Dualsky FC151

Dualsky FC151 6-Axis Flight Control System User Manual

Model: FC151

1. INTRODUCTION

The Dualsky FC151 is a compact 6-axis flight control system designed for RC airplanes and quadcopters. It integrates a 3-axis gyroscope and a 3-axis accelerometer to provide advanced attitude stabilization. This manual provides essential information for the proper setup, operation, and maintenance of your FC151 unit.

Image 1.1: Dualsky FC151 Flight Control unit with indicated dimensions (36mm length, 27.5mm width, 12mm height).

2. KEY FEATURES

- **6-Axis Stabilization:** Combines 3-axis gyroscope and 3-axis accelerometer for precise flight control.
- **Compact Design:** Mini dimension, weighing only 8 grams.
- **High Performance:** Equipped with a 32-bit high-performance ARM MCU.
- **Advanced Algorithm:** Utilizes an original advanced attitude stabilization algorithm.
- **Aircraft Compatibility:** Supports single/double aileron, fly wing, and V-tail aircraft.
- **Flaperon Mixing:** Integrated support for flaperon mixing.
- **Flight Modes:** Supports aerobatic/3D airplanes and auto-level functionality.
- **Adjustable Sensitivity:** Independent sensitivity adjustment for all 3 axes.
- **S.BUS Support:** Compatible with Futaba S.BUS protocol.
- **Mode Switching:** Allows mode switching via an extra channel.
- **Easy Programming:** Programmed via a single button and LED indicators.
- **HV Input Support:** Compatible with High Voltage (HV) inputs.

3. PACKAGE CONTENTS

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

- Dualsky FC151 Flight Control Unit
- Connecting Cables (if included, not explicitly listed but implied for installation)
- Instruction Manual (this document)

Image 3.1: The Dualsky FC151 Flight Control unit shown within its retail packaging.

4. SETUP AND INSTALLATION

4.1 Physical Installation

Mount the FC151 unit securely in your RC aircraft or quadcopter. Ensure it is oriented correctly according to the "HEAD DIRECTION" arrow on the unit. The compact size allows for flexible placement, but avoid areas with excessive vibration or electromagnetic interference.

Image 4.1: Top view of the FC151 unit, highlighting the 'HEAD DIRECTION' indicator and adjustment points for AIL, ELE, RUD.

4.2 Wiring Connections

Connect the FC151 to your receiver and servos using appropriate cables. The unit features clearly labeled ports for system power (SYS), aileron (AIL1, AIL2), elevator (ELE), rudder (RUD), and mode selection (MODE). If using S.BUS, refer to your receiver's manual for proper connection to the FC151's S.BUS port.

Image 4.2: The FC151 unit displaying its various input and output ports for connection to a receiver and servos.

4.3 Control Surface Types and Mixing

The FC151 supports various aircraft configurations. Ensure your transmitter is set up correctly for the chosen aircraft type, and then configure the FC151 accordingly. The unit supports:

- Single Aileron Aircraft
- Double Aileron Aircraft
- Fly Wing Aircraft (Delta Wing)
- V-Tail Aircraft

Flaperon mixing is also supported. Refer to the diagram below for visual guidance on control surface configurations.

Image 4.3: Diagram showing typical control surface setups for single/double aileron, V-tail, and fly wing aircraft.

4.4 Sensitivity Adjustment

The FC151 allows independent sensitivity adjustment for aileron (AIL), elevator (ELE), and rudder (RUD) axes. Use a small screwdriver to carefully adjust the potentiometers labeled AIL, ELE, and RUD on the top of the unit. Start with lower sensitivity settings and gradually increase as needed during test flights to achieve desired stability without overcorrection.

4.5 Flight Mode Selection

The FC151 supports different flight modes, including auto-level and modes suitable for aerobatic/3D flying. These modes can be switched via an extra channel on your transmitter, connected to the FC151's MODE input. Consult the LED indicators for current mode status.

5. OPERATION

Once installed and configured, the FC151 will provide stabilization during flight. The system continuously monitors the aircraft's attitude and makes rapid corrections to maintain stability. For advanced users, programming via the onboard button and LEDs allows for fine-tuning of parameters. Refer to the specific programming sequence detailed in the full product manual (if available) or Dualsky's official website for detailed steps.
Ensure your transmitter is properly calibrated and all control surfaces respond correctly before attempting flight.

6. MAINTENANCE

- **Cleaning:** Keep the unit clean and free from dust and debris. Use a soft, dry cloth for cleaning.
- **Inspection:** Periodically inspect all wiring connections for looseness or damage.
- **Environmental Conditions:** Avoid exposing the unit to extreme temperatures, moisture, or direct sunlight for prolonged periods.
- **Firmware:** Check the Dualsky official website for any available firmware updates.

7. TROUBLESHOOTING

Problem	Possible Cause	Solution
No power to FC151	Incorrect wiring, faulty power source, damaged cable.	Check all power connections. Ensure battery is charged. Inspect cables for damage.
Unstable flight / Overcorrection	Sensitivity too high, incorrect mounting, vibration.	Reduce sensitivity settings. Re-mount the unit securely. Check for excessive vibrations.
Incorrect control response	Incorrect servo direction, wrong aircraft type selected, faulty servo.	Verify servo directions in transmitter. Confirm correct aircraft type setting on FC151. Test servos independently.
Mode switching not working	Extra channel not configured, incorrect wiring to MODE input.	Ensure transmitter channel is assigned and connected correctly to the FC151 MODE input.

8. SPECIFICATIONS

Feature	Detail
Brand	Dualsky
Model Name	FC151
Control Type	6-Axis (3-axis Gyro + 3-axis Accelerometer)
MCU	32-bit ARM
Weight	8 grams (approximate, based on description)
Dimensions	36mm x 27.5mm x 12mm (approximate, based on image)
Supported Aircraft	Single/Double Aileron, Fly Wing, V-Tail
Protocols	Futaba S.BUS
Input Voltage	Supports HV inputs (specific voltage range not provided)
UPC	782911429230

9. WARRANTY AND SUPPORT

For warranty information, please refer to the official Dualsky website or contact your authorized Dualsky dealer. Product support and additional resources, including detailed programming guides, may be available on the manufacturer's website:

www.dualsky.com/cx

For specific inquiries or technical assistance, please contact Dualsky customer service.

The GTIN/UPC for this product is 6941047114364.