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HGLRC Zeus35 AIO

HGLRC Zeus35 AIO Flight Controller Stack User Manual

Model: Zeus35 AIO | Brand: HGLRC

1. Introduction

This manual provides essential information for the proper installation, operation, and maintenance of your HGLRC Zeus35 AIO Flight Controller Stack. Please read this manual thoroughly before using the product to ensure safe and optimal performance. This product is designed for use in RC racing drones, quadcopters, and multirotors.

2. Product Overview and Features

The HGLRC Zeus35 AIO is a compact and integrated flight controller and electronic speed controller (ESC) solution, designed for high-performance drone applications. It combines an F411 Flight Controller with a 35A BLS 4-in-1 ESC.

Key Features:

- **High-end Quality:** Built-in current sensor and support for SBUS/PPM/DSMX receivers, suitable for most RC drones and quadcopters.
- **Efficient & Lightweight:** F4 Zeus35 Flight Controller with integrated 35A BLHELI_S 4-in-1 ESC. Weighs only 10g, ideal for 2-5 inch mini indoor/outdoor racing drones.
- **35A 4-in-1 ESC:** Supports DSHOT 600 / 300 / 150 / Oneshot125 / Oneshot 42 / MultiShot / Damped Light modes.
- **Easy Operation:** Compact dimensions (40x32mm board) with 20mm mounting pattern (M2/M3), designed for straightforward soldering and installation.

Product Components:

