American University of Beirut

ECE312 Lab

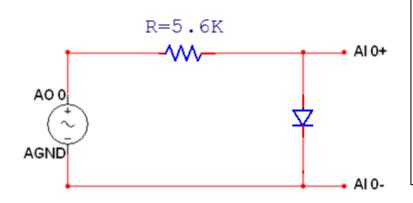
MyDAQ Assignment 3

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20110****

Due on 23/12/2011

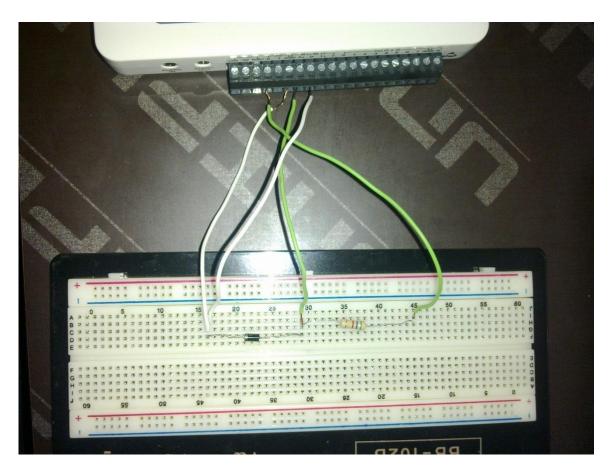
1. <u>Description of the hardware setup</u>:



We use AO0 & AGND of the MyDAQ from which we can get the input voltage signal.

We use AIO+ & AIO- of the MyDAQ in order to plot the output voltage signal on the scope & measure the values needed.





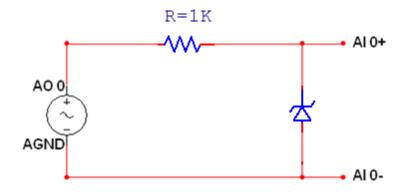
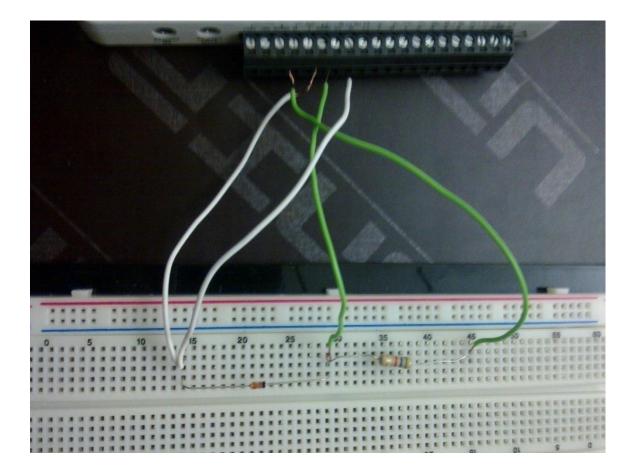


Figure A-2: One Zener clipping circuit



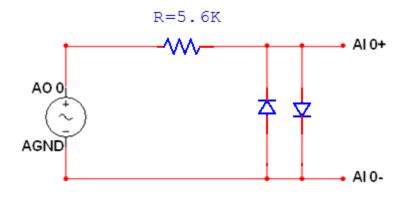
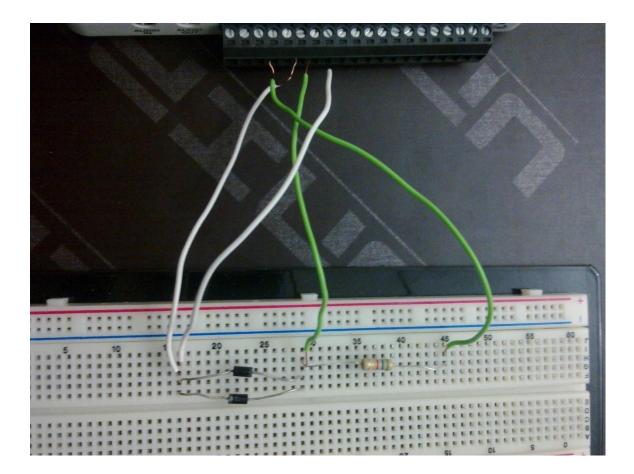


