

Hyperion Titan High-Volt Brushless ESC v3.1, with TI-WARN LED

Transmitter Stick Programmable Functions

* indicates default

Brake Modes: On / Off*

Battery Type: NiMH-NiCd / 5S-12S Lithium (8S Li default setting)

Soft Start: On* / Off

Warning Voltage: LCV +0.2V* / LCV +0.3V

Timing Modes: Auto* / 7 deg / 30 deg

Motor Rotation: Reverse Off */ Reverse On

LVC Cutoff Modes: Hard - Stop / Soft - Reduce Power* / NO CUT

RPM Control (Governor): Off* / Range 1 / Range 2 / Range 3

Acceleration Delay Range 1~10



Hyperion Emeter or PC Software for TITAN can program also the settings below

NiCd/NiMH per cell cutoff voltage: 0.6V* / 0.7V / 0.8V / 0.9V
 Lithium per cell cutoff voltage: 2.0V to 3.2V, in 0.1V steps (3.1V per cell default)
 Additional Timing Modes: 8 deg / 15 deg / 22 degrees (Z series motors: suggest "auto")

Hardware Specs:

- *OPTO Noise Isolation (No BEC)
- *Switching Frequency: 8Khz
- *Over-Temp Protection: Soft Cutoff@80C
- *Max Commutations: 345,240
- *Voltage Ranges: 16~36 cells Ni~, 5~12 Cell Lithium

Dimensions:

Controller	Board Size	Weight
	L x W x H mm	
TITAN 85HV POW31	60.0 x 28 x 11.0	74g
TITAN 90HV POW31	66.5 x 52 x 17.4	109g

TITAN WARNING LED SYSTEM

TITAN WARN is an extremely useful addition to your ESC, due to the nature of high-performance batteries and aircraft models today. The newest 16C/20C+ lithium Polymer batteries provide tremendous performance but, compared to older low-rate lithium, they are easily damaged if discharged too deeply. High-rate lithium polymer and A123 cell types also have very steep voltage drops as capacity becomes depleted. That means that when your battery reaches auto-cut voltage, there may be little or nothing remaining in the flight pack to allow safe landing. Finally, for electric helicopters, 3D aerobatic models, EDF Jets - and many other models - it can be dangerous to have a sudden cut of motor power - even if it is a 'soft' cut. But pilots still need to know when to land, to avoid over-discharge damage to their expensive batteries.

The **TI-WARN system uses a bright RED LED attached to the TITAN ESC by cable.** Mount it on your model so the LED is visible during flight. The TITAN WARNING LED system works by reference to the setting for Lithium per Cell Cutoff Voltage. For example, with the default setting of 3.1V/cell Li, and LED Warning Voltage at default of +0.2V /cell, then the Warning LED will begin flashing whenever the flight pack voltage reaches 3.3V/cell, and LED will become solid red when flight pack reaches 3.2V/cell. In this case the pilot may choose to set LVC Type to NO CUT (if helicopter or 3D model, for example), and when the LED goes solid red, plan on landing soon. Start with conservative settings and experiment to see which leaves the desired capacity remaining at end of flight. (see Hyperion Battery datasheets for more info) **Note:** When Flight Pack is first connected to TITAN ESC, LED will flash to indicate the current Lithium BATTERY TYPE setting. That is, two flashes if ESC is set to Lithium 2S, three flashes if set to 3S. You MUST be sure that the ESC BATTERY TYPE setting matches your flight pack! **Note:** The LED warnings only occur when motor is running (i.e. throttle stick is above 'zero' setting).

Programming the Titan ESC via Transmitter Stick

- For Tx stick programming, the motor serves as the speaker - so connect your brushless motor to the Titan ESC first.
- Remove the propeller from the motor before starting programming!
- Futaba Transmitters should have the throttle set to servo REVERSE before using the Titan ESC.
- Connect the Titan ESC Throttle connector to the correct channel on your receiver
- Switch on the transmitter and set **the throttle stick to full throttle.**
- Connect a 4.8V Receiver pack to receiver with proper polarity
- Connect the flight battery pack to TITAN ESC with proper polarity (never reverse RED/BLACK wires!)
- Wait for 5 seconds; you'll hear these tones ___ -- when setup mode is entered.
- Follow the tones listed below for each programming function.
- When you hear the tones for your desired function, pull the throttle down, then you'll hear confirmation tone. The setting is now memorized. You can only change one setting at a time, if you need to change more settings, disconnect the motor battery pack and wait 5 seconds, and repeat the procedure for next setting.

Brake Mode On/Off

To change brake mode, pull the throttle stick within 5 seconds of first setup mode tones ___ --

After changing the brake mode, the ESC responds with these confirmations:

Brake mode changed to OFF _ - (double tone)

Brake mode changed to ON _ (single tone)

Battery Type (Default is 8S Lithium. If your Battery is not Li 8S, you must change this setting appropriately)

NiMH/NiCd:

5S Lithium: (5-tone series, five times)

6S Lithium: (6-tone series, five times)

7S to 12S continues as above, with 7 tones for 7S, 8 tones for 8S, etc...

