

Eagle 2 PRO

Onboard air-data measuring system for R/C aircraft with telemetry.



Manual version: 1.0

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Contents

- Introduction 3
 - Key features of the Eagle** 3
 - Specifications**..... 3
- Physical overview 4
- Using the Eagle 2 PRO module..... 5
 - Powering the module**..... 5
 - Mounting the module** 5
- Connecting module to Android RC electronics app 6
 - Unit settings: 7
 - Unit logbook:..... 8
- Firmware update..... 9
- Revision history 10

Introduction

The “Eagle 2 PRO” is one component of RC Electronics model aircraft telemetry system. The unit is the “on-board” unit intended to be used with the “Snipe / Finch” “ground station”. The unit is designed to measure many parameters of an R/C model aircraft and transmit them to the ground station via the telemetry link working on 433 MHz frequency. The unit is capable of measuring sink/climb rate (Vario), altitude, acceleration of the plane in all axes, noise level, servo pulse on servo input, GPS data with 18Hz refresh rate and supply voltage. For storage it has internal fast solid-state storage which will record up to 20h of flying. Unit can be used as position logger for online events like Soaring League and Free Glide League which can be found on www.rcmodelsport.com platform.

RF link is limited to max 350m in altitude. When flying higher, RF link will not send anything to the ground!

Key features of the Eagle 2 PRO

- Integrated fast solid-state memory for up to 20h of logging
- Latest pressure sensor for ultra-fast detection of climb / sink
- Two pressure sensors for altitude and Vario measuring
- 3 axes accelerometer
- **EnI** - Environment noise level detection to detect working electric, impeller or jet motor.
- **FHSS** - Frequency Hopping Spread System on 433MHz telemetry channel to eliminate frequency conflicts.
- 18 Hz GPS working with GNSS, Glonass and prepared for Galileo global positioning satellites.
- Various telemetry protocol supported over one of servo input (JetiEx, PowerBox System, Hott ...)

Specifications

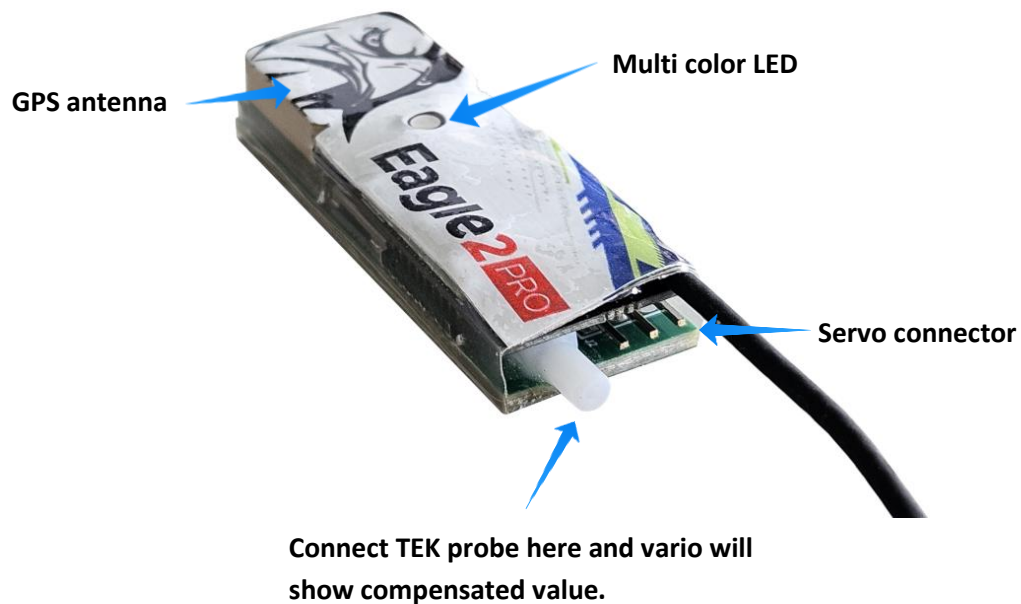
Unit Dimensions	52 mm x 17 mm x 9 mm
Weight	15 grams
Temperature Range ¹	-10°C ~ +60°C
Input Voltage Range	4.0 – 12.0 volts DC
Input Current	40 milliamps @ 5V DC
Measured Voltage	4.0 – 12.0 volts DC
Memory capacity	Up to 20h of flying

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

Pictures bellow is showing the Eagle 2 PRO unit. It has built in GPS antenna, one pressure port (Pte – total energy compensated pressure from TEK probe) and a multi-color LED to show the status of the unit. JR 3-pin servo input is used to measure normal PWM servo pulse or to transmit data via 3rd party telemetry (depends on unit setting). The unit gets power from JR connector and has built in BLE transmitter with antenna for communication with mobile application.

