HGLRC SPECTER F722 PRO FC

HGLRC SPECTER F722 Pro Flight Controller User Manual

Model: SPECTER F722 PRO FC

1. INTRODUCTION

This manual provides detailed instructions for the installation, configuration, and operation of the HGLRC SPECTER F722 Pro Flight Controller. Designed for FPV drone applications, this flight controller integrates advanced features for enhanced performance and reliability. Please read this manual thoroughly before use to ensure proper setup and safe operation.

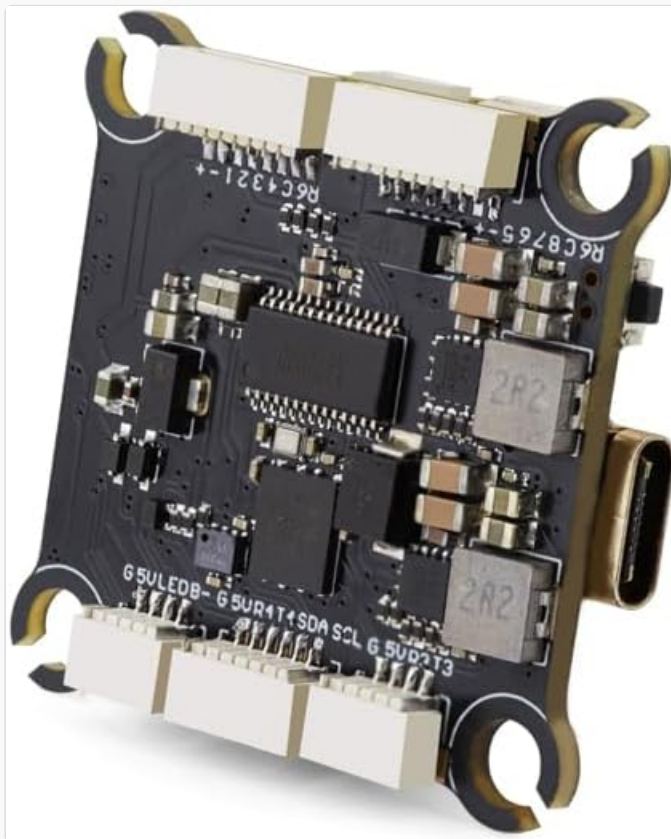**Note: This flight controller does not support INAV firmware.**

Image 1.1: Overview of the HGLRC SPECTER F722 Pro Flight Controller. This image displays the compact design and various connection points of the flight controller board.

2. KEY FEATURES

- **Enhanced Stability:** Utilizes the MPU6000 gyroscope for improved flight stability and precise control.

- **High-Performance Processing:** Equipped with an STM32F722 processor operating at up to 216 MHz for smoother control and responsiveness.

- **Ample Data Recording:** Features a 16MB black box for comprehensive flight data recording and analysis.

- **Versatile Camera Integration:** Provides dual camera signal outputs, allowing switching between front and rear cameras via Betaflight settings.

- **Modular Design:** Offers a full module direct plug-in connection system, eliminating the need for soldering pads for easier setup.

- **Integrated Barometer:** Includes a DPS310 barometer for accurate altitude readings.

- **Dual BEC Output:** Provides 10V2A and 5V2.5A BEC outputs for powering peripherals.
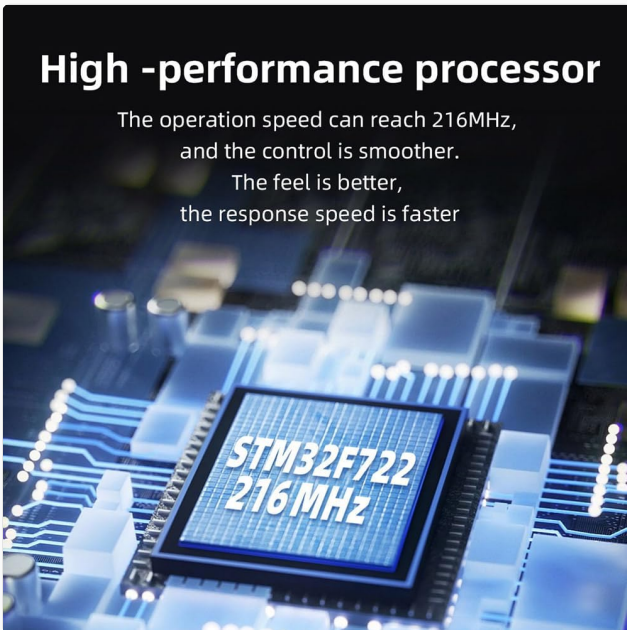

