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## 1.Command List

Type	Command	Name
Print Command	LF	Print and line feed
	CR	Print and carriage return
	HT	JMP to the next TAB position
	ESC D n	Set horizontal tab positions
	ESC J n	Print and Feed n dots paper
	ESC d n	Print and Feed n lines
	ESC K	Print and reverse feed paper
	ESC e	Print and reverse feed paper n lines
	GS ( F	Set adjustment values(s)
	GS FF	Feed marked paper to print starting position
	ESC U	Select/Cancel print one-way
Line spacing Command	ESC 2	Select default line spacing
	ESC 3 n	Set line spacing
	ESC a n	Select justification
Character Command	ESC ! n	Select print mode(s)
	ESC M n	Select character font
	ESC G n	Turn on/off double-strike mode
	ESC E n	Set or Cancele bold font
	ESC SP n	Set the space between chars
	ESC { n	Turn upside-down printing mode on/off
	ESC - n	Set the underline dots(0,1,2)
	ESC % n	Select/Cancel user-defined characters
	FS &	Select Chinese mode
	FS .	Select character mode
	FS !	Set print mode for Kanji characters
	FS - n	Turn underline mode on/off for characters
	FS ?	Cancele user-defined Kanji characters
	FS W	Turn quadruple-size mode on/off for Kanji characters
	FS 2 c1 c2	Define user-defined Kanji characters
	FS S n1 n2	Set left and right -side Kanji character spacing
	ESC &	Define user-defined characters
	ESC ? n	Cancele user-defined characters
	ESC R n	Select and internation character set
	ESC t n	Select character code table
Bit Image Command	ESC *	Select bit-image mode

Init Command	ESC @	Initialize printer
Status Command	DLE EOT n	Real-time status transmission
	GS r n	Transmit status
	ESC p m	Generate pulse
	ESC <	Print head reset
	GS a n	Enable/Disable ASB
controls parameter Command	ESC c 5 n	Select/Cancel panel button。

## 2.Control Commands

### 1.HT

[Name]	Horizontal tab
[Format]	ASCII HT
	Hex 09
	Decimal 9
[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 <b>ESC D</b> .
	◆ If this command is received when the printing position is at [printing area width + 1], the printer executes print buffer-full printing of the current line and horizontal tab processing from the beginning of the next line.
[Reference]	<b>ESC D</b>

### 2.LF

[Name]	Print and line feed
[Format]	ASCII LF
	Hex 0A
	Decimal 10
[Description]	Prints the data in the print buffer and feeds one line, based on the cu rrent line spacing.
[Note]	This command sets the print position to the beginning of the line.
[Reference]	<b>ESC 2, ESC 3</b>

## 3.CR

[Name]	Print and carriage return
[Format]	ASCII      CR
	Hex        0D
	Decimal    13
[Description]	This command will print the date of the buffer area, but not feedpaper.
[Notes]	<ul style="list-style-type: none"><li>• This command line feed is ignored with a serial interface model.</li><li>• Sets the print starting position to the beginning of the line.</li></ul>
[Reference]	LF

## 4.DLE EOT n

[Name]	Real-time status transmission
[Format]	ASCII      DLE      EOT    n
	Hex        10        04        n
	Decimal    16        4        n
[Range]	$1 \leq n \leq 4$
[Description]	Transmits the selected printer status specified by n in real-time, according to the following parameters: n = 1: Transmit printer status n = 2: Transmit offline status n = 3: Transmit error status n = 4: Transmit paper roll sensor status
[Notes]	<ul style="list-style-type: none"><li>• When the status is transmitted, the printer only transmits one-byte but not affirm the condition of DSR signal.</li><li>• This command is executed even when the printer is offline, the receive buffer is full, or there is an error status with a serial interface model.</li><li>• With a parallel interface model, this command cannot be executed when the printer is busy. This command is executed even when the printer is offline or in error status, with a parallel interface model.</li><li>• When Auto Status Back (ASB) is enabled using the <b>GS a</b> command, the status transmitted by the <b>DLE EOT</b> command and the ASB status must be differentiated.</li><li>• If printer not select outside device command, <b>ESC =</b> select the command still effective.</li><li>• The printer executes this command upon receiving it.</li></ul>

- The status is transmitted whenever the data sequence <10>H<04>H<n> ( $1 \leq n \leq 4$ ) is received.

Example:

In **ESC m nL nH d1...dk**,  $d1=<10>H$ ,  $d2=<04>H$ ,  $d3=<01>H$

- Do not use this command within another command that consists of 2 or more bytes.

