HGLRC FC F405 8S V1

HGLRC F405 8S V1 Flight Controller User Manual

Your guide to setting up and operating the HGLRC F405 8S V1 Flight Controller.

1. Introduction

The HGLRC F405 8S V1 Flight Controller is a high-performance component designed for FPV racing and freestyle drones. It features an ICM42688P gyroscope for enhanced stability and a modular, direct-connect design for simplified installation. This manual provides essential information for proper setup, operation, and maintenance.

Key Features:

- **High-Performance Gyroscope:** Equipped with ICM42688P for superior flight stability, with reserved MPU6000 gyro pads for future upgrades.
- **Modular Design:** Direct-connect, plug-and-play functionality eliminates the need for solder pads, streamlining the build process.
- **Large Black Box:** Includes a 16MB black box for extensive flight data recording.
- **8S High-Voltage Support:** Provides rapid output for extremely fast response and stable control during aggressive flight maneuvers.

2. What's in the Box

Verify that all items are present in your package:

- 1x HGLRC F405 8S V1 Flight Controller
- 1x 30AWG 25mm Dual-End SH1.0-8P Flex Cable
- 1x 30AWG, 70mm Dual-End SH1.0-4P Flex Cable
- 1x 30AWG, 60mm Single-End SH1.0-3P/Single-End SH1.25-3P Cable
- 1x 30AWG 70mm, Single-Ended GH1.25-6P/Single-Ended SH1.0-7P Cable

- 1x 30AWG, Total Length 140mm, Double-Ended SH1.0-6P Cable
- 4x 3*8 Shock-Absorbing Columns
- 1x HGLRC Sticker
- 1x QR Code Card

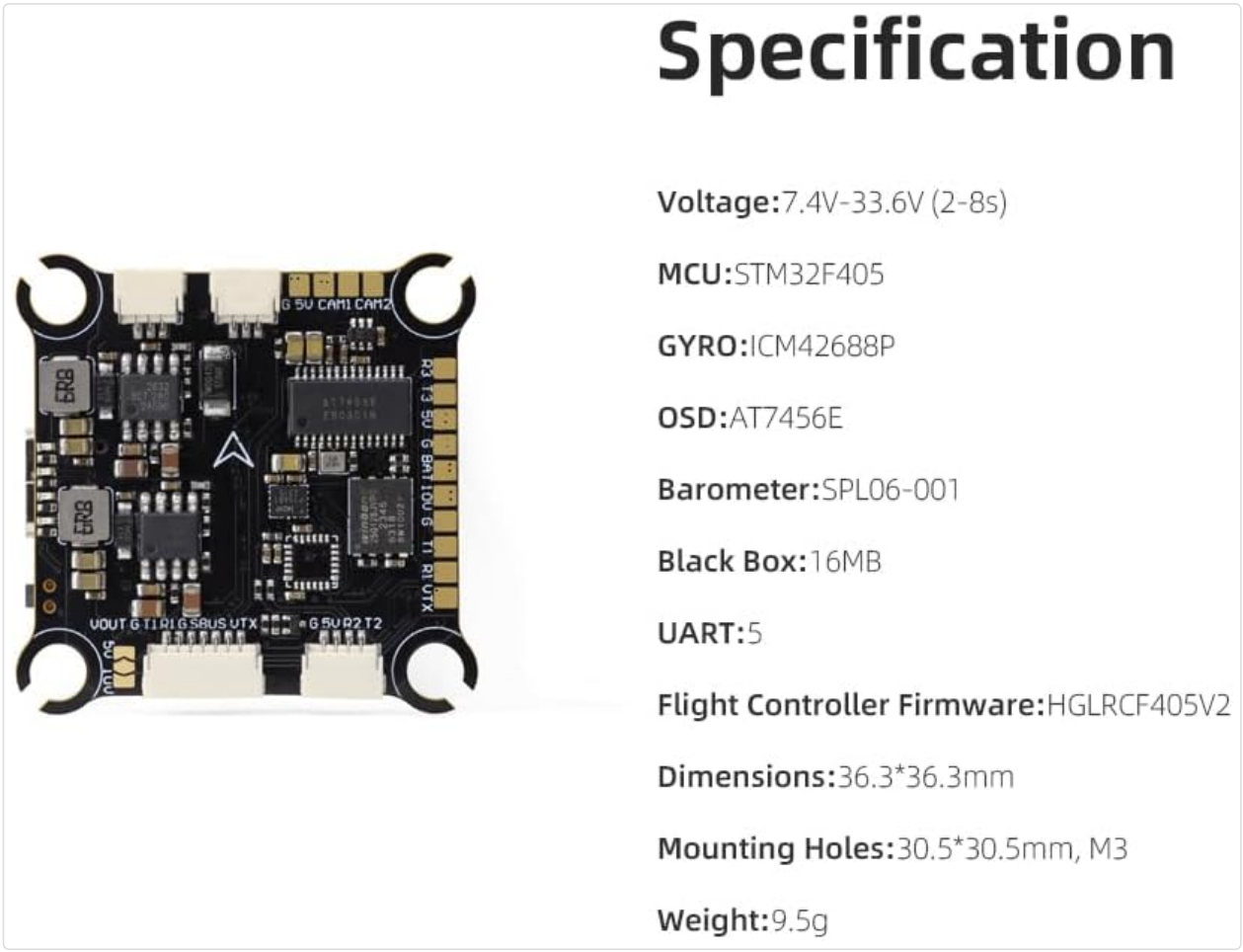

Image: Contents of the HGLRC F405 8S V1 Flight Controller package, including the flight controller, various flex cables, shock-absorbing columns, and branding materials.

