Conduino V03 Characterization

1. Using a reference 180 ohm resistor

Using an 0603 resistor soldered to the end of a 9" USB cable. The resistor is a Panasonic ERA-3AEB181V, 0.1% 180 Ohm, with a 25 ppm temp-co.

Pretty stable, has 0.08% noise in the reading. Something happened at about 5 ½ hours, maybe the watch-dog timer was triggered. There is a 0.35% transient in the reading there. Notice that the temperature also had a transient at the same time, so something odd happened.
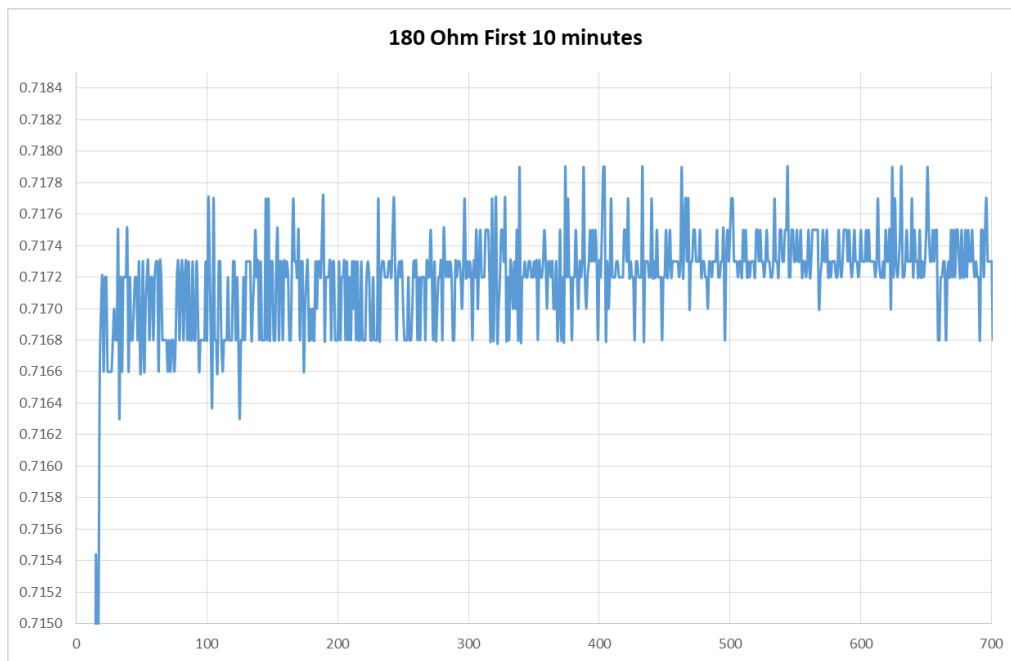
At 10 minute startup, the reading is 0.04% below where it ends up hours later.

