SIYI

E6
PROPULSION SYSTEM
USER MANUAL

SIYI Technology (Shenzhen) Co., Ltd.

SIYI.biz/en

Thank you for purchasing SIYI Technology's product.

The E6 is an integrated propulsion system independently developed by SIYI Technology, specifically designed for agricultural drones and industrial UAVs with a single-axis thrust of 3-6KG. Combining strong thrust, precise control, and high reliability, it features FOC vector control, dual throttle redundancy, modular design, and potting sealing technology. With intelligent data monitoring and fault storage capabilities, as well as an IPX6 protection rating, the E6 is the ideal choice for agricultural and industrial propulsion systems.

To ensure a positive product experience, please carefully review the user manual before installation and flight. This manual will help address most of your usage questions. For further assistance, you can visit the relevant product pages on the official SIYI Technology website (https://SIYI.biz/en/), call SIYI Technology Official After-Sales Service Center at (400-838-2918), or email support@SIYI.biz to consult with SIYI Technology engineers or provide feedback regarding the product.

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Contact Us: **SIYI Official Website** *(https://SIYI.biz/en)*

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Facebook	
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Manual Version Update Record

Version	Date	Updates
1.0	2025.2	Initial version.

CONTENTS

READ TIPS

Icons

Please pay more attention to content indicated with the following marks:

DANGER Dangerous manipulation probably leads to human injuries.

WARNING Warnings on manipulation possibly leads to human injuries.

CAUTION Cautions on what manipulation may lead to property loss.

Prohibited **Mandatory** **Mark**

Safety

D6 enterprise propulsion system is designed for professional application in specific scenes, users who approach to the

equipment should have the basic knowledge of how to operate it. Irregular or irresponsible manipulations to the device may cause damage, property loss, or human injuries, and SIYI Technology is not obliged to any of the damage, loss, or injury. It is prohibited to use SIYI products for military purpose. Users under 14 years' old should follow an experienced trainer's guide. Disassembling or modification to the system is prohibited without permission from its manufacturer, SIYI Technology.

Storage / Carrying / Recycling

When your SIYI product is left unused, or you are bringing it outdoors, or the product life has expired, please do read the below precautions.

⚠ DANGER

Always place your SIYI products at places where babies or kids do not reach.

SIYI products should be placed in places which are too hot (above 60℃) or too cold (under -20℃).

CAUTION

SIYI products should not be placed in places under direct sunshine or too dusty or too wet.

Carrying or transporting SIYI products should avoid vibration or shatter by which components may break.

CHAPTER 1 INTRODUCTION

1.1 Product Features

Powerful Performance

The maximum recommended thrust per rotor reaches 6kg, with a thrust-to-weight ratio of 7.0G/W. With enhanced power redundancy, the system enables smoother flight under load and longer operational endurance, improving work efficiency.

Modular Design

This integrated propulsion system eliminates the need for complex assembly of power components. Users only need to install the system onto the arm, providing high integration, ease of use, and quick assembly and disassembly.

ESC (Electronic Speed Controller)

The **SIYI** self-developed FOC ESC offers precise control and high responsiveness. Its fault protection function has undergone extensive testing to ensure safety, reliability, and stability. It supports data storage, real-time system monitoring, and issue location and analysis. Featuring potting sealing technology, it

provides an IPX6 protection rating, making it resistant to rain and pesticides, ensuring long-term stable operation.

Motor

The motor is equipped with high-quality bearings and high-performance magnets to enhance corrosion resistance, extend lifespan, and ensure long-term stable operation. The centrifugal cooling structure utilizes excellent aerodynamic simulation design, providing high airflow, low noise, and outstanding heat dissipation. The motor's winding insulation is rated for 200°C, significantly improving motor reliability during operation.

Propellers

The propellers feature a large pitch design with superior aerodynamics to provide higher thrust while maintaining efficiency. Made from carbon fiber nylon composite material, they are corrosion-resistant, easy to maintain, and durable in various operational environments.

PWM + CAN Dual Throttle Redundancy

The dual throttle design allows flexible control response and logic selection, adjusting real-time responses quickly to enhance data transmission stability and system anti-interference

capability. With dual redundancy via PWM throttle and CAN throttle, the system can switch between throttles without changing the throttle position, greatly improving fault tolerance and safety.

Fault Storage & Real-Time Analysis

The ESC has built-in data storage. When combined with the **SIYI CAN LINK** power upgrade and tuning module, it enables firmware upgrades, real-time data monitoring, historical data queries, fault storage and analysis, and ESC parameter adjustments. Using the CAN communication protocol, the system quickly detects and provides feedback on the Propulsion System's status, preventing potential risks.

Comprehensive ESC Protection

Whether during power-on self-checks or operation, the ESC features preset detection mechanisms to identify system abnormalities in time, ensuring both equipment and personnel safety.

1. **Power-On Self-Check**: High/low voltage protection, phase loss protection, operational amplifier abnormality

protection, MOSFET short-circuit protection, throttle loss/zeroing protection

2. **Operational Protection**: Stalled motor protection, throttle loss warning, overcurrent warning

Efficient and Reliable

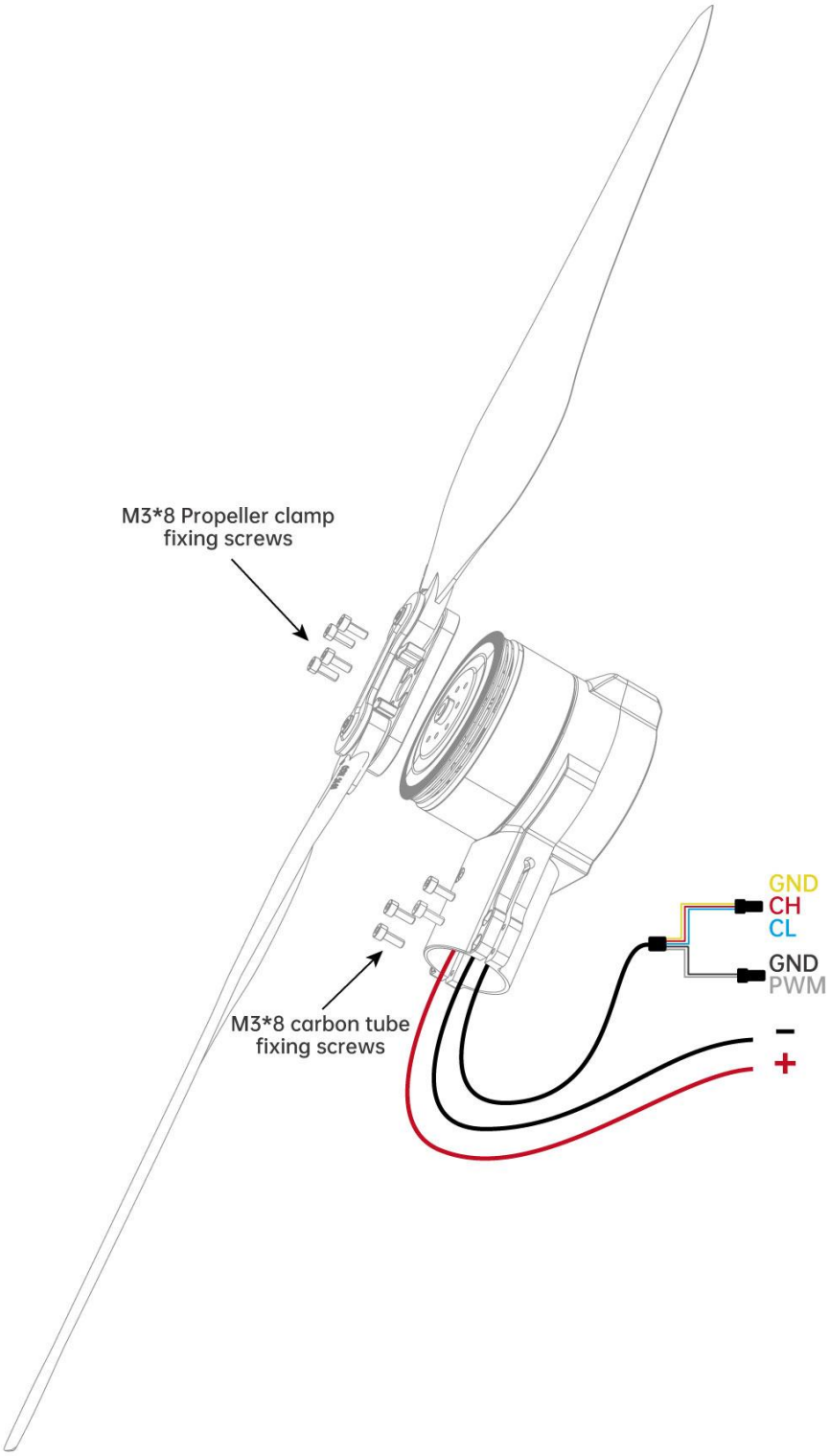
Through hundreds of tests, rigorous aging under harsh laboratory conditions for over 1000 hours of continuous load, and more than 200 hours of field aging, the system undergoes strict quality control.

Balancing Open-Source and Commercial Ecosystem

Following years of excellence in the intelligent robotics field, **SIYI Technology** supports both open-source and trusted commercial systems, infusing strong vitality into the creation of a sustainable industry ecosystem.

1. **SIYI Ecosystem**: View data waveforms, upgrade firmware, change configurations, and trace fault data on the upper-level system.
2. **Open-Source Ecosystem**: Open-source protocol support — Autopilot, PX4, Decahedron.

1.2 Product Overview



1.3 Technical Specification

Overall

Max Thrust	12.5 kg / rotor
Recommended Take-off Weight	3 ~ 6 kg / rotor
Recommended Battery	12S ~ 14S LiPo
Cable Length	Power Cable : 900 mm Signal Cable : 1050 mm
Protection Class	IPX6
Compatible Arm Tube Diameter	30 mm
Product Weight	715 g

ESC

Model	70A FOC
PWM Voltage Input	3.3 / 5V
PWM Pulse Width	1050 ~ 1950 μs
PWM Working Frequency	50 ~ 500 Hz
Max Voltage	63V

Continuous Current	60A
Max Current	120A(Brief)
Communication Protocol	CAN
Firmware Upgrade	Supported
Digital Throttle	CAN Throttle

Motor

KV	155 KV
Motor Size	Φ62 * 18 mm
Poles & Magnets	24N28P
Product Weight	403.5 g

Propeller

Diameter x Pitch	24 * 9.0Inch
Product Weight	109.6 g

1.4 Performance Specifications

E6 Foldable Propeller Performance							
Working Voltage	Propeller	Throttle (%)	Thrust (kg)	Current (A)	RPM	Power Input (W)	Efficiency (g/W)
48V	2490	30	1.46	2.4	1986	114.0	12.8
		33	1.81	3.2	2209	155.3	11.6
		36	2.21	4.3	2431	205.4	10.7
		39	2.60	5.4	2646	259.2	10.0
		42	3.09	6.8	2858	324.5	9.5
		45	3.49	8.1	3062	390.7	8.9
		48	3.91	9.8	3256	469.8	8.3
		51	4.54	11.8	3444	568.2	8.0
		54	4.88	13.5	3644	647.8	7.5
		57	5.57	15.9	3813	763.4	7.3
		60	6.02	18.3	3992	875.3	6.9
		63	6.55	20.6	4157	990.0	6.6
		66	7.23	23.7	4308	1135.7	6.4
		69	7.65	26.2	4490	1256.3	6.1
		72	8.19	29.6	4629	1419.1	5.8
		75	8.86	33.0	4778	1580.5	5.6
		78	9.43	36.2	4923	1735.5	5.4
		81	9.86	39.6	5039	1897.0	5.2
		84	10.32	43.3	5168	2077.6	5.0
		87	10.92	47.0	5287	2255.8	4.8
		90	11.40	51.2	5397	2456.5	4.6
		93	11.70	53.9	5514	2588.3	4.5
		96	12.10	57.9	5605	2774.3	4.4
		100	12.52	59.2	5632	2842.6	4.3

1.5 Packing List

Powertrain (Excluding Propellers)

1 x E6 UAV Powertrain (CW or CCW)

Propellers

1 x 2490 Folding Propeller (CW or CCW)

1 x Propeller Strap

4 x M3*8 Hexagon Socket Screws

1.6 Protection Function, Indicator Definition, & Buzzer Definition

The SIYI propulsion system uses both indicator lights and a buzzer to define different operational statuses.

Status	Abnormal Information	Buzzer	Indicator Light	Recommended Action
Self-Check Status	Overvoltage, Undervoltage	No sound	Yellow light flashing Overvoltage: One short beep Undervoltage: Two short beeps	Check the power supply
	Operational Amplifier Error	No sound	Yellow light flashing Two long, three short beeps	Contact technical support
	MOS Short-Circuit	No sound	Yellow light flashing Two long, two short beeps	Contact technical support
	Motor Phase Loss	No sound	Yellow light flashing Two long, one short beep	Check if the motor is rotating smoothly
	Throttle Loss	One short beep	Yellow light flashing One long beep	Check if the throttle harness is damaged, and ensure the connected device is outputting the correct signal
	Throttle Not Returning to Zero	Rapid short beeps	Yellow light flashing One long, one short beep	Check the throttle range of the flight controller and remote controller
During	Throttle Loss	One short	Yellow light	Loose or damaged

Operation		beep	flashing One long beep	wiring, or the connected device is not outputting the correct signal
	Stall Protection	No sound	Yellow light flashing One long, four short beeps	Check if there is any debris in the motor
	MOS Overtemperature	No sound	Yellow light flashing One long, two short beeps	Check if within the recommended payload range
	Capacitor Overtemperature	No sound	Yellow light flashing One long, three short beeps	Check if within the recommended payload range
	Full Throttle (100%)	No sound	Yellow light stays on until the throttle is reduced to a non-full position	Not within the recommended thrust range; will return to normal light after the throttle is reduced to a non-full position
	Overcurrent Warning	No sound	Yellow light flashing	Check if within the recommended payload range
ESC Firmware Upgrade	No Firmware	No sound	White light solid	Upgrade the firmware after connecting to tuning software
	Firmware Upgrade Failed	No sound	White light solid	Ensure the propulsion system is working correctly, wiring is properly connected, and then attempt to reflash the firmware
	Firmware Upgrading	No sound	White light solid	Firmware upgrade in progress; will return to normal light after successful upgrade

Note

Red, green, and blue are the normal indicator light colors, which can be user-defined or the system's navigation lights can be turned off.

Even if the navigation lights of the propulsion system are turned off, the yellow light will still flash in case of a fault or anomaly.

CHAPTER 2 PREPARE FOR ASSEMBLY

2.1 Solder the Power Connector

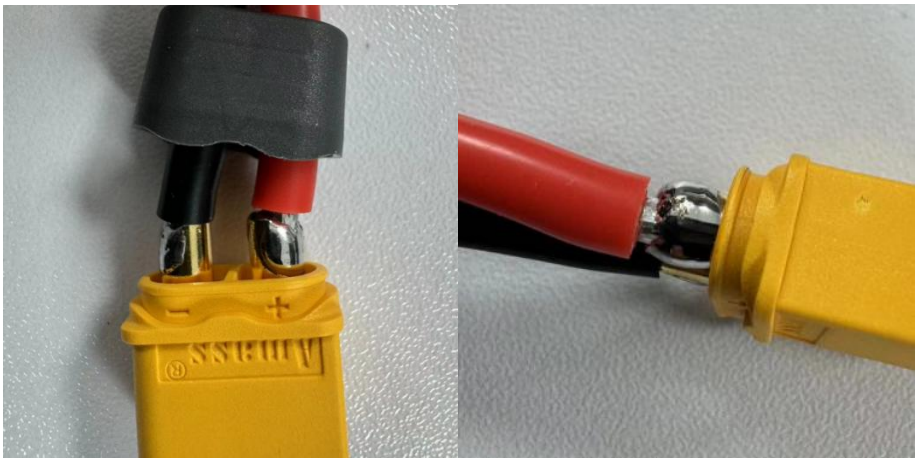
Soldering the power connector is a necessary step to ensure that the propulsion system works properly.

Tools Required:

- Soldering Iron
- Soldering Tin (enough)
- Connectors (Amass XT60 or higher grade is recommended)

Steps

1. Identify the positive (red) and negative (black) power wires of the propulsion system.
2. Use the soldering iron to solder the positive wire to the positive pole of the connector and the negative wire to the negative pole of the connector.



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Please ensure that the power wires are fully and securely soldered to the connector, with the solder joints being well-filled to avoid cold or weak soldering. This is crucial for maximizing flight safety.

2.2 Configuration

SIYI UniGCS software allows users to customize the Propulsion System's light color, throttle ID, and CAN throttle settings.

