Saved from manuals.plus.
Open the live page for links to other documents and user manuals.

AKK FX3-ultimate

AKK FX3-ultimate Mini VTX Instruction Manual

Model: FX3-ultimate

1. Introduction

The AKK FX3-ultimate is a compact and versatile 5.8GHz video transmitter (VTX) designed for FPV (First Person View) applications. It offers switchable power output levels (25mW, 200mW, 400mW, 600mW) and supports OSD (On-Screen Display) configuration via Betaflight using Smart Audio. This manual provides essential information for the proper installation, operation, and maintenance of your FX3-ultimate VTX.

Key Features:

- Support for Pit Mode (0.01mW for interference-free setup).
- Wide input voltage range: 7V-24V.
- Integrated 5V output for powering your FPV camera.
- Selectable power levels: 25mW, 200mW, 400mW, 600mW.
- MMCX and U.FL antenna connectors for flexibility.
- One-button control for channel, band, and power settings.
- Built-in microphone for audio transmission.
- OSD configuration capability via Smart Audio (Betaflight compatible).

2. Safety Information and Regulatory Notice

Important: This equipment operates on frequencies that may require an amateur radio license in certain regions, including the US. Operators are responsible for complying with all applicable laws and regulations. Operating this equipment without the necessary license may result in significant fines.

- Always ensure the antenna is properly connected before powering on the VTX. Operating without an antenna can cause permanent damage to the unit.
- Verify input voltage polarity before connecting power to prevent damage.
- Avoid touching the VTX during operation, as it may become hot.
- Keep the device away from water and moisture.
- Do not attempt to modify the VTX, as this may void the warranty and could lead to malfunction or non-compliance with regulations.

