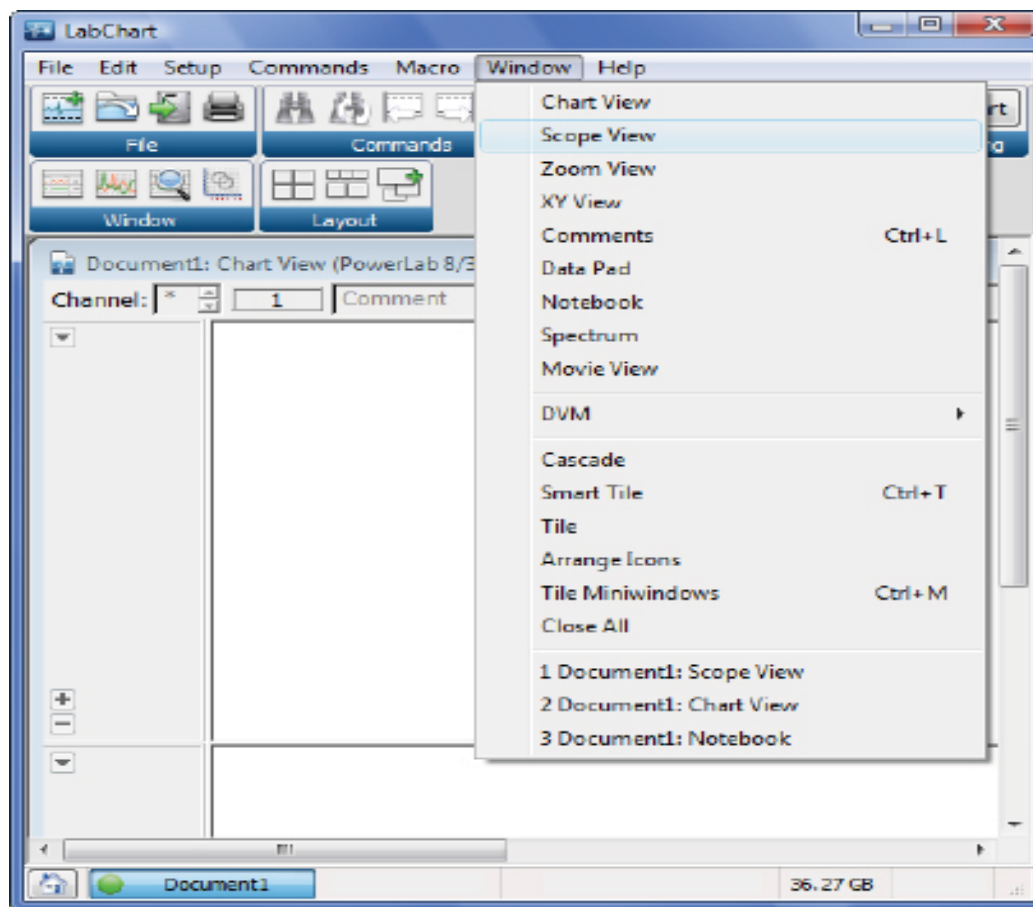


The LabChart 7 Scope View provides an additional way of displaying LabChart data. It provides the display and analysis capabilities of a digital storage oscilloscope using PowerLab. Due to the flexibility of LabChart, Scope View can be used to average signals on multiple channels in real time.

In Scope View, each sweep is recorded and represented in pages, creating a list of recorded waveforms that can be averaged and overlaid for analysis.

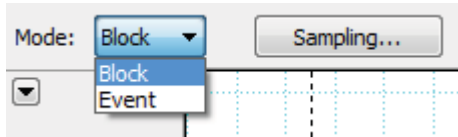
Displaying LabChart 7 Scope View



Open Scope View from the Window drop-down menu or by clicking Scope View button in Windows section of the LabChart Toolbar

- Open Scope View by choosing **Window > Scope View**
- Alternatively, click **Scope View** button in **Windows** section of the **LabChart Toolbar**.

