

Falcon

FAI approved device for F5J competitions with flight data recording



Manual version: 1.3

RC Electronics

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Contents

Introduction.....	3
Key features	3
How it works	3
Specifications	4
Physical overview.....	4
Using the Falcon module	5
Powering the module.....	5
Mounting the module.....	5
Operation.....	6
Status icons	6
Connecting module to the RC electronics application.....	7
Unit settings:	8
Unit logbook:.....	9
Firmware update	10
Revision history	11

Introduction

The Falcon module is designed as a lightweight, compact device with an onboard TFT display for use in FAI-approved F5J and F5L competitions.

The Falcon module records data from various built-in sensors for subsequent review. Competition parameters are shown on the onboard display. Communication with Android and iOS devices is provided via Bluetooth Low Energy (BLE). The module uses a state-of-the-art pressure sensor, a highly accurate three-axis accelerometer and solid-state memory for data storage.

Key features

- Lightweight at only **18 grams** with JR cables.
- Small: 48 mm x 17 mm x 9 mm.
- Integrated **F5J FAI** altitude/time switch.
- Can be used also for F5L, ALES (user settable motor restart, motor off altitude / motor run time)
- Integrated color TFT display.
- Integrated GPS receiver with its own rechargeable battery to keep GPS clock running
- Integrated automatic precise flight time recording function for F5J, F5L, ALES flying
- Records various flight data for later review over www.rcmodelspot.com platform.
- Wide range of input power: 4 – 12 volts DC. Normally taking power from your aircraft receiver supply.

How it works

The module uses a high-resolution barometric pressure sensor to detect small changes in air pressure caused by changes in altitude. It is sensitive enough to detect altitude changes of less than 10 cm. This sensitivity also means that readings may be affected by local weather conditions and atmospheric-pressure variations.

The device is intended to measure short-term altitude changes in radio-controlled aircraft. Long-term altitude readings may vary considerably due to changing atmospheric conditions. The module is therefore best suited to measuring relative changes in altitude.

The module has an onboard colour TFT display for showing operating and flight data.

Data is stored in onboard solid-state flash memory.

Specifications

Board Dimensions	48 mm x 17 mm x 9 mm
Weight	18 grams
Temperature Range ¹	-10°C ~ +60°C
Input Voltage Range	4.0 – 12.0 volts DC
Input Current	70 mA
Measured Voltage	4.0 – 12.0 volts DC
Basic recorded data	Altitude, vario, servo pulse, battery voltage, GPS position, ENL, ...

¹ Specifications are taken from component ratings and system limits and may not have been tested to the full extent of the specified ranges.

Physical overview

The JR male connector is used to connect it to the radio-controlled aircraft's onboard receiver, which powers the module and detects servo pulse. The JR female connector serves as a servo pass-through or as output for the F5J time switch function (connect it to ESC). Onboard color TFT display is used for displaying different parameters.

Onboard GPS receiver with build in GPS antenna needs no metal / carbon area above it to work correctly. With the help of internal rechargeable battery, GPS position will be 3D after 5s from power on!



Using the Falcon module

Powering the module

To power the module ON, connect the three-pin male connector to the throttle channel of the radio-controlled aircraft receiver, and then connect the ESC or servo to the module's female servo pass-through connector. Always observe the correct polarity when connecting the module to the receiver.

Mounting the module

The module can be mounted in one of two ways:

- The recommended installation location is inside the aircraft fuselage. In this case, an opening of at least 0.5 cm² should be provided to allow the pressure inside the fuselage to equalise with the external atmospheric pressure. Many aircraft fuselages are not airtight and are already sufficiently ventilated.

The module may be mounted using double-sided tape, cable ties or hook-and-loop fastener.

Ensure that the module does not touch any metal surfaces. Although unlikely, contact with metal could short-circuit exposed contacts and may result in radio-system failure.

Do not mount the module directly on top of propulsion batteries in electric aircraft. Battery heat may affect altitude readings by up to 30 metres.

Keep the module away from water, fuel and other liquids.

Always perform a range check and test the aircraft radio system before flying with the device installed. Verify that all connections are correct and that no system interference is present.

Operation

Each time the module is turned ON, it sets the current altitude to zero and begins logging data to a circular buffer.

