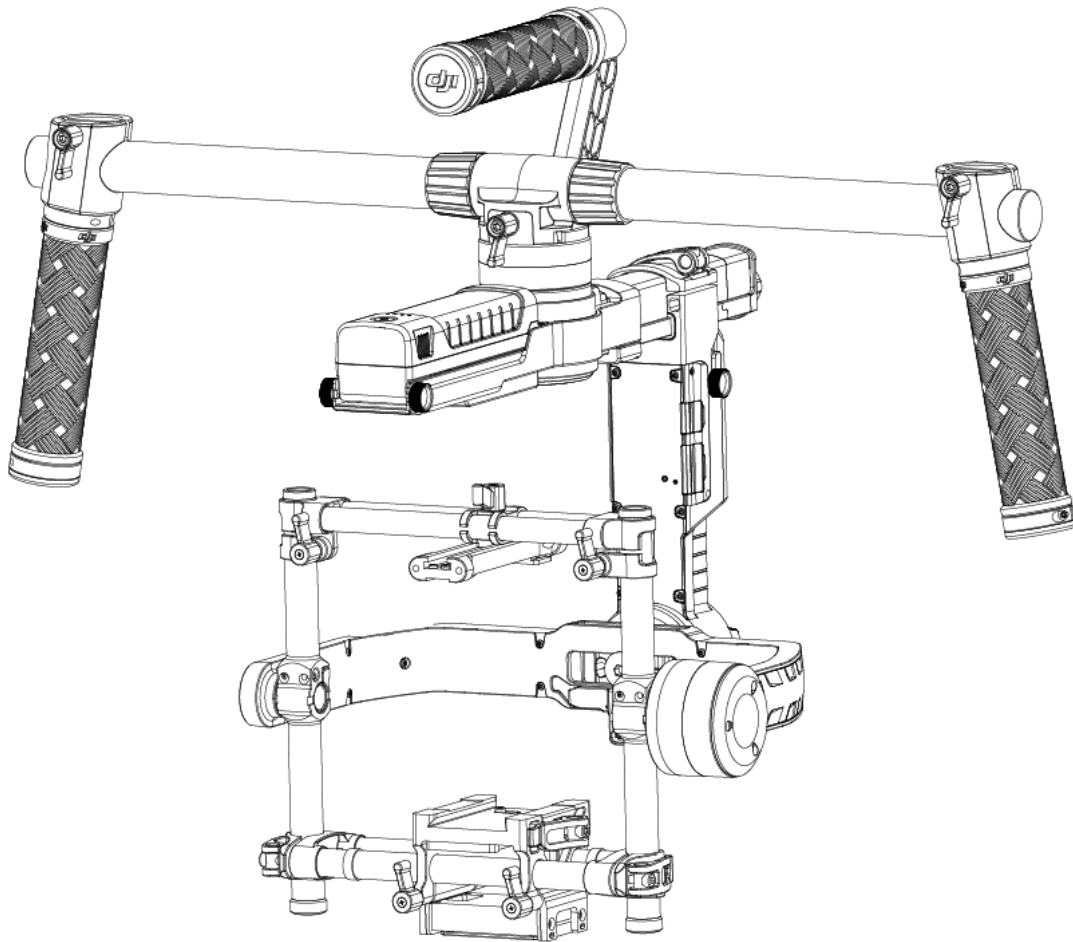


# RONIN-MX User Manual

V1.0 2016.04



## Disclaimer and Warning

Congratulations on purchasing your new DJI product. The information in this document affects your safety and your legal rights and responsibilities. *Read this entire document carefully to ensure proper configuration before use.* Failure to read and follow instructions and warnings in this document may result in serious injury to yourself or others, or damage to your DJI product or damage to other objects in the vicinity. This User Manual and all other collateral documents are subject to change at the sole discretion of DJI. For up-to-date product information, visit <http://www.dji.com> and click on the product page for this product.

### Do not modify or adjust the Ronin-MX





The Ronin-MX has been calibrated before it leaves the factory. No modification or adjustment of the Ronin-MX is required or recommended. Be sure to use the original battery, otherwise performance may be hindered and internal malfunctions or damage may occur. Please download the corresponding Assistant software.

By using this product, you hereby signify that you have read this disclaimer and warning carefully and that you understand and agree to abide by the terms and conditions herein. You agree that you are solely responsible for your own conduct while using this product, and for any consequences thereof. You agree to use this product only for purposes that are proper and in accordance with all applicable laws, rules, and regulations, and all terms, precautions, practices, policies and guidelines DJI has made and may make available.

DJI accepts no liability for damage, injury or any legal responsibility incurred directly or indirectly from the use of this product. The user shall observe safe and lawful practices including, but not limited to, those set forth in this User Manual.

## Using this Manual

### Legend

-  **WARNING** Warning: Failure to properly follow procedures may result in property damage, collateral damage, and serious or superficial injury.
-  **CAUTION** Caution: Failure to properly follow procedures may result in property damage and serious injury.
-  **NOTICE** Notice: Failure to properly follow procedures may result in property damage, a small possibility of injury, or no possibility of injury.
-  **TIPS** Tips

### Before You Begin

The following documents have been produced to help you safely operate and make full use of your Ronin-MX:

Ronin-MX Quick start Guide

Ronin-MX User Manual

Ronin-MX Intelligent Battery Safety Guidelines

Check all of the included parts listed in the In the Box section below. Read this entire User Manual and watch the informational and tutorial videos on the product page of DJI's official website (<http://www.dji.com>\*\*\*\*). Read the disclaimers and warnings above to understand your legal rights and

responsibilities. If you have any questions or problems during the installation, maintenance or use of this product, please contact DJI or a DJI authorized dealer.

## Download DJI Ronin Assistant App

Download and install the DJI Ronin Assistant App.

Search “DJI Assistant” on the App Store and then follow instructions for iOS installation.

Search “DJI Ronin” on Google Play and then follow instructions for Android installation.

For the best experience, use a mobile device that runs iOS 7.1 or Android 4.3, or a later version.

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## Introduction

Developed for filmmaking professionals, the DJI Ronin-MX marks a generational leap forward in camera stabilization technology, it is designed for handheld use and can be mounted to a DJI Matrice 600 aircraft for capturing amazing footage from the air. It also support to be used on vehicle, Jib or Wirecam. The technology built into the DJI Ronin-MX allows a broad spectrum of cameras, of varying sizes and weights, to be stabilized during filming.

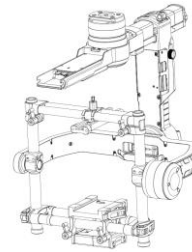
Using with the DJI SRW-60G, the Ronin-MX can rotate 360 degrees continuously while obtaining the HD video link. It can also be connected to DJI Lightbridge 2 during aerial shot for video link. The Ronin-MX is compatible with DJI Focus, too.

A brushless gimbal stabilization system is not simply three brushless motors moving on three axes. The motors work with position feedback and the IMU (Inertial Measurement Unit) to communicate with DJI's custom 32-bit processor, which processes movement calculations in milliseconds. This reduces angular vibration to less than 0.02° of translated movement, meaning that the camera will remain perfectly steady. The Ronin-MX can be used in different operation modes: underslung mode, upright mode, briefcase mode and so on.

## In the Box

### Gimbal x1

The gimbal includes built-in DJI motor drive modules, an independent IMU module, a 32-bit DSP processor, a power supply module, a Bluetooth module, a transmitter/receiver module, a camera shelf, a power breakout box and slip ring.



### Handle Bar x1

Customizable handle bar for the gimbal. The handle bar is assembled from five parts, including a top handle, two handle bars and two grips.



### Remote Control – 2.4 GHz x1

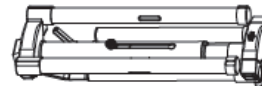
Control the gimbal's movements, switch work modes, and select gimbal speed.



Ronin-MX

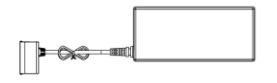
### Tuning Stand x1

For suspending or storing the gimbal.



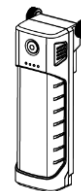
### Charger x1

Automatic switching charger 100-240V



### DJI Intelligent Battery x2

Power source for the gimbal.  
Supplies power for other external devices.



### Cable Pack x1

ANSI cable  
JIS or CE cable (varies by region)



### Micro USB Cable x1

For firmware upgrades.



#### CAN Cable x1

For connecting the gimbal and Matrice 600.



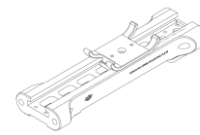
#### Camera Mounting Plate x1

For mounting your camera onto the gimbal.



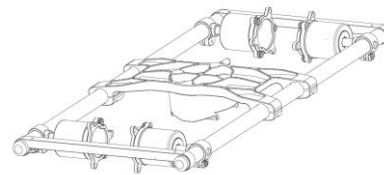
#### Camera Upper Mounting Plate x1

For mounting your camera onto the gimbal.



#### Vibration Absorber x1

For mounting the gimbal onto the Matrice 600.



#### Accessories Package

Camera Screw A (1/4") x2



Camera Screw B (3/8") x2



Camera Screw C (1/4") x2



Camera Screw D (3/8") x2



Lens Support Screw x1



Lens Support x1



Allen Wrench x3 (2 mm, 3 mm, 3/16")

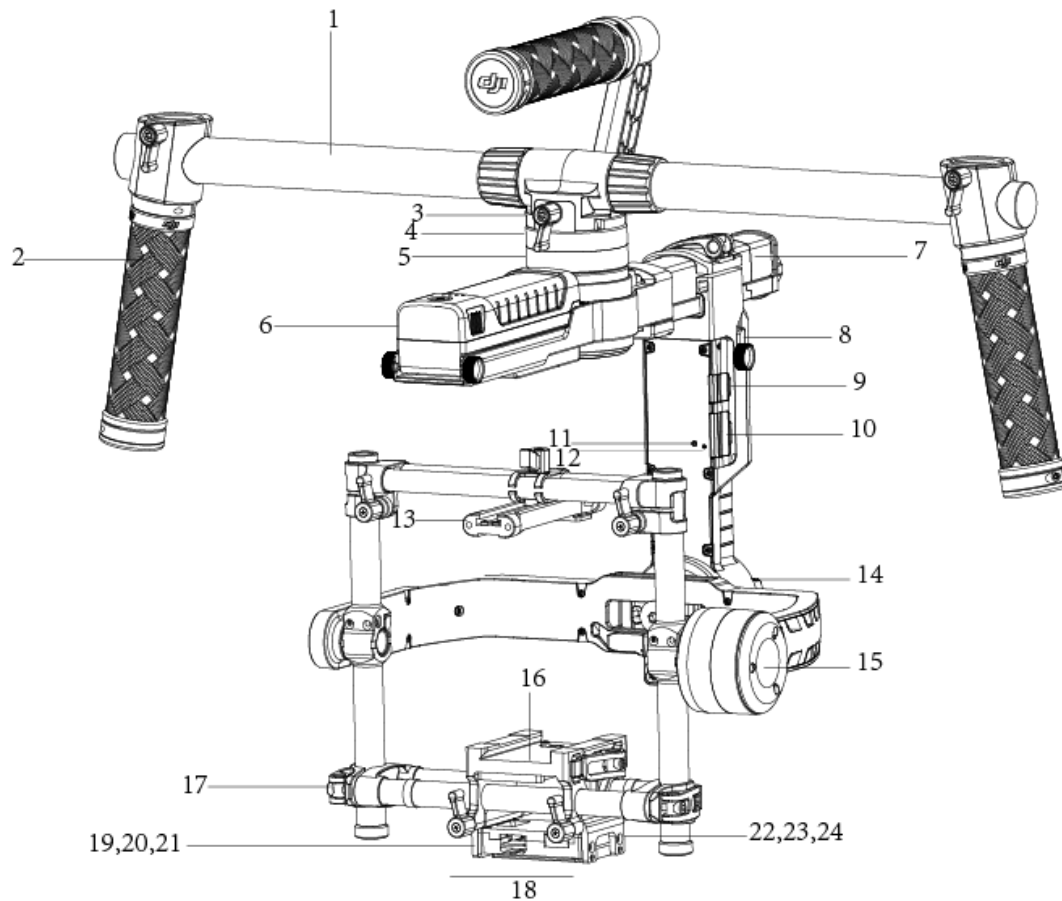


Vibration Absorber Screw X1



Camera Upper Mounting Plate Screw x2

## Ronin-MX Diagram



- [1] Top Handle Bar
- [2] Side Handle
- [3] Gimbal Connector
- [4] CAN2 Bus Port
- [5] Pan Motor
- [6] DJI Intelligent Battery
- [7] Pan Adjustment Slider
- [8] Intelligent Battery Power Distributor Mounting Plate (optional)
- [9] D-BUS Receiver Port
- [10] USB Port & CAN1 Bus Port
- [11] Bind Button
- [12] Gimbal LED Indicator Light
- [13] Camera Upper Mounting Plate
- [14] Roll Motor
- [15] Tilt Motor
- [16] Fore and Aft Adjustment
- [17] Tilt Vertical Adjustment

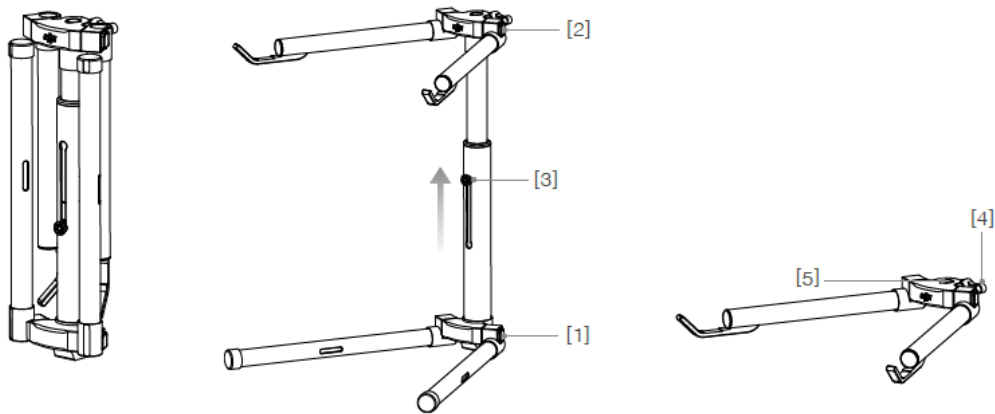
- [18] Roll Adjustment
- [19] IMU Port
- [20] P-TAP Accessory Power Port
- [21] USB Accessory Power Port
- [22] P-TAP Port (rear side)
- [23] DJI Lightbridge Port (rear side)
- [24] GCU Port (rear side)

## Getting Started

### Tuning Stand

You can use the tuning stand to hold the Ronin-MX during setup or for storage. To unfold the tuning stand, follow the steps below.

