

Beuiouer F4V3S

Beuiouer F4V3S Flight Controller Board User Manual

1. INTRODUCTION

The Beuiouer F4V3S Flight Controller Board is a high-performance control unit designed for FPV racing drones and other multirotor applications. It integrates an STM32 F405 MCU, an OSD, a barometer, and various connectivity options to provide a robust platform for flight control using firmware such as Betaflight or INAV.

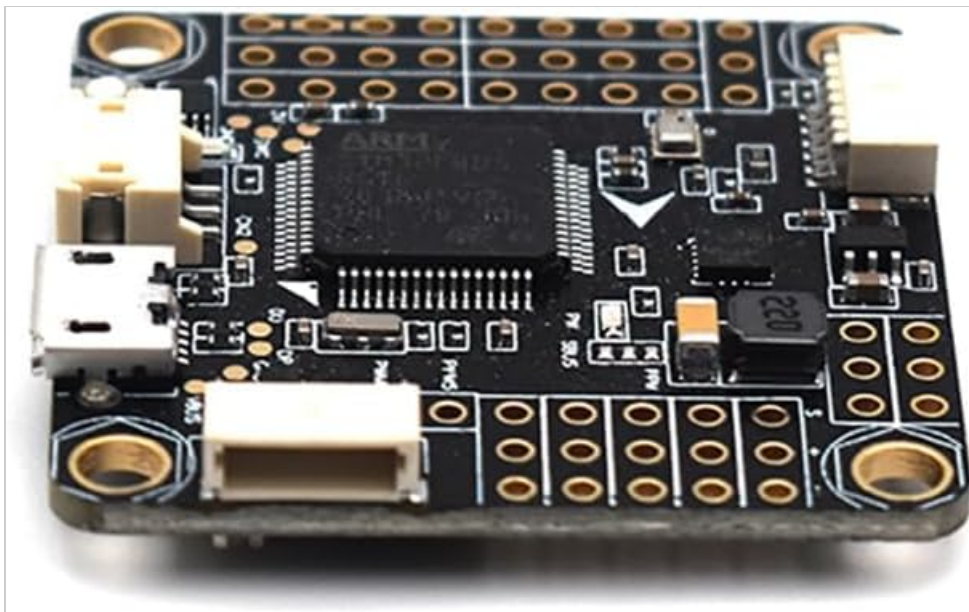


Figure 1: Top view of the F4V3S Flight Controller Board. This image displays the main STM32 F405 processor, the micro USB port for configuration, and clearly labeled solder pads for various connections.

2. KEY FEATURES

- **MCU:** STM32 F405
- **Gyro/Accelerometer:** IC268G SPI (appears as MPU6500 in INAV configurator)
- **Barometer:** BMP280
- **OSD:** Integrated, configurable via Betaflight Configurator
- **ESC Support:** Dshot compatible, 4x3 pin ESC layout
- **Receiver Ports:** SBUS/PPM and Spektrum DSM-X ports

- **Power:** 5V 3A SBEC
- **Video Filter:** On-board video filter (provides 5V to VTX and Camera)
- **SmartAudio:** SmartAudio V2 via J10
- **Data Logging:** SD card slot for blackbox logging
- **Dimensions:** Standard board size approximately 36x36mm, mount hole size 30.5x30.5mm