When take-off is detected (motor servo pulse is more than 1200us), the buffered data is saved to flash memory. During flight, the module stores data from its sensors and connected modules in onboard memory. While the module is in flight, the recording icon is shown on the display and BLE connectivity is disabled – turned off!

When landing is detected, the module stops recording and the recording icon disappears.

Status icons

Module has 3 different status icons which are showing its state of work.



Internal clock not synced to GPS time



clock synced to GPS time



Bad GPS reception



valid 3D GPS reception



BT connection established



in flight mode



Green check mark: AMRT is armed and ready for use.



Orange exclamation mark (!): At power-on, the detected servo input pulse was below 800 μ s or above 1,200 μ s. In this condition, AMRT will not permit the motor to start.

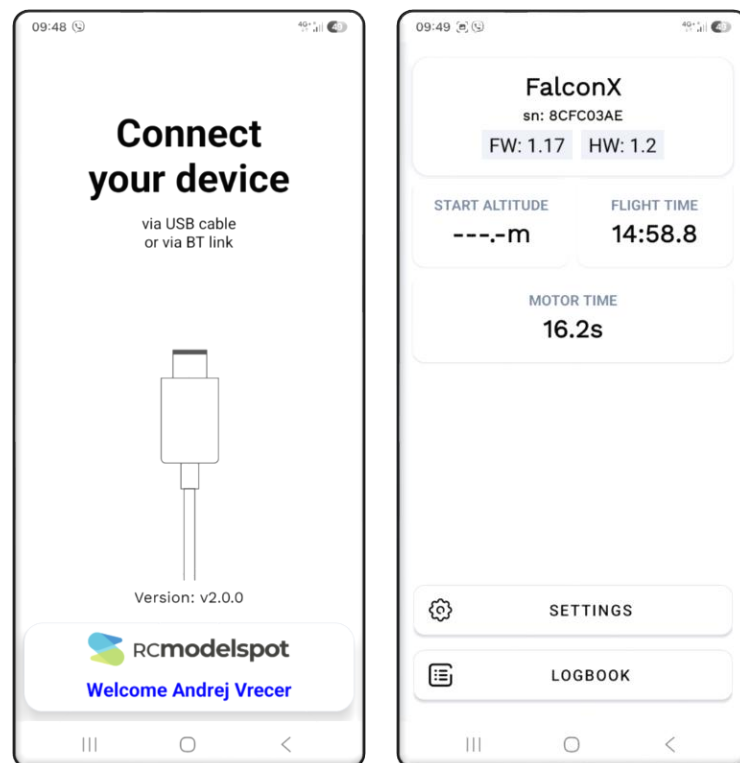


Red cross: The AMRT function is no longer armed. This may occur, for example, in Category 1 operation after the motor has been used once. A power cycle is required to re-arm AMRT. In F5L mode, AMRT may also be re-armed using an external reset switch.

Connecting module to the RC electronics application

Connect the module to an Android or iOS device on which the RC Electronics app has been installed from Google Play or the Apple App Store. The unit connects automatically when it is powered on and the app is running – no extra pairing is needed!

Start the RC Electronics app and power on the Falcon unit. For instructions on configuring the application, refer to the application manual.



The application displays basic information about the connected device and allows you to configure settings, view flights and upload flight data to the www.rcmodelsport.com platform.

Unit settings:

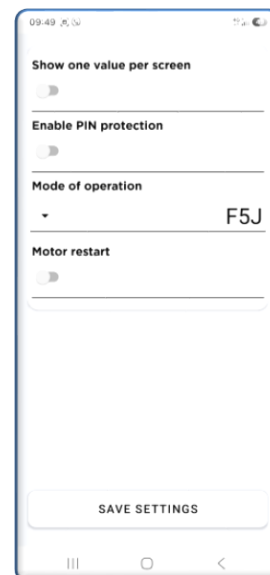
Show one value per screen:

When enabled, FalconX displays one value per screen using a larger font. To change the displayed screen, tap the FalconX unit or gently shake the model in which it is installed.

Enable PIN protection:

When enabled, the FalconX displays a PIN screen containing a four-digit PIN when the RC Electronics app connects to the unit. The user must enter this PIN in the app before the Settings and Logbook buttons become available. This prevents unauthorised users from changing device settings via the BLE connection.

