



FOXTECH LY-10KGF Propulsion System Test Platform User Guide

[Home](#) » [FOXTECH](#) » FOXTECH LY-10KGF Propulsion System Test Platform User Guide 



LY-10KGF Propulsion System Test Platform

User Guide

L Y – 10K GF QSG

QuickStart Guide (QSG)

Contents

- [1 Notice and Disclaimer](#)
- [2 Installation](#)
- [3 Install ESC.](#)
- [4 Installation of Infrared Temperature Probe](#)
- [5 Install Propeller and First Test](#)
- [6 SoftwareDebugging](#)
- [7 Regular Checklist](#)
- [8 Documents / Resources](#)
 - [8.1 References](#)
- [9 Related Posts](#)

Notice and Disclaimer

Please read the following terms carefully before making any operation:

1. Power Input should be within its range, DO NOT reverse polarity;
2. DO NOT test small-size motors with LY-10KGF test stand due to static friction between spindle and guide rail;
3. Ensure the test stand, power supply, batteries, and all cables are well fixed;
4. Always Disconnect the power source before entering the test area or touching the tool. Ensure no electric

leakage when voltage exceeds the safety voltage of the human body;

5. Check the test stand according to the regular checklist to avoid any safety issues caused by bolts loosening;
6. Operation MUST strictly follow the user manual. Wing Flying has no liability for any issue caused by the wrong operation(eg. Approach or touch the rotating motor and propeller);
7. Violent test or destructive experiment is Prohibited. Disconnect the power source immediately when accidents occur like resonance, propeller exploding, and propeller breaking.

Installation

1. Install the Motor

1. Choose a suitable motor mount, as shown in Fig.2.1.1 and Fig.2.1.2



Fig. 2.1.1 Motor Mount



Fig. 2.1.2 Motor

2. Mount the motor with 4 screws and fish-eyes, as shown in Fig.2.1.3 and Fig.2.1.4:



Fig.2.1.3

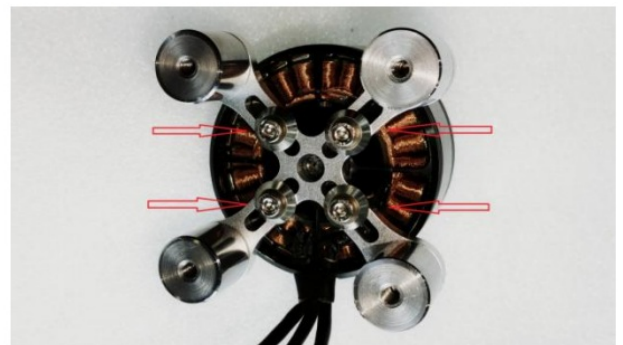


Fig.2.1.4

3. Install the motor on the test stand with screws. Motor cables should be on the side of the ESC Mounting Plate, as shown in Fig. 2.1.5:

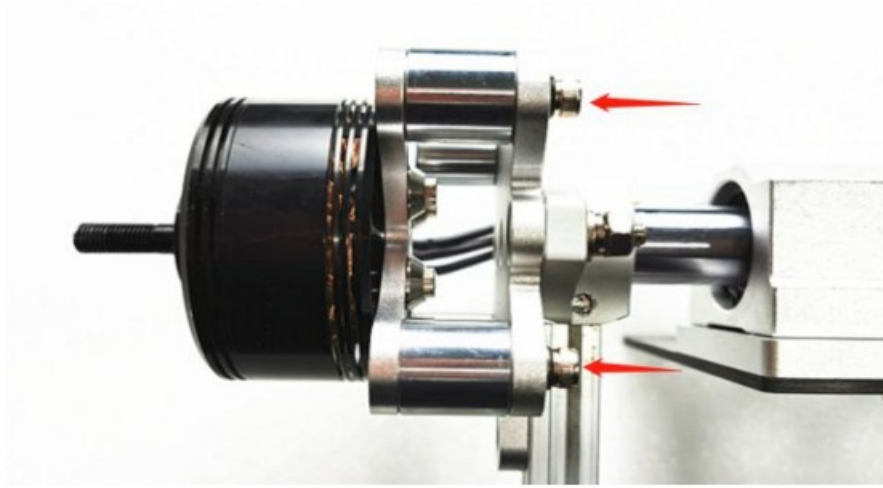


Fig. 2.1.5 Installation Completed

Install ESC.