Example:

If you attempt to transmit **ESC 3 n** to the printer, but DTR (DSR for the host computer) goes to MARK before n is transmitted and then **DLE EOT 3** interrupts before n is received, the code <10>H for **DLE EOT 3** is processed as the code for **ESC 3 <10>H**.

n = 1: Printer status

Bit	Hex	Decimal	Function
0	00	0	Not used. Fixed to Off.
1	02	2	Not used. Fixed to On.
2	00	0	Drawer open/close signal is LOW.(connector pin3)
	04	4	Drawer open/close signal is HIGH.(connector pin3)
3	00	0	Online.
	08	8	Offline.
4	10	16	Not used. Fixed to On.
5	00	0	Not wait online recover.
	20	32	Wait online recover.
6	--	--	Undefined.
7	00	0	Not used. Fixed to Off.

n = 2: Offline status

Bit	Hex	Decimal	Function
0	00	0	Not used. Fixed to Off.
1	02	2	Not used. Fixed to On.
2	00	0	Platen is closed.
	04	4	Platen is opened.
3	00	0	Paper is not being fed by using the FEED button.
	08	8	Paper is being fed by the FEED button.
4	10	16	Not used. Fixed to On.
5	00	0	Printer not paper out
	20	32	Printer paper out
6	00	0	No error.

	40	64	Error occurred.
7	00	0	Not used. Fixed to Off.

n = 3: Error status

Bit	Hex	Decimal	Function
0	00	0	Not used. Fixed to Off.
1	02	2	Not used. Fixed to On.
2	--	--	Undefined.
3	00	0	No autocutter error.
	08	8	Autocutter error occurred.
4	10	16	Not used. Fixed to On.
5	00	0	No unrecoverable error.
	20	32	Unrecoverable error occurred.
6	00	0	Printer head temperature and voltage is normal.
	40	64	Printer head temperature and voltage is out of range.
7	00	0	Not used. Fixed to Off.

n = 4: Continuous paper sensor status

Bit	Hex	Decimal	Function
0	00	0	Not used. Fixed to Off.
1	02	2	Not used. Fixed to On.
2.3	00	0	Paper roll sensor: Paper present.
	0c	12	Paper roll near-end detected by paper roll sensor.
4	10	16	Not used. Fixed to On.
5.6	00	0	Paper roll sensor: Paper present.
	60	96	Paper roll end detected by paper roll sensor.
7	00	0	Not used. Fixed to Off.

[Reference] DLE ENQ, GS a

## 5.ESC SP n

[Name]	Set right-side character spacing
[Format]	ASCII ESC SP n
	Hex 1B 20 n
	Decimal 27 32 n
[Range]	$0 \leq n \leq 255$
[Description]	Sets the character spacing for the right side of the character to $[n \times 0.159 \text{ mm}]$ .
[Notes]	<ul style="list-style-type: none"> <li>The right-side character spacing for double-width mode is twice the normal value.</li> </ul>
[Default]	n = 0

## 6.ESC ! n

[Name] Select print mode(s)

[Format] ASCII    ESC    !    n  
 Hex        1B    21    n  
 Decimal    27    33    n

[Range]  $0 \leq n \leq 255$

[Description] Selects print mode(s) using n as follows:

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Character Font A (11×9).
	On	01	1	Character Font B (9×9).
1	-	-	-	Undefined.
2	-	-	-	Undefined.
3	Off	00	0	Emphasized mode not selected.
	On	08	8	Emphasized mode selected.
4	Off	00	0	Double-height mode not selected.
	On	10	16	Double-height mode selected.
5	Off	00	0	Double-width mode not selected.
	On	20	32	Double-width mode selected.
6	-	-	-	Undefined.
7	Off	00	0	Underline mode not selected.
	On	80	128	Underline mode selected.

[Notes]

- When both double-height and double-width modes are selected, quadruple-size characters are printed.
- The printer can underline all characters, but cannot underline the space set by **HT** or 90° clockwise rotated characters.
- Underline mode selected by this command is not affect Kanji characters to print .print mode is set by **FS I**.

[Default] n = 1

[Reference] ESC –, ESC E

## 7.ESC % n

[Name] Select/cancel user-defined character set

[Format] ASCII    ESC    %    n  
 Hex        1B    25    n  
 Decimal    27    37    n

[Range]  $0 \leq n \leq 255$

[Description] Selects or cancels the user-defined character set.

- When the LSB of n is 0, the user-defined character set is canceled.
- When the LSB of n is 1, the user-defined character set is selected.



[Notes]	<ul style="list-style-type: none"> <li>When the user-defined character set is canceled, the built-in character set is automatically selected.</li> <li>n is available only for the least significant bit.</li> </ul>
[Default]	n = 0
[Reference]	ESC &, ESC ?

