# 6. Software Commands

This chapter covers the software commands for Standard and IBM Mode. The software commands are grouped into the following classifications:

## Standard Mode (FX-86e/FX-800)

### FONT SELECTION


| Name | Function | Page |
|---|---|---|
| ESC+4 | Selects Italic printing | 6-10 |
| ESC+5 | Releases Italic printing | 6-10 |
| ESC+k+n | Selects Print font style | 6-10 |
| ESC+x+1 | Selects NLQ font | 6-11 |
| ESC+x+0 | Releases NLQ font | 6-11 |
| ESC+S+1 | Selects subscript printing | 6-12 |
| ESC+S+0 | Selects superscript printing | 6-12 |
| ESC+T | Releases sub/superscript printing | 6-12 |


### CHARACTER PITCH SELECTION


| Name | Function | Page |
|---|---|---|
| ESC+P | Sets 10 cpi (pica pitch) printing | 6-12 |
| ESC+M | *Sets 12 cpi (elite pitch) printing | 6-13 |
| ESC+g | Sets 15 cpi (Micron) printing | 6-13 |
| SI | *Sets 17 cpi (compressed) printing | 6-14 |
| ESC+SI | *Sets 17 cpi (compressed) printing | 6-14 |
| DC2 | Releases compressed printing | 6-14 |
| ESC+p+1 | Sets proportional spacing | 6-14 |
| ESC+p+0 | Releases proportional spacing | 6-14 |
| ESC+SP+n | Sets character dot spacing | 6-15 |
| ESC+!+n | Sets certain pitches based upon value of n | 6-15 |


### CHARACTER HIGHLIGHT SELECTION


| Name | Function | Page |
|---|---|---|
| ESC+!+n | Sets highlighting based upon value of n | 6-15 |
| ESC+E | Sets emphasized printing | 6-16 |
| ESC+F | Releases emphasized printing | 6-16 |
| ESC+G | Sets double printing | 6-16 |
| ESC+H | Releases double printing | 6-16 |


* When 12 cpi and compressed pitch are set simultaneously, subsequent output is printed in 20 cpi (160 characters per line).






| | | |
|---|---|---|
| SO | Sets single-line double width printing | 6-17 |
| DC4 | Releases single-line double width printing | 6-17 |
| ESC+SO | Sets single-line double width printing | 6-17 |
| ESC+W+1 | Sets double width printing | 6-17 |
| ESC+W+0 | Releases double width printing | 6-17 |
| ESC+w+1 | Sets double-high printing | 6-17 |
| ESC+w+0 | Releases double-high printing | 6-17 |
| ESC+ – +1 | Sets underlining | 6-18 |
| ESC+ – +0 | Releases underlining | 6-18 |


### CHARACTER SET SELECTION


| Name | Function | Page |
|---|---|---|
| ESC+R+n | Sets international character set | 6-19 |
| ESC+6 | Selects IBM Character Set II | 6-20 |
| ESC+7 | Selects IBM Character Set I | 6-20 |
| ESC+t+n | Selects alternate character set | 6-21 |


### BIT IMAGE (GRAPHICS) MODE SELECTION


| Name | Function | Page |
|---|---|---|
| ESC+K+$n_1$+$n_2$ | Sets standard density (480 dot/line) | 6-22 |
| ESC+L+$n_1$+$n_2$ | Sets double density (960 dot/line) | 6-22 |
| ESC+Y+$n_1$+$n_2$ | Sets double density/double speed (960 dot/line) | 6-22 |
| ESC+Z+$n_1$+$n_2$ | Sets quadruple density (1920 dot/line) | 6-22 |
| ESC+*+m+$n_1$+$n_2$ | Sets 8-pin bit image mode selection (480, 576, 640, 720, 960, 1152, 1920) | 6-23 |
| ESC+^+m+$n_1$+$n_2$ | Sets 9-pin bit image mode selection (480, 576, 640, 720, 960, 1152, 1920) | 6-23 |
| ESC+?+n+m | Reassigns graphics mode density | 6-24 |


### PAPER FEED SELECTION — Amount


| Name | Function | Page |
|---|---|---|
| ESC+0 | Sets paper feed to 1/8 inch (3.2 mm) | 6-24 |
| ESC+1 | Sets paper feed to 7/72 inch (2.47 mm) | 6-25 |
| ESC+2 | Sets paper feed to 1/6 inch (4.2 mm) | 6-25 |
| ESC+A+n | Sets paper feed to n/72 | 6-25 |
| ESC+3+n | Sets paper feed to n/216 inch | 6-26 |

## PAPER FEED SELECTION — Execution

| Name | Function | Page |
|---|---|---|
| FF | Feeds paper to next top form position | 6-27 |
| LF | Feeds paper one line | 6-27 |
| ESC+J+n | Executes one-line paper feed of n/216 inch | 6-28 |
| ESC+j+n | Executes one-line reverse paper feed of n/216 inch | 6-28 |

## PAGE FORMAT CONTROL

| Name | Function | Page |
|---|---|---|
| ESC+C+0+n | Sets page length in inches | 6-29 |
| ESC+C+n | Sets page length in lines | 6-30 |
| ESC+Q+n | Sets right margin | 6-30 |
| ESC+l+n | Sets left margin | 6-31 |
| ESC+a+0 | Enables left alignment | 6-32 |
| ESC+a+1 | Enables auto centering | 6-32 |
| ESC+a+2 | Enables right alignment | 6-32 |
| ESC+a+3 | Enables auto justification | 6-33 |
| ESC+N+n | Sets skip perforation | 6-34 |
| ESC+O | Releases skip perforation | 6-34 |

## TABULATION — Horizontal

| Name | Function | Page |
|---|---|---|
| ESC+D+$n_1$+...+$n_k$+0 | Sets horizontal tab | 6-34 |
| ESC+D+0 | Releases horizontal tab | 6-34 |
| HT | Executes horizontal tab | 6-35 |

## TABULATION — Vertical

| Name | Function | Page |
|---|---|---|
| ESC+B+$n_1$+...+$n_k$+0 | Sets vertical tab | 6-35 |
| ESC+B+0 | Releases vertical tab | 6-35 |
| VT | Executes vertical tab | 6-36 |
| ESC+/+n | Sets VFU channel | 6-36 |
| ESC+b+m+$n_1$+...+ $n_k$+0 | Sets VFU tabulation | 6-37 |
| ESC+b+m+0 | Releases VFU tabulation | 6-37 |





## CARRIAGE CONTROL

| Name | Function | Page |
|---|---|---|
| BS | Prints, then backspaces one character | 6-37 |
| CR | Prints a line, then returns carriage | 6-38 |
| ESC+< | Sets one line unidirection print | 6-38 |
| ESC+U+1 | Sets single direction printing | 6-38 |
| ESC+U+0 | Releases single direction printing | 6-38 |
| ESC+s+1 | Sets half speed printing | 6-39 |
| ESC+s+0 | Releases half speed printing | 6-39 |
| ESC+\+$n_1$+$n_2$ | Moves the printhead to a relative horizontal position | 6-39 |
| ESC+$+$n_1$+$n_2$ | Moves the printhead to an absolute horizontal position | 6-40 |

## DATA CONTROL

| Name | Function | Page |
|---|---|---|
| CAN | Clears data in buffer | 6-40 |
| DC1 | Selects printer remotely | 6-40 |
| DC3 | Deselects printer remotely | 6-41 |
| DEL | Deletes last printable character | 6-41 |
| ESC+> | Sets MSB on | 6-42 |
| ESC+= | Sets MSB off | 6-42 |
| ESC+# | Cancels MSB setting | 6-42 |
| ESC+I+1 | Selects undefined code printing | 6-43 |
| ESC+I+0 | Releases printing code from undefined code location | 6-43 |

## DOWNLOADABLE CHARACTER SELECTION

| Name | Function | Page |
|---|---|---|
| ESC+&+0+Cs+Ce+ At+$P_1$+$P_2$+...+$P_{11}$ | Defines download draft font | 6-44 |
| ESC+&+2+Cs+Ce+ At+$P_{1H}$+$P_{1L}$+...+$P_{23L}$ | Defines download near letter quality font | 6-44 |
| ESC+%+n | Selects download CG | 6-44 |
| ESC+:+0+0+0 | Copies internal CG font into download CG | 6-45 |

