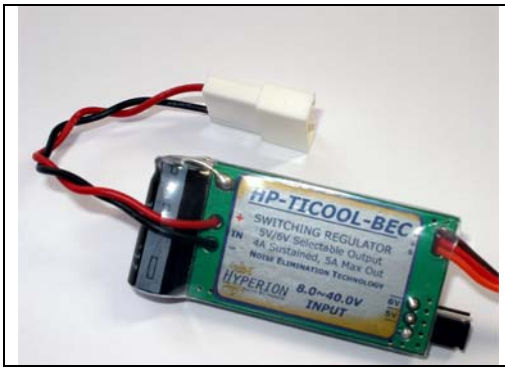


HYPERION TITAN COOL BEC

Switching Regulator 5V/6V Power Supply
With NET Noise Elimination Technology
4A Sustained, 5A Max - 8V~40V Input

3S~10S LiPoly
3S~12S A123
7~28 Cells NiX
Weight: 20g*
Dim: 54x25x10mm

OVERVIEW: Radio-controlled model Receivers and Servos require 4.8V~6V of input voltage. Traditionally, this voltage was supplied by a 4~5 cell NiCd battery pack. "BEC" means "battery elimination circuit" because voltage from the main flight pack is used instead, but stepped down to suit the requirements of the receiver. As such, a separate battery for receiver is not needed. However, standard BEC circuits found on most motor speed controllers have tight limits on the input voltage they can handle, because they convert the difference between main pack voltage and receiver voltage into waste heat. If it gets too hot, the BEC shuts down and control of the model is lost. In general, 3S (11.1V) battery packs are the limit for standard BEC, and even then one must be very careful not to use too many or the wrong type of servos...

Unlike standard BEC circuits, TICOOL is a switch-mode regulator. This means that it efficiently converts even 40V (10S) to match the receiver at 5V or 6V, without overheating. As such, the TICOOL can support as many as 8 standard servos (or as many as 6 Digital), almost regardless of the type of main pack used. But the drawback to switch-mode regulators - in the past - has been radio "noise" that the switching can create, and which can interfere with control of the model.

The TICOOL-BEC is the result of extensive testing and development to eliminate such radio noise. Hyperion NET technology is a suite of techniques to eliminate noise and/or move it to a frequency which cannot interfere with your receiver. During worldwide testing, TICOOL showed excellent properties with a wide variety of radio equipment. As a form of insurance, we also add a ferrite suppression ring to the receiver connector wire set. The ring weighs 4g, so total of TICOOL and ring is 24g*. In the majority of user configurations the ferrite ring will be unnecessary, so you may choose to remove it, then range check your system before flight - only adding it back if your particular setup shows increased range with ring in use.

SETUP: **SEE REVERSE PAGE FOR DIAGRAMS**
The photo at top of this page shows a Hyperion Lithium Pack Balance Connector added to the input leads of TICOOL-BEC. If your model is flying on a single lithium pack of 3S to 6S, this is the easiest way to power the TICOOL. Simply connect the TICOOL to the balance connector of your flight pack, to power your receiver and servos. For Hyperion LiPo (or compatible, such as PolyQuest, PolyQ, and others) 3S~4S packs, use connector part# HP-EOSLBA-MC-A4; for 5S use HP-EOSLBA-MC-A5; for 6S use HP-EOSLBA-MC-A6.
Note: see reverse page for cautions, and for wiring diagrams including alternative connection method at ESC.

