Software Developer's Manual

Raster Command Reference

PT-E550W/P750W

Version 1.00

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Contents

Introduction **1**
About Raster Commands **2**
1. Printing Using Raster Commands **3**
2. Print Data **5**
2.1 Print data overview 5
2.2 Sample (analyzing the print data of the test page) 7
2.2.1 Preparation 7
2.2.2 Checking the print data 7
2.2.3 Explanation of print data for the test page 10
2.3 Page data details 12
2.3.1 Resolution 12
2.3.2 Page size 13
2.3.3 Feed amount 16
2.3.4 Maximum and minimum lengths 17
2.3.5 Raster line 18
3. Print Command List **21**
4. Printing Command Details **22**
NULL Invalidate 22
ESC @ Initialize 22
ESC i S Status information request 22
ESC i a Switch dynamic command mode 30
ESC i z Print information command 31
ESC i M Various mode settings 32
ESC i K Advanced mode settings 32
ESC i d Specify margin amount (feed amount) 33
ESC i A Specify the page number in “cut each * labels” 33
M Select compression mode 34
g Raster graphics transfer 36
Z Zero raster graphics 36
FF Print command 36
Control-Z Print command with feeding 37
5. Flow Charts **38**
5.1 Concurrent printing normal flow for USB connection 39
5.2 Concurrent printing error flow for USB connection (when feeding at the end of the page) 40
5.3 Concurrent printing error flow for USB connection (with a concurrent printing error such as end of tape) 41
5.4 Buffered printing normal flow for USB connection 42
5.5 Buffered printing error flow for USB connection 43
5.6 Normal Flow for Network (Standard TCP/IP port) Connection 44
Appendix A: USB Specifications **45**
Appendix B: Introducing the Brother Developer Center **46**

Introduction

This material provides the necessary information for directly controlling the Brother printer PT-XXXX (where “XXXX” is the model name).
This information is provided assuming that the user has full understanding of the operating system being used and basic mastery of USB in a developer's environment.
Details concerning the USB interface are not described in this material. If a USB interface is being used, refer to “Appendix A: USB Specifications” to prepare the interface.

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

About Raster Commands

Using raster commands an PT-XXXX printer (where “XXXX” is the model name) can be used to print without using our printer driver.

This operation is useful in the following situations.

- When printing from an operating system other than Windows
  (Example: When printing from a Linux computer or mobile terminal)
- When adding print functions to an existing system

In addition, printing can be performed with advanced settings.

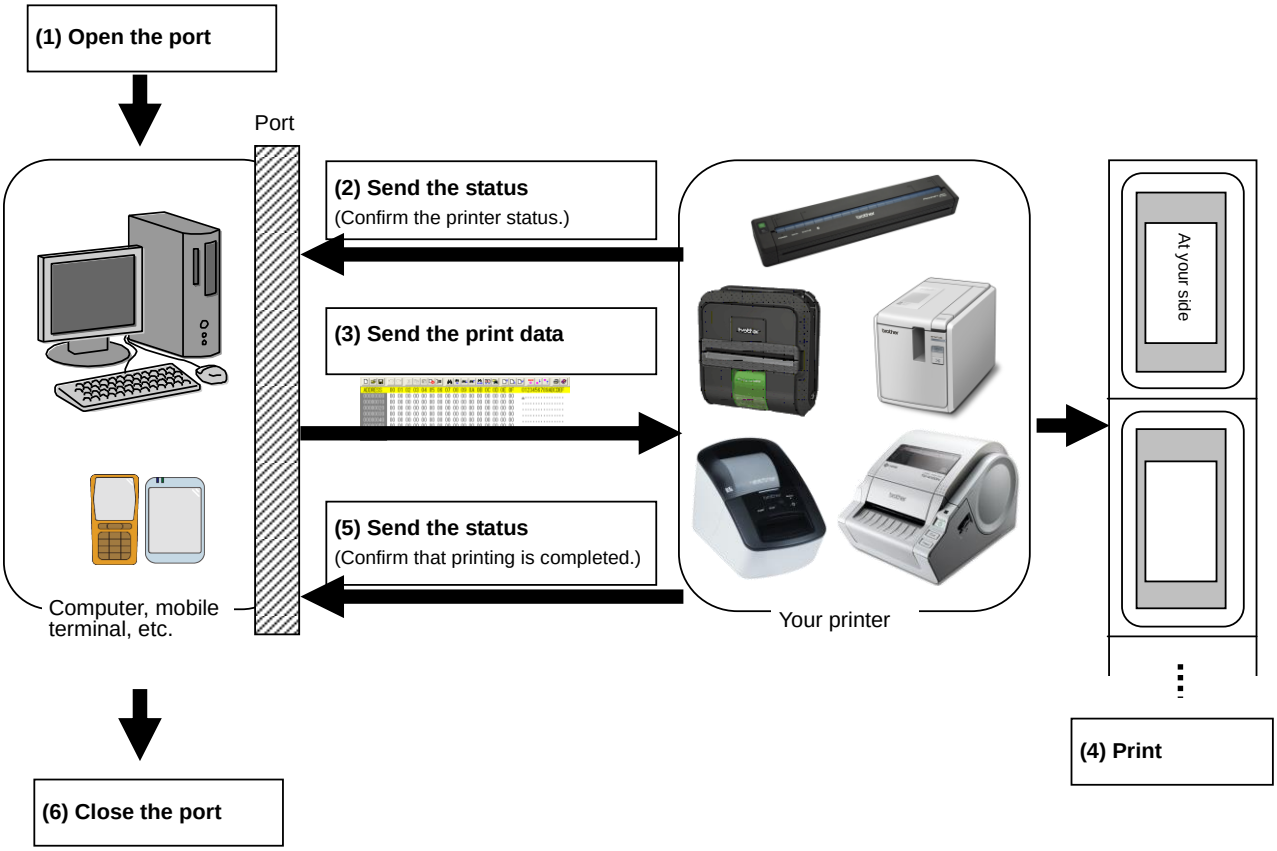
In this material, “raster” refers to binary bitmap data (collection of dots).