3. Package Contents

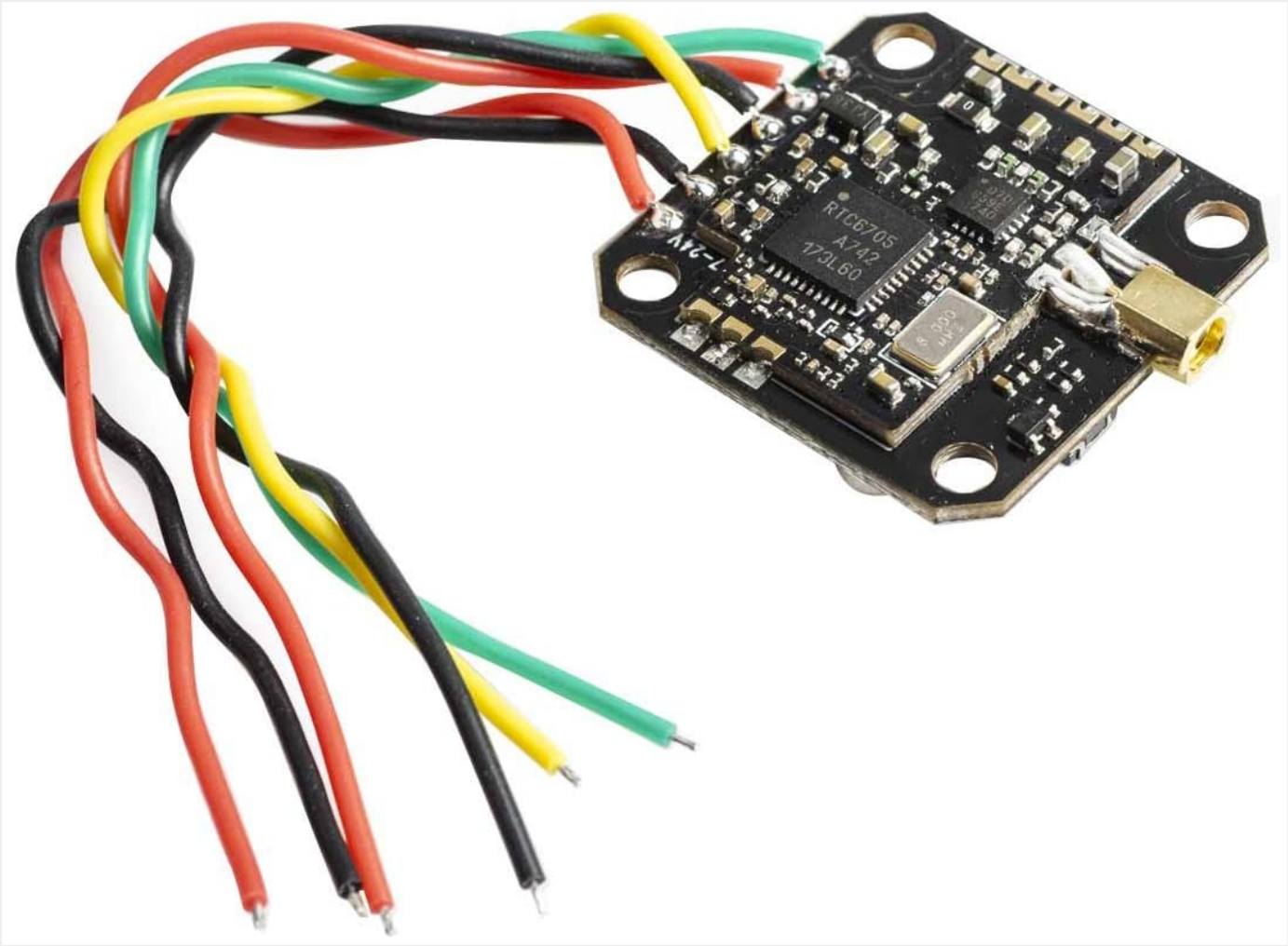


Image: Contents of the AKK FX3-ultimate package, showing the VTX module, connecting cable, MMCX antenna, and the instruction manual.

The AKK FX3-ultimate package typically includes the following items:

- 1x AKK FX3-ultimate Mini VTX
- 1x Connecting Cable (with pre-soldered wires)
- 1x MMCX Antenna
- 1x Product Manual

