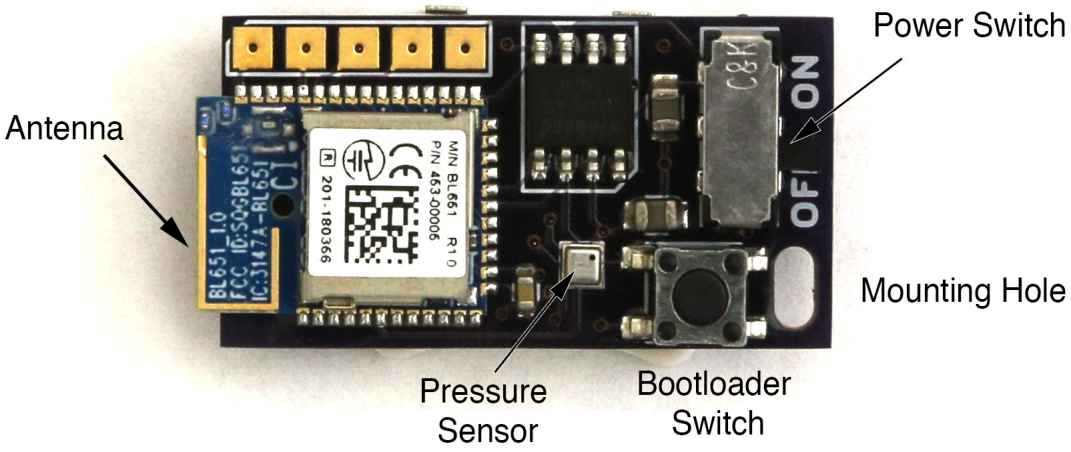
FlightSketch Mini

User's Guide

05/14/2019



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Welcome

Welcome to FlightSketch! Thank you for your purchase. The FlightSketch Mini is the result of not being able to find an altimeter that met our needs. We wanted smaller, lighter, cheaper, & easier to use. We wanted something that we could (and would) put in every flight. But, there is always the chance that the way we fly is different than the way you fly. If there are new features you'd like to see or other improvement ideas, please let us know! You can reach us at dev@flightsketch.com. One more thing, we love to see flights! Share your flights with us and others by uploading your logs & attaching photos & notes.

Mounting

The FlightSketch Mini uses a barometric pressure sensor to determine altitude. This requires installation in an area that is vented to the outside static pressure. For most low & mid power models, 3 vent holes 1/16" to 3/32" on a straight (not tapered) section of airframe work well. For durability, it is recommended to mount the altimeter in an avionics or payload bay that is isolated from any ejection gasses. The combustion products are corrosive and may shorten the life of the sensor. In an av-bay, the altimeter can be mounted to a sled or to the side of the airframe with double sided tape attached to the battery side of the unit. In a small payload bay, the altimeter can simply be wrapped with any soft material for padding and left floating. It is recommended to tether the altimeter through the mounting hole in case of an unplanned separation. If it is desired to fly the altimeter in a model without a second bay, the altimeter can be tethered to the shock cord just below the nose cone. Packing the wadding and recovery system between the ejection charge and altimeter will help limit exposure. The included nylon sleeve will shield the sensor from direct airflow during the decent and offer some protection against dirt & moisture when being ejected from the model. The sleeve is ***not*** flame resistant and appropriate wadding must be used.

Account Setup & App Login

FlightSketch accounts are optional for use with the FlightSketch Mini. Without an account, you can still use the altimeter and view the maximum altitude of a flight and store the flight profiles locally. With an account you can also upload the data to the FlightSketch flight log service and also store weather, photos and notes from your flights. A free account can be created at https://flightsketch.com/store/accounts/.

To log in from the FlightSketch app, select the “Setup” menu in the top right of the home screen and select the “Accounts” Tab. Enter your username and password to log in. A successful login will show the message “Logged in as ...” below the password field. This process will retrieve an authentication token and store it in your keychain for future use. Your actual password is ***not*** stored on the device. You should verify the “Logged in as ...” message also appears on the home screen whenever you start the app.

