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› GoolRC 3650 4370KV 4P Sensorless Brushless Motor and 45A Brushless ESC Instruction Manual

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FOR 1/10 RC OFF-ROAD CARS

1. INTRODUCTION

Thank you for choosing the GoolRC 3650 4370KV 4P Sensorless Brushless Motor and 45A Brushless ESC. This high-performance power system is designed for 1/10 scale RC off-road vehicles, offering reliability and efficiency. This manual provides essential information for proper installation, operation, and maintenance to ensure optimal performance and longevity of your product. Please read this manual thoroughly before use.



Image 1.1: GoolRC 3650 4370KV 4P Sensorless Brushless Motor and 45A Brushless ESC.

2. PRODUCT OVERVIEW AND FEATURES

2.1 Motor Features:

- **4 poles 12 slot Hi-torque motor design:** Provides strong and consistent power output.
- **CNC machined 6061 T6 billet aluminum heatsink can:** Ensures efficient heat dissipation for improved performance and durability.
- **High purity copper windings:** Maximizes efficiency and power transfer.
- **High RPM ABEC5 oversized bearings:** Contributes to smooth operation and extended lifespan.
- **Universal fit for all 1/10 brushless cars:** Features a multi-mounting system for M3 screws.
- **Precision balanced rotor:** Ensures smoothness for best reliability and maximum RPM.
- **Stator - Super Thin (0.35mm) laminations:** Enhances motor efficiency.
- **Removable/replaceable:** Designed for ease of maintenance.
- **Precision engineered:** For maximum energy conversion.

2.2 Electric Speed Controller (ESC) Features:

- **Compatible with sensorless brushless motors:** Versatile for various applications.
- **High anti-interference capability:** Ensures stable and reliable operation.
- **Advanced software interface:** Allows for setting up or updating the software (requires compatible programming card, sold separately).
- **Super smooth and accurate throttle linearity:** Provides precise control over vehicle speed.
- **Fast response to throttle input:** Enhances driving experience.
- **Multiple protection features:** Includes low voltage cut-off protection, over-heat protection, and throttle signal loss protection for safety and component longevity.

