C H A P T E R

6

Routing Output

Producing Output with SAS Software

When you print text or graphics, SAS needs to know where the output should go, how it should be written, and how the output should look. You can control text printing in two ways:

□ using forms. The default printer—as well as other aspects of your output such as printer margins, printer control language, and font control information—are controlled by the FORM subsystem. Forms produce output in ASCII format. Forms are especially useful when you use the PRINT command from the windowing environment and when you print from SAS/AF and SAS/FSP windows. Using forms is the default printing method.

To use forms, you must first define forms for the printers that you want to use, and then when you want to produce output, select the form that you want to use. "Defining Forms" on page 149 describes how to define forms.

Note: To print with forms, host printing must be turned off. See "Turning Host Printing On and Off" on page 142 for more information. △

□ using host printing. Host printing produces output in Postscript or PCL format. Host printing allows you to send the output of your SAS application or the contents of the active window to either a file or to a compatible printer in Postscript, PCL4, or PCL5 format. Through the host printing dialog boxes, you can print or preview the contents of the active window. With the FILENAME statement, you can associate a fileref with the XPRINTER device type and use that fileref in statements, commands, and fields that accept filerefs to send window contents or program output to a file or printer.

Note: Host printing is not supported on MIPS ABI and Intel ABI. △

To use host printing, you must first define printer devices and, when you want to produce output, select the printer device to which you want to send the output. When you define a print device, you specify the device type (such as a Postscript file or an HP Laser printer), the command required to send output to the device, and options such as fonts and margins. "Setting Up Host Printing" on page 142 describes how to define printer devices.

If you are printing graphics, the output is controlled by drivers. You can print graphics using one of two types of drivers:

□ native SAS/GRAPH drivers

□ host printing drivers.

Refer to the online help for SAS/GRAPH for more information about native SAS/ GRAPH drivers.

The Default Routings for the SAS Log and Procedure Output

For each SAS job or session, the SAS System automatically creates two types of output:

SAS log
:   contains information about the processing of SAS statements. As each program step executes, notes are written to the SAS log along with any applicable error or warning messages.

SAS output
:   is also called the *procedure output file* or *print file*. Whenever a SAS program executes a PROC step or a DATA step that produces printed output, SAS sends the output to the SAS output file.

Table 6.1 on page 126 shows the default routings of the SAS log and output files.

Table 6.1   Default Routings of the SAS Log and Output Files

Processing Mode	SAS Log File	SAS Output File
batch	`filename.log`	`filename.lst`
windowing environment	LOG window	OUTPUT window
interactive line	terminal	terminal

By default, both the log file and the output file are written to your current directory. Your system administrator might have changed these default routings.

Changing the Default Routings

There are four primary methods for routing your output:

☐ using the Print dialog box. The Print dialog box is available when you are using the SAS windowing environment.

☐ issuing windowing environment commands. The PRTFILE, PRINT, and FILE commands can be issued from any command line and can be used to send output to external files or to other devices defined with the FILENAME statement.

☐ using the PRINTTO procedure. You can use the PRINTTO procedure in any mode. Using the FILENAME statement with the PRINTTO procedure is the most flexible way of routing your output.

☐ specifying alternate destinations with the PRINT, LOG, ALTPRINT, or ALTLOG system options.

For example, you can send output directly to a printer by

☐ assigning a fileref using the FILENAME statement and then using PROC PRINTTO to send output to that fileref.

☐ using the PRINT command with forms.

☐ specifying a destination (either fileref or filename) with the PRTFILE command, then using the PRINT command to send output to that destination.

You can send log or procedure output to an external file by

☐ specifying a pathname or a fileref in the PROC PRINTTO statement.

☐ using SAS system options to specify the output destination.

☐ specifying a pathname or a fileref in the FILE command.

Use Table 6.2 on page 127 to help you decide which method you should choose to change the routing.

