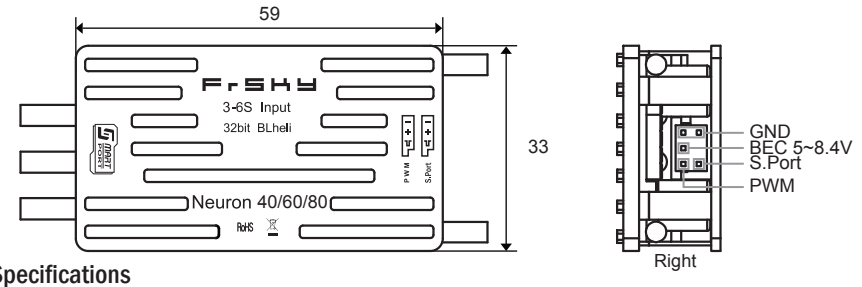
Introduction

Thank you for purchasing FrSky ESC Neuron 40/60/80. The ESC has high performance processor. The SBEC voltage can be adjusted through LUA (FrOS & OpenTX Supported) or through FreeLink App with Airlink S. The Neuron ESC is encased in a CNC aluminum protective shell which also aids in heat dissipation. In order to fully enjoy the benefits of the products, please read the instruction manual carefully and set up the device as described below.

Overview



Specifications

Model Name	Size (L×W×H)	Weight	LiPo cells	SBEC	Cont. Current	Peak Current
Neuron 40	59*33*17mm	58g	3~6S	5~8.4V	40A	60A
Neuron 60	59*33*17mm	58g	3~6S	5~8.4V	60A	100A
Neuron 80	59*33*17mm	58g	3~6S	5~8.4V	80A	120A

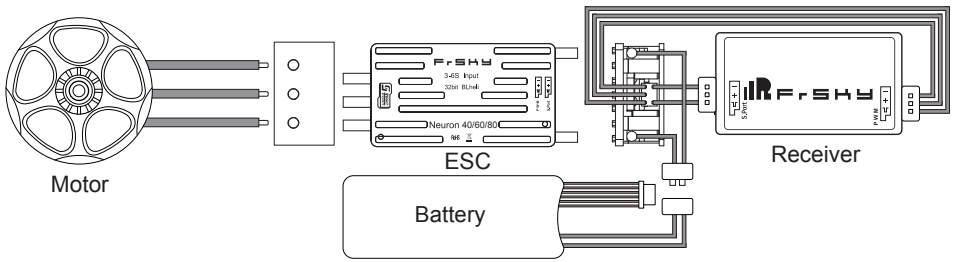
Maximum supported speeds:

D	Erpm	M	Erpm	P	Erpm	Regular pwm input signal	Erpm
Dshot at 8kHz	470k	Multishot at 8kHz	510k	Proshot at 8kHz	480k	Regular at 8kHz	510k
Dshot at 16kHz	420k	Multishot at 16kHz	450k	Proshot at 16kHz	430k	Regular at 16kHz	450k
Dshot at 32kHz	310k	Multishot at 32kHz	420k	Proshot at 32kHz	330k	Regular at 32kHz	420k
Dshot at 16kHz with sine	280k						

Features

- Smart Port enabled
  Telemetry data for ESC: Voltage, Current (Resolution 125mA, Precision ±2%), RPM, Power Consumption, Temperature.
  Telemetry data for SBEC: Output Voltage, Current (Resolution 50mA, Precision ±2%)
- High performance 32-bit micro-processor
- Over-temperature and over-current protection
- SBEC Supports 7A@5~8.4V (adjusted through LUA or through FreeLink App with Airlink S)

Connection Diagram

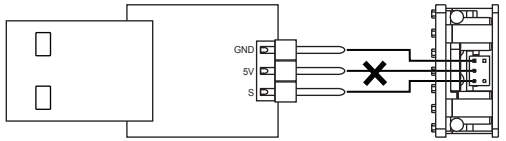


Warning: Please DO NOT connect BEC to any devices with power supply.

