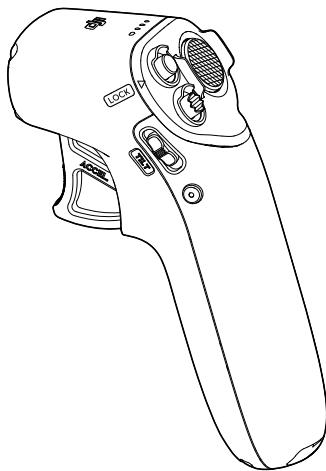




Motion Controller

User Manual

v1.0 2021.03



 **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.

Using this Manual

Legend

 Warning

 Important

 Hints and Tips

 Reference

Read Before the First Flight

Visit the address below or scan the QR code to watch the tutorial videos, which demonstrate how to use the DJI Motion Controller safely:

<https://www.dji.com/dji-fpv/video>



Download the DJI Fly App

Scan the QR code on the right to download DJI Fly.

The Android version of DJI Fly is compatible with Android v6.0 and later. The iOS version of DJI Fly is compatible with iOS v11.0 and later.



Download the DJI Virtual Flight App

Scan the QR code on the right to download DJI Virtual Flight.

The iOS version of DJI Virtual Flight is compatible with iOS v11.0 and later.



Download DJI Assistant 2 (DJI FPV series)

Download DJI ASSISTANT™ 2 (DJI FPV Series) at <https://www.dji.com/dji-fpv/downloads>.

Warnings

1. Use this product within the operating temperature range. Avoid any sudden or large movements when handling the product.
2. Fly in an environment away from electromagnetic interference such as power lines and metal structures.

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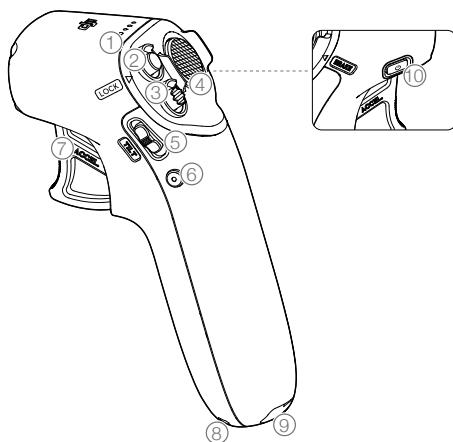
Product Profile

Introduction

When used with the DJI FPV Goggles V2, the DJI Motion Controller provides an immersive and intuitive flying experience that allows users to easily control the aircraft using hand movements. Built into the DJI Motion Controller is DJI's O3 transmission technology, offering a maximum transmission range of 6 mi (10 km). The motion controller works at both 2.4 and 5.8 GHz and is capable of selecting the best transmission channel automatically. The maximum runtime of the motion controller is approximately 5 hours.

- ⚠**
- The motion controller reaches its maximum transmission distance (FCC) in a wide-open area with no electromagnetic interference when the aircraft is at an altitude of approximately 400 ft (120 m). The maximum transmission distance refers to the maximum distance that the aircraft can still send and receive transmissions. It does not refer to the maximum distance the aircraft can fly in a single flight.
 - 5.8 GHz is not supported in certain regions. Observe local laws and regulations.

Diagram



1. Battery Level LEDs

Indicates the battery level of the motion controller.

2. Lock Button

Press twice to start the motors of the aircraft.

Press and hold to make the aircraft automatically take off, ascend to approximately 1 m, and hover.

Press and hold again to make the aircraft automatically land and the motors stop.

Press once to cancel Low Battery RTH when the countdown appears in the goggles.

3. Mode Button

Press once to switch between Normal and Sport mode.

4. Brake Button

Press once to make the aircraft brake and hover in place (only when GPS or Downward Vision System is available). Press again to unlock the attitude and record the current position as zero attitude.

Press and hold to initiate RTH. Press again to cancel RTH.

5. Gimbal Tilt Slider

Push up and down to adjust the tilt of the gimbal (only available before takeoff).

6. Shutter/Record Button

Press once to take photos or start or stop recording. Press and hold to switch between photo and video mode.

7. Accelerator

Press to fly the aircraft in the direction of the circle in the goggles. Apply more pressure to accelerate. Release to stop and hover.

8. Lanyard Hole

9. USB-C Port

For charging or connecting the motion controller to a computer to update firmware.

10. Power Button

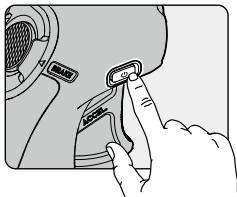
Press once to check the current battery level. Press once then again and hold to power the motion controller on or off.

Operation

Powering On/Off

Press the power button once to check the current battery level. Recharge before using if the battery level is too low.

Press once then press again and hold to power the motion controller on or off.



