

IPET-IV7 Product Specification & Operation Guide

目录

1. Introduction	2
2. Notes	2
1. Parameters	1
2. Test Data	3
3. Appearance and mounting structure (mm)	5
4. Power System Installation Instructions	6
5. Propeller Installation Instructions	6
5-1: Hard-Lock Nut Locking Method	6
5-2: Bolt Locking Method	8
6. User Guide	10
6-1: Notes	10
6-2: Wiring Method	10
7. Startup Process	11
8. Protection Functions	11
9. Common Faults and Alert Tones Description	12
10. Motor Temperature Viewing	13
10-1: Operation	13
11. Setting the ID via the PC software	14
11-1: Connection (This procedure applies to the setup of all subsequent functions.)	14
11-2: Operation	15
12. Motor Encoder Calibration Settings	16
12-1: Operation	16
13. Propeller Lock	18
12-2: Operation	18
14. Rotation direction setting	19
14-1: Operation	19
15. Throttle Priority Setting	21
15-1: Operation	21
16. Firmware Update	22
16-1: Operation	22
17. Frequently Asked Questions	25



IV7 Integrated Power System Product Specification

1. Introduction

The IV series is an integrated power system specifically developed for fixed-wing and Vertical Take-Off and Landing (VTOL) unmanned aerial vehicles. Its design features focus on high operational life, efficient heat dissipation, high reliability, extended endurance, and low noise.

2. Notes

- **Proprietary System & Motor Matching:** This power system series is a proprietary design and requires strict parameter matching with the corresponding motors. The firmware is unique; each program is specifically tailored for a single motor and propeller combination. It is not compatible with multiple configurations. Please contact the manufacturer if you require a different combination.
- **Ground Testing Safety:** DO NOT install the propeller during ground testing to prevent potential hazards and personal injury.
- **Connection Integrity:** Ensure all components are connected carefully and securely. Poor connections may lead to loss of flight control, equipment damage, or other unforeseen circumstances.
- **Soldering Instructions:** If you need to solder any input or output connectors to the Electronic Speed Controller (ESC), please use a sufficiently powerful soldering station to guarantee a reliable and robust connection.
- **Motor Rotation Direction:** If a change in the motor's rotational direction is required, it must be configured using the dedicated upper-computer software (Ground Control Station software).

IV7(IV7125)-Recommended for Vtol and fixed-wing UAVs with a takeoff weight of 20-25kg

1. Parameters

System Parameters	Model	IV7215 KV170
	Configuration	IV7215 Motor+14S FOC IV150A ESC
	Recommended Battery	12-14S(LiPo)
	Max Thrust (kg)	14.7
	Recommended Take off Weight(kg)	20-25
	Total Weight with Wires(g)	1100±2%
	Protection Rating	IPX5
	Operating Temperature(°C)	-30~60
	Wire Length (mm)	1800±5
	Wire Specifications	Power Wire: Silicon wire-Red/Black-10AWG-1800mm Signal Wire: Shield wire-Black-OD4.2-5C-1200mm Connector: -JP-3P*2-Black/White/Green/Yellow/Gray
Motor	KV (RPM/V)	170
ESC Parameters	Throttle Range(μs)	1040-1940 (Fixed)
	Protocol	DroneCAN、UAVCAN
	Control Method	PWM/CAN
	Max Voltage(V)	60
	Max Continuous Current (A)	80 (Open environment, ≤60°C)
	Peak Current (A)	150 (Open environment, ≤60°C)
Propellers	Model	22*10
	Length(mm)	558.8

System Parameters	Model	IV7(IV7215) KV200
	Configuration	IV7215 Motor+14S FOC IV150A ESC
	Recommended Battery	12S(LiPo)
	Max Thrust (kg)	14
	Recommended Take off Weight(kg)	20-25
	Total Weight with Wires(g)	1100±2%
	Protection Rating	IPX5
	Operating Temperature(°C)	-30~60
	Wire Length (mm)	1800±5
	Wire Specifications	Power Wire: Silicon wire-Red/Black-10AWG-1800mm Signal Wire: Shield wire-Black-OD4.2-5C-1200mm Connector: -JP-3P*2-Black/White/Green/Yellow/Gray
Motor	KV (RPM/V)	200
ESC Parameters	Throttle Range(μs)	1040-1940 (Fixed)
	Protocol	DroneCAN、UAVCAN
	Control Method	PWM/CAN
	Max Voltage(V)	60
	Max Continuous Current (A)	80 (Open environment, ≤60°C)
	Peak Current (A)	150 (Open environment, ≤60°C)
Propellers	Model	20*10
	Length(mm)	508