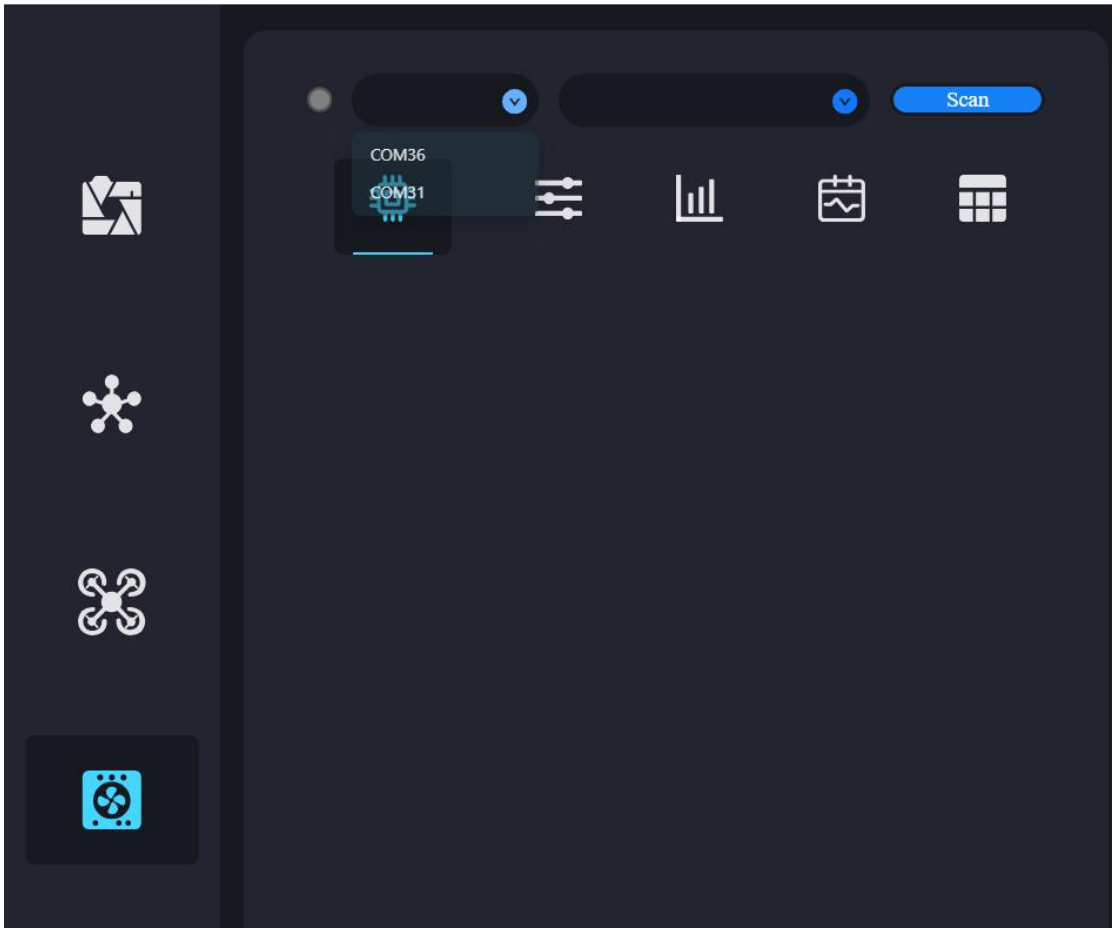
Tools Required

- SIYI UniGCS (Windows Version)
- SIYI CAN Link Module
- Windows Device

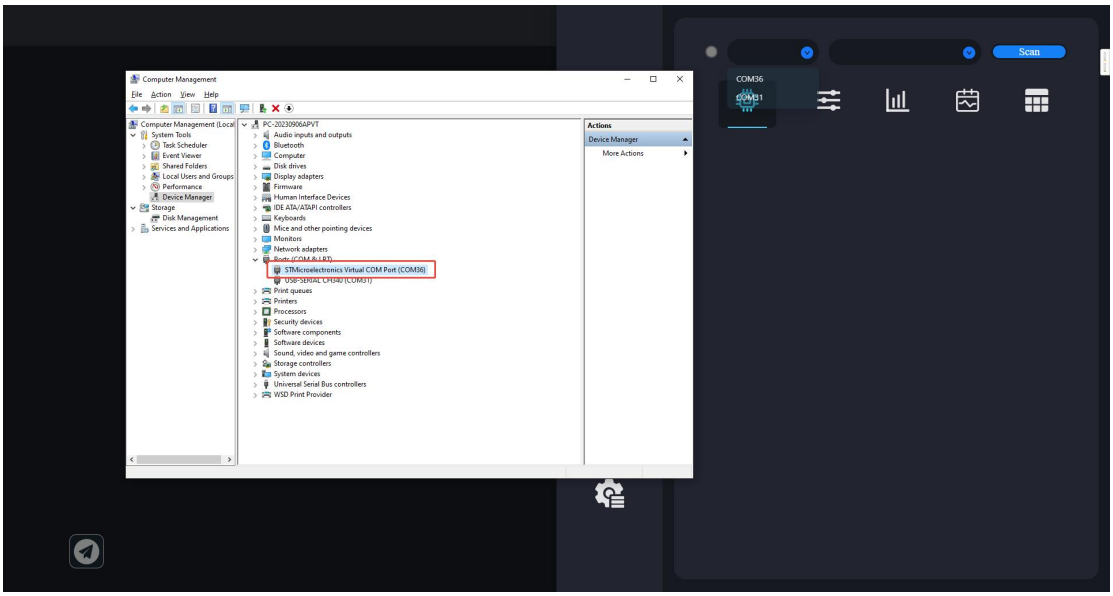
Steps

1.Please refer to the image above to connect the Propulsion System, ground control station, and Windows device.

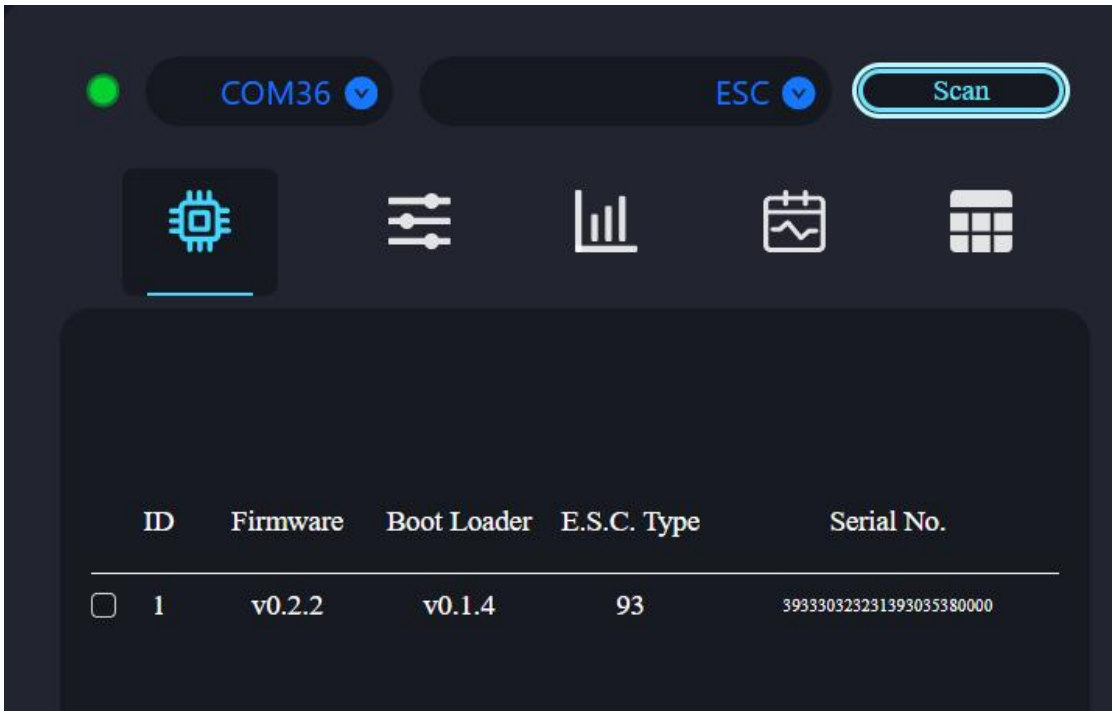
2.Run the SIYI UniGCS software and enter the ESC settings menu.



3.Select the corresponding COM port and device type (ESC), then click "Scan."

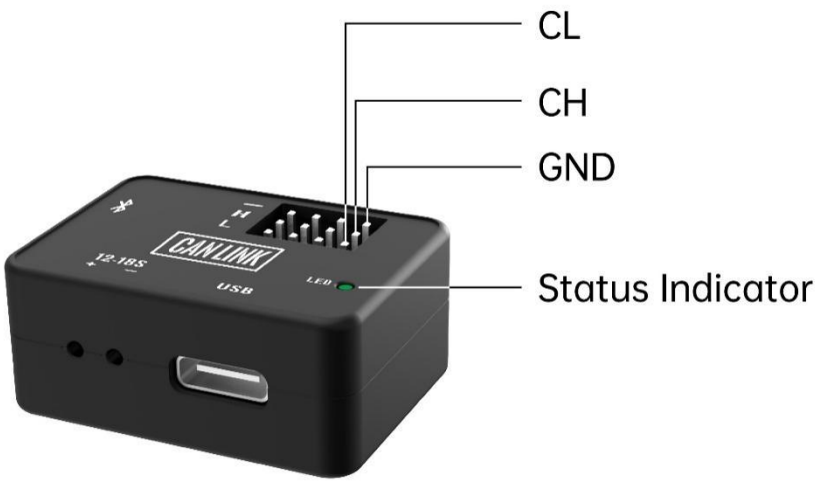


4.If the Propulsion System is successfully recognized, the connection is successful.



Note:

Before performing parameter adjustments, please ensure that the Propulsion System is functioning properly, and pay special attention to the pin definition of the CAN interface to avoid incorrect insertion.

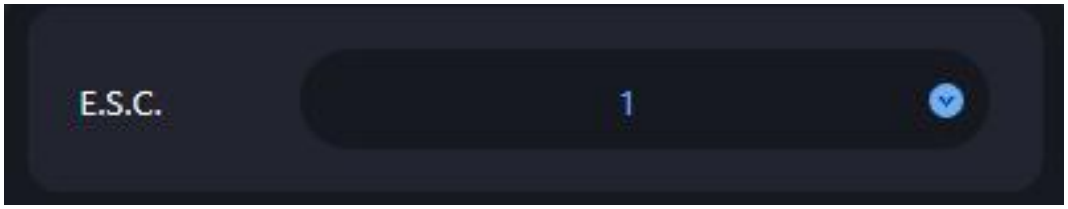


2.2.1 Indicator Colors

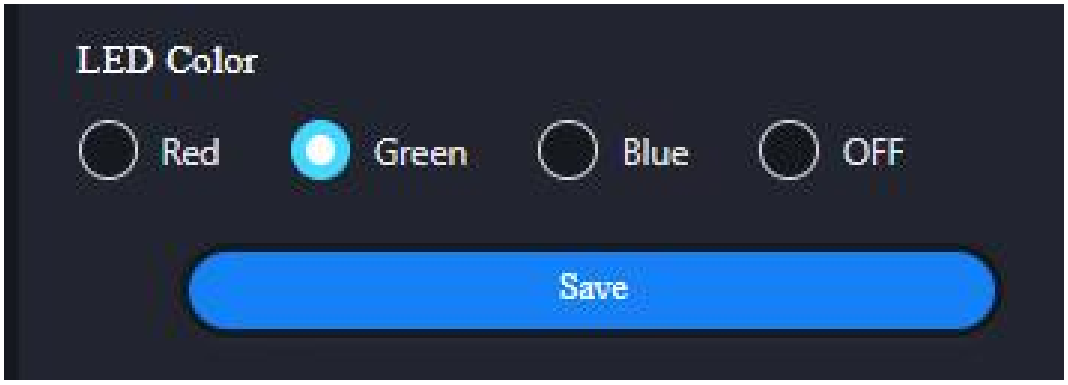
The indicator colors of the propulsion system are an important reference during LOS (Line of Sight) flight.

Steps

1. Select the target ESC ID.



2. Set the indicator color for the selected ESC and save the settings.



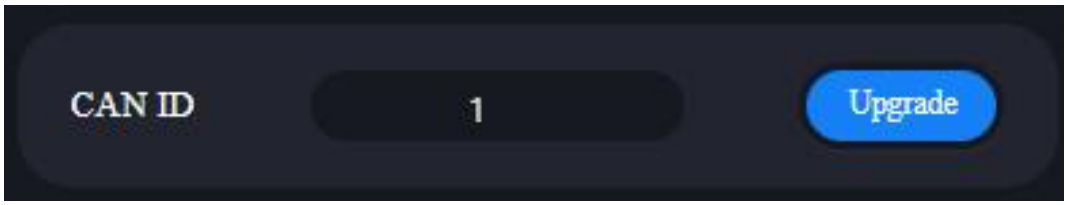
3. If the propulsion system's indicator color changes accordingly, settings are successful.

Mark

Before configuring the ESC, please disconnect other serial port devices to avoid issues in recognizing the propulsion system.

2.2.2 CAN ID

When using CAN throttle, it is necessary to set a CAN ID for the propulsion system.



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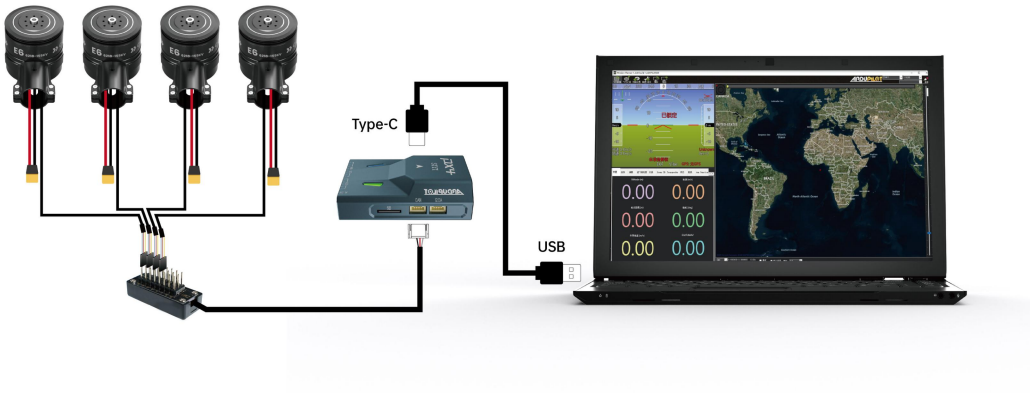
CAN ID has been automatically assigned during production. So, it is not mandatory to configure the CAN ID every time.

2.3 CAN Throttle

CAN throttle is digital throttle which helps the propulsion system function more precise and smoother.

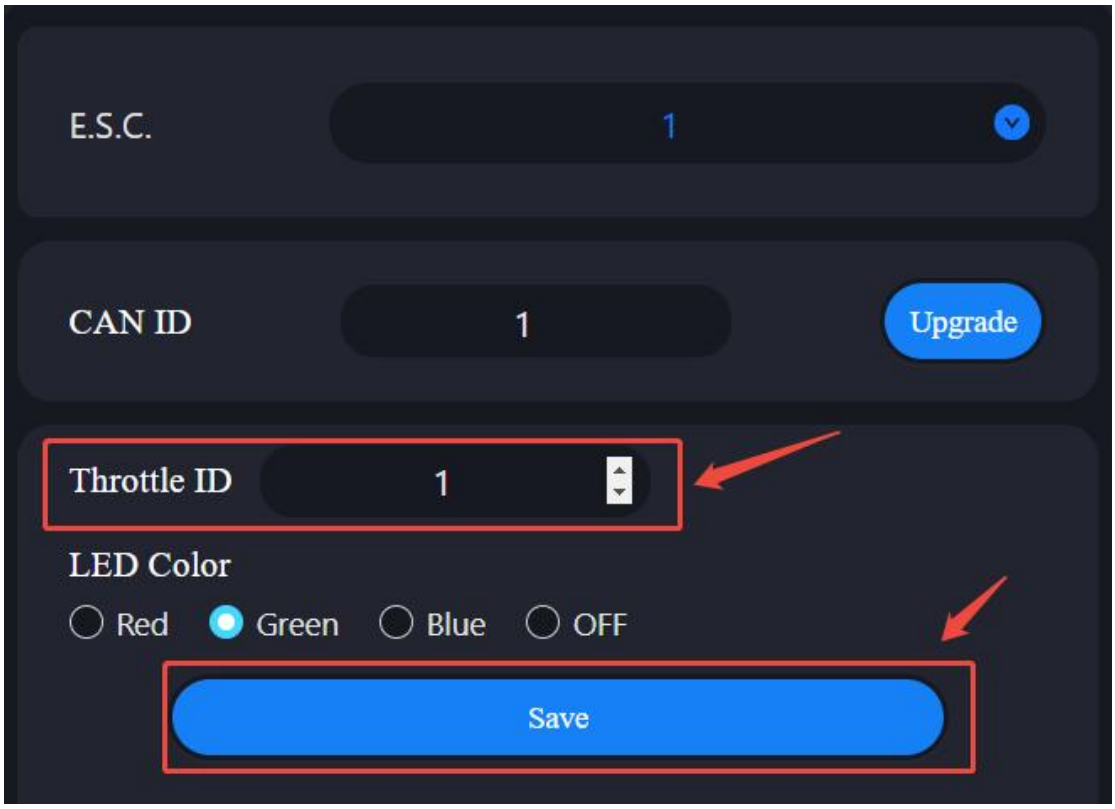


Note:

The E6 Propulsion System defaults to PWM throttle priority. The CAN throttle will only be used when there is no PWM throttle. If the CAN throttle is not used, no settings are required.

