CUIPPWRJ CUIPPWRJ123

CUIPPWRJ Argus F7 40A AIO F722 ICM42688P Flight Controller and ESC User Manual

Model: CUIPPWRJ123

1. Introduction

This manual provides detailed instructions for the installation, configuration, and operation of the CUIPPWRJ Argus F7 40A AIO F722 ICM42688P Flight Controller and ESC. This All-In-One (AIO) board integrates a powerful F722 flight controller with a 40A BLHeli_S Electronic Speed Controller, designed for various RC drone applications, particularly Cinewhoop drones.

2. Safety Precautions

- Always disconnect power before performing any installation, maintenance, or repair.
- Ensure correct polarity when connecting power to avoid damage to the unit and other components.
- Soldering should be performed by individuals with adequate experience to prevent short circuits or cold solder joints.
- Verify all connections and configurations before applying power and operating the drone.
- Keep the unit away from moisture, dust, and extreme temperatures.

3. Package Contents

Verify that all items listed below are included in your package:

- 1x CUIPPWRJ Argus F7 AIO - F722 FC + 40A 3-6S BLHeli_S ESC (25.5x25.5mm / 26.5x26.5mm mounting)
- 1x 270uF/35V Capacitor
- 1x Amass XT60 Connector
- 2x 10AWG 100mm Wires (Red and Black)
- 4x Rubber Grommets
- 2x 8-Pin SH1.0 Cables

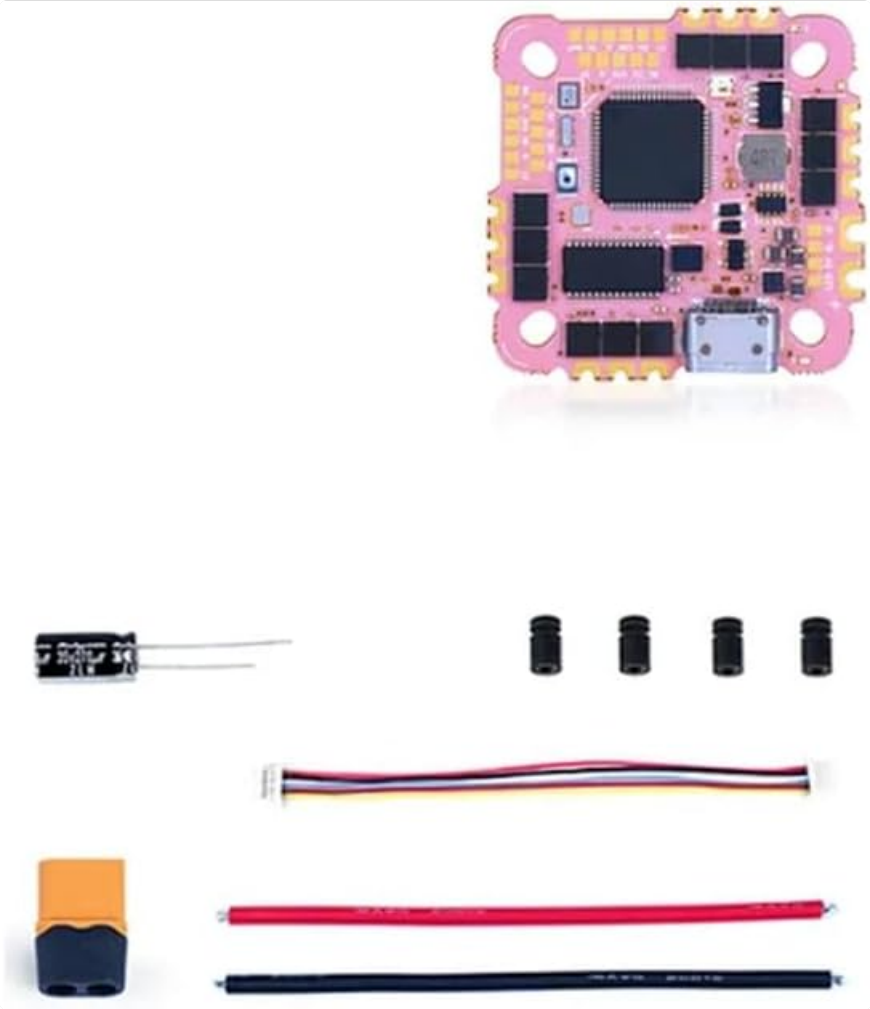

Image 1: CUIPPWRJ Argus F7 AIO Flight Controller and included accessories. This image displays the pink AIO board, a capacitor, an XT60 connector, red and black power wires, rubber grommets, and two 8-pin SH1.0 cables.

