

## PP-EESC Programming Instructions

### IMPORTANT

**Before using your new ESC for the 1<sup>st</sup> time please read the section “Setting the throttle for the 1<sup>st</sup> Time”**

#### Features

- ✓ Soft Starting – Reduces the stress on the airframe.
- ✓ Linear Throttle Response – Smooth and progressive throttling over the whole stick movement – easier to fly.
- ✓ Switch Mode BEC – Allows the use of the in-built BEC from 2 to 6 LiPo – No Need for separate battery or UBEC. (exc 25A, 30A and 33A versions)
- ✓ Auto timing – no need for manual selection.
- ✓ Low Voltage Cut Off – Protect your batteries from damage due to excessive drain.
- ✓ Thermally Protected – The ESC will reduce the output power to the motor depending upon its temperature.
- ✓ Signal lost Protection – Upon loss of radio signal the ESC will reduce the output power to 20% for three seconds and then stop the motor.
- ✓ Loss of a Phase and Object Striking Protection – The ESC will stop the motor. The throttle stick has to be returned to the off position for 1 second before the motor will restart.
- ✓ Power on Protection – The motor will not start unless the throttle stick is in the off position when the power is applied
- ✓ Simple Parameter Setting.

#### Product Specification

Model Number	Continuous Current	Burst Current	Input	BEC Output	Weight	Size (mm)
PP-EESC25AU	25A	35A for 10 Seconds	2-4 LiPo 5.6 – 17VDC	5V @2A	20g	39x25x10
PP-EESC30AU	30A	40A for 10 Seconds	2-4 LiPo 5.6 – 17VDC	5V @2A	25g	48x25x11
PP-EESC33AU	33A	45A for 10 Seconds	2-4 LiPo 5.6 – 17VDC	5V @2A	22g	43x25x10
PP-EESC35AU	35A	45A for 10 Seconds	2-6 LiPo 5.6 – 27VDC	5V/6V @3A Programmable	31g	59x30x10.5
PP-EESC45AU	45A	60A for 10 Seconds	2-6 LiPo 5.6 – 27VDC	5V/6V @3A Programmable	40g	60x31x13
PP-EESC60AU	60A	80A for 10 Seconds	2-6 LiPo 5.6 – 27VDC	5V/6V @3A Programmable	52g	64x31x13
PP-EESC70AU	70A	90A for 10 Seconds	2-6 LiPo 5.6 – 27VDC	5V/6V @3A Programmable	61g	81x31x13
PP-EESC80AU	80A	100A for 10 Seconds	2-6 LiPo 5.6 – 27VDC	5V/6V @3A Programmable	66g	83x31x13

#### Programmable Parameters

- ✓ Throttle Range – suitable for all transmitters on the market.
- ✓ Low Voltage Protection – Highest / Higher / Lower / Lowest. The default is “Lower”.
- ✓ For Li-XX, Voltage for each cell is 3.25V / 3.0V / 2.75V / 2.5V. The default is 2.75V per cell
- ✓ For Ni-XX, Voltages are 70% / 65% / 60% / 55%. The default is 60% of the voltage on connection
- ✓ Battery Type - Li-XX / Ni-XX. The default is Li-XX.
- ✓ Flying Mode - Mode 1 / Mode 2 / Mode 3. The default is Mode 2. Mode 1 is more efficient but less power. Mode 3 (hard/high timing) is less efficient but more power. Mode 2 (medium timing) gives good efficiency and good power. **Outrunners should only be used on either Mode 2 or Mode 3. Inrunners should be used on either Mode 1 or Mode 2.**
- ✓ Break Setting – Enable brake or disable brake. The default is brake disabled.

#### How to Mount and Connect your ESC

- ✓ The leads from the battery to the ESC (red and black) can be extended up to 12 inches (300mm) if required. If a longer run is needed then extend the 3 wires to the motor as needed.
- ✓ Add your choice of connectors as necessary paying careful attention to the polarity of the wires that connect to your battery.
- ✓ Mount your ESC in a place with good cooling.
- ✓ Connect the 3 thick wires from the ESC to the motor; don't worry about the order just now.
- ✓ Connect the ESC (servo type plug) to the throttle channel on your receiver.
- ✓ Turn on your transmitter ensuring the throttle is in the lowest/off position and then connect the ESC to your flight battery.
- ✓ Ensure nothing can touch the propeller or be sucked into it. Gently blip the throttle once to check rotation of the motor. If the motor spins in the correct direction, disconnect the flight battery and turn your transmitter off. If the motor rotates in the wrong direction then disconnect the flight battery and swap over any 2 of the wires that connect the ESC to the motor, the motor will now turn in the other direction, yes it really is as simple as that.

#### Setting the throttle for the 1<sup>st</sup> Time

This is a “one off” connection procedure. The following procedure is to teach the ESC the full throttle position and must be repeated if a different transmitter or receiver is used with the ESC.

Turn on transmitter.

- ✓ Set throttle on the transmitter to “Full Throttle”.
- ✓ Connect the flight pack to the ESC, the ESC will make a tone like “de...de”. This confirms that the full throttle position has been registered by the ESC.
- ✓ Return the throttle stick on the transmitter to “off” position as soon as the “de...de” sound is heard. After 3 seconds the ESC will then enter the normal operation mode. Please see below for more information.
- ✓ Disconnect battery from the ESC.



