

AME 40462: Senior Aerospace Design DAQs

Do not use glue or epoxy to mount any hardware with the exception of the pitot-static probe if absolutely necessary. Use Velcro on the bottom surface of the black recorder only.

The sticker gives all of the necessary information for correct wiring (the red dots refer to the red wire). “Expander” refers to the GPS sensor and the Dual Channel A/D boards goes in the “Thermo” slot. Wireless transmitter goes above GPS. You can plug the wire from the battery into any servo slot. The USB port is only used for downloading data following flight.

The G-Force sensor should be mounted on a fuselage side wall (inside plane), while the GPS needs to be oriented according to the given information with no more than monokote between it and a view of the sky.

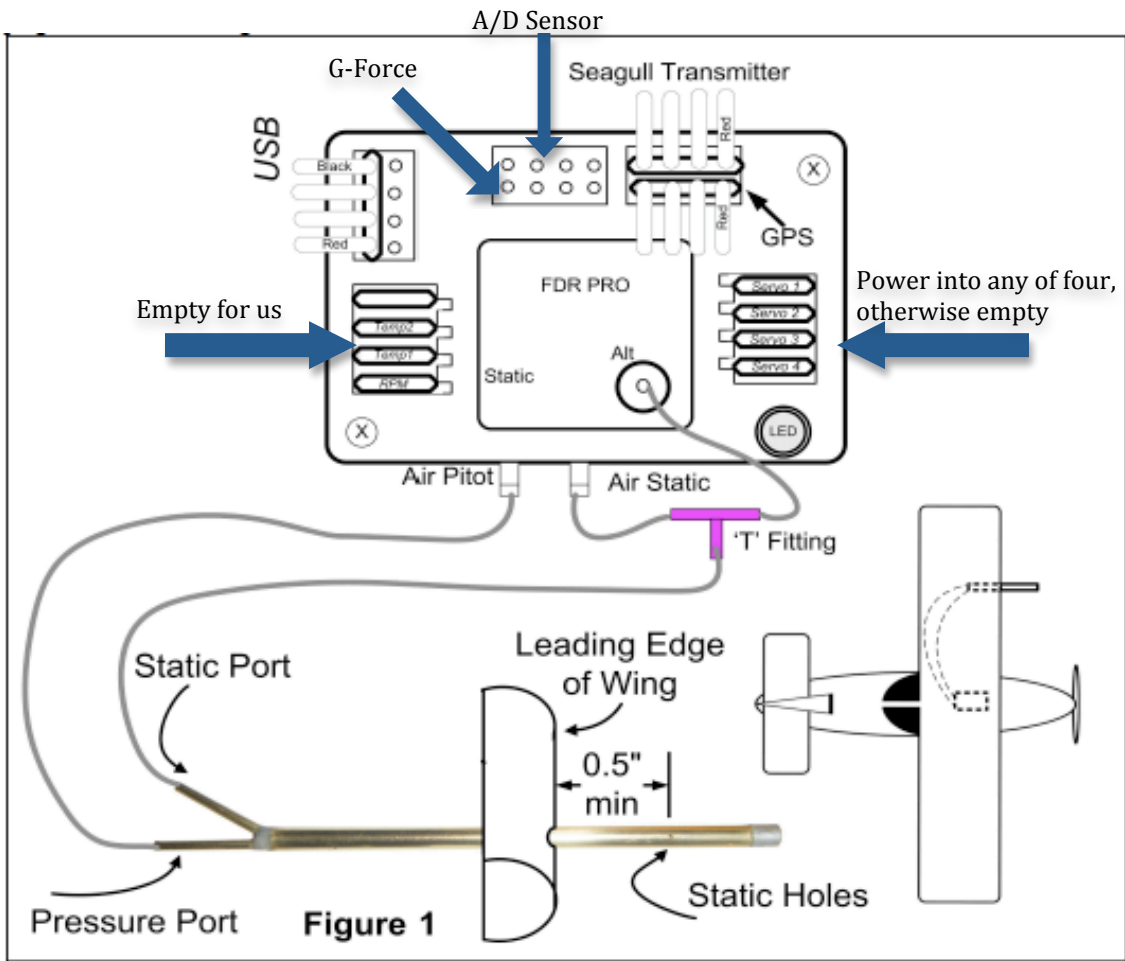
Once powered on, the recorder will flash 2 times continually until it finds a GPS signal (should take a couple of seconds). Then it proceeds to flash once continuously meaning it is recording data. Pressing the red button will pause it (pressing again un-pauses). It can take more than ten minutes of flight time sampling at 10 Hz (will not overwrite, will simply stop recording once full).

Bring a flash drive to the field. After a flight, you will bring your recorder to the TA who will generate the necessary files and give them to you immediately.

The .kml file is the Google Earth file. Just open Google Earth and then go File⇒Open. The .fdr file is the numerical data file. Open using Excel, File⇒Open⇒All Files⇒Delimited⇒Space

We will be recording: time from startup (ms), altitude (feet) and speed (mph) from pitot-static probe, voltage from Channels A and B of the dual channel A/D sensor, and the following from the GPS: coordinates, altitude (feet), speed (mph), course / heading (degrees), distance from start (feet), time (UTC)

A full construction diagram can be found on the next page.



AME 40462: Senior Aerospace Design Wiring

1. BEC (white or blue component with Speed Controller) ⇒ Y Cable
2. Y Cable ⇒ Flight Receiver (Horizontal Line of Plugs below the channels) / DAQ (any of four set of plugs on right side listed as servos). Note, one plug fits the Flight Receiver only while the other fits both. Into the receiver, the colors go white (signal on sticker), red (+), black (-) from left to right. Make sure you match colors going into each Y Cable (white to white, red to red, black to black).
3. Looking at the DAQ so that the sticker reads correctly, the GPS sensor goes into the lower set of four plugs of the upper right two channels. The acceleration sensor goes into lower set of four plugs of the upper middle two channels. Look for Expansion (GPS) and G-Force (acceleration). The items in the upper half sets of pins are the A/D sensor and wireless transmitter. The red circles on the sticker give you which side the red wire connects into (furthest right plug).
4. Each servo plugs into appropriate channel on flight receiver: **Aileron** (use Y Cable to split signal to each), **Elevator**, and **Rudder**.
5. Speed controller servo plug connects to **Throttle** on the flight receiver.
6. Match up colors for the speed controller and engine.
7. **Final connection always flight battery to speed controller. Only do so when everyone is clear and under supervision.**

Servo Wire Definitions (Futaba on top, Hitec on bottom)

