Hobbywing 31003002

HOBBYWING XRotor Flight Controller F7 Convertible User Manual

Model: 31003002

1. Product Overview

The HOBBYWING XRotor Flight Controller F7 Convertible is engineered for FPV Racing, featuring advanced hardware and high-speed processing capabilities. It is designed to provide stable and accurate flight control for various FPV applications.

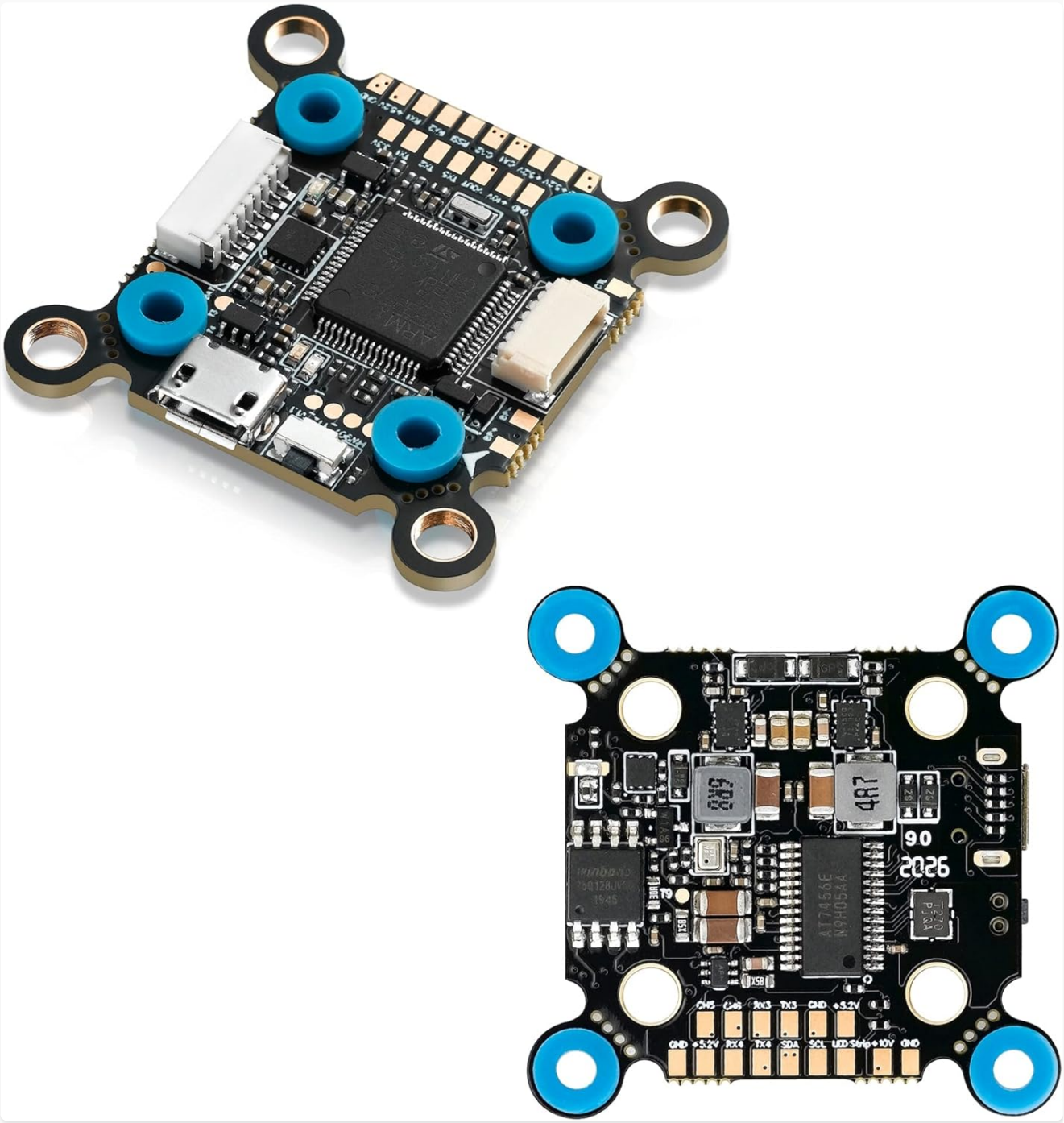

Image 1.1: Top view of the HOBBYWING XRotor Flight Controller F7 Convertible.

Key features include an STM32F722 MCU for powerful computing, a high-sensitivity ICM20602 six-axis motion sensor, and support for bidirectional DShot digital throttle communication. An integrated OSD chip allows for easy parameter adjustment, and on-board Flash memory records flight logs for debugging.

