

# ONYX™ 60A BRUSHED ESC INSTRUCTIONS

Thank you for purchasing the ONYX electronic speed controller (ESC). Operating RC models can be very dangerous, so please read this manual carefully.

**Please read and understand all warnings before installation and operation!**



## OPERATIONAL WARNINGS!

- Disconnect the battery from the ESC immediately if the ESC or battery becomes hot! Allow the ESC or battery to cool down before reconnecting.
- **NEVER** use more than the specified voltage on the ESC's input.
- **ALWAYS** mount the ESC in a position where air can flow through the heat sink during operation.
- **ALWAYS** turn on the transmitter before connecting the battery to the ESC.
- **ALWAYS** disconnect the battery from the ESC when not in use.
- **ALWAYS** remove the pinion gear when making programming changes. This will prevent the model from taking off accidentally.
- **DO NOT** use with brushless motors.
- **ALWAYS** set the battery type to LiPo when using a LiPo battery. This will turn on the LVC.
- **ALWAYS** use heat-shrink tubing to insulate any bare wires to prevent a short circuit.
- **ALWAYS** allow the ESC to cool before touching. It is normal for ESCs to get warm during operation.
- **DO NOT** allow metal/conductive materials to accidentally make contact across any or all motor/battery posts.
- **NEVER** power up the ESC before plugging it into the Rx and switching on the transmitter (Tx).
- **ALWAYS** keep out of reach of children.
- **ONYX is not responsible for incidental damage or personal injury as a result of misuse of this product.**



## LITHIUM BATTERY CAUTIONS!



This product may use a lithium polymer (LiPo) battery. Improper handling could result in FIRE! A lithium battery fire has the potential to ignite surrounding areas and may cause property damage or cause personal injury.

- **ALWAYS** set the ESC to LiPo battery mode to prevent over discharging.
- **NEVER** leave a LiPo battery unattended while charging or during operation.
- **NEVER** operate a vehicle with a LiPo battery inside a building.
- **IMPORTANT!** Always unplug the LiPo battery immediately when finished operating your vehicle.
- **ALWAYS** charge and store LiPo batteries in a fireproof location. **Never** store LiPo batteries inside the model.
- If you ever see a LiPo battery puff or smoke during operation, immediately disconnect the battery and move the entire model, with the battery installed, to a fireproof location (outside if possible).
- Consult the battery and charger instruction manuals.

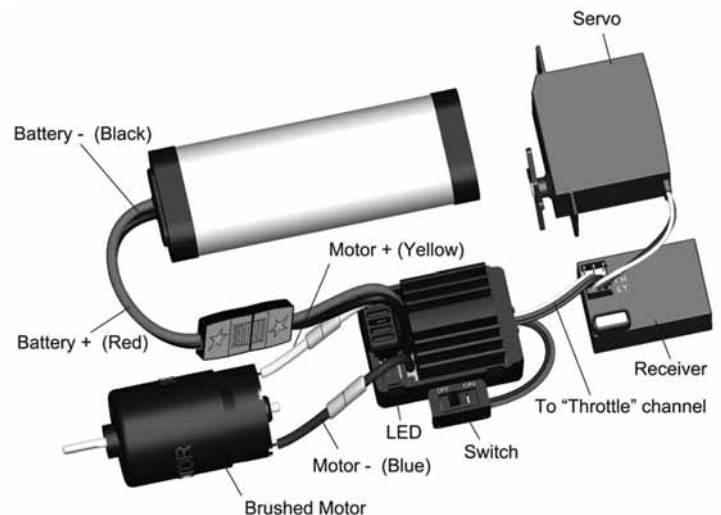
## FEATURES

- Designed for brushed motors.
- Includes three operation modes: Forward with brake, Forward with brake and reverse, or Forward and Reverse only (for crawlers).
- Water- and dust-proof. The ESC is resistant to splashes and can handle brief submersions.
- Smooth acceleration and linear feel.
- Easy throttle calibration.

- Safety features: Low voltage cut-off protection for LiPo or NiMH battery, Thermal protection, Signal loss protection.
- Easy to program.
- Powerful BEC regulator.
- Auto cell selection.

