

## BRUSHLESS MOTOR CONTROLLERS



Controller Type	Amp Rating Cont/Max	Weight w/wires	Weight w/o wire	IR Ohm	BEC	Max Ni Cells	Max Li Cells
W-EBLESC-10	10A / 14A	8.8g	3.1g	0.0120	1.5A	10	3
W-EBLESC-15	15A / 20A	17g	7g	0.0107	2A	10	3
W-EBLESC-25	25A / 32A	21g	8g	0.0070	2A	12	4
W-EBLESC-35	35A / 45A	27g	12g	0.0054	3A	12	4
W-EBLESC-45	45A / 56A	41g	20g	0.0023	3A	12	4
W-EBLESC-55	55A / 67A	48g	23g	0.0016	3A	12	4
W-EBLESC-70	70A / 83A	50g	26g	0.0013	3A	12	4
W-EBLESC-90	90A / 106A	57g	29g	0.0011	4A	12	4
W-EBLESC-110	110A / 128A	62g	35g	0.0008	4A	12	4

Waypoint brushless motor controllers use higher quality and more FETs than is typical - for lowest internal resistance - and use an optimized controller chip and firmware. As such, they outperform many ESC which may cost two or even three times as much...

### Programmable Features

<b>Battery Type:</b>	Lithium Polymer*, NiCd/NiMH	Default settings shown by *
<b>Brake Strength:</b>	No Brake, Soft*, Medium, Hard Brake	
<b>Startup Speed:</b>	Very Slow, Slow, Medium*, Fast	
<b>Frequency:</b>	8*, 16, 32KHz	
<b>Timing:</b>	Auto*, 5, 12, 18, 25 degrees	

The 10A to 110A Waypoint ESC listed above all auto-detect cell count for both Lithium Polymer and NiCd/NiMH types. Lithium auto-cut is at 3.0~3.1V/cell, and NiCd/NiMH at .88V per cell. All ESC are usable with lithium 2S to 4S packs, but for 10A and 15A we recommend 3S max. At 4S, one must be very careful to limit servo count to 2 maximum, and use low-current-draw servos, or disconnect RED wire (V+) from the Receiver connector, and use separate receiver battery or SBEC unit.

## Waypoint Electronic Speed Controller (ESC) Setup

### Initial Throttle Range Setup (you MUST complete this step!)

- Remove propeller from motor to perform initial throttle range setup
- Turn on transmitter and set throttle to maximum position (zero all trims)
  - Connect ESC to Receiver in proper Channel with correct polarity
  - Connect Main Battery Pack to the ESC.

After approximately 2 seconds, the LED flashes rapidly, then 1 second later you will hear 2 beeps confirming the maximum throttle position has been set.

Within **10 seconds**, move throttle to minimum position, the LED flashes slowly for 1 second and then you will hear 2 beeps indicating minimum throttle position is set and confirmed. Disconnect the main battery pack from ESC.

You only need to do this once for your transmitter, as throttle range will be stored in the memory of the speed controller. **If changing transmitter, reset the throttle range** by performing again steps (a), (b), and (c) above.

### Using your Waypoint Brushless ESC

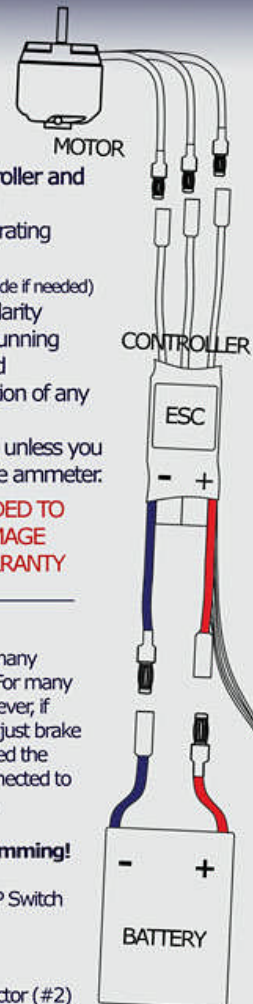
- Turn on your transmitter with the throttle stick set at minimum position.
- Connect the battery to the ESC. The LED flashes rapidly for 1 second, and then you will hear 2 beeps confirming minimum throttle position detected. Then you will hear one beep confirming the ESC is armed and ready. You're ready to fly.

