

Section 4

HP PCL Page Format Commands

In addition to using print commands to control printer operation, you can use page format commands to set up all your labels.* These commands or escape sequences allow you to:

- select page size and length
- select the page source
- select orientation (portrait or landscape)
- select the print direction
- set margins and text length
- set row and column dimensions
- set line spacing

This section lists the page format commands by subsection. The name of the command is followed by the escape sequence, its decimal and hex formats, and a description of how to use the command.

For information on the IntelliBar extension commands used to control printer operation, see Section 2.

PAGE SIZE

ESC &l#A

Decimal: 027 038 108 # 065

Hex: 1B 26 6C # 41

#: Paper

1 = Executive (7.25 in. x 10.5 in.)

2 = Letter (8.5 in. x 11 in.)

3 = Legal (8.5 in. x 14 in.)

26 = A4 (210 mm x 297 mm)

Envelopes

80 = Monarch (Letter – 3 7/8 in. x 7 1/2 in.)

81 = Commercial 10 (Business – 4 1/8 in. x 9 1/2 in.)

90 = International DL (110 mm x 220 mm)

91 = International C5 (162 mm x 229 mm)

The page size command sets the page size installed in the printer. This also sets the size of the addressable print area.

NOTE: The IntelliBar does not respond to this command.

When the printer receives the page size command, it will print subsequent labels using the user default settings for the top margin, text length, and left and right margins. The macro overlay is disabled and the cursor position moves to the left edge of the addressable print area on the top margin of the next label.

If a page size other than the size set by the command is installed, the printer shows an error message on the control panel display.

The factory default setting is for letter-sized labels.

PAGE LENGTH

ESC &I#P

Decimal: 027 038 108 # 080

Hex: 1B 26 6C # 50

#: number of lines.

Use the page length command to set the number of lines on a page. The value field (#) sets the length of the addressable print area in lines. The printer ignores the page length command if the command is set for a value greater than the maximum supported page size or if the Vertical Motion Index (VMI) is set at 0.

If a page length other than the size set by the command is installed, the printer shows an error message on the control panel display.

When the printer receives the page length command, it prints subsequent pages using the user default settings for the top margin, text length, and left and right margins. The macro overlay is disabled, and the cursor position moves to the left edge of the addressable print area on the top margin of the next page.

The factory default setting is for a letter-sized page.

Table 4-1 and Table 4-2 provide page length values for the standard page sizes in portrait and landscape orientations.

Determine the number of lines per page by multiplying the line spacing setting (lines per inch) times the length of the page in inches

Table 4-1 Page Lengths for Portrait Orientation

Page Size	LINES PER INCH	
	6	8
Letter	66	88
Legal	84	112
A4	70	93
Executive	63	84

Table 4-2 Page Lengths for Landscape Orientation

Page Size	LINES PER INCH	
	6	8
Letter	51	68
Legal	–	–
A4	49	66
Executive	43	58

You can print a legal-size page in landscape orientation by starting in portrait orientation and setting the page length using ESC&l84P. Next, set the orientation to landscape using ESC&l10.

PAPER SOURCE

ESC &l#H

Decimal: 027 038 108 # 072

Hex: 1B 26 6C # 48

- #:
- 0 = print the current label
 - 1 = feed paper from paper cassette
 - 2 = feed paper from manual feed slot

Use this command to select either the paper cassette or the manual feed feature.

NOTE: The IntelliBar does not respond to this command.

ORIENTATION

ESC &l#O

Decimal: 027 038 108 48 079 (portrait)

027 038 108 49 079 (landscape)

027 038 108 50 079 (reverse portrait)

027 038 108 51 079 (reverse landscape)

Hex: 1B 26 6C 3# 4F

- #:
- 0 = portrait orientation
 - 1 = landscape orientation
 - 2 = reverse portrait
 - 3 = reverse landscape

Use this command to set the page orientation. The command sets user default values for page length, top margin, text length, left and right margins, horizontal motion index (HMI), and vertical motion index (VMI). Any data in the print buffer received before the command will be printed, followed by a form feed and carriage return. The cursor moves to the left edge of the top margin on the addressable print area of the next page.