2.3.1 Setting CAN Throttle via SIYI UniGCS

Please refer to Section 2.2 of this user manual to connect the device and run the SIYI UniGCS software to enter the ESC settings menu. Select the target ESC, set the throttle ID for the ESC, and save the settings.

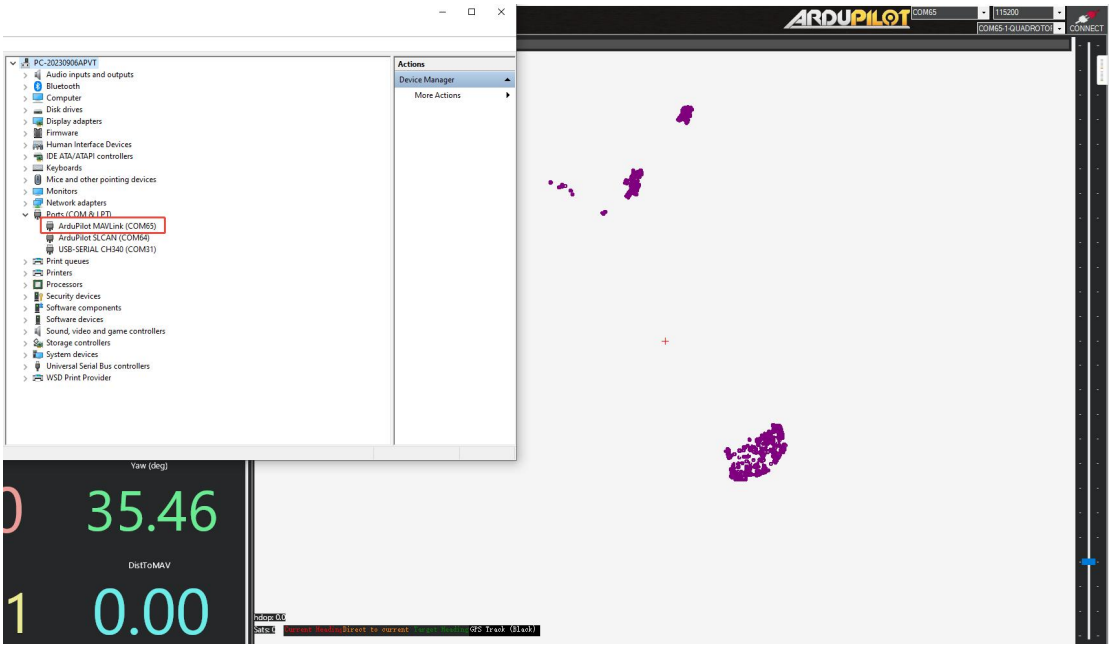


2.3.2 Setting CAN Throttle via Mission Planner Ground Control Station (ArduPilot)

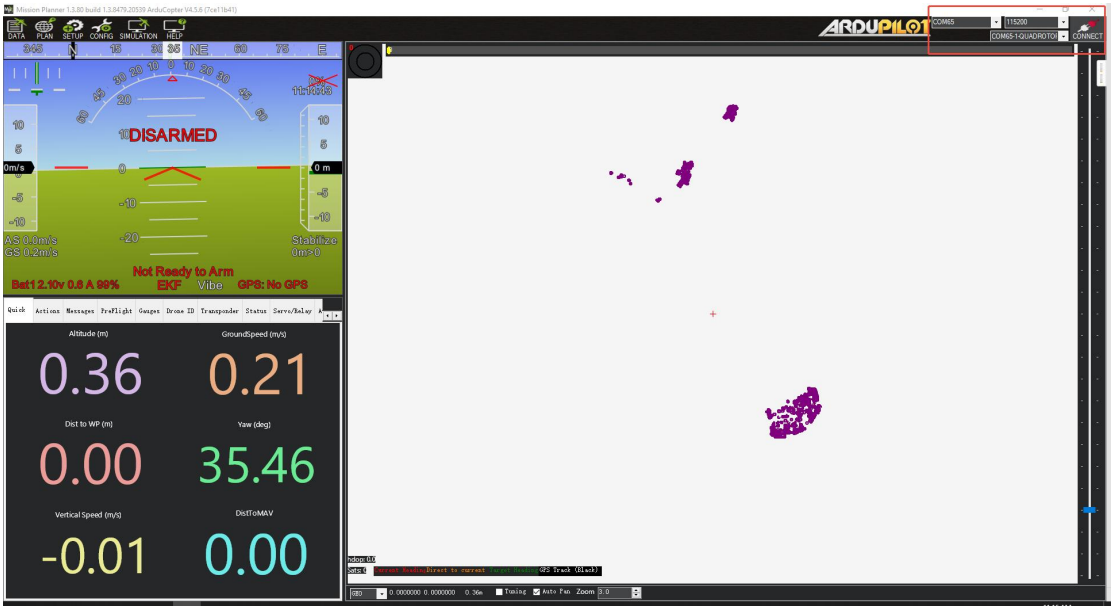
The ArduPilot flight controller supports setting the E6 propulsion system via the DroneCAN protocol.

Steps

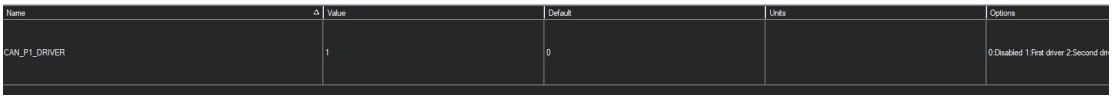
1.Launch Mission Planner and find the corresponding port in the PC device manager.



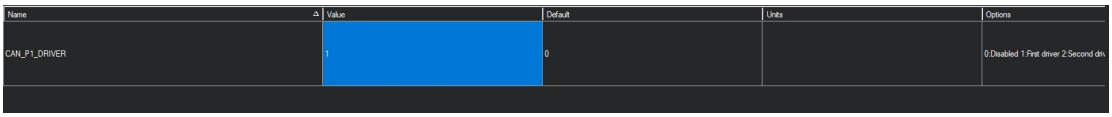
2.Select the corresponding COM port and set the baud rate to 115200.



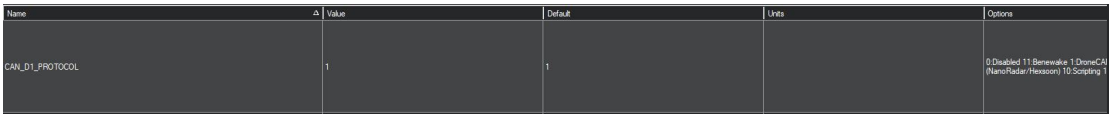
3.Search for CAN_P1_DRIVER.



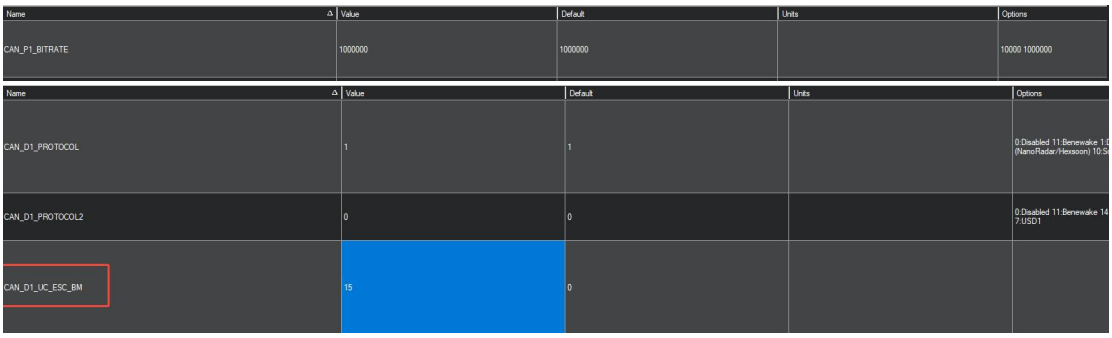
4.Set the value to CAN_P1_DRIVER = 1.



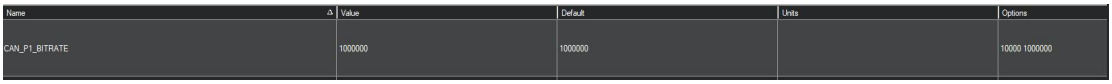
5.Then configure the parameter CAN_D1_PROTOCOL = 1 to set the CAN interface protocol to DroneCAN.



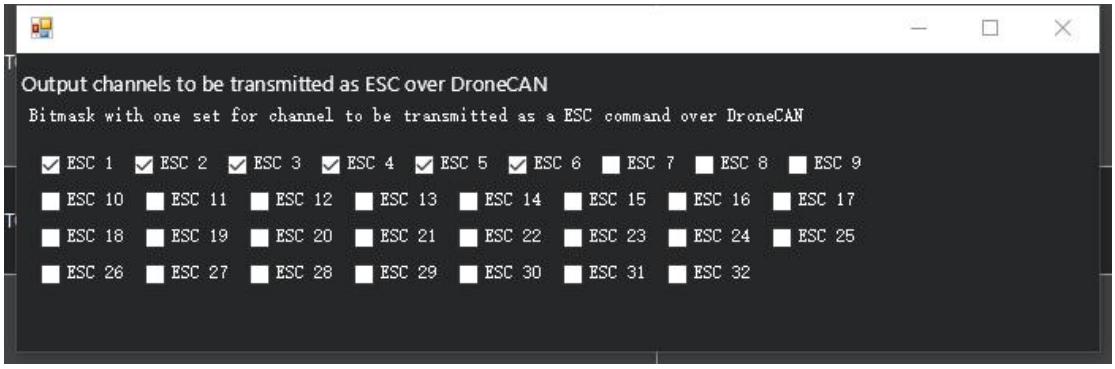
6.After successful configuration, restart the flight controller, and you should see additional parameters, CAN_P1_BITRATE and CAN_D1_UC_ESC_BM.



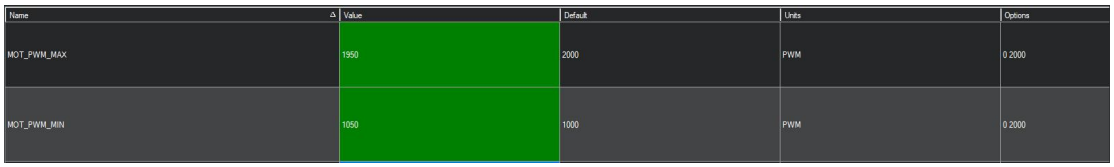
7.Set the CAN_P1_BITRATE to 1000000.



8.Check the CAN_D1_UC_ESC_BM based on the number of ESCs and their corresponding ESC numbers. The following image shows the case where 6 ESCs are used, and the ESC numbers are configured as 1, 2, 3, 4, 5, and 6.



9.Set MOT_PWM_MAX to 1950 and MOT_PWM_MIN to 1050.



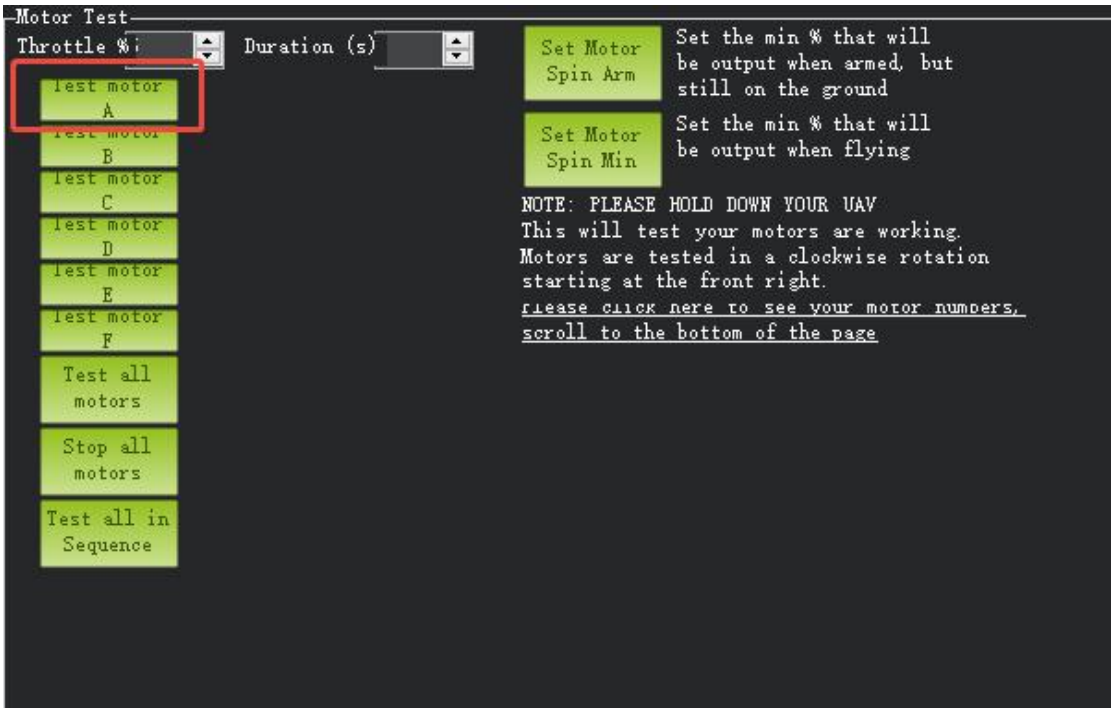
Warning

When setting the MOT_PWM_MAX/MIN parameters, do not install the propellers. It is normal for the motors to briefly start when writing the correct parameters.

ESC Test

1.In the ESC test interface, you can set the throttle and the duration of the throttle action. After setting, select the motor to test based on the motor number.

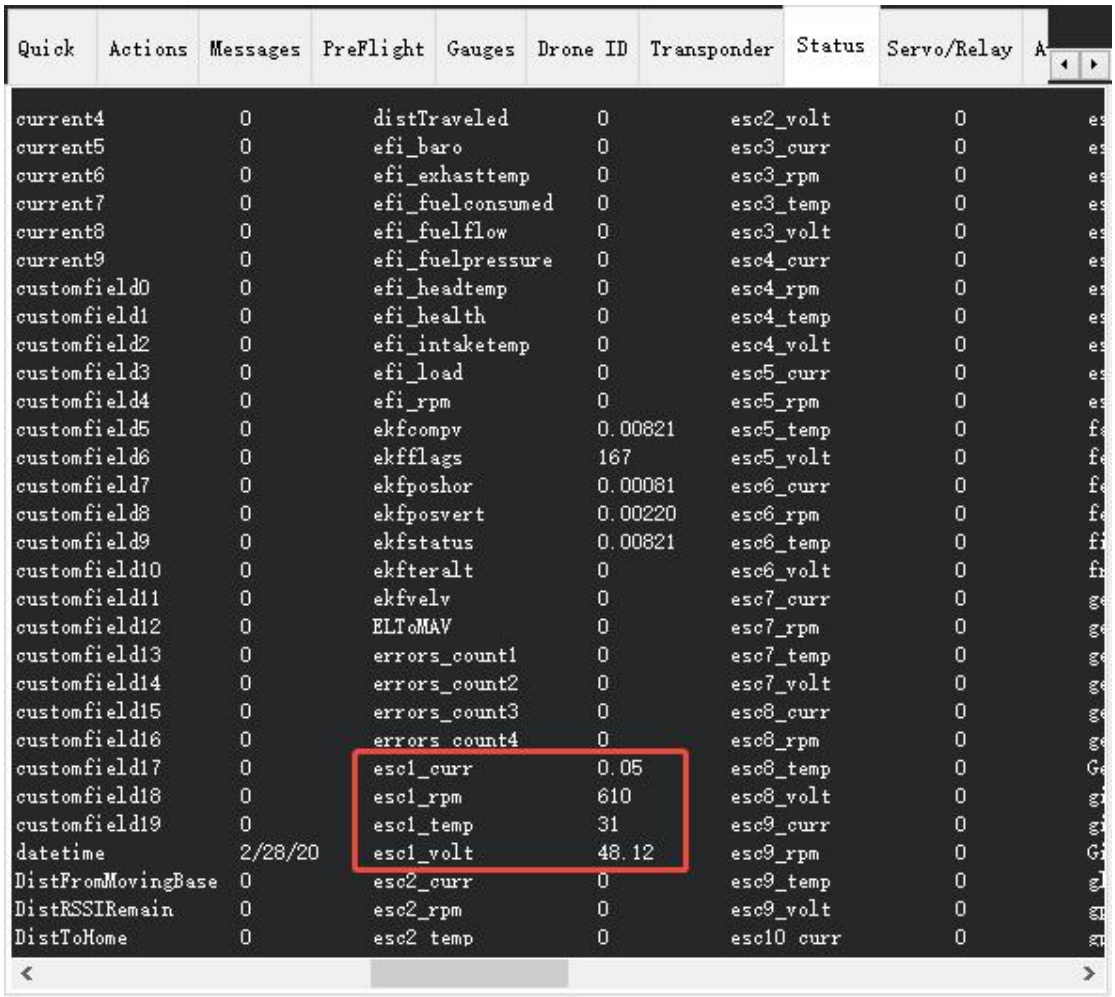
2.For example, to test motor number 1, click Test motor A.



