

HAWK'S WORK 20A Brushless ESC

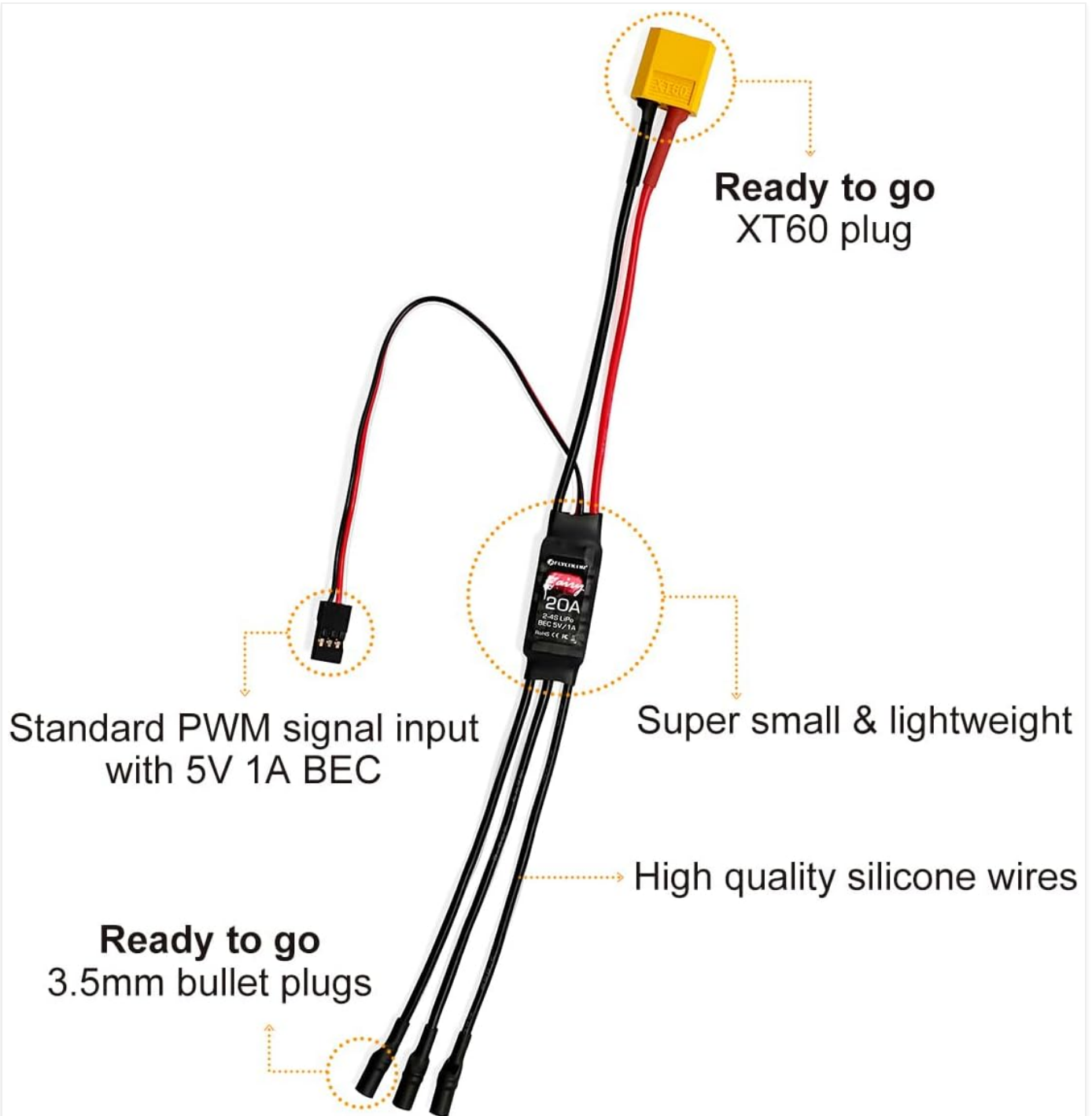
HAWK'S WORK Flycolor 20A Brushless ESC Instruction Manual

Model: 20A Brushless ESC

Overview	Specifications	Safety Information	Installation	Calibration	Operation
	Troubleshooting	Maintenance		Warranty & Support	

1. OVERVIEW AND FEATURES

The HAWK'S WORK Flycolor 20A Brushless ESC (Electronic Speed Controller) is designed for multi-rotor DIY drones, offering reliable motor control and efficient power management. This ESC comes pre-soldered with an XT60 connector and 3.5mm bullet plugs for convenient installation.



