TALON SERIES
USER GUIDE
castle

IMPORTANT WARNINGS
• Castle Creations is not responsible for your use of this product or for any damage or injuries you may cause or sustain as a result of its usage.
• Castle controllers are for use by adults only.
• Always remove the propeller or pinion when working on a power system with the battery connected.
• Please observe all local laws regarding the flying of remote control aircraft.
• Never fly over others or near crowds.
• An RC vehicle crash or a power system malfunction may result in fire. Never operate RC vehicles in a flammable environment, such as around dry vegetation.

HOW TO CONNECT YOUR TALON
1. Add Your Battery Connector
You must solder a quality battery connector of your choice to the red (+) and black (-) power wires. Solder the battery connector to the wires. ENSURE THAT THE POLARITY IS CORRECT (red wire to battery red wire, black wire to battery black wire). Follow the instructions provided with the battery connector.

2. Connect The Motor To Your ESC
Solder the bullet connectors included with the Talon ESC to the motor wires, then plug the bullets into the barrels on the Talon. Swap any two connections to reverse the rotation of the motor.

3. Connect The ESC To Your Receiver
Connect the receiver lead to the throttle channel on your receiver.

Note to users with external receiver/radio power supply: Always disconnect the red power wire on the throttle lead if an external BEC or battery is employed in the radio/servo circuit.

Note to users with a Futaba transmitter: You must reverse the throttle channel signal on your transmitter. Please refer to your Futaba instructions and exercise extreme caution when first powering your ESC.

OPERATION
The Castle Talon ESC will not provide power to the motor when first powered up. The ESC must receive a low throttle signal to arm.

Follow this initialization sequence to operate the motor.
1. Turn your transmitter ON and set the throttle stick to mid throttle.
2. If you are using an external BEC or radio battery and your red power wire on the throttle lead is disconnected, power the radio receiver in the RC vehicle.
3. Connect the main power battery to the speed controller. The ESC will make a chime and then a sequence of beeps. Count the number of beeps and make sure it matches the number of LiPo cells that were plugged into the unit.* The speed controller will remain disarmed and will not operate the motor until it receives the zero throttle command from the receiver.
4. When you are ready to fly, move the throttle stick to the lowest position on your transmitter.
5. The Phoenix will play the arming tone through the motor to indicate that it is armed.

*If the ESC does not count the correct number of cells, as indicated by the beeps, then your cutoff voltage will NOT work. Do NOT fly. First, ensure your battery is fully charged. If the problem persists please contact customer support.

Note: if auto-calibrate throttle (default throttle setting) is selected, always restrain vehicle and run throttle to full power prior to flight to allow ESC to recognize the full throttle signal.

Note: Always power your radio transmitter before powering up the receiver and/or the ESC. Some receivers with failsafe features or receiver units that are not bound on receiver power up are entirely capable of causing the arming sequence to occur and command the ESC to drive the motor. Always keep the aircraft restrained and clear of body parts when the ESC is powered.

Always perform a range check at full, half, and zero throttle before flying with any new speed controller!

TALON ESC PROGRAMMABLE FEATURES
Talon ESCs offer a wide array of operating modes and settings for helicopter, multi-rotor, and fixed wing vehicles. These settings are most readily accessed using the Castle Link USB adapter (coupon for free Castle Link USB adapter is included with the Talon ESC) and Castle Link User Interface software available at no charge at castlecreations.com/downloads.

TALON ESC STICK PROGRAMMING
You may change the following settings using your transmitter and receiver.

1. Add Your Battery Connector
2. Connect The Motor To Your ESC
3. Connect The ESC To Your Receiver

Low Voltage Cutoff Value
ESC optionally stops or ramps down the motor power when the input battery voltage drops to the programmed cutoff voltage per cell. Values include: 3.0, 3.1, 3.2, 3.3, 3.4 volts per cell or NONE. Default value = 3.2V per cell.

