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HGLRC SPECTER F722 Lite

HGLRC SPECTER F722 Lite Flight Controller User Manual

Model: SPECTER F722 Lite

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of your HGLRC SPECTER F722 Lite Flight Controller. Designed for FPV drones, this flight controller integrates an ICM42688 Gyro and an ELRS 2.4G receiver, offering high performance in a compact form factor. Please read this manual thoroughly before use to ensure proper setup and safe operation.

2. PACKAGE CONTENTS

Verify that all items listed below are included in your package. If any components are missing or damaged, please contact HGLRC support.

- 1x SPECTER F722 Lite Flight Controller
- 1x 25mm 8Pin Flight Control Cable
- 1x 90mm 2.4G T-type Antenna
- 1x 40mm 2.4G T-type Antenna
- 4x M3*8 Shock Absorbers

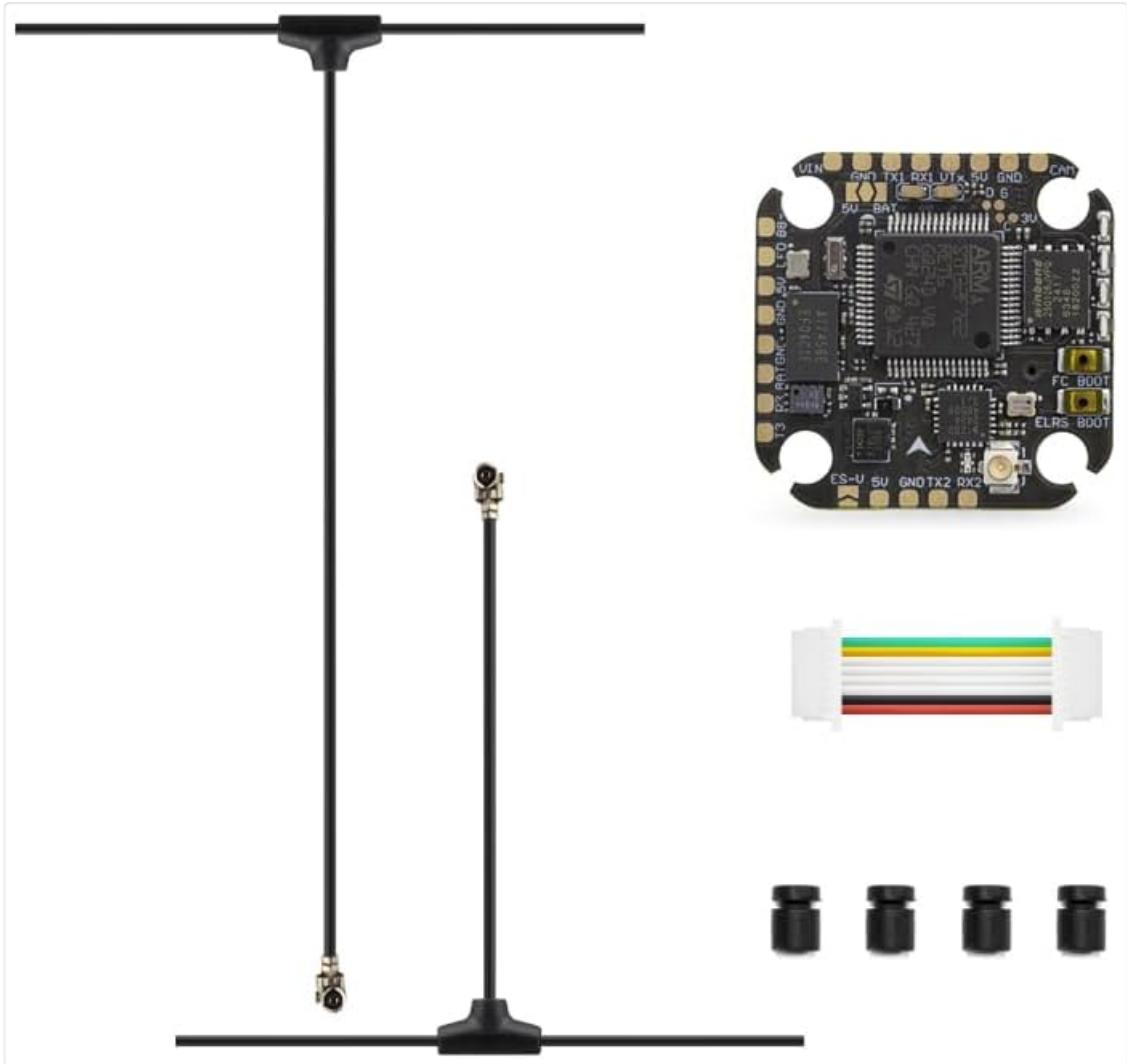


Image: The complete package contents, including the flight controller, cables, antennas, and shock absorbers.

3. PRODUCT OVERVIEW

The HGLRC SPECTER F722 Lite is a high-performance flight controller designed for FPV applications. It features a powerful STM32F722 MCU, an ICM42688P gyroscope, and an integrated ELRS 2.4Ghz R2 receiver, providing precise control and minimal latency. Its compact size and lightweight design make it suitable for a wide range of FPV drones.

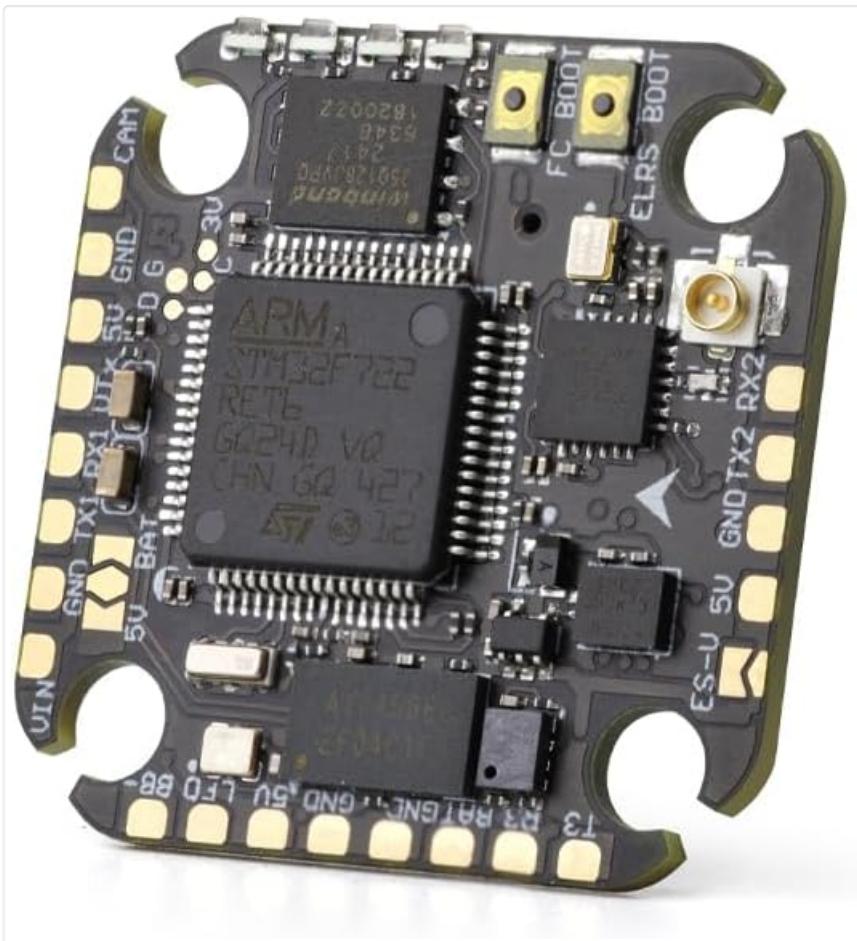


Image: Top view of the HGLRC SPECTER F722 Lite Flight Controller, showing the main MCU, gyroscope, and ELRS module.

