FlyFishRC M10QMC-5-8-83L

FlyFishRC M10QMC-5-8-83L GPS Module Instruction Manual

Model: M10QMC-5-8-83L

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of the FlyFishRC M10QMC-5-8-83L GPS Module. This module is designed for use in RC FPV racing drones, quadcopters, and airplanes, offering fast and precise positioning capabilities.
Key features of the M10QMC-5-8-83L module include:

- 72 channel 10 Hz Refresh rate for accurate and timely data.
- Built-in TCXO crystal and farad capacitor for faster hot start performance.
- High sensitivity 18x18mm GPS patch antenna for reliable signal reception.
- SH1.0-6Pin terminal design, simplifying connection without soldering.
- Integrated QMC5-8-83L Magnetometer chip for precise heading information.

2. Product Overview

The FlyFishRC M10QMC-5-8-83L is a compact and high-performance GPS module with an integrated compass. Understanding its components is crucial for proper installation and operation.

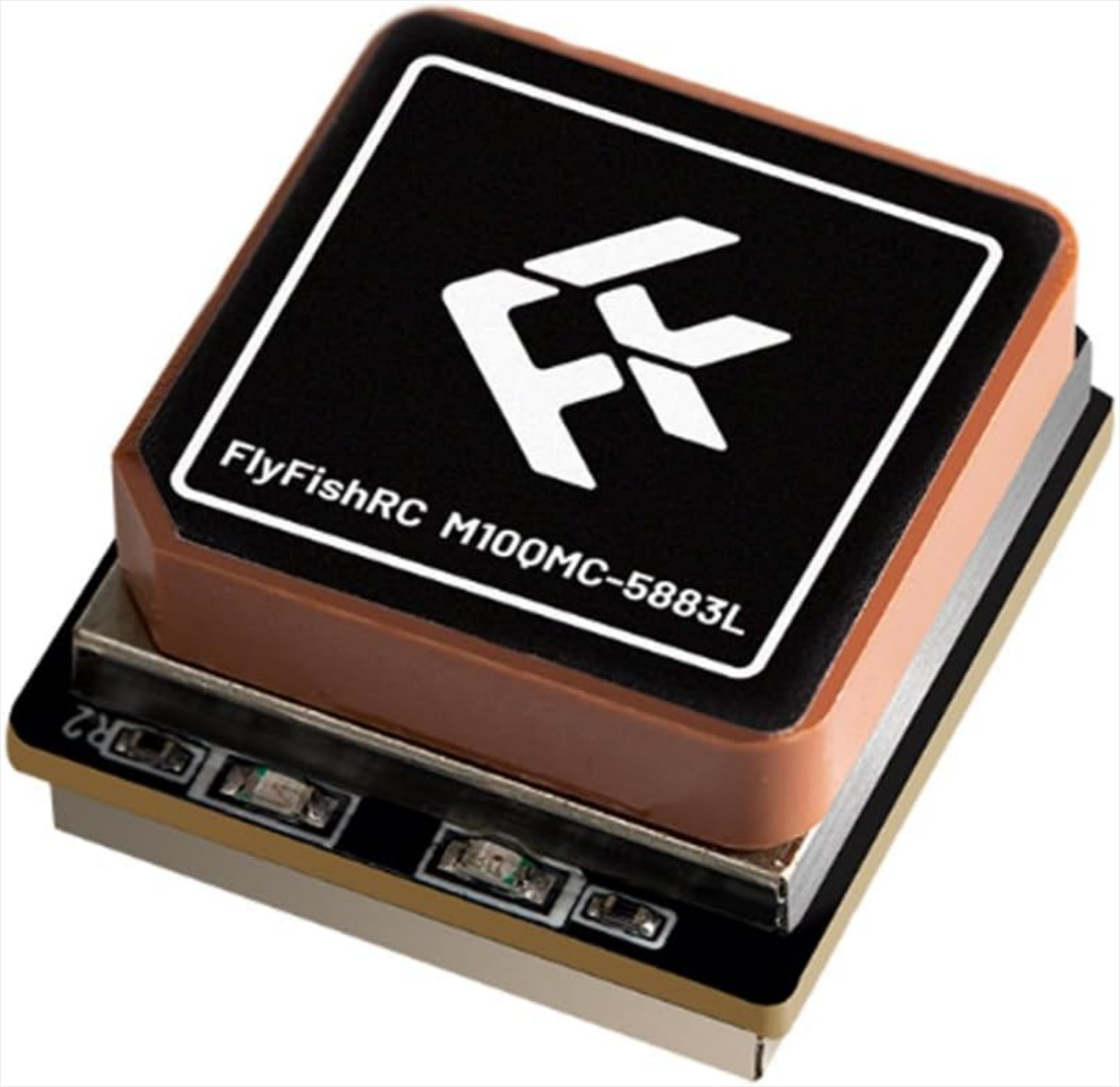

Figure 2.1: Top view of the FlyFishRC M10QMC-5-8-83L GPS Module. This image shows the compact design of the module with the FlyFishRC logo and model number clearly visible on the top surface.

2.1 Pinout Diagram

The module features a SH1.0-6Pin connector for easy integration. Refer to the pinout diagram below for correct wiring.