Brake
ESC optionally stops rotation of the motor when the throttle signal is moved to the lowest position. Values include soft delayed brake, hard delayed brake, soft immediate brake, hard immediate brake, and brake disabled. Default value = brake disabled.

Low Voltage Cutoff Type
Select the method of cutoff employed by the Talon when the low voltage set in #1 is reached. Options are hard cutoff, soft cutoff, RPM decrease, and pulsing RPM.

PWM Settings
Choose a PWM rate that best suits your motor.

MANUALLY CHANGING PROGRAMMABLE SETTINGS
The Talon ESC software is designed to make it difficult to accidentally enter programming mode. Once in programming mode, the Talon ESC “asks” questions by beeping and flashing the setting number, followed by the number for each of the setting values. You must answer “yes” or “no” by moving the throttle stick on your transmitter to each of the setting values as the Talon ESC presents them. The values are always presented in sequence. This method does NOT “tell you” what any of the settings are currently programmed for.

The current setting and setting value are “flashed” out by the LED. (For example if you are on setting #3 and value #2, there will be 3 beeps/ flashes, then 2 beeps/flashes repeating until you answer). Answering “no” to a setting value will cause the Talon ESC to ask for the next value in sequence. Answering “yes” to a setting value will store that setting in the permanent memory, and skip to the next setting.

NOTE: if you answer “no” to all values for a particular setting, the ESC will keep whatever value had been previously programmed. Only by answering “yes” to a value will the Talon ESC store/change any value.

You will need to move the transmitter stick to the “yes” (full throttle) position or the “no” (zero throttle) position to answer the question. When the Talon ESC has accepted your answer, it will flash the LED rapidly, and emit a constant beeping. Move the throttle stick back to the middle position for the next question.

After you have verified that the controller works properly, follow the steps below to change settings.
The Talon ESC must be connected to a motor in order for you to hear the Soft Cutoff ESC reduces RPM dramatically. Will shut the motor off when the Soft Brake – No Hard Cutoff Recommended Use 8kHz Value 12kHz Soft Delayed Brake Recommended for most brushless motors. 16kHz DISABLED Value Move your transmitter stick back to the top position again. After a short 3.4V per cell Recommended Use Brake Disabled 3.2V per cell Hard Brake – No Delay 3.3V per cell Soft Brake - No Delay 3.4V per cell Hard Delayed Brake 1. Option Value Recommended Use
1. Hard Cutoff Will shut the motor off when the programmed cutoff voltage is reached. The motor may be restarted by lowering the throttle to the brake position, and re-arming. For gliders and some parkflyers where a “motor off” situation does not put the model in danger.
2. Soft Cutoff ESC ramps down the throttle to safely maintain the battery voltage at the programmed cutoff level. Very useful for 3D flying, indoor flying, all helicopters, and most any sport flying where you do not want the motor to turn off when the low voltage cutoff is reached. This is the FACTORY setting.
3. RPM decrease ESC reduces RPM dramatically.
4. Pulsing RPM ESC pulses throttle

Note: Options 3 and 4 will give a warning that the battery pack is below the preset low voltage level. The ESC will allow the user to run the motor without additional action. The user is responsible for stopping further discharge of the battery.

Setting 4: PWM Switching Rate**

<table>
<thead>
<tr>
<th>Option</th>
<th>Value</th>
<th>Recommended Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8kHz</td>
<td>Suggested for most Scorpion outrunners.</td>
</tr>
<tr>
<td>2</td>
<td>12 kHz</td>
<td>Recommended for most brushless motors. <strong>This is the FACTORY setting.</strong></td>
</tr>
<tr>
<td>3</td>
<td>16 kHz</td>
<td>Recommended for low inductance motors. RARE. Suggested for Kontronik Tango motors.</td>
</tr>
</tbody>
</table>

**Refer to motor manufacturer’s instructions for frequency settings.

CONTACT AND WARRANTY INFO
Your Talon ESC is warranted for one year* from date of purchase to be free from manufacturing and component defects. This warranty does not cover abuse, neglect, or damage due to incorrect wiring, over voltage, or overloading. If you have any questions, comments, or wish to return your ESC for warranty or non-warranty repair or replacement, contact Castle Creations, Inc. at:

Phone: (913) 390-6939
540 North Rogers Road
Olathe, Kansas 66062 USA
www.castlecreations.com

*You may have additional warranty rights under the laws of certain nations or states.