4. Product Overview

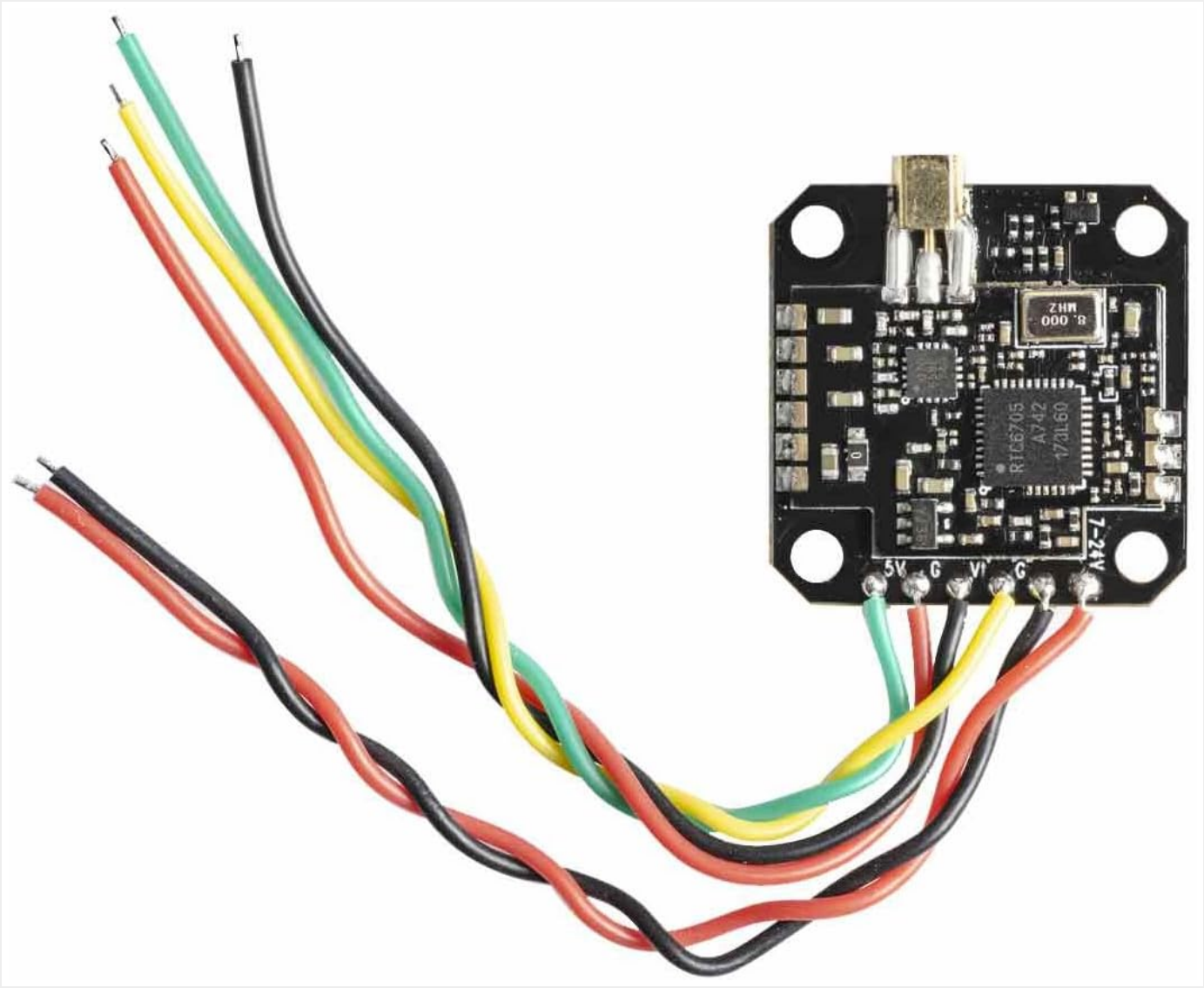


Image: Detailed diagram of the AKK FX3-ultimate VTX, highlighting the LED indicators, control button, MMCX and U.FL antenna connectors, microphone, and solder pads for power, video, and Smart Audio connections.

The diagram above illustrates the key components and connection points of the FX3-ultimate VTX.

- **LED Indicators:**
  - 5 Red LEDs: Indicate the selected Band.
  - 1 Blue LED: Indicates the selected Channel.
  - 1 Green LED: Indicates the selected Power level.
- **Button:** Used for changing Band, Channel, and Power settings.
- **MMCX Connector:** Primary antenna connection point.
- **U.FL Connector:** Secondary antenna connection point (often used with pigtails).
- **Microphone:** For audio transmission.
- **Solder Pads:**
  - **7-24V Input:** Main power input for the VTX.
  - **GND:** Ground connection.
  - **Video:** Video signal input from the camera.
  - **Smart Audio:** Data line for OSD configuration.
  - **5V Output:** Regulated 5V power output for an FPV camera.

5. Specifications

Feature	Specification
Input Voltage	7V-24V
Camera Power Output	5V @ under 0.3A max
Output Power Levels	25mW, 200mW, 400mW, 600mW
Current Consumption (at 12V)	25mW: 100mA, 200mW: 200mA, 400mW: 250mA, 600mW: 320mA
Range	Up to 2 km (with omnidirectional RHCP antennas)
Port Connector	Solder Pads
Antenna Connector	MMCX / U.FL
Dimensions	26mm (W) x 26mm (D), 20x20mm (mounting hole spacing)
Weight	5.4g (excluding antenna)
Special Features	Smart Audio Compatibility, Pit Mode

