

# Plot2Excel Manual

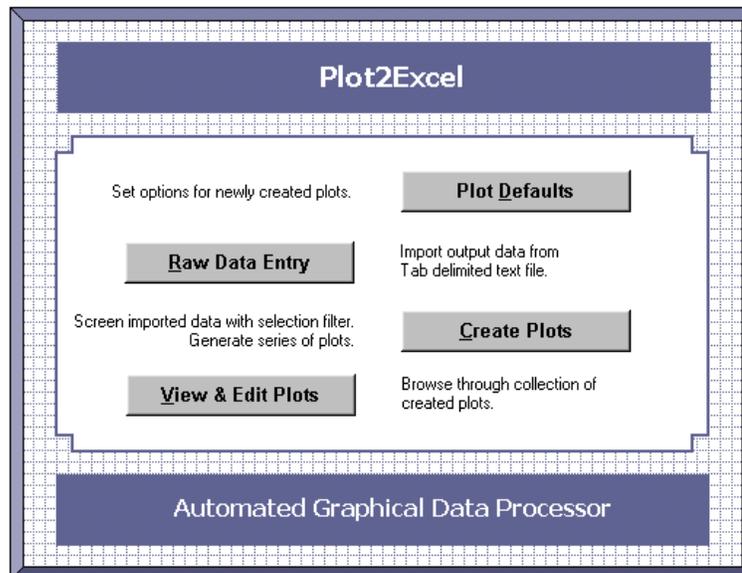
Plot2Excel is a general purpose X-Y plotting tool.

All right reserved to Andrei Zaoostrovski.

*March 1, 2001*

## Program Description

**Plot2Excel™** is an Excel spreadsheet enhanced with Visual Basic for Applications to facilitate creating X-Y plots from large formatted data sets. It efficiently generates many plots with a user-controlled standard style. Plot2Excel runs with MS Excel 97 and later versions.



Main Menu

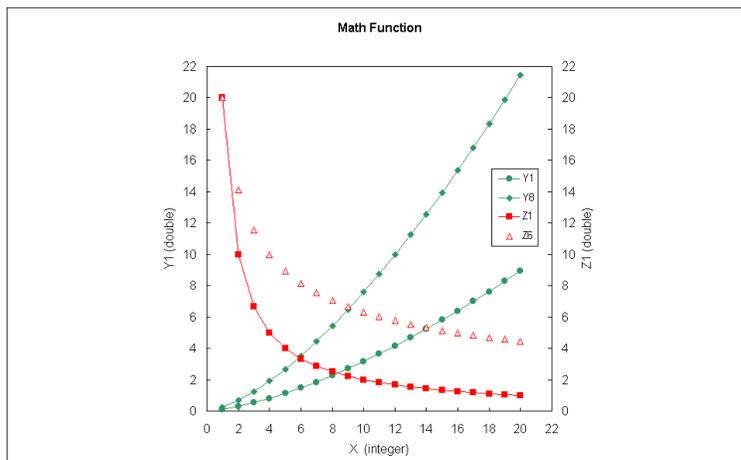
Engineers working with a variety of computer models often need to analyze results visually. Plot2Excel is designed to give them a simple way to generate X-Y line and symbol plots and to avoid repetitive operations.

Plot2Excel reads data sets written with a specified format in Tab-delimited text files. The program allows the user to select data tables using an advanced search filter. Afterwards, any data columns from the selected tables can be plotted on the same chart with user-controlled size, style and axis scale.

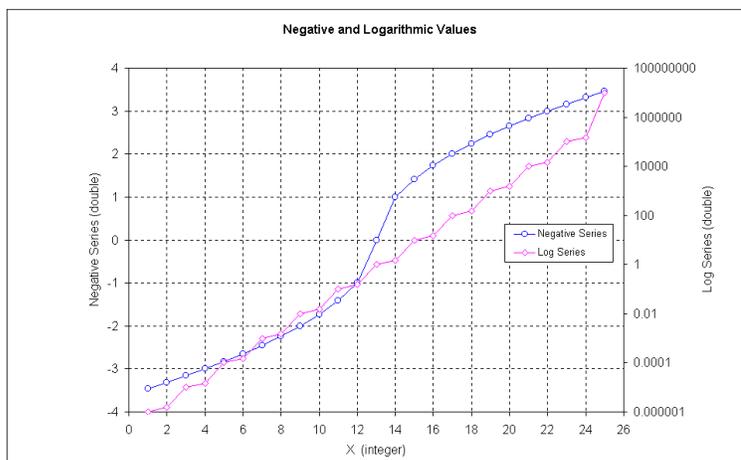
Plot2Excel creates descriptions of each plot and allows saving them as a text file called *Plot-Log*. Later you can import a new data set plus the saved Plot-Log file. By pressing a single button, all plots are created with the new data, using the same format which was previously defined. More that 100 plots can be instantly generated with the Plot-Log function. Excel 2000 is recommended for running the Plot-Log as the older version is prone to run out of memory and stop with a job of generating more then 15 plots at a time.

