ATA HOBBY Radiolink F722

Radiolink F722 Flight Controller Stack with 4-in-1 55A ESC User Manual

Model: Radiolink F722 | Brand: ATA HOBBY

1. Introduction

This manual provides detailed instructions for the Radiolink F722 Flight Controller Stack, which includes a flight controller and a 4-in-1 55A Electronic Speed Controller (ESC). This integrated system is designed for 2-8 axis multi-rotors, FPV drones, and fixed-wing aircraft, offering advanced control and telemetry capabilities. It supports 3S-6S batteries and features an integrated OSD module for real-time flight data display.

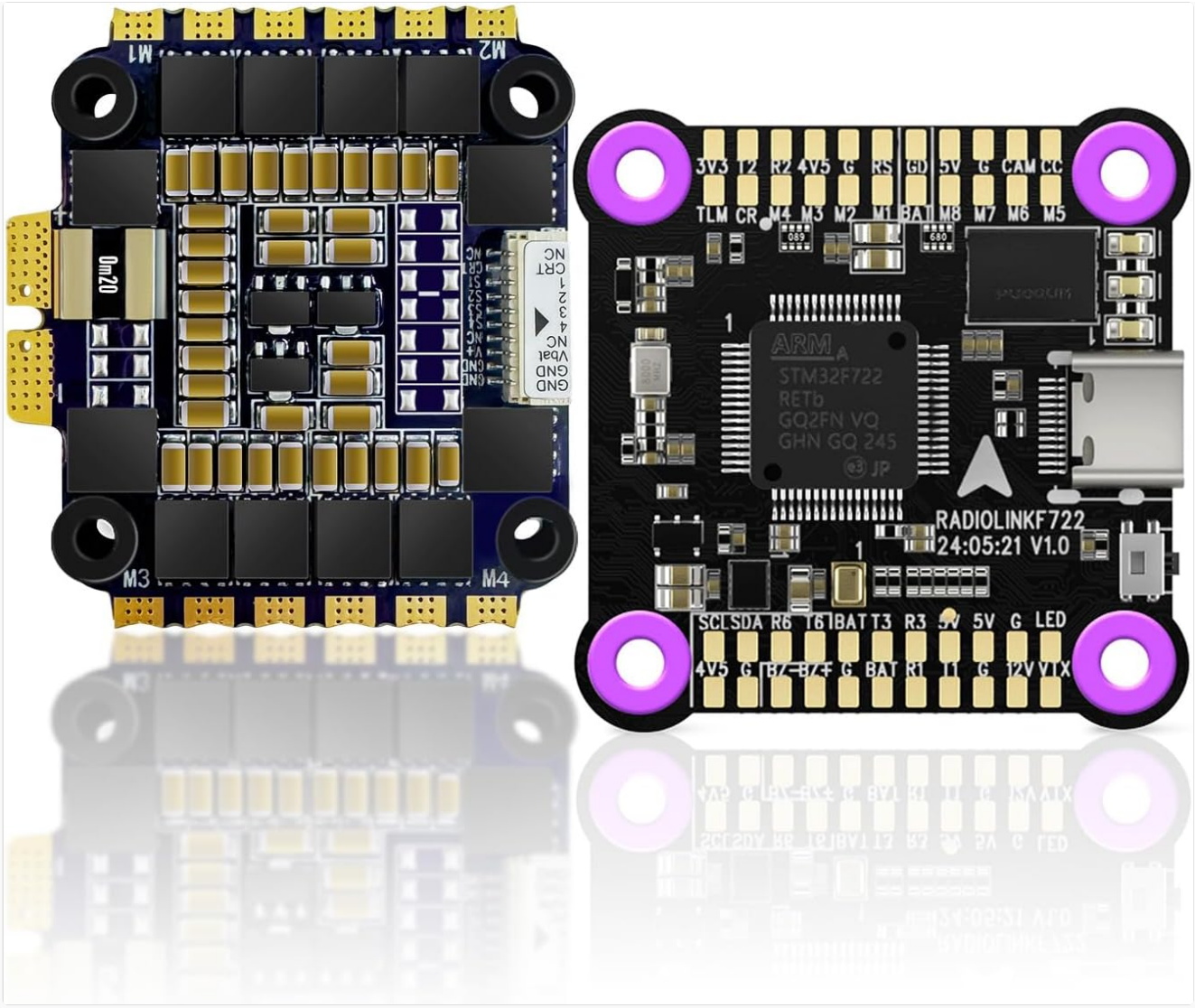

Figure 1.1: The Radiolink F722 Flight Controller and 4-in-1 55A ESC Board. This image displays both components of the stack, highlighting their compact design and layout.

