Thank you for purchasing this product! Please read the following statement carefully before use and, once used, it is considered to be an acceptance of all the contents. Please strictly observe and adhere to the manual installation with this product. Unauthorized modification may result in personal injury and product damage.

We reserve the rights to update the design and performance of the product without notice.

This propulsion system is an industrial-grade component for unmanned aircraft. If you have more specialized application requirements, please contact us.
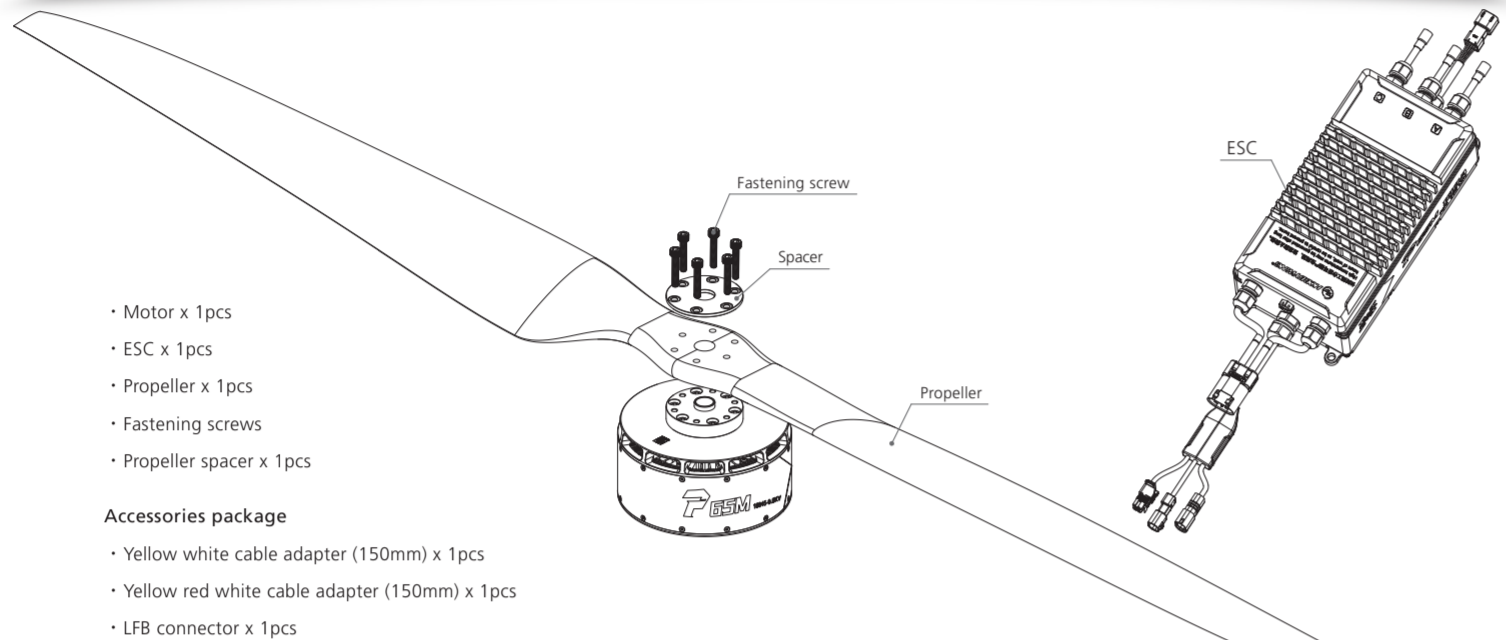
Facebook   Instagram   LinkedIn

01 Introduction

The P65M is an industrial-grade brushless thrust system designed for multi-rotor aircraft, supporting a rated single-axis load of 65 kg with a maximum thrust of 130 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.
• This product adopts a fully isolated design between protective earth (PE), power circuits, and low-voltage signal circuits, ensuring low-impedance connection (common grounding) between the motor base and ESChousing.
• When connecting the sensor-enabled cable, if sensor-assisted startup is used, calibration via the upper computer is required first. Without calibration, the motor will remain in sensorless startup mode. The motor temperature measurement (NTC) function works normally with or without calibration. The ESC program defaults to not requiring sensor-assisted startup; this logic is added solely to pursue stability during rapid motor startup and is not mandatory.
• The sensor cable and fixed-Props functionality cable share the same wiring. If either function is used, calibration is required for it to take effect.

