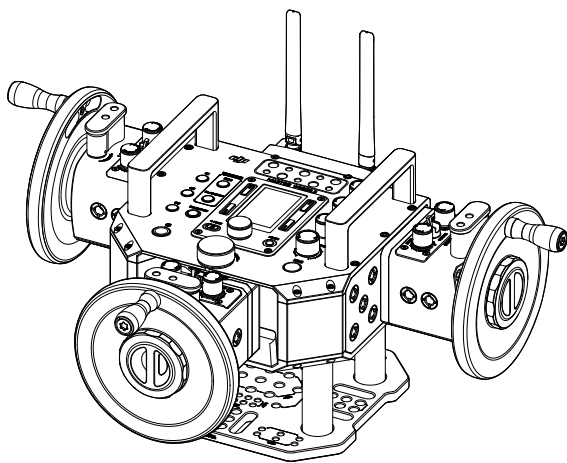


DJI Master Wheels

DJI 大师摇轮

User Guide
使用说明

V1.0 2020.04



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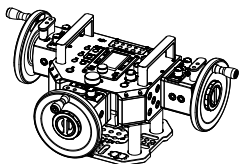
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In the Box

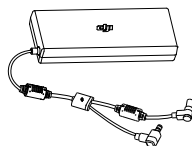
Master Wheels* ×1



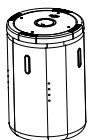
TB50 Intelligent Battery ×2



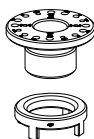
180W Power Adapter ×1



Battery Charging Hub ×1



Mitchell Mount Adapter ×1



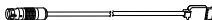
Allen Wrench ×1



AC Power Cable ×6



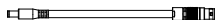
Wireless Receiver CAN Bus Cable (0.8 m) ×1



DJI Master Wheels to Inspire 2 RC CAN Bus Cable (5 m) ×1



Ronin 2 DC Power Cable ×1



Ronin 2 2-pin Power Cable ×1



USB-C Cable ×1



RF Power Cable (5 m) ×1



Control Module Cable (2 m)*
×3



3/8" -16 Screw ×4



1/4" -20 Screw ×4



1/4" -20 Screw ×4



M8 Screw ×8



Storage Case ×1



DJI Pro Wireless Receiver*
×1



Antenna* ×6



Ronin 2 UART to D-Bus
Cable* ×1



S-Bus Cable ×1



User Guide ×1



DJI Master Wheels User Guide
DJI Pro Wireless Receiver User
Guide

DJI Master Wheels 2-Axis includes two wheel and control modules and two control module cables in the package. Other items and functions described in this manual apply to both DJI Master Wheels 2-Axis and DJI Master Wheels 3-Axis.

* These items are included in the DJI Pro Wireless Receiver's package.

Introduction

The DJI Master Wheels is a professional wheel controller system that employs high-precision sensors, advanced control algorithms, and a state-of-the-art design to deliver smooth and precise remote camera movement control. Master Wheels can connect with the RONIN™ 2 and Ronin-S through the included wireless receiver or with third-party gimbals through an S-Bus connection.

Master Wheels features a modular design, meaning the wheels and control modules can be detached from the base. The wheel and control modules can still be operated via cables while detached from the base, giving users more freedom when shooting in tight spaces. Additionally, users can manually adjust the orientation of the control modules for a more ergonomic fit.

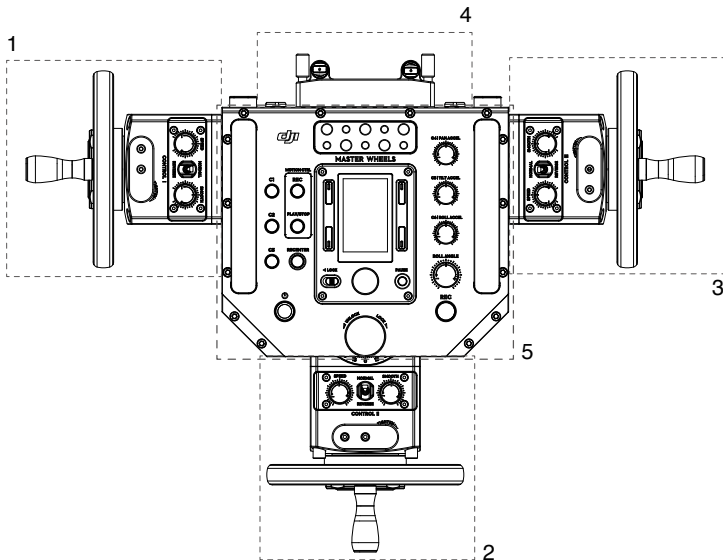
Various buttons and menus on the main control console allow you to monitor the status of your equipment and adjust settings on the fly. The Motion Control feature lets cinematographers record specific movements and duplicate them when needed.

Master Wheels' dual-frequency 2.4 GHz and 5.8 GHz wireless transmission system supports a maximum operating range of 3 km in ideal conditions (unobstructed and free of interference). The radio transmission module can also quickly be detached and placed in an open area to obtain a stronger signal. Wired connections are also supported.

The main control console contains multiple 1/4"-20 and 3/8"-16 mounting holes for attaching monitors, video transmission systems, and more. Master Wheels also comes with a Mitchell mount that can be attached to the base plate for connecting to tripods, cars, and more, allowing users to shoot any scene that they can imagine.

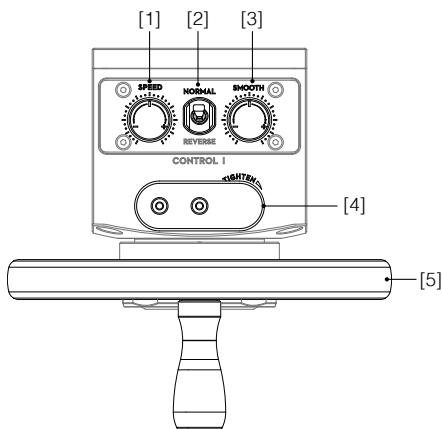
Master Wheels uses TB50 batteries, offering up to 18 hours of operating time. Users can also power monitors or wireless transmitters via the CAN Bus port.

Components




1. Wheel and Control Module I

The Wheel and Control modules can be mounted on the main control base, or they can be detached from the base and operated via cables, giving users more freedom when shooting in tight spaces.



- [1] Speed Adjustment Knob: Turn to adjust the control axis speed. Set the speed value to 100 and ramping value to 0 for a 1:5 movement ratio between the gimbal and Master Wheels.
- [2] Direction Adjustment Switch: Toggle to adjust control direction and transmission off of the axis movement.
- [3] Smoothing Adjustment Knob: Turn to adjust the control smoothing of the gimbal axis. When this value increases, and when control input is released it will be translated into smoother and slower movement.
- [4] Damping Adjustment Knob: Turn to adjust the damping of the wheel.
- [5] Wheel: Turn to control the movement of gimbal axis.

 Operate the wheel and adjustment knobs carefully and gently.

2. Wheel and Control Module II

The same as Wheel and Control Module I.

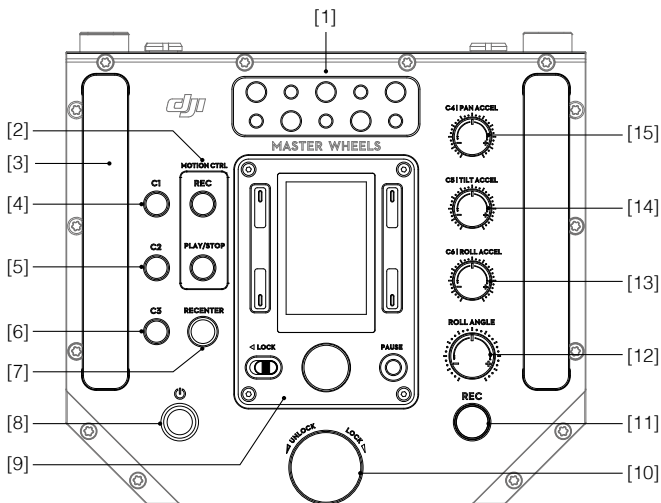
3. Wheel and Control Module III

The same as Wheel and Control Module I.

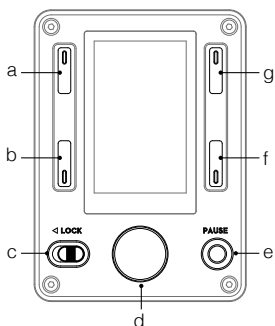
4. Radio Transmission Module

The radio transmission module can be mounted on the Master Wheels or detached and placed in an open area to obtain a stronger signal.