Setting up Recording Mode in Scope View

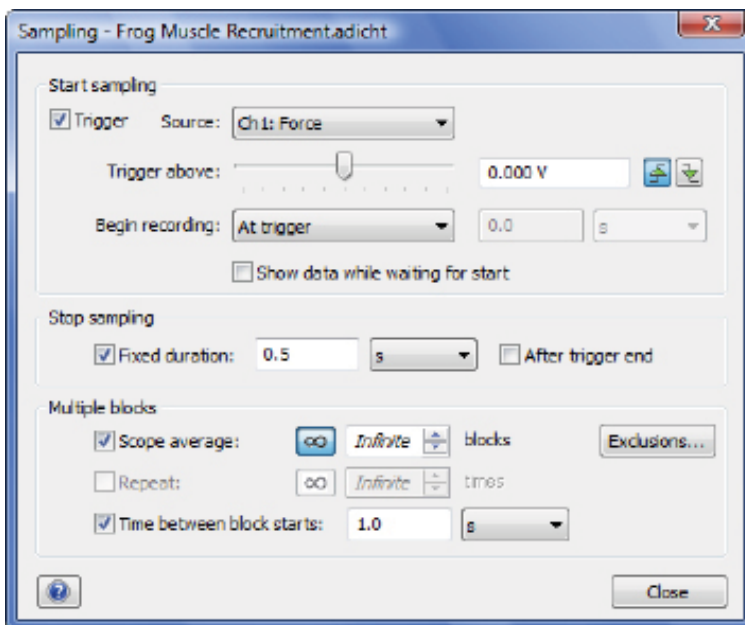


Record data in Scope View using either Data Blocks or Events

Scope View records data into pages using either data blocks or events using Events Marker

A. Block Mode Recording

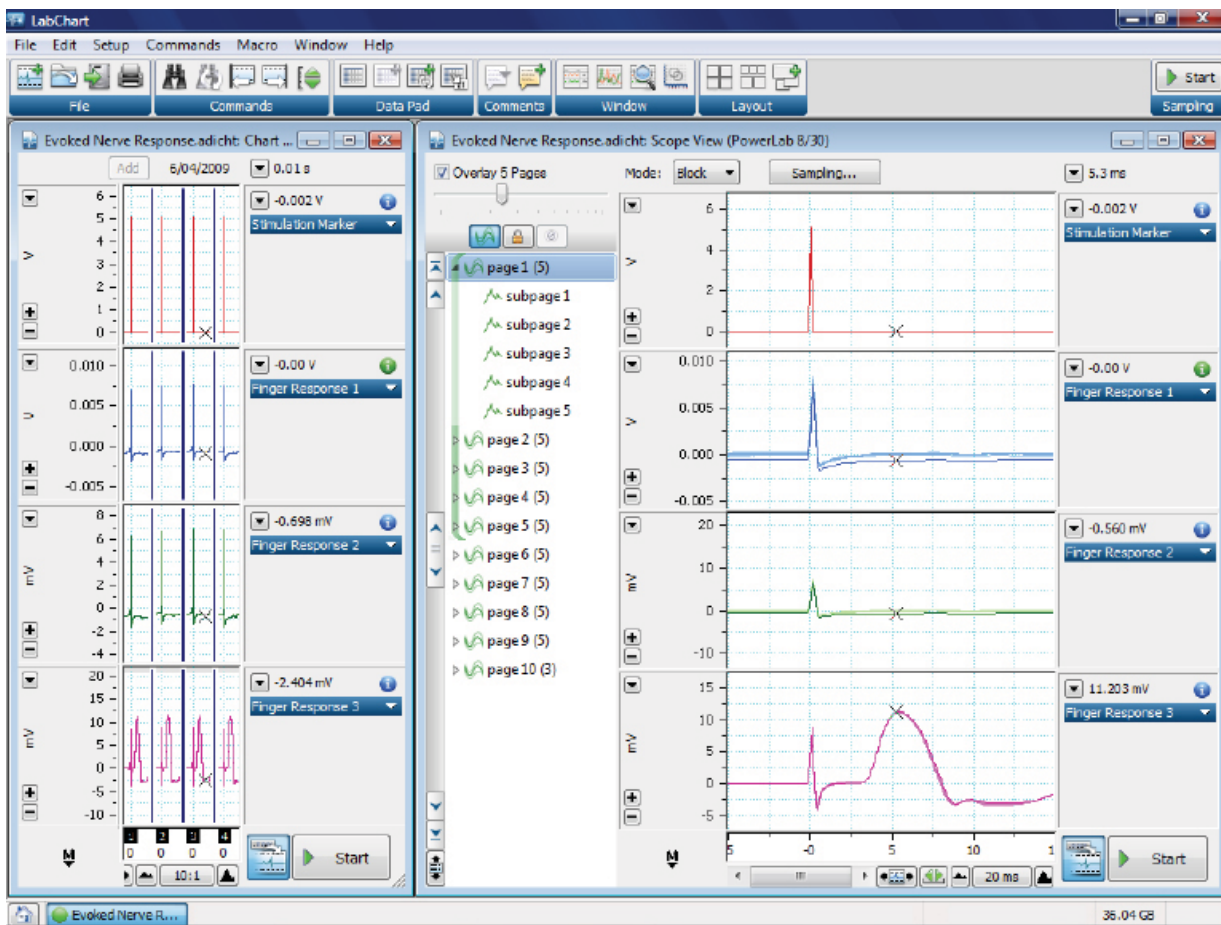
- Choose **Block** from the Scope View **Mode** drop-down menu
- Click the **Sampling** button.