1. Hold the stand in the upright position as shown in the picture below.
2. Press the buttons [1] on the outsides of the lower legs and rotate the legs downwards, away from the stand. Then press the buttons [2] on the outsides of the upper support arms and pull them upwards, away from the stand. Press the button [3] on the vertical support and slide it up to extend the stand, as shown.
- 3 The upper half of this tuning stand can be removed by loosening the knob on the rear of the stand. You can use it with any C-stand style stud that fits into the hole where the support arms converge.



When mounting this section to a C-stand, always be sure to check the balance of the stand so that the Ronin-MX, if it is fitted with a camera, does not tip over.

When setting on a table, make sure the table is flat and level.

### Assembling the Handle Bar

1. Attach the handle bars to both sides of the top handle by tightening the grip screws.



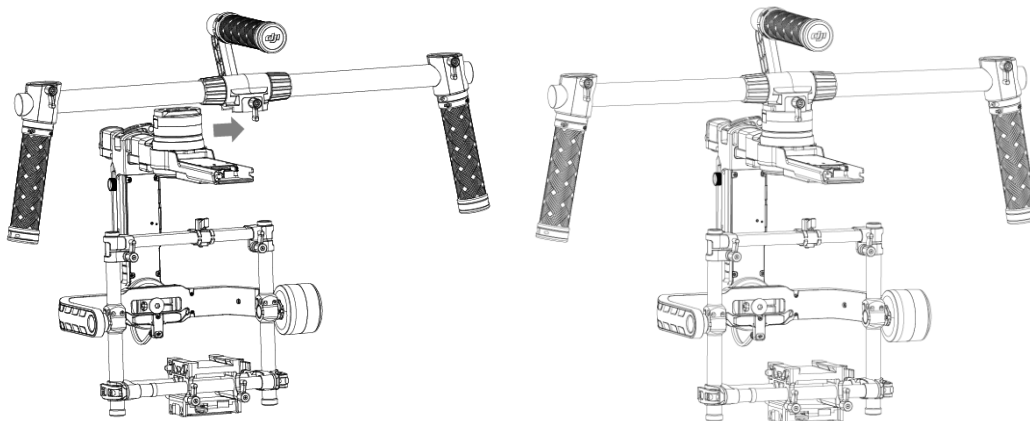


2. Attach the grips to the handle bar and lock them in the preferred position.



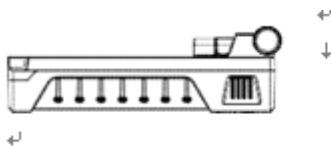
## Installing the Handle Bar onto the Gimbal

1. Place the handle bar in position, as shown below, then slide it horizontally into the gimbal and tighten the knob.
2. Holding the gimbal by the grips, make sure that the gimbal is not obstructed during a 360 degree pan. The installation is complete.

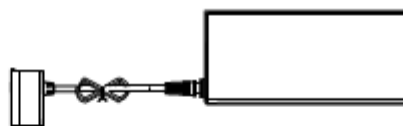


## DJI Intelligent Battery

Before you start using your Ronin-MX, be sure to charge the battery. The DJI Intelligent Battery was specially designed for the Ronin-MX. It has a capacity of 1580 mAh, a voltage of 14.4 V, and a variety of power management functions. Only charge the DJI Intelligent Battery with DJI approved charger (MODEL BC235144015). When the DJI Intelligent Battery is fully charged, the Ronin-MX has a maximum run-time of three hours.



DJI Intelligent Battery



Charger

DJI Intelligent Battery Functions	
Balanced Charging	Automatically balances the voltage of each battery cell during charging.
Battery Level Display	Displays current battery levels
Overcharge Protection	Charging stops automatically when the battery voltage is too high.
Over-Discharge Protection	Discharging stops automatically when battery voltage is too low.
Short-Circuit Protection	Automatically cuts power supply when a short circuit is detected
Sleep Protection	Sleep mode is activated after 20 minutes of inactivity, saving power
Charging Temperature Detection	The battery will charge only when the temperature is between 0 °C and 55°C

Battery Specifications	
Type	LiPo
Capacity	1580 mAh
Voltage	14.4 V
Charging Environment Temperature	32° to 104°F (0° to 40°C)
Operating Environment Temperature	14° to 104°F (-10° to 40°C)
Charging/Discharging Environment Relative Humidity	< 80%



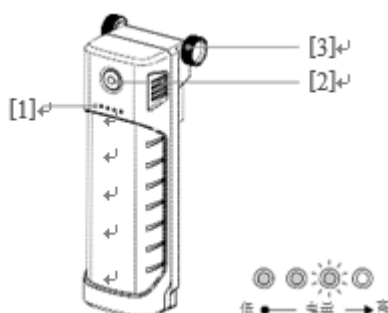
- Read the user manual, disclaimer, and battery safety guidelines before use. Users take full responsibility for all operations and usage.
- Always use DJI approved chargers. DJI takes no responsibility for any consequences resulting from the use of non-DJI approved chargers.

## Charging the DJI Intelligent Battery

1. Connect the charger to a wall socket (100-240V, 50/60Hz).
2. Connect the DJI Intelligent Battery to the charger.
3. The battery level indicator lights display the current charge level as the DJI Intelligent Battery charges.
4. The DJI Intelligent Battery is fully charged when the battery level indicator lights turn off. Disconnect the battery from the charger when charging is complete.



## Using the DJI Intelligent Battery

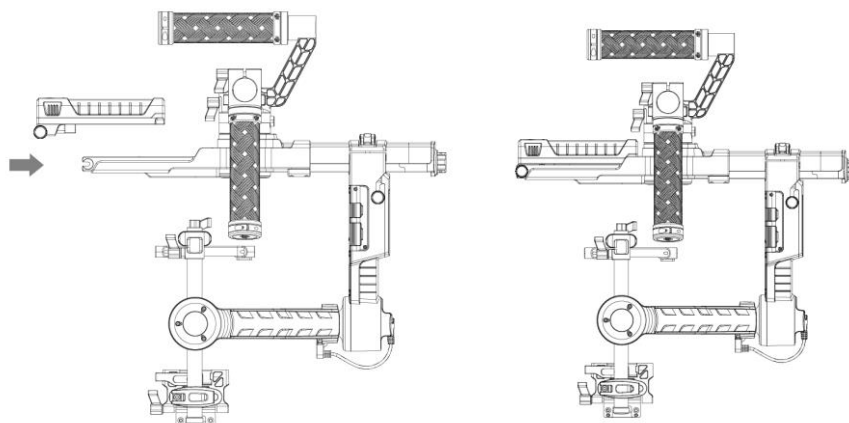


- [1] Battery Level Indicators
- [2] Power Button (with LED indicator)
- [3] Thumb Screws

<b>Checking the Battery Level</b>	When the DJI Intelligent Battery is turned off, pressing the battery power button once will display the current battery level.
<b>Powering On</b>	When the DJI Intelligent Battery is turned off, press and hold the power button for 1 second to turn on the DJI Intelligent Battery.
<b>Powering Off</b>	When the DJI Intelligent Battery is turned on, press and hold the power button for 1 second to turn off the DJI Intelligent Battery.

## DJI Intelligent Battery Installation

1. Loosen the screws on either side of the DJI Intelligent Battery. Slide the DJI Intelligent Battery directly into the gimbal and then slide it down. Be sure the battery's thumb screws go fit into their locating slots, so that the DJI Intelligent Battery makes full contact with the gimbal's electrical leads.
2. Tighten the screws on the DJI Intelligent Battery to lock it in place.



- Make sure the DJI Intelligent Battery is turned off during installation.

- 
- An incorrectly installed battery may lead to (1) Poor battery connection, or (2) Unavailable battery information.
- 

3. Mount the Intelligent Battery Power Distributor with an Intelligent Battery here to supply power for your camera or other accessories, if needed.

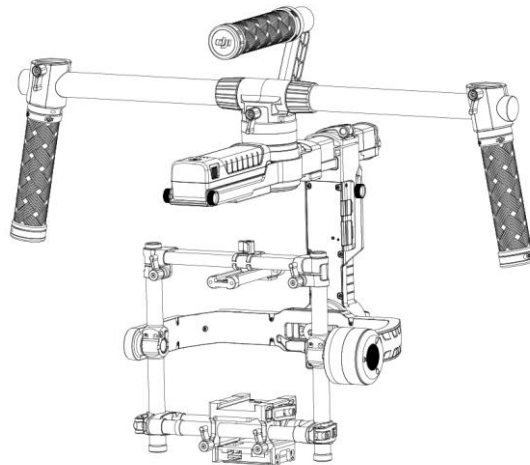
## Mounting the Camera

The Ronin-MX uses an adjustable camera mounting plate that allows you to easily balance, install, and remove the camera. The Ronin-MX has been tested with the following types of cameras. Other cameras similar in size and weight may also be compatible.

Black Magic Cinema Camera	Canon 5D MK III	Nikon D800
Black Magic Pocket Cinema Camera	Canon 6D	Panasonic GH3
Canon 1Dc	Canon 7D	Panasonic GH4
Canon 5D MK II	Canon C100	Sony Alpha 7
RED EPIC	ARRI ALEXA Mini	

## Camera Size Requirements

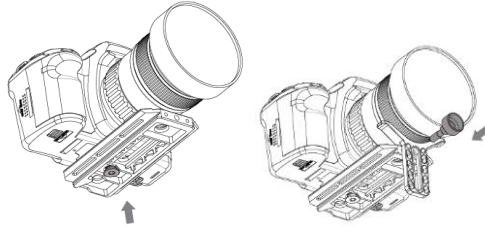
The maximum depth from the center of gravity on the camera base plate is 120 mm. The maximum height, measured from the top of the camera base plate, is 130 mm. The maximum width is 160 mm.



- Make sure the camera is powered off during installation.
  - It is recommended to use soft connection cables to avoid obstructing camera movement.
-

## How to mount the camera

1. Attach the camera mounting plate to your camera using the provided camera screws A, B, C or D. Choose the correct screw holes according to your camera's configuration. Some cameras have two tripod mounting holes. If two mounting holes are available on your camera, use them both. Secure the camera as firmly as possible.
2. Install the lens support by gently pushing it up, so that it is applying light pressure to the lens. Then tighten the thumbscrew.



Note: Camera screws A and B only fit the holes of the mounting plate, while camera screws C and D only fit the slot of the mounting plate. Be sure to use the correct 1/4" or 3/8" screws.



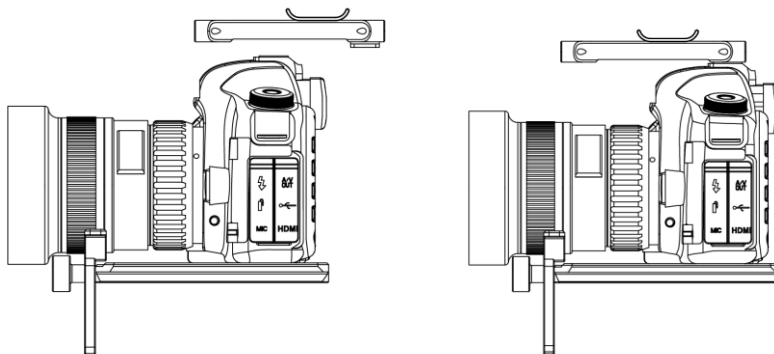
Why do you need to use a lens support?

Certain cameras have a very tight lens securing system, and some cameras such as the Canon 5D MKII and MKIII have very loose lens securing systems. The Ronin-MX balances the camera as one solid unit. If the mounted camera has a loose lens securing system, the lens support must be used. This is because a loose connection between the lens and the camera body may allow vibrations that travel through to the camera but not directly to the lens, resulting in the two masses shaking at different frequencies. The resulting oscillations will be transmitted to the IMU, causing the whole gimbal to shake. If the lens support fits, it's best to use it at all times.

