

User Manual of AE-20A、 25A、 30A Electronic Speed Controller (ESC)

Thanks for purchasing our Electronic Speed Controller (ESC). High power system for RC model can be very dangerous, so we strongly suggest you read this manual carefully. In that we have no control over the correct use, installation, application, or maintenance of our products, no liability shall be assumed nor accepted for any damages, losses or costs resulting from the use of the product. Any claims arising from the operating, failure or malfunctioning etc. will be denied. We assume no liability for personal injury, property damage or consequential damages resulting from our product or our workmanship. As far as is legally permitted, the obligation to compensation is limited to the invoice amount of the affected product.

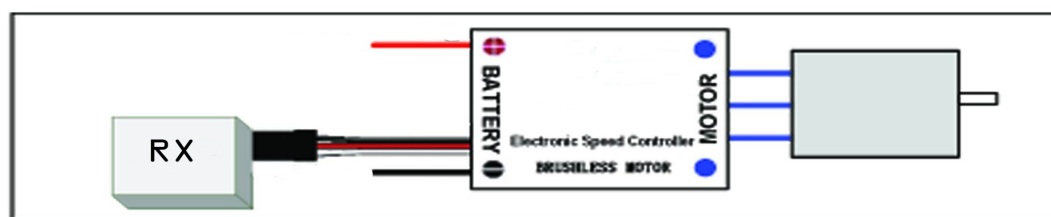
Features :

- High performance microprocessor brings out the best compatibility with all kinds of motors and the higher driving efficiency,start smoothly,suitable for most brushless motor on market.
- Imported low impedance capacitors,providing good anti-jamming capability,greatly reduce the possibility the loss of control.
- Supported motor speed (Maximum): 190000rpm(2 poles), 63000rpm (6 poles), 34000rpm(14poles)
- Throttle range can be configured to be compatible with all transmitters currently available on market Smooth,linear,quick and precise throttle response.
- With Super-Soft and Govener Mode for helicopter,compatible with Fixed-wing aircraft and Helicopter.
- With protected over-temperature function,ensure the safe of using ESC and providing good anti-jamming capability.
- With the design of cooling fins,decrease using temperature.
- The size is small , proper and easy for installation.

Direction for use:

- The range of input voltage:5.5V-16.8V(Lipo 2-4cells/Nimh 6-12cells).Don't surpass voltage to use ,otherwise it will break the product.
- The power should be connected in correct way .Red is anode and black is cathode.
- Setting for high throttle response speed, current will be increased in expedite instantaneous.
- With continuous heavy current working,it needs the heat output of ESC goes better.

Wiring Diagram : Attention to the anode and cathode of the power and connection the power for testing after checked,the wrong connection will break the controller.



For normal start process direction:

Start transmitters and move the throttle stick to the bottom position	Connection the ESC to the battery ,a special tone 123.....(ding-ding-ding),that means the connection is ok.	Start throttle ,the motor starting	If haven't move the throttle,the ESC will emit the tone begin to report the function of setted menu	Default: 1.Ding (No brake) 2.Ding-Ding (Medium Timing) 3.Ding-Ding(Medium cut-off threshold) 4.,Ding (Fixed-Wing) 5.Ding (Normal throttle response)
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After checking the connection is ok,start transmitters and move the throttle stick to the bottom position,then the ESC connection the power.

After connection the ESC to the motor,a special tone“♪1 2 3”—— “ (ding - ding - ding) ” ,that means the self-testing

of the ESC is normal. At this moment move the throttle stick to the top position, the motor can start normally.

If the throttle is still in the bottom position after self-testing is ok, the ESC will emit the tone to report the function of set menu.

ESC emits 5 times "Ding" tone, each time of "Ding" means the match choose with 5 functions menu (please see the concrete function matches function setting form), it can check whether the function setting form is in accord with the setting or not.

Throttle range setting:

(Attn ! For the first time use or the ESC with other transmitters to use, it need to re-setting the throttle range, other time needn't).

Proposal set throttle range for the first time use, after finished, the throttle linear will be more smoothly.

The method of setting

1	2	3	4	5	6	7
Start transmitters and move the throttle stick to the top position	Connection the ESC to the battery, a special tone 123.....12345 (ding-ding-ding) emits, that means the connection is ok.	"Ding-Ding-Ding", confirm tone of the top position of throttle	Move the throttle stick to the bottom position, wait for 2 seconds.	"ding---ding---ding" confirm tone of the bottom position of throttle	Cut off the power, the throttle range have finished the setting	Haven't cut off the power, it will continue to enter other functions set

Cut off the power of ESC after confirm the ESC connection and working is normal, keep the transmitters start and move the throttle stick to the top position.

Connection the power of ESC, the motor will emit "1 2 3"—"1 2 3 4 5" (it means enter into the setting)—"dong dong dong" (it means the top position of the throttle signal is confirmed). Put the throttle to the bottom position and wait 2 seconds, then can hear again the tone of "dong dong dong" (it means the bottom position of the throttle signal is confirmed). At this moment, cut off the power, the throttle setting have finished.

If haven't cut off the power, it will continue to enter other functions.

After cut off the power of ESC and put the throttle to the bottom position, the ESC connection the power again, it means the ESC enter into the normal use.

Menu

1. Brake Setting: off/soft/hard

2. Timing: Low / Medium / High

Setting is according to poles of motor. Low timing value for 2 poles motor, for higher speed, Medium timing value be chosen. Medium timing value for motors with more than 6 poles to get a high efficiency. For higher speed, High timing value can be chosen. When revision timing, it will cause current increase and ESC fever etc, pay much attention to the change of current value, avoid current overload, influence the life of motor and ESC.

