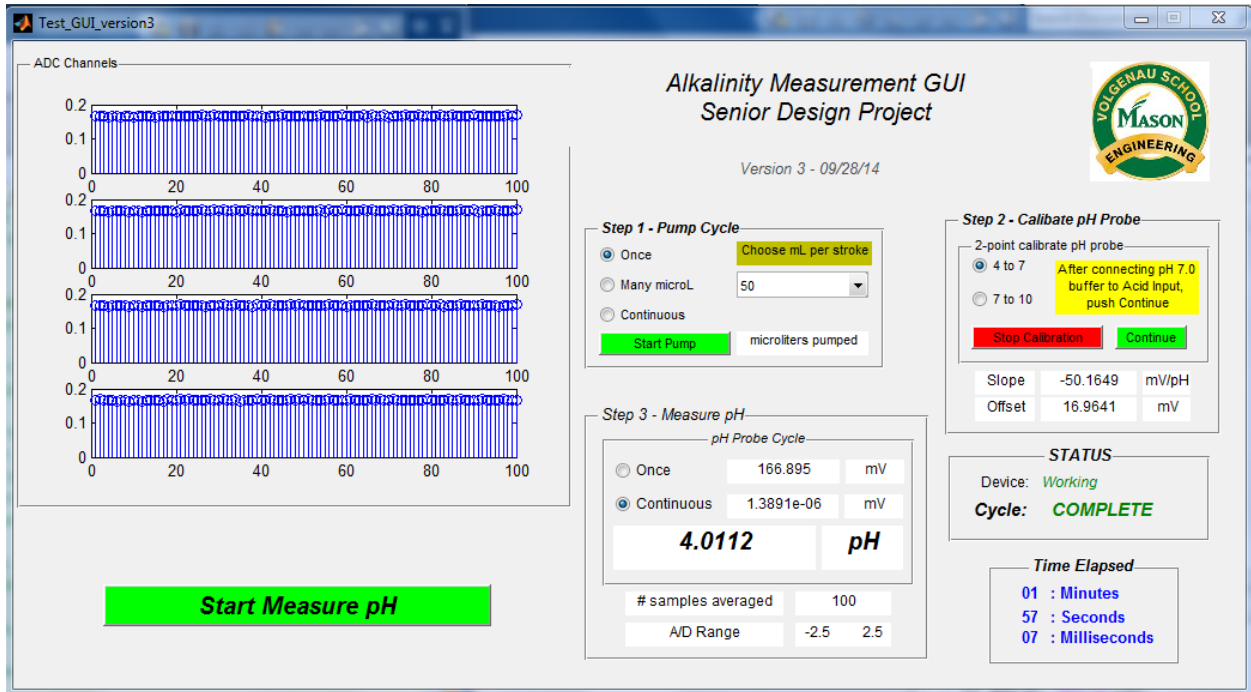
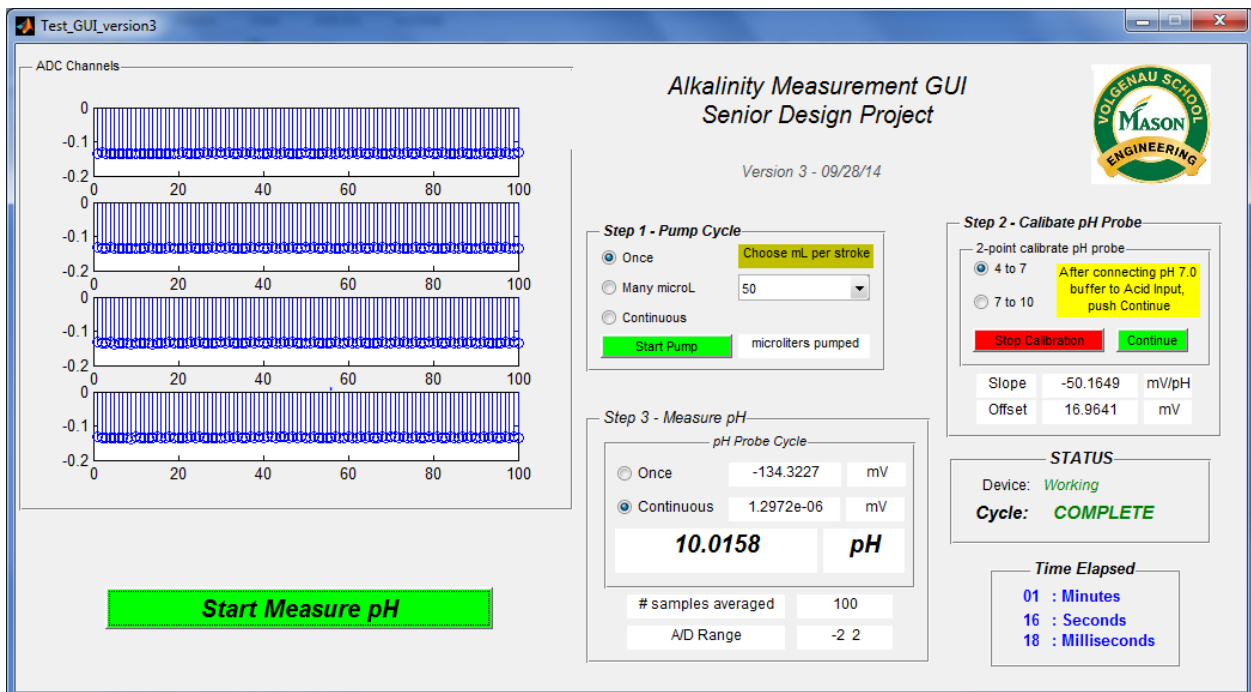