Instruction Manual for ESC Neuron 40/60/80

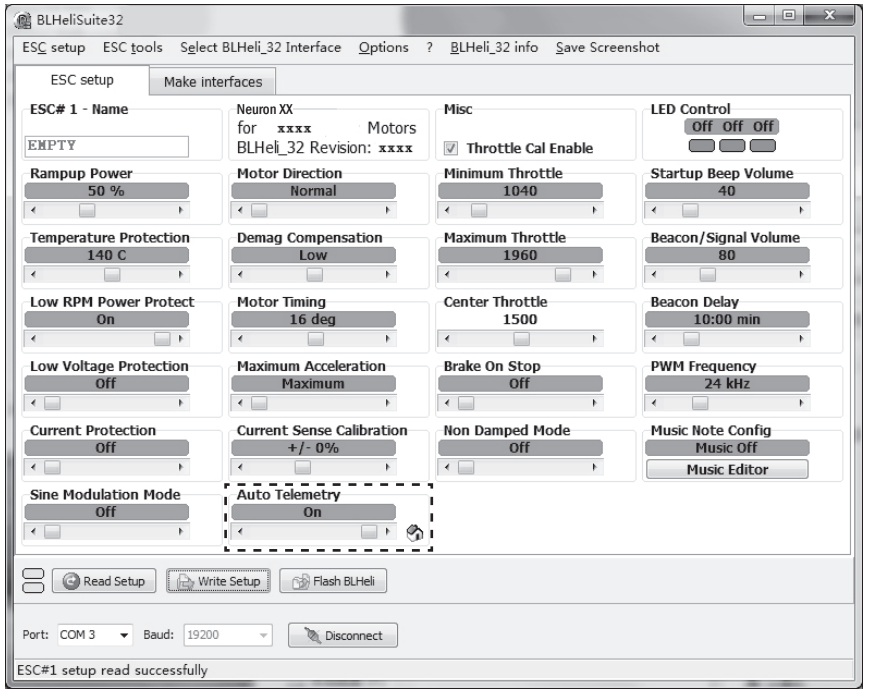
Programming parameters

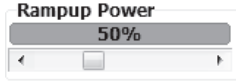
FrSky ESC Neuron 40/60/80 supports programming parameters through USB Adapter. USB Adapter is not included in the package.Users could buy BLHeli USB Linker on your own.
The connection diagram is below.



Never connect the 5V output from USB adapter to ESC, or ESC will not work normally.

The configuration method based on the operation manual for BLHeli_32 ARM is only for reference. For more detailed information, please refer to the original BLHeli manual carefully. Due to firmware update or other reasons, the descriptions for functions may differ, so please take the official BLHeli manual as standard.





Rampup Power can be set to relative values from 3% to 150%. 3% is the minimum power to start the engine and 150% is the maximum power to operate the motor normally.

Temperature protection can be disabled or enabled and temperature threshold can be programmed. The measured maximum temperature is different because the hardware are not the same.

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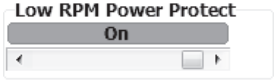
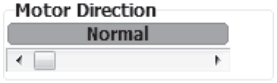
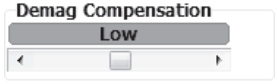


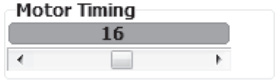
Power limit under low RPM can be enabled or disabled. In order to achieve full power on some low-KV motors running with low voltage, disable it can be necessary. However, it may lead to the damage of motors and ESC.



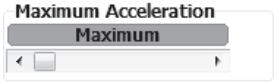
There are four motor directions: Normal, Reversed, Bidirectional and Bidirectional Reversed. Under Bidirectional mode, the center position of throttle is zero, above is forward rotation and below is reverse rotation. Also, throttle calibration is disabled.



