

PSS®E 33.4

Guide to Printing and Plotting

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Siemens Energy, Inc.
Siemens Power Technologies International
400 State Street, PO Box 1058
Schenectady, NY 12301-1058 USA
+1 518-395-5000
www.siemens.com/power-technologies

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Chapter 1

Introduction

This manual documents the printing and plotting capabilities available in Siemens PTI software products using Version 17 of Siemens PTI's Fortran Utilities Package (FUP) and Version 8.0 of Siemens PTI's Device Independent Plotting Package (Indeplot). Through these packages, Siemens PTI software products provide a high degree of flexibility in both printing and plotting. This manual describes their adaptability to a wide variety of printing and plotting devices. This is achieved by the use of parameter files that can be customized at each installation site. Individual users may modify the printing and plotting parameters to meet their specific needs. Parameter files can be created and/or modified with any text editor.

The organization of the manual is defined as follows:

- Printing:** [Chapter 2](#) describes text printing options and a printer parameter file used for customizing all spool/print queue definitions. This parameter file is used for both text and graphics output to define site-specific spool/print queue definitions. There is a separate subsection for each computer system.
- PostScript:** [Chapter 3](#) describes the parameter file used to control Siemens PTI's PostScript text file printing translator. This translator is needed to send text to PostScript printers when the computer system does not support PostScript.
- Plotting:** [Chapter 4](#) describes hard copy graphics printing options and the parameter files used for controlling Siemens PTI's graphics package (Indeplot) for all supported graphics devices. There is a separate subsection for each graphic device along with any computer system-specific notes for that graphic device.

In some cases, it is not necessary for customized parameter files to exist for printing or plotting to be successful, but installations can usually benefit by providing files adapted to the print and plot devices in use.

In the following sections, the parameter files are referred to with a simple form such as PARMPR or PARMTK. On most systems the filename ends with ".DAT".

The parameter files are opened by using a directory search list on most machines. The program checks the current directory, the user's login or home directory (on some systems), and, finally, a master parameter file directory. Note that once a file is located, only that copy is used even if another copy exists in the search list. The actual filename and search method is discussed in the machine-specific product installation and usage manual.

1.1 Plotting via Indeplot

Indeplot is a graphics package written to allow the user to produce plots on a variety of plotting devices without the need to include coding that is specific to any one device. This means the user can produce graphics output without regard to the medium on which plots will ultimately be produced.

Indeplot supports many devices on many different computer systems, including PCs, HP, Digital, and SUN. Graphics devices include MOTIF, Tektronix, Calcomp pen plotter, QMS Laser Printers, PostScript Laser Printers and Versatec via Versaplot, Versaplot/Random, and the KMW vector processor. Even though Indeplot supports many devices, it attempts to behave the same on all the devices so as to yield consistent results.

Indeplot parameter files are described in detail in [Chapter 4](#). These are used to modify plotting characteristics to a specific plotting device.

1.2 Plotting to Hard Copy Devices

Each graphics device has its own plotting parameter file; in addition, any graphics device that automatically spools may refer to the printing parameter file, PARMPR, to define spooling characteristics. Any graphics device that supports Siemens PTI's method of automatically being spooled is indicated by the entry "Default Hard Copy Device Name" in the summary table on the first page of each device parameter section. To associate a graphics device with a spool queue, one uses the parameter "PRINTER" as described in [Section 2.2 GUI Output Device Selection](#). This allows the graphics device to be associated with a printer defined in the printer parameter file. Sample printer parameter files defining spool queues for graphic devices can be found in [Appendix A](#).

1.3 GUI versus Non-GUI

All printing and plotting features are available from our traditional (non-GUI) interface as well as our Graphical User Interface (GUI). The non-GUI dialog is described in detail. The windows used in the GUI interface follows similar dialog.

1.4 List of Obsolete Machines

We no longer support the following machines:

- IBM VM/CMS.
- Prime.
- PC for DOS.
- VAXstation using VWS software (UIS\$ routines).
- HP/Apollo.
- IBM MVS.

Chapter 2

Printing

2.1 Non-GUI Output Device Selection

Whenever printed output is requested in Siemens PTI software products, a standard output selection menu is presented. When using a non-GUI interface, the following menu is used:

```
ENTER OUTPUT DEVICE CODE:
0 FOR NO OUTPUT           1 FOR CRT TERMINAL
2 FOR FILE                 3 FOR PRINTER-1
4 FOR PRINTER-2           5 FOR HARD COPY TERMINAL
6 FOR ALTERNATE SPOOL DEVICE:
```

When the CRT terminal option is selected, the limited line capacity of the screen is recognized and most reporting activities pause at the end of each "screen full," giving the user the opportunity to scan the display before continuing or abandoning the report. When the user's workstation consists of a hard copy terminal device and the "hard copy terminal" is selected for output, the nonvolatile nature of the device is recognized and the continue/abort selection is suppressed. [Section 2.3](#) describes the manner in which a parameter file can be used to specify actual printer names for PRINTER-1 and PRINTER-2.

When a hard copy output device (device codes 3, 4, or 6) is selected, the user is given the ability to have multiple copies of the output tabulation produced (up to six). If more than six copies are requested, then one copy will be assumed.

When an alternate spool device is selected, the user may select any available spooled device on the system by responding to the instruction:

```
ENTER SPOOL DEVICE NAME, OPTION:
```

The OPTION entry is normally left blank unless the output is directed to a PostScript printer, in which case one of the following options may be specified:

LANDSCAPE Prints the text across the 11-in. length of the paper, allowing 132 column output to be printed.

PORTRAIT Prints the text across the 8.5-in. width of the paper, allowing more lines per page, but shorter line widths. This is the default for PostScript printing.

When printing to PostScript devices, the user may override the default translation characteristics, such as margins, by having a PostScript parameter file named PSCRIPT. Refer to [Chapter 4](#) for further details on the contents of the PSCRIPT file.

2.2 GUI Output Device Selection

When using a GUI, the following window ([Figure 2-1](#)) is presented to select the output destination:

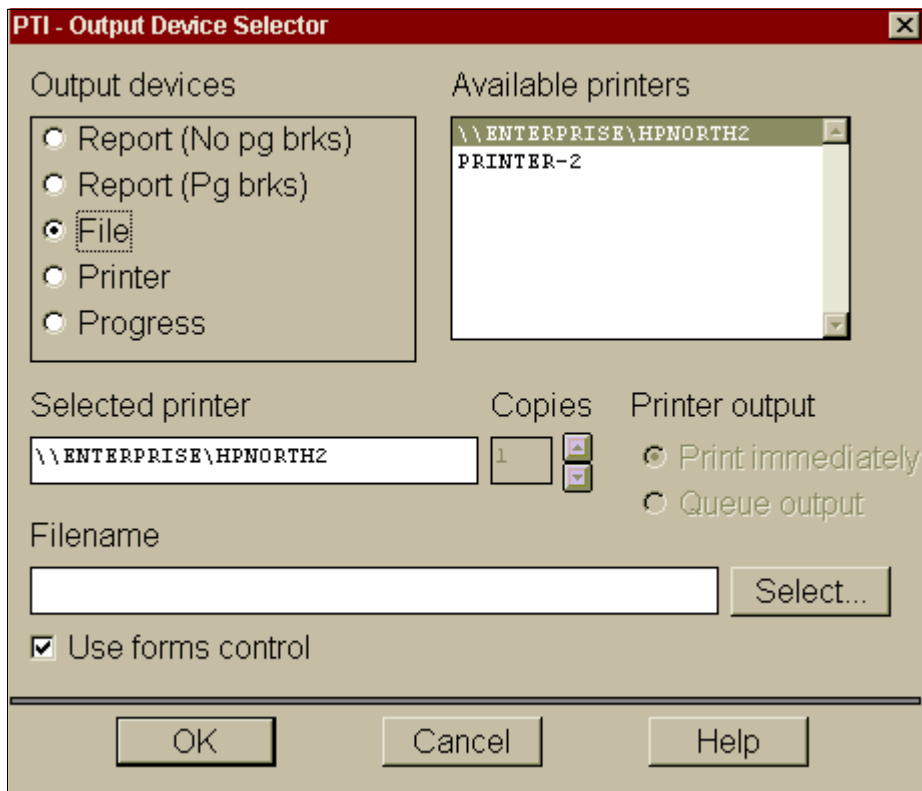


Figure 2-1. Output Device Selector Dialog

Only one output device can be selected. A printer can be selected by picking an available printer, entering a printer name in the field "Selected printer", or by picking Printer for the output device. "File" and "Filename" work similarly. "Progress" refers to the progress window normally part of the main GUI. "Report" refers to a report window, which is a separate window from the main GUI.

"Report (No pg brks)" requests output to the report window, but requests that only one set of headings at the beginning of the report be produced. Otherwise, except for output directed to a file, headings are produced for each page. The program keeps a count of lines per page. The lines per page for each device can be set in the PARMPR file, and can usually also be set by options in the software product as well.

The list of available printers comes directly from the PARMPR file and displays the "cdesc" field from the PRINTER parameter. The user can enter one of the available printers in the "Selected Printer" text input field, enter an undefined printer name, and/or the OPTION field used by PostScript printers.

Some output activities respond to a previously selected "bulk" output device. When selecting that bulk output device, the buttons for Printer Output, "Print immediately" and "Queue output", are activated, if a printer is selected. The meaning of this choice is whether reports responding to this preselected device should send their output to the printer as soon as they are done (print immediately), or whether the output should be held and printed with all such output at the same time, either when the device selection is changed, or when the program is terminated (queued output).

Output activities that output information with Fortran carriage control characters in column 1 will activate the "Use Forms Control" flag. Turning off this flag will cause the output device/file to not be opened with the Fortran carriage control option. This is not significant on every computer system.

2.2.1 Line Mode GUI Output Device Selection

If the GUI has the capability to carry on line-mode dialog (i.e., dialog as if there were no GUI), two variations on the menu in [Section 2.1](#) may be displayed. Normally, the following menu will be presented:

```
ENTER OUTPUT DEVICE CODE:
0 FOR NO OUTPUT                1 FOR REPORT WINDOW, WITH PAGE BREAKS
2 FOR A FILE                   3 FOR PRINTER-1
4 FOR PRINTER-2               5 FOR REPORT WINDOW, WITH NO PAGE BREAKS
6 FOR ALTERNATE SPOOL DEVICE  7 FOR PROGRESS WINDOW (WITH PAGE BREAKS):
```

This corresponds to the choices normally available through the GUI. For dialog devices, the report window is not a viable option, therefore this alternative menu is displayed:

```
ENTER OUTPUT DEVICE CODE:
0 FOR NO OUTPUT
1 FOR PROGRESS WINDOW
2 FOR A FILE
3 FOR PRINTER-1
4 FOR PRINTER-2
6 FOR ALTERNATE SPOOL DEVICE:
```

2.3 Printer Definition Parameter File

The printer parameter file PARMPR is used to customize spool device characteristics, such as banner page, queue type, and alternate queue name. All automatic spooling performed by Siemens PTI products, including spooling to plotting devices, accesses this parameter file.

Each line in the file contains one or more free form assignments in the following form:

```
parameter_name printer_code = new_value
```

where:

parameter_name Is the name of the parameter.

printer_code Is the number used to specify the internal printer code for grouping parameters together.

T	Terminal (device code 1).
F	File (device code 2).
1	Printer 1 (device code 3).
2	Printer 2 (device code 4).
3-20	Alternate spool devices (device code 6).

`new_value` Is the value to assign parameter for `device_code`.

The device code indicated above refers to the choices in the menu described at the beginning of [Section 2.1](#).

All variable identifiers in the following documentation are of a type determined by the first character of the identifier name.

c = Character string.
i = Integer number.
r = Real number.
l = Logical flag (1 = yes or true, 0 = no or false).

Comment lines may be used anywhere in the parameter files. The format for comment lines is:

```
! string
* string
```

where `string` can be any sequence of characters.

The following pages describe the PARMPR parameters, which are recognized for each of the computer systems on which Siemens PTI software products are supported. This file is processed once at the start of any Siemens PTI software product.

If changes are made to the PARMPR file during program execution, the program will not reflect those changes. Programs that have a line-mode interface can cause the PARMPR file to be reread by entering the @PARMPR immediate command, which will reset the status of the program forcing a reread of PARMPR for the next output.

2.3.1 Interaction Between PARMPR and Output Device Selector

Only devices defined in PARMPR are known to the application. Entering printer names that are not known will have differing results depending on the computer system you are using. In some cases, a file is created, in some an error is reported, etc.

Known printers are displayed in the Available Printers list in the GUI output device selector.

For the line-mode menus, there are two locations reserved for printer names, intended to be used for the most frequently used printers. They are menu choices 3 and 4, and will by default contain the values "PRINTER-1" and "PRINTER-2". The `cdesc` field of the PRINTER parameter for `printer_code` 1 and `printer_code` 2 are displayed here, if defined.

See the definition of the PRINTER parameter in [Section 2.4](#) for more details.

2.4 PARMPR - Printer Definition File

Parameter Filename:	PARMPR
Computer Systems:	All

2.4.1 Parameters

BANNER_PAGE

MS-Windows	OpenVMS
✓	✓

Specifies whether or not to display a banner page at the beginning of each print job. Usage is:

```
BANNER_PAGE printer_code = lflag
```

where:

printer_code Is the internal printer code number used for grouping parameters together for a specified printer.

lflag Is 0 to suppress the banner page, or 1 to display the banner page. Default is queue dependent.

END_STRING

MS-Windows	OpenVMS
✓	✓

Specifies an output string to be appended at the end of print jobs. This is implemented only for applications that write the file directly to the print queue (not copying previously generated data files, such as graphics activities). Usage is:

```
END_STRING printer_code = iseq,iseq,iseq,...
```

where:

printer_code Is the internal printer code number used for grouping parameters together for a specified printer.

iseq Is the ASCII/EBCDIC Decimal Equivalence string to send. As many of these codes as required may be entered on the line. Quoted strings of characters may also be used to enter data. Fortran carriage control may require the first character to be a space. The maximum string length is 132 characters. Refer to [Appendix A](#) for the

ASCII and EBCDIC character sets.

FORM

MS-Windows	OpenVMS
	✓

Specifies the name of the form you want for the print job. Usage is:

```
FORM printer_code = cname
```

where:

printer_code Is the internal printer code number used for grouping parameters together for a specified printer.

cname Is the form name. Maximum length is 64 characters. There is no default.

HEADER_LINE

MS-Windows	OpenVMS
✓	✓

Specifies whether or not to display the header line at the top of each page. Header lines are generally suppressed automatically when the file is in Fortran forms control, such as most reporting activities. Usage is:

```
HEADER_LINE printer_code = lflag
```

where:

printer_code Is the internal printer code number used for grouping parameters together for a specified printer.

lflag Is 0 to suppress the header line or 1 to display the header line. Default is 0.

LINES_PER_PAGE

MS-Windows	OpenVMS
✓	✓

Specifies the number of lines per page for the device. This is used by the Siemens PTI application program and does not send any information to the print queue. Usage is:

```
LINES_PER_PAGE printer_code = inumb
```

where:

printer_code Is the internal printer code number used for grouping parameters together for a specified printer.

inumb Is the number of lines per page.

PAGE_ORIENTATION

MS-Windows	OpenVMS
✓	✓

Selects the page orientation. Usually only implemented for PostScript devices. This parameter will not effect the orientation for graphics output. For graphics orientation see the appropriate graphics parameter file section. Usage is:

```
PAGE_ORIENTATION printer_code = cname
```

where:

printer_code Is the internal printer code number used for grouping parameters together for a specified printer.

cname Is the orientation. The value PORTRAIT specifies that text is printed upright such as this page. The value LANDSCAPE is used to rotate the page 90°. Default is PORTRAIT.

PRINT_COMMAND

MS-Windows	OpenVMS
✓	

Specifies an alternate method for automatically spooling text or graphics to a printer. This method is described in more detail below. Usage is:

```
PRINT_COMMAND printer_code = string
```

where:

printer_code Is the internal printer code number used for grouping parameters together for a specified printer.

string Is the character string that specifies the alternate spool command. To include blanks or other special characters, the string should be quoted.

The special print command is used to specify a site-specific print command where the printing needs extend beyond the standard capabilities of Siemens PTI software. To enable this method of

printing, use the parameter "PRINT_COMMAND". This parameter defines a site-specific command that will trigger the spooling of text and graphic files.

The appropriate spooling options will be passed as arguments to the site-specific command. Some of the arguments passed are controlled by other parameters in the PARMPR file ("BANNER_PAGE" for example).

The arguments to the command procedure are defined as follows (note that the arguments may appear in any order):

Argument	Definition
FN name	Filename.
DV device	Actual device queue name (defined by parameter PRINTER).
PO	File is in PostScript format.
NP	File is not in PostScript format.
QT number	Queue type number (defined by parameter PRINTER_TYPE).
C number	Number of copies to print, if greater than 1 requested.
F	File was initially written with Fortran forms control and may need additional processing. Standard file format (no Fortran forms control).
NF	
P	Use page orientation of PORTRAIT.
L	Use page orientation of LANDSCAPE (refer to PAGE_ORIENTATION parameter).
D	Delete file when finished printing.
ND	Do not delete file when finished printing.

The following arguments will only be present when specifically being requested, usually via other parameters in the printer parameter file.

Argument	Definition
FO form	Form name (defined by parameter FORM).
B	Display banner page.
NB	Suppress banner page.
T	Display trailer page.
NT	Suppress trailer page (defined by parameter TRAILER_PAGE).
H	Display header line.
NH	Suppress header line (defined by parameter HEADER_LINE).
E extra	Queue-specific qualifiers specified until end of line (defined by parameter SPECIAL_OPTIONS).

Note that the order of the arguments are not guaranteed, except "E", which will always be last.

PRINTER

MS-Windows	OpenVMS
✓	✓

Specifies the actual queue name, queue description, and alternate queue names. The queue description also acts as an alternate queue name and is to be used in prompts to the user. The alternate queue names are used to access the same printer by more than one name. Usage is:

```
PRINTER printer_code = cactual, cdesc, calter1, ..., calter5
```

where:

- printer_code** Is the internal printer code number used for grouping parameters together for a specified printer.
- cactual** Is the actual device queue name. The name "PRINTER" is used to specify the default system print queue.
- cdesc** Is the description field. Default is the actual queue name specified by "cactual".
- calter_n** Are the alternate queue names (limited to five names) that may be used to reference the same queue.

Note that imbedded blanks are not allowed in any of the above fields unless enclosed in quotes. Each of the above fields are typically limited to 64 characters, however, the actual limit is system dependent.

PRINTER_TYPE

MS-Windows	OpenVMS
✓	✓

Specifies the type of printer. The printer type is used by Siemens PTI products to customize output. Usage is:

```
PRINTER_TYPE printer_code = itype
```

where:

- printer_code** Is the internal printer code number used for grouping parameters together for a specified printer.
- itype** Is the printer device type.
 - 0Most standard printers and plotters.
 - 1PostScript printer. Used only on some machines that can handle PostScript printing. Check your printer section for usage.

