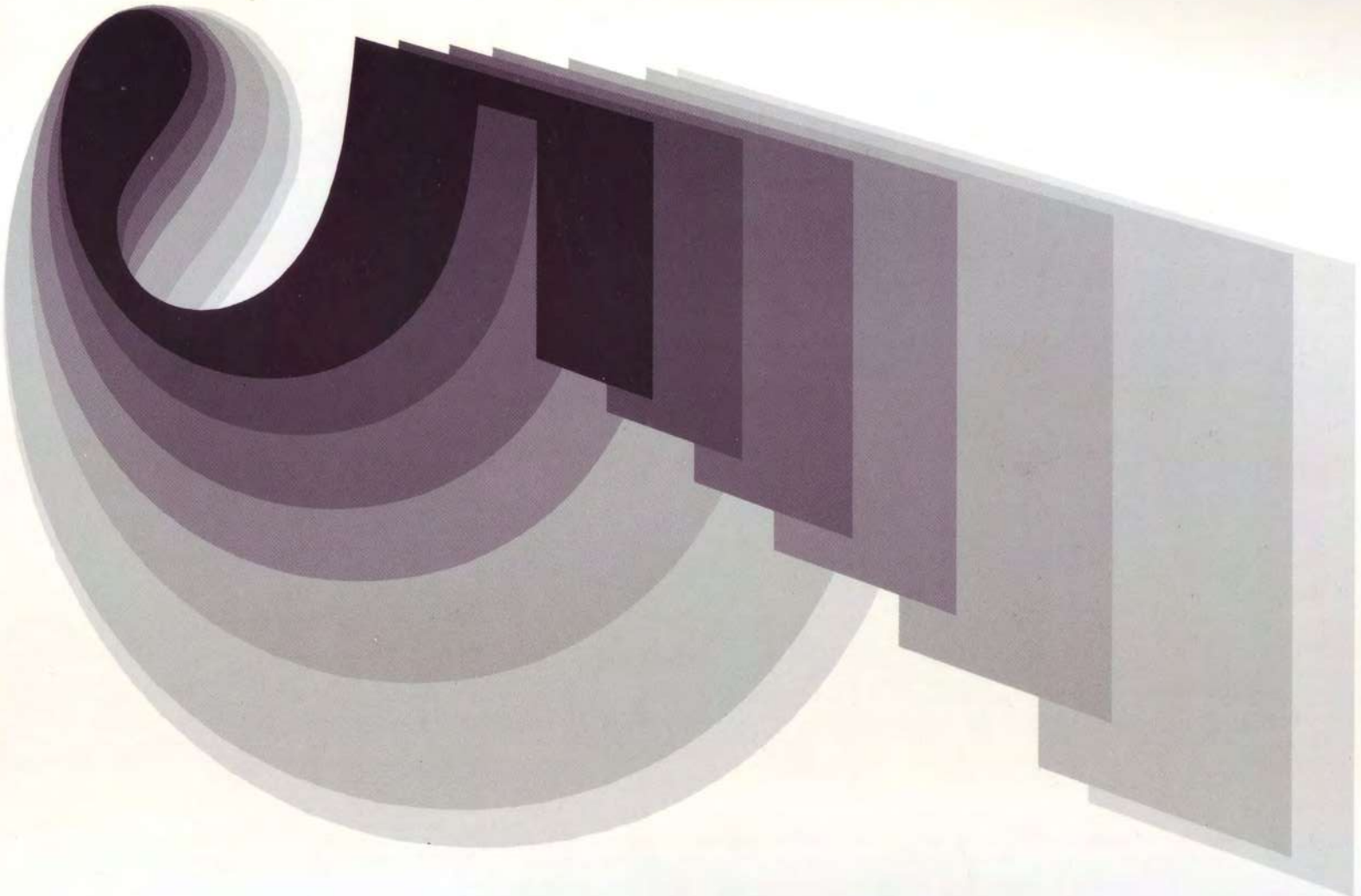
STARJET



APPIC

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INTRODUCTION

Introduction

If you are not familiar with Laser Printers, this brief introduction will explain the uses of this technology.

Laser printers are characterized by the following two fundamental characteristics:

- The technology used

- The quality of impression achieved by this technology

The Technology

Impact Printers

As the name indicates, these printers use the same basic method as do mechanical typewriters. Either a hammer or needles are used to strike the paper surface through an inked ribbon. The physical blow transfers ink from the ribbon to the paper surface, thus forming the image required.

This printer technology - either hammer for heavy-duty needs, or needle for so-called letter-quality printers, have been available for many years.

Laser Printers

The method used to print a character is quite similar to that used by dot matrix (needle) printers: a character is formed by a number of dots. However the size of each dot is far smaller, an image is thus made up of a far greater number of dots, giving a far more precise outline.

The technology used is considerably different to that used in impact printers: a laser beam is focused onto a photo-sensitive drum, the light charges areas on the drum, toner is attracted to these areas, and finally the toner is heat-fused to the paper surface, forming the final image.

The use of this technology allows lines formed from succession of dots to be traced at any thickness anywhere on the page, or indeed any other graphical element to be drawn on the page. By allowing a number of these graphical elements (lines, boxes, shaded areas, etc.) to be drawn on the page, the ability to produce electronic forms is achieved.

The resolution of the printer is measured by the number of elementary dots it is capable of addressing, and thus printing. The LaserJet printers all have a resolution of 300 dots per inch. This resolution is fundamental to the rest of this documentation.

PCL

A laser printer is, as we have seen, capable of printing anything, or nearly anything that we could wish.

It is possible to transfer data to the printer. In this case the printer will use whatever character font has been defined to print the data, page after page as it is received.

It is also possible to ask the printer to perform more complex tasks. To achieve this, the printer formatter (an integrated controller inside the printer) is capable of executing commands expressed in a special language: all LaserJet printers execute commands expressed in PCL, or Printer Control Language.

Different levels of PCL have been specified. The latest version, PCL 5 allows far more sophisticated graphics to be printed than previous versions allowed.

This command language is based on the use of a number of escape sequences.

An escape sequence is simply a sequence of characters prefixed by the <escape> character. An escape sequence may contain a number of numeric parameters, and is nearly always terminated by an upper-case letter.

Note: StarJet supports versions 4 and 5 of PCL, which is supported by all HP LaserJet printers with the exception of the original LaserJet model HP2686.

The following printers are currently supported:

- LaserJet +
- LaserJet 500
- LaserJet IIP
- LaserJet II
- LaserJet IID
- LaserJet II
- LaserJet IIID
- LaserJet 2000

as well as all true HP LaserJet-compatible printers.

Electronic Forms

The basic concept is simple: remove the need for pre-printed stationary by printing both the data from the application program and a copy of the form at the same time on a LaserJet printer

Pre-printed stationary can represent a significant expense for the MIS department for many reasons: primarily the cost of printing, because changes to addresses, phone numbers etc. can obsolete all stock, and finally because an operator must mount the correct paper on demand, correctly align it, etc. ..

Electronic forms provide solutions to all these problems:

- by printing the form at the same time as the data, thus eliminating all special stocks of paper.
- the software-based forms all easily modifiable, eliminating waste caused by changes to letterhead details.
- they are available immediately, without operator intervention.

To obtain these results it is necessary to send to the LaserJet printer the necessary PCL commands, in other words the required escape sequences.

Printing on the HP3000

The HP3000 being a multi-user system, it is common to see many dozens of users making use of printers located in the same room as the HP3000.

To avoid all conflict between users trying to access a printer simultaneously, output passes to printers via 'spool' files, quite simply disc-based buffers waiting for the physical printer to become available.

Spool files may either be special files only accessible via special utilities such as SPOOK (under MPE V and MPE XL prior to version 2.1), or they may be almost 'normal' disc files located in the HPSPOOL account (MPE XL as of version 2.1, with the introduction of the Native Mode Spooler).

Whichever spool file method is used, the objective of electronic form management software is to ensure that the commands necessary to print the form are sent to the printer automatically, before the printer receives the data being sent.

This is the objective of StarJet.

> Note: StarJet supports all versions of MPE V and MPE XL. StarJet does not operate under MPE IV based systems.

The Physical Page

The Physical page is quite simply the sheet of paper on which the printout is to be performed. The page is characterized by its dimensions: Letter, A4, A3 and ledger are examples of paper sizes accepted by LaserJet printers.

The technology used by all LaserJet printers prevents any data or graphics elements being printed on a small region around the edge of the paper known as the non-printable area. This area is about 1/4 inch wide.

StarJet uses proprietary techniques to reduce the size of this area, thus increasing the useful surface area of the paper, but a margin of about 50 points remains inaccessible around all 4 edges of the paper.

Note: All coordinates used by StarJet are relative to the printable area of the paper.

Orientation

LaserJet printers allow flexibility in an area unknown to impact printers: it is possible to print a page either vertically or horizontally across the paper.

'Portrait' orientation corresponds to printing in the vertical sense. The reader holds the page vertically in order to read it.

'Landscape' orientation corresponds to printing in the horizontal sense of the paper, so the reader holds the page horizontally to read it.

The Logical Page

Logical pages are made available by advanced use of the LaserJet features.

In the simplest case the physical page corresponds to the logical page. As soon as the application finishes writing to a page, the physical page is ejected by a physical form feed. Data is then written to the next physical page. From the application's point of view a page has been finished, from the printer's point of view a page has been printed.

LaserJet printers provide flexible ways to adjust the dimensions of all elements that make up the print process, and allow us to print many 'logical' pages on a single physical page. For example, it is possible, on a single physical sheet of A4 paper in the horizontal (landscape) orientation, to print the contents of two pages of text side-by-side. In this context, a physical page eject is only performed when the application has written the contents of two pages to the printer.

The notion of logical pages is especially useful when printing is performed for archival purposes.

What is a Form?

Take as an example the invoices produced by your company. They contain two types of printed elements: a group of fixed elements and superimposed data.

The data is normally directly output by the application program, and included the name of the client, the address, etc.

The rest of the invoice is common to all invoices produced for all clients. This includes columns together with their titles, shaded areas, boxes, headings, your company name and address, logos...

These common elements constitute the form itself.

Creating a Form

Creating a form consists quite simply of creating an exhaustive list of all the elements that make up the form.

In common terms, define the lines that delimit the various columns, the boxes, etc.

The definition of a line, for example, requires a number of parameters to be specified: the line's orientation (vertical in the case of columns), the line thickness, the coordinates of the starting point, the coordinates of the line end. For boxes the definition includes the thickness, the coordinates of the top-left corner and the coordinates of the bottom-right corner.

Once this list has been finished, the form has been defined.

Double-sided

Some printers are capable of printing on both sides of the physical page. This feature is particularly useful for invoices (where it is possible to print the conditions of sale on the reverse), or in order to reduce the consumption of paper (in particular when printing long lists).

It is possible to print a standard 'form' on the reverse of every page printed, or to simply print a data and overlaid form on both sides of every page.

MultiPart Forms

We have not mentioned until now the aspect of printing the most often encountered in MIS environments: multi part forms.

Many applications use the physical characteristics of impact printers to print, in a single pass, multiple copies of the same page. Invoices are printed on between 3 and 6 copies using carbon paper or more modern chemical-based alternatives.

LaserJet printers obviously cannot be used in the same way, there is no physical impact in the printer, and carbon papers cannot be used.

It is possible, however, by exploiting the LaserJet printer fully, to emulate multipart forms by simply printing multiple copies of each page. It is also possible to print multiple copies of each page where each copy is printed on a different form design. For example, one copy marked 'Original', two copies marked 'Duplicate' and one copy marked 'Accounts copy'.

The Overlay

An application program, continuing for the moment the previous example, can print an unknown number of pages when launched: one day 10 invoices, the next 25.

It is possible, when printing every page, to resend the definition of the form to the printer every time.

LaserJet printers support, however, a far more powerful feature, they are capable of automatically repeating the same sequence of commands on every page printed.

This sequence of commands are defined inside what we term an Overlay. When an overlay has been defined, sent once to the LaserJet printer and activated, it will be printed automatically on all pages that follow.

Within the LaserJet printer's memory, each overlay is associated with a unique number, its identification number.

> Note: In order for a form to be printed automatically on every page of a printout, it must be defined within an overlay.

Character Font Definitions

As we have already seen, the LaserJet printers are capable of depositing toner on any point on the page. By printing points in predefined patterns, they are capable of printing any required character style.

This flexibility also allows the printing of logos and bar codes. In order to print these fonts, however, it is necessary to supply the printer with the definition of each character to be printed. These character definitions (or fonts) may be supplied in either of three forms: internal, cartridge or soft font. Soft fonts are located on the HP3000, and must be downloaded to the printer memory before they can be used.

If a printer has access to 5 different fonts at the time it is printing a page, then all 5 fonts can be used when printing the page.

Internal Fonts

These are the fonts supplied internally inside the LaserJet printer. The number of internal fonts varies according to the LaserJet model.

It is possible to printout a list of all internal fonts inside a LaserJet printer by means of the front panel button labeled 'PRINT FONTS'. This feature is available on all recent LaserJet models.

In any case, the number of internal fonts is relatively limited when compared to the large number of fonts available commercially. Internal fonts, however, are free and may be used at any time without having to transfer them to the printer.

Cartridges

LaserJet printers all contain at least one slot in which a cartridge may be placed.

