D6 ENTERPRISE PROPULSION SYSTEM USER MANUAL



SIYI Technology (Shenzhen) Co., Ltd.

siyi.biz/en

Thank you for purchasing SIYI's product.

D6 enterprise propulsion system is the first integrated brushless propulsion system developed by SIYI Technology. It is mainly suitable for enterprise flying platform with 30mm arm diameter and single-axis take-off weight of 2KG to 2.5KG. D6 enterprise propulsion system adopts nano-coating technology, waterproof level up to IPX5 and can operate stably in an environment of -30°C to 50°C. It is equipped with self-developed electric speed controllers using FOC algorithm control to improve the throttle response speed while making the system more efficient, the operation lower noise, and the throttle more linear. D6 propulsion system also has power-on low voltage, high voltage, op amp abnormality, MOS short circuit, and phase loss protection functions. During operation, it has stall protection, throttle loss, and temperature abnormality prompt functions. It uses CAN protocol to communicate with DroneCAN / UAVCAN / ArduPilot / PX4 open-source ecosystem and stores operation data and fault data.

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To ensure you a good experience of the product, please read this manual carefully. If you encounter any issue using the product, please consult the manual or check the online pages of this product on SIYI official website (https://siyi.biz/en). You can also write an email to SIYI official A/S center (support@siyi.biz).

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

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LinkedIn	
YouTube	

Manual Version Update Record

Version	Date	Updates			
1.0	2024.9	Initial version.			
1.1	2025.2	 Add content to section 2.3.2. Update section 7 on after-sales and warranty. 			

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READ TIPS

lcons

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.



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.

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°C) or too cold (under -20°C).



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

A Fully Self-Developed & Highly Integrated Propulsion System

Integrated design, stable and reliable, lightweight and compact, efficient and collaborative, easy for solution provider and maintenance.

Electronic Speed Controller

The electronic speed controller (ESC) is field-oriented control (FOC) and is developed by SIYI, which provides precise control and efficient response. The fault protection function has been tested by massive experiments and is safe, reliable and highly stable. It supports data storage and real-time monitoring of system operation status, which is convenient for locating and analyzing problems. It also adopts nano-coating technology and provides IPX5 protection level.

Motor

The motor is SIYI strictly selected by craftmanship and materials, which comes with full CNC structure, imported bearings, imported permanent magnets, and high temperature resistant enameled wire. Strong thrust and good heat dissipation.

Propellers

Equipped with pure carbon fiber blades, lightweight material, high strength and durability, high rigidity and no deformation, corrosion resistance, stable performance, high precision and smooth operation.

Strong Thrust, Extraordinary Efficiency

Straight & Foldable Propellers Equally Matched

D6 enterprise propulsion system is compatible with both straight propellers and foldable propellers, considering both thrust performance and flight efficiency.

PWM & CAN

Dual Throttle Redundancy

The dual throttle design allows flexible selection of control response and control logic, real-time adjustment of fast response, and improved data transmission stability and system anti-interference capabilities. The PWM throttle and CAN

throttle are dual-redundant, and the throttle attitude remains unchanged when the throttle is disabled during operation, greatly improving the system's fault tolerance and safety.

Fault Storage

Real-Time Analytics

The propulsion system is equipped with a variety of sensors to detect and store core parameters such as system voltage, current, temperature, and rotating speed in real time. It supports reading data through the CAN bus, providing pilots and engineers with reliable and rich fault analysis basis, and improving diagnosis and maintenance efficiency.

Complete ESC Protection Function

Whether in the power-on self-test stage or the operation stage, a rich set of preset detection mechanisms can be used to take protective measures for abnormal system operation conditions or potential problems to avoid equipment damage and ensure personnel safety.

Outstanding Design

Top-Notch Craftsmanship

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Excellent design concepts combined with stringent process requirements provide multiple guarantees for user delivery.

Heat Dissipation Performance

The motor is fully CNC-processed and equipped with a centrifugal fan to ensure that the internal temperature of the ESC is lower than 45 °C and the internal temperature of the motor is lower than 40 °C in the hover throttle thermal balance state.

Protection Performance

Key components and materials are selected to high standards, and the overall protection level can reach IPX5.

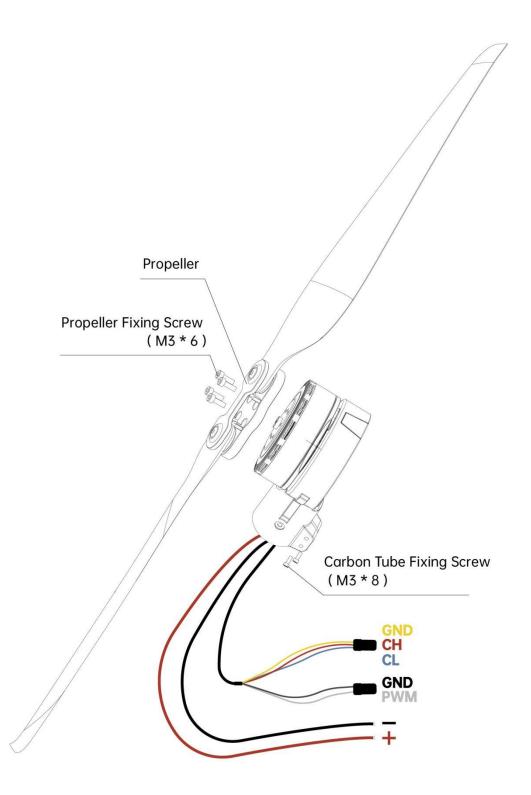
Motor Life

The normal operating life of the bearings can exceed 1000 hours.

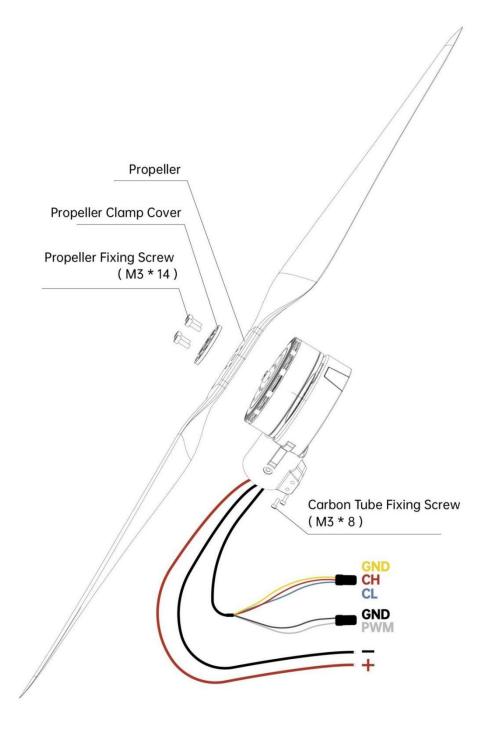
Both Open-Source & Commercial Ecosystem Compatible

SIYI Technology has been adhering to its fine traditions in the field of intelligent robots for many years, while adapting inclusive open-source systems and trustworthy commercial systems, injecting strong vitality into enabling the construction of a sustainable industry ecosystem!





Propeller (Foldable)



Propeller (Straight)

1.3 Technical Specification

Overall

Max Thrust	6.5 kg / rotor			
Recommended				
Take-off Weight	2 to 2.5 kg /rotor			
Recommended	12 ~ 14S LiPo			
Battery	12 ~ 143 LIPO			
Cable Lawyth	Power Cable: 710 mm			
Cable Length	Signal Cable: 780 mm			
Protection Class	IPX5			
Compatible Arm Tube	20 mm			
Diameter	30 mm			
Product Weight	429 g			

ESC

Model	55 A FOC				
PWM Voltage Input	3.3 / 5 V				
PWM Pulse Width	1100 ~ 1940 µs				
PWM Working Frequency	50 ~ 500 Hz				
Max Voltage	60 V				
Continuous Current	23 A				
Max Current	55 A				
Communication Protocol	CAN				
Firmware Upgrade	Supported				
Digital Throttle	CAN Throttle				

Motor

KV	130 KV				
Motor Size	Φ67.7 * 23.1 mm				
Poles & Magnets	24N28P				
Product Weight	240 g				

Propeller (Straight)

Diameter x Pitch	22 x 7.8 Inch		
Product Weight	35.7 g		

Propeller (Foldable)

Diameter x Pitch	22 x 9 Inch
Product Weight	61.2 g

1.4 Performance Specifications

D6 Foldable Propeller Performance							
Working Voltage	Propellers	Throttle (%)	Thrust (G)	Current (A)	RPM	Power Input (W)	Efficiency (G/W)
		30	1109	1.85	2120	88.7	12.5
		33	1316	2.29	2297	110.0	12.0
		36	1513	2.80	2468	134.2	11.3
		39	1697	3.26	2633	156.5	10.8
		42	1931	3.96	2799	190.0	10.2
		45	2201	<mark>4.6</mark> 4	2962	222.8	9.9
		48	2374	5.30	3112	254.1	9.3
		51	2626	5.98	3260	286.9	9.2
		54	2885	6.87	3401	330.2	8.7
		57	3136	7.78	3540	373.7	8.4
		60	3339	8.51	3677	408.6	8.2
48V	22*9" Foldable	63	3562	9.47	3809	454.4	7.8
	1 oldubio	66	3869	10.53	3933	505.3	7.7
		69	4028	11.53	4055	553.1	7.3
		72	4308	12.52	4166	600.5	7.2
		75	4527	13.79	4279	662.4	6.8
		78	4844	14.85	4386	713.4	6.8
		81	5019	15.87	4490	762.0	6.6
		84	5210	16.91	4586	811.7	6.4
		87	5445	18.13	4682	870.0	6.3
		90	5501	18.76	4771	900.1	6.1
		95	6230	<mark>22.44</mark>	4882	1077.8	5.8
		100	6510	25.02	5066	1200.3	5.4