Table 6.2 Decision Table: Changing the Default Destination

To route your SAS log or output to...	Using this mode of processing...	Use this method...	See...
a printer	any mode	FILENAME statement (PRINTER device type) and PRINTTO procedure	"Using the PRINTTO Procedure" on page 133
	interactive modes	FILENAME statement (XPRINTER device type) and PRINTTO procedure	"Routing Output to an XPRINTER Device" on page 134
	windowing environment	PRINT command and FORM subsystem	"Using the PRINT Command with Forms" on page 131
		Print dialog	"Using the Print Dialog Box" on page 128
		FILENAME statement and PRTFILE and PRINT commands	"Using PRTFILE and PRINT with a Fileref" on page 131
an external file	any mode	PRINTTO procedure	"Using the PRINTTO Procedure" on page 133

To route your SAS log or output to...	Using this mode of processing...	Use this method...	See...
	interactive modes	FILENAME statement (XPRINTER device type) and PRINTTO procedure	"Routing Output to an XPRINTER Device" on page 134
	windowing environment	Print dialog	"Using the Print Dialog Box" on page 128
		FILENAME statement and PRTFILE and PRINT commands	"Using PRTFILE and PRINT with a Fileref" on page 131
	batch	LOG and PRINT system options	"Using SAS System Options" on page 136
a UNIX command (pipe)	any mode	FILENAME statement and PRINTTO procedure	"Using the PRINTTO Procedure" on page 133
	windowing environment	FILENAME statement and PRTFILE and PRINT commands	"Using PRTFILE and PRINT with a Fileref" on page 131
its usual location *and* to an external file	any mode	ALTLOG and ALTPRINT system options	"Using SAS System Options" on page 136
	windowing environment	FILE command	"Using the FILE Command" on page 133
		Print dialog	"Using the Print Dialog Box" on page 128
a terminal	batch	FILENAME statement and PRINTTO procedure	"Routing Output to a Terminal" on page 135

Using the Print Dialog Box

When you are using the SAS windowing environment, you can use the Print dialog box to print the contents of the active window using either host printing or forms.

If you use host printing, the Print dialog box sends the window contents to your default host printer device (see "Specifying Your Default Printer Device" on page 147). You can define host printer devices to be either a Postscript (or PCL) printer or an external file, so you can use the Print dialog box to send output to either a printer or an external file. See "Setting Up Host Printing" on page 142 for information on defining host printer devices.

If you use forms, the Print dialog box sends the window contents to the system printer that you specify.

Printing from Text Windows

To print part or all of the contents of a window, click in the window to make it the active window. If you want to mark and print only selected lines of text, mark the text before you open the Print dialog box. To open the Print dialog box, issue the DLGPRT command or select

| File | ▶ | Print... |

Display 6.1 Print Dialog Box
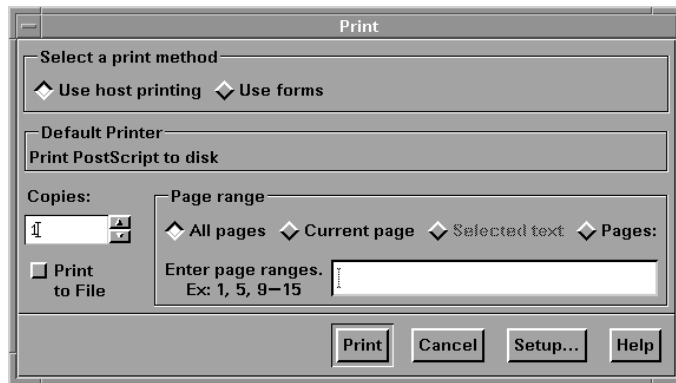
To use forms for printing, select **Use forms**. SAS prompts you to enter a spool command and the name of your system printer. When you select Print , SAS prints the contents of the active window using the command and printer name that you specified and additional information from your default form. See "Defining Forms" on page 149 for more information.

To use host printing, select **Use host printing**. The dialog box displays the default printer name you specified through the Printer Setup dialog box. To select a different printer device, select Setup... to open the Printer Setup dialog box, select the printer device that you want to use, and then select OK .

