

# PowerPROview

Graph Object and Graphing Data

Users Guide

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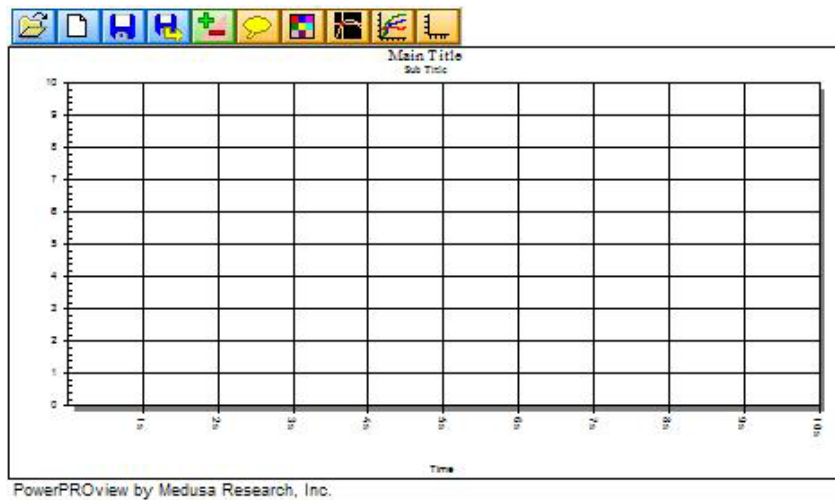
## Graphing Object and Graphing Data Users Guide

### Introduction

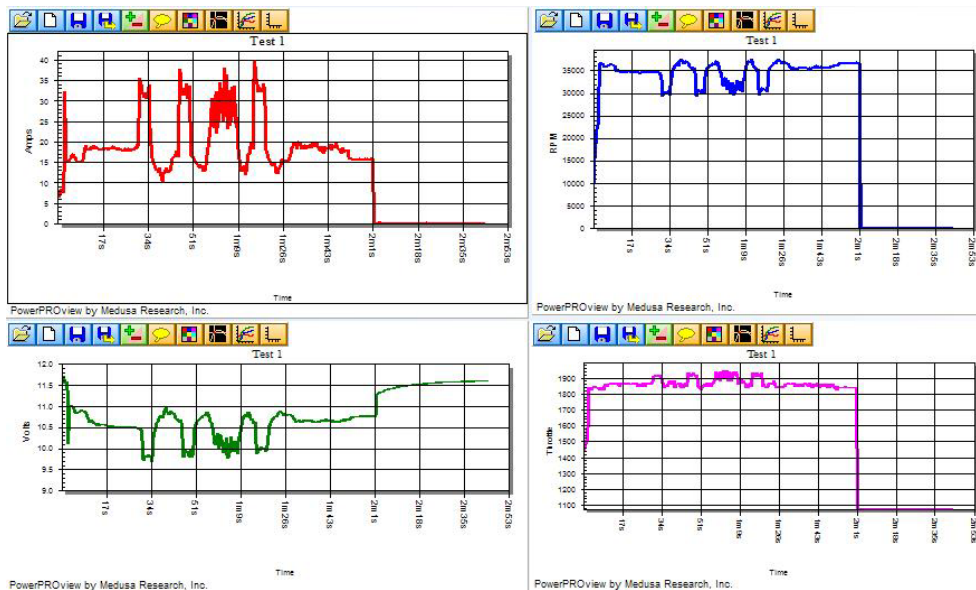
The Graph Object is used to graph real-time or saved data. You can place notations on the graph, plot with multiple axis, overlay several sets of data for comparison, and plot any values on both the X and Y axis (i.e. Amps vs. Volts).

### Creating a Graph Object

To create a Graph Object you must either create a new Data View or enter Design Mode for a Data View. Once in Design Mode drag and drop a Graph object from the Object selector onto the Data View. Size and place in the desired position and exit Design mode.



You can have one Graph Object or as many Graph Objects on a Data View (or Views) as you want.



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When the Graph Object is first created the default settings from the System Options are used. Once a Graph Object is created you can change its local settings and they will be saved with the Data View when it is saved. If you save the graph data the local settings will also be saved with the graph data.

