

LY-70KGF Propulsion System Test Platform

3.0

Quick Start Guide (QSG)

I. Notice and Disclaimer

Please read following terms carefully before taking 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 platform 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** power source before entering the test area or touching the tool. Ensure no electric leakage when voltage exceeds the safety voltage of human body;
5. Check the test stand according to the regular checklist to avoid any safety issue caused by bolts loosening;
6. Operation **MUST** be strictly follow the user manual. Wing Flying has no liability for any issue caused by wrong operation(eg. Approach or touch the rotating motor and propeller);
7. Violent test or destructive experiment is **Prohibited**. Disconnect power source immediately when accidents occur like resonance, propeller exploding and propeller breaking.

II. Installation

Please follow the instructions procedures below strictly.

1. Install Motor

Install motor on the motor mount with bolts and screws,as shown in Fig. 2.1.1.

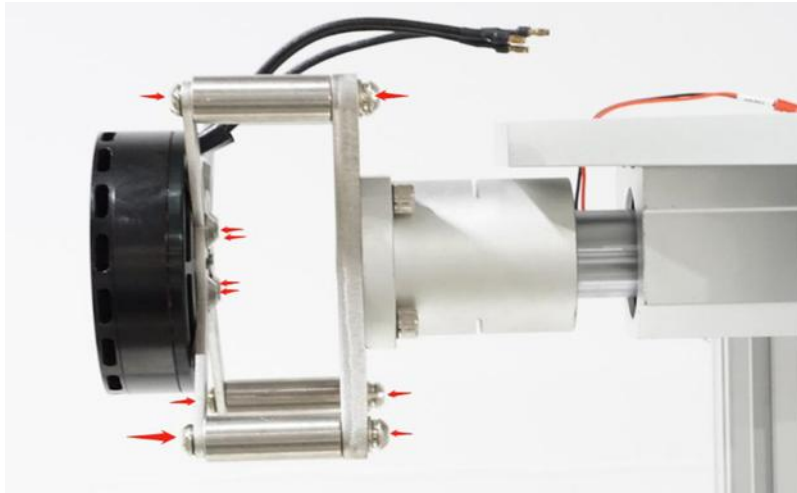


Fig. 2.1.1 Motor installation

2. Connect ESC and RMP Sensor

(1) Connect Motor and ESC(Any two cables) with the conversion cables, as shown in Fig. 2.2.1. Then connect JST plug.

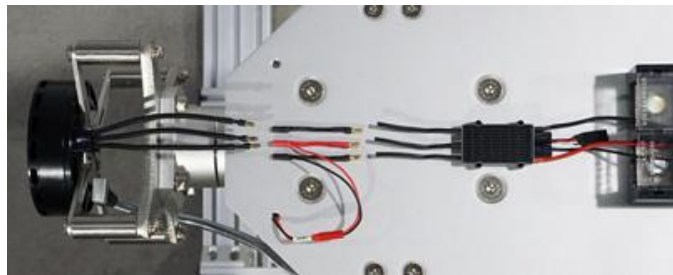


Fig 2.2.1 Motor&ESC Connection

(2) ESC signal cable connects to “OUT” port on the control module, as shown in Fig. 2.2.2:
The default output of “OUT” port is 3.3VPWM, 72Hz. Contact manufacturer if there is any problem on compatibility .

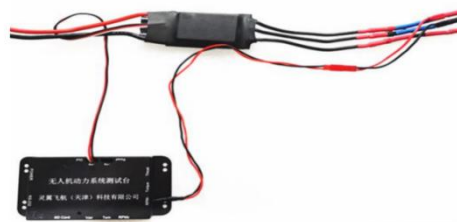


Fig 2.2.2 Signal Cable Connection

Note:

1. 3.5mm banana connector, max current 50A. And 4.0mm banana connector, max current 80A. We recommend users to weld cables by themselves if it exceeds the range above. (the conversion cable can be welded to any two soldered joints to reduce loss);
2. As shown in Fig. 2.2.2, motor, ESC and RPM sensor must be well fixed. **Keep a loose connection between motor and ESC, otherwise it will affect the accuracy of the test.**

3. Installation of Infrared Temperature Probe

LY-70KGF/Max 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



Fig. 2.3.1 Installation of Temperature Probe

4. Install Propeller and First Test

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

User **MUST** 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 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. Motor can stop rotating in time when propeller reaches its limitation.