D6 Foldable Propeller Performance

D6 Straight Propeller Performance							
Working Voltage	Propellers	Throttle (%)	Thrust (G)	Current (A)	RPM	Power Input (W)	Efficiency (G/W)
		30	1101	1.75	2114	84.2	13.1
		33	1257	2.12	2299	102.0	12.3
		36	1440	2.65	2469	127.0	11.3
		39	1659	3.20	2634	153.6	10.8
		42	1910	3.80	2803	182.3	10.5
		45	2088	4.39	2960	210.8	9.9
		48	2364	5.16	3108	247.4	9.6
		51	2570	5.83	3257	279.6	9.2
		54	2818	6.66	3401	319.8	8.8
		57	3047	7.54	3541	362.3	8.4
		60	3307	8.36	3675	401.4	8.2
48V	22*7.8 Straight	63	3688	9.76	3810	468.3	7.9
	oraight	66	3871	10.45	3932	501.4	7.7
		69	4056	11.41	4047	547.5	7.4
		72	4133	12.00	4172	575.5	7.2
		75	4581	13.65	4284	654.6	7.0
		78	4688	14.36	4389	688.1	6.8
		81	4970	15.76	4491	756.8	6.6
		84	5294	17.10	4579	820.8	6.5
		87	5401	17.95	4676	861.5	6.3
		90	5544	18.80	4770	901.9	6.1
		95	5992	21.22	<mark>4</mark> 911	1019.2	5.9
		100	6566	25.60	5040	1227.9	5.3

D6 Straight Propeller Performance

1.5 Packing List

Motor Assembly (Excluding Propellers)

1 x D6 Industrial Propulsion System Assembly (CW or CCW)

Straight Propeller

- 1 x D6 2278 Straight Propeller (CW or CCW)
- 1 x Propeller Spacer
- 4 x Hex Socket Head Cap Screw HM3*14

Foldable Propeller

- 1 x D6 Foldable Propeller (CW or CCW)
- 4 x Hex Socket Button Head Screw M3*6

1.6 Protection Function, Indicator Definition, & Buzzer Definition

SIYI propulsion system uses both indicators and buzzers to define different working states.

Statu s	Errors	Buzzer	Indicator	Suggested Actions
	Overvolta ge, Undervolt age	No Beep	Yellow Blinks Overvoltage: One short Undervoltage: Two short	Check the power supply voltage and reduce it appropriately
	Operation al Amplifier Abnormali ty	No Beep	Yellow Blinks Two long & three short	Contact technical support
Self- Check	MOS Short Circuit	No Beep	Yellow Blinks Two long & two short	Contact technical support
Status	Motor Phase Loss	No Beep	Yellow Blinks Two long & one short	Check if the motor rotation is stuck
	Throttle Signal Loss	One Short Beep	Yellow Blinks One long	Check if the throttle wires are damaged and whether the connected equipment is outputting the

				corresponding
				signal
		Rapid Short Beeps		Check the throttle
	Throttle		Yellow Blinks	range on the
	Not Zero		One long & one short	flight controller
				and the remote
				controller
		One		Loose wires,
	Throttle		Yellow Blinks	damaged wires,
	Signal	Short		or no signal
	Loss	Веер	One long	output from the
				connected device
	Throttle	No	Yellow Blinks	Check if the
	Stall	_		motor rotation is
	Stall	Веер	One long & four short	stuck
				Is payload weight
In	MOS Overheat	No Веер	Yellow Blinks	within
Oper			One long & two short	recommended
ation				range?
ation				ls payload weight
	Capacitor	No Веер	Yellow Blinks	within
	Overheat		One long & three short	recommended
				range?
				Beyond
	Full Throttle (100%)	No	Solid yellow until normal	recommended
			throttle (less than 100%)	thrust range,
		Веер	then returns to normal	returns to normal
			color	color in normal
				throttle
ESC	No Firmware			Upgrade firmware
Firmw			Solid White	through SIYI
are	Tirriware	всср		software
Upgr	Firmware	No	Solid White	Ensure the

ade	Upgrade	Веер		propulsion
	Failed			system is working
				properly, and the
				wires are
				connected
				correctly, then try
				re-flashing the
				firmware
				Firmware upgrade
				in progress,
	Firmware	No	White Blinks	returns to normal
	Upgrading	Веер		color after
				successful
				upgrade



Red, green, and blue are normal indicator colors. Users can define the colors or turn off indicator blinking.

Even if indicator blinking is turned off, the yellow color will still blink in case of a malfunction or abnormal condition.

CHAPTER 2 PREPARE FOR ASSEMBLY

Watch Tutorial Video

SIYI D6 Enterprise Propulsion System User Tutorial Vol.1 -

ASSEMBLY

https://www.youtube.com/watch?v=Cdg3LkeN-

el&list=PLnwDdKcxulbc5StgCD-xdx9GRcsUEuvWD&index=2

SIYI D6 Enterprise Propulsion System User Tutorial Vol.2 - ADJUST & CHECK PARAMETER

https://www.youtube.com/watch?v=gYLqLQA97nQ&list=PLnwDd Kcxulbc5StgCD-xdx9GRcsUEuvWD&index=3

SIYI D6 Enterprise Propulsion System User Tutorial Vol.3 - FLIGHT TEST

https://www.youtube.com/watch?v=2bflGtdl_l8&list=PLnwDdKcx ulbc5StgCD-xdx9GRcsUEuvWD&index=4

SIYI D6 Enterprise Propulsion System User Tutorial Vol.4 - TROUBLE SHOOTING

https://www.youtube.com/watch?v=QXPyzqQuO8c&list=PLnwDd

Kcxulbc5StgCD-xdx9GRcsUEuvWD&index=5

SIYI D6 Enterprise Propulsion System User Tutorial Vo.5 -

FIRMWARE UPGRADE

https://www.youtube.com/watch?v=SHv5EgqwnTE&list=PLnwDd

Kcxulbc5StgCD-xdx9GRcsUEuvWD&index=6

2.1 Solder the Power Connector

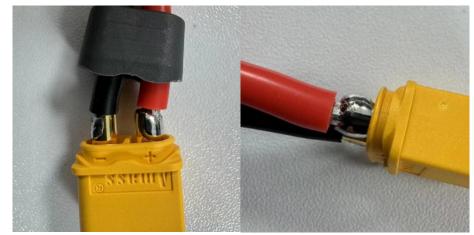
Soldering the power connector is a necessary step to ensure that the propulsion system works properly.

Tools Required:

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

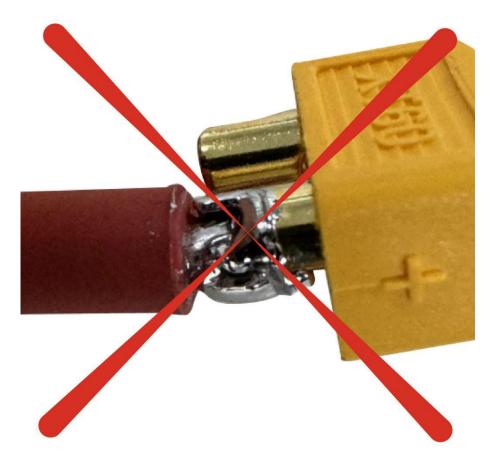
Steps

- 1. Identify the positive (red) and negative (black) power wires of the propulsion system.
- 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.





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



2.2 Configuration

The SIYI software allows users to customize the propulsion system's indicator colors, throttle ID, and CAN throttle settings.

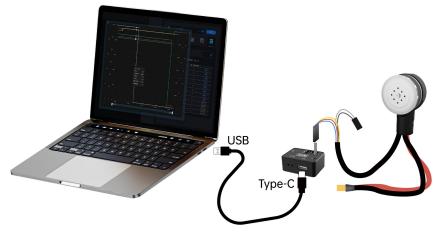
Tools Required

- SIYI Software for Windows
- SIYI CAN Link Module

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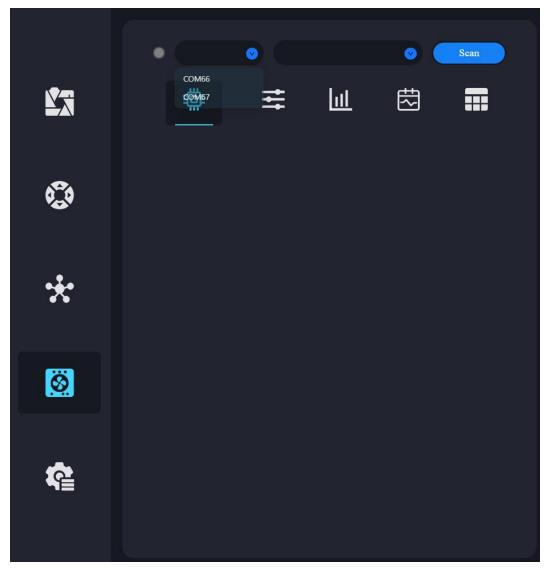
• Windows Device

Steps



Connect the flight controller that is connected to the CAN Hub module bus to the computer using a Type-C cable

- 1. Please refer to the diagram above to connect the propulsion system, the CAN Link module, and the Windows device.
- 2. Run the SIYI software and go to the ESC settings menu.