Important: Be careful on polarity when connecting power to the unit. Improper connection can damage unit! Correct polarization is marked on the bottom of the unit by the servo connector!



Using the Eagle 2 PRO module

Powering the module

To power the module, plug the 3-pin female connector cable into servo connector and the other end to the R/C aircraft receiver. **Be sure to observe proper polarity when plugging the connector into the module and receiver.** You can also power it directly from a battery. Please respect max voltage input of 12V and correct polarity.

During operation LED will flash different status is:

Red flashing – module is waiting for GPS signal

green flashing – module is ready for flight, GPS reception is good

blue flashing – onboard logger is running – in flight mode

Mounting the module

The module can be mounted using double-sided tape, cable ties or Velcro. Velcro is recommended, so that the module can be easily removed.

Mount it under no carbon surface as it has built in GPS antenna. If there is any carbon or metal part above it, GPS reception will be compromised.

Be sure that the module is not touching any metal surfaces. Although unlikely, there is a possibility of shorting the metal contacts on the module, which could result in a radio system failure.

Do not mount the module on top of power batteries when using electric motors, because they get hot and this can affect the altitude readings by up to 30m.

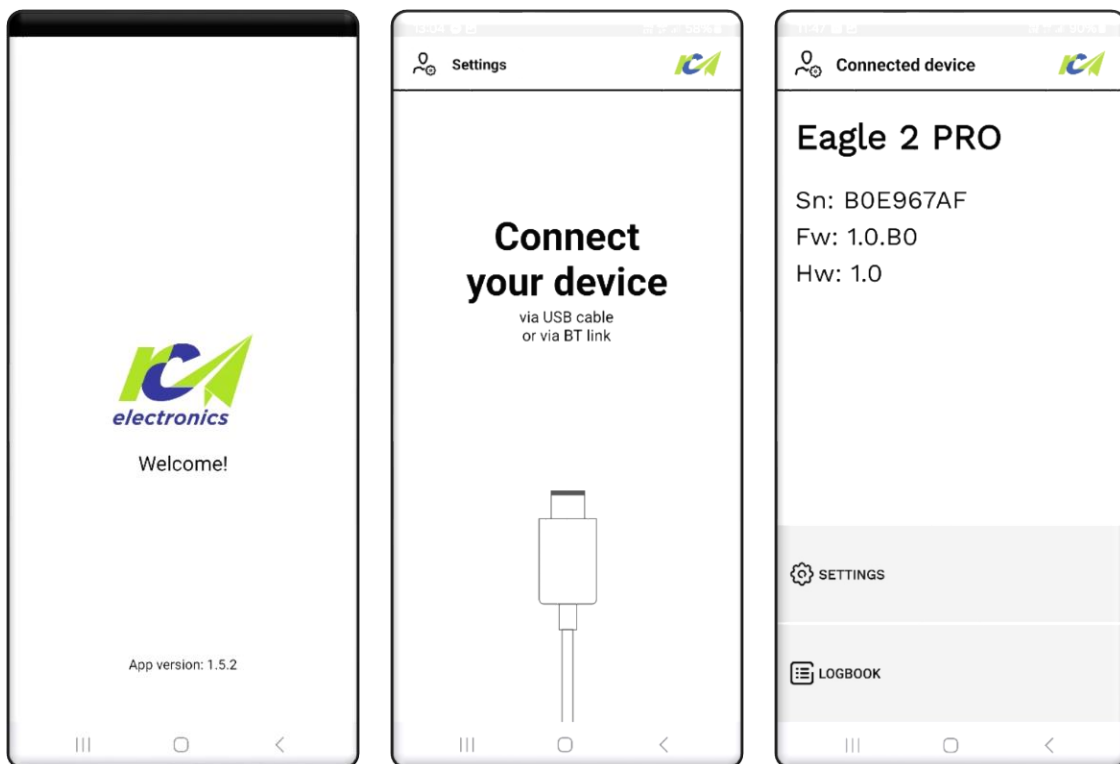
Be sure to keep the module away from water, fuel and other liquids. Always range check and test the aircraft's radio systems before flying with the Eagle 2 PRO module installed, to verify that all connections have been made correctly and there is no system interference.

Connecting module to Android RC electronics app

Please note! At the moment there is no iOS application jet. We are working on it and will publish its release on our Facebook page and website once ready.

