

PowerPROview

Software Users Guide

26 January, 2008

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Before You Start

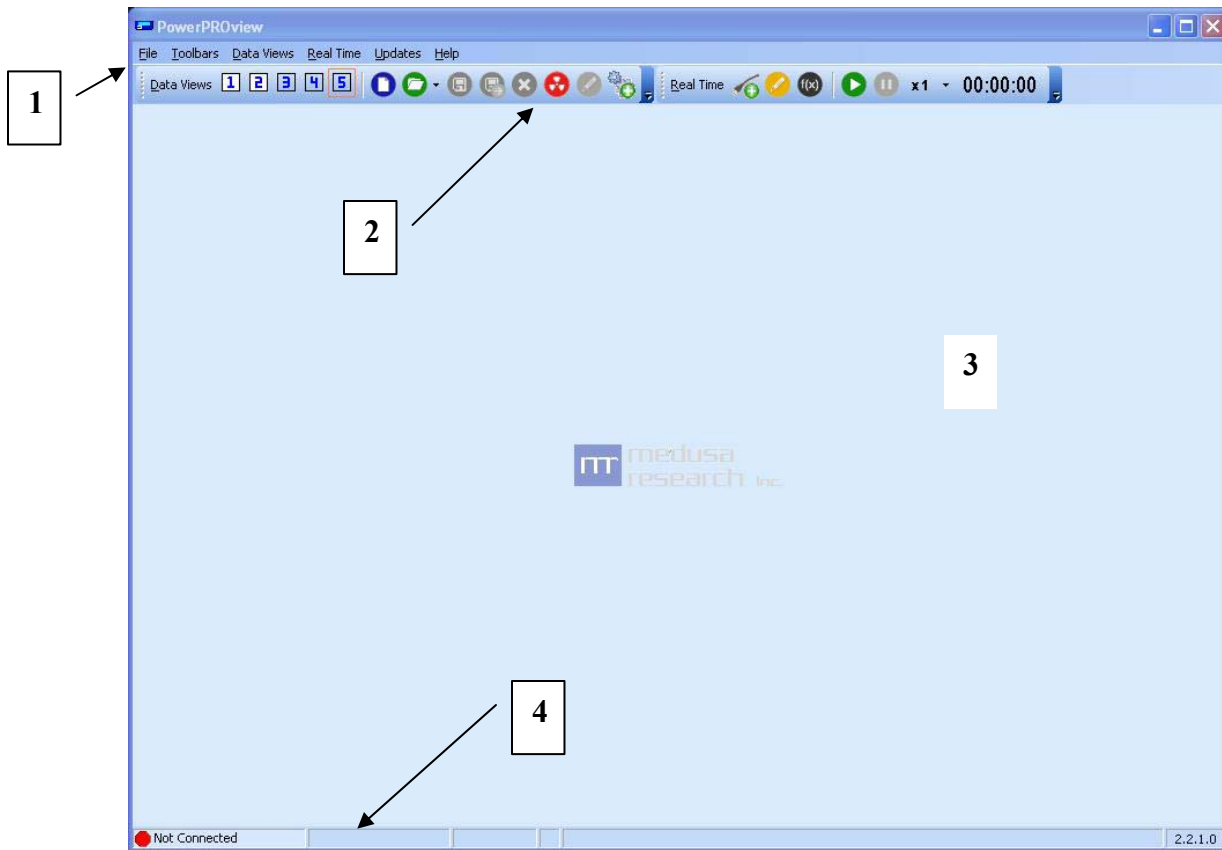
You must install the Medusa USB Drivers before using the PowerPROview program with a device connected. Refer to the document “Installing Medusa USB Drivers” for instructions on installing the USB drivers. This document can be found in the directory:

“C:\Program Files\Medusa Research\PowerPROview”
or from the help menu in PowerPROview.

Start-Up

Run PowerPROview. Your Power Analyzer or POWERLink can be connected before or after the program is started but must be connected when you try to connect to it. Once PowerPROview is connected to the Power Analyzer DO NOT unplug the unit or you will get errors. When using a POWERLink USB Adapter make sure a device is connected to it (i.e. an Oracle or Data memory Module) before connecting to it.

When PowerPROview runs you will see the main screen as below:



There are four sections to the main window:

- (1) Main Menu
- (2) Toolbars (Data View & Real-time)
- (3) Data View
- (4) Status bar

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Main Menu

The Main Menu allows access to all the functions of the program.
You can also right mouse click to get various options in different areas.

Toolbars

Toolbars give quick access to various functions. The two toolbars Data Views and Real Time are always available. Other toolbars will appear and disappear as a device is connected and disconnected. The toolbars that appear for a device can depend upon how the device is connected (i.e. connected thru a Power Analyzer PRO or thru a POWERLink).

