TecellaLab

User Guide

Tecella

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Costa Mesa, CA 92626
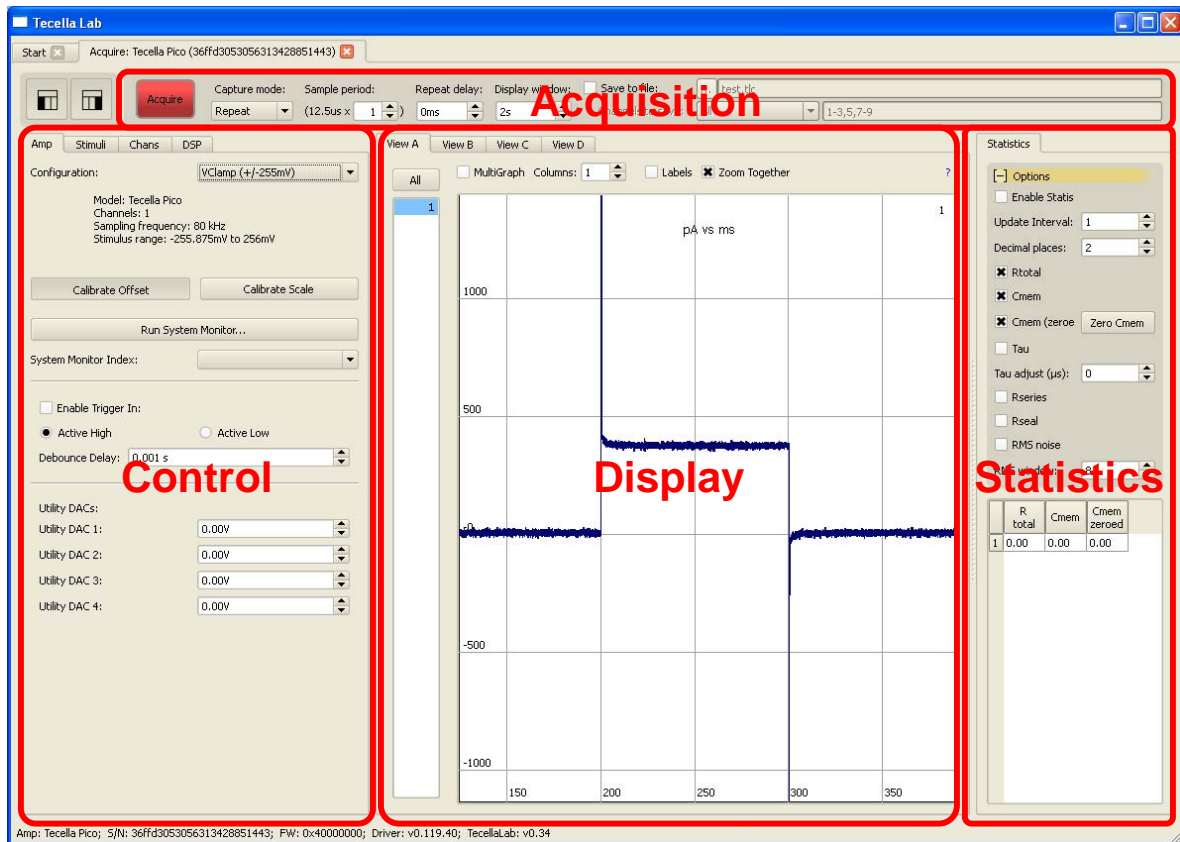+1-714-641-1709
support@tecella.com

Tecella

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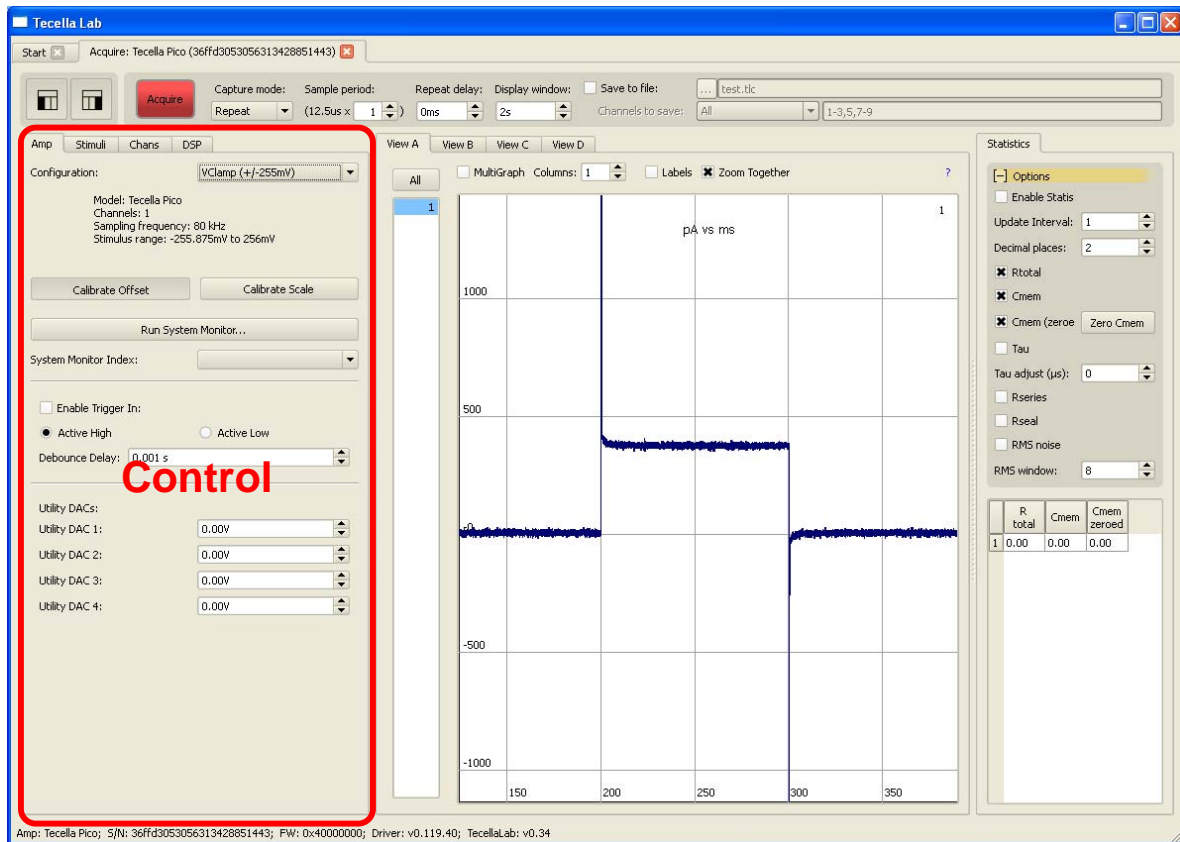
1. Main Window