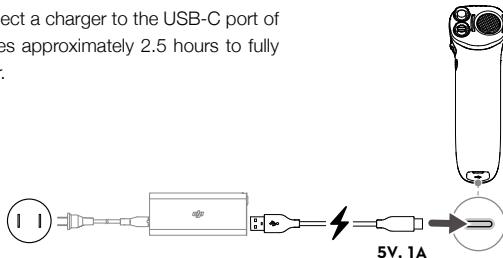
The battery level LEDs display the power level of the battery during charging and discharging. The statuses of the LEDs are defined below:

- LED is on.
- LED is flashing.
- LED is off.

LED1	LED2	LED3	LED4	Battery Level
				Battery Level > 80%
				75% < Battery Level ≤ 80%
				63% < Battery Level ≤ 75%
				50% < Battery Level ≤ 63%
				38% < Battery Level ≤ 50%
				15% < Battery Level ≤ 38%
				8% < Battery Level ≤ 15%
				0% < Battery Level ≤ 8%

Charging

Use a USB-C cable to connect a charger to the USB-C port of the motion controller. It takes approximately 2.5 hours to fully charge the motion controller.



The table below shows the battery level during charging.

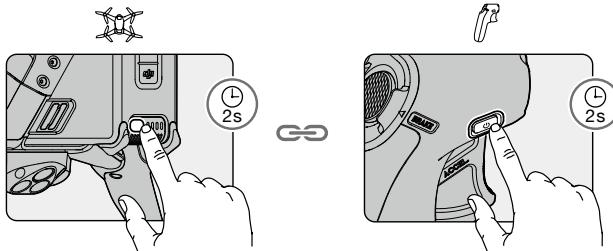
LED1	LED2	LED3	LED4	Battery Level
				0% < Battery Level ≤ 50%
				50% < Battery Level ≤ 75%
				75% < Battery Level < 100%
				Fully charged

Linking

Follow the steps below to link the motion controller and the aircraft.



- The aircraft must be linked with the goggles before the motion controller.

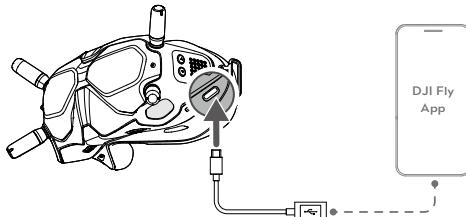


Make sure that all devices are powered on before linking.

- Press and hold the power button of the aircraft until the battery level LEDs start to blink in sequence.
- Press and hold the power button of the motion controller until it beeps continually and the battery level indicators blink in sequence.
- The motion controller stops beeping when linking is successful and both the battery level indicators turn solid and display the battery level.

Activation

The DJI Motion Controller must be activated before using for the first time. Make sure all devices are linked after powering on the aircraft, goggles, and motion controller. Connect the USB-C port of the goggles to the mobile device, run DJI Fly, and follow the prompts to activate. An internet connection is required for activation.

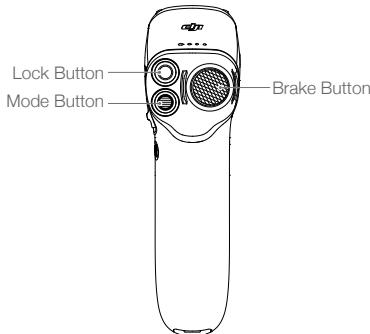


Controlling the Aircraft

The motion controller has two modes: Normal mode and Sport mode. Normal mode is selected by default.

- Zero attitude: the initial position of the motion controller that is used as a reference point when any movements are made with the motion controller.
- Before using for the first time, practice flying with the motion controller using DJI Virtual Flight.

Motion Controller	Aircraft & Goggles Screen (← Indicates nose direction)	Remarks
		<p>Rotate the motion controller to control the orientation of the aircraft.</p> <p>The orientation of the aircraft changes with the rotation of the motion controller accordingly and is always consistent with the orientation of the motion controller.</p> <p>The circle in the goggles will move left and right and the video transmission will change accordingly.</p>
		<p>The orientation of the aircraft can also be controlled by tilting the motion controller left and right.</p> <p>Tilt left to rotate the aircraft counterclockwise and tilt right to rotate clockwise. The aircraft hovers in place if the motion controller is at zero attitude.</p> <p>The tilt angle corresponds to the angular velocity of the rotation of the aircraft. The greater the tilt angle of the motion controller, the faster the aircraft will rotate.</p> <p>The circle in the goggles will move left and right and the video transmission will change accordingly.</p> <p> It is recommended to use this movement to control the orientation of the aircraft.</p>
		<p>Tilt the motion controller up and down to control the tilt of the gimbal.</p> <p>The tilt of the gimbal changes with the tilt of the motion controller accordingly and is always consistent with the orientation of the motion controller.</p> <p>The circle in the goggles will move up and down and the video transmission will change accordingly.</p>
		<p>To control the ascent or descent of the aircraft, first tilt the motion controller 90° up or down. Once complete, press the accelerator to make the aircraft ascend or descend.</p>
		<p>Press the accelerator to fly in the direction of the circle in the goggles.</p> <p>Apply more pressure to accelerate. Release to stop and hover.</p>



Lock Button

Press twice to start the motors of the aircraft.