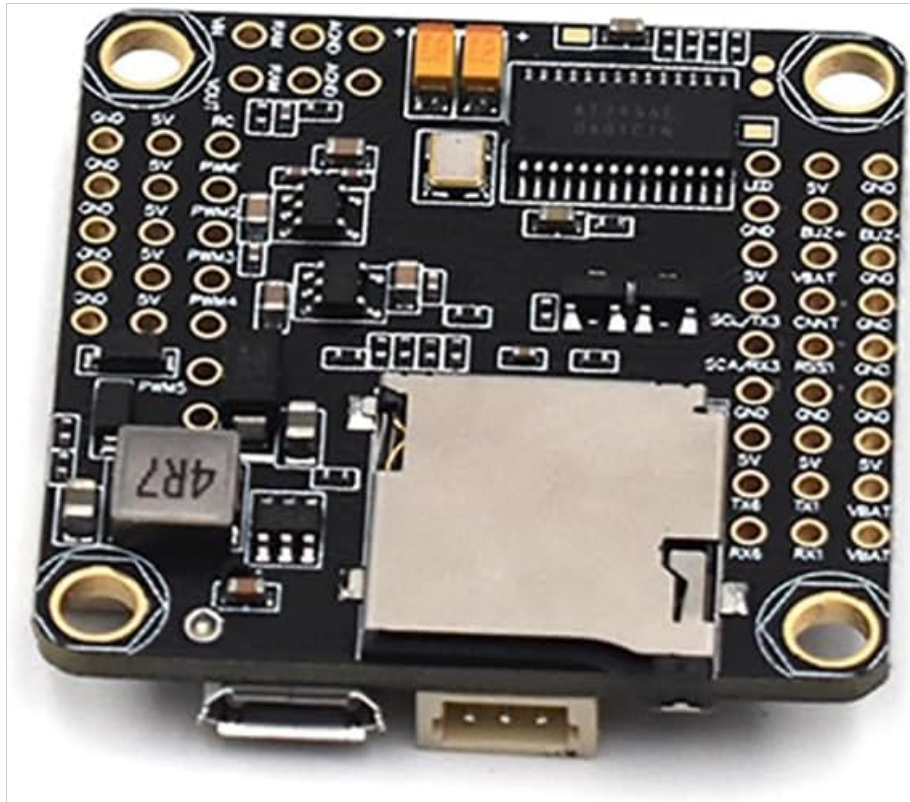


Figure 2: Bottom view of the F4V3S Flight Controller Board. This image shows the integrated SD card slot for flight data logging and additional connection points.

3. SETUP AND INSTALLATION

3.1 Physical Installation

Mount the flight controller securely onto your drone frame using appropriate standoffs and screws. Ensure the board is oriented correctly according to your chosen firmware's documentation (e.g., Betaflight or INAV). The standard mount hole size is 30.5x30.5mm.

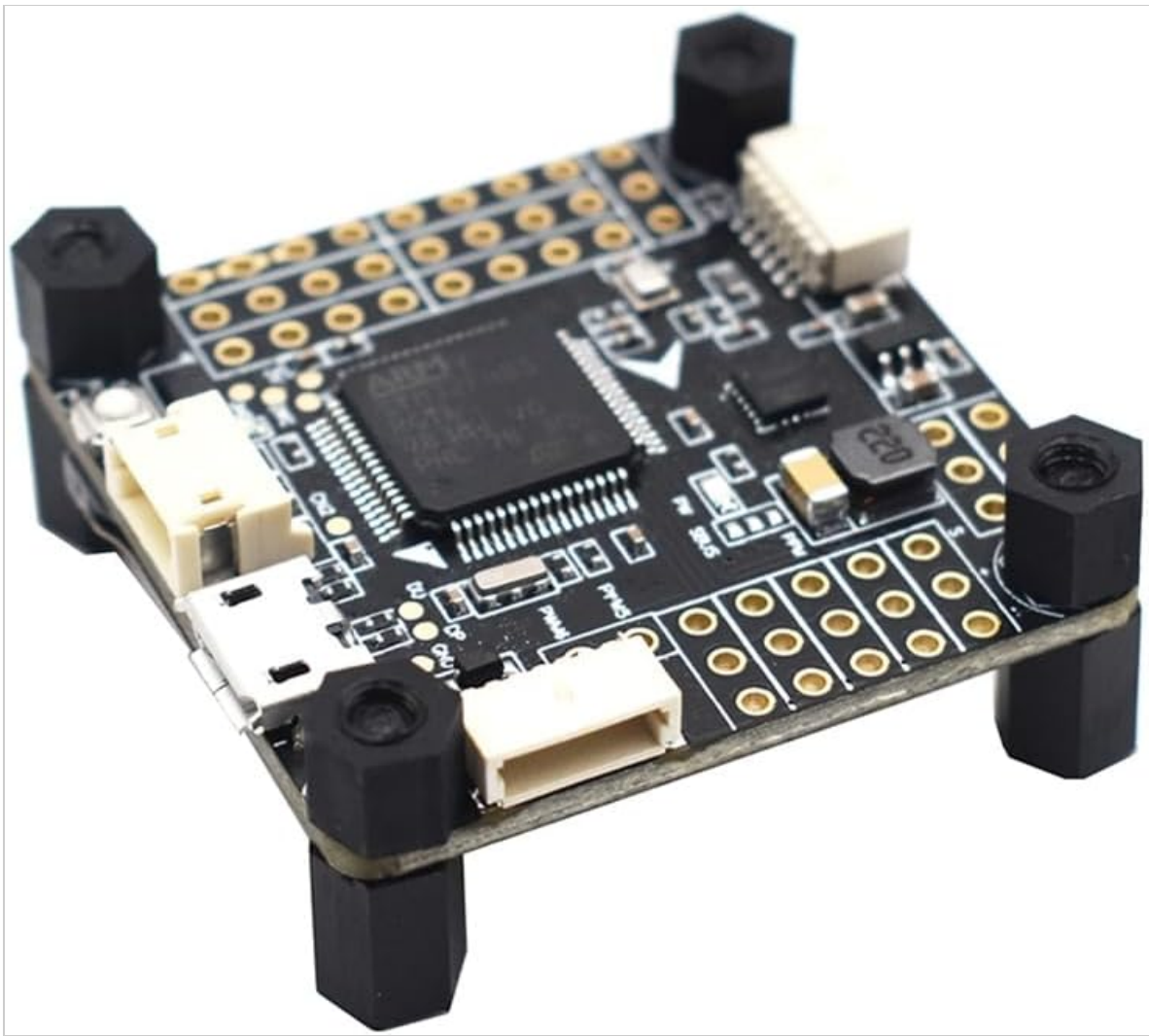


Figure 3: F4V3S Flight Controller Board mounted on standoffs. This illustrates how the board is typically installed within a drone frame.