Image 2.1: High-performance STM32F722 processor. This image highlights the central processing unit, indicating its 216 MHz operating speed for efficient flight control.
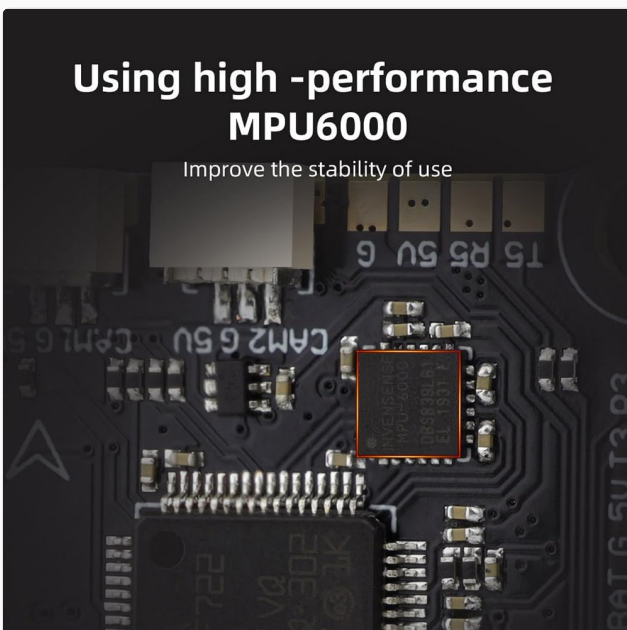
Image 2.2: MPU6000 gyroscope for enhanced stability. The image shows the MPU6000 chip, crucial for precise motion sensing and flight stabilization.
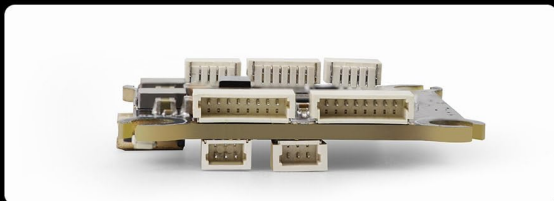

Image 2.3: Modular direct insertion connection system. This view illustrates the plug-and-play connectors, simplifying wiring and installation without soldering.
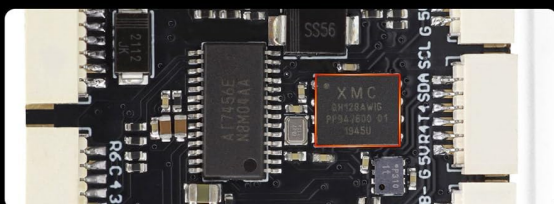

Image 2.4: 16MB black box for flight data recording. The image points to the 16MB flash memory chip used for storing flight logs.

Equipped with 10V electronic switch

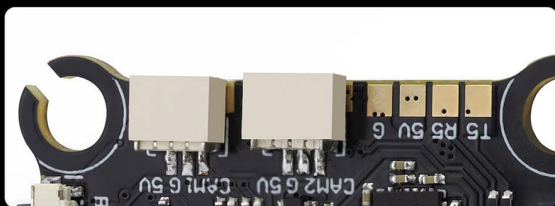You can set the opening/off mode through BF

Image 2.5: 10V electronic switch for peripherals. This image shows the component responsible for the 10V output, which can be controlled via Betaflight.

3. PACKAGE CONTENTS

Verify that all items are present in your package:

- 1x HGLRC SPECTER F722 PRO Flight Controller
- 1x 30AWG 25mm double-ended SH1.0-8P cable
- 1x 30AWG 70mm single-head SH1.0-7P/single-head SH1.0-6P cable
- 1x 30AWG 70mm single-head SH1.0-7P/single-head GH1.25-6P VTX cable
- 2x 30AWG 60mm single-head SH1.0-3P/single-head 1.25-3P camera cable
- 1x 30AWG 100mm single-head SH1.0-4P receiver cable
- 4x M3*22 hexagon socket screws

4. SPECIFICATIONS

Component	Specification
Flight Controller Firmware	HGLRCF722 MINI
MCU	STM32F722
Gyroscope	MPU6000
OSD	AT7456E
Barometer	DPS310
Black Box	16MB
UARTs	5
BEC Output	10V2A / 5V2.5A

Input Voltage	7.4V-22.8V (2-6S LIPO)
Dimensions	37mm x 34mm x 9.8mm
Mounting Hole Position	30.5mm x 30.5mm, M3
Weight	8.5g

5. SETUP AND INSTALLATION

Careful installation is crucial for the proper functioning of your flight controller. Follow these general guidelines:

1. **Mounting:** Secure the flight controller to your drone frame using the provided M3 screws. Ensure proper isolation from vibrations. The mounting hole pattern is 30.5mm x 30.5mm.

2. **Wiring:** Connect the flight controller to your Electronic Speed Controllers (ESCs), receiver, VTX (Video Transmitter), camera, and other peripherals using the included cables. Refer to the wiring diagram below for specific connections. The modular plug-in system simplifies this process.