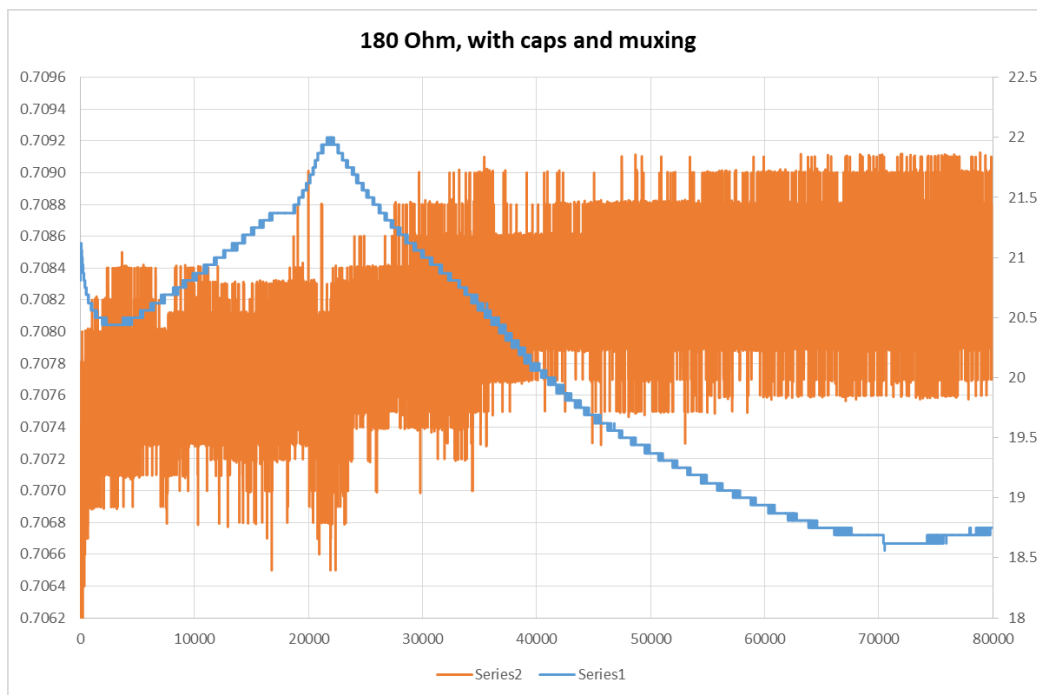Temperature has no measurable effect since the resistor temp-co is so small.

Compared to the USB probe, this looks pretty stable.

180 Ohm Resistor Range 3
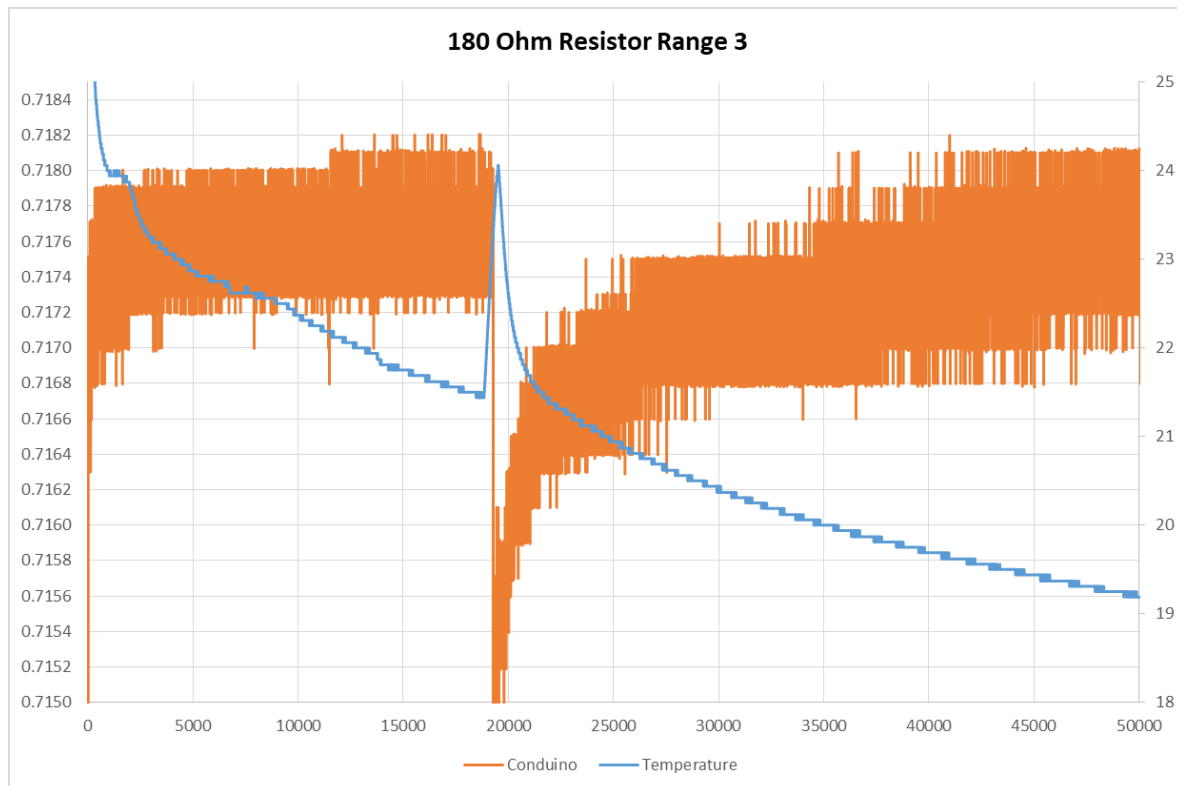
The first 10 minutes:

Here, a different board with the same 180 ohm test probe, but with the AC caps and muxing shows a little more noise, but similar.