## MISCELLANEOUS


| Name | Function | Page |
|---|---|---|
| BEL | Sounds the buzzer | 6-45 |
| ESC | First byte of multi-byte control codes | 6-46 |
| NUL | Last byte of certain multi-byte control codes | 6-46 |
| ESC+@ | Initializes the printer | 6-46 |
| ESC+9 | Enables paper-out detection | 6-46 |
| ESC+8 | Disables paper-out detection | 6-46 |
| ESC+EM+n | Selects Cut Sheet Feeder | 6-47 |






# IBM Mode (Proprinter II )

## FONT SELECTION


| Name | Function | Page |
|---|---|---|
| ESC+k+n | Selects NLQ font | 6-10 |
| ESC+I+n | Selects font | 6-11 |
| ESC+G | Sets double strike printing | 6-12 |
| ESC+H | Releases double strike printing | 6-12 |
| ESC+S+1 | Selects subscript printing | 6-12 |
| ESC+S+0 | Selects superscript printing | 6-12 |
| ESC+T | Releases sub/superscript printing | 6-12 |


## CHARACTER PITCH SELECTION


| Name | Function | Page |
|---|---|---|
| ESC+: | Sets 12 cpi (elite pitch) printing | 6-13 |
| SI | Sets 17 cpi (compressed) printing | 6-14 |
| ESC+SI | Sets 17 cpi (compressed) printing | 6-14 |
| DC2 | Releases elite and compressed printing | 6-14 |
| ESC+P+1 | Sets proportional spacing | 6-15 |
| ESC+P+0 | Releases proportional spacing | 6-15 |


## CHARACTER HIGHLIGHT SELECTION


| Name | Function | Page |
|---|---|---|
| ESC+E | Sets emphasized printing | 6-16 |
| ESC+F | Releases emphasized printing | 6-16 |
| SO | Sets single-line double width printing | 6-17 |
| DC4 | Releases single-line double width printing | 6-17 |
| ESC+SO | Sets single-line double width printing | 6-17 |
| ESC+W+1 | Sets double width printing | 6-17 |
| ESC+W+0 | Releases double width printing | 6-17 |
| ESC+[+@+$n_1$+$n_2$+ $m_1$+$m_2$+$m_3$+$m_4$ | Sets double-high printing | 6-18 |
| ESC+ − +1 | Sets underlining | 6-18 |
| ESC+ − +0 | Releases underlining | 6-18 |
| ESC+_+1 | Sets overlining | 6-19 |
| ESC+_+0 | Releases overlining | 6-19 |

## CHARACTER SET SELECTION

| Name | Function | Page |
|---|---|---|
| ESC+6 | Selects IBM Character Set II | 6-20 |
| ESC+7 | Selects IBM Character Set I | 6-20 |
| ESC+\+$n_1$+$n_2$ | Sets all character set (Continuous) | 6-21 |
| ESC+^ | Sets all character set (Single) | 6-21 |

## BIT IMAGE (GRAPHICS) MODE SELECTION

| Name | Function | Page |
|---|---|---|
| ESC+K+$n_1$+$n_2$ | Sets standard density (480 dot/line) | 6-22 |
| ESC+L+$n_1$+$n_2$ | Sets double density (960 dot/line) | 6-22 |
| ESC+Y+$n_1$+$n_2$ | Sets double density/double speed (960 dot/line) | 6-22 |
| ESC+Z+$n_1$+$n_2$ | Sets quadruple density (1920 dot/line) | 6-22 |

## PAPER FEED SELECTION — Amount

| Name | Function | Page |
|---|---|---|
| ESC+0 | Sets paper feed to 1/8 inch (3.2 mm) | 6-24 |
| ESC+1 | Sets paper feed to 7/72 inch (2.47 mm) | 6-25 |
| ESC+2 | Executes line spacing set by ESC+A | 6-25 |
| ESC+A+n | Sets paper feed to n/72 | 6-25 |
| ESC+3+n | Sets paper feed to n/216 inch | 6-26 |
| ESC+5+1 | Sets automatic line feed on | 6-26 |
| ESC+5+0 | Sets automatic line feed off | 6-26 |

## PAPER FEED SELECTION — Execution

| Name | Function | Page |
|---|---|---|
| FF | Feeds paper to next top of form position | 6-27 |
| LF | Feeds paper one line | 6-27 |
| ESC+J+n | Executes one-line paper feed of n/216 inch | 6-28 |





## PAGE FORMAT CONTROL

| Name | Function | Page |
|---|---|---|
| ESC+C+0+n | Sets page length in inches | 6-29 |
| ESC+C+n | Sets page length in lines | 6-30 |
| ESC+X+$n_1$+$n_2$ | Sets left and right margin | 6-31 |
| ESC+4 | Sets top of form | 6-33 |
| ESC+N+n | Sets skip perforation | 6-34 |
| ESC+O | Releases skip perforation | 6-34 |

## TABULATION — Horizontal

| Name | Function | Page |
|---|---|---|
| ESC+D+$n_1$+...+$n_x$+0 | Sets horizontal tab | 6-34 |
| ESC+D+0 | Releases horizontal tab | 6-34 |
| HT | Executes horizontal tab | 6-35 |

## TABULATION — Vertical

| Name | Function | Page |
|---|---|---|
| ESC+B+$n_1$+...+$n_x$+0 | Sets vertical tab | 6-35 |
| ESC+B+0 | Releases vertical tab | 6-35 |
| VT | Executes vertical tab | 6-36 |
| ESC+R | Returns to default tabs | 6-36 |

## CARRIAGE CONTROL

| Name | Function | Page |
|---|---|---|
| BS | Prints, then backspaces one character | 6-37 |
| CR | Prints a line, then returns carriage | 6-38 |
| ESC+U+1 | Sets single direction printing | 6-38 |
| ESC+U+0 | Releases single direction printing | 6-38 |

## DATA CONTROL

| Name | Function | Page |
|---|---|---|
| CAN | Clears data in buffer | 6-40 |
| DC1 | Selects printer remotely | 6-40 |
| ESC+Q+3 | Deselects printer remotely | 6-41 |

## DOWNLOADABLE CHARACTER SELECTION

| Name | Function | Page |
|---|---|---|
| ESC+=+$n_1$+$n_2$ | Defines download draft font | 6-45 |

## MISCELLANEOUS

| Name | Function | Page |
|---|---|---|
| BEL | Sounds the buzzer | 6-45 |
| ESC | First byte of multi-byte control codes | 6-46 |
| NUL | Last byte of certain multi-byte control codes | 6-46 |
| ESC+9 | Enables paper-out detection | 6-46 |
| ESC+8 | Disables paper-out detection | 6-46 |





## ITALIC FONT: (Standard Mode only)

Selects italic character printing.

| | | | | |
|---|---|---|---|---|
| **Name:** | Set: | ESC+4 | Release: | ESC+5 |
| **Dec.:** | | 27, 52 | | 27, 53 |
| **Hex.:** | | 1B, 34 | | 1B, 35 |

**Comment:**

- Italic characters in locations $160_{DEC}$–$254_{DEC}$ ($A0_{HEX}$-$FE_{HEX}$) are printed in place of characters in locations $32_{DEC}$–$126_{DEC}$ ($20_{HEX}$–$7E_{HEX}$).

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## NLQ FONT STYLE:

Selects NLQ font style.

| | | |
|---|---|---|
| **Name:** | ESC+k+n | (n=0, 1, 2, 3, 6) |
| **Dec.:** | 27, 107, n | |
| **Hex.:** | 1B, 6B, n | |

**Comments:**

- The following values can be used.
  - n=0, 2: Courier font
  - n=1: Sans Serif
  - n=3: Prestige font
  - n=6: Bold PS font
- This command is operational only when the font is set to "PGM" on Control Table.
- This command is effective in near letter quality mode only.
- Initial setting is Courier.

## NEAR LETTER QUALITY (NLQ) FONT:

**(Standard Mode only)**

Selects near letter quality font printing.

| | | |
|---|---|---|
| **Name:** | ESC+x+n | (n=0, 1) |
| **Dec.:** | 27, 120, n | |
| **Hex.:** | 1B, 78, n | |

**Comments:**

- Near letter quality characters are printed with two passes of the print head. Therefore double printing by ESC+G is ineffective in near letter quality printing.
- Fonts are set as: n=0:Draft font, n=1:NLQ font
- This command is operational only when the Font is set to "PGM" in the Control Table.

