DATECS CMP-10 COMMAND SET

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1. COMMAND DETAILS

1.1 Description of Items

XXXX **ALL**

[Function]	Command Function
[Code]	A sequence of code constituting a command is represented in hexadecimal number for <>H, binary number for < >B, and decimal number for < >, respectively; [ ]k represents a repeat count of k-times.
[Range]	Describes an argument value(setting range) for the command.
[Outline]	Describes a command outline.
[Caution]	Describes a caution as required.
[Default]	Describes an initial value for the command when accompanied by an argument.
[See Also]	Describes the associated commands for use.
[Sample Program]	Describes a coding example in the Q-BASIC sample program.

• This example is only for your reference and differs depending on the language used, version, and so on. For details, see the manual for the language used.

HT

[Function] Horizontal Tab Command

[Code] <09>H

[Outline] Shifts the printing position to the next horizontal tab position.
– Ignored when the next horizontal tab position has not been set.

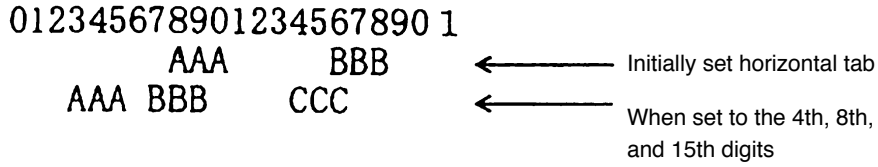
[Caution] – The horizontal tab position is set by ESC D.
– Initial setting of the horizontal tab position is each 8 characters in 9th, 17th, 25th,columns.

[See Also] ESC D

[Sample Program]

```
LPRINT „012345678901234567890 1“;
LPRINT CHR$ (&HA);
LPRINT CHR$ (&H9) + „AAA“;
LPRINT CHR$ (&H9) + „BBB“;
LPRINT CHR$ (&HA);
LPRINT CHR$ (&H1B) + „D“;
LPRINT CHR$ (3) + CHR$ (7) + CHR$ (14) + CHR$ (0);
LPRINT CHR$ (&H9) + „AAA“;
LPRINT CHR$ (&H9) + „BBB“;
LPRINT CHR$ (&H9) + „CCC“ + CHR$ (&HA);
```

[Print Results]



LF

[Function] Printing and Paper Feed Command

[Code] <0A>H

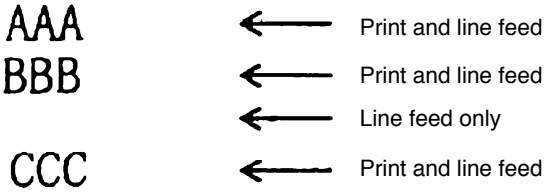
[Outline] Prints data inside the input buffer and feeds lines based on the line feed amount having been set.
- The head of the line becomes the next print starting position.

[See Also] ESC 2, ESC 3

[Sample Program]

```
LPRINT “AAA” + CHR$ (&HA);
LPRINT “BBB” + CHR$ (&HA);
LPRINT CHR$ (&HA);
LPRINT “CCC” + CHR$ (&HA);
```

[Print Results]



CR

[Function] Print Command

[Code] <0D>H

[Outline] This command is ignored.

ESC SP n

[Function] Setting the right space amount of the character

[Code] <1B>H<20>H<n>

[Range] {0 =< n=< 20} Data is described in Hex code.

[Outline] The rightward space amount is set in dot unit (1/203 inch unit). In the initial value, it is n=0.

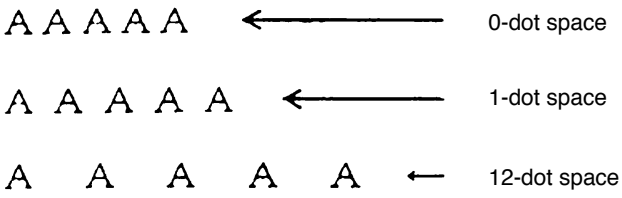
[Caution] The rightward space amount in doublewide mode is made double of the set volume.

[Default] n = 0

[Sample Program]

```
LPRINT CHR$ (&H1B) + „ „ + CHR$ (0);
LPRINT „AAAAA“ + CHR$ (&HA);
LPRINT CHR$ (&H1B) + „ „ + CHR$ (1);
LPRINT „AAAAA“ + CHR$ (&HA);
LPRINT CHR$ (&H1B) + „ „ + CHR$ (12);
LPRINT „AAAAA“ + CHR$ (&HA);
```

[Print Results]



ESC $ n1 n2

[Function] Specifying the Absolute Positions

[Code] <1B>H<24>H<n1><n2>

[Range] {0 =< n1 =< FF}
{0 =< n2 =< 1} Data is described in Hex code.

[Outline] The printing start position is specified in the number of dots (1/203 inch unit) from the beginning of line.
–The number of dots is divided by 256, whose quotient is taken as n2 and the residual as n1.
– Therefore, the printing start position is equal to n1+n2 x 256 from the begin ning of line.

[Caution] Specifying beyond the line end is ignored.

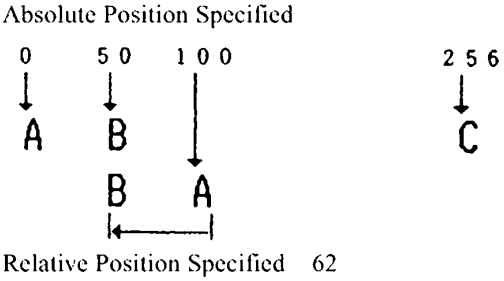
[Default] The initial value is not specified.

[See Also] ESC \

[Sample Program]

```
LPRINT CHR$ (&H1B) + „$“;
LPRINT CHR$ (0) + CHR$ (0) + „A“;
LPRINT CHR$ (&H1B) + „$“;
LPRINT CHR$ (50) + CHR$ (0) + „B“;
LPRINT CHR$ (&H1B) + „$“;
LPRINT CHR$ (0) + CHR$ (1) + „C“;
LPRINT CHR$ (&HA);
LPRINT CHR$ (&H1B) + „$“;
LPRINT CHR$ (100) + CHR$ (0) + „A“;
LPRINT CHR$ (&H1B) + „&#165;“;
LPRINT CHR$ (&HC2) + CHR$ (&HFF) + „B“;
LPRINT CHR$ (&HA);
```

[Print Results]



ESC % n

[Function] Specifying/Canceling Download Character Set

[Code] <1B>H<25>H<n>

[Range] {0 =< n =< FF} data is described in Hex code.