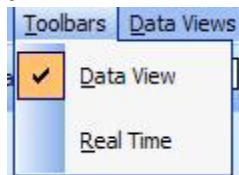
Moving, Floating, and Hiding Toolbars

Toolbars can be repositioned and can also float. If you drag the toolbar out of the toolbar area it will be floating and look like this:



To return it back to the toolbar just drag it into the toolbar area.

Toolbars can also be hidden. If you click on the X in a floating toolbar it will disappear. To have a toolbar restored to view use the Toolbar menu item from the main menu and click on the toolbar you wish to restore so that it is checked. To hide a toolbar click on the toolbar so that it is not checked.



Configuring Toolbar Items

Each item on a toolbar can be configured to be shown or hidden. To configure a toolbars items click on the arrow on the right side of the toolbar to get the toolbar menu, then move the mouse cursor to Toolbar Setup, then to Add or Remove Buttons. You will then see a list of the possible items to be displayed on the toolbar. Click on an item to have it displayed (checked) or hidden (unchecked).

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Data Views

A Data View is an area where data can be presented in various forms. There are five (5) possible Data Views available. Only one Data View can be viewed at a time but you can easily switch between views. Data in each view is always updated even if the view is not displayed. Each Data View that you setup can be saved for later use so you can create hundreds of views for various uses and only load the ones that you need when you want them.

Data View Toolbar

The Data View Toolbar can be used for various Data View operations



This is the Data View Status:  It is showing that View 1 and 3 is displaying data and that View 1 is the active view. Views 2, 4 and 5 are empty. When a view is empty the Medusa logo will appear in the center of the view area.



If you hover the mouse cursor over a view number it will show you the description of the view loaded in that view (if any). Any view number with a white background has view data. The view number with a red square around it is the view being displayed.



Create a new view.



Open an existing view.

This will display a list of available views that have been previously saved. The arrow to the right will display a list of the most recently opened views.



Save current view to disk.



Close current view.



Delete a view from a list of available views.



Edit the current Data View Description.



Enter data View Design Mode.

Use design mode to add new data displays to a view.



Exit Data View Design Mode.

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Creating a Data View

To Add a data display object to a view you must first create a view or load an existing view. If a new view is created, you are automatically placed in view design mode. If you load a view or are working with an existing view you must click on the Enter Design Mode toolbar button or right click on the Data View and select Enter Design Mode from the menu.

Once in design mode you can add, delete move, resize and configure data objects. When all data objects are added, positioned, sized and configured exit design mode.

You can then save the Data View for future use. It is helpful to give the view a description for future reference. The view description will also show up when the mouse cursor is hovered over the view number so a description is very helpful.

You can also save a copy of a Data View so that you can make changes to the copy to create a new variation of that view. Use the “Save As” function from the Data View menu either on the toolbar or the main menu.

Using Data Views

Not everyone will need more than one Data View. We provided the five (5) Data Views so that those who want more data objects have the room to add them. A typical use would be to put all the real time data objects (i.e. Volts amps, RPM, etc.) on one view and use another one or more for graph objects that plot different data. One graph could plot the efficiency where another one could plot the current versus RPM. There are many uses that the flexibility of PowerPROview can accommodate from the simple to the complex.

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View Design Mode

In view design mode you can add, remove, move, size and configure the data being displayed. When you enter View Design Mode the data object selector will be displayed with various tabs grouping different type of data objects:

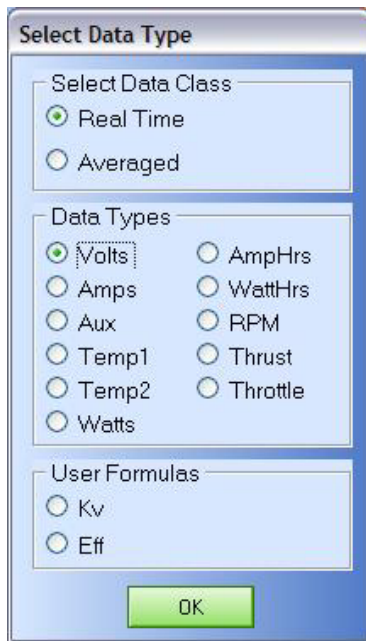


To select a data object either double click the item or drag and drop it onto the current data view.

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Once you have select an object the Select Data Type window will open:



Here is where you configure the data that will be displayed in the data object selected. Select the class of data and then the type of data. The type of data can be either the fixed internal data types or user defined data created from a user created Data Formula.

Data Class

Real Time data is the actual raw data where Averaged data is data averaged per the averaging settings in the System Options.

Data Types

These are the fixed internal data types. Note that not all data types will be valid for a connected device.

User Formulas

These are the currently selected user defined data formulas.

Once you make your selection and click the OK button the data object will appear in the data view. You can then drag and size the data object as needed. While in Design Mode you can select any object in the view by clicking on it. Once selected you can move the object, size the object, or configure the object properties.

