

08 ID setting

If there is no requirement, the default factory ID of the ESC is 1, the throttle channel is 1, and the bus speed is 500kbps. This function requires the additional purchase of DataLink data box.

Before using this function, ensure that the computer system has installed Microsoft Visual C++ 2013 software in advance, otherwise it cannot operate normally.

1) **Connection**
ESC---->DataLink data box *yellow red white---->- CH1 CL1"; Connect the data box to the computer via USB.
Connect the data box to the computer via USB.
When changing the ID, please remove the propeller to avoid danger. Please set ESC ID one by one.
For the same aircraft, different ESC IDs and throttles cannot be the same to avoid same ID recognizing as one ESC when using CAN function.

2) **Operating diagram**

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    graph LR
      A[The ESC CAN cable is connected to the DataLink data box, and the data box is connected to the computer.] --> B[Run DataLink host computer software.]
      B --> C[Enter the software page, confirm the software version of DataLink in the type "DataLink", and ensure that the program version is LINK-01.2.16-5C.]
      C --> D[Enter the CAN parameter adjustment page.]
      D --> E[Wait for the bus rate to be automatically set to 5500kbps.]
      E --> F[Go to "Basic parameters", set ID and throttle channel.]
      F --> G[Click "Set ID and Throttle Channel" and wait for the data to be saved.]
      H[Check the page prompt to confirm whether the setting is successful.] --> I[The equipment is powered off, there is no sequence of power outages, and the equipment will not be burned.]
  
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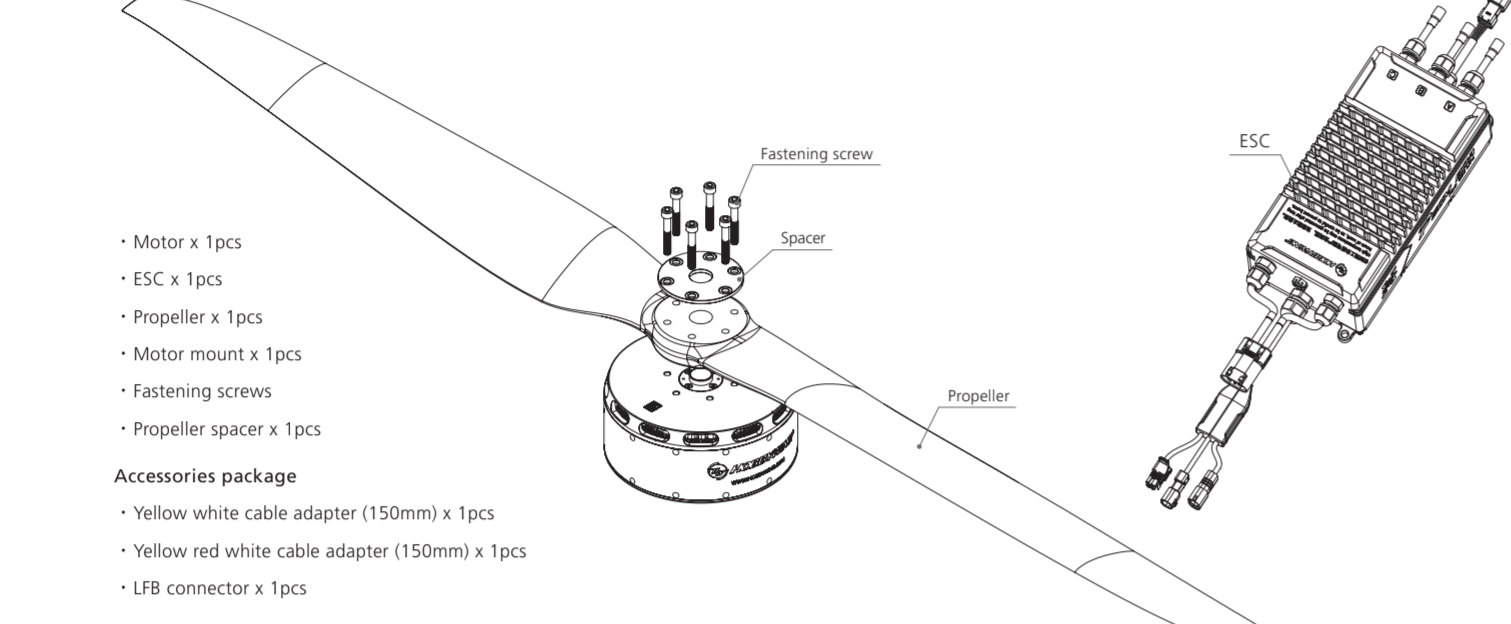
01 Introduction