4. Specifications

Feature	Specification
Flight Controller	F722
Gyroscope	ICM42688P
ESC Current	40A (Burst 50A)
Input Voltage	3-6S LiPo
BEC Output	5V/3A
Mounting Hole	25.5x25.5mm / 26.5x26.5mm (M3)
BlackBox	16MB Onboard Flash
UARTs	5
OSD	Supported

Feature	Specification
Barometer	Yes
GPS	Supported
Buzzer	Supported
Amperage Meter Scale	210
ESC Firmware	BLHeli_S (Pre-Flashed BlueJay)
Dimensions	36x36x7.2mm
Weight	14.7g

5. Setup

5.1 Physical Installation

1. **Mounting:** Use the provided rubber grommets to mount the AIO board onto your drone frame. Ensure the board is securely fastened to prevent vibration. The mounting holes are compatible with 25.5x25.5mm or 26.5x26.5mm patterns with M3 screws.
2. **Power Wiring:** Solder the 10AWG red and black wires to the main battery pads on the AIO board, observing correct polarity. Connect the Amass XT60 connector to the other end of these wires.
3. **Motor Connections:** Solder your motor wires to the designated ESC pads on the AIO board. Ensure each motor is connected to its corresponding ESC output.
4. **Capacitor Installation:** Solder the included 270uF/35V capacitor to the main battery pads (positive to positive, negative to negative) to help filter power noise.
5. **Peripheral Connections:** Connect other peripherals such as your receiver, video transmitter (VTX), camera, and GPS module to the appropriate UARTs and pads using the provided SH1.0 cables or direct soldering as required. Refer to the board's pinout diagram (not provided in this manual, typically found on the manufacturer's website) for specific connections.

5.2 Software Configuration

1. **Flight Controller Firmware:** The F722 flight controller typically runs Betaflight firmware. Connect the AIO board to your computer via a USB cable. Open the Betaflight Configurator software.
2. **Firmware Flashing (if necessary):** If the board does not connect or requires an update, flash the latest stable Betaflight firmware for the F722 target. Always back up your configuration before flashing.
3. **Initial Setup:** Follow the Betaflight setup wizard to configure basic settings, including accelerometer calibration, port assignments for peripherals (receiver, VTX, GPS), and ESC protocol (DShot is recommended).
4. **ESC Configuration:** The ESCs are pre-flashed with BlueJay firmware. Use the BLHeli_S Configurator (or Betaflight Passthrough) to verify ESC settings, calibrate motor directions, and update firmware if needed.
5. **BlackBox:** The 16MB onboard BlackBox allows for detailed flight data logging. Configure BlackBox logging rates and parameters within Betaflight Configurator for performance analysis.

6. Operating

Once the physical installation and software configuration are complete, you can proceed with operating your drone.

- **Pre-Flight Checks:** Always perform a thorough pre-flight check, including propeller direction, motor spin direction, control surface response, and battery voltage.
- **Arming:** Arm the drone using your configured arming switch on the radio transmitter. Ensure you are in a safe environment before arming.
- **Flight:** Operate the drone responsibly. The F722 flight controller with ICM42688P gyro provides enhanced stability and responsiveness.
- **Data Analysis:** After flights, you can download BlackBox logs from the AIO board via Betaflight Configurator for detailed analysis of flight performance and troubleshooting.

7. Maintenance

- **Regular Inspection:** Periodically inspect all solder joints and connections for signs of wear, corrosion, or damage.
- **Cleaning:** Keep the board clean from dust, dirt, and debris. Use compressed air or a soft brush. Avoid using liquids directly on the electronics.
- **Firmware Updates:** Regularly check for and apply firmware updates for both Betaflight (FC) and BlueJay (ESC) to benefit from performance improvements and bug fixes.
- **Storage:** When not in use, store the AIO board in a dry, anti-static environment.

8. Troubleshooting

- **No Power:** Check battery connections, XT60 polarity, and ensure no short circuits are present on the board.
- **Motors Not Spinning:** Verify ESC calibration, motor direction in BLHeli_S Configurator, and ensure motors are properly connected to the ESC pads. Check Betaflight motor tab for proper motor response.
- **No Connection to Betaflight:** Ensure correct USB cable is used. Try a different USB port or computer. Install necessary drivers (e.g., STM32 VCP Driver, Zadig for DFU mode).
- **Unstable Flight:** Review PID tuning, filter settings in Betaflight. Check for excessive vibrations from motors or propellers. Ensure the board is securely mounted with grommets.
- **Video Issues:** Check VTX and camera connections. Ensure correct OSD settings in Betaflight.
- **Desync Issues:** The Argus F7 AIO is designed to resolve desync issues. If they occur, verify ESC firmware is up to date and motor timing settings are appropriate.

9. Warranty and Support

For warranty information, technical support, or further assistance, please refer to the official CUIPPWRJ website or contact your retailer. Keep your proof of purchase for any warranty claims.