Figure 1.2: Key Features of the Radiolink F722 Flight Controller Stack. This image illustrates the main features such as Betaflight/INAV support, OSD, multiple interfaces, 4-in-1 ESC, LED indicators, DJI HD digital image support, ESC telemetry, barometer, and gyroscope.

2. Specifications

The following table details the technical specifications of the Radiolink F722 Flight Controller Stack:

Feature	Value
Main Processor	STM32F722RET6
Gyroscope	ICM42688
Barometer	SPL06-001
Dimensions	41mm x 45mm x 5.8mm
Weight	0.892 ounces (25.3 grams)
Continuous Current (ESC)	45A - 65A

Feature	Value
ESC Firmware	A-H-30
Battery Support	3-6S LiPo
Mounting Hole	1.2*1.2 inches (M3)
Operating Temperature	85 Degrees Celsius
Parameter Adjustment Software	Bluejay Configurator or BLHeliSuite
Supported Signals	Two-way DShot, OneShot, PWM
Output Channels	Up to 8 channels
Image Transmission Support	DJI and CADDX HD digital, Analog

Figure 2.1: High Configuration of the F722 Flight Controller. This image details the main components of the flight controller, including the STM32F722RET6 Main Processor, ICM42688 Gyroscope, and SPL06-001 Barometer.

