# Summit Series ESC instruction manual

## Features
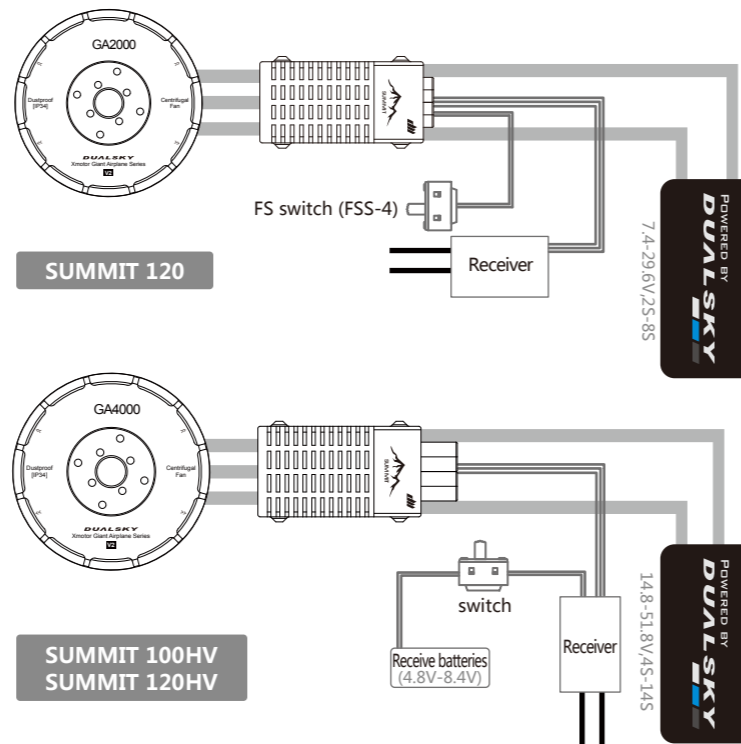
- 32-bit ARM core — 32位ARM内核
- Auto timing — 自动进角
- Quick acceleration — 迅捷的加速
- Anti-spark — 防电弧设计
- Reaction torque limit program — 反扭矩限制程序
  (Pattern Flight Edition Special) — (F3A版本专属)
- Drag brake & energy recovery — 拖刹及能量回收
- Brake Adjustable — 可调刹车力度
- OPTO throttle signal — 光耦信号隔离
  (HV special) — (高压专属)
- Performance UBEC — 高性能UBEC
  (Low voltage version special) — (低压版专属)
- Multiple protection — 多重保护
- Full CNC ALU. case — 全金属外壳
- Tests passed with Dualsky GA, HD, EA, DA, ECO motors — 兼容全系列双天电机

