PP8X Printer Command Manual

Pinnacle Technology Corp.

CONTENTS

1 COMMANDS

Command	Decimal	Hex	Function
HT	9	9	Horizontal tab
LF	10	0A	Print and line feed
CR	13	0D	Print and carriage return
DLE EOT	16 4	10 04	Transmit real-time state
ESC SP	27 32	1B 20	Set right-side character spacing
ESC !	27 33	1B 21	Select print mode(s)
ESC $	27 36	1B 24	Set absolute print position
ESC *	27 42	1B 2A	Select bit-image mode
ESC -	27 45	1B 2D	Turn underline mode on/off
ESC 2	27 50	1B 32	Select default line spacing
ESC 3	27 51	1B 33	Set line spacing
ESC =	27 61	1B 3D	Select printer on or off
ESC @	27 64	1B 40	Initialize printer
ESC C	27 67	1B 43	Set cut sheet eject length
ESC D	27 68	1B 44	Set horizontal tab positions
ESC J	27 74	1B 4A	Print bitmap lattice data, and feed n lines.
ESC a	27 97	1B 61	Position alignment
ESC d	27 100	1B 64	Print and feed paper n lines
ESC v	27 118	1B 76	Transmit paper sensor status

ESC	{	27	123	1B	7B	Turn upside-down printing mode on/off
FS	!	28	33	1C	21	Set Chinese characters mode
FS	S	28	83	1C	53	Set Chinese character space amount
FS	p	28	112	1C	70	Print bit image that download to flash
FS	q	28	113	1C	71	Define NV bit image
GS	!	29	33	1D	21	Select character size
GS	H	29	72	1D	48	Select printing position of HRI characters
GS	L	29	76	1D	4C	Set left margin
GS	h	29	104	1D	68	Set bar code height
GS	k	29	107	1D	6B	Print bar code
GS	v	29	118	1D	76	Print raster graphic
GS	w	29	119	1D	77	Set bar code width

● **HT   Horizontal tab**

Format: ASCII   HT

Decimal   9

Hex   09

Description: Moves the print position to the next horizontal tab position.

Notes: This command is ignored unless the next horizontal tab position has been set.

If the next horizontal tab position exceeds the printing area, the printer sets the printing position to [printing area width + 1].

Horizontal tab positions are set with ESC D.

If this command is received when the printing position is at [printing area width + 1], the printer executes print bufferfull printing of the current line and horizontal tab processing from the beginning of the next line.

Please refer to ESC D

- **LF**   **Print and line feed**

Format: ASCII: LF

            Decimal   10

            Hex   0A

Note: - LF prints the data in the print buffer and fed per line based on the

        current line space;

   - Print characters with CR command

- **CR**   **Print and carriage return**

Format: ASCII   CR

            Decimal   13

            Hex   0D

Note: - Set the print position to the beginning of the line.

   - Print characters with LF command

- **DLE EOT n**   **Transmit real-time state**

Format: ASCII   DLE   EOT   n

            Decimal   16   4   n

            Hex   10   04   n

Range: $1 \leqslant n \leqslant 4$

Note: transmit the real-time state parameter n of the printer, in order to designate the deferent printer state, define as follows:

n=1: transmit printer state;

n=2: transmit offline state;

n=3: transmit error state;

n=4: transmit paper roll sensor state;

● **ESC SP n**   Set right-side character spacing

Format: ASCII   ESC   SP   n

Decimal   27   32   n

Hex   1B   20   n

Range: $0 \leqslant n \leqslant 255$

ESC SP n sets the right-side character spacing to n (horizontal or vertical motion unit). It is used to change the spacing between characters. The default setting is n=0. When standard mode is selected, the horizontal motion unit set by GS P is used. When page mode is selected, the vertical or horizontal motion unit set by GS P is used for the print direction set by ESC T.

This command is effective for all characters (except for HRI characters).

● **ESC ！**   **Select print modes**

Format: ASCⅡ   ESC   ！   n

Decimal   27   33   n

Hex   1B   21   n

Range: $0 \leqslant n \leqslant 255$

Initial Value   n=0

Function   Select print mode(s) using n as follows.

Bit	Off/On	1/0	Hex	Decimal	Functions
0	Off	0	00	0	Character font A(12×24) selected
1，2	Off		---	---	Reserved
3	Off	0	00	0	Emphasized mode not selected.
	On	1	08	8	Emphasized mode selected.
4	Off	0	00	0	Double-height mode not selected.
	On	1	10	16	Double-height mode selected.
5	Off	0	00	0	Double-width mode not selected.
	On	1	20	32	Double-width mode selected.
6	Off		---	---	Reserved
7	Off	0	00	0	Underline mode not selected.
	On	1	80	128	Underline mode selected.

Details:

- Quadruple-size characters are printed by specifying both double-tall (bit4=1) and double-wide (bit 5=1) modes.

- An underline is applied to the entire character width, including the ESC SP (character right space amount). However, underlines are not applied to portions that have been skipped using HT (horizontal tab) or ESC V (character 90 degree rotation).

- The thickness of the underline is set by ESC - (specify/cancel underlines) regardless of the character.

- The base line for characters is the same when there are characters having different vertical direction ratios in the same line.

- The setting of the last received command is effective even when emphasized printing is executed by the ESC E (specify/cancel emphasized printing) command.

- The setting of the last received command is effective even when underlines are executed by the (ESC -) Specify/cancel underline command.

- The setting of the last received command is effective even when character size is executed by the GS! command.

- Emphasized printing (bit 3) is effective for ANK and Chinese characters. Other printing modes are effective only on ANK characters. Specifications using this command are ignored in HRI characters.

  The following are the font configurations on printers.

  Reference: ESC-, ESC E, GS!

● **ESC $**   **Set absolute print position**

Format:	ASCⅡ	ESC	$	nL	nH
	Decimal	27	36	nL	nH
	Hex	1B	24	nL	nH

Range: 0≤nL≤255   0≤nH≤255

● **ESC ***   **Select bit-image mode**

Format: ASCII   ESC   *   m nL nH d1 ... dk

           Decimal   27   42   m nL nH d1 ... dk

           Hex   1B   2A   m nL nH d1 ... dk

Range: m=0, 1, 32, 33   0≤nL≤255   0≤nH≤3   0≤d≤255

ESC * m nL nH d1 ... dk selects a bit-image mode using m for the number of dots specified by (nL + nH×256).　 Set a bit to 1 to print a dot, or set a bit to 0 to not print a dot. d indicates the bit image data. The modes selectable by m are as follows:

m	Mode	Vertical direction		Horizontal direction	
		Number of bits for vertical data	Dot density (DPI)	Dot density (DPI)	Amount of data (k)
0	8-dot single-density	8	68	101	192
1	8-dot double-density	8	68	203	384
2	24-dot single-density	24	203	101	192
33	24-dot double-density	24	203	203	384
39	24-dot double-density	24	203DPI	203DPI	384

● **ESC -**   **Turn underline mode on/off**

Format：ASCⅡ   ESC   -   n

　　　Decimal   27   45   n

　　　　Hex   1B   2D   n

Range： 0 ≤n≤1

● **ESC 2**   **select default line spacing**

Format: ASCⅡ   ESC   2

　　　Decimal   27   50

　　　Hex   1B   32

● **ESC 3**   **Set line spacing**

Format: ASCⅡ   ESC   3   n

　　　Decimal   27   51   n

　　　　Hex   1B   33   n

Range: 0 ≤n≤255

ESC 3 n sets the line spacing to n×(vertical or horizontal motion unit). The default setting of the paper feed amount is 1/6 inch (n=60). The maximum line spacing amount is 40 inches. When standard mode is selected, the vertical motion unit set by GS P is used. When page mode is selected, the vertical or horizontal motion unit set by GS P is used for the print direction set by ESC T.

The line spacing can be set independently in standard mode and in page mode.

- **ESC = n   Select peripheral device**

Format: ASCII   ESC   =   n

            Decimal   27   61   n

            Hex   1B   3D   n

Range: 0≤n≤255

ESC = n selects the device to which the host computer sends data, based on the

value of n as follows:

Bit	Off/on	Hex	Decimal	Function
0	Off	00	0	Printer disabled
	On	01	1	Printer enabled
1-7	-	-	-	undefined

When the LSB (least significant bit) of n is 1, the printer is enabled; when it is 0,

the printer is disabled. When the printer is disabled, it ignores all received data with

the exception of DLE ENQ 1 and DLE ENQ 2. The default setting is n. If ASB is

enabled when the printer is disabled by ESC =, the printer transmits a 4-byte status

message whenever the status changes.

- **ESC   @   Initialize printer**

Format   ASCⅡ   ESC   @

            Decimal   27   64

            Hex   1B   40

ESC @ initializes the printer. All settings, including character font and line

spacing settings, are canceled. The data in the print buffer is cleared and the printer

mode is reset to the mode that was in effect when the power was turned on. The DIP switch settings are not checked again, the data in the receive buffer is not cleared, and any macro definitions are not cleared.

● **ESC   D**   **Set horizontal tab positions**

Format: ASCⅡ   ESC   D   n1 … nk NUL

Decimal   27   68   n1 … nk 00

Hex   1B   44   n1 … nk 0

Range: 1≤n≤255   0≤k≤32

ESC D n1 … nk NUL sets a horizontal tab position to n columns from the beginning of a line, with k indication the total number of horizontal tab positions to be set. When a left margin is set in standard mode, the position of the left margin is the beginning of the line. A maximum of 32 tab positions can be set. This command cancels any previous horizontal tab settings. The default tab positions are every eight characters for the font A (12×24).

● **ESC   J**   **print and feed paper**

Format: ASCⅡ   ESC   J   n

Decimal   27   74   n

Hex   1B   4A   n

Range: 0≤n≤255

ESC J n prints the data in the print buffer and feeds the paper n×(vertical or horizontal motion unit). This command is used to temporarily feed a specific length without changing the line spacing set by other commands. The maximum paper

feed amount is 40 inches. When standard mode is selected, the vertical motion unit set by GS P is used. When page mode is selected, the vertical or horizontal motion unit set by GS P is used fro the print direction set by ESC T.

● **ESC a** Position alignment

Format: ASCII ESC a n

Hex. 1B 61 n

Decimal 27 97 n

Range: $0 \leq n \leq 2, 48 \leq n \leq 50$

Default Value: $n = 0$

Description: Aligns all print data in one line to a specified position.

N	Position
0, 48	Left alignment
1, 49	Center
2, 50	Right alignment

Notes:

∗ This command is effective only when input at the top of the line when standard mode is being used.

∗ This command has no affect in page mode. In page mode, this command is only effective for the setting.

∗ Specifies the alignment position in the printing region that has been set.

∗ Portions skipped using command HT, ESC $ and ESC \ are also targeted for position alignment.

E.g.

Left alignment	Center	Right alignment
ABC ABCD ABCDE	ABC ABCD ABCDE	ABC ABCD ABCDE

● **ESC d**   Print and feed paper n lines

Format: ASCII   ESC   d   n

Hex.   1B   64   n

Decimal   27   100   n

Range: 0 ≤ n ≤ 255

Description: Prints the data in the print buffer and performs a paper feed of n lines.

Notes:

∗   Sets the print position to the beginning of the next line after printing.

∗   Line feeds set by command ESC 2 and ESC 3 are not affected.

∗   Paper is fed approximately 1016 mm (40 inches) if the [n x line feed amount] exceeds approximately 1016 mm (40 inches).

Reference: ESC 2, ESC 3

● **ESC v**   **Transmit paper sensor status**

Format: ASCII   ESC   v

Decimal   27   118

Hex   1B   76

ESC v transmits the status of a paper sensor as 1 byte of data. This command allows the host to obtain the near-end or paper-out status for each line. GS r 1 can

also be used to check the status. GS r is recommended for transmitting the paper sensor status. The status to be transmitted is shown in the table below.

Bit	Off/on	Hex	Decimal	Status
0,1	Off	00	0	Paper roll near-end sensor: paper adequate.
	On	03	3	Paper roll near-end sensor: paper near end.
	Off	00	0	Paper roll end sensor: paper present.
	On	(0C)	(12)	Paper roll end sensor: paper not present.
4	Off	00	0	Not used. Fixed to Off.
5,6	-	-	-	Undefined.
7	Off	00	0	Not used. Fixed to Off.

● **ESC {**   **Turn upside-down printing mode on/off**

Format: ASCⅡ   ESC   {   n

Decimal   27   123   n

Hex   1B   7B   n

Range: 0 ≤n≤255

ESC { n turns upside-down printing mode on or off. When the LSB (least significant bit) of n is 1, upside-down printing mode is turned on; when it is 0, upside-down printing mode is turned off. The default setting is n=0. When upside-down mode is turned on, the printer prints 180°-rotated characters from right to left. The line printing order is not reversed; therefore, be careful of the order of the data transmitted. In standard mode, this command is enabled only when processed at the beginning of a line. In page mode, an internal flag is activated and

this command is enabled when the printer returns to standard mode.

● **FS ! n**   **Set Chinese characters printing mode compages**

Format   ASCII   FS   !   n

        Decimal   28   33   n

          Hex   1C   21   n

Range: $0 \leqslant n \leqslant 255$

Set the parameter n of Chinese characters printing mode as follows:

Digit	0/1	Hex	Decimal	Function
0, 1		---	---	Undefined.
2	0	00	0	Double-width mode not selected.
	1	04	4	Double-width mode selected.
3	0	00	0	Double-height mode not selected.
	1	08	8	Double-height mode selected.
4-6		--	--	Undefined.
7	0	00	0	Underline not selected.
	1	80	128	Underline selected.

● **FS S n1 n2**   Set Chinese character space amount

Format: ASCII   FS   S   n1   n2

          Decimal   28   83   n1   n2

            Hex   1C   53   n1   n2

Range: $0 \leqslant n1 \leqslant 255, 0 \leqslant n2 \leqslant 255$

Initial value: n1=0, n2=0

Description: 1. Sets the Chinese character space amount and right space amount.

2. Left space amount: n1 x (basic calculated pitch)

3. Right space amount: n2 x (basic calculated pitch)

Note:

∗ The space amount set by this command is the amount when using standard sized characters. When expanding characters more than double in the horizontal direction, the space amount is [set amount x horizontal direction magnification].

∗ Space amount can be set independently for both the standard and page modes.

∗ The basic calculated pitch is set by GSP (Set basic calculated pitch). Also, after setting the Chinese character space amount, it is not affected even if the basic calculated pitch is changed.

∗ If there are fractions in the result, correct to the minimum mechanical pitch and discard.

∗ Use the basic calculated pitch (x) for the horizontal direction in standard mode.

∗ In page mode, the basic calculated pitch that is used according to the starting point is shown below.

  a. When the starting point is specified to be upper left or lower right by the ESC T command (Character print direction selection in page mode), the basic calculated pitch (x) for the horizontal direction is used.

  b. When the starting point is specified to be upper right or lower left by the ESC T command, the basic calculated pitch (y) for the vertical direction is used.

  c. The maximum value for the left or right space for Chinese characters is approximately 35.893 mm (255/180 inches). Specifications that exceed the

maximum value are rounded off to that value.

Reference: GSP

- **FS p n m**   Print the bit image that download to flash

   Format   ASCII   FS   p   n   m

                  Hex   1C   70   n   m

                  Decimal   28   112   n   m

   Range: $1 \leq n \leq 255, 0 \leq m \leq 3, 48 \leq m \leq 51$

   Description: Using mode m to print bit image that download to flash.

m	Mode	Density of Vertical Direction Dots	Density of Horizontal Direction Dots
0, 48	Normal Mode	180DPI	180 DPI
1, 49	Double-wide Mode	180DPI	90 DPI
2, 50	Double-tall Mode	90 DPI	180 DPI
3, 51	Quadruple Mode	90 DPI	90 DPI

   n specifies the bit image(defined by command FS q) number.

   m specifies the bit-image mode.

Details:

✧ Flash bit image is a bit image defined in flash memory by FS q and printed by

   this command.

✧ This command is ignored when the bit image is undefined.

✧ This command is effective only when no data exists in the print buffer in standard mode.

✧ Excluding upside-down printing, print modes (emphasized printing, double printing, double wide, double tall, underlines, character sizes, black/white inverted printing and 90 degree clockwise rotation) are unaffected.

✧ If bit image specification is of a size that exceeds the print region, the data in the print region is targeted for printing, but the excessive data is not printed.

✧ This command feeds dots (for the height *n* of the NV bit image) in normal and double-width modes,

✧ and (for the height of the NV bit image n x 2) in double-height and quadruple modes, regardless of

✧ the line spacing specified by ESC 2 or ESC 3.

✧ After printing the bit image, this command sets the print line feed and processes the subsequent data as normal data.

Reference: ESC *, FS q, GS /, GS v 0

● **FS q n [xL xH yL yH d1...dk] 1... [xL xH yL yH d1...dk] n   Define NV bit image**

Format				
ASCII	FS	q	n	[xLxHyLyHd1...dk]1 ... [xLxHyLyHd1...dk] n
Hex	1C	71	n	[xLxHyLyHd1...dk]1 ... [xLxHyLyHd1...dk] n
Decimal	28	113	n	[xLxHyLyHd1...dk]1 ... [xLxHyLyHd1...dk] n

Range:

$1 \leq n \leq 255$

$0 \leq xL \leq 255$

$1 \leq (xL+xH\times256) \leq 1023$

$1 \leq (yL+yH\times256) \leq 288$

$0 \leq d \leq 255$

$k = (xL+xH \times 256) \times (yL+yH \times 256) \times 8$

The maximum capacity that downloads to NV is 8096 bytes.

Descriptions: Defines the specified flash bit image.

● n specifies the number of NV bit images to define.

● xL and xH specify the horizontal direction for one NV bit image (xL + xH x 256) x 8 dots.

● yL and yH specify the vertical direction for one NV bit image (yL + yH x 256) x 8 dots.

Notes:

∗ There is the potential of damaging the non-volatile memory by overusing the command, so only use this command once a day to write to the non-volatile memory.

∗ This command erases all previously defined NV bit images. The printer cannot redefine only one of several data definitions that had been defined before. Therefore, all data must be resent.

∗ The printer may enter a BUSY state while writing data to the non-volatile memory when using this command. While the printer is BUSY, the printer will stop receptions so data will not be received from the host (including real-time commands).

∗ . NV bit image is a bit image defined by this command in non-volatile memory and is printed by the FS p (Print NV bit image) command.

∗ . This command is effective only when processed at the top of the line when

standard mode is being used.

* This command is effective when 7 bytes of FS to yH of the command are processed normally.

* When the amount of data exceeds the capacity left in the range defined by xL, xH, yL, yH, the printer only processes the data in the defined range.

* This command is invalid when processing an argument that is out of the defined range with the initial NV bit image data.

* The printer terminates processing of this command and starts writing data to the non-volatile memory if an argument out of the defined range is processed on the second and subsequent NV bit image data. This invalidates the NV bit image being defined (making it undefined), but the NV bit images prior to that are valid.

* d specifies defined data. Bits that correspond to the dots to print are 1, and the bits that correspond to the dots that are not printed are 0.

* An n number of NV bit images are defined in ascending order from 01H. Therefore, The first data of [xLxHyLyHd1.dk] is an NV bit image of the number 01H. The final data of [xLxHyLyHd1.dk] is the NV bit image of the number n. This matches with the NV bit image number that is specified for NV bit image printing (by FS p).

* One NV bit image definition data is configured by [xL xH yL yH d1.dk]. Therefore, if defining only one NV bit image data, n = 1. The data of [xL xH yL yH d1.dk] is processed only once. This uses ([data: (xL + xH x 256) x (yL + yH x 256) x 8] + [Data: 4]) of non-volatile memory.

* The printer is in a BUSY state just prior to writing to the non-volatile memory.

* The sending of ASB status and detection of status are not possible while processing this command even when the ASB function is specified.

* When processing this command while defining a macro, the macro definition is terminated and the command commences with processing.

* NV bit images that have been defined are not initialized by the ESC @ (Initialize printer), a reset or by turning off the printer's power.

* This command only defines the NV bit image, but it does not print it. To print an NV bit image, use FS p (Print NV bit image).

Reference: FS p

Ex.:   For xL=64, xH=0, yL=96, yH=0
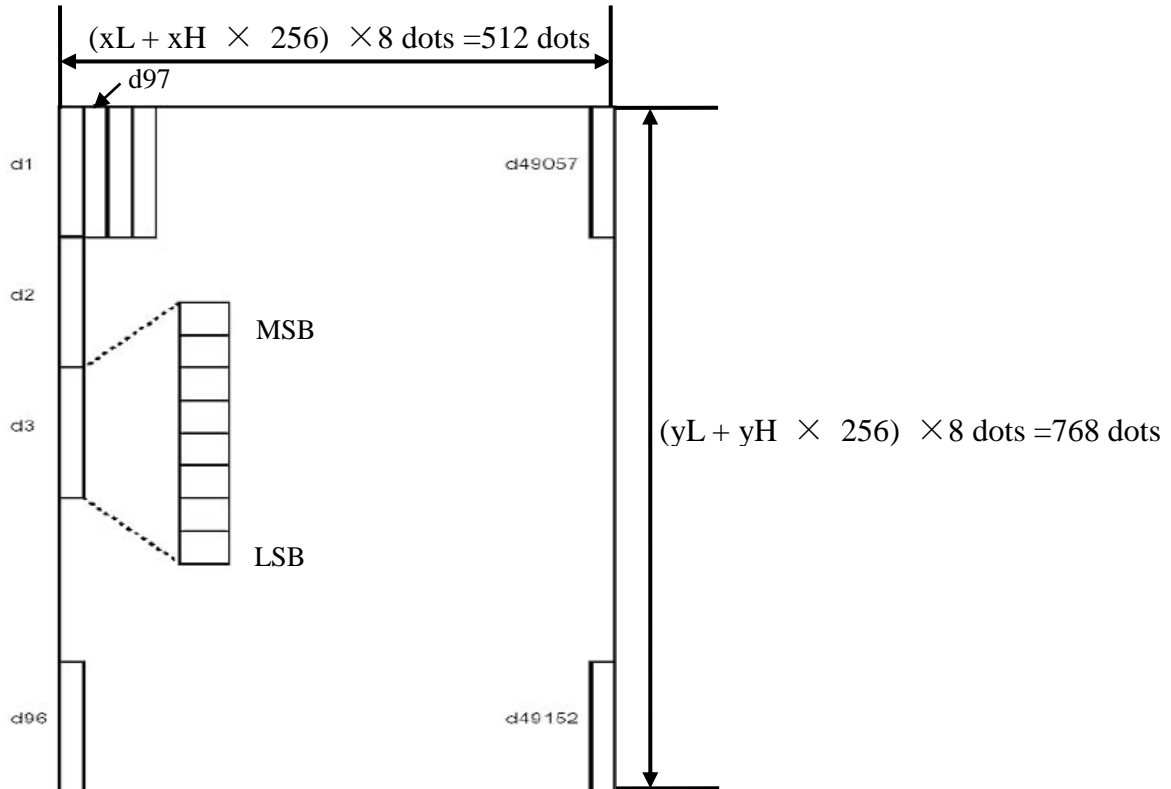
- **GS！n： Select character size**

Format: ASCII GS ! n

Hex 1D 21 n

Decimal 29 33 n

Range: $0 \leq n \leq 255$

GS ! n selects the character height using bits 0 to 3, and selects the character width using bits 4 to 7.

Character width selection is as follows:

Hex	Decimal	Width
00	0	1 (normal)
10	16	2 (double-width)

Character height selection is as follows:

| Hex	Decimal	Height
00	0	1 (normal)
01	1	2 (double-width)
02	2	3
03	3	4
04	4	5
05	5	6
06	6	7
07	7	8

● **GS H n: Select printing position of HRI characters**

Format: ASCII   GS   H   n

    Hex   1D   48   n

    Decimal   29   72   n

Range: 0≤n≤3

    48≤n≤51

GS H n selects the printing position for HRI characters when printing a bar code.

n selects the printing position as follows:

The default setting is n=0. HRI characters are printed at the position specified by
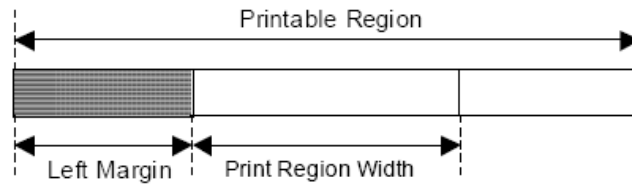
GS H.
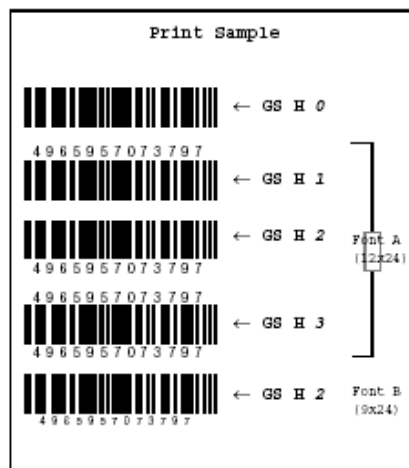
● **GS L nL nH   Set left margin**

Format: ASCII   GS   L   nL   nH

    Hex   1D   4C   nL   nH

    Decimal 29   76   nL   nH

Range: 0≤ nL ≤ 255, 0≤ nH ≤ 255

Description: 1. nL and nH set the specified left margin.

    2. The left margin is [(nL + nH x 256) x basic calculated pitch]

Printable Region

Left Margin   Print Region Width

Note:

∗ This command is effective only when input at the top of the line when standard
mode is being used.

∗ This command has no affect in page mode. This command is only effective for the
setting.

∗ The maximum setting for the left margin is the same size as the printable region for
the horizontal direction. Specifications that exceed the maximum value are
rounded off to that value.

∗ The basic calculated pitch is set by GSP (Set basic calculated pitch). Also, after
setting the left margin, it is not affected even if the basic calculated pitch is
changed.

∗ Use the basic calculated pitch (x) for the horizontal direction of GS P (Set basic
calculated pitch) to calculate the left margin. If the calculation results in fractions,
the pitch is corrected to a minimal mechanical pitch and the rest is discarded.

Reference: GS P, GS W

● **GS h n: Set bar code height**

Format: ASCI   GS   h   n

Hex   1D   68   n

Decimal   29   104   n

Range: 1≤n≤255

GS h n selects the height of a bar code. n specifies the number of dots in the vertical direction. One dot corresponds to 1/180 inch. The default setting is n=162

Program Example

PRINT #1,CHR$(&H1D);"h";CHR$(50);Set height to 50

 PRINT #1,CHR$(&H1D);"k";CHR$(2);Print bar code

 PRINT #1,"496595707379";CHR$(0);

 PRINT #1,CHR$(&HA);

PRINT #1,CHR$(&H1D);"h";CHR$(100);Set height to 100

 PRINT #1,CHR$(&H1D);"k";CHR$(2);Print bar code

 PRINT #1,"496595707379";CHR$(0);

 PRINT #1,CHR$(&HA);

Print Sample

Height: 50 dots

Height: 100 dots
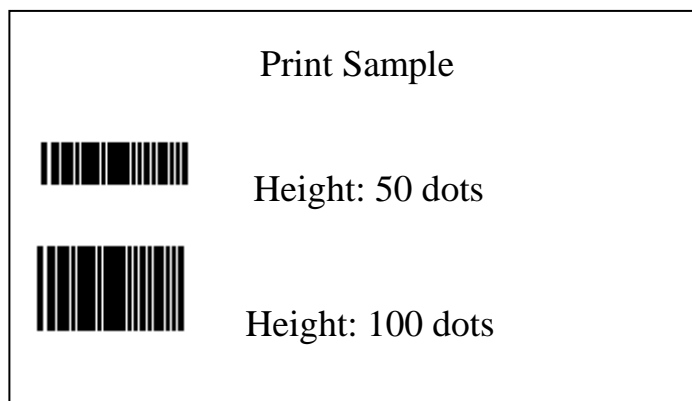
- **GS k m d1 ... dk NUL   GS k m n d1 ... dn: Print bar code**

Format:　①ASCII　　GS　　k　　m d1 ... dk NUL

　　　　　　Hex　　　　1D　　6B　　m d1 ... dk 00

　　　　　　Decimal　29　　107　　m d1 ... dk 0

　　　　　②ASCII　　GS　　k　　m n d1 ... dn

　　　　　　Hex　　　　1D　　6B　　m n d1 ... dn

Decimal   29   107   m n d1 ... dn

Range: ①0≤m≤6 (k and d depend on the bar code system used)

　　　　　　②65≤m≤73 (n and d depend on the bar code system used)

①GS k m d1 ... dk NUL and ②GS k m n d1 ... dn select a bar code system and print the bar code. m specifies a bar code system as follows:

m		Bar Code System	Number of Characters	Remarks
①	0	UPC-A	$11 \leq k \leq 12$	$48 \leq d \leq 57$
	1	UPC-E	$11 \leq k \leq 12$	$48 \leq d \leq 57$
	2	JAN13 (EAN13)	$12 \leq k \leq 13$	$48 \leq d \leq 57$
	3	JAN8 (EAN8)	$7 \leq k \leq 8$	$48 \leq d \leq 57$
	4	CODE39	$1 \leq k$	$48 \leq d \leq 57, 65 \leq d \leq 90,$ $d = 32, 36, 37, 43, 45, 46, 47$
	5	ITF	$1 \leq k$ (even number)	$48 \leq d \leq 57$
	6	CODABAR	$1 \leq k$	$48 \leq d \leq 57, 65 \leq d \leq 68,$ $d = 36, 43, 45, 46, 47, 58$
②	65	UPC-A	$11 \leq n \leq 12$	$48 \leq d \leq 57$
	66	UPC-E	$11 \leq n \leq 12$	$48 \leq d \leq 57$
	67	JAN13 (EAN13)	$12 \leq n \leq 13$	$48 \leq d \leq 57$
	68	JAN8 (EAN8)	$7 \leq n \leq 8$	$48 \leq d \leq 57$
	69	CODE39	$1 \leq n \leq 255$	$48 \leq d \leq 57, 65 \leq d \leq 90,$ $d = 32, 36, 37, 43, 45, 46, 47$
	70	ITF	$1 \leq n \leq 255$ (even number)	$48 \leq d \leq 57$
	71	CODABAR	$1 \leq n \leq 255$	$48 \leq d \leq 57, 65 \leq d \leq 68,$ $d = 36, 43, 45, 46, 47, 58$
	72	CODE93	$1 \leq n \leq 255$	$0 \leq d \leq 127$
	73	CODE128	$2 \leq n \leq 255$	$0 \leq d \leq 127$

In GS k m d1 ... dk NUL, d indicates the character code to be printed and k indicates the number of characters to be printed. In GS k m n d1 ... dn, n indicates the number of the bar code data; the printer processes n bytes from the next character data as bar code data. d indicates the character code to be printed. If n is outside of the specified range, the printer stops command processing and processes the following data as normal data. If the bar code width exceeds the printing area, the printer does not print the bar code. In standard mode, these commands are enabled only when no data exists in the print buffer.

```
┌─────────────────────────────────────────────────────────┐
│                    Program Example                      │
│                                                         │
│ PRINT #1,CHR$(&H1D);"k";CHR$(2);Print bar code          │
│                                                         │
│ PRINT #1,"496595707379";CHR$(0);                        │
│                                                         │
│ PRINT #1,CHR$(&HA);                                     │
│                                                         │
│ PRINT #1,CHR$(&H1D);"k";CHR$(67);CHR$(12);              │
│                                                         │
│ PRINT #1,"496595707379"; Print bar code                 │
└─────────────────────────────────────────────────────────┘
```

```
┌──────────────────────────────┐
│         Print Sample         │
│                              │
│     ▌▌▌ ▌▌▌▌▌▌ ▌▌ ▌▌▌        │
│                              │
│     ▌▌▌ ▌▌▌▌▌▌ ▌▌ ▌▌▌        │
└──────────────────────────────┘
```

● **GS   v: 0   m   xL   xH   yL   yH   d1...dk   Print raster graphic**

Format: ASCII   GS   v   0   m   xL   xH   yL   yH   d1...dk

          Hex   1D   76   30   m   xL   xH   yL   yH   d1...dk

          Decimal 29   118 48   m   xL   xH   yL   yH   d1...dk
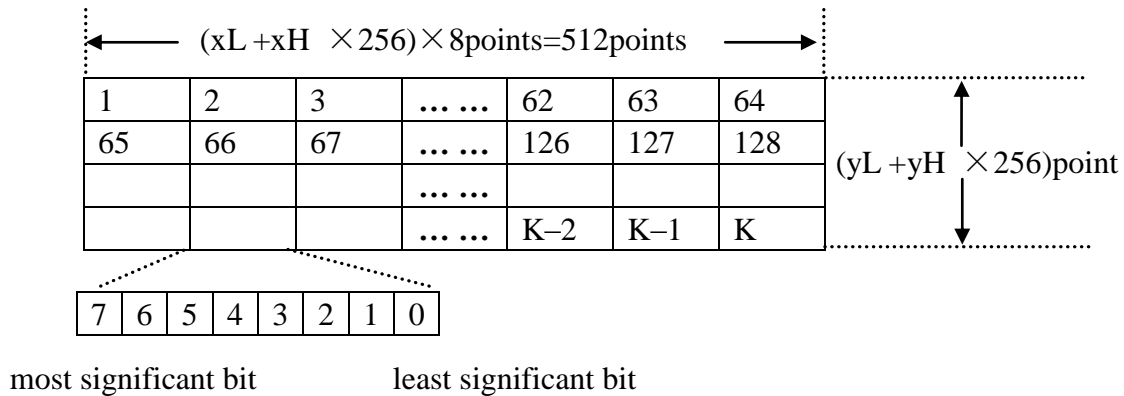
Range: m=0

          $0 \leq xL \leq 27$

          xH=0

          yL=24

          yH=0

          $0 \leq d \leq 5$

          $k = (xL + xH \times 256) \times (yL + yH \times 256) \ (k \neq 0)$

❖ xL,xH indicate the number of the byte in horizontal raster graphic(xL+ xH $\times$ 256)

26

❖ yL、yH indicate the number of the point in vertical raster graphic(yL+ yH ×256)

E.g. when xL +xH ×256=64

● **GS w n:**   **Set bar code width**

Format:	ASCII	GS	w	n
	Hex	1D	77	n
	Decimal	29	119	n

Range: 2≤n≤ 6

GS w n selects the horizontal size of a bar code.   n specifies the bar code width as shown below. The multilevel bar codes are UPC-A, UPC-E, JAN13 (EAN13), JAN8 (EAN8), CODE93, and CODE128. The binary level bar codes are CODE39, ITF, and CODABAR. The default setting is n=3.

n	Module Width (mm) for Multilevel Bar Code	Binary Level Bar Code	
		Thin Element Width (mm)	Thick Element Width (mm)
2	0.282	0.282	0.706
3	0.423	0.423	1.129
4	0.564	0.564	1.411
5	0.706	0.706	1.834
6	0.847	0.847	2.258

```
                    Program Example

PRINT #1,CHR$(&H1D);"w";CHR$(3);Set width size to 3

PRINT #1,CHR$(&H1D);"k";CHR$(2);Print bar code

PRINT #1,"496595707379";CHR$(0);

PRINT #1,CHR$(&HA);

PRINT #1,CHR$(&H1D);"w";CHR$(4);Set width size to 4

PRINT #1,CHR$(&H1D);"k";CHR$(2);Print bar code

PRINT #1,"496595707379";CHR$(0);

PRINT #1,CHR$(&HA);

PRINT #1,CHR$(&H1D);"w";CHR$(5);Set width size to 5

PRINT #1,CHR$(&H1D);"k";CHR$(2);Print bar code

PRINT #1,"496595707379";CHR$(0);

PRINT #1,CHR$(&HA);
```


Print Sample

Width size 3

Width size 4

Width size 5

2 COMMAND SAMPLE (hex command)

1d 68 64 1d 6b 02 34 39 36 35 39 35 37 30 37 33 37 39 00 0a

   //print a barcode width 1, height 100

1d 77 02 1d 6b 02 34 39 36 35 39 35 37 30 37 33 37 39 00 0a

   // print a barcode width 2, height 100

1d 77 02 1d 6b 02 32 32 30 30 30 30 32 30 30 30 35 30 35 00 0a

    // print EAN-13 barcode

1d 6b 00 30 30 30 30 30 30 30 30 30 30 30 00 0a

    //print UPC-A barcode

1d 6b 03 30 30 30 30 30 30 30 30 00 0a

    //print EAN-8 barcode

1d 6b 04 30 30 30 30 30 30 30 30 30 30 30 30 30 00 0a

    // CODE39

1d 68 64 1d 48 03 1d 6b 04 30 30 30 30 30 30 30 30 30 30 30 30 30 00 0a

   //set the position of digits on the barcode