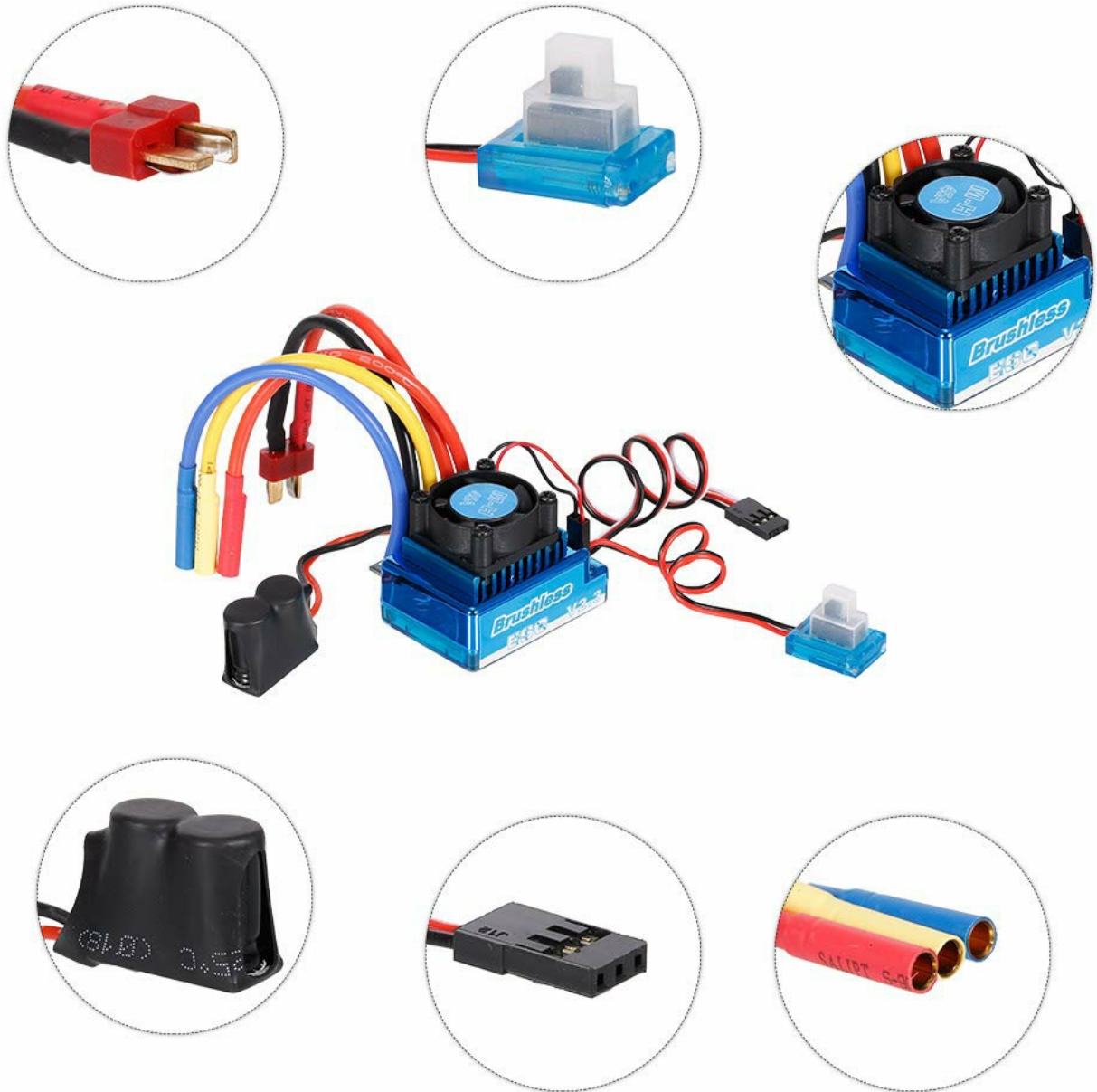


Image 2.1: Detailed view of the GoolRC 45A Brushless ESC and its connections.

3. SPECIFICATIONS

3.1 Motor Specifications:

Specification	Value
RPM	4370KV
Max Current	66A
Max Watts	820W
Can Size	3650
Sensored	No
Can Diameter	36mm
Can Length	50mm
Shaft Diameter	3.175mm
Shaft Length	15mm
Bullet Connector	4mm
Weight	146g / 5.2oz
Max Voltage	7.4V (2S) - 11.1V (3S)