03 Thrust system composition

・Motor x 1pcs
・ESC x 1pcs
・Propeller x 1pcs
・Fastening screws
・Propeller spacer x 1pcs

Accessories package
・Yellow white cable adapter (150mm) x 1pcs
・Yellow red white cable adapter (150mm) x 1pcs
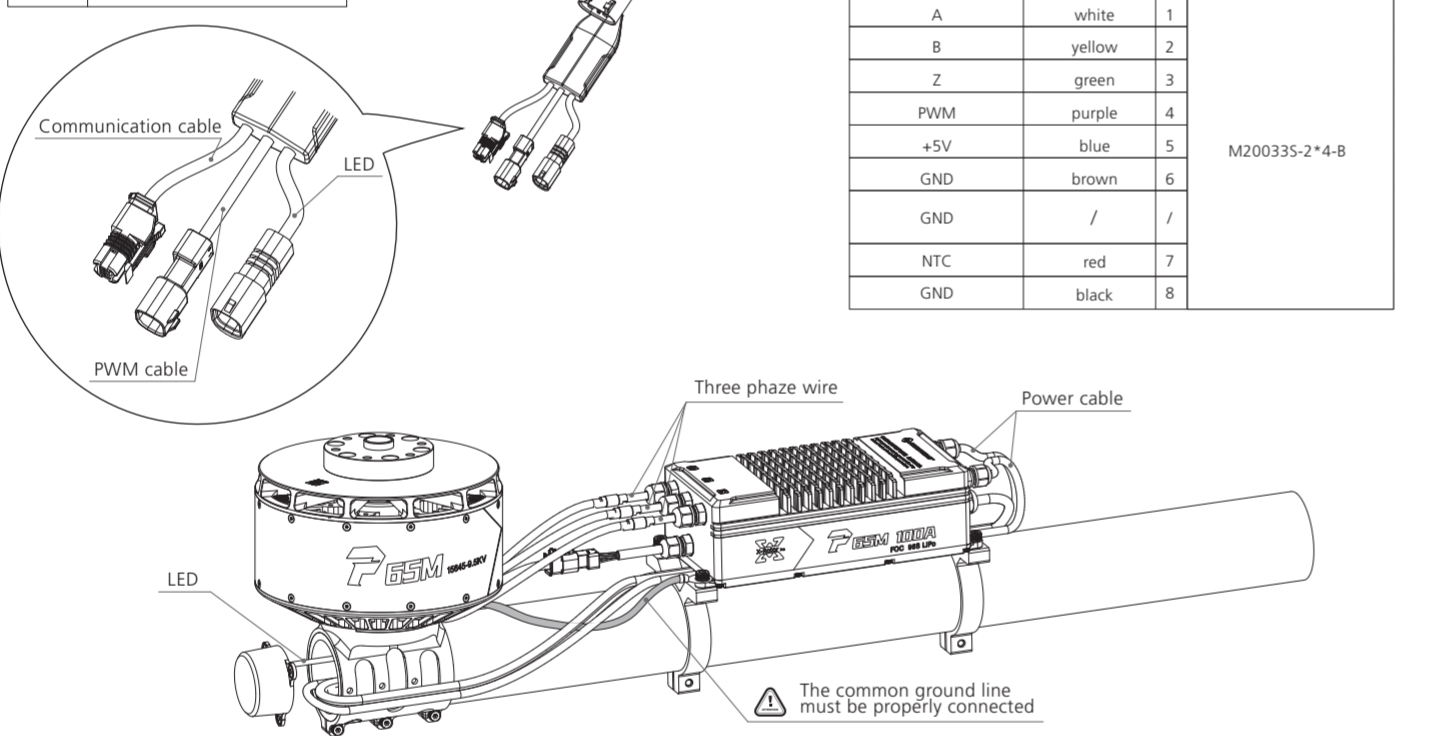・LFB connector x 1pcs

Fastening screw
Spacer
ESC
Propeller

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, IGBT temperature, etc.
• The phase wire connection correspondence between the motor and ESC is: A-Blue, B-Yellow, C-Orange. When connected this way, the actual motor rotation direction is CW (Clockwise). To change the rotation direction, it should be configured via software.
• The standard sensor cable connector includes the motor temperature measurement (NTC) function via Pin7 and Pin8, which provide real-time feedback on motor temperature.The remaining pins are for the sensor cable, which also serve as the fixed-Props control cable.
• ESC PWM throttle range is fixed to 1100-1940us, no need to do calibration.