5. Main Control Base

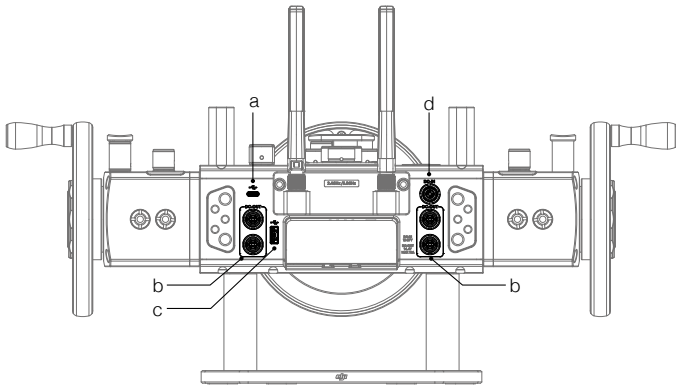


- [1] Mounting Holes: Use the 1/4"-20 and 3/8"-16 mounting holes to attach accessories.
- [2] Motion Control: Record gimbal movements by pressing the REC button, repeat the recorded gimbal movements by pressing the PLAY/STOP button.
- [3] Handle: Use to hold and move the Master Wheels.
- [4] C1 Button: Customize its function using the on-board panel.
- [5] C2 Button: Customize its function using the on-board panel.
- [6] C3 Button: Customize its function using the on-board panel.
- [7] Recenter Button: Press to recenter the gimbal.
- [8] Power Button: Press and hold to turn the Master Wheels on or off.
- [9] On-board Panel



- a. Mounting Mode Button: Press to select a mounting mode for the gimbal.
- b. Back Button: Press once to enter the Master Wheels settings page or go back to the previous menu.
- c. Lock Switch: Toggle to lock the Panel during usage to avoid accidental inputs.
- d. Jog Wheel/OK Button: Rotate to select options, and press once to confirm an option.
- e. Pause Button: Press once to power off the motor without powering off the gimbal.
- f. Toggle Button: Press once to enter the gimbal settings page or toggle between submenus.
- g. Follow Mode Button: Press to select a Follow mode for the gimbal.

- [10] Angle Adjustment Knob: Unlock to manually adjust the orientation of Wheel and Control Module II.
- [11] Record Button: Press to start or stop the camera recording after connecting to the Shutter Control port on the Ronin 2's Power Hub.
- [12] Roll Axis Angle Adjustment Knob: Turn to adjust the roll axis angle.
- [13] C6 Roll Axis Ramping Knob: Turn to adjust the ramping for the roll axis.
- [14] C5 Tilt Axis Ramping Knob: Turn to adjust the ramping for the tilt axis.
- [15] C4 Pan Axis Ramping Knob: Turn to adjust the ramping for the pan axis.
- [16] Main Control Base Ports

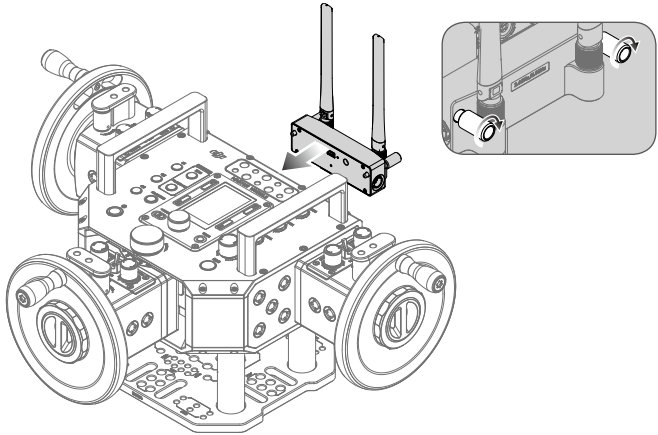


- a. USB-C Port: Used for firmware updating.
 - b. DC OUT Port: 14.4 V and the total current of all DC OUT Ports is 8 A.
 - c. USB-A Port: Used for USB connections.
 - d. DC IN Port: 12–27 V; used for connecting external power to the Master Wheels.
- [17] Mounting Holes
1/4"-20 or 3/8"-16 mounting holes.

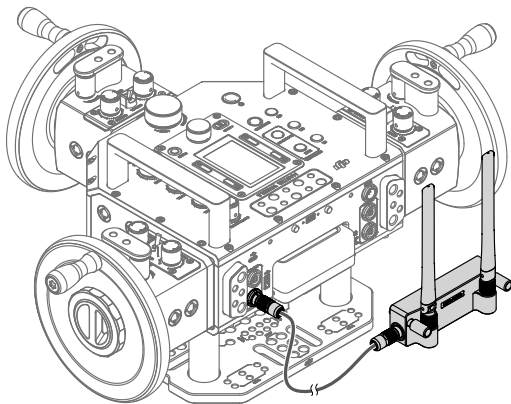
Installation

Mounting the Radio Transmission Module

Attach the radio transmission module by connecting the Pogo Pins and then tightening the screws.

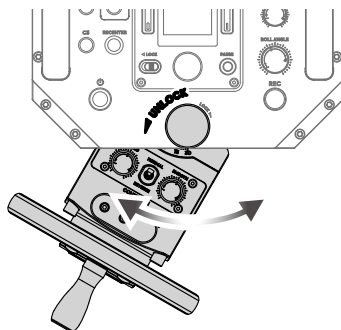


You can also connect the radio transmission module to one of the DC OUT ports on the Master Wheels using the provided RF Power Cable if you want to place the transmission module in a different location.



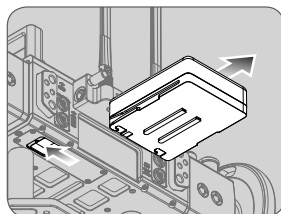
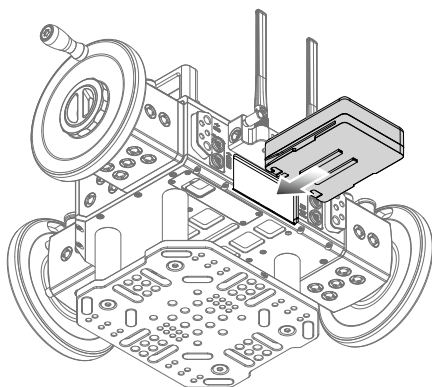
Adjust the Orientation of Wheel and Control Module II

Rotate the angle adjustment knob to the unlocked position and adjust the module to the desired orientation, and then rotate the knob back to lock the module in place.



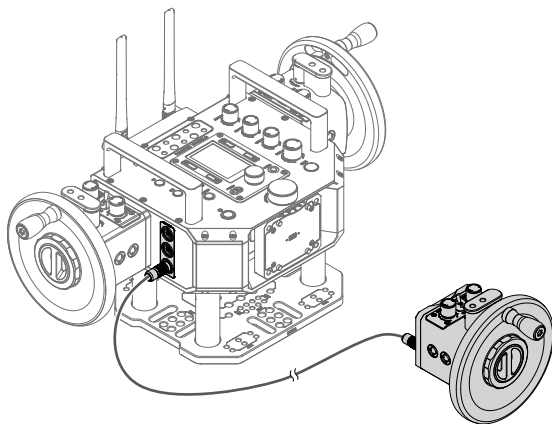
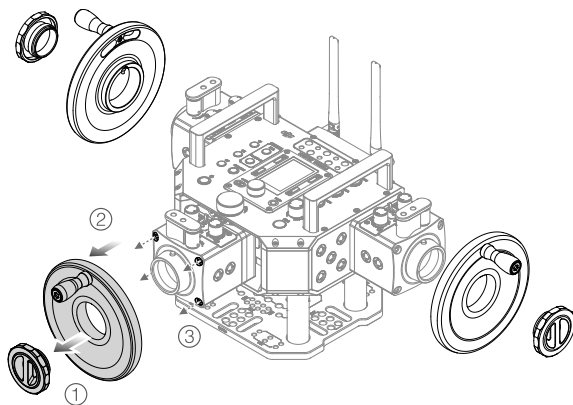
Mounting the Intelligent Battery

Insert the Intelligent Battery as shown below. When removing the battery, first unlock the battery latch on the bottom of the base by sliding it in the direction shown below, and then remove the battery.



