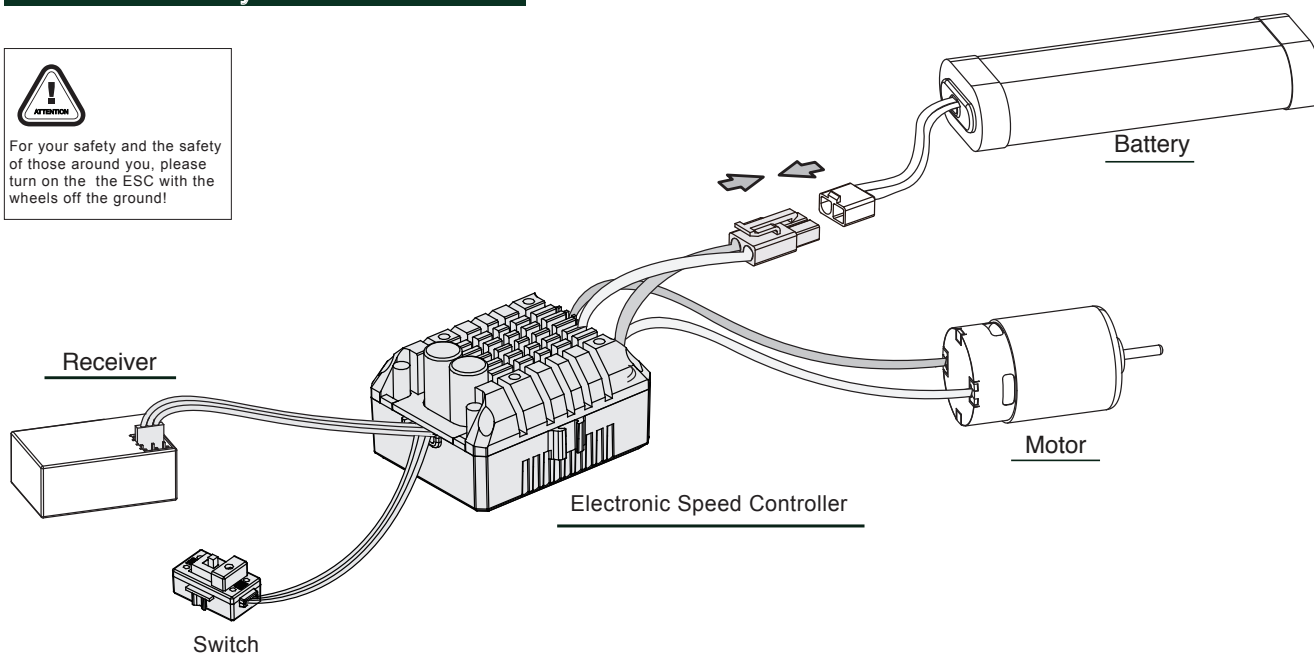


# Brushed Electronic Speed Controller

## SPECIFICATIONS

Type	Outcry Extreme Speed Controller ESC	
Model	Z-E0118	
Cont. / Peak Current	80A / 400A	
Motor Type	for 540 / 550 / 775 size motors	
Applications	1/10th Crawler - 1/10 buggy or truggy - 1/10 on-road	
Motor Limit	540/550/590 size motors	Motor Limit with 2S LiPo / 6S NiMH: 12T or RPM < 30,000 @7.4V
	540/550/590 size motors	Motor Limit with 3S LiPo / 9S NiMH: 16T or RPM < 20,000 @7.4V
LiPo / NiMH Cells	2 - 3S LiPo / 5-9 NiMH	
BEC Output	6V / 7.4V @ 8A (Switch-mode)	
Size / Weight	50.0 x 42.9 x 26.5 mm / 58.5g	
Programming Port	Separate Port / Fan power supply	

## How to connect your new ESC



### • Motor Wiring:

There is no polarity on the M+/M- two ESC-to-motor wires, hence, do not worry on how you connect them initially. You may find it necessary to swap two wires if the motor runs in reverse.

### • Receiver Wiring:

Plug the throttle control cable on the ESC into the throttle (TH) channel on receiver. The throttle control cable will output the voltage of 6V/7.4V to the receiver and steering servo. Hence, no separate battery can be connected to the receiver. Otherwise, your ESC may be damaged.

### • Battery Wiring:

Proper polarity is essential. Please ensure positive (+) connects to positive (+), and negative (-) connects to negative (-) when plugging in the battery! When reverse polarity is applied to your ESC from the battery, it WILL damage your ESC. This WILL NOT be covered under warranty!


