

1. Motor Adjustment

The Auto Tune Stability button allows for automatic adjustment of each motor’s stiffness (as relayed from the sensors and interpreted by the Ronin-M) to accomplish an optimized setting. Besides the stiffness, there are other electronic settings being tuned. It is highly recommended that the Auto Tune Stability button be tapped whenever a new camera configuration is mounted or the lens or accessories are changed. This will offer the optimal stability and settings.

Each axis has its own stiffness and trim adjustment. 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. In most cases, the Auto Tune Stability settings will be suitable.

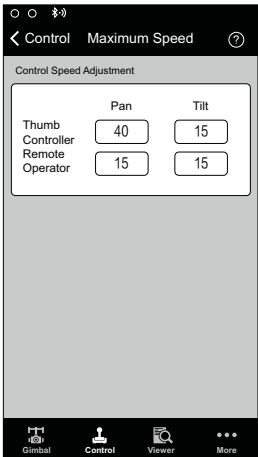
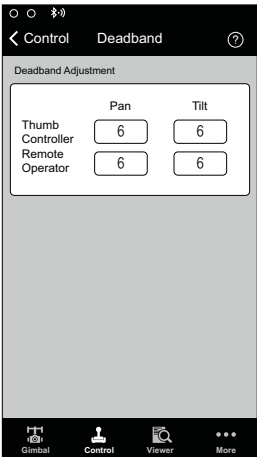
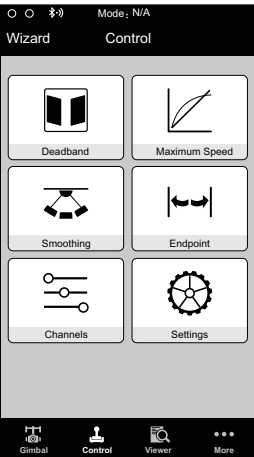
2. SmoothTrack Mode

Refer to the Basic Settings section for details relating to [SmoothTrack Mode](#).

Control Menu

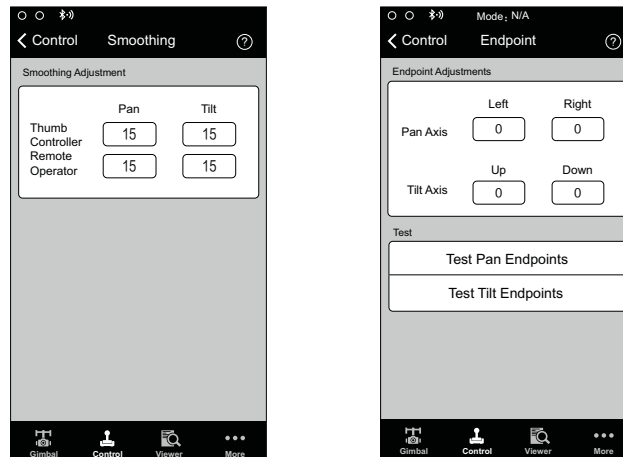
1. Deadband

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

Tilt axis endpoints can be adjusted independently for up and down 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.

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

If the ability to rotate 360° on the pan axis is needed, simply adjust the pan endpoints to 0. If endpoints are set to 0, 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

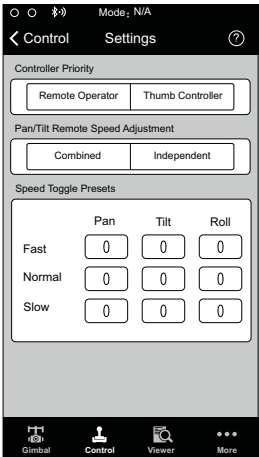
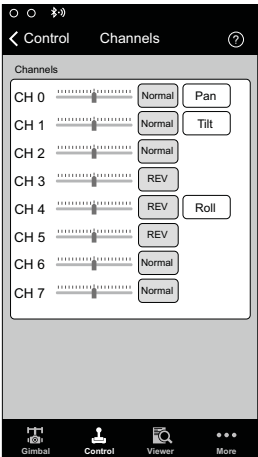
Controller Priority: If both input devices simultaneously send control signals to the gimbal, the input from the selected controller will take priority and will control the device at that given time.

