PrestoPlot

User Manual

Version 26.09

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1. PrestoPlot

PrestoPlot is a fast and intuitive tool to display and customize graphs from timed data sets. Data sets can also be manipulated on the fly through user-defined functions.

This freeware was originally developed by the French Space Agency (CNES) for the space industry where telemetry analysis is central in spacecraft housekeeping. For more than a decade, this software is being constantly updated and extended with several releases every year.

PrestoPlot has become a key factor in the analysis of both simple and complex multidisciplinary data such as for telemetry data, test bench measurements, simulation results or any kind of tabulated timed data.

This tool greatly benefits both scientists and engineers by lifting common plotting limitations such as the data sets length, the number of data axes, the number of time axes, the capability to plot non numerical values (such as "ON/OFF" or whatever the user defines) and eases zooming in and out: imagine being able to load and plot data in only 3 mouse clicks!

PrestoPlot input data file format is fully generic (csv/tsv like) and can be used to trace timed data from any source (see Generic CSV Format and Tab File Format). Dedicated complex input file formats are also available (see tab separated file, CIC File and RES File Formats).

There is no fixed limit to the number of graphs or loaded data sets. **PrestoPlot** has been tested with data sets of over 50 000 000 elements (see Limitations).

Best of all, **PrestoPlot** is a portable freeware and does not require any dependency other than its binary executable (for Windows and Linux 32/64 bit platforms).

PrestoPlot® - YouTube Tutorials - Downloads Support

2. Getting Started with PrestoPlot

To get started with PrestoPlot, here are the key steps:

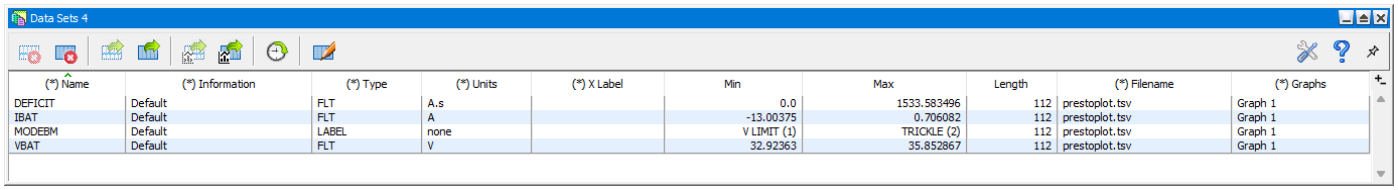
- Load data
- Plot graphs
- Analyse and use your graphs

2.1 Load data

PrestoPlot has a generic data loader that will, in most cases, automatically load data from a tabulated file.

You can load this data in the following ways: - Using the menu or the file load icon on the toolbar - By dragging and dropping the file from another application - By copying and pasting tabulated data from another application (spreadsheet)

Once the files have been loaded, the datasets that could be read are displayed in the datasets window.



(*) Name	(*) Information	(*) Type	(*) Units	(*) X Label	Min	Max	Length	(*) Filename	(*) Graphs
DEFICIT	Default	FLT	A.s		0.0	1533.583496	112	prestoplot.tsv	Graph 1
IBAT	Default	FLT	A		-13.00375	0.706082	112	prestoplot.tsv	Graph 1
MODEBM	Default	LABEL	none		V LIMIT (1)	TRICKLE (2)	112	prestoplot.tsv	Graph 1
VBAT	Default	FLT	V		32.92363	35.852867	112	prestoplot.tsv	Graph 1

2.2 Plot graphs

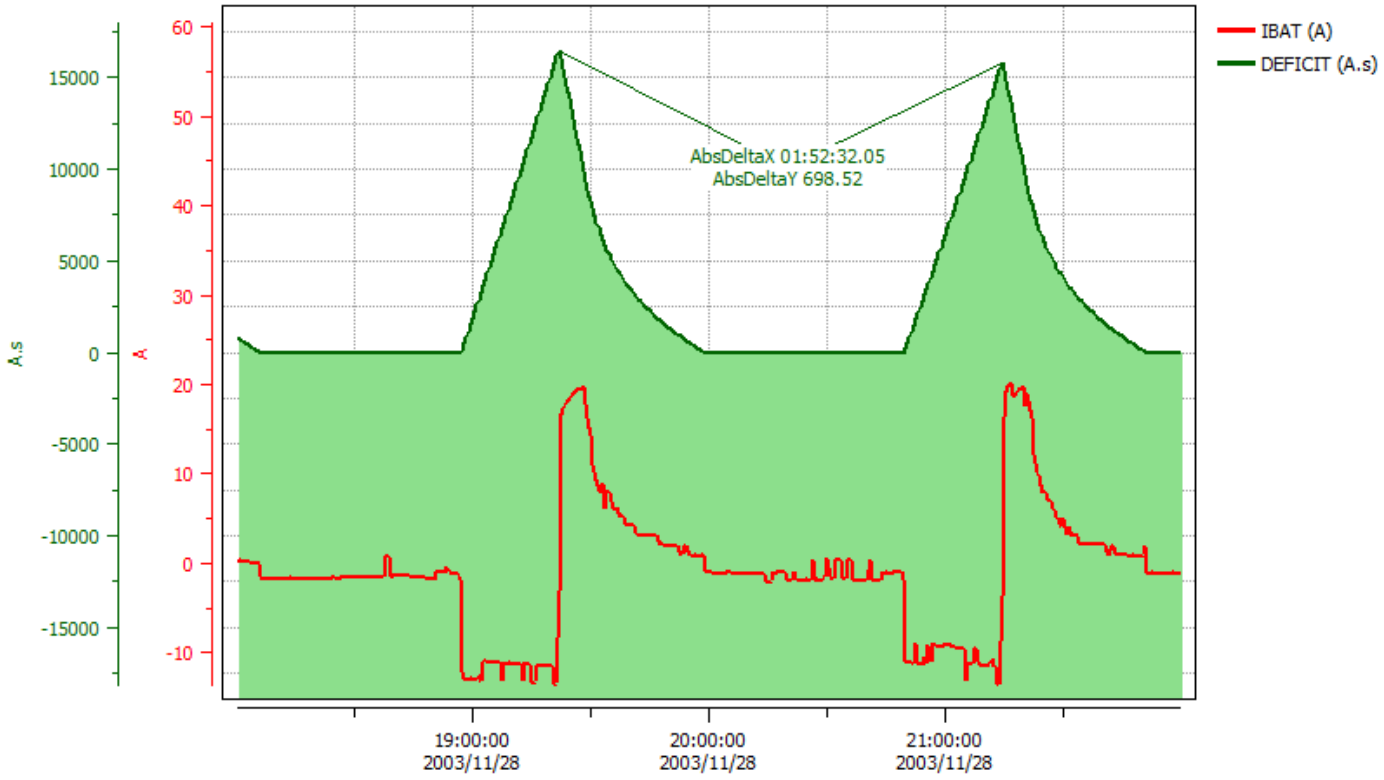
You can now select the datasets you want to display on a new graph, then press Enter, F2, or click on  to display the new graph with the selected datasets.

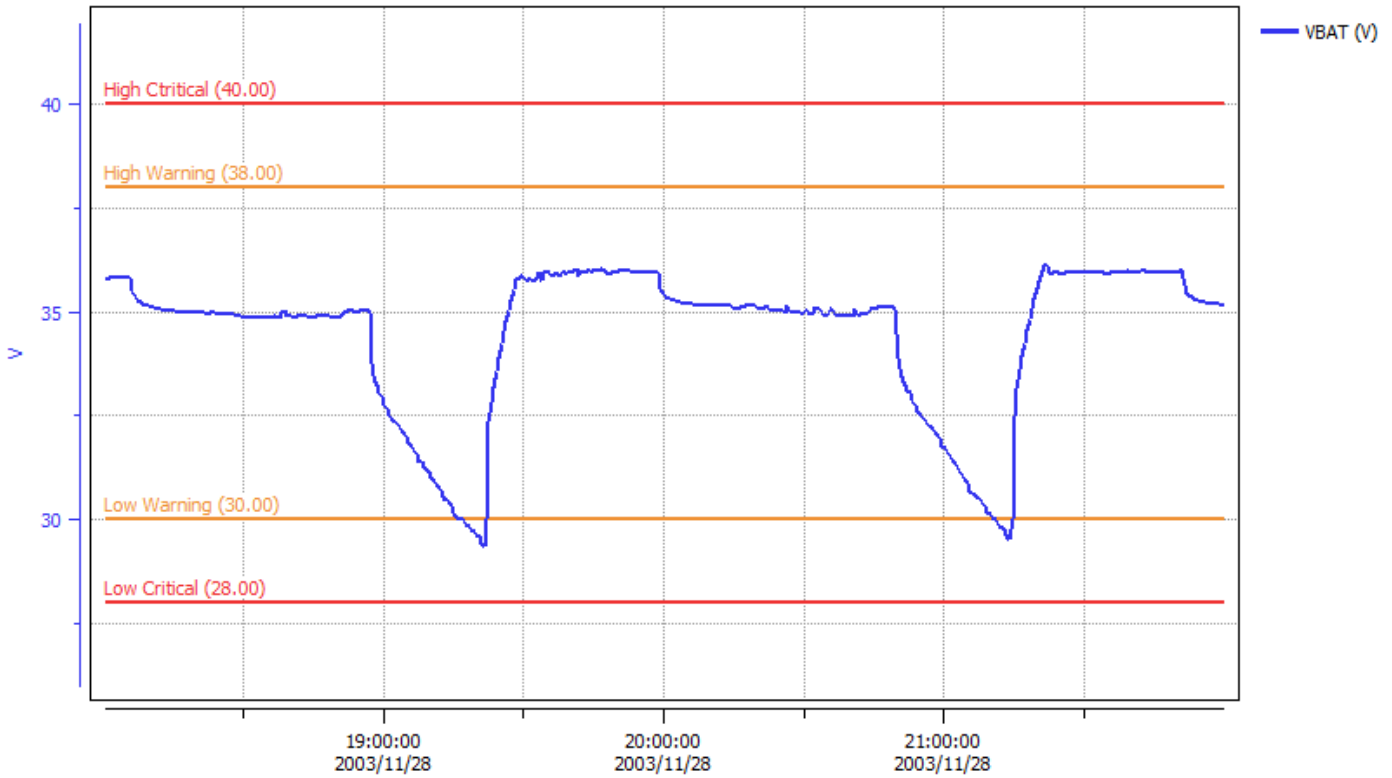
You can create as many graphs as you want by repeating the operation.

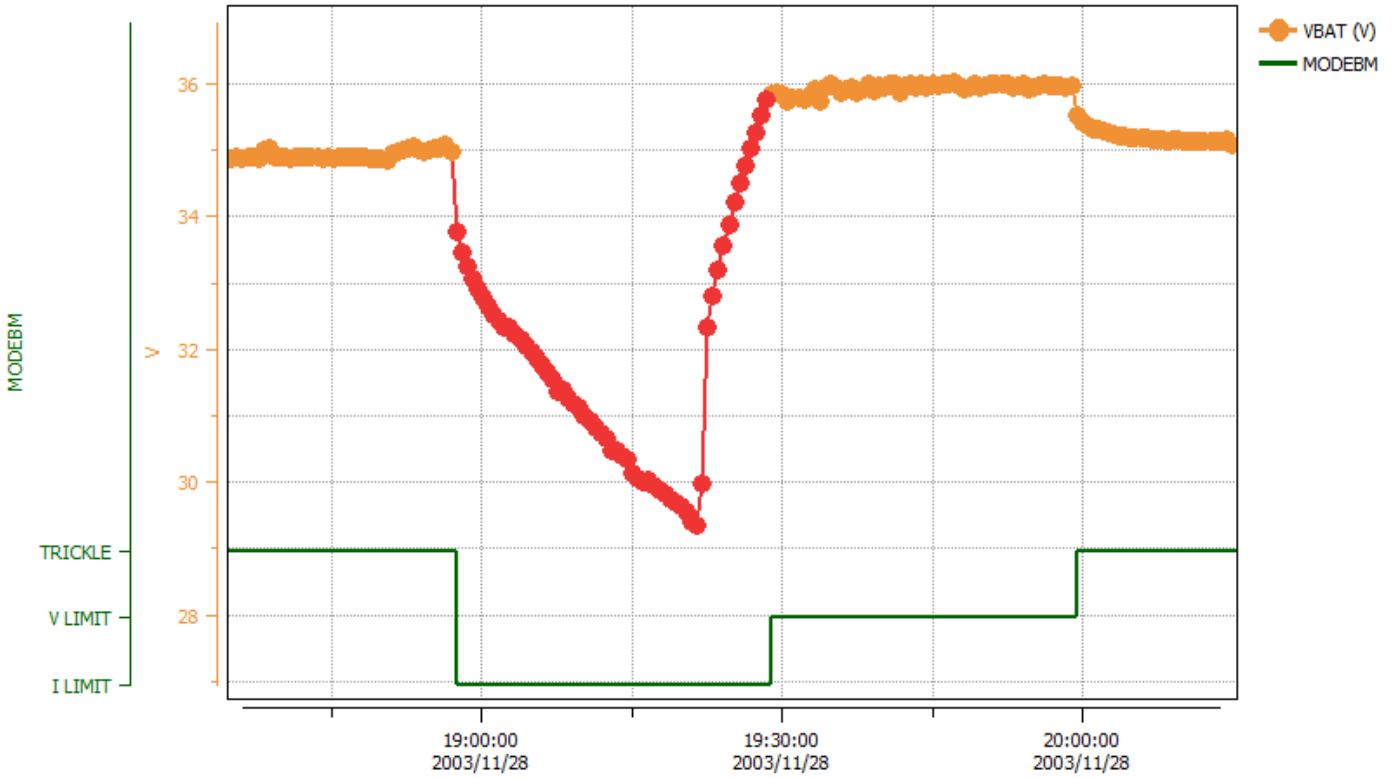
2.3 Analyse and use your graphs

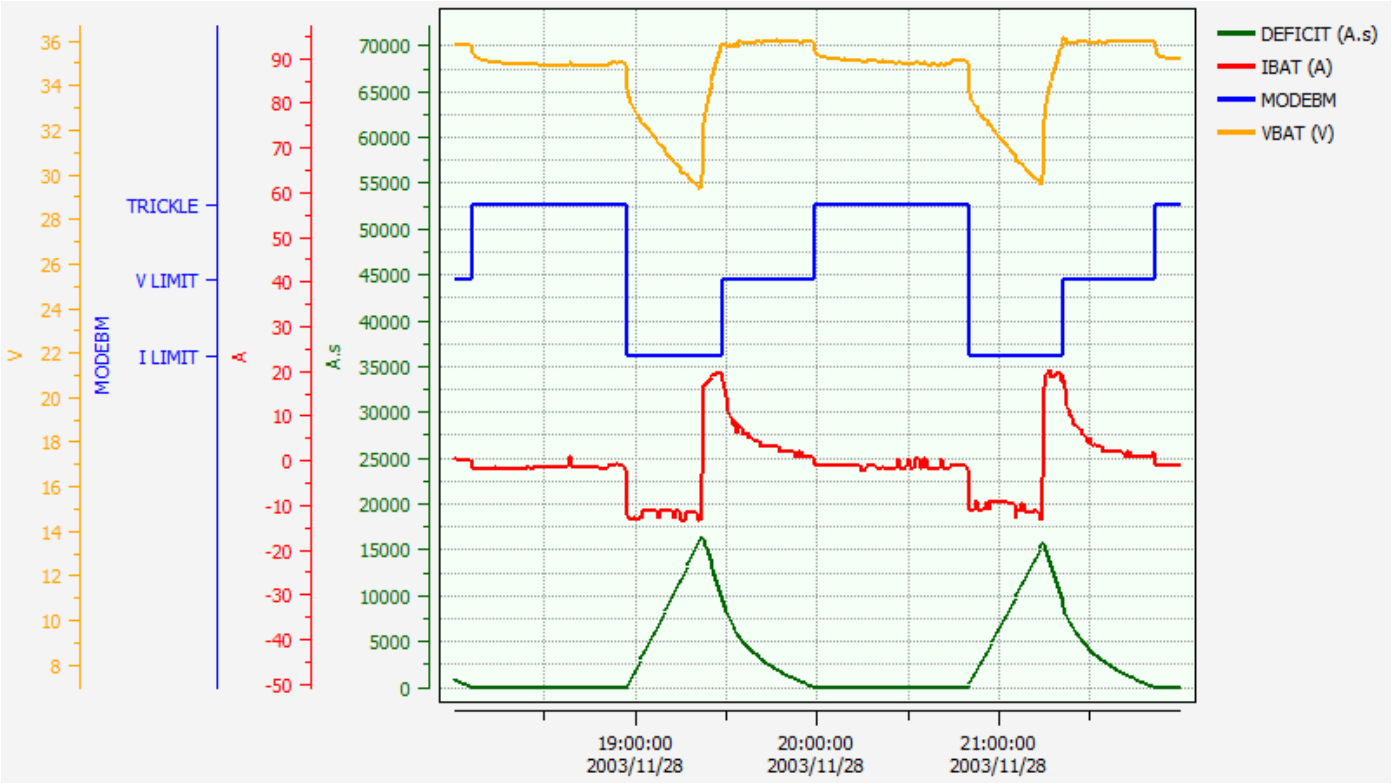
Now that you have displayed the graphs you wanted, you can start to make your data speak by playing around with the configuration of the graphs, visual elements, markers, and conditional styling.

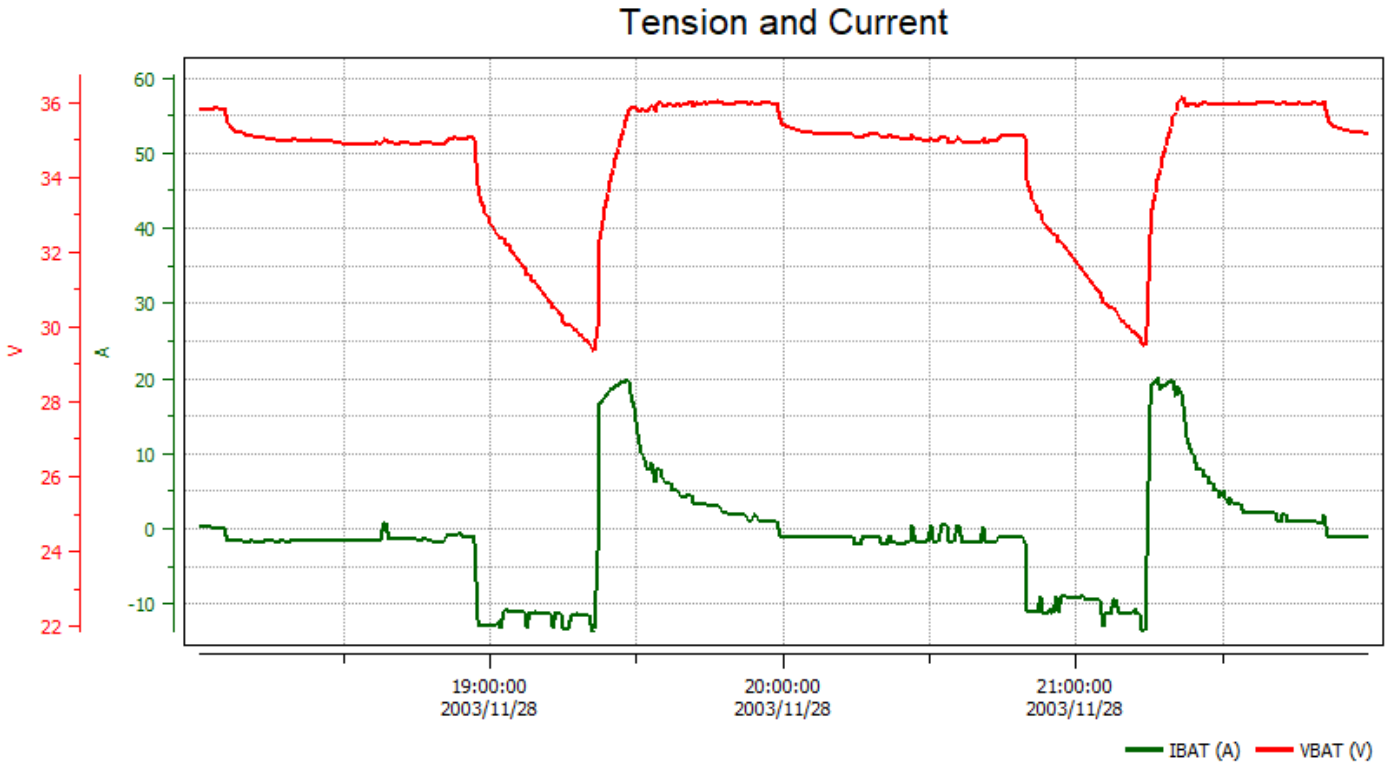
Here are some possible graph configurations :

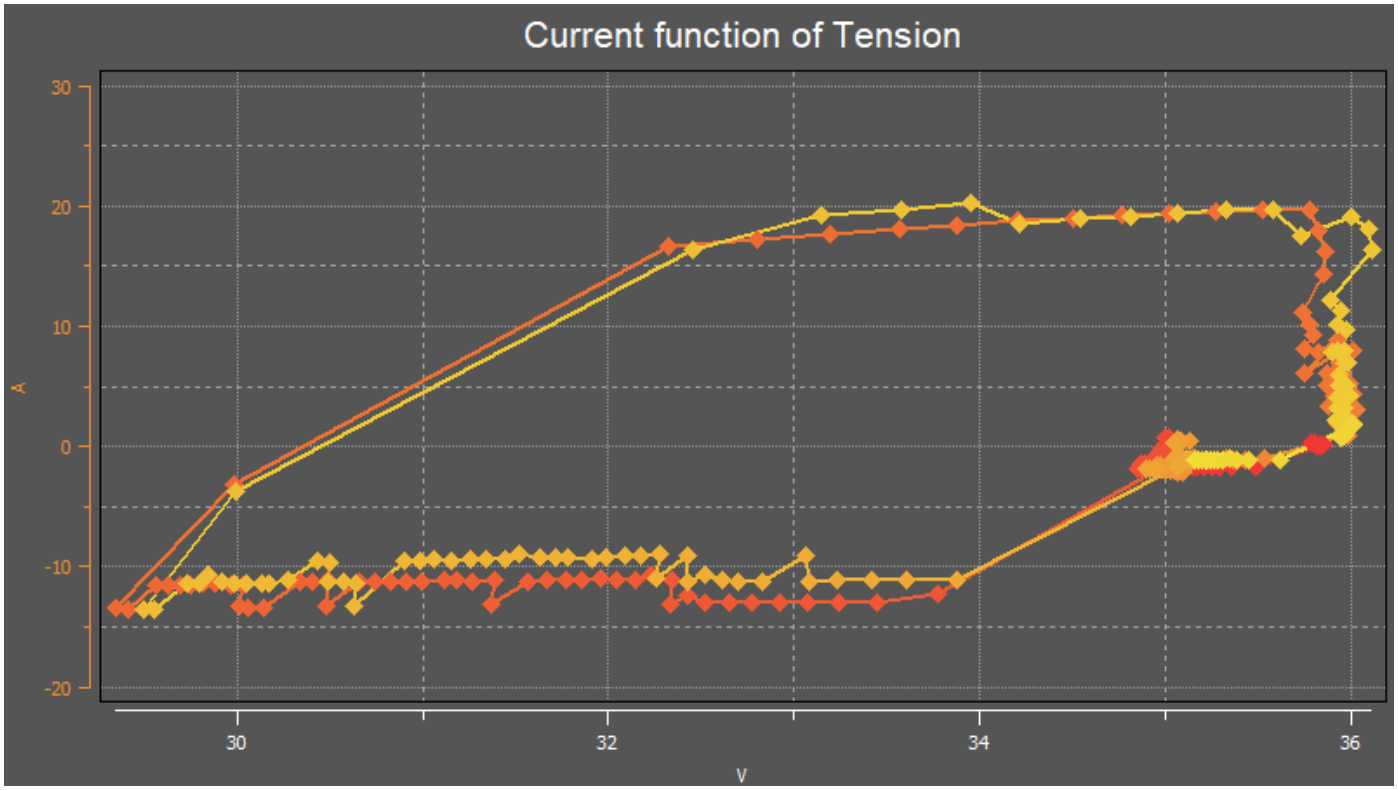


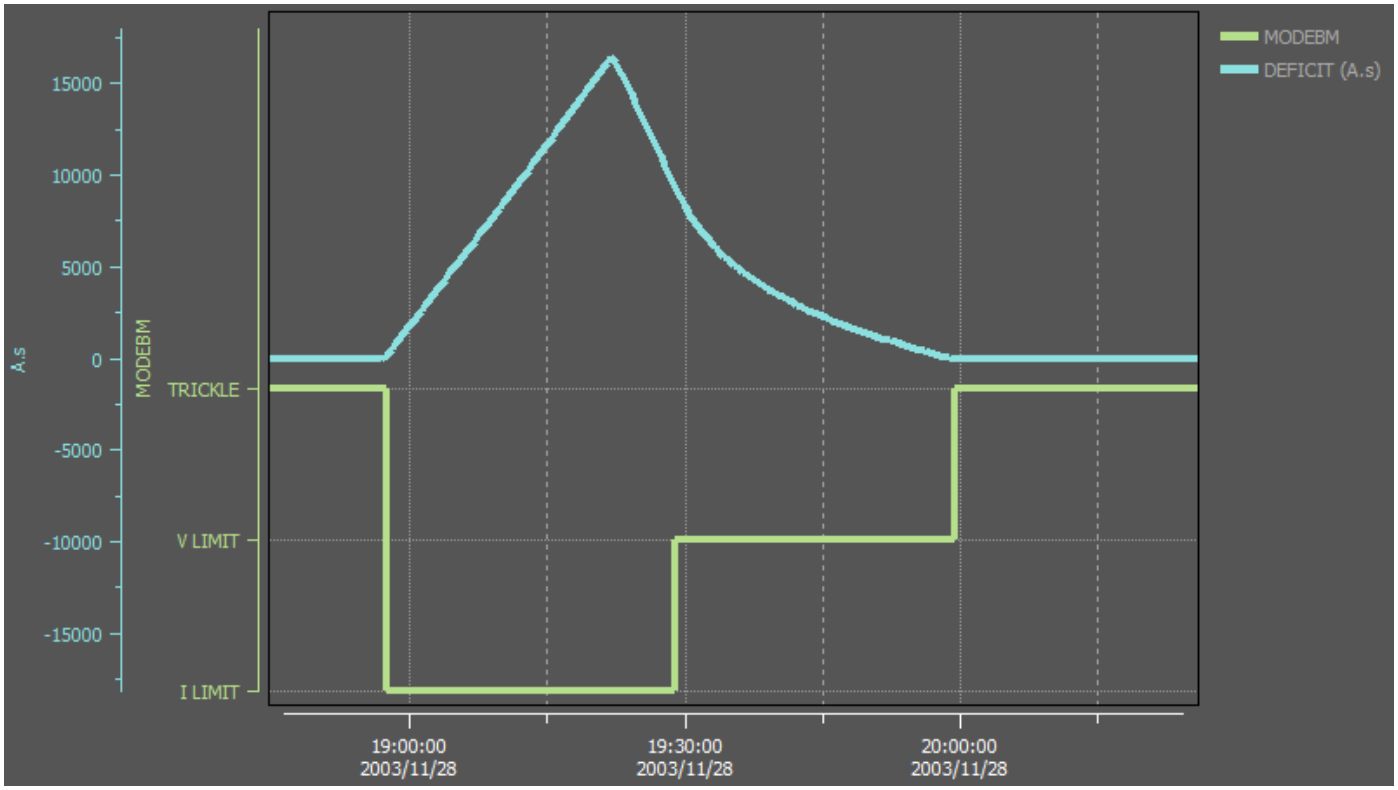


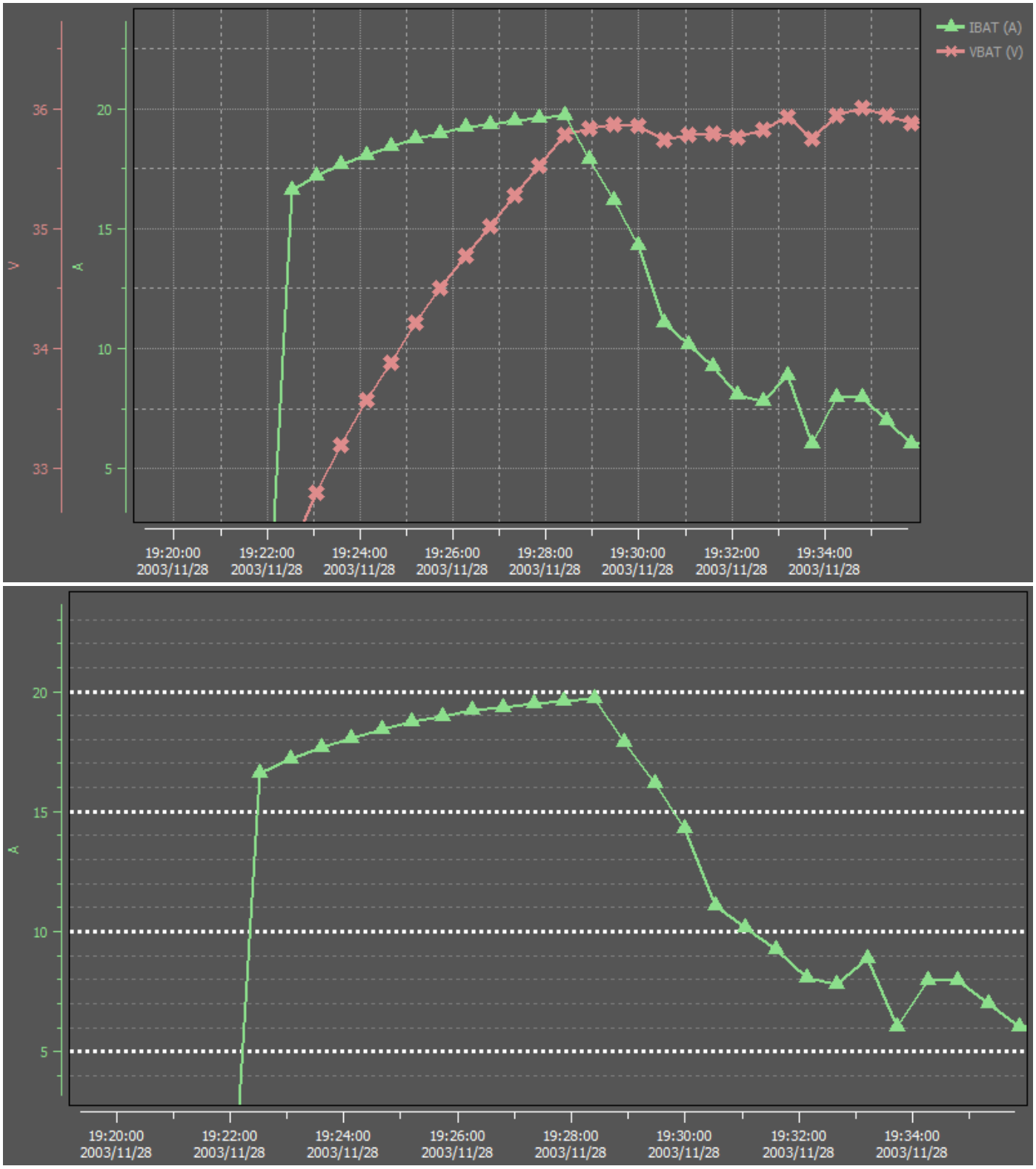












2.4 Going further

To learn more, take a look at:

- Customizing graphs, curves and axes
- Using markers
- Using pens
- Saving your work (Models, Graphs, PGD Files, Workspaces, Projects
- Using the calculator
- Automation

3. PrestoPlot Core concepts

PrestoPlot has a few concepts that are important to understand in order to use it to its full potential.

3.1 Datasets

A dataset is the starting point for any visual representation. A dataset can correspond to a variable or parameter sampled over time. One or more datasets are loaded into PrestoPlot when a data file is opened.

The list of loaded datasets is displayed in a dedicated dataset window. Basic information is displayed in this window, such as the names of the datasets, units, number of data points, etc.

A dataset consists of at least two data vectors: - A data vector, which is usually a measured or physical quantity, displayed on the Y-axis - A time vector displayed on the X-axis. Note that the X vector may not be a time vector.

A dataset can be displayed and plotted on a graph.

3.2 Models

A model is a visual style for a graph, a specific configuration of the graphic and visual elements that compose it. These elements are configurable and can be saved in a model file.

A saved model can be reused on new data to instantly reapply the same graph style and visual configuration.

This is very useful if you want to have models to regularly produce graph images over consecutive time periods.

A model is abstract and does not contain any data.

3.3 Graphs

Graphs are obviously the central elements of PrestoPlot. A graph is a visual representation of one or more datasets. It combines a visual style and configuration of all elements with the data from the datasets it represents. It is sufficient on its own to display a final rendering and export the graph as an image.

Graphs can be saved to files so that they can be easily shared with third parties.

3.4 Workspaces

Workspaces are simply sets of models. Imagine you are preparing a large number of graphs to plot a day's worth of data, and you want to redraw the same graphs for the following day. Workspaces allow you to save all your models in a file and instantly reapply them to new data.

3.5 Projects

A PrestoPlot project represents all the graphs displayed with all the loaded datasets.

It is the preferred way to save a work state and retrieve it later, or to share the entire work environment with a third party.

By configuration, it is possible to include all loaded datasets, or only the datasets represented on graphs.

3.6 File contents

Contents	PMD / PMDB	PGR / PGRB	PWS / PWSB	PPJ	PGD
Datasets		X		X	
Graph Style	X	X	X	X	X
Graph Count	1	1	*	*	*
Format	Internal	Internal	Internal	Internal	JSON

A graph count of * is multiple graph descriptions

4. Loading data

4.1 Load data from clipboard

A very easy way to load data in PrestoPlot is to simply copy-paste (Control-v) a bunch of data formatted in a CSV-like style. The generic CSV loader will guess the content format and load the datasets.

For example, you can copy-paste an array of data from Excel or LibreOffice Calc, into PrestoPlot. The datasets will be automatically created.

If you have a specific formatting or want to use an advance loading dialog, use the Control-Shift-V shortcut to paste instead.

See the generic CSV loader configuration for fine tuning the loader.

> **Tip**
> On windows clicking on a file or files in the explorer will copy the file path(s) to the clipboard, if the clipboard contains a path to a data file it can be loaded by simply pasting in PrestoPlot.

4.2 Generic CSV File Format

This file contains columns of data separated by a single unique character, the data values can be numerical or labels or empty values. It can be produced using Excel or a simulation or a simple log file.

If the **First** line contains labels they will be used as the names of the datasets, ("s will be ignored). If the **Second** line contains labels they will be used as the units for the datasets, ("s will be ignored).

If **no** names are given the generic name **Data[n]** ([n] is a number) will be used.

PrestoPlot will use the set of Generic CSV preferences to detect and process the file structure:

- **Column separator** - Can be `AUTO` detected from one of `TAB`, `SEMICOLON`, `COMMA`, or `SPACE`.
- **Decimal separator** - Can be `AUTO` detected from either `PERIOD` or `COMMA`.
- **Parameter names** - Defined in the first line of the file.
- **Units** - Defined in the second line of the file.
- **Date column present/absent** - Detected using the structure of the first column data.
- **Format of the date column** - Detected from the Date Formats using the CSV preferences.

4.2.1 Additional Information

Additional comments can be added after the units line

Where `»` is the separator character for this file.

`# Description : » DEFICIT » Charge deficit` Will add a description for the dataset 'DEFICIT'.

`# Label values : » MODEBM » I LIMIT » 0 » V LIMIT » 1 » TRICKLE » 2` Will add a labelling transfer function for the dataset 'MODEBM'

`# X Label : » Calendar Date` Gives a label to display on the X axis for all of the datasets in this file.

`# Offset : » ISO8601 » 2005/05/17 00:00:00.000 » [delta]` Will convert a calendar dated file to SECONDS by giving the Date value for the 0.0 SECONDS date, the date is added to all SECONDS values for this file. The optional 'delta' value will be added as a numerical correction factor.

`# Baseline : » ISO8601 » 2005/05/17 00:00:00.000 » [delta]` Will convert a dated file to SECONDS, the date is subtracted from all date values for this file. The optional 'delta' value will be added as a numerical correction factor.

> **Tip**
> Any other line starting with the # character will be ignored.

e.g. With ISO8601 format dates :

```
t;IBAT;VBAT
ISO8601;A;V
2003/05/12 00:00:12.330;0.00;0.00
2003/05/12 00:00:44.330;3.20;3.20
2003/05/12 00:01:26.330;2.56;4.81
```

e.g. With LINE_NUMBER (Date columnn set to 0) :

```
IBAT,VBAT
A,V
0.00,0.00
3.20,3.20
2.56,4.81
```

4.2.2 Special Number values

The special number values `NaN` (**N**ot **a** **N**umber) and `Inf` (**Inf**inity) are handled by PrestoPlot depending on the other values present in the dataset.

- An `FLT` with numerical values only will have any special values removed.
- A `LABEL` or `LABEL + FLT` with label values will have the labels `NaN` or `Inf` added to the label transfer function and display the labels appropriately.

4.3 XLSX Excel files

PrestoPlot can open simple XLSX format Excel files (extension `.xlsx`). The files should contain columns of data using the same rules as for Generic Multicolumn files, excluding the **Encoding** comment, this is handled automatically.

The data should be present in the first rows and columns of the file, where saving the file as a TAB separated CSV file should produce the same results.

If a date is present it must be the first column in the file. Excel formatted dates are imported as ISO8601 format dates.

> **Tip**
> To add milliseconds values, use a custom format with hh:mm:ss.000.

The **Description** and **Labels** comments can be added and then `»` indicates a change of column. **E.G.** `# Description :` in the first column, `PARAM` in the second and the text of the description in the third.

```
# Description : » DEFICIT » Charge deficit
```

If the file contains multiple sheets then PrestoPlot will ask which sheets to load (from the command line -load will load every sheet unless specific sheets are specified).

> **Tip**
> Double clicking on one of the sheet names will load that sheet.
>
> Selecting any sheet names and pressing enter will load the selected sheets.

The set of Generic CSV preferences will be used, except the **Field Separator** and **Force Multi Space** which are automatic.

4.4 ZIP files Format

A standard zip file containing a set of .tsv, .tab, .txt or .csv files.

If a zip file is loaded into PrestoPlot it will load the list of compatible files in the archive.

- If the zip file contains only one file then it will be loaded automatically.
- If several are found then a dialog box will appear showing the list of loadable files.

Elements in the list can be selected by dragging the mouse pointer over the elements with the left mouse button pressed, the selection can be extended using the shift key and the left mouse button and single elements added/removed using the Control key and the left mouse button.

If the list is long, it can be filtered by typing characters into the Filter entry **e.g.**:

- Typing MAN will display any files which start by the three letters **MAN**.
- Typing *MAN will display any files containing **MAN** somewhere in their name.
- Typing *M?N will display any files containing **M** then any character followed by **N** somewhere in their name.
- Typing *M[AIO]N will display any files containing **MAN**, **MIN** or **MON** somewhere in their name.

Once the chosen files have been selected, pressing the 'Load selected files' button will load each of the files in turn.

> **Tip**
> Double clicking on one of the names will load that file and leave the dialog box open to choose more files.

If a zip file is loaded from the command line (or a command file file) then all of the compatible files will be loaded, unless specific files are listed after the filename using a ':' separator. **e.g.** `-load "D:/Data/Files.zip:*r*;*R*"` Will load any files containing **r** or **R** in the name.

4.5 TSV files Format

See also Generic CSV format.

This tab separated file contains a selection of data from one data packet with a set of `#` comments describing the packet.

