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Mamba XLX2 Extreme Electronic Speed Controller Instruction Manual

MODEL: 010-0167-00 | BRAND: CASTLE CREATIONS

1. Introduction

The Castle Creations Mamba XLX2 Extreme Electronic Speed Controller (ESC) is designed for high-performance power systems in large-scale RC vehicles (1/6, 1/7, 1/5th scale). This ESC incorporates advanced hardware and software, including sensored motor support, CRYO-DRIVE thermal management, and a waterproof design. It features onboard data logging, a powerful integrated 20A Peak Adjustable BEC, and auxiliary wire functionality for on-the-fly adjustments.

The CRYO-DRIVE technology optimizes thermal performance by minimizing heat generation and maximizing airflow through an open housing design, a 50mm fan, and a forged elliptical fin heatsink. This results in increased power handling, cooler ESC temperatures, and extended runtimes.



Figure 1: Mamba XLX2 Extreme Electronic Speed Controller.

2. What's in the Box

Verify that all components are present in the packaging:

- Mamba XLX2 ESC
- 300mm Direct Connect Sensor Wire
- Mamba Decals
- Coupon for free Castle Link USB Adapter
- Quick Start Guide
- Sensor port dust cover

3. Setup

The Mamba XLX2 ESC is designed for 1/5th scale vehicles weighing up to 42 lbs, running 3s-8s LiPo batteries. Ensure your vehicle's components are compatible and can support the power output of the XLX2.

3.1 Initial Installation

Mount the ESC securely in your vehicle, ensuring adequate airflow for cooling. Connect the motor, battery, and receiver according to the wiring diagrams provided in the official Mamba XLX2 Product Use Statements. Proper wiring and soldering are critical for performance and safety.



Figure 2: Example installation of a Castle Creations ESC in an RC car.

3.2 Programming and Optimization

Optimize the ESC for various driving conditions using the Castle Link Programming Suite on a Windows PC (free coupon included). Alternatively, use the B-Link Bluetooth Adapter (sold separately) with the free Castle Link app for Android or iOS for wireless adjustments. This allows you to create, save, and download setup profiles.



Figure 3: Castle Link USB Programming Kit for ESC configuration.

For detailed information on calibration, input voltage, minimum battery requirements, wiring, soldering, and connectors, refer to the official Mamba XLX2 Product Use Statements.

4. Operating Instructions

4.1 SmartSense Mode

The SmartSense mode utilizes the motor's sensors for smooth starts, excellent torque, and precise low-speed drivability. Once the motor reaches a certain speed, the system seamlessly transitions to Castle's efficient sensorless mode, maximizing power delivery to the ground.



Figure 4: SmartSense technology for smooth motor starts.

4.2 Auxiliary Wire Functionality

The auxiliary wire allows for on-the-fly adjustments from your transmitter. Connect the white signal wire to an open radio channel and enable the feature in Castle Link. You can then access programming parameters such as Torque Control, Max Brake, or Max Throttle directly from your transmitter during operation.

4.3 Data Logging

The Mamba XLX2 includes onboard data logging capabilities. This feature allows you to monitor critical parameters such as current, voltage, temperatures, and RPM, providing valuable insights into your system's performance and helping with optimization.



Figure 5: Data logging feature for performance monitoring.

4.4 CRYO-DRIVE Thermal Management

The CRYO-DRIVE system actively manages the ESC's temperature, ensuring optimal performance and reliability. This technology reduces heat generation and enhances cooling through its unique design and components.



Figure 6: CRYO-DRIVE technology for advanced thermal management.

4.5 Instructional Videos

For a comprehensive guide on setting up and operating your Mamba XLX2 ESC, please watch the detailed instructional video below:



Video 1: Detailed setup and operation guide for the Mamba XLX2 ESC.

Additionally, this video provides an overview of key features and benefits:



Video 2: Overview of Mamba XLX2 ESC features.

5. Maintenance

Regular maintenance ensures the longevity and optimal performance of your Mamba XLX2 ESC:

- **Cleaning:** Keep the ESC free from dirt, dust, and debris. Use compressed air or a soft brush to clean the heatsink fins and fan.
- **Connection Checks:** Periodically inspect all wiring and connectors for signs of wear, corrosion, or loose connections. Ensure all solder joints are secure.
- **Waterproof Design:** While the ESC features a waterproof design, it is recommended to dry the unit thoroughly after exposure to moisture to prevent long-term issues. Avoid prolonged submersion.
- **Firmware Updates:** Regularly check for and install the latest firmware updates using the Castle Link software to

benefit from performance improvements and bug fixes.

6. Troubleshooting

If you encounter issues with your Mamba XLX2 ESC, consider the following general troubleshooting steps:

- **No Power:** Check all battery connections, ensure the battery is charged, and verify that the ESC is properly connected to the receiver.
- **Motor Not Responding:** Confirm motor connections are secure and that the sensor wire (if used) is correctly plugged in. Check for proper calibration between the ESC and your radio system.
- **Overheating:** Ensure adequate airflow around the ESC. Check gearing for proper ratios and verify that the motor is not undersized for the vehicle. Monitor temperatures using the data logging feature.
- **Erratic Behavior:** Re-calibrate the ESC to your radio. Check for radio interference or damaged wiring.

For specific issues related to calibration, input voltage, minimum battery requirements, wiring, soldering, and connectors, always refer to the official Mamba XLX2 Product Use Statements provided by Castle Creations. These documents contain detailed guidance for resolving complex problems.

7. Specifications

Feature	Specification
Product Dimensions	3.98 x 2.49 x 2.2 inches
Item Weight	13.1 ounces
Model Number	010-0167-00
Manufacturer Recommended Age	18 years and up
Battery Requirements	1 Lithium Polymer battery required (3s-8s LiPo compatible)
Manufacturer	Castle Creations
First Available Date	February 24, 2021

8. Warranty and Support

The Mamba XLX2 ESC is proudly designed, assembled, and supported by Castle Creations in Olathe, KS, USA. For warranty information, please refer to the official warranty policy available on the Castle Creations website or contact their customer support directly.

For technical assistance, troubleshooting, or any product-related inquiries, please contact Castle Creations customer support. Ensure you have your product model number (010-0167-00) and purchase details available when seeking support.