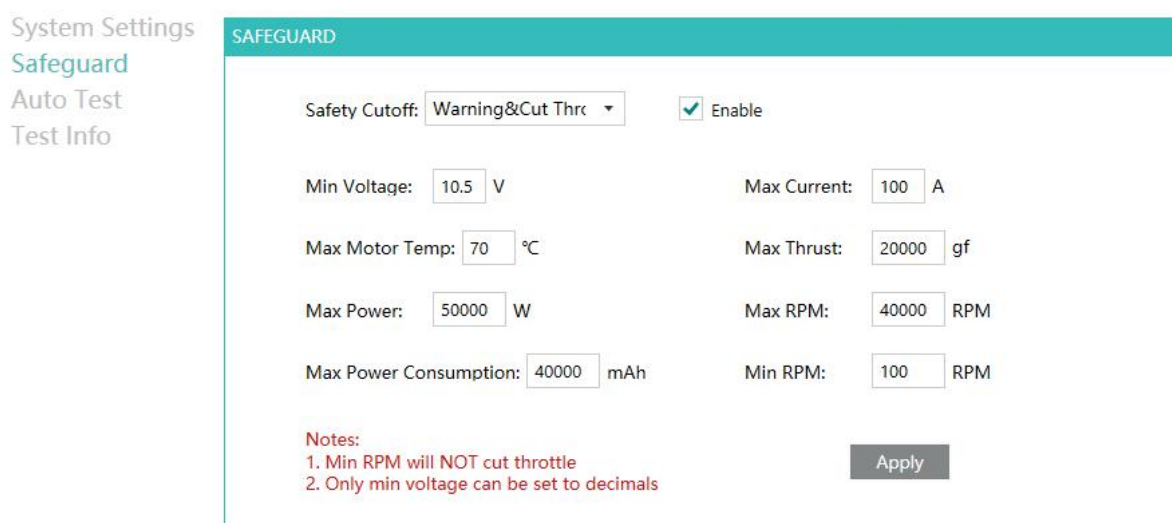


Fig. 2.4.1 Safeguard Setting

III. Software Debugging

1. Power On the Test Stand

Connect with 220V input, then power adapter connects to DC input (12V) on the test stand. You



Fig. 3.1.1 Power Adapter

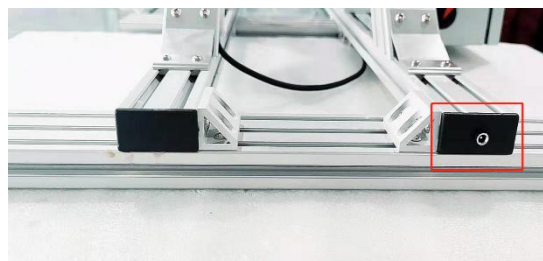


Fig. 3.1.2 DC Input on Test Stand

will hear “DiDiDi” after powered on, as shown in Fig. 3.1.1 and Fig. 3.1.2:

2. Connect with PC

(1) Software installation: Win7 / Win8 / Win8.1 / Win10 system

(2) Connection: connect the data cables or wireless data transmission. USB cable connects to your computer.