This image displays the HAWK'S WORK Flycolor 20A Brushless ESC, showcasing its compact size, pre-soldered XT60 connector for power input, standard PWM signal input with a 5V 1A BEC (Battery Eliminator Circuit), and high-quality silicone wires for durability and efficient power transfer.

Key Features:

- **OneShot 125 Support:** Enhances communication speed between the flight controller and ESC by up to 8 times.
- **Comprehensive Protection:** Includes start-up protection, overload protection, loss of throttle signal protection, and blocked rotation protection for increased safety and longevity.
- **Pre-soldered Connectors:** Equipped with an XT60 connector for battery input and 3.5mm female banana plugs for motor connections, simplifying assembly.
- **Compact and Lightweight:** Approximately 50% smaller in size and 45% lighter (around 10 grams) compared to similar ESCs, ideal for weight-sensitive applications.
- **500Hz Refresh Rate:** Supports throttle signals with refresh rates up to 500Hz, ensuring compatibility with various modern flight controllers.



The image illustrates the compact and lightweight nature of the ESC, placed on a kitchen scale indicating a weight of 17.9 grams. Key dimensions are highlighted: 25mm length, 15mm width, and 4mm thickness, emphasizing its suitability for space-constrained applications.

2. SPECIFICATIONS

Product Dimensions	6.69 x 3.54 x 1.57 inches
Item Weight	4.6 ounces
Item Model Number	ESC
Manufacturer	FLYCOLOR

Recommended Age	0 - 10 years (Note: This is a general toy category recommendation, actual usage requires adult supervision and technical knowledge.)
Batteries	2 AAA batteries required (for remote control, not included with ESC)

3. SAFETY INFORMATION

Please read and understand all safety warnings and instructions before using the ESC. Improper use can lead to serious injury or damage to property.