## Dimensions

### SUMMIT 120

80,0
16,5
19,7
66,8
33,2
37,5

### SUMMIT 100HV / SUMMIT 120HV

85,4
15,5
19,2
15,5
69,8
38,8
43,1

## Wiring Diagram

### SUMMIT 120

GA2000
FS switch (FSS-4)
Receiver
7.4-29.6V/2S-8S

### SUMMIT 100HV / SUMMIT 120HV

GA4000
switch
Receive batteries (4.8V-8.4V)
Receiver
14.8-51.8V/4S-14S

## Initialization
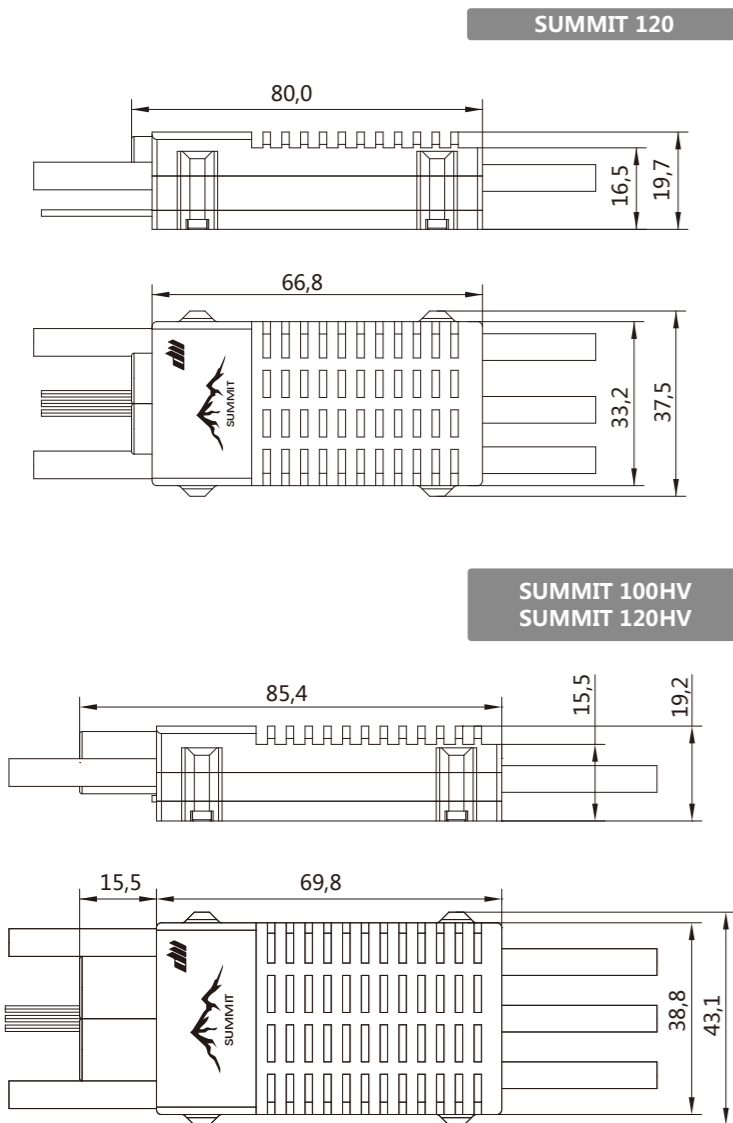
Turn on the correct power (tone: 4-2-4) → Battery cells number prompt → throttle signal is correct (tone: 4-2-4) → Finish, ready to run.
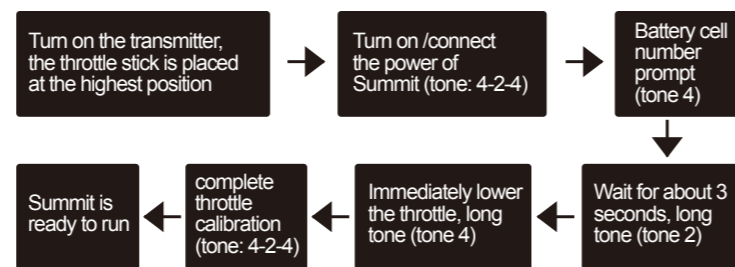
* If the throttle signal alarm occurs, please follow the status table.

## Battery cells number prompt

- Summit ESC is designed for lithium-ion polymer batteries. The number of cell is automatic recognized, and the sound is prompted.
- Prompt the battery number of cells = long tone times x 3 + short tone times (1 or 2)
- For example: one long tone and one brief tone are 4S batteries, two long tone are 6S batteries, two long tone and two brief tone are 8S batteries, and four long tone are 12S batteries
- If the battery number of cells is difference from actual battery number of cells, please check the battery and to ensure it is fully charged.
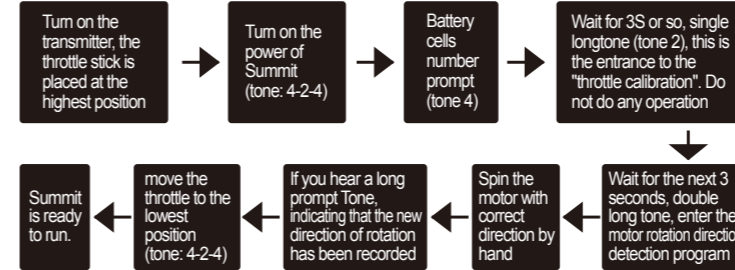
## Throttle calibration

- Whenever the model data in the remote control is used with the Summit ESC for the first time, it is strongly recommended to do "throttle calibration".
- If the calibration is not done, the lowest throttle signal may be high and the ESC will not work. It is also possible that the throttle signal is low and the ESC brake function is activated.

