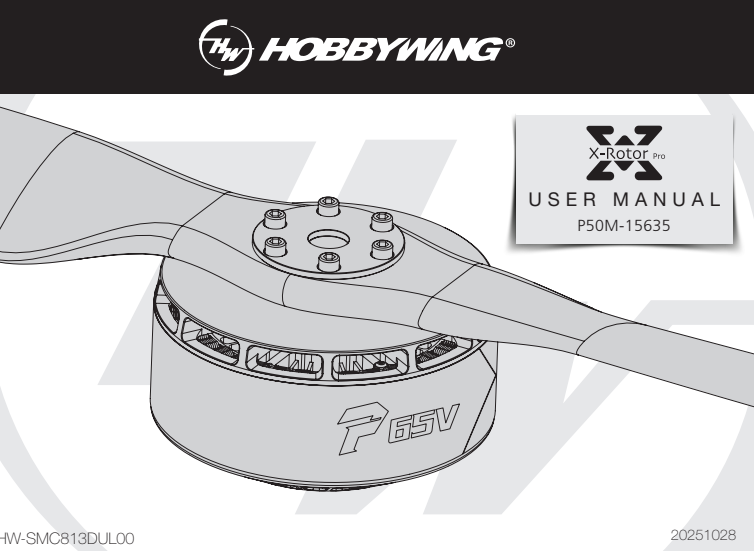




01 Introduction

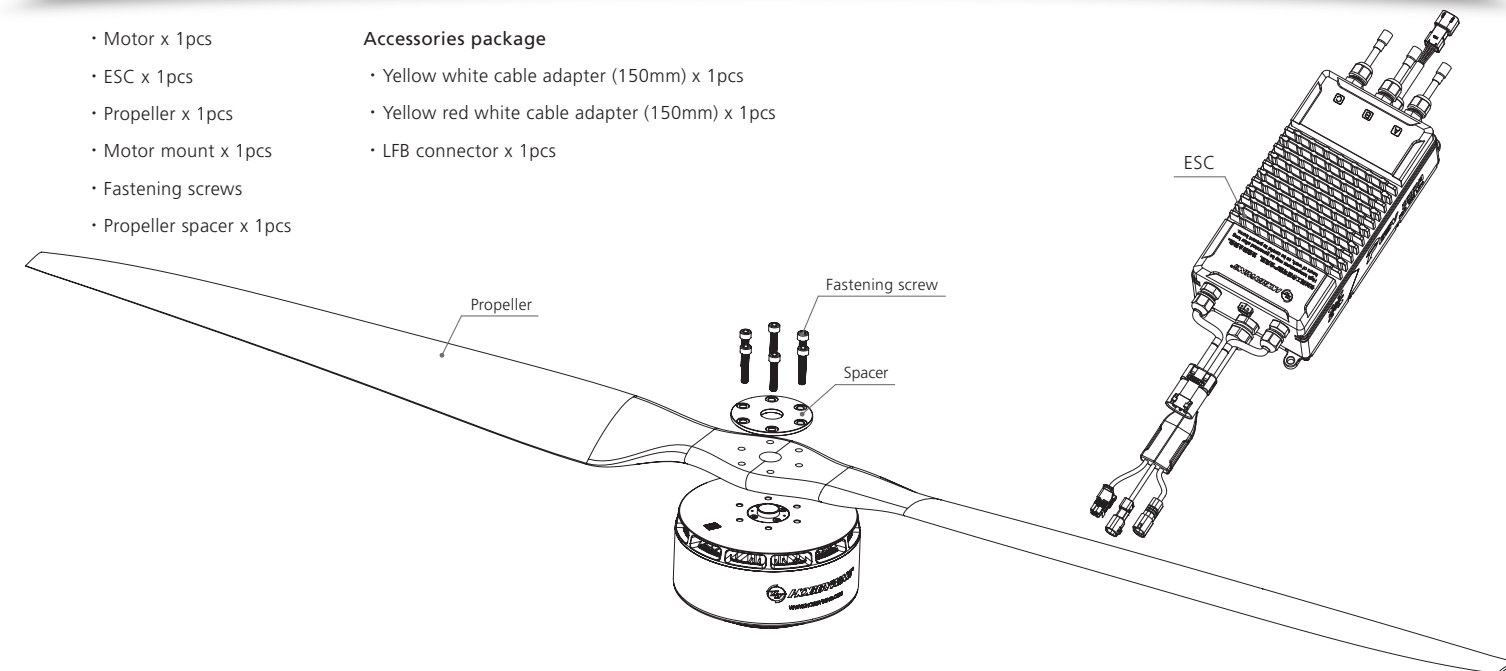
The P65V is an industrial-grade brushless thrust system designed for VTOL rotor sections, supporting a rated single-axis load of 65 kg with a maximum thrust of 114 kg/axis. Featuring IP35 protection and high-efficiency thermal dissipation, it delivers a one-step power solution for heavy-load VTOL drone applications across logistics, emergency rescue, 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.
- It comes standard with a intelligent propeller control (IPC) function, which can be optionally enabled based on actual operational requirements.
- 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.
- This power system requires calibration before its first use; otherwise, the motor will not start when the throttle signal is given.

