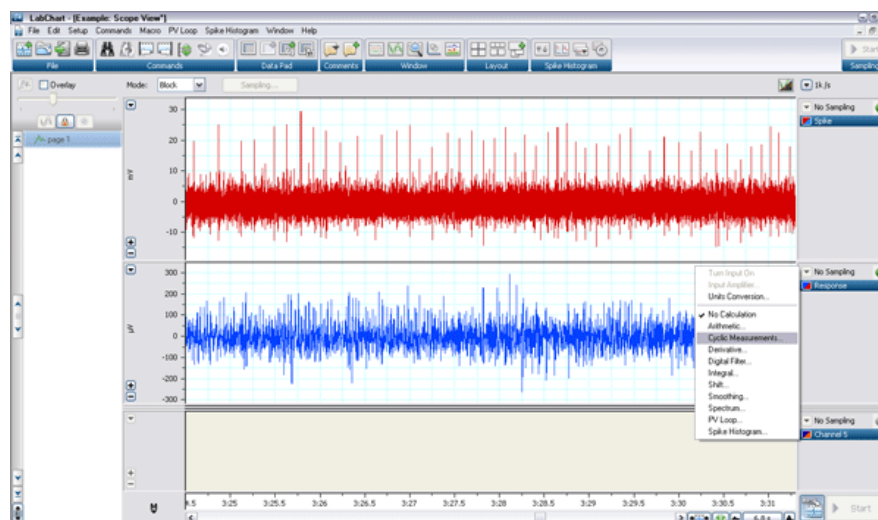


Spike-Triggered Averaging

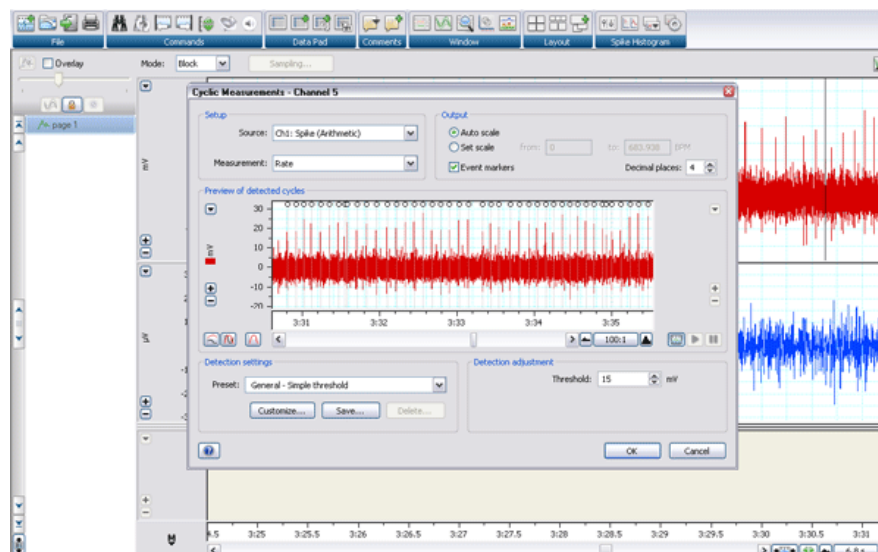
The Scope View Event Mode in LabChart for Windows can be used for the spike-triggered averaging of virtually any signal. LabChart alone may be sufficient for spike-triggered averaging with a single unit recording. But if the spike of interest is one of several units in a multi-unit recording, the Spike Histogram Module can be used to discriminate a single spike before it is used for averaging in Scope View.

To define all spikes as Events in LabChart you can use the peak detector in Cyclic Measurements.

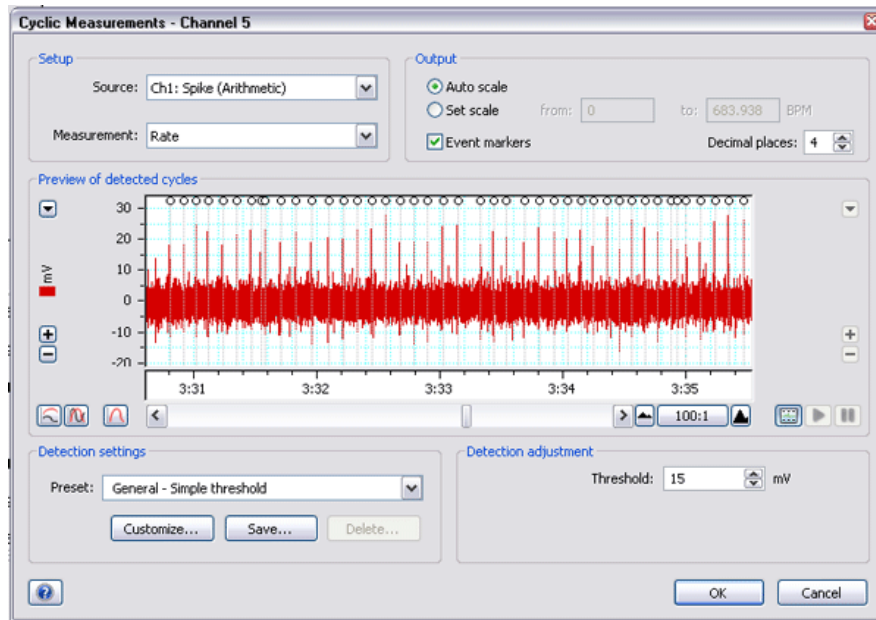
- 1) In an unused channel select Cyclic Measurements from the drop-down Channel Function menu.