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## PRINT MODE SELECT:

**(IBM Mode only)**

Selects the printing fonts and quality.

| | |
|---|---|
| **Name:** | ESC+I+n |
| **Dec.:** | 27, 73, n |
| **Hex.:** | 1B, 49, n |

n=0: Internal Draft fonts.
n=1: Internal Draft 12cpi High Speed fonts.
n=2: Internal Sans Serif fonts. (IBM NLQ)
n=3: Internal NLQ fonts. (IBM NLQ II)
n=4: Download Draft fonts.
n=5: Download Draft 12 cpi High Speed fonts.
n=6: Download Text fonts. (IBM download NLQ)
n=7: Download NLQ fonts. (IBM download NLQ II)

**Comments:**

- When n=4, the second of two horizontal adjacent columns will not be fired. When n=6 (download Text font), all columns will be fired.
- This command is operational only when the FONT is set to "PGM" in the Control Table.
- When you select "n=3", initial setting is Courier and you can change font by ESC+k+n.
- Text Matrix is 18x9.





## DOUBLE STRIKE PRINTING:

**(IBM Mode only)**

Selects double strike printing.

| | | | |
|---|---|---|---|
| **Name:** | Set: | ESC+G | Release: ESC+H |
| **Dec.:** | | 27, 71 | 27, 72 |
| **Hex.:** | | 1B, 47 | 1B, 48 |

**Comment:**

- In Draft mode, the printer prints Sans Serif (IBM NLQ) font. In NLQ mode, this command is inefective.

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## SUB/SUPERSCRIPT FONT:

Selects Sub/Superscript font with characters printed on the top/bottom half of the line. Characters are reduced to 1/2 their original height.

| | | | |
|---|---|---|---|
| **Name:** | Set: | ESC+S+n<br>(subscript: n=1)<br>(superscript: n=0) | Release: ESC+T |
| **Dec.:** | | 27, 83, n | 27, 84 |
| **Hex.:** | | 1B, 53, n | 1B, 54 |

**Comment:**

- Sub/superscript characters are 1/2 normal height.

---

## PICA PITCH:

**(Standard Mode only)**

Sets printing to 10 characters per inch (80 characters per line).

| | |
|---|---|
| **Name:** | ESC+P |
| **Dec.:** | 27, 80 |
| **Hex.:** | 1B, 50 |

**Comment:**

- This command is operational only when the PITCH is set to "PGM" in the Control Table.

## ELITE PITCH: (Standard Mode only)

Sets printing to 12 characters per inch (96 characters per line).

**Name:** ESC+M
**Dec.:** 27, 77
**Hex.:** 1B, 4D

**Comments:**
- This command is operational only when the PITCH is set to "PGM" in the Control Table.
- When 12 cpi and compressed pitch are set simultaneously, subsequent output is 20 cpi (160 characters per line).

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## ELITE PITCH: (IBM Mode only)

Sets printing to 12 characters per inch (96 characters per line).

| **Name:** Set: | ESC+: | Release: | DC2 |
|---|---|---|---|
| **Dec.:** | 27, 58 | | 18 |
| **Hex.:** | 1B, 3A | | 12 |

**Comment:**
- This command is operational only when the PITCH is set to "PGM" in the Control Table.

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## MICRON PRINTING: (Standard Mode only)

Sets micron (15 characters per inch) printing. (120 characters per line)

**Name:** ESC+g
**Dec.:** 27, 103
**Hex.:** 1B, 67

**Comments:**
- This command is operational only when the PITCH is set to "PGM" in the Control Table.
- When micron and compressed are set simultaneously subsequent output is 15 cpi (120 cpl).





## COMPRESSED PRINTING PITCH:

Sets printing to 17 characters per inch. (137 characters per line).

| **Name:** Set: | SI or ESC+SI | Release: | DC2 |
|---|---|---|---|
| **Dec.:** | 15 or 27, 15 | | 18 |
| **Hex.:** | 0F or 1B, 0F | | 12 |

**Comments:**
**(Standard Mode)**
- This command is operational only when the PITCH is set to "PGM" in the Control Table.
- When 12 cpi and compressed pitch are set simultaneously, subsequent output is 20 cpi (160 characters per line).
- When 15 cpi and compressed pitch are set simultaneously, the compressed print setting is ineffective.
- If proportional spacing is set together with compressed printing, compressed printing is ineffective.

**(IBM Mode)**
- Issuing the Set compressed command causes subsequent output to print at 17 cpi; issuing a Release compressed command causes subsequent output to print at 10 cpi.

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## PROPORTIONAL SPACING: (Standard Mode only)

Sets proportional spacing between characters.

| **Name:** Set: | ESC+p+1 | Release : | ESC+p+0 |
|---|---|---|---|
| **Dec.:** | 27, 112, 1 | | 27, 112, 0 |
| **Hex.:** | 1B, 70, 01 | | 1B, 70, 00 |

**Comments:**
- If proportional spacing is set together with compressed printing, compressed printing is ineffective.
- This command is operational only when the PITCH is set to "PGM" in the Control Table.

## PROPORTIONAL SPACING: (IBM Mode only)

Sets proportional spacing between characters.

| | | | | |
|---|---|---|---|---|
| **Name:** | Set: | ESC+P+1 | Release: | ESC+P+0 |
| **Dec.:** | | 27, 80, 1 | | 27, 80, 0 |
| **Hex.:** | | 1B, 50, 01 | | 1B, 50, 00 |

**Comment:**

- This command is operational only when the PITCH is set to "PGM" in the Control Table.

## CHARACTER DOT SPACING: (Standard Mode only)

Sets character dot spacing.

| | | |
|---|---|---|
| **Name:** | ESC+SP+n | (0≤n≤127) |
| **Dec.:** | 27, 32, n | |
| **Hex.:** | 1B, 20, n | |

**Comment:**

- Sets the amount of dot space n/120 added to the right of each character. When setting 15 cpi (Micron printing) dot space is n/180.

## PROGRAMMABLE PITCH/HIGHLIGHTING: (Standard Mode only)

Sets a combination of character pitch and/or highlighting.

| | | |
|---|---|---|
| **Name:** | ESC+!+n | (0≤n≤127) |
| **Dec.:** | 27, 33, n | |
| **Hec.:** | 1B, 21, n | |

**Comments:**

- Example: n=49 ($31_{HEX}$) (bits 0,4 and 5 to "1") produces elite, double printing, double width.
- PS and compressed setting ignore compressed.





- Print modes correspond to the setting of each bit as illustrated below.

| Bit | 7 (MSB) | 6 | 5 | 4 | 3 | 2 | 1 | 0 (LSB) |
|---|---|---|---|---|---|---|---|---|
| "1" | Under-lining | Italic | Double width | Double printing | Empha-sized | Com-pressed | PS | Elite |
| "0" | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Pica |

## EMPHASIZED PRINTING:

Sets printing to twice the original horizontal dot density.

| | | | | |
|---|---|---|---|---|
| **Name:** | Set: | ESC+E | Release: | ESC+F |
| **Dec.:** | | 27, 69 | | 27, 70 |
| **Hex.:** | | 1B, 45 | | 1B, 46 |

**Comment:**

- Emphasized characters are printed at half speed (100 cps in draft pica pitch).

## DOUBLE PRINTING: (Standard Mode only)

Sets double printing.

| | | | | |
|---|---|---|---|---|
| **Name:** | Set: | ESC+G | Release: | ESC+H |
| **Dec.:** | | 27, 71 | | 27, 72 |
| **Hex.:** | | 1B, 47 | | 1B, 48 |

**Comment:**

- Double Printing prints each line of data with two passes of the printhead, feeding the paper 1/216" (0.12 mm) between the first and second pass.

## DOUBLE WIDTH PRINTING-SINGLE LINE:

Sets double width (elongated) character printing for one line only.

| | | | | |
|---|---|---|---|---|
| **Name:** | Set: | SO or ESC+SO | Release: | DC4 or ESC+W+0 |
| **Dec.:** | | 14 or 27, 14 | | 20 or 27, 87, 0 |
| **Hex.:** | | 0E or 1B, 0E | | 14 or 1B, 57, 00 |

**Comment:**

- Single-line double width printing is released when:
  - –a LF, FF, or VT is executed.
  - –a CR is executed (IBM Mode only).
  - –the printer is initialized (Standard Mode only).
  - –DC4 or ESC+W+0 is executed.
  - –ESC+!+0 is executed (Standard Mode only).