3. In the status bar, you can view the following data for ESC 1 under this throttle action:

- Voltage (esc1_volt)
- Current (esc1_curr)
- RPM (esc1_rpm)

- Temperature (esc1_temp)



2.3.3 Setting CAN Throttle via QGroundControl Ground Station (PX4)

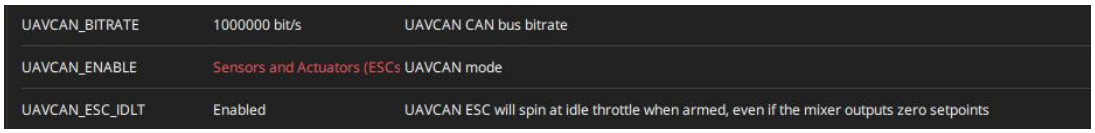
PX4 flight control supports communication with the E6 propulsion system via the UAV CAN protocol.

To configure the parameters correctly:

Set UAVCAN_BITRATE to 1000000.

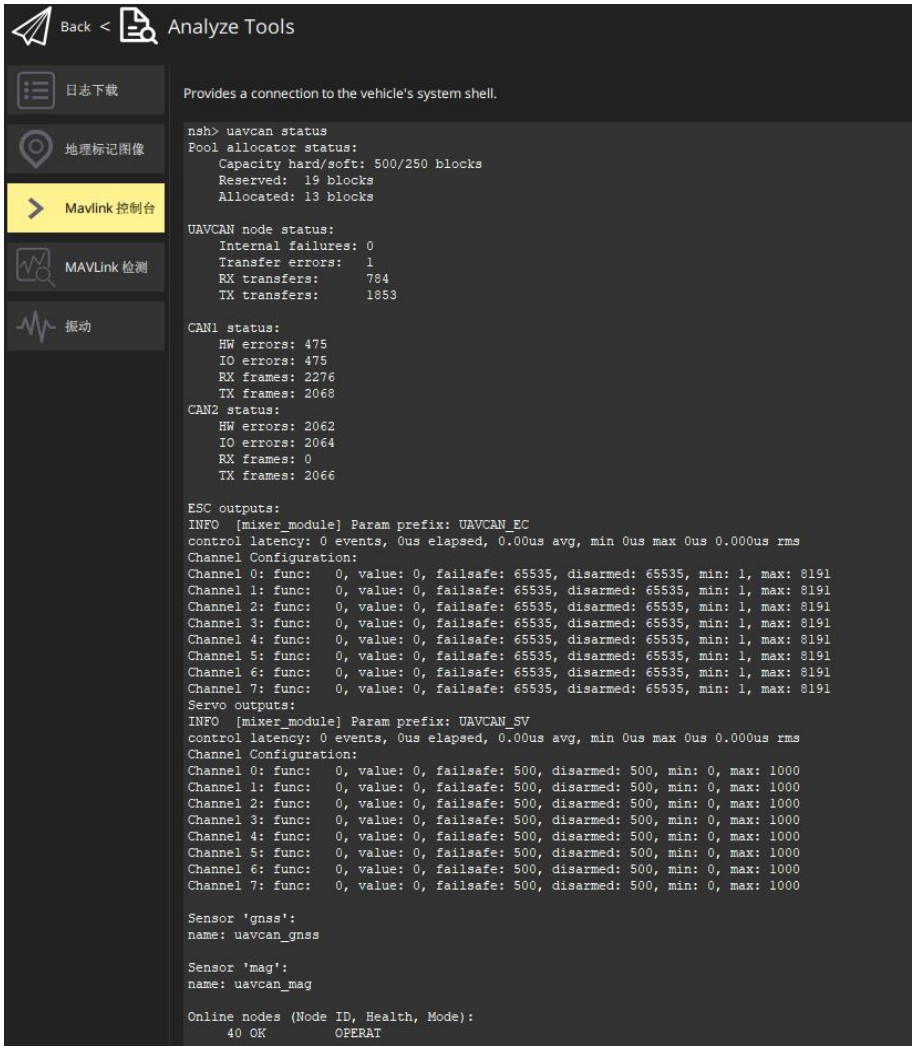
Set UAVCAN_ENABLE to Sensors and Actuators (ESCs) Automatic

Config.



Set SYS_CTRL_ALLOC to Enabled to enable the CAN dynamic ID allocation feature. The PX4 CAN dynamic ID allocation feature requires an SD card; if the SD card is not inserted, PX4 will not be able to dynamically assign a CAN node ID to the CAN device.

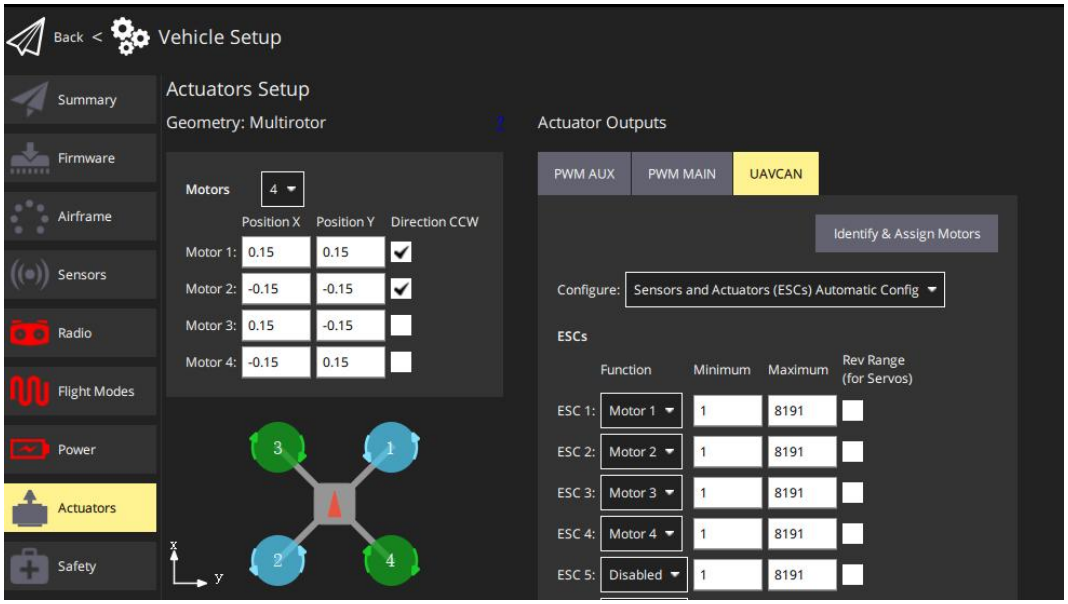
After configuring the above parameters, restart PX4. In the Mavlink console, enter uavcan status to check the CAN port status and the devices connected to the CAN port.



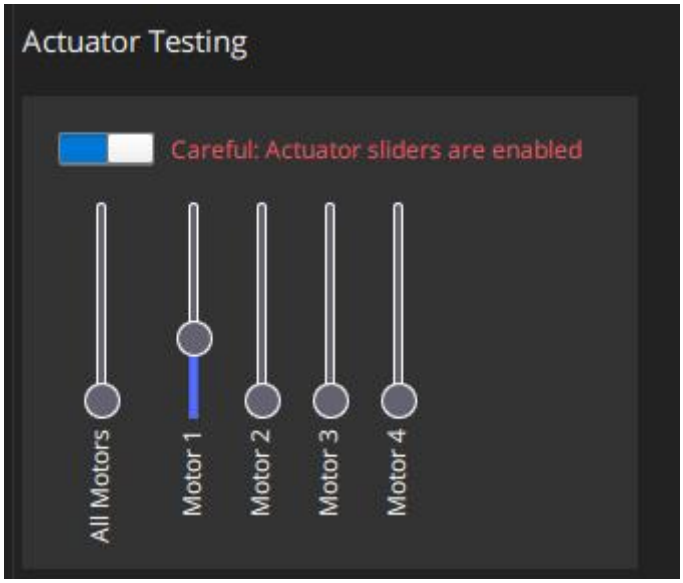
ESC Testing

1. In the Actuators Outputs section, set the correspondence between the ESC and the motor, and configure the maximum and minimum throttle values.

In the Geometry: Multirotor section, set the rotation direction of the motors and their configuration relative to the center point.

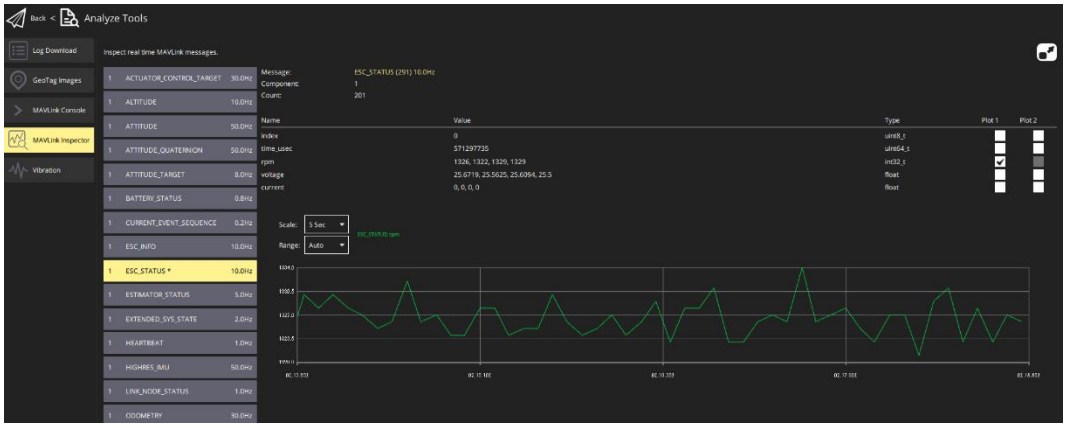


2、Turn on the switch in the Actuator Testing section, and slide the throttle control to adjust the motor throttle for testing.



3、Check the Mavlink messages. The ESC_STATUS message contains information such as motor speed, voltage, and current. Select the option to plot the data to view the variation of these

values over time.



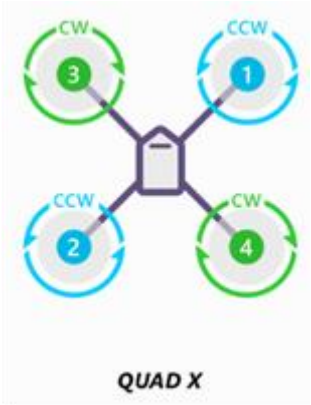
CHAPTER 3 START ASSEMBLY

3.1 Motor Assembly

3.1.1 Match Throttle ID & Motor Orientation

Mainstream flight control systems on the market typically define specific throttle IDs and motor directions for particular models. When installing the propulsion system, we need to carefully refer to the flight control system's user manual to match the throttle IDs and motor directions accordingly.

For example, with the N7 flight control system (ArduPilot firmware) paired with the E6 propulsion system:



Quadcopter

Hexacopter

Octocopter

Select the corresponding motor based on its orientation (CW or CCW).

NOTE

If your SIYI propulsion system is to be used with a close-source commercial flight controller, please carefully check the flight controller user manual regarding throttle ID and motor orientation to avoid improper use and potential safety risks. If

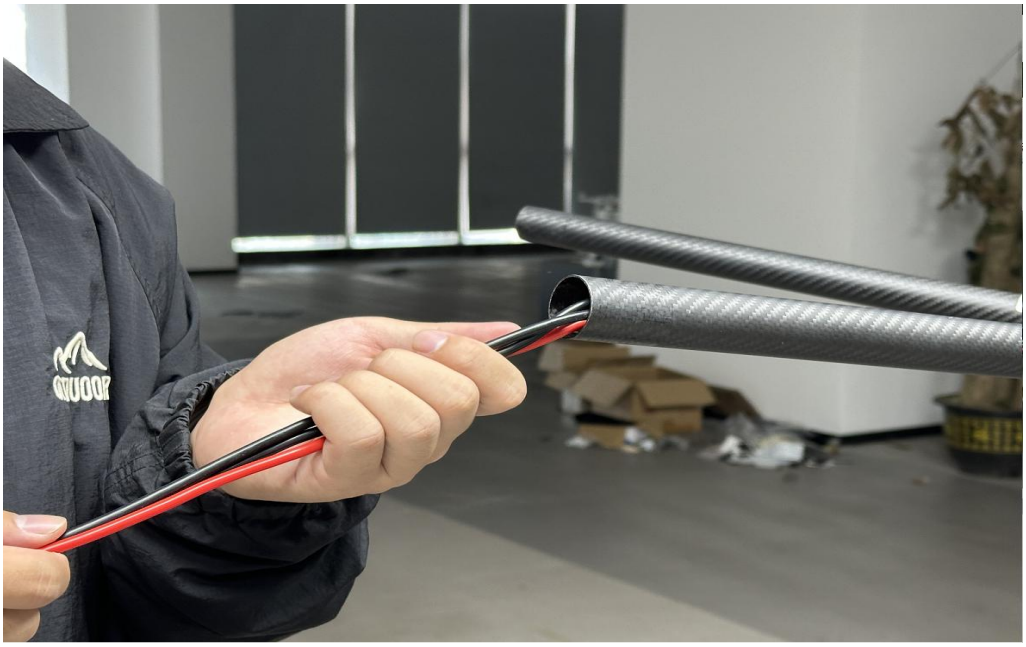
necessary, please always consult the manufacturer's technical support.

3.1.2 Install and Pre-tighten the Propulsion System to the Arm

Once the throttle ID and motor directions are confirmed, you can begin installing the propulsion system onto the arm. This step requires only pre-tightening the propulsion system, leaving some slack for adjustments during the later balancing process.

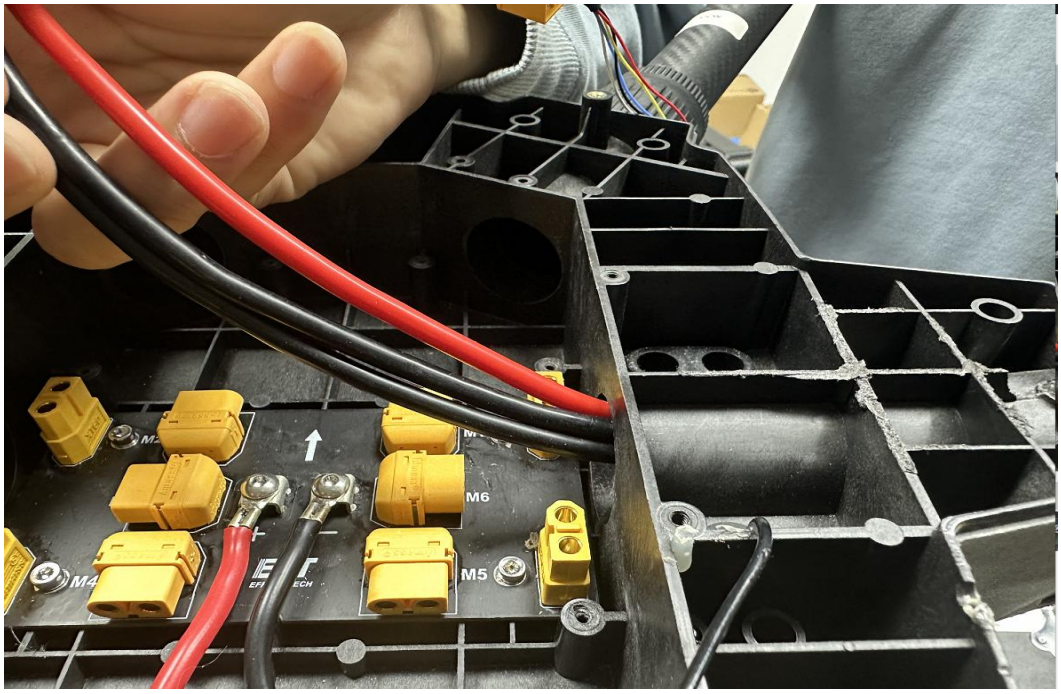
Steps:

1. Thread the wiring of the propulsion system through the arm tube.



2.Install the propulsion system onto the arm, ensuring only pre-tightening at this stage. Leave room for adjustments during the later balancing process.

3.Pass the wiring of the propulsion system through the arm tube again.

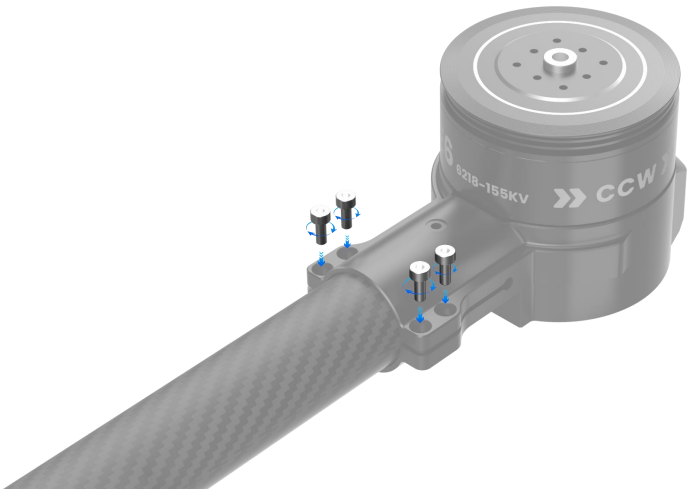


3.2 Propulsion Balancing

Next, use a spirit level to calibrate the balancing of the installed propulsion system along the X and Y axes.