Press and hold to make the aircraft automatically take off, ascend to approximately 1 m, and hover.

Press and hold while hovering to make the aircraft automatically land and the motors to stop.

Press once to cancel Low Battery RTH when the countdown appears in the goggles.

-
- ⚠ • Critical Low Battery landing cannot be canceled.

Brake Button

Press once to make the aircraft brake and hover in place. The goggles will show . Press again to unlock the attitude and record the current position as zero attitude. To record the zero attitude, the motion controller must be held upright and the white dot must be inside the box of the motion controller movement display. The box turns to when the white dot is inside.

If the aircraft is performing RTH or auto landing, press once to exit RTH.

Press and hold the brake button until the motion controller beeps to indicate that RTH has started. Press the button again to cancel RTH and regain control of the aircraft.

-
- 💡 • If the aircraft brakes and hovers, the zero attitude may need to be reset before the flight can resume.

Mode Button

Press once to switch between Normal and Sport mode. The current mode is displayed in the goggles.

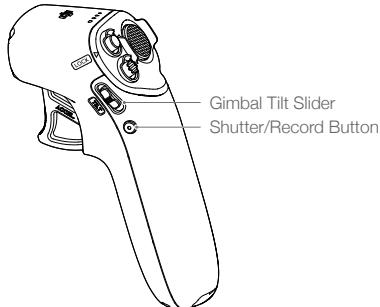
Motion Controller Alert

The motion controller sounds an alert during RTH. The alert cannot be cancelled.

The motion controller sounds an alert when the battery level is 6% to 15%. A low battery level alert can be cancelled by pressing the power button. A critical battery level alert will sound when the battery level is less than 5% and cannot be cancelled.

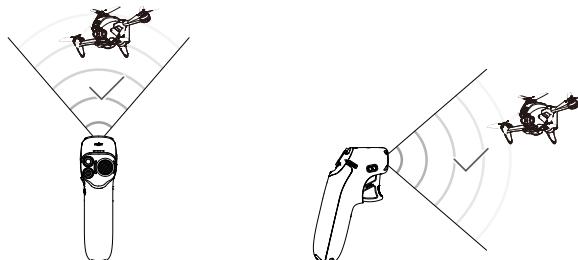
Controlling the Camera

1. Shutter/Record Button: press once to take a photo or to start or stop recording. Press and hold to switch between photo and video mode.
2. Gimbal Tilt Slider: push up and down to adjust the tilt of the gimbal (only available before takeoff).



Optimal Transmission Zone

The signal between the aircraft and the motion controller is most reliable when the motion controller is positioned in relation to the aircraft as shown below.

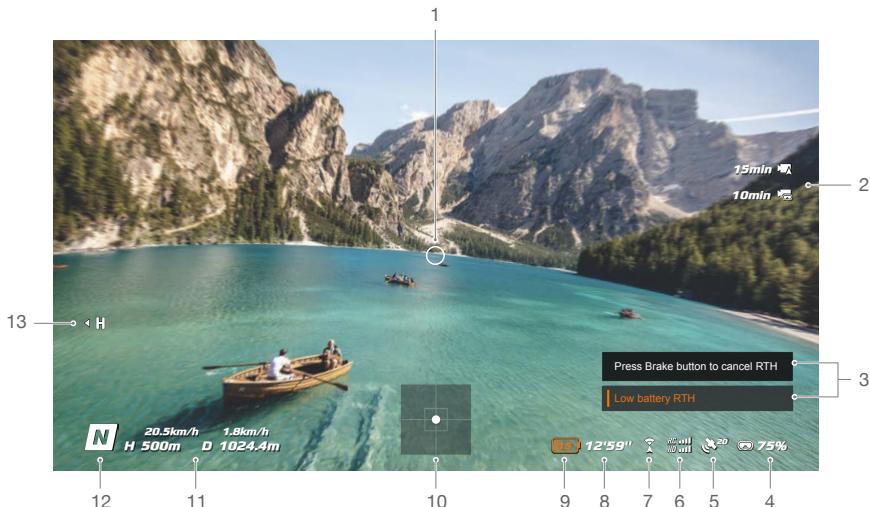


Optimal Transmission Zone

-
-  • In order to avoid interference, DO NOT use other wireless devices on the same frequency as the motion controller.
-

Goggles Screen

The motion controller should be used with the DJI FPV Goggles V2, which give users a first-person view from the aerial camera with real-time video and audio transmission.