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

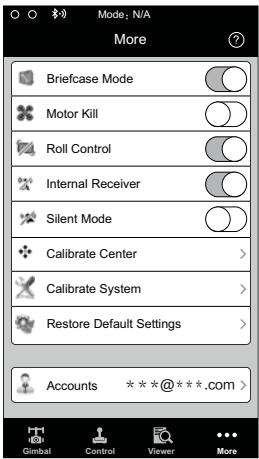
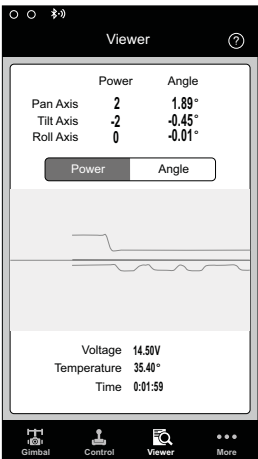
Speed Toggle Presets: These presets will allow you to change the SmoothTrack speed remotely. If the remote control is turned on, the Speed Toggle Presets for SmoothTrack will take precedence over the

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

Motor Kill

When the Motor Kill switch is activated, the Ronin-M 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 Remote Control is off, the roll axis movement cannot be controlled by a remote control or the thumb controller.

Silent Mode

Enable Silent Mode to reduce the level of noise that is created by the motors in environments such as a quiet room. By enabling silent mode, larger and sudden gimbal movements may not be as accurately stabilized during use in situations such as running when silent mode wouldn't really be needed. Use silent mode in quiet conditions where light motor noise may be an issue during audio recording. Otherwise, it is recommended to leave silent mode off.

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.

Calibrate Center

If the Ronin-M's pan axis is off-center, you can recalibrate the true center of the Ronin-M 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-M 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-M. Do not move the Ronin-M during calibration. Restart the Ronin-M after calibration is complete.

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-M, open the "Device List" and the app will search for Bluetooth devices it recognizes.

DJI PC / MAC Assistant Tuning

You can also configure the Ronin-M 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 PC/MAC.

Install DJI PC / MAC Assistant

Installing and Running on Windows

1. Download the DJI WIN DRIVER INSTALLER from the Ronin-M product page on DJI.com. Connect the Ronin-M to your PC via the provided USB cable and be sure the Ronin-M 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 Assistant.
5. Upgrade the firmware or configure parameters using the Assistant as needed.



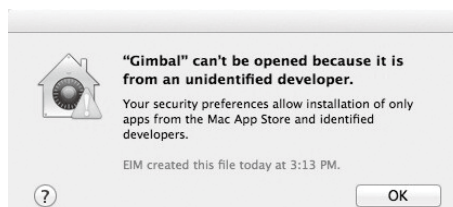
The Assistant installer supports Windows XP, Win7, and Win8 (32 or 64 bit).

Installing and Running on Mac OS X

1. Download the Assistant installer (.DMG) from the Ronin-M 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-M Assistant, Launchpad will block access because the 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-M 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-M: Auto Tune Stability, 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: 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-M) to accomplish an optimized setting. Each axis has its own stiffness and trim adjustment.

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

Briefcase Mode: Select the checkbox to enable Briefcase Mode.

Enable Silent Mode: Select the checkbox to reduce motor noise.

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.

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.

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

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-M's pan axis is off center, you can recalibrate the true center of the Ronin-M 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.

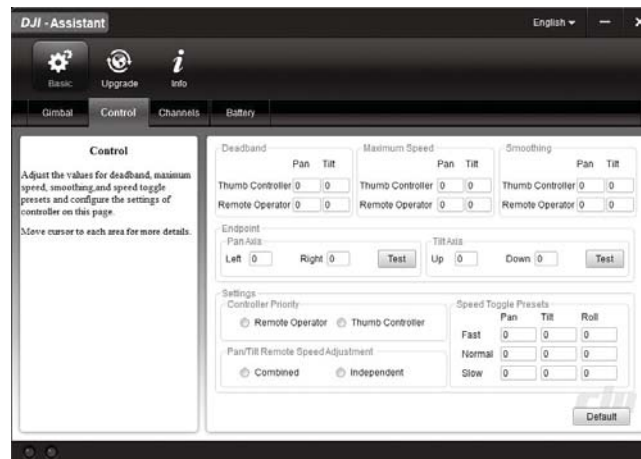
Viewer Menu: The Viewer Menu provides essential live data for monitoring the Ronin-M's electronics and feedback from the motors. Power is indicated for each axis. The current angle of each axis is also indicated.

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-M 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-M. Do not move the Ronin-M during calibration. Restart the Ronin-M 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-M) to accomplish an optimized setting.