SPECIFICATIONS		ONXM1060
Continuous / Burst		Forward: 60A / 360A Backward: 30A / 180A
Input		2-3S LiPo or 5-9 cell NiMH
Applications		1:10 on-road, off-road Buggy, Truggy, SC, SCT, Boats, and Crawlers (F/R mode).
Motor Limit	2S LiPo/ 5-6 cell NiMH	540 or 550 size motor ≥ 8T
	3S LiPo/ 7-9 cell NiMH	540 or 550 size motor ≥ 13T
Resistance		Forward: 0.008 ohm Backward: 0.0016 ohm
Built-In BEC		3A / 6V
Dimensions and Weight		36 x 30 x 18mm, 40g

## ESC SETUP



### 1. CONNECT THE ESC.

- Connect the ESC to the motor. Yellow to the positive (+) side of the motor. Blue to the negative (-) side of the motor.
- Connect the ESC's Rx lead to the throttle channel of the receiver (typically CH2).
- Connect the "+" and "-" battery wires of the ESC to the battery pack.

**CAUTION! Incorrect polarity will damage the ESC immediately.**

### 2. TRANSMITTER SETUP

- Set the "D/R", "EPA" and "ATL" to 100% for throttle channel.
- Set the "TRIM" of the throttle channel to center.

**NOTE:** For Futaba and Tactic transmitters, the direction of throttle channel must be set to "REV". Other radio systems may be different. Consult your transmitter's manual to be sure.

**IMPORTANT!** Always use the Failsafe in your radio system. Set it up so the throttle moves to zero.

### 3. THROTTLE CALIBRATION

Every time you turn on the ESC, the throttle will calibrate. First turn on your transmitter and keep the throttle at neutral. Next, turn on the ESC. You will first hear a short beep or beeps to indicate your battery setup (see chart on the next page). This will be followed by a long beep. This process is very quick. Once you hear the long beep, you are ready to go.

**NOTE:** When changing settings of the throttle channel, (D/R, ATV, ATL or EPA), always restart the ESC to recalibrate.

#### 4. OPERATION STATUS

BEEP SOUNDS
<b>1 SHORT «BEEP»</b> NiMH/NiCd Battery Setting
<b>2 SHORT «BEEPS»</b> 2S LiPo Battery Setting
<b>3 SHORT «BEEPS»</b> 3S LiPo Battery Setting
<b>1 LONG «BEEP»</b> Throttle Calibration Complete

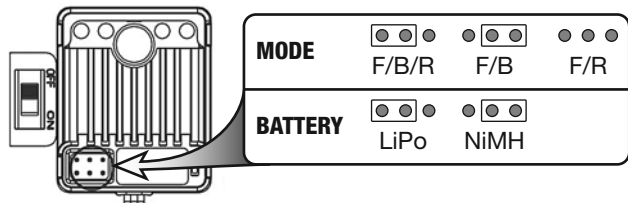
LED STATUS
When the throttle is at neutral, the red LED is off.
Forward or reverse at <i>partial</i> throttle, the red LED blinks.
Forward or reverse at <i>full</i> throttle, the red LED is solid.

#### 5. PROGRAMMING THE ESC

The ESC is programmed by using jumper connectors placed in specific locations. (Tweezers are recommended to plug and unplug the jumper.)

The chart shows the jumper positions for programming the drag brake and for selecting battery type.

**IMPORTANT!** If running a LiPo battery, you **MUST** use the LiPo setting to protect the battery from over-discharging.



#### OPERATION

- There are three modes of operation. Forward with Brake and Reverse (F/B/R) is most common for general running. Forward with Brake (F/B) is required for racing. Or Forward and Reverse (F/R) with drag brake at neutral is used for crawling and tanks.
- When the mode is set for Forward with Brake and Reverse (F/B/R), you will use the “Double-Click” method to make the car go into reverse. When you move the trigger backwards for the first time, the ESC activates the brake only. If the trigger is moved backwards a second time (with the motor stopped) reverse will be activated. This “Double-Click” method prevents mistakenly moving into reverse too quickly and allows better brake function.
- Forward/Reverse (F/R) mode is ideal for crawler applications. This allows you to quickly move from forward to reverse without

delay in case you are stuck. When at neutral, it holds full brake. Be careful, however. This mode is harder on motors and drivelines. It is not recommended to be used with race cars or general driving.