Scope Sampling Dialog

- In the **Start Sampling** panel,
 - o Tick the **Trigger** box.
 - o Select trigger **Source** from the drop down menu
 - o Choose Trigger level required to start LabChart recording from the **Trigger above** slide bar
 - o Select between positive-going transition (or contact closure) or negative-going transition (or contact opening) from the **Trigger slope**
 - o Select when to **Begin Recording**
 - o Tick the **Show data while waiting for trigger** to view data while waiting for the trigger.

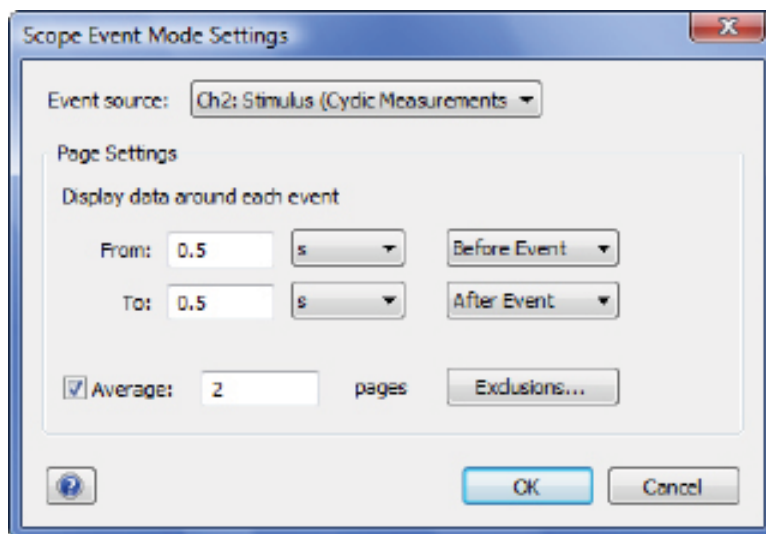
- In the **Stop Sampling** panel,
 - o Tick the **Fixed duration** checkbox and select when to stop sampling
 - o Tick **After trigger end** checkbox to stop sampling after a fixed duration from when the trigger ended
- In the **Multiple Blocks** panel,
 - o **Scope average** checkbox is only applicable if **fixed duration** is checked in the **Stop Sampling** panel. Choose the number of sweeps to be averaged.
 - o Click **Repeat** checkbox and enter the number averages to record.
- Click **Close**
- Click **Start** recording in Scope or Chart View. Data will appear as blocks in Chart View



In Scope View (left) Block Mode recording, data appears as blocks in Chart View (right).

B. Event Mode Recording

- Choose **Event** from the Scope View **Mode** drop-down menu
- **Event Mode** will work if **Event Markers** are present. **Event Markers** can be generated using:
 - o Cyclic Measurements
 - o Peak Analysis Module
 - o Spike Histogram Module
- To generate **Event Markers** using Cyclic Measurements, select an empty channel and open **Cyclic Measurements** dialog. Select **Source** channel that will contain a detectable event. Check **Events Markers** on in the Output panel.
- Click **OK**



