HGLRC 40A AIO 6ESC

HGLRC SPECTER F722 40A 6 in 1 High-performance AIO User Manual

Model: 40A AIO 6ESC

Introduction

The HGLRC SPECTER F722 40A 6 in 1 High-performance AIO is an advanced all-in-one flight controller and electronic speed controller (ESC) designed for FPV racing drones and quadcopters, specifically supporting Y6 six-axis and other mixed control types. This compact unit integrates essential components, simplifying wiring and setup for optimal flight performance.
This manual provides detailed instructions for the installation, operation, maintenance, and troubleshooting of your HGLRC SPECTER F722 40A AIO.

Product Overview

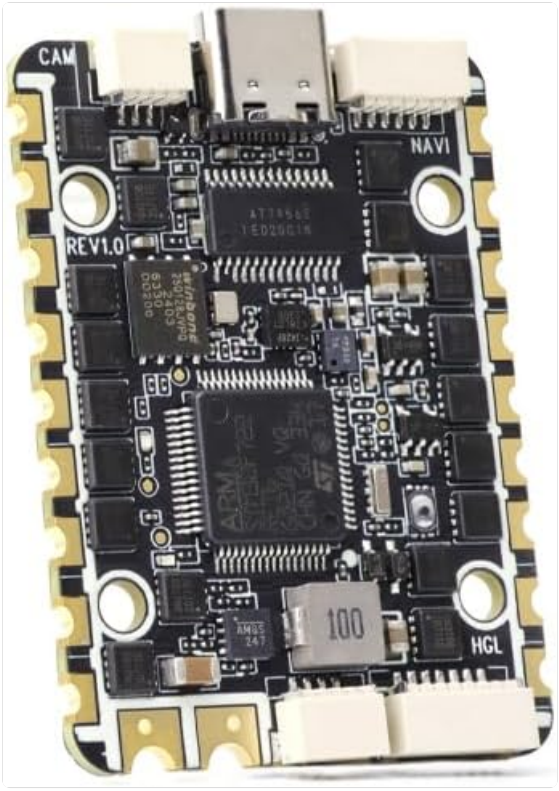


Image: Front view of the HGLRC SPECTER F722 40A AIO Flight Controller, showcasing its compact design and various components.

The HGLRC SPECTER F722 40A AIO combines a powerful flight controller and a 40A 6-in-1 ESC into a single board, reducing complexity and weight. It is engineered for high performance in FPV applications.



Image: The HGLRC SPECTER 40A six-channel AIO, highlighting its support for multiple types of mixed control, including Y6 and six-axis configurations.



Image: A close-up view emphasizing the integrated flight control and ESC, illustrating how this two-in-one design eliminates the need for complex wiring.



Image: Detail showing the six-channel ESC output, designed to support various mixed control types such as Y6 and six-axis drone configurations.

