M10 Mini GPS

FlyFishRC M10 Mini GPS Module
User manual



Read the entire manual before installation. Always remove the propellers whenever you connect a battery to the model.

www.rotorama.com

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1. Safety instructions

1.1 General rules

- Read the entire manual before installation and setup and keep it for future reference.
- The module is intended for installation in radio-controlled models and FPV drones. It is not a toy and must be kept out of the reach of children.
- Install the module only in a switched-off model with the battery disconnected. Observe the correct supply polarity — swapping VCC and GND may permanently damage the module and the flight controller (FC).
- Solder only to the designated pads, quickly and with a suitable tip temperature. Overheating may damage the module and the ceramic antenna.
- Protect the module from moisture, dust, mechanical stress and impacts on the ceramic antenna.
- Operation of a model fitted with a GPS module is governed by the regulations of the country in which you operate it. **The law of the country of operation always prevails**; references to Czech regulations in this manual are examples only.

1.2 Working with a connected battery

Whenever you connect the flight battery to the model on the bench or while configuring it in Betaflight, always remove the propellers first.

- GPS Rescue (return to home) is an emergency aid, not a substitute for the pilot. Always fly the model so that you can take over manual control at any time.
- Test the GPS Rescue function in an open, safe place without people and obstacles before relying on it for the first time.

2. Product description

2.1 Description

The FlyfishRC M10 Mini is a small, fast and easy to use GPS. It uses an 11.7 × 11.7 mm RHCP ceramic patch antenna to provide excellent reception and a highly stable connection. The u-blox generation 10 chip allows minor altitude changes to be skipped for increased stability.

The module is a receiver of satellite navigation signals and communicates with the flight controller (FC) via a serial interface (UART). In Betaflight it enables, among other things, the **GPS Rescue** function — automatic return of the model to the launch point.

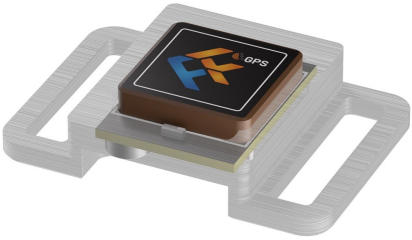


FlyFishRC M10 Mini GPS

2.2 Package contents

Qty	Item
1×	FlyFishRC M10 Mini GPS module
1×	Battery strap GPS mount
4×	#30 silicone cable
1×	GPS manual

※ The flight controller (FC), battery strap and battery are not included.



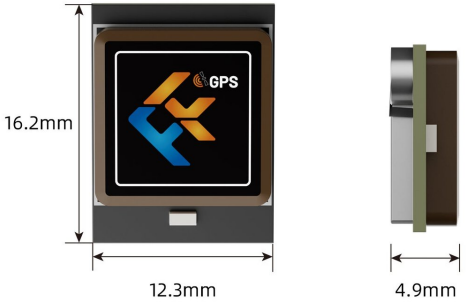
GPS module in the battery strap mount

2.3 Specifications

Parameter	Value
Chip	u-blox, generation 10
Antenna	ceramic patch antenna, RHCP
GPS patch antenna size	11.7 × 11.7 mm
Total dimensions	12.3 × 16.2 × 4.9 mm
Weight	2.4 g
Input voltage	3.3–5 V
GPS pin definition	UART: RX / TX, power VCC / GND
Protocol in Betaflight	UBLOX

Additional data stated by the manufacturer on the product page:

Parameter	Value
Speed accuracy	0.05 m/s
Cold start	30 s
Hot start	1–3 s
Tracking sensitivity	−167 dBm
Maximum altitude	50,000 m
Maximum speed	500 m/s
Maximum acceleration	≤ 4 G
Baud rate	4800–115200 bps (recommended 115200 bps)
VCC supply	typically 5 V, approx. 40 mA



Module dimensions

2.4 Pin description

There are four solder pads marked with letters on the back of the module:

Pad	Signal	Function
R	RXD	data input — connect to TX of the flight controller
T	TXD	data output — connect to RX of the flight controller
V	VCC	power supply (typically 5 V)
G	GND	ground