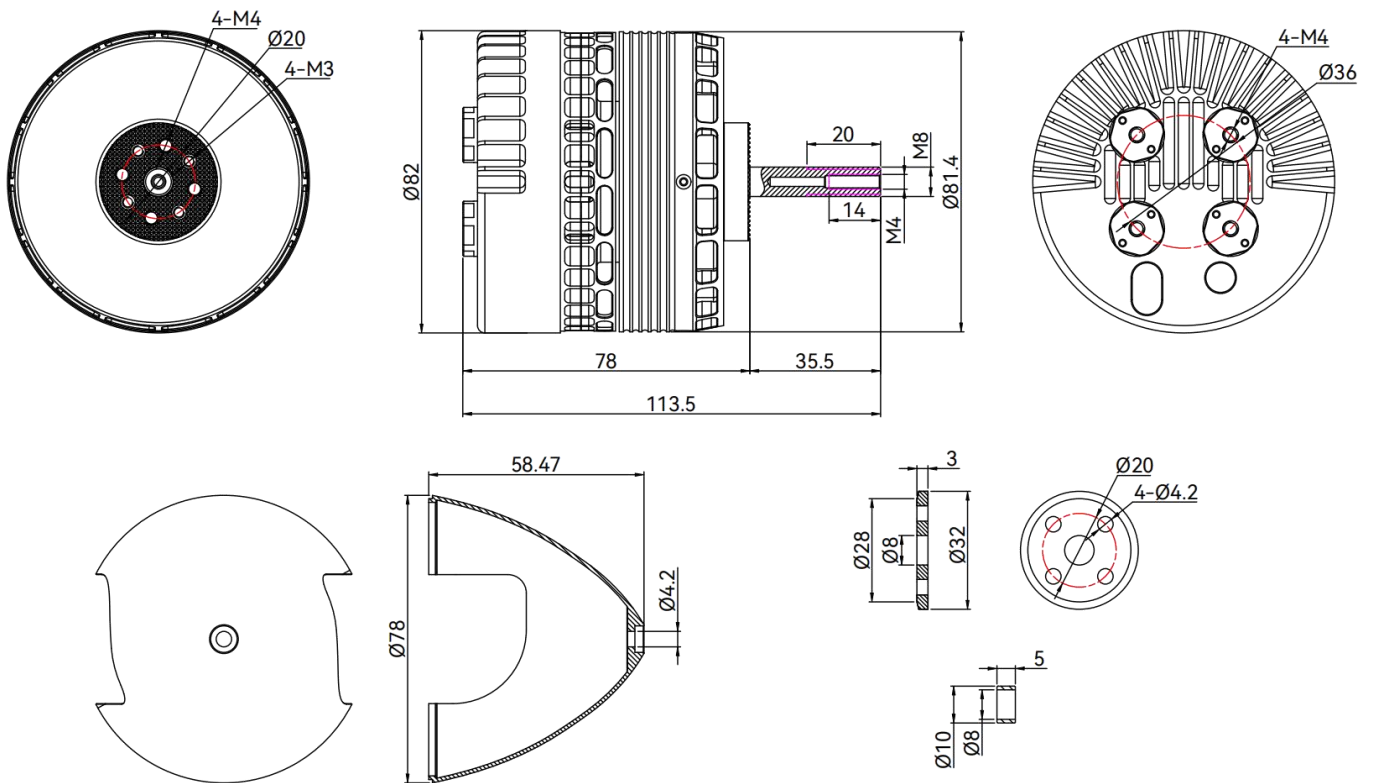
2. Test Data

IV7(IV7215) KV170 +14S FOC IV150A+22*10					Ambient Temp:		25°C
Voltage A (V)	Throttle (%)	Current A (A)	Thrust A (gf)	Torque (N·m)	RPM	Power(W)	Overall Efficiency A (gf/W)
48V	30%	2.13	1005	0.34	2151	103	9.78
	35%	3.18	1439	0.46	2525	154	9.37
	40%	4.59	1978	0.61	2897	221	8.94
	45%	6.38	2562	0.77	3269	308	8.33
	50%	8.64	3248	0.98	3637	416	7.80
	55%	11.34	4015	1.18	4010	547	7.34
	60%	14.89	4867	1.41	4376	718	6.78
	65%	18.98	5809	1.67	4744	915	6.35
	70%	23.82	6833	1.97	5108	1148	5.95
	75%	29.41	7899	2.26	5474	1417	5.58
	80%	35.86	8957	2.56	5840	1727	5.19
	85%	43.58	10185	2.89	6215	2098	4.86
	90%	53.52	11645	3.30	6605	2575	4.52
	95%	74.03	13984	3.67	7160	3559	3.93

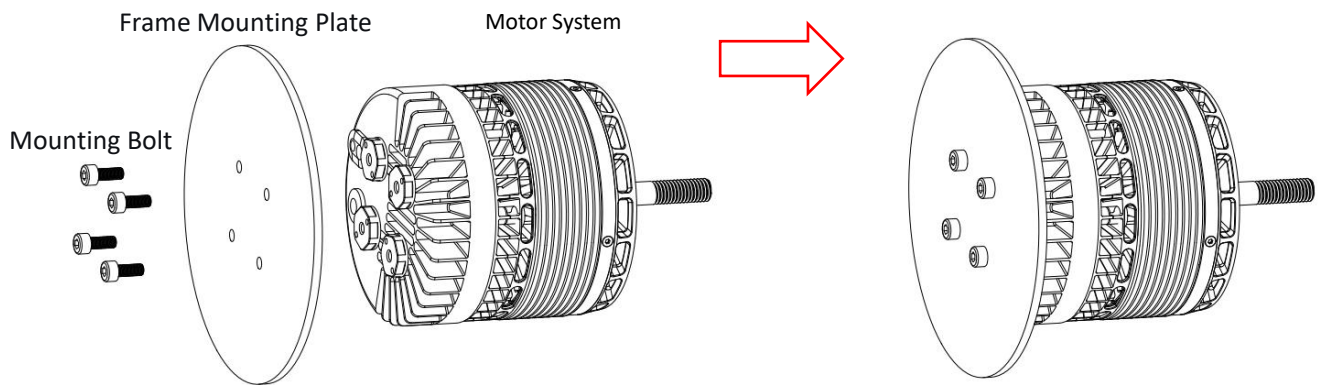
	100%	79.02	14667	4.16	7343	3795	3.87
IV7(IV7215) KV200+14S FOC IV150A+20*10					Ambient Temp:		25°C
Voltage A (V)	Throttle (%)	Current A (A)	Thrust A (gf)	Torque (N·m)	RPM	Power(W)	Overall Efficiency A (gf/W)
48V	30%	2.69	1087	0.36	2482	130	8.35
	35%	4.01	1565	0.48	2917	194	8.06
	40%	5.78	2159	0.64	3358	280	7.71
	45%	8.07	2798	0.81	3799	391	7.16
	50%	10.88	3496	1.00	4236	527	6.64
	55%	14.50	4318	1.25	4672	702	6.15
	60%	18.72	5200	1.50	5107	906	5.74
	65%	23.86	6197	1.74	5536	1154	5.37
	70%	29.99	7250	2.02	5967	1451	5.00
	75%	37.31	8439	2.33	6396	1804	4.68
	80%	46.11	9692	2.79	6833	2230	4.35
	85%	56.96	11082	3.20	7271	2752	4.03
	90%	70.47	12610	3.62	7734	3403	3.71
	95%	87.31	14237	4.11	8178	4211	3.38
100%	87.33	14224	4.10	8175	4215	3.38	

Note: The above data are measured by a professional laboratory test bench for reference in selection.

3. Appearance and mounting structure (mm)



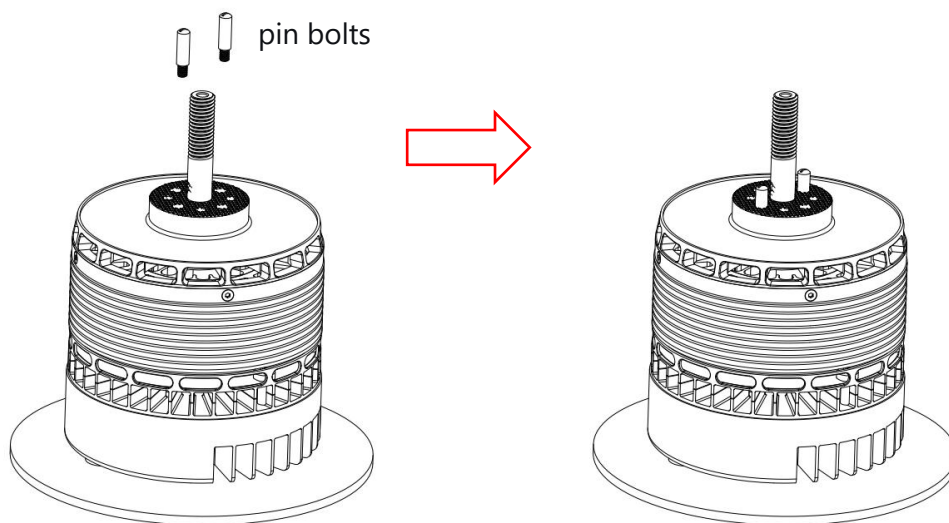
4. Power System Installation Instructions



