



castle

DRIVER'S ED
GUIDE

INSTRUCTION MANUAL FOR CASTLE CREATIONS
SURFACE BRUSHLESS POWER SYSTEMS

WARNING: This is an extremely powerful brushless motor system. We strongly recommend removing your pinion gear for your own safety and the safety of those around you before performing calibration and programming functions with this system. Please keep your hands, hair, pets, fuzzy purple shorts and garden gnomes clear from the gear train and wheels of an armed high performance system. Rubber tires will "grow" to extreme size on a high speed vehicle. **DO NOT** hold the vehicle in the air and run it up to full throttle. Tire failures at speed can cause serious injury! Make sure your tires are securely glued to the rims and check them often! Always disconnect the battery from the ESC when you are finished using your vehicle. The switch on the ESC controls the power that is delivered to the receiver and servo(s). The controller will always draw current when it is connected to the battery and will completely discharge batteries if they are connected for long durations. This may cause failure of your batteries and/or ESC. Castle Creations will not warranty ESCs damaged by batteries that are left plugged in. Castle Creations is not responsible for any damage as a result of batteries left plugged in to your ESC. **ALWAYS disconnect your batteries after use.** Your Castle ESC is programmed to sound a tone every thirty seconds to remind you that it is still powered.

QUICK START GUIDE

1. Solder a high quality battery connector to the ESC.
2. Mount the ESC and motor into the vehicle.
3. Plug in the 3 motor wires to the 3 motor wires on the ESC, or into the gold bullet connectors on your ESC.
4. Plug in the ESC Rx lead to the throttle channel (#2) on your receiver.
5. Make sure the ESC's switch is off. *NOTE: if no switch is present skip to step #7.*
6. Plug in a battery.
7. Holding full throttle on your transmitter, turn the switch ON. ***NOTE: if your ESC does not have a switch, hold full throttle on your transmitter before plugging in the battery.***
 - A. After a few seconds you'll hear multiple tones and the red LED will come on with a single continuous beep.
 - B. Now hold full brake and after a few seconds you'll hear multiple tones and the yellow LED will come on with a single continuous beep.
 - C. Now relax to neutral and after a few seconds you'll hear multiple tones and ALL the LEDs will light up.
 - D. A few seconds later the ESC will arm with a double tone and yellow LED. You're ready to go!

CONTENTS

Usage Warning	2	• Brushed Motor Wiring	11
Quick Start Guide	3	• High Power Wiring.....	12
Introduction	6	Radio Connection	13
Power	8	ESC Setup	14
• Wiring	8	How To Calibrate The ESC	15
Connections	9	How To Use Castle Link	19
• Brushless Motor Wiring.....	9	Manual Programming	19

- 1. Brake/Reverse Type 23
- 2. Brake Amount..... 24
- 3. Reverse Amount..... 26
- 4. Punch/Traction Control..... 27
- 5. Drag Brake..... 29
- 6. Dead Band..... 30
- 7. Cutoff Voltage 31

- 8. Motor Timing..... 33
- 9. Motor Type 35
- Troubleshooting 37**
- Technical Support..... 40**
- Warranty Info. 40**
- ESC Programming Guide..... 42**

EASY TO USE, SOPHISTICATED ENOUGH TO WIN EVERYTHING

Castle controllers are extremely simple to set up and optimize for your application. Most users may simply plug the controller into their motor, radio and battery and run it immediately.

Advanced users may wish to access the incredible tuning features using their Windows based PC and the Castle Link interface. With Castle Link software you can tune the ESC exactly with point and click ease!

Note: Any mini USB cable will work with the Castle Link - you do not have to buy a "Castle" specific USB cable.

Please make sure to read this manual completely to get the most from your Castle ESC.

A WORD ABOUT BATTERIES AND CONNECTORS

As with any extremely high powered electric power system, the primary limitations to ultimate vehicle performance are the batteries and connectors. Use the best batteries and connectors that you can find. The better the batteries, the more punch you'll have!

Recommended capacity for 1/18th scale vehicles is 1500mah+, 1/10th, 1/8th, and 1/5th scale recommended capacity is 5000mah+. Do not use 20C continuous discharge batteries. We recommend 30C continuous discharge or higher for 1/18th scale to 1/8th scale vehicles (or high quality 25C batteries such as Traxxas[®] Power Cells[®]), and 35C continuous or higher for 1/5th scale vehicles. Using too low of a C rating or capacity will damage your ESC, and will not be covered under warranty.

Hint: Look for the batteries with the lowest resistance, not necessarily the coolest labels.
Top-of-the-line cells aren't required for this system to operate normally, but the best cells

will certainly allow your Castle system to put more power to the ground! Poor quality battery connectors can be a roadblock to performance. Avoid the common “white plastic” connectors commonly seen on many battery packs. A fast brushless setup will draw many times the power that these connectors can safely handle. Invest in connector sets made for high powered electric systems such as our CC Bullets, Castle Connectors, Traxxas® TRX® connectors, or Deans® Ultra plugs.

