Strain Gauge Measurement Board

This board was designed to take readings from up-to 10 resistive bridge sensors at a time with high speed, high accuracy, and low noise. The ADC that handles the measurement is the MAX11410 from Maxim Integrated. This is a 24-bit 5 channel differential sigma-delta ADC with sample rates of up to 1.9ksps. With this board requiring a minimum sample rate of 50sps, this ADC performs well enough with its multiplexed analog input.

1.9ksps / (2ADCs * 5channels) = 190sps max

Accounting for worst case scenario time transient of the ADC's internals per read cycle across both ADCs:

240us * 2 + 2us * 2 + 2us * 10 ~= 0.5ms spent waiting for signals to settle resulting in a theoretical MAX sample rate of 170sps for the ADC's in the configuration of this board.

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Title
STRAIN GAUGE BOARD - OVERVIEW

Size	Document Number	Created by:	Rev
A	01-001	J. NGUYEN	1

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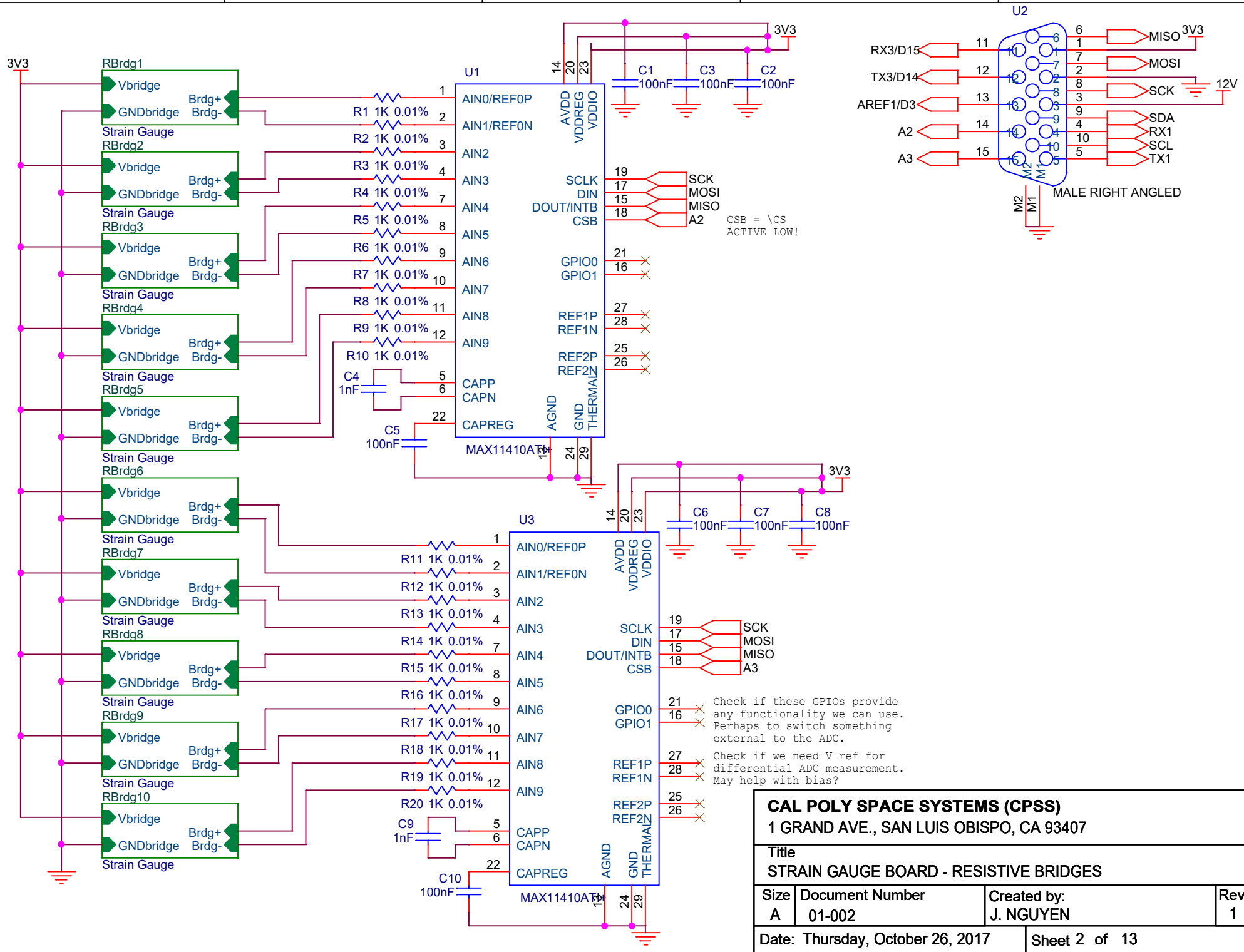

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Title
STRAIN GAUGE BOARD - RESISTIVE BRIDGES

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Title
STRAIN GAUGE BOARD - MECHANICAL

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A	01-003	J. NGUYEN	1

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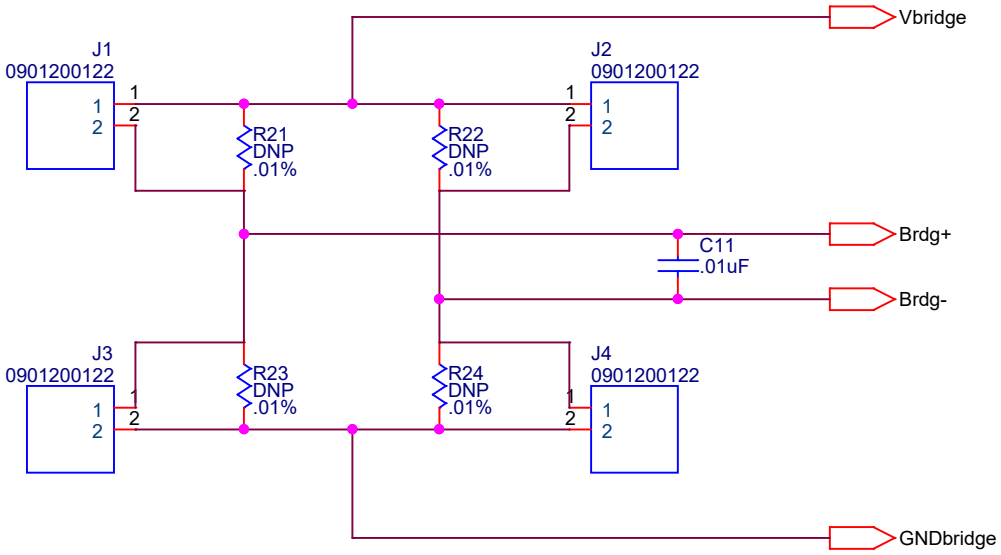

If wiring in multiple strain gauges for a rosette, they can be attached to any of the headers. To keep a balanced bridge, if not all the headers are populated with strain gauges or otherwise, populate the DNP with a resistor of the same value as the other resistive sensor(s).

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Title STRAIN GAUGE BOARD - WHEATSTONE BRIDGE			
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