Back of the module with solder pads R, T, V, G

3. Installation and wiring

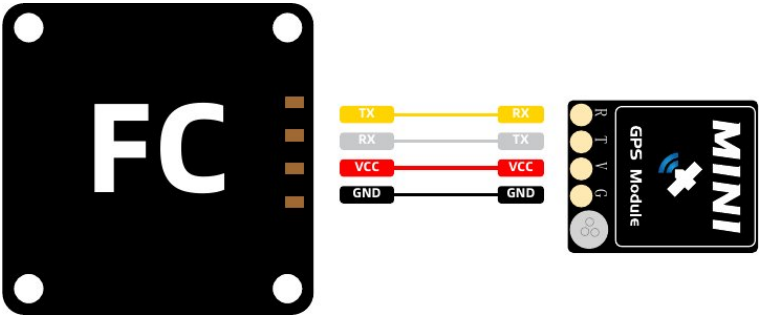
3.1 Module placement

- Place the module so that the ceramic antenna (the side with the logo) faces **up towards the sky** with no metal or carbon parts above it.
- Mount the module as far as possible from the video transmitter (VTX) antennas, the receiver and other sources of interference (power leads, electronic speed controllers ESC).
- Use the supplied mount to attach the module to the battery strap: thread the battery strap through the slots of the mount and secure the module in the mount.
- Route the cables so that they cannot get into the propellers and are not under tension.

3.2 Connecting to the flight controller

Use the supplied silicone cables for wiring. The data lines are **crossed**: TX of the flight controller to RX of the module and RX of the flight controller to TX of the module.

Flight controller (FC)		GPS module
TX (UART)	→	RX (R)
RX (UART)	←	TX (T)
VCC (5 V)	—	VCC (V)
GND	—	GND (G)



Wiring of the module to the flight controller

Before applying power, check that VCC and GND are not swapped and that there is no solder bridge between adjacent pads.

4. Setup in Betaflight

GPS modules with a generation 10 (M10) chip are supported by Betaflight **4.3 or above**. Connect the flight controller to the computer with a USB cable and open *Betaflight Configurator*.

4.1 UART port setup

① Enter the *Ports* tab.

② For the UART the module is connected to (UART4 in the manufacturer's example), select **GPS** in the *Sensor Input* column.

③ Change the baud rate to **115200**.

④ Click *Save*.

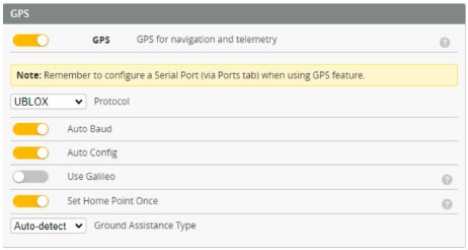
4.2 GPS configuration

① Enter the *Configuration* tab and enable **GPS**.

② Select the **UBLOX** protocol (*Protocol*).

③ Enable *Auto Baud* and *Auto Config*.

④ Click *Save*.



GPS section in the Configuration tab

4.3 Communication check

Reconnect the flight controller. For the GPS to work properly, an additional power supply may be needed — on some flight controllers the GPS supply output is not active when powered from USB only. Plug the flight battery into your aircraft.

Always take off the propellers before plugging in the battery!

Watch the status bar at the top of Betaflight. When the **GPS** icon lights up, the GPS is "talking" to your flight controller.



Status bar — GPS icon lit

5. GPS Rescue setup

5.1 GPS Rescue mode switch

In the *Modes* tab, add the **GPS RESCUE** mode and assign it your desired AUX channel and the range used to activate it from your radio. Click *Save*.



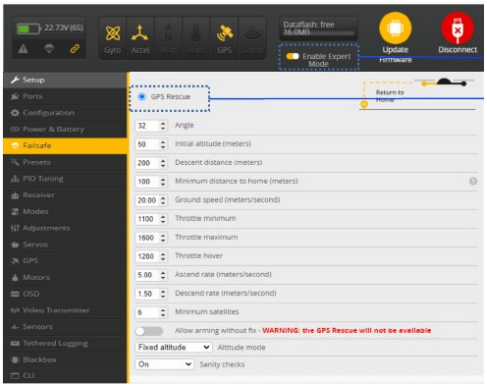
GPS RESCUE mode assigned to an AUX channel in the Modes tab

5.2 Failsafe tab parameters

① Enable *Expert Mode* in the top bar — without it the *Failsafe* tab is not displayed.

② In the *Failsafe* tab, change the Stage 2 failsafe procedure to **GPS Rescue**.

③ Set the GPS Rescue parameters to suit your model and flying site and save them. The meaning of each item is described in the Betaflight documentation at betaflight.com.



Failsafe tab with GPS Rescue selected (Expert Mode on)

5.3 Channel fallback value

In *Channel Fallback Settings* in the *Failsafe* tab, set the AUX channel used for GPS RESCUE to *Set* with a value that reliably triggers GPS Rescue (within the range set in step 5.1).



AUX channel fallback value for GPS RESCUE

6. Operation

6.1 Acquiring a position fix

- After power-up, the module needs some time to acquire a position (fix). According to the manufacturer, a cold start takes 30 s and a hot start 1–3 s; the actual time depends on the view of the sky and on interference.
- Acquire the fix outdoors, with a clear view of the sky, away from buildings and tall obstacles.
- The number of satellites found and the fix status are shown in the *GPS* tab of Betaflight and can also be displayed in the OSD.