TecellaLab's Main Window is comprised of 4 sections:

- Acquisition
- Control
- Display
- Statistics

Each of these sections are explained in further detail in the following pages.
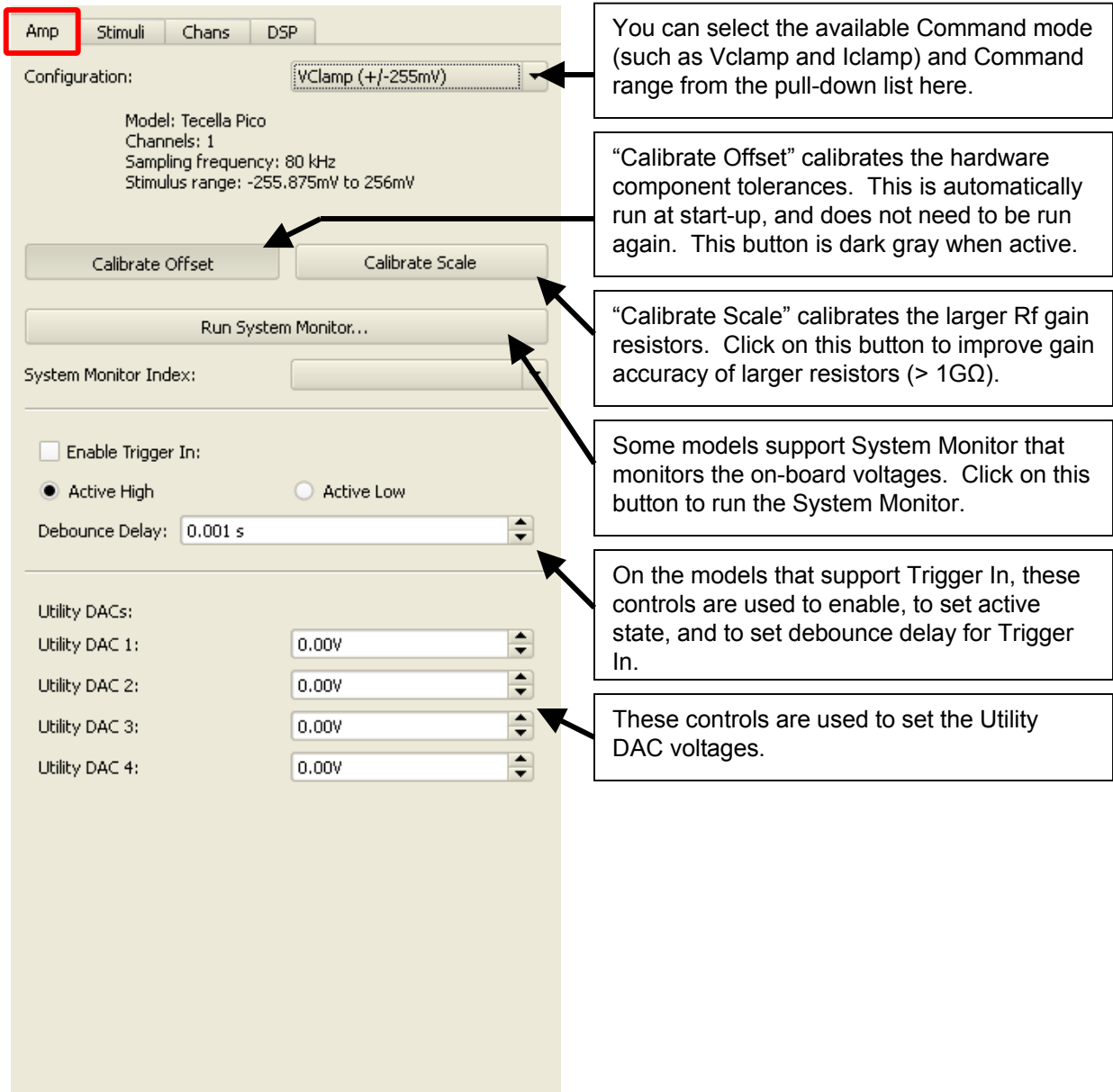
2. Control

The Control section contains all the functions for controlling the amplifier and stimuli, as well as the DSP functions. The Control section is comprised of the following 4 tabs.