If the user is signed in to an RCmodelsport account when PIN protection is enabled, the RCmodelsport login email is used for authentication. This allows the user to connect to PIN-protected devices without entering the PIN each time a connection is established.



Mode of operation:

A predefined operating mode may be selected. Device settings are then configured automatically according to the rules of the selected competition category. Custom mode allows the user to configure all available settings manually.

Motor restart:

When enabled, the firmware-version prefix changes from F to S and the module may be used in Category 2 events, where motor restart is permitted. For Category 1 events, Motor restart must be set to OFF. Each time this setting is changed, the start-altitude value on the module is reset to - - - m.

AMRT altitude:

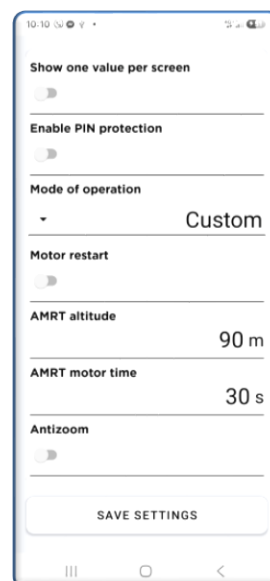
The user may set the altitude at which the motor will be switched off.

AMRT motor time:

The user may set the maximum motor run time.

Antizoom:

When enabled, AMRT switches off the motor before the selected altitude is reached in order to compensate for the aircraft's remaining kinetic energy.



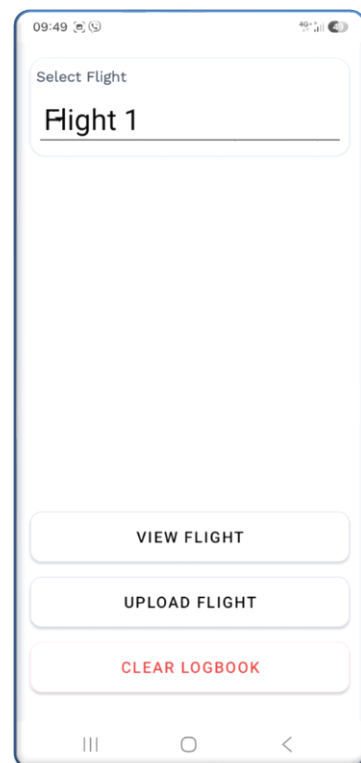
Settings are applied only after the “SAVE SETTINGS” button is pressed. If the user returns to the previous screen without saving, the new settings are discarded.

Unit logbook:

Select a flight from the drop-down list and press the “UPLOAD FLIGHT” button. The selected flight will then be uploaded to the user’s www.rcmodelspot.com account.

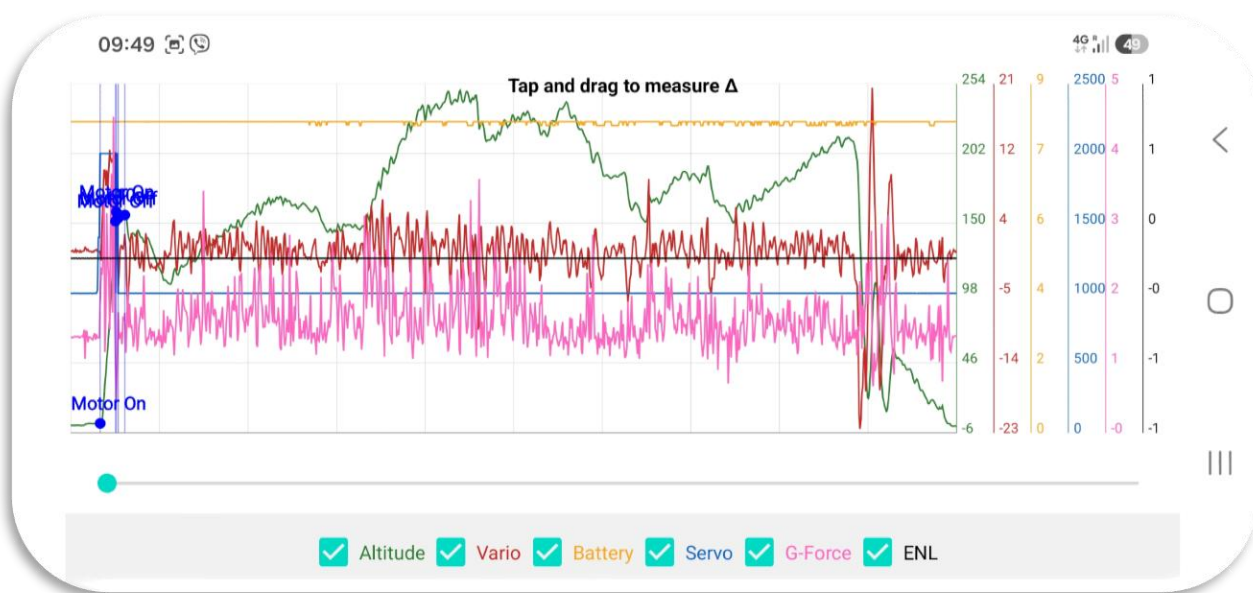
The user’s www.rcmodelspot.com login details must be entered in the RC Electronics application settings.