## 8.ESC & y c1 c2 [x1 d1...d(y x x1)]...[xk d1...d(y x xk)]

[Name]	Define user-defined characters
[Format]	<p>ASCII    ESC    &amp;    y    c1    c2 [x1 d1...d(y x x1)]...[xk d1...d(y x xk)]</p> <p>Hex       1B    26    y    c1    c2 [x1 d1...d(y x x1)]...[xk d1...d(y x xk)]</p> <p>Decimal   27   38    y    c1    c2 [x1 d1...d(y x x1)]...[xk d1...d(y x xk)]</p>
[Range]	<p>y = 3</p> <p><math>32 \leq c1 \leq c2 \leq 126</math></p> <p><math>0 \leq x \leq 12</math> (when Font A (11×9) is selected)</p> <p><math>0 \leq x \leq 9</math> (when Font B (9×9) is selected)</p> <p><math>0 \leq d1 \dots d(y \times xk) \leq 255</math></p>
[Description]	<p>Defines user-defined characters.</p> <ul style="list-style-type: none"> <li>y specifies the number of bytes in the vertical direction.</li> <li>c1 specifies the beginning character code for the definition, and c2 specifies the final code.</li> <li>x specifies the number of dots in the horizontal direction.</li> </ul>
[Notes]	<ul style="list-style-type: none"> <li>The allowable character code range is from ASCII code &lt;20&gt;H to &lt;7E&gt;H.</li> <li>It is possible to define multiple characters for consecutive character codes. If only one character is desired, use c1 = c2.</li> <li>d is the dot data for the characters. The dot pattern is in the horizontal direction from the left side. Any remaining dots on the right side are blank.</li> <li>The data to define user-defined characters is (y×x) bytes.</li> <li>Set a corresponding bit to 1 to print a dot or 0 not to print a dot.</li> <li>This command can define different user-defined character patterns for each font. To select a font, use ESC !.</li> <li>User-defined characters and a downloaded bit image cannot be defined simultaneously. When this command is executed, the downloaded bit image is cleared.</li> </ul>

- The user-defined character definition is cleared when:
  - 1) **ESC @** is executed.
  - 2) **ESC ?** is executed.
  - 3) The power is turned off.
- The max define character is 8

[Default] The internal character set

[Reference] **ESC %**, **ESC ?**

## 9.ESC \* m nL nH d1...dk

[Name] Select bit-image mode

[Format] ASCII   ESC    \*   m   nL   nH   d1...dk  
 Hex       1B    2A   m   nL   nH   d1...dk  
 Decimal   27    42   m   nL   nH   d1...dk

[Range] m = 0, 1  
 $0 \leq nL \leq 255$   
 $0 \leq nH \leq 3$   
 $0 \leq d \leq 255$   
 $K = nL + nH \times 256$

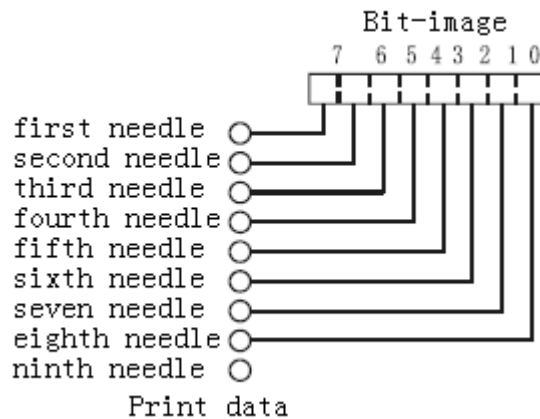
[Description] Selects a bit-image mode using m for the number of dots specified by nL and nH, as follows:

m	Mode	Vertical Direction Dot Density	Horizontal Direction Dot Density
0	8-dot single-density	60 dpi	90 dpi
1	8-dot double-density	60 dpi	180 dpi

- [Notes]
- If the value of m is out of the specified range, nL and the data following are processed as normal data.
  - The nL and nH indicate the number of dots in the bit image in the horizontal direction. The number of dots is calculated by  $nL + nH \times 256$ .

- If the bit-image data input exceeds the number of dots to be printed on a line, the excess data is ignored.
- d indicates the bit-image data. Set a corresponding bit to 1 to print a dot or to 0 not to print a dot.

- [Description]
- If m and nL exceed appoint area, the latter data is according to the conventional data processing
  - Back to the conventional data processing mode after print a Bit-image.
  - The relationship between bit-image data and the point to print as follows:



## 10.ESC - n

[Name]	Turn underline mode on/off			
[Format]	ASCII	ESC	-	n
	Hex	1B	2D	n
	Decimal	27	45	n
[Range]	n =0,1 48 49			
[Description]	Turns underline mode on or off, based on the following values			

n	Function
0, 48	Turns off underline mode
1, 49	Turns on underline mode

[Notes]	<ul style="list-style-type: none"> <li>The printer can underline all characters (including right-side character spacing), but cannot underline the space set by HT.</li> <li>Underline mode can also be turned on or off by using ESC !.</li> <li>If n exceed appoint limits,the command is ignore.</li> <li>Setting the current underline command not affect the Kanji character to print.</li> </ul>
[Default]	n = 0
[Reference]	ESC !