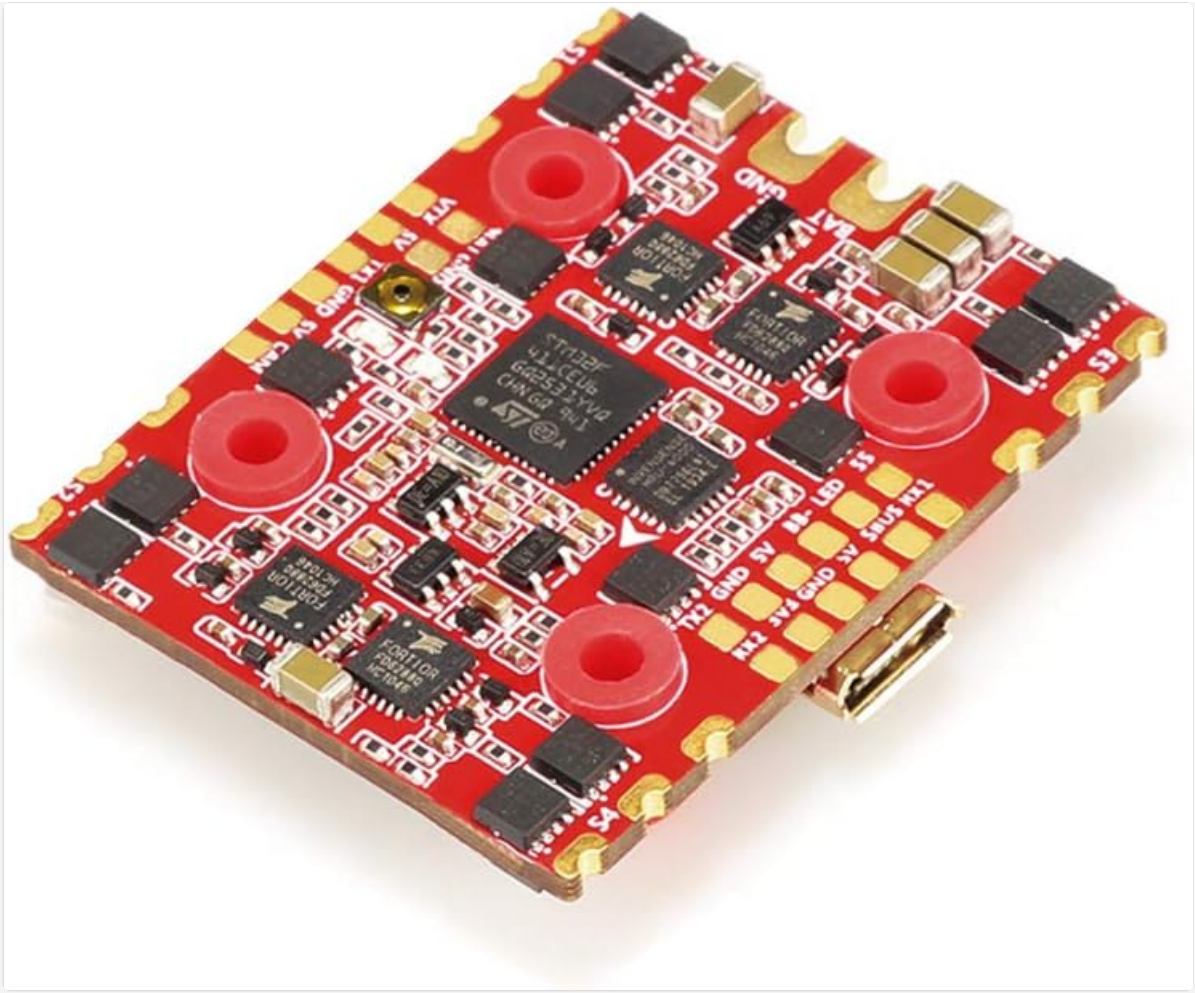


Figure 2.1: Top-down view of the HGLRC Zeus35 AIO Flight Controller Stack, showcasing its compact design and integrated components.

