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## AKK FX2-ultimate-mini

# AKK FX2-ultimate-mini FPV Transmitter User Manual

Model: FX2-ultimate-mini

## PRODUCT OVERVIEW

The AKK FX2-ultimate-mini is a compact and powerful 5.8GHz Video Transmitter (VTX) designed for FPV (First Person View) applications. It features Smart Audio support for OSD (On-Screen Display) configuration via Betaflight flight control boards, offering flexible power output options (25mW, 200mW, 600mW) and a wide input voltage range. Its integrated microphone and robust design make it suitable for various FPV setups, especially racing drones requiring long-range capabilities and clean video transmission.

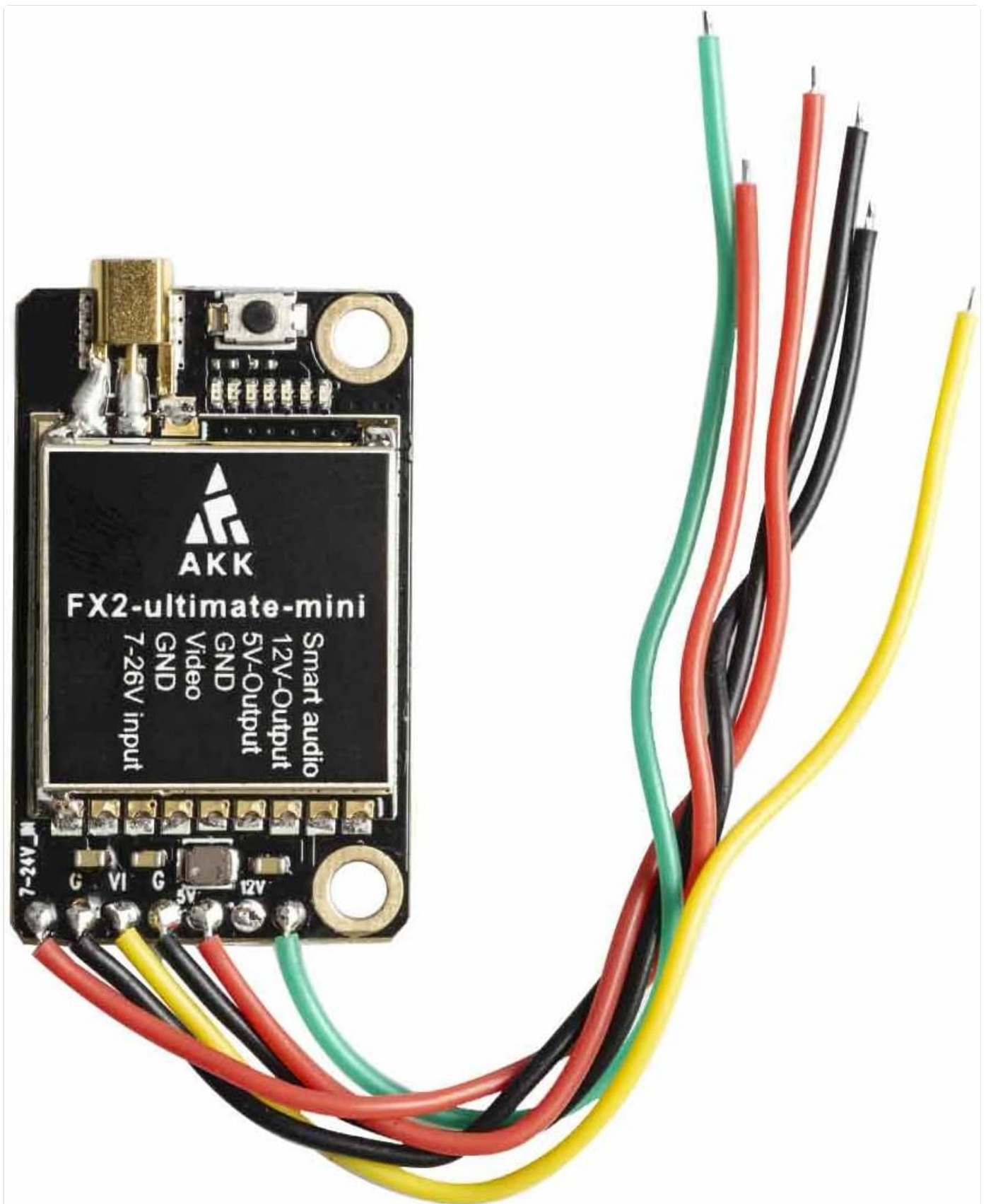


Figure 1: Front view of the AKK FX2-ultimate-mini FPV Transmitter with pre-soldered connection wires.