The basic sequence of events for the creation of a graph object when a Data View is loaded is as follows:

1. Create the Graph Object.
2. Set graph settings from System Options (Graph Defaults).
3. Set graph settings from saved Data View values.
4. Load Graph Data file, if one was saved.
5. Set graph setting from Graph Data file, if loaded.

What this means is that when you load a graph data file it will override any current graph settings with those save in the graph data file. This allows you to customize each graph and have the ability to load it into any Graph Object and have it look the same.

It also means that a Graph Object in a Data View will always have the same settings every time that Data View is loaded.

### **Graph Data**

The data that is plotted in a Graph Object is actually contained in the Graph Objects memory. That means that when you add data from a saved data file to a Graph Object to be plotted, the data to be plotted is actually copied into the Graph Object. Only those data channels selected to be plotted (i.e. Volts, Amps, etc.) are copied into the Graph Objects memory.

Once a plot, or plots, has been created in a Graph Object, and all the graph settings, titles and annotations are set, you can save the Graph Object data into a graph data file to be loaded at a later time. If you do not save the graph data then your graph will be lost once the view is closed.

### **Graphing Data While Recording**

When Recording is started all graph objects on all data views will plot the recorded data, for those data values selected, for the duration of the recording. Once recording has stopped you can save the recorded data itself or the data loaded into the Graph Object. Usually you would save the recorded data to be able to plot other graphs from the data.

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### **Toolbar**

The toolbar appears in the upper left corner of each graph object.



Open/Load Graph File



New/Reset Graph



Save Graph



Save Graph As



Add/Remove Data



Text Labels



Custom Graph Settings



Enable/Disable Data Cursor



Setup Graph Axes



Axis Scaling

### **Open/Load Graph File**

Click on the Add/Load Graph Data button to browse for a previously save graph data file. A graph data file contains the graph settings and plots previously setup and saved.

### **New/Reset Graph**

Click on the New/Reset Graph to remove all data from the graph and reset all settings back to the defaults. Use this function to clear a graph in preparation for setting up a new graph.

### **Save Graph**

Click the Save Graph button to save the graph settings and plotted data to a graph data file.

### **Save Graph Data As**

Click the Save Graph As button to save the current graph settings and plotted data to a graph data file with a different name than the one currently loaded.

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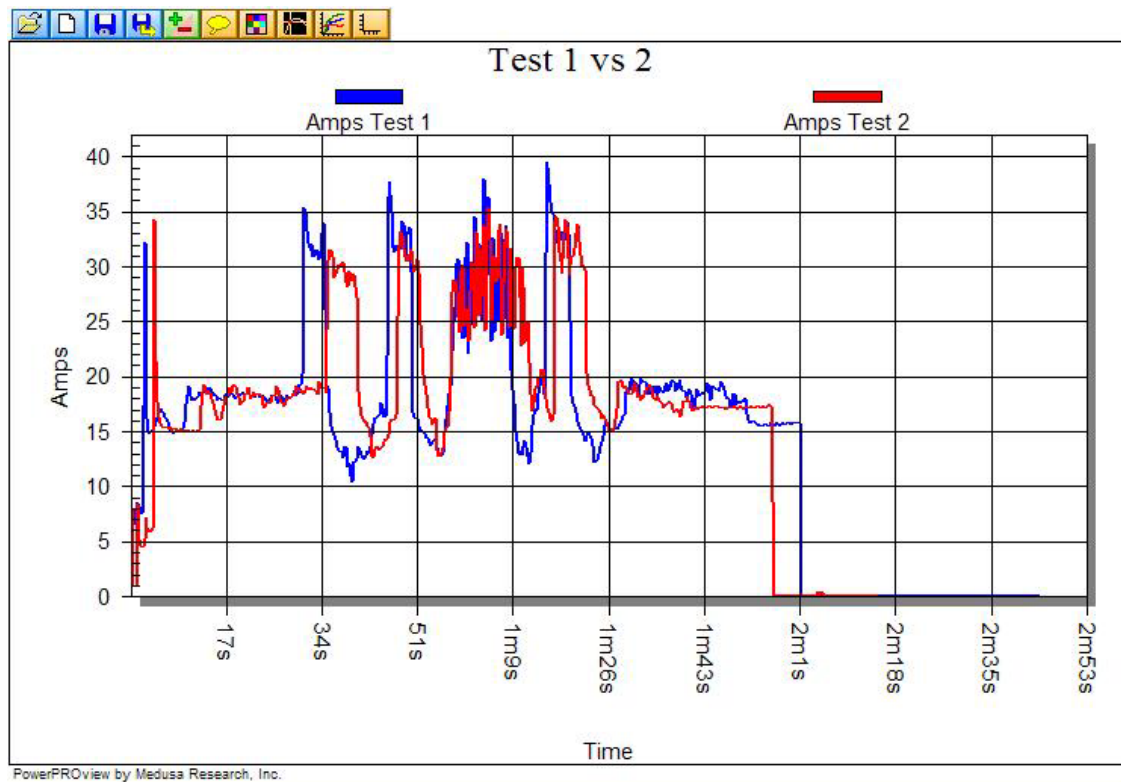
### Add/Remove Data