- 2 PostScript printer. Necessary translation of text to PostScript handled within Siemens PTI software. See [Chapter 4](#) for more details.

PSCRIPT_NAME

MS-Windows	OpenVMS
✓	✓

Specifies an alternate filename for the PostScript parameter file described in [Chapter 4](#) of this manual. As with any parameter file, this file will be opened by using a machine-specific search method. Usage is:

```
PSCRIPT_NAME printer_code = cvalue
```

where:

printer_code Is the internal printer code number used for grouping parameters together for a specified printer.

cvalue Is the parameter filename. The default value is "PSCRIPT".

SPECIAL_OPTIONS

MS-Windows	OpenVMS

Specifies any print qualifiers to be appended to the print command. The method by which this is used is machine dependent. For sample usage, review the machine-specific sections that follow this section. Usage is:

```
SPECIAL_OPTIONS printer_code = cvalue
```

where:

printer_code Is the internal printer code number used for grouping parameters together for a specified printer.

cvalue Is the extra print qualifiers. The value must be quoted to handle imbedded blanks. Maximum length is 64 characters.

START_STRING

MS-Windows	OpenVMS
✓	✓

Specifies an output string to be inserted at the beginning of print jobs. This is implemented only for applications that write the file directly to the print queue (not copying previously generated data files). Usage is:

```
START_STRING printer_code = iseq,iseq,iseq,...
```

where:

printer_code Is the internal printer code number used for grouping parameters together for a specified printer.

iseq Is the ASCII/EBCDIC Decimal Equivalence string to send. As many of these codes as required may be entered on the line. Quoted strings of characters may also be used to enter data. Fortran carriage control may require the first character to be a space. The maximum string length is 132 characters. Refer to [Appendix A](#) for the ASCII and EBCDIC character sets.

TRAILER_PAGE

MS-Windows	OpenVMS
	✓

Specifies whether or not to display a trailer page at the end of each print job. Usage is:

```
TRAILER_PAGE printer_code = lflag
```

where:

printer_code Is the internal printer code number used for grouping parameters together for a specified printer.

lflag Is 0 to suppress the trailer page or 1 to display the banner page. Default is queue dependent.

2.4.2 80386/80486 PC Windows Notes

In the PARMPR file, the printer name WIN-PRINTER has a special meaning. It indicates that the default windows printer driver should be used. In the output device selection menus/GUI windows, the actual printer name will appear when WIN-PRINTER is designated in the PARMPR file.

If output is directed that printer, standard WIN32 API calls are used to output both text and graphics. (In the case of text output, font and related information is obtained from a product-specific INI file.)

When using the WIN-PRINTER option, therefore, both text and graphics data can be sent to any printer that is supported by the Windows operating system.

When output is directed to any device other than the windows printer, the associated text or graphics information is merely copied to the printer with very little "interpretation". Note that only devices that recognize HP-GL or PostScript code can be used for graphics output when not using the "windows printer". Control of the printer will also be limited. For example, font selection will only be possible by using the printer-specific "start" strings in the PARMPR file.

2.4.3 OpenVMS Notes

Printing files on OpenVMS Systems is accomplished by directing the files to the desired print queue (reference OpenVMS documentation manuals for assistance in establishing print queues). These print queues are used to direct output to a specific printer and control print attributes such as paper orientation, size, etc.

OpenVMS logical names may be used to define the print queues to Siemens PTI software products. The default device name for the logic PRINT 1 is PLOTTER, VERSATEC. The default device name for PRINTER 2 is PRINTER.

When a device name of PLOT is used, the queue name PLOTTER will be used. This is to allow existing Versatec installations to continue working by setting up the parameter: "PRINTER 1 = PLOT, Versatec". If you are using the Siemens PTI-supplied plotting library (Versaplot-7), then you should define the FORM to be PLOT. This allows the queue name to be translated to SPOOLQ.

It is possible to use the OpenVMS print symbiont form types by defining the queue name and the form name as a logical name. For example, to define a logical name that would direct output to the print queue DOWNSTAIRS with a form name of NARROW, define the logical name PRINTER using the following command:

```
DEFINE PRINTER DOWNSTAIRS, NARROW
```

This command can be executed as part of the user's login sequence or PRINTER could be defined as a system logical name as part of the system start-up procedure.

It is possible to use the OpenVMS logical names to define the location of the PARMPR.DAT file. For example, to define a logical name that would define the parameter file or existing in the login directory, execute the OpenVMS command:

```
DEFINE PARMPR SYS$LOGIN:PARMPR.DAT
```

This command can be executed as part of the user's login sequence.

2.5 Examples

The following are some examples using a device that recognizes HP PCL Printer Control Language.

How can I force a page to print before or after report (to keep my reports from attaching to other documents)?

Add the following entry to your START_STRING or END_STRING, as required:

Page Ejection: 27,38,108,48,72

For example: START_STRING 2 = 27,38,108,48,72.

How do I set the page orientation when printing PSS/U reports?

Portrait Orientation: 27,38,108,48,79

Landscape Orientation: 27,38,108,49,79

For example: START_STRING 2 = 27,38,108,49,79.

How do I make my report fit across a single page?

The following entries are examples of HP PCL codes to set the number of characters per inch on HP PCL compliant printers.

15 Characters per Inch: 27,40,115,49,53,72

19 Characters per Inch: 27,40,115,49,57,72

23 Characters per Inch: 27,40,115,50,51,72

Note that you can adjust the number of characters per inch to suit your needs by replacing the fourth and fifth values in the above strings with decimal numbers from the following table corresponding to the character desired (see the table and the explanations that follow it).

Character	Decimal	Character	Decimal
0	48	5	53
1	49	6	54
2	50	7	55
3	51	8	56
4	52	9	57

Explanation:

To find the two values to create a common string to set 39 characters per inch, you would:

1. Go to the Character 3 and get the corresponding Decimal equivalent 51.
2. Go to the Character 9 and get the corresponding Decimal equivalent 57.
3. Enter these values in the Characters per Inch string as shown below:

39 Characters per Inch: 27,40,115,51,57,72

Chapter 3

PostScript Parameter File for Text Printing

3.1 Introduction

Some computer systems require the text be translated into PostScript form prior to its submission to the spooling subsystem. The spool queue should allow data lines longer than 132 columns. A recommended length would be 256 characters per line. Whenever the PRINTER_TYPE is set to 2, as described in [Section 2.3](#), a parameter file named PSCRIPT is referenced for information to be used in translating the text into PostScript format. The parameter file PSCRIPT can be used to change the default PostScript device characteristics such as resolution, font selection, margins, and so on. It is not necessary to have a PSCRIPT file for this translation to occur, but only to override the assumed characteristics of the PostScript printer and the preprogrammed format of each output page.

It should be noted that any string specified by the END_STRING or START_STRING parameters defined in the printer parameter file, PARMPR, will also be translated.

Note that the PSCRIPT parameter file, which is accessed when printing tabular output to PostScript printers, is independent from the Indeplot parameter file PARMPS, which is accessed when generating graphical output for PostScript devices. Refer to [Section 4.12](#) for details on the PARMPS file.

3.2 PostScript Definition Parameter File

Each line in the file contains one or more free form assignments in the following form:

```
parameter_name = new_value
```

where:

parameter_name Is the name of the parameter.

new_value Is the value to assign parameter for device_code.

All variable identifiers in the following documentation are of a type determined by the first character of the identifier name.

c = Character string.

i = Integer number.

r = Real number.

l = Logical flag (1 = yes or true, 0 = no or false).

Comment lines may be used anywhere in the parameter files. The format for comment lines is:

```
! string
* string
```

where string can be any sequence of characters.

The following pages describe the PSCRIPT parameters that are recognized for each of the computer systems on which Siemens PTI software products are supported.

3.3 PSCRIPT - PostScript Text Printing

Parameter Filename:	PSCRIPT
Computer Systems:	All

3.3.1 Parameters

BOTTOM_MARGIN

Specifies the distance to be used for the bottom margin in number of dots. The actual margin width is a function of the RESOLUTION parameter. Usage is:

```
BOTTOM_MARGIN = ivalue
```

where:

ivalue Is the dots from the bottom of the page. The default value is 150 (or 1/2 in.).

END_PAGE

Specifies the last page to print, thus, allowing the user to end the print job possibly before the last page. Usage is:

```
END_PAGE = ivalue
```

where:

ivalue Is the last page to print. The default value is 99999.

ENTER_POSTSCRIPT_MODE

Specifies a string to be written at the beginning of each translated text file. Usage is:

```
ENTER_POSTSCRIPT_MODE = iseq, iseq, ...
```

where:

iseq Is the ASCII/EBCDIC decimal equivalent of the corresponding character of the string. Quoted strings of characters may also be used to enter data. Refer to [Appendix A](#) for the ASCII and EBCDIC character sets.

EXIT_POSTSCRIPT_MODE

Specifies a string to be written at the end of each translated text file. Usage is:

```
EXIT_POSTSCRIPT_MODE = iseq, iseq, ...
```

where:

iseq Is the ASCII/EBCDIC decimal equivalent of the corresponding character of the string. Quoted strings of characters may also be used to enter data. Refer to [Appendix A](#) for the ASCII and EBCDIC character sets.

FONT

Specifies the name of the character font to be used. The specified font must already be loaded in the printer. For tabular program output, a nonproportional font is normally selected. Usage is:

```
FONT = 'cname'
```

where:

cname Is the PostScript font name. The default font is Courier.

FONT_SIZE

Specifies the height at which characters are to be printed in number of dots. The actual character size is a function of the RESOLUTION parameter. Usage is:

```
FONT_SIZE = ivalue
```

where:

ivalue Is the font size. The default value is 38.

FTN

Specifies if the translator should use the Fortran forms control in column 1 to control header line and page advances. The applications generally force this option on, therefore the user cannot disable this control. Usage is:

```
FTN = lflag
```

where:

lflag Is 0 to not use Fortran forms control or 1 to use Fortran forms control. Default if 0, except if the application forces this feature on.

HEADER_LINE

Enables information line on the top of each page of text with filename and page number. When the FTN option is enabled, this feature does not work. Usage is:

```
HEADER_LINE = lflag
```

where:

lflag Is 0 to disable and 1 to enable the header line. The default value is 0.

LEFT_MARGIN

Specifies the distance to be used for the left margin in number of dots. The actual margin width is a function of the RESOLUTION parameter. Usage is:

```
LEFT_MARGIN = ivalue
```

where:

ivalue Is the dots from the left for the margin. The default value is 150 (or 0.5 in.).

LINE_SPACING

Specifies the spacing between each line of text in number of dots. This value plus the font size defines the distance between the lower left starting points of successive output lines. The actual spacing distance is a function of the RESOLUTION parameter. Usage is:

```
LINE_SPACING = ivalue
```

where:

ivalue Is the number of dots between each line. The default value is 4.

ORIENTATION

Specifies the page orientation for which direction the text is printed on the page. Usage is:

```
ORIENTATION = cvalue
```

where:

cvalue Is either PORTRAIT or LANDSCAPE. The default is PORTRAIT (same as this manual). LANDSCAPE prints at a 90° rotation.

RESOLUTION

Specifies the resolution of the printer in dots per inch. Most laser printers are 300 dots per inch. Usage is:

```
RESOLUTION = ivalue
```

where:

ivalue Is the dots per inch. The default value is 300.

START_PAGE

Specifies the first page to print, thus allowing the user to skip over initial pages. Usage is:

```
START_PAGE = ivalue
```

where:

ivalue Is the first page. The default value is 1.

TAB

Specifies the column increment for tab characters in the file. The value 0 will disable this feature. Usage is:

```
TAB = ivalue
```

where:

ivalue Is the number of characters for each column. The default value is 8.

TOP_MARGIN

Specifies the distance to be used for the top margin in number of dots. The actual margin width is a function of the RESOLUTION parameter. Usage is:

```
TOP_MARGIN = ivalue
```

where:

ivalue Is the dots from the top of the page. The default value is 150 (or 1/2 in.).

XPAPER

Specifies the width of the paper. Usage is:

```
XPAPER = ivalue
```

where:

ivalue Is the width in terms of resolution. The default is 2550 (300 * 8.5 in.).

YPAPER

Specifies the height of the paper. Usage is:

```
YPAPER = ivalue
```

where:

ivalue Is the height in terms of resolution. The default is 3300 (300 * 11 in.).

Chapter 4

Plotting via Indeplot

4.1 Graphics Devices

Several graphics output devices are recognized by those Siemens PTI programs that present results in graphical form. Obviously, users should restrict their selection of an output destination to those devices supported by Siemens PTI at their installation.

When the program requests a graphics device from the non-GUI interface, the user receives an installation-dependent prompt. The following is an example:

```
SUPPORTED PLOTTING DEVICES ARE:
  0 = NONE                      2 = HP 7221A
 11 = GRPG FILE                 26 = MS-Windows (color)
 27 = HP 7470A                 28 = HP 7475A
 29 = MS-Windows (B&W)        30 = MS-\\ENTERPRISE\HPCENTR2
 38 = HP-GL FILE              41 = POSTSCRIPT
 99 = INDE. PLOT FILE
SELECT PLOTTING DEVICE [, PARM FILE]:
```

The user should select a graphics device and, optionally, a new parameter filename. The default parameter filenames are described in [Section 4.3](#). The parameter filename will be saved for the session and is unique for each device family.

Following the generation of most hard copy graphics devices, such as HP pen plotters or laser printer, the user receives the prompt:

```
ENTER NUMBER OF COPIES (0 TO 5), DEVICE NAME:
```

This prompt will be used by devices using Siemens PTI's method of spooling files. This is indicated by the entry "Default Hard Copy Device Name" in the summary table on the first page of each device parameter section.

The user is given the ability to have multiple copies of the diagram produced (up to five). If more than five copies are requested, then one copy will be assumed. If "0" copies are requested, the plot will be saved on disk to be plotted later. The user may also specify the device (or queue) name of the device at which the plot is to be generated. For systems with a single such device, no user device name designation is required; for systems with multiple spooled devices, the plot will be directed to the "default" device unless a different device name is specified. The default hard copy device name is listed in the table at the beginning of the section for each graphics device where this prompt may occur.

Appendix A contains a summary of graphic devices supported by Siemens PTI software products.

4.2 GUI Plotting Differences

When selecting a graphics device from the GUI (see Figure 4-1), the user receives the following installation-dependent window for this purpose.

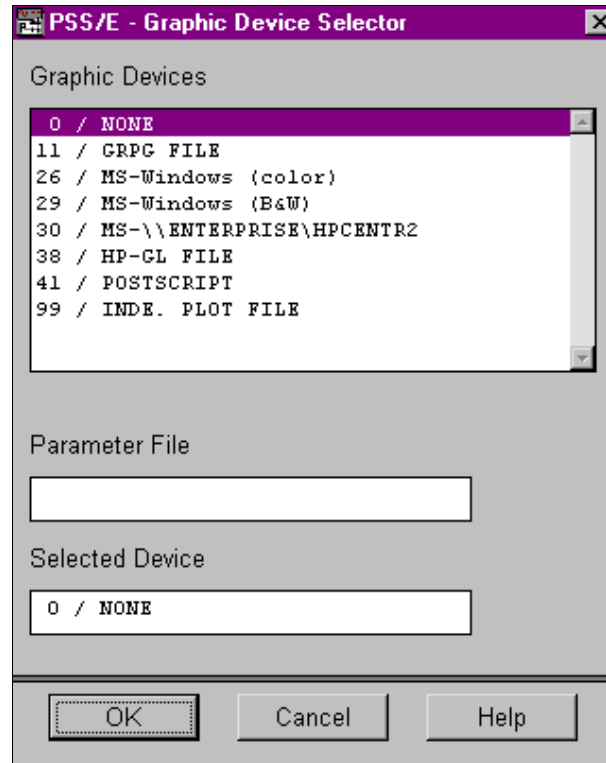


Figure 4-1. Graphic Device Selector Dialog

The list of graphic devices is dependent on the devices available at installation of the product. This example is a typical PC installation. The user can select one of the devices from the list or type its device number in the "Selected Device" text input field. The user can optionally enter a new parameter filename in the "Parameter File" text input field. Note that only the number is read from the "Selected Device" field; the program will not read data following the number.

Following generation of most hard copy graphics, the user will need to designate which printer to actually use for printing their plot (see "Spooled Device" column of Table 4-1). The user would receive the window shown in Figure 4-2.

The list of available printers comes directly from the PARMPR file and displays the "cdesc" field from the PRINTER parameter. The user can also enter a printer name, whether or not it had been defined in the PARMPR file, in the "Selected Printer" text input field.

Table 4-1. Known Devices and Associated Parameter Files

Device Name	Abbreviation	Parameter Filename	Spooled Device
Calcomp	CC	PARMCC	No
HP 7470, 7475, 7550, HP-GL file	HP	PARMHP	HP-GL file only
KMW VP-10, VP-30	KM	PARMKM	Yes
Microsoft Windows	PC	PARMPW, PARMPH	No
PostScript	PS	PARMPS	Yes
QMS Lasergrafix	QM	PARMQM	Yes
ReGIS (VT330/VT340)	RG	PARMRG	No
Tektronix	TK	PARMTK	Tekfile only
Versatec	VR, V9	PARMVR	VR only
X Window System (X.11)	DW	PARMDW	No

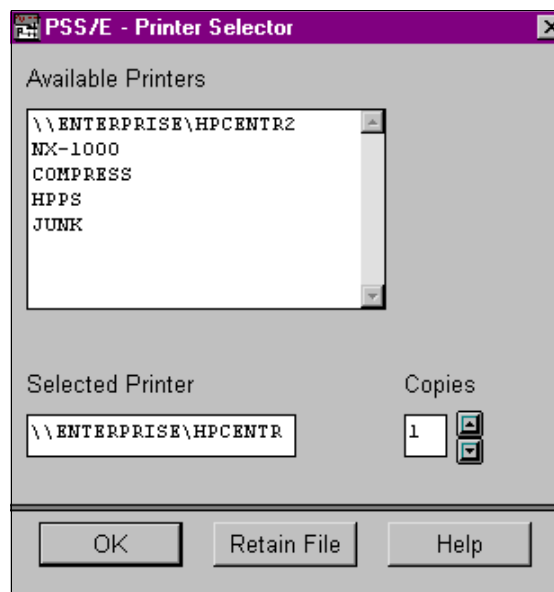


Figure 4-2. Printer Selector Dialog

4.3 Indeplot Parameter Files

Parameter files may be used to customize plotting device characteristics when using Indeplot. Indeplot assigns a two-character abbreviation to each device type that it can handle. The parameter files have the name PARMxx, where xx is usually that two-character abbreviation for the device. Table 4-1 lists all the known devices and their parameter files.

Each file contains one or more free-form assignment statements as defined in this section.

All variable identifiers in the following documentation are of a type determined by the first character of the identifier name. The definitions are:

c = character string.
 i = integer number.
 r = real number.
 l = logical flag (1 = yes or true, 0 = no or false).