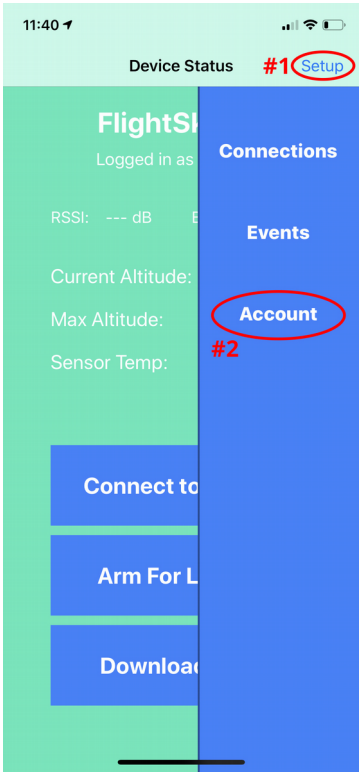


Figure 1: Accessing Login

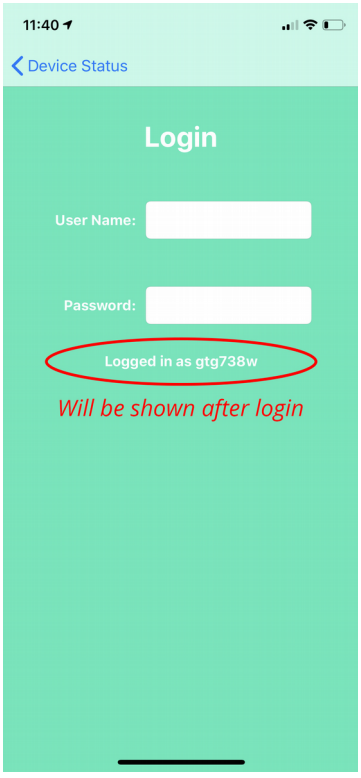
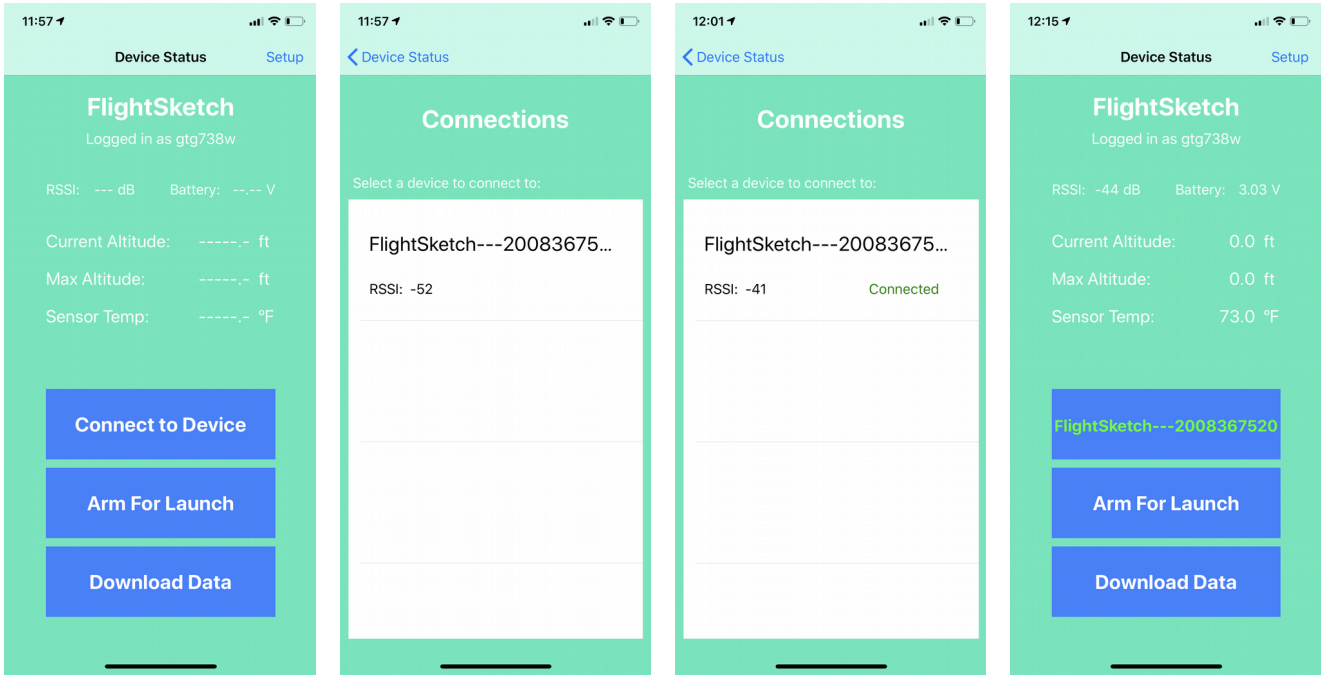


