Viewplot Help Contents

Viewplot For Windows
by
Engineered Software

Viewplot for is an Engineering tool which is useful for plotting raw data or functional equations and FFT calculations generated by the program Datafit. It can be used stand-alone, or launched from within Datafit once the programs have been registered.   It has the ability to plot multiple curves from one or more datasets and display them in the same or separate windows simultaneously.   Plots can be customized by formatting legends, numerical scaling, line colors, fonts, line styles and axis/title labels.   The plots can be saved, printed or copied to the Windows clipboard for pasting into other applications.

To learn how to use Help, press F1 or select Using Help from the Help Menu.

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Customizing Viewplot

You can change some user preferences using the **Options** menu. Choose **Edit - Options** in the main Viewplot window to access the following user preferences.   The changes are saved in the viewplot.ini file in your Windows directory for future sessions. These preferences are:

1. Window Settings

Font Setup: Font, Fontsize, Fontbold and FontItalic are the default font designations for plot window text.   The text objects for plots are listed the **Plot Objects** list.   These include the plot **Title**, **Axis Labels**, **Axis Titles** and plot **Legends**.   To change the default font designation for any of these objects, select the object in the list you want to change.   Click the **Change Font** button, and select the desired font from the Font Dialog box.   During installation, Ms Sans Serif is designated as the default font.   This is a common Windows font.   If however, your system does not have this font, you will be warned and the default system font for your system will be used. If you receive this warning, you can correct the problem here.   Only the fonts supported by your computer and printer are listed in the Fonts Dialog box.   The new font settings will take effect immediately upon opening any **new** plot windows.   To change fonts only within the current plot window, choose **Plot -** Format Axis and click on the **Fonts** button. All font information is saved when a plot is saved.

Window Settings:.   The windows can be moved and resized once they are visible, but these setting determine their initial placement and size.   **Default X** is the designation for horizontal placement of the windows (in pixels).   **Default Y** of the designation for vertical placement of the windows (in pixels). Height is the window height (in pixels), and Width is, you guessed it, the window width.   To change these settings, enter the properties in the appropriate text boxes.   To make the windows appear full screen upon startup, click the **Maximize Display** button.   This will set the default window size to be maximized to the screen dimensions designated by your current video driver. You can position and size the screen prior to selecting **Edit - Options** and click the **Set to Current** button to set the default window settings to the current settings.   The Window settings will take effect the next time you run Viewplot.

Project Directory: This is the directory where all of the projects are stored. When you install Datafit and Viewplot, you are prompted for the directory in which to install the executables. The default project directory will exist in the install directory and will be called projects.   If you want to change it, create a new directory (from DOS or Windows File Manager) and change the text in the **Project Directory** box to point to the new project directory.

When you exit the **Options** panel by selecting the **Ok** button, the changes you made will be automatically saved.   If you want to exit the panel without changing any settings, just press the **Cancel** button.

OPEN (File Menu)

Choosing **File - Open** will create a new plot window. The file dialog box will prompt you for the name of a Datafit equation solution file (*.dft), a Datafit FFT solution file (*.fft) a Viewplot plot file (*.plt), or a delimited text file (*.*).   If you selected a Datafit equation solution file or an FFT solution file, enter the path and filename to the file you wish to open, or use the directory listbox to change to a directory containing the desired file.   Once the file is read, you will be shown a list of equations with correlation coefficients and discreet input, or FFT data that exists in the particular file.   If you are reading a delimited text file, the the name of the input file will be shown in this list.   Correlation coefficients are only shown next to solved equations. Correlation is calculated in order to determine how well the approximation function describes the input data. A correlation of 1.0 indicates a perfect fit.   The approximating function is less accurate as the correlation decreases from a value of 1.0.

NOTE: Solutions solved in Datafit Versions 2.1 and earlier did not save the correlation information to file, therefore the correlation will appear to be zero.   This will not affect the plot you are creating, but to see the correct correlation, re-open the project in Datafit and the files will be automatically updated.

You can load one equation (select a single item in the list by clicking on it), multiple equations (multi-select items by holding the <Ctrl> key while selecting) or all of the equations (choose **Select All**).   To de-select all of the items in the list, choose **Deselect All**.   At least one equation must be selected.   The Cubic Spline equations will be plotted with an initial default number of 100 points per spline for the range in which the equation is valid.   All least squares equations will be plotted at the inputted values.   FFT data will be plotted at the discreet frequency points determined by the sampling rate.