POWER

Wiring

Your Castle ESC has motor connectors on the motor wires or directly on the board and the battery input wires are bare. You must add the connector of your choice to the battery leads. We recommend a connector rated for 40-100amps, such as CC Bullets, Castle Connectors, Deans® Ultra, or Traxxas® TRX® connectors.

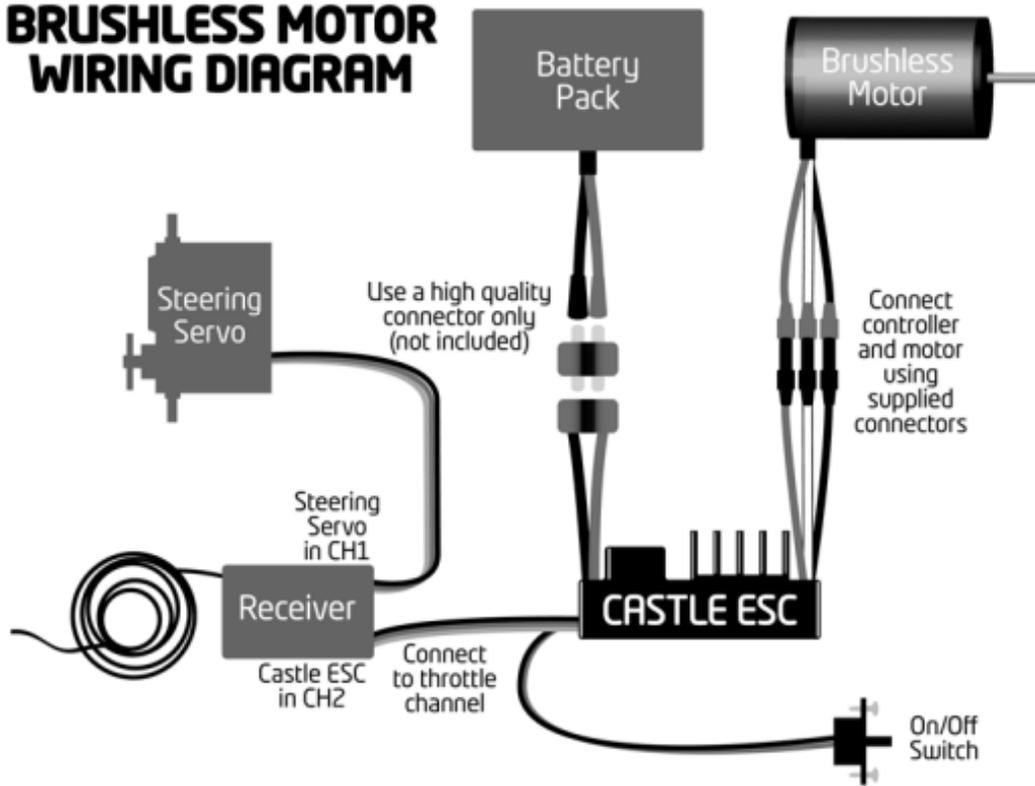
Proper polarity is essential here! Make absolutely sure positive (+) connects to positive (+), and negative (-) connects to negative (-) when you plug in your battery! If reverse polarity is applied to your ESC from the battery, it WILL damage your ESC. This WILL NOT be covered under warranty!

CONNECTIONS

Brushless Motor Wiring

For brushless motor connection, the three wires from the ESC to the motor have no polarity. Connect the red, white and black

BRUSHLESS MOTOR WIRING DIAGRAM



motor wires to the three wires coming from the motor or directly to the ESC in any order. If you are using a motor other than a Castle Creations motor, you may need to either solder on matching male bullet plugs to your motor, or solder the ESC wires directly to the motor wires. If you choose to direct solder or to shorten the motor wires, you may do so on the Castle Creations NC14XX series, NC15XX series, NC1717, and NC2028 motors only. **DO NOT CUT any part of the wire length from any other motor, regardless of brand or type.** In most cases, only the last 1/4 inch or so of most motor wires are able to be soldered. If they are clipped shorter you may not be able to solder the remaining portion of the wire and the motor will not run properly, if at all. **If the motor is supplied with connectors you do not want to use, simply unsolder the original motor connectors from the wires - do not cut them off.**