Figure 2: Verifying Login

Connecting To The Altimeter

To connect to the altimeter, ensure the altimeter is turned on and select the “Connect to Device” button to open the Connections window. Your altimeter should appear in the device list with a unique identifier. Tap the name to connect. A green “Connected” label will appear after the altimeter is connected. The last connected altimeter will be remembered by the app and will automatically connect if able. After the altimeter is connected, the “Connect to Device” button on the home screen will change to show the device name in green to verify it is connected. The Altitude field will show 0ft until the altimeter is armed for launch. To extend battery life, the barometer is tuned off until the altimeter is armed or is in flight. The altimeter RSSI (**R**eceived **S**ignal **S**trength **I**ndicator) and battery voltage will continue to be updated even in this standby mode.

**Note – If your altimeter is not shown in the list, you may need to disable Bluetooth on your iOS device and then re-enable to clear the connection status.



Arming For Launch

It is recommended to arm the altimeter for launch when the model is fully assembled and ready on the pad. The altimeter uses a launch trigger of 10ft altitude **and** 30ft/s vertical speed. It is possible for pressure changes during model assembly or wind gusts to activate the launch trigger. If this happens, simply re-arm the altimeter again. Arming the altimeter will reset and lock the reference altitude (zero point). Arming will also erase the on board memory and delete the previous flight data. When successfully armed, the “Arm For Launch” button on the main screen will change to a green “Ready To Launch” label. The barometer will also be activated and you will see live data shown in the altitude fields. At this point, the model can be launched and the altimeter will automatically start recording data.

**Note – The flight log data actually starts about 1 second *before* launch is detected with the help of a pre-launch buffer. You should wait a minimum of 2 seconds between arming and launch to ensure a complete data set is recorded.

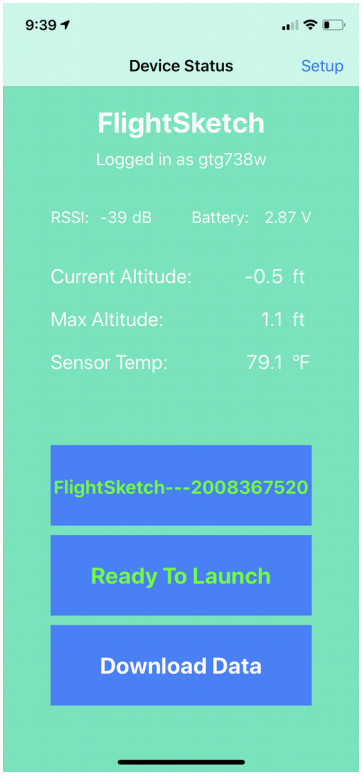
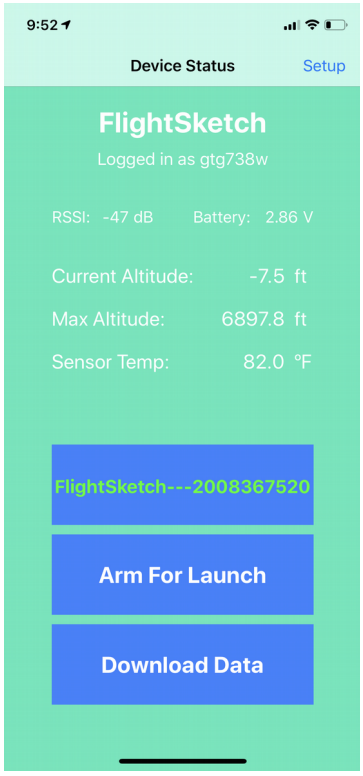