Refer to this material to print by sending initialization commands and control codes together with raster data to the PT-XXXX printer (hereafter, referred to as “printer”).

This manual describes the procedure for adding these codes and sending the data.

1. Printing Using Raster Commands

The printing procedure is described below. For detailed flow charts, refer to “5. Flow Charts”. For details on each command, refer to “4. Printing Command Details”.



(1) Open the USB/network port

Open the USB/network port in the operating environment. The procedure for opening the USB/network port is not described in this material.

(2) Confirm the printer status sent from the printer

The “status information request” command is sent to the printer, the status information received from the printer is analyzed, and then the status of the printer is determined.

For details on the “status information request” command and on the definitions of “status”, refer to “Status information request” in “4. Printing Command Details”.

(3) Send the print data

If the status analysis confirms that media compatible with the print data is loaded into the printer and that no error has occurred, the print data is sent.

The structure of the print data is explained in the next section, “2. Print Data”.

Note:

No command can be sent to the printer after the print data is transmitted and until the completion of printing is confirmed.

Even the “status information request” command cannot be sent during printing.

(4) Print the data

(5) Confirm that printing is completed

When printing is completed, the status is received from the printer.

If this status is analyzed to confirm that printing is completed, printing one page is considered finished.

If the print job has multiple pages, (2) through (4) are repeated.

(6) Close the USB/network port

After all printing is finished, close the USB/network port.

Note:

In order to print at high speed when a USB port is used to send uncompressed raster data, the Brother PT-XXXX starts printing when it starts to receive print data, instead of waiting for a print command (concurrent printing).

For the processing flow, for example when managing errors, refer to “5. Flow Charts”.

2. Print Data

2.1 Print data overview

The print data is constructed of the following: (1) initialization commands, (2) control codes, (3) raster data, and (4) print commands. If the print job consists of multiple pages, (2) through (4) are repeated.

(1) Initialization commands

Specified only once at the beginning of the job.

Sequence	Command Name	Description/Example
1	Invalidate	Sends a 100-byte invalidate command, and then resets the printer to the receiving state.
2	Initialize	Initializes for printing. 1Bh, 40h (Fixed)

(2) Control codes

Added at the beginning of each page and sent for each page.

Sequence	Command Name	Description/Example
1	Switch dynamic command mode	Switches the printer to raster mode. 1Bh, 69h, 61h, 01h
2	Print information command	Sets the print information for the printer. When printing 100 mm on 24-mm-wide tape with the 180 dpi model: 1Bh, 69h, 7Ah, 84h, 00h, 18h, 00h, 9Ch, 02h, 00h, 00h, 00h, 00h
3	Various mode settings	When auto cut is enabled: 1Bh, 69h, 4Dh, 40h
4	Specify the page number in “cut each * labels”	When an auto cut setting is effective, specify the number of sheets for auto cut. For each sheets, 1Bh, 69h, 41h, 01h
5	Advanced mode settings	When chain printing is disabled: 1BH,69H,4B,08H
6	Specify margin amount	Specifies the amount of the margins. For 2 mm margins on the 180 dpi model: 1Bh, 69h, 64h, 0Eh, 00h
7	Select compression mode	Selects the compression mode for raster graphics. To send the data compressed to TIFF format: 4Dh, 02h

(3) Raster data

Repeated for each page in the print job.

Sequence	Command Name	Description/Example
-	Raster graphics transfer	Sends a raster line that contains data with pixels set to “ON”.
-	Zero raster graphics	Sends a raster line with all pixels set to “0”.（Valid only when TIFF is selected as the compression mode） 5Ah (Fixed)

(4) Print commands

Specified at the end of the page.

Sequence	Command Name	Description/Example
-	Print command	Specifies at the end of a page that is not the last page. 0Ch（Fixed）
-	Print command with feeding	Specifies at the end of the last page. 1Ah (Fixed)

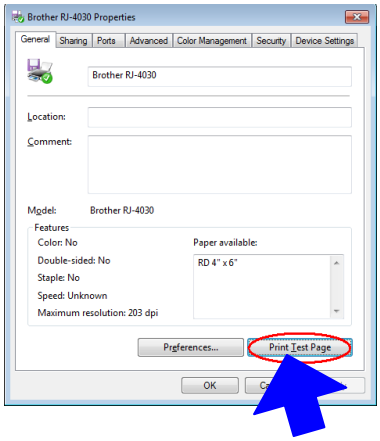
2.2 Sample (analyzing the print data of the test page)

The print data created by the printer driver is described here.