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## DOUBLE WIDTH PRINTING:

Sets double width (elongated) character printing.

| | | | | |
|---|---|---|---|---|
| **Name:** | Set: | ESC+W+1 | Release: | ESC+W+0 |
| **Dec.:** | | 27, 87, 1 | | 27, 45, 0 |
| **Hex.:** | | 1B, 57, 01 | | 1B, 57, 00 |

**Comment:**

- Double width printing set by ESC+W+1 is only released by ESC+W+0 or ESC+!+0 (Standard Mode only).

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## DOUBLE HIGH PRINTING: **(Standard Mode only)**

Sets double high printing.

| | | | | |
|---|---|---|---|---|
| **Name:** | Set: | ESC+w+1 | Release: | ESC+w+0 |
| **Dec.:** | | 27, 119, 1 | | 27, 119, 0 |
| **Hex.:** | | 1B, 77, 01 | | 1B, 77, 00 |

**Comments:**

- Sub/Superscript and compressed modes are not valid with double high printing (10 and 12 cpi only).
- ESC+!+n can also be used to release double high printing (see Programmable Pitch for valid "n" values).





## DOUBLE HIGH AND DOUBLE WIDTH PRINTING: **(IBM Mode only)**

Sets printing to double high, double width or both at the same time.

**Name:** ESC+[+@+$n_1$+$n_2$+$m_1$+$m_2$+$m_3$+$m_4$
**Dec.:** 27, 91, 64, $n_1$, $n_2$, $m_1$, $m_2$, $m_3$, $m_4$
**Hex.:** 1B, 5B, 40, $n_1$, $n_2$, $m_1$, $m_2$, $m_3$, $m_4$

**Comments:**

- The values of $n_1$, $n_2$, $m_1$ and $m_2$ must be as follows:
  $n_1$=4, $n_2$=0, $m_1$=0, $m_2$=0
- The value of $m_3$ selects both the line feed and character height as follows:

| $m_3$ | Line feed | Char. height |
|---|---|---|
| 0 | Unchanged | Unchanged |
| 1 | Unchanged | Standard |
| 2 | Unchanged | Double-high |
| 16 | Single | Unchanged |
| 17 | Single | Standard |
| 18 | Single | Double-high |
| 32 | Double | Unchanged |
| 33 | Double | Standard |
| 34 | Double | Double-high |

- The value of $m_4$ selects the character width as follows:
  $m_4$=1: Single–width
  $m_4$=2: Double–width

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## UNDERLINING:

Sets continuous underlining of characters.

| | | | | |
|---|---|---|---|---|
| **Name:** | Set: | ESC+ – +1 | Release: | ESC+ – +0 |
| **Dec.:** | | 27, 45, 1 | | 27, 45, 0 |
| **Hex.:** | | 1B, 2D, 01 | | 1B, 2D, 00 |

**Comment:**

- Bit image data, spaces set by the HT code and IBM Graphic characters are not underlined.

## OVERLINING: (IBM Mode only)

Sets continuous overlining of characters.

| | | |
|---|---|---|
| **Name:** Set: | ESC+_+1 | Release: ESC+_+0 |
| **Dec.:** | 27, 95, 1 | 27, 95, 0 |
| **Hex.:** | 1B, 5F, 01 | 1B, 5F, 00 |

**Comment:**

- Bit image data, spaces set by the HT code, IBM 12-dot special characters are not overlined.

---

## INTERNATIONAL CHARACTER SET: (Standard Mode only)

Selects any one of 13 international character sets.

| | | |
|---|---|---|
| **Name:** | ESC+R+n | (0≤n≤12) |
| **Dec.:** | 27, 82, n | |
| **Hex.:** | 1B, 52, n | |

**Comments:**

- Values of "n" are follows:

| | |
|---|---|
| n=0: USA | n=7: SPAIN I |
| n=1: FRANCE | n=8: JAPAN |
| n=2: GERMANY | n=9: NORWAY |
| n=3: ENGLAND | n=10: DENMARK II |
| n=4: DENMARK I | n=11: SPAIN II |
| n=5: SWEDEN | n=12: LATIN AMERICA |
| n=6: ITALY | |

- Appendix A illustrates allocation of international characters to their respective locations.
- International character sets can be set with DIP switches.





## IBM CHARACTER SET I:

Selects IBM Mode (Character Set 1).

| | |
|---|---|
| **Name:** | ESC+7 |
| **Dec.:** | 27, 55 |
| **Hex.:** | 1B, 37 |

**Comments:**

- Refer to Appendix A.

**(Standard Mode)**

- This command is operational only when IBM Graphics is selected by ESC+t+1.

---

## IBM CHARACTER SET II:

Selects IBM Mode (Character Set 2).

| | |
|---|---|
| **Name:** | ESC+6 |
| **Dec.:** | 27, 54 |
| **Hex.:** | 1B, 36 |

**Comments:**

- Refer to Appendix A.

**(Standard Mode)**

- This command is operational only when IBM Graphics is selected by ESC+t+1.

## ALL CHARACTER CHART PRINTING (Continuous): (IBM Mode only)

Prints continuously from All Character chart.

**Name:** ESC+\+$n_1$+$n_2$
**Dec.:** 27, 92, $n_1$, $n_2$
**Hex.:** 1B, 5C, $n_1$, $n_2$

**Comments:**
- This command allows the printing of all characters including those with an ASCII value in the range decimal 0~32, 128~159.
- Refer to IBM All character chart. (Appendix A).
- The values specified for $n_1$ and $n_2$ indicate how many characters to print from All character chart, calculating the total count with this formula; Total count=$n_2$×256+$n_1$.

## ALL CHARACTER CHART PRINTING (Single): (IBM Mode only)

Prints single character from All Character chart.

**Name:** ESC+^
**Dec.:** 27, 94
**Hex.:** 1B, 5E

**Comments:**
- Only the next character following this command will be printed as a character from the All Character chart.
- Refer to IBM All character chart (Appendix A).

## ALTERNATE CHARACTER SET: (Standard Mode only)

Selects alternate character set.

**Name:** ESC+t+n (n=0, 1)
**Dec.:** 27, 116, n
**Hex.:** 1B, 74, n

**Comments:**
- The following values of n can be used.
  n=0: Italic
  n=1: Standard Graphic character set
- Refer to Appendix A.





## STANDARD DENSITY GRAPHICS:

Sets standard density graphics mode (480 dots per line/60 dots per inch (25.4 mm)).

**Name:** ESC+K+$n_1$+$n_2$+Data
**Dec.:** 27, 75, $n_1$, $n_2$, Data
**Hex.:** 1B, 4B, $n_1$, $n_2$, Data

## DOUBLE DENSITY GRAPHICS:

Sets double density graphics mode (960 dots per line/120 dots per inch (25.4 mm)).

**Name:** ESC+L+$n_1$+$n_2$+Data
**Dec.:** 27, 76, $n_1$, $n_2$, Data
**Hex.:** 1B, 4C, $n_1$, $n_2$, Data

## DOUBLE SPEED, DOUBLE DENSITY GRAPHICS:

Sets double speed, double density graphics mode (960 dots per line/120 dots per inch (25.4 mm)).

**Name:** ESC+Y+$n_1$+$n_2$+Data
**Dec.:** 27, 89, $n_1$, $n_2$, Data
**Hex.:** 1B, 59, $n_1$, $n_2$, Data

**Comment:**
- Horizontally adjacent dots cannot be printed.

## QUADRUPLE DENSITY GRAPHICS:

Sets quadruple density graphics mode (1920 dots per line/240 dots per inch (25.4 mm)).

**Name:** ESC+Z+$n_1$+$n_2$+Data
**Dec.:** 27, 90, $n_1$, $n_2$, Data
**Hex.:** 1B, 5A, $n_1$, $n_2$, Data

**Comment:**
- Horizontally adjacent dots cannot be printed.

## 8-PIN BIT IMAGE MODE SELECTION:

**(Standard Mode only)**

Selects one of eight 8-pin bit image graphic modes.

