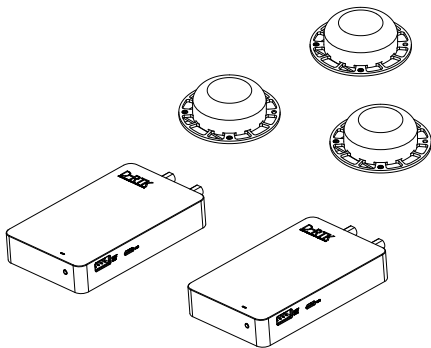


D-RTK

User Manual

V1.0 2017.10



Searching for Keywords

Search for keywords such as “battery” and “install” to find a topic. If you are using Adobe Acrobat Reader to read this document, press Ctrl+F on Windows or Command+F on Mac to begin a search.

Navigating to a Topic

View a complete list of topics in the table of contents. Click on a topic to navigate to that section.

Printing this Document

This document supports high resolution printing.

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Disclaimer

Thank you for purchasing the D-RTK™ (hereinafter referred to as “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 install and use this product in strict accordance with this manual. 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 variance among different versions, the Simplified Chinese version shall prevail when the product in question is purchased in Mainland China, and the English version shall prevail when the product in question is purchased in any other region.

Warnings















1. Ensure all parts are connected correctly and OFFSET values are configured correctly in DJI Assistant 2 when using the D-RTK for the first time.
2. DO NOT bend or fold the antenna cable excessively.
3. Be sure that the Ground System antenna is perfectly level when mounted.
4. Only operate in an open environment free from radio interference.
5. Ensure that the Air System and the Ground System antennas are unobstructed when used.
6. The two Air System antennas should be kept at the same height.
7. Make sure that the DATALINK PRO antennas DO NOT obstruct each other when used.
8. At least one A3 series GPS module is required.
9. 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.
10. Ensure that the D-RTK and its components are free from contamination (e.g. water, oil, soil and sand).
11. Download the latest version of the user manual or software for any related DJI product that is required when using this product.

Introduction






The D-RTK is a GPS and barometer system specially designed to provide centimeter-level positioning accuracy for the DJI A3 series flight controllers. Using dual antennas, its heading reference is more accurate than a normal compass sensor, and it is able to withstand magnetic interference from metal structures.

Depending on the region of purchase, the D-RTK uses either GPS and BeiDou or GPS and GLONASS to perform at the highest standards.

Overview

D-RTK Processor × 2 	GNSS Antenna × 3 	Antenna Cable × 3 	
Antenna Bracket I × 1 	Antenna Bracket II × 2 	Base Board × 1 	
DATALINK PRO Bracket × 1 	Thumb Screw × 1 	8-pin Cable × 1 	
4-pin CAN Cable × 1 	Micro USB Cable × 1 	Ground System Power Cable × 1 	
Air System Power Cable I × 1 	Air System Power Cable II × 1 	Screw M2.5 × 5 M3.0 × 8 Cup-head Full Thread Screw M3 & M3 Nut	Others Velcro Double-sided Tape Hexagonal L-wrench

Matrice 600 Accessories*

Upper Expansion Plate × 1	Bracket × 4	Assistant Bracket × 2	Antenna Bracket III × 4
			
Antenna Clip × 2	Screw		
	M2.5 × 5 M3.0 × 8		

*Complimentary with purchase of both the DJI Matrice 600 and D-RTK.

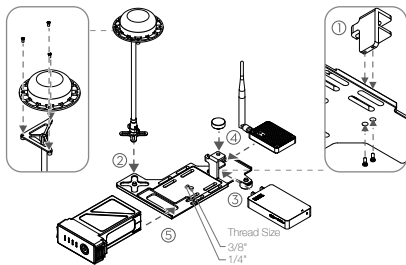
Ground System Installation and Connection

The following uses the DJI A3 Flight Control System, DJI DATALINK PRO 900 and DJI Intelligent Flight Battery to illustrate a typical installation and connection.