Communication cable	M20032S-1*3-SR-B-male
CH	1
CL	2
-	3

PWM cable	M20033S-1*3-SR-B-female
S	1
-	3

LED	M20033S-2*2-B-female
+	1
R	2
G	3
B	4

1 white
2 yellow
3 green
4 purple
5 blue
6 brown
7 red
8 black

Sensor connector	Wire color	Connector model number
A	white	1
B	yellow	2
Z	green	3
PWM	purple	4
+5V	blue	5
GND	brown	6
GND	/	/
NTC	red	7
GND	black	8

M20033S-2*4-B

Communication cable
LED
PWM cable

Three phaze wire
Power cable
LED

The common ground line must be properly connected

05 Specifications

Recommended uniaxial load: 65 kg
Max.Torque: 130 kg
Lithium compatible: 96~107S (LIPO)
Ambient temperature: -35℃-55℃
Applicable carbon tube: 60mm (diameter)
Total weight (excluding propellers): 7465±60g / 7185g±60g
Protection level: IP35
Support throttle frequency: 50-500Hz

ESC
Continuous current: 40A / 355V (Non-airtight ambient temperature ＜60 ℃)
Lithium compatible: 280-450V DC
Instantaneous current: 100A /355V (3 seconds - good heat dissipation)
Throttle solidified: 1100-1940μs
Communication& digital throttle: CAN / RS485
Firmware upgrade: supported

Motor
Stator size: 156*45mm
Outer diameter: Φ167.1*H110.5mm
KV rating: 9.5KV / 11 KV

Propeller
Model: MSC 64x20 / MSC 72x25
Weight (straight propeler) : 870±20g / 1150±20g

*Normal flight operating voltage range: 280 VDC to 450 VDC.
Hovering thrust operating voltage range: 315 VDC to 450 VDC.
Maximum thrust operating voltage range: 336 VDC to 450 VDC.

06 Thrust system parameters

MSC 72x25 -9.5KV Load performance parameters

MSC 64x20 -11KV Load performance parameters
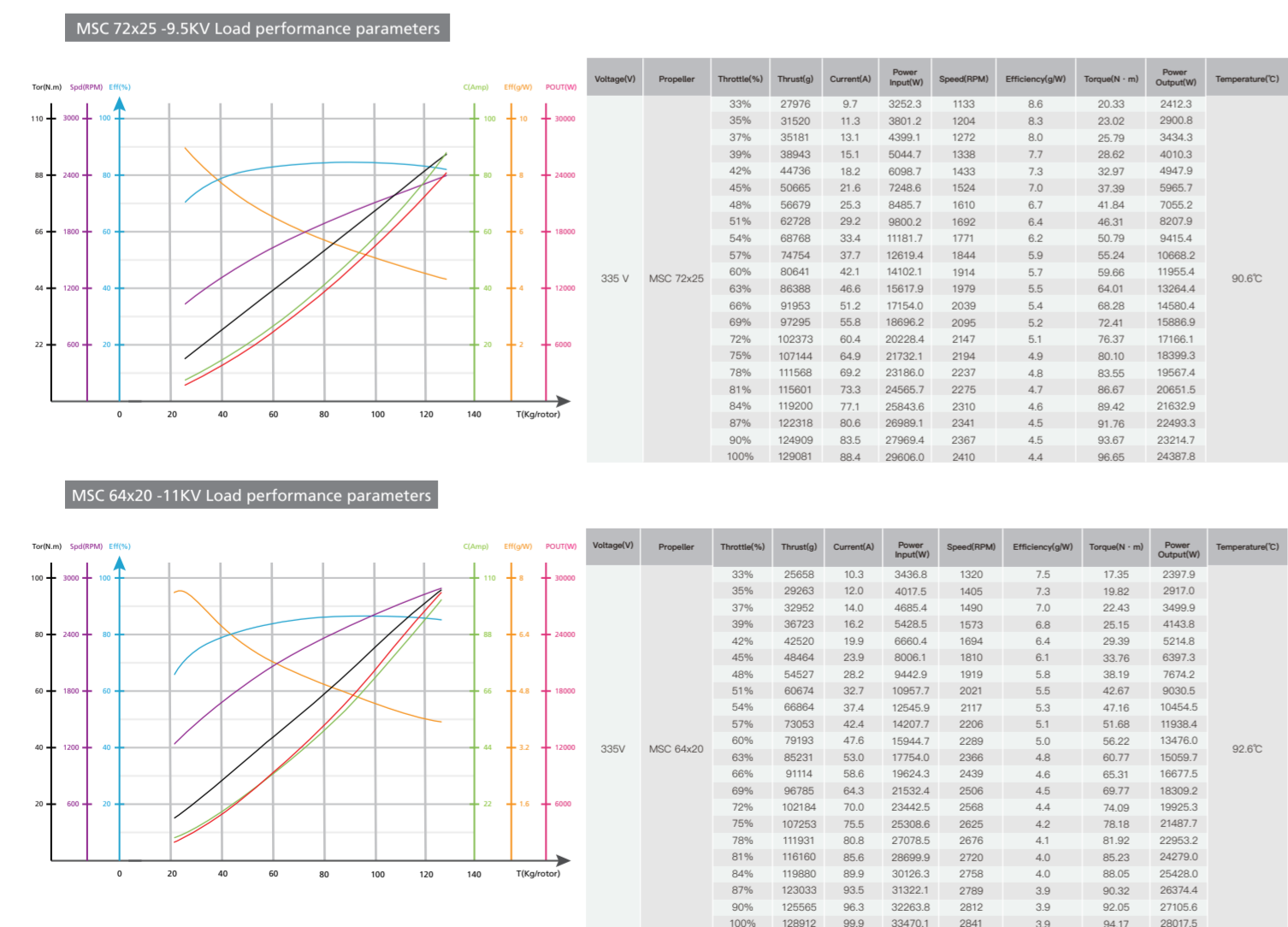
The above data are measured by Hobbywing Lab at the ambient temperature of 25℃ and sea level by changing the throttle input adjustment. The motor temperature is measured by running the throttle at the rated point for 10 minutes, for reference only.