Cartridges offer different selections of up to 200 different fonts in a single cartridge, to make the fonts accessible the cartridge must be plugged into the printer, and must not then be removed.

Cartridge-based fonts do not have to be downloaded, and are thus immediately available.

Unfortunately, cartridges are not free; you also need one cartridge for every printer you intend to use.

Soft Fonts

These are character font descriptions located in disc files. The file contains the collection of commands required to define all the characters in the font completely.

Soft fonts are not free either, but they may be shared between multiple printers. Unfortunately in order to make use of a soft font, the contents of the definition file must be downloaded to the LaserJet printer's memory. This download may take a long time, in particular for large fonts sizes, and when the printer is connected at a slow speed (2400 baud, for example).

> Note: We strongly recommend that you configure all LaserJets at 19200 baud.

Choosing a Font

When choosing between the three different methods of defining character fonts, three different criteria must be evaluated: flexibility, performance and cost.

In all cases, if a character font is available internally in the printer, it is preferable to use it. Internal fonts don't consume printer memory, don't take transmission time and are free.

When the printer is being used for large printouts, and when directly connected to the system, downloaded fonts are appropriate: the transmission time is negligible when compared to the total print time, and a font of this type may be shared between many printers.

However, if a printer if connected by packet switching network (X.25 or Transpac), it may become advantageous to invest in a cartridge adapted to your needs, in order to avoid paying for the transmission of the soft font definition to the printer.

This last point may also hold when your printout must be accomplished as quickly as possible.

Font Characteristics

A character font is defined by a number of characteristics:

- it may be Helvetica, Courier, bar code or logo

- it may be large or small

- it may be fixed or proportionally spaced

- it may be bold, italic or normal

As you may have realized, LaserJet printers provide you with a very large choice. It is necessary to decide what one wishes to see in print to select the best font for the printer.

INTEGRATION

What is integration?

'Integration' is the act of combining on the same page the form and the data to be printed.

This integration may be performed at different times, according to the wishes of the user and the functionality desired.

It is possible to download the page definition (overlay) into the printer memory at the start of each day, and then simply to activate the overlay whenever required. This method is called 'pre-loading'.

It is also possible to add the form definition into the spoolfile at the moment the application opens the spoolfile. This method is known as 'pre-processing'.

Finally, it is possible to redirect the applications output to a disc file, and to subsequently reprocess this file, and to add in the form definition. This method is called 'post-processing'.

Pre-Loading

LaserJet Painters contain varying amounts of internal memory. This memory is capable of holding one or many forms definitions (the limit is a function of the amount of memory present). The LaserJet also allows the activation of any one of these overlays when required.

The use of this function makes it absolutely necessary to ensure that the electrical supply to the printer is not cut off. Any interruption to the power supply results in the loss of all form and font definitions held in the LaserJet memory.

This method does present one large advantage: it is only necessary to download font and form definitions to the printer once when it is first switched on. This allows transmission costs to the printer to be reduced when connected by X.25, for example.

On the other hand, it does limit the flexibility of use. If, for any reason, the printer is switched off or reset, and the font or form definitions are not downloaded again, all subsequent printouts will be performed on virgin paper, without any form appearing. This method also cannot be used in combination with any of StarJet's dynamic variable commands.

This method also requires some care in the definition of an overlay. As each overlay must have a unique number, it is vital to prevent use of the same overlay number by different applications. If two users define different forms but with the same overlay definition number, then the last overlay to be down-loaded will erase the first in the LaserJet memory.

Finally, this method requires some care on the part of operations personnel; they must check that the printer is correctly connected before downloading the form and font definitions required.

This is the ideal method for networked printers and for applications demanding very high performance printouts.

Pre-Processing

This is the method used in the vast majority of cases. The LaserJet command sequences are inserted in the spoolfile just before the data. The form definition and the data form are in a single indivisible file avoiding all possible errors. When the file is printed all form and font definitions will automatically be sent to the printer, and the data will be printed on top of the required form. It is also possible to vary the form definition commands dynamically using JCWs.

The setting up of this method is also the least difficult: it is sufficient to add, before the RUN of the application program, a FILE command which specifies the name of the form desired.

It should also be noted that it is this method (simplified to the extreme) that is used to activate a pre-loaded form definition held in the printer memory.

Nevertheless this method does have its drawbacks. First being cost, when a network configuration is used. Performance second, when instant printouts are required. Functionality third: it is not possible to emulate multi-part forms and logical page printing when using this method.

Post-Processing

Whenever a user wishes to alter, or move or reformat data, especially for multi-part form emulation, it becomes necessary to have access to the data itself. Post-processing is the only method that allows this.

It is necessary, after the normal functioning of the application program, to run the StarJet program, and to indicate that it must process the data held in a disc file created by the application.

StarJet will create a spoolfile which contains all information necessary to print the data in the requested format.

This method is the highest overhead method of the three, because it results in I/Os being multiplied by three - the first time the data is written to disc by the application, then it is read by the StarJet program, and finally re-written to the output spoolfile by StarJet.

Note: This is the only method that allows the printing of multiple logical pages, as well as the emulation of multi-part forms.

Note: The current version of StarJet only supports simple control codes used to signal new-page when printing multiple logical pages and when emulating multi-part forms.

Other Solutions

It is possible to envisage the merging of forms and data by other methods. For example, by intercepting spoolfiles before they are actually transferred to the printer. In this case it is necessary to read the spoolfile and create another output file containing the necessary escape sequences, then to write the data in the first spoolfile into the second. When the processing has terminated the first spoolfile must be purged, and the second is printed.

StarJet does not use this method because it is incompatible with our objective of high performance.

Tradeoffs

Three tradeoffs must be evaluated: performance, cost and flexibility.

Performance may be evaluated from two different angles.

Firstly, at the level of the HP3000 system. It is clear that post-processing is the most costly method, data must first be written to disc file, then read by StarJet and finally written to output spoolfile.

At the level of data transfer between the HP3000 and the printer: pre-loading allows the transfer once only of a form description that may subsequently be referenced many times in the day.

Cost is directly related to performance, taking into account the type of connection used. Pre-loading is the method of choice when the target printer is connected by a packet switched network.

Finally, flexibility if reduced in the case of pre-loading. The operator's supervision is required, power cuts can cause problems and collisions between applications using the same font definition numbers must be supervised.

TOOLS

We have defined the essential objectives of electronic form control software.

In chronological order, it is necessary to design the form image, generate the commands necessary for the printer to print this form image in an overlay, integrate these commands with the data from the application, and transfer the whole to the printer.

Designing the form : PC Design

The first stage is designing the form (overlay) required.

We provide a PC-based tool for this purpose. PC-Design makes use of the graphics capabilities of a PC and the case-of-use of a mouse to allow the rapid creation of form descriptions.

Once the overlay has been correctly designed on the PC display, PC-Design creates an ASCII command file containing descriptions of all the graphic elements. This command file is used by StarJet on the HP3000.

The ASCII command file created by PC-Design may be browsed or modified using any PC or HP3000 based editor.

In order for an HP3000-based application to make use of the form, it is only necessary to transfer the command file to the HP3000.

> Note: The use of PC-Design is optional. It is perfectly feasible to build the command file from scratch using any HP3000-based editor.

Translation, Integration, Mixing: StarJet

Once the command file has been transferred or created on the HP3000, and within the restrictions imposed by the HP3000 file system, StarJet is able to read the command file, translate the commands into the appropriate PCL escape sequences, integrate the data from the application program, and finally to mix the two together.

If, during initial tests, any misplacement of graphical elements is seen, it is possible either to modify the graphics elements on a PC, or to make the changes directly to the command file on the HP3000.

Advanced Use: The StarJet Intrinsics

It is possible to dynamically modify (at run time) the characteristics of a form. For example, to extend the size of a box to include a (variable) number of lines in an invoice. Only the application itself is able to know the required size of such a box.

To allow such elements to be drawn by an application, StarJet is supplied with intrinsics allowing programmatic access to StarJet commands.

Advanced Use: Dynamic parameters via JCWs

StarJet allows the value of JCWs to be set and tested within a command file.

It is thus possible to test (providing that a JCW has been setup prior to the test) if the selected printer is capable of printing on both sides of the page, or even to vary the form used between that used for invoices or credit notes. This last example is interesting, as a credit note is generally just an invoice issued in reverse. It becomes possible to use a single command file to specify both forms, where the file contains a test for a JCW used to indicate which form is to be generated.

The Command File

We have described the concept of a command file. StarJet accepts a large number of commands, which make up the Form Description Language (FDL). FDL commands are intended to make the design of complex forms easy to achieve.

Coordinates of graphics elements are always described in terms of points.

Coordinates are specified in terms of displacement along two axes, the X-axis defining the horizontal displacement, and the Y-axis defining the vertical. The zero point of both axes is the top-left-corner of the logical page.

LaserJet printers internally support a resolution of 300 points per inch, thus a coordinate specified as '300,600' corresponds to a point one inch from the left side of the logical page, and two inches below the top of the logical page.

Syntax

All StarJet commands must be prefixed by the '/' character, followed by the StarJet command, followed by any parameters required by the command.

The '/' character must be in the first column.

The StarJet command may be immediately after the '/', or it may be separated by one or many spaces.

Any parameters must be separated from each other by at least one space.

No other delimiters may be used.

Every line in the command file that does not start with the '/' character will be treated as a data line, and will be printed at the current cursor position (the position the cursor was left at following execution of the last StarJet command).

Some commands are directed to StarJet, and produce no direct printed output. For example the /IF command, which allows the value of a JCW to be tested, or the /INCLUDE command which allows commands (or data) to be read from another file during the execution of a command file.

Command files are ASCII files; in effect they constitute StarJet source files. Like the source for any language they may be accessed or modified by any text editor. StarJet command files may be kept numbered or unnumbered, fixed or variable, in normal or QEDIT[1] formats.

[1] QEDIT is a product of ROBELLE Consulting Ltd; Langley, B.C., Canada (604) 888 3666.

PC-DESIGN

Introduction

PC-Design is a tool which allows you to benefit from the ease-of-use of a PC graphical interface when designing forms for use ultimately on the HP3000.

The tool is simple to use, the graphical interface is designed to make learning to use PC-Design as simple and intuitive as possible.

The minimum requirements for hardware are as follows:

- HP Vectra or compatible PC

- minimum 640K of memory

- VGA graphics screen or compatible

- a mouse

A color display is preferable, but not required.

To print the form created by PC-Design on the HP3000, you must transfer the command file from the PC to the HP3000. To accomplish this you should use the ASCII (or text) file transfer capabilities of products such as AdvanceLink (HP), Reflection (WRQ) or Session (Tymlabs).

The following documentation covers the installation of PC-Design, a guided tour of the product, and hints for fully exploiting its features.

Installation

PC-Design is supplied on diskette included in this documentation.

To install the product, perform the following:

- Insert the diskette in the drive of your PC.

- type:

```
A:
A:INSTALL
```

This command creates a directory on the hard disc, and copies all files required by StarJet from the floppy to the hard disc.

Once the prompt is displayed without any other message, PC-Design has been correctly installed, and is available for your use.

Launching PC-Design

Within MS /DOS, enter the StarJet directory:

```
C>CD STARJET
C>PCDESIGN
```

After starting up, PC-Design displays the following:

```
PC-Design for StarJet Version 3.0 (c) APPIC 1990

            (ENTER or MOUSE BUTTON)
```

Hit any key or mouse button to continue, the program will then display a menu containing the following options:

```
About
File
```

Move the mouse to position over ‘File’, click the right-hand button, and keep the button pushed down. PC-Design will display the following menu choices:

```
New
Load
Save
Grid
Quit
```

Use the mouse to select ‘New’. A menu displaying the following choices will be displayed:

```
A4
A3
Letter
Ledger
Executive
Legal
```

Select ‘Letter’ with the mouse and click. Two orientations will be displayed:

```
Portrait
Landscape
```

Click on Portrait.

This sequence has effectively defined the size and orientation of the page in which you can now design your form. The menus are removed, and a blank area is drawn on the screen. On the left-hand side are two groups of buttons containing text or graphical symbols.

The upper group indicates the available actions:

```
Add
Modify
Move
Copy
Delete
```

The lower group indicates the type of object being manipulated:

```
Overlay
Fonts
Vertical lines
Horizontal Lines
Text
Shaded Areas
Boxes
```

Below these two groups is a window containing information about the current mode:

Overlay = 0 Zoom = O

In the menu bar, at the top of the screen, a new option is displayed:

About
File
Options

To define an overlay, first click on ‘Add’. This will change to inverse-video, then click on 'Overlay'. A window will be displayed, in which you must enter the identification number of the overlay. Using the keyboard, type:

1 <RETURN>

After the window has been removed, the status line at the bottom will be updated, and now indicates:

Overlay = 1 Zoom = 0

‘ADD’ remains in inverse video, indicating that the mode is still active.

