

TecellaLab User Guide

December 2010

Tecella

Installation & UI Version Selection

Install TecellaLab by simply unzipping the zip file to a folder on your computer.

Double-click on the TecellaLab icon, and you will first be asked to select between V1 and V2 interfaces.

V1 interface is better suited for simple protocols, and V2 interface is better suited for more complex protocols, such as episodic.

Both interfaces are described in this document, so you can glance at the screen shots to determine which interface is better suited for your application.

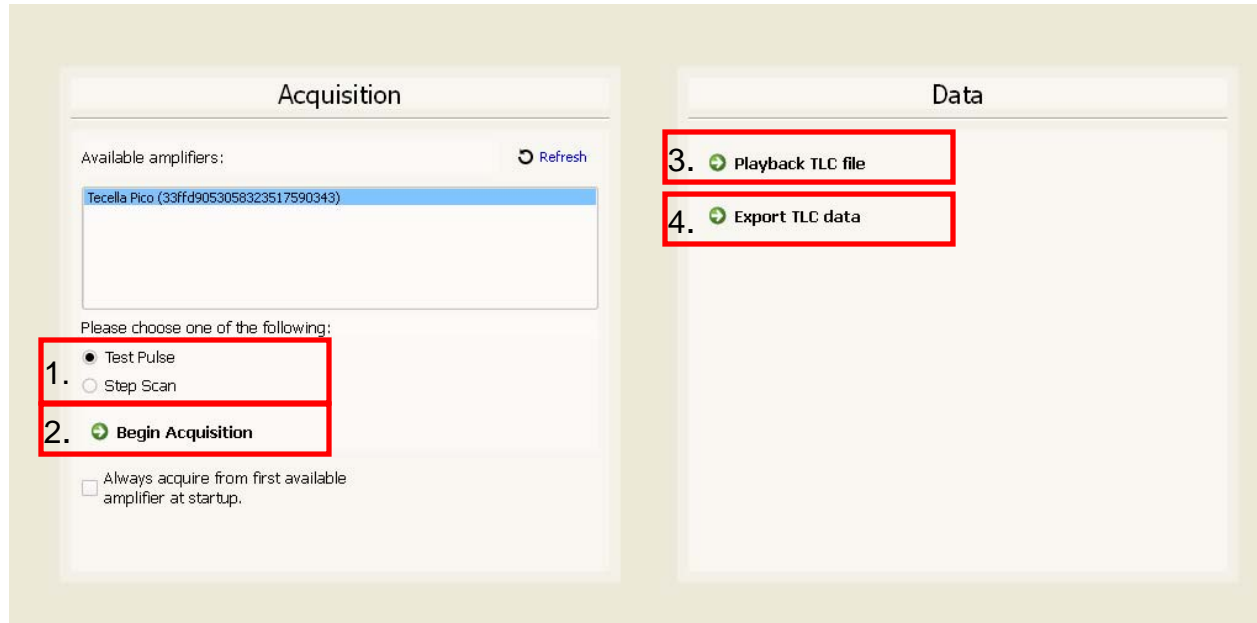
After you select the UI version, you will see screen shots as shown in the following pages. First, the V1 screen shots will be shown, followed by the V2 screen shots.

V1 screen shots will be notated as “UI 1”, and V2 screen shots will be notated as “UI 2”.

UI 1 Screen shots

The following pages pertain the UI version 1.

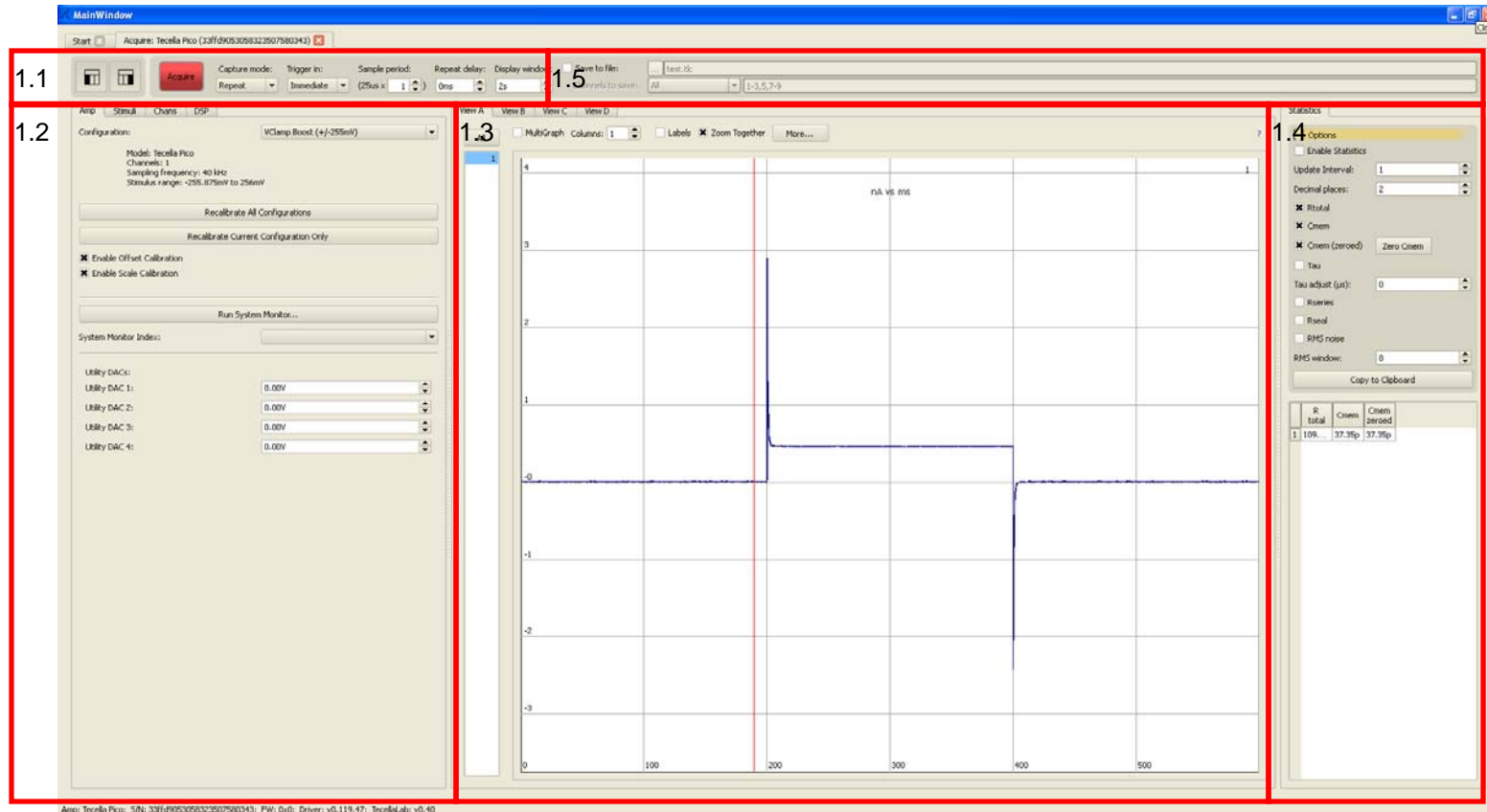
UI 1: Startup Screen



1. Select Experiment type.
2. Press “Begin Acquisition” to start Experiment.
3. Playback previously saved TLC file.
4. Convert TLC file to another file format.

To get acquainted with the software, simply select “Test Pulse”, then click on “Begin Acquisition”.