## Features

### Features

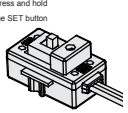
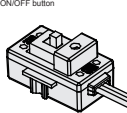
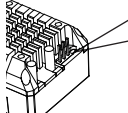
- Water-proof and dust-proof design, suitable for all-weather.
- Built-in powerful switch-mode BEC. The continuous current reaches 8A and the instantaneous current reaches 10A, with switchable voltage of 6V/ 7.4V, makes it easy to use all kinds of high torque and high voltage servos.
- Tunable drag brake and drag brake rate for different vehicles and driving technique. •Proportional brake: 9 levels of initial brake force, 9 levels of maximum brake force, 9 levels of drag brake force.
- Multiple protection functions: low voltage protection, over-temperature protection.
- Independent program card connector: It is more convenient to connect the program card without unplugging the ESC from the receiver.

# ESC Setup

## 1. Radio Calibration

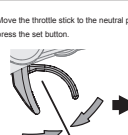
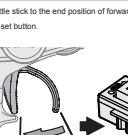
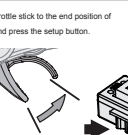


Begin using your ESC by calibrating with your transmitter. We strongly recommend all users to use the "Fail Safe" function on the radio system and set (F/S) to "Output OFF" or "Neutral Position". Example of calibrating Neutral range and Endpoint.

1. Turn on the transmitter, ensure all parameters (D/R, Curve, ATL) on the throttle channel are at default (100%). For transmitter without LCD, please turn the knob to the maximum, and the throttle "TRIM" to 0. Please also turn the corresponding knob to the neutral position. For FutabaTM transmitter, the direction of throttle channel shall be set to "REV", while other radio systems shall be set to "NOR". Please ensure the "ABS/braking function" of your transmitter must be DISABLED.

2. Start with transmitter on and the ESC turned off but connected to a battery. Holding the SET button and press the ON/OFF button to turn on the ESC, the RED LED on the ESC starts to flash (Note: the motor beeps at the same time), and then release the SET button immediately (The ESC will enter the programming mode if the SET button is not released in 3 seconds, please restart from step 1.).  
Note: Beeps from the motor may be low sometimes, and you can check the LED status instead.

3. Set the neutral point, the full throttle endpoint and the full brake endpoint.  
Leave transmitter at the neutral position, press the SET button, the RED LED flashes 1 time and the motor beeps 1 time to accept the neutral position.

- Pull the throttle trigger to the full throttle position, press the SET button, the RED LED blinks 2 times and the motor beeps 2 times to accept the full throttle endpoint.
- Push the throttle trigger to the full brake position, press the SET button, the RED LED blinks 3 times and the motor beeps 3 times to accept the full brake endpoint.

4. The motor can be started 3 seconds after the ESC/Radio calibration is complete.

## 2. Power ON/OFF & Warning Tones

- Power ON/OFF: (Start with the ESC turned off), press the ON/OFF button to turn on the ESC. (Start with the ESC turned on), press and hold the ON/OFF button to turn off the ESC.
- Warning Tones: When the ESC is turned on in the normal way (that is turn it on without pressing and holding the SET button): if you set the "Battery Type" to "LiPo", the motor will beep N (number) beeps to indicate the number of LiPo cells you have plugged in (i.e. 2 beeps indicates a 2S LiPo, 3 beeps indicates a 3S LiPo.) and then a long beep to inform you that your ESC is ready to work. If you set the "Battery Type" to "NiMH", the motor will only beep a beep to indicate the ESC is in NiMH mode and then another beep to inform you that your ESC is ready to function.

## 3. Programmable Items

Highlighted options are the factory default settings.

Programmable Item	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
1. Running Mode	F/B	F/B/R	F/R	BOAT					
2. Battery Type	NiMH	Lipo							
3. Cutoff Voltage	0V/Cell	2.8V/Cell	3.0V/Cell	3.2V/Cell	3.4V/Cell				
4. Initial Start Force	0%	2%	4%	6%	8%	10%	12%	14%	16%
5. Max. Forward Force	25%	50%	75%	100%					
6. Max. Reverse Force	25%	50%	75%	100%					
7. Max. Brake Force	0%	12.5%	25%	37.5%	50%	62.5%	75%	87.5%	100%
8. Drag Brake	0%	5%	10%	50%	60%	70%	80%	90%	100%
9. Neutral Range	0.02ms	0.02ms	0.04ms	0.05ms	0.06ms	0.07ms	0.08ms	0.10ms	0.12ms
10. Throttle curve	1	2	3	4	5	6	7	8	9
11. BEC Voltage	6V	7.4V							

### 1. Running Mode:

Option 1: Forward with Brake. Racing Mode. Forward and Braking are the only functions.