The factory default setting is portrait orientation. You can select landscape orientation through the control panel.

NOTE: You can use only one orientation per page. To print multiple directions per page, use the Print Direction command (see “Print Direction”).

The printer automatically rotates all fonts to the currently selected orientation.

Figure 4-1 shows the features of portrait and landscape orientation modes.

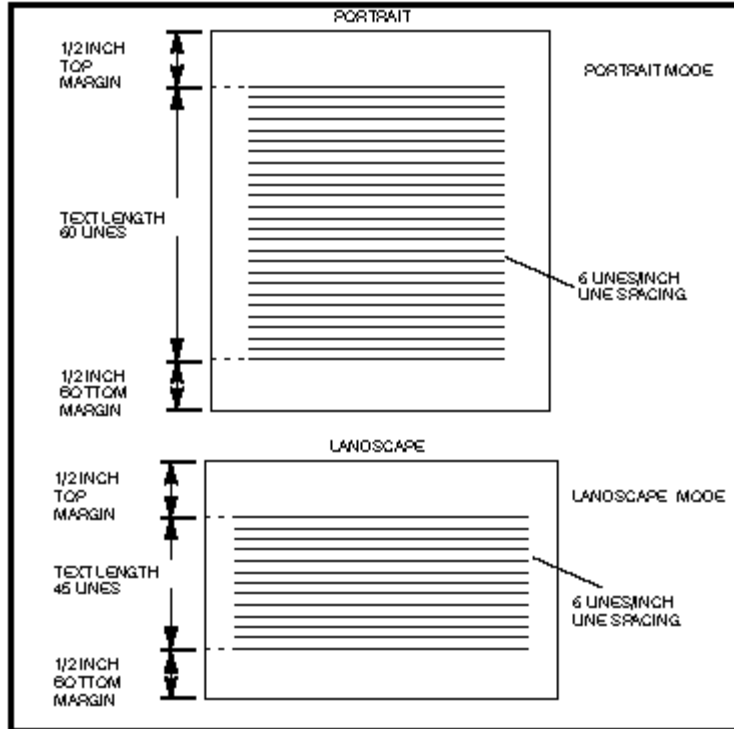


Figure 4-1 Orientation Features

PRINT DIRECTION

ESC &I#P

Decimal: 027 038 097 #...# 080

Hex: 1B 26 61 #...# 50

- #:
- 0 = 0° rotation
 - 90 = 90° counterclockwise rotation
 - 180 = 180° counterclockwise rotation
 - 270 = 270° counterclockwise rotation

Default = 0

Range = 0, 90, 180, 270 (all other values ignored)

This command rotates the logical page coordinate system *with respect to the current orientation* without performing a page eject. This rotation is performed in 90° degree increments in a counterclockwise direction. This allows printing in four directions on the same page.

Changing the print direction causes the following to occur:

- The print origin moves with the logical page rotation. For example, rotating a default page (Portrait orientation, 0° print direction) 90° causes data to print in the landscape direction across the “portrait” page.
- The margins are translated (when the print direction changes by 90°, the left margin becomes the new top margin, the former top margin becomes the new right margin, etc.)
- The cursor position remains at the same physical location.
- All subsequent printing (characters, area fill patterns, raster images) is rotated to coincide with the new print direction.
- Any current raster graphics end when the print direction changes.

NOTE: This command does not affect HPGL/2 vector graphic images. HPGL/2 graphics can be rotated only with the Orientation command (see “Orientation”) or the HPGL/2 “RO” command.

- The Print Direction command does not default HMI.