The P50M is an industrial-grade brushless thrust system designed for multi-rotor aircraft, supporting a rated single-axis load of 50 kg with a maximum thrust of 106 kg/axis. It supports carbon fiber tubes with a 60 mm diameter for installation. Featuring IP35 protection and high-efficiency thermal dissipation, it delivers a one-step-power solution for heavy-load multi-rotor drone applications across logistics, emergency rescue, construction lifting, and other critical domains. The FOC ESC employs CAN communication protocol and dual-redundant throttle control (digital/PWM), integrating power-on self-diagnostics, fault logging, over-current protection, and stall protection to ensure operational safety.

02 Precautions

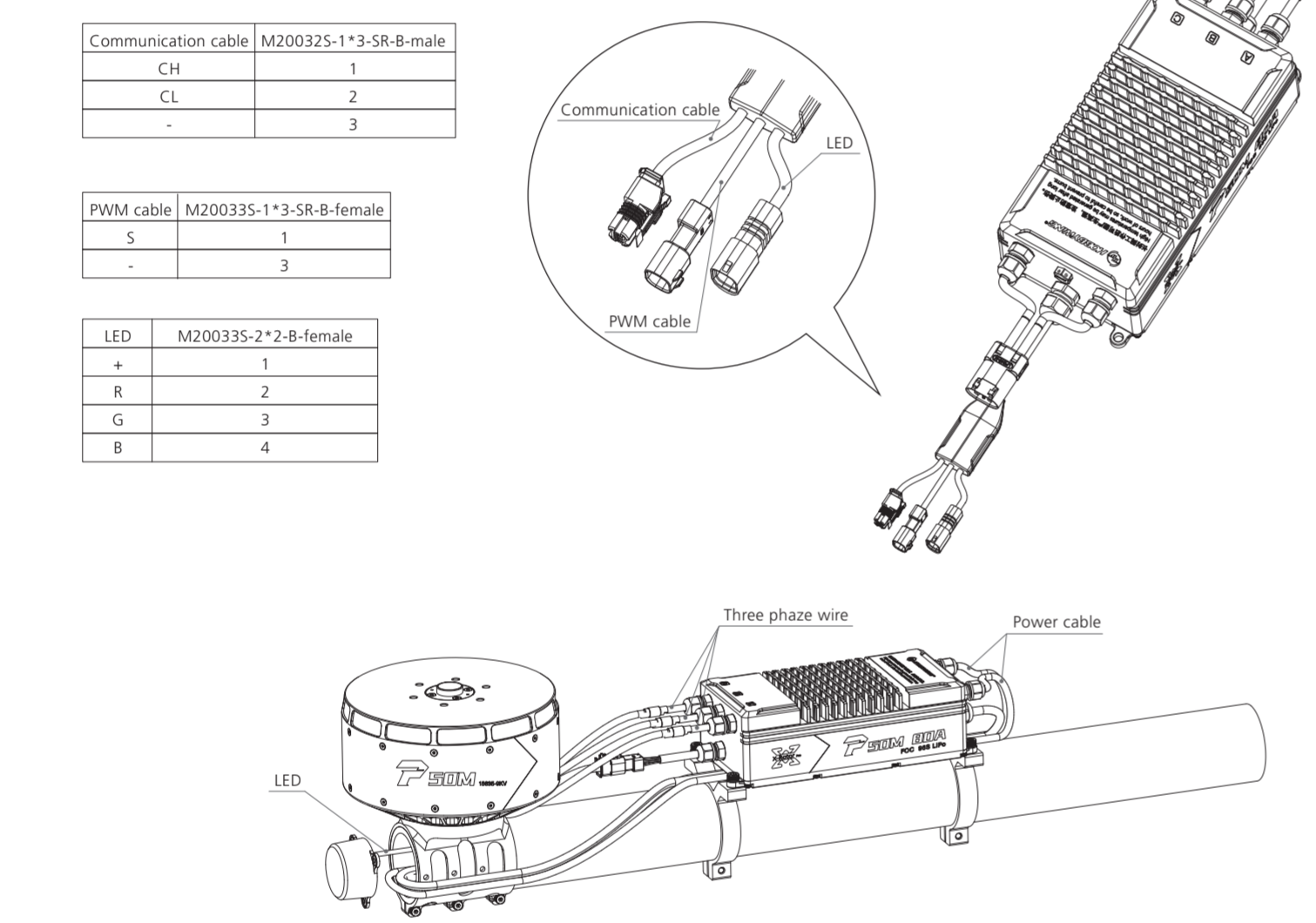
- Please stay away from crowds, high-voltage lines, obstacles, etc. when using, and be sure to follow safety regulations when using.
- The thrust system contains FOC driven ESC, which needs to strictly match the motor parameters. The program is unique. It is only suitable for one combination of propellers and is not compatible with multiple combinations at the same time. If you need to change it, please contact the manufacturer. Unreasonable combinations will trigger ESC protection and make it unusable.
- The ESC is equipped with CAN/485 function. This manual only introduces the CAN communication version. When using the CAN function, the ESC ID and the throttle channel of the same aircraft can not be the same, otherwise the multiple ESCs will be recognized as one ESC.
- Do not install propellers for ground testing to avoid unnecessary danger.
