

# SineSic FOC 80A Pro

**MAD**  
COMPONENTS

150–435V Electronic Speed Controller manual (V1.0)

## ⚠ Disclaimer

Thank you for choosing this product. Please carefully read this manual before using this product. Using this product will indicate you're agreed with the all items in this manual. Please strictly follow these items during usage. We'll not commit any responsibility including but not limited to indirect loss or joint responsibility caused by improper usage, private modification and other faults. The maximum compensation will be not more than the cost of product itself.

## ⚠ Attention

This part has strong power. High speed running propellers have certain safety risk. User must be older than 18 years and have relative professional knowledge.

Before usage, please carefully check if all the components are in good conditions.

## ESC Protection Mechanism

- **Open heat sink, more efficient heat dissipation.**

The ESC has undergone multiple heat dissipation designs, making it compact and powerful. Using aviation aluminum materials with better heat dissipation for packaging instead of traditional plastic packaging, the heat dissipation performance is improved dozens of times. Stable and reliable during continuous high-power operation, providing ultra-high performance for long-endurance aircraft.

- **Optimized program with fast response time**

Specially optimized for the characteristics of multi rotor flight and the firmware of disc brushless motors to improve the response speed of ESC. The motor can be completed from idle to full speed in only 0.28 seconds. Faster response speed brings more stable hovering and cruising performance to the aircraft, and significantly improves the motion performance of the aircraft.

- **Fearless of harsh environments**

The ESC is equipped with standardized three proof paint protection treatment and a fully enclosed enclosure, with a protection level of IP67. It can isolate rainwater and dust, and resist liquid corrosion such as pesticides and salt mist, providing comprehensive protection for the ESC, smooth operation in harsh environments and weather conditions.

- Support V high-voltage platform, specifically customized for ultra heavy load drone.

- Adopting the third-generation semiconductor material silicon carbide (SiC) MOS transistor and mature new energy vehicle drive architecture design, so that it has the advantages of high power density and high efficiency.

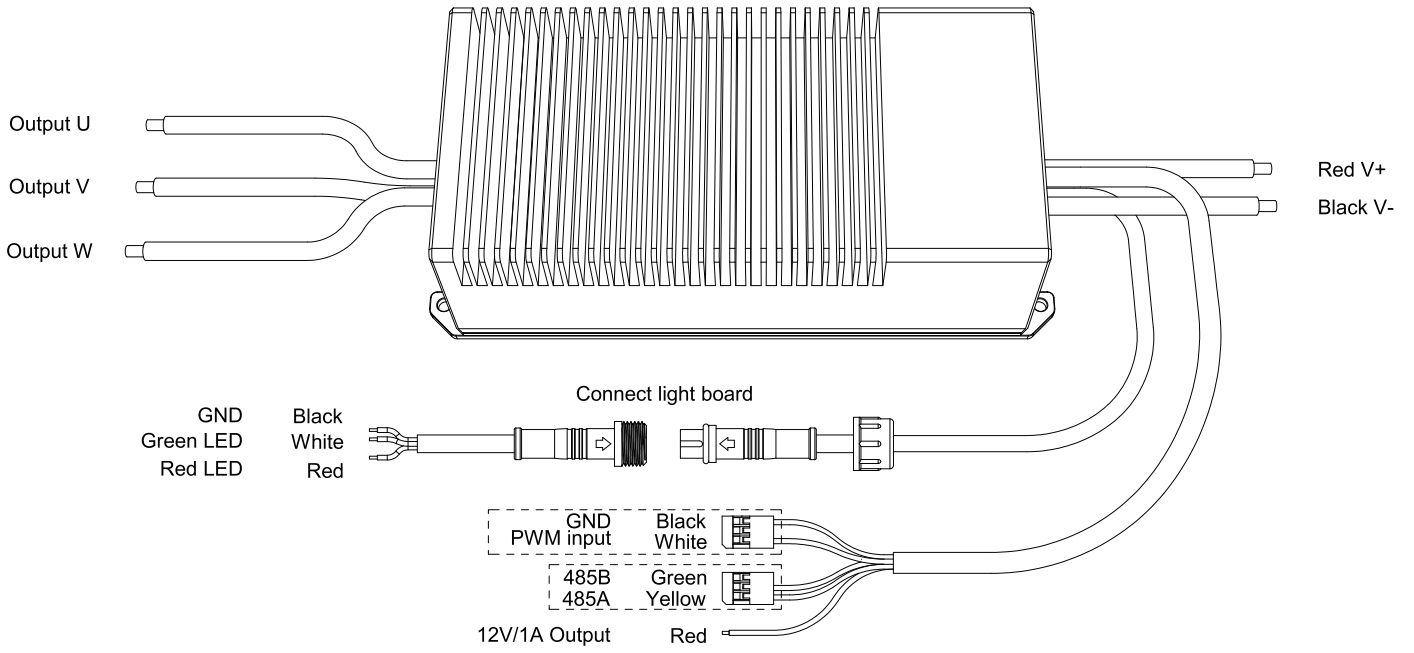
- Equipped with V/A BEC output for easy integration of the entire machine.