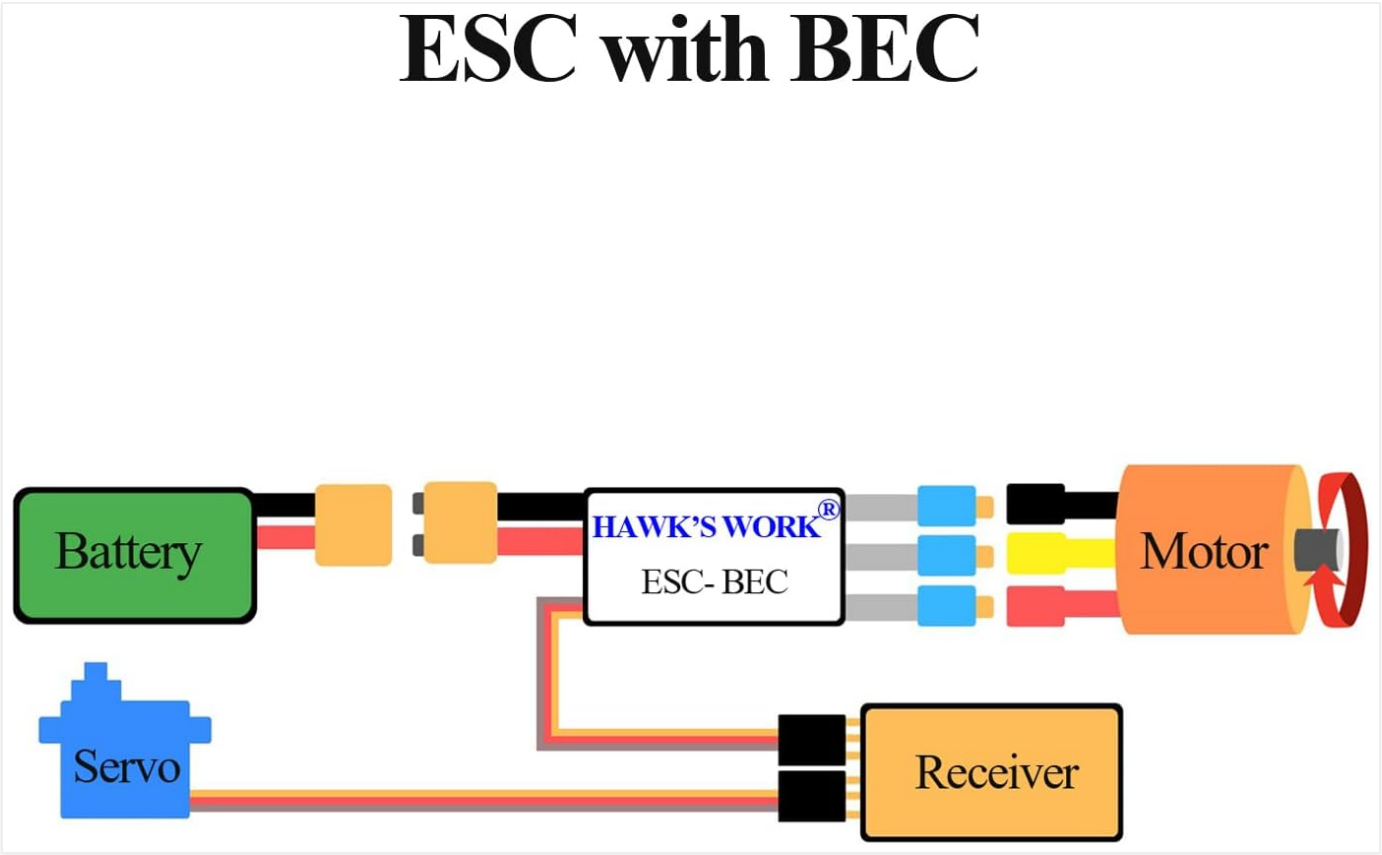
- Always connect the ESC to the flight controller and battery in the correct polarity. Reverse polarity can cause immediate damage.
- Ensure all connections are secure to prevent accidental disconnections during operation.
- Keep hands and loose clothing away from rotating propellers and motors when the system is powered on.
- Operate in open areas, away from people, animals, and obstacles.
- Do not modify the ESC or its components. Unauthorized modifications can void the warranty and create safety hazards.
- Store the ESC in a dry, cool environment, away from direct sunlight and extreme temperatures.

4. INSTALLATION GUIDE

Proper installation of the ESC is crucial for the safe and efficient operation of your multi-rotor drone or RC plane. Follow these steps carefully.

4.1 Connecting the ESC to the Motor and Flight Controller

Each ESC controls one motor. For multi-rotor drones, you will need one ESC per motor. The ESC connects to the motor via three wires and to the flight controller via a signal wire.



This diagram provides a clear visual guide for connecting the ESC with its integrated BEC. It shows the battery supplying power to the ESC-BEC unit, which then connects to the motor, servo, and receiver, outlining the essential wiring for a functional RC setup.

1. **Motor Connection:** Connect the three wires from the ESC to the three wires of your brushless motor using the 3.5mm bullet plugs. The order of these three wires determines the motor's rotation direction. If the motor spins in the wrong direction, swap any two of the three wires.
2. **Flight Controller Connection:** Connect the signal wire (usually a three-wire servo connector: signal, positive, negative) from the ESC to the corresponding motor output port on your flight controller. Ensure the black wire (ground) is on top or matches your flight controller's pinout.
3. **Power Connection:** Connect the XT60 connector from the ESC to your drone's power distribution board (PDB) or directly to the battery if using a single ESC setup.