3.3 Tightening the Arm

Once the installation and balancing are confirmed, tighten the propulsion system to the arm's carbon tube to ensure a secure installation.



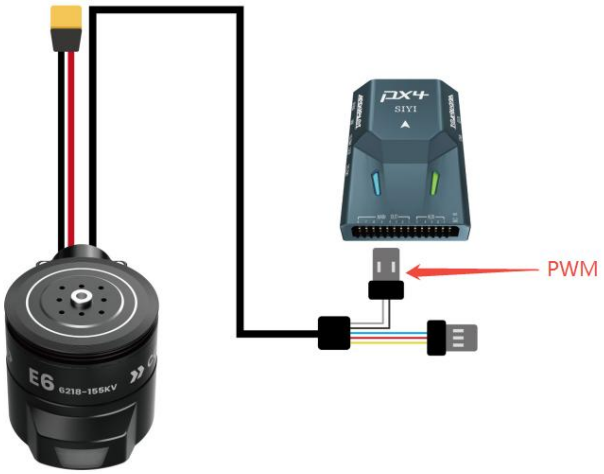
Note:

The E6 propulsion system is equipped with pre-drilled rivet holes. Please assess whether rivets need to be installed based on the actual situation to ensure the overall structural stability and safety.

3.4 Wiring and Cable Management

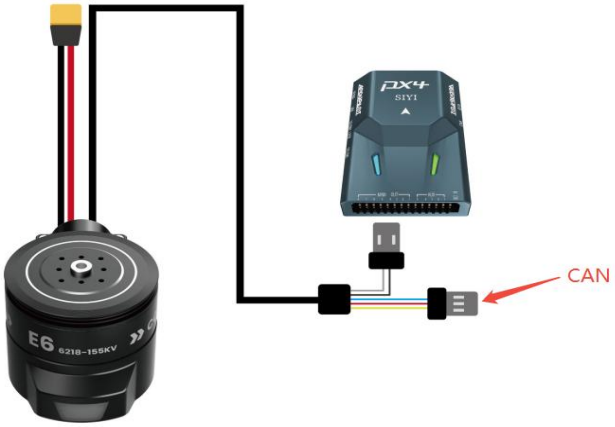
Now, connect the various cables of the propulsion system to their designated positions and arrange them properly.

3.4.1 PWM Throttle Cable

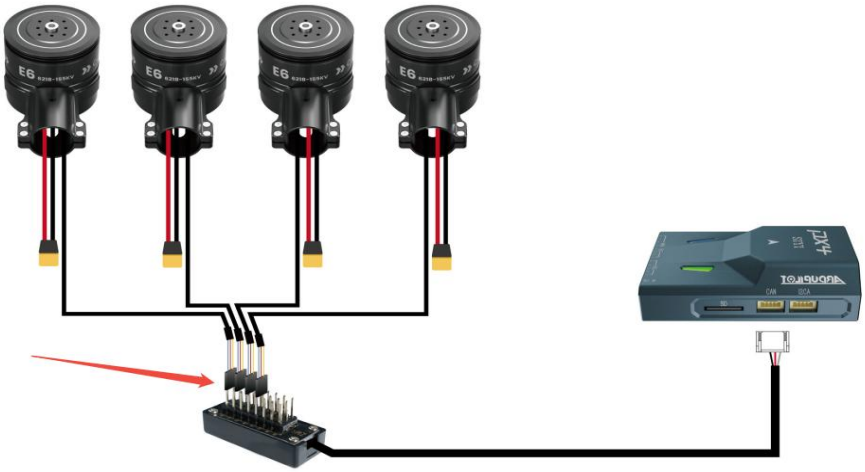


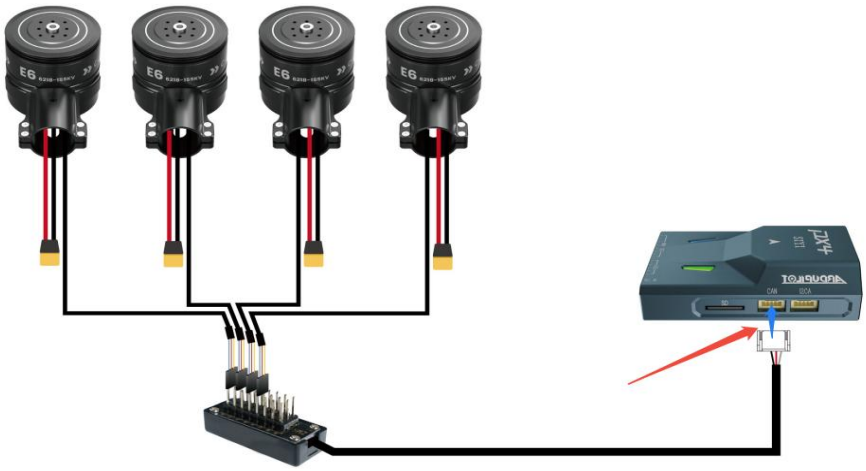
Connect the PWM signal cable to the corresponding throttle output pin on the flight controller.

3.4.2 CAN Signal Wire (if necessary)



If using CAN throttle, connect the CAN signal cable to the CAN Hub module and integrate it into the flight controller's CAN port in a bus configuration.



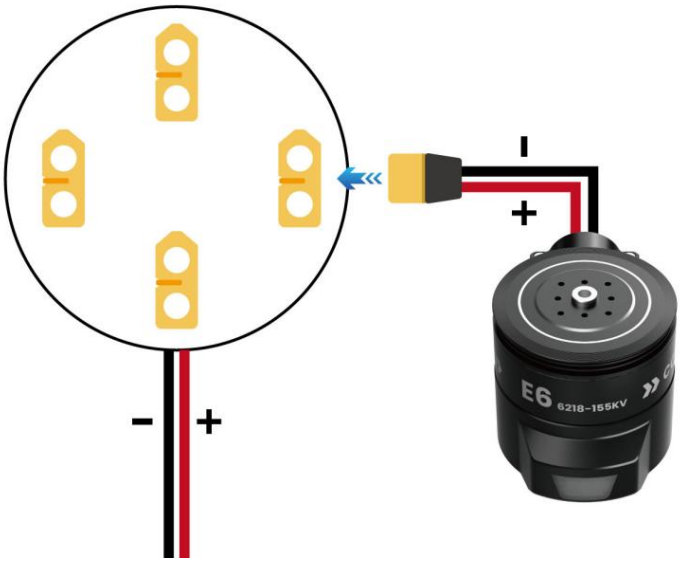


Note:

If not using CAN throttle, no configuration is needed.

3.4.3 Power Supply Line

Connect the power bus to the power supply port of the distribution board.



3.5 Debugging and Inspection

Before starting the debugging process, please follow these steps in order:

1. Ensure that the wiring of the propulsion system is correct to avoid miswiring or loose connections, which could lead to safety risks.
2. Make sure the propellers are not installed to avoid safety risks during the debugging process.
3. Power on the system and confirm that the communication between the ground station and the flight controller is normal.

3.5.1 Throttle Channels

Use the ground station software to sequentially send signals to each throttle channel of the flight controller to verify the operation of each throttle ID in the propulsion system and ensure that it matches the default settings of the flight control system.

3.5.2 Motor Direction

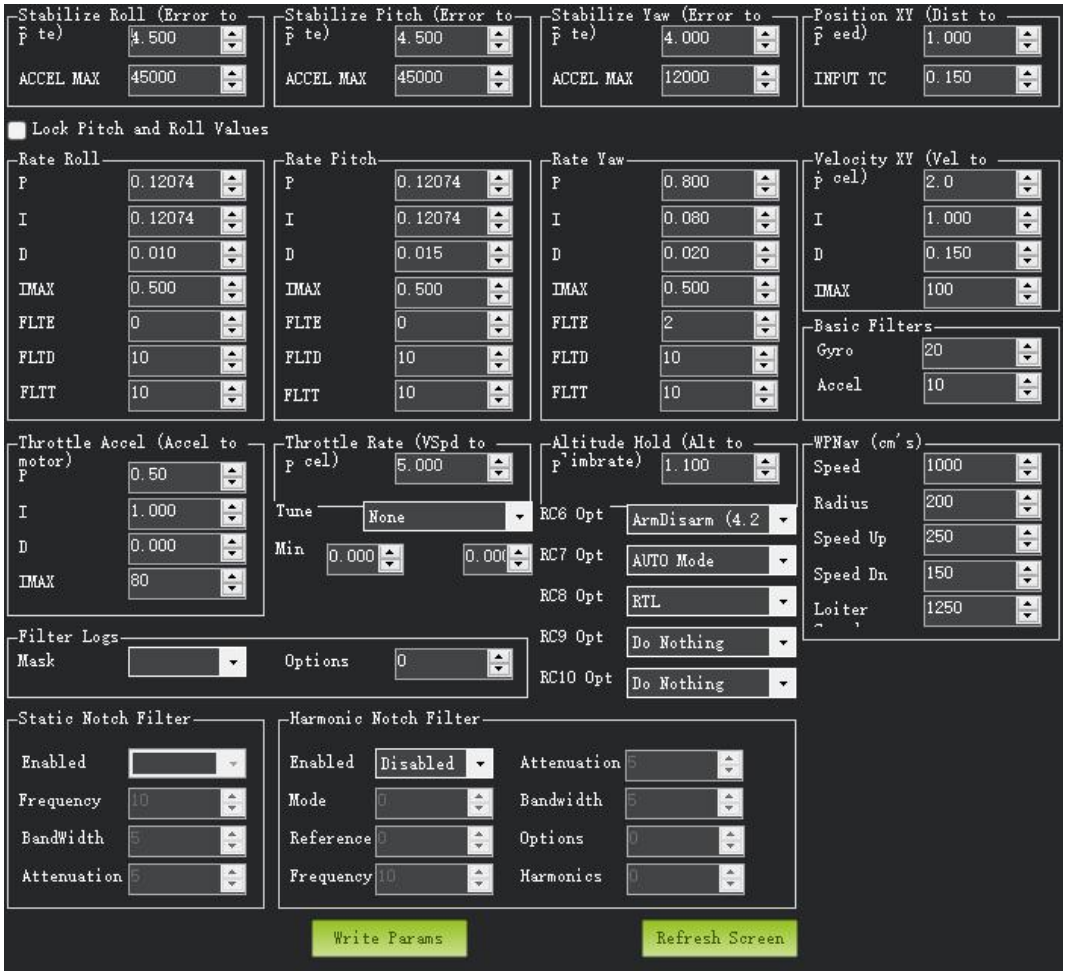
Activate each motor one by one through the ground station software to verify the operation of each motor's direction in the propulsion system and ensure that it matches the default settings of the flight control system.

3.5.3 Flight Controller Parameters

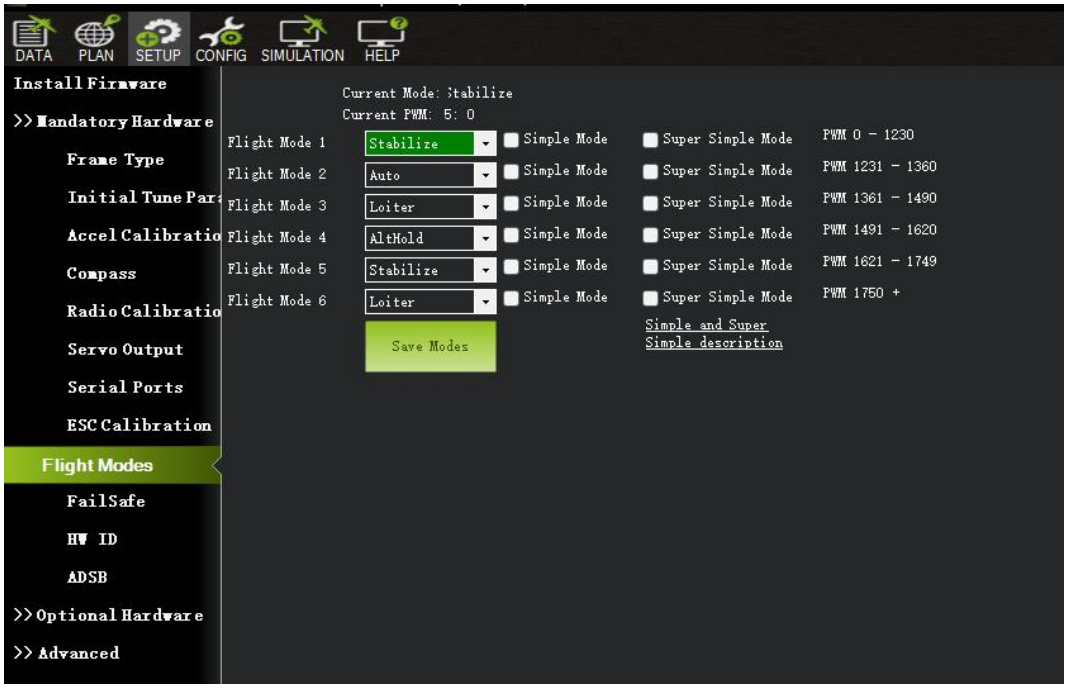
Checking the flight controller parameters is crucial for ensuring the drone's flight safety, improving flight stability and precision, diagnosing and troubleshooting issues, as well as performance evaluation and optimization. Therefore, the flight controller parameters should be regularly checked and adjusted before and during flights to ensure the drone's proper operation and successful mission completion.

Key parameters to focus on include:

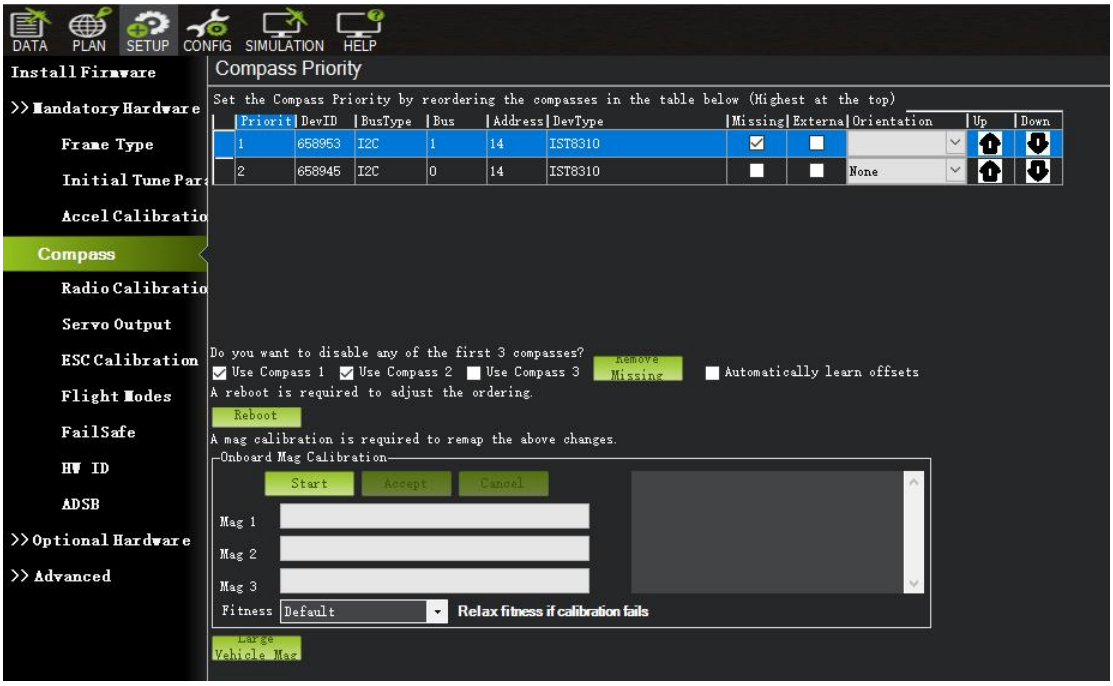
PID (Proportional, Integral, Derivative control parameters)



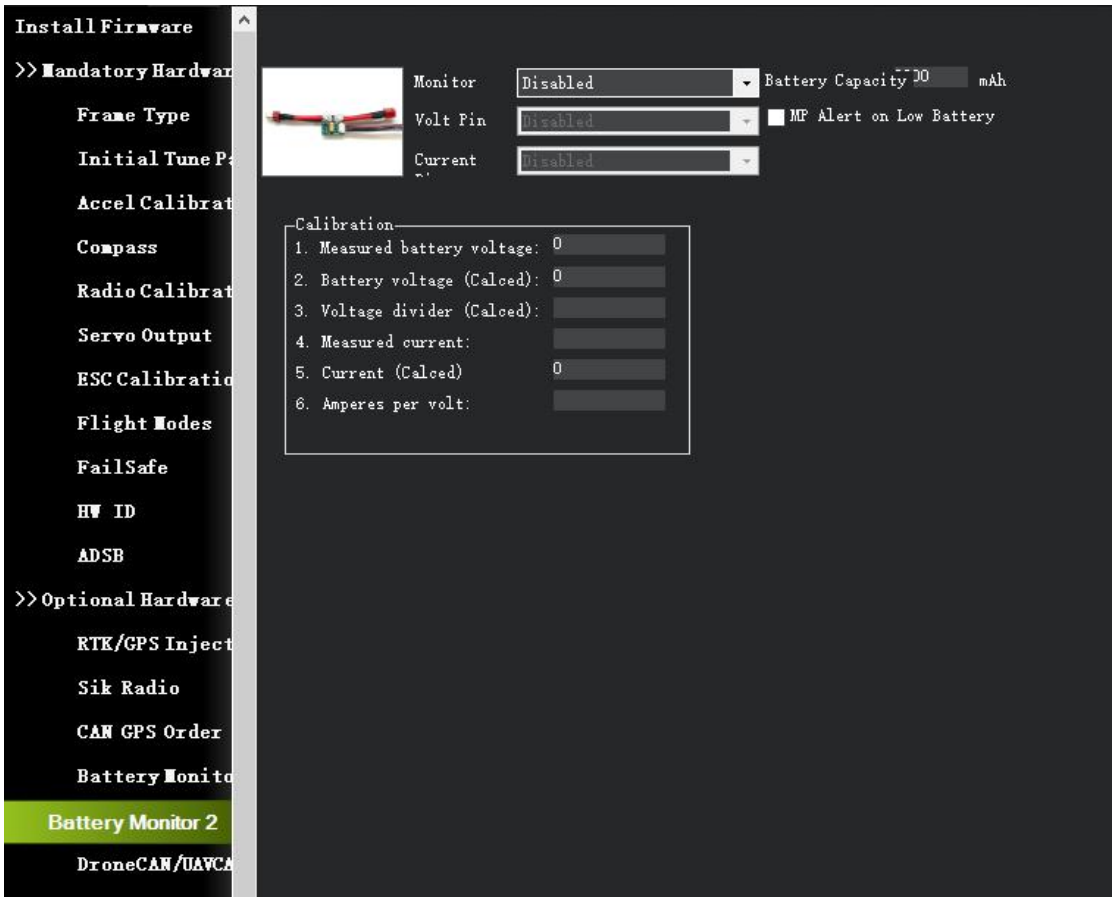
Flight Mode Configuration



Gyroscope and Accelerometer Calibration Status



Voltage and Current Monitoring Settings



Note:

Based on the actual flight performance of the drone and recommendations from the flight control software, we should adjust the PID parameters as needed. To verify the adjustment effects, it is recommended to conduct small-scale flight tests and carefully observe the drone's flight stability and response speed. On this basis, gradually fine-tune the parameters until the drone reaches the optimal flight state.