To send output to a file, select **Print to File** and then select Print . SAS displays the File Selection dialog box, which allows you to select an existing file or enter a new filename. If you print to the same filename again, the contents of the file will be overwritten. Each print request replaces the contents of this file; you cannot append output to a file when you are using host printing. (APPEND is not valid for XPRINTER devices. See "Routing Output to an XPRINTER Device" on page 134.)

By default, SAS prints the entire contents of the selected window (**All pages**). To print only the page currently displayed in the window, select **Current page**. If you marked text before you invoked the Print dialog box, choose **Selected text** to print only the marked text. To print a range of pages or other individual pages, select **Pages:** and enter the page numbers in the field immediately below. Separate individual page numbers and page ranges with either a comma (,) or a blank. You can enter page ranges in any of these formats:

n-m   prints all pages from *n* to *m*, inclusive.

-n   prints all pages from page 1 to page *n*.

n-   prints all pages from page *n* to the last page.

For example, **-4,8,12-15,18-** will print pages 1 through 4, page 8, pages 12 through 15, and pages 18 through the last page.

To print more than one copy of the output, enter a specific number into the **Copies:** field or select the up and down arrows to change the number of copies. The **Copies:** field has no effect when you are printing to a file.

When you print multiple copies, each page is printed the specified number of times before the next page is printed. In other words, SAS prints multiple copies of page 1, then multiple copies of page 2, and so on, rather than collating the copies.

To send output to the default printer or file, select Print . If SAS displays a clock icon for a long time and you are sending output to a network printer, your printer server might be down. If so, you will eventually see a message in the shell where you invoked your SAS session saying that indicates that the server is down.
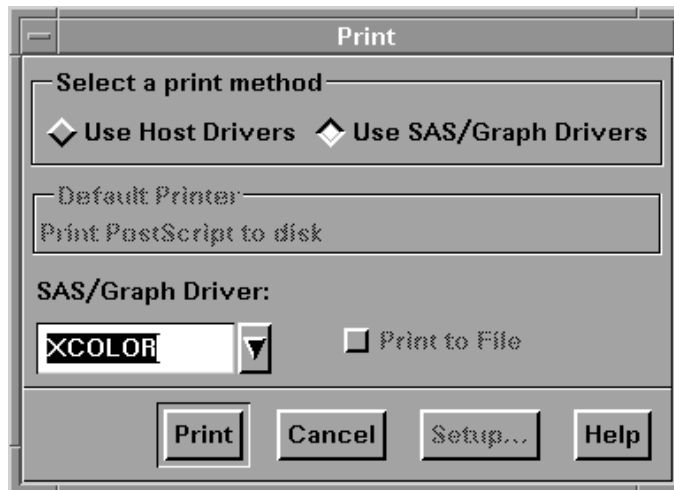
Printing from GRAPH Windows

If you have host printing turned on, then you can use the Print dialog box to print the contents of a GRAPH window. Click in the window to make it the active window, and then issue the DLGPRT command or select

File ▶ Print...

SAS displays the Print dialog box.

Display 6.2   Print Dialog Box for Graph Windows

Note: Fonts and margins set through the host printing dialog boxes have no effect when you print from GRAPH windows. Make sure that you specify the correct options on a GOPTIONS statement. △

To print output using a SAS/GRAPH driver, select **Use SAS/GRAPH Drivers**. Select the down arrow beside the **SAS/GRAPH Driver:** field to display the available drivers. Make sure that your printer destination has been set inside the device using the GDEVICE procedure or the GOPTIONS statement. For complete information about printing from GRAPH windows, refer to *SAS/GRAPH Software: Reference* and the online help for SAS/GRAPH.

To use host printing, select **Use Host Drivers**. Select the down arrow beside the **Host Driver:** field to display the available host drivers:

□ XPRINTC produces color output.

□ XPRINTG produces grayscale output.

□ XPRINTM produces black and white output.

Most laser printers, including PostScript and HP LaserJet printers, can produce grayscale output.

The **Default Printer** field displays the default printer name that you specified through the Printer Setup dialog box. To select a different printer device, select Setup... .

