# WF-EDU-02 Motor and Propeller Test Stand

3.0

## Quick Start Guide(QSG)

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# 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 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** 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

## 1. Install the Motor

Mount the motor with 4 screws and fish-eye washers, then install it on the head of the test stand, as shown in Fig.2.1.

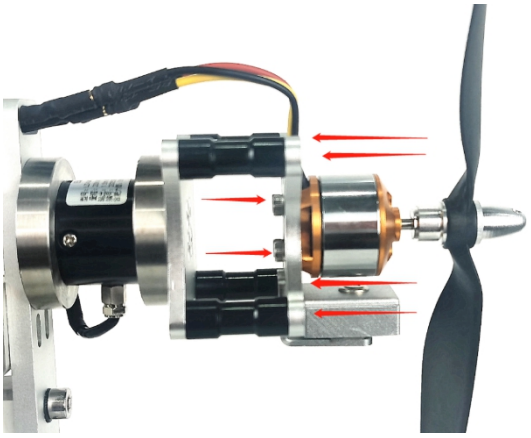

Fig 2.1 Motor Installation

## 2. Install ESC

ESC has been installed on the mounting plate and cables have connected to the control module, as shown in Fig.2.2(DO NOT detach the ESC).

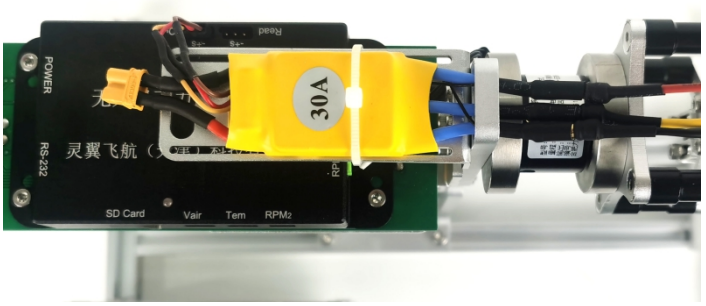


Fig.2.2 ESC Installation

## 3. Installation of Infrared Temperature Probe

The test stand measures temperature by 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.3.1.

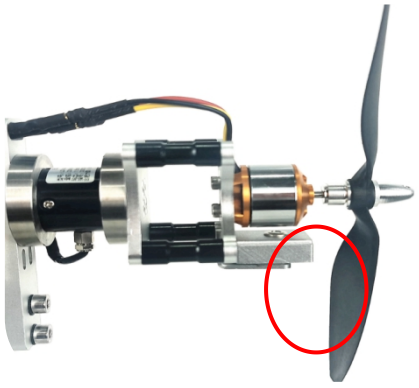

Fig.3.1 Installation of Temperature Probe

## 4. Install Propeller and First Test

(1) Install propellers according to your manual. Ensure your propeller is well fixed.

(2) First Test

User **Should** do the Safeguard settings to prevent any damage for first-time use, as shown in Fig. 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℃ /coil temperature 100℃. 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 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

## 2. Connect with PC

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

(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.

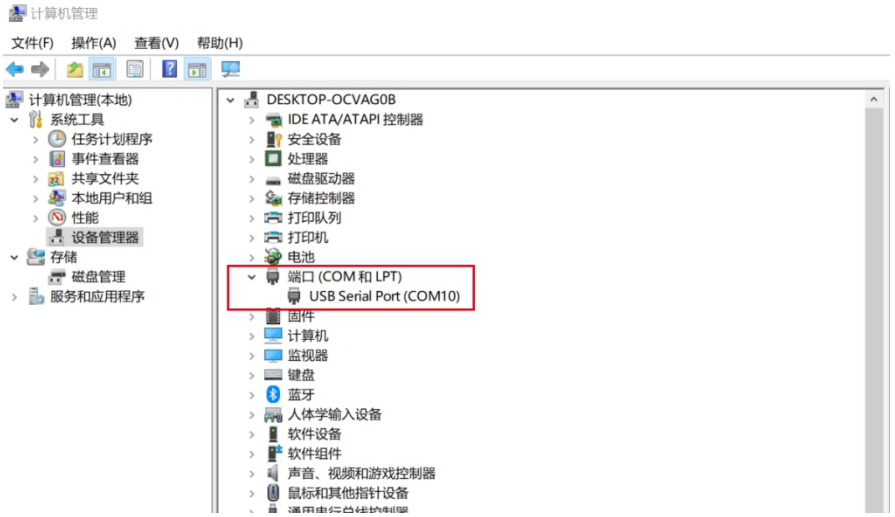


Fig.3.2.1

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

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

## 3.Settings

(1) Software License

User can obtain the License in the U disk(U disk included in the package)

(2). Settings

①PWM range : MIN and MAX throttle input of the ESC. Generally from 1100 to 1940.

②Motor Pairs(Polar Pairs): half of Magnetic poles /2; Obtain the motor-pairs from the list. Must input the motor pairs, otherwise it will display wrong RPM.

Fig 3.3.1 System Settings

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

## 4. 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 raw data


Figure 3.4.1 Throttle Unlock Interface

Disconnected the motor, then install propeller. User can do next step in "Advanced throttle". Unlock throttle to Advanced Throttle mode


Figure 3.4.2 Advanced Throttle

# IV. Regular Checklist

| Item | Each test | Each detachment | 30 times test/month | 100 times test/3 months | Remarks |
|---|---|---|---|---|---|
| Screws on holding Structure | x | √ | x | √ | This data is obtained from GF9047 propeller with 10000RPM. 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 | √ | √ | √ | √ | |
| Screws on thrust/torque sensor | x | √ | √ | √ | |
| Screws on Control Module | x | √ | x | √ | |
| Thrust/Torque sensor | x | √ | x | √ | |
| Voltage/current sensor calibration | x | √ | x | √ | |

(1).Check the screws: Use an Allen key to tighten screws and apply some glue when necessary.
(2).Thrust/torque sensor inspection: use a simple tension meter on the end plate. Compare the data with the test bench. It's qualified if the error is less than 80g ( Thrust<5KGF). Generally, the sensor will not be damaged or flailed to work as long as the data are almost the same.

(3).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 stand.