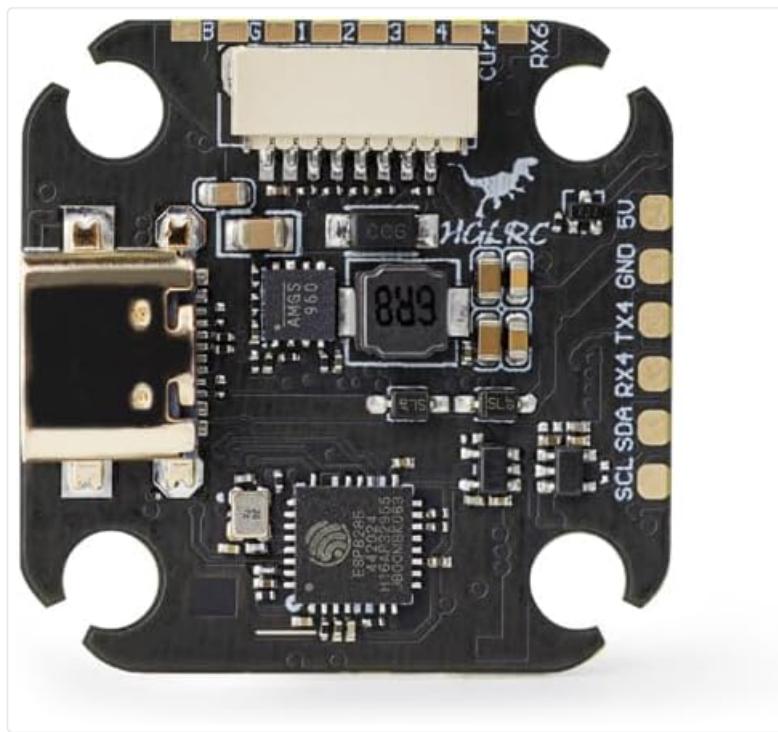
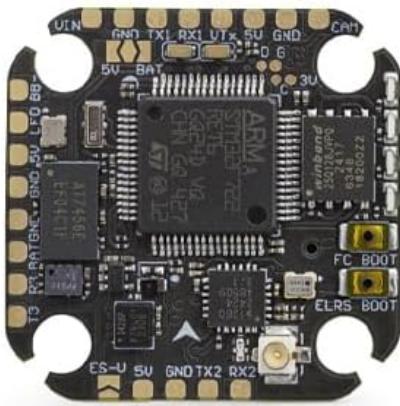


Image: Bottom view of the HGLRC SPECTER F722 Lite Flight Controller, highlighting the USB port and other components.

4. SPECIFICATIONS

Detailed technical specifications for the HGLRC SPECTER F722 Lite Flight Controller:

Product parameters



Product name:HGLRC F722 Lite

Firmware:HGLRC F722MINI4.5.1

MCU:STM32F722

Gyroscope:ICM42688P

Barometer:dps310

Working voltage:8.4V-26.1V(2-6s lipo)

BEC:5V 2A

Black box:16MB

Serial UARTS:5

Built-in receiver:ELRS 2.4Ghz R2

OSD:Supported

Mounting holes:20×20mm, M3

Size:28×28mm

Weight:4g

Image: A diagram illustrating the key product parameters and dimensions of the flight controller.

Parameter	Value
FC Name	HGLRC F722 Lite
Firmware	HGLRC F722MINI_4.5.1
MCU	STM32F722
Gyroscope	ICM42688P
Barometer	DPS310
Operating Voltage	8.4V-25.2V (2-6S LiPo)
BEC Output	5V 2A
Black Box	16MB
Serial UARTS	5
Built-in Receiver	ELRS 2.4Ghz R2
OSD	Supported