To send your output to the printer or file that you have specified, select Print . If SAS displays a clock icon for a long time and you are sending output to a network printer, your printer server might be down. If so, you will eventually see a message in the shell where you invoked your SAS session that indicates that the server is down.

When you print graphics using the host drivers, SAS prints notes in the SAS LOG similar to the following:

```
Note: The window system or device has set the
      XMAX value of the device XPRINTG to
      7.99 inches.
Note: The window system or device has set the
      YMAX value of the device XPRINTG to
      10.61 inches
```

You can ignore these notes.

Using Commands

In the SAS windowing environment, you can use the PRTFILE, PRINT, and FILE commands to send the contents of the active window to an output device. The PRINT command sends the contents of the active window to either your default printer or to the location you specify with the PRTFILE command. With the PRTFILE, you can specify either a filename or a fileref. The FILE command sends the contents of the active window to the filename or fileref that you specify. With the FILENAME statement, you can create filerefs that point to printers, plotters, or external files or filerefs that pipe your output to a UNIX command. You can use the PRINT and PRTFILE commands with forms or with host printing.

Using the PRINT Command with Forms

Use the PRINT command to route the contents of a window to your default printer. This is the easiest method of printing output. For example, issue the PRINT command from the command line of your OUTPUT window to send the contents of that window to your default printer.

To route the contents of a window to a printer that is not your default printer, you can use select a different form through the pull-down menu:

File ▶ Print Utilities ▶ Set Form Name...

If you do not have host printing turned on (see "Printing from the SAS System" on page 32), all subsequent print operations will use the form that you specify.

Note: Multiple forms can be specified for the same printer. Select a form that uses a printer other than your default printer. △

You can also select a different form by specifying the FORM= option with the PRINT command. For example, to copy output to a printer destination that is described in a form named MYOUTPUT, you enter the following command-line command:

```
print form=myoutput
```

For more information on forms, see "Defining Forms" on page 149.

Using PRTFILE and PRINT with a Fileref

You can also use the PRTFILE command, followed by the PRINT command, to print the contents of windows. This method enables you to override some of the defaults that are established by the FORM subsystem, such as the destination.

PRTFILE establishes the destination, and PRINT sends the contents of the window to that destination. If you do not specify a destination with the PRTFILE command, PRINT automatically sends the window contents to your default printer.

If you want to send output directly to a printer, you must first submit the FILENAME statement to assign a fileref to a PRINTER, XPRINTER, or PIPE device. For example, to print the contents of your OUTPUT window:

1 Submit a FILENAME statement or FILENAME function to associate a fileref with a system printer (PRINTER device type), a host printer device (XPRINTER device type), or a UNIX command (PIPE device type). Enclose the printer name or UNIX command in either single or double quotes.

   For example, the following statement associates MYRPT with the system printer named BLDGA2 and specifies two copies of every printout:

   ```
   filename myrpt printer 'bldga2 -n2';
   ```

   (See the documentation for your print command for information about other options that you can specify.)

   The following statement allows you to print output using the **lp** command on the printer named myljet:

   ```
   filename ascout pipe 'lp -dmyljet';
   ```

   The following statement sends output to the **lp** command and redirects any error messages produced by this command to the **lperror** file in your home directory:

   ```
   filename myrpt pipe 'lp 2>$HOME/lperror';
   ```

   Note: Redirecting standard error is allowed only in the Bourne and Korn shells. △

   The following statement associates MYRPT with your default host printer device:

   ```
   filename myrpt xprinter;
   ```

   MYRPT can be defined as an external file or as a Postscript (or PCL) printer. You cannot specify options with the XPRINTER device, and you can open only one XPRINTER device at a time during a SAS session.

   If you frequently use the same print command and destination, you can add the appropriate FILENAME statement to your autoexec file. See "Customizing Your SAS Session" on page 14 for more information.

