Software Developer's Manual

ESC/P Command Reference

RJ-4030/4040

Version 1.01

brother

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Introduction

This material provides the necessary information for directly controlling RJ-4030/4040.

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.

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

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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 0) *ESC/P standard mode
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 l, 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 1–6 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 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.

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(5) Bit images, barcodes, and 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)
      An image data has to be transferred and registered to the printer first.

2. Examples of Using ESC/P Commands

Set Basic setup first.

Basic setup

> **1) Register a media to be used.**
>
> **2) Specify ESC/P command mode.**

Basic set up 1: Register a media to be used
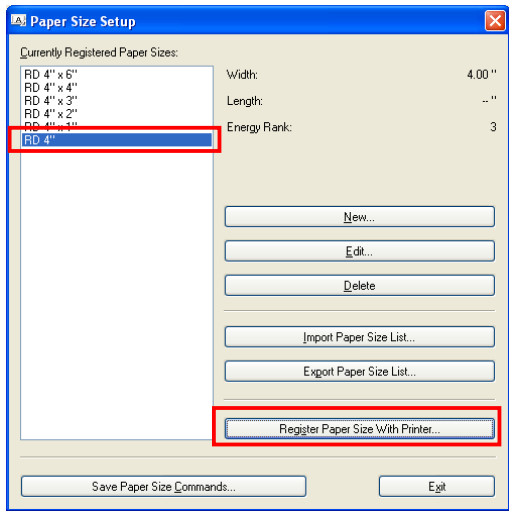
Register a media with the Custom Label tool.

Note: The media size to be used is also able to be output and saved as a command file with the Custom Labe Tool.

Basic set up 2: Specify ESC/P command mode

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.

Entered Command

ESC i a 00h

2. Examples of Using ESC/P Commands

This is the label that will be made.

Step 2:

Page length

4 inches

Step 1:

Landscape

1.8 inches

Step 4:

Vertical position

1 inch

At your side

Step 3:

Horizontal position

Step 5:

Font type: Helsinki

(proportional pitch)

Step 6:

Character size: 100 dots
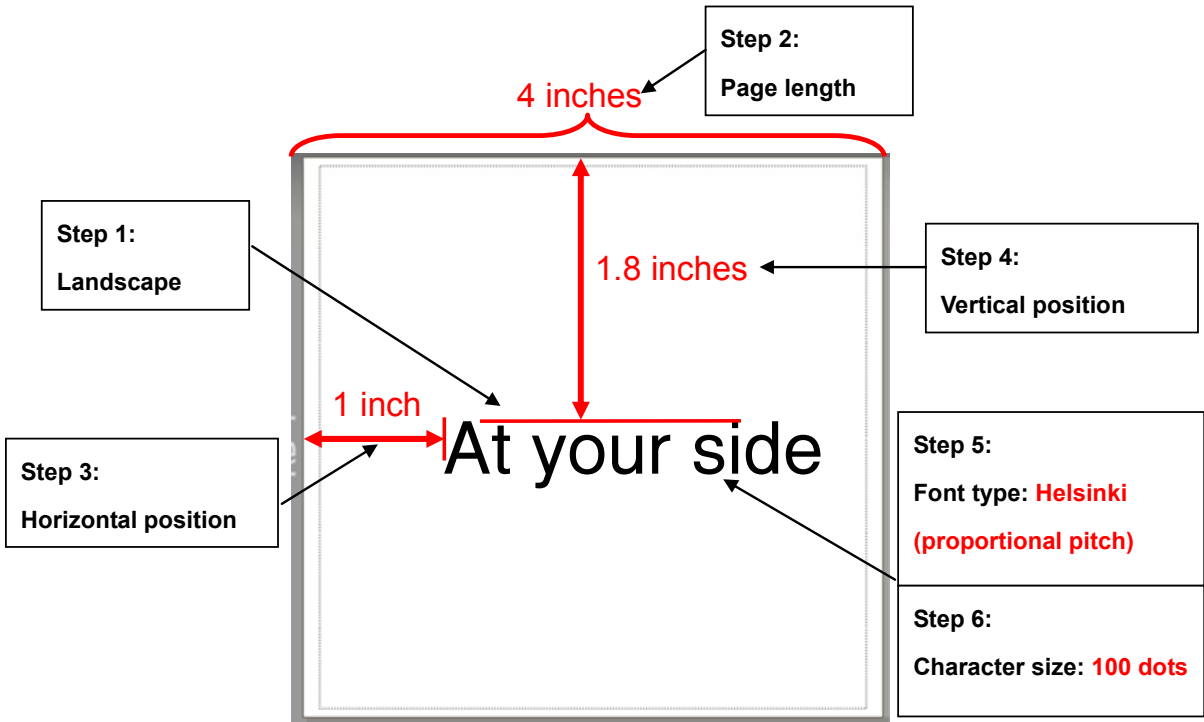
In order to make this label, the following six steps are required.

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   nL

    ESC i L 01h

2. Examples of Using ESC/P Commands

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

$0 \leq (mL+mH*256) < 8192$

Description

- Specifies the page length.
  * A page length 0 indicates the Auto setting.
- The unit is 1/203 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.

4 inches (box label: **At your side**)

4 inches=812 dots

812 dots–48 dots=764 dots

*The page length does not include the margins.

For the margins, subtract 6 mm (48 dots) from the page length.

Page length=mL+mH*256=764

```
          ‖      ‖
         252     2
          ‖      ‖
         FCh    02h
```

Entered command nL nH mL mH

ESC (C 02h 00h FCh 02h
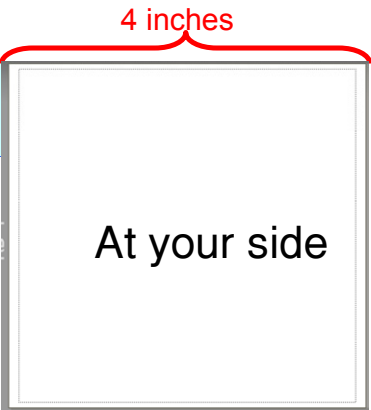
Step 3: Specify the horizontal position.

ESC $ Specify absolute horizontal position

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

Parameters

$0 \leq n1 \leq 255, 0 \leq n2 \leq 255$

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 1/203 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.

1 inch (box label: **At your side**)

1 inch=203 dots

Horizontal position=n1+n2*256=203

```
          ‖     ‖
         203    0
          ‖     ‖
         CBh   00h
```

Entered command nL nH

ESC $ CBh 00h

2. Examples of Using ESC/P Commands
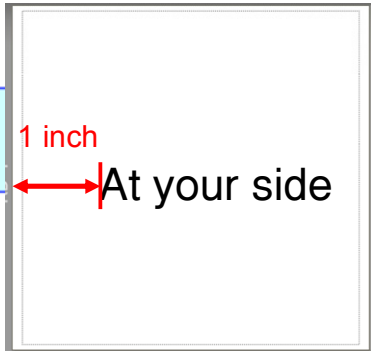
Step 4: Specify the vertical position.

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

1.8 inches

At your side

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.

1.8 inch=365 dots

Vertical position=n1+n2*256=365

     ‖   ‖

    109   **1**

     ‖   ‖

   6Dh 01h

Entered command   nL   nH   mL   mH

ESC (V 02h 00h 6Dh 01h
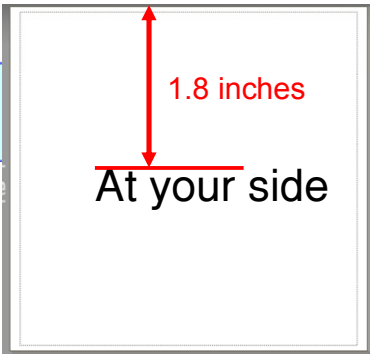
Step 5: Select the font type.

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.

At your side

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

Font type: Helsinki (proportional pitch)

● The default value is n=1 (Letter Gothic Bold (fixed pitch)).

● If the font is changed from a bitmap font to outline font, the character size is changed to the default setting (28dots).

● If the font is changed from an outline font to bitmap font, the character size is changed to default setting (24 dots).

● Propotional pitched Helsinki is forced to be selected when a character assigned from 0x80 to 0xFF in the Japanese character code table is used.

n=11=0Bh

Entered command   n

ESC k L 0Bh

2. Examples of Using ESC/P Commands

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=16, 24, 32 dots nH=0	\<Outline fonts\> The maximum is: nL=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=16, 24 and 32 are valid.
- With outline fonts, n=400 is the maximum.
- The commands for specifying stretched characters, compressed characters and the character spacing (SO, ESC W, ESC I, ESC SP) remain available.

At your side

Character size: 100 dots

Character size=n1+n2*256=100 dots

```
           ‖     ‖
          100    0
           ‖     ‖
          64h   00h
```

Entered command	m	nL	nH
ESC X	00h	64h	00h

2. Examples of Using ESC/P Commands

All commands together will make the example label shown below.