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

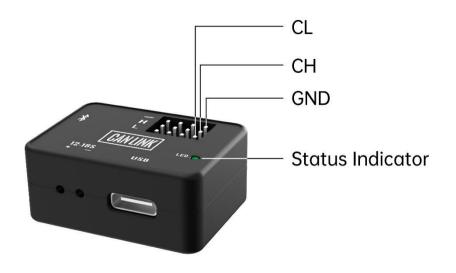
			•	•	SIYI.
Dovice Manager File Action View Holp Action Sector Action Action Input and outputs Action Input and Input and outputs Action Input and I	OM17)			COM11	
Connect the propulsion : and use the Type-C cable	system's CAN œ a to connect the	able to the CAN Lin module to the con	nk module neuter		激活 Windows Ristricatuses.Windows,
О СОМ9	•		ESC 📀	Scan	
	=	Lat	<u>ج</u>		

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

•		сом17 📀		1	ESC 📀 🤇	Scan
	4		t+†	<u>lul</u>	ا ک	
		_				
	ID	Firmware	Boot Loader	E.S.C. Type	Serial	No.
	1	v0.2.6	v0.1.3	85	38353032323237	3437330000



Before configuration, make sure the propulsion system is functioning properly and pay special attention to the CAN interface pin definitions to avoid incorrect connections.

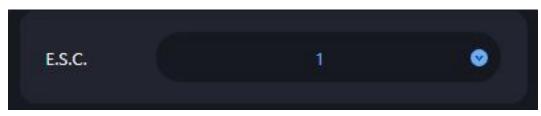


2.2.1 Indicator Colors

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.

LED Color	🗿 Green	O Blue	
		Save	

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





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.

CAN ID	Unorade
CANID	Opgrade



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.



Connect the flight controller that is connected to the CAN Hub module bus to the computer using a Type-C cable



D6 propulsion system is PWM throttle priority in default and will only use CAN throttle if PWM throttle is not available. If you require CAN throttle priority, please always contact SIYI support. If you do not use CAN throttle, then it's not necessary to configure CAN throttle.

2.3.1 Setting CAN Throttle through SIYI Software

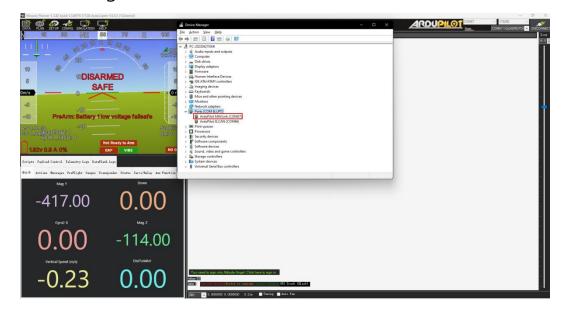
Please refer to chapter 2.2 of this user manual to connect devices and run the SIYI software. Then go to "ESC Settings", select the target ESC and set its throttle ID, then save the settings.

2.3.2 Setting CAN Throttle through Mission Planner (ArduPilot)

ArduPilot flight controllers support setting D6 propulsion system through the DroneCAN protocol.

Steps

1. Run Mission Planner and locate the corresponding port in PC Device Manager.



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

							5200 · J.QUADROTOF · 注接
۵		Default	单位	选项		E	inti
ж				03	rate at which pitch angle returns to level in acro and sport mode. A higher value causes the vehicle to return to level faster. For helicopter sets the decay rate of the virtual flybar in the pitch axis. A higher value causes faster decay of desired to actual attrude.		保存
L	1	1		03	nete at which roll angle returns to level in acro and sport mode. A higher value causes the vehicle to return to level faster. For helicopter sets the decay rate of the virtual flybar in the roll axis. A higher value causes faster decay of desired to actual attitude.		15X8J
	0	0			A range of options that can be applied to change acro mode behaviour. Avenode enables ATC_THR_MIX_MAN at all times (air mode has no effect on helicoptens). Rate Loop Only deables the use of angle stabilization and uses angular rate stabilization only.		影響動和 比較開設
>	0.3	0.3		-0.5 0.95 0:Disabled	Acro roll/pitch Expo to allow faster rotation when stick at edges		所有单位都会以原始 核式城存,不会被编放
E	360	360	deg/s	1 1080	Acro mode maximum roll and pitch rate. Higher values mean faster rate of rotation		THE ADDRESS OF THE RECORDER.
E_TC	•	0	•	01 0.5 Very Soft	Acro roll and pitch rate control input time constant. Low numbers lead to shaper response, higher numbers to softer response		ton the
2	•	0		01	Acro Throttle Mid		金艺灵组以语 推案
1	2	2		0.Disabled 1.Leveling 2.Leveling and Limbod	Type of trainer used in acro mode		
	0	0		-1.0 0.95 0 Disabled	Acro yaw expo to allow faster rotation when stick at edges		Modified None Default
	202.5	202.5	deg/s	1 360	Acro mode maximum yaw rate. Higher value means faster rate of rotation		
_TC	0	0	•	01 0.5:Very Soft	Acro yaw rate control input time constant. Law numbers lead to sharper response, higher numbers to softer response		
	0	0		0.Disabled 1.uAvtonix-MAVLink	Type of ADS-B hardware for ADSB-in and ADSB-out configuration and operation. If any type is selected then MAVLink based ADSB-in messages will always be enabled		
ETA	0.1	0.1		0.001 0.5	This controls the time constant for the cross-over frequency used to fuse AHRS (simples) and heading) and GPS data to estimate ground velocity. Time constant is 0.1/beta. Alarger (Spland Sprand Spr		
YE	3	3		0 Disabled 2 Enable EKF2 2 Enable EKF2	The control with Nacion Marshall And	7 20	◎波術挙
N	1	1		0.0 1.0	The controls which Neuroffs Mahama Rev of Sector Ran for 2010 Complete Statements - Unit of the Complete Statements - Unit of the Complete Statement - Compl		
NSATS	6	6		0 10	Minimum number of satellites visible to use GPS for velocity based corrections atitude correction. This defaults to 6, which is about the point at which the velocity numbers from a GPS become too unreliable for accurate correction of the accelerometers.		

3. Locate the CAN_P1_DRIVER by searching.

Name 4	Value	Default	Units	Options	Desc	Fav
CAN_P1_BITRATE	1000000	1000000		10000 1000000	Bt rate can be set up to from 10000 to 1000000	
CAN_P1_DRIVER	1	0		0:Disabled 1:First driver 2:Second driver	Enabling this option enables use of CAN buses.	
CAN_P1_FDBITRATE				1:1M 2:2M	Bit rate can be set up to from 1000000 to 8000000	

4. Set the value of CAN_P1_DRIVER to 1.



5. Set the value of CAN_D1_PROTOCOL to 1 and configure the

CAN interface protocol to DroneCAN.



6. After successful setup, restart the flight controller. You should

see additional parameters: CAN_P1_BITRATE and CAN_D1_UC_ESC_BM.



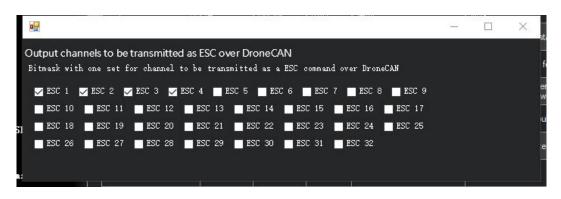
Name 2	Value	Default	Units	Options	Desc	
CAN_D1_PROTOCOL				BroneCAN	Enabling this option starts selected protocol that will use this virtual driver	
CAN_D1_PROTOCOL2	0	0		0:Disabled 7:USD1 10:Satisfies	Secondary protocol with 11 bit CAN addressing	
CAN_D1_UC_ESC_BM					Bitmask with one set for channel to be transmitted as a ESC command over DroneCAN	
CAN_D1_UC_ESC_OF	0	0		0 18	Offset for ESC numbering in DroneCAN ESC RawCommand messages. This allows for more efficient packing of ESC command messages. If your ESCs are on servo functions 5 to 8 and you set this parameter to 4 then the ESC RawCommand will be sent with the first 4 slots filed. This can be used for more efficient usage of CAN bandwidth	
CAN_D1_UC_ESC_RV					Bitmask with one set for each output channel that uses a revensible ESC over DroneCAN. Revensible ESCs use both positive and negative values in RawCommands, with positive commanding the forward direction and negative commanding the reverse direction.	
CAN_D1_UC_NODE					DroneCAN node ID used by the driver itself on this network	
CAN_D1_UC_NTF_RT	20	20	Hz	1 200	Maximum transmit rate for Notify State Message	
CAN_D1_UC_OPTION	0	0			Option flags	
CAN_D1_UC_POOL	16384	16384		1024 16384	Amount of memory in bytes to allocate for the DroneCAN memory pool. More memory is needed for higher CAN bus loads	
CAN_D1_UC_RLY_RT	0	o	Hz	0 200	Maximum transmit rate for relay outputs, note that this rate is per message each message does 1 relay, so if with more relays will take longer to update at the same rate, a extra message will be sent when a relay changes stude	
CAN_D1_UC_SER_EN				0.Disabled 1.Enabled	Enable DroneCAN virtual serial ports	
CAN_D1_UC_SRV_BM					Bitmask with one set for channel to be transmitted as a servo command over DroneCAN	
CAN_D1_UC_SRV_RT	50	50		1 200	Maximum transmit rate for servo outputs	
CAN_LOGLEVEL	0	0		0 4 0:Log None 1:Log Ferrer	Loglevel for recording initialisation and debug information from CAN Interface	
CAN_P1_BITRATE	1000000	1000000		10000 1000000	Bit rate can be set up to from 10000 to 1000000	
CAN_P1_DRIVER	1	0		0:Disabled 1:First driver	Enabling this option enables use of CAN buses.	
CAN_P1_FDBITRATE				1:1M 2:2M	Bit rate can be set up to from 1000000 to 8000000	