Included in the parameter descriptions is the specification of the programmed default for each of the parameters. In some cases, however, a parameter file which changes one or more defaults may be included as part of a Siemens PTI software distribution tape.

Comment lines may be used anywhere in the parameter files. The format for comment lines is:

```
! string
* string
```

where string can be any sequence of characters.

4.4 PARMCC - Calcomp Pen Plotter

Parameter Filename:	PARMCC
Required Library:	Calcomp's Host Compatible Basic Software (HCBS)
Computer Systems:	OpenVMS

4.4.1 Parameters

ADVANCE_PAPER

Specifies the distance to advance the paper after each plot for Calcomp pen plotters. Usage is:

```
ADVANCE_PAPER = rnumb
```

where:

rnumb Is the distance to advance the paper in inches. Default is 2.0 in.

COLOR_MAP

Overrides the default color mapping for color graphics devices. This parameter allows the user to change the order in which colors are selected. Usage is:

```
COLOR_MAP = icolor1,icolor2,...,icolor16
```

where:

icolor Is the index of the color to select for this device. All values should be in the range of 1 to 16. Defaults are 1, 2, 3, 4, ..., 16.

CONTINUOUS_FORM

Determines if the device can display plots longer than XPAPER's value.

```
CONTINUOUS_FORM = lflag
```

where:

lflag Is 0 if the plot must remain within XPAPER by YPAPER or 1 for to allow the plot to exceed XPAPER. Default is 1.

CUT_BOX

Specifies whether or not a "cut" box should be drawn around plots. Additionally, specifies the location of the box relative to the generated plot. Usage is:

```
CUT_BOX = lflag, rxbox, rybox, rxborder, ryborder
```

where:

lflag Is 0 if a box is not to be drawn around the plot or 1 if a box is to be drawn. When 0 is specified, rxbox, rybox, rxborder, and ryborder are all defaulted to 0. Default is 0.

rxbox Is the distance to move in the x-direction from the edge of the paper in inches (optional). Default is 0.0 in.

rybox Is the distance to move in the y-direction from the edge of the paper in inches (optional). Default is 0.0 in.

rxborder Is the x-coordinate distance between the border and the plot edge (optional). Default is 0.75 in.

ryborder Is the y-coordinate distance between the border and the plot edge (optional). Default is 0.50 in.

DEVICE_CLASS

Used to change the device classification number. The graphics device driver may need to be programmed differently in order to accept a different device class. Users should not normally change this parameter. Usage is:

```
DEVICE_CLASS = inumb
```

where:

inumb Is the device class number. Values are:

1 - Device supports stripping.

2 - Map to full display.

3 - Use exact size in inches.

4 - Calcomp plotter.

Default for Calcomp is 4.

HARDWARE_CLIP

Determines if the clipping of unplotable vectors should be handled by software or hardware. Usage is:

```
HARDWARE_CLIP = lflag
```

where:

lflag Is 0 if the device can perform hardware clipping or 1 if the device cannot do hardware clipping requiring Indeplot to do software clipping. Default is 1.

HARDWARE_DASH

Determines if dashed lines should be generated by software or hardware. In general, plots can be produced much faster if hardware dashed lines are available. Usage is:

```
HARDWARE_DASH = lflag
```

where:

lflag Is 0 if the device cannot generate dashed lines or 1 if the device can generate dashed lines in hardware. The Zeta plotter is capable of hardware dashed lines. Default is 0 for Calcomp and 1 for the Zeta plotter. (See the [ZETA_PLOTTER](#) parameter below.)

NUMBER_OF_PENS

Specifies the maximum number of pens available for use. Usage is:

```
NUMBER_OF_PENS = inumb
```

where:

inumb Is the number of pens available. Default is 4.

SOFTWARE_PAPER_ALIGNMENT

Used to align paper to the top of a form without requiring hardware top-of-form indicator. Usage is:

```
SOFTWARE_PAPER_ALIGNMENT = lflag
```

where:

lflag Is 0 if hardware form alignment is available and 1 if software alignment should be done.
Default is 0.

UNIT_NUMBER

Specifies the unit number to use for the device. Usage is:

```
UNIT_NUMBER = inumb
```

where:

inumb Is the unit number. Default is automatic.

XCHNG

Used to rotate the entire plot 90° (including the plotting window). Usage is:

```
XCHNG = lflag
```

where:

lflag Is 0 if plot should be normal and 1 if plot should be rotated 90°. Default is 0.

XPAPER

Used to set the paper size in the x direction or width. Usage is:

```
XPAPER = rnumb
```

where:

rnumb Is the x size. Default is 8.5.

YPAPER

Used to set the paper size in the y direction. Usage is:

```
YPAPER = rnumb
```

where:

rnumb Is the y size. Default is 11.0.

ZETA_PLOTTER

Allows the Calcomp interface to work with the Nicolet Zeta 8 pen plotter. Usage is:

```
ZETA_PLOTTER = lflag
```

where:

lflag Is 0 to interface to a Calcomp or 1 to interface to the Nicolet Zeta 8. Default is 0. When Nicolet Zeta, hardware dashed lines are used by default. (See the parameter **HARDWARE_DASH** above.)

4.4.2 OpenVMS Notes

If your installation includes the Calcomp interface, the loading command files assume that the Calcomp supplied plotting library is installed as described in your Siemens PTI product installation instructions. The default name is CALCOMP.OLB.

The file PTICC.FLX is provided in case it is necessary to change the argument values or types passed to the Calcomp routines from Siemens PTI routines. The location of this file is product dependent and should be described in your Siemens PTI product installation manual. The most common changes are long integer versus short integer libraries. VMS Fortran compiler defaults to long integer, therefore, PTICC.FLX uses the long integer declarations. If any changes were necessary, there is a command file provided to compile this file.

4.5 PARMDW - X Window System

Parameter Filename:	PARMDW
Computer Systems:	OpenVMS

4.5.1 Parameters

CHARACTER_WIDTH

Used to specify the width of a hardware generated character. Usage is:

```
CHARACTER_WIDTH,DW = rnumb
```

where:

rnumb Is in pixels. Default is 6.

COLOR_MAP

Overrides the default color mapping for color graphics devices. This parameter allows the user to change the order in which colors are selected. Usage is:

```
COLOR_MAP = icolor1,icolor2,...,icolor16
```

where:

icolor Is the index of the color to select for this device. All values should be in the range of 1 to 16. Defaults are 1, 2, 3, 4, ..., 16. The colors defined for each numeric value are as follows (note that the names are as defined in the X11 Window System Standard):

1	black/white	9	springgreen
2	red	10	slateblue
3	green	11	coral
4	blue	12	maroon
5	cyan	13	navy
6	magenta	14	greenyellow
7	yellow	15	mediumvioletred
8	orangered	16	darkslategray

DEFINE_COLOR

Overrides the color definition for a specific color index. This allows the user to describe a given color using red, green, and blue values. Usage is:

```
DEFINE_COLOR icolor = ired,igreen,ibblue
```

where:

icolor Is the index of the color to change using red, green, blue values

ired Is the intensity of the red phosphor in the range 0 to 255.

igreen Is the intensity of the green phosphor in the range 0 to 255.

ibblue Is the intensity of the blue phosphor in the range 0 to 255.

Note that "0" specifies that the phosphor is off and "255" specifies that the phosphor is fully on. The default colors are described in the table for the COLOR_MAP parameter.

FLAG

Used to change specific characteristics. Usage is:

```
FLAG = cvalue
```

where:

If cvalue = WHITE Force the background color to the x-definition of white.

If cvalue = BLACK Force the background color to the x-definition of black.

If cvalue = INVERT Switch from the workstation's default background color to the alternative background color.

Default is FLAG = WHITE.

FONT_NAME

Used to specify the font for displaying text during input and simple output. The simple output is used in most menus. Font name usage is enabled with the parameter `HARDWARE_PRINT`. Usage is:

```
FONT_NAME = iseq, iseq, ...
```

where:

iseq Is the ASCII/EBCDIC Decimal Equivalent string used to specify font name to use. Quoted strings of characters may also be used to enter the font name. The font name should be a valid X11 font description, which can include an asterisk for wild character. If the font name is invalid, the default font is used. The default name is "fixed*".

HARDWARE_CLIP

Determines if the clipping of unplotable vectors should be handled by software or hardware. Usage is:

```
HARDWARE_CLIP = lflag
```

where:

lflag Is 0 if the device can perform hardware clipping or 1 if the device cannot do hardware clipping requiring Indeplot to do software clipping. Default is 1.

HARDWARE_FILL

Determines if toning or filling of polygon areas should be performed by software or hardware. Plots involving toning can be produced much faster when the hardware supports toning. Usage is:

```
HARDWARE_FILL = lflag
```

where:

lflag Is 0 if the device cannot perform hardware filling or 1 if the device can do hardware fill. Default is 1.

HARDWARE_PRINT

Specifies whether or not text should be generated by the hardware in simple cases (i.e., fixed size and angle). Usage is:

```
HARDWARE_PRINT = lflag
```

where:

lflag Is 0 if the device cannot do hardware text or 1 if the device can do hardware text. Default is 1. For gray scale devices, the user may use device code 25, which will force this value to 2. Otherwise, gray scale devices are treated like color when device code 39 is used.

NUMBER_OF_PENS

Specifies the maximum number of pens available for use. Usage is:

```
NUMBER_OF_PENS = inumb
```

where:

inumb Is the number of pens available. Default is 2 for black and white and 16 for color (or gray scale) displays.

PAGE_SIZE

Specifies the default size of window to create. The window will be centered on the display and may be resized with standard window manager commands.

```
PAGE_SIZE = rfactor
```

where:

rfactor Is the size specified as a real number from 0.0 to 1.0, where 1.0 is the entire display. Default is 0.75 (75% of the display).

THICK_MAP

Overrides the default thickness (line width) mapping for black and white graphic devices. This parameter allows the user to change the order in which line widths are selected. Usage is:

```
THICK_MAP = iwidth1,...iwidth5
```

where:

iwidth Is the index of the line thickness to select for this device. The values should be in the range of 1 to 5, where 1 is the thinnest and 5 is the thickest. Defaults are 1, 2, 3, 4, 5.

XCHNG

Used to rotate the entire plot 90° (including the plotting window). Usage is:

```
XCHNG = lflag
```

where:

lflag Is 0 if plot should be normal and 1 if plot should be rotated 90°. Default is 0.

4.5.2 OpenVMS Notes

When this driver is installed, DECwindows or DECwindows-MOTIF must also be installed. This may include nodes that do not have graphics displays but would still need to support execution of the application.

To display graphics on a display that is not the CPU executing the application, one must first define the display to use by using the VMS command SET DISPLAY. This may require special privileges. Possible usage is:

```
$SET DISPLAY/CREATE/TRANSPORT=DECNET/NODE=node_name::
```

To display graphics on a VMS workstation after doing a VMS SET HOST command to the same node, one must enter:

```
$SET DISPLAY/TRANSPORT=LOCAL/NODE=0
```

To display graphics on an X terminal using Digital's LAT protocol, one must enter:

```
$SET DISPLAY/CREATE/TRANSPORT=LAT/NODE=LAT_number
```

To display graphics on an X terminal or workstation using TCP/IP protocol, one must enter:

```
$SET DISPLAY/CREATE/TRANSPORT=TCPIP/NODE="ip_address" or "node-name"
```

Within graphics, the user can force the 8th bit to 1 when entering characters by typing "<character>\". This might be needed for accessing fonts with 256 characters. To enter a backslash type "\\\".

4.6 PARMHP - Hewlett Packard Pen Plotters and Plot File

Parameter Filename:	PARMHP
Default Hard Copy Device Name:	HPPLOT
Models Supported:	7221, 7470, 7475, 7550, HP-GL FILE
Computer Systems:	HP-GL FILE supported on all computers, limitations may apply to specific devices.

Note that HP-GL FILE can be used for any spooled device that can process the HP-GL language.

4.6.1 Parameters

COLOR_MAP

Overrides the default color mapping for color graphics devices. This parameter allows the user to change the order in which colors are selected. Usage is:

```
COLOR_MAP = icolor1,icolor2,...,icolor16
```

where:

icolor Is the index of the color to select for this device. All values should be in the range of 1 to 16. Defaults are 1, 2, 3, 4, ..., 16.

DEFINE_PEN_WIDTH

Specifies the HP-GL/2 command for defining the width of a pen. This command is not supported by the original HP-GL. To change the pen width for all pens, simply include a single DEFINE_PEN_WIDTH parameter without specifying a pen number. Usage is:

```
DEFINE_PEN_WIDTH = rwidth,ipen
```

where:

rwidth Is the line width. A value of 0 selects the thinnest line available. Plotter default values are device specific.

ipen Is the pen number for the width to be applied. If it is not specified, the width applies to all pens. The maximum number of pens available is defined by the parameter NUMBER_OF_PENS.

DEVICE_TYPE

Used to assign the HP model number to be used. This is used to override some of the default characteristics (i.e., to install an HP7475 with hardware handshaking, set DEVICE_TYPE to 7000 and use plotting device 28). When the device type equals 7000, then the D/Y switch should be set to "D" since the plotter will not be sent the logical ON/OFF commands. Usage is:

```
DEVICE_TYPE = itype
```

where:

itype Is the model number of the HP device; valid numbers are 7221, 7470, 7475, 7550, and 7000 (HP-FILE). Default depends on device selected (i.e., 7475 for device 28).

ENTER_GRAPHICS_MODE

Specifies a string to be written to the graphics device, which does not automatically enter graphics mode. It is possible to enter a different command for each device type. Usage is:

```
ENTER_GRAPHICS_MODE, cterm = iseq, iseq, iseq, ...
```

where:

cterm Is the valid device for the command. Valid entries are ALL or one of the device names (i.e., HP7221, HP7470, HP7475, HPFIL). Default is no code for all terminal types.

iseq Is the ASCII/EBCDIC Decimal Equivalence string to send. As many of these codes as required may be entered on the line. Quoted strings of characters may also be used to enter data. If the first value is -1, then this line is continued from the previous line. Refer to [Appendix A](#) for the ASCII and EBCDIC character sets.

EXIT_GRAPHICS_MODE

Specifies a string to be written to the graphics device to exit the graphics mode and return the device back to normal operation. Usage is:

```
EXIT_GRAPHICS_MODE, cterm = iseq, iseq, iseq, ...
```

where:

cterm Is the valid device for the command. Valid entries are ALL or one of the device names (i.e., HP7221, HP7470, HP7475, HPFIL). Default is no code for all device types.

iseq Is the ASCII/EBCDIC Decimal Equivalence string to send. As many of these codes as required may be entered on the line. Quoted strings of characters may also be used to enter data. If the first value is -1, then this line is continued from the previous line. Refer to [Appendix A](#) for the ASCII and EBCDIC character sets.

FILE_FORMAT

Specifies the file format for the intermediate file containing the graphical data. In most circumstances, the default file format should suffice. Usage is:

```
FILE_FORMAT = ctype
```

where:

ctype Is either "LIST" or "FTN". "FTN" is used to specify the spooler that Fortran output conventions are used. "LIST" is not Fortran output conventions. Default is "LIST".

FLAG

Used to change specific characteristics. Usage is:

```
FLAG = cvalue
```

where:

If cvalue = SPEEDADJ, then pen velocity instruction is used.

If cvalue = NOSPEEDADJ, then pen velocity instruction is not used.

Default is FLAG = SPEEDADJ.

HANDSHAKE

Used to specify what handshaking method to use with all HP pen plotters except the HP-7221. Currently, this should only be used when generating an HP-GL data file (device number 38). Usage is:

```
HANDSHAKE = iseq, iseq, ...
```

where:

iseq Is the ASCII/EBCDIC Decimal Equivalence string used to specify handshaking method as described in the *HP Interfacing and Programming Manual*. Default for HP-FILE is nothing, for all others select buffer handshake method which is ASCII 27, 46, 77, 49, 48, 59, 49, 55, 59, 49, 48, 59, 49, 51, 58. Refer to [Appendix A](#) for the ASCII and EBCDIC character sets.

Note that to disable all handshaking methods, use the HANDSHAKE command with no arguments. If you wish to change the method on device numbers 27 and 28, you must select the DEVICE_TYPE = 7000.

To select XON/XOFF handshaking, use the following ASCII line:

```
HANDSHAKE = 27, 46, 73, 56, 49, 59, 59, 49, 55, 58, 27, 46, 78, 59, 49, 57, 58
```

HARDWARE_CLIP

Determines if the clipping of unplotable vectors should be handled by software or hardware. Usage is:

```
HARDWARE_CLIP = lflag
```

where:

lflag Is 0 if the device can perform hardware clipping or 1 if the device cannot do hardware clipping requiring Indeplot to do software clipping. Default is 1.

HARDWARE_DASH

Determines if dashed lines should be generated by software or hardware. In general, plots can be produced much faster if hardware dashed lines are available. Usage is:

```
HARDWARE_DASH = lflag
```

where:

lflag Is 0 if the device cannot generate dashed lines or 1 if the device can generate dashed lines in hardware. Default is 1.

HARDWARE_PRINT

Specifies whether or not text should be generated by the hardware in simple cases (i.e., fixed size and angle). Usage is:

```
HARDWARE_PRINT = lflag
```

where:

lflag Is 0 if the device cannot do hardware text or 1 if the device can do hardware text. Default for 7221 is 1, otherwise it is 0.

MAXX

Sets the maximum x-axis coordinate (in units) for plotting. Usage is:

```
MAXX = inumb
```

where:

inumb Is the value to assign. Default for the HP 7221 is 3200, otherwise it is 10100.

MAXY

Sets the maximum y-axis coordinate (in units) for plotting. Usage is:

```
MAXY = inumb
```

where:

inumb Is the value to assign. Default for the HP 7221 is 2280, otherwise it is 7900.

MINX

Sets the minimum x-axis coordinate (in units) for plotting. Usage is:

```
MINX = inumb
```

where:

inumb Is the value to assign. Default is 0.

MINY

Sets the minimum y-axis coordinate (in units) for plotting. Usage is:

```
MINY = inumb
```

where:

inumb Is the value to assign. Default is 0.

NUMBER_OF_PENS

Specifies the maximum number of pens available for use. Usage is:

```
NUMBER_OF_PENS = inumb
```

where:

inumb Is the number of pens available. Default for the 7470 is 2; for the 7475 is 6; and for the 7221 is 4.

PAGEFEED

Can be used to force automatic page feed on pen plotters with this feature. Usage is:

```
PAGEFEED = lflag, iseq, iseq, ...
```

where:

lflag Is 0 if the plotter should not use automatic page feed or 1 if the device should do automatic page feed. Default is 0.

iseq Is the ASCII/EBCDIC Decimal Equivalence string used to specify page feed instruction. Default is 80, 71, 59, which is "PG;" on ASCII machines. Refer to [Appendix A](#) for the ASCII and EBCDIC character sets.