ESC i a 00h	**Select ESC/P mode** **Binary command: 1B 69 61 00**
ESC @	**Initialize ESC/P mode** **Binary command: 1B 40**
ESC i L 01h ESC (C 02h 00h FCh 02h ESC $ CBh 00h ESC (V 02h 00h 6Dh 01h ESC k 0bh ESC X 00h 64h 00h	**6 steps explained above**
At your side	**Text to be print** **Binary command: 41 74 20 79 6F 75** **72 20 73 69 64 65**
FF	**Print start command** **Binary command: 0C**
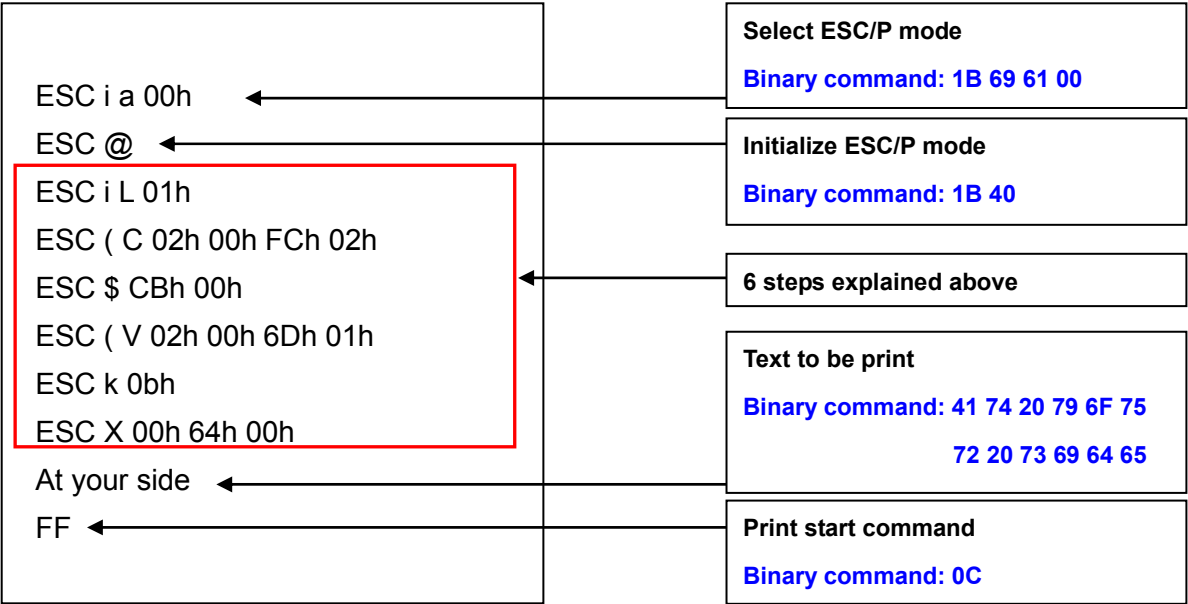
However, these commands should be converted to binary data before sent to the printer, as shown below.