1. Mount ESC on the mounting plate. Connect E S C and the motor with the conversion cables.
Connect E S C with power modules f LY-10KGF, as shown n Fig.2.2.1 and **Fig.2.2.2**:



Fig. 2.2.1

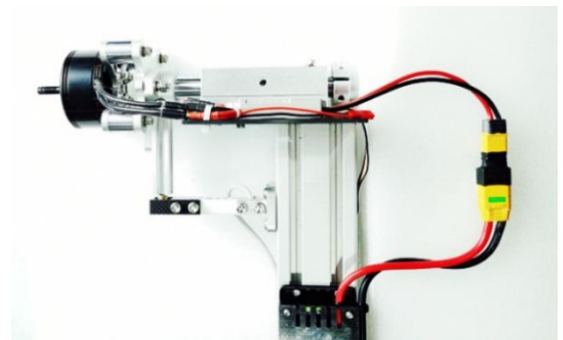


Fig. 2.2.2

Note: Keep a loose cable connection between the motor and ESC, otherwise, it will affect the accuracy of the test.

2. Connect JST Plug. The ESC signal cable connects to the “OUT” port on the control module, as shown in Fig. 2.2.3:

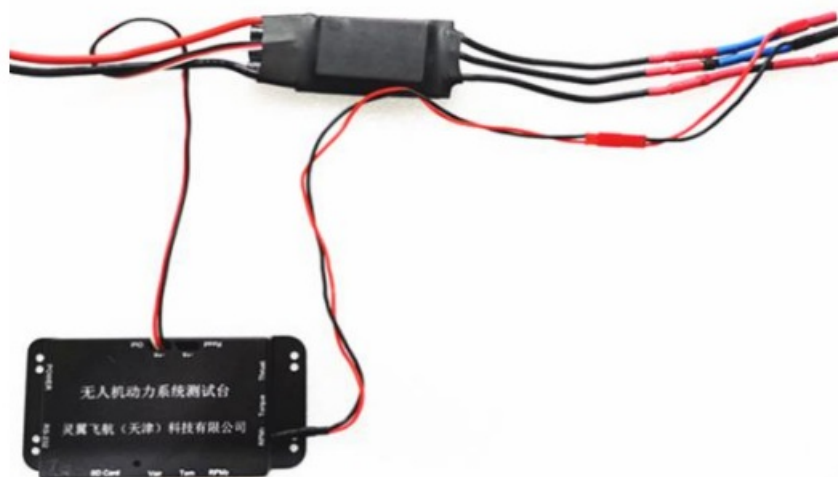


Fig. 2.2.3 Connection of signal cables

Note: “Out” and “read+” come with SV output for the receiver or ESC of special requirements, Disconnect them if do not use the receiver or ESC.

Installation of Infrared Temperature Probe

LY-10KGF measures temperature with infrared detection. Install the probe parallel to the test surface and keep the distance around 1-3cm (keep the lens clean without greasy covered).

The temperature probe detects temperature without touching the object. There will be a deviation due to the emissivity of the object. Therefore, the test area should be in dark (black tape or black marker can be used). Besides, the probe may also detect the ambient temperature, install the sensor inside the bracket and keep good ventilation, as shown in Fig. 2.3.1 and Fig.2.3.2:



Fig.2.3.1 Location of Temperature Probe

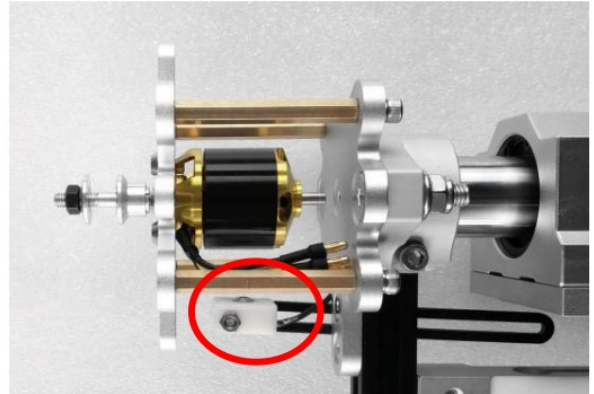


Fig.2.3.2 Location of Temperature Probe

Note: The bracket should not touch the main body or torque sensor to avoid inaccuracy.