To draw a bow within the active overlay number 1, click on the box symbol. A message is displayed in the right-hand part of the menu bar:

Click on corner of box

At this time a new window is displayed in which are displayed the X and Y coordinates of the current mouse position. Move the mouse into the virgin page area. Note that the coordinates are updated as the mouse position changes. Finally move the mouse to obtain the coordinates:

X : 680 Y : 330 in Points

Click the right-hand mouse button, and keep it pressed. The menu bar message field will indicate:

Release on opposite corner

Move the mouse to obtain the following:

X : 1480 Y : 1100 in Points

Finally, release the mouse button. A new window appears in which you can define the thickness of line used to draw the box. Move the arrow inside the white column, push the right-hand mouse button and slide the mouse vertically until you obtain, on the right of the column, the value 12. Release the button, then click on the square marked OK. The definition of your first box is now complete.

In order to duplicate this same box on another area of the page, click the Copy box in the upper group. The following message is displayed:

Click at the border of box

Position the cursor over any one of the lines around the box, and click the right-hand mouse button. The menu bar message reads:

Click when positioned

Drag the mouse: a new box will follow the mouse as it moves. When you click the right-hand mouse button (providing that you are still positioned within the page area), a new box with the same characteristics as the original will be placed on the form.

Operations on all graphics objects (vertical lines, horizontal lines, shaded areas) are achieved in the same way.

In order to add text inside your form, it is first necessary to define the character font(s) to be used. To perform this, select Add, then click on Font. A window appears, with the title Fonts Currently Defined.

The question is asked:

New font number?

Enter

1 <Return>

The program will then ask

Font #01 Name?

Enter the character font name

HV24OBRP

Character font number 1 is now defined and identified in the window, together with its name.

The program now waits for another character font to be defined. To terminate this phase, push the <escape> key.

It is now possible to add text inside the form. Assuming that Add is still active, click on Text. A window displays all character fonts currently defined, and you will be asked to enter the number of the font to use:

Font number to be used?

Enter

1 <Return>

The two windows are replaced by another with the title ‘Type in your Text’.

Enter:

INVOICE <Return>

This last window is also removed. The text ‘INVOICE’ is now displayed at the current mouse position, and moves as the mouse is moved. The menu bar message displays ‘Position text’. When you have correctly positioned the text, click the right-hand mouse button.

To quit the Add Text mode, hit the <Escape> key when the program prompts you to enter the number of the character font desired.

Menu File

When you click on the File entry in the menu bar, a menu displaying the following choices is displayed:

```
New
Load
Save
Grid
Quit
```

We have already covered actions performed by the New choice.

Load

The LOAD command is used to reload a command file previously created and saved. File created by PC-Design are saved with the default extension '. DES', as a result Load will display the list of files (*.DES) in the current directory.

```
Please enter file spec
*.des
```

You may, of course, change this default if required. After hitting the <Return> key, a window is displayed containing a list of all qualified files. You can scroll through this list by clicking on one of the arrows displayed on the right of the file list. To select one of the files displayed, just click on the file name. This file name is then displayed at the top of the window. To validate this choice, click on the 'OK' button .

> Note: When reading in a file selected by the Load command, it is possible that no design will be visible on the screen. For example, if the screen design is defined within an overlay, you must first call up the overlay (Modify - Overlay) to display the form design.

Save

When you click on the Save command, a window entitled Enter file name is displayed. If you have created a new file, the default name Noname.des will be displayed; if you have loaded and modified a pre-existing file, the original name will be displayed. You may enter any name desired, then hit <Return>, or hit <Return> immediately to take the displayed default.

Grid

It is possible to display a form on-screen as a model when defining another form. For example, if you wish to design an invoice form which closely matched an order form previously defined, click over Grid, and then follow the same procedure as defined under Load.

> Note: When reading in a file selected by the Grid command, it is possible that no design will be visible on the screen. For example, if the screen design is defined within an overlay, you must first call up the overlay (Modify - Overlay) to display the form design.

Quit

Click on Quit to terminate PC-Design. If any change has been made to the form design during the PC-Design session, and if you have not saved these changes to disc, the program will warn you, and ask for confirmation that you don't wish to save the changes made. Click over whichever choice is required.

Menu Options

The Options menu choice is available on the menu bar once a new form has been defined, or when an existing form has been loaded from disc.

This menu choice displays the following options:

Units
Margins
Duplex
Copies
Back Side
Zoom +
Env. Name

Units

Once you have selected the Units option, a window is displayed which allows you to select the units of measure used to display the current cursor position when the mouse is moved within the current form. The following units of measure are available:

Inches
Milli.
Points

Click on the desired choice, and the X and Y coordinates displayed in the position window will be displayed in the chosen units.

Margins

This command allows you to define all information specific to the placement of data on the page. The first question asked is:

TOP margin?

Enter a number indicating the number of lines required for the top margin. The next question:

Number of lines?

allows you to specify the total number of lines that each page should contain. Finally the question:

Line Spacing?

allows you to define exactly the interline spacing required. You may specify this value with up to 4 decimal places, to achieve the required result.

Duplex

Click on this option to select 'Duplex mode'. Of course, this option is only available when using a duplex-capable printer. The following options may be selected:

```
None
Horizontal
Vertical
```

None is used to nullify the selection of duplex printing; the other choices indicate the sense of the paper movement.

Copies

This option allows you to define the number of copies of each page that will be printed.

> Note: This command has no connection with the number of copies as defined by the MPE spooler; multiple copies selected using this menu option are printed locally by the printer, without intervention by the HP3000.

Back Side

This option allows the specification of a form to be printed on the rear of every page. After selection of this option, the Options menu choice 'Back Side' is replaced by 'Front Side'.

Zoom +

This option allows you to zoom in on a precise area on the form. PC-Design supports multiple levels of zoom. Once selected, the message Click at center of zoom is displayed in the menu bar. Just move the mouse to the center of the region to display, and click the left mouse button.

The zoom level is shown next to the active overlay number.

When the Options menu is subsequently displayed, the option Zoom - will be available. When you have reached the maximum zoom level, the Zoom + menu choice is no longer displayed.

Env. Name

This command allows you to define the name of the compiled environment to be generated by StarJet from the command file.

> Note: This option is not used with StarJet versions 4 and 5, it is only provided for compatibility reasons with old versions of StarJet.

RUNNING STARJET

In this chapter we will discuss the two main modes of operation of StarJet: the interactive mode, that is running the StarJet program by an explicit :RUN command, and the implicit mode, where the program is launched on your behalf when a :FILE equation uses the ENV= parameter, or when the StarJet intrinsics are used.

The following pages also contain syntax descriptions of all the commands recognized by StarJet. The great majority of these commands are available in either interactive or implicit mode. Some commands, for technical reasons, are only available in one or another mode. In these cases all limitations are explained following the syntax description.

Interactive (or explicit) mode

The mode is useful in the following cases:

- Development of a form description file

- Using StarJet features only available in this mode

- Using StarJet to list (or reformat) a disc-based source file

Implicit Mode

The major benefit of StarJet for a business site is based around the use of its implicit mode. This mode is used when, before launching an application program, you signal to the system that when the application opens a particular output file, the file is to be printed overlaid with an electronic form defined by StarJet commands.

In order to do this you must modify the :FILE equation used to specify the output file, in order to indicate the name of the file containing the StarJet commands which define the required form. The ENV= parameter of the :FILE equation is used to specify the name of the StarJet command file. When the :FILE equation is modified in this way, the StarJet program will be launched, invisibly, to execute the command file, and to write the corresponding PCL commands to the application's output file.

This is the mode of using StarJet that allows the printing of Invoices, Delivery Notes, Order Forms, etc., all integrated with the data output by the corresponding application program.

> Note: The StarJet program is only actually launched when the :FILE equation's ENV= parameter is used, and when the command file specified is actually a StarJet command file.

Explicitly running StarJet

To run StarJet, type

:RUN STARJET.PUB.APPIC

```
:RUN STARJET.PUB.APPIC

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Licensed for APPIC micro 3000 Epinay sur Orge                16900

Enter command filename, or <Return> to enter commands interactively:
Command File   :<Return>

Enter output device number, or <Return> to discard output:
Printer Device :<Return>

    Note: Input file is terminal.
        : Terminate input using //

       1: /B 1 100 100 2000 2000
       2: /V 1 500 100 2000
       3: //

        : StarJet execution terminated by //

Input Lines     : 3      Processor Time : 498 ms     Total Errors   : 0
Logical Writes  : 4      Elapsed Time   : 15.06 s    Total Warnings : 0
Physical Writes : 1      Bytes Written  : 148

END OF PROGRAM
:
```

When :RUN explicitly, the StarJet program always accesses two files:

- an input file named STARIN
- an output file named STAROUT

Either or both of these files may be redirected by :FILE equation:

:FILE STARIN=<filename>
:FILE STAROUT;DEV=<device>[,<priority>];CCTL

If STARIN and/or STAROUT are not defined by :FILE equation, then StarJet will prompt for the file names when it is run:

```
:RUN STARJET.PUB.APPIC

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Enter command filename, or <Return> to enter commands interactively:
Command File   :<filename>

Enter output device number, or <Return> to discard output:
Printer Device :device[,priority]

Input Lines     : 2      Processor Time : 498 ms     Total Errors   : 0
Logical Writes  : 4      Elapsed Time   : 15.06 s    Total Warnings : 0
Physical Writes : 1      Bytes Written  : 148

END OF PROGRAM
:
```

STARLOG

When StarJet is run interactively, as in the first example on the previous page, a temporary file named STARLOG is always created, into which are written all commands input during the program run.

> Note: Only actual commands are logged to the STARLOG file. Any line input that does not start with a '/' character will be treated as a data line, and will not be logged.

Launching via :FILE equation

To signal that a StarJet form is to be used when printing an output file, the MPE :FILE equation is used as follows:

```
:FILE LP;DEV=<device>[,<priority>];REC=-255
        ;CCTL;ENV=<filename>
```

The filename indicated with the ENV= parameter is the name of the StarJet command file to be used.

When the application opens the output file - file LP in this case - StarJet is automatically launched in order to execute the commands in the StarJet command

file, and to write the corresponding PCL commands into the output spoolfile. Thus the application writes its data to the same spoolfile as StarJet, without even being aware of the fact that StarJet has been activated.

The files STARIN and STAROUT, as documented in the section 'Running StarJet', are not used when StarJet is activated via :FILE equation.

RUN STARJET;INFO = "..."

The StarJet program accepts commands passed via the :RUN command's INFO= parameter.

In the case that you wish to specify multiple commands in this way, separate commands from each other using the ';' character as a delimiter.

For example:

```
:FILE STAROUT;DEV=<device>
:RUN STARJET.PUB.APPIC;INFO="/LIST;/INCLUDE FIC"
```

It is also possible to combine the use of file STARIN with commands passed by the INFO string. This feature is particularly useful while testing StarJet, by forcing StarJet to list the contents of a command file while executing it, when the command file itself does not contain the /LIST command. For example:

```
:FILE STARIN=<filename>
```

```
:FILE STAROUT;DEV=<device>
:RUN STARJET.PUB.APPIC;INFO="/LIST"
```

STARERR

If StarJet detects any error during the processing of commands located within a StarJet command file, the temporary file STARERR is created and a copy of all error/warning messages generated is written to the file.

The file may be browsed using any editor following the run of the application program, to determine exactly what errors were detected by StarJet.

When StarJet is launched as the result of a :FILE equation, it neither produces messages on the screen (when used interactively), nor in the job listing (when used in batch).

StarJet Commands

The following pages contain full descriptions of all commands that make up StarJet's Form Description Language (FDL).

The commands typically used in a StarJet command file follow a natural logic.

The first commands specified (level 1) are intended to define the print environment. They generally influence the entire printout that follows. These commands allow the definition of:

- the paper format.
- the paper source.
- the activation of duplex printing.
- the downloading of any character font files required.

Once the print environment has been specified, the second group of commands (level 2) allows the definition of the characteristics of each page in the printout.

For example:

- use a Helvetica font to print 'INVOICE' on the top-right of each page.
- print a shaded area where the net amount is to be printed.
- print the General Terms on the rear of every page printed.

The third and last group of commands (level 3) allows the definition of the environment for the application's data that will overlay the form. It is thus possible to:

- define the character set used to print the application's data.
- compress the inter-line and inter-character spacing to physically print the application's data on the form.

Certain StarJet commands may be used at any level. /IF and /ELSE are used, for example, to test the value of a JCW, and to conditionally execute StarJet commands.

The logical barrier which delimits the environment between commands in the first and second levels is the /OVERLAY command. This command is used to delimit an overlay, that is the sequence of StarJet commands that must be performed on every page that is printed (see the 'Overlay' section in the introduction for more information).

The end of an overlay is indicated by the command /OVERLAY 0.

For example, the following sequence of commands:

```
/PORTRAIT A4 MAXLINES=60
/CHAR 1 HV240BRP
/CHAR 2 LP120RRP
/OVERLAY 1
/   BOX 1 100 500 2200 3200
/   TEXT 1 2500 100 INVOICE
/OVERLAY 0
/TEXT 2
```

contains commands at all three levels:

- define the paper size, orientation, and the character fonts required.
- define the form contents to be printed on every page, delimited by the two /OVERLAY commands.
- finally activate font number 2 for the application's data.

In some situations, e.g. where the automatic printing of an electronic form is not required, it is possible that no level-2 commands will be used. For example:

```
/LANDSCAPE A4 MAXLINES=60 FORMAT=2 BY 2
/FRAME WIDTH=10 STYLE=30
/INCLUDE SOURCE
```

This contains two level-1 commands, one to define the size of the physical page, as well as the number and format of logical pages to be printed on every physical page, the other to specify the size and style of frame border to be printed around every logical page. The final command imports data from a disc file, which results in its contents being printed within the logical page environment previously specified.