LEFT MARGIN

ESC &a#L
Decimal: 027 038 097 #...# 076
Hex: 1B 26 61 #...# 4C

#: column number

Use the left margin command to set the left margin to the left edge of a column you specify.

The default first column is column 0, located at the left edge of the addressable print area. If you specify a value greater than the current right margin, the printer ignores the escape sequence.

The HMI sets the distance between columns. Because margins are a physical position, they will not change once set even though the HMI may change.

If a new left margin is set within the existing left margin, the cursor shifts to the new left margin.

Column 0 is the factory default setting for the left margin.

RIGHT MARGIN

ESC &a#M

Decimal: 027 038 097 #...# 077

Hex: 1B 26 61 #...# 4D

#: column number

Use the right margin command to set the right margin to the right edge of a column you specify.

The maximum default right column is located at the right edge of the addressable print area. If you specify a value greater than the right margin of the addressable print area, the printer uses the right margin of the addressable print area. If you specify a column value less than the left margin, the printer ignores the escape sequence.

The HMI sets the distance between columns. Because margins are physical positions, they will not change when set even though the HMI may change.

If a new right margin is set to the right of the existing right margin, the cursor shifts to the new right margin.

The factory default setting for the right margin is the right edge of the addressable print area.

TOP MARGIN

ESC &l#E

Decimal: 027 038 108 #...# 069

Hex: 1B 26 6C #...# 45

#: number of lines

Use the top margin command to set the number of lines between the top of the addressable print area and the top of the text area.

The printer ignores this escape sequence if you specify a value greater than the length of the current addressable print area or if the current VMI is 0 (VMI sets the space between lines of text). When the printer receives a valid top margin command, it resets the text length according to the following equation:

Text length = addressable print area length (in inches) – top margin (in inches) – 1/2 inch.

Because the top margin is a physical position, it will not change once set, even though the VMI or line spacing may change.

The current values of the top margin and VMI determine the vertical cursor position through the following equation:

First line (in inches) = top margin (in inches) + (72/100 * VMI)

This position will be at the baseline of a character to provide the correct character position in a character cell. Figure 4-2 shows the relationship of the cursor position to the top margin and the VMI.

NOTE: The first line of the addressable print area is 0.

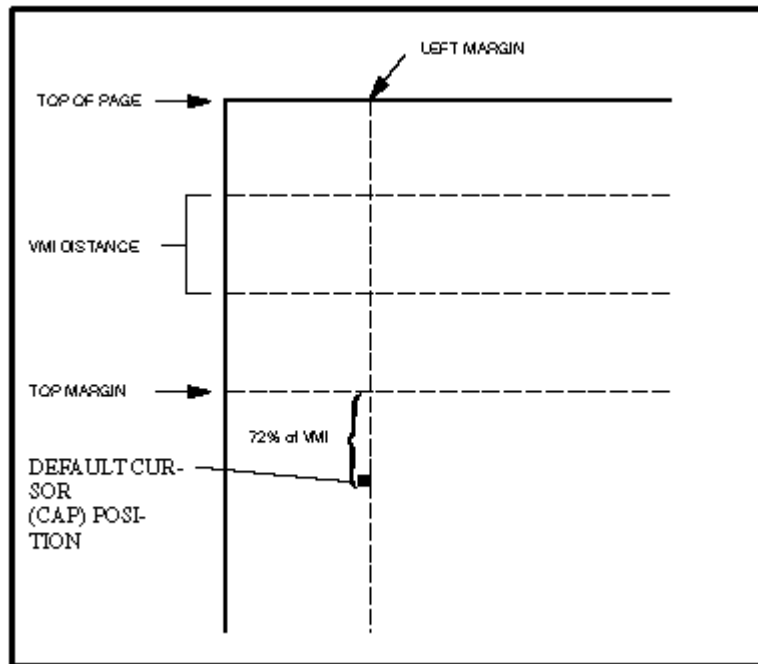


Figure 4-2 Top Margin Cursor Position

CLEAR HORIZONTAL MARGINS

ESC 9

Decimal: 027 057

Hex: 1B 39

Use the clear horizontal margin command to reset the left and right margins. The printer will set the left margin to the left edge (column 0) of the addressable print area and the right margin to the right edge of the addressable print area.

TEXT LENGTH

ESC &l#F

Decimal: 027 038 108 #...# 070

Hex: 1B 26 6C #...# 46

#: number of lines

Use the text length command to set the number of lines available for printing text within the addressable print area.

Text length in lines is set by the value field (#) starting from the top margin. If you specify a value greater than the addressable print area minus the top margin, or if the VMI is 0, the printer ignores the command. The default text length is used if values for orientation, page length, page size, or top margin change.

The printer calculates the user default text length according to the following equation:

$$\text{Text length (in lines)} = \text{Integer portion (of addressable print area (in inches) - top margin (in inches) - 1/2 inch) } \times 48/\text{VMI}$$

The factory default is as follows:

$$\text{Text length (in lines)} = ((\text{addressable print area length (in inches)} - 1 \text{ inch}) \times 6).$$

You must select the user default VMI through software commands.

PERFORATION SKIP

ESC &l#L

Decimal: 027 038 108 # 076

Hex: 1B 26 6C # 4C

#: 0 = disable

1 = enable

Use the perforation skip command to move the cursor from the bottom line on the page to the top of the text area on the following page.

The perforation region starts at the bottom of the text area on a page and ends at the top of the text area on the next page. When the skip is enabled, a line feed or half-line feed moves the cursor to the top of the text area on the following page. When the skip is disabled, a line feed or half-line feed moves the cursor into the perforation region where printing will continue.

HORIZONTAL MOTION INDEX

ESC &k#H

Decimal: 027 038 107 #...# 072

Hex: 1B 26 6B #...# 48

#: number of 1/120 increments

Use the horizontal motion index (HMI) to set the distance between columns. You can specify a value from 0 to 840. Values can be set to four decimal places. No horizontal motion will occur if the HMI is 0.

If you use fixed pitch fonts, all printable characters including the space and backspace characters, are affected by the HMI. If you select proportional fonts, the HMI affects only the control code space character.

The HMI defaults if any font characteristics change and if shift in and shift out are used to switch between primary and secondary fonts.

The pitch value in the font header equals the default HMI value. The factory default font HMI value is 12 to give 10 characters per inch ($12/120 = 1/10$).

VERTICAL MOTION INDEX

ESC &l#C

Decimal: 027 038 108 # 067

Hex: 1B 26 6C # 43

#: number of 1/48 inch increments between rows

Use the vertical motion index (VMI) to set the space between rows. You can specify a value from 0 to 336. If you specify a VMI value greater than the current addressable print area length, the printer ignores the command. You can specify a value up to four decimal points. A zero value indicates no vertical motion.

The VMI command affects the spacing of both line feed and half-line feed. The factory default VMI value is 8. This is the same as six lines per inch.

LINE SPACING

ESC &l#D

Decimal: 027 038 108 #...# 068

Hex: 1B 26 6C #...# 44

#: 1 = 1 lines per inch (lpi)

2 = 2 lpi

3 = 3 lpi

4 = 4 lpi

6 = 6 lpi

8 = 8 lpi

12 = 12 lpi

16 = 16 lpi

24 = 24 lpi

48 = 48 lpi

Use the line spacing command to set the number of lines printed per page. This command functions like the VMI command; however, it sets the VMI in lines per inch.

The factory default setting is six lines per inch.

* "This information is subject to change without notice. This information is provided "as is" without either express or implied warranty. IntelliTech International, Inc. disclaims any and all warranties with regard to this information. IntelliTech shall not be liable in any event for any special, indirect or consequential damages or any damages whatsoever resulting from loss of data, profits or use, for any reason or in any action, arising out of or in connection with the use or performance of this information. "