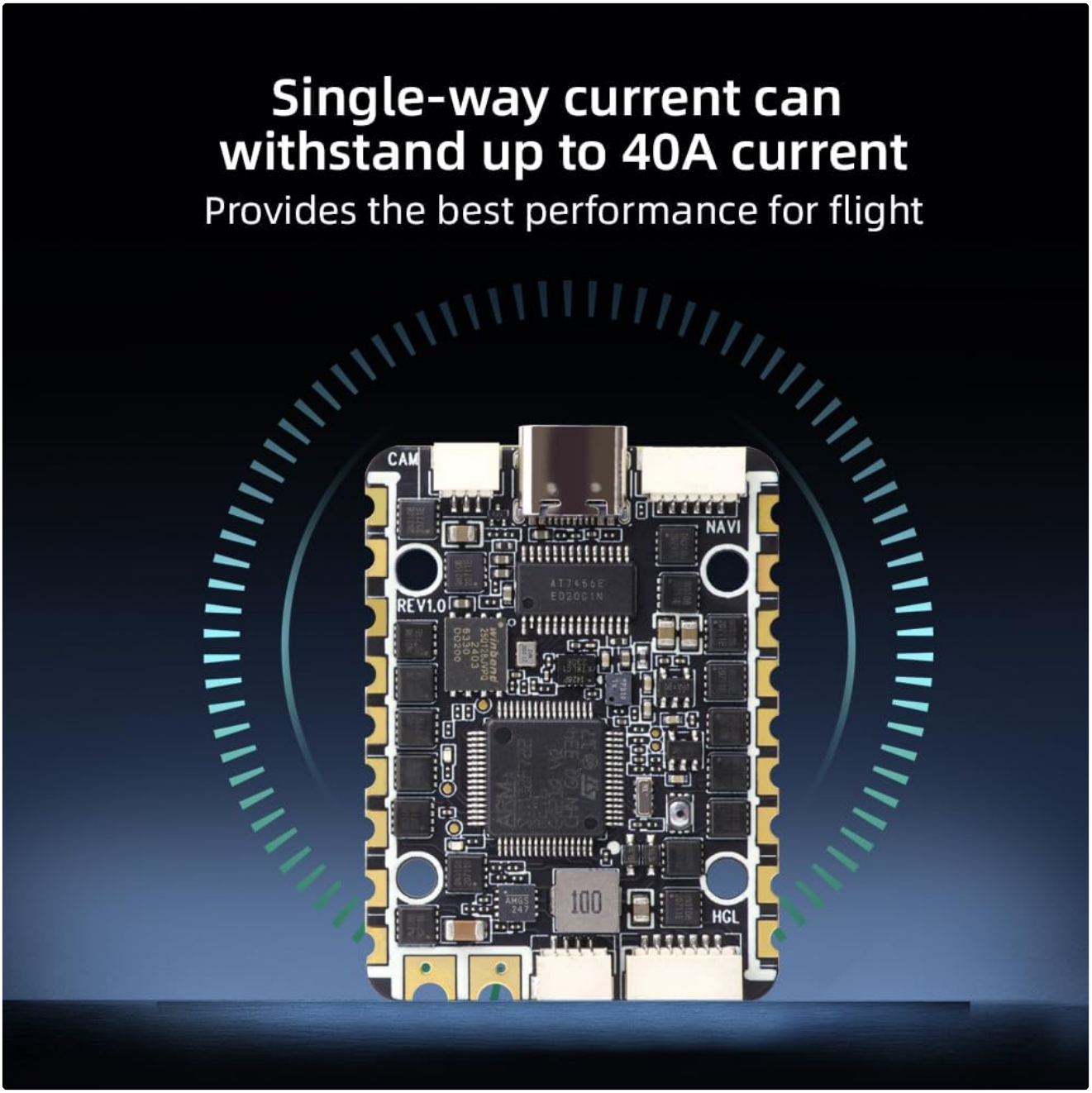


Image: Visual representation of the AIO's capability to withstand up to 40A current per single channel, ensuring optimal performance during flight.



Image: Illustration of the AIO's compatibility with both HD VTX Air Units and analog VTX terminals, allowing for direct plug-and-play connectivity.

Specifications

Parameter	Value
Name	HGLRC SPECTER F722 40A 6 channel AIO
Size	34×48mm
Mounting Hole	25.5×25.5mm, M2
Weight	13.2g

Parameter	Value
Flight Control MCU	STM32F722
Gyroscope	ICM42688P
Barometer	dps310
Working Voltage	7.4V—26.1V (2S-6S lipo)
Max Single ESC Current	40A
Flight Control Firmware	HGLRCF722AIO_X6 4.4.3
ESC Firmware	F-H-40- Bluejay, 0.19, 48kHz
Black Box	16MB
UARTS	3
Model Name	40A AIO 6ESC
Color	Black
Product Dimensions	1.88"L x 1.33"W x 0.1"H