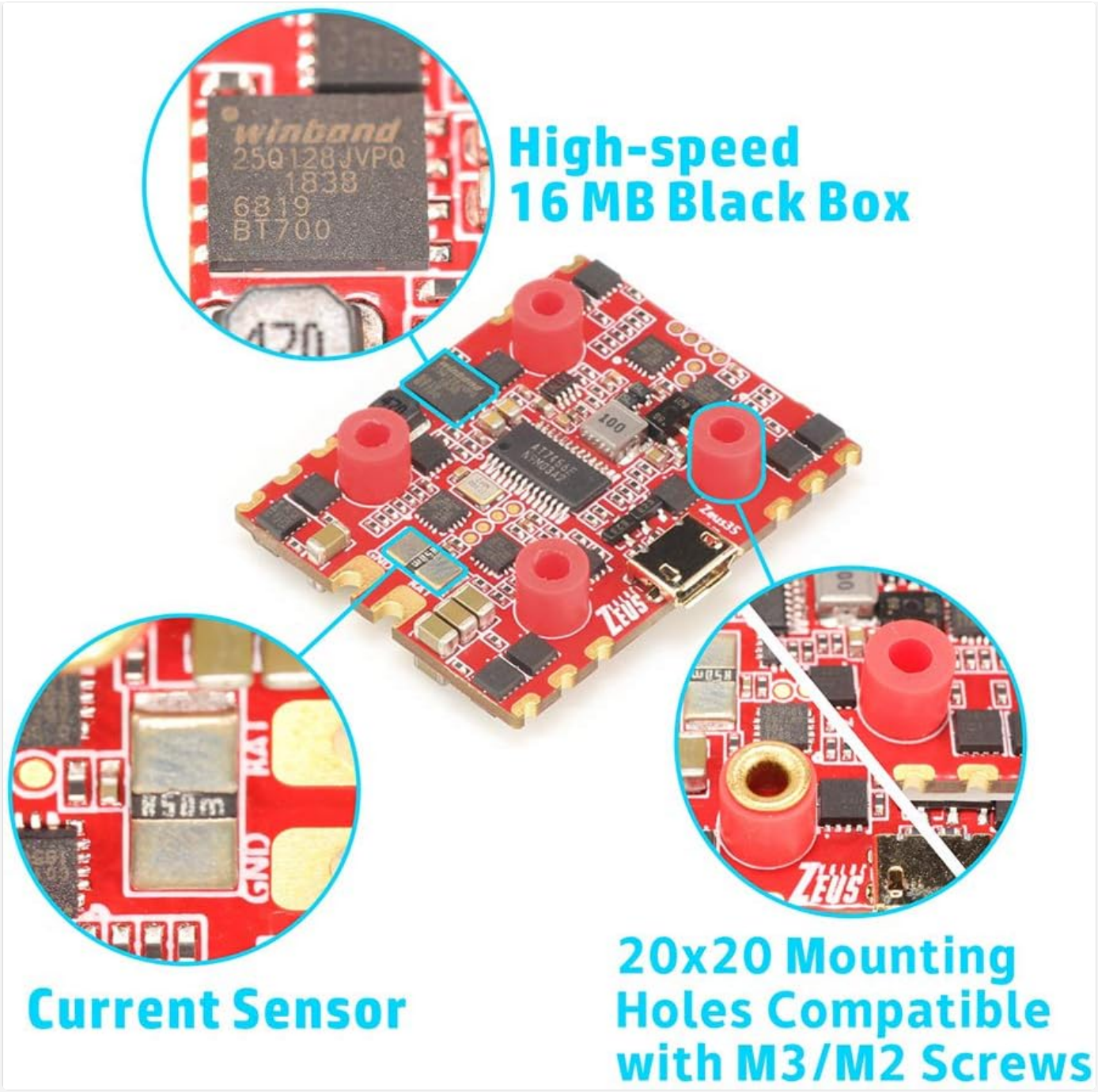


Figure 2.2: Detailed view highlighting key features such as the high-speed 16 MB Black Box for flight data logging, integrated Current Sensor, and 20x20mm mounting holes compatible with M2/M3 screws.