This is a typical example of the use of StarJet interactively.

The following pages contain descriptions of all StarJet commands.

For every command the description includes a syntax summary, notes on use of the command, and an example of its use.

Syntax

StarJet commands must begin with a prefix character located in column 1.

This prefix defaults to slash '/'; it can be modified using the /PREFIX command, if necessary.

> Note: Any line in the command file that does not begin with the current active prefix character will be printed as data line.

Command syntax descriptions use these conventions:

<parameter>	Indicates a required parameter
[. . .]	Indicates an option
opt1 | opt2	Indicates exclusive options. Only one option may be specified
option	Indicates a default option
KEYWORD	Indicates a keyword

StarJet Command List

This is the complete list of commands recognized by StarJet:

```
/ABORT
/ACTIVATE-OVERLAY
/BOX
/CHAR
/CLIP
/COPIES
/DENSITY
/DO
/DUPLEX
/ECHO
/EXIT
/FIGURE
/FRAME
/GRID
/HELP
/HORIZONTAL
/IF /ELSEIF /ELSE /ENDIF
/INCLUDE
/INCLUDE StarJet
/INCLUDE VPLUS
/INCLUDE Data
/INCLUDE Spool
/LANDSCAPE
/LIST
/MODE
/MULTIDATA
/MULTIPART
/NEED
/NOCLIP
/NOLIST
/OVERLAY
/PAGE
/PATTERN
/PORTRAIT
/PREFIX
/REDO
/RESET
/RETURN
/SETJCW
/SHADE
/SHOWINT
/SHOWOPT
/SHOWUDC
/SUSPEND
/TELLOP
/TEXT
/VERTICAL
/WHILE /ENDWHILE
```

/ABORT

Stops execution of StarJet in an error state.

Syntax

```
/ABORT
```

Parameters

None.

Comments

This command stops StarJet's execution in an error state. The error number is incremented, "Program terminated in an error state" is displayed, and the CIERROR JCW is set to 976.

The JCW named 'JCW' is also set to FATAL0.

/ACTIVATE-OVERLAY or /AO

Requests activation of an overlay previously stored in the LaserJet's memory.

Syntax

```
/ACTIVATE-OVERLAY <number>
```

Parameters

number overlay identification number.

Comments

Once an overlay is resident in the printer's memory - that is, once it has been assigned an identification number and downloaded using the /OVERLAY <number> command - it is possible to activate the overlay in the following two circumstances:

- if it has been loaded as a temporary overlay, and the printer has not received a software reset
- if it has been loaded as a permanent overlay, and the printer has not received a hard reset (power cycle).

This command is especially useful in order to reduce transmission costs associated with packet-switched networks.

Note: Overlays in the printer memory are deleted by hard resets, by the use of the printer front-panel 'reset' button, and by power cuts. They are also deleted if another overlay with the same identification number is sent to the printer.

/BOX or /B

Draws a box.

Syntax

```
/BOX <thickness> <x1> < y1> <x2> <y2>
     [SHADE=<level>] | [PATTERN=<style>] | [WHITE]
```

Parameters

thickness	thickness of box in points.
x1	x-coordinate of top left hand corner of box.
y1	y-coordinate of top left hand corner of box.
x2	x-coordinate of bottom right hand comer of box.
y2	y-coordinate of bottom right hand corner of box.
SHADE	keyword indicating box contents to be shaded.
level	shade intensity (range 1 to 8).
PATTERN	keyword indicating box contents to be pattern filled.
style	pattern style (range 1 to 6).
WHITE	keyword indicating box contents to be erased.

Comments

This command is used to draw rectangular boxes.

The box will be drawn with a black line of <thickness> thickness, the top left and bottom right hand corners of the box are specified as two sets of <x>:<y> coordinate pairs.

The shade level and pattern style parameters give the same results as those documented for the /SHADE and /PATTERN commands.

> Note: The WHITE keyword is only available on LaserJet models IIP, III and IIID. It has no effect on other LaserJet printer models.

Example

```
/PORTRAIT A4 MAXLINES=50
/OVERLAY 1
/   BOX 1 100 100 2200 3200
/   N 15 2000 3100 2200 3200 SHADE=2
/OVERLAY 0
```

Two boxes are drawn in this example:

- the first is drawn very fine (a single point thick).
- the second, heavier box (15 points thick) is drawn shaded lightly.
- The boxes are defined within an Overlay, delimited by both /OVERLAY commands.

/CHAR or /C

Selects and downloads character fonts.

Syntax

```
/CHAR <font-number> <filename>
                    [DOWNLOAD | OPTIMIZE | INTERNAL]
                    [PERMANENT | TEMPORARY]
                    [PRIMARY | SECONDARY]
```

Parameters

font-number	identification number to be associated with this font for the rest of StarJet processing.
filename	name of the font (as defined below).
DOWNLOAD	keyword (default) indicating that the entire font file is to be downloaded to the printer.
OPTIMIZE	keyword indicating that only characters actually used are to be downloaded to the printer.
INTERNAL	keyword indicating that the font to be selected is resident in the printer (or in a cartridge).
PERMANENT	keyword indicating that the font is to be saved as permanent in the printer memory.
TEMPORARY	keyword indicating that the font is to be saved as temporary in the printer memory.
PRIMARY	indicating that the font is to be selected as the primary font.
SECONDARY	keyword indicating that the font is to be selected as the secondary font.

Comments

This command allows a font either to be selected (in the case of printer-resident fonts), or (in the case of HP3000-based soft fonts) to be downloaded to the printer and then selected.

Font-Number is used to associate an identification number to the font being selected. This number is used by the printer when storing and subsequently re-accessing the font. Legal values are in the range 1..32767.

Filename indicates the name of the font. The font name may be specified in either of two ways: by font name or by escape sequence.

If the keyword INTERNAL is not specified, the filename is required, and must correspond to an existing, accessible HP3000 soft font file.

If the keyword INTERNAL is specified, the filename, which may or may not correspond to a valid HP3000 soft font file, is used by StarJet to generate the escape sequence required to select the font held internally by the LaserJet printer.

The filename must correspond to the following syntax:

- 2 characters defining the font style:
  - **HV** for Helvetica (proportional)
  - **TR** for Times Roman (proportional)
  - **LP** for Line Printer (fixed)
  - **LG** for Letter Gothic (fixed)
  - **CR** for Courier (fixed)
  - **PR** for Prestige (fixed)
  - **CG** for CG Times (proportional)
  - **UN** for Univers (proportional)
- 3 numbers defining the height of the font in tenths of a point:
  - **240** for a font of 24 points
- 1 character defining the style:
  - **B** for Bold
  - **I** for Italic
  - **R** for Regular
- 1 character defining the symbol set:
  - **R** for Roman-8
  - **L** for Line Draw
- 1 character defining the font orientation:
  - **P** for Portrait
  - **L** for Landscape

Examples:

HV240BRP	Helvetica, 24 point Bold Roman-8 Portrait
LP120RRP	Line Printer, 12 point Regular Roman-8 Portrait
TR180IRL	Times Roman, 18 point Italic Roman-8 Landscape

Note: The orientation of the font should correspond to that of the page orientation, as specified by the active /PORTRAIT or /LANDSCAPE command.

For downloaded character fonts, the filename parameter must correspond to an existing, accessible HP3000 character font file. The filename may be qualified to any desired group and account, or left unqualified. The search order used by StarJet is the following:

- Filename.LASERJ.APPIC

- Filename.LASERJ.SYS

- Filename.group.account (using the user's logon group and account names)

It is also possible, only in the case when the INTERNAL keyword is used to select a printer-resident font, to specify the explicit escape sequence to be used to select the font. This escape sequence is the same as that appearing on the Font List printed when the LaserJet Printer's 'Print Fonts' button is pushed (not available on the LaserJet Series II).

When entering an explicit escape sequence, replace all <escape> characters by '~' characters.

Some character fonts are classed as fixed spacing: every character is designed to occupy the same space on a line. Other fonts are classed as proportional: different characters are defined with different widths, so that each character occupies the space required, and no more. Fonts defined as Helvetica, Times Roman, CG Times and Univers are normally proportional. Fonts defined as Courier, Line Printer and Prestige are normally defined as fixed.

Internal is a keyword indicating that StarJet should associate the font-number to a font held internally in the printer. This font is one either stored internally in the printer, or resident in a font cartridge plugged into the printer.

Optimize is a keyword indicating that StarJet should only download the definitions for the characters actually printed. Thus, if you need to download a large font to print the title 'INVOICE', this keyword allows you to avoid the overhead of downloading all the other letters, numbers and special characters in the font, but just the characters 'I', 'N', 'V', 'O', 'C', and 'E'.

> Note: This keyword is only available for fonts managed by StarJet. This keyword allows the optimization of all data written under the control of StarJet, but not of data written directly by application programs.

Primary is used to force the printer to select this font as its primary font. The font may be subsequently selected via the command, without the necessity to indicate the font number.

Secondary is used to force the printer to select the font as its secondary font. The font may be subsequently selected via the /U command, without the necessity to indicate the font number. A secondary font may also be selected at any time by embedding the Shift-In and control characters in your data. These control codes are accessible from the keyboard using <Control> 'O' and <Contro1> 'N'.

Example

```
/PORTRAIT A4 MAXLINES=50
/CHAR 1 HV240BRP OPTIMIZE
/C 2 LP120BRP INTERNAL
/C 3 TR140BRP
/C 4 ~(8U~(s0p16.67h8.5v0s0b0T
```

This sequence of commands selects A4 paper, printed vertically down the page, and then defines 4 fonts for subsequent usage.

The first has identification number 1, and is a Helvetica 24 point, bold Roman 8 portrait font. The font will be downloaded, but only the definitions of the characters actually used will be sent to the printer.

The second font (number 2) is a Line Printer 12 point Roman 8 normal portrait font. The font is printer-resident (internal or cartridge).

The third font (number 3) is a Times Roman 14 point Bold Roman 8 Portrait font. The entire font is downloaded.

The fourth font (number 4) is an internal font selected by the explicit escape sequence. This sequence must be entered exactly as shown in the Font list generated when the 'Print Fonts' button is pressed (or as shown in the documentation supplied with most cartridge fonts).

Note: We strongly advise the selection of fixed fonts for the printing of most application data, in order to preserve the correct alignment of columns of data.

/CLIP

Controls the treatment of graphical elements outside the logical page.

Syntax

```
/CLIP [WARN | NOWARN]
```

Parameters

WARN	keyword indicating that a warning is to be displayed if an element is clipped.
NOWARN	keyword indicating that elements are to be clipped silently.

Comments

The graphical elements that constitute a form may be adjusted automatically to the maximum size of the logical page on which they are printed.

Thus, if a vertical line would be drawn to a point outside of the current logical page, StarJet will automatically adjust the length of the line.

This feature is particularly useful in avoiding undesirable effects when printing multiple elements.

By default, the adjustment of elements automatically generates a warning, indicating that the element has been adjusted.

Use of NOWARN suppresses these messages.

/COPIES

Requests that multiple copies of each page are to be printed.

Syntax

```
/COPIES <copies>
```

Parameters

copies numeric value between 1 and 99.

Comments

This command allows the printing of multiple copies of each page. These copies are handled locally by the printer, that is, the data is only sent to the printer once. Copies are printed immediately, for example 3 copies of page 1, 3 copies of page 2, etc.

Example

```
/PORTRAIT A4 MAXLINES=50
/COPIES 3
```

These commands request A4 paper, printed vertically. Three copies of every page are requested.

Note: All copies generated in this way are identical to each other.

Note: The actual data is sent only once to the printer, regardless of the number of copies requested.

/DENSITY or /D

Specifies the density of characters.

Syntax

```
/DENSITY <chars-per-inch>
```

Parameters

chars-per-inch	real number, maximum 4 decimal places, specifies number of characters per inch across the paper.

Comments

This command controls the density of printing data characters for the currently active font.

If the font is a fixed font, this command affects all characters printed in the font.

If the font is proportional, only the space character is affected by this command.

The value may be specified with up to 4 decimal places.

Examples

```
/PORTRAIT A4
/CHAR 1 LP120RRP
/TEXT 1
/DENSITY 16.67
```

Text printed in font 1, compressed

```
/DENSITY 10.00
```

Text printed in font 1, normal spacing

/DO

Repeats the last StarJet command.

Syntax

```
/DO
```

Parameters

None.

Comments

This command repeats the last-used StarJet command, without allowing the command to be edited.

Note: This command is only available when StarJet is run interactively.

Note: This command does not allow the previous command to be modified, only repeated.

Note: Commands executed within an /INCLUDE command are not accessible via this command.

/DUPLEX

Requests activation or deactivation of Duplex-printing modes.

Syntax

```
/DUPLEX <mode>
```

Parameters

mode value 0, 1 or 2.

Comments

Value 0 deactivates duplex printing modes.

Value 1 activates horizontal duplex printing mode, generally used with Landscape orientation printing.

Value 2 activates vertical duplex printing mode, generally used with Portrait orientation printing.