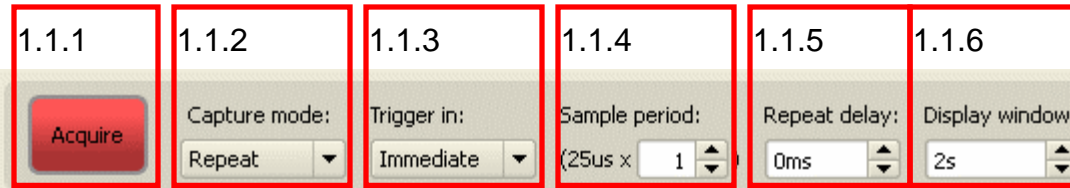
UI 1: Main Window



The above depicts the Main Window of TecellaLab. The Main Window consists of:

- 1.1 Acquisition Controls
- 1.2 Amplifier Controls
- 1.3 Graph
- 1.4 Statistics
- 1.5 Save to File

UI 1.1: Acquisition Controls



Acquisition Controls consists of the following:

1.1.1 Acquire Button

Begins and ends acquisition.

1.1.2 Capture mode

Choices include Single, Repeat, Continuous.

Continuous mode is the same as Gap Free mode.

1.1.3 Trigger In

Choose Trigger In source

1.1.4 Sample Period

Allows you to choose Sample Period as a multiple of base period.

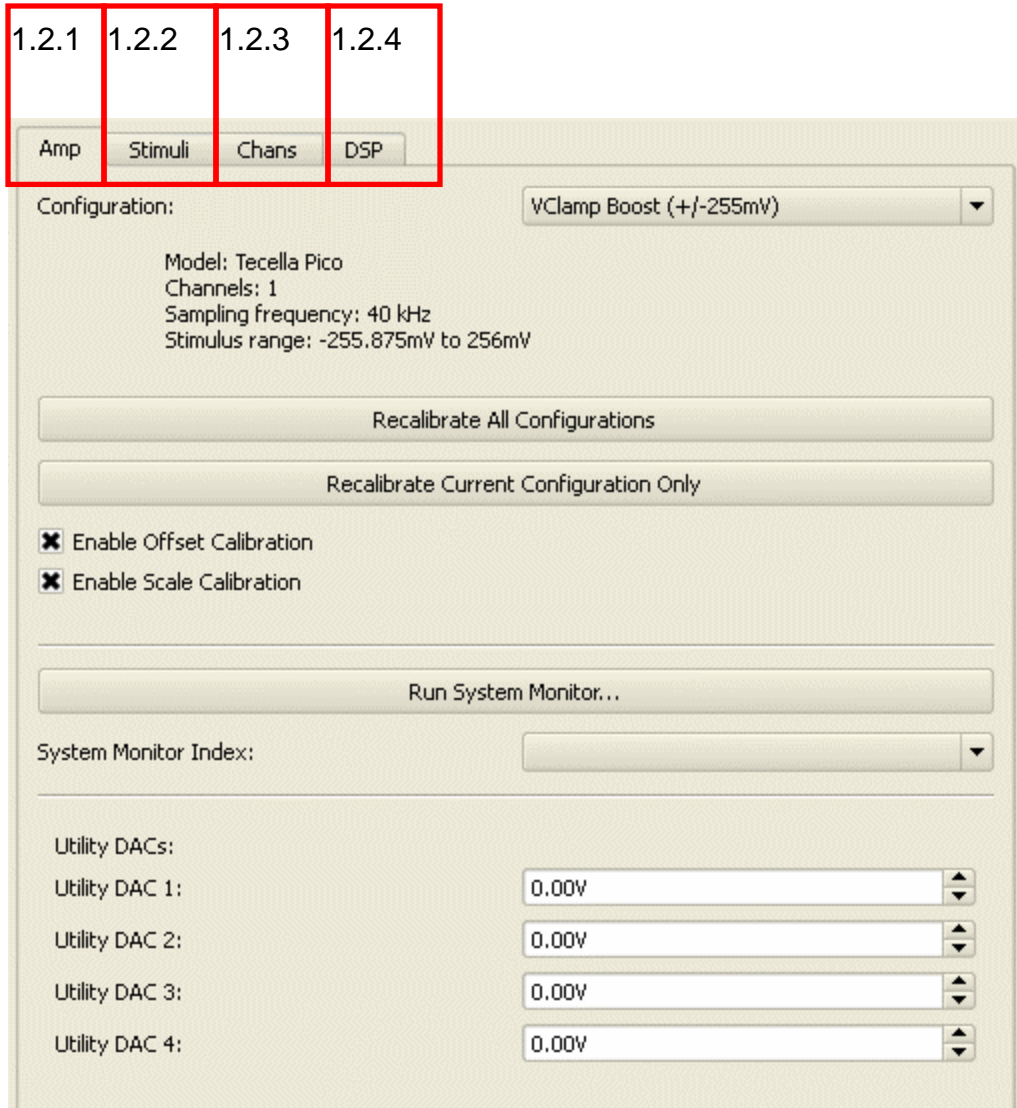
1.1.5 Repeat Delay

Specify delay between Repeats in Repeat Capture mode.

1.1.6 Display Window

Specify size of Display window in Continuous Capture mode

UI 1.2: Amplifier Controls



Amplifier Controls consists of the following 4 tabs

1.2.1 Amplifier Tab

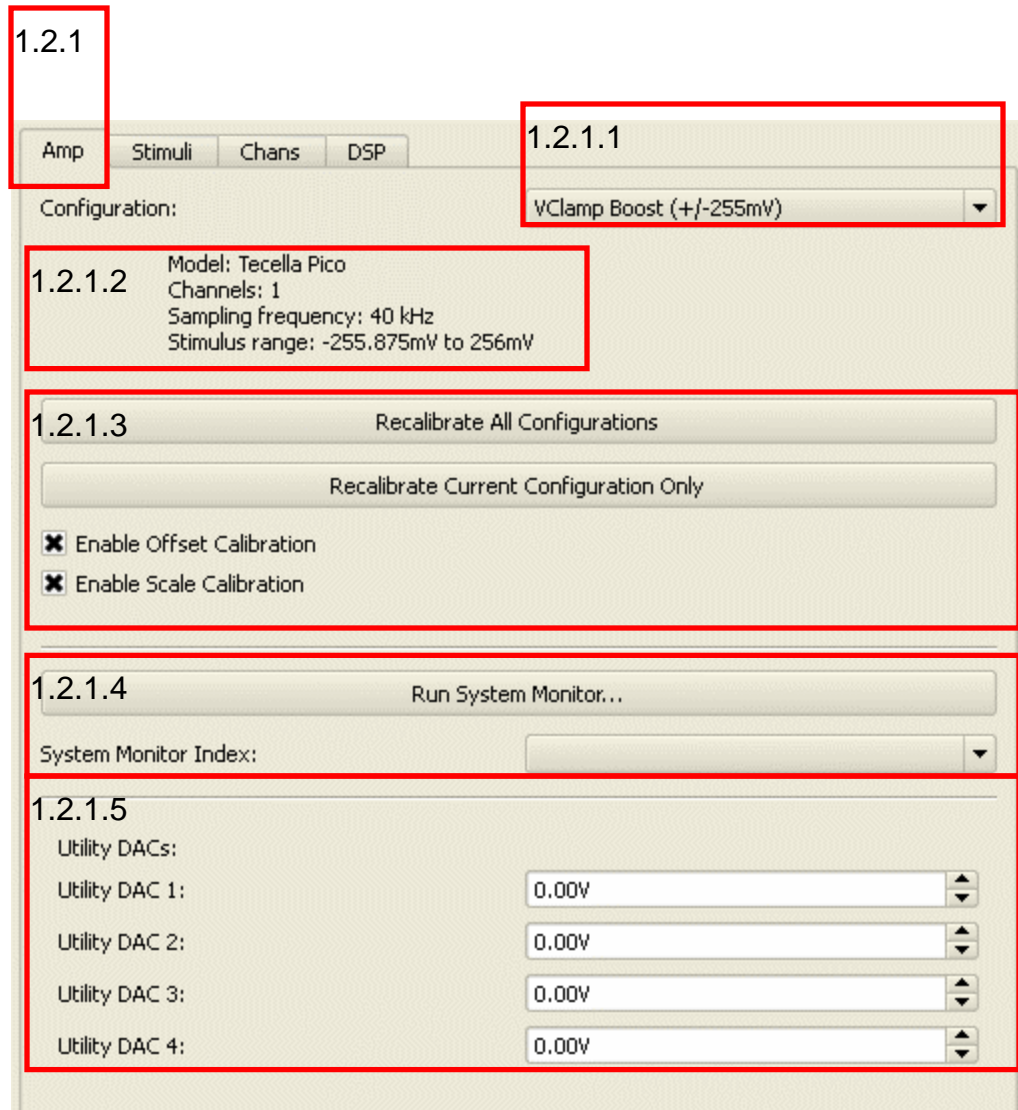
1.2.2 Stimuli Tab

1.2.3 Channels Tab

1.2.4 DSP Tab

These are explained in detail on the following pages.