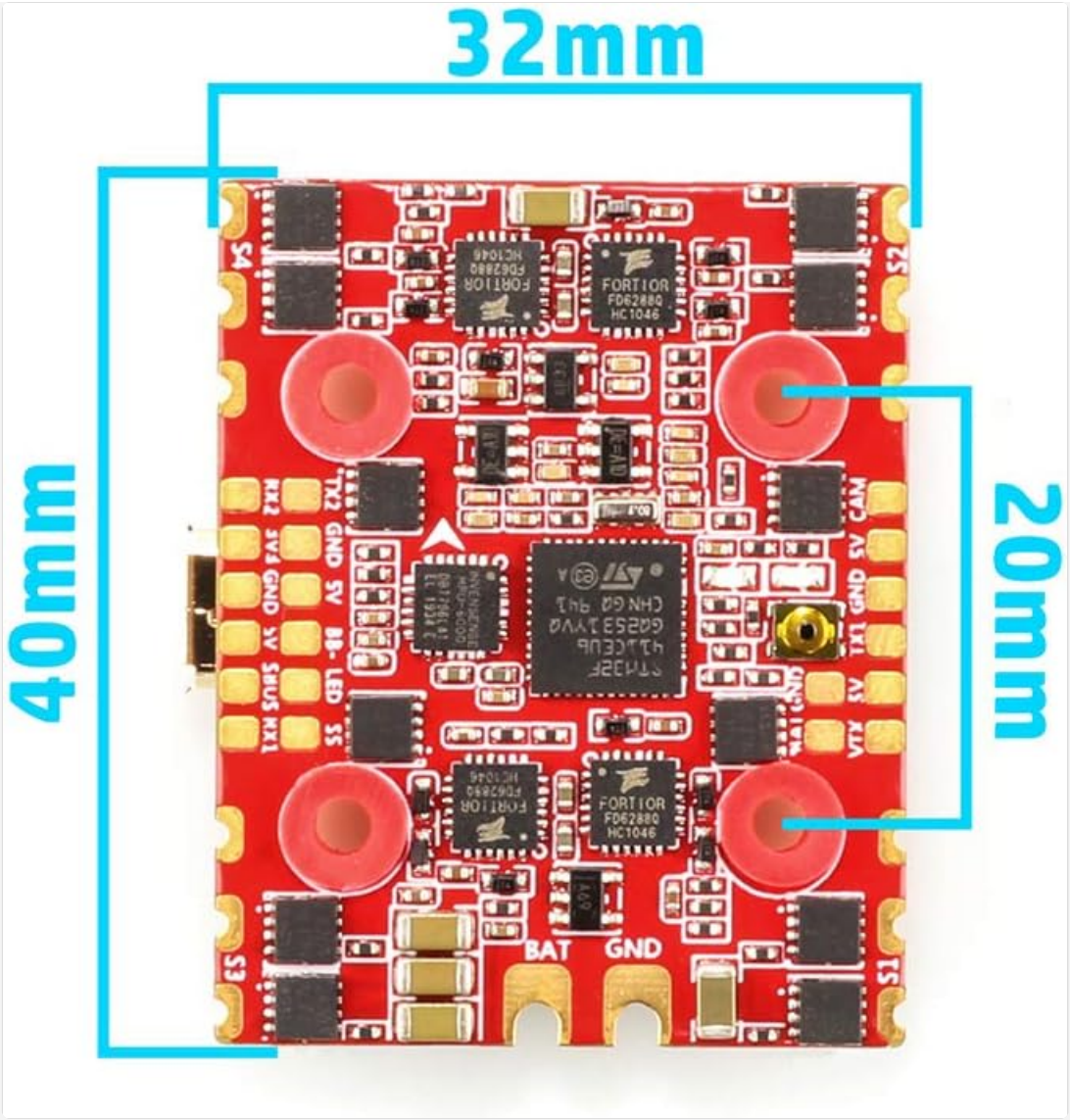


Figure 2.3: Dimensions of the Zeus35 AIO board, measuring 40mm in length and 32mm in width, with a 20mm mounting hole pattern.

3. Technical Specifications

Component	Specification
Usage	For 100mm-250mm Frame Kits
Installing Hole	20x20mm, M2/M3
Dimensions	40x32mm
Input Voltage	3-6S LiPo
FC Firmware	BF HGLRCF411 (HGLRC)
ESC Firmware	BLS
CPU	STM32F411
MPU	MPU6000

Component	Specification
OSD	Supported
BEC	5V/2A
LED	Supported
BlackBox	16M
UARTs	2 (UART1 for VTX/DJI, UART2 for Receiver)
Current Sensor	Supported
Constant Current	35A
Peak Current	40A (10s)
Weight	Approximately 10g

4. Setup and Installation

4.1 Before You Begin

The Zeus35 AIO is typically pre-configured before delivery. If you intend to flash new firmware, it is crucial to contact HGLRC support to obtain the corresponding files to ensure proper product operation. Incorrect firmware can lead to malfunction.
Ensure you have all necessary tools and components, including a soldering iron, solder, heat shrink tubing, and the recommended motors and propellers for your frame kit.

4.2 Wiring Diagram

Refer to the following diagram for correct wiring connections. Proper wiring is critical for the safe and reliable operation of your drone.

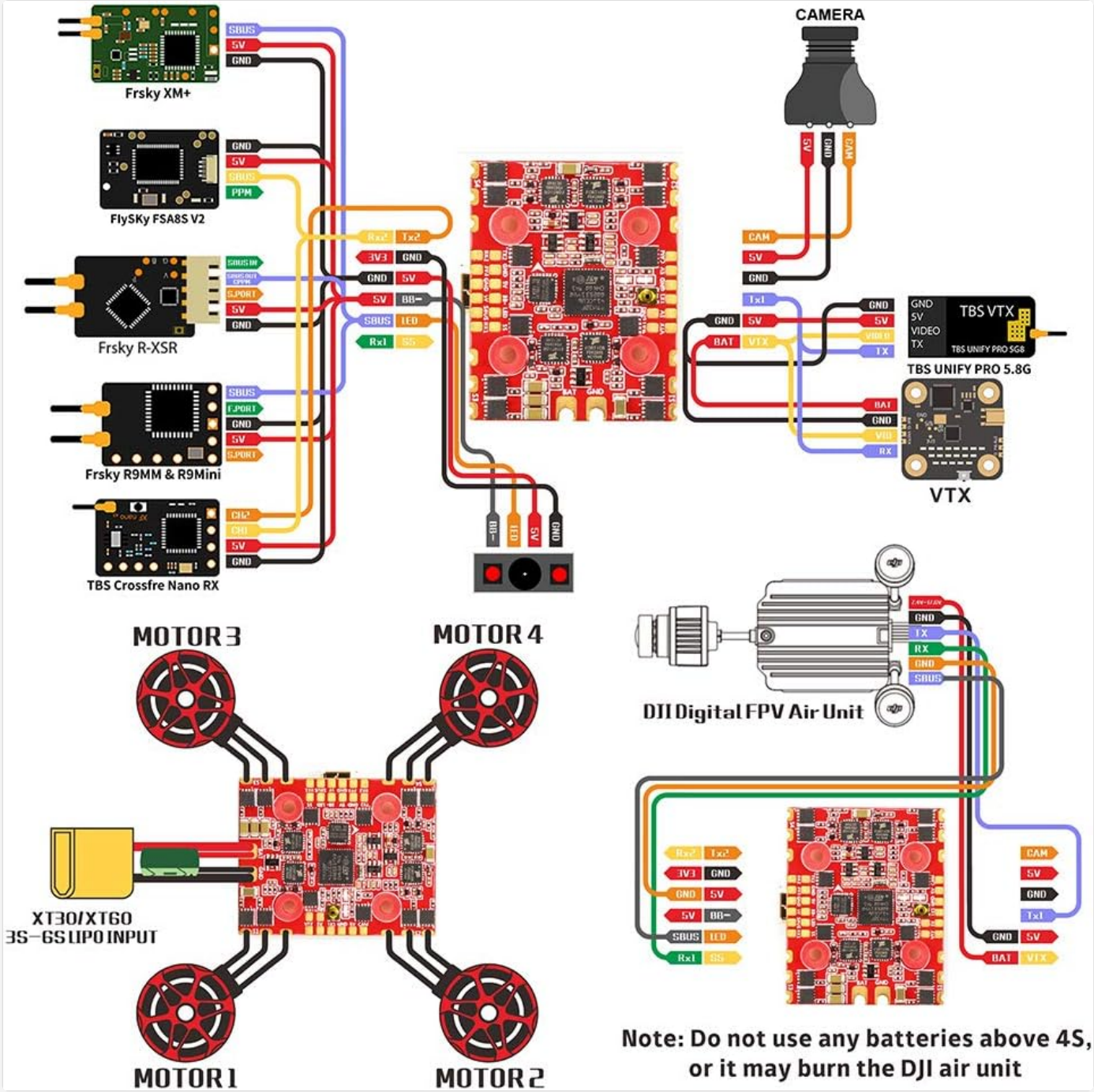


Figure 4.1: Comprehensive wiring diagram for the HGLRC Zeus35 AIO, illustrating connections for motors, various receivers (FrSky XM+, FlySky FS-A8S V2, FrSky R-XSR, FrSky R9MM & R9Mini, TBS Crossfire Nano RX), VTX (TBS Unify Pro 5.8G), camera, and DJI Digital FPV Air Unit. **Important Note:** Do not use any batteries above 4S with the DJI Digital FPV Air Unit, as it may cause damage.

- **Power Input:** Connect your 3-6S LiPo battery to the BAT and GND pads.
- **Motors:** Connect motors 1-4 to the corresponding S1-S4 pads on the ESC.
- **Receiver:** Connect your receiver to UART2 (RX2/TX2) for signal input. Supported types include SBUS, PPM, and DSMX.
- **VTX/DJI Air Unit:** Connect your video transmitter or DJI Digital FPV Air Unit to UART1 (RX1/TX1). Ensure correct voltage supply for your VTX/Air Unit.
- **Camera:** Connect your FPV camera to the CAM and GND pads.