2. Tests using a USB probe in ~35ppt saline solution with a recirculation pump. The AC caps are C1 and C4 that are in series with the D+ and D- electrodes of the USB probe. The mux is a 2-channel SPDT analog switch. It is used to swap the USB probe electrodes each time a measurement is taken.

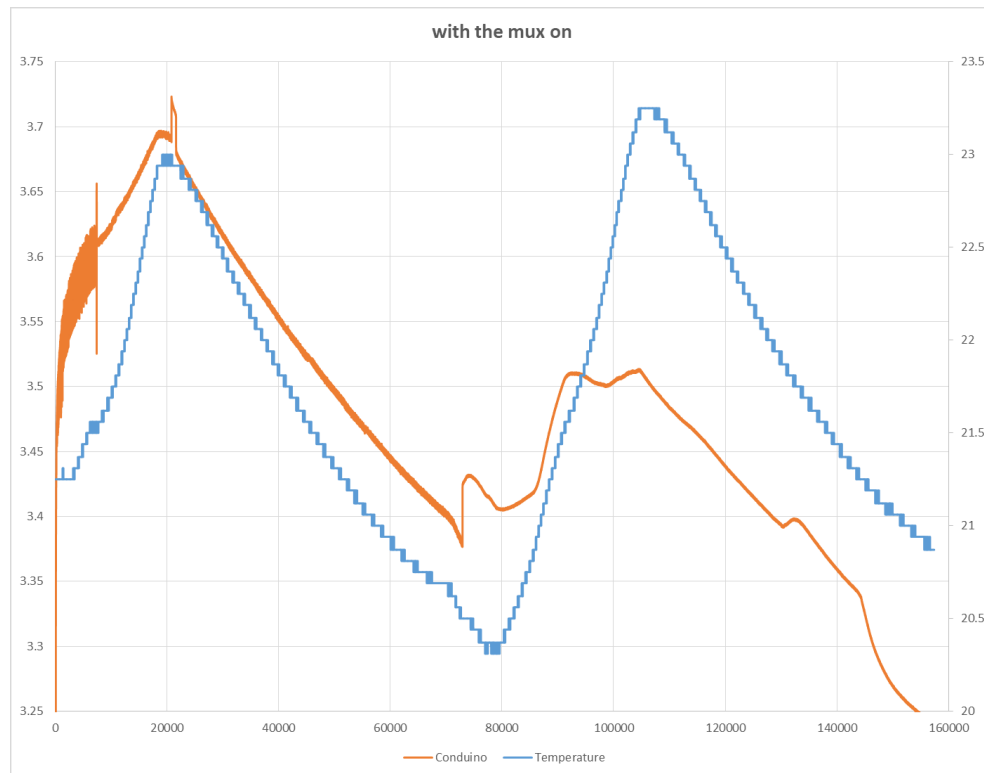| AC Caps	Mux	Notes
No	No	So-so tracking, strong startup drift
No	Yes	Similar
Yes	Yes	So-so tracking, strong startup drift
Yes	No	Really bad tracking and startup drift