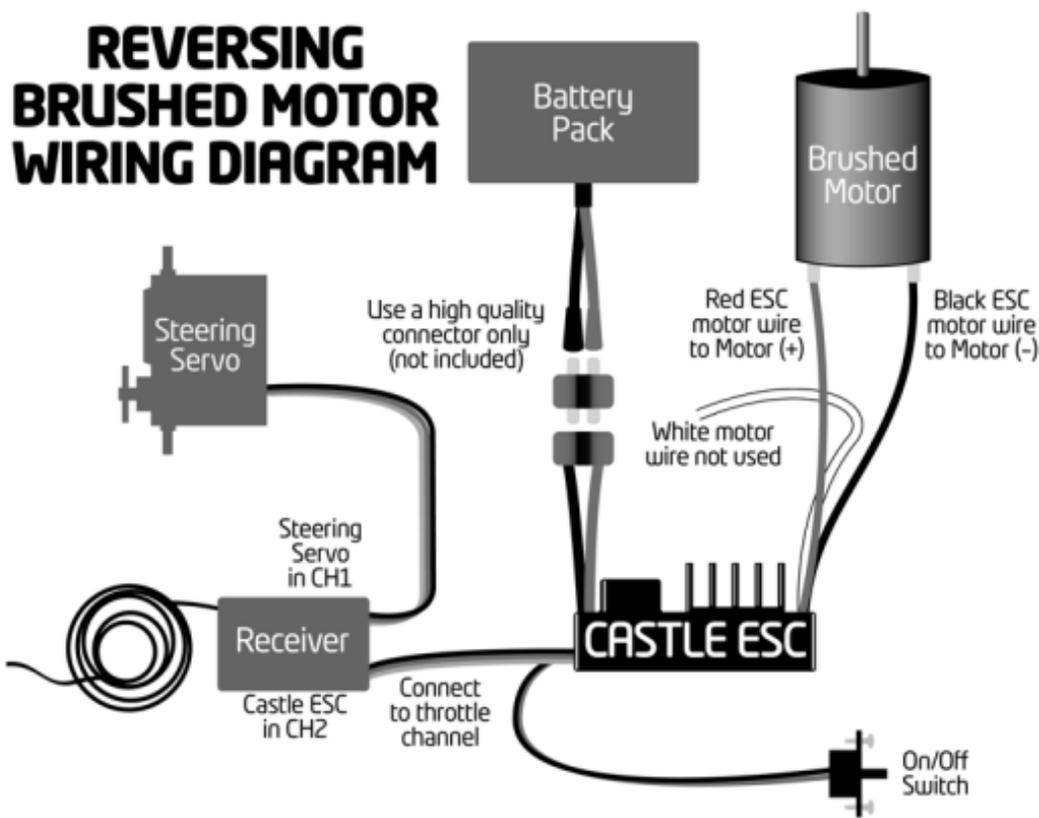
There is no polarity on the three ESC-to-motor wires, so do not worry about how you connect them initially. You may find it necessary to swap two wires if the motor runs in reverse. This will be explained below.

Note: If running a sensed brushless motor with a sensed ESC, DO NOT change the wire orientation. Change the motor direction setting with Castle Link.

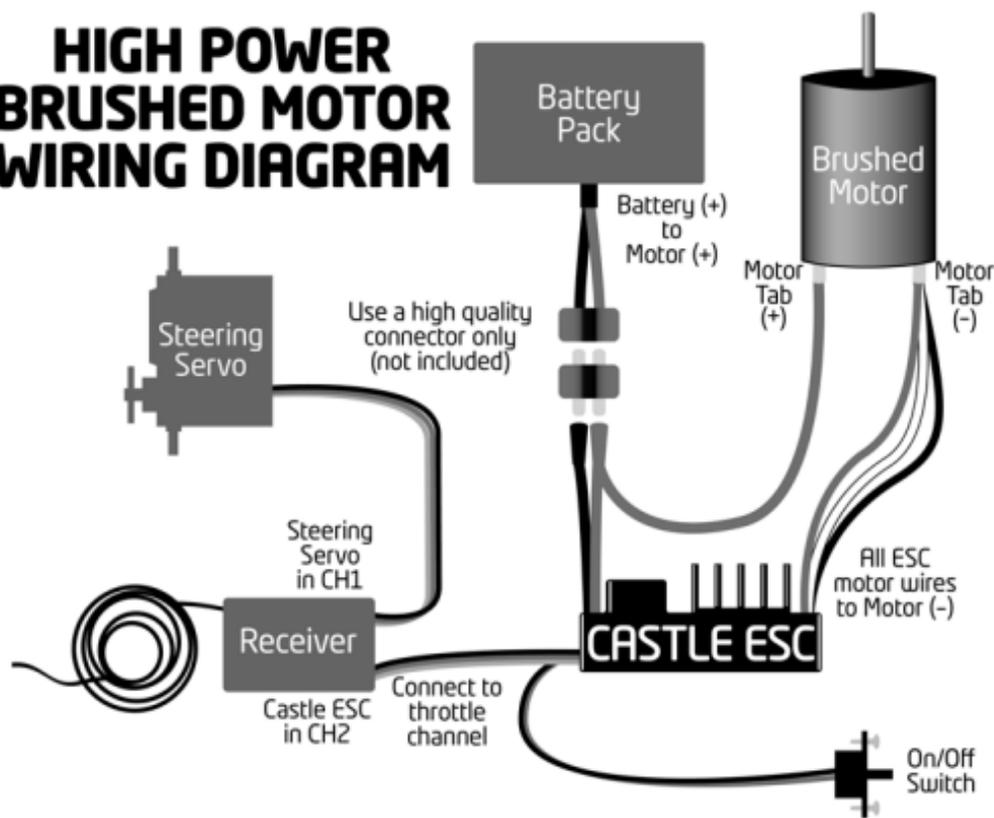
Brushed Motor Wiring

Reversing Brushed Motor Mode:

Use this mode if you wish to use reverse. Make sure you change the Motor type setting to "Brushed Reversing" in the ESC before using a brushed motor. Use only the red and black motor wires from the ESC, or the outside connectors on the ESC. In most applications, the red wire from the ESC will



HIGH POWER BRUSHED MOTOR WIRING DIAGRAM



connect to the red wire (or positive + side hood) on your motor, and the black wire to the black wire (or negative - side hood) of the motor. The white motor wire (or center connector on the ESC) is not used. After calibration, (explained later) you may need to swap the two motor wires to get the wheels to spin in the right direction.

High Power Brushed Motor Mode:

Using High Power Brushed Motor Mode will allow for the use of lower turn count brushed motors, and forward only operation.

Make sure you change the Motor type setting to “Brushed High Power” in the ESC before using a brushed motor. Connect all three of the ESC motor wires to the negative (-) side of the motor. You can either use a “Y” harness from the ESC battery input positive wire to connect to both the battery and the positive side of the motor, or use a single wire from the positive ESC input to the positive battery pole and then continue to the positive (+) side of the motor.

RADIO CONNECTION

Your Castle ESC plugs into the throttle channel of your receiver. This is usually channel 2. Your Castle ESC provides 5 - 8 volts to the receiver to power the receiver and the steering servo. No separate receiver battery is needed to power the radio system. Some servos can draw more current than the onboard BEC can handle and will require an external BEC or receiver pack.

Castle ESC receiver plugs are made to be used with any current receiver, but you will need to make sure the polarity is correct when plugging into the receiver. The signal wire is orange, the positive wire is red, and the negative is brown. Some radio systems use white for signal, red

for positive and black for negative color scheme. Check your receiver documentation for correct connection polarity if it's not marked.

Note: most receivers use negative to the outside of the case and signal towards the inside of the case.

ESC SETUP

ESC/Radio Calibration

Individual transmitter's signals for neutral, full throttle, and full brake vary. You must calibrate your Castle ESC so that it will operate effectively with your transmitter. Anytime the ESC is powered up with a new transmitter, or with different throttle channel settings, it will need to be calibrated to "know" what the transmitter's throttle settings are. It will also need to be calibrated after updating with new software via Castle Link.

If you are using a Futaba or Futaba OEM brand transmitter, you will need to set the transmitter's throttle channel direction to the REVERSE (Rev) position. This is either an external micro switch on the transmitter or an option available within the computer programming of the transmitter.

Please start by zeroing out any throttle trim that you may have set in your transmitter.

Don't plug in the battery yet! Make sure that the battery polarity and input polarity on the ESC are correct. Check the on/off switch of the Castle ESC to make sure that it is in the OFF position. We recommend removing your pinion gear before calibration as a safety precaution!

How to Calibrate the ESC

Step 1: Start with the transmitter ON, the battery disconnected, and the ESC's switch in the OFF position (if ESC has a switch).

Step 2: Plug a battery into your Castle ESC. (NOTE: If your ESC does not have a switch, hold full throttle on your transmitter before plugging in the battery.)

Step 3: Hold full throttle on the transmitter and turn the ESC's switch ON. Keep holding full throttle on the transmitter. If all your connections are correct, you will hear one multi-toned initialization "ring" from the motor (all tones are played by the ESC vibrating the motor).

STEP 4: After a second or two, the green LED on the ESC will blink rapidly and the motor will "ring" 4 times rapidly in a row (accepting the full throttle endpoint). After the green LED flashes and tones, the ESC will blink the red LED. At this point the full throttle endpoint has been set within the ESC and now it's looking for the full brake endpoint (red LED blinking).

STEP 5: Move the throttle trigger to the full brake position and hold full brake. After a few seconds, the ESC will flash the red LED and ring 4 times rapidly (accepting full brake endpoint).

STEP 6: After accepting the full brake endpoint the ESC will then blink the yellow LED. Now relax the trigger to the neutral position. The ESC will now ring 4 times and flash the yellow LED rapidly to accept the neutral position.

After accepting the neutral position, the ESC will ring twice, flash ALL the LEDs, and the yellow LED will illuminate (solid yellow for all ESCs except Mamba Max Pro which flashes). This is the arming tone and LED indication that the ESC IS NOW ARMED and the car will respond to throttle inputs from your transmitter.