(3) Driver Debugging: Right click “My Computer” to “Computer management” , click “Device Manager”. User can find “USB Serial Port (COM XX)” which indicates driver has been installed automatically , as shown in Fig. 3.2.1

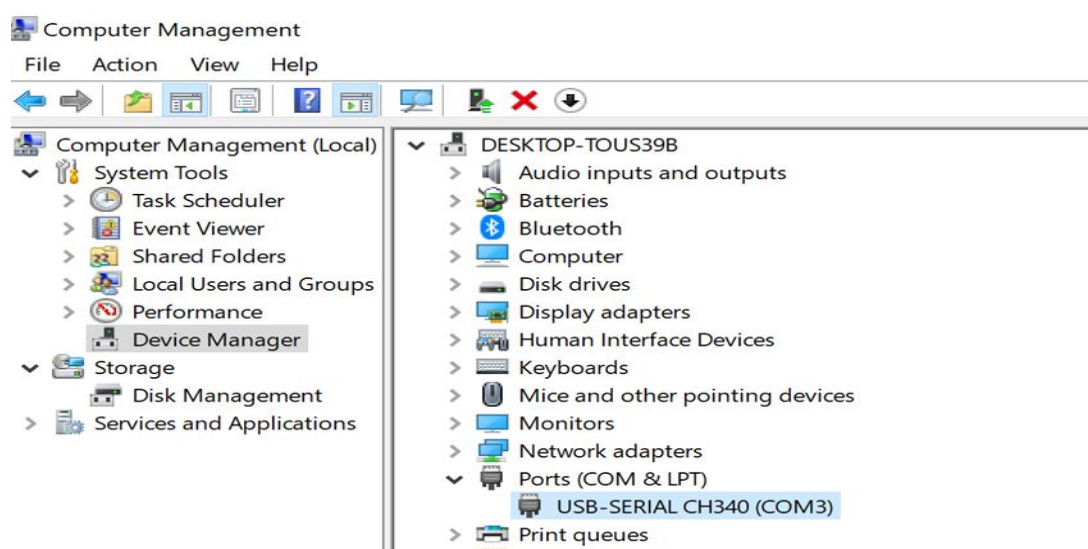


Fig. 3.2.1 Port Location

NOTE: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, user will see the COM XX , then click "Connect".

Connection succeeded when hearing “Di”, as shown in Fig. 3.2.2:

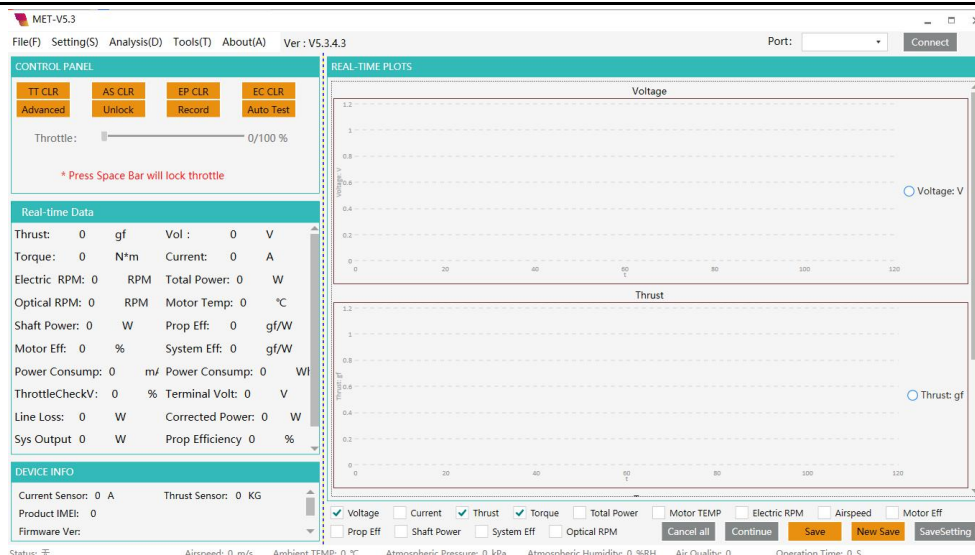


Fig. 3.2.2 Software Connection

3.Advanced Throttle and Data Recording

The data in Excel is recorded in Manual Control mode. User 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 original data.