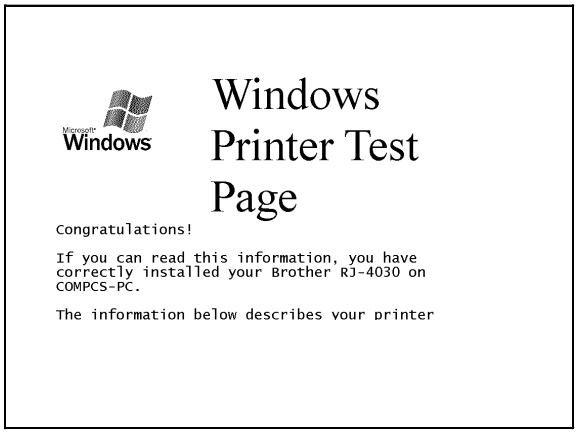
As an example, we will check the print data created when the **[Print Test Page]** button in the printer Properties dialog box is clicked to print the test page.

Since the print data differs depending on the print settings of the printer, refer to this procedure and try creating print data with various print settings.

Furthermore, this procedure is for the Windows® 7 operating environment. A similar procedure can be performed if you are using a different operating system.



Printer Properties



Test page

2.2.1 Preparation

Install the two listed below.

- Printer driver of the Brother PT-XXXX
- Binary file editor

The data that we will analyze in this sample is a binary file.

Therefore, use a binary file editor to display and check the contents of the binary file.

2.2.2 Checking the print data

The procedure for checking the print data is provided below.

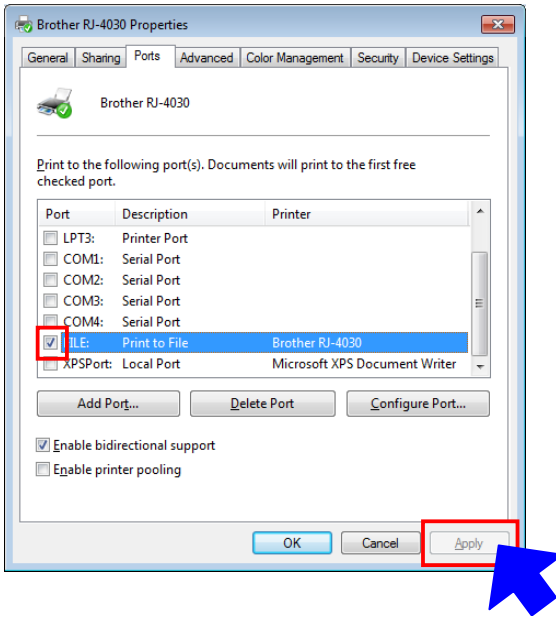
Step 1: Change the port of the printer to “FILE:”.

Step 2: Print the desired item (in this case, the test page), and then specify the file name.

Step 3: Open the created file in the binary file editor to check it.

Step 1: Change the port of the printer to "FILE:".

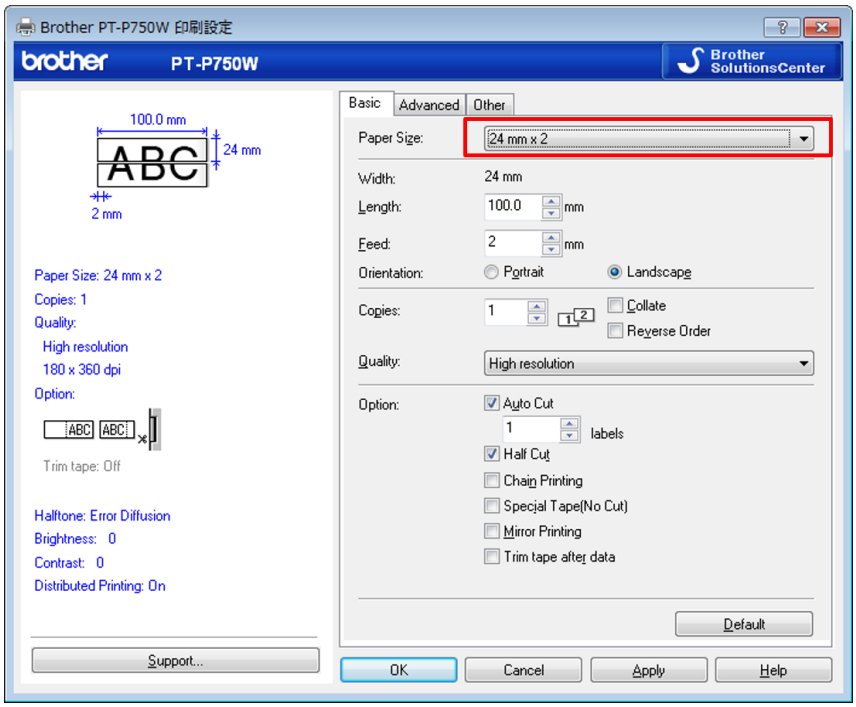
Open the **Printers and Faxes** folder, and then right-click the printer (in this case, RJ-4030) to display the Properties dialog box. In the Properties dialog box, click the **[Ports]** tab, select the "**FILE:**" check box, and then click the **[Apply]** button.