- For tanks, two ESCs are needed—one ESC connected to each side. Using a two-stick radio or a wheel radio with mixing, you will be able to independently control each track.

#### SAFETY SYSTEMS

**Low Voltage Cut-Off (LVC) Protection:** If the battery voltage is lower than the cut-off voltage for 2 seconds, the ESC will enter the protection mode. When the vehicle stops, the red LED will blink to indicate the low voltage cut-off protection has been activated.

LVC CHART	
<b>2S LiPo</b>	Throttle reduces to 50% at 6.5V, cuts off at 6.0V.
<b>3S LiPo</b>	Throttle reduces to 50% at 9.75V, cuts off at 9.0V.
<b>5-9 Cell NiMH</b>	Throttle reduces to 50% at 4.5V, cuts off at 4.0V.

**Thermal Protection:** When the internal temperature of the ESC is higher than 212° F (100° C) for 5 seconds, the ESC will reduce and cut off the output power. The vehicle will stop and the red LED blinks to indicate the thermal protection has been activated. When the ESC cools down to 176° F (80° C), the ESC will reset to normal.

**Throttle Signal Loss Protection:** The ESC will shut down the motor if the throttle signal has been lost for 0.1 seconds.

#### 1-YEAR LIMITED WARRANTY

**PLEASE DO NOT RETURN YOUR PRODUCT TO THE STORE!** ONYX will repair or replace factory defects for one year from the date of purchase. This warranty specifically does not cover crash damage, misuse, or abuse. To make a warranty claim, please contact our support team at [www.oynx-rc.com/support](http://www.oynx-rc.com/support).

This warranty applies only if the product is operated in compliance with the instructions and warnings provided with each model. ONYX assumes no liability except for the exclusive remedy or repair of parts as specified above. ONYX shall not be liable for consequential or incidental damages. Some states do not allow the exclusion of consequential or incidental damages, so the above exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

#### TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
After powering on, the motor will not work, no sound is emitted, and the LED is off.	Check the connections between the battery pack and the ESC.	Check the battery connection or replace the defective connectors.
	Switch may be damaged.	Replace the switch.
After powering on, the motor won't work and the red LED blinks.	Throttle signal is abnormal.	Check the receiver connection; make sure it is plugged securely into the throttle channel.
	Throttle range calibration failed.	Set the “TRIM” of throttle channel to its neutral position.
The car runs in reverse while giving throttle. (The motor runs in the opposite direction).	The wire connections between ESC and the motor are wrong.	Swap the wire connections between the ESC and the motor.
The vehicle won't go in reverse.	The jumper position is incorrect.	Check the jumper and plug it into the correct position.
	The neutral point of the throttle channel is incorrect.	Set the “TRIM” of the throttle channel to its neutral position.
The vehicle can't go forward, but can go in reverse.	The direction of the throttle channel is not correct.	Reset the direction of the throttle channel (NOR ⇒ REV or REV ⇒ NOR).
The motor doesn't work, but the LED in the ESC is working normally.	The connection between the motor and ESC is broken.	Check the connections and replace the defective connector(s).
	The motor is damaged.	Replace the motor.
The motor suddenly stops running during operation.	The throttle signal is lost.	Check the Tx batteries and the the Rx connections.
	LVC or Thermal Protection has been activated.	Replace the battery pack or cool down the ESC.
The vehicle cannot reach top speed and the red LED doesn't read solid at full throttle.	Transmitter settings are incorrect.	Set D/R, EPA, ATL to 100% and set the TRIM to its neutral position.
The motor stutters during quick acceleration.	The battery is unable to handle the motor draw.	Use a battery with better discharge (greater “C” value).
	Motor RPM is too high and/or the gear ratio is too aggressive.	Use a motor with lower RPM or use a smaller pinion.
	A chassis problem is causing drivetrain drag.	Check the drivetrain in the vehicle.