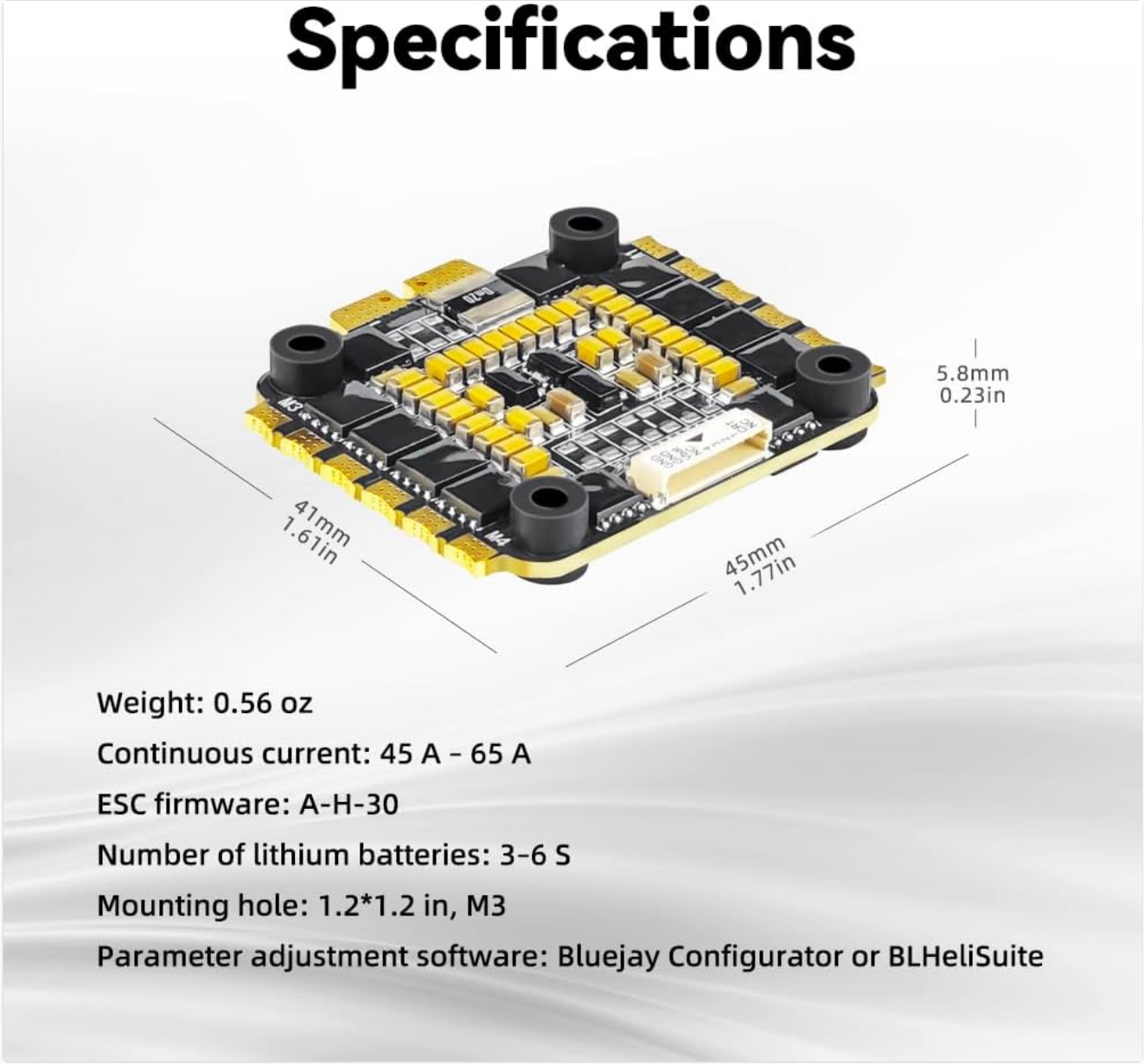

Figure 2.2: Technical Specifications of the F722 Flight Controller Stack. This image provides dimensions, weight, continuous current, ESC firmware, battery support, mounting hole size, and parameter adjustment software.

3. Setup and Installation

3.1 Component Identification

Familiarize yourself with the various ports, solder pads, and components on both the flight controller and the 4-in-1 ESC board before proceeding with connections.