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.
• Over 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.
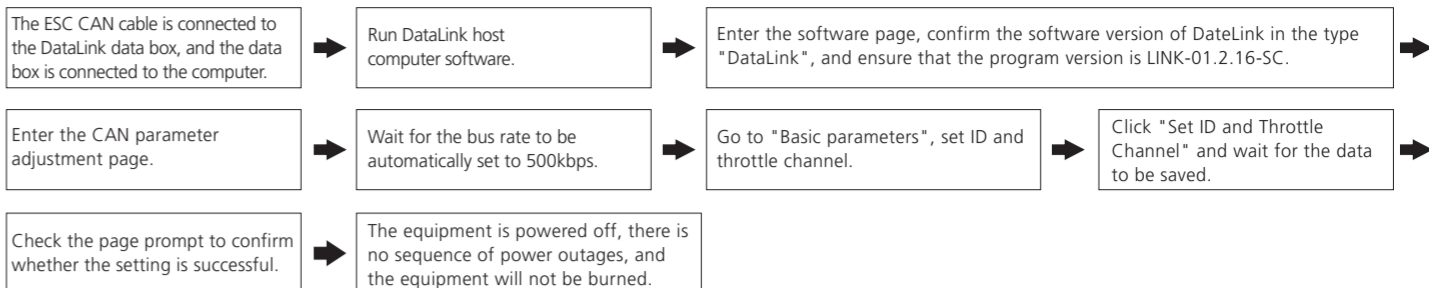
08 ID setting

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 Micosoft 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

The ESC CAN cable is connected to the DataLink data box, and the data box is connected to the computer.	Run DataLink host computer software.	Enter the software page, confirm the software version of DateLink in the type "DataLink", and ensure that the program version is LINK-01.2.16-SC.
Enter the CAN parameter adjustment page.	Wait for the bus rate to be automatically set to 500kbps.	Go to "Basic parameters", set ID and throttle channel.	Click "Set ID and Throttle Channel" and wait for the data to be saved.
Check the page prompt to confirm whether the setting is successful.	The equipment is powered off, there is no sequence of power outages, and the equipment will not be burned.		