If you cannot arm properly, hear a pulsed warning tone, see continuous flashing LED

- \*Check your transmitter: Is it on? (for Futaba TRANSMITTER, set Throttle to REVERSE)
- \*Check the ESC Connector to receiver: Proper Channel and Polarity?
- \*Check the Motor Connections to the ESC, re-solder them if necessary.
- \*Check your battery: Fully charged? Good condition? Replace battery?
- \*Try another receiver.
- \*Disconnect battery and then reconnect battery and listen again for arming signals.
- \*Go through Initial Throttle Range Setup again, careful to move stick to minimum throttle (idle) within 10 seconds after setting maximum throttle range.

Warranted against defects in materials and workmanship only, for six months from purchase date. Contact your seller for assistance before making a return, please.

## General Setup Instructions for Motor and ESC



- \* Combined length of wires between Controller and Battery must NEVER exceed 20cm (8")!!
- \* Use only quality Gold connectors of 20A+ rating
- \* Insure proper solder joints
- \* Do NOT shorten Motor Wires! (shorten ESC side if needed)
- \* NEVER connect Battery <-> ESC reverse polarity
- \* Firmly mount the motor in model before running
- \* Test system first without propeller attached
- \* To reverse motor direction, switch connection of any two wires between Motor and Controller
- \* Do NOT exceed max suggested prop size, unless you confirm current is within spec with accurate ammeter.

**COOLING AIRFLOW MUST BE PROVIDED TO MOTOR AND ESC!! OVER-TEMP DAMAGE IS NOT COVERED BY WAYPOINT WARRANTY**

## Programming Waypoint ESC

If you are using Lithium Polymer battery packs, in many cases you will not need to program the ESC at all. For many models, the default settings are already ideal. However, if you are using NiCd or NiMH batteries, or need to adjust brake setting for your glider, for example, then you will need the programming card #W-BLESC-PRG, your ESC connected to a Motor, a Battery Pack, and the instructions below.

### Remove propeller from motor during programming!

(a) Consult the list below, and set Programming DIP Switch Bank (#1) to match your preferred ESC Settings (Switch 1 must be in the Zero (off) position)

(b) Connect your ESC to Program Card ESC Connector (#2) (Red=(+), Brown=(-), Orange=Signal)

(c) Connect your Battery Pack to the ESC

(d) Push Program Button (#3) and hold it until you hear 3 tones, each one second apart.

Release the program button, detach battery, disconnect ESC from Programmer card. You are done!



SWITCHES 2 and 3 - BATTERY TYPE  
 [0][0] = NiCd or NiMH  
 [1][1] = Lithium Polymer

SWITCHES 4 and 5 - BRAKE STRENGTH  
 [0][0] = NO Brake  
 [1][0] = Soft Brake  
 [0][1] = Medium Brake  
 [1][1] = Hard Brake

SWITCHES 6 and 7 - STARTUP SPEED  
 [0][0] = Fast Start (0.15 seconds)  
 [1][0] = Medium Start (0.30 seconds)  
 [0][1] = Slow Start (0.70 seconds)  
 [1][1] = Very Slow (1.0 second)

SWITCHES 8 and 9 - FREQUENCY  
 [0][0] = 8 KHZ  
 [1][0] = 16 KHZ  
 [0][1] = 32 KHZ

SWITCHES 10, 11 and 12 - TIMING  
 [0][0][0] = AUTOMATIC ADJUST  
 [1][0][0] = 5 degrees  
 [0][1][0] = 12 degrees  
 [1][1][0] = 18 degrees  
 [0][0][1] = 25 degrees

Unless you have a specific reason for changing frequency or timing, it is best to leave these in the default [0] settings.

NOTE: You CAN program without a MOTOR attached to the ESC, but you will not hear the confirmation tones.