## Normal Operating Procedure

- ✓ Move the throttle stick to lowest/off position.
- ✓ Connect the flight battery to ESC. The ESC will make a tone like “de-li-le,de-li-le” this means everything is OK, you can go fly.
- ✓ The throttle range must be taught to the ESC before being used with either a new transmitter or receiver.

## Parameter Setting Procedure with your Transmitter

The ESC will scroll through each parameter in turn (except the throttle range setting item). The motor will emit a tone to indicate current parameter and its current value. If you need to change the value of this parameter, move the throttle stick to the lowest/off position and wait to hear the motor emit the tone that represents the value you require. Then push the stick to the highest/full throttle position. If you keep the throttle stick in the lowest/off position for more than 3 seconds the ESC will exit the programming mode and enter the normal flight mode. If you hear a tone like “de... le. de... le”. This means the throttle stick is not at lowest/off position or it is not receiving a throttle signal from your receiver or throttle range incorrect. If you are sure that your throttle stick is at the lowest/off position then the throttle range needs to be set, please see the above section “Setting the throttle for the 1st Time”

## Parameter Tone Explanation

Tone	Parameter
“bee-bee”	Throttle range
“bee--de”	Voltage protection and it's value is Highest
“bee--de-de”	Voltage protection and value is Higher
“bee--de-de-de”	Voltage protection and value is Lower (Default is 2.75V per cell for LiPo batteries)
“bee--de-de-de-de”	Voltage protection and value is Lowest
“bee-bee--de”	Battery type and value is Li-XX (Default)
“bee-bee--de-de”	Battery type and value is Ni-XX
“bee-bee-bee--de”	Flying mode setting and value is mode 1 (Soft timing)
“bee-bee-bee--de-de”	Flying mode setting and value is mode 2 (Medium timing) (Default)
“bee-bee-bee--de-de-de”	Flying mode setting and value is mode 3 (Hard/High timing)
“bee-bee-bee-bee--de”	Brake setting and value is Enable
“bee-bee-bee-bee--de-de”	Brake setting and value is Disable (Default)
“bee-bee-bee-bee-bee--de”	BEC setting and value is 5V (Default) (not available on 30A version)
“bee-bee-bee-bee-bee--de-de”	BEC setting and value is 6V (not available on 30A version)

## Setting examples

- ✓ To enter the programming mode: Keep the throttle stick at highest/top position and connect the battery pack to the ESC. You should now hear a short tone like “bee-bee”.
- ✓ Setting throttle range: After first “bee-bee”, push the throttle stick lowest/off position and keep it there for one second. You should then hear “bee”. This means the highest and lowest point has been remembered.
- ✓ Setting Low Voltage Level: Keep the throttle stick at highest/top position. When you hear “bee” and current value, push the throttle stick to the lowest/off position and wait till you hear the motor beep the value you want, then push the throttle stick back to highest/top position.
- ✓ Setting the Battery Type: Keep the throttle stick at the highest/top point. When the motor beeps “bee-bee” and required value, push the throttle stick to the bottom/off position and wait for the motor to beep the value you want, then return the throttle stick back to highest/top position.
- ✓ Flying Mode Setting: Keep the throttle stick at highest/top position. When you hear the motor beep “bee-bee-bee” and the value you require, push the throttle stick to the lowest/off position and wait to hear the value, then return the stick to the highest/top position.
- ✓ Brake Setting: Keep the throttle stick at the highest/top position. When you hear the motor beep “bee-bee-bee-bee” and the value you require push the throttle stick to the lowest/off position and wait to hear the value, then return the stick to the highest/top position.
- ✓ To Quit the Programming Mode: Whenever you wish to exit the programming mode just push throttle stick to lowest/off position and wait 3 seconds, the motor should then beep “de-le-le”, The ESC has now exited the programming mode and is now in the normal flying mode, you can now go fly.

Problem	Cause	Solution
The motor does not respond to the throttle and emit tone like “de-le-de-le... de-le-de-le ...”	1. Throttle range not configured. 2. Throttle stick not at the lowest position 3. There is no signal output from receiver.	1. Configure the throttle range. 2. Move the stick to the lowest/off position. 3. Check the receiver.
The motor rocks back and forth and doesn't rotate	1. Bad solder joint between motor and ESC 2. Broken wire between motor and ESC	1. Check and re-solder connectors/joints 2. Check and repair any broken wires
The motor not respond to the throttle and emit tone like “bee... bee,bee... .de... de... de...”	Throttle channels reverse	Reverse the throttle channel of your transmitter (refer to the transmitter users manual)
The motor does not respond to the throttle and no tone is heard.	Battery connection error	Check the connection to the battery pack and/or check battery voltage.
The motor suddenly stops while working	1. Loss of throttle signal. 2. Battery connection is loose.	1. Check the transmitter and receiver. Check the connection to throttle channel. 2. Check the battery output and connection to the ESC.
The motor rotates in the wrong direction	Incorrect phase sequence.	Swap the connection of any 2 of the 3 wires between the ESC and the motor.
Full power not available or the motor stops just after starting.	1. Throttle range not configured. 2. Not enough voltage in the battery. 3. Loose battery connection.	1. Configure the throttle range. 2. Recharge or replace the battery for a fully charged one. 3. Check the connections between the battery and the ESC.