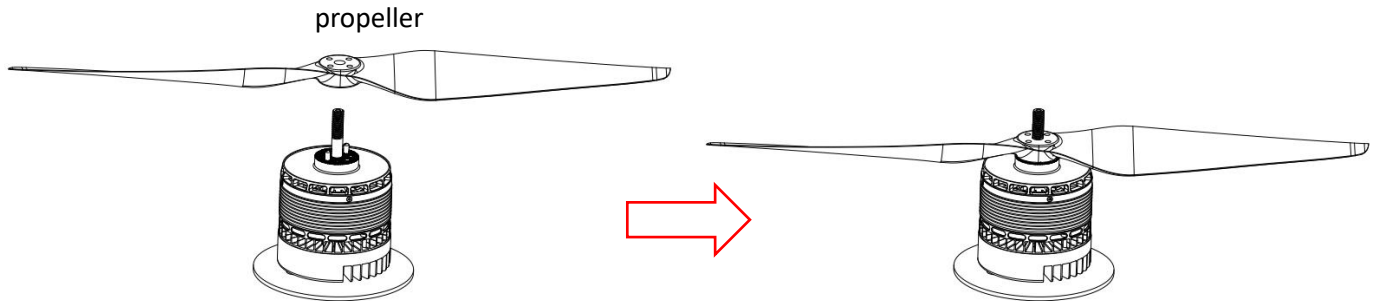
Install the motor onto the frame mounting plate using the mounting bolts.

5. Propeller Installation Instructions

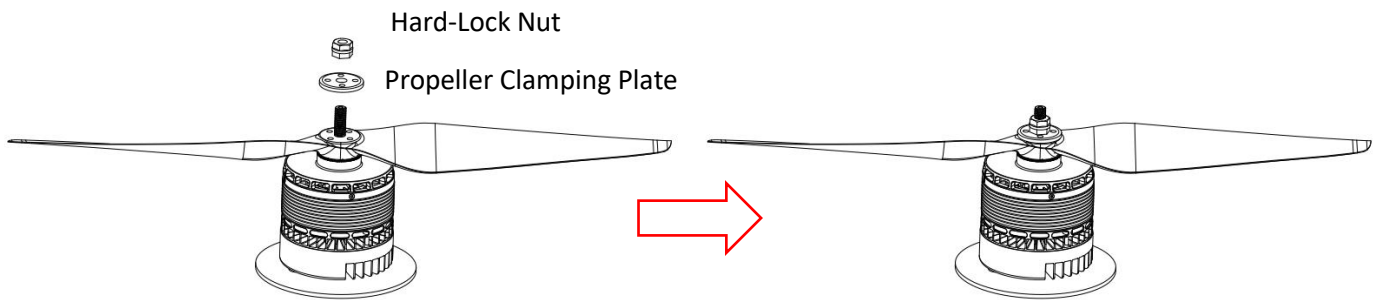
5-1: Hard-Lock Nut Locking Method



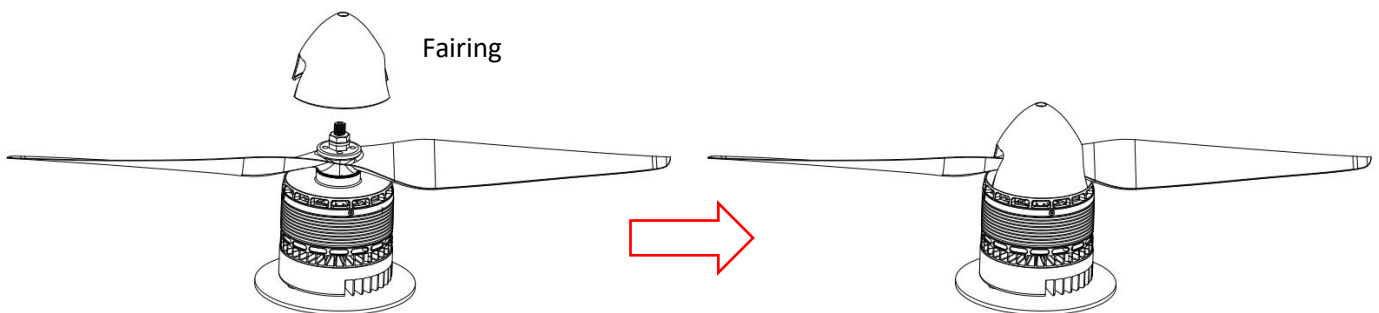
Step 1: Install the two pin bolts into the threaded holes on the blade mounting surface.



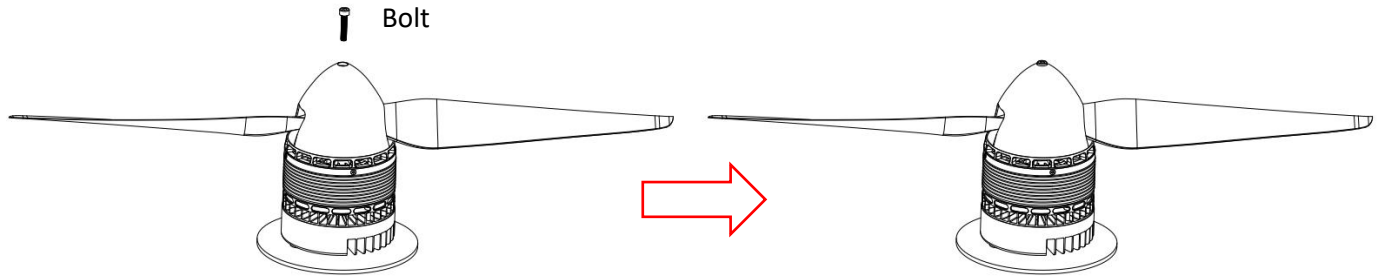
Step 2: Slide the propeller over the steel shaft, ensuring the pin bolts fit into the corresponding holes on the propeller.



Step 3: Place the propeller clamping plate and tighten the Hard-Lock nuts.

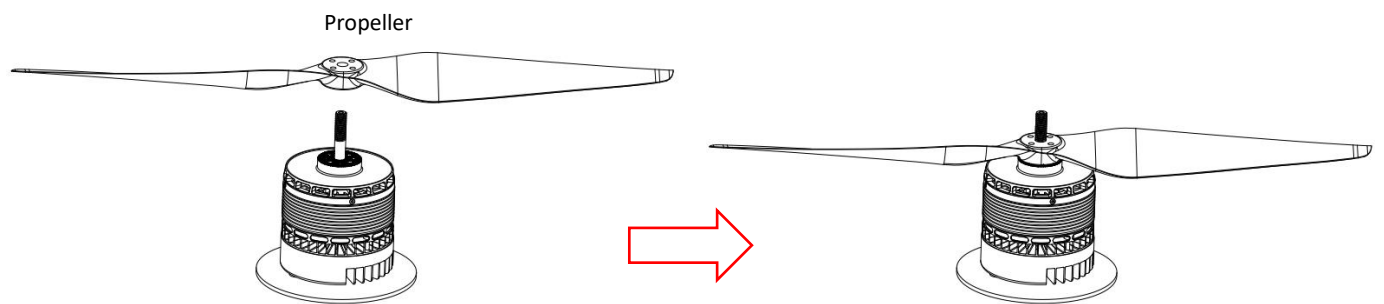


Step 4: Position the fairing in place.