- 2) Set the Source to the raw data channel containing your spike data. The Measurement is not important in this case since we just want to define the spikes as events.

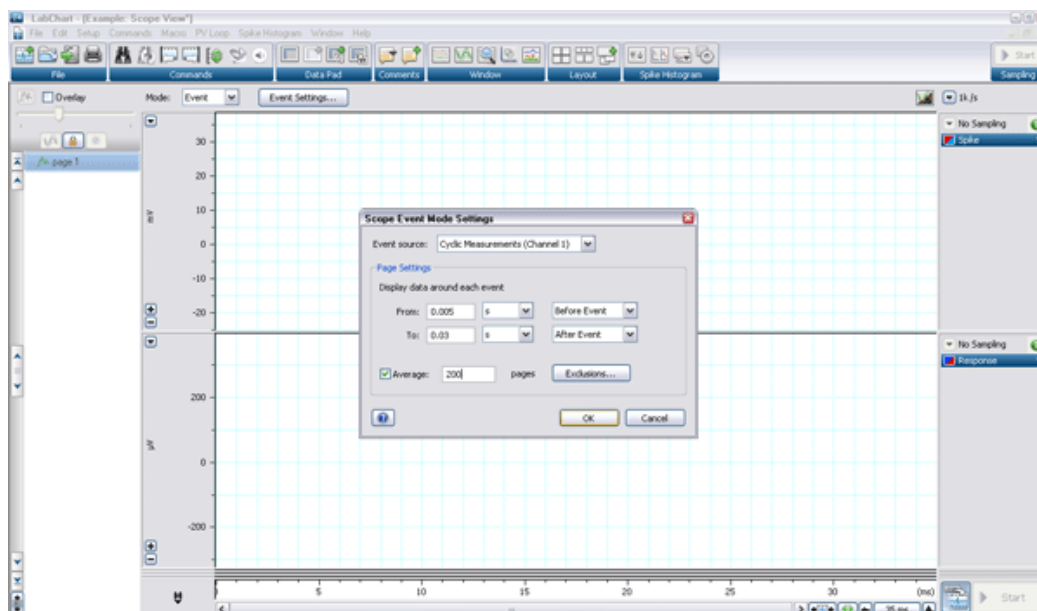


- 3) Select a Detection settings preset. The General-Simple Threshold or Spikey Shape presets may work for a single unit recording, or you can customize the detector. Adjust the peak detector so only your spikes are detected. Adding Event markers to the raw data is optional.

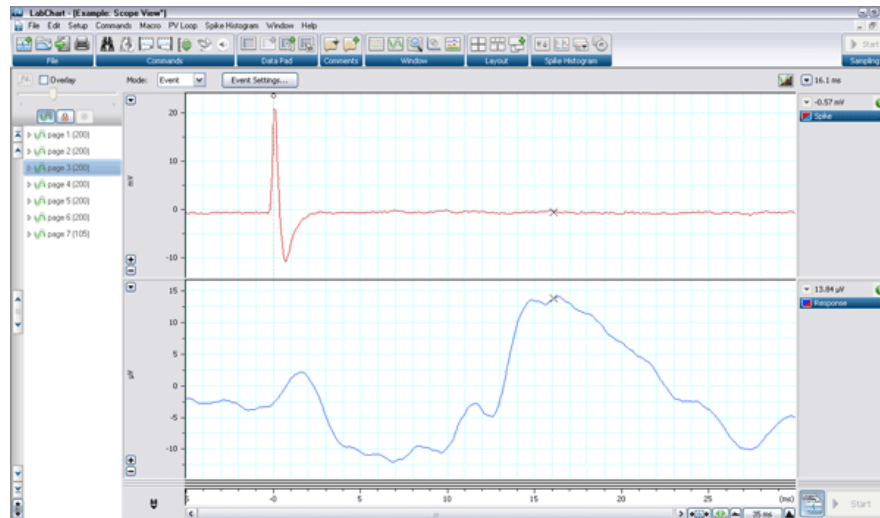


- 4) After defining the spikes as events, select the Event Mode in the Scope View window. In the Event Mode Settings dialog:

- Select the Event source
- Set the appropriate time base, that is, the data displayed around the spike
- Set the number of pages you want to average



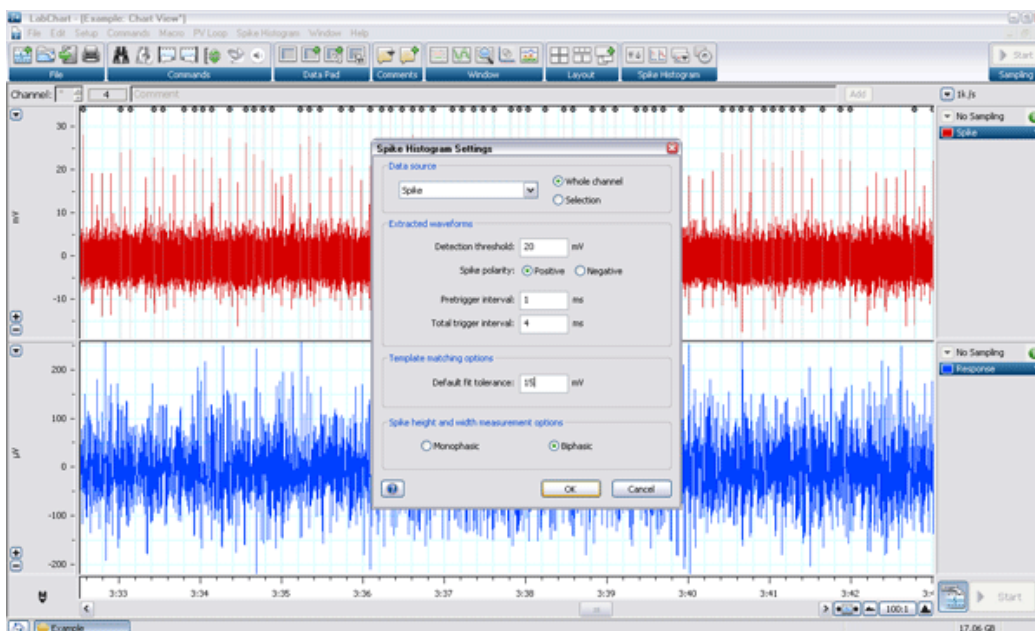
5) The averaged response is now displayed.



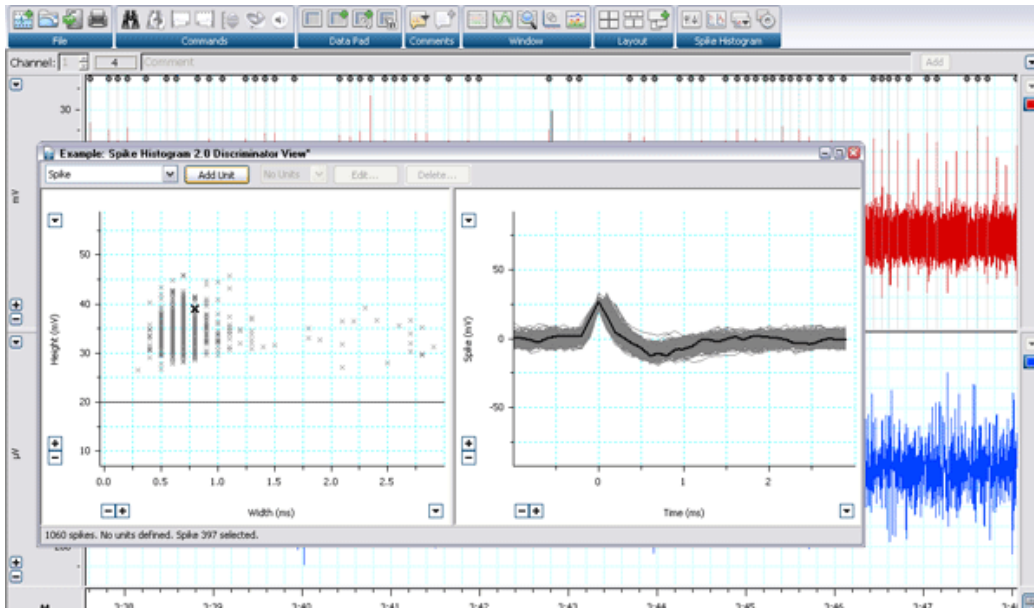
Scope View Event Mode can also be used online for spike-triggered averaging during acquisition. Simply define your event source with Cyclic Measurements before you start recording your experiment data.

If you would like to use one spike from a multi-unit recording for spike-triggered averaging, or if Cyclic Measurements cannot isolate your spike for some reason, you can use the Spike Histogram Module to precisely discriminate and define your spike.

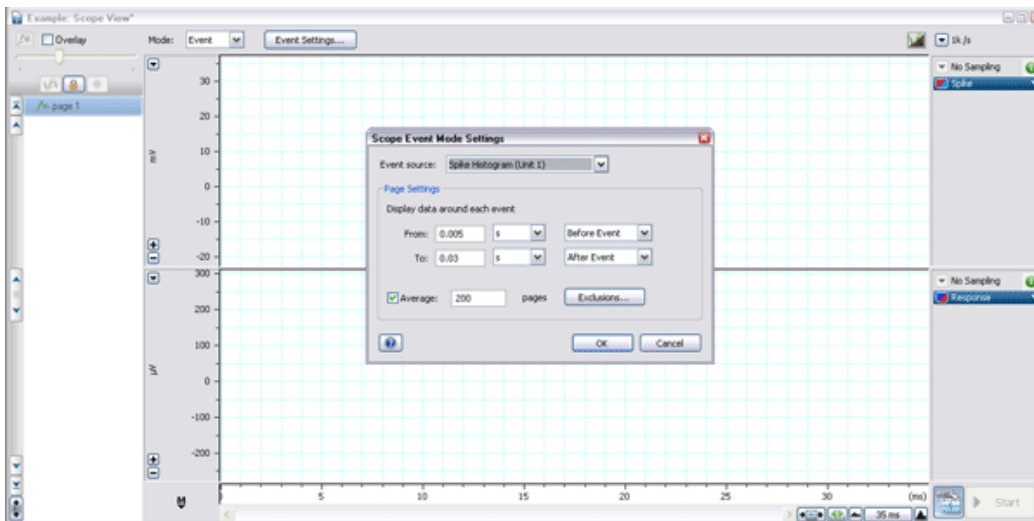
1) Use the Spike Histogram Settings dialog to set the detection parameters for your spike.



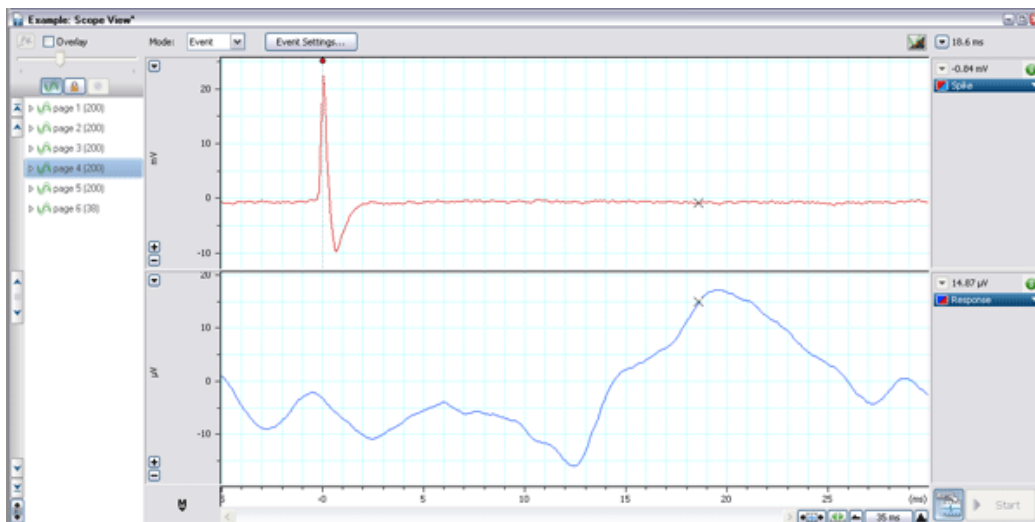
2) In the Discriminator View, select a template spike and click Add Unit to define your unit.



3) Open the Scope View Window and select the Event Mode. The unit defined by Spike Histogram will be listed as an Event Source in the Event Mode Settings dialog.



- 4) Only the responses to those spikes included in the Spike Histogram unit are displayed in the averaged Scope View pages.



Spike Histogram and Scope View Event Mode can be used online. Simply define your unit with Spike Histogram prior to recording your experiment data. All of the subsequent spikes that match your unit template will be included in the spike-triggered average.