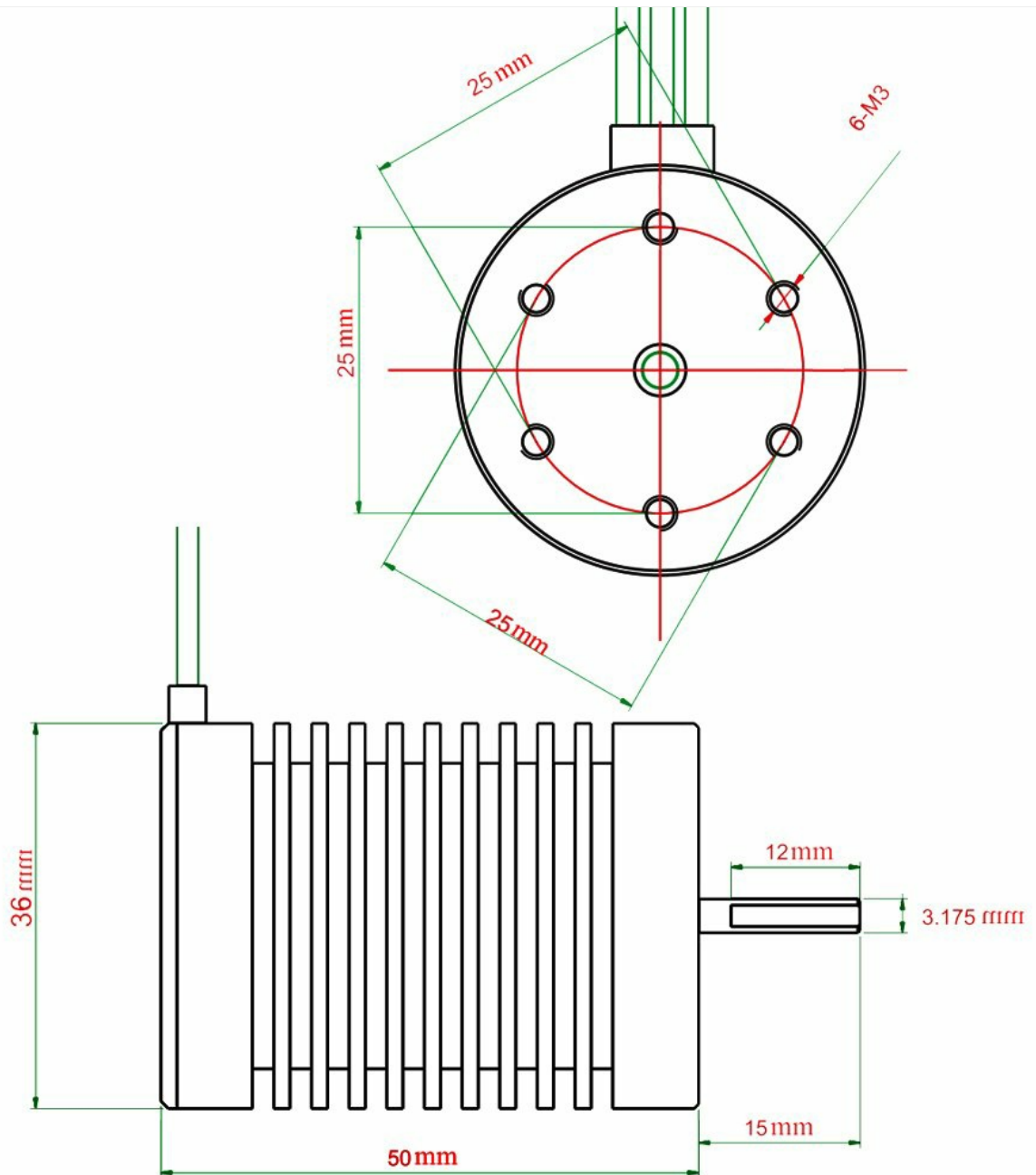


Image 3.1: Dimensional diagram of the GoolRC 3650 Brushless Motor.

3.2 Electric Speed Controller (ESC) Specifications:

Specification	Value
Cont. Current	45A
Burst Current	260A / 10sec
Battery	2-3 Cell Lipo / 4-9 Cell NiMh
SBEC	Yes
SBEC Output	5.8V / 3A
Power Supply Plugs	T Male
Motor Plugs	Female 4mm Bullet Connector

Specification	Value
Size (without fan)	45 x 35 x 35mm
Weight	76g / 2.7oz

4. SETUP AND INSTALLATION

Proper installation is crucial for the performance and safety of your RC vehicle. Follow these steps carefully:

- 1. Mount the Motor:** Securely attach the 3650 brushless motor to your vehicle's motor mount using M3 screws. Ensure proper gear mesh between the motor pinion and the spur gear.
- 2. Mount the ESC:** Find a suitable location in your chassis for the 45A ESC, ensuring good airflow for cooling. Use double-sided tape or zip ties to secure it.
- 3. Connect Motor to ESC:** Connect the three 4mm bullet connectors from the motor to the corresponding female 4mm bullet connectors on the ESC. The order of connection may affect motor rotation direction; if the motor spins in the wrong direction, swap any two of the three motor wires.
- 4. Connect ESC to Receiver:** Plug the ESC's signal cable (usually a black, red, and white wire bundle) into the throttle channel (CH2) of your RC receiver.
- 5. Connect Battery:** Connect your battery pack (2-3 Cell Lipo or 4-9 Cell NiMh) to the T-Male power supply plug on the ESC. Ensure correct polarity.
- 6. Power On Sequence:** Always turn on your transmitter first, then connect the battery to the ESC. When finished, disconnect the battery from the ESC first, then turn off your transmitter.

