Software Developer's Manual

ESC/P Command Reference

QL-720NW

Version 1.0

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Introduction

This material provides the necessary information for directly controlling QL-720NW.
This information is provided assuming that the user has full understanding of the operating system being used and basic mastery of RS-232C or USB in a developer's environment.
We accept no responsibility for any problems caused by programs that you develop using the information provided in this material, affecting software, data or hardware, including the QL-720NW, and any problems resulting directly or indirectly from them. Use this material only if you accept these terms.

Read the model names that appear in the screens in this manual as the name of your printer.

These ESC/P commands have been adapted specifically for this company.

What is ESC/P?

ESC/P is one type of control codes used for printers. With the codes introduced in this document, various labels can be created and printed. In this document, ESC/P codes are provided as both ASCII and binary codes.

When sending codes to the printer, make sure that the binary codes are used, otherwise the printer cannot parse the codes.

1. Using ESC/P Commands

Below is a description of the flow for creating documents.

Also refer to "2. Examples of Using ESC/P Commands".

(1) Start ESC/P

1. Switch the command mode.	- Switch command mode (ESC i a)
2. Initialize	- Initialize (ESC @)

(2) Format settings

1. Select the orientation.	- Specify landscape orientation (ESC i L)
2. Specify the page size.	- Specify page length (ESC (C)
3. Specify print area.	- Specify page format (ESC (c) - Specify left/right margins (ESC I, ESC Q)
4. Specify the line feed amount.	- Specify line feed amount (ESC 0, ESC 2, ESC 3, ESC A)
5. Specify tab positions.	- Specify horizontal tab position (ESC D) - Specify vertical tab position (ESC B)

(3) Print operations

1. Specify the print position.	- Specify the vertical position (ESC (v, ESC (V, VT, ESC J) - Specify the horizontal position (ESC $, ESC \, HT, ESC a)
2. Transfer the print data (one line).	- Transfer necessary text operation codes (see (4)), bit images, barcodes, and downloaded data (see (5))
3. End of the line.	- Feed the paper (CR, LF)
4. Repeat 1–3 above.	
5. End of the page.	- Specify cutting (ESC i C) - Feed the page (FF)
6. Repeat 1–5 above.	
7. End of the document.	

(4) Text operations

1. Specify the character set.	- Select font (ESC k) - Select character code (ESC t) - Select international character set (ESC R) - Specify character size (ESC X) - Specify the character spacing (ESC P, ESC M, ESC g, ESC SP)
2. Specify the character style.	- Specify character style (ESC 4, ESC 5, ESC E, ESC F, ESC G, ESC H, ESC W, SO, ESC SO, SI, ESC SI, DC2, DC4, ESC -, ESC !)
3. Specify character codes.	

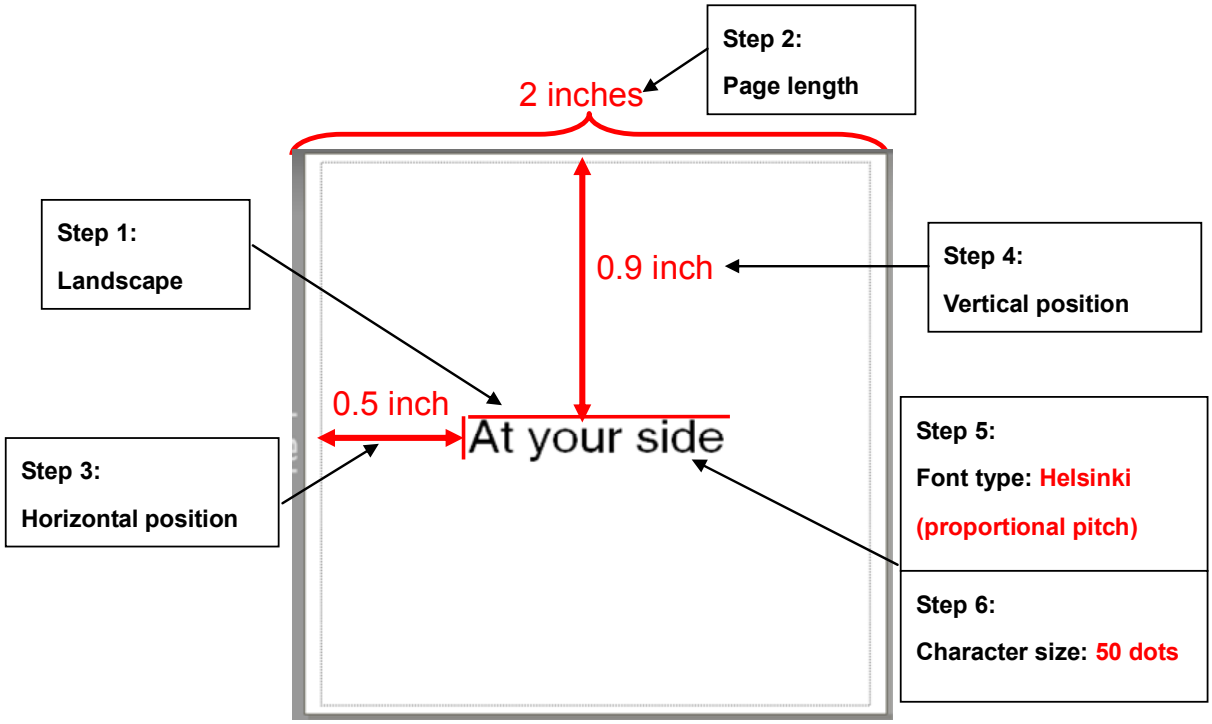
Repeat 1–3 above as necessary.

(5) Image data

1. Specify bit images.	- (ESC *, ESC K, ESC L, ESC Y, ESC Z)
2. Specify barcodes.	- (ESC i B)
3. Specify 2D barcodes.	- (ESC i Q, ESC i V, ESC i D, ESC i M)
4. Print the downloaded data	- (ESC i F) Downloaded image data must first be downloaded and saved on the printer.

2. Examples of Using ESC/P Commands

This is the label that will be made.



In order to make this label, the following six steps are required after entering ESC/P mode.

Step 1: Select the landscape orientation.

ESC i L Specify landscape orientation

ASCII:	ESC	i	L	n
Decimal:	27	105	76	n
Hexadecimal:	1B	69	4C	n

Parameters

n=0, 1 or 48, 49

Description

- Applies or cancels the landscape orientation
  - n=1 or 49 ("1"): Applies the landscape orientation.
  - n=0 or 48 ("0"): Cancels the landscape orientation.
- Using this command clears all text.
- Before entering text, specify the paper orientation with this command.
- When the printer is turned on, the landscape orientation is canceled.

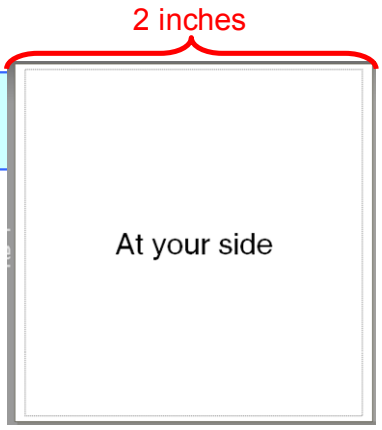
Entered command n

ESC i L 01h

Step 2: Specify the page length.

ESC (C Specify page length

ASCII:	ESC	(	C	nL	nH	mL	mH
Decimal:	27	40	67	nL	nH	mL	mH
Hexadecimal:	1B	28	43	nL	nH	mL	mH



Parameters

nL=2, nH=0

0<(mL+mH*256)<12000

Description

- Specifies the page length.
- The unit is 1/300 inch (=1 dot).
  Page length=mL+mH*256
- The current paper position is the TOF.
- The top and bottom margins are canceled with ESC (c.
- All previously entered text is cleared.
- A standard unit is not used.
- This command is available only with continuous length tape.

2 inches=600 dots

600 dots–72 dots=528 dots

***The page length does not include the margins.**

For the margins, subtract 6 mm (72 dots) from the page length.

Page length=mL+mH*256=528

16 2

10h 02h

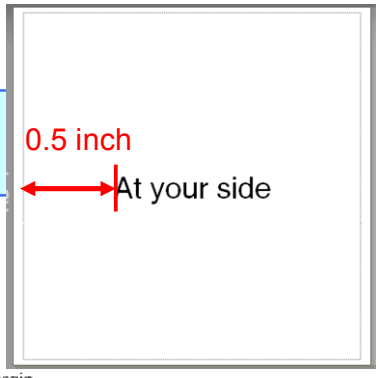
Entered command

nL	nH	mL	mH
ESC (C 02h	00h	10h	02h

Step 3: Specify the horizontal position.

ESC $ Specify absolute horizontal position

ASCII:	ESC	$	n1	n2
Decimal:	27	36	n1	n2
Hexadecimal:	1B	24	n1	n2



Parameters

0≤n1≤255, 0≤n2≤255

Description

- Specifies the absolute print position (in dots) for the next data.
- An absolute print position specifies the next print position as a number of dots from the left margin.
- n1 and n2 indicate the number of dots from the left margin.
  (Number of dots=n1+n2*256)
- The dot spacing is calculated as 1/300 inch.
- The maximum number of dots that can be specified with n1 and n2 depends on the media.
- This command is available only with left alignment.

0.5 inch=150 dots

Horizontal position=n1+n2*256=150

150 0

96h 00h

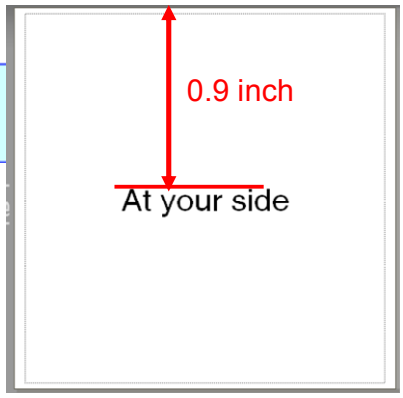
Entered command

n1	n2
ESC $ 96h	00h

Step 4: Specify the vertical position.

ESC (V Specify absolute vertical position

ASCII:	ESC	(	V	nL	nH	mL	mH
Decimal:	27	40	86	nL	nH	mL	mH
Hexadecimal:	1B	28	56	nL	nH	mL	mH



Parameters

nL=2

nH=0

0≤mL≤255

0≤mH≤127

Description

- Specifies the vertical print position as an absolute position from the top margin position.
  Vertical position=mL+mH*256+top margin
- The absolute vertical position is measured from the top margin position when this command was specified.
- If a position extending beyond the bottom margin is specified, printing starts.
- There is no restriction on the amount of movement back (upward) from the current position.
- With left alignment, the print position for the next line becomes the end position of the current line.
  (The horizontal position does not move to the left margin.)
  With right alignment and center alignment, the horizontal position moves to the beginning of the line.
- Auto-canceling double-width characters specified with SO or ESC SO are canceled.

0.9 inch=270 dots

Vertical position=mL+mH*256+18 dots=270

252 0

FCh 00h

Entered command

nL	nH	mL	mH
ESC (V 02h	00h	FCh	00h

Step 5: Select the font type.

ESC k Select font

ASCII:	ESC	k	n
Decimal:	27	107	n
Hexadecimal:	1B	6B	n

Parameters

0≤n≤4, 9≤n≤11

Description

- Selects the font.

Bitmap Fonts		Outline Fonts	
n=0	Brougham (fixed pitch)	n=9	Letter Gothic (fixed pit
n=1	Letter Gothic Bold (fixed pitch)	n=10	Brussels (proportional pitch)
n=2	Brussels (proportional pitch)	n=11	Helsinki (proportional pitch)
n=3	Helsinki (proportional pitch)		
n=4	San Diego (proportional pitch)		

- The default value is n=0 (Brougham (fixed pitch)).
- If the font is changed from a bitmap font to outline font, the character size is changed to the default setting (42 dots).
- If the font is changed from an outline font to bitmap font, the character size is changed to default setting (32 dots).

n=11=0Bh

Entered command

n
ESC k 0Bh

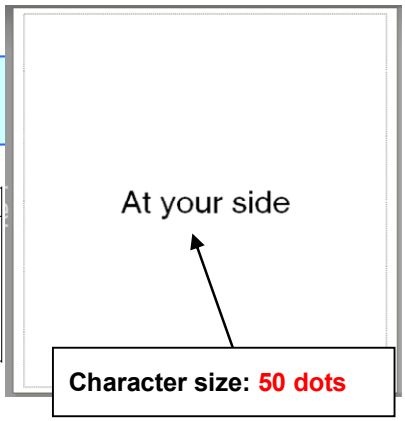
Step 6: Specify the character size.

ESC X Specify character size

ASCII:	ESC	X	m	nL	nH
Decimal:	27	88	m	nL	nH
Hexadecimal:	1B	58	m	nL	nH

Parameters

Character width:	The value of m is irrelevant.	
Character size:	<Bitmap fonts> Valid only with: nL=24, 32, 48 dots nH=0	<Outline fonts> Valid only with: nL=33, 38, 42, 46, 50, 58, 67, 75, 83, 92, 100, 117, 133, 150, 167, 200, 233 nH=0 nL=11, 44, 77, 111, 144 nH=1



Description

- This command is used only to change the size.
- Outline must not be specified.
- The character width cannot be specified.
- The character size is specified as n=nL+nH*256 dots.
- The width and the height are the same.
- With bitmap fonts, only n=24, 32 and 48 are valid.
- With outline fonts, n is valid only when it is one of the following values:
  33, 38, 42, 46, 50, 58, 67, 75, 83, 92, 100, 117, 133, 150, 167, 200, 233, 267, 300, 333, 367, 400
- The commands for specifying stretched characters, compressed characters and the character spacing (SO, ESC W, SI, ESC !, ESC SP) remain available.

Character size=nL+nH*256=50 dots

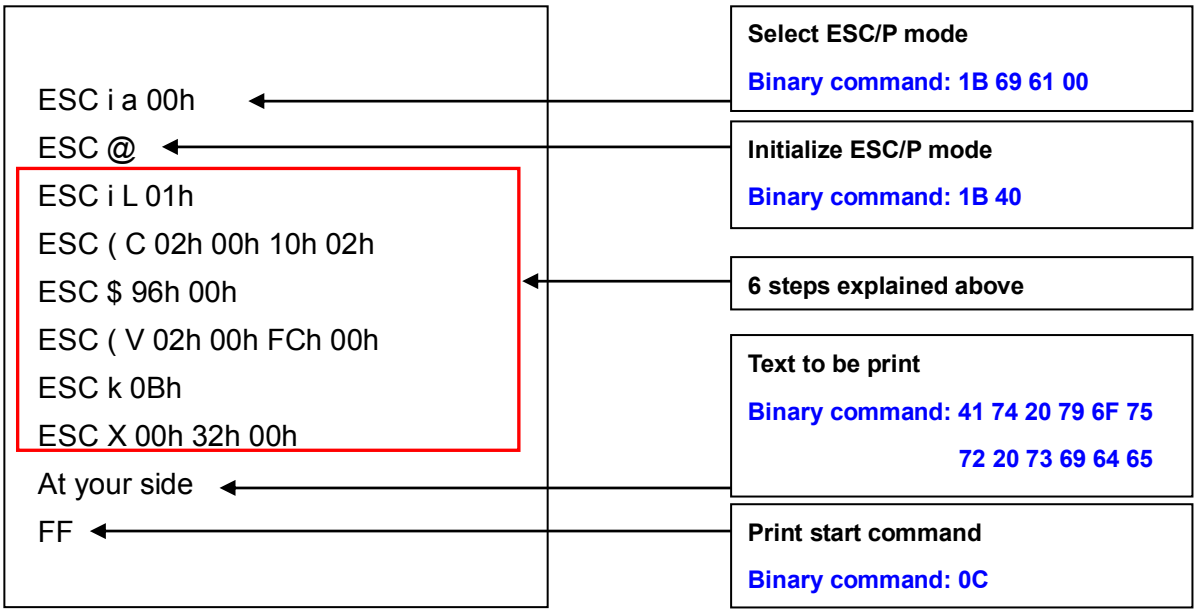
50 = 0

32h 00h

Entered command

	m	nL	nH
ESC X	00h	32h	00h

All commands together will make the example label shown below.



However, these commands should be converted to binary data before sent to the printer, as shown below.

Here is the captured converted binary data.

```
1B 69 61 00 1B 40 1B 69 4C 01 1B 28 43 02 00 10
02 1B 24 96 00 1B 28 56 02 00 FC 00 1B 6B 0B 1B
58 00 32 00 41 74 20 79 6F 75 72 20 73 69 64 65
0C
```

When the printer receives above binary commands, the label shown below is printed.

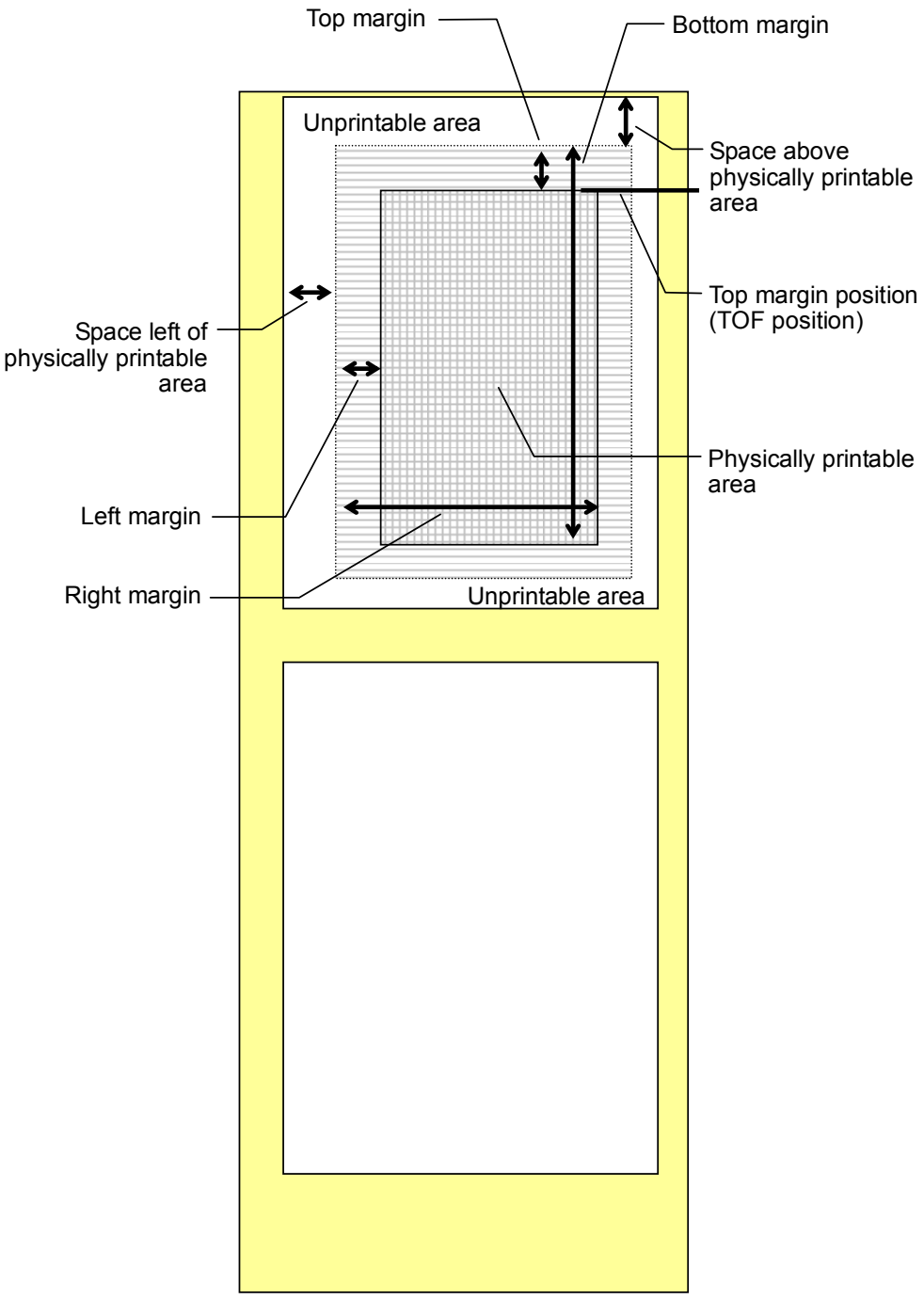
3. ESC/P Command Limitations

3.1 Print area

The printing media are die-cut labels and continuous length tape.

