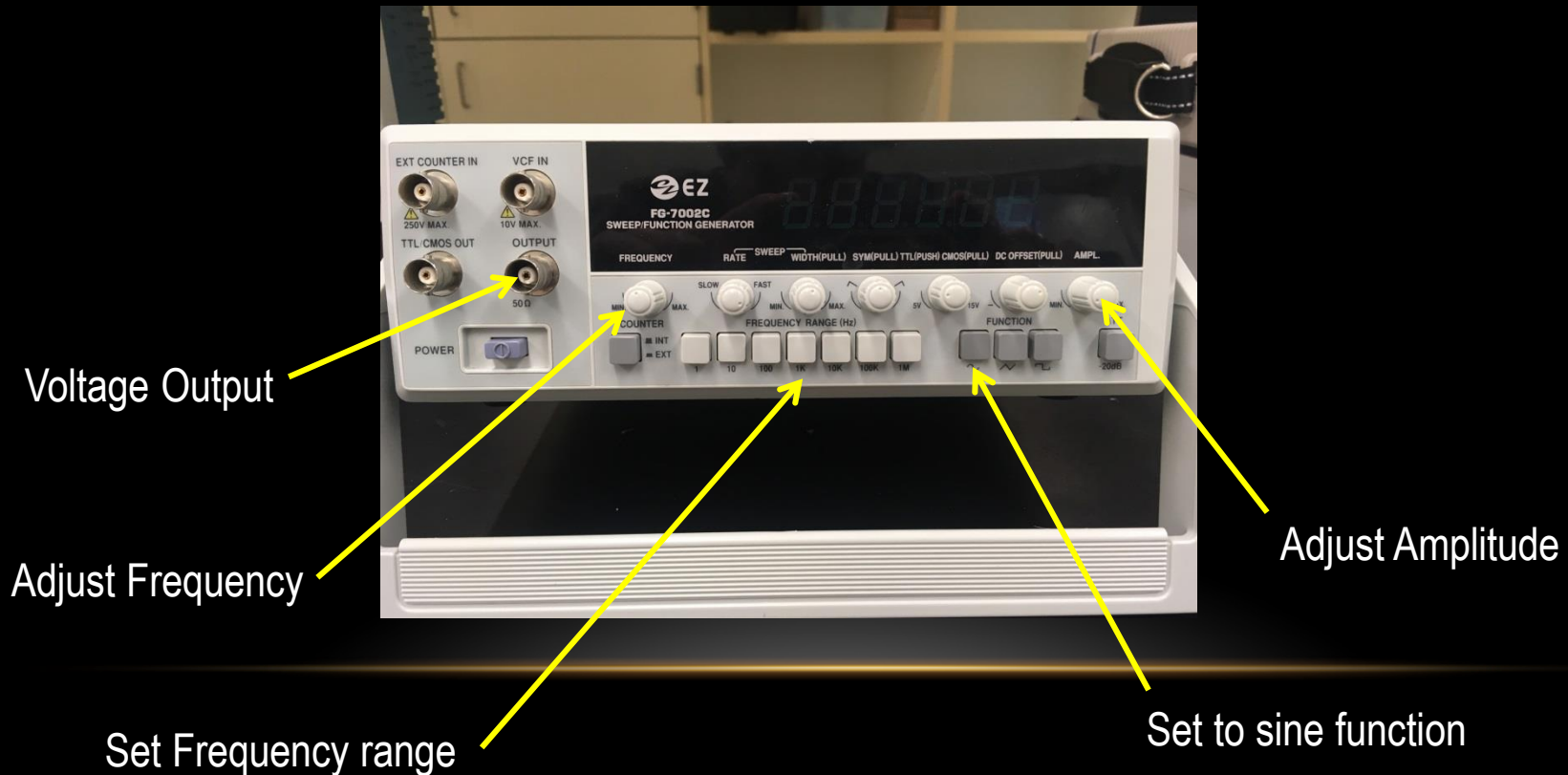


WEEK 7: DATA ACQUISITION TESTING

- Use data acquisition VI to display and record a known signal
 - Use a signal generator to create a sinusoidal voltage
 - Vary sine wave function (change amplitude and/or frequency)
 - Save sine wave data with VI to a data file on the computer
 - Plot the data file in Sigmaplot
-