Install Propeller and First Test

1. Install propellers according to your manual. Ensure your propeller is well fixed.
2. First Test

User Should do the Safeguard settings to prevent any damage for first-time use, as shown in Fig. 2.4.1:

1. Min voltage: recommended setting = number of lithium batteries * 2.8V (18650 battery is 2.5V);
2. Max current: the max current recommended by the manufacturer;
3. Max motor temperature: recommended setting = the temperature of motor case 75°C /coil temperature 100°C.
Temperature can be higher for large-size motors.
4. Max RPM: set the max rotational speed. The motor can stop rotating in time when a propeller reaches its limitation.

SAFEGUARD

Safety Cutoff: Warning&Cut Thrc

☒ Enable

Min Voltage: 10.5 V

Max Current: 100 A

Max Motor Temp: 70 °C

Max Thrust: 20000 gf

Max Power: 50000 W

Max RPM: 40000 RPM

Max Power Consumption: 40000 mAh

Min RPM: 100 RPM

Notes:

1. Min RPM will NOT cut throttle

2. Only min voltage can be set to decimals

Apply

SoftwareDebugging

1. Power On the Test Stand

Connect with 220V input, then Power adapter connects to DC input (12V)on the test stand. You will hear “DiDiDi”after powered on, as shown in Fig. 3.1.1 and Fig. 3.1.2:



Fig. 3.1.1 Power Adapter

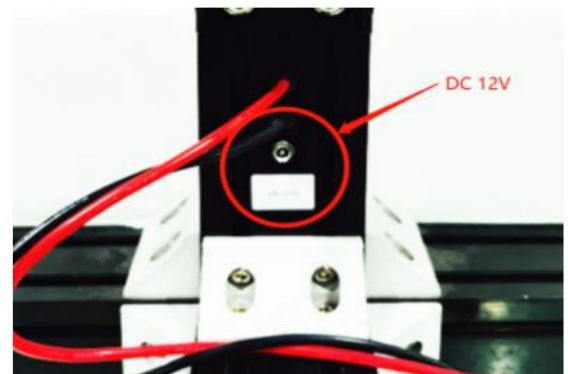


Fig. 3.1.2 DC Input

Connect with PC

1. Software installation: Win7 / Win8 / Win8.1 / Win10.net
2. Connection: connect the data cables or wireless data link. USB cable connects to your computer.
3. Driver Debugging: Right-click “My Computer” to “Computer Management”, and click “Device Manager”. Users can find “USB Serial Port (COM XX)” which indicates the driver has been installed automatically, as shown in Fig. 3.2.1