Example

```
/PORTRAIT A4 MAXLINES=60 FORMAT=2 BY 2
/DUPLEX 2
/FRAME WIDTH=15 STYLE=10 GAP=10
```

These commands request A4 paper, printed vertically down the page.

Each physical page contains 4 logical pages (2 across and 2 down), and each logical page is to be delimited by an individual black border 15 points thick, with an inter-frame gap of 10 points. The printout is to be performed duplex.

Note: This command has no effect when used with printers not equipped with duplex facilities.

/ECHO

Displays a message on $STDLIST.

Syntax

```
/ECHO <text>
```

Parameters

text Free-form text.

Comments

This command allows messages to be displayed on $STDLIST.

Example

```
/LANDSCAPE A4
/BOX 1 100 100 200 200
/LIST
/VERTICAL 12 150 100 200
/NOLIST
/ECHO End of command display
/HORIZONTAL 5 100 150 200
```

The processing of this file, stored as TEST, results in the following display:

```
:RUN STARJET.PUB.APPIC

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Enter command filename, or <Return> to enter commands interactively:
Command File   :TEST

Enter output device number, or <Return> to discard output:
Printer Device :<Return>

       3: /LIST
       4: /VERTICAL 12 150 100 2000
       5: /NOLIST
End of command display

Input Lines     : 7      Processor Time : 113 ms     Total Errors   : 0
Logical Writes  : 9      Elapsed Time   : 183 ms     Total Warnings : 0
Physical Writes : 1      Bytes Written  : 243

END OF PROGRAM
:
```

/EXIT

Stops StarJet execution.

Syntax

```
/EXIT
```

Parameters

None.

Comments

This command may be used anywhere within a command file, and when executed will terminate execution of StarJet.

/FIGURE or /F

Prints a raster format image.

Syntax

```
/FIGURE <resolution> <x> <y> <filename>
```

Parameters

resolution resolution level, value 1 to 4:

1: 300 points/inch.
2: 150 points/inch.
3: 100 points/inch.
4: 75 points/inch.

x x-coordinate of start (top-left) of image.

y y-coordinate of start (top-left) of image.

filename HP3000 file containing raster image.

Comments

This command allows the printing of raster format images held in HP3000 disc files. A raster file contains binary data defining the image format.

Example

```
/PORTRAIT A4 MAXLINE=50
/F 1 300 300 FRASTER
```

Prints the raster graphics image held in file FRASTER.

/FRAME

Prints a frame around the logical pages in a printout.

Syntax

```
/FRAME [WIDTH = <dots>]
       [STYLE = <pattern> or shading>]
       [OVERLAP | GAP=<dots>]
       [FLASH]
```

Parameters

WIDTH	keyword indicating the width of the frame.
dots	frame width, in points.
STYLE	keyword indicating the frame style.
pattern	frame pattern code (range 1 to 6).
shading	frame pattern shade percentage (range 10 to 100).
OVERLAP	keyword indicating that adjacent frames should overlap.
GAP	keyword indicating that adjacent frames should not touch.
dots	inter-frame spacing, in points.
FLASH	Print all logical page frames at start of every physical page (trailing unused logical pages are also drawn).

Comments

The frame style parameter indicates either the pattern style (values 1 to 6), or the shade percentage (values 10 to 100).

The OVERLAP and GAP options are mutually exclusive, and only have meaning when multiple logical pages are to be drawn on every physical page.

Example

```
/PORTRAIT A4 MAXLINES=60 FORMAT=2 BY 2
/FRAME WIDTH=15 STYLE=10 GAP=10
```

These commands request A4 paper, printed vertically down the page. Every page contains 4 logical pages (2 across and 2 down), each logical page is to be surrounded by a separate 10% shaded frame 15 dots thick, separated by 10 points from the adjoining frame.

Note: This command is only available when either /PORTRAIT or /LANDSCAPE has been specified.

Note: The frame style remains active for all subsequent pages until redefined. /FRAME 0 deactivates any current frame style.

/GRID

Draws a high-definition grid over the entire current logical page.

Syntax

```
/GRID
```

Parameters

None.

Comments

This command is used to draw a high-definition grid on the current logical page.

The grid is composed of a fine line every 20 points, and a heavy line every 100 points. Both X and Y axes are labeled every 100 points.

Examples

```
/PORTRAIT A4 MAXLINES=65
/GRID
```

These commands request the drawing of a grid over an A4 page, vertical format.

```
/PORTRAIT A4 MAXLINES=65
/OVERLAY 1
/   GRID
/OVERLAY 1
```

These commands request the grid to be drawn from within an overlay.

This technique is useful when aligning form elements on application program data fields, in order to precisely determine the coordinates.

/HELP

On-line Help.

Syntax

```
/HELP [command]
```

Parameters

command Name of command to display help on.

Comments

This command functions exactly like MPE's :HELP command.

If no command name is supplied, StarJet will display a list of all available commands. When inside the help facility, you may enter a command name at any prompt.

Example

```
:RUN STARJET.PUB.APPIC

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Enter command filename, or <Return> to enter commands interactively:
Command File   :<Return>

Enter output device number, or <Return> to discard output:
Printer Device :<Return>

    Note: Input file is terminal.
        : Terminate input using //
       1: /HELP PORTRAIT

/PORTRAIT

Specifies paper size and logical page format in portrait orientation.

/PORTRAIT <papersize>
          [LINES= <lines-per-logical-page>]
          [FORMAT = <x> BY <y>]
          [ACROSS | DOWN]
          [DOWNLOAD | INTERNAL]

KEYWORDS: NOTES ,EXAMPLE

       2: //
        : StarJet execution terminated by //

Input Lines     : 2      Processor Time : 115 ms     Total Errors   : 0
Logical Writes  : 1      Elapsed Time   : 5.6 s      Total Warnings : 0
Physical Writes : 1      Bytes Written  : 1

END OF PROGRAM
:
```

/HLF

Requests a half-line-feed.

Syntax

```
/HLF
```

Parameters

None.

Comments

This command allows the printer cursor to be displaced by a vertical distance equivalent to half of the normal line feed distance.

/HORIZONTAL or /H

Draws a horizontal line on the logical page.

Syntax

```
/HORIZONTAL <thickness> <x1> <y1> <x2>
```

Parameters

thickness	thickness of line in points.
x1	x-coordinate of start (left) of line.
y1	y-coordinate of start (left) of line.
x2	x-coordinate of stop (right) of line.

Comments

A horizontal line <thickness> points wide is drawn from <x1>:<y1> to <x2>:<y1>.

> Note: The coordinates are limited to the current logical page - see /CLIP command for more information.

Example

```
/LANDSCAPE A4
/OVERLAY 1
/   HORIZONTAL 1 100 100 3200
/   H 10 2000 2000 3200
/OVERLAY 0
```

This example draws two horizontal lines within an overlay:

- the first is a fine line drawn almost across the entire page
- the second is a thicker line drawn in the lower part of the page

/IF, /ELSEIF, /ELSE, /ENDIF

Conditionally executes commands.

Syntax

```
/IF <expression> THEN
   …
/ELSE
   …
/ENDIF
```

```
/IF <expression> THEN
   …
/ENDIF
```

```
/IF <expression> THEN
   …
/ELSEIF <expression> THEN
   …
/ELSE
   …
/ENDIF
```

Parameters

expression	logical expression with numeric/logical operands and operators.

Comments

The following operators may be used in <expression>:

logical operators	AND, OR
relational operators	=, <>, <, >, <=, >=
arithmetic operators	=, -, *, /

Operands may specify any numeric constant, any defined JCW name, or a numeric expression made up of either/both.

Parentheses may be used to force any required order of evaluation.

If the expression evaluates as TRUE, then all StarJet commands are executed until the matching /ELSE or /ENDIF command is seen.

Commands after /ELSE are executed if the expression evaluates as FALSE.

The /ELSEIF command may be used to test another condition, if the original /IF command evaluated false.

Note: Any undefined JCW used in an expression will be treated as if the value was defined as zero (a warning will be displayed).

Note: These commands may be nested up to 15 levels deep.

Example

```
/IF (alreadydone = 0) THEN
/   *
/   * First time around, download font
/   *
/   CHAR 1 HV24ORRP PERMANENT
/   *
/   setjcw alreadydone = 1
/   *
/ELSE
/   *
/   * download done, reselect font without download
/   *
/   CHAR 1 HV240RRP INTERNAL
/   *
/ENDIF
```

This example illustrates the use of /IF ... /ELSE commands to avoid downloading a font more than once.

/INCLUDE or /INC (summary)

Include data/commands from an external file.

Syntax

```
/INCLUDE <filename>
         [NUMBER | RENUMBER | UNNUMBER] [NOSTRIP]
         [NOERROR]
         [FORM=<name> | number | @ | ?]
         [FIELD=OFF | DASH | SOLID | PATTERN]
         [NOXEQ | XEQ [prefix [INCLUDE]]]
         [DEPTH = <include-levels>]
         [PRINTSPF]
         [LIST | NOLIST]
         [FILEID | NOFILEID]
```

Comments

This command allows data/commands to be included from many different file types:

- Flat files containing data and/or StarJet commands
- Qedit-format files
- VPLUS files
- StarJet command files
- Output spoolfiles

To simplify this documentation, discussion of the /INCLUDE file has been separated into sections, according to the usage of the command.

Note: The keywords XEQ and NOXEQ may be replaced by the synonyms EXEC and NOEXEC.

Note: This command may be nested up to 16 levels deep.

/INCLUDE or /INC (with StarJet command file)

Include data/commands from a StarJet command file.

Syntax

```
/INCLUDE <filename>
         [NUMBER | RENUMBER | UNNUMBER] [NOSTRIP]
         [NOERROR]
         [NOXEQ | XEQ [prefix [INCLUDE]]]
         [DEPTH = <include-levels>]
         [LIST | NOLIST]
```

Parameters

filename	HP3000 file to be included.
NUMBER	print data lines numbered.
RENUMBER	print data lines renumbered.
UNNUMBER	print data lines unnumbered.
NOSTRIP	treat line numbers as data.
NOERROR	don't treat missing file as an error.
NOXEQ	treat StarJet commands as data (do not execute).
XEQ	execute StarJet commands found.
prefix	command prefix character (default '/').
INCLUDE	only execute <prefix>INCLUDE commands found.
DEPTH	keyword limiting recursion depth of include.
include-levels	number of levels of INCLUDE to execute.

Comments

This command allows the inclusion of a file containing StarJet commands.

It is possible to create default configuration files, for example containing the definition of fonts common to all printouts, executed by simple reference to the filename containing the commands.

NUMBER (or NUM) prints any embedded data lines with the original line number from the file (if the file was kept numbered), or with a sequence number (if the file was kept unnumbered).

RENUMBER (or REN) prints any embedded data lines with a sequence number.

UNNUMBER (or UNN) prints any embedded data lines without numbering them (default case).

NOSTRIP is used to help StarJet determine if the contents of a file are numbered or not. StarJet normally determines this by looking at the filecode of a file, and the contents of the end of the first line in the file.

Files of type COBOL are kept by EDITOR with the file code EDTCT; their line numbers are stored in the first 6 characters of each line.

Other file types (if numbered) contain their line numbers in the last 8 characters of each line. If your command file is kept as unnumbered, and if it contains numeric information in the last 8 characters of the first line, then you must use the NOSTRIP keyword to indicate to StarJet that the numeric information at the end of the line is not to be interpreted as a line number, but is to be included as part of the command.

XEQ, when used without the addition of <prefix>INCLUDE, is used to indicate that any StarJet commands embedded within the file are to be executed (provided that they are prefixed by the <prefix> character).

NOXEQ indicates that any embedded StarJet commands are to be treated as data lines.

Examples

```
/PORTRAIT A4 MAXLINES=5O
/INCLUDE GENFONTS XEQ
/T 4 100 100 ....
```

This example illustrates how a predefined command sequence may be included in another command file.

The file GENFONTS can, for example, contain the definition of a number of fonts, including the font number 4. This font is referenced by the /TEXT command that immediately follows the /INCLUDE.

```
/PORTRAIT A4 MAXLINES=50
/C 1 LP120RRO
/INCLUDE GENFONTS NOXEQ NUM
```

This example shows how the contents of file GENFONTS may be printed, but not executed as StarJet commands (keyword NOXEQ specified).

If GENFONTS was kept with line numbers, these numbers will be printed with the data, otherwise the line number will be synthesized.

```
/PORTRAIT A4 MAXLINES=50
/C 1 LLP080RRP
/INCLUDE FORME3.PUB.BYS XEQ /INCLUDE DEPTH=3
```

This example illustrates the inclusion of file FORME3.PUB.SYS.

The keywords XEQ /INCLUDE will result in the execution of any /INCLUDE commands within the file FORME3, but of no other /commands within the file. Any other lines starting with '/' in the file will be treated as simple data lines, and printed as such.

/INCLUDE or /INC (with VPLUS formfile)

Include VPLUS form image(s) from a VPLUS formfile.

Syntax

```
/INCLUDE <filename>
         [FORM=<name> | number | @ | ?]
         [FIELD=OFF | DASH | SOLID | PATTERN]
```

Parameters

filename	filename of VPLUS formfile or fast formfile.
FORM	keyword indicating that VPLUS forms are to be extracted.
formfile	name of form to include.
formnumber	form number to include.
@	include all forms.
?	display list of all forms (on screen only).
FIELD	keyword indicating input field enhancements.
OFF	don't enhance input fields.
DASH	display dashes for all input field characters.
SOLID	underline all input field characters.
PATTERN	enhance input field characters with a special pattern.