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-SC 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.
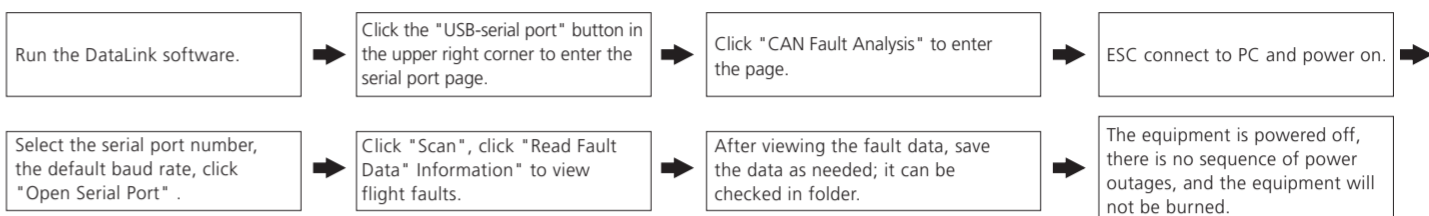The DataLink box has three power supply methods (+5V), USB data cable, serial port assistant, and external power supply cable. You can choose one of the power supply methods, and you don't need to repeat the power supply.
Note: For detailed steps, please refer to the DataLink user manual.
1) Connection
Serial port assistant ----> DataLink data box "GND 5V TX RX" ----> "- + RX2 TX2" (please click here for the corresponding line sequence);
ESC---->DataLink data box "yellow red white"---->"- CH1 CL1", multiple ESCs can be used in parallel.
2) Software operation

Run the DataLink software.	Click the "USB-serial port" button in the upper right corner to enter the serial port page.	Click "CAN Fault Analysis" to enter the page.	ESC connect to PC and power on.
Select the serial port number, the default baud rate, click "Open Serial Port".	Click "Scan", click "Read Fault Data" information" to view flight faults.	After viewing the fault data, save the data as needed; it can be checked in folder.	The equipment is powered off, there is no sequence of power outages, and the equipment will not be burned.

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-SC 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
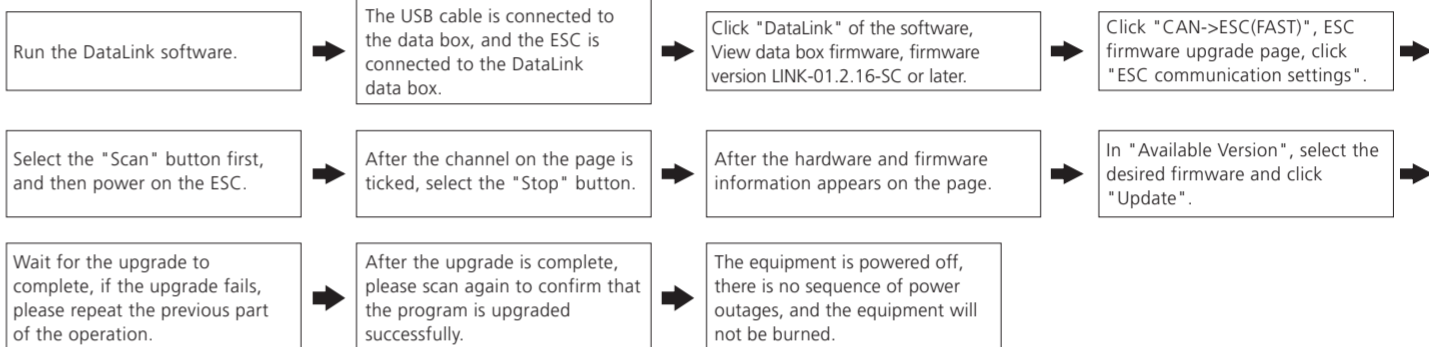Connect the computer and the DataLink data box with the USB data cable;
ESC---->DataLink data box "yellow red white"---->"- CH1 CL1".
2) Firmware acquisition
It can be obtained at the place of purchase, Hobbywing official website, dealers, Hobbywing sales and Hobbywing after-sales offices.
Note: It can only be upgraded from the existing program, and software and hardware cannot be upgraded together.
3) Operating diagram

Run the DataLink software.	The USB cable is connected to the data box, and the ESC is connected to the DataLink data box.	Click "DataLink" of the software, View data box firmware, firmware version LINK-01.2.16-SC or later.	Click "CAN->ESC(FAST)", ESC firmware upgrade page, click "ESC communication settings".
Select the "Scan" button first, and then power on the ESC.	After the channel on the page is ticked, select the "Stop" button.	After the hardware and firmware information appears on the page.	In "Available Version", select the desired firmware and click "Update".
Wait for the upgrade to complete, if the upgrade fails, please repeat the previous part of the operation.	After the upgrade is complete, please scan again to confirm that the program is upgraded successfully.	The equipment is powered off, there is no sequence of power outages, and the equipment will not be burned.	