2 Issue the PRTFILE command as described in "Specifying the Print File" on page 136. Specify the fileref from your FILENAME statement or FILENAME function. For example:

   ```
   prtfile myrpt
   ```

3 From the command line of the windows whose contents you want to print, issue the PRINT command. If you are sending output to a system printer or if you are using forms-based printing, then you can print the contents of more than one window. If you want to print the contents of any other windows, issue the PRINT command from the command line of those windows. A requestor window warns you that the destination file already exists. Enter **A** in the requestor window to append the window contents to the destination file.

   Note: If you are using host printing to send output to a file, the file will always be replaced; APPEND is not valid for an XPRINTER device. △

4 From the command line of the first window that you printed, issue the FREE command to close the print file or device. You must close the output device before output is generated. If you do not close the print file or output device before you end your SAS session, SAS will close it for you when you exit your session.

5 Submit a FILENAME statement or FILENAME function to clear (deassign) the
fileref. Your output is not actually printed until you perform this step. For
example:

```
filename myrpt clear;
```

To return to forms-based printing, issue the PRTFILE CLEAR command.

Using the FILE Command

You can use the FILE command to copy the contents of many different windows to
external files. Issue the FILE command on the command line of the window whose
contents you want to copy. For example, to copy the contents of the LOG window to
/u/myid/log/app1, issue the following command on the command line of the LOG
window:

```
file '/u/myid/log/app1'
```

If the file does not exist, SAS creates it. If the file already exists, a requestor window
asks you whether you want to replace it or to append data to the existing data.

If you have already associated a fileref with your external file, you can use the fileref
instead of the filename:

```
file myref
```

Note: If you use the FILE command to save your output, carriage-control
information is not saved (that is, page breaks are removed from the output). You may
want to use the PRINT command with the FILE option instead:

PRINT FILE=*fileref* | '*pathname*'

△

Using the PRINTTO Procedure

When you use the PRINTTO procedure with its LOG= and PRINT= options, you can
route the SAS log or SAS procedure output to an external file or a fileref from any
mode. Specify the external file or the fileref in the PROC PRINTTO statement. For
example, the following example routes procedure output to **/u/myid/output/prog1**:

```
proc printto print='/u/myid/output/prog1' new;
run;
```

The NEW option causes any existing information in the file to be cleared. If you omit
the NEW option from the PROC PRINTTO statement, the SAS log or procedure output
is appended to the existing file.

If you plan to specify the same destination several times in your SAS program, you
can assign a fileref to the file using a FILENAME statement. (See "Assigning Filerefs
with the FILENAME Statement" on page 106 for details and examples.) For example,
you can use the PRINTER device type to send output directly to your system printer:

```
filename myoutput printer;
proc printto print=myoutput;
run;
```

Output will be sent to your default system printer or, if you have specified the
SYSPRINT system option, to the printer specified with that option.

You can also use the PIPE device type to send output to a UNIX command. When you specify the print command, you may also want to specify a destination for (redirect) any error messages produced by the print command. Enclose the UNIX command in either single or double quotes. The following example associates the fileref MYOUTPUT with the print command **lp**, which will send output to the printer named **myljet**:

```
filename myoutput pipe 'lp -dmyljet';
proc printto print=myoutput;
run;
```

You can send the SAS log to the same printer by using the LOG= option:

```
filename mylog pipe 'lp -dmyljet';
proc printto log=mylog;
run;
```

The log and procedure output continue to be routed to the designated external file until another PROC PRINTTO statement reroutes them.

Any time you use PROC PRINTTO to route output, you must close the output device before PROC PRINTTO will release the output or log and send it to the destination you have specified. To close the output device, issue PROC PRINTTO without any parameters:

```
proc printto;
run;
```

Issuing PROC PRINTTO without any parameters closes the output device, generates output, and reroutes the log and procedure output to their default destinations. See Table 6.1 on page 126 for a list of the default destinations.

For more information on PROC PRINTTO, see "PRINTTO" on page 232 and *SAS Procedures Guide*.

Routing Output to an XPRINTER Device

You can use the XPRINTER device type to send output to the default printer device that has been selected in the Printer Setup dialog box. You can use the XPRINTER device in any mode, but if you use XPRINTER devices in batch mode, a display device must be available.

