Brushless Motor Controller (ESC)

Thanks for using Turborix (AE) Brushless Motor Controllers. Please read the instructions carefully before you start to use new controllers.

The ESCs use higher quality micro processor and more FETs with lower internal resistance. As such, they outperform many other ESCs. In particular, they have extremely performance-cost ratio.

Technical details:

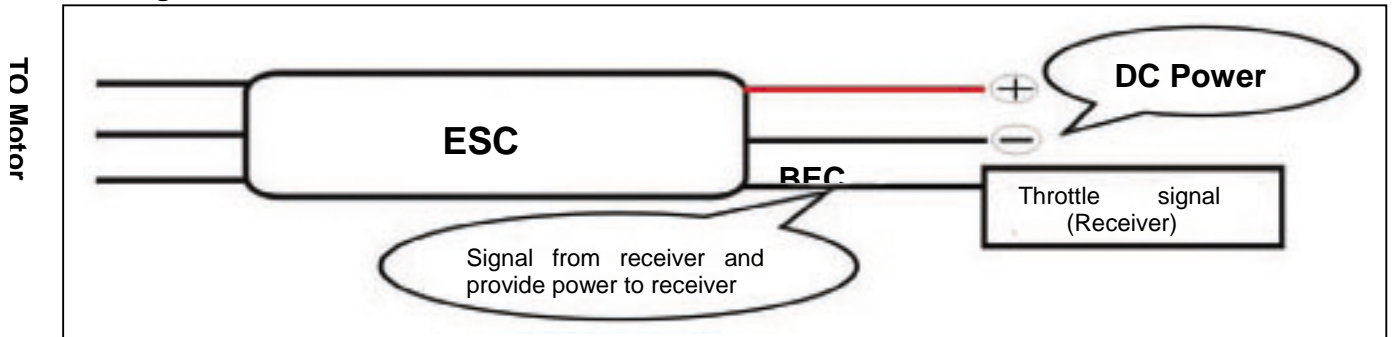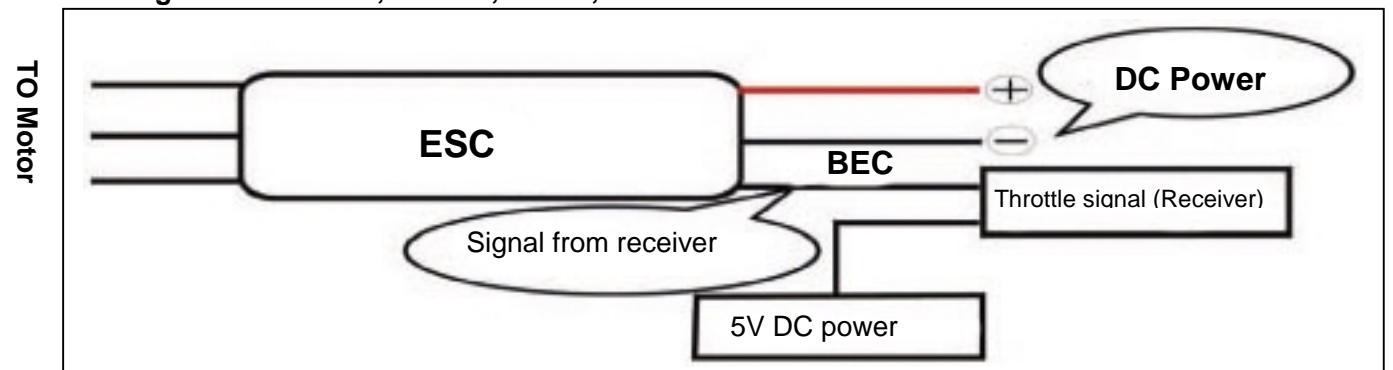| Model	Current (A)	BEC	Cells	Weight (g)
FM10A	10	Max 1A	NiCd/NiMh 6-12	10
			Li-Po 2-3	
FM20A	20	Max 2A	NiCd/NiMh 6-12	18
			Li-Po 2-3	
FM30A	30	Max 3A	NiCd/NiMh 6-12	25
			Li-Po 2-3	
FM40A	40	OPTO	NiCd/NiMh 8-18	35
			Li-Po 3-6	
FM60A	60	OPTO	NiCd/NiMh 8-18	55
			Li-Po 3-6	
FM80A	80	OPTO	NiCd/NiMh 8-18	55
			Li-Po 3-6	
FM120A	120	OPTO	NiCd/NiMh 8-18	78
			Li-Po 3-6	