SET_OFFSET

Used to allow extra space around the edges of the plot. These values are used to adjust where the plot is drawn relative to the minimum and maximum values. Usage is:

```
SET_OFFSET = iminx, iminy, imaxx, imaxy
```

where:

iminx Is the amount to subtract from the minimum x-coordinate. Default is 0.

iminy Is the amount to subtract from the minimum y-coordinate. Default is 0.

imaxx Is the amount to add to the maximum x-coordinate. Default is 0.

imaxy Is the amount to add to the maximum y-coordinate. Default is 0.

THICK_MAP

Overrides the default thickness (line width) mapping for black and white graphic devices. This parameter allows the user to change the order in which line widths are selected. Usage is:

```
THICK_MAP = iwidth1,...iwidth5
```

where:

iwidth Is the index of the line thickness to select for this device. The values should be in the range of 1 to 5, where 1 is the thinnest and 5 is the thickest. Defaults are 1, 2, 3, 4, 5.

XCHNG

Used to rotate the entire plot 90° (including the plotting window). Usage is:

```
XCHNG = lflag
```

where:

lflag Is 0 if plot should be normal and 1 if plot should be rotated 90°. Default is 0.

XPAPER

Used to set the paper size in the x direction for HP-7221 only. Usage is:

```
XPAPER = rnumb
```

where:

rnumb Is the x size. Default for the HP-7221 is 15.75.

YPAPER

Used to set the paper size in the y direction for HP-7221 only. Usage is:

```
YPAPER = rnumb
```

where:

rnumb Is the y size. Default for the HP-7221 is 11.25.

4.6.2 OpenVMS Notes

There are three different ways to install an HP plotter. It can be directly wired to a terminal, allocated to a separate port, or defined as a print queue. When wired directly to a terminal or allocated line, select either graphics output device number 27 or 28 (HP-7470, HP-7475).

When it is desired to print to a device that uses HP-GL syntax from an allocated line, output is handled within Indeplot. Indeplot will allocate and deallocate the device as necessary. The device name should be defined as a system-wide logical named HPLINE. From the system account, one must execute the following commands and add them to the system start-up file:

```
DEFINE/SYSTEM HPLINE device
SET TERM/PERM/SPEED=xxxx HPLINE
SET PROT=(W:RWLP)/DEV HPLINE
```

When it is desired to install a device that uses HP-GL syntax (i.e., 7470, 7475, and 7550) spool device, output is handled by the standard VMS print symbiont. This method is used by selecting graphics output device number 38 (HP-GL FILE). The default device or queue name of HP PLOT may be a logical name. The HANDSHAKE parameter should be used to define XON/XOFF handshaking and the line used for the queue should also be defined to use XON/XOFF handshaking. The HP-7475 plotter used as a spooled device should have the D/Y switch set to D. Refer to the appropriate VMS documentation for details on setting up this spooling queue, queue characteristics such as /NOFLAG should be used. These characteristics need to be defined in a printer parameter file described in [Chapter 2](#).

The HP-7550 can be used by selecting the HP-7470 or HP-7475 and defining the parameters NUMBER_OF_PENS, PAGEFEED. The HP-7475 plotter should have the D/Y switch set to Y.

Some printers will require the use of the /PASSALL qualifier on the PRINT command. We do not provide access to this qualifier, but the command can be simulated via the terminal port, the print queue form, and the way the print queue is set up. Perform the following steps:

1. Define the print queue form with the following qualifiers:

```
$ DEFINE/FORM/NOTRUNCATE/NOWRAP/STOCK=DEFAULT-
_$ /MARGIN=(BOTTOM=0, TOP=0, LEFT=0, RIGHT=0) <form_name> -
_$ <form_number>
```

The "/WIDTH" qualifier may only affect the flag and trailer pages if the form also has "/NOWRAP" and "/NOTRUNCATE" set.

2. Set the terminal device (LTAn, TXn, TTn) characteristics to:

```
$ SET TERMINAL/TTSYNC/INTERACTIVE/SCOPE/NOWRAP/FORM/TAB-
_$ /PASTHRU <terminal_port_name>
```

3. Set the "NOFEED" characteristic on the print queue:

```
$ INITIALIZE/QUEUE/START/ON=<port_name>/DEFAULT=NOFEED-
_$ /<other_desirable_queue_characteristics> <queue_name>
```

4.7 PARMKM - KMW Vector Processor

Parameter Filename:	PARMKM
Default Hard Copy Device Name:	KMWPlot
Models Supported:	VP-10, VP-30 series
Computer Systems:	OpenVMS

4.7.1 Parameters

ADVANCE_PAPER

Specifies the distance to advance the paper before each plot for KMW vector processor plots. Usage is:

```
ADVANCE_PAPER = rnumb
```

where:

rnumb Is the distance to advance the paper in inches. Default is 0.0 in.

COLOR_MAP

Overrides the default color mapping for color graphics devices. This parameter allows the user to change the order in which colors are selected. Usage is:

```
COLOR_MAP = icolor1,icolor2,...,icolor16
```

where:

icolor Is the index of the color to select for this device. All values should be in the range of 1 to 16. Defaults are 1, 2, 3, 4, ..., 16.

EXTRA_BLANK_PAGE

Determines if an extra blank page at the beginning of the plot is required for proper page alignment. Usage is:

```
EXTRA_BLANK_PAGE = lflag
```

where:

lflag Is 0 if the device does not require an extra page sent. Default is 0.

FORMFEED

Specifies the number of form feeds to be issued at the end of the plotting job. Usage is:

```
FORMFEED = inumb
```

where:

inumb Is the number of form feeds to be issued. Default is 1.

GROUPS

Specifies whether or not multiple plots should be grouped together when space allows it on the Versatec. Normally used when working with a Versatec wider than 11 in.

```
GROUPS = lflag
```

where:

lflag Is 0 if no grouping is desired or 1 if several single page plots are to be grouped together to conserve paper. Default is 0.

HARDWARE_CLIP

Determines if the clipping of unplotable vectors should be handled by software or hardware. Usage is:

```
HARDWARE_CLIP = lflag
```

where:

lflag Is 0 if the device can perform hardware clipping or 1 if the device cannot do hardware clipping requiring Indeplot to do software clipping. Default is 1.

HARDWARE_DASH

Determines if dashed lines should be generated by software or hardware. In general, plots can be produced much faster if hardware dashed lines are available. Usage is:

```
HARDWARE_DASH = lflag
```

where:

lflag Is 0 if the device cannot generate dashed lines or 1 if the device can generate dashed lines in hardware. Default is 0.

HARDWARE_FILL

Determines if toning or filling of polygon areas should be performed by software or hardware. Plots involving toning can be produced much faster when the hardware supports toning. Usage is:

```
HARDWARE_FILL = lflag
```

where:

lflag Is 0 if the device cannot perform hardware filling or 1 if the device can do hardware fill. Default is 1.

INITIAL_FORMFEED

Specifies the number of form feeds to be issued at the start of the plotting job. Usage is:

```
INITIAL_FORMFEED = inumb
```

where:

inumb Is the number of form feeds to be issued. Default is 0.

KMW_VP_TYPE

Specifies the type of KMW Systems Corp. Vector Processor installed. Usage is:

```
KMW_VP_TYPE = itype
```

where:

itype Is 10 for a VP-10 series vector processor or 30 for a VP-30 series vector processor. Default is 10.

NIBS_PER_INCH

Specifies the number of nibs per inch for the KMW vector processor. Usage is:

```
NIBS_PER_INCH = inumb
```

where:

inumb Is the NIBS per inch. Default is 200.

NUMBER_OF_PENS

Specifies the maximum number of colors available. A value greater than 1 assumes a color device. Usage is:

```
NUMBER_OF_PENS = inumb
```

where:

inumb Is the number of colors available. Default is 1.

THICK_MAP

Overrides the default thickness (line width) mapping for black and white graphic devices. This parameter allows the user to change the order in which line widths are selected. Usage is:

```
THICK_MAP = iwidth1,...iwidth5
```

where:

iwidth Is the index of the line thickness to select for this device. The values should be in the range of 1 to 5, where 1 is the thinnest and 5 is the thickest. Defaults are 1, 2, 3, 4, 5.

V80

For Versatec V80. Allows adjustment of the position of plots on Versatec paper. Usage is:

```
V80 = lflag
```

where:

lflag Is 0 if the Versatec is not a V80 or 1 if the Versatec is a V80. Default is 1.

XCHNG

Used to rotate the entire plot 90° (including the plotting window). Usage is:

```
XCHNG = lflag
```

where:

lflag Is 0 if plot should be normal and 1 if plot should be rotated 90°. Default is 0.

XLIMIT

Sets the maximum x-coordinate values used when GROUPing plots together. This, along with YLIMIT, is used to determine the number of plots that can be grouped together on a single page. Usage is:

```
XLIMIT = rnumb
```

where:

rnumb Is the x-coordinate limit in inches. Default is 89.0 in.

XPAPER

Sets the exact (or apparent) size of the paper. This parameter can be used to adjust the spacing between plots to compensate for inaccuracies in the paper feed mechanism. Usage is:

```
XPAPER = rnumb
```

where:

rnumb Is the x-coordinate paper size in inches. Default is 8.53 in.

YLIMIT

Sets the maximum y-coordinate value used when GROUPing plots together. This, along with XLIMIT, is used to specify the number of plots that can be grouped together on a single page. Usage is:

```
YLIMIT = rnumb
```

where:

rnumb Is the y-coordinate limit in inches. Default is 10.56 in.

YPAPER

Sets the exact (or apparent) size of the paper. This parameter is included for completeness and should not normally be changed. Usage is:

```
YPAPER = rnumb
```

where:

rnumb Is the y-coordinate paper size in inches. Default is 10.56 in.

4.7.2 OpenVMS Notes

When the Versatec has been installed on your system with a KMW vector processor, output is handled by the standard VMS print symbiont. The default device or queue name is KMWPLLOT, which may be a logical name. See the appropriate VMS documentation for details on setting up a print queue.

4.8 PARMPH - Windows Default Printer

Parameter Filename:	PARMPH
Computer Systems:	Microsoft Windows

This parameter file will be used for the Microsoft Windows default printer. If there is no PARMPH file, the PARMPW file will be used (if it exists). See PARMPW for a description of the valid parameters.

4.9 PARMPS - PostScript Devices

Parameter Filename:	PARMPS
Default Hard Copy Device Name:	PSPLOT
Computer Systems:	All

4.9.1 Parameters

COLOR_MAP

Overrides the default color mapping for color graphics devices. This parameter allows the user to change the order in which colors are selected. Usage is:

```
COLOR_MAP = icolor1,icolor2,...,icolor16
```

where:

icolor Is the index of the color to select for this device. All values should be in the range of 1 to 16. Defaults are 1, 2, 3, 4, ..., 16. The colors defined for each numeric value are as follows:

1	Black
2	Red
3	Green
4	Blue
5	Cyan
6	Magenta
7	Yellow
8	Black

ENTER_GRAPHICS_MODE

Specifies a string to be written to the beginning of the file to be sent to the PostScript printer. Usage is:

```
ENTER_GRAPHICS_MODE, PS = iseq, iseq, iseq, ...
```

where:

iseq Is the ASCII/EBCDIC Decimal Equivalence string to send. Quoted strings of characters may also be used to enter data. Refer to [Appendix A](#) for the ASCII and EBCDIC character sets. Up to six lines can be included.

EXIT_GRAPHICS_MODE

Specifies a string to be written to the end of the file to be sent to the PostScript printer. Usage is:

```
EXIT_GRAPHICS_MODE, PS = iseq, iseq, iseq, ...
```

where:

iseq Is the ASCII/EBCDIC Decimal Equivalence string to send. Quoted strings of characters may also be used to enter data. Refer to [Appendix A](#) for the ASCII and EBCDIC character sets. Up to six lines can be included.

FILE_FORMAT

Specifies the file format for the intermediate file containing the graphical data. In most circumstances, the default file format should suffice. Usage is:

```
FILE_FORMAT = ctype
```

where:

ctype Is either "LIST" or "FTN". "FTN" is used to specify the spooler that Fortran output conventions are used. "LIST" is not Fortran conventions. Default is "LIST".

FORM_PROMPT

Used to control a prompt that will ask which form the user's plots will use for each plot. If the feature is not used, then the default form to be used is 1. Usage is:

```
FORM_PROMPT = lflag
```

where:

lflag Is 0 if the user wants the default form 1 to be used and 1 will prompt the user for a form number. Default is 0.

FORM_SELECT_COMMAND

Used to define a plotter-dependent sequence that is associated with a given form number. This sequence is sent to the PostScript printer at the start of each plot. The typical usage is to select a specific paper tray. Usage is:

```
FORM_SELECT_COMMAND,iform = iade,iade
```

where:

iform Is the form number from 1 to 4. It is required.

iade Is the ASCII/EBCDIC Decimal Equivalence string to send. As many of these codes as required may be entered on the line. Quoted strings of characters may also be used to enter data. The maximum string length is 132 characters. Refer to [Appendix A](#) for the ASCII and EBCDIC character sets.

For example, to change the paper tray selection for form 1 (the default) to paper tray 2, use the following:

```
FORM_SELECT_COMMAND,1 = 'statusdict begin 2 setpapertray end'
```

FORM_SIZE

Used to define the plotting limits of a form. Usually used to define the physical size of the paper being used in a specific paper tray. Usage is:

```
FORM_SIZE,iform,ctitle = iminx,iminy,imaxx,imaxy
```

where:

iform Is the form number from 1 to 4. It is required.

ctitle Is a description of the form to be used when a prompt is displayed. If more than one word is to be used, it must be contained in single quotes. The default for form 1 is STANDARD.

iminx Is the distance from the edge of the paper for the minimum x-coordinate measured in 300 dots per inch. The default for form 1 is 100.

iminy Is the distance from the edge of the paper for the minimum y-coordinate measured in 300 dots per inch. The default for form 1 is 100.

imaxx Is the distance from the edge of the paper for the maximum x-coordinate measured in 300 dots per inch. The default for form 1 is 2450.

imaxy Is the distance from the edge of the paper for the maximum y-coordinate measured in 300 dots per inch. the default for form 1 is 3200.

If you were using MINX, MINY, MAXX, or MAXY or you wish to change the defaults for form 1, use the following:

```
FORM_SIZE, 1, STANDARD = 100, 100, 2450, 3200
```

HARDWARE_CLIP

Determines if the clipping of unplotable vectors should be handled by software or hardware. Usage is:

```
HARDWARE_CLIP = lflag
```

where:

lflag Is 0 if the device can perform hardware clipping or 1 if the device cannot do hardware clipping requiring Indeplot to do software clipping. Default is 1.

HARDWARE_DASH

Determines if dashed lines should be generated by software or hardware. In general, plots can be produced much faster if hardware dashed lines are available. Usage is:

```
HARDWARE_DASH = lflag
```

where:

lflag Is 0 if the device cannot generate dashed lines or 1 if the device can generate dashed lines in hardware. Default is 1.

HARDWARE_FILL

Determines if toning or filling of polygon areas should be performed by software or hardware. Plots involving toning can be produced much faster when the hardware supports toning. Usage is:

```
HARDWARE_FILL = lflag
```

where:

lflag Is 0 if the device cannot perform hardware filling or 1 if the device can do hardware fill. Default is 1.

HARDWARE_PRINT

Specifies whether or not text should be generated by the hardware in simple cases (i.e., fixed size and angle). It uses the nonproportional Courier font. Usage is:

```
HARDWARE_PRINT = lflag
```

where:

lflag Is 0 if the device cannot do hardware text or 1 if the device can do hardware text. Default is 1.

HARDWARE_TEXT

Used to enable most text output to use a PostScript font. This will not change the symbols that some applications specifically define. The first font generally should not be changed, since there are several characters that do not map to a standard character set. Usage is:

```
HARDWARE_TEXT = lflag, ifont, cfname
```

where:

lflag	Defines if hardware text should be used for this font. Values are 0 for not available and 1 for available.
ifont	Defines the font number to change. Values are 1 to n (usually only 1 and 2 are used).
cfname	Defines the PostScript font name to use. Example values are Courier, Helvetica, and Times Roman.

Note that cfname must match a valid printer font name; generally there are no spaces!

To force all text output to be displayed using a specific PostScript font, such as Times Italic, use the following:

```
HARDWARE_TEXT = 1, 1, Times-Italic  
HARDWARE_TEXT = 1, 2, Times-Italic  
HARDWARE_PRINT = 0
```

The last line allows Indeplot to use the font defined for font number 1 to be used. Please note that this is a proportional spaced font and will change the text placement.

INITIAL_FORMFEED

Specifies the number of blank pages to be sent at the start of the file. Usage is:

```
INITIAL_FORMFEED = inumb
```

where:

inumb Is the number of blank pages. Default is 0.

LINE_WIDTHS

Specifies the values to use for setting the line widths. The thickness is used for any lines including our software text but not including any characters generated by using hardware text. Usage is:

```
LINE_WIDTHS = rnumb1, ..., rnumb5
```

where:

numb Is the line width for each of the different line thicknesses. The units are approximately in pixels depending on size of paper used. Default values are 1, 3, 4, 5, 6.

NIBS_PER_INCH

Specifies the number of dots or pixels per inch for this device. Usage is:

```
NIBS_PER_INCH = inumb
```

where:

inumb Is the dots per inch. Default is 300.

NUMBER_OF_PENS

Specifies the maximum number of colors available to the device. Maximum number of defined colors is 8. Usage is:

```
NUMBER_OF_PENS = inumb
```

where:

inumb Is the number of colors available. Default is 1.

THICK_MAP

Overrides the default thickness (line width) mapping for black and white graphic devices. This parameter allows the user to change the order in which line widths are selected. Usage is:

```
THICK_MAP = iwidth1,...iwidth5
```

where:

iwidth Is the index of the line thickness to select for this device. The values should be in the range of 1 to 5, where 1 is the thinnest and 5 is the thickest. Defaults are 1, 2, 3, 4, 5.

XCHNG

Used to rotate the entire plot 90° (including the plotting window). Usage is:

```
XCHNG = lflag
```

where:

lflag Is 0 if plot should be normal and 1 if plot should be rotated 90°. Default is 0.

XPAPER

Used to set the paper size in the x-direction or width. Usage is:

```
XPAPER = rnumb
```

where:

rnumb Is the x size. Default is 8.5.

YPAPER

Used to set the paper size in the y-direction. Usage is:

```
YPAPER = rnumb
```

where:

rnumb Is the y size. Default is 11.0.

4.9.2 OpenVMS Notes

When a PostScript printer has been installed on your system, output is handled by the standard VMS print symbiont for plotting. The default device or queue name is PSLOT, which may be a logical name. See the appropriate VMS documentation for details on setting up a print queue. [Sample 1](#) in [Appendix A](#) shows a complete example for PostScript setup.

Printing standard text to a PostScript printer may require special print queue software to translate the text to PostScript.

4.9.3 Creating a Parameter File for Printers with Multiple Trays and Sizes

Many PostScript printers have more than one input paper tray. In some cases, the input trays also vary in size. Siemens PTI's PostScript driver has the ability to allow the user to select different input paper trays. All sizes are in 300 dots per inch (i.e., 100 units equals 1/3 of an inch).