Object properties allow you to change the caption, number of decimal places, colors, fonts and many other properties of the data object. Each data object has its own set of properties and each one can be configured separately.

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Manipulating Data Objects

While in Design Mode you can click on an object and it will be selected as indicated by the black outline and resizing points around it. While selected, an object can be deleted, moved, resized, or its properties changed.

Here a selected Digital Display configured to display Volts:



Resizing a Data Object

Using the mouse cursor you can resize an object by dragging any of the resizing points. From the keyboard you can hold down the Shift key and use the arrow keys to change its size.

Moving a Data Object

Using the mouse cursor just drag the object anywhere you want and drop it. From the keyboard use the arrow keys to move it around.

Deleting a Data Object

When an object is selected it can be deleted by pressing the Delete key or from the right click menu.

Data Object Properties

Almost every object has a number of properties that define its look, color, data value, and other attributes unique to that object. To access the property editor, select an object, right click and select Object Properties or hold down the Alt key and press Enter. The Object property Editor will be displayed with that objects properties. You can view the properties of different objects by clicking on that object and the properties displayed will change to those of the object just clicked without having to exit the properties editor.

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Data Object Property Editor

The screenshot shows a 'Property Editor' window for an object named 'Meter1: Digital Display'. The window is divided into two main sections: a left pane with property categories and a right pane with the corresponding property values. The categories on the left are: DataValue, DISPLAY, CAPTION, Font, NUMBER, and BEVEL. The right pane shows the following settings:

Property	Value
DataValue	Volts
DISPLAY	
Color	\$007C9885
ShadowColor1	\$005E7766
ShadowColor2	\$007C9885
ShadowWidth	5
ShadowLayout	TopLeft
CAPTION	
Text	Volts
Font	MS Sans Serif
Color	WindowText
Size	8
NUMBER	
ActiveOnly	<input checked="" type="checkbox"/> True
Digits	5
Decimals	2
ShowLeadingZeros	<input checked="" type="checkbox"/> True
OutlineColor	Black
OffColor	\$007C9885
OnColor	Black
BEVEL	
Visible	<input checked="" type="checkbox"/> True
BorderColor	BtnFace
BorderWidth	0

At the top is the object name and type, in this case the name is Meter 1 and the type is Digital Display.

As you can see there are many properties that can be used to customize your data view display.

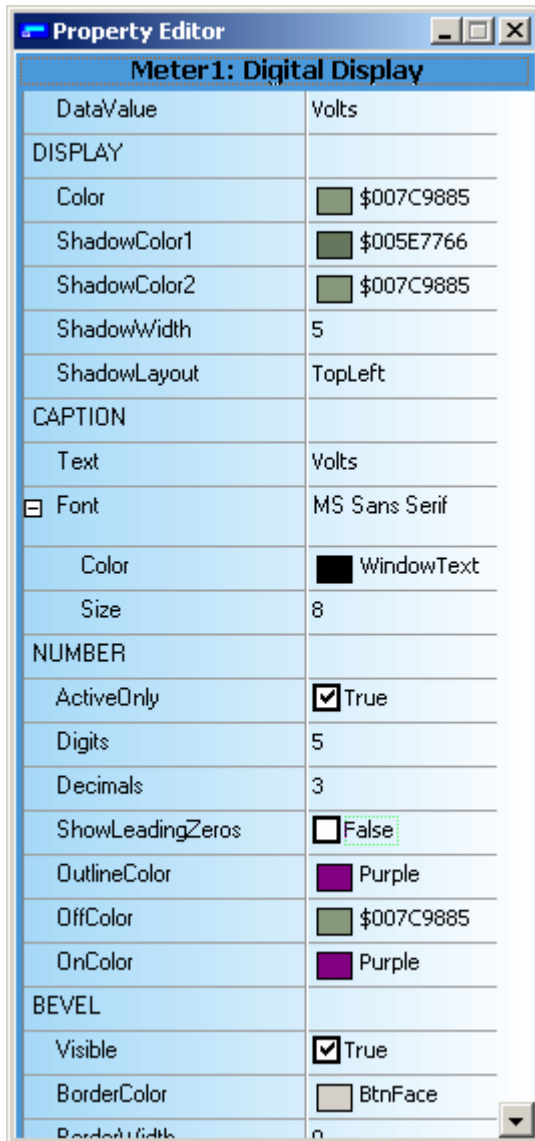
Once a property has been changed, the object will be updated with the new setting once you click on a different property, press enter, or close the property editor.

The left side is the description of the property, the right the current property setting.

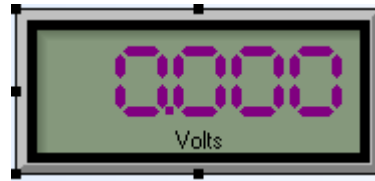
You can scroll up and down by clicking on the scroll buttons at either the top, bottom of the right side. Here we are at the top so only a scroll down button is displayed.