**Name:** ESC+*+m+$n_1$+$n_2$+Data (0≤m≤7)
**Dec.:** 27, 42, m, $n_1$, $n_2$, Data
**Hex.:** 1B, 2A, m, $n_1$, $n_2$, Data

**Comments:**

- Values of mare as follows:

| m | Mode | Dot Density |
|---|---|---|
| 0 | Standard density | 480 dpl/60 dpi |
| 1 | Double density | 960 dpl/120 dpi |
| 2 | Double speed, double density | 960 dpl/120 dpi |
| 3 | Quadruple density | 1920 dpl/240 dpi |
| 4 | CRT I | 640 dpl/80 dpi |
| 5 | Plotter | 576 dpl/72 dpi |
| 6 | CRT II | 720 dpl/90 dpi |
| 7 | Double–density plotter | 1152 dpl/144 dpi |

- Both the vertical and horizontal dot pitches in the 576 dot density mode equal 1/72 inch (0.35 mm), thereby producing a 1:1 aspect ratio.
- The following settings are equivalent:
  - –ESC+K+$n_1$+$n_2$+Data and ESC+*+0+$n_1$+$n_2$+Data
  - –ESC+L+$n_1$+$n_2$+Data and ESC+*+1+$n_1$+$n_2$+Data
  - –ESC+Y+$n_1$+$n_2$+Data and ESC+*+2+$n_1$+$n_2$+Data
  - –ESC+Z+$n_1$+$n_2$+Data and ESC+*+3+$n_1$+$n_2$+Data
- See page 5-22 for the determination of $n_1$ and $n_2$.

## 9-PIN BIT IMAGE MODE SELECTION:

**(Standard Mode only)**

Selects one of eight 9-pin bit image graphic modes.

**Name:** ESC+^+m+$n_1$+$n_2$+Data
**Dec.:** 27, 94, m, $n_1$, $n_2$, Data
**Hex.:** 1B, 5E, m, $n_1$, $n_2$, Data

**Comments:**

- See 8-Pin Bit Image (above) for values of "m".
- See page 5-25 for the determination of $n_1$ and $n_2$.





## BIT IMAGE MODE REASSIGNMENT:

**(Standard Mode only)**

Reassigns bit image graphics mode density.

**Name:** ESC+?+n+m+Data
(n=75, 76, 89, 90 m=0, 1, 2, 3, 4, 5, 6, 7)
**Dec.:** 27, 63, n, m, Data
**Hex.:** 1B, 3F, n, m, Data

**Comments:**

- The value of "n" specifies the graphics mode which is to be reassigned:
  - n=75: Reassign Standard density (ESC+K+$n_1$+$n_2$)
  - n=76: Reassign Double density (ESC+L+$n_1$+$n_2$)
  - n=89: Reassign Double speed, Double density (ESC+Y+$n_1$+$n_2$)
  - n=90: Reassign Quadruple density (ESC+Z+$n_1$+$n_2$)
- The value of "m" specifies the graphics mode to which the original is to be reassigned:
  - m=0: Reassign to Standard density
  - m=1: Reassign to Double density
  - m=2: Reassign to Double speed, Double density
  - m=3: Reassign to Quadruple density
  - m=4: Reassign to CRT I
  - m=5: Reassign to Plotter
  - m=6: Reassign to CRT II
  - m=7: Reassign to Double–density plotter
- Refer to table on page 5-21 and 5-22 for details on the various bit image densities.

## 1/8 INCH PAPER FEED:

Sets paper feed amount to 1/8 inch (3.2 mm).

**Name:** ESC+0
**Dec.:** 27, 48
**Hex.:** 1B, 30

## 7/72 INCH PAPER FEED:

Sets paper feed amount to 7/72 inch (2.47 mm).

**Name:** ESC+1
**Dec.:** 27, 49
**Hex.:** 1B, 31

---

## 1/6 INCH PAPER FEED:

Sets paper feed amount to 1/6 inch (4.23 mm).

**Name:** ESC+2
**Dec.:** 27, 50
**Hex.:** 1B, 32

**Comments:**

- ESC+2 sets 1/6 inch paper feed in Standard Mode only.
- Use ESC+A+n, n=12, to set 1/6 inch paper feed and use ESC+2 to activate the ESC+A+n setting in the IBM Mode. The IBM Mode defaults to 1/6 inch.

---

## n/72 INCH PAPER FEED:

Sets programmable paper feed amount to n/72 inch.

**Name:** ESC+A+n (0≤n≤85)
**Dec.:** 27, 65, n
**Hex.:** 1B, 41, n

**Comments:**

- In IBM Mode only, ESC+2 must be input after ESC+A+n for n/72 inch paper feed to become effective.
- In IBM Mode, the default of n is 12.
- In IBM Mode, n=0 is ineffective.





## n/216 INCH PAPER FEED:

Sets programmable paper feed amount to n/216 inch.

**Name:** ESC+3+n
**Dec.:** 27, 51, n
**Hex.:** 1B, 33, n

**Comments:**

- n/216 inch paper feed is valid for 0≤n≤255.
- In IBM Mode, n=0 is ineffective.

---

## AUTOMATIC LINE FEED MODE: (IBM Mode only)

Automatically executes a Line Feed following a Carriage Return.

| **Name:** | Set: | ESC+5+1 | Release: | ESC+5+0 |
|---|---|---|---|---|
| **Dec.:** | | 27, 53, 1 | | 27, 53, 0 |
| **Hex.:** | | 1B, 35, 01 | | 1B, 35, 00 |

**Comments:**

- DIP Switch 3 also controls the auto line feed function (refer to Section 2.10). Setting this switch to the ON position is equivalent to executing the ESC+5+1 command. Similarly, setting the switch to the OFF position is equivalent to executing the ESC+5+0 command.
- LF is tied to CR in this mode.

## FORM FEED (FF):

Feeds paper to next top of form position after first printing any data in the buffer.

**Name:** FF
**Dec.:** 12
**Hex.:** 0C

**Comments:**

- FF releases single-line double width printing set by SO (see page 6-17).
- Amount of form feed depends upon page length set by the page length control command.

---

## LINE FEED (LF):

Causes data in buffer to be printed and then executes a single line feed.

**Name:** LF
**Dec.:** 10
**Hex.:** 0A

**Comments:**

- When the new line position falls within the perforation skip area, the paper advances to the next top of form position (when DIP switch 2 is ON).
- If there is no data, "space" data (ASCII 32), or blanks between HT print positions in the buffer, LF feeds the paper by only 1 line.
- The amount of spacing generated by LF is a function of the paper feed amount setting.
- LF code releases single-line double width printing set by SO.
- In IBM Mode only, DIP switch 7 controls the Automatic CR function. When this switch is OFF, LF executes a single line feed. The carriage, however, does not return to the left margin position. When this switch is ON, a Carriage Return command (CR) is added to each Line Feed (LF).





## n/216 INCH PAPER FEED:

Prints out the data in the print buffer and feeds the paper n/216 inch.

**Name:** ESC+J+n
**Dec.:** 27, 74, n
**Hex.:** 1B, 4A, n

**Comments:**

- In the IBM Mode only, when DIP switch 7 (Automatic CR) is ON, Carriage Return command (CR) is added automatically to this command.
- Single-line, n/216 inch paper feed is valid for $0 \leq n \leq 255$.
- This command sets the paper feed for ONE line only. Subsequent paper feed returns to previous setting. However, the carriage does not return to the left margin position. Instead, printing of next line begins where previous printing left off.
- This command does not release single-line double width printing.

---

## n/216 INCH REVERSE DIRECTION SINGLE LINE PAPER FEED: (Standard Mode only)

Prints out the data in the print buffer and feeds the paper n/216 inch in reverse direction.

**Name:** ESC+j+n
**Dec.:** 27, 106, n
**Hex.:** 1B, 6A, n

**Comments:**

- Reverse, single line n/216 inch paper feed is valid for $0 \leq n \leq 255$.
- This command sets reverse direction paper feed for one line only. The carriage will not return, however, to the left margin position. Instead, the printing of the next line begins where the previous printing left off.
- This command does not release single-line double width printing.

**Notes:**
- Reverse paper feed cannot be executed in the area within 3.6 inches (91.4 mm) of the bottom perforation. Additionally, the perforation should not be included in the area of reverse paper feed.
- Multi-part forms should not be used with reverse paper feed.

## PAGE LENGTH (INCHES):

Sets page length in number of inches.

| | | |
|---|---|---|
| **Name:** | ESC+C+0+n | (Standard Mode 1≦n≦22) |
| **Dec.:** | 27, 67, 0, n | (IBM Mode 1≦n≦255) |
| **Hex.:** | 1B, 43, 00, n | |

**Comments:**
- Upon receipt of ESC+C+0+n, the present line position becomes the top of page position.
- The value of n must be in the range 1≦n≦22 (255 in IBM Mode).
- ESC+C+0+n releases the VT, VFU and skip perforation settings.
- The page length does not change even if the paper feed amount is changed.
- The terms "form" and "page" are interchangeable.
- You can set the form length through the Control Table without using this command.





## PAGE LENGTH (LINES):

Sets page length in number of lines.

| | | |
|---|---|---|
| **Name:** | ESC+C+n | (Standard Mode 1≦n≦127) |
| **Dec.:** | 27, 67, n | (IBM Mode 1≦n≦255) |
| **Hex.:** | 1B, 43, n | |

**Comments:**
- Upon receipt of ESC+C+n, the present line position becomes the top of page position.
- The value of n must be in the range 1≦n≦127 (255 in IBM Mode). If n=0, page length returns to the inch designation.
- ESC+C+n releases the VT, VFU and skip perforation settings.
- The page length does not change even if the paper feed amount is changed.
- The terms "form" and "page" are interchangeable.

## RIGHT MARGIN: (Standard Mode only)

Sets position of right margin.

| | |
|---|---|
| **Name:** | ESC+Q+n |
| **Dec.:** | 27, 81, n |
| **Hex.:** | 1B, 51, n |

**Comments:**
- Permissible values of "n" are given below.

| | |
|---|---|
| PICA | 2≦n≦80 |
| ELITE | 3≦n≦96 |
| MICRON | 3≦n≦120 |
| COMPRESSED | 4≦n≦137 |
| ELITE COMPRESSED | 4≦n≦160 |

- Any designation to the left of the left margin position is ignored.
- Setting the right margin clears all data in the buffer.
- In proportional spacing, the right margin is set with pica pitch.
- Once the right margin position is set, a change in the character mode will not alter this right margin setting.

## LEFT MARGIN: (Standard Mode only)

Sets position of left margin.

**Name:** ESC+l+n
**Dec.:** 27, 108, n
**Hex.:** 1B, 6C, n

**Comments:**

- If the value of n exceeds the right margin value, ESC+l+n is ineffective and the left margin does not change.
- Setting the left margin position clears all data in the print buffer.
- In proportional spacing, the left margin is set with pica pitch.
- Once the left margin position is set, a change in the character mode will not alter this left margin setting.
- Permissible values of "n" are given below.

| | |
|---|---|
| PICA | $0 \leqq n \leqq 78$ |
| ELITE | $0 \leqq n \leqq 93$ |
| MICRON | $0 \leqq n \leqq 117$ |
| COMPRESSED | $0 \leqq n \leqq 133$ |
| ELITE COMPRESSED | $0 \leqq n \leqq 156$ |

---

## MARGIN SET: (IBM Mode only)

Sets positions of left and right margins.

**Name:** ESC+X+$n_1$+$n_2$
**Dec.:** 27, 88, $n_1$, $n_2$
**Hex.:** 1B, 58, $n_1$, $n_2$

**Comments:**

- The left margin column is set to $n_1$ in the current width, and the right margin column is set to $n_2$.
- If $n_2 < n_1$, it is ignored.
- Setting the margin clears all data in the buffer.
- Once the margin position is set, a change in the character width will not alter the settings.
- When $n_1$ or $n_2$=0, that margin does not change.
- Permissable values of $n_1$, $n_2$ are given below.

| | | |
|---|---|---|
| Pica print | $1 \leqq n_1 \leqq 79$ | $2 \leqq n_2 \leqq 80$ |
| Elite print | $1 \leqq n_1 \leqq 94$ | $3 \leqq n_2 \leqq 96$ |
| Compressed print | $1 \leqq n_1 \leqq 134$ | $4 \leqq n_2 \leqq 137$ |





## LEFT ALIGNMENT: (Standard Mode only)

Sets print alignment at the left margin.

**Name:** ESC+a+0
**Dec.:** 27, 97, 0
**Hex.:** 1B, 61, 00

**Comments:**

- This command clears the ESC+a+1, ESC+a+2 and ESC+a+3 settings.
- The printer defaults to this setting.
- 48, 128 and 176 can also be used in place of 0.

---

## AUTO CENTERING: (Standard Mode only)

Enables automatic centering of a print line between the left and right margins.

**Name:** ESC+a+1
**Dec.:** 27, 97, 1
**Hex.:** 1B, 61, 01

**Comments:**

- This command clears the ESC+a+0, ESC+a+2 and ESC+a+3 settings.
- 49, 129 and 177 can also be used in place of 1.

---

## RIGHT ALIGNMENT: (Standard Mode only)

Sets print alignment at the right margin.

**Name:** ESC+a+2
**Dec.:** 27, 97, 2
**Hex.:** 1B, 61, 02

**Comments:**

- This command clears the ESC+a+0, ESC+a+1 and ESC+a+3 settings.
- 50, 130 and 178 can also be used in place of 2.

## AUTO JUSTIFICATION: (Standard Mode only)

Sets automatic justification of a print line between the left and right margins.

**Name:** ESC+a+3
**Dec.:** 27, 97, 3
**Hex.:** 1B, 61, 03

**Comments:**

- Printing is executed upon receipt of print execution commands (CR, LF, FF, etc.).
- Auto justification is executed when data exceeds right margin and upon receipt of print execution commands (CR, LF, FF, etc.).
- This command clears the ESC+a+0, ESC+a+1 and ESC+a+2 settings.
- 51, 131 and 179 can also be used in place of 3.

---

## TOP OF FORM: (IBM Mode only)

Sets top of form.

**Name:** ESC+4
**Dec.:** 27, 52
**Hex.:** 1B, 34

**Comment:**

- This command sets the current paper position as the top of form.





## SKIP PERFORATION:

Sets skip-over perforation.

| | | | | |
|---|---|---|---|---|
| **Name:** | Set: | ESC+N+n | Release: | ESC+O |
| **Dec.:** | | 27, 78, n | | 27, 79 |
| **Hex.:** | | 1B, 4E, n | | 1B, 4F |

**Comments:**

- The value of n specifies the number of lines (or n times the current line spacing amount) to be skipped at the bottom of the page.
- This commands is effective only for $1 \leqq n \leqq 127$. For $n \geqq 128$, the value is processed as n-128.
- If n=0 or 128, this command is ignored.
- The skip perforation amount does not change even if the paper feed amount is changed following a skip perforation designation.
- The skip perforation setting is released upon receipt of the page length designation command.

---

## HORIZONTAL TAB STOP SETTING:

Sets horizontal tabulations to specified values.

| | | | | |
|---|---|---|---|---|
| **Name:** | Set: | ESC+D+$n_1$+$n_2$+...+$n_x$+0 | Release: | ESC+D+0 |
| **Dec.:** | | 27, 68, $n_1$, $n_2$,..., $n_x$, 0 | | 27, 68, 0 |
| **Hex.:** | | 1B, 44, $n_1$, $n_2$,..., $n_x$, 00 | | 1B, 44, 00 |

**Comments:**

- Horizontal tabs are set from the left margin position.
- Horizontal tabs must be designated such that $n_1 < n_2 < \ldots < n_x$.
- A maximum of 32 tabs may be set on a single line.
- ESC+D+$n_1$+$n_2$+...+$n_x$+0 sets horizontal tab stops. The HT command on page 6-35 executes the tab designation.
- In proportional spacing, horizontal tabs are set with pica pitch.
- When the left margin is changed, horizontal tabs default to every 8 columns, beginning with the new left margin setting (Standard Mode only).
- When the margin is changed, horizontal tabs will be moved according new left margin setting. (IBM Mode only)

## HORIZONTAL TAB EXECUTION:

Executes the horizontal TAB as designated by ESC+D+$n_1$+$n_2$+...+$n_x$+0.

**Name:** HT
**Dec.:** 9
**Hex.:** 09

**Comments:**

- If the value of the horizontal TAB is less than present column position, that HT is ignored.
- If the value of the horizontal TAB exceeds the maximum printing width, all data within correct printing range will be printed according to the HT setting(s). A single line feed is executed.
- When in underline mode, the blank spaces between consecutive HT print positions are not underlined.
- When the printer is powered up, TAB is automatically set every 8 characters.

---

## VERTICAL TAB STOP SETTING:

Sets vertical tabulation to specified values.

| | | | |
|---|---|---|---|
| **Name:** | Set: ESC+B+$n_1$+$n_2$+...+$n_x$+0 | Release: | ESC+B+0 |
| **Dec.:** | 27, 66, $n_1$, $n_2$,..., $n_x$, 0 | | 27, 66, 0 |
| **Hex.:** | 1B, 42, $n_1$, $n_2$,..., $n_x$, 00 | | 1B, 42, 00 |

**Comments:**

- VT is set from the top of page position.
- Vertical tabs must be designated such that $n_1<n_2...<n_x$.
- A maximum of 16 tabs may be set (in Standard Mode).
- A maximum of 64 tabs may be set (in IBM Mode).
- ESC+B+$n_1$+$n_2$+...+$n_x$+0 sets vertical tab stops. The VT command on page 6-36 executes the tab designation.
- If the paper feed amount is changed after a VT designation, the VT positions remain as initially set.
- VT setting is released by page length designation commands.





## VERTICAL TAB EXECUTION:

Executes the vertical TAB as designated by ESC+B+$n_1$+$n_2$+...+$n_x$+0, ESC+b+m+$n_1$+$n_2$+...+$n_x$+0.

**Name:** VT
**Dec.:** 11
**Hex.:** 0B

**Comments:**
**(Standard Mode)**

- When TABs are set with VT or VFU setting command and when there is no tab setting on a position exceeding present line, data is printed out and paper is fed to the next top of page position (same as FF).

**(IBM Mode)**

- When TABs are set with VT setting command and there is no tab setting on a position exceeding the present line, data is printed out and the paper is advanced one line (same as LF).
- When vertical TAB has not been set by ESC+B+$n_1$+$n_2$+...+$n_x$+0, or ESC+b+m+$n_1$+$n_2$+...+$n_x$+0, execution of VT causes data in the buffer to be printed and the paper to be advanced one line (same function as LF).

---

## ALL TAB INITIAL CLEAR: (IBM Mode only)

Sets all tabs to power ON settings.

**Name:** ESC+R
**Dec.:** 27, 82
**Hex.:** 1B, 52

**Comment:**
This command sets horizontal tabs at every 8 position and clears all vertical tabs.

---

## VFU CHANNEL SELECTION: (Standard Mode only)

Selects one of eight channels in the Vertical Format Unit VFU).

**Name:** ESC+/+n (0≤n≤7)
**Dec.:** 27, 47, n
**Hex.:** 1B, 2F, n

**Comments:**

- The value of n must be in the range 0≤n≤7.
- Channel 0 is the default setting.

## VFU SETTING: (Standard Mode only)

Sets the tab position of each channel in the VFU (Vertical Format Unit).

**Name:** Set: ESC+b+m+$n_1$+$n_2$+...+$n_x$+0 Release: ESC+b+m+0
($0 \leq m \leq 7$) ($1 \leq x \leq 16$)

| | | |
|---|---|---|
| **Dec.:** | 27, 98, m, $n_1$, $n_2$,..., $n_x$, 0 | 27, 98, m, 0 |
| **Hex.:** | 1B, 62, m, $n_1$, $n_2$,..., $n_x$, 00 | 1B, 62, m, 00 |

**Comments:**

- The VFU has eight channels. A maximum of 16 vertical tabs can be set for each channel.
- The VFU is valid for $0 \leq m \leq 7$ and selects one channel based on the value of "m".
- Any VFU setting exceeding the page length is ineffective.
- To operate the VFU, input the VT code ($11_{DEC}$) after selecting the channel via VFU channel selection command (ESC+/+n).
- The VFU position does not change even if paper feed amount is altered after VFU setting.
- The VFU setting is released by the page length designation commands.
- The vertical tab specified with ESC+B+$n_1$+$n_2$+...+$n_x$+0 is set to VFU channel 0.

---

## BACKSPACE:

Prints data in buffer and backspaces one space before printing next character.

| | |
|---|---|
| **Name:** | BS |
| **Dec.:** | 8 |
| **Hex.:** | 08 |

**Comments:**

- Since BS backspaces the width of a character, the backspacing amount will depend upon the character mode set when the BS code was received.
- This command is ignored in the word processing mode (ESC+a+1, ESC+a+2 or ESC+a+3).





## CARRIAGE RETURN:

Prints all data in buffer and designates that the next line start at the left margin.

| | |
|---|---|
| **Name:** | CR |
| **Dec.:** | 13 |
| **Hex.:** | 0D |

**Comments:**

- Certain computers issue an automatic line feed with a carriage return. Check your computer manual for details.
- When DIP switch 3 is ON the paper is fed automatically (a LF is executed automatically) whenever a CR code is executed.

---

## ONE LINE UNIDIRECTION PRINT:

(Standard Mode only)

Set one line single direction (left to right) printing mode.

| | |
|---|---|
| **Name:** | ESC+< |
| **Dec.:** | 27, 60 |
| **Hex.:** | 1B, 3C |

---

## SINGLE DIRECTION:

Sets single direction (left to right) printing mode.

| | | | |
|---|---|---|---|
| **Name:** | Set: ESC+U+1 | Release: | ESC+U+0 |
| **Dec.:** | 27, 85, 1 | | 27, 85, 0 |
| **Hex.:** | 1B, 55, 01 | | 1B, 55, 00 |

## HALF SPEED PRINTING: (Standard Mode only)

Sets printing to half speed.

| | | | | |
|---|---|---|---|---|
| **Name:** | Set: | ESC+s+1 | Release: | ESC+s+0 |
| **Dec.:** | | 27, 115, 1 | | 27, 115, 0 |
| **Hex.:** | | 1B, 73, 01 | | 1B, 73, 00 |

**Comment:**

- Half speed printing can be set only in the pica, elite, standard density image, double speed double density image, and 720 dots/line image modes.

---

## RELATIVE HORIZONTAL POSITION:

(Standard Mode only)

Moves the printhead to a relative horizontal position.

| | |
|---|---|
| **Name:** | ESC+\+$n_1$+$n_2$ |
| **Dec.:** | 27, 92, $n_1$, $n_2$ |
| **Hex.:** | 1B, 5C, $n_1$, $n_2$ |

**Comments:**

- This command moves the printhead ($n_1$+256×$n_2$)/120 inch from current position at which point printing of following data will start.
- To calculate $n_1$ and $n_2$, first determine the total increments of 1/120" to move the printhead from its current position. If the head movement will be to the left subtract this number from 65336. Divide 256 into the determined number yielding $n_2$=the integer portion of the division and $n_1$=the remainder.

$$256 \overline{)\ \text{increments}}\ n_2$$
$$-256 \times n_2$$
$$n_1$$

- If the resullting movement would place the printhead outside current margins, the command is ignored.





## ABSOLUTE HORIZONTAL POSITION:

(Standard Mode only)

Moves the printhead to an absolute horizontal position.

| | |
|---|---|
| **Name:** | ESC+$+$n_1$+$n_2$ |
| **Dec.:** | 27, 36, $n_1$, $n_2$ |
| **Hex.:** | 1B, 24, $n_1$, $n_2$ |

**Comments:**

- This command moves the printhead to a position $n_1$+256×$n_2$ dots (units) from the left margin. Each unit equals 1/60th of an inch.
- To calculate $n_1$ and $n_2$, divide 256 into the determined number yielding $n_2$=the integer portion of the division and $n_1$=the remainder.

---

## CANCEL:

Clears all data in the buffer.

| | |
|---|---|
| **Name:** | CAN |
| **Dec.:** | 24 |
| **Hex.:** | 18 |

---

## REMOTE PRINTER SELECT:

Selects the printer remotely, enabling it to receive data.

| | |
|---|---|
| **Name:** | DC1 (Device Control 1) |
| **Dec.:** | 17 |
| **Hex.:** | 11 |

**Comment:**

- Receipt of DC1 while the printer is deselected by DC3 (Standard Mode) /ESC+Q+3 (IBM Mode) enables the printer to receive data.

## REMOTE PRINTER DESELECT:

**(Standard Mode only)**

Deselects the printer remotely, disabling it from receiving data.

**Name:** DC3 (Device Control 3)
**Dec.:** 19
**Hex.:** 13

**Comment:**

- All data sent in deselect status becomes invalid. In order to return to select status, send DC1 code.

---

## REMOTE PRINTER DESELECT: (IBM Mode only)

Deselects the printer remotely, disabling it from receiving data.

**Name:** ESC+Q+3
**Dec.:** 27, 81, 3
**Hex.:** 1B, 51, 03

**Comment:**

- All data sent in deselect status becomes invalid. In order to return to select status, send DC1 code.

---

## DELETE: (Standard Mode only)

Deletes the last character stored in the buffer.

**Name:** DEL
**Dec.:** 127
**Hex.:** 7F

**Comments:**

- Only ordinary text may be DELeted. Bit image data, spacing between output generated by consecutive TABs, and character mode designation cannot be DELeted.
- This command is ignored in the word processing mode (ESC+a+1, ESC+a+2 or ESC+a+3).





## MSB ON: (Standard Mode only)

Sets the Most Significant Bit to 1.

**Name:** ESC+>
**Dec.:** 27, 62
**Hex.:** 1B, 3E

**Comments:**

- ESC+> has no effect on bit image data.
- This setting can be released by ESC+#.

---

## MSB OFF: (Standard Mode only)

Sets the Most Significant Bit to 0.

**Name:** ESC+=
**Dec.:** 27, 61
**Hex.:** 1B, 3D

**Comments:**

- ESC+= has no effect on bit image data.
- This setting can be released by ESC+#.

---

## MSB CANCEL: (Standard Mode only)

Sets printer to receive 8th bit "as is".

**Name:** ESC+#
**Dec.:** 27, 35
**Hex.:** 1B, 23

**Comment:**

- This setting has no effect on bit image data.

## UNDEFINED CODE PRINTING: (Standard Mode only)

Designates undefined codes in locations 0~31$_{DEC}$, 128~159$_{DEC}$ as printing codes for international characters.

**Name:** Set: ESC+I+1 Release: ESC+I+0
**Dec.:** 27, 73, 1 27, 73, 0
**Hex.:** 1B, 49, 01 1B, 49, 00

**Comments:**

- The following characters are printed out by this command.

| Code (DEC) | Print Code | Code (DEC) | Print Code | Code (DEC) | Print Code |
|---|---|---|---|---|---|
| 0 | à | 22 | ¨ | 140 | (FF) |
| 1 | è | 23 | Ä | 141 | (CR) |
| 2 | ù | 24 | (CAN) | 142 | (SO) |
| 3 | ò | 25 | Ü | 143 | (SI) |
| 4 | ì | 26 | ä | 144 | § |
| 5 | ° | 27 | (ESC) | 145 | ß |
| 6 | £ | 28 | ü | 146 | (DC2) |
| 7 | (BEL) | 29 | É | 147 | (DC3) |
| 8 | (BS) | 30 | é | 148 | (DC4) |
| 9 | (HT) | 31 | ¥ | 149 | ø |
| 10 | (LF) | 128 | à | 150 | Ä |
| 11 | (VT) | 129 | è | 151 | Ä |
| 12 | (FF) | 130 | ù | 152 | (CAN) |
| 13 | (CR) | 131 | ò | 153 | Ü |
| 14 | (SO) | 132 | ì | 154 | ä |
| 15 | (SI) | 133 | ° | 155 | (ESC) |
| 16 | § | 134 | £ | 156 | ü |
| 17 | ß | 135 | (BEL) | 157 | É |
| 18 | (DC2) | 136 | (BS) | 158 | é |
| 19 | (DC3) | 137 | (HT) | 159 | ¥ |
| 20 | (DC4) | 138 | (LF) | | |
| 21 | ø | 139 | (VT) | | |

- International Characters reside in ASCII location 0-31$_{DEC}$ and 128–159$_{DEC}$. While these characters are normally set as unprintable codes ESC+I+1 sets these as printable characters.





## DRAFT FONT DOWNLOADING: (Standard Mode only)

Defines down line load characters into specified address locations in RAM.

**Name:** ESC+&+0+Cs+Ce+At+$P_1$+$P_2$+...+$P_{11}$
(0≦Cs≦Ce≦255)
**Dec.:** 27, 38, 0, Cs, Ce, At, $P_1$, $P_2$,..., $P_{11}$
**Hex.:** 1B, 26, 00, Cs, Ce, At, $P_1$, $P_2$,..., $P_{11}$

**Comment:**

- Refer to page 5-3.

---

## NLQ FONT DOWNLOADING: (Standard Mode only)

Defines download NLQ font.

**Name:** ESC+&+2+Cs+Ce+At+$P_{1H}$+$P_{1L}$+...+$P_{23L}$
(0≦Cs≦Ce≦255)
**Dec.:** 27, 38, 0, Cs, Ce, At, $P_{1H}$, $P_{1L}$,..., $P_{23L}$
**Hex.:** B1, 26, 00, Cs, Ce, At, $P_{1H}$, $P_{1L}$,..., $P_{23L}$

**Comment:**

- Refer to page 5-8.

---

## CHARACTER GENERATOR SELECTION: (Standard Mode only)

Selects the character generator.

**Name:** ESC+%+n (n=0 or n=1)
**Dec.:** 27, 37, n
**Hex.:** 1B, 25, n

**Comment:**

- Refer to page 5-12.

## CHARACTER GENERATOR SET COPY:

**(Standard Mode only)**

Copies internal CG font into downloadable font area.

**Name:** ESC+:+0+0+0
**Dec.:** 27, 58, 0, 0, 0
**Hex.:** 1B, 3A, 00, 00, 00

**Comment:**
- Refer to page 5-11.

---

## DOWNLOADABLE CHARACTER DEFINITION:

**(IBM Mode only)**

Defines download characters into specified address locations.

**Name:** ESC+=+$n_1$+$n_2$+m+Cs+$At_1$+$At_2$+Data
($0 \leq Cs \leq 255$)
**Dec.:** 27, 61, $n_1$, $n_2$, m, Cs, $At_1$, $At_2$, Data
**Hex.:** 1B, 3D, $n_1$, $n_2$, m, Cs, $At_1$, $At_2$, Data

**Comment:**
- Refer to Section 5.2 on page 5-13 (Draft and Text) and 5-19 (NLQ) for detailed information.

---

## BELL

Sounds buzzer for approximately 0.2 second.

**Name:** BEL
**Dec.:** 7
**Hex.:** 07

**Input Format:** LPRINT CHR$(7) ;





## ESCAPE:

First byte of each multi-byte printer control code.

**Name:** ESC
**Dec.:** 27
**Hex.:** 1B

**Comment:**
- Cannot be generated by the ESC key on certain computers.

---

## NULL:

Used in certain multi-byte printer control codes.

**Name:** NUL
**Dec.:** 0
**Hex.:** 00

---

## RESET PRINTER:

**(Standard Mode only)**

Initializes printer, causing data in the printer buffer, but not in the receive buffer, to be cleared.

**Name:** ESC+@
**Dec.:** 27, 64
**Hex.:** 1B, 40

**Comment:**
- Refer to Section 3.4 for an explanation of printer initialization.

---

## PAPER-OUT DETECTION:

Enables paper-out detector.

| | | | | |
|---|---|---|---|---|
| **Name:** | Set: | ESC+9 | Release: | ESC+8 |
| **Dec.:** | | 27, 57 | | 27, 56 |
| **Hex.:** | | 1B, 39 | | 1B, 38 |

**Comment:**
- Disabling of the paper-out detector causes printing to continue after paper end.

## CUT SHEET FEEDER: (Standard Mode only)

Selects Cut Sheet Feeder (CSF) mode ON/OFF.

**Name:** ESC+EM+n
**Dec.:** 27, 25, n
**Hex.:** 1B, 19, n

**Comment:**

- The following values of n can be used.
  - n="0": Cut Sheet Feeder mode is OFF
  - n="4": Cut Sheet Feeder mode is ON

**Note:**

- If the Cut Sheet Feeder is not installed and ESC+EM+4 is executed, the printer will not feed the paper correctly.