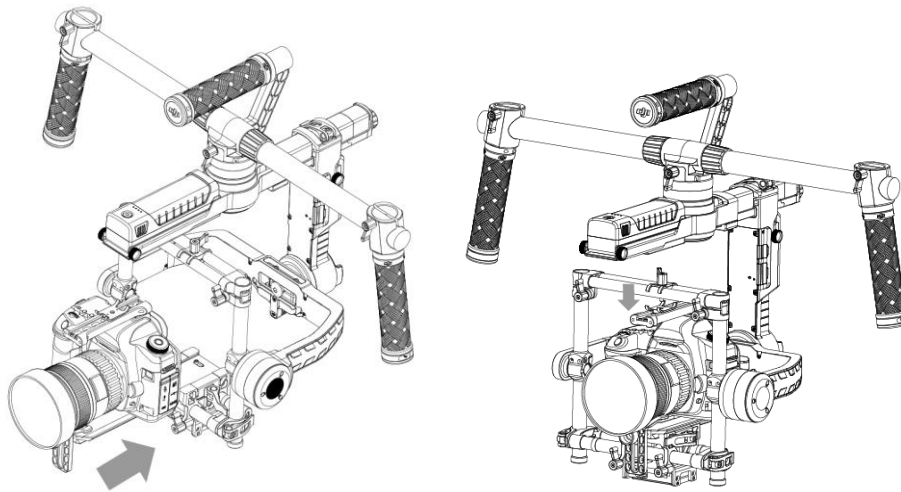


- The lens support can be installed facing outward or inward to accommodate different lens types.
- Ensure alignment of the camera base plate and then tighten the mounting screw, before tightening the lens support.

3. Mount the Camera Upper Mounting Plate to the top of the camera through the hot shoe and then tighten it.



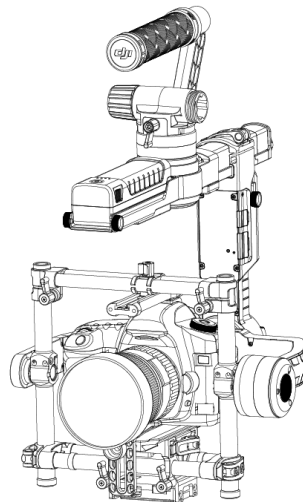
4. With the gimbal facing outward on the tuning stand, slide the mounting plate into the receiver until the safety lock engages. Adjust the vertical position of the cross bar to meet the camera upper mounting plate.
5. When the camera achieves a rough balance, tighten the camera base side clamp and the lock - knob.



Note: You can adjust the tightness of the clamp with an M3 Allen wrench.

## Configuring the Handle Bar

The customizable handle bar of the Ronin-MX can be removed, if necessary. Loosen the two grip screws where the handle bar meets the gimbal then remove the grips from the handle bar. You can remove one or both sides of the handle bar. The resulting configuration is shown below.



# Balancing

To obtain the best performance from the Ronin-MX, proper balancing is a must. Accurate balance is critical for shots where the Ronin-MX will be subjected to extreme movements or accelerations (running, horseback riding, biking, car mounts, helicopters, etc.) Proper balance will also offer a longer battery runtime. There are three axes that need to be accurately balanced prior to turning on the Ronin-MX and setting up the software.

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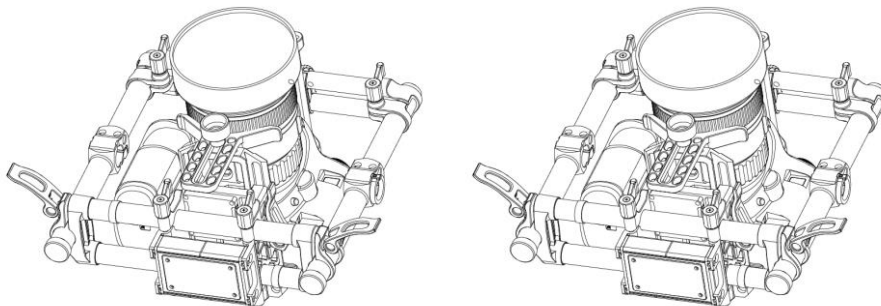
⚠ The camera needs to be fully configured, with all accessories, prior to installing and balancing the camera on the gimbal. If the camera has a lens cap, be sure to remove it prior to balancing. Be sure that the Ronin-MX's power is turned off while balancing the camera.

---

## Step 1: Balancing the Vertical Tilt

To adjust the vertical balance, you will need to change the camera's vertical position. Adjust the height of the crossbar to achieve vertical tilt balance.

1. Rotate the Tilt Axis so that the camera lens is pointing upward, then loosen the two vertical adjustment tabs and the lock-knobs on the top cross bar.
2. Gently slide the camera mount crossbar forwards or backwards until the camera points upwards when released.
3. Tighten the tabs and lock-knobs, then manually rotate the assembly, simulating tilt, to ensure there is no binding in the tilt motor. When proper balance is achieved, you can rotate the camera to any tilt angle and it will stay in that position (while holding the roll axis in position).



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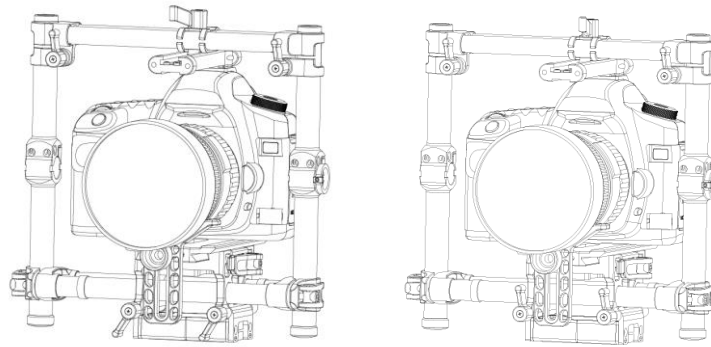
⚠ Ensure that the measurement marks match up on both of the vertical bars. If they do not match up, the assembly could possibly be skewed higher or lower on one side, which would cause the tilt motor to bind.

---


## Step 2: Balancing the Roll Axis

Balancing the camera, from left to right, on the Roll Axis is also required. When the proper left/right roll balance is achieved, the camera will remain level.

1. Loosen the three lock-knobs to allow the camera and mounting plate to slide left and right.
2. Slide the camera left or right until the Roll Axis remains level.
3. Tighten the three lock-knobs to lock the camera mounting plate in position.



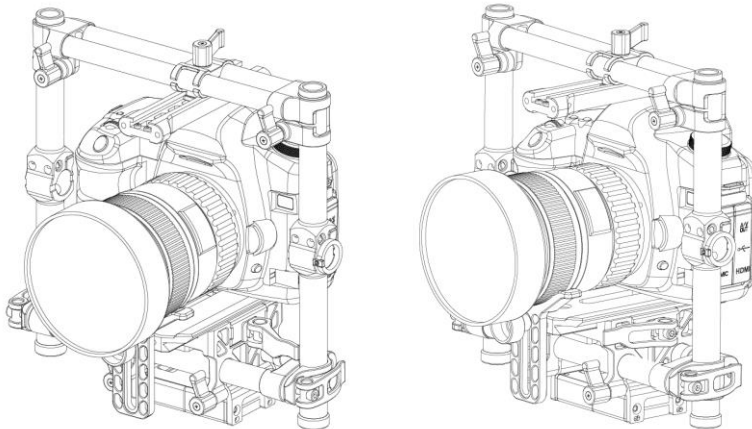
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 When adjusting the roll balance position of the camera, only loosen the two lock-knobs a few turns to allow the camera base to slide. Do not loosen the lock-knobs excessively.

---

### Step 3: Balancing the Tilt Axis

1. Loosen the camera base's side clamp and the lock-knob on the cross bar to allow the camera and mounting plate to slide forwards and backwards.
2. Slide the camera forwards or backwards until the tilt axis remains level. Only very small adjustments are required to achieve the proper balance.
3. Tighten the side clamp to lock the camera and mounting plate in position. When the proper fore and aft tilt balance is achieved, the camera will stay level when you remove your hand (while holding the roll axis in position).

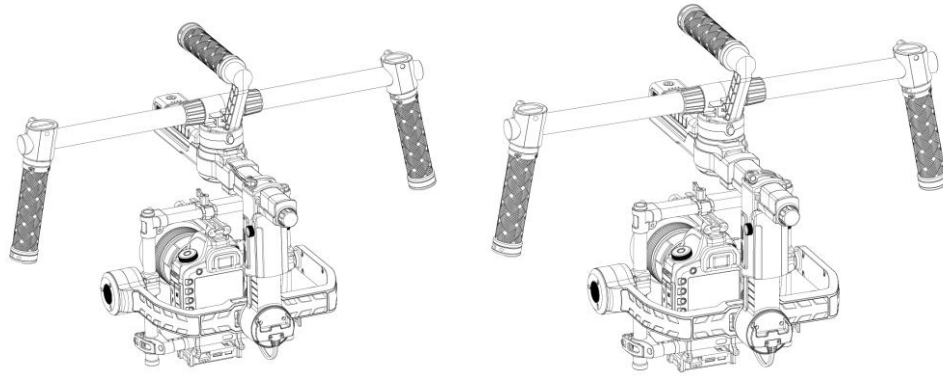


### Step 4: Balancing the Pan Axis

To achieve the pan axis balance, you must adjust the pan axis slide.

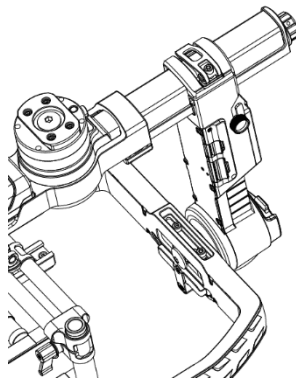
1. Open the clamp [1] on the pan axis and turn the knob [2] to slide the assembly. Identify if the Ronin-MX is front heavy or rear heavy. Rotate the Ronin-MX on the stand so one side is higher than the other, if the front end rotates from the higher position to the lower position and that means the Ronin-MX is currently front heavy, then you will need to slide the gimbal backward, otherwise you need to slide the gimbal forward.
2. Tighten the clamp after balancing is completed. While the Ronin-MX is resting on the tuning stand, try rotating the Ronin-MX. If the camera does not swing, the pan axis is properly balanced.





## Advanced Roll Adjustment

If additional roll adjustment is needed in cases where the camera itself is too light in comparison to the tilt motor assembly, advanced roll adjustment can be achieved by loosening the indicated screws and pushing the assembly to the right or left.



## Tuning and Operation for Handheld Usage

### DJI Ronin-MX Assistant App Tuning

After balancing the mechanism, you can fine tune the balance by adjusting software parameters in the DJI Assistant app, and configure your Ronin-MX.

### Download and Install

1. Download the DJI Assistant app.  
For the iOS version, search “DJI Assistant” in the App Store, then follow the installation instructions.  
Search “DJI Ronin” in Google Play, then follow the installation instructions for the Android version.
2. Ensure that Bluetooth is enabled on your mobile device and orient the camera in the standard operating position (facing forwards). Turn on your Ronin-MX, then launch the DJI Assistant App.
3. When using the DJI Assistant app for the first time, you will be prompted to register using a valid e-mail address.
4. Connect your device to the Ronin-MX by following the step-by-step instructions in the DJI

Assistant app. After connecting to the gimbal's main control, you will see the Wizard menu. When the indicator at the top of the screen displays solid green and the blue light is blinking, the connection is complete. The green LED on the Ronin-MX will also light up.

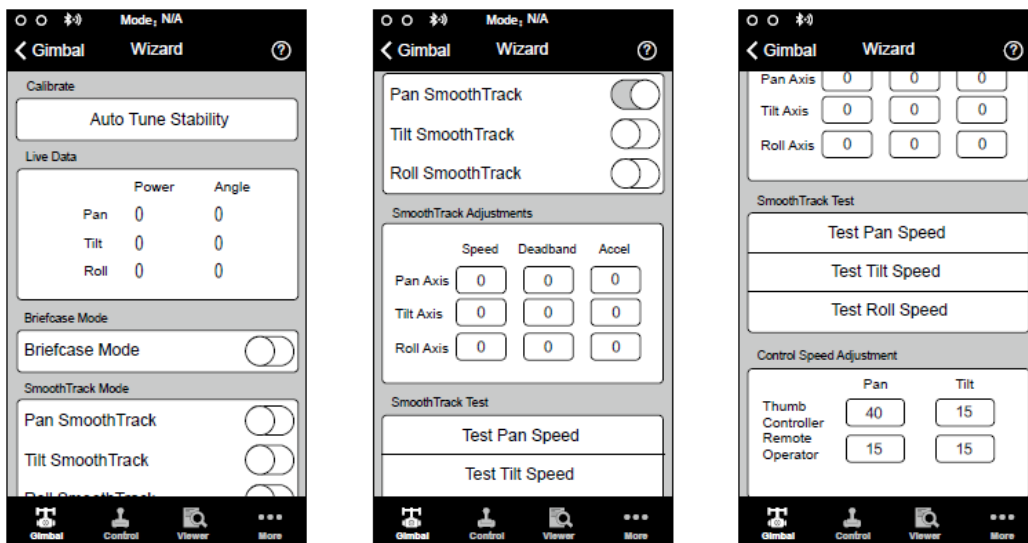
5. Activation is required when use the Ronin-MX for the first time, otherwise the gimbal will not work. To activate your Ronin-MX, connect your mobile device to Internet, then enter the 'More' page in the DJI Assistant app and tap the 'Activate' button.



- After enabling Bluetooth on your mobile device, return to the DJI Assistant app to connect to the Ronin-MX. The Ronin-MX will not appear in the mobile device's Bluetooth device list. It can only be connected via the DJI Assistant app.
- The iOS version and Android version of the DJI Assistant app functions are the same. Assistant pages shown in this manual are from the iOS version.

## Basic Settings

The functions accessible in the Wizard are the most basic functions you may want to adjust upon receiving your Ronin-MX. These options are also the most frequently used functions during standard operation. You can adjust all of these settings in the Wizard menu.