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

2. Control



DJI PC / MAC Assistant Tuning

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.

If the ability to rotate 360° on the pan axis is needed, simply adjust the endpoints for pan to 0. If endpoints are set to 0 for 360° pan ability, then the "Test Pan Endpoint" function will not change the pan axis.

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

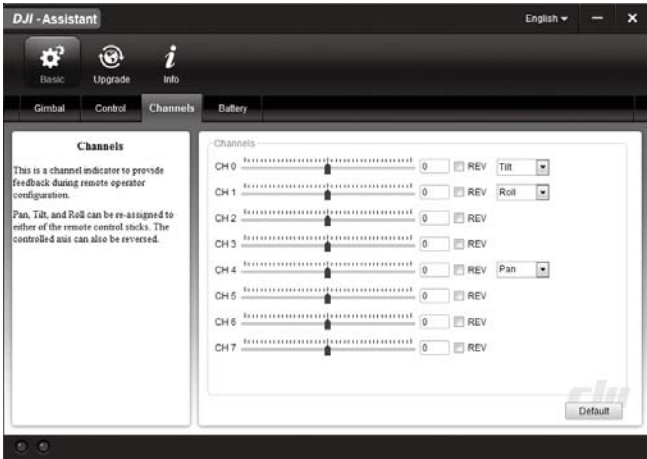
Controller Priority: If both input devices simultaneously send control signals to the gimbal, the input from the selected controller will take priority and will control the device at that given time.

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

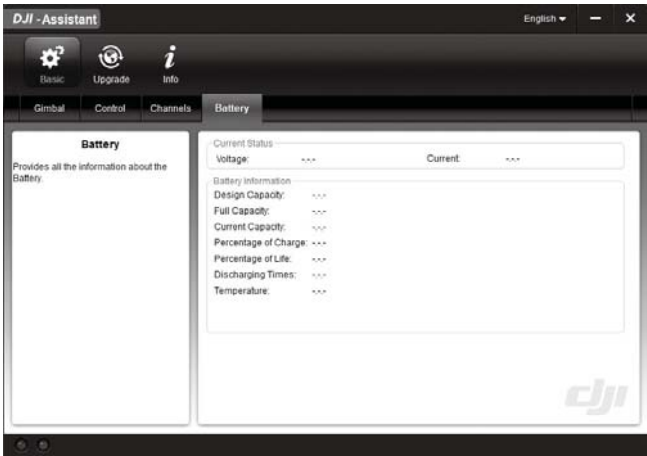
over the Assistant settings. Once the remote control is turned off, the SmoothTrack settings in the Assistant will take over.

3. Channels



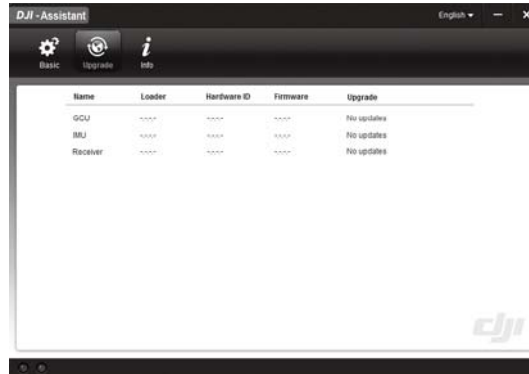
This is a channel indicator to provide feedback during remote operator configuration. Pan, tilt, and roll can be re-assigned to either of the remote control sticks. The controlled axis can also be reversed.

4. Battery



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

Upgrade



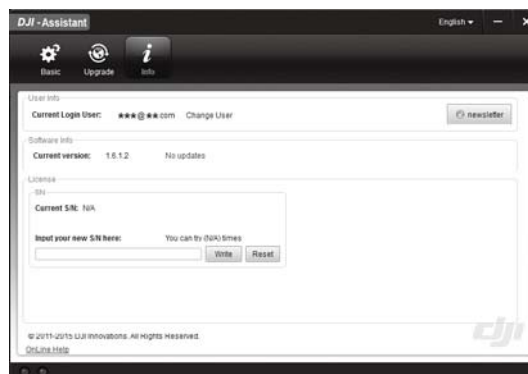
You can view the latest firmware version information on this page. Upgrade the firmware by following the steps below:

1. Connect the Ronin-M to your computer via the Micro-USB cable and wait until the indicator LED in the PC 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-M off and then on after the upgrade is complete.