- Be sure to connect all parts carefully. If the connection is poor, you may not be able to control the aircraft normally, or other unpredictable situations such as equipment damage may occur.
- If you need to weld the input and output wire connectors of the ESC, please ensure that the welding is reliable and use welding equipment with sufficient power.
- Do not use this thrust system when the external ambient temperature exceeds 55°C. The high temperature will destroy the ESC and may cause damage to the motor and cause your drone to crash.
- The motor rotation direction of the thrust system has not been determined by the factory, the user can change the order of the motor phase wires to change the motor rotation direction according to the actual needs.

03 Thrust system composition



04 Thrust system installation

- The product comes standard with a signal cable adapter for debugging purposes. Yellow, red and white cables are data output and upgrade signal cables (The firmware of the ESC can be upgraded), yellow cable is GND; red cable is CAN-High (hereinafter referred to as CH), white cable is CAN-Low (hereinafter referred to as CL); yellow and white cables are PWM throttle signal cables for the ESC, yellow line is GND, and white cable is throttle signal cable.
- The data signal cable outputs real-time data such as throttle, motor speed, bus current, bus voltage, capacitor temperature, MOSFET temperature, etc.
- ESC PWM throttle pulse width 1100-1940µs, solidified pulse width, cannot be calibrated.
- RS485 bus and PWM throttle can not be functional at the same time. If RS485 bus is chosen, PWM throttle will not be available. The white wire is A, and the yellow wire is B.