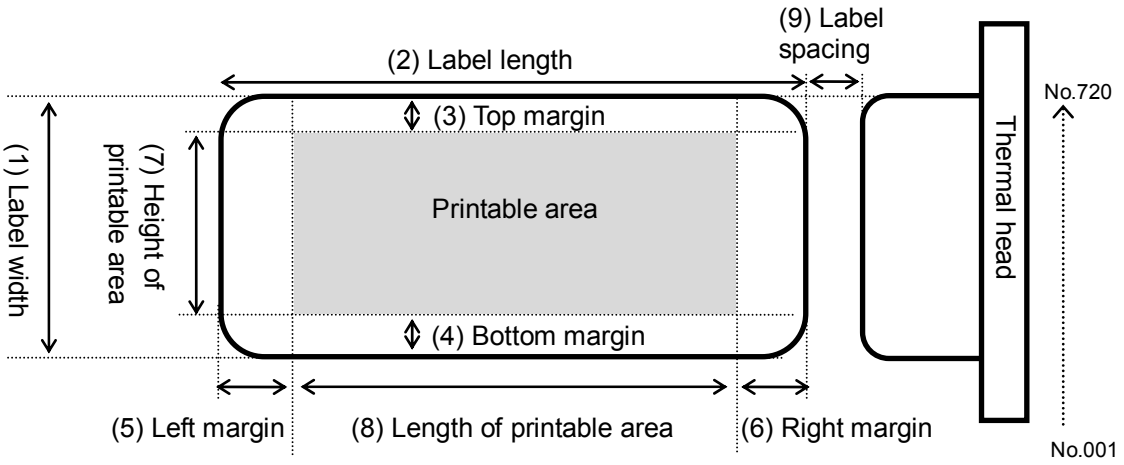
The area that can physically be printed on depends on the size and type of the print media.

Die-cut labels



The print area for each media is described below.

Print area



The maximum length of continuous length label is 1 meter.

	Sensor No.	Head-Applied Forced segmenting	(1)	(2)	(3) (4)	(5) (6)	(7)	(8)	Drive Head No.
Standard Address	1	No	29mm	90.3mm	1.5mm	3mm	25.92mm	83.94mm	408 - 713
Large Address	2	No	38mm	90.3mm	1.5mm	3mm	34.98mm	83.94mm	295 - 707
Small Address	3	No	62mm	28.93mm	1.5mm	3mm	58.95mm	22.95mm	012 - 707
Sipping	4	No	62mm	100.36mm	1.5mm	3mm	58.95mm	93.93mm	012 - 707
Multi purpose	5	No	17mm	54.32mm	1.5mm	3mm	13.98mm	47.94mm	555 - 719
File Folder	6	No	17mm	87.13mm	1.5mm	3mm	13.98mm	80.97mm	555 - 719
CD/DVD (MKP)	7	Yes	58.29mm	58.29mm	3mm	3mm	52.34mm	52.34mm	051 - 668
Die Cut Labels 29mmx42mm	8	No	29mm	42.1mm	1.5mm	3mm	25.92mm	36mm	408 - 713
Die Cut Labels 29mmX52mm	10	No	52mm	28.93mm	1.5mm	3mm	48.96mm	22.95mm	142 - 719
Continuous Length Paper 62 Postage Print (only for U.S.A)	11	No	62mm	-	1.5mm	3mm	58.95mm	-	012 - 707
Square Paper (23mm)	12	No	23.0mm	23.03mm	1.5mm	3mm	19.99mm	17.11mm	443 - 678
Die Cut Labels 39mmX48mm	13	No	39mm	47.98mm	1.5mm	3mm	36mm	41.93mm	289 - 713

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	Sensor No.	Head-Applied Forced segmenting	(1)	(2)	(3) (4)	(5) (6)	(7)	(8)	Drive Head No.
Postage Print (only for U.S.A)	14	No	32.9mm	47.62mm	1.5mm	3mm	29.9mm	41.59mm	325 - 677
Round Paper	17	No	12.0mm	12.0mm	2mm	2mm	7.96mm	7.96mm	513 - 606
Round Paper	18	No	24.0mm	24.0mm	2mm	2mm	19.99mm	19.99mm	442 - 677
Continuous Length Paper (38mm)	19	No	38mm	-	1.5mm	3mm	34.98mm	-	295 - 707
Continuous Length Paper (29mm)	20	No	29mm	-	1.5mm	3mm	25.92mm	-	408 - 713
Continuous Length Paper (62mm)	21	No	62mm	-	1.5mm	3mm	58.95mm	-	012 - 707
Continuous Length Film-White (29mm)	22	Yes	29mm	-	1.5mm	3mm	25.92mm	-	408 - 713
Continuous Length Film-White (62mm)	23	Yes	62mm	-	1.5mm	3mm	58.95mm	-	012 - 707
Continuous Length Film-Yellow (62mm)	24	Yes	62mm	-	1.5mm	3mm	58.95mm	-	012 - 707
Continuous Length Film-Clear (62mm)	25	Yes	62mm	-	1.5mm	3mm	58.95mm	-	012 - 707
Continuous Length Paper (12mm)	26	No	12mm	-	1.5mm	3mm	8.98mm	-	584 - 689
Continuous Length Paper (50mm)	27	No	50 mm	-	1.5mm	3mm	46.92mm	-	154 - 707
Continuous Length Non-Adhesive Paper (54mm)	28	Yes	54mm	-	2.5mm/ 1.5mm	3mm	49.97mm	-	130 - 719

3.2 Characters

This system uses single-byte character codes and is installed with five bitmap fonts (Brougham, Letter Gothic Bold, Brussels, Helsinki and San Diego) as well as three outline fonts (Letter Gothic Bold, Brussels and Helsinki.

Fixed pitch or proportional pitch (PS pitch) can be specified for any of the fonts.

However, there are fonts that are better with a fixed pitch and fonts that are better with a proportional pitch (PS pitch).

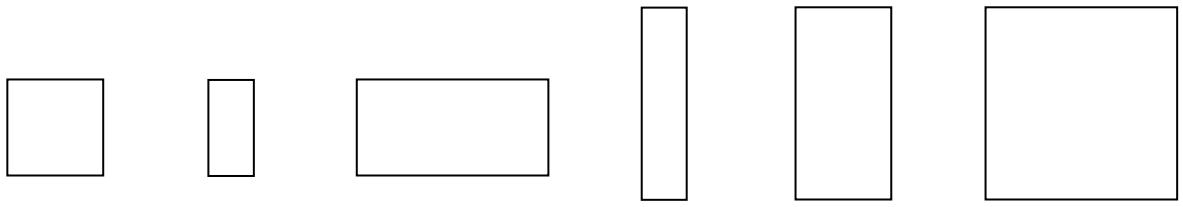
The fonts that are better with a fixed pitch are: Brougham and Letter Gothic Bold.

The fonts that are better with a proportional pitch are: Brussels, Helsinki and San Diego.

Each of the five bitmap fonts has three sizes: 24 dots, 32 dots and 48 dots.

3.2.1 Character sizes

Each font is available in full size, compressed size (half width), double width, double height and half width, double height, and quadruple size.



The actual character size is slightly smaller than the nominal size (the parameter value received with the size command). This varies depending on the font.

Nominal (dots)	24	32	48
Height (dots)	21	28	44
Width (dots)	11	16	26

The above example is for Brougham (full size, no character styles applied).

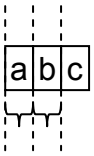
The line-drawing characters (┘└┤─├│┼┬┐┌, etc.) and shaded characters have the Brougham font applied regardless of the specified font and pitch (proportional or fixed) settings.

3.2.2 Character pitches

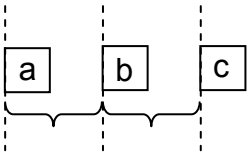
Pitch refers to the spacing between neighboring characters.

When characters are arranged with a fixed pitch, they will be evenly spaced.

If characters extend over several lines, they will align in straight rows.



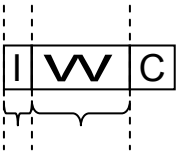
Fixed spacing



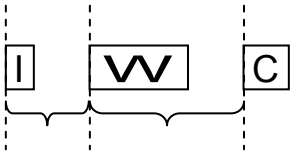
Fixed spacing

When characters are arranged with a proportional pitch, the spacing will vary depending on the character. (For example, “W” is wide but “I” is narrow.)

As a result, the excess space between characters is eliminated and the text appears more compact.

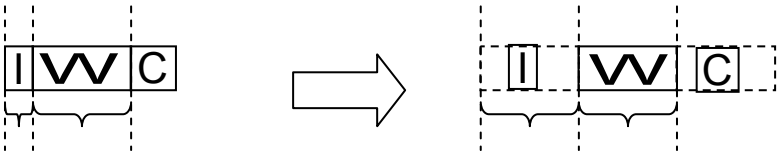


Variable spacing



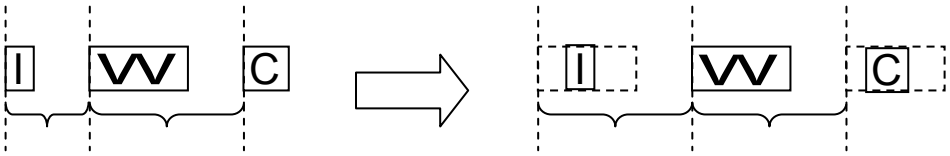
Variable spacing

If a fixed pitch is applied to a font that is better with a proportional pitch, all characters are given the same width as the widest character in the font.



Variable spacing

Fixed spacing



Variable spacing

Fixed spacing

This makes it possible to evenly space the characters of a proportional-pitch font without having to change the font.

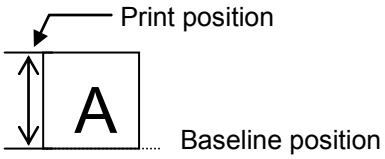
If a proportional pitch is applied to a font that is better with a fixed pitch, all characters are given the same width, appearing the same as with a fixed pitch.

3.3 Print position

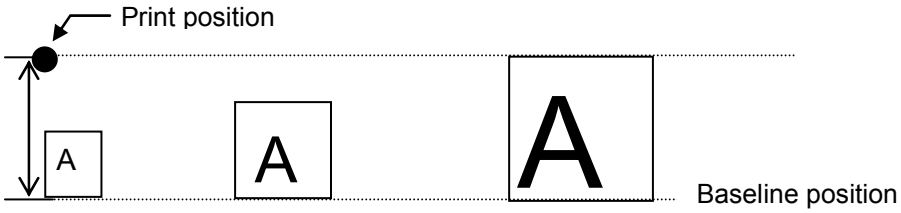
The print position is the standard position for printing characters, bitmaps, and barcodes.
There is a horizontal print position and vertical print position, which are the reference points for vertical position movement and horizontal position movement.

3.3.1 Characters

Characters are arranged with their top edges aligned with the print position.
The baseline of each character is the bottom edge of the character, regardless of size, font, etc.



All characters on a single line are printed with a baseline positions that is the same for each character.
If a single line consists of characters with different heights, the characters are aligned with the baseline of the tallest character on the line.



Underlines are drawn 4 dots below the baseline position.

3.3.2 Bitmaps, barcodes and downloaded images

These types of image data are treated in the same way as characters and are printed with the bottom edge of the image aligned with the baseline.

3.3.3 Same line

Characters and images are considered to be on the same line, even if they are separated by tabs.
Horizontal movement to the right between characters or images is regarded as being on the same line; however, horizontal movement to the left is regarded as being on separate lines if wrapping occurs.

3.4 Line feed amount

The amount of line feed is the amount of vertical movement from the print position of one line to the print position of the next line.

HHHHHHHHHHHHH
HHHHHHHHHHHHH
HHHHHHHHHHHHH


Line feed amount

The line feed amount is specified with ESC 0, ESC 2, ESC A, and ESC 3.

- Within a single line of text, the tallest character is determined, and the baseline is moved so that the top edge of that character is at the vertical print position.
- The tallest character within a line becomes the line height.
- If characters are underlined, 4 dots are added to the line height.
- If the line height is greater than the specified line feed amount, the line height is used as the actual line feed amount.
  In this way, even if the specified line feed amount is small, the upper and lower lines will not overlap.

4. Control Code List

Character/style selection commands (Refer to section 5.1 Character/style selection commands.)

ASCII Code	Binary Code	Description
ESC R	1B 52	Select international character set
ESC q	1B 71	Select character style
ESC k	1B 6B	Select font
ESC t	1B 74	Select character code set

Text printing commands (Refer to section 5.2 Text printing commands.)

ASCII Code	Binary Code	Description
ESC 4	1B 34	Apply italic style
ESC 5	1B 35	Cancel italic style
ESC E	1B 45	Apply bold style
ESC F	1B 46	Cancel bold style
ESC G	1B 47	Apply double-strike printing
ESC H	1B 48	Cancel double-strike printing
ESC P	1B 50	Apply pica pitch (10 cpi)
ESC M	1B 4D	Apply elite pitch (12 cpi)
ESC g	1B 67	Apply micron pitch
ESC p	1B 70	Specify proportional characters
ESC W	1B 57	Specify double-width characters
SO	0E	Specify auto-canceling stretched characters
ESC SO	1B 0E	Specify auto-canceling stretched characters
SI	0F	Specify compressed characters
ESC SI	1B 0F	Specify compressed characters
DC2	12	Cancel compressed characters
DC4	14	Cancel auto-canceling double-width characters
ESC -	1B 2D	Apply/cancel underlining
ESC !	1B 21	Global formatting
ESC SP	1B 20	Specify character spacing
ESC X	1B 58	Specify character size

Line feed commands (Refer to section 5.3 Line feed commands.)

ASCII Code	Binary Code	Description
ESC 0	1B 30	Specify line feed of 1/8 inch
ESC 2	1B 32	Specify line feed of 1/6 inch
ESC 3	1B 33	Specify minimum line feed
ESC A	1B 41	Specify line feed of n/60 inch

Horizontal movement commands (Refer to section 5.4 Horizontal movement commands.)

ASCII Code	Binary Code	Description
ESC l	1B 6C	Specify left margin
ESC Q	1B 51	Specify right margin
CR	0D	Carriage return
ESC D	1B 44	Specify horizontal tab position
HT	09	Perform horizontal tab
ESC $	1B 24	Specify absolute horizontal position
ESC \	1B 5C	Specify relative horizontal position
ESC a	1B 61	Specify alignment

Vertical movement commands (Refer to section 5.5 Vertical movement commands.)

ASCII Code	Binary Code	Description
LF	0A	Line feed
FF	0C	Page feed
ESC J	1B 4A	Forward paper feed
ESC B	1B 42	Specify vertical tab position
VT	0B	Perform vertical tab
ESC (V	1B 28 56	Specify absolute vertical position
ESC (v	1B 28 76	Specify relative vertical position

Paper formatting commands (Refer to section 5.6 Paper formatting commands.)

ASCII Code	Binary Code	Description
ESC (c	1B 28 63	Specify page format
ESC (C	1B 28 43	Specify page length
ESC U	1B 55	Specify minimum margin

Printer control commands (Refer to section 5.7 Printer control commands.)

ASCII Code	Binary Code	Description
ESC @	1B 40	Initialize (defaults)

Graphics commands (Refer to section 5.8 Graphics commands.)

ASCII Code	Binary Code	Description
ESC *	1B 2A	Select bit image
ESC K	1B 4B	8-dot single-density bit image
ESC L	1B 4C	8-dot double-density bit image
ESC Y	1B 59	8-dot double-speed double-density bit image
ESC Z	1B 5A	8-dot quadruple-density bit image

Advanced commands (Refer to section 5.9 Advanced commands.)

ASCII Code	Binary Code	Description
ESC i B	1B 69 42	Barcode
ESC i Q	1B 69 51	2D barcode (QR Code)
ESC i P	1B 69 50	Specify QR Code version
ESC i V	1B 69 56	2D barcode (PDF417)
ESC i D	1B 69 44	2D barcode (DataMatrix)
ESC i M	1B 69 4D	2D barcode (MaxiCode)
ESC i F	1B 69 46	Print downloaded data
ESC i a	1B 69 61	Switch command mode
ESC i S	1B 69 53	Status information request
ESC i L	1B 69 4C	Specify landscape orientation
ESC i C	1B 69 43	Specify cutting

Advanced static commands (Refer to section 5.10 Advanced static commands.)

ASCII Code	Binary Code	Description
ESC iXQ2	1B 69 58 51 32	Select default character style
ESC iXQ1	1B 69 58 51 31	Retrieve default character style
ESC iXk2	1B 69 58 6B 32	Select default font
ESC iXk1	1B 69 58 6B 31	Retrieve default font
ESC iXX2	1B 69 58 58 32	Specify default character size
ESC iXX1	1B 69 58 58 31	Retrieve default character size
ESC iX32	1B 69 58 33 32	Specify default line feed
ESC iX31	1B 69 58 33 31	Retrieve default line feed
ESC iXA2	1B 69 58 41 32	Select default alignment
ESC iXA1	1B 69 58 41 31	Retrieve default alignment
ESC iX(2	1B 69 58 28 32	Specify default page length
ESC iX(1	1B 69 58 28 31	Retrieve default page length
ESC iXL2	1B 69 58 4C 32	Select default landscape orientation
ESC iXL1	1B 69 58 4C 31	Retrieve default landscape orientation
ESC iXj2	1B 69 58 6A 32	Select default international character set
ESC iXj1	1B 69 58 6A 31	Retrieve default international character set
ESC iXm2	1B 69 58 6D 32	Select default character code set
ESC iXm1	1B 69 58 6D 31	Retrieve default character code set
ESC iXU2	1B 69 58 55 32	Specify default minimum margin
ESC iXU1	1B 69 58 55 31	Retrieve default minimum margin

5. Control Command Details

5.1 Character/style selection commands

ESC R Select international character set

ASCII:	ESC	R	n
Decimal:	27	82	n
Hexadecimal:	1B	52	n

Parameters

0≤n≤13, 64

Description

- Selects the character set, and switches some of the character codes in the code table according to the value of n.

  n=0: U.S.A.
  n=1: France
  n=2: Germany
  n=3: U.K.
  n=4: Denmark I
  n=5: Sweden
  n=6: Italy
  n=7: Spain I
  n=8: Japan
  n=9: Norway
  n=10: Denmark II
  n=11: Spain II
  n=12: Latin America
  n=13: South Korea
  n=64: Legal

- The following 12 codes are switched.

  23h, 24h, 40h, 5Bh, 5Ch, 5Dh, 5Eh, 60h, 7Bh, 7Ch, 7Dh, 7Eh

- The default setting is n=0 (U.S.A.)

Example

Code:	5Ch ESC R 08h 5Ch FF
Print result:	\ ¥

ESC q Select character style

ASCII:	ESC	q	n
Decimal:	27	113	n
Hexadecimal:	1B	71	n

Parameters

0≤n≤3

Description

- Selects the character style.

  n=0: None (normal characters)

  n=1: Outline

  n=2: Shadow

  n=3: Shadow and outline

Example

Code:	ABC ESC q 03h ABC ESC q 00h ABC FF
Print result:	ABCABCABC

ESC k Select font

ASCII:	ESC	k	n
Decimal:	27	107	n
Hexadecimal:	1B	6B	n

Parameters

0≤n≤4, 9≤n≤11

Description

- Selects the font.

Bitmap Fonts		Outline Fonts	
n=0	Brougham (fixed pitch)	n=9	Letter Gothic (fixed pitch)
n=1	Letter Gothic Bold (fixed pitch)	n=10	Brussels (proportional pitch)
n=2	Brussels (proportional pitch)	n=11	Helsinki (proportional pitch)
n=3	Helsinki (proportional pitch)		
n=4	San Diego (proportional pitch)		

- The default value is n=0 (Brougham (fixed pitch)).
- If the font is changed from a bitmap font to outline font, the character size is changed to the default setting (42 dots).
- If the font is changed from an outline font to bitmap font, the character size is changed to default setting (32 dots).

ESC t Select character code set

ASCII:	ESC	t	n
Decimal:	27	116	n
Hexadecimal:	1B	74	n

Parameters

n=0, 1, 2

Description

- From the three built-in character code sets, selects the character code set used.
  - n=0: Standard character code set
  - n=1: Eastern European character code set
  - n=2: Western European character code set
  - n=3: (Reserved)
- The default setting is n=2.

5.2 Text printing commands

ESC 4 Apply italic style

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

Parameters

None

Description

- Prints the subsequent text in italics.
- This command is valid anywhere in a text line.

ESC 5 Cancel italic style

ASCII:	ESC	5
Decimal:	27	53
Hexadecimal:	1B	35

Parameters

None

Description

- Cancels the italic character style.
- This command is valid anywhere in a text line.