7. Configure CAN_P1_BITRATE to 100000_{\circ}

 Name
 A value
 Default
 Units
 Opposits
 Default

 CAN_P1_BITRATE
 1000000
 1000000
 Bit rate can be set up to from 10000 to 1000000
 Bit rate can be set up to from 10000 to 1000000

8. Select the CAN_D1_UC_ESC_BM options according to the number and IDs of the ESCs. The below picture shows the situation using 4 ESCs of which the IDs are assigned as 1, 2, 3, and 4.



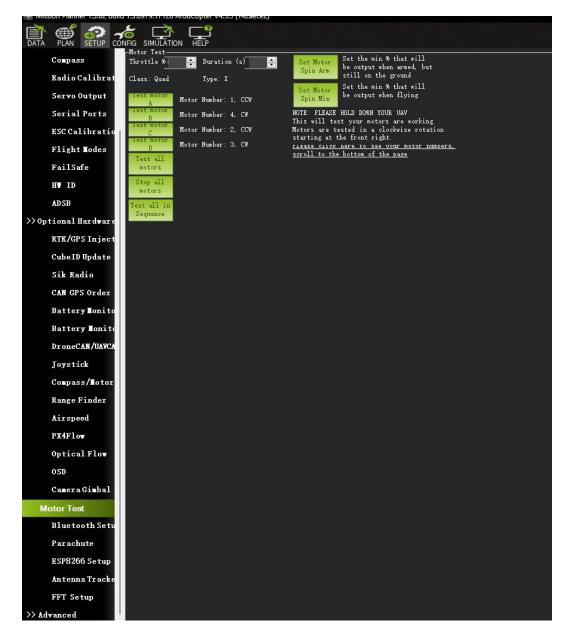
	9.Set	MOT_PWM_MAX	to	1940	and	MOT_PWM_MIN	to
--	-------	-------------	----	------	-----	-------------	----

1100.

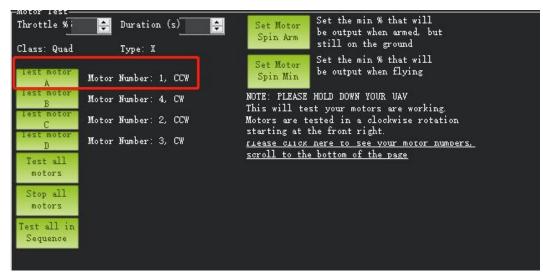
Name	Value	Default	Units	Options
мот_рии_мах	1950	2000	Р₩М	0 2000
NGT_PHIM_MIN	1050	1000	PWM	0 2000

ESC Testing

 In "Motor Testing" page, you can set the throttle and the duration of the throttle action. After configuring these settings, select the motor you need to test according to its number.



2. For example, to motor 1, click "Test motor A."



- 3. In the status bar, under the current throttle action, you can see ESC 1's
- Voltage (esc1_volt)
- Current (esc1_curr)
- RPM (esc1_rpm)
- Temperature (esc1_temp)

data, etc.

Scripts	Payload	Control	Telemetry L	ogs DataF	lash Logs		
Quick	Actions	Messages	PreFlight	Gauges T	ransponder	Status Servo/Relay #	Aux Function
accels	q	1.010)14 ay		-17	battery_remainin	g3 0
accels	q2	0, 999	902 ay2		-7	battery_remainin	.g4 0
accels	q3	0	ay3		0	battery_remainin	.550
ahrs2_	alt	0	az		-1010	battery_remainin	.g6 0
ahrs2_	lat	0	az2		-999	battery_remainin	g7 0
ahrs2_	lng	0	az3		0	battery_remainin	.g8 0
ahrs2_	pitch	0	AZTo	MAV	0	battery_remainin	.g9 0
ahrs2_	roll	0	Base		0, 0, 0,	, battery_remainmi	n O
ahrs2_	yaw	0	batt	ery_cell1	1.928	battery_remainmi	n2 0
airspe	ed	0	batt	ery_cell2	0	battery_remainmi	n3 0
airspe	ed1_temp	0	batt	ery_cell3	0	battery_remainmi	n4 0
airspe	ed2_temp	0	batt	ery_cell4	0	battery_remainmi	n5 0
alt		0.851	l batt	ery_cell5	0	battery_remainmi	n6 0
alt_er	ror	0	batt	ery_cell6	0	battery_remainmi	n7 0
altasl		0	batt	ery_cell7	0	battery_remainmi	n8 0
altasl	2	0	batt	ery_cell8	0	battery_remainmi	n9 O
altd10	0	0.008	351 batt	ery_cell9	0	battery_temp	0
altd10	00	0.000)85 batt	ery_cell10	0	battery_temp2	0
altoff	sethome	0	batt	ery_cell11	0	battery_temp3	0
AOA		0	batt	ery_cell12	0	battery_temp4	0
armed		False	e batt	ery_cell13	0	battery_temp5	0
aspd_e	rror	0	batt	ery_cell14	0	battery_temp6	0
asrati	0	0	batt	ery_kmleft	0	battery_temp7	0
ax		-1	batt	ery_mahper	km ∞	battery_temp8	0
ax2		0	batt	ery_remain	ing O	battery_temp9	0
ax3		0	batt	ery_remain	ing2 0	battery_usedmah	192

2.3.3 Setting CAN Throttle through QGroundControl (PX4)

PX4 flight controllers support configuring D6 propulsion system through the UAVCAN protocol.

Parameter Configuration

Set UAVCAN_BITRATE to1000000.

Set UAVCAN_ENABLE to Sensors and Actuators (ESCs) Automatic Config.



UAVCAN_BITRATE	1000000 bit/s	UAVCAN CAN bus bitrate
UAVCAN_ENABLE		rs (ESCs UAVCAN mode
UAVCAN_ESC_IDLT	Enabled	UAVCAN ESC will spin at idle throttle when armed, even if the mixer outputs zero setpoints

Set SYS_CTRL_ALLOC to "Enabled" to enable CAN dynamic ID allocation. PX4 dynamic CAN ID allocation requires an SD card. Without SD card, PX4 does not dynamically allocate CAN node IDs for CAN devices.

	TANKING .	Fashia Dunamia Control Allocation
SYS_CTRL_ALLOC	Enabled	Enable Dynamic Control Allocation

After configuring the above parameters, restart the PX4 flight controller. In Mavlink console, enter "uavcan status" to view the CAN port status information and the devices connected to the CAN port.