### 1. Calibrate

Auto Tune Stability provides an easy one-touch button for automatic configuration of each axis. The trajectory, speed, power, and stiffness of motors are automatically tuned for the camera configuration that is mounted. Auto Tune Stability should be tapped whenever a new camera configuration is mounted or whenever the lens or accessories are changed. This will ensure stability and provide ideal calibration settings.

### 2. Live Data

This data represents the feedback from each motor axis. If a particular motor axis indicates a power reading greater than 10, this often means the mechanical balance of the camera hasn't been properly adjusted. A properly balanced camera rig will display readings close to 0 power on each axis, but these values may vary. The angle reading indicates the current angle of each axis is in relation to center.

### **3. Briefcase Mode**

When Briefcase Mode is switched on, the Ronin-MX will be able to seamlessly transform into this operation mode. With Briefcase Mode turned off, the Ronin-MX will allow the camera to roll when the Ronin-MX is tilted past the standard roll axis parameters.

### **4. SmoothTrack Mode**

When SmoothTrack Mode is enabled, the Ronin-MX will can be "steered," on the selected axis, by the camera's operator. The steering/translation speed can be adjusted for each axis independently. When the Ronin-MX's top bar is rotated left or right, the camera will move, smoothly following the user's input, and stop at the appropriate angle. In the SmoothTrack options menu, the settings for the pan axis, roll axis and the tilt axis can be independently adjusted.

The speed will determine how fast the camera will travel while translating a pan/roll/tilt movement. Deadband will determine how much movement the gimbal will tolerate prior to translating the camera's pan/roll/tilt.

The Acceleration determines how closely the camera will follow the translated pan/tilt/roll movement.

When mounting a heavy camera (such as RED) on the Ronin-MX, the Acceleration should be adjusted properly. If the acceleration is too large, the camera could not stop steady due to the inertia. If the acceleration is too small, the SmoothTrack speed of the gimbal could not reach at the maximum speed.

The SmoothTrack pan, roll, and tilt speed can be tested. Ensure there is no obstruction of the camera before tapping the test button.

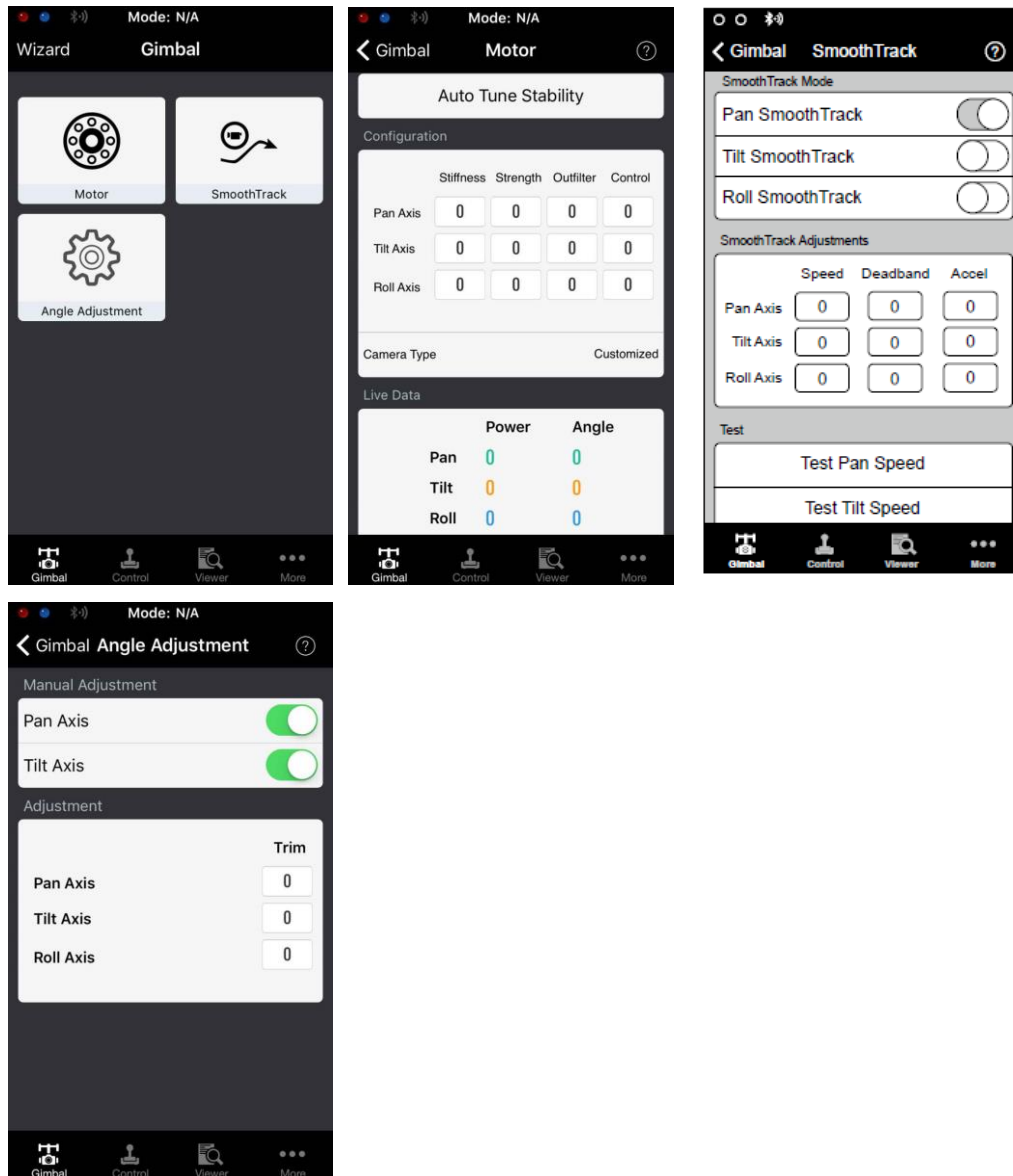
### **5. Control Speed Adjustment**

The remote control speed can be adjusted here. This setting represents the maximum speed in the pan and tilt axis when the remote control sticks are pushed all the way in any given direction.

## Advanced Settings

There are more advanced functions you can adjust through the Assistant to meet your requirements.

### Gimbal Menu



### 1. Motor Adjustment

It is highly recommended to choose the Camera Type (SLR Camera or RED Camera) to obtain best Stiffness, Strength, Outfilter and Control value.

The Auto Tune Stability button allows for automatic adjustment of each motor's stiffness (as relayed from the sensors and interpreted by the Ronin-MX) to accomplish an optimized setting. Besides the stiffness, there are other electronic settings being tuned.

The motor stiffness adjustment allows the user to fine tune the amount of power that is applied by the motors as they react and balance the weight on each axis. The higher you adjust the stiffness settings, without causing any vibrations or oscillations to the gimbal, the better your experience will be.

There will be default settings for Strength, Outfilter and Control value, it is not recommended to adjust these values by yourself. Increase the Strength will reduce the error of the gimbal attitude. If the gimbal appears high frequency vibration, increase the Outfilter value. Increase the Control value will compensate the angular vibration.

## 2. SmoothTrack Mode

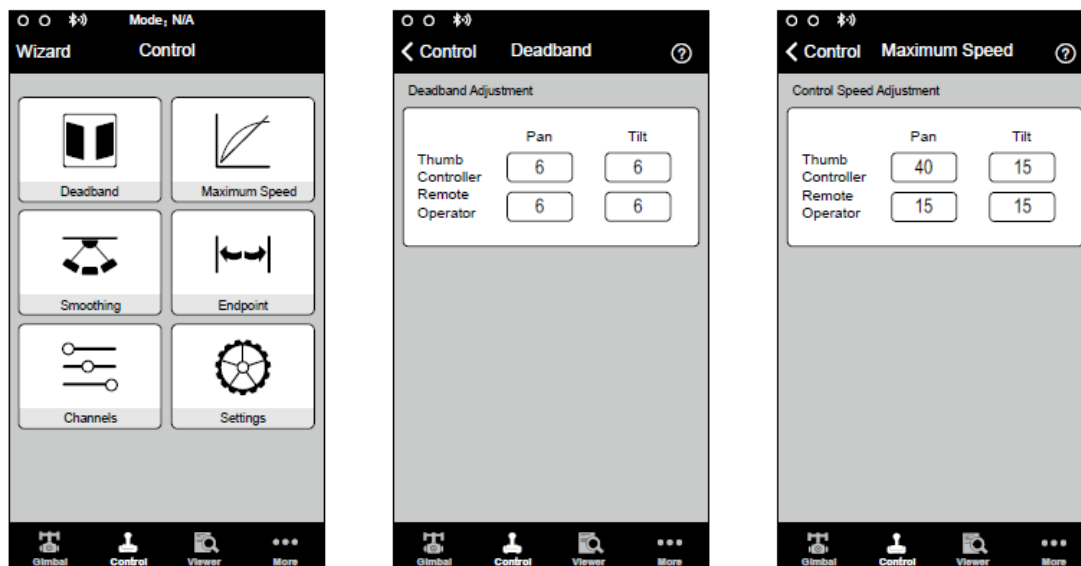
Refer to the Basic Settings section for details relating to SmoothTrack Mode.

## 3. Angle Adjustment

Enable Manual Adjustment to allow the pan and tilt axes to be adjusted by hand when the Ronin-MX is turned on.

The trim adjustment controls the amount of trim that is applied to each off-center axis. The default setting of 0° represents center.

## Control Menu



### 1. Deadband

The thumb controller and the remote operator control can have independently adjusted pan and tilt deadband settings. The larger the deadband, the more stick movement will be required to translate into actual movement of the gimbal.

### 2. Maximum Speed

Maximum Speed is a function that prevents the control stick response from being a linear response, which is also known as an increasing response curve. This means the amount that the gimbal moves on the pan or tilt axis is not directly proportional to control stick manipulation.

Control stick response can be adjusted to be milder below the first half of control stick travel and increased to a higher speed towards the last half of control stick travel. The preset exponential curve is calibrated based on maximum speed input.

The maximum speeds of the thumb controller and the remote control sticks can be set independent of each other.



### 3. Smoothing

When the control stick input is released, the translated movement will be smoother and slower than if the smoothing is increased. If smoothing is set to 0, the slowdown will be translated as an abrupt stop. The thumb controller and remote operator control sticks can be set independently. Pan and tilt smoothing can also be independently adjusted.

### 4. Remote Control Endpoints Adjustment

Pan axis endpoint settings determine the farthest points to which the gimbal will rotate left or right during controller input. Pan axis endpoints can be adjusted independently, for left and right movement, when used with a remote control or the thumb controller.

Tilt axis endpoint settings control the maximum points to which the gimbal can rotate up or down. Tilt axis endpoints can be adjusted independently for up and down movement when used with a remote control or the thumb controller.

The pan and tilt endpoints can be tested. Ensure the camera is unobstructed before tapping the test buttons.

The default endpoint settings for pan axis are set to 0, that means there is no endpoint for pan axis so that it can rotate 360° continuously, the pan axis will not move when the "Test Pan Endpoint" button is pressed.

### 5. Channels

The channel indicator provides feedback during remote operator configuration. Pan, tilt, and roll can be re-assigned to either of the remote control sticks. Each axis can also be reversed.

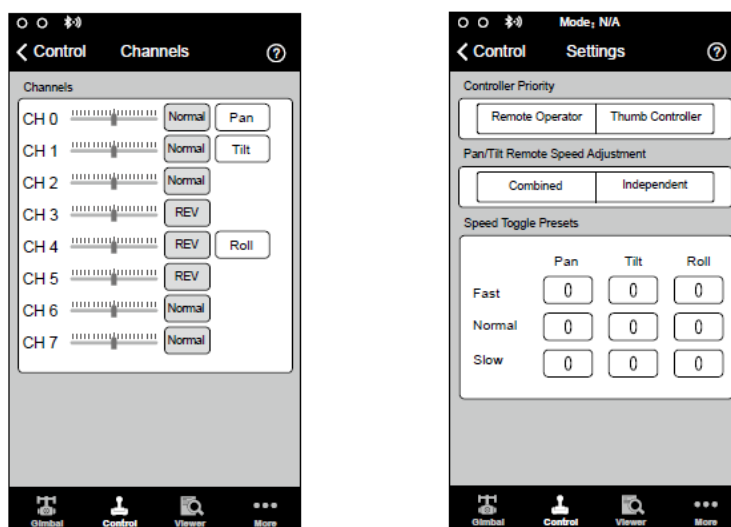
### 6. Settings

**Controller Priority:** If both input devices simultaneously send control signals to the gimbal, the input

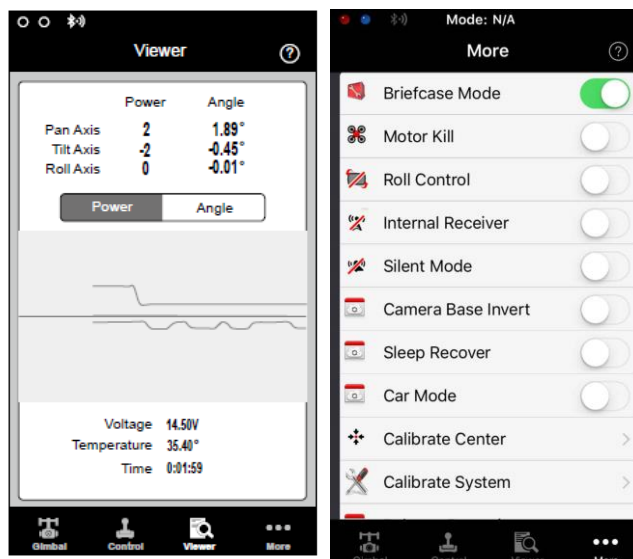
from the selected controller will take priority and will control the device at that given time.