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 loss	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 1short	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	Continus short loudly beep & LED continuous short blinking	Continuous short with blinking & LED off with LED off	Continus 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.
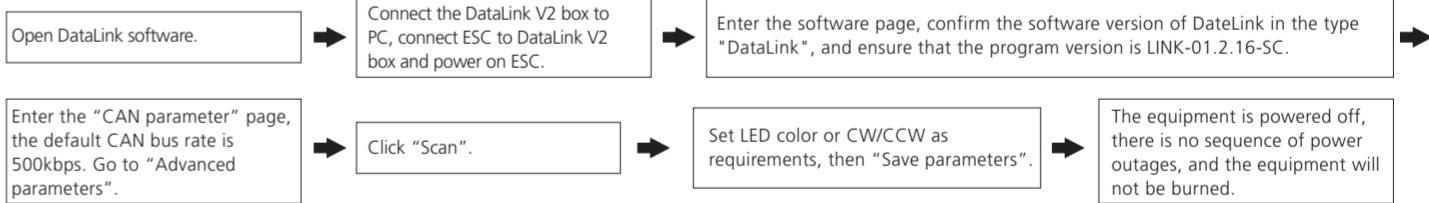**1) Connections**
Connect PC and DataLink V2 box;
ESC---->DataLink V2 box"yellow red white"---->"- CH1 CL1 ", there is no need to connect the "+" pin on the box.No need to connect the XT30 plug to the battery, the DataLink V2 box can be powered by the USB-C cable.
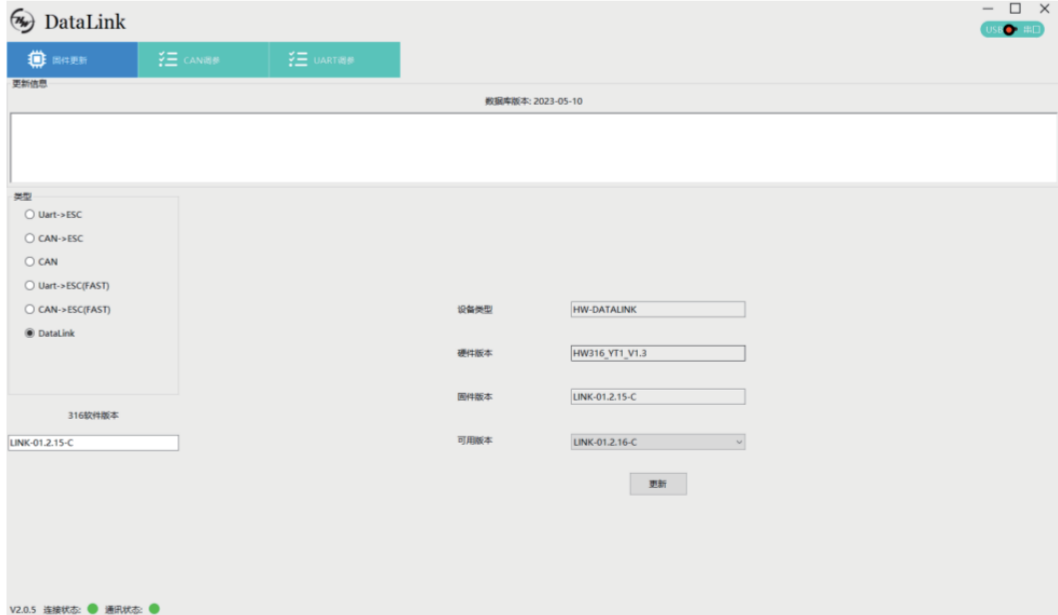**2) RGB LED color list**

	R	G	B
Red	✓	✕	✕
Green	✕	✓	✕
Blue	✕	✕	✓
White	✓	✓	✓
Purple	✓	✕	✓

3) Operating diagram

Open DataLink software.	Connect the DataLink V2 box to PC, connect ESC to DataLink V2 box and power on ESC.	Enter the software page, confirm the software version of DateLink in the type "DataLink", and ensure that the program version is LINK-01.2.16-SC.
Enter the "CAN parameter" page, the default CAN bus rate is 500kbps. Go to "Advanced parameters".	Click "Scan".	Set LED color or CW/CCW as requirements, then "Save parameters".	The equipment is powered off, there is no sequence of power outages, and the equipment will not be burned.

4) Datalink software