Example

Code:	ABC ESC 4 DEF ESC 5 GHI FF
Print result:	ABC*DEF*GHI

ESC E Apply bold style

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

Parameters

None

Description

- Prints the subsequent text in bold.
- This command is valid anywhere in a text line.

ESC F Cancel bold style

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

Parameters

None

Description

- Cancels the bold style.
- This command is valid anywhere in a text line.

Example

Code:	ABC ESC E DEF ESC F GHI FF
Print result:	ABC**DEF**GHI

ESC G Apply double-strike printing

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

Parameters

None

Description

- Prints the subsequent text in bold.
- This command is valid anywhere in a text line.

ESC H Cancel double-strike printing

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

Parameters

None

Description

- Cancels the bold style.
- This command is valid anywhere in a text line.

Example

Code:	ABC ESC G DEF ESC H GHI FF
Print result:	ABC**DEF**GHI

ESC P Apply pica pitch (10 cpi)

ASCII:	ESC	P
Decimal:	27	80
Hexadecimal:	1B	50

Parameters

None

Description

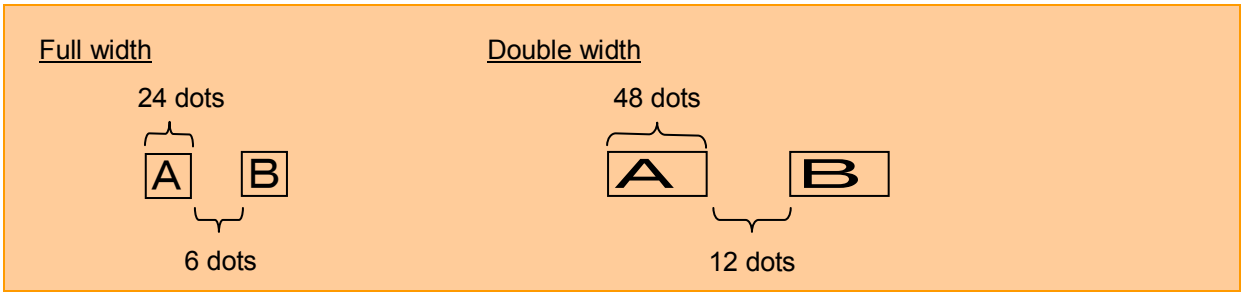
- Prints the subsequent text with the pica pitch (10 characters/inch).
- The character spacing is 30 dots (=300 dots/10 characters).
- If the character width is 30 dots or less, the character spacing is specified as 30 minus the character width.
- If the character width exceeds 30 dots, the character spacing is specified as the character width.
  (The spacing between characters is 0 dot.)
  In this case, the pitch does not exactly equal the pica pitch.
- With double-width characters, the character spacing is doubled (60 dots).
- With half-width characters, the character spacing is halved (15 dots).
- When the character spacing is changed with ESC SP, the setting is updated.
- This command is invalid when proportional pitch is selected.
- In outline fonts, the spacing between characters is 0 dot.

Setting (dots)		Full Width			Double Width			Half Width		
		24	32	48	24	32	48	24	32	48
Width (dots)	Brougham	11	16	26	22	32	52	6	8	13
	Letter Gothic Bold	10	14	22	20	28	44	5	7	11
	Brussels	25	35	56	50	70	112	13	18	28
	Helsinki	21	28	44	42	56	88	11	14	22
	San Diego	24	35	57	48	70	114	12	18	29

The above table refers to characters with a fixed pitch. (Applying styles may increase the size.)

Example

For a 24-dot font at full width:



ESC M Apply elite pitch (12 cpi)

ASCII:	ESC	M
Decimal:	27	77
Hexadecimal:	1B	4D

Parameters

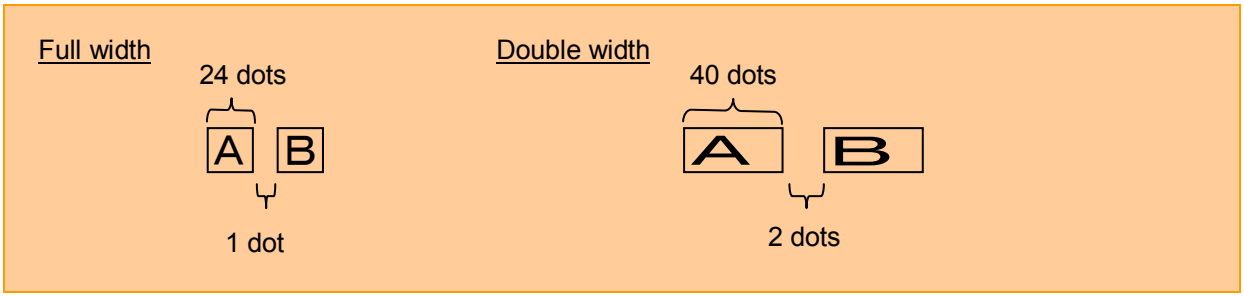
None

Description

- Prints the subsequent text with the elite pitch (12 characters/inch).
- The character spacing is 25 dots (=300 dots/12 characters).
- If the character width is 25 dots or less, the character spacing is specified as 25 minus the character width.
- If the character width exceeds 25 dots, the character spacing is specified as the character width.
  (The spacing between characters is 0 dot.)
  In this case, the pitch does not exactly equal the elite pitch.
- With double-width characters, the character spacing is doubled (50 dots).
- With half-width characters, the character spacing is halved (13 dots).
- When the character spacing is changed with ESC SP, the setting is updated.
- This command is invalid when proportional pitch is selected.
- In outline fonts, the spacing between characters is 0 dot.

Example

For a 24-dot font at full width:



ESC g Apply micron pitch

ASCII:	ESC	g
Decimal:	27	103
Hexadecimal:	1B	67

Parameters

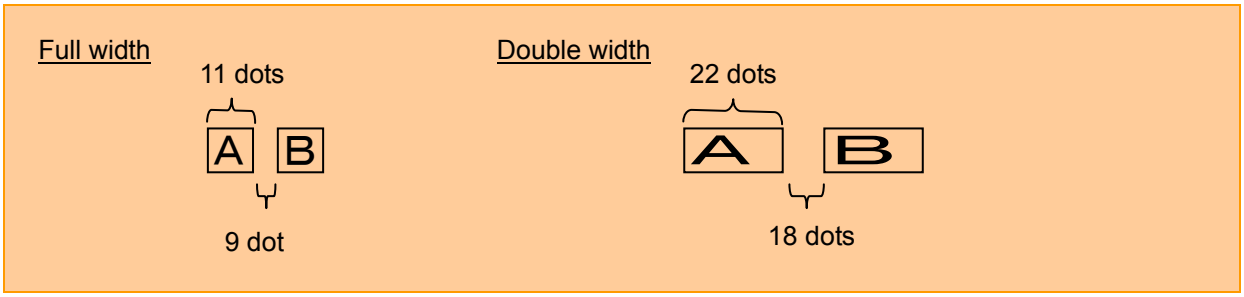
None

Description

- Prints the subsequent text with the micron pitch (15 characters/inch).
- The character spacing is 20 dots (=300 dots/15 characters).
- If the character width is 20 dots or less, the character spacing is specified as 20 minus the character width.
- If the character width exceeds 20 dots, the character spacing is specified as the character width.
  (The spacing between characters is 0 dot.)
  In this case, the pitch does not exactly equal the micron pitch.
- With double-width characters, the character spacing is doubled (40 dots).
- With half-width characters, the character spacing is halved (10 dots).
- When the character spacing is changed with ESC SP, the setting is updated.
- This command is invalid when proportional pitch is selected.
- In outline fonts, the spacing between characters is 0 dot.

Example

For a 11-dot font at full width:



ESC p Specify proportional characters

ASCII:	ESC	p	n
Decimal:	27	112	n
Hexadecimal:	1B	70	n

Parameters

n=0, 1, 48 (“0”), 49 (“1”)

Description

- Specifies proportional characters.

  n=1 or 49 (“1”): Specifies proportional characters.

  n=0 or 48 (“0”): Cancels proportional characters.
- If proportional characters are specified, the character spacing specified with ESC SP is maintained as is.

ESC W Specify double-width characters

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

Parameters

n=0, 1 or 48 (“0”), 49 (“1”)

Description

- Specifies double-width characters.

  n=1 or 49 (“1”): Specifies double-width characters.

  n=0 or 48 (“0”): Cancels double-width characters.
- Double-width characters specified with this command are not canceled with the DC4 code or a line feed.
- Canceling double-width characters also cancels compressed (half-width) characters.

Example

Code:	ABC ESC W 1 ABC ESC W 0 ABC FF
Print result:	ABC  ABC

SO Specify auto-canceling stretched characters

ASCII:	SO
Decimal:	14
Hexadecimal:	0E

Parameters

None

Description

- Prints the subsequent text at double width.
- This command is canceled with DC4, LF, VT, FF, CR or an automatic line feed.
- This command is canceled with ESC $, ESC \, ESC J, ESC (V or ESC (v.
- This command can also be canceled with ESC W+0.

ESC SO Specify auto-canceling stretched characters

ASCII:	ESC	SO
Decimal:	27	14
Hexadecimal:	1B	0E

Parameters

None

Description

- Same as SO

Example

Code:	ABC ESC SO ABCDEFGHIJK…XYZ FF
Print result:	ABC ABCDEFGHIJK. . .(Automatic line feed) XYZ

SI Specify compressed characters

ASCII:	SI
Decimal:	15
Hexadecimal:	0F

Parameters

None

Description

- Prints the subsequent text at half width.

ESC SI Specify compressed characters

ASCII:	ESC	SI
Decimal:	27	15
Hexadecimal:	1B	0F

Parameters

None

Description

- Same as SI

DC2 Cancel compressed characters

ASCII:	DC2
Decimal:	18
Hexadecimal:	12

Parameters

None

Description

- Cancels compressed characters specified with SI or ESC SI.

DC4 Cancel auto-canceling double-width characters

ASCII:	DC4
Decimal:	20
Hexadecimal:	14

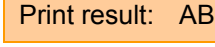
Parameters

None

Description

- Cancels double-width characters specified with ESC SO or SO.
- Does not cancel the ESC W command.

Example

Code:	ABC ESC SO ABCDEF DC4 GHIJK FF
Print result:	ABC  GHIJK

ESC – Apply/cancel underlining

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

Parameters

n=0, 1, 2, 3, 4 or 48 (“0”), 49 (“1”), 50 (“2”), 51 (“3”), 52 (“4”)

Description

- Applies or cancels underlining.

  n=4 or 52 (“4”): Applies underlining with a width of 4 dots.

  n=3 or 51 (“3”): Applies underlining with a width of 3 dots.

  n=2 or 50 (“2”): Applies underlining with a width of 2 dots.

  n=1 or 49 (“1”): Applies underlining with a width of 1 dot.

  n=0 or 48 (“0”): Cancels underlining.
- This command is valid anywhere in a text line.
- The underlining specified with this command is a continuous line.
- Spaces between characters and words are also underlined.
- Areas with the “specify absolute horizontal position” (ESC $) and “specify relative horizontal position” (ESC \) commands are not underlined.
- Bit images and barcodes are not underlined either.
- 4/300 inch (4 dots) is added to the line feed amount for lines that include underlined characters.
- The underline is positioned as follows:

Underline	Underline Position
1 dot wide	2/300 inch (second dot) below the characters
2 dots wide	Between 2/300 inch (second dot) and 3/300 inch (third dot) below the characters
3 dots wide	Between 1/300 inch (first dot) and 3/300 inch (third dot) below the characters
4 dots wide	Between 1/300 inch (first dot) and 4/300 inch (fourth dot) below the characters

ABCDE ABCDE ABCDE

(1-dot width) (3-dot width)

Example

Code:	ABC ESC - 1 ABC ESC - 0 ABC FF
Print result:	ABCABCABC

ESC !　　Global formatting

ASCII:	ESC	!	n
Decimal:	27	33	n
Hexadecimal:	1B	21	n

Parameters

0≤n≤255

Description

- Specifies a combination of print modes.
- Specifies modes depending on the bit value of n.
- When the ESC ! code is used, a combination of multiple print modes can be specified at one time.
- The priority order is from Bit 5 to Bit 2.
- Bit 0 is available only if Bit 1 is 0.
- Selected character styles are canceled, and the characters return to the normal style.
- Canceling double-width characters also cancels compressed (half-width) characters.

Bit	7	6	5	4	3	2	1	0
1	Underline	Italics	Double width	Double height	Bold	Compressed	Proportional	12 cpi
0	Cancel	Cancel	Cancel	Cancel	Cancel	Cancel	Cancel	10 cpi

Example

- To apply underlining and specify double-width characters at the same time:

Code:	ABC ESC ! A0h ABC ESC ! 00h ABC FF
Print result:	ABC  ABC

ESC SP Specify character spacing

ASCII:	ESC	SP	n
Decimal:	27	32	n
Hexadecimal:	1B	20	n

Parameters

0≤n≤127

Description

- Specifies the character spacing.
- n indicates the number of dots.
- The default setting is 0 dot.
- With double-width characters, the character spacing is doubled; with half-width characters, it is halved.

ESC X Specify character size

ASCII:	ESC	X	m	nL	nH
Decimal:	27	88	m	nL	nH
Hexadecimal:	1B	58	m	nL	nH

Parameters

Character width:	The value of m is irrelevant.	
Character size:	<Bitmap fonts> Valid only with: nL=24, 32, 48 dots nH=0	<Outline fonts> Valid only with: nL=33, 38, 42, 46, 50, 58, 67, 75, 83, 92, 100, 117, 133, 150, 167, 200, 233 nH=0 nL=11, 44, 77, 111, 144 nH=1

Description

- This command is used only to change the size.
- Outline must not be specified.
- The character width cannot be specified.
- The character size is specified as n=nL+nH*256 dots.
- The width and the height are the same.
- With bitmap fonts, only n=24, 32 and 48 are valid.
- With outline fonts, n is valid only when it is one of the following values:
  33, 38, 42, 46, 50, 58, 67, 75, 83, 92, 100, 117, 133, 150, 167, 200, 233, 267, 300, 333, 367, 400
- The commands for specifying stretched characters, compressed characters and the character spacing (SO, ESC W, SI, ESC !, ESC SP) remain available.

Example

For “ABC” at a 24-dot size and “DEF” at a 50-dot size:

Code: ESC k 01h
ESC X 00h 18h 00h ABC
ESC k 09h
ESC X 00h 32h 00h DEF FF

Print result: ABC DEF

5.3 Line feed commands

ESC 0 Specify line feed of 1/8 inch

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

Parameters

None

Description

- Specifies a line feed of 1/8 inch (about 0.32 cm).
- Specifies a line feed of 38/300 inch (=38 dots).

ESC 2 Specify line feed of 1/6 inch

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

Parameters

None

Description

- Specifies a line feed of 1/6 inch (about 0.42 cm).
- Specifies a line feed of 50/300 inch (=50 dots).

ESC 3 Specify minimum line feed

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

Parameters

0≤n≤255

Description

- Specifies a line feed of n/300 inch per line.
- The line feed is specified in 1-dot units.

ESC A Specify line feed of n/60 inch

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

Parameters

0≤n≤255

Description

- Specifies a line feed of n/60 inch.
- The line feed is specified in 5-dot units.

5.4 Horizontal movement commands

ESC l Specify left margin

ASCII:	ESC	l	n
Decimal:	27	108	n
Hexadecimal:	1B	6C	n

Parameters

0≤n≤255

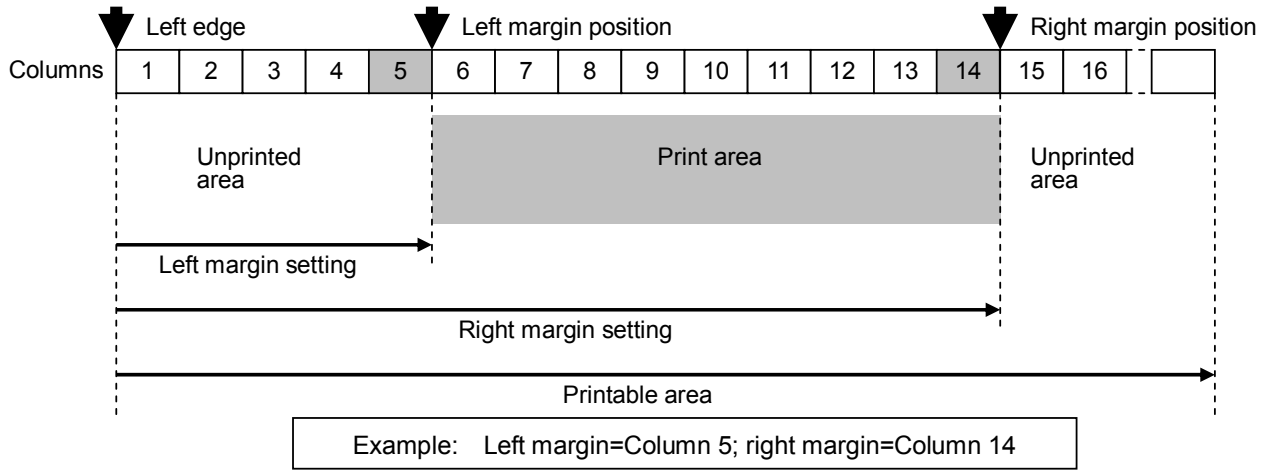
0≤left margin<right margin

Description

- The left margin and the right margin use the left edge of the physically printable area as the reference.
- The area between the left edge of the physically printable area and the specified number of columns is specified as an unprinted area. The left margin position is the right edge of the specified column. (Character width*n)
- The setting is in the range 0≤ (character width*n) ≤x. Settings outside that range are ignored. However, x is a value dependent on the media.
- The area between the left edge (first column) to the nth column is specified as an unprinted area.
- The position of the left margin is the character width (when this command was specified)*n from the left edge.

  The character width when the margin specified includes the settings for the character spacing. In addition, when a pitch of 10 cpi (=30 dots), 12 cpi (=25 dots) or 15cpi (=20 dots), compressed characters or double-width characters are specified, that character width is considered as the unit.

  However, character styles that increase the character width are not applied.



Example: Left margin=Column 5; right margin=Column 14

- The horizontal print position is moved to the left margin position.
- If the left margin setting is not at the beginning of the line, the left margin is specified after a line feed.
  The beginning of the line indicates the left margin position for left alignment; for right and center alignment, it means that no image or character is entered on the line.
- Even if the character width is changed after the left margin has bee specified, the left margin position does not change.
- A left margin setting that puts the left margin position to the right of the right margin position is ignored.
- The left margin should be specified at least one column (10 cpi=30 dots) less than the right margin.
  (If the character width (when the command was specified)*n is greater than the right margin-30 dots), the setting is ignored.)
- If the difference between the right margin position and the left margin position is less than one character, that character is ignored.
- When proportional pitch is specified with the ESC p command, a character width of 10 cpi (=30 dot) is applied.
- If the print media is continuous length tape, the printing orientation is landscape and the page length is not specified, commands specifying the left margin are ignored.
- If the minimum margin has been set to 3 mm and the printing orientation is landscape, the left margin increases by 1 mm.

Example

To specify the left margin at Column 3:

Code:	ABC CR ESC l 03h EFGHIJ FF
Print result:	ABC EFGHIJ

ESC Q Specify right margin

ASCII:	ESC	Q	n
Decimal:	27	81	n
Hexadecimal:	1B	51	n

Parameters

1≤n≤255

Left margin<character width (when the command was specified)*n≤printable area

Description

- The left margin and the right margin use the left edge of the physically printable area as the reference.
- The right margin position is the right edge of the specified column. (Character width*n)
- The setting is in the range 1≤(character width*n)≤x. Settings outside that range are ignored. However, x is a value dependent on the media.
- Left margin≤print area<right margin
- The position of the right margin is the character width (when the command was specified)*n from the left edge.

  The character width when the margin is specified includes the settings for the character spacing. In addition, when a pitch of 10 cpi (=30 dots), 12 cpi (=25 dots) or 15 cpi (=20 dots), compressed characters or double-width characters are specified, that character width is considered as the unit.

  However, character styles that increase the character width are not applied.
- The horizontal print position is moved to the left margin position.
- If the right margin setting is not at the beginning of the line, the right margin is specified after a line feed.

  The beginning of the line indicates the left margin position for left alignment; for right and center alignment, it means that no image or character is entered on the line.
- Even if the character width is changed after the right margin has been specified, the right margin position does not change.
- A right margin setting that puts the right margin position to the left of the left margin position is ignored.
- The right margin should be specified at least one column (10 cpi=30 dots) greater than the left margin.