**Pan/Tilt Remote Speed Adjustment:** Click to choose combined or independent settings.

**Speed Toggle Presets:** These presets will allow you to change the SmoothTrack speed remotely. If the remote control is turned on, the Speed Toggle Presets for SmoothTrack will take precedence over the Assistant settings. Once the remote control is turned off, the SmoothTrack settings in the Assistant will take over.



## Viewer Menu



The viewer provides all the essential live data for monitoring the gimbal's electronics, as well as feedback from the motors. Power is indicated for each axis. The current angle of each axis is also indicated. The voltage of the battery, temperature of the main electronics, and also current uptime can also be monitored via this menu.

## More Menu

### Briefcase Mode

When Briefcase Mode is switched on, the Ronin-MX will be able to seamlessly transform into this operation mode. With Briefcase Mode turned off, the Ronin-MX will allow the camera to roll when the Ronin-MX is tilted past the standard roll axis parameters.

### Motor Kill

When the motor kill switch is activated, the Ronin-MX is still powered on, but the motors will be powered off. This will allow an adjustment to the gimbal or camera without having to turn it off completely. Prior to turning off the Motor Kill Switch, make sure the gimbal is positioned in the standard operating position. The Motor Kill Switch can also be used if the gimbal operator experiences an issue or needs to make a quick mechanical adjustment to the gimbal or camera setup.

### Roll Control

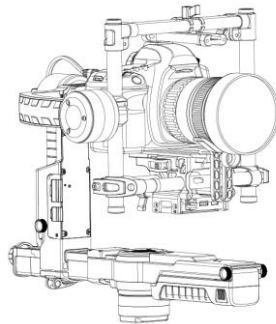
When the Roll Control is off, the roll axis movement cannot be controlled by a remote control or the thumb controller.

### Internal Receiver

When the Internal Receiver is off, the gimbal cannot be controlled by a remote control or the thumb controller, and can only be controlled by other devices via a D-Bus or Lightbridge connection.

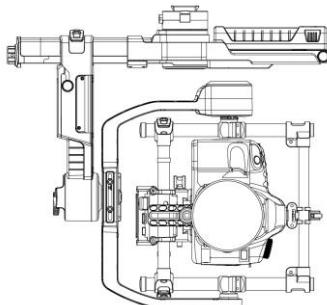
### Camera Base Invert

Enable this function to allow invert the camera base to mount your camera, it is helpful when the Ronin-MX is mounted invert on a vehicle, so that the captured footage will be positive.



### Sleep Recover

When the Sleep Recover is enable, adjust the Ronin-MX roll axis to 75° or above (as shown below), then the gimbal will turn off without turning off the Intelligent Battery or other accessories. Adjust the roll axis to horizontal will bring the gimbal back to normal.





### **Car Mode**

Enable the Car Mode when use the Ronin-MX on a car or jib. In this mode, the gimbal will not drift when the car is turning at high speed, so that the footage will be stay steady. Ensure the Ronin-MX is working on Underslung Mode when using Car Mode.

### **Calibrate Center**

If the Ronin-MX's pan axis is off-center, you can recalibrate the true center of the Ronin-MX using this switch. Using a remote control, position the pan axis at dead center, then tap the Calibrate Center button. Tap "Center" again in the pop-up to confirm. Restart the device after recalibrating the center.

### **Calibrate System**

Calibrate System is only used if you notice any kind of drift in any of the axes. To calibrate the system, place the Ronin-MX on the tuning stand and make sure it is completely steady. Ensure a 90 degrees movement of the camera with the lens pointing straight down is possible without any interference from video monitor wires during the movement. Then tap the Calibrate System button and let the process finish before picking up the Ronin-MX.

Do not touch or move the Ronin-MX during calibration.

### **Balance Detection**

Tap to check the balance status of the tilt and roll axis. Ensure there is no obstacle during balance detection.

### **Activation**

Activation is required when use your Ronin-MX for the first time, otherwise the gimbal will not work. To activate your Ronin-MX, connect your mobile device to Internet, then tap the 'Activate' button.

### **Restore Default Settings**

This will restore all of the factory default settings that can be configured through the DJI Assistant app.

### **Device List**

To force the DJI Assistant app to find the Ronin-MX, open the "Device List" and the app will search for Bluetooth devices it recognizes.

## **DJI PC / MAC Assistant Tuning**

You can also tune the Ronin-MX and upgrade the firmware through the DJI PC/MAC Assistant.



- The configuration settings of the DJI Assistant app and DJI PC/MAC Assistant are the same. There is no need to repeat settings adjustment in both Assistants.
  - The DJI Assistant app and the DJI PC/MAC Assistant program cannot be connected at the same time. If running the DJI Assistant app on your mobile device, be sure to disconnect the micro USB cable before using the DJI PC/MAC Assistant on a computer.
-

## Install DJI PC / MAC Assistant

### Installing and Running on Windows

1. Download the DJI WIN DRIVER INSTALLER from the Ronin-MX product page on DJI.com. Connect the Ronin-MX to your PC via the provided USB cable and be sure the Ronin-MX is powered on prior to installing the DJI WIN DRIVER.
2. Download the appropriate Assistant installer from DJI.com.
3. Double click the Assistant installer and follow the steps to finish the installation.
4. Run the Assistant.
5. Upgrade the firmware or configure parameters using the Assistant as needed.

⚠ The Assistant installer supports Windows XP above.

### Installing and Running on Mac OS X

1. Download the Assistant installer (.DMG) from the Ronin-MX product page on DJI.com.
2. Run the installer and follow the prompts to finish the installation.

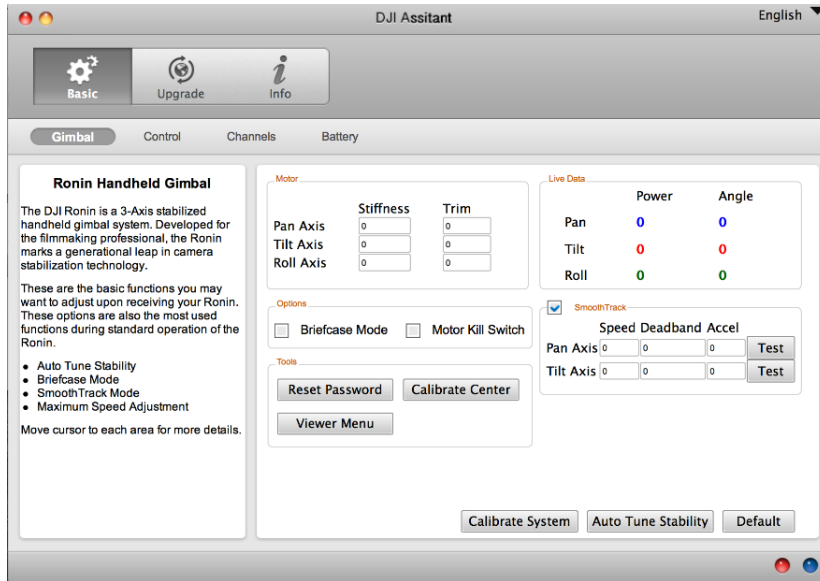


3. When launching for the first time, if using Launchpad to run the Ronin-MX Assistant, Launchpad will block access because Assistant has not been reviewed by the App Store.



4. Locate the Gimbal icon using the Finder, press "Control," then click the icon (or right-click the icon using a mouse). Choose Open from the shortcut menu, then click Open in the dialog box to launch the program.
5. After the first successful launch, double click the Gimbal icon, as usual, to launch the program

using Finder or Launchpad.



⚠ The DMG installer supports Mac OS X 10.9 or above.

💡 Ronin-MX Assistant on Mac OS X and Windows are the same. Assistant pages shown in this manual are from the Windows version.

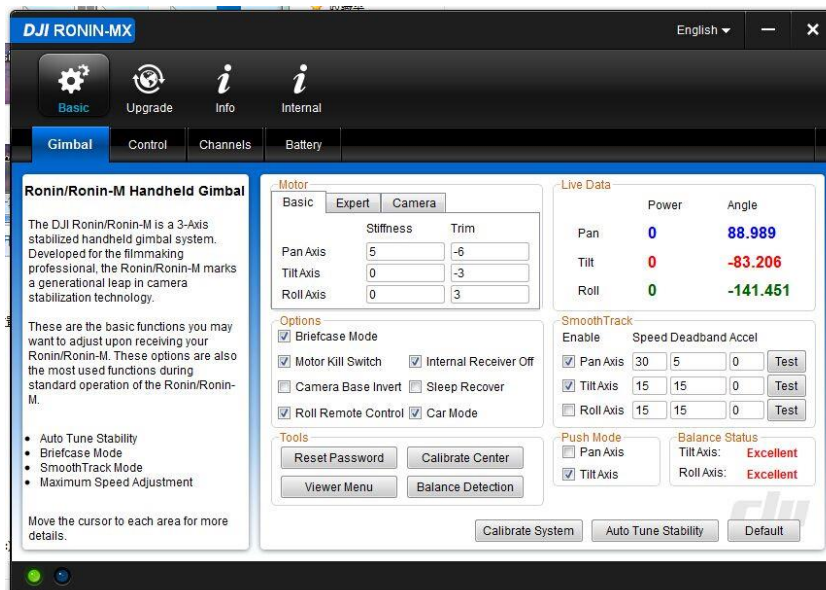
## Settings

Adjust the following basic functions before using the Ronin-MX: Camera Type, Briefcase Mode, SmoothTrack, and Maximum Speed Adjustment.

The definition and function of every button in the DJI Assistant app and DJI PC Assistant are the same, refer to the section describing the DJI Assistant app for more details.

## Basic

### 1. Gimbal



## Motor

**Basic:** Each axis has its own stiffness and trim adjustment. To select the Camera type will obtain the best configuration.

**Expert:** Display the Strength, Outfilter and Control values. There will be default settings of these parameters, it is not recommended to adjust them by yourself.

**Live Data:** This monitors the feedback from the motors on each axis.

**Briefcase Mode:** Select the checkbox to enable Briefcase Mode.

**Motor Kill Switch:** Select the checkbox to enable the Motor Kill Switch.

**Internal Receiver Off:** Select to prevent the gimbal from being controlled by the included remote controller or the optional thumb controller. The gimbal can then only be controlled by other devices via a D-Bus or Lightbridge connection when the Internal Receiver is off.

**Camera Base Invert:** Select the checkbox to allow the camera base invert.

**Sleep Recover:** Select the checkbox to enable sleep recover function.

**Roll Remote Control Off:** Select this checkbox to prevent the roll axis movement from being controlled by the included remote controller or the optional thumb controller.

**Car Mode:** Select Car Mode when using the Ronin-MX on a vehicle or jib.

**SmoothTrack:** Select this checkbox to enable SmoothTrack. Note that the pan axis and the tilt axis can be adjusted independently.

The pan and tilt SmoothTrack speed can be tested. Ensure that there is nothing obstructing the camera when running the test procedures.

**Reset Password:** If you forgot your Bluetooth connection password, click here to reset your password.

**Calibrate Center:** If the Ronin-MX's pan axis is off center, you can recalibrate the true center of the Ronin-MX using this switch. Using a remote control, position the pan axis at dead center, then click the Calibrate Center button. Click "Center" again in the pop-up to confirm.

**Viewer Menu:** The Viewer menu provides essential live data for monitoring the Ronin-MX's electronics and feedback from the motors. Power is indicated for each axis. The current angle of each axis is also indicated.

**Balance Detection:** Select the checkbox to check the balance status of roll and tilt axis.

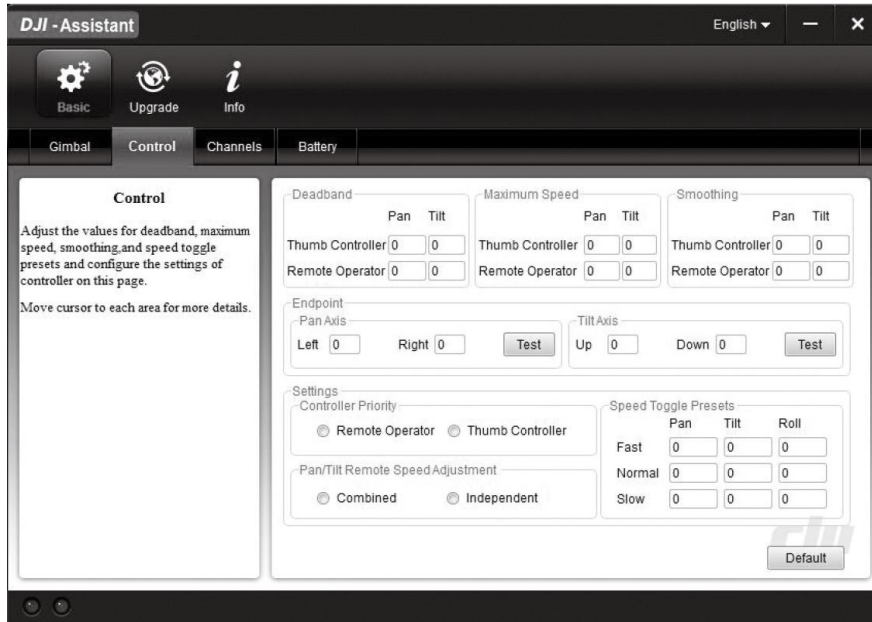
**Push Mode:** Enable Push Mode to allow the pan and tilt axes to be adjusted by hand when the Ronin-MX is turned on.