Amplifier
Stimuli
Channels
DSP

Each of these tabs are explained in further detail in the following pages.

2-1. Amplifier tab

The Amplifier tab contains the controls for your amplifier's hardware. You should not need
to change settings on this tab often.

You can select the available Command mode (such as Vclamp and Iclamp) and Command range from the pull-down list here.

"Calibrate Offset" calibrates the hardware component tolerances. This is automatically run at start-up, and does not need to be run again. This button is dark gray when active.

"Calibrate Scale" calibrates the larger Rf gain resistors. Click on this button to improve gain accuracy of larger resistors (> 1GΩ).
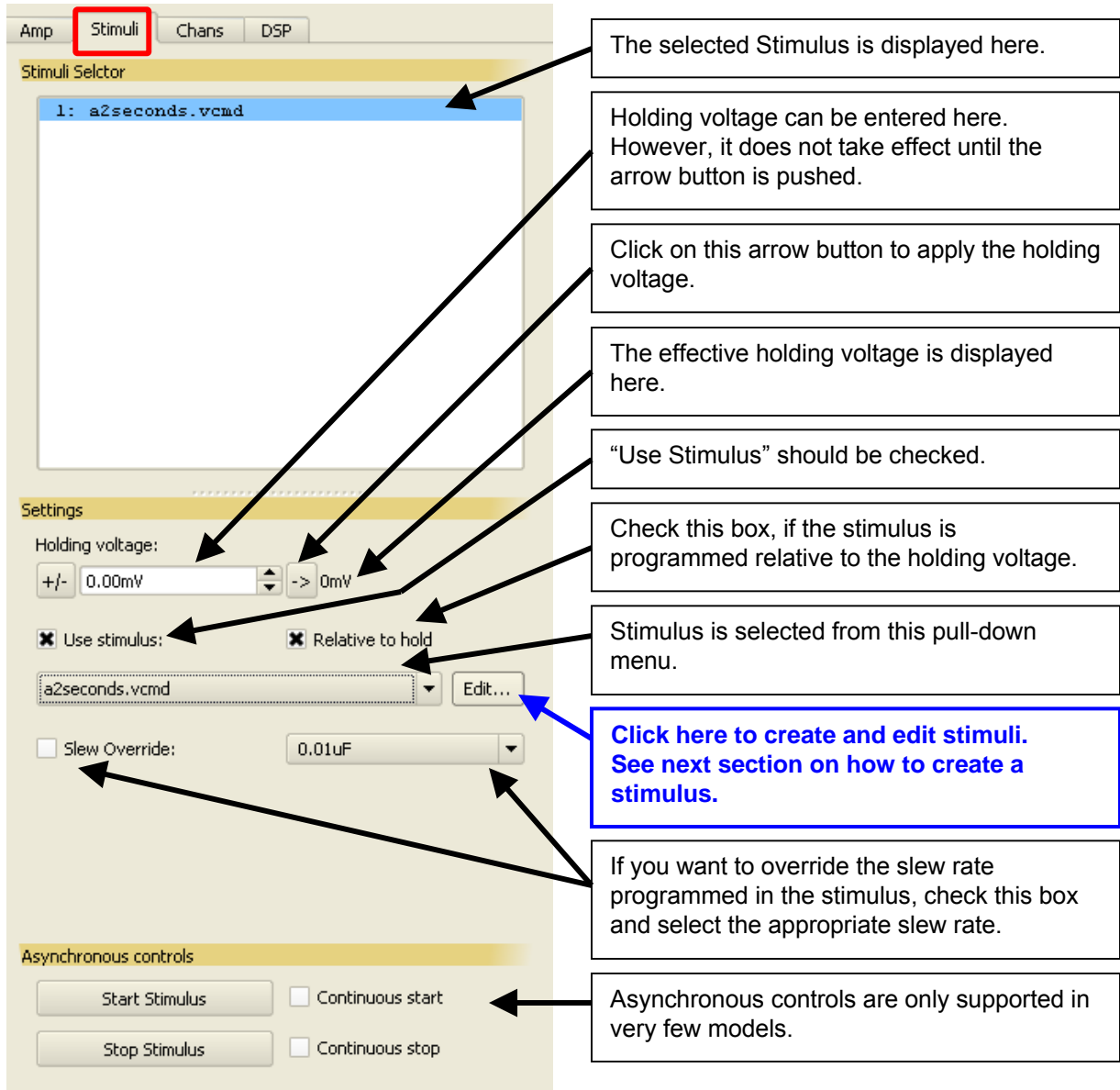
Some models support System Monitor that monitors the on-board voltages. Click on this button to run the System Monitor.

On the models that support Trigger In, these controls are used to enable, to set active state, and to set debounce delay for Trigger In.

These controls are used to set the Utility DAC voltages.

2-2. Stimuli tab

The Stimuli tab contains the controls for creating, editing, selecting, and managing your stimuli.