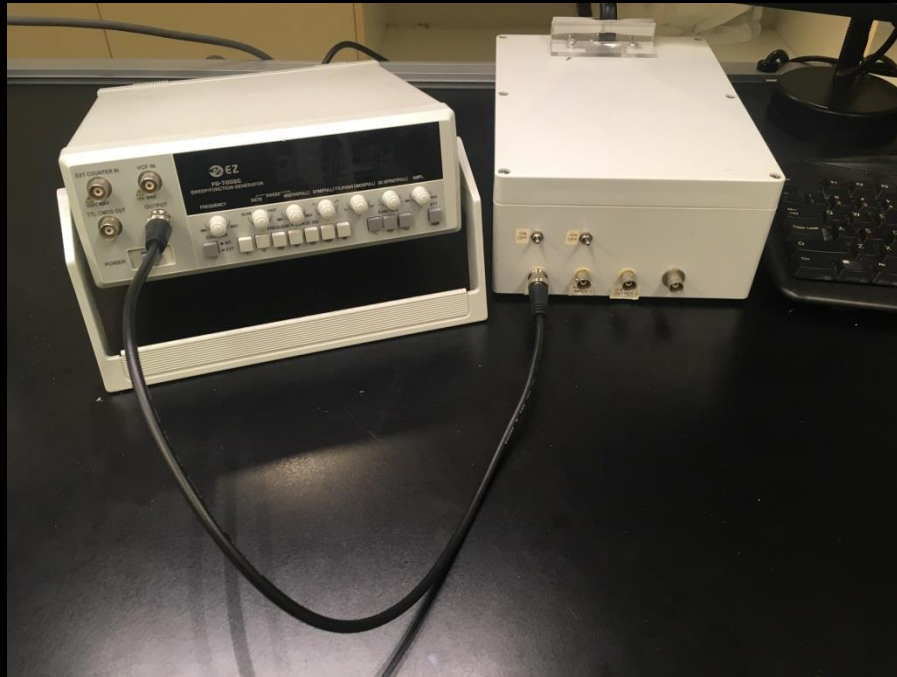
SIGNAL (OR FUNCTION) GENERATOR

- Test instrument for creating various time-varying voltage waveforms
- Use a sine wave between 1-5 Hz, amplitude up to +/- 5V
- Use “Output” terminal from signal generator
- Frequency and amplitude need not be exact
- Function generator only displays frequency; amplitude is found from output with o-scope or VI display



TEST YOUR VI

- Connect signal generator to A/D Input #0 on break-out box (Picture below)
- Signal generator will create a sine-wave output
- Display and save this test signal with your Labview VI (*.lvm data files)
- Save at least 2 different sine wave functions



PLOT YOUR TEST RESULTS

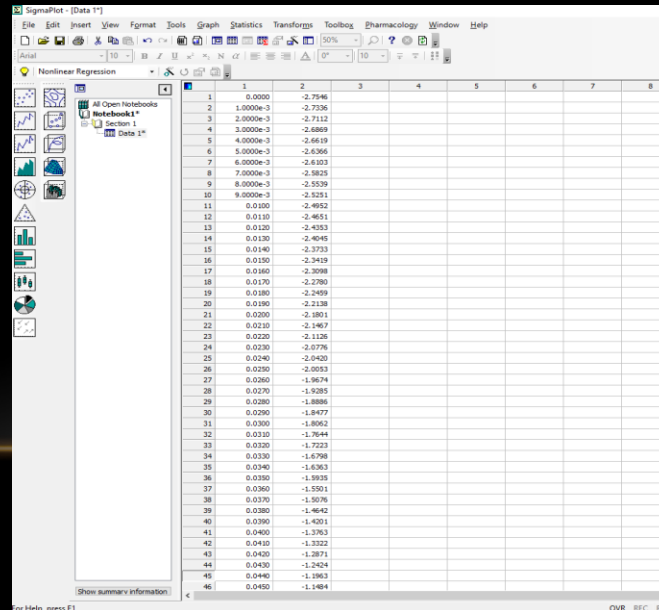
- Use the software program “Sigmaplot” to create and save graphs of your sine waves
- Before you run SigmaPlot, rename your Labview output data file: *.lvm to *.txt

This can be easier if you show file extensions:

- * From the Explorer folder, click “Organize>folder and search options”
- * In the View Tab, uncheck “Hide extensions for known file types”
- Run SigmaPlot from the start menu, opening a blank notebook

From Worksheet, “import” the *.txt text data file as a tab-delimited file

The file contents will be in the Sigmaplot data window. Delete all of the header lines from the Worksheet tab, by selecting them, then “delete”. The data will look something like this:

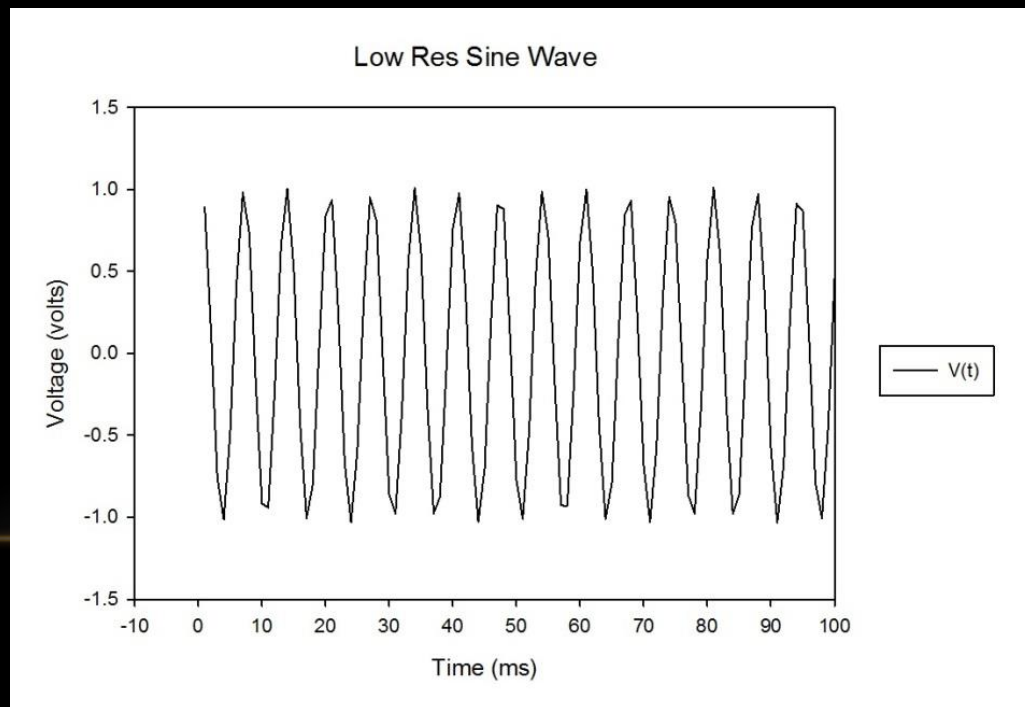


The screenshot shows the SigmaPlot software interface. The main window displays a data table with 46 rows and 2 columns. The first column contains values ranging from 0.0000 to 0.0450 in increments of 0.0010. The second column contains values ranging from -2.7546 to -1.1484. The interface includes a menu bar (File, Edit, Insert, View, Format, Tools, Graph, Statistics, Transforms, Toolbars, Pharmacology, Window, Help) and a toolbar with various icons. The data window is titled "Nonlinear Regression" and shows a grid with columns 1 through 8. The data is as follows:

Row	Column 1	Column 2
1	0.0000	-2.7546
2	1.0000e-3	-2.7336
3	2.0000e-3	-2.7112
4	3.0000e-3	-2.6889
5	4.0000e-3	-2.6619
6	5.0000e-3	-2.6366
7	6.0000e-3	-2.6103
8	7.0000e-3	-2.5825
9	8.0000e-3	-2.5539
10	9.0000e-3	-2.5251
11	0.0100	-2.4952
12	0.0110	-2.4651
13	0.0120	-2.4353
14	0.0130	-2.4045
15	0.0140	-2.3733
16	0.0150	-2.3419
17	0.0160	-2.3098
18	0.0170	-2.2780
19	0.0180	-2.2459
20	0.0190	-2.2138
21	0.0200	-2.1801
22	0.0210	-2.1467
23	0.0220	-2.1136
24	0.0230	-2.0796
25	0.0240	-2.0450
26	0.0250	-2.0103
27	0.0260	-1.9674
28	0.0270	-1.9285
29	0.0280	-1.8896
30	0.0290	-1.8477
31	0.0300	-1.8062
32	0.0310	-1.7644
33	0.0320	-1.7223
34	0.0330	-1.6798
35	0.0340	-1.6383
36	0.0350	-1.5935
37	0.0360	-1.5501
38	0.0370	-1.5076
39	0.0380	-1.4642
40	0.0390	-1.4201
41	0.0400	-1.3763
42	0.0410	-1.3322
43	0.0420	-1.2871
44	0.0430	-1.2424
45	0.0440	-1.1963
46	0.0450	-1.1484

PLOT YOUR TEST RESULTS

- Sigmaplot will create a plot of your data that you can edit to look better
- Double click on the scale numbers to change the scale ranges.
- Double click on the scale labels (i.e. 'X-Data') and update with more accurate labels
- Make other change to the plot as needed
- You can save the entire Sigmaplot file (data and graph), and also export the graph as image file to include in your report, from the Home Tab, under export.



WEEK 7 TOPICS FOR FINAL REPORT

- Describe test setup, including function of a function generator.
- Using SigmaPlot to create graphs
- Include graphs of at least 2 test sine waves, with both axes scaled, and labeled.
 - For example: y-axis could be “Output Voltage (volts)”, scaled so the curve looks good
 - X-axis can be “Time (sec)”, scaled with the appropriate time values