

AMPX ESC 120A

MAD
COMPONENTS

12~24S 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

Please follow local laws and regulations to legally use this product in flight, and be sure to stay away from people, high-tension lines, and public places.

This product has strong power and high speed propeller operation with certain safety risks. Users must older than 18 years old and have relevant professional knowledge.

Do not get close to the motor or propeller that rotates at high speed to avoid being cut.

Before flight, please carefully check that all parts are in good condition, propeller and motor are installed correctly, and screws are not loose.

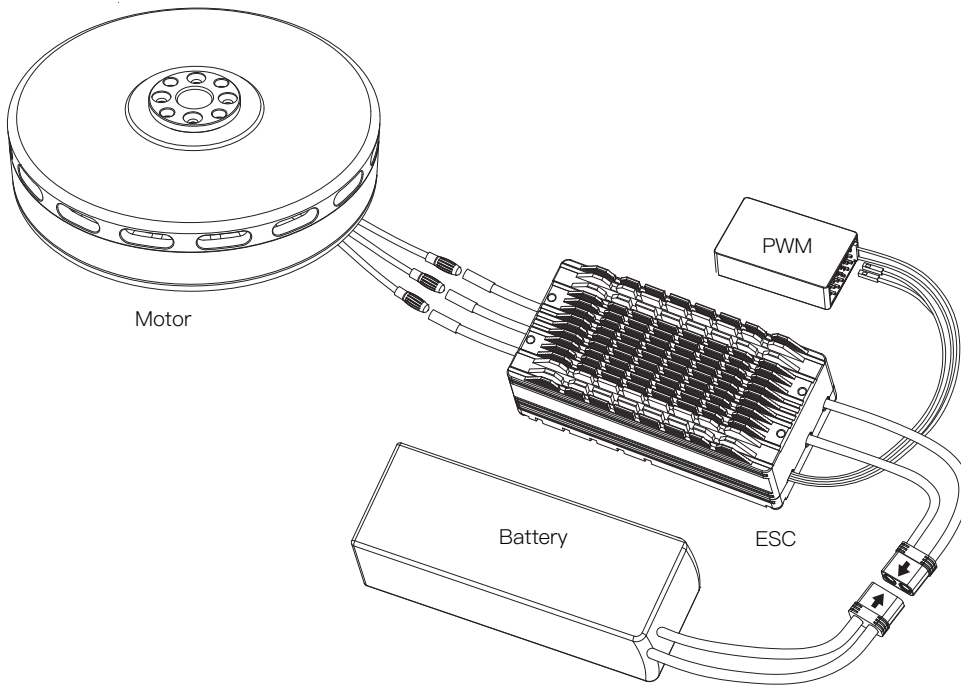
Features

- Quick response. it will take only 0.40 seconds from starting motor to full speed running.
- Good compatibility and stability with special control algorithm for disc motors.
- Synchronous freewheeling technology can bring better throttle linearity, driving efficiency and automatic energy recovery when lowering motor speed.
- Have output interfaces of RPM and error signal.
- With 485 communication interface, can be real-time communication with flight control. (Note: This function should be matched with flight control)
- Convenient installation screw holes without considering ESC part front and back sides.

Protection Function

- **Over Current Protection**
Once checking current is more than 180A and lasts 3 seconds, ESC will shut off power output, and will resume normal after making throttle zero.
- **Short Circuit Protection**
Once checking instant current is more than 240A, ESC will power off, and will rework after trouble shooting and powering again.
- **Stalling Protection**
Motor stall will trigger stalling protection. ESC will resume after making throttle zero and powering again.
- **Voltage Protection**
Once checking voltage is less than 40V or more than 105V, ESC will alarm and will not start up motor. But it will be out of effect during flying.
- **Temperature Protection**
During flight, if the temperature of the ESC is higher than 125°C, it will generate a fault signal and start reducing the output power to 50% of the maximum value. If the temperature continues to rise to 140°C, the ESC will turn off the output, and the normal output will not be restored until the throttle setting is reset to zero. When the temperature drops to 80°C, the maximum output power of the esc starts to rise.
- **Throttle Loss Protection**
When the detected throttle signal is lost for more than 2 seconds, the ESC will automatically shut down. After the throttle signal is restored, the ESC will work again
- **Start Protection**
When the motor is not started after increasing the accelerator for 10 seconds, the ESC will automatically shut down. After the accelerator is reset to zero, and the accelerator is pushed again, the ESC will return to normal.
- **Throttle Calibration**
First connect the motor and turn up the throttle to highest, then power on, turn down the throttle to lowest when hear the ESC "beep beep" two times. It indicates the throttle calibration has been set successful when hear the ESC make the sound of "Do Mi So" one time.

ESC Connection



Black wire: ground wire
 White cable: throttle signal cable
 Yellow cable: error signal cable
 Orange cable: RPM signal cable
 RPM conversion formula:

$$M_RPM = E_FRE * 60 / P$$

M_RPM: motor speed

E_FRE: Electrical frequency of motor
 Namely RPM signal frequency

P: Number of motor magnets

ESC Parameter

Model	AMPX ESC 120A	Stall Protection	available
BEC	No	Error Signal Output	available
PWM Input Signal Voltage	3.3V/5V (compatible)	Protection Grade	IP67 (sealing with resin)
Online Update	not available	Motor Line	8AWG
Throttle Loss Protection	available	Continuous Current	120A (under good cooling conditions)
Phase Short	available	Instant Current	180A (under good cooling conditions)
Size(L*W*H)	117.5 * 56.3 * 42.8mm	Throttle Pulse Width	default 1050us-1940us, throttle calibration needed.
Power Line	8AWG	Voltage Protection	available
Battery Section	12~24S	Temperature Protection	available
Recommended Battery	24S	Speed Signal Output	not available
Compatible Signal Frequency	50-500Hz	Weight(without lines)	315g
Current Protection	available	Working Environmental Temperature	-20-65°C

Trouble Shooting

Problem	Alarm	Cause	Solution
Motor can't start after powering on.	Quick noise of beep beep beep...	Throttle is not made zero.	Adjust throttle bottom
Motor can't start after powering on.	Beep, beep, beep... every 1 second.	Receiver has not throttle output signal.	Check sender and receiver co-work condition, check throttle control lines.
Voltage is less than 40V.	Beep beep, beep beep... every 1 second.	Battery voltage is too low.	Change full power battery.
Voltage is more than 105V.	Beep beep, beep beep... every 1 second.	Battery voltage is too high	Change proper full power battery.
Temperature is higher than 80 centigrade degree.	Beep beep beep, beep... every 1 second.	ESC's temperature is too high	Please cool down the ESC in a ventilated place
The power-on current or short-circuit protection is abnormal	Beep beep beep beep, beep,beep, beep, (Each interval is 1 second)	Overload	Replace the propeller with appropriate one