## 11.ESC 2

[Name]	Select default line spacing		
[Format]	ASCII	ESC	2
	Hex	1B	32
	Decimal	27	50
[Description]	Selects 4.233 mm line spacing.		
[Reference]	ESC 3		

## 12.ESC 3 n

[Name]	Set line spacing
[Format]	ASCII    ESC    3    n Hex       1B    33    n Decimal    27    51    n
[Range]	$0 \leq n \leq 255$
[Description]	Sets the line spacing to $[n \times 0.175 \text{ mm}]$ .
[Default]	$n = 24$
[Reference]	<b>ESC 2</b>

## 13.ESC <

[Name]	Print head reset
[Format]	ASCII    ESC    < Hex       1B    3c Decimal    27    60
[Description]	Move the print head to wait-printing position.
[Notes]	<ul style="list-style-type: none"><li>• First,the print head move to the most left side,and than move to the most right side ,finally move to the most left side.</li><li>• the most left side can by initial position sensor detect.</li><li>• Because of executing the command need to detect initial position , the print position can remove after executing the command.</li></ul>

## 14.ESC ? n

[Name]	Cancel user-defined characters
[Format]	ASCII    ESC    ?    n Hex       1B    3F    n Decimal    27    63    n
[Range]	$32 \leq n \leq 126$
[Description]	Cancels user-defined characters.
[Notes]	<ul style="list-style-type: none"><li>• This command cancels the patterns defined for the character codes specified by n. After the user-defined characters are canceled, the corresponding patterns for the internal characters are printed.</li><li>• This command deletes the pattern defined for the specified code in the font selected by <b>ESC !</b>.</li><li>• If a user-defined characters have not been defined, the printer ignores this command.</li></ul>
[Reference]	<b>ESC &amp;, ESC %</b>

## 15.ESC @

[Name]	Initialize printer		
[Format]	ASCII	ESC	@
	Hex	1B	40
	Decimal	27	64
[Description]	Clears the data in the print buffer and resets the printer mode to the mode that was in effect when the power was turned on.		
[Notes]	<ul style="list-style-type: none"><li>The DIP switch settings are not checked again.</li></ul>		

## 16.ESC D n1...nk NUL

[Name]	Set horizontal tab positions				
[Format]	ASCII	ESC	D	n1...nk	NUL
	Hex	1B	44	n1...nk	00
	Decimal	27	68	n1...nk	0
[Range]	$1 \leq n \leq 255$				
	$0 \leq k \leq 32$				
[Description]	Sets horizontal tab positions. <ul style="list-style-type: none"><li>n specifies the column number for setting a horizontal tab position from the beginning of the line.</li><li>k indicates the total number of horizontal tab positions to be set.</li></ul>				
[Notes]	<ul style="list-style-type: none"><li>The horizontal tab position is stored as a value of [character width x n] measured from the beginning of the line. The character width includes the right-side character spacing, and double-width characters are set with twice the width of normal characters.</li><li>This command cancels the previous horizontal tab settings.</li><li>When setting n = 8, the print position is moved to column 9 by sending HT.</li><li>Up to 32 tab positions (k = 32) can be set. Data exceeding 32 tab positions is processed as normal data.</li><li>Transmit [n]k in ascending order and place a NUL code 0 at the end.</li></ul> When [n]k is less than or equal to the preceding value [n]k-1, tab setting is finished and the following data is processed as normal data. <ul style="list-style-type: none"><li>ESC D NUL cancels all horizontal tab positions.</li><li>The previously specified horizontal tab positions do not change, even if the character width changes.</li><li>The character width is memorized for each standard</li></ul>				

	mode.
[Default]	The default tab positions are at intervals of 8 characters (columns 9, 17, 25,...) for Font A (9×9).
[Reference]	HT

## 17.ESC E n

[Name]	Turn emphasized mode on/off
[Format]	ASCII      ESC    E    n
	Hex        1B    45    n
	Decimal    27    69    n
[Range]	$0 \leq n \leq 255$
[Description]	Turns emphasized mode on or off
	When the LSB of n is 0, emphasized mode is turned off. When the LSB of n is 1, emphasized mode is turned on.
[Notes]	<ul style="list-style-type: none"> <li>Only the least significant bit of n is enabled.</li> <li>Not print emphasize Bit-image.</li> <li>This command and <b>ESC !</b> turn on and off emphasized mode in the same way. Be careful when this command is used with <b>ESC !</b>.</li> <li>Printer output is the same in double-strike mode and in emphasized mode.</li> <li>This command is affect the printing of alphanumeric and Kanji character.</li> <li>In emphasized mode the print two-pass will change slow.</li> </ul>
[Default]	n = 0
[Reference]	ESC !, ESC G

## 18.ESC G n

[Name]	Turn on/off double-strike mode
[Format]	ASCII      ESC      G    n
	Hex        1B    47    n
	Decimal    27    71    n
[Range]	$0 \leq n \leq 255$
[Description]	Turns double-strike mode on or off.
	<ul style="list-style-type: none"> <li>When the LSB of n is 0, double-strike mode is turned off.</li> <li>When the LSB of n is 1, double-strike mode is turned on.</li> </ul>
[Notes]	<ul style="list-style-type: none"> <li>Only the lowest bit of n is enabled.</li> <li>Not print emphasize Bit-image.</li> <li>Printer output is the same in double-strike mode and in emphasized mode.</li> <li>This command is affect the printing of alphanumeric and Kanji character.</li> </ul>

- In double-strike mode the print two-pass will change slow.