Installation

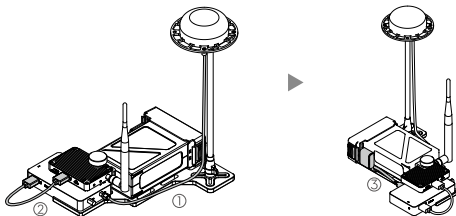
1. Mount the DATALINK PRO Bracket onto the Base Board with two M2.5×5 screws.
2. Mount the GNSS Antenna onto the Antenna Bracket I with three M3.0×8 screws, and then fix the Antenna Bracket I onto the Base Board.
3. Fix the D-RTK Processor onto the Base Board as the Ground System.
4. Fix the DATALINK PRO Base Station onto the DATALINK PRO Bracket.
5. Fix the battery in place with velcro and then fix the Base Board onto an appropriate tripod*.

*Supports ordinary camera and camcorder tripods mounted with 1/4-20 screws.



Connection

1. Connect the Ground System and the GNSS Antenna with an Antenna Cable.
2. Connect the Ground System and the DATALINK PRO Base Station with an 8-pin Cable.
3. Connect the Ground System to the battery with the Ground System Power Cable.

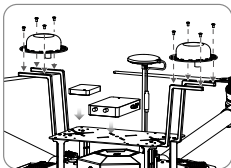


Air System Installation and Connection

The following uses the Antenna Bracket III, DJI DATALINK PRO 900, DJI Matrice 600, D-RTK and DJI A3 Flight Control System to illustrate a typical installation and connection.

Installation

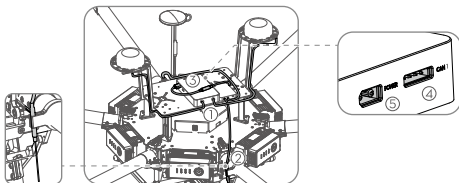
1. Mount the two GNSS Antennas to the Antenna Bracket III with four M3.0×6.5 screws.
2. Attach the D-RTK Processor (working as the Air System) and the DATALINK PRO Mobile Station to the Upper Expansion Plate with double-sided tape.



- Use the Antenna Bracket II if using other types of aircraft and follow the requirements below:
 - a. Ensure that the two Antenna Brackets II form a straight line through the aircraft's center of gravity, and the distance between the two Antennas is greater than 25 cm (the farther apart, the better).
 - b. The two Antenna Brackets II should be equidistant from the aircraft's center of gravity.
 - c. The two Air System antennas should be kept at the same height.

Connection

1. Using the Antenna Cables, connect the Ground System's "ANT1" port to one Antenna as the Master Antenna, and the "ANT2" port to the other Antenna as the Slave Antenna.
2. Attach the DATALINK PRO Mobile Station's Antennas and tidy them with clips.
3. Connect the Air System CAN/UART port to the DATALINK PRO Mobile Station CAN/UART port with an 8-pin Cable.
4. Connect the Air System "CAN1" port to any CAN1 port on the A3 flight controller with a 4-pin CAN Cable.
5. Connect the Air System "POWER" port to the power port on the aircraft with an Air System Power Cable I.



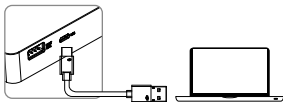
- Use the Air System Power Cable II if using the D-RTK with other types of aircraft.

Usage

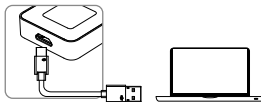
Configuring Parameters Using DJI Assistant 2

IMPORTANT: The Ground System and Air System should be connected to the computer separately and activated. Be sure to configure parameters with DJI Assistant 2 for first time use.

1. Download DJI Assistant 2 from www.dji.com and install it on your computer.
2. Connect the Ground System to the computer with DJI Assistant 2 launched, and then go to Connected Devices > D-RTK to configure the coordinates.
3. When configuring the Air System, ensure the A3 Flight Control System is connected. Connect the Flight Control System to the computer with DJI Assistant 2 launched. Select the connected Flight Control System from the Connected Devices page, and then go to DJI Devices > Air System Antenna to configure antenna offset parameters.