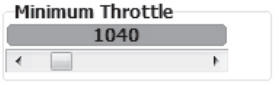
Demag Compensation is meant to protect the motor from stalling which is caused by over demagnetization of coils. A sudden and sharp increase of throttle (especially at low RPM) will lead to the stalling or stutter of the motor. Under the circumstance, Demag Compensation is an appropriate way to fix the problem.



Motor Timing can be set from 1% to 31% with 10 increments or operate automatically. A medium setting could make the motor work perfectly, however, if the motor stutters, it is advised to increase timing.

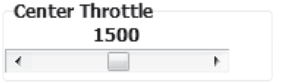


Maximum Acceleration can be set between 0.1%/ms and 25.5%/ms. It can also be set to maximum, thus acceleration is not limited. It functions as a backup parameter. For example, if the setting goes to 10.0%/ms, it means the power of the motor is not allowed to increase by more than 10% per millisecond.

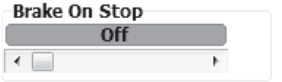


The Minimum Throttle can be adjusted from 900 to 1615. The value for the settings (Minimum Throttle, Maximum Throttle and Center Throttle) are designed for normal input signal (from 1000μs to 2000μs). For other input signal, the value must be scaled. For Dshot iuput signal, the setting doesn't work.

The Maximum Throttle can be adjusted from 1140 to 2100.

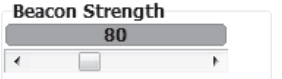


The Center Throttle can be adjusted from 1001 to 2099. It is only used for bidirectional operation.



Brake On Stop can be set between 1% and 100% or inhibited.

The continuous and frequent throttle stick movements (switch between the maximum and minimum values) under the braking function activated in a very short time would damage the products,you should be careful the function enable.



Sets the strength of beacon beeps. The ESC will make beacon beeps of the signal of throttle has been zero for a given time. Note that set a high beacon stength will lead to the heating of motors and the ESC.

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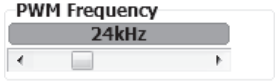
Sets the delay before beacon beeping starts.



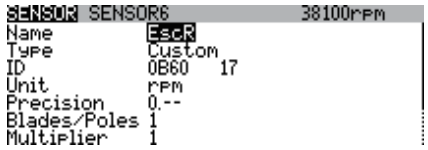
The PWM frequency of motors could be programmed between 16kHz and 48 kHz. Higher PWM frequency will make motors run smoother.

Smart Port

All data measured by S. Port supported products could be passed back to the transmitter.

Smart Port (S. Port) is a signal wire full duplex digital transmission interface developed by FrSky Electronic Co., Ltd. All products enabled with Smart Port (including XJT module, RX8R receiver, new hub-less sensors, new Smart Dashboard, etc), serial port user data and other user input/output devices can be connected without limitations for numbers or sequences at a high transmis sion speed.

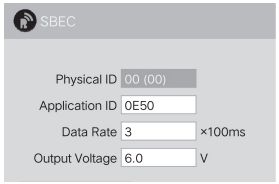
Here are the interface of parameter configuration and feedback on OpenTX.



Parameter configuration

Telemetry feedback

Here is the interface of FreeLink



Warnings

- Before using the ESC, please read through the manuals of all power devices and models. Ensure rational power configuration, or it will make the unit overloaded and damaged.
- Always keep your model away from unsafe elements, such as concrete buildings and high-voltage power lines. Fly your models according to the manual strictly, or it may cause damage and serious injuries.
- Always disconnect the batteries from the ESC after use, or it may drive the motor to rotate and cause injuries. If the ESC is connected to the battery for a long time, the battery will be fully discharged, which may lead to the malfunction of both batteries and the ESC.

FrSky is continuously adding features and improvements to our products. To get the most from your product, please check the download section of the FrSky website www.frsky-rc.com for the latest update firmware and manuals

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