地理标记图像 加sh> uavcan status Fool allocator status: Capacity hard/soft: 500/250 blocks Reserved: 19 blocks Allocated: 13 blocks UAVCAN node status: Internal failures: 0 Transfer errors: 1 RX transfers: 784
● 地理标记图像 Pool allocator status: Capacity hard/soft: 500/250 blocks Reserved: 19 blocks Allocated: 13 blocks ● Mavlink 控制合 UAVCAN node status: Internal failures: 0 Transfer errors: 1 RX transfers: 784
UAVCAN node status: Internal failures: 0 Transfer errors: 1 RX transfers: 784
- My 振动 CAN1 status: HW errors: 475
IO errors: 475 RX frames: 2276 TX frames: 2068
CAN2 status:
HW errors: 2062 IO errors: 2064
RX frames: 0 TX frames: 2066
ESC outputs:
INFO [mixer_module] Param prefix: UAVCAN_EC control latency: 0 events, 0us elapsed, 0.00us avg, min 0us max 0us 0.000us rms
Channel Configuration: Channel 0: func: 0, value: 0, failsafe: 65535, disarmed: 65535, min: 1, max: 8191
Channel 1: func: 0, value: 0, failsafe: 65535, disarmed: 65535, min: 1, max: 8191
Channel 2: func: 0, value: 0, failsafe: 65535, disarmed: 65535, min: 1, max: 8191
Channel 3: func: 0, value: 0, failsafe: 65535, disarmed: 65535, min: 1, max: 8191 Channel 4: func: 0, value: 0, failsafe: 65535, disarmed: 65535, min: 1, max: 8191
Channel 5: func: 0, value: 0, failsafe: 65535, disarmed: 65535, min: 1, max: 8191
Channel 6: func: 0, value: 0, failsafe: 65535, disarmed: 65535, min: 1, max: 8191
Channel 7: func: 0, value: 0, failsafe: 65535, disarmed: 65535, min: 1, max: 8191 Servo outputs:
INFO [mixer module] Param prefix: UAVCAN SV
control latency: 0 events, Ous elapsed, 0.00us avg, min Ous max Ous 0.000us rms
Channel Configuration: Channel 0: func: 0, value: 0, failsafe: 500, disarmed: 500, min: 0, max: 1000
Channel 1: func: 0, value: 0, failsafe: 500, disarmed: 500, min: 0, max: 1000
Channel 2: func: 0, value: 0, failsafe: 500, disarmed: 500, min: 0, max: 1000
Channel 3: func: 0, value: 0, failsafe: 500, disarmed: 500, min: 0, max: 1000 Channel 4: func: 0, value: 0, failsafe: 500, disarmed: 500, min: 0, max: 1000
Channel 5: func: 0, value: 0, failsafe: 500, disarmed: 500, min: 0, max: 1000
Channel 6: func: 0, value: 0, failsafe: 500, disarmed: 500, min: 0, max: 1000
Channel 7: func: 0, value: 0, failsafe: 500, disarmed: 500, min: 0, max: 1000
Sensor 'gnss': name: uavcan_gnss
Sensor 'mag': name: uavcan_mag
Online nodes (Node ID, Health, Mode): 40 OK OPERAT

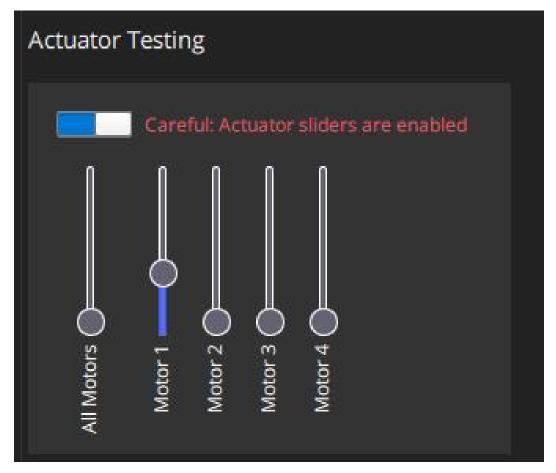
ESC Testing

In "Actuators Outputs", set the correspondence between the ESCs and motors, and configure the maximum and minimum throttle values.

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

Back < 🕏	Vehicle Setup	
Summary	Actuators Setup Geometry: Multirotor	Actuator Outputs
Firmware		
Airframe	Motors 4 - Position X Position Y Direction CCW	Identify & Assign Motors
(()) Sensors	Motor 1: 0.15 Image: Constraint of the second seco	Configure: Sensors and Actuators (ESCs) Automatic Config 🔻
Radio	Motor 3: 0.15 -0.15 Motor 4: -0.15 0.15	ESCs Rev Range
Flight Modes		Function Minimum Maximum (for Servos) ESC 1: Motor 1 - 1 8191
Power		ESC 2: Motor 2 🐨 1
Actuators		ESC 3: Motor 3 - 1 8191
Safety	× 2 4	ESC 5: Disabled v 1 8191

Open the switch in "Actuator Testing" and adjust the throttle size of the motor to be tested by sliding the throttle slider.



Check Mavlink messages. The ESC_STATUS message includes

information such as the ESC's RPM, voltage, and current. Select the option to plot the data to view the variation of these parameters over time.



SIYI CHAPTER 3 START ASSEMBLY

3.1 Motor Assembly

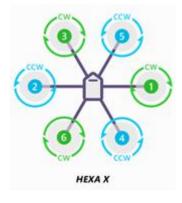
3.1.1 Match Throttle ID & Motor Orientation

Most flight controllers on market have predefined throttle IDs and motor orientation for specific drone models. When assembling the propulsion system, please carefully refer to the flight controller's user manual to correctly match each throttle ID with the corresponding motor orientation.

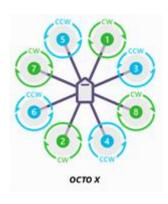
For example, when using N7 flight controller (ArduPilot firmware) with D6 enterprise propulsion system:



Quadcopter



Hexacopter



Octocopter

Select the corresponding motor based on its orientation (CW or

CCW).





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 Adjusting Arm Diameter (if necessary)



D6 propulsion system is 30mm arm diameter in default.

If your arm diameter is less than 30 mm, you will need a reducing component between the arm tube and the D6 motor tube to make sure that the propulsion system can be assembled properly.



Steps

Install the Reducing Component





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When installing the reducing component, it is recommended to use rivets to secure the arm to ensure the overall structural stability and safety.

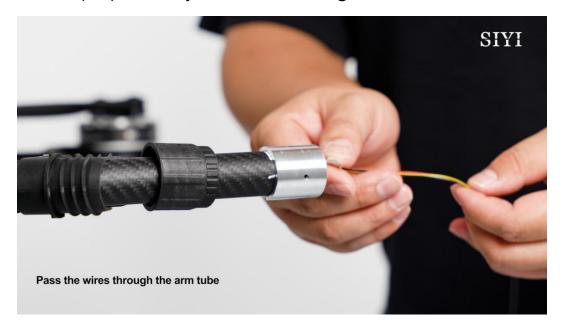


3.1.3 Assemble and Pre-tightening the Motor to the Arm

After matching the throttle ID and motor orientation, let's assemble the motor onto the arm. During this step, the motor only needs to be pre-tightened, allowing a little space for post adjustments during calibration process.

Steps

1. Pass the propulsion system wires through the arm tube.



2. Assemble the motor onto the arm.



3. Pass the propulsion system's wires through the arm tube.



3.2 Balance the Motor

Next, use a level to balance the motor assembly's X-axis and Y-axis.



3.3 Lock the Arm

After assembling and balancing the motor, let's lock the motor to the arm tube to ensure a secure installation.



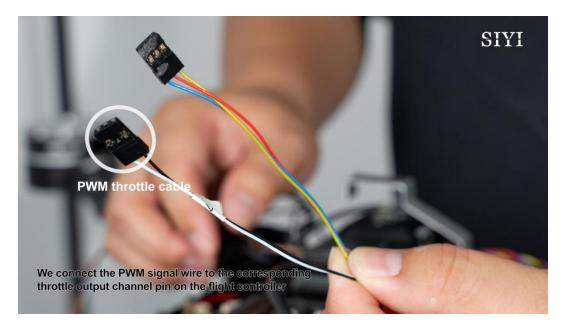
🗿 Mark

D6 propulsion system comes with rivet holes. It 's up to customers whether rivets are required based on the actual situation to ensure overall structural stability and safety.

3.4 Wiring and Routing

Now, let 's connect all propulsion system wires to their designated positions and arrange them appropriately.

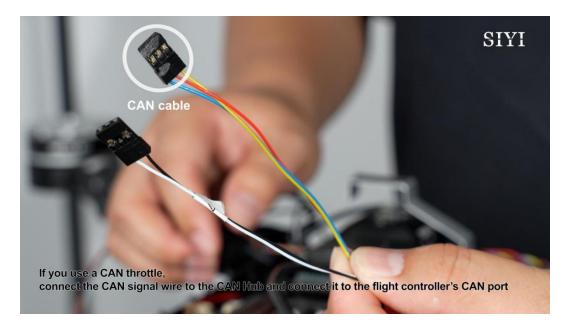
3.4.1 PWM Throttle Wire



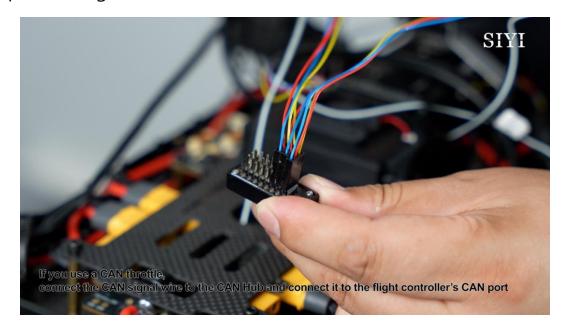
Connect PWM signal wires to the corresponding pins of throttle output channel on the flight controller.



3.4.2 CAN Signal Wire (if necessary)



If using CAN throttle, connect the CAN signal wires to the CAN Hub module and integrate it into the flight controller's CAN port through the bus.