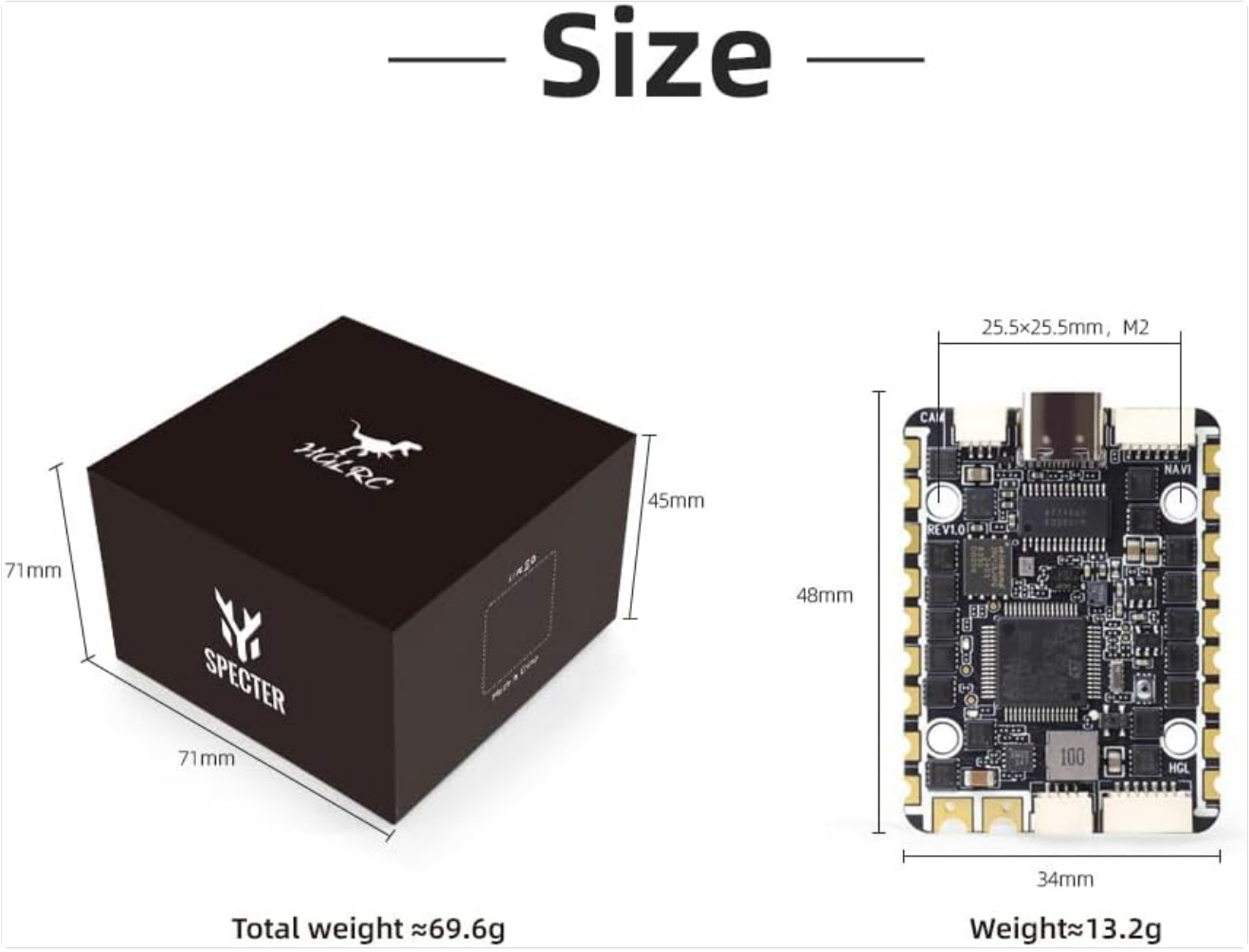


Image: Diagram illustrating the physical dimensions of the HGLRC SPECTER F722 40A AIO, including its length, width, and mounting hole specifications.

What's in the Box

The following components are included with your HGLRC SPECTER F722 40A AIO:

- 1× SPECTER F722 40A 4S-6S 6 channel AIO V2 flight controller
- 1× 30AWG 70MM single-head SH1.0-7P/single-head SH1.0-6P DJI cable
- 1× 30AWG cable length 70MM, single-head GH1.25-6P/single-head SH1.0-7P analog image transmission cable
- 1× 30AWG cable length 140mm double-head SH1.0-6P GPS cable
- 1× 30AWG cable length 70mm double-head SH11.0-4P receiver cable
- 1× 30AWG cable length 60mm single-head SH1.0-3P/single-head SH1.25-3P camera cable
- 1× 16AWG cable length 7mm red and black power cable
- 4× M2*6.6 Shock-absorbing ball
- 4× cup head hexagon socket M2*10 black nickel-plated screws
- 4× anti-loosening self-locking M2 nuts
- 1× type C male and female adapter module



Image: A visual representation of all components included in the product package, such as the flight controller, various cables, screws, nuts, and shock-absorbing balls.

Setup and Installation

Proper installation is crucial for the optimal performance and safety of your drone. Refer to the wiring diagram below for correct connections.