LVC AutoCut Mode (Low Voltage Cutoff Behavior)

If the motor battery pack drops to the programmed cut-off voltage, the controller will **reduce the motor speed** or **stop the motor**, depending on the setting below, to ensure that there is enough power for the receiver and servos. You can resume full power by setting throttle to full stop for a moment and return to full throttle, but remember that it's time to land your model! Note that setting NO CUT means the V/cell setting is then only relevant to the TITAN WARNING system, and that the pilot must determine when to land to avoid over-discharge of the flight pack.

Soft Auto-Cut (reduce rpm): - - - - - (normal for sport models)

Hard Auto-Cut (full stop): - - - - - (normal for gliders)

NO Cut: - - - - - (competition gliders, sometimes helicopters and 3D aerobatic models)

(continued on reverse page)

Soft Start

When gearbox drive system is used it is highly recommended to enable the Soft start.

Disable the soft start function when direct drive system is used or being in speed competition

Enable: * **V V V V V** (note: when rpm control is ON, soft start becomes super soft, with 15 second spool up)

Disable: **VV VV VV VV VV**

Timing (timing advance)

The controller has three timing modes; Automatic works for **ALL** types of brushless motors. But for some high-pole-count or homemade brushless motors, you may want to try hard timing for optimal efficiency and power.

Auto 7~30 degrees: * - - - - -

Soft 7 degrees: - - - - -

Hard 22 ~ 30 degrees: - - - - -

Warning Voltage

LCV +0.2V/cell: * \ \ \ \ \ (LED flashes at Li AUTOCUT v/cell setting +0.2V, Solid Red at v/cell +0.1V)

LCV +0.3V/cell: / / / / / (LED flashes at Li AUTOCUT v/cell setting +0.3V, Solid Red at v/cell +0.2V)

Rotation Reverse Reverse Motor Rotation: **W W W W W**

Active RPM Control (Helicopter Governor Mode) Max Potential Motor RPM = [commutations / #of magnets]

NOTE: Titan ESC can drive motors at rpm beyond the motor and motor bearing's physical max rpm. Be careful!

OFF: * - - - - - 345,240 commutations max (esc limit of commutations)

range 1: - - - - - 153,800 commutations max

range 2: - - - - - 213,000 commutations max

range 3: - - - - - 310,000 commutations max

GasMode: - - - - - **RPM Control is OFF in GasMode, but Heli Super-soft start is ENABLED.**

Note: When RPM Control is turned ON, some other settings are also automatically changed, as below:

1) LVC Mode changes to SOFT if currently set HARD; if LVC is currently set to SOFT or NO CUT, LVC is unchanged.

2) If SOFT START is currently disabled, it is turned ON. With RpmControl or GasMode ON, Soft Start is a very soft 15-second spool up of motor

Acceleration Level (slows acceleration to avoid over-current condition with large propellers. See hyperion.hk website for details)

Level1 - - - note: for Acceleration Level, each level sounds series only three times

Level2 - - - - -

Level3 - - - - -

Level4 - - - - -

Level5 - - - - -

Level6 - - - - -

Level7 - - - - -

Level8 - - - - -

Level9 - - - - -

Level10 - - - - -

CAUTIONS!

- **NEVER reverse the polarity from battery to Titan ESC! Be careful, please.**
- Futaba transmitters should have throttle channel set to "reverse".
- Always test and range check the Titan ESC with your transmitter and receiver before actual use.
- When testing, be sure the motor is properly mounted, **never hand held**.
- Always position yourself behind a spinning propeller, not in front.
- Switch off the Titan ESC AND disconnect the battery pack immediately after your flight has ended.
- RC aircraft power systems are dangerous. Please act accordingly.

TROUBLESHOOTING and TIPS:

* OPTO ESC need receiver powered by a separate 4.8~6.0V battery (or BEC device) **before** flight pack is connected to ESC

* Check condition of Motor/ESC/Battery Wires and Connectors carefully. Re-solder connectors if startup is rough

* **Default BATTERY TYPE setting is LI 8S. If your pack is not LITHIUM 8S, program Battery Type first**

* For high-rate lithium (16C or higher) 3.1V LCV setting is best to avoid pack damage and reserve some power for landing

* LCV settings start at 2.0V, allowing v3 TITAN ESC to work with any cell chemistry, including A123 brand packs

* Continuous Amperage is rated at 25 degrees Celsius (77f) ambient temperature, with cooling airflow to ESC. Reduce continuous rating 10% if ambient exceeds 35 degrees Celsius (95f); reduce a further 20% if cooling airflow is poor.

Warranty

Hyperion Titan brushless speed controllers are fully guaranteed against defects in material or workmanship for 12 months from date of purchase. The warranty does NOT cover damage to reverse-polarity connection of the battery, over-spec use, water or crash damage, nor any other claim not arising from a defect in materials or assembly. **You must contact your selling dealer with details of the problem before making a return.** In most cases, the problem is an issue with radio or controller setup, and can easily be resolved at no expense to you. Controllers returned without notice in which defects are not found will only be returned to the sender at his expense.

Crash, water, or reverse-polarity damaged Hyperion Titan ESC may be exchanged with your seller for a 40% discount on new replacement, from manufacturers suggested retail.

Wishing You Many Happy Flights...

The Hyperion Team