Figure A-3: Two diode clipping circuit



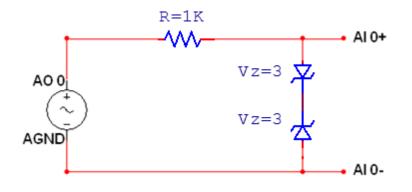
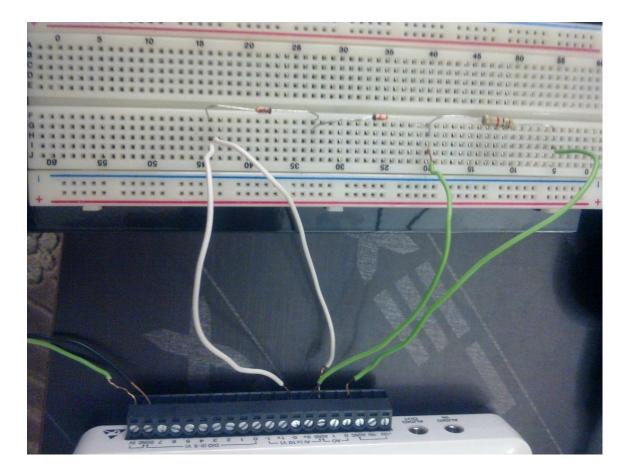


Figure A-4: Two Zener clipping circuit



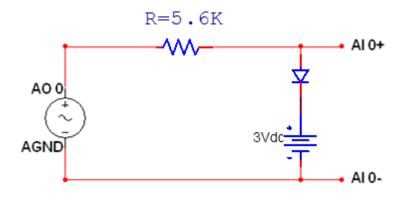


Figure A-5: Diode clipping with DC source

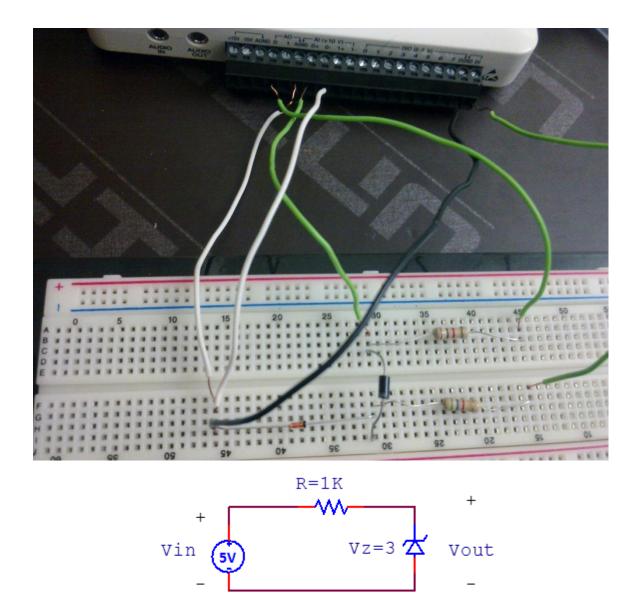


Figure B-1: Voltage regulator used as DC source

2. <u>Description of the software setup</u>:



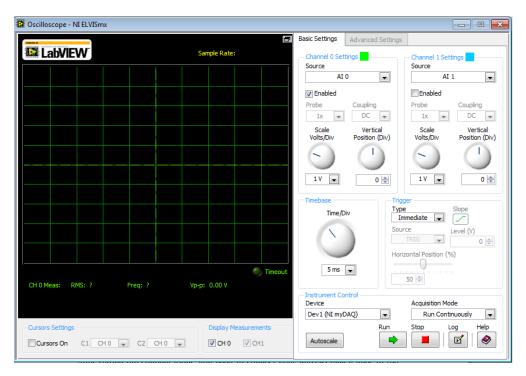
We will use the DMM to measure the resistance of the resistors that we will use in our circuits.