From this point on, when you connect batteries and turn the switch on, the ESC will give the initialization tone and flash after a battery is plugged in and the switch is turned on, and the arming tone will ring a second or two later. If the ESC is programmed for the Auto-LiPo setting, it will beep the number of cells in your LiPo pack between the initialization tones and the arming tones. After the arming tone plays, the ESC is ACTIVE and will respond to throttle

application. If you have problems calibrating your transmitter with the Castle ESC, please see the troubleshooting guide on page 37 for more tips or visit our website's FAQ pages. Once you are calibrated and armed, do one last check before going out and experiencing the Castle brushless difference. Slowly advance the throttle and check the rotation direction of the motor and the color of the LEDs on the ESC. If the motor is spinning in the right direction and the GREEN LED is blinking green, then you are ready for a test run before going into the settings of the ESC. If the ESC shows the green LED with throttle, but the wheels spin in the wrong direction, you'll need to switch any two of the motor wires (example: switch from red to red and black to black to red to black and black to red). Castle Link capable Castle products may be connected to your PC using the Castle Link USB adapter. The Castle Link software will give you access to a whole new world of tuning options. You may use Castle Link to tune your throttle curve and brake curve, set your drag brake feel, and use the incredible **Torque Limit** to keep the front end of your car on the ground with all the power you have at your command. As new features become available, you can install them in your Castle ESC for "real time" updates! All of

this ensures your Castle ESC will be the best that it can be.

To use Castle Link™

Disconnect the ESC from the throttle channel on the receiver and connect the ESC to the Castle Link adapter chip via the ESC's receiver wire. Castle ESCs may also be manually programmed using your transmitter and receiver. Manual programming may not provide access to all of the Castle ESC's features.

Manual Programming

Follow these steps to change settings on your Castle ESC without a computer.

Programming With Your Transmitter

You can use your transmitter to change a few of the program settings with your transmitter

without a Castle Link or a Field Programming Card. For basic use these settings are usually enough to get you going.

Transmitter programming is very easy, simply answering YES or NO to a list of options. These are grouped into 9 settings and each setting has several possible options. You can only accept one option per setting. By answering YES to an option you will jump to the next setting. If you answer NO to an option you will jump to the next option under that setting.

At each option, you can accept it by going to full throttle on your transmitter, or you can reject the option by going to full brake. In programming terms full throttle is 'YES,' full brake is 'NO.' The ESC will indicate that it has accepted your selection by producing a continuous skipping tone. When you get this tone, allow the trigger to go back to the neutral position to change to the next setting or option depending on your selection.

To get into programming mode on the ESC:

1. Turn your transmitter on.
2. Plug the battery into the ESC with its switch off. *Note: if your ESC does not have a switch, hold full throttle on your transmitter before plugging in the battery.*
3. Hold full throttle on your transmitter and turn the ESC switch on.
4. The ESC will go through its boot up sequence blinking green
5. There will be a sequence of melodic tones and the light will turn red
6. Keep holding the trigger, within 6 - 8 seconds the light will turn yellow. You are in programming mode; let the trigger return to neutral.

When in programming mode, the ESC will beep once, pause, then beep once again and repeat until a change is made with your transmitter. If you accept setting 1. Brake/Reverse Type's default option 1: Reverse Lockout, you would pull full throttle to accept option one. When the

trigger is returned to neutral the beep pattern will change to 2 beeps followed by 1 beep meaning that by selecting option 1 you jump to setting 2. If at setting 2: Brake Amount, you reject option 1. 25% by going to full brake/reverse the beep pattern will change to 2 beeps, meaning it's still at setting 2, followed by 2 beeps meaning you are now at option 2 under setting 2.

Look at the inside back cover of this guide to the Castle Car ESC Programming Guide. This shows the programming sequence as settings and options. Accept or reject options, usually selecting the default, unless you want to change that specific setting.

As an example, say you want to turn off the default Voltage Cutoff to run NiMh batteries. Work through the settings and options selecting the default options until you get to 7 beeps, meaning Cutoff Voltage, followed by 1 beep for option 1: None. This is the correct setting for NiMh. Select option 1 by going to full throttle. Once you have changed the setting you want you can unplug power from the ESC to get out of programming mode. You do not need to finish

all of the settings. The ESC will store your changes until you change them again.

The ESC cannot change settings itself, it only does what it is told.

The next section of the manual gives a description of each of the settings and options and what you can expect when you change an option from default. Before you make changes, it is a good idea to go over the Castle Car ESC Programming Reference, marking the options you wish to change.

1. Brake/Reverse Type

Sets whether reverse is enabled or not, and exactly how it can be accessed.

Option 1: With Reverse (Default)

This setting allows the use of reverse only after the ESC senses two seconds of neutral throttle.

Use it for race practice sessions and bashing, but check with your race director to see if this setting is allowed for actual racing.

Option 2: Without Reverse

Use this setting for actual sanctioned racing events. Reverse cannot be accessed under any circumstances with this setting.

Option 3: Crawler Reverse

Reverse or forward is accessible at any time after the ESC brakes to zero motor RPM (even if the vehicle is moving).