The following example uses the FILENAME statement to associate the fileref PRINTOUT with the default host printer device and routes the procedure output to that device:

```
filename printout xprinter;
proc printto log=printout print=printout;
run;
```

You cannot specify any options with the XPRINTER device type.

If you have not set up a printer device through the Printer Setup dialog box, the output will be printed, using a Courier font with no margins, to a generic Postscript file named **prn.ps** in your current working directory.

Note: You can open only one XPRINTER device at a time during a SAS session. The OVP system option is not valid for XPRINTER devices; messages will be appended, not overwritten. △

As with other device types, you must close the XPRINTER device before output will be generated. To close the XPRINTER device and generate output, issue PROC PRINTTO without any parameters:

```
proc printto;
run;
```

Routing Output to a Terminal

In batch mode, you can direct output to a terminal by associating a fileref with a terminal and then using PROC PRINTTO to send output to that fileref. In the FILENAME statement, specify the TERMINAL device-type and the special file associated with the terminal. For example, the following statements send the SAS log to the terminal that is associated with the **/dev/tty3** special file:

```
filename term terminal '/dev/tty3';
proc printto log=term;
run;
```

Simulating Forms in the Batch Environment

The FORMS subsystem is not available in batch mode. If you need to add printer control language (PCL, see "Printer Control Language" on page 154) to your print file, you can add the PCL through the DATA step.

The following example defines a print file, writes PCL and data to this print file, and sends the print file to the printer:

```
filename myoutput pipe 'lp -oraw -dmylaserjet';

/* set the print file to fileref */
proc printto print=myoutput;
run;

data one;
   x=1;
run;

/* write PCL to print file */
data _null_;
   file myoutput;
   put '1b'x '&l10';  /* landscape mode */
   put '1b'x '&2kS';  /* compressed mode */
run;

/* write data set to print file */
proc print data=one;
run;

/* release the print file */
proc printto;
run;
```

The **'1b'x** sequence is an escape sequence that is required before each PCL control sequence.

Using SAS System Options

You can use SAS system options to change the destination of the SAS log and procedure output. The options that you use depend on which task you want to accomplish:

□ To route your SAS log or procedure output to an external file *instead of* to their default destinations, use the LOG and PRINT system options.

□ To route the log or output to an external file *in addition* to their default destinations, use the ALTLOG and ALTPRINT system options. This method works in all modes of running SAS.

LOG and PRINT are normally used in batch and interactive line modes. These system options have no effect in the windowing environment. If you are running in the windowing environment, use the ALTLOG and ALTPRINT system options.

You can specify the options in the SAS command, a configuration file, and the SASV7_OPTIONS environment variable. For example, you could specify these options in the SAS command as follows:

```
sas -log '/u/myid/log' -print '/u/myid/prt'
sas -altlog '/u/myid/log' -altprint '/u/myid/prt'
```

See "Specifying System Options" on page 14 for more information.

Creating Postscript Output

You can use the **pstext** UNIX command, the PRINTCMD and SYSPRINT system options, and the PRINT command to create PostScript output. The PRINTCMD option sets the UNIX print command that SAS will use, and the SYSPRINT option specifies a destination.

You can use the **pstext** command as your print command and redirect or pipe the output of that command. For example, the following options send your output through the **pstext** command and then redirect the output of that command to the file named **/tmp/file.ps**:

```
options printcmd='pstext';
options sysprint='>/tmp/file.ps';
```

When you issue the PRINT command, SAS creates the file **/tmp/file.ps**.

The following options send your output through the **pstext** command and then pipe the output of that command to the **lp** command:

```
options printcmd='pstext';
options sysprint='| lp -dmylaserjet';
```

When you issue the PRINT command from within SAS, postscript output is sent to the **mylaserjet** printer.