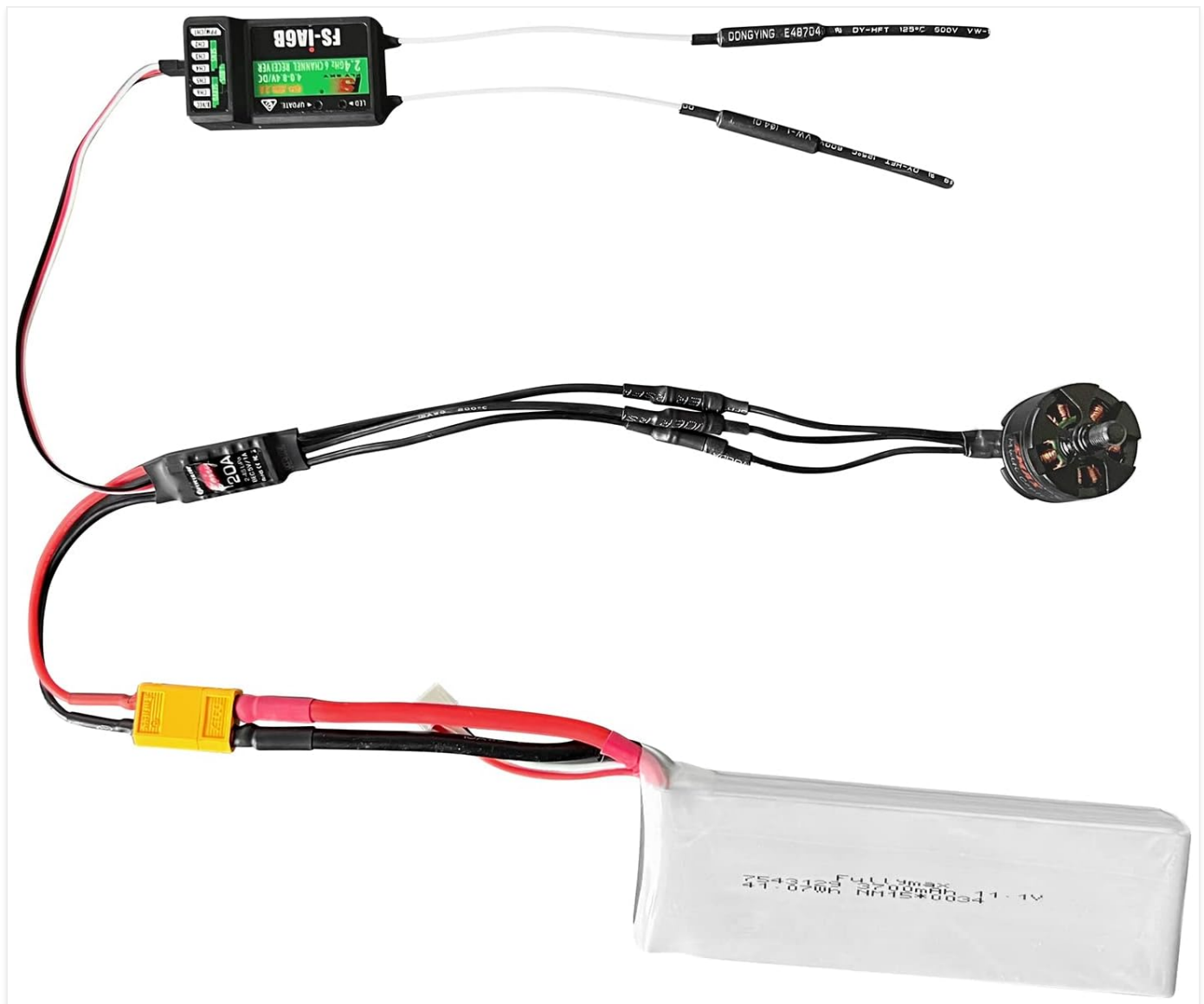
A detailed close-up of the XT60 connector, highlighting its robust design for secure and efficient power connection between the battery and the ESC.



This image shows a close-up of the 3.5mm bullet plugs, which are used to connect the ESC to the motor, ensuring a reliable electrical connection.

4.2 Securing the ESCs

Once connected, secure the ESCs to the drone's arms or frame using zip ties or double-sided tape. Ensure they are firmly attached and wires are neatly routed to avoid interference with propellers or other moving parts.



An overhead view of a quadcopter frame with all essential components installed, including the battery, ESC, motor, and receiver. This image serves as a reference for the overall layout and connection points during the assembly process.