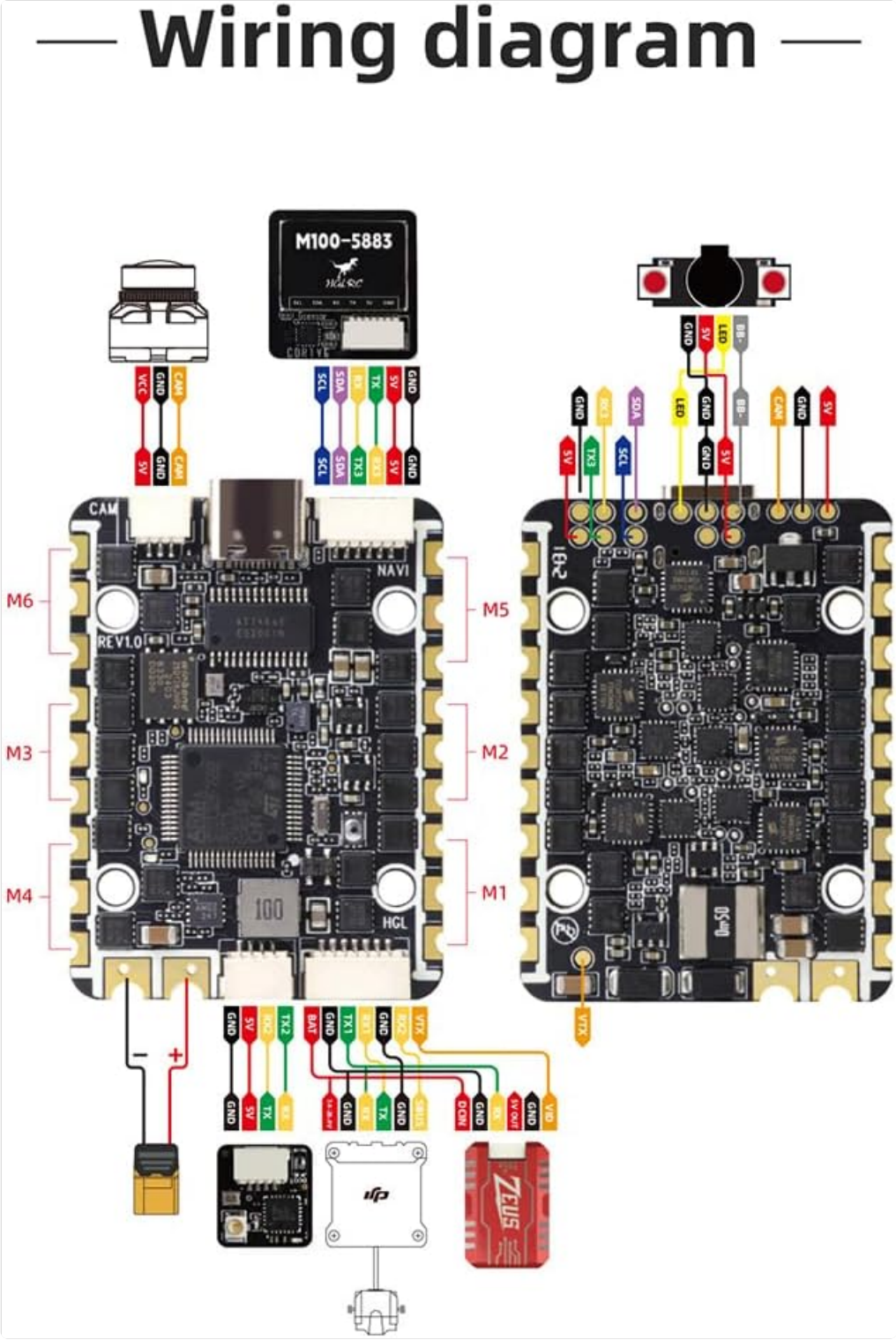


Image: Detailed wiring diagram showing connection points for camera (CAM), GPS (NAVI), receiver, VTX, and power. This diagram is essential for correct setup.

Mounting

- Use the provided M2*6.6 shock-absorbing balls and M2*10 screws for mounting.
- Ensure the flight controller is securely mounted to the drone frame using the 25.5x25.5mm M2 mounting holes.
- Utilize the anti-loosening self-locking M2 nuts to prevent vibration-induced loosening during flight.

Wiring Connections

- **Power Connection:** Connect the 16AWG red and black power cable to your LiPo battery (2S-6S). Ensure correct polarity.