3. **Power Connection:** Connect your LiPo battery (2-6S) to the main power input of your ESCs, which will then power the flight controller.

4. **Firmware Flashing:** Connect the flight controller to your computer via USB. Use the Betaflight Configurator software to flash the HGLRCF722 MINI firmware. Ensure you select the correct target.

5. **Initial Configuration:** After flashing, perform initial configuration in Betaflight Configurator. This includes setting up your receiver, ESC protocol, OSD, modes, and PID tuning.

5.1 Wiring Diagram

The following diagram illustrates typical connections for the HGLRC SPECTER F722 Pro Flight Controller with various drone components. Always cross-reference with your specific component manuals.
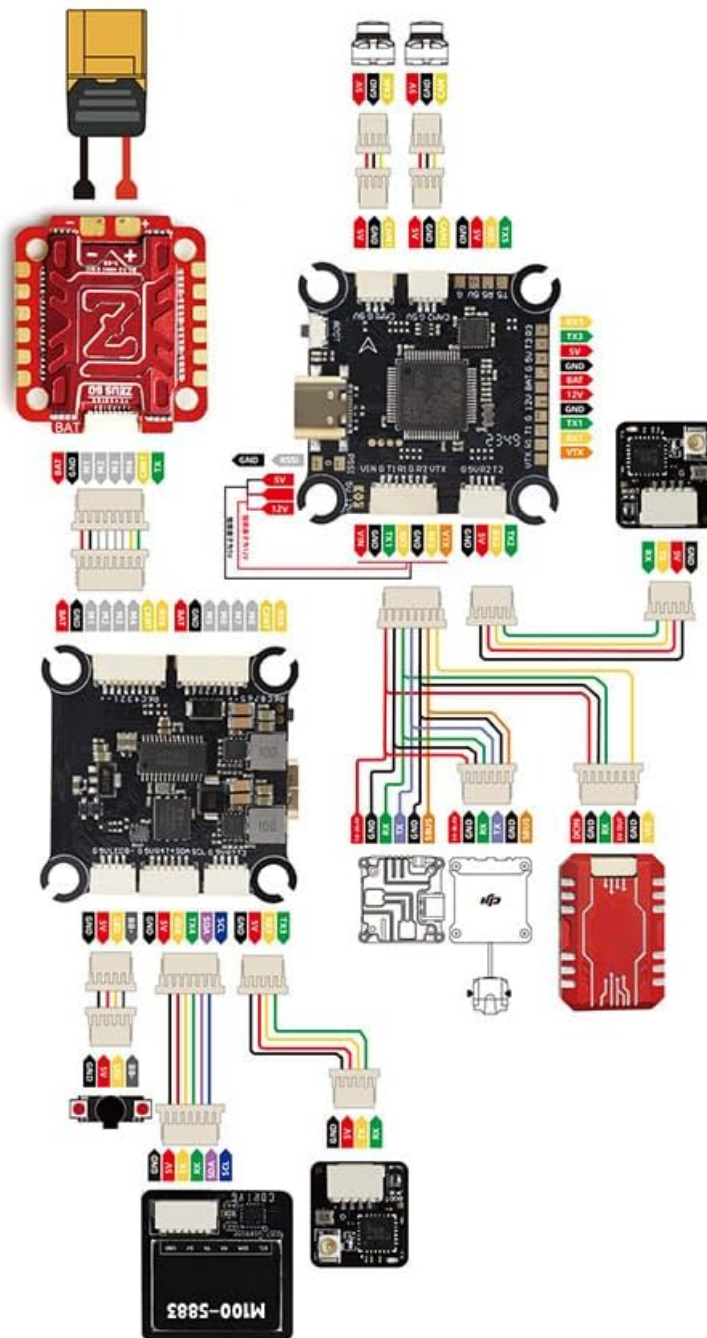
Image 5.1: Detailed wiring diagram for the HGLRC SPECTER F722 Pro Flight Controller. This diagram shows connections to ESCs, receiver, VTX, camera, and other common FPV drone components.

6. OPERATING INSTRUCTIONS

Once the flight controller is installed and configured, follow these steps for operation:

1. **Pre-Flight Checks:** Before each flight, ensure all connections are secure, propellers are correctly installed, and battery is fully charged. Verify that your radio transmitter is powered on and bound to the receiver.

2. **Arming the Drone:** With the drone on a stable, level surface, arm the motors using the designated switch on your radio transmitter. Ensure no obstacles are near the propellers.

3. **Flight Control:** Use your radio transmitter to control the drone. The F722 Pro's MPU6000 gyroscope and STM32F722 processor provide stable and responsive flight characteristics.