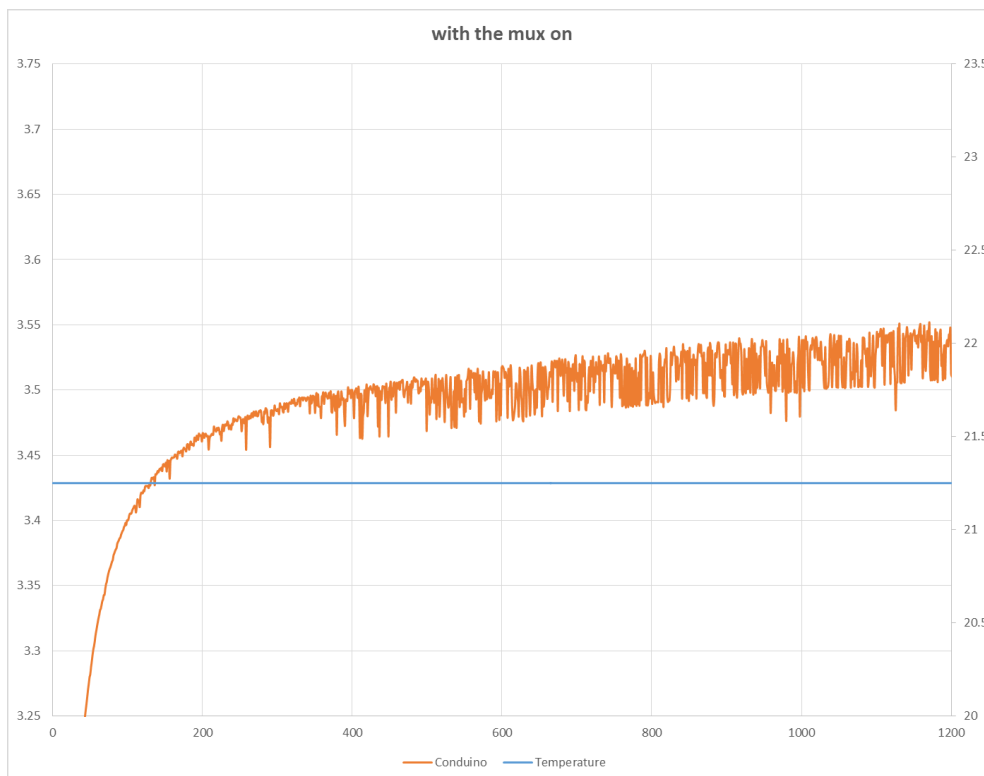# 46 hours USB probe, no AC caps, no muxing. (Temperature affect inconsistent)
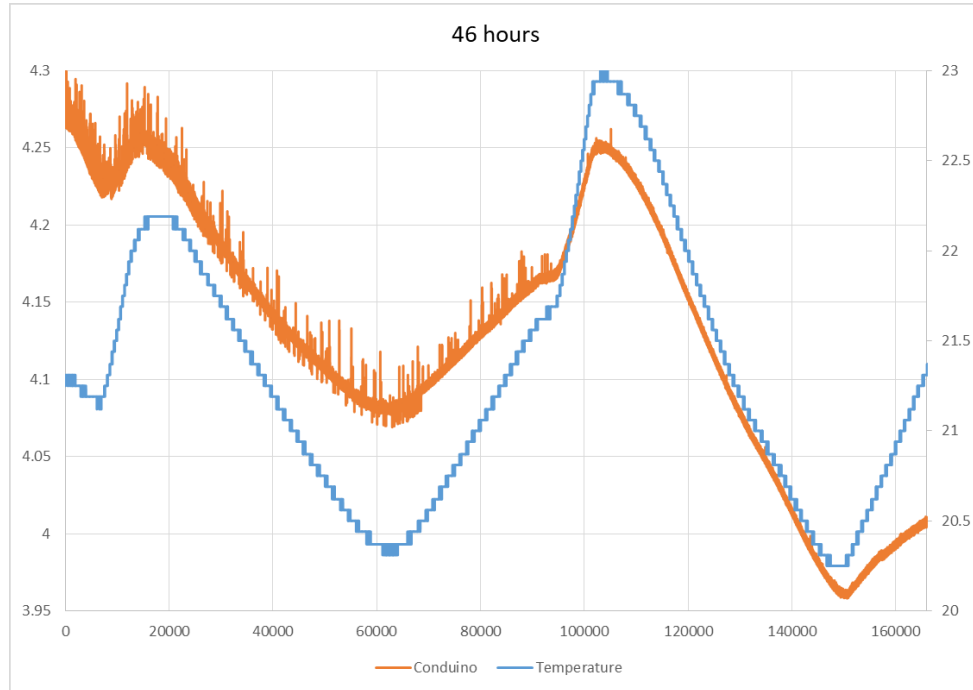
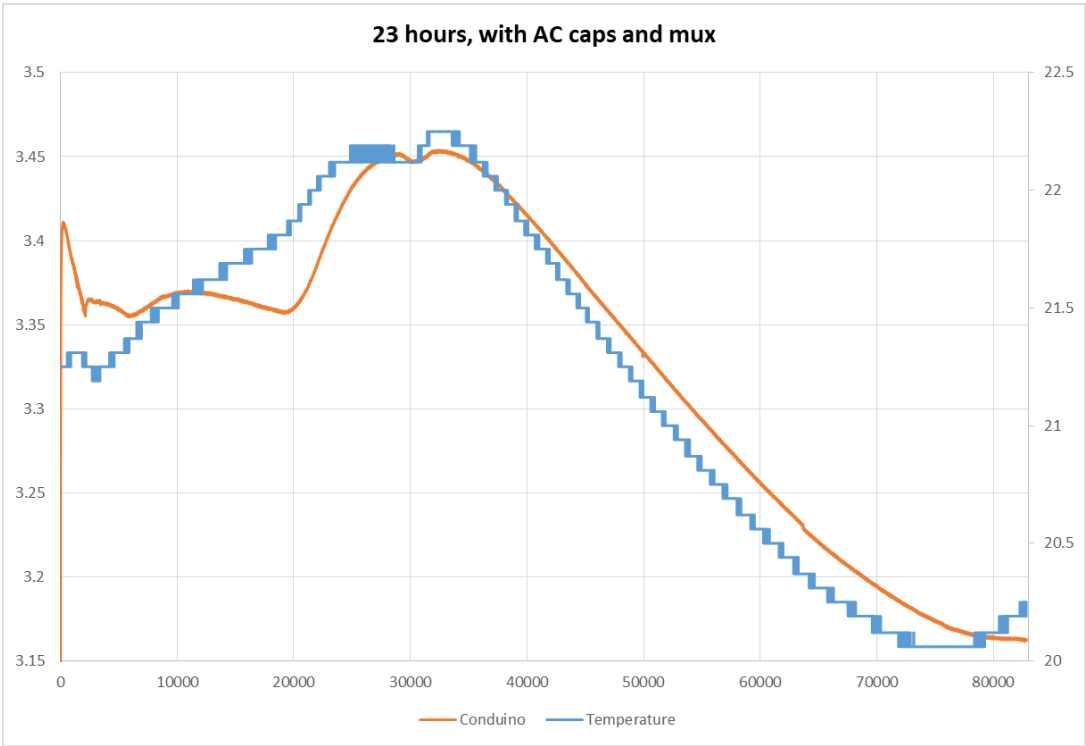