Click on the Add/Remove Data button to load saved data files for plotting.



Click the Add button to browse for saved data files (\*.PAR) to add to the graph. Select a loaded data file and click on the Remove button to remove that files data from the graph.

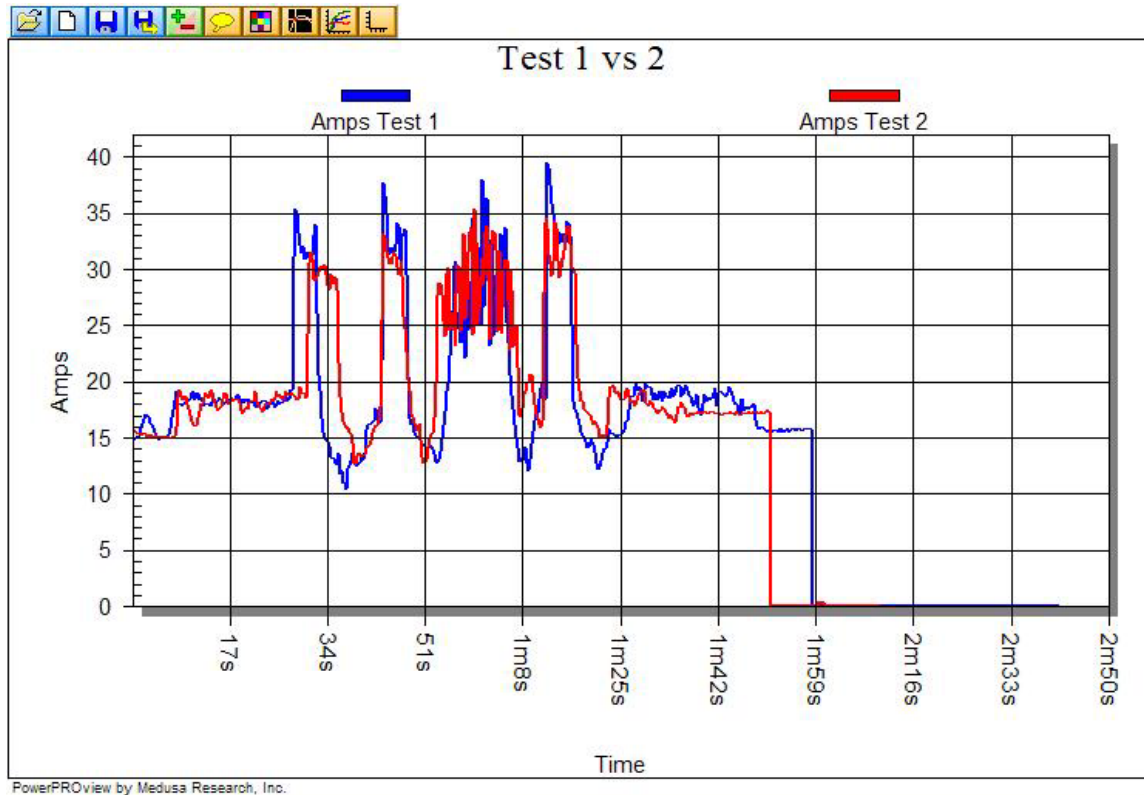
Adding multiple files allows you to overlay similar data for comparisons such as battery charge/discharge data or various prop motor combinations.



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The saved data editor can be used to trim un-needed data from a saved data file to provide a “cleaner” looking graph and to help align data better.



When using the Power Analyzer Pro ESC feature you can get repeatable tests that you can overlay without having to trim data.

