# Falcon

FAI-approved device for F5J competitions with flight data recording




Manual version: 1.4

RC Electronics
support@rc-electronics.eu; http://www.rc-electronics.eu

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# Introduction

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

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

## *Key features*

- Lightweight: only 18 grams including JR cables.
- Compact dimensions: 48 mm x 17 mm x 9 mm.
- Integrated FAI-approved F5J altitude/time switch.
- Also suitable for eF3K, F5L, RC-E7 and ALES, with user-configurable motor restart, motor-off altitude and motor run time.
- Integrated colour TFT display.
- Integrated GPS receiver with a dedicated rechargeable backup battery to maintain the GPS clock.
- Integrated automatic and accurate flight-time recording for F5J, F5L and ALES.
- Records flight data for subsequent review on the www.rcmodelspot.com platform.
- Wide input-voltage range: 4-12 V DC. Power is normally supplied by the aircraft receiver system.

## *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. Because of this high sensitivity, readings may also be influenced by local weather conditions and variations in atmospheric pressure.

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

The onboard colour TFT display shows relevant operating and flight data.

Flight 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 to +60 °C |
| Input Voltage Range | 4.0-12.0 V DC |
| Input Current | 70 mA |
| Measured Voltage Range | 4.0-12.0 V DC |
| Basic recorded data | Altitude, vario, servo pulse, battery voltage, GPS position, ENL, ... |

1 Specifications are based on component ratings and system limits and may not have been verified over the full extent of the stated ranges.

## Physical overview

The JR male connector is used to connect the module to the radio-controlled aircraft receiver. This connection supplies power to the module and provides the servo-pulse input. The JR female connector provides a servo pass-through output and is also used for the F5J time-switch function; connect this output to the ESC. The onboard colour TFT display shows the relevant operating and flight parameters.

The integrated GPS receiver includes an onboard GPS antenna. For reliable reception, ensure that no metal or carbon-fibre structure is positioned directly above the antenna. The internal rechargeable backup battery maintains the GPS clock while the module is powered off, allowing a 3D GPS fix to be obtained more quickly after the next power-on.



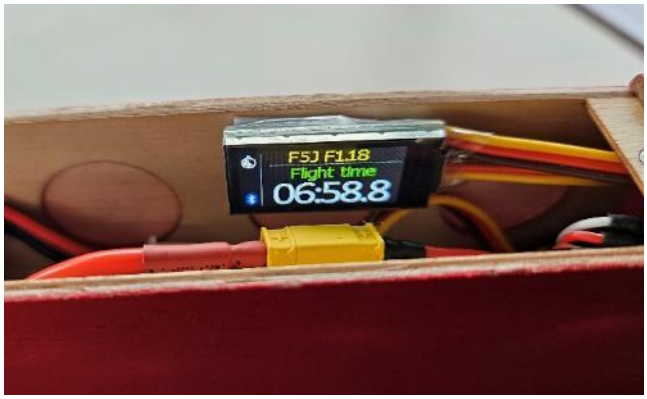
# Using the Falcon module

## *Powering the module*

To power the module ON, connect the three-pin male connector to the throttle channel of the radio-controlled aircraft receiver. 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*

For the most accurate flight-time detection, securely attach the device to the fuselage using double-sided adhesive tape. A rigid installation allows Falcon to reliably detect the first impact when the aircraft touches the ground. If the device is left loose or freely suspended inside the fuselage, landing detection may be unreliable or may fail completely.




The module can be installed as follows:

- The recommended installation location is inside the aircraft fuselage. An opening of at least 0.5 cm² should be provided to allow the internal fuselage pressure to equalize with the external atmospheric pressure. Many aircraft fuselages are not airtight and already provide sufficient ventilation.

Secure the module using double-sided adhesive tape.

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

Do not mount the module directly on top of propulsion batteries in electric aircraft. Heat from the battery may affect altitude measurements.

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

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

## *Operation*

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

When take-off is detected (motor servo pulse above 1,200 µs), the buffered data is saved to flash memory. During flight, the module records 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.

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

## *Status icons*

The module uses status icons to indicate its current operating state.