3.6 Installing the Propellers

Installing the propellers is the final step before the flight test. Before installing the propellers, please make sure that all previous steps have been completed correctly to avoid test accidents that could lead to personal injury or property damage.

3.6.1 Matching the Motor Direction

The propeller rotation (CW and CCW) should correspond to the motor rotation (CW and CCW) one-to-one.

CW

CCW

3.6.2 Installing and Securing the Propellers

The propellers should be secured using M3*8 screws, aligning the propeller holes with the motor assembly holes and tightening the screws.

CHAPTER 4 FLIGHT TEST

It is necessary to perform a series of basic checks on the drone before takeoff and during flight to ensure flight safety and improve testing efficiency and success rates.

Note:

This section only covers the testing guidelines related to the propulsion system. For flight testing instructions for other components, please refer to the respective component's user manual.

4.1 Pre-flight Check

A pre-flight check should be conducted every time before powering on.

4.1.1 Check the Propellers

Ensure the propellers are properly installed, securely fastened,

and free of any damage.

If using folding propellers, unfold the blades at this time to avoid unnecessary vibrations during takeoff.

4.1.2 Check the Powertrain

Ensure the motors are securely installed and the wiring is correct.

And manually rotate the motors to check for any blockages or stiffness.

4.2 Start Flight Testing

4.2.1 Ground Test

Place the drone on a flat, open surface and power it on. Then, unlock the drone and slowly increase the throttle, carefully observing the drone's response to ensure that all motors and propellers are functioning properly.

4.2.2 Low-Altitude Hover Test

The low-altitude hover test is conducted to check the stability and control response of the drone.

Place the drone in a hover at a height of one to two meters, observe its hovering stability, and perform slight movements in each direction (forward, backward, left, right) and rotation (yaw) to ensure the drone can execute these actions stably.

4.2.3 Basic Flight Maneuver Test

Increase the flight altitude and perform basic maneuvers such as forward, backward, lateral translation, and rotation. Observe the drone's response and stability to confirm the propulsion system's responsiveness and stability.

4.3 Post-Flight Check

After each flight, it is recommended to perform necessary checks on the drone to promptly identify any flight abnormalities or safety risks.

4.3.1 Check the Propellers and Motors

Check if the propellers are loose or damaged, and inspect the motors for looseness, blockages, or abnormal heating.

4.3.2 Record and Analyze Flight Data

Analyzing flight data helps to identify flight abnormalities and deficiencies, enabling timely countermeasures to improve flight test efficiency.

Key flight test data to focus on include:

- Flight time
- Power consumption
- Flight mode
- Abnormal phenomena

CHAPTER 5 TROUBLESHOOTING

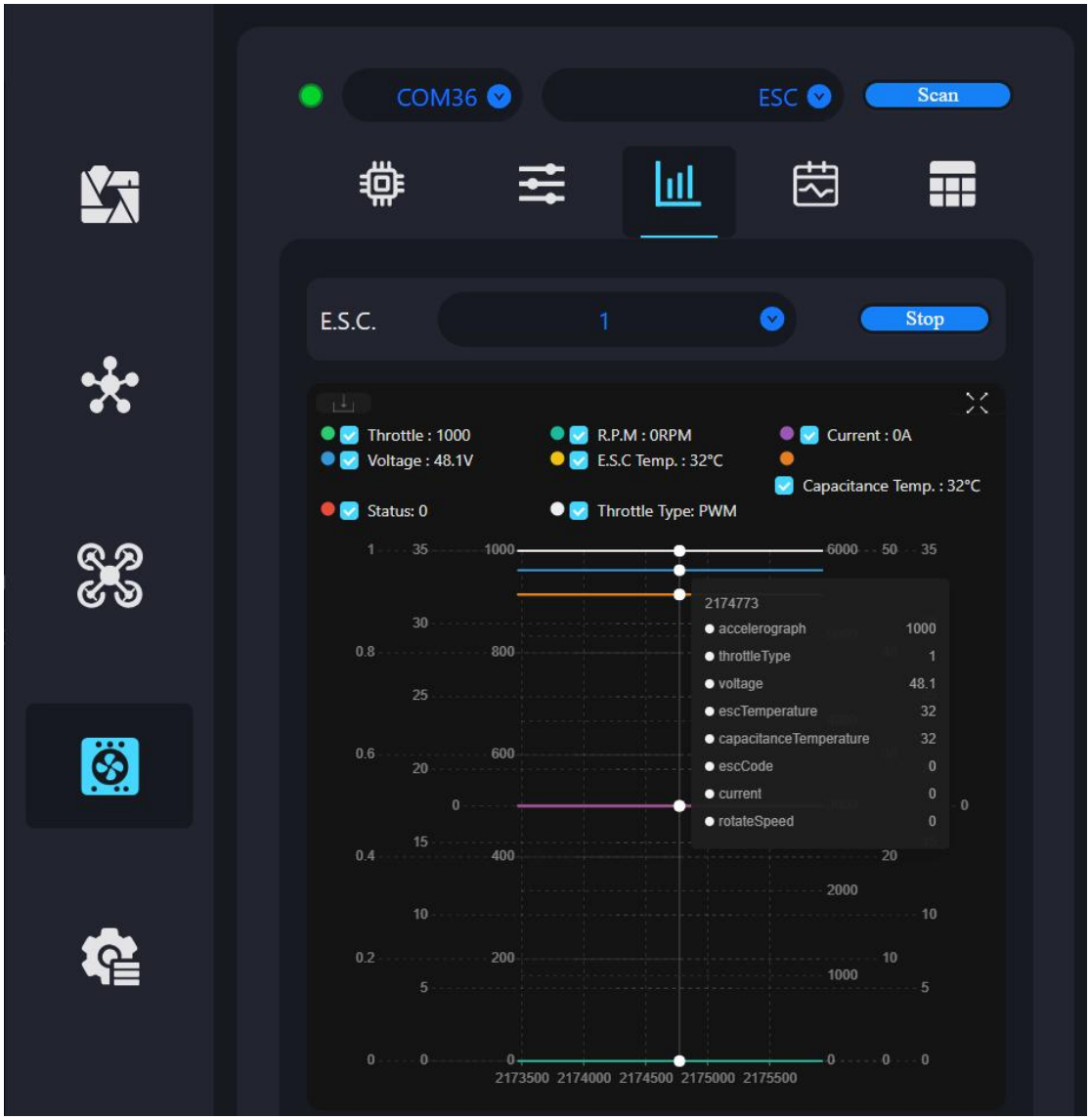
SIYI tuning software supports real-time monitoring of information such as vibration, temperature, current, and voltage of the propulsion system, assisting in the quick identification of issues and improving maintenance efficiency to ensure operational safety.

Note

Before troubleshooting, the propellers should be removed to avoid potential safety risks.

Ensure flight data is confirmed to avoid incorrect data analysis, which may lead to inaccurate identification of the issue's cause.

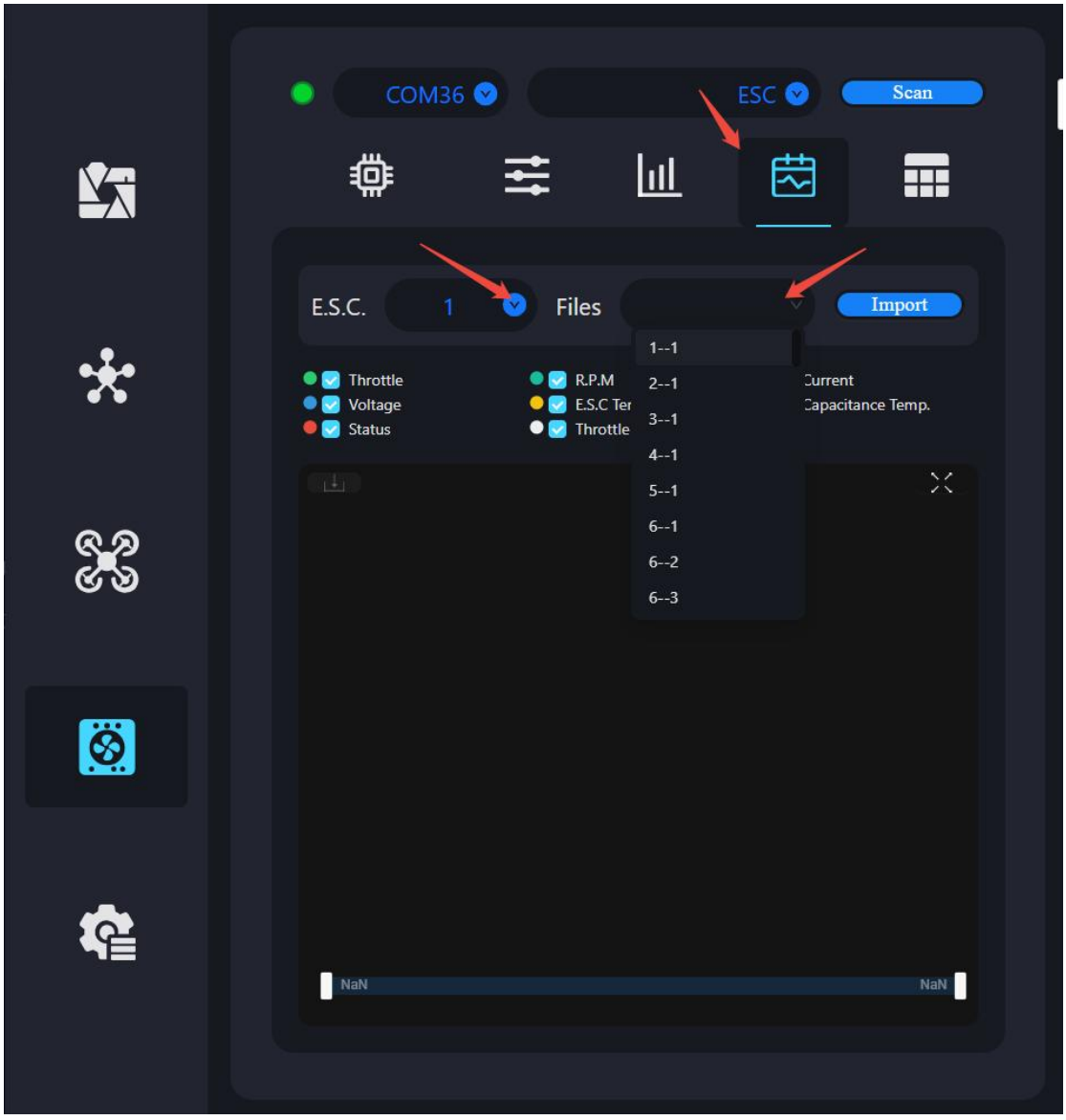
5.1 Real-time Operating Data



After selecting the corresponding ESC ID, the system will display a series of parameters, including throttle status, RPM, voltage, ESC temperature, ESC status, and throttle type. Additionally, real-time waveform graphs will be displayed for monitoring and

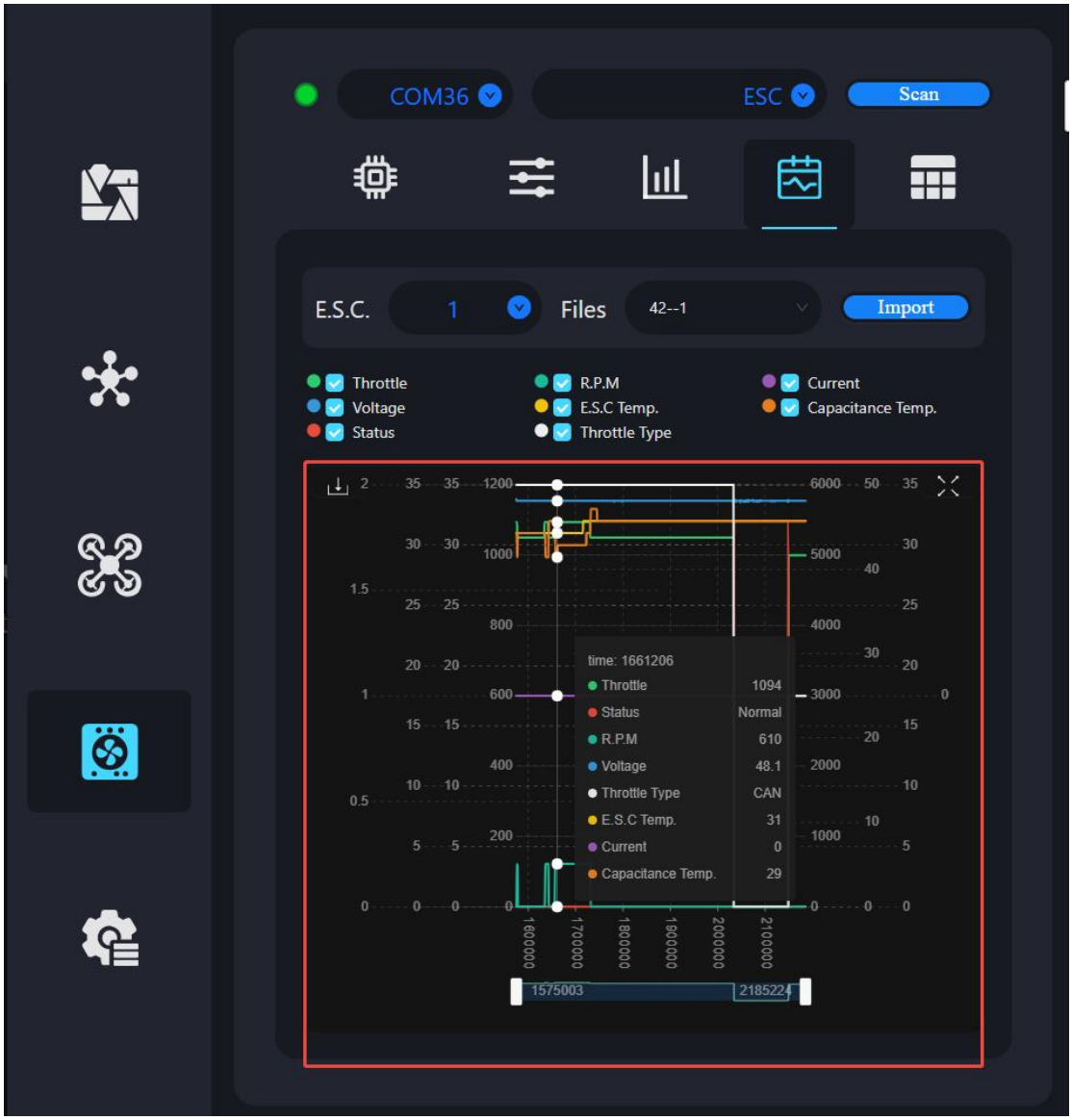
analysis.