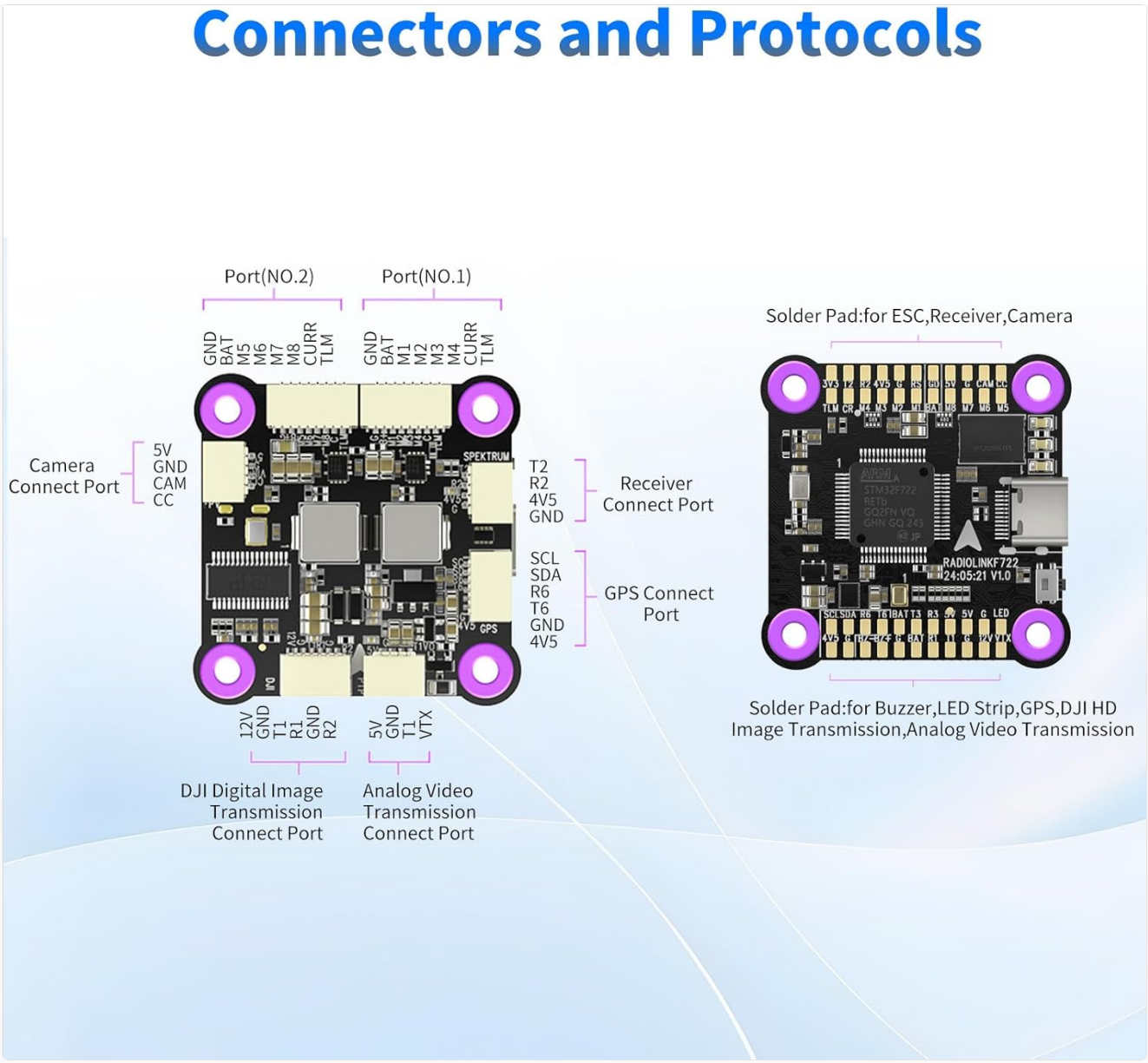

Figure 3.1: Connectors and Protocols Diagram. This image provides a detailed layout of the flight controller's ports and solder pads, including connections for camera, receiver, GPS, DJI Digital Image Transmission, Analog Video Transmission, ESC, Buzzer, and LED Strip.

3.2 Wiring and Connections

The F722 Flight Controller Stack is designed for straightforward integration. Refer to the connection diagram for proper wiring of external devices such as receivers, GPS modules, and video transmission systems.

- **ESC Connection:** The 4-in-1 ESC connects directly to the flight controller via the provided cable.
- **Receiver Connection:** Connect your SBUS or other compatible receiver to the designated port.
- **GPS Connection:** A dedicated port is available for GPS modules.
- **Camera Connection:** Connect your FPV camera to the Camera Connect Port.
- **Video Transmission:** Both DJI Digital Image Transmission and Analog Video Transmission systems are supported with dedicated connection points.

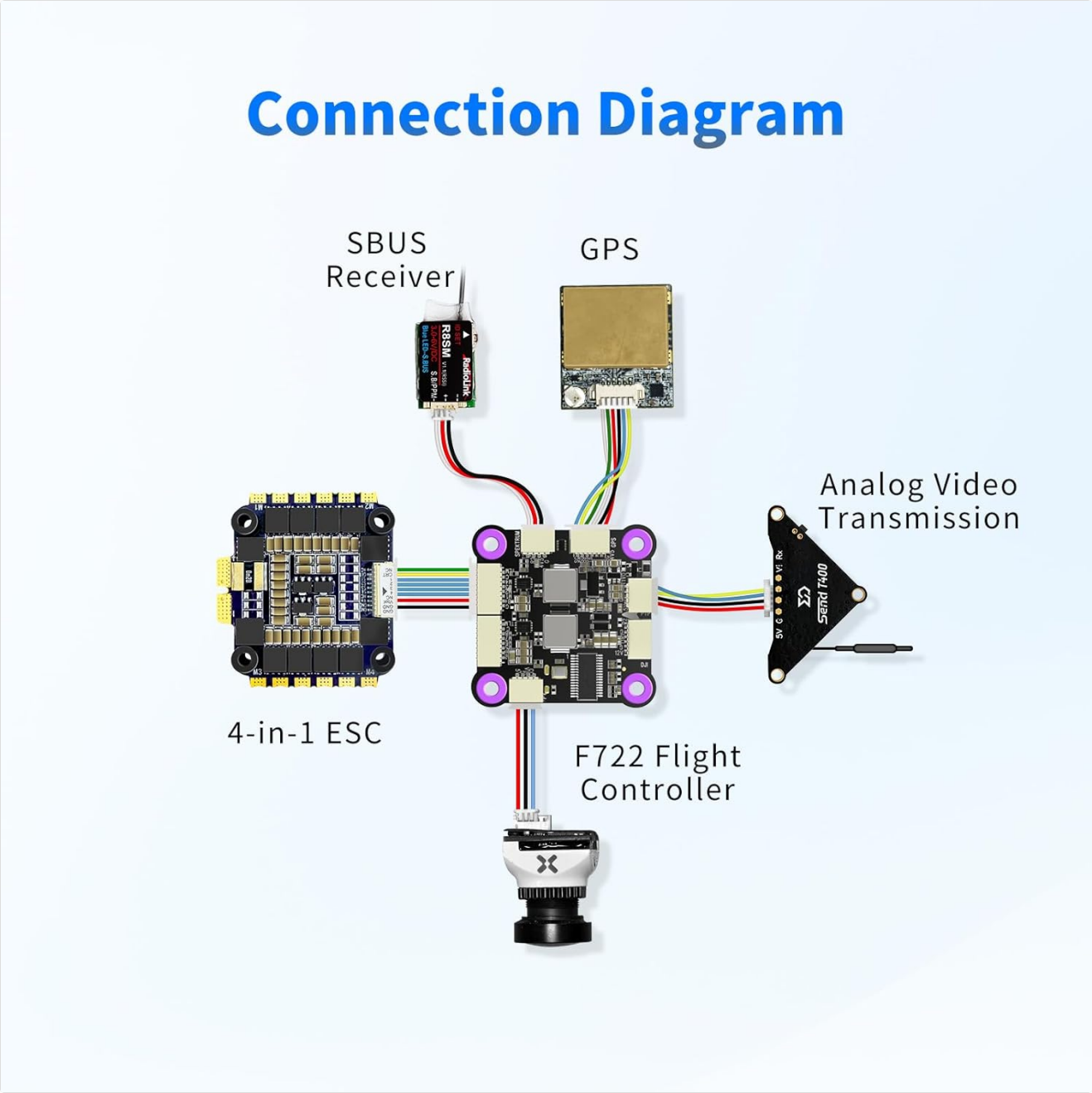

Figure 3.2: Typical Connection Diagram for F722 Flight Controller Stack. This diagram illustrates how the F722 Flight Controller, 4-in-1 ESC, SBUS Receiver, GPS, and Analog Video Transmission module connect within a drone system.

3.3 Firmware Configuration

The F722 Flight Controller supports mainstream firmware such as Betaflight and INAV. Connect the flight controller to your computer via USB and use the respective configurator software (e.g., Betaflight Configurator) to flash firmware, configure settings, and calibrate sensors.

4. Operating Instructions

4.1 OSD Module Functionality

The integrated OSD module allows for real-time display of flight information directly on your FPV video feed. This includes data such as flight direction, aircraft position, battery voltage, and more. The OSD display can be customized through the flight controller's configuration software.

Figure 4.1: OSD Module Integrated for Real-time Flight Data Display. This image displays a Betaflight OSD configuration screen on a laptop, showing how flight data can be overlaid on the video feed.

4.2 Image Transmission

The F722 Flight Controller Stack supports plug-and-play connectivity for DJI and CADDX high-definition digital image transmission systems, as well as analog video transmission. A switch can be configured to control the 12V BEC power supply for image transmission, enhancing power management.