3.2 Wiring Connections

Connect your Electronic Speed Controllers (ESCs), receiver, Video Transmitter (VTX), Camera, GPS (if applicable), and other peripherals to the designated solder pads or connectors on the flight controller. Refer to the pinout diagram (not provided in this manual, typically found in firmware documentation or product specific diagrams) for precise connections.

- **ESCs:** Utilize the 4x3 pin ESC layout for motor connections.
- **Receiver:** Connect SBUS, PPM, or Spektrum DSM-X receivers to their respective ports.
- **VTX & Camera:** The on-board video filter provides a regulated 5V supply for your VTX and camera. Connect these components accordingly.
- **SmartAudio:** Connect compatible VTX units to the J10 port for SmartAudio V2 functionality.
- **SD Card:** Insert a formatted micro SD card into the slot for blackbox flight data logging.

3.3 Firmware Flashing and Configuration

Connect the flight controller to your computer via the micro USB port. Use the Betaflight Configurator or INAV Configurator software to flash the appropriate firmware (e.g., Betaflight, INAV) and configure all flight parameters, including PID tuning, receiver protocols, OSD settings, and mode assignments.

4. OPERATING INSTRUCTIONS

Once the flight controller is physically installed, wired, and configured with your preferred firmware, ensure all components are functioning correctly before flight. Power on your drone, allow the flight controller to initialize, and verify receiver input, motor response, and OSD display. Adjust flight parameters as needed through the configurator or directly from your transmitter if SmartAudio or similar protocols are configured.

5. MAINTENANCE

- **Regular Inspection:** Periodically inspect all solder joints and connections for signs of wear, corrosion, or damage.
- **Cleaning:** Keep the board free from dust, dirt, and moisture. Use a soft brush or compressed air for cleaning. Avoid using liquids directly on the board.
- **Firmware Updates:** Regularly check for and apply firmware updates for Betaflight or INAV to benefit from new features, performance improvements, and bug fixes.
- **Environmental Protection:** If operating in harsh environments, consider conformal coating the board for added protection against moisture and debris.

6. TROUBLESHOOTING

- **No Power:** Verify battery connection, power distribution board (PDB) functionality, and ensure no short circuits are present on the flight controller.
- **No USB Connection:** Try a different USB cable or port. Ensure the correct drivers are installed on your computer.
- **Motors Not Spinning:** Check ESC connections, motor direction in the configurator, and ensure the arming sequence is correctly performed. Verify Dshot protocol settings.
- **No Receiver Input:** Confirm receiver is powered, correctly wired, and bound to your transmitter. Check receiver protocol settings in the configurator (SBUS, PPM, DSM-X).
- **OSD Not Displaying:** Ensure VTX and camera are correctly wired to the flight controller's video input/output. Check OSD settings in the configurator.
- **Unstable Flight:** Review PID tuning, motor/propeller balance, and ensure the flight controller is securely mounted with minimal vibration.

7. SPECIFICATIONS

Brand	Beuiouer
Model Name	F4V3S (Model Number: 500707625)
MCU	STM32 F405
Gyro/Accelerometer	IC268G SPI
Barometer	BMP280
OSD	Integrated
SBEC	5V 3A
Connectivity Technology	SBUS, PPM, DSM-X, SmartAudio, SD card

Operating System Compatibility	Betaflight, INAV (ChibiOS/RT)
Board Size	Approx. 36x36mm
Mount Hole Size	30.5x30.5mm
Item Weight	12 g

8. SAFETY INFORMATION

- Always disconnect the battery before performing any wiring or maintenance on the flight controller or drone.
- Ensure correct polarity for all power connections to prevent damage to the flight controller and other components.
- Exercise caution when soldering to avoid short circuits.
- Operate drones responsibly and in accordance with local regulations.
- Keep the flight controller away from water, extreme temperatures, and static electricity.

9. WARRANTY AND SUPPORT

Specific warranty details for the Beuiouer F4V3S Flight Controller Board are not provided in this manual. Please refer to your point of purchase or the manufacturer's official website for warranty information and technical support contacts.