[Ports] tab of the printer Properties dialog box

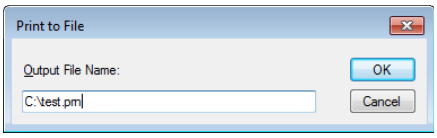
Step 2: Print the item (in this case, the test page), and then specify the file name.

Print the test page with "24mm x 2" selected as the paper size in the print settings.



When the test page is printed with the printer, a dialog box appears so that the file name can be specified. (Refer to the illustration below.)

After a file name is typed in and the **[OK]** button is clicked, the printer driver creates the print data and saves it in a file with the specified name.



Dialog box for specifying the file name

Step 3: Open the print data in the binary file editor.

Open the saved file in the binary file editor. The rows of numbers that appear are the print data. (Refer to the illustration below.)

The print data is constructed of the following: (1) initialization commands, (2) control codes, (3) raster data and (4) print commands, which were described in "2.1 Print data overview". For details on the print data, refer to "2.2.3 Explanation of print data for the test page".

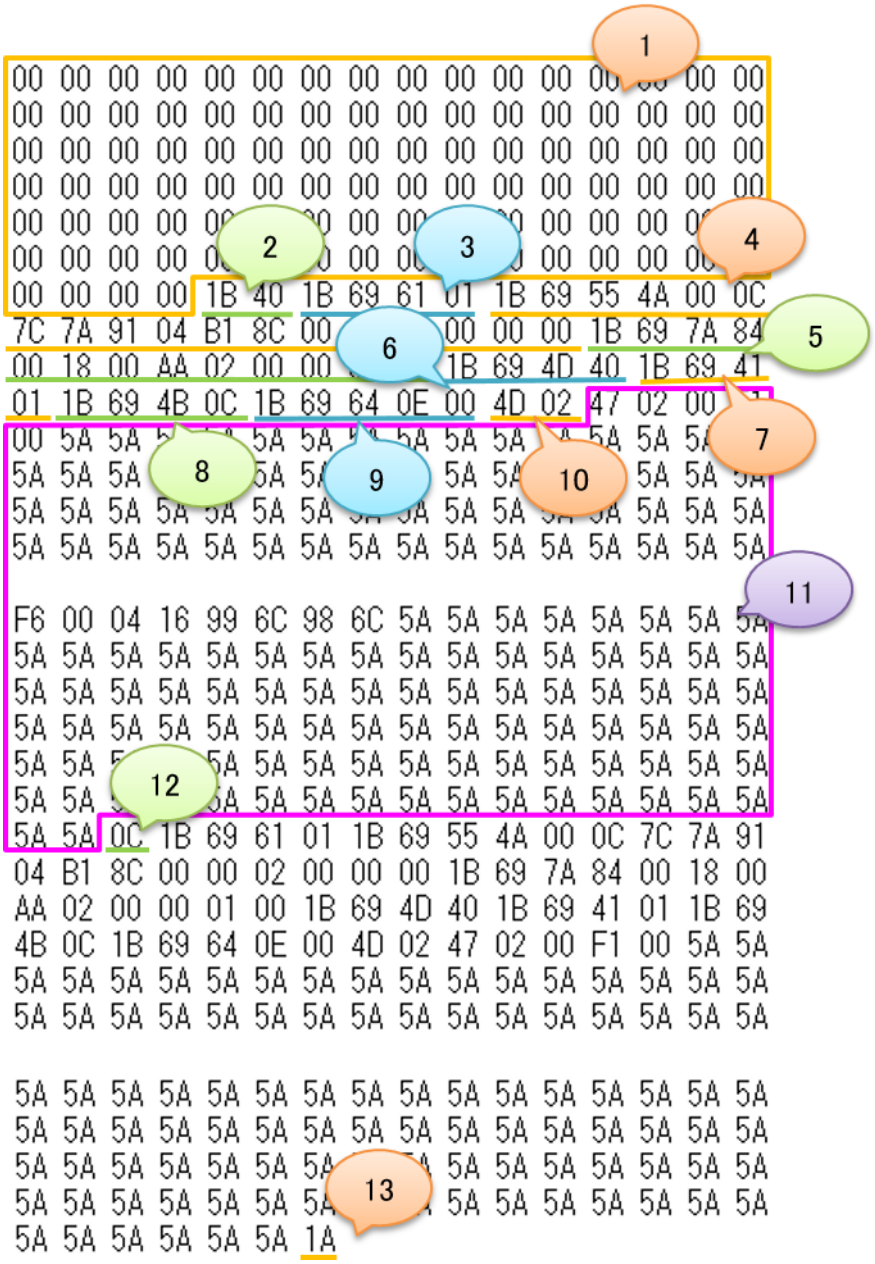
```
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00   (1) Initialization commands
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 1B 40 1B 69 61 01 1B 69 55 4A 00 0C
70 54 D2 7D 66 00 00 00 02 00 00 00 1B 69 7A 84
00 18 00 AA 02 00 00 00 00 1B 69 4D 40 1B 69 41   (2) Control codes
01 1B 69 4B 0C 1B 69 64 0E 00 4D 02 47 02 00 F1
00 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A   (3) Raster data
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
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5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 5A
5A 5A 5A 5A 5A 5A 5A 5A 5A 5A 0C 1B 69 61 01 1B
```

Print data

2.2.3 Explanation of print data for the test page

The print data for the test page outputted in the previous section is described below.