By default, Least Squares equations will be plotted as continuous lines.   Input data from a solution file or raw data will be plotted as discreet points. Cubic Splines and FFT data are always plotted as continuous lines.   This method of plotting lines as discreet or continious can be changed in the **Plot** - Format Graphs menu.

If you selected a Viewplot plot file (*.plt), the plot will be read in as it was last saved and will not promp you for graphs to include.

If you want to plot equations or FFTs from different solutions of the same plot, use **File** - Import.

Import (File Menu)

Choosing **File - Import** will read and add equations or raw data to the active plot window.   The file dialog box will prompt you for the name of a Datafit FFT solution file (*.fft), an equation solution file (*.dft), or a delimited text file (*.*).   Enter the path and filename to the file you wish to open, or use the directory listbox to change to a directory containing the desired file.   Once the file is read, you will be shown a list of equations with correlation coefficients and discreet input, or FFT data that exists in the particular file. If you are reading a delimited text file, the the name of the input file will be shown in this list.   Correlation coefficients are only shown next to solved equations. Correlation is calculated in order to determine how well the approximation function describes the input data. A correlation of 1.0 indicates a perfect fit.   The approximating function is less accurate as the correlation decreases from a value of 1.0.

NOTE: Solutions solved in Datafit Versions 2.1 and earlier did not save the correlation information to file, therefore the correlation will appear to be zero.   This will not affect the plot you are creating, but to see the correct correlation, re-open the project in Datafit and the files will be automatically updated.

If you are reading either type of solution file, you can load one equation (select a single item in the list by clicking on it), multiple equations (multi-select items by holding the <Ctrl> key while selecting) or all of the equations (choose **Select All**).   To de-select all of the items in the list, choose **Deselect All**.   At least one equation must be selected.   The equations or data in the file chosen will be added to the plot in the active window.   The plot will be rescaled to fit all of the plotted equations or data for their respective ranges. Cubic Spline equations will be plotted with the current number of points per spline.   By default, Least Squares equations will be plotted as continuous lines.   Input data from a solution file or raw data will be plotted as discreet points. Cubic Splines and FFT data are always plotted as continuous lines. This method of plotting lines as discreet or continious can be changed in the **Plot** - Format Graphs menu.

If you are reading a text delimited file, the file structure needs to be two values per line (X Y) format but the data can be be comma delimited, tab delimited, or space delimited, or a combination of these.   For example:

        1.0,2.0 is valid (comma delimited)
        1.0, 2.0 is valid (comma delimited with space)
        1.0   2.0 is valid (tab delimited or multiple space delimited)
        1.0,   2.0 is valid (comma delimited with multiple tabs or multiple spaces)
        1.0 2.0 is valid (space delimited)

It is not necessary to know the file structure being imported, the software will automatically detect this. All leading and trailing spaces and tabs are ignored.   If you want to import data from another software package, like **Excel**, choose **File - Save** as... and select Comma, Tab, or Space delimited format from the **Excel** main menu.

Importing is useful for plotting raw data or data from different solutions in the same graph. For example, if Least Squares method is preferred, but the entire data set cannot accurately be described by a single equation, the data set can be broken up into smaller datasets.   Importing equations from different datasets will allow you to plot them all on the same graph.

You cannot import a Viewplot plot file into the current plot window.   You may only import Datafit equation solutions, FFT solutions, or delimited text files (raw data).   If you want to add equations to a saved Viewplot file, open the Viewplot file first, then import the Datafit solution, FFT solution or delimited text file.

Save As... (File Menu)

Choosing **File - Save As...** will save the current plot in Viewplot file format (*.plt).   All information, including line color and style information, plot axis labeling information, legend placement and fonts will be saved. This will allow retrieving the plot file for <u>Printing</u> or <u>Importing</u> plots at a later time.   The file will be save as a Viewplot plot file (*.plt).

Close (File Menu)

Choosing **File - Close** will close the current active plot window.   Unless you <u>save</u> the current plot prior to closing the window, any of the <u>Axis formatting</u> or <u>Graph formatting</u> you have done to the active plot will be lost.

Print (File Menu)

Choosing **File - Print** allows you to make hardcopies of the active plot window.   Although the software should work with any Microsoft Wondows supported printer, there may be problems with certain printers or printer drivers.   If you have any problems printing to any particular printer, please contact the printer manufacturer and obtain the latest version of the printer driver.   If this does not solve the problem, please <u>contact us</u> and give us information about the printer (Brand, Printer driver version number) as well as the behavior observed.