Pressing the “CLEAR LOGBOOK” button permanently deletes the log files from the device’s internal memory.



The “VIEW FLIGHT” button displays a basic graph and flight-data information. This function does not require an RCmodelspot login or an active internet connection.

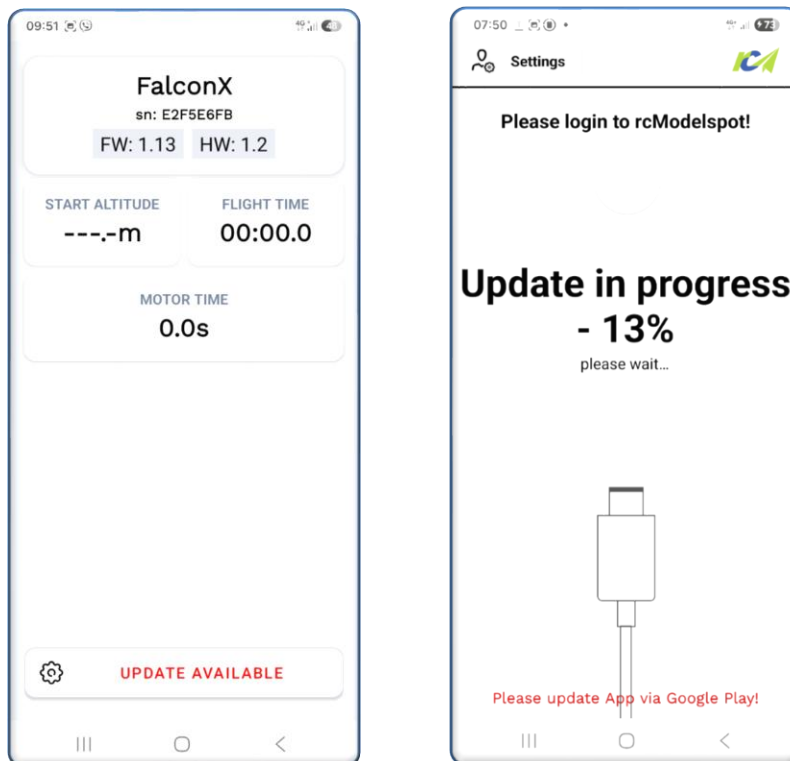
Use a finger gesture to zoom in, and then use the scroll bar at the bottom of the screen to move through the graph.



Firmware update

The RC Electronics app requires internet access, via Wi-Fi or mobile data, to check whether a newer firmware version is available on the server. If a newer version is found, the app displays the “UPDATE AVAILABLE” button after the Falcon is connected.

After the user presses the “UPDATE AVAILABLE” button, the app performs the firmware update. Once the transfer is complete, Falcon may require up to 15 seconds to finish the update. Do not disconnect the power during this period. Wait until the app displays the Falcon device data again.



Revision history

July 2026	Manual includes all features available in firmware version 1.17 or later New settings New status icons Flight view
March 2026	Removed “Android only app”. Now there is also iOS app in Apple store
January 2026	Added F5L settings Update of unit is done via RCElectronics app
September 2024	Initial release of user manual.