UI 1.2.1: Amplifier Tab



Amplifier Tab consists of the following:

1.2.1.1 Amplifier Configuration – Choose between configurations (VClamp, IClamp)

1.2.1.2 Amplifier Information

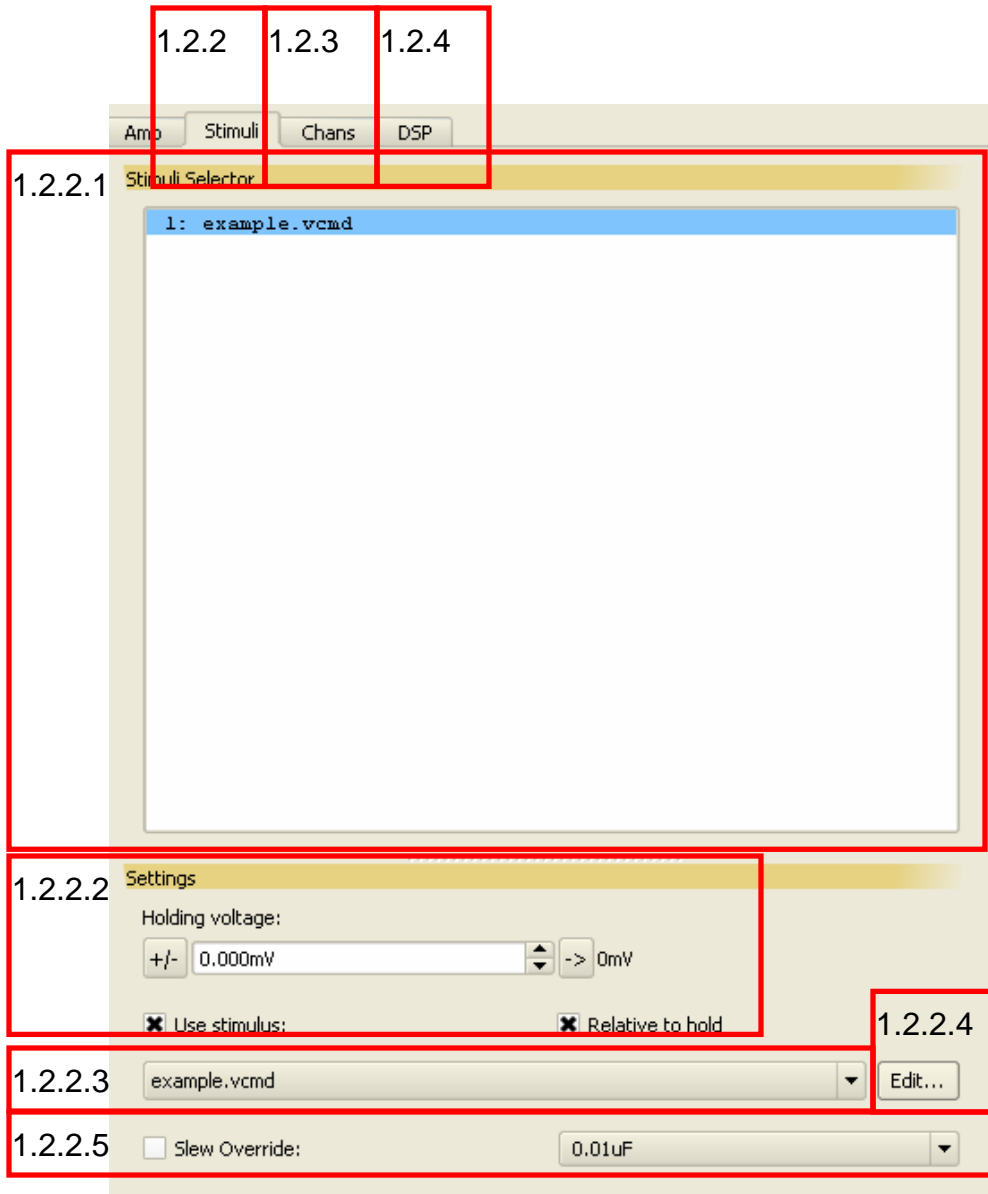
1.2.1.3 Offset and Scale Calibration

Note: This is strictly to calibrate the amplifier internal circuitry, and is different from Offset due to the experiment setup.

1.2.1.4 System Monitor

1.2.1.5 Utility DAC Control

UI 1.2.2: Stimuli tab



The Stimuli tab consists of the following:

1.2.2.1 Stimuli Selected – shows which stimulus is programmed

1.2.2.2 Stimulus Settings

1.2.2.3 Choose stimulus

1.2.2.4 Edit – Open stimulus editor UI

1.2.2.5 Slew Override

UI 1.2.2.4 – Stimulus Editor

1.2.2.4.1

Stimuli

New...
Copy...
Save
Delete

example.vcmd
example2.vcmd

Done

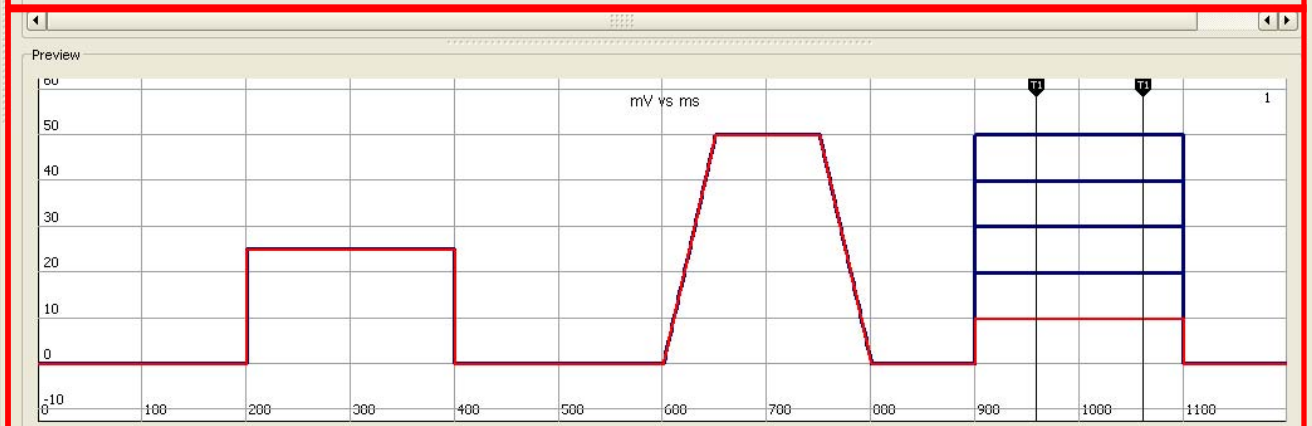
1.2.2.4.2

Sweep Count: 5 Repeat Count: 1

Sequence of Elements

1	2	3	4	5	6	7	8	9
Digital Outs: 3 0 7 4	Digital Outs: 3 0 7 4	Digital Outs: 3 0 7 4	Digital Outs: 3 0 7 4	Digital Outs: 3 0 7 4	Digital Outs: 3 0 7 4	Digital Outs: 3 0 7 4	Digital Outs: 3 0 7 4	Digital Outs: 3 0 7 4
Slew Rate: 0.01uF	Slew Rate: 0.01uF	Slew Rate: 0.01uF	Slew Rate: 0.01uF	Slew Rate: 0.01uF	Slew Rate: 0.01uF	Slew Rate: 0.01uF	Slew Rate: 0.01uF	Slew Rate: 0.01uF
Amplitude (mV) 0.000	Amplitude (mV) 25.000	Amplitude (mV) 0.000	Initial Value (mV) 0.000	Amplitude (mV) 50.000	Initial Value (mV) 50.000	Amplitude (mV) 0.000	Initial (mV) 10.000	Amplitude (mV) 0.000
Duration (ms) 200.000	Duration (ms) 200.000	Duration (ms) 200.000	Step Size (mV) 1.000	Duration (ms) 100.000	Step Size (mV) 1.000	Duration (ms) 100.000	Duration (ms) 10.000	Delta (mV) 10.000
			Step Duration (ms) 1.000		Step Duration (ms) 1.000		Duration (ms) 200.000	
			Step Count (#) 50		Step Count (#) 50			

1.2.2.4.3



1.2.2.4.4

UI 1.2.2.4 Stimulus Editor

1.2.2.4.1 File save and create controls

1.2.2.4.2 Sweep and repeat count controls

Sweep only applies when multiple steps are specified.

1.2.2.4.3 UI Stimulus controls

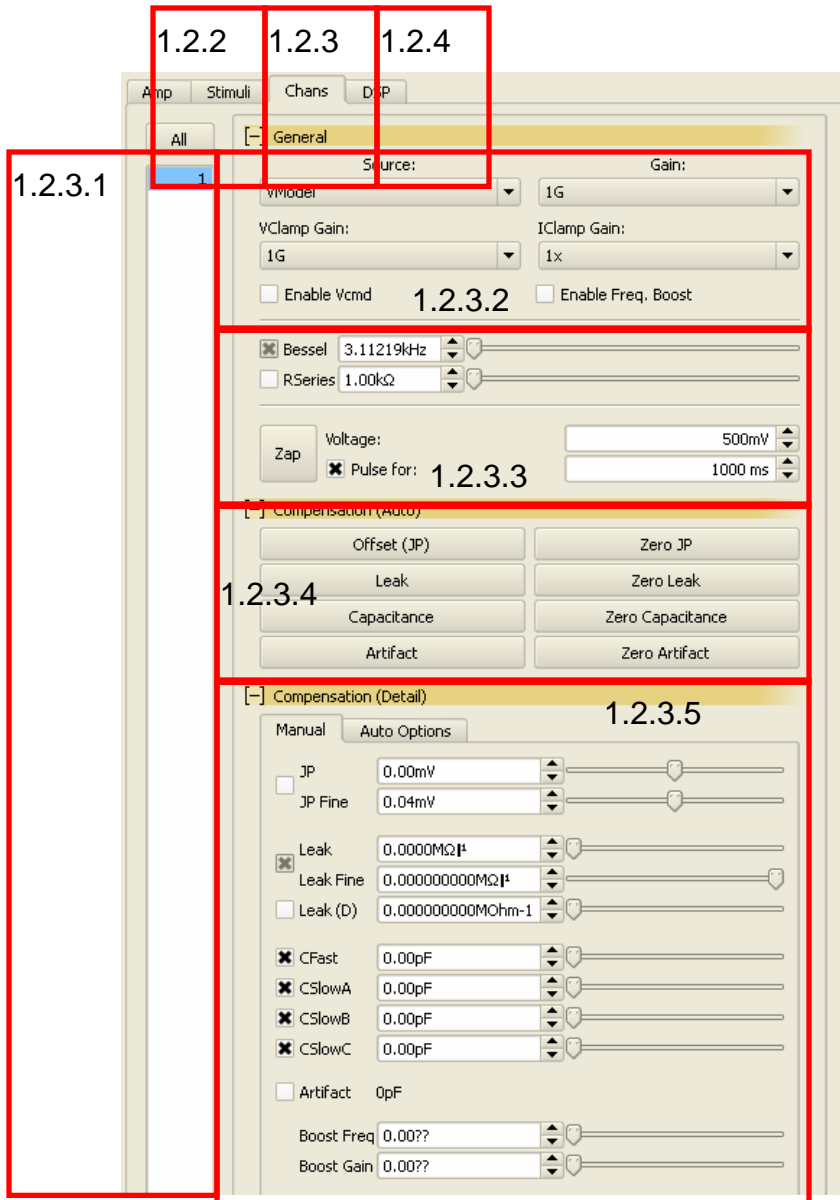
Add, remove segments.

Specify segment length, magnitude, ramp size.

1.2.2.4.4 Preview

Visual representation of stimulus.

UI 1.2.3 Channel Control tab



Channel Control tab consists of the following:

1.2.3.1 Channel selector

Select which channels to control

1.2.3.2 Source and Gain control

1.2.3.3 Bessel filter, RSeries compensation, Zap control

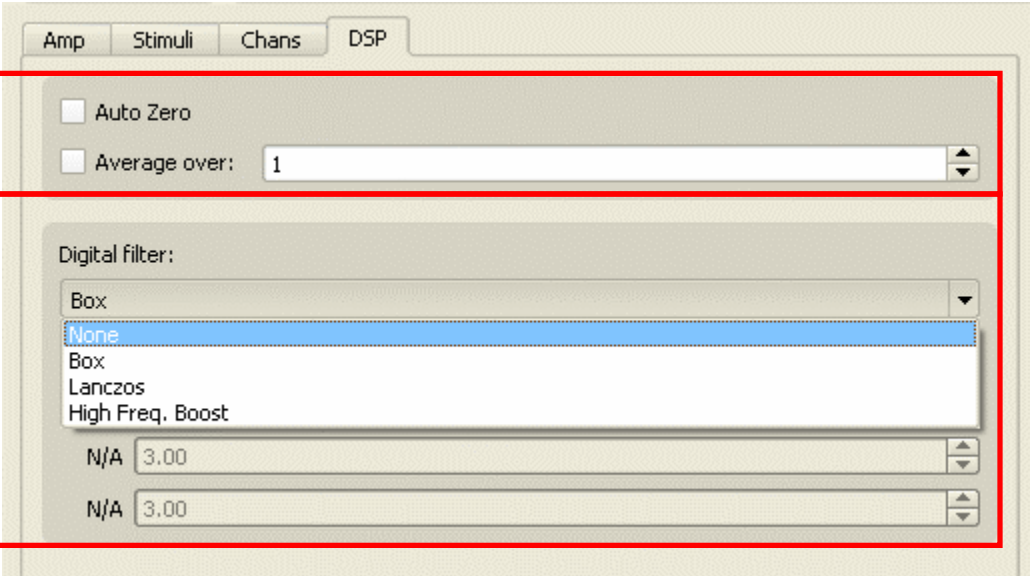
1.2.3.4 Automatic Compensation control

1.2.3.5 Manual Compensation control

UI 1.2.4 DSP tab

1.2.2	1.2.3	1.2.4
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1.2.4.1



Auto Zero
 Average over: 1

1.2.4.2

Digital filter:

Box

None

Box

Lanczos

High Freq. Boost

N/A 3.00

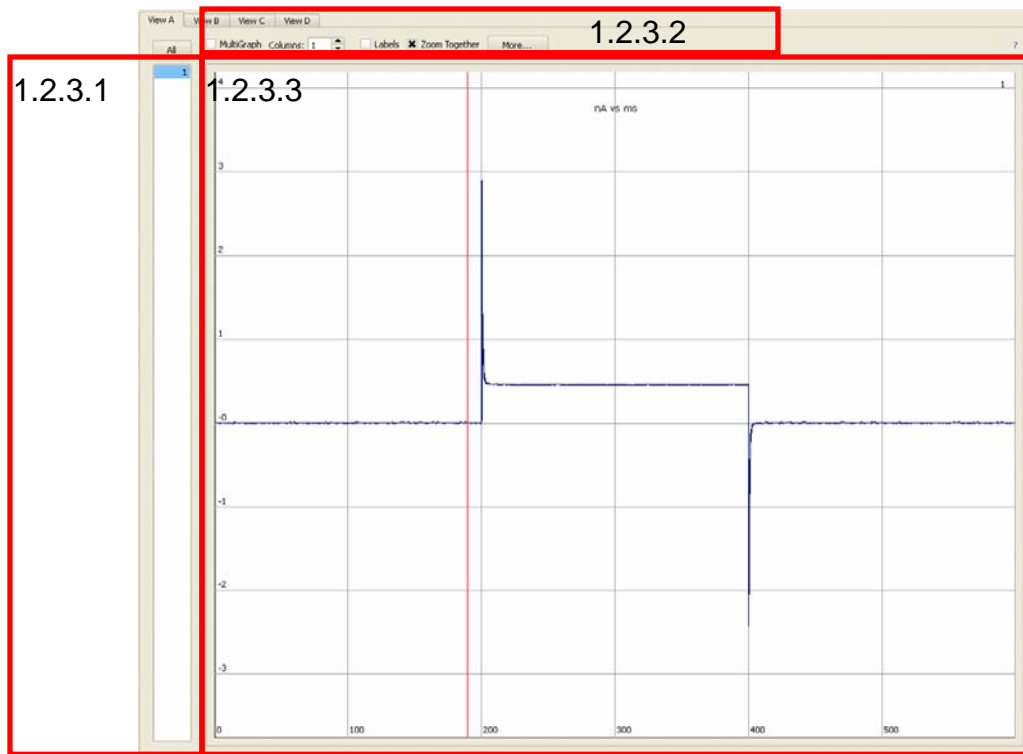
N/A 3.00

DSP tab consists of the following:

1.2.4.1 Auto Zero and Average Samples

1.2.4.2 Digital Filter

UI 1.3 Graph



The Graph display consists of the following:

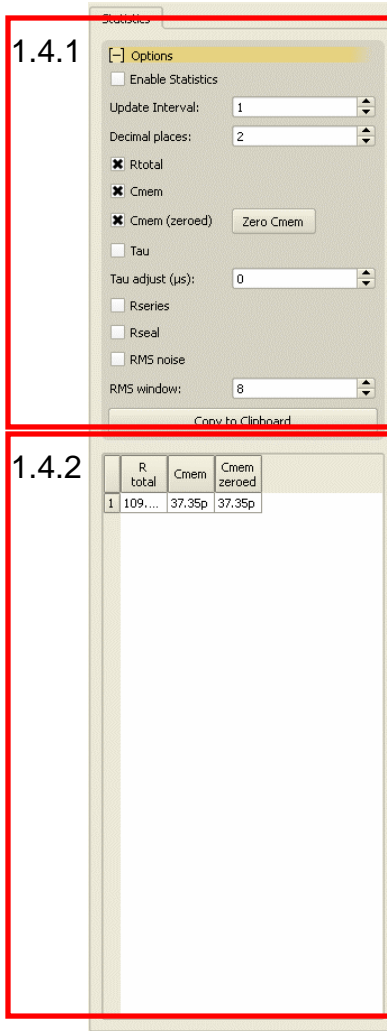
1.2.3.1 Channel Selector

Select channels to view.

1.2.3.2 Graph Options Control

1.2.3.3 Graph Display

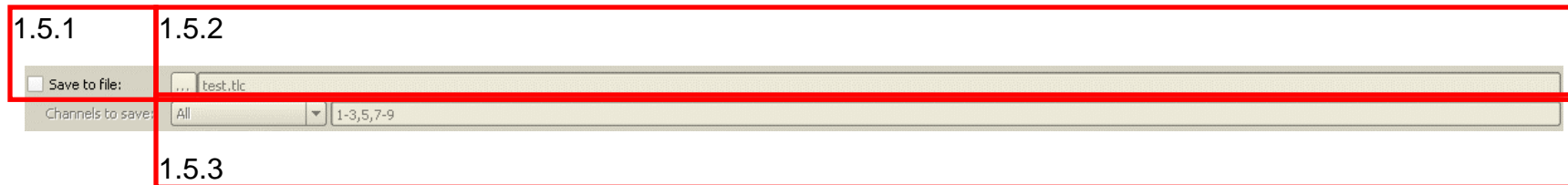
UI 1.4 Statistics



1.4.1 Statistics Options – Select Statistics to Display

1.4.2 Statistics Display – Shows Selected Statistics for all channels.

UI 1.5 Save to File



1.5.1 Save to File Checkbox

1.5.2 File Selector

1.5.3 Select Channels to Save

UI 2 Screen shots

The following pages pertain the UI version 2.

UI 2 Main Window

The screenshot displays the Tecellab software interface with several key components highlighted by red boxes:

- 2.1**: The top toolbar containing icons for file operations, execution, and testing.
- 2.2**: The **Amplifier Configuration** panel on the left, including settings for VClamp Boost, Acquisition Mode, Epochs, Cmd, Digital OUTs, Sampling Rate, and various compensation parameters.
- 2.3**: The **Amplifier Controls** panel in the center, featuring a **General** section with Source, Gain, VModel, and VClamp Gain settings, and a **Compensation (Auto)** section with fields for Offset, Leak, Capacitance, and Artifact.
- 2.4**: The **System Lab Book** window on the right, which displays a log of protocol events with timestamps and file paths.
- 2.5**: The **Screen capture only** window at the bottom right, showing a graph of **nA vs ms** with a signal trace that exhibits a step change.

UI 2.1



2.1.1 File Save and Load Options

2.1.2 Acquisition Play/Stop/Record Options

2.1.3 Membrane Test (Square/Triangle Wave)

2.1.4

2.1.5 Sub Window Display Options

U2.2 Quick Controls

Amplifier Configuration

VClamp Boost (+/-255mV) ▾

Acquisition Mode:

Episodic ▾

Cmd (mV)

0.00 mV ▾

Digital OUTs

3 0

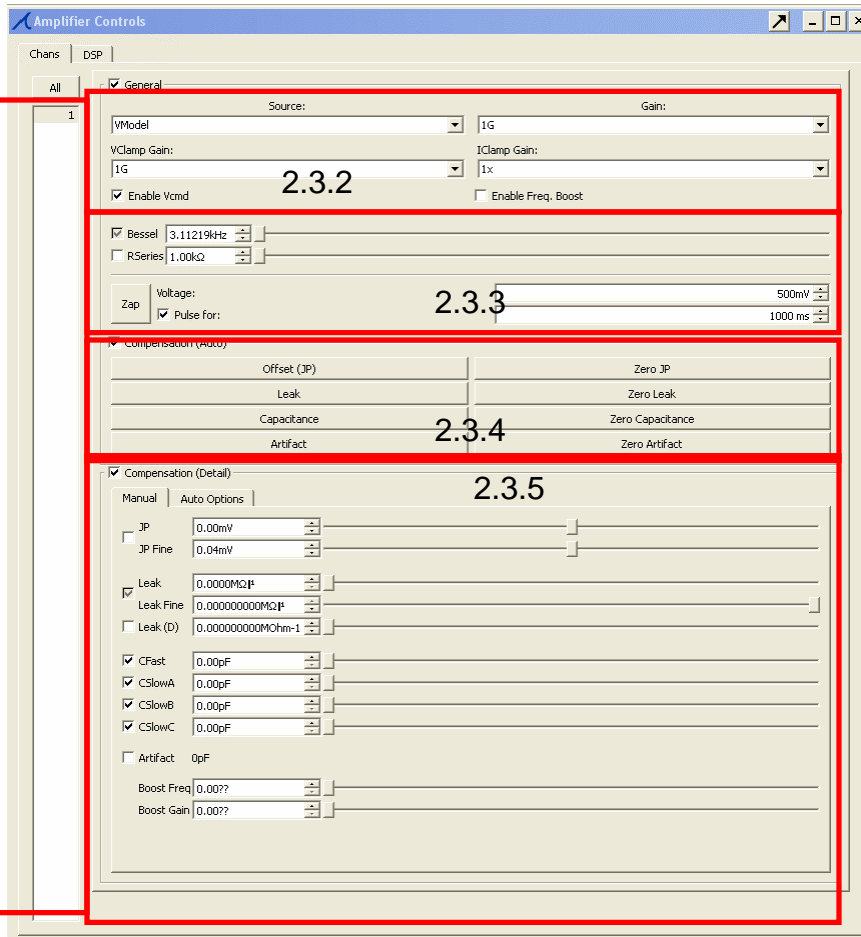
7 4

Sampling (Hz)