The selected Stimulus is displayed here.

Holding voltage can be entered here. However, it does not take effect until the arrow button is pushed.

Click on this arrow button to apply the holding voltage.

The effective holding voltage is displayed here.

"Use Stimulus" should be checked.

Check this box, if the stimulus is programmed relative to the holding voltage.

Stimulus is selected from this pull-down menu.

Click here to create and edit stimuli. See next section on how to create a stimulus.

If you want to override the slew rate programmed in the stimulus, check this box and select the appropriate slew rate.

Asynchronous controls are only supported in very few models.

![Tecella]

2-2-1. Create a New stimulus

When you click the "Edit …" button from the previous page, you will see the following Stimulus Editor window.

Click on "New …"

Enter desired stimulus file name here.

Then, click "Save".

![Tecella logo]
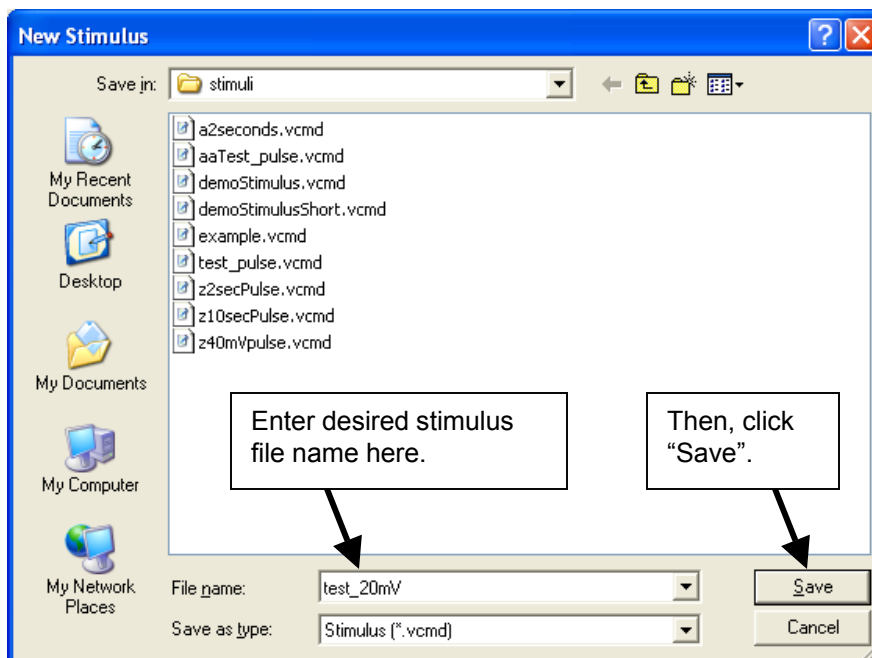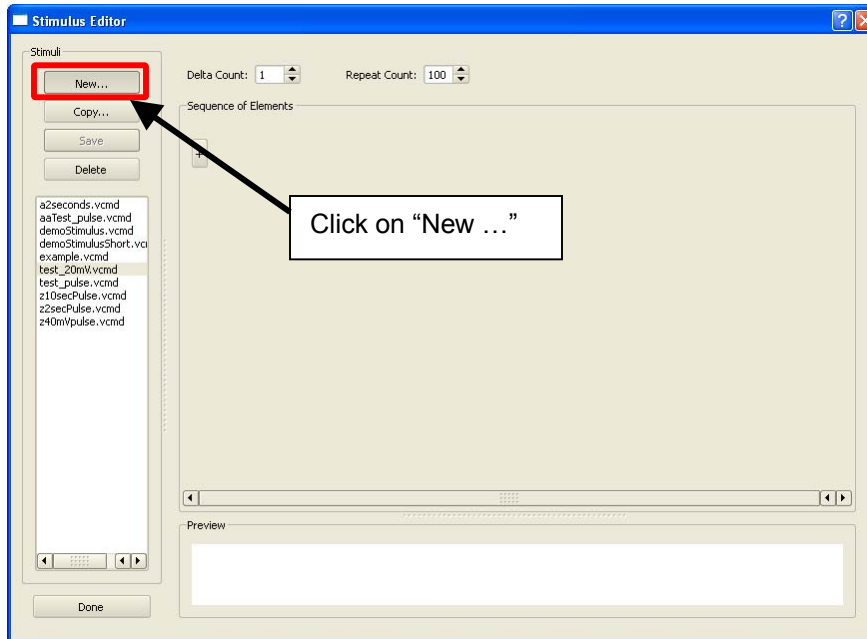
2-2-2. Create a New stimulus or Edit an existing stimulus
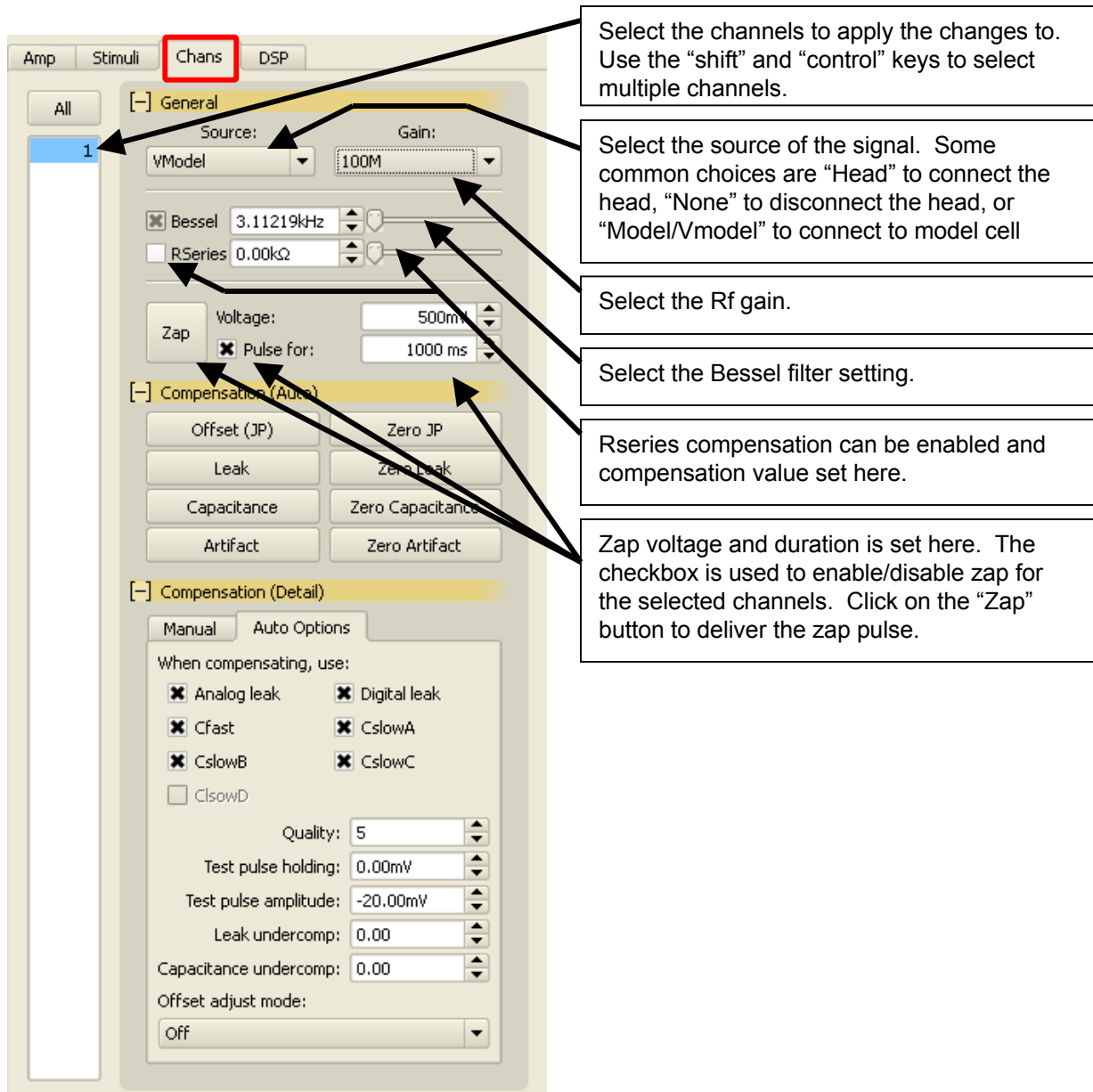
| Set Delta count here. Usually leave this as 1. | Enter Repeat count here. | Click to delete segment. | Click to add segment. | Select segment type here. |