6. Setup and Installation

6.1 Wiring Diagram

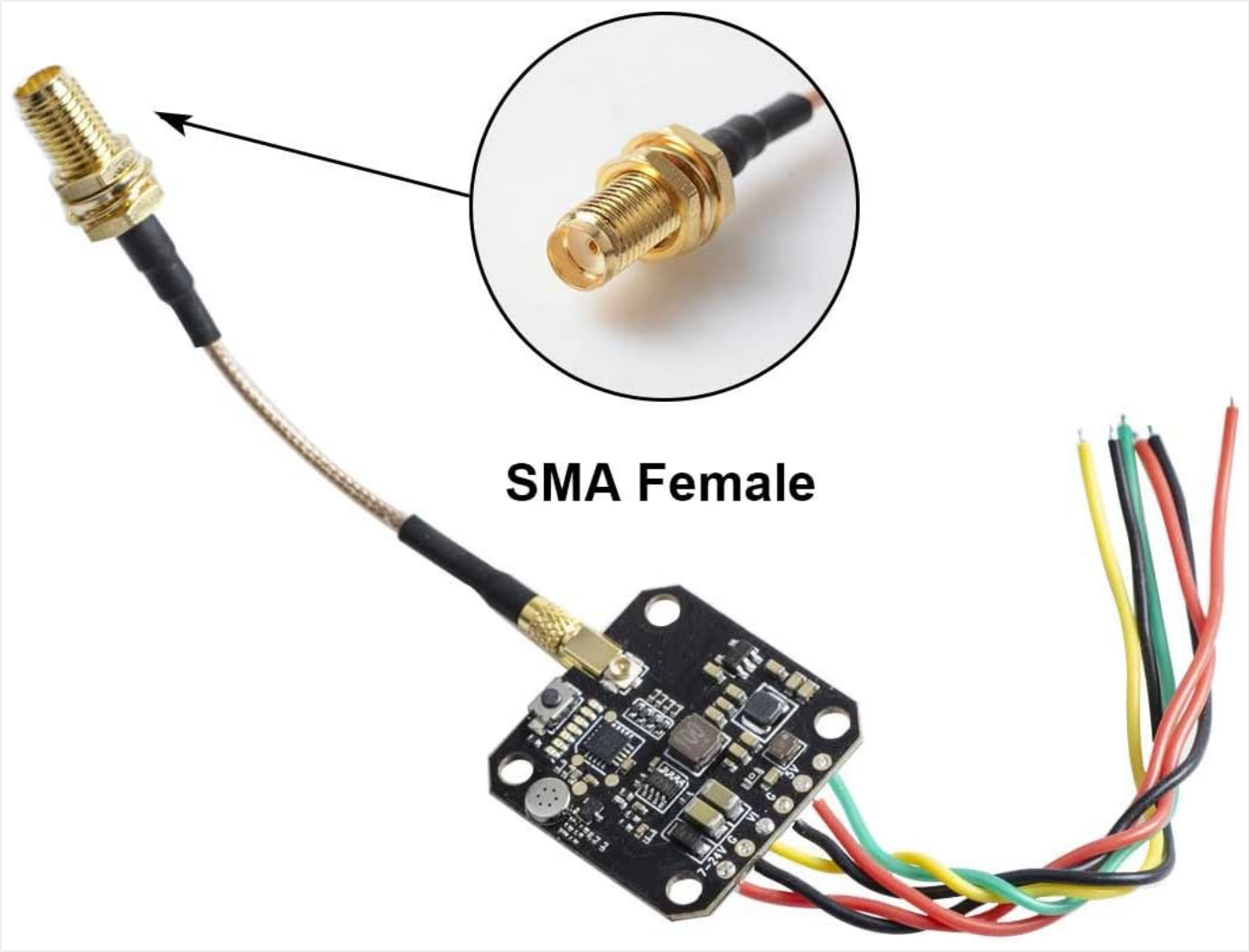


Image: The AKK FX3-ultimate VTX module with its multi-colored connecting wires, ready for soldering to a flight controller or power distribution board.

Refer to the Product Overview diagram (Section 4) for detailed pinout information. The included cable typically has pre-soldered wires corresponding to the solder pads on the VTX.

- **Power Input (7-24V):** Connect the positive wire (e.g., red) to your flight controller's or PDB's main battery voltage output (VBAT).
- **Ground (GND):** Connect the negative wire (e.g., black) to a common ground point on your flight controller or PDB.
- **Video Input (Video):** Connect the video signal wire (e.g., yellow) from your FPV camera to this pad.
- **Smart Audio:** Connect the Smart Audio wire (e.g., green) to a free UART TX pad on your flight controller for OSD configuration.
- **5V Output (5V):** If your FPV camera requires 5V power, connect its positive power input to this pad. Ensure your camera's current draw does not exceed 0.3A.
- **Camera Ground (GND):** Connect your FPV camera's ground to a common ground point.