20000 ▾

U2.3

2.3.1



2.3.1 Channel selector – Select which channels to control

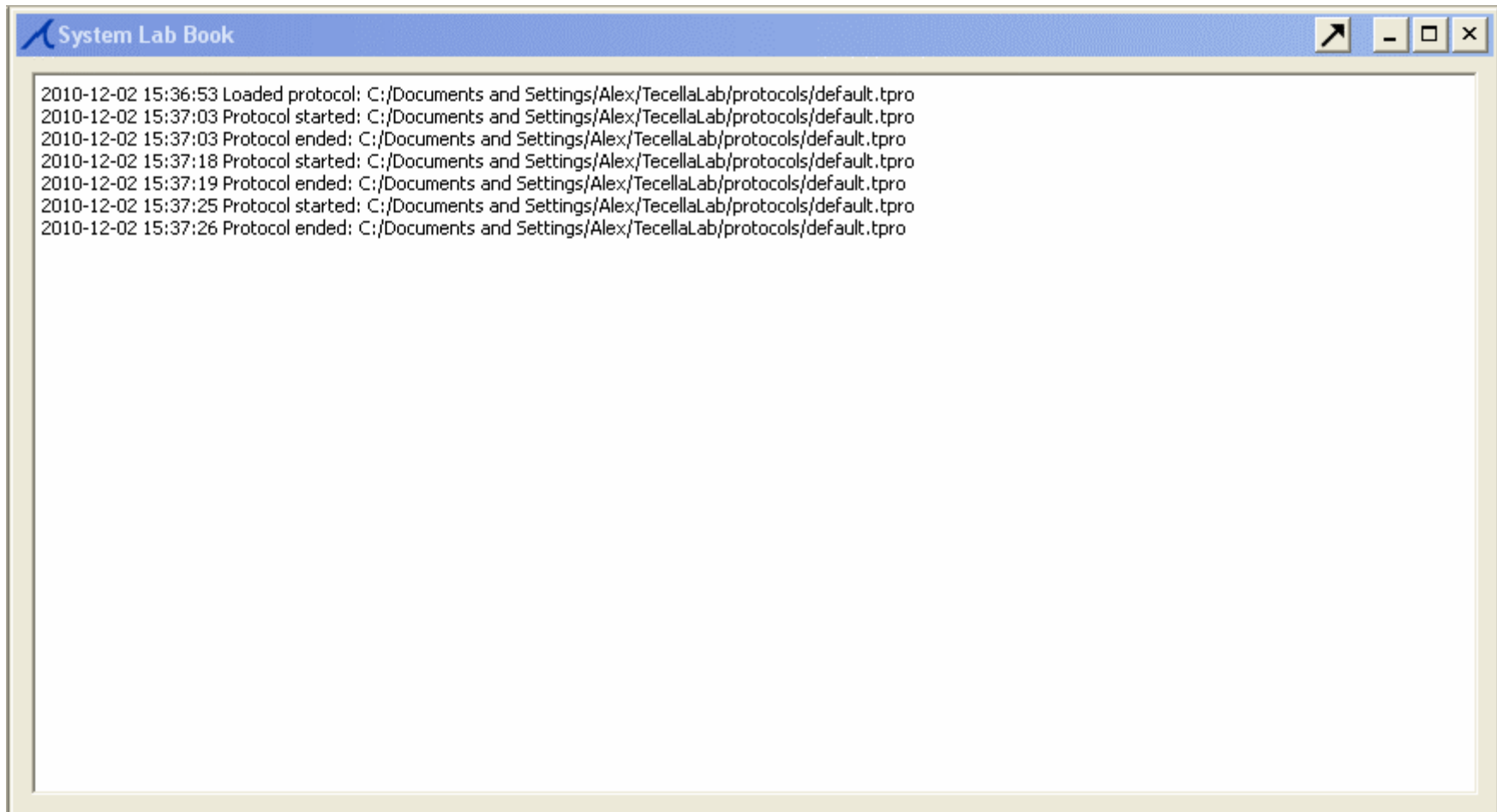
2.3.2 Source and Gain control

2.3.3 Bessel filter, RSeries compensation, Zap control

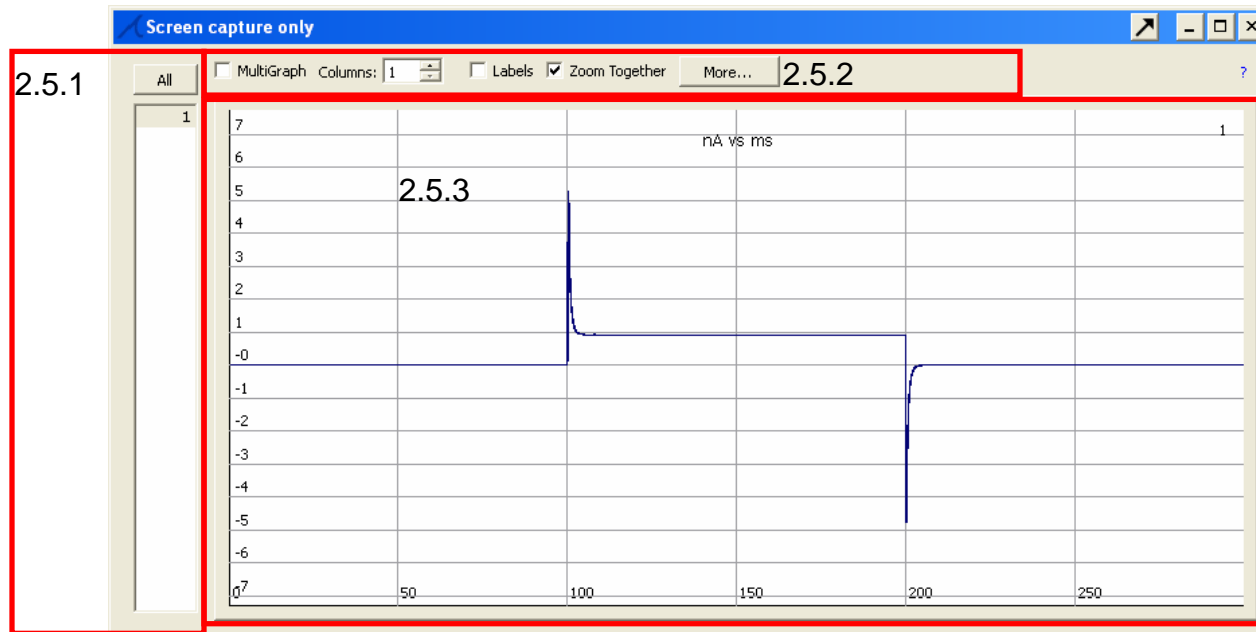
2.3.4 Automatic Compensation control

2.3.5 Manual Compensation control

U2.4 Log Book



UI 2.5 Graph

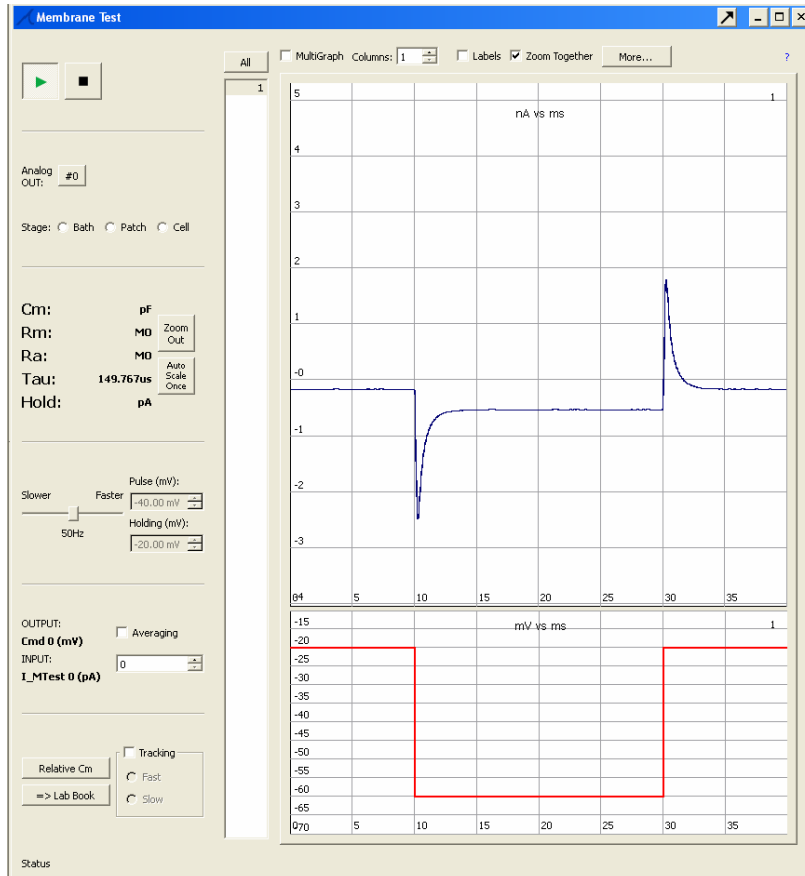


2.5.1 Channel Selector – Select channels to view