The following illustration shows the print data created in section “2.2.1 Preparation” opened in the binary file editor.



Print data

Descriptions for the numbers in the print data on the previous page are provided in the following table.

For details on each command, refer to “4. Printing Command Details”.

No.	Command Name	Description
1	Invalidate	A 100-byte invalidate command is sent.
2	Initialize	The “initialize” command is sent.
3	Switch dynamic command mode	The printer is switched to raster mode. Send this command before sending raster data to the printer.
4	Job ID setting commands	Internal specification commands Since this is a command for outputting with the commercial version driver, it is unnecessary for the user to send this command.
5	Print information command	Media size information for the print data is sent. This is the command for “24 mm” tape.
6	Various mode settings (1Bh+69h+4Dh+00H)	This is a command for specifying a mode. Here, nothing is specified.
7	Specify the page number in “cut each * labels”	The number of pages printed before automatically cutting is specified.
8	Advanced mode settings	This is the command for specifying settings for the advanced mode. In this case, “no chain printing” is enabled.
9	Specify margin amount	Specifies the amount of the margins. This is the command for “15 dots”.
10	Select compression mode	TIFF compression mode is selected.
11	Raster data	Raster data continues.
12	Print command	Since it is not the last page, the print command is sent at the end of the page.
13	Print command with feeding	Since it is the last page, the print command with feeding is sent at the end of the page.

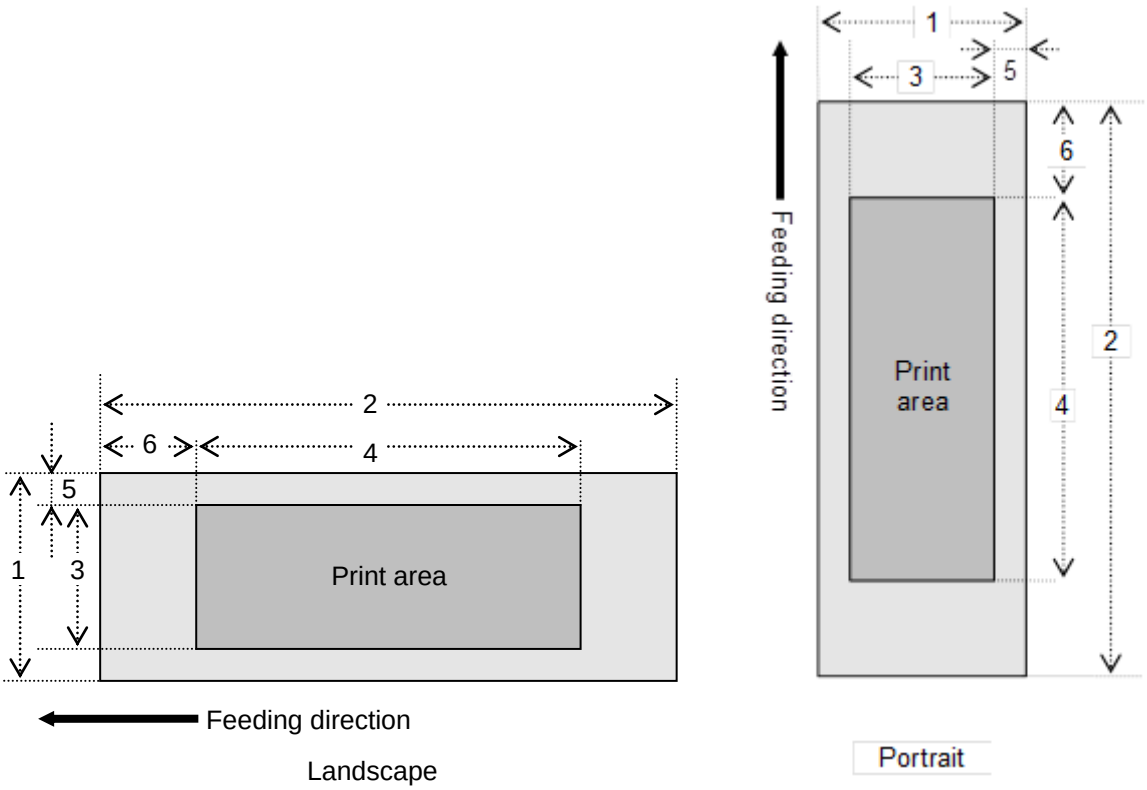
2.3 Page data details

2.3.1 Resolution

Resolution	Height-to-Width Proportion
180 dpi high, 180 dpi wide	1:1
180 dpi high, 360 dpi wide	1:2