Detaching the Wheel and Control Modules

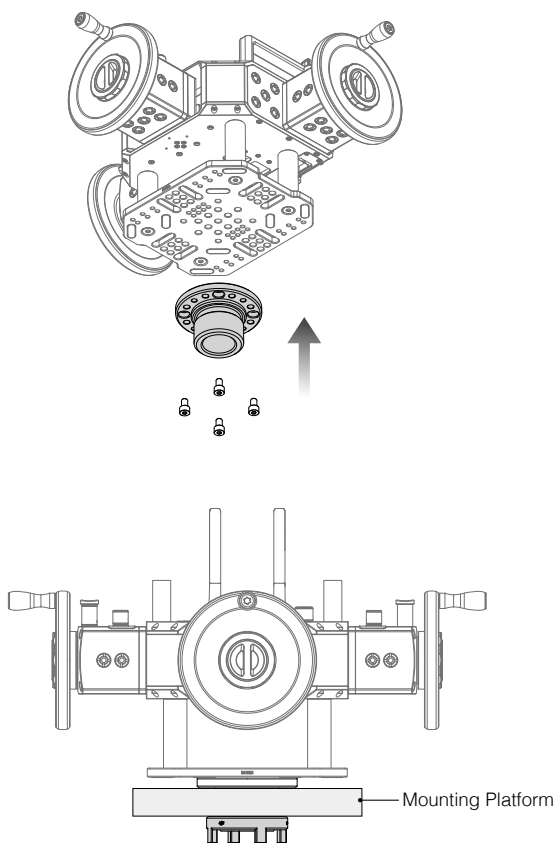
The wheel and control modules are mounted on the base by default. If you need to remove them, first detach the wheel, and then loosen the screws to remove the control modules. To use a Wheel and Control module remotely, connect it to one of the DC OUT ports on the Master Wheels using the provided Control Module Cable.



Keep the Pogo Pin connectors clean and wipe them if there is anything on them that prevents them from working properly.

Mounting the Main Control Base on Other Platforms

Mount the main control base on other platforms such as a tripod using a Mitchell mount as shown below.



Connecting to a Gimbal

1. Wireless Connection

To wirelessly connect the Master Wheels to a gimbal, it is recommended to use the DJI Pro Wireless Receiver. Please refer to the DJI Pro Wireless Receiver User Guide for connection details.

Using the DJI Pro Wireless Receiver is recommended for optimal performance. You can also connect the Master Wheels to Ronin 2 using Ronin 2's linking procedures.

2. Wired Connection

Connect the DC IN port on the Master Wheels to the 14.4 V Accessory Power Port located above the Ronin 2's pan motor using the Ronin 2 CAN Bus control cable (sold separately).

3. Other Cable Connection

Use the Ronin 2 2-pin cable to power the video transmission systems.

Use the Ronin 2 DC power cable to power other connected devices.



- The latest firmware is required when using the Master Wheels with the Ronin-S. Please ensure that all firmware versions are up to date.
- DO NOT mix up the Inspire 2 RC CAN Bus cable and Wireless Receiver CAN Bus cable. They are different, and using them interchangeably may damage the devices.

Settings

These settings are based on using Master Wheels with the Ronin 2.

Main UI Display Settings

1. GPS Signal Strength

: Shows the current GPS signal strength

2. Mounting Modes

: Handheld mode

: Car Mount mode

: Aerial mode

: Tripod mode

3. Follow Modes

: Free mode

: Follow mode

: FPV mode

: Recenter mode

4. Battery Number and Battery Level

: Shows the number of batteries currently in use by the Ronin 2 and the current battery level of the Ronin 2

5. Remote Controller Signal Strength

: Displays the remote controller signal strength

6. Master Wheels Battery Level

: Displays the current battery level of the Master Wheels

7. Max Speed

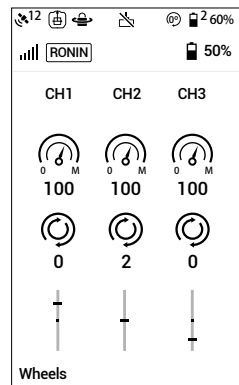
Displays the max speed of the pan, tilt, and roll axes

8. Smoothing

Displays the smoothing of the pan, tilt, and roll axes

9. Speed

Displays the real-time speed of the pan, tilt, and roll axes



Master Wheels Settings

Settings

Basic

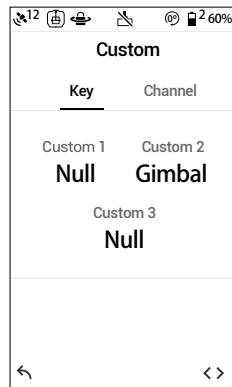
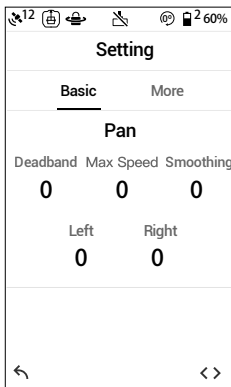
The Deadband, Smoothing, and Endpoints settings for the pan, roll, and tilt axes can be independently adjusted. The default endpoint setting for the pan axis is 180°, which means there is no endpoint for the pan axis, allowing it to rotate 360° continuously.

More

Languages can be switched between English and Chinese. The SN number and firmware version of the Master Wheels is displayed on this page.

Custom

Use this page to customize functions for the C1, C2, and C3 buttons, and assign pan, tilt, and roll axis control for the three Wheel and Control modules. The wheel and control modules can be mounted to any position on the main control base.



Gimbal Settings

Motor

Basic: The Auto Tune, Stiffness, Strength, Filter, and Control values for the tilt, roll, and pan axes can be set independently. You can set the power-on position, fine tune the pan or tilt axis, and test the balance for the three axes on this page.

SmoothTrack

Settings for the pan, roll, and tilt axes can be set independently.

Monitor

The Motor page displays the power, angle, and temperature of the motors. The Log page displays any abnormal status information for the gimbal.

System Settings

Use this page to calibrate the system, pair to devices, and select the operating Wi-Fi frequency and gimbal working mode. Custom motor configurations can be saved or reset to default settings on this page.

Camera Page

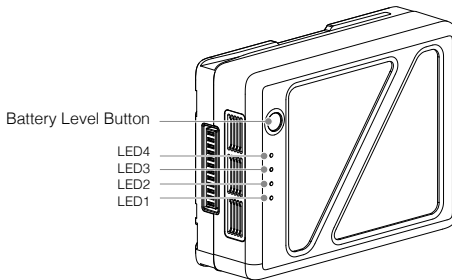
Use this page to control camera recording and various other supported settings when a camera control cable is attached.



Refer to the Ronin 2 User Manual for further details.

Intelligent Battery


The TB50 Intelligent Battery has a capacity of 4280 mAh, a voltage of 22.8 V, and a variety of power management functions.



Intelligent Battery Functions

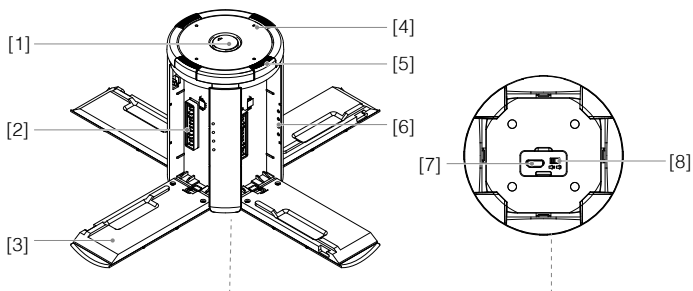
1. Battery Level Display: LEDs display the current battery level.
2. Auto-Discharging Function: The battery automatically discharges to below 70% of total power when it is idle for more than 10 days to prevent swelling. To exit idle state, press the Power Level button to check the battery level. It takes approximately three days to discharge the battery to 65%. It is normal to feel moderate heat emitting from the battery during the discharge process.
3. Balancing Function: Automatically balances the voltage of each battery cell when charging.
4. Overcharge Protection: Charging stops automatically when the battery is fully charged.
5. Temperature Protection: The battery will only charge when the temperature is between 41°-113° F (5°-45° C).
6. Overcurrent Protection: Battery stops charging when high amperage (> 10 A) is detected.
7. Over-Discharge Protection: To prevent serious damage to the battery, current output will be cut off when the battery cell is discharged to 2.8 V and not in use. To extend operating times, overcharging protection is disabled as batteries discharge during usage. In this instance, a battery voltage below 2 V may cause a safety hazard such as a fire when charged. To prevent this, the battery will not be able to charge if the voltage of a single battery cell is below 2 V. Avoid using any batteries matching this description. Always be alert to avoid over-discharging to prevent permanent battery damage.
8. Short Circuit Protection: Automatically cuts the power supply when a short circuit is detected.
9. Battery Cell Damage Protection: DJI Pro Assistant for Ronin displays a warning message when detecting a damaged battery cell.
10. Sleep Mode: Sleep mode is entered to save power when the battery is not in use.
11. Communication: Battery voltage, capacity, current, and other relevant information is provided to the gimbal.