- **DJI Air Unit/Analog VTX:** Use the appropriate SH1.0-7P/SH1.0-6P DJI cable or GH1.25-6P/SH1.0-7P analog image transmission cable for your video transmitter.
- **GPS Module:** Connect the 140mm double-head SH1.0-6P GPS cable to the NAVI port.
- **Receiver:** Connect your receiver using the 70mm double-head SH1.0-4P receiver cable.
- **Camera:** Use the 60mm single-head SH1.0-3P/single-head SH1.25-3P camera cable for your FPV camera.
- **USB Connectivity:** The included Type-C male and female adapter module allows for easy connection to a computer for firmware flashing and configuration.

Always double-check all connections before powering on the device to prevent damage.

Operating Instructions

Once the HGLRC SPECTER F722 40A AIO is correctly installed and wired, proceed with the following steps for operation:

1. **Firmware Flashing:** Connect the AIO to your computer using the USB Type-C adapter. Use Betaflight Configurator (or similar flight control software) to flash the recommended firmware (HGLRCF722AIO_X6 4.4.3). Ensure the correct target is selected.
2. **ESC Firmware:** Verify the ESC firmware (F-H-40- Bluejay, 0.19, 48kHz) is up to date. If necessary, use BLHeli_S or Bluejay configurator to update.
3. **Configuration:**
    - Calibrate the accelerometer and gyroscope.
    - Configure UARTs for your receiver, GPS, and VTX as per the wiring diagram.
    - Set up motor directions and ESC protocols (e.g., DShot600).
    - Configure flight modes and OSD settings as desired.
4. **Pre-Flight Checks:** Before each flight, ensure all propellers are securely attached, battery is fully charged, and all control surfaces respond correctly to transmitter inputs.
5. **Flight:** Operate your drone responsibly and within legal limits. Always maintain visual line of sight.

Maintenance

Regular maintenance helps ensure the longevity and reliability of your HGLRC SPECTER F722 40A AIO:

- **Cleaning:** Periodically clean the board with a soft brush and isopropyl alcohol to remove dust, dirt, or debris. Ensure no conductive materials are present.
- **Inspections:** Regularly inspect solder joints for cracks or cold joints. Check all cable connections for looseness or damage.
- **Firmware Updates:** Keep flight control and ESC firmware updated to the latest stable versions to benefit from bug fixes and performance improvements.
- **Storage:** When not in use, store the AIO in a dry, anti-static environment, away from extreme temperatures.
- **Physical Damage:** After any crash or hard landing, thoroughly inspect the board for physical damage, bent

pins, or cracked components.

Troubleshooting

This section addresses common issues you might encounter:

Problem	Possible Cause	Solution
No power to AIO	Incorrect battery connection, faulty power cable, short circuit.	Check battery polarity and connection. Inspect power cable for damage. Look for visible shorts on the board.
Motors not spinning/stuttering	Incorrect ESC protocol, motor direction, faulty motor/ESC, desynced ESC.	Verify ESC protocol in Betaflight. Check motor direction. Recalibrate ESCs. Inspect motor and ESC for damage.
No signal from receiver	Incorrect wiring, wrong UART, receiver not bound, faulty receiver.	Check receiver wiring to the correct UART. Ensure receiver is properly bound to your transmitter. Test with a known good receiver if possible.
Video feed issues (no image/static)	Incorrect VTX wiring, VTX not powered, camera issue, incorrect VTX channel.	Verify VTX and camera wiring. Ensure VTX is receiving power. Check VTX channel and band settings.
Drone drifts or is unstable	Improper accelerometer calibration, vibrations, incorrect PID tuning.	Recalibrate accelerometer. Check for loose components causing vibrations. Adjust PID tuning in Betaflight.

For more detailed troubleshooting or advanced issues, refer to online FPV community forums or the official HGLRC support resources.

Warranty and Support

HGLRC is committed to providing high-quality products. If you encounter any issues or require assistance, please contact HGLRC customer support.

- **Contact:** For any questions or help, please contact the original HGLRC manufacturer. They aim to respond within 24 hours.
- **Warranty:** Specific warranty terms and conditions may vary. Please refer to your purchase documentation or the official HGLRC website for detailed warranty information.
- **Online Resources:** Visit the official HGLRC website or community forums for additional resources, firmware updates, and FAQs.

"Choose us risk free today" - HGLRC

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Ask a question about this manual

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

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After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. Privacy details.

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question