1. Flight Direction Indicator

When the motion controller is stationary, it indicates the midpoint of the screen. When the motion controller is moved, it indicates the change of the aircraft orientation or gimbal pitch.

2. microSD Card Information

Displays whether or not a microSD card is inserted in the aircraft or goggles as well as the remaining capacity. A flashing icon will appear when recording.

3. Prompts

Displays information such as when switching modes and when the battery level is low.

4. Goggles Battery Level

Displays the battery level of the goggles. The goggles will beep when the battery level is too low. The voltage will also be displayed if a third-party battery is being used.

5. GPS Status

Displays the current strength of the GPS signal.

6. Remote Control and Video Downlink Signal Strength

Displays the remote control signal strength between the aircraft and motion controller and the video downlink signal strength between the aircraft and the goggles.

7. Forward Vision System Status

Displays the status of the Forward Vision System. The icon is white when the Forward Vision System is working normally. Red indicates that the Forward Vision System is not enabled or working abnormally and the aircraft cannot automatically slow down when encountering obstacles.

8. Remaining Flight Time

Displays the remaining flight time of the aircraft after starting the motors.

9. Aircraft Battery Level

Displays the current battery level of the Intelligent Flight Battery on the aircraft.

10. Motion Controller Movement Display

Displays the attitude information of the motion controller such as when it tilts left and right, up and down, and whether the attitude is fixed when the aircraft brakes and hovers.

11. Flight Telemetry

D 1024.4 m, H 500 m, 9 m/s, 6 m/s: displays the distance between the aircraft and the Home Point, height from the Home Point, aircraft horizontal speed, and aircraft vertical speed.

12. Flight Modes

Displays the current flight mode.

13. Home Point

Indicates the location of the Home Point.

-
-  • It is recommended to watch the tutorial video in the goggles before using for the first time. Go to Settings, Control, Motion Controller, Flight Control, and then First Flight Tutorial.
-

-  • Using the goggles does not satisfy the requirement of visual line of sight (VLOS). Some countries or regions require a visual observer to assist during flight. Make sure to comply with local regulations when using the goggles.
-

Appendix

Specifications

Model	FC7BMC
Weight	167 g
Operating Frequency	2.400-2.4835 GHz; 5.725-5.850 GHz
Max Transmission Distance (unobstructed, free of interference)	10 km (FCC); 6 km (CE/SRRC/MIC)
Transmitter Power (EIRP)	2.4 GHz: ≤28.5 dBm (FCC), ≤20 dBm (CE/SRRC/MIC) 5.8 GHz: ≤31.5 dBm (FCC), ≤19 dBm (SRRC), ≤14 dBm (CE)
Operating Temperature Range	-10° to 40° C (14° to 104° F)
Max Runtime	5 hours

Motion Controller Calibration

The compass, IMU, and accelerator of the motion controller can be calibrated. Immediately calibrate any of the modules when prompted to do so.

On the goggles, go to Settings, Control, Motion Controller, and then Motion Controller Calibration. Select the module and follow the prompts to complete calibration.



- DO NOT calibrate the compass in locations where magnetic interference may occur such as close to magnetite deposits or large metallic structures such as parking structures, steel-reinforced basements, bridges, cars, or scaffolding.
- DO NOT carry objects that contain ferromagnetic materials such as mobile phones near the aircraft during calibration.

Firmware Update

Use DJI Fly or DJI Assistant 2 (DJI FPV series) to update the motion controller firmware.

Using DJI Fly

Power on the aircraft, goggles, and motion controller. Make sure all the devices are linked. Connect the USB-C port of the goggles to the mobile device, run DJI Fly, and follow the prompt to update. An internet connection is required.

Using DJI Assistant 2 (DJI FPV Series)

Use DJI Assistant 2 (DJI FPV series) to update the motion controller separately.

1. Power on the device and connect it to a computer with a USB-C cable.
2. Launch DJI Assistant 2 (DJI FPV series) and log in with a DJI account.
3. Select the device and click Firmware Update on the left.
4. Select the firmware version required.
5. DJI Assistant 2 (DJI FPV series) will download and update the firmware automatically.
6. The device will restart automatically after the firmware update is complete.



- Before performing an update, make sure the motion controller has a battery level of at least 30%.
- Do not unplug the USB-C cable during an update.
- The firmware update will take approximately 5 minutes. Make sure the mobile device or the computer is connected to the internet.

After-Sales Information

Visit <https://www.dji.com/support> to learn more about after-sales service policies, repair services, and support.

DJI Support
<http://www.dji.com/support>

This content is subject to change.

Download the latest version from
<https://www.dji.com/dji-fpv>

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