- Mature and reliable sensorless FOC algorithm, combined with years of market validation, has formed a comprehensive development and verification system, promoting high reliability of products.

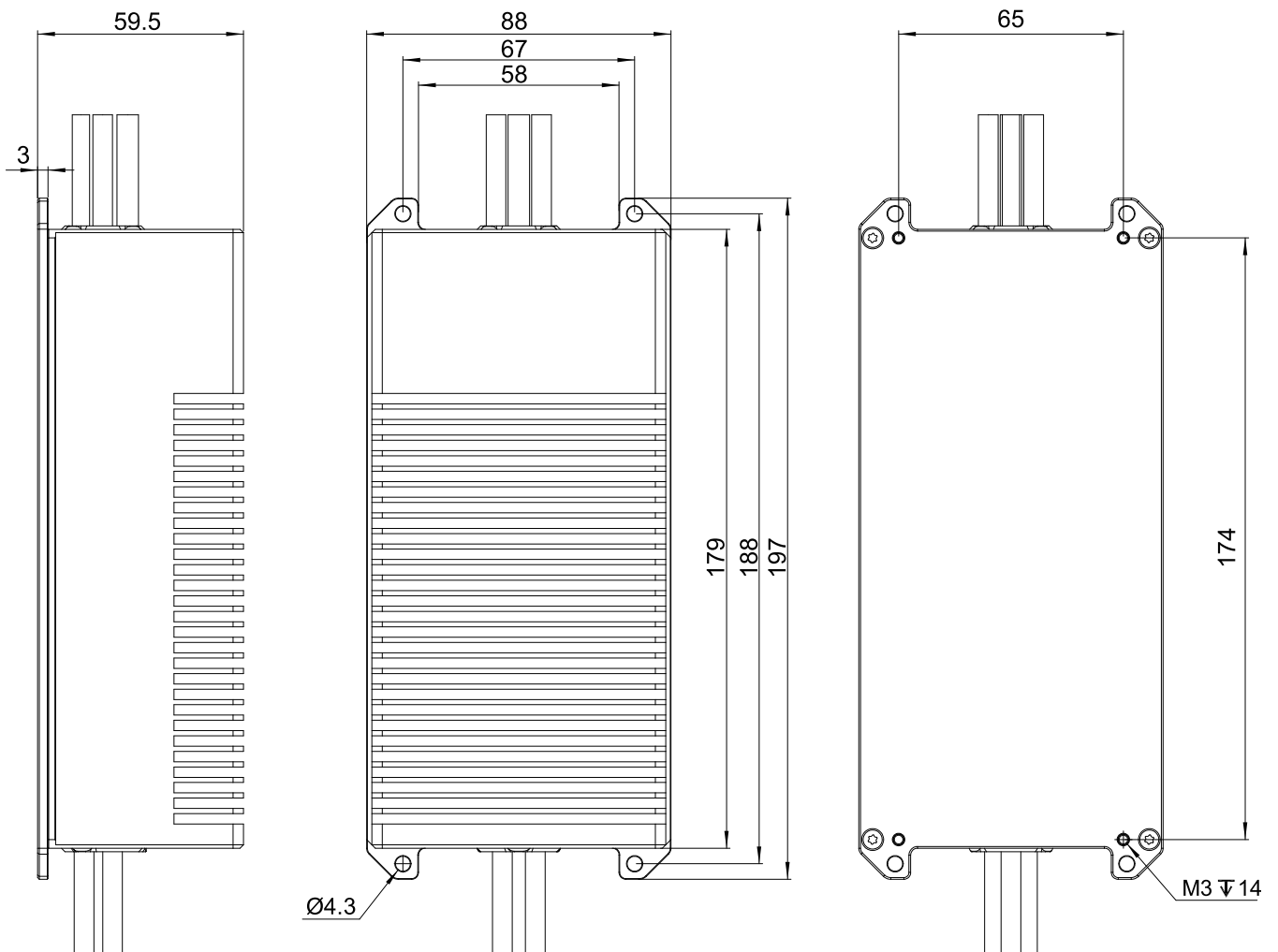
## ESC Parameter

ESC type	SineSic FOC 80A Pro	BEC	12V/1A
Recommended thrust	80~90Kg	Weight (with wire/ shell)	1.4kg
Recommended battery	96~100S(LiPo)	PWM input level	3.3V/5V
Rated output power	16KW	PWM input pulse width	200~2000uS
Maximum working voltage	435V	PWM input frequency	50~450Hz
Continuous output current	80A	Communication interface	RS485 (CAN)
Peak output current	150A (10S)	Digital communication throttle	YES
Maximum RPM	4800RPM(20 Pole Pairs)	Firmware update	YES
Operating ambient temperature	-40~50°C	ESC protection strategy	Rotation-clogging protection, current excessive protection
Waterproof level	IP67		Short circuit protection, overvoltage protection
Cooling method	Forced air cooling		Under voltage protection, input signal discrimination
			Overheat power protection, throttle loss protection

# ESC Line Sequence Definition Diagram



# ESC Product Drawing



## LED Indicator/Sound

The motor does not turn after the aircraft is unlocked, but only after the throttle is raised.

When the plane is powered on, connect the remote control and the motor turns

When the power-on self-test fails, the motor "beeps" every 1.5 seconds, and the indicator light flashes yellow briefly.

When the power-on self-test fails, the motor "beeps" every 0.5 seconds, and the indicator light flashes yellow briefly.

The motor does not sound. The indicator light flashes yellow 4 times every 1.5 seconds: "short – short – short-long".

The motor does not sound. The indicator light flashes yellow 4 times every 1.5 seconds: "long – short – long-short".

The motor does not sound. The indicator light flashes yellow 4 times every 1.5 seconds: other flashing methods.

The power-on self-test is normal, the motor does not turn after unlocking, and the indicator light is yellow for 0.5 seconds -- the motor does not sound when the indicator light is off for 0.5 seconds.

The power-on self-test is normal, the motor does not turn during operation, indicator light: 0.5 seconds yellow light -- 0.5 seconds off, the motor does not sound

The power-on self-test is normal, the motor does not start or stops midway, indicator light: 1 second yellow light -- 1 second off, the motor does not sound