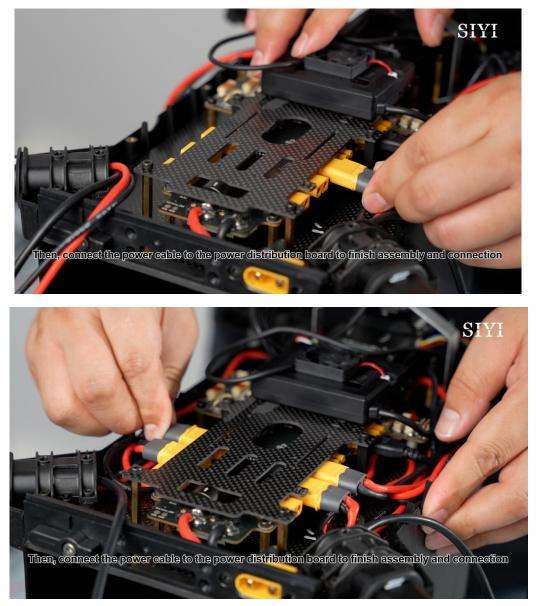


🗿 Mark

If CAN throttle is not used, no additional configuration is required.

3.4.3 Power Supply Wire

Connect the power wire to power supply on the power distribution board.



3.5 Debug and Check

Before debugging, please strictly follow the below steps in order:

- 1. Ensure that the propulsion system wires are correctly connected to avoid safety risks from incorrect or missing connections.
- 2. Confirm that no propellers are installed to prevent safety risks during debugging.
- Power on the system and verify that the communication between the ground station and the flight control system is functioning correctly.

3.5.1 Throttle Channels

Use the GCS to send signals to flight controller to individually verify if each throttle ID works consistently with the default settings of the flight controller.



3.5.2 Motor Orientation

Activate each motor individually through the GCS to verify if each motor of the propulsion system matches the default settings of flight controller.



3.5.3 Flight Controller Parameters

Checking flight controller parameters is crucial for ensuring drone flight safety, enhancing flight stability and precision, performing troubleshooting, and evaluating and optimizing performance. Therefore, it is essential to regularly check and adjust these parameters both before and during drone operations to ensure smooth flight and successful mission completion.

Recommended Key Parameters to Monitor

PID (Proportional, Integral, Derivative Control Parameters)

Sinte Num Kund Kund Kund Kund Kund Kund Kund Kund	Stabiliza 1	Roll (Error to —	Stabiliza B	itch (Error to	Stabiliza	Yaw (Error to	-Position XY	(Dist to
Lock Fitch and Roll Values Rate Roll P 0.12074 I 0.12074 D 0.010 D 0.010 D 0.010 D 0.010 D 0.015 PLTE 0 FLTE 0 FLTE 0 FLTT 10 FLTT 10 Throttle Rate (VSpd to protect) Pinbrate Note Pinbrate 1.100 Tune None None None None None None None RC3 Opt ArmDisarm (4.2 Max <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>								
Rate Roll Rate Pitch Rate Yaw Rate Yaw Valority XY (Vel to F 0.12074 F 1 0.12074 F 1 1.000 F D 0.010 F D 0.015 D D 0.015 D D 0.150 D	ACCEL MAX	45000 🚔	ACCEL MAX	45000 🚔	ACCEL MAX	12000 🚔	INPUT TC	0. 150 🚔
P0.12074P0.12074P0.800 \dot{p} cel)2.0I0.12074I0.020I1.000ID0.010D0.015DD0.020DD0.010DD0.015DDDD0.010DDDDDDD0.010DDDDDDD0.010DDDDDDDDDDDDDDFLTEDDDDDDDFLTD10DFLTTDDDDFLTT10DDDDDDFLTT10DDDDDDFLTT10DDDDDDFLTT10DDDDDDFLTTDDDDDDDT1.000DDDDDDTDDDDDDDDTDDDDDDDDTDDDDDDDDTDDDDDDDDTDDDDDDDDDD </td <td>🔲 Lock Pito</td> <td>, h and Roll Values</td> <td>5</td> <td></td> <td></td> <td></td> <td></td> <td></td>	🔲 Lock Pito	, h and Roll Values	5					
I 0.12074 I 0.12074 I I 0.000 I I 1.000 I I 1.000 I I 1.000 I I 1.000 I I I 0.000 I I I 1.000 I I I 0.000 I <	-Rate Roll-	an arean	-Rate Pitch-	100		na secon		(Vel to
D 0.010 ÷ p 0.015 ÷ D 0.020 ÷ p 0.160 ÷ IMAX 0.500 ÷ IMAX 0.500 ÷ IMAX 0.500 ÷ PLTE 0 ÷ FLTE 0 ÷ * 0 0 ÷ * 0 0 ÷ * 0 0 ÷ * * 0 ÷ * * * * * * * * * * * * * * *	P	and the second se	P		P	and the second se	p ^{cel)}	
IMAX 0.500 IMAX 0.500 IMAX 0.500 IMAX 100 Imax FLTE 0 Imax 0.500 Imax 100 Imax 100 Imax Imax 100 Imax Imax 100 Imax Imax 100 Imax I	I		I		I		I	
FLTE 0 + FLTE 0 + FLTE 2 + Basic Filters FLTD 10 + FLTD 10 + FLTD 10 + Basic Filters Gyro 20 + FLTT 10 + FLTD 10 + FLTD 10 + Basic Filters Gyro 20 + FLTT 10 + FLTD 10 + FLTD 10 + Basic Filters Gyro 20 + Acoel 10 + Basic Filters Badius 200 + Acoel 10 + Basic Filters Speed Indo Filters Speed Node Speed	D		D	0.015 🔶	D		D	0. 150 🚔
FLTD 10 Image: constraint of the set o	IMAX	0.500 🍦	IMAX		IMAX	0. 500 🚔	IMAX	100 🚔
FLTD 10 Image: constraint of the set o	FLTE	0 🌲	FLTE	0 📫	FLTE	2 🍦	-Basic Filte	rs
FLIT IO FLIT IO Accel IO Accel Throttle Accel (Accel to motor) Throttle Rate (VSpd to p cel) Altitude Hold (Alt to p cel) Main of the p cel Speed Speed Speed Speed Radius 200 Speed Radius Speed	FLTD		FLTD		FLTD	10	Gyro	20
motor) 0.50 motor) p cel) 5.000 motor) p imbrate) 1.100 motor) Radius 200 matched Radius 200 motor) Speed 1000 motor) Speed 1000 motor) Speed 1000 motor) Speed 1000 matched Speed 1000 motor) Speed Speed <td>FLTT</td> <td></td> <td>FLTT</td> <td>-</td> <td>FLTT</td> <td></td> <td>Accel</td> <td>10 🚔</td>	FLTT		FLTT	-	FLTT		Accel	10 🚔
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I 1.000 Image: Tune None RC6 Opt ArmDisarm (4.2 Radius 200 Image: Speed Up Speed Up 250 Image: Speed Up Speed Up 250 Image: Speed Up Speed Up 250 Image: Speed Up Speed Up 150 Image: Speed Up Speed Up 150 Image: Speed Up Speed Up Image: Speed Up Speed Up Image: Speed Up Speed Up Image: Speed	motor) P	0.50 🜻	P cel)	5.000 🚔	P'imbrate) 1.100 🚔	Speed	1000 🚔
IMAX 80 Imax 0.000 R.7 Opt AUTO Mode Speed Dn Loiter Filter Logs RC9 Opt Do Nothing RC9 Opt Do Nothing Imax Speed Dn Loiter 1250 Imax Mask Imax Options Imax RC9 Opt Do Nothing Imax I	I		Tune N	one	- RC6 Opt - []	ArmDisarm (4.2 🔻	Radius	
IMAX 80 Imax RC3 Opt RTL Speed Dn 150 Imax Filter Logs RC9 Opt Do Nothing Imax <	D	0.000 🚔	Min 0.000	.	RC7 Opt		Speed Up	
Filter Logs Conter 1250 Mask Options Image: Conter of the content of the con	IMAX	80 🌲	38 18				Speed Dn	
Mask Options Options RC10 Opt Do Nothing C -Static Notch Filter Frequency 10 BandWidth S Attenuation S Frequency 10 Frequency 10 Construction S Frequency 10 Construction S Construction S Cons		- 51				XIL 🝷	Loiter	1250 🔶
RC10 Opt Do Nothing Static Notch Filter Enabled Frequency BandWidth Reference Frequency C Frequency Frequ			0-41			Do Nothing 🗾 🔫		
Enabled Enabled Disabled Attenuation Frequency 10 BandWidth 5 Attenuation 5 Frequency 10 Frequency 10	mask	· · · ·	Options		RC10 Opt	Do Nothing 👻		
Frequency Image: Constraint of the second	CStatic Not	ch Filter	-Harmonic N	otch Filter —				
BandWidth E Reference O Options O C Attenuation E Frequency O C Karmonics O C	Enabled	-	Enabled	Disabled 👻	Attenuation	÷		
Attenuation 5 🗧 Frequency 10 🔅 Karmonics 🖸 😂	Frequency	10	Mode	¢	Bandwidth	\$		
	BandWidth	5	Reference	¢	Options	÷		
Write Params Refresh Soreen	Attenuatio	n 5 🔶	Frequency	0 ≑	Harmonics	÷		
			Write	Params		Refresh Screen		

