DATAPLOT supports a wide range of graphics commands. The PLOT command is the primary command for generating 2D graphs. It supports numerous formats and options and is both flexible and powerful. In addition, DATAPLOT provides a large number of specialized graphics formats. These can be broken down into the following 9 categories.

**X-Y Plots**

- **PLOT**
  Generate a plot of variables and/or functions.
- **ERROR BAR PLOT**
  Generate a plot with error bars.
- **VECTOR PLOT**
  Generate a vector plot (pairs of points connected with arrows).

**3-D Plots**

- **3D-PLOT**
  Generate a 3-dimensional plot of variables and/or functions.
- **CONTOUR PLOT**
  Generate a contour plot.

**Distributional Plots**

- **HISTOGRAM**
  Generate a histogram (absolute or relative frequencies, cumulative frequencies).
- **BIHISTOGRAM**
  Generate a bihistogram (absolute or relative frequencies).
- **FREQUENCY PLOT**
  Generate a frequency plot (absolute or relative frequencies, cumulative frequencies).
- **ROOTOGRAM**
  Generate a rootogram.
- **STEM AND LEAF PLOT**
  Generate a stem and leaf plot.
- **PIE CHART**
  Generate a pie chart.
- **PROBABILITY PLOT**
  Generate a probability plot (24 distributions).
- **PPCC PLOT**
  Generate a probability plot correlation coefficient plot (9 distributions).
- **NORMAL PLOT**
  Generate a Normal plot (a variation of the normal probability plot).
- **BOX-COX NORMALITY PLOT**
  Generate a Box-Cox normality plot.
- **BOX-COX LINEARITY PLOT**
  Generate a Box-Cox linearity plot.
- **BOX-COX HOMO PLOT**
  Generate a Box-Cox homoscedasticity plot.
- **PERCENT POINT PLOT**
  Generate a percent point plot (also known as a quantile plot).
- **QUANTILE-QUANTILE PLOT**
  Generate a quantile-quantile plot.
- **SYMMETRY PLOT**
  Generate a symmetry plot.
- **4 PLOT**
  Generate a 4 plot (run sequence plot, lag plot, histogram, normal probability plot on one page).

**Time Series**

- **RUN SEQUENCE PLOT**
  Generate a run sequence plot.
Graphics Commands

LAG ... PLOT Generate a lag plot.
... CORRELATION PLOT Generate an auto-, cross-, or partial auto-correlation plot.
... SPECTRAL PLOT Generate various types of spectral plots.
... PERIODOGRAM Generate a periodogram plot.
AV PLOT Generate an Allan variance plot.
ASD PLOT Generate an Allan standard deviation plot.
COMPLEX DEMODULATION PLOT Generate a complex demodulation plot.

Multivariate Plots
ANDREWS PLOT Generate Andrews curves.
PROFILE PLOT Generate a profile plot.
STAR PLOT Generate a star plot.
SYMBOL PLOT Generate a symbol plot (plot character attributes such as size and color set by other variables).

Analysis of Variance, Design of Experiments
... BLOCK PLOT Generate a block plot.
BOX PLOT Generate a box plot.
DEX ... PLOT Generate design of experiment plots (15 different plot formats).
I PLOT Generate an I plot.
YOUDEN PLOT Generate a Youden plot.

Statistics Plots
ANOP PLOT Generate an Analysis of proportions plot.
BOOTSTRAP ... STATISTIC PLOT Generate a bootstrap plot for a given statistic (for over 30 statistics).
JACKNIFE ... STATISTIC PLOT Generate a jacknife plot for a given statistic (for over 30 statistics).
HOMOSCEDASTICITY PLOT Generate a homoscedasticity plot.
PHASE PLANE DIAGRAM Generate a phase plane diagram.
FRACTAL PLOT Generate a fractal plot.
PARETO PLOT Generate a Pareto plot.
... STATISTIC PLOT Generate a statistic (versus data subset) plot (for over 30 statistics). These plots are documented individually as the AUTOCORRELATION STATISTIC PLOT, AUTOCOVARIANCE PLOT, COUNTS PLOT, CP PLOT, CPK PLOT, DECILE PLOT, EXPECTED LOSS PLOT, EXTREME PLOT, HINGE PLOT, KURTOSIS PLOT, LINEAR CORRELATION PLOT, LINEAR INTERCEPT PLOT, LINEAR RESSD PLOT, LINEAR SLOPE PLOT, MAXIMUM PLOT, MEAN PLOT, MEDIAN PLOT, MIDMEAN PLOT, MIDRANGE PLOT, MINIMUM PLOT, NORMAL PPCC PLOT, PERCENT DEFECTIVE PLOT, PRODUCT PLOT, QUARTILE PLOT, RANGE PLOT, RELATIVE STANDARD DEVIATION PLOT, RELATIVE VARIANCE PLOT, SINE AMPLITUDE PLOT, SINE FREQUENCY PLOT, SKEWNESS PLOT, STANDARD DEVIATION PLOT, STANDARD DEVIATION OF MEAN PLOT, SUM PLOT, TAGUCHI SN0, TAGUCHI SN+, TAGUCHI SN-, TAGUCHI SN00, TRIMMED MEAN
Graphics Commands

- **PLOT, VARIANCE PLOT, VARIANCE OF THE MEAN PLOT, and WINDSORIZED MEAN PLOT.**
- **6-PLOT**
  
  Generate 6 plots useful for analyzing fits.

**Reliability, Extreme Value Analysis**

- **TAIL AREA PLOT**
  
  Generate a tail area plot.
- **WEIBULL PLOT**
  
  Generate a Weibull plot.
- **CME PLOT**
  
  Generate a conditional mean exceedance plot.

**Quality Control**

- **XBAR CHART**
  
  Generate a mean control chart.
- **R CHART**
  
  Generate a range control chart.
- **S CHART**
  
  Generate a standard deviation control chart.
- **C CONTROL CHART**
  
  Generate a C control chart.
- **U CONTROL CHART**
  
  Generate a U control chart.
- **P CONTROL CHART**
  
  Generate a P control chart.
- **NP CONTROL CHART**
  
  Generate an NP control chart.
- **Q ... CONTROL CHART**
  
  Generate Quesenberry type control charts.

The ... in some of the commands indicates user-defined options for the command, as in

- **NORMAL PROBABILITY PLOT, UNIFORM PROBABILITY PLOT, etc.**
- **AUTOCORRELATION PLOT, CROSS-CORRELATION PLOT**
- **MEAN CONTROL CHART, RANGE CONTROL CHART, etc.**

**DATAPLOT** provides a great deal of flexibility in controlling the elements of a plot. For example, each plot trace can be drawn as a line, a character, a bar, or a spike. The settings for each of these is independent of the others. The chapter on **Plot Control** documents the commands for controlling the plot features.

The flexibility in controlling the plot attributes and features means that it is possible to create specialized chart formats not listed above. For example, various types of bar charts can be created from the standard PLOT command (and setting the **LINE** and **BAR** attributes appropriately). Check the various **LINE**, **CHARACTER**, **BAR**, and **SPIKE** attribute setting commands in the Plot Control chapter. It is also straightforward to change the default appearance of the supported charts with these attribute setting commands.

There are separate chapters that discuss topics such as available line styles and plot characters.

**Multiple curves per plot**

**DATAPLOT** can generate multiple curves per plot. For example,

- **LINES SOLID BLANK**
- **CHARACTER BLANK O**
- **PLOT Y1 Y2 VS X**
- **PLOT Y1 VS X1 AND**
- **PLOT Y2 VS X2**

The first plot command draws two curves (Y1 and Y2) against a common x coordinate while the second PLOT command plots two curves with different x coordinates.

When drawing multiple curves, **DATAPLOT** uses the concept of “traces.” A trace is a connected set of points. Points in the same trace are plotted with the same attributes. In the above example, Y1 is trace 1 and Y2 is trace 2. This is used when setting the attributes for a curve. For example, Y1 is drawn as a solid line with no character while Y2 is drawn as an O with no connected line.

The attribute setting commands (**LINE**, **CHARACTER**, **LINE COLOR**, **LINE THICKNESS**, etc.) specify the attributes for up to 100 traces. When a plot is generated, the first trace uses the first entry from each of the attribute setting commands, the second trace uses the second entries, and so on.
The ability to define traces is also useful in creating specialized chart formats. For example, it is easy to create a curve that is solid, then dashed for a certain number of points, and then solid again. This is done by creating a “tag” variable and then entering a command like PLOT Y X TAG. The variable TAG identifies those points in Y and X which are plotted with common attributes. The documentation for the PLOT command discusses the use of tag variables in more detail.

Overlaying plots
By default, DATAPLOT erases the screen at the beginning of a plot. The PRE-ERASE OFF command suppresses this initial screen erase and can be used to overlay plots on the same frame. If you do this, be sure to use the XLIMITS and YLIMITS command to set constant scales. The command LIMITS FREEZE (after the first plot) can be used if you do not know what your data limits are (this assumes the scales set for the first plot will contain the data for subsequent plots which may or may not be true). You may also want to suppress certain plot elements for subsequent plots (e.g., FRAME OFF, TIC MARKS OFF, TIC LABELS OFF) to avoid redrawing significant portions of a plot. However, this step is not required (it just saves plotting time).

Multiple plots per page
DATAPLOT provides two methods for positioning multiple plots on a page. The MULTIPLOT command allows you to specify an arbitrary number of rows and columns. It splits the page up into these rows and columns and each subsequent command that generates a plot simply moves to the next row and column position on the page. There is no restriction on the type of plot command that you can use. See the MULTIPLOT command in the Plot Control chapter for details.

The WINDOW CORNER COORDINATES and the FRAME CORNER COORDINATES commands let you specify the portion of the page to use for the next plot. These can be used in conjunction with the PRE-ERASE OFF command to generate multiple plots per page. These commands are documented in the Plot Control chapter.

Using the WINDOW CORNER COORDINATES (or the FRAME CORNER COORDINATES) command is not as easy as using the MULTIPLOT command, but it is more flexible in that you can position the plot anywhere. This allows you to do some things that the MULTIPLOT command does not. For example, you can draw a small plot inside the frame of regular size plot.

Plotting data subsets
DATAPLOT allows data subsets to be plotted by using the keywords SUBSET, EXCEPT, or FOR. The The SUBSET and EXCEPT keywords selects subsets based on the values of one or more variables. The variable defining the subset need not be one of the variables being plotted. The FOR keyword selects subsets based on the row number (e.g., plot the first 10 rows or plot every fifth row). The use of these keywords is documented in detail in the Keywords chapter of this volume.