03 Thrust system composition

- Motor x 1pcs
 - ESC x 1pcs
 - Propeller x 1pcs
 - Motor mount 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



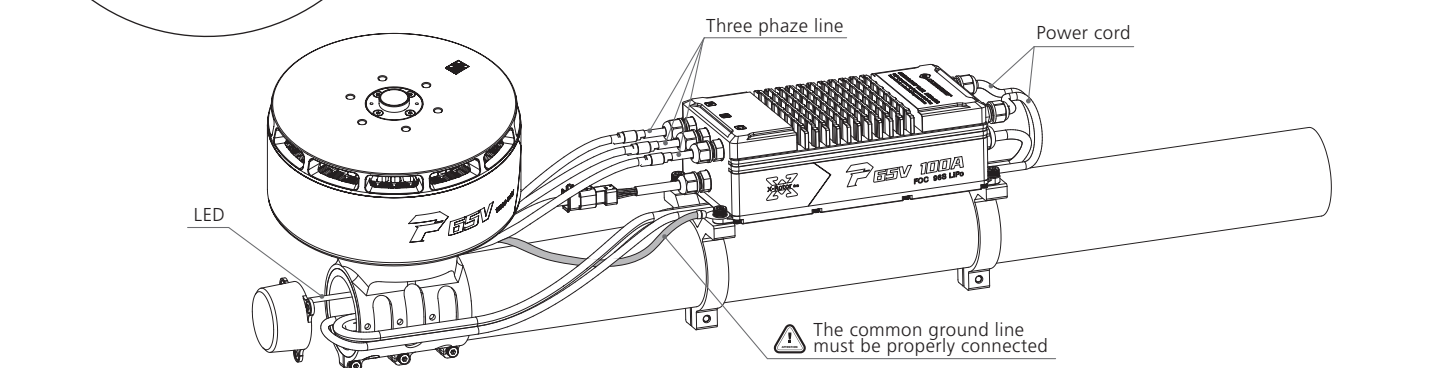
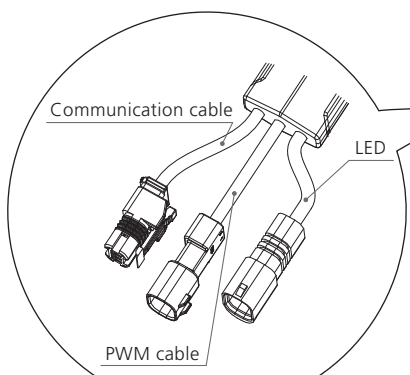
04 Thrust system installation

- 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 1100-1940µs, no need to do calibration.

