Section 10

HP PCL Macro Commands and Programming Hints

Your printer uses several commands during a typical print operation. During some operations the same print routine may be repeated several times. PCL provides a macro feature so you can reduce the number of commands sent to the printer. A macro is a collection of escape sequences, control codes, and data downloaded to the printer that can be initiated through a single command.*

CREATING A MACRO

Each macro needs a unique identification (ID) number that must be assigned before you define the macro. If you assign an existing macro's number to a new macro, the existing macro is overwritten in the user memory as you define the new macro. All subsequent macro operations are performed by using the macro ID number.

You create a macro in three steps.

- first, send an escape sequence to the printer that indicates the start of a macro definition.
- second, send the escape codes, control codes, and data that you want in the macro. These items must be sent in the intended order of execution.
- third, send an escape code to the printer that indicates the end of the macro definition.

CONTROLLING A MACRO

Macros are stored in user memory. Depending on the amount of memory available in the IntelliBar, up to 32 macros can be stored simultaneously.

You can use three different ways to invoke a macro:

- execute
- call
- overlay.

When a macro is executed, the macro starts its routine using the modified print environment. Any parameter changes made during the execution are recorded in the modified print environment. The changes remain after the macro routine has finished execution.

When a macro is called, the macro starts its routine using the modified print environment. Any parameter changes made during the call are recorded in the modified print environment but the changes do not remain after the call is completed. The previously existing modified print environment is restored.

When a macro is invoked for automatic overlay, the macro routine will be the final operation each time a page is printed. Before the macro is executed, the current modified print environment is recorded and replaced by the overlay print environment.

The overlay print environment is a combination of the user default and current modified print environments. Any parameter changes made during a macro overlay are recorded in the modified print environment. The changes do not remain after the overlay routine is complete. The previously existing modified is restored.

The overlay environment uses the current settings for the following parameters (all other parameters are set to the user default values):

- Page Length
- Paper source
- Page size
- Number of copies
- Orientation
- Cursor position stack.

> **NOTE:** The current active print position is not part of the modified print environment. Cursor position is neither saved when a macro is invoked or restored after the routine has finished. Use the push/pop cursor position escape sequence to save and recall a cursor position.

TEMPORARY/PERMANENT MACROS

A macro is automatically defined as temporary, and deleted from user memory during a printer reset. You can designate a macro to be permanent so it will not be deleted during a printer reset. Macro status is designated through a sequence that references the macro ID number.

NOTE: Temporary and permanent macros are deleted from the printer memory any time power to the printer is turned off.

MACRO ID

The macro ID sequence specifies an identification number for use in subsequent macro routines.

ESC &f#Y
Decimal: 027 038 102 # 089
Hex: 1B 26 66 # 59

#: macro ID number = 0 to 32767

The factory default macro ID is 0.

If you want to use 7 as an identification number, for example, send:

ESC &f7Y

MACRO CONTROL

The macro control sequence contains the commands to define, invoke, and delete macros.

ESC &f#X
Decimal: 027 038 102 # 088
Hex: 1B 26 66 # 58

#: 0 = Start macro definition (last ID specfied)
1 = Stop macro definition
2 = Execute macro (last ID specified)
3 = Call macro (last ID specified)
4 = Enable macro for automatic overlay (last ID specified)
5 = Disable automatic overlay
6 = Delete all macros
7 = Delete all temporary macros
8 = Delete macro (last ID specified)
9 = Make macro temporary (last ID specified)
10 = Make macro permanent (last ID specified)

NOTE: A macro may call or execute another macro that in turn can call or execute another macro. Two levels of macros can be “nested” in this manner.

Other than call and execute, you can not place macro control statements within a macro.

You cannot use a printer reset command in a macro.

Do not place font management commands in a macro. You cannot download, delete, or make a font permanent in a macro.

MACRO EXAMPLE

This example shows the definition of a macro used for a company letterhead.

ESC&f4Y	Specify the macro ID as 4
ESC&f0X	Start macro definition
ESC&a540h780V	Places letterhead at decipoints 540, 780 in the PCL coordinate system
ESC*t300R	Set graphics resolution to 300 dots-per-inch
ESC(1X	Select font with ID of 1
Master Printer Inc. Text 20 Raster Way Text Downtown, NY 12664 Text	
ESC&a540h960V	Position first rule at decipoints 540, 960
ESC*c10v4680H	Set rule height and width
ESC*c0P	Print the first rule
ESC&a540h980V	Position the second rule at decipoints 540, 980
ESC*c0P	Print the second rule
ESC&540h1200V	Position for the first line of text at decipoints 540, 1200
ESC&f1X	Stop macro definition

The macro can be executed, called, or invoked for automatic overlay.

PROGRAMMING HINTS

The following paragraphs provide information for use during PCL software development.

End of Line Wrap

ESC&s0C (enabled)
Decimal: 027 038 115 048 067
Hex: 1B 26 73 30 43

ESC&s1C (disabled)
Decimal: 027 038 115 049 067
Hex: 1B 26 73 31 43

This command defines the action that occurs when a line of text reaches the right margin.

When end-of-line wrap is enabled, a character or space that moves the cursor to the right margin executes a CR-LF (prior to the printing of the character or space).

When end-of-line wrap is disabled, a character or space that would move the cursor to the right margin may be clipped. When a character is clipped, the cursor is set to the right margin.

The factory default is end-of-line wrap disabled.

The primary use of this command is with display functions mode.

Display Functions Mode

ESCY (enables display function mode)
Decimal: 027 089
Hex: 1B 59

ESCZ (disables display functions mode)
Decimal: 027 090
Hex: 1B 5A

This command allows all escape sequences and control codes to be printed instead of executed.

When the printer is in display functions mode, all control codes and escape sequences are printed and not executed, with the following exceptions:

- CR is printed and executed as CR-LF.
- ESCZ is printed and executed.

Display functions mode instructs the printer to display rather than execute the data it receives. The data is printed using the current text area and selected font.

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