Comments

This command form allows the inclusion of screen images from VPLUS form files.

The filename must specify the name. of a valid VPLUS form file, of filecode VFORM or VFAST.

The FORM keyword allows the specification of the name or number of the form to be extracted. To display all forms, use the '@' character.

If the form cannot be located, StarJet sets the FSERROR JCW to 172.

See below for an example of the usage of this feature.

When StarJet is used interactively, if you do not know the name or number of the form desired, the '?' character will result in a list of all form names/numbers being displayed on the terminal.

The keyword FIELD allows the specification of the method used to identify all input field zones when the form is printed. Four choices are available:

- OFF — no display enhancements.
- DASH — identify all input fields by non-contiguous dashes, thus allowing the length of input fields to be determined.
- SOLID — identify input fields with a solid underline.
- PATTERN — identify input fields with a cross-hatched pattern underline.

> Note: Use of this command format will automatically select the character fonts necessary to display the form data, and any line-draw characters used within the form.

Examples

```
/PORTRAIT A4 MAXLINES=70
/FRAME 5
/INCLUDE RISEFORM.PUB.SYS FORM=FPSPECS FIELD=DASH
```

This example illustrates how to print out the FSPECS form in file RISEFORM.PUB.SYS. Every input field character will be individually identified by a dashed underline.

```
/RESET
/LANDSCAPE A4 MAXLINES=30 FORMAT=2 BY 2
/SETJCW LOOP=1
/SETJCW FSERROR=0
/WHILE (FSERROR <> 172) DO
/   INCLUDE RISEFORM.PUB.SYS FORM=!LOOP
/   SETJCW LOOP=LOOP+1
/ENDWHILE
```

This example illustrates how to use the /WHILE command, together with a test for FSERROR=172 indicating the end of all forms. The form number is obtained by substituting the value of LOOP.

> Note: Use of the /LIST command allows the screen display of VPLUS screen images as they are included.

> Note: StarJet is supplied with 4 Line Draw character sets, they are selected automatically when required.

/INCLUDE or /INC (with data and source files)

Include data files and source files.

Syntax

```
/INCLUDE <filename>
         [NUMBER | RENUMBER | UNNUMBER] [NOSTRIP]
         [NOERROR]
         [NOXEQ | XEQ [prefix [INCLUDE]]]
         [DEPTH = <include-levels>]
```

Parameters

filename	HP3000 file to be included.
NUMBER	print data lines numbered.
RENUMBER	print data lines renumbered.
UNNUMBER	print data lines unnumbered.
NOSTRIP	treat line numbers as data.
NOERROR	don't treat missing file as an error.
NOXEQ	treat StarJet commands as data (do not execute).
XEQ	execute StarJet commands found.
prefix	command prefix character (default '/').
INCLUDE	only execute <prefix>INCLUDE commands found.
DEPTH	keyword limiting recursion depth of include.
include-levels	number of levels of INCLUDE to execute.

Comments

This command allows the inclusion of a file containing data or source.

It is possible to request, for archival purposes, printout of data with multiple pages compressed onto each physical page.

NUMBER (or NUM) prints any embedded data lines with the original line number from the file (if the file was kept numbered), or with a sequence number (if the file was kept unnumbered).

RENUMBER (or REN) prints any embedded data lines with a sequence number.

UNNUMBER (or UNN) prints any embedded data lines without numbering them (default case).

Files of type COBOL are kept by EDITOR with the file code EDTCT, their line numbers are stored in the first 6 characters of each line.

Other file types (if numbered) contain their line numbers in the last 8 characters of each line. If your command file is kept as unnumbered, and if it contains numeric

information in the last 8 characters of the first line, then you must use the NOSTRIP keyword to indicate to StarJet that the numeric information at the end of the line is not to be interpreted as a line number, but is to be executed as part of the command.

NOXEQ indicates that the file contents are to be treated only as data, regardless of any '/' character prefixes.

The <prefix>INCLUDE keyword is used to indicate to StarJet that any embedded INCLUDE commands are to be executed. The <prefix> character indicates the prefix character to be recognized, for example '#' in C, or '$' for Pascal. Use of the DEPTH keyword allows the definition of the maximum number of nested INCLUDEs to be executed.

> Note: The <prefix> character and INCLUDE must not be separated by any spaces.

Examples

```
/LANDSCAPE A4 MAXLINES=50 FORMAT=2 BY 2
/FRAME
/C 4 LP080RRL
/T 4
/INCLUDE SOURCE RENUM XEQ $INCLUDE DEPTH=3
```

This example illustrates how to request printout of a source file for archive purposes, in this case with 4 pages of 50 lines each per logical page.

The file will be printed with StarJet-generated sequence numbers, and any embedded $INCLUDE commands will be executed.

/INCLUDE or /INC (with output spoolfiles)

Include contents of an output spoolfile.

Syntax

```
/INCLUDE <filename>
         [NUMBER | RENUMBER | UNNUMBER] [NOSTRIP]
         [NOXEQ | XEQ [prefix [INCLUDE]]]
         [DEPTH = <include-levels>]
         [NOERROR]
         [PRINTSPF]
         [LIST | NOLIST]
         [FILEID | NOFILEID]
```

Parameters

filename	HP3000 output spoolfile to be included.
NUMBER	print data lines numbered.
RENUMBER	print data lines renumbered.
UNNUMBER	print data lines unnumbered.
NOSTRIP	treat line numbers as data.
NOERROR	don't treat missing file as an error.
NOXEQ	treat StarJet commands as data (do not execute).
XEQ	execute StarJet commands found.
prefix	command prefix character (default '/').
INCLUDE	only execute <prefix>INCLUDE commands found.
DEPTH	keyword limiting recursion depth of include.
include-levels	number of levels of INCLUDE to execute.
PRINTSPF	display spoolfile format information (cctl, etc.).
LIST	display file contents while performing include.
NOLIST	suppress file contents display while performing include.
FILEID	display file names as they are included.
NOFILEID	suppress file name display as they are included.

Comments

Spoolfile names are specified using a special name format: the spoolfile name is specified as **#O***nnn* where *nnn* indicates the spoolfile number.

It is also possible to combine the use of this special syntax with a JCW to specify the number:

#O!<jcw-name>

On MPE XL systems version 2.1 and later, it is also possible to specify the filename using regular MPE filename syntax, in the form O*nnn*.OUT.HPSPOOL.

The specified spoolfile must be in the READY state for it to be included.

NUMBER (or NUM) prints any embedded data lines with the original line number from the file (if the file was kept numbered), or with a sequence number (if the file was kept unnumbered).

RENUMBER (or REN) prints any embedded data lines with a sequence number.

UNNUMBER (or UNN) prints any embedded data lines without numbering them (default case).

Files of type COBOL are kept by EDITOR with the file code EDTCT; their line numbers are stored in the first 6 characters of each line.

Other file types (if numbered) contain their line numbers in the last 8 characters of each line. If your command file is kept as unnumbered, and if it contains numeric information in the last 8 characters of the first line, then you must use the NOSTRIP keyword to indicate to StarJet that the numeric information at the end of the line is not to be stripped as a line number, but is to be executed as part of the command.

/LANDSCAPE or /LAND

Define paper size and orientation.

Syntax

```
/LANDSCAPE <papersize>
           [MAXLINES = <lines-per-page>]
           [FORMAT = <x> BY <y>]
           [ACROSS | DOWN]
           [TOP = <margin>]
```

Parameters

papersize	defines the physical paper size. Legal values are: A4. A3. LEGAL. LETTER. LEDGER. MONARCH. EXECUTIVE. COMMERCIAL-10 or COM-10. INTERNATIONAL-DL or DL. INTERNATIONAL-C5 or C5.
MAXLINES	keyword defining lines per logical page.
lines-per-page	number of lines per logical page.
FORMAT	keyword defining multiple logical pages.
x	logical pages across the page.
y	logical pages down the page.
ACROSS	fill pages from left to right.
DOWN	fill pages from top to bottom.
TOP	keyword defining top margin value.
margin	top margin value (optional).

Comments

This command should be the first command specified (unless /RESET is used).

This command allows the specification of the physical page size, the maximum number of lines per page, and the number of logical pages per physical page, if required.

/LANDSCAPE indicates the printing orientation, across the paper's long dimension.

Note: /LANDSCAPE cannot be used together with /PORTRAIT.

If multiple logical pages are to be printed on every physical page, it is possible to specify that the logical pages be filled in column order (DOWN), or in row order (ACROSS). ACROSS is the default.

The keyword TOP allows the specification of a top margin value.

Note: Only use the TOP keyword if necessary. StarJet selects a default top margin value according to the logical and physical page specification.

Note: Use of multiple logical pages is only possible in post-processing mode – see discussion in the Integration section.

Example

```
/LANDSCAPE A3 FORMAT= 4 BY 3 DOWN
```

The paper is A3, landscape orientation. The command requests 12 logical pages per physical page: 4 across and 3 down, filled from top-to-bottom and left-to-right.

The DOWN keyword results in the pages being filled in the following order:

1	4	7	10
2	5	8	11
3	6	9	12

Note: Use of multiple logical page styles is fully supported on the LaserJet Series III in page protect mode (requiring the addition of at least 1 meg of memory). Use of these styles on older LaserJet models is dependent on the number of logical pages, and the amount of data printed in each. All LaserJet models support at least two full logical pages, and all post-Series II models support at least four.

/LF

Requests line feed(s).

Syntax

```
/LF <lines>
```

Parameters

lines number of lines to skip (default 1).

Comments

This command is used to move the cursor by one or more lines.

Example

```
/LANDSCAPE A4
/CHAR LP120RRP INTERNAL
/TEXT 1 0 200 First line
/LF 4
Second line printed 4 lines after the first
```

/LIST

Displays commands as they are executed.

Syntax

```
/LIST
```

Parameters

None.

Comments

Once this command is executed, StarJet displays each command and data line on the terminal, as it is processed. Each command is preceded by its sequence number.

Example

```
/LANDSCAPE
/BOX 1 100 100 200 200
/LIST
/VERTICAL 12 150 100 200
```

The execution of these commands - stored as TEST - results in the following display:

```
:RUN STARJET.PUB.APPIC

StarJet Version 5.0                      Copyright (c) APPIC, 1990
Licensed for APPIC micro 3000 Epinay sur Orge                16900

Enter command filename, or <Return> to enter commands interactively:
Command File   :TEST

Enter output device number, or <Return> to discard output:
Printer Device :<Return>

       3: /LIST
       4: /VERTICAL 12 150 100 200

Input Lines     : 4      Processor Time :  85 ms     Total Errors   : 0
Logical Writes  : 8      Elapsed Time   : 136 ms     Total Warnings : 0
Physical Writes : 1      Bytes Written  : 231

END OF PROGRAM
:
```

Note: This command is automatically executed by StarJet when it is run if the STARLIST JCW is set to 1. This allows execution of any command file to be traced easily.

Note: The reverse of this command is the /NOLIST command.

/MODE

Switches between PCL mode and other command execution modes.

Syntax

```
/MODE [HPGL | PCL | MPE]
```

Parameters

HPGL	Switch to HP-GL/2 mode.
PCL	Switch to PCL mode (default).
MPE	Switch to MPE mode.

Comments

This command allows the inclusion, within a StarJet command file, of MPE and HPGL/2 commands.

Once the mode has been switched to MPE mode, for example, it must be switched back to PCL mode before StarJet commands may again be used.

HP-GL/2 mode is only available on LaserJet models III and IIID.

The command /MODE, without any parameters, returns to the previously-selected execution mode.

Example

```
/PORTRAIT A4
/MODE HPGL
in;sp1;sd1,9;dtr;
ul 9,0,10,5,15,10,10,20,15;
/MODE
/BOX 5 100 100 200 200
```

This example includes a series of HP-GL/2 commands from within a StarJet command file. The second /MODE command returns to StarJet command execution mode.

> Note: HP-GL/2 commands obey a special syntax. Refer to the LaserJet III Technical Reference Manual for a description of HP-GL/2 command syntax.

/MULTIDATA

Used in preparation for multi-part form emulation.

Syntax

```
/MULTIDATA
```

Parameters

None.

Comments

This command must be located within every one of the overlays to be used in multipart form emulation, just before the end of the overlay definition.

The command allows StarJet to correctly handle multi-part form emulation from within the selected overlays.

Note: Multi-part form emulation is only available in post-processing mode.

Example

```
/PORTRAIT A4 MAXLINES=50
/CHAR 1 HV240BRP OPTIMIZE
/*
/* Overlay 1 used for original
/*
/OVERLAY 1
/   TEXT 1 1500 200 ORIGINAL
/   MULTIDATA
/OVERLAY 0
/*
/* Overlay 2 used for duplicate
/*
/OVERLAY 2
/   TEXT 1 1500 200 DUPLICATE
/   MULTIDATA
/OVERLAY 0
…
```

This command file defines two simple overlays, the first prints 'ORIGINAL', the second prints 'DUPLICATE'.

Both overlay definitions include the /MULTIDATA command, just before the end of each overlay definition.

Note: This command is used in conduction with the /MULTIPART command.