[Default]      n = 0  
[Reference]    **ESC E**

## 19.ESC J n

[Name]            Print and feed paper  
[Format]        ASCII      ESC    J      n  
                    Hex        1B    4A      n  
                    Decimal    27    74      n  
[Range]          0 ≤ n ≤ 255  
[Description]    Prints the data in the print buffer and feeds the paper [n× 0.176 mm].  
[Notes]            • After printing is completed, this command sets the print starting position to the beginning of the line.  
                      • The paper feed amount set by this command does not affect the values set by **ESC 2** or **ESC 3**.  
[Reference]      **ESC K**

## 20.ESC K n

[Name]            Print and reverse feed paper  
[Format]        ASCII      ESC      K      n  
                    Hex        1 B    4B      n  
                    Decimal    27    75      n  
[Range]          0 ≤ n ≤ 48  
[Description]    Prints the data in the print buffer and reverse feed paper the paper [n× 0.176 mm].  
[Notes]            • If n exceed specified limits,printer only print data but no reverse feed paper .  
                      • Not more than twice consecutive use this command.  
                      • Reverse feed can lead to the following problem:  
                          1) Feed paper space is not right.  
                          2) Printer's noise bigger than ordinary circumstances.  
                          3) Paper may and colour bar rub dirty.  
[Reference]      **ESC J**

## 21.ESC M n

[Name]            Select character font  
[Format]        ASCII      ESC      M      n  
                    Hex        1B        4D      n  
                    Decimal    27        77      n  
[Range]          n = 0, 1, 48, 49

[Description]      Selects the character font.	
n	Function
0, 48	Character Font A (11× 9) selected.
1, 49	Character Font B (9×9) selected.

[Default]      n = 1

## 22.ESC R n

[Name]      Select an international character set

[Format]      ASCII    ESC    R    n

Hex    1B    52    n

Decimal 27    82    n

[Range]       $0 \leq n \leq 15$

[Description]      Selects international character set n from the following table:

n	Character set
0	U.S.A
1	France
2	Germany
3	U.K
4	Denmark I
5	Sweden
6	Italy
7	Spain I
8	Japan
9	Norway
10	Denmark II
11	Spain II
12	Latin America
13	Korea
14	Slovenia/Croatia
15	China

[Default]      n = 0

## 23.ESC U n

[Name]      Select/Cancel print one-way

[Format]      ASCII    ESC    U    n

Hex    1B    55    n

Decimal 27    85    n

[Range]       $0 \leq n \leq 255$

[Description]      Select/Cancel print one-way.

- When the LSB of n is 0, the print one-way is enabled.
- When the LSB of n is 1, the print one-way is disabled.



- [Notes]
- Only the lowest bit of n is valid.
  - When setting print one-way, the print head from left to right.
  - To avoid horizontal direction to irregularities, so suggesting use one-way print.
- [Default] n = 0

## 24.ESC a n

- [Name] Select justification
- [Format]
- |         |     |    |   |
|---------|-----|----|---|
| ASCII   | ESC | a  | n |
| Hex     | 1B  | 61 | n |
| Decimal | 27  | 97 | n |
- [Range]  $0 \leq n \leq 2, 48 \leq n \leq 50$
- [Description] Aligns all the data in one line to the specified position.  
n selects the justification as follows:

n	Justification
0, 48	Left justification
1, 49	Centering
2, 50	Right justification

- [Notes]
- The command is enabled only when processed at the beginning of the line in standard mode.
  - This command executes justification in the printing area.
  - This command justifies the space area according to HT or ESC W.
- [Default] n = 0
- [Example]

### Left justification

ABC  
ABCD  
ABCDE

### Centering

ABC  
ABCD  
ABCDE

### Right justification

ABC  
ABCD  
ABCDE

## 25.ESC c 5 n

- [Name] Enable/disable panel buttons
- [Format]
- |         |     |    |    |   |
|---------|-----|----|----|---|
| ASCII   | ESC | c  | 5  | n |
| Hex     | 1B  | 63 | 35 | n |
| Decimal | 27  | 99 | 53 | n |
- [Range]  $0 \leq n \leq 255$
- [Description] Enables or disables the panel buttons.
- When the LSB of n is 0, the panel buttons are enabled.
  - When the LSB of n is 1, the panel buttons are disabled.
- [Notes]
- Only the lowest bit of n is valid.

- When the panel buttons are disabled, none of them are usable when the printer cover is closed.
- [Default]                      n = 0

## 26.ESC d n

- [Name]                      Print and feed n lines
- [Format]                    ASCII      ESC      d      n  
                                  Hex      1B      64      n  
                                  Decimal    27      100    n
- [Range]                     $0 \leq n \leq 255$
- [Description]              Prints the data in the print buffer and feeds n lines.
- [Notes]                    • This command sets the print starting position to the beginning of the line.  
                                  • This command does not affect the line spacing set by **ESC 2** or **ESC 3**.  
                                  • The maximum paper feed amount is 1016 mm. If the paper feed amount (n x line spacing) of more than 1016 mm is specified, the printer feeds the paper only 1016 mm.
- [Reference]                **ESC e**