The following shows an example PostScript parameter file segment for selecting different trays:

```
FORM_PROMPT = 1            ! Enable an additional question after selecting device 41
!
! The next three commands are used to specify the PostScript commands
! for selecting different paper trays
!
FORM_SELECT_COMMAND 1 = 'statusdict begin 1 setpapertray end'
FORM_SELECT_COMMAND 2 = 'statusdict begin 2 setpapertray end'
FORM_SELECT_COMMAND 3 = 'statusdict begin 3 setpapertray end'
!
! The next three commands are used to specify the size of paper loaded
! in the corresponding paper tray
!
FORM_SIZE 1 LETTER = 100, 100, 2450, 3200        / 8.5 x 11 with 1/3 inch border
FORM_SIZE 2 LEGAL  = 100, 100, 2450, 4100        / 8.5 x 14 with 1/3 inch border
FORM_SIZE 3 LEDGER  = 100, 100, 3200, 5000        / 11 x 17 with 1/3 inch border
```

Some computer systems have print queues that require PostScript data to begin with the character "%!". By default, Siemens PTI's software automatically inserts these characters at the top of the file. However, the FORM_SELECT_COMMAND string is inserted at the top of the file, thus the following FORM_SELECT_COMMANDs may be needed:

```
FORM_SELECT_COMMAND 1 = '%!',10,'statusdict begin 1 setpapertray end'
FORM_SELECT_COMMAND 2 = '%!',10,'statusdict begin 2 setpapertray end'
FORM_SELECT_COMMAND 3 = '%!',10,'statusdict begin 3 setpapertray end'
```

Note that the number 10 is a <LF> character used for starting a new line. This may vary on different computer systems. Other values might be 13, 138, or 141 for ASCII based systems, and 37 for IBM mainframes.

The user would see the following prompt after selecting device 41 (PostScript):

```
SUPPORTED PLOTTING DEVICES ARE:
  0 = NONE                      39 = X Window
 41 = POSTSCRIPT                99 = INDE. PLOT FILE
ENTER DESIRED PLOTTING DEVICE: 41
```

```
FORM NUMBER AND ASSOCIATED SIZE:
1 - LETTER      -   100,   100,  2450,  3200
2 - LEGAL       -   100,   100,  2450,  4100
3 - LEDGER      -   100,   100,  3200,  5000
ENTER FORM NUMBER: 2
```

```
ENTER NUMBER OF COPIES (0 TO 5), DEVICE NAME FOR PS DEVICE:
```

The user selected paper tray 2 defined with form 2 to be 8.5 by 14 in.

4.10 PARMPW - Microsoft Windows

Parameter Filename: PARMPW
Computer Systems: Microsoft Windows

4.10.1 Parameters

CHARACTER_WIDTH

Used to specify the width of a hardware generated character. Usage is:

```
CHARACTER_WIDTH,DW = rnumb
```

where:

rnumb Is in pixels. Default is calculated.

COLOR_MAP

Overrides the default color mapping for color graphics devices. This parameter allows the user to change the order in which colors are selected. Usage is:

```
COLOR_MAP = icolor1,icolor2,...,icolor16
```

where:

icolor Is the index of the color to select for this device. All values should be in the range of 1 to 16. Defaults are 1, 2, 3, 4, ..., 16. The colors defined for each numeric value are as follows:

1	Black/white	9	0% red, 33% green, 66% blue
2	Red	10	33% red, 33% green, 66% blue
3	Green	11	66% red, 0% green, 100% blue
4	Blue	12	Green
5	Cyan	13	0% red, 0% green, 66% blue
6	Magenta	14	0% red, 33% green, 33% blue
7	Yellow	15	33% red, 33% green, 33% blue
8	100% red, 33% green, 33% blue	16	0% red, 66% green, 66% blue

DEFINE_COLOR

Overrides the color definition for a specific color index. This allows the user to describe a given color using red, green, and blue values. Usage is:

```
DEFINE_COLOR icolor = ired,igreen,ibblue
```

where:

icolor Is the index of the color to change using red, green, blue values

ired Is the intensity of the red phosphor in the range 0 to 255.

igreen Is the intensity of the green phosphor in the range 0 to 255.

ibblue Is the intensity of the blue phosphor in the range 0 to 255.

Note that "0" specifies that the phosphor is off and "255" specifies that the phosphor is fully on. The default colors are described in the table for the COLOR_MAP parameter.

FLAG

Used to change specific characteristics. Usage is:

```
FLAG = cvalue
```

where:

- If cvalue = WHITE Force the background color to white.
- If cvalue = BLACK Force the background color to black.
- If cvalue = INVERT Switch from the workstation's default background color to the alternative background color.

Default is FLAG = WHITE for hard copy and FLAG=BLACK for screen.

FONT_NAME

Used to specify the font for displaying text during input and simple output. The simple output is used in most menus. Font name usage is enabled with the parameter HARDWARE_PRINT. Usage is:

```
FONT_NAME = iseq, iseq, ...
```

where:

- iseq Is the ASCII/EBCDIC Decimal Equivalent string used to specify font name to use. Quoted strings of characters may also be used to enter the font name. The font name should be a valid font description, which can include an asterisk for wild character. If the font name is invalid, the default font is used. The default name is "'COURIER-NEW'-500-FIXED-MODERN-18*".

HARDWARE_CLIP

Determines if the clipping of unplotable vectors should be handled by software or hardware. Usage is:

```
HARDWARE_CLIP = lflag
```

where:

- lflag Is 0 if the device can perform hardware clipping or 1 if the device cannot do hardware clipping requiring Indeplot to do software clipping. Default is 0.

HARDWARE_FILL

Determines if toning or filling of polygon areas should be performed by software or hardware. Plots involving toning can be produced much faster when the hardware supports toning. Usage is:

```
HARDWARE_FILL = lflag
```

where:

- lflag Is 0 if the device cannot perform hardware filling or 1 if the device can do hardware fill. Default is 0.

HARDWARE_PRINT

Specifies whether or not text should be generated by the hardware in simple cases (i.e., fixed size and angle). Usage is:

```
HARDWARE_PRINT = lflag
```

where:

lflag Is 0 if the device cannot do hardware text or 1 if the device can do hardware text.
Default is 0 for hard copy and 1 for screen.

LINE_WIDTHS

Specifies the values to use for setting the line widths. The thickness is used for any lines including our software text. Usage is:

```
LINE_WIDTHS = inumb1,...,inumb5
```

where:

inumb Is the line width for each of the different line thicknesses. Default values are 0, 2, 3, 4, 5.

Note that 0 means use the thinnest available line.

NUMBER_OF_PENS

Specifies the maximum number of pens available for use. Usage is:

```
NUMBER_OF_PENS = inumb
```

where:

inumb Is the number of pens available. Default is 2 for black and white and 16 for color (or gray scale) devices.

PAGE_SIZE

Specifies the default size of window to create. The window will be centered on the display and may be resized with standard window manager commands.

```
PAGE_SIZE = rfactor
```

where:

rfactor Is the size specified as a real number from 0.0 to 1.0, where 1.0 is the entire display.
Default is 0.8 (80% of the display) for screen and 1.0 (100% of the paper) for hard copy.

THICK_MAP

Overrides the default thickness (line width) mapping for black and white graphic devices. This parameter allows the user to change the order in which line widths are selected. Usage is:

```
THICK_MAP = iwidth1, ..., iwidth5
```

where:

iwidth Is the index of the line thickness to select for this device. The values should be in the range of 1 to 5, where 1 is the thinnest and 5 is the thickest. Defaults are 1, 2, 3, 4, 5.

XCHNG

Used to rotate the entire plot 90° (including the plotting window). Usage is:

```
XCHNG = lflag
```

where:

lflag Is 0 if plot should be normal and 1 if plot should be rotated 90°. Default is 0.

4.10.2 Microsoft Windows Notes

This graphics device is Siemens PTI's interface to Microsoft Windows. This support allows graphical output to the user's screen and to the user's currently selected default hard copy device.

It should be noted that Siemens PTI uses three categories of devices. They are:

Device Number	Function
26	Screen
29	Screen (force B&W)
30	Hard copy

Device 26 determines if the screen is color or black and white.

Device 29 will use black and white regardless of the device characteristics, thus allowing line thickness to be used instead of colors.

Device 30 is used to plot to the Microsoft Windows default hard copy device.

4.11 PARMQM - QMS Lasergrafix

Parameter Filename:	PARMQM
Default Hard Copy Device Name:	QMSLOT
Models Supported:	Black and White Lasergrafix Family

Computer Systems:	OpenVMS
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4.11.1 Parameters

COLOR_MAP

Overrides the default color mapping for color graphics devices. This parameter allows the user to change the order in which colors are selected. Usage is:

```
COLOR_MAP = icolor1,icolor2,...,icolor16
```

where:

icolor Is the index of the color to select for this device. All values should be in the range of 1 to 16. Defaults are 1, 2, 3, 4, ..., 16.

DEVICE_TYPE

Used to assign the QMS Lasergrafix model number. Usage is:

```
DEVICE_TYPE = inumb
```

where:

inumb Is the model number, such as 800, 1200, or 2400. Default is 1200.

FORCE_PAGE

Used to force extra blank pages out at the end of plotting. Usage is:

```
FORCE_PAGE = inumb
```

where:

inumb Is the number of blank pages. Default is 0.

FORM_PROMPT

Used to control a prompt that will ask which form the user's plots will use for each plot. If the feature is not used, then the default form is 1. Usage is:

```
FORM_PROMPT = lflag
```

where:

lflag Is 0 if the user wants the default form 1 to be used and 1 will prompt the user for a form number. Default is 0.

FORM_SELECT_COMMAND

Used to define a machine dependent sequence that is associated with a given form number. This sequence is sent to the QMS Lasergrafix at the start of each plot. Usage is:

```
FORM_SELECT_COMMAND,iform = iseq,iseq,iseq,...
```

where:

- iform** Is the form number. It is required.
- iseq** Is the machine-dependent character code to send. It is normally either ASCII or EBCDIC Decimal Equivalence. When iseq is 0, the current QUIC command character will be inserted. Default for form 1 is 0, 73, 70, 48, 88, 88, 88 (which is <QUIC Char>IF0XXX) and the default for form 2 is 0, 73, 70, 49, 88, 88, 88 (which is <QUIC Char> IF1XXX). To achieve the same results on an EBCDIC machine, such as an IBM, one should change form 1 to 0, 201, 198, 240, 231, 231, 231 and form 2 to 0, 201, 198, 241, 231, 231, 231.
- The details of the QUIC command "IF" that is used for paper tray and stacker control is described in the *Lasergrafix Users' Guide*, supplied by QMS. For the QMS Lasergrafix 1200, the format is:

```
<QUIC Char>IFtpls
```

where:

- t** Is the paper tray control:
 - 0 (ASCII-48, EBCDIC-240) use top paper tray.
 - 1 (ASCII-49, EBCDIC-241) use bottom paper tray.
 - T (ASCII-84, EBCDIC-227) toggle to other tray.
 - X (ASCII-88, EBCDIC-231) retain current setting.
- p** Is page stacker control.
- l** Is page length control:
 - 0 (ASCII-48, EBCDIC-240) use short page.
 - 1 (ASCII-49, EBCDIC-241) use long page.
 - 2 (ASCII-50, EBCDIC-242) use european A-4 page.
 - X (ASCII-88, EBCDIC-231) retain current setting.
- s** Is tray switch error recovery control.

FORM_SIZE

Used to define the plotting limits of a form. Usage is:

```
FORM_SIZE,iform,ctitle = iminx,iminy,imaxx,imaxy
```

where:

- iform** Is the form number from 1 to 4. Required.

ctitle	Is a description of the form to be used when a prompt is displayed. If more than one word is to be used, it must be contained in single quotes. Default for form 1 is 'PAPER TRAY 1' and the default for form 2 is 'PAPER TRAY 2'. Required.
iminx	Is the distance from the edge of the paper for the minimum x-coordinate measured in thousands of an inch (i.e., 500 is 0.5 in., 2000 is 2 in). Default for form 1 is 300 and the default for form 2 is 300.
iminy	Is the distance from the edge of the paper for the minimum y-coordinate measured in thousands of an inch. Default for form 1 is 300 and the default for form 2 is 300.
imaxx	Is the distance from the edge of the paper for the maximum x-coordinate measured in thousands of an inch. Default for form 1 is 8000 and the default for form 2 is 8000.
imaxy	Is the distance from the edge of the paper for the maximum y-coordinate measured in thousands of an inch. Default for form 1 is 10500 and the default for form 2 is 13500.

For an 11 x 17 plot, values for iminx, iminy, imaxx, and imaxy could be 300, 300, 16500, 10500.

HARDWARE_CLIP

Determines if the clipping of unplotable vectors should be handled by software or hardware. Usage is:

```
HARDWARE_CLIP = lflag
```

where:

lflag Is 0 if the device can perform hardware clipping or 1 if the device cannot do hardware clipping requiring Indeplot to do software clipping. Default is 1.

HARDWARE_DASH

Determines if dashed lines should be generated by software or hardware. In general, plots can be produced much faster if hardware dashed lines are available. Usage is:

```
HARDWARE_DASH = lflag
```

where:

lflag Is 0 if the device cannot generate dashed lines or 1 if the device can generate dashed lines in hardware. Default is 1.

INITIAL_FORMFEED

Specifies the number of form feeds to be issued at the start of the plotting job. Usage is:

```
INITIAL_FORMFEED = inumb
```

where:

inumb Is the number of form feeds to be issued. Default is 0.

MINIMUM_LINE_WIDTH

Used to set the minimum line width to be used. All line widths will be based on this value. Usage is:

```
MINIMUM_LINE_WIDTH = inumb
```

where:

inumb Is the number of dots. The value must be odd in the range of 1 to 23 dots. If an even number is selected, then the number is rounded up to the next odd number. Default is 3.

QUIC_COMMAND_CHARACTER

Used to specify the command character used by the QUIC language. Usage is:

```
QUIC_COMMAND_CHARACTER = inumb
```

where:

inumb Is the decimal equivalent for the character. To use on ASCII machines, the character is typically an "^", which is 94. On IBM it may need to be changed to the logical-not character, which is 95. Default is 94.

SET_POWER_ON_DEFAULTS

Used to set the QMS hardware back to default conditions after a series of plots are done. This could be important if other applications use the plotter and expect a default condition such as paper tray number 1, font 49, or paper orientation of landscape. Usage is:

```
SET_POWER_ON_DEFAULTS = lflag
```

where:

lflag Is 0 if nothing should be done or 1 if the defaults should be reset. If lflag is 1, then an extra blank page may be printed at the end of a plotting series. Default is 0.

THICK_MAP

Overrides the default thickness (line width) mapping for black and white graphic devices. This parameter allows the user to change the order in which line widths are selected. Usage is:

```
THICK_MAP = iwidth1,...iwidth5
```

where:

iwidth Is the index of the line thickness to select for this device. The values should be in the range of 1 to 5, where 1 is the thinnest and 5 is the thickest. Defaults are 1, 2, 3, 4, 5.

XCHNG

Used to rotate the entire plot 90° (including the plotting window). Usage is:

```
XCHNG = lflag
```

where:

lflag Is 0 if plot should be normal and 1 if plot should be rotated 90°. Default is 0.

4.11.2 OpenVMS Notes

If a QMS Lasergrafix printer is to be used for plotting, the logical name QMSPLLOT must be defined in order to direct plots to the appropriate queue. For example:

```
DEFINE QMSPLLOT LPAO
```

defines the logical name QMSPLLOT to point to the queue LPAO. It is possible to define QMSPLLOT so that it will also define a form name to be used when printing. The command:

```
DEFINE QMSPLLOT TXC6,GRAY
```

directs plots to the queue TXC6 with a form name of GRAY.

Refer to the appropriate VMS documentation for more details on setting up the spooling queue.

4.12 PARMRG - ReGIS Graphics Language

Parameter Filename:	PARMRG
Models Supported:	VT330 and VT340 on VAX Computers
Computer Systems:	OpenVMS

4.12.1 Parameters

COLOR_MAP

Overrides the default color mapping for color graphics devices. This parameter allows the user to change the order in which colors are selected. Usage is:

```
COLOR_MAP = icolor1,icolor2,...,icolor16
```

where:

icolor Is the index of the color to select for this device. All values should be in the range of 1 to 16. Defaults are 1, 2, 3, 4, ..., 16.

ENTER_GRAPHICS_MODE

Specifies a string to be written to the beginning of the file to be sent to the ReGIS device. Usage is:

```
ENTER_GRAPHICS_MODE, ReGIS = iseq, iseq, iseq, ...
```

where:

iseq Is the ASCII/EBCDIC Decimal Equivalence string to send. Quoted strings of characters may also be used to enter data. If the first value is -1, then this line is continued from the previous line. Refer to [Appendix A](#) for the ASCII and EBCDIC character sets.

EXIT_GRAPHICS_MODE

Specifies a string to be written to the end of the file to be sent to the ReGIS device. Usage is:

```
EXIT_GRAPHICS_MODE, ReGIS = iseq, iseq, iseq, ...
```

where:

iseq Is the ASCII/EBCDIC Decimal Equivalence string to send. Quoted strings of characters may also be used to enter data. If the first value is -1, then this line is continued from the previous line. Refer to [Appendix A](#) for the ASCII and EBCDIC character sets.

HARDWARE_CLIP

Determines if the clipping of unplotable vectors should be handled by software or hardware. Usage is:

```
HARDWARE_CLIP = lflag
```

where:

lflag Is 0 if the device can perform hardware clipping or 1 if the device cannot do hardware clipping requiring Indeplot to do software clipping. Default is 1.

HARDWARE_DASH

Determines if dashed lines should be generated by software or hardware. In general, plots can be produced much faster if hardware dashed lines are available. Usage is:

```
HARDWARE_DASH = lflag
```

where:

lflag Is 0 if the device cannot generate dashed lines or 1 if the device can generate dashed lines in hardware. Default is 1.

HARDWARE_PRINT

Specifies whether or not text should be generated by the hardware in simple cases (i.e., fixed size and angle). Usage is:

```
HARDWARE_PRINT = lflag
```

where:

lflag Is 0 if the device cannot do hardware text or 1 if the device can do hardware text. Default is 1.

MAXX

Sets the maximum x-axis coordinate (in units) for plotting. Usage is:

```
MAXX = inumb
```

where:

inumb Is the value to assign. Default is 799.

MAXY

Sets the maximum y-axis coordinate (in units) for plotting. Usage is:

```
MAXY = inumb
```

where:

inumb Is the value to assign. Default is 479.

MINX

Sets the minimum x-axis coordinate (in units) for plotting. Usage is:

```
MINX = inumb
```

where:

inumb Is the value to assign. Default is 0.

MINY

Sets the minimum y-axis coordinate (in units) for plotting. Usage is:

```
MINY = inumb
```

where:

inumb Is the value to assign. Default is 0.

NUMBER_OF_PENS

Specifies the maximum number of colors available to the device. Usage is:

```
NUMBER_OF_PENS = inumb
```

where:

inumb Is the number of colors available. Default is 15 for VT340, otherwise 1.