Digital Multimeter - NI ELVISmx			
0.98 kOhms			
	••••••••••••••••••••••••••••••••••••••		
Measurement Settings	+F @‱ ► >>)		
Mode Banana Jack Connections			
Range 20Kohm 💌			
Null Offset	HI COM HI		
Instrument Control Device Av Dev1 (NI myDAQ)	cquisition Mode Run Continuously 🗨		
R	Run		

We will also use the Function Generator to apply a sinusoidal input signal of specified frequency and pk-pk voltage (Vpp)

🔀 Function Genera	ator - NI ELVISmx		
LabVIE	W		OFF
Waveform Setting	requency	Amplitude	DC Offset
∧ ⊥ 200m		0.0 ↔ Vpp 1.00 ↔ Vpp Duty Cycle 50 ↔ %	0.00 🗭 V Modulation Type None 💌
Sweep Settings Start Frequency 100.0 🚔 Ha		Step Iz 100.00 🚔 Hz	Step Interval
Instrument Contr Device Dev1 (NI myDA	Si		• op Help
Manual Mode		▶	

We will also use the scope, where the output signal is plotted, in order to measure the pk-pk output voltage, maximum output voltage, and minimum output voltage.



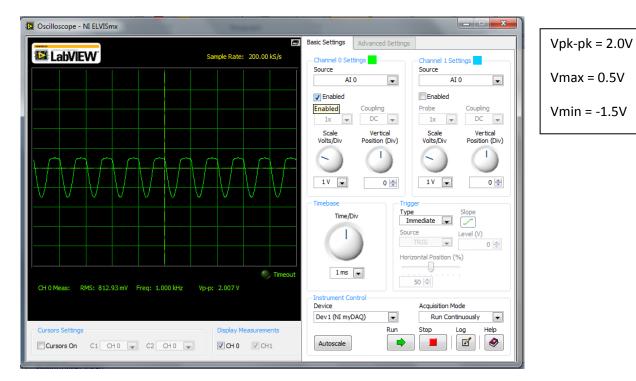
3. <u>Testing</u>:

Resistors Used:

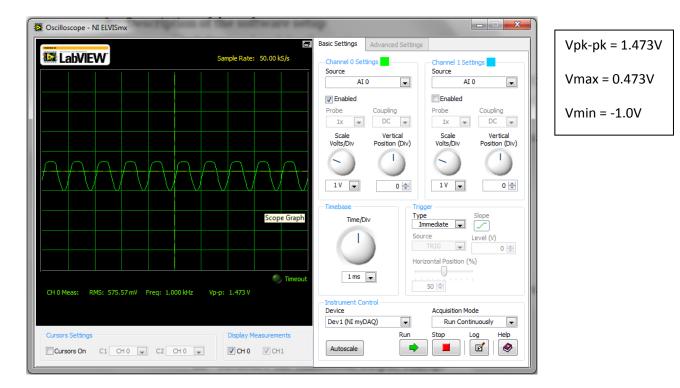
Digital Multimeter - NI ELVISmx		
LabVIEW	B	
0.98 kOhms		
Measurement Settings		
	Jack Connections	
Instrument Control Device Dev1 (NI myDAQ)	Acquisition Mode Run Continuously	
	Run Stop Help	

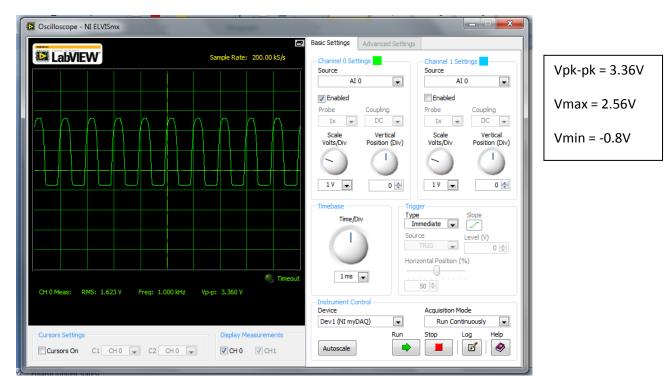
🕼 Digital Multimeter - NI ELVISmx			
5.48 kOhms			
	%FS		
Measurement Settings			
V= V~ A= A~ (2 ++ 🕬 🕶 🕠		
Mode Banar Specify Range 🗸	na Jack Connections		
Range 20Kohm			
Null Offset	ні сом ні		
- Instrument Control			
Device Dev1 (NI myDAQ)	Acquisition Mode Run Continuously		
	Run Stop Help		
U			

For one diode clipping circuit (Figure A-1), apply a 2 V peak-to-peak, 1 KHz sinusoidal wave as input.