3. Specifications

Voltage Input	7.4V-33.6V (2-8S LiPo)
MCU	STM32F405
Gyroscope	ICM42688P (MPU6000 pads reserved)
OSD	AT7456E
Barometer	SPL06-001
Black Box	16MB
UART Ports	5
Flight Controller Firmware	HGLRCF405V2 (Supports Betaflight, Ardupilot, INAV)

Dimensions	36.3mm x 36.3mm x 1.78mm (1.42"L x 1.42"W x 0.07"H)
Mounting Holes	30.5mm x 30.5mm, M3
Weight	9.5g (0.335 ounces)
Connectivity	USB Type-C

Image: A visual representation of the HGLRC F405 8S V1 Flight Controller highlighting its key specifications and components.

4. Setup and Installation

4.1 Component Overview

The HGLRC F405 8S V1 Flight Controller is designed for easy integration into your FPV drone build. Its modular nature simplifies connections.

Image: The HGLRC F405 8S V1 Flight Controller, showcasing its high-performance ICM42688P gyroscope for enhanced flight stability. MPU6000 gyro pads are reserved for future upgrades.

Image: The HGLRC F405 8S V1 Flight Controller demonstrating its modular plug-and-play design, which eliminates the need for soldering and simplifies the build process.

4.2 Wiring Diagram

Refer to the following diagram for proper connection of your flight controller to other drone components such as the ESC, receiver, video transmitter, and GPS module.

Image: Detailed wiring diagram for the HGLRC F405 8S V1 Flight Controller, illustrating connections to various peripherals like ESC, FPV camera, DJI O3 Air Unit, GPS, and telemetry radio.

4.3 Video Guide: Flight Controller F405 Details

Your browser does not support the video tag.

Video: An official HGLRC video detailing the features, specifications, and connectivity options of the F405 Flight Controller. This video provides a visual walkthrough of the product's capabilities and integration.

5. Operating Instructions

5.1 Firmware Compatibility

The HGLRC F405 8S V1 Flight Controller is compatible with popular flight control firmware. You can flash the board with:

- **Betaflight:** A widely used open-source firmware for FPV drones, offering extensive customization and flight modes.
- **Ardupilot:** A comprehensive and powerful open-source autopilot software suite, suitable for various UAV applications.
- **INAV:** Firmware designed for GPS-enabled drones, offering navigation features like RTH (Return To Home) and waypoint missions.

Ensure you download the correct firmware target (HGLRCF405V2) from the respective firmware configurator or website.

5.2 Initial Configuration

After physically connecting all components and flashing the desired firmware, connect the flight controller to your computer via the USB Type-C port. Use the corresponding configurator software (e.g., Betaflight Configurator) to perform initial setup, calibrate sensors, configure motor outputs, and set up your radio receiver.

6. Maintenance

To ensure the longevity and optimal performance of your HGLRC F405 8S V1 Flight Controller, follow these maintenance guidelines:

- **Keep Clean:** Regularly inspect the board for dust, debris, or moisture. Use a soft brush or compressed air to gently clean the surface. Avoid using liquids directly on the board.
- **Inspect Connections:** Periodically check all cable connections for looseness or damage. Ensure connectors are securely seated.
- **Physical Damage:** After any crash or hard landing, inspect the board for cracks, bent pins, or damaged components.
- **Storage:** When not in use, store the flight controller in a dry, anti-static environment, away from extreme temperatures.

7. Troubleshooting

If you encounter issues with your HGLRC F405 8S V1 Flight Controller, consider the following common troubleshooting steps:

- **No Power:** Verify battery connection and voltage. Check for shorts or incorrect wiring. Ensure the power distribution board (PDB) or ESC is functioning correctly.
- **No USB Connection:** Try a different USB cable or port. Ensure the correct drivers are installed on your computer. If the boot button is stuck, it might prevent normal connection.
- **Motors Not Spinning:** Check motor connections to the ESC. Verify ESC calibration and firmware settings. Ensure your radio receiver is properly bound and configured in the flight controller software.
- **Unstable Flight:** Recalibrate the accelerometer and gyroscope. Check for vibrations affecting the flight controller. Ensure PID settings are appropriate for your drone frame and motors.
- **OSD Not Displaying:** Verify OSD settings in the flight controller software. Check video signal

connections from the camera to the flight controller and from the flight controller to the video transmitter.

- **GPS Issues:** Ensure the GPS module has a clear view of the sky. Check GPS wiring and baud rate settings in the flight controller software.

For more detailed troubleshooting, consult the official HGLRC support resources or relevant community forums for your chosen firmware (Betaflight, Ardupilot, INAV).

8. Warranty and Support

8.1 Warranty Information

HGLRC products are typically covered by a limited warranty against manufacturing defects. The specific terms and duration of the warranty may vary. Please retain your proof of purchase for any warranty claims. Damage resulting from improper installation, misuse, modification, or accidents is generally not covered under warranty.

8.2 Technical Support

For technical assistance, firmware updates, or further inquiries, please visit the official HGLRC website or contact their customer support. Online resources, including FAQs and community forums, can also provide valuable information and solutions.

HGLRC Official Website: Visit the HGLRC Store on Amazon