Option 2: Forward / Reverse with Brake. This option is known to be the "training" mode with "Forward / Reverse with Brake" functions. It is also known as the "DOUBLE-CLICK" method, your vehicle only brakes on the 1st time you push the throttle trigger forward (brake). The motor stops when you quickly release the throttle trigger and then re-push the trigger quickly (2nd push), only then the vehicle will reverse. The reverse function will not work if your car does not come to a complete stop. The vehicle only reverses after the motor stops. This method is for preventing the vehicle from being accidentally reversed.

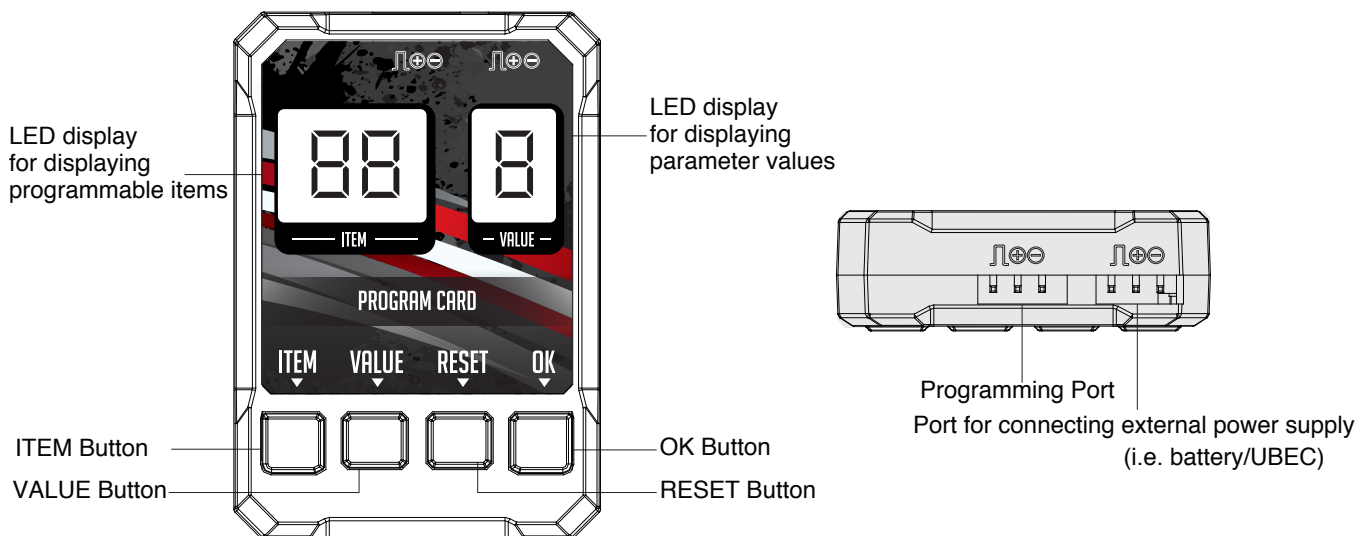
Option 3: Forward and Reverse. Rock Crawler Mode. It uses the "SINGLE-CLICK" method. The vehicle will go into reverse immediately when you push the throttle trigger forward (brake).

Option 4: Boat mode. This mode is "Forward / Reverse with no Brake". Mainly used for boats. Low voltage, temperature protection will only be half power output, it will not stop under this mode.

2. Battery Type:  
This ESC supports NIMH and Lipo battery types. The correct voltage should be selected using the program card
3. Cutoff Voltage:  
Sets the voltage at which the ESC lowers or removes power to the motor in order to keep the battery at a safe minimum voltage (for LiPo batteries). The ESC monitors the battery voltage all the time; it will immediately cut off the output when the voltage goes below the cutoff threshold. The RED LED will use a short repeated flash to indicate cutoff is activated. (☆-, ☆-, ☆-).  
Option1: 0V  
The ESC does not cut the power due to low voltage. Please pay attention to the power change of your vehicle. In general the battery voltage gets low when your vehicle is losing power. Stop operating the vehicle immediately.  
Option2: 2.8V  
Option3: 3.0V  
Option3: 3.2V  
Option4: 3.4V
4. Initial Start Force:  
This is the initial power supplied to the power when you pull the trigger. Think of this as Anti-Slip in a full size car. The more power, the more likely it is that your car will spin out when starting. This also draws a higher output from batteries, so only high quality batteries should be used in settings higher than the middle.
5. Max Forward Force:  
Total force at full throttle. It is adjustable by 25%, 50%, 75%, 100% (default).
6. Max Reverse Force:  
Total force at full reverse. It is adjustable by 25%, 50%(default), 75%, 100%.
7. Max. Brake Force:  
Total force at full brake. It is adjustable by 0%, 12.5%, 25%, 37.5%, 50%, 62.5%, 75%, 87.5% 100% (default).
8. Drag Brake:  
Drag Brake Drag brake is the braking power produced when releasing the throttle trigger from full speed to neutral zone. It is used primarily in rock crawlers.
9. Neutral Range:  
Not all transmitters default to the neutral position. Use this setting to adjust the size of the neutral position.
10. Throttle curve:  
This is equivalent to setting up exponential on a programmable transmitter. There are 9 settings. 1 is linear and 9 has the most curve for exponential.
11. BEC Voltage:  
Option 1: 6.0V  
This is default setting and best for all standard servos.  
Option 2: 7.2V  
This is useful for high power servos that can handle 7.2V or higher.