## 27.ESC e n

- [Name]                      Print and reverse feed paper n lines
- [Format]                    ASCII      ESC      e      n  
                                  Hex      1B      65      n  
                                  Decimal    27      101    n
- [Range]                     $0 \leq n \leq 2$
- [Description]              Prints the data in the print buffer and reverse feed paper n lines.
- [Notes]                    • If n exceed specified limits,printer only print data but no reverse feed paper .  
                                  • Not more than twice consecutive use this command.  
                                  • Reverse feed can lead to the following problem:  
                                      1) Feed paper space is not right.  
                                      2) Printer's noise bigger than ordinary circumstances.  
                                      3) Paper may and colour bar rub dirty.
- [Reference]                **ESC d**

## 28.ESC p m t1 t2

- [Name]                      Generate pulse
- [Format]                    ASCII      ESC      p      m      t1    t2  
                                  Hex      1B      70      m      t1    t2  
                                  Decimal    27      112    m      t1    t2

[Range]	m=0, 48 $0 \leq t1 \leq 5$ $0 \leq t2 \leq 255$
[Description]	Outputs the pulse specified by t1 and t2 to connector pin m as follow : On time= t1 x 2 millisecond Off time= t2 x 2 millisecond <ul style="list-style-type: none"> <li>When <math>t2 &lt; t1</math> ,the printer dispose t1 x 2 millisecond</li> <li>If <math>t2 &gt; 50</math>,it will be disposed <math>t2=50</math>.</li> </ul>

## 29.ESC t n

[Name]	Select character code table
[Format]	ASCII      ESC    t    n Hex          1B    74    n Decimal    27    116    n
[Range]	$0 \leq n \leq 5, 16 \leq n \leq 19, n = 255$
[Description]	Selects page n from the character code table.

N	Code Page
0	CP437 [U.S.A., Standard Europe]
1	Katakana
2	CP850 [Multilingual]
3	CP860 [Portuguese]
4	CP863 [Canadian-French]
5	CP865 [Nordic]
16	WCP1252 Latin I
17	PC866
18	CP852 [Latina 2]
19	CP858 Multilingual Latin I +Euro)
21	Vietnam
22	PC857[Turkey]
255	Thai

[Default]      n = 0

## 30.ESC { n

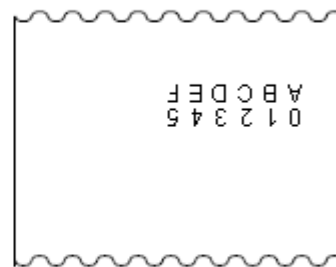
[Name]	Turns on/off upside-down printing mode
[Format]	ASCII      ESC    {    n Hex          1B    7B    n Decimal    27    123    n
[Range]	$0 \leq n \leq 255$
[Description]	Turns upside-down printing mode on or off. <ul style="list-style-type: none"> <li>When the LSB of n is 0, upside-down printing mode is turned off.</li> </ul>

- When the LSB of n is 1, upside-down printing mode is turned on.
- [Notes]
  - Only the lowest bit of n is valid.
  - This command is enabled only when processed at the beginning of a line in standard mode.
  - In upside-down printing mode, the printer rotates the line to be printed by 180° and then prints it.
- [Default] n = 0
- [Example]

When upside-down printing mode is off.



When upside-down printing mode is on.



Paper feed direction

## 31. ESC r n(#)

- [Name] select printing colour
- [Format]
 

ASCII	ESC	r	n
Hexadecimal Code	1B	72	n
Decimal Code	27	114	n
- [Range] n = 0, 1, 48, 49
- [Description]
 

printing color :

n = 0, 48 black

n = 1, 49 red
- [Notes]
  - Only valid when enter the command at the beginning of a line
  - Only valid for double color printing
- [Default] •n = 0

## 32. GS a n

- [Name] Enable/Disable Automatic Status Back (ASB)
- [Format]
 

ASCII	GS	a	n
Hex	1D	61	n
Decimal	29	97	n
- [Range]  $0 \leq n \leq 255$
- [Description] Enables or disables ASB and specifies the status items to include, using n as follows:

Bit	Off/On	Hex	Decimal	Status for ASB
0	Off	00	0	Drawer is open ,close connector pin 3.
	On	01	1	Drawer is open ,open connector pin 3.
1	-	-	-	Undefined .
2	Off	00	0	Error status disabled.
	On	04	4	Error status enabled.
3	Off	00	0	Paper roll sensor status disabled.
	On	08	8	Paper roll sensor status enabled.
4-7	-	-	-	Undefined.