6.2 Antenna Connection

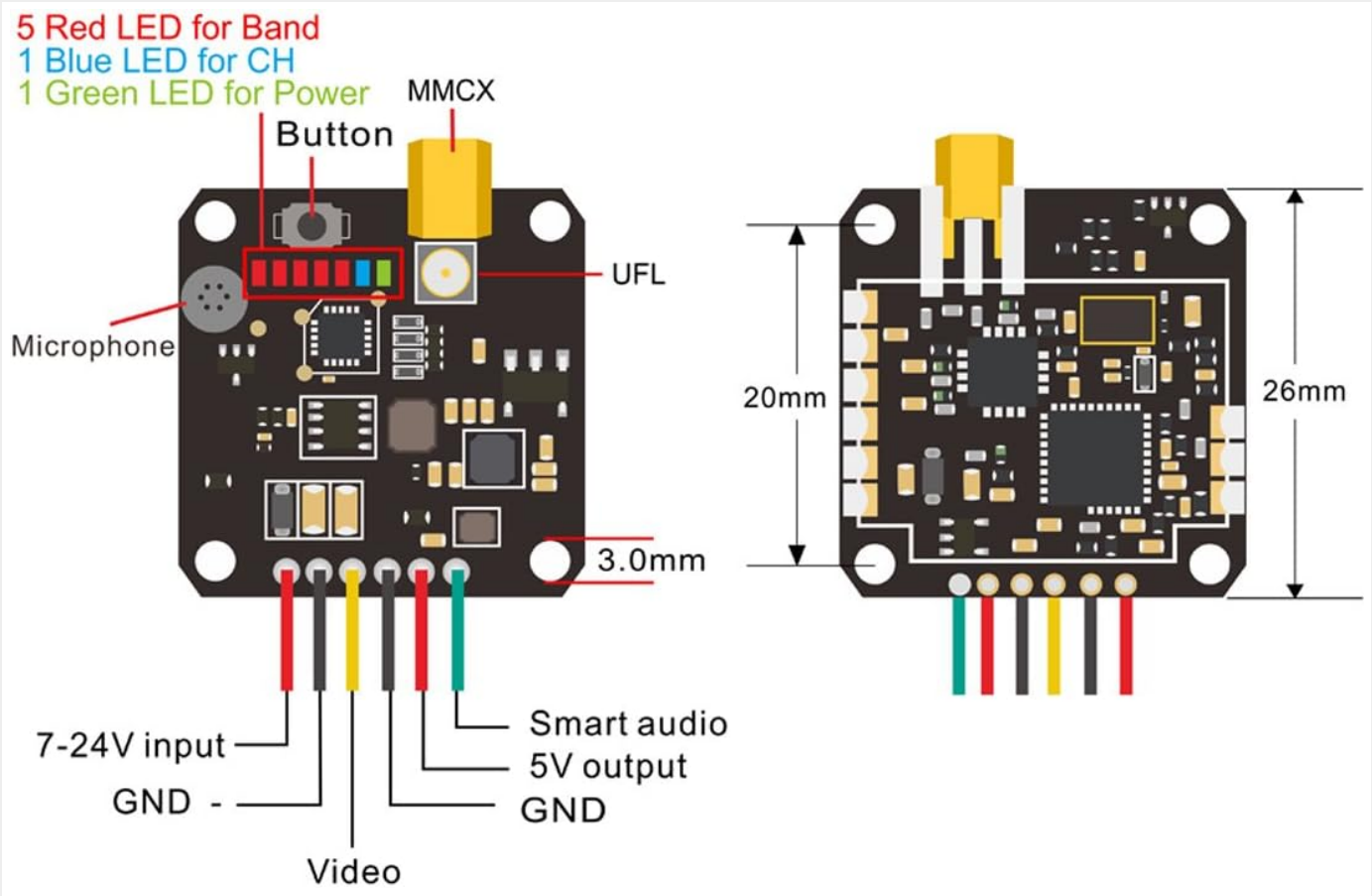


Image: The AKK FX3-ultimate VTX connected to an MMCX to SMA Female pigtail, illustrating the antenna connection method.