Here is the captured converted binary data.

```
1B 69 61 00 1B 40 1B 69 4C 01 1B 28 43 02 00 FC
02 1B 24 CB 00 1B 28 56 02 00 6D 01 1B 6B 0B 1B
58 00 64 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.

At your side

2. Examples of Using ESC/P Commands
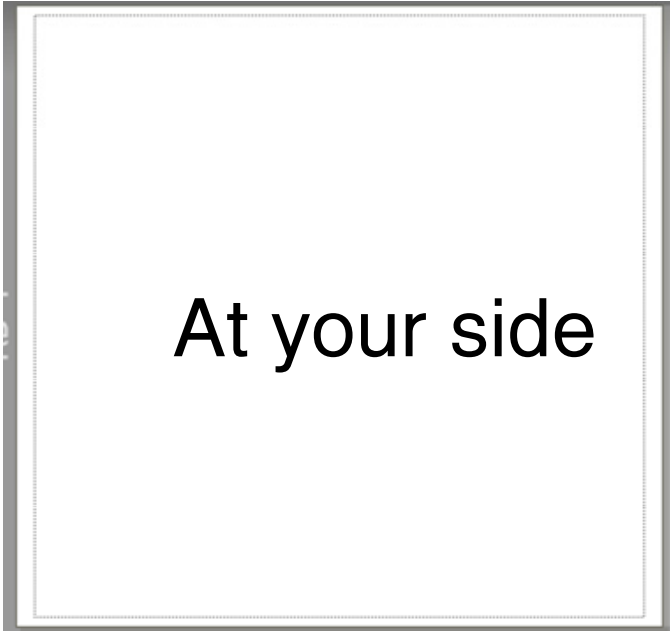
3. ESC/P Command Limitations

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
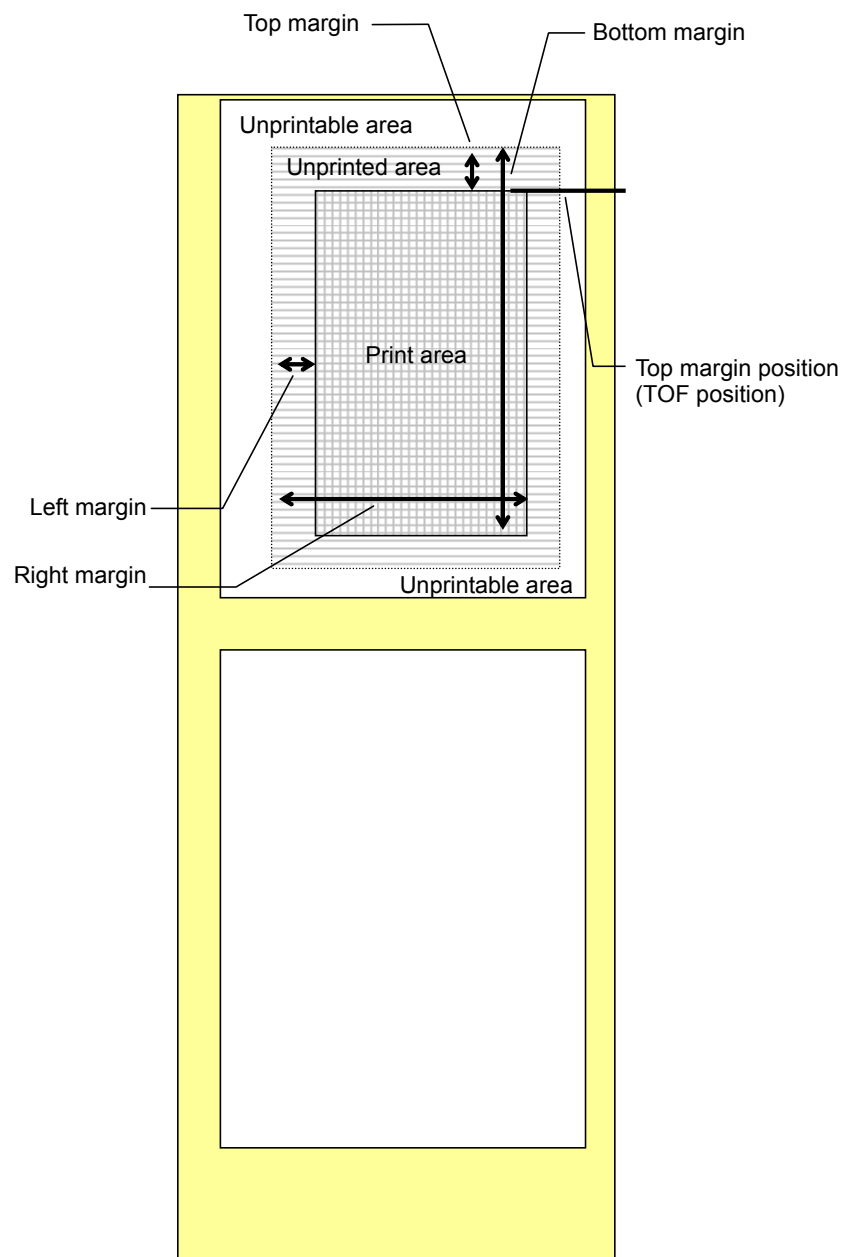
The print area for each media is described below.

Print area
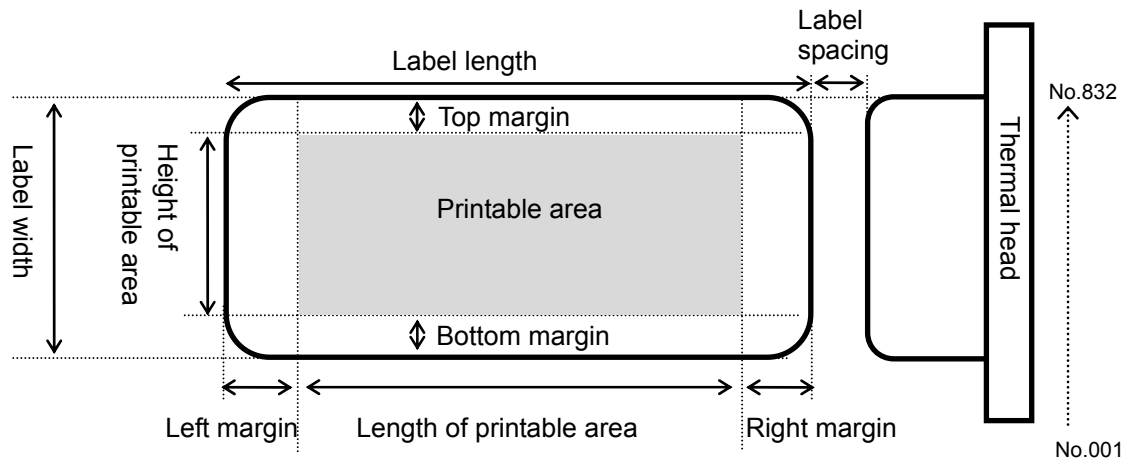
* To specify media settings, use the Custom Label Tool.

3. ESC/P Command Limitations

3.2 Characters

This system uses single-byte character codes and is installed with two bitmap fonts (Letter Gothic Bold and Helsinki) and 2 outline fonts (Letter Gothic 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: Letter Gothic and Letter Gothic Bold.

The font that is better with a proportional pitch is: Helsinki.

Each bitmap font has three sizes: 16 dots, 24 dots, and 32 dots.

3.1.1 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.

| Full size | Half width | Double width | Double height and half width | Double height | Quadruple size |
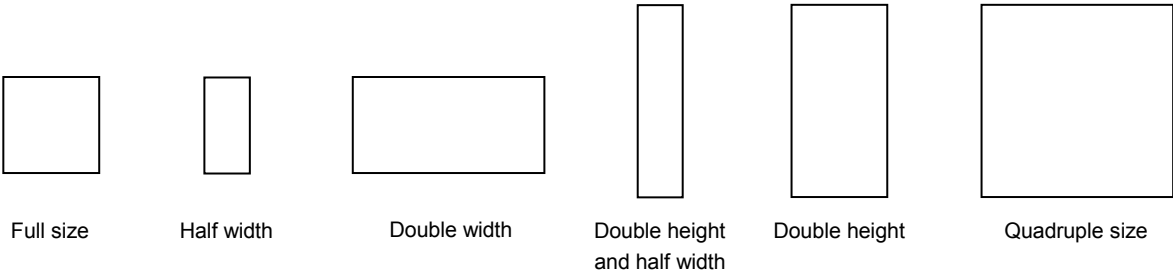
The actual character size is slightly smaller than the nominal size (the parameter value received with the size command). This varies depending on the font.

Nominal (dots)	16	24	32
Height (dots)	15	21	28
Width (dots)	8	10	14

The above example is for Letter Gothic Bold (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.

3.1.2 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
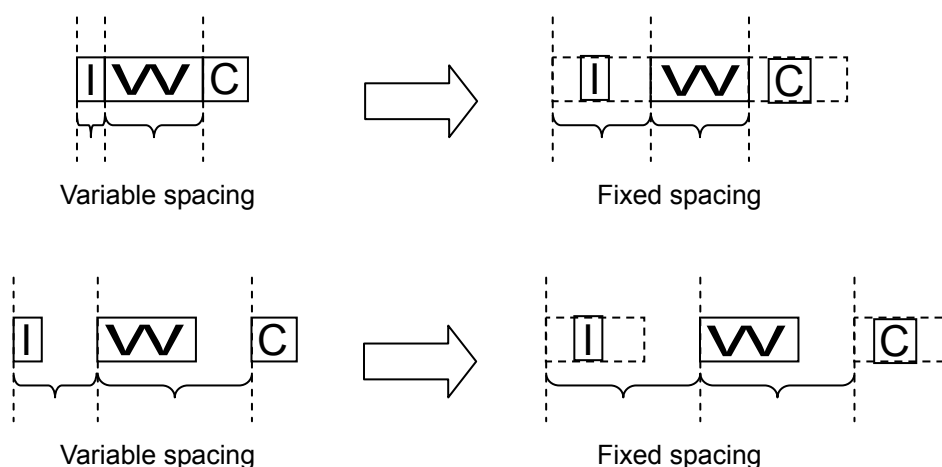
This makes it possible to evenly space the characters of a proportional-pitch font without having to change the font.

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. ESC/P Command Limitations

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.
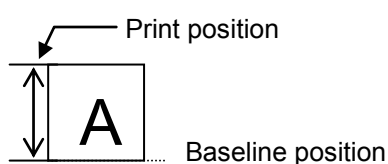
All characters on a single line are printed with a baseline positions that is the same for each character.

If a single line consists of characters with different heights, the characters are aligned with the baseline of the tallest character on the line.
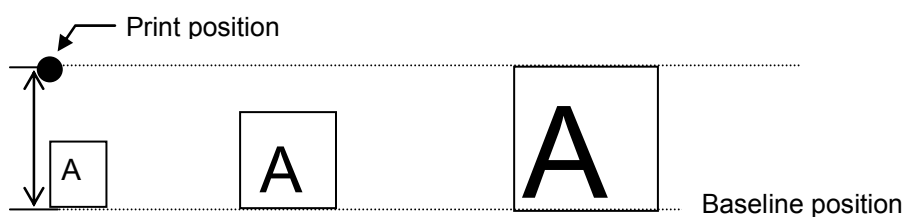
Underlines are drawn 4 dots below the baseline position.

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. ESC/P Command Limitations

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
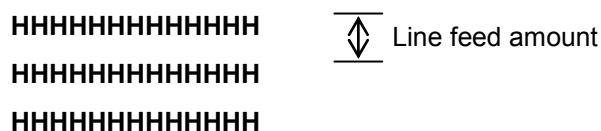
$\updownarrow$ Line feed amount

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.

3. ESC/P Command Limitations

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 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

4. Control Code List

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 G	1B 69 47	Specify font setting
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

4. Control Code List

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 iXd2	1B 69 58 64 32	Specify recovery setting
ESC iXd1	1B 69 58 64 31	Retrieve recovery setting

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

4. Control Code List

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 02h 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	Reserved	n=9	Letter Gothic (fixed pitch)
n=1	Letter Gothic Bold (fixed pitch)	n=10	Reserved
n=2	Reserved	n=11	Helsinki (proportional pitch)
n=3	Helsinki (proportional pitch)		
n=4	Reserved		

● The default value is n=1 (Letter Gothic Bold (fixed pitch)).

● If the font is changed from a bitmap font to outline font, the character size is changed to the default setting (28dots).

● If the font is changed from an outline font to bitmap font, the character size is changed to default setting (24 dots).

● Propotional pitched Helsinki is forced to be selected when a character assigned from 0x80 to 0xFF in the Japanese character code table is used.

5. Control Command Details

ESC t   Select character code set

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

Parameters

    0≤n≤4

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

    n=4: Japanese character code set

The default setting is n=0.

5. Control Command Details

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

5. Control Command Details

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

5. Control Command Details

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 20 dots (=203 dots/10 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 pica 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.

Setting (dots)		Full Width			Double Width			Half Width		
		16	24	32	16	24	32	16	24	32
Width (dots)	Letter Gothic Bold	8	10	14	16	20	28	4	5	7
	Helsinki	16	21	28	30	42	56	8	11	14

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

Example

For a 15-dot font at full width:

Full width   Double width

　　　15 dots   30 dots

　　　　A   B   A   B

　　　　5 dots   10 dots
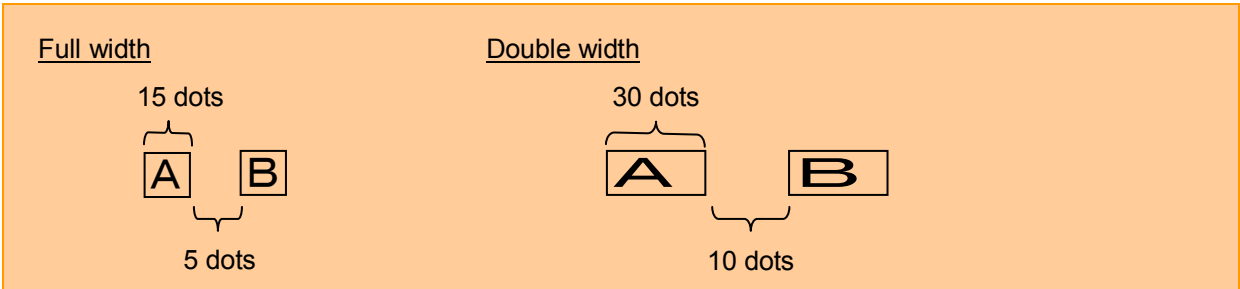
ESC M   Apply elite pitch (12 cpi)

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 16 dots (=203 dots/12 characters).

● If the character width is 16 dots or less, the character spacing is specified as 16 minus the character width.

● If the character width exceeds 16 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 (32 dots).

● With half-width characters, the character spacing is halved (8 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 15-dot font at full width:

5. Control Command Details
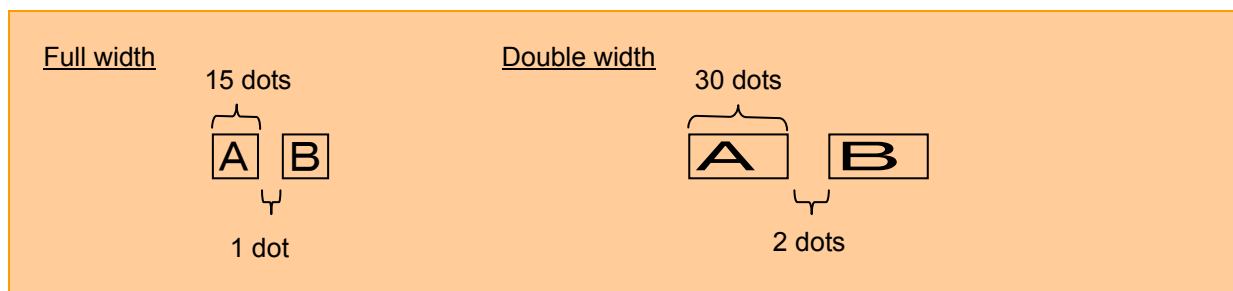
ESC p   Specify proportional characters

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 or FS 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:	ABC𝐀𝐁𝐂ABC

5. Control Command Details

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, CR, LF, VT, FF, ESC J, or an automatic line feed.
- This command is canceled with ESC $, ESC \, ESC (V or ESC (v.
- This command can also be canceled with ESC W0.

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:	ABCABCDEFGHIJK... (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.

DC 4   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**ABCDEF**GHIJK

5. Control Command Details

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.

● 4/203 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	Between 2/203 inch (2 dots) and 3/203 inch (3 dots) below the characters
2 dots wide	Between 1/203 inch (1 dot) and 3/203 inch (3 dots) below the characters
3 dots wide	Between 1/203 inch (1 dot) and 3/203 inch (3 dots) below the characters
4 dots wide	Between 1/203 inch (1 dot) and 4/203 inch (4 dots) 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**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.

5. Control Command Details

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=16, 24, 32 dots nH=0	<Outline fonts> The maximum is: nL=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.
- With bitmap fonts, only n=16, 24 and 32 are valid.
- With outline fonts, n=400 is the maximum.
- The commands for specifying stretched characters, compressed characters and the character spacing (SO, ESC W, ESC !, ESC SP) remain available.

Example

For "ABC" at a 24-dot size and "DEF" at a 48-dot size:

Code:	ESC k 01h
	ESC X 00h 18h 00h ABC
	ESC k 09h
	ESC X 00h 30h 00h DEF FF
Print result:	ABC DEF

5. Control Command Details

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 25/203 inch (=25 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 33/203 inch (=33 dots).

5. Control Command Details

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/203 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 3-dot units.

5. Control Command Details

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, full-width character spacing or half-width character spacing. In addition, when a pitch of 10 cpi (=20 dots) or 12 cpi (=16 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
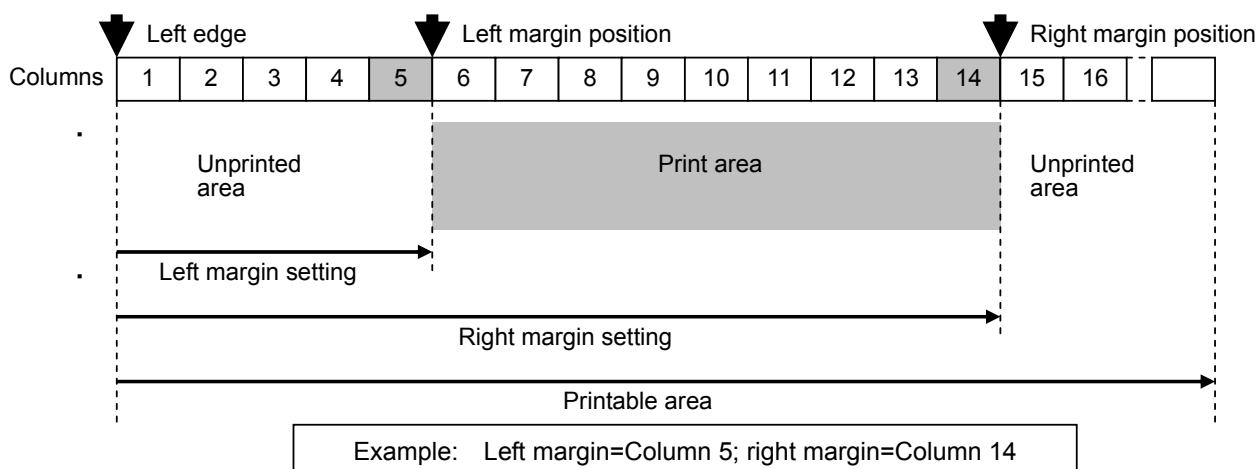
- The horizontal print position is moved to the left margin position.
- If the left margin setting is not at the beginning of the line, the left margin is specified after a line feed. The beginning of the line indicates the left margin position for left alignment; for right and center alignment, it means 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=20 dots) less than the right margin. (If the character width (when the command was specified)*n is greater than the right margin-20 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 (=20 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.

Example

To specify the left margin at Column 3:

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