4.3 Mounting

The Zeus35 AIO features a 20x20mm mounting pattern, compatible with both M2 and M3 screws. Use appropriate standoffs and screws to securely mount the board to your drone frame, ensuring no short circuits occur from contact with

carbon fiber or other conductive materials.

5. Operation

Once installed and wired correctly, the HGLRC Zeus35 AIO is ready for configuration via Betaflight Configurator (or similar flight controller software). Ensure your drone's motors are properly calibrated and spinning in the correct direction. Always perform initial tests with propellers removed for safety.

- **Firmware Configuration:** Connect the flight controller to your computer via USB. Use Betaflight Configurator to load the HGLRCF411 firmware, configure PID settings, OSD, modes, and receiver protocols.
- **ESC Calibration:** Calibrate your ESCs through Betaflight or your radio transmitter to ensure proper motor synchronization.
- **Pre-Flight Checks:** Before each flight, verify all connections are secure, propellers are correctly installed, and battery voltage is adequate.

6. Maintenance

Regular maintenance ensures the longevity and reliability of your Zeus35 AIO Flight Controller Stack.

- **Cleaning:** Periodically inspect the board for dust, dirt, or debris. Use compressed air or a soft brush to gently clean the components. Avoid using liquids.
- **Connection Checks:** Regularly check all soldered joints and connectors for looseness or corrosion. Re-solder or replace as necessary.
- **Physical Inspection:** Inspect the board for any signs of physical damage, such as cracks, burnt components, or bent pins.
- **Firmware Updates:** While not always necessary, occasional firmware updates can provide performance improvements or bug fixes. Always back up your configuration before updating.

7. Troubleshooting

This section addresses common issues you might encounter with your HGLRC Zeus35 AIO.

- **No Power/No Lights:**
  - Check battery connection and voltage.
  - Inspect for short circuits on the board or wiring.
  - Verify power distribution board (PDB) or battery lead integrity.
- **Motors Not Spinning/Erratic Behavior:**
  - Ensure ESCs are calibrated correctly.
  - Check motor wiring for correct phase connections.
  - Verify motor direction in Betaflight.
  - Inspect for damaged motors or ESCs.
- **No Gyro/Accelerometer Data (DOA Gyro):**
  - This can indicate a faulty MPU. If the board is new and exhibits this, contact support immediately for assistance.
  - Ensure the flight controller is properly seated and not experiencing excessive vibrations.
- **No Receiver Signal:**

- Verify receiver wiring to UART2.
- Check receiver binding to your radio transmitter.
- Ensure correct receiver protocol is selected in Betaflight (e.g., SBUS, PPM, DSMX).

- **Video Issues (No FPV Feed):**
  - Check camera and VTX wiring to UART1 and video pads.
  - Verify VTX power and channel settings.
  - Ensure your FPV goggles/monitor are on the correct frequency.

For persistent issues, refer to online resources, community forums, or contact HGLRC technical support.

8. Package Contents

The following items are included in your HGLRC Zeus35 AIO package:

- 1x Zeus35 AIO Flight Controller

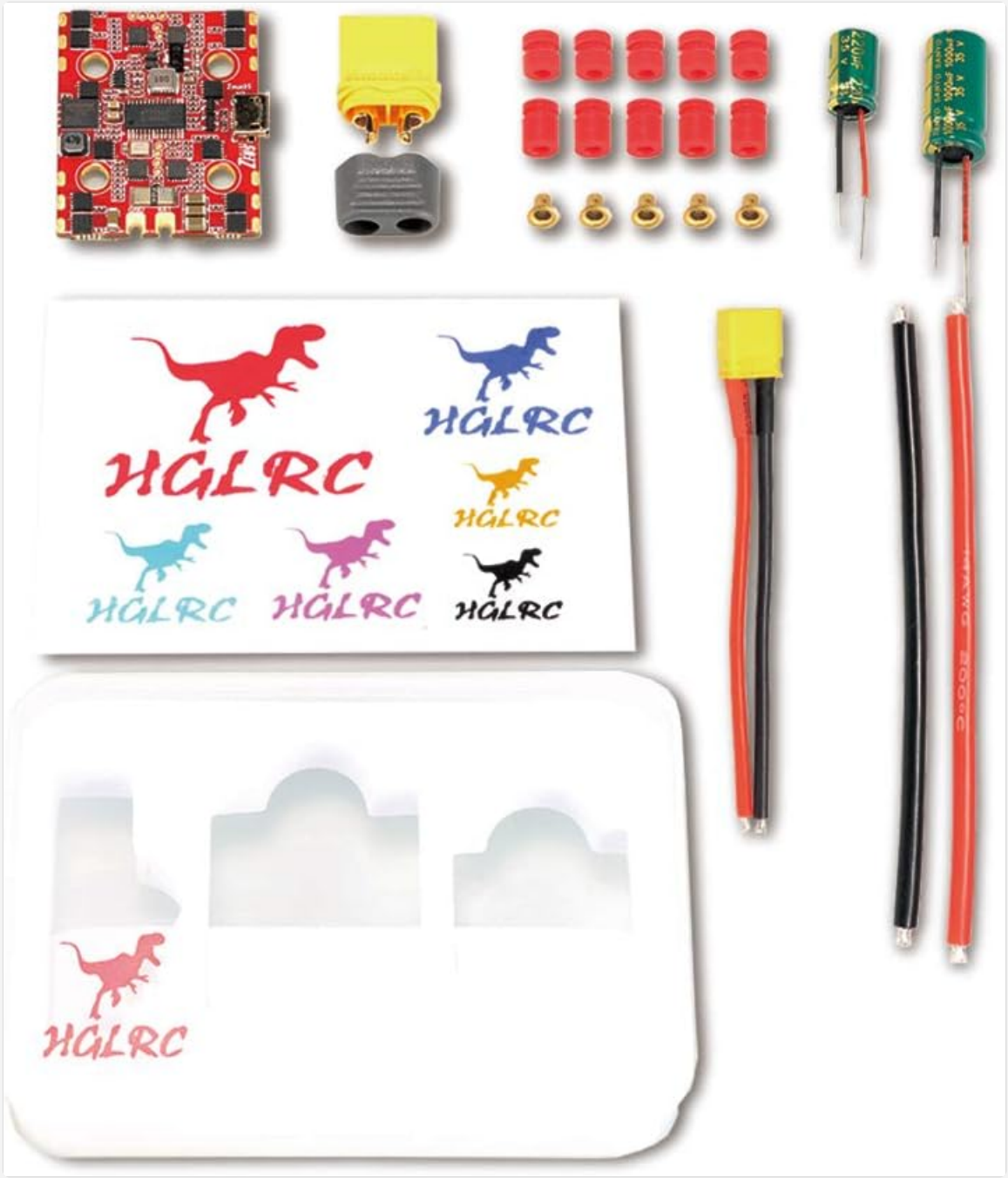


Figure 8.1: Image showing the typical contents of the HGLRC Zeus35 AIO package, which includes the flight controller itself, various cables, connectors, and mounting hardware.

9. Recommended Parts

For optimal performance, HGLRC recommends the following components (not included in the package):

- **Motors:** 1408 / 1407 / 1306 / 1106 series motors
- **Propeller:** 2-5 Inch propellers

10. Warranty and Support

HGLRC stands behind the quality of its products. If you encounter any issues or require assistance, please contact HGLRC customer support. They are committed to providing support within 24 hours.
For specific warranty terms and conditions, please refer to the official HGLRC website or contact their support team directly. Always retain your proof of purchase.

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