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

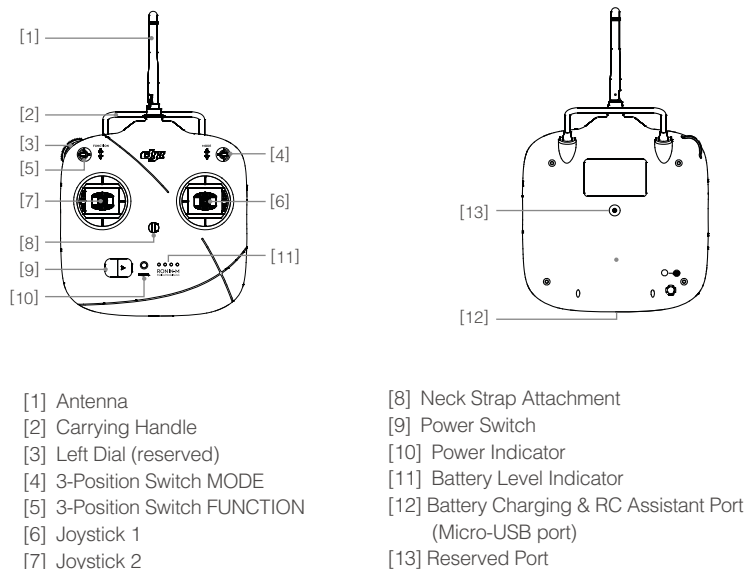
Info



You can check which version of the DJI Assistant App 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-M will be locked and you will need to contact customer support.

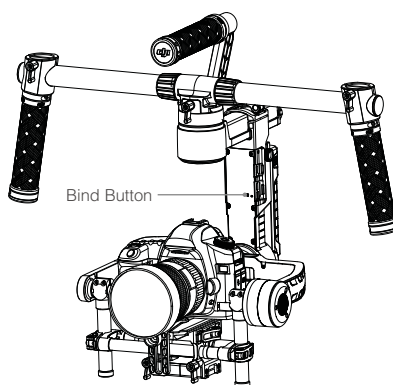
Remote Control



Connecting the Remote Control to the Ronin-M

1. Turn on the Ronin-M.
2. Press the Bind Button (shown below) of the Ronin-M once. The Ronin-M'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-M have been successfully bound.

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





- Please make sure that the remote control is sufficiently charged before use. If the low-battery alert sounds, (refer to Remote Control Power LED Indicator Status below), 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 20cm away from any person.

Remote Control Power LED Indicator Status

Power LED Indicator	Sound	Remote Control Status
 — Solid Green	None	Functioning normally
 — Solid Red	None	Charging (remote control is powered off)
 — Solid Yellow	None	Remote control joystick calibration error, re-calibrate
 — Solid Red	BB---BB---BB	Low voltage (from 3.5 V-3.53 V). Recharge the remote control
 Quick Red flashing	B-B-B.....	Critical low voltage (from 3.45V-3.5V); recharge the remote control immediately
 Slow Green flashing	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.

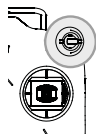
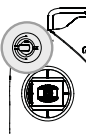
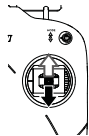
Remote Control Battery Level Indicator Status

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. 1. 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. 2. 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. 3. 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. Position 1  -Free, SmoothTrack Off Position 2  -Free, SmoothTrack On Position 3  -Reset to Center, SmoothTrack On		
	FUNCTION: 1. 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.		Right Stick (Default settings): 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.

Adding a Third-Party Transmitter/Receiver

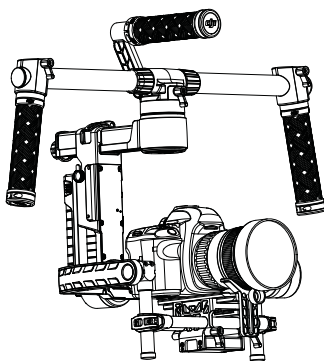
The Ronin-M supports 3rd party transmitters/receivers, such as D-Bus. Connect the transmitter through the integrated port (refer to the Ronin-M Diagram for the location of the D-Bus port).