2.3.2 Page size

(a) Continuous length tape



Number 1 Width 2 Length

3 Print area width (maximum printing width) 4 Print area length

5 Width offset 6 Length offset

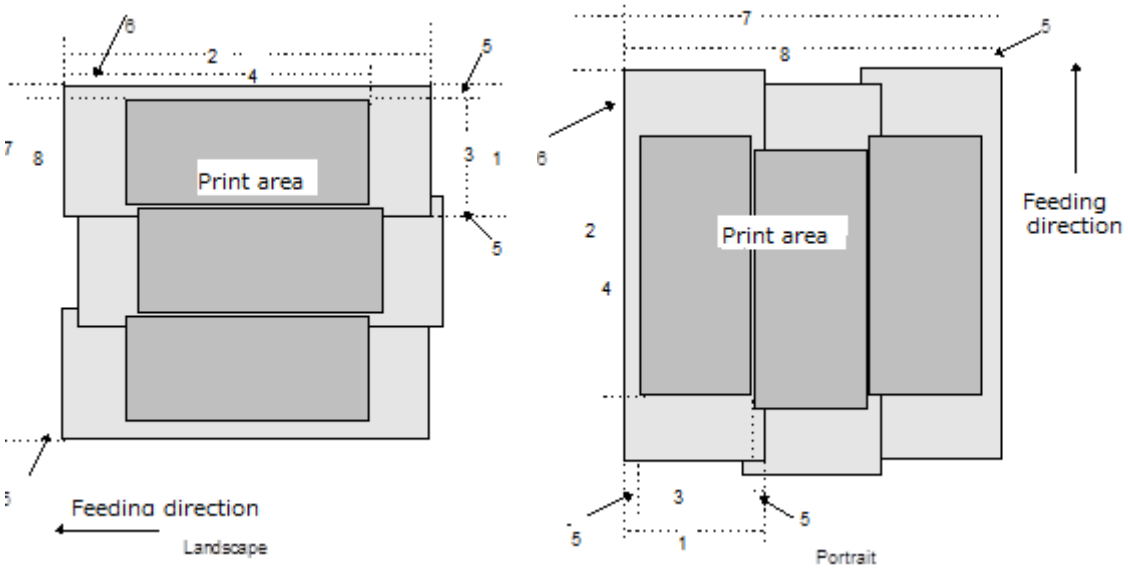
TZe tape

ID	Tape Size	Designation	1	2	3	4	5	6
263	3.5 mm	3.5 mm 0.13"	3.40 mm 24 dots	→2.3.4	3.40 mm 24 dots	→2.3.4	0.00 mm 0 dots	→2.3.3
257	6 mm	6 mm 0.23"	5.90 mm 42 dots	→2.3.4	4.50 mm 32 dots	→2.3.4	0.70 mm 5 dots	→2.3.3
258	9 mm	9 mm 0.35”	9.00mm 64 dots	→2.3.4	7.10 mm 50 dots	→2.3.4	0.98 mm 7 dots	→2.3.3
259	12 mm	12 mm 0.47”	11.9mm 84 dots	→2.3.4	9.90 mm 70 dots	→2.3.4	0.98 mm 7 dots	→2.3.3
260	18 mm	18 mm 0.70”	18.1 mm 128 dots	→2.3.4	15.8 mm 112 dots	→2.3.4	1.12 mm 8 dots	→2.3.3
261	24 mm	24 mm 0.94”	24.0 mm 170 dots	→2.3.4	18.1 mm 128 dots	→2.3.4	2.96 mm 21 dots	→2.3.3

Heat-Shrink Tube

ID	Tape Size	Designation	1	2	3	4	5	6
415	6 mm	HS 5.8mm HS 0.23"	5.60 mm 40 dots	→2.3.4	3.90 mm 28 dots	→2.3.4	0.80 mm 6 dots	→2.3.3
416	9 mm	HS 8.8mm 0.34”	8.70mm 62 dots	→2.3.4	6.80 mm 48 dots	→2.3.4	1.10 mm 8 dots	→2.3.3
417	12 mm	HS 11.7mm 0.46”	11.6mm 82 dots	→2.3.4	9.30 mm 66 dots	→2.3.4	1.10 mm 8 dots	→2.3.3
418	18 mm	HS 17.7mm 0.69”	17.8 mm 126 dots	→2.3.4	14.9 mm 106 dots	→2.3.4	1.40 mm 10 dots	→2.3.3
419	24 mm	HS 23.6mm HS 0.93”	23.7 mm 168 dots	→2.3.4	18.1 mm 128 dots	→2.3.4	2.80 mm 20 dots	→2.3.3