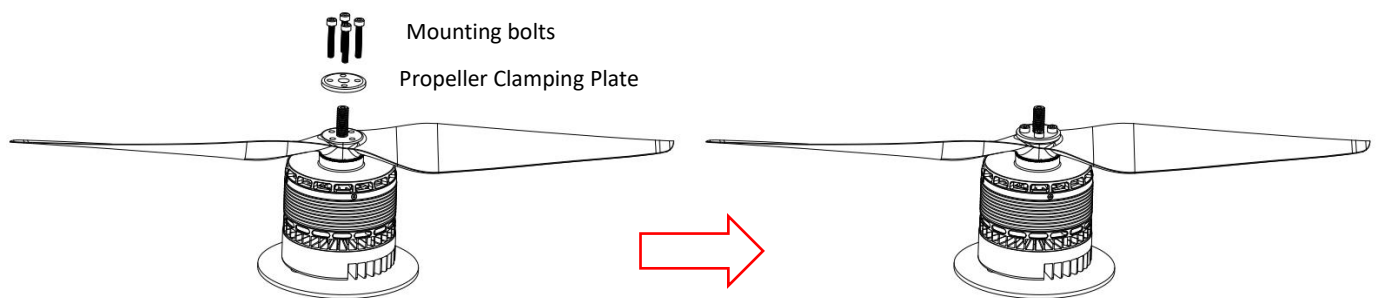


Step 5: Insert the bolts through the fairing and tighten them into the mounting holes on the steel shaft to secure.

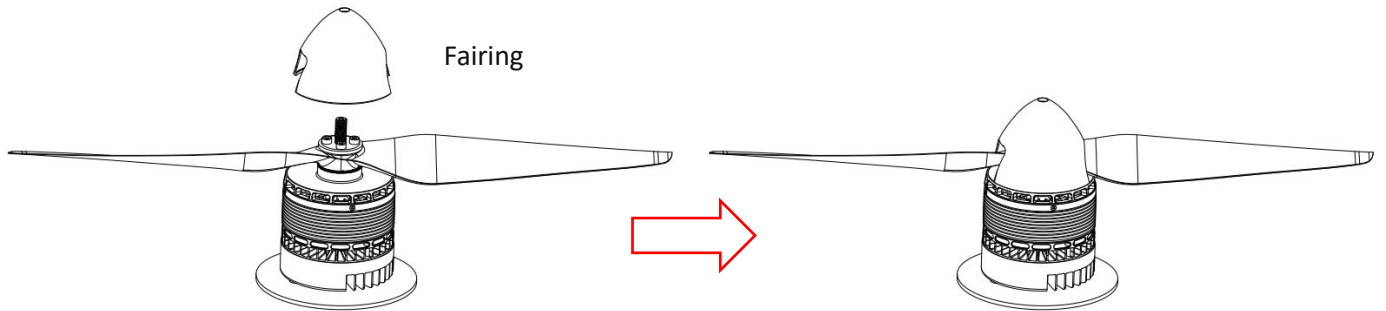
5-2: Bolt Locking Method



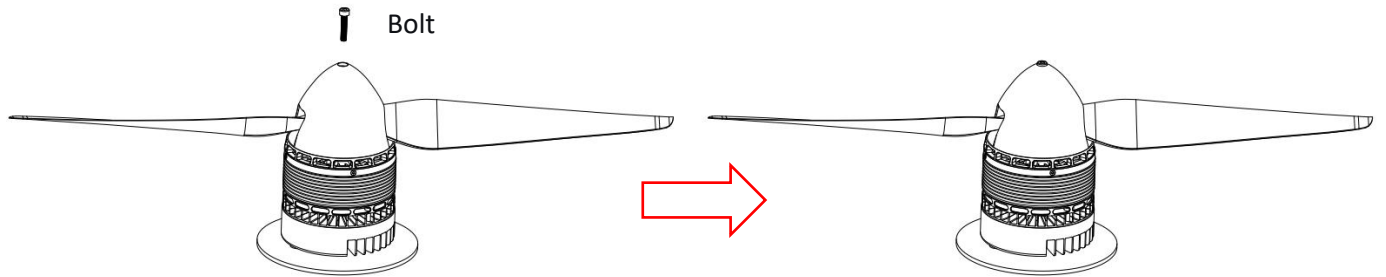
Step 1: Slide the propeller blade over the steel shaft.



Step 2: Place the propeller clamping plate and tighten the mounting bolts respectively.



Step 3: Position the fairing in place.

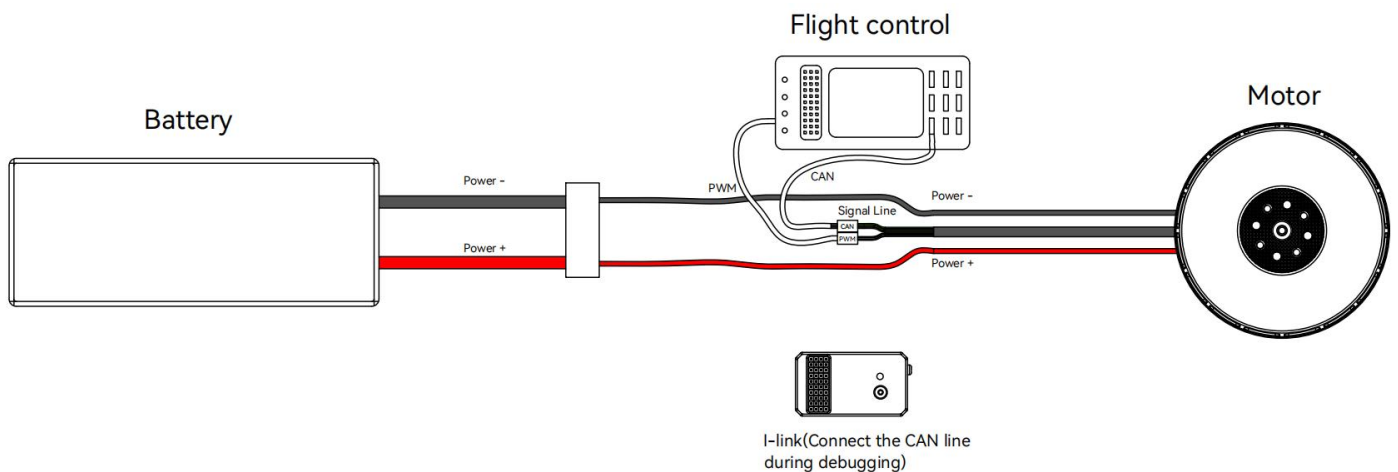


Step 4: Insert the bolts through the fairing and tighten them into the mounting holes on the steel shaft to secure.