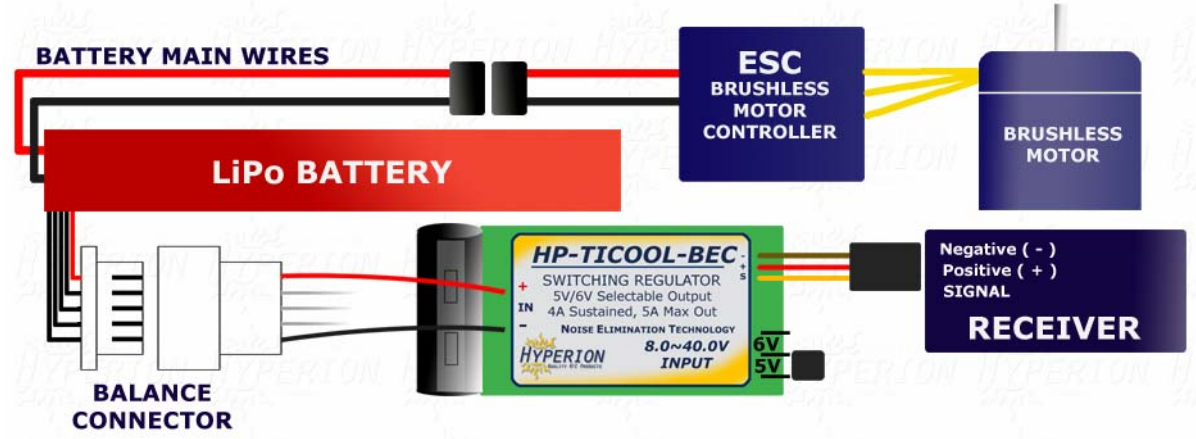
The TICOOL has a jumper switch on right side. The lower position is 5.0V under load; the upper position is 6.0V under load (minimum). IMPORTANT! Many servos on the market today, especially the smaller ones, are NOT made to run on 6.0V. Using 6.0V setting with such servos will cause greatly increased load on TICOOL, and will likely also damage the servo or greatly shorten its service life. Consult documentation to be sure that your servos are intended for 6.0V operation... BEFORE choosing the 6.0V TICOOL setting! (Note: a spare jumper is included in the package)

CAUTIONS!

- **NEVER reverse the polarity from Battery to TICOOL Input Wires!**
- After choosing 5V/6V Jumper Position, secure the jumper to TICOOL with a thin piece of cellophane tape.
- Always perform a transmitter/Receiver range check on first installation of TICOOL, and whenever components or component positions are changed
- Locate TICOOL as far from Receiver as is practical
- Do not increase wire length of TICOOL input or output leads
- Immediately after landing disconnect Battery Pack from ESC, and TICOOL from Battery Pack
- For larger models, or any model which does not have easy battery access, install a quality Switch Harness between TICOOL and receiver. Turn Switch OFF immediately after flight, to prevent others on your frequency from inadvertently controlling your model. Then disconnect the Flight Pack from ESC and TICOOL from Flight pack as soon as possible thereafter.
- Check the condition of all wires and connectors in your power system regularly to insure good condition.

THE SERVO LOAD RATINGS FOR THE TICOOL-BEC ASSUME SERVOS WHICH ARE AVERAGE IN CURRENT DRAWN AT IDLE AND UNDER LOAD, WHICH ARE IN GOOD CONDITION, AND WHICH ARE OPERATING NON-BINDING CONTROL SURFACES. If necessary, replace servos and/or repair control surfaces before flight to insure reliable operation. Note that servos vary widely in their specifications. Depending on your servos, you may be able to use fewer or more servos than we specify. Operate the model's control surfaces on the ground and check temperature of TICOOL. If cool to just warm, perform a short test flight and check temps again. If any part of TICOOL is uncomfortably warm to the touch after the short test flight, you may need to examine your setup. If cool to the touch, you may be able to use more servos, or use TICOOL 6V setting if 6V operation is supported by your servos.