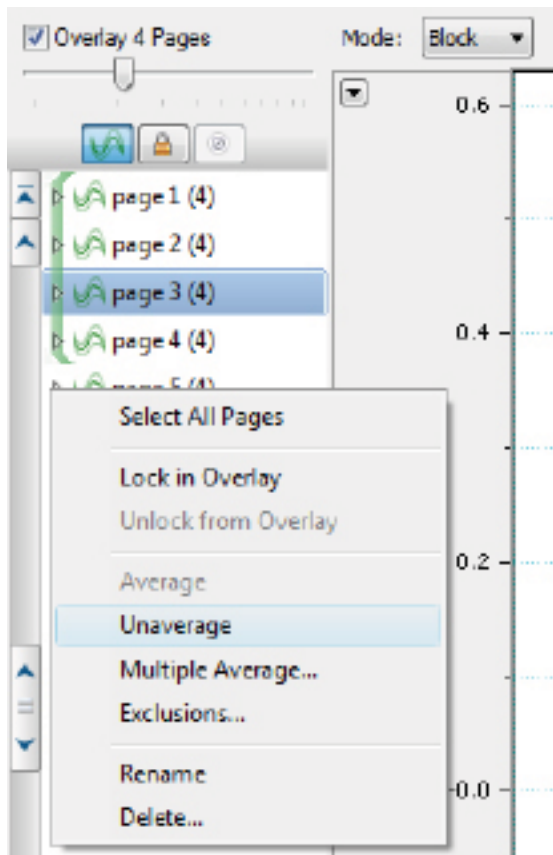
Scope View Settings Dialog

- Click the **Events Settings** button in Scope View
- In **Event Source** drop-down menu, choose the channel containing the channel calculation
- In the **Page Settings** panel, enter the time to **display data around each event** before or after Event Marker. Tick the **Averaging** checkbox and select the number of pages to go in each average.
- Click the **Exclusions** button to automatically exclude pages from the average if they have noisy or missing data.

Analysis in Scope View

A. Averaging Sweeps

- Sweeps are recorded and displayed in the **Page Explorer** at the left hand side of the Scope View
 - o When averaging, a page is an average of subpages (sweeps).
 - o When not averaging, a page is just a sweep.

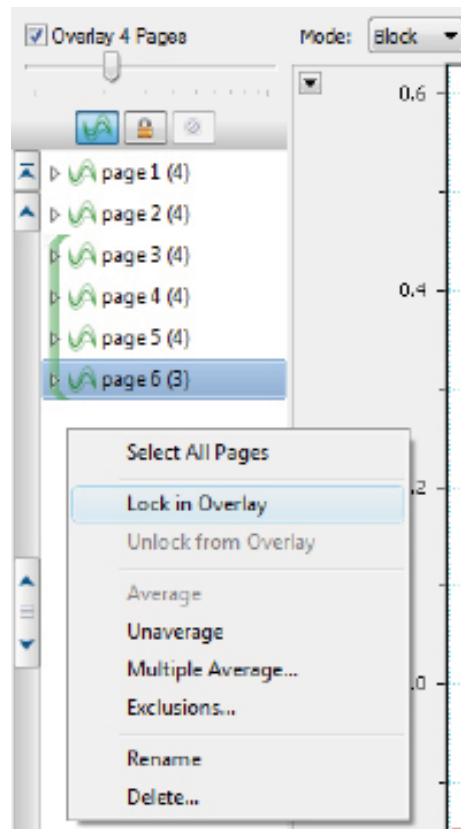


Right-clicking on Page Explorer brings up to bring up Averaging options

- Right click in the **Page Explorer** to list **Averaging options**
 - o **Average:** Average user selected pages
 - o **Unaverage:** Unaverage selected averaged page
 - o **Multiple Average:** Recalculate and apply averaging for selected/all pages. Option to choose between page-based or time-based average.
 - o **Exclusions:** Set criteria to automatically exclude undesired sweeps from averaging

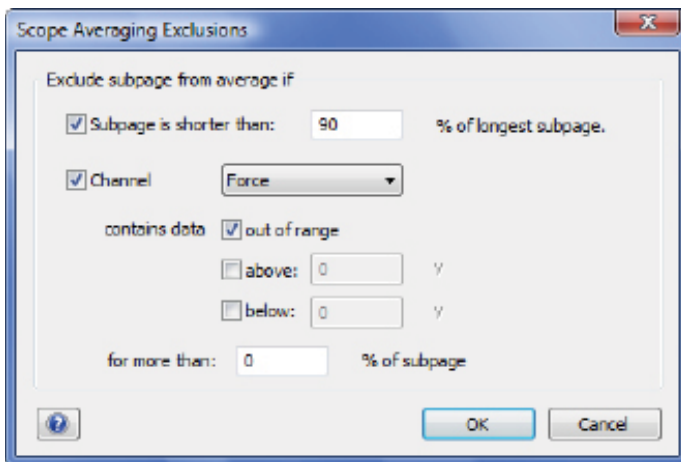
B. Overlaying Sweeps

- Tick on the **Overlay** checkbox and select the number of pages to be overlaid using the **Overlay page control slider**. Overlaid pages will be indicated on the left by the green bracket with the averaged trace appearing in black on the right.
- Select the padlock icon or right click in the **Page Explorer** to lock a page and **Always show selected page in overlay**.



Scope Overlay checkbox and Overlay page control slider. Right-clicking in Page Explorer will bring up Overlay options C.

Excluding Pages from Analysis



Scope Averaging Exclusions dialog to remove undesired subpage from averaging

- To exclude a page/subpage from averaging, click on **Exclude selected page/subpage from average** icon
- Open the Exclusion dialog by right click in the **Page Explorer**. Exclusion criteria includes:
 - o Subpage that are shorter than desired
 - o Subpages which have out of range data, or have data that is too high or too low