Turn on the transmitter, the throttle stick is placed at the highest position → Turn on /connect the power of Summit (tone: 4-2-4) → Battery cell number prompt (tone 4) → Wait for about 3 seconds, long tone (tone 2) → Immediately lower the throttle, long tone (tone 4) → complete throttle calibration (tone: 4-2-4) → Summit is ready to run

- If R/C throttle signal is reversed, the ESC may enter the calibration incorrectly. Please pay special attention to this, power off, reverse the throttle signal and try again.

## Change the direction of motor rotation

The Summit ESC can change the direction of motor rotation by setting, without having to go through the physical way of changing the two-phase motor line.

Turn on the transmitter, the throttle stick is placed at the highest position → Turn on the power of Summit (tone: 4-2-4) → Battery cells number prompt (tone 4) → Wait for 3S or so, single longtone (tone 2), this is the entrance to the "throttle calibration". Do not do any operation → Wait for the next 3 seconds, double long tone, enter the motor rotation direction detection program → Spin the motor with correct direction by hand → If you hear a long prompt Tone, indicating that the new direction of rotation has been recorded → move the throttle to the lowest position (tone: 4-2-4) → Summit is ready to run.

- Do the throttle calibration firstly
- If the motor rotates in the right direction, do not operate.
- In this operation, propeller must NOT be installed.
- This operation only records the direction of the motor once. If it needs to be re-recorded, power off the ESC and repeat the above steps.
- This operation does not change the value of throttle.

## Timing and applicable motors

Summit ESC uses intelligent algorithms and automatic timing, so users no longer need to experiment with different timing and motor compatibility. Summit is applicable to Dualsky ECO, EA, DA, GA, MR, HD, etc series motors. It is also applicable to the same type of high quality senseless brushless outrunner on the market. There is also good compatibility with the senseless brushless inrunners.

## Set idle speed and energy recovery

After the Summit throttle is calibrated, the default minimum throttle is the freewheel. At this time, if the throttle's trim is pushed up a few and the motor is rotating, the gas engine idle speed effect can be simulated. The idle speed has the following advantages:

- Motor acceleration is faster
- Stay in energy recovery mode
- Better drag-brake effect than freewheel.

## Set the brake

If the lowest point of the throttle is lowered from the unpowered position (by trim or throttle curve), the throttle enters the brake zone. The braking force of the Summit series can be finely adjusted in the range of 0-100%. The lower the throttle position, the greater the braking force, which is very suitable for aerobatics such as F3A.

## Set the throttle lock switch

On the ground, if the throttle stick is accidentally touched, the propeller will rotate, which is very dangerous. Summit ESC can't be avoided either. It is recommended to set the throttle lock by the Throttle cut-off function, one more protection. At the same time, this function works well with the idle function.

## Switch and dormancy

For Summit which has BEC module, the BEC output can be controlled by the FSS-4 switch. When the BEC is turned off, the ESC goes to dormancy. The switch is Fail safe type. Without switch or switch failure, ESC remains in working condition.
Summit HV series which is without BEC enters the dormancy state when the throttle signal disappears for more than 3 seconds. After the signal is recovered, it must be lowered to the minimum before the ESC can be restarted. With this function, the main battery can be connected with power system in advance, the remote control system is not turned on and placed the model in the waiting area.

- Dormant ESC has a few milliampere of power consumption. it is not recommended keeping dormancy for more than 24 hours.