  (If the character width (when the command was specified)*n is less than the left margin+30 dots, the setting is ignored.)
- If the difference between the right margin position and the left margin position is less than one character, that character is ignored.
- When proportional pitch is specified with the ESC p command, a character width of 10 cpi (=30 dot) is applied.
- If the print media is continuous length tape, the printing orientation is landscape and the page length is not specified, commands specifying the right margin are ignored.
- If the minimum margin has been set to 3 mm and the printing orientation is landscape, the right margin increases by 1 mm.

CR Carriage return

ASCII:	CR
Decimal:	13
Hexadecimal:	0D

Parameters

None

Description

- Ends input of a line, and waits for input of the next line.
- The next print position becomes the beginning of the next line.
- A line feed command immediately after the carriage return is ignored.
- Auto-canceling double-width characters specified with SO or ESC SO are canceled.
- Same process as LF

ESC D Specify horizontal tab position

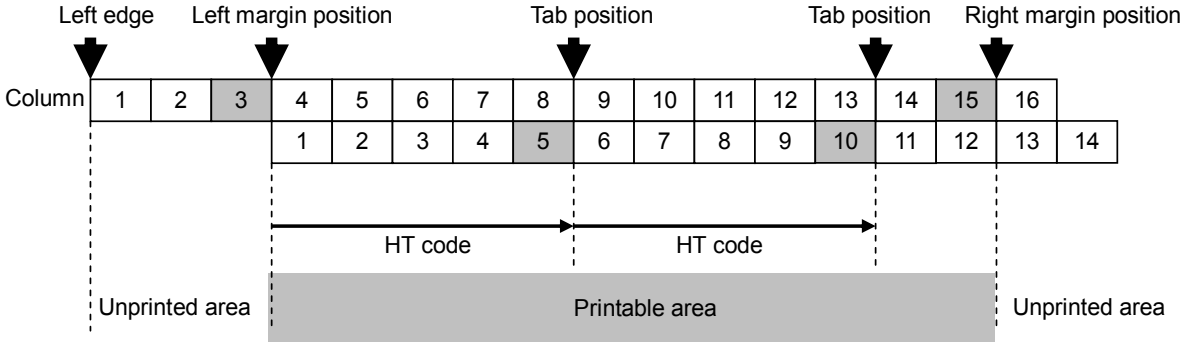
ASCII:	ESC	D	$[n]_k$	NUL
Decimal:	27	68	$[n]_k$	0
Hexadecimal:	1B	44	$[n]_k$	00h

Parameters

1≤n≤255, 0≤k≤32

Description

- The horizontal tab position is the character width (when the command was specified)*n from the left margin.
- Enter n values in ascending order and end the settings with NUL.
- If an n value is smaller than a previous one, tab setting is ended.
- Even if the character width is changed after the horizontal tab positions have been specified, the horizontal tab position settings do not change.
- ESC D NUL cancels all horizontal tab positions.
- If the left margin is moved, the horizontal tab positions are also moved by the same amount.
- Up to 32 horizontal tab positions can be specified. However, horizontal tab positions beyond the right margin are invalid and only become valid when a change in the right margin setting or left margin setting moves the print area to include those tab positions.
- The character width when the horizontal tabs are specified includes the settings for the character spacing. In addition, when a pitch of 10 cpi, 12 cpi or 15 cpi compressed characters or double-width characters are specified, that character width is considered as the unit.
- When proportional pitch is specified with ESC p, horizontal tab positions are specified at 10 cpi.
- When the printer is turned on, a horizontal tab position is specified every 8 columns at 10 cpi.
  Even if the character width is changed before the horizontal tab positions has been specified, the horizontal tab positions do not change.



Example:
After the left margin is specified as Column 3 and the right margin as Column 15, horizontal tabs were specified at Column 5 and Column 10, and HT were performed.

HT Perform horizontal tab

ASCII:	HT
Decimal:	9
Hexadecimal:	09

Parameters

None

Description

- Moves the horizontal print position to the nearest horizontal tab position to the right of the input position.
- If there is no horizontal tab position to the right of the input position, or if the next horizontal tab position is beyond the right margin, the HT command is ignored.
- If underlining is specified, the space between the current position and the next horizontal tab position is not underlined.
- When the printer is turned on, a horizontal tab position is specified every 8 columns at 10 cpi.
  Even if the character width is changed before the horizontal tab positions have been specified, the horizontal tab positions do not change.
- This command is available only with left alignment.

Example

To specify horizontal tabs at Column 4, Column 8, and Column 12, and perform horizontal tabs:

Code:	ESC D 04h 08h 0Ch 00h
	123456789012 CR A HT B HT C HT D FF
Print result:	123456789012
	A B C D

ESC $ Specify absolute horizontal position

ASCII:	ESC	$	n1	n2
Decimal:	27	36	n1	n2
Hexadecimal:	1B	24	n1	n2

Parameters

0≤n1≤255, 0≤n2≤255

Description

- Specifies the absolute print position (in dots) for the next data.
- An absolute print position specifies the next print position as a number of dots from the left margin.
- n1 and n2 indicate the number of dots from the left margin.
  (Number of dots=n1+n2*256)
- The dot spacing is calculated as 1/300 inch.
- The maximum number of dots that can be specified with n1 and n2 depends on the media.
- This command is available only with left alignment.

ESC \ Specify relative horizontal position

ASCII:	ESC	\	n1	n2
Decimal:	27	92	n1	n2
Hexadecimal:	1B	5C	n1	n2

Parameters

0≤n1≤255, 0≤n2≤255

Description

- Specifies the horizontal print position (in dots) as a relative position from the current position.
- A relative position specifies the next print position as a number of dots from the current position.
- n1 and n2 indicate the number of dots from the current position. (Number of dots=n1+n2*256)
- The dot spacing is calculated as 1/300 inch.
- Left margin position≤horizontal position after moving<right margin position
  Horizontal position after moving=n1+n2*256
- The specified value for moving to the left is expressed as a two's complement. It is determined by the following equation.
  n1+n2*256=65536-distance actually moved
- This command is available only with left alignment.

ESC a Specify alignment

ASCII:	ESC	a	n
Decimal:	27	97	n
Hexadecimal:	1B	61	n

Parameters

0≤n≤3 or “0”≤n≤“3”

Description

- Prints the subsequent text with the alignment described below, according to the value of n.
  n=0 or 48 (“0”): Applies left alignment.
  n=1 or 49 (“1”): Applies center alignment.
  n=2 or 50 (“2”): Applies right alignment.
  n=3 or 51 (“3”): Applies nothing.
- The default setting is n=0.
- Data is aligned between the left and right margins by entering a CR, LF, and FF code or by buffer printing.
- If the alignment setting is not at the beginning of the line, the alignment is specified after a line feed.
  The beginning of the line indicates the left margin position for left alignment;
  for right and center alignment, it means that no image or character is entered on the line.
- HT, ESC \ and ESC $ are ignored when n=1 or n=2.
- If the print media is continuous length tape, the printing orientation is landscape and the page length is not specified, commands specifying alignment are ignored.

5.5 Vertical movement commands

LF Line feed

ASCII:	LF
Decimal:	10
Hexadecimal:	0A

Parameters

None

Description

- Feeds the paper by the amount specified by a line feed command (ESC 0, ESC 2, ESC 3, ESC A).
- The print position becomes the beginning of the next line.
- The default value is a line feed of 48 dots.
- A carriage return immediately after a line feed is ignored.
- Auto-canceling double-width characters specified with SO or ESC SO are canceled.
- Same process as CR

FF Page feed

ASCII:	FF
Decimal:	12
Hexadecimal:	0C

Parameters

None

Description

- Starts the printing.
- The previously entered data string of characters and commands is cleared after being printed.
- At this time, auto-canceling double-width characters specified with SO or ESC SO are canceled.

ESC J Forward paper feed

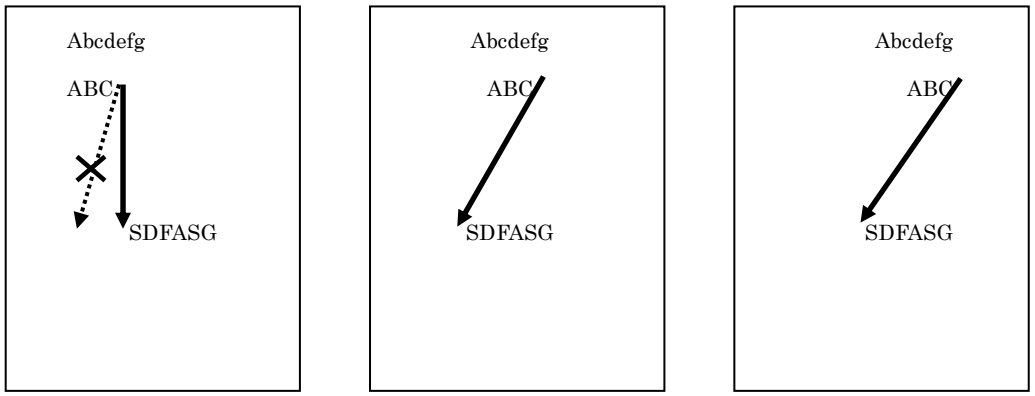
ASCII:	ESC	J	n
Decimal:	27	74	n
Hexadecimal:	1B	4A	n

Parameters

0≤n≤255

Description

- Ends input for the current line and moves the vertical print position forward by n/300 inch (=1 dot).
- If the bottom margin setting is exceeded, printing starts.
- With left alignment, the print position for the next line becomes the end position of the current line.
  (The horizontal position does not move to the left margin.)
  With right alignment and center alignment, the horizontal position moves to the beginning of the line.
- Auto-canceling double-width characters specified with SO or ESC SO are canceled.



Left alignment　Center alignment　Right alignment

Example: Performing a forward paper feed after the second line

ESC B Specify vertical tab position

ASCII:	ESC	B	$[n]_k$	NUL
Decimal:	27	66	$[n]_k$	0
Hexadecimal:	1B	42	$[n]_k$	00h

Parameters

1≤n≤255

0≤k≤16

Description

- The vertical tab position is the line feed amount (when this command was specified)*n from the top margin.
- Enter n values in ascending order and end the settings with NUL.
- If an n value is smaller than a previous one, tab setting is ended.
- Up to 16 vertical tabs can be specified.
- ESC B NUL cancels all vertical tab positions.
- Vertical tab positions can be specified regardless of the setting of the bottom margin position. However, vertical tab positions outside the print area (beyond the bottom margin position) are invalid and only become valid when a change in the top margin setting or bottom margin setting moves the print area to include those tab positions.
- Use VT to move to the vertical tab position.
- When changing vertical tab positions, specify all positions again.
- If the top margin is moved, the vertical tab positions are also moved by the same amount.
- Even if the line feed amount is changed after the vertical tab positions have been specified, the vertical tab position settings do not change.
- Performing a VT when no vertical tabs have been specified is equal to performing a CR.

VT Perform vertical tab

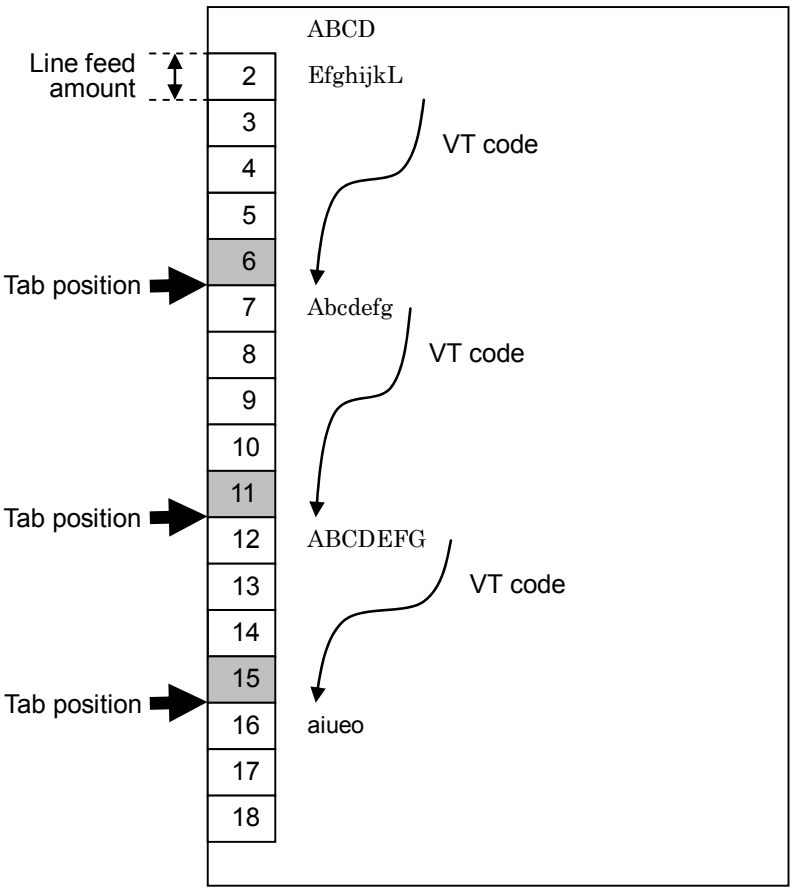
ASCII:	VT
Decimal:	11
Hexadecimal:	0B

Parameters

None

Description

- Moves the print position to the nearest vertical tab position down from the input position.
- The next horizontal print position becomes the beginning of the line.
- If the next vertical tab position extends beyond the bottom margin, or if there is no vertical tab position specified below the current position, VT is performed as if it is (moves to the TOF position of the next page).



Example: Vertical tabs are specified at Lines 6, 11, and 15, and data is entered while VT are performed.

- When all vertical tab positions have been canceled by an initialization or with ESC B NUL, performing VT is equal to performing CR.
- Auto-canceling double-width characters specified with SO or ESC SO are canceled.

ESC (V Specify absolute vertical position

ASCII:	ESC	(	V	nL	nH	mL	mH
Decimal:	27	40	86	nL	nH	mL	mH
Hexadecimal:	1B	28	56	nL	nH	mL	mH

Parameters

nL=2

nH=0

0≤mL≤255

0≤mH≤127

Description

- Specifies the vertical print position as an absolute position from the top margin position.
  Vertical position=mL+mH*256+top margin
- The absolute vertical position is measured from the top margin position when this command was specified.
- If a position extending beyond the bottom margin is specified, printing starts.
- There is no restriction on the amount of movement back (upward) from the current position.
- With left alignment, the print position for the next line becomes the end position of the current line.
  (The horizontal position does not move to the left margin.)
  With right alignment and center alignment, the horizontal position moves to the beginning of the line.
- Auto-canceling double-width characters specified with SO or ESC SO are canceled.

ESC (v Specify relative vertical position

ASCII:	ESC	(	v	nL	nH	mL	mH
Decimal:	27	40	118	nL	nH	mL	mH
Hexadecimal:	1B	28	76	nL	nH	mL	mH

Parameters

nL=2

nH=0

0≤mL≤255

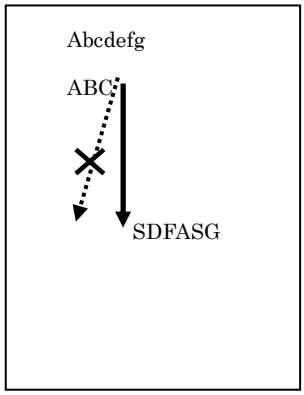
0≤mH≤127

-16384≤(mL+mH*256)≤16383

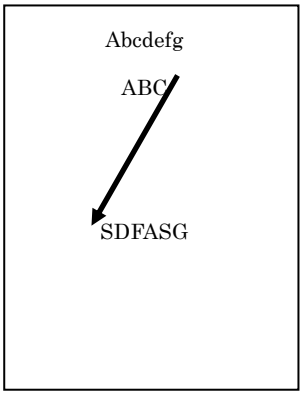
Description

- Specifies the vertical print position* as a relative position from the current position.
  Vertical position after movement=mL+mH*256+current position
- When moving upwards, the specified value is expressed as a two's complement.
  It is determined by the following equation.
  mL+mH*256=65536–distance actually moved
- Settings moving the print position above the top margin are ignored.
- If a position extending beyond the bottom margin is specified, printing starts.
- With left alignment, the print position for the next line becomes the end position of the current line.
  (The horizontal position does not move to the left margin.)
  With right alignment and center alignment, the horizontal position moves to the beginning of the line.
- Auto-canceling double-width characters specified with SO or ESC SO are canceled.

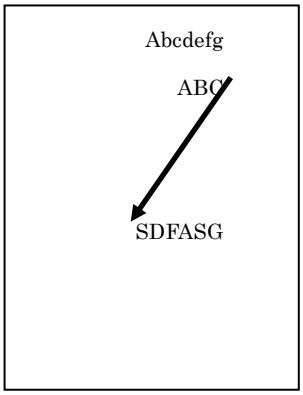
* Print position : The print position is the standard position for printing characters, bitmaps, and barcodes.



Left alignment



Center alignment



Right alignment

Example: Moving to a vertical position specified after the second line

5.6 Paper formatting commands

ESC (c Specify page format

ASCII:	ESC	(	c	nL	nH	tL	tH	BL	BH
Decimal:	27	40	99	nL	nH	tL	tH	BL	BH
Hexadecimal:	1B	28	63	nL	nH	tL	tH	BL	BH

Parameters

nL=4, nH=0

(tL+tH*256)<(BL+BH*256)

Top margin<bottom margin

Description

- Specifies settings for the top and bottom margins.
- The physically printable area depends on the media.
  The top margin and the bottom margin are specified in units of 1/300 inch (=1 dot) using the top edge of the physically printable area as the reference.
  (The left margin and the right margin use the left edge of the physically printable area as the reference.)
- Top margin=tL+tH*256
- Bottom margin= BL+BH*256
- The top margin position is the TOF in the vertical direction.
- All previously entered text is cleared.
- The character baseline for the first line of text is 24/300 inch (=24 dots) below the top margin.
- When this command is used previously specified top and bottom margins are canceled.
- A standard unit is not used.
- If the print media is continuous length tape, the printing orientation is landscape and the page length is not specified, commands specifying the page format are ignored.
- If the minimum margin has been set to 3 mm and the printing orientation is landscape, both the top and bottom margins increase by 1 mm.

ESC (C Specify page length

ASCII:	ESC	(	C	nL	nH	mL	mH
Decimal:	27	40	67	nL	nH	mL	mH
Hexadecimal:	1B	28	43	nL	nH	mL	mH

Parameters

nL=2, nH=0

0<(mL+mH*256)<12000

Description

- Specifies the page length.
- The unit is 1/300 inch (=1 dot).

  Page length=mL+mH*256
- The current paper position is the TOF.
- The top and bottom margins are canceled with ESC (c.
- All previously entered text is cleared.
- A standard unit is not used.
- This command is available only with continuous length tape.

Inch, mm, and dot conversion table

inch	mm	Number of dots
0	0.0	0
1	25.4	300
2	50.8	600
3	76.2	900
4	101.6	1200
5	127.0	1500
6	152.4	1800
7	177.8	2100
8	203.2	2400
9	228.6	2700
10	254.0	3000
11	279.4	3300
12	304.8	3600
13	330.2	3900
14	355.6	4200
15	381.0	4500
16	406.4	4800
17	431.8	5100
18	457.2	5400
19	482.6	5700
20	508.0	6000

ESC U Specify minimum margin

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

Parameters

2≤n≤3 or “2”≤n≤“3”

Description

- Specifies the minimum margin amount.
- n=2 or 50 (“2”): Specifies a minimum margin of 2 mm.
- n=3 or 51 (“3”): Specifies a minimum margin of 3 mm.
- Using this command clears all text.

5.7 Printer control commands

ESC @ Initialize

ASCII:	ESC	@
Decimal:	27	64
Hexadecimal:	1B	40

Parameters

None

Description

- Returns all commands to their default settings. (See below.)

Item	Default
Input buffer	Saved
Text buffer	Cleared
Print buffer	Cleared
Top margin	0 dot
Bottom margin	Depends on media
Left margin	0 dot
Right margin	Depends on media
Line feed amount	48 dots*
Horizontal tab positions	Horizontal tab every 8 characters (based on a character width of 10 cpi)*
Vertical tab positions	None
Character size	32 dots*
Character spacing	0 dot

Item	Default
Proportional pitch	Canceled*
International character set	USA*
Character style	Canceled*
Compressed	Canceled
Horizontal print position	Left margin position
Vertical print position	Top margin position (TOF position)
Landscape setting	Canceled*
Page length setting	Canceled*
Cut setting	Auto cut (manufacturer's default)
Font	Brougham*
Character code set	Western European character code set*
Minimum margin amount	3 mm*

* May differ depending on the user settings.

