Nick's Turnigy dlux HV ESC Quick Programming Guide

See the "Turnigy dlux User Manual " that was included with the ESC for Installation, Wiring, and Safety Warning Details:

The Turnigy High Voltage (HV) dlux Electronic Speed Control (ESC) features a "Spark Eliminator Lead with 2mm Plug". Currently, there are 80, 120, and 160 Amp versions of this high voltage controller (HobbyKing item numbers 17983, 17982, and 17981, respectively). The controller is designed for 6S to 12S Lipo Batteries.

Normal Start-up Procedure:

- Put throttle stick in the down or brake position
- Switch the Transmitter "On"
- Connect the Black wire of the ESC to the Black wire of the Battery
- Touch the "Anti-Spark" wire lead to the Red wire of the battery and immediately connect the Red wire of the battery to the Red wire of the ESC (see the last page for a thorough explanation of the "Anti-Spark" wire).
- Remove the Anti-spark wire and place in an insulated holder
- Plug-in Receiver battery, or if applicable, turn On BEC switch

You will hear one beep for Brake on or two tones for Brake off. The motor now is ready to run.

Notes:
Always connect the motor battery pack just before flight and disconnect it immediately after landing.
Futaba Radios require the throttle channel to be reversed.
Full throttle position will be automatically calibrated on start-up.

Factory default settings

Brake	Off
Battery Type	Lipo 10S
Cut-Off Voltage	3.2V
Rotation	Normal
Acceleration	High
Timing	Automatic.
Under Voltage	Reduce power
Switch Frequency	8kHz
RPM Control	Off

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Programming the Controller

The Controller should be connected to a suitable motor so that you can hear the various tones and beeps that will confirm actions. **REMOVE the propeller on the motor** when the controller is being programmed.

Overview:

- ✔ Moving the transmitter throttle stick to the full up position while powering "on" the controller initiates the programming sequence.
- ✔ If within 1-5 seconds of power -up, you move the throttle stick to the off position you will program brake on/off.
- ✔ 5+ seconds after power-up, the programming sequence for Battery Type, Rotation, Acceleration, Under Voltage, Timing, Switching Frequency, Restore to Factory Defaults, and Active RPM Control begins.
- ✔ You can only change **one** setting at a time; if you need to change more settings, disconnect the motor battery pack and wait for 5 seconds. Repeat procedure for the next setting change.
- ✔ The 5+ second programming sequence always starts at "Battery Type" and goes one-by-one until you reach the last option " Active RPM Control". It is not possible to "skip ahead" or move back.
- ✔ When you hear the beeps that correspond to the parameter you want to change, move the throttle stick down, then you'll hear two confirmation tones. The setting is now changed and memorized.
- ✔ You can exit the programming mode at any time if you disconnect the battery connector from ESC.

How to Enter Programming Mode

1. Switch ON the transmitter, and move the throttle stick to the **full** throttle position.
2. Connect the motor battery pack and turn ON the receiver (BEC) switch.
3. Listen for the tone sequence of the parameter you want to change; when you reach the parameter you want to change, move the transmitter throttle stick to the down position.

Note: Starting at "2. Battery Type" and continuing through "9. Active RPM Control", each pattern plays consecutively for a total of 3 plays each. Also note, that the Turnigy manual attempts to show the patterns as "musical notes". I found that some of the correlations between the Turnigy musical notation was not correct, so I did not attempt to reproduce that here. It is actually best to follow along by number of events grouped together and separated by the comma's shown after item 3, rather than try to interpret the musical notation.

1. Setting up the propeller Brake on or off

Follow above procedure enter to the programming mode. If you move the throttle stick to off within 5 seconds, Brake setting will be changed. (ON ~ OFF, or OFF ~ ON)

Continued next page

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2. Battery Type

Select a NiMH/NiCD battery or the number of Lipo cells which is being used to power your model. 6S to 12S

NiMH/NiCD: ♪, the tone repeats 2 more times

6S Lipo: ♪♪♪♪♪♪, Pattern repeats 2 more times

7S Lipo:♪♪♪♪♪♪♪, Pattern repeats 2 more times

8S Lipo:♪♪♪♪♪♪♪♪, Pattern repeats 2 more times

9S Lipo:♪♪♪♪♪♪♪♪♪, Pattern repeats 2 more times

10S Lipo:♪♪♪♪♪♪♪♪♪♪, Pattern repeats 2 more times

11S Lipo:♪♪♪♪♪♪♪♪♪♪♪, Pattern repeats 2 more times

12S Lipo:♪♪♪♪♪♪♪♪♪♪♪♪, Pattern repeats 2 more times

3. Rotation Reverse

This function is to change the motor rotation direction (for example: Clock-wise or Counter-Clockwise, or vice versa).