### Plot Samples.

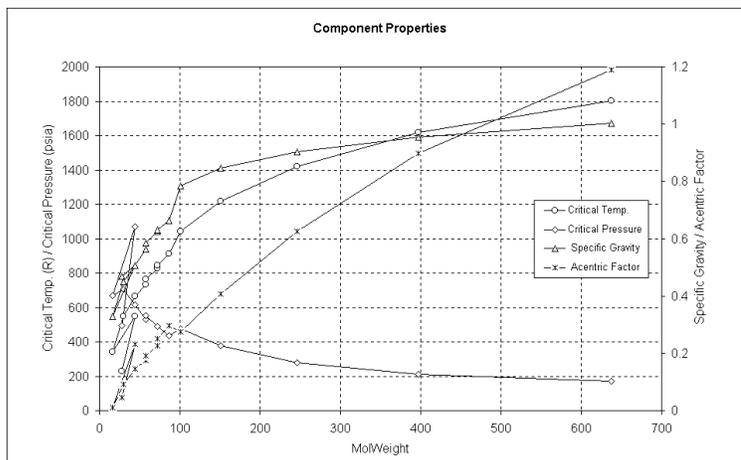
Line and symbol series, no grid lines, square plot area.



Secondary Y-axis in logarithmic scale, plot width is 2/3 of total space.

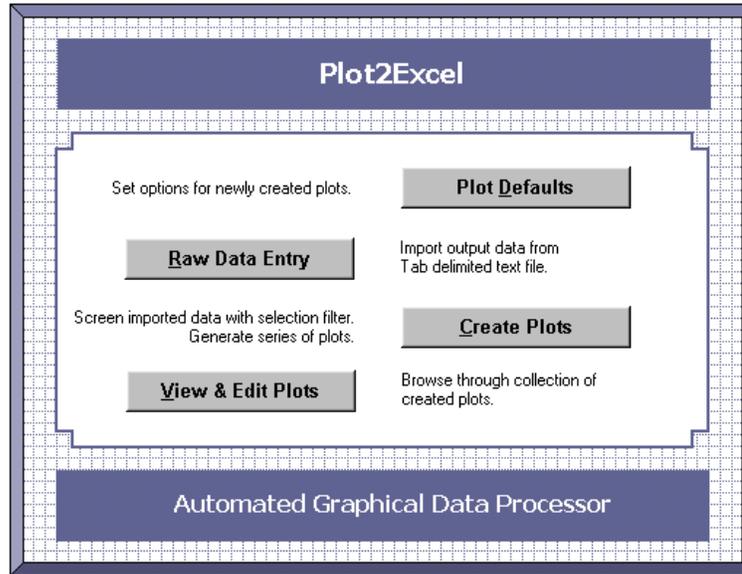


Plot area width is 3/4 of total space.



## Main Menu

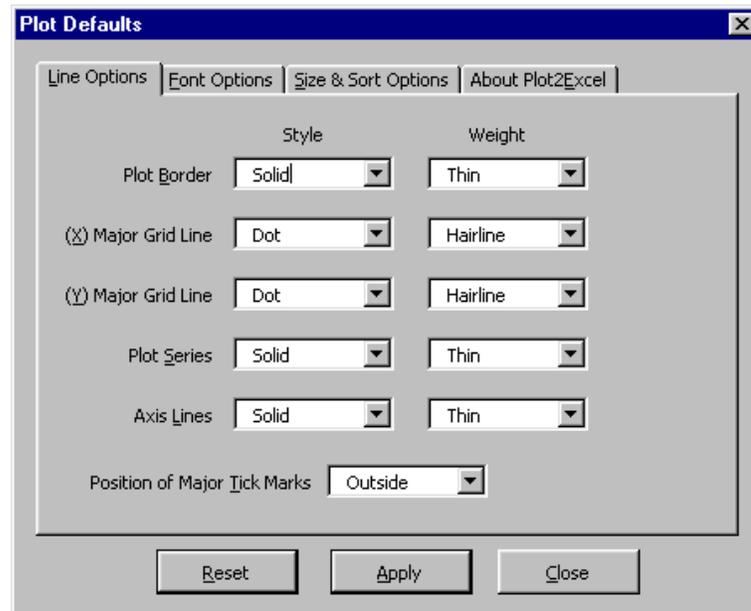
The main worksheet in Plot2Excel is called Menu. If it is deleted or renamed, the program will not work. In fact, it is protected. This worksheet contains the Main Menu with controls as shown below. Each of the functions is explained in the following chapters starting from the top.