/MULTIPART

Activates multi-part form emulation.

Syntax

```
/MULTIPART [i j [k …]]
```

Parameters

i j k … Individual overlay numbers to be used for emulation.

Comments

This command must appear just prior to the data to be used for multipart form emulation.

The numbers indicate the overlay identification numbers to be used for each copy required.

The same overlay number may be repeated multiple times in the specification, if multiple identical copies are required.

> Note: This functionality is only available in post-processing mode - see relevant discussion in the Integration section.

Example

```
/PORTRAIT A4 MAXLINES=50
/CHAR 1 HV240BRP OPTIMIZE
/* Overlay 1 used for original
/OVERLAY 1
/   TEXT 1 1500 200 ORIGINAL
/   MULTIDATA
/OVERLAY 0
/* Overlay 2 used for duplicate
/OVERLAY 2
/   TEXT 1 1500 200 DUPLICATE
/   MULTIDATA
/OVERLAY 0
/* Overlay 3 used for internal-use copy
/OVERLAY 3
/   TEXT 1 1500 200 INTERNAL-USE
/   MULTIDATA
/OVERLAY 0
/MULTIPART 1 2 2 2 3
/INCLUDE <data-file>
```

This command file defines three simple overlays, each responsible for printing a title - ‘ORIGINAL’, ‘DUPLICATE’ and ‘INTERNAL-USE’.

Usage

The /MULTIPART command is issued just prior to including the data, which is held in an external disc file.

The order of overlay numbers in the /MULTIPART command defines the order and number of copies required. In this example:

- one copy marked ‘ORIGINAL’
- three copies marked ‘DUPLICATE’
- one copy marked ‘INTERNAL-USE’

Each copy will be printed with identical data overlaid.

Note: This command must be used in conjunction with the /MULTIDATA command.

Note: This functionality is only available in post-processing mode.

Note: Regardless of the number of copies requested, the actual data is only sent to the printer once.

/NEED

Requests a minimal number of lines free on the current logical page.

Syntax

```
/NEED <lines>
```

Parameters

lines number of lines required.

Comments

If the requested number of lines is not available on the current logical page (or physical page if multiple styles not requested), then a logical page eject is generated.

If multiple-logical page styles are active, StarJet continues printing on the next logical page.

Example

```
/LANDSCAPE A4
/NEED 24
/INCLUDE file
```

The command file verifies that at least 24 lines are available on the current logical page before including data from the external file. If less that 24 lines remain, StarJet generates a logical page eject, otherwise no action is taken.

/NOLIST

Turns off command display.

Syntax

```
/NOLIST
```

Parameters

None.

Comments

Once this command is executed, StarJet terminates display of commands/data.

Example

```
/LANDSCAPE
/BOX 1 100 100 200 200
/LIST
/VERTICAL 12 150 100 200
/NOLIST
/HORIZONTAL 5 100 150 200
```

The execution of these commands - stored as TEST - results in the following display:

```
:RUN STARJET.PUB.APPIC

StarJet Version 5.0                      Copyright (c) APPIC, 1990
Licensed for APPIC micro 3000 Epinay sur Orge                16900

Enter command filename, or <Return> to enter commands interactively:
Command File   :TEST

Enter output device number, or <Return> to discard output:
Printer Device :<Return>

       3: /LIST
       4: /VERTICAL 12 150 100 200
       5: /NOLIST

Input Lines     : 6      Processor Time : 109 ms     Total Errors   : 0
Logical Writes  : 9      Elapsed Time   : 163 ms     Total Warnings : 0
Physical Writes : 1      Bytes Written  : 253

END OF PROGRAM
:
```

Note: The reverse of this command is the /LIST command.

/OVERLAY or /O

Used to delimit an Overlay definition.

Syntax

```
/OVERLAY <number>
```

```
/OVERLAY 0 [PERM | TEMP]
```

Parameters

number	overlay identification number.
0	indicates end of overlay definition.
PERM	keyword indicating that overlay to be saved as permanent in the printer memory.
TEMP	keyword indicating that overlay to be saved as temporary in the printer memory.

Comments

The /OVERLAY <number> and /OVERLAY 0 commands are used to delimit a sequence of commands to be executed automatically on every page printed.

When the printer receives a physical page eject (form feed) command, all the commands defined within the current overlay are printed on the page just before it is physically ejected.

A single StarJet command file may contain definitions for several overlays, however the last one defined is the one that will be active for the data that follows.

To activate a previously-loaded overlay, use the /ACTIVATE-OVERLAY command.

The keyword PERM allows an overlay definition to be saved as permanent in the printer's memory. By default an overlay is saved as temporary, which means that it will be lost if the printer receives a soft reset (sent by the /RESET command or the sequence).

Note: A Permanent overlay can survive both of these commands, but will still be removed if the printer is hard-reset (the 'reset' button is pressed, or the power is cycled).

Example

```
/LANDSCAPE A4
/DUPLEX 2
/OVERLAY 1
/   * Start of overlay 1
/   BOX 10 100 100 3200 2300
/   * End of overlay 1
/OVERLAY 0
/OVERLAY 35
/   * Start of overlay 35
/   B 10 100 100 3200 2300
/   * This box is printed on the reverse of each page
/   PAGE
/   * Generates a page eject
/   S 2 100 100 3200 2300
/   * Print shaded area on front of page
/OVERLAY 0 PERM
```

This example shows the definition of two overlays:

The first, overlay number 1, is simply composed of a box description. It would be printed on every page that follows.

The second overlay is identified by number 35. It is stored as permanent in the printer memory, as indicated by the PERM keyword on the closing /OVERLAY 0 command. This overlay has a special use, as it contains the /PAGE command. Data from the application will be printed on the form that contains the box definition, but then another page eject will be performed by the overlay's /PAGE command, and the shaded area will be printed on the reverse side of the paper.

> Note: This command is used to permit a form to be automatically repeated on every page of a report.

/PAGE or /P

Request a logical page eject.

Syntax

```
/PAGE
```

Parameters

None.

Comments

This command generates a logical page eject.

If multiple logical page styles are not active, and if the printer is not operating in duplex mode, then a /PAGE commands results in a physical form feed. If duplex mode is active (and providing that the printer supports it), then printing continues on the rear of the page (if this is the first side), or on the next physical page (if this is the rear).

If multiple logical page styles are active, than the /PAGE command causes a jump to the next logical page position. If the current logical page is the last on a physical page, then a physical page eject is also generated.

This command, when used within an overlay definition, allows the printing of an overlay on the rear of a page.

Example

```
/PORTRAIT A4 MAXLINES=50
/DUPLEX 1
/CHAR 1 HV120BRP
/OVERLAY 1
/   BOX 1 100 100 2200 3200
/   PAGE
/   TEXT 1 100 100 General Terms and Agreement
/OVERLAY 0
```

This sequence of commands accomplishes the following:

When the application performs a form feed the box is drawn on the page (via the /BOX command), then a form feed is generated (via /PAGE), and then the string ‘General Terms and Agreement’ is printed on the rear of the page.

Finally, the form feed requested by the application is performed.

/PATTERN

Draws a pattern-filled area.

Syntax

```
/PATTERN <style> <x1> < y1> <x2> <y2>
```

Parameters

style pattern style (range 1 to 6):

1: horizontal lines.
2: vertical lines.
3: diagonals from top-right to bottom-left.
4: diagonals from top-left to bottom-right.
5: styles 1 and 2.
6: styles 3 and 4.

x1 x-coordinate of top left hand corner of area.

y1 y-coordinate of top left hand corner of area.

x2 x-coordinate of bottom right hand comer of area.

y2 y-coordinate of bottom right hand corner of area.

Comments

This command is used to draw pattern-filled areas.

The area will be drawn with the requested <style> pattern; the top left and bottom right hand corners of the box are specified as two sets of <x>:<y> coordinate pairs.

Example

```
/PORTRAIT A4 MAXLINES=50
/PATTERN 1 100 100 2200 200
/PATTERN 6 2000 3100 2200 3200
```

Two pattern-filled areas will be printed by this command file:

- the first is drawn using horizontal lines
- the second is composed of crossed diagonal lines

/PORTRAIT

Define paper size and orientation.

Syntax

```
/PORTRAIT <papersize>
          [MAXLINES = <lines-per-page>]
          [FORMAT = <x> BY <y>]
          [ACROSS | DOWN]
          [TOP = <margin>]
```

Parameters

papersize	defines the physical paper size. Legal values are: A4. A3. LEGAL. LETTER. LEDGER. MONARCH. EXECUTIVE. COMMERCIAL-10 or COM-10. INTERNATIONAL-DL or DL. INTERNATIONAL-C5 or C5.
MAXLINES	keyword defining lines per logical page.
lines-per-page	number of lines per logical page.
FORMAT	keyword defining multiple logical pages.
x	logical pages across the page.
y	logical pages down the page.
ACROSS	fill pages from left to right.
DOWN	fill pages from top to bottom.
TOP	keyword defining top margin value.
margin	top margin value (optional).

Comments

This command should be the first command specified (unless /RESET is used).

This command allows the specification of the physical page size, the maximum number of lines per page, and the number of logical pages per physical page, if required.

/PORTRAIT also indicates the printing orientation, across the short dimension of the paper.

Note: /PORTRAIT cannot be used together with /LANDSCAPE.

If multiple logical pages are to be printed on every physical page, it is possible to specify that the logical pages be filled in column order (DOWN), or in row order (ACROSS). ACROSS is the default.

The keyword TOP allows the specification of a top margin value.

Note: Only use the TOP keyword if necessary. StarJet selects a default top margin value according to the logical and physical page specification.

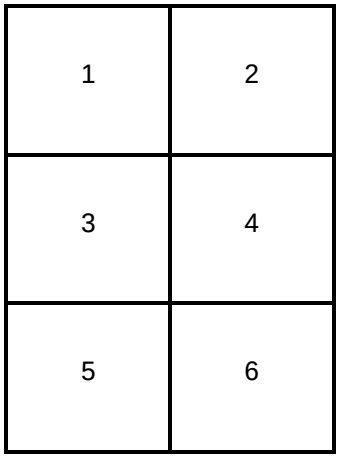
Note: Use of multiple logical pages is only possible in post-processing mode – see discussion in the Integration section.

Example

/PORTRAIT A3 FORMAT= 2 BY 3

The paper is A3, portrait orientation. The command requests 6 logical pages per physical page: 2 across and 3 down, filled from left-to-right and top-to-bottom.

The logical pages are filled in the following order:



Note: Use of multiple logical page styles is fully supported on the LaserJet Series III in page protect mode (requiring the addition of at least 1 meg of memory). Use of these styles on older LaserJet models is dependent on the number of logical pages, and the amount of data printed in each. All LaserJet models support at least two full logical pages, and all post-Series II models support at least four.

/PREFIX

Changes StarJet's command prefix character.

Syntax

```
/PREFIX <special>
```

Parameters

special special character to replace the slash character.

Comments

This command allows the StarJet command prefix character to be changed to any special (non-alphanumeric) character.

If this command is used within an include file, the previously-active prefix character is restored when the include file execution terminates.

Note: The '//' command is sensitive to the current prefix. The command is always recognized as a double <prefix>.

Examples

```
/LANDSCAPE A4
/PREFIX #
#BOX 1 100 100 299 299
#PREFIX /
```

The #BOX command is executed as a StarJet command, as the '/' prefix had been changed to '#'.

```
/LANDSCAPE A4
/PREFIX #
#BOX 1 100 100 1200 200
##
```

Execution of StarJet is terminated by the '##' command (synonym for the '//' command).

/REDO

Redo the previous StarJet command, with the ability to edit the command.

Syntax

```
/REDO
```

Parameters

None.

Comments

This command is used to recall the last-executed StarJet command, edit it, and re-do the command.

The command functions exactly as does the MPE V-style :REDO command.

Note: This command is only available when StarJet is run interactively.

Note: Commands executed within an /INCLUDE command are not accessible via this command.

/RESET

Sends a soft-reset to the printer.

Syntax

```
/RESET
```

Parameters

None.

Comments

This command results in the <escape>E sequence being sent to the printer.

> Note: This command, if used within a StarJet command file, will erase the effect of all commands previously executed.

Example

```
/RESET
/LANDSCAPE A4
…
```

Allows the printer to be reset to its default state, before sending a new sequence of commands.

/RETURN

Terminates execution of an INCLUDE file.

Syntax

```
/RETURN
```

Parameters

None.

Comments

When StarJet is executing the contents of an INCLUDE file, both the end of the file, and the /RETURN command will stop execution of the file contents.

StarJet then continues executing the previously-active file.

When this command is used at the top-level command file, it has no effect.

> Note: The use of this command in an INCLUDE file is optional, control always returns to the previous level at the end of a file.

/RLF

Requests reverse line feed(s).

Syntax

```
/RLF <lines>
```

Parameters

lines number of lines to skip backwards (default 1).

Comments

This command is used to move the cursor up by one or more lines.

Example

```
/PORTRAIT A4
/CHAR LP120RRP INTERNAL
/TEXT 1 0 1000 First line
/RLF 6
Second line printed 6 lines above the first one
```

/ROTATE

Rotates the sense of printing.

Syntax

```
/ROTATE <angle>
```

Parameters

angle defines the clockwise rotation required, expressed in degrees. Legal values are 0, 90, 180 and 270.

