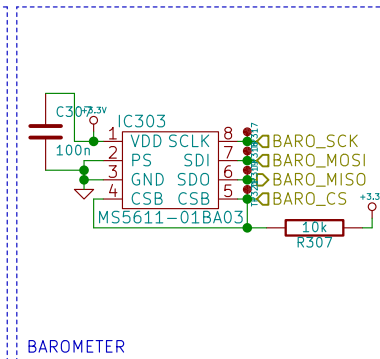
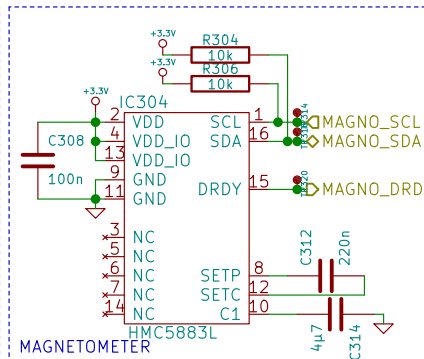
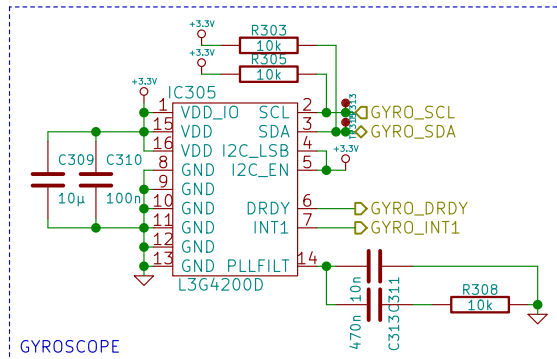
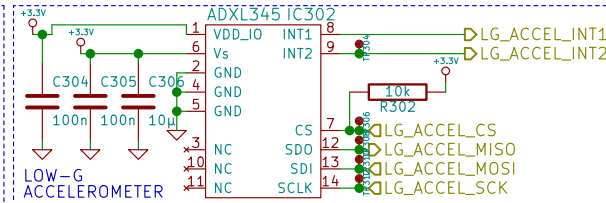
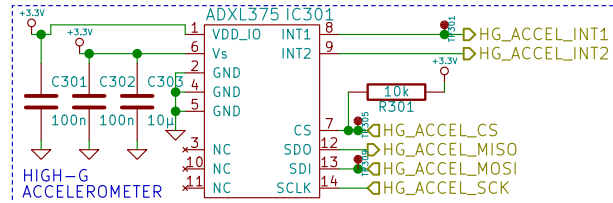


INERTIAL MEASUREMENT UNIT



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Cambridge University Spaceflight

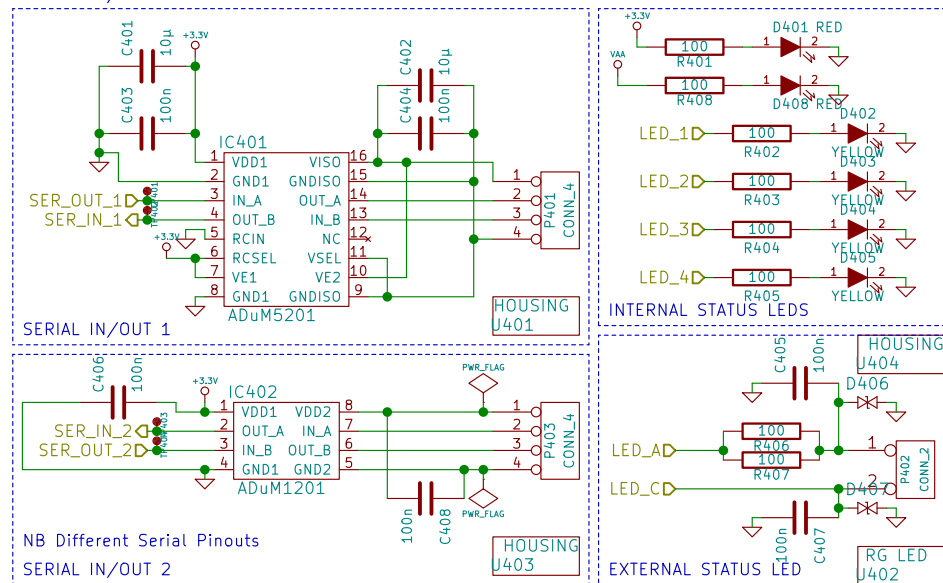
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Title: Martlet 2 Flight Computer

Size: A4 Date: 18 Jul 2014
KiCad E.D.A. kicad (2014-jan-25)-product

Rev: 1
Id: 3/6

INPUT/OUTPUT



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Sheet: /10/
File: io.sch

Title: Martlet 2 Flight Computer

Size: A4 Date: 18 Jul 2014
KiCad E.D.A. kicad (2014-jan-25)-product

Rev: 1
Id: 4/6

The diagram shows a pyrotechnic circuit with the following components and connections:

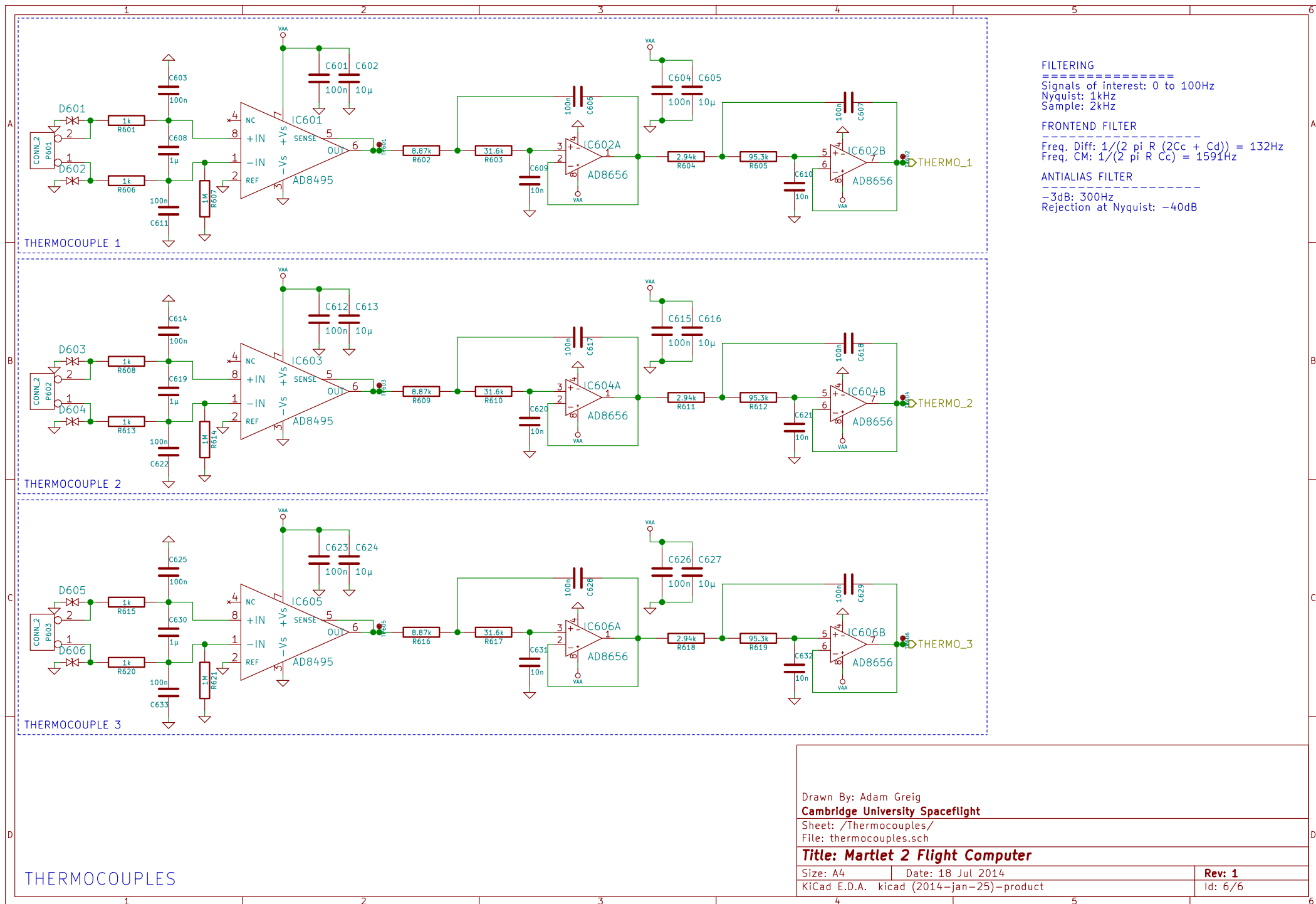
- Power Supply:** +BATT is connected to the positive terminal of the pyrotechnic device (P501) and to the base of transistor Q501.
- Input PYRO_1_FD:** Connected to a 100k resistor (R502), which is in series with a 100k resistor (R504) leading to the base of transistor Q502.
- Input PYRO_1_C:** Connected to a 100k resistor (R506), which is in series with a 100k resistor (R507) leading to the base of transistor Q501.
- Transistors:** Q501 and Q502 are NPN transistors. Q501's emitter is grounded, and its collector is connected to the positive terminal of the pyrotechnic device. Q502's emitter is grounded, and its collector is connected to the negative terminal of the pyrotechnic device.
- Diodes:** D501 is a Schottky diode with its anode connected to the positive terminal of the pyrotechnic device and its cathode to ground. D504 is a diode with its anode connected to the negative terminal of the pyrotechnic device and its cathode to ground.
- Resistors:** R501 (10k) is connected between +BATT and the base of Q501. R503 (100k) is connected between +BATT and the base of Q502. R505 (5k) is connected between +BATT and the positive terminal of the pyrotechnic device. R506 (100k) and R507 (100k) are connected in series between PYRO_1_C and the base of Q501.
- Capacitor:** C501 (100nF) is connected between the negative terminal of the pyrotechnic device and ground.
- Output:** The pyrotechnic device is connected to a connector P501, which is labeled CONN.2.

[illegible][illegible]

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Title: Martlet 2 Flight Computer

Rev: 1
Id: 5/6



FILTERING

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Signals of interest: 0 to 100Hz
 Nyquist: 1kHz
 Sample: 2kHz

FRONTEND FILTER

Freq, Diff: $1/(2 \pi R (2C_c + C_d)) = 132\text{Hz}$
 Freq, CM: $1/(2 \pi R C_c) = 1591\text{Hz}$

ANTIALIAS FILTER

-3dB: 300Hz
 Rejection at Nyquist: -40dB