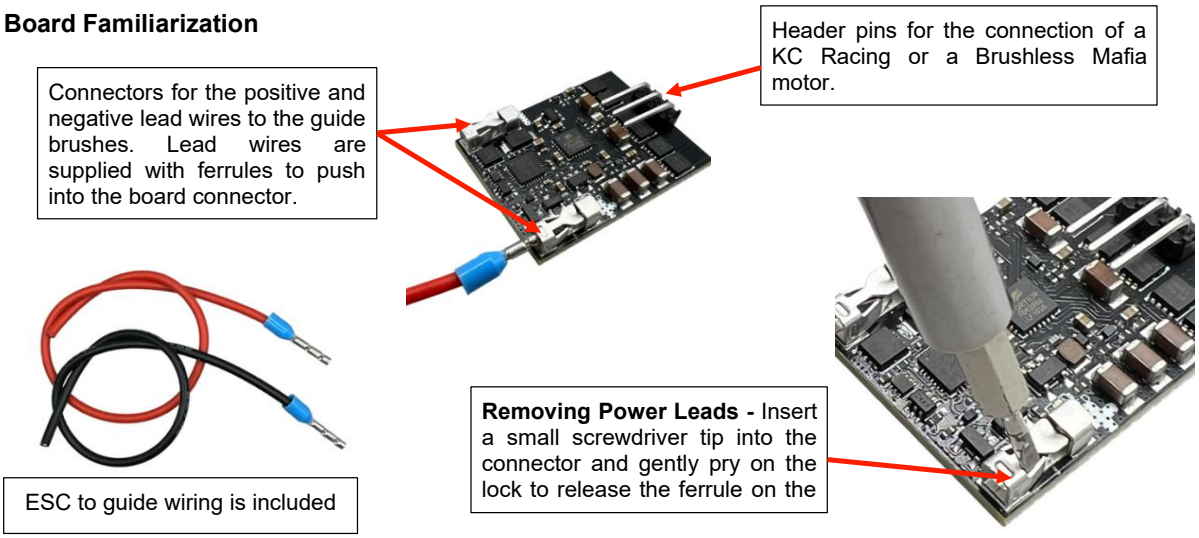
Instructions for X89 Brushless Mafia ESCs

Thank you for purchasing the X89 Brushless Mafia ESC. This ESC has been specifically designed and programmed for general Road Racing.

Please read these instructions carefully before using the product to ensure safe and efficient operation.

Description :	The X89 Brushless Mafia is a single sided board based on the architecture and components of the Remora ESC
Dimensions :	30.1 x 23.2 mm / 1.19 x 0.91 inch / Weight 6.5 g / 0.23 oz
Firmware:	Escape32 version 14.5
Wiring:	22 gauge black and red - 6” in length
Board color:	Black
Intended use:	Slot Car Road Racing
Board Identification:	X89 Brushless Mafia silk screened on the back side of the board

Board Familiarization



- No soldering is required directly on the ESC. The 3 motor cables and the two wires for the track power are attached with connectors.
- The positive pole is marked + (plus) on the circuit board. The negative pole is marked - (minus). Likewise, the red wire is positive, and the black wire is negative. In the US, tracks are typically wired with the right braid as positive and the left braid as negative.

Installation:

- Connecting the motor cables and power supply: Connect the three-position motor cable connector of the brushless motor to the corresponding header pins on the ESC circuit board.
- Solder the two wires for the track power (plus and minus) to the corresponding connections on the chassis guide flag, observing the polarity of the track power. The red positive (+) wire must be connected to the plus connection and the black negative (-) wire to the minus connection.
- The X89 Brushless Mafia ESC has reverse polarity protection on the input power.

- **The maximum permissible voltage for the power supply is 16.5 volts. Do not exceed this value to avoid damaging the product.**
- Motor compatibility: The ESC is designed for Road Racing with brushless motors from 1,800KV to 6,500KV. **2-3S motors are not suitable. They must carry a 4S rating.** Note that this controller may not be compatible with some motors. In such cases, use a suitable motor.
- Mechanical blockage: If the motor is mechanically blocked, disconnect the power supply immediately to prevent overheating and damage.
- **IMPORTANT:** Motor fastening screws which are too long will destroy and block the motor. Take care not to use screws that are too long to secure the motor.
- Instructions for use: Only switch on the power supply when the brushless motor is correctly connected. **Never power the ESC without a motor connected.** Make sure that the motor can move freely before switching on the power supply. Ensure that the voltage limit of 16.5 volts is NEVER exceeded. If the motor makes unusual noises or behaves abnormally, disconnect the power immediately and check the motor and connections.

Mechanical attachment:

- Make sure that the chassis of the vehicle is clean and dry to ensure optimum adhesion of the double-sided adhesive tape. Check the positioning of the control board on the chassis. Take into account the placement of the cables to ensure a proper connection. Cut the double-sided adhesive tape so that it covers the dimensions of the circuit board. Remove the protective film from one side of the double-sided adhesive tape and stick it carefully to the underside of the control board. Carefully position the circuit board on the chassis in the desired location. Make sure that no components come into contact with other parts of the vehicle. Press the circuit board firmly onto the chassis so that the double-sided adhesive tape, adheres properly.

ATTENTION: Motor turns the wrong way:

- Remove the motor to ESC connector, flip over the motor electrical connector and push back onto the header pins.
- **Do not swap the power supply connection wires.** This will not change the direction of rotation of the motor.

Elimination of malfunctions:

- Motor does not rotate: Check the motor cables for secure and correct connections both on the motor and on the control board. Ensure that the power supply is switched on and has the correct polarity. Check whether the motor is mechanically blocked. Remove any obstructions or jamming.
- **Motor runs unevenly or stutters: The SUPPLY VOLTAGE IS TOO HIGH. Reduce the voltage,** otherwise the control unit will be destroyed. Check the motor cables for the correct connections, or damage to the wiring.
- Motor overheating: Ensure that the motor is sufficiently ventilated and is not blocked by obstacles. Check the voltage settings and ensure that the operating voltage is within the recommended limits.
- Uncontrolled behavior of the motor: Check for possible interference with other electronic devices that could affect the control system.
- Interference from other electronic devices: If other electronic devices are interfered, with in the power supply, use an EMC interference suppression filter in the supply line to the power supply.
- If so-called PWM controllers are used as controllers, the power supply unit may report an error and switch off when the vehicle brakes due to the voltage flowing back.
- General faults and malfunctions: Check the control board for visible damage, burnt components or soldered joints and make sure that all cables and connections are secure and tight.
- For additional information on brushless technology, please visit http://www.KCRacing.net/Tech