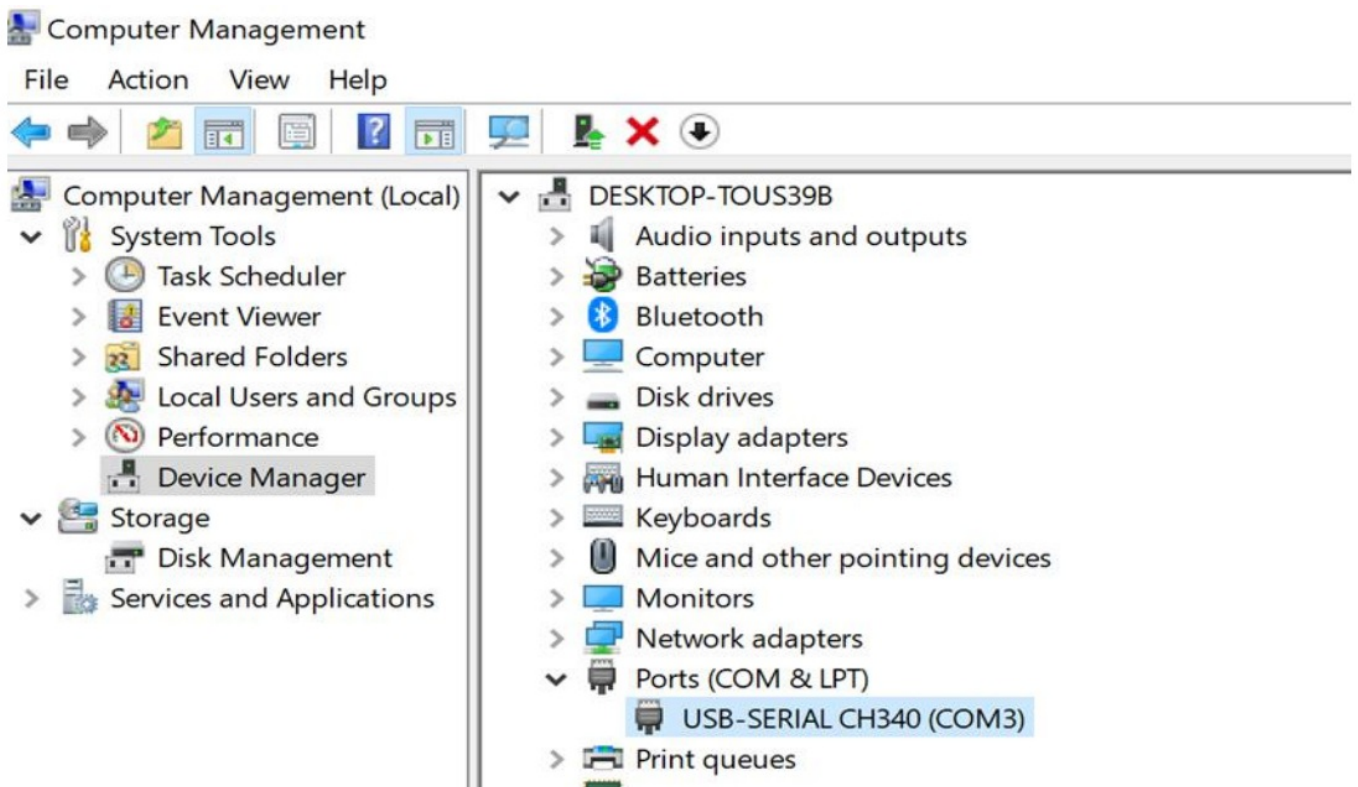


Fig. 3.2.1

NOTE: Failed to install the drive when it comes with . Please check your computer and driver installation.(right-click to update).

(4)Software Connection: Open the software, the user will see COM XX, then click "Connect". Connection succeeded when hearing "Di", as shown in Fig. 3.2.2:

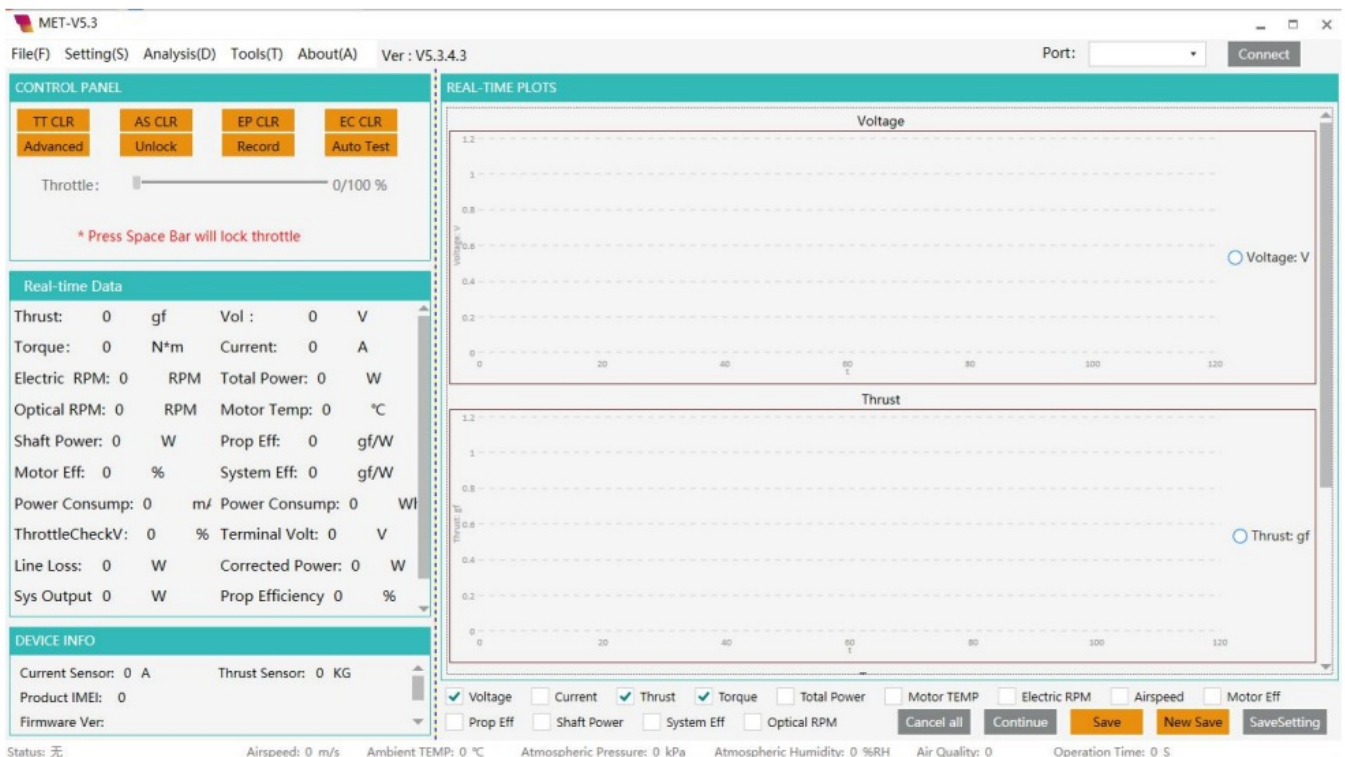


Fig. 3.2.2 Software Connection

Note Always connect the USB cable to Computer before running the software, otherwise the device can't be recognized.

3. Settings

Open the software to "System SETTINGS", as shown in Fig. 3.3.1:

1. PWM range: MIN and MAX throttle input of the ESC, generally from 1100 to 1940.
2. Motor Pairs(Polar Pairs): half of the Magnetic poles; Obtain the motor pairs from the list.

Must input the motor pairs, otherwise, it will display the wrong RPM.

MET SETTINGS

System Settings

Safeguard

Auto Test

Test Info

Bench Type

LY-Single

Bench Model:

10 KGF

Color:

Teal

Language:

English

Apply

PWM Range:

1100

-

1900

No. of Poles:

4

Number of blades:

2

Voltage offset:

0

Line Loss:

1

mΩ

Set

Read

Reboot

Update

Fig. 3.3.1 System Settings

Software debugging: DO NOT install the propeller for first-time use. Power on the test stands and click “unlock throttle” after ESC starts working(the user may need to calibrate the throttle range. Learn how to calibrate ESC from FAQ). The throttle unlocked when hearing “DiDi” from the test stand. Move the “throttle” to check if the motor works and displays the correct RPM. Move the “throttle” to the full range to check the actual RPM and calculate the VK.

4. Advanced Throttle and Data Recording

The data in Excel is recorded in Manual Control mode. Users can click “Recording” to start recording. Click “Lock” or “Stop” to stop data recording.

It will automate data recording in Automatic Mode. The data will be saved when stop recording. Open the File →File Storage, to check the raw data.

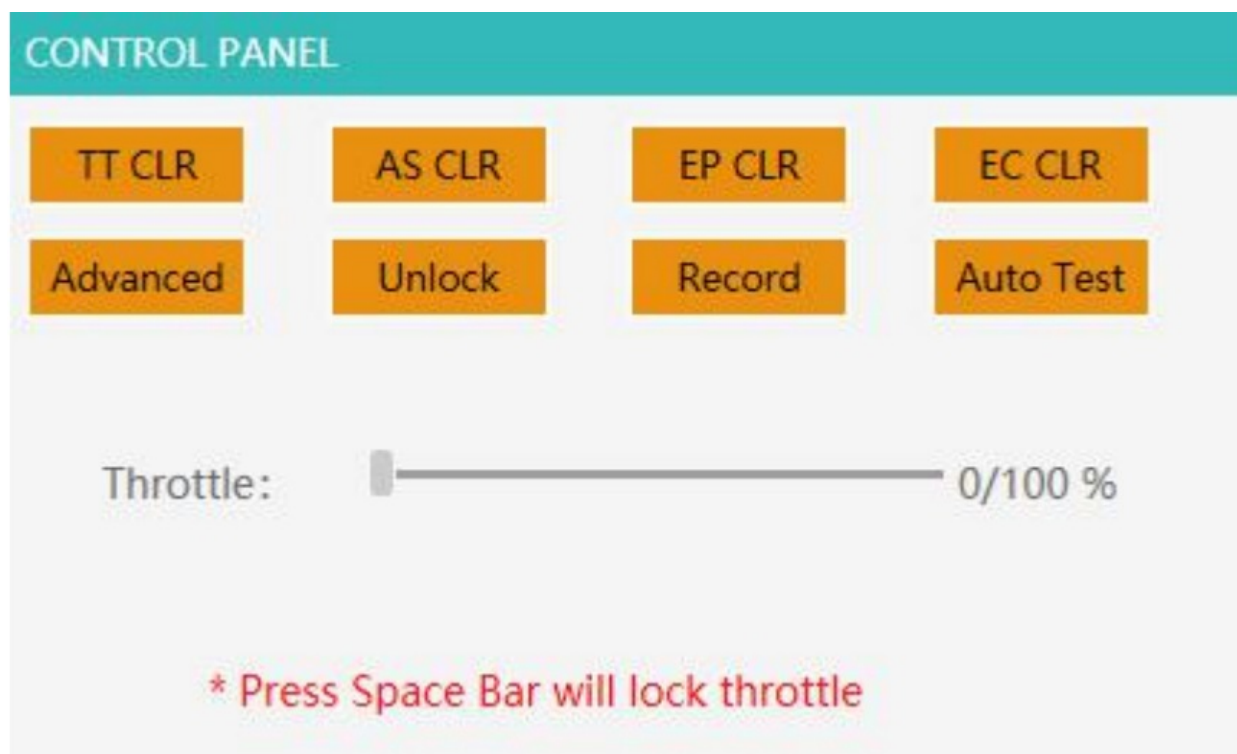


Figure 3.4.1 Throttle Unlock Interface

Disconnect power to the motor, then install a propeller. Users can do the next step in “Advanced throttle”. Unlock the throttle to Advanced Throttle mode.