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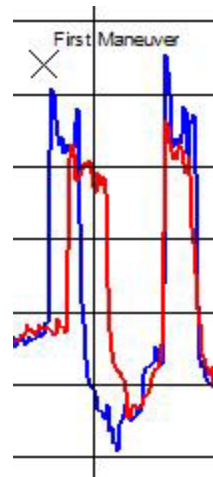
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### Text Labels/Annotations

The Text Labels button allows you to identify points of interest on the graph by placing text labels (also known as annotations) onto the graphing grid area.



1. Enter the Text to display in the box at the upper left corner.
2. Click the Add button.
3. The dialog will hide and your text will be shown. Move the text to where you want to place it with the mouse and then left click once to place it at that position.
4. The dialog will re-appear for the next annotation, when you are done adding text annotations click the Done button.



The text size and cross marker can be changed at any time by clicking the Text Label button, changing the items as desired, and clicking the Done button when finished with any changes.

To delete text, select a label in the list on the right side and click Remove.

To move text you must first delete it and then add it again placing it in the new location.



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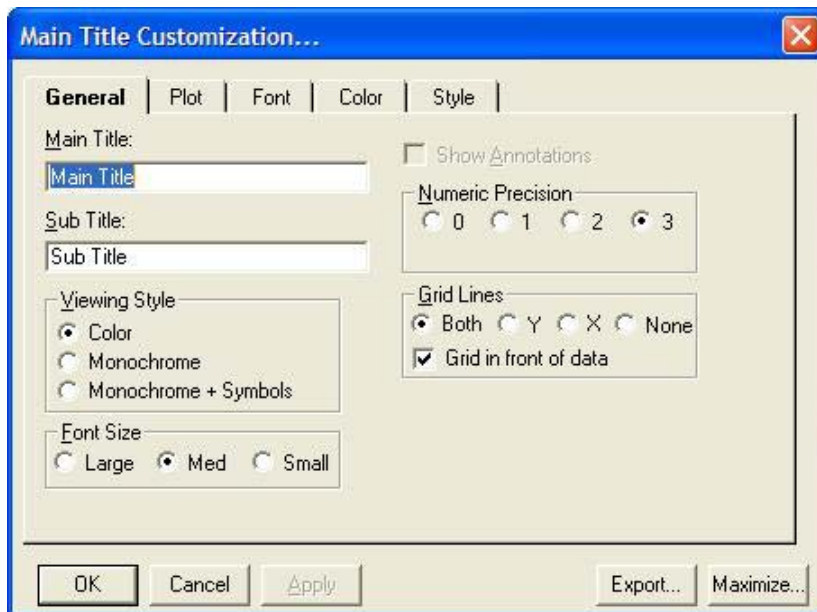
### **Custom Graph Settings**

The Customize dialog is broken up into five (5) sections. These settings allow the you to change the various graph settings for the titles, gridlines, plot types, fonts, graph colors, and the styles/colors of the lines.

Many of these settings can be set as defaults in the Systems Options.

### **General**

The general tab can change the *Main Title* and *Sub Title* settings, color or monochrome graph view, whether or not gridlines are displayed and the precision of plotted data.

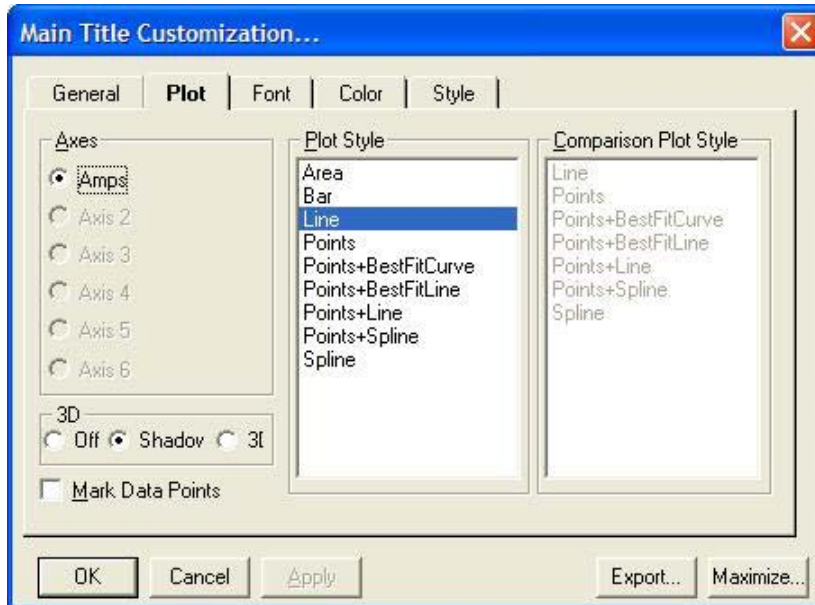


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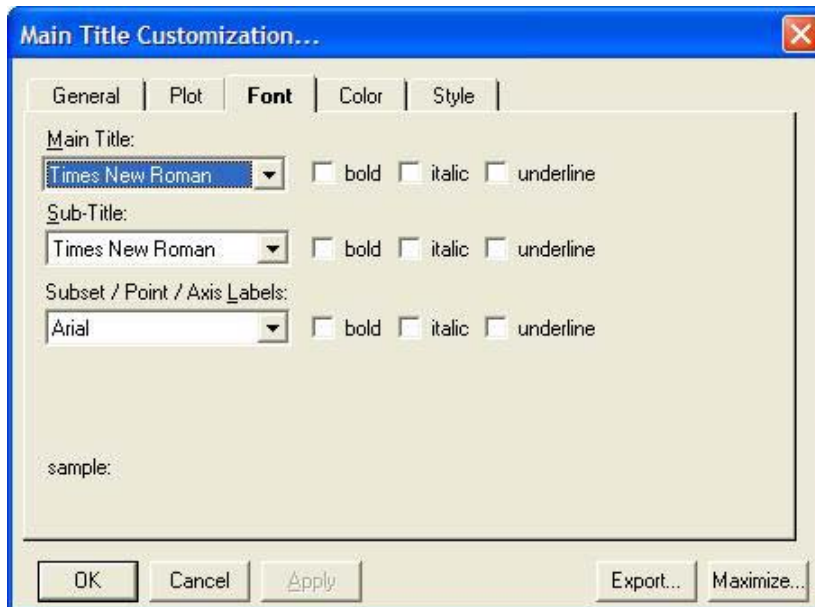
### Plot

Plot allows the user to change the style of the traces on the graph. Available options are *Area*, *Bar*, *Line*, *Points*, *Points and Best Fit Line*, *Points and Best Fit Curve*, *Points and Line*, *Points and Spline*, and *Spline only*. The user can also change the data points mark style to *Shadow* or *3D*.



### Font

Font changes the font type and attributes (*italic*, underline, **bold**) for the Main Title, Sub Title, and all other graph text.