Diagram for FM10A, FM20A, FM30A

Diagram For FM40A, FM60A ,FM80A, FM120A

Main functions:

1. Safety mode: the motor won't start no matter what the position of the control stick is when switched on the RC unit. When the throttle is not at lowest or Max position, it will sound by "di-di-di" for warning.

2. Brake: On / Off (factory setting is Off).
3. Battery type: NiCd/NiMh, LiPo.
4. Number of batteries: automatic (when setting Battery Type, the ESC will set Number of Batteries automatically at the same time)
5. Start up mode: Soft start up, Hard start up
6. Timing mode: Soft timing-for 2, 4, 6 pole brushless motors, Hard timing-for 6 and more pole motors, Auto
7. Temperature protection: the controller will reduce output power when temperature reaches 120 degrees centigrade
8. Low voltage protection: reduce output power when the voltage goes down below the setting (setting of low voltage is 2.8V times number of batteries)

Operating instructions:

- Normal start up:

Connect the controller and motor as above connection drawing. Switch on the transmitter and check the throttle stick at lowest position. Connect the main power pack and switch on BEC (for the controllers with "beeps" – Brake On, now you can begin flying. If the throttle stick is not at lowest position, you will hear "di-di-di", that alarms you moving the stick to lowest position.

- Set up by Throttle Stick:

Connect controller with motor as above connection diagram. Switch on the transmitter and check the throttle stick is at Max position. Connect the main power pack and switch on BEC (for the controllers with BEC). After a piece of music, you can follow the prompting sound to begin programming. When hear a prompting sound (sound 3 times), move the throttle stick from high to low position quickly. You should hear a "beep", your setting is done. Move the stick back to Max position, waiting for the prompting sound and repeat above steps for other settings. After your setting, keep the stick at lowest position for 5 seconds, you will hear a piece of music. Now, you can begin flying.

Prompting Sound:

1. Brake On: -   -   -
2. Brake Off: - -   - -   - -
3. NiCd / NiMh: . -   . -   . -
4. LiPo: . --   . --   . –
5. Soft Start up: .. -   .. -   .. –
6. Hard Start up: .. --   .. --   .. –
7. Soft Timing: … "   …"   …"
8. Hard Timing: ,,, --   ,,, --   ,,, --
9. Reset to Factory Setting: ⋯   ⋯   ⋯

The controllers are supplied with factory setting, Brake Off, Soft start up and Auto timing.

Note: when the first time of using the ESC, or when changing number of batteries, or when changing battery type, the setting of Battery Type must be done every time.

Programming Card:

Turborix (AE) ESC can be programmed by a E-PRG-1 programming card. It will expand ESC's functions and suitability. Details please see the instructions of E-PRG-1 Programming Card.

Notice:

1. Every Turborix (AE) ESC of FM10A, FM20A and FM30a has a BEC plug (JR connector), it is for connecting to receiver and also for connecting to Programming Card. For FM40A, FM60A, FM80A and FM120A there are two JR connectors on each ESC. The one with long wire is for connecting to receiver. The one with short wire is for connecting to Programming Card.

2. Choose suitable brushless motors and propellers, ensure the working current never exceed specified current of ESC.

3. Make sure the connecting for battery positive and negative is right. Reversing the connection will damage the ESC permanently.

4. Use suitable batteries, do not exceed specified voltage of ESC.

5. Do not disassemble the ESC by self, it will damage the ESC or lose message.

6. The ESCs are designed for airplane models only.

7. Take care in using safely. Incorrect use may cause injury to the body. The company will not be responsible for any damage or loss caused by incorrect operation.

8. Reverse the motor direction by exchanging the position of any two connections to the motor.

Warning:

The propellers on turning are dangerous. Disconnect the main power pack immediately after flying.

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