Flight Mode Configuration

	VFIG SIMULATIO				
Install Firmware		Current Mode: Stabi	ilize		
>> Mandatory Hardware		Current PWM: 5: 0			
Frame Ту ре	Flight Mode 1	Stabilize	🚽 🔲 Simple Mode	🔲 Super Simple Mode	PWM 0 - 1230
	Flight Mode 2	Auto	💂 🔲 Simple Mode	🔲 Super Simple Mode	PWM 1231 - 1360
Initial Tune Par:	Flight Mode 3	Loiter	🕳 🔝 Simple Mode	🦲 Super Simple Mode	PWM 1361 - 1490
Accel Calibratio	Flight Mode 4	AltHold	🚽 🔲 Simple Mode	🔝 Super Simple Mode	PWM 1491 - 1620
Compass	Flight Mode 5	Stabilize	📮 📄 Simple Mode	📄 Super Simple Mode	PWM 1621 - 1749
- Radio Calibratio	Flight Mode 6	Loiter	🖵 🔲 Simple Mode	🔲 Super Simple Mode	PWM 1750 +
Kadio Calibratio	l .			Simple and Super	
Servo Output		Save Modes		<u>Simple description</u>	
Serial Ports		a.			
ESC Calibration					
Flight Modes <					
FailSafe					
HW ID					
ADSB					
>>Optional Hardware					
>> Advanced					

Gyroscope and Accelerometer Calibration Status



Voltage and Current Monitoring Settings

Instattetteteate	
>> H andatory Hardwar	Monitor Analog Voltage and Curr - Battery Capacity mAh
Frame Тур е	Sensor 0: Other 🚽 💿 MP Alert on Low Battery
Initial Tune Pa	HW Ver 9: Durandal/ZealotH743 💌
Accel Calibrat	-Calibration
Compass	1. Measured battery voltage: 1.91188576556
Radio Calibrat	2. Battery voltage (Calced): 191186576555 3. Voltage divider (Calced): 16.43558
Servo Output	4. Measured current:
Serial Ports	5. Current (Calced)
ESC Calibratio	6. Amperes per volt: 60
Flight L odes	
FailSafe	
HW ID	
ADSB	
>>Optional Hardware	
RTK/GPS Inject	
CubeID Update	
Sik Radio	
CAN GPS Order	
Battery Monitor	
Pottorn Tonite	



Based on actual drone flight performance and suggestions from GCS, PID parameters should be adjusted as needed. To verify the effects of these adjustments, it is recommended to conduct a few flight tests and carefully observe the drone's stability and response speed. On this basis, fine-tune the parameters step by step until the drone achieves optimal flight performance.

3.6 Installing Propellers

Installing propellers is the final step before conducting flight tests. Before installing propellers, please ensure that all previous steps have been completed correctly to avoid test accidents that could result in personal injury or property loss.

3.6.1 Matching Motor Orientation

Propeller rotation orientation (CW and CCW) should correspond precisely with the motor rotation orientation (CW and CCW).



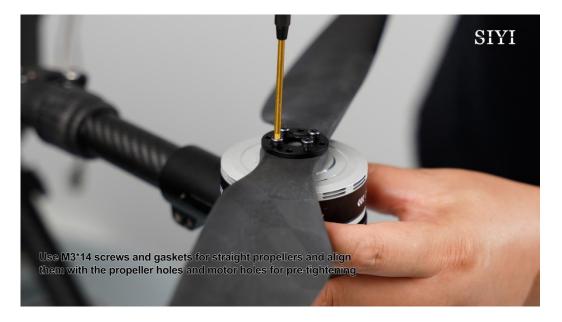
CW



CCW

3.6.2 Installation and Tightening

Use M3*14 screws for straight propellers and align the propeller washers to the propeller holes and the motor holes. Only pretightening the screws in this step.



Use M3*6 screws for foldable propellers and align the propeller holes with the motor holes. Only pre-tightening the screws in this step.





Do not mix straight and foldable propellers on the same multirotor drone.

SIYI CHAPTER 4 FLIGHT TEST

Before arming the drone to take off or during flight, it is necessary to conduct a series of basic checking on the drone to ensure flight safety, improve test efficiency and success rate.

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This chapter only introduces the test guidance related to the propulsion system. Regarding flight test guidance for other components, please refer to the user manual of the corresponding component.

4.1 Pre-flight Checking

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

4.1.1 Check the Propellers

Confirm that the propellers are installed correctly, firmly fastened, and without damage.



If foldable propellers are used, it's time to unfold the propellers to avoid unnecessary vibrations during takeoff.



4.1.2 Check the Power Assembly

Confirm that the motor is firmly installed, and the wiring is correct.



And manually rotate the motor to check if there is any blockage or jamming.



4.2 Start Flight Test

4.2.1 Ground Test

Place the drone on a flat and open ground and power on the drone. Then arm the drone and slowly increase throttle, and carefully observe drone feedback to ensure that all motors and propellers are working properly.



4.2.2 Low-Altitude Hovering Test

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



Hover the drone at height of one to two meters, observe its hovering stability, and test pan control (forward and backward, left and right) and spin control (yaw) in all orientation in a small scale to ensure that the drone can stably perform these actions.

4.2.3 Basic Flight Movement Test

Increase the flight altitude and perform simple forward, backward, left-right pan and spin movement. Observe drone response feedback and stability to confirm the response ability and stability of the propulsion system.



4.3 Post-flight Inspection

After each flight, it is recommended to conduct necessary inspections on the drone to detect flight abnormalities and potential safety hazards in a timely manner.

4.3.1 Check Propellers and Motors

Check if the propellers are loose or damaged, and check if the motors are loose, blocked, or overheated.

4.3.2 Record and Analyze Flight Log

Analyzing flight log is helpful for trouble shooting and improving flight quality to propose countermeasures in a timely manner and improve flight test efficiency.

It is suggested to pay more attention to the flight test data below:

- Flight Time
- Power Consumption
- Flight Mode
- Abnormal Phenomena

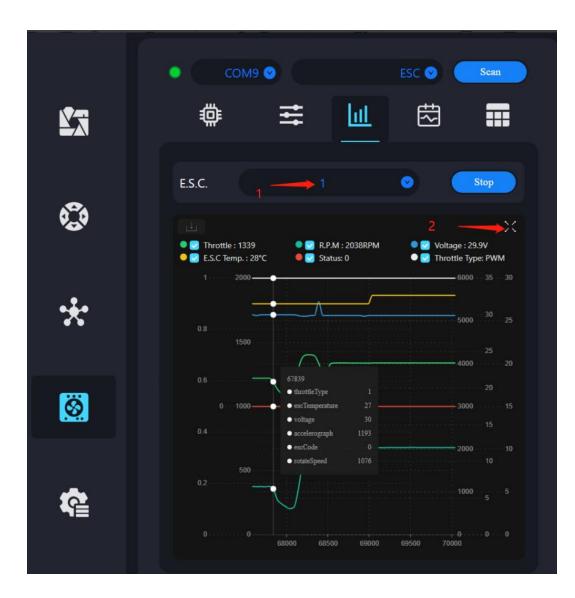
CHAPTER 5 TROUBLESHOOTING

SIYI software supports real-time view of propulsion system working status information such as vibration, temperature, current, and voltage which are very helpful for quick troubleshooting, improving maintenance efficiency, and ensuring operation safety.



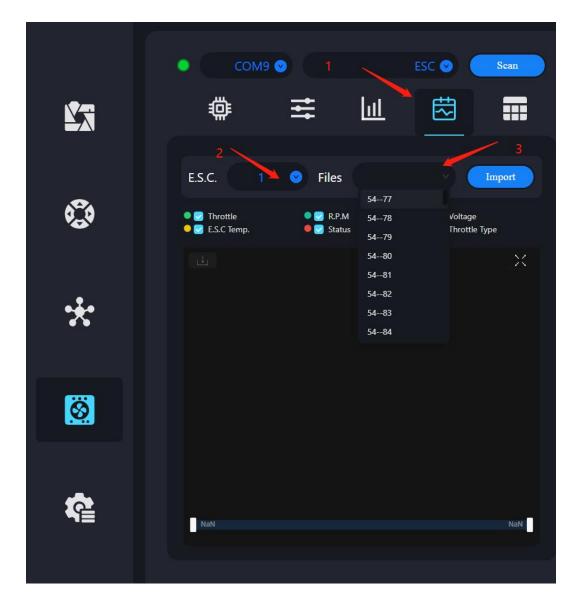
Propellers should be removed before troubleshooting to avoid risks to personal safety.

Confirm flight log to avoid incorrect data analysis and inability to accurately analyze the cause of the problem.



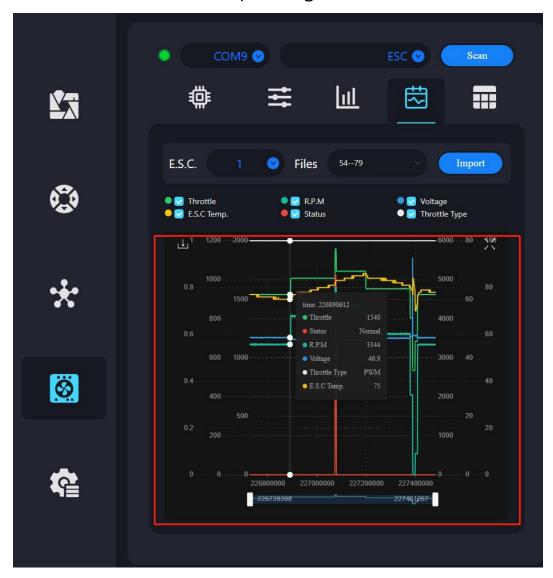
5.1 Real-time Operating Data

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. In addition, the corresponding waveform diagrams will be displayed in real time for monitoring and analysis.