The Menu worksheet can be activated with <Ctrl+F> keys from within Excel. Acceleration keys can be used throughout Plot2Excel. For example <Alt+d> keys do the same as pushing on the Plot Defaults button on the Main Menu.

Note that all the User-Forms or menus in Excel are modal, which means, that the user must respond or close the form before using any other part of the application.

## Plot Defaults



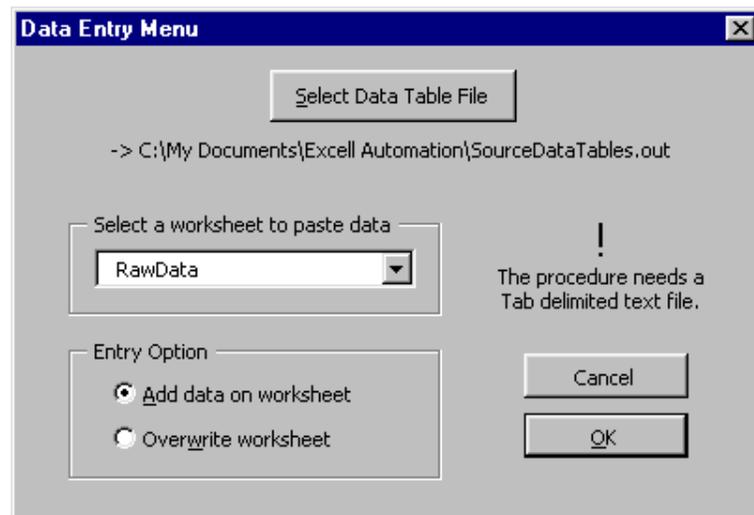
With the Plot Defaults menu you can set your format of the newly created plots. Notice that values of Plot Series Line, Series Marker Size and Sort (X) values are recorded in the Plot-Log file. When you run Plot-Log to recreate new plots, values from the file override defaults in this menu.

**Reset** - invoke default values.

**Apply** - saves new values

**Close** - close menu without saving data

## Raw Data Entry



**Select Data Table File** – opens a standard File Open menu where you can pick up a Tab-delimited text file containing a data set generated in a computer model or any sort of text editor. The file-type extension by default is **.tab**, but you can change the type to **\*.\*** - all files.

Type the name of the new worksheet that you want to put the data on (do not use spaces in the name) or select an existing worksheet. Notice that sheets named "Data#" " keep data for specific charts and should not be used to paste raw data; otherwise the chart will be lost.

You have two options to paste raw data on a worksheet. You can add raw data after the existing records or completely overwrite it.

The imported Tab-delimited txt file can contain up to 65,500 lines. In practice, the size of the data set can be limited by the computer or Excel capacity to process it quickly. In these cases it is recommended to split large data sets in two or more and import them on different datasheets.

Alternatively to using the Data Entry menu you can also copy and paste your data over the Windows clipboard.

## Data Set Format

The imported data is grouped in tables. Number of tables is not limited.