2. Brake Amount

Sets what percentage of available braking power is applied with full brake.

Option 1: 25% Power

Allows only 25% of available braking power at full brake.

Option 2: 50% Power (Default)

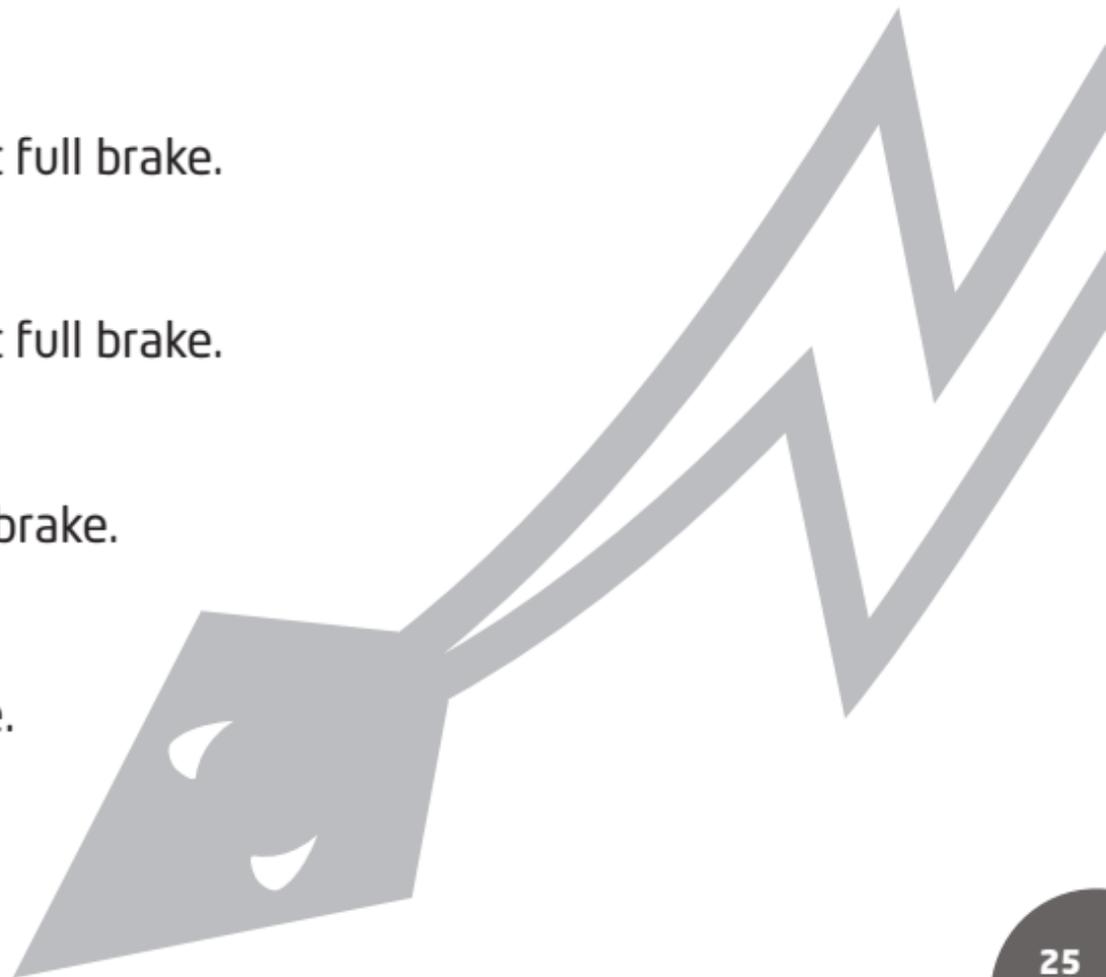
Allows only 50% of available braking power at full brake.

Option 3: 75% Power

Allows 75% of available braking power at full brake.

Option 4: 100% Power

Allows all available braking power at full brake.



3. Reverse Amount

Sets how much power will be applied in the reverse direction, if reverse is enabled.

Option 1: 25% Power

Allows only 25% power in reverse.

Option 2: 50% Power (Default)

Allows only 50% power in reverse.

Option 3: 75% Power

Allows only 75% power in reverse.

Option 4: 100% Power

Allows 100% power in reverse.

4. Punch/Traction Control

This setting controls how fast the throttle position within the ESC can be changed over time. This smooths high power starts and limits punch somewhat. As explained previously, acceleration is a matter of battery capability, but you may not want 100% of what the battery can deliver in every situation. This setting is crucial to drag racing as it can be used as a “traction control” to match traction conditions. The lower the setting, the less throttle change limiting there is. For pure burnout and wheelie action, use a very low setting or the disabled setting. For softer acceleration or for a low-grip surface, raise it up to a higher setting. ***Don't be afraid to use these settings! It may be fun to watch your car do back flips, but sooner or later you are going to want to be able to drive it under some semblance of control. This is THE setting to put you back into control.***

Option 1: High

Very limited acceleration. Good for 2WD vehicles on hard dirt, or for general bashing when you

want to be gentle on the transmission.

