

Dear customer,

Congratulations on the purchase of your new AirBoss Brushless Speed Controller. This is a new generation of sensorless controller, with the latest software designed for ALL types of brushless motors.

Please read and pay careful attention to the following instructions before you start to work with your motor and controller. Model Aircraft equipped with any high power system can cause serious injury and destruction. This is not a toy.

The general features and specifications:

- 5 - 10 cells Ni-Cd
- 2 to 3 Li-Poly cells (User programmable)
- 5V / 1A BEC
- Brake on /off (User programmable)
- Acceleration Hard / Soft (User programmable)
- 8 /16 kHz switching frequency (User programmable)
- Timing mode (User programmable)
- Reverse rotation (User programmable)
- Cutoff Voltage (User programmable)
- Over temperature cutoff,
- Max RPM (2-pole); 200,000

Heli version:

Active RPM control

- range 1 up to 20.000 electrical rpm

(full stick means 20.000 rpm at 2 pole motors, 10.000 at 4-pole motors....)

- range 2 up to 50.000 electrical rpm

- range 3 up to 100.000 electrical rpm

(this would be max. 14.000rpm at 14-pole motors)

Specifications:

Model	Number of cell	BEC	Weight (g)	Current / Peak (A)	MosFets
Airboss 8	5-10NC / 2-3 LiPo	Yes	12	8/ 10	6
Airboss 12	5-10NC / 2-3 LiPo	Yes	22	12 / 16	12
Airboss 25	5-10NC / 2-3 LiPo	Yes	22	25/29	12
Airboss 35	5-10NC / 2-3 Lipo	Yes	28	35/40	18

Wire Connections:

The Controller can be connected to the motor by soldering the three wires direct or by using high quality connectors. Always use new connectors and be sure to insulate them with Heat Shrink tube. The maximum length of the battery lead wires shall not exceed 6 inches.

- Solder controller wires direct or to connectors.
- Solder connector of choice to the battery leads ensuring the correct polarity.
- Insulate all solder connectors with heat shrink tubes.
- Plug the “JR” connector into the receiver throttle channel.

Installing the Controller:

Install the controller in the model so that it is free from vibration and shock, using Velcro or double sided foam tape. Make sure there is sufficient cooling to the controller by ducting air through cooling holes from outside airflow or hang the ESC on the outside of the plane. ***Failure to provide adequate cooling can cause damage to your controller.**

Normal start up:

Ensure the throttle channel is in the full off/ down position.

- Switch Transmitter “On”,
- Connect battery pack to the controller
- Switch on the receiver (BEC switch)
- *You will hear the ESC arm by one or two tones. The beeps inform you of the brake status. One tone for **Brake on** or two tones for **Brake off**.
- **You motor now is ready to run.**

*** You will only hear this tone if your ESC is hooked to a motor. The tone is generated by the ESC pulsing the motor for audible feedback. Tones will fluctuate depending on the position of the motor.**

WARNINGS and Notice of Operation:

- Always connect the motor battery pack just before flight and disconnect it immediately after landing.
- Once the motor battery pack is connected, handle the model with extremely care and remain clear of the propeller at all times.
- Even when the receiver (BEC switch) is in the “Off” position, the ESC is drawing power from the battery pack. Unplug the pack completely to avoid damage from over-discharge.
- Temperature Overload protection is built into your Airboss Speed Controller. When the temperature reaches 230°F/110°C, the controller will cut power to the motor to preserve control.
- Do Not exceed the 10 cells/ 3 cell Li-poly or 4-5 servos when using the internal BEC.
- Take care to ensure the polarity is correct before connecting any power source to your Airboss Speed controller. Applying power to the controller of incorrect polarity will cause damage.