5.2 Historical Operating Data

Users can consult relevant information through the ESC ID. The front part represents the corresponding number of power-on times, and the rear part represents the file serial number. According to this naming rule, users can read the data content of the corresponding file.



5.3 Fault Storage Function

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Users need to select the corresponding ESC ID for viewing according to actual needs. When the user clicks the details option, the system will display the abnormal occurrence time of the file and specific abnormal point information.



SIYI CHAPTER 6 FIRMWARE UPGRADE

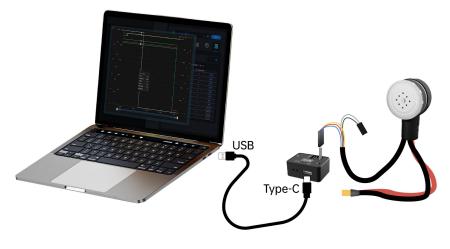
6.1 Upgrade through SIYI Software

SIYI software supports users to upgrade the ESC firmware of the propulsion system.

Tool Preparation

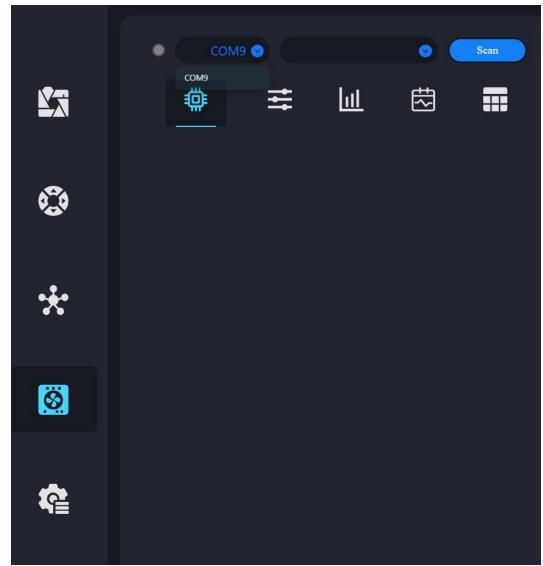
- SIYI Software
- SIYI CAN Link Module
- Windows device

Steps

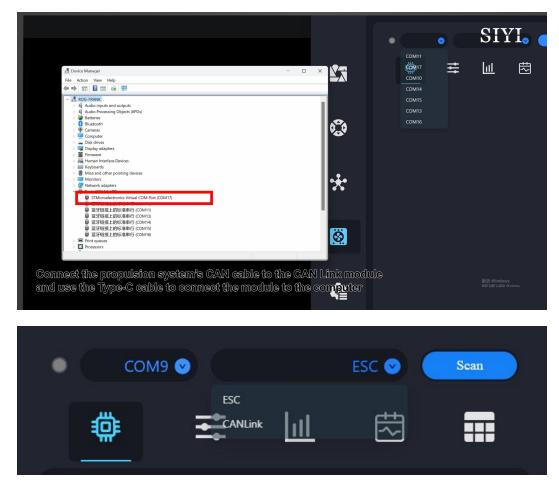


Connect the flight controller that is connected to the CAN Hub module bus to the computer using a Type-C cable

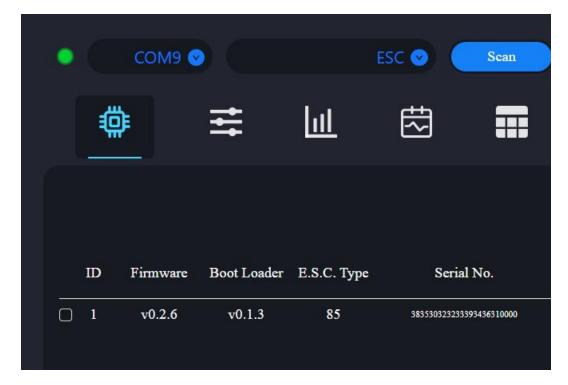
- 1. Please refer to the above picture to connect the propulsion system, the SIYI CAN Link module, and the Windows device.
- 2. Run SIYI software and go to "ESC Settings".



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



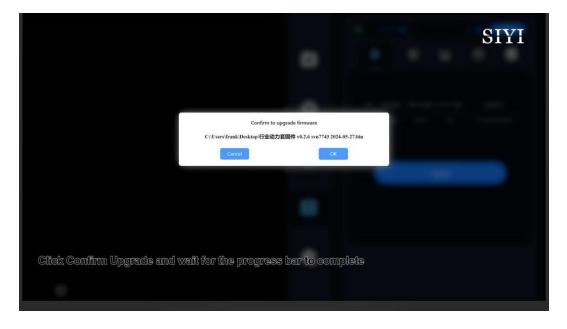
4. If the propulsion system is recognized normally, the connection is successful.

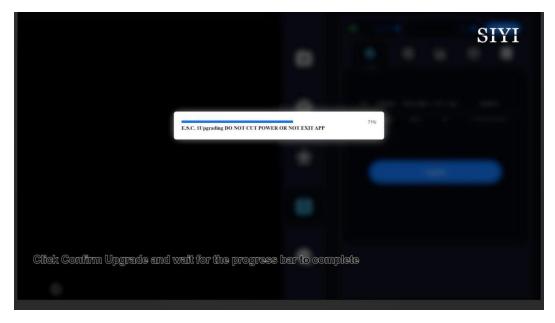


5. Click "Upgrade" and select the firmware file.

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6. Then click "OK" and wait for the update progress bar is completed.





7. Upgrade is successful.

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Sucess to upgrade		•	
	*		
Click Confirm Upgrade and wait for the prog	ress bar to comp	olete	

🗿 Mark

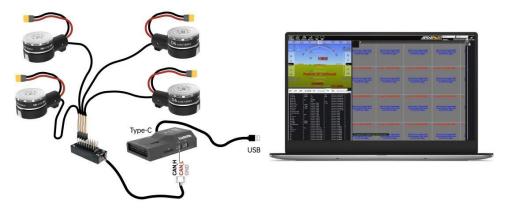
Before firmware upgrade, please make sure that the propulsion system is working properly. And pay special attention to the pin definition of the CAN Link Module to avoid reverse insertion. Upgrade status will be presented through indicator color

changes. After upgrade, there will be a beep sound and the indicator will return to its original color simultaneously.



6.2 Upgrade in DroneCAN Protocol through Mission Planner (ArduPilot)

ArduPilot flight controller supports upgrading SIYI propulsion system firmware through DroneCAN protocol.



Connect the flight controller that is connected to the CAN Hub module bus to the computer using a Type-C cable

Steps

Run Mission Planner and find the corresponding port in the PC

device manager.

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	1	1		03		s to level in acro and sport mode. A higher value causes the vehicle to return to level faster. For helicopter ual flybar in the roll axis. A higher value causes faster decay of desired to actual attitude.		与人要群
						e applied to change acromode behaviour. Airmode enables ATC_THR_MIX_MAN at all times (airmode has e Loop Only disables the use of angle stabilization and uses angular rate stabilization only.		取得にお 単純能数
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						constant. Low numbers lead to sharper response, higher numbers to softer response		
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ETA	0.1	0.1				or the cross-over frequency used to fuse AHRS (anspeed and heading) and GPS data to estimate ground rig. A larger time constant will use GPS data less and a small time constant will use air data less.		
Έ	Selec	it the	COLLC	sponding (COM p <mark>ort an</mark> o	d baud rate as 115200		
N	Glick	Çom	lect			e the GPS to correct the attitude. This should never be set to zero for a plane as it would result in the plane lane please use the default value of 1.0.		
ISATS	6	6		0 10	Minimum number of satellites	visible to use GPS for velocity based corrections attitude correction. This defaults to 6, which is about the point from a GPS become too unreliable for accurate correction of the accelerometers.		

In DroneCAN / UAVCAN column, click MAVlink-CAN1 to refresh the CAN device.

The option "SIYI ESC" belongs to SIYI propulsion system ESC.



Mission Planner 1.3.81 bui	■二番(1)	<mark>ら</mark> 调试		4.3.7 (aacad88f)							
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>> 可选硬件					Stats						
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		10	?	OPERATIONAL	_	00:56:18		12/10/14/10	0	Menu	
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CAN GPS Order											
电池监测器											
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DroneCAN/UAVCAK											
Joystick											
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Find the "Update" option. Select the ESC firmware for upgrade. During the upgrade process, "Mode" is "SOFTWARE_UPDATE" and a progress bar is displayed.

ID	Name	Mode	Health	Uptime	HW Version	SW Version	SW CRC	Menu		
 127	org.missionpla	OPERATIONAL	OK	00:29:36	0.0	1.0.0	0	Menu		
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SIYI CHAPTER 7 AFTER-SALE SERVICE

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