Stimulus Editor

Stimuli

New...
Copy...
Save
Delete

a2seconds.vcmd
aaTest_pulse.vcmd
demoStimulus.vcmd
demoStimulusShort.vcmd
example.vcmd
test_pulse.vcmd
z10secPulse.vcmd
z2secPulse.vcmd
z40mVpulse.vcmd

Done

Delta Count: 1   Repeat Count: 100

Sequence of Elements

| 1 | - | 2 | - | 3 | - | 4 | - | 5 |

Digital Outs: Digital Outs: Digital Outs: Digital Outs: Digital Outs:
1 □□□□ 4   1 ✖□□□ 4   1 □□□□ 4   1 □□□□ 4   1 □□□□ 4
5 □□□□ 8   5 □□□□ 8   5 □□□□ 8   5 □□□□ 8   5 □□□□ 8

Slew Rate: Slew Rate: Slew Rate: Slew Rate: Slew Rate:
0.01uF   0.01uF   0.01uF   0.01uF   0.01uF

Amplitude (mV)   Amplitude (mV)   Amplitude (mV)   Amplitude (mV)   Amplitude (mV)
0.000   40.000   0.000   0.000   0.000

Duration (ms)   Duration (ms)   Duration (ms)   Duration (ms)   Duration (ms)
200.0   100.0   700.0   500.0   500.0

| Digital Out control. |
| Slew control for segment. |
| Voltage for segment. |
| Duration for segment. |

Preview

| Preview the stimulus here. |

| Click "Save", then "Done" when finished. |

2-3. Channels tab (part 1 of 2)

The Channels tab contains the controls for controlling modes and compensations for each channel.

Select the channels to apply the changes to. Use the "shift" and "control" keys to select multiple channels.