3. Battery Protection Voltage Threshold (Cut-Off Threshold): High / Medium

Default is Medium (suitable for Cell discharge); this function can calculate automatically the number of battery cells (7.4-16.8V) and protection the discharge. Avoid to broken battery of discharge voltage too lower.

High cut-off threshold: first stage is 3.2V/1cell; second stage is 3V/1cell

Medium cut-off threshold: first stage is 3V/1cell; second stage is 2.8V/1cell

A-Li-Ion/Li-Po High: when single voltage of Li-Po down to 3.2V, coming into the first stage production, motion will discontinue indirection, for this moment, user should throttle down and ready to land. when single voltage of Li-Po down to 2.9V, coming into the second stage production, full restriction the motion output. (Attn: Only in 4-1 option, the normal Fixed-wing will be start the second stage protection).

When enter into the first stage,operator should land the plane in time,avoid the battery discharge in heavy and damage the battery.

Ex:when use 11.1V 3cell Li-po battery,the voltage protection should set High cut-off threshold.

11.1V Li-po battery ,the full charged is 12.6V,the ESC is regarded as 3cells Li-po battery.

Enter into the first stage protection voltage is $3.2V \times 3\text{cell}=9.6V$;

the second stage protection voltage is $2.9V \times 3\text{cell}=8.7V$

When the voltage down to 9.6V,motion will discontinue indirection,when the voltage down to 8.7V,full restriction the motion output.

Attn:Above functions are suitable only to the Lithium Batteries with enough power and functioning correctly .

We suggest strongly to use the battery in enough power . Or it is possible to damage battery and protect in advance owing to the incorrect judgement .

4. Plane Mode: Normal plane(Normal) /Helicopter mode 1(Soft) /Helicopter mode 2(Super-Soft+Governor Mode),

Normal plane mode(option4-1):

suitable for normal plane and clouds fly.

Helicopter mode1(option4-2):

Have the soft start function,suitable for Normal,Idle1,Idle2 etc flying mode.when change to Idle1or Idle2 mode,if the higher RPM make the gyroscopes have slight trace,for this moment should be down the sensitivity of gyroscopes.

Helicopter mode 2(option4-3)with Soft+Governor Mode),

suitable for for stunt flying of Idle1,Idle2 (not suitable for Normal Flying mode).Choose Governor mode function ,throttle speed should be between 75%-85%.If the higher RPM make the gyroscopes have slight trace,it should be bring down the Sensitivity of gyroscopes.Because of the lacking RPM(gear matches improper),the poor performance of battery,the sensitivity of the gyroscopes setting improper or pitch setting wrong,all of this will influence the function of the Governor,even cause the tail deflection,so choose this mode should be recognized for the related condition.

5.Throttle response speed setting:Normal/Medium/ High

Default is Normal,this function is according to flying features of users' to adjust properly .For exmple.3D plane and violent 3D helicopter suitable for Medium or High speed,made the motion more quicker and flexible.But pay attention when you improve throttle response speed,the voltage and electric power consumption will be increased.

Other functions:

Start protection function:

ESC checked the throttle haven't seted the bottom position when starting,motor can't go work to avoid turning injure.

Over-heat protection:

When radiate environment of ESC is bad or continuous heavy service result in the temperature have decreased to 100 degree,ESC will start the Over-heat protection and let motion cut intermittently.In order to the ESC reached a best efficiency ,we proposal install the ESC to cross-ventilation position of the cabin.

Function setting mode:

1.Entering setting mode:

Confirm the ESC connection is ok,start the transmitters and move the throttle to the top position,then connection the power.At this moment ,the ESC entering to the setting,the motor will emit “♪1 2 3”—— “♪1 2 3 4 5”(it means enter into the setting)——“dong dong dong”(it means the top position of the throttle is confirmed).Put the throttle to the bottom

position ,then can hear again the tone of “dong dong dong”(it means the bottom position of the throttle is confirmed).At this moment,the throttle setting have finished and enter into functions setting.

2.Setting mode option:

The tone of etering function setting mode is 1-5tims (Dong),after 5times is the confirmed tone

"dong—dong—dong ".Before finished the 5times tone "dong",through the different position of throttle stick to set every functions option.When the confirmed tone"dong—dong—dong "have finished,it means this function have finished.

If need to go on set others item,cut off the power is ok,confirmed setting is valid.

Five fuctions setting . 1, brake 2,motor timing 3 ,motor protection 4, plane mode ,5 、 throttle response speed(please refer to the setting table) . Each setting include 3 options and each options' setting valid is according to the top, center and bottom position of throttle.

ATTN:After finished the setting,cut off the battery and reinstall it ,then can enter into the using mode.

Throttle stick and each functions match table:(in 5times"ding",all can setting of below)

Throttle stick position Menu	Low	Medium	High
1. Brake setting	• off	soft	hard
2. Timing setting	Low	• Medium	High
3. Battery Protection Voltage Threshold	High cut-off threshold	• Medium cut-off threshold	———
4. Plane Mode	• Fixed-wing aircraft	Helicopter mode 1 (with Soft start)	Helicopter mode 2 (Super-Soft+Govener Mode)
5.Throttle response speed setting	• normal	Medium	High

Attn:• It mens defaults.

Check after setting

The motor will emits “J123”——“ding – ding –ding”self-testing tone when the throttle is on the bottom position.

The 5times"ding",each one represent selected item.

EG: the original setting is as below :

Connect the battery after the ESC being connected correctly .

“J123”——“ding – ding –ding”

“Ding” 1,no brake

“ding ding” 2, medium timing

“ding ding” 2,Medium cut-off threshold

“ding ” 1,fixed wing aircraft

“ding” 1,Normal throttle response speed