5. Control Command Details

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 0≤(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, full-width character spacing or half-width character spacing. In addition, when a pitch of 10 cpi (=20 dots) or 12 cpi (=16 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=20 dots) greater than the left margin.

  (If the character width (when the command was specified)*n is less than the left margin+20 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 (=20 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.

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

5. Control Command Details

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, full-width character spacing or half-width character spacing. In addition, when a pitch of 10 cpi, or 12 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.
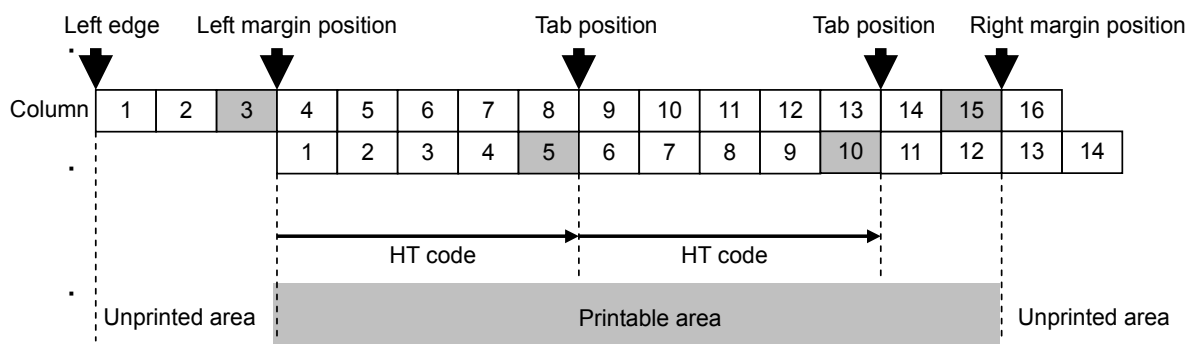
Example:
After the left margin is specified as Column 3 and the right margin as Column 15, horizontal tabs were specified at Column 5 and Column 10, and HT were performed.

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 1/203 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 1/203 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 32 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.

5. Control Command Details

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/203 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
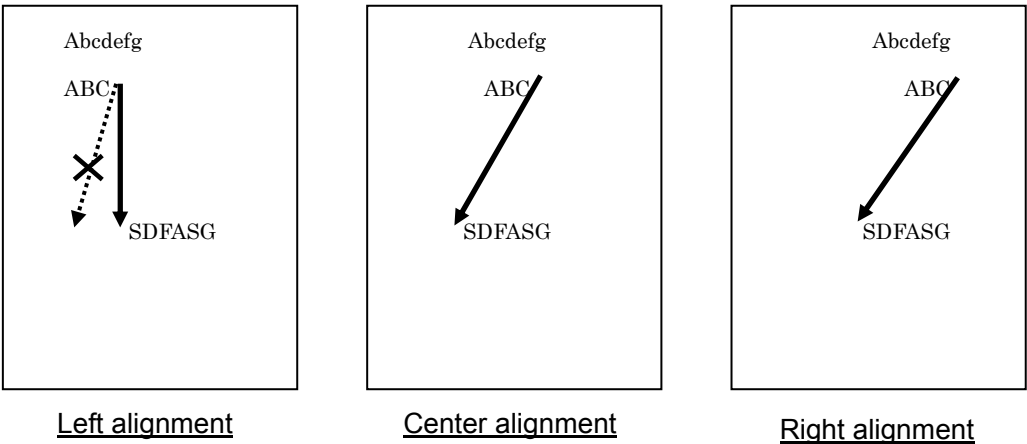
Example: Performing a forward paper feed after the second line

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

  $1 \leq n \leq 255$

  $0 \leq k \leq 16$

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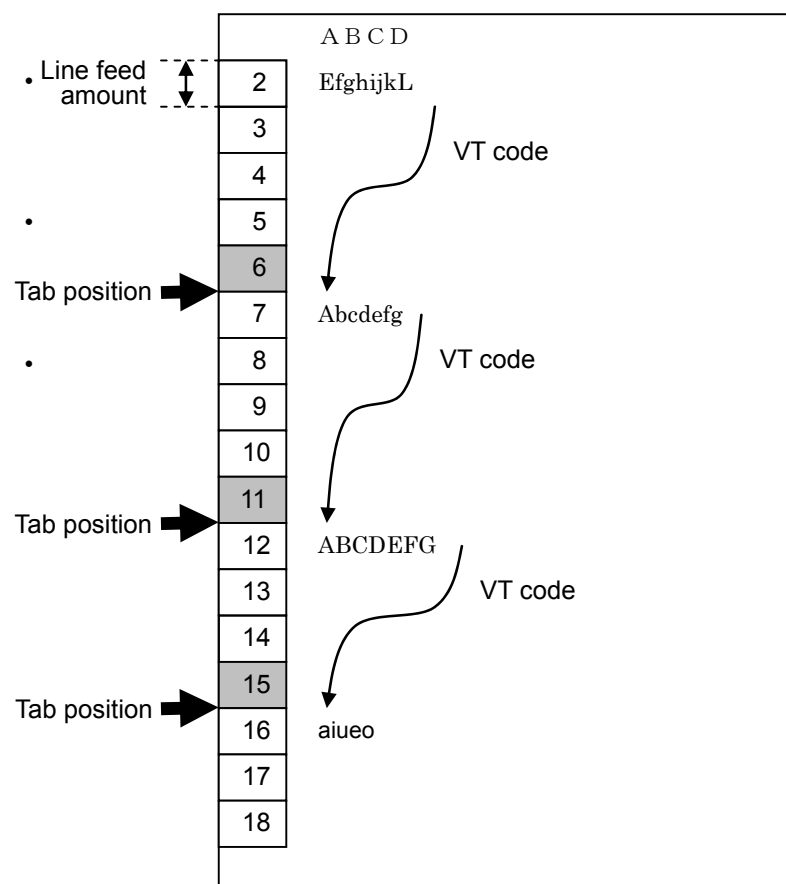
Example: Vertical tabs are specified at Lines 6, 11, and 15, and data is entered while VT are performed.

- 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.

5. Control Command Details

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

$\quad$ nL=2

$\quad$ nH=0

$\quad$ 0≤mL≤255

$\quad$ 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.

5. Control Command Details

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

    $0 \leq mL \leq 255$

    $0 \leq mH \leq 63$, $192 \leq mH \leq 255$

    $-16384 \leq (mL+mH*256) \leq 16383$

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.
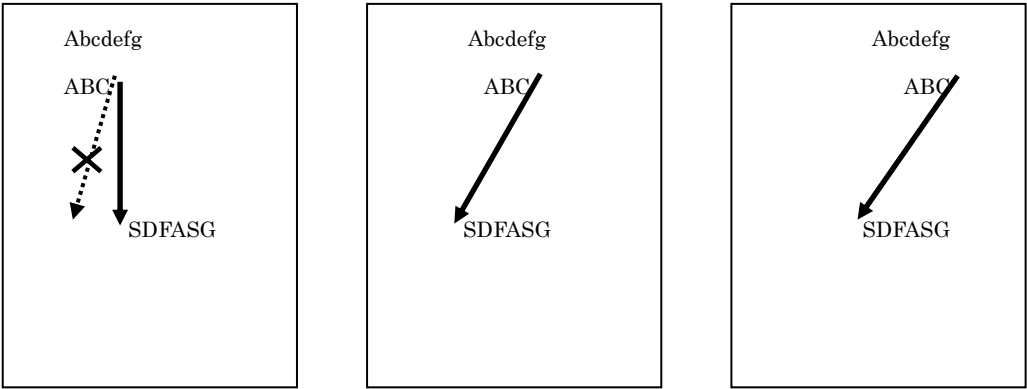
Left alignment   Center alignment   Right alignment

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 1/203 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.

● 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.

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

$0 \leq (mL+mH*256) < 8192$

Description

- Specifies the page length.

    * A page length 0 indicates the Auto setting.

- The unit is 1/203 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	203
2	50.8	406
3	76.2	609
4	101.6	812
5	127.0	1015
6	152.4	1218
7	177.8	1421
8	203.2	1624
9	228.6	1827
10	254.0	2030
11	279.4	2233
12	304.8	2436
13	330.2	2639
14	355.6	2842
15	381.0	3045
16	406.4	3248
17	431.8	3451
18	457.2	3654
19	482.6	3857
20	508.0	4060

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	32 dots
Horizontal tab positions	Horizontal tab every 8 characters (based on a character width of 10 cpi)
Vertical tab positions	None
Character size	21 dots
Character spacing	0 dot
International character set	USA
Character style	Canceled
Compressed	Canceled
Horizontal print position	Top margin position (TOF position)
Vertical print position	Left margin position
Landscape setting	Canceled
Page length setting	Canceled
Cut setting	Auto cut (manufacturer's default)
Font	Brougham

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

    $0 \leq n1 \leq 255$, $0 \leq n2 \leq 11$

    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	4/203 inch	4/203 inch
1	120 dpi	60 dpi	2/203 inch	4/203 inch
2	120 dpi	60 dpi	2/203 inch	4/203 inch
3	240 dpi	60 dpi	1/203 inch	4/203 inch
4	80 dpi	60 dpi	3/203 inch	4/203 inch
6	90 dpi	60 dpi	3/203 inch	4/203 inch
32	60 dpi	180 dpi	4/203 inch	1/203 inch
33	120 dpi	180 dpi	2/203 inch	1/203 inch
38	90 dpi	180 dpi	3/203 inch	1/203 inch
39	180 dpi	180 dpi	1/203 inch	1/203 inch

● Horizontally neighboring dots are not omitted.

Limitations:

A maximum of 63 can be used with this command.

5. Control Command Details

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:

$n1＋n2*256$ bytes
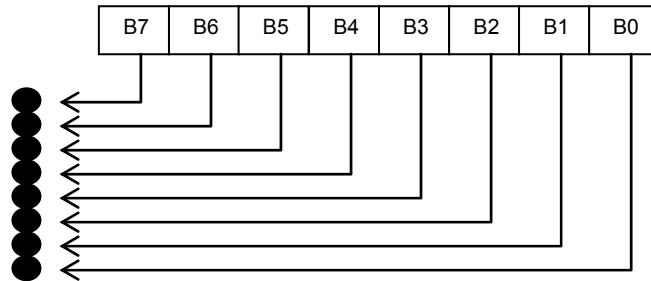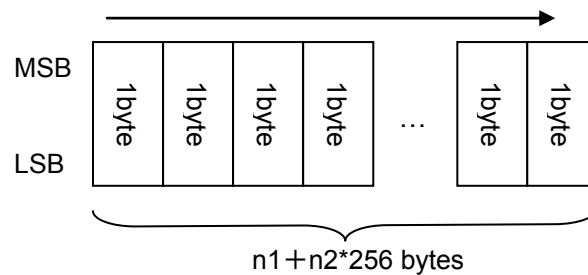
- One dot of the image data is enlarged as follows, according to the value of m.
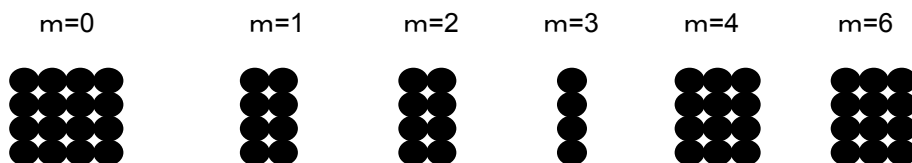
- As a result, the image is sized depending on the value of m, as follows:

    m=0   32 dots vertically×(n1+n2*256)*4 dots horizontally

    m=1   32 dots vertically×(n1+n2*256)*2 dots horizontally

    m=2   32 dots vertically×(n1+n2*256)*2 dots horizontally

    m=3   32 dots vertically×(n1+n2*256)*1 dots horizontally

    m=4   32 dots vertically×(n1+n2*256)*3 dots horizontally

    m=6   32 dots vertically×(n1+n2*256)*3 dots horizontally

5. Control Command Details

When m=32, 33, 38, 39

- 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
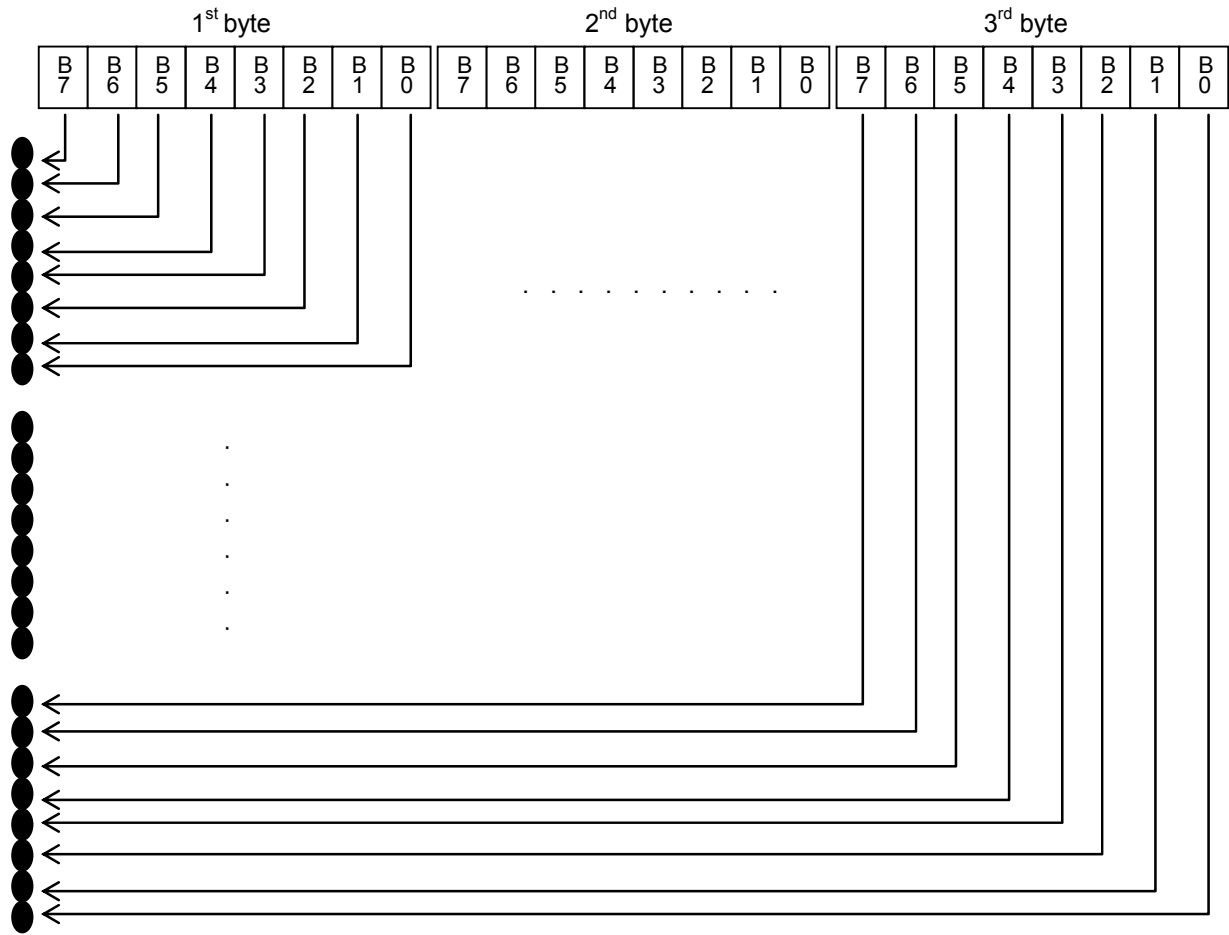
Relationship between the image data and the dots

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

(n1+n2*256)*3 bytes

5. Control Command Details

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

m=32	m=33	m=38	m=39
●●●●	●●	●●●	●
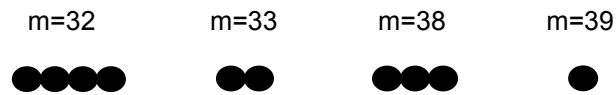
● As a result, the image is sized depending on the value of m, as follows:

m=32	32 dots vertically×(n1+n2*256)*4 dots horizontally
m=33	24 dots vertically×(n1+n2*256)*2 dots horizontally
m=38	24 dots vertically×(n1+n2*256)*3 dots horizontally
m=39	24 dots vertically×(n1+n2*256)*1 dots horizontally

5. Control Command Details

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:

n1+n2*256 bytes
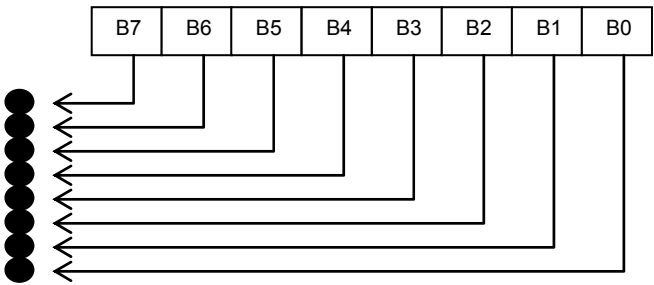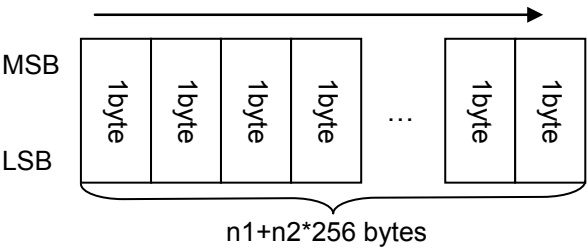
- One dot of image data is enlarged to 4 dots vertically by 4 dots horizontally.
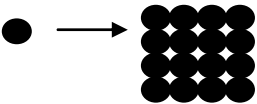
- As a result, the image is 32 dots vertically by (n1+n2*256)*4 dots horizontally.

5. Control Command Details

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

$0 \le n1 \le 255$, $0 \le n2 \le 3$

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:
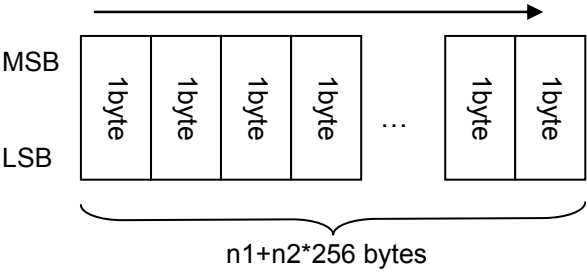
● One dot of image data is enlarged to 4 dots vertically by 2 dots horizontally.
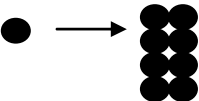
● As a result, the image is 32 dots vertically by (n1+n2 *256)*2 dots horizontally.

5. Control Command Details

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:
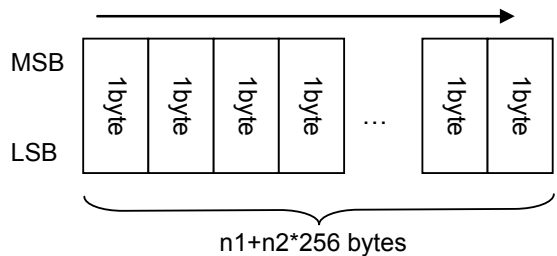
● One dot of image data is enlarged to 4 dots vertically by 1 dot horizontally.
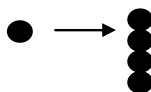
● As a result, the image is 32 dots vertically by (n1+n2*256)*1 dots horizontally.

5. Control Command Details

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]	B or b [Barcode data]	[Backslash]	
		(1)	(2) (3)	(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 EXTENSION
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≤832 (RSS-14 Standard) 71≤height≤832 (RSS-14 Truncated) 71≤height≤832 (RSS-14 Stacked) 239≤height≤832 (RSS-14 Stacked Omni) 62≤height≤832 (RSS Limited) 134≤height≤832 (RSS Expanded) If height<min., height=min. If height>max., height=max.
w (width)	w0: extra small w1: small w2: medium w3: large
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: o. 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.)

5. Control Command Details

Note

* For parameter numerals 0–9, both 00h–09h and 30h–39h 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.)

    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* (for RSS Expanded)
        * ISO646 characters can be printed.
        (numbers, letters, spaces, !, ", %, &, ', (,), *, +, ,, -, ., /, :, ;, <, =, >, ? and _)

    td: 1–64 characters

    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.

5. Control Command Details

(4) [Backslash]:   End of barcode

Barcode Type	Command
POSTNET, UPC/EAN EXTENSION, 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.
- 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

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

Example

For barcode type CODE39, with no characters printed below the barcode, a size of large (width) × 480 dots (height), without parentheses, a ratio between thick and thin bars of 3:1, and bar lengths not equalized, the command will be as shown below.