Exit (File Menu)

Choosing **File - Exit** will close all opened plot windows and exit Viewplot. Unless you <u>save</u> any opened plot windows prior to exiting, any of the <u>Axis formatting</u> or <u>Graph Formatting</u> you have done to any plots will be lost.

Licenses and Registration

You are required to register your copy of DataFit and Viewplot if you find them useful.   A lot of hard work went into making them, and a lot more will go into making them better.   Payment of $30.00 for a single user license (based on US currency) can be accepted in the following forms:

1. Cash
2. Check/Money Order
3. Credit Card (Visa, Mastercard, American Express)
4. First Virtual
5. Invoice

You may also obtain a Site license.   Site licenses cover a single organization for an area of up to one hundred miles (160 km) in radius.)   The cost of a site license is $100.00 (based on U.S. currency).

This payment will cover the use of both programs.   Once you are registered, you can obtain priority technical support, provide input for future releases, get rid of the nagging registration screens, receive upgrade information, and generally feel better about yourself.

To register, select **Complete Registration Form** from the Registration Information panel.   The **Registration** program will appear.   Follow the detailed instructions on the form.   Depending on your payment option, you will be given instructions on how to send the payment.   You only need to complete one registration form for both Datafit and Viewplot.   The **Registration** program can also be launched from the Register icon.

To register copies of Datafit/Viewplot please use the **Register** program provided with Datafit/Viewplot to make payments. We use **KAGI Shareware** registration service, which accepts different payment methods, including credit card and invoices. If you live in the US or Canada, you may also mail us your check or money order directly, payable to John A. Gilmore, at the following address:

Engineered Software
C/O John A. Gilmore
1315 Varner Road
Pittsburgh, PA 15227, USA

Once we receive the form, you will receive a confirmation letter which will include your registration number and license agreement.   Once you have received a registration number, you may permanently enter it by selecting **Enter Registration** from the registration information panel.   Be sure to enter your name EXACTLY how it is spelled on the confirmation letter. If you have any problems entering your registration number, please contact <u>technical support.</u>

Obtaining Technical Support

Shareware Evaluation Users

Questions will be addressed to the extent that answers are needed to determine whether or not Datafit/Viewplot will fit your needs.

You may obtain technical support in one of the following two ways:

1. **Questions by US Mail**

    Send your questions to:

    Engineered Software
    C/O John A.Gilmore
    1315 Varner Road
    Pittsburgh, PA 15227

    Be sure to include your return address.

2. **Questions by EMAIL**

You can send Email via internet to johng@kagi.com.   Be sure to include your return address. This is probably the quickest way to obtain technical support.

Registered Users

In addition to the above two methods, you will receive phone support as well. Call (412) 881-4210 between 9:00 AM and 3:00 PM Eastern Standard Time.   If there is no answer, please leave a message with your name, phone number and license number reported to you from the software.   You can get the license number by choosing **About Viewplot** from the **Help** menu.   In the near future, there will be fax support as well.

Format Axis (Plot Menu)

Choosing **Plot - Format Axis...** will allow the user to customize the physical appearance of the active plot. The window which will appear is described below.

Heading

The heading text box will place text on the plot which would be the title appearing above the plot. To add a plot heading, click in the text box and type in the desired text.   To exclude a title from the plot, leave the Heading text box blank, or delete the text currently in the box.   To change the font or font size of the heading, you can click on the **Fonts** button described below and change the font settings.

X Label

The X Label text box will place text on the plot which would label the horizontal X axis. To add an X Label, click in the text box and type in the desired text.   To exclude an X axis label from the plot, leave the X Label text box blank, or delete the text currently in the box. To change the font or font size of the X Label, you click on the **Fonts** button described below and change the font settings.

Y Label

The Y Label text box will place text on the plot which would label the vertical Y axis. To add a Y Label, click in the text box and type in the desired text.   To exclude a Y axis label from the plot, leave the Y Label text box blank, or delete the text currently in the box. To change the font or font size of the Y Label, you click on the **Fonts** button described below and change the font settings.

X Min, X Max, Y Min, Y Max

These text boxes allow the plot extremes to be entered to control the numerical labeling of the X and Y axis. The first time a data is displayed using after Opening a solution file, the extremes are automatically calculated so that all of the equation data is displayed for their valid ranges. If a Plot file is Opened, these values will read from the file to reflect the formatting of the Saved plot. To reset the minimum and maximum values to display all data in the plot, choose **Plot** - Fit All.   To change the font or font size of the number labels, you can go into the Options menu and change the font settings.