05 Specifications

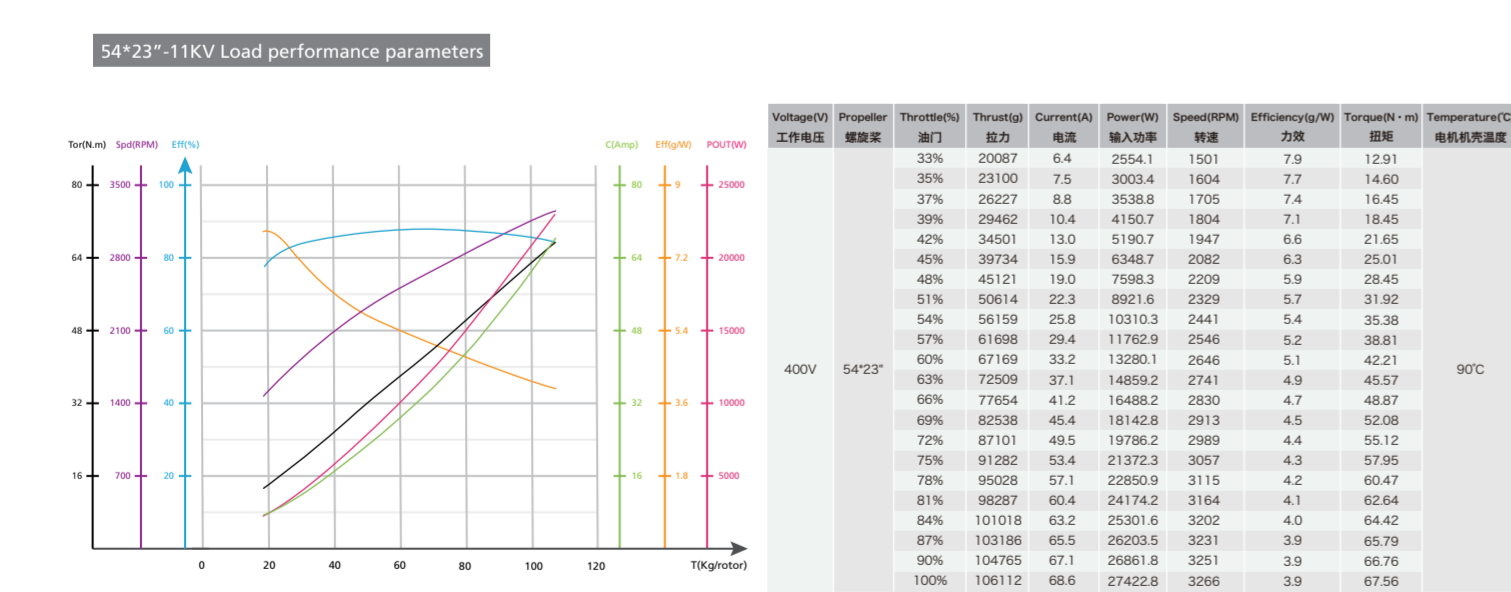
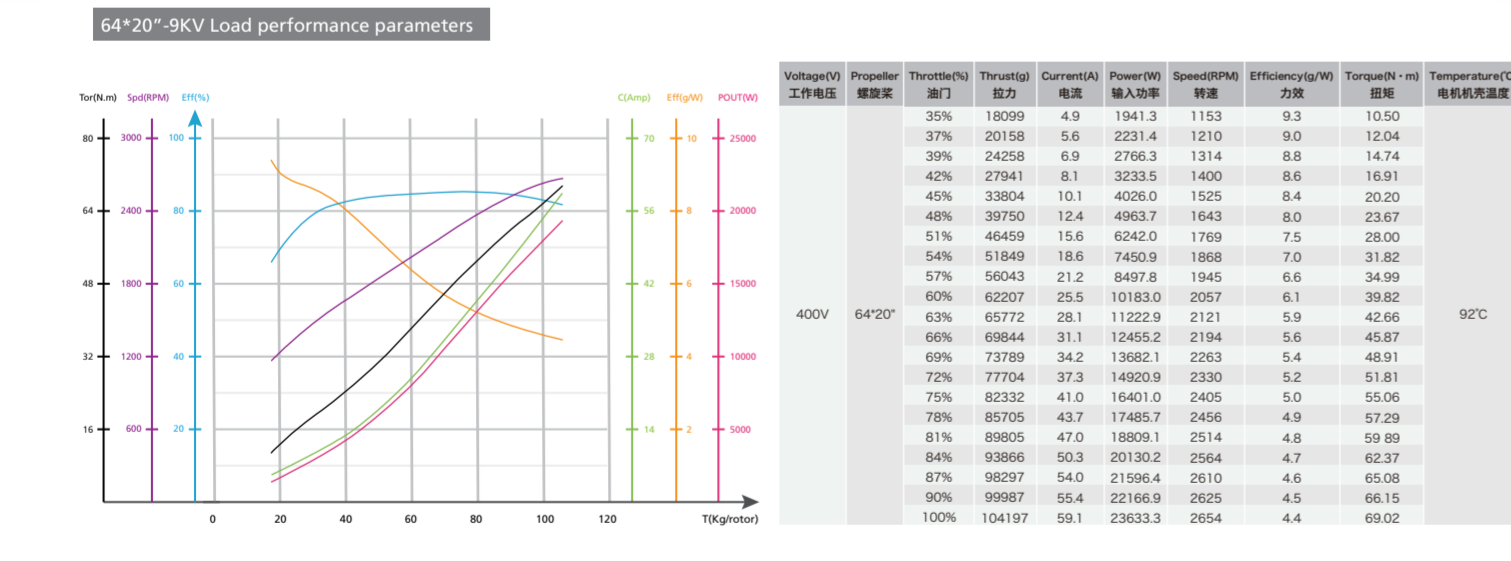
Recommended uniaxial load: 50kg
Max.Torque: 106kg
Lithium compatible: 96-107S (LIPO)
Ambient temperature: -35°C-55°C
Applicable carbon tube: 60mm (diameter)
Total weight (excluding propellers): 6100-6300 g
Protection level: IP35
Support throttle frequency: 50-500Hz