```
ESC i t0 r0 w3 h E0h 01h e0 z0 f1 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			Specifies the dot size per cell side.
	[1-byte decimal]	1	Prints 1 dot per cell side.
	[1-byte decimal]	2	Prints 2 dots per cell side.
	[1-byte decimal]	3	**Prints 3 dots per cell side. (default value)**
	[1-byte decimal]	4	Prints 4 dots per cell side.
	[1-byte decimal]	5	Prints 5 dots per cell side.
	[1-byte decimal]	6	Prints 6 dots per cell side.
	[1-byte decimal]	8	Prints 8 dots per cell side.
	[1-byte decimal]	10	Prints 10 dots per cell side.
2. Symbol type	[1-byte decimal]	1	Model 1
	[1-byte decimal]	2	**Model 2 (default value)**
	[1-byte decimal]	3	Micro QR
3. Structured Append setting	[1-byte decimal]	0	**Not partitioned. (default value)**
	[1-byte decimal]	1	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	High-density level: L 7%
	[1-byte decimal]	2	**Standard level: M 15% (default value)**
	[1-byte decimal]	3	High-reliability level: Q 25%
	[1-byte decimal]	4	Ultra-high-reliability level: H 30% (*2)
8. Data input method	[1-byte decimal]	0	**Auto input (default value)**
	[1-byte decimal]	1	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.