Strong startup drift
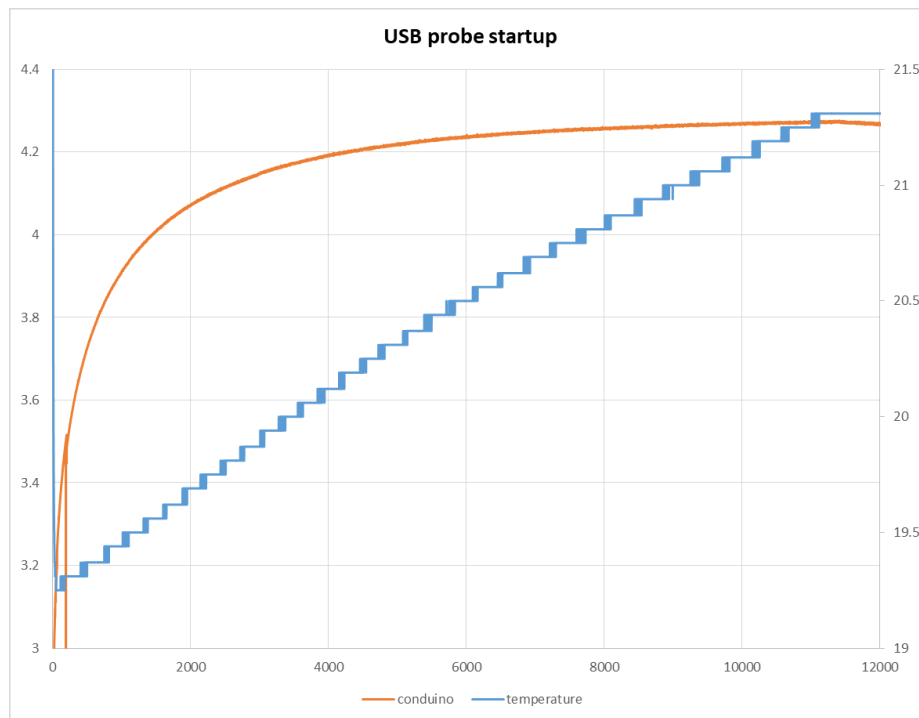
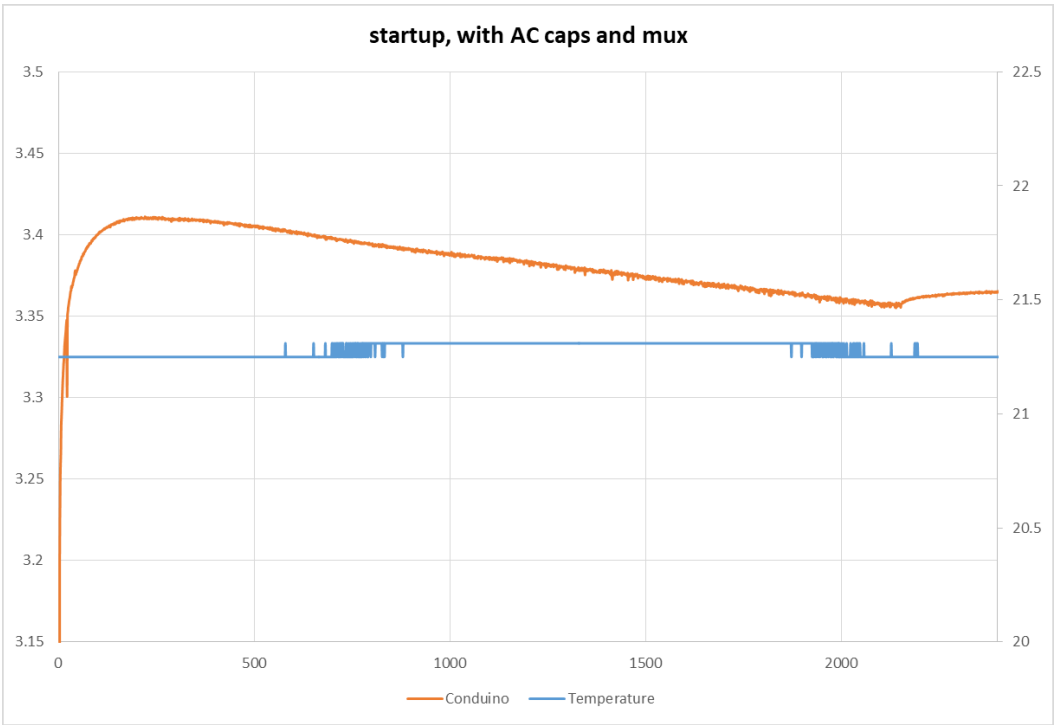## 44 hours, no AC caps, with muxing changing electrodes each sample

First 20 minutes of previous plot showing slow drift at startup

With the electrode AC caps, and muxing

Startup with the electrode AC caps and muxing, first 40 minutes

With AC caps but no mux, shows strong drift unrelated to temperature