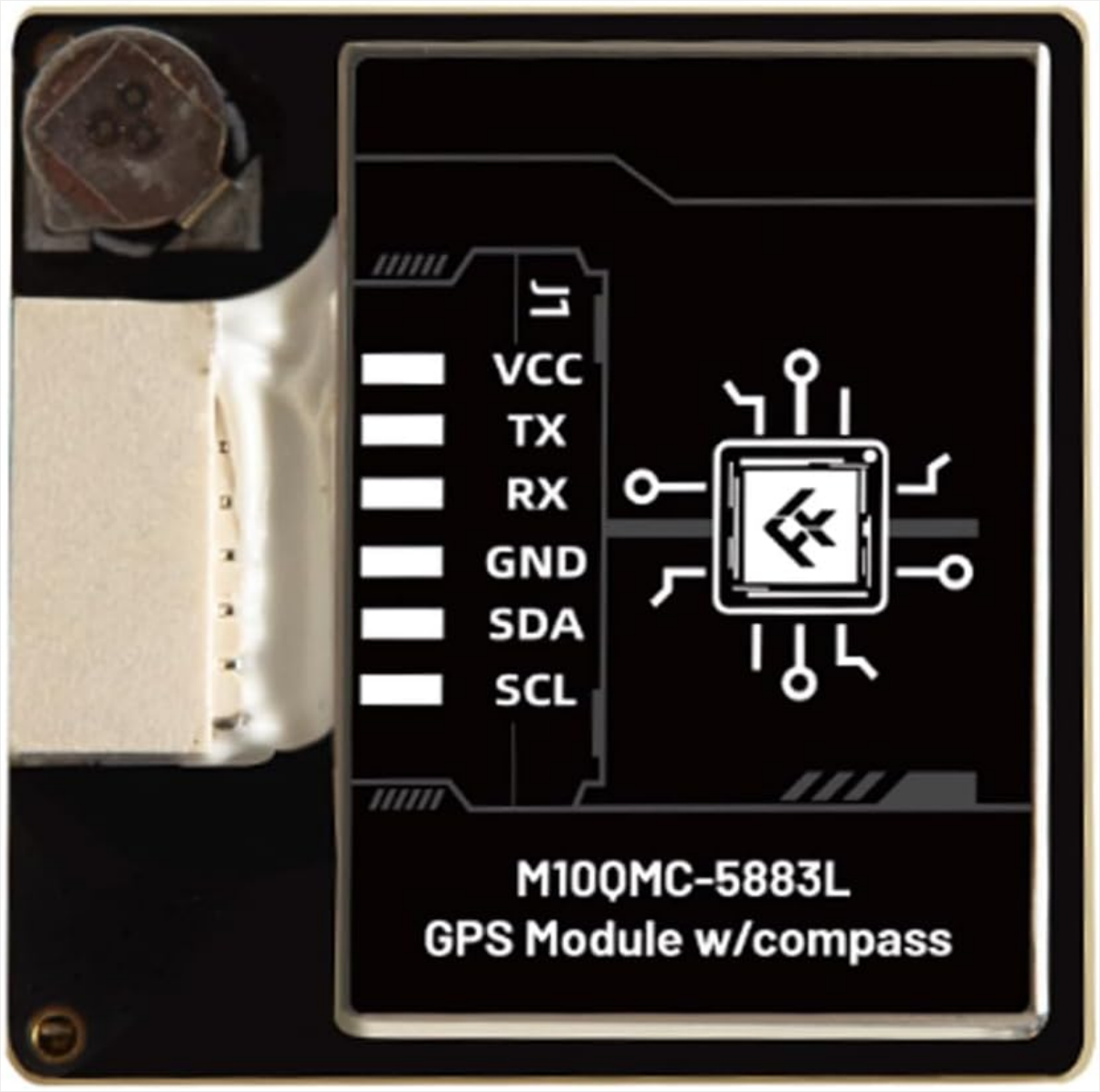

Figure 2.2: Pinout diagram for the M10QMC-5-8-83L GPS Module. This diagram illustrates the function of each pin on the SH1.0-6Pin connector, including VCC, TX, RX, GND, SDA, and SCL.

- **VCC:** Power input (typically 5V).
- **TX:** Transmit data (GPS data output).
- **RX:** Receive data (GPS configuration input).
- **GND:** Ground connection.
- **SDA:** I2C Data line (for compass).
- **SCL:** I2C Clock line (for compass).

2.2 Indicator Lights

The module is equipped with two indicator lights to provide status feedback:

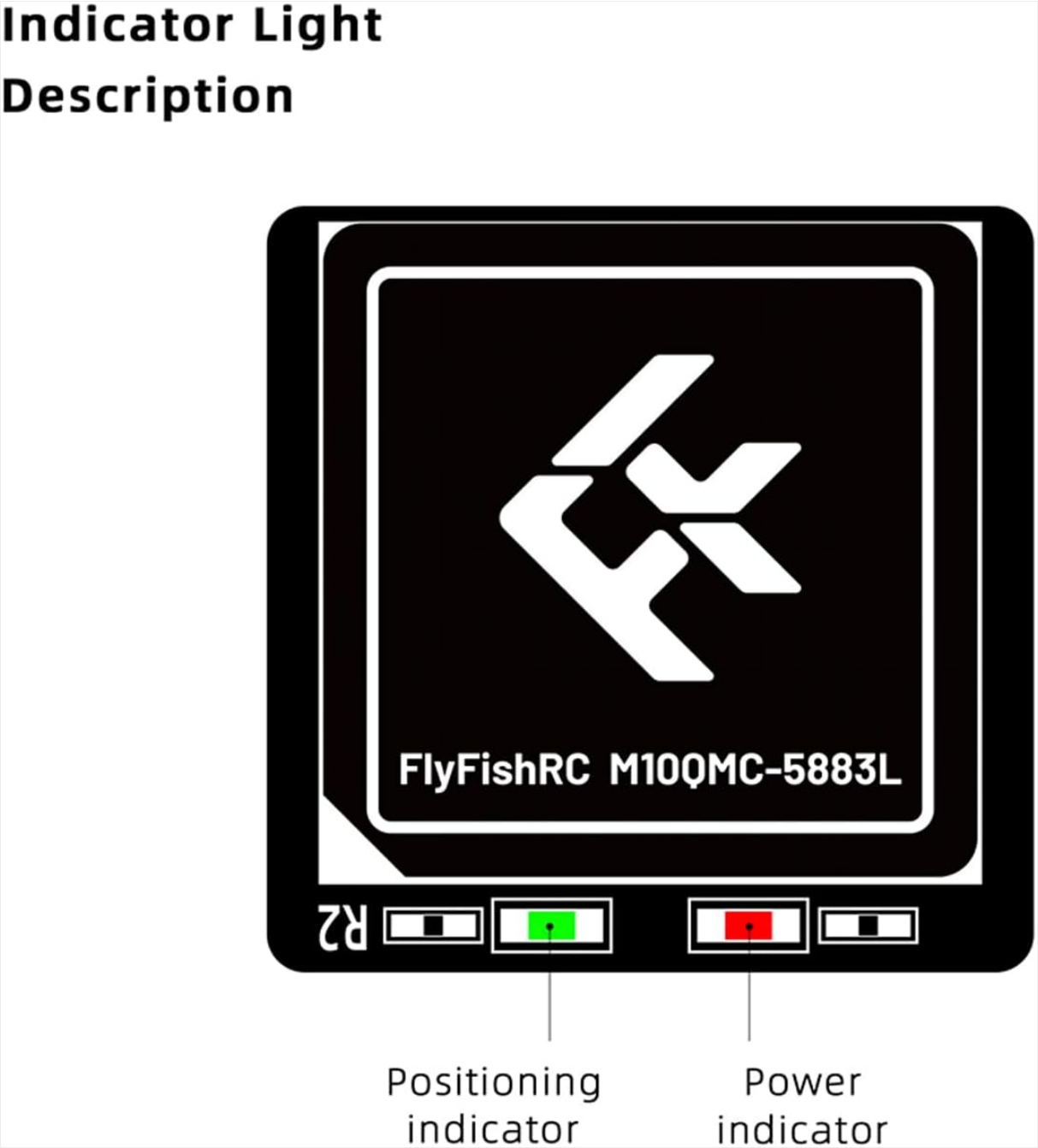

Figure 2.3: Indicator light description for the M10QMC-5-8-83L GPS Module. This image highlights the positioning indicator (green) and the power indicator (red) and their respective locations on the module.

- **Power Indicator (Red):** Illuminates when the module receives power.
- **Positioning Indicator (Green):** Flashes when a GPS fix is acquired. A solid light indicates no fix or searching for satellites.

3. Setup

3.1 Wiring

