



# HV 100A Opto NAVY Brushless Speed Controller

Type	Voltage	Amp (A)	FET	IR ( $\Omega$ )	NiMH Cells	LiPo Cells	BEC	Weight (with wires)	Dimension (mm)
100-10-40 Opto	12 - 60V	100	12	0.002 $\Omega$	10 - 40	4 - 14	NO	145 grams	100 x 65 x 13

### Features:

- Voltage Scope:
  - 12 - 60V
- Quantities of battery support:
  - Ultra High Voltage Version: 10 - 40 cells NiMH Battery or 4 - 14 cells LiPo Battery
- IR: 0.002  $\Omega$
- Equipped with Well-chosen High Performance MOSFET
- Cutoff Voltage protection set as 3.0V for each cell of LiPo battery
- PWM frequency: 8K, 16K & 32K
- Supports most brushless motors (Restriction of rotation speed for 14-Pole Outrunner Brushless Motor within 32000 rpm)

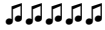
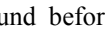

### Additional characteristic:



- Automatic start restriction once the throttle position is in error
- Automatic throttle learning module
- Closure of power of incorrect signal
- Report of receiver without signal and output closure
- Multi-functional motor programming

### How to use:



- $\text{♪}$  = Ring Tone  $\text{♩}$  = High Tone: “Beep” Sound  $\text{♭}$  = Bass Tone: “Beep” Sound
- Connect the controller output leads with the motor first, and then connect the controller’s signal lead with the receiver’s throttle channel (usually channel 2). Make sure the throttle is at “Neutral” (50%) position before switching on the transmitter and connecting to main power source.
- There will be two  $\text{♪♪}$  ring tones when the system is on with power, indicating that the power source/controller/motor has been connected successfully.
- There will be two  $\text{♩♩}$  “Beep” “Beep” sounds from the motor after waiting for 1 second ; it means that the controller is under control of the receiver. Stay away from the propeller to avoid any accidents. After hearing the  $\text{♩♩}$  “Beep” “Beep” sound, the motor can be operated into rotating or braking function by controller according to the movement of transmitter’s throttle.
- Please check the condition of the transmitter if the  $\text{♩♩}$  sounds continuously.

**Attention:**







☞ There will be a  sound that stands for the incorrect signal from the controller when the signal was lost from the receiver and the controller will switch off the output immediately. You may seek your remote-controlled model according to this sound when running at outfield. (The PCM receiver can maintain its normal control signal, even when the receiving signal is missing. However, the motor will not be able to provide incorrect signal sound through the controller). Moreover certain receivers not equipped with the Sound function, it may not have the  sound before the transmitter is on, but the  sound will not occur. Then please switch on the transmitter.

☞ It is normal that the motor will slightly vibrate due to the loud sound of the  prompt sound. Please check the battery or the quality of the battery connection if the safe prompt sound  is weak or unclear.


**How to change the programming of the controller:**

1. Cut off the main power source from the controller, switch on the power of the transmitter
2. Hold “Full” throttle (100%) position on your transmitter
3. Connect the main power source to the controller
4. Wait for the prompt sound 
5. Electricity prompt sound: 

**System will enter into the Section Mode:**

-  Section Mode 1(Battery Type & Cell Count Options)
-  Section Mode 2 (The Characteristics of the Throttle)
-  Section Mode 3 (Braking Options)
-  Section Mode 4 (Rotor Rotation Options)
-  Section Mode 5 (Timing Options)
-  Section Mode 6 (PWM Options)


These sound groups will repeat 3 times. If the throttle does not make any changes, it will enter into the next Mode.


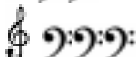
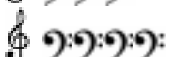
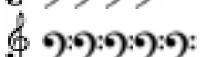
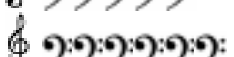
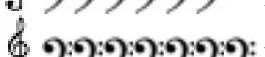
You will hear a new prompt sound  when moving the throttle to “Neutral” (50%) position before the sound ends and then it will enter into selected section mode.

**Entering Section Mode:**

Move the transmitter throttle to “Full” (100%) position if you want to select specified section mode while between 1<sup>st</sup> and 3<sup>rd</sup> “Tone” of each sound group.