Communication cable	M200325-1*3-SR-B-male
CH	1
CL	2
-	3

PWM cable	M200335-1*3-SR-B-female
S	1
-	3

LED	M200335-2*2-B-female
+	1
R	2
G	3
B	4



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

05 Specifications

Recommended uniaxial load: 65kg
Max Torque: 114kg
Lithium compatible: 96~107S (LiPo)
Ambient temperature: -35°C~55°C
Propeller positioning: IPC(Intelligent Propeller Control)
Total weight (excluding propellers): 6100g
Protection level: IP35
Support throttle frequency: 50-500Hz

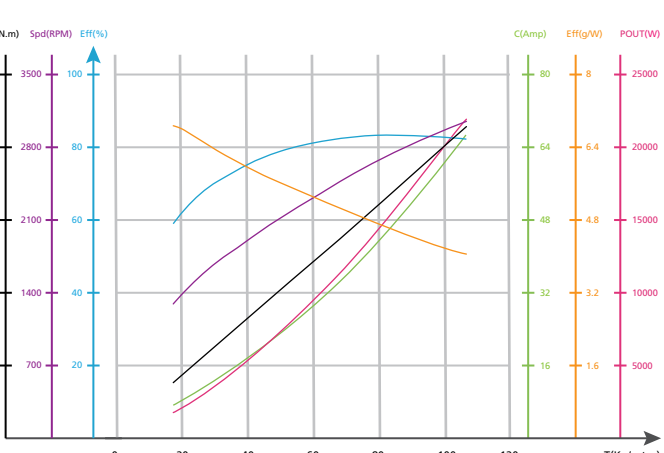
ESC
Continuous current: 40A (Non-airtight ambient temperature <60 °C)
Lithium compatible: 280~450VDC
Instantaneous current: 100A (3 seconds - good heat dissipation)
Throttle solidified: 1100-1940µs
Communication & digital throttle: CAN / RS485
Firmware upgrade: supported

