Cheetah HW30A Brushless ESC

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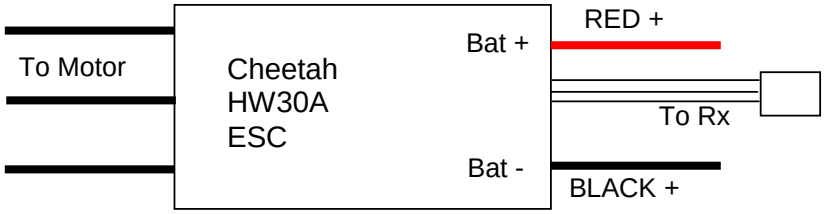
The HW30A ESC can be used with 4-10 NiMH/NiCd or 2-3 cell LiPo batteries and will automatically detect the number of cells. The BEC is functional with up to 3 LiPo cells. Before use, you should program the battery type (LiPo or NiMH/NiCd) and the brake setting. The brake defaults to OFF.



Specifications:

Max Continuous Current:	30A on 3 Cells
BEC:	2A
Input Voltage:	2-3 Lithium Polymer 4-10 NiCD/NiMH
Resistance:	0.0050 ohm
FETs:	12
Lithium Cut-Off Voltage:	3.0V / cell
Size:	45 x 24 x 9mm
Temperature Protection:	110C
PWM:	8KHz
Max Rotation Speed	20,000 RPM for 14 pole motor

Additional Features:

1. Soft start
2. Won't start if throttle stick is not at idle
3. Auto-learning of throttle range
4. Auto shut-down of motor if signal is lost or out-of-spec
5. Auto calibration of motors
6. If there is no response on the receiver, the motor will be automatically shut off

CAUTION:

1. Secure the motor or aircraft and stay clear of the propeller
2. Running the motor at high RPM without a propeller attached may damage the motor

Hookup Instructions:

1. Solder an appropriate connector on the battery + (red) and battery – (black) leads. We recommend Deans or Anderson Power Pole connectors. If using a polarized connector, make sure the polarity matches your batteries, and make sure your connector can handle 30 amps of current.
2. Connect the three motor wires to your brushless motor (ignore the wire colors). If the motor spins in the wrong direction, swap any two of the motor wires to reverse the direction. We recommend using gold plated spring connectors (also known as bullet connectors) between the motor and the speed control to facilitate swapping the wires. Make sure to cover the bullet connectors with heat shrink tubing.
3. Plug the servo connector into the appropriate channel on your receiver. Most receivers use channel 3 for the throttle, but some use channel 1. Consult the manual for your receiver for details. The red wire on the servo connector is positive (+), the brown or black wire is negative (-), and the orange or white wire is the signal.
4. Make sure your transmitter throttle channel is not reversed. Most Futaba transmitters have the throttle channel reversed by default.
5. Before flight, you must program the battery type, number of cells, and cut-off voltage. See the next page for programming instructions.

6. Install your ESC in a location in your airplane that receives good cooling airflow. Keep the motor and battery wires away from your receiver and antenna.

Battery Eliminator Circuit (BEC):

This ESC contains a battery eliminator circuit (BEC) which may be used to power your receiver and servos under most conditions. This allows you to eliminate the separate on-board radio battery pack, and reduce the weight of your aircraft. The BEC may not be used simultaneously with an on-board radio pack - use one or the other, but not both. Up to 4 servos can be used when the battery voltage is 7.4V or less. Over 7.4V, only 3 servos can be used.

If you are not using the BEC function, you must clip the red (+) wire on the ESC receiver lead.

Cutoff Voltage:

Cutoff voltages are auto-set. The cut-off voltages are:

- 6.0V for 2-cell LiPo
- 9.0V for 3-cell LiPo
- 0.8V per cell for NiCd/NiMH

Programming Instructions:

1. Connect your motor and receiver to the speed controller, but do not connect the battery yet.
2. Turn on your transmitter and move the throttle stick to the full throttle position (full up).
3. If you are using a separate receiver battery pack instead of using the BEC, connect the receiver pack and turn it on
4. Connect your battery and the controller will initialize with a musical tone.
5. Secure the airplane and stay clear of the propeller
6. The ESC will issue a series of one to three beeps representing the three items that can be programmed. Each is repeated twice. When you hear the option you wish to program (summarized in the table below), move the throttle stick to the full down position to program the option.

—	1 Beep	Set Lipo Battery Cutoff
— —	2 Beeps	Set NiMH/NiCd Battery Cutoff
— — —	3 Beeps	Toggle Brake Mode

Table 1 – Programming Parameters

NOTE:
Choose either LiPo cutoff, or NiMH/NiCd cutoff - do not choose both

7. Once you confirm your choice, you will hear a sharper tone indicating this choice has been saved
8. If you want to change the brake setting, disconnect your battery and repeat steps 2-8. You must power off the speed control before programming each option.

CAUTION:
After programming an option, the throttle is armed. If you advance the throttle stick, the motor will run. If you are not ready to fly, unplug the motor battery and turn the transmitter off. Always turn your transmitter (and receiver if using a separate receiver battery) and be sure the throttle stick is set to idle before connecting the motor battery.

All of your programming will be saved in the ESCs non-volatile memory. There is no need to program again unless you wish to change a setting.

NOTE:
If the motor rotates in the wrong direction, simply swap any two of the three wires from the speed control to the motor.