Operation Modes

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

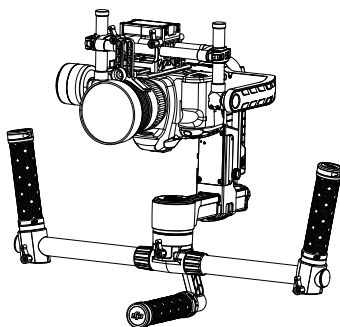
Underslung Mode

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



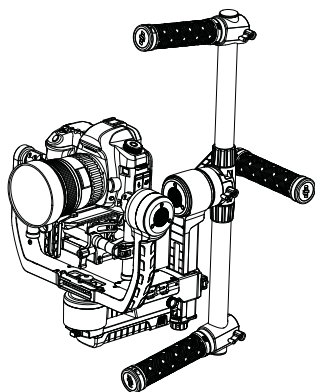
Upright Mode

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-M 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-M will never automatically transform into Briefcase Mode. In Briefcase Mode, the remote control cannot pan, tilt, or roll the gimbal.

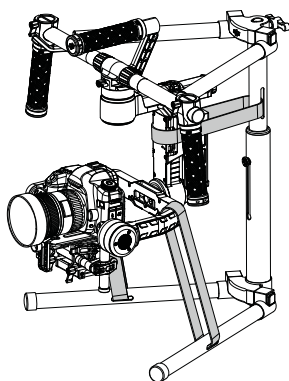


Maintenance

Maintenance

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

The Ronin-M 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-M down with a soft dry cloth. Never spray any cleaning liquids onto the Ronin-M.



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 press 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	(1) Check to make sure all knobs are tight, including the pan motor knob. (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. (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.
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-M seems to be drifting	Place the Ronin-M 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-M.
5 SmoothTrack does not work	(1) Turn on the remote control and be sure that the MODE switch is not in Position 1 (the uppermost position). (2) Check whether SmoothTrack is turned off in the DJI Assistant App or the DJI PC/MAC Assistant software. (3) Check whether the SmoothTrack deadband is turned up too high. If it is, reduce the deadband value in the SmoothTrack Menu.
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-M 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-M will deactivate the motors and will not reactivate them until the unit has been restarted.
8 Forgot the Bluetooth password	Connect the Ronin-M 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		
Built-In Functions	• Three Operation Modes - Underslung Mode - Upright Mode - Briefcase Mode • Built-in, independent IMU module • DJI Specialized Gimbal Drive Motors with Encoders	• Bluetooth Module • USB Connection • 2.4 GHz Receiver • Temperature Sensor • DJI Advanced 32-Bit DSP Processor • D-Bus Receiver Supported
Peripheral		
Camera Tray Dimensions	Maximum depth from the center of gravity on camera base plate: 120mm Maximum height measured from top of the camera base plate: 195mm Maximum width: 160 mm	
Accessory Power Connections	12V Regulated P-Tap x 2; USB 500mW x 1; DJI Lightbridge x 1	
GCU Input Power	4 S Ronin-M Battery	
Connections	2.4GHz Remote Control; Bluetooth 4.0; USB 2.0	
PC/MAC Assistant Software Requirements	Windows XP SP3; Windows 7; Windows 8 (32 or 64 bit); Mac OS X 10.9 or above	
Mobile Assistant Software Requirements	Mobile Device: iOS 7.0 or above, Android 4.3 or above	
Mechanical & Electrical Characteristics		
Working Current	• Static current: 300 mA (@16 V) • Dynamic current: 600 mA (@16 V) • Locked motor current: Max 10 A (@16 V)	
Operating Temperature	-15 °C ~ 50 °C (-5 °F ~ 120 °F)	
Weight	2.3 kg (5.07 lb) fully loaded with handlebar	
Gimbal Dimensions	500 mm (W) x 210 mm (D) x 420 mm (H)	
Working Performance		
Load Weight Capacity (Reference Value)	3.6 kg (8 lb)	
Angular Vibration Range	± 0.02°	
Maximum Control Rotation Speed	Pan axis: 90°/sec; Tilt axis: 100°/sec; Roll axis: 30°/sec	
Mechanical Endpoint Range	Pan axis: 360° Tilt axis: 105° Up, 190° Down Roll axis: ± 110°	
Controlled Rotation Range	Pan axis control: 360° Tilt axis control: Up 105° to Down 190° Roll axis control: ± 25°	

The content is subject to change.

Download the latest version from
<http://www.dji.com/product/ronin-m>



If you have any questions about this document, please contact DJI
by sending a message to DocSupport@dji.com.

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