5.2 Historical Operating Data

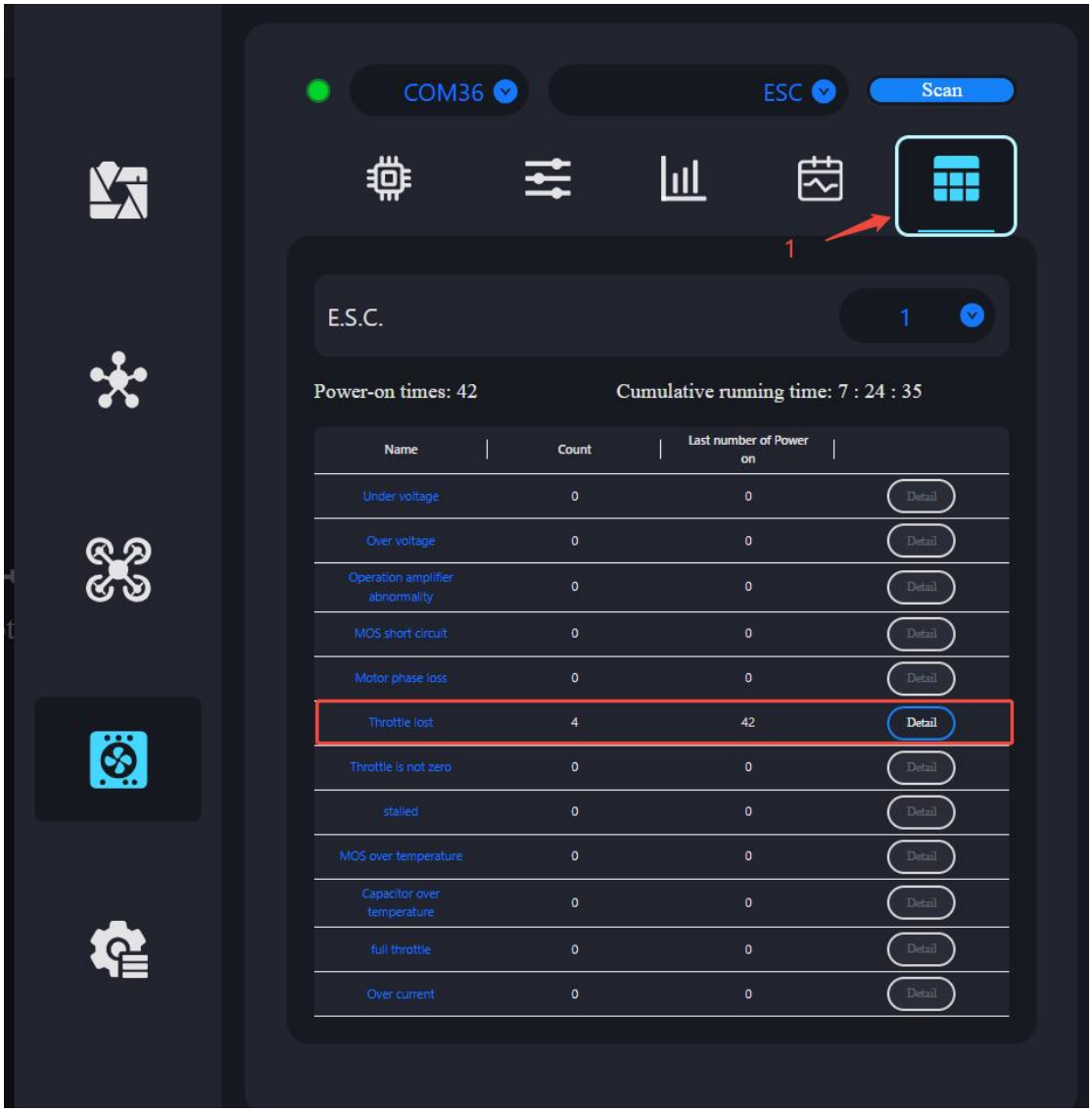


Users can refer to the relevant information using the ESC ID. The prefix indicates the corresponding power-on count, while the suffix represents the file number. Based on this naming

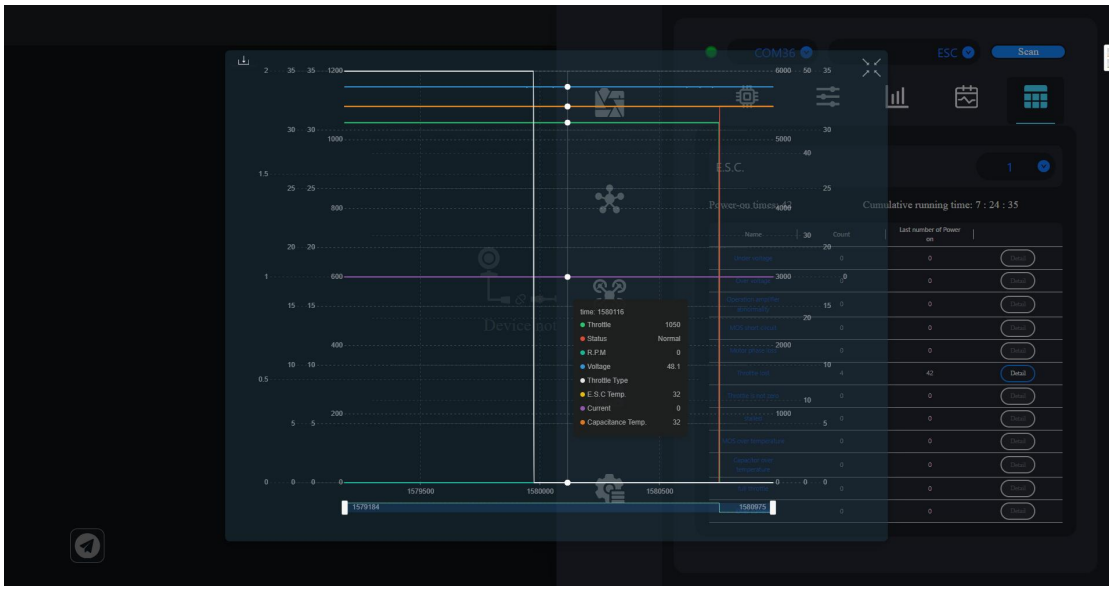
convention, users can access the data content of the corresponding file.



5.3 Fault Storage Function



Users need to select the corresponding ESC ID based on their actual needs to view the information. When the user clicks the "Details" option, the system will display the occurrence time of the anomaly and the specific details of the issue.



CHAPTER 6 FIRMWARE UPGRADE

6.1 Upgrading via UniGCS Software

The SIYI Ground Control Station (GCS) software supports users in upgrading the propulsion system ESC firmware.

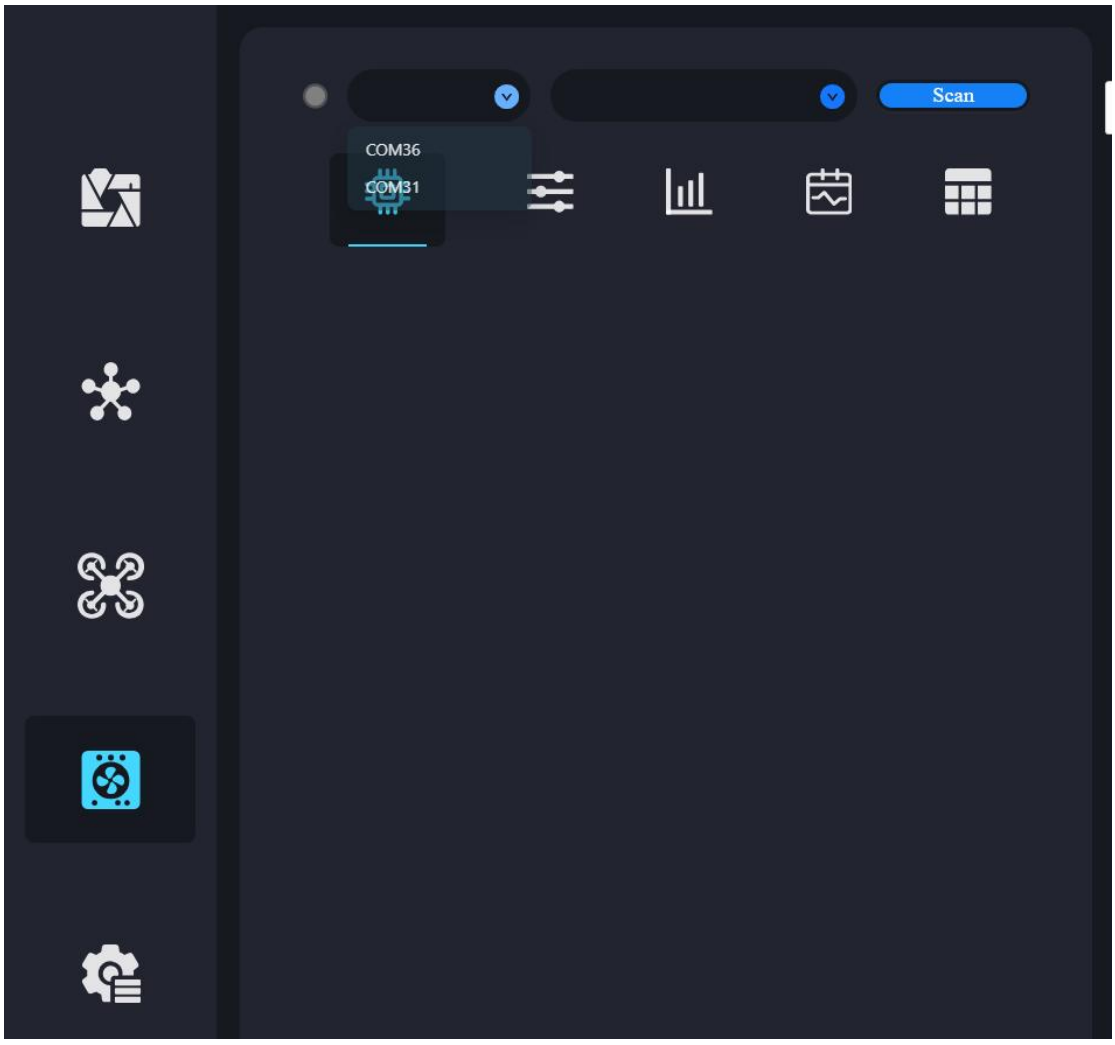
Tools Required

- SIYI UniGCS Software (Windows version)
- SIYI CAN Link Module
- Windows Device

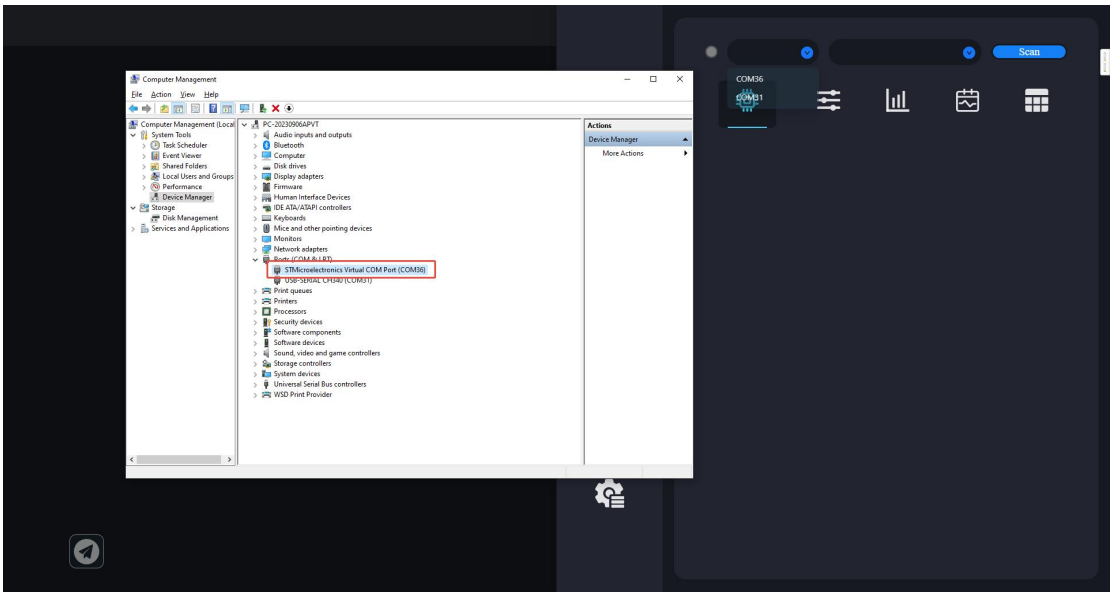
Operating Steps

1. Refer to the image above to connect the propulsion system, SIYI CAN Link module, and Windows device.

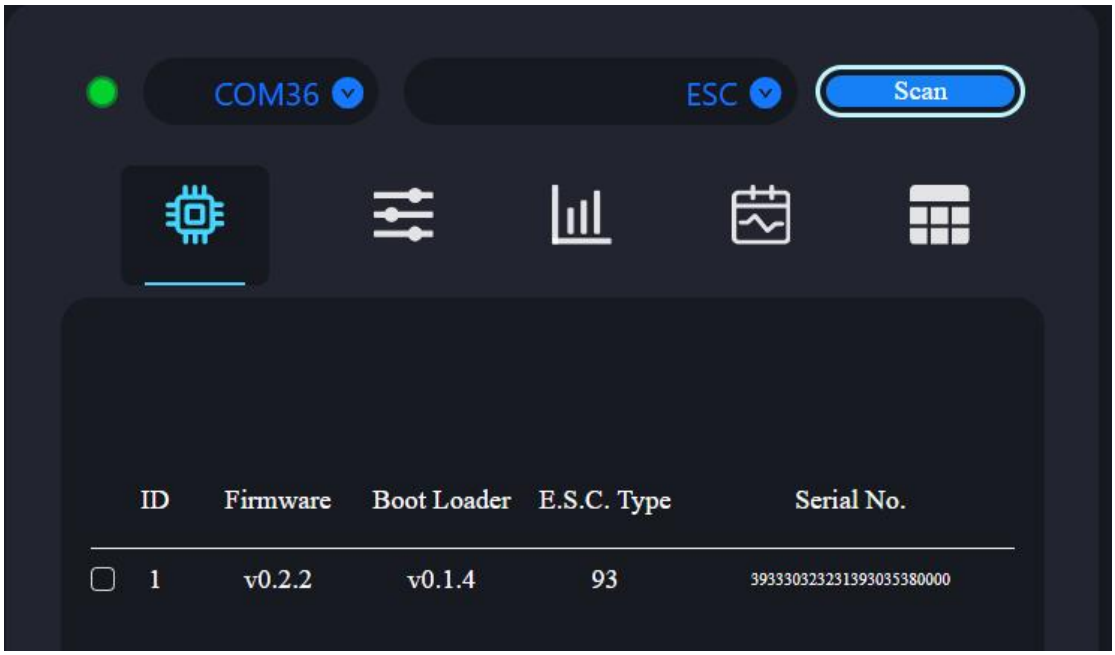
2. Run the SIYI Ground Control Station (GCS) software and navigate to the ESC settings menu.



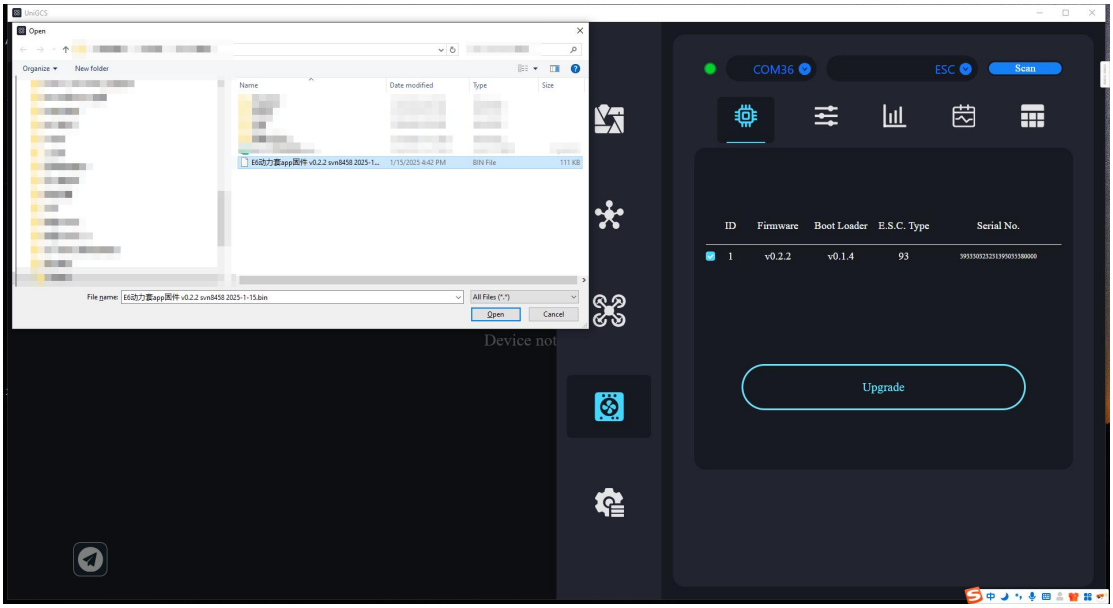
3. Select the corresponding COM port and device type (ESC), then click "Scan."



