REFERENCE MANUAL

LAPTOP PRINTER
LT-20

SEIKOSHA

Contents

Printer Operation

DC1

Format: ASCII code: DC1
Hexadecimal: 11
Decimal: 17

Function: Sets the printer to accept data from a computer after the ESC Q command has deselected the printer.

ESC Q

Format: ASCII code: ESC   Q   (24)
Hexadecimal: 1B   51   24
Decimal: 27   81   36

Function: Sets the printer so that it will not accept data from the computer.

After deselecting the printer with this command, you must use DC1 to set the printer to accept data.

ESC j

STOP PRINTING

Format:	ASCII code: ESC j
	Hexadecimal: 1B 6A
	Decimal: 27 106

Function: This command sets the printer off line after printing the current buffer contents.

To set the printer back on line, press [ON/OFF LINE] switch on the front panel.

ESC j works the same as pressing [ON/OFF LINE] switch when the printer is on line.

Data Control

CR

<div align="right">

CARRIAGE RETURN

</div>

Format: ASCII code: CR
              Hexadecimal: 0D
              Decimal: 13

Function: Tells the printer to print the current buffer contents and then do a carriage return. A carriage return moves the print head to the left margin on the same line.

In addition to the carriage return, the printer does a line feed if Function switch 8 (CR CODE) is set to "CR+LF" position or if the printer receives the command ESC 5 (1).

CR ends double-width printing selected by SO.

CAN

<div align="right">

CANCEL

</div>

Format: ASCII code: CAN
              Hexadecimal: 18
              Decimal: 24

Function: This code clears text, but does not clear control codes in the print buffer.

The current print position does not change.

Printing Direction

ESC U *n*   *SET BIDIRECTIONAL/UNIDIRECTIONAL*

Format: ASCII code: ESC U   *n*
                  Hexadecimal: 1B   55 *n*
                  Decimal: 27   85 *n*

Function: Select unidirectional printing with ESC U (1). Select bidirectional print-
                  ing with ESC U (0).

                  Usually, this printer prints using a bidirectional logic seeking technique.

Vertical Motion

LF

Format:

ASCII code:	LF
Hexadecimal:	0A
Decimal:	10

Function:

Feeds the paper one line after printing the current buffer contents.

The line spacing commands discussed later in the manual determines the distance that the paper feeds with each line feed command.

The LF code terminates the double-width printing set by the SO command.

If you set Function switch 7 (LF CODE) to "CR+LF" position, the printer does a carriage return; otherwise, it does not.

ESC 0

Format:

ASCII code:	ESC	0
Hexadecimal:	1B	30
Decimal:	27	48

Function:

Sets the line feed distance to 1/8 inch.

When you first turn on the printer, the line feed distance is 1/6 inch. The ESC 0 command changes the line feed distance to 1/8 inch.

ESC 1

SET 7/72-INCH LINE FEED

Format: ASCII code: ESC 1
                  Hexadecimal: 1B   31
                  Decimal: 27   49

Function: Sets the line feed distance to 7/72 inch.

                  The printer retains the 7/72-inch line feed distance until you change the line
                  feed pitch again or until you turn off the printer.

ESC 2

START LINE SPACING SET BY ESC A

Format: ASCII code: ESC 2
                  Hexadecimal: 1B   32
                  Decimal: 27   50

Function: ESC 2 is an execution command for the ESC A command. In other words,
                  you should send the ESC A command (to define the line feed pitch) before
                  you send the ESC 2 command.

                  If you have not sent an ESC A command, the printer automatically sets
                  the line-feed distance to 1/6 inch.

ESC 3 *n*   *SET VARIABLE LINE FEED*

Format: ASCII code: ESC   3   *n*
                     Hexadecimal: 1B   33   *n*
                     Decimal: 27   51   *n*

Function: ESC 3 (*n*) changes the line-feed distance to *n*/216 inch in standard mode,
                     n/180 inch in AGM mode (Function switch 6 set to "ON" position).

                     n is a single-byte number and can represent any number from 1 to 255.

                     In either mode, you can switch the base line-feed pitch is 1/216 inch and 1/
                     180 inch using the ESC [\ command. When you turn on the printer, the
                     default base line-feed pitch is 1/216 inch. If you have set DIP Switch 6 to on
                     for AGM mode, the default pitch is 1/180 inch.

ESC A *n*   *STORE VARIABLE LINE SPACING*

Format: ASCII code: ESC   A   *n*
                     Hexadecimal: 1B   41   *n*
                     Decimal: 27   65   *n*

Function: The ESC A command defines the line-feed pitch in increments of 1/72
                     inch in standard mode, 1/60 inch in AGM mode (Function Switch 6 set to
                     "AGM ON" position).

                     n is a single-byte number and can represent any value from 1 to 85.

                     To activate the new pitch defined by ESC A, send the ESC 2 command.

7

ESC J n

VARIABLE LINE SPACING

Format:

ASCII code: ESC   J   *n*

Hexadecimal: 1B 4A   *n*

Decimal: 27 74   *n*

Function:

At the ESC J (*n*) command, this printer prints out the current buffer contents and then feeds the paper *n*/216 inch in standard mode, *n*/180 inch in AGM mode.

n is a single-byte number and can represent any value from 1 to 255.

In either mode, you can switch the base line-feed pitch between 1/216 inch and 1/180 inch using the ESC [\ command.

If you set the Function Switch 7 to the (LF+CR) position, the printer does a carriage return; otherwise, it does not.

With ESC J, you can print on the skip perforation area set by the ESC N command.

ESC 5 n

SET AUTOMATIC LINE FEED

Format:

ASCII code: ESC   5   *n*

Hexadecimal: 1B 35   *n*

Decimal: 27 53   *n*

Function:

The automatic line feed is set by sending the ESC 5 (1) command or by setting Function switch 8 to the "CR+LF" position. The automatic line feed by sending the ESC 5 (0) command or by setting the Function Switch 8 to the "CR only" position.

FF

Format: ASCII code: FF
Hexadecimal: 0C
Decimal: 12

Function: The printer does a form feed to the top of the next page and then does a carriage return, after printing the current buffer contents.

This command ends the double-width printing set by the SO command.

ESC C *n*

Format: ASCII code: ESC   C   *n*
Hexadecimal: 1B   43   *n*
Decimal: 27   67   *n*

Function: ESC C *n* sets the number of lines per page.

n is a single-byte number.
After the printer executes the form length setting command, the current line becomes the top-of-form position.

The current line-feed pitch determines the form length. The form length remains unchanged even if you change the line-feed pitch after setting the form length.

The maximum form length setting is approximately 182 inches.

This command ends the skip perforation set by the ESC N command.

ESC C NUL *n*   *SET FORM LENGTH IN INCHES*

Format:

ASCII code:	ESC	C	NUL	*n*
Hexadecimal:	1B	43	00	*n*
Decimal:	27	67	0	*n*

Function:

ESC C 0 *n* sets the number of inches per page.

n is a single-byte number.

After the printer executes the form length setting command, the current line becomes the top-of-form position.

The current line-feed pitch determines the form length. The form length remains unchanged even if you change the line-feed pitch after setting the form length.

The maximum form length setting is approximately 182 inches.

This command ends the skip perforation set by the ESC N command.

ESC 4   *SET TOP OF FORM*

Format:

ASCII code:	ESC	4
Hexadecimal:	1B	34
Decimal:	27	52

Function:

This command sets the current position on the page as the top of form.

ESC N *n*   *SET SKIP PERFORATION*

Format: ASCII code: ESC   N   *n*
                   Hexadecimal: 1B   4E   *n*
                   Decimal: 27   78   *n*

Function: Sets the number of lines to skip at the end of each page.

                   The value of *n* shows the number of lines you might want to skip at the
                   bottom of a page. With this value set correctly, you can avoid printing on
                   the perforation. *n* is a single-byte number and can represent any value
                   from 1 to 255. If the value you set for *n* is greater than the page length (in
                   lines), the printer does a form feed after printing each line that would print
                   below the bottom of the page.

                   The current line-feed pitch determines the skip distance. The skip dis-
                   tance remains unchanged even if you change the line-feed pitch after set-
                   ting the skip perforation.

                   Either the ESC O command or the form length setting command ends the
                   skip perforation function.

ESC O   *CANCEL SKIP PERFORATION*

Format: ASCII code: ESC   O
                   Hexadecimal: 1B   4F
                   Decimal: 27   79

Function: This command cancels the skip perforation set by ESC N.

VT

Format:

ASCII code:	VT
Hexadecimal:	0B
Decimal:	11

Function:

This command feeds the paper to the next vertical tab stop after printing the buffer contents.

This command ends the double-width printing set by the SO command.

If you set Function switch 7 to "CR+LF" position, the printer does a carriage return; otherwise, it does not.

If you have not set another vertical tab stop or if the next tab's setting is greater than the current form length, this command functions like the LF code.

ESC B *n*1...*n64*
NUL

Format:

ASCII code:	ESC	B	*n*1..*n64*	NUL
Hexadecimal:	1B	42	*n*1..*n64*	00
Decimal:	27	66	*n*1..*n64*	0

Function:

You can use ESC B to set a maximum of 64 vertical tab stops. (Note that the top of form is line 1.)

n represents the line number that you select for the vertical tab stop. This value is a single-byte number from 1 to 255. Designate other vertical tabs in ascending order.

After you set the vertical tab stops, the VT command skips to the next vertical tab position.

The line-feed pitch affects the vertical tab stops. When you change the line-feed pitch, the vertical tab position shift.

When you designate new vertical tab stops, the printer clears all previously selected tabs.

The printer does not set any vertical tab stops when you turn on the printer. ESC R or ESC B NUL clears all vertical tab stops.

ESC R   *SET ALL TABS TO POWER ON SETTINGS*

Format: ASCII code: ESC   R
                   Hexadecimal: 1B   52
                   Decimal: 27   82

Function: This command clears all vertical tab stops and sets the horizontal tab stops
                   to the same positions they were in when you first turned on the printer (one
                   tab in every eighth column from the left margin).

ESC [\ *n*1 *n*2
NUL NUL *m*1 *m*2

SET BASE LINE-FEED PITCH

Format:

ASCII code:	ESC	[	\	*n*1	*n*2	NUL	NUL	*m*1	*m*2
Hexadecimal	1B	5B	5C	*n*1	*n*2	00	00	*m*1	*m*2
Decimal	27	91	92	*n*1	*n*2	0	0	*m*1	*m*2

Function:

ESC [\ defines the base line-feed pitch for the line spacing commands, ESC J *n* and ESC 3 *n*.

*n*1 and *n*2 specify the number of mode bytes following *n*2. Normally, *n*1 is 4 and *n*2 is 0.

When either *m*1 or *m*2 is 216, and the other is 0, the printer sets the base line-feed pitch to 1/216 inch. When either *m*1 or *m*2 is 180, and the other is 0, the printer sets the base line-feed pitch to 1/180 inch.

When you turn on the printer, the default base line-feed pitch is 1/216 inch in standard mode (Function Switch 6 set to the (AGM OFF) position), 1/180 inch in AGM mode (Function Switch 6 set to the (AGM ON) position).

ESC]

REVERSE LINE FEED

Format:

ASCII code:	ESC	]
Hexadecimal:	1B	5D
Decimal:	27	93

Function:

This command is ignored.

Horizontal Motion

HT
HORIZONTAL TAB

Format:	ASCII code:	HT
	Hexadecimal:	09
	Decimal:	9

Function: Moves the print head to the next horizontal tab stop after printing the buffer contents.

If there is no horizontal tab stop to the right of the current print head position, or if you set the next tab stop position to a position beyond the current right margin, the printer ignores HT.

Set tab stops with the ESC D command.

When you first turn on the printer, there is a horizontal tab stop at every eighth column, beginning at column 9.

ESC D *n*1...*n*28 NUL

Format:

ASCII code	ESC	D	*n*1...*n*28	NUL
Hexadecimal	1B	44	*n*1...*n*28	00
Decimal	27	68	*n*1...*n*28	0

Function:

You can set the maximum of 28 horizontal tab stops. (Note that the left margin setting is column 0.)

n represents the column number that you select for the horizontal tab stop. This value is a single-byte number from 1 to 137. Enter the number for the appropriate column after you have counted it off, beginning with column 0. Designate other horizontal tabs from left to right (in ascending order).

After you set the horizontal tab stops, the HT command skips to the next tab position to the right.

The character pitch and the printing mode affect the horizontal tabs. If the current font is proportionally spaced, the printer uses the width of the space code (32 Decimal) as the character pitch.

When you first turn on the printer, there is a horizontal tab stop at every eighth column from the left margin.

When you designate new horizontal tab stops, the printer clears all previously selected tab.

To reset the horizontal tabs to this default setting, use the ESC R command. To clear all tab stops, send the ESC D NUL command.

Horizontal tab stops are set at every eighth column when the printer is turned on.

ESC R   *SET ALL TABS TO POWER ON SETTINGS*

Format: ASCII code: ESC   R
                     Hexadecimal: 1B   52
                     Decimal: 27   82

Function: This command sets the horizontal tab stops to the same positions they were
                     in when you first turned on the printer (one tab in every eighth column
                     from the left margin) and clears all vertical tab stops.

ESC X *n*1 *n*2   *SET LEFT AND RIGHT MARGINS*

Format:

ASCII code:	ESC	X	*n*1	*n*2
Hexadecimal:	1B	58	*n*1	*n*2
Decimal:	27	88	*n*1	*n*2

Function:

Based on the current font pitch, you can set the left and right margins to specific character positions. Send ESC X, followed by the left margin position (*n*1) and the right margin position (*n*2).

Check how many characters per inch there are in the current font. Then, count the appropriate number of character spaces from the left edge of the page ($1 < n1 < n2 <$ maximum number of characters per line in the current font pitch).

Once set, the margin positions on the page do not change, even if you change the character-font pitch. If you want to change the margins in a new font pitch, send the ESC X *n*1 *n*2 command again with revised margin settings.

The minimum distance between the left and right margins is 2/5 inch. If you give values that would result in less than 2/5 inch between the margins, the printer ignores this command.

If you set the left margin to the left of the previous left margin setting, data prints at the original left-margin position of following data does not change. If you set the right margin to the right of the right-most column, the right-most column becomes the right margin.

BS

<div align="right">

BACKSPACE

</div>

Format: ASCII code: BS
              Hexadecimal: 08
              Decimal: 8

Function: This command moves the print head to the left one character space.

The current pitch determines the distance of a backspace. In double-width print mode, the printer doubles the backspace distance. If the current font is proportionally spaced, the printer uses the width of the space code (32 Decimal) as the backspace distance.

ESC d *n*1 *n*2

<div align="right">

RELATIVE DOT POSITIONING

</div>

Format: ASCII code: ESC   d   *n*1   *n*2
              Hexadecimal: 1B   64   *n*1   *n*2
              Decimal: 27   100 *n*1   *n*2

Function: This command sets the next print position to the right of the current position in dot units.

$n1$ and $n2$ are single-byte numbers used to determine the position where printing begins. The formula $n1 + (n2 \times 256)$ specifies the position. The dot pitch is 1/120 inch.

If you have set the underline mode and/or the overscore mode, lines print through the space created by the dot positioning.

Print Mode Selection

ESC I *n*   *SELECT PRINT MODE*

Format:	ASCII code:	ESC I	*n*
	Hexadecimal:	1B 49	*n*
	Decimal	27 73	*n*

Function: This command selects a resident or downloaded font in draft or letter-quality (LQ) mode according to the value of *n*. Refer to the table below.

n	Print Mode
0	Standard 10 cpi
2	LQ 10 cpi
3	LQ Proportional
4	Standard 10 cpi Download
6	LQ 10 cpi Download
7	LQ Proportional Download
8	Standard 12 cpi
10	LQ 12 cpi
12	Standard 12 cpi Download
14	LQ 12 cpi Download
16	Standard 17.1 cpi
18	LQ 17.1 cpi
20	Standard 17.1 cpi Download
22	LQ 17.1 cpi Download

Character Width and Print Size

DC2

SELECT STANDARD 10 CPI PRINTING

Format: ASCII code: DC2

Hexadecimal: 12

Decimal: 18

Function: This command sets the printer to standard 10 cpi printing mode and ends condensed mode or compressed mode after printing the buffer contents.

This command does not end double-width printing.

ESC :

SELECT COMPRESSED PRINTING

Format: ASCII code: ESC   :

Hexadecimal: 1B   3A

Decimal: 27   58

Function: This command selects the compressed character (12 cpi) and cancels the standard (10 cpi) mode and the condensed (17.1 cpi) code after printing the buffer contents.

This command does not end double-width printing.

SI   *SELECT CONDENSED PRINTING*

Format: ASCII code: SI
                     Hexadecimal: 0F
                     Decimal: 15

Function: This command sets condensed printing after printing the buffer contents.
                     Character spacing in condensed mode is 17.1 characters per inch.

                     The printer also condenses horizontal tabs and spaces.

                     Cancel condensed printing with the DC2 command.

                     In bit image mode or emphasized printing mode, the printer suspends con-
                     densed printing.

                     To change from compressed print (12 cpi) to condensed print (17.1 cpi), be
                     sure to end the compressed print mode with DC2 command before sending
                     SI. Otherwise, the printer ignores the SI command.

ESC P *n*

SELECT OR DESELECT PROPORTIONAL
CHARACTERS

Format:

ASCII code:	ESC	P	*n*
Hexadecimal:	1B	50	*n*
Decimal:	27	80	*n*

Function:

ESC P (1) selects proportional character mode after printing the buffer contents.

When you select proportional spacing (*n*=1), characters print in different sized spaces, depending on the width of each character. That is, narrow characters, such as i, print in a small space, while wide characters, such as W, print in a wide space.

ESC P (0) or ESC I (*n*) ends the proportional spacing mode. When you use the ESC P (0) command to end the proportional spacing mode the printer returns to the LQ print mode and the character pitch that were in use before you selected proportional spacing.

SO

SET DOUBLE-WIDTH PRINTING

Format:

ASCII code: SO

Hexadecimal: 0E

Decimal: 14

Function:

This command sets the double-width printing for one line only.

In the double-width printing mode, the printer doubles the width of a printed character. Likewise, the printer doubles the pitch of the spaces. However, it does not double the pitch of horizontal tabs; double-width printing does not affect them.

CR, CAN, LF, FF, VT, DC4, ESC W (0), or ESC [@ cancels double-width printing.

DC4

CANCEL DOUBLE-WIDTH PRINTING

Format:

ASCII code: DC4

Hexadecimal   14

Decimal   20

Function:

This command cancels single-line double-width printing that you set with the SO command.

ESC W *n*   *CONTINUOUS DOUBLE-WIDTH PRINTING*

Format:

ASCII code:	ESC	W	*n*
Hexadecimal:	1B	57	*n*
Decimal:	27	87	*n*

Function:

ESC W (1) selects double-width printing mode after printing the buffer contents. ESC W (0) deselects double-width printing mode set by ESC W (1).

In the double-width printing mode, the printer doubles the width of a printed character. Likewise, the printer doubles the pitch of the spaces. However, it does not double the pitch of horizontal tabs; double-width printing does not affect them.

ESC [@ n1 n2
NUL NUL m1 m2

DOUBLE-HEIGHT PRINTING

Format:

ASCII code:	ESC	[	@	n1	n2	NUL	NUL	m1	m2
Hexadecimal:	1B	5B	40	n1	n2	00	00	m1	m2
Decimal:	27	91	64	n1	n2	0	0	m1	m2

Function:

This command selects or deselects double-height printing mode, double-width printing mode, or both modes at the same time.

In addition to the functions mentioned above, you can also use this command to set double line spacing.

$n1$ and $n2$ specify the number of mode bytes following $n2$. Normally, $n1$ is 4 and $n2$ is 0.

The high-order half-byte of $m1$ controls the line spacing. The low-order half-byte of $m1$ controls the character height.

The low-order half-byte of $m2$ controls the character width. The high-order half-byte of $m2$ is ignored.

If you select the double-height character mode, the printer automatically uses the LQ character mode.

Refer to the table on the next page to see the modes you can select by using $m1$ and $m2$.

Character Width and Print Size

m1		Mode
Hex.	Dec.	
00	0	No change
01	1	Line spacing unchanged, standard-height character
02	2	Line spacing unchanged, double-height character
10	16	Single line spacing, character height unchanged
11	17	Single line spacing, standard-height character
12	18	Single line spacing, double-height character
20	32	Double line spacing, character height unchanged
21	33	Double line spacing, standard-height character
22	34	Double line spacing, double-height character

m2		Mode
Hex.	Dec.	
00	0	No change
01	1	Standard-width character
02	2	Double-width character

Print Enhancement

ESC E
<div align="right">*SET EMPHASIZED PRINTING*</div>

Format: ASCII code: ESC   E
                         Hexadecimal: 1B   45
                         Decimal: 27   69

Function: This command selects the emphasized printing mode after printing the buffer contents.

In the emphasized printing mode, this printer prints characters twice–once in the normal printing position, then again with a slight horizontal shift.

ESC F
<div align="right">*CANCEL EMPHASIZED PRINTING*</div>

Format: ASCII code: ESC   F
                         Hexadecimal: 1B   46
                         Decimal: 27   70

Function: This command cancels the emphasized printing mode set by the ESC E command after printing the buffer contents.

ESC G

SET DOUBLE-STRIKE PRINTING

Format: ASCII code: ESC G
              Hexadecimal: 1B   47
              Decimal: 27   71

Function: This command sets double-strike printing mode after printing the buffer contents.

In the double-strike printing mode, this printer prints characters twice - once in the normal printing position then again with a slight vertical shift.

The printer suppresses double-strike printing in high-resolution graphics mode.

ESC H

CANCEL DOUBLE-STRIKE PRINTING

Format: ASCII code: ESC H
              Hexadecimal: 1B   48
              Decimal: 27   72

Function: This command cancels double-strike printing mode set by ESC G command after printing the buffer contents.

ESC S *n*   *SET SUPERSCRIPT/SUBSCRIPT*

Format: ASCII code: ESC   S   *n*
                     Hexadecimal: 1B   53   *n*
                     Decimal: 27   83   *n*

Function: This command selects superscript/subscript mode after printing the buffer
                     contents.

                     In superscript mode, a character prints on the upper half of a normal
                     character space. In subscript mode, a character prints on the lower half of a
                     normal character space.

                     The ESC S (0) command sets the superscript mode and the ESC S (1)
                     command sets the subscript mode.

                     The ESC T command cancels both codes.

ESC T   *END SUPERSCRIPT/SUBSCRIPT*

Format: ASCII code: ESC   T
                     Hexadecimal: 1B   54
                     Decimal: 27   84

Function: This command deselects superscript/subscript mode and returns the
                     printer to the character mode it used before you selected this mode.

ESC - *n*   *UNDERLINING*

Format: ASCII code: ESC   -   *n*
                  Hexadecimal: 1B   2D *n*
                  Decimal: 27   45 *n*

Function: ESC - (1) sets the underline mode. When you select underlining, the
                  printer underlines all characters and spaces (except bit image data, graph-
                  ics symbols, and the spaces moved by horizontal tabs).

                  ESC - (0) cancels this mode.

ESC _ *n*   *OVERSCORING*

Format: ASCII code: ESC   _   *n*
                  Hexadecimal: 1B   5F *n*
                  Decimal: 27   95 *n*

Function: ESC _ (1) sets the overscore mode. When you select overscoring, the
                  printer overscores all characters and spaces (except bit image data,
                  graphic symbols, and spaces moved by horizontal tabs).

                  ESC _ (0) cancels this mode.

Character Table Control

ESC 6   *SELECT IBM CHARACTER SET 2*

Format: ASCII: ESC   6
                     Hexadecimal: 1B   36
                     Decimal: 27   54

Function: This command selects the IBM Character Set 2.

                     When you turn on the printer, the setting of the Function Switch 5 deter-
                     mines the default character set.

ESC 7   · *SELECT IBM CHARACTER SET 1*

Format: ASCII: ESC   7
                     Hexadecimal: 1B   37
                     Decimal: 27   55

Function: This command selects the IBM Character Set 1

                     When you turn on the printer, the setting of the Function Switch 5 deter-
                     mines the default character set.

ESC ^ *n*

**PRINT A CHARACTER FROM
ALL CHARACTERS CHART**

Format:	ASCII code:	ESC	^	*n*
	Hexadecimal:	1B	5E	*n*
	Decimal:	27	94	*n*

Function: ESC ^ *n* prints only one character from the All Characters Chart.

n is the ASCII code for the character you want to print.

To print more than one character from the All Characters Chart, use the ESC \ command.

ESC \ *n*1 *n*2

**PRINT CONTINUOUSLY FROM ALL
CHARACTERS CHART**

Format:	ASCII code:	ESC	\	*n*1	*n*2
	Hexadecimal	1B	5C	*n*1	*n*2
	Decimal	27	92	*n*1	*n*2

Function: This command specifies the next $n1 + (n2 \times 256)$ characters to print from the All Characters Chart. Refer to the "IBM All Characters Chart" in the character set appendix.

While this command is in effect, none of the control codes function.

Downloading Characters

ESC = $n1$ $n2$ m $a1$ $a2$ *DEFINE DOWNLOADING CHARACTERS*

Format:

ASCII code:	ESC	=	$n1$	$n2$	m	$a1$	$a2$
Hexadecimal:	1B	3D	$n1$	$n2$	m	$a1$	$a2$
Decimal	27	61	$n1$	$n2$	m	$a1$	$a2$

Function: This command defines downloading characters.

$n1$ and $n2$ specify the number of data bytes following $n2$ as $n1 + (n2 \times 256)$.
If both $n1$ and $n2$ are 0, the printer initializes downloading area.

m is decimal 35.

$a1$ and $a2$ specify the memory address where the printer stores the data.

To select the downloading characters defines by this command, use the code sequence ESC I n.

Graphic Printing Control

ESC K *n1 n2*　　　*NORMAL-DENSITY 8-PIN BIT IMAGE MODE*

Format:　　ASCII code:　　ESC　K　*n*1　*n*2

Hexadecimal:　1B　4B　*n*1　*n*2

Decimal　　　27　75　*n*1　*n*2

Function:　This commands prints 8-pin bit image graphics at normal density. In normal-density 8-pin bit image mode, horizontal dot (bit) density is 1/60 inch.

*n*1 and *n*2 indicate the horizontal dot position. The actual value is *n*1 + (256 × *n*2). The total number of data bytes (*n*1, *n*2) should not exceed 480.

The number of data bytes (*n*1 + *n*2 × 256) equals the number of horizontal columns.

ESC L *n1 n2*　　　*DOUBLE-DENSITY 8-PIN BIT IMAGE MODE*

Format:　　ASCII code:　　ESC　L　*n*1　*n*2

Hexadecimal:　1B　4C　*n*1　*n*2

Decimal:　　　27　76　*n*1　*n*2

Function:　This command prints 8-pin bit image graphics at double density. In double-density 8-pin bit image mode, horizontal dot (bit) density is 1/120 inch.

The total number of data bytes (*n*1, *n*2) should not exceed 960.

ESC Y *n*1 *n*2

DOUBLE-DENSITY 8-PIN BIT IMAGE
MODE (NORMAL SPEED)

Format:

ASCII code:	ESC	Y	n1	n2
Hexadecimal:	1B	59	*n*1	*n*2
Decimal:	27	89	*n*1	*n*2

Function: This command prints 8-pin double-density bit image graphics at normal speed.

In double-density bit image mode (normal speed), the dot density is 1/120 inch. The dot construction is the same as that for double-density bit image mode. However, do not continuously print bits that are in the same vertical position or you could damage the printer.

The definition and limits of this mode are like those described in the "Double-Density Bit Image Mode" section.

ESC Z *n*1 *n*2

QUADRUPLE-DENSITY 8-PIN BIT
IMAGE MODE

Format:

ASCII code:	ESC	Z	n1	n2
Hexadecimal:	1B	5A	*n*1	*n*2
Decimal:	27	90	*n*1	*n*2

Function: This command prints 8-pin bit image graphics at quadruple density.

In quadruple-density 8-pin bit image mode, horizontal dot (bit) density is 1/240 inch. In this mode, the printer does not continuously print the bits in the same vertical position.

The total number of data bytes (*n*1, *n*2) should not exceed 1,920.

ESC [g *n*1 *n*2 *m*

SET VARIABLE BIT IMAGE
GRAPHICS MODE

Format:

ASCII code:	ESC	[	g	*n*1	*n*2	*m*
Hexadecimal:	1B	5B	67	*n*1	*n*2	*m*
Decimal:	27	91	103	*n*1	*n*2	*m*

Function:

This command selects one of the various graphics modes.

*n*1 and *n*2 specify the number of data bytes following *n*2 as $n1 + (n2 \times 256)$. Both of these are single-byte numbers; *n*1 is the lower part of the value and *n*2 is the upper part of the value.

m specifies one of the following eight graphics modes:

m	Graphic Mode
0	60-dpi, 8-pin bit image mode (Same as ESC K)
1	120-dpi, 8-pin bit image mode (Same as ESC L)
2	120-dpi, 8-pin bit image mode, normal speed (Same as ESC Y)
3	240-dpi, 8-pin bit image mode, (Same as ESC Z)
8	60-dpi, 24-pin bit image mode
9	120-dpi, 24-pin bit image mode
11	180-dpi, 24-pin bit image mode
12	360-dpi, 24-pin bit image mode

When *m* is a 2, 3, or 12 the printer does not continuously print bits in the same vertical position.

In 8-pin bit image mode (*m*=0, 1, 2, or 3), each dot column requires 1 byte of data for defining 8 vertical dots. In this case, the number of data bytes ($n1 + n2 \times 256$) equals the number of horizontal dot columns plus one.

In 24-pin bit image mode (*m*=8, 9, 11, or 12), each dot column requires 3 bytes of data for defining 24 vertical dots. In this case, use the following formula to calculate the number of data bytes ($n1 + n2 \times 256$).

Number of data bytes ($n1 + n2 \times 256$) =

$$1 + [3 \times \text{(number of horizontal dot columns)}]$$

ESC * m
n1 n2

Format:

ASCII code:	ESC	*	m	$n1$	$n2$
Hexadecimal:	1B	2A	m	$n1$	$n2$
Decimal:	27	42	m	$n1$	$n2$

Function:

Selects one of the various graphics modes in the Alternate Graphics Mode (AGM) mode.

This command is valid only in AGM mode. To select the AGM mode, set Function switch 6 to "ON" position. In AGM mode, you can use high-resolution 24-pin graphic command.

m specifies one of the following eight graphics modes:

m	Graphic Mode
0	60-dpi, 8-pin bit image mode (Same as ESC K)
1	120-dpi, 8-pin bit image mode (Same as ESC L)
2	120-dpi, 8-pin bit image mode, normal speed (Same as ESC Y)
3	240-dpi, 8-pin bit image mode (Same as ESC Z)
4	80-dpi, 8-pin bit image mode (CRT I)
6	90-dpi, 8-pin bit image mode (CRT II)
32	60-dpi, 24-pin bit image mode (High-resolution for ESC K)
33	120-dpi, 24-pin bit image mode (High-resolution for ESC L)
38	90-dpi, 24-pin bit image mode (CRT III)
39	180-dpi, 24-pin bit image mode (Triple-density, high-resolution)
40	360-dpi, 24-pin bit image mode (Hex-density, high-resolution)

$n1$ and $n2$ specify the number of data bytes following $n2$ as $n1 + (n2 \times 256)$. Both of these are single-byte numbers; $n1$ is the lower part of the value and $n2$ is the upper part of the value.

In 8-pin bit image mode ($m=0$, 1, 2, 3, 4, or 6), each dot column requires one byte of data to define 8 vertical dots. In this case, the number of data bytes ($n1 + n2 \times 256$) equals the number of horizontal columns.

In 24-pin bit image mode (m=32, 33, 38, 39 or 40), each dot column requires three byte of data for defining 24 vertical dots. In this case, use the following formula to calculate the number of data bytes ($n1 + n2 \times 256$).

Number of data bytes ($n1 + n2 \times 256$) = 3 × (number of horizontal dot columns)

Appendix A
Character Sets

IBM Character Set 1 (Code Page 437)

H\L	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL		SP	0	@	P	`	p	NUL		á	≡	∟	╨	α	≡
1		DC1	!	1	A	Q	a	q		DC1	í	▓	┴	╤	β	±
2		DC2	"	2	B	R	b	r		DC2	ó	█	┬	╥	Γ	≥
3			#	3	C	S	c	s			ú	│	├	╙	π	≤
4		DC4	$	4	D	T	d	t		DC4	ñ	┤	─	╘	Σ	⌠
5			%	5	E	U	e	u			Ñ	╡	┼	╒	σ	⌡
6			&	6	F	V	f	v			ª	╢	╞	╓	μ	÷
7			'	7	G	W	g	w			º	╖	╟	╫	τ	≈
8	BS	CAN	(	8	H	X	h	x	BS	CAN	¿	╕	╚	╪	Φ	°
9	HT		)	9	I	Y	i	y	HT		⌐	╣	╔	┘	Θ	∙
A	LF		*	:	J	Z	j	z	LF		¬	║	╩	┌	Ω	·
B	VT	ESC	+	;	K	[	k	{	VT	ESC	½	╗	╦	█	δ	√
C	FF		,	<	L	\	l			FF		¼	╝	╠	▄	∞	ⁿ
D	CR		−	=	M	]	m	}	CR		¡	╜	=	▌	φ	²
E	SO		.	>	N	^	n	~	SO		«	╛	╬	▐	ε	■
F	SI		/	?	O	_	o	NUL	SI		»	┐	╧	▀	∩	SP

IBM Character Set 2 (Code Page 437)

H / L	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL		SP	0	@	P	`	p	Ç	É	á	≡	└	╨	α	≡
1		DC1	!	1	A	Q	a	q	ü	æ	í	▨	⊥	╤	β	±
2		DC2	"	2	B	R	b	r	é	Æ	ó	█	┬	π	Γ	≥
3	♥		#	3	C	S	c	s	â	ô	ú	│	├	╙	π	≤
4	♦	DC4	$	4	D	T	d	t	ä	ö	ñ	┤	─	╘	Σ	⌠
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	╡	┼	╒	σ	⌡
6	♠		&	6	F	V	f	v	å	û	ª	╢	╞	╓	μ	÷
7			'	7	G	W	g	w	ç	ù	º	╥	╟	╫	τ	≈
8	BS	CAN	(	8	H	X	h	x	ê	ÿ	¿	╖	╚	╪	Φ	°
9	HT		)	9	I	Y	i	y	ë	Ö	⌐	╕	╔	┘	Θ	•
A	LF		*	:	J	Z	j	z	è	Ü	¬	║	╩	┌	Ω	·
B	VT	ESC	+	;	K	[	k	{	ï	¢	½	╗	╦	█	δ	√
C	FF		,	<	L	\	l	|	î	£	¼	╝	╠	■	∞	ⁿ
D	CR		−	=	M	]	m	}	ì	¥	¡	╜	=	█	φ	²
E	SO		.	>	N	^	n	~	Ä	Pt	«	╛	╬	█	ε	■
F	SI		/	?	O	_	o	NUL	Å	ƒ	»	┐	⊥	■	∩	SP

IBM All Character Set (Code Page 437)

H⧸L	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	Ø	►		0	@	P	`	p	Ç	É	á	≣	└	╨	α	≡
1	☻	◄	!	1	A	Q	a	q	ü	æ	í	▌	┴	╤	β	±
2	☻	↕	"	2	B	R	b	r	é	Æ	ó	█	┬	π	Γ	≥
3	♥	‼	#	3	C	S	c	s	â	ô	ú	│	├	╨	π	≤
4	♦	¶	$	4	D	T	d	t	ä	ö	ñ	┤	─	╠	Σ	⌠
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	╡	┼	╞	σ	⌡
6	♠	▬	&	6	F	V	f	v	å	û	ª	╢	╟	╥	μ	÷
7	•	↨	'	7	G	W	g	w	ç	ù	º	╖	╫	╪	τ	≈
8	◘	↑	(	8	H	X	h	x	ê	ÿ	¿	╕	╙	╪	Φ	°
9	○	↓	)	9	I	Y	i	y	ë	Ö	⌐	╣	╚	┘	Θ	∙
A	◙	→	*	:	J	Z	j	z	è	Ü	¬	║	╩	┌	Ω	·
B	♂	←	+	;	K	[	k	{	ï	¢	½	╗	╦	█	δ	√
C	♀	∟	,	<	L	\	l	|	î	£	¼	╝	╠	■	∞	ⁿ
D	♪	↔	-	=	M	]	m	}	ì	¥	¡	╜	=	█	φ	²
E	♫	▲	.	>	N	^	n	~	Ä	₧	«	╛	╬	█	ε	■
F	☼	▼	/	?	O	_	o	⌂	Å	ƒ	»	┐	⊥	▪	∩	

IBM All Character Set (Code Page 850)

H \ L	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	Ø	►		0	@	P	`	p	Ç	É	á	≡	└	ð	Ó	-
1	☺	◄	!	1	A	Q	a	q	ü	æ	í	▓	⊥	Ð	β	±
2	☻	↕	"	2	B	R	b	r	é	Æ	ó	█	┬	Ê	Ô	=
3	♥	‼	#	3	C	S	c	s	â	ô	ú	│	├	Ë	Ò	¾
4	♦	¶	$	4	D	T	d	t	ä	ö	ñ	┤	─	È	õ	¶
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	Á	┼	ı	Õ	§
6	♠	▬	&	6	F	V	f	v	å	û	ª	Â	ã	Í	µ	÷
7	•	↨	'	7	G	W	g	w	ç	ù	º	À	Ã	Î	Þ	¸
8	◘	↑	(	8	H	X	h	x	ê	ÿ	¿	©	╚	Ï	Þ	°
9	○	↓	)	9	I	Y	i	y	ë	Ö	®	╣	╔	┘	Ú	¨
A	■	→	*	:	J	Z	j	z	è	Ü	¬	║	╩	┌	Û	·
B	♂	←	+	;	K	[	k	{	ï	ø	½	╗	╦	■	Ù	¹
C	♀	∟	,	<	L	\	l	|	î	£	¼	╝	╠	■	ý	³
D	♪	↔	-	=	M	]	m	}	ì	Ø	¡	¢	=	¦	Ý	²
E	♫	▲	.	>	N	^	n	~	Ä	×	«	¥	╬	Ì	¯	■
F	☼	▼	/	?	O	_	o	⌂	Å	ƒ	»	┐	¤	■	´	

44

IBM All Character Set (Code Page 860)

H / L	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	Ø	►		0	@	P	`	p	Ç	É	á	≣	└	╨	α	≡
1	☻	◄	!	1	A	Q	a	q	ü	À	í	▌	┴	╥	β	±
2	●	↕	"	2	B	R	b	r	é	È	ó	█	┬	π	Γ	≥
3	♥	‼	#	3	C	S	c	s	â	ô	ú	│	├	╩	π	≤
4	♦	¶	$	4	D	T	d	t	ã	õ	ñ	┤	─	╞	Σ	⌠
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	╡	┼	╟	σ	⌡
6	♠	▬	&	6	F	V	f	v	Á	Ú	ª	╢	╞	π	µ	÷
7	●	↨	'	7	G	W	g	w	ç	ù	º	╖	╫	╬	τ	≈
8	◘	↑	(	8	H	X	h	x	ê	Ì	¿	╕	╩	╪	Φ	°
9	○	↓	)	9	I	Y	i	y	Ê	Õ	Ò	╣	╔	╨	Θ	∙
A	█	→	*	:	J	Z	j	z	è	Ü	¬	║	╦	Γ	Ω	·
B	♂	←	+	;	K	[	k	{	Í	¢	½	╗	╥	█	δ	√
C	♀	∟	,	<	L	\	l			Ô	£	¼	╝	╟	■	∞	ⁿ
D	♪	↔	-	=	M	]	m	}	ì	Ù	¡	╜	=	▌	φ	²
E	♫	▲	.	>	N	^	n	~	Ã	Pt	«	╛	╬	▐	ε	■
F	☼	▼	/	?	O	_	o	⌂	Â	Ó	»	┐	⊥	▀	∩	

IBM All Character Set (Code Page 863)

H \ L	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	Ø	►		0	@	P	`	p	Ç	É	¦	≡	└	╨	α	≡
1	☺	◄	!	1	A	Q	a	q	ü	È	´	▓	┴	╤	β	±
2	☻	↕	"	2	B	R	b	r	é	Ê	ó	█	┬	π	Γ	≥
3	♥	‼	#	3	C	S	c	s	â	ô	ú	│	├	╙	π	≤
4	♦	¶	$	4	D	T	d	t	Â	Ë	¨	┤	─	╘	Σ	⌠
5	♣	§	%	5	E	U	e	u	à	Ï	.	╡	┼	╒	σ	⌡
6	♠	▬	&	6	F	V	f	v	¶	û	³	╢	╞	π	μ	÷
7	•	↕	'	7	G	W	g	w	ç	ù	¯	╖	╟	╫	τ	≈
8	◘	↑	(	8	H	X	h	x	ê	¤	Î	╕	╚	‡	Φ	°
9	○	↓	)	9	I	Y	i	y	ë	Ô	⌐	╣	╔	╓	Θ	•
A	■	→	*	:	J	Z	j	z	è	Ü	¬	║	╩	⌐	Ω	·
B	♂	←	+	;	K	[	k	{	ï	¢	½	╗	╦	■	δ	√
C	♀	└	,	<	L	\	l	|	î	£	¼	╝	╠	■	∞	ⁿ
D	♪	↔	-	=	M	]	m	}	=	Ù	¾	╜	=	▌	φ	²
E	♫	▲	.	>	N	^	n	~	À	Û	«	╛	╧	▐	ε	■
F	☼	▼	/	?	O	_	o	⌂	§	ƒ	»	┐	╪	▀	∩	

IBM All Character Set (Code Page 865)

H\L	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	∅	►		0	@	P	`	p	Ç	É	á	▤	└	╨	α	≡
1	☻	◄	!	1	A	Q	a	q	ü	æ	í	▓	┴	╤	β	±
2	☻	↕	"	2	B	R	b	r	é	Æ	ó	█	┬	π	Γ	≥
3	♥	‼	#	3	C	S	c	s	â	ô	ú	│	├	╙	π	≤
4	♦	¶	$	4	D	T	d	t	ä	ö	ñ	┤	─	╘	Σ	⌠
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	╡	┼	╒	σ	⌡
6	♠	▬	&	6	F	V	f	v	å	û	ª	╢	╞	╓	µ	÷
7	•	↨	'	7	G	W	g	w	ç	ù	º	╖	╟	╫	τ	≈
8	◘	↑	(	8	H	X	h	x	ê	ÿ	¿	╕	╚	╪	Φ	°
9	○	↓	)	9	I	Y	i	y	ë	Ö	⌐	╣	╔	┘	Θ	∙
A	◙	→	*	:	J	Z	j	z	è	Ü	¬	║	╩	┌	Ω	·
B	♂	←	+	;	K	[	k	{	ï	ø	½	╗	╦	█	δ	√
C	♀	∟	,	<	L	\	l	|	î	£	¼	╝	╠	▄	∞	ⁿ
D	♪	↔	-	=	M	]	m	}	ì	Ø	¡	╜	=	▌	φ	²
E	♫	▲	.	>	N	^	n	~	Ä	Pt	«	╛	╬	▐	ε	■
F	☼	▼	/	?	O	_	o	⌂	Å	ƒ	¤	┐	┴	▀	∩	

Appendix B
Control Code Summary

Symbol	Code		Function	Page
	Dec.	Hex.		
BS	8	08	Backspace—Moves the print head to the left one character space	20
HT	9	09	Horizontal tab—Moves the print head to the next horizontal tab stop after printing the buffer contents	16
LF	10	0A	Line feed—Feeds the paper one line after printing the current buffer contents	5
VT	11	0B	Vertical tab—Feeds the paper to the next vertical tab stop after printing the buffer contents	12
FF	12	0C	Form feed—Does a form feed to the top of the next page after printing the current buffer contents	9
CR	13	0D	Carriage return—Tells the printer to print the current buffer contents and then do a carriage return. A carriage return moves the print head to the left margin on the same line	3
SO	14	0E	Starts double-width printing for one line only. Double-width characters print twice as wide as the current character spacing	25
SI	15	0F	Starts condensed printing after printing the buffer contents. Character spacing in condensed mode is 17.1 characters per inch	23
DC1	17	11	Sets the printer to accept data from a computer after the ESC Q command has deselected the printer	1
DC2	18	12	Ends condensed mode or compressed mode and sets the printer to standard 10 cpi printing mode after printing the buffer contents	22

Symbol	Code		Function	Page
	Dec.	Hex.		
DC4	20	14	Cancels single-line double-width printing that you selected with the SO command	25
CAN	24	18	Clears all data in the printer buffer, except the control codes	3
ESC • *m* *n1 n2* *d1...dk*	27 42 *m* *n1 n2* *d1...dk*	1B 2A *m* *n1 n2* *d1...dk*	Selects one of the various graphics modes in the Alternate Graphics Mode (AGM) mode *m* specifies one of the following eight graphics modes: *m*=0: 60-dpi, 8-pin bit image mode (Same as ESC K) *m*=1: 120-dpi, 8-pin bit image mode (Same as ESC L) *m*=2: 120-dpi, 8-pin bit image mode, normal speed (Same as ESC Y) *m*=3: 240-dpi, 8-pin bit image mode (Same as ESC Z) *m*=4: 80-dpi, 8-pin bit image mode (CRT I) *m*=6: 90-dpi, 8-pin bit image mode (CRT II) *m*=32:60-dpi, 24-pin bit image mode (High-resolution for ESC K) *m*=33:120-dpi, 24-pin bit image mode (High-resolution for ESC L) *m*=38:90-dpi, 24-pin bit image mode (CRT III) *m*=39:180-dpi, 24-pin bit image mode (Triple-density High-resolution) *m*=40:360-dpi, 24-pin bit image mode (Hex-density, high-resolution)	39
ESC - *n*	27 45 *n*	1B 2D *n*	Starts or stops continuous underlining	32
ESC 0	27 48	1B 30	Sets the line feed distance to 1/8 inch	5
ESC 1	27 49	1B 31	Sets the line feed distance to 7/72 inch	6
ESC 2	27 50	1B 32	Starts the line spacing that you defined with the ESC A command	6

Symbol	Code		Function	Page
	Dec.	Hex.		
ESC 3 *n*	27 51 *n*	1B 33 *n*	Sets the line feed distance to *n*/216 inch in standard mode, *n*/180 inch in AGM mode (DIP Switch 3 set to ON)	7
ESC 4	27 52	1B 34	Sets the current position on the page as the top of form	10
ESC 5 *n*	27 53 *n*	1B 35 *n*	Turns the automatic line feed on or off	8
ESC 6	27 54	1B 36	Selects IBM Character Set 2	33
ESC 7	27 55	1B 37	Selects IBM Character Set 1	33
ESC :	27 58	1B 3A	Selects the compressed character (12 cpi) after printing the buffer contents	22
ESC = *n1 n2* *m* *a1 a2* *d1...d11*	27 61 *n1 n2* *m* *a1 a2* *d1...d11*	1B 3D *n1 n2* *m* *a1 a2* *d1...d11*	Defines downloading characters	35
ESC A *n*	27 65 *n*	1B 41 *n*	Sets the line spacing to *n*/72 inch in standard mode, *n*/60 inch in AGM mode (Function Switch 6 set to the (AGM ON) position	7
ESC B *n1...n64* NUL	27 66 *n1...n64* 0	1B 42 *n1...n64* 00	Set up to 64 vertical tab stops	13
ESC C *n*	27 67 *n*	1B 43 *n*	Sets the form length in lines	9

Symbol	Code		Function	Page
	Dec.	Hex.		
ESC C NUL *n*	27 67 0 *n*	1B 43 00 *n*	Sets the form length in inches	10
ESC D *n1...n28* NUL	27 68 *n1...n28* 0	1B 44 *n1...n28* 00	Sets up to 28 horizontal tab stops	17
ESC E	27 69	1B 45	Selects the emphasized printing mode after printing the buffer contents	29
ESC F	27 70	1B 46	Cancels the emphasized printing mode after printing the buffer contents	29
ESC G	27 71	1B 47	Sets double-strike printing mode after printing the buffer contents	30
ESC H	27 72	1B 48	Stops double-strike printing mode after printing the buffer contents	30
ESC I *n*	27 73 *n*	1B 49 *n*	Selects a normal or downloaded font in standard (draft) or letter-quality (LQ) mode after printing the buffer contents	21
ESC J *n*	27 74 *n*	1B 4A *n*	Advances the paper by a variable amount (*n*/216 inch in standard mode, *n*/180 inch in AGM mode) after printing the buffer contents	8
ESC K *n1 n2* *d1...dk*	27 75 *n1 n2* *d1...dk*	1B 4B *n1 n2* *d1...dk*	Prints 8-pin bit image graphics at normal density	36
ESC L *n1 n2* *d1...dk*	27 76 *n1 n2* *d1...dk*	1B 4C *n1 n2* *d1...dk*	Prints 8-pin bit image graphics at double density	36

Symbol	Code		Function	Page
	Dec.	Hex.		
ESC N *n*	27 78 *n*	1B 4E *n*	Sets the number of lines to skip at the end of each page	11
ESC O	27 79	1B 4F	Cancels skip perforation set by ESC N	11
ESC P *n*	27 80 *n*	1B 50 *n*	Selects or deselects proportional character mode after printing the buffer contents	24
ESC Q (24)	27 81 36	1B 51 24	Sets the printer so that it will not accept data from the computer	1
ESC R	27 82	1B 52	Sets the horizontal tab stops to the same positions they were in when you first turned on the printer (one tab in every eighth column from the left to right) and clears all vertical tab stops	14 18
ESC S *n*	27 83 *n*	1B 53 *n*	Selects superscript/subscript mode after printing the buffer contents *n*=0: selects superscript mode *n*=1: selects subscript mode	31
ESC T	27 84	1B 54	ESC T deselects superscript/subscript mode and returns the printer to the character mode it used before you selected this mode	31
ESC U *n*	27 85 *n*	1B 55 *n*	Selects or deselects bidirectional printing mode *n*=0: selects bidirectional printing mode *n*=1: selects unidirectional printing mode	4
ESC W *n*	27 87 *n*	1B 57 *n*	Selects or deselects continuous double-width printing mode after printing the buffer contents	26

Symbol	Code		Function	Page
	Dec.	Hex.		
ESC X *n*1 *n*2	27 88 *n*1 *n*2	1B 58 *n*1 *n*2	Sets the left and right margins	19
ESC Y *n*1 *n*2 *d*1...*dk*	27 89 *n*1 *n*2 *d*1...*dk*	1B 59 *n*1 *n*2 *d*1...*dk*	Prints 8-pin double-density bit image graphics at normal speed	37
ESC Z *n*1 *n*2 *d*1...*dk*	27 90 *n*1 *n*2 *d*1...*dk*	1B 5A *n*1 *n*2 *d*1...*dk*	Prints 8-pin bit image graphics at quadruple density	37
ESC [@ *n*1 *n*2 NUL NUL *m*1 *m*2	27 91 64 *n*1 *n*2 0 0 *m*1 *m*2	1B 5B 40 *n*1 *n*2 00 00 *m*1 *m*2	Selects or deselects double-height printing mode, double-width printing mode, or both modes at the same time	27
ESC [\ *n*1 *n*2 NUL NUL *m*1 *m*2	27 91 92 *n*1 *n*2 0 0 *m*1 *m*2	1B 5B 5C *n*1 *n*2 00 00 *m*1 *m*2	Sets the base line-feed pitch	15

Symbol	Code		Function	Page
	Dec.	Hex.		
ESC [g *n1 n2* *m* *d1...dk*	27 91 103 *n1 n2* *m* *d1...dk*	1B 5B 67 *n1 n2* *m* *d1...dk*	Selects one of the various graphics modes *m*=0: 60-dpi, 8-pin bit image mode (Same as ESC K) *m*=1: 120-dpi, 8-pin bit image mode (Same as ESC L) *m*=2: 120-dpi, 8-pin bit image mode, normal speed (Same as ESC Y) *m*=3: 240-dpi, 8-pin bit image mode (Same as ESC Z) *m*=8: 60-dpi, 24-pin bit image mode *m*=9: 120-dpi, 24-pin bit image mode *m*=11: 180-dpi, 24-pin bit image mode *m*=12: 360-dpi, 24-pin bit image mode	38
ESC \ *n1 n2*	27 92 *n1 n2*	1B 5C *n1 n2*	Prints continuously from the All Characters Chart	34
ESC]	27 93	1B 5D	This command is ignored	15
ESC ^ *n*	27 94 *n*	1B 5E *n*	Prints a single character from the All Characters Chart	34
ESC _ *n*	27 95 *n*	1B 5F *n*	Starts or stops continuous overscoring	32
ESC d *n1 n2*	27 100 *n1 n2*	1B 64 *n1 n2*	Sets the next print position to the right of the current position	20
ESC j	27 106	1B 6A	Sets the printer off line after printing the buffer contents	2

Appendix C
Parallel Interface

Signal Configuration

Pin No.	Signal	IN/OUT	Pin No.	Signal	IN/OUT
1	STROBE	IN	19	GND	
2	DATA1	IN	20	GND	
3	DATA2	IN	21	GND	
4	DATA3	IN	22	GND	
5	DATA4	IN	23	GND	
6	DATA5	IN	24	GND	
7	DATA6	IN	25	GND	
8	DATA7	IN	26	GND	
9	DATA8	IN	27	GND	
10	ACK	OUT	28	GND	
11	BUSY	OUT	29	GND	
12	PE	OUT	30	GND	
13	SLCT	OUT	31	INITIAL	IN
14	HIGH		32	ERROR	OUT
15	NC		33	GND	
16	GND		34	NC	
17	CHASSIS GND		35	HIGH	
18	NC		36	NC	

Note 1: HIGH is connected through a 2.2 kΩ pull-up resistor to +5V.

Note 2: NC stands for lines Not Connected.

Note: blank page