Select the source of the signal. Some common choices are "Head" to connect the head, "None" to disconnect the head, or "Model/Vmodel" to connect to model cell
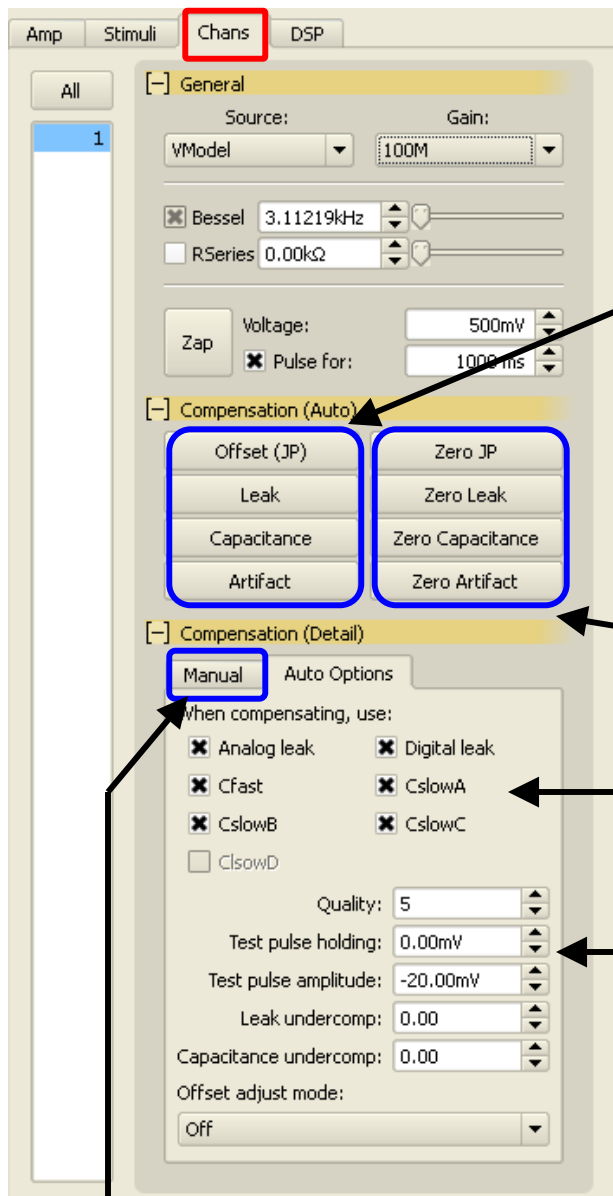
Select the Rf gain.

Select the Bessel filter setting.

Rseries compensation can be enabled and compensation value set here.

Zap voltage and duration is set here. The checkbox is used to enable/disable zap for the selected channels. Click on the "Zap" button to deliver the zap pulse.

2-3. Channels tab (part 2 of 2)

The Channels tab contains the controls for controlling modes and compensations for each channel.

After setting the Compensation Detail below, click on these buttons to perform Auto Compensation.

"Offset (JP)" to compensate offset at the head.
"Leak" to compensate leak from seal.
"Capacitance" to compensate total capacitance.
"Artifact" to digitally remove all artifacts.

These buttons are used to set the zero point for each of the compensations. Usually, these buttons do not need to be pressed.
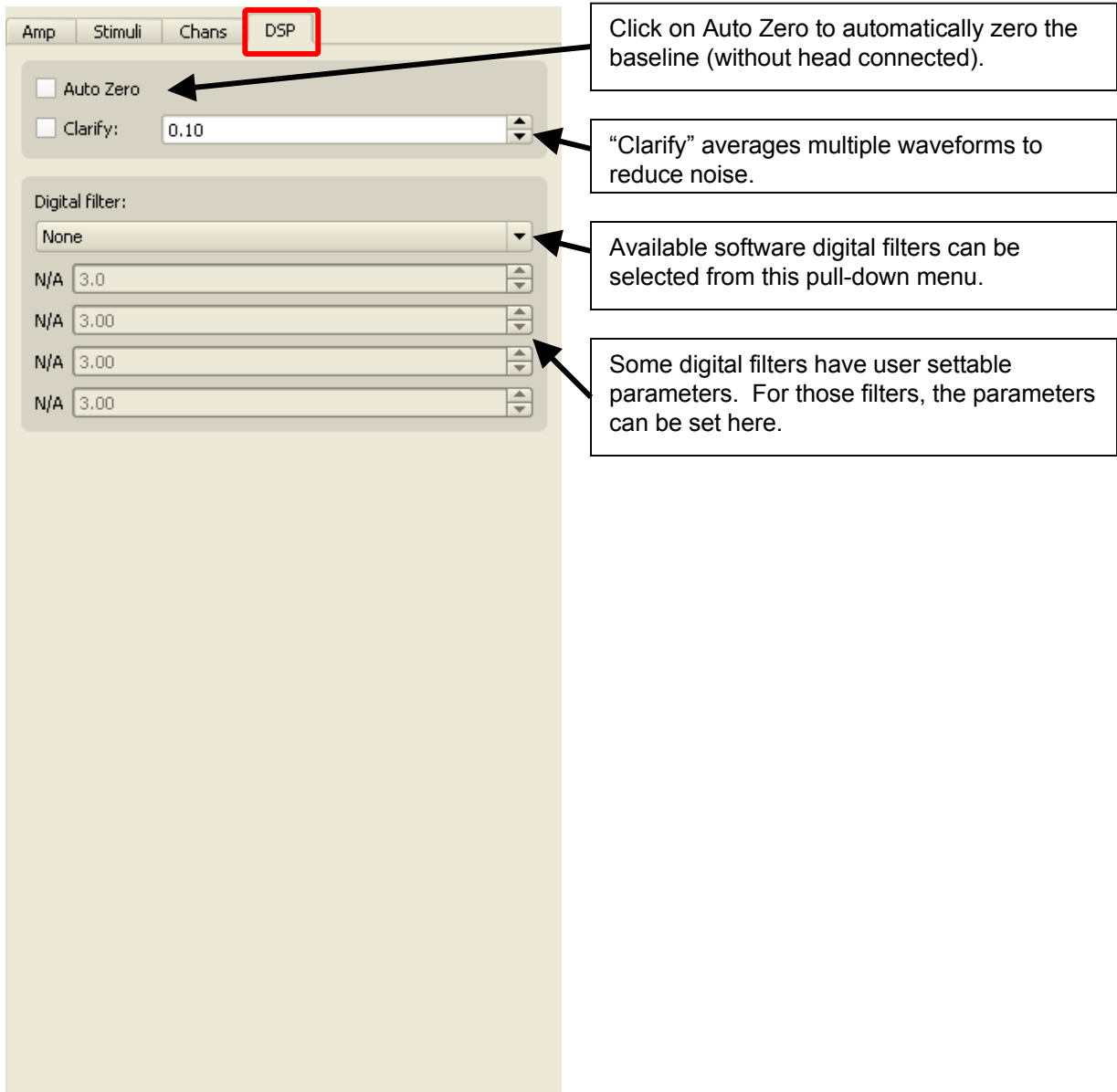
Select the parameters to include in Auto Compensation.