NON-WARRANTY REPAIRS
Never throw away a damaged Castle product! You may send it to Castle and take advantage of our flat price replacement offer. Please check our website for specific pricing.
### TALON ESC OPERATIONAL TONES AND ERROR CODES

<table>
<thead>
<tr>
<th>Tone</th>
<th>Talon LED</th>
<th>Meaning</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Castle power tune with beeps corresponding to number of cells</td>
<td>Blinks out cell-counts with <strong>RED LED</strong></td>
<td>Power up notice</td>
<td>ESC plays Castle signature tone and beeps out the number of cells attached to controller. Note: when Auto-LiPo detect is disabled by the user, ESC will not beep the number of cells. ESC will not run motor until it receives an arming signal from radio via the throttle lead.</td>
</tr>
<tr>
<td>Arming tune</td>
<td>N/A</td>
<td>ESC ready to run motor</td>
<td>ESC plays the Castle arming tone once it receives a low throttle signal from the receiver. Controller is ready to run the motor at this point.</td>
</tr>
<tr>
<td>•</td>
<td><strong>RED LED</strong> matches tones</td>
<td>Powered ESC notice</td>
<td>ESC beeps motor every 10 seconds to remind user that power is connected to the ESC. This notice may be disabled in Castle Link.</td>
</tr>
<tr>
<td>• –</td>
<td><strong>RED LED</strong> matches tones</td>
<td>Low voltage cutoff</td>
<td>Main battery voltage dropped below the cutoff value. Default is Auto-LiPo which generates a value using 3.2V times the detected cell count. Other settings may be entered in Castle Link.</td>
</tr>
<tr>
<td>• – •</td>
<td><strong>RED LED</strong> matches tones</td>
<td>Over temperature</td>
<td>ESC reached an overtemp condition when operated under too high a load, operated without proper cooling airflow, or when operated at partial throttle (40%-99%) with too large a load.</td>
</tr>
<tr>
<td>• – –</td>
<td><strong>RED LED</strong> matches tones</td>
<td>Excessive load</td>
<td>ESC detects very high current spikes. Causes may include damaged wiring leading to or in the motor, or the use of too large a motor for the controller.</td>
</tr>
<tr>
<td>• •</td>
<td><strong>RED LED</strong> matches tones</td>
<td>Start fail</td>
<td>ESC was unable to start motor</td>
</tr>
<tr>
<td>• –</td>
<td><strong>RED LED</strong> matches tones</td>
<td>Radio glitch</td>
<td>ESC detected unusual signals or loss of signal on throttle wire.</td>
</tr>
<tr>
<td>• • •</td>
<td><strong>RED LED</strong> matches tones</td>
<td>Motor anomaly</td>
<td>ESC detected a sudden mechanical interruption of the motor’s rotation.</td>
</tr>
<tr>
<td>– •</td>
<td><strong>RED LED</strong> matches tones</td>
<td>Over-current</td>
<td>ESC detected operating currents that exceed the current rating of the ESC.</td>
</tr>
<tr>
<td>– – •</td>
<td><strong>RED LED</strong> matches tones</td>
<td>BEC over temperature</td>
<td>ESC has detected that the integrated BEC is overheating due to current draw above the rating of the BEC.</td>
</tr>
<tr>
<td>None</td>
<td>Flashing <strong>GREEN LED</strong></td>
<td>Locked head speed</td>
<td>Governor mode has locked the head speed.</td>
</tr>
<tr>
<td>None</td>
<td><strong>SOLID RED</strong></td>
<td>Full throttle</td>
<td>ESC is at full throttle.</td>
</tr>
</tbody>
</table>