## PACKAGE CONTENTS

Upon opening the package, please verify that all components are present and undamaged:

- 1x AKK FX2-ultimate-mini FPV Transmitter
- 1x Connection Cable (pre-soldered)
- 1x MMCX Antenna

- 1x Product Manual (this document)



Figure 2: Contents typically included in the AKK FX2-ultimate-mini product package.

## SPECIFICATIONS

Feature	Value
Input Voltage	7V-26V
Power Supply Output	5V/12V for camera
Output Power	25mW / 200mW / 600mW switchable
Antenna Connector	MMCX
Cable Connector	Solder pads

Feature	Value
Dimensions	36mm x 32mm (30.5mm stackable hole)
Weight	8g (excluding antenna)
Special Features	OSD configuration via Smart Audio, Integrated Microphone, UART compatible with Betaflight OSD FC

## SETUP AND INSTALLATION

Proper installation is crucial for the optimal performance of your FX2-ultimate-mini VTX. Follow these steps carefully:

- 1. Wiring Connections:** The VTX uses solder pads for connections. Refer to the wiring diagram below for correct pin assignments.
  - **7V-26V Input:** Connect to your main battery voltage (LiPo).
  - **GND:** Connect to common ground.
  - **Video:** Connect to the video input of your flight controller or camera.
  - **5V-Output / 12V-Output:** These pads provide regulated power for your FPV camera. Choose the appropriate voltage for your camera.
  - **Smart Audio:** Connect to a UART TX pad on your Betaflight flight controller for OSD configuration.