Mounting Holes	20x20mm, M3
Size	28x28mm
Weight	4g

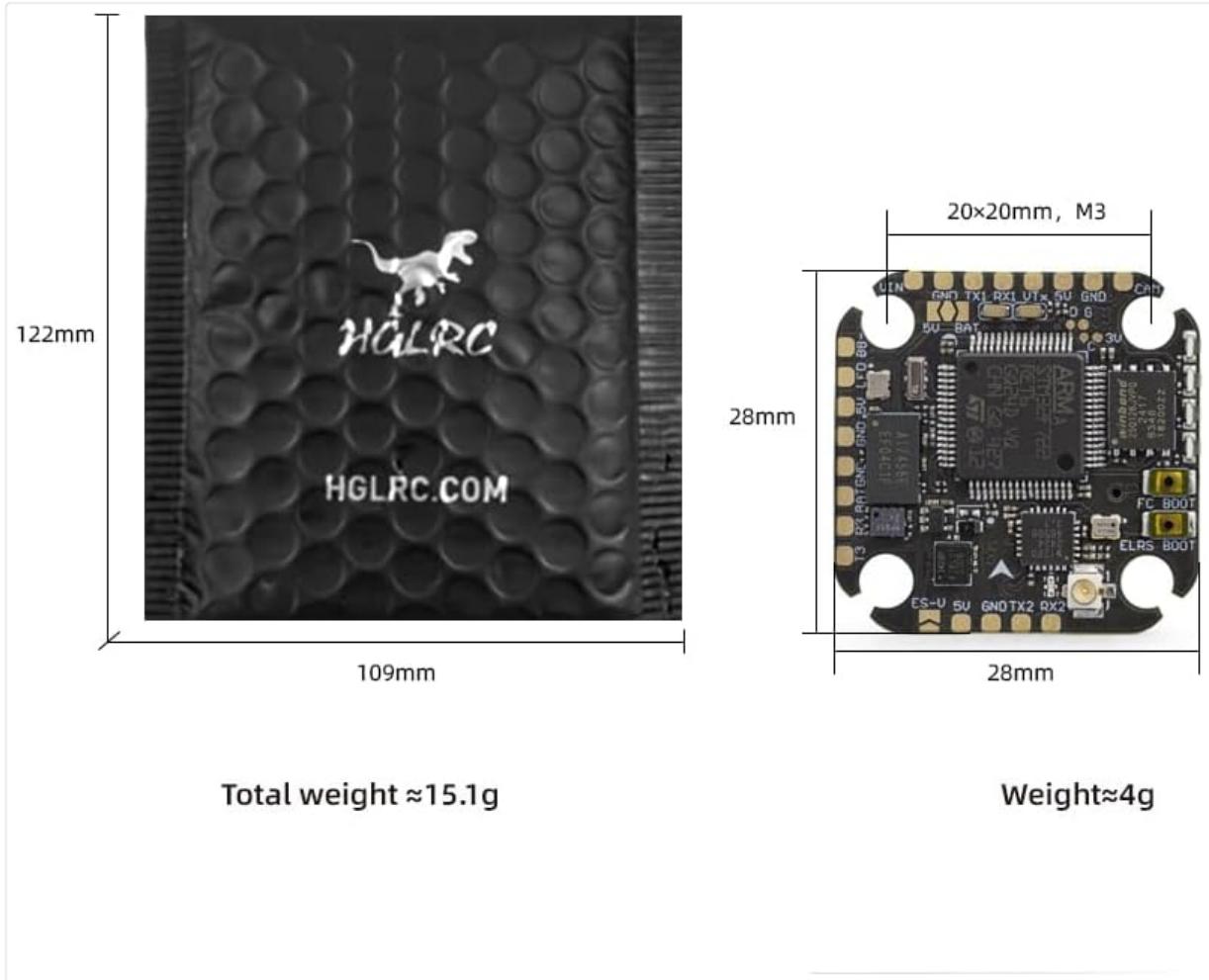


Image: Visual representation of the flight controller's dimensions (28x28mm) and weight (approximately 4g).

5. SETUP AND INSTALLATION

Careful installation is crucial for the performance and longevity of your flight controller. Follow these guidelines:

- Mounting:** Use the provided M3*8 shock absorbers to mount the flight controller onto your drone frame. The mounting hole pattern is 20x20mm. Ensure the arrow on the flight controller points towards the front of the drone.
- Power Connection:** Connect the flight controller to your drone's power distribution board (PDB) or ESCs. The operating voltage range is 8.4V-25.2V (2-6S LiPo). Ensure correct polarity (VIN, GND).
- Motor Connections:** Connect your ESCs to the appropriate motor output pads on the flight controller. Refer to your ESC and motor documentation for specific wiring.
- Receiver Connection:** The SPECTER F722 Lite has a built-in ELRS 2.4Ghz R2 receiver. Ensure your ELRS transmitter is bound to this receiver. If using an external receiver, connect it to one of the available UARTs (e.g., RX1/TX1).
- Antenna Installation:** Connect the provided 2.4G T-type antennas to the ELRS antenna connector on

the flight controller. Position the antennas away from other electronics and carbon fiber for optimal signal reception.

