



# Purple Power Electronic Speed Controller Users Manual

## Specifications

Part Number	Continuous Amps	BEC (Max)	LiPo (No. of cells)	NiCd/NiMh (No. of cells)	Weight (g)
PP-DESC40AU	40 Amps	3 Amps	2 - 4	6 - 12	36g
PP-DESC60A	60 Amps	OPTO	2 - 6	6 - 16	34g
PP-DESC60AU	60 Amps	3 Amps	2 - 4	6 - 12	36g
PP-DESC70A	70 Amps	OPTO	2 - 6	6 - 16	43g
PP-DESC100A	100 Amps	OPTO	2 - 6	6 - 16	45g

## Features

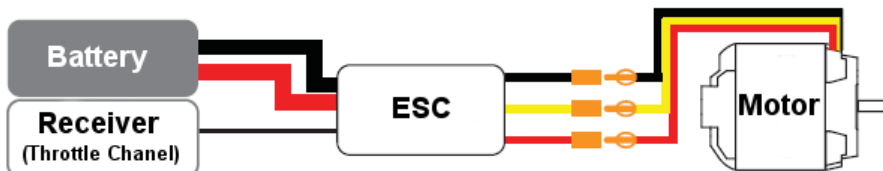
1. Easy setting / Easy operation.
2. Safe start-up – The motor will not start regardless of the throttle position.
3. Automatic power cut-off – When the motor is stopped unexpectedly or when the radio signal has been lost for more the 3 seconds.
4. High rate of switching (PWM Pulse Width Modulation) 8kHz
5. Over voltage protected. The ESC will not start if the voltage is greater then 18V (except for the OPTO versions)
6. Over temperature protected. The ESC will cut power to the motor when the temperature reaches 110°C
7. Low voltage cut-off 3.0V/2.7V (selectable) for Lithium-ion/Lithium Polymer or 0.9V/0.7V (selectable) for Ni-Cd/Ni-Mh batteries.
8. Selectable timing modes
  - Low Timing – Providing high efficiency for 2,4 and 6 pole motors
  - High Timing – For high speed motors (6 poles or more) and outrunner motors.
9. Selectable cut offs – hard cut off or soft cut off

## Factory Default Settings

1. Brake off
2. Timing – High (suitable for Outrunners and most other motors)
3. Throttle curve – Linear
4. Battery type – Lithium-Ion/Lithium-Polymer
5. Cut off voltage – 2.7V for Li-xx battery
6. Cut off type – Soft
7. Rotation - Left

## How to Connect The ESC

Connect the motor, ESC, battery, and receiver in order shown below. To change the direction of the motor swap any two of the three cables (red, yellow and black) between the Esc and the motor. Yes it really is as simple as that.



## Normal Start Up

1. Make sure the motor is connected to the ESC and the ESC is connected to your receiver.
2. Switch on your transmitter.
3. Set the throttle stick to the lowest position.
4. Connect the main power pack to the ESC or for ESC without BEC's switch on power to the receiver.
5. You should then hear either 1 single beep (brake is on) or 2 single beeps (brake is off). If you do not hear any beeps, disconnect the battery, wait for 5 seconds and connect again.
6. Five seconds later you should hear 5 single beeps (low timing mode) or 5 double beeps (high timing mode)
7. The ESC is now ready for flight.

## Programming the ESC via the Transmitter

### To set brake on or off (Note: factory default setting is off)

1. Switch "on" the transmitter and move the stick to "full throttle" (highest position).
2. Connect the main power pack to the ESC. For ESC without BEC, switch on the power to receiver
3. Wait 5 seconds.
4. After 5 seconds, you will hear 4 continuous "beeps" (the sound is non cyclic)
5. Swiftly move the throttle stick to position "close" (lowest position).
6. After moving, if you hear 1 "beep" that means the brake is on; if you hear 2 "beeps" that means the brake is off.

*If you want to change the brake mode again, disconnect the motor battery pack and then repeat the procedure.*

### To set the motor timing mode to high or low (Note: factory default setting is high)

1. Setting Timing mode, according to the features of different brand of motors.
2. Timing mode 1: 0-7° Timing mode 2: 8-18° Timing mode 3: 19-24° Timing mode 4: 25-30°
3. Switch "on" the transmitter and move the stick to "full throttle" (highest position).
4. Connect the main power pack to the ESC, (For ESC without BEC, switch on the power to receiver) and wait 5 seconds.
5. After 5 seconds, you will hear 4 continuous "beeps". (now don't move the stick.)

6. After further 5 seconds, you will hear:
  - (1) 5 continuous "Beep", which means the timing mode 1;
  - (2) then 5 continuous "Beep Beep", which means the timing mode 2;
  - (3) then 5 continuous "Beep Beep Beep", which means the timing mode 3;
  - (4) then 5 continuous "Beep Beep Beep Beep", which means the timing mode 4.
7. When setting Timing mode, the throttle stick is on "full throttle" (highest position), during Timing mode 1 to Timing mode 4, swiftly move the throttle stick to position "close" (lowest position) according to the requirement.
8. After about 1-2 seconds, you will hear one "Beep" or two "Beeps", which means the setting 2 has been saved. Note: one "Beep" means Brake mode is on; two "Beeps" means Brake mode is off.
9. When connecting with the battery and starting to use, if the throttle stick isn't moved in about 5 seconds, you will hear 5 continuous "Beep", which means the timing mode 1, and so on. If you set timing mode 3, you should hear 5 continuous "Beep Beep Beep". This means ESC is doing the self-detection.

If you want to change the timing mode again, disconnect the motor battery pack and then repeat the procedure.

## Setting Frequency Mode and Motor Direction

1. Frequency mode 1: (8KHZ) It's the general setting, lowest efficiency loss. For example Hacker.
2. Frequency mode 2: (16KHZ) It fits the motors with "low impedance". For example Aveox, Plettenburg, Mega.
3. Frequency mode 3: (32KHZ) It fits the motors with "low inductance". For example PULSO, AXI, Kohler, Tango.
4. Motor Rotation direction: Left (**factory default setting**) / Right
  - Switch on the transmitter and move the stick to "full throttle"(highest position).
  - Connect the main power pack to ESC (For ESC without BEC, switch on the power to receiver) and wait 5 seconds.
  - After 5 seconds, you will hear 4 continuous "beeps". (now don't move the stick.)
  - Wait further 5 seconds, then you will hear all the sounds of timing mode 1 to 4.
  - After that, you will hear:
    1. 5 continuous "Dong", which means frequency mode 1;
    2. Then 5 continuous "Dong Beep", which means frequency mode 2;
    3. Then 5 continuous "Beep Beep", which means frequency mode 3;
    4. Then 5 continuous "Dong Beep Dong", which is setting motor rotation direction.
- When setting frequency mode and motor rotation direction, the throttle stick is on position "full throttle"(highest position). During frequency mode 1 to motor rotation direction, swiftly move the throttle stick to position "close" (lowest position) according to the requirement.
- After about 1-2 seconds, you will hear one "Beep" or two "Beeps", which means the setting 3 has been saved.

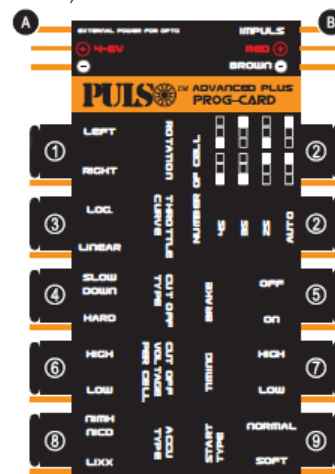
Note1: one "Beep" means Brake mode is on; two "Beeps" means Brake mode is off.

Note2: If you want to change the frequency

## Programming the ESC Using the 'Advance Plus' Programming Card

(Some functions of below also can be programmed by using RC throttle stick. Please refer to the above instructions)

1. Motor Rotation Direction - Left (**factory default setting**) / Right
2. Cell number of Li-XX battery - Auto (**factory default setting**) / 2 / 3 / 4
3. Throttle Curve – Linear soft throttle curve. When the throttle at the mid-position, RPM=60% of Max RPM. (Be suitable for F3A, 3D models, etc.) (**factory default setting**)  
Logarithm---sensible throttle curve. When the throttle at the mid-position, RPM=80% of Max RPM. (Be suitable for Racer, Glider models, boat, Car, etc.)
4. Cut-Off Mode - Slow down - the motor turns off gradually by power reduction when the voltage drops. (**factory default setting**) Hard - the motor is fully off immediately as the voltage drops to the cut-off voltage.
5. Brake Mode - Off (**factory default setting**) / On
6. Cut-Off voltage - Low—0.7V/cell for Ni-CD & Ni-MH; 2.7V/cell for Li-ion/Li-polymer. (**factory default setting**) High—0.9V/cell for Ni-CD & Ni-MH; 3.0V/cell for Li-ion/Li-polymer.
7. Timing Mode - High (hard timing 25°)—for 6 and more pole outrunner motors, it gives highest RPM and current. (**factory default setting**)  
Low (soft timing 0°)—for 2, 4, 6 pole motors, it gives maximum efficiency.
8. Battery Type  
ACCU Li-XX (Li-Polymer or Li-Ion.) (**Factory Default setting**)  
ACCU Ni-XX (NICD or NIMH)
10. Start Type - Normal (**factory default setting**) / Soft



By using PULSO Prog-card, the above 9 functions can be programmed quickly and simply. Note: When setting with Prog-card, don't need the receiver and transmitter. Connecting method shown below



1. Set all 10 jumpers to the required positions.
  2. For ESC with BEC: Plug JR connector (part of ESC) to the Prog-card position "3PINS" on the top right corner. (Note: don't plug it in inverse direction). For ESC without BEC (OPTO): Connect receiver power pack to the Prog-card position "External power for OPTO" on the top left corner .  
Note: For ESC without BEC(OPTO), ESC cannot supply 5V power to Receiver and servos, so an additional receiver power pack is needed.
  3. Connect the motor with the ESC.
  4. Connect the main power pack to the ESC. After that, 1 "beep" will be heard, which means the settings of the prog-card are input to ESC.
  5. Disconnect the main power pack and then disconnect the Prog-card.
- Now the settings are completed.