 Clock not synced to GPS

 Clock synced to GPS

 Poor GPS reception

 Valid 3D GPS reception

 Bluetooth connection established

 In-flight mode

 **Green check mark:** AMRT is armed and ready for operation.

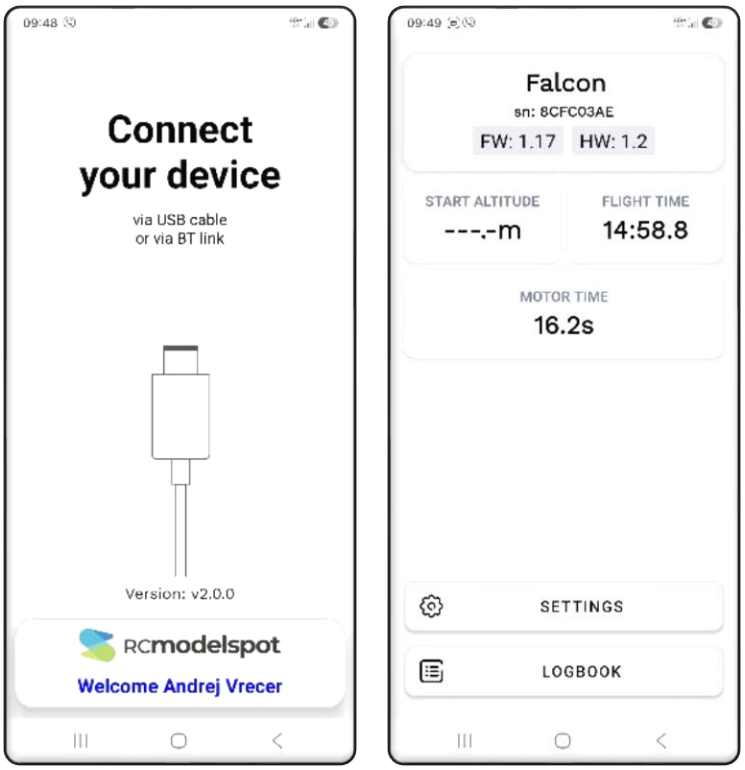
 **Orange exclamation mark (!):** At power-on, the detected servo input pulse was below 800 µs or above 1,200 µs. In this condition, AMRT will not permit the motor to start.

 **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 the module to the RC Electronics application

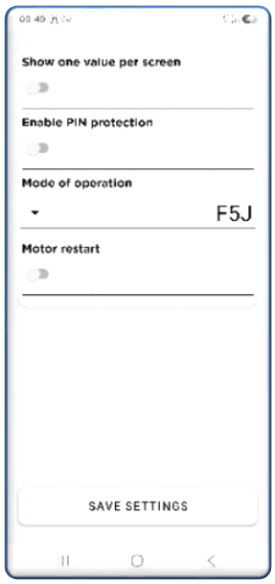
Connect the module to an Android or iOS device on which the RC Electronics app has been installed from Google Play or the Apple App Store. The unit connects automatically when it is powered on and the app is running. No additional Bluetooth pairing is required.

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



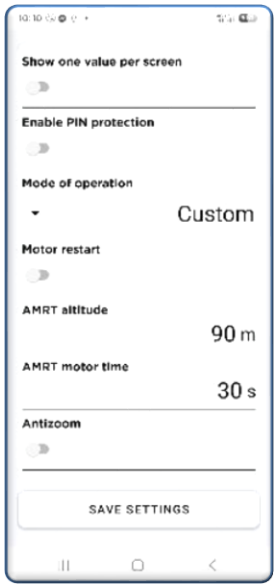

The application displays basic information about the connected device and allows you to configure settings, view recorded flights and upload flight data to the www.rcmodelspot.com platform.

## *Unit settings:*




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

**Enable PIN protection:**
When enabled, Falcon displays a PIN screen containing a four-digit code 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 helps prevent unauthorized users from changing device settings via the BLE connection.
If the user is signed in to an RCmodelspot account when PIN protection is enabled, the RCmodelspot 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:**
Select a predefined operating mode to configure the device automatically according to the rules of the selected competition category. Select Custom mode 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:**
Set the altitude at which AMRT will switch off the motor.

**AMRT motor time:**
Set the maximum permitted motor run time.

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

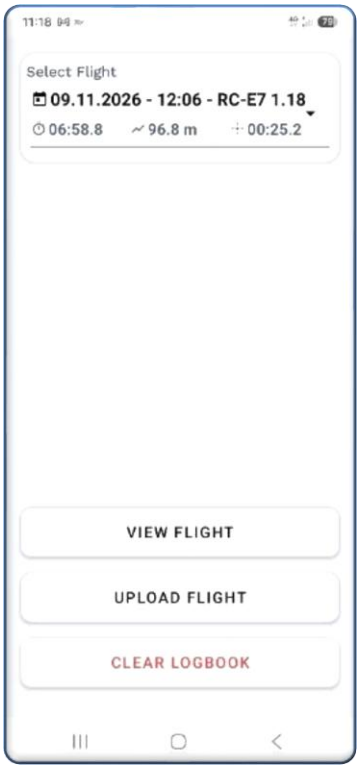
**Settings are applied only after the "SAVE SETTINGS" button is pressed. If the user returns to the previous screen without saving, the changes are discarded.**