2. Setup and Installation

2.1 Physical Installation

The flight controller features a unique installation design with double hole distance mounting options (30x30MM & 20x20MM) to accommodate various frames. The shock absorption mechanism of the installation holes helps reduce the impact of external vibrations on sensitive components, contributing to stable and accurate flight.

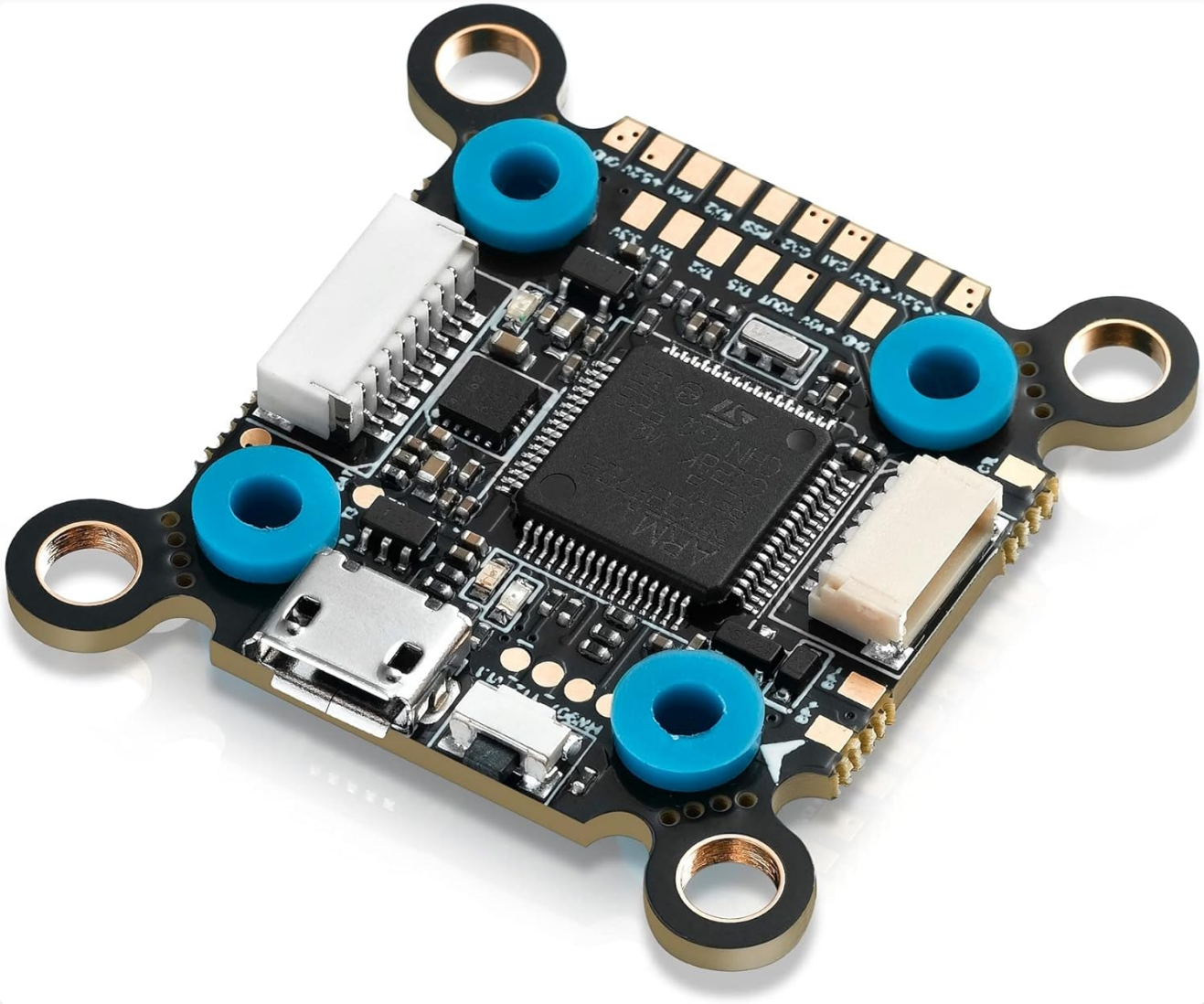

Image 2.1: Angled view of the flight controller, highlighting mounting points and connectors.