12. Heating: Batteries can work even in cold weather. Refer to "Heating the Battery" section for details.

 Read the user guide, and battery safety guidelines before use. Users take full responsibility for all operations and usage.

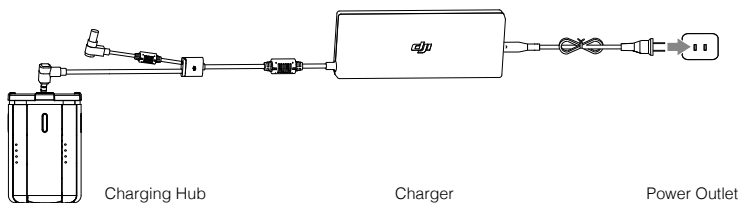
Charging the Intelligent Battery

The Quad Charging Hub is designed for use with the Battery Charger. It charges up to four Intelligent Batteries simultaneously. The Charging Hub will intelligently charge batteries in sequence according to battery power levels from high to low.

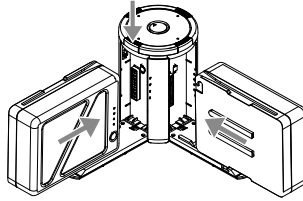


- | | |
|---------------------------------------|--------------------------------------|
| [1] Power Port | [5] Cover/Battery Release Button |
| [2] Charging Port | [6] Status LEDs |
| [3] Charging Port Cover | [7] Firmware Update Port (Micro USB) |
| [4] Battery Charging Level Indicators | [8] Speaker Switch |

1. Connect the Battery Charger to a power outlet (100-240 V, 50/60 Hz), then uncover the rubber cover on the power port to connect the Charging Hub to the Battery Charger.



- Press the Release button and open the corresponding charging port cover. Insert the Intelligent Battery into the charging port to begin charging.



Refer to the “Status LED Descriptions” section for more information about Status LED blinking patterns. The Speaker will begin beeping when charging is complete. Refer to the “Speaker Beeping Descriptions” for more information about Speaker beeping patterns.



- Press the Release button to detach batteries after charging is complete.
- DO NOT leave metal terminals exposed to open air when not in use.

Status LED Descriptions

Status LED (Charging Hub)		Description
.....	Blinking Green	Charging
—	Solid Green	Fully charged
.....	Blinking Red	Battery Charger Error. Retry with an official battery charger.
—	Solid Red	Intelligent Battery error
.....	Blinking Yellow	Battery temperature too high/low.
—	Solid Yellow	Ready to charge
.....	Alternating Green Blinks	Intelligent Battery not detected

Battery Level Indicators while Charging (Battery)

LED1	LED2	LED3	LED4	Battery Level
				0%~50%
				50%~75%
				75%~100%
				Fully Charged

Charging Protection LED Display

The table below shows battery protection mechanisms and corresponding Status LED patterns.

Battery Level Indicators for Battery Protection					
LED1	LED2	LED3	LED4	Blinking Pattern	Battery Protection Item
○	☀	○	○	LED2 blinks twice per second	Over current detected
○	☀	○	○	LED2 blinks three times per second	Short circuit detected
○	○	☀	○	LED3 blinks twice per second	Over charge detected
○	○	☀	○	LED3 blinks three times per second	Over-voltage charger detected
○	○	○	☀	LED4 blinks twice per second	Charging temperature is too low (<0° C)
○	○	○	☀	LED4 blinks three times per second	Charging temperature is too high (>40° C)

After any of the above-mentioned protection issues are resolved, press the Battery Level button to turn off the Battery Level Indicator. Unplug the Intelligent Battery from the charger and plug it back in to resume charging. Note that you do not need to unplug and plug the charger in the event of a room temperature error. The charger will resume charging when the temperature falls within the normal range.



DJI is not responsible for damage caused by third-party chargers.

Speaker Beeping Descriptions

Toggle the Speaker switch to turn the warning sound on or off.

Descriptions	Beeping Pattern
Toggle the buzzer switch to turn it on	Quick beeping
Connect to the Battery Charger	Quick beeping
A battery pair is fully charged	Quick beeping
Four Intelligent Batteries are fully charged	Alternating two short and one long beeps, last for about 1 hour

Heating the Battery

Manual Heating: When the battery is powered off, press and hold the Power button for 3 seconds to initiate battery warm-up manually.

The battery will warm up if the temperature is below 59° F (15° C). As it warms, Status LED 1 & 2 and LED 3 & 4 will blink alternately. The battery will stop warming when it reaches 68° F (20° C). The temperature of the battery will remain between 59°- 68° F (15°-20° C). When Status LED 1 and LED 4 blink alternately indicates a temperature above 59° F (15° C). This will last for approximately 30 minutes, then the battery will power off automatically.

Auto Heating: Insert the batteries into the Master Wheels and power on. When the temperature of the battery is below 59° F (15° C), it will warm up automatically. Check the Status LEDs for the current power level.

Low-Temperature Notice

1. The performance of the Intelligent Battery is significantly reduced at low temperatures (air temperatures below 41° F /5° C). Ensure that the battery is fully charged and the cell voltage is at 4.35 V before use.
2. In extremely cold weather, the battery temperature may not be high enough even after warming up. In these cases, insulate the battery as required.
3. To ensure optimum performance, keep the Intelligent Battery's core temperature above 68° F (20° C) when in use.

Updating Firmware

Update firmware using the USB-C port and DJI Pro Assistant for Ronin. Do not disconnect the Master Wheels from the computer during firmware updates.

Specifications

Voltage	22.8 V
Battery Capacity/Energy	4280 mAh/97.58 Wh
Operating Temperature	-4° to 122° F (-20° to 50° C)
Charging Temperature	41° to 104° F (5° to 45° C)
Battery Life	18 hours
Charging Time	1.5 hours
DC IN	12–27 V
DC OUT	14.4 V / Max. 8 A

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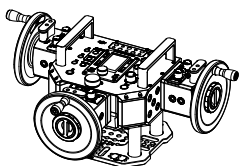
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物品清单

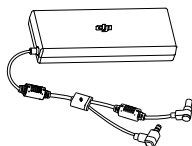
摇轮 * × 1



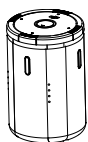
TB50 智能电池 × 2



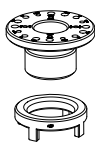
180W 充电器 × 1



电池管家 × 1



米切尔平台转接件 × 1



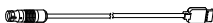
扳手 × 1



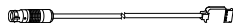
AC 电源线 × 6



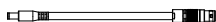
无线接收机 CAN Bus 连接线 (0.8 m) × 1



Inspire 2 遥控器 CAN Bus 连接线 (5 m) × 1



Ronin 2 云台 DC 电源线 × 1



图传供电线 × 1



USB-C 数据线 × 1



射频供电线 (5 m) × 1



控制模块连接线 * (2 m) × 3



3/8"-16 螺丝 × 4



1/4"-20 螺丝 × 4



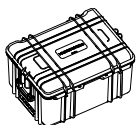
1/4"-20 螺丝 × 4



M8 螺丝 × 8



手提箱 × 1



DJI 专业无线接收机 * × 1



天线 * × 6



Ronin 2 D-Bus 连接线 * × 1



S-Bus 连接线 * × 1



文档



DJI 大师摇轮使用说明
DJI 专业无线接收机使用说明

如您购买的是 DJI 大师摇轮两轴套装，包装内的摇轮控制模块与控制模块连接线数量均为 2。其它物品与功能均与 DJI 大师摇轮三轴版一致。

* 部分物品包含在 DJI 专业无线接收机包装内。

产品概述

DJI 大师摇轮 (DJI Master Wheels, 以下简称“摇轮”) 是一款专业级摇轮控制器, 可连接 RONIN™ 2、Ronin-S 以及支持 S-Bus 控制协议的第三方云台设备, 实现云台的高精度控制。