ESC
Continuous current: 40A (Non-airtight ambient temperature -60 °C)
Lithium compatible: 31S-450V
Instantaneous current: 80A (3 seconds - good heat dissipation)
Throttle solidified: 1100-1940µs
Communication & digital throttle: CAN / RS485
Firmware upgrade: supported

Motor
Model: 15635
Outer diameter: Ø167.1*H100.5mm
KV rating: 9KV / 11 KV

Propeller
Dimension: 64*20 / 54*23"
Weight (straight propeller): 860g / 707g

06 Thrust system parameters



The above data are measured by Hobbywing Lab at the ambient temperature of 25°C and sea level by changing the throttle input adjustment. The motor temperature is measured by running the throttle at the rated point for 10 minutes, for reference only.

07 ESC protection function

- This ESC is specially designed for industrial drones, without low-voltage protection and over-heat protection.
- **Stall protection**
When the ESC detects that the motor is locked, the ESC will completely turn off the output and repeatedly try to restart the motor. Please land the aircraft as soon as possible if the motor is unable to be restarted. The power output can only be resumed after the power is turned off and restarted, and the fault is eliminated.
 - **Current protection**
When the instantaneous phase current abnormality reaches 250A, the ESC will turn off the output and keep trying to restart the motor. If the motor does not restart, it will return to normal after power on again.
 - **Over-heat warning**
A fault message will be sent out through the data interface when the IGBT temperature is higher than 110°C or capacitor temperature is higher than 100°C. Please land the aircraft in time or reduce the throttle output when the ESC reports an over-heat fault, if the temperature continues to rise, electronic components may be damaged.
 - **Low voltage protection**
This ESC has no low-voltage protection. Some electronic components of the ESC will work abnormally when the voltage falls below 315VDC. Please land the aircraft in time.
 - **Throttle signal loss protection**
When the ESC detects that the throttle signal is lost, the output will be turned off immediately to avoid greater losses caused by the continued high-speed rotation of the propeller. After the signal is restored, the ESC will resume normal operation immediately.