**Calibrate System:** Calibrate System is only used if you notice any kind of drift in any of the axes. To calibrate the system, place the Ronin-MX on the tuning stand and make sure it is completely steady. Ensure a 90 degrees movement of the camera with the lens pointing straight down is possible without any interference from video monitor wires during the movement. Then click the Calibrate System button and let the process finish before picking up the Ronin-MX. Do not move the Ronin-MX during calibration. Restart the Ronin-MX after calibration is complete.

**Auto Tune Stability:** The Auto Tune Stability button allows for automatic adjustment of each motor's stiffness settings (as relayed from the sensors and interpreted by the Ronin-MX).

**Default:** Click here to restore all settings to the factory defaults.

## 2. Control



The thumb controller and the remote operator control sticks have a Deadband, Maximum Speed, and Smoothing adjustment, all of which can be set independently.

**Endpoint:** Pan axis endpoints can be adjusted independently for left and right movement when used with a remote control or the thumb controller. Tilt axis endpoints can be adjusted independently for up and down movement when used with a remote control or the thumb controller.

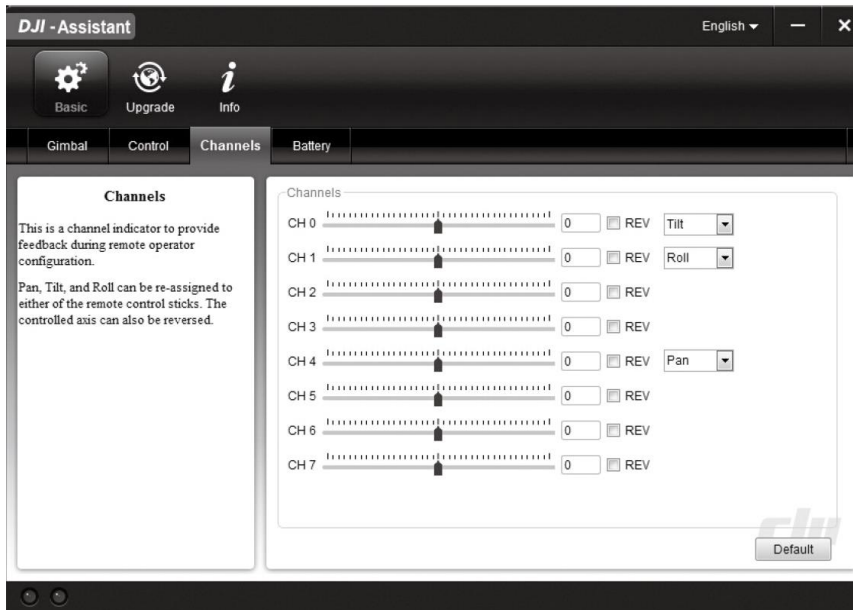
The pan and tilt endpoints can be tested. Ensure that the camera is unobstructed when clicking the test buttons.

**Controller Priority:** If both input devices simultaneously send control signals to the gimbal, the input from the selected controller will take priority and will control the device at that given time.

**Pan/Tilt Remote Speed Adjustment:** Click to choose combined or independent settings.

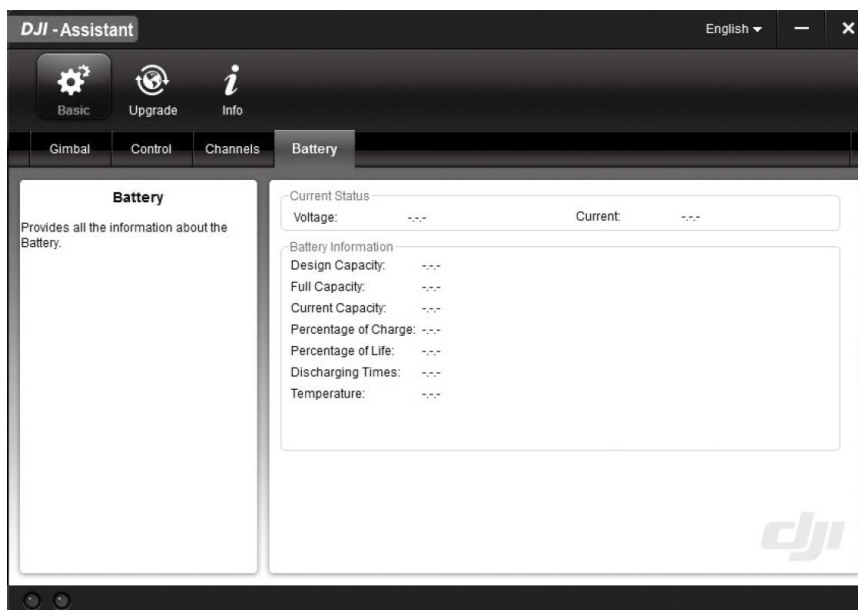
**Speed Toggle Presets:** These presets will allow you to change the SmoothTrack speed remotely. If the remote control is turned on, the Speed Toggle Presets for SmoothTrack will take precedence over the Assistant settings. Once the remote control is turned off, the SmoothTrack settings in the Assistant will take over.

## 3. Channels



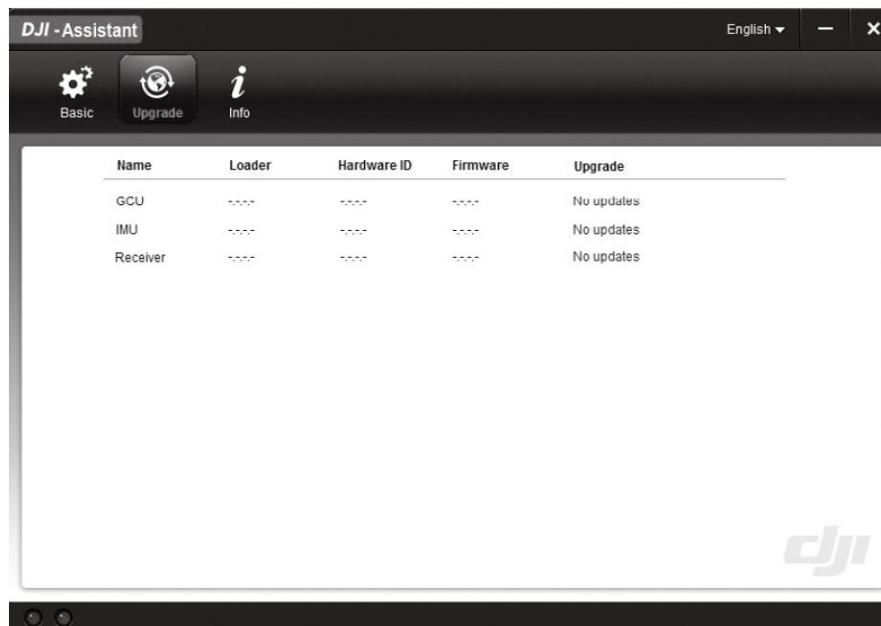
This is a channel indicator to provide feedback during remote operator configuration. Pan, tilt, and roll can be re-assigned to either of the remote control sticks. The controlled axis can also be reversed.

#### 4. Battery



This page provides all of the essential information regarding the Ronin-MX's battery.

## Upgrade



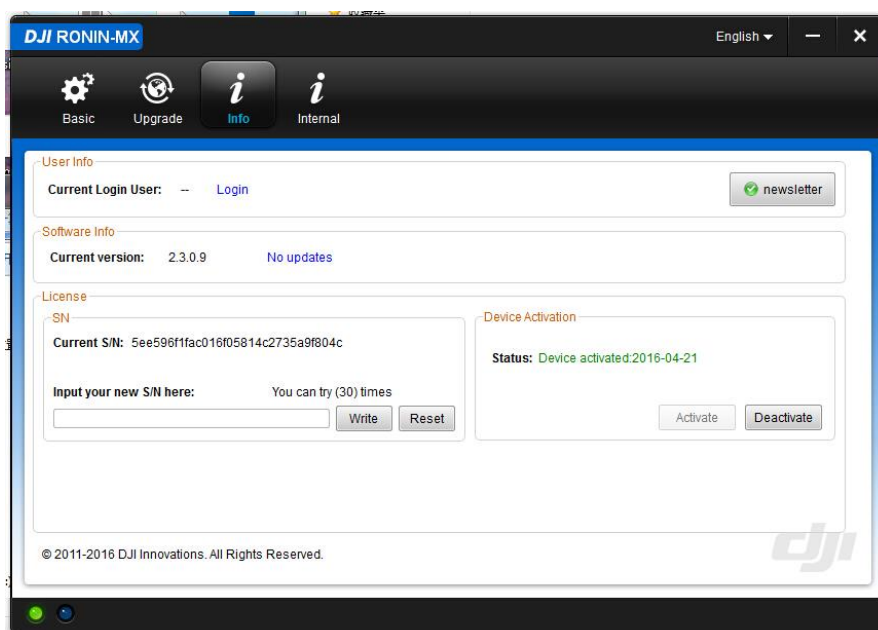
You can view the latest firmware version information on this page. Upgrade the firmware by following the steps below:

1. Connect the Ronin-MX to your computer via the Micro USB cable and wait until the indicator LED in the DJI Assistant blinks blue.
2. Click “Upgrade”.
3. Wait for the download to finish.
4. Click “Upgrade” again and then click “Confirm”.
5. Power the Ronin-MX off and then on after the upgrade is complete.



1. Ensure that your computer is connected to the Internet.
2. Close any antivirus programs and network firewalls.
3. Ensure that the Ronin-MX is powered on during the upgrade. Do not power off the Ronin-MX until the upgrade is complete.
4. Do not disconnect the USB cable during the upgrade.

## Info



The Ronin-MX must be activated for the first time usage. Click the Activate button to activate your Ronin-MX, otherwise the gimbal will not work.

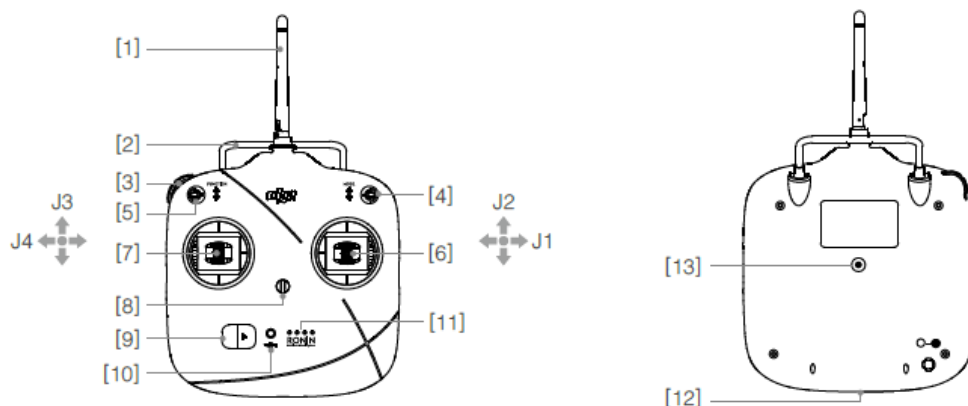
You can check which version of the DJI Assistant you are using in the Info tab.

The S/N is a 32-digit authorization code that is used to activate certain functions. The authorization code for your unit is entered after it is manufactured. You may be asked to enter a new S/N after upgrading. Fill in the S/N and then click the Write button. If you enter an invalid S/N more than 30 times, the Ronin-MX will be locked and you will need to contact customer support.



# Remote Control Operation

## Remote Control Diagram

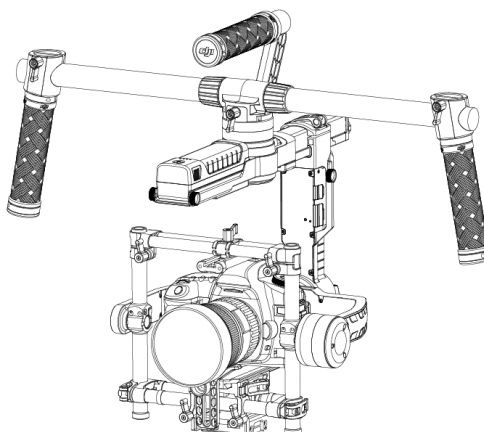


[1] Antenna [2] Carrying Handle [3] Left Dial (reserved) [4] 3-Position Switch (MODE) [5] 3-Position Switch (FUNCTION) [6] Joystick 1 [7] Joystick 2 [8] Neck Strap Attachment [9] Power Switch [10] Power Indicator [11] Battery Level Indicator [12] Battery Charging & RC Assistant Port (Micro USB port) [13] Reserved Port

## Connecting the Remote Control to the Ronin-MX



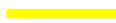



1. Turn on the Ronin-MX.
2. Press the Bind Button (shown below) of the Ronin-MX once. The Ronin-MX's LED indicator will blink green quickly at that time.
3. Slide the power switch to the right to power on the remote control. If the LED of gimbal turns solid green light, the remote control and the Ronin-MX have been successfully bound.

The binding process only needs to be done once, unless the bind button is pressed or if the Ronin-MX needs to be bound to another remote control.



- Make sure that the remote control is sufficiently charged before use. If the low-battery alert sounds, please recharge the battery as soon as possible.
  - Charge the remote control's battery using the included Micro USB cable. Using the incorrect type of charging cable may cause damage.
- ⚠
- Turn off the remote control before charging. The power LED indicator will glow solid green when the battery is fully charged.
  - When using the remote control, ensure that the antenna is at least 20 cm away from any person.