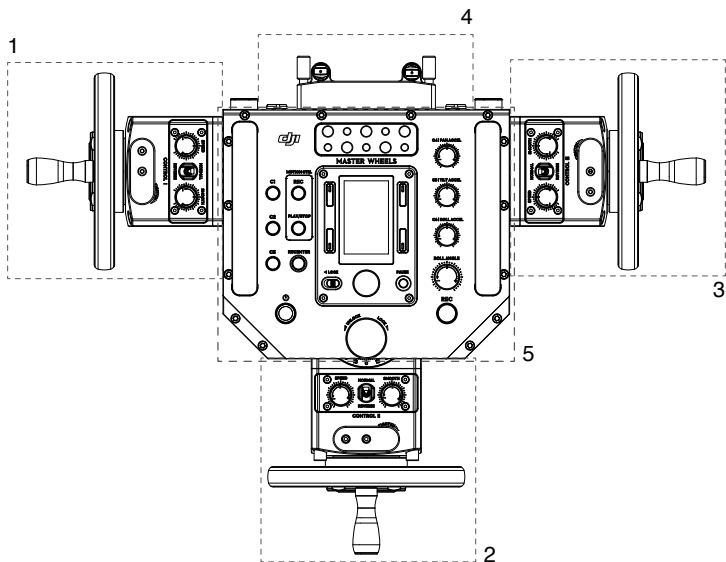
摇轮采用模块化设计, 操作轮及其控制模块、射频模块可快速拆装。拆卸后可通过线缆连接主控制台, 方便在狭小的空间操作以及灵活放置于信号不受遮挡处使用。摇轮配备丰富的按键旋钮和控制面板, 使设备的状态监视和参数调整更加轻松, 并且具备云台轨迹录制功能, 能重复拍摄轨迹。

摇轮采用无线与有线两种连接方式。2.4GHz 和 5.8GHz 双频双向无线连接, 配合 DJI 无线接收机, 可在高达 3 公里的距离内实现控制 (无干扰、无遮挡环境下)。使用有线连接则可有效避免设备间相互干扰, 使控制更稳定可靠。

主控制台预留多组 1/4" -20 和 3/8" -16 标准螺纹孔, 可安装监视器、图传等设备, 并通过主控台的 CAN-BUS 接口为设备供电。通过标准米切尔平台接口转接件可将摇轮安装到具有米切尔接口的平台 (如三脚架) 使用。

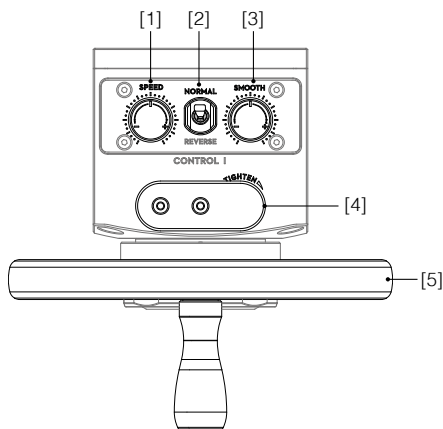
摇轮使用 TB50 智能电池, 续航时间长达 18 小时 (无其它负载的情况下)。

认识摇轮




1. 控制模块 I

控制模块可安装在摇轮主控台，也可拆卸下来，并通过标配控制模块连接线与主控台通信，方便在狭小空间拍摄。



- [1] 速度调节旋钮：调节云台对应轴速度。当速度设置为 100 且 EXP 设置为 0 时，摇轮和云台速度比约为 5：1。
- [2] 方向调节拨杆：转换云台对应轴转动方向以及暂停操作轮对云台的控制。
- [3] 平滑度调节旋钮：调节云台对应轴平滑度。平滑度值设置越高则云台的实际响应动作越平缓。
- [4] 阻尼调节旋钮：调节操控轮操作手感。
- [5] 操控轮：旋转操控轮控制云台对应轴转动。

 控制操作轮或调节旋钮时，请适度用力。

2. 控制模块 II

同控制模块 I。

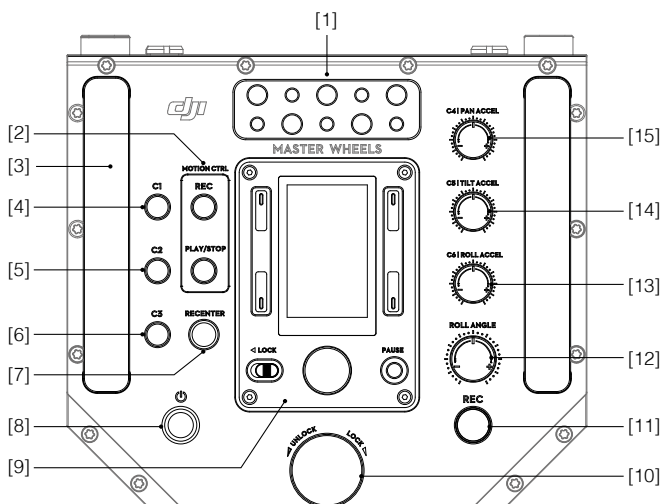
3. 控制模块 III

同控制模块 I。

4. 射频模块

射频模块可拆卸，在信号复杂的拍摄现场，可以将射频模块放置信号不受遮挡的位置拍摄。

5. 主控制台模块



[1] 1/4" -20 和 3/8" -16 标准螺纹孔

[2] 轨迹录制：记录云台轨迹，按 REC 开始记录，通过 PLAY/STOP 使云台重复或停止所记录下的运动轨迹。

[3] 提手

[4] C1 按键：自定义按键，通过控制面板设置功能。

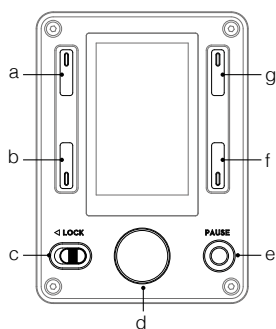
[5] C2 按键：自定义按键，通过控制面板设置功能。

[6] C3 按键：自定义按键，通过控制面板设置功能。

[7] 回中按键：按一下使云台回中。

[8] 电源按键：长按开 / 关机。

[9] 控制面板



a. 挂载模式按键：用于选择云台挂载模式。

b. 返回按键：按压进入摇轮设置界面或返回上一级菜单。

c. 锁定按键：拨动按键以锁定 / 解锁控制面板。拍摄过程中可锁定控制面板防止误操作。

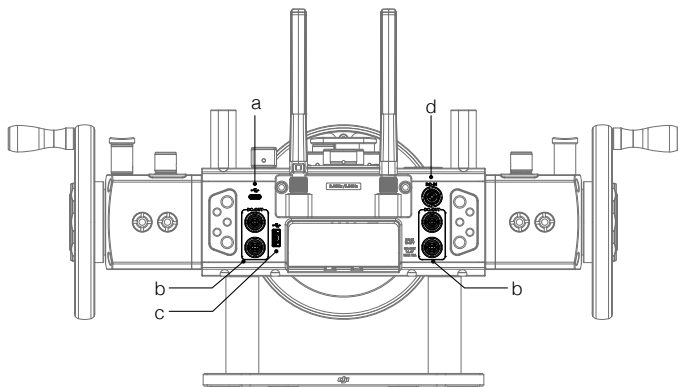
d. 切换 / 确认旋钮：旋转旋钮切换选项，按压旋钮确定选项。

e. 暂停按键：长按使云台电机关闭。

f. 切换按键：按压进入云台设置界面或切换子页面。

g. 跟随模式按键：用于选择云台跟随模式。

- [10] 控制模块 II 角度调节旋钮：控制模块 II 角度可以调节，个人需要同时控制两个轴时，可将角度调整至更方便操作位置（详见“安装”章节）。
- [11] 录影按键：连接 Ronin 2 电源分配模块的快门控制接口，可控制摄影机开始 / 停止录影。
- [12] 横滚轴角度调节旋钮：调节横滚轴角度。
- [13] C6 横滚轴速度 EXP 调节旋钮：调节横滚轴速度 EXP。
- [14] C5 俯仰轴速度 EXP 调节旋钮：调节俯仰轴速度 EXP。
- [15] C4 平移轴速度 EXP 调节旋钮：调节平移轴速度 EXP。
- [16] 主控台接口