09 Fault data read

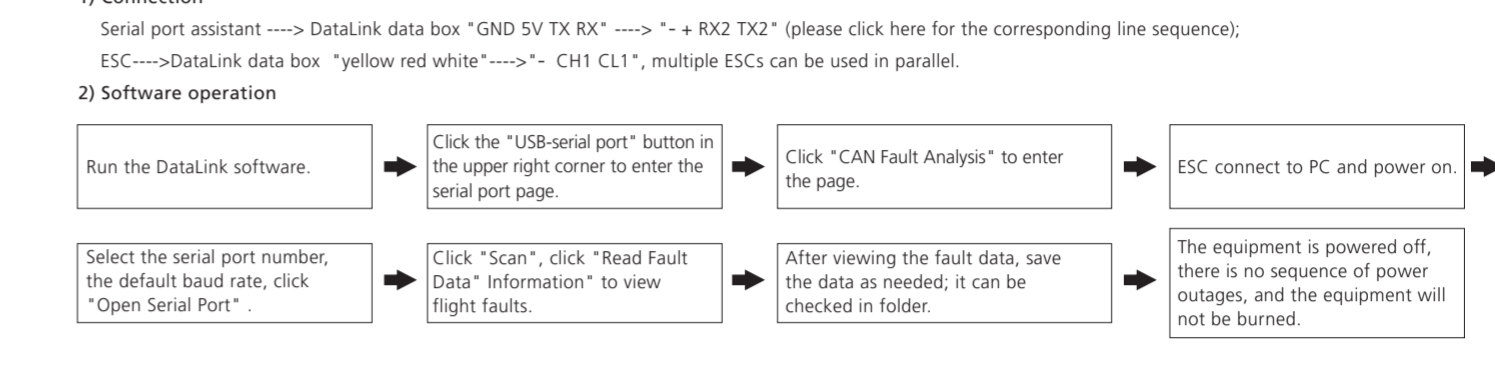
The ESC has its own fault storage function to store the times upon powering-on, flight time, and fault times information. It is convenient for flight fault analysis. This function needs to use DataLink data box, serial port assistant, and DataLink host computer software.

Note: DataLink software can be obtained from Hobbywing official website, dealers, Hobbywing sales, and Hobbywing after-sales.

DataLink data box firmware version requirements: LINK-01.2.16-5C or later; serial port assistant requirements: USB to TTL protocol; DataLink host computer software requirements: fault storage version. It can be obtained on the official website, WeChat official account or after-sales service.

The DataLink box has three power supply methods (+5V), USB data cable, serial port assistant, and external power supply cable. You can choose one of the power supply methods, and you don't need to repeat the power supply.

Note: For detailed steps, please refer to the DataLink user manual.



10 Firmware upgrade

Firmware upgrade is divided into two ways: computer online upgrade and flight controller remote upgrade. It supports online upgrade of multiple ESCs at the same time, and the upgrade port is CAN-ESC (Fast).

The upgrade of the flight control needs to cooperate with the flight control(not explained here).

This function needs to use DataLink data box, special DataLink software for upgrade package, and USB data cable.

DataLink data box version requirements, LINK-01.2.16-5C or later; DataLink software can be obtained from Hobbywing official website, distributors, Hobbywing sales, and Hobbywing after-sales.

Note: Please ensure that the computer system has installed Microsoft Visual C++ 2013 software before using this function, otherwise it cannot be used. An upgrade package usually only contains one program for one type of ESC. For other ESCs, please re-obtain the upgrade package for the corresponding ESC model.

1) **Connection**
Connect the computer and the DataLink data box with the USB data cable;
ESC---->DataLink data box *yellow red white---->- CH1 CL1".

2) **Firmware acquisition**
It can be obtained at the place of purchase, Hobbywing official website, dealers, Hobbywing sales and Hobbywing after-sales offices.
Note: It can only be upgraded from the existing program, and software and hardware cannot be upgraded together.

