

Makerfire VTX-HV

Matek Video Transmitter 5.8G VTX-HV User Manual

Model: VTX-HV | Brand: Makerfire

INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of your Matek 5.8G VTX-HV Video Transmitter. The VTX-HV is a compact and versatile video transmitter designed for FPV racing drones and RC quadcopters, offering switchable output power and advanced control options.

Please read this manual thoroughly before using the product to ensure proper function and safety.

SPECIFICATIONS

Feature	Detail
Input Voltage	7~27V (2~6S LiPo)
Channels	40 standard channels (A/B/E/F/R Band)
Output Power	25mW, 200mW, 500mW (switchable)
BEC Output	5V/1A for Camera or Flight Controller (FC)
Power Consumption	3.1W Max. @ 500mW
Video Input Impedance	75 Ohm
Audio Subcarrier Frequency	6.5 MHz
RF Connector	U.FL (IPEX) or MMCX
Video Format	NTSC/PAL
Weight	6g (Tx only, without SMA cable)
Dimensions	36 x 22 x 6.5mm (with 30.5mm mounting holes)

Overall Product Dimensions	33.6 x 2.21 x 0.61 cm; 13.61 g (packaged)
Control Methods	Traditional button+LED, BFCMS (BFOSD & LUA Script) via FC UART_TX
Firmware	Upgradeable

SETUP

Proper installation is crucial for optimal performance. Follow these steps carefully.

Package Contents

Depending on the version purchased, your package will include:

- 5.8G Video Transmitter (U.FL or MMCX version)
- PVC Heat-shrink tube
- U.FL to SMA Female, RG178 cable 10cm (U.FL version) *OR* MMCX to SMA Female, RG178 cable 9cm (MMCX version)
- U.FL 5.8G whip antenna, RG178 10cm (U.FL version)

Physical Installation and Dimensions

The VTX-HV is designed for compact builds with 30.5mm mounting holes.