### *Table Sample*

---

Header	Title	Black-Oil fluid properties			
Header	Experiment	Differential Liberation (DLE)			
Header	Exp. Numb.	3			
Header	Fluid	Oil sample #5			
Names	Stage	Pressure	Oil Volume	Mol Weight	Density
Units	#	(Bara)	(%)		(kg/m3)
	1	350	100	270	720
	2	300	100	270	710
	3	250	85		720
	4	200	70		725
	5	150	50		730

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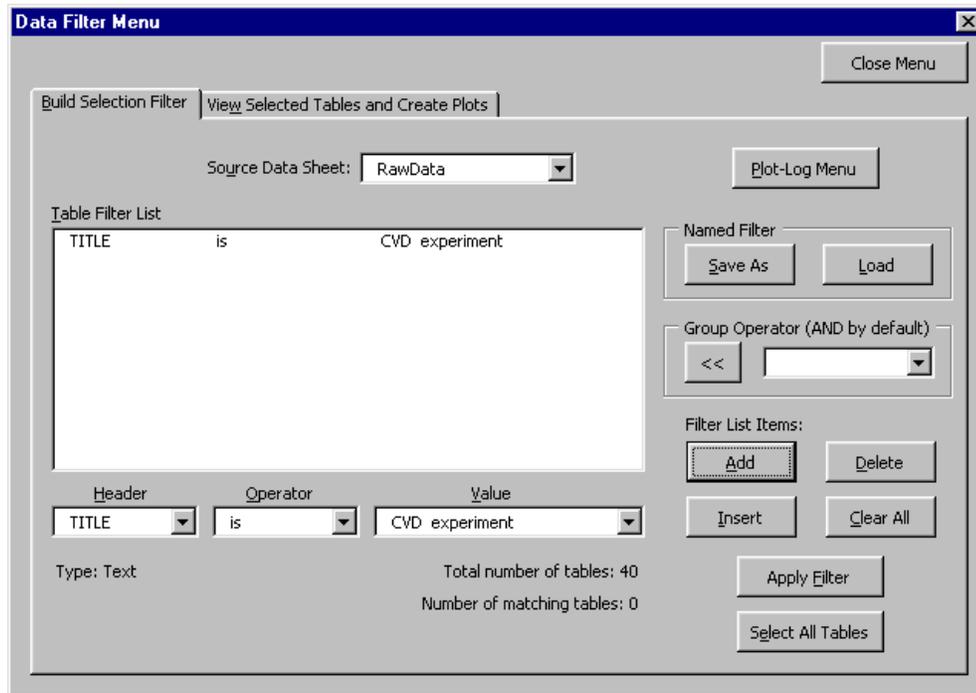
- The format of imported file is not case sensitive.
- Numbers of data rows and columns in a table are not limited
- Tables are separated by one or more **blank lines without any characters**. Notice that spaces (“ ”) will be treated by Excel as characters, so do not leave spaces on the separation line.
- Some data entries can be blank like in the column *Mol Weight*, but it is important to have at least one character in a column or a row to keep the rest of data as part of the table.
- The table is defined by 3 keywords:
  - Header** – provides table description. Every table should have at least one header and as many as you need. The header has its name and value. The name is a character string like *Title* or *Exp. Number*. The value can be of character, numeric or date type.
  - Names** – define data column names. Can be only one and immediately follows the last keyword Header.
  - Units** – define data units. Can be only one and immediately follows the keyword Names.

## Create Plots

Building a plot starts with selecting source data tables.

**Source Data Sheet** – shows where Plot2excel looks for the data tables. A string at the bottom of the menu always shows the total number of the available tables on the selected data sheet. Any plot can get its X and Y data values from the tables residing on one raw datasheet, whether you build it with Plot Setup or Plot-Log menu.

## Data Filter



**Select All Tables** – allows user to see all tables in Plot Setup menu and use them for selecting X and Y values.

**Apply Filter** –selects a restricted set of tables according to the conditions in the filter list. This is a way to reduce the choice of tables in the Plot Setup menu, when the total number of tables is too large. If you set Apply Filter on, the selecting process checks whether or not the headers of every table match the requirements specified in the filter. The specifications can be quite broad or very selective. The filter setup process is:

1. Select a header from the **Header** drop-down list. This list contains all unique header names on the chosen source datasheet.
2. Select a logical condition from the **Operator** drop-down list.
3. Type in or select a **Value** for the specified header.
4. Add this logical statement to the filter list with the **Add** button.

For example, you can define a filter to permit selection of tables only with a certain title. All other tables with different titles or without a title will be ignored.

## Group Operator

If you have two or more statements in the filter list they are joint with relational operator AND by default. For example, the following two filters make the same choice:

group operator AND is implied by default,

```
TITLE      is      Simulated results
DATE       =      10/05/99
```

group operator AND is used explicitly,

```
      ** Begin AND **
TITLE      is      Simulated results
DATE       =      10/05/99
      ** End AND **
```

For each group operator, there is a pair of corresponding Begin and End. For example, **\*\* Begin And \*\*** and **\*\* End And \*\***, **\*\* Begin Or \*\*** and **\*\* End Or \*\***. Filter statements are put in between each pair of group operators.