(*3) Some barcode readers cannot recognize a barcode with the cell size specified as 1 dot or 2 dots.

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	-
Alphanumeric character input	A or a	**ESC i Q [other parameters] 1 A012345678aBcDe **
Kanji character input	K or k	**ESC i Q [other parameters] 1 K kanji character input **
Binary character input	B or b+4-digit number	**ESC i Q [other parameters] 1 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.

5. Control Command Details

(3) \\\: End of barcode

There must be three backslashes to end 2D barcode.

Example

Refer to the section "Summary".

ESC i P   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)

5. Control Command Details

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

5. Control Command Details

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

* Some barcode readers cannot recognize a barcode with the cell size specified as 1 dot or 2 dots.

* 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 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.

5. Control Command Details

[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.

5. Control Command Details

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

5. Control Command Details

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		**[ECC200 square]**
	[1-byte decimal] x	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

Some barcode readers cannot recognize a barcode with the cell size specified as 1 dot or 2 dots.

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.

<u>Example</u>

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] \ [Barcode data] \\\
			(1) (2) (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.

5. Control Command Details

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.
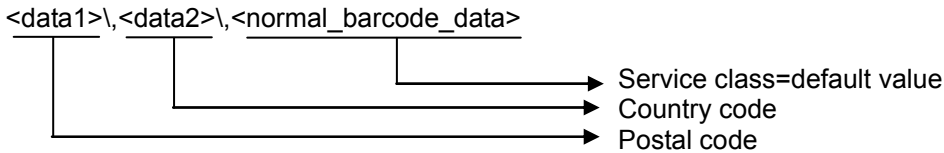
                                                       Service class=default value
                                                       Country code
                                                       Postal code

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.

5. Control Command Details

ESC iG   Specify font

ASCII:	ESC	i	G	n1	n2	data
Decimal:	27	105	71	n1	n2	data
Hexadecimal:	1B	69	47	n1	n2	data

Parameters

    n=0 (Fixed)

    1≤n2≤16

Description

● Specify font

    n2:   Specify the length of character string of specified font name.

    Data: Character string of font name.

Example

For specifing "HelOb.FNT".

ESC i G 00h 09h HelOb.FNT

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: Minus 1 from the key number assigned when transport the data.

    0≤n≤98

Description

● Print a transferred image on a current print position.