### 33.GS r n

[Name] Transmit status  
 [Format] ASCII GS r n  
 Hex 1D 72 n  
 Decimal 29 114 n  
 [Range]  $1 \leq n \leq 2, 49 \leq n \leq 50$   
 [Description] Transmits the status specified by n as follows:

n	Function
1, 49	Transmits paper sensor status
2,50	Transmits drawer status

- [Notes]
- When using a serial interface  
 When DTR/DSR control is selected, the printer transmits only 1 byte after confirming the host is ready to receive data (DSR signal is SPACE). If the host computer is not ready to receive data (DSR signal is MARK), the printer waits until the host is ready.  
 When XON/XOFF control is selected, the printer transmits only 1 byte without confirming the condition of the DSR signal.
  - This command is executed when the data in the receive buffer is developed. Therefore, there may be a time lag between receiving this command and transmitting the status, depending on the receive buffer status.
  - When Auto Status Back (ASB) is enabled using **GS a**, the status transmitted by **GS r** and the ASB status must be differentiated using.
  - The status types to be transmitted are shown below:

Paper sensor status (n = 1, 49):

Bit	Off/On	Hex	Decimal	Status for ASB
0,1	-	-	-	Undefined.
2,3	Off	00	0	Paper roll end sensor: paper adequate.
	On	(0C)	(12)	Paper roll end sensor: paper near end.

4	Off	00	0	Not used. Fixed to Off.
5,6	-	-	-	Undefined.
7	Off	00	0	Not used. Fixed to Off.

Drawer status (n = 2, 50):

Bit	Off/On	Hex	Decimal	Status for ASB
0	Off	00	0	Drawer is open.
	On	01	1	Drawer is closed.
1-3	--	--	--	Undefined.
4	Off	00	0	Not used. Fixed to Off.
5,6	-	-	-	Undefined.
7	Off	00	0	Not used. Fixed to Off.

[Reference]      DLE EOT, GS a

### 3.Kanji Control Commands

#### 1.FS ! n

[Name]              Set print mode(s) for Kanji characters

[Format]            ASCII      FS      !      n

Hex            1C    21    n

Decimal      28    33    n

[Range]             $0 \leq n \leq 255$

[Description]      Sets the print mode for Kanji characters, using n as follows:

Bit	Off/On	Hex	Decimal	Function
0	—	—	—	Undefined.
1	—	—	—	Undefined.
2	Off	00	0	Double-width mode is OFF.
	On	04	4	Double-width mode is ON.
3	Off	00	0	Double-height mode is OFF.
	On	08	8	Double-height mode is ON.
4	—	—	—	Undefined.
5	—	—	—	Undefined.
6	—	—	—	Undefined.
7	Off	00	0	Underline mode is OFF.
	On	80	128	Underline mode is ON.

- [Notes]
- When both double-width and double-height modes are set (including right- and left-side character spacing), quadruple-size characters are printed.
  - The printer can underline all characters (including right- and left-side character spacing), but cannot underline the space set by HT and 90° clockwise-rotated characters.

[Default]            n = 0

---

[Reference]      FS , FS W

## 2.FS &

[Name]                      Select Kanji character mode

[Format]                    ASCII                      FS                      &  
                                   Hex                        1C                      26  
                                   Decimal                    28                      38

[Description]              Selects Kanji character mode.

[Notes]                      For Kanji model:

- When the Kanji character mode is selected, the printer processes all Kanji code as two bytes each.
- Kanji codes are processed in the order of the first byte and second byte.
- Kanji character mode is not selected when the power is turned on.

[Reference]                  FS . ,FS C

## 3.FS - n

[Name]                      Turn underline mode on/off for Kanji characters

[Format]                    ASCII                      FS                      –                      n  
                                   Hex                        1C                      2D                      n  
                                   Decimal                    28                      45                      n

[Range]                      0 ≤ n ≤ 1

[Description]               Turns underline mode for Kanji characters on or off, based on the following values of n.

n	Function
0, 48	Turns off underline mode for Kanji characters
1, 49	Turns on underline mode for Kanji characters (1-dot thick)
2, 50	Turns on underline mode for Kanji characters (1-dot thick)

[Notes]                      • The printer can underline all characters (including right- and left-side Character spacing), but cannot underline the space set by HT and 90° clockwise-rotated characters.

[Default]                    n = 0

[Reference]                  FS !

## 4.FS .

[Name]                      Cancel Kanji character mode

[Format]                    ASCII                      FS                      .  
                                   Hex                        1C                      2E  
                                   Decimal                    28                      46

[Description]               Cancels Kanji character mode.

[Notes]	<p>For Kanji model:</p> <ul style="list-style-type: none"> <li>When the Kanji character mode is not selected, all character codes are processed one byte at a time as ASCII code.</li> <li>Kanji character mode is not selected when the power is turned on.</li> </ul>
[Reference]	<b>FS &amp; ,FS C</b>

## 5.FS 2 c1 c2 d1...dk

[Name]	Define user-defined Kanji characters					
[Format]	ASCII	FS	2	c1	c2	d1...dk
	Hex	1C	32	c1	c2	d1...dk
	Decimal	28	50	c1	c2	d1...dk
[Range]	c1 and c2 indicate character codes for the defined characters.					
Model type			c1	c2		
Chinese kanji supporting model			c1 = FEH	A1H ≤ c2 ≤ FEH		
	0 ≤ d ≤ 255					
	k = 32					
[Description]	Defines user-defined Kanji characters for the character codes specified by c1 and c2.					
[Notes]	c1 and c2 indicate character codes for the defined characters. c1 specifies for the first byte, and c2 for the second byte.					
	d indicates the dot data. Set a corresponding bit to 1 to print a dot or to 0 to not print a dot.					
	After defines user-defined Kanji characters,it can redefine old defining Kanji characters,but not defines new Kanji characters.					
	After defines user-defined Kanji characters,the definition is all effective ,only if execute redefine or <b>ESC @,FS ?</b> or printer reset or power is turn off.					
[Default]	All spaces.					
[Reference]	<b>ESC c 1</b>					