**3650 4370KV 4P Sensorless Brushless Motor
+ 45A Brushless ESC for 1/10 RC Car**



Image 4.1: Example of the GoolRC motor and ESC installed in an RC vehicle chassis.

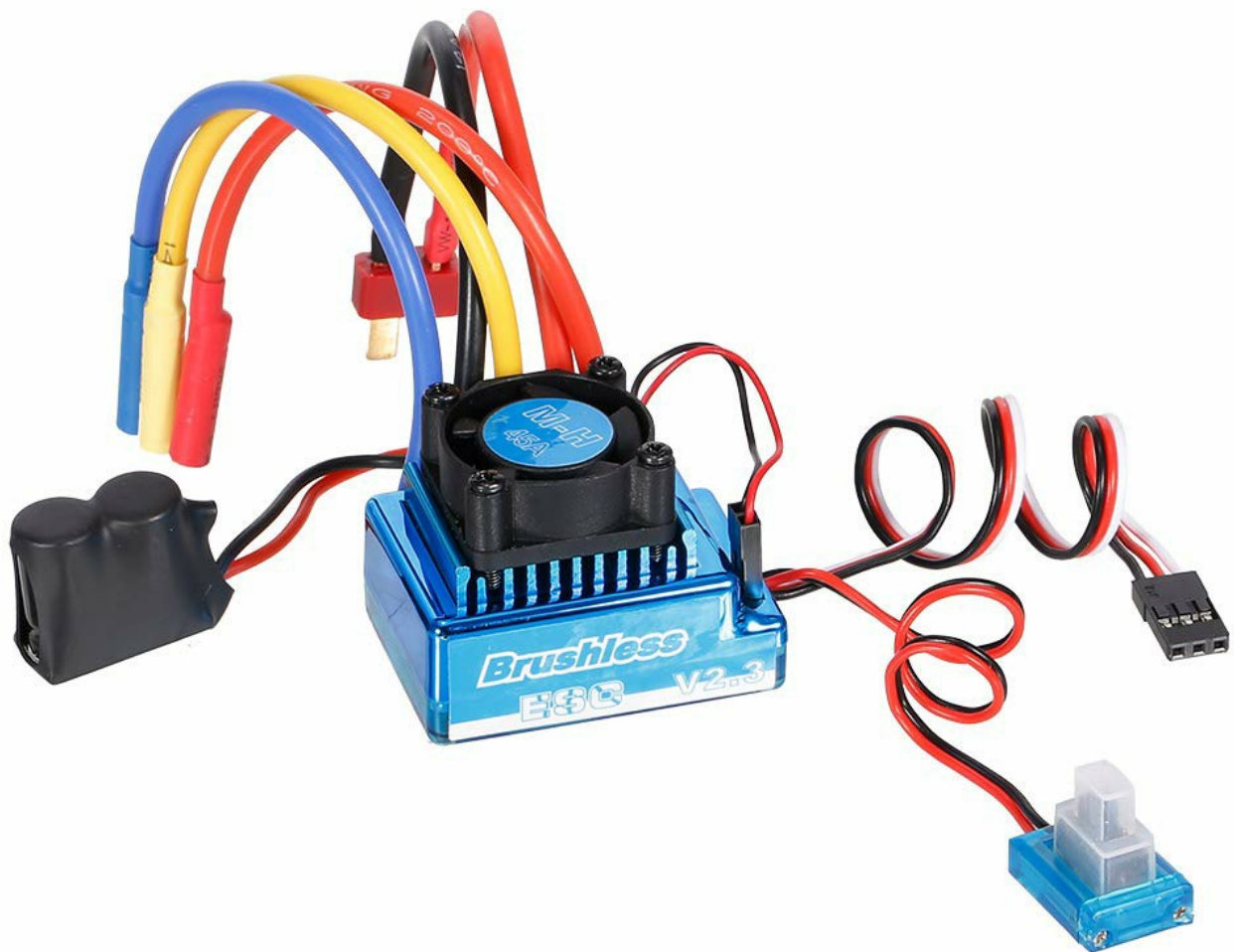


Image 4.2: GoolRC 45A Brushless ESC with integrated cooling fan and wiring.

5. OPERATING INSTRUCTIONS

Once installed, the GoolRC ESC provides smooth and responsive control. The ESC is pre-configured with standard settings suitable for most applications. For advanced tuning, a compatible programming card (not included) can be used to adjust parameters such as:

- Cut-off Voltage (for battery protection)
- Start Mode (punch)
- Brake Force
- Drag Brake
- Throttle Range

The ESC features multiple protection mechanisms:

- **Low Voltage Cut-off Protection:** Prevents over-discharge of the battery. The ESC will reduce power or cut off the motor when the battery voltage drops below a safe threshold.
- **Over-Heat Protection:** If the ESC temperature exceeds a safe limit, the ESC will reduce power output to

prevent damage.

- **Throttle Signal Loss Protection:** If the ESC loses the throttle signal from the receiver for a short period, it will cut off the motor output to prevent runaway.

6. MAINTENANCE

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

- **Cleaning:** After each use, especially in dusty or dirty conditions, clean the motor and ESC with a soft brush or compressed air to remove dirt and debris. Ensure cooling fins on the motor and ESC are clear.
- **Inspection:** Periodically check all wires and connectors for signs of wear, fraying, or damage. Ensure all connections are secure.
- **Motor Bearings:** While the motor uses high-quality bearings, extreme conditions may require occasional inspection or lubrication. If you notice unusual noise or resistance, inspect the bearings.
- **Heat Management:** Always ensure adequate airflow around the ESC and motor during operation. Avoid running the components at excessively high temperatures, as this can reduce their lifespan.