5.8 Graphics commands

ESC * Select bit image

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

Parameters

m=0, 1, 2, 3, 4, 6, 32, 33, 38, 39, 40, 71, 72, 73

0≤n1≤255, 0≤n2≤11

The image data is as follows:

- n1+n2*256 bytes when m=0, 1, 2, 3, 4, 6
- (n1+n2*256)*3 bytes when m=32, 33, 38, 39, 40
- (n1+n2*256)*6 bytes when m=71, 72, 73

Description

- Selects and outputs a bit image according to the value of m.
- n1 and n2 indicate the number of dot positions.

  n1: The remainder from dividing the number of dot positions by 256

  n2: The quotient from dividing the number of dot positions by 256

m	Horizontal Dot Density	Vertical Dot Density	Horizontal Dot Resolution	Vertical Dot Resolution
0	60 dpi	60 dpi	6/300 inch	6/300 inch
1	120 dpi	60 dpi	3/300 inch	6/300 inch
2	120 dpi	60 dpi	3/300 inch	6/300 inch
3	240 dpi	60 dpi	2/300 inch	6/300 inch
4	80 dpi	60 dpi	4/300 inch	6/300 inch
6	90 dpi	60 dpi	4/300 inch	6/300 inch
32	60 dpi	180 dpi	6/300 inch	2/300 inch
33	120 dpi	180 dpi	3/300 inch	2/300 inch
38	90 dpi	180 dpi	4/300 inch	2/300 inch
39	180 dpi	180 dpi	2/300 inch	2/300 inch
40	300 dpi	180 dpi	1/300 inch	2/300 inch
71	180 dpi	360 dpi	2/300 inch	1/300 inch
72	360 dpi	360 dpi	1/300 inch	1/300 inch
73	360 dpi	360 dpi	1/300 inch	1/300 inch

- Horizontally neighboring dots are not omitted.

  Limitations:

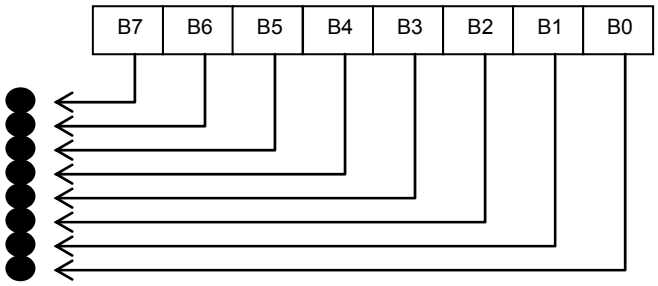
  A maximum of 63 can be used with this command.

When m=0, 1, 2, 3, 4, 6

- n1 and n2 indicate the number of dot positions.

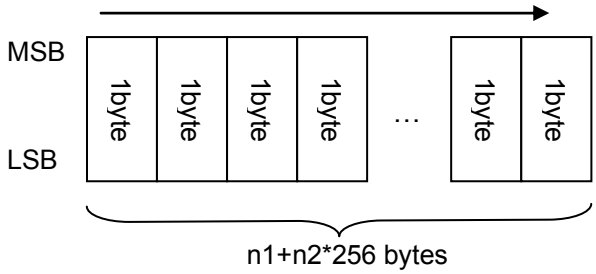
  n1: The remainder from dividing the number of dot positions by 256

  n2: The quotient from dividing the number of dot positions by 256

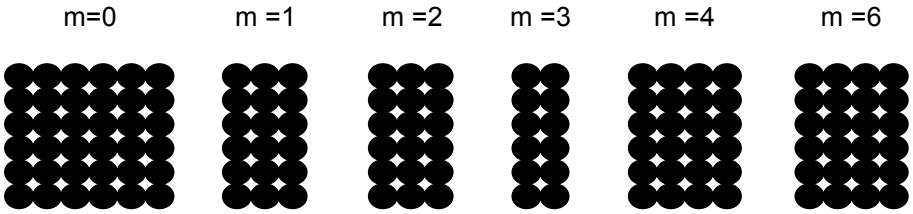


Relationship between the image data and the dots

- First, the data is lined up in one row as follows:



- One dot of the image data is enlarged as follows, according to the value of m.



- As a result, the image is sized depending on the value of m, as follows:

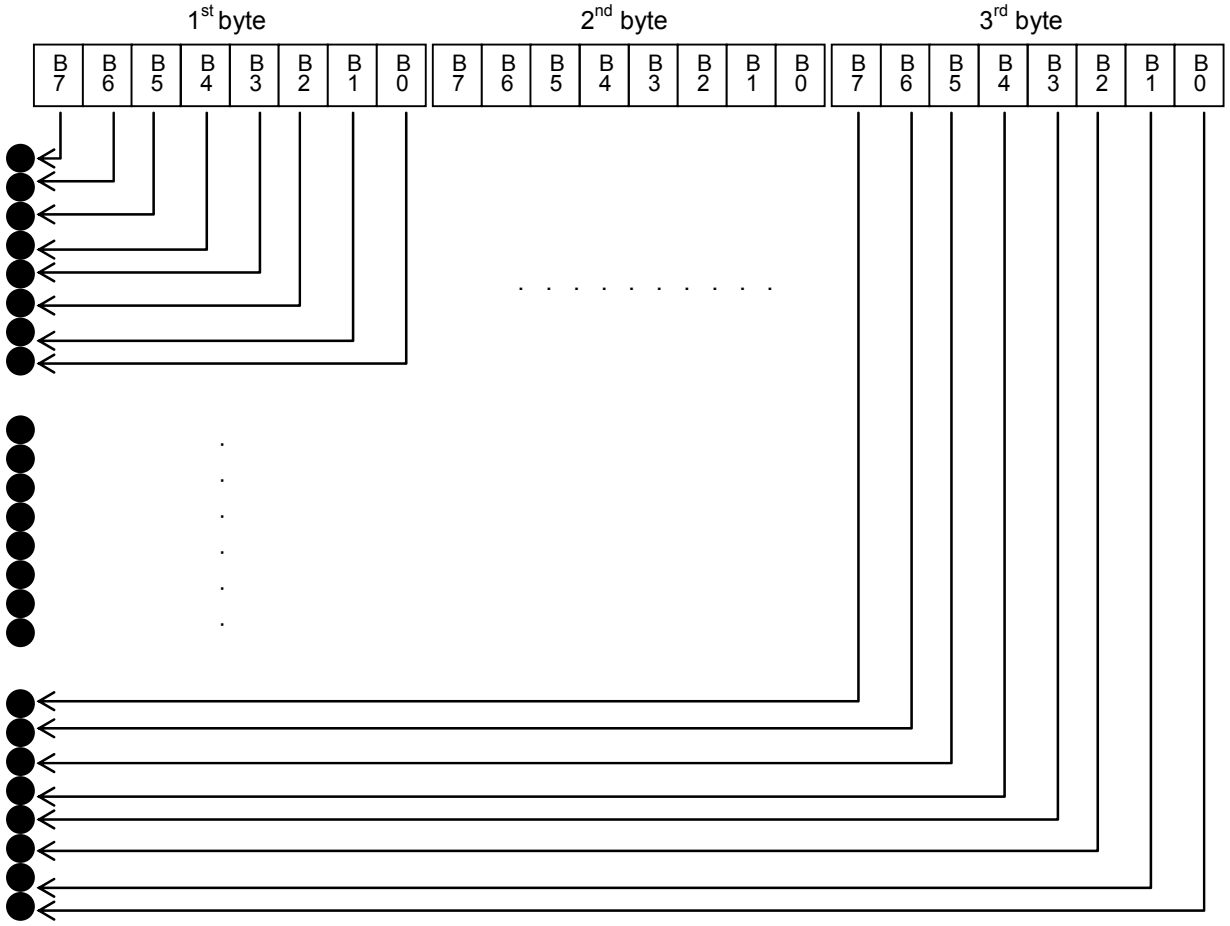
m=0	48 dots vertically×(n1+n2*256)*6 dots horizontally
m=1	48 dots vertically×(n1+n2*256)*3 dots horizontally
m=2	48 dots vertically×(n1+n2*256)*3 dots horizontally
m=3	48 dots vertically×(n1+n2*256)*2 dots horizontally
m=4	48 dots vertically×(n1+n2*256)*4 dots horizontally
m=6	48 dots vertically×(n1+n2*256)*4 dots horizontally

When m=32, 33, 38, 39, 40

- n1 and n2 indicate the number of dot positions.

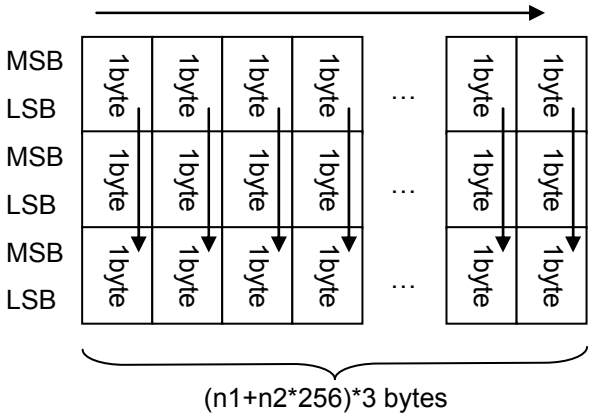
  n1: The remainder from dividing the number of dot positions by 256

  n2: The quotient from dividing the number of dot positions by 256

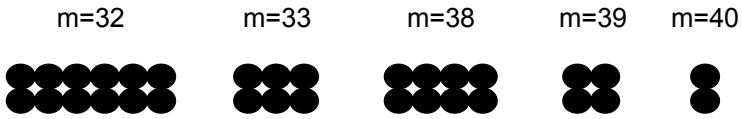


Relationship between the image data and the dots

First, the data is lined up in three rows as follows:



- One dot of the image data is enlarged as follows, according to the value of m.



- As a result, the image is sized depending on the value of m, as follows:

  m=32 48 dots vertically×(n1+n2*256)*6 dots horizontally

  m=33 48 dots vertically×(n1+n2*256)*3 dots horizontally

  m=38 48 dots vertically×(n1+n2*256)*4 dots horizontally

  m=39 48 dots vertically×(n1+n2*256)*2 dots horizontally

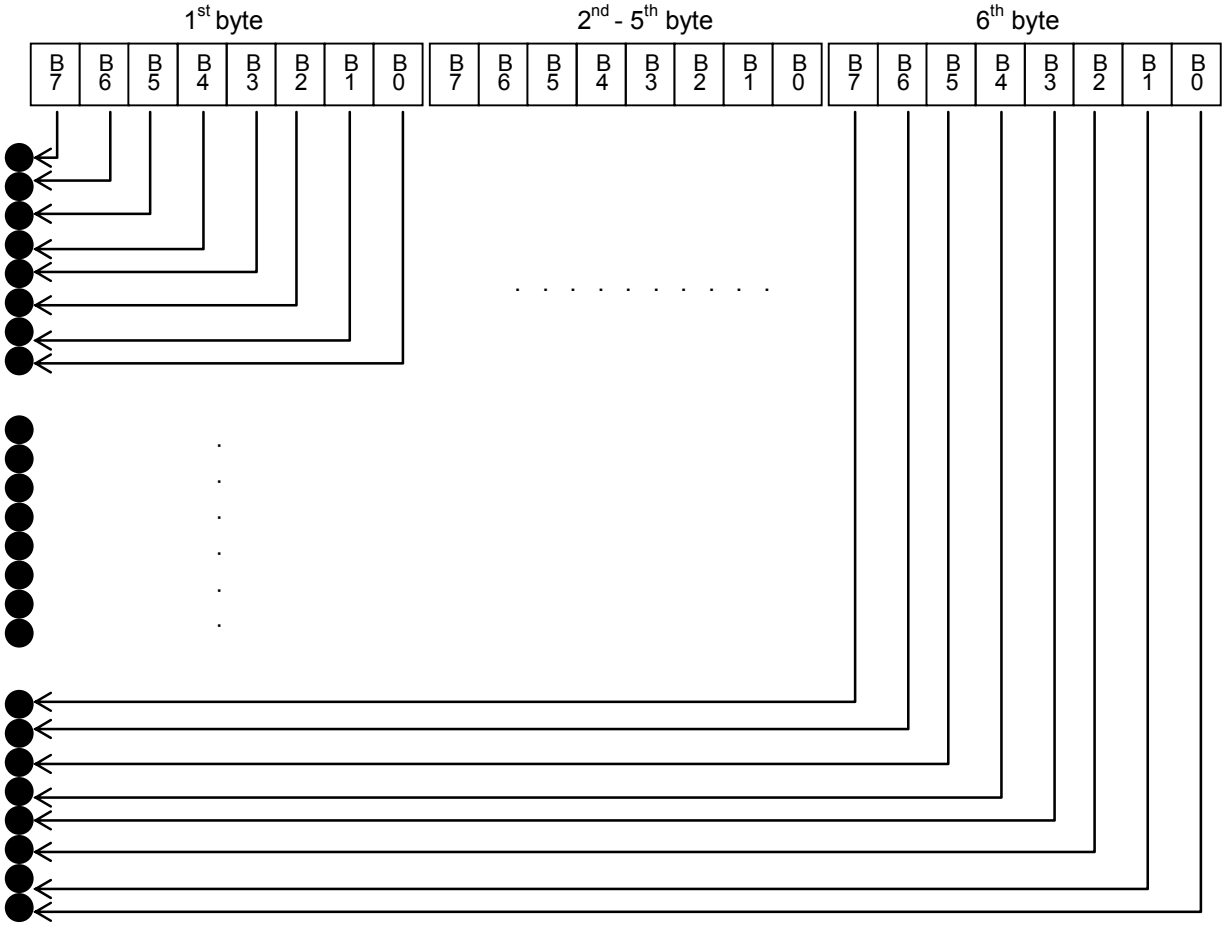
  m=40 48 dots vertically×(n1+n2*256)*1 dot horizontally

When m=71, 72, 73

- n1 and n2 indicate the number of dot positions.

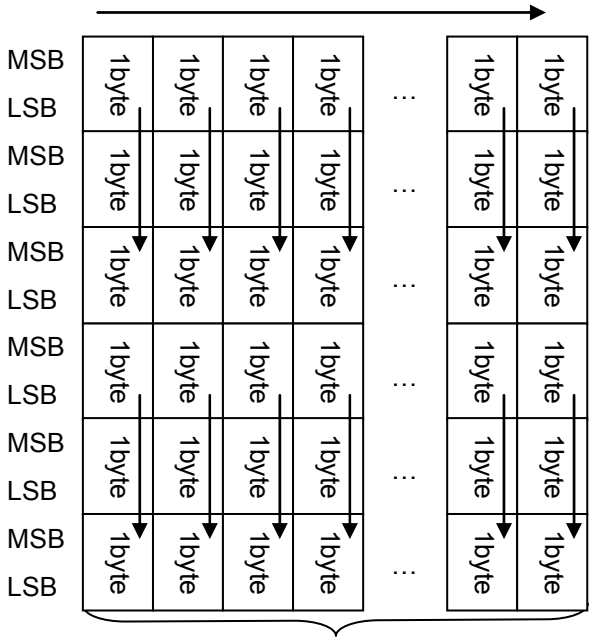
  n1: The remainder from dividing the number of dot positions by 256

  n2: The quotient from dividing the number of dot positions by 256

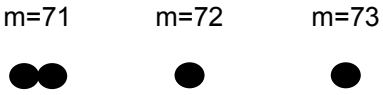


Relationship between the image data and the dots

First, the data is lined up in six rows as follows:



- One dot of the image data is enlarged as follows, according to the value of m.



- As a result, the image is sized depending on the value of m, as follows:

  m=71 48 dots vertically×(n1+n2*256)*2 dots horizontally

  m=72 48 dots vertically×(n1+n2*256)*1 dot horizontally

  m=73 48 dots vertically×(n1+n2*256)*1 dot horizontally

ESC K 8-dot single-density bit image

ASCII:	ESC	K	n1	n2	Data
Decimal:	27	75	n1	n2	Data
Hexadecimal:	1B	4B	n1	n2	Data

Parameters

0≤n1≤255, 0≤n2≤3

The data contains n1+n2*256 bytes of image data.

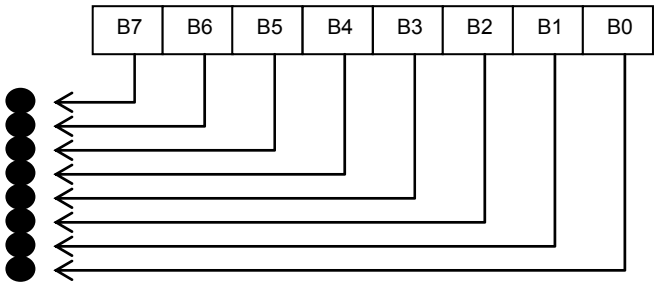
Description

Specifies that an 8-dot single-density bit image is printed with the number of dot positions indicated by n1 and n2.

- n1 and n2 indicate the number of dot positions.

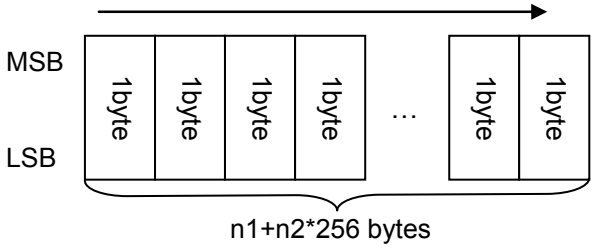
  n1: The remainder from dividing the number of dot positions by 256

  n2: The quotient from dividing the number of dot positions by 256

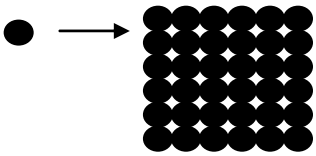


Relationship between the image data and the dots

- First, the data is lined up in one row as follows:



- One dot of image data is enlarged to 6 dots vertically by 6 dots horizontally.



- As a result, the image is 48 dots vertically by (n1+n2*256)*6 dots horizontally.

ESC L 8-dot double-density bit image

ASCII:	ESC	L	n1	n2	Data
Decimal:	27	76	n1	n2	Data
Hexadecimal:	1B	4C	n1	n2	Data

Parameters

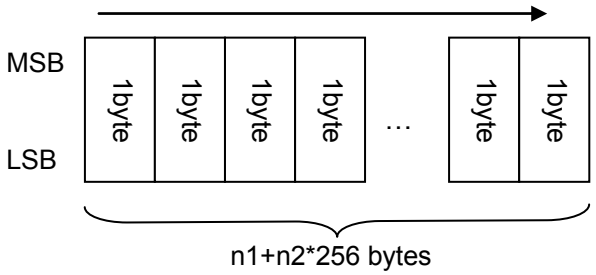
0≤n1≤255, 0≤n2≤3

The data contains n1+n2*256 bytes of image data.

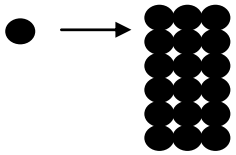
Description

Specifies that an 8-dot double-density bit image is printed with the number of dot positions indicated by n1 and n2.

- n1 and n2 are specified in the same way as with ESC K.
- First, the data is lined up in one row as follows:



- One dot of image data is enlarged to 6 dots vertically by 3 dots horizontally.



- As a result, the image is 48 dots vertically by (n1+n2 *256)*3 dots horizontally.

ESC Y 8-dot double-speed double-density bit image

ASCII:	ESC	Y	n1	n2	Data
Decimal:	27	89	n1	n2	Data
Hexadecimal:	1B	59	n1	n2	Data

Parameters

0≤n1≤255, 0≤n2≤3

The data contains n1+n2*256 bytes of image data.

Description

- Same as for an 8-dot double-density bit image. Horizontally neighboring dots are not omitted.

ESC Z 8-dot quadruple-density bit image

ASCII:	ESC	Z	n1	n2	Data
Decimal:	27	90	n1	n2	Data
Hexadecimal:	1B	5A	n1	n2	Data

Parameters

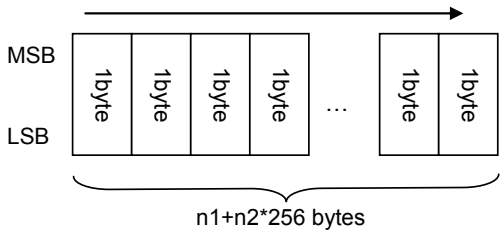
0≤n1≤255, 0≤n2≤7

The data contains n1+n2*256 bytes of image data.

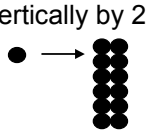
Description

Specifies that an 8-dot quadruple-density bit image is printed with the number of dot positions indicated by n1 and n2.

- n1 and n2 are specified in the same way as with ESC K.
- Horizontally neighboring dots are not omitted.
- First, the data is lined up in one row as follows:



- One dot of image data is enlarged to 6 dots vertically by 2 dots horizontally.