#### 4. ESC Programming

##### (1) Functions & Explanations



## (2) Program your ESC with a LED Program Card

A standard LED program card is included in the product box or sold separately if you do not have one. The interface can be used to quickly program the ESC.

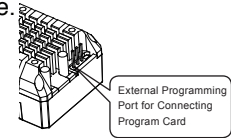
Before the programming:

Step 1: Connect your ESC to the program card via a White/Red/Black cable with two JR male connectors (one end of the cable to the separate programming port on the ESC and the other end to the port marked with “-/+/S” on the program card)

Step 2: Turn on the ESC, all programmable items will show after a few seconds.

Step 3: You can select the item by clicking “ITEM” & “VALUE” buttons on the program card.

Step 4: Press the “OK” button to save all new settings to your ESC.



## (3) Specifications

- Working Voltage: 5.0V - 8.0V
- Size: 38.9 x 12.0 x 55.9mm
- Weight: 40g

## 5. Factory Reset

1. Restore the default values with the LED program card:

After connecting the LED program card to the ESC, press the “RESET” button and the “OK” button to factory reset your ESC.

## LED Status Designations

- The Red LED goes out when the throttle trigger is in throttle neutral zone.
- The Red LED flashes when the throttler is pulled to go forward and it turns solid Red when you pull the throttle trigger to the full throttle endpoint.
- The Red LED flashes when your vehicle brakes and it turns solid Red when you push the throttle trigger to the full brake endpoint and set the “maximum brake force” to 100%
- The Red LED flashes when your vehicle runs backward and it runs solid Red when you push the throttle trigger to the full brake endpoint and set the “maximum reverse force” to 100%.

## Protection Functions

1. Voltage protection: when the battery voltage is lower than the protection threshold for 2 seconds, the battery will enter the low-voltage protection mode (normally, there are two stages of low-voltage protection in the electric regulation, the first stage is to reduce the output power, and the second stage is to completely shut down the output), and the red light on the ESC will flash continuously.

2. Overtemperature protection: when the ESC internal temperature is higher than 212°F / 100°C, the power will be reduced until the output is cut off. When overtemperature protection occurs, the ESC will not suddenly cut off the output, so as to avoid a sudden stop and cause accidents. The green light will flash after the stop and return to normal output power when the temperature is below 80°C. half power output.

*Note: When it is on boat mode, the motor will be half power output when enter low voltage protection. LED flash quickly, please stop the boat immediately*

## Troubleshooting

Trouble(s)	Possible Causes	Solution(s)
The ESC was unable to start the status LED; the motor after it was powered on	1. No power was supplied to the ESC. 2. The ESC switch was damaged	1. Check if all ESC & battery joints or connections have been well soldered or firmly connected. 2. Replace the broken switch.
The ESC was unable to start the motor (but the Red status LED flashed) after it was powered on	The throttle control cable was reversely plugged in or in the wrong channel on the receiver.	Please plug the throttle control cable in the TH channel (usually CH2) on receiver or recalibrate the throttle range.
The vehicle moved forward or backward slowly when the throttle trigger was at the neutral position	The throttle range was not calibrated properly.	Please recalibrate the throttle range or fine-tune the neutral position on the transmitter.
The vehicle ran backward when you pulled the throttle trigger towards you	1. The ESC-to-motor wiring order was incorrect. 2. Incorrectly set the direction of the throttle channel.	1. Swap motor wires. 2. Change the direction of the throttle channel from “NOR” to “REV” or “REV” to “NOR”.
The motor suddenly stopped or significantly reduced its output in operation	1. The receiver was influenced by some foreign interference. 2. The LVC protection was activated. 3. The ESC thermal protection was activated.	1. Check all devices and try to find out all possible causes, and check the transmitter’s battery voltage. 2. The Red LED keeps flashing indicating the LVC protection is activated, so please replace your battery pack. 3. The Red LED keeps flashing indicating the ESC thermal protection is activated, please let your ESC cool down before using it again.
The vehicle could run forward but could not reverse	The throttle neutral position on your transmitter was actually in the braking zone.	Recalibrate the throttle neutral position. No LED on the ESC will come on when the throttle trigger is at the neutral position.