Connect the module to any Android / iOS mobile device where RC electronics app was installed from Google Play / Apple store. Unit connects automatically when powered on and app is running! There is no BT pairing needed!

Run RC electronics App and power on Eagle 2 PRO unit. How to set up Application, please refer to the application manual!



You will be able to see basic info, set the settings and download the IGC flight from device when connected.

Unit settings:

Vario filter:

Vario response time in seconds.

Servo channel:

Servo channel for servo control. If disabled then normal PWM servo input on device is used, else **servo channel** from 3rd party telemetry data will be used for servo pulse measurements.

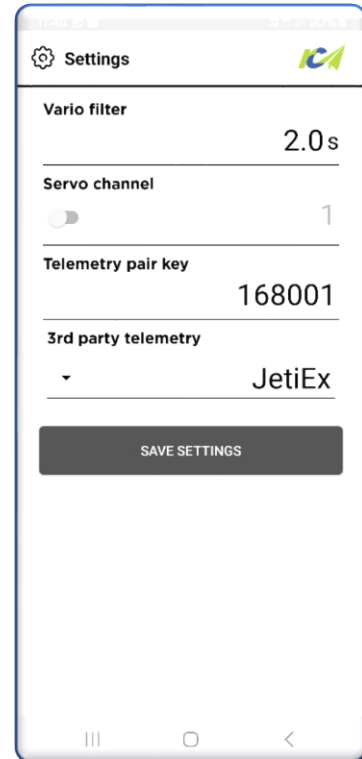
Telemetry pair key:

Enter your ground unit serial nr to pair it for valid RF link.

3rd party telemetry:

Select which 3rd party telemetry protocol will be used on Servo connector.

Settings are set only after “SAVE SETTINGS” button is pressed. If user uses back function, new settings are ignored!

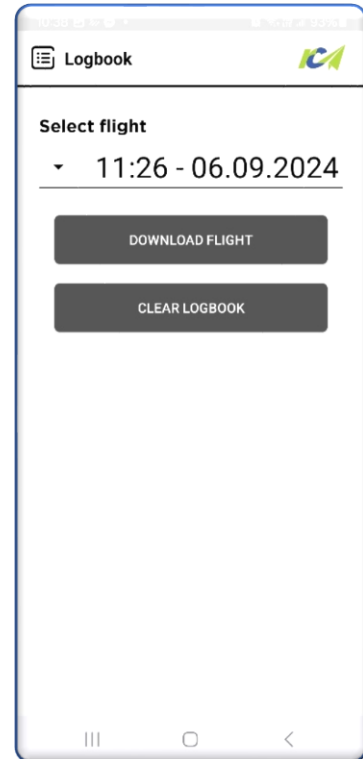


Unit logbook:

Select flight from dropdown list and press “DOWNLAOD FLIGHT” button. After flight is downloaded, user will be asked if he wishes it to upload it to his www.rcmodelsport.com account.

Before upload user must set his www.rcmodelsport.com login data into RC electronics application settings

Pressing “CLEAR LOGBOOK” button, will clear the log files from internal memory



Firmware update

For updating the unit, we are using special app which can be installed from Google Play or Apple store

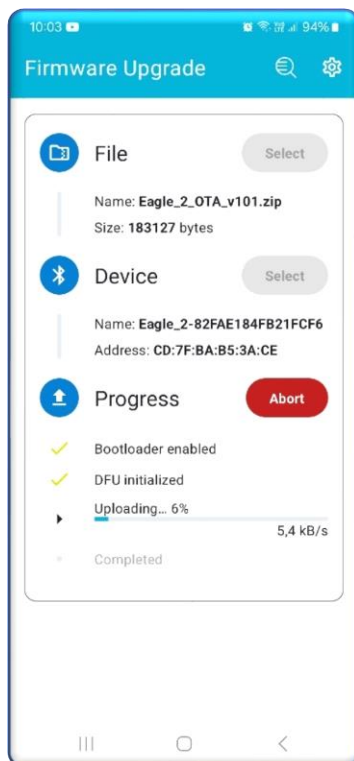
App name is DFU (Nordic Semiconductor)

Please install the app, then download new update file from our website. It will be zip file which you store to downloads folder of your mobile device.

Then run the DFU app, select zip file, turn on Eagle 2 PRO and select it under devices and press update.

After update unit will reset itself and new version will be in use. In case user tries to upload wrong zip file to the Eagle 2 PRO, the unit will reject it!

Eagle 2 and Eagle 2 PRO have the same firmware file!



Revision history

19.09.2024	v1.0	- initial version
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