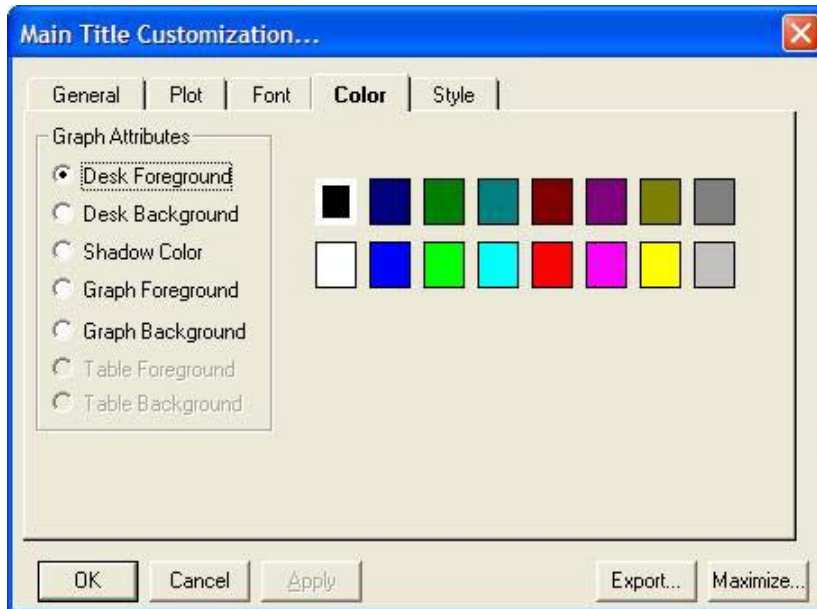


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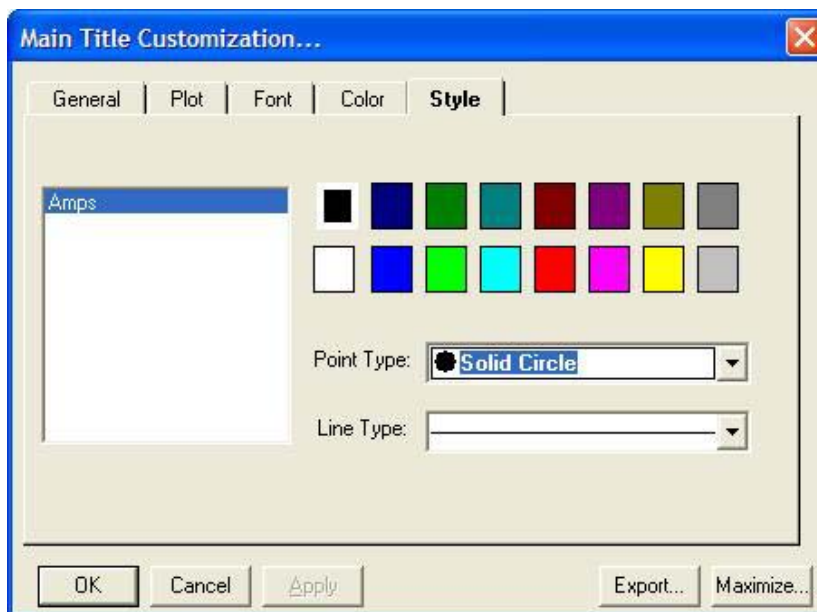
### Color

The Color tab applies to the colors of the *Graph* and *Desktop* areas. The user can change the background and foreground color of these two areas to create a custom look like the graph shown in the *Getting Started* section.



### Style

Style applies to the colors and line types for the traces on the graph. The user can also change the trace colors in this dialog.

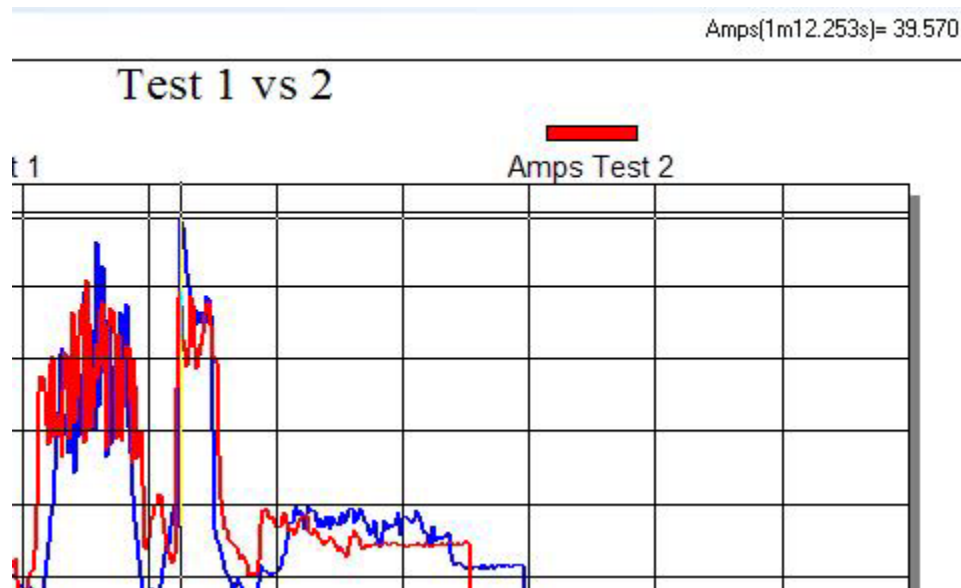


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### Enable/Disable Data Cursor

The Data Cursor button toggles the data cursor on and off.



When active, click on a plot to initially place the cursor. A cross-hair will be placed over the plot of the graph and the value at that point at the cross-hair intersection will be displayed in the upper right hand corner. The plot name, x position and y position will be displayed.