CONNECTION OPTION - Via Lithium Balance Connector

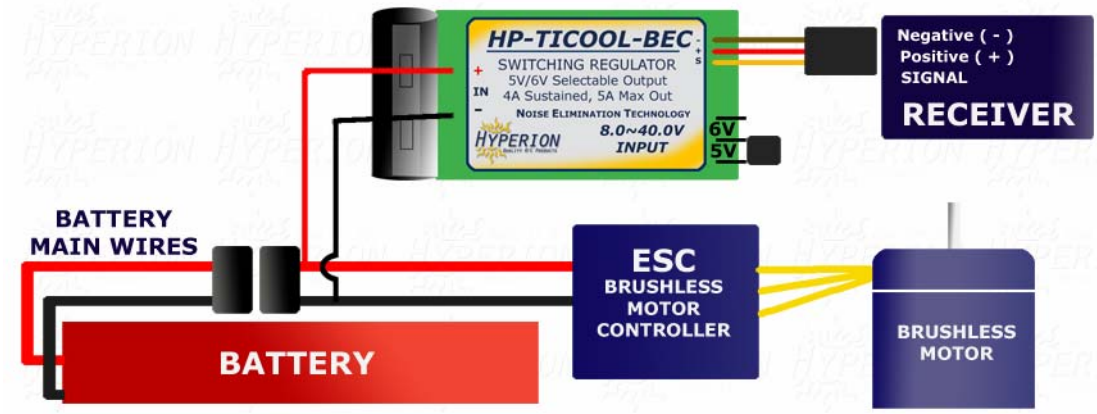


This option is recommended for models which use a SINGLE lithium power pack. Pictured above, at bottom left, is the Hyperion Balance Connector wired to a Hyperion-compatible 4S Lithium Pack. Note that the mating connector attached to INPUT leads of TICOOL-BEC unit is part# HP-EOSLBA-MC-A4, but that the inner wires (shown in GREY) have been removed. EOSLBA-MC-A4 works for either 3S or 4S packs, wired as shown. The wiring is the same for 5S packs (using # HP-EOSLBA-MC-A5), and for 6S packs (using # HP-EOSLBA-MC-A6) - that is, the inner wires of connector to TICOOL-BEC are removed, leaving only the outermost RED and BLACK wires remaining.

A similar method can be used for any brand of single lithium pack up to 10S, if it has a balance connector and you can buy the mating connector for TICOOL Input Leads. However, do be sure that you check the maker's documentation in order to wire the connector properly. After wiring, always measure the voltage at the MAIN PACK WIRES, and confirm that the Input Voltage to TICOOL is the same.

ADVANTAGES: This system is convenient to use. It is easy to install. It allows you to easily move the TICOOL BEC to any model using the same type of lithium pack balance connector, without any re-soldering. It allows you to power receiver and servos WITHOUT powering the Speed Controller and Motor (for example, while setting up servos, etc).
DISADVANTAGES: The Balance Connectors are really limited to about 2A continuous current and about 4A peak. In flight, 4 or 5 average-draw servos will typically pull no more than this. So the system is recommended for models with up to 5 analog or 4 digital servos. However, for models with more servos, or high-draw "super" speed or torque type servos, it is better to use the wiring system below. If you are using lithium packs which are not Hyperion branded, Hyperion makes no guarantee about the suitability of connectors which may be used.
CAUTIONS: Do not attach TICOOL to a single pack's balance connector in models which use two lithium packs in series (or in parallel). Do NOT attach TWO TICOOL units to Two-Pack Models (i.e. one to each balance connector)

CONNECTION OPTION - Attach at ESC Connector



This option is recommended for models which do not use a balance connector (for example, if using NiMH packs) or models which use more than one lithium pack to power the model, connected in series or in parallel.

Simply solder the RED/BLACK Input Leads from TICOOL-BEC unit to the pins of connector attached to your ESC. Do be sure to use at least 2.5cm (1") of shrink tubing to secure the leads parallel to the ESC wires for that distance. This insures that mechanical stress is not placed on the solder joints of the input wires to ESC connector...

ADVANTAGES: Allows maximum servo count or high-draw servos types without worry. Works with any type of battery pack, and/or multiple packs.
DISADVANTAGES: You have to re-solder in order to move the TICOOL to a Different ESC. It does NOT allow you to power receiver and servos WITHOUT powering the Speed Controller and Motor. TICOOL and ESC are always powered at the same time.

HP-TICOOL-BEC WARRANTY

LIMITED TO DEFECTS IN MATERIALS OR WORKMANSHIP ONLY, FOR NO MORE THAN 6 MONTHS FROM DATE OF SALE.
IN EVENT OF NON-WARRANTY DAMAGE, EXCHANGEABLE FOR NEW AT 40% DISCOUNT FROM MFG RETAIL PRICE