Major Grids, Minor Grids

Selecting the Major Grid check box will cause gridlines corresponding to the Major Ticks to be displayed. Selecting the Minor Grid check box will cause gridlines corresponding to the Minor Ticks to be displayed. These check boxes apply to both the X and Y axis.

Major Ticks, Minor Ticks

Selecting the Major Ticks checkbox will display the major   tickmarks on both the X and Y axis. The major ticks also control the numerical labeling on the X and Y axis. Numerical axis labels will appear corresponding to each of the major tickmarks. Minor tickmarks appear between the major tickmarks. The X and Y text boxes appearing beneath the tick and grid check boxes control the number of tick marks displayed on the plot.

Fonts

Selecting the Fonts button will allow you to change fonts for the active plot window. Font, Fontsize, Fontbold and FontItalic are the font designations for plot window text.   The text objects for plots are listed the **Plot Objects** list.   These include the plot **Title**, **Axis Labels**, **Axis Titles** and plot **Legends**.   To change the font designation for any of these objects, select the object in the list you want to change. Click the **Change Font** button, and select the desired font from the Font Dialog box.   Only the fonts

supported by your computer and printer are listed in the Fonts Dialog box.   **True Type** fonts give the best results, as the appear the same on both the screen and the printer.   The new font settings will take effect immediately in the current   plot window.   Upon <u>Opening</u>any new plot windows, the default settings in the **Edit -** <u>Options</u> menu will initially be used.   The font information for each plot that is <u>Saved</u> is also saved in the file.   When a Plot file is saved and later re-opened, the fonts used will be the fonts that the plot was created with.

Show Legends

Selecting the Show legends check box will display the plot legend. The legend will appear as a box containing line colors, line styles and line names for each curve in the plot. The legend box can be moved about the plot by clicking the left mouse button in the box and dragging the box while holding down the left mousebutton. When the mouse button is released, the the legend will be redisplayed in the new position. The position of the legend is also <u>saved</u> along with the plot. To customize line colors, styles and names, choose **Plot** - <u>Format Graphs.</u>   To change the font or font size of the Legends, you can go into the <u>Options</u> menu and change the font settings.

Number of Points per Spline

The maximum number of points per spline text box controls the number of points plotted for each cubic spline curve in the plot. The Cubic Spline data is read in as equations, not as discreet data points, so the user has control over the calculated number of points for each curve. The default number is 100, however for plots whose X range is very large, this number can be increased up to 1000. The number of points is also<u> saved</u> along with the plot.

Format Graphs (Plot Menu)

Choosing **Plot - Format Graphs** will allow the user to customize the physical appearance of lines on the plot and the plot legend. The window which will appear is described below.

All of the equations or data plotted will appear in the list box. The names given by default are the equation type solved prefixed by the Datafit project name. If the data was imported from a delimited file, the filename will appear to represent the data.   These names can be changed by selecting the name in the listbox, and editing it in the text box beneath the list. To change the color or style of a particular line, select it in the list, and click on the **Colors** or **Styles** buttons. Choosing either of these two options will pop up a panel to allow the user to select a new color or line style. The **Line Width** can be controlled by using the spin buttons, or typing the **Line Width** in the line width text box.   You can specify line widths from values of 1 to 5.   If a line width of greater than 1 is selected, the line style is ignored.   The **Display Line** checkbox controls whether or not the line will appear on the plot and in the legend. Only the line currently selected in the list will be affected by any changes made.

The **Plot as Continuous** checkbox will allow Least Squares equations and raw data to be plotted as either discreet points (point enclosed by a circle) or as continuous lines (one point connecting to the next). By default, Least Squares equations will be plotted as continuous lines and   input data from a solution file or raw data will be plotted as discreet points. Cubic Splines and FFT data are always plotted as continuous lines.

Fit All (Plot Menu)

Choosing **Plot - Fit All** will reset the minimum and maximum values to display all data in the plot. This action will override and reset user entries X Min, X Max, Y Min, and Y Max in the Format Axis panel.

Zoom in (Plot Menu)

Choosing **Plot - Zoom In** will allow the user to graphically zoom into a particular region of the plot. Once selected from the menu, the curser will change to an up arrow. Select the first corner of the zoom box by clicking and releasing the left mouse button. The zoom box will size according to the mouse position once the first point has been selected. Select the second corner of the box by again using the left mouse button. To abort the zooming process at any time, click the right mouse button. Once both corners of the box have been selected, the plot will be rescaled to the zoom box coordinates. This action will override and reset user entries **X Min, X Max, Y Min, and Y Max** in the <u>Format Axis</u> panel.