## Remote Control Power LED Indicator Status

Power LED Indicator	Sound	Remote Control Status
	None	Functioning normally
	None	Charging (remote controls powered off)
	None	Remote control joystick calibration error, re-calibrate
	BB---BB--- BB	Low voltage (from 3.5 V-3.53 V); recharge the remote control
	B-B-B.....	Critical low voltage (from 3.45 V-3.5 V); recharge the remote control immediately
	B--B--B.....	Alert will sound after 15 minutes of inactivity. It will stop once you start using the remote control.

⚠ The remote control will turn off automatically when battery voltage drops below 3.45V. Charge the battery as soon as possible when the low voltage alert appears or sounds.

## Remote Control Battery Level Indicator Status

The battery level indicator displays the current battery level. The following is a description of the indicators.

○: The LED is in a solid state on      ☀: The LED is blinking      ○: The LED is off

LED1	LED2	LED3	LED4	Current Battery Level
○	○	○	○	75%~100%
○	○	○	○	50%~75%
○	○	○	○	25%~50%
○	○	○	○	12.5%~25%
☀	○	○	○	0%~12.5%
○	○	○	○	<0%

## Remote Control Features

MODE: The MODE switch is used for toggling SmoothTrack.

- In Position 1, SmoothTrack is off. The remote control is free to control the pan axis and stops and holds the last position determined by the pan axis control stick.
- In Position 2, SmoothTrack is on. The remote control is free to control the pan axis and stops and holds the last position determined by the pan axis control stick.
- In Position 3, SmoothTrack is on. The gimbal will reorient and reset the pan angle to the forward-facing direction when the pan axis control stick is released.

FUNCTION: 1. The FUNCTION switch is used to select the SmoothTrack speed.

There are 3 possible selections: Fast, Normal, and Slow. The value of each speed can be preset in the DJI Assistant app or DJI PC/MAC Assistant.

Position 1  - Fast

Position 2  - Normal

Position 3  - Slow

### 2. Activating Motor Kill Switch

Quickly flip the FUNCTION Switch between Position 1 and Position 3 at least three times to activate the Motor Kill Switch. Repeat this process to turn off the Motor Kill Switch. Be sure to position the camera in the standard operating position before re-activating the gimbal's motors. The Motor Kill Switch is useful if the gimbal operator runs into an issue or needs to make a quick mechanical adjustment to the gimbal or camera setup.

**Left Stick**(Default settings): Horizontal movements on the left stick control the roll axis. Vertical movements have no definition.

**Right Stick**(Default settings): Horizontal movements on the right stick control the pan axis. Vertical movements on the right stick control the tilt axis.



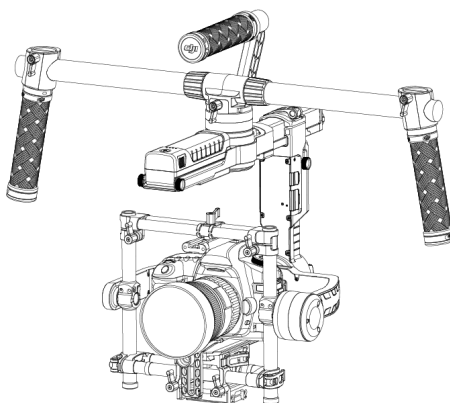
These stick settings can be customized in the DJI Assistant app or DJI PC/MAC Assistant.

## Operation Modes

There are three operation modes for the Ronin-MX: Underslung Mode, Upright Mode and Briefcase Mode.

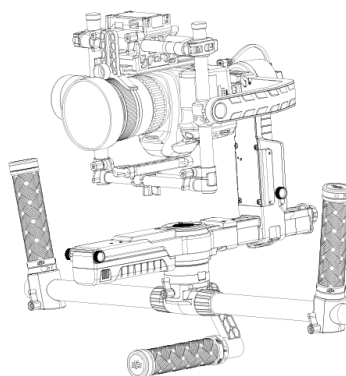
### Underslung Mode

Underslung Mode is the standard, default mode. The Ronin-MX can be used in this mode without any adjustments.



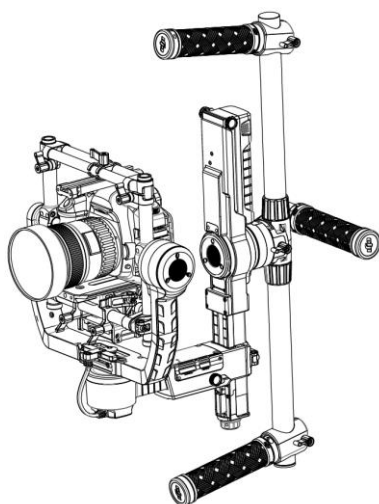
## Upright Mode

Flip the gimbal forward 180 degrees and it will automatically change to Upright Mode. Alternatively, you can change the gimbal into upright mode before turning it on. Upright Mode is ideal for car mounts or other top down perspective camera positions, as it allows you to shoot higher and/or at eye level. Upright Mode can also be used without any adjustments. Do not flip the gimbal sideways (left or right) to convert to Upright Mode.



## Briefcase Mode

Briefcase Mode allows you to hold the Ronin-MX in a slim profile close to your body. To use Briefcase Mode, tilt the gimbal 90° to the left or right on the roll axis. You can turn Briefcase Mode off in the DJI Assistant app, in which case the Ronin-MX will never automatically transform into Briefcase Mode. In Briefcase Mode, the remote control cannot pan, tilt, or roll the gimbal.

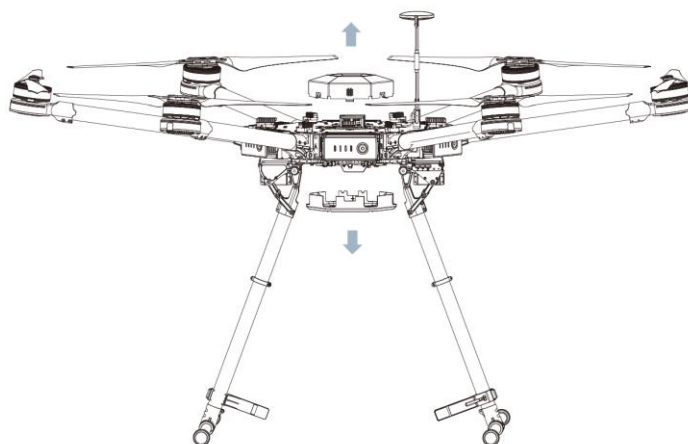


## Using with Matrice 600

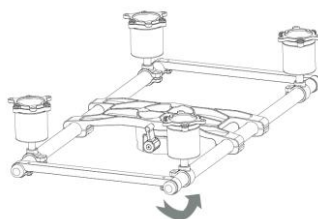
### Mounting the Ronin-MX onto Matrice 600

Before mounting the Ronin-MX onto a Matrice 600, ensure the camera is mounted securely on the Ronin-MX and the balancing is adjusted properly.

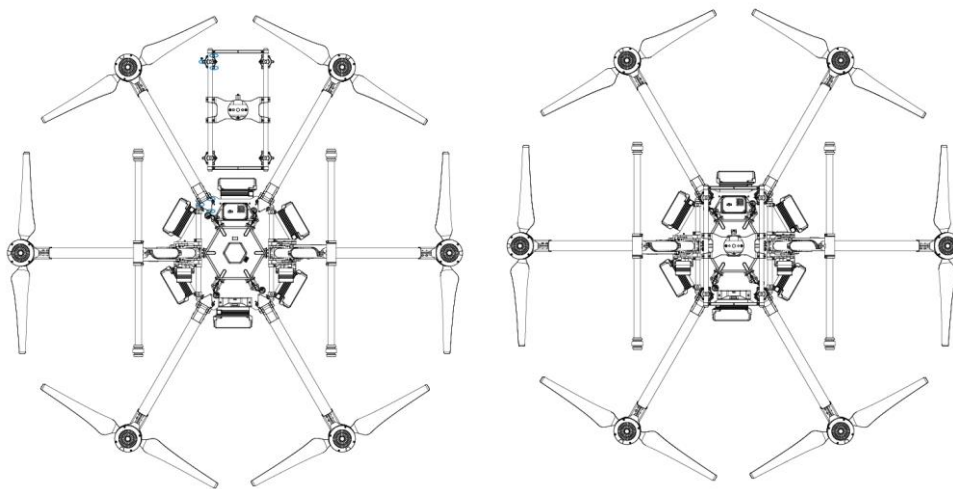
1. Remove the Matrice 600's upper cover and lower cover of the center frame and the expansion mounting kit.



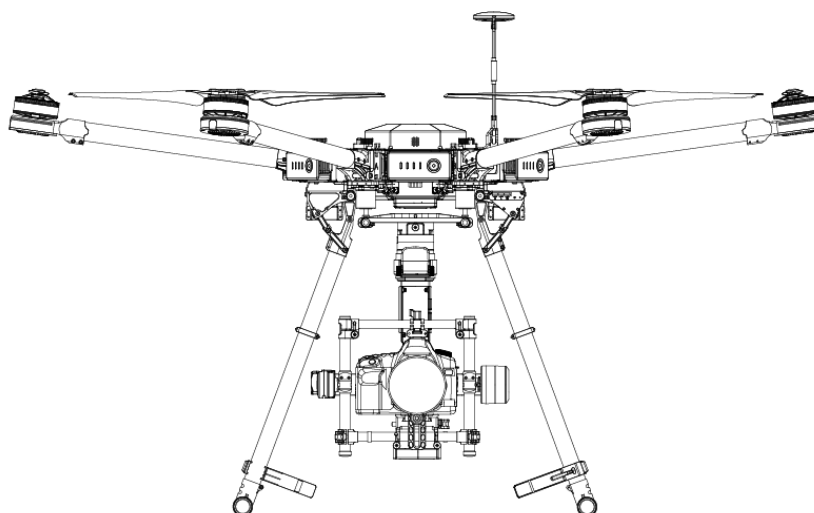
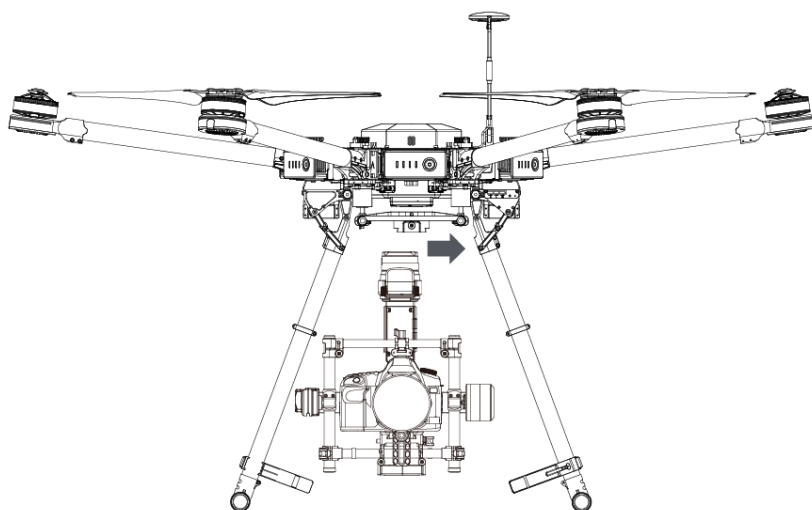
2. Adjust the mounting plate of the vibration absorber of Ronin-MX.



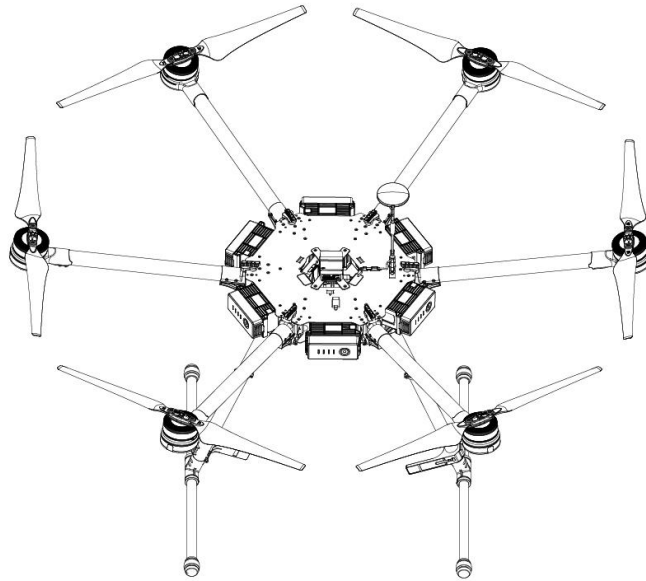
3. Mount the vibration absorber onto the bottom of the Matrice 600 with the lock-Knob facing forward, then tighten the 12 vibration absorber screws.



4. Slide the gimbal into the gimbal connector of the vibration absorber, then tighten the lock-knob.



5. Connect the CAN 2 port on the Ronin-MX and the CAN 1 port on the Matrice 600's main controller by using the CAN bus cable. Note that the CAN bus cable must be pulled through the hole on the center frame.



6. Use with the DJI SRW-60G wireless video link to obtain the HD image transmission without obstructing the pan axis movements of Ronin-MX. Refer to the SRW-60G user manual on how to use it.
7. If not using the wireless video link, the HD image transmission also can be transmitted through DJI Lightbridge 2.  
Connection: connect the Ronin-MX's Lightbridge port and the Lightbridge 2 air system by using the CAN bus cable, then connect the camera's HDMI port and the Lightbridge 2 air system.