2.2 Wiring and Connections

- **DJI Image Transmission System:** A dedicated port for the DJI image transmission system is included. Use the corresponding flat cable (supplied with the FC) for plug-and-play connectivity, eliminating the need for soldering.
- **Power Supply:** The FMU integrates a 12V BEC circuit, providing 5V and 12V dual BEC output. This supplies power for image transmission and 12V LED devices.
- **ESC Compatibility:** This flight controller is designed to perfectly match with Hobbywing Tower 4-in-1 ESCs for simplified installation and wiring.
- **VTX Control:** An on-board Pit Switch module allows for VTX (Video Transmitter) activation or deactivation via radio after configuration in the FC parameter software.

3. Operating Instructions

3.1 Firmware Compatibility

The XRotor Flight Controller F7 supports various mainstream FPV firmware, including:

- BetaFlight
- Cleanflight
- Butterflight

- INAV

Users can utilize the corresponding parameter adjustment software for these firmware to fine-tune various settings, optimizing the flight controller for specific FPV flight styles and racing conditions.

3.2 OSD Functionality

The integrated OSD (On-Screen Display) chip enables adjustment and configuration of OSD parameters directly within the FC parameter adjustment software or via your radio. This provides a convenient way to monitor flight data in real-time.

3.3 Flight Log Recording

An on-board large-capacity Flash memory chip is included to record and store extensive flight logs. This data is crucial for users to analyze flight performance and debug any issues that may arise.

4. Maintenance

To ensure optimal performance and longevity of your HOBBYWING XRotor Flight Controller F7, follow these general maintenance guidelines:

- **Regular Inspection:** Periodically inspect the flight controller for any visible damage, loose connections, or debris.
- **Cleaning:** Gently clean the board with a soft brush or compressed air to remove dust and dirt. Avoid using liquids directly on the electronic components.
- **Storage:** When not in use, store the flight controller in a dry, cool environment, away from direct sunlight and extreme temperatures.
- **Firmware Updates:** Keep the flight controller's firmware updated to the latest version to benefit from performance improvements and bug fixes. Refer to the specific firmware documentation for update procedures.

5. Troubleshooting

If you encounter issues with your HOBBYWING XRotor Flight Controller F7, consider the following general troubleshooting steps:

- **Connection Check:** Verify all wiring and connections are secure and correctly oriented. Ensure no cables are loose or damaged.
- **Power Supply:** Confirm that the flight controller is receiving stable and correct voltage (5V and 12V where applicable).
- **Firmware Integrity:** If experiencing unexpected behavior, try reflashing the firmware. Ensure you are using the correct firmware version for your specific flight controller model.
- **Software Configuration:** Double-check all parameters in your chosen FPV software (e.g., BetaFlight Configurator). Incorrect settings can lead to flight instability or non-functional features.
- **Sensor Calibration:** Recalibrate the accelerometer and gyroscope sensors if you notice drift or unstable flight characteristics.
- **Component Isolation:** If a specific function (e.g., OSD, image transmission) is not working, try disconnecting other peripherals to isolate the issue.

For persistent issues, consult online FPV communities, manufacturer forums, or contact Hobbywing support.

6. Specifications

Feature	Detail
Model Number	31003002
MCU	STM32F722
Motion Sensor	ICM20602 (Six-axis)
ESC Communication	Bidirectional DShot
OSD	Integrated OSD chip
Flight Log Storage	On-board large capacity Flash memory
DJI Image Transmission Port	Dedicated port with flat cable support
BEC Output	5V & 12V Dual BEC circuit
VTX Control	On-board Pit Switch module
Mounting Hole Distance	30x30MM & 20x20MM
Item Weight	1.76 ounces
Package Dimensions	4.33 x 2.87 x 1.26 inches
Manufacturer Recommended Age	18 years and up

7. Warranty and Support

7.1 Legal Disclaimer and Warranty

This product is covered by the HOBBYWING official manufacturer warranty. Please note that Hong Kong and Chinese stores are not HOBBYWING authorized stores in North America, and items purchased from such sources may be deemed non-warranty.
A high-power system for RC models can be dangerous. Please read this manual carefully. HOBBYWING North America has no control over the correct use, installation, application, or maintenance of its products. Therefore, no liability shall be assumed or accepted for any damages, losses, or costs resulting from the use of the product. Any claims arising from operating, failure, or malfunctioning will be denied. We assume no liability for personal injury or consequential damages resulting from our product or workmanship. As far as legally permitted, the obligation to compensation is limited to the invoice amount of the affected product.

7.2 Customer Support

For more information or support, please contact HOBBYWING North America via their online store at HobbywingDirect.com.