6. User Guide

6-1: Notes

- Do not exceed the ESC's recommended operating voltage range, otherwise, it may cause irreversible damage to the ESC.
- The throttle for this ESC is fixed and does not require calibration. The throttle range is 1040-1940 μ s.
- The FOC ESC has a braking effect and generates back EMF. Please ensure you use a power supply capable of absorbing back EMF during ESC testing or flight to avoid damaging the ESC and power supply.
- The ESC supports both PWM and CAN throttle modes. One mode is set as the primary mode, and the other serves as a backup. Upon startup, the throttle signal must be connected to the ESC via the primary mode to ensure normal operation. The backup throttle only becomes effective if the primary throttle signal is lost during operation. The default factory setting is PWM throttle priority mode. To change it to CAN throttle priority mode, please contact the manufacturer or configure it via the PC software.



6-2: Wiring Method

- 1) The 2P-JR connector serves as the PWM throttle input. The white wire is the throttle signal wire, and the black wire is the ground wire.
- 2) The 3P-JR connector serves as the CAN throttle input. The green wire is CANL, the yellow wire is CANH, and the gray wire is the ground wire.
- 3) The red wire is power positive, and the black wire is power negative.

7. Startup Process

- 1) Turn on the remote control and move the throttle stick to the lowest point.
- 2) Connect the system to the battery. The motor will emit a beep, indicating the system is ready and the self-check is complete, and it is ready for takeoff.

8. Protection Functions

Startup Protection:

When powered on normally, the ESC first initiates a self-check. If the self-check succeeds, it will beep normally and is ready to run. If the self-check fails, the ESC cannot start.

Stall Protection:

When the ESC detects a motor stall, it will completely cut off output after 5 seconds and report a fault. If the stall fault is cleared, returning the throttle to zero and then outputting again can restart the motor.

Current Protection:

When an instantaneous current anomaly exceeds 280 A, the ESC will attempt to restart three times. If the ESC is still in an overcurrent state on the fourth attempt, it will completely shut down output. Restoring power will return it to normal.

Temperature Warning:

When the MOS or capacitor temperature exceeds 110 °C, a temperature alarm will be sent via the CAN communication interface. After the throttle is returned to zero, the navigation light will flash yellow three times, with a 1-second interval between flashes. After 2 seconds, the flash cycle repeats. The motor will also emit a long “Beep... Beep... Beep...” (with a 2-second interval between each beep). If the temperature exceeds 130 °C, the ESC may burn out. Upon receiving the warning, please land immediately or reduce throttle output.

Throttle Signal Loss Protection:

When the ESC detects throttle loss and a backup throttle is available, it will immediately respond to the backup throttle output.

When the ESC detects throttle loss without a backup throttle, it will continue outputting based on the last received throttle for 2 seconds. If the throttle signal is received within 2 seconds, it will resume normal response. If no signal is received within 2 seconds, the output is cut off. Power must be cycled to restore operation.

9. Common Faults and Alert Tones Description

Fault Phenomenon	Alarm	Possible Cause	Solution
Motor fails to start after power-up	Rapid single-tone "beepp beep beep..."	Throttle not at zero position	Move the throttle stick to the lowest position.
Motor fails to start after power-up	"beep, beep, beep_" (1-second intervals)	The receiver's throttle channel is not outputting a throttle signal	<ol style="list-style-type: none"> 1. Check if the radio and receiver are paired correctly. 2. Check if the throttle channel wiring is connected properly. 3. Verify the ESC communication priority (factory default is PWM).
The power supply voltage is above 63V.	"beep, beep, beep_" (1-second intervals)	Input battery voltage is too high.	Replace with a suitable, fully charged battery with voltage below 63V.
ESC LED indicator flashing	"beep, beep, beep_" (2-second intervals)	Secondary fault detected after landing.	Identify issues through electrical health management

10. Motor Temperature Viewing

Notes:

- Disconnect the propeller during setup to avoid hazards.
- On the same drone, different ESCs must have unique IDs; otherwise, those with the same ID will be recognized as a single ESC when using CAN functions.
- By default, the ESC factory settings are: ID = 1, throttle channel = 1, and baud rate = 1 MHz.
- This feature requires the purchase of I-link.

10-1: Operation

The screenshot shows the IPET SYSTEM interface with the following components:

- Status Panel (Left):**
 - Bus Voltage: 47.75V
 - Bus Current: 0.00A
 - Phase Current: 0.00A
 - MOS Temperature: 32.60°C
 - Motor Temperature: 00.00°C** (highlighted with a red box and number 3)
 - Motor Speed: 0.00Rpm
 - Current Phase: 35.99°
 - Current Mode: Idle Mode
 - Current Error: No Error
 - Health Status: No Error
 - Hardware Version: TM401_V20_V1
 - Software Version: I7_KV80_V6
- Control Panel (Left):**
 - Buttons: Control (highlighted with a red box and number 1), Param, Cali
 - Control Mode: DRONECAN (highlighted with a red box and number 2)
 - Target ID: ID1
 - Control Throttle: 0
 - Close Equipment: ILINK
- Data Graph (Right):**
 - Y-axis labels: Voltage, Bus Current, Phase Current, Capacitor Temperature, MOS Temperature, Encoder Position, Throttle, Motor Speed
 - Legend: Voltage, Bus Current, Phase Current, Capacitor Temperature, MOS Temperature, Encoder Position, Throttle, Motor Speed
- Node List (Bottom):**

Search Node								Node Info		HLTH Manage		Update FW	
Node List:													
	NODE ID	ESC ID	UPDATE TIME	HW ID	SW ID	Voltage	Current	Temperature	lower up tim				
1	1	1	15:23:37 159	3032487195	0	47.75V	0A	32.6°C	12635s	4			
- Footer (Bottom):**
 - Data Log, Data Playback, Firmware Update, Devices Manage

- 1) Click "Control";
- 2) Under Motor "Control Mode", select "DRONECAN" mode;
- 3) The motor temperature in the ESC status will then be displayed in real time in the upper right corner.

11. Setting the ID via the PC software

Notes:

- Disconnect the propeller during setup to avoid hazards.
- On the same drone, different ESCs must have unique IDs; otherwise, those with the same ID will be recognized as a single ESC when using CAN functions.
- By default, the ESC factory settings are: ID = 1, throttle channel = 1, and baud rate = 1 MHz.
- This feature requires the purchase of I-link.

11-1: Connection (This procedure applies to the setup of all subsequent functions.)

- ESC---->I-Link; “Green Yellow Gray”----> “CAN LOW CAN HIGH -”
- Connect the I-Link to the computer via USB.