3) **Operating diagram**

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    graph LR
      A[Run the DataLink software.] --> B[The USB cable is connected to the data box, and the ESC is connected to the DataLink data box.]
      B --> C[Click "DataLink" of the software, View data box firmware, firmware version LINK-01.2.16-5C or later.]
      C --> D[Click "CAN->ESC(FAST)"; ESC firmware upgrade page, click "ESC communication settings".]
      E[Select the "Scan" button first, and then power on the ESC.] --> F[After the channel on the page is ticked, select the "Stop" button.]
      F --> G[After the hardware and firmware information appears on the page.]
      G --> H[In "Available Version", select the desired firmware and click "Update".]
      I[Wait for the upgrade to complete, if the upgrade fails, please repeat the previous part of the operation.] --> J[After the upgrade is complete, please scan again to confirm that the program is upgraded successfully.]
      J --> K[The equipment is powered off, there is no sequence of power outages, and the equipment will not be burned.]
  
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11 Common Faults and Prompt Sound Description

| Warning tone description | | | |
|---|--|---|--|
| Symptoms | Alarm tone | Possible causes | Solutions |
| Motor fails to start after power on | "Beep beep beep..." rapid monophonic | Throttle not reset to zero | Push the throttle to the lowest point or recalibrate the throttle point |
| Motor fails to start after power on | "Beep, beep, beep..." (1 second for each interval) | Receiver throttle channel has no throttle signal output | 1. Check whether the transmitter and receiver operates normally 2. Check whether the throttle control channel wiring is normal |
| The power-on voltage is lower than 315VDC | "Beep, beep" (interval 1 second) | Battery voltage is too low | Replace with a suitable fully charged battery |
| The power-on voltage is higher than 450VDC | "Beep, beep" (interval 1 second) | Battery voltage too high | Replace with a suitable fully charged battery |
| The motor stops or restarts | | The motor is not compatible with the ESC | Replace the motor, or replace the propeller |
| There is no sound during the self-test of the motor, but the motor can rotate | There is no prompt sound during self-test, and the motor rotates | Driver exception | 1. Replace ESC 2. Return to factory for repair |
| The motor cannot start normally, accompanied by "click/click" jitter | There is no prompt sound during the self-test, and the motor is unable to rotate | Motor phase loss | 1. Check phase connection 2. Check motor 3. If there is no problem with the motor and connection, return the ESC to the factory for repair |

12 The blinking of the light

| Condition | normal | Full of throttle | Over voltage | Low voltage | Over current | Throttle lost | The input throttle signal is not at the 0% position | MOS overheat | Capacitor over heat | Motor block |
|---------------------------------|---|---------------------------|--------------|---|--------------|---------------|---|--------------------|---------------------|--------------------|
| Number of blinking of the light | The light is always on | Continuous short blinking | 1 short | 2 short | 3 short | 1 long | 1 long and 1 short | 1 long and 2 short | 1 long and 3 short | 1 long and 4 short |
| Others | | | | | | | | | | |
| Condition | The input throttle signal is not at the 0% position | | | Shorted circuit of signal line | | | Open circuit of motor | | | |
| Sound & blinking | Continous short loudly beep & LED continuous short blinking | | | Continuous short with blinking & LED off with LED off | | | Continous short blinking without beep | | | |

13 Settings of LED color and CW/CCW

Please purchase the DataLink V2 box from Hobbywing or Hobbywing distributors. Please buy CAN analyzer if needed. Please contact the manufacture of your flight controller in advance to check if our products have communication protocol with your flight controller already. In parameter settings, gray area means unable to set. For other parameters, please do not modify at will to avoid crash.

We only include how to set parameters with DataLink V2 box in this user manual. If you are using CAN analyzer please follow HW CAN protocol document. If you are using flight controller to set ESC parameters, please contact the flight controller manufacture for help.