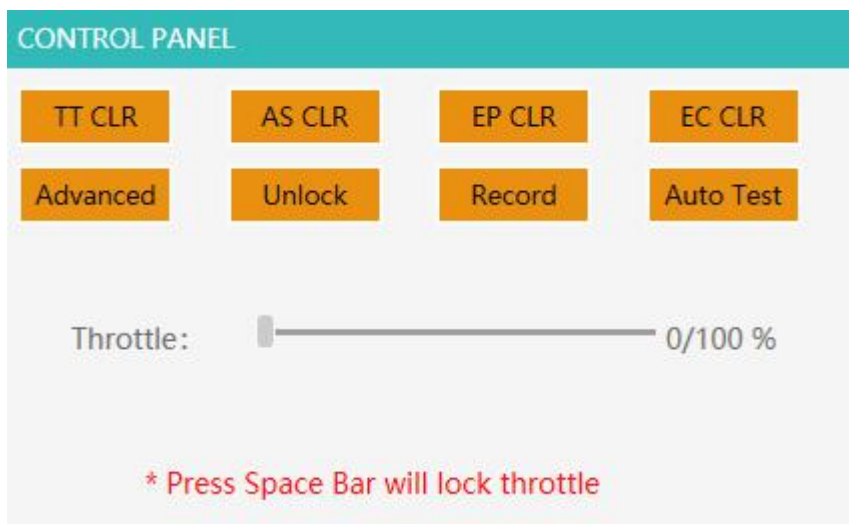


Fig. 3.3.1 Throttle Unlock Interface

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

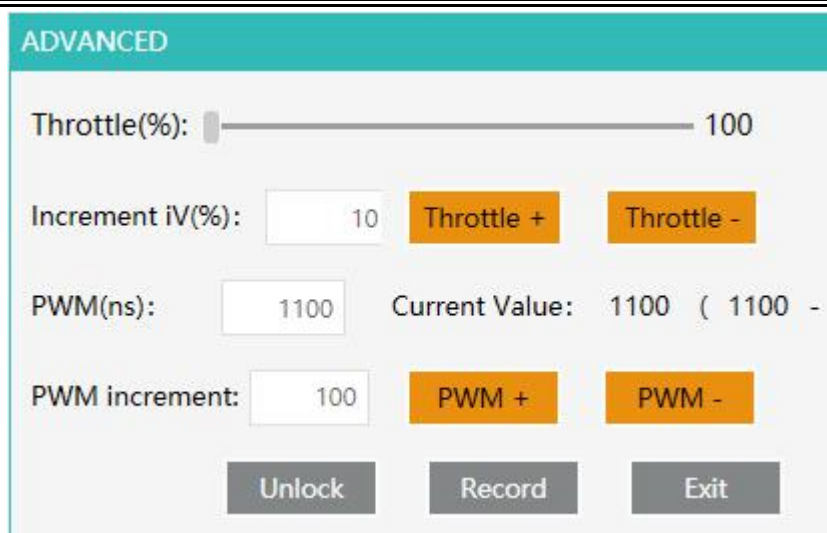


Figure 3.3.2 Advanced Throttle Interface

IV. Regular Checklist

Item	Each test	Each Detachment	30 times test/month	100 times test/3 months	Remarks
Screws on holding Structure	x	x	x	√	This data is obtained from HAWK-40 inch propeller with 2000-4000RPM. Please make proper adjustment if the vibration of your motor and propeller is far different from it.
Screws on Motor mount	√	√	√	√	
Screws to fix Temperature probe	√	√	√	√	
Linear bearing lubrication	x	x	√	√	
Screws on thrust/torque sensor	x	x	√	√	
Airspeed components	x	x	√	√	
Screws on Control Module	x	√	√	√	
Thrust/Torque sensor	x	x	x	√	
Voltage/current sensor calibration	x	x	x	√	

(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 multi meter to check if it exceeds maximum error.

Note: Please read the Software Manual for details.

Please read FAQ if there is any question of using the test platform.