11-2: Operation

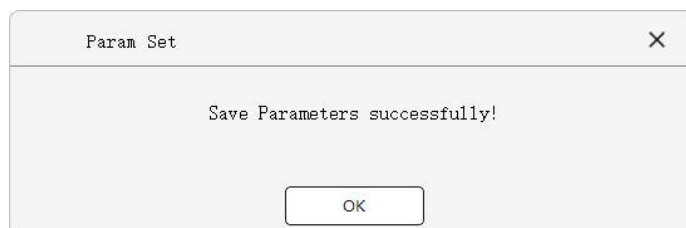
The screenshot displays the IPET SYSTEM web interface. On the left, a status panel shows various system metrics. The central area contains a graph with multiple data series. The bottom control panel includes buttons for 'Control', 'Param', and 'Call'. Below these are settings for 'ID Setting' (ID1), 'Fdb Rate' (0HZ), 'Priority Set', 'LED Setting', 'CAN RL', 'Dir Setting', 'Rotor Lock', and 'Navigation light'. At the bottom, there are buttons for 'Data Log', 'Data Playback', 'Firmware Update', and 'Devices Manage'. A 'Node List' table is visible, showing one node with the following data:

NODE ID	ESC ID	UPDATE TIME	HW ID	SW ID	Voltage	Current	Temperature	over up tim
1	1	09:29:11 297	3032487195	0	47.7813V	0A	16.6563°C	126354

- 1) Click "Device Management" (If a node already exists, skip steps 1-3).
- 2) Click "Search Node".
- 3) The node information will be displayed.
- 4) Click the "Parameters" button. If the read is successful, the following prompt will appear.
- 5) Click "Read Parameters". If the read is successful, the following prompt will appear.



- 6) Click "ID Settings" and select the ID you want to change.
- 7) Click "Save Settings." If the save is successful, the following prompt will appear:



12. Motor Encoder Calibration Settings

Notes:

- Disconnect the propeller during setup to avoid hazards.
- On the same drone, different ESCs must have unique IDs; otherwise, those with the same ID will be recognized as a single ESC when using CAN functions.
- By default, the ESC factory settings are: ID = 1, throttle channel = 1, and baud rate = 1 MHz.
- This feature requires the purchase of I-link.

12-1: Operation

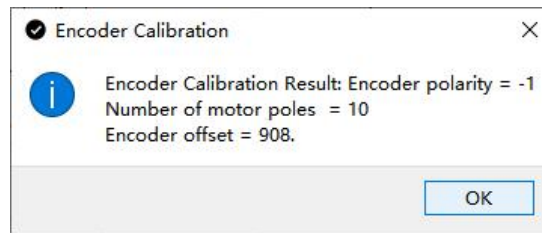
The screenshot displays the IPET System interface. On the left, a status panel shows various motor parameters: Bus Voltage (47.75V), Bus Current (0.00A), Phase Current (0.00A), MOS Temperature (25.60°C), Motor Temperature (00.00°C), Motor Speed (0.00Rpm), Current Phase (35.99°), Current Mode (ShutDown Mode), Current Error (Throttle Signal Lost), Health Status (Throttle Signal Lost), Hardware Version (TM401_V20_V1), and Software Version (I7_KV80_V6). Below this, there are three buttons: 'Control', 'Param', and 'Call', with 'Call' highlighted by a red box and a red circle labeled '1'. Underneath is a 'Motor Position' section with a motor diagram and three buttons: 'Start', 'Set Origin', and 'Stop', with 'Start' and 'Set Origin' highlighted by red boxes and red circles labeled '2' and '3' respectively. At the bottom of the interface are buttons for 'Data Log', 'Data Playback', 'Firmware Update', and 'Devices Manage'.

On the right, a large graph displays real-time data for Voltage, Bus Current, Phase Current, Capacitor Temperature, MOS Temperature, Encoder Position, Throttle, and Motor Speed. The graph shows a horizontal line for Voltage at approximately 47.75V, Bus Current at 0.00A, Phase Current at 0.00A, and MOS Temperature at 25.60°C. The Encoder Position and Throttle values are also shown as horizontal lines. The Motor Speed is shown as a horizontal line at 0.00Rpm. Below the graph, there are checkboxes for each data series, all of which are checked.

At the bottom of the interface, there is a 'Node List' table with the following data:

NODE ID	ESC ID	UPDATE TIME	HW ID	SW ID	Voltage	Current	Temperature	Power up tim
1	1	14:45:56 640	3032487195	0	0V	0A	16.375°C	0s

- 1) Click "Calibration";
- 2) Click "Start Calibration". The motor will slowly rotate several times. Upon successful calibration, the following prompt will appear;



3) Click “Set Origin” to set the motor’s origin position. When successful, the following prompt will appear.



13. Propeller Lock

Notes:

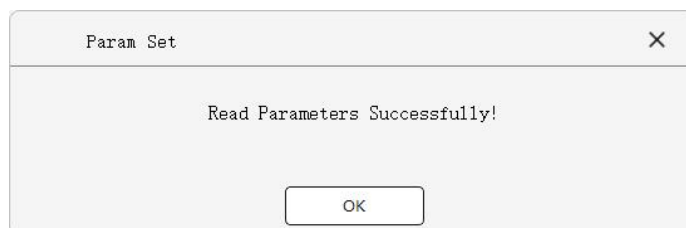
- Disconnect the propeller during setup to avoid hazards.
- On the same drone, different ESCs must have unique IDs; otherwise, those with the same ID will be recognized as a single ESC when using CAN functions.
- By default, the ESC factory settings are: ID = 1, throttle channel = 1, and baud rate = 1 MHz.
- This feature requires the purchase of I-link.

12-2: Operation

The screenshot shows the IPET SYSTEM software interface. On the left, there is a 'Param' tab selected, with a red box around it labeled '1'. Below it, the 'Rotor Lock' setting is set to 'Disable Auto Rotor Lock', with a red box around it labeled '3'. At the bottom of the parameter list, there are 'Read Param' and 'Save Param' buttons, with red boxes around them labeled '2' and '4' respectively. On the right, there is a data graph showing various parameters over time, including Voltage, Bus Current, Phase Current, Capacitor Temperature, MOS Temperature, Encoder Position, Throttle, and Motor Speed. Below the graph is a 'Node List' table with the following data:

NODE ID	ESC ID	UPDATE TIME	HW ID	SW ID	Voltage	Current	Temperature	Power up tim
1	1	14:45:56 640	3032487195	0	0V	0A	16.375°C	0s

- 1) Click “Parameters” ;
- 2) Click “Read Parameters”. Upon successful reading, the following prompt will appear;



- 3) Click “Propeller Brake Settings” and select “Disable Auto Propeller Brake” or “Enable Auto Propeller

Brake” .

Note:

Disable Auto Propeller Brake: The motor will not automatically enter propeller brake mode. However, the motor can be controlled by sending arbitrary position commands via CAN, and the motor’s fixed position will be the commanded position.

Enable Auto Propeller Brake: When the PWM pulse width is below 1080 μ s, the motor is in idle mode; between 1080 μ s and 1120 μ s, propeller brake mode is active, and the motor will automatically enter propeller brake mode with the motor’s fixed position set to the configured origin position. Above 1120 μ s, normal PWM speed regulation is active.