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Here we have changed the number of decimal places to 3 and changed the color of the digits to Purple and turned off leading zeros.



As you can see there are endless possibilities of customizing your displays.

There are various data display objects and even some non-data objects available to drop on a data view and configure. There are too many to go into detail here on each of their properties so explore and try each one out. You can also create any number of the same data object in a data view for the same or different data values.

Once you are done designing a data view, don't forget to exit the design mode and save your view!

NOTE: You can not access all the functions of the graph object unless you have exited design mode. The graph object has its own menu at the top of the object that appears when your mouse cursor is at the top of the graph.

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Data Objects

Displays

The display objects display data in a digital format with or without a decimal point

Digital Display



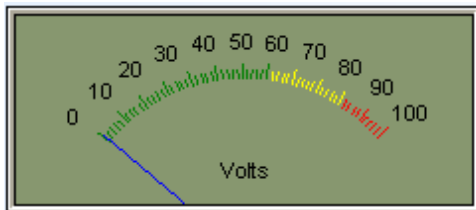
Digital Digits



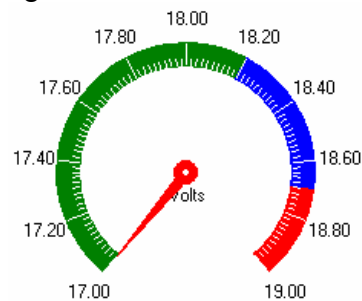
Meters

The meter objects display the data in an analog fashion. The Analog and Angular meters also can color code different regions of the scale.

Analog Meter



Angular Meter



Dial Meter



LCD Dial Meter



LCD Tachometer



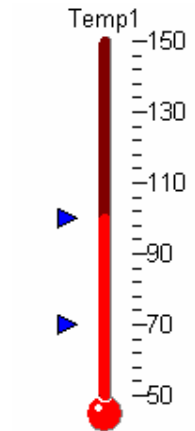
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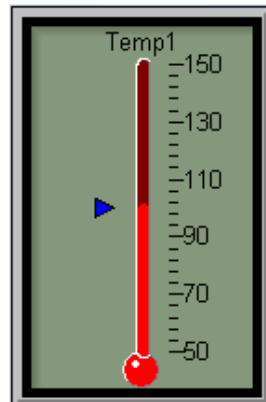
Gauges

The gauge objects display data in a linear fashion. The Thermometer also has min/max pointers. Some gauges can provide color coded regions.

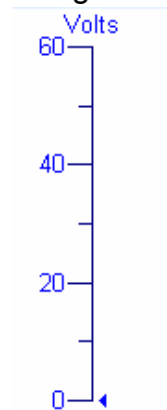
Thermometer



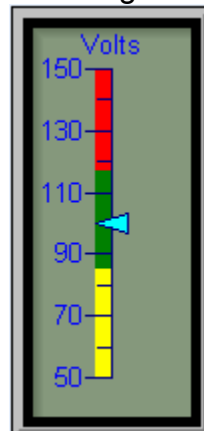
LCD Thermometer



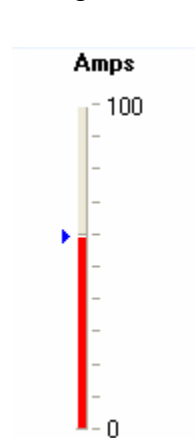
Gauge



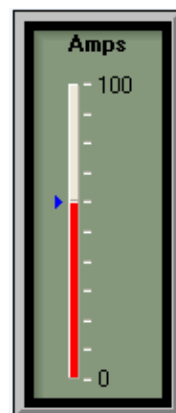
LC Gauge 1



Gauge 2



LCD Gauge 2



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Misc.

The miscellaneous objects can be used to label and highlight a data view.