THICK_MAP

Overrides the default thickness (line width) mapping for black and white graphic devices. This parameter allows the user to change the order in which line widths are selected. Usage is:

```
THICK_MAP = iwidth1,...iwidth5
```

where:

iwidth Is the index of the line thickness to select for this device. The values should be in the range of 1 to 5, where 1 is the thinnest and 5 is the thickest. Defaults are 1, 2, 3, 4, 5.

XCHNG

Used to rotate the entire plot 90° (including the plotting window). Usage is:

```
XCHNG = lflag
```

where:

lflag Is 0 if plot should be normal and 1 if plot should be rotated 90°. Default is 0.

4.12.2 OpenVMS Notes

When the ReGIS plotting device is selected, it will inquire for the terminal type to set the default number of colors. When the terminal type matches that of a VT340, it selects color; otherwise it selects black and white.

4.13 PARMTK - Tektronix Graphics Terminals and Plot File

Parameter Filename:	PARMTK
Default Hard Copy Device Name:	TEKPLOT
Models Supported:	4010, 4014, 411x, 41xx, and 4662 and 4663 pen plotters and Tektronix plot files
Computer Systems:	OpenVMS

Valid device names used for the variable "cterm" are as follows:

Cterm	Device	Tektronix Model
4010	3	4010
4014	4, 5	4014, 4014-1
4662	6	4662
4663	7	4663
4105	17	4105, 4104, 4106
4107	18	4107, 4109, 4207, 4209
4112	20	4112
4113	21	4113
4114	22	4114
4115	23	4115, 4125
4111	33	4111
TEKFIL	37, 40	4510

4.13.1 Parameters

ALPHA_CURSOR

Used to specify if a software-generated alphanumeric input is needed. Usage is:

```
ALPHA_CURSOR, cterm = lflag
```

where:

cterm	Is the valid Tektronix terminal for the command. Valid entries are ALL or one of the device names (i.e., 4014). Default is no code for all terminal types.
lflag	Is 0 if the device has a good hardware cursor and is 1 if a software-generated cursor is to be used. Default is 1.

CHARACTER_SIZE

Used to select a different hardware character size. Usage is:

```
CHARACTER_SIZE, cterm = inumb
```

where:

cterm Is the valid Tektronix terminal for the command. Valid entries are ALL or one of the device names (i.e., 4014). Default is no code for all terminal types.

inumb Is the number of the character size to select. Default is 0.

CHARACTER_WIDTH

Used to specify the width of a hardware-generated character. Usage is:

```
CHARACTER_WIDTH, cterm = rnumb
```

where:

cterm Is the valid Tektronix terminal for the command. Valid entries are ALL or one of the device names (i.e., 4014). Default is no code for all terminal types.

rnumb Is in hardware units. Default is 0.0.

COLOR_MAP

Overrides the default color mapping for color graphics devices. This parameter allows the user to change the order in which colors are selected. Usage is:

```
COLOR_MAP = icolor1, icolor2, ..., icolor16
```

where:

icolor Is the index of the color to select for this device. All values should be in the range of 1 to 16. Defaults are 1, 2, 3, 4, ..., 16.

COLOR_TABLE

Used to specify an alternate color table for color terminals that do not follow the Tektronix standard. Usage is:

```
COLOR_TABLE, cterm = lflag
```

where:

cterm Is the valid Tektronix terminal for the command. Valid entries are ALL or one of the device names (i.e., 4014). Default is no code for all terminal types.

lflag Is 0 if the terminal is to use Tektronix color selection or is 1 if the color selection is described with SET_COLOR. Default is 0.

ENTER_GRAPHICS_MODE

Specifies a string to be written to the terminal to enter the graphics mode and is intended for (but not limited to) use with 4010 look-a-likes that do not automatically enter graphics mode. It is possible to enter a different command for each terminal type. Usage is:

```
ENTER_GRAPHICS_MODE, cterm = iseq, iseq, iseq, ...
```

where:

cterm Is the valid Tektronix terminal for the command. Valid entries are ALL or one of the device names (i.e., 4014). Default is no code for all terminal types.

iseq Is the ASCII/EBCDIC Decimal Equivalence string to send. As many of these codes as required may be entered on the line. Quoted strings of characters may also be used to enter data. If the first value is -1, then this line is continued from the previous line. Refer to [Appendix A](#) for the ASCII and EBCDIC character sets.

EXIT_GRAPHICS_MODE

Specifies a string to be written to the terminal to exit the graphics mode and return the terminal back to normal operation. Usage is:

```
EXIT_GRAPHICS_MODE, cterm = iseq, iseq, iseq, ...
```

where:

cterm Is the valid Tektronix terminal for the command. Valid entries are ALL or one of the device names (i.e., 4014). Default is no code for all terminal types.

iseq Is the ASCII/EBCDIC Decimal Equivalence string to send. As many of these codes as required may be entered on the line. Quoted strings of characters may also be used to enter data. If the first value is -1, then this line is continued from the previous line. Refer to [Appendix A](#) for the ASCII and EBCDIC character sets.

FILE_FORMAT

Specifies the file format for the intermediate file containing the graphical data. In most circumstances, the default file format should suffice. Usage is:

```
FILE_FORMAT = ctype
```

where:

ctype Is either "LIST" or "FTN". "FTN" is used to specify the spooler that Fortran output conventions are used. "LIST" is not Fortran output conventions. Default is "LIST".

FLAG

Used to change specific characteristics. Usage is:

```
FLAG = cvalue
```

where:

If cvalue = PAGE A form feed is issued for next page.

If cvalue = NOPAGE No form feed is issued for next page.

Default is FLAG = PAGE.

HARD_COPY

Allows automatic hard copy output from Tektronix terminals or specifies the hard copy code required for 4510 rasterizers. On Tektronix terminals, the plot will be drawn on the attached hard copy unit after the plot is drawn on the CRT. Usage is:

```
HARD_COPY, cterm = lflag
```

where:

cterm Is the valid Tektronix terminal for the command. Valid entries are ALL or one of the device names (i.e., 4014). Default is all terminal types.

lflag Is 0 to suppress automatic hard copy mode.

1 To force a hard copy of each plot in 4010 series escape codes.

10 To force a hard copy of each plot in 4100 series escape codes using hard copy code "0".

11 To force a hard copy of each plot in 4100 series escape codes using hard copy code "1".

12 To force a hard copy of each plot in 4100 series escape codes using hard copy code "2".

HARDWARE_CLIP

Determines if the clipping of unplotable vectors should be handled by software or hardware. Usage is:

```
HARDWARE_CLIP = lflag
```

where:

lflag Is 0 if the device can perform hardware clipping, or 1 if the device cannot do hardware clipping requiring Indeplot to do software clipping. Default is 1.

HARDWARE_DASH

Determines if dashed lines should be generated by software or hardware. In general, plots can be produced much faster if hardware dashed lines are available. Usage is:

```
HARDWARE_DASH = lflag
```

where:

lflag Is 0 if the device cannot generate dashed lines or 1 if the device can generate dashed lines in hardware. Default is 1.

HARDWARE_FILL

Determines if toning or filling of polygon areas should be performed by software or hardware. Plots involving toning can be produced much faster when the hardware supports toning. Usage is:

```
HARDWARE_FILL = lflag
```

where:

lflag Is 0 if the device cannot perform hardware filling or 1 if the device can do hardware fill. Default is device dependent.

HARDWARE_PRINT

Specifies whether or not text should be generated by the hardware in simple cases (i.e., fixed size and angle). Usage is:

```
HARDWARE_PRINT = lflag
```

where:

lflag Is 0 if the device cannot do hardware text or 1 if the device can do hardware text. Default is 1.

MAXX

Sets the maximum x-axis coordinate (in units) for plotting. Usage is:

```
MAXX = inumb
```

where:

inumb Is the value to assign. Default is 1023.

MAXY

Sets the maximum y-axis coordinate (in units) for plotting. Usage is:

```
MAXY = inumb
```

where:

inumb Is the value to assign. Default is 779.

MINX

Sets the minimum x-axis coordinate (in units) for plotting. Usage is:

```
MINX = inumb
```

where:

inumb Is the value to assign. Default is 0.

MINY

Sets the minimum y-axis coordinate (in units) for plotting. Usage is:

```
MINY = inumb
```

where:

inumb Is the value to assign. Default is 0.

NUMBER_OF_COLORS

Used to specify the number of colors available for the device. Usage is:

```
NUMBER_OF_COLORS, cterm = inumb
```

where:

cterm Is the valid Tektronix terminal for the command. Valid entries are ALL or one of the device names (i.e., 4014). Default is no code for all terminal types.

inumb Is the number of colors. Default varies with device.

SET_COLOR

Used to specify a string to be written to the terminal to select a given color. Usage is:

```
SET_COLOR, cterm, inumb = iseq, iseq, ...
```

where:

cterm Is the valid Tektronix terminal for the command. Valid entries are ALL or one of the device names (i.e., 4014). Default is no code for all terminal types.

inumb Is color index to specify where 0 is the background color and 1 the foreground color.

iseq Is the ASCII/EBCDIC Decimal Equivalence string to use for selecting color index. Refer to [Appendix A](#) for the ASCII and EBCDIC character sets.

SOFTWARE_SEGMENTS

Used to specify selective erase providing the terminal can do selective erase by using color 0 for background and color 1 for foreground even on black and white terminals. Usage is:

```
SOFTWARE_SEGMENTS, cterm = lflag
```

where:

cterm Is the valid Tektronix terminal for the command. Valid entries are ALL or one of the device names (i.e., 4014). Default is no code for all terminal types.

lflag Is 0 if selective erase is not needed and is 1 if selective erase is needed to implement segments. Default varies with device.

TABLET_DEVICE_CODE

Specifies the device code for GIN events on 41xx and 41x terminals. Usage is:

```
TABLET_DEVICE_CODE, cterm = inumb
```

where:

cterm Is the valid Tektronix terminal for the command. Valid entries are ALL or one of the device names (i.e., 4014). Default is all terminal types.

inumb Is the alternate GIN device used for graphical input. Default is 0.

THICK_MAP

Overrides the default thickness (line width) mapping for black and white graphic devices. This parameter allows the user to change the order in which line widths are selected. Usage is:

```
THICK_MAP = iwidth1,...iwidth5
```

where:

iwidth Is the index of the line thickness to select for this device. The values should be in the range of 1 to 5, where 1 is the thinnest and 5 is the thickest. Defaults are 1, 2, 3, 4, 5.

XCHNG

Used to rotate the entire plot 90° (including the plotting window). Usage is:

```
XCHNG = lflag
```

where:

lflag Is 0 if plot should be normal and 1 if plot should be rotated 90°. Default is 0.

4.13.2 OpenVMS Notes

When it is desired to install a device that uses Tektronix syntax (i.e., Tek 4510) as a spool device, output is handled by the standard VMS print symbiont. The default device or queue name is TEKPLOT (which may be a logical name). Refer to the appropriate VMS documentation for details on setting up this spooling queue.

Color and selective erase for 4010/4014 emulators are supported. For selecting different colors, use the COLOR_TABLE and the SET_COLOR parameters. For taking advantage of a terminal's ability to do selective erase, use the parameters CHARACTER_WIDTH, SOFTWARE_SEGMENTS, and SET_COLOR for indexes 0 and 1. When using selective erase, it will appear as though the terminal is able to use hardware segments.

For using the Tektronix 4010/4014 plot file on LN03 plus printer, the terminal characteristics /EIGHT, /WIDTH=132, and /PASTHRU should be set and the queue characteristic /NOFEED should be set.

4.13.3 Creating a Parameter File for "Smart" Terminals on VMS

To define a parameter file for 4010/4014 emulation terminals that are capable of selective erase, one should do the following:

1. Declare the terminal can do selective erase and define how to select the normal writing mode and the background "color."

```
SOFTWARE_SEGMENTS, 4014 = 1
SET_COLOR, 4014, 0 = ...    ← Used to define background "color."
SET_COLOR, 4014, 1 = ...    ← Used to define foreground "color."
```

2. Define the hardware character width so that backspacing over characters will be correctly deleted.

```
CHARACTER_WIDTH, 4014 = #
```

3. Decide if the software should echo a cursor during graphical text input or if the terminal will echo its own cursor.

```
ALPHA_CURSOR, 4014 = 0 or 1
```

4. If the terminal is color, one must declare a color table and the number of colors in the table.

```
COLOR_TABLE, 4014 = 1
NUMBER_OF_COLORS, 4014 = 3
SET_COLOR, 4014, 1 = ...    ← Color #1
SET_COLOR, 4014, 2 = ...    ← Color #2
SET_COLOR, 4014, 3 = ...    ← Color #3
```

4.14 PARMVR - Versatec Plotters V9 (Device Name PARMV9)

Parameter Filename: PARMVR

Computer Systems: OpenVMS

4.14.1 Parameters

COLOR_MAP

Overrides the default color mapping for color graphics devices. This parameter allows the user to change the order in which colors are selected. Usage is:

```
COLOR_MAP = icolor1,icolor2,...,icolor16
```

where:

icolor Is the index of the color to select for this device. All values should be in the range of 1 to 16. Defaults are 1, 2, 3, 4, ..., 16.

FORMFEED

Specifies the number of form feeds to be issued at the end of the plotting job. Usage is:

```
FORMFEED = inumb
```

where:

inumb Is the number of form feeds to be issued. Default is 0.

GROUPS

Specifies whether or not multiple plots should be grouped together when space allows it on the Versatec. Normally used when working with a Versatec wider than 11 in.

```
GROUPS = lflag
```

where:

lflag Is 0 if no grouping is desired or 1 if several single page plots are to be grouped together to conserve paper. Default is 0.

HARDWARE_CLIP

Determines if the clipping of unplotable vectors should be handled by software or hardware. Usage is:

```
HARDWARE_CLIP = lflag
```

where:

lflag Is 0 if the device can perform hardware clipping or 1 if the device cannot do hardware clipping requiring Indeplot to do software clipping. Default is 1 when GROUPS is 0 and 0 when GROUPS is 1.

HARDWARE_DASH

Determines if dashed lines should be generated by software or hardware. In general, plots can be produced much faster if hardware dashed lines are available. Usage is:

```
HARDWARE_DASH = lflag
```

where:

lflag Is 0 if the device cannot generate dashed lines or 1 if the device can generate dashed lines in hardware. Default is 1.

HARDWARE_FILL

Determines if toning or filling of polygon areas should be performed by software or hardware. Plots involving toning can be produced much faster when the hardware supports toning. Usage is:

```
HARDWARE_FILL = lflag
```

where:

lflag Is 0 if the device cannot perform hardware filling or 1 if the device can do hardware fill. Default is 1.

NIBS_PER_INCH

Specifies the number of nibs per inch for the Versatec. Usage is:

```
NIBS_PER_INCH = inumb
```

where:

inumb Is the NIBS per inch. Default is 200.

QUEUE_COMMAND

Used to define a machine specific character string to initiate automatic spooling. Usage is:

```
QUEUE_COMMAND = cstring
```

where:

cstring Is used to define a single command to start plotting.

THICK_MAP

Overrides the default thickness (line width) mapping for black and white graphic devices. This parameter allows the user to change the order in which line widths are selected. Usage is:

```
THICK_MAP = iwidth1,...iwidth5
```

where:

iwidth Is the index of the line thickness to select for this device. The values should be in the range of 1 to 5, where 1 is the thinnest and 5 is the thickest. Defaults are 1, 2, 3, 4, 5.

V80

For Versatec V80. Allows adjustment of the position of plots on Versatec paper. Usage is:

V80 = lflag

where:

lflag Is 0 if the Versatec is not a V80 or 1 if the Versatec is a V80. Default is 1.

XCHNG

Used to rotate the entire plot 90° (including the plotting window). Usage is:

XCHNG = lflag

where:

lflag Is 0 if plot should be normal and 1 if plot should be rotated 90°. Default is 0.

XLIMIT

Sets the maximum x-coordinate values used when GROUPing plots together. This, along with YLIMIT, is used to determine the number of plots that can be grouped together on a single page. Usage is:

XLIMIT = rnumb

where:

rnumb Is the x-coordinate limit in inches. Default is 8.0 in.

XPAPER

Sets the exact (or apparent) size of the paper. This parameter can be used to adjust the spacing between plots to compensate for inaccuracies in the paper feed mechanism. Usage is:

XPAPER = rnumb

where:

rnumb Is the x-coordinate paper size in inches. Default is 8.53 in.

YLIMIT

Sets the maximum y-coordinate value used when GROUPing plots together. This, along with XLIMIT, is used to specify the number of plots that can be grouped together on a single page. Usage is:

YLIMIT = rnumb

where:

rnumb Is the y-coordinate limit in inches. Default is 10.56 in.

YPAPER

Sets the exact (or apparent) size of the paper. This parameter is included for completeness and should not normally be changed. Usage is:

```
YPAPER = rnumb
```

where:

rnumb Is the y-coordinate paper size in inches. Default is 10.56 in.

4.14.2 OpenVMS Notes

For Versatec-supplied software, the plot file is processed by Phase II Versaplot by spawning a command file called PRINT_VER_PLOT.COM located in the parameter file directory. This command file may be customized for your site. The major change would involve executing the proper Phase II program supplied by Versatec. Refer to the appropriate Versatec documentation for details on installing the Versaplot libraries and submitting the output to the Versatec plotting system.

4.15 PARMVR - Versatec Plotters V07 (Device Name VR)

Parameter Filename:	PARMVR
Computer Systems:	OpenVMS/VAX

4.15.1 Parameters

COLOR_MAP

Overrides the default color mapping for color graphics devices. This parameter allows the user to change the order in which colors are selected. Usage is:

```
COLOR_MAP = icolor1,icolor2,...,icolor16
```

where:

icolor Is the index of the color to select for this device. All values should be in the range of 1 to 16. Defaults are 1, 2, 3, 4, ..., 16.

FORMFEED

Specifies the number of form feeds to be issued at the end of the plotting job. Usage is:

```
FORMFEED = inumb
```

where:

inumb Is the number of form feeds to be issued. Default is 0.

GROUPS

Specifies whether or not multiple plots should be grouped together when space allows it on the Versatec. Normally used when working with a Versatec wider than 11 in.

```
GROUPS = lflag
```

where:

lflag Is 0 if no grouping is desired or 1 if several single page plots are to be grouped together to conserve paper. Default is 0.

HARDWARE_CLIP

Determines if the clipping of unplotable vectors should be handled by software or hardware. Usage is:

```
HARDWARE_CLIP = lflag
```

where:

lflag Is 0 if the device can perform hardware clipping or 1 if the device cannot do hardware clipping requiring Indeplot to do software clipping. Default is 1 when GROUPS is 0 and 0 when GROUPS is 1.

HARDWARE_DASH

Determines if dashed lines should be generated by software or hardware. In general, plots can be produced much faster if hardware dashed lines are available. Usage is:

```
HARDWARE_DASH = lflag
```

where:

lflag Is 0 if the device cannot generate dashed lines or 1 if the device can generate dashed lines in hardware. Default is 1.