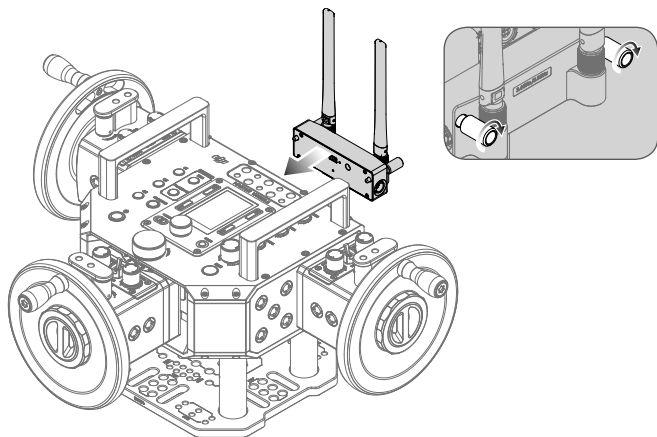
- a. USB-C 接口：升级接口。
- b. DC-OUT 接口：14.4V，最大总电流 8A（通过电池供电）。
- c. USB-A 接口。
- d. DC-IN 接口：12-27V，连接外部电源给摇轮供电。

- [17] 机身螺纹孔
1/4" -20 或 3/8" -16 标准螺纹孔。

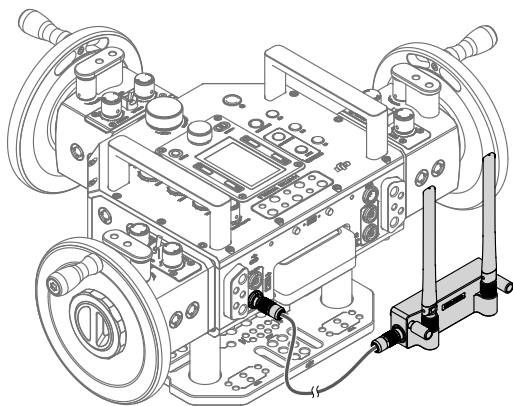
安装

安装射频模块

对准 Pogo Pin 接口，拧紧螺丝固定射频模块。

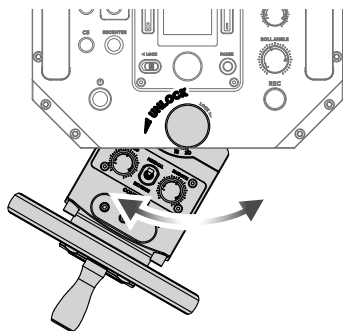


如需将射频模块放置别处，使用射频供电线连接射频模块接口与主控台任一 DC-OUT 接口。



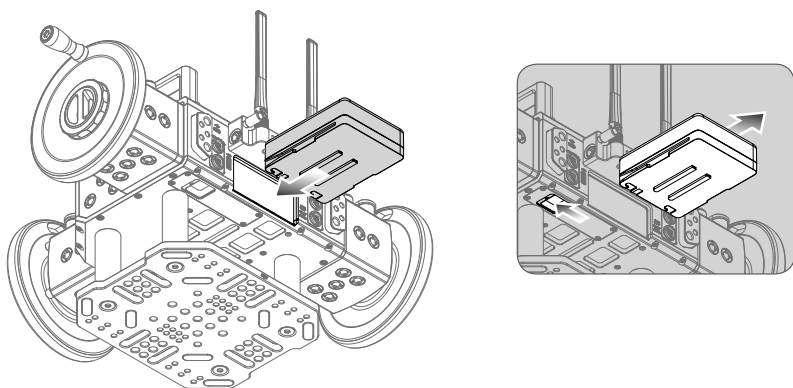
控制模块 II 角度调节

往解锁方向拧松角度调节旋钮，调整控制模块角度后，再往锁定方向拧紧角度调节旋钮。



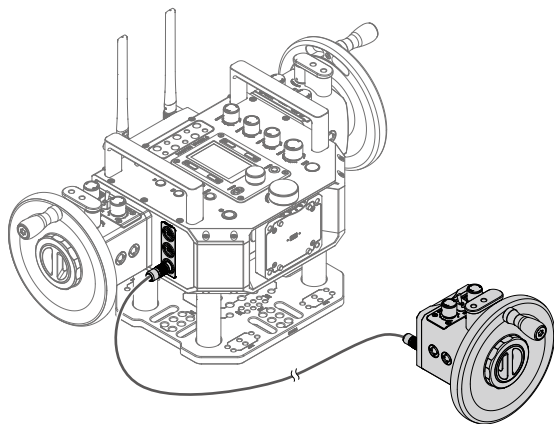
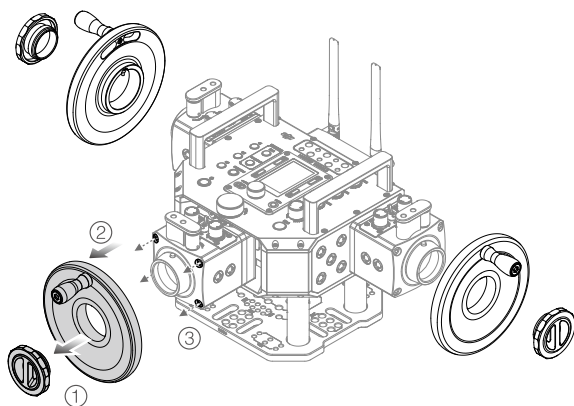
安装电池

按图示嵌入智能电池。拆卸时往箭头所指方向推动电池卡扣使电池弹出。



拆卸控制模块

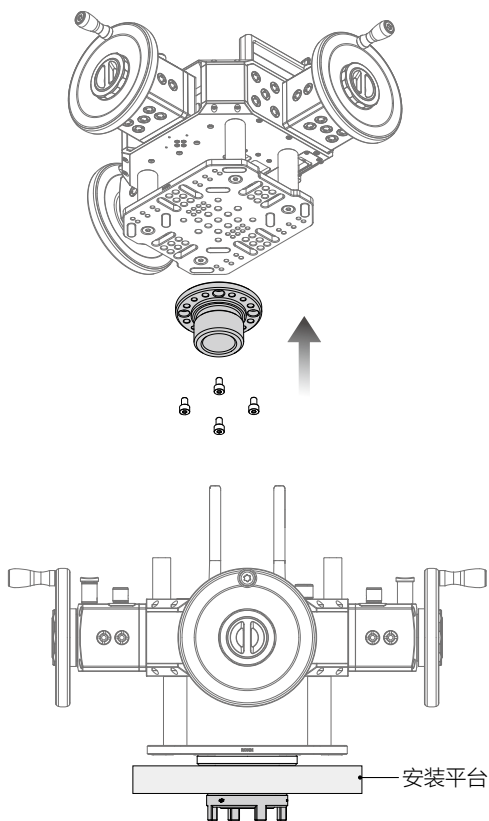
控制模块可安装拆卸。首先拧下螺丝 ①，拆下操作轮 ②，其次拧松螺丝 ③ 卸下控制模块。使用控制模块连接线连接控制模块及主控制台任一 DC-OUT 接口。



⚠ 确保射频模块和控制模块 Pogo Pin 接口干净无异物。当通过 Pogo Pin 接口连接无法正常工作时，请检查接口是否被脏、异物遮挡并擦拭干净。

固定控制台至其它平台

通过米切尔平台转接件，固定控制台至三脚架或其它平台上使用。



连接至云台

1. 无线连接

推荐配合 DJI 专业无线接收机使用，以获得最佳通信效果。关于接收机的详细内容，请参见包装内提供的《DJI 专业无线接收机使用说明》。

如不使用 DJI 专业无线接收机，也可直接将摇轮与 Ronin 2 对频（通信效果可能无法达到最佳）。

2. 有线连接

使用选配 Ronin 2 CAN Bus 控制线（30 m 长，需另行购买）连接云台平移轴电机上的 14.4 V 电源 / 配件输出接口和摇轮 DC IN 接口。

3. 其它连线说明

使用图传供电线，连接摇轮和图传设备，使摇轮为图传供电。

使用 Ronin 2 云台 DC 电源线给其它外围设备供电。

- ⚠️ • 使用摇轮控制 Ronin-S 时需配合使用最新固件，请留意摇轮固件发布记录。
- Inspire 2 RC CAN Bus 连接线（5 m）和无线接收机 CAN Bus 连接线（0.8 m）不可混用，否则可能损坏设备。