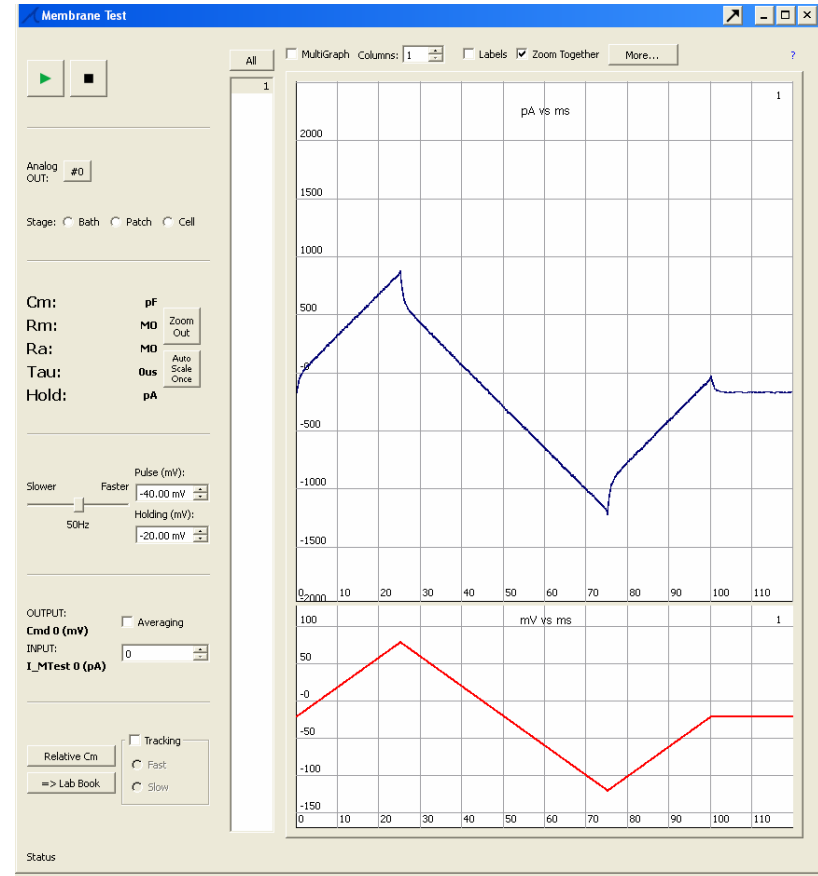
2.5.2 Graph Options Control

2.5.3 Graph Display

UI 2.6 Membrane Test

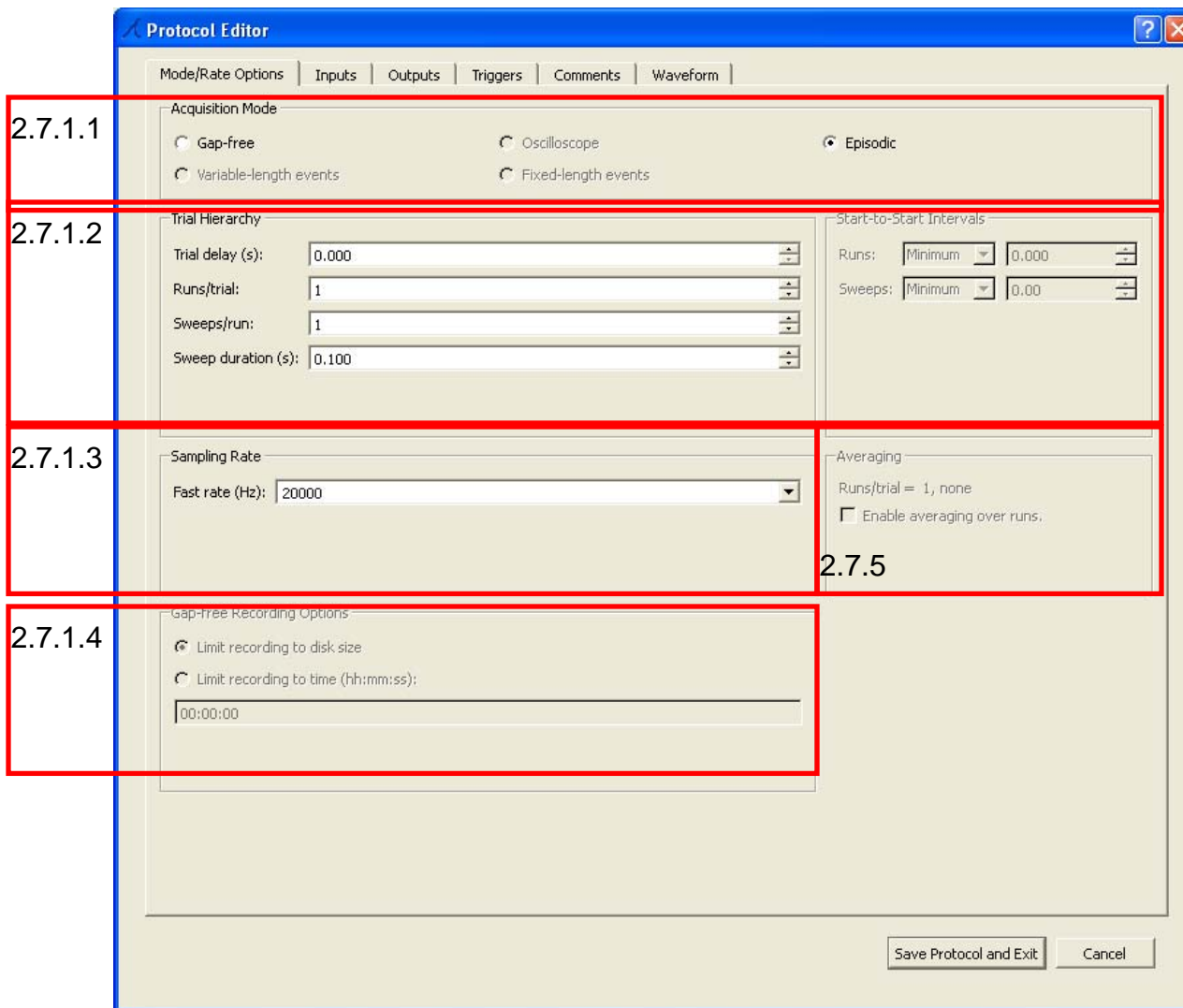


2.6.1 Membrane Test - Square



2.6.2 Membrane Test - Triangle

UI 2.7 Protocol Editor



2.7.1 Mode Rate Options

2.7.1.1 Acquisition Mode

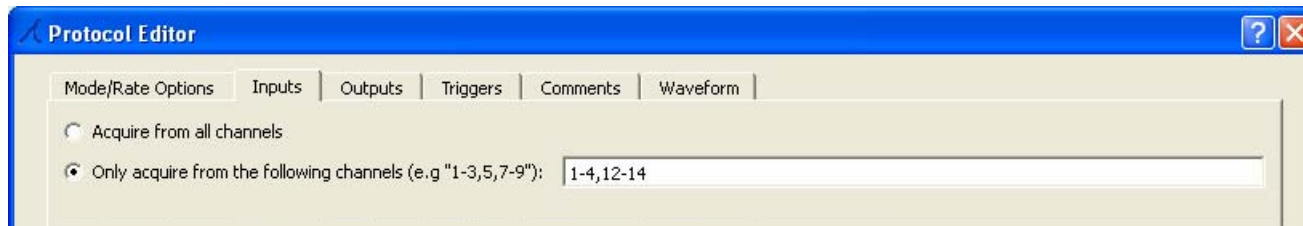
2.7.1.2 Trial Options

2.7.1.3 Sampling Rate

2.7.1.4 Gap-Free
Recording Options