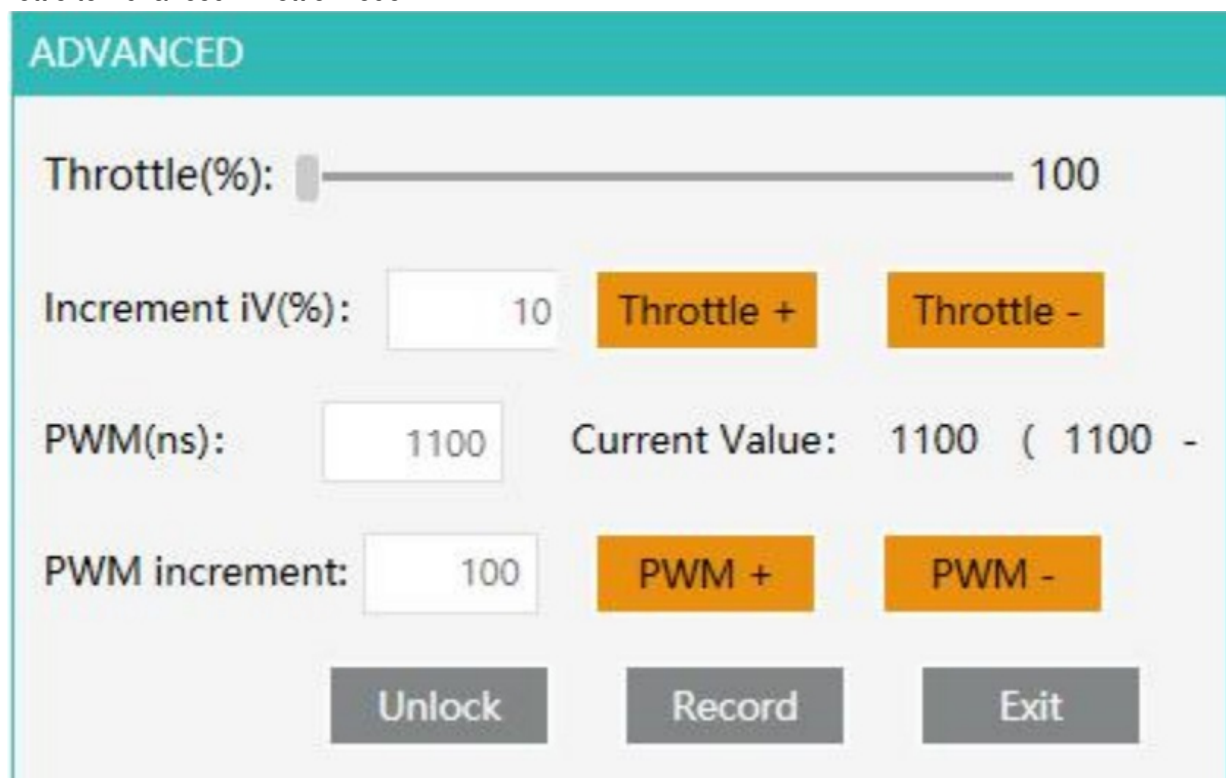


Figure 3.4.2 Advanced Throttle

Regular Checklist

Item	Each test	Each detachment	30 times test/month	100 times test/3 months	Remarks
Screws on holding Structure	x	x	x	V	His data is obtained propeller with 2000-5000RPM. Please adjust if the vibration of your motor and propeller is far different from it
Screws on Motor mount	V	V	V	V	
Screws to fix Temperature probe	V	V	V	V	
Linear bearing lubrication	x	x	V	V	
Screws on thrust/torque sensor	x	x	V	V	
Airspeed components	x	x	V	V	
Screws on Control Module	x	V	V	V	
Thrust/Torque sensor	x	x	x	V	
Voltage/current sensor calibration	x	x	x	V	

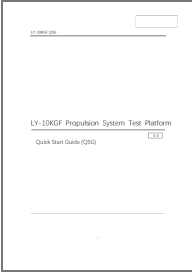
1. Check the screws: Use an Allen key to tighten screws and apply some glue when necessary.
2. Linear bearing lubrication: Spray the low-viscosity lubricant (WD-40 high-performance white lithium grease is recommended) into the oil inlet (DO NOT use mechanical lubricating oil with high viscosity).
3. Thrust/torque sensor inspection: use a tension meter on the end plate. Compare the data with the test bench. It's qualified if the error is less than 500g (Thrust < 10KGF). Generally, the sensor will not be damaged or failed to work as long as the data are almost the same.
4. Calibrate voltage/current sensor: Compare with a high-precision multimeter to check if it exceeds maximum error.

Note: Please read the software manual for details.

Please read FAQ if there are any questions about using the test platform.



Documents / Resources

	<p>FOXTECH LY-10KGF Propulsion System Test Platform [pdf] User Guide LY-10KGF Propulsion System Test Platform, LY-10KGF, Propulsion System Test Platform, Test Platform, Propulsion System</p>
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References

-  [Win10.net](#)