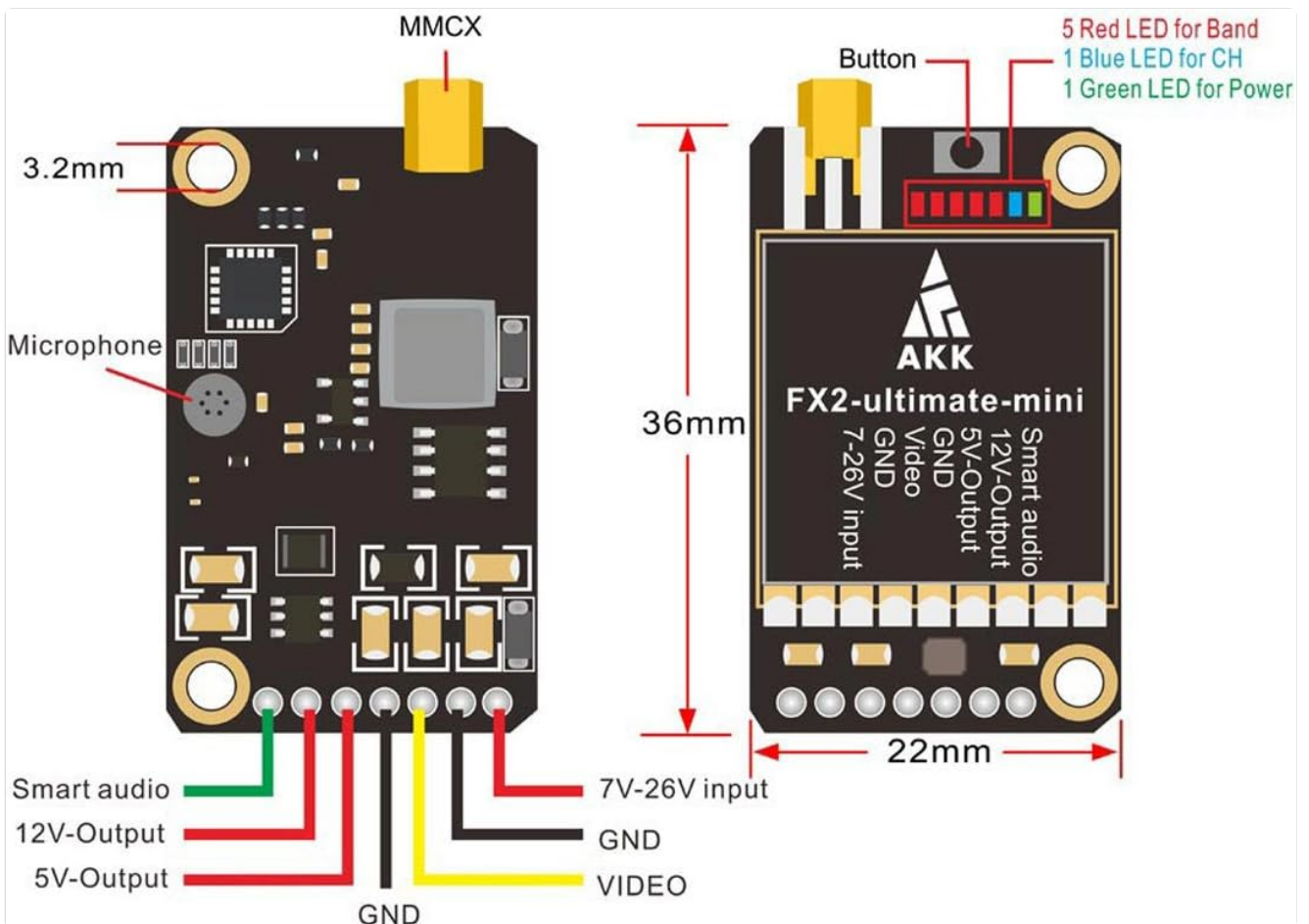


Figure 3: Detailed diagram showing wiring connections, dimensions, button, and LED indicators.

- 2. Antenna Connection:** Connect the provided MMCX antenna to the MMCX connector on the VTX. Ensure a secure connection.

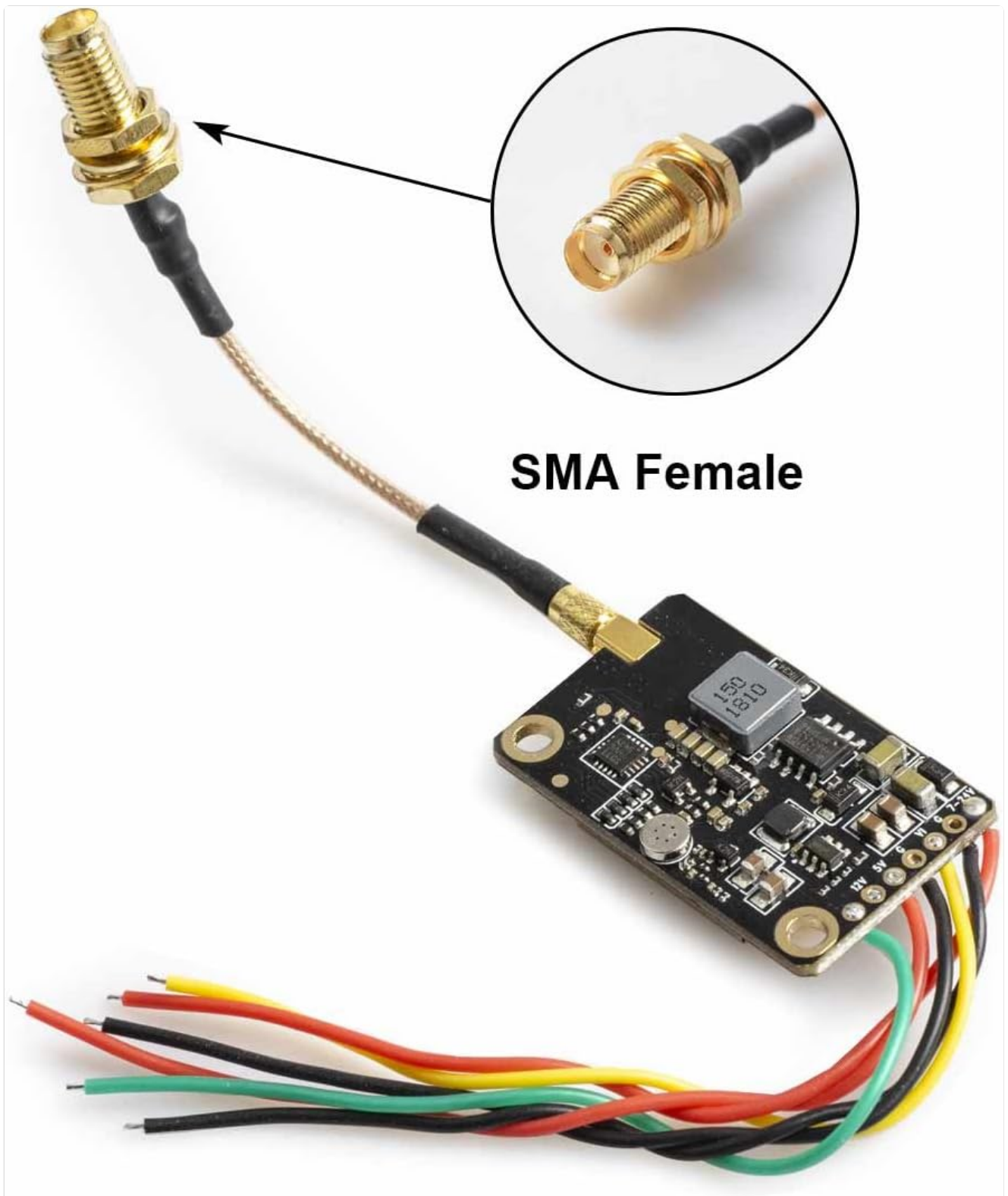


Figure 4: The VTX with an MMCX to SMA Female adapter and antenna attached.