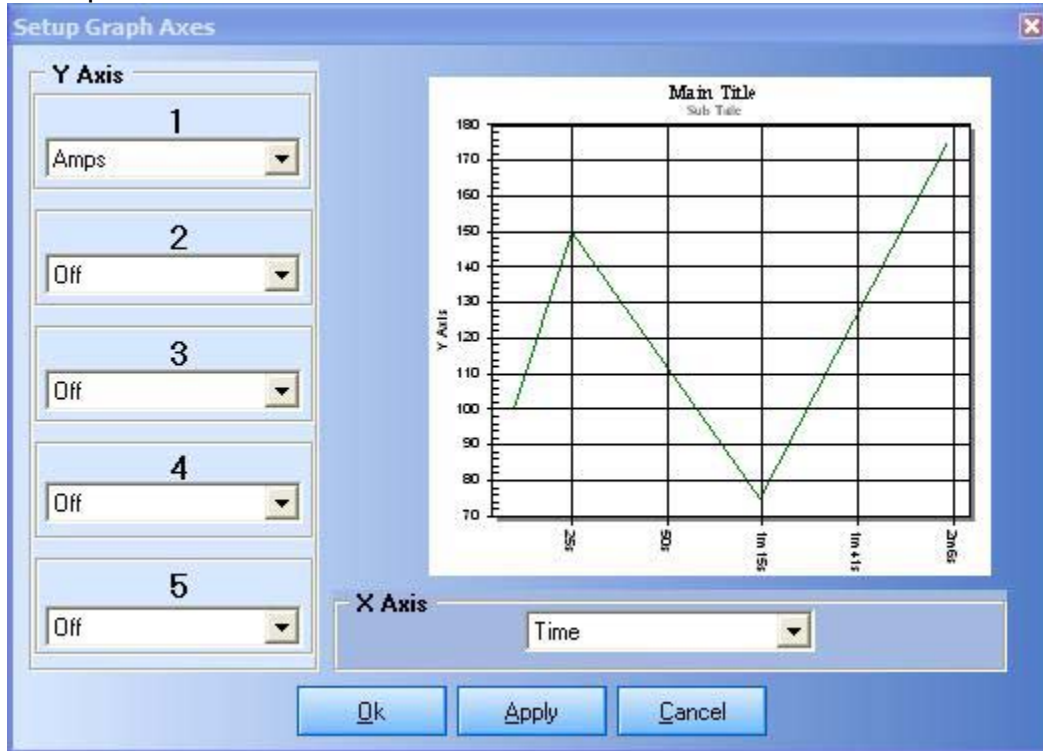
Move the cursor by clicking on a point on the trace, or use the  $\uparrow\downarrow$  keyboard buttons to move between traces and the  $\leftarrow \rightarrow$  to move along a trace.

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### Setup Graph Axes

To select the data to be plotted click on the Setup Graph Axes button and pick the data to be plotted for each Y axis desired and the X axis if other than Time is desired.

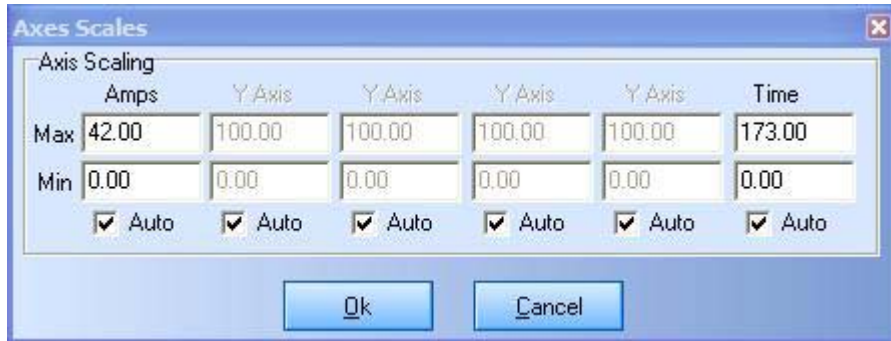


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### **Axis Scaling**

Each axis can be scaled differently. By default auto scaling is on for all axes. Click on the Axis Scaling button to set axis scaling.



While auto scaling is on, the current auto scale will be displayed. With manual scaling on you can set the scaling to any scale desired.

### **Quick Steps To Setting Up A Graph**

1. Setup Data Axes
2. Add Data
3. Adjust Scaling if needed.
4. Adjust Custom Settings (Set title, subtitle, line types, colors, etc.)
5. Add text annotations if needed
6. Save graph data.