Set the test pulse to be used for Auto Compensation.

All of the compensation can be performed manually by clicking on this tab.

2-4. DSP tab

The DSP tab contains the controls for TecellaLab's soft-DSP features.

Click on Auto Zero to automatically zero the baseline (without head connected).

"Clarify" averages multiple waveforms to reduce noise.

Available software digital filters can be selected from this pull-down menu.

Some digital filters have user settable parameters. For those filters, the parameters can be set here.
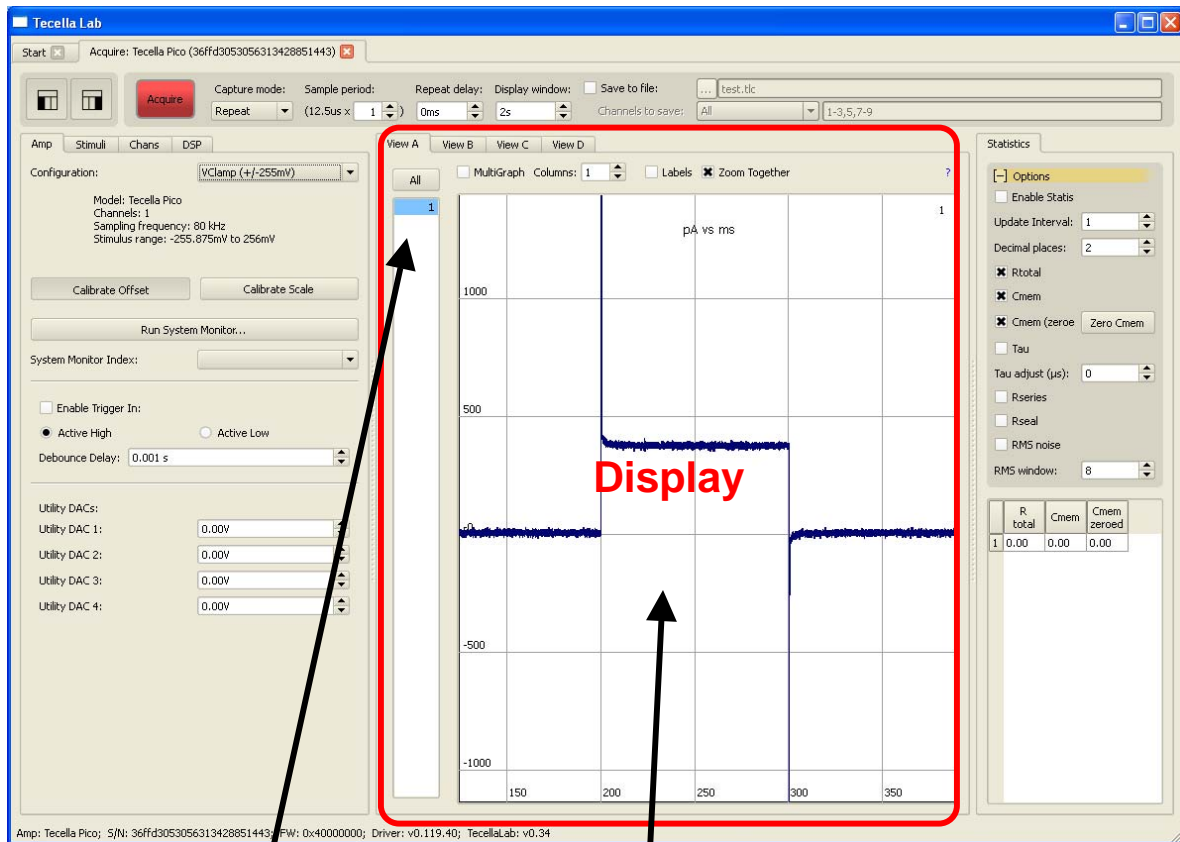
3. Acquisition section

Set the acquisition mode here. Choices are "Repeat", "Continuous", and "Single".