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

Propeller
Dimension: 60*20" / 54*23"
Weight (straight propeller): 620g / 707g

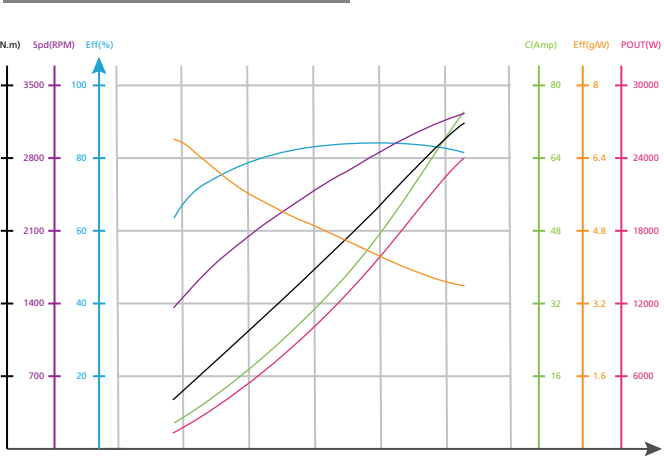
06 Power system parameters

60*20" Load performance parameters



Voltage(V)	Propeller	Throttle(%)	Thrust(g)	Current(A)	Power Input(W)	Speed(RPM)	Efficiency (%)	Torque (N·m)	Power Output(W)	Temperature(°C)
400V	60*20"	33%	21641	8.0	3188.1	1334	0.8	13.67	1195.1	85°C
		35%	24691	9.3	3710.1	1490	0.7	15.56	2427.3	
		37%	27969	10.8	4301.9	1584	0.5	17.64	2526.3	
		39%	31408	12.4	4961.6	1675	0.3	19.96	3463.3	
		42%	36748	15.0	6009.1	1805	0.1	23.32	4407.4	
		45%	42177	17.9	7137.8	1926	0.9	26.83	5411.3	
		48%	47581	20.8	8314.9	2041	5.7	30.27	6470.7	
		51%	52886	23.8	9526.5	2150	5.6	33.61	7568.1	
		54%	58042	26.9	10766.3	2254	5.4	36.83	8691.3	
		57%	63026	30.1	12031.8	2351	5.2	39.93	9822.2	
		60%	67930	33.4	13322.7	2443	5.1	42.94	10985.0	
		63%	72458	36.7	14638.9	2529	4.9	45.86	12145.7	
		66%	76822	40.0	15979.5	2609	4.8	48.72	13310.3	
		69%	81031	43.4	17341.4	2683	4.7	51.52	14474.0	
		72%	85390	46.9	18717.5	2751	4.6	54.27	15629.7	
		75%	89394	50.4	20094.8	2812	4.4	56.94	16766.5	
400V	54*23"	33%	19319	53.8	21462.2	2983	4.3	59.50	17868.3	92°C
		37%	22758.5	57.1	22758.5	2918	4.3	61.89	18912.4	
		40%	25827.4	60.1	23971.6	2962	4.2	64.06	19869.3	
		43%	28624.4	62.8	25028.9	2999	4.1	65.92	20724.4	
		46%	31267.7	65.0	25997.4	3029	4.1	67.38	21368.0	
		49%	33765.5	66.9	26687.5	3056	4.0	68.68	21977.9	
		52%	36106.0	68.4	27184.5	3076	3.8	69.64	22524.5	
		55%	38304.4	69.6	27518.5	3103	3.7	70.31	23018.2	
		58%	40369.5	70.7	27718.5	3133	3.7	70.86	23474.6	
		61%	42299.0	71.7	28072.4	3166	3.6	70.01	23856.1	
		64%	44086.0	73.0	29216.7	3199	3.6	70.81	23718.2	
		67%	45734.4	73.7	29468.1	3204	3.6	71.18	23881.1	
		70%	47258.5	74.4	29644.5	3204	3.6	71.18	23881.1	
		73%	48658.5	75.0	29758.5	3204	3.6	71.18	23881.1	
		76%	49934.4	75.6	29818.5	3204	3.6	71.18	23881.1	
		79%	51104.4	76.1	29844.5	3204	3.6	71.18	23881.1	

54*23" Load performance parameters



Voltage(V)	Propeller	Throttle(%)	Thrust(g)	Current(A)	Power Input(W)	Speed(RPM)	Efficiency (%)	Torque (N·m)	Power Output(W)	Temperature(°C)
400V	54*23"	33%	22319	8.4	3376.5	1535	6.6	14.48	2326.2	92°C
		35%	25780	10.1	4028.9	1648	6.4	16.73	2884.4	
		37%	29222	11.8	4722.3	1752	6.2	18.98	3481.0	
		39%	32695	13.6	5461.0	1849	6.0	21.26	4116.3	
		42%	38040	16.6	6552.7	1988	5.7	24.75	5151.3	
		45%	43607	19.9	7952.2	2119	5.5	28.37	6295.0	
		48%	49417	23.4	9372.2	2246	5.3	32.13	7556.9	
		51%	55441	27.3	10929.8	2369	5.1	36.05	8944.8	
		54%	61615	31.6	12643.6	2490	4.9	40.13	10463.4	
		57%	67842	36.3	14524.4	2608	4.7	44.35	12106.5	
		60%	74034	41.4	16561.8	2721	4.5	48.64	13858.9	
		63%	79970	46.8	18711.8	2828	4.3	52.92	15667.8	
		66%	85600	52.2	20892.8	2924	4.1	57.02	17460.7	
		69%	90760	57.5	22995.0	3008	3.9	60.78	19143.9	
		72%	95323	62.2	24902.0	3076	3.8	64.04	20624.5	
		75%	99183	66.3	26516.3	3127	3.7	66.68	21833.4	
400V	54*23"	78%	102257	69.4	27778.5	3163	3.7	68.66	22740.6	92°C
		81%	104650	71.7	28672.4	3186	3.6	70.01	23256.1	
		84%	105906	73.0	29216.7	3199	3.6	70.81	23718.2	
		87%	106569	73.7	29468.1	3204	3.6	71.18	23881.1	
		90%	106569	73.7	29468.1	3204	3.6	71.18	23881.1	
		93%	106569	73.7	29468.1	3204	3.6	71.18	23881.1	
		96%	106569	73.7	29468.1	3204	3.6	71.18	23881.1	
		99%	106569	73.7	29468.1	3204	3.6	71.18	23881.1	
		100%	106569	73.7	29468.1	3204	3.6	71.18	23881.1	
		100%	106569	73.7	29468.1	3204	3.6	71.18	23881.1	
		100%	106569	73.7	29468.1	3204	3.6	71.18	23881.1	
		100%	106569	73.7	29468.1	3204	3.6	71.18	23881.1	
		100%	106569	73.7	29468.1	3204	3.6	71.18	23881.1	
		100%	106569	73.7	29468.1	3204	3.6	71.18	23881.1	
		100%	106569	73.7	29468.1	3204	3.6	71.18	23881.1	

The above data is based on the measurement made by Hobbywing Laboratory at room temperature 25°C, sea level altitude, varying throttle input regulation, and the temperature of the motor is recommend take off weight under continuous operation for 5 mins, which is 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 280VDC. 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 Microsoft Visual C++ 2013 software in advance, otherwise it cannot operate normally.

1) Connection

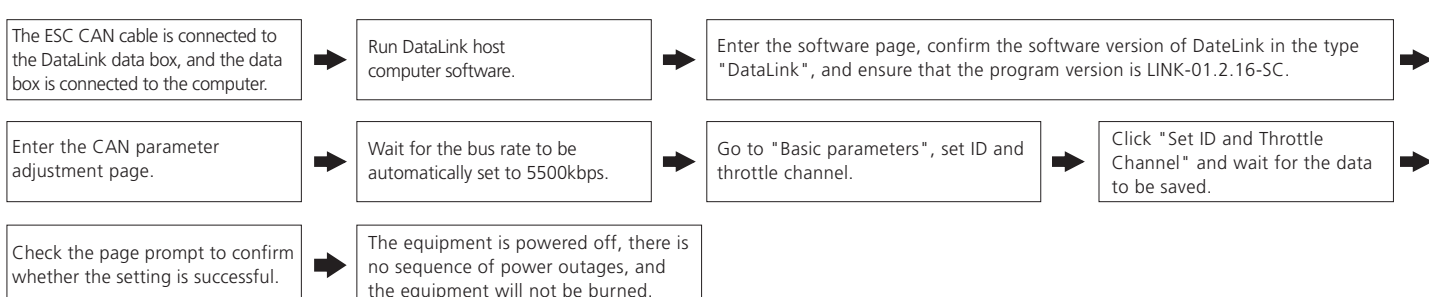
ESC-----DataLink data box "yellow red white"-----> CH1 CL1"; Connect the data box to the computer via USB.

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



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.

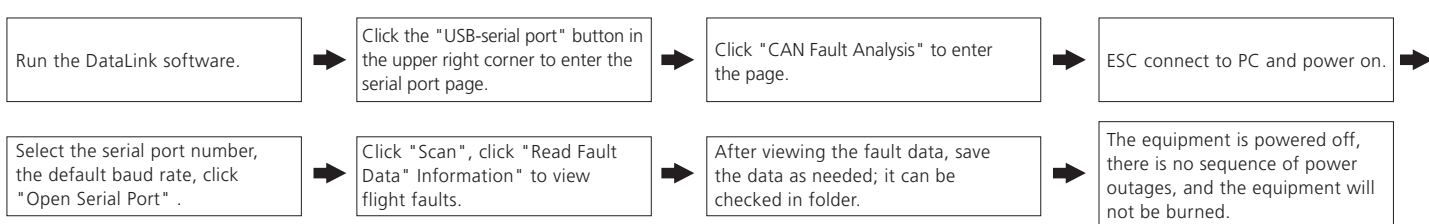
Note: For detailed steps, please refer to the DataLink user manual.

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



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 controller needs to cooperate with the flight controller(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