The **AND** operator is to create the logical intersection of two or more selection statements. The tables must satisfy all conditions inside the AND pair for selection.

The **OR** operator is to create the logical union of two or more selection statements. The tables must satisfy at least one statement inside the OR pair for selection.

A group of statements can be nested inside several pairs of Begin and End as shown in the following example:

```
      ** Begin And **
Experiment is Laboratory measurements
      ** Begin Or **
Exp. Number = 3
Exp. Number = 4
Exp. Number = 5
      ** End Or **
      ** End And **
```

Changing the pair of Begin and End positions in a selection filter can dramatically change which tables are selected.

## Named Filter

After you complete a selection filter, you can save it in a Tab-delimited text file for later use. Choose **Save As** button and enter a name in the Save Filter List box for the current displaying filter. Later, you can recall the selection statements from the text file using the **Load** button.

## Plot Setup

You can start the Plot Setup menu either from the Data Filter or from the View & Edit menu.

This menu helps you to select X and Y values for each plot series and define how it is going to look. All these controls should be fairly easy to use, though with a few comments.

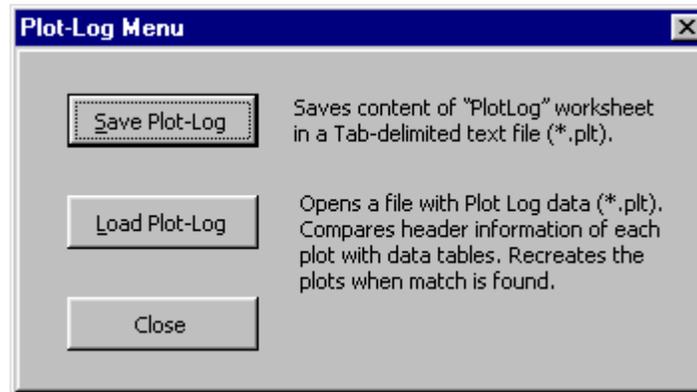
A plot can be created with one X-axis and one or two Y-axes. The first series is always plotted on the primary Y-axis. The **Filter Menu** button appears only when you actually edit an existing plot and allows adding more tables to the current selection. **Sort (X) values** means that the X data column can be sorted to put all elements in order to avoid loops on series lines when you do not need to see them. The Y data column is shifted accordingly.

Pressing the **OK** button does the following:

- Creates a datasheet named **Data#** with copies of the selected X and Y data columns from the raw datasheet and some additional information about the series which is necessary to start Edit procedure if you want to update the chart later. It is not recommended to make any manual changes to this datasheet.
- Creates chart-sheet named **Plot#** with the actual chart object.
- Makes a record in the **PlotLog** datasheet

## Plot-Log Menu

The Plot-Log menu is a key component in Plot2Excel intended to automate the whole plotting process. It virtually allows to clone charts using pre-defined chart descriptions and updated raw datasets. With the Plot-Log you can make more that 100 plots at once.



Properties of every plot created with Plot2excel are automatically described in terms of its source data tables, X and Y values and series style. All these properties are reflected in the PlotLog datasheet. With the **Save Plot-Log** button you can save these records in a Tab-delimited text file for later use. The default file-type extension is \*.plt.

To run a Plot-Log file you need to:

- Set up your preferences in **Plot Defaults** menu
- Import a file with new data tables using the **Raw Data Entry** menu.
- Open the **Data Filter** menu and select a source datasheet containing raw data.
- Open the **Plot-Log** menu and using the **Load Plot-Log** button select the appropriate file and press OK. Plot2Excel will read this Log file and compare every plot description with the available source data tables. A plot can be created when at least one plot series has a corresponding data table with matching X and Y names and units. After comparison is finished an info-box is displayed showing how many plots can be created with the loaded PlotLog file and available data tables.
- Press OK and the charts will be plotted automatically.
- Later you can edit these charts, add new ones or delete them. Every change will also be reflected on the PlotLog datasheet.

MS Excel 2000 is required if you need to make more that 15 plots at once with Plot-Log function. The older version of Excel is prone to run out of memory with this task.