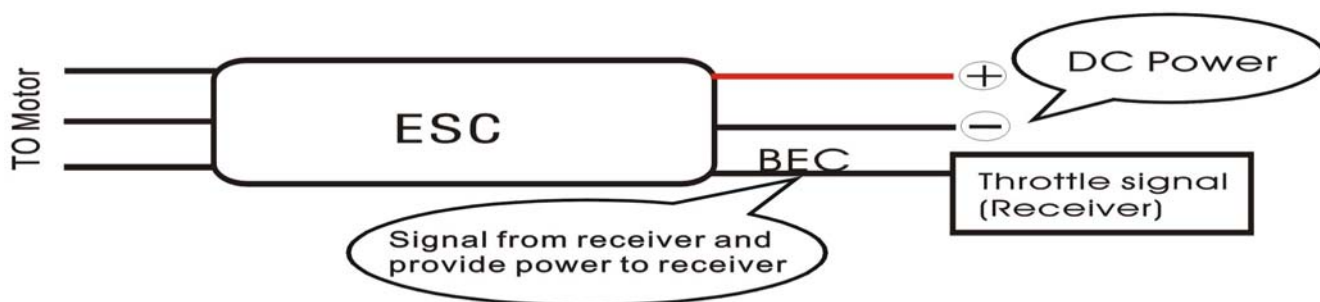# CopterX CX450-10-03 Brushless Motor Controllers

Thanks for using CopterX Brushless Motor Controllers. Please read the directions carefully before you start to use new controllers.

Technical details:

Model	Current (A)	BEC	Cells		Weight (g)
CX450-10-03	30	max 2A	NiCd/NiMh 6-12		25
			Li-Poly 2-3		

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.
2. Brake: On / Off (factory setting is Off)
3. Battery type: NiCd/NiMh, LiPoly (the setting of battery type must be done every time when changing a battery pack)
4. Number of batteries: automatic
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 controllers have automatic reduce output power with auto detection for temperature (120°C)
8. Low voltage protection: reduce output power when the voltage goes down

Operating instructions:

-Normal start up:

Connect the controller and motor as above connection drawing. Switch on the transmitter and check the throttle stick is at low position. Connect the main power pack and switch on BEC (for the controllers with BEC), you should hear a piece of music. After the music, you can begin flying. If the throttle stick is not at low position, you will hear beeps from the motor, that alarms you moving the stick to low position.

-Setting:

Connect controller with motor as above connection diagram. Switch on the transmitter and check the throttle stick is at high 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 high position, waiting for the prompting sound and repeat above steps for other settings. After your setting, keep the stick at low position for 5 seconds, you will hear a piece of music. Now, you can begin flying.

Prompting Sound:
1. Brake Off: **- -   - -   - -**
2. Brake On: **-   -   -**
3. NiCd / NiMh: **.-   .-   .-**
4. LiPoly: **.--   .--   .——**
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, LiPoly (automatic for battery number), Soft start up and Auto timing.

Programming Card:
Super series ESC can be programmed by a E-PRO programming card. It will expand ESC's functions and suitability. Details please see the instructions of SUPER E-PRO Programming Card.

Notice:
1. Choose suitable brushless motors and propellers, ensure the working current never exceed specified current of ESC.
2. Make sure the connection for battery positive and negative is right. Reversing the connection will damage the ESC permanently.
3. Use suitable batteries, do not exceed specified voltage of ESC.
4. Do not disassemble the ESC by self, it will damage the ESC or lose message.
5. The ESCs are designed for airplane models only.
6. 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.
7. 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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