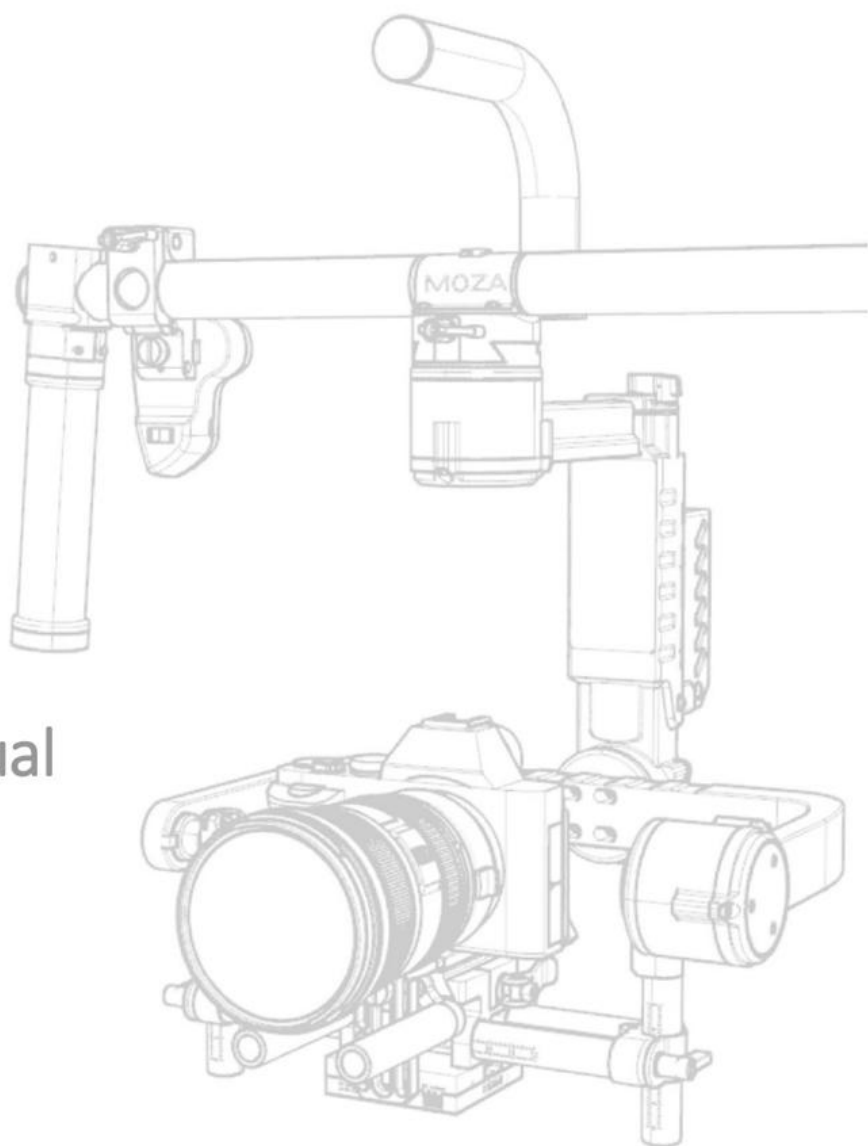


MOZA Lite 2

# User Manual



V1.0

**GUBSEN**

## Disclaimers and Warnings

Thank you for buying the MOZA Lite 2. By using this product, you hereby agree to this disclaimer and signify that you have read it fully . You acknowledge that you are responsible for your own conduct and any content created while using this product , and for any consequences thereof . You agree to use this product only for its proper purpose and in accordance with local regulations, terms, and any applicable policies and guidelines.

Do not modify or adjust the MOZA Lite 2.

The MOZA Lite 2 was calibrated before it left the factory. No adjustment or amending of the MOZA Lite 2 is permitted. Make sure to use the original battery, or performance may be hindered, internal malfunctions may be caused, and damage to the gimbal may occur. Please download the corresponding assistance software.

As Gudsen has no control over use , setup, final assembly , modification or mis-use, no liability shall be assumed or accepted for any resulting damage or injury. By assembling and/or using, this product, the user accepts all resulting liability. Gudsen assumes no liability for damage or injuries incurred directly or indirectly from the use of this product.

Gudsen and MOZA Lite 2 are registered trademarks of Gudsen . All product names, brands, etc., appearing in this manual are trademarks or registered trademarks and/of their respective owner companies. This product and manual are copyrighted by Gudsen, with all rights reserved . No part of this product or manual shall be reproduced in any form without the prior written consent and authorization of Gudsen . No patent liability is assumed with respect to the use of this product or information contained herein.

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## User note

Congratulations on your purchase of the MOZA series 3 axis camera gimbal! These instructions will help you to successfully install and correctly use this product and its accessories. Please carefully read these instructions before using this product.

### Announcement

1. We have done our best to create accurate and complete instructions, but minor errors and omissions may still exist. When in doubt, please refer to the actual product.
2. Gudsen is responsible for the warranty and maintenance of the product itself. However Gudsen assumes no liability for damage or injuries incurred directly or indirectly from misuse of the product.
3. By reading this disclaimer, you also acknowledge that:
  - (1). Any part of this disclaimer is subject to change without prior notice. Please refer to [www.gudsen.com](http://www.gudsen.com) for the latest version.
  - (2). Gudsen reserves the right of final interpretation of this disclaimer.



## In the Box

**Gimbal x1**

**Stand X \*1 (premium and above)**

**Handle Bar X\*1**

**Top Handle X\*1**

**Intelligent Battery X\*1**

**Thumb Controller (bracket assembled) X\*1 (premium and above)**

Thumb Controller x1

1/4 Screw x1

**Quick Install Assembly x 1**

Camera Mounting Plate x 1

1/4 Camera Screw x 1

3/8 Camera Screw x 1

**Charger x 1**

**Tool Bag x 1**

Follow Focus Assembly Tube x 2

1/4 Screw x 1

Lens Support x 1

L2/L2.5/L3 Allen Wrench x 3

Flannelette Bag x 1

**Wires x5**

EOS Cable x 1

SONY Cable x 1

GH\BMD Cable x 1

Micro USB Cable X 1

ANSI Cable x 1

**User Manual x 1**

**Wrapper x 1**

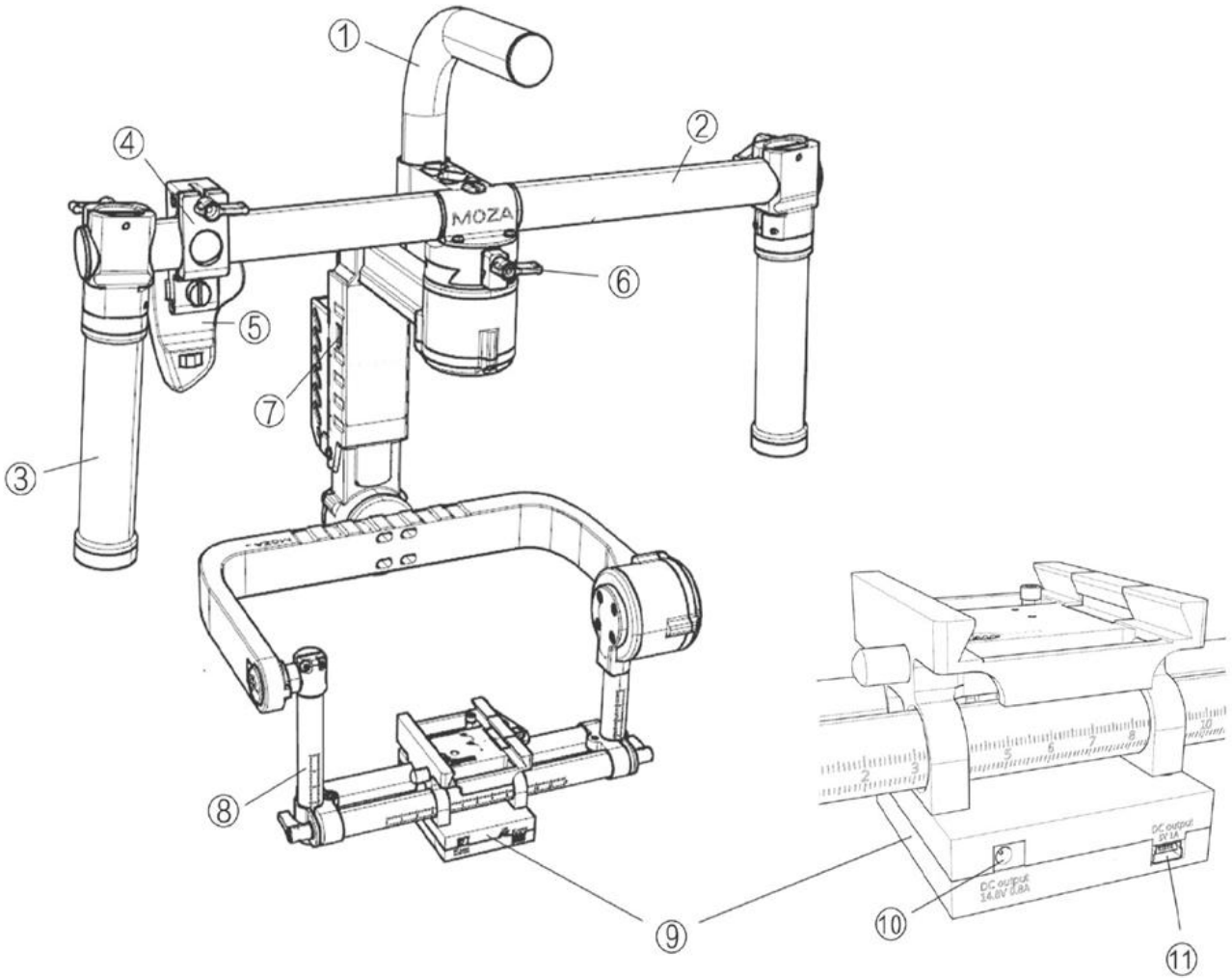
Professional: Flight Case x 1, First Layer EVA Cotton x 1, Second Layer EVA Cotton x 1, Egg Cotton Interlayer x 1.

Others: Paper Box x 1, First Layer Pearl Wool x 1, Second Layer Pearl Wool x 1, Pearl Wool Interlayer x 1.