HARDWARE_FILL

Determines if toning or filling of polygon areas should be performed by software or hardware. Plots involving toning can be produced much faster when the hardware supports toning. Usage is:

```
HARDWARE_FILL = lflag
```

where:

lflag Is 0 if the device cannot perform hardware filling or 1 if the device can do hardware fill. Default is 1.

NIBS_PER_INCH

Specifies the number of nibs per inch for the Versatec. Usage is:

```
NIBS_PER_INCH = inumb
```

where:

inumb Is the NIBS per inch. Default is 200.

THICK_MAP

Overrides the default thickness (line width) mapping for black and white graphic devices. This parameter allows the user to change the order in which line widths are selected. Usage is:

```
THICK_MAP = iwidth1,...iwidth5
```

where:

iwidth Is the index of the line thickness to select for this device. The values should be in the range of 1 to 5, where 1 is the thinnest and 5 is the thickest. Defaults are 1, 2, 3, 4, 5.

V80

For Versatec V80. Allows adjustment of the position of plots on Versatec paper. Usage is:

```
V80 = lflag
```

where:

lflag Is 0 if the Versatec is not a V80 or 1 if the Versatec is a V80. Default is 1.

XCHNG

Used to rotate the entire plot 90° (including the plotting window). Usage is:

```
XCHNG = lflag
```

where:

lflag Is 0 if plot should be normal and 1 if plot should be rotated 90°. Default is 0.

XLIMIT

Sets the maximum x-coordinate values used when GROUPing plots together. This, along with YLIMIT, is used to determine the number of plots that can be grouped together on a single page. Usage is:

```
XLIMIT = rnumb
```

where:

rnumb Is the x-coordinate limit in inches. Default is 8.0 in.

XPAPER

Sets the exact (or apparent) size of the paper. This parameter can be used to adjust the spacing between plots to compensate for inaccuracies in the paper feed mechanism. Usage is:

```
XPAPER = rnumb
```

where:

rnumb Is the x-coordinate paper size in inches. Default is 8.53 in.

YLIMIT

Sets the maximum y-coordinate value used when GROUPing plots together. This, along with XLIMIT, is used to specify the number of plots that can be grouped together on a single page. Usage is:

```
YLIMIT = rnumb
```

where:

rnumb Is the y-coordinate limit in inches. Default is 10.56 in.

YPAPER

Sets the exact (or apparent) size of the paper. This parameter is included for completeness and should not normally be changed. Usage is:

```
YPAPER = rnumb
```

where:

rnumb Is the y-coordinate paper size in inches. Default is 10.56 in.

4.15.2 OpenVMS/VAX Notes

If a Versatec has been installed on your system without a KMW vector processor, execute the procedures as described in the Siemens PTI-supplied documentation titled, *Versaplot-7 on VAX Computers*.

It is possible to use the VAX print forms types by defining the queue name and the form name for a logical name. For example, to define a logical which would output directly to the Versatec V80 with a form name of VERSATEC, define the logical name PLOTTER (which is the default name for the Versatec) using the following command:

```
DEFINE PLOTTER LVA0,VERSATEC
```

This command can be executed as part of the logic sequence or PLOTTER could be defined as a system logical name in the system start-up procedure.

4.16 Device Independent Plot File

4.16.1 General

The device independent plot file created by the application was designed with the emphasis on simplicity and versatility rather than efficiency. This gives the end user maximum freedom in the utilization of the file, including transferring the file to a foreign computer for plotting if desired. The simplistic design reduces the programming effort required to utilize the plot file.

4.16.2 Independent Plot File Format

The first line of the independent plot file defines the limits of the plot in inches and can be read using either a formatted or free-form read. The values are XMIN, XMAX, YMIN, and YMAX. The statement required to read the line might look like

```
READ(INFIL,7) XMIN, XMAX, YMIN, YMAX
7 FORMAT(4F10.3)
```

or:

```
READ(INFIL,*) XMIN, XMAX, YMIN, YMAX
```

The following lines contain codes to control the actual plotting of the data. The entries are written four to a line and contain the fields IACT, XC, and YC, where:

- | | |
|----------|--|
| IACT = 2 | Draw to XC, YC. |
| IACT = 3 | Move to XC, YC. |
| IACT = 4 | Set dashed line type as defined by INT(XC). |
| IACT = 5 | Set pen color or line width as defined by INT(XC). |
| IACT = 6 | Normally, set line width as with 5, but not pen color. |

IACT = 7 Normally, set pen color as with 5, but not line width.

IACT = -99 End the plotting page.

IACT = 99 End the plot.

INT is the Fortran intrinsic function for obtaining the integer value of a number, thus INT(XC) is the integer value of XC. The plotting program utilizing this file can ignore the functions of IACT, which are not supported on the desired plotting device.

The statement required to read the line might look like:

```
      READ(INFIL,17) (IACT(I),XC(I),YC(I)),I=1,4)
17  FORMAT(4(I3,2F8.3))
```

or:

```
      READ(INFIL,*) (IACT(I),XC(I),YC(I)),I=1,4)
```

4.16.3 Sample Program

A program to read and plot coordinate data might look like the following section of code.

```
INTEGER    IACT(4), I, INFIL
REAL      XC(4), YC(4)
INTRINSIC INT
.
.
.
10 READ(INFIL,*) XMIN, XMAX, YMIN, YMAX
CALL PLOTON(XMIN,XMAX,YMIN,YMAX)
20 READ(INFIL,*,END=90) (IACT(I),XC(I),YC(I)),I=1,4)
DO 30 I = 1,4
  IF (IACT(I).EQ.2) CALL DRAW(XC(I),YC(I))
  IF (IACT(I).EQ.3) CALL MOVE(XC(I),YC(I))
  IF (IACT(I).EQ.4) CALL DASH(INT(XC(I)))
  IF (IACT(I).EQ.5) CALL PENCOL(INT(XC(I)))
  IF (IACT(I).EQ.6) CALL PEN(INT(XC(I)))
  IF (IACT(I).EQ.7) CALL COLOR(INT(XC(I)))
  IF (IACT(I).EQ.-99) CALL NEWPAG
  IF (IACT(I).EQ.99) CALL PLOTOF
30 CONTINUE
.
.
.
90 STOP
END
```

4.17 Fonts Within Graphics

4.17.1 Types of Fonts

There are two types of fonts used by Indepplot: software and hardware. Software fonts are composed of individual vectors that form each character. Hardware fonts are specific to the hardware device. When hardware fonts are not available or not usable, Indepplot automatically uses software fonts. Hardware fonts generally increase the plotting speed and/or reduce the size of the plot.

4.17.2 Software Fonts

Siemens PTI provides several software fonts that can be selected either at run-time or be "linked" into the program. By default, font 1 is an English font without lowercase characters and font 2 is an English font with both upper and lowercase characters. Not all Siemens PTI applications allow the user to "link" different fonts into the program; however, one can always override the "linked" in fonts by selecting different fonts at run-time.

The following table shows the Siemens PTI-supplied fonts and, optionally, the block data file used at "link-time". [Appendix A](#) displays each font supplied by Siemens PTI.

Font Name	Description	Block Data (Optional)
ftueng.dat	English without lowercase	blkfnt.flx or blkfnt.eng
fleng.dat	English with upper and lowercase	blkfnt.flx or blkfnt.eng
ftudan.dat	Danish without lowercase	blkfnt.dan
fldan.dat	Danish with upper and lowercase	blkfnt.dan
ftuswd.dat	Swedish without lowercase	blkfnt.swd
flswd.dat	Swedish with upper and lowercase	blkfnt.swd
ftugre.dat	Greek without lowercase	blkfnt.gre
ftlgre.dat	Greek with upper and lowercase	blkfnt.gre

To override the default font at run-time, the user establishes a file in the form "PTIFNTxx.DAT". On the Prime, the form is "PTIFNTxx". The "xx" should be replaced with the font number to change at run-time. The file should contain a font definition that is consistent with the format of the Siemens PTI-supplied fonts, such as "ftueng.dat". For instance, to use the Greek fonts, one could copy the files provided in the following manner:

```
Copy ftugre.dat to PTIFNT01.DAT
```

and:

```
Copy ftlgre.dat to PTIFNT02.DAT
```

4.17.3 Software Font File Format

Users may define their own font file, although, usually this is not necessary. The font file format is an editable text file with some fairly simple rules. There are three sections: header, pointer, and description.

4.17.3.1 Header Section: FNTHEAD,1,30

The header section defines 30 real numbers as follows:

Position	Description
1	Lower left x value, always 0.0
2	Lower left y value, always 0.0
3	Upper right x value, always 1.0
4	Upper right y value, always 1.0
5 to 10	ASCII decimal equivalences that describe font name
11	Last pointer value of font description
12	Starting character index (usually 1)
13	Ending character index (usually 128)
14 to 30	Reserved for future use

4.17.3.2 Pointer Section: FNTLEN,1,128

The pointer section defines the index into the description section for each character. There is a value for each ASCII character position. This pointer is the position used to find the character within the definition section. To leave a character definition undefined, simply use a pointer value of "0".

4.17.3.3 Description Section: FNTDES,charno,start,end

The description section defines each characters shape. There is a separate FNTDES line for each character to be defined by the font. The "charno" is the ASCII value of the character offset by one. For example, the ASCII value of the character "A" is 65, so the charno would be 66. The "start" and "end" are indices into a description array. The start value is the same as the pointer value in FNTLEN for any given character. Each description's first field is the total number of values that describe the character. Then the character definition follows, with a special value of 1003.0 that means to "move to" the next point. Any data values that follow will "draw to" each point or coordinate pair unless the special value of 1003.0 is used to cause a "move to" the next point.

A sample portion of a font file is as follows:

```
FNTHEAD,1,30
0.0, 0.0, 1.0, 1.0, 102.0, 116.0, 117.0, 101.0, 110.0, 103.0, 2042.0,
1.0, 128.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0,
0.0, 0.0, 0.0, 0.0, 0.0
FNTLEN,1,128
1, 20, 47, 62, ...
...,2019, 2031
FNTDES,1,1,19
18.0, 1003.0, 0.0, 0.0, 0.0, 0.429, 0.429, 0.429, 0.429, - 0.429, -0.429,
-0.429, -0.429, 0.429, 0.0, 0.429, 1003.0, 0.0, 0.0
FNTDES,2,20,46
26.0, 1003.0, 0.0, 0.0, 0.0, 0.429, 0.286, 0.429, 0.429, 0.286, 0.429,
-0.286, 0.286, -0.429, -0.286, -0.429, -0.286, - 0.429, 0.286,
-0.286, 0.429, 0.0, 0.429, 1003.0, 0.0, 0.0
```


4.17.3.4 Creating an 8-Bit Font

One way would be to expand an existing font file to include the additional information. This would be done by changing the 128 to 256 in the font header and on the FNTLEN line. You would then need to create the additional FNTDES records.

Another method would be to combine two existing 7-bit font files. The first FNTHED record should have the starting and ending character indexes updated to reflect the larger size (i.e., 1 and 256). Then include the second 7-bit font file with the limits for FNTLEN changed from "1,128" to "129,256".

Currently, there are limited uses for 8-bit font files.

4.17.4 Hardware Fonts

Hardware font support is device specific. Generally, interactive devices, such as workstations, Tektronix displays, and PCs will use hardware fonts for displaying menus. The use of hardware fonts for this purpose is also application dependent, but is generally used because of the better speed and readability.

Hardware fonts are also available on PostScript printers. When enabled on PostScript devices, the hardware font will override the software font for all text. However, some symbols displayed by the application will continue to use the software font even if a hardware font is enabled. Hardware fonts are enabled by using the parameter file for PostScript devices, PARMPS.

Most applications assume a nonproportional font is used. Therefore, if one enables a font, that font should be nonproportional. If a proportional font is used by mistake, the plotting data will not line up correctly. PostScript printers usually have many fonts, but the only nonproportional font seems to be "Courier" and its variations.

Appendix A

Sample Printer Parameter Files

The following samples illustrate the use of printer parameter files to define several configurations. Some samples demonstrate the relationship between hard copy graphics spooling and the printer parameter files.

A.1 Sample 1

The definition for a system line printer that would be used as “OUTPUT DEVICE CODE = 3” or PRINTER-1 might be defined as:

```
PRINTER, 1=PRT1, 'LINE PRINTER'
BANNER_PAGE, 1=1
```

The definition for a Versatec printer/plotter connected to a KMW vector processor that would be used as “OUTPUT DEVICE CODE = 4” or PRINTER-2 might be defined as:

```
PRINTER, 2=KMW1, 'KMW UP', KMW PLOT
BANNER_PAGE, 2=0
```

The definition for a HP-7550 with automatic page feed might be defined as:

```
PRINTER, 3=HP1, HP PLOT
BANNER_PAGE, 3=0
```

These parameters would have the following effects:

- Whenever bulk output is requested, the prompt would be displayed as follows:

```
ENTER OUTPUT DEVICE CODE:
0 FOR NO OUTPUT      1 FOR CRT TERMINAL
2 FOR FILE           3 FOR LINE PRINTER
4 FOR KMW UP         5 FOR HARD COPY TERMINAL
6 FOR ALTERNATE SPOOL DEVICE:
```

For device code 3 (LINE PRINTER), the output will be spooled to the queue named PRT1 with banner page enabled.

For device code 4 (KMW UP), the output will be spooled to the queue named KMW1 with banner page disabled.

Also, the default for graphics output to plotting device 12 (KMW) will be directed to KMW1 with the banner page disabled. This is accomplished by the presence of the identifier KMWPlot on the “PRINTER” parameter line for printer “2”.

- The default for graphics output to plotting device 38 (HP-GL FILE) will be spooled to device HP1. This is accomplished by the presence of the identifier HPPlot on the “PRINTER” parameter line for printer “3”. The banner page must be disabled.

A.2 Sample 2

The definition for a system with only a PostScript laser printer used for printing and plotting might be defined as:

```
PRINTER, 1=PS, PS, PSPlot
PRINTER_TYPE, 1=2
PAGE_ORIENTATION, 1=PORTRAIT
START_STRING, 1=4
END_STRING, 1=4

PRINTER, 2=PS, PSLAND
PRINTER_TYPE, 2=2
PAGE_ORIENTATION, 2=LANDSCAPE
START_STRING, 2=4
END_STRING, 2=4
```

These parameters would have the following effects:

- Whenever bulk output is requested, the prompt would be displayed as follows:

```
ENTER OUTPUT DEVICE CODE:
  0 FOR NO OUTPUT      1 FOR CRT TERMINAL
  2 FOR FILE            3 FOR PS
  4 FOR PSLAND          5 FOR HARD COPY TERMINAL
  6 FOR ALTERNATE SPOOL DEVICE:
```

For device code 3 (PS), the output will be spooled to the queue named PS using Siemens PTI's text to PostScript translator. The orientation will be portrait (or upright). A <control-D> will be inserted at the beginning and end of file to reset the PostScript printer.

Device code 4 (PSLAND) is the same as PS except the page orientation is landscape (or sideways).

- By default, graphics output to plotting device 41 (PostScript) will be spooled to device PS. This is accomplished by the presence of the identifier PSPlot on the “PRINTER” parameter line for printer “1”.
- The spool queue should allow data lines longer than 132 columns if possible. A recommended maximum length would be 256 characters per line.

A.3 Sample 3

This definition is for a PC system with one default Windows printer and two parallel printers. A sample PARMPR.DAT file is as follows:

```
!
PRINTER 1 = WIN-PRINTER
!
PRINTER 2 = LPT2,PSCENTR2,POSTSCRIPT,PSPLOT
PRINTER_TYPE 2 = 2
!
! Print to HP Laserjet - portrait orientation.
PRINTER 3 = LPT1,HP_Portrait
START_STRING 3 = ' ',27,'&100',27,'(s16.66H'
END_STRING 3 = ' ',27
!
! Print to HP Laserjet - landscape orientation.
PRINTER 4 = LPT1,HP_Landscape
START_STRING 4 = ' ',27,'&110',27,'(s16.66H'
END_STRING 4 = ' ',27
```

When you print graphics to a PostScript printer or text to any printer, the Printer Selector menu reads PARMPR and displays a list of user-defined device names found there. The sample PARMPR would produce the following list of names:

```
default_printer
PSCENTR2
HP_PORTRAIT
HP_LANDSCAPE
```

These parameters would have the following effects:

- Whenever bulk output is requested, the prompt would be displayed as follows:

```
ENTER OUTPUT DEVICE CODE:
  0 FOR NO OUTPUT      1 FOR CRT TERMINAL
  2 FOR FILE           3 FOR default_printer
  4 FOR HP_PORTRAIT    5 FOR HARD COPY TERMINAL
  6 FOR ALTERNATE SPOOL DEVICE:
```
- Printers 3 and 4 are different entries for the same HP Laserjet Series II printer attached to LPT1. The start string for Printer 3 indicates a portrait page orientation and condensed print. Printer 4 includes a start string indicating a landscape page orientation and condensed print.
- Printer 2 is a QMS-2025 PostScript printer connected to LPT2.
- Note that the “default” PostScript printer (when used for graphics output) must have PSPLOT as one of its name “aliases;” therefore the QMS 2025 would be the default in this sample.

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Appendix B

Indeplot-Supported Graphic Devices

Table B-1 lists Indeplot-supported graphic devices and the relevant data supporting them.

B.1 Notes Concerning Graphics and Older DEC Equipment

For interactive graphics devices, we support the Digital VT240/VT241 and VT330/VT340 as a Tektronix 4010/4014 terminal. The display resolution on the VT240/VT241 is very limited and is probably not acceptable. Simple graphics activities on the VT330/VT340 should work fine, but some activities such as screen digitizing will not work as intended using the Tektronix driver. In PSSTME, the screen digitizing option in activity DRED and advanced features of DRAW requires some enhancements to Tektronix 4010/4014, which Digital VT240/VT241 and VT330/VT340 do not support. This is also true in the PSS/U activity, TIOC. Using the ReGIS driver, all graphics capabilities are supported on the VT330 and VT340. Tektronix 4100 series, 4110 series, 4200 series, and the Tektronix emulation terminals listed in **Table B-1** will all work fine.