6. **Peripheral Connections:** Connect other peripherals such as FPV camera, VTX (video transmitter), GPS, or buzzer to the designated pads. The flight controller supports OSD.
7. **Firmware Flashing:** Connect the flight controller to your computer via USB. Use Betaflight Configurator (or similar software) to flash the recommended firmware (HGLRCF722MINI_4.5.1) and configure settings.

6. OPERATING INSTRUCTIONS

Once installed and configured, the HGLRC SPECTER F722 Lite Flight Controller is ready for operation. Basic steps include:

1. **Initial Configuration:** After flashing firmware, open Betaflight Configurator. Navigate through the tabs to set up your drone's configuration, including accelerometer calibration, ESC protocol, motor directions, receiver modes, OSD elements, and PID tuning.
2. **Binding ELRS Receiver:** If not already bound, put the flight controller into ELRS bind mode (usually by powering on/off three times rapidly or via Betaflight CLI command). Then, activate bind mode on your ELRS transmitter.
3. **Pre-Flight Checks:** Before each flight, perform thorough pre-flight checks. Verify motor spin direction, control surface response, battery voltage, and FPV video feed.
4. **Arming and Disarming:** Configure an arming switch on your radio. Ensure the drone is on a stable, level surface before arming. Disarm immediately if any issues arise.
5. **Flight Modes:** Set up various flight modes (e.g., Acro, Angle, Horizon) in Betaflight and assign them to switches on your radio for different flying experiences.

7. MAINTENANCE

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

- **Inspection:** Periodically inspect the flight controller for any visible damage, loose connections, or signs of corrosion.
- **Cleaning:** Keep the flight controller clean and free from dust, dirt, and moisture. Use a soft brush or compressed air for cleaning. Avoid using liquids.
- **Firmware Updates:** Check for official firmware updates from HGLRC or Betaflight. Updates can provide performance improvements, new features, or bug fixes.
- **Environmental Protection:** Protect the flight controller from extreme temperatures, direct sunlight, and excessive vibrations. Consider conformal coating for moisture protection in humid environments.

8. TROUBLESHOOTING

If you encounter issues, refer to the following common troubleshooting steps:

- **No Power:**
 - Check all power connections for correct polarity and secure soldering.
 - Verify battery voltage is within the 2-6S LiPo range.

- **No Connection to Betaflight Configurator:**

- Ensure USB drivers are correctly installed (e.g., STM32 Virtual COM Port Driver, Zadig for DFU mode).
- Try a different USB cable or port.
- Ensure the flight controller is powered correctly.

- **Motors Not Spinning:**

- Check ESC connections and ensure ESCs are calibrated.
- Verify motor direction and protocol settings in Betaflight.
- Ensure the drone is armed and throttle is above minimum.

- **Receiver Not Responding:**

- Confirm the ELRS receiver is properly bound to your transmitter.
- Check antenna connections.
- Verify receiver protocol settings in Betaflight.

- **Unstable Flight:**

- Recalibrate the accelerometer.
- Check for loose components or vibrations affecting the gyroscope.
- Review PID tuning settings.

9. SAFETY INFORMATION

Operating FPV drones and associated electronics carries inherent risks. Adhere to the following safety precautions:

- Always disconnect the battery before performing any maintenance or wiring changes.
- Ensure all connections are secure and properly insulated to prevent short circuits.
- Never operate your drone near people, animals, or property.
- Be aware of local regulations and laws regarding drone operation.
- Use caution when handling LiPo batteries, as they can be dangerous if mishandled.
- Keep the flight controller and other electronic components away from water and moisture.

10. WARRANTY AND SUPPORT

For warranty information or technical assistance, please contact HGLRC customer support through their official website or the retailer where you purchased the product. Provide your product model and purchase details for efficient service.

Visit the official HGLRC store for more information:[HGLRC Store](#)