## Power Supply ( + 12 V) and ( - 12 V) from Lead-acid battery

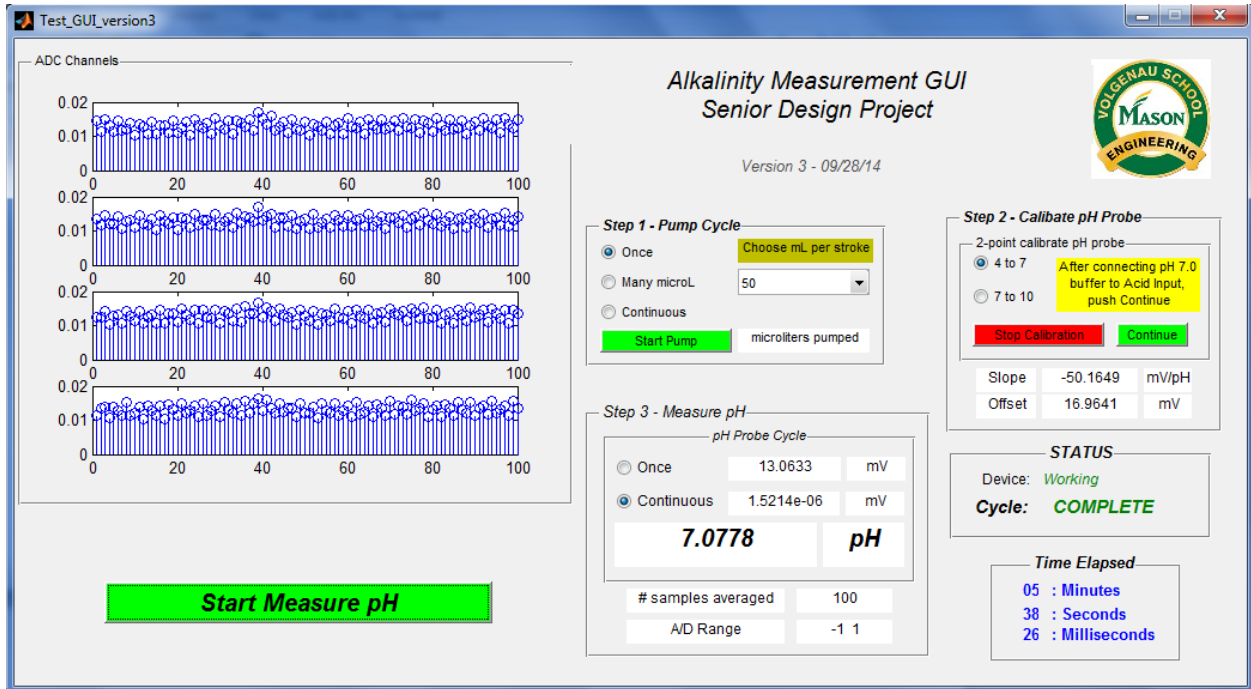
pH 4 buffer with fluctuation of  $\pm 0.02$



pH 10 buffer with fluctuation of  $\pm 0.02$



pH 7 buffer. Reading started at 7.14pH stabilized at around 7.07 with fluctuation of  $\pm 0.02$  after 5 minutes and 38 seconds.



**Implementation of Input bias current return path**

**Resistor chosen: 132 MΩ**

*pH 10 buffer. pH reading of 10.05 with fluctuation of ±0.05*

ADC Channels

Alkalinity Measurement GUI  
Senior Design Project

Version 3 - 09/28/14

VOITGENAU SCHOOL  
MASON  
ENGINEERING

**Step 1 - Pump Cycle**

Once

Many microL

Continuous

microliters pumped

**Step 2 - Calibrate pH Probe**

2-point calibrate pH probe

4 to 7

7 to 10

Slope -42.5801 mV/pH  
Offset -309.7148 mV

**Step 3 - Measure pH**

pH Probe Cycle

Once -441.9625 mV

Continuous 1.6166e-06 mV

**10.1059 pH**

# samples averaged 100  
A/D Range -10 10

**STATUS**

Device: Working  
Cycle: COMPLETE

**Time Elapsed**

03 : Minutes  
53 : Seconds  
32 : Milliseconds