CUIPPWRJ CUIPPWRJ123

CUIPPWRJ GEP-F722-HD V2 Flight Controller and 50A 4in1 ESC Instruction Manual

Model: GEP-F722-HD V2 / Taker F722 BLS 50A Stack

1. Introduction

Thank you for choosing the CUIPPWRJ GEP-F722-HD V2 Flight Controller and 50A 4in1 ESC Stack. This high-performance stack is designed for freestyle drones, offering advanced control and power management. It features an STM32F722 MCU, ICM42688-P IMU, and a robust 50A 4in1 ESC, ensuring stable and responsive flight. This manual provides essential information for proper installation, operation, and maintenance of your device.

2. Safety Information

Please read and understand all safety warnings and instructions before using this product. Failure to do so may result in damage to the product, property, or serious injury.

- Always disconnect the battery before performing any maintenance or installation.
- Ensure correct polarity when connecting power. Incorrect connections can cause irreversible damage.
- Avoid short circuits. Keep metal objects away from exposed circuitry.
- Operate in a well-ventilated area.
- This product is not a toy. Keep out of reach of children.
- Seek professional assistance if you are unsure about any installation or wiring procedures.

3. Package Contents

Verify that all items are present in your package:

- GEP-F722-HD V2 Flight Controller
- GEP-BLS50A-4IN1 ESC
- Connection Cables (various)

- Mounting Hardware (screws, standoffs)
- Instruction Manual (this document)

4. Setup and Installation

This section guides you through the physical installation and initial configuration of the flight controller and ESC stack.

4.1 Physical Installation

1. **Mounting the Stack:** The stack features a 30.5x30.5mm mounting hole pattern. Securely mount the ESC first, followed by the flight controller, using the provided standoffs and screws. Ensure proper orientation as indicated by arrows on the boards.

Image 1: The GEP-F722-HD V2 Flight Controller and 50A 4in1 ESC Stack. This image displays the compact design of the stack, highlighting the flight controller mounted atop the 4-in-1 ESC, with various connection pads visible.

2. **Motor Connections:** Solder your drone's motor wires to the corresponding pads on the GEP-BLS50A-4IN1 ESC. Pay close attention to the motor order and rotation direction as per your drone frame's specifications and flight controller software configuration.
3. **Power Connection:** Connect the main battery lead (3-6S LiPo) to the designated battery pads on the ESC. Ensure correct polarity (+ and -).
4. **Air Unit Connection:** The GEP-F722-HD V2 Flight Controller supports direct connection to compatible Air Units. Refer to your Air Unit's manual for specific wiring instructions and connect it to the dedicated port on the flight controller.
5. **Receiver Connection:** Connect your radio receiver to one of the available UARTs on the flight controller. Consult the flight controller's pinout diagram for specific UART assignments (e.g., SBUS, CRSF, PPM).
6. **Other Peripherals:** Connect any other peripherals such as GPS, VTX, or camera to the appropriate pads and UARTs as required. The flight controller has 5 UARTs available.

4.2 Software Configuration (BetaFlight)

The GEP-F722-HD V2 Flight Controller runs BetaFlight firmware.

1. **Connect to PC:** Connect the flight controller to your computer using a Type-C USB cable.
2. **Install BetaFlight Configurator:** Download and install the latest BetaFlight Configurator software from the

official BetaFlight website (betaflight.com).

3. **Flash Firmware:** It is recommended to flash the latest stable BetaFlight firmware for the GEP-F722-HD V2. Select the correct target (e.g., GEPF722) in the configurator.
4. **Initial Setup:** Follow the BetaFlight setup wizard to configure your receiver, motors, ESC protocol (Dshot 150/300/600 supported), OSD, and other settings.
5. **ESC Calibration:** While the GEP-BLS50A-4IN1 ESC typically does not require calibration with Dshot protocols, ensure proper motor direction and functionality through the BetaFlight motor tab.

5. Operating Instructions

Once the setup is complete, you can proceed with operating your drone.

- **Pre-Flight Checks:** Before each flight, perform a thorough visual inspection of your drone. Check all connections, propeller integrity, and battery charge level.
- **Arming:** Arm your drone using the configured switch on your radio transmitter. Ensure you are in a safe, open area away from people and obstacles.
- **Flight Modes:** Utilize the flight modes configured in BetaFlight (e.g., Acro, Angle, Horizon) to suit your flying style and skill level.
- **Power Management:** The ESC supports 3-6S LiPo batteries. Monitor your battery voltage during flight to avoid over-discharging, which can damage the battery.
- **BLHELI_S Firmware:** The ESC is equipped with BLHELI_S firmware, providing smooth throttle response and efficient motor control. Advanced users can configure ESC settings via BetaFlight passthrough.

6. Maintenance

Regular maintenance ensures the longevity and optimal performance of your flight controller and ESC stack.

- **Cleaning:** Periodically clean the boards with a soft brush or compressed air to remove dust, dirt, or debris. Avoid using liquids.
- **Inspection:** Regularly inspect solder joints for cracks or cold joints. Check for any signs of physical damage to components or wiring.
- **Firmware Updates:** Keep your BetaFlight firmware and BLHELI_S firmware updated to benefit from performance improvements and bug fixes.
- **Storage:** When not in use, store the stack in a dry, anti-static environment.

7. Troubleshooting

This section addresses common issues you might encounter.

- **No Power:**
  - Check battery connection and polarity.
  - Inspect main power leads for breaks or poor solder joints.
  - Ensure the battery is charged.
- **Motors Not Spinning:**
  - Verify motor connections to the ESC.
  - Check ESC protocol settings in BetaFlight.
  - Ensure the drone is armed and throttle is above minimum.

- Check for motor desync issues; try updating ESC firmware.

- **No Connection to BetaFlight Configurator:**
  - Ensure correct USB cable is used (data capable, not just charging).
  - Install necessary VCP (Virtual COM Port) drivers.
  - Try a different USB port or computer.

- **Unstable Flight:**
  - Check propeller balance and integrity.
  - Verify flight controller mounting is secure and vibration-free.
  - Review PID tuning settings in BetaFlight.
  - Ensure IMU is calibrated correctly.

8. Specifications

Detailed technical specifications for the CUIPPWRJ GEP-F722-HD V2 Flight Controller and GEP-BLS50A-4IN1 ESC.

Flight Controller (GEP-F722-HD V2)

- **MCU:** STM32F722
- **IMU:** ICM42688-P (SPI)
- **Black Box:** 16M onboard
- **USB Interface:** Type-C
- **OSD:** BetaFlight OSD with AT7456E chip
- **BEC:** 5V@3A, 9V@2.5A dual BEC
- **Size:** 36.85×36.85mm
- **Mounting Hole:** 30.5×30.5mm
- **Input Voltage:** 3-6S LiPo
- **UART:** 5
- **Power Filter:** Integrated filter
- **Weight:** 8.1g

ESC (GEP-BLS50A-4IN1)

- **Input Voltage:** 3-6S LiPo
- **Continuous Current:** 50A
- **Burst Current:** 55A (5 seconds)
- **Support Protocol:** Dshot 150/300/600
- **Size:** 42.9×39.7mm
- **Mounting Hole:** 30.5×30.5mm
- **Weight:** 13.7g

9. Warranty and Support

CUIPPWRJ products are manufactured to high standards. For warranty information and technical support, please refer to the official CUIPPWRJ website or contact your retailer. Keep your proof of purchase for any warranty claims.

For further assistance, you may visit the manufacturer's website or contact their customer service.

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