Connect the GPS module to your flight controller using the provided SH1.0-6Pin cable. Ensure correct pin alignment as shown in the diagram below. Incorrect wiring can damage the module or flight controller.

Wiring

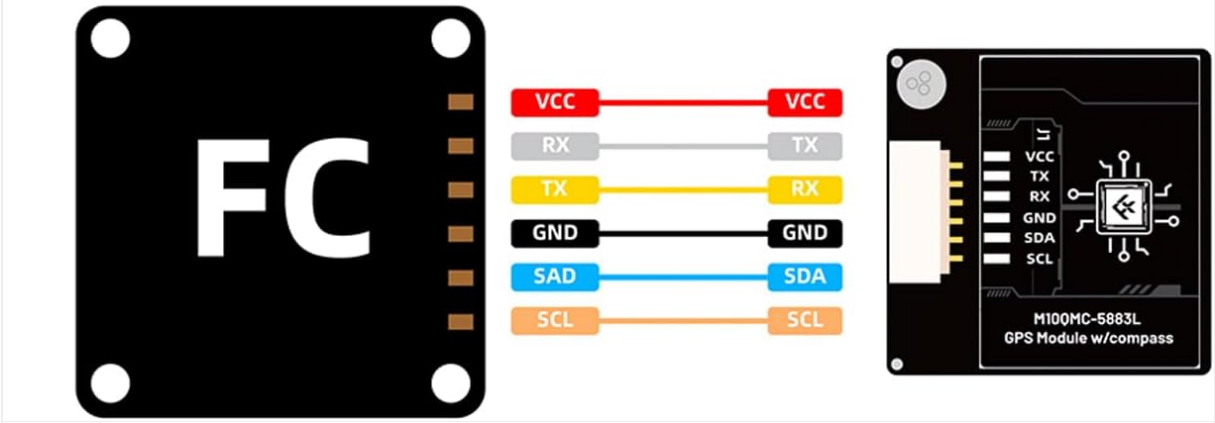

Figure 3.1: Wiring diagram showing connections between the GPS module and a flight controller (FC). This diagram illustrates how each pin (VCC, TX, RX, GND, SDA, SCL) on the GPS module connects to corresponding pins on the flight controller.