7. TROUBLESHOOTING

If you encounter issues, refer to the following troubleshooting guide:

Problem	Possible Cause	Solution
Motor not spinning / No response	1. Incorrect wiring 2. Low battery voltage 3. Throttle signal loss 4. ESC in protection mode	1. Check all motor and battery connections. 2. Charge or replace battery. 3. Ensure transmitter is on and bound to receiver. 4. Check for overheating or low voltage cut-off.
Motor spins in wrong direction	Motor wire connection order	Swap any two of the three motor wires connected to the ESC.
Motor or ESC overheating	1. Improper gearing 2. Excessive load 3. Insufficient airflow	1. Adjust gear ratio (smaller pinion, larger spur). 2. Reduce load or driving intensity. 3. Ensure proper ventilation; consider additional cooling if needed.
Intermittent power loss	Loose connections or damaged wires	Inspect all connections and wires for damage or looseness. Secure or replace as necessary.

8. SAFETY INFORMATION

Please observe the following safety precautions:

- Always operate RC vehicles in open areas, away from people, pets, and obstacles.
- Keep hands and loose clothing away from rotating parts (motor, gears, wheels).
- Ensure proper ventilation for the ESC and motor to prevent overheating.
- Use only compatible batteries and chargers. Incorrect battery usage can lead to fire or explosion.
- Disconnect the battery from the ESC when not in use to prevent accidental activation.
- This product is recommended for users aged 14 years and up. Adult supervision is advised for younger users.

9. WARRANTY AND SUPPORT

GoolRC products are manufactured to high standards. For specific warranty information or technical support, please refer to the product packaging or contact GoolRC customer service directly. You can find more information and contact details on the official GoolRC store page: [GoolRC Store](#).

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