3. **Mounting:** The VTX has 30.5mm stackable holes, allowing it to be mounted directly onto your flight controller stack. Ensure proper insulation to prevent short circuits.

## OPERATING INSTRUCTIONS

The FX2-ultimate-mini VTX can be configured using its onboard button or via Smart Audio through your flight controller's OSD.

### Button Control:

The VTX features a single button for manual configuration of channels, bands, and power levels. Refer to Figure 3 for

button location and LED indicators.

- **Changing Channels:** Short press the button to cycle through channels. The blue LED will indicate the current channel (1-8).
- **Changing Bands:** Long press the button (approx. 3 seconds) to cycle through bands. The red LEDs will indicate the current band (A, B, E, F, R).
- **Changing Power Levels:** After selecting a band, another long press (approx. 3 seconds) will cycle through power levels (25mW, 200mW, 600mW). The green LED indicates power.

*Note: Always ensure an antenna is connected before powering on the VTX to prevent damage.*

### Smart Audio Configuration (Recommended):

For advanced and convenient configuration, utilize the Smart Audio feature with your Betaflight flight controller. This allows you to change VTX settings directly from your OSD or Betaflight Configurator.

1. **Connect Smart Audio:** Ensure the Smart Audio pad on the VTX is connected to a free UART TX pad on your flight controller (as per Setup section).
2. **Betaflight Configuration:**
  - In Betaflight Configurator, navigate to the "Ports" tab.
  - Enable "VTX (SmartAudio)" for the UART connected to the VTX.
  - Navigate to the "Video Transmitter" tab.
  - Select "SmartAudio" as the VTX protocol.
  - Load the appropriate VTX table if not already present.
3. **OSD Control:** Once configured in Betaflight, you can access the VTX settings menu through your FPV goggles' OSD. Typically, this involves a stick command (e.g., throttle mid, yaw left, pitch forward) to enter the OSD menu. Navigate to VTX settings to adjust band, channel, and power.

## MAINTENANCE

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To ensure the longevity and reliable performance of your FX2-ultimate-mini VTX, consider the following maintenance tips:

- **Heat Management:** The VTX can generate significant heat, especially at higher power outputs (600mW). Ensure adequate airflow around the unit. Avoid prolonged operation on the bench without proper cooling or an antenna connected.
- **Antenna Care:** Always ensure the antenna is securely connected before powering on the VTX. A loose or disconnected antenna can lead to VTX damage. Avoid bending or stressing the antenna connector.
- **Cleanliness:** Keep the VTX free from dirt, dust, and moisture. If cleaning is necessary, use a soft, dry brush or compressed air. Avoid liquid cleaners.
- **Physical Protection:** While designed to be robust, protect the VTX from direct impacts. Consider using a protective enclosure or mounting it in a location less prone to crash damage.

## TROUBLESHOOTING

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If you encounter issues with your FX2-ultimate-mini VTX, refer to the following common problems and solutions:

- **No Video Signal / Poor Video Quality:**
  - Check all wiring connections (Video, GND, Power) for continuity and correct polarity.
  - Ensure the antenna is securely attached and undamaged.
  - Verify that your FPV goggles/receiver are on the correct band and channel.
  - Check the VTX power output setting; a higher power setting might be needed for better range or penetration.

- Inspect for physical damage to the VTX or its components.
- **VTX Gets Excessively Hot:**
  - This is normal at higher power outputs, but excessive heat can indicate a problem.
  - Ensure adequate airflow around the VTX. Do not enclose it in a tight space without ventilation.
  - Verify that the antenna is properly connected. Operating without an antenna will cause rapid overheating and damage.
  - Check input voltage; ensure it is within the specified 7V-26V range.
- **Smart Audio Not Working:**
  - Confirm the Smart Audio wire is connected to a TX pad on your flight controller.
  - Verify that the correct UART is enabled for VTX (SmartAudio) in Betaflight Configurator.
  - Ensure the VTX protocol is set to SmartAudio in Betaflight.
  - Check for any conflicting peripherals on the same UART.
- **VTX Not Powering On:**
  - Check the input voltage and polarity.
  - Inspect solder joints for cold joints or short circuits.
  - Ensure your power source is providing sufficient current.

## WARRANTY AND SUPPORT

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Information regarding the specific warranty terms and conditions for the AKK FX2-ultimate-mini FPV Transmitter was not provided in the available product data. For warranty claims or technical support, please refer to the official AKK website or contact your point of purchase.

It is recommended to retain your proof of purchase for any warranty-related inquiries.

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This manual is for informational purposes only. AKK reserves the right to make changes to product specifications without prior notice.