● If there is no image data, this command is ignored.

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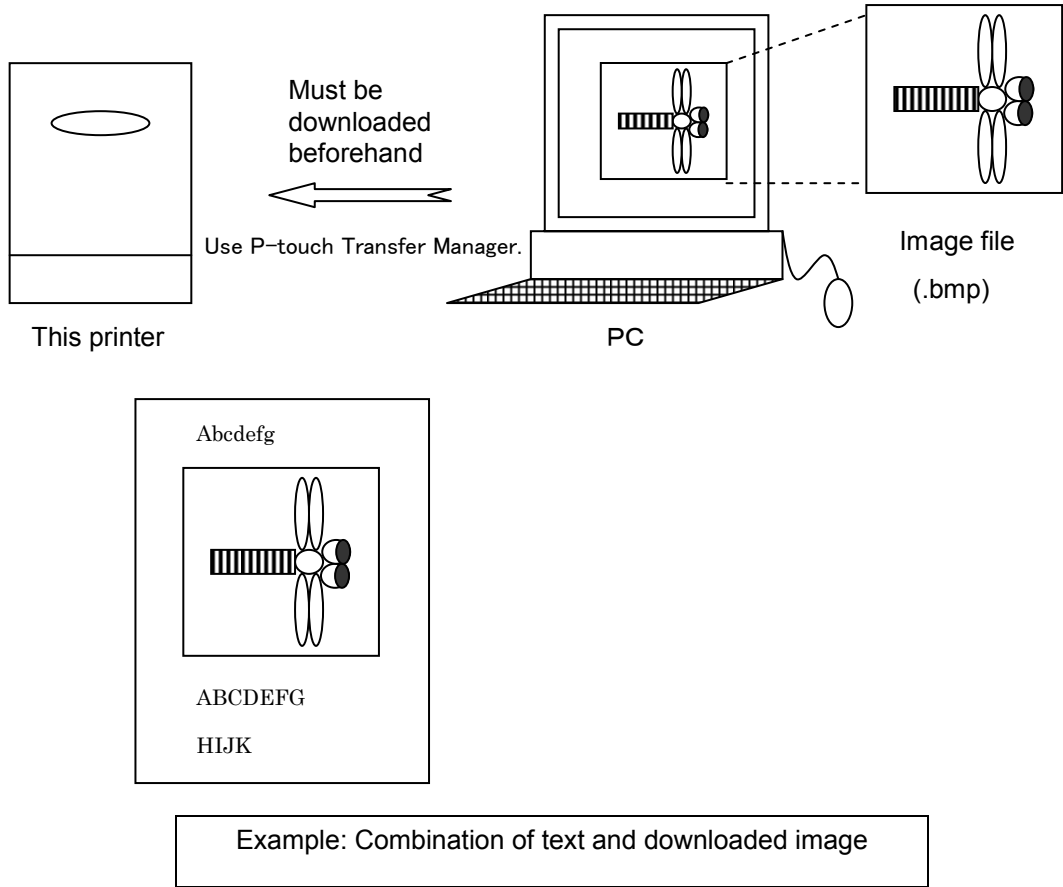
● As with text, if the image data does not all fit on the current line, an automatic line feed is performed, and the data is placed at the beginning of the next line. At that time, the any data that does not fit in the print area is deleted.

Abcdefg

1. The text is entered.

Abcdefg

2. The downloaded image is entered.

Abcdefg

3. Since the image does not fit, it is pasted in after an automatic line feed.

Example: Normal size

Abc

1. The text is entered.

Abc

2. The downloaded image is entered.

Abc

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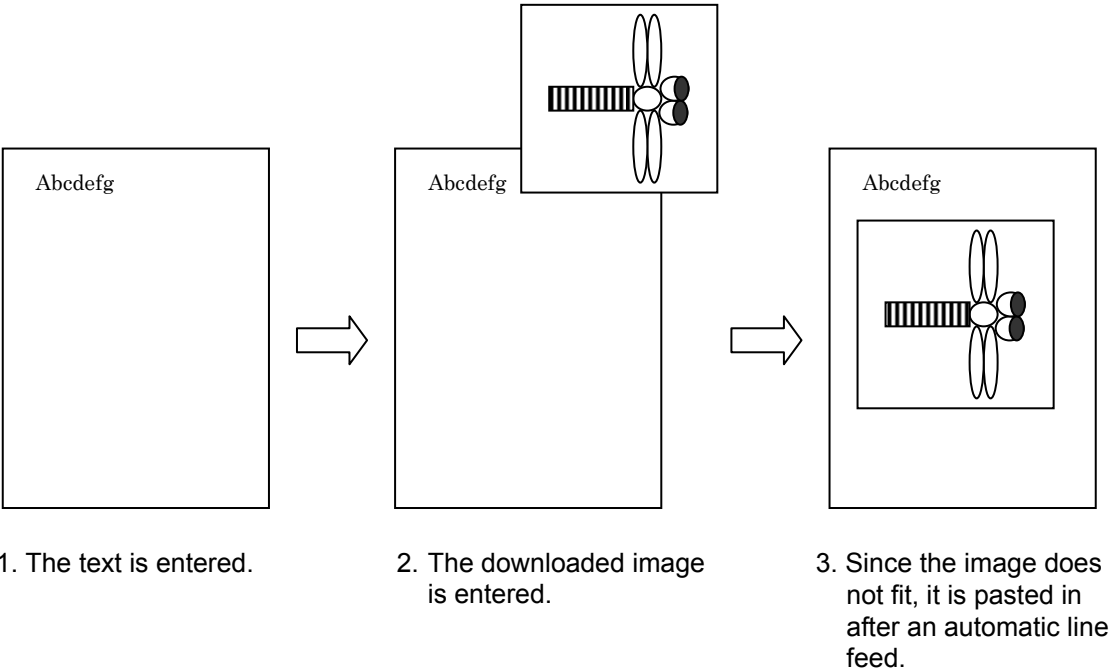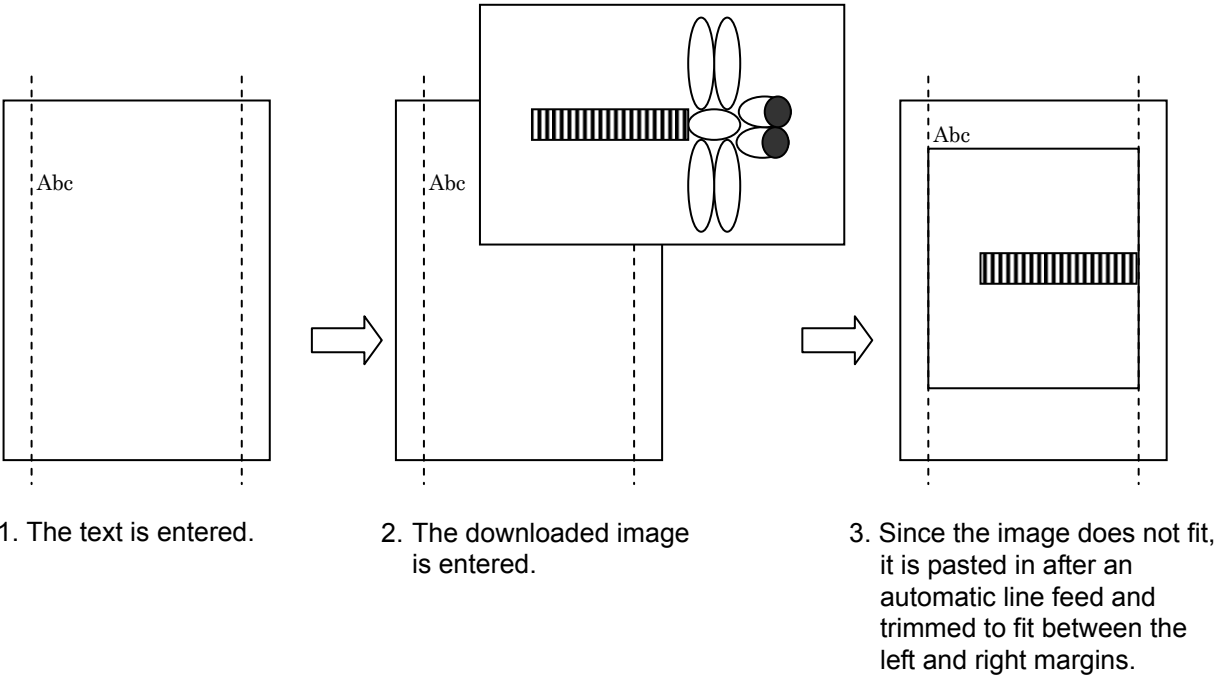
Example: Image larger than the distance between left and right margins

5. Control Command Details

● 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.
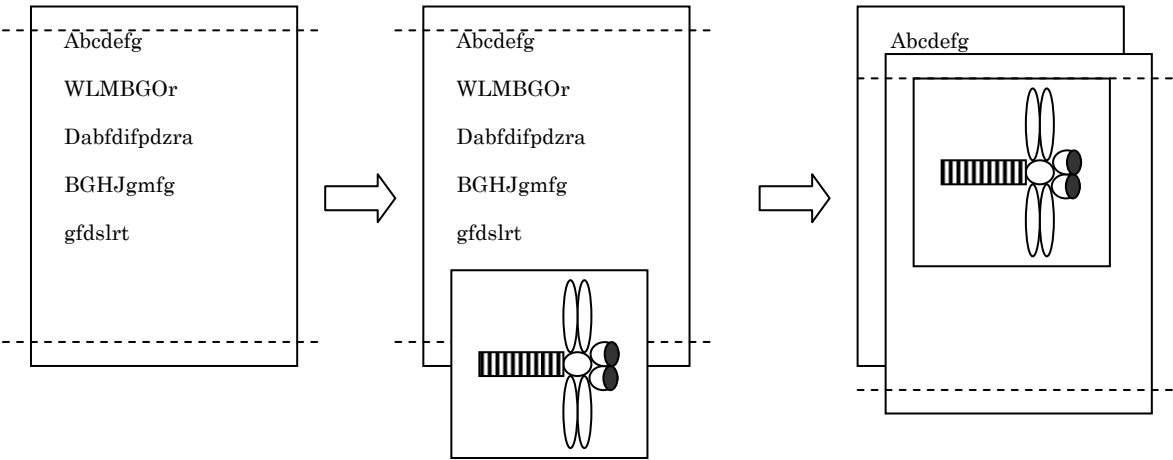
1. The text is entered.