The file contains one line for each packet with each line containing, the date and three entries for each data value `Physical Value`, `Raw Value`, `Condition Flag`.

e.g. DRPPC Generated file

```
# Parameters : » DEFICIT » DEFICITCOMP
# Start date : » 2003/05/12 00:00:00
# End date : » 2003/05/13 00:00:00
# Sampling : » 1
# Parameter unit : » A.s
# Minimum value : » 0.000000 » 0.000000
# Maximum value : » 21986.140626 » 15.268150
2003/05/12 00:00:12.330 » 1093358092 » 2085.415039 » 3007 » 0 » 1.448205 » 2007
2003/05/12 00:00:44.330 » 1268108044 » 2418.724121 » 3007 » 0 » 1.679670 » 2007
```

e.g. PrestoDecom Generated .tsv file

```
# Parameters : » DEFICIT » MODEBM
# APID : » POM
# N° APID : » 281
# Sampling : » 1
# Offset : 0
# Label values : » MODEBM » I LIMIT » 0 » V LIMIT » 1 » TRICKLE » 2
# Parameter unit : » A.s » none
# Archive Start Date : » 2003/05/12 00:00:12.330
# Archive End Date : » 2003/05/12 23:59:40.416
# Description : » DEFICIT » charge deficit
# Description : » MODEBM » power management mode (Vlimit, Ilimit)
# Start Date : » 2003/05/12 00:00:12.000
# End Date : » 2003/05/12 23:59:41.000
2003/05/12 00:00:12.330 » 2085.415039 » 2085.415039 » 2 » 0 » I LIMIT » 2
2003/05/12 00:00:44.330 » 2418.724121 » 2418.724121 » 2 » 0 » I LIMIT » 2
2003/05/12 00:01:16.330 » 2754.121582 » 2754.121582 » 2 » 0 » I LIMIT » 2
2003/05/12 00:01:48.330 » 3088.918945 » 3088.918945 » 2 » 0 » I LIMIT » 2
2003/05/12 00:02:20.330 » 3425.762695 » 3425.762695 » 2 » 0 » I LIMIT » 2
```

The `Label values` comment is used by PrestoPlot to populate label axes with all the possible values of a label transfer function, even when they are not present in the data file.

The `Description` comment is used by PrestoPlot in the `Information` column, for the respective data, of the Data Sets window, if these comments are not present the APID comment will be used.

The `Condition Flag` is not used by PrestoPlot.

PrestoDecom can add a baseline date for simulator data to the .tsv file:

e.g. `# Offset : » 2003/05/12 00:00:12.330 » DATE » [delta]`

This entry is used to give the Date value for the 0.0 simulation date and is used by PrestoPlot as a constant offset to all date values for this file. The optional `delta` value will be added as a numerical correction factor.

> **Note**
> All values in this file are separated by tabs (»).

4.6 TAB files Format

See Generic CSV format.

4.7 CIC files Format

This file format is used at CNES CIC and is a standard for exchanging data between experts.

Its full specification can be found in the document **CIC Data Exchange Protocol** (DCT/DA/PA/2009.0021267).

The following file content is given as a sample :

```
CIC_AEM_VERS = 1.0
CREATION_DATE = 2009-12-08T09:00:00
ORIGINATOR   = SPACEBEL

META_START

COMMENT Exemple de fichier d'attitude

OBJECT_NAME = CubeSat
OBJECT_ID = CubeSat

REF_FRAME_A = EME2000
REF_FRAME_B = SC_BODY_1
ATTITUDE_DIR = A2B

TIME_SYSTEM = UTC

ATTITUDE_TYPE = QUATERNION

META_STOP

55276 » 0 » 0.003498 » 0.92446 » -0.202258 » -0.323192
55276 » 30 » 0.000134 » 0.919235 » -0.202341 » -0.337735
55276 » 60 » -0.00323 » 0.91378 » -0.202373 » -0.352194
...
```

4.8 BASILES RES file Format

This file format is used by the BASILES simulator to record data sampling values.

The following file content is given as a sample :

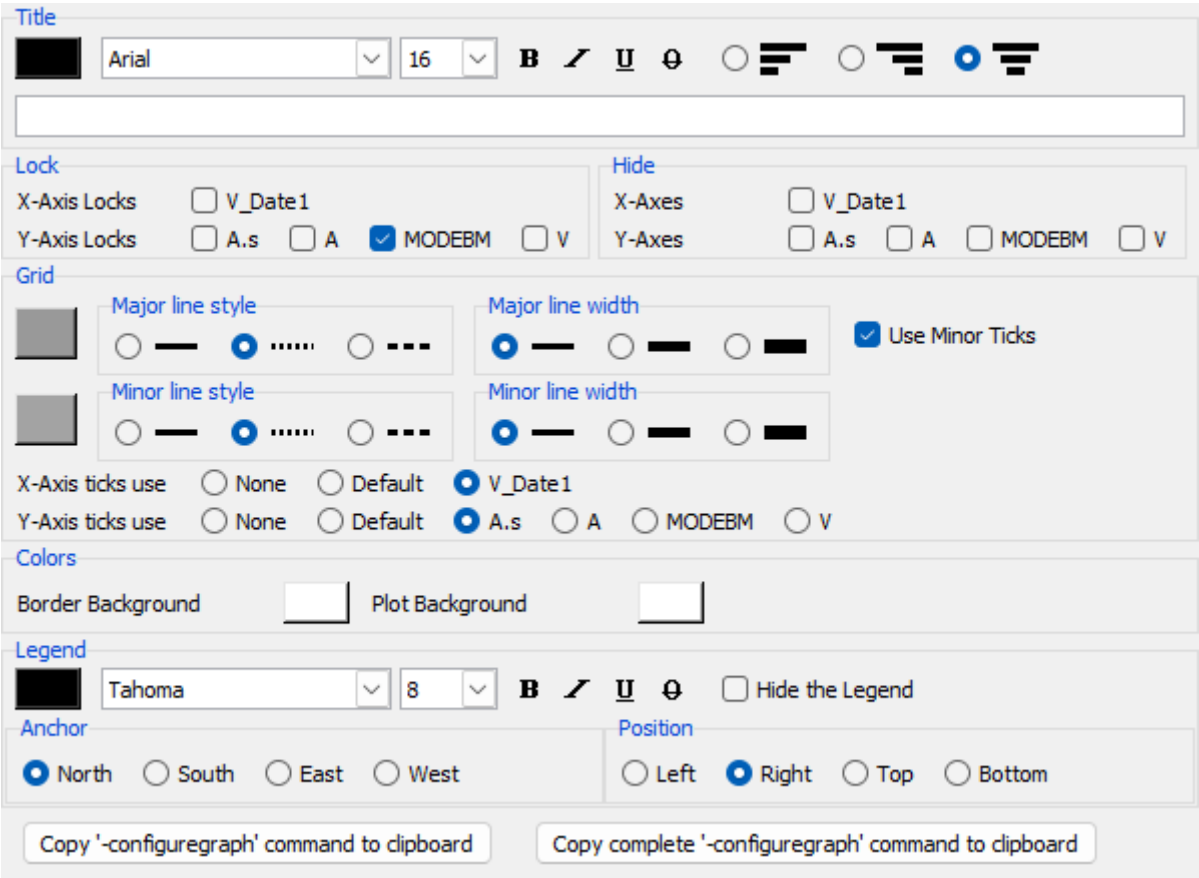
```
rts                             :   1 :      reel64 : s
ELEC_CONSO_SAT.rConso_Sat       : 1 :      reel64 : W
ELEC_BATTERIE.rTension_BNR      : 1 :      reel64 : V
ELEC_BATTERIE.rCharge_Batt      : 1 :      reel64 : %
=================================================
rts ELEC_CONSO_SAT.rConso_Sat   ELEC_BATTERIE.rTension_BNR  ELEC_BATTERIE.rCharge_Batt
0    5.200000000000000e+01   3.200000000000000e+01   1.000000000000000e+02
0.03125  5.200000000000000e+01   3.200000000000000e+01   1.000000000000000e+02
0.0625   5.200000000000000e+01   3.200000000000000e+01   1.000000000000000e+02
0.09375  5.200000000000000e+01   3.200000000000000e+01   1.000000000000000e+02
0.125    5.200000000000000e+01   3.200000000000000e+01   1.000000000000000e+02
...
```

5. Customize

5.1 Customize graphs

The Configure Graph window changes the appearance of the graph window plot area.

5.1.0.1 User Interface



5.1.0.2 Configure Window Menu

The dialog menu contains the following specific entries:

- **Copy configuration command to clipboard** - Copies only settings different from the defaults to the clipboard as a `-configuregraph` command line option.
- **Copy complete configuration command to clipboard** - Copies all the current set of settings to the clipboard as a `-configuregraph` command line option.

> **Tip**
> This can be activated using the two shortcut buttons on the bottom of the dialog

5.1.1 Configuration

You can modify the following elements:

- **Title** Change the text, color, font, and alignment of the title message.
  > **N.B.** Alignment applies only to multi-line titles created using `\n` to break up the lines.
- **Lock** Each axis on the graph can be locked or unlocked to prevent zooming the axis when zooming.
- **Hide** Each axis on the graph can be shown or hidden to increase the visible area.
- **Grid** The plot area contains a grid of lines associated with one X and one Y axis. You can change the color, line thickness, and line style, as well as choose to display grid lines for the minor ticks on the axes.
- **Colors** Change the border and background colors.

> **Tip**

When printing graphs on a black and white printer, a white border color is best.

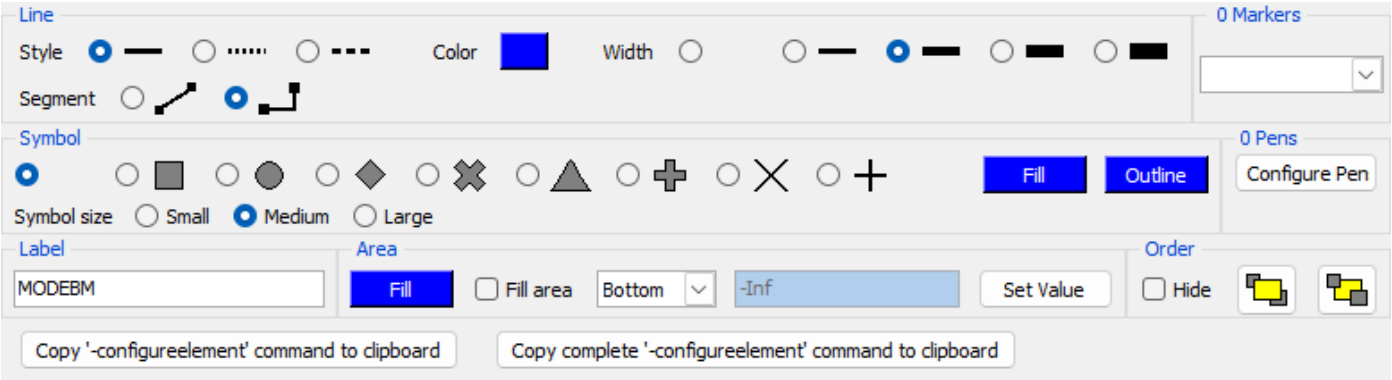
- **Legend** Change the color and font of the legend text and the position of the legend on the graph window. "Position" is the placement with respect to the graph, and "anchor" is the placement within the side position.

> **Tip**
> The compass points change the relative position, so East/West are very similar on the Left and Right sides.

5.2 Customize graph curves

The Configure Graph Data window changes the appearance of one data set, the name of the data set is displayed on the title bar.

5.2.0.1 User Interface



5.2.0.2 Configure Window Menu

The dialog menu contains the following specific entries:

- **Copy configuration command to clipboard** - Copies only settings different from the defaults to the clipboard as a `-configureelement` command line option.
- **Copy complete configuration command to clipboard** - Copies all the current set of settings to the clipboard as a `-configureelement` command line option.

> **Tip**
> This can be activated using the two shortcut buttons on the bottom of the dialog

5.2.1 Configuration

The following elements can be changed:

- **Line** - Change the line style, color, width and segment type.
  > N.B. Changing the line color will also change the symbol and area fill colors.
- **Symbol** - Change the form of the data point symbol and the outline and fill colors used to draw each symbol.
  > N.B. The symbol is best used on small data sets or on zoomed regions.
- **Label** - Change the label displayed on the graph legend.
- **Area** - Enable the filling of the area underneath or above the graph line and its fill color.
- **Order** - Change whether this element is displayed and the order of this element relative to the other elements, either before all the others or after the others.
  > N.B. The order of the elements is only necessary when the fill region is activated: the elements are drawn from the bottom to the top of the legend list.

> **Tip**
> Hidden graph elements can be reactivated by using the Configure Axes sub-menu on the graph menu to reopen the Configure Graph Data window.

- **Pens** - Display the number of pens defined for this set of data with a button to open the Configure Pens window.
- **Markers** - It is possible to add one of five different annotation markers to a graph, these markers are associated with one data element. Selecting the appropriate marker type in the list will automatically create a new marker.
  > N.B. the current number of markers for this element is displayed on this frame.
  - The following marker types are supported:
    - **HORIZONTAL** - A horizontal line with a block of text. The text can contain the Y position value.

- **VERTICAL** - A vertical line with a block of text. The text can contain the X position value.
- **TEXT** - A block of text.
- **POINT** - A block of text connected to one point on the data set. The connected point can be changed by dragging the line segment with the left mouse button. The text can contain the X position value, the Y position value and the Number of the current data element.
- **2POINT** - A block of text connected to two points on the data set. The connected points can be changed by dragging each line segment with the left mouse button. The text can contain any of the aditional marker values.

- The appearance of the markers can be changed by using the right mouse button to display the Configure Marker window.

> **Tip**
>
> A markers position can be changed by dragging the marker with the left mouse button. Press Shift while dragging (VERTICAL or HORIZONTAL) to attach the marker to the point closest to the mouse pointer. The POINT and 2POINT markers can be moved when the associated text block changes color, the end point will automatically attach to the point closest to the mouse pointer.

> **Tip**
>
> A marker can be removed by hitting the DELETE button while holding the mouse pointer over it.

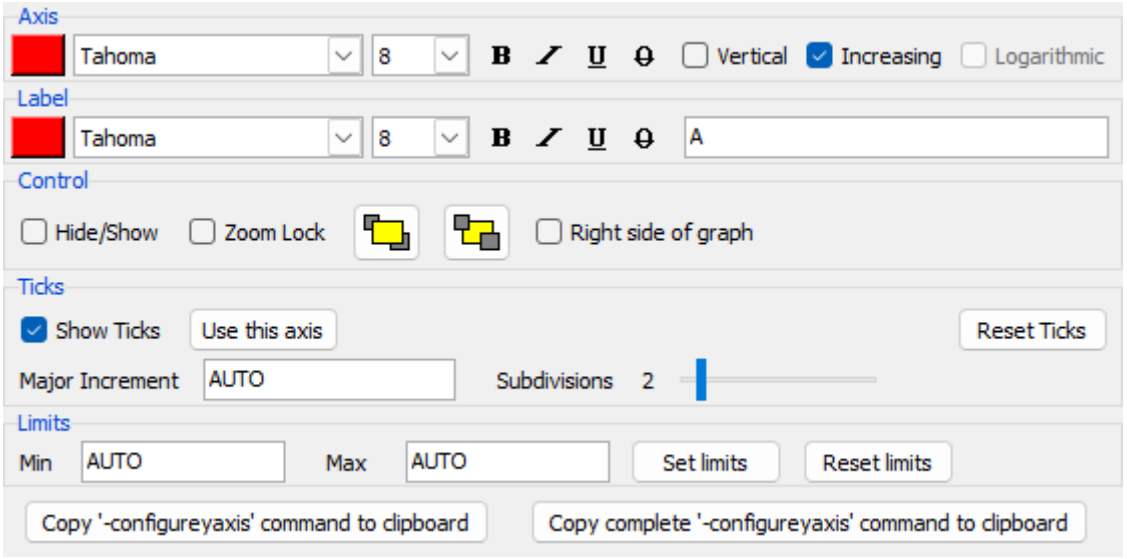
5.3 Axis

5.3.1 Configure Graph Axis

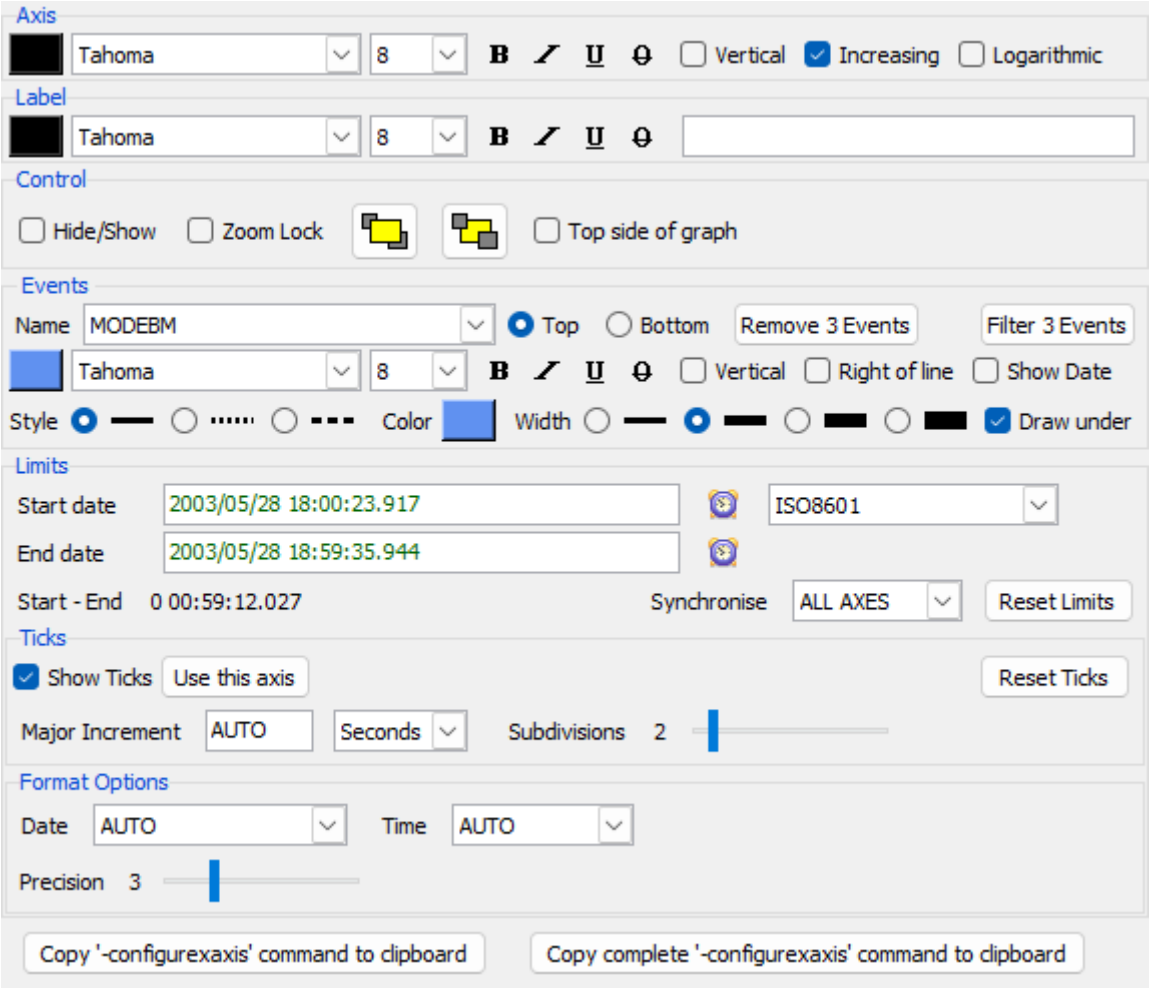
The Configure Graph Axis window changes the appearance of one graph axis. The name of the graph and the axis are displayed on the title bar.

5.3.1.0.1 User Interface

Data Axis



Date Axis



5.3.1.0.2 Configure Window Menu

The dialog menu contains the following specific entries:

- **Copy configuration command to clipboard** - Copies only settings different from the defaults to the clipboard as `-configurexaxis` or `-configureyaxis` command line options.
- **Copy complete configuration command to clipboard** - Copies the current set of settings to the clipboard as `-configurexaxis` or `-configureyaxis` command line options.

> **Tip**
> This can be activated using the two shortcut buttons on the bottom of the dialog

5.3.1.1 Configuration

The following elements can be changed:

- **Axis** Change the color, font and orientation of the tick labels and lines used for the axis as well as the order of the axis (increasing or decreasing) and if the scale is linear or logarithmic.
- **Label** Change the color, font and text of the label displayed on the axis.
- **Control** Change how this axis is managed:
  - Hide/Show the axis and all text.

> **Tip**
> - This is useful when two date axes have the same time base, one can be hidden to increase the plotting space.
> - It is possible to quickly hide an axis by using the Control key with the right mouse button.

  - Lock this axis so that it will not be changed using the automatic zoom, it can be modified by changing the limits or using the selective axis zooming. When an axis is locked its background color is changed.
  - Move this axis to the right of/on top of the other axes.
  - Move this axis to the left of/underneath the other axes.
- **Events** Import onto this axis and display sets of vertical event markers (labels and vertical markers) from a labelled dataset, this will show **either** the dates that the dataset changes state (including the initial state) **or** all of the dates: !!! tip - Importing the events will use the current set of options. - To change the options first select the set of markers then change the options.
  - Name of this set of markers to configure or import.

> **Tip**
>
> - The `----------` item (if present) separates the datasets which have the same date (came from the same file) from those which came from a different file and which may not have the same date values and may not be visible on the graph. Selecting this item will be ignored.

- Top - Display the labels on the top of the graph.
- Bottom - Display the labels on the bottom of the graph.
- Remove or Import all event markers for this set and axis.
- Filter the event markers for all available markers.
- Change the color, font and orientation of the text labels showing the event state and optional date of the marker.
- Change the color, style and position relative to the data elements, of the vertical event bars.

> N.B. Changing the marker color will also change the color of the text labels*

> **Tip**
>
> - Clicking on a marker with the mouse will display the date for the marker.

- **Ticks** Change how the axis tick marks are displayed and labelled. The contents of this element changes depending on whether this axis is a Date axis, Label axis or Numerical axis:
  - **All axes:**
    - Hide/Show all tick marks and their labels for this axis.
    - Use this axis as the controlling axis for the grid as in the configure graph window.
    - Major Increment - sets the step interval for major tick marks and labels.
    - Subdivisions - sets the number of subdivisions indicated by minor tick marks to be displayed. (check tip below)
    - Reset Ticks - resets the tick marks back to their initial configuration
  - **LABEL axis ONLY:**
    - Display label values as Labels or as numerical values.
  - **Date axis ONLY:**
    - The `Custom Date Format` check box allows certain parameters to be changed depending on the Date format selected.
    - Set the major increment in Days, Hours, Minutes, Seconds, Milli, Micro, Nano or Pico.

> **Tip**
>
> - Setting the sub division to 1 removes the minor tick marks.

- **Limits** Change the minimum and maximum limits displayed for this axis. The contents of this element changes depending on whether this axis is a Date axis or not:
  - **Numeric axis** - Enter the numeric minimum and maximum limits and press the `Set limits` button or `Enter`. Entering `AUTO` will set this limit according to the data values associated with this axis.
  - **Date axis** - The date limits can be changed in several ways:
    - Using the  buttons to display a date Date Picker popup.
    - Entering a new date directly in the entry boxes and pressing enter. When the displayed dates are green, they are correct and will be applied directly to the graph, when they are red, there is an error in the date/time format and it must be corrected. (check tip below)

    This window also displays the time between the start and end limits in `Days HH:MM:SS.mmm` format.

    The `Date Format` Drop down allows the format for this axis to be changed (see the Date format page for more details). The `Synchronise` selection allows the time axes to be associated (see the Synchronisation page for more details). The `Reset limits` button restores the initial limits for this axis (see the Synchronisation page for its action when the axes are synchronised).

> **Tip**
>
> - When the cursor is in the Start/End date entries the UP/DOWN arrows change the time +/- 1 minute and the PGUP/PGDOWN by +/- 1 hour and Control-PGUP/PGDOWN by +/- 1 day.
> - The standard windows COPY/PASTE work in these entries, so whole dates can be copied to align multiple date axes.

5.3.2 Synchronizing Axes

PrestoPlot allows multiple time axes on its graphs, when the data elements are loaded from different files or from sparse data files, and by default will limit these axes to the first and last data values.

It is sometimes necessary however to link together the limits of these axes to allow the comparison of the data.

PrestoPlot has four synchronisation types:

- `NONE` - The axes are independant and can be moved and zoomed individually.

- `THIS AXIS` - All axes have the same limits as this axis.
- `ALL AXES` - All axes have the limits of the youngest and oldest data points from all axes.
- `LOCKED` - All axes have the same time-span as this axis and their limits move relative to this axis.

After synchronisation, the axis used to synchronise becomes the master axis and its labels will change color, the other axes become slave axes. Any zoom information will be lost (use 'Reset Zoom' or 'Reset limits' to redisplay the whole data set).

5.3.2.1 THIS AXIS

This type should be used when all the data points cover the same time period, **i.e.** data from several different telemetry packets from the same telemetry archive.

After synchronisation all the slave axes have their limits set to be the same as those the master axis currently has visible.

Only the master axis will be displayed as all the other axes behave identically to this one.

5.3.2.2 ALL AXES

This type should be used when the data points are sequential or only partially overlap, **i.e.** data from several different telemetry packets from sequential telemetry archives or data that changes from one packet to another when a mode changes.

After synchronisation all the axes have their limits set to be the youngest and oldest limits of all the time axes.

Only the master axis will be displayed as all the other axes behave identically to this one.

5.3.2.3 LOCKED

This type should be used when the data points cover the same or similar time spans but at different time periods, **i.e.** data from 10am to 11am but on two different days.

After synchronisation all the slave axes have their limits set to their current start date and their end date adjusted to cover the same period as the master axis has visible. (**E.G.** the slaves start does not change but its range will be the same as the master axis).

All the axes remain visible and any zooming on any axis will be added to all the axes. Sliding the master axis will slide all the axes but sliding the slave axes will adjust their relative offset from the master axis. This allows events on the axes to be lined up precisely; for greater precision lining up the axes simply zoom in on the region to align.

5.3.3 Date Formats

PrestoPlot allows the format displayed on the time axes and in markers to be changed even if the data source was in a different format.

> **Warning**
> PrestoPlot® does not automatically manage conversion between timescales (TDB, TAI, TT, etc.).

5.3.3.1 Date format list

5.3.3.1.1 AUTO

Use the format of the data file used for this date axis.

5.3.3.1.2 JJCNES_FRAC

Displays the date as `dddd.ffff` where the dddd is the number of days since '1950/01/01' and .ffff is the fraction of the day (Midday gives .5). **e.g.**:

```
18971.5 (2001/12/10 12:00:00.000)
20000.1234 (2004/10/04 02:57:41.76)
```

Only the Precision of the fraction can be changed for this format.

5.3.3.1.3 JJCNES_SEC

Displays the date as `dddd ssss.ffff` where dddd is the number of days since '1950/01/01' and ssss.ffff is the number of seconds and fractions of second in the day. **e.g.**:

```
18971 1234.5 (2001/12/10 00:20:34.5)
20000 40000.1234 (2004/10/04 11:06:40.1234)
```

Only the Precision of the seconds can be changed for this format.

5.3.3.1.4 JJ2000_MSDAY

Displays the date as `dddd mmmmmmmm` where dddd is the number of days since '2000/01/01' and mmmmmmmm is the number of milliseconds in the day. **e.g.**:

```
344 43200000 (2001/12/10 12:00:00.000)
2000 12345678 (2005/06/23 03:25:45.678)
```

This format has no customisation options.

5.3.3.1.5 ESA_YEARDAY

Displays the date as `yyyy-ddd hh.mm.ss.mmm` where yyyy is the year, ddd is the number of the day in the year and hh.mm.ss.mmm is the 24H time with fractions of seconds. **e.g.**:

```
2004-123 12.34.18.34 (2004/05/02 12:34:18.34)
```

Only the Precision of the seconds can be changed for this format.

5.3.3.1.6 ISO8601 (¹)

Displays the date in `yyyy/mm/dd hh:mm:ss.mmm` format (Year/Month/Day), with an optional time component. **e.g.**:

```
2003/05/12 00:02:20.330
2003/05/12
```

The Date format, Time format, and Precision options can be changed for this format.

5.3.3.1.7 ISO8601+SECONDS

Displays the date as an offset `nnnn.nnns` and `yyyy/mm/dd hh:mm:ss.mmm` format (Year/Month/Day).

> By default, the T0/Epoch date is set to the `DefaultDateFormatEpoch` option.

e.g.:

```
2003/05/12 00:02:20.330 | 3200.000 s
```

> **Tip**
> To enter a new date value only enter the calendar part **or** the seconds part PrestoPlot will detect which format is used.

> **Tip**
> The `Reset Epoch` button will set the T0/Epoch to the `DefaultDateFormatEpoch` option.

The Date format, Time format, Epoch date, Precision and Decimal SECONDS ticks options can be changed for this format.

> **Tip**
> `Decimal SECONDS ticks` will position the tick marks to a power of 10 seconds, otherwise the positioning is a power of 60 to have rounded HH:MM:SS values

5.3.3.1.8 USA (¹)

Displays the date in `mm/dd/yyyy hh:mm:ss.mmm` format (Month/Day/Year), with an optional time component. **e.g.**:

```
05/12/2003 00:02:20.330
05/12/2003
```

The Date format, Time format, and Precision options can be changed for this format.

5.3.3.1.9 USA+SECONDS

Displays the date as an offset `nnnn.nnn s` and `mm/dd/yyyy hh:mm:ss.mmm` format (Month/Day/Year).

> By default, the T0/Epoch date is set to the `DefaultDateFormatEpoch` option.

e.g.:

```
05/12/2003 00:02:20.330 | 3200.000 s
```

> **Tip**
> To enter a new date value only enter the calendar part **or** the seconds part PrestoPlot will detect which format is used.

> **Tip**
> The `Reset Epoch` button will set the T0/Epoch to the `DefaultDateFormatEpoch` option.

The Date format, Time format, Epoch date, Precision and Decimal SECONDS ticks options can be changed for this format.

5.3.3.1.10 EUR (¹)

Displays the date in `dd/mm/yyyy hh:mm:ss.mmm` format (Day/Month/Year), with an optional time component. **e.g.**:

```
12/05/2003 00:02:20.330
12/05/2003
```

The Date format, Time format, and Precision options can be changed for this format.

5.3.3.1.11 EUR+SECONDS

Displays the date as an offset `nnnn.nnn s` and `dd/mm/yyyy hh:mm:ss.mmm` format (Day/Month/Year).

> By default, the T0/Epoch date is set to the `DefaultDateFormatEpoch` option.

e.g.:

```
12/05/2003 00:02:20.330 | 3200.000 s
```

> **Tip**
> To enter a new date value only enter the calendar part **or** the seconds part PrestoPlot will detect which format is used.

> **Tip**
> The `Reset Epoch` button will set the T0/Epoch to the `DefaultDateFormatEpoch` option.

The Date format, Time format, Epoch date, Precision and Decimal SECONDS ticks options can be changed for this format.

5.3.3.1.12 GPS_SECONDS

Displays the date as `wwww ssss.ffff` where wwww is the number of weeks since '1980/01/06' and ssss.ffff is the number of seconds and fractions of a second in the week. **e.g.**:

```
0 88.34 (1980/01/06 00:01:28.340)
1266 327495.0 (2004/04/14 18:58:15.0)
```

Only the Precision of the seconds can be changed for this format.

5.3.3.1.13 OFFSET

Displays the date as an offset in seconds and fractions of a second from a given T0/Epoch date.

> By default, the T0/Epoch date is set to the `DefaultDateFormatEpoch` option.

> **Tip**
> The `Reset Epoch` button will set the T0/Epoch to the first date in the dataset **not** the `DefaultDateFormatEpoch` option.

The Epoch date, Engineering format, Precision and Decimal SECONDS ticks options can be configured for this format.

5.3.3.1.14 SECONDS

Displays the date as `ssss.ssss` in seconds and fractions of a second. **e.g.**:

```
10.123456789
```

The Time format, Engineering format, and Precision options can be configured.

5.3.3.1.15 UNIX

Displays the date as `ssss.ssss` in seconds and fractions of a second. **e.g.**:

```
10.123456789
```

Only the Precision of the seconds can be changed for this format.

5.3.3.1.16 UNIXMS

Displays the date as `ssss.ssss` in milliseconds and fractions of a millisecond. **e.g.**:

```
10.123456789
```

Only the Precision of the milliseconds can be changed for this format.

5.3.3.1.17 UNIXUS

Displays the date as `ssss.ssss` in microseconds and fractions of a microsecond. **e.g.**:

```
10.123456789
```

Only the Precision of the microseconds can be changed for this format.

5.3.3.1.18 LINE_NUMBER

Displays the date as the line number of the data file. This format has no customisation options.

> **Tip**
> Additional date formats can be created within a plugin.

(¹) The calendar dates (ISO8601, EUR and USA) can contain either '/' or '-' as a date separator and a ' ' (space) or 'T' as a date/time separator when loading dates from source data files. Also, the time is optional and can be omitted. **e.g.** for EUR the date can be one of:

```
12/05/2003T00:02:20.330
12-05-2003T00:02:20.330
12/05/2003 00:02:20.330
12-05-2003 00:02:20.330
12/05/2003
12-05-2003
```

5.3.3.2 Options

Most of these formats have a set of configuration options:

- **Engineering Format** - Display the value using either 'Engineering' (1.2345e+010) or 'Floating' format (123.456).
- **Precision** - Change the number of decimal digits displayed for fractions of second (0 to 12).
- **Epoch** - Change the starting date for the 0 seconds value for `ISO88601+SECONDS` and `OFFSET` formats, this is **always** entered using the **ISO8601** format.
- **Decimal SECONDS Ticks** Adjust the tick marks to be a power of 10 (Decimal) or a power of 60 (Sexagecimal).
- **Date Format** - Each format has a list of date types associated and NONE for no date display. AUTO will use the standard format (2004/04/17) in the correct order for the associated format.

```
17-April-2004 or 04/04/17.
```

> N.B.Selecting a date format with a 'T' as the last character will display the date on a single line.

```
2003/05/28T00:02:20.330.
```

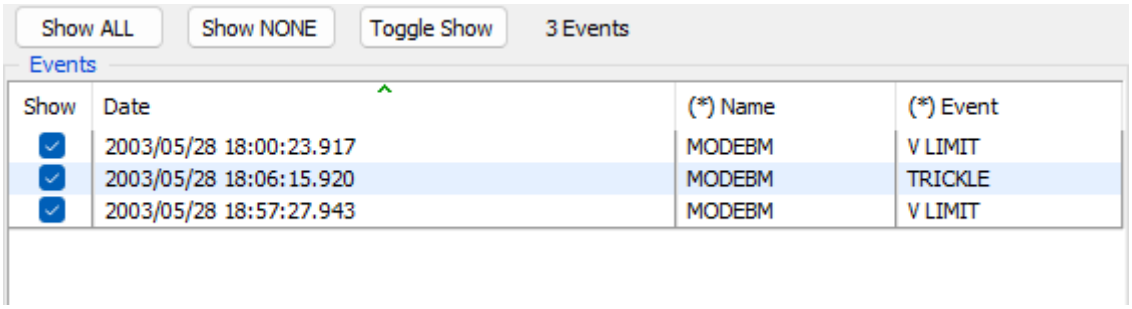
> **Tip**
> If two formats appear the same (2003-May-28) the first of the two in the list will be full month names **April** and the second will be 3-letter month names **Apr**.

- **Time Format** - Select the time from one of four formats or NONE for no time display. AUTO will use the standard time 19:45:32.123. e.g. 19:45 or 07:45 PM.

> N.B. Fractions of seconds will only be displayed if seconds are displayed and the precision is not 0.

5.3.4 Filter Event Markers

5.3.4.0.1 User Interface



The Filter Event Markers window allows hiding/Showing events from a graph The name of the graph and the axis are displayed on the title bar.

The window has two sections, a button bar with three buttons and a table of events to be filtered. The buttons allow:

- **Show ALL** - Change the state of all of the visible checkboxes to be checked.
- **Show NON** - Change the state of all of the visible checkboxes to be unchecked.
- **Toggle Show** - Toggle the state of all of the visible checkboxes to be the inverse state.

The label shows counters for the numbers of - total markers/ total visible markers/filtered markers ans selected markers.

The table shows 4 columns for each event: - **Show** - A check box showing the visible state of the event marker. - **Date** - The date for each marker. - **Name** - The name of the group of markers. - **Event** - The label for each marker.

The Name and Event fields can be filtered by clicking with the right mouse button on the column header, or clicking on one of the names/labels with the right mouse button and selecting the filter option from the menu.

A right mouse click on the event list will display a popup menu allowing the same actions as the buttons on the set of selected markers.

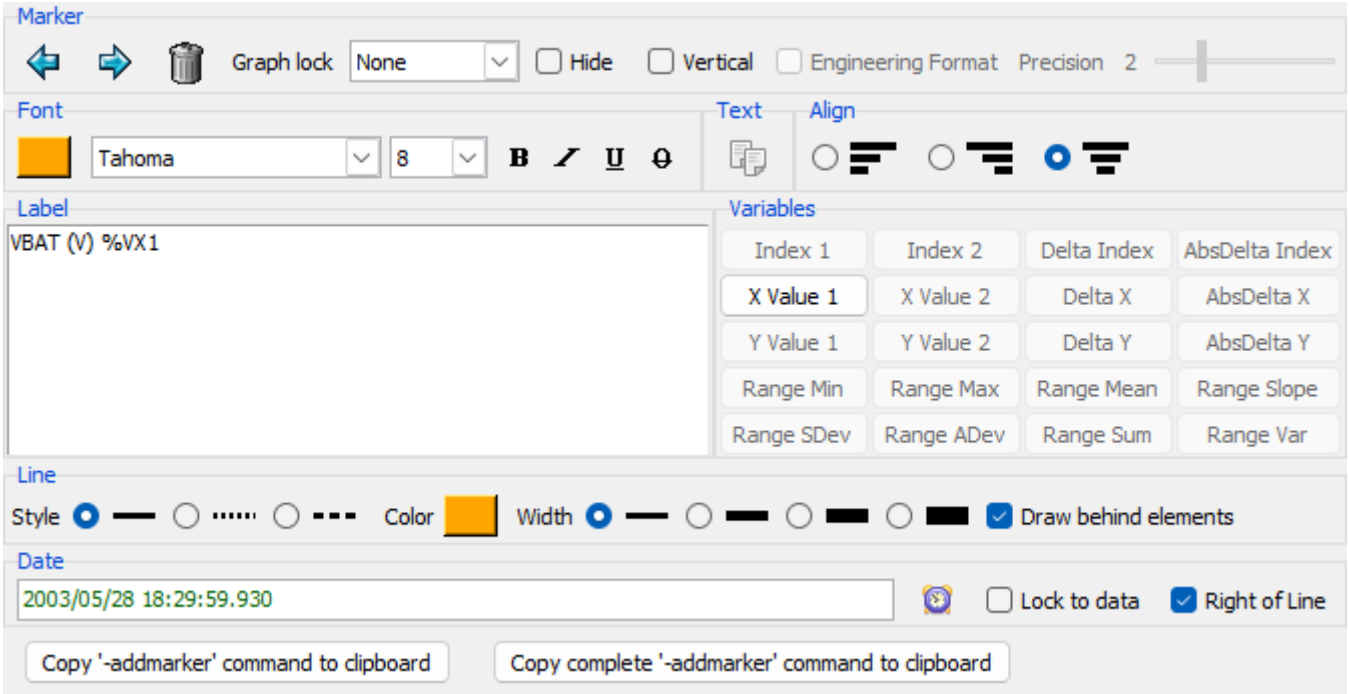
> **Tips**
>
> Pressing the Space bar with any rows selected will toggle the checkboxes for each of the selected rows.
>
> Pressing the Space bar AND the Shift key with any rows selected will check the checkboxes for each of the selected rows.

> N.B. Model files (PMD) do not store the events, so their visible state cannot be restored from a PMD file.

5.4 Configure Markers

The Configure Marker window changes the appearance of one marker. The name of the graph, the data set name and the type of marker are displayed on the title bar together with a count of the total number of markers positioned for this data set.

