iFlight Defender-16

iFlight Defender-16 2S HD Cinewhoop Drone User Manual

Model: Defender-16 (ELRS 2.4GHz)

1. Introduction

This manual provides essential information for the safe and effective operation of your iFlight Defender-16 2S HD Cinewhoop Drone. Please read this manual thoroughly before operating the drone to ensure proper setup, usage, and maintenance. The Defender-16 is a compact FPV quadcopter designed for high-definition video capture and agile flight.

2. Product Overview

Key Features

- No soldering required for assembly; motors and propellers utilize a plug-in mounting method.
- Dedicated VTX mount bracket with central grille opening and air duct design for efficient heat dissipation.
- USER1 preset for video transmitter power supply switch, allowing manual VTX shutdown to conserve power and prevent overheating.
- Crash-protected battery shell with an innovative quick-release structure for easy battery replacement.
- Drone can be disassembled with only 6 screws for convenient maintenance and repair.
- Full plug-and-play high-performance AIO (All-In-One) flight controller with increased redundancy.
- Integrated beeper for quick retrieval in case of accidental loss.
- Injection-molded frame for durability and lightweight construction.
- Customized vibration-damped O3 camera mount for smooth footage and stable Gyro Data.
- Turtle Mode pre-setup for easy recovery after a crash.

What's in the Box

- 1 x Defender-16 O3 HD BNF Drone
- 1 x Defender-16 900mAh 25C 2S Battery
- 1 x Defender-16 Type-C Charging Adapter
- 4 x Defender-1809-3 Propellers (pairs)
- 1 x Propeller Removal Tool

Product Images

Figure 1: Top-front view of the iFlight Defender-16 drone, showcasing its compact design and propeller guards.

Figure 2: Bottom view of the iFlight Defender-16 drone, highlighting the motor mounts and frame structure.

3. Setup

3.1 Battery Installation

1. Ensure the drone is powered off.
2. Locate the battery compartment, typically on the top or bottom of the drone.
3. Insert the provided Defender-16 900mAh 2S battery into the compartment. The quick-release structure allows for easy and secure attachment.
4. Connect the battery's power connector to the drone's power input.

3.2 Propeller Attachment

1. Identify the correct rotation direction for each propeller (CW for clockwise, CCW for counter-clockwise).
2. Align the propeller with the motor shaft. The Defender-16 uses a plug-in mounting method, eliminating the need for screws.
3. Gently push and twist the propeller onto the motor shaft until it is securely seated.
4. Repeat for all four motors. Use the provided propeller removal tool for detachment when necessary.

3.3 Binding with Transmitter (ELRS 2.4GHz)

Refer to your ELRS 2.4GHz transmitter's manual for specific binding procedures. Generally, this involves putting both the drone's receiver and the transmitter into binding mode. Ensure both devices are powered on and in close proximity during the binding process.

4. Operating Instructions

4.1 Pre-Flight Check

- Ensure the battery is fully charged and securely connected.
- Verify all propellers are correctly attached and free from damage.
- Check for any loose wires or components.
- Confirm your FPV goggles (e.g., DJI Goggles 2) are powered on and receiving a clear video feed.
- Ensure your transmitter is powered on and bound to the drone.

4.2 Arming and Takeoff

1. Place the drone on a flat, level surface.
2. Arm the motors using the designated switch on your transmitter (refer to your transmitter's configuration). The motors will spin slowly.
3. Gently increase the throttle to lift off.

4.3 Flight Modes

The Defender-16 supports various flight modes, including Manual Mode, which allows for maximum control and agility. Familiarize yourself with your transmitter's flight mode switch assignments.

4.4 Video Transmitter (VTX) Control

The USER1 preset on the flight controller is configured as a video transmitter power supply switch. This allows you to manually turn off the VTX when the drone is idle, conserving power and preventing overheating. Consult your flight controller's documentation for details on how to activate this switch via your transmitter.

4.5 Turtle Mode

The Defender-16 comes with Turtle Mode pre-setup. If the drone lands upside down after a crash, activate Turtle Mode via your transmitter. This will allow the motors to spin in reverse, flipping the drone back over without needing to retrieve it manually.

4.6 Landing

Reduce throttle slowly to descend. Once on the ground, disarm the motors immediately using the designated switch on your transmitter.

5. Maintenance

5.1 General Cleaning

Regularly clean the drone to remove dust, dirt, and debris. Use a soft brush or compressed air. Avoid using liquids directly on electronic components.

5.2 Propeller Inspection and Replacement

Inspect propellers before and after each flight for cracks, bends, or other damage. Damaged propellers can affect flight performance and safety. Replace any damaged propellers immediately using the provided propeller removal tool.

5.3 Battery Care

- Always use the provided Defender-16 Type-C Charging Adapter or a compatible 2S LiPo charger.
- Do not overcharge or over-discharge the battery.
- Store batteries in a cool, dry place at storage voltage (approximately 3.8V per cell).
- Discontinue use if the battery shows signs of swelling or damage.

5.4 Disassembly for Repair

The Defender-16 is designed for easy maintenance. The drone can be disassembled by removing only 6 screws, providing access to internal components for repair or replacement.

6. Troubleshooting

6.1 Drone Lost Signal / Crashed

- The integrated beeper can assist in locating the drone. Activate the beeper via your transmitter if configured.
- If the drone is upside down, activate Turtle Mode to flip it over.

6.2 No Video Feed

- Ensure your FPV goggles are on the correct frequency/channel.
- Check VTX power status. If USER1 preset is used, ensure the VTX is powered on.
- Inspect the O3 Air Unit and its connections for any damage or dislodged cables.

6.3 Drone Not Arming

- Ensure the transmitter is powered on and bound to the drone.
- Check battery connection and charge level.
- Verify that the drone is on a flat, level surface. Some flight controllers prevent arming if the drone is not level.
- Check for any error messages in your FPV goggles or flight controller OSD.

7. Specifications

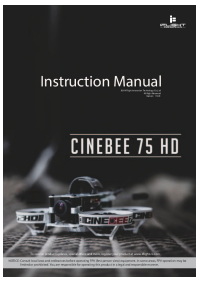
Flight Electronics	Defender-16/20 F411 AIO
Video Transmission	DJI O3 Air Unit (naked version)
Frame Wheelbase	81mm
Motors	Defender-16 1002 14000KV
Propellers	Defender-16 1809-3 (3-blade)
Takeoff Weight (incl. 900mAh battery)	120g
Dimensions (L×W×H)	121x117x47mm
Max Speed (Manual Mode)	55 Km/H
Max Hover Time (with 2S 900mAh battery)	Approx. 6 mins
Max Wind Speed Resistance	Level 3
Antennas	Dual Antennas

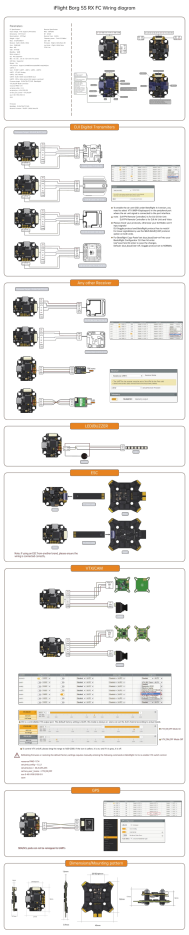
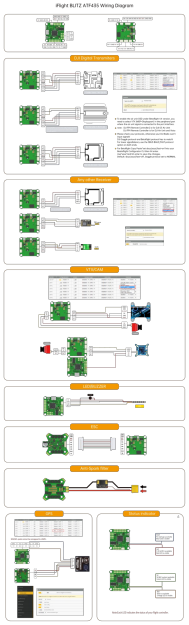
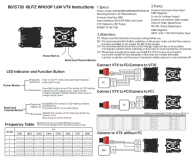
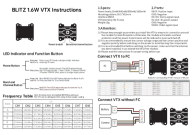
FOV (single screen)	155°
Operating Temperature Range	-10° to 40° C (14° to 104° F)
Power Input	7.4-26.4 V
Video Transmission Specifications (DJI O3 Air Unit)	
Communication Bandwidth	Max 40 MHz
Communication Frequency	2.400-2.4835 GHz (RX only), 5.725-5.850 GHz (RX and TX)
End-to-End Latency (with DJI Goggles 2, 1080p/100fps)	As low as 30 ms
End-to-End Latency (with DJI Goggles 2, 1080p/60fps)	As low as 40 ms
Max Video Transmission Bitrate	50 Mbps
Max Video Transmission Range	10 km (FCC), 2 km (CE), 6 km (SRRC)

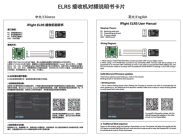
8. Warranty and Support

For warranty information, technical support, or service inquiries, please refer to the official iFlight website or contact their customer support directly. Keep your proof of purchase for any warranty claims.
Official iFlight Store: Visit the iFlight Store on Amazon

Related Documents - Defender-16

	iFlight CineBee 75 HD FPV Drone Instruction Manual Comprehensive instruction manual for the iFlight CineBee 75 HD FPV drone, covering setup, binding, flight controls, maintenance, and troubleshooting. Learn to operate your drone safely and effectively.

	[iFlight Borg 5S RX FC Wiring Diagram and Specifications] Detailed wiring diagram and technical specifications for the iFlight Borg 5S RX FC, including receiver details, VTX control, and compatibility information for drone builders.
	[iFlight BLITZ ATF435 Flight Controller Wiring Diagram and Setup Guide] Detailed wiring diagram and setup instructions for the iFlight BLITZ ATF435 flight controller, covering connections for DJI digital transmitters, various receivers, ESCs, and peripherals. Includes setup guidance for Betaflight.
	[iFlight BLITZ WHOOP 1.6W VTX: Installation and Operation Guide] Comprehensive instructions for the iFlight BLITZ WHOOP 1.6W VTX, covering specifications, port connections, button functions, wiring diagrams, frequency table, and important attention points for drone FPV systems.
	[iFlight BLITZ 1.6W VTX: Setup and Operation Guide] Comprehensive instructions for the iFlight BLITZ 1.6W VTX, covering specifications, port descriptions, connection diagrams, button functions, and frequency bands for optimal FPV system setup.

	[iFlight ELRS C8RXELRS User Manual and FCC Compliance] User manual and FCC compliance information for the iFlight ELRS C8RXELRS receiver module, covering pinout, wiring, binding, firmware updates, and regulatory requirements.