Figure 4.2: Supported Multiple Image Transmission Systems. This image shows the flight controller connected to DJI HD digital image transmission and analog video transmission systems, highlighting plug-and-play compatibility and built-in BECs.

4.3 ESC Information Telemetry

The ESC supports telemetry, allowing the flight controller to receive real-time information from the ESCs, such as motor RPM, current draw, and temperature. This data can be displayed on the OSD or logged for post-flight analysis. The system supports two-way DShot, OneShot, and PWM signals.

Figure 4.3: ESC Information Telemetry Supported. This image shows a laptop and a smartphone displaying Betaflight configurator interfaces, indicating support for current mainstream throttle signals including two-way DShot, OneShot, and PWM signals.

4.4 LED Indicators

The flight controller features three color LED indicators to provide status information:

- **Blue LED:** Status indicator.
- **Red LED:** Power indicator.
- **Yellow and Green LED:** 12V BEC indicator.

Figure 4.4: 3 Colors LED Indicators. This image highlights the blue (status), red (power), and yellow/green (12V BEC) LED indicators

on the flight controller.

5. Packing List

The following components are included with your Radiolink F722 Flight Controller Stack:

Figure 5.1: F722 Packing List. This image shows all included components for the Radiolink F722 Flight Controller Stack.

- F722 Flight Controller x 1
- 4-in-1 ESC x 1
- Camera Connect Cable x 1
- ELRS Receiver Connect Cable x 1
- Analog Video Transmission Connect Cable x 1
- GPS Connect Cable x 1
- R8SM Receiver Connect Cable x 1
- Receiver Connect Cable x 1
- ESC Connect Cables x 2

6. Maintenance

To ensure optimal performance and longevity of your Radiolink F722 Flight Controller Stack, observe the following maintenance guidelines:

- **Regular Inspection:** Periodically check all connections for secure fit and inspect for any signs of wear, corrosion, or damage to wires and components.
- **Cleaning:** Keep the flight controller and ESC free from dust, dirt, and moisture. Use a soft, dry brush or compressed air for cleaning. Avoid using liquids or solvents.
- **Environmental Protection:** Operate the device within its specified temperature range and avoid exposure to extreme conditions, including excessive heat, cold, or humidity.
- **Firmware Updates:** Regularly check for and apply official firmware updates to ensure the best performance, stability, and access to new features.

7. Troubleshooting

If you encounter issues with your Radiolink F722 Flight Controller Stack, consider the following troubleshooting steps:

- **No Power:** Verify that the battery is correctly connected and charged. Check all power leads for proper soldering and continuity. Ensure the flight controller is receiving the correct voltage (3-6S).
- **No Signal from Receiver:** Confirm the receiver is properly bound to your transmitter. Check the receiver's wiring to the flight controller and ensure the correct UART is configured in the flight control software.
- **Motors Not Spinning:** Ensure ESCs are calibrated and motor directions are correctly set in the flight control software. Check motor connections to the ESC. Verify that the arming sequence is correctly performed.
- **OSD Not Displaying:** Check OSD settings in the flight control software. Ensure the video signal is correctly routed through the OSD.
- **Unstable Flight:** Review PID settings in the flight control software. Ensure all sensors (gyroscope, accelerometer) are calibrated correctly. Check for physical damage to propellers or frame.
- **Connection Issues with PC:** Try a different USB cable or port. Ensure the correct drivers are installed for the flight controller.

For persistent issues, consult online communities or the manufacturer's support resources.

8. Safety Information

Warning: Not suitable for children under 14 years old. This product is intended for experienced users in the hobby of remote-controlled aircraft. Improper use, assembly, or modification can lead to serious injury or property damage. Always follow safety guidelines for operating FPV drones and multi-rotors.

- Always operate in a safe environment, away from people, animals, and property.
- Ensure all components are securely fastened and correctly wired before flight.
- Never operate with damaged components or batteries.
- Be aware of local regulations regarding drone operation.

9. Warranty and Support

For warranty information and technical support, please refer to the official ATA HOBBY brand store or contact their customer service directly. Keep your purchase receipt for warranty claims.

Visit the ATA HOBBY Store for more information and support resources.