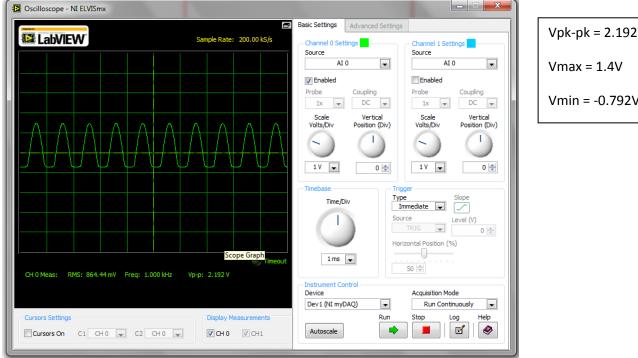
For one diode clipping circuit (Figure A-1), apply a 3 V peak-to-peak, 1 KHz sinusoidal wave as input.





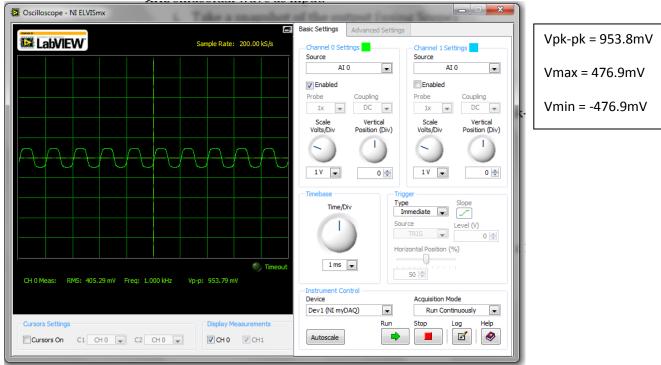
For one Zener clipping circuit (Figure A-2), apply a 3 V peak-to-peak, 1 KHz sinusoidal wave as input.

For one Zener clipping circuit (Figure A-2), apply a 10 V peak-to-peak, 1 KHz sinusoidal wave as input.



Vpk-pk = 2.192V

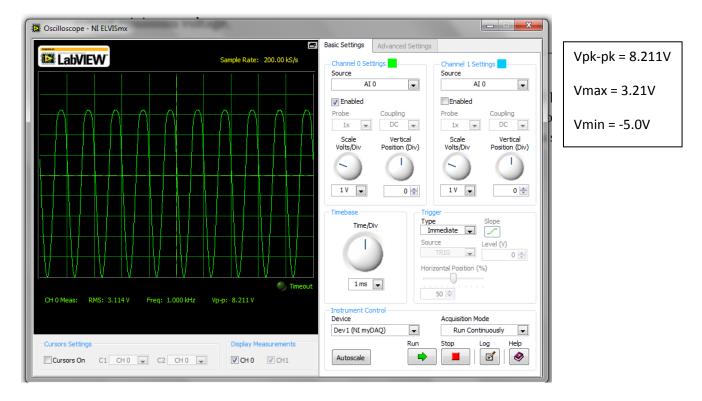
Vmin = -0.792V



For two diode clipping circuit (Figure A-3), apply a 2 V peak-to-peak, 1 KHz sinusoidal wave as input.

For two Zener clipping circuit (Figure A-4), apply a 10 V peak-to-peak, 1 KHz sinusoidal wave as input.





For diode clipping circuit with DC source (Figure A-5), apply a 10 V peak-to-peak, 1 KHz sinusoidal wave as input.