SIEMENS

Table B-1. Indeplot-Supported Graphic Devices

Device	Computer System	Color	Picture Quality	Relative Speed	Used in Batch Mode	Requires Extra Software	Comments
Benson Varian Pen Plotter	DEC-VAX/VMS	Yes	Good	Slow	No	Yes	Not recommended by Siemens PTI.
Calcomp Pen Plotters	OpenVMS	Yes	Good	Slow	Yes	Yes (HCBS)	
Nicolet Zeta-8 Pen Plotters	OpenVMS	Yes	Good	Slow	Yes	Yes	
Hewlett-Packard Pen Plotters 7470, 7475, 7550	OpenVMS	Yes	Good	Slow	No	No	
Hewlett Packard HP-GL Plot File	All	Depends on device used.			Yes	No	Can be used via print queue.
Tektronix 4010/4014, 41xx, 42xx	OpenVMS	Yes	Fair to Good	Medium	No	No	Also see Tektronix emulation terminals.
Tektronix Plot File for 4510	OpenVMS	Yes	Good	Medium	Yes	No	Can be used via print queue.
Tektronix Pen Plotters 4662 and 4663	OpenVMS	Yes	Good	Slow	No	Yes (IGL)	
QMS Lasergrafix Laser Printer (black and white only)	OpenVMS	No	Good	Medium to Fast	Yes	No	Several interfaces are available.
VT330/VT340 via ReGIS	OpenVMS	Available	Good	Medium	No	No	
Versatec Printer/Plotter with Direct Computer Interface	V9-OpenVMS, V7-VAX	No	Good	Fast	Yes	Yes	Requires Versaplot software from Versatec for OpenVMS systems. OpenVMS requires 121 or 122 DMA controller. A vector to raster converter may be used in this configuration. (Not recommended by Siemens PTI.)
Versatec Printer/Plotter with KMW VP10 or VP30 Vector Processor	OpenVMS	No	Good	Fast	Yes	No	OpenVMS users can select Data Products parallel or RS232 serial interface for the KMW VP.
X Window System	OpenVMS	Available	Fair to Good	Fast	No	No	Using Xlib routines.

SIEMENS

Table B-1. Indeplot-Supported Graphic Devices

Device	Computer System	Color	Picture Quality	Relative Speed	Used in Batch Mode	Requires Extra Software	Comments
PostScript Support	All	Depends on device used.			Yes	No	Typically, this device will be a laser printer.
PC Graphics for Windows	Supported PCs	Depends on device used.			Yes	Yes	

Appendix C

ASCII and EBCDIC Character Sets

Table C-1 ASCII Character Set represents the ASCII character set. To the left side of the table are the base decimal values for each row, and at the top of the table are the amounts to add to the row for each column of characters. To determine the decimal value of an ASCII character, add the decimal value that corresponds to the row with the decimal value that corresponds to the column. For example, the value of the character representing the equal sign (“=”) is 56+5 or 61.

Table C-1. ASCII Character Set

Row	Column							
	+0	+1	+2	+3	+4	+5	+6	+7
0	NUL	SOH	STX	ETX	EOT	ENQ	ACK	BEL
8	BS	HT	LF	VT	FF	CR	SO	SI
16	DLE	DC1	DC2	DC3	DC4	NAK	SYN	ETB
24	CAN	EM	SUB	ESC	FS	GS	RS	US
32		!	"	#	\$	%	&	'
40	()	*	+	,	-	.	/
48	0	1	2	3	4	5	6	7
56	8	9	:	;	<	=	>	?
64	@	A	B	C	D	E	F	G
72	H	I	J	K	L	M	N	O
80	P	Q	R	S	T	U	V	W
88	X	Y	Z	[\]	^	_
96	`	a	b	c	d	e	f	g
104	h	i	j	k	l	m	n	o
112	p	q	r	s	t	u	v	w
120	x	y	z	{	|	}	~	DEL

Table C-2 represents the EBCDIC character set which is used on IBM mainframes. All other machines use the ASCII character set. Using the previous example, the value of the EBCDIC character representing the equal sign (=) is 120 + 6 or 126.

Table C-2. EBCDIC Character Set

Row	Column							
	+0	+1	+2	+3	+4	+5	+6	+7
0	NUL	SOH	STX	ETX	PF	HT	LC	DEL
8	GE	RLF	SMM	VT	FF	CR	SO	SI
16	DLE	DC1	DC2	TM	RES	NL	BS	IL
24	CAN	EM	CC	CU1	IFS	IGS	IRS	IUS
32	DS	SOS	FS		BYP	LF	ETB	ESC
40			SM	CU2		ENQ	ACK	BEL
48			SYN		N	RS	UC	EOT
56				CU3	DC4	NAK		SUB
64	space							
72			¢	.	<	(	+	|
80	&							
88			!	\$	*)	;	¬
96	-	/						
104			|	,	%	_	>	?
112								
120		‘	:	#	@	’	=	"
128		a	b	c	d	e	f	g
136	h	i						
144		j	k	l	m	n	o	p
152	q	r						
160		~	s	t	u	v	w	x
168	y	z						
176								
184								
192	{	A	B	C	D	E	F	G
200	H	I			hook		fork	
208	}	J	K	L	M	N	O	P
216	Q	R						
224	\		S	T	U	V	W	X
232	Y	Z			chair			
240	0	1	2	3	4	5	6	7
248	8	9	|					EO

Appendix D

Indeplot Fonts Files

This chapter details the contents of the Indeplot Fonts Files listed below:

- [ftueng.dat](#)
- [ftleng.dat](#)
- [ftudan.dat](#)
- [ftldan.dat](#)
- [ftuswd.dat](#)
- [ftlswd.dat](#)
- [ftugre.dat](#)
- [ftlgre.dat](#)

D.1 ftueng.dat

FONT NUMBER =1 (ftueng)

Symbols available to theINDEPLOT TEXTDI/SYMBDIsubroutines

Codes next to each symbol are: 1. Integer equivalent

1	□	17	|	33		49	0	65	©	81	P	97	∞	113	Σ
2	⊖	18	BS	34	!	50	1	66	A	82	Q	98	—	114	÷
3	△	19	}	35	"	51	2	67	B	83	R	99	μ	115	≤
4	+	20	≡	36	#	52	3	68	C	84	S	100	π	116	≥
5	×	21	→	37	\$	53	4	69	D	85	T	101	φ	117	Δ
6	◊	22	CR	38	%	54	5	70	E	86	U	102	⊖	118	¢
7	△	23	≠	39	&	55	6	71	F	87	V	103	ψ	119	—
8	×	24	±	40	'	56	7	72	G	88	W	104	x	120	|
9	Z	25	{	41	(	57	8	73	H	89	X	105	w	121	W
10	Y	26	NUL	42	)	58	9	74	I	90	Y	106	λ	122	√
11	□	27	—	43	*	59	:	75	J	91	Z	107	α	123	†
12	*	28	∫	44	+	60	;	76	K	92	⌈	108	δ	124	{
13	⊗	29	⊃	45	•	61	<	77	L	93	\	109	€	125	←
14	|	30	V	46	—	62	=	78	M	94	⌋	110	η	126	}
15	☆	31	~	47	•	63	>	79	N	95	^	111	SUP	127	↑
16	—	32	≈	48	/	64	?	80	O	96	—	112	SUB	128	↓

NOTE: 1. The first 14 symbols are centered.
2. A subset of the symbols are accessible via ASCII or EBCDIC codes.

Figure D-1. Indeplot Font File ftueng.dat: English Without Lowercase Characters

D.2 ftleng.dat

FONT NUMBER =2 (Courier)

Symbols available to theINDEPLOT TEXTDI/SYMBDIsubroutines

Codes next to each symbol are: 1. Integer equivalent

1	□	17	|	33		49	∅	65	@	81	P	97	∞	113	p
2	⊙	18		34	!	50	1	66	A	82	Q	98	a	114	q
3	△	19	}	35	"	51	2	67	B	83	R	99	b	115	r
4	+	20	≡	36	#	52	3	68	C	84	S	100	c	116	s
5	×	21	→	37	\$	53	4	69	D	85	T	101	d	117	t
6	◊	22		38	%	54	5	70	E	86	U	102	e	118	u
7	△	23	≠	39	&	55	6	71	F	87	V	103	f	119	v
8	⊗	24	±	40	'	56	7	72	G	88	W	104	g	120	w
9	Z	25	{	41	(	57	8	73	H	89	X	105	h	121	x
10	Y	26		42	)	58	9	74	I	90	Y	106	i	122	y
11	⊠	27	—	43	×	59	:	75	J	91	Z	107	j	123	z
12	*	28	∫	44	+	60	;	76	K	92	[	108	k	124	{
13	⊗	29	⊃	45	,	61	<	77	L	93	\	109	l	125	|
14	|	30	∨	46	—	62	=	78	M	94	□	110	m	126	}
15	☆	31	~	47	.	63	>	79	N	95	^	111	n	127	↑
16	—	32	≈	48	/	64	?	80	O	96	—	112	o	128	↓

NOTE: 1. The first 14 symbols are centered.
2. A subset of the symbols are accessible via ASCII or EBCDIC codes.

Figure D-2. Indepplot Font File ftleng.dat: English With Upper and Lowercase Characters

D.3 ftudan.dat

FONT NUMBER =1 (ftudan)

Symbols available to theINDEPLOT TEXTDI/SYMBDIsubroutines

Codes next to each symbol are: 1. Integer equivalent

1	□	17	|	33	49	0	65	È	81	P	97	∞	113	Σ
2	⊖	18	BS	34	!	50	1	66	A	82	Q	98	—	÷
3	△	19	}	35	"	51	2	67	B	83	R	99	μ	≤
4	+	20	≡	36	#	52	3	68	C	84	S	100	π	≥
5	×	21	→	37	α	53	4	69	D	85	T	101	φ	Δ
6	◊	22	CR	38	%	54	5	70	E	86	U	102	⊖	¢
7	△	23	≠	39	&	55	6	71	F	87	V	103	ψ	—
8	×	24	±	40	'	56	7	72	G	88	W	104	x	|
9	Z	25	{	41	(	57	8	73	H	89	X	105	w	W
10	Y	26	NUL	42	)	58	9	74	I	90	Y	106	λ	√
11	□	27	—	43	*	59	:	75	J	91	Z	107	α	†
12	*	28	∫	44	+	60	;	76	K	92	Æ	108	δ	{
13	×	29	⊃	45	•	61	<	77	L	93	Ø	109	€	←
14	|	30	V	46	—	62	=	78	M	94	Å	110	η	}
15	☆	31	~	47	•	63	>	79	N	95	^	111	SUP	↑
16	—	32	≈	48	/	64	?	80	O	96	—	112	SUB	↓

NOTE: 1. The first 14 symbols are centered.
2. A subset of the symbols are accessible via ASCII or EBCDIC codes.

Figure D-3. Indeplot Font File ftudan.dat: Danish Without Lowercase Characters

D.4 ftldan.dat

FONT NUMBER =2 (Courier)

Symbols available to theINDEPLOT TEXTDI/SYMBDIsubroutines

Codes next to each symbol are: 1. Integer equivalent

1	□	17	|	33		49	0	65	È	81	P	97	è	113	p
2	⊖	18		34	!	50	1	66	À	82	Q	98	à	114	q
3	△	19	}	35	"	51	2	67	B	83	R	99	b	115	r
4	+	20	≡	36	#	52	3	68	C	84	S	100	c	116	s
5	×	21	→	37	α	53	4	69	D	85	T	101	d	117	t
6	◊	22		38	%	54	5	70	E	86	U	102	e	118	u
7	△	23	≠	39	&	55	6	71	F	87	V	103	f	119	v
8	×	24	±	40	'	56	7	72	G	88	W	104	g	120	w
9	Z	25	{	41	(	57	8	73	H	89	X	105	h	121	x
10	Y	26		42	)	58	9	74	I	90	Y	106	i	122	y
11	⊠	27	—	43	*	59	:	75	J	91	Z	107	j	123	z
12	*	28	∫	44	+	60	;	76	K	92	Æ	108	k	124	æ
13	⊗	29	⊃	45	‚	61	<	77	L	93	Ø	109	l	125	ø
14	|	30	∇	46	—	62	=	78	M	94	Å	110	m	126	å
15	☆	31	~	47	•	63	>	79	N	95	^	111	n	127	—
16	—	32	≈	48	/	64	?	80	O	96	—	112	o	128	↓

NOTE: 1. The first 14 symbols are centered.
2. A subset of the symbols are accessible via ASCII or EBCDIC codes.

Figure D-4. Indeplot Font File ftldan.dat: Danish With Upper and Lowercase Characters

D.5 ftuswd.dat

FONT NUMBER =1 (ftuswd)

Symbols available to theINDEPLOT TEXTDI/SYMBDIsubroutines

Codes next to each symbol are: 1. Integer equivalent

1	□	17	|	33		49	0	65	È	81	P	97	∞	113	Σ
2	⊖	18	BS	34	!	50	1	66	A	82	Q	98	—	114	÷
3	△	19	}	35	"	51	2	67	B	83	R	99	μ	115	≤
4	+	20	≡	36	#	52	3	68	C	84	S	100	π	116	≥
5	×	21	→	37	α	53	4	69	D	85	T	101	φ	117	Δ
6	◊	22	CR	38	%	54	5	70	E	86	U	102	⊖	118	¢
7	△	23	≠	39	&	55	6	71	F	87	V	103	ψ	119	—
8	×	24	±	40	'	56	7	72	G	88	W	104	x	120	|
9	Z	25	{	41	(	57	8	73	H	89	X	105	w	121	W
10	Y	26	NUL	42	)	58	9	74	I	90	Y	106	λ	122	√
11	□	27	—	43	*	59	:	75	J	91	Z	107	α	123	†
12	*	28	∫	44	+	60	;	76	K	92	Ä	108	δ	124	{
13	×	29	⊃	45	•	61	<	77	L	93	Ö	109	€	125	←
14	|	30	V	46	—	62	=	78	M	94	Å	110	η	126	}
15	☆	31	~	47	•	63	>	79	N	95	^	111	SUP	127	↑
16	—	32	≈	48	/	64	?	80	O	96	—	112	SUB	128	↓

NOTE: 1. The first 14 symbols are centered.
2. A subset of the symbols are accessible via ASCII or EBCDIC codes.

Figure D-5. Indepplot Font File ftuswd.dat: Swedish Without Lowercase Characters

D.6 ftlswd.dat

FONT NUMBER =2 (Courier)

Symbols available to theINDEPLOT TEXTDI/SYMBDIsubroutines

Codes next to each symbol are: 1. Integer equivalent

1	□	17	|	33		49	0	65	È	81	P	97	è	113	p
2	⊙	18		34	!	50	1	66	À	82	Q	98	à	114	q
3	△	19	}	35	"	51	2	67	B	83	R	99	b	115	r
4	+	20	≡	36	#	52	3	68	C	84	S	100	c	116	s
5	×	21	→	37	¤	53	4	69	D	85	T	101	d	117	t
6	◊	22		38	%	54	5	70	E	86	U	102	e	118	u
7	△	23	≠	39	&	55	6	71	F	87	V	103	f	119	v
8	⊗	24	±	40	'	56	7	72	G	88	W	104	g	120	w
9	Z	25	{	41	(	57	8	73	H	89	X	105	h	121	x
10	Y	26		42	)	58	9	74	I	90	Y	106	i	122	y
11	⊠	27	—	43	×	59	:	75	J	91	Z	107	j	123	z
12	*	28	∫	44	+	60	;	76	K	92	Ä	108	k	124	ä
13	⊗	29	⊃	45	,	61	<	77	L	93	Ö	109	l	125	ö
14	|	30	∇	46	—	62	=	78	M	94	Å	110	m	126	å
15	☆	31	~	47	.	63	>	79	N	95	^	111	n	127	—
16	—	32	≈	48	/	64	?	80	O	96	—	112	o	128	↓

NOTE: 1. The first 14 symbols are centered.
2. A subset of the symbols are accessible via ASCII or EBCDIC codes.

Figure D-6. Indepplot Font File ftlswd.dat: Swedish With Upper and Lowercase Characters

D.7 ftugre.dat

FONT NUMBER =1 (ftugre)

Symbols available to theINDEPLOT TEXTDI/SYMBDisubroutines

Codes next to each symbol are: 1. Integer equivalent

1	□	17	|	33		49	∅	65	©	81	Π	97	∞	113	Σ
2	⊙	18	ΒΣ	34	∇	50	1	66	Α	82	Θ	98	—	114	⊖
3	△	19	}	35	∇	51	2	67	Β	83	Ρ	99	μ	115	≤
4	+	20	≡	36	#	52	3	68	Χ	84	Σ	100	π	116	≥
5	×	21	→	37	\$	53	4	69	Δ	85	Τ	101	Φ	117	Δ
6	◊	22	XP	38	%	54	5	70	Ε	86	Υ	102	Θ	118	¢
7	△	23	≠	39	&	55	6	71	Φ	87	ς	103	ψ	119	—
8	×	24	±	40	'	56	7	72	Γ	88	Ω	104	x	120	|
9	Z	25	{	41	(	57	8	73	H	89	Ξ	105	ω	121	∞
10	Y	26	NYΛ	42	)	58	9	74	I	90	Ψ	106	λ	122	√
11	□	27	—	43	×	59	:	75	υ	91	Z	107	α	123	†
12	*	28	∫	44	+	60	;	76	K	92	Γ	108	δ	124	{
13	×	29	⊃	45	,	61	<	77	Λ	93	\	109	€	125	←
14	|	30	V	46	—	62	=	78	M	94	□	110	η	126	}
15	☆	31	~	47	•	63	>	79	N	95	Λ	111	ΣΥΠ	127	↑
16	—	32	≈	48	/	64	?	80	Ο	96	—	112	ΣΥΒ	128	↓

NOTE: 1. The first 14 symbols are centered.
2. A subset of the symbols are accessible via ASCII or EBCDIC codes.

Figure D-7. Indeplot Font File ftugre.dat: Greek Without Lowercase Characters

D.8 ftlgre.dat

FONT NUMBER =2 (Courier)

Symbols available to theINDEPLOT TEXTDI/SYMBDIsubroutines

Codes next to each symbol are: 1. Integer equivalent

1	□	17	|	33		49	∅	65	©	81	Π	97	∞	113	π
2	⊙	18		34	!	50	1	66	A	82	⊖	98	α	114	θ
3	△	19	}	35	"	51	2	67	B	83	P	99	β	115	ρ
4	+	20	≡	36	#	52	3	68	X	84	Σ	100	χ	116	σ
5	×	21	→	37	\$	53	4	69	Δ	85	T	101	δ	117	τ
6	◊	22		38	%	54	5	70	E	86	Υ	102	ε	118	υ
7	△	23	≠	39	&	55	6	71	Φ	87	ς	103	φ	119	ω
8	⊗	24	±	40	'	56	7	72	Γ	88	Ω	104	γ	120	ω
9	Z	25	{	41	(	57	8	73	H	89	Ξ	105	η	121	ξ
10	Y	26		42	)	58	9	74	I	90	Ψ	106	ι	122	ψ
11	⊠	27	—	43	×	59	:	75	∪	91	Z	107	φ	123	ζ
12	*	28	∫	44	+	60	;	76	K	92	⌈	108	k	124	{
13	⊗	29	⊃	45	,	61	<	77	Λ	93	\	109	λ	125	|
14	|	30	V	46	—	62	=	78	M	94	□	110	μ	126	}
15	☆	31	~	47	.	63	>	79	N	95	^	111	v	127	↑
16	—	32	≈	48	/	64	?	80	0	96	—	112	o	128	↓

NOTE: 1. The first 14 symbols are centered.
2. A subset of the symbols are accessible via ASCII or EBCDIC codes.

Figure D-8. Indeplot Font File ftlgre.dat: Greek With Upper and Lowercase Characters

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