4) Click “Save Settings” . Upon successful saving, the following prompt will appear.

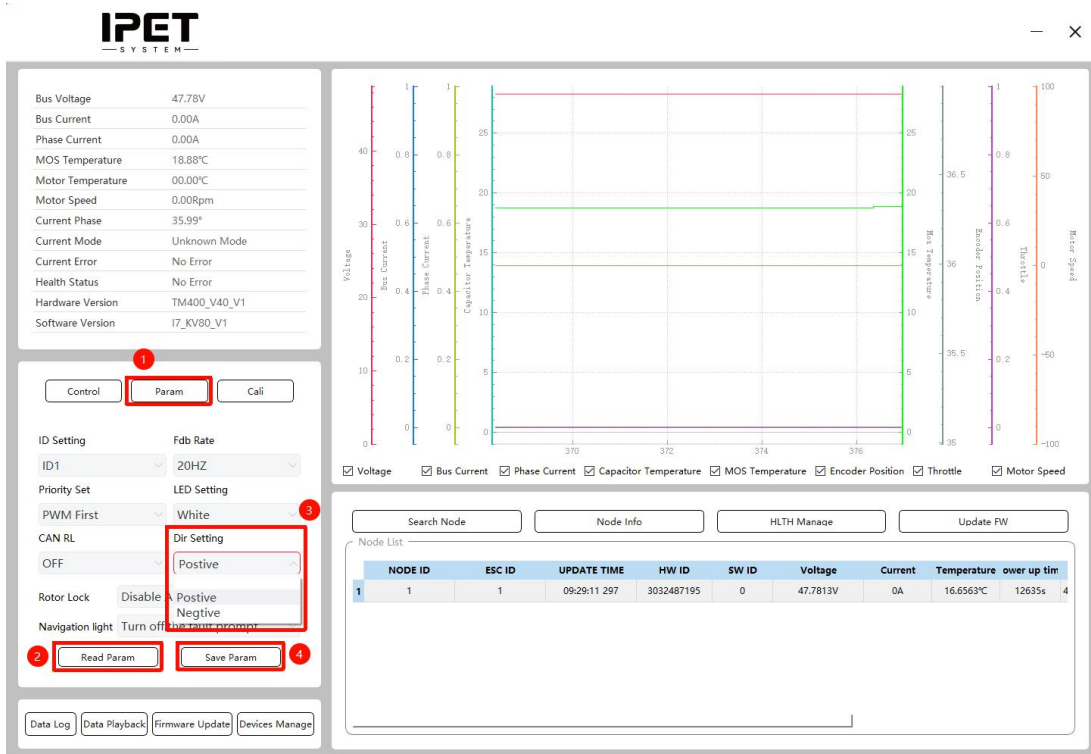


14. Rotation direction setting

Notes:

- Disconnect the propeller during setup to avoid hazards.
- On the same drone, different ESCs must have unique IDs; otherwise, those with the same ID will be recognized as a single ESC when using CAN functions.
- By default, the ESC factory settings are: ID = 1, throttle channel = 1, and baud rate = 1 MHz.
- This feature requires the purchase of I-link.

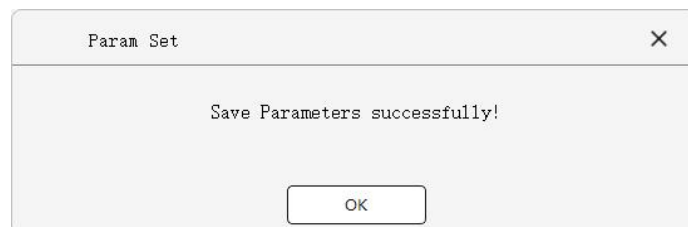
14-1: Operation



- 1) Click on "Parameter Settings".
- 2) Click "Read Parameters". If the read is successful, the following prompt will appear:



- 3) Click on "Rotation Direction Setting" and select the desired rotation direction for modification.
- 4) Click "Save Settings". If the save is successful, the following prompt will appear:



15. Throttle Priority Setting

Notes:

- Disconnect the propeller during setup to avoid hazards.
- On the same drone, different ESCs must have unique IDs; otherwise, those with the same ID will be recognized as a single ESC when using CAN functions.
- By default, the ESC factory settings are: ID = 1, throttle channel = 1, and baud rate = 1 MHz.
- This feature requires the purchase of I-link.

15-1: Operation

The screenshot shows the IPET SYSTEM software interface. On the left, there is a status panel with various sensor readings: Bus Voltage (47.78V), Bus Current (0.00A), Phase Current (0.00A), MOS Temperature (19.88°C), Motor Temperature (00.00°C), Motor Speed (0.00Rpm), Current Phase (35.99°), Current Mode (Unknown Mode), Current Error (No Error), Health Status (No Error), Hardware Version (TM400_V40_V1), and Software Version (I7_KV80_V1). Below this is a control panel with buttons for 'Control', 'Param', and 'Call'. The 'Param' button is highlighted with a red box and a '1'. Underneath, there are settings for ID1 (1), Fdb Rate (20HZ), Priority Set (PWM First), LED Setting (White), Dir Setting (Postive), Rotor Lock (Disable Auto Rotor Lock), and Navigation light (Turn off the fault prompt). The 'Read Param' and 'Save Param' buttons are highlighted with red boxes and '2' and '4' respectively. At the bottom of the control panel are buttons for 'Data Log', 'Data Playback', 'Firmware Update', and 'Devices Manage'.

On the right, there is a graph showing multiple data series over time. The x-axis represents time from 512 to 518. The y-axes represent Voltage, Bus Current, Phase Current, Capacitor Temperature, MOS Temperature, Encoder Position, Throttle, and Motor Speed. The graph shows that the throttle is set to 1.0, and the motor speed is approximately 12635 RPM. Below the graph is a 'Node List' table with columns: NODE ID, ESC ID, UPDATE TIME, HW ID, SW ID, Voltage, Current, Temperature, and over tim. The table contains one entry:

NODE ID	ESC ID	UPDATE TIME	HW ID	SW ID	Voltage	Current	Temperature	over tim
1	1	09:29:11 297	3032487195	0	47.7813V	0A	16.6563°C	12635s

1) Click on "Parameter Settings".

2) Click "Read Parameters". If the read is successful, the following prompt will appear:



- 3) Click "Throttle Priority Settings" and select the throttle priority you wish to change.
- 4) Click "Save Settings". If the save is successful, the following prompt will appear:



16. Firmware Update

The firmware upgrade function requires the use of I-Link, a USB cable, and the PC software package. Multiple ESCs can be upgraded simultaneously.

Note: The PC software package can be obtained from the point of purchase, or from the IPET official website, sales, or after-sales support.

Notes:

- Disconnect the propeller during setup to avoid hazards.
- On the same drone, different ESCs must have unique IDs; otherwise, those with the same ID will be recognized as a single ESC when using CAN functions.
- By default, the ESC factory settings are: ID = 1, throttle channel = 1, and baud rate = 1 MHz.
- This feature requires the purchase of I-link.

16-1: Operation

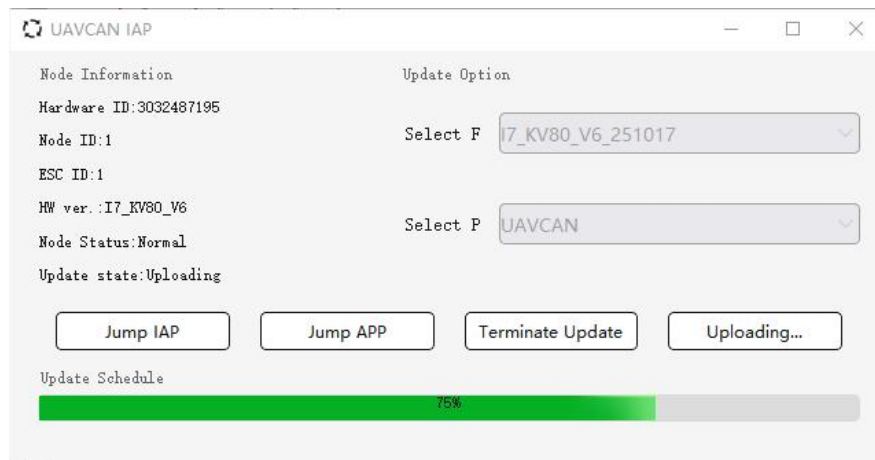
The screenshot shows the IPET SYSTEM web interface. On the left, there is a dashboard with various sensor readings: Bus Voltage (47.78V), Bus Current (0.00A), Phase Current (0.00A), MOS Temperature (20.88°C), Motor Temperature (00.00°C), Motor Speed (0.00Rpm), Current Phase (35.99°), Current Mode (Unknown Mode), Current Error (No Error), Health Status (No Error), Hardware Version (TM400_V40_V1), and Software Version (I7_KV80_V1). Below this is a control panel with buttons for Control, Param, and Cali. Further down are settings for ID Setting, Fdb Rate, Priority Set, LED Setting, PWM First, White, CAN RL, Dir Setting, Rotor Lock, and Navigation light. At the bottom left, there are buttons for Data Log, Data Playback, Firmware Update, and Devices Manage (highlighted with a red box and number 1).

In the center, there is a graph showing multiple data series over time. Below the graph are checkboxes for Voltage, Bus Current, Phase Current, Capacitor Temperature, MOS Temperature, Encoder Position, Throttle, and Motor Speed. Below the graph is a Node List table (highlighted with a red box and number 2) with columns: NODE ID, ESC ID, UPDATE TIME, HW ID, SW ID, Voltage, Current, Temperature, and over up tim. The table contains one row with data: 1, 1, 09:29:11 297, 3032487195, 0, 47.7813V, 0A, 16.6563°C, 12635s. Below the table are buttons for Search Node (highlighted with a red box and number 3), Node Info, HLTH Manaqe, and Update FW (highlighted with a red box and number 4).

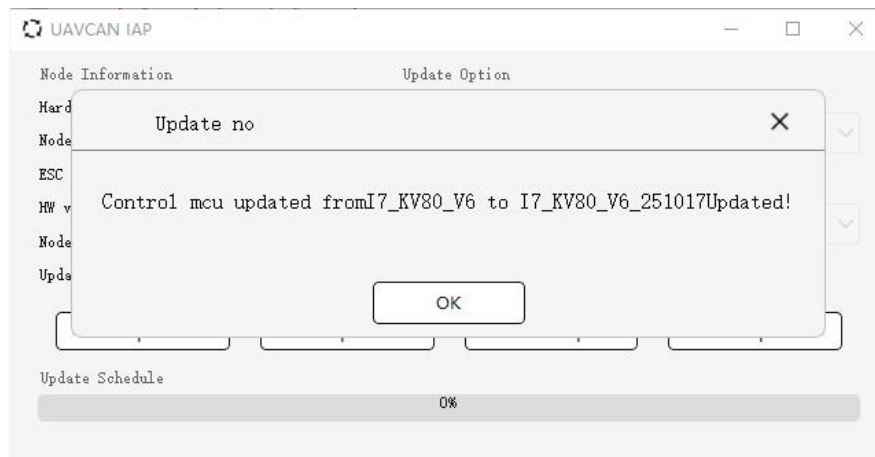
- 1) Click "Device Management".
- 2) Click "Search Nodes".
- 3) Select ESC.
- 4) Click "Upgrade Node Firmware"

The screenshot shows the UAVCAN IAP window. On the left, there is a Node Information section with fields: Hardware ID:3032487195, Node ID:1, ESC ID:1, HW ver.:I7_KV80_V6, Node Status:Normal, and Update Status:Prepare For Update. On the right, there is an Update Option section with a Select F dropdown menu (highlighted with a red box and number 5) showing a list of firmware options: I7_KV80_V6_251017 (highlighted in blue), STAPP_V0218_STGENGRAL, STAPP_V250606_STGENGRAL, STBOOT_V0218_STGENGRAL, and XHSC_APP_XHGENGRAL_V250410. Below the dropdown are buttons for Jump IAP, Jump APP, Terminate Update (highlighted with a red box and number 6), and Start Update (highlighted with a red box). At the bottom, there is an Update Schedule section with a progress bar showing 0%.

- 5) Select the corresponding firmware
- 6) Click "Start Upgrade".
- 7) Power on the ESC.



8) Wait for the progress bar to complete.



9) When the prompt appears, the update has been completed;

10) Click "OK", then power cycle the ESC and check whether the version has been updated correctly.

17. Frequently Asked Questions

- 1) This series of propulsion systems is unique and requires strict matching of motor parameters. The firmware is exclusive, meaning one firmware version is only suitable for one specific motor + propeller combination. It cannot be compatible with multiple combinations simultaneously. Contact the manufacturer if usage is needed.
- 2) It is not recommended to change the propeller for the propulsion system combo. Improper combinations may trigger ESC protection, rendering it unusable.
- 3) Do not install propellers during ground tests to avoid unnecessary danger.
- 4) To change the motor's rotation direction, you can configure it via the PC software.
- 5) Do not exceed the ESC's recommended operating voltage range, otherwise, it may cause irreversible damage to the ESC.
- 6) The throttle for this ESC is fixed and does not require calibration. The throttle range is 1040–1940 μ s.
- 7) The FOC ESC has a braking effect and generates back EMF. Please ensure you use a power supply capable of absorbing back EMF during ESC testing or flight to avoid damaging the ESC and power supply.
- 8) The ESC supports both PWM and CAN throttle modes. One mode is set as the primary mode, and the other serves as a backup. Upon startup, the throttle signal must be connected to the ESC via the primary mode to ensure normal operation.
- 9) The backup throttle only becomes effective if the primary throttle signal is lost during operation. The default factory setting is PWM throttle priority mode. To change it to CAN throttle priority mode, please contact the manufacturer or configure it via the PC software.