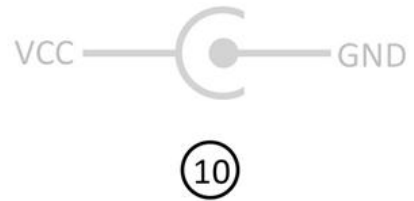
## Safety Instructions

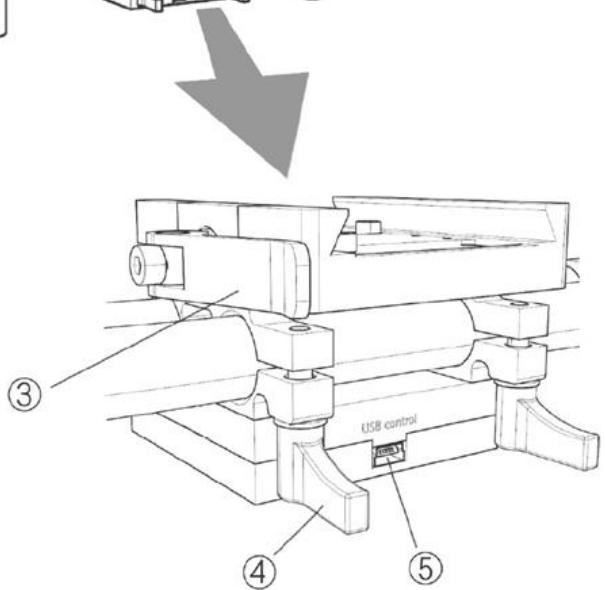
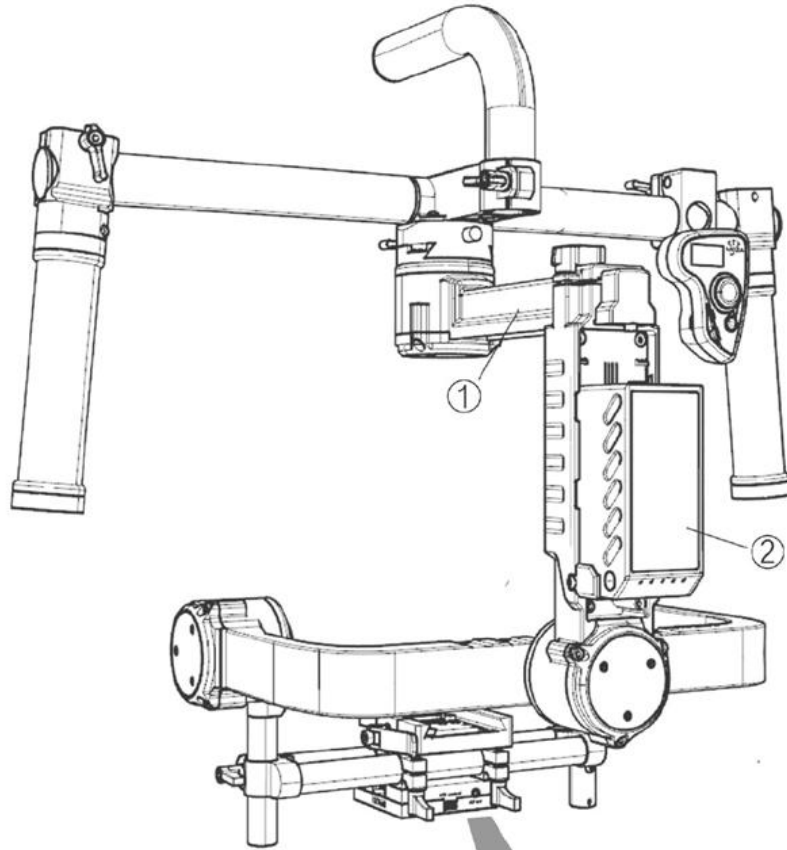
- 1.The MOZA Lite 2 is a precision machine, but it is not waterproof. Keep it away from rain and damp conditions. Do not place it on items containing liquid or store any liquid-containing items on it.
- 2.Do not use this product at a gas station, filling station or any other location that bans the use of electronic devices.
- 3.Do not use the MOZA Lite 2 in hospital, on an airplane, etc. It contains wireless equipment
- 4.Keep this product away from children to avoid a choking hazard. The MOZA Lite 2 is equipped with small parts and accessories.
- 5.The MOZA Lite2 and thumb controller is powered by large-capacity lithium battery. If misused, the battery could explode, resulting in fire and possible chemical burns. Please observe the following precautions:
  - (1). Do not dismantle the batteries;
  - (2). Do not crush, beat, throw, stomp on, or shake the batteries.
  - (3). Do not short circuit the batteries. Keep the MOZA Lite 2 away from metal and other conductors.
  - (4). Store the batteries in an environment in which the temperature is lower 65°C, and keep them out of direct sunlight.
  - (5). Keep the batteries away from fire.
  - (6). Do not use damaged or leaking batteries.
  - (7). Use the original batteries and charger supplied here. Do not use other batteries or chargers, or use these batteries and charger with other machines. Gudsen has no liability in any of above situations.

Diagram



- 1 Top Handle
- 2 Handle Bar
- 3 Side Handle
- 4 Bracket
- 5 Thumb Controller
- 6 Pan Axis Quick Release Mount
- 7 USB/SBUS Port
- 8 Vertical Tilt Adjustment
- 9 Distribution Unit
- 10 DC Output 14.8V
- 11 DC Output 5V





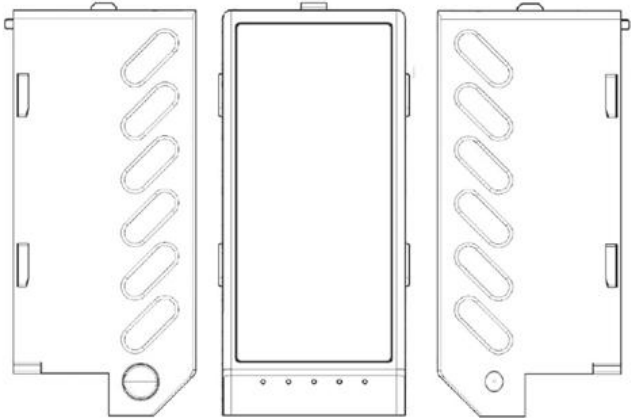
- 1 Pan Axis Adjustment
- 2 MOZA Intelligent Battery
- 3 Tilt Axis Adjustment
- 4 Roll Axis Adjustment
- 5 USB Control Port

## Installation

### 1.Preparations before installation:

Before you begin using your MOZA Lite 2, you must charge the battery. Check the battery level before use.

To check the current battery level press the button on the left side. Small blue lights will go on. Each small blue light represents 20% of the power. The first small light blinks when the battery level is low, indicating that the battery needs to be charged. The charge port is on the right.



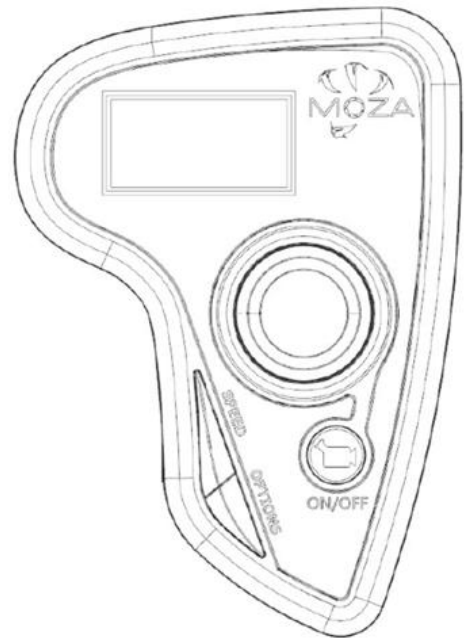
The intelligent battery functions only when installed on the MOZA Lite2. It will shutdown automatically when the battery is installed on any other device.

Make sure that the thumb controller is sufficiently charged before attempting to use it. Always check the battery level before use.

Press the ON/OFF button on the thumb controller and hold it for 3 seconds to turn the device on. The screen will turn on, and the top right will display the current battery level. When the battery runs low, recharge the thumb controller with the micro USB cable included in this package.

The thumb controller can be charged with any standard 5 volt power source with a USB port. Therefore, no extra charger is included here.

If you're charging the controller while it is in shutdown, no indications will appear. The device cannot turn on while charging. After charging, you will be able to turn the device on.



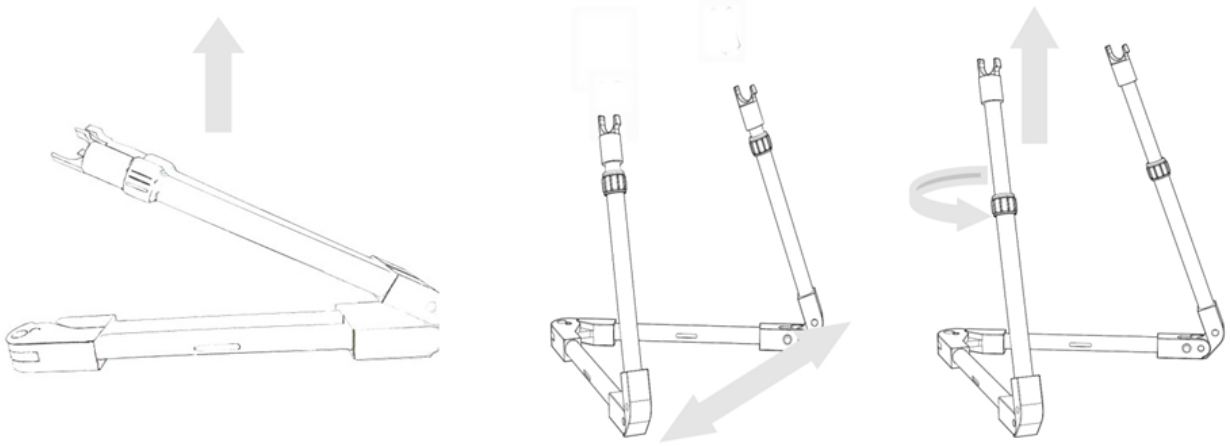
## 2. Unfolding the Stand

The stand holds the MOZA Lite 2 during setup and storage.

To unfold the stand, hold it in a horizontal position. Remove the upper legs so that they open in a vertical direction and the lock-button bounced release, thus indicating that the upper legs are locked.

Remove the lower legs on both sides.

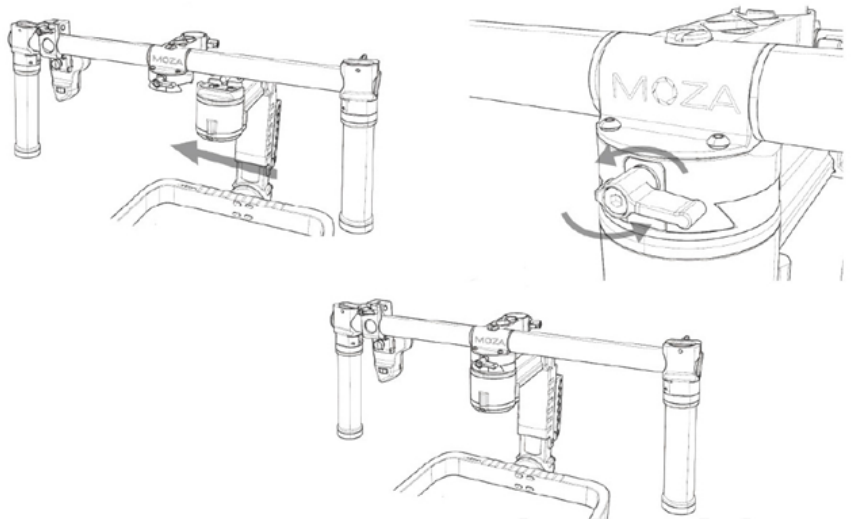
Next, loosen the locking rings on the upper legs in a counterclockwise direction to stretch the stand, then tighten the locking rings in a clockwise fashion.



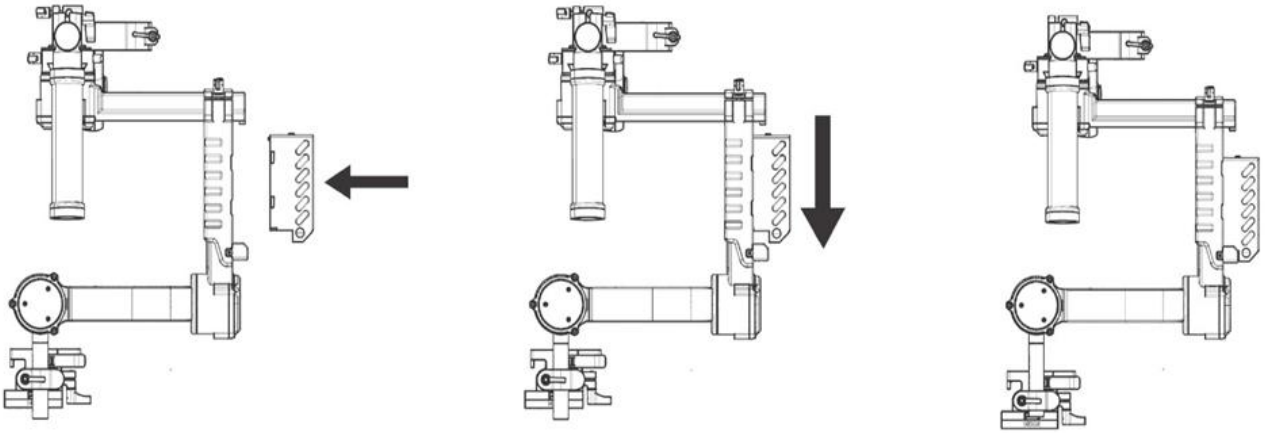
## 3. Assembling the Handle Bar

Place the handle bar in position. Attach the side handle to the handle bar and lock it in your preferred position. Then, slide it horizontally into the gimbal and tighten the lock-knob. Holding the gimbal by the side handle, make sure the gimbal is not loose.