The indicator light flashes alternately red and green during operation.

The indicator light flashes yellow every 0.2 seconds during operation.

## Cause Collection

Flight control or remote control output unlocked idle throttle value less than 1100uS.

The remote control is set to lock the throttle over 1100uS, or close to 1100uS

The throttle PWM signal is missing or the identification throttle PWM range is incorrect.

Detects high throttle when get power and enters protected state

If the power-on self-test fails, the motor line loop may be disconnected.

The power-on self-test fails, and the power supply voltage is abnormal

The power-on self-test fails, and the electrical hardware is abnormal.

Motor startup failure, blocking protection occurred during startup

The motor is blocked and entered the protection state.

Short circuit or overcurrent protection occurs, and the device enters the protection state.

The PWM throttle signal is missing.

The ESC detects that the temperature is too high

## Solution

Set the idle throttle value of the flight control or remote control to be greater than 1100uS. 1160uS-1180uS is recommended

The remote control needs to set the lock throttle less than or equal to 1050uS.

Ensure that the throttle signal cable is properly connected, and check whether the signal cable is damaged.

Make sure that the electric self-test passes before lifting the throttle.

Open the ESC cover and check whether the three motor wires are well welded.

Check whether the battery voltage is normal. Check whether the power cable is properly connected

Record the LED flashing mode video, contact MAD after-sales service; Replace the ESC and test again.

Power on and off again and restart the power supply. If it reappears, check whether the motor is damaged.

Check whether the machine is blocked because of blasting, check whether the motor is smooth by hand.

Disassemble the electric adjusting cover and check whether the motor line is damaged and whether the copper terminal of the motor line is loose.

Make an emergency landing and check whether the PWM signal line is well connected and whether the signal line is damaged halfway.

After the aircraft lands and stops, check whether the temperature of the electric adjustment shell is too high. If the temperature is too high, check whether the screws of the five wiring position of the ESC are loose.