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
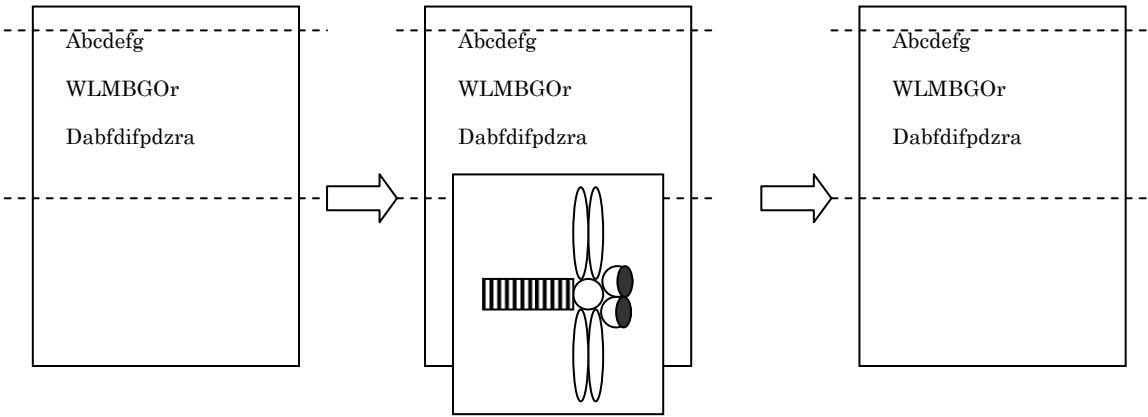
1. The text is entered.

2. The downloaded image is entered.

3. The entire image is ignored.

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

5. Control Command Details

● An image data used by "ESC i F" has to be registered into a printer first. Use P-touch Transfer Manager for transferring the BMP file to a printer for image data registration. A maximum size of memory is 6MB so that the total size of storable data has to be equal to or less than 6MB.

● 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.

5. Control Command Details

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.

5. Control Command Details

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 "7" (37h)
5	4	1	Model code	RJ-4030: Fixed at "1" (31h) RJ-4040: Fixed at "2" (32h)
6	5	1	Country code	Fixed at "0" (30h)
7	6	1	Battery level information	Refer to table (5) below.
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 11.
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 11.
15	14	1	Media sensor value	Refer to "3.1 Print area" on page 11.
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 11.
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

5. Control Command Details

(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	Not used

(2) Error information 2

Flag	Mask	Meaning
Bit 0	01h	Not used
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
Continuous length tape	4Ah	
Die-cut label	4Bh	

(4) Status type

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

(5) Battery level information

Flag	Mask	Meaning
Bit 0	00h	Full battery
Bit 1	01h	Half battery
Bit 2	02h	Low battery
Bit 3	03h	Changing required
Bit 4	04h	AC adapter in use

5. Control Command Details

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.

- The setting specified by "ESC iXL2"(default landscape setting) is valid for the landscape orientation when the printer is turned on.

5. Control Command Details
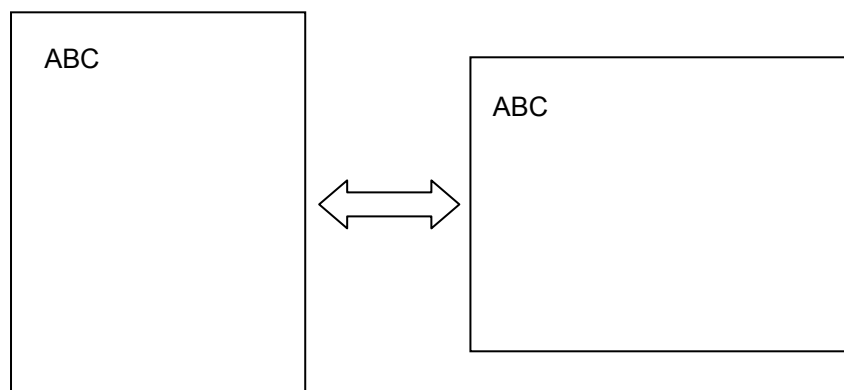
ESC i C   Specify cutting

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.

- This command is applied to only a printer with auto cutter.
- 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. Control Command Details

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

5. Control Command Details

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:　Reserved

    n3=01h:　Letter Gothic Bold (bitmap) (*Manufacturer's default)

    n3=02h:　Reserved

    n3=03h:　Helsinki (bitmap)

    n3=04h:　Reserved

    n3=09h:　Letter Gothic (outline)

    n3=0Ah:　Reserved

    n3=0Bh:　Helsinki (outline)

● This command is a static command.

Remarks

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

● Propotional pitched Helsinki is forced to be selected when a character assigned from 0x80 to 0xFF in the Japanese character code table is used.

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 01h: Letter Gothic Bold (bitmap) 03h: Helsinki (bitmap) 09h: Letter Gothic (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.

  The maximum valid setting is n=400.

  *The manufacturer's default is 24.

- 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≤02h

Description

● Specifies the default line feed.

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

    *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 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

5. Control Command Details

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.

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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≤1Fh

Description

● Specifies the default page length.

    n3+(n4*256): Default page length (dots) (0, 203 through 7999)

    *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)

　　00h≤n3≤04h

Description

● Selects the default character code set.

　　n3=00h:　Standard character code set (*Manufacturer's default)

　　n3=01h:　Eastern European character code set

　　n3=02h:　Western European character code set

　　n3=03h:　Reserved

　　n3=04h:　Japanese character code set

● 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 iXd2   Specify recovery setting

ASCII:	ESC	i	X	d	2	n1	n2	n3
Decimal:	27	105	88	100	50	n1	n2	n3
Hexadecimal:	1B	69	58	64	32	n1	n2	n3

Parameters

    n1: 01h (Fixed)

    n2: 00h (Fixed)

    00h≤n3≤01h

Description

● Select enable or disable of recovery print.

    n3=00h: Disable recovery print

    n3=01h: Enable recovery print (*Manufacturer's default)

● This command is a static command.

Remarks

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

ESC iXd1   Retrieve recovery setting

ASCII:	ESC	i	X	d	1	n1	n2
Decimal:	27	105	88	100	49	n1	n2
Hexadecimal:	1B	69	58	64	31	n1	n2

Parameters

    n1: 00h (Fixed)

    n2: 00h (Fixed)

Description

● Return a current recovery setting as 3 Bytes data.

[1]	01h (Fixed)
[2]	00h (Fixed)
[3]	Setting 00h: Disable recovery print 01h: Enable recovery print

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

5. Control Command Details

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	Ð	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	^	~	¨	¸	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	€	tˇ		°	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	ˇL	"	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	Ĭ		¨	¸	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.

Appendix A: Character Code Tables

(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.

Appendix A: Character Code Tables

(4) Japanese character code set

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			SP	0	@	P	`	p	＿	⊥	SP	―	タ	ミ	=	×
1			!	1	A	Q	a	Q	＿	┬	。	ア	チ	ム	╠	円
2			"	2	B	R	b	R	■	┤	「	イ	ツ	メ	╪	年
3			#	3	C	S	c	S	■	├	」	ウ	テ	モ	╡	月
4			$	4	D	T	d	T	■	￣	、	エ	ト	ヤ	◢	日
5			%	5	E	U	e	u	■	＿	・	オ	ナ	ユ	◣	時
6			&	6	F	V	f	v	■	│	ヲ	カ	ニ	ヨ	�￬	分
7			'	7	G	W	g	w	■	│	ァ	キ	ヌ	ラ	◤	秒
8			(	8	H	X	h	x	│	┌	ィ	ク	ネ	リ	♤	〒
9			)	9	I	Y	i	y	│	┐	ゥ	ケ	ノ	ル	♡	市
A			*	:	J	Z	j	z	▮	└	ェ	コ	ハ	レ	◇	区
B			+	;	K	[	k	{	▮	┘	ォ	サ	ヒ	ロ	♣	町
C			,	<	L	\	l	¦	▮	´	ャ	シ	フ	ワ	●	村
D			ー	=	M	]	m	}	▮	、	ュ	ス	ヘ	ン	○	人
E			.	>	N	^	n	~	▮	゛	ョ	セ	ホ	゛	/	⁞
F			/	?	O	_	o	DEL	+	゜	ッ	ソ	マ	゜	\	

Note

" ■ " indicates that a space is printed.

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

A character assigned from 0x80 to 0xFF is printed as Propotional pitched Helsinki.

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 A: Character Code Tables

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