## *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.**

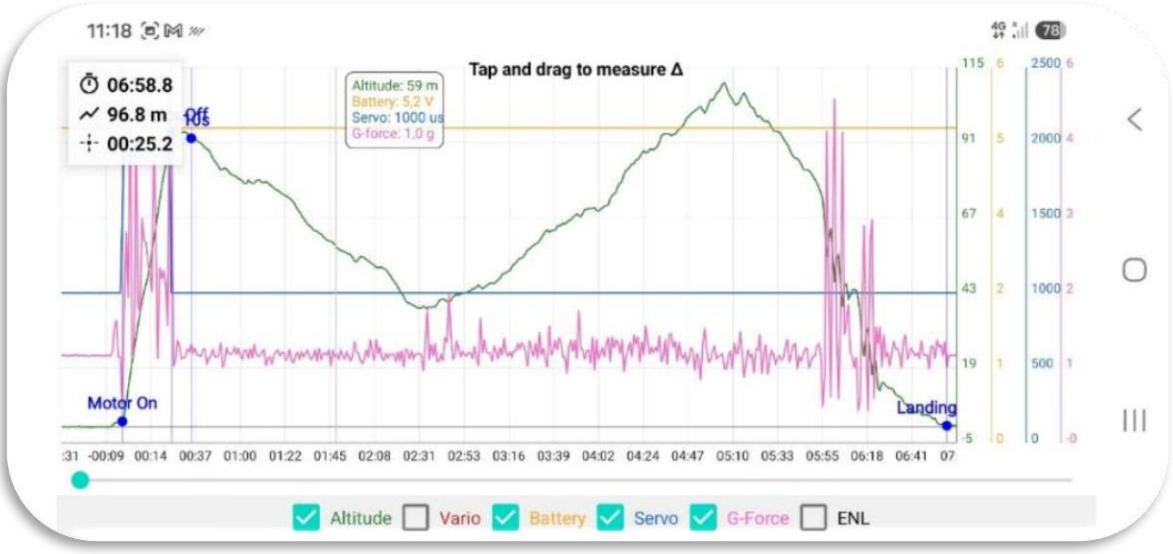
Pressing the “CLEAR LOGBOOK” button permanently deletes all log files from the device’s internal memory.







The “VIEW FLIGHT” button displays a basic graph together with flight-data information. This function does not require an RCmodelspot login or an active internet connection.
Use a finger gesture to zoom in on the graph, then use the scroll bar at the bottom of the screen to move through the recorded data.

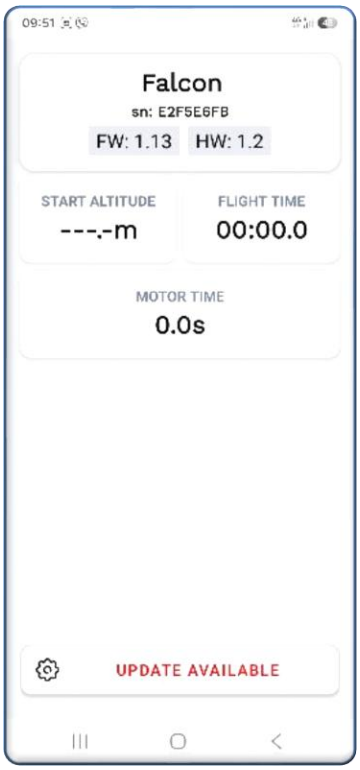


# Firmware update

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 available, the app displays the “UPDATE AVAILABLE” button after Falcon is connected.

Press the “UPDATE AVAILABLE” button to start the firmware update. Once the transfer is complete, Falcon may require up to 15 seconds to finalize the update. Do not disconnect power during this period. Wait until the app displays the Falcon device information again before using the unit.

**For safety, remove Falcon from the aircraft before performing a firmware update. During the update process, the throttle output signal is undefined, and the ESC could unexpectedly start the motor.**






# Revision history

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|---|---|
| November 2026 | New Logbook and Graph View screenshots<br>Safety recommendation for removing the unit from the aircraft during firmware updates<br>Installation recommendation added<br>Manual translated into additional languages |
| July 2026 | Manual updated to include all features available in firmware version 1.17 or later<br>New settings<br>New status icons<br>Flight View<br>Flight view |
| March 2026 | Removed “Android-only app” wording; the iOS app is now also available in the Apple App Store |
| January 2026 | Added F5L settings<br>Firmware updates moved to the RC Electronics app |
| September 2024 | Initial release of the user manual. |