Label

Label

HTML Label

Simple HTML Label

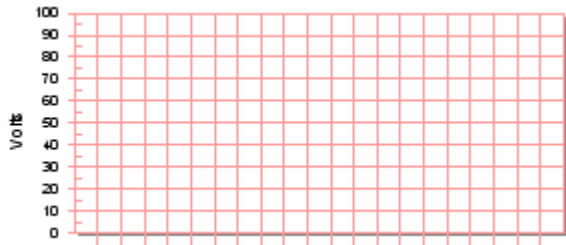
Border



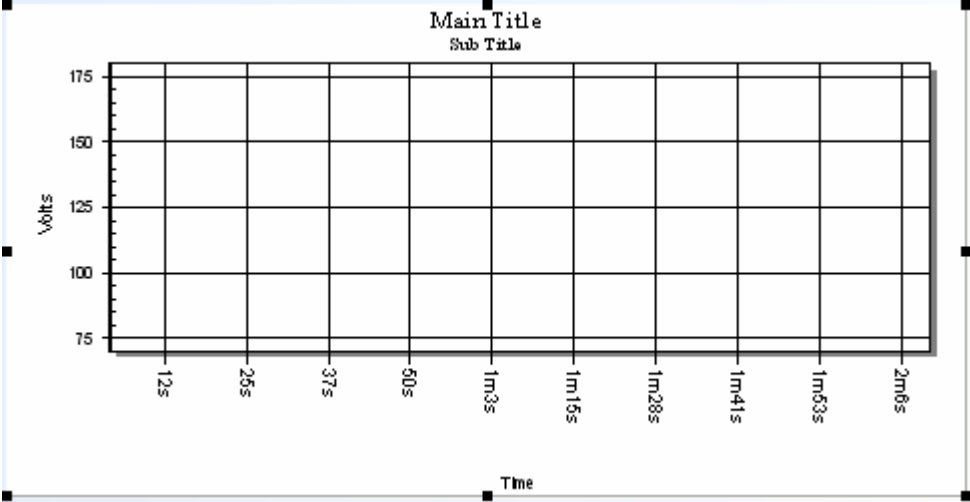
Graphs

The graph objects graphs the data. The Strip Chart shows a rolling history of the data where the Graph object plots up to 5 different values at the same time. The graph object can also load saved data recorded at a previous time and used to view comparisons between different tests.

Strip Chart



Graph



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Triggers

The trigger objects are used to signal when a data channel has crossed a threshold. They can be used to signal a voltage too low or a current too high. The level alarm can change colors up to four times and even blink.

LCD Alarm



Level Alarm



LCD Level Alarm

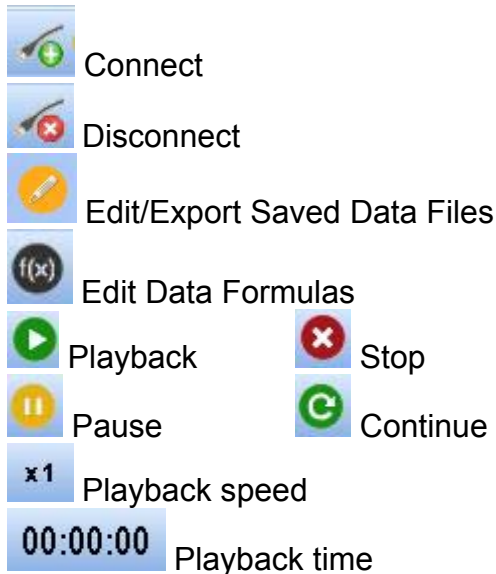


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Real-Time Toolbar

The Real Time toolbar is used to connect and disconnect a device, to edit saved data recordings and to defined and select user formulas.



Connecting to a Device

If the System Option "Auto Connect" is enabled, then when PowerPROview is started it will automatically connect to a device if one is found. If more than one device is connected, then a selection window will appear where you will have to select the device to connect to.

PowerPROview will only connect to one device at a time. You can run multiple instances of PowerPROview using the command line option "/MULTI". Each instance can connect to one device. Each device can only connect to one instance at a time. Note that running multiple instances of PowerPROview will require a lot of memory.

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Edit/Export Saved Data Files

Data can be recorded and then saved to a file. Once saved to a file you can view/edit/export that data. When recorded data is saved to a file it is saved as a .PAR file. The file data is in a special format and can not be viewed or edited with a text editor. Instead, you use the Edit/Export Saved Data function.

The screenshot shows the 'Edit PAR File' window with a menu bar (File, Data, Formulas) and a toolbar. The main area contains a data table with columns: Sample, Time, Secs, Volts, Amps, Aux, Temp 1, Temp 2, Thrust, Watts, RPM, AmpHrs, WattHrs, and Throttle. Below the table is a 'Data Summary' section with rows for Min, Max, and Avg values. At the bottom is a 'File Information' section showing file details and settings.

Toolbar: Contains icons for opening, saving, deleting, undo, editing formulas, exporting, and averaging data.

Data: The main table of recorded data points.

Data Summary: A section providing statistical data (Min, Max, Avg) for the recorded data.

File Information: A section displaying file metadata and configuration settings.

	Open Saved Data File		Save File
	Show First n Data Points		Show Last n Data Points
	Delete First n Data Points		Delete Last n Data Points
	Delete from Cursor to Data Top		Delete from Cursor to Data End
	Undo Last Delete		
	Edit File Data Formulas		Recalc Data from Data Formulas
	Export Data		
	Average Data		Show/Hide Data Columns

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The data editor has several areas of interest: the Data, Data Summary and File Information areas. The Data area shows the recorded data in columns. Each row is one sample. The Data Summary area shows the Min, Max, and Average for each column of data. The File Information area shows various parameters related to the file and the data contained within such as: Number of samples, Sec per Sample, Data Length (Total Secs), Average Settings, Unit Name (that the data came from), and more.

The first column "Sample" is the index of the data point (i.e. sample), the second column "Time" is the time index in hh:mm:ss.sss format with the third column "Secs" showing the time index in seconds. The next columns are the data and data formula columns. After editing data or changing formulas you can save the file overwriting the original or as a copy of the original with your changes. To save as a copy use the "File|Save As" from the main menu.

Data formulas can be changed and the data recalculated using the data saved in the file. This give you the ability to go back to captured/recorded data and calculate data based on different formulas or formulas with different parameters.

NOTE: Formulas are only changed in the file when you select a formula. Editing formulas in the Available Formula list do not change the Active Formulas in the file until they are reselected. Once reselected you can then recalculate the data from the formulas to get your new results. Saving the file will save all selected formulas with any changes/recalculations made.

Data Markers

Data Markers can be set to define a starting and ending row of data that defines a data region. Right click on the data row that you wish to use as the beginning or end of a data region and select either Set Start Marker or Set End Marker from the popup menu. Once both markers are set the data region will be highlighted in blue.

Sample	Time	Secs	Volts	Amps	Aux	Temp 1	Temp 2	Thrust	Watts	RPM	Amphrs	WattHrs	Throttle
1	00:00:00.2294	0.2294	11.995	3.190	0.000	32.0	0.0	0.0	38.264	6100	0.0	0.0	157
2	00:00:00.4588	0.4588	11.995	3.190	0.000	32.0	0.0	0.0	38.264	6100	0.0	0.0	157
3	00:00:00.688	0.6881	11.970	3.580	0.000	32.0	0.0	0.0	42.853	6625	0.0	0.0	156
4	00:00:00.917	0.9175	11.970	3.770	0.000	32.0	0.0	0.0	45.127	6625	0.0	0.0	157
5	00:00:01.146	1.1469	11.960	3.910	0.000	32.0	0.0	0.0	46.764	6625	0.0	0.0	157
6	00:00:01.376	1.3763	11.940	4.230	0.000	32.0	0.0	0.0	50.506	6625	0.0	0.0	160
7	00:00:01.605	1.6056	11.915	4.480	0.000	32.0	0.0	0.0	53.379	6625	0.0	0.0	160
8	00:00:01.835	1.8350	11.905	5.040	0.000	32.0	0.0	0.0	60.001	10050	0.0	0.0	160
9	00:00:02.0644	2.0644	11.880	5.260	0.000	32.0	0.0	0.0	62.489	10050	0.0	0.0	159
10	00:00:02.2938	2.2938	11.870	5.740	0.000	32.0	0.0	0.0	68.134	10050	0.0	0.0	160

Whenever a data region is defined the Data Summary will reflect the Min, Max, and Average for the data defined by that region.

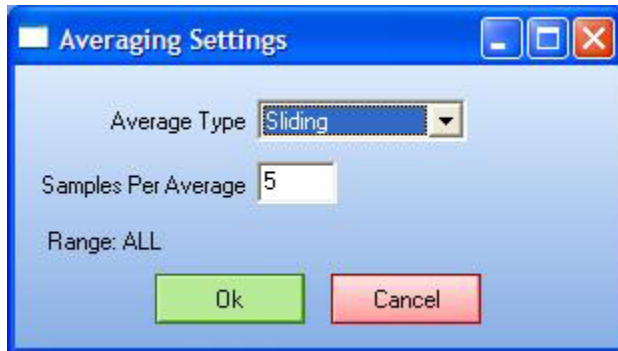
Left click on a data row and select Clear Markers to remove the data region.

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Averaging Data

You can average saved data after the fact. Data can be averaged either for all the data or for a defined data region (see Data Markers above). Click on the Average Data button to get the average setup screen:



Note that the “Range” will show the range of data that will be averaged. Once the Average Type and Samples Per Average are set to your liking click Ok and all columns of data will be averaged for the indicated range. You should always keep your original file so that you can go back to the original unaveraged data so remember to save your averaged data in a new file by using “File|Save As” from the main menu.

Show/Hide Data Columns

If there are data columns that do not contain any valid data you can hide those columns by using the Show/Hide Data Columns button.



Check or uncheck the data columns that you wish to show or hide. Click Ok and only those columns checked will be shown.

Click the “Show All” button to quickly show all data columns.

Note: the column settings are not saved with the data. Each time you open the saved data editor all columns are shown as the default.

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Exporting Saved Data

Use the Export Saved Data function to export the data to one of four (4) formats:

Excel Spreadsheet .xls (must have excel installed)

Text (Tab Delimited) .txt

CSV (Comma Delimited) .csv

Formatted Text (Space Delimited) .prn

The default character for CSV file output is a comma. Some countries use a comma as a decimal character instead of a period. Under the System Options Export Section you can configure the Data Export Separator character used in the CSV format to be any character other than a comma. The Decimal Character can also be changed from a period to a comma or any character you choose.

NOTE: Do not have both the Data Export Separator and Decimal Character the same character.

Playback

Playback allows you to playback data from a saved data file. When data is played back it acts as if the data was coming from a device (i.e. Power Analyzer or Oracle) and will be displayed on the data objects and graph objects. Click the Start Playback button, select a file and it will start playing. You can click on the pause button to pause at any time and then click Continue to resume playback. The stop button will stop the playback.

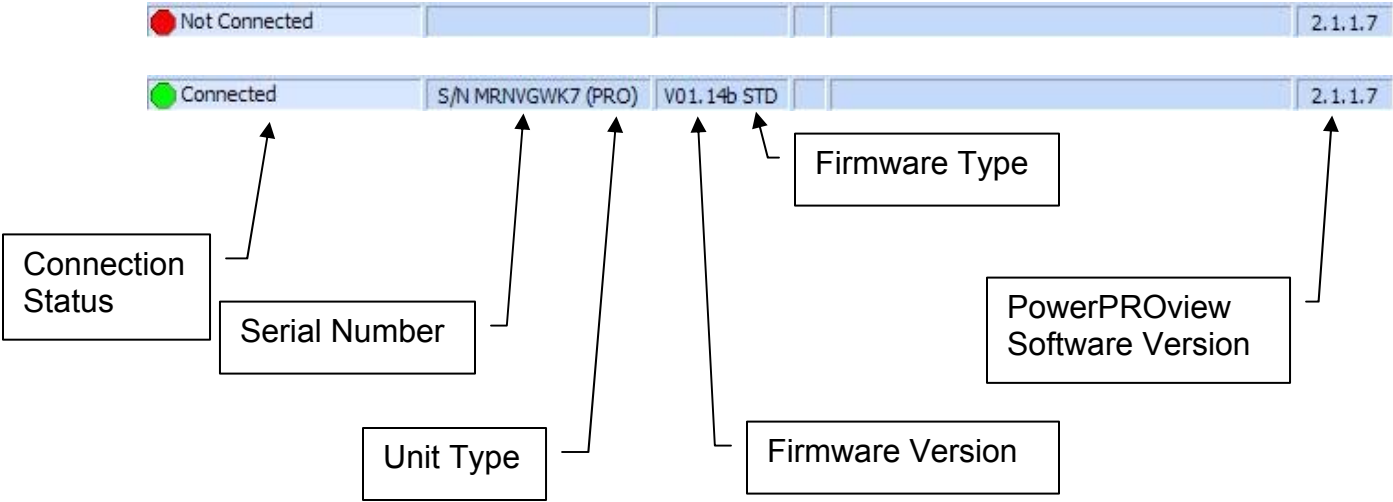
The play back speed can be select before or during playback. You can speed up or slow down the playback as needed. The playback time will be shown in the playback timer..

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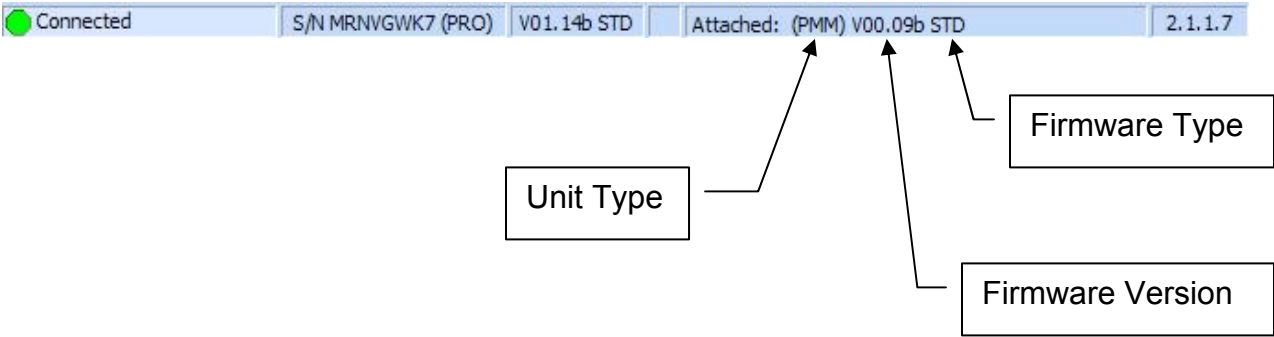
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Status Bar

The status bar indicates whether a Device is connected or not and what is connected. When a device is connected it will also show the serial number, type, and firmware info.



Sometimes a secondary device can be attached to the primary device. When this is the case the information for the secondary device will be display as shown:



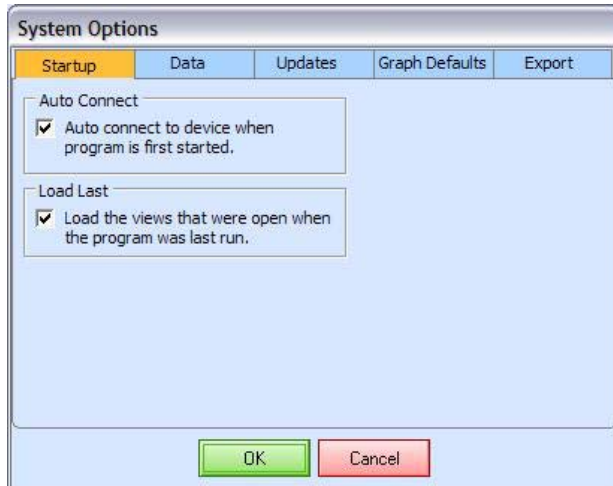
The above status bar example shows a Power Analyzer PRO with a Data memory Module attached to it.

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System Options

System options can be found on the main menu under “File|Options”.
There are system options for Startup, Data, Updates, Graph and Export.



System Startup Options

Auto Connect: If checked will connect to a device on startup if a device is found.

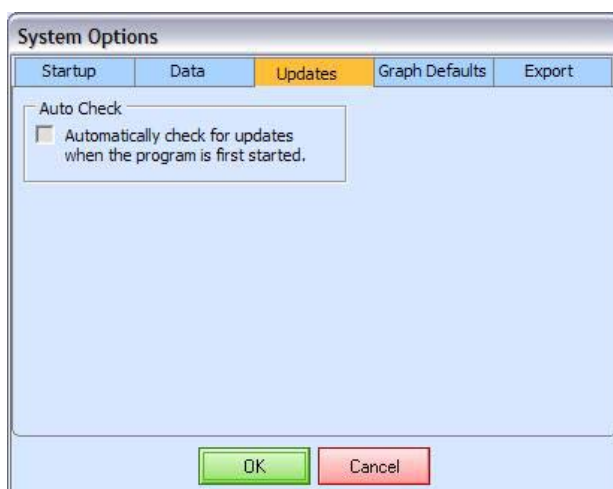
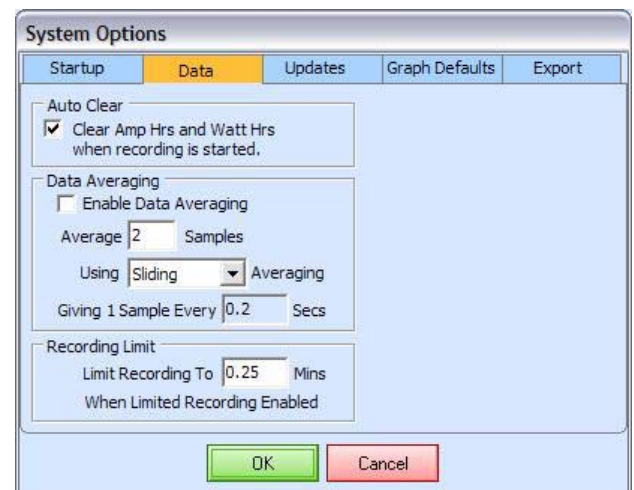
Load Last: If checked loads the last views that were open when the program was closed.

System Data Options

Auto Clear: If checked will automatically zero the AmpHrs and WattHrs when recording starts.

Data Averaging: If checked will average data over the number of samples specified using the selected averaging type.

Recording Limit: Sets the maximum recording limit if Limited Recording is enabled.



System Update Options

Auto Check: If checked will use the internet to check for program and firmware updates. (NOTE: Not implemented at this time).

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System Graph Defaults Options

There are various graph defaults that can be set that will be used as defaults to configure a graph object on a data view. Any saved graph files loaded will override the graph defaults.



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System Export Options

The Export options allow you to set the Data Export Character used in the CSV export file as well as the Decimal character used in all the export files. Changing the Data Export Separator to say a vertical bar “|” and the Decimal Character to a comma provides compatibility with other countries formats.



System File Management

The various files used in the system for device Configurations, Data Views, Waveforms, and Formulas are saved in the users application data area. To provide ease of use and exchange of files between users you can import and export these files using the File|Data Management” option from the main menu. There is a menu item for each file type for import and export.

The actual files are stored in:

For XP:

C:\Documents and Settings\<username>\Application Data\MedusaResearch\PowerPROview

For Win98:

C:\Windows\Application Data\MedusaResearch\PowerPROview

The Formulas reside in the PowerPROview directory in the file DataFormulas.DFF. Under the PowerPROview directory you will find the sub directories:

Configs	Device configurations (.PAC)
Firmware	Firmware files (.PAF)
Views	Data Views (.MVU)
Waveforms	Waveform files (.WFM)

All of the files with the exception of the firmware MVU files are text readable and editable. It is not advised that you edit them directly but use the PowerPROview program to read and write them.