Configuring the Ground System



Configuring the Air System



- Connect the Ground System and the Air System one by one to the computer for firmware upgrade. Power cycle the DATALINK PRO, Flight Control System and D-RTK after upgrading.
- Supports Windows 7 (or later) or Mac OS X 10.9 (or later).

Usage Procedures

Use the D-RTK in an open environment free from radio interference and follow the procedures below:

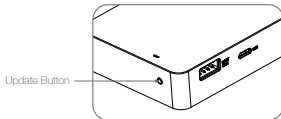
1. Power on the Ground System, and wait for the Working Status LED to turn solid green.
2. Power on the Air System, and wait for the Working Status LED to turn solid green.
3. The D-RTK is ready to work when the A3 Flight Control System's Flight Status LED blinks green and blue alternately.



- DO NOT power on the Air System before the Ground System's Working Status LED turns solid green.
 - Ensure the Air System and the Ground System's antennas are unobstructed when used.
 - Download the User Manual from www.dji.com to learn more.
 - The DATALINK PRO Base Station and Mobile Station's 4-position Switches should be toggled to the UART_SW1 position if the D-RTK is only used with the DATALINK PRO, otherwise the D-RTK will fail to receive data from the DATALINK PRO. If also using DJI Assistant 2 Ground Station, the 4-position Switches should be toggled to the COMBO_SW4 position. Refer to the "DATALINK PRO User Manual" for more details.
 - Set the A3 Flight Control System to P mode or F mode.
-
















Updating the Ground System's Position

Each time it is used, the Ground System automatically detects the offset distance from its previous position. If the offset distance is > 50 meters, the Ground System will update the new position coordinates automatically. If the position has changed but the Ground System does not update automatically, you will need to update manually. Press the Update Button and hold for 5 seconds until the Ground System recalculates the position coordinates. The Working Status LED will blink green quickly if the position is updated successfully (DJI GO will prompt you once the Ground System's position is updated successfully).



- DO NOT move the Ground System during positioning.
 - The Ground System's position coordinates can be set in DJI Assistant 2.
-

Working Status LED

Ground System		
 — Solid White	Ground System is initializing or not activated.	
 Blinking White Slowly	Initialization failure.	
 — Solid Red	D-RTK not positioned.	
 Blinking Red Slowly	Setting the Ground System's position.	
 — Solid Green	Ground System's position is set.	
 Blinking Green Quickly	Ground System's position is updated.	
Air System		
 — Solid White	Air System is initializing or not activated.	
 Blinking White Slowly	Initialization failure.	
 — Solid Yellow	Ground System not positioned but differential data received.	
 — Solid Red	Ground System not positioned, differential data not received.	
 Blinking Yellow Slowly	Ground System positioned with single point, differential data received.	
 Blinking Red Slowly	Ground System positioned with single point, but differential data not received.	
 Blinking Purple Slowly	D-RTK is executing floating-point mode.	
 Blinking Green Slowly	D-RTK is executing calculation mode.	
 — Solid Green	D-RTK is executing fixed mode.	



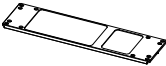



Appendix

Specifications

Positioning Accuracy	Horizontal: 1 cm + 1 ppm Vertical: 2 cm + 1 ppm
Orientation Accuracy	$(0.2/R)^{\circ}$ R is the baseline distance (distance between the two Air System antennas) in meters.
Root Mean Square (RMS)	0.03 m/s
Frequency Used	Global version: GPS L1&L2, GLONASS F1&F2 Asia-Pacific version: GPS L1&L2, BEIDOU B1&B2
Interface Type	CAN, UART, USB
Input Voltage	3S to 12S (12 to 52 V)
Power Consumption	5.2 W
Current	0.45 A (@ 12 V)
D-RTK Processor Dimensions	112.3 mm × 63 mm × 18.6 mm
D-RTK Processor Weight	139.5 g
Operating Temperature	32° to 113°F (0° to 45°C)
Storage Temperature	-40° to 185°F (-40° to 85°C)

