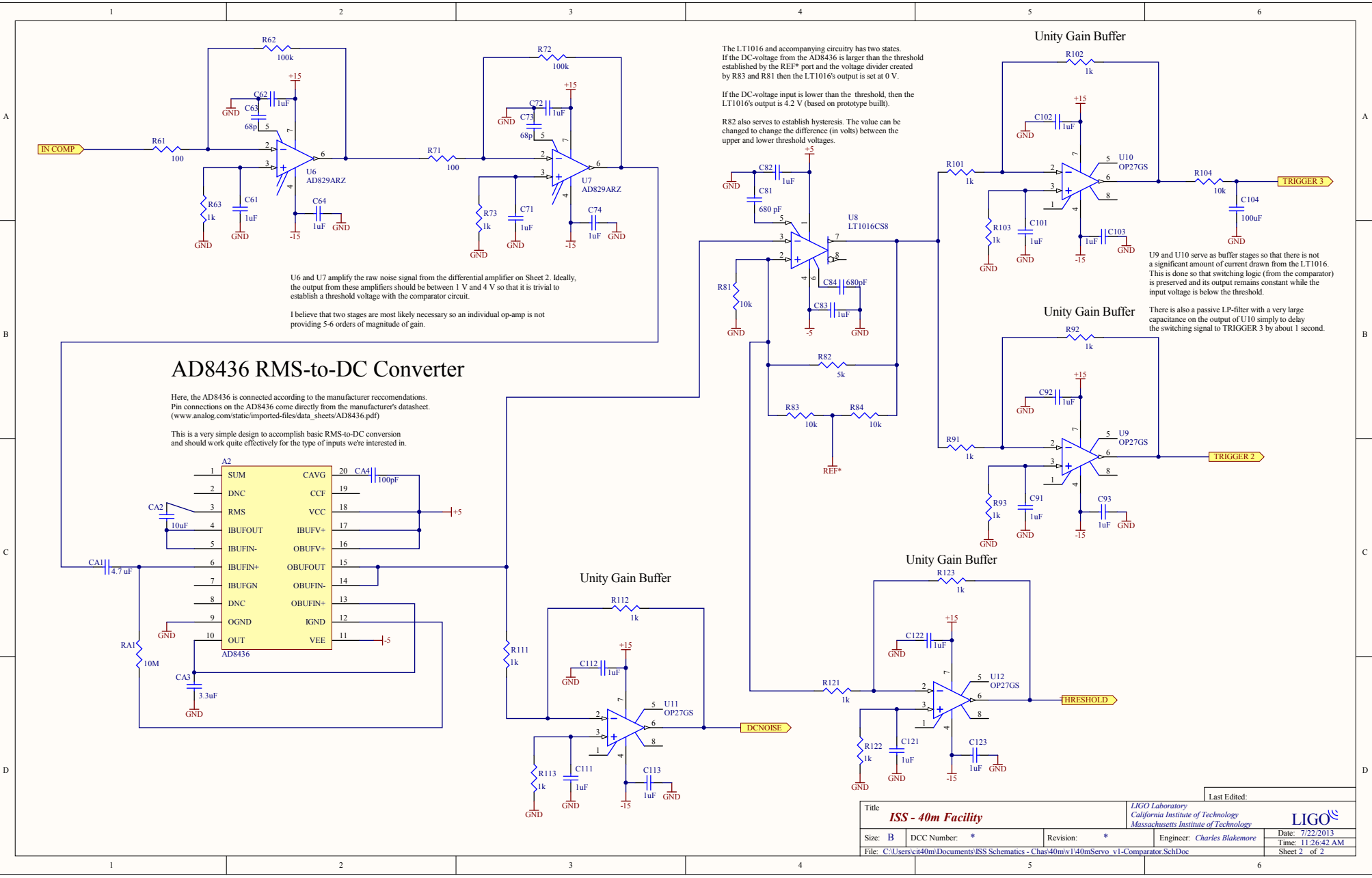


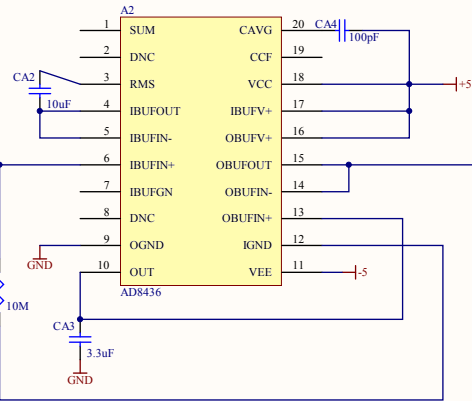
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ISS - 40m Facility		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology	
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AD8436 RMS-to-DC Converter

Here, the AD8436 is connected according to the manufacturer recommendations. Pin connections on the AD8436 come directly from the manufacturer's datasheet (www.analog.com/static/imported-files/data_sheets/AD8436.pdf)

This is a very simple design to accomplish basic RMS-to-DC conversion and should work quite effectively for the type of inputs we're interested in.



U6 and U7 amplify the raw noise signal from the differential amplifier on Sheet 2. Ideally, the output from these amplifiers should be between 1 V and 4 V so that it is trivial to establish a threshold voltage with the comparator circuit.

I believe that two stages are most likely necessary so an individual op-amp is not providing 5-6 orders of magnitude of gain.

The LT1016 and accompanying circuitry has two states. If the DC-voltage from the AD8436 is larger than the threshold established by the REF+ port and the voltage divider created by R83 and R81 then the LT1016's output is set at 0 V.

If the DC-voltage input is lower than the threshold, then the LT1016's output is 4.2 V (based on prototype built). R82 also serves to establish hysteresis. The value can be changed to change the difference (in volts) between the upper and lower threshold voltages.

Unity Gain Buffer

U9 and U10 serve as buffer stages so that there is not a significant amount of current drawn from the LT1016. This is done so that switching logic (from the comparator) is preserved and its output remains constant while the input voltage is below the threshold.

There is also a passive LP-filter with a very large capacitance on the output of U10 simply to delay the switching signal to TRIGGER 3 by about 1 second.

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