1. Connect **VCC** on the GPS module to a 5V power output on your flight controller.
2. Connect **GND** on the GPS module to a Ground pin on your flight controller.
3. Connect **TX** on the GPS module to an available**RX** UART pin on your flight controller.
4. Connect **RX** on the GPS module to an available**TX** UART pin on your flight controller.
5. Connect **SDA** on the GPS module to the**SDA** pin of the I2C bus on your flight controller.
6. Connect **SCL** on the GPS module to the**SCL** pin of the I2C bus on your flight controller.

Note: Refer to your flight controller's manual for specific UART and I2C pin assignments.

3.2 Mounting

Mount the GPS module securely on your RC vehicle. For optimal performance, consider the following:

- **Clear Sky View:** Position the module with a clear, unobstructed view of the sky. Avoid placing it directly under carbon fiber plates or other materials that can block GPS signals.
- **Interference:** Keep the GPS module away from high-current wires, ESCs, VTXs, and other electronic components that can generate electromagnetic interference.
- **Orientation:** Ensure the module is mounted with the arrow or designated front facing forward relative to your vehicle's flight direction for accurate compass readings.

Figure 3.2: Example of the FlyFishRC M10QMC-5-8-83L GPS Module mounted on an FPV drone. This image demonstrates a typical mounting position on the rear of a drone frame, ensuring a clear view of the sky and minimal interference.

4. Operating Instructions

4.1 Power On and Initial Status

Upon powering your RC vehicle, the red power indicator on the GPS module will illuminate. The green positioning indicator will initially be solid or off, indicating that the module is searching for satellites.

4.2 GPS Signal Acquisition

For optimal signal acquisition, operate the vehicle in an open outdoor area with a clear view of the sky. The module will begin searching for satellite signals. This process may take a few seconds (hot start) to several minutes (cold start) depending on the environment and previous usage.

- Once a sufficient number of satellites are acquired for a 3D fix, the green positioning indicator will begin to flash. This indicates that the GPS module is providing accurate position data.
- The 10 Hz refresh rate ensures rapid updates of position data to your flight controller.
- The integrated QMC5-8-83L magnetometer will provide heading information to the flight controller, which is essential for features like RTH (Return To Home) and GPS hold modes.

5. Maintenance

The FlyFishRC M10QMC-5-8-83L GPS module is designed for durability. Minimal maintenance is required:

- **Cleaning:** Keep the module free from dust and debris. Use a soft, dry cloth for cleaning. Avoid using liquids or solvents.
- **Physical Inspection:** Periodically check the wiring and connections for any signs of wear or damage. Ensure the module remains securely mounted.
- **Storage:** When not in use, store the module in a dry, cool environment, away from direct sunlight and extreme temperatures.

6. Troubleshooting

If you encounter issues with your GPS module, refer to the following common troubleshooting steps:

Problem	Possible Cause	Solution
No power indicator (red LED off)	No power supply or incorrect wiring.	Check VCC and GND connections. Ensure the flight controller is powered on.
Green positioning indicator does not flash (no GPS fix)	• Obstructed sky view. • Electromagnetic interference. • Incorrect UART configuration on flight controller.	• Move to an open outdoor area. • Relocate the GPS module away from noisy electronics. • Verify UART settings (baud rate, protocol) in your flight controller software (e.g., Betaflight, ArduPilot).
Inaccurate compass readings or "Mag Error"	• Magnetic interference from other components. • Incorrect compass orientation in flight controller software. • Compass not calibrated.	• Move the GPS module further from power wires, ESCs, and motors. • Adjust compass orientation settings in your flight controller software. • Perform a compass calibration procedure.
No data from GPS to flight controller	• Incorrect TX/RX wiring. • Incorrect UART port enabled or configured.	• Double-check TX/RX connections (GPS TX to FC RX, GPS RX to FC TX). • Ensure the correct UART port is enabled for serial GPS in your flight controller software.