参数设置

以下参数设置针对摇轮配合 Ronin 2 云台为例进行说明。

主界面说明

1. GPS 星数

📶¹²: 数字表示 GPS 星数。

2. 云台挂载模式

👤: 手持模式。

🚗: 车载模式。

➤: 飞行模式。

📷: 三脚架模式。

3. 云台跟随模式

🔒: 锁定模式。

🕒: 跟随模式。

👤: FPV 模式。

🏠: 回中模式。

4. 云台工作电池数量 / 电量

🔋² 60%: 显示云台正在工作的电池数量和总电量。

5. 遥控信号强度

📶: 显示遥控信号强度。

6. 摇轮电池电量

🔋 50%: 显示摇轮当前电量。

7. 最大速度

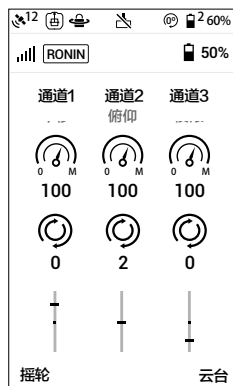
显示云台平移、俯仰、横滚轴的最大速度值。

8. 平滑度

显示云台平移、俯仰、横滚轴的平滑度值。

9. 实时速度

显示云台平移、俯仰、横滚轴的实时速度。



摇轮设置

摇轮设置界面

按压左侧按键进入摇轮设置界面。

基础：可设置摇轮控制云台平移轴、俯仰轴、横滚轴的死区、最大速度、平滑度与限位。其中平移轴左右限位设置成 180° 的时候表示云台平移轴没有限位。

更多：语言选择；关于：设备名称，SN 码，固件版本信息。

自定义界面

设置 C1，C2，C3 按键功能。

通道 1、2、3 分别对应控制模块 I、II、III，可映射平移、横滚、俯仰轴至任一通道，映射通道不受控制模块安装位置影响。



云台设置

按压右侧按键进入云台设置界面。

电机

基础：平移轴、俯仰轴、横滚轴的力度、强度、滤波、超前控制值设置；显示云台电量、姿态与抖动量；进行云台自动校准。

更多：设置平移轴零位；针对平移轴与俯仰轴的云台角度微调；云台平衡度测试。

SmoothTrack

平移轴、俯仰轴、横滚轴的 SmoothTrack 可分别开启或关闭，速度、死区、加速度也可分别设置。平移轴、俯仰轴可开启手动调节。

监视

电机：显示平移轴、俯仰轴、横滚轴电量、关节角、温度。

日志：显示云台状态信息。当云台发生异常时，可进入该界面检查云台具体问题。


设置

通用：选择跟云台对频；设置遥控频段和云台工作模式。

配置：选择预设参数；恢复云台参数。

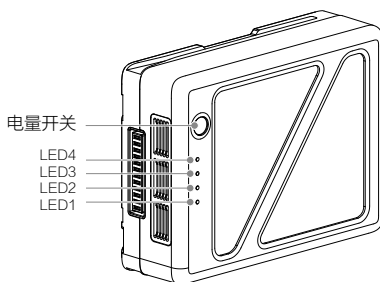
摄影机

在摄影机页面可控制相机录像。

 关于参数设置更详细的说明，请参考《Ronin 2 用户手册》。

智能电池

摇轮采用 TB50 智能电池，容量为 4280 mAh，电压为 22.8 V，具有充放电管理功能。



智能电池功能

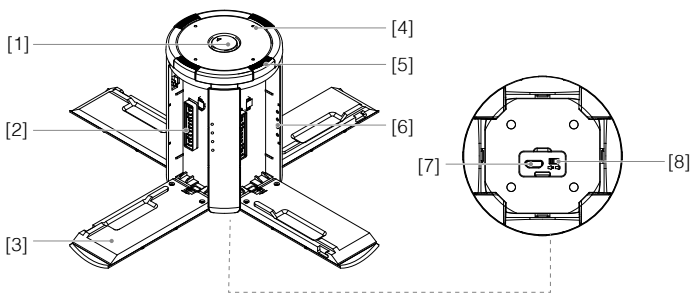
1. 电量显示：电池自带电量指示灯，可以显示电池当前电池电量。
2. 电池存储自放电保护：电池电量大于 70% 无任何操作（包括查看电量等操作）存储 10 天后，电池可启动自放电至 65% 电量，以保护电池。自放电过程约 3 天时间，期间无 LED 灯指示，可能会有轻微发热，属正常现象。
3. 平衡功能：自动平衡电池内部电芯电压，以保护电池。
4. 过充电保护：过度充电会严重损伤电池，当电池充满后会自动会停止充电。
5. 充电温度保护：电池温度为 5℃ 以下或 45℃ 以上时充电会损坏电池，此时电池将不启动充电。
6. 充电过流保护：大电流充电严重损伤电池，当充电电流大于 10 A，电池会停止充电。
7. 过放电保护：过度放电会严重损伤电池。当电池不在工作状态时，电池电芯放电至 2.8 V 将会切断输出；当电池处于工作状态时，则过放电保护不启动，以保障安全。当电池处于放电状态时，为了尽可能的争取工作时间，电池会关闭过放电保护以让电池持续输出。一旦出现这种情况，很可能会因为严重过放，导致电芯电压低于 2 V。严重过放的电池再次充电有极大的起火安全隐患，因此，单个电芯电压低于 2 V 时，电池将被锁死，禁止再次充电。该电池无法继续使用。因此请用户千万注意，切勿故意将电池严重过放，否则将承担电池损坏的风险。

8. 短路保护：在电池检测到短路的情况下，会切断输出，以保护电池。
9. 电芯损坏检测：在电池检测到电芯损坏或者电芯严重不平衡的情况下，会提示电池已经损坏。
10. 休眠保护：当电池不在工作状态时，将会进入休眠状态，以保持电量。
11. 通讯：摇轮可以通过电池上的通讯接口实时获得电池信息，例如电压、电量、电流等。
12. 加热功能：该功能可确保电池在低温情况下也可以正常工作。

⚠ 电池使用前请仔细阅读并严格遵守 DJI 在使用说明、智能电池安全使用指引和电池表面贴纸上的要求。用户将对电池的操作和使用负责。

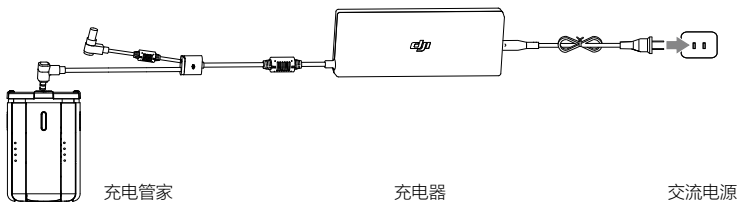
充电

充电管家配合标配充电器使用，最多可连接四块智能电池，并同时为两块进行充电。充电过程中，充电管家会优先选择两块电量较高的电池组进行充电。

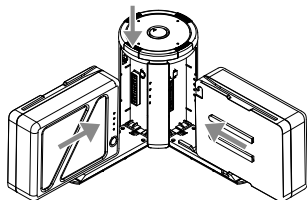


- | | |
|-------------|---------------------------|
| [1] 电源接口 | [5] 保护壳 / 电池脱离按钮 |
| [2] 充电接口 | [6] 状态指示灯 |
| [3] 充电接口保护壳 | [7] 升级接口 (Micro USB 接口) |
| [4] 充电电量指示灯 | [8] 蜂鸣器开关 |

1. 连接标配充电器到交流电源(100-240 V, 50/60 Hz), 然后打开顶部电源接口硅胶垫, 将充电器接头插入充电管家的电源接口。



2. 按下保护壳 / 电池脱离按钮，对准智能电池与充电管家的电池导轨，将智能电池插入充电接口充电。



充电过程中，状态指示灯含义请参阅“状态指示灯描述”。电池充满后会有提示音，提示音含义请参阅“提示音描述”。

- ⚠**
- 充电完成后，必须按住充电管家上方的保护壳/电池脱离按钮，才能移除电池。
 - 不使用充电管家时，请勿打开充电接口保护壳，避免金属端子暴露在外。

状态指示灯描述

闪灯方式	描述
..... 绿灯闪烁	正在充电
—— 绿灯常亮	充电完成
..... 红灯闪烁	未检测到充电器或充电器异常
—— 红灯常亮	智能电池异常
..... 黄灯闪烁	电池温度过高 / 过低
—— 黄灯常亮	等待充电
..... 绿灯轮流闪烁	未检测到智能电池