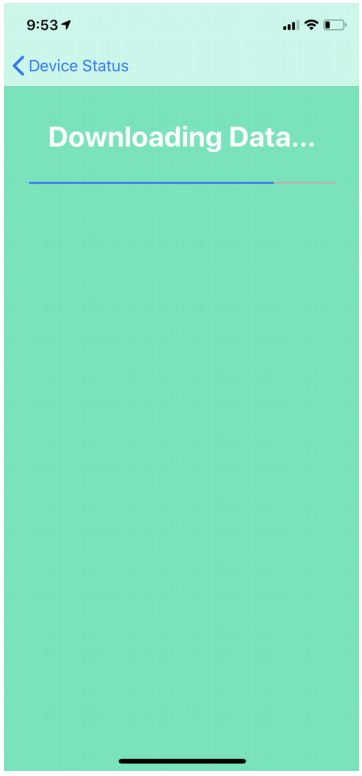
Figure 3: Armed Status

Downloading Data

After launch, the app will need to re-connect if the model has flown father than the RF range (~100-300ft). This will happen automatically as long as the Bluetooth radio has not connected to another device since arming. If it does not re-connect automatically, follow the above connection steps to re-link. After the connection is restored, the max altitude (apogee) will be shown on the screen. The barometer is also shut down on landing so the current altitude will no longer steam data.

Tap the “Download Data” button to start the data download. The data storage is persistent for the last flight recorded. If the altimeter is powered off, the last flight may be recovered by connecting as above and tapping the download button.





Saving & Uploading Data

Once the download process is complete, you will be given the option to save the file locally to your iOS device, or upload the data to the FlightSketch flight log service. If saved locally, a csv text file can be found in the Files app under “On my iPhone” in a folder named FlightSketch. The default file name is generated from the current time and date and can be edited or replaced in the field shown.

If you wish to upload the data to the web, there are fields to enter a title for the data plot and a description of the flight. Selecting “Use Current Weather” will also check the current weather conditions at your location (must allow location use when the app is started for the first time) and store this with your flight log. Basic flight parameters such as max vertical velocity and burn time will also be calculated and stored online. The raw data file may be retrieved at anytime from the detail flight page online.

** Note – You must be logged in to upload logs. Please check you are logged in on the main screen before starting the download process.

Support

Features:

- Nordic Semiconductor nrf52810 with 32bit ARM processor and integrated Bluetooth Low Energy communication
- Bosch BMP388 24bit digital pressure sensor
- Kalman state filter for accurate altitude and velocity data
- 50Hz data logging of altitude and vertical velocity
- 4Mbit onboard flash memory (~10minutes @50Hz)
- Onboard, replaceable, 12mm coin cell battery
- ~200hr battery life with CR1225 battery (included)
- Mounting hole to attach 100lb kevlar shock cord or similar
- Free & optional cloud data storage and sharing with flightsketch.com

Dimensions:

- Fits inside 18mm (BT-20) body tube
- 0.64" (16.3mm) wide
- 1.20" (30.5mm) long
- 0.38" (9.7mm) tall
- 3.1g (0.109oz) without battery
- 4.2g (0.148oz) ready to fly with CR1225 battery (included)

For additional support or comments, please contact sales@flightsketch.com

Contains FCC ID: SQGBL651 IC: 3147A-BL651

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation