CHAPTER 12  Graphics Attributes

All lines drawn by DATAPLOT can have the following attributes set:

• line type;
• line color;
• line thickness.

Available line types
DATAPLOT recognizes the following line types--

<table>
<thead>
<tr>
<th>Line Type</th>
<th>Short Designations</th>
</tr>
</thead>
<tbody>
<tr>
<td>no line</td>
<td>BLANK or NONE or BL or NO</td>
</tr>
<tr>
<td>solid</td>
<td>SOLID or SO</td>
</tr>
<tr>
<td>dotted</td>
<td>DOT or DOTTED or DO</td>
</tr>
<tr>
<td>dashed</td>
<td>DASH or DASHED or DA</td>
</tr>
<tr>
<td>dashed type 1</td>
<td>DASH1 or DA1</td>
</tr>
<tr>
<td>dashed type 2</td>
<td>DASH2 or DA2</td>
</tr>
<tr>
<td>dashed type 3</td>
<td>DASH3 or DA3</td>
</tr>
<tr>
<td>dashed type 4</td>
<td>DASH4 or DA4</td>
</tr>
</tbody>
</table>

The short designations (e.g., BL for BLANK, SO for SOLID, DA3 for DASH3) allow for the specification of a large number of line types on a single command line. For example,

```
LINES SO SO SO SO DO DO DO DO DO DA DA DA DA DA DA
```

DATAPLOT draws all dash patterns in hardware, so dashed lines can have a somewhat different appearance on different graphics devices. In addition, some graphics devices may not support 5 different dash patterns. In this case, the unsupported dash types are mapped to one of the supported dash types.

DATAPLOT does not currently draw any dash patterns in software.

The line style for each element of the plot can be controlled individually. These commands are documented in the Plot Control chapter.

Line colors
The available colors are documented in the Color chapter. The line color for each element of the plot can be controlled individually. These commands are documented in the Plot Control chapter.

Line thickness
Line thickness is handled in hardware when available on the device. If not, thick lines are drawn as multiple lines in software. The documentation for the supported devices in the Output Devices chapter specifies whether the given device draws wide lines in hardware or software. This means that wide lines can have a slightly different appearance on different devices.

The THICKNESS command can be used to set the default thickness for all plot lines. The thickness for each element of the plot can also be controlled individually. These commands are documented in the Plot Control chapter.
Plot symbols

Plot symbols can be taken from the following categories:

- common plotting characters;
- any ascii keyboard character (up to 4 characters can be specified for the plot symbol);
- Greek symbols;
- mathematics symbols;
- miscellaneous symbols.

The case (upper versus lower) and font (simplex, duplex, triplex, etc.) of the plot character are specified by the current setting of the CASE and FONT commands. The Greek, math, and miscellaneous symbols are available only when one of the Hershey fonts have been specified via the FONT command (simplex, duplex, triplex, triplex italic, complex, simplex script, complex script).

The common plot characters include:

- blank BLANK or NONE or BL or NO
- circle CIRCLE or O or CI
- square SQUARE or BOX or SQ
- diamond DIAMOND or DI
- triangle TRIANGLE or TR
- reverse triangle REVTRI or TRIREV or RT
- star STAR or ST
- arrow up ARROWU or AU
- arrow down ARROWD or AD
- vertical bar VERTICAL BAR or VB
- pyramid PYRAMID
- cube CUBE
- arrow ARROW or ARRH
- vector VECTOR
- point POINT

Of the above characters, the circle, square, diamond, triangle, reverse triangle, pyramid, and cube can be filled to provide a solid plot symbol. Use the CHARACTER FILL command to specify filled characters. For example,

CHARACTER FILL ON OFF ON ON

Up to 4 ASCII characters can be specified for the plot symbol. More than 1 character is most often used for the case where the CHARACTER command is used to label points. Some examples of this are given in the Plot Control chapter under the various character attribute setting commands.

The ASCII keyboard characters include:

- 0 to 9
- A to Z, a to z
- period .
- bar -
- plus +
- asterisk *
- left bracket [
- right bracket ]
- left brace {
- right brace }
- exclamation point !
- double quote “
- number #
- dollar $
The available Greek symbols, mathematics symbols, and miscellaneous symbols are listed in the Text Attributes chapter.

When specifying one of the special symbols as a plot character, leave off the open and closed parenthesis. For example, ALPH() is used to generate a Greek alpha. To use this as a plot symbol, enter:

```
CHARACTER ALPH
```

DATAPLOT automatically switches to a software font if it recognizes one of the special symbols.

Although the Postscript device supports a special symbol font that generates Greek characters, DATAPLOT does not use this when it encounters a Greek character (it is drawn in software). If, for example, you want to use $\alpha$ as the plot symbol drawn using the Postscript font (not the DATAPLOT software font), you could do something like the following:

```
SET POSTSCRIPT FONT SYMBOL
LINE BLANK
CHARACTER a
CHARACTER CASE ASIS
TIC MARK LABEL OFF
LABEL
PLOT Y X
X1TIC MARK LABEL ON
Y1TIC MARK LABEL ON
Y1LABEL Y
X1LABEL X
CHARACTER BLANK
SET POSTSCRIPT FONT HELB
PLOT Y X
```

Notice that the plot is generated twice. This is because only one Postscript font can be active. The plot is drawn once with the symbol font and all other text turned off to draw the character symbol with the Postscript greek character. It is then redrawn using the default Postscript font with no character symbol, but the other text turned on. Also, with the symbol font, Greek characters are specified by the corresponding alphabetic character, not the special () strings. The correspondence between the standard
keyboard characters and the Greek (and other miscellaneous symbols) in the Postscript symbol font is given in the Postscript Reference Language Manual.