- As a result, the image is 48 dots vertically by (n1+n2*256)*2 dots horizontally.

5.9 Advanced commands

ESC i B Barcode

ASCII:	ESC	i [Parameters]	B or b [Barcode data]	Backslash
Decimal:	27	105 [Parameters]	66 or 98 [Barcode data]	92
Hexadecimal:	1B	69 [Parameters]	42 or 62 [Barcode data]	5C
Format:	ESC	i [Parameters] (1)	B or b [Barcode data] (2) (3)	[Backslash] (4)

Parameters

(1) [Parameters]: Barcode parameters

T or t (type)	t0: CODE39 t1: ITF (I-2/5) t5: EAN-8, EAN-13, UPC-A t6: UPC-E t9: CODABAR ta: CODE128 tb: GS1-128 (UCC/EAN-128) tc: RSS symbols td: CODE93 te: POSTNET tf: UPC/EAN EXTENTION
s (style)	Ignored
p (number of passes)	Ignored
R or r (characters below barcode)	r0: OFF r1: ON
u (units of measurement)	Ignored
x (horizontal position)	Ignored
y (vertical offset)	Ignored

h (height)	h n1 n2 Height=n1+n2*256 (dots) 48≤height≤480 If height<48, height=48. If height>480, height=480. However, the height is as shown below with tc. 131≤height≤720 (RSS-14 Standard) 71≤height≤720 (RSS-14 Truncated) 71≤height≤720 (RSS-14 Stacked) 239≤height≤720 (RSS-14 Stacked Omni) 62≤height≤720 (RSS Limited) 134≤height≤720 (RSS Expanded) If height<min., height=min. If height>max., height=max.
w (width)	w0: extra small w1: small w2: medium w3: large w4: extra extra small
E or e (parentheses deletion)	e0: ON e1: OFF
o (RSS symbols model)	o0: RSS-14 Standard o1: RSS-14 Truncated o2: RSS-14 Stacked o3: RSS-14 Stacked Omnidirectional o4: RSS Limited o5: RSS Expanded Standard o6: RSS Expanded Stacked
c (number of horizontal characters for RSS Expanded Stacked)	c: No. of horizontal characters This must be an even value where 2≤no. of horizontal characters≤20.
z (ratio between thick and thin bars)	z0: (3:1) z1: (2.5:1) z2: (2:1)
f (equalize bar lengths)	f0: OFF f1: ON

(A barcode with a large number of stacked rows may be considered out of specifications and unreadable by the reader.)

Note

* For parameter numerals 0–9, both 00h–09h and 30h–39h are recognized.
* For parameter hexadecimals a–f, both 0ah–0fh and 61h–66h are recognized.
* The parameter types a, b, c, d, e and f are recognized even when uppercase.
* The parameter “parentheses deletion” is available only when GS1-128 (UCC/EAN-128) is selected.
* The parameter “ratio between thick and thin bars” is available only when t0, t1 or t9 is selected.
* The parameter “equalize bar lengths” is available only when t5 or t6 is selected.
* If any other type is selected, these parameters are ignored.
* When there is no type command or an invalid type command has been specified, CODE39 is specified.
* The number of characters that can be entered for each barcode type is as follows:

t0: 1–50 characters (“*” is not included)

t1: 1–64 characters

t5: 7 characters (for EAN-8)
12 characters (for EAN-13)
11 characters (for UPC-A)

t6: 6 characters

t9: 3–64 characters (Must begin and end with A, B, C, or D.)
Lowercase letters “a”, “b”, “c” or “d” can be entered at the beginning or end, but the text that will be printed are the uppercase letters “A”, “B”, “C” or “D”.

ta: 1–64 characters

tb: 1–64 characters

tc: 3–15 characters (begins with “01”) (except with RSS Expanded)
1–64 numbers or 1–40 letters*1 (for RSS Expanded)
*1 ISO646 characters can be printed.
(numbers, letters, spaces, !, ”, %, &, ’, (,), *, +, ,, -, ., /, :, ;, <, =, >, ? and _)

td: 1–64 characters (The full set of ASCII characters can be used.)

te: 5 characters, 9 characters, 11 characters

tf: 2 characters, 5 characters

(2) B or b: Beginning of barcode data

(3) [Barcode data]: Barcode data

? (Generate check digit):

Generates a check digit when “?” is in the barcode data.

The position of “?” is irrelevant as long as it is within the barcode data.

With POSTNET, CODE93, UPC/EAN EXTENSION, CODE128 and GS1-128(UCC/EAN-128), no check digit is generated.

If “?” is inserted, it is treated as barcode data.

With only UPC/EAN EXTENSION, the data is printed above the barcode.

(4) [Backslash]: End of barcode

Barcode Type	Command
POSTNET, UPC/EAN EXTENTION, CODE39, ITF(I-2/5), EAN-8, EAN-13, UPC-A, UPC-E, CODABAR, RSS symbols	ESC i [Parameter] B or b [Barcode data] \
CODE93, CODE128, GS1-128 (UCC/EAN-128)	ESC i [Parameter] B or b [Barcode data] \\\

Description

- Specifies a barcode image.
- Any data extending beyond the right margin is ignored.
- Since the check digit is generated automatically from the barcode data, the check digit is not sent as barcode data. Since the length of the barcode data is also checked, the data would not be correctly recognized if the check digit data was present.
- With CODE39, ITF (I-2/5), CODABAR, CODE128, GS1-128 (UCC/EAN-128) or RSS Expanded, the buffer length for the barcode image is about 22 cm. A barcode longer than 22 cm will not be printed.
- The characters that can be printed with CODE128 and GS1-128 (UCC/EAN-128) are the 128 ASCII characters and the special codes FNC1, FNC2, FNC3 and FNC4.
  Codes assigned to the special codes:

  FNC1: 86h, FNC2: 81h, FNC3: 80h, FNC4: 84h
- The control codes and special codes appear as spaces when characters are printed below CODE128 and GS1-128 (UCC/EAN-128) barcodes.
- The control codes appear as spaces when characters are printed below CODE93 barcodes.
- Special code FNC1 can also be printed with RSS Expanded.
  This special code also appears as a space when characters are printed below the barcode.
  Code assigned to the special code:

  FNC1: 86h
- The width can be set to extra extra small only with CODE128 and EAN128.
- Characters are not printed below the barcode when the width is set to extra extra small.

Example

For barcode type CODE39, with no characters printed below the barcode, a size of large (width) × 480 dots (height) and a ratio between thick and thin bars of 3:1, the command will be as shown below.

```
ESC i t0 r0 he0h 01h w3 z0 B 123456789 \
```

ESC i Q 2D barcode (QR Code)

ASCII:	ESC	i	Q or q	Data		
Decimal:	27	105	81 or 113	Data		
Hexadecimal:	1B	69	51 or 71	Data		
Format:	ESC	i	Q or q	[Parameters]	[Barcode data]	\\\
				(1)	(2)	(3)

Parameters

(1) [Parameters]

Unlike with 1D barcodes, all parameters must be specified in order, starting from the top.

If a value other than those listed is entered for a parameter, that parameter is specified with its default value.

1. Cell size	[1-byte decimal] 3 [1-byte decimal] 4 [1-byte decimal] 5 [1-byte decimal] 6 [1-byte decimal] 8 [1-byte decimal] 10	Specifies the dot size per cell side. **Prints 3 dots per cell side. (default value)** Prints 4 dots per cell side. Prints 5 dots per cell side. Prints 6 dots per cell side. Prints 8 dots per cell side. Prints 10 dots per cell side.
2. Symbol type	[1-byte decimal] 1 [1-byte decimal] 2 [1-byte decimal] 3	Model 1 **Model 2 (default value)** Micro QR
3. Structured Append setting	[1-byte decimal] 0 [1-byte decimal] 1	**Not partitioned. (default value)** Partitioned (*1)
4. Code number	[1-byte decimal] 1–16	Indicates the number of the symbol in a partitioned QR Code.
5. Number of partitions	[1-byte decimal] 2–16	Indicates the total number of symbols in a partitioned QR Code.
6. Parity data	[1-byte hexadecimal] 00-FF	Value (in bytes) of exclusively OR'ing all the print data (print data before partition)
7. Error correction level	[1-byte decimal] 1 [1-byte decimal] 2 [1-byte decimal] 3 [1-byte decimal] 4	High-density level: L 7% **Standard level: M 15% (default value)** High-reliability level: Q 25% Ultra-high-reliability level: H 30% (*2)
8. Data input method	[1-byte decimal] 0 [1-byte decimal] 1	**Auto input (default value)** Manual input Selects whether numbers, English alphanumeric characters, kanji characters or binary characters are entered.

(*1) With Micro QR, the Structured Append setting is invalid, and the default setting is used.

(*2) With Micro QR, error correction level 4 is invalid, and the default setting is used.

What is the QR Code Structured Append setting?

QR Codes have Structured Append settings.

A long character string can be partitioned into 2 to 16 partitions and printed.

With ESC/P commands, it is necessary to enter only the number of partitions.

For example, if the print data is partitioned into 3 partitions, the barcode data is as follows:

ESC	i	Q or q	[1st parameter]	[1st set of barcode data]	\\\
ESC	i	Q or q	[2nd parameter]	[2nd set of barcode data]	\\\
ESC	i	Q or q	[3rd parameter]	[3rd set of barcode data]	\\\

Refer to the following for specifying settings for 3 through 6 in [Parameters].

3. Structured append setting:	This determines whether or not the barcode data is partitioned. If the data is not partitioned, enter 0. When not partitioning, the values of 4 (code number), 5 (number of partitions), and 6 (parity data) are ignored; therefore, enter 0 as a dummy value for these parameters.
4. Code number:	This indicates which number the ESC/P command for that QR Code is. For example, if it is for the second of four partitions, this is 2; for the fourth this is 4.
5. Number of partitions:	This is the number of partitions.
6. Parity data:	This is the value (in bytes) of exclusively OR'ing all the print data (print data before partition). Entering the same value as for the partitioned QR Code ESC/P command indicates that these codes are linked.

What is exclusive OR'ing in bytes?

The data is exclusively OR'ed (XOR'ed) in bytes and in order.

For example, putting a character string into hexadecimal gives 31h, 32h, 33h, 34h.

Character	OR'ed (XOR'ed) in bytes	Results
XOR of 31h and 32h	0011 0001 ^= 0011 0010	0000 0011 (03h)
XOR of 03h and 33h	0000 0011 ^= 0011 0011	0011 0000 (30h)
XOR of 30h and 34h	0011 0000 ^= 0011 0100	**0000 0100 (04h) Therefore, the parity is 04h.**

Note

If this parity value is incorrect, the correct QR Code is not generated.

Summary

Printing the character string “123456789” with a cell size of 4 dots, Model 2, standard error correction level, and automatic data input.

Without Structured Append	**ESC i Q 04h 02h 00h 00h 00h 00h 02h 00h “123456789” **
With Structured Append [Three partitions]	**ESC i Q 04h 02h 01h 01h 03h 31h 02h 00h “123” ** **ESC i Q 04h 02h 01h 02h 03h 31h 02h 00h “456” ** **ESC i Q 04h 02h 01h 03h 03h 31h 02h 00h “789” ** (The parity for the character string “123456789” is 31h.)

(2) [Barcode data]: Barcode data

When manual input is selected in 8 (data input method), the barcode data must be preceded with one of the following single-byte alphanumeric characters.

Barcode Type	Preceded Character	Example
Number input	N or n	**ESC i Q [other parameters] 01h N123456789 **
Alphanumeric character input	A or a	**ESC i Q [other parameters] 01h A012345678aBcDe **
Kanji character input	K or k	**ESC i Q [other parameters] 01h K kanji character input **
Binary character input	B or b+4-digit number	**ESC i Q [other parameters] 01h B0005#### ** With the “4-digit number”, specify the number of binary characters to actually be entered. For example, if 12 binary characters are to be entered, specify: B 0012 (30h, 30h, 31h, 32h)

The number of barcode data characters that can be entered depends on the model type and the input method.

Model 1	707 English alphanumeric characters, 1167 numbers, 486 binary bytes, 299 kanji characters
Model 2	4296 English alphanumeric characters, 7089 numbers, 2953 binary bytes, 1817 kanji characters
Micro QR	21 English alphanumeric characters, 35 numbers, 15 binary bytes, 9 kanji characters

Note

The numbers listed above are for an error correction level at a high-density level (L 7%).

If the standard level or higher is set, the number of characters that can be entered may decrease. In addition, even if the characters are entered with the high-density level (L) specified, the number of characters that can be entered may decrease due to compression.

(3) \\\: End of barcode

There must be three backslashes to end 2D barcode.

Example

Refer to the section "Summary".

ESC i P Specify QR Code version

ASCII:	ESC	i	P	n
Decimal:	27	105	80	n
Hexadecimal:	1B	69	50	n

Parameters

0≤n≤40

Description

- The barcode size can be fixed.
- The default value is 0.
- The available versions differ depending on the symbol type used.

  If a setting other than those listed is specified, the setting returns to its default.

  The following settings are available for each symbol type.

  Model1 (0–14), Model2 (0–40), MicroQR (0–4)

ESC i V 2D barcode (PDF417)

ASCII:	ESC	i	V or v	Data		
Decimal:	27	105	86 or 118	Data		
Hexadecimal:	1B	69	56 or 76	Data		
Format:	ESC	i	V or v	[Parameters]	[Barcode data]	\\\
				(1)	(2)	(3)

Parameters

(1) [Parameters]

Unlike with 1D barcodes, all parameters must be specified in order, starting from the top.

If a value other than those listed is entered for a parameter, that parameter is specified with its default value.

1. Cell size	[1-byte decimal] 3 [1-byte decimal] 4 [1-byte decimal] 5 [1-byte decimal] 6 [1-byte decimal] 8 [1-byte decimal] 10	Specifies the dot size per cell side. **Prints 3 dots per cell side. (default value)** Prints 4 dots per cell side. Prints 5 dots per cell side. Prints 6 dots per cell side. Prints 8 dots per cell side. Prints 10 dots per cell side.
2. Symbol type	[1-byte decimal] 0 [1-byte decimal] 1 [1-byte decimal] 2 [1-byte decimal] 3	**Standard (default value)** Truncate MicroPDF417 standard MicroPDF417 Code128 emulation
3. Data input method	[1-byte decimal] 0 [1-byte decimal] 1	**Auto input (default value)** Binary input
4. Error correction capacity-type	[1-byte decimal] 0 [1-byte decimal] 1	**Level input setting (default value)** Percentage input setting
5. Error correction capacity-value		
- Level input	[2-byte decimal] 0–8	Specifies the level. (The default value is 0.)
- Percentage input	[2-byte decimal] 0–400	Specifies the percentage. (The default value is 10.)
6. Symbol size (X direction)	[1-byte decimal] 0 [1-byte decimal] 1–30 *0 and 1–4 with MicroPDF417	**Auto setting (default value)** Manual settings
7. Symbol size (Y direction)	[1-byte decimal] 0 [1-byte decimal] 3–90 *0 and 4–44 with MicroPDF417	**Auto setting (default value)** Manual settings

8. Aspect value	[2-byte decimal] 1–1000	Specifies the aspect value. Actually, this is 0.01–10.0, but since the decimal point cannot be entered, a value multiplied by 100 is entered. The default value is 50. (The actual value is 0.5.)

Note

*** If a setting for the symbol size (X direction) or symbol size (Y direction) has been specified manually, the aspect value setting is ignored.**

*** If a setting for the symbol size (X direction) or the symbol size (Y direction) has been entered manually, the bar code may not be printed or an unreadable bar code may be printed.**

*** If both a large cell size and a high level error correction capacity have been specified, printing may not be possible due to a full print buffer.**

[With symbol type MicroPDF417]

* Since the error correction capacity is automatically determined from the symbol size (X direction) setting, the settings for “error correction capacity and type” and “error correction capacity-value” are ignored.

* The aspect value setting is ignored.

* The following table shows the values available for the symbol size (Y direction) according to the symbol size (X direction) setting. If an invalid setting is specified for the symbol size (Y direction), the default setting is specified.

Symbol Size (X Direction)	Symbol Size (Y Direction)											
Auto	Auto											
1	Auto	11	14	17	20	24	28					
2	Auto	8	11	14	17	20	23	26				
3	Auto	6	8	10	12	15	20	26	32	38	44	
4	Auto	4	6	8	10	12	15	20	26	32	38	44

(2) Barcode data

The numbers of barcode data characters that can be entered are as follows.

1850 alphanumeric characters, 2710 numbers, 1108 binary bytes

Note

The numbers listed above are for an error correction level at the lowest level. If the standard level or higher is set, the number of characters that can be entered may decrease. In addition, even if the characters are entered with the lowest level specified, the number of characters that can be entered may decrease due to compression.

[With symbol type MicroPDF417]

Maximum of 250 alphanumeric characters, maximum of 366 numbers, maximum of 150 bytes of binary data

However, the following table shows the maximum amount of information allowed according to the settings for symbol size (X direction) and symbol size (Y direction).

X	Y	Maximum Amount of Information Allowed		
		Alphanumeric Characters	Numbers	Binary
1	11	6	8	3
1	14	12	17	7
1	17	18	26	10
1	20	22	32	13
1	24	30	44	18
1	28	38	55	22
2	8	14	20	8
2	11	24	35	14
2	14	36	52	21
2	17	46	67	27
2	20	56	82	33
2	23	64	93	38
2	26	72	105	43
3	6	10	14	6
3	8	18	26	10
3	10	26	38	15
3	12	34	49	20
3	15	46	67	27
3	20	66	96	39
3	26	90	132	54
3	32	114	167	68
3	38	138	202	82
3	44	162	237	97
4	4	14	20	8
4	6	22	32	13
4	8	34	49	20
4	10	46	67	27
4	12	58	85	34
4	15	76	111	45
4	20	106	155	63
4	26	142	208	85
4	32	178	261	106
4	38	214	313	128
4	44	250	366	150

(3) \\\: End of barcode

There must be three backslashes to end 2D barcodes.

ESC i D 2D barcode (DataMatrix)

ASCII:	ESC	i	D or d	data		
Decimal:	27	105	68 or 100	data		
Hexadecimal:	1B	69	44 or 64	data		
Format:	ESC	i	D or d	[Parameters]	[Barcode data]	\\\
				(1)	(2)	(3)

Parameters

(1) [Parameters]

Unlike with 1D barcodes, all parameters must be specified in order, starting from the top.

If a value other than those listed is entered for a parameter, that parameter is specified with its default value.

1. Cell size	[1-byte decimal] 3 [1-byte decimal] 4 [1-byte decimal] 5 [1-byte decimal] 6 [1-byte decimal] 8 [1-byte decimal] 10	Specifies the dot size per cell side. **Prints 3 dots per cell side. (default value)** Prints 4 dots per cell side. Prints 5 dots per cell side. Prints 6 dots per cell side. Prints 8 dots per cell side. Prints 10 dots per cell side.
2. Symbol type	[1-byte decimal] 0 [1-byte decimal] 1	**ECC200 square (default value)** ECC200 rectangular
3. Vertical size	[1-byte decimal] 0 [1-byte decimal] 10 [1-byte decimal] 12 [1-byte decimal] 14 [1-byte decimal] 16 [1-byte decimal] 18 [1-byte decimal] 20 [1-byte decimal] 22 [1-byte decimal] 24 [1-byte decimal] 26 [1-byte decimal] 32 [1-byte decimal] 36 [1-byte decimal] 40 [1-byte decimal] 44 [1-byte decimal] 48 [1-byte decimal] 52 [1-byte decimal] 64 [1-byte decimal] 72 [1-byte decimal] 80 [1-byte decimal] 88 [1-byte decimal] 96 (continued to the next page)	**[ECC200 square]** **Vertical no. of cells: AUTO (default value)** Vertical no. of cells: 10 cells Vertical no. of cells: 12 cells Vertical no. of cells: 14 cells Vertical no. of cells: 16 cells Vertical no. of cells: 18 cells Vertical no. of cells: 20 cells Vertical no. of cells: 22 cells Vertical no. of cells: 24 cells Vertical no. of cells: 26 cells Vertical no. of cells: 32 cells Vertical no. of cells: 36 cells Vertical no. of cells: 40 cells Vertical no. of cells: 44 cells Vertical no. of cells: 48 cells Vertical no. of cells: 52 cells Vertical no. of cells: 64 cells Vertical no. of cells: 72 cells Vertical no. of cells: 80 cells Vertical no. of cells: 88 cells Vertical no. of cells: 96 cells

3. Vertical size (continued)	(continued from the previous page)	
	[1-byte decimal] 104	Vertical no. of cells: 104 cells
	[1-byte decimal] 120	Vertical no. of cells: 120 cells
	[1-byte decimal] 132	Vertical no. of cells: 132 cells
	[1-byte decimal] 144	Vertical no. of cells: 144 cells
		[ECC200 rectangular]
	[1-byte decimal] 0	**Vertical no. of cells: AUTO (default value)**
	[1-byte decimal] 8	Vertical no. of cells: 8 cells
	[1-byte decimal] 12	Vertical no. of cells: 12 cells
	[1-byte decimal] 16	Vertical no. of cells: 16 cells
4. Horizontal size	[1-byte decimal] x	**[ECC200 square]** Horizontal no. of cells: Same value as vertical size (x)
		[ECC200 rectangular] (1) When the vertical size is AUTO
	[1-byte decimal] 0	**Horizontal no. of cells: AUTO (default value)**
		(2) When the vertical size is 8 cells
	[1-byte decimal] 18	Horizontal no. of cells: 18 cells
	[1-byte decimal] 32	Horizontal no. of cells: 32 cells
		(3) When the vertical size is 12 cells
	[1-byte decimal] 26	Horizontal no. of cells: 26 cells
	[1-byte decimal] 36	Horizontal no. of cells: 36 cells
		(4) When the vertical size is 16 cells
	[1-byte decimal] 36	Horizontal no. of cells: 36 cells
	[1-byte decimal] 48	Horizontal no. of cells: 48 cells
5. Reserved	[1-byte decimal]×5 0	5 bytes of dummy data (0) is sent.

Note

*** If the vertical size is specified as a value other than those listed for ECC200 square, the AUTO setting is selected. If the horizontal size is specified as a value different from the vertical size, the setting is changed to the same value as the horizontal size.**

*** If the vertical or horizontal size for ECC200 rectangular is specified as a value other than those listed, the AUTO setting is selected.**

(2) [Barcode data]: Barcode data

The maximum number of barcode data characters that can be entered is listed below.

2335 alphanumeric characters, 3116 numbers, 1556 bytes of binary data

Note

The numbers of characters that can be entered (as listed above) are for the maximum vertical × horizontal cell settings (144 cells × 144 cells). The number of characters that can be entered may decrease, depending on the specified settings.

(3) \\\: End of barcode

There must be three backslashes to end 2D barcodes.

Example

For data “12345” with symbol type ECC square at 40 × 40 with a 3-dot cell size, the command will be as shown below.

ESC i D 03h 00h 28h(40d) 28h 00h 00h 00h 00h 00h “12345” \\\

ESC i M 2D barcode (MaxiCode)

ASCII:	ESC	i	M or m	data
Decimal:	27	105	77 or 109	data
Hexadecimal:	1B	69	4D or 6D	data
Format:	ESC	i	M or m	[Parameters] (1) \ (2) [Barcode data] (3) \\\ (4)

Parameters

(1) [Parameters]

If a value other than those listed is entered for a parameter, that parameter is specified with its default value.

1. Symbol type	[1-byte decimal] 0 [1-byte decimal] 1 [1-byte decimal] 2	**Standard (default value)** Full EEC Structured carrier message
2. Structured Append setting	[1-byte decimal] 0 [1-byte decimal] 1	**With Structured Append (default value)** Without Structured Append

(2) \ (backslash)

Separator between parameters and barcode data

(3) [Barcode data]: Barcode data

The number of barcode data characters that can be entered is listed below.

Symbol Type	Maximum Amount of Information Allowed	
	Alphanumeric Characters	Numbers
Standard	93	138
Full EEC	77	113
Structured carrier message	84	126

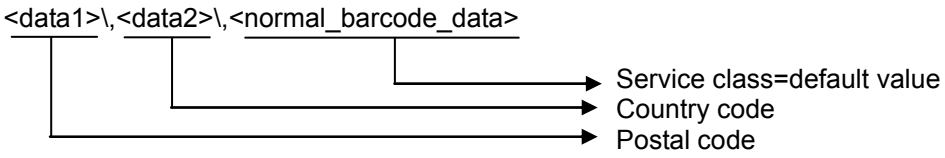
Note

The numbers of characters that can be entered (as listed above) are for when using only the common character set (code set A in the MaxiCode specifications). The number of characters that can be entered may decrease, depending on the characters that are used.

When the symbol type is the structured carrier message, the service class, country code and postal code can be specified separately from the normal data. Specify each value, separated by a backslash and comma (\,), immediately before the normal data.

<postal_code>\,<country_code>\,<service_class>\,<normal_barcode_data>

When "\," is not used three times, the data is written as shown in the following example.



If a value other than those listed is entered for a parameter, that parameter is specified with its default value.

Postal code	9 or less numbers, or 6 or less alphanumeric characters	Ignored when not structured carrier message. **Default value: 000000000**
Country code	3 or less numbers	Ignored when not structured carrier message. **Default value: 000**
Service class	3 or less numbers	Ignored when not structured carrier message. **Default value: 000**

Note

If the postal code is specified as alphanumeric characters, characters other than those listed below are invalid.

A to Z " # $ % & ' ( ) * + , - . / 0 to 9 :

However, lowercase letters (a to z) are converted to the valid uppercase letters (A to Z).

(4) \\\: End of barcode

There must be three backslashes to end 2D barcodes.

ESC i F Print downloaded data

ASCII:	ESC	i	F	P	n
Decimal:	27	105	70	80	n
Hexadecimal:	1B	69	46	50	n

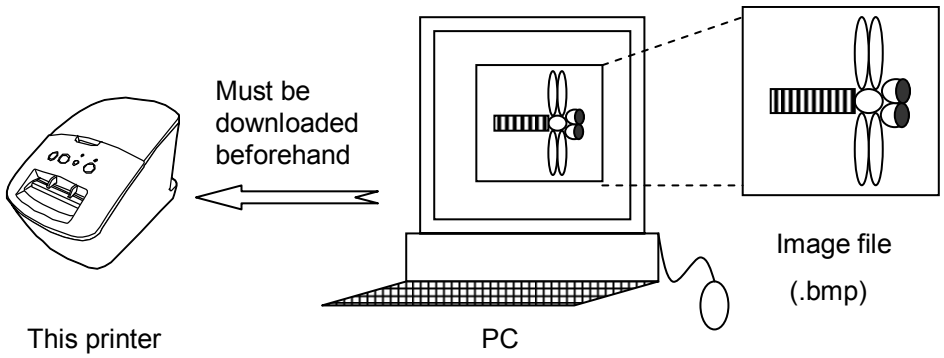
Parameters

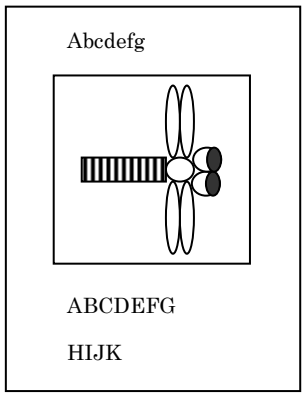
n: file header index

0≤n≤98

Description

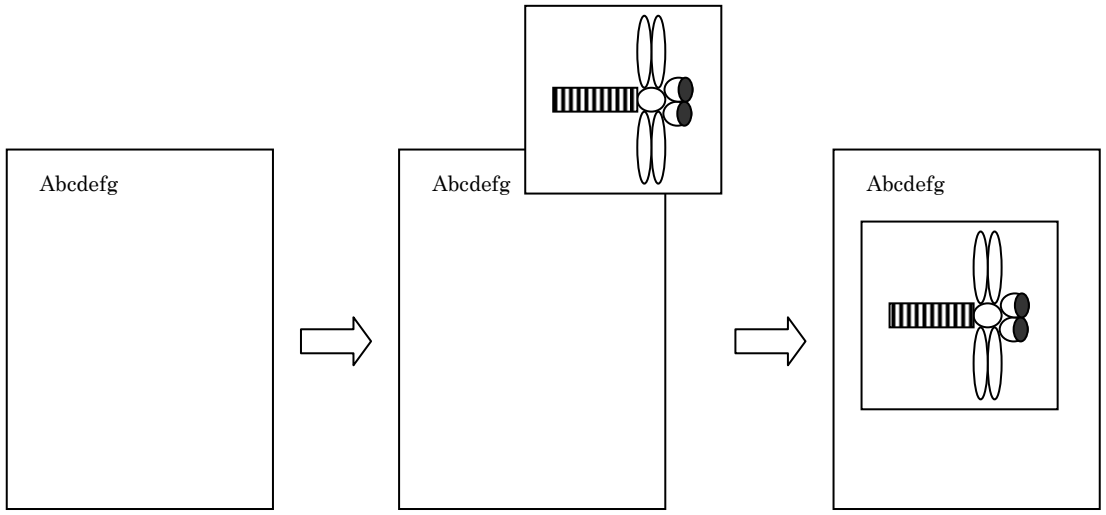
- Expands downloaded data in the print buffer as image data.
- Expands downloaded image data from the print position.
- If there is no image data, this command is ignored.





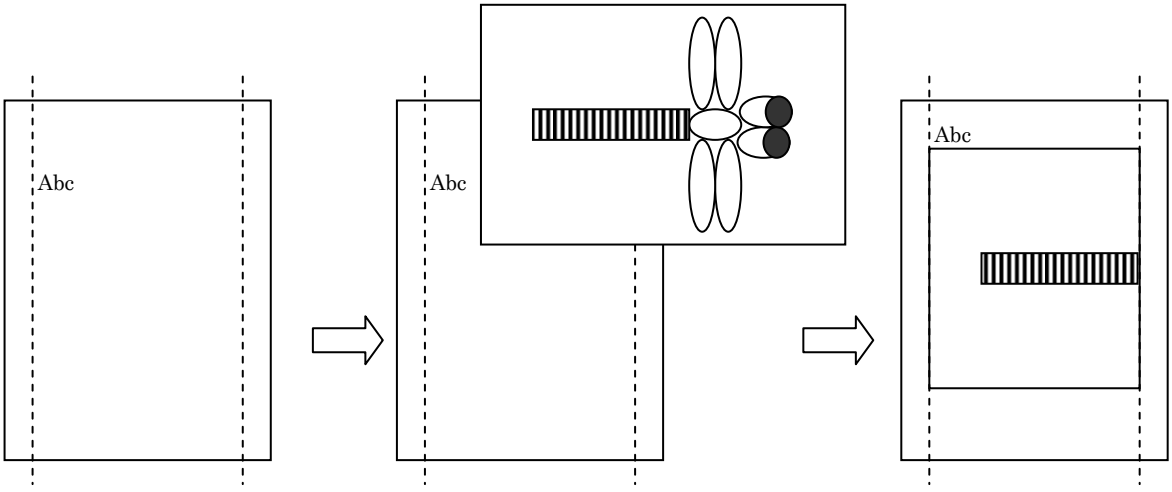
Example: Combination of text and downloaded image

- As with text, if the image data does not all fit on the current line, an automatic line feed is performed, and the data is placed at the beginning of the next line. At that time, the any data that does not fit in the print area is deleted.



1. The text is entered.
2. The downloaded image is entered.
3. Since the image does not fit, it is pasted in after an automatic line feed.

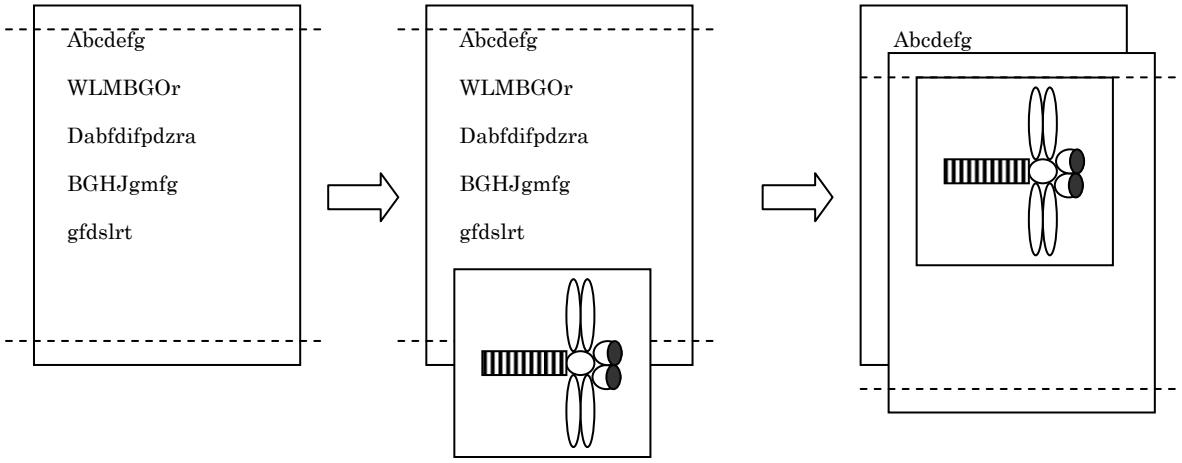
Example: Normal size



1. The text is entered.
2. The downloaded image is entered.
3. Since the image does not fit, it is pasted in after an automatic line feed and trimmed to fit between the left and right margins.

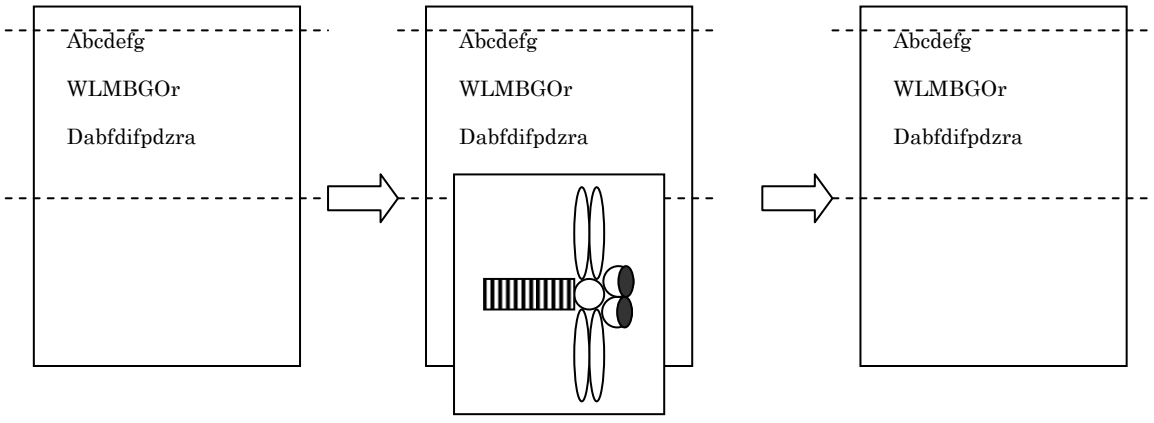
Example: Image larger than the distance between left and right margins

- If the result of pasting in the downloaded image extends beyond the bottom margin position, the image is pasted in after a page feed. However, if the downloaded image is larger than the entire area between the top and bottom margins, the entire image is ignored.



1. The text is entered.
2. The downloaded image is entered.
3. Since the image does not fit, it is pasted in after an automatic page feed.

Example: Image smaller than the distance between the top and bottom margins



1. The text is entered.
2. The downloaded image is entered.
3. The entire image is ignored.

Example: Image larger than the distance between top and bottom margins

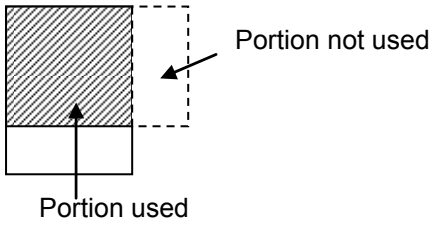
- There are limits on the amount of image data that can be stored in the printer. The size of the storage area is 6,144 KB. However, bitmap data is not stored as is, but is converted into the printer storage format by Transfer Manager.
- Image data larger than the media size is handled by deleting the portion of the image that does not fit within the size of the media.
  The portion of image data deleted depends on the media orientation.

Examples

- Portrait (Media: Die-cut shipping label)

Size of Downloaded Image	Print Size
1109 (height)×696 (width)	1109 (height)×696 (width) (Not deleted)
696 (height)×1109 (width)	696 (height)×696 (width) (Part deleted)

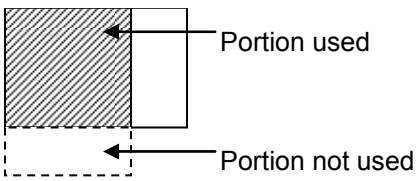
With a downloaded image saved at 696 (height) by 1109 (width)



- Landscape (Media: Die-cut shipping label)

Size of Downloaded Image	Print Size
696 (height)×1109 (width)	1109 (height)×696 (width) (Not deleted)
1109 (height)×696 (width)	696 (height)×696 (width) (Part deleted)

With a downloaded image saved at 1109 (height) by 696 (width)



ESC i a Switch command mode

ASCII:	ESC	i	a	n
Decimal:	27	105	97	n
Hexadecimal:	1B	69	61	n

Parameters

n: Command mode

0 or 48: ESC/P standard mode

1 or 49: Raster graphics mode

3 or 51: P-touch Template mode

Description

- Switches the command mode to ESC/P, P-touch Template or PTCBP (raster graphics) mode.
- Dynamically switches between the three modes.
- Since this is a dynamic command, after the printer is turned off and on again, the setting returns to the previously setting.

ESC i S Status information request

ASCII:	ESC	i	S
Decimal:	27	105	83
Hexadecimal:	1B	69	53

Parameters

None

Description

- Sends a requests for the printer status.

  The printer status consists of 32 bytes.

Order	Offset	Size	Name	Value/Standard
1	0	1	Print head mark	Fixed at 80h
2	1	1	Size	Fixed at 20h
3	2	1	Brother code	Fixed at “B” (42h)
4	3	1	Series code	Fixed at “4” (34h)
5	4	1	Model code	Fixed at “7” (37h)
6	5	1	Country code	Fixed at “0” (30h)
7	6	1	Printer information	Fixed at 00h
8	7	1	Reserved	Fixed at 00h
9	8	1	Error information 1	Refer to table (1) below.
10	9	1	Error information 2	Refer to table (2) below.
11	10	1	Media width	Refer to “3.1 Print area” on page 10.
12	11	1	Media type	Refer to table (3) below.
13	12	1	Number of colors	Fixed at 00h
14	13	1	Media length (higher order bytes)	Refer to “3.1 Print area” on page 10.
15	14	1	Media sensor value	Refer to “3.1 Print area” on page 10.
16	15	1	Mode	Fixed at 00h
17	16	1	Density	Fixed at 00h
18	17	1	Media length (lower order bytes)	Refer to “3.1 Print area” on page 10.
19	18	1	Status type	Refer to table (4) below.
20	19	1	Phase type	Fixed at 00h
21	20	1	Phase number (higher order bytes)	Fixed at 00h
22	21	1	Phase number (lower order bytes)	Fixed at 00h
23	22	1	Notification number	Not used
24	23	1	Expansion area (number of bytes)	Fixed at 00h
25	24	8	Reserved	Fixed at 00h

(1) Error information 1

Flag	Mask	Meaning
Bit 0	01h	“No media” error
Bit 1	02h	“End of media” error
Bit 2	04h	“Cutter jam” error
Bit 3	08h	Not used
Bit 4	10h	Printer in use
Bit 5	20h	Printer turned off
Bit 6	40h	Not used
Bit 7	80h	Fan motor error

(2) Error information 2

Flag	Mask	Meaning
Bit 0	01h	“Replace media” error
Bit 1	02h	“Expansion buffer full” error
Bit 2	04h	Communication error
Bit 3	08h	Image error occurred
Bit 4	10h	“Cover open” error
Bit 5	20h	Not used
Bit 6	40h	Leading edge detection error
Bit 7	80h	System error

(3) Media type

Media Type	Value	Remarks
None	00h	No media
Continuous length tape	0Ah	
Die-cut label	0Bh	

(4) Status type

Status Type	Value	Remarks
Reply to status request	00h	
(Not used)	01h	
Error occurred	02h	
(Not used)	03h - FFh	

ESC i L Specify landscape orientation

ASCII:	ESC	i	L	n
Decimal:	27	105	76	n
Hexadecimal:	1B	69	4C	n

Parameters

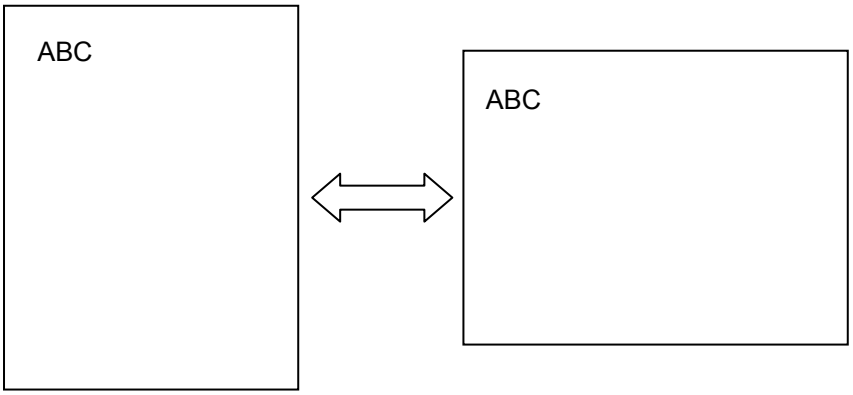
n=0, 1 or 48, 49

Description

- Applies or cancels the landscape orientation

  n=1 or 49 (“1”): Applies the landscape orientation.

  n=0 or 48 (“0”): Cancels the landscape orientation.
- Using this command clears all text.
- Before entering text, specify the paper orientation with this command.
- When the printer is turned on, the landscape orientation is canceled.



ESC i C Specify cutting

ASCII:	ESC	i	C	n
Decimal:	27	105	67	n
Hexadecimal:	1B	69	43	n

Parameters

n=0, 1 or 48, 49

Description

- Specifies cutting after printing.

  n=1 or 49 (“1”): Specifies cutting.

  n=0 or 48 (“0”): Cancels cutting.
- The default auto cut setting can be changed with the P-touch Template Settings Tool (P-touch Template Settings.exe).
- The number of auto cut copies can be specified with the P-touch Template Settings Tool (P-touch Template Settings.exe).
- Manufacturer’s default auto cut setting: ON (auto cut)

  Manufacturer’s default auto cut copies: 1

5.10 Advanced static commands

ESC iXQ2 Select default character style

ASCII:	ESC	i	X	Q	2	n1	n2	n3
Decimal:	27	105	88	81	50	n1	n2	n3
Hexadecimal:	1B	69	58	51	32	n1	n2	n3

Parameters

n1: 01h (Fixed)

n2: 00h (Fixed)

00h≤n3≤04h

Description

- Selects the default character style.

  n3=00h: None (normal characters) (*Manufacturer's default)

  n3=01h: Bold

  n3=02h: Outline

  n3=03h: Shadow

  n3=04h: Shadow and outline

- This command is a static command.

Remarks

- Invalid if n3 is a value other than 00h through 04h

ESC iXQ1 Retrieve default character style

ASCII:	ESC	i	X	Q	1	n1	n2
Decimal:	27	105	88	81	49	n1	n2
Hexadecimal:	1B	69	58	51	31	n1	n2

Parameters

n1: 00h (Fixed)

n2: 00h (Fixed)

Description

- The default character style setting is returned as 3-byte data.

[1]	01h (Fixed)
[2]	00h (Fixed)
[3]	Setting 00h: None (normal characters) 01h: Bold 02h: Outline 03h: Shadow 04h: Shadow and outline

- The retrieved value is a value specified by a static command.

ESC iXk2 Select default font

ASCII:	ESC	i	X	k	2	n1	n2	n3
Decimal:	27	105	88	107	50	n1	n2	n3
Hexadecimal:	1B	69	58	6B	32	n1	n2	n3

Parameters

n1: 01h (Fixed)

n2: 00h (Fixed)

00h≤n3≤04h, 09h≤n3≤0Bh

Description

- Selects the default font.

  n3=00h: Brougham (bitmap) (Manufacturer's default)

  n3=01h: Letter Gothic Bold (bitmap)

  n3=02h: Brussels (bitmap)

  n3=03h: Helsinki (bitmap)

  n3=04h: San Diego (bitmap)

  n3=09h: Letter Gothic (outline)

  n3=0Ah: Brussels (outline)

  n3=0Bh: Helsinki (outline)

- This command is a static command.

Remarks

- Invalid if n3 is a value outside of the allowable range

ESC iXk1 Retrieve default font

ASCII:	ESC	i	X	k	1	n1	n2
Decimal:	27	105	88	107	49	n1	n2
Hexadecimal:	1B	69	58	6B	31	n1	n2

Parameters

n1: 00h (Fixed)

n2: 00h (Fixed)

Description

- The default font setting is returned as 3-byte data.

[1]	01h (Fixed)
[2]	00h (Fixed)
[3]	Setting 00h: Brougham (bitmap) (Manufacturer's default) 01h: Letter Gothic Bold (bitmap) 02h: Brussels (bitmap) 03h: Helsinki (bitmap) 04h: San Diego (bitmap) 09h: Letter Gothic (outline) 0Ah: Brussels (outline) 0Bh: Helsinki (outline)

- The retrieved value is a value specified by a static command.

ESC iXX2 Specify default character size

ASCII:	ESC	i	X	X	2	n1	n2	n3	n4
Decimal:	27	105	88	88	50	n1	n2	n3	n4
Hexadecimal:	1B	69	58	58	32	n1	n2	n3	n4

Parameters

n1: 02h (Fixed)

n2: 00h (Fixed)

00h≤n3≤FFh, 00h≤n4≤01h

Description

- Specifies the default character size.

  n3+(n4*256): Default character size (dots)
- The following settings (dots) are valid.

  24, 32, 33, 38, 42, 46, 48, 50, 58, 67, 75, 83, 92, 100, 117, 133, 150, 167, 200, 233, 267, 300, 333, 367, 400

  The manufacturer's default is 32.
- This command is a static command.

Remarks

- Invalid if the setting is a value outside of the allowable range

ESC iXX1 Retrieve default character size

ASCII:	ESC	i	X	X	1	n1	n2
Decimal:	27	105	88	88	49	n1	n2
Hexadecimal:	1B	69	58	58	31	n1	n2

Parameters

n1: 00h (Fixed)

n2: 00h (Fixed)

Description

- The default character size setting is returned as 4-byte data.

[1]	02h (Fixed)
[2]	00h (Fixed)
[3, 4]	n3 n4 settings n3+(n4*256): Default character size (dots)

- The retrieved value is a value specified by a static command.

ESC iX32 Specify default line feed

ASCII:	ESC	i	X	3	2	n1	n2	n3	n4
Decimal:	27	105	88	51	50	n1	n2	n3	n4
Hexadecimal:	1B	69	58	33	32	n1	n2	n3	n4

Parameters

n1: 02h (Fixed)

n2: 00h (Fixed)

00h≤n3≤FFh, 00h≤n4≤04h

Description

- Specifies the default line feed.

  n3+(n4*256): Default line feed (dots) (0 through 1275)

  *The manufacturer's default is 48.

- This command is a static command.

Remarks

- Invalid if the setting is a value outside of the allowable range

ESC iX31 Retrieve default line feed

ASCII:	ESC	i	X	3	1	n1	n2	
Decimal:	27	105	88	51	49	n1	n2	
Hexadecimal:	1B	69	58	33	31	n1	n2	

Parameters

n1: 00h (Fixed)

n2: 00h (Fixed)

Description

- The default line feed setting is returned as 4-byte data.

[1]	02h (Fixed)
[2]	00h (Fixed)
[3, 4]	n3 n4 settings n3+(n4*256): Default line feed (dots)

- The retrieved value is a value specified by a static command.

ESC iXA2 Select default alignment

ASCII:	ESC	i	X	A	2	n1	n2	n3
Decimal:	27	105	88	65	50	n1	n2	n3
Hexadecimal:	1B	69	58	41	32	n1	n2	n3

Parameters

n1: 01h (Fixed)

n2: 00h (Fixed)

00h≤n3≤02h

Description

- Selects the default alignment.

  n3=00h: Left alignment (Manufacturer's default)

  n3=01h: Center alignment

  n3=02h: Right alignment

- This command is a static command.

Remarks

- Invalid if n3 is a value outside of the allowable range
- If the print media is continuous length tape, the printing orientation is landscape and the page length is not specified, commands specifying the alignment are ignored.

ESC iXA1 Retrieve default alignment

ASCII:	ESC	i	X	A	1	n1	n2
Decimal:	27	105	88	65	49	n1	n2
Hexadecimal:	1B	69	58	41	31	n1	n2

Parameters

n1: 00h (Fixed)

n2: 00h (Fixed)

Description

- The default alignment setting is returned as 3-byte data.

[1]	01h (Fixed)
[2]	00h (Fixed)
[3]	Setting 00h: Left alignment 01h: Center alignment 02h: Right alignment

- The retrieved value is a value specified by a static command.

ESC iX(2 Specify default page length

ASCII:	ESC	i	X	(	2	n1	n2	n3	n4
Decimal:	27	105	88	40	50	n1	n2	n3	n4
Hexadecimal:	1B	69	58	28	32	n1	n2	n3	n4

Parameters

n1: 02h (Fixed)

n2: 00h (Fixed)

00h≤n3≤FFh, 00h≤n4≤2Eh

Description

- Specifies the default page length.

  n3+(n4*256): Default page length (dots) (0, 229 through 11999)

  *A default page length of 0 indicates the Auto setting.

  *The manufacturer's default is 0.
- This command is a static command.

Remarks

- Invalid if the setting is a value outside of the allowable range

ESC iX(1 Retrieve default page length

ASCII:	ESC	i	X	(	1	n1	n2
Decimal:	27	105	88	40	49	n1	n2
Hexadecimal:	1B	69	58	28	31	n1	n2

Parameters

n1: 00h (Fixed)

n2: 00h (Fixed)

Description

- The default page length setting is returned as 4-byte data.

[1]	02h (Fixed)
[2]	00h (Fixed)
[3, 4]	n3 n4 settings n3+(n4*256): Default page length (dots) *A default page length of 0 indicates the Auto setting.

- The retrieved value is a value specified by a static command.

ESC iXL2 Select default landscape orientation

ASCII:	ESC	i	X	L	2	n1	n2	n3
Decimal:	27	105	88	76	50	n1	n2	n3
Hexadecimal:	1B	69	58	4C	32	n1	n2	n3

Parameters

n1: 01h (Fixed)

n2: 00h (Fixed)

00h≤n3≤01h

Description

- Selects the default landscape orientation setting.

  n3=00h: Cancel landscape orientation (*Manufacturer's default)

  n3=01h: Apply landscape orientation

- This command is a static command.

Remarks

- Invalid if n3 is a value outside of the allowable range

ESC iXL1 Retrieve default landscape orientation

ASCII:	ESC	i	X	L	1	n1	n2
Decimal:	27	105	88	76	49	n1	n2
Hexadecimal:	1B	69	58	4C	31	n1	n2

Parameters

n1: 00h (Fixed)

n2: 00h (Fixed)

Description

- The default landscape orientation setting is returned as 3-byte data.

[1]	01h (Fixed)
[2]	00h (Fixed)
[3]	Setting 00h: Cancel landscape orientation 01h: Apply landscape orientation

- The retrieved value is a value specified by a static command.

ESC iXj2 Select default international character set

ASCII:	ESC	i	X	j	2	n1	n2	n3
Decimal:	27	105	88	106	50	n1	n2	n3
Hexadecimal:	1B	69	58	6A	32	n1	n2	n3

Parameters

n1: 01h (Fixed)

n2: 00h (Fixed)

00h≤n3≤0Dh, 40h

Description

- Selects the default international character set.

  n3=00h: U.S.A. (*Manufacturer's default)

  n3=01h: France

  n3=02h: Germany

  n3=03h: U.K.

  n3=04h: Denmark I

  n3=05h: Sweden

  n3=06h: Italy

  n3=07h: Spain I

  n3=08h: Japan

  n3=09h: Norway

  n3=0Ah: Denmark II

  n3=0Bh: Spain II

  n3=0Ch: Latin America

  n3=0Dh: South Korea

  n3=40h: Legal

- This command is a static command.

Remarks

- Invalid if n3 is a value outside of the allowable range

ESC iXj1 Retrieve default international character set

ASCII:	ESC	i	X	j	1	n1	n2
Decimal:	27	105	88	106	49	n1	n2
Hexadecimal:	1B	69	58	6A	31	n1	n2

Parameters

n1: 00h (Fixed)

n2: 00h (Fixed)

Description

- The default international character set setting is returned as 3-byte data.

[1]	01h (Fixed)
[2]	00h (Fixed)
[3]	Setting 00h: U.S.A. 01h: France 02h: Germany 03h: U.K. 04h: Denmark I 05h: Sweden 06h: Italy 07h: Spain I 08h: Japan 09h: Norway 0Ah: Denmark II 0Bh: Spain II 0Ch: Latin America 0Dh: South Korea 40h: Legal

- The retrieved value is a value specified by a static command.

ESC iXm2 Select default character code set

ASCII:	ESC	i	X	m	2	n1	n2	n3
Decimal:	27	105	88	109	50	n1	n2	n3
Hexadecimal:	1B	69	58	6D	32	n1	n2	n3

Parameters

n1: 01h (Fixed)

n2: 00h (Fixed)

n3: 00h, 01h, 02h

Description

- Selects the default character code set.

  n3=00h: Standard character code set

  n3=01h: Eastern European character code set

  n3=02h: Western European character code set (Manufacturer's default)

- This command is a static command.

Remarks

- Invalid if n3 is a value outside of the allowable range

ESC iXm1 Retrieve default character code set

ASCII:	ESC	i	X	m	1	n1	n2
Decimal:	27	105	88	109	49	n1	n2
Hexadecimal:	1B	69	58	6D	31	n1	n2

Parameters

n1: 00h (Fixed)

n2: 00h (Fixed)

Description

- The default character code set setting is returned as 3-byte data.

[1]	01h (Fixed)
[2]	00h (Fixed)
[3]	Setting 00h: Standard character code set 01h: Eastern European character code set 02h: Western European character code set

- The retrieved value is a value specified by a static command.

ESC iXU2 Specify default minimum margin

ASCII:	ESC	i	X	U	2	n1	n2	n3
Decimal:	27	105	88	85	50	n1	n2	n3
Hexadecimal:	1B	69	58	55	32	n1	n2	n3

Parameters

n1: 01h (Fixed)

n2: 00h (Fixed)

02h≤n3≤03h

Description

- Selects the default minimum margin amount.

  nh3=02h: Specifies a minimum margin of 2 mm.

  nh3=03h: Specifies a minimum margin of 3 mm. (Manufacturer's default)

- This command is a static command.

Remarks

- Invalid if n3 is a value outside of the allowable range

ESC iXU1 Retrieve default minimum margin

ASCII:	ESC	i	X	U	1	n1	n2
Decimal:	27	105	88	85	49	n1	n2
Hexadecimal:	1B	69	58	55	31	n1	n2

Parameters

n1: 00h (Fixed)

n2: 00h (Fixed)

Description

- The default minimum margin setting is returned as 3-byte data.

[1]	01h (Fixed)
[2]	00h (Fixed)
[3]	Setting value 02h: 2mm 03h: 3mm

- The retrieved value is a value specified by a static command.

Appendix A: Character Code Tables

Character code tables

(1) Windows1252 (Western Europe)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			SP	0	@	P	`	p	€			°	À	Đ	à	ð
1			!	1	A	Q	a	q	~	‘	¡	±	Á	Ñ	á	ñ
2			”	2	B	R	b	r	,	’	¢	²	Â	Ò	â	ò
3			#	3	C	S	c	s	*ƒ*	“	£	³	Ã	Ó	ã	ó
4			$	4	D	T	d	t	„	”	¤	´	Ä	Ô	ä	ô
5			%	5	E	U	e	u	…	•	¥	µ	Å	Õ	å	õ
6			&	6	F	V	f	v	†	-	|	¶	Æ	Ö	æ	ö
7			’	7	G	W	g	w	‡	—	§	·	Ç	×	ç	÷
8			(	8	H	X	h	x	ˆ	˜	¨	¸	È	Ø	è	ø
9			)	9	I	Y	i	y	‰	™	©	¹	É	Ù	é	ù
A			*	:	J	Z	j	z	Š	š	ª	º	Ê	Ú	ê	ú
B			+	;	K	[	k	{	<	>	«	»	Ë	Û	ë	û
C			,	<	L	\	l	¦	Œ	œ	¬	¼	Ì	Ü	ì	ü
D			-	=	M	]	m	}			-	½	Í	Ý	í	ý
E			.	>	N	^	n	~	Ž	ž	®	¾	Î	Þ	î	þ
F			/	?	O	_	o	DEL		Ÿ	¯	¿	Ï	ß	ï	ÿ

Note

" ■ " indicates that a space is printed.

" ■ " indicates that the character will switch when the international character set is changed.

(2) Windows1250 (Eastern Europe)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			SP	0	@	P	`	p	€	t˘		°	Ŕ	Đ	ŕ	đ
1			!	1	A	Q	a	q	À	‘	ˇ	±	Á	Ń	á	ń
2			"	2	B	R	b	r	¸	’	˘	˛	Â	Ň	â	ň
3			#	3	C	S	c	s	ˇ L	“	Ł	ł	Ă	Ó	ă	ó
4			$	4	D	T	d	t	„	”	¤	´	Ä	Ô	ä	ô
5			%	5	E	U	e	u	…	•	Ą	µ	Ĺ	Ő	Í	ő
6			&	6	F	V	f	v	†	–	|	¶	Ć	Ö	ć	ö
7			’	7	G	W	g	w	‡	—	§	·	Ç	×	ç	÷
8			(	8	H	X	h	x	Ǐ		¨	¸	Č	Ř	č	ř
9			)	9	I	Y	i	y	‰	™	©	ą	É	Ů	é	ů
A			*	:	J	Z	j	z	Š	š	Ş	ş	Ę	Ú	ę	ú
B			+	;	K	[	k	{	<	>	«	»	Ë	Ű	ë	ű
C			,	<	L	\	l	¦	Ś	ś	¬	Ľ	Ě	Ü	ě	ü
D			–	=	M	]	m	}	Ť	ť	–	˝	Í	Ý	í	ý
E			.	>	N	^	n	~	Ž	ž	®	ľ	Î	Ţ	î	ţ
F			/	?	O	_	o	DEL	Ź	ź	Ż	ż	Ď	ß	ď	˙

Note

" ■ " indicates that a space is printed.

" ■ " indicates that the character will switch when the international character set is changed.

(3) Brother standard

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			SP	0	@	P	`	p	Ç	É	á	▒	└		α	
1			!	1	A	Q	a	q	ü	æ	í	▒	┴		β	±
2			”	2	B	R	b	r	é	Æ	ó	▓	┬			
3			#	3	C	S	c	s	â	ô	ú	│	├			¾
4			$	4	D	T	d	t	ä	ö	ñ	┤	─			
5			%	5	E	U	e	u	à	ò	Ñ		┼			§
6			&	6	F	V	f	v	å	û	ª				µ	÷
7			’	7	G	W	g	w	ç	ù	º					
8			(	8	H	X	h	x	ê	ÿ	¿	©	╚			°
9			)	9	I	Y	i	y	ë	Ö	®	╣	╔	┘		·
A			*	:	J	Z	j	z	è	Ü	€	║	╩	┌	Ω	
B			+	;	K	[	k	{	ï	¢	½	╗	╦	✓	δ	
C			,	<	L	\	l	¦	î	£	¼	╝	╠	☑		³
D			-	=	M	]	m	}	ì	¥	¡	TEL	═		ø	²
E			.	>	N	^	n	~	Ä	Pts	«	FAX	╬			
F			/	?	O	_	o	DEL	Å	ƒ	»	┐		☐		

Note

" ■ " indicates that a space is printed.

" ■ " indicates that the character will switch when the international character set is changed.

International character set table

Corresponding characters that switch in each language when the international character set is changed

n		23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
0	United States (U.S.A)	#	$	@	[	\	]	^	`	{	¦	}	~
1	France	#	$	à	°	ç	§	^	`	é	ù	è	¨
2	Germany	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
3	Britain (U.K.)	£	$	@	[	\	]	^	`	{	¦	}	~
4	Denmark I	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
5	Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
6	Italy	#	$	@	°	\	é	^	ù	à	ò	è	ì
7	Spain I	Pt	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
8	Japan	#	$	@	[	¥	]	^	`	{	¦	}	~
9	Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
10	Denmark II	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
11	Spain II	#	$	á	¡	Ñ	¿	é	`	í	ñ	ó	ú
12	Latin America	#	$	á	¡	Ñ	¿	é	ü	í	ñ	ó	ú
13	South Korea	#	$	@	[	₩	]	^	`	{	¦	}	~
64	Legal	#	$	§	°	´	"	¶	`	©	®	†	TM

Appendix B: Introducing the Brother Developer Center

Useful information for developers, such as applications, tools, SDKs as well as FAQs, are provided in the Brother Developer Center.

http://www.brother.com/product/dev/index.htm