电池（充电状态）

LED1	LED2	LED3	LED4	当前电量
				0%~50%
				50%~75%
				75%~100%
				充满

电池（充电保护）					
LED1	LED2	LED3	LED4	显示规则	保护项目
○	☀	○	○	LED2 每秒闪 2 次	充电电流过大
○	☀	○	○	LED2 每秒闪 3 次	充电短路
○	○	☀	○	LED3 每秒闪 2 次	充电过充导致电池电压过高
○	○	☀	○	LED3 每秒闪 3 次	充电器电压过高
○	○	○	☀	LED4 每秒闪 2 次	充电温度过低
○	○	○	☀	LED4 每秒闪 3 次	充电温度过高

排除故障(充电电流过大, 充电短路, 充电过充导致电池电压过高, 充电器电压过高)后, 请按下电池电源按键取消 LED 灯保护提示, 重新拔插充电器恢复充电。如遇到充电温度异常, 则等待充电温度恢复正常, 电池将自动恢复充电, 无需重新拔插充电器。

⚠ 智能电池必须使用 DJI 官方指定的专用充电器进行充电, 对于使用非 DJI 官方提供的充电器进行充电所造成的一切后果, DJI 将不予负责。

蜂鸣器提示音描述

描述	鸣响方式
拨动蜂鸣开关, 打开蜂鸣器	短鸣一声
当蜂鸣器开关处于打开状态, 插入充电器	短鸣一声
两块电池充电完毕	短鸣一声
红灯常亮	短鸣一声
四块电池充电完毕	每分钟鸣响三次(两短一长), 持续一小时

加热电池

手动加热: 关闭状态下, 长按电量开关 3 秒, 进入手动加热状态。如果当前温度小于 15℃, 则进入加热状态, 此时 LED1、LED2 和 LED3、LED4 交替闪烁, 加热到 20℃ 进入保温; 如果当前温度高于 15℃, 则进入保温状态, 此时 LED1 和 LED4 交替闪烁, 保温温度为 15-20℃, 最长保温时间 30 分钟, 超时将自动关机。

自动加热: 电池安装至摇轮并开启电源后, 当温度低于 15℃ 时自动加热, 并且温度保持在 15-20℃ 之间。

低温使用注意事项

1. 在低温环境 ($<5\text{ }^{\circ}\text{C}$) 下使用电池, 电池内阻加大而电压骤降, 使得容量减少, 从而导致续航时间减少。使用电池前务必充满电池, 即电芯电压达到 4.35 V 。
2. 在极度寒冷条件下, 即使采取加热措施, 电池温度可能也无法达到可用的温度, 请增加保温措施。
3. 为了发挥电池的最佳性能, 建议将电池温度保持在 $20\text{ }^{\circ}\text{C}$ 以上。

升级

连接摇轮 USB-C 接口与电脑, 通过 DJI Pro Assistant for Ronin 调参软件给摇轮升级。升级过程中请勿断开连接。若升级失败请重新升级。

规格参数

标准电压	22.8 V
电池容量 / 能量	4280 mAh/97.58 Wh
工作环境温度	$-20\text{ }^{\circ}\text{C}$ 至 $50\text{ }^{\circ}\text{C}$
充电环境温度	$5\text{ }^{\circ}\text{C}$ 至 $45\text{ }^{\circ}\text{C}$
工作时间	18 小时
充电时间	1.5 小时
DC IN	12 - 27 V
DC OUT	14.4 V/ 最大总输出 8 A

Compliance Information

FCC Compliance Notice

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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

RF Exposure Information

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm during normal operation.

IC RSS Warning

This device complies with Industry Canada licence-exempt RSS standard (s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

IC Radiation Exposure Statement:

This equipment complies with IC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

KCC Warning Message

“해당무선설비는 운용 중 전파혼신 가능성이 있으므로 인명안전과 관련된 서비스는 할 수 없습니다.”
“해당 무선설비는 운용 중 전파혼신 가능성이 있음”

NCC Warning Message

低功率電波輻射性電機管理辦法

第十二條 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

EU Compliance Statement: SZ DJI Osmo Technology Co., Ltd. hereby declares that this device is in compliance with the essential requirements and other relevant provisions of the Directive 2014/53/EU.

A copy of the EU Declaration of Conformity is available online at www.dji.com/euro-compliance
EU contact address: DJI GmbH, Industriestrasse 12, 97618, Niederlauer, Germany

Declaración de cumplimiento UE: SZ DJI Osmo Technology Co., Ltd. por la presente declara que este dispositivo cumple los requisitos básicos y el resto de provisiones relevantes de la Directiva 2014/53/EU.

Hay disponible online una copia de la Declaración de conformidad UE en www.dji.com/euro-compliance

Dirección de contacto de la UE: DJI GmbH, Industriestrasse 12, 97618, Niederlauer, Germany

EU-verklaring van overeenstemming: SZ DJI Osmo Technology Co., Ltd. verklaart hierbij dat dit apparaat voldoet aan de essentiële vereisten en andere relevante bepalingen van Richtlijn 2014/53/EU.

De EU-verklaring van overeenstemming is online beschikbaar op www.dji.com/euro-compliance
Contactadres EU: DJI GmbH, Industriestrasse 12, 97618, Niederlauer, Germany

Declaração de conformidade da UE: A SZ DJI Osmo Technology Co., Ltd. declara, através deste documento, que este dispositivo está em conformidade com os requisitos essenciais e outras disposições relevantes da Diretiva 2014/53/EU.

Existe uma cópia da Declaração de conformidade da UE disponível online em www.dji.com/euro-compliance

Endereço de contacto na UE: DJI GmbH, Industriestrasse 12, 97618, Niederlauer, Germany

Dichiarazione di conformità UE: SZ DJI Osmo Technology Co., Ltd. dichiara che il presente dispositivo è conforme ai requisiti essenziali e alle altre disposizioni rilevanti della direttiva 2014/53/EU.

Una copia della dichiarazione di conformità UE è disponibile online all'indirizzo Web www.dji.com/euro-compliance

Indirizzo di contatto UE: DJI GmbH, Industriestrasse 12, 97618, Niederlauer, Germany

Déclaration de conformité UE : Par la présente, SZ DJI Osmo Technology Co., Ltd. déclare que cet appareil est conforme aux principales exigences et autres clauses pertinentes de la directive européenne 2014/53/EU.

Une copie de la déclaration de conformité UE est disponible sur le site www.dji.com/euro-compliance

Adresse de contact pour l'UE : DJI GmbH, Industriestrasse 12, 97618, Niederlauer, Germany

EU-Compliance: Hiermit erklärt SZ DJI Osmo Technology Co., Ltd., dass dieses Gerät den wesentlichen Anforderungen und anderen einschlägigen Bestimmungen der EU-Richtlinie 2014/53/EU entspricht.


Eine Kopie der EU-Konformitätserklärung finden Sie online auf www.dji.com/euro-compliance.

Kontaktadresse innerhalb der EU: DJI GmbH, Industriestrasse 12, 97618, Niederlauer, Germany



CAUTION: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS

Environmentally friendly disposal

 Old electrical appliances must not be disposed of together with the residual waste, but have to be disposed of separately. The disposal at the communal collecting point via private persons is for free. The owner of old appliances is responsible to bring the appliances to these collecting points or to similar collection points. With this little personal effort, you contribute to recycle valuable raw materials and the treatment of toxic substances.

Thailand Warning message

เครื่องโทรคมนาคมและอุปกรณ์นี้ มีความสอดคล้องตามข้อกำหนดของ กทท.

Mexico Warning message

"La operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada."

Brazil Warning message

Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário

部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr ⁶⁺)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
线路板	×	○	○	○	○	○
外壳	×	○	○	○	○	○
金属部件(铜合金)	×	○	○	○	○	○
内部线材	×	○	○	○	○	○
其他配件	×	○	○	○	○	○

本表格依据 SJ/T 11364 的规定编制。
 ○：表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。
 ×：表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。（产品符合欧盟 ROHS 指令环保要求）

DJI Support
DJI 技术支持

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