(b) Split size



Number 1 Width 2 Length

3 Print area width (maximum printing width) 4 Print area length

5 Width offset 6 Length offset

7Overall width 8 Width of overall print area

TZe tape

ID	Tape Size	Designation	1	3	5	7 [3]×Split number+[5]×2	8 [3]×Split number
279	12 mm	12 mm×2 0.47”×2	11.9 mm 84 dots	9.90 mm 70 dots	0.98 mm 7 dots	9.90mmx2+0.98mmx2 70dotsx2+7dotsx2	9.90mmx2 70dotsx2
285	12 mm	12 mm×3 0.47”×3	11.9 mm 84 dots	9.90 mm 70 dots	0.98 mm 7 dots	9.90mmx3+0.98mmx2 70dotsx3+7dotsx2	9.90mmx3 70dotsx3
291	12 mm	12 mm×4 0.47”×4	11.9 mm 84 dots	9.90 mm 70 dots	0.98 mm 7 dots	9.90mmx4+0.98mmx2 70dotsx4+7dotsx2	9.90mmx4 70dotsx4
280	18 mm	18 mmx2 0.70”x2	18.1 mm 128 dots	15.8 mm 112 dots	1.12 mm 8 dots	15.8mmx2+1.12mmx2 112dotsx2+8dotsx2	15.8mmx2 112dotsx2
286	18 mm	18 mmx3 0.70”x3	18.1 mm 128 dots	15.8 mm 112 dots	1.12 mm 8 dots	15.8mmx3+1.12mmx2 112dotsx3+8dotsx2	15.8mmx3 112dotsx3
292	18 mm	18 mmx4 0.70”x4	18.1 mm 128 dots	15.8 mm 112 dots	1.12 mm 8 dots	15.8mmx4+1.12mmx2 112dotsx4+8dotsx2	15.8mmx4 112dotsx4
281	24mm	24mmx2 0.94”x2	24.0 mm 170 dots	18.1 mm 128 dots	2.96 mm 21 dots	18.1mmx2+2.96mmx2 128dotsx2+21dotsx2	18.1mmx2 128dotsx
287	24mm	24mmx3 0.94”x3	24.0 mm 170 dots	18.1 mm 128 dots	2.96 mm 21 dots	18.1mmx3+2.96mmx2 128dotsx3+21dotsx2	18.1mmx3 128dotsx3
293	24mm	24mmx4 0.94”x4	24.0 mm 170 dots	18.1 mm 128 dots	2.96 mm 21 dots	18.1mmx4+2.96mmx2 128dotsx4+21dotsx2	18.1mmx4 128dotsx4

2.3.3 Feed amount

The feed amount (left and right margins) is defined below.

180dpi × 180dpi

Type	Minimum margin setting	Maximum margin setting	Minimum margin setting with no precut (Unrelated to driver)
Normal	2mm 0.08" 14 dots	127 mm 5" 900 dots	24.3mm 0.96” 172dots

180dpi × 360dpi

Type	Minimum margin setting	Maximum margin setting	Minimum margin setting with no precut (Unrelated to driver)
Normal	2mm 0.08" 28 dots	127 mm 5" 1800 dots	24.3mm 0.96” 344dots

2.3.4 Maximum and minimum lengths

The maximum and minimum lengths are defined below.

TZe tape

180dpi × 180dpi

Type	Minimum length	Maximum length
Normal	4.4mm 0.18” 31 dots	1000 mm 39.37” 7086dots

180dpi × 360dpi

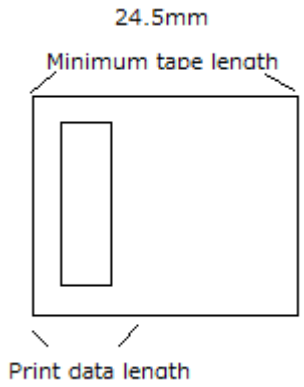
Type	Minimum length	Maximum length
Normal	4.2mm 0.17” 60 dots	1000 mm 39.37” 14172dots

Heat-Shrink Tube

Type	Minimum length	Maximum length
Normal	4.4 mm 0.18” 31 dots	500 mm 19.69” 3543dots

* The minimum length with the driver (minimum print data length: 2 mm margins × 2 + minimum print area) is based on the machine specifications (due to the machine cutter position), and the minimum length of tape that can be fed out is 24.5 mm.

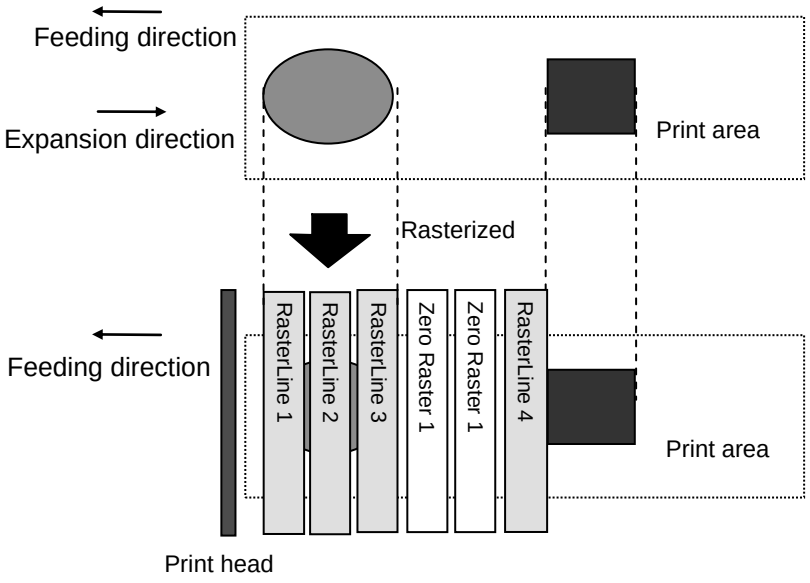
For example, even when the minimum print data of 4.4 mm is created, the print result will be the 24.5 mm of tape shown below, since the minimum length of tape that can be fed out is 24.5 mm.



