Hello Mark,

The linear output swing range depends on the common-mode voltage, reference voltage, and gain of the device. This is due to the common-mode and output swing limitations of the internal amplifiers. There is an article series on EDN that explains these relationships. Unfortunately I can't seem to put the links in this forum post, so you'll have to search the web for "Vcm vs. Vout" and "EDN". It is a 3 part series.

Even though the reference articles discuss traditional 3-op amp instrumentation amplifiers, a similar analysis can be conducted for 2-op amp IAs.

Unfortunately I do not understand the 4th sentence that begins with "You mentioned using..."

I assume you're grounding pins 2, 4, and 5. This will not yield a linear system because you're violating the linear operating region of A2, or 'bottom' amplifier. While you may get an output, it will not be linear.

In addition to the aforementioned articles, this may make more sense if you watch the TI Precision Labs (TIPL) video series on "Input and Output Limitations". These videos only discuss single op amps, but the same limitations apply to op amps inside of instrumentation amplifiers. You can get to these videos by typing "TI Precision Labs" in the ti.com search engine and clicking on the link called "Meet TI Prcision Labs: Online classroom for analog design" under "Recommended Results".

My understanding is that you want to use VIN- to subtract the sensor's initial dc offset. Please see attached TINA-TI simulation. It's not what I recommend, but I believe it is the circuit you desire.