## Summit's protection features

- Anti-spark protection
- Unsafe throttle signal protection
- Loss signal protection
- Out-of-step protection
- Over temperature protection
- Over-voltage and under-voltage protection
- Low voltage protection
- Locked-rotor protection
- Over current protection
- Short circuit protection

## SUMMIT ESC status and tones

| Item | Tones | Built-in LED Red | Built-in LED Green | External LED (HV ONLY) | Operation |
|---|---|---|---|---|---|
| No throttle signal | one short tone repeats (Summit HV dormancy) | Off | Off | Solid On | Check the throttle/receiver and it will return to normal when there is signal |
| Unsafe throttle signal | 1 short tone repeat | Off | On | Solid On | The throttle is too high, recovery after the throttle is lowed |
| Throttle signal loss | N/A | Off | Off | Off | In working state, throttle signal loses more than 0.2S, motor stops, power recover when throttle is normal; signal loses more than 3S ESC enters no throttle signal processing mode. |
| Power-on under voltage | 3 short tone repeat | Off | Solid On | Solid On | Battery voltage is too low (less than 13.2V), check the input voltage and then power on again |
| Power-on overvoltage | 4 short tone repeat | Off | Solid On | Solid On | The battery voltage is too high (higher than 4.2V/CELL), check the input voltage and power on again. |
| Working low voltage protection | N/A | Off | Single flash | Slow flash | Output power is limited to 60% (multi-rotor version is not limited to power) |
| Out of step protection | N/A | On | Off | On | Decrease throttle to lowest position and try again |
| Stall protection | N/A | On | Off | On | Decrease throttle to lowest position and try again |
| Short circuit protection | N/A | Three flash repeat | Off | Slow flash | Internal operation |
| Over current protection | N/A | Double flash repeat | Off | Slow flash | Internal operation |
| Over temperature protection | N/A | Single flash repeat | Off | Slow flash | Internal operation |

## Disclaimer

Thank you very much for using this product. Please read this statement carefully before use. By using it, you agree to the full terms of this statement. Please use this product strictly in accordance with the precautions in the manual. We do not assume any liability arising out of the use of this product or illegal modification or mishandling, including but not limited to indirect or joint liability, and the maximum compensation is not higher than the price of the product itself.

## Precautions

- Please use this product to fly legally according to local laws and regulations, and be sure to stay away from crowds, high-voltage lines, and public places.
- This product has strong power and high speed operation of the propeller. Do not approach the motor or propeller that is rotating at high speed to avoid being cut.
- Users must be at least 18 years of age and have the appropriate expertise.
- Before flying, please check all the components are intact, the propeller and motor are installed correctly, and the screws are not loose.
- Keep within the limits stated in the speed controller specification.
- maintain correct polarity of all connecting leads.
- take great care to avoid short-circuits.
- install and protect the speed controller in such a way that it cannot come into contact with grease, oil or water.
- ensure that air circulation is adequate.
- Keep well clear of the rotational plane of the propeller when the battery is connected
- Injury Hazard.

## Warranty regulations

Dualsky electronic products are warranted for 12 months from the date of sale. If you want to claim during the warranty period, please contact your dealer immediately. The cashier receipt at the model store can prove that the goods are under warranty. Please note that the warranty period will not be extended under any circumstances. Warranty service is provided free of charge for any functional defects, production failures or material defects during the warranty period. We will not accept any further claims, such as indirect damage to the goods at the time of return, The user need to pay the retuning shipping cost. We will pay for the shipping cost when return the goods back to user. If shipping costs are not prepaid, we will not accept the returned goods. We do not accept the damage caused by transportation and do not make up for the loss of transportation. We recommend that you buy the insurance for transportation and send your equipment to the service center.

**We can process your claim if the following conditions are met:**
- Provide cashier receipts
- Operate the ESC correctly according to the instructions
- Use recommended power supplies and accessories
- Not due to the damage caused by water ingress, reverse polarity, heavy load.
- Please provide a concise and accurate description of the fault to help us solve the problem.