For REPEAT mode, set the time between repeats here.

Save to file. And specify file to save to.

Click on this button to start and stop acquisition.

Sampling rate can be reduced here.

For CONTINUOUS mode, set the window size here.

Specify the channels to save data for.

4. Display section

Select the channels to display.
Use the "shift" and "control" keys
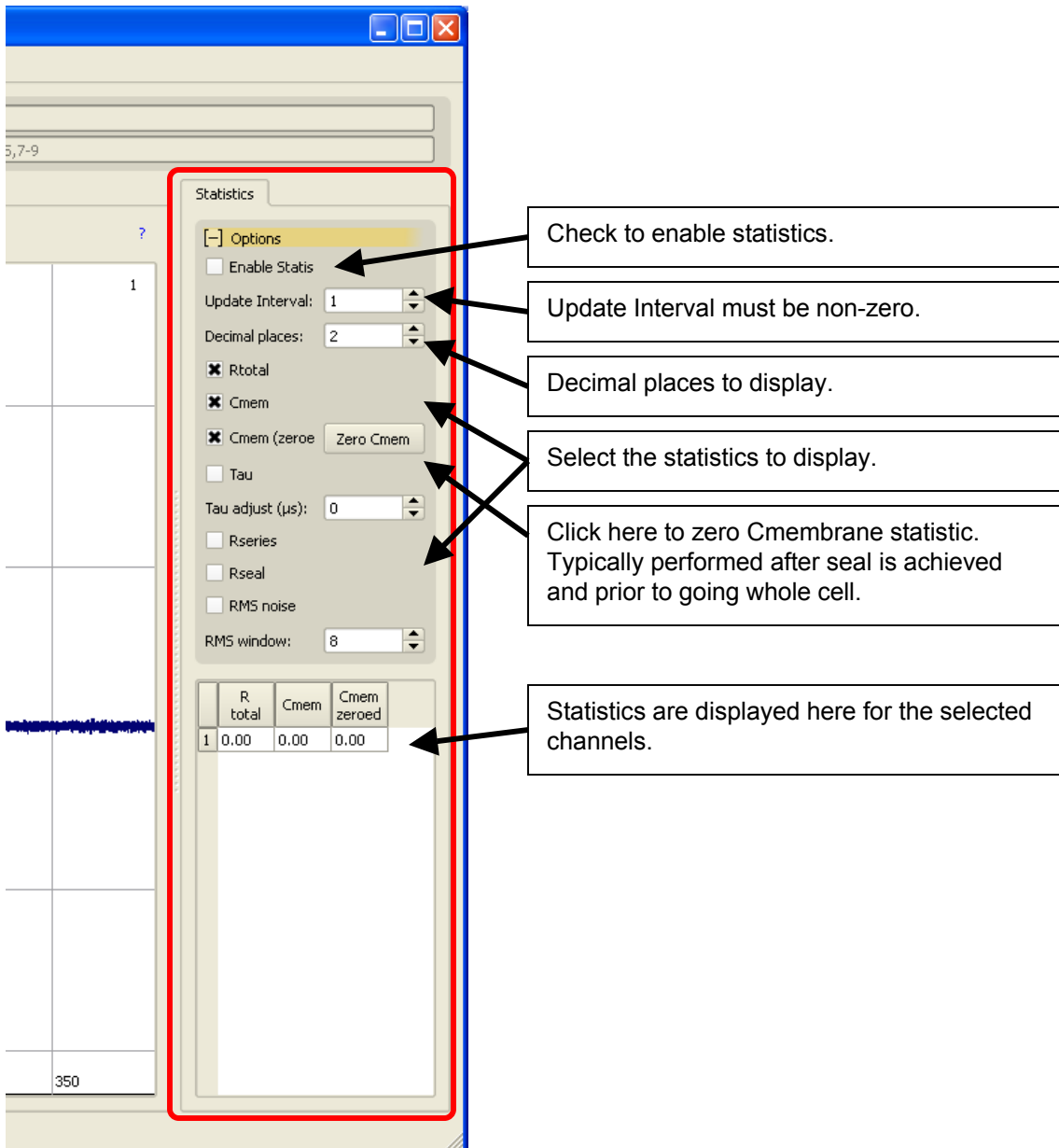to select multiple channels.

The display window has easy "pan", "zoom",
and "fit" features.

To pan, hold down left mouse button and
move the mouse.

To zoom, hold down the right mouse button
and move the mouse.

To fit the entire waveform, double-click on the
left mouse button.

5. Statistics section

Statistics

[–] Options

☐ Enable Statis — Check to enable statistics.

Update Interval: 1 — Update Interval must be non-zero.

Decimal places: 2 — Decimal places to display.

☒ Rtotal

☒ Cmem

☒ Cmem (zeroe) [Zero Cmem] — Select the statistics to display.

☐ Tau

Tau adjust (µs): 0

☐ Rseries

☐ Rseal

☐ RMS noise

RMS window: 8

Click here to zero Cmembrane statistic. Typically performed after seal is achieved and prior to going whole cell.

	R total	Cmem	Cmem zeroed
1	0.00	0.00	0.00

Statistics are displayed here for the selected channels.