7. Specifications

Detailed technical specifications for the FlyFishRC M10QMC-5-8-83L GPS Module:

Feature	Detail
Model	M10QMC-5-8-83L
Channels	72
Refresh Rate	10 Hz

Feature	Detail
Antenna Type	18x18mm GPS patch antenna
Magnetometer Chip	QMC5-8-83L
Connector	SH1.0-6Pin
Dimensions	20mm x 20mm x 11mm (approx. 0.8 x 0.8 x 0.43 inches)
Weight	9.4 grams (approx. 0.33 ounces)
Manufacturer	FlyFishRC

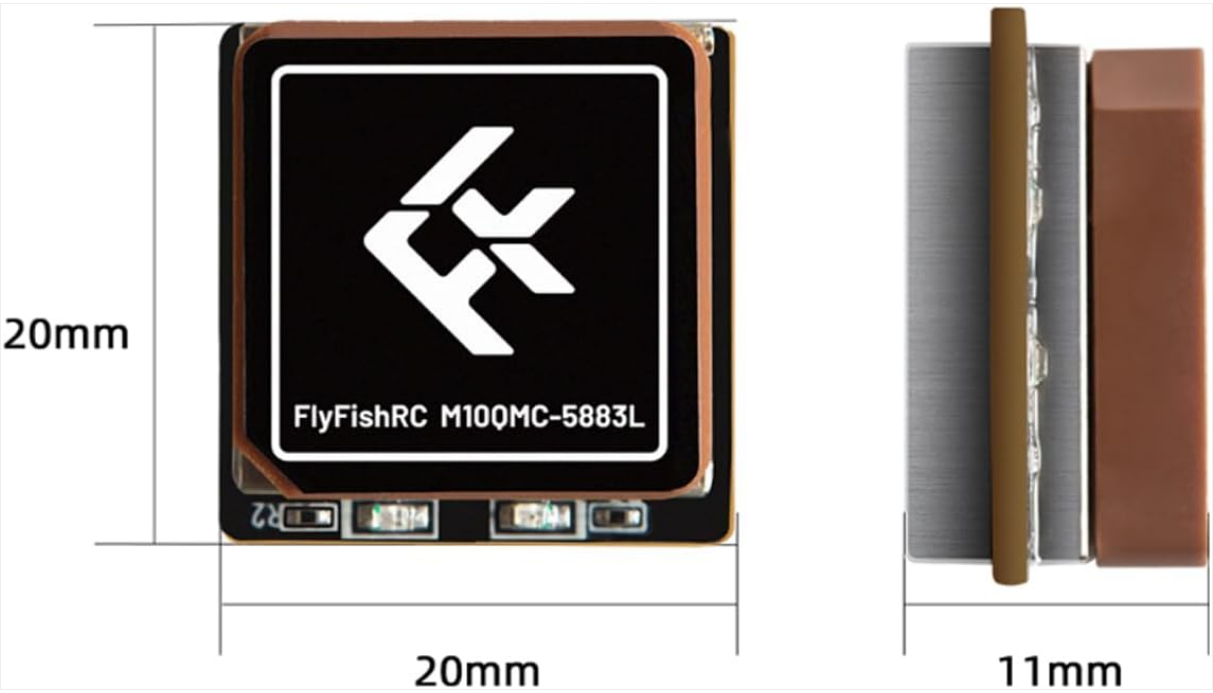

Figure 7.1: Dimensions of the FlyFishRC M10QMC-5-8-83L GPS Module. This image provides a visual representation of the module's length, width (20mm each), and height (11mm).

Figure 7.2: Weight of the FlyFishRC M10QMC-5-8-83L GPS Module. The module is shown on a digital scale displaying a weight of 9.4 grams.

8. Warranty and Support

FlyFishRC products are manufactured to high-quality standards. For warranty information, technical support, or further assistance, please refer to the official FlyFishRC website or contact your retailer. Keep your proof of purchase for warranty claims.

For the latest firmware updates and detailed configuration guides, visit the manufacturer's support resources online.