Place the thumb controller bracket on the right side of the handle bar.



#### 4. MOZA Lite 2 Intelligent Battery Installation

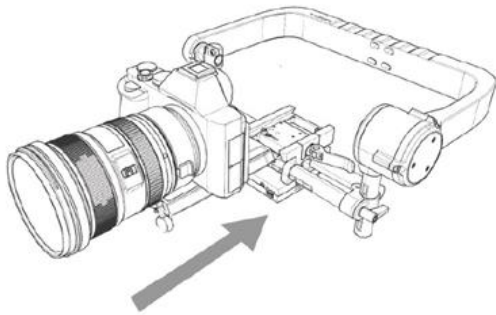


Slide the MOZA Lite 2 intelligent battery directly into the gimbal and slide it down. Be sure the battery's thumb screw fits into the locating slot.

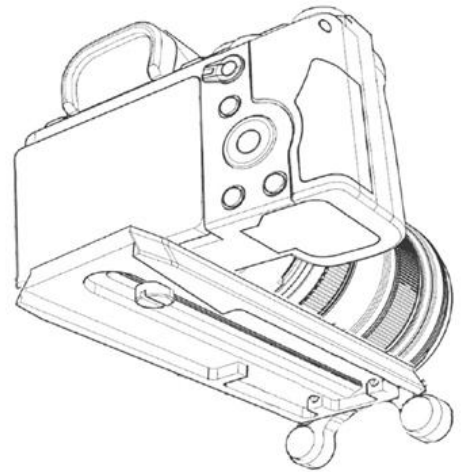
#### 5. Mounting Camera

To fit on more cameras, 1/4 and 3/8 screws have been adapted, Choose the correct screw holes, according to your camera's configuration.

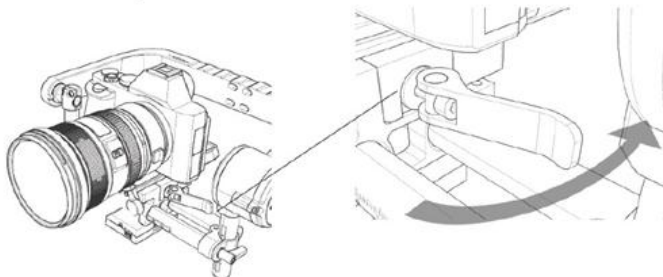
Change the horizontal position of the camera on the



mounting plate to make sure it is centered.



Slide the mounting plate onto the gimbal. Then balance the camera on the gimbal, and lock the fix handle. If the fix handle does not work properly, use the M3 wrench to adjust the screw below the handle





## Balancing

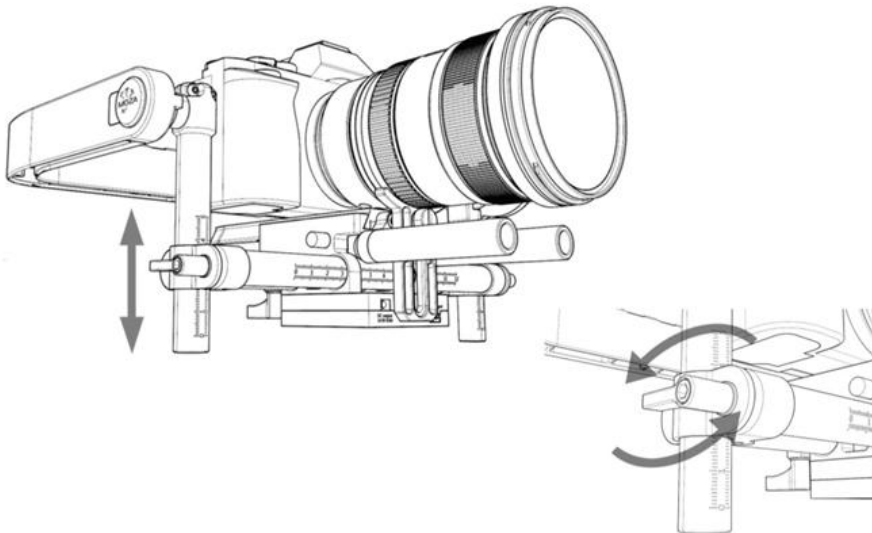
### 1. Balancing the Tilt Axis

Loosen the side clamp to slide the camera forwards or backwards until the tilt axis is level. Then tighten the side clamp.



### 2. Balancing the Vertical Tilt

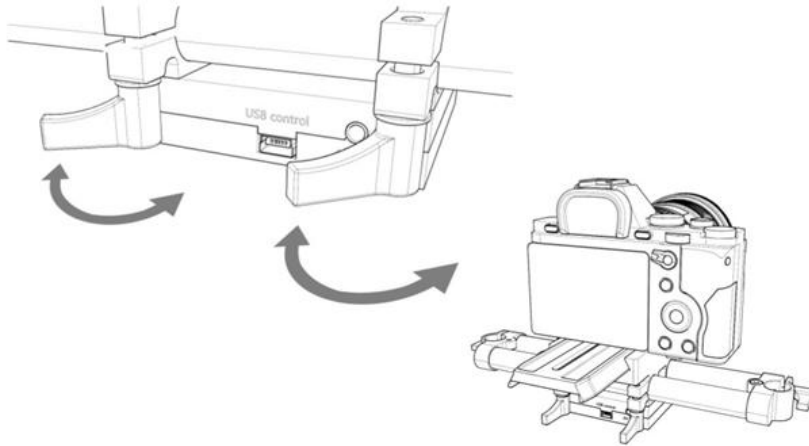
Loosen the two lock-knobs to slide the camera upwards or downwards until the camera stays still when released. Then tighten the two lock-knobs.





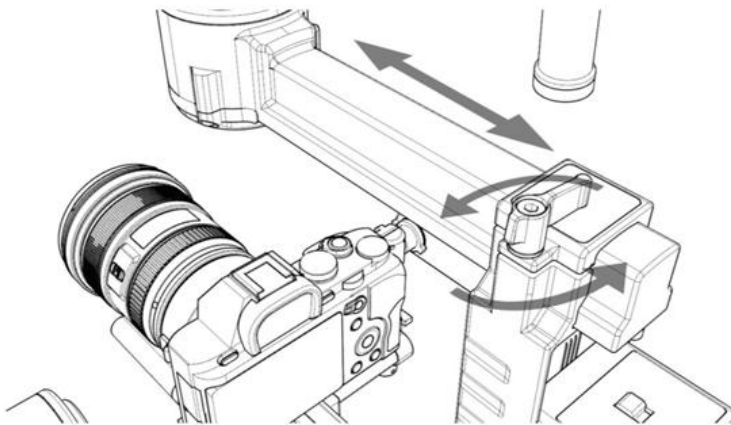
### 3. Balancing the Roll Axis

Loosen the two lock-knobs to slide the camera left or right until the roll axis becomes level. Then, tighten the two lock-knobs.



### 4. Balancing the Pan Axis

Loosen the lock-knob to slide the compartment forward or backwards until the pan axis stays still when released.



## Getting Started

### **Some things to remember before you get started.**

1. Heavy lenses may be necessary in certain cases, but heavy lenses change the camera's center of gravity, causing oscillation. Use the lens support in the situations. Remove the lens support from the tool bag and install it on the pan axis quick release mount to stabilize the lens.

2. Follow Focus may also be needed in certain occasions. For your convenience, two tubes for use in installing Follow Focus have been supplied. Remove them from the tool bag, and rotate the connecting base of the mount plate.

3. In some situations, you may need to use a very light camera or lens for shooting. Since the roll axis power motor is quite heavy, this may cause the horizontal gravity to be uneven. In such cases, advanced roll adjustment is necessary. Loosen the 4 screws on the U-shaped handle. Contact official skill support, if necessary.

4. Different cameras have different control interfaces. Thus, we have adapted 4 kinds of cables for connecting cameras. Choose the correct one to connect your control interface and USB port.

5. After installation and balancing, turn on the battery to make MOZA work. The left button on the battery works as follows:

A quick press in the shutdown state: displays the battery level

A long press in the shutdown state: turns on the machine

A long press when displaying the Battery level: forces a reboot

A quick press in the power-on state causes: shutdown

**To Check MOZA's Function Before the First Use, Follow the Steps Below**

1. Long press the battery's 'ON/OFF' button to turn on MOZA. This will check if the machine is stable and noiseless.
2. Long press the thumb controller's 'ON-OFF' button to turn on the controller. Check its effectiveness. Move the joystick in all directions to check whether it can operate MOZA successfully and noiselessly.
3. Take the handle from the stand and move it in the roll, pan, and tilt axis directions. Check the camera's stability during this process.
4. Switch to different modes: underslung, upright, and briefcase. Repeat step three for each mode.
5. Put the handle back on the stand and turn on the camera. After it is on, quickly press the 'ON-OFF' button on the thumb controller to check if the camera will start to record. Roll the roller to observe if it changes the camera's focus. Press the 'ON-OFF' button on the thumb controller while the camera is recording to see if the camera turns off.
6. After completing the steps above, you should be able to begin shooting.

**Attention:**

To control the functions of the camera (such as recording and camera focus), you must choose the right type of camera. For more details, please refer to the thumb controller function instructions in this chapter. They will instruct you in choosing the right camera type.

## Function Instructions

### **Follow Mode**

Usually, by default a lens will keep level in all circumstances. When the Follow mode is on, the lens will follow the movement of the operation instead of locking in a level direction.

There are 3 types of Follow modes. Quickly press the 'Option' button to switch between modes. For more specific operations, refer to the thumb controller function instructions.

**Pan Mode:** The default mode. The tilt and roll axes will lock. The lens will keep level and forward, and follow the pan axis movement.

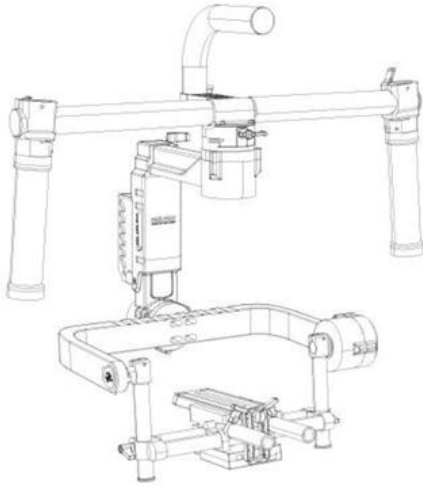
**Tilt Mode:** Only the roll axis will lock to keep the picture level. The tilt and pan axes will follow the movement.

**Pan & Tilt Mode:** Only the roll axis will lock to keep the picture level. The tilt and pan axes will follow the movement.

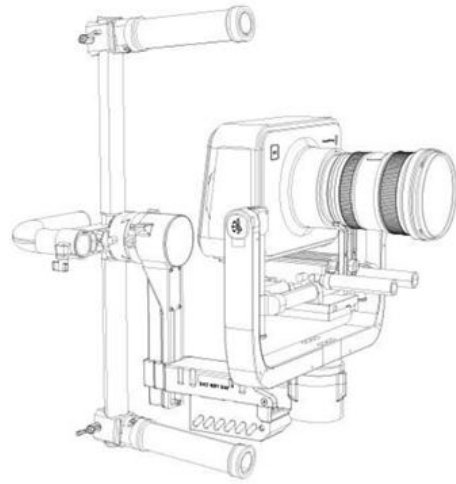
**All-Lock Mode:** All 3 axes will keep locked. The lens will always stay in a fixed direction.

## Operation Modes

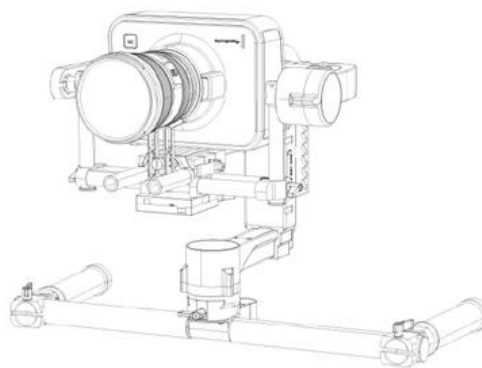
There are 3 operation modes for the MOZA Lite 2, it is very flexible and can change its shape to adapt to various situations. Users can choose the proper mode for the shooting circumstance, the specific steps for transformation are as follow:



Underslung Mode



Briefcase Mode



Upright Mode

## Gimbal Movement Control

The gimbal's movement can be controlled by the thumb or SBUS controller. The thumb controller works effectively within 30 meters of the gimbal. It can control the pan and tilt axis movements in all Follow and Operation modes. The gimbal will stop and hold the last position. The last position will then become the new stable position, and MOZA will balance according to it. The control effect won't be interrupted by your movement or a follow effect. You can control the gimbal's movement by the thumb controller or through your own movement.



## Camera

The MOZA Lite 2 has a 4kg load capacity. Any weight lower than a 4kg camera lens combination installed on the MOZA Lite 2 can be perfectly stabilized.

We have added a camera recording control function because single-person operation can be inconvenient. The types of cameras we support are as follows:

Types	Record	Focus	Others
Canon 5DII 5DIII	√	√	
Canon 6D	√	√	
Canon 7D	√	√	
SONY A7s A7r	√		
Panasonic GH3 GH4	√		
BMCC BMPC BMPCC	√		

All camera control operations can be performed with the thumb controller. Choose the corresponding type of camera on the thumb controller before using the control function. There are wires included with this product that are relevant to all of the cameras listed above. Insert the mini-USB wire into the distribution unit USB control port, and insert the other end into the camera control port.

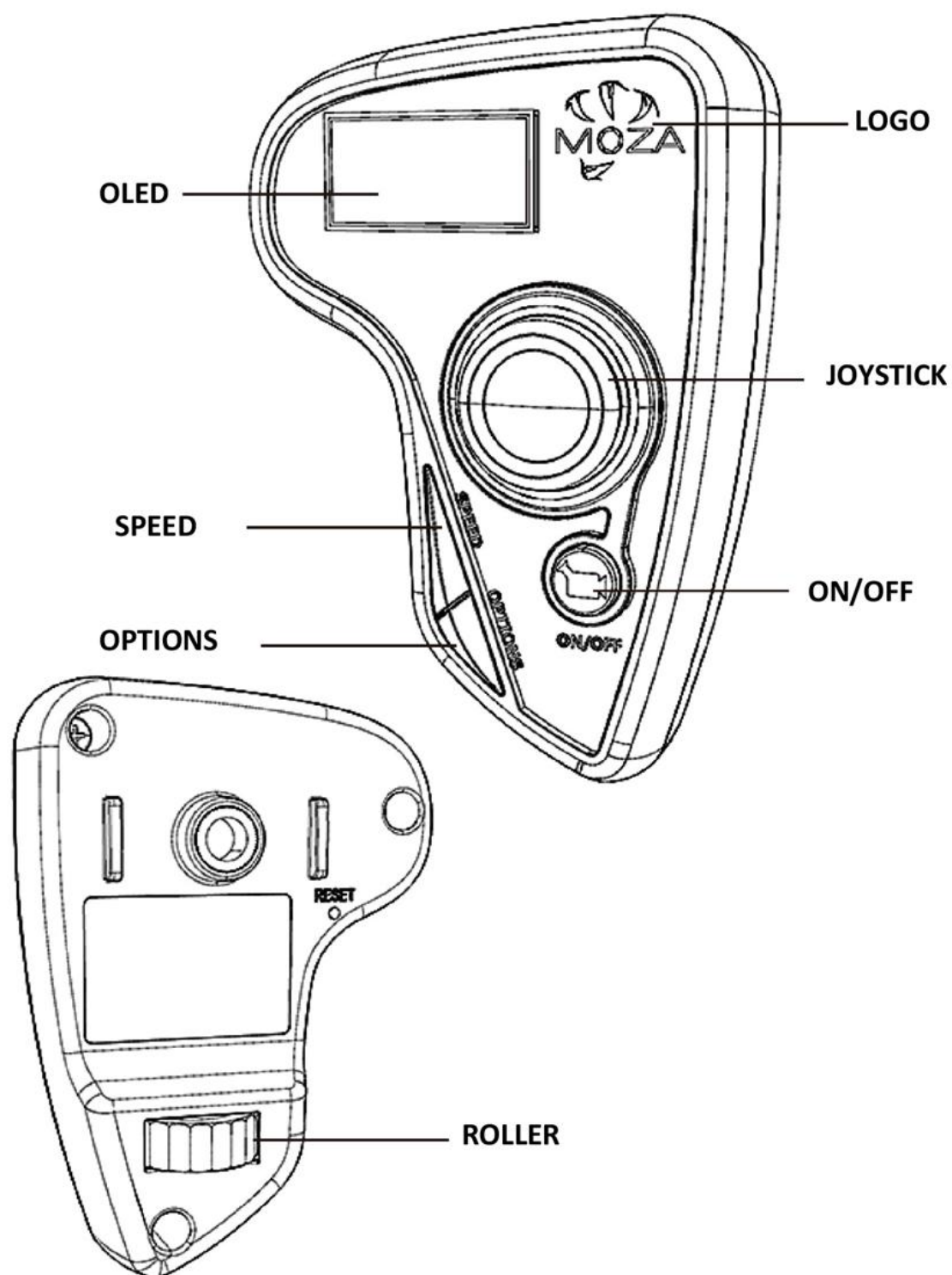
Some of the Cannon EOS series cameras (such as the 5D3) require users to press down the 'START/STOP' button to begin when inserting into the USB. Then, listen to the shutter sound and wait for several seconds. Next, press down the 'START/STOP' button. The thumb controller will operate the camera once the camera screen shows a picture.

The wires of the Panasonic GH series camera fit the port for the Blackmagic BMCC/ BMPC/BMPCC. They can share the control wires supplied with this product.



## Thumb Controller

### Interface Diagram





## Button Introduction

### Joystick

The main interface controls the up, down, and sideways movements.

On the menu interface, vertical movements will select projects. Moving leftwards will return you to the previous menu. Moving rightwards confirms your selection.

On the Data Input interface, vertical movements increase or decrease the number, and move you to the left exit. Moving to the right will preserve your MOZA selections and make them effective.

### SPEED button

A single press will change speeds between Low/Medium/High.

A long press will change the speed settings between the gimbal movement and focus control speeds.

After connecting with the USB, pressing the 'SPEED' button will cause the device to enter the firmware upgrade mode.

### OPTIONS button

A single press will switch the Follow modes between pan follow, tilt follow, and all locked.

A long press will bring you to the main menu.

After connecting with the USB, pressing the 'OPTIONS' button will cause the device to enter the factory mode.

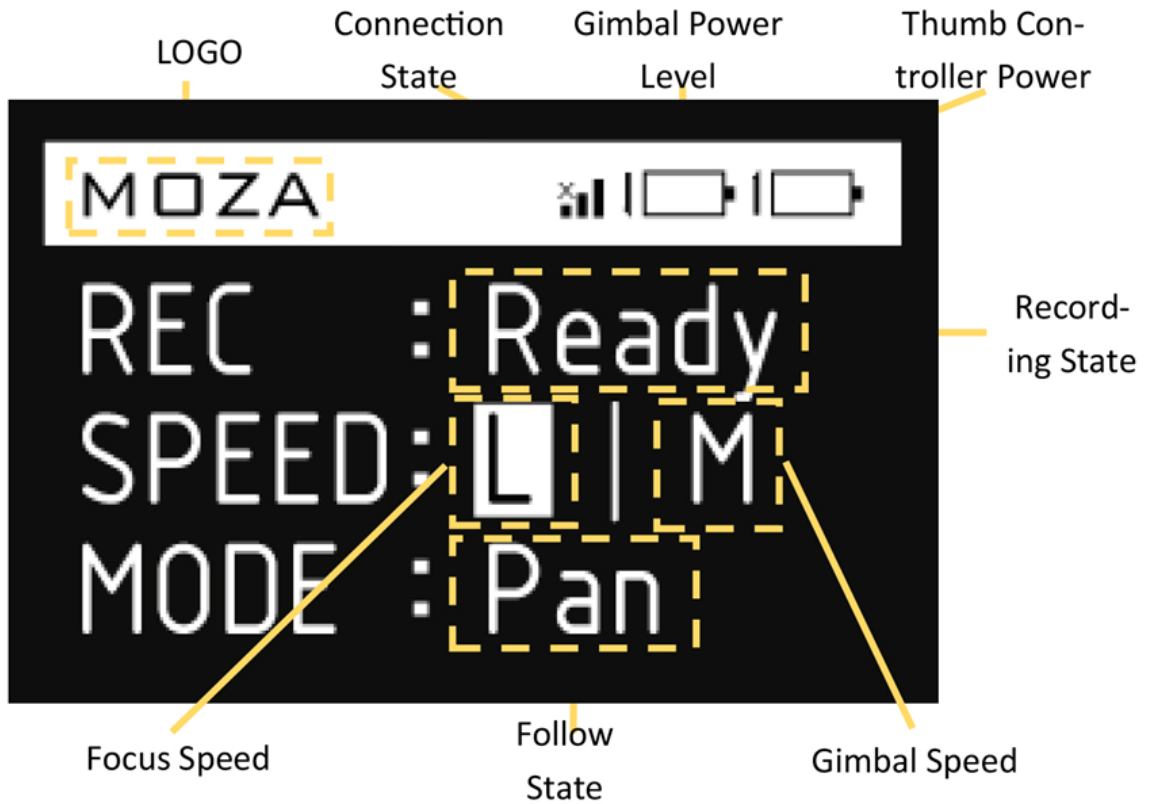
### ON-OFF button

A single press will start or stop a recording. A long press will turn the power on or off.

### ROLLER

Rolling horizontally controls the camera focus. Double click to return to the initial status.

## Using the Main Menu



REC  
 Read Ready to record  
 Recording Recording

SPEED  
 L Low  
 M Medium  
 H High

FOLLOW MODE  
 Pan Pan axis follows, tilt axis locked  
 Tilt Pan axis follows, tilt axis follows  
 Pan & Tilt Pan axis and tilt axis follow  
 All-Lock All-lock

## Settings

### 1. Adjusting the focusing speed

A single press of the 'Speed' button will switch you between the 3 levels of speed adjustment.



### 2. Adjusting the gimbal movement speed

A long press of the 'Speed' button will adjust the speed. Another long press will return you to the focus speed adjustment.



### 3.Choosing different levels

When adjusting the speed, a single press of the 'Speed' button will allow you to choose between the 3 different levels.



### 4.Starting or stopping the recording

A single press of the on-off



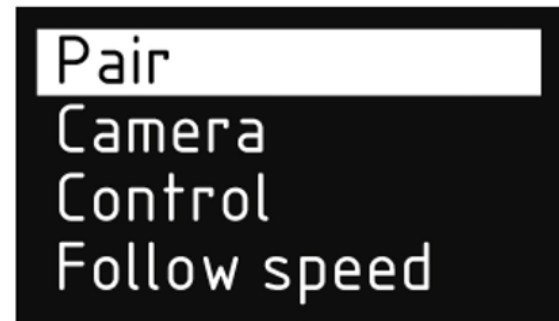
**5.Switching MOZA to Shoot Mode:** Single press the 'OPTIONS' button.



**6.Controlling Camera Focus:** Roll the roller.

**7.One-step Reset:** Double click the roller.

**8.Entering the Main Menu Interface:** Long press the 'OPTIONS' button.



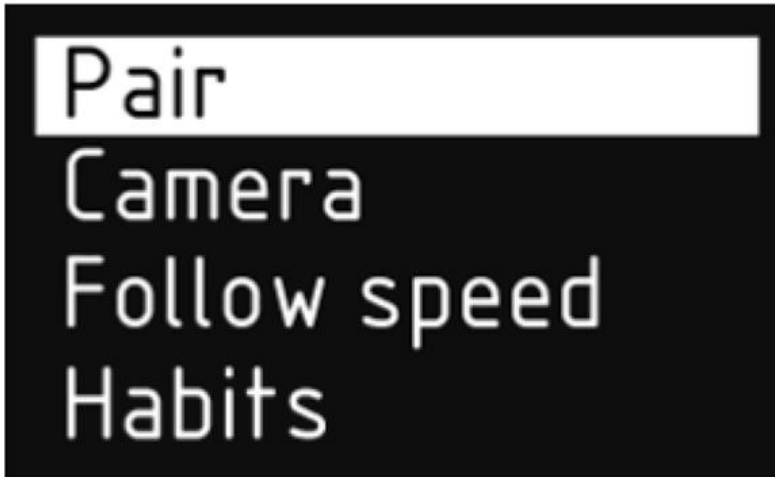
**9.Shutting Down the Thumb Controller:** Long press the on-off button.

## Thumb Controller Menu Content

Top menu	Secondary menu	Third menu	Fourth menu	
Pair	NO			
	YES			
Camera	EOS DSLR	Lens ultralight		
		Lens light		
		Lens heavy		
	EOS Cinema	Lens ultralight		
		Lens light		
		Lens heavy		
	Alpha	ditto		
	GH	ditto		
	BMCC	ditto		
	BMPC	ditto		
	BMPCC	ditto		
Habits	Joystick	Mode	4 Direction	
			8 Direction	
		Up Down	PIT	
			ROL	
			YAW	
		Left Right	PIT	
			ROL	
			YAW	
		Reverse	LEFT-RIGHT	
			UP-DOWN	
		Display	Custom	1 (min)
			Always On	

## Main Menu and Operation

There are 8 options on the first menu. You can choose any option by moving the joystick vertically.



Move upwards: the choice tap goes up

Move downwards: the choice tap goes down

Move leftwards: exit the present menu and return to the main menu

Move rightwards: enter the secondary menu of the option selected

Long press OPTIONS: Exit and enter the main menu

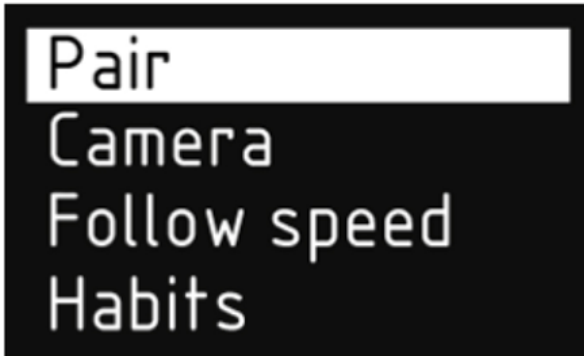
Long press ON/OFF: Turn-off the thumb controller

Other operations: same as the main menu

### Pairing

It is necessary to pair the MOZA with the thumb controller when you change the thumb controller or MOZA gimbal.

Long press 'OPTIONS' to enter the menu. Then choose 'Pair' and move the joystick rightwards to enter the secondary menu.



Move the joystick downwards to choose the 'YES' option, and move the joystick rightwards again to enter the Pairing mode. Wait for MOZA to turn on pairing. The interface will appear, as below:

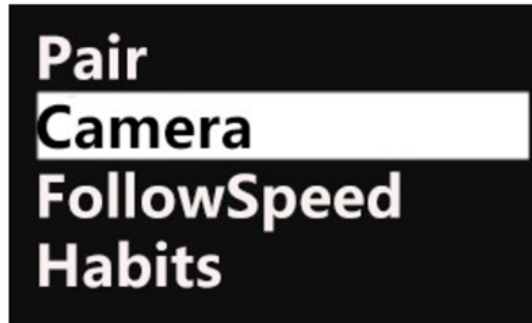


Install the intelligent battery in MOZA, and the pairing is complete. The screen will display 'OK' for 1 second if the pairing is successful. It will automatically return to the secondary menu, after which you can go back to the main menu. MOZA can be controlled via the controller. Otherwise, the screen will continue to show 'Pairing'.



## Choosing Camera Types

Because there are different weights and means of control, MOZA needs different parameters to balance itself. After choosing a type of camera, the corresponding parameters must be saved to MOZA. You must keep the power on while operating.



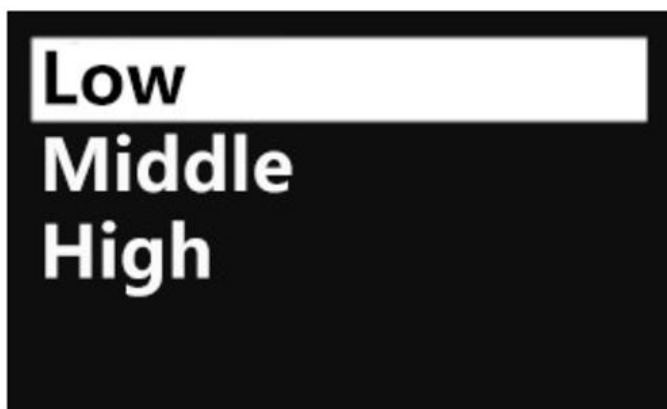
Long press the 'OPTIONS' button to enter the menu, and choose 'Camera'. Move the joystick rightwards to enter the secondary menu. In this menu, there are various types of cameras.



Move the joystick vertically to choose the camera type. Move rightwards to enter the third menu, where you can choose the weight of your lens. The weight of your lens is divided into 3 levels: ultralight, light, and heavy. Choose the option that corresponds to your lens weight, and move the joystick rightwards. The parameter will then be saved to MOZA. After setting, MOZA will reset itself automatically. The screen will display 'OK' for half a second. It will display 'CameraERR' if you choose the wrong type of camera. If this happens, please check the connections between MOZA and the thumb controller, and then choose again.

## Follow Speed

On the pan axis follow or tilt axis follow, MOZA will make the lens move with the photographer instead of locking in one fixed direction. During fast-moving scenes, following too slow will miss shots, and following too fast will result in unnatural transitions and an unsteady picture. You can modify the Follow speed when necessary.



Long press **'OPTIONS'** to enter the menu. Choose 'Follow speed' and move the joystick rightwards to enter the secondary menu. There are three speed levels you can choose: Low/Middle/High. After choosing the level you want, move the joystick rightwards to save them to MOZA and initiate them as effective. Otherwise, the operation will be invalid. If save successfully, the thumb controller will display "OK" for one second, otherwise the thumb controller will display "ERROR" for one second.

The specific figures of the different levels can be set though Windows/Mac software.

## Habit

Photographers have different shooting habits. Some get used to gimbal operation where the joystick moves in the same direction as the lens. Others get used to the opposite. For convenience, the thumb controller can be set to accommodate your particular habits. What's more, the lens movements can satisfy your various needs because they can be set to 4 (up, down, left, and right) or 8 directions (up, down, left, right, top left, top right, low left, and low right).



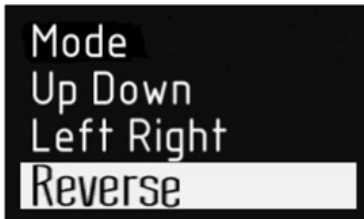
### Setting for 4 or 8 directions

The joystick for the thumb controller is a 4-d switch joystick, which can input single-phase signals or two adjacent phase signals. By default (4 directions), the joystick will only control one-way movements (up, down, left, and right) of the gimbal. When you choose 8 directions, the joystick will control the movements of two adjacent directions (top left, top right, low left, and low right), plus the other 4 directions, with 8 directions being controlled in total.

The control axis is not fixed. You can remap it. Remapping will not influence the Directions setting.

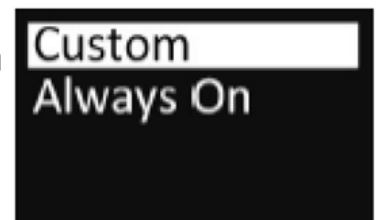


Up Down and Left Right are used to remap the joystick controlling the gimbal axis movement. You are able to choose the directions that need to be remapped. Move the joystick rightwards to choose the gimbal axis (roll, tilt, and pan). After completing the remapping, move the joystick and the corresponding power motor will follow



'Reverse' will make the power motor move the opposite way of the joystick's movement. You can adjust according to your own needs. Operation direction has no relationship to the joystick map or the 4/8 Direction mode.

'Display' will set the OLED background light. To choose 'Backlight', move the joystick rightwards and enter the fourth menu. There are 2 options: 'Custom' and 'Always on'. When you want to choose 'Custom', move the joystick rightwards to set the brightness time. The default time is 1 minute.



You can also choose the 'Always on' mode when you need to check the screen regularly.

The joystick and roller will continue to work when the OLED screen light is off. In this situation, single press the 'OPTIONS', 'SPEED', and 'ON/OFF' buttons. The screen will be bright and it will not affect the function. All of the buttons functions will resume when the backlight is on.

## Software and APP

Adjust Parameter software is supplied for Windows, Mac, Android and IOS systems.

Names	Operating System	Requirements
MOZA ASSISTANT	WINDOWS	WINDOWS XP and above
MOZA ASSISTANT	MAC	MAC OS X 10.0 and above
MOZA ASSISTANT	IOS	IOS 7 and above
MOZA ASSISTANT	ANDROID	ANDROID 4.0 and above



## Open the Software and Connect to MOZA LITE 2

Double click the software icon to open the software. The top left green light will blink while the system is waiting to connect to MOZA. Two modes are included that allow for adjustments: Parameter mode and Upgrade mode. In the Adjust Parameter mode, software enters the Adjust Parameter interface automatically. You can check and adjust each parameter. In the Upgrade mode, software enters the firmware upgrade interface. Users can check all software and firmware versions and upgrade firmware.



To Enter the Adjust Parameter mode, follow the steps listed below.

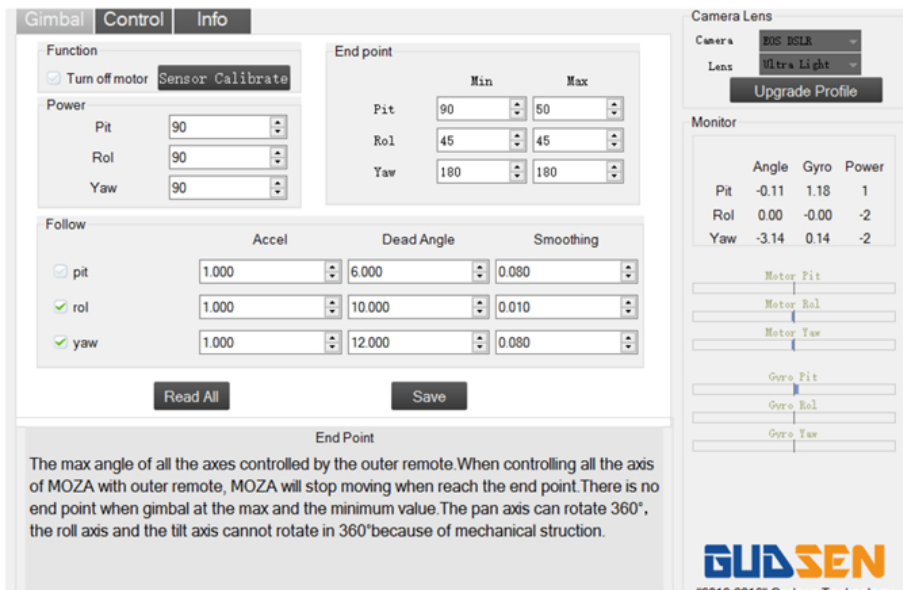
1. Open the software and wait for connection.
2. Install the intelligent battery in MOZA, and turn it on.
3. Insert the micro-USB cable into the computer and MOZA USB interfaces.
4. The software will recognize MOZA. Enter the Adjust Parameter interface.

Once in the Adjust Parameter interface, enter the Upgrade mode and follow the steps below.

1. Open the software and wait for connection.
2. Insert the micro-USB cable into the computer and MOZA USB interfaces.
3. Install the intelligent battery into MOZA, and turn it on.
4. The software will recognize MOZA. Enter the firmware Upgrade interface.

## App Interface

Connect directly to MOZA. You will see the parameter interface below:



The adjustment parameter interface has Gimbal, Control, and Info tabs. The Gimbal tab lists every parameter of the gimbal's algorithm, including:

**Power:** The output value of each power motor. The adjustment range is between 0 and 100. The higher the figure, the bigger the motor torque and stronger the load capacity.

**Turn off Motor:** Shuts down the power motor.

**Sensor Calibration:** Calibrates the initial state of the gimbal.

**Follow:** The setting for turning Follow on or off, and the Follow parameters. Every axis can be set separately.

**Accel:** Adjusts the accelerated speed from still to rotate.

**Speed:** The speed at which the Follow moves.

**Dead Corner:** Deviation angle allowed before a Follow movement.

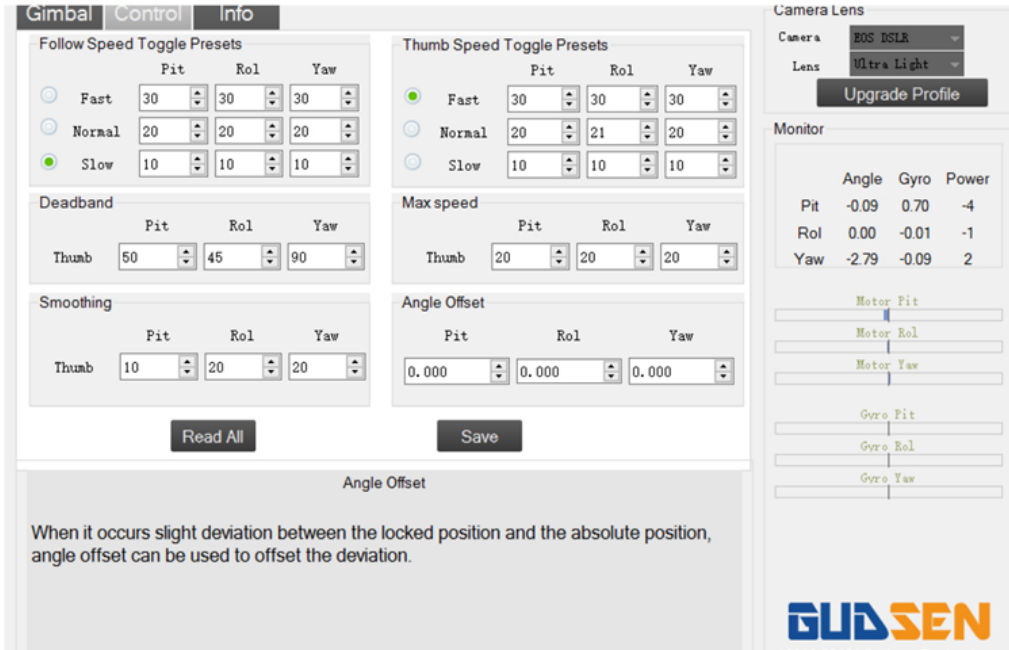
**Camera Lens:** Choose the proper type of camera and lens.

**Upgrade Profile:** Upgrade the MOZA Lite2 parameters to the official default data.

**Monitor:** Real-time detection data of gimbal.

**Guide:** It will show the current function when you move the mouse over certain functional area.

Control tab contains all of parameters of controlling gimbal.



**Follow Speed:** The specific values of different speed level of gimbal follow movement. There are three options of follow speed: Low\Middle\High

**Dead Band :** Ignores the 'No Response' signal range of the outer control

**Smoothing:** The smoothing of each axis when the outer remote operates the gimbal.

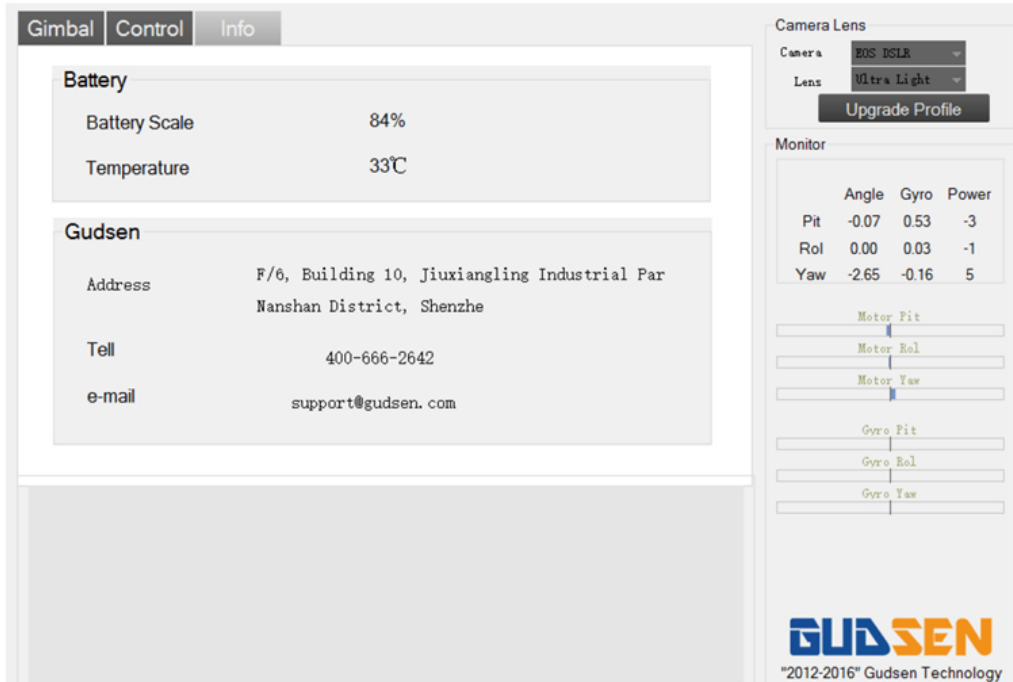
**Remote Speed:** The specific values of thumb controller operate the gimbal. There are three options of thumb controller: Low\Middle\High.

**Max Speed:** The max speed of the power motor when the outer remote operates the gimbal.

**Angle Offset:** When it occurs slight deviation between the locked position and the absolute position, angle offset can be used to offset the deviation.



The Info tab can be used to check the version of the firmware or software, and the battery use condition.



**Software:** Current software (PC software, not MOZA Lite 2 firmware) version number.

**Battery:** Remaining battery capacity and the current battery remaining.

**Temperature:** Temperature of the battery inside the environment.

**About:** Software information.

## Use Software to Adjust Parameter

**Control**

Function:  Turn off motor **Sensor Calibrate**

Power

Pit	90
Rol	90
Yaw	90

Follow

	Accel	Dead Angle	Smoothing
<input checked="" type="checkbox"/> pit	1.000	6.000	0.080
<input checked="" type="checkbox"/> rol	1.000	10.000	0.010
<input checked="" type="checkbox"/> yaw	1.000	12.000	0.080

**End Point**

	Min	Max
Pit	90	50
Rol	45	45
Yaw	180	180

**Monitor**

	Angle	Gyro	Power
Pit	-0.11	1.18	1
Rol	0.00	-0.00	-2
Yaw	-3.14	0.14	-2

**End Point**

The max angle of all the axes controlled by the outer remote. When controlling all the axis of MOZA with outer remote, MOZA will stop moving when reach the end point. There is no end point when gimbal at the max and the minimum value. The pan axis can rotate 360°, the roll axis and the tilt axis cannot rotate in 360° because of mechanical struction.

**Camera Lens**

Camera: EOS DSLR  
Lens: Ultra Light  
**Upgrade Profile**

**GUDSEN**  
"2012-2016" Gudsen Technology

Once MOZA has connected with your computer in Adjust Parameter mode, enter the Adjust Parameters interface and click the 'Read All' button. The MOZA parameters will be shown on your computer.

You can then adjust the parameters to meet your particular requirements.

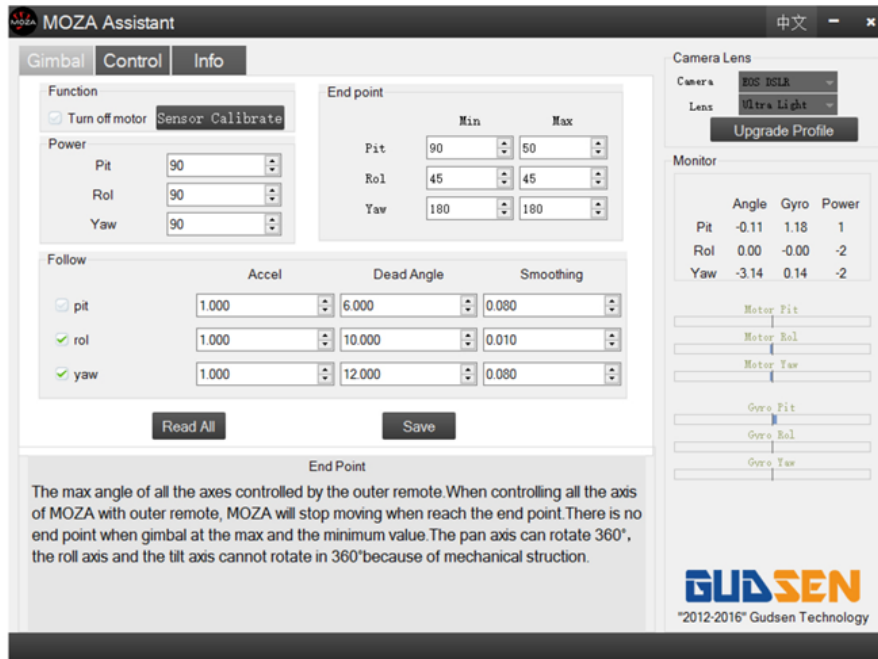
You can input values or press the 'Increase/Decrease' button to modify the parameters.

Clicking the 'Choice' box will start or stop the corresponding function. Use only a single press to start the function.

After modifying the parameters or using the 'Choice' box, click the 'SAVE' button. This will save the new parameters to MOZA and begin their effect.

You can load the preset parameters through the "Upgrade Profile" option to write the newest proper parameters to make sure MOZA is back to its normal working state.

## Calibrate Sensor through Software



Two important factors of calibrate sensor:

1. Static environment, no vibration
2. Ambient temperature below 25 °C .

If the environment does not meet the criteria, sensor cannot be calibrated, unpredictable problems may occur.

Sensor Calibrate Steps:

1. Once MOZA has connected with your computer in Adjust Parameter mode, turn on the MOZA assistant.
2. Check the “turn off motor” option to shut down the power motor and all of the follow enable switches.
3. Put the MOZA Lite 2 on a static table, the gimbal is perfectly still.
4. Click the “Sensor Calibrate”, wait for at least 3 minutes and look at the gyroscope data change. The calibrate will be completed when all of the axes gyroscope data fluctuated within  $0 \pm 0.03$
5. Reset the follow enable switches to their original state, uncheck the “turn off motor” option to make the motor start to work.
6. Click the “Save” button and write the data to MOZA Lite2, calibration complete.

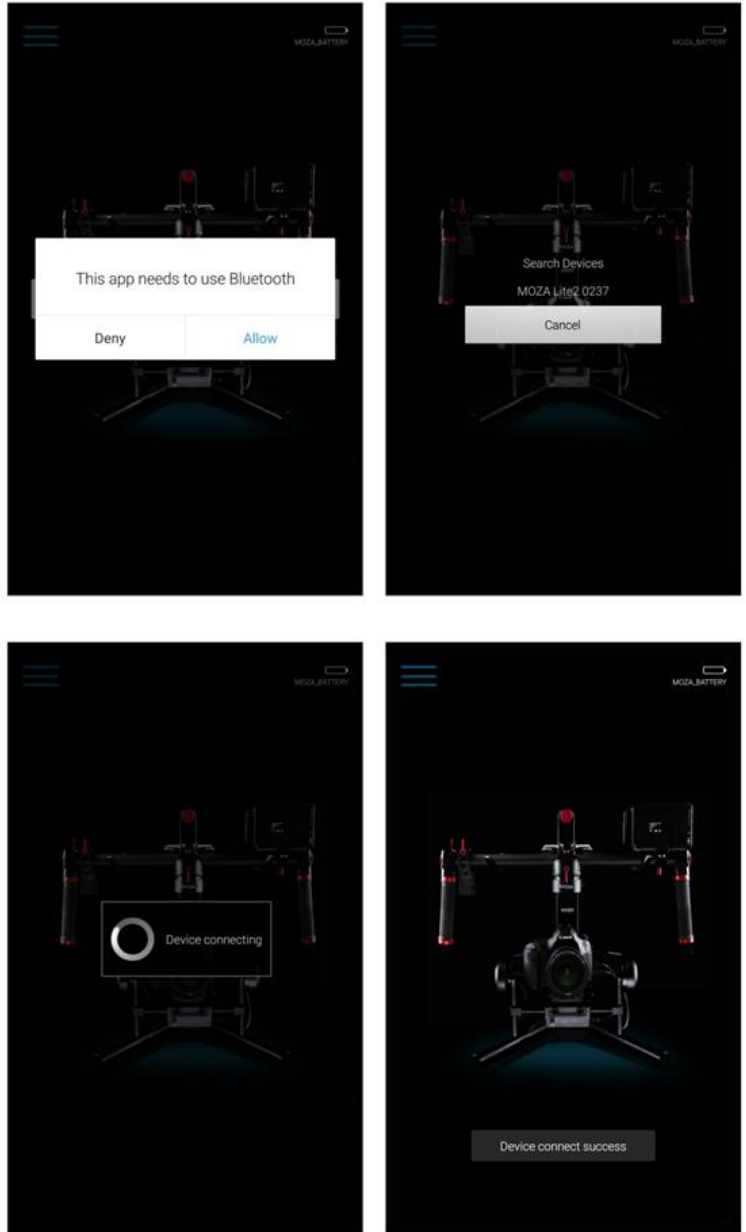
## Connecting and Adjusting the Parameter APP with MOZA

After installing the Adjust Parameter APP on your android or IOS system, your parameters can be checked or modified via a Bluetooth connection with MOZA. Devices must be equipped with Bluetooth capacity.

After the APP is turned on, it will inspect the Bluetooth device. If the Bluetooth capacity is on, the APP will automatically search for devices, if not, the APP will ask for Bluetooth authority. Once approved, the APP will search for devices. If not given approval the APP will exit.

After searching the MOZA device, click the device's name and the APP connecting with the device. Then wait for 5 seconds. The words "connection successful" will blink at the bottom of the screen. Once the background gets bright, the users will be able to operate it.

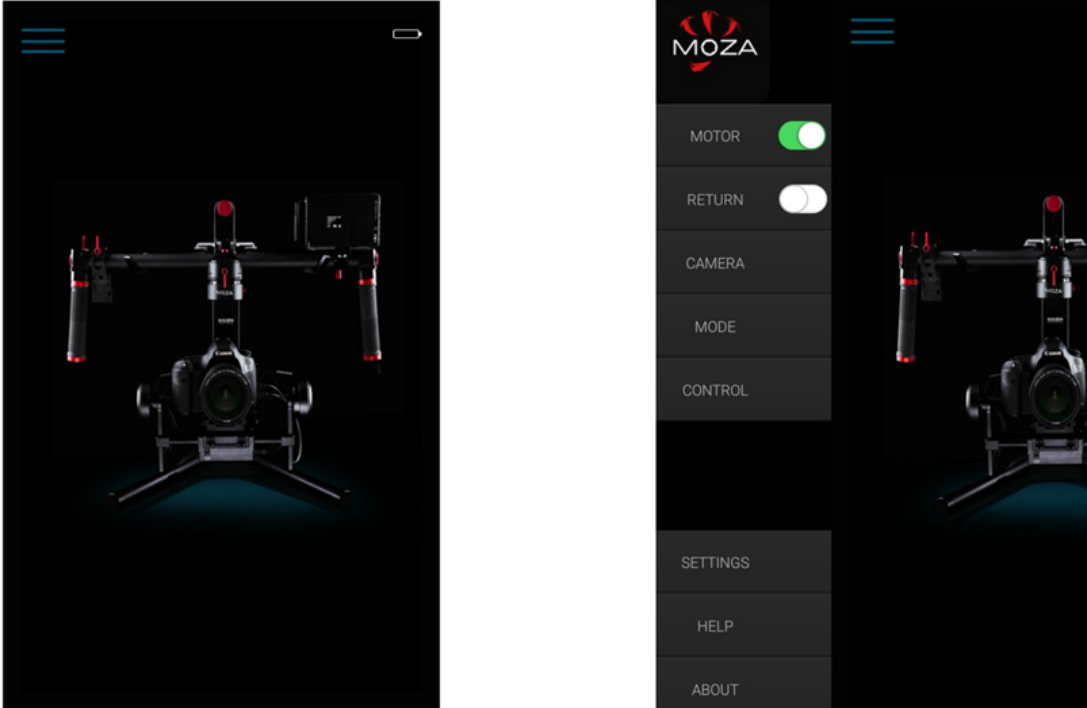
The device will return to the Bluetooth list when connecting with other devices.



## APP Interface

There is a folding structure to the APP interface. Click the menu in the upper left button or slide to right can pull out the tab list on the left.

**Power Motor:** Turn the power motor on or off (when calibrating or in standby mode)



**Center the Camera:** Center the camera within one step, adjust the position to the initial state.

**Device:** Choose the camera type and weight of the lens

**Modes:** Switch among operating modes

**Remote:** Adjust the parameters of the thumb controller or outer remote control.

**Setting:** Choose a language, calibrate a sensor, default settings, modify your account information, and provide feedback.

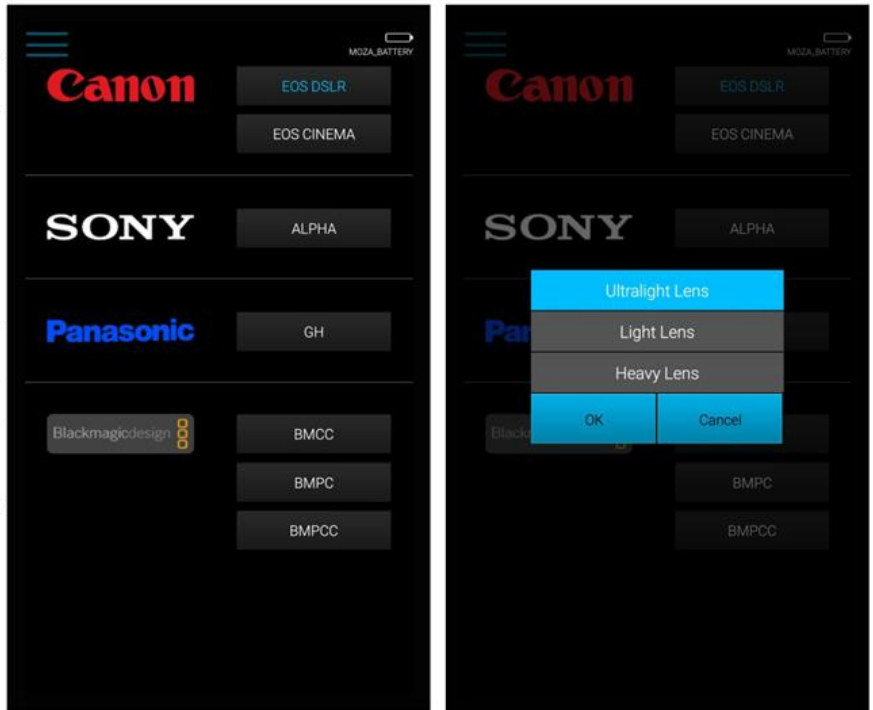
**Help:** View the help manual

**About:** Check the APP version, MOZA firmware version, device type, and service information.



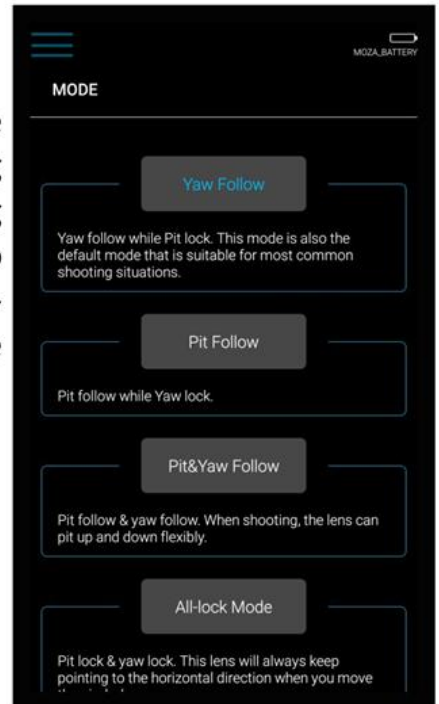
### Choosing a Camera through the APP

Open the APP and enter the device interface. There will be a list of all of the cameras that the MOZA Lite2 can load. Click the type of camera you will use. Next, you will see the possible weights of the lens. Choose the proper one, and the operation is completed. The combination usage situation will be displayed at the bottom of the screen.



### Switch MOZA Modes through the APP

Open the APP and enter the interface to choose the proper mode. There will be 3 common operating modes, each with brief instructions. The operating mode is indicated in blue. Click the mode you want to switch to; that mode will then change to blue. Suggestions will be listed at the bottom of the screen, once the operation is successfully completed.



## Modify Remote Parameters

ANGLE SETUP	PITCH	ROLL	YAW
MIN ANGLE	0	0	0
MAX ANGLE	0	0	0

SPEED SETUP	SPEED LEVEL
THUM SPEED	0
FOLLOW SPEED	0

WRITE

ANGLE SETUP	PITCH	ROLL	YAW
MIN ANGLE	0	0	0
MAX ANGLE	-180	0	0

SPEED	SPEED LEVEL
THUM	0
FOLLOW SPEED	0

WRITE

Open the APP and engage the remote parameters setting interface. The following are parameters that can be modified:

**Maximum remote angle:** The maximum angle that the thumb controller can operate the gimbal.

**Minimum remote angle:** The minimum angle that the thumb controller can operate the gimbal.

**Remote speed:** The value of the different speed levels on the thumb controller. There are three options: Low\Middle\High

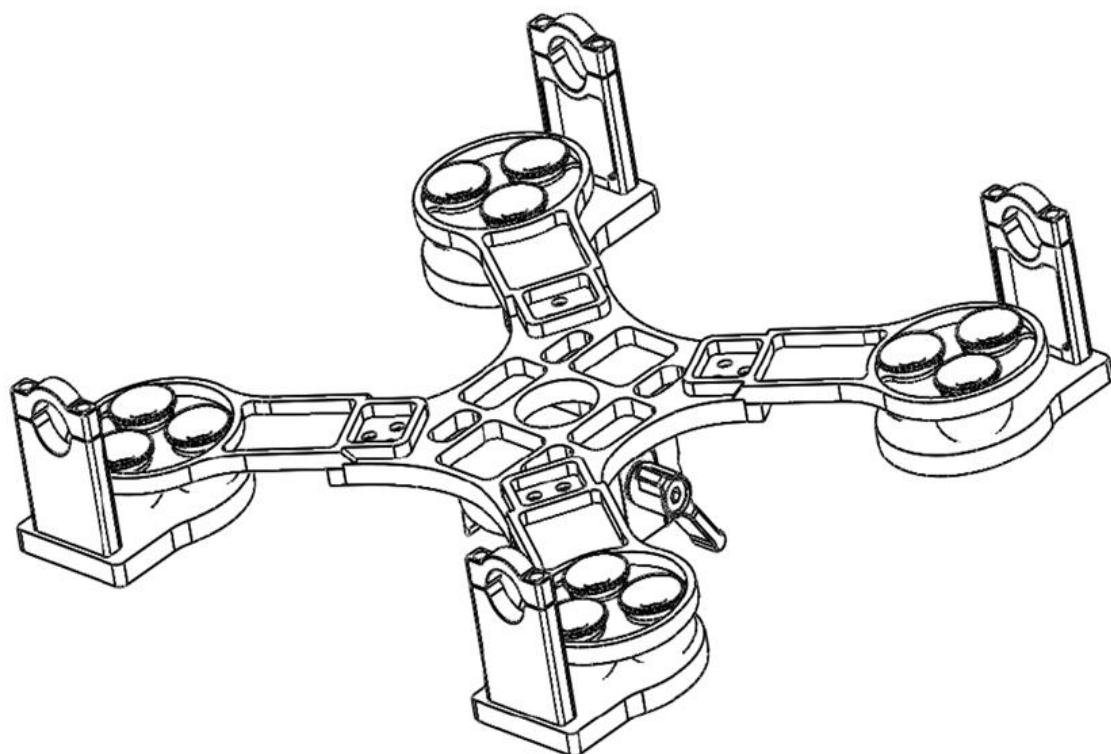
**Follow speed:** The value of different speed level of gimbal follow movement, There are three options: Low\Middle\High

Click the correspond figure. The drop-down list will pop up. Then choose the desired value. When all of the figures are chosen, click the 'WRITE' button. The parameter will now be effective.



## Accessories

### Drone Damper



As a professional gimbal, the MOZA Lite 2 can load your camera for an aerial shoot. The damper connected to the drone reduces vibrations.

There are 4 locked slots opposite from one another. They lock on the parallel axis with a 12mm diameter and the axial gap with a 160mm diameter. The lock slots landing the loading frame contain 4 groups of shock absorbing balls. Each group contains 3, for 12 balls in total. The shock absorbing balls bear the load by squeezing. Compared to a tensile load bearing, this better protects the device and keeps it from falling.

The drone damper has a quick install structure located on the load bearing lower section that perfectly matches up with the MOZA Lite 2, making it easy to assemble and disassemble.

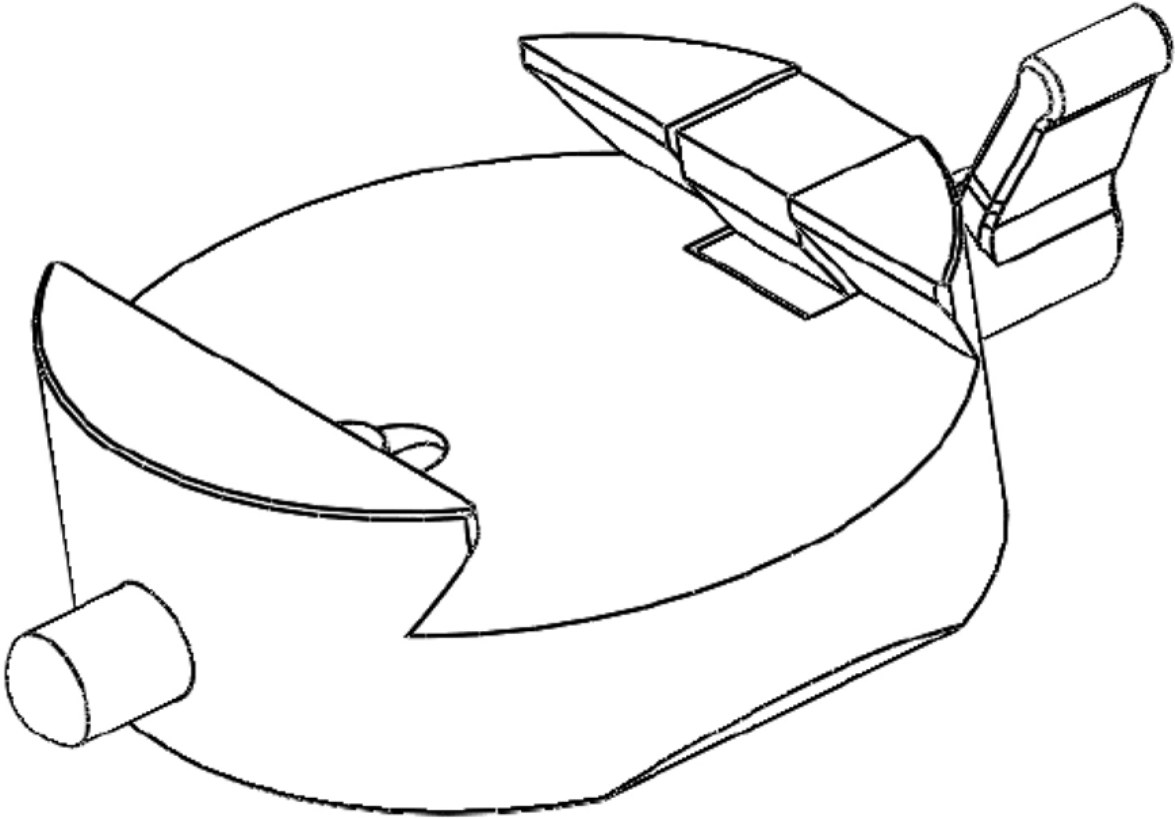
**The drone damper must be purchased separately. It is not included in the accessories provided with this product in the box. For more information, please log on to [www.gudsen.com](http://www.gudsen.com).**

### Tripod Connector

The MOZA LITE 2 can be installed on the tripod via the tripod connector.

The tripod has a quick install structure located on the load—bearing lower section, This matches perfectly with MOZA LITE 2, making it easy to assemble and disassemble.

There is a 1/4 screw that fits directly in to screw hole located on the top center of



the tripod.

**A tripod connector must be purchased separately. It is not included in the accessories to this device. For more information, please log on to [www.gudsen.com](http://www.gudsen.com).**

## Specifications

### MOZA Lite 2

#### General Features

Weight	2.2kg
Unfold Size	50*25*35(CM)
Maximum Load	4kg

#### Extended Interface

Bluetooth	Bluetooth 4.0
Remote	2.4G
USB Slave	Micro USB
PPM	General PPM Protocol
CAN	General CAN Protocol
USB Control	Mini USB
USB Power Output	Mini USB 5V 1A
DC OUT	3.5MM 14.8V 0.8A

#### Electrical Parameters

Working Voltage	14.8V
Resting Current	20mA
Quiescent Current	100mA
Dynamic Current	300mA
Bluetooth Distance	5M
2.4GRemote Distance	50M
Max Speed of Motor:	5R/S

#### Machine Features

Gimbal Holding Size:	18*15*25 (CM)
Max Rotation Angle:	
PITCH	-175° —— 135°
ROLL	-75° —— 235°
YAW	360°

#### Thumb Controller

Weight	100g
Battery Capacity	600mAh
Output Voltage	3.7V
Working Current	50mA
Resting Current	10mA
Stand-by Time	24h
Wireless Version	2.4G
Effective Distance	50M
Charging Voltage	5V
Charging Time	2h

#### Battery

Battery Capacity	2800mAh
Output Voltage	14.8V
Output Cut-off Voltage	12V
Output Current	2A
Output Cut-off Current	100mA

#### Charger

Input Voltage	110~220V AC
Output Voltage	16.8V
Output Current	2A



## FAQs

### 1. Gimbal skew

If the initial gimbal gesture skews, open the MOZA Assistant on your PC to correct the gesture and calibrate the sensor.

### 2. Low power motor output

First, balance the gimbal. After eliminating the possibility of overload caused by bad balancing, choose the proper lens weight via the thumb controller. If the problem isn't solved, open the MOZA Assistant on your PC to turn up the corresponding value.

### 3. Follow speed is too slow

Turn on the thumb controller, Open the parameters APP and MOZA Assistant to adjust the speed of each axis.

### 4. Thumb controller cannot be used to record.

First, check all of the cables to and make sure they are correctly and properly connected. Then, turn on the thumb controller and choose the proper type of camera. The types of cameras are listed on Page 16 of this manual.

### 5. Gimbal movement is beyond the control of the thumb controller

First, check the icons on the screen of the thumb controller to make sure there is a connection. If not, pair them again. After ensuring that they are properly connected, check the joystick map function. (see page 28)

6. If there are vibrations after MOZA Lite 2 calibration, check all of the knobs and screws to make sure they are well tightened, if they aren't, use the screwdriver to tighten them up.
7. In the case of a power motor shutdown, it is likely that the three axes of the MOZA Lite 2 have engaged the self-protection function. When there are abnormal conditions, the self-protection mode shuts off the power.

## Maintenance

This product uses double-decked packing. The outer container is designed to bear any logistic transportation damage. The inner containers is a paper box (for basic and premium devices) or flight case (for professional devices) for use in safekeeping of the product during storage.

In case of long-term lack of use, please remove the battery, and store the MOZA Lite 2 and accessories in the inner box. The product should be stored in dry and cool place, away from direct sunlight, damp conditions, and water.

Accessories should be stored in the tool bag to prevent scratches and loss.

Current increases rapidly when the power motor is started. Therefore, detach the electrical machine to extend its life.

The stand should be used for MOZA Lite 2 storage. Do not hang other heavy items on the stand. Without the stand, the L-shaped handle bar can be detached and the MOZA Lite 2 can be stored on table in the underslung mode.

Please retain this user manual.

No part of this manual should be reproduced in any form without prior written permission.

Official website: [TP://WWW.GUDSEN.COM](http://WWW.GUDSEN.COM)

Service e-mail: [SUPPORT@GUDSEN.COM](mailto:SUPPORT@GUDSEN.COM)





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