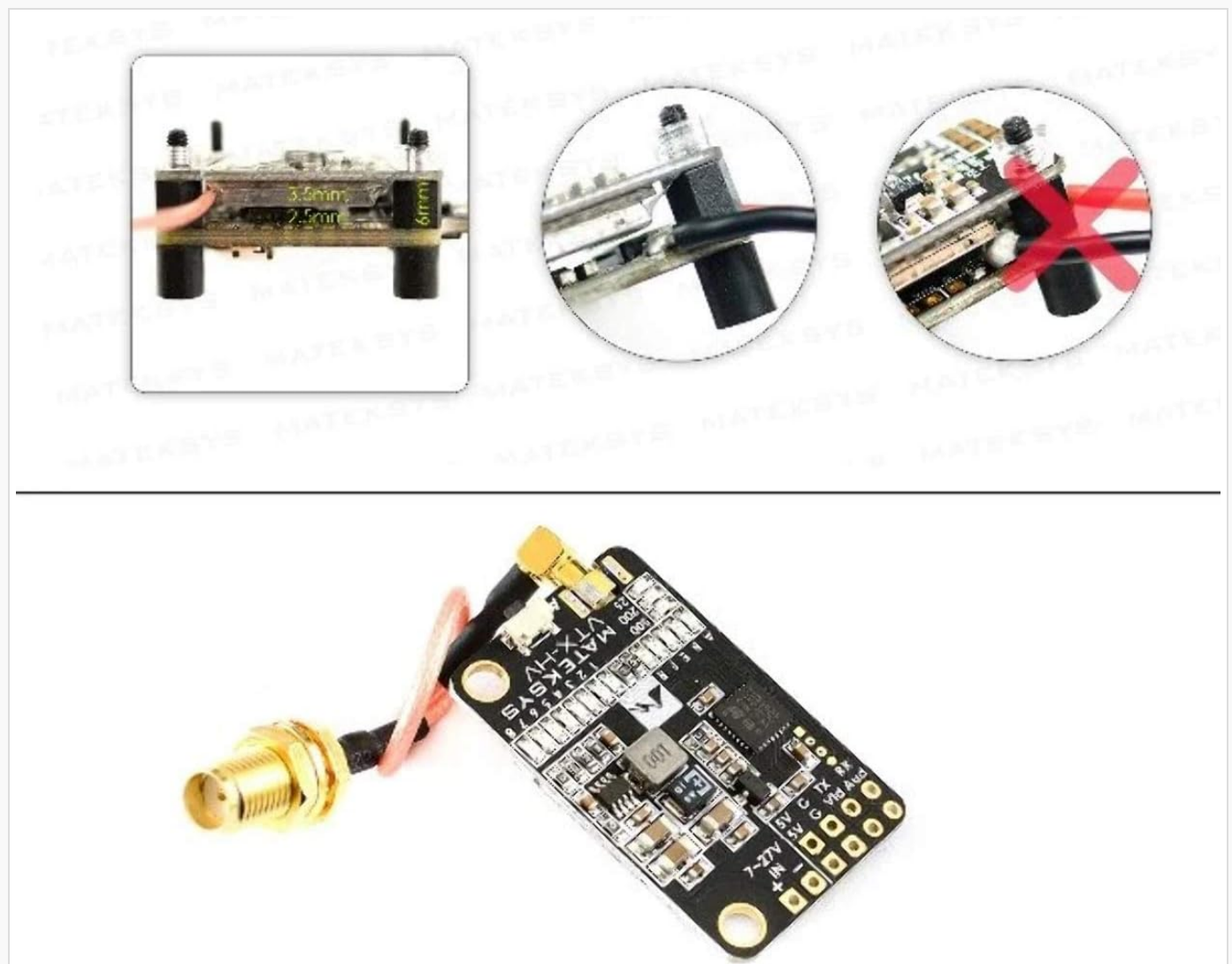


Figure 1: Matek VTX-HV dimensions. The module measures 36mm in length, 22mm in width, and 6.5mm in height, with 30.5mm mounting

hole spacing.

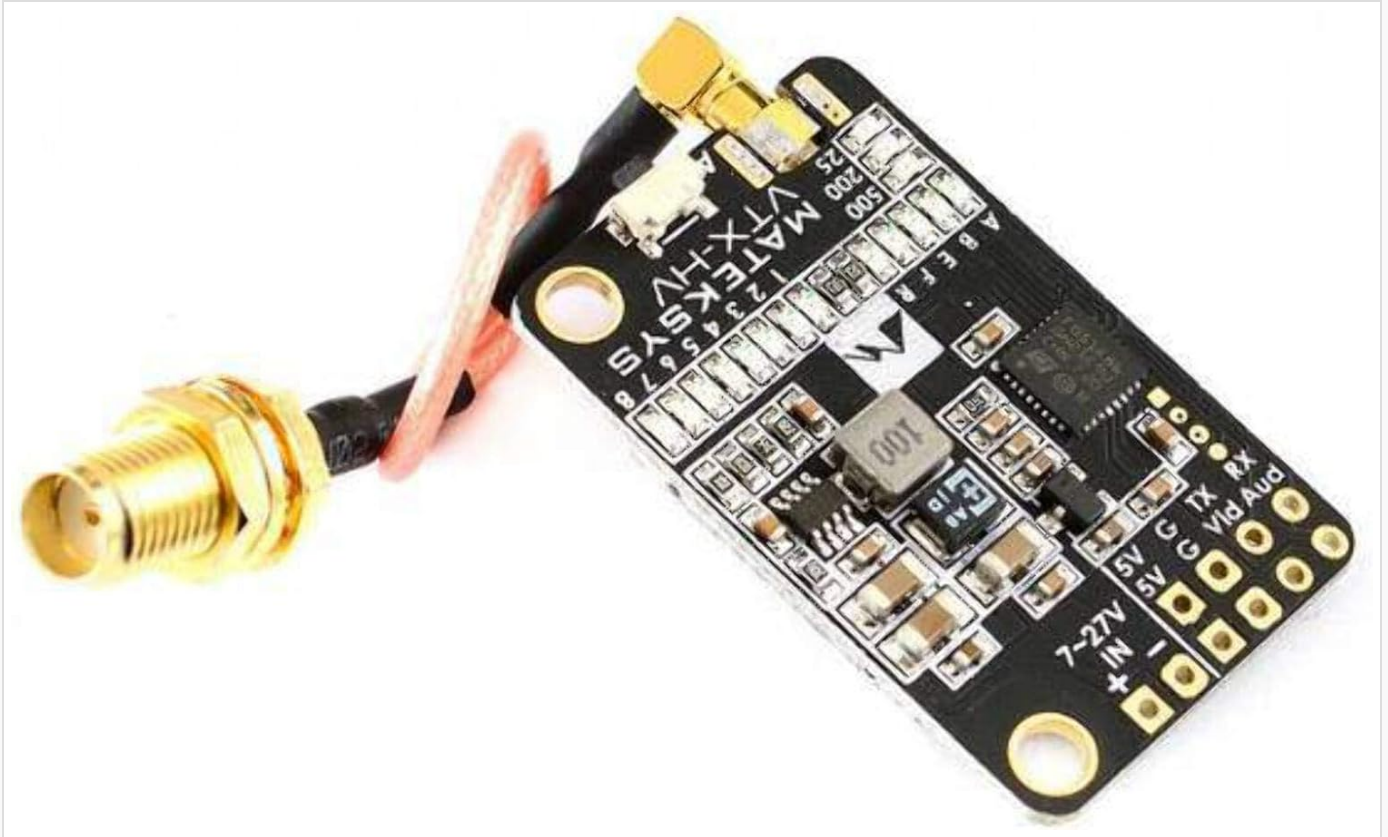


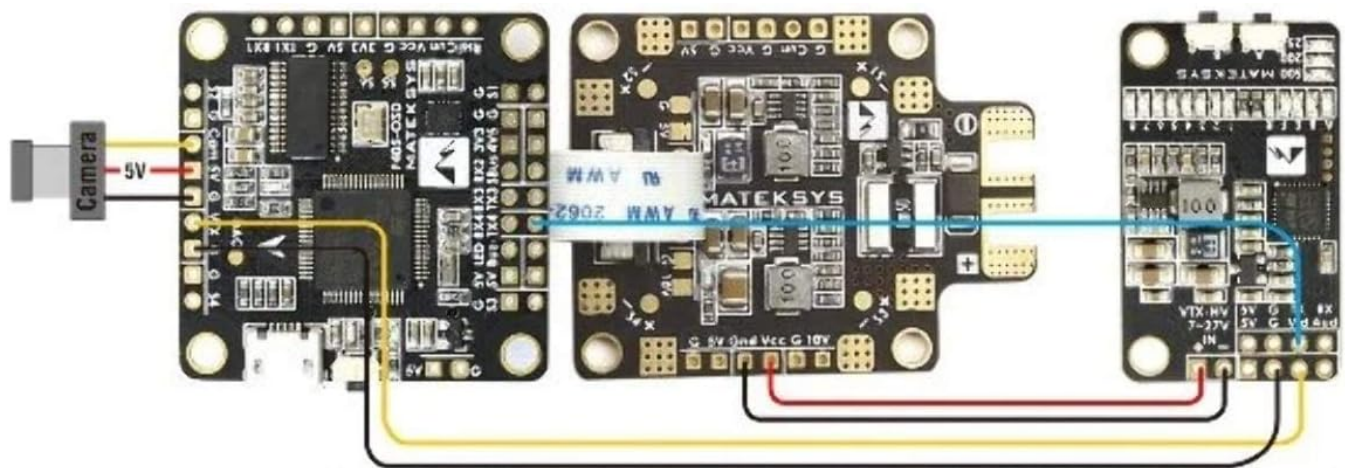
Figure 2: The Matek VTX-HV module shown with a U.FL connector and an attached SMA female cable, ready for antenna connection.



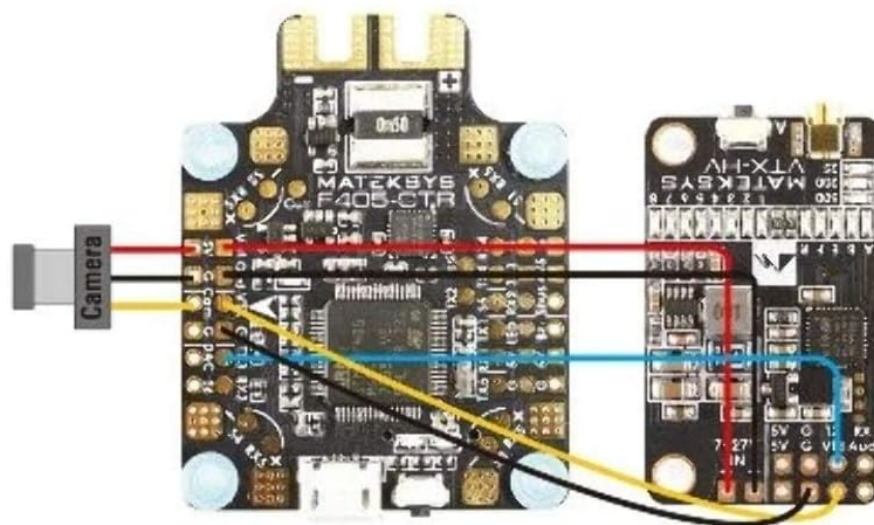
Figure 3: The MMCX version of the Matek VTX-HV, illustrating the MMCX connector and the included MMCX to SMA Female cable.

Wiring Connections

Connect the VTX-HV to your flight controller (FC) and camera according to the diagrams below. Ensure correct polarity for power connections.



If power the VTX from battery voltage, the Video Ground connection is integral.



Peripherals	
Disabled	AUTO
Disabled	AUTO
Disabled	AUTO
IRC Tramp	AUTO
Disabled	AUTO
Disabled	AUTO

BFOSD Control
VTX Uart_TX to FC Uart_TX

Figure 4: Wiring diagram showing connections for the VTX-HV. It illustrates how to connect the VTX to a camera and different flight controllers, including power (7-27V IN), ground (G), video input (Vid), and control (TX/RX).

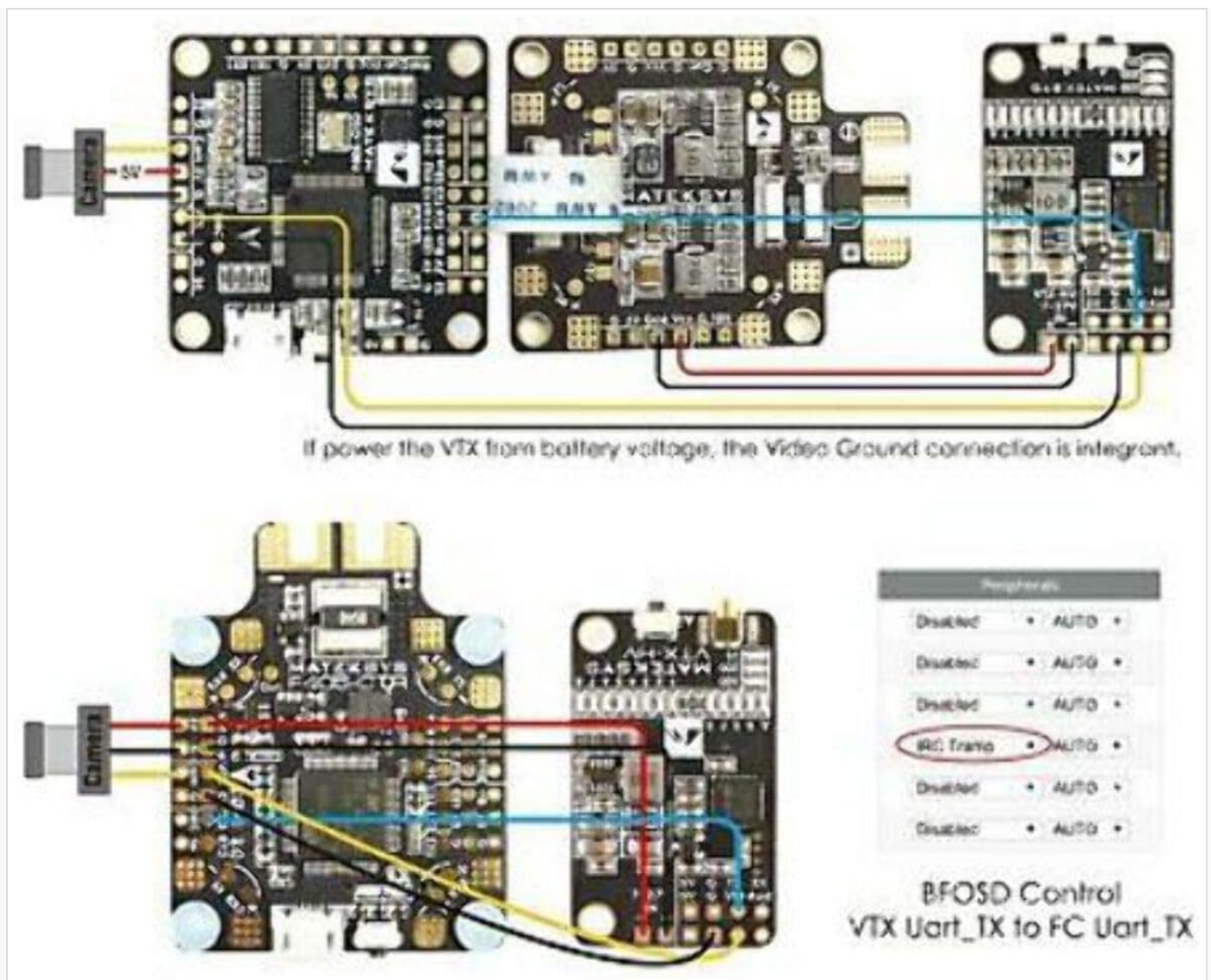


Figure 5: Detailed wiring diagram specifically for connecting the VTX-HV to a Matek F405-OSD flight controller. This diagram also highlights the BFCMS control setup via FC UART_TX, showing the necessary peripheral settings in Betaflight OSD.

- **Power Input (IN):** Connect to a 7-27V (2-6S LiPo) power source.
- **Ground (G):** Connect to the common ground of your system.
- **Video Input (Vid):** Connect to the video output of your FPV camera.
- **BEC Output (5V):** Provides 5V/1A power for your camera or flight controller.
- **Control (TX/RX):** For BFCMS control, connect the VTX's TX pin to an available UART RX pin on your flight controller.

If powering the VTX directly from battery voltage, the Video Ground connection is integrated.

OPERATING INSTRUCTIONS

The VTX-HV offers two primary methods for control: traditional button+LED and BFCMS via flight controller.

Traditional Button and LED Control

The VTX-HV features a button and LED indicators for manual configuration of channels, bands, and output power.

- **Changing Channels:** Short press the button to cycle through channels (1-8).
- **Changing Bands:** Long press the button to cycle through bands (A, B, E, F, R).
- **Changing Power:** A specific sequence of presses (refer to the VTX's silkscreen or Matek documentation for exact

details) allows switching between 25mW, 200mW, and 500mW output power.

BFCMS (BFOSD & LUA Script) Control

For advanced control and integration with your flight controller, the VTX-HV supports BFCMS (Betaflight OSD & LUA Script) via FC UART_TX.

- Ensure the VTX's TX pin is connected to an available UART RX pin on your flight controller.
- In Betaflight Configurator, navigate to the "Ports" tab and enable "IRC Tramp" (or similar VTX protocol) on the corresponding UART.
- Once configured, you can adjust VTX settings (channel, band, power) directly from your OSD menu using your transmitter sticks or via LUA scripts on OpenTX/EdgeTX radios.

Firmware Upgrade

The VTX-HV firmware is upgradeable. Refer to the official Matek Systems website for the latest firmware versions and detailed instructions on the upgrade process. Typically, this involves connecting the VTX to your computer and using specific flashing tools.

MAINTENANCE

To ensure the longevity and reliable performance of your VTX-HV, follow these maintenance guidelines:

- **Cleanliness:** Keep the VTX free from dust, dirt, and moisture. Use a soft, dry cloth for cleaning.
- **Heat Management:** Ensure adequate airflow around the VTX, especially when operating at higher power levels (500mW). Overheating can damage the unit. Consider using the provided heat-shrink tube for protection, but ensure it does not impede cooling.
- **Connections:** Regularly inspect all solder joints and connectors (U.FL/MMCX, SMA) for secure attachment and signs of wear or corrosion. Loose connections can lead to signal loss or intermittent operation.
- **Antenna:** Always ensure an antenna is connected to the VTX before powering it on. Operating without an antenna can permanently damage the transmitter.
- **Physical Protection:** Protect the VTX from physical impact and vibrations. Mount it securely within your drone's frame.

TROUBLESHOOTING

If you encounter issues with your VTX-HV, refer to the following common problems and solutions:

- **No Video Signal / Black Screen:**
 - Check all wiring connections, especially video input from the camera and power to the VTX.
 - Ensure the camera is powered and functioning correctly.
 - Verify that the VTX is powered on and receiving the correct voltage (7-27V).
 - Confirm that your FPV goggles/receiver are on the correct channel and band.
 - Ensure an antenna is securely connected to the VTX.
 - If using BFCMS, check Betaflight settings to ensure the VTX protocol is enabled on the correct UART.
- **Poor Video Quality / Static:**
 - Check antenna connection on both VTX and receiver. Ensure antennas are compatible and undamaged.
 - Verify that the VTX and receiver are on the exact same channel and band.
 - Ensure the VTX is not overheating. Provide better airflow if necessary.

- Check for sources of electrical noise near the VTX (e.g., ESCs, motors). Consider adding capacitors to your power system if noise is suspected.
- Increase VTX output power if operating in an environment with significant interference, provided it complies with local regulations.

- **VTX Not Powering On / Burnt Out:**

- Verify input voltage is within the specified 7-27V range. Overvoltage will damage the unit.
- Check for short circuits in the wiring.
- Ensure an antenna was connected before powering on. Operating without an antenna can cause immediate damage.
- If the unit has failed prematurely, and all installation steps were followed, it may indicate a manufacturing defect.

If problems persist after attempting these solutions, contact customer support or consult online FPV communities for further assistance.

WARRANTY INFORMATION

Makerfire products are typically covered by a limited warranty against manufacturing defects. The specific terms and duration of the warranty may vary based on your region and point of purchase. Please retain your proof of purchase for warranty claims.

This warranty does not cover damage caused by improper installation, misuse, accidents, unauthorized modifications, or operation outside of the specified parameters. For detailed warranty information, please refer to the warranty policy provided at the time of purchase or contact Makerfire customer service.

SUPPORT

For technical support, troubleshooting assistance, or general inquiries regarding your Matek VTX-HV, please refer to the following resources:

- **Official Matek Systems Website:** <http://www.mateksys.com/?portfolio=vtx-hv> (for product documentation, firmware updates, and FAQs)
- **Online FPV Communities and Forums:** Many experienced users can provide valuable insights and solutions.
- **Retailer Support:** Contact the retailer from whom you purchased the product for direct assistance.

When contacting support, please be prepared to provide your product model (VTX-HV), a detailed description of the issue, and any relevant setup information.

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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

you@example.com

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