Factory default settings:

Brake	:	Off
Cut-off voltage	:	9V
Cut-off Type	:	Soft cut-off
Soft start	:	Enable
Timing	:	Auto
Frequency	:	8KHz
RPM Control	:	Off

AIRBOSS

ELECTRONIC
SPEED CONTROLLER

How to program your controller:

- Switch on the transmitter and advance the throttle stick to full throttle/ On.
- Connect the battery pack and turn on the receiver (BEC) switch.
- Waits for 5 sec, you'll hear tones; setup mode is entered: **__ -- (two low tones then two high tones)**
- When you hear the desired tones/beeps, move the throttle position to full off, then you'll hear two confirmation tones. The setting is now memorized.
- You can only change one setting at a time, if you need to change more settings, disconnect the battery pack and wait 5 seconds, and repeat above procedure for next setting.
- The ESC will step through each programming option until it recognizes throttle input signifying a change.

1. Setting up the propeller Brake on or off

If you decrease the throttle position to full off within 5 sec, the **Brake** will be changed. (ON @ OFF, or OFF @ ON)

2. Cut-Off voltage

(Program Cut-off voltage for the controller)
NiCad/Nimh:

- (**five single beeps**)
- 2 Lipos: (6V)
- (**Six dual beeps**)
- 3 Lipos: (9V)
- (**Six triple beeps**)

3. Rotation reverse

This function is to change the direction that the motor rotates. The same thing can be accomplished by changing any two wires between the motor and ESC. We provide this feature in the event that your wires are direct soldered.

Reverse motor rotation

W W W W W (**five double warble tone**)

4. Soft start (Acceleration)

When a gearbox is being used, it is highly recommended to enable the Soft start to avoid stripping the spur gear.

Enable:

VV VV VV VV VV (**five dual warble tones**)

Disable:

V V V V V (**five warble tones**)

5. Cut off Type

If the motor battery pack drops to the programmed cut-off voltage, the controller will either reduce the motor speed or stop the motor to ensure that there is enough power for the receiver and servos. When the cut-off voltage is reached, you can resume normal operation by decreasing the throttle to "0" (full off) and advancing the throttle on again. **But remember that it's time to land your model!**

Ignore

__ -- __ -- __ -- __ -- (**dual low followed by dual high**)

Soft Cut-off:

_ - _ - _ - _ - (**low then high tones**)

Hard Cut-off:

- _ - _ - _ - (**high then low tones**)

6. Timing (advance timing)

The controller has three timing modes; Automatic works perfect for **ALL** types of brushless motor. However some brands will require that you set the right timing for optimal efficiency and power. 7 degree for multi-pole motors, 30 degree for out runner motors.

Automatic: (7 ~ 30 degree) (Best setting for Torque motors)

- - - - - (**five short tones**)

Soft: (7 degree)

-- -- -- -- (**five dual short tones**)

Hard (22 ~ 30 degree)

--- --- --- (**five triple short tones**)

7. Switching Frequency

The controller has two switching frequency modes. 8KHz is good for ALL types of two pole motor, 16KHz is good for multi pole motors.

8 kHz:

\ \ \ \ ** (**five warble down)

16 kHz

/ / / / / (**five warble up**)

8. Restore Factory Default Settings

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9. Active RPM Control (Governor mode)

.._ _ first range (up to 20.000 electrical rpm)

...._ second range (up to 50.000 electrical rpm)

....._ third range (up to 100.000 electrical rpm).

<p>1. Setting up the propeller Brake on or off Decrease the throttle position to full off within 5 sec, the Brake will be changed. (ON @ OFF, or OFF @ ON)</p>	<p>5. Cut off Type Ignore Soft Cut-off: Hard Cut-off:</p>
<p>2. Cut-Off voltage (Program Cut-off voltage for the controller) NiCad/Nimh: 2 Lipos: (6V) 3 Lipos: (9V)</p>	<p>6. Timing (advance timing) Automatic: (7 ~ 30 degrees) Soft: (7 degree) Hard (22 ~ 30 degree)</p>
<p>3. Reverse Motor Rotation W W W W W</p>	<p>7. Switching Frequency 8 kHz 16kHz / / / / /</p>
<p>4. Soft start (Acceleration) Enable: VV VV VV VV VV Disable: V V V V V</p>	<p>8. Restore Factory Defaults</p>

Field Cheat Sheet
Cut out and take with you