♪, ♪, ♪ (Warble sound)

4. Acceleration

Soft start is recommended when a gearbox drive system is being used. Disable the soft start function when a direct drive system is used .

Soft Start: ♪♪, ♪♪, ♪♪

Direct Drive: ♪, ♪, ♪

5. Under Voltage

If the motor battery pack drops to the programmed cut-off voltage, the controller will either ignore (motor won't stop until battery is total depleted), reduce the motor speed, or stop the motor to ensure that there is enough power for the receiver and servos. When reduce mode or stop mode is active, you can resume normal operation by moving the throttle stick down and back up again. Land your model immediately!

Ignore: ♪♪, ♪♪, ♪♪

Reduce power: ♪♪♪, ♪♪♪, ♪♪♪

Stop: ♪♪♪, ♪♪♪, ♪♪♪

6. Timing

The controller has three timing modes; Automatic works well for ALL types of brushless motors. Some brands or homemade brushless motors, require a change of timing for optimal efficiency and power; 7 degree for multi-pole motors, 30 degree for out runner motors.

Automatic: ♪, ♪, ♪

Medium: ♪♪, ♪♪, ♪♪

High: ♪♪♪, ♪♪♪, ♪♪♪

7. Switching Frequency

The controller has two switching frequency modes. 8KHz is good for ALL types of two pole motors, 16KHz is good for multi-pole motors.

8 KHz: ♪, ♪, ♪

16 KHz: ♪, ♪, ♪

8. Restore Factory Default Setting

♪♪, ♪♪, ♪♪

9. Active RPM Control

Off: ♪♪, ♪♪, ♪♪

On: ♪♪, ♪♪, ♪♪

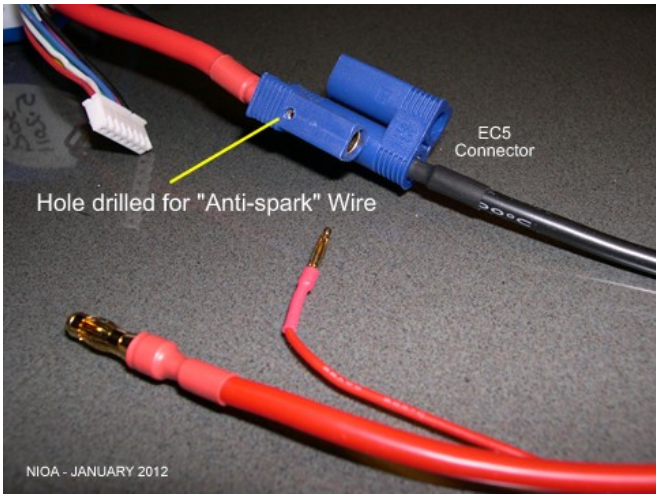
Nick's Turnigy dlux HV ESC Quick Programming Guide

Anti-Spark Feature:

Disconnect all wires from the battery and the ESC. The "Anti-Spark" wire (ASW) or "Spark Eliminator" wire is used by first connecting the negative terminal of the ESC to the negative terminal of the battery. The ASW is touched to the positive terminal of the battery. This "charges" the ESC capacitors and prevents the "pop" that is often heard when a ASW system is not used. This only needs to be done very briefly, less than a second or two. Then, while holding the ASW on the battery terminal connector, the positive ESC terminal is connected to the positive connector of the battery. Remove the ASW wire and place in an insulated holder.

Here is one idea on how to setup the Anti-Spark System:

I use EC5 connectors for all my large aircraft. All my batteries have EC5 connectors. I drilled a small hole in the positive battery connector end for the ASW to be connected to. Normally I use two series connected 6S cells to make a 12S battery source. So the small hole for the ASW would actually be drilled into the female end of the adapter (which is very convenient). For testing purposes however, I drilled the hole into the actual battery connector; you can do that too, but it is not necessary. Also, just for testing, I left the "other" half of the ESC's EC5 connector still on the ESC. This could be cut off if desired. The idea is just to show that you need access to the batteries positive terminal. You can of course, use any type of connector you see fit. I like the "grips" on the EC5's so I will continue to use them.



Warning!

- High power motor systems can be very dangerous! High current flow can overheat wires and batteries, causing fires. Follow the wiring connection procedure carefully! (See the Turnigy Manual for details).
- Always fly at a sanctioned field. Never fly over or near spectators. Even though this Controller is equipped with a safety arming program, you should still use caution when connecting the main battery.

Notice for Operation:

- Temperature overload protection is built into the speed controller. Overload will turn off the motor immediately when the temperature reaches 212°F / 100°C.
- **Do Not** connect the controller to just "any" kind of power source. Take care to ensure the correct polarity of NiCd, NiMH or Li-Poly power packs.
- **Do Not** connect the motor battery to the wrong polarity, the controller will be seriously damaged.