## 6.FS ? c1 c2

[Name]	Cancel user-defined Kanji characters
[Format]	<p>ASCII      FS      ?      c1      c2</p> <p>Hex        1C    3F      c1      c2</p> <p>Decimal    28    63      c1      c2</p>
[Range]	c1 and c2 indicate character codes for the defined characters.



Model type	c1	c2
Chinese kanji supporting model	c1 = FEH	A1H ≤ c2 ≤ FEH

[Description] Cancel user-defined Kanji characters

- Cancel user-defined Kanji characters for the character codes specified by c1 and c2, print margin characters after Cancel user-defined Kanji characters .

[Notes] • It is ignore if not define user-defined Kanji characters.

[Reference] **FS 2 , FS c**

## 7.FS S n1 n2

[Name]	Set left- and right-side Kanji character spacing				
[Format]	ASCII	FS	S	n1	n2
	Hex	1C	53	n1	n2
	Decimal	28	83	n1	n2
[Range]	0 ≤ n1 ≤ 32				
	0 ≤ n2 ≤ 32				
[Description]	Sets left- and right-side Kanji character spacing to n1 and n2, respectively.				
[Notes]	<ul style="list-style-type: none"><li>• When double-width mode is set, the left- and right-side character spacing is twice the normal value.</li><li>• The Kanji characters spacing which is set to half dot as unit.</li></ul>				
[Default]	n1 = 0, n2 = 0				

## 8.FS W n

[Name]	Turn quadruple-size mode on/off for Kanji characters			
[Format]	ASCII	FS	W	n
	Hex	1C	57	n
	Decimal	28	87	n
[Range]	0 ≤ n ≤ 255			
[Description]	Turns quadruple-size mode on or off for Kanji characters. <ul style="list-style-type: none"><li>• When the LSB of n is 0, quadruple-size mode for Kanji characters is turned off.</li><li>• When the LSB of n is 1, quadruple-size mode for Kanji characters is turned on.</li></ul>			
[Notes]	<ul style="list-style-type: none"><li>• Only the lowest bit of n is valid.</li></ul> In quadruple-size mode, the printer prints the same size characters as when double-width and double-height modes are both turned on.			
[Default]	n = 0			
[Reference]	FS !			

## 9.GS ( F pL pH a m nL nH(for BM)

[Name]	Set adjustment value(s)
[Format]	ASCII GS ( F pL pH a m nL nH Hex 1D 28 46 pL pH a m nL nH Decimal 29 40 70 pL p a m nL nH
[Range]	$(pL + (pH \times 256)) = 4$ (where $pL = 4$ , $pH = 0$ ) $1 \leq a \leq 2$ $m = 0, 48$ or $1, 49$ $0 \leq (nL + nH \times 256) \leq 65535$ (where $0 \leq nL \leq 255$ , $0 \leq nH \leq 255$ )
[Description]	This command is effective only when the BM sensor is enabled. Sets adjustment values(s) for the printer operations specified by a. pL and pH specifies the number of the parameter such as a to $(pL + (pH \times 256))$ bytes. <ul style="list-style-type: none"> <li>a specifies setting values for the positions to start printing and cutting</li> </ul>

a	Function
1	Setting value for the positions to start the printing.
2	Setting value for the positions to start the cutting.

• m specifies the direction of the adjustment.

m	Function
0,48	Specifies a forward paper feeding direction
1,49	Specifies a backward paper feeding direction.

- nL and nH specifies the setting value to  $[(nL + nH \times 256) \times 0.125 \text{ mm}]$ .
- The adjustment value for the print starting position ( $a = 1$ ) is affected with the following commands: **GS FF**
- The adjustment value for the paper cutting position ( $a = 2$ ) is affected with the following commands: **GS V m n**

[Default]	All adjustment values are set to "0". (At the factory setting, the print starting position and the cutting position are set to the head position and the cutter position respectively when the BM sensor detects the BM.)
[Reference]	<b>GS FF, GS V</b>

## 10.GS FF (for BM)

[Name]	Feed marked paper to print starting position
[Format]	ASCII GS FF Hex 1D 0C Decimal 29 12

[Description]	Feeds the marked paper to the print starting position.
[Notes:]	<ul style="list-style-type: none"><li>• This command is enabled only when the BM sensor is set to be effective.</li><li>• This command sets the next print position to the beginning of the line by <b>GS ( F(a=1)</b>.</li><li>• Even if this command is executed at the print starting position of the marked paper, the printer does not feed the marked paper to the next print starting position.</li></ul>
[Reference]	<b>GS ( F</b>