[Outline] Specifying/canceling download characters.
Further, only the lowest bit (n0) is valid for n.
The lowest bit (n0) indicates the following.

n0	Function
0	Selecting download character set
1	Canceling download character set

[Caution] Download characters and download bit images cannot be defined simultaneously.

[Default] n = 0

[See Also] ESC &

ESC & m n1 n2 [d] k

[Function] Define user characters

[Code] <1B>H<26>H<m><n1><n2>[<d>]k

[Range] { m = 0-3 Subcommand}
{20h <= n1 <= FFh }
{n1 <= n2 <= FFh }
{k = (n2-n1+1)*48 for m=2 and k = (n2-n1+1)*16 for m=3 }

[Outline] Defines a group of user characters.

m=0: Copy internal character set A to user character set A (Parameters n1, n2 and d are omitted }

m=1: Copy internal character set B to user character set B (Parameters n1, n2 and d are omitted }

m=2: Define character group with ASCII codes between >=n1 and <=n2 for character set A (12x24). Every character is 48 bytes, two bytes for each line. Only the first nibble of the second byte is used.

m=3: Define character group with ASCII codes between >=n1 and <=n2 for character set B (9x16). Every character is 16 bytes.

[Caution] The data for character set A is composed from left to right and from top to bottom with two bytes for each horizontal line.
The first bite contains teh first 8 bits with the left most bit is MSB.
The second byte contains only the first nibble (the most significant 4 bits)

The data for character set B is composed from left to right and from top to bottom with only one byte for each horizontal line. The nineth bith is alawys 0

ESC ! n

[Function] Collective Specifying Printing Mode

[Code] <1B>H<21>H<n>

[Range] {0 =< n=< FF} Data is described in Hex code.

[Outline] Printing mode is assigned. Each n bit indicates the following:

		Va l ue	
Bit	Function	0	1
0	Character Font	Font A	Font B
1	Undefined		
2	Undefined		
3	High-lighting	Canceled	Specified
4	Double height	Canceled	Specified
5	Double width	Canceled	Specified
6	Undefined		
7	Underline	Canceled	Specified

[Caution] – With double height and double width being specified simultaneously, double wide and double high characters are consisted.
– An underline is attached to the full character width, which, however, is not attached to the part having been skipped by the horizontal tab.
Neither is it attached to 90°-right-turned characters.
– The underline width is as having been specified by <ESC ->. (The default setting is 1 dot width.)
- Specification with this command is invalid to Kanji, except specification and cancellation of highlighting
- In case that double wide character and normal character exist in same one line, the layout of underline is consistent one.

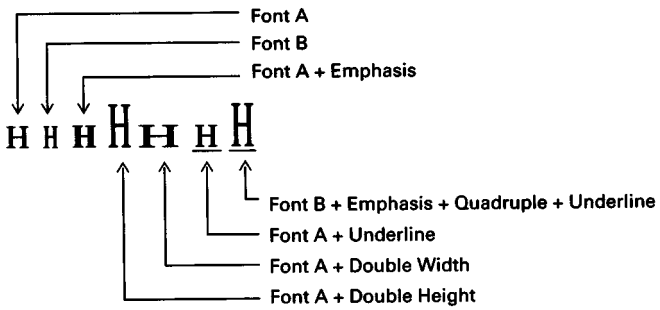
[Default] n = 0

[See Also] ESC E,ESC _

[Sample Program]

```
LPRINT CHR$(&H1B) + „!“ + CHR$(&H00) + „H“ ;
LPRINT CHR$(&H1B) + „!“ + CHR$(&H01) + „H“ ;
LPRINT CHR$(&H1B) + „!“ + CHR$(&H08) + „H“ ;
LPRINT CHR$(&H1B) + „!“ + CHR$(&H10) + „H“ ;
LPRINT CHR$(&H1B) + „!“ + CHR$(&H20) + „H“ ;
LPRINT CHR$(&H1B) + „!“ + CHR$(&HB9) + „H“ ;
LPRINT CHR$(&HA) ;
END
```

[Print Results]



ESC * m n1 n2 [d] k

[Function] Specifying the Bit Image Mode

[Code] <1B>H<2A>H<m><n1><n2> [<d>] k

[Range] {m= 0, 1, 32, 33 bit image mode (See the table below.)}
{0 =< n1 =< FF(Hex)}
{0 =< n2 =< 03(Hex)}
{0 =< d =< FF(Hex)}
{k = n1 + FF(Hex) n2 (m = 0, 1)
{k = (n1+ FF(Hex) n2) 3} (m = 32, 33)

[Outline] According to the number of dots specified in n1, n2, specify the bit image of mode n.
– The No. of dots printed is divided by 256, whose quotient is taken as n2 and residual as n1.
– The total no. of dots printed in the bit image is equal to n1 + (256 x n2).
– When bit image data have been input in excess of dot position of one line (384 dots) , the excess data is handled as normal data.
– d is bit image data, the bits subject to printing are taken as “1” and those not as “0”.
– The bit image modes specified by m are shown as follows:

		Vertical Direction		Horizontal Direction	
m(Hex)	Mode	Dots	Dot Density	Dot Density	Max. Dots
0	8-dot single density	8	67 DPI	101 DPI	192
1	8-dot double density	8	67 DPI	203 DPI	384
32	24-dot single density	24	203 DPI	101 DPI	192
33	24-dot double density	24	203 DPI	203 DPI	384

[Caution] – When the values set in m (bit image mode) are out of the above range, the data following after n1 is processed as normal printing data.
– After completion of bit image printing, printer returns to normal data processing mode.

ESC +

[Function] Switch OFF the printer

[Code] <1B>H<2B>H

[Range] none

[Outline] This command is used for switching off the printer from the host.

ESC _ n

[Function] Specifying/Canceling underline

[Code] <1B>H<2D>H<n>

[Range] 0<n<2

[Outline] Specifying/canceling an underline.
– Types of underlines by n value are shown below:

n (Hex)	Type
0	Canceling an underline
1	Specifying an underline for 1-dot width
2	Specifying an underline for 2-dots width

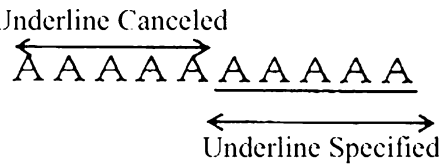
[Caution] – An underline is attached to the full character width. It is, however, not attached to the part having been skipped by horizontal tab command.
– An underline is not attached to a 90 - right-turned characters.
– Specification/cancellation with this command is invalid to Kanji.

[See Also] ESC !

[Sample Program]

```
LPRINT CHR$(&H1B) + "_" + CHR$(0);
LPRINT "AAAAA";
LPRINT CHR$(&H1B) + "_" + CHR$(1);
LPRINT "AAAAA" + CHR$(&HA);
END
```

[Print Results]



ESC .

[Function] Printer self test
[Code] <1B>H<2E>H
[Range] none
[Outline] Prints character table, character samples with different attributes and diagnostics.
[See Also] ESC T

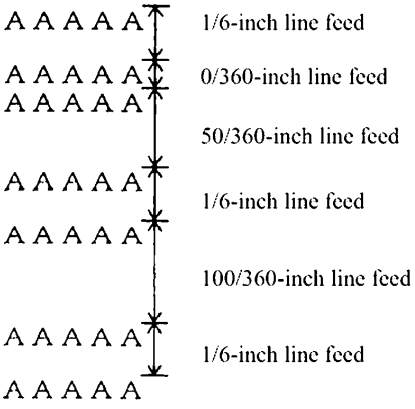
ESC 2

[Function] Specifying 1/6-inch line feed rate
[Code] <1B>H<32>H
[Outline] The line feed rate per line is specified by 1/6 inch.

[Sample Program]

```
LPRINT “AAAAA” + CHR$ (&HA);
LPRINT CHR$ (&H1B) + “3” + CHR$ (0);
LPRINT “AAAAA” + CHR$ (&HA);
LPRINT CHR$ (&H1B) + “3” + CHR$ (50);
LPRINT “AAAAA” + CHR$ (&HA);
LPRINT CHR$ (&H1B) + “2”;
LPRINT “AAAAA” + CHR$ (&HA);
LPRINT “AAAAA”;
LPRINT CHR$ (&H1B) + “J” + CHR$ (100);
LPRINT “AAAAA” + CHR$ (&HA);
LPRINT “AAAAA” + CHR$ (&HA);
```

[Print Results]



ESC 3 n

[Function]	Setting line feed rate of minimum pitch
[Code]	<1B>H<33>H<n>
[Range]	{0 =< n =< FF} Data is described in Hex code.
[Outline]	The line feed rate per line is specified by n/360 inch. Since an actual mechanical pitch is 1/203 inch, it is internally converted approximate to the value specified with this command.
[Default]	The initial value is n = 60 (1/6 inch) (18H), being 4.23 mm line feed rate.
[Sample Program]	See Sample Program and Print Results for ESC 2

ESC ? n

[Function] Reading magnetic stripe reader

[Code] <1B>H<3F>H<n>

[Outline] When the command is received the bicolor LED is shining in RED and the printer is waiting for the magnetic card to be swiped through the reader. If even after 10 seconds the card is not swiped the command is aborted automatically.
Printer returns the information read from the tracks. If nothing is read the printer will return `0'.

[Range] n is the parameter which sets the tracks. n can have the following values:

n (HEX)	Track
0	Track 1 and 2
1	Track 2 and 3
2	Track 2 and 1
3	Track 3 and 2
4	Only track 1
5	Only track 3
6	Only track 2

ESC = n

[Function] Data Input Control

[Code] <1B>H<3D>H<n>

[Range] {0 =< n =< FF} Data is described in Hex code.

[Outline] Selecting equipment in which data input from the host is effective.
– Each bit of n indicates as follows:

Bit	Equipment	Va l ue	
		0	1
0	Printer	Invalid	Valid
1	Not defined		
2	Not defined		
3	Not defined		
4	Not defined		
5	Not defined		
6	Not defined		
7	Not defined		

– When the printer has not been selected, this printer abandons all the received data until it is selected by this command.

[Caution] – Even when the printer has not been selected, it can become BUSY state through printer operation.
– When the printer is deselected, this printer discards all the data until it is selected with this command.

[Default] The initial value of n is “1”.

[Sample Program]

```
LPRINT “AAAAA”;
LPRINT CHR$ (&H1B) + “=” + CHR$ (0);
LPRINT “aaaaa” + CHR$ (&HA);
LPRINT CHR$ (&H1B) + “=” + CHR$ (1);
LPRINT “AAAAA” + CHR$ (&HA);
```

[Print Results]

A A A A A C C C C C
↑
BBBBB is not printed

ESC @

[Function] Initializing the Printer

[Code] <1B>H<40>H

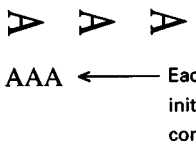
[Range] Clears data stored in the print buffer and brings various settings to the initial state (Default state).

[Caution] Data inside the internal input buffer are not cleared.

[Sample Program]

```
LPRINT CHR$ (&H1B) + " ! " + CHR$ (&H30) ;
LPRINT CHR$ (&H1B) + "V" + CHR$ (1);
LPRINT "AAA" + CHR$ (&HA);
LPRINT CHR$ (&H1B) + "@";
LPRINT "AAA" + CHR$ (&HA);
```

[Print Results]



ESC D [n] k NUL

[Function] Setting Horizontal Tab Position

[Code] <1B>H<44>H [<n>] k<00>H

[Range] {0 =< n =< FFH} Data is described in Hex code.
{0 =< k =< 20H} Data is described in Hex code.

[Outline] Specifying a horizontal tab position.
– ”n” indicates the no. of columns from the beginning to the horizontal tab position.
At this time, n= set position _ 1 is to be specified. For example, to set the position at 9th column, n=8 is to be specified.
– k denotes the number of horizontal tab positions you want to set.
– The tab position is set at position where it is “character width x n” from the line beginning.
The character width, at this time, includes the rightward space amount.
In double wide characters, it is made double of the ordinary case.
– Tab positions can be specified are maximum 32.
Specifying exceeding this is ignored.
<n> k, which denotes a setting position, is input in the increasing order and ends at <00> H.
– ESC D NUL clears all the set tab positions. Following clearing, horizontal tab command is ignored.

[Caution] When the data, <n> k, is equal to or smaller than its preceding data, <n> k-1, it is assumed that tab setting is finished. If this is the case, the next data onward will be processed as normal data.
When the data, <n> k, exceeds a 1-line print area, set the horizontal tab position, assuming “Set digit position = Maximum print digits + 1.” The horizontal tab position does not change even if the character width is altered after setting the horizontal tab position.

[Default] Initial value is specified for each eight characters (9th.17th.25th column) of ANK characters.

[See Also] HT

[Sample Program]

[Print Results]

See Sample Program and Print Results for HT.

ESC E n

[Function] Specifying/canceling highlighting

[Code] <1B>H<45>H<n>

[Range] {0 =< n =<FF} Data is described in Hex code.

[Outline] Specifying/canceling the highlighting characters.
• "n" is valid only for the lowest bit (n0).
• Control by the lowest bit (n0) is shown as follows:

n0	Type
0	Canceling highlighting.
1	Specifying highlighting.

• This is effective to all characters.
• Dot configuration of a highlighted character includes one extra dot added at its side.

[Caution] – The print result of Double printing and highlight character printing is completely same.

[See Also] ESC !

[Sample Program]

```
LPRINT CHR$ (&H1B) + "E" + CHR$ (0);
LPRINT "AAABBB" + CHR$ (&HA);
LPRINT CHR$ (&H1B) + "E" + CHR$ (1);
LPRINT "AAABBB" + CHR$ (&HA);
```

[Print Results]

A A A B B B ← Highlighting canceled

A A A B B B ← Highlighting canceled

ESC G n

[Function] Specifying/canceling Double Printing

[Code] <1B>H<47>H<n>

[Range] {0 =< n =< FF} Data is described in Hex code.

[Outline] Specifying/canceling the double printing.
• "n" is valid only for the lowest bit (n0).
• Control by n is shown as follows.

n0	Type
0	Canceling double printing.
1	Specifying double printing.

• This is effective to all characters.

[Caution] – The print result of Double printing and highlight character printing is completely same.

[See Also] ESC E

[Sample Program]

```
LPRINT CHR$ (&H1B) + "G" + CHR$ (0);
LPRINT "AAABBB" + CHR$ (&HA);
LPRINT CHR$ (&H1B) + "G" + CHR$ (1);
LPRINT "AAABBB" + CHR$ (&HA);
```

[Print Results]

A A A B B B ← Highlighting canceled

A A A B B B ← Highlighting canceled

ESC J n

[Function] Printing and feeding paper n/203 inch

[Code] <1B>H<4A>H<n>

[Range] {0 =< n =< FF} Data is described in Hex code.

[Outline] Prints data inside the print buffer and feeds paper by n/360 inch. Since an actual mechanical pitch is 1/203 inch, it is inte nally converted approximate to the value specified with this command.
– Specified volume does not remain.
– The beginning of the line is to be considered as the next printing start position.
– Initial value is not defined.

[Sample Program]

[Print Results]

See Sample Program and Print Results for ESC 2 on Page 48.

ESC S n

[Function] Setting serial interface communication speed

[Code] <1B>H<53>H<n>

[Range] {0 =< n =< 4} Data is described in Hex code.

[Outline] Sets the communication speed for the serial interface.

n (HEX)	SPEED (BPS)
0	2400BPS
1	9600BPS
2	19200BPS
3	57600BPS
4	115200BPS

The command is valid only when the printer is connected through a serial cable. It is not valid when using IrDA interface. The last setting is valid even after the printer is switched OFF.

[Default] The default value is 1 [9600BPS]

ESC T

[Function] Printing of diagnostic information

[Code] <1B>H<54>H

[Range] {0 =< n =< 4} Data is described in Hex code.

[Outline] Prints diagnostic information for the printer

[See Also] ESC .

[Print Results]
MODEL CMP-10 Version 1.XX
Intensity: 100%
Timeout: 10 min
Temperature: 27 C
Battery: 7.8 V
Mode: RS232C
Speed: 9600 bps

ESC V n

[Function] Specifying/Canceling 90°-right- turned Characters

[Code] <1B>H<56>H<n>

[Range] {0 =< n =< 1} Data is described in Hex code.

[Outline] Specifying/canceling characters 90°-right- turned character.
"n" means the followings.

n (Hex)	Condition
0	Canceling 90°-right- turned Characters
1	Specifying 90°-right- turned Characters

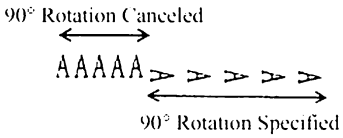
[Caution] No underlines are attached to 90°-right- turned characters.

[Default] The initial value of n is "0".

[Sample Program]

```
LPRINT CHR$ (&H1B) + "V" + CHR$ (0);
LPRINT "AAAAA";
LPRINT CHR$ (&H1B) + "V" + CHR$ (1);
LPRINT "AAAAA" + CHR$ (&HA);
```

[Print Results]



ESC Y n

[Function] Specifying print density

[Code] <1B>H<59>H<n>

[Range] {0 =< n =< 5} Data is described in Hex code.

[Outline] Specifies the print density.
"n" means the followings.

n (Hex)	Condition
0	70% density
1	80% density
2	90% density
3	100%density
4	120 %density
5	150 %density

[Caution] Higher density may lead to slower printing

[Default] The initial value of n is "3".(100%)

[Sample Program]

```
LPRINT CHR$ (&H1B) + "Y" + CHR$ (0);
LPRINT "AAAAA";
LPRINT CHR$ (&H1B) + "Y" + CHR$ (5);
LPRINT "AAAAA" + CHR$ (&HA);
```

[Print Results]

ESC \ n1 n2

[Function]	Specifying the relative positions
[Code]	<1B>H<5C>H<1n><2n>
[Range]	0 ≤ 1n ≤ 225 0 ≤ 2n ≤ 225
[Outline]	The printing starts position is specified in the number of dots (1/203 inch unit) from the current position. • Rightward direction is taken as plus and leftward direction as minus • To specify N dot in minus (left) direction, use a complement of N for assignment. – N dots = 65536 – N • The number of dots is divided by 256, whose quotient is taken as n2 and the residual as n1.
[Caution]	• Specifying exceeding the top of line or the end of line is ignored.
[Default]	The initial value is not specified.
[See Also]	ESC $
[Sample Program]	See Sample Program and Print Results for ESC $.

[Print Results]
See Sample Program and Print Results for ESC $.

ESC a n

[Function] Aligning the characters

[Code] <1B>H<61>H<n>

[Range] {0 =< n =< 2} Data is described in Hex code.

[Outline] All the printed data within one line are aligned in the specified position.
Depending on n value, positional alignment is carried out as in the table below:

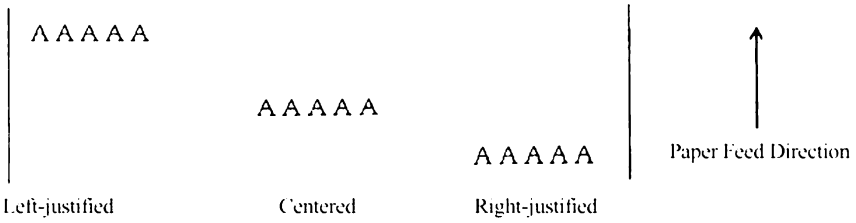
n (Hex)	Position
0	Left end alignment
1	Centering
2	Right end alignment

[Caution] –This is valid only when n is inputted at the beginning of line.
– The initial value of n is “0”.

[Sample Program]

```
LPRINT CHR$ (&H1B) + “a” + CHR$ (0);
LPRINT “AAAAA” + CHR$ (&HA);
LPRINT CHR$ (&H1B) + “a” + CHR$ (1);
LPRINT “AAAAA” + CHR$ (&HA);
LPRINT CHR$ (&H1B) + “a” + CHR$ (2);
LPRINT “AAAAA” + CHR$ (&HA);
```

[Print Results]



ESC c5 n

[Function] Enabling/Disabling Panel Switches

[Code] <1B>H<63>H<35>H<n>

[Range] {0 =< n =< FF} Data is described in Hex code.

[Outline] Selecting the LF switch valid/invalid.
– “n” is valid only in the lowest bit (n0).
– “n” bit means the followings.

n0	Condition
0	LFSW valid.
1	LFSW invalid.

[Caution] When the panel switch is disabled with this command, the LF switch is disabled. Therefore, the paper cannot be fed by operating the LF switch.

[Default] The initial value of n is “0”.

[Sample Program]
LPRINT CHR$ (&H1B) + “c5” + CHR$ (0); ¼¼
When enabling the LF switch
LPRINT CHR$ (&H1B) + “c5” + CHR$ (1); ¼¼
When disabling the LF switch

ESC d n

[Function] Printing and Feeding the paper by n lines

[Code] <1B>H<64>H<n>

[Range] 0 =< n =< FF} Data is described in Hex code.

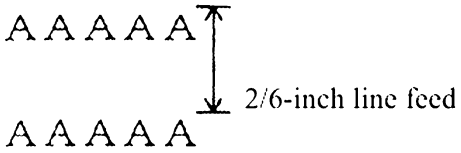
[Outline] Prints data inside the buffer and feeds paper by n lines.
Specified line does not remain.
The beginning of the line is to be considered as
the next printing start position.

[Default] The initial value is not defined.

[Sample Program]

```
LPRINT “AAAAA”
LPRINT CHR$ (&H1B) + “d” + CHR$ (2);
LPRINT “AAAAA” + CHR$ (&HA);
```

[Print Results]



ESC v (Serial Interface Only)

[Function] Transmitting the printer status

[Code] <1B> H <76> H

[Outline] Current printer status is transmitted..

[Caution] –Status sent out consists of 1 byte whose content is as in the table below.
– In XON/XOFF control, DSR signal state not being confirmed, only 1 byte is transmitted.
– In paper end (paper near end) status, this command may be unreceptible state due to BUSY state.
Remarks. This command is valid only for serial interface.

		Value	
Bit	Function	0	1
0	Not defined		
1	Not defined		
2	Paper end	With paper	Without paper
3	Not defined		
4	Not used	Fixed to 0 -	
5	Not defined		
6	Not defined		
7	Not defined		

[Sample Program]

```
OPEN “COM1:N81NN” AS #1 ;
PRINT #1, CHR$ (&H1B) ; “v” ;
A$ = INPUT$ (1, #1) ;
CLOSE #1
END
```

ESC x n

[Function] Selecting the time interval for automatically switching Off the printer.

[Code] <1B>H<78>H<n>

[Range] {0 =< n =< 3C} Data is described in Hex code.

[Outline] Sets the time interval after which the printer will be switched Off automatically if there is no incoming data through the Serial interafce, there is no IrDA communication and LF button is not pressed. The maximum value for the interval is 60 minutes <3C>H . If the interval is set to 0 the auto power off is disabled

[Default] The initial value is (0AH) 10minutes.

[Sample Program]
LPRINT CHR$ (&H1B) + „x“ + CHR$ (H14);

After executing this command the printer will perform auto power off after 20 minutes, if there is no IrDA communication and LF button is not pressed

ESC { n

[Function] Specifying/Canceling the Inverted Characters

[Code] <1B>H<7B>H<n>

[Range] {0 =< n =< FF} Data is described in Hex code.

[Outline] Specifying/canceling inverted characters.
– "n" is valid only for the lowest bit (n0).
– Bit n (n0) means the followings.

n0	Condition
0	Canceling inverted characters.
1	Specifying inverted characters.

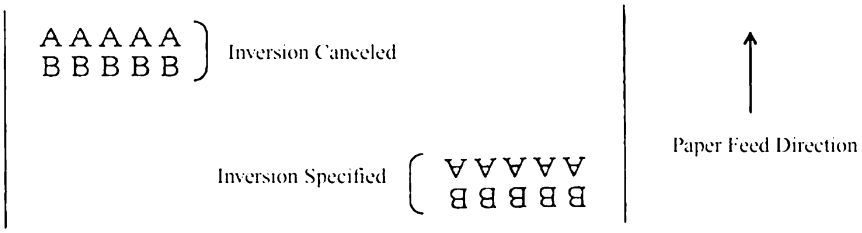
[Caution] – Inverted-printing means printing the line at 180°turned.
– This is valid only when this is specified at the beginning of a line.

[Default] – The initial value of n is "0".

[Sample Program]

```
LPRINT CHR$ (&H1B) + "{" + CHR$ (0);
LPRINT "AAAAA" + CHR$ (&HA);
LPRINT "BBBBB" + CHR$ (&HA);
LPRINT CHR$ (&H1B) + "{" + CHR$ (1);
LPRINT "AAAAA" + CHR$ (&HA);
LPRINT "BBBBB" + CHR$ (&HA);
```

[Print Results]



GS k n [d] k NUL

[Function] Printing the Bar Code

[Code] <1D>H<6B>H<n> [< d>] k <00>H

[Range] {0 =< n =< 7} Data are described in Hex code.

[Outline] Specifying a type of bar code and printing bar codes.
– The beginning of line is considered as the next printing start position.
– Depending on the value of n, the following bar code can be selected.
– d indicates a character code to be printed and k indicates the number of character to be printed.

n (Hex)	Bar Code System	Maximum Columns
0	UPC-A	–
1	UPC-E	–
2	JAN13 (EAN)	–
3	JAN 8 (EAN)	–
4	CODE 39	11
5	ITF	22
6	CODABAR (NW-7)	15
7	CODE 128	14
8	CODE 93	

[Caution] – When data being held in the print buffer, this command is ignored.
– Regardless of the specified feed pitch, this command feeds the paper to be required to print a bar code.
– If the character code d cannot be printed in the respective bar code system, the bar code so far will be printed, processing the subsequent data as normal data.
– When a bar code whose number of characters to be printed is fixed has been selected, the number of characters k have to be always made equal to the number of characters to be printed. (The bar code is not printed when not matching.)
– When the horizontal direction exceeds one line length, the excess part is not printed.

[Default] The initial value is not specified.

[Description of Bar Codes] <For print examples, see Page 67. >

UPC-A This bar code, consisting of numerals only, has a fixed length of 12 column; a 11-columns number entered from the host or application software plus a check column(12th column) automatically calculated inside the printer. If the 12th-column numeral is sent from the host, the entire bar code will be printed as it is.

UPC-E This bar code, consisting of numerals only, has a fixed length of 8 column; the first number system character is “0” stationary. A 12 column numeral entered from the host or application software is compressed to 8 columns with a check column and printed. The 12th-column check column is automatically calculated inside the printer and sent from the host, the entire bar code will be printed, compressed to 8 columns.

JAN-13 (EAN) This bar code, consisting of numerals only, has a fixed length of 13 column; a 12-column number entered from the host or application software plus a check column(13th column) automat cally calculated inside the printer. If the 13th-column numeral is sent from the host, the entire bar code will be printed as it is.

JAN-8 (EAN) This bar code, consisting of numerals only, has a fixed length of 8 column; a 7-column number entered from the host or application software plus a check column(8th column) automatically calculated inside the printer. If the 8th-column numeral is sent from the host, the entire bar code will be printed as it is.

CODE39 This bar code, consisting of uppercase alphabets and numerals, has a variable length of column. A start/stop code “*” is automatcally added by the printer. Available characters include a space and “$, %, +, -, · , /, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9,” and uppercase alphabets. ITF This bar code, consisting of numerals only, has a variable length of even column. If an odd-column code is tranferred, nothing will be printed.

CODABAR (NW-7) This bar code, consisting of alpha numerals, has a variable length of column. Available characters include “0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, $, +, -,., /, :.” A start/stop code is required; any one of A, B, C, and D is used.

CODE128 This bar code consists of all of 128 ASCII code characters and has a variable length of column. This printer supports the code subsets A, B, and C. By prefixing a transfer code with any one character of A, B, and C, you can select the code subset to start from.
If not prefixed with A, B, or C, the code subset B will be selected.

– The code subset A is the bar code consisting of standard uppercase alphabets, numerals, symbols, and special codes.
– The code subset B is the bar code consisting of standard uppercase/lowercase alphabets, numerals, symbols, control codes, and special codes.
– The code subset C is the bar code consisting of special characters and 100 kinds of numbers ranging from 00 to 99.

The check column automatically calculated inside the printer is added to the end of the entered column to be printed.

– Processing of the special characters

The characters above the ASCII code number 96 are considered special characters. The following lists the converted characters for entering these characters.

ASCII Code	Converted Character	Subset Code A	Subset Code B	Subset Code C
96	80h	FNC 3	FNC 3	-N/A-
97	81h	FNC 2	FNC 2	-N/A-
98	82h	SHIFT	SHIFT	-N/A-
99	83h	CODE C	CODE C	-N/A-
100	84h	CODE B	FNC 4	CODE B
101	85h	FNC 4	CODE A	CODE A
102	86h	FNC 1	FNC 1	FNC 1

The following exemplifies a selection of the code subset as a method to utilize the special characters.

<Selection of Code Subset>
Initial selection: Enter any one character of A, B, and C.
Conversion on the way: Enter any one character of 82h through 85h Example) When initially testing with the code subset B, and then, printing the bar code, “123,” with the code subset A
Input code : B TEST <85> 123
Bar code data : <CODE B>TEST<CODE A>123

[Sample Program]

```
LPRINT CHR$ (&H1D) + “H” + CHR$ (2);
LPRINT CHR$ (&H1D) + “k”;
LPRINT CHR$ (4);
LPRINT “123” + CHR$ (0);
```

[Print Results]

When the data "123" is printed with the code 39

[Descriptionof BarCodes]

UPC-A, UPC-E, JAN-13 (EAN), JAN-8 (EAN), CODE39, ITF, CODABAR, CODE128

Type	Print Sample	Outline of Symbol	Max. column
UPC-A		12-column fixed-length bar code consisting of numerals only	–
UPC-E		8-column fixed-length bar code consistingof numerals only. Abbreviated version of UPC-A	–
JAN-13		13-column fixed-length bar code consisting of numerals only	–
JAN-8		8-column fixed-length bar code consisting of numerals only	–
CODE39		Variable-length bar code consisting of alphabets and numerals. The start/stop code “*” is automatically added.	11
ITF		Even-column variable-length bar code consisting of numerals only	22
CODABAR (NW-7)		Variable-length bar code consisting of alpha numerals. Any one of A, B, C, and D is required as the start/stop code.	15
CODE128		Variable-length bar code consisting of all 128 ASCII code characters.	14

Printing is done depending on bar code specification type, number of print column, bar code height, width (Magnification), visible code presence, and bar code data specification.

GS w n

[Function] Selecting the horizontal size (Scale factor) of the Bar Code

[Code] <1D>H <77>H<n>

[Range] {2 =< n =< 4} Data is described in Hex code.

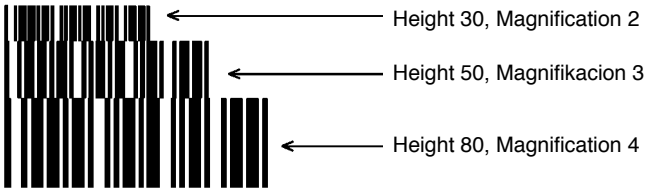
[Outline] Selecting bar code width.
n denotes the number of dots in fine element width.

[Default] The initial value of this width is “3”.

[Sample Program]

```
LPRINT CHR$ (&H1D) + “h” + CHR$ (30);
LPRINT CHR$ (&H1D) + “w” + CHR$ (2);
GOSUB BC
LPRINT CHR$ (&H1D) + “h” + CHR$ (50);
LPRINT CHR$ (&H1D) + “w” + CHR$ (3);
GOSUB BC
LPRINT CHR$ (&H1D) + “h” + CHR$ (80);
LPRINT CHR$ (&H1D) + “w” + CHR$ (4);
GOSUB BC
END
BC:
LPRINT CHR$ (&H1D) + “k”;
LPRINT CHR$ (4);
LPRINT “12” + CHR$ (0);
RETURN
```

[Print Results]



GS h n

[Function] Selecting the height of the Bar Code

[Code] <1D>H<68>H<n>

[Range] {1 =< n =< FF} Data is described in Hex code.

[Outline] Selecting bar code height.
n denotes the number of dots in the vertical direction.

[Default] The initial value of n is “162”.

[Sample Program]

[Print Results]

See Sample Program and Print Results for GS w on page 68.

GS H n

[Function] Selecting of Printing Position of HRI Code

[Code] <1D>H<48>H<n>

[Range] {0 =< n =< 3} Data is described in Hex code.

[Outline] Selecting printing position of HRI code in printing bar codes.
– “n” means the followings.

n (Hex)	Printing Position
0	No printing
1	Above the bar code
2	Below the bar code
3	Both above and below the bar code

The HRI code refers to the bar code-turned characters so that you can read them.

[Caution] The HRI code is printed in the font selected with GS f. Specify before the GS k command.

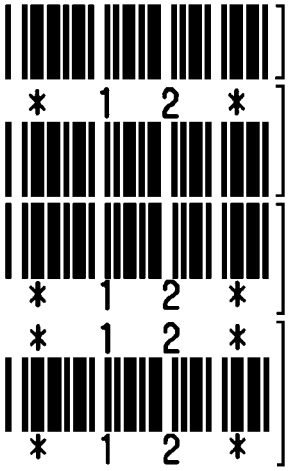
[Default] The initial value of n is “0”.

[See Also] GS f

[Sample Program]

```
LPRINT CHR$ (&H1B) + “3” + CHR$ (5);
LPRINT CHR$ (&H1D) + “h” + CHR$ (50);
LPRINT CHR$ (&H1D) + “H” + CHR$ (0);
GOSUB BC
LPRINT CHR$ (&H1D) + “H” + CHR$ (1);
GOSUB BC
LPRINT CHR$ (&H1D) + “H” + CHR$ (2);
GOSUB BC
LPRINT CHR$ (&H1D) + “H” + CHR$ (3);
GOSUB BC
END
BC:
LPRINT CHR$ (&H1D) + “k”;
LPRINT CHR$ (4);
LPRINT “12” + CHR$ (0);
LPRINT CHR$ (&HA);
RETURN
```

[Print Results]



No Visible Code

Printed above

Printed below

Printed above and below

GS f n

[Function] Selecting the font of HRI code

[Code] <1D>H<66>H<n>

[Range] n = 0, 1

[Outline] Selecting the font of HRI code in printing bar code.
The type of font can be printed by selecting n is as follows.
The HRI code refers to the bar code-turned characters
so that you can read them.

n	Font
0	Font A
1	Font B

[Caution] The HRI code is printed at the position specified with GS h on page 63.

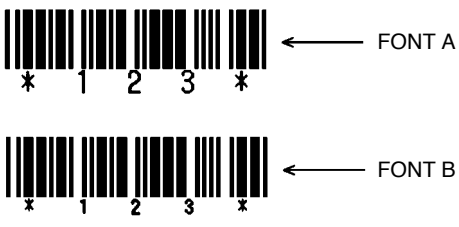
[Default] The initial value of n is “0”.

[See Also] GS H

[Sample Program]

```
LPRINT CHR$ (&H1D) + “h” + CHR$ (50);
LPRINT CHR$ (&H1D) + “H” + CHR$ (2);
LPRINT CHR$ (&H1D) + “f” + CHR$ (0);
GOSUB BC
LPRINT CHR$ (&H1D) + “f” + CHR$ (1);
GOSUB BC
END
BC:
LPRINT CHR$ (&H1D) + “k”;
LPRINT CHR$ (4);
LPRINT “123” + CHR$ (0);
LPRINT CHR$ (&HA);
RETURN
```

[Print Results]



GS * n1 n2 [d] n1 n2 D1 ..... Dn

[Function] Defining the Download Bit Image (LOGO)

[Code] <1D>H<2A>H<n1><n2> [< d >]

[Range] {1 =< n1 =< 7F} defines horizontal size of downloaded image.
{1 =< n2 =< F8} defines the vertical size of downloaded image

[Outline] Defines downloading bit images of the number of dots specified by n1/n2.
The numbers of dots are n1 x 8 in horizontal direction and n2 x 8 in vertical direction. The number of horizontal bytes can be up to 7F, but only the first 48 (30H) bytes will be printed. The rest will be rejected.
– d indicates bit image data.
– The download bit image thus defined remains effective until redefinition, ESC @ execution, ESC &. It remains downloaded even after Power is switched OFF.

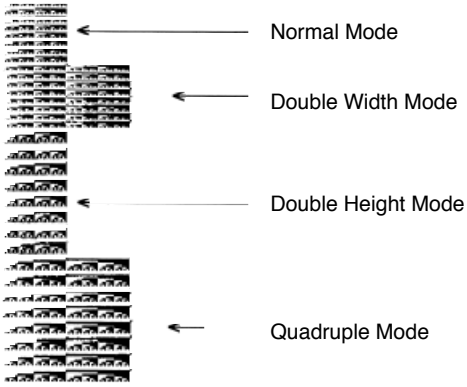
[Caution] – A download character and a download bit image can not be defined simulta neously.
– With this command executed, defined content of a download character is cleared.
The maximum size of the Bit image cannot exceed 16KB.
Relations between the bit image data and the dot defined are shown below:

[See Also] GS /

[Sample Program]

```
GOSUB IMG
LPRINT CHR$ (&H1D) + “/” + CHR$ (0);
LPRINT CHR$ (&H1D) + “/” + CHR$ (1);
LPRINT CHR$ (&H1D) + “/” + CHR$ (2);
LPRINT CHR$ (&H1D) + “/” + CHR$ (3);
END
IMG:
n 1 = 10 : n 2= 5
LPRINT CHR$ (&H1D) + “*”;
LPRINT CHR$ (n1) + CHR$ (n2);
FOR J=1 TO n1*8
FOR I=1 TO n2
LPRINT CHR$ (J);
NEXT I
NEXT J
RETURN
```

[Print Results]



GS / m

[Function] Printing the Download, Bit Image

[Code] <1D>H<2F>H<m>

[Range] {0 =< m =< 03} Data is described in Hex code.

[Outline] Prints download bit image in a mode specified by m.
– Modes can be selected by m are shown below.

m Mode	Name Dot	Density in Vertical Direction	Dot Density in Horizontal Direction
0	Normal mode	203 DPI	203 DPI
1	Double wide mode	203 DPI	101 DPI
2	Double high mode	101 DPI	203 DPI
3	Double wide/double high mode	101 DPI	101 DPI

[Caution] – When data exist inside the print buffer, this command is ignored.
– When a download bit image has not been defined, this command is ignored.
– A portion of a download bit image exceeding one line length is not printed.
– A download character and a download bit image cannot be defined simultaneously.

[Default] The initial value is not specified.

[See Also] GS *

[Sample Program]

[Print Results]

See Sample Program and Print Results for GS *.

GS :

[Function] Starting / Ending Macro Definition

[Code] <1D>H<3A>H

[Outline] Specifying starting / ending macro definition.
Means termination when received while defining a macro.

[Caution] – Maximum content available for macro definition is 2048 bytes.
– A portion exceeding 2048 bytes is not defined.
– Even with ESC @ (initialization of the printer) having been executed, defined content is not cleared. Therefore, it is possible to include ESC @ into the content of macro definition.
– Normal printing operation is carried out even while in macro definition

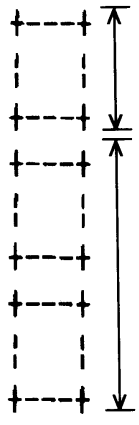
[Default] Initially, Macro is not specified.

[See Also] GS ^

[Sample Program]

```
LPRINT CHR$ (&H1D) + ": " ;
LPRINT "+___+" + CHR$ (&HA);
LPRINT " I I " + CHR$ (&HA);
LPRINT "+___+" + CHR$ (&HA);
LPRINT CHR$ (&H1D) + ": ";
LPRINT CHR$ (&H1D) + " ^ ";
LPRINT CHR$ (2) + CHR$ (10);
LPRINT CHR$ (0);
```

[Print Results]



Normal Printing during Macro Definition

Printing during Macro Execution

GS ^ n1 n2 n3

[Function] Executing the Macro

[Code] <1D>H<5E>H<n1><n2><n3>

[Range] {0 =< n1 =< FF}
{0 =< n2 =< FF}
{0 =< 3 =< 1} Data is described in Hex code.

[Outline] Executing contents defined in macro.
"n1~ n3" indicate as follows:
n1 : The number of times of macro execution
n2 : Waiting time on macro execution
Waiting time of n2 x 100msec is given for every execution.
n3 : Macro execution mode

n3	Mode
0	Continuous execution
1	Execution by LFSW

Continuous execution: The Macro is executed n1 times continuously at the time intervals specified by n2.
Execution by FEED S: After waiting for lapse of time specified by n2, the LF switch is waited to be pressed. When it is pressed, the macro is executed once.
This action is repeated n1 times.

[Caution] – When this command is received while in macro definition, suspension of macro definition is indicated. At this time, the defined content is cleared.
– No execution takes place when macro is held undefined or n1=0.
– While in macro execution with n3=1, paper feed with the LF SW is not available.

[Default] Initially, this command is not specified.

[See Also] GS :

[Sample Program]

[Print Results]
See Sample Program and Print Results for GS : .

GS L nL nH

[Function] Setting the left margin

[Code] <1D>H<4C>H<nL><nH>

[Range] 0 nL 255
0 nH 255

[Outline] This command sets the left margin specified by nL and nH. The value of the left margin is [(nL + nH x 256) x basic calculation pitch] inches.

[Caution] This command only works when it is entered at the beginning of a line.

When PAGE MODE is selected, this command only executes the internal flagging of the printer.
The setting of this command does not affect PAGE MODE.
The maximum settable left margin is equal to the horizontal printable area.
A setting greater than this maximum is trimmed to the maximum.
The basic calculation pitch is defined by GS P. Once defined, the left margin is not changed if the basic calculation pitch is changed by GS P.
The left margin is calculated with the horizontal basic calculation pitch (x) set by GS P. A fraction resulting from the calculation is corrected with the minimum pitch of the mechanism, and the remainder is omitted.
– When mapping character data, if the print area specified is not wide enough to accommodate one character of the current font, only the line for that character data is handled as follows:

(1) The print area is extended toward the right to be equivalent to one character of the current font, but not wider than the printable area.
(2) If an area for one character cannot be provided as a result of step (1), the print area is extended toward the left. (So, the left margin is decreased.)

– When mapping non-character data (Bit image, downloaded bit image, or bar code), if the print area specified is narrower than 9-bits, only the line for that data is handled as follows:

(1) The print area is extended toward the left (So, the left margin is decreased) until it is 9-dot wide, but not wider than the printable area.

[Default] nL = 0, nH = 0

Notes

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