4. **OSD Monitoring:** Monitor flight data such as battery voltage, current, flight time, and RSSI through the On-Screen Display (OSD) in your FPV goggles or monitor.

5. **Disarming:** After landing, disarm the motors using the designated switch on your radio transmitter.

6. **Black Box Data:** After flights, you can download and analyze the 16MB black box data using Betaflight Blackbox Explorer for performance review and tuning adjustments.

7. MAINTENANCE

Regular maintenance helps ensure the longevity and reliable performance of your flight controller:

- **Visual Inspection:** Periodically inspect the flight controller for any signs of physical damage, loose connections, or debris.
- **Cleaning:** Gently clean the board with a soft brush or compressed air to remove dust and dirt. Avoid using liquids directly on the board.
- **Connection Integrity:** Ensure all plug-in connections are firm and secure.
- **Firmware Updates:** Check the official HGLRC website or Betaflight resources for any available firmware updates. Update only if necessary and follow instructions carefully.
- **Storage:** When not in use, store the flight controller in a dry, anti-static environment.

8. TROUBLESHOOTING

If you encounter issues with your HGLRC SPECTER F722 Pro Flight Controller, consider the following troubleshooting steps:

- **No Power:**
  - Check battery connection and voltage.
  - Verify continuity of power cables.
  - Inspect for short circuits on the board.

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

- **Motors Not Arming:**
  - Check Betaflight 'Modes' tab for correct arming switch setup.
  - Verify receiver input in Betaflight 'Receiver' tab.
  - Check for pre-arm conditions (e.g., accelerometer calibration, low battery warning, motor protocol errors).

- **Unstable Flight:**
  - Ensure flight controller is mounted securely and isolated from vibrations.
  - Perform accelerometer calibration in Betaflight.
  - Review PID tuning settings.
  - Check for bent or damaged propellers.

- **OSD Not Displaying:**
  - Verify OSD settings in Betaflight.
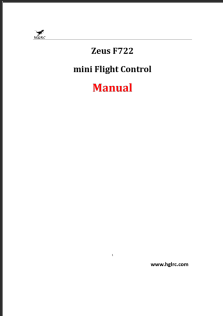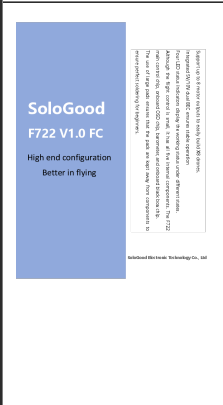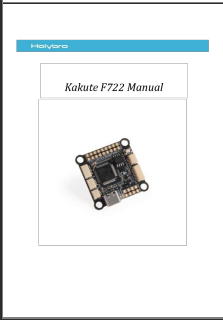 - Check VTX and camera connections.

For more advanced troubleshooting, consult online FPV communities or the official HGLRC support channels.

9. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the official HGLRC website or contact your retailer. Keep your proof of purchase for any warranty claims.
HGLRC Official Website: www.hglrc.com

Related Documents - SPECTER F722 PRO FC

Zeus F722 mini Flight Control **Manual** www.hglrc.com	**HGLRC Zeus F722 Mini Flight Controller Manual** This manual provides detailed instructions and specifications for the HGLRC Zeus F722 mini flight controller, covering setup, configuration, wiring, and troubleshooting for FPV drone enthusiasts.
SoloGood F722 V1.0 FC High end configuration Better in flying	**SoloGood F722 V1.0 FC: High-End Flight Controller for Drones** Detailed specifications, features, and setup guide for the SoloGood F722 V1.0 FC, a high-performance flight controller designed for building X8 drones. Learn about its main control chip, onboard OSD, barometer, black box, dual BEC, and LED status indicators. Includes wiring diagrams and Betaflight configuration instructions.
Kakute F722 Manual	**Holybro Kakute F722 Flight Controller Manual and Pinout Guide** Comprehensive manual and pinout diagram for the Holybro Kakute F722 flight controller, detailing specifications, connections, and features for FPV drones.

[HGLRC Zeus35 Pro AIO Flight Controller Manual - Setup and Configuration Guide](#)
Comprehensive manual for the HGLRC Zeus35 Pro AIO Flight Controller, covering product specifications, interface, setup, configuration, OSD, GPS, LED settings, and troubleshooting.

[Foxeer F722 V3 Flight Controller X8 DJI Type-C - Technical Overview](#)
Detailed specifications and wiring guide for the Foxeer F722 V3 Flight Controller, designed for X8 configurations with DJI and Type-C compatibility.

[HGLRC Zeus F722 mini Flight Controller Manual](#)
Comprehensive manual for the HGLRC Zeus F722 mini Flight Controller, covering specifications, interface, setup, configuration, and troubleshooting for FPV drones. Includes detailed instructions for Betaflight software.