Comments

This command allows the sense of printing to be dynamically rotated. The LaserJet Series III allows both portrait and landscape-orientations to be mixed on the same page.

> Note: This feature is only available on LaserJet printers that support PCL level 5: LaserJet series III and IIID printers.

Example

```
/PORTRAIT A4
/C TR080RRP
/T1 100 1000
/ROTATE 90
Text printed vertically up the page
/ROTATE 0
/T1 100 2000
Text printed horizontally across the page
```

/SETJCW

Sets a JCW to a specified value.

Syntax

```
/SETJCW <name> <delimiter> <expression>
```

Parameters

name	JCW name to be set.
delimiter	any special character(s).
expression	numeric value to set JCW to.

Comments

This command allows JCWs to be assigned values within StarJet command files.

The following arithmetic operators may be used in the numeric expression:

+, -, *, /

Operands may specify any numeric constant, any defined JCW name, or a numeric expression made up of both.

Parentheses may be used to force any required order of evaluation.

The JCW value may be subsequently tested by the /IF command, or the resulting value may be substituted for any numeric StarJet command parameter, by using the '!' substitution prefix.

Example

```
/LANDSCAPE A4
/SETJCW thick=10
/HORIZONTAL !thick 100 100 3200
/BOX !thick 2000 2000 3200
```

The 'thick' JCW is assigned the value 10, and is then used in two commands to supply the first parameter value for each.

/SHADE or /S

Draws a shaded area.

Syntax

```
/SHADE <level> <x1> < y1> <x2> <y2>
```

Parameters

level	shaded level (range 1 to 8).
x1	x-coordinate of top left hand corner of area.
y1	y-coordinate of top left hand corner of area.
x2	x-coordinate of bottom right hand comer of area.
y2	y-coordinate of bottom right hand corner of area.

Comments

This command is used to draw shaded areas.

The area will be drawn with the requested <level> shade; the top left and bottom right hand corners of the box are specified as two sets of <x>:<y> coordinate pairs.

Example

```
/PORTRAIT A4 MAXLINES=50
/OVERLAY 1
/   SHADE 1 100 100 2200 200
/   S 7 2000 3100 2200 3200
/OVERLAY 0
```

Two shaded areas will be printed by this command file.

- the first is drawn with a very fine shade.
- the second is composed of heavy shading.
- both shaded areas are defined within an overlay.

/SHOWINT

Displays all active internal fonts.

Syntax

```
/SHOWINT
```

Parameters

None.

Comments

This command displays information about all selected internal fonts.

Internal fonts are those fonts defined using the /CHAR INTERNAL syntax, as well as some fonts selected automatically by StarJet.

The display shows the font number and the corresponding selection escape sequence used.

Example

```
:RUN STARJET.PUB.APPIC

StarJet Version 5.0                       Copyright (c) APPIC, 1990
Licensed for APPIC micro 3000 Epinay sur Orge                16900

Enter command filename, or <Return> to enter commands interactively:
Command File   :<Return>

Enter output device number, or <Return> to discard output:
Printer Device :<Return>

    Note: Input file is terminal.
        : Terminate input using //

       1: /PORTRAIT A4
       2: /CHAR 1 HV240BRP OPTIMIZE
       3: /CHAR 2 LP120RRP INTERNAL
       4: /SHOWINT

          Following internal fonts active:

          Font #    Definition
          2         ~(8U~(s0p10.00h12.00v0s0b35T

       5: //
        : StarJet execution terminated by //

Input Lines     : 5      Processor Time : 1.03 s     Total Errors   : 0
Logical Writes  : 13     Elapsed Time   : 146.97 s   Total Warnings : 0
Physical Writes : 13     Bytes Written  : 417

END OF PROGRAM
:
```

The ‘~’ (tilde) character is used to signal the position of any <esc> characters. This allows the sequences to be displayed easily, and corresponds to the method used by the /CHAR command to enter the sequences.

/SHOWOPT

Displays information about active optimized fonts.

Syntax

```
/SHOWOPT
```

Parameters

None.

Comments

This command displays information about all currently active optimized fonts.

Optimized fonts are all fonts selected using the /CHAR command's OPTIMIZE keyword.

The display shows the font number, the name of the corresponding HP3000 font file, the number of character definitions actually sent to the printer, and the total number defined in the font file.

Example

```
:RUN STARJET.PUB.APPIC

StarJet Version 5.0                      Copyright (c) APPIC, 1990
Licensed for APPIC micro 3000 Epinay sur Orge                16900

Enter command filename, or <Return> to enter commands interactively:
Command File   :<Return>

Enter output device number, or <Return> to discard output:
Printer Device :<Return>

    Note: Input file is terminal.
        : Terminate input using //

       1: /PORTRAIT A4
       2: /CHAR 1 HV240BRP OPTIMIZE
       3: /TEXT 1 1500 300 FACTURE
       4: /SHOWOPT

          Following optimized fonts active:

          Font #    Count      File
          1         7/183      HV240BRP.LASERJ.APPIC

       5: //
        : StarJet execution terminated by //

Input Lines     : 5      Processor Time : 1.29 s     Total Errors   : 0
Logical Writes  : 80     Elapsed Time   : 51.55 s    Total Warnings : 0
Physical Writes : 33     Bytes Written  : 4656

END OF PROGRAM
:
```

/SHOWUDC

Displays all commands defined in the STARUDC file.

Syntax

```
/SHOWUDC
```

Parameters

None.

Comments

This command displays the list of all commands defined in the STARUDC file.

Commands are displayed in alphabetical order.

Example

```
:RUN STARJET.PUB.APPIC

StarJet Version 5.0                      Copyright (c) APPIC, 1990
Licensed for APPIC micro 3000 Epinay sur Orge                16900

Enter command filename, or <Return> to enter commands interactively:
Command File   :<Return>

Enter output device number, or <Return> to discard output:
Printer Device :<Return>

    Note: Input file is terminal.
        : Terminate input using //

       1: /SHOWUDC

SET-MARGINS                    ~&a M~&a L

       2: //
        : StarJet execution terminated by //

Input Lines     : 2     Processor Time : 455 ms     Total Errors   : 0
Logical Writes  : 1     Elapsed Time   : 20.32 s    Total Warnings : 0
Physical Writes : 1     Bytes Written  : 1

END OF PROGRAM
:
```

/SUSPEND

Temporarily interrupts execution of StarJet.

Syntax

```
/SUSPEND
```

Parameters

None.

Comments

When running StarJet from within a program capable of handling suspended son processes, the /SUSPEND command allows you to return to the calling program without terminating StarJet. When you subsequently reactivate StarJet, execution continues at the point immediately following the /SUSPEND command.

/SUSPEND will terminate execution with a warning if StarJet is being run directly from the MPE prompt.

/SUSPEND may not be used when a command file is executed via a File equation's ENV= parameter.

Note: When StarJet is suspended, all accessed files remain open.

/TELLOP

Displays a message on the system console.

Syntax

```
/TELLOP <text>
```

Parameters

Text Free-form text.

Comments

This command allows messages to be displayed on the system console.

Example

```
/LANDSCAPE A4
/TELLOP Starting invoice printout
...
```

/TEXT or /T

Activate any font, and/or position the cursor, and/or print text.

Syntax

```
/TEXT <font-number> <x> <y> <text>
```

Parameters

font-number	font number to select.
x	x-coordinate of start (left) of text.
y	y-coordinate of start (left) of text.
text	free-form text (may contain spaces).

Comments

This command performs multiple actions: it allows a string of text to be printed in a given font at a given location, but it also allows the cursor to be positioned and the font to be selected, without actually printing anything.

If the string of data specified has a leading '~' (tilde) character, then that character and any other '~' characters will be replaced by <esc> characters as it is printed.

Note: The font-number corresponds to that specified previously in a /CHAR command.

Example

```
/PORTRAIT A4 MAXLINES=60
/CHAR 1 HV240BRP OPTIMIZE
/CHAR 2 LP120RRP INTERNAL
/OVERLAY 1
/   TEXT 1 2300 300 INVOICE
/OVERLAY 0
/TEXT 2
```

Two fonts are defined in this example:

- the first (number 1) is downloaded. It is a Helvetica 24 point bold font.
- the second (number 2) is an internal printer font, line printer 12 point.

The overlay will result in the word 'INVOICE' being printed in font number 1, at the top left of each page.

The final command is used to select font number 2 to be used to print all data that is appended by the application program.

/U

Activate a secondary font, and/or position the cursor, and/or print text.

Syntax

```
/U <font-number> <x> <y> <text>
```

Parameters

font-number	font number to select.
x	x-coordinate of start (left) of text.
y	y-coordinate of start (left) of text.
text	free-form text (may contain spaces).

Comments

This command performs multiple actions: it allows a string of text to be printed in a given font at a given location, but it also allows the cursor to be positioned and the font to be selected, without actually printing anything.

If the string of data specified has a leading '~' (tilde) character, then that character and any other '~' characters will be replaced by <esc> characters as it is printed.

> Note: The font-number corresponds to that specified previously in a /CHAR command.

Example

```
/PORTRAIT A4 MAXLINES=60
/CHAR 1 HV240BRP OPTIMIZE
/CHAR 2 LP120RRP INTERNAL
/T 1
/U 2
Attention ! <shift-out> freeform text
```

The command /U indicates that font number 2 is to be selected as the secondary font. The final line of text will be printed using two different fonts:

- the string 'Attention !' will be printed using font number 2.
- the rest of the text will be printed using font number 1.

/VERTICAL or /V

Draws a vertical line on the logical page.

Syntax

```
/VERTICAL <thickness> <x1> <y1> <x2>
```

Parameters

thickness	thickness of line in points.
x1	x-coordinate of start (top) of line.
y1	y-coordinate of start (top) of line.
x2	x-coordinate of stop (bottom) of line.

Comments

A vertical line <thickness> points wide is drawn from <x1>:<y1> to <x2>:<y1>.

Note: The coordinates are limited to the current logical page - see /CLIP command for more information.

/WHILE, /ENDWHILE

Repeats a sequence of commands.

Syntax

```
/WHILE <expression> DO
   …
/ENDWHILE
```

Parameters

expression	logical expression with numeric/logical operands and operators.

Comments

The following operators may be used in <expression>:

logical operators	AND, OR
relational operators	=, <>, <, >, <=, >=
arithmetic operators	=, -, *, /

Operands may specify any numeric constant, any defined JCW name, or a numeric expression made up of either/both.

Parentheses may be used to force any required order of evaluation.

If the expression evaluates as TRUE, then all StarJet commands are executed until the matching /ENDWHILE command is seen, at which time execution returns to the start of the /WHILE loop.

Note: Any undefined JCW used in an expression will be treated as if the value was defined as zero (a warning will be displayed).

Note: These commands may be nested up to 15 levels deep.

Example

```
/LANDSCAPE A4
/SETJCW thick=1
/WHILE (thick < 10) DO
/   SETJCW y=100*thick
/   HORIZONTAL !thick 100 !y 3200
/   SETJCW thick=thick+1
/ENDWHILE
```

The thick JCW is set to one, and execution is repeated until its value is 10. The sequence delimited by /WHILE . . . /ENDWHILE is executed for each iteration.

/*

Non-printing comment.

Syntax

```
/* <text>
```

Parameters

`text`	Free-form text.

Comments

Allows non-printing comments to be added to StarJet command files.

//

Terminate StarJet execution.

Syntax

```
//
```

Parameters

None.

Comments

This command terminates StarJet execution.

> Note: If the StarJet prefix character is changed using the /PREFIX command, this command changes also. For example, if the prefix is changed to the '#' character, then '//' changes to '##'.

STARUDC Extensions

It is possible to define extensions to the StarJet commands documented in this manual.

The file STARUDC.PUB.APPIC is a flat ASCII file provided with StarJet which contains a number of command definitions. The contents of this file may be browsed or modified using any HP3000 editor.

You may add your own command definitions to this file, by following the following rules:

First identify the escape sequence to send to the printer by reference to the printer technical reference manual.

A command definition is composed of two parts:

- the command name.
- the sequence(s) to be sent.

The command name must obey the following rules:

- insert it in correct alphabetical order in the file.
- insert it at column 1, in upper case, with no more than 15 alphabetic characters.
- the only special character(s) allowed is the dash '-'

The escape sequence must follow the following rules:

- starts in column 31.
- all <esc> characters must be replaced by '~' (tilde) characters.
- any parameters expected must be defined by leaving a single space in the definition sequence, where the parameter is to be inserted.

> Note: StarJet performs no validation whatsoever on parameters supplied to user defined commands.

Example

You wish to define a new command called /SET-MARGINS, to change the setting of both the left and right margins. The LaserJet documentation indicates that the correct sequences to send are:

Right margin: **<esc>&a#M** where **'#'** indicates the number of columns.

Left margin : **<esc>&a#L** where **'#'** indicates the number of columns.

To define this command, add the following line to file STARUDC:

```
Column 1                        column 31
|                               |
SET-MARGINS                     ~&a M~&a L
```

The command accepts two numeric parameters, the first defining the right margin, the second the left.

To execute the command, issue the command

/SET-MARGINS 7 5

Note: The command must be inserted in the file STARUDC in correct alphabetical order.

Note: The numeric parameters of a user-defined-command may reference a predefined JCW value.