**Labjack U6**

**Absolute accuracy of analog inputs**

2000uV on 10V (gain = 1) – or 0.02%

Emma’s take: *‘I believe that the analog inputs of the Labjack are indeed accurate as the claim. The analog \*outputs\* are very much not. They reference the USB voltage, which varies computer to computer and over time. But for an input I think they are alright.’*

**On source impedance**

The key specification here is the maximum source impedance. As long as the source impedance is not over this value, there will be no substantial errors due to impedance problems. For source impedance greater than this value, there are two error sources that need to be considered. First, there is a simple offset error due to the input bias current flowing through the source impedance. Second, if sampling more than 1 channel, there can be a more complex settling error if the analog input system needs to quickly swing from one voltage to another. Required settling time to meet specifications can depend on the source impedance of the signal, channel order, resolution index, and gain/range.

*\*\*\*Source impedance shouldn’t exceed 1kOhm. Luckily the Keithley 6485 Picoammeter has analog output impedance of 1kOhm. Abiding by the 1kOhm threshold also ensures that the auto settling factor functionality performs correctly.*

**On settling time**

Auto settling time setting with gain of 1 is giving us a 10us delay at each measurement (see table in https://labjack.com/support/app-notes/SettlingTime).

**Keithley 6485**

**On analog output**

The Model 6485/6487 has an analog output on the rear panel. The ANALOG OUT provides a scaled, inverting ±2V output. A full-scale reading corresponds to ±2V output (manual)

ANALOG OUTPUT: Scaled voltage output (inverting 2V full scale on all ranges) 3% ±2mV, 1kW impedance (datasheet)

Analog rise time of 8ms on current readings up to 20Na (datasheet)

CAUTION: Connecting COMMON or ANALOG OUT to earth while floating the input may damage the instrument (manual)

The Model 6485 output impedance is 1kOhm