The FX3-ultimate VTX features both MMCX and U.FL antenna connectors.

- Carefully connect your 5.8GHz FPV antenna to either the MMCX or U.FL connector.
- Ensure the connection is secure. **Never power on the VTX without an antenna connected.**
- If using an MMCX to SMA pigtail, ensure the pigtail is securely attached to the VTX and the SMA antenna is then screwed onto the pigtail.

7. Operating Instructions

7.1 Manual Control (Button Operation)

The single button on the VTX allows for manual adjustment of frequency band, channel, and power level. The LED indicators (Red for Band, Blue for Channel, Green for Power) will show the current selection.

- **Change Channel:** Short press the button. The Blue LED will cycle through channels (1-8).
- **Change Band:** Press and hold the button for approximately 3 seconds. The Red LEDs will cycle through bands (A, B, E, F, R).
- **Change Power Level:** Press and hold the button for approximately 6 seconds. The Green LED will cycle through power levels (25mW, 200mW, 400mW, 600mW).

Note: Channels 5645, 5925, 5945 (E4, E7, E8) are not available due to FCC regulations. Attempting to select these channels will result in an invalid action.

7.2 Smart Audio Configuration (OSD Control)

The FX3-ultimate supports Smart Audio, allowing you to configure VTX settings directly from your flight controller's OSD (On-Screen Display) menu, typically via Betaflight.

1. Ensure the Smart Audio wire is connected to a UART TX pad on your flight controller.
2. In Betaflight Configurator, navigate to the "Ports" tab and enable "VTX (SmartAudio)" for the corresponding UART.
3. Save and reboot your flight controller.
4. Access the OSD menu using your transmitter sticks (e.g., Throttle Mid, Yaw Left, Pitch Forward).
5. Navigate to the VTX settings menu within the OSD to adjust Band, Channel, and Power levels.

This method offers more precise control and avoids the need for physical button presses on the VTX.

7.3 Pit Mode (0.01mW)

Pit Mode allows the VTX to transmit at a very low power output (0.01mW). This is useful for performing maintenance or setup on your drone without interfering with other pilots or causing signal issues in a race environment. Pit Mode can typically be activated and deactivated via Smart Audio through your OSD.

8. Maintenance

- Keep the VTX clean and free from dust and debris.
- Regularly check all solder joints and connections for integrity.
- Ensure the antenna connection is always secure.
- Avoid exposing the VTX to extreme temperatures or direct sunlight for prolonged periods.
- If the VTX becomes wet, disconnect power immediately and allow it to dry completely before re-applying power.

9. Troubleshooting

Problem	Possible Cause	Solution
No video signal	Incorrect wiring, VTX not powered, antenna disconnected, wrong channel/band selected on receiver.	Check all wiring connections (power, video), ensure VTX is receiving power, verify antenna is connected, confirm receiver is on the correct band/channel.
Poor video quality/short range	Low power setting, damaged antenna, interference, VTX overheating.	Increase VTX power output, inspect antenna for damage, ensure VTX has adequate airflow, check for nearby sources of interference.
VTX not responding to button presses	Button malfunction, VTX locked (rare).	Try Smart Audio configuration. If still unresponsive, contact support.
Smart Audio not working	Incorrect wiring, UART not configured in Betaflight, incompatible firmware.	Verify Smart Audio wire connection to flight controller TX pad, ensure VTX (SmartAudio) is enabled on the correct UART in Betaflight Ports tab.

10. Regulatory Compliance (FCC Notice)

As stated in the Safety Information, the AKK FX3-ultimate operates under the FCC's amateur radio rules. In the United States, a valid amateur radio license is required to operate this equipment legally. Users are responsible for understanding and adhering to all local and national regulations regarding radio frequency transmission. Failure to comply may result in penalties.
Specific channels (5645, 5925, 5945, corresponding to E4, E7, E8) are restricted and cannot be used in compliance with FCC regulations. The VTX will not allow selection of these frequencies.

© 2026 AKK. All rights reserved.

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

Open the live page

https://manuals.plus/asin/B07DYL677Z

More documents and user manuals: **https://manuals.plus/**