5.4.0.1 User Interface



5.4.0.2 Configure Window Menu

The dialog menu contains the following specific entries:

- **Copy configuration command to clipboard** - Copies only settings different from the defaults to the clipboard as an `-addmarker` command line option.
- **Copy complete configuration command to clipboard** - Copies all the current set of settings to the clipboard as an `-addmarker` command line option.

> **Tip**
>
> This can be activated using the two shortcut buttons on the bottom of the dialog

5.4.1 Configuration

The following elements can be changed:

5.4.1.0.1 Marker

Cycle through the markers for this data element, delete the current marker, lock the markers position to the graph so it can no longer be moved accidentally, temporarily hide the marker and change the label orientation. It is also possible to change the format for displayed values, using either 'Engineering' (1.2345e+010) or 'Floating' format (123.456) and the number of decimal digits displayed (0 to 8).

5.4.1.0.2 Font

Change the color and font used for the text segment of the marker.

> **Tip**
>
> The current text from the label can be copied using the  button

5.4.1.0.3 Align

Change the alignment of the text segment of the marker if it contains more than one line.

5.4.1.0.4 Label

Modify the contents of the text segment, this text can contain one of the following special sequences:

Sequence	Description
`%E`	The element name.
`%UY`	The elements Units.
`%UX`	The elements X Units/Label.
`%VX1`	The X position for VERTICAL, POINT and 2POINT markers.
`%VY1`	The Y position for HORIZONTAL, POINT and 2POINT markers.
`%VX2`	The X position for 2POINT markers second line segment.
`%VY2`	The Y position for 2POINT markers second line segment.
`%N1`	The number of the data element for POINT and 2POINT markers.
`%N2`	The number of the data element for 2POINT markers second line segment.
`%DX`	The delta in X between the 2POINT markers two line segments.
`%DY`	The delta in Y between the 2POINT markers two line segments.
`%DI`	The delta in element numbers between the 2POINT markers two line segments.
`%ABSDI`	Absolute value of the delta in element numbers between the 2POINT markers two line segments.
`%ABSDX`	Absolute value of the delta in X between the 2POINT markers two line segments.
`%ABSDY`	Absolute value of the delta in Y between the 2POINT markers two line segments.
`%MIN`	The minimal Y data value in the range between the 2POINT markers two line segments.
`%MAX`	The maximal Y data value in the range between the 2POINT markers two line segments.
`%AVE`	The mean average Y data value in the range between the 2POINT markers two line segments.
`%SLO`	The slope of the graph for the 2 points of a 2POINT marker.
`%SD`	The Standard Deviation (the square root of the variance) of the range of data for the 2POINT markers two line segments.
`%AD`	The Average Deviation (the sum of the absolute values of the differences between the element and the mean value divided by the length of the data set) of the range of data for the 2POINT markers two line segments.
`%SUM`	The sum of the Y data values in the range between the 2POINT markers two line segments.
`%VAR`	The variance (the sum of the squared differences between each element and the mean) of the Y data values in the range between the 2POINT markers two line segments.

An extra set of sequences is available for UsingX() calculated datasets if the original X axis dataset is still present:

Sequence	Description
`%XD1`	The date for this data point for POINT and 2POINT markers.
`%XD2`	The date for this data point for the 2POINT markers second line segment.

Sequence	Description
%XDD	The delta between the dates for the 2POINT markers two line segments.
%XDAD	Absolute value of the delta between the dates for the 2POINT markers two line segments.

5.4.1.0.5 Line

- Change the line segment's style, color, width and drawing order.

5.4.1.0.6 Value / Date

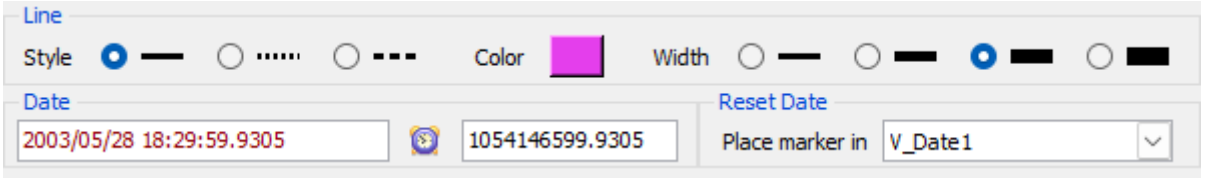
> **Tip**
>
> Use the buttons to display a date Date Picker popup.

- Set the HORIZONTAL position value.
- Set the VERTICAL position date.
- Lock the marker's position to only be within the data limits for this data set.
- Change which side of the line the text is displayed.
- Set the POINT or 2POINT position (X value). The actual data point will be the point with the closest date/x value to the given value.
- Swap the two current dates/x values for a 2POINT marker.

5.5 Configure Time Marker

The Configure Time Marker window changes the appearance of the time marker displayed by the Tool bar button.

5.5.0.1 User Interface



The following elements can be changed:

- Line - Change the line style, color and width.
- Date - The date value is always displayed in ISO8601 and SECONDS and can be changed in several ways.
  - Using the buttons to display a date Date Picker popup.
  - Entering a new date directly in the entry box and pressing enter.

    When the displayed date is green, it is correct and will be applied directly to the marker. When it is red, there is an error in the date/time format and it must be corrected.

> **Tip**
>
> - When the cursor is in the entry the UP/DOWN arrows change the time +/- 1 minute and the PGUP/PGDOWN by +/- 1 hour and Control-PGUP/PGDOWN by +/- 1 day.
> - The standard windows COPY/PASTE work in this entry, so whole dates can be copied.

- Reset Date - Place the Time Marker in the middle of any of the loaded V_Date vectors. The combo box will list all the current vectors.

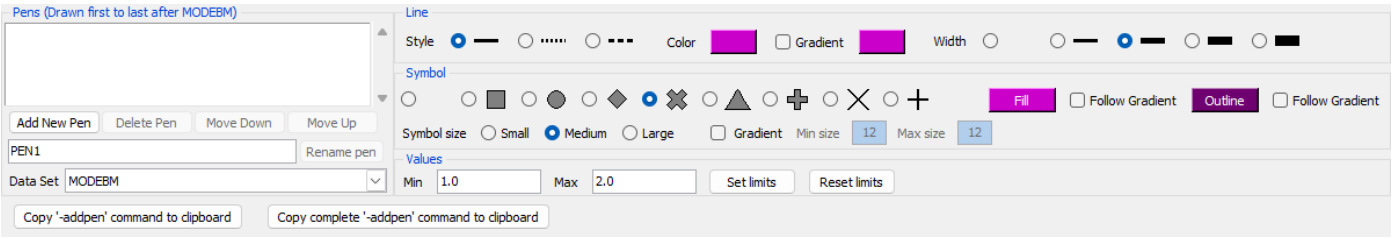
> N.B. The configuration is kept in the INI file between executions of PrestoPlot.

5.6 Configure Pens

The Configure Pens window controls a set of different pen styles for a given dataset. The name of the graph and the data set name are displayed on the title bar.

PrestoPlot can associate a set of pens or drawing styles with each dataset.

5.6.0.1 User Interface



5.6.0.2 Configure Window Menu

The dialog menu contains the following specific entries:

- **Copy configuration command to clipboard** - Copies only settings different from the defaults to the clipboard as an `-addpen` command line option.
- **Copy complete configuration command to clipboard** - Copies all the current set of settings to the clipboard as an `-addpen` command line option.

> **Tip**
> This can be activated using the two shortcut buttons on the bottom of the dialog

The window is separated into two halves:

5.6.0.3 Pens

To add, delete, reorder and rename the pens and name the data set to use as the weights to decide which pen to apply (Only one weight dataset can be used for all of the pens for each dataset).

5.6.0.4 Attributes

To modify how each one of the pens are drawn: The line segment attributes apply to the two line segments before and after the associated data point.

- **Line** Change the line style, color, gradient and width.
  > **N.B.** The gradient changes color evenly from the first visible point to the last using the two end colors.
- **Symbol** Change the form of the data point symbol and the size, outline and fill colors used to draw each symbol.
  > **N.B.** The gradient changes the size of the symbol evenly from the smallest weight value to the largest using the two symbol sizes.
- **Values** Change the Minimum and maximum values used to apply this pen. **e.g.** If the values are 0 and 1 then any data values in the weights data set which lie between 0 and 1 will be drawn using this pen.

> **N.B.** The pens are applied from the first to the last so if they overlap only the last one drawn will be visible.

6. Save your work

6.1 Saving your models

A PMD (**Prestoplot MoDel file**) contains the configuration parameters of a graph (i.e. all its style and configuration, minus the data sets). This is used to reproduce the style of a graph but using a new set of loaded data.

> i.e. Displaying similar graphs using data from two different days or periods of time.

A graph saved in a PMD file is not sufficient to be reloaded. You will need the original datasets (or at least datasets with the same names) to reopen a similar graph (looking likes the one you saved).

There is currently two supported formats to save models :

- Binary PMD (.pmdb) - recommanded
- Legacy PMD (.pmd) - deprecated not saveable

> **In a nutshell**
>
> - **Purpose**: Format for saving chart models (formatting without data).
> - **Contents**: Only and all formatting settings :
>   - Curve colors and thickness.
>   - Axis titles, scales, and configurations.
>   - Zoom levels and user customizations.
>
>   > There is no dataset information in this file.
> - **Usage**:
>   - Apply a predefined style to new charts.
>   - Share chart styles without data.

6.1.1 Binary PMD (.pmdb)

Binary PMD files are the recommanded new way to store your graphs. They are more efficient and more compressed than legacy ones.

If you start using PrestoPlot, you should consider using them instead of legacy PMD.

6.1.2 Legacy PMD (.pmd)

Legacy PMD files are the original way to store model informations. The informations were stored in an internal ASCII format that is no longer recommended today.

If you just want to save a model, use the Binary PMD instead, if you want to produce models (by hand or programmaticaly, use the PGD format)

A legacy PMD file has the following structure:

- **Encoding** - A comment describing the encoding of this file.
- **PrestoPlot version information** - A comment describing PrestoPlot version used to create the .pmd file.
- **File version information** - The format version for the file (0 before 4.6.0 and 1 from 4.6.0 onwards).
- **Graph attributes** - How the graph as a whole is displayed (see Configure Graph).
- **Grid attributes** - How the background grid is displayed
- **Legend attributes** - How and where the legend is displayed
- **Graph elements** - How the data elements and their markers are displayed
- **Graph axes** - How the axes are displayed
- **Extra information** - Information not covered by the other sections

Attribute details

Warning

These files are internal PrestoPlot files and incorrect contents could cause PrestoPlot to stop working correctly. As such you should modify them at your own risk.

6.1.2.1 Graph attributes

- **-aspect** - Define the Width/height aspect ratio for the graph (default 0.0 fill window space)
- **-background** - Sets the background color. This includes the margins and legend, but not the plotting area.
- **-borderwidth** - Sets the width of the 3-D border around the outside edge of the widget. The -relief option determines if the border is to be drawn.
- **-bottommargin** - If non-zero, overrides the computed size of the margin extending below the X-coordinate axis. If pixels is 0, the automatically computed size is used.
- **-font** - Sets the font of the graph title.
- **-foreground** - Sets the graph title foreground color.
- **-highlightbackground** - Sets the background color when a graph is selected using the mouse.
- **-highlightcolor** - Sets the foreground color when a graph is selected using the mouse.
- **-highlightthickness** - Sets the thickness in pixels of the highlight border around the graph.
- **-justify** - Specifies how the title should be justified. This matters only when the title contains more than one line of text. Justify must be left, right, or center.
- **-leftmargin** - If non-zero, overrides the computed size of the margin extending from the left edge of the window to the Y-coordinate axis. If 0, the automatically computed size is used.
- **-plotbackground** - Specifies the background color of the plotting area.
- **-plotborderwidth** - Sets the width of the 3-D border around the plotting area. The **-plotrelief** option determines if a border is drawn.
- **-plotpadx** - Sets the amount of padding to be added to the left and right sides of the plotting area. Pad can be a list of one or two screen distances. If pad has two elements, the left side of the plotting area entry is padded by the first distance and the right side by the second. If pad is just one distance, both the left and right sides are padded evenly.
- **-plotpady** - Sets the amount of padding to be added to the top and bottom of the plotting area. Pad can be a list of one or two screen distances. If pad has two elements, the top of the plotting area is padded by the first distance and the bottom by the second. If pad is just one distance, both the top and bottom are padded evenly.
- **-plotrelief** - Specifies the 3-D effect for the plotting area. Relief specifies how the interior of the plotting area should appear relative to rest of the graph; for example, raised means the plot should appear to protrude from the graph, relative to the surface of the graph.
- **-relief** - Specifies the 3-D effect for the graph widget. Relief specifies how the graph should appear relative to widget it is packed into; for example, raised means the graph should appear to protrude.
- **-rightmargin** - If non-zero, overrides the computed size of the margin extending from the plotting area to the right edge of the window. By default, the legend is drawn in this margin. If pixels is 0, the automatically computed size is used.
- **-shadow** - Specifies the shadow color of the graph title
- **-title** - Sets the title. If "", no title will be displayed.
- **-topmargin** - If non-zero, overrides the computed size of the margin between the graph and the title. If 0, the automatically computed size is used.

The following elements are present in the file but should not be modified and need not be present if these files are generated automatically:

The following elements are present in the file but should not be modified and need not be present if these files are generated automatically:

- **-baseline** - NOT USED for line graphs.
- **-bottomvariable** - Name of the variable containing the **-bottommargin** value.
- **-bufferelements** - Indicates whether an internal pixmap to buffer the display of data elements should be used. If boolean is true, data elements are drawn to an internal pixmap. This option is especially useful when the graph is redrawn frequently while the data remains unchanged (for example, moving a marker across the plot).
- **-buffergraph** - Indicates whether an internal pixmap to buffer the display of the entire graph should be used.
- **-cursor** - Specifies the widget's cursor (for instance "crosshair").
- **-data** - NOT USED for line graphs.
- **-datacommand** - NOT USED for line graphs.
- **-halo** - Specifies a maximum distance to consider when searching for the closest data point. Data points further than pixels away are ignored.
- **-invertxy** - Indicates whether the placement X-axis and Y-axis should be inverted. If boolean is true, the X and Y axes are swapped.
- **-leftvariable** - Name of the variable containing the **-leftmargin** value.
- **-rightvariable** - Name of the variable containing the **-rightmargin** value.
- **-takefocus** - Provides information used when moving the focus from window to window via keyboard traversal (e.g., Tab and Shift-Tab). If 0, this means that this window should be skipped entirely during keyboard traversal. 1 means that this window should always receive the input focus. An empty value means that the traversal scripts make the decision whether to focus on the window.
- **-tile** - Specifies a tiled background for the widget. If image isn't "", the background is tiled using image. Otherwise, the normal background color is drawn (see the **-background** option). Image must be an image created using the Tk image command.
- **-topvariable** - Name of the variable containing the **-topmargin** value.

6.1.2.2 Grid attributes

- **-color** - Sets the color of the grid lines.
- **-dashes** - Sets the dash style of the grid lines. DashList is a list of up to 11 numbers that alternately represent the lengths of the dashes and gaps on the grid lines. Each number must be between 1 and 255. If dashList is "", the grid will be solid lines.

- **-hide** - Indicates whether the grid should be drawn. If true, grid lines are not shown.
- **-linewidth** - Sets the width of solid grid lines.
- **-mapx** - Specifies the X-axis to display grid lines. X Axis must be the name of an axis or "" for no grid lines.
- **-mapy** - Specifies the Y-axis to display grid lines. Y Axis must be the name of an axis or "" for no grid lines.
- **-minor** - Indicates whether the grid lines should be drawn for minor ticks. If boolean is true, the lines will appear at minor tick intervals.

6.1.2.3 Legend attributes

- **-activebackground** - Sets the background color for active legend entries. All legend entries marked active are drawn using this background color.
- **-activeborderwidth** - Sets the width of the 3-D border around the outside edge of the active legend entries.
- **-activeforeground** - Sets the foreground color for active legend entries. All legend entries marked as active are drawn using this foreground color.
- **-activerelief** - Specifies the 3-D effect desired for active legend entries. Relief denotes how the interior of the entry should appear relative to the legend; for example, raised means the entry should appear to protrude from the legend, relative to the surface of the legend.
- **-anchor** - Tells how to position the legend relative to the positioning point for the legend. This is dependent on the value of the -position option. (n, s, e, w, ne, nw, se, sw or c)
- **-background** - Sets the background color of the legend. If color is "", the legend background with be transparent.
- **-borderwidth** - Sets the width of the 3-D border around the outside edge of the legend (if such border is being drawn; the -relief option determines this).
- **-columns** - Specifies how many columns will be used to display the legend items. Default is 0 and a single column is used.
- **-font** - Specifies a font to use when drawing the labels of each element into the legend.
- **-foreground** - Sets the foreground color of the text drawn for the element labels.
- **-hide** - Indicates whether the legend should be displayed. If boolean is true, the legend will not be draw.
- **-ipadx** - Sets the amount of internal padding to be added to the width of each legend entry. Pad can be a list of one or two screen distances. If pad has two elements, the left side of the legend entry is padded by the first distance and the right side by the second. If pad is just one distance, both the left and right sides are padded evenly.
- **-ipady** - Sets an amount of internal padding to be added to the height of each legend entry. Pad can be a list of one or two screen distances. If pad has two elements, the top of the entry is padded by the first distance and the bottom by the second. If pad is just one distance, both the top and bottom of the entry are padded evenly.
- **-padx** - Sets the padding to the left and right exteriors of the legend. Pad can be a list of one or two screen distances. If pad has two elements, the left side of the legend is padded by the first distance and the right side by the second. If pad has just one distance, both the left and right sides are padded evenly.
- **-pady** - Sets the padding above and below the legend. Pad can be a list of one or two screen distances. If pad has two elements, the area above the legend is padded by the first distance and the area below by the second. If pad is just one distance, both the top and bottom areas are padded evenly.
- **-position** - Specifies where the legend is drawn. The **-anchor** option also affects where the legend is positioned. If pos is left, right, top, or bottom, the legend is drawn in the specified margin. If pos is plotarea, then the legend is drawn inside the plotting area at a particular anchor. If pos is in the form "@x,y", where x and y are the window coordinates, the legend is drawn in the plotting area at the specified coordinates.
- **-raised** - Indicates whether the legend is above or below the data elements. This matters only if the legend is in the plotting area. If boolean is true, the legend will be drawn on top of any elements that may overlap it.
- **-relief** - Specifies the 3-D effect for the border around the legend. Relief specifies how the interior of the legend should appear relative to the graph; for example, raised means the legend should appear to protrude from the graph, relative to the surface of the graph.
- **-rows** - Specifies how many rows will be used to display the legend items. Default is 0 and a single column is used.
- **-shadow** - Specifies the shadow color of the text drawn for the element labels.

6.1.2.4 Graph elements

6.1.2.4.1 Data

- **-areapattern** - Bitmap to use for filling the area under the data element. solid fills a solid **-areaforeground** color.
- **-areaforeground** - Color to use for the area underneath the graph or bitmap foreground.
- **-areabackground** - Color to use for bitmap background for the area under the graph.
- **-areatile** - Image to use for filling the area under the data element.
- **-color** - Color of the traces connecting the data points.
- **-dashes** - Sets the dash style of the element line. `DashList` is a list of up to 11 numbers that alternately represent the lengths of the dashes and gaps on the element line. Each number must be between 1 and 255. If `DashList` is "", the lines will be solid.
- **-fill** - Sets the interior color of symbols. If color is "", the interior of the symbol is transparent. If color is `defcolor`, then the color will be the same as the **-color** option.
- **-hide** - Indicates whether the element is hidden. `1` is hidden, `0` is visible.
- **-label** - Sets the element's label in the legend. If text is "", the element will have no entry in the legend. The default label is the element's name.
- **-linewidth** - Sets the width of the connecting lines between data points. If `0`, no connecting lines will be drawn between symbols.
- **-maxsymbols** - Sets the maximum number of symbols to display on this element.
- **-offdash** - Sets the color of the stripes when traces are dashed (see the **-dashes** option). If color is "", then the "off" pixels will represent gaps instead of stripes. If color is `defcolor`, then the color will be the same as the **-color** option.
- **-outline** - Sets the color of the outline around each symbol. If color is "", then no outline is drawn. If color is `defcolor`, then the color will be the same as the **-color** option.
- **-outlinewidth** - Sets the width of the outline bordering each symbol. If pixels is `0`, no outline will be drawn.
- **-pixels** - Sets the size of symbols. If pixels is `0`, no symbols will be drawn.
- **-reduce** - Apply Douglas-Peucker line simplification algorithm to the displayed data points using the given value.
- **-scalesymbols** - If boolean is true, the size of the symbols drawn will change with the scale of the X-axis and Y-axis. At the time this option is set, the current ranges of the axes are saved as the normalized scales (i.e., scale factor is 1.0) and the element is drawn at its designated size (see the **-pixels** option). As the scale of the axes change, the symbol will be scaled according to the smaller of the X-axis and Y-axis scales. If boolean is false, the element's symbols are drawn at the designated size, regardless of axis scales.

- **-showvalues** - Display data values next to the symbols. One of `none`, `x`, `y`, or `both` specifies which values to show. See the **-valueXX** options below.
- **-smooth** - Specifies how connecting line segments are drawn between data points. `Smooth` can be either `linear`, `step`, `natural`, or `quadratic`. If `linear`, a single line segment is drawn, connecting both data points. When `step`, two line segments are drawn: the first is a horizontal line segment that steps to the next X-coordinate, the second is a vertical line, moving to the next Y-coordinate. Both `natural` and `quadratic` generate multiple segments between data points. If `natural`, the segments are generated using a cubic spline. If `quadratic`, a quadratic spline is used.
- **-symbol** - Specifies the symbol for data points. Symbol can be either `square`, `circle`, `diamond`, `plus`, `cross`, `splus`, `scross`, `triangle`, "" (where no symbol is drawn), or an image. Bitmaps are specified as `"source ?mask?"`, where `source` is the name of the bitmap, and `mask` is the bitmap's optional mask.
- **-trace** - Indicates whether connecting lines between data points (whose X-coordinate values are either increasing or decreasing) are drawn. `Direction` must be `increasing`, `decreasing`, or `both`. For example, if direction is `increasing`, connecting lines will be drawn only between those data points where X-coordinate values are monotonically increasing. If direction is `both`, connecting lines will be drawn between all data points.
- **-valueanchor** - Position of the data point with respect to the text. (`n`, `s`, `e`, `w`, `ne`, `nw`, `se`, `sw` or `c`)
- **-valuecolor** - Color of the text for the values.
- **-valuefont** - Font to use for the value labels.
- **-valueformat** - Format to use for the value labels.
- **-valuerotate** - Rotation angle in degrees for the values.
- **-valueshadow** - Shadow color for the value labels.

The following elements are present in the file but should not be modified and need not be present if these files are generated automatically:

- **-activepen** - Specifies the pen to use to draw the active element. If `penName` is "", no active elements will be drawn.
- **-bindtags** - Handled internally by PrestoPlot.
- **-errorbarcolor** - NOT USED by PrestoPlot.
- **-errorbarwidth** - NOT USED by PrestoPlot.
- **-errorbarcap** - NOT USED by PrestoPlot.
- **-folded** - Gives the name of the axis onto which the elements are mapped. See the Folding option.
- **-labelrelief** - Specifies the 3-D effect for the border around the legend label. Reset by PrestoPlot.
- **-pen** - Handled internally by PrestoPlot.
- **-showerrorbars** - NOT USED by PrestoPlot.
- **-state** - Defines the state of the element, one of `normal`, `active`, or `disabled`.
- **-styles** - Specifies which pen to use based on the range of weights given. `StyleList` is a list of style specifications. Each style specification is a list consisting of a pen name, and optionally a minimum and maximum range. Data points whose weight (see the **-weight** option) falls in this range are drawn with this pen. If no range is specified, it defaults to the index of the pen in the list. Note: this affects only symbol attributes; line attributes (such as line width, dashes, etc.) are ignored. Handled internally by PrestoPlot.
- **-weights** - Specifies the weights of the individual data points. This, together with the list of pen styles (see the **-styles** option), controls how data points are drawn. The argument is the name of a BLT vector or a list of numeric expressions representing the weights for each data point. Handled internally by PrestoPlot.

6.1.2.4.2 Markers

The markers used by PrestoPlot are composed of multiple different marker elements, each element has a set of options depending on its type, many of these options are updated dynamically by PrestoPlot when the markers are modified:

- **-anchor** - Position of the text with respect to the **-coords** option (n, s, e, w, ne, nw, se, sw or c)
- **-background** - Background text color.
- **-cap** - End of line style. one of butt, projecting or round.
- **-dashes** - Sets the dash style of marker line. `DashList` is a list of up to 11 numbers that alternately represent the lengths of the dashes and gaps on the element line. Each number must be between 1 and 255. If `DashList` is "", the lines will be solid.
- **-dashoffset** - Offset to start using the **-dashes**.
- **-font** - Font to use for the text.
- **-foreground** - Foreground text color.
- **-join** - Join style for marker line segments. one of bevel, miter or round.
- **-justify** - Specifies how the text should be justified. This matters only when the text contains more than one line of text. Justify must be left, right, or center.
- **-hide** - Indicates whether the marker element is hidden. 1 is hidden 0 is visible
- **-linewidth** - Sets the width of the line.
- **-outline** - Sets the foreground color of the line.
- **-padx** - Sets the padding to the left and right side of the text. Pad can be a list of one or two screen distances. If pad has two elements, the left side of the text is padded by the first distance and the right side by the second. If pad has just one distance, both the left and right sides are padded evenly.
- **-pady** - Sets the padding above and below the text. Pad can be a list of one or two screen distances. If pad has two elements, the top side of the text is padded by the first distance and the bottom side by the second. If pad has just one distance, both the top and bottom sides are padded evenly.
- **-rotate** - Rotation angle in degrees for the text.
- **-shadow** - Shadow color for the text.
- **-state** - State for the marker, one of normal, active or disabled.
- **-text** - Text to display in the marker.
- **-under** - Boolean to place the marker behind all graph elements.
- **-xoffset** - Offset in x for the marker from the **-coords** position.
- **-yoffset** - Offset in y for the marker from the **-coords** position.

The following elements are present in the file but should not be modified:

- **-bindtags** - Handled internally by PrestoPlot.
- **-coords** - Handled internally by PrestoPlot.
- **-xor** - Boolean drawing method.

Tip

As a special case, Markers can be placed on the side of the graph by using 'Inf' or '-Inf' for the x coordinate and 'e' or 'w' respectively for the -anchor option.

6.1.2.5 Graph axes

- **-background** - Background color for the axis. If color is "", the axis background with be transparent.
- **-borderwidth** - Width of the ends of the axis.
- **-color** - Color for the axis. if color is "", the axis background with be transparent.
- **-descending** - Indicates whether the values along the axis are monotonically increasing or decreasing. If boolean is true, the axis values will be decreasing.
- **-hide** - Indicates whether the axis is hidden. `1` is hidden, `0` is visible.
- **-justify** - Specifies how the axis title should be justified. This matters only when the axis title contains more than one line of text. Justify must be `left`, `right`, or `center`.
- **-labeloffset** - Boolean to offset the axis label values.
- **-limitscolor** - Color for the axis limits text.
- **-limitsfont** - Font to use for the axis limits text.
- **-limitsformat** - Specifies a printf-like description to format the minimum and maximum limits of the axis. The limits are displayed at the top/bottom or left/right sides of the plotting area. `FormatStr` is a list of one or two format descriptions. If one description is supplied, both the minimum and maximum limits are formatted in the same way. If two, the first designates the format for the minimum limit, the second for the maximum. If `""` is given as either description, then that limit will not be displayed. (To use `""` this needs to be set using double quotes, e.g. `{%g }` to only display the minimum limit.)
- **-limitsshadow** - Shadow color for the axis limits text.
- **-linewidth** - Sets the width of the axis and tick lines.
- **-logscale** - Indicates whether the scale of the axis is logarithmic or linear. If boolean is true, the axis is logarithmic.
- **-loose** - Indicates whether the limits of the axis should fit the data points tightly, at the outermost data points, or loosely, at the outer tick intervals. If the axis limit is set with the **-min** or **-max** option, the axes are displayed tightly. If boolean is true, the axis range is "loose".
- **-minorticks** - Specifies where to display minor axis ticks. You can use this option to display minor ticks at non-uniform intervals. `MinorList` is a list of real values, ranging from 0.0 to 1.0, designating the placement of a minor tick.
- **-relief** - Specifies the 3-D effect for the border around the axis using the **-background** color.
- **-rotate** - Specifies how many degrees to rotate the axis tick labels.
- **-showticks** - Indicates whether axis ticks should be drawn. If boolean is true, ticks are drawn. If false, only the axis line is drawn.
- **-stepsize** - Specifies the interval between major axis ticks. If value isn't a valid interval (must be less than the axis range), the request is ignored and the step size is automatically calculated.
- **-subdivisions** - Indicates how many minor axis ticks are to be drawn. For example, if number is two, only one minor tick is drawn. If number is one, no minor ticks are displayed.
- **-tickfont** - Specifies the font for axis tick labels.
- **-ticklength** - Sets the length of major and minor ticks (minor ticks are half the length of major ticks). If pixels is less than zero, the axis will be inverted with ticks drawn pointing towards the plot.
- **-tickshadow** - Shadow color for axis tick labels.
- **-title** - Sets the title of the axis. If text is `""`, no axis title will be displayed.
- **-titlealternate** - Boolean to use the alternate axis title position. If true, the title will be placed above or to the right of the axis.
- **-titlecolor** - Sets the color of the axis title.
- **-titlefont** - Sets the font of the axis title.
- **-titleshadow** - Sets the shadow color of the axis title.
- **Events** - Information used to display a set of event markers on the graph for this axis, for a PGR file the markers are saved as is, for a PMD the attributes and the name of the original event dataset are saved so that they can be reproduced from the current datasets.

The following elements are present in the file but should not be modified and need not be present if these files are generated automatically:

- **-autorange** - Handled internally by PrestoPlot.
- **-bindtags** - Handled internally by PrestoPlot.
- **-command** - Handled internally by PrestoPlot.
- **-max** - Handled internally by PrestoPlot.
- **-min** - Handled internally by PrestoPlot.
- **-scrollincrement** - Handled internally by PrestoPlot.
- **-scrollmax** - Handled internally by PrestoPlot.
- **-scrollmin** - Handled internally by PrestoPlot.
- **-shiftby** - Handled internally by PrestoPlot.
- **-tickdivider** - NOT USED by PrestoPlot

6.1.2.6 Extra Information

- **EventData** - Information used to add event markers.
- **SynchroData** - Information used to synchronise the Date axes.

6.2 Saving your graphs

A PGR (**Prestoplot GRaph file**) contains all the parameters of a graph (i.e. all its information, including the data sets). This is used to reproduce a graph identically.

> i.e. Sending a graph to another user or keeping a copy of a graph for use later.

A graph saved in a PGR file is self-sufficient to be reloaded. You don't need anymore original data or other model for the style.

There is currently two supported formats to save graphs :

- Binary PGR (.pgrb) - recommanded
- Legacy PGR (.pgr) - deprecated not saveable

In a nutshell

- **Purpose**: Standard format for storing a single chart.
- **Contents**: All data and formatting settings :
  - Data associated with the chart.
  - Complete formatting settings (curve colors, thickness, axis titles, scales, zooms levels, ...)
- **Usage**:
  - Reopen a chart in its exact previous state, with all necessary datasets reloaded automatically.
  - Embed in external documents (Word, LibreOffice). Linked images allow reopening the source chart directly in PrestoPlot.

Tip

If the .pgr/.pgrb extension is associated to PrestoPlot in your OS, you'll be able to directly re-open the graph by double-clicking it in a file browser.

6.2.1 Binary PGR (.pgrb)

Binary PGR files are the recommanded way to store your graphs. They are more efficient and more compressed than legacy ones.

If you start using PrestoPlot, you should consider using them instead of legacy PGR.

6.2.2 Legacy PGR (.pgr)

A legacy PGR file has the following structure:

- **Encoding** - A comment describing the encoding of this file.
- **PrestoPlot version information** - A comment describing PrestoPlot version used to create the .pmd file.
- **File version information** - The format version for the file (0 before 4.6.0 and 1 from 4.6.0 onwards).
- **Graph attributes** - How the graph as a whole is displayed (see Configure Graph).
- **Grid attributes** - How the background grid is displayed
- **Legend attributes** - How and where the legend is displayed
- **Graph elements** - How the data elements and their markers are displayed
- **Graph axes** - How the axes are displayed
- **Extra information** - Information not covered by the other sections
- **Values** - Dataset values for each curves

Attribute details

Warning

These files are internal PrestoPlot files and incorrect contents could cause PrestoPlot to stop working correctly. As such you should modify them at your own risk.

6.2.2.1 Graph attributes

- **-aspect** - Define the Width/height aspect ratio for the graph (default 0.0 fill window space)
- **-background** - Sets the background color. This includes the margins and legend, but not the plotting area.
- **-borderwidth** - Sets the width of the 3-D border around the outside edge of the widget. The -relief option determines if the border is to be drawn.
- **-bottommargin** - If non-zero, overrides the computed size of the margin extending below the X-coordinate axis. If pixels is 0, the automatically computed size is used.
- **-font** - Sets the font of the graph title.
- **-foreground** - Sets the graph title foreground color.
- **-highlightbackground** - Sets the background color when a graph is selected using the mouse.
- **-highlightcolor** - Sets the foreground color when a graph is selected using the mouse.
- **-highlightthickness** - Sets the thickness in pixels of the highlight border around the graph.
- **-justify** - Specifies how the title should be justified. This matters only when the title contains more than one line of text. Justify must be left, right, or center.
- **-leftmargin** - If non-zero, overrides the computed size of the margin extending from the left edge of the window to the Y-coordinate axis. If 0, the automatically computed size is used.
- **-plotbackground** - Specifies the background color of the plotting area.
- **-plotborderwidth** - Sets the width of the 3-D border around the plotting area. The **-plotrelief** option determines if a border is drawn.
- **-plotpadx** - Sets the amount of padding to be added to the left and right sides of the plotting area. Pad can be a list of one or two screen distances. If pad has two elements, the left side of the plotting area entry is padded by the first distance and the right side by the second. If pad is just one distance, both the left and right sides are padded evenly.
- **-plotpady** - Sets the amount of padding to be added to the top and bottom of the plotting area. Pad can be a list of one or two screen distances. If pad has two elements, the top of the plotting area is padded by the first distance and the bottom by the second. If pad is just one distance, both the top and bottom are padded evenly.
- **-plotrelief** - Specifies the 3-D effect for the plotting area. Relief specifies how the interior of the plotting area should appear relative to rest of the graph; for example, raised means the plot should appear to protrude from the graph, relative to the surface of the graph.
- **-relief** - Specifies the 3-D effect for the graph widget. Relief specifies how the graph should appear relative to widget it is packed into; for example, raised means the graph should appear to protrude.
- **-rightmargin** - If non-zero, overrides the computed size of the margin extending from the plotting area to the right edge of the window. By default, the legend is drawn in this margin. If pixels is 0, the automatically computed size is used.
- **-shadow** - Specifies the shadow color of the graph title
- **-title** - Sets the title. If "", no title will be displayed.
- **-topmargin** - If non-zero, overrides the computed size of the margin between the graph and the title. If 0, the automatically computed size is used.

The following elements are present in the file but should not be modified and need not be present if these files are generated automatically:

The following elements are present in the file but should not be modified and need not be present if these files are generated automatically:

- **-baseline** - NOT USED for line graphs.
- **-bottomvariable** - Name of the variable containing the **-bottommargin** value.
- **-bufferelements** - Indicates whether an internal pixmap to buffer the display of data elements should be used. If boolean is true, data elements are drawn to an internal pixmap. This option is especially useful when the graph is redrawn frequently while the data remains unchanged (for example, moving a marker across the plot).
- **-buffergraph** - Indicates whether an internal pixmap to buffer the display of the entire graph should be used.
- **-cursor** - Specifies the widget's cursor (for instance "crosshair").
- **-data** - NOT USED for line graphs.
- **-datacommand** - NOT USED for line graphs.
- **-halo** - Specifies a maximum distance to consider when searching for the closest data point. Data points further than pixels away are ignored.
- **-invertxy** - Indicates whether the placement X-axis and Y-axis should be inverted. If boolean is true, the X and Y axes are swapped.
- **-leftvariable** - Name of the variable containing the **-leftmargin** value.
- **-rightvariable** - Name of the variable containing the **-rightmargin** value.
- **-takefocus** - Provides information used when moving the focus from window to window via keyboard traversal (e.g., Tab and Shift-Tab). If 0, this means that this window should be skipped entirely during keyboard traversal. 1 means that this window should always receive the input focus. An empty value means that the traversal scripts make the decision whether to focus on the window.
- **-tile** - Specifies a tiled background for the widget. If image isn't "", the background is tiled using image. Otherwise, the normal background color is drawn (see the **-background** option). Image must be an image created using the Tk image command.
- **-topvariable** - Name of the variable containing the **-topmargin** value.

6.2.2.2 Grid attributes

- **-color** - Sets the color of the grid lines.
- **-dashes** - Sets the dash style of the grid lines. DashList is a list of up to 11 numbers that alternately represent the lengths of the dashes and gaps on the grid lines. Each number must be between 1 and 255. If dashList is "", the grid will be solid lines.

- **-hide** - Indicates whether the grid should be drawn. If true, grid lines are not shown.
- **-linewidth** - Sets the width of solid grid lines.
- **-mapx** - Specifies the X-axis to display grid lines. X Axis must be the name of an axis or "" for no grid lines.
- **-mapy** - Specifies the Y-axis to display grid lines. Y Axis must be the name of an axis or "" for no grid lines.
- **-minor** - Indicates whether the grid lines should be drawn for minor ticks. If boolean is true, the lines will appear at minor tick intervals.

6.2.2.3 Legend attributes

- **-activebackground** - Sets the background color for active legend entries. All legend entries marked active are drawn using this background color.
- **-activeborderwidth** - Sets the width of the 3-D border around the outside edge of the active legend entries.
- **-activeforeground** - Sets the foreground color for active legend entries. All legend entries marked as active are drawn using this foreground color.
- **-activerelief** - Specifies the 3-D effect desired for active legend entries. Relief denotes how the interior of the entry should appear relative to the legend; for example, raised means the entry should appear to protrude from the legend, relative to the surface of the legend.
- **-anchor** - Tells how to position the legend relative to the positioning point for the legend. This is dependent on the value of the -position option. (n, s, e, w, ne, nw, se, sw or c)
- **-background** - Sets the background color of the legend. If color is "", the legend background with be transparent.
- **-borderwidth** - Sets the width of the 3-D border around the outside edge of the legend (if such border is being drawn; the -relief option determines this).
- **-columns** - Specifies how many columns will be used to display the legend items. Default is 0 and a single column is used.
- **-font** - Specifies a font to use when drawing the labels of each element into the legend.
- **-foreground** - Sets the foreground color of the text drawn for the element labels.
- **-hide** - Indicates whether the legend should be displayed. If boolean is true, the legend will not be draw.
- **-ipadx** - Sets the amount of internal padding to be added to the width of each legend entry. Pad can be a list of one or two screen distances. If pad has two elements, the left side of the legend entry is padded by the first distance and the right side by the second. If pad is just one distance, both the left and right sides are padded evenly.
- **-ipady** - Sets an amount of internal padding to be added to the height of each legend entry. Pad can be a list of one or two screen distances. If pad has two elements, the top of the entry is padded by the first distance and the bottom by the second. If pad is just one distance, both the top and bottom of the entry are padded evenly.
- **-padx** - Sets the padding to the left and right exteriors of the legend. Pad can be a list of one or two screen distances. If pad has two elements, the left side of the legend is padded by the first distance and the right side by the second. If pad has just one distance, both the left and right sides are padded evenly.
- **-pady** - Sets the padding above and below the legend. Pad can be a list of one or two screen distances. If pad has two elements, the area above the legend is padded by the first distance and the area below by the second. If pad is just one distance, both the top and bottom areas are padded evenly.
- **-position** - Specifies where the legend is drawn. The **-anchor** option also affects where the legend is positioned. If pos is left, right, top, or bottom, the legend is drawn in the specified margin. If pos is plotarea, then the legend is drawn inside the plotting area at a particular anchor. If pos is in the form "@x,y", where x and y are the window coordinates, the legend is drawn in the plotting area at the specified coordinates.
- **-raised** - Indicates whether the legend is above or below the data elements. This matters only if the legend is in the plotting area. If boolean is true, the legend will be drawn on top of any elements that may overlap it.
- **-relief** - Specifies the 3-D effect for the border around the legend. Relief specifies how the interior of the legend should appear relative to the graph; for example, raised means the legend should appear to protrude from the graph, relative to the surface of the graph.
- **-rows** - Specifies how many rows will be used to display the legend items. Default is 0 and a single column is used.
- **-shadow** - Specifies the shadow color of the text drawn for the element labels.

6.2.2.4 Graph elements

6.2.2.4.1 Data

- **-areapattern** - Bitmap to use for filling the area under the data element. solid fills a solid **-areaforeground** color.
- **-areaforeground** - Color to use for the area underneath the graph or bitmap foreground.
- **-areabackground** - Color to use for bitmap background for the area under the graph.
- **-areatile** - Image to use for filling the area under the data element.
- **-color** - Color of the traces connecting the data points.
- **-dashes** - Sets the dash style of the element line. `DashList` is a list of up to 11 numbers that alternately represent the lengths of the dashes and gaps on the element line. Each number must be between 1 and 255. If `DashList` is "", the lines will be solid.
- **-fill** - Sets the interior color of symbols. If color is "", the interior of the symbol is transparent. If color is `defcolor`, then the color will be the same as the **-color** option.
- **-hide** - Indicates whether the element is hidden. `1` is hidden, `0` is visible.
- **-label** - Sets the element's label in the legend. If text is "", the element will have no entry in the legend. The default label is the element's name.
- **-linewidth** - Sets the width of the connecting lines between data points. If `0`, no connecting lines will be drawn between symbols.
- **-maxsymbols** - Sets the maximum number of symbols to display on this element.
- **-offdash** - Sets the color of the stripes when traces are dashed (see the **-dashes** option). If color is "", then the "off" pixels will represent gaps instead of stripes. If color is `defcolor`, then the color will be the same as the **-color** option.
- **-outline** - Sets the color of the outline around each symbol. If color is "", then no outline is drawn. If color is `defcolor`, then the color will be the same as the **-color** option.
- **-outlinewidth** - Sets the width of the outline bordering each symbol. If pixels is `0`, no outline will be drawn.
- **-pixels** - Sets the size of symbols. If pixels is `0`, no symbols will be drawn.
- **-reduce** - Apply Douglas-Peucker line simplification algorithm to the displayed data points using the given value.
- **-scalesymbols** - If boolean is true, the size of the symbols drawn will change with the scale of the X-axis and Y-axis. At the time this option is set, the current ranges of the axes are saved as the normalized scales (i.e., scale factor is 1.0) and the element is drawn at its designated size (see the **-pixels** option). As the scale of the axes change, the symbol will be scaled according to the smaller of the X-axis and Y-axis scales. If boolean is false, the element's symbols are drawn at the designated size, regardless of axis scales.

- **-showvalues** - Display data values next to the symbols. One of `none`, `x`, `y`, or `both` specifies which values to show. See the **-valueXX** options below.
- **-smooth** - Specifies how connecting line segments are drawn between data points. `Smooth` can be either `linear`, `step`, `natural`, or `quadratic`. If `linear`, a single line segment is drawn, connecting both data points. When `step`, two line segments are drawn: the first is a horizontal line segment that steps to the next X-coordinate, the second is a vertical line, moving to the next Y-coordinate. Both `natural` and `quadratic` generate multiple segments between data points. If `natural`, the segments are generated using a cubic spline. If `quadratic`, a quadratic spline is used.
- **-symbol** - Specifies the symbol for data points. Symbol can be either `square`, `circle`, `diamond`, `plus`, `cross`, `splus`, `scross`, `triangle`, "" (where no symbol is drawn), or an image. Bitmaps are specified as `"source ?mask?"`, where `source` is the name of the bitmap, and `mask` is the bitmap's optional mask.
- **-trace** - Indicates whether connecting lines between data points (whose X-coordinate values are either increasing or decreasing) are drawn. `Direction` must be `increasing`, `decreasing`, or `both`. For example, if direction is `increasing`, connecting lines will be drawn only between those data points where X-coordinate values are monotonically increasing. If direction is `both`, connecting lines will be drawn between all data points.
- **-valueanchor** - Position of the data point with respect to the text. (`n`, `s`, `e`, `w`, `ne`, `nw`, `se`, `sw` or `c`)
- **-valuecolor** - Color of the text for the values.
- **-valuefont** - Font to use for the value labels.
- **-valueformat** - Format to use for the value labels.
- **-valuerotate** - Rotation angle in degrees for the values.
- **-valueshadow** - Shadow color for the value labels.

The following elements are present in the file but should not be modified and need not be present if these files are generated automatically:

- **-activepen** - Specifies the pen to use to draw the active element. If `penName` is "", no active elements will be drawn.
- **-bindtags** - Handled internally by PrestoPlot.
- **-errorbarcolor** - NOT USED by PrestoPlot.
- **-errorbarwidth** - NOT USED by PrestoPlot.
- **-errorbarcap** - NOT USED by PrestoPlot.
- **-folded** - Gives the name of the axis onto which the elements are mapped. See the Folding option.
- **-labelrelief** - Specifies the 3-D effect for the border around the legend label. Reset by PrestoPlot.
- **-pen** - Handled internally by PrestoPlot.
- **-showerrorbars** - NOT USED by PrestoPlot.
- **-state** - Defines the state of the element, one of `normal`, `active`, or `disabled`.
- **-styles** - Specifies which pen to use based on the range of weights given. `StyleList` is a list of style specifications. Each style specification is a list consisting of a pen name, and optionally a minimum and maximum range. Data points whose weight (see the **-weight** option) falls in this range are drawn with this pen. If no range is specified, it defaults to the index of the pen in the list. Note: this affects only symbol attributes; line attributes (such as line width, dashes, etc.) are ignored. Handled internally by PrestoPlot.
- **-weights** - Specifies the weights of the individual data points. This, together with the list of pen styles (see the **-styles** option), controls how data points are drawn. The argument is the name of a BLT vector or a list of numeric expressions representing the weights for each data point. Handled internally by PrestoPlot.

6.2.2.4.2 Markers

The markers used by PrestoPlot are composed of multiple different marker elements, each element has a set of options depending on its type, many of these options are updated dynamically by PrestoPlot when the markers are modified:

- **-anchor** - Position of the text with respect to the **-coords** option (n, s, e, w, ne, nw, se, sw or c)
- **-background** - Background text color.
- **-cap** - End of line style. one of butt, projecting or round.
- **-dashes** - Sets the dash style of marker line. `DashList` is a list of up to 11 numbers that alternately represent the lengths of the dashes and gaps on the element line. Each number must be between 1 and 255. If `DashList` is "", the lines will be solid.
- **-dashoffset** - Offset to start using the **-dashes**.
- **-font** - Font to use for the text.
- **-foreground** - Foreground text color.
- **-join** - Join style for marker line segments. one of bevel, miter or round.
- **-justify** - Specifies how the text should be justified. This matters only when the text contains more than one line of text. Justify must be left, right, or center.
- **-hide** - Indicates whether the marker element is hidden. 1 is hidden 0 is visible
- **-linewidth** - Sets the width of the line.
- **-outline** - Sets the foreground color of the line.
- **-padx** - Sets the padding to the left and right side of the text. Pad can be a list of one or two screen distances. If pad has two elements, the left side of the text is padded by the first distance and the right side by the second. If pad has just one distance, both the left and right sides are padded evenly.
- **-pady** - Sets the padding above and below the text. Pad can be a list of one or two screen distances. If pad has two elements, the top side of the text is padded by the first distance and the bottom side by the second. If pad has just one distance, both the top and bottom sides are padded evenly.
- **-rotate** - Rotation angle in degrees for the text.
- **-shadow** - Shadow color for the text.
- **-state** - State for the marker, one of normal, active or disabled.
- **-text** - Text to display in the marker.
- **-under** - Boolean to place the marker behind all graph elements.
- **-xoffset** - Offset in x for the marker from the **-coords** position.
- **-yoffset** - Offset in y for the marker from the **-coords** position.

The following elements are present in the file but should not be modified:

- **-bindtags** - Handled internally by PrestoPlot.
- **-coords** - Handled internally by PrestoPlot.
- **-xor** - Boolean drawing method.

Tip

As a special case, Markers can be placed on the side of the graph by using 'Inf' or '-Inf' for the x coordinate and 'e' or 'w' respectively for the -anchor option.

6.2.2.5 Graph axes

- **-background** - Background color for the axis. If color is "", the axis background with be transparent.
- **-borderwidth** - Width of the ends of the axis.
- **-color** - Color for the axis. if color is "", the axis background with be transparent.
- **-descending** - Indicates whether the values along the axis are monotonically increasing or decreasing. If boolean is true, the axis values will be decreasing.
- **-hide** - Indicates whether the axis is hidden. `1` is hidden, `0` is visible.
- **-justify** - Specifies how the axis title should be justified. This matters only when the axis title contains more than one line of text. Justify must be `left`, `right`, or `center`.
- **-labeloffset** - Boolean to offset the axis label values.
- **-limitscolor** - Color for the axis limits text.
- **-limitsfont** - Font to use for the axis limits text.
- **-limitsformat** - Specifies a printf-like description to format the minimum and maximum limits of the axis. The limits are displayed at the top/bottom or left/right sides of the plotting area. `FormatStr` is a list of one or two format descriptions. If one description is supplied, both the minimum and maximum limits are formatted in the same way. If two, the first designates the format for the minimum limit, the second for the maximum. If `""` is given as either description, then that limit will not be displayed. (To use `""` this needs to be set using double quotes, e.g. `{%g }` to only display the minimum limit.)
- **-limitsshadow** - Shadow color for the axis limits text.
- **-linewidth** - Sets the width of the axis and tick lines.
- **-logscale** - Indicates whether the scale of the axis is logarithmic or linear. If boolean is true, the axis is logarithmic.
- **-loose** - Indicates whether the limits of the axis should fit the data points tightly, at the outermost data points, or loosely, at the outer tick intervals. If the axis limit is set with the **-min** or **-max** option, the axes are displayed tightly. If boolean is true, the axis range is "loose".
- **-minorticks** - Specifies where to display minor axis ticks. You can use this option to display minor ticks at non-uniform intervals. `MinorList` is a list of real values, ranging from 0.0 to 1.0, designating the placement of a minor tick.
- **-relief** - Specifies the 3-D effect for the border around the axis using the **-background** color.
- **-rotate** - Specifies how many degrees to rotate the axis tick labels.
- **-showticks** - Indicates whether axis ticks should be drawn. If boolean is true, ticks are drawn. If false, only the axis line is drawn.
- **-stepsize** - Specifies the interval between major axis ticks. If value isn't a valid interval (must be less than the axis range), the request is ignored and the step size is automatically calculated.
- **-subdivisions** - Indicates how many minor axis ticks are to be drawn. For example, if number is two, only one minor tick is drawn. If number is one, no minor ticks are displayed.
- **-tickfont** - Specifies the font for axis tick labels.
- **-ticklength** - Sets the length of major and minor ticks (minor ticks are half the length of major ticks). If pixels is less than zero, the axis will be inverted with ticks drawn pointing towards the plot.
- **-tickshadow** - Shadow color for axis tick labels.
- **-title** - Sets the title of the axis. If text is `""`, no axis title will be displayed.
- **-titlealternate** - Boolean to use the alternate axis title position. If true, the title will be placed above or to the right of the axis.
- **-titlecolor** - Sets the color of the axis title.
- **-titlefont** - Sets the font of the axis title.
- **-titleshadow** - Sets the shadow color of the axis title.
- **Events** - Information used to display a set of event markers on the graph for this axis, for a PGR file the markers are saved as is, for a PMD the attributes and the name of the original event dataset are saved so that they can be reproduced from the current datasets.

The following elements are present in the file but should not be modified and need not be present if these files are generated automatically:

- **-autorange** - Handled internally by PrestoPlot.
- **-bindtags** - Handled internally by PrestoPlot.
- **-command** - Handled internally by PrestoPlot.
- **-max** - Handled internally by PrestoPlot.
- **-min** - Handled internally by PrestoPlot.
- **-scrollincrement** - Handled internally by PrestoPlot.
- **-scrollmax** - Handled internally by PrestoPlot.
- **-scrollmin** - Handled internally by PrestoPlot.
- **-shiftby** - Handled internally by PrestoPlot.
- **-tickdivider** - NOT USED by PrestoPlot

6.2.2.6 Extra Information

- **EventData** - Information used to add event markers.
- **SynchroData** - Information used to synchronise the Date axes.

6.3 PGD File Format

6.3.1 JSON Format

PGD allows loading PrestoPlot Graph Description files in JSON format. These files should be encoded using the UTF-8 encoding, which is the default for JSON, if any non ASCII charaters are to be used. The file contents can be checked on-line JSON Validator.

A PGD file is a list of graph configurations to create and configure new graphs and save them as images or PMDB/PGRB files.

> **In a nutshell**
> - **Format**: JSON-based chart description file.
> - **Purpose**: Easily describe graphs.
> - **Usage**:
>   - Integration with third party software
>   - Create graph description programmatically (by third party)
>   - Simplify automation

Here is an example of a minimalist PGD file :

```
{
    "version" : 1,
    "graphs"  : [{
        "datasets" : ["DEFICIT","IBAT","MODEBM","VBAT"],
        "settings" : {
            "general" : {
                "axes"        : "spread"
            }
        }
    }]
}
```

This file will produce a graph with the four datasets DEFICIT, IBAT, MODEBM and VBAT, with spread axes.

6.3.2 Format description

The current format is described below.

```
{
  "version": 1,            // Version is 1
  "variables": {
   "flight": "VA222",      // Set the variable '$flight' to the value VA222
   "color": "green",       // Set the variable '$color' to the value green
   "datasets": "VBAT IBAT" // Set the list of datasets (no commas for a list in a variable)
  },
  "graphs": [              // List of graphs to create
  {
   "graphname": "MyGraph",     // Name for the graph window
   "exports": [{               // List of image/graph/model exports on finished graph
    "filename": "IMG/img.png", // Name of the file can use sub directories (PNG, GIF, PS, EPS, EMF, PGRB, PMDB)
    "size": "1800x450"         // Size of the image file produced (default is maximized or configured size)
   }],
   "datasets": "$datasets",        // List of datasets to add to the graph
   "settings": {                   // List of optional settings
    "general": {                   // General graph settings
     "title": "My flight $flight", // Title for the graph
     "titlefont": "Tahoma 16",     // Font for the title (can add bold,italic,underline,overstrike)
     "titlecolor": "orange",       // Color for the title
     "titlejustify": "left",       // One of (center,right,left)
     "foldedcommonlabels": "true", // Boolean true for common label axes are folded into one axis
     "axes": "spread",             // One of (spread,overlayed)
     "xaxisorder": ["VBAT", "IBAT"], // X axis ordering, from bottom to top, both sides together
     "yaxisorder": ["IBAT", "VBAT"], // Y axis ordering, from left to right, both sides together
     "background": "beige",        // Color of the plot area background
     "borderbackground": "$color", // Color of the graph border
     "synchronise": {              // Time axis synchronisation
      "mode": "locked"             // One of (none,this axis,all axes,locked)
      "dataset": "VBAT",           // Master time axis
      "offsets": [{                // Axis offsets (locked ONLY)
        "dataset": "IBAT",         // Dataset time axis
        "offset": "-12:00:00.00",  // Offset "[+-][DD] [HH:MM:SS.mmm]" (minus 12 hours)
       },{
        "dataset": "MODEBM",       // Dataset time axis
        "offset": "1 00:00:01.00", // Offset "[+-][DD] [HH:MM:SS.mmm]" (plus 1 day and one second)
       }]
     },
     "legend": {                   // Configuration of the legend
      "position": "right",         // Side of the graph to position (left,right,top,bottom) or none for not visible
      "anchor": "north",           // Position on the side (north,south,east,west)
      "font": "Tahoma 10 bold",    // Font for the legend text (can add bold,italic,underline,overstrike)
      "color": "black"             // Color of the legend text
     },
     "grid": {                     // Configuration of the grid
      "xdataset": "IBAT",          // Element to use for the X axis grid lines (none for no lines)
      "ydataset": "VBAT",          // Element to use for the Y axis grid lines (none for no lines)
      "linecolor": "#34e22a",      // Color of the grid lines
      "linestyle": "solid",        // Style of the grid lines, one of (solid,dotted,dashed)
      "linewidth": "2"             // Width of the grid lines (1,2,3)
      "useminorgrid": "false"      // Boolean true to display minor grid lines
      "minorlinecolor": "#34e22a", // Color of the minor grid lines
```

```
      "minorlinestyle": "dotted",  // One of (solid,dotted,dashed)
      "minorlinewidth": "1"        // Width of the minor grid lines (1,2,3)
     }
    },
    "elements": [{             // Configuration of Graph elements
     "dataset": "VBAT",        // Element to configure
     "label": "VBAT (V)",      // Label to display in the legend
     "linestyle": "solid",     // One of (solid,dotted,dashed)
     "linecolor": "green",     // Color of the joining lines
     "linewidth": "2",         // Width of the joining lines (0,1,2,3,4)
     "symbol": "arrow",        // One of (square,circle,diamond,plus,cross,splus,scross,triangle,arrow,none)
     "symbolfill": "#90ee90",  // Color of the symbol interior
     "symboloutline": "green", // Color of the symbol outline
     "symbolsize": "large",    // One of (small(8),medium(12),large(16) or number 4-100)
     "segment": "linear",      // One of (linear,step)
     "fillarea": "lightgreen"  // Fill the area above and/or below the element using the color or none for transparent.
     "fillbase": "top"         // One of (top,bottom,min,minaxis,max,maxaxis or a numerical value)
    }],
    "events": [{               // Configuration of Event markers
     "dataset": "VBAT",        // Element to add markers to
     "position": "top",        // One of (top,bottom)
     "events": "MODEBM",       // Labelled dataset to use for events
     "mode": "all",            // Event mode (transition,all)
     "color": "blue",          // Label and Line color
     "titlecolor": "blue",     // Label color
     "titlefont": "Tahoma 12",  // Label font (can add bold,italic,underline,overstrike)
     "titleorient": "vertical", // Label orientation (horizontal,vertical)
     "titleside": "left",      // Label, side of the line (left,right) only for vertical
     "titledate": "show",      // Display the event date (show,hide)
     "linestyle": "solid",     // One of (solid,dotted,dashed)
     "linecolor": "blue",      // Line color
     "linewidth": "3",         // Width of the event lines (1,2,3,4)
     "linestacking": "above",   // Draw lines relative to the elements (above,below)
     "showonly": ["I LIMIT", "V LIMIT"] // Show ONLY listed events (can contain * and ?)
    }],
    "pens": [{                      // Configuration of graph pens
     "dataset": "VBAT",             // Dataset to add the pen to
     "values": "Q_VBAT",            // Values dataset to be used as weights
     "pen": [{
      "name": "MyPen",              // Name of this pen
      "min": "30",                  // Minimum raw value to apply for pen
      "max": "36",                  // Maximum raw value to apply for pen
      "linestyle": "solid",         // One of (solid,dotted,dashed)
      "linecolor": "#FF0000/#00FF00", // Color for the line, for gradient use from/to colors
      "linewidth": "0",             // Width of the pen lines (0,1,2,3,4)
      "symbol": "circle",           // One of (square,circle,diamond,plus,cross,splus,scross,triangle,arrow,none)
      "symbolfill": "gradient",     // Color of the symbol interior ('gradient' or a color)
      "symboloutline": "#000000",   // Color of the symbol outline ('gradient' or a color)
      "symbolsize": "small/large"   // One of (small(8),medium(12),large(16) or number 4-100), min/max for gradient
     }]
    }],
    "x-axes": [{                       // Configure any X axes
     "dataset": "VBAT",                // Id of the axis to configure
     "dateformat": "ISO8601+SECONDS",  // One of the Date formats (see Date Formats, default AUTO)
     "custom": "%B-%d:%I:%M %p:3",     // A custom format description (see Custom date formating)
     "epochdate": "2003/05/28 10:00:00.000", // The T0/Epoch date for 'ISO8601+SECONDS', 'EUR+SECONDS', 'USA+SECONDS' and 'OFFSET' format dates (see Custom
date formating)
     "decimalticks": "true",           // Use base 10 to round the tick marks if false use base 60 (HH:MM::SS)
     "min": "2003/05/28 10:00:00.000000", // Minimum limit of the date axes (see format)
     "max": "2003/05/28 22:00:00.000000", // Maximum limit of the date axes (see format)
     "font": "Courier 16 bold",        // Font for the tick labels (can add bold,italic,underline,overstrike)
     "color": "red",                   // Color of the axis and tick marks
     "scale": "linear",                // One of (linear,logarithmic)
     "stepsize": "4",                  // Interval between major ticks
     "subdivisions": "3",              // Number of minor axis ticks (max 50)
     "label": "Date",                  // Label text
     "labelfont": "{Script MT} 18",    // Font for the label (can add bold,italic,underline,overstrike)
     "labelcolor": "blue",             // Color of the label
     "tickorient": "horizontal",       // One of (horizontal,vertical)
     "order": "decreasing",            // One of (increasing,decreasing)
     "side": "top",                    // One of (top,bottom)
     "hidden": "true",                 // Boolean true is hidden
     "zoomlock": "true",               // Boolean true is zoom locked
     "moveaxis": "closest"             // One of (closest,furthest)
    }],
    "y-axes": [{                   // Configure any Y axes
     "dataset": "MODEBM",          // Id of the axis to configure
     "color": "red",               // Color for the axis and tick marks
     "font": "Courier 16 bold",    // Font for the tick labels (can add bold,italic,underline,overstrike)
     "scale": "logarithmic",       // One of (linear,logarithmic)
     "stepsize": "4",              // Interval between major ticks
     "subdivisions": "3",          // Number of minor axis ticks (max 50)
     "label": "AMPS",              // Label text
     "labelfont": "{Script MT} 18", // Font for the label (can add bold,italic,underline,overstrike)
     "labelcolor": "blue",         // Color of the label
     "labelvalues": "numbers",     // One of (labels,numbers) ONLY for LABELS
     "tickorient": "horizontal",   // One of (horizontal,vertical)
     "order": "increasing",        // One of (increasing,decreasing)
     "side": "right",              // One of (left,right)
     "hidden": "true",             // Boolean true is hidden
     "zoomlock": "true",           // Boolean true is zoom locked
     "moveaxis": "closest",        // One of (closest,furthest)
     "min": "0",                   // Minimum limit of the axis
     "max": "20"                   // Maximum limit of the axis
    }],
    "markers": [{                  // Configuration of graph markers (see Configure Markers)
     "dataset": "VBAT",            // Dataset to add the marker to
     "markers": [{
      "type": "vertical",          // One of (vertical,horizontal,text,point,2point)
      "label": "VBAT (%VX1)",      // Text to display (see Marker Label)
      "graphlock": "none",         // Marker is locked to the graph (none,graph,left,right,top,bottom,topleft,topright,bottomleft,bottomright)
      "labelfont": "Tahoma 8",     // Font for the label (can add bold,italic,underline,overstrike)
      "labelcolor": "blue",        // Color of the label
```

```
      "labeljustify": "center",       // One of (center,right,left)
      "hidden": "false",              // Boolean true is hidden
      "datalock": "lock",             // Marker is locked to the data (lock,nolock)
      "value": "2003/05/28 11:00:00", // Position of the marker
      "xlabelposition": "2003/05/28 11:00:00",  // X Position of the marker label or % (0%-100%) from left of the graph (if variable)
      "ylabelposition": "25%",        // Y Position of the marker label or % (0%-100%) from bottom of the graph (if variable)
      "labelside": "right",           // One of (left,right,above,below)
      "labelorient": "vertical",      // One of (vertical,horizontal)
      "precision": "2",               // One of (0,1,2,3,4,5,6,7,8)
      "format": "f",                  // One of (f,e)
      "linestyle": "solid",           // One of (solid,dotted,dashed)
      "linecolor": "#FF0000",         // Color for the line
      "linewidth": "2",               // Width of the line(s) (1,2,3,4)
      "points": [{                    // Pointer information for Point markers
        "index": "11",                  // Index in the dataset to point to
        "value": "2003/05/28 11:00:00", // Closest date to point to
        "linestyle": "solid",           // One of (solid,dotted,dashed)
        "linecolor": "#FF0000",         // Color for the line
        "linewidth": "3",               // Width of the line (1,2,3,4)
        "order": "before",              // One of (before,behind) position to the element line/symbols
      }]
     }]
    }]
   }
  }]
}
```

> All elements are **optional** except the '**datasets**' and '**dataset**' items.

The INI file option `PGD::Config(LogWarnings)` can be set to true to activate warning messages in the log file if the PGD does not display the graph as you like.

6.3.3 Custom Date Formatting

6.3.3.1 Calendar

The x-axes format option for ISO8601, EUR and USA dates can be extended with custom formatting options. The syntax is `Date;Time;Precision`, all 3 must be present e.g. `%B-%d;%I:%M %p;3` where:

Date - `AUTO` - The default format for this format. - `NONE` - No value displayed - `%Y` - Full 4 digit year (2024) - `%y` - 2 digit year (24) - `%m` - 2 digit month (11) - `%B` - Full textual month name (November) - `%b` - 3 letter month name (Nov) - `%d` - 2 digit date (21)

Time - `AUTO` - The default format for this format. - `NONE` - No value displayed - `%H` - 2 digit 24 hour (18) - `%I` - 2 digit 12 hour (06) - `%M` - 2 digit minute (35) - `%S` - 2 digit second (24) - `%p` - AM/PM indicator (PM)

Precision An integer value from 0 to 12 inclusive, for the fractions of seconds.

6.3.3.2 Seconds

The x-axes format option for SECONDS dates can be extended with custom formatting options. The syntax is `Time;Precision`, both must be present e.g. `TIME;6` where:

Time - `AUTO` - The default format for this format. - `NONE` - No value displayed - `TIME` - [DAYS] HH:MM:SS

Precision An integer value from 0 to 12 inclusive, for the fractions of seconds. e.g.

6.4 Workspaces

A PWS (**Prestoplot WorkSpace file**) is simply a set of models. When you save a workspace, all the graphs displayed are saved as models in the Workspace. They are used to save a multi-graph environment that you will want to use regularly with new, updated data or over a different time period.

A workspace is not sufficient to reload graphs ; the expected datasets have to be loaded before loading the Workspace, for the graph to be shown.

There are currently two supported formats to save workspaces :

- Binary PWS (.pwsb) - recommanded
- Legacy PWS (.pws) - deprecated not saveable

> **In a nutshell**
> - **Purpose**: Legacy formats for chart models and workspace storage.
> - **Contents**:
>   - `.pmd` : Chart model configurations.
>   - `.pws` : Full workspace, including window states (maximized, minimized, etc.).
> - **Notes**: Superseded by `.ppj` and binary formats (`.pmdb` , `.pwsb`) for better performance.

6.4.1 Binary Workspaces (.pwsb)

Binary PWSB files are the recommanded way to store your workspaces. They are more efficient than legacy ones.

If you start using PrestoPlot, you should consider using them instead of legacy workspaces.

6.4.2 Legacy Workspaces (.pws)

Legacy PWS files are the original way to store your workspaces. The information was stored in an internal ASCII format that is no longer recommended today.

6.5 Projects

A PPJ (**Prestoplot ProJect file**) is simply a set of graphs. When you save a project, all the datasets loaded and the graphs displayed are saved. They are used to save a self-sufficient multi-graph environment that you can reopen later, or share with others.

In a nutshell

- **Purpose**: Save multiple graphs in a single project file.
- **Contents**: Collection of graphs and data.
- **Usage**:
  - Save or share a complete analysis session.
  - Loading a `.ppj` project adds to the current session without erasing existing data.

7. Export

7.1 Exporting graph as images

It is an obvious scenario to want to export graphs as images.

There are several ways to do this, both via the user interface and via the command line for automated processes.

7.1.1 On the user interface

Exporting images via the user interface is very simple. Several icons on the toolbar allow you to do this.

Icon	Action
 (Windows only)	**Copy graph to clipboard** Copy the graph to the clipboard in a vectorial image format.
	**Save graph to a file** Save the graph into an image file, PNG format by default, other formats available in the Preferences.
	**Print the graph** Print the graph on a printer.

7.1.2 On command line

Exporting images on command line is performed through one of `-saveXXX` command. Replace `XXX` by a file format extension (png, gif, ...). See the complete description in the Command line options page.

Example:

```
-savepng "D:/mygraph.png"
```

In the same way, PrestoPlot has a command to save all graphs at once, in a directory. For this, use the `-saveXXXallgraphs` command.

Example:

```
-savepngallgraphs "D:/mydirectory/"
```

7.2 Export Data

7.2.1 Export Datasets

You can export the currently loaded datasets to a tabbed text file or a CSV file using the icon in the toolbar :  or  or from the **Data Sets** window local menu.

7.2.2 Export statistics

PrestoPlot can export to a tabbed text file a set of statictical values for each set of loaded data.

The following statistics are recorded in the file with one line per dataset:

- **Name** - The Name of the data set.
- **Units** - The Units of the data.
- **Length** - The Number of elements in the data set.
- **DataX** - The name of the data vector containing the X values (in general this vector contains the dates).
- **Packet** - The name of the packet of data from **PrestoDecom**.
- **Min** - The Minimum data value.
- **Max** - The Maximum data value.
- **Mean** - The Mean average data value.
- **Sum** - The Sum of all values.
- **Sdev** - The Standard deviation (Square root of the variance).
- **Adev** - The Average deviation.
- **Var** - The Variance of the values.
- **Q1** - The First quartile.
- **Q3** - The Third quartile.
- **Skew** - The Skewness (Third moment) Degree of asymetry about the mean.
- **Filename** - The name of the data file or the Formula from the calculator for generated data.

Example:

```
 Name » Units » Length » DataX » Packet » Min » Max » Mean » Sum » Sdev » Adev » Var » Q1 » Q3 » Skew » Filename
 MODEAOCS » none » 360 » V_Date1 » SHM » 0.0 » 3.0 » 2.513888 » 905.0 » 0.654809 » 0.580632 » 0.428775 » 2.0 » 3.0 » 1.608283 » test.tsv
 RWSPEED2 » rd/s » 360 » V_Date1 » SHM » 158.532440 » 159.618530 » 159.164889 » 57299.360269 » 0.228813 » 0.180377 » 0.052355 » 159.056030 » 159.094421 »
1.696892 » test.tsv
 RWSPEEDTAR2 » rd/s » 360 » V_Date1 » SHM » 158.709991 » 158.709991 » 158.709991 » 57135.5969 » 8.538379 » 8.526512 » 7.290393 » 158.709991 » 158.709991 »
0.995836 » test.tsv
```

7.3 HTML Report

PrestoPlot can generate an HTML report containing all the graphs displayed in PrestoPlot.

This feature is accessible via the menu (File > Export HTML Report) or via the command line `-reportHTML` (see details).

The HTML report contains:

- An index.htm file, which is the entry point for the report
- The graph images displayed in PNG format
- The associated graphs in PGRB format
- A PCF file that allows you to reopen all graphs in PrestoPlot

Links are automatically included in the report, on each graph image, referencing the associated graph. This allows you to easily reopen a graph by simply clicking on its image.

> **Tip**
>
> Embedded images sizes are automatically determined to provide an optimized rendering. You can still adjust the aspect ratio by setting a default size for the graphe saved images (see DefaultSaveGraphWidth and DefaultSaveGraphHeight).

8. Advanced Features

8.1 Calculator

The Calculator window allows simple calculations to be performed on the current data sets to create new data sets.

8.1.0.1 User Interface

The window contains the following elements:

- **Window Menu** - Actions local to the calculator.
- **Tool Bar** - Actions for the calculator.
- **Formula** - The current calculation to evaluate.
  - The **Create** button will create a new set of data using the calculation expression; this button is only available if the expression is correct.
  - New data sets will use the dates from the first data set present in the formula.
  - New data sets are numbered `DataN` where N counts up from 0, unless a specific name is given in the Name field.
- **Results** - The first few elements of each set of data used and the results of the calculation.
- **Constant list** - A list of available constants for calculations.
- **Function list** - A list of available functions for specific calculations.

8.1.1 Calculator Window Menu

The calculator menu contains the following specific entries:

- **Hide Tool Bar / Show Tool Bar** - Hide or show the tool bar for this window.
- **Reset Calculator** - Reset the calculator back to its initial state, empties the formula and the results table.

8.1.1.1 Tool Bar

Icon	Action
	Function list Show/Hide the table of available calculator functions.
	Constant list Show/Hide the table of available Constants.
	Results preview Show/Hide the results preview table.
	Reset Reset the calculator back to its initial state, empties the Expression and the results table.
	Preferences Open the Calculator preferences tab.
	Help Display the help for the calculator.
	Hide the tool bar Remove the tool bar. (N.B. The tool bar can be restored in the window menu).

> **Tip**
> The tool bar can be placed on any of the edges of the window by dragging it to that edge or pressing the right mouse button on any blank space and selecting an edge on the popup menu.

8.1.1.2 Calculation Formula

This entry shows the current calculation together with the name and units of the dataset to be created.

The formula can be modified by:

- Using the History List (see below) by pressing the small triangle button to the right of the formula.
- Typing on the keyboard.

> **Tip**
> Use the TAB key to complete dataset or function names

- Double clicking on the name of a function in the functions table.
- Double clicking on the name of a constant in the constants table.
- Dragging and dropping datasets from the Data Sets window.
-  Selecting a dataset from a popup list.

As the calculation is modified, and when the expression is correct the results table will be updated.

If a  is displayed, then the calculation is incorrect and must be modified. An error message indicating the problem is displayed under the Expression.

If a  is displayed, then the calculation is not coherent and should be modified (time base is different), new data can still be created. A warning message indicating the problem is displayed under the Expression.

If a  is displayed, then the calculation is a correct expression and a new data set can be created by pressing the Create Data button.

8.1.1.2.1 History List

Each time a new set of data is created the calculation expression which was used to generate it is kept in a history list, selecting an entry will replace the current calculation.

> **Tip**
> The history list can be emptied and the number of elements kept in the history list can be modified in the Preferences window.

8.1.1.2.2 Name

This name will be used for the next data set created with the calculator. See Limitations for the set of acceptable characters.

If this field is empty then the created data set will be numbered '**DataN**' where N counts up from 0.

8.1.1.2.3 Units

This name will be used as the units for the next data set created with the calculator. See Limitations for the set of acceptable characters.

If this field is empty then the created data set will have '**none**' for its units.

8.1.1.3 Results Preview

This table gives a preview of the dataset values that will be produced, including all the datasets used in the calculation.

Results Preview

N°	Result	DEFICIT	MODEBM
00	815.860596	815.860596	V LIMIT
01	735.91333	735.91333	V LIMIT
02	656.50647	656.50647	V LIMIT
03	571.252075	571.252075	V LIMIT
04	496.243103	496.243103	V LIMIT

> The preview, for speed, may process only partial datasets, the results displayed may be diferent when processing the complete datasets (e.g. Filter() or Slice()) for the final calculation.

> **Tip**
> The number of elements calculated and displayed in this table can be changed in the Preferences window.

8.1.1.4 Constants

This table gives a list of numerical constants.

Constants (13)

(*) Name	Value	Description	(*) Group
atm	101325	Atmospheric standard pressure (Pa)	Physical
c	299792458	Speed of light in vacuum (m/s-1)	Physical
e	1.602176634e-19	Elementary charge (C)	Physical
epsilon0	8.8541878188e-12	Vacuum electric permittivity (F/m-1)	Physical
G	6.67430e-11	Gravity constant (m3/kg-1/s-2)	Physical
h	6.62607015e-34	Planck constant (J/Hz-1)	Physical

Tip

The list of constants can be updated in the ini file.

8.1.1.5 Function list

The formula for a calculation can contain mathematic and scalar functions:

Functions (54)

(*) Function	Description	(*) In	(*) Group
abs	abs(dataset) Absolute value of each element	1	Maths
acos	acos(dataset) Arc cosine of each element (radians)	1	Maths
adev	adev(dataset) Average deviation of the dataset	1	Scalar
AlignX	AlignX(dataset, dataset) Generate a new dataset from the first argument with the same X values as the second argument	2	Default
asin	asin(dataset) Arc sine of each element (radians)	1	Maths
atan	atan(dataset) Arc tangent of each element (radians)	1	Maths

8.1.1.6 Basic Math (in order of Precedence)

Operator	Description
`( )`	Parenthesis changes precedence
`^`	Exponent
`* / %`	Multiply, divide, remainder
`+ -`	Add and subtract

8.1.1.7 Scientific Functions

Function	Description
`abs()`	Absolute value
`sin() cos() tan()`	Sinus, Cosinus, Tangent (Radians)
`asin() acos() atan()`	ArcSinus, ArcCosinus, ArcTangent (Radians)
`sinh() cosh() tanh()`	Hyperbolic Sinus, Tangent, Cosinus (Radians)
`log10() log() exp()`	Log base 10, Natural Log, e to the power of x
`ceil()`	Ceiling (next highest whole number)
`floor()`	Floor (previous lowest whole number)
`norm()`	Scale all values to be between 0.0 and 1.0
`random()`	Random values from 0.0 to 1.0
`round()`	Round (nearest whole number)
`sqrt()`	Square root

8.1.1.8 Logic Functions

Operator / Function	Description
`-`	Unary Minus (invert sign)
`!`	Logical NOT (0.0 if non-zero, 1.0 otherwise)
`< >`	Less than, Greater than (1.0 if true, 0.0 otherwise)
`== !=`	Equal to, Not equal to (1.0 if true, 0.0 otherwise)
`<= >=`	Less than or equal, Greater than or equal (1.0 if true, 0.0 otherwise)
`&&`	Logical AND (1.0 if both non-zero, 0.0 otherwise)
`||`	Logical OR (0.0 if both zero, 1.0 otherwise)
`&`	Bitwise AND (integer part)
`|`	Bitwise OR (integer part)
`<< >>`	LeftShift, RightShift (integer part)
`? :`	Ternary operator: `(expression) ? TrueVal : FalseVal`

> **Note:** TrueVal/FalseVal can be constant values or expressions containing datasets.

8.1.1.9 Scalar Functions

Function	Description
`adev()`	Average deviation of the data elements
`kurtosis()`	Degree of peakedness (fourth moment)
`length()`	Number of data elements
`min()`	Minimum value of all data elements
`max()`	Maximum value of all data elements
`mean()`	Mean average value of data elements
`median()`	Median average value of data elements
`nz()`	Number of zero data elements
`prod()`	Product of the dataset
`q1()`	First quartile of the data elements
`q3()`	Third quartile of the data elements
`sdev()`	Standard deviation of the data elements
`skew()`	Skewness (third moment) of the data elements
`sum()`	Sum of the data set
`variance()`	Variance of the data elements

8.1.1.10 Extended Functions

- **AlignX** - `AlignX(dataset1,dataset2)` Produce a new data set from dataset1 with the same x values as dataset2 by interpolation.
- **Atan2()** - `Atan2(dataset1,dataset2)` Produce a new data set by calculating the ArcTangent for the pair of values (Radians).
  `atan2(n) = atan2(dataset1(n),dataset2(n))`
- **Bit()** - `Bit(dataset,n)` Produce a new data set by extracting the bit number 'n' from each value. Numbering starts from '0'.
- **Cumul()** - `Cumul(dataset)` Produce a new data set by cumulating the values of dataset.
  `cumul(0) = dataset(0)` `cumul(n) = dataset(n) + dataset(n-1)`

- **CumulDistrib()** - `CumulDistrib(dataset)` Produce a new data set by computing the cumulative distribution of dataset.

  `cumul(n) = 100 * count_points_lower_or_equal(dataset(n)) / N`

- **Delta()** - `Delta(dataset)` Produce a new data set by calculating the delta of dataset.

  `delta(0) = delta(1)` `delta(n) = dataset(n) - dataset(n-1)`

- **DeltaT()** - `DeltaT(dataset)` Produce a new data set by calculating the delta of date dataset.

  `deltat(0) = 0` `deltat(n) = date(n) - date(n-1)`

- **Derive()** - `Derive(dataset)` Produce a new data set by calculating the derivative of dataset.

  `derive(0) = 0` `derive(n) = (dataset(n) - dataset(n-1)) / (t(n) - t(n-1))`

- **Filter()** - `Filter([dataset,] expression)` Produce a new data set by copying dataset, for each element where the expression evaluates to TRUE.
  - Labels **must** use single quotes (`'`) to limit the text.
  - Examples:
    - `Filter(VBAT > 34)` - Copy only VBAT values > 34
    - `Filter(IBAT, MODEBM == 'I LIMIT')` - Copy IBAT values when MODEBM is 'I LIMIT'
    - `Filter(DEFICIT, IBAT != 0 && MODEBM == 'TRICKLE')` - Copy DEFICIT values when IBAT != 0 **and** MODEBM is TRICKLE

- **Integ()** - `Integ(dataset)` Produce a new data set by calculating the integral of dataset.

  `integ(0) = 0` `integ(n) = (dataset(n) * (t(n)-t(n-1))) + integ(n-1)`

- **Mean()** - `Mean(dataset1, dataset2, ...)` Produce a new data set by calculating the mean of a set of datasets.

  `mean(0) = (v1(0)+v2(0)+v3(0)) / 3.0` `mean(n) = (v1(n)+v2(n)+v3(n)) / 3.0`

- **Merge()** - `Merge(dataset1, dataset2, ...)` Produce a new data set by merging the set of datasets into one. Any double entries (same date, same value) will be removed.

- **Norm()** - `Norm(v1, [v2, ...])` Produce the norm of a set of datasets.

  `Norm(v1, v2) = sqrt(v1^2 + v2^2)`

- **Reduce()** - `Reduce(dataset)` Produce a new data set by reducing intermediate repeated values to only the first and last values.

- **Round()** - `Round(dataset, precision)` Produce a new data set by rounding each value to the given precision.
  - **precision** >0 value is rounded to the specified number of decimal places.
  - **precision** =0 value is rounded to the nearest integer.
  - **precision** <0 value is rounded to the left of the decimal point.

- **Slice()** - `Slice(dataset,n,m)` Produce a new data set using the values from the range indicated by the indexes n and m.

  > `'end'` Can be used in the place of `m`.

- **SliceTime()** - `SliceTime(dataset, t1, t2)` Produce a new data set using the time range t1 - t2 of dataset.

  > The range is from the first t1 limit to the last t2 limit; if the dataset is not in chronological order, the result may include dates outside the range t1-t2 (See Sorting).

  - Calendar dates **must** use single quotes (`'`) to limit the text.
  - Example:
    - `SliceTime(VBAT, '2003/05/28 18:00:23.917', '2003/05/28 18:59:35.944')`

- **Smooth** - `Smooth(dataset,order)` Produce a new data set using dataset smoothed using the order-n, where `0 < order < (dataset length /2)`.

- **Transition()** - `Transition(dataset)` Produce a new data set by reducing multiple repeated values to only one instance, leaving only transitions.

- **Using-X** - `UsingX(dataset1,dataset2)` Produce a new data set using dataset1 for the Y values and dataset2 for the X values.

  > As long as dataset2 is loaded in PrestoPlot, its date values will be visible in the new datasets tooltips and Data Table and can be displayed in POINT and 2POINT Markers.

8.2 Data Values

8.2.0.1 User Interface

Date / X	DEFICIT	IBAT	MODEBM	VBAT
2003/05/28 18:00:23.917	815.860596	0.228694	V LIMIT	35.831757
2003/05/28 18:00:55.917	735.91333	0.30134	V LIMIT	35.788231
2003/05/28 18:01:27.918	656.50647	0.30134	V LIMIT	35.809341
2003/05/28 18:01:59.917	571.252075	0.228694	V LIMIT	35.852867
2003/05/28 18:02:31.917	496.243103	0.207938	V LIMIT	35.81102
2003/05/28 18:03:03.918	417.058899	0.280584	V LIMIT	35.809715
2003/05/28 18:03:35.919	340.249878	0.0	V LIMIT	35.814766
2003/05/28 18:04:07.918	264.249451	0.0	V LIMIT	35.835876
2003/05/28 18:04:39.919	190.459351	0.0	V LIMIT	35.835876
2003/05/28 18:05:11.919	114.544281	0.239072	V LIMIT	35.810455
2003/05/28 18:05:43.919	39.205391	0.0	V LIMIT	35.835876
2003/05/28 18:06:15.920	0.0	-1.67375	TRICKLE	35.486015
2003/05/28 18:06:47.920	0.0	-1.72525	TRICKLE	35.360291
2003/05/28 18:07:19.920	0.0	-1.72525	TRICKLE	35.296959
2003/05/28 18:07:51.920	0.0	-1.72525	TRICKLE	35.254738
2003/05/28 18:08:23.920	0.0	-1.648	TRICKLE	35.211128
2003/05/28 18:08:55.921	0.0	-1.72525	TRICKLE	35.170296
2003/05/28 18:09:27.922	0.0	-1.67375	TRICKLE	35.169365
2003/05/28 18:09:59.921	0.0	-1.751	TRICKLE	35.149651
2003/05/28 18:10:31.922	0.0	-1.751	TRICKLE	35.107437

The Show Data window displays a table of the actual data values for a number of data sets with their complete date. It can be displayed from the Data Sets window by selecting the sets to see and pressing the main button, or **linked** to a Graph window by clicking on the graph window with the left mouse button to pull it in front of the others then pressing the graphs button.

> **Tip**
> Pressing the right mouse button over any of the data cells will display a menu to copy the value of the cell to the clipboard.

8.2.1 Linked Data

If the window was opened linked to a graph window then specific data values can be found on the graph by selecting a value in the table with the left mouse button, the corresponding data point(s) on the graph will be highlighted.

Any data points selected on the graph with the left mouse button will also be highlighted in the Show Data window.

> **Note**
> The use of this feature requires working with sorted datasets.

8.2.2 Show Data Selection window Menu

The show data selection menu contains the following specific entries:

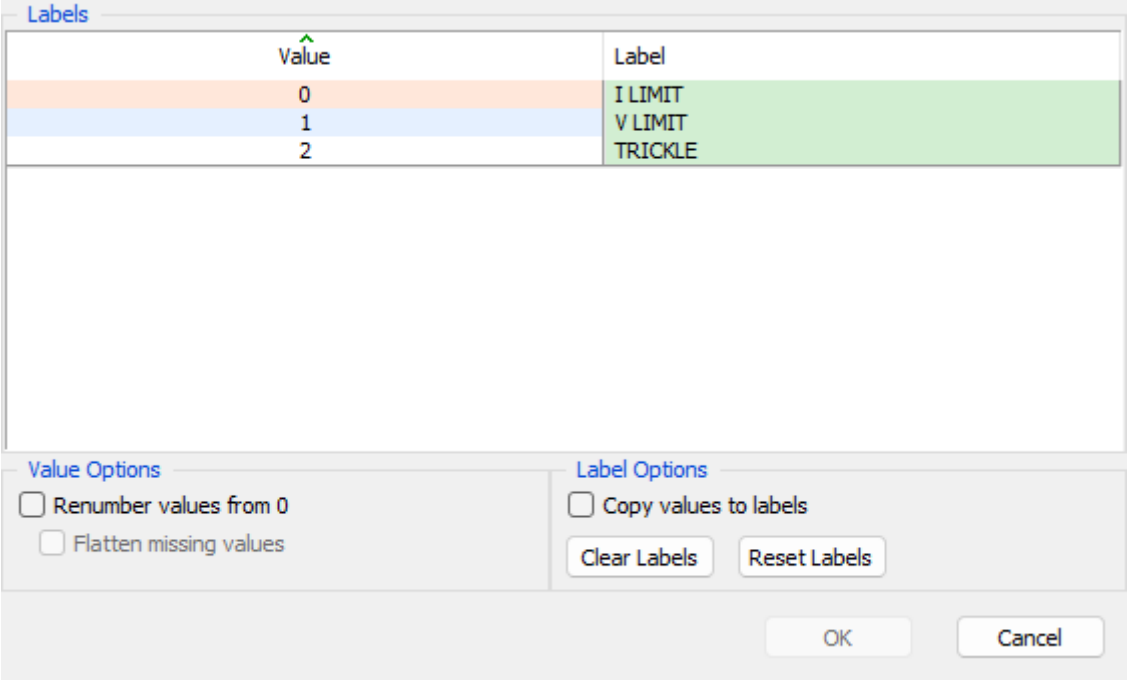
- **Export Data** - will ask for a filename to export the data for all the displayed data as a Tab File.

8.3 Edit Labels

This window allows updating the set of labels associated with a dataset.

If a dataset has only integer values and less than 100 unique values then it can have a textual label associated with each value. The dialog contains the following elements:

8.3.0.1 User Interface



- **Table of values** - Displays a row for each value to be set with the corresponding label value to be displayed.
- **Renumber labels from N** - Allows the user to renumber (1 by 1) the list of raw values for the dataset starting from the `BaseLabelOffset` configuration value.
- **Flatten missing values** - Allows the user to remove any label values that are not present in the dataset.
- **Copy values to labels** - Use the raw numeric value as the label value.
- **Clear Labels** - Empty all labels to create a FLT dataset.
- **Reset Labels** - Reset labels back to the original values.
- **OK** - Set the list of labels for the dataset and close the dialog.
- **Cancel** - Throw away all changes and close the dialog.

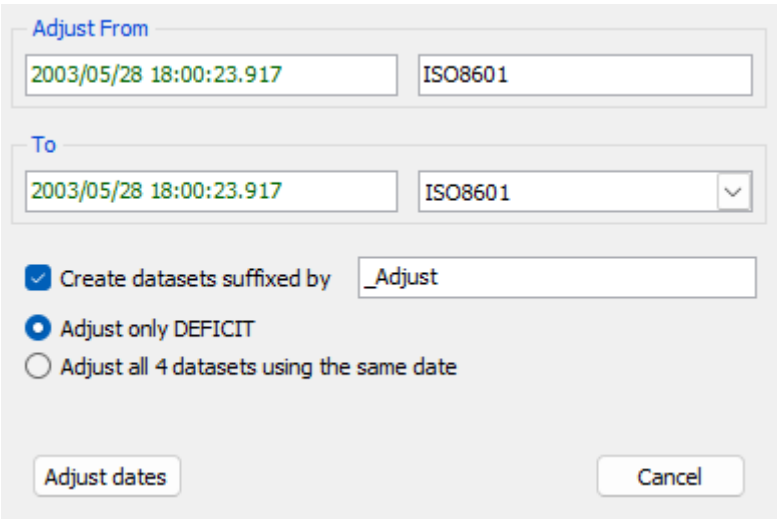
> **Tip**
> Raw values displayed in green have been changed from their original value

> **Tip**
> Raw values which are not present in the dataset are displayed with a pink background

See also the -setlabels and -spreadlabels command line option.

8.4 Adjust Dates

8.4.0.1 User Interface



The Adjust Dates window allows adjusting a datasets dates, by changing the date format or by shifting the date values by a given offset. It can be displayed from the Data Sets popup menu by activating the popup menu on the dataset to adjust.

The dialog contains the following elements:

- **Adjust From** - Displays the first date in the dataset and the current format. The date can be adjusted to set the equivalence date. (*)
- **To** - Allows the user to set a specific date that the 'From' date will be adjusted to. (*)
- **Create datasets suffixed by** - Create a new set of datasets with the adjusted dates by adding the suffix to the names. If unchecked (no suffix) the datasets will be updated without copying.
- **Adjust only this dataset** - This dataset will be separated from the other datasets using the same dates before adjusting.
- **Adjust all of the datasets** - All of the datasets using this date will be adjusted.

> (*): The dates can be adjusted quickly using the Keyboard shortcuts.

---

e.g.

1) The dates for a dataset need to be shifted by a set time (1 hour), adjust the '**From**' date value to be one hour (PG-Up see Keyboard shortcuts) before of the '**To**' date. `-adjustdate "VBAT from=2003/05/28 18:00:23.917 to=2003/05/28 19:00:23.917"`

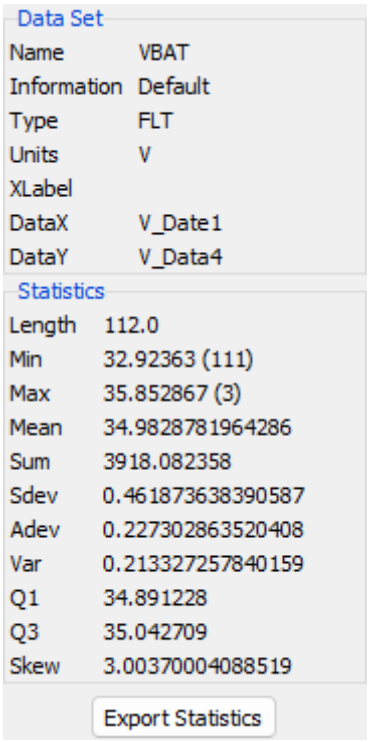
2) The second dates for a dataset need to be changed to a calendar date, adjust the '**From**' seconds value to be the equivalent calendar date and format to the '**To**' calendar value. `-adjustdate "FLIGHT1 from=0 to=ISO8601:2003/05/28 19:00:23.917"`

3) The calendar dates for a dataset need to be changed to a seconds offset, adjust the '**From**' calendar date value to be the equivalent of the '**To**' seconds value. `-adjustdate "VBAT to=SECONDS:0" (The from is the first value of the dataset)`

4) All of the datasets using the same date (from the same file) can be adjusted at the same time using the '**group=all**' option. `-adjustdate "VBAT group=all to=SECONDS:0"`

8.5 Statistics

8.5.0.1 User Interface



The Statistics window displays information about the selected data set and a set of statistics.

The following information is displayed:

- **Set Name** - the name of this set of data.
- **Information** - Information on the set of data.
  e.g. The parameter description for this set of data (see PrestoDecom and APID in the PrestoDecom File).
- **Type** - one of `FLT` for numerical values or `LABEL` for state values or `LABEL + FLT` for mixed.
- **Units** - the units name for this data or none if not defined.
- **X Label** - the label for this datasets X axis. This will change for all datasets using the same date.
- **Data X** - the name of the data vector containing the X values (in general this vector contains the dates).
- **Data Y** - the name of the data vector containing the Y values.

The following statistics are displayed:

- **Length** - the total number of data values.
- **Min** - the smallest Y data value in this set, followed in brackets by the number of the smallest element. If there is more than one element with this value then the number of the first element is given followed by the number of minimum value elements.

- **Max** - the largest Y data value in this set, followed in brackets by the number of the largest element. If there is more than one element with this value then the number of the first element is given followed by the number of maximum value elements.
- **Mean** - the mean average value for the data set.
- **Sum** - the sum of all the data elements.
- **Sdev** - the Standard Deviation of the data elements (the square root of the variance).
- **Adev** - the Average Deviation of the data elements (the sum of the absolute values of the differences between the element and the mean value divided by the length of the data set).
- **Var** - the Variance of the data set (the sum of the squared differences between each element and the mean, the Variance is the sum divided by the length of the data set minus 1).
- **Q1** - the first quartile of the data set.
- **Q3** - the third quartile of the data set.
- **Skew** - the Skewness (or third moment) of the data set (this characterises the degree of asymetry of the data set about the mean).

The Export Statistics button at the bottom of the window will write these values to a tab separated text file compatible with Excel.

8.6 Single or Multiple Sessions

PrestoPlot has a new simplified session manager.

Only **ONE** copy of PrestoPlot can be run per user with any given session name.

When PrestoPlot is executed it will use the session name, if present (default option or command line option), and check to see if there is already a session with this name:

- If a session exists with the name PrestoPlot will send its command line to be processed by this session and will terminate.
- If there is no session with this name, then PrestoPlot will take over the session name and process the command line itself.
- If there is no session name PrestoPlot will run independently.

The current session name can be changed in the preferences or in a PCF file if the name is not already in use by a session. This allows using different PrestoPlot sessions for different activities.

9. Automation

9.1 Command Line Options - CLI

PrestoPlot can be controlled from a command line or from within a batch file or shell script.

The syntax of the command line is as follows:

```
prestoplot -option argument [-option argument] ...
```

> **Note**
> The argument must be surrounded by " " if it contains spaces !
> **e.g.** `-renamedata "VBAT VBATTERIE" -calc "INTRA(°)=ARC * 3.1415926 * 2"`

9.1.1 Command Line Option Pairs

PrestoPlot accepts the following command line option pairs:

9.1.1.1 `-adddatasets`

Add the arguments as data elements to the last opened or selected graph. **Example:**

```
-adddatasets "IBAT DEFICIT"
```

9.1.1.2 `-addmarker`

Add a Marker to the last opened or selected graph.

Arguments:

- **Dataset**: The name of the dataset to mark (not optional).
- **type=**: The type of the marker, one of: `horizontal`, `vertical`, `text`, `point`, `2point` (not optional).
- **datalock=**: The marker is locked to the data (only for vertical or horizontal markers), one of: `lock`, `nolock`.
- **label=**: The text to display on the marker. Can contain special sequences for markers. Use `\n` to add multiple lines of text.
- **labelcolor=**: The color of text elements.
- **labelfont=**: The font to use for the label (can add bold, italic, underline, overstrike).
- **labelorient=**: The orientation of the marker text (only for vertical markers), one of: `horizontal`, `vertical`.
- **labelside=**: The side of the marker text (only for vertical or horizontal markers), one of: `left`, `right` for vertical markers or `above`, `below` for horizontal markers.
- **linecolor=**: The color of line elements. Use `linecolor1` and `linecolor2` for a 2point marker.
- **linestyle=**: The style of line elements, one of `solid`, `dotted` or `dashed`. Use `linestyle1` and `linestyle2` for a 2point marker.
- **linewidth=**: The width of line elements, one of `1`, `2`, `3` or `4`. Use `linewidth1` and `linewidth2` for a 2point marker.
- **lock=**: The position to lock the label to. One of `left` or `right` for horizontal markers, `top` or `bottom` for vertical markers and `topleft`, `top`, `topright`, `left`, `right`, `bottomleft`, `bottom` and `bottomright` for the text, point and 2point markers. All markers can be locked to the `graph` and can no longer be moved.
- **order=**: The position of the line elements with respect to the data lines, one of: `behind`, `before`.
- **value=**: The indication of the marker position (not for text); either a value for horizontal markers or a date for vertical and point markers. Point markers will point to the closest value. Use `value1` and `value2` for a 2point marker.
- **index=**: The index of the data to point to (only for point or 2point markers); first datapoint is 0, second is 1, etc. Use `index1` and `index2` for a 2point marker.
- **xlabelposition=**: The X position of the marker text (only for horizontal, text, point and 2point), Either a dataset x value or a percentage graph position where 0% is on the left and 100% on the right.
- **ylabelposition=**: The Y position of the marker text (only for vertical, text, point and 2point), Either a dataset y value or a percentage graph position where 0% is on the bottom and 100% on the top.

> **Note:** If any setting contains spaces, enclose in `{}`.

Examples:

```
-addmarker "IBAT type=hor value=2.5 label={Name: %E\nValue: %VY1} lock=right"
```

```
-addmarker "VBAT type=ver value={2003/05/28 18:31:01.078} label={Name: %E\nValue: %VX1} labelcolor=red linecolor=green ylabelposition=70%"
```

```
-addmarker "DEFICIT type=po value={2003/05/28 18:32:00.200} label={DEFICIT (%UY)\n(%VX1,%VY1)}"
```

```
-addmarker "DEFICIT type=2p index1=50 index2=100 label={Name: %E\n(%VX1,%VY1)\n(%VX2,%VY2)\n(%SLO)} labelfont={tahoma 20 bold} labelcolor=red
linecolor1=green linecolor2=blue xlabelposition=25% lock=top"
```

9.1.1.3 `-addpen`

Add a Pen to the last opened or selected graph.

Arguments:

- **Dataset**: The name of the dataset to add to (not optional).
- **name=**: The name of the pen, if the pen already exists the pen will be replaced.
- **linecolor=**: The color of line elements.
- **linestyle=**: The style of line elements, one of `solid`, `dotted` or `dashed`.
- **linewidth=**: The width of line elements, one of `1`, `2`, `3` or `4`.
- **max=**: Maximum raw value to apply for pen.
- **min=**: Minimum raw value to apply for pen.
- **symbol=**: The symbol for the pen values (`square`, `circle`, `diamond`, `plus`, `cross`, `splus`, `scross`, `triangle`, `arrow`, or `none`).
- **symbolfill=**: Color of the symbol interior (`gradient` or a color).
- **symboloutline=**: Color of the symbol outline (`gradient` or a color).
- **symbolsize=**: One of (small(8),medium(12),large(16) or number 4-100), min/max for gradient.
- **values=**: The name of the dataset for the `min` and `max` values. If not present uses the dataset values.

Examples:

```
-addpen "IBAT name=WeightI min=-1.4 max=0 linestyle=solid symbol=triangle linecolor=green/orange symbolfill=gradient symbolsize=small/large
symboloutline=gradient"
```

9.1.1.4 `-adjustdate`

Adjust date values for a set of datasets, or create a new set (suffix=_newname) using the adjusted dates).

Arguments:

- **Dataset**: The name of the dataset to change.
- **group=**: If set to `'ALL'`, all associated datasets from the same file will be adjusted using the same date. Any other value will change only the named dataset.
- **suffix=**: Add a suffix to create new datasets; if not present, the datasets will be adjusted in place.
- **from=**: The base date in the dataset for adjustment. If not specified, the first date in the dataset is used.
- **to=**: The date to which the base date will be adjusted.

Example:

```
-adjustdate "FLIGHT1 from=0 to=ISO8601:2003/05/28 19:00:23.917 suffix=_date group=all"
```

The seconds value `0` becomes the calendar date `2003/05/28 19:00:23.917`.

9.1.1.5 `-arrange`

Arrange windows.

Arguments:

- **Action**: The action to take on the windows.
  - `tile`: Rearrange windows with equal size in rows and columns as a grid.
  - `horizontally`: Rearrange windows with equal size from top to bottom.
  - `vertically`: Rearrange windows with equal size from left to right.
  - `cascade`: Rearrange windows overlapping from the top left corner so that all window titles are visible.
  - `maximize`: Make windows as large as possible.
  - `minimize`: Make all windows the size of a small part of the window title bar.
- **Mode**: One of `'all'` for all open windows or `'graph'` for only the graph windows (default: `graph`).

> **Note:** If Mode is not present then the mode defaults to graph.

Examples:

```
-arrange tile:graphs
-arrange tile
```

9.1.1.6 `-calc`

Pass calculation expression to calculator. Format: `"NAME(UNITS)=EXPRESSION"`

Arguments: The argument is the calculation expression which will be passed to the calculator. It takes the form `"NAME(UNITS)=EXPRESSION"` where:

- **NAME**: The name of the new data to be created.
- **UNITS**: The units to be used for the new data.
- **EXPRESSION**: The calculation to execute.

Examples:

```
-calc "VBATDEF(V)=UsingX(VBAT,DEFICIT)"
-calc "not(none)=!RELAY"
-calc "activation(none)=((!RELAY1)||(!RELAY2))&&((!RELAY3)||(!RELAY4))"
```

9.1.1.7 `-commandfile`

Read a set of command line options from the named file (one per line).

See also PCF files.

> **Note:** The command file can also contain comments by preceding the line with the '#' character.

Example:

```
-commandfile PowerMgmt.pcf
```

Sample `PowerMgmt.pcf` (Lines starting with `#` are comments.):

```
# Load in a set of data from the POM packet
-load "D:/USERS/Presto/PrestoDecom/Resultats/POM_2003_06_16_10_12_59_Decom.tsv"
# Draw a graph from the loaded data
-loadmodel "D:/USERS/Presto/PrestoPlot/Saved/Pom.pmdb"
# Save the graph as a gif image file
-savegif "D:/USERS/Presto/PrestoPlot/Saved/Pom.gif"
# Delete the graph
-closegraph LAST
# Delete the loaded data
-deletedata "IBAT VBAT"
```

The command file can access variables defined in the initial batch or script file using the `$env(VariableName)` variable.

9.1.1.8 `-closegraph`

Close the last graph, selected graph or all graphs.

Argument:

- **LAST**: Close the last opened graph.
- **SELECTED**: Close the current selected graph or the last opened graph if none are selected.
- **ALL**: Close all open graphs.

Example:

```
-closegraph LAST
```

9.1.1.9 `-configureelement`

Configure an element on the last opened or selected graph.

Arguments:

- **Dataset**: The name of the dataset to change.
- **label=**: Label to display in the legend (If empty hide the element name in the legend).
- **symbol=**: The symbol for the element (`square` , `circle` , `diamond` , `plus` , `cross` , `splus` , `scross` , `triangle` , `arrow` , or `none`).
- **symbolfill=**: The color for the symbol interior.
- **symboloutline=**: The color for the symbol outline.
- **symbolsize=**: The size of the symbol (`small` (8), `medium` (12), `large` (16), or a number from 4 to 100).
- **linestyle=**: The style for element lines (`solid` , `dotted` , `dashed`).
- **segment=**: The segment style for element lines (`linear` , `step`).
- **linecolor=**: The color of the line segments.
- **linewidth=**: The width of the joining lines (0, 1, 2, 3, or 4).
- **fillarea=**: The color for the area fill. (use `none` to remove a fill)
- **fillbase=**: The base value for the area fill:
  - `top` : Fill from the top of the graph down to the data curve.
  - `bottom` : Fill from the bottom of the graph up to the data curve.
  - `min` : Fill from the minimum dataset value up to the data curve.
  - `minaxis` : Fill from the minimum automatic axis value up to the data curve.
  - `max` : Fill from the maximum dataset value down to the data curve.
  - `maxaxis` : Fill from the maximum automatic axis value down to the data curve.
  - `value` : Numerical value, fill from the value up or down to the data curve.

> **Note:** If label contains spaces, it must be enclosed in `{}` .

Example:

```
-configureelement "IBAT label={IBAT (A)} symbol=cross symbolsize=large symbolfill=blue fillarea=lightblue fillbase=top"
```

The element IBAT will have a large blue cross symbol.

```
-configureelement "VBAT symbolfill=green fillarea=lightgreen fillbase=35.4"
```

The element VBAT will have a green fill area from the horizontal 35.4 limit.

9.1.1.10 `-configuregraph`

Configure the last opened or selected graph.

Arguments:

- **background=**: The color of the plot area background.
- **borderbackground=**: The color of the graph border.
- **legendanchor=**: Position on the side (`north` , `south` , `east` , `west`).
- **legendcolor=**: Color of the legend text
- **legendfont=**: Font for the legend text (can add bold,italic,underline,overstrike).
- **legendposition=**: Side of the graph to position (`left` , `right` , `top` , `bottom`) or `none` for not visible.
- **linecolor=**: Color of the grid lines.
- **linestyle=**: Style of the grid lines, one of (`solid` , `dotted` , `dashed`).
- **linewidth=**: Width of the grid lines (`1` , `2` , `3`).
- **minorlinecolor=**: Color of the minor grid lines.
- **minorlinestyle=**: Style of the minor grid lines, one of (`solid` , `dotted` , `dashed`).
- **minorlinewidth=**: Width of the minor grid lines (`1` , `2` , `3`).
- **title=**: Title for the graph.
- **titlecolor=**: Color for the title.
- **titlejustify=**: One of (`center` , `right` , `left`).
- **titlefont=**: Font for the title (can add bold,italic,underline,overstrike).
- **useminorticks=**: Boolean `true` to display minor grid lines.
- **xticks=** `Value` : X vertical grid line positions.
- **yticks=** `Value` : Y horizontal grid line positions.
- **ticks=** `Value` : X and Y grid lines.

  > **Value:** The name of a dataset or `none` for no lines or `default` for the default set of 11 lines.

Example:

```
-configuregraph "titlefont={Tahoma 16 bold} xticks=none yticks=VBAT"
```

9.1.1.11 `-configurexaxis`

Configure an X axis on the last opened or selected graph.

Arguments:

- **Dataset**: The name of the dataset with the X axis to change.
- **color=**: Change the color of the axis and tick marks.
- **decimalticks=**: If true round the tick marks to decimal seconds, if false use base 60 (HH:MM::SS), **only** for `ISO8601+SECONDS` , `EUR+SECONDS` , `USA+SECONDS` and `OFFSET` format dates.
- **epochdate=**: The T0/Epoch date for `ISO8601+SECONDS` , `EUR+SECONDS` , `USA+SECONDS` and `OFFSET` format dates.
- **dateformat=**: Change the date format (date axes only). Use `AUTO` to reset to default. (see Date Formats)
- **hidden=**: Change the visibility (Boolean true) is hidden.
- **label=**: Change the axis label.
- **labelcolor=**: Change the color of the label.
- **labelvalues=**: Display ONLY for LABEL axes.
- **max=**: Maximum limit. Use 'max=AUTO' for automatic limit.
- **min=**: Minimum limit. Use 'min=AUTO' for automatic limit.
- **order=**: The direction (`increasing` or `decreasing`) of the axis.
- **scale=**: The scale (`linear` or `logarithmic`) of the axis.
- **side=**: Which side the axis is placed, (`top` or `bottom`) of the graph.
- **stepsize=**: The size of the step between each major tick in seconds.
- **subdivisions=**: The number of subdivisions between major ticks.
- **tickorient=**: The direction (`vertical` or `horizontal`) of the tick labels.
- **zoomlock=**: Lock the axis to block zooming.

- **custom=**: A custom date/time format for some date forms.

> **Note:** Values with spaces must be in `{}`.
>
> **Note:** The options are processed in order, so format should be present before min/max.

Example:

```
-configurexaxis "IBAT stepsize=1800"
```

The date axis will have major ticks separated every 1/2 hour.

> **Note:** Limits for date axes can also be changed using `-from` and `-to`.

9.1.1.12 `-configureyaxis`

Configure a Y axis on the last opened or selected graph.

Arguments:

- **Dataset**: Name with Y axis.
- **color=**: Change the color of the axis and tick marks.
- **hidden=**: Change the visibility (Boolean true) is hidden.
- **label=**: Change the axis label.
- **labelcolor=**: Change the color of the label.
- **labelvalues=**: Display (`labels` or `numbers`) (LABEL axes).
- **max=**: Maximum limit. Use 'max=AUTO' for automatic limit.
- **min=**: Minimum limit. Use 'min=AUTO' for automatic limit.
- **move=**: Move the axis (`closest` or `furthest`) from the graph area.
- **order=**: The direction (`increasing` or `decreasing`) of the axis.
- **scale=**: The scale (`linear` or `logarithmic`) of the axis.
- **side=**: Which side the axis is placed, (`left` or `right`) of the graph.
- **stepsize=**: Step size.
- **subdivisions=**: Subdivisions between ticks.
- **tickorient=**: The direction (`vertical` or `horizontal`) of the tick labels.
- **zoomlock=**: Lock the axis to block zooming.

> **Note:** Labels with spaces must be in `{}`.

Example:

```
-configureyaxis "IBAT min=0 max=20 label={IBAT (A)}"
```

9.1.1.13 `-converttodate`

Convert a non-dated dataset to a SECONDS date.

Example:

```
-converttodate "EL_Using-X_TD"
```

9.1.1.14 `-deletedata`

Delete the data sets named in the argument.

Example:

```
-deletedata "IBAT VBAT"
```

> If argument is `ALL`, all datasets are deleted.

9.1.1.15 `-duplicategraph`

Make a new copy of the last opened or selected graph.

Example:

```
-duplicategraph
```

> If no graphs, does nothing.

9.1.1.16 `-exit`

Exit immediately from PrestoPlot (no argument needed).

9.1.1.17 `-exportdata`

Export the data for the named sets of data to a tab separated text file. If the only name in the list is `ALL` then the the data for all currently loaded data sets will be exported.

Example:

```
-exportdata "D:/USERS/Presto/PrestoPlot/PomExport.txt(IBAT MODEBM)"
```

9.1.1.18 `-exportstatistics`

Export the statistics for the named sets of data to a tab separated text file. If the only name in the list is `ALL` then the statistics for all currently loaded data sets will be exported.

Example:

```
-exportstatistics "D:/USERS/Presto/PrestoPlot/Stats.txt(IBAT VBAT)"
```

9.1.1.19 `-exportini`

Export a selection of parameters to a file with the same format as the INI file.

Example:

```
-exportini "/path/file.ini;P1 P2 P3"  # Will export parameters P1, P2 and P3 current values to file.ini.
```

9.1.1.20 `-exportvalue`

Export one dated value for each of the named data sets to a tab separated text file.

Syntax: `filename(arguments)`

Arguments:

- **Date**: The date of the single value to export.
  > The default date format is ISO8601, this can be changed by prefixing the date with the name of the format.
- **Mode**: one of:
  - `Before` : The data value just before or at the given date or an empty value if none are before.
  - `After` : The data value just after or at the given date or an empty value if none are after.
  - `At` : The data value at the given date or an empty value if none.
  - `Nearest` : The data value closest to the date (before if 2 points are equidistant).
- **Datasets**: An ordered list of datasets to export.

> The Mode comment in the file contains the mode, the date in the format given to the commmand and, if different, the date in the format of the exported values.

Examples:

```
-exportvalue "D:/USERS/Pom.txt(2003/05/28 18:57:27.943 Nearest IBAT MODEBM)"
```

```
-exportvalue "D:/USERS/Data.csv(SECONDS:156.4 before DATA1 DATA2)"
```

9.1.1.21 `-fft`

Fast Fourier Transform Produce the Spectrum Phase and Spectrum Modulus datasets based on frequency from a datasets values.

Arguments:

- **Dataset**: The name of the dataset to process.
- **range**: The range of the dataset to use.
  - `PAD` : Add sufficient 0 elements to make the length a power of 2.
  - `TRUNC` : Shorten the length to a power of 2.
  - `start:end` : Numerical indexes giving the range to process.
- **sampling**: The custom sampling factor to use.
- **resample**: Resample (Boolean true) the values of the input dataset using the sampling factor and the origin date of the dataset.

Example:

```
-fft "VBAT range=PAD sampling=25 resample=true"
```

9.1.1.22 -from

Set the start date for all axes on the last opened or selected graph.

> The default date format is ISO8601, this can be changed by prefixing the date with the name of the format. (See also -to).

Examples:

```
-from "JJCNES_FRAC:23691.058"
```

```
-from "SECONDS:-400.0" -to "SECONDS:10.0"
```

9.1.1.23 -importini

Import a set of parameters defined in a file with the same format as the INI file.

Example:

```
-importini "/path/file.ini"  # will import the parameter values defined in file.ini.
```

9.1.1.24 -import

Load argument as a data file using a legacy plugin.

Example:

```
-import "CEV/CTV:D:/File.dat"
```

9.1.1.25 -importevents

Import a labelled dataset as a set of events on the last opened or selected graph.

Arguments:

- **Dataset**: The name of the dataset with the X axis to import to.
- **events=**: The dataset to use for the event values.
- **mode=**: How events are processed (transition,all), either only **transitions** or **all** of the events.
- **position=**: The position (`top` or `bottom`) of the labels on the event markers.
- **titlefont=**: The font to use for the event labels.
- **titlecolor=**: The color of the label text.
- **titleorient=**: The direction (`vertical` or `horizontal`) of the event labels.
- **titleside=**: The side (`left` or `right`) of the event labels (only useful for vertical labels).
- **titledate=**: Display (show or hide) the event dates.
- **linecolor=**: The color of the event lines.
- **linewidth=**: The width (`0` , `1` , `2` , `3` , `4`) of the event lines.
- **linestyle=**: The style (`solid` , `dotted` , `dashed`) for event lines.
- **showonly=**: Show only events from the list. Wildcards (`*` , `?` and `[chars]`) are supported.

> **Note:** Event names with spaces must be in `{}` .

> **Warning**
> Only the first 2000 events will be imported.

Example:

```
-importevents "DEFICIT events=MODEBM position=bottom titlecolor=green showonly={{I LIMIT} [VI]*}"
```

9.1.1.26 -load

Load argument as a new data file.

If the file is a zip archive of files or a xlsx Excel file, a list of ';' separated files / sheet names can be specified after a ':' separator.

Examples:

```
-load "D:/USERS/Presto/PrestoDecom/Resultats/POM_2003_06_16_10_12_59_Decom.tsv"
```

```
-load "D:/USERS/Presto/PrestoDecom/Resultats/2003_06_16.zip:POM*;*AOCS*;FILE.tab"
```

```
-load "D:/USERS/Presto/PrestoDecom/Resultats/Results.xlsx:SH*;Feuille 3"
```

> **Tip**
> `*`, `?` and `[chars]` Wildcards supported for file/sheet names.

9.1.1.27 `-loadmodel`

Load argument as a model file (`*.pmdb` , `*.pmd`).

> Graph (`*.pgrb` , `*.pgr`) and project (`*.ppj`) files can be loaded. All the data names and attributes will be used (including date axis attributes **except** the start and end dates), but no data will be loaded.

Example:

```
-loadmodel "D:/USERS/Presto/PrestoPlot/Saved/Pom.pmdb"
```

```
-loadmodel "D:/USERS/Presto/PrestoPlot/Saved/Pom.ppj"
```

> **Tip**
> The file name can contain the `*` , `?` and `[chars]` wildcard characters. The default is `*` .

9.1.1.28 `-loadgraph`

Load argument as a graph file (`*.pgrb` , `*.pgr`).

Example:

```
-loadgraph "D:/USERS/Presto/PrestoPlot/Saved/Pom.pgr"
```

> **Tip**
> The file name can contain the `*` , `?` and `[chars]` wildcard characters. The default is `*` .

9.1.1.29 `-loadproject`

Load argument as a Project file (`*.ppj`). \

Example:

```
-loadproject "D:/USERS/Presto/PrestoPlot/Saved/POM.ppj"
```

9.1.1.30 `-loadworkspace`

Load argument as a workspace file (`*.pwsb` , `*.pws`).

Example:

```
-loadworkspace "D:/USERS/Presto/PrestoPlot/Saved/AOCSGraphs.pwsb"
```

> **Tip**
> The file name can contain the `*` , `?` and `[chars]` wildcard characters. The default is `*` .

9.1.1.31 `-logfile`

Use the argument as the file to log all PrestoPlot actions to, instead of PrestoPlot.log.

> **note** This option only works on the command line not in a PCF

9.1.1.32 `-newgraph`

Create a new graph using the arguments as data elements file.

Example:

```
-newgraph "IBAT VBAT DEFICIT"
```

9.1.1.33 `-nosession`

Ignore the default session name and always open a new PrestoPlot window.

> **note** This option only works on the command line not in a PCF

Example:

```
-import "PLUGIN:D:/USERS/Presto/PrestoPlot/Saved/data.in" -nosession
```

9.1.1.34 `-nosingle`

Deprecated. Use `-nosession` instead (not in PCF).

9.1.1.35 `-noshow`

Hides Graphical user Interface (GUI) while performing operations.

> **note** This option only works on the command line not in a PCF

Examples:

```
-loadgraphmodel "D:/USERS/Presto/PrestoPlot/Saved/Pom.pgr" -noshow
-commandfile PowerMgmt.pcf -noshow
```

> **Note**
>
> On Linux some window managers ignore the request to be displayed off the screen, if this is the case the `Xvfb` program can be used to create a virtual screen display:
>
> ```
> # Start the Virtual X server
> Xvfb :1&
> # Keep the process id
> let xpid=$!
> # Run PrestoPlot on the new hidden/virtual display
> prestoplot -display :1 -commandfile PlotCommands.pcf -exit
> # stop the X server
> kill $xpid
> ```
>
> For complete details, to adjust screen size and color depth, see the man page for `Xvfb`.

9.1.1.36 `-optionoverride`

Temporarily override an option.

Example:

```
-optionoverride "SYMBOL=cross square"
```

See also `resetoverrides`.

> **Note:** If used from the command line, the option will not be saved when quitting PrestoPlot.

9.1.1.37 `-plugin`

Pass argument as a parameter to the plug-ins `ENTRY` Entry point.

Example:

```
-plugin "TIMEConnect:hostname=localhost port=8888"
```

9.1.1.38 -printgraph

Send a copy of the last opened or selected graph to a printer. (The printer name "DEFAULT" can be used if a default printer is declared).

Arguments:

- **size=**: Size of the printed graph in `widthxheight` format (in pixels). Default is the screen size.

Example:

```
-printgraph DEFAULT
-printgraph "HPLASER01 size=600x400"
```

9.1.1.39 -renamedata

Rename a data set. The argument contains the current name and the new name.

Example:

```
-renamedata "VBAT VBATTERIE"
```

9.1.1.40 -renameinformation

Rename a data sets information value. The argument contains the data set name and the new information name.

Example:

```
-renameinformation "VBATTERIE Information of Volts Battery"
```

9.1.1.41 -renameunits

Rename data sets unit values. The argument contains the data set name and the new unit name.

Example:

```
-renameunits "V[Oo]* Volts"
```

> **Tip**
> The dataset name can contain the `*`, `?` and `[chars]` wildcard characters to rename multiple units at the same time.

9.1.1.42 -renamexunits

Deprecated. Use `-xlabel` instead.

9.1.1.43 -renamegraph

Rename the last opened or selected graph.

Example:

```
-renamegraph "New Name"
```

9.1.1.44 -reportHTML

Generate an HTML report that shows all opened graphs in PNG and PGRB format, and a PCF to reopen all the graphs in PrestoPlot.

Example:

```
-reportHTML "D:/USERS/Presto/PrestoPlot/Saved"
```

9.1.1.45 `-resetoverrides`

Remove any overrides.

Example:

```
-resetoverrides
```

See also `-optionoverride`.

9.1.1.46 `-saveallgraphs`

Save all opened graphs with all attributes (including markers) and data values to PrestoPlot graph files (*.pgrb). The argument is the directory where the graphs will be saved, it will be created if not found. Each file has the name of the contained saved graph.

Example:

```
-saveallgraphs "D:/USERS/Presto/PrestoPlot/Saved"
```

9.1.1.47 `-savegraph`

Save the last opened or selected graph with all attributes (including markers) and data values to a PrestoPlot graph file (*.pgrb). The argument is the file in which the graph has to be saved.

Example:

```
-savegraph "D:/USERS/Presto/PrestoPlot/Saved/Pom.pgrb"
```

9.1.1.48 `-saveproject`

Save all datasets and graphs to a Project file (*.ppj). The argument is the file in which the project has to be saved.

Example:

```
-saveproject "D:/USERS/Presto/PrestoPlot/Saved/Pom.ppj"
```

9.1.1.49 `-savepgd`

Save the last opened or selected graph with all attributes (including markers) a PrestoPlot Graph Description file (*.pgd). The argument is the file in which the graph has to be saved.

Two Options can be added as flags to the end of the filename using the ';' separator :

- `optimise`
- `limits`, `xlimits` or `ylimits`

Example:

```
-savepgd "D:/USERS/Presto/PrestoPlot/Saved/Pom.pgd;optimise;limits"
```

9.1.1.50 `-saveXXX`

Save the last opened or selected graph window to the argument file as an image file. Note that the graph windows will be maximized first unless a size is specified.

XXX should be replaced by one of the following:

- **png**: Save the graph as a PNG file.
- **gif**: Save the graph as a GIF file.
- **eps**: Save the graph as an Encapsulated Postscript file.
- **emf**: Save the graph as an Extended MetaFile file.
  > **Note**: This option is only available on Windows systems.
- **ps**: Save the graph as a Postscript file.
  > **Note**: This option uses the ps2ps postscript converter and is only available on Linux systems supporting this command.

Examples:

```
-saveps "D:/USERS/Presto/PrestoPlot/Pom.ps"
-saveemf "D:/USERS/Presto/PrestoPlot/Pom.emf"
-savepng "D:/USERS/Presto/PrestoPlot/Saved/Pom.png size=600x400"
```

9.1.1.51 `-saveXXXallgraphs`

Save all open graphs as image files in the directory given as argument. Note that the graph windows will be maximized first unless a size is specified.

XXX should be replaced by one of the following:

- **png**: Save the graph as a PNG file.
- **gif**: Save the graph as a GIF file.
- **eps**: Save the graph as an Encapsulated Postscript file.
- **emf**: Save the graph as an Extended MetaFile file.
  > **Note**: This option is only available on Windows systems.
- **ps**: Save the graph as a Postscript file.
  > **Note**: This option uses the ps2ps postscript converter and is only available on Linux systems supporting this command.

Examples:

```
-savegifallgraphs "D:/USERS/Presto/PrestoPlot/Saved"
-saveemfallgraphs "D:/USERS/Presto/PrestoPlot/Saved"
```

9.1.1.52 `-selectgraph`

Select a specific graph for all command line options that work on the last opened or selected graph.

Arguments:

- **Name**: Name of the graph to select.

Example:

```
-selectgraph "Graph 2"
```

> **Note**
> The Selected graph will be reset if the graph is closed or a new graph is created

---

9.1.1.53 `-session`

Use the argument (Letters and Digits or `_` (underscore) only) as the session name.

- **From the command line**, if a PrestoPlot exists with this session name the rest of the command line will be sent to it, and this PrestoPlot terminates, otherwise this PrestoPlot will start with the session name.

> **Note**
> If used on the command line it **MUST** be the first option on the line.

- **From a PCF**, The current session name can only be changed if no other session has the name.

Example:

```
-session MY_SESSION
-session ""
```

> **Tip**
> Use `""` to remove session processing.

9.1.1.54 `-set variable=value`

Initialise a command line local variable.

Examples:

Initialises the Directory variable which can be used with `${Directory}` :

```
-set "Directory = C:/User/Results"
```

> **Note** Any spaces are removed from the variable name and value, to include spaces in the value it is necessary to surround the value with `{}`'s.
>
> **Note** A special variable `workingdirectory` can be set in the preferences command entry to allow relative paths for command entries.

Initialises the working directory and a useable variable :

```
-set "workingdirectory = C:/User/Results"
```

9.1.1.55 `-setlabels`

Replace the set of label values for a dataset.

Arguments:

- **Dataset**: Replace the set of label values for a dataset.
- **List**: one of three possibilities:
  - **an empty list**, removes any labels and set to **FLT** type.
  - **Label+value list** A set of `Label=value` items separated by `;`.
  - The keyword `copyvalues`, each of the labels will be the same as the numerical value

Example:

```
-setlabels "MODEBM I LIMIT=0;V LIMIT=1;TRICKLE=2"
```

```
-setlabels "TD copyvalues"
```

```
-setlabels MODEBM
```

9.1.1.56 `-sortalldatasets`

Sort any loaded datasets into chronological order (apply to dated datasets only).

9.1.1.57 `-spreadaxes`

Spread all axes of the last opened or selected graph to make sure the datasets won't overlay.

Example:

```
-spreadaxes
```

9.1.1.58 `-spreadlabels`

Spread a Labelled dataset by renumbering raw values starting from the `BaseLabelOffset` configuration value.

Arguments:

- **Dataset**: The name of the dataset to spread.
- **mode**: The method used for spreading, either `all` or `flatten` (Optional).
  - `all`: Renumber all of the raw label values.
  - `flatten`: Renumber the raw values and remove any that are not present in the dataset (Default mode if not present).

Example:

```
-spreadlabels "MODEBM flatten"
```

9.1.1.59 `-title`

Set or change the last opened or selected graph title.

Example:

```
-title "My title"
```

9.1.1.60 `-to`

Set the end date for all axes on the last opened or selected graph. The default date format is **ISO8601**, this can be changed by prefixing the date with the name of the format. (See also `-from`).

Example:

```
-to "GPS_SECONDS:1819 345600.000"
```

9.1.1.61 `-version`

Write a version message to the PrestoPlot.log file and exit. On Linux the version will also be written to the standard output.

> **Warning**
> This option overrides any other command line options, which will not be processed.

9.1.1.62 `-xlabel`

Change the X axis label for a given dataset. Any datasets using the same date or from the same original file will also be changed. The argument contains the X axis data set name and the new unit name.

Examples:

```
-xlabel "DEFICIT:Ground Date"
-xlabel "DEFICIT_FFT_F:Hz_2"
```

Any errors or messages during command line processing are added to the Log File.

TIP: If results are unexpected, check `PrestoPlot.log` for error messages.

9.1.2 File path names

PrestoPlot recognises three types of file path:

- **None** - Files without a path (e.g. `Model2.pmdb` or `POM1.tsv`) these files will use the current working directories (one for Data files and one for Model/Graph/WorkSpace/Command/Image files) from the ini file for the PrestoPlot used on the command line.
- **Relative** - Files with a relative path (e.g. `MODELS/Model2.pmdb` or `./POM1.tsv`) will be accessed relative to the current directory.
- **Full** - Files with a complete path (e.g. `D:/MODELS/Model2.pmdb` or `F:/DATA/POM1.tsv`) will be accessed using the path specified.

9.2 What is a `.pcf` file?

A `.pcf` file is a text file that contains a series of commands that PrestoPlot can automatically execute. These commands allow scripting of chart creation and image generation, which can then be dynamically integrated into reports.

9.2.1 How to create a .pcf file?

The simplest way to create a .pcf file is to use the recording feature in PrestoPlot:

1. **Recording actions**: PrestoPlot records most user actions (such as opening files, creating charts, or using the calculator) in a "log window".
2. **File generation**: A button named **Create PCF from log** allows you to automatically build the .pcf command file from the actions recorded in this log.
3. **Saving**: When you save this file, for example naming it my_macro, the `.pcf` extension is added automatically.

> Not all actions are recorded in the log. For example, specific curve settings (such as thickness or color) are not included.

9.2.2 What does a .pcf file contain?

A .pcf file contains a list of commands that reproduce user actions (see all available commands).

Here are some examples of actions that can be scripted:

- Load data files, using either absolute or relative file paths.
- Create new variables using the integrated calculator.
- Create charts, add titles, and rename them.
- Export charts as images (e.g., in PNG format), optionally specifying format and size.
- Save charts in PrestoPlot format (`.pgrb`).

9.2.3 How to run a .pcf file?

There are several ways to execute a .pcf macro:

1. **From the PrestoPlot interface**:
2. Using the **PCF icon**.
3. With the **F5 keyboard shortcut**.
4. By simply dragging and dropping the `.pcf` file into the PrestoPlot window.
5. **From the command line**: A .pcf file can be executed directly from a command line, which is very useful for process automation.
6. **File association**: It is possible to associate the `.pcf` extension with the PrestoPlot executable. Once this association is made, double-clicking on a `.pcf` file will launch PrestoPlot (if not already open) and execute the commands it contains.

9.2.4 Example of a .pcf file

```
# Load in a set of data from the POM packet
-load "D:/USERS/Presto/PrestoDecom/Resultats/POM_2003_06_16_10_12_59_Decom.tsv"
# Draw a graph from the loaded data
-loadmodel "D:/USERS/Presto/PrestoPlot/Saved/Pom.pmd"
# Save the graph as a gif image file
-savegif "D:/USERS/Presto/PrestoPlot/Saved/Pom.gif"
# Delete the graph
-closegraph LAST
# Delete the loaded data
-deletedata "IBAT VBAT"
```

9.3 Log File

PrestoPlot records a number of user actions in the `PrestoPlot.log` file which is placed in :

- The same directory as the **PrestoPlot** executable on Windows.
- **$HOME/.PrestoPlot** under Linux.

This file can be used to construct a Windows .bat file or a Linux shell script to automatically run PrestoPlot from its Command Line or even a Presto Command File to replay the same actions.

The following actions are recorded in the file:

- **Load Data file** - Either a G3 file(s) (*.tsv) or a Tab file(s) (*.tab) has been loaded.
- **Import Data file** - An external legacy was used to load a data file.
- **Load PrestoPlot file** - Either a PrestoPlot model (.pmdb, .pmd) or graph (.pgrb, .pgr) file has been loaded.
- **Calculation** - The Calculator has been used to create a new dataset.
- **Rename Data** - A data set has been renamed.
- **Rename units** - A data sets units value has been renamed.
- **Delete Data** - A data set has been deleted.
- **Save Image** - The current graph window has been saved as an image file.
- **Save all Graphs as Images** - All graphs have been saved as image files in a target directory.
- **Load Graph as a Model** - A Graph file has been loaded using the load model command.
- **Load a Workspace** - A workspace file has been loaded using the load workspace command.
- **Export Statistics** - A Statistics file has been created using the Export Statistics menu command.
- **Export Data** - A Tab separated data file has been created using the Export Data menu command.

Example log file:

```
-load "D:/USERS/Presto/PrestoDecom/Resultats/POM_2003_06_16_10_12_59_Decom.tsv"
-loadmodel "D:/USERS/Presto/PrestoPlot/Saved/Pom.pmd"
-loadgraphmodel "D:/USERS/Presto/PrestoPlot/Saved/Pom.pgr"
-renamedata "VBAT VBATTERIE"
-renameunits "VBATTERIE Volts"
-calc "VEDE(V)= UsingX(VBATTERIE,DEFICIT)"
-savegif "D:/USERS/Presto/PrestoPlot/Saved/Pom.gif"
-saveemf "D:/USERS/Presto/PrestoPlot/Saved/Pom.emf"
-savegifallgraphs "D:/USERS/Presto/PrestoPlot/Saved"
-saveemfallgraphs "D:/USERS/Presto/PrestoPlot/Saved"
```

Info

All file names in the log are saved with **full** path names.

Tip

Any errors which occur while running PrestoPlot from the command line will be saved to the log file.

Tip

PrestoPlot can log messages to a Log4j server by configuring the Log4j options in the Preference file.

10. User Interface

10.1 Windows

PrestoPlot contains many different windows:

Icon	Window
	**Data Sets** Gives access to all the sets of data loaded in memory.
	**Statistics** Display statistics on a data set and allow exporting.
	**Show Data** Display a table of data values for a collection of data sets.
	**Calculator** Create new data sets by using expressions.
	**Graphs** Graphically display a collection of data sets.
	**Configure Graph** Change the display attributes for the graph window.
	**Configure Graph Axis** Change the display attributes of a graph axis.
	**Customize Graph Data** Change the display attributes for one set of data.
	**Configure Graph Markers** Change the display attributes for one data sets markers.
	**Configure Time Marker** Change the display attributes for ALL the time markers.
	**Configure Pens** Change the display attributes and manage a set of pens for a set of graph data.
	**Preferences** Allow certain default program values to be changed.
	**Advanced preferences** This window allows changing the value of PrestoPlot configuration parameters.
	**Help** Display the online help system.

Each window has the standard windows controls and a local menu which contains entries specific to that window.

> **Tip**
> Windows can be closed using the Control-w keyboard shortcut.

10.2 Menu Bar

The menu bar has four menus:

- **File** Contains the commands to load and save all the file types and the other main operations.
- **Window** Contains the commands to rearrange the windows in the main window and an entry for each window.
- **Configure** Contains the configuration options.
- **Help** Contains the help commands.

> **N.B.** Menu items containing `...` indicate that this option will display a dialog box for more information.

10.2.1 File Menu

The **File Menu** contains the following commands:

- **Open New Data File(s) ...** Load in new data file(s) containing a collection of data sets from either TSV file(s) (.tsv), CIC file(s) (.txt), RES file(s) (.res), zip file(s) (.zip) or Tab file(s) (.tab, .txt).

  > **N.B.** The current directory is kept in the INI file between executions of PrestoPlot.

- **Configure New Data File(s) ...** Load in new data file containing a collection of data sets and allow configuring the CSV elements used to load the file.
- **Import Data File(s) ...** Load in new data file(s) containing a collection of data sets by using an external legacy Import Plug-in.

  > **N.B.** This item is only available if such plugin is loaded.

- **Import Clipboard as CSV file ...** Load in the contents of the clipboard as a CSV format file, or a file path to a CSV file.
- **Configure Clipboard as a CSV file ...** Load in the contents of the clipboard as a CSV format file, or a file path to a CSV file and allow configuring the CSV elements used to load the file.
- **Recent Files** Display a sub menu of the different groups of recent files
  - **Data** Menu of most recent data files.
  - **Graphs** Menu of most recent graph files (.pgr and .pgrb).
  - **Model and PGD** Menu of most recent model (.pmd and .pmdb) and PGD (.pgd) files.
  - **Project and Workspace** Menu of most recent project (.ppj) and workspace (.pws, .pwsb) files.
  - **Command** Menu of most recent command (.pcf) files.
- **Open Command File(s) ...** Load and execute a PrestoPlot command .pcf file.
- **Save Command File ...** Open the Preferences to save a command .pcf file.
- **Load Model ...** Create a new graph using the data set names and graph attributes found in a PrestoPlot model (*.pmdb, *.pmd) or graph (*.pgrb, *.pgr) file.

  > **N.B.** If a graph file is loaded only the names and attributes will be used (including date axis attributes **except** the start and end dates), no data will be loaded.

- **Save Model ...** Save the current graph (element names, axes, attributes, markers) but no data values - to a PrestoPlot model (*.pmdb) file.

  > **N.B.** The time axes attributes are saved except the start and end limits: a model file can be used to display data sets from different files and the time base is not guaranteed to be identical between files.

- **Load Graph ...** Create a new graph using the data sets and attributes found in a PrestoPlot graph (*.pgrb, *.pgr) file.
- **Save Graph ...** Save the current graph with all attributes (including markers) and data values to a PrestoPlot graph (*.pgrb) file.
- **Load Workspace ...** Create a set of new graphs using the data set names and attributes found in a PrestoPlot workspace (*.pwsb, *.pws) file.
- **Save Workspace ...** Save all the graphs as a collection of models to a PrestoPlot workspace (*.pwsb) file.

  > **N.B.** The current state of all the graph windows (Minimized, Maximized, Normal) is also saved.

- **Load Project ...** Load datasets and new graphs from a PrestoPlot project (*.ppj) file.
- **Save Project ...** Save all the current datasets and graphs to a PrestoPlot project (*.ppj) file.
- **Copy Graph to Clipboard (1)** Copy the current graph to the windows clipboard as Windows Metafile data. (only available on the windows platform)
- **Print Graph (1)** Print the current graph to a windows printer
- **Save Graph as Image ... (1)** Save the current graph as an image file (currently png/gif/emf/eps are supported on windows and png/gif/eps on Linux with ps available on some Linux systems).
- **Duplicate Graph** Make a new copy of the current graph.
- **Save all Graphs as Images ... (1)** Let the user choose a target directory and save all graphs as image files in this directory. Image format can be choosen from the HardCopy tab of the Preferences window. Format is png by default.

  > **N.B.** If the Hardcopy Marker option is on, the current time and date will be displayed on the graph for all hardcopy options (1).

- **Export HTML Report ...** Let the user choose a target directory and generate an HTML report that shows all opened graphs in PNG and PGR format, and a PCF to reopen all the graphs in PrestoPlot.
- **New Graph** Create a new empty graph window, new data can be added or removed using the right mouse button (see Adding/Removing graph elements).
- **New Graph using selection** Create a new graph window and add all the data sets currently selected in the Data sets window.
- **Time Markers** Show/Hide the display of the Time Markers on all graphs.
- **Display Data sets** Display the Data sets window.
- **Calculator** Display the Calculator window.
- **Exit** Leave the PrestoPlot program and save all current configuration data to the .ini file.

10.2.2 Window Menu

The **Window Menu** contains the following commands:

- **Tile across** Rearrange all windows with equal size in rows and columns as a grid.
- **Tile horizontally** Rearrange all windows with equal size from top to bottom.
- **Tile vertically** Rearrange all windows with equal size from left to right.
- **Cascade** Rearrange all windows overlapping from the top left corner so that all the window titles are visible.
- **Tile Graphs across** Rearrange Graph windows with equal size in rows and columns as a grid.
- **Tile Graphs horizontally** Rearrange Graph windows with equal size from top to bottom.
- **Tile Graphs vertically** Rearrange Graph windows with equal size from left to right.
- **Cascade Graphs** Rearrange Graph windows overlapping from the top left corner so that all the window titles are visible.
- **Restore all** Restore all the windows.
- **Arrange icons** Rearrange all the iconified (minimized) windows at the bottom of the main window.
- **Maximize all** Make all windows as large as possible.
- **Minimize all** Make all windows the size of a small part of the windows title bar.
- **Maximize Graphs** Make all Graph windows as large as possible.
- **Minimize Graphs** Make all Graph windows the size of a small part of the windows title bar.
- **Delete all graphs** Close all the Graph windows **after** confirmation from the user.
- **Reopen last closed graph** Reopen the last closed graph if datasets are still present.
- **Window list** The rest of the window menu contains one entry for each window on the display with a check mark in front of the currently raised window.

10.2.3 Configure Menu

The **Configure Menu** contains the following commands:

- **Preferences** Display the Preferences window.
- **Command Line** Display the Command Line window.
- **Hide Tool Bar/Show Tool Bar** Alternatively remove or add the Tool Bar from the main window.
- **Hide Date Bar/Show Date Bar** Alternatively remove or add the Time marker from the main window.
- **Hide Tab Bar/Show Tab Bar** Alternatively remove or add the Window Tab Bar from the main window.

10.2.4 Help Menu

The **Help Menu** contains the following commands:

- **Help** Display the Help with the contents page open.
- **About** Display information about PrestoPlot.

10.3 Tool Bar

> N.B. Some tool bar buttons can be used with both left and right mouse buttons.

Icon	Action
	**Open New Data File(s)** Load in new data file(s) containing a collection of data sets from either G3 file(s) (*.tsv), CIC file(s) (*.txt), zip file(s) (*.zip) or Tab file(s) (*.tab, *.txt). A Shift click or right mouse click on this button will Open the CSV Configure dialog for the chosen file.
	**Import Data File(s)** Load in new data file(s) containing a collection of data sets by using an external Import Plug-in N.B. This button is only available if an Import plugin is registered.
	**Load Command File** Load a command (*.pcf) file. Any commands in the file will be executed as if the user had performed the action.
	**Save Command File** Open the Preferences to save a command (*.pcf) file.

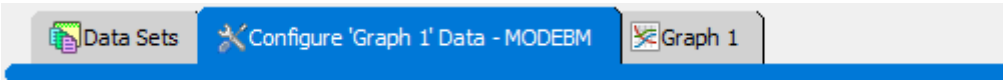
Icon	Action
	**Command line** Open the Command line window.
	**Load Model** Create a new graph using the data set names and graph attributes found in a PrestoPlot model (.pmdb, .pmd) or graph (*.pgrb, *.pgr) file. N.B. If a graph file is loaded all attributes will be used (including date axis attributes except the start and end dates), no data will be loaded. A right mouse click on this button defaults to a .pgr file extension for the open file dialog box.
	**Save Model** Save the current graph (element names, axes, attributes, markers) - but no data values - to a PrestoPlot model (*.pmdb) file. N.B. The time axes attributes are saved except the start and end limits: a model file can be used to display data sets from different files and the time base is not guaranteed to be identical between files.
	**Load PGD** Create new graphs using the information found in a PrestoPlot Graph Description File (*.pgd) file.
	**Save PGD** Save the current graph (element names, axes, attributes - but no data values - to a PrestoPlot Graph Description File (*.pgd) file. This will ask for a filename then open a dialog to configure a set of options.
	**Load Graph** Create a new graph using the data sets and attributes found in a PrestoPlot graph (*.pgrb, *.pgr) file.
	**Save Graph** Save the current graph including all attributes (including markers) and data values to a PrestoPlot graph (*.pgrb) file.
	**Load Workspace** Create a set of new graphs using the data set names and attributes found in a PrestoPlot workspace (*.pwsb, *.pws) file.
	**Save Workspace** Save all the graphs as a collection of models to a PrestoPlot workspace (*.pwsb) file. The current state of all the graph windows (Minimized, Maximized, Normal) is also saved.
	**Load Project** Load datasets and new graphs from a PrestoPlot project (*.ppj) file.
	**Save Project** Save all the current datasets and graphs to a PrestoPlot project (*.ppj) file.
	**Copy Graph to Clipboard (1)** Copy the current graph to the windows clipboard as Windows Metafile data. (only available on the windows platform)
	**Save as Image (1)** Save the current graph as an image file (currently png/gif/emf/eps are supported on windows and png/gif/eps on Linux with ps available on some Linux systems).
	**Print Graph (1)** Print the current graph to a windows printer. N.B. If the Hardcopy Marker option is on, the current time and date will be displayed on the graph for all three hardcopy options (1).
	**New Graph** Create a graph window and add all the data sets currently selected in the Data Sets window.
	**Time Markers** Show/Hide the display of the Time Markers on all graphs.
	**Duplicate graph** Make a new copy of the current graph.
	**Delete All Graphs** Close all the Graph windows after confirmation from the user.

Icon	Action
	**Display Data Sets** Display the Data Sets window.
	**Display data** Display the Show Data window.
	**Calculator** Display the Calculator window.
	**Tile across** Rearrange all windows with equal size in rows and columns as a grid. A right mouse click on this button will arrange only the graph windows.
	**Maximize all** Make all windows as large as possible. A right mouse click on this button will maximise only the graph windows.
	**Preferences** Display the Preferences window.
	**Help** Display the Help window with the contents page open. A right mouse click on this button will display the help page for the currently raised window.

> **Tip**
> It is possible for Plugins to add extra tool buttons.

10.4 Window Tab Bar

10.4.0.1 User Interface



The window tabs bar displays a tab for each open window in the main window.

The `Graph` tabs are always at the right hand end and the `Data Sets` tab is always at the left hand end, the remaining tabs are inserted just after the Data Sets tab.

A left mouse click on a tab will bring the associated window in front of the others (raised).

A middle mouse click on a tab will close the associated window.

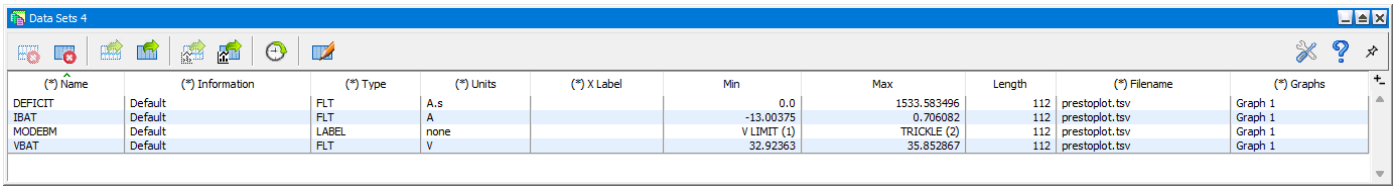
> **Tip**
> When lots of windows are open there may not be enough space to display all the tabs on the screen in which case the tabs can be dragged left and right with the middle mouse button or by using the mouse-wheel.

> **Tip**
> To be able to easily find a graph window it is possible to change the text on the tab (and the graphs title bar) by clicking the graph tab when it is selected or selecting "Rename Graph" from the Graph Menu.

The graph tabs can be reordered using the two blue arrow buttons on the right hand of the tab bar, when a graph has been raised.

10.5 Data Sets Window

10.5.0.1 User Interface



The **Data Sets** window displays a table with one row per dataset and 12 columns:

Column	Description
Name	Name of the dataset. (*)
Information	Name of the source packet, the description of the parameter (see File Formats) or other information for this set of data. (*)
Type	`FLT` for numerical values, `LABEL` for state values `LABEL + FLT` for mixed numerical/state.
Units	Units name (used as Y axis label in graphs), or none. (*)
X Label	Label for the dataset's X axis. (*)
Data X	Name of the data vector for X values (usually dates). (¹)
Data Y	Name of the data vector for Y values. (¹)
Min	Smallest Y value in set.
Max	Largest Y value in set.
Length	Total Number of data values.
Filename	File from which the dataset was loaded.
Graphs	List of graph windows containing this dataset.

Elements in the list can be selected by clicking the elements with the left mouse button, the selection can be extended using the shift key and the left mouse button and single elements added/removed using the Control key and the left mouse button.

> **(*)**: Column values can be changed by pressing the  edit mode button and clicking on the cell to change the contents. Pressing the  while in edit mode will leave the edit mode.
>
> **(¹)**: Columns are hidden by default, but can be viewed using the  menu on the top right hand of the table.

Note

Datasets with mixed Labelled and Numerical data values will have a colored background (by default light Orange) Datasets with non dated x-values data values will have a colored foreground (by default Purple).

Tip

The columns can be sorted by clicking on the column headers, a second and successive clicks will reverse the order of the sort.

The Data Sets window can be used to manipulate the data sets in several ways:

- A double click with the left mouse button will open a new graph with the selected data displayed.
- Pressing Enter on the keyboard will open a new graph with the selected data displayed.
- A right mouse click on the data sets list will display a popup menu with a set of actions which change depending on the current selected datasets and the element under the mouse pointer.
- Single data sets can be displayed in the Statistics window by clicking with the right mouse button directly on the data element and selecting the 'Statistics' option from the menu (N.B. this action does not use the- current selection but the nearest to the mouse cursor - even if it is past the end of the table).
- Selected data sets can be displayed on any Graph window by dragging the elements with the left mouse button pressed onto the graph window to be used and releasing the button.
- Selected data sets can be deleted - after confirmation - by dragging the elements with the left mouse button pressed and releasing the button anywhere but over a graph window or the calculator.
- Selected data sets can be deleted - after confirmation - by pressing the DELETE key.
- Selected data sets can be inserted into the calculator formula - by dragging the elements with the left mouse button pressed onto the Calculator window and releasing the button.

10.5.1 Tool Bar

Icon	Action
	**Delete selected datasets** Will ask confirmation to delete all the selected data
	**Delete all datasets** Will ask confirmation to delete all the data sets.

Icon	Action
	**Export selected datasets** Will ask for a filename to export the data for the selected data sets as a Tab File.
	**Export all datasets** Will ask for a filename to export the data for all the data sets as a Tab File.
	**Export selected dataset statistics** Will ask for a filename to export the statistics for the selected data sets.
	**Export all dataset statistics** Will ask for a filename to export the statistics for all the data sets. See: the Statistics File page for details.
	**Sort all datasets** Sort all of the datasets into chronological order (apply to dated datasets only).
	**Edit Mode** Activate/deactivate edit mode to allow editing the Name, Information, Units and Xlabel of any dataset.
	**Preferences** Open the data preferences tab.
	**Help** Display the help for the Dataset window.
	**Hide tool bar** Remove the tool bar for this window. (N.B. The tool bar can be restored in the window menu).

Tip

The tool bar can be placed on any of the edges of the graph window by dragging it to that edge or pressing the right mouse button on any blank space and selecting an edge on the popup menu.

10.5.2 Data Sets popup Menu

The data sets menu can display the following entries:

Icon	Action
	**New Graph** Create a new graph and display the selected datasets.
	**New Individual Graphs** Create a new graph for each of the selected datasets.
	**Statistics** Open the 'Statistics' window for this dataset.
	**Sort Chronologically** Sort this dataset (and any associated datasets) into chronological order (apply to dated datasets only).
	**Adjust dates** Change the format or adjust the dates for this dataset.
	**Convert to SECONDS** Change the format for the X-axis of this dataset to SECONDS.
	**Set/Edit Labels** Change the set of associated label values for a dataset.
	**Delete dataset** Ask confirmation to delete this dataset.
	**Fast Fourier Transform** Create the Spectrum Phase and Spectrum Modulus datasets based on frequency.
	**Function** Use the calculator function to generate new datasets by applying the function. (The remaining menu entries depend on the number and order of the selected datasets.)

> **Tip**
> The available functions can vary depending on which groups of functions are active and the order they are selected.

10.5.3 Data Sets window Menu

The data sets menu contains the following specific entries:

- **Delete Selected Data** - Will ask confirmation to delete all the selected data sets.
- **Delete all Data** - Will ask confirmation to delete all the data sets.
- **Export Selected Data** - Will ask for a filename to export the data for the selected data sets as a Tab File.
- **Export all Data** - Will ask for a filename to export the data for all the data sets as a Tab File.
- **Export Statistics for Selected Data** - Will ask for a filename to export the statistics for the selected data sets.
- **Export Statistics for all Data** - Will ask for a filename to export the statistics for all the data sets.
  See: the Statistics File page for details.
- **Sort all Data** - Sort all of the datasets into chronological order (apply to dated datasets only).
- **Hide Tool Bar/Show Tool Bar** - Hide/Show the tool bar for this window.

> **Tip**
> The title bar contains a count of the number of data sets in memory.

10.5.4 Filtering

PrestoPlot implements a filtering mechanism on the dataset table to reduce the contents.

Any table column which displays a `(*)` just before the title for the column will allow filtering on the contents of the column. The filtering will hide all the rows in the table which do not correspond to the current filter. If a filter is active on a column, then the label will display the text of the filter between the `()`'s without the `*`

There are different forms of filters available:

- **Pre-defined filters** for quick access.
- **Custom** filters which allow three special characters, '`*`' which replaces any set of characters, '`?`' which replaces exactly one character and '`|`' which allows to apply many filters at the same time.
  e.g. *ABC will display only the lines containing any text with ABC at the end in this column.
  e.g. *A|*B will display the lines containing any text with A or with B at the end in this column.

For some columns, filters for all the elements are available by right-clicking on the head of the column, if the number of different elements is less than 20.

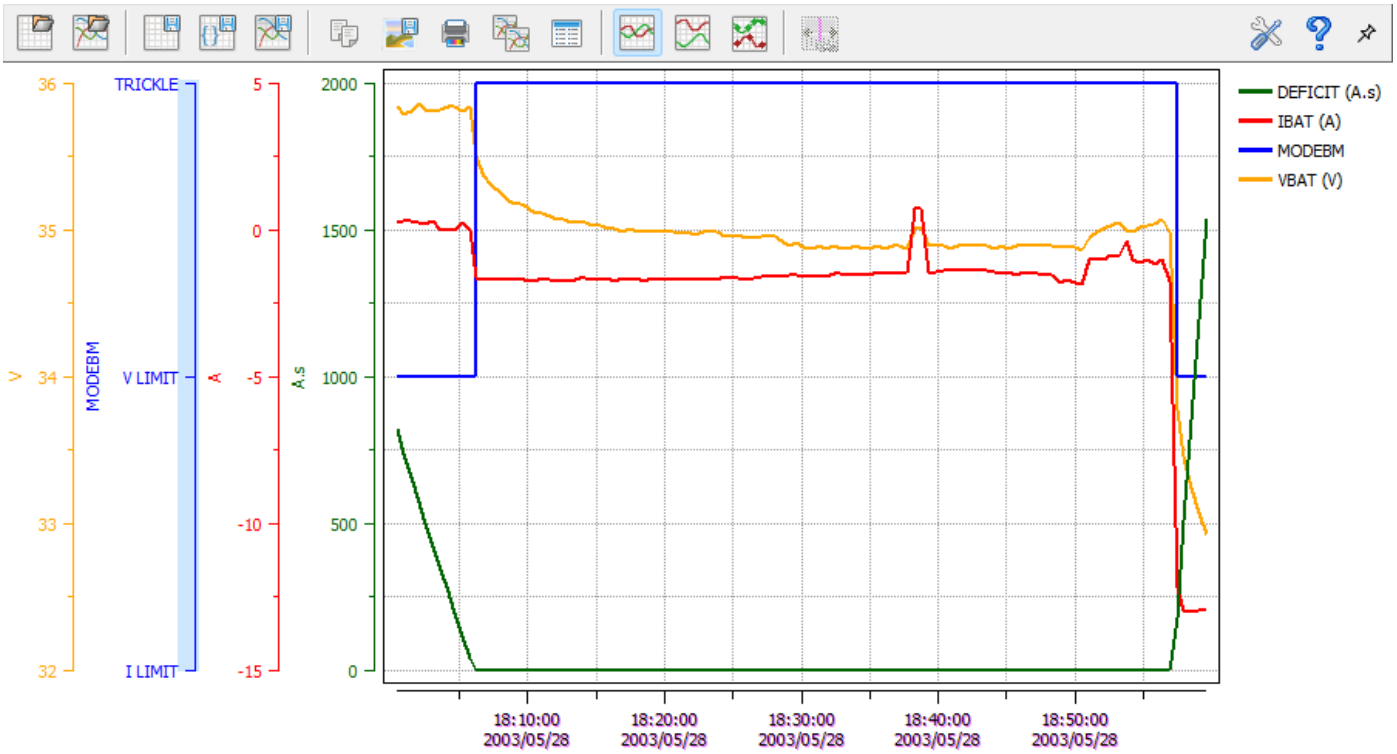
Multiple columns can be filtered at the same time and only the rows which correspond to all of the active filters will be displayed.

The column filter menus allow resetting the current filer for a column or resetting all filters on the table.

10.6 Graphs

PrestoPlot can display a large number of Graph windows (Tested with > 100) at the same time.

10.6.0.1 User Interface



A Graph window contains the following elements:

- Window Menu - All actions local to this graph.
- Tool Bar - Actions local to this graph.
- Graph - The traced data values.
- Axes - One axis for each unit displayed and one for each timebase.
- Legend - The list of all the displayed data sets.

10.6.1 Graph Window Menu

The graph menu contains the following specific entries:

- **Import Model ...** - Use the graph attributes found in a PrestoPlot model (*.pmdb, *.pmd) or graph (.pgrb, .pgr) file on this graph.

  > N.B. If a graph file is loaded all attributes will be used (including date axis attributes except the start and end dates), no data will be loaded.

- **Import Graph ...** - Use the data sets and attributes found in a PrestoPlot graph (*.pgrb, *.pgr) file on this graph.
- **Save Model ...** - Save this graph (element names, axes, attributes, markers) - but no data values - to a PrestoPlot model (*.pmdb) file.

  > N.B. The time axes and their attributes are not saved: a model file can be used to display data sets from different files and the time base is not guaranteed to be identical between files.

- **Save Graph ...** - Save this graph including all attributes (including markers) and data values to a PrestoPlot graph (*.pgrb) file.
- **Copy to Clipboard (1)** - Copy this graph to the windows clipboard as Windows Metafile data. (only available on the windows platform)
- **Print ... (1)** - Print this graph to a windows printer.
- **Save as Image ... (1)** - Save this graph as an image (currently png/gif/emf/eps are supported on windows and png/gif/eps on Linux with ps available on some Linux systems).

  > N.B. If the Hardcopy Marker option is on, the current time and date will be displayed on the graph for the three hardcopy options (1).

- **Show Data Table** - Display the Show Data window linked to this graph: selecting any data points on the graph will highlight the data values in the show data - window.
- **Hide Tool Bar/Show Tool Bar** - Hide/Show the tool bar for this graph window.
- **Rename Graph** - Change the displayed title for this graph window.
- **Configure Graph** - Display the Configure Graph window for this graph.
- **Configure Axes ->** - This submenu contains an entry for each displayed axis which will display the Configure Graph Axis window to change the appearance of the axis on this graph.
- **Configure Data Set ->** - This submenu contains an entry for each displayed data set which will display the Configure Graph Data window to change the appearance of the data sets on this graph.
- **Reset Zoom** - Reset the all axes back to their original settings (same as 'Reset limits' for each axis), and empty the zoom stack.

  > N.B. Using both the Configure Graph Axis window to change axes limits and the graph zooming may have an unexpected effect on the graph. Use this menu option to restore the zoom

10.6.2 Tool Bar

Icon	Action
	**Import Model** Use the graph attributes found in a PrestoPlot model (*.pmdb, *.pmd) or graph (*.pgrb, *.pgr) file on this graph. N.B. If a graph file is loaded all attributes will be used (including date axis attributes except the start and end dates), no data will be loaded.
	**Import Graph** Use the data sets and attributes found in a PrestoPlot graph (*.pgrb, *.pgr) file on this graph.
	**Save Model** Save this graph (element names, axes, attributes, markers) - but no data values - to a PrestoPlot model (*.pmdb) file. N.B. The time axes and their attributes are not saved: a model file can be used to display data sets from different files and the time base is not guaranteed to be identical between files.
	**Save to PGD file** Save this graph (element names, axes, attributes - but no data values) to a PrestoPlot Graph Description File. This will ask for a filename then open a dialog to configure a set of options.
	**Save Graph** Save this graph including all attributes (including markers) and data values to a PrestoPlot graph (*.pgrb) file.
	**Copy Graph to Clipboard (¹)** Copy this graph to the windows clipboard as Windows Metafile data. (only available on the windows platform)
	**Save as Image ... (¹)** Save this graph as an image (currently png/gif/emf/eps are supported on windows and png/gif/eps on Linux with ps available on some Linux systems).
	**Print Graph (¹)** Print this graph to a windows printer. N.B. If the Hardcopy Marker option is on, the current time and date will be displayed on the graph for all three hardcopy options (¹).
	**Duplicate graph** Make a new copy of the current graph.
	**Display data** Display the Show Data window linked to this graph: selecting any data points on the graph will highlight the data values in the show data window.
	**Overlay axes** Reset limits of all vertical axes, so the datasets will be overlayed. N.B. This will restore the mouse wheel zooming on all unlocked axes, indicated by the button staying highlighted.
	**Spread axes** Spread all vertical axes: adjust the limit of each Y axis to make sure the datasets don't overlay. N.B. This will also limit the mouse wheel zooming to only horizontal axes, indicated by the button staying highlighted.
	**Activate data points** Activate all the data points using the ActiveSymbol (default circle).
	**Scroll Lock** Block/Allow the Time server scrolling when the date changes. This allows the graph data to be viewed without scrolling to follow the time marker. When pressed (unlinked) the time marker will update its position but the graph will no longer scroll to keep the time marker visible.
	**Graph Configure** Display the Configure Graph window for this graph.
	**Help** Display the help for the Graph.

Icon	Action
	Hide tool bar Remove the tool bar for this graph. (N.B. The tool bar can be restored in the window menu).

> **Tip**
> The tool bar can be placed on any of the edges of the graph window by dragging it to that edge or pressing the right mouse button on any blank space and selecting an edge on the popup menu.

> N.B. Some tool bar buttons can be used with both left and right mouse buttons.

10.6.3 Graph

The graph plot area shows the plot lines for each data element. The appearance of the plot region can be changed in the configure graph window (button). It is possible to move the whole graph area by dragging using the left mouse button on any part of the plotting area that does not contain data or markers.

> **Tip**
> Pressing the Alt key while dragging the graph will update the horizontal time axes of all graphs to the same limits.

10.6.3.1 Data Point Information

Pressing the left mouse button over any of the data lines will display a small popup showing information about the closest data value to that point (**N.B.** If this graph is linked to the Show Data window the corresponding data value in the show data window will be highlighted. Pressing the right mouse button over any of the data lines will display a menu to copy the date or the value of the data point to the clipboard.

> **Tip**
> Activating the data point display will facilitate selecting a specific point.

10.6.3.2 Zooming

PrestoPlot allows two different methods for zooming a region of the graph:

- **Selecting a region** - A region of the plot area can be enlarged by dragging out a rectangle with the middle mouse button pressed, the selected region will increase in size to fill the whole plot area. A new region can be selected within a previously zoomed region. To return back to the previous zoom, click on the plot region with the right mouse button.
- **MouseWheel** - Turning the wheel on a mouse will zoom in or out one step for each click. The zoom will center on the current mouse position on the graph.

> **Tip**
> Using the Right mouse button with the Shift key pressed will reset the zooming.

> **Tip**
> - Pressing the Shift key while zooming with the mousewheel will fix the zoom to 50% per step.
> - Pressing the Control key while zooming with the mousewheel on a graph will constrain the zoom to only horizontal axes.
> - Pressing the Alt key while zooming on a graph will update the horizontal time axes of all graphs to the same time limits.

It is also possible to selectively zoom one axis of the graph (even when locked) by selecting a part of the axis using the middle mouse button or using the mousewheel. (if this axis has been synchronised with other axes then the other axes may also be changed, see Synchronisation). If the selection is started on a tick value then the selection will be limited to major tick values and the current limits, and if the selection is started on the axis line then any range of values can be selected. The new limits will be displayed during the selection.

10.6.4 Axes

There are Y axes representing each data unit type and X axes representing each time base or unit type: their appearance can be changed by clicking on the axis with the right mouse button to display the Configure Graph Axis window. If the Folding option is active in the preferences then there may be only one Y axis for each group of identical labelled axes. If two non date X axes have the same X label then there will be only one X axis for each unit value. It is possible to separate these X axis by changing the **X label** in the Dataset window for any dataset using the X data.

> **Tip**
> The axis will change color when the mouse pointer is positioned over it to make actions easier.

10.6.4.1 Sliding

It is possible to change both the start/min and end/max limits of any axis by sliding the axis using the left mouse button, the new limits and the distance of the slide will be displayed during the slide (if this axis has been synchronised with other axes then the other axes may also be changed, see Synchronisation).

> **Tip**
> Pressing the **Alt** key while sliding a time axis will update the horizontal time axes of all graphs to the same limits.

10.6.5 Legend

The legend gives the list of all drawn data sets with an example of their plot line The legends position can be changed in the Configure Graph window (button).

> N.B. Using the right mouse button to click on an entry in the legend will display the Configure Graph Data window, which can be used to change the appearance of the graph element.

> **Tip**
> Clicking on the name of an dataset will activate all the data points using the ActiveSymbol.

10.6.6 Adding or Removing data

Data sets can be added to the graph window by selecting the sets in the data sets window and dragging them with the left mouse button pressed onto the graph window and releasing the button.

> **Tip**
> It is also possible to drag single data sets between two graphs using this method.

Data sets can be removed from the graph by dragging them out of the graph window (but not onto another graph window).

10.6.7 Time Markers

A set of synchronised time markers (all the markers show the same date) can be activated for all graphs from the Tool bar. The time markers can be moved by dragging them with the left mouse button and all the markers on all the graphs will move at the same time. Including scrolling the graphs to make the markers visible unless the Scroll Lock is active.

A right mouse click on the marker will open the Configure Time Marker dialog.

> N.B. If the date axes on a graph are not synchronised, it is possible to see the multiple time markers (one for each date axis).

> **Tip**
> If the time marker is not in the visible space of a graph then PrestoPlot will display a small arrow button (or) indicating the direction of the marker, a left mouse click on the arrow will adjust the associated date axis so that the time marker is in the middle of the graph.

10.7 Complete Guide to Using the Mouse in PrestoPlot

PrestoPlot is designed for smooth and fast interaction, where the mouse plays a central role. This guide details all possible mouse actions, grouped by usage context (where you click) to make learning easier.

10.7.1 In the "Dataset" Window

The "Dataset" window is your starting point. This is where you select the data to visualize.

Button	Action	Result
Left Click	Single click on one or more datasets	Selects the datasets for a future action.
Right Click	Click on a selection of datasets	Opens a context menu to: • **Create a new chart** (`New Graph`).

Button	Action	Result
		• Edit the attributes of the dataset (name, unit, etc.). • Access calculator shortcuts (e.g.: `delta`, `delta_t`).

10.7.2 In a Graph window

This is the main interaction space for visual analysis of your data.

Button	Action	Result
Left Click	Click on a curve	Displays the coordinates (value and time) of the point closest to the cursor.
	Hold left click + move on the graph	Allows you to move the graph (Pan).
	Hold left click + move on an axis	Allows you to move along the axis (Pan).
Right Click	Click in an empty area of the chart	Cancels the last **rectangle** zoom operation.
	Shift + Right click	Cancels **all** zooms and returns to the initial view.
Middle Button	Hold middle click + draw a rectangle	Precisely zooms into the area defined by the rectangle.
	Hold middle click + draw a line on an axis	Zooms into the selected interval on that axis.
	Hold middle click on the graduation of an axis	Allows very precise zooming, "snapping" from ticks to ticks.
Scroll Wheel	Scroll the wheel	Zooms in or out progressively, centered on the cursor position, as in a mapping software.
	Scroll the wheel on a specific axis (which appears in bold)	The zoom applies only to that axis.
	Shift + Scroll	Zoom in or out using a higher zoom factor.
	Control + Scroll	Zoom in or out **ONLY** on the X axis.

10.7.3 On Chart Elements (Legend, Axes, Title)

These actions allow you to finely configure the appearance and properties of your chart.

Context	Button	Action	Result
Legend	**Left Click**	Click on a dataset name	Shows or hides symbols for each point of the curve.
	Right Click	Click on a dataset name	Opens the curve configuration window (style, color, thickness, coloring, "pens" configuration for conditional coloring).
Axes	**Right Click**	Click on an axis (X or Y)	Opens the axis configuration window (range, graduations, label, color, etc.).
Graph name	**Right Click**	Click on the chart tab	Allows renaming the chart.

10.7.4 On Markers

Markers are analysis tools that allow you to point to precise values on your curves.

Button	Action	Result
Left Click	Hold left click + move on the **marker line** (when the background turns blue)	Moves the marker to change the pointed value. The displayed values update dynamically. On a "point" marker, this moves the marker from measurement point to measurement point.
	Hold left click + move on the **marker text** (when the background turns blue)	Repositions the marker label (text) without changing the pointed value.

Button	Action	Result
	Shift + Hold left click + move on the **marker line** (when the background turns blue)	Repositions the marker (vertical or horizontal) constraining the position to data values only.
Right Click	Click on a marker	Opens its attribute window to change style, color, value format, etc.

10.8 Keyboard Shortcuts

10.8.1 PrestoPlot Keyboard Shortcuts

PrestoPlot accepts several keyboard shortcuts which are associated with the window type which is currently raised (Has the ksyboard focus).

10.8.1.1 Any window raised

Shortcut	Action
F1	Display the online help for the currently raised window.
SHIFT-F1	Start the context help and wait for the left mouse button to select an object.
F2	Open a new graph with the currently selected data sets from the Data Sets window loaded or an empty graph if there are none selected.
F3 or Control-o	Open a new data file.
Shift-F3 or Control-Shift-O	Open a new data file In the CSV Configure dialog.
F5	Load a command (*.pcf) file.
F6	Import a data file by calling an Import Plug-in.
F7	Display the Command Line window.
F8	Display the Preferences window.
F9	Display/Hide the Tool bar of buttons at the top of the screen.
F10	Display/Hide the Date bar (Only if a Time server plugin is loaded) at the top of the screen.
F11	Display/Hide the bar of tabbed window selections.
ESCAPE	Cancel the context help or any dialog window.
ENTER	When pressed in any text entry zone PrestoPlot will process the contents of the entry (IF its contents are valid).
Control-d	Duplicate the last opened graph.
Control-Shift-D	Delete all datasets after confirmation.
Control-Shift-G	Reopen the last closed graph if datasets are still present.
Control-v	Import the contents of the clipboard as a generic CSV file. If the clipboard contains a file path (copy option in explorer) then load the file as if dropped.
Control-Shift-V	Import the contents of the clipboard using the CSV Configure dialog. If the clipboard contains a file path (copy option in explorer) then load the file as if dropped.
Control-w	Close the topmost window.
Control-Shift-W	Delete all graphs after confirmation.
Alt-Left	Move the current graph tab to the left.
Alt-Right	Move the current graph tab to the right.
Control-TAB	Switch the current tab to the next tab to the right, wrap to the leftmost if it is the last one.

Shortcut	Action
Control-Shift-TAB	Switch the current tab to the next tab to the left, wrap to the rightmost if it is the first one.

> **TIP:** All the text entry boxes use the standard windows command keys to move the cursor, select and copy/paste text.

10.8.1.2 Data Set window

Shortcut	Action
DELETE	Delete (after confirmation) any selected data sets.
ESCAPE	Leave editing mode.
ENTER	Open selected datasets on a new graph.
Control-a	Select all datasets.

10.8.1.3 Graph window

Shortcut	Action
Control-c	Copy the contents of the graph to the windows clipboard or copy the text of a highlighted marker.
Control-i	Save the contents of a graph as an image.
Control-p	Copy the contents of the graph to a windows printer.
DELETE	Delete a highlighted marker.

10.8.1.4 Date entry boxes

Date Axis, Marker and Adjust Date Date entry boxes

Shortcut	Action
Control-a	Select all the text in the entry.
Up	Add 1 minute to the current time.
Down	Remove 1 minute from the current time.
PG-Up	Add 1 hour to the current time.
PG-Down	Remove 1 hour from the current time.
Control-PG-Up	Add 1 day to the current time.
Control-PG-Down	Remove 1 day from the current time.
	The standard windows keys to move the cursor, select and copy/paste text.

10.9 PGD Save dialog

The PGD save dialog has three options:

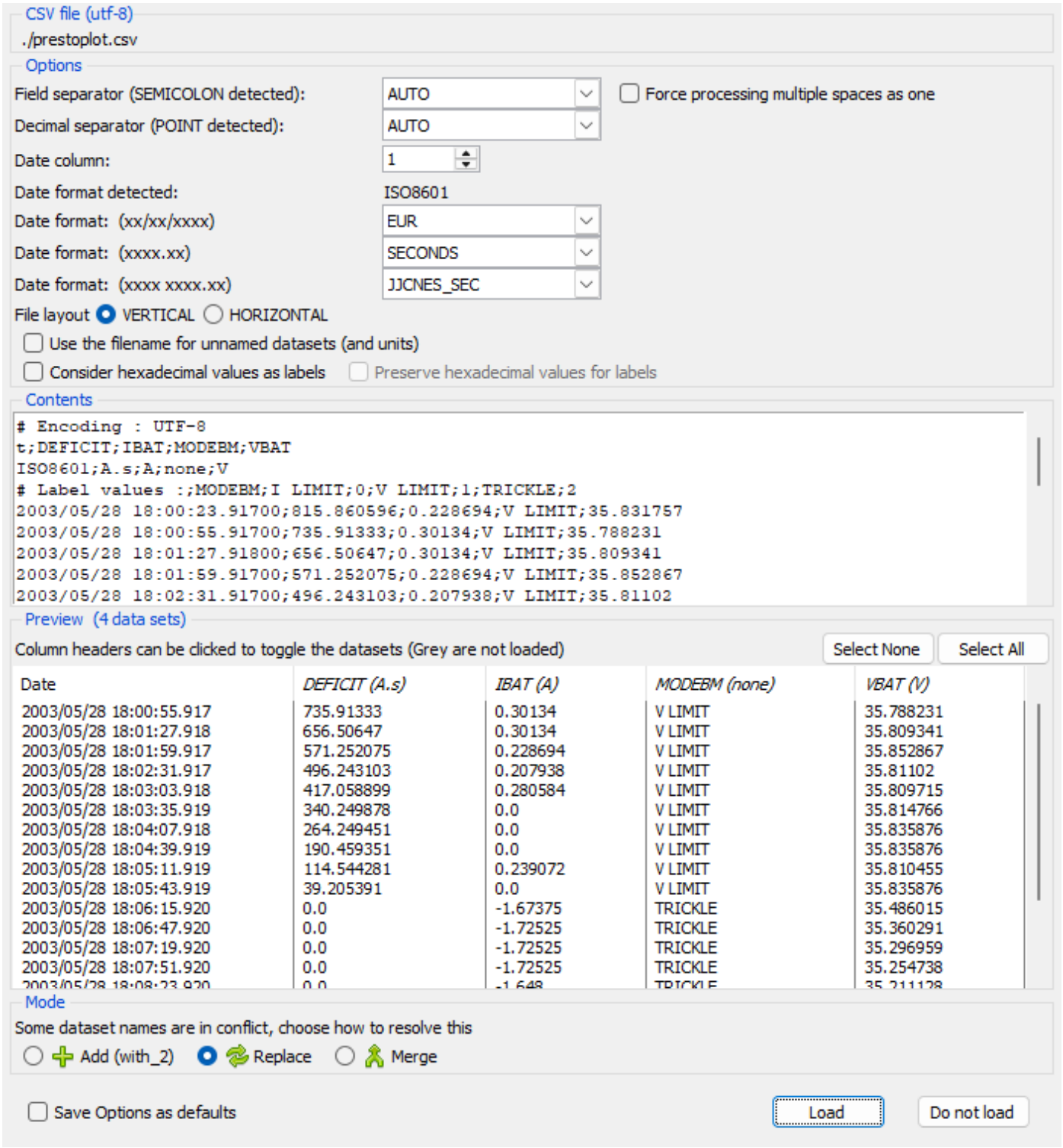
- **PGD file** - The path to the PGD file to create. The open button allows changing the file.
- **Optimise output** - Only save options that are different from the default options in **PrestoPlot**.
- **Include X-axis limits** - include the X-axis limits in the PGD file.
- **Include Y-axis limits** - include the Y-axis limits in the PGD file.

> Optimised PGD files **WILL** produce different graphs if the default options are changed or different.

10.10 CSV Configuration dialog

The CSV Load dialog allows configuring the various CSV options to load specific CSV files.

10.10.0.1 User Interface



The dialog is activated by pressing the **SHIFT** key at the same time as opening (Open button, Control-Shift-O, Shift-DropFile, Control-Shift-V) a data file.

The dialog has the following elements:

- **CSV file** - The full path to the file and the encoding used for the load.
- **Options** - The set of configuration options used to process the file contents.
  - Field separator, separating the different columns of data. (use AUTO for automatic detection)
  - Date column, number 1 is the first column. (use 0 for no date columns)
  - Decimal separator used in decimal numbers. (use AUTO for automatic detection)
  - Date format detected.
  - Format to use for calendar dates. (xx/xx/xxxx).
  - Format to use for numerical dates. (xxxx.xx).
  - Format to use for double entry dates. (xxxx xxxx.xx)
  - File layout. The orientation of the data in the file. (VERTICAL/HORIZONTAL)

- Use filename for unnamed datasets. If a CSV file does not contain the naming headers (Names and/or Units) use the name of the file as a base for naming the datasets.

  > e.g. If the file name is 'IBAT(A).csv', then the dataset will be named '**IBAT**' with its units set to '**A**'.

- Select if hexadecimal values (0xnnn) should be imported as labels or decimal values, and if the numeric values should be preserved.

- **Contents** - A textual preview of the file contents.
- **Preview** - An preview of the dataset contents if loaded using the current options. The two buttons will select `NONE` of the columns to be loaded or `ALL` of the columns.

  > N.B. Columns can be removed from being loaded by clicking with the mouse on the column headers. greyed out columns will not be loaded.

> **Tip**
>
> Pressing the SHIFT key and clicking or right clicking on the column header will set this column to the date column.

- **Mode** - The mode used to resolve conflicts with already loaded datasets.

  > N.B. Conflicted datasets have their column names in ITALIC and can be selected to not be loaded.

- **Save options as defaults** - The set of options will be saved to the ini file when the file is loaded.
- **Load** - Load the chosen datasets using the chosen mode if necessary, and close the dialog.
- **Do not load** - Do not load the file and close the dialog.

10.11 Edit Labels dialog

This window allows updating the set of labels associated with a dataset.

See the full description here.

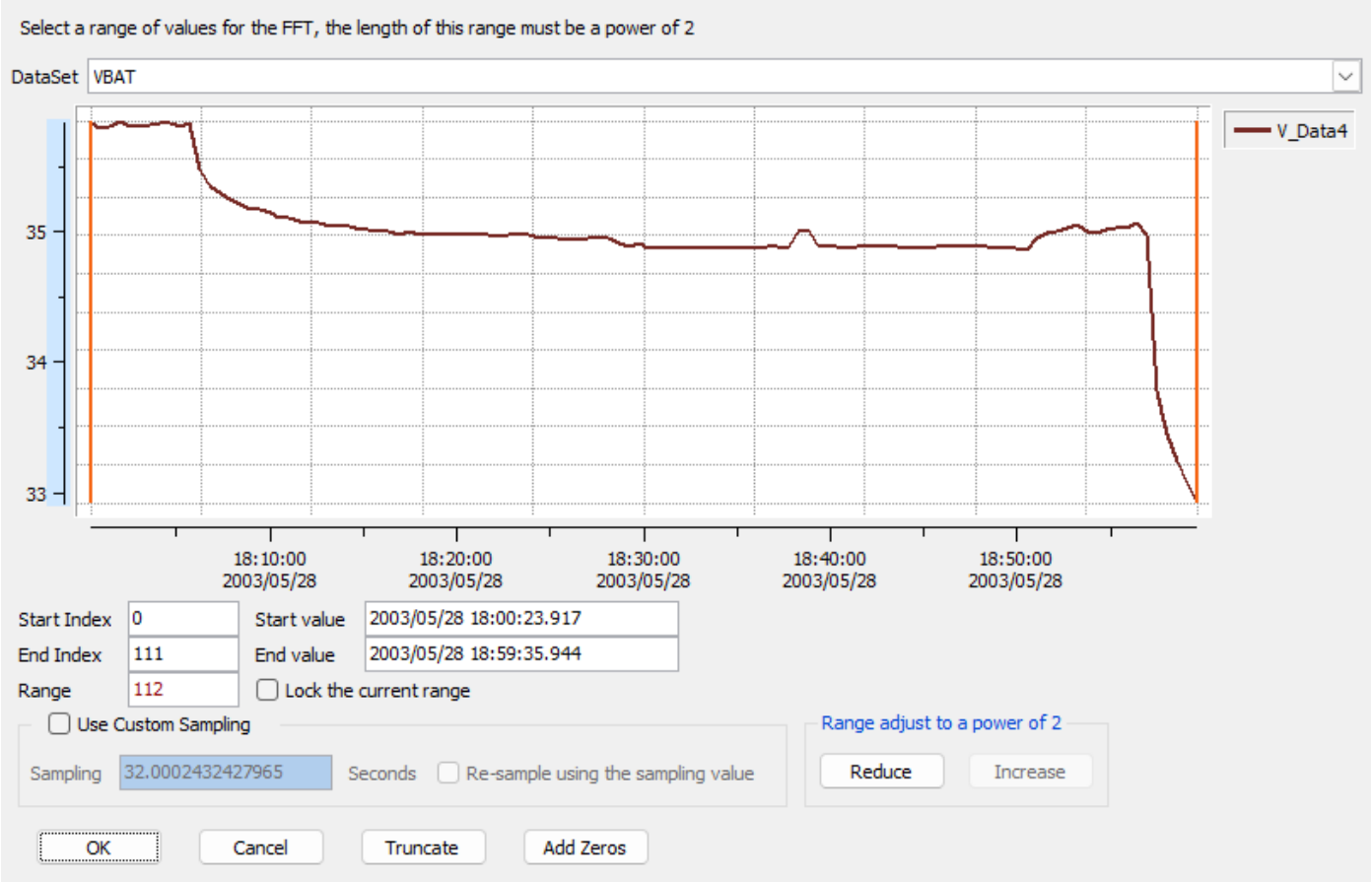
See also the -setlabels command line option.

10.12 FFT dialog

Fast Fourier Tranform - Produce the Spectrum Phase and Spectrum Modulus datasets based on frequency from datasets values. See FFT Wikipedia for more details.

FFT calculation is based on a regular sampling of the input signal.

10.12.0.1 User Interface



The Fast Fourier Transform dialog can be used to configure the options:

- **Dataset** - Select a Dataset from the list.
- **Preview** - dynamic preview of the range to be processed the start/end markers can be used to adjust the range.
- **Range** - The current preview range.
  - Start Index - numerical index of the start marker from the preview.
  - End Index - numerical index of the end marker from the preview.
  - Range - Number of values in the range.
  - Lock the current range - Fix the preview range, moving the start/end markers will move both together.
- **Use Custom Sampling** - Is the custom sampling factor in seconds to use.
- **Re-sample** - If checked will resample the values of the input dataset using the sampling value and the origin date of the dataset.
- **Range adjustment** is used to adjust the range of processing.
  - Reduce - Reduce the preview range to the next smaller power of 2.
  - Increase - Increase the preview range to the next larger power of 2.
- **OK** - Close the dialog and process the settings.
- **Cancel** - Close the dialog without processing.
- **Truncate** - Close the dialog and process the range from 0 to the largest power of 2 possible.
- **Add Zeros** - Close the dialog and process the range from 0 to the next power of 2 possible.

Custom sampling: here it is supposed that data samples are indeed acquired regularly but that the time stamps associated to each of them are not regular. This option takes the sampling value supplied and consider the data samples as they are.

Custom sampling and resampling: here it is supposed that data samples are not acquired regularly and that the time stamps are reliable. This option takes the sampling value supplied and interpolates data values at regular time stamps.

10.13 Command Line Window

Enter and test command line options

- **View Log file** - Contains a copy of the current log file contents.
- **Enter commands** - Try new commands:
  - **Directory** A display of the current directory and a button to change it.

> **Tip**
>
> - The working directory can also be changed using a `set workingdir=directory` command

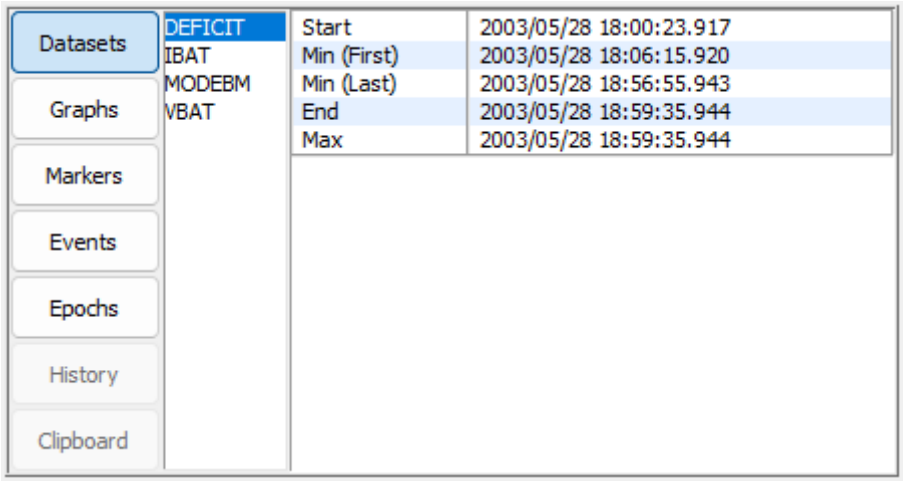
  - **Command** A command entry to try out and add new commands one command at a time, with buttons to execute the command and erase the current command.

> **Tips**
>
> - It is not necessary to add the '-' in front of commands
> - The up/down arrow keys can be used to recall previous commands.
> - Pressing the TAB key will complete commands and dataset names and show possibilities for multiple matches.
> - Pasting multiple command lines will execute them one by one, as if read from a PCF file.

10.14 Date Picker

This popup window allows choosing a date from a collection of dates

10.14.0.1 User Interface



> **Note**
> **PrestoPlot** will do its best to convert the dates into different formats, **however** not all formats are compatible, it is up to the user to choose relevant dates.

The date can be chosen from the following:

10.14.0.1.1 Datasets

The list of datasets available and for each one (in chronological order):

- **Start** - The first date in the dataset.
- **End** - The last date in the dataset.
- **Min** - The date of the minimum value in the dataset.
- **Max** - The date of the maximum value in the dataset.
- **Min (First)** - The date of the first minimum value in the dataset if there is more than one.
- **Min (Last)** - The date of the last minimum value in the dataset if there is more than one.
- **Max (First)** - The date of the first maximum value in the dataset if there is more than one.
- **Max (Last)** - The date of the last maximum value in the dataset if there is more than one.

10.14.0.1.2 Graphs

The list of graphs available and for each one (in chronological order):

- **Min dataset** - The current minimum for the datasets date axis.
- **Max dataset** - The current maximum for the datasets date axis.

10.14.0.1.3 Markers

The list of graphs available and for each one (in chronological order):

- **Marker** - The date for each this markers lines (vertical, point and 2point).

10.14.0.1.4 Events

The list of graphs available and for each one (in chronological order):

- **Event** - The name and date of the event

10.14.0.1.5 Epochs

The list of Epochs configured globally and for each graph (in chronological order):

- **Global** - The configured `DefaultDateFormatEpoch` Epoch date.
- **Graph** - The current Epoch date defined for this graph

10.14.0.1.6 History

A list of the last chosen dates in selection order.

10.14.0.1.7 Clipboard

If the clipboard contains a date then this date can be chosen

10.15 Preferences

The Preferences window allows a number of elements of PrestoPlot to be modified, these changes are saved in a configuration file and will remain between two executions of PrestoPlot.

The window is split into sections using multiple tabs:

- **General** - Miscellaneous configuration options.

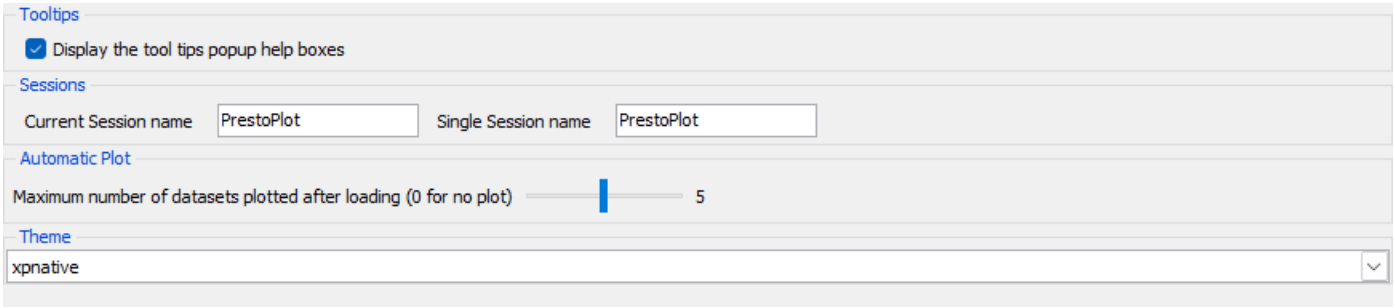
- **Data** - Options to configure data handling.
- **Graphs** - Options to configure graphs.
- **Axes** - Options to configure Axes.
- **Markers** - Options to configure Markers.
- **HardCopy** - Options related to the Hardcopy of a graph window.
- **Calculator** - Options related to the Calculator window.
- **Window Tabs** - Options related to the Window Tab Bar.
- **Command Log** - Options related to the handling of batch files for command line processing.
- **Plugins** - Options related to the handling of any Plug-ins.

10.15.1 Buttons

There are four buttons on the bottom of the preferences window

- **OK** - Apply any changes made to the preferences and close the preferences dialog.
- **Apply** - Apply any changes made to the preferences and leave the preferences dialog open.
- **Cancel** - Close the preferences dialog and cancel any preference changes.
- **Advanced** - Open the Advanced Preferences dialog.

10.15.2 General tab



- **Tooltips** - Display the tool-tips popup help boxes over the tool bars after a short delay.
- **Sessions** - Shows the current session name and the default session name for PrestoPlot. Only **ONE** copy of PrestoPlot can have the same name at a time.

  The current session name can only be changed if no other session has the name.

  If the default session name is changed any new PrestoPlot executions will use the new name, an empty name will allow multiple individual sessions.

  > N.B. The default single session name is ignored if PrestoPlot is used from the command line for more than one data file load/ import or if the command line override option (-nosession) is used.

- **Automatic Plot** - Sets the maximum number of data sets loaded to be automatically plotted (0-10).

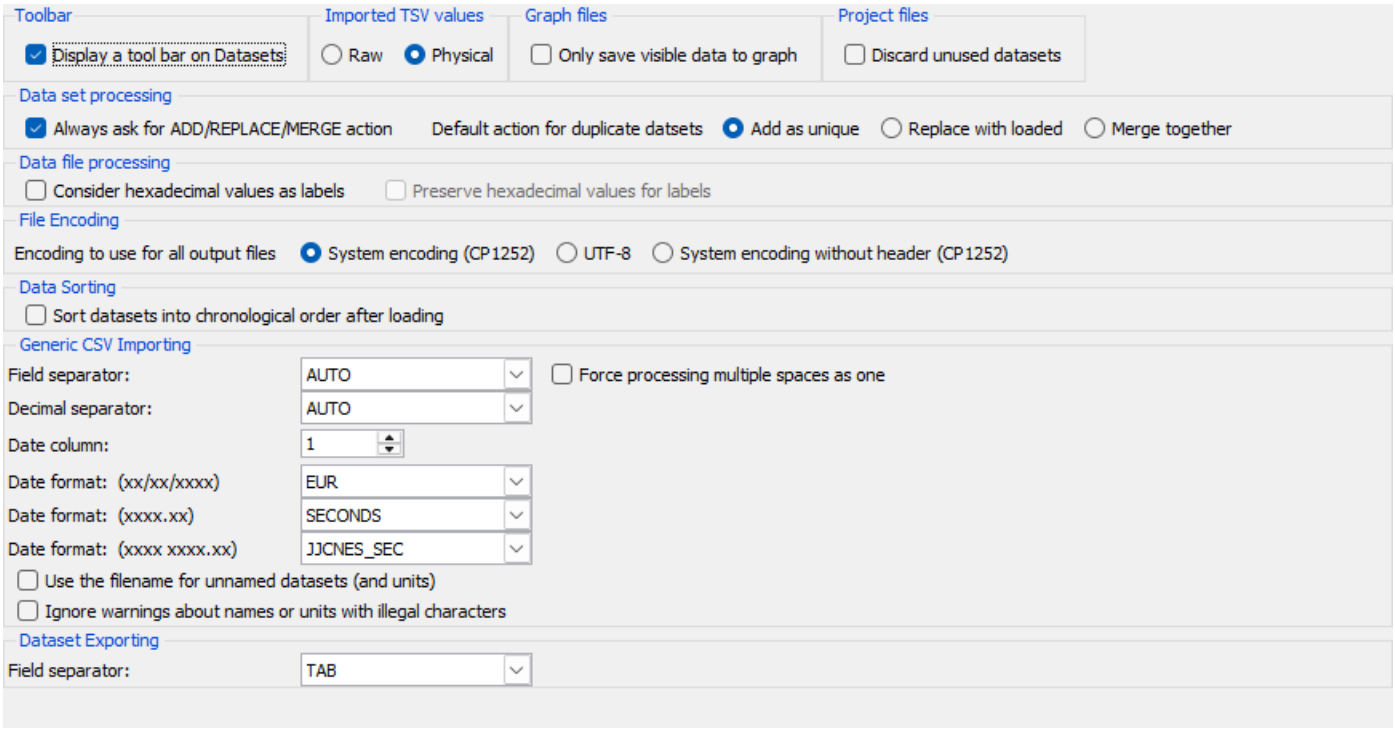
  > Example : If 'Automatic Plot' is 4 and three data sets are loaded from a file, then a graph window will be automatically opened and the three data sets will be added to it.

  Info

  Setting this value to 0 will disable automatic plotting of data

- **Theme** - Change the display theme. Choose one of the installed themes from the list

10.15.3 Data tab

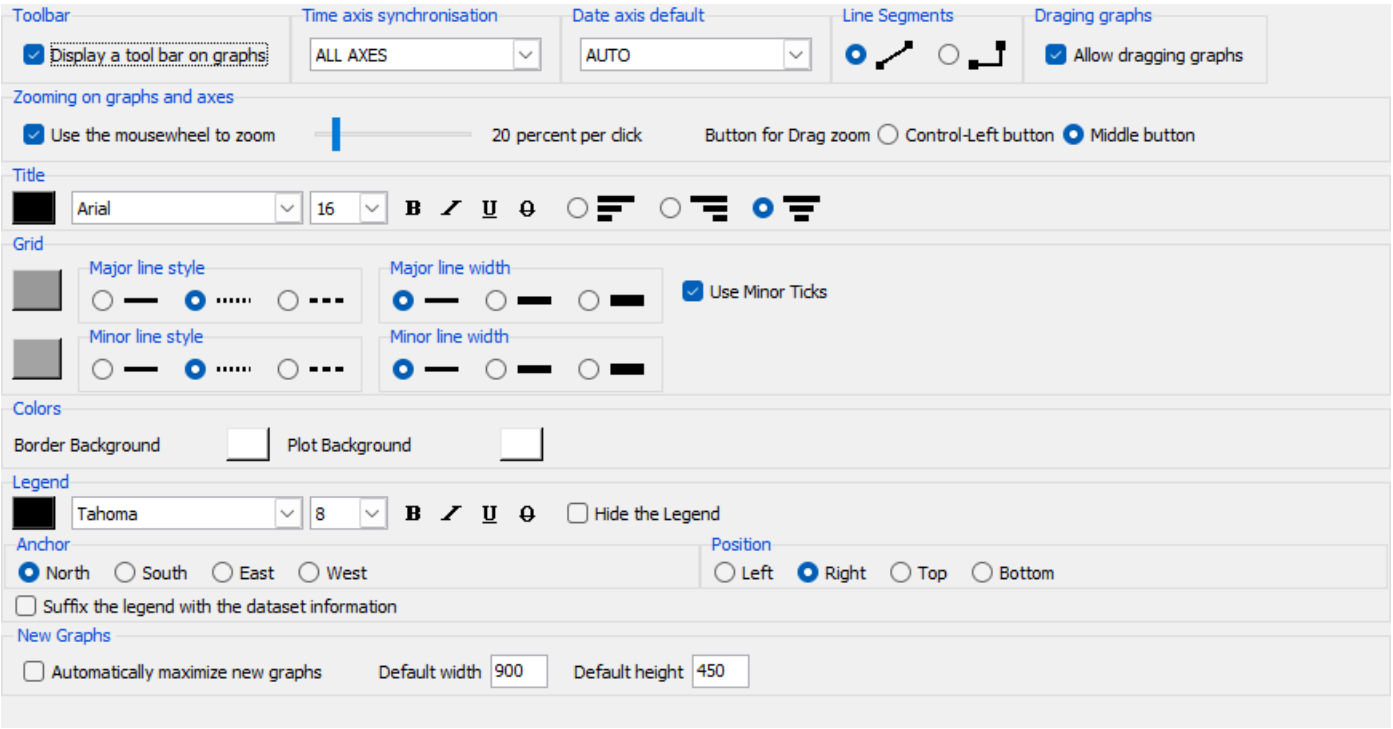


- **Display a tool bar on Datasets** - Display the tool bar on the datasets window (the tool bar can be restored at any time in the Datasets window menu).
- **Imported TSV values** - Select if raw or physical values are loaded from G3/DRPPC TSV files.
- **Graph files** - Select to only save the visible data points in the PGRB files.
- **Project files** - Select to only save the datasets used in PPJ files.
- **Data set processing** - Select how to handle loading duplicated datasets.
  - **Add as unique** will generate unique names by adding '_n' to all of the names,
  - **Replace with loaded** will overwrite any existing data sets,
  - **Merge together** will merge the two datasets together and remove double entries, this will sort the new dataset.
- **Data file processing** - Select how hexadecimal values (0x1234) are handled
  - **Consider hexadecimal values as labels** if hexadecimal values should be imported as labels. Otherwise they will be converted into decimal values.
  - **Preserve hexadecimal values for labels** if imported labels should preserve the numerical values for the labels.
- **File Encoding** - Select the encoding used for files produced by PrestoPlot:
  - **System encoding** will use the encoding defined by the system,
  - **UTF-8** will always use UTF-8 (only available if the system encoding is not UTF-8)
  - **System encoding without header** will use the encoding defined by the system but will not write the encoding header.

    If the encoding is written to the header of the file, it will be used when reading the file. Any manual editing should use the current encoding for the file or some character information may be lost.
- **Data Sorting** - Select if all loaded datasets should be automatically sorted into chronological order after loading.
- **Generic CSV Importing** - Options to handle different types of Generic CSV format files.
  - **Field separator** The character used to separate the values into different columns.
  - **Force Multi Space** Force treating multiple spaces as a single space separator.
  - **Decimal separator** The character used to separate whole numbers from the fractional part.
  - **Date column** The column representing dates, use 0 for no date column (LINE_NUMBER).
  - **Calendar date format** The format to be used if a date of type xx/xx/xxxx to set DAY/MONTH or MONTH/DAY.
  - **Numerical date format** The format to use if a date is of type xxxx.xx numerical.
  - **Double date format** The format to use if a date is of type xxxx xxxx.xx double numerical. See Date Formats for a detailed explication of the formats.
  - **Use filename** If a CSV file does not contain the naming headers (Names and/or Units) use the name of the file as a base for naming the datasets.

    > Example : If the file name is 'IBAT(A).csv', then the dataset will be named 'IBAT' with its units set to 'A'.
  - **Ignore warnings** If checked there will be no more warnings that dataset names or units are incorrect and have been updated.
- **Exporting** - Options to handle exporting data values.
  - **Field separator** The character used to separate the values into different columns.

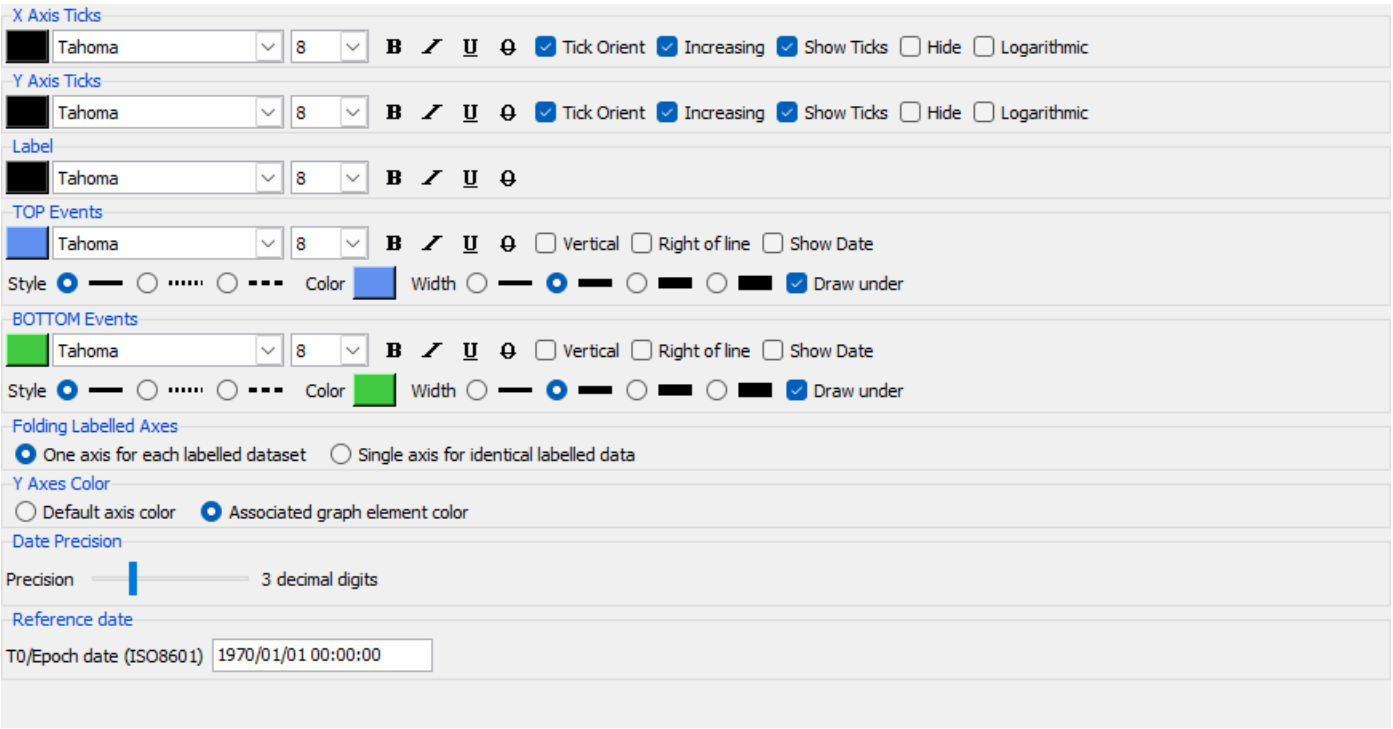
10.15.4 Graphs tab



- **Tool bar** - Display the tool bar on new graph windows (the tool bar can be restored at any time in the graph window menu).
- **Time axis synchronisation** - Choose the default time axis synchronisation for all new graphs.
- **Date axis default** - Choose the default date axis format for absolute dates on all new graphs.
- **Line Segments** - Change the default style for the lines drawn between data points.
- **Dragging Graphs** - If checked then graphs can be dragged using the mouse button on the background of the graph.
- **Mouse Wheel zooming** - This option activates zooming on graphs and axes using the mousewheel.

  The percentage zoom factor can be adjusted from 10% to 90%.
- **Zoom button** - Select either Control-Left or Middle for the mouse button used to drag out a region to zoom.
- **Title** - Change the defaults for graph titles.
- **Grid** - Change the defaults for graph background grids.
- **Color** - Change the defaults for the graph border and plot background colors.
- **Legend** - Change the defaults for graph legends.
- **New Graphs** - Choose whether to automatically maximize new graphs. Define the default size for new graphs, if not maximized.

10.15.5 Axes tab

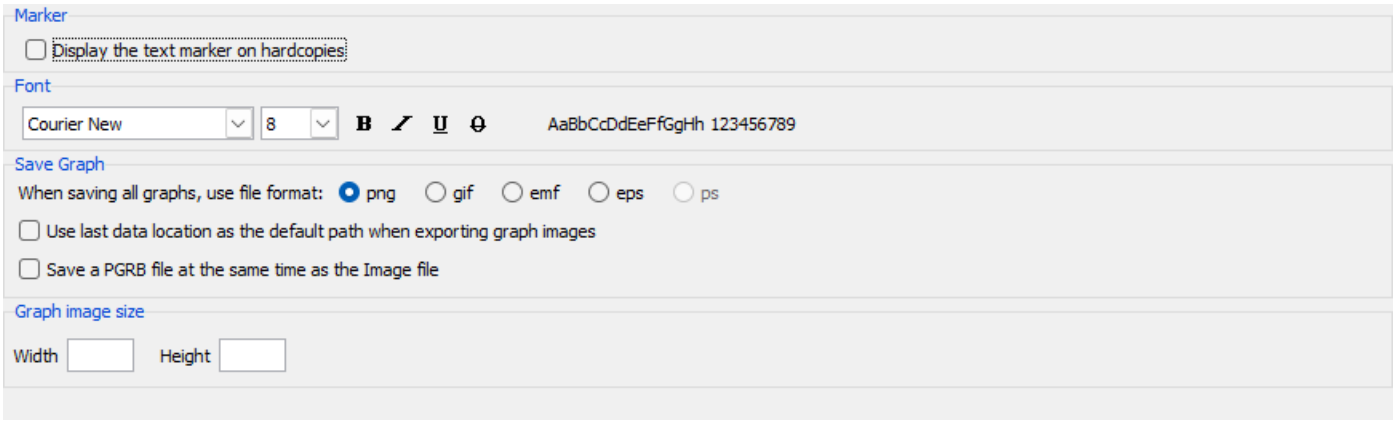


- **X Axis Ticks** - Change the defaults for any X horizontal axes.
- **Y Axis Ticks** - Change the defaults for any Y vertical axes.
- **Label** - Change the defaults for axis labels.
- **Events** - Change the defaults for the TOP/BOTTOM Event markers.
- **Folding Labelled Axes** - Activate the folding or reuse of common labelled axes when the labels are identical.
- **Y Axes Color** - Activate the automatic coloration of Y vertical axes with the color of their associated graph element (if an axis is associated to more than one graph element due to folding, then a-default axis color is used).
- **Date Precision** - Set the default precision in number of decimal digits for displayed seconds (0 to 12).
- **Reference Date** - Set the T0/Epoch date for `ISO8601+SECONDS`, `EUR+SECONDS` and `OFFSET` date formats 0 second value (ISO8601 format date).

10.15.6 Markers tab

- **Number Format** - Change the defaults for displaying numerical values in markers.
- **Text** - Change the defaults for marker text.
- **Line** - Change the default line style for different marker lines.
- **Graph lock** - Change the default graph lock for Horizontal and Vertical markers.
- **Label Orient** - Change the Label orientation for Vertical marker labels.

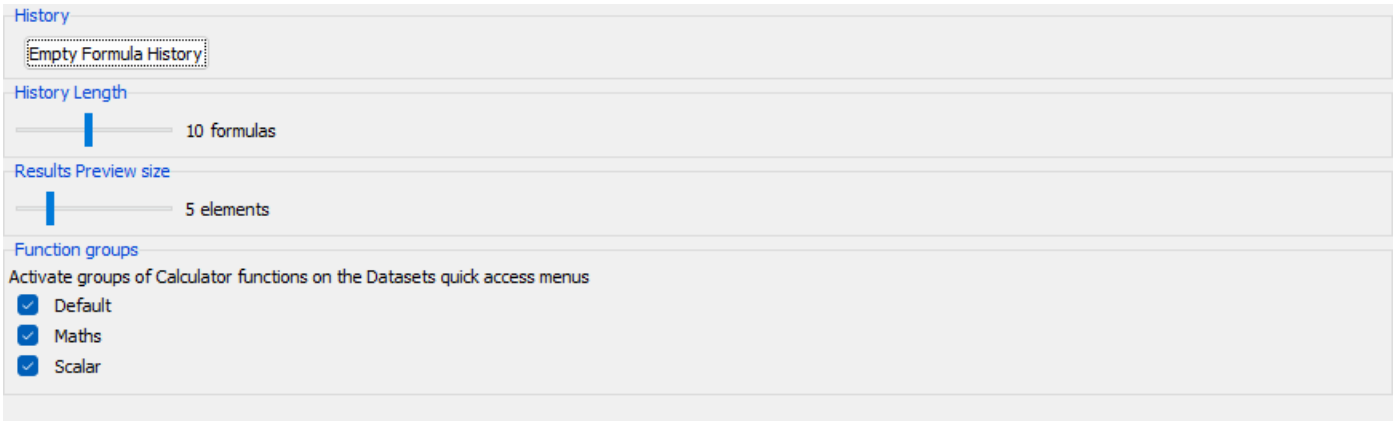
10.15.7 HardCopy tab



The hardcopy marker is a small text block which will be added to the graph when a hardcopy (Print, Copy, Image) is taken.

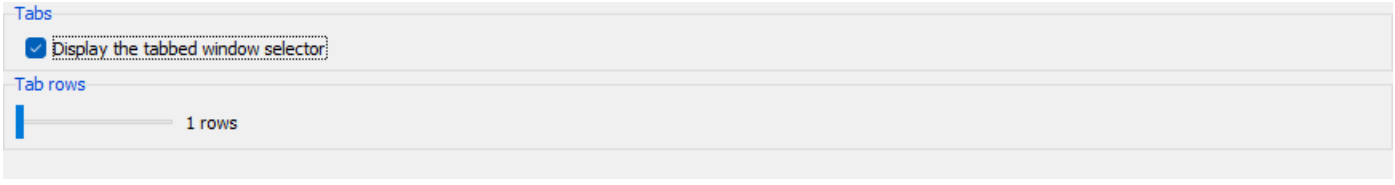
- **Marker** - If checked, a marker giving the current date and time will be added to the hard copy.
- **Font** - Selects the font to be used to display the marker.
- **Save Graph** - Selects the image format to be used to save all the graphs. Select preferences about individual graph save default location and whether to save a PGR at the same time.
- **Graph image size** - Specify the size of all saved image files. If left empty then command line/PCF image saves will maximize any graphs before saving and user interface saves will save the graph with the size it is displayed.

10.15.8 Calculator tab



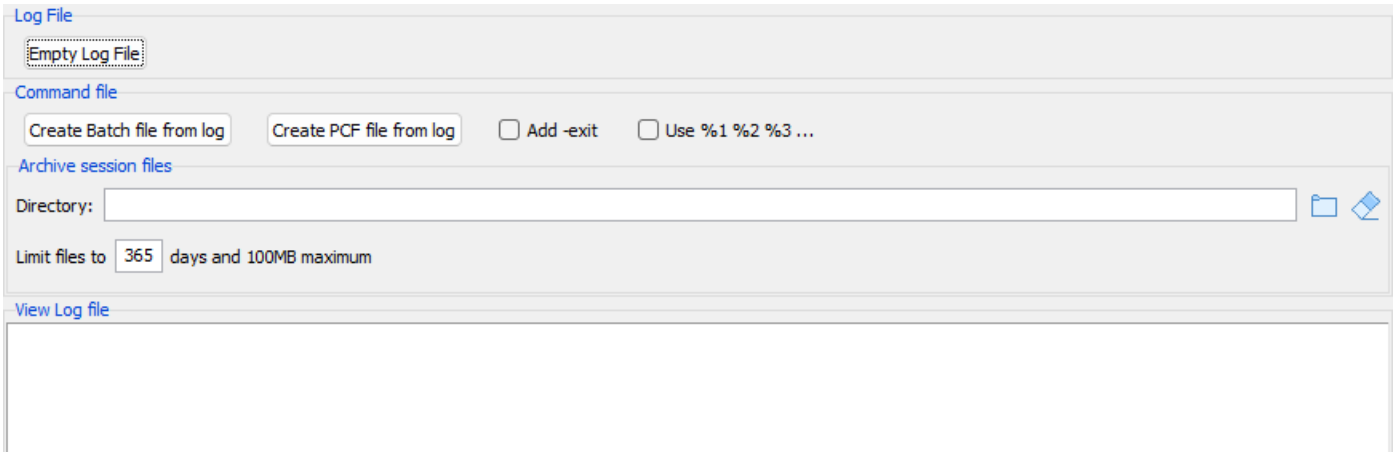
- **History** - This button will clear the calculation history list.
- **History Length** - Selects the number of entries kept in the history list (limits 1-100).
- **Results Preview Size** - Selects the number of entries displayed in the results table (limits 1-20).

10.15.9 Window Tabs tab



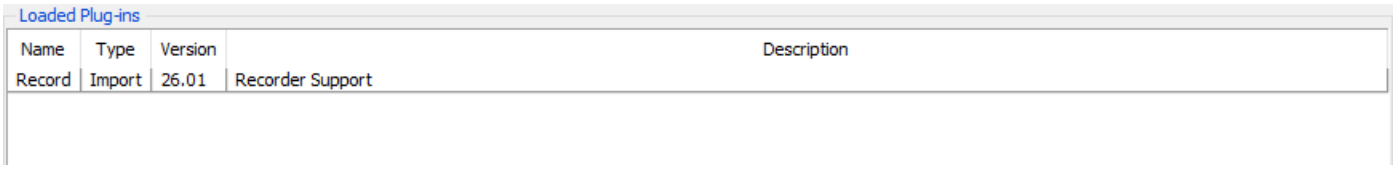
- **Tabs** - If checked then the Windows Tabs will be displayed.
- **Tab rows** - Select the number of rows of tabs to display. When there are too many tabs to display on one row, it can either overflow onto another row or it can be scrolled with the middle mouse button (limits 1-3).

10.15.10 Command Log tab



- **Empty Log File** - Clear the current log file. -TIP: This can be used after creating a batch file to start recording a new list of operations.
- **Create Batch/Shell file from log** - Construct a new Windows .bat of Unix .sh file from the current contents of the log file.
- **Create PCF file from log** - Construct a new Presto Command File .pcf file from the current contents of the log file. -There are two options which affect the creation:
  - **Add -exit** - Add the -exit command line option to the end of the file to automatically exit PrestoPlot.
  - **Use %1 %2 %3 ...** - Replace all loaded data file names by the Batch file argument variables (%1/$1 represents the first argument to the batch file). This option is ignored for PCF files.
- **Archive session files** - On exit, archive the contents of the log file as a dated PCF session file (Session-YYYY-MM-DD-HH-MM-SS.pcf).
  - **Directory** A display of the current archive directory and buttons to change or empty it. If the directory field is empty or the directory does not exist then session files will not be archived.
  - **Days** The number of days to keep the archived files. At startup PrestoPlot will remove older files and then any files until the used file space is less than 100MB (oldest files first).

10.15.11 Plug-ins tab

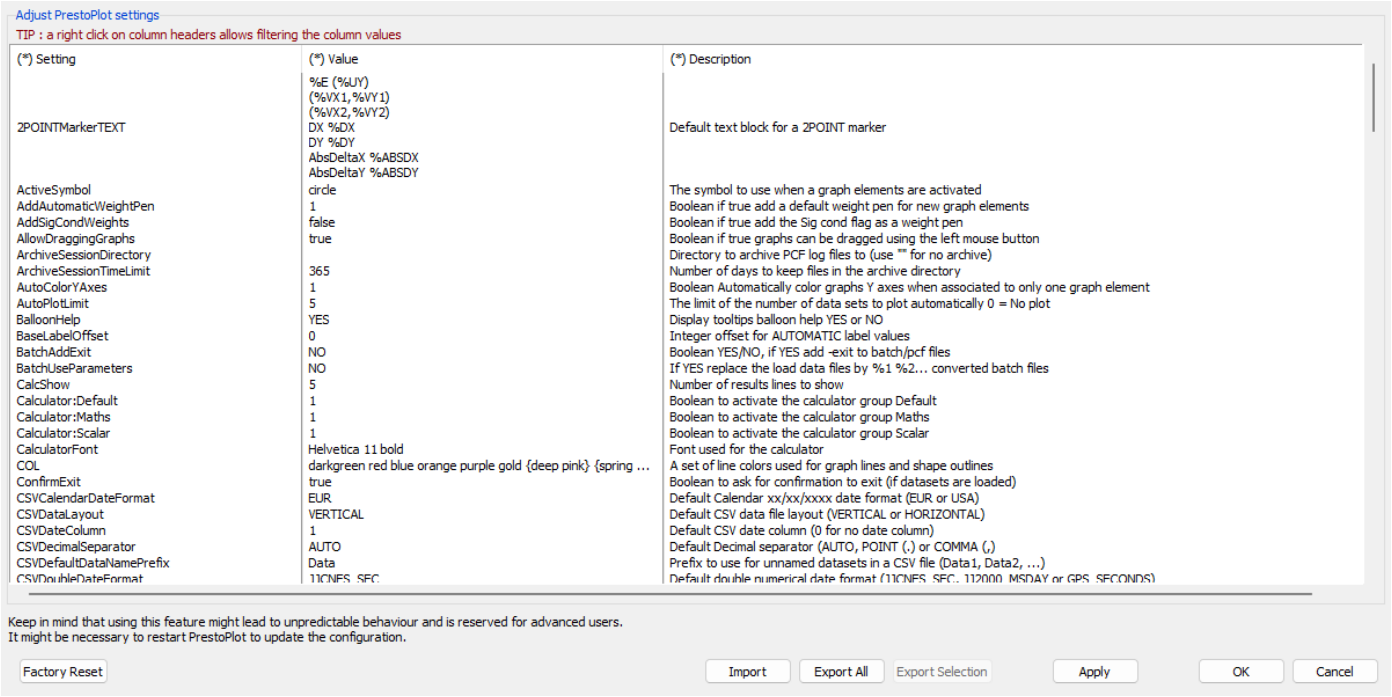


A list of the current loaded plug-ins, their versions and a brief description. Selecting a Plugin in the list will display any configuration options for that plugin.

10.16 Advanced Preferences

This window allows changing the value of PrestoPlot configuration parameters. The table displayed contains three columns:

- **Setting** - The parameter name.
- **Value** - The parameter editable value.
- **Description** - A short description of the parameter.



> **Tip**
>
> The table can be filtered by pressing the right mouse button on any column heading.

> **Tip**
>
> Any values which are different from the defaults will be displayed in **BOLD**.

Pressing the right mouse button over any of the data lines will display a menu which can include:

- Copy the option name to the clipboard.
- Copy the cell contents to the clipboard.
- Copy the selected option names to the clipboard.
- Reset an option to its default value.

Some parameters might not appear if they are specific to a mission that was not loaded in PrestoPlot.

Some parameters might be greyed out and their value non-editable if the `LockList` parameter was defined in the INI file.

There are seven buttons on the bottom of the advanced preferences window:

- **Factory Reset** - Reset all option to their default values.
- **Import** - Import a set of parameters defined in a file with the same format as the INI file. A parameter blocked by `LockList` will not be imported.
- **Export All** - Export all parameters to a file with the same format as the INI file.
- **Export Selection** - Export selected parameters to a file with the same format as the INI file.
- **Apply** - Accept all changes but do not close the window.
- **OK** - Accept all changes and close the window.
- **Cancel** - Ignore any change and close the window.

> **Tip**
>
> Pressing `Control-a` will select all rows in the table for copying/exporting.

Keep in mind that using this feature might lead to unpredictable behaviour and is reserved for advanced users. It might be necessary to restart PrestoPlot to update the configuration.

11. Preferences

11.1 Generality

PrestoPlot has a large number of configuration settings, saved in an INI file. The most common ones can be changed via the preferences window. Other settings can be changed via the advanced preferences window, or directly in the INI file. Please note that this file is written when PrestoPlot is closed.

11.1.1 INI file location

The INI file location depends on the Operating System you are using.

11.1.1.1 Windows

On Windows this file is stored in the same directory as the executable, or in `User/APPDATA/PrestoPlot` if the executable is in a non writable directory.

11.1.1.2 Linux

On Linux this file is stored in the same directory as the executable and the users `$HOME/.PrestoPlot` directory this allows a global initialisation file for all users and a local initialisation file for user configuration. Only the user file is written.

11.2 Lock list

The 'LockList' setting can be used **in the global ini file** to block user configuration of certain elements : - ADVANCEDEDIT - Disable access to the Advanced Editor in Preferences - PLUGIN - Disable Local plugin extensions in the `$HOME/.PrestoPlot` directory - INIFILE - Disable the use (read and write) of the user INI and LOG files in the $HOME/.PrestoPlot directory, the log file will be written to the global directory

11.3 Constants

The ini file contains a set of Constants for the calculator, defined in a `Calculator Constants` block.

Each entry is for one constant value. The syntax is as follows:

```
set Constant(Name) {DESC {Description} VALUE {Value} FORMULA {expression for the value} GROUP {Group name}}
```

Where:

- **Name** - The name to use in the calculator.
- **DESC** - A description, optional but useful.
- **VALUE** - The constant numerical value. Optional with FORMULA
- **FORMULA** - A formula to give the value. Optional with VALUE
- **GROUP** - A grouping name to allow filtering if there are many constants. (Defaults to Basic)

One of FORMULA or VALUE must be present.

> **Warning**
> Care should be take when changing this list (make sure PrestoPlot is not running and be sure to make a copy before editing).

11.4 All setting descriptions

This section describes all the settings available.

> **Warning**
> Modifying advanced configuration settings may cause PrestoPlot to malfunction. You do so at your own risk.

Setting	Description
`2POINTMarkerTEXT`	Default text block for a 2POINT marker
`ActiveSymbol`	The symbol to use when a graph elements are activated
`AddAutomaticWeightPen`	Boolean if true add a default weight pen for new graph elements
`AddSigCondWeights`	Boolean if true add the Sig cond flag as a weight pen
`AllowDraggingGraphs`	Boolean if true graphs can be dragged using the left mouse button

Setting	Description
ArchiveSessionDirectory	Directory to archive PCF log files to (use "" for no archive)
ArchiveSessionTimeLimit	Number of days to keep files in the archive directory
AutoColorYAxes	Boolean Automatically color graphs Y axes when associated to only one graph element
AutoPlotLimit	The limit of the number of data sets to plot automatically 0 = No plot
BalloonHelp	Display tooltips balloon help YES or NO
BaseLabelOffset	Integer offset for AUTOMATIC label values
BatchAddExit	Boolean YES/NO, if YES add -exit to batch/pcf files
BatchUseParameters	If YES replace the load data files by %1 %2... converted batch files
COL	A set of line colors used for graph lines and shape outlines
CSVCalendarDateFormat	Default Calendar xx/xx/xxxx date format (EUR or USA)
CSVDataLayout	Default CSV data file layout (VERTICAL or HORIZONTAL)
CSVDateColumn	Default CSV date column (0 for no date column)
CSVDecimalSeparator	Default Decimal separator (AUTO, POINT (.) or COMMA (,)
CSVDefaultDataNamePrefix	Prefix to use for unnamed datasets in a CSV file (Data1, Data2, ...)
CSVDoubleDateFormat	Default double numerical date format (JJCNES_SEC, JJ2000_MSDAY or GPS_SECONDS)
CSVFieldSeparator	Default CSV Field separator (AUTO, COMMA (,), SEMICOLON (;), SPACE ( ) or TAB ( )
CSVForceMultiSpace	Boolean to force processing multiple space separators as one
CSVLoadColumns	Default CSV columns to load, is all columns loaded (this is best used as -optionoverride not permanent)
CSVNumericalDateFormat	Default Numerical date format (SECONDS, JJCNES_FRAC, UNIX, UNIXMS, UNIXUS or LINE_NUMBER)
CSVUseFilenameAsPrefix	Boolean to use the filename for unnamed datasets in a CSV file (Fname-1, Fname-2, ...)
CURFONT	The font used for all widget text
CalcShow	Number of results lines to show
CalculatorFont	Font used for the calculator
ConfirmExit	Boolean to ask for confirmation to exit (if datasets are loaded)
DASH	A set of dash styles used for graph lines (one of '', '1' or '3')
DateMarkerArrows	Display arrows if date marker goes outside graph
DateMarkerColor	Default colour used for date markers
DateMarkerDashes	Default dash style for date markers (one of '', '1' or '3')
DateMarkerWidth	Default width for date markers (one of '1', '2', '3' or '4')
DefaultAxisLabelFont	Default axis label font
DefaultAxisLabelTextColor	Default axis label text color
DefaultDSToolBarState	Display the toolbar on the dataset window 'normal' or 'withdrawn
DefaultDateAdjustSuffix	Suffix to add to duplicated date adjusted dataset names
DefaultDateFormat	Default format for absolute dates on new graphs
DefaultDateFormatEng	Default engineering format for absolute dates on new graphs (f or e)
DefaultDateFormatEpoch	Default T0/Epoch date (ISO8601 format) for 0 seconds date offsets on new graphs (ISO8601+SECONDS, EUR+SECONDS or USA+SECONDS format)

Setting	Description
DefaultDateFormatPrec	Default decimal precision for absolute dates on new graphs (0 to 12)
DefaultEventColorBOTTOM	Default color for the BOTTOM event markers
DefaultEventColorTOP	Default color for the TOP event markers
DefaultEventDashesBOTTOM	Default dash style for the BOTTOM event markers
DefaultEventDashesTOP	Default dash style for the TOP event markers
DefaultEventFontBOTTOM	Default font for the BOTTOM event titles
DefaultEventFontTOP	Default font for the TOP event titles
DefaultEventLineWidthBOTTOM	Default line width for the BOTTOM event markers
DefaultEventLineWidthTOP	Default line width for the TOP event markers
DefaultEventTitleColorBOTTOM	Default color for the BOTTOM event marker titles
DefaultEventTitleColorTOP	Default color for the TOP event marker titles
DefaultEventTitleDateBOTTOM	Default show dates in title (SHOW, HIDE)
DefaultEventTitleDateTOP	Default show dates in title (SHOW, HIDE)
DefaultEventTitleOrientBOTTOM	Default orientation 0.0 Horizontal, 90.0 vertical
DefaultEventTitleOrientTOP	Default orientation 0.0 Horizontal, 90.0 vertical
DefaultEventTitleSideBOTTOM	Default side of the line segment for vertical labels (LEFT,RIGHT)
DefaultEventTitleSideTOP	Default side of the line segment for vertical labels (LEFT,RIGHT)
DefaultEventUnderBOTTOM	Default line position with respect to data elements
DefaultEventUnderTOP	Default line position with respect to data elements
DefaultGraphBackground	Default graph border background color
DefaultGraphHeight	Default new graph window height (before MaximizeNewGraphs)
DefaultGraphPlotbackground	Default graph plot area background color
DefaultGraphSynchronise	Default Graph synchronisation for all new graphs (NONE, 'THIS AXIS', 'ALL AXES', LOCKED)
DefaultGraphWidth	Default new graph window width (before MaximizeNewGraphs)
DefaultGridColor	Default grid line color
DefaultGridDashes	Default grid dash style (one of '', '1' or '3')
DefaultGridLinewidth	Default grid line width (one of '1', '2' or '3')
DefaultGridMinor	Default grid minor minor tick grid lines boolean
DefaultGridMinorColor	Default minor grid line color
DefaultGridMinorDashes	Default minor grid dash style (one of '', '1' or '3')
DefaultGridMinorLinewidth	Default minor grid line width (one of '1', '2' or '3')
DefaultLegendAnchor	Default Legend anchor position within the side
DefaultLegendColor	Default font color for the graph legend
DefaultLegendFont	Default font for the graph legend
DefaultLegendHide	Default graph legend visibility state
DefaultLegendSide	Default Legend side position within the graph window
DefaultMarkerFont	Default marker font
DefaultMarkerFormat	Default marker format one of e or f

Setting	Description
DefaultMarkerJustify	Default marker text justification
DefaultMarkerPrecision	Default marker decimal precision
DefaultMarkerUnder	Boolean Default Marker lines drawn behind all data elements
DefaultSaveGraphHeight	Default graph window height for saved images
DefaultSaveGraphWidth	Default graph window width for saved images
DefaultSegmentType	Default linetype between data points (linear or step)
DefaultSingleSymbol	Display this symbol for graphs with only one element
DefaultSymbolSize	Default symbol size (8 small 12 medium 16 large)
DefaultTitleColor	Default graph title color
DefaultTitleFont	Default graph title font
DefaultTitleJustify	Default graph title justification
DefaultToolBarState	Display the toolbar on the graph windows 'normal' or 'withdrawn
DefaultWorkingDirectory	The full path name of the current working directory in PCF files
DefaultXAxisHide	Default axis label hide 0 show 1 hide
DefaultXAxisLogScale	Default axis logarithmic scale 0 linear 1 logarithmic
DefaultXAxisTickFont	Default axis tick font
DefaultXAxisTickOrder	Default axis order 0 increasing 1 decreasing
DefaultXAxisTickOrient	Default axis tick label orient 0.0 or 90.0 degrees
DefaultXAxisTickTextColor	Default axis tick text color
DefaultXAxisTicks	Default axis show ticks and labels 0 no ticks 1 visible ticks
DefaultYAxisHide	Default axis label hide 0 show 1 hide
DefaultYAxisLogScale	Default axis logarithmic scale 0 linear 1 logarithmic
DefaultYAxisTickFont	Default axis tick font
DefaultYAxisTickOrder	Default axis order 0 increasing 1 decreasing
DefaultYAxisTickOrient	Default axis tick label orient 0.0 or 90.0 degrees
DefaultYAxisTickTextColor	Default axis tick text color
DefaultYAxisTicks	Default axis show ticks and labels 0 no ticks 1 visible ticks
DisablePCFMessages	Boolean if true errors will not be displayed when loading a PCF file
DiscardUnusedDatasets	Boolean to save only the datasets needed in a project file
DisplayMode	Mode to use to display inernal windows one of MDI or WINDOW
DragCursor	Cursor name to use for draging data
DuplicateDatasetAction	Default action (ADD, REPLACE or MERGE) for handling duplicated dataset
DuplicateDatasetAsk	Boolean to ask how to handle duplicate datasets
EmptyUnitsNames	List of case insensitive names for parameters without units
ExportDir	The current working directory for Export operations
ExportFieldSeparator	Export Field separator (COMMA (,), SEMICOLON (;), SPACE ( ) or TAB ( )
FILL	A set of shape fill colors used for graph elements
FileEncoding	Define the encoding to use for all output files (SYSTEM SYSTEMNOHHEADER UTF-8)

Setting	Description
FilterThreshold	Maximum number of different elements in a column for a filter to be displayed for each element
FoldCommonLabelNames	Default label axis folding 0 no folding 1 fold when possible
FormulaHistory	List of last HistoryLength calculator formulas
Geometry	Window position (topright) and size, use "" for maximised (WIDTHxHEIGHT+ACROSSPOS+DOWNPOS 1100x900+20+10)
HORIZONTALMarkerDashes	Default dash style for a Horizontal marker (one of '', '1' or '3')
HORIZONTALMarkerLinewidth	Default line width for a Horizontal marker (one of '1', '2', '3' or '4')
HORIZONTALMarkerLock	Default graph lock for a Horizontal marker (none, graph, left, right)
HORIZONTALMarkerTEXT	Default text block for a Horizontal marker
HardAnchor	Hard Copy Marker Anchor position for text left edge needs (w)est right edge (e)ast
HardBg	Hard Copy Marker background color (use "" for transparent)
HardCoord	Hard Copy Marker position (x y +-Inf gives left/right/top/bottom border positions)
HardEnabled	Flag to enable the Hardcopy text marker (YES or NO)
HardFg	Hard Copy Marker foreground text color
HardFont	Hard Copy Marker font name
HardForceBgWhite	Force Hard Copy to use white backgrounds
HardJustify	Hard Copy Marker justification for multiline labels (left/right/center)
HardPad	Hard Copy Marker border padding
HardPostscriptFile	Default File to Print Postscript to
HardText	Hard Copy Marker text String is evaluated by tcl before each hardcopy can use \n
HexaAsLabels	Define if hexadecimal values should be imported as labels. Otherwise they will be converted into decimal values.
HexaPreserveValues	Define if hexadecimal values values should be kept for labels.
HistoryLength	Number of historical formulas to keep
IgnoreNameWarnings	Boolean to ignore warnings about names or units with illegal characters
ImageDirFollowsData	Boolean to change SaveImageDir for any TSV/TAB/PGR loads
ImportedValues	Define if 'raw' or 'physical' values should be imported from the .tsv files.
LineNumberOffset	Offset for LINE_NUMBER values, 1 gives first line in file 1 value
LineWidth	A set of line widths used for graph lines
LockColor	Axis background color when locked
Log4jHostname	Hostname for the Log4j connection (If empty Log4j is deactivated)
Log4jIDSat	Satellite ID to sent to Log4j
Log4jLevels	List of levels to log (INFO, ERROR, DEBUG, WARN, FATAL)
Log4jPort	Port number for the Log4j connection (If empty Log4j is deactivated)
MaxLabelValues	Maximum number of label values allowed for labelled data (<5000)
MaximizeNewGraphs	Automatically maximize new graphs
MixedDataBackgroundColor	Dataset background color for mixed Labelled and numeric datasets
MouseWheelZoom	Boolean to activate using the Mouse wheel to zoom

Setting	Description
MouseWheelZoomPercent	The percentage zoom for each mouse wheel click
NonDatedBackgroundColor	Dataset foreground color for non dated datasets
POINTMarkerDashes	Default dash style for Point markers (one of '', '1' or '3')
POINTMarkerLinewidth	Default line width for Point markers (one of '1', '2', '3' or '4')
POINTMarkerTEXT	Default text block for a POINT marker
PSConverter	Default converter program to convert EPS to PS for printing
PSPaperSize	Paper size for the postscript printer (default a4) names in lowercase
RealTimeBufferSize	The maximum buffer size when receiving realtime data (In number of points, for all dataset, and for the RealTimePeriod duration)
RealTimeDatasetLimit	The maximum stored points for a realtime dataset (empty for unlimited)
RealTimePeriod	The refresh period (in milliseconds) for realtime updates
Recent-command	Recent Command files list
Recent-data	Recent Data files list
Recent-graph	Recent Graph files list
Recent-model	Recent Model and PGD files list
Recent-project	Recent Project and Workspace files list
RecentHistoryLength	Numbr of recent files to remember in the recent files lists
SMALLFONT	The font used for the small Popups
SYMBOL	A set of symbols used for graph elements ('' square circle diamond cross triangle plus scross splus)
SaveAllFileExt	File type to save all graphs as images (png, gif, emf or eps on windows ; png, gif, ps or eps on unix)
SaveCommandDir	The full path name of the current working directory for opening command files
SaveImageAndPGR	Boolean to save a .pgrb file at the same time as the Image in the same directory
SaveImageDir	The full path name of the current working directory for opening image files
SaveLoadGraphDir	The current working directory for Save/Load graph operations
SaveLoadPGDDir	The current working directory for Save/Load PGD operations
SaveProjectDir	The full path name of the current working directory for Save/Load project files
SaveVisibleDataOnly	Boolean to save only the visible data points in a graph file
SaveWorkSPDir	The full path name of the current working directory for Save/Load workspace files
ShowTabSet	Boolean defining if the tabbed window selector is displayed
SigCondLabelValues	Transfer function for the default (PrestoDecom) Significance condition labels
SingleSessionName	If not empty gives the default session name
SlideColor	Axis background color when sliding the axis
SortDatasetsOnLoad	Automatically sort datasets into chronological order after loading
SplashShow	Time to display the splash screen in milliseconds
SpreadLabels	AUTOMATIC renumbering of raw label values when loaded ('', 'all' or 'flatten')
SuffixLegendInformation	Add the dataset information in the legend label
SynchroColor	Axis title/label shadow color when Synchronised

Setting	Description
`SynchroXColor`	Background color when Synchronising all X date axes
`TEXTMarkerTEXT`	Default text block for a TEXT marker
`TabTiers`	The number of rows of tabs to display
`Theme`	Current theme to use
`ToolTipDelay`	The number of milliseconds the tooltips are displayed
`UnixPrinter`	Default printing device to use for unix lp -d
`VERTICALLabelOrient`	Default label orient 0.0 or 90.0 degrees for a Vertical marker
`VERTICALMarkerDashes`	Default dash style for a Vertical marker (one of '', '1' or '3')
`VERTICALMarkerLinewidth`	Default line width for a Vertical marker (one of '1', '2', '3' or '4')
`VERTICALMarkerLock`	Default graph lock for a Vertical marker (none, graph, top, bottom)
`VERTICALMarkerTEXT`	Default text block for a Vertical marker
`WeightPenFillColor`	Default fill colour used for the weight pen
`WeightPenLineColor`	Default line colour used for the weight pen
`WeightPenLineWidth`	Default line width used for the weight pen
`WeightPenOutlineColor`	Default outline colour used for the weight pen
`WeightPenSymbol`	Default symbol used for the weight pen (empty for no symbol)
`WeightPenSymbolSize`	Default symbol size for the weight pen (8 small 12 medium 16 large)
`WeigthPenLineStyle`	Default line style used for the weight pen (one of '', '1' or '3')
`WindowCommandLineGeometry`	Position and Size of the command line window
`WindowtDatasetHeight`	Height of the dataset window
`WorkingDir`	The full path name of the current working directory for opening data files
`XPActive`	Colour used for active highlights when not defined in a theme
`XPLighter`	Default lighter color for some interface elements
`ZIPFileExtensions`	List of acceptable file extensions to look for in ZIP files
`ZoomButton`	String defining which button to use for zooming (2 for Middle button or 1 for Control-left button)
`ZoomLineColor`	Axis background color when zooming on the line
`ZoomTickColor`	Axis background color when zooming on the axis tick marks

12. Limitations

PrestoPlot has few directly coded limitations on its operation but may contain implicit limitations. This section will detail limits which have been noted, but which do not effect the general operation of PrestoPlot.

12.1 Data Limitations

There is no fixed limit to the number of graphs or data sets which can be loaded PrestoPlot has been tested with data sets of over 50 000 000 elements.

12.2 Label Limitations

There is a fixed limit to the number of label values (5000) which can be loaded for a dataset.

> PrestoPlot can display 1000's of labels but only about 100 can be legible on a graph at one time.

12.3 Name Restrictions

Data names can contain any character **EXCEPT** `space` and `"` (double quote), and **MUST** start with an alphabetical character or `_` (underscore). Data units can contain any character **EXCEPT** `space` and `"` (double quote). Data names, Data units, Graph names and Pen names can contain brackets (`{}[]()`) but any brackets in a name must be equally matched by the corresponding pair.

Any unauthorised characters or unmatched brackets will be replaced by `_`'s (underscore).

Tip

Any Data names identical to calculator functions can be plotted but not used in the calculator. **E.G.** `sin(0)` can be used as a dataset but cannot be used for calculations and should be renamed to `sin_(0)`.

Tip

Although allowed in data names the character `=` can cause problems for calculations and is best avoided.

12.4 Numerical Limitations

- **Floating point resolution** - Data values are stored internally as 'C' doubles which use 8-bytes. This gives 15 significant digits with the smallest absolute value = approximately **2.3E-308** and the largest absolute value = approximately **1.7E+308**.
- **Date precision** - Dates are stored internally as a second.fraction offset from the '1 January 1970' using a 'C' double. This gives a millisecond precision for the full date range (up to 2037).

  > N.B. (The date 2005/01/01 needs 10 digits of the 15 significant digits available, 2037/01/01 also uses 10 digits). ****