In other words, the print data will be on 24.5 mm of tape when the print data length is 24.5 mm or less.

2.3.5 Raster line

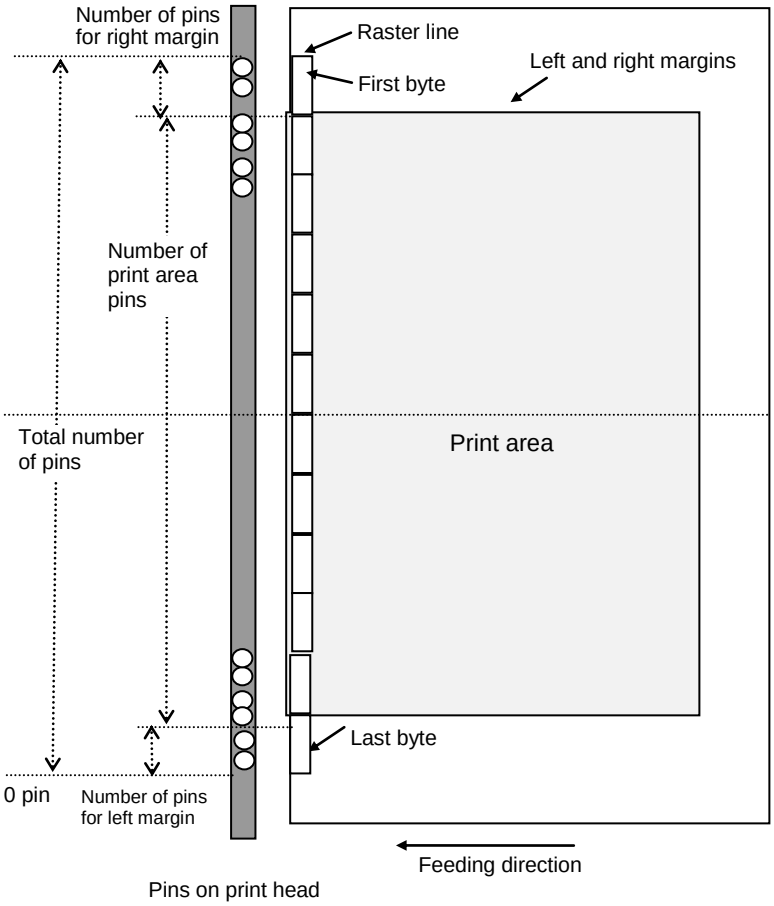
As shown below, the parts with data to be printed are converted with “raster graphics transfer”, and the parts with no data are converted with “zero raster graphics”. On the actual tape, margins (feed) are added specified with “various mode settings” at the beginning and the end.



The following shows the relationship between the raster graphics parameters and the pixels.



Total number of pins: 128pin



TZe tape:

Tape Type	Number of pins for left margin	Number of print area pins	Number of pins for right margin	Number of bytes for raster graphics transfer
3.5 mm	52	24	52	16
6 mm	48	32	48	16
9 mm	39	50	39	16
12 mm	29	70	29	16
18 mm	8	112	8	16
24 mm	0	128	0	16

Heat-Shrink Tube:

Tape Type	Number of pins for left margin	Number of print area pins	Number of pins for right margin	Number of bytes for raster graphics transfer
6 mm	50	28	50	16
9 mm	40	48	40	16
12 mm	31	66	31	16
18 mm	11	106	11	16
24 mm	0	128	0	16

3. Print Command List

ASCII Code	Binary Code	Description
NULL	00	Invalidate
ESC @	1B 40	Initialize
ESC i S	1B 69 53	Status information request
ESC i a	1B 69 61	Switch dynamic command mode
ESC i z	1B 69 7A	Print information command
ESC i M	1B 69 4D	Various mode settings
ESC i K	1B 69 4B	Advanced mode settings
ESC i d	1B 69 64	Specify margin amount (feed amount)
M	4D	Select compression mode
g	67	Raster graphics transfer
Z	5A	Zero raster graphics
FF	0C	Print command
Control-Z	1A	Print command with feeding

4. Printing Command Details

NULL Invalidate

ASCII:	NULL
Hexadecimal:	00

Description

- Skipped
- If data transmission is to be stopped midway, send the “initialize” command after sending the “invalidate” command for the appropriate number of bytes to return to the receiving state, where the print buffer is cleared.

ESC @ Initialize

ASCII:	ESC	@
Hexadecimal:	1B	40

Description

- Initializes mode settings.
- Also used to cancel printing.

ESC i S Status information request

ASCII:	ESC	i	S
Hexadecimal:	1B	69	53

Description

- Send a request to the printer for status information. For details on the status, refer to the previous section.
- The size is fixed at 32 bytes.

  Note

  Before sending print data to the printer, this command should be sent once. Since error information is automatically sent by the printer during printing, do not send this command while printing.

  For details on transmission of the status, refer to “5. Flow Charts”.

Number	Offset	Size	Name	Value/Reference
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 “0” (30h)
5	4	1	Model code	PT-E550W: Fixed at “f” (66h) PT-P750W: Fