

SONY

Adjusting the gimbal parameters (GBL-T3)

Airpeak gimbal setting guide



Overview

Correct adjustment of the gimbal is essential for proper use. Please review the following explanation and make any necessary changes to the gimbal's settings.

Please refer to *Help Guide* for the instructions on how to mount and use the gimbal.

Preset of motor parameters 2

Important note: Be sure to do this before using the gimbal.

To use the gimbal correctly, you need to enter the appropriate motor parameters for your camera and lens. This section describes how to apply motor control presets all at once.

Manual adjustment of motor parameters 3

If the motor parameters of the gimbal do not match due to the difference in weight when the camera is equipped with accessories (such as a hood, a filter, etc.) or the individual differences in the gimbal, you need to manually adjust the motor parameters. This section will teach you how to do this.

Calibration 13

Normally, it is not necessary to do this calibration. Only do this if you experience symptoms of drift, such as if the camera cannot be leveled, if the angle gradually shifts, etc. Follow these steps to execute Gyro calibration of the IMU sensor.

Preset of motor parameters

To use the gimbal correctly, you need to enter the appropriate motor parameters for your camera and lens. This section describes how to manually enter motor parameters and how to apply presets all at once.

Sections:

1. How to input motor parameters with Airpeak Flight
2. Apply preset at once

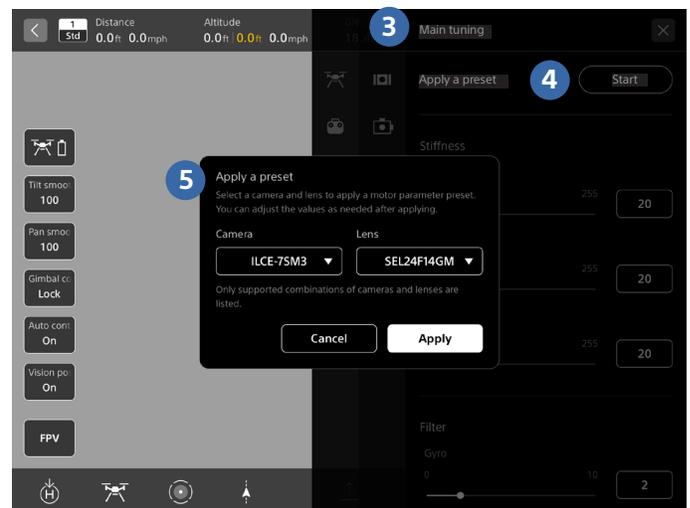
1. How to input motor parameters with Airpeak Flight

- 1 Tap  "SETTINGS" at the top right of the Airpeak Flight app screen.
- 2 Tap [GIMBAL] from the displayed setting menu.
- 3 Tap [MAIN TUNING] to display the parameter setting screen for motor control.
- 4 Each parameter value can be changed by moving the slide bar or tapping the value on the right side and entering the value via the on-screen keyboard that is displayed.

2. Apply preset at once

- 1 Tap  "SETTINGS" at the top right of the Airpeak Flight app screen.
- 2 Tap [GIMBAL] from the displayed setting menu.
- 3 Tap [MAIN TUNING] to display the parameter setting screen for motor control.
- 4 Tap [START] in [APPLY A PRESET] menu at the top of the motor parameter setting screen.
- 5 Select a camera and lens and apply motor parameter presets.

Once applying preset has been done, refer to *Trouble Shooting in Manual* adjustment of motor parameters section as needed.



Note: The preset values of the motor parameters are the values under the condition without a lens hood, and with a filter attached. Check "Compatibility" to know the camera body and lens supported by this product.

Manual adjustment of motor parameters

If the motor parameters of the gimbal do not match due to the difference in weight when the camera is equipped with accessories (such as a hood, a filter, etc.) or the individual differences in the gimbal, you need to manually adjust the motor parameters.

Please install PC software “gTuneDesktop” by Gremsy for motor parameters adjustment.

Sections:

1. About motor parameters
2. Connect gimbal to PC
3. Start gTuneDesktop and input initial parameter
4. Adjust motor parameters on each axis
5. Check the image
6. Trouble shooting

1. About motor parameters

Stiffness

It is a parameter to control the horizontal stability of gimbal. (Min: 0, Max: 255)

A higher value causes gimbal oscillation, while a lower value causes decreased stability.

**This value varies depending on the model of camera and lens used.*

Gyro Filter, Output Filter

It is a parameter to control the effect on gimbal oscillation control. (Min: 0, Max: 10)

A higher value can suppress oscillation but will sacrifice horizontal stability.

Hold Strength

It is a parameter to control the holding strength of gimbal position. (Min: 0, Max: 100)

The gimbal can hold the position with a higher value, but oscillation will occur.

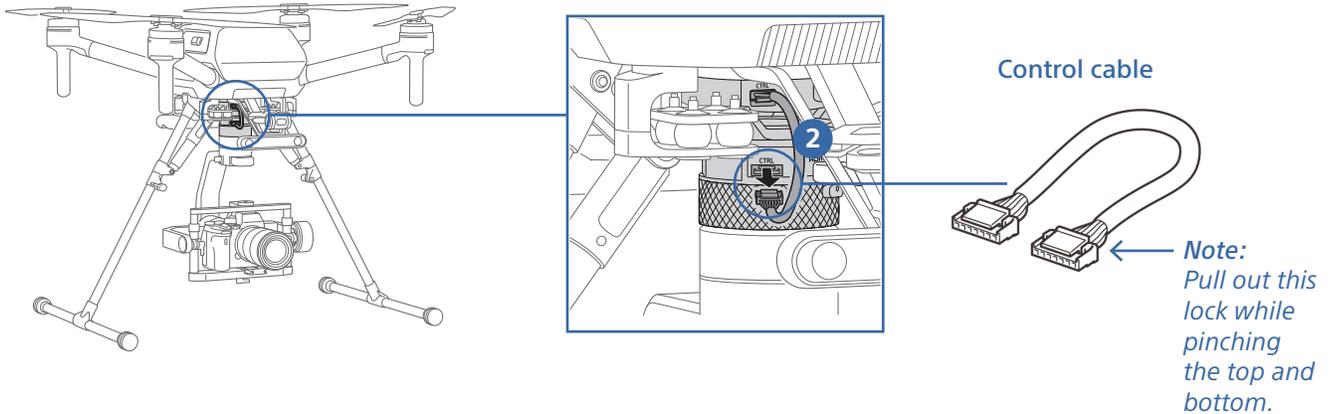
Gain

It is a parameter to control the speed of gimbal returning to horizontal. (Min: 0, Max: 255)

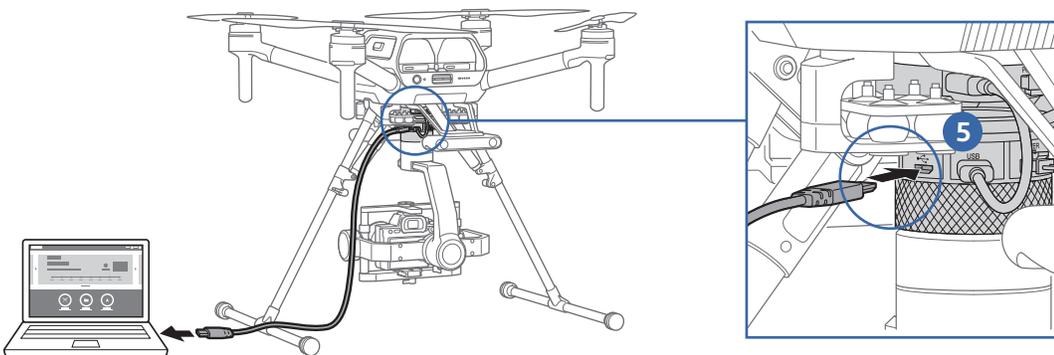
The gimbal can be leveled quickly with a higher value, but oscillation will occur.

2. Connect gimbal to PC

- 1 Before motor parameter adjustment, please double check the gimbal is properly balanced. If it is not balanced, refer to *Startup Guide* or *Help Guide* and try the balance adjustment again.
- 2 Control cable needs to be disconnected during motor parameter adjustment. With the power source of Airpeak turned off, disconnect one side of the control cable as shown in the image below.

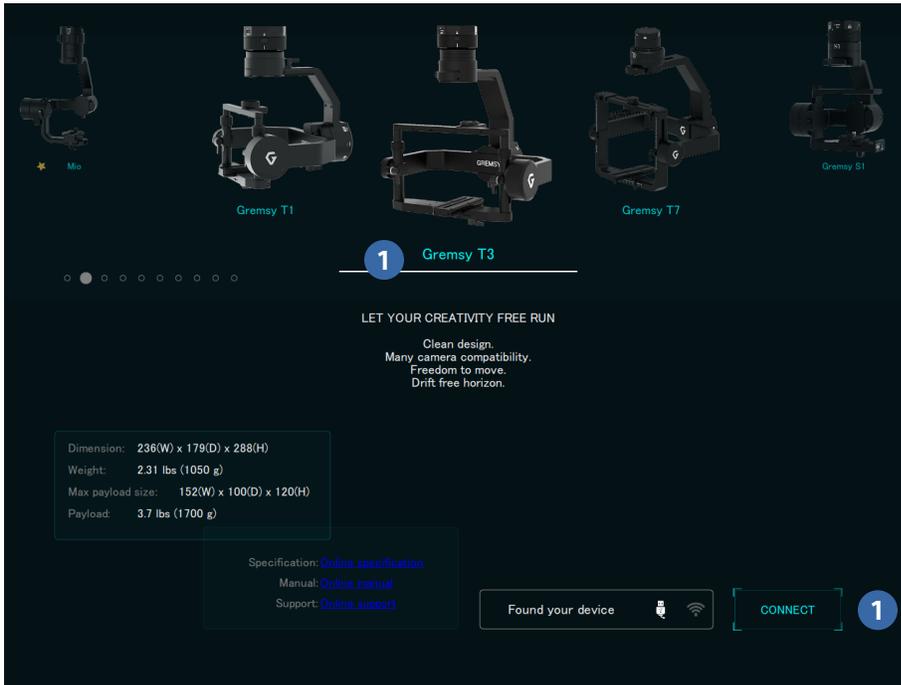


- 3 Turn the aircraft on.
- 4 Turn the camera on to avoid a position change of the focus unit in the lens.
- 5 Connect your PC and Gremsy gimbal with supplied microUSB cable.

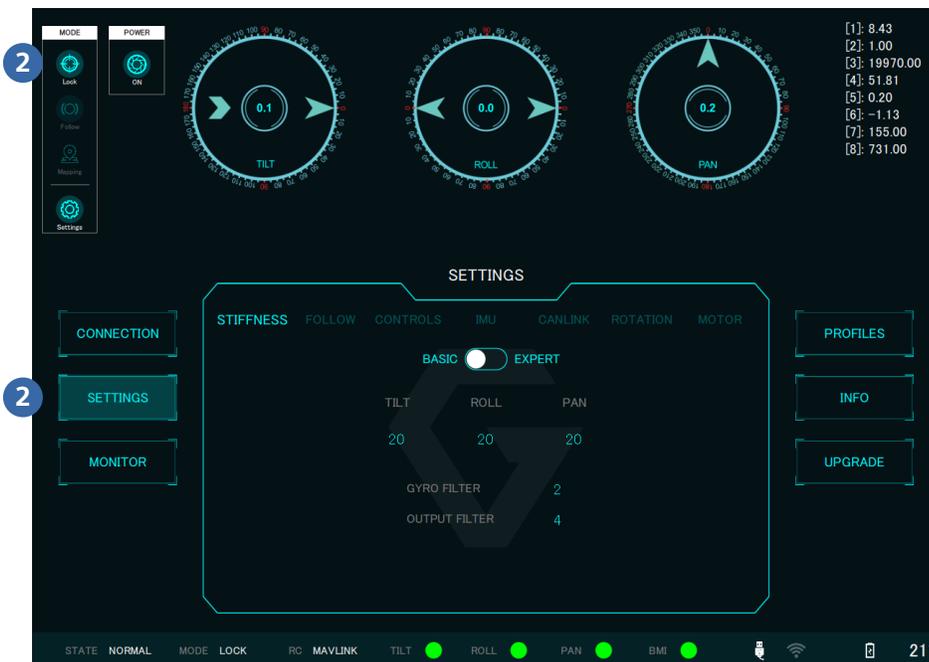


3. Start gTuneDesktop and input initial parameter

- 1 Start “gTuneDesktop”, select Gremsy T3, then press the [CONNECT] button.



- 2 After connecting, the screen will switch to [SETTINGS]. Press the Lock button at the top left of the screen. **Note:** All subsequent operations must be performed in Lock mode.



3. Start gTuneDesktop and input initial parameter *(continued)*

- Depending on the model of camera used, set the following motor parameters for both [BASIC] setting and [EXPERT] setting.

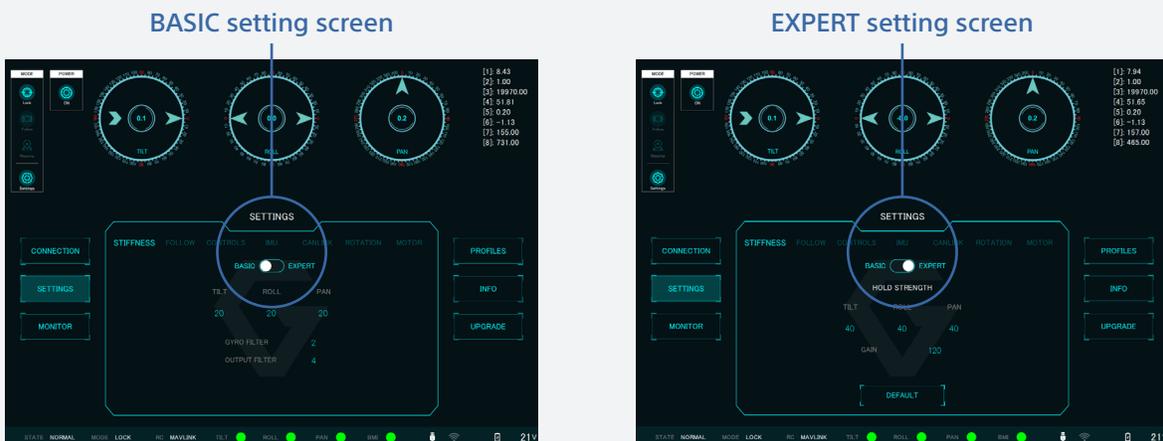
Table of Motor parameters for initial setting (Except ILCE-7C)

BASIC SETTING	STIFFNESS	TILT	20
		ROLL	20
		PAN	20
	FILTER	GYRO FILTER	1
		OUTPUT FILTER	6
EXPERT SETTING	HOLD STRENGTH	TILT	50
		ROLL	40
		PAN	50
	GAIN		180

Table of Motor parameters for initial setting (ILCE-7C)

BASIC SETTING	STIFFNESS	TILT	20
		ROLL	20
		PAN	20
	FILTER	GYRO FILTER	1
		OUTPUT FILTER	6
EXPERT SETTING	HOLD STRENGTH	TILT	55
		ROLL	40
		PAN	55
	GAIN		180

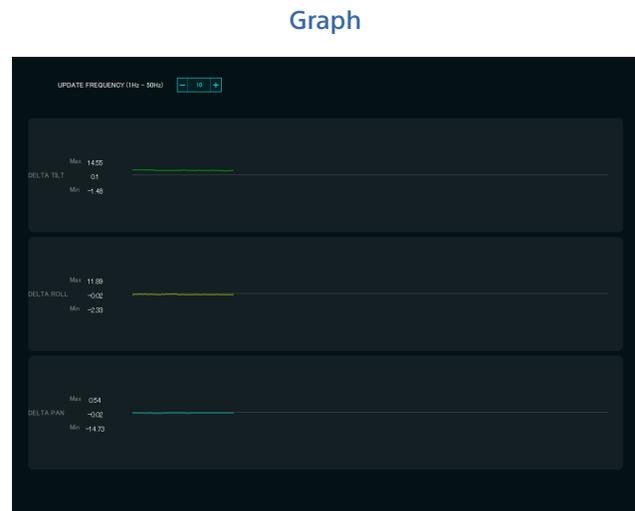
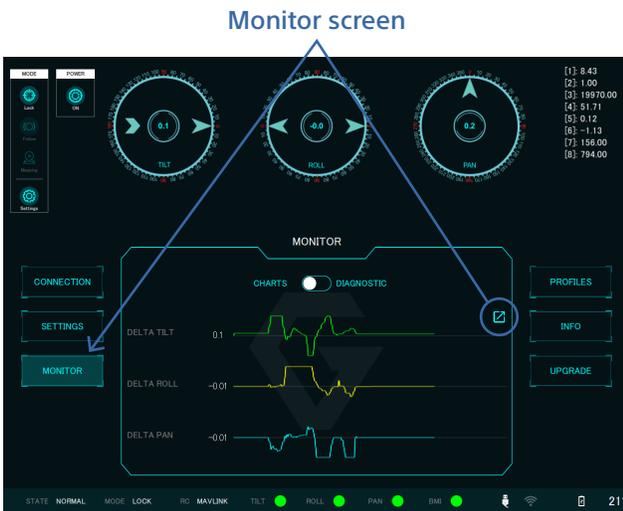
Hint: In [SETTINGS], you can switch between [BASIC] setting and [EXPERT] setting with the slide button on the center of the screen.



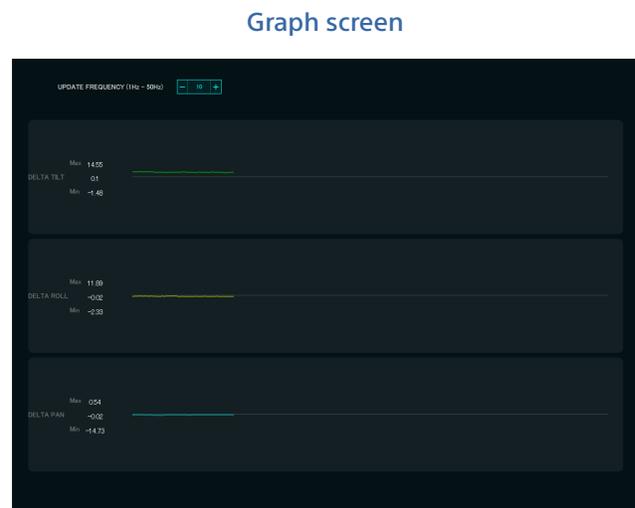
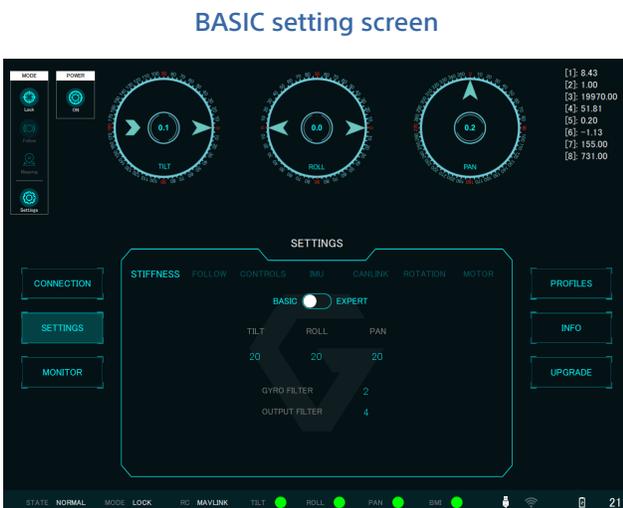
4. Adjust motor parameters on each axis

Adjust the motor parameters on each axis in the following order to get a proper response without any overshoot on the graph: TILT → ROLL → PAN

- 1 Check the graph.
 - A. Press the [MONITOR] button to switch to the MONITOR screen.
 - B. Press the arrow button on the right side of the MONITOR screen to renew the graph.



- C. Press the [SETTINGS] button on the originally open screen to return to the BASIC setting screen.
 - D. Place the SETTINGS screen and the graph screen side by side.



4. Adjust motor parameters on each axis (continued)

2 TILT axis parameter adjustment.

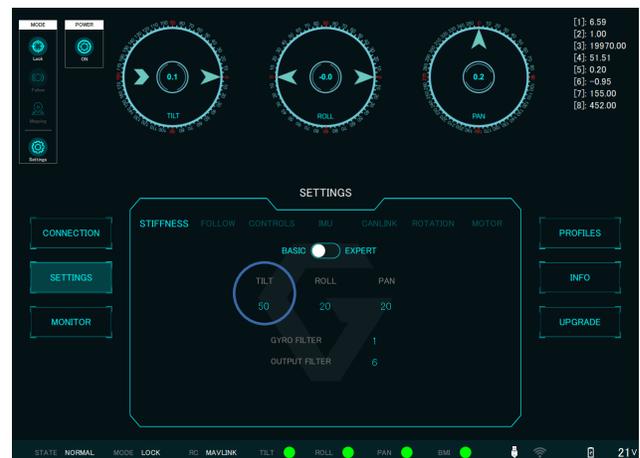
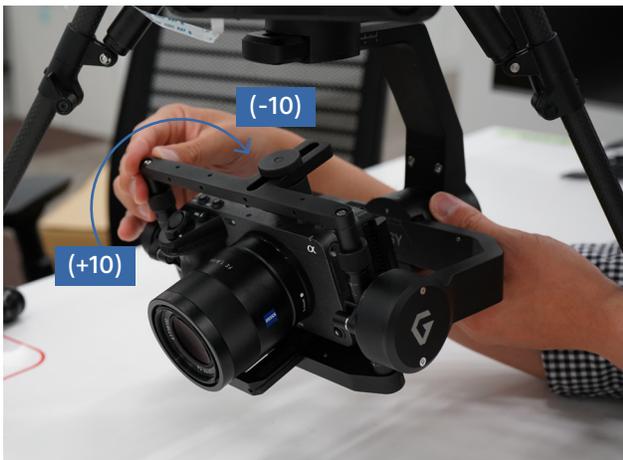
A. While holding the gimbal so that it doesn't roll, push the TILT axis of the gimbal directly by hand and move it up to +10 degrees (Angle of the TILT axis will be displayed at the top of BASIC setting screen).

B. Quickly release your hand from the gimbal.

C. If an overshoot happens, increase the TILT value on the SETTINGS screen and move the TILT axis +10 degrees again then check if the overshoot is eliminated (The recommended incremental value is around 5).

D. Repeat steps B–C until there is no overshoot. Search for the minimum value, as gimbal oscillation will occur when the value is too high.

E. Do the same sequence with the opposite direction (-10 degree) and set the TILT value.



4. Adjust motor parameters on each axis (continued)

Hint: The graph screen on the right figure below, you can see that the graph goes over the center part and penetrates to the lower side (so-called “overshoot”).

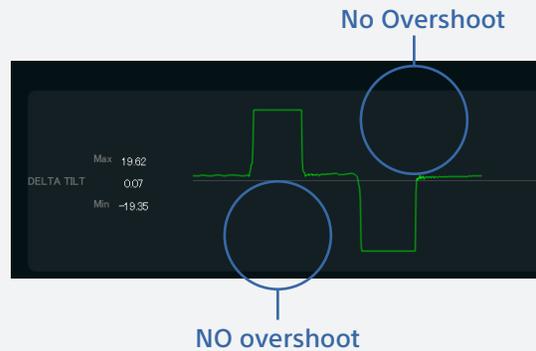
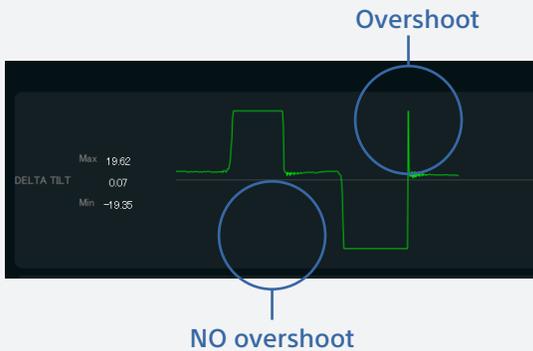
NO Overshoot



Overshoot



Hint: In the left figure below, there is no overshoot in the positive direction, but there is in the negative direction. Increase the TILT value to eliminate the overshoot in both direction as shown in the figure on the right.



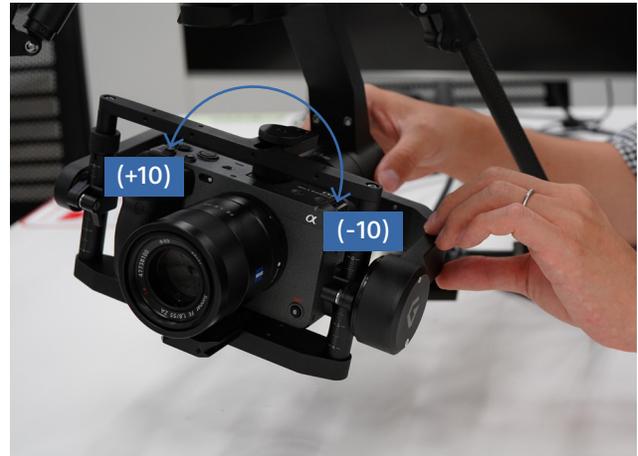
4. Adjust motor parameters on each axis (continued)

3 ROLL axis parameter adjustment.

In the same sequence as TILT axis adjustment, tune the parameter in ROLL axis.

While holding the gimbal so that it doesn't move in PAN axis, push the left side of the gimbal's ROLL axis down with your hand until it reaches ± 10 degrees.

Increase the ROLL value in BASIC setting until the overshoot is eliminated. Search for the minimum value, as gimbal oscillation will occur when the value is too high.

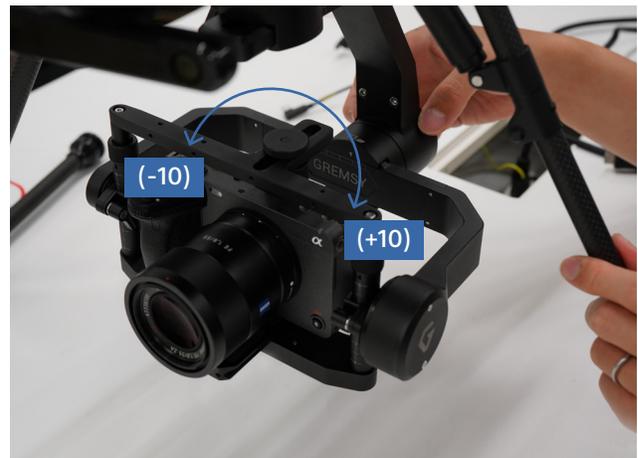


4 PAN axis parameter adjustment.

In the same sequence as TILT axis adjustment, tune the parameter in PAN axis.

While holding the aircraft so that it doesn't move, push the gimbal in PAN axis until it reaches ± 10 degrees.

Increase the PAN value in BASIC setting until the overshoot is eliminated. Search for the minimum value, as gimbal oscillation will occur when the value is too high.



Hint: PAN value in the BASIC setting screen would change because the gimbal is not connected to the aircraft and the gimbal can move in PAN axis.

If this phenomenon occurs, press the POWER button near the upper left of the screen to turn the gimbal off. After a few seconds, press this POWER button again then the gimbal turns on with initial (0 degree) position.



5. Check the image

- 1 Turn on the controller and the mobile device, then check the image of main gimbal with Airpeak Flight. Make sure that there is no oscillation on the screen. If oscillation occurs, identify which axis is vibrating by decreasing axis value of each axis around 20 in BASIC setting of gTuneDesktop. Once you find the vibrating axis, adjust the value by around 5 to 10, then re-check the image on Airpeak Flight. If the image is still vibrating, turn off the aircraft and double check that the balance of the gimbal is properly adjusted.
- 2 Pull out the microUSB cable and turn off the aircraft. Re-connect the control cable which you disconnected in *“Connect gimbal to PC”* section.

6. Trouble shooting

Here are hints for manual adjustment of motor parameters for movie shooting. It is not necessary to adjust every parameter.

Double check the following points before changing the motor parameters:

- The balance of gimbal is properly adjusted.
- Bottom lever of the camera plate and the top camera screw are firmly tightened.
- If you have some problems after *“Preset of motor parameters”*
 - Choose correct model of camera and lens.
 - Ensure parameter is applied correctly.

While shooting movie, rolling shutter effect might occur depending on the model, shooting mode, or settings. It would be recommended to set a shutter speed slower than double the framerate.

The image is jiggling

If the image is jiggling while hovering or flying slowly, try the following adjustments:

- Increase STIFFNESS value by 5 to 10.
- Decrease HOLD STRENGTH value. Do not set the value lower than 40. If you change the HOLD STRENGTH value, you need to adjust the STIFFNESS value as well.
- Decrease GAIN value. Do not set the value lower than 150. If you change the GAIN value, you need to adjust the STIFFNESS value as well.

6. Trouble shooting *(continued)*

The temporary vibration occurs in the image

With quick acceleration or slow down, the image may temporarily vibrate. This may be avoided by taking the following actions:

- Decrease STIFFNESS value by 5 to 10.
- Increase HOLD STRENGTH value. Do not set the value higher than 55. If you change the HOLD STRENGTH value, you need to adjust the STIFFNESS value as well.

The image resolution gets lower

If the image quality gets lower while hovering or flying slowly, try the following adjustments:

- Decrease STIFFNESS value by 5 to 10.
- Decrease HOLD STRENGTH value. Do not set the value lower than 40. If you change the HOLD STRENGTH value, you need to adjust the STIFFNESS value as well.

The image is distorted or undulate

With quick acceleration or high-speed flight, image may be distorted or undulate.

This may be avoided by taking the following actions:

- Decrease STIFFNESS value by 5 to 10.
- Decrease HOLD STRENGTH value. Do not set the value lower than 40. If you change the HOLD STRENGTH value, you need to adjust the STIFFNESS value as well.

Calibration

Here are the steps to execute calibration of the IMU sensor.

Only do this if you experience symptoms:

- Drift such as camera cannot be leveled, angle gradually shifts, etc.
-> Try Gyro calibration
- Gimbal rolls -> Try Acceleration calibration. If the gimbal still rolls even mafter the acceleration calibration, try Gyro calibration as well.

Please install PC software "gTuneDesktop" by Gremsy for calibration.

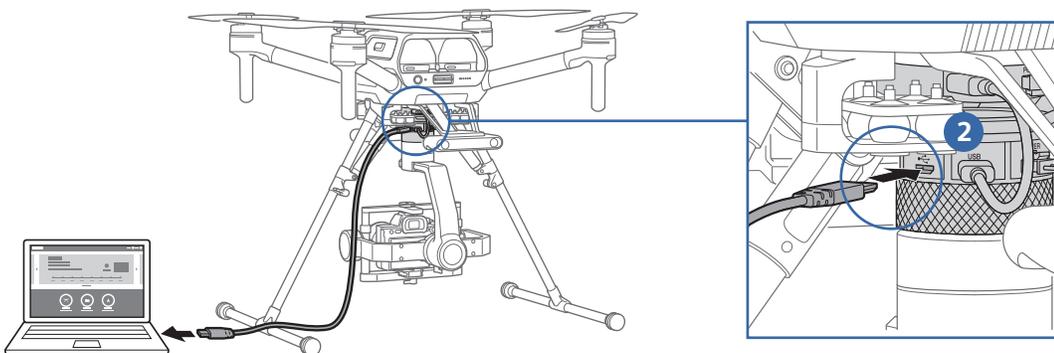


Attention:

- Calibrate the gimbal on a level and stable surface.
- Do not touch or move the aircraft or gimbal while calibration is in progress.

Calibrating the Gyro of the IMU sensor

- 1 Connect the gimbal to the aircraft and turn it on.
- 2 Once the gimbal gets active, connect the gimbal to PC with supplied microUSB cable.
- 3 Run "gTuneDesktop". Select "Gremsy T3" in the menu, then press "CONNECT" button in the bottom right.
- 4 Screen will be switched to [SETTINGS] as the connections are done, then press "IMU" tab.
- 5 Press "CALIBRATE" button, then press "OK" to start calibration.
- 6 After the calibration is finished, press "POWER" to turn the gimbal on.



Calibrating the Acceleration of the IMU sensor

Prepare a stand to keep the gimbal horizontal level at 2.75in - 4in (7cm - 10cm) height

- 1 Control cable needs to be disconnected during the calibration. With the power source of Airpeak turned off, disconnect one side of the control cable. (Fig.1)
- 2 Turn the aircraft on.
- 3 Connect the gimbal to PC with supplied microUSB cable. (Fig.2)

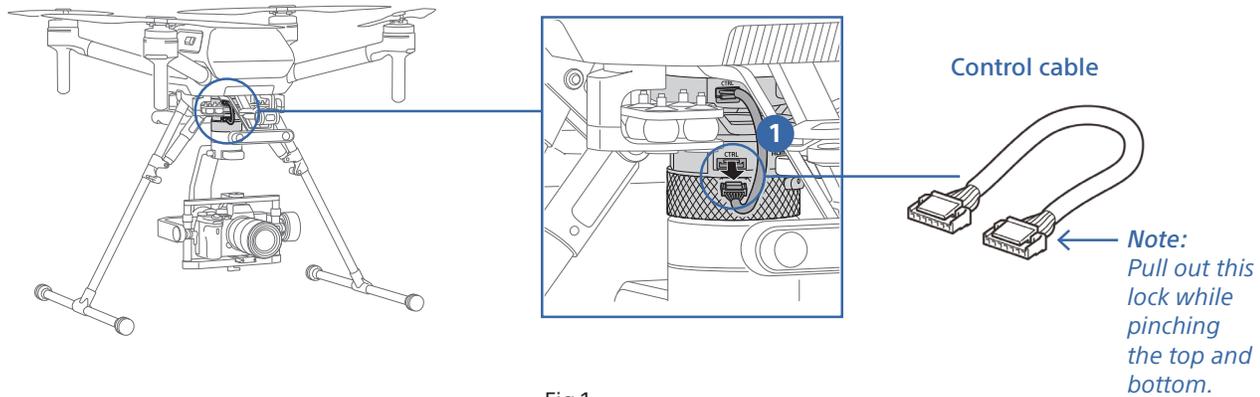


Fig.1

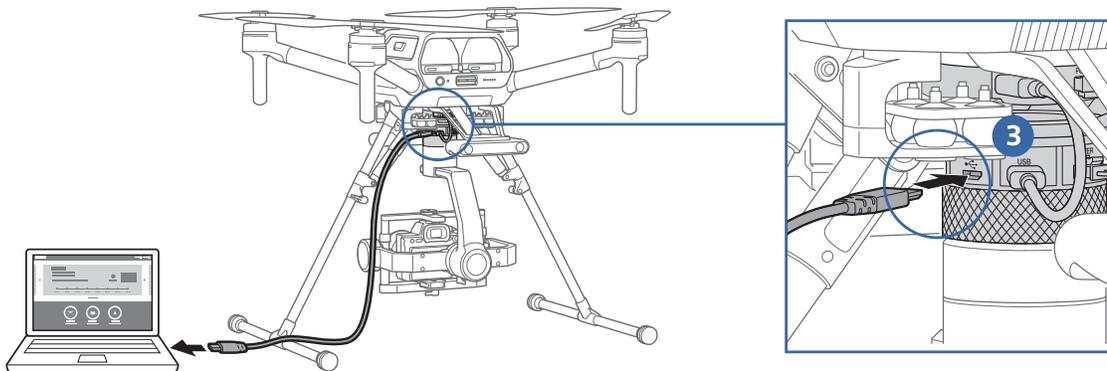
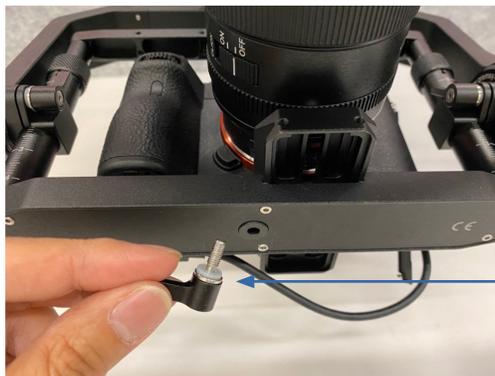


Fig.2

- 4 Run "gTuneDesktop", select "Gremsy T3" in the menu, then press the "CONNECT" button in the bottom right.
- 5 Screen will be switched to "SETTINGS" as the connections are done, then press "IMU" tab. Select "ACCEL".
- 6 Press "POWER" to turn the gimbal off.



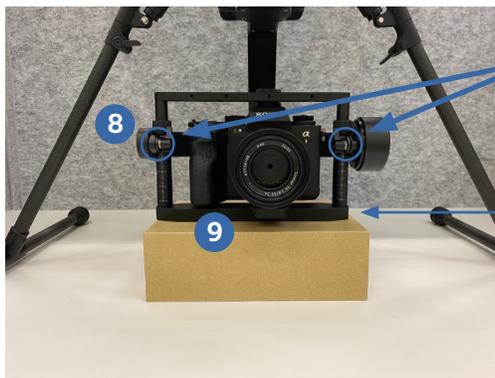
7 To make the bottom of the gimbal flat, remove the screw as below.



Note:
Do not lose this washer.
(white plastic part)

8 Loosen the two screws of the pitch axis.

9 Place the stand on the table and put the gimbal on it.



Loosen the screws

Note:
Make sure to keep the gimbal
in horizontal position.

10 Switch "ADVANCE" to the left side.

11 Press "CALIBRATE" button, then press "OK" to start calibration.

12 After the calibration is finished, close gTuneDesktop and turn the aircraft off.

13 Disconnect the microUSB cable and connect back the control cable.

14 Screw back the bottom side of the gimbal.

15 Adjust the balance of the gimbal again. (**Note:** The screws loosened)



Software

gTuneDesktop is a PC software developed by Gremsy. By connecting to Gremsy gimbal, the software can:

- Change parameters
- Calibrate the sensor
- Check the position of gimbal
- Update firmware

Get USB derive and software from following websites.

Installers

1 USB Driver

Download Universal Windows Driver from below site.

[Download](#)

**This link will direct you to Silicon Laboratories, Inc website.*

2 gTuneDesktop

[Download](#)

** This link will direct you to GitHub, Inc website.*

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