A fully assembled drone, including a GPS module, demonstrating the complete system where the ESCs are integrated for motor control.

4.3 Installation Video

For a visual guide on the installation process, please refer to the video below:

Video tutorial on installing a brushless ESC in a drone or RC plane. This video provides an easy-to-follow installation guide for the brushless ESC in your drone or RC plane. It covers connecting the ESC to the motor and flight controller.

5. ESC CALIBRATION

ESC calibration is essential for ensuring that all motors respond uniformly to throttle commands from the flight controller. This process sets the minimum and maximum throttle endpoints for each ESC.

5.1 Calibration Steps:

1. **Power On Transmitter:** Turn on your remote control transmitter and ensure the throttle stick is at its maximum position.
2. **Connect Battery:** Connect the main battery to your drone/ESC. The ESCs will emit a long beep, indicating they have detected the maximum throttle signal.
3. **Lower Throttle:** Once the long beep is heard, immediately move the throttle stick to its lowest position. The ESCs

will then emit a series of beeps or a musical tone, confirming the minimum throttle has been set.

4. **Disconnect Power:** Disconnect the battery and turn off the transmitter. The calibration is now complete.
5. **Verify:** Reconnect the battery and test the motors at low throttle to ensure smooth and synchronized operation.

Note: Calibration is typically required for newly assembled drones or when replacing an ESC or transmitter. If the process fails, repeat from the beginning.

5.2 Calibration Video

For a visual demonstration of the ESC calibration process, please watch the video below:

Video demonstrating the ESC calibration process for a drone. This video provides a step-by-step guide on how to calibrate the Electronic Speed Controller (ESC) for your multi-rotor drone. Proper calibration ensures accurate throttle response and stable flight.

6. OPERATION

After successful installation and calibration, your ESCs are ready for operation. The flight controller will send signals to the ESCs, which in turn control the speed and direction of the brushless motors.

- Ensure your flight controller is properly configured for your drone type (e.g., quadcopter, hexacopter).
- Always perform a pre-flight check to ensure all motors spin freely and in the correct direction.
- Start with low throttle inputs and gradually increase as you become familiar with the drone's response.
- Monitor battery voltage during flight to avoid over-discharging, which can damage the battery and lead to a loss of power.

7. TROUBLESHOOTING

If you encounter issues with your ESCs, consider the following common troubleshooting steps:

- **Motor Not Spinning/Irregularly:**
 - Check all motor-to-ESC connections for looseness or incorrect wiring.
 - Recalibrate the ESCs.
 - Verify motor rotation direction and swap any two motor wires if incorrect.
 - Inspect for physical damage to the motor or ESC.
- **ESC Overheating:**
 - Ensure adequate airflow around the ESCs.
 - Check if the motor is drawing too much current (e.g., due to oversized propellers or a damaged motor).
 - Verify battery voltage and cell count are within the ESC's specifications.
- **Loss of Control/Unstable Flight:**
 - Ensure all ESCs are properly calibrated.
 - Check for loose connections between the ESCs and the flight controller.
 - Verify flight controller settings and PID tuning.

8. MAINTENANCE

Regular maintenance helps ensure the longevity and optimal performance of your ESCs:

- **Keep Clean:** Periodically clean the ESCs to remove dust, dirt, and debris, which can hinder heat dissipation.

- **Inspect Connections:** Regularly check all solder joints and connectors for signs of wear, corrosion, or looseness.
- **Check for Damage:** Inspect the ESC for any physical damage, such as cracked components or frayed wires. Replace damaged ESCs immediately.
- **Proper Storage:** When not in use, store the ESCs in a dry, cool place, away from direct sunlight and extreme temperatures.

9. WARRANTY & SUPPORT

HAWK'S WORK products are designed for quality and performance. For specific warranty details and support, please refer to the retailer's return policy or contact HAWK'S WORK directly.

- **Return Policy:** This product typically comes with a 30-day refund/replacement return policy. Please check with your point of purchase for exact terms.
- **Manufacturer Support:** For technical assistance or product-related inquiries, please reach out to HAWK'S WORK customer support.

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Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

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After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question