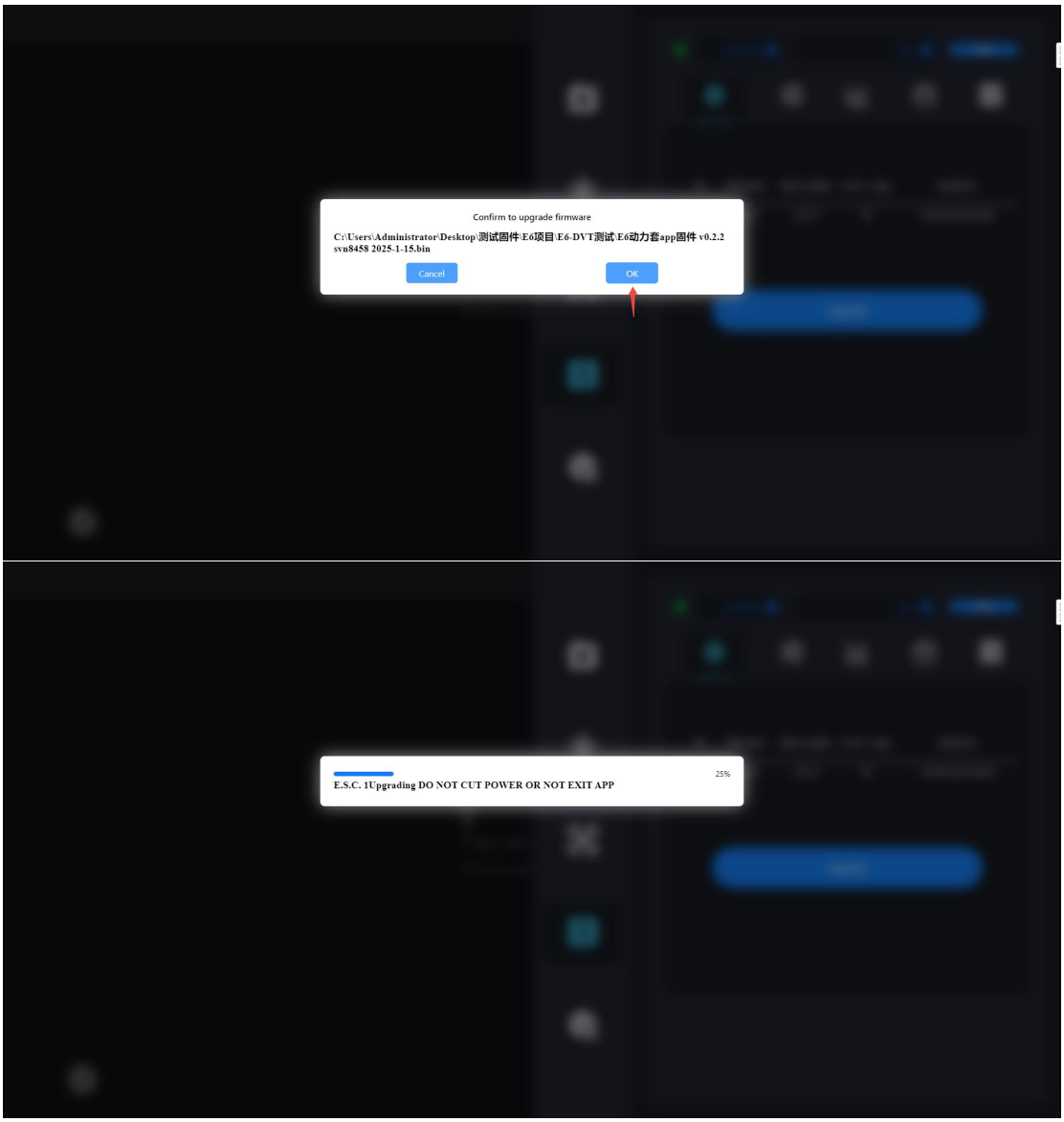
4. If the propulsion system is successfully recognized, the connection is successful.



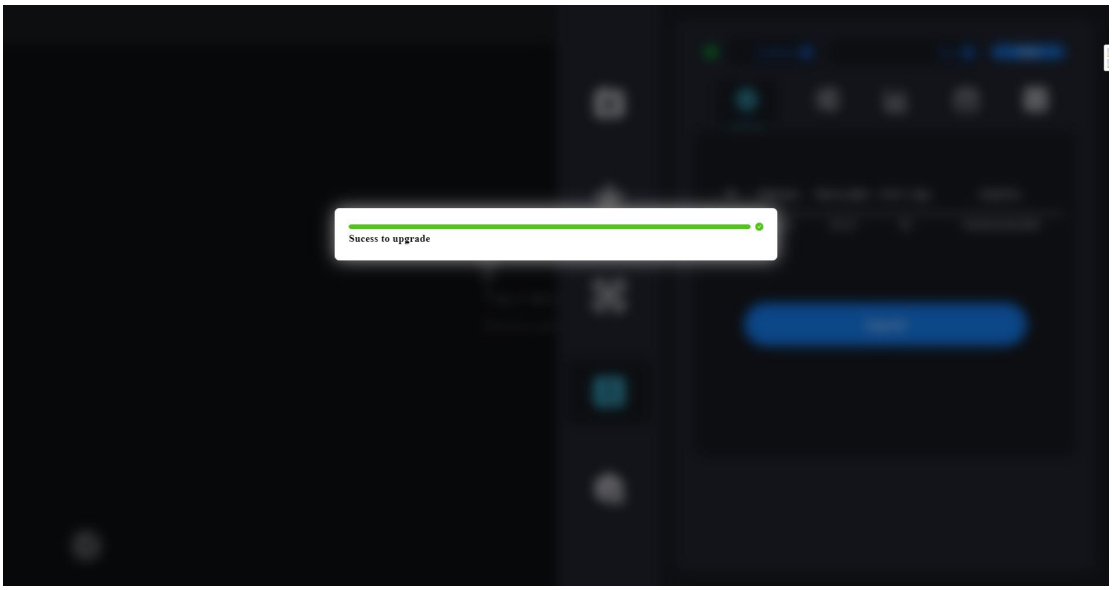
5. Click "Update" to upgrade and select the firmware file.



6. Click "Confirm" to start the upgrade and wait for the progress bar to complete.



7. The upgrade is complete.



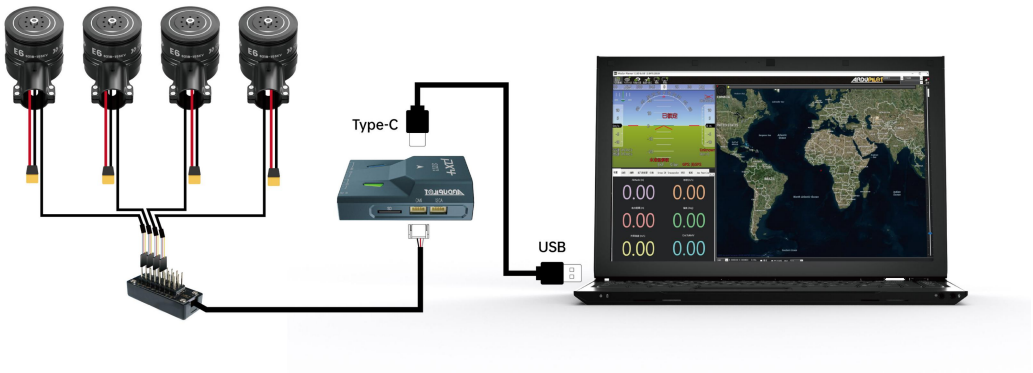
Note

Before performing a firmware upgrade, please ensure the propulsion system is functioning properly, and pay special attention to the pinout of the CAN interface to avoid incorrect insertion.

The upgrade status will be indicated by a change in the color of the indicator light. Once the upgrade is complete, a beep will sound, and the indicator light will return to its original color.

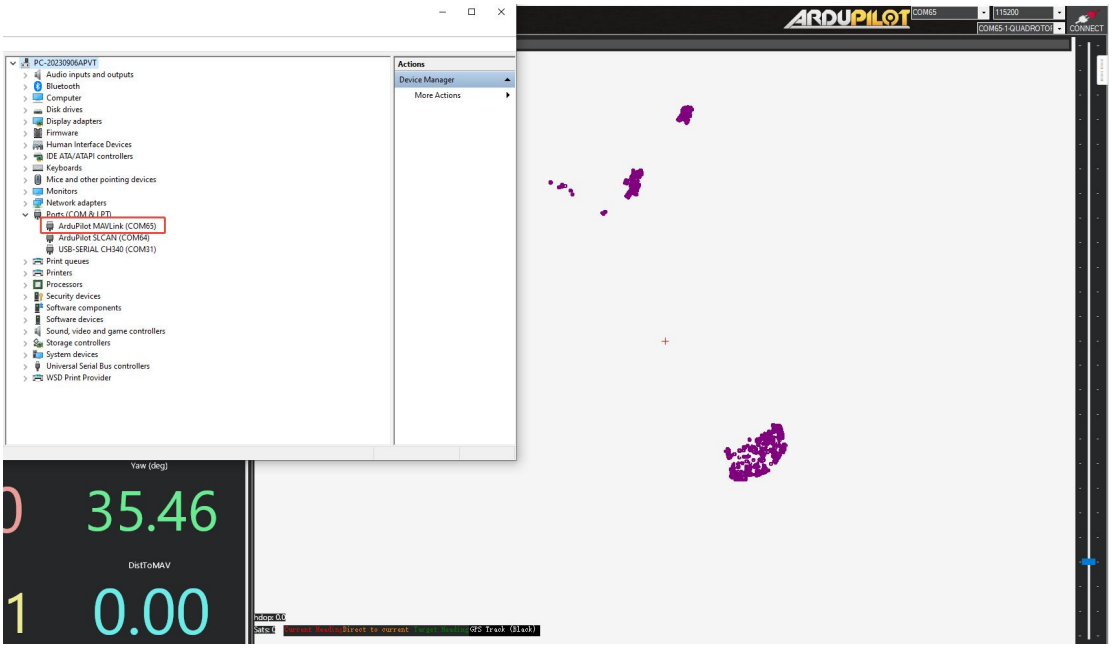
6.2 Using DroneCAN Protocol to Upgrade via Mission Planner Software (ArduPilot)

The ArduPilot flight controller supports upgrading the SIYI propulsion system firmware via the DroneCAN protocol.

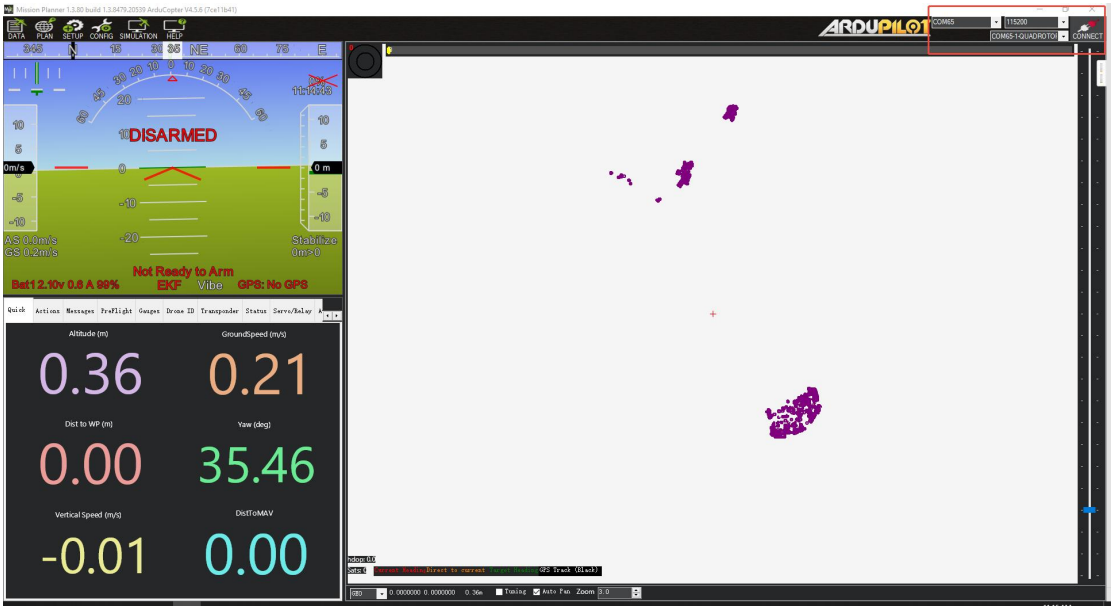


Operating Steps

1. Launch Mission Planner and locate the corresponding port in the PC device manager.



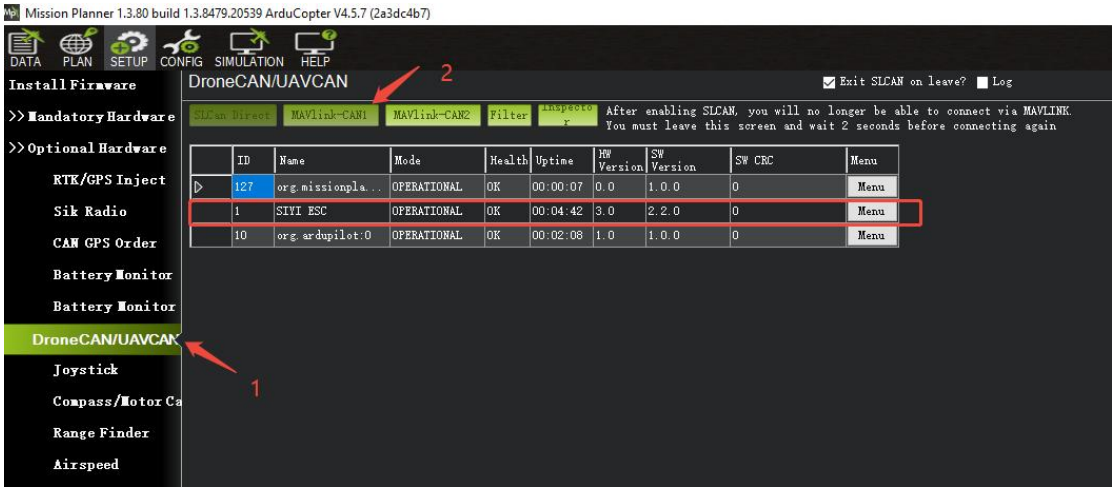
2. Select the appropriate COM port and set the baud rate to 115200.



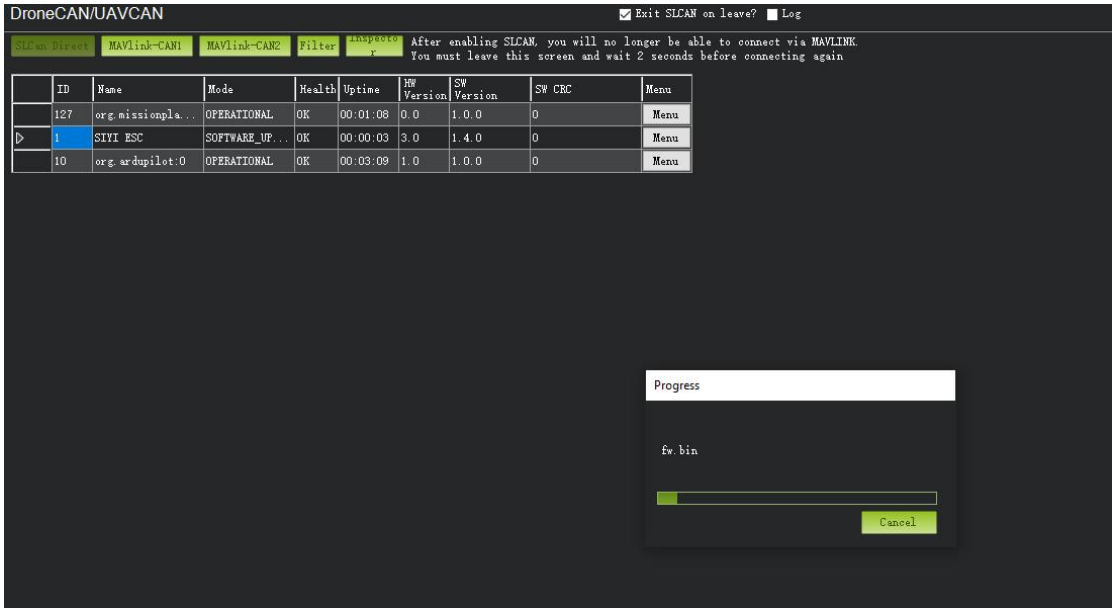
3. In the DroneCAN / UAVCAN section, click MAVlink-CAN1 to

refresh the CAN devices.

4. The option named "SIYI ESC" corresponds to the SIYI propulsion system ESC.



5. In the menu, find the "Update" option, select the ESC firmware to upgrade. During the upgrade process, the mode will be "SOFTWARE_UPDATE," and a progress bar will be displayed.



CHAPTER 7 AFTER-SALE SERVICE

Please visit the SIYI Technology support page at Service and Support - SIYI Technology | Empowering and Building an Intelligent Robot Ecology for the latest after-sales and warranty information.