2.7.1.5 Averaging options

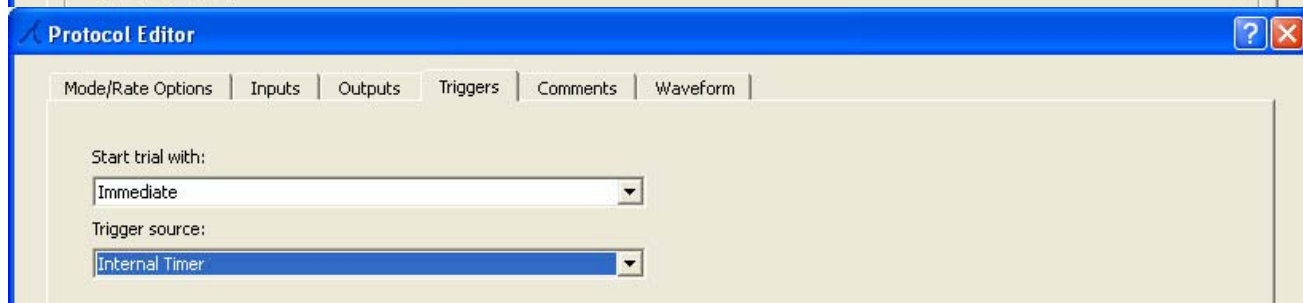
UI 2.7



2.7.2 Inputs – Select channels to acquire from

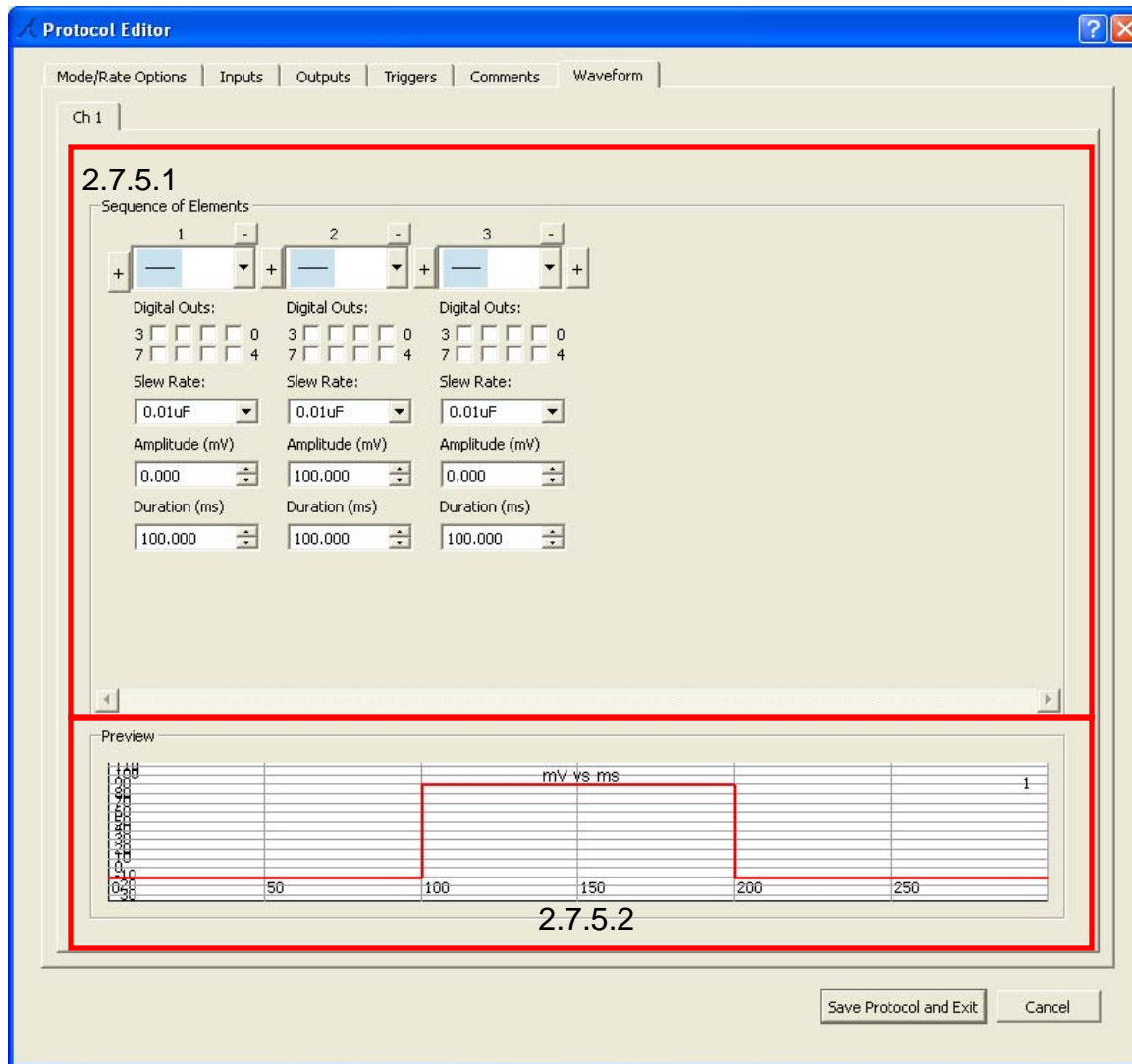


2.7.3 Outputs – Select Analog/Digital Output levels.



2.7.4 Triggers – Select Trigger source.

U2.7.5 Stimulus Editor



2.7.5.1 UI Stimulus controls – Add, remove segments; specify segment length, magnitude, ramp size.

2.7.5.2 Preview - Visual representation of stimulus in 2.7.5.1