



## **ZGRAFWIN Help**

Welcome to ZGRAFWIN Help. A brief description of the graph types and program options available follows. Please refer to the user documentation (see the file ZGRAFWIN.DOC) for a more complete description.

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# Graph Styles

## F-2D

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Graphs up to four expressions in the x-y plane, each of the form  $Y = F(X)$  or  $F(X,Y) = 0$ . Each expression may be up to 130 chars. long. Functions/expressions are evaluated using double precision; most 'C' math-library functions are supported.

## G-3D

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Graphs the equation  $Z = G(X,Y)$  in the x-y-z plane. The function may be up to 130 chars. long, and is evaluated using double precision; most 'C' math-library functions are supported.

## X/Y Line, Polar, Log, Area:

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Displays an X/Y Line, Polar, Log, or Area graph of (x, y) data from a data-file, displaying a user-selected symbol at each data-point. Each (x, y) coordinate must be on a separate line in the data-file, followed by the symbol [see documentation for complete data formats]. Up to 1000 (x, y) points may be graphed.

## Bar:

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Creates a 2-D/3-D bar graph [up to 3 groups of bars, 30 bars total per graph] using user-specified fill-colors and patterns. Manual data-entry or a data-file may be used for input.

## Pie:

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Creates a single- or multi-colored 2-D/3-D pie graph [10 slices, maximum]. Manual data-entry or a data-file may be used for input.

# Math Functions

The following math expressions are available in the user-defined expressions F-2D and G-3D:

- ABS() = Absolute Value
- ACOS() = Arc Cosine
- ASIN() = Arc Sine
- ATAN() = Arc Tangent
- COSH() = Hyperbolic Cosine
- COS() = Cosine
- EXP() = e (2.7182...) raised to a power
- LOG10() = Log Base Ten
- LOG() = Log Base e (2.7182...)
- POW10() = 10 raised to power
- RAND() = Random Number in the Range [0,1].
- SINH() = Hyperbolic Sine
- SIN() = Sine
- SQRT() = Square Root
- SQR() = Square [e.g., SQR(5.0) = 25.0]
- TANH() = Hyperbolic Tangent
- TAN() = Tangent

The following operators are available in these expressions:

- + Addition
- Subtraction
- \* Multiplication
- / Division
- ^ Raise To a Power, e.g.,  $5^3 = 125$
- () Parenthesis

Some sample functions follow:

- Parabola:  $X * X$
- Circle:  $X*X + Y*Y - 25.0$
- Curved Surface:  $\sin( X * Y * 0.1 )$

# ***Saving and Restoring Graphs***

ZGRAFWIN supports the PCX graphics standard, and allows the importing/exporting of graphics files using this format.

## **Saving Images**

To capture a graphics image to a file, select "Save PCX File" on the "Options | Image Load/Save" menu, when the desired graph is displayed onscreen.

## **Restoring Images**

To load and display an image previously saved to a PCX file, use "Load PCX File" on the "Options | Image Load/Save" menu.

## **Copying Images to the Clipboard**

Images may be copied to the Windows clipboard also, using another option on the same menu.

Note: ZGRAFWIN allows importing of monochrome, 16- and 256-color PCX images. Images are saved in 16-color PCX format only.

# **Printing Graphs**

## **To Print a Graph**

To print a graph, first generate the graph onscreen, using the "Draw" command on the pull-down menu for the appropriate graph style. Then select the "Print" command on the same menu.

## **Print Formats**

ZGRAFWIN supports two different styles of printing--a "screen print" mode (for which three distinct formats are available: "Best Fit", "Full-Page", "1-2-3X") and a "Direct-GDI" mode. The screen-print styles copy bit-mapped data from the screen to the printer; the "Direct-GDI" mode issues graphics device calls directly to the printer driver. See documentation for more info.

## **Adjusting Print Settings**

The "print settings" selection [under the "Options | Printing" menu] allows specification of print settings, including options for screen-print styles and direct-GDI print styles. Use the "Options | Printing | Printer Setup" selection or the Windows Control Panel Printer Setup options to tailor other settings for your printer driver...

Note: Landscape orientation is recommended (if your printer driver supports it) for output on 8.5 x 11-inch paper. Landscape mode can be selected via the Windows Control Panel, "Printers" option.

## **If You Experience Problems**

If printing does not start, check that the printer is online, and then verify that the settings in your Windows "WIN.INI" System file are correct [see ZGRAFWIN.DOC file, "Printing" section, for more information].

Note: When printing graphs with solid fill sections (pie, bar, and area graphs), you may wish to select "Single-color graph" (under the graph "Options | Style" sub-menu) or "Convert for Blk+Wht" (under "Options | Printing | Print settings" if the printed output is in black-and-white...)

# ***Adding Custom Text to Graphs***

## **To Add Text**

Custom text strings may be added to a graph using the "Text" menu options. The foreground and background color of the text as well as text style (font, relative size, etc.) settings may be selected. After selecting text attributes, you may add a text string to a graph using "Enter text string". You're first prompted to enter the text you wish to add, then directed to move the mouse cursor to the location onscreen where the text should be positioned. When the mouse button is clicked, the text string will be drawn onscreen and locked into place.

## **Correcting Mistakes**

If you make a mistake entering a string, you can delete the most recently entered text string ("Delete last string") or clear all text strings from the window at once ("Delete All text").

Note: A maximum of 30 text strings, each up to 80 characters long may be added to a graph.

# ***Editing Files***

ZGRAFWIN has a built-in editor, useful for editing small text files (10K Bytes or less), such as data-files for use with ZGRAFWIN. To access the editor, Select "Editor" on the "Options" menu.

## **Using the Editor**

The editor is fairly limited, but it does make use of a few features found in other Windows word-processing applications, including the ability to cut and paste text.

Note: When done editing, be sure to select "Exit Editor" to return to the main ZGRAFWIN menu.

# ***Adjusting Graph Colors***

ZGRAFWIN allows the user to select graph colors from a palette of 64 colors [On mono monitors Windows will simulate the colors using various cross-hatch patterns]. There are color selection on each of the pull-down menus, as appropriate for each graph.

## **Axis, Border, and Background Colors**

ZGRAFWIN allows the user to select colors for the graph axis (or border on the pie, bar, and area graphs), and the screen background.

## **Plot Colors**

Plot colors may be selected on the F-2D, G-3D, X/Y-Line, Polar, and Log graphs. Each plot color corresponds to an individual data group appearing in the graph.

## **Fill Colors**

Fill-colors are selectable for the pie, bar, and area graphs. Each fill-color corresponds to the data for an individual pie-slice, bar-group, or area-ribbon in the graph.

Important: You can use any combination of colors you wish, but for best results, use just the PURE colors for the axis, plot, and background colors [the PURE colors are the 16 colors located in the top two rows of the palette--dark black (color 0) thru bright white (color 15)]. The other "dithered" colors may be used for fill-colors...

## **Painting/Colorizing Regions**

To paint in a (bounded) area of the graph, simply position the mouse to a location within the region to colorize, and click the mouse. The region will be filled in with the current paint color [The paint color may be set/changed under the "Options", "Colors" submenu, or by clicking the right mouse button]. This option provides a quick way to color in regions, and is especially useful on the pie, bar, and area graphs.



# ***Tool Bar Selections***

The following is an explanation of the ZGRAFWIN tool bar options:

## **Load/Draw**

Loads a Graph Data File and Immediately Displays it Onscreen.

## **Redraw**

Redraws the Screen. May Be Used to Redraw a Graph After Changing a Graph Parameter, or Can Be Used to Remove the Effects of Undesired Paint Operations.

## **Edit Data**

Brings Up a Dialog Box Allowing the User to Edit Data for a Given Graph. Note: This Option Does Not Apply For the F-2D and G-3D Graphs.

## **Title**

Allows the User to Select a Main Graph Title.

## **Edit Text**

Switches To A Full-Window Editor With Which the User May Edit Small Files (i.e., Less than 10K Bytes). The Editor is Ideal for Editing ZGRAFWIN Graph Data Files.

## **Load PCX**

Imports a PCX File into ZGRAFWIN (Mono, 16-, and 256-color formats are supported).

## **Save PCX**

Saves the Current Window Contents to a PCX File (16-color format supported only).

## **Print Setup**

Brings Up the Windows Printer Driver Dialog Box. This Option Requires COMMDLG.DLL and May Not Work Under Windows 3.0.

## **Print Settings**

Allows the User to Select Individual Print Settings for ZGRAFWIN (See Discussion Under the "Print Formats" Category).

## **Help**

Brings Up the ZGRAFWIN Online Help Index. You Are Now Using the Online Help Feature.

## **About**

Displays ZGRAFWIN Program Information.

# ***Miscellaneous Options***

## **Numeric Precision**

ZGRAFWIN allows the user to specify the relative precision of numbers displayed along the axes of most graphs, using the "Axis Numbers/Divisions" selection under a graph's "Setup" menu. The precision represents the number of places shown after the decimal point in numbers. For example, the number "1.23456" would be displayed as "1.23" using a precision of 2, and "1" using a precision of 0. Also, for convenience, numbers can be displayed in regular floating-pt. format or in scientific notation.

## **Axis Divisions**

On the F-2D, X/Y, Area, and Bar Graphs, the user may select the number of divisions along the x- and/or y-axes. This option is accessible under the "Setup", "Axis Numbers/Divisions" selection on a graph menu.