Option 2: Medium

Medium acceleration limiting. Good for 2WD vehicles on soft dirt, and 4WD vehicles on hard dirt.

Option 3: Low

Light acceleration limiting. Good for 4WD vehicles on soft dirt.

Option 4: Lowest

Very light acceleration limiting. Good for most situations including 4WD vehicles on dirt and asphalt, and 2WD vehicles on asphalt.

Option 5: Disabled (Default)

Acceleration is only limited by battery ability. This setting is good for 4WD sedans on carpet,

high traction drag racing, or bashing where unlimited wheelie power is desired.

5. Drag Brake

Sets the amount of drag brake applied at neutral throttle to simulate the slight braking effect of a neutral brushed motor while coasting.

Option 1: Drag Brake OFF (Default)

Vehicle will coast with almost no resistance from the motor at neutral throttle.

Option 2: Drag Brake 10%

Low amount of braking effect from the motor at neutral throttle.

Option 3: Drag Brake 20%

More braking effect from the motor at neutral throttle.

Option 4: Drag Brake 30%

Fairly high braking effect from the motor at neutral throttle.

Option 5: Drag Brake 40%

High braking effect from the motor at neutral throttle.

6. Dead Band

You may adjust the neutral throttle “width” of the controller with this setting. Smaller values make the controller enter forward or brake/reverse with a smaller movement of your throttle trigger for finer control. Be careful, some transmitters offer better resolution than others. If

your ESC will not respond to "Neutral" throttle, make this setting larger.

Option 1: Large - 0.1500 ms

Option 2: Normal - 0.1000 ms **(Default)**

Option 3: Small - 0.0750 ms

Option 4: Very Small - 0.0500 ms

Option 5: Smallest - 0.0250 ms

7. Cutoff Voltage

Sets the voltage at which the ESC lowers or removes power to the motor in order to either keep the battery at a safe minimum voltage (Lithium Polymer cells) or the radio system working reliably (NiCad/NiMH cells).

Option 1: None

Does not cut off or limit the motor due to low voltage. ***Do not use with any Lithium packs!***

Applications: Any racing or bashing situation with 6-8 cell NiCad or NiMH packs.

Use this setting ONLY with NiCad or NiMH packs. With continued driving, the radio system may eventually cease to deliver pulses to the servo and ESC, and the vehicle will not be under control. You will irreversibly damage Lithium Polymer packs with this setting!

Option 2: Auto-Lipo (Default)

This setting automatically detects the number of LiPo cells you have plugged in. It will automatically set the cut-off to 3.2 volts per cell. It will beep the number of cells in your LiPo pack between the initialization tones and the arming tones on initial power up of the controller.

Option 3: 5v

Cuts off/limits the motor speed/acceleration when the pack gets down to 5 volts. A good setting

for racing or bashing in any vehicle using 8-12 NiMH or NiCad packs.

Option 4: 6v

Cuts off/limits acceleration when the pack gets down to 6 volts.

Option 5: 9v

Cuts off/limits acceleration when the pack gets down to 9 volts.

Option 6: 12v

Cuts off/limits acceleration when the pack gets down to 12 volts.

8. Motor Timing

Advancing the timing on an electric motor can have varying effects. Lowering the timing

advance will reduce the amp draw, increase runtime, reduce motor/battery temperature, and may slightly reduce top speed and punch. Raising the timing advance will increase amp draw, decrease runtime, increase motor/battery temperature, and may slightly increase top speed and punch.

If you are after maximum top speed, it's better to "gear up" to get it rather than advance the timing too far.

Option 1: Lowest

A maximum efficiency setting giving long runtimes and cooler motor temps. Very useful with high Kv (low turn) motors to increase motor life and reduce motor/battery temperatures.

Option 2: Normal (Default)

The best mix of speed, punch, and efficiency for all motors.

Option 3: Highest

Increases amp draw, reduces runtimes, increases motor/battery temperatures, and may increase top speed/punch slightly.

Use with care, and monitor motor and battery temps often! DO NOT use any setting above "normal" with 6000Kv or higher motors.

9. Motor Type

This setting sets which type of motor you will be using with the Castle ESC. ***The ESC may be damaged if this setting does not match the motor type/hook-up method in the car, and this damage is not covered under warranty.***

Option 1: Brushless (Default)

(See Brushless Motor Setup diagram on page 9). Uses all three of the ESC motor wires (or motor

connectors) connected to all three of the brushless motor wires. If the motor spins the wrong way with forward throttle, swap any two of the wires to get the correct direction. (Applies to sensorless brushless only. Reverse motor direction using Castle Link with sensored brushless motors).

Option 2: Brushed Reversing

(See Reversing Brushed Motor Setup diagram on page 11). Uses the Red and Black ESC motor wires (or outside motor connectors on the ESC) to connect to the (+) and (-) side of the brushed motor. If the motor spins in the wrong direction with forward throttle, reverse the motor wires for correct motor direction.