6.2 Pre-flight check

- The module is firmly attached, the antenna faces up and the cables are safely clear of the propellers.
- Before Arm (starting the motors), wait until the module has a valid fix and enough satellites. Betaflight stores the home point at Arm — if you arm without a fix, GPS Rescue will not have a correct return target.
- Check that the GPS RESCUE switch on your radio works (*Modes* tab or OSD).
- Insert a fully charged battery before the flight.

7. Maintenance and troubleshooting

7.1 Maintenance and storage

- Keep the module clean and dry; remove dirt with a dry soft brush.
- After a crash, check the ceramic antenna, the solder joints and the cables.
- Store in a dry place out of the reach of children, protected from impacts.

7.2 Troubleshooting

Problem	Cause and solution
GPS icon in Betaflight does not light up	Check the wiring — TX and RX must be crossed. Make sure the correct UART is selected in the *Ports* tab. Connect the flight battery (without propellers) — the GPS supply output may not be active from USB.
Module communicates but gets no fix	Move the model outdoors to a place with a clear view of the sky. Remove metal and carbon parts above the antenna and move the module away from the VTX and its antenna. A cold start takes longer than a hot start.
GPS Rescue mode cannot be activated	The model has no valid fix or not enough satellites, or the AUX channel is not assigned correctly in *Modes*. Check the settings in the *Failsafe* tab.
Unstable position	Check the module placement and interference from other electronics; the antenna must face up.

8. Information for the EU and Czech Market

8.1 Importer and responsible person in the EU

The product is placed on the European Union market by the importer stated below, who is at the same time the responsible person within the meaning of Article 16 of Regulation (EU) 2023/988 of the European Parliament and of the Council on general product safety (GPSR).

Importer / responsible person in the EU	Rotorama, s.r.o.
Company ID (IČO)	051 57 692
VAT ID (DIČ)	CZ05157692
Registered office	Okrajová 1351, 674 01 Třebíč, Czech Republic
E-mail	info@rotorama.cz
Phone	+420 252 252 098
Website	www.rotorama.com

8.2 Product conformity

CE

- The product bears the **CE** marking and complies with the requirements of the applicable European Union harmonisation legislation.
- A copy of the **EU Declaration of Conformity** is available from the importer at the address stated above or at the e-mail address info@rotorama.cz.
- **Product identification:** the type designation (FlyFishRC M10 Mini GPS) is given in this manual; the back of the module is printed with *MINI GPS Module*.

8.3 Disposal of electrical equipment



- The crossed-out wheeled bin symbol on the product, its packaging or in the documentation means that at the end of its service life the product **must not be disposed of together with mixed municipal waste**.
- Hand it over at a take-back point for electrical equipment – at a collection yard, at a take-back point of a collective system, or at the retailer when purchasing a new equivalent product. Take-back is free of charge for the end user.
- The obligations under Act No. 542/2020 Coll., on end-of-life products, are fulfilled by the importer through a collective take-back system.
- Proper disposal helps prevent negative impacts on the environment and human health and contributes to the reuse of secondary raw materials.

Through its contractual partner **ASEKOL a.s.**, the company ensures the take-back of waste electrical equipment from households and the separate collection of waste electrical equipment, batteries and accumulators in accordance with the applicable legislation. The customer is entitled to hand over old electrical equipment or a battery or accumulator at any collection point of the above contractual partner. The addresses of these take-back points are listed at www.asekol.cz, www.ecobat.cz and also https://visoh2.mzp.cz/RegistrMistZO/RegistrMistZOPublic/MapaMistZpetOdberu.

9. Warranty and rights arising from defective performance

The rights and obligations of the contracting parties are governed by Czech law, in particular by Act No. 89/2012 Coll., the Civil Code, and Act No. 634/1992 Coll., on consumer protection.

- The seller is liable to the buyer for the product being free of defects on receipt. If the buyer is a consumer, a defect may be notified **within two years of receipt** of the product (Section 2165 of the Civil Code).
- If a defect appears within **one year** of receipt, the product is deemed to have been defective already at the time of receipt (Section 2161(5) of the Civil Code).
- When purchasing online, a consumer has the right to **withdraw from the contract within 14 days** of receiving the goods without giving a reason (Section 1829 of the Civil Code).
- Claims should be made with the retailer from whom you purchased the product. The importer's contact details are given in Chapter 8.1.
- The competent body for out-of-court settlement of consumer disputes is the **Czech Trade Inspection Authority**, Štěpánská 796/44, 110 00 Prague 1, www.coi.cz.