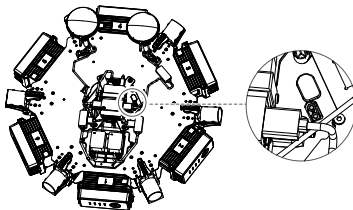
Mounting the D-RTK onto the M600 Pro

Matrice 600 Pro Accessories

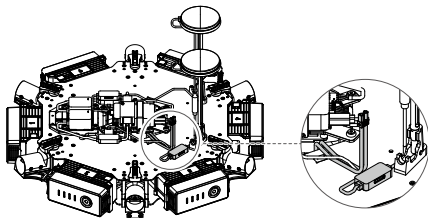
Quick-Release Base Bracket × 2	Quick-Release Top Bracket × 2	Upper Expansion Plate × 1	
			
Antenna Bracket III × 4	Knurled Screw × 2	Antenna Clip × 2	Screw Package × 1
			M3.0 × 6.5 M3.0 × 7.8

Preparing the Cables

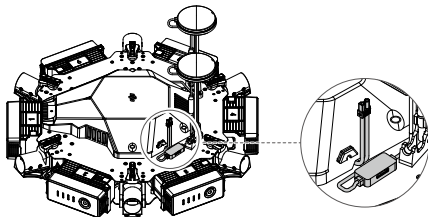
1. Organize the flight control system's cables.
2. Unscrew the six screws to remove the M600 PRO's top shell.
3. Connect the D-RTK Air System Power Cable II to the BMS board's XT30 port.



4. Move the GPS2 or GPS3's Hub port outside the top shell.

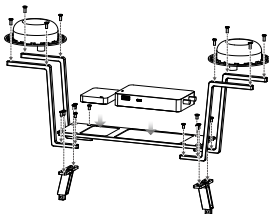


5. Mount the top shell and organize the cables.

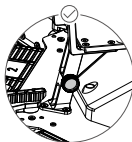
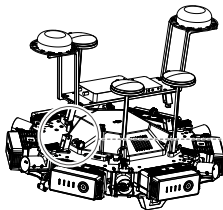


Installation

1. Mount the Antenna Bracket III to the Upper Expansion Plate with four M3.0×6.5 screws.
2. Mount the Quick-Release Top Bracket to the Upper Expansion Plate with two M3.0×6.5 screws.
3. Mount the two GNSS Antennas to the Antenna Bracket III with four M3.0×6.5 screws.
4. Attach the D-RTK Processor (working as the Air System) and the DATALINK PRO Mobile Station to the Upper Expansion Plate with double-sided tape.

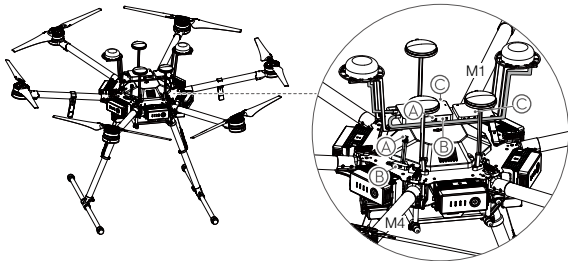


5. Remove the three screws on both left and right sides of the aircraft and mount the Quick-Release Base Brackets on it.
6. Mount the Quick-Release Top Bracket to the Quick-Release Base Bracket with the knurled screw.



Connection

1. Use the Antenna Cables to connect the antennas on the Air System. The Master Antenna connects to the Ground System's ANT1 port, and the Slave Antenna connects to the ANT2 port. Make sure the location information for D-RTK in DJI Assistant 2 matches the actual locations. The antenna on the aircraft's left side connects to the ANT2 port, and the right side connects to the ANT1 port by default in DJI Assistant 2.
2. Attach the DATALINK PRO Mobile Station's Antennas and use the clips to make the cables in stay place.
3. Connect the Air System CAN/UART port to the DATALINK PRO Mobile Station CAN/UART port with an 8-pin Cable.
4. Connect the Air System CAN1 port to any CAN1 port on the A3 flight controller with a 4-pin CAN Cable.
5. Connect the Air System POWER port to the power port on the aircraft with an Air System Power Cable I.



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