Option 3: Brushed High Power

(See Figure 3: High Power Brushed Motor Setup on page 12). Connect all three of the ESC motor wires (or motor connectors on the ESC) to the negative (-) side of the motor. You can either

use a “Y” harness from the ESC battery input positive wire to connect to both the battery and the positive side of the motor, or use a single wire from the positive ESC input to the positive battery pole and then continue to the positive (+) side of the motor.

TROUBLESHOOTING

If you're still having difficulties with your Castle ESC after trying the suggestions offered here, please contact Castle Creations technical support at the e-mail or phone number in the next section.

Problem: My Castle ESC may or may not arm, but it will not calibrate to my transmitter.

Solution: Most calibration issues can be solved by changing settings on the transmitter. Make sure you have both your throttle and brake endpoints (called EPA or ATV on your radio) on the throttle channel out to between 100 to 120%. Make sure if you have a Futaba or Futaba made

transmitter to have the throttle channel set to the reversed position.

Problem: My ESC calibrates for the full throttle and full brake positions but won't calibrate to the neutral throttle position (yellow LED keeps flashing with single beeps).

Solution: Try moving the throttle trim one way, then the other (usually towards the throttle side is best). If your transmitter has a 50/50 and 70/30 setting for the throttle, set it for 50/50 and retry calibration. Also, if you have changed the dead band to a narrower band you may want to try going back to the "normal" setting. If you have a Mamba Max Pro and the ESC is not beeping, the yellow flashing light at neutral is normal and the ESC is ready for use.

Problem: My vehicle acts like it has "turbo lag" (poor acceleration/punch for the first few feet or yards, and then it "kicks in").

Solution: Make sure you're using high quality batteries and a battery connector capable of high amp flow (40-100 amps). This behavior is very typical of a battery pack that is having difficulty providing the power your vehicle/system requires for top performance. Refer to page 7 for recommended battery capacity and C ratings for use with Castle Creations systems.

For NiCad/NiMH packs, use copper bars to connect cells rather than welded tabs.

Problem: My battery pack is plugged into the ESC and nothing is working - no steering and no throttle.

Solution: Make sure the ESC's receiver plug is plugged into channel 2 on the receiver, and that it's plugged in with the correct orientation. Double check your solder connections on the battery plug, and make sure the battery is showing good voltage. The switch on the ESC may be bad. Cut the switch off (leave the wires attached to the ESC), strip back some insulation and

twist the bare wires together. If the ESC powers up you can attach a different switch or it is recommend to solder the wires together and cover the connection with heat-shrink. Doing this will not void your warranty.

For more troubleshooting tips visit: www.castlecreations.com/FAQ

TECHNICAL SUPPORT

You may contact our world-class technical support department via e-mail, or phone. For tech support hours see our website at www.castlecreations.com/support.

E-mail: support@castlecreations.com

Phone: (913) 390-6939, option #1.

WARRANTY INFO

Your Castle ESC is warranted for one (1) year from date of purchase to be free from manufacturing and component defects. This warranty does not cover damages caused to your motor or controller from abuse. Abuse includes, but is not limited to, the following: incorrect wiring, over voltage, overloading, improper gearing, improper motor selection, incorrect controller settings, insufficient batteries or connectors. If you have any questions, comments, or wish to return your Castle ESC for warranty or non-warranty repair or replacement, please contact Castle Creations, Inc.



ESC PROGRAMMING GUIDE

1: Brake/Reverse Type

Option 1: With Reverse **(D)***

Option 2: Without Reverse

Option 3: Crawler Reverse

2: Brake Amount

Option 1: 25%

Option 2: 50% **(D)***

Option 3: 75%

Option 4: 100%

3: Reverse Amount

Option 1: 25%

Option 2: 50% **(D)***

Option 3: 75%

Option 4: 100%

4: Punch Control

Option 1: High

Option 2: Medium

Option 3: Low

Option 4: Lowest

Option 5: Disabled **(D)***

5: Drag Brake

Option 1: Disabled **(D)***

Option 2: 10%

Option 3: 20%

Option 4: 30%

Option 5: 40%

6. Throttle Dead Band

Setting 1: Large - 0.1500 ms

Setting 2: Normal - 0.1000 ms **(D)***

Setting 3: Small - 0.0750 ms

Setting 4: Very Small - 0.0500 ms

Setting 5: Smallest - 0.0250 ms

7: Voltage Cutoff

Option 1: None

Option 2: Auto-Lipo **(D)***

Option 3: 5v

Option 4: 6v

Option 5: 9v

Option 6: 12v

8: Motor Timing

Option 1: Lowest

Option 2: Normal **(D)***

Option 3: Highest

9: Motor Type

Option 1: Brushless **(D)***

Option 2: Brushed Reversing

Option 3: Brushed High Power

Note: (D)* Denotes default setting



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