1. The program are writen by python, make sure you already have python with following dependencies: <matplotlib>, <numpy>, <nidaqmx>

if you do not have, please run the command seperately in the powershell: pip install numpy; pip install matplotlib; pip install nidaqmx

if you get some error about the DLL from matplotlib when you run the script, please install a small software "visual C++ redistributable for visual studio 2015" which can be found in google, then you can run the code

2. This program can read the current, voltage output from the axon amplifier, and apply the voltage to the amplifier.

for read current: connect <SCALED OUTPUT> on the back of axon to the Ni daq card analog input channel <ai0>

for read voltage: connect <10 Vm> on the back of axon to the Ni daq card analog input channel <ai1>

for apply voltage: connect <EXIT. COMMAND/INPUT/REAR SWITCHED> on the back of axon to the Ni daq card analog onput channel <ao0>

3. The parameter to control the instrument are in the json file, you can load a new one or edit it by click the menu "Protocol"

"device" : tell the program the ni daq channel name, order should be [read current, read voltage, apply voltage]

"Vichannel: 0: disable voltage read channel, 1: enable this channel

"Vochannel": 0: disable voltage apply channel, 1: enable this channel

"fs": sampling rate, units kHz if your ni daq card have maxmium x khz sampling rate and you need use voltage read channel, the maxmium fs must be smaller than x/2 kHz

"ab": the number of "alpha" x "beta" in the axon front panel

"recordvoltage": 0: do not save the voltage channel to data file(.dat) 1: save the voltage channel to data file(.dat2) if Vichannel is 1 then it will be saved, otherwise Vochannel will be saved

"totaltime": total running time for the recording, units s. 0 means recording continuously

"filetime": In the recording, max time for one single file, it will create a new file then

"mode": "gapfree": record and play data free mode. "sweep": record and play data with a repeat and period time

"wave": "empty", "sin", "triangle", "sawtooth". scaled function e.g. y->(-1, 1) = sin(x->(0 , 1))

"period": period time of each sweep units second.

"lagtime": units second. add 0 voltage with lagtime at the begin of one period time. it is included in the period time

"increment": every sweep plus this number with present voltage. units mV

"maxvoltage": the maxmium voltage could be reached. units mV

"v0": the begin voltage. units mV

"amplitude": the amplitude for the wave. units mV

"offset": preserve for calibrate the apply voltage and actual voltage