 Section Mode 1 - Battery Type and Cell Count Options


 No Cutoff Voltage function when the controller uses this program, the Soft Braking Option in Mode 4 will be invalid. **(Default Setting)**


-  4 cells LiPo battery (Cutoff Voltage 12.0V)
-  6 cells LiPo battery (Cutoff Voltage 18.0V)
-  8 cells LiPo battery (Cutoff Voltage 24.0V)
-  10 cells LiPo battery (Cutoff Voltage 30.0V)
-  12 cells LiPo battery Cutoff Voltage 36.0V)
-  14 cells LiPo battery (Cutoff Voltage 42.0V)




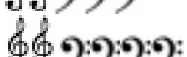
**If you are running NiCd or NiMH battery cells, the default cutoff voltage of the ETTI Navy ESC (5.0V) is normally what you should use, and anything else in the programming is up to your personal preference to change, so you are ready to run!**

**IMPORTANT NOTE: Lithium Polymer User\*\***





**If you are using Lithium Polymer (Li-Po) batteries, DO NOT operated your boat with the factory default setting Cutoff Voltage. You must change the Cutoff Voltage BEFORE running your boat.**


If the transmitter throttle is not changed, the system will repeat this programming mode, until it moves the throttle to “Full” 100% position to re-enter the main programming mode. It can be moved to “Neutral” 50% position by canceling or quitting the selection at any time and then the system will save the selected data in the program. The safe sound prompt sound  will ring after a second to confirm your final selected mode, and the system will input the information again. Then the power will be out according the accelerator proportion.


 Section Mode 2 - Throttle Options


-  Auto Throttle calibration type with end point **(Default Setting)**
-  Fixed Throttle calibration type with end point
-  High Starting Power
-  Low Starting Power **(Default Setting)**


 Section Mode 3 - Braking Options


-  No braking function **(Default Setting)**
-  Soft Braking – The accelerator will initiate the Baking of the motor for 3 seconds consecutively. It will stop upon the request of power output
-  Medium Braking – 3 seconds duration. It will stop upon the request of power output
-  High Braking – 3 seconds duration. It will stop upon the request of power output

 **Section Mode 4 – Rotor Rotation Options**


 Rotate clockwise; it is not necessary to change the connection wire of the motor **(Default Setting)**

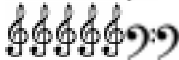
 Rotate anti-clockwise; it is not necessary to change the connection wire of the motor


 Soft braking when the battery voltage reaches at protection voltage, it will decrease the power output until the power is shut down. **(Default Setting)**


 Hard braking when the battery voltage reaches at protection voltage, the motor will be suspended.

 **Section Mode 5 – Timing Options**


 2 ° (for 2 - 4 pole motors) **(Default Setting)**

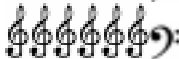
 7 ° (for 6 - 8 pole motors)


 15 ° (for 10 - 14 pole motors)


 30 ° (for 10 - 14 pole motors and increasing the power output)

 **Section Mode 6 – PWM Options**

 8K suitable for most low kv Inrunner Brushless Motor and Outrunner Brushless Motors.

 16K suitable for high kv with Extremely Low Resistance Inrunner Brushless Motors (Such as 3000 kv brushless motor, vibration would be decreased obviously and it can rotate smoothly. However, if this PWM frequency to be selected and the controller will produce 20% excessive heat from the controller! Please make sure the effective cooling is maintained! **(Default Setting)**

 32K suitable for High kv with Extremely Low Inductance Brushless motors

Move the throttle to the “Braking” 0% position after the setting has been completed. You will hear  for confirmation of your setting and then it will resume normal for use

**Caution:**

1. This equipment is designed for Remote-controlled models only. To avoid any accidents that may occur; do not use this equipment in means of dynamic transportation.
2. This equipment is a high efficiency electronic product, and can produce massive heat when operating, forced air cooling condition must be maintained.
3. The interior part of this equipment has been equipped with a power source voltage detection system, whenever connected with the battery please use the shortest connection wiring with sufficient electric current in order to avoid the voltage system malfunction that can affect the usage.
4. This equipment does not allow running two or more motors simultaneously also to avoid malfunctioning.
5. If you intend to use a low turn or low impedance motor then you must use a capacitor bank. If you do not your ESC capacitors will blow and further irreparable damage could be caused.