Note that wire connection for video link will obstruct the pan axis movement in certain range, the pan axis could not rotate 360 degrees continuously.

## DJI GO App Tuning

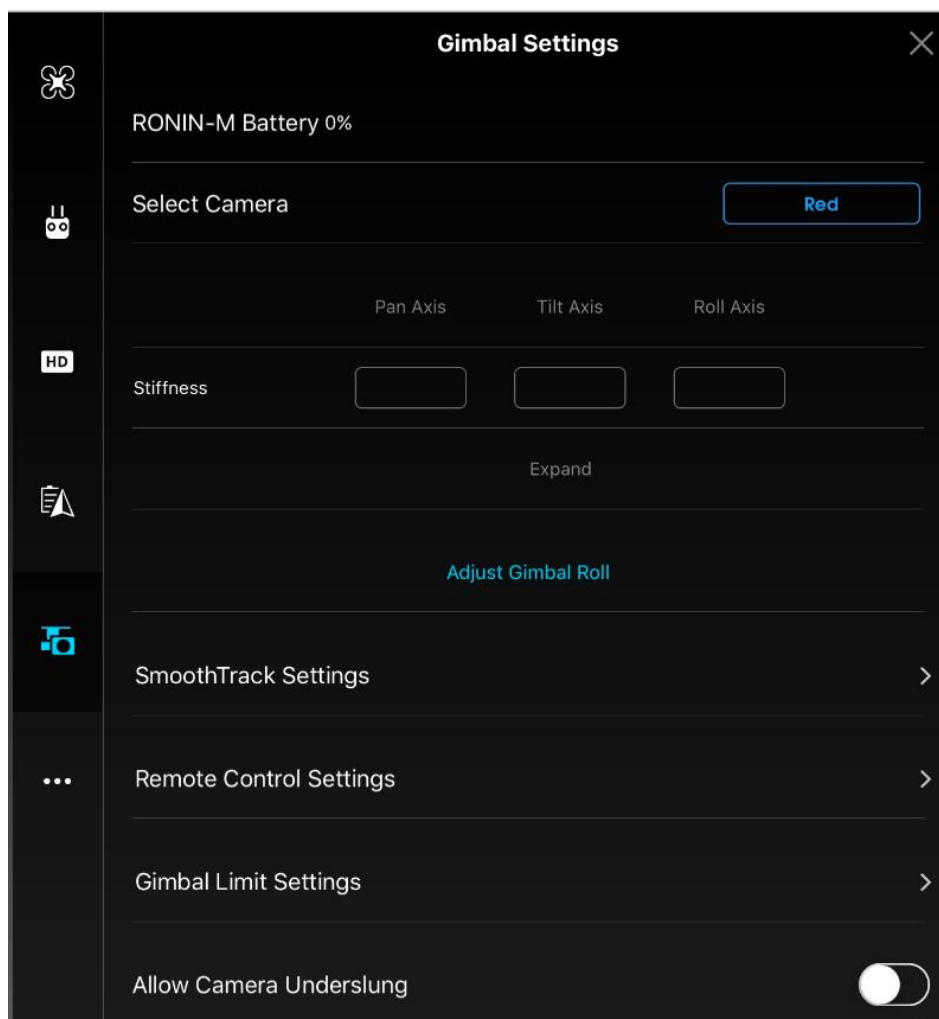
Enter Camera view to select gimbal work mode: Follow Mode, FPV Mode and Free Mode.

Follow Mode: the angle between gimbal's orientation and aircraft's nose remains constant at all times. The tilt angle can be adjusted by the remote controller. The roll axis cannot be controlled.

FPV Mode: The gimbal will synchronize with the movement of the aircraft to provide a first-person perspective flying experience.

Free Mode: The gimbal's pan axis do not constant with the aircraft's nose. The tilt angle can be adjusted by the remote controller. The roll axis cannot be controlled.

Tap the icon to configure the gimbal.



#### Select Camera

It is recommended to select the SLR Camera or RED Camera according to the mounted camera to obtain optimized settings for the Stiffness, Strength, Outfilter and the Control.

#### Adjust Gimbal Roll

Tap to fine tune the gimbal's roll if you notice the roll axis is not level.

#### SmoothTrack Settings

The Deadband and the speed can be adjust separately for pan and tilt axis.

#### Remote Control Settings

The Deadband, Maximum Speed and the Smoothing can be adjust separately for pan and tilt axis control.

#### Endpoint Settings

The endpoint for the pan and tilt axis can be adjust to limit the maximum left/right or up/down angle.



### Allow Camera Underslung

Tap to allow the camera mounted invert on the gimbal.

### Motor Kill

When the motor kill switch is activated, the Ronin-MX is still powered on, but the motors will be powered off. This will allow an adjustment to the gimbal or camera without having to turn it off completely. Prior to turning off the Motor Kill Switch, make sure the gimbal is positioned in the standard operating position.

### Calibration

Place the aircraft in a steady flat before perform the calibration. The Ronin-MX will be power off and power on again automatically when calibration is complete. Observe the roll axis's position, recalibrate is needed if the roll axis is off level.

Ensure there is nothing obstructing the gimbal's movements during calibration.

### Balance Detection

Tap to check the balance status of the tilt and roll axis. Ensure there is nothing obstructing the gimbal's movements.

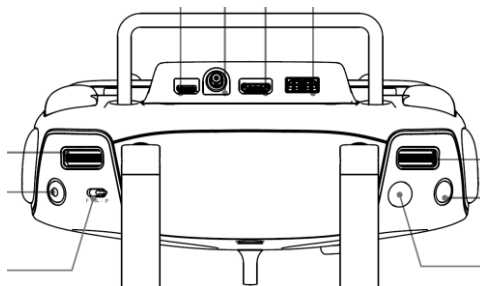
### Default Settings

Tap to restore all the gimbal settings to the default settings.

## Remote Controller Operation

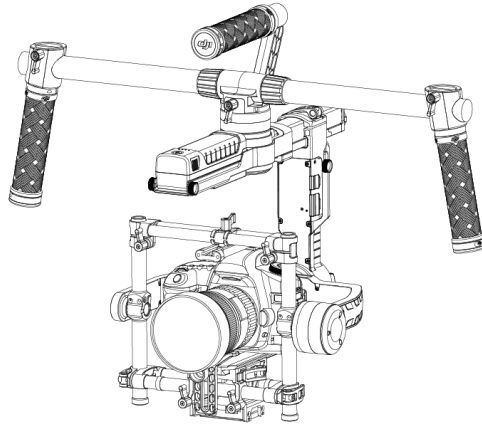
The Ronin-MX only can be controlled by the Matrice 600's remote controller instead of the remote control of Ronin-MX.

Adjust the Ronin-MX's tilt or pan by using the gimbal dial on the remote controller. (Configure through the C1 and C2 buttons according to the DJI GO's tips.)



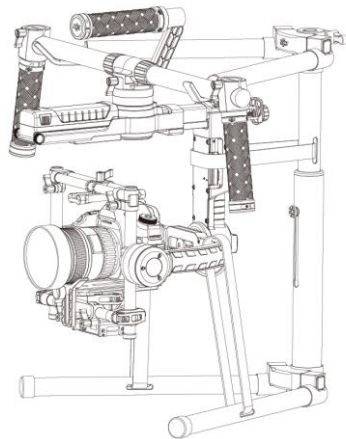
## Adding a Third-Party Transmitter/Receiver

The Ronin-MX supports 3<sup>rd</sup> party transmitters/receivers, such as D-Bus. Connect the transmitter through the integrated port (refer to the Ronin-MX Diagram for the location of the D-Bus port).



## Maintenance

The figure below shows the proper configuration for transporting the Ronin-MX with the Tuning Stand. Using the hook-and-loop straps, lock the Ronin-MX in place, as shown. Be sure to remove the straps prior to turning the Ronin-MX on again.



The Ronin-MX is a precise machine and is not waterproof. Keep it away from sand and dust when in use. After use, it is recommended that you wipe the Ronin-MX down with a soft dry cloth. Never spray any cleaning liquids onto the Ronin-MX.

## Troubleshooting

	Problem	Solution
1	Motors appear to be weak	After balancing the camera, launch the DJI Assistant app or the DJI PC/MAC Assistant and select Auto Tune Stability. Wait for the process to finish and the stiffness settings will be displayed on the screen.
2	The gimbal is vibrating, even after tapping the Auto Tune Stability button	<ol style="list-style-type: none"> <li>1) Check to make sure all knobs are tight, including the pan motor knob.</li> <li>2) Check to make sure the camera screw is tight. Push on the camera plate to make sure it is not loose or sliding on the gimbal's camera mount.</li> <li>3) Try decreasing the stiffness setting of each axis. By looking at the "Power" readings for the axes, you should be able to tell if there is one particular axis being affected.</li> </ol>
3	Pan axis seems to be off-center	Open the DJI Assistant app or DJI PC/MAC Assistant, select the Calibrate Center and follow the on-screen instructions.
4	Ronin-MX seems to be drifting	Place the Ronin-MX on the Tuning Stand and enter the DJI Assistant App or the DJI PC/MAC Assistant. Tap/click the Calibrate System button and let the process finish before picking up the Ronin-MX.
5	SmoothTrack does not work	<ol style="list-style-type: none"> <li>1) Turn on the remote control and be sure that the MODE switch is not in Position 1 (the uppermost position).</li> <li>2) Check whether SmoothTrack is turned off in the DJI Assistant app or the DJI PC/MAC Assistant software.</li> <li>3) Check whether the SmoothTrack deadband is turned up too high. If it is, reduce the deadband value in the SmoothTrack Menu.</li> </ol>
6	Motors turn off automatically	Check your camera balance. If the power level in the Gimbal Motors Menu indicates an output of 10 or more, on any axis, rebalance the camera.
7	Gimbal turns off and doesn't come back on	Restart the gimbal. There is a motor protection algorithm built into the Ronin-MX to protect the electronic components. If any particular motor enters a protection mode (motor shuts off six times within a one minute period), the Ronin-MX will deactivate the motors and will not reactivate them until the unit has been restarted.
8	Forgot the Bluetooth password	Connect the Ronin-MX to the DJI PC/MAC Assistant and click the "Reset Password" button to reset the password.
9	Video footage appears to wobble from side-to-side or up-and-down	The SmoothTrack speed setting is too high or the SmoothTrack deadband setting is too low. Decrease the SmoothTrack speed or increase the deadband.

# Specifications

General	
<b>Built-In Functions</b>	<ul style="list-style-type: none"> <li>● Operation Modes               <ul style="list-style-type: none"> <li>✧ Underslung Mode</li> <li>✧ Upright Mode</li> <li>✧ Briefcase Mode</li> <li>✧ Aerial Mode</li> <li>✧ Jib or Wirecam Mode</li> </ul> </li> <li>● Built-in, independent IMU module</li> <li>● DJI Specialized Gimbal Drive Motors with Encoders</li> <li>● Bluetooth Module</li> <li>● USB Connection</li> <li>● 2.4 GHz Receiver</li> <li>● Temperature Sensor</li> <li>● DJI Advanced 32-Bit DSP Processor</li> <li>● D-Bus Receiver Supported</li> </ul>
Peripheral	
<b>Camera Tray Dimensions</b>	Maximum depth from the center of gravity on camera base plate: 120 mm Maximum height measured from top of the camera base plate: 130 mm Maximum width: 160 mm
<b>Accessory Power Connections</b>	12V Regulated P-Tap x 2; USB 500mW x 1; DJI Lightbridge x 1
<b>GCU Input Power</b>	Intelligent Battery: 423496-1580 mAh-14.4 V
<b>Connections</b>	2.4 GHz Remote Control; Bluetooth 4.0; USB 2.0
<b>PC/MAC Assistant Requirements</b>	Windows XP or above; Mac OS X 10.9 or above
<b>Mobile Assistant Software Requirements</b>	iOS 7.1 or above; Android 4.3 or above
Mechanical & Electrical Characteristics	
<b>Working Current</b>	<ul style="list-style-type: none"> <li>● Static current: 300 mA (@16 V)</li> <li>● Dynamic current: 600 mA (@16 V)</li> <li>● Locked motor current: Max 10 A (@16 V)</li> </ul>
<b>Operating Temperature</b>	5° to 122°F (-15° to 50°C)
<b>Weight</b>	Including handle bar: 6.11 lb (2.77 kg) Including vibration absorber: 4.74 lb (2.15 kg)
<b>Dimensions</b>	Excluding handle bar : 280 mm (W) x 370 mm (D)x 340 mm (H) Including handle bar : 560 mm (W) x 370 mm (D) x 440 mm (H)
Working Performance	
<b>Load Weight (Reference Value)</b>	10 lb (4.5 kg)
<b>Angular Vibration Range</b>	± 0.02°
<b>Maximum Controlled Rotation</b>	Pan axis: 200°/s

<b>Speed</b>	Tilt axis: 100°/s Roll axis: 30°/s
<b>Mechanical Endpoint Range</b>	Pan axis control: 360° continuous rotation Tilt axis control: +270° to -150° Roll axis control: ± 110°
<b>Controlled Rotation Range</b>	Pan axis control: 360° continuous rotation Tilt axis control: +45° to -135° Roll axis control: ± 25°

## Compliance Notice

### 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 TECHNOLOGY CO., LTD. hereby declares that this device is in compliance with the essential requirements and other relevant provisions of the R&TTE Directive.

A copy of the EU Declaration of Conformity is available online at [www.dji.com/euro-compliance](http://www.dji.com/euro-compliance)



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