Specifying the Print File

When you issue the PRINT command, SAS sends your output to your default printer unless you specify a print file. You can specify a print file in two ways:

□ entering the PRTFILE command:

PRTFILE *file-spec* **CLEAR**|**APPEND**|**REPLACE**

The *file-spec* can be either a fileref or a filename. If you specify an external filename, forms will be used for printing.

□ selecting

| File | ▶ | Print Utilities | ▶ | Set Print File |

and entering the name of the print file.

Printing Large Files with the PIPE Device Type

When you print a file with the **lp** command, a symbolic link is created from the file to the **/usr/spool** directory. When you pipe output to the **lp** command, the output is copied under the **/usr/spool** directory.

If you experience problems printing large files using the PIPE device type, you can circumvent the problem in either of the following ways:

□ save the print file to a disk file and then print it with the **lp** command. Issue the PRINT command from the output or log window, for example:

```
print file='bigfile'
```

Exit your SAS session and print the file, or use the SAS X command to print the file from within your SAS session, for example:

```
x 'lp -dmylsrjt bigfile'
```

□ create a fileref using the PIPE device type that can handle large files. For example, the following fileref saves the print file to disk, prints the saved file, and then removes the file:

```
filename myfile pipe 'cat >bigfile;lp -dmylsrlt bigfile;rm bigfile;';
```

Controlling the Content and Appearance of Output

Some of the attributes of the SAS log and procedure output depend on the destination to which they are being sent. For example, if the log and output are being sent to your display, the default line and page size are derived from your display. If one or both of these files are sent to the system printer or written to a file, the default line size is 132 and the default page size is 60.

Some of the attributes of the SAS log and procedure output depend on the mode in which you are running. For example, if you are running in interactive line mode, SAS source statements are not echoed to the SAS log. If you are using the SAS windowing environment all source statements are written to the log as they are submitted. In batch mode, the log and procedure output are formatted for a standard system printer.

See "Customizing Your SAS Session" on page 14 for information on specifying system options.

Note: The values that you enter through the FORM window may override the values specified in the LINESIZE and PAGESIZE options. See "Text Body and Margin Information" on page 150 for more information. △

SAS Log Options

Use the following options to control the contents of the log. See Chapter 17, "SAS System Options," on page 253 for details on specifying options.

f FULLSTIMER
NOFULLSTIMER
   controls whether a list of resources (such as I/O performed, page faults, elapsed
   time, and CPU time) used for each PROC or DATA step is written to the log.
   NOFULLSTIMER is the default.

LINESIZE=*width*
   controls the line length used. *Width* can be any value from 64 to 256.

NOTES
NONOTES
   controls printing of NOTES on the log. NOTES is the default setting for all
   execution modes. Specify NOTES unless your SAS program is completely
   debugged.

PAGESIZE=*n*
   controls the number of lines that are printed on each page. *N* can be any number
   from 15 to 32767.

SOURCE
NOSOURCE
   controls whether SAS source statements are written to the log. NOSOURCE is the
   default setting in interactive line mode; otherwise, SOURCE is the default.

SOURCE2
NOSOURCE2
   controls whether SAS statements that are included with %INCLUDE statements
   are written to the log. NOSOURCE2 is the default setting for all execution modes.

STIMER
NOSTIMER
   controls whether user CPU time and elapsed time are written to the log. STIMER
   is the default.

Procedure Output Options

Use these system options to control the contents of the procedure output:

CENTER
NOCENTER
   controls whether the printed results are centered or left-aligned on the procedure
   output page. CENTER is the default.

DATE
NODATE
   controls whether the date is written at the top of each procedure output page.
   DATE is the default.

LINESIZE=*width*
   controls the line length used. *Width* can be any value from 64 to 256.

NUMBER
NONUMBER
   controls whether the output page number is written on each procedure output
   page. NUMBER is the default.

PAGENO=*n*
   resets the current page number in the print file. The default page number at the
   beginning of the SAS session is 1. The pages are numbered sequentially

throughout the SAS session unless the PAGENO option is specified in an OPTIONS statement during the session.

PAGESIZE=*n*

controls the number of lines that are printed on each page. *N* can be any number from 15 to 32767.

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