Show Coordinates (Plot Menu)

Choosing **Plot - Show Coordinates** will allow the user to obtain actual numerical values from the plot. Once selected from the menu, the curser will change to a cross-hair, and an XY coordinate box will appear in the top right corner of the plot window.   Move the mouse to the desired location and click the left mouse button.   If the point selected is an arbitrary point in the background of the plot, an x will be placed at the point where the mouse was clicked, and the X and Y coordinates will be displayed in the coordinate box.   If another point is picked, the x will relocate to the new position, and the coordinates of the new position will be updated.   If the point selected is within a few pixels from a vertex point of a plotted line, mouse will snap to the vertex, and a box will appear around the selected point.   Once the box appears, you can trace the line by using the left and right arrows on the keyboard.   The left arrow will move the box left to the next vertex on the line, and the right arrow will move the box right to the next vertex on the line.   If there is more than one line being displayed and you have trouble snapping to the desired line, both vertex points may lie within the snap tolerance.   If this happens, you can hide the unwanted line by first using **Plot** - Format Graphs and hide the unwanted line. To abort the show coordinate process at any time, click the right mouse button.

Copy to Clipboard (Plot Menu)

Choosing **Plot - Copy to Clipboard** will capture a bitmap of the active plot and place it in the windows clipboard. The bitmap can then be pasted into other applications.

Warranty Information

Limited Warranty:

a.   The licensor warrants that it has the right to license the use of the licensed product(s).

b.   The Licensor warrants that the licensed product(s) will substantially perform as described in the products documention, provided that the licensed product(s) is installed properly on an IBM compatable computer running an unmodified copy of Microsoft Windows, version 3.1 or greater.

c.   This limited warranty is in lieu of all other waranties, expressed or implied, including, without limitation, warranties of merchantability and fitness for a particular purpose.

Limitation of Liability:

a.   Licensees sole and exclusive remedy for damage or loss in any way connected with the Licensed Product(s) or any services furnished by or for the Licensor, whether by breach of contract, warranty, due care, or breach of any other duty, shall be, at the Licensors option, (I) replacement of the Licensed Product(s), (ii) reperformance of services, or (iii) return to Licensee of the License Fee if non-performance is documented within ninety (90) days of the execution of the License Agreement.

b.   The Licensor shall not be liable to Licensee or to any other person for any special, incidental, indirect or consequential damages whatsoever even if the Licensor has been advised of the possibility of such damages, including without limitation, damages for loss of goodwill, loss of profits, business interruptionm and computer failure or malfunction.

DISCLAIMER

While Engineered Software has made every effort to deliver a high quality and useful product, we do no guarentee that this product is completly free from defects.   Engineered Software is not responsible for any damage to the purchasers computer system or data and in no event will Engineered Software, its officers, directors, employees or agents be responsible to the purchaser for any consequential, incidental, or indirect damages (including but not limited to damages for loss of business profits, business interruption, or loss of data) arising out of the use or inability to use the Engineered Software product, even if Engineered Software has been advised of the possibility of such damages.

Additional Information

If there are enhancements you would like to see added to Datafit/Viewplot and are a registered user, please dont hesitate to let us know. You can contact us by any of the methods listed in the <u>Technical Support</u> information.   We cannot guarantee that every request will be honored, but well do our best. Nows the time to get your requests in.

Also, If there is a specific application you need or would like to see, we are open for suggestions.   We have some other projects planned for the future, but would also like to hear from you.   This can even be Graphical Interfaces to code you may already have (for those of you in industry with all that Fortran source code lying around...)

Keep an eye on our Homepage on the Web.   The address is:

> http://198.207.242.3/authors/johng/, or
> http://www.kagi.com/authors/johng/

Dont forget the trailing slash!

Updates to the programs will be listed there, as well as new programs in the works.   New versions can be downloaded from the Homepage.

Thanks:

Thanks to **Chuck (did you put your drums together yet?) McGowan** for his constant input and heckling during development of this program.

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Thanks to **Greg Kochaniak** (http://198.207.242.3/authors/gregko/ or gregko@kagi.com) for writing the Register program, and **Kagi Shareware** (http://198.207.242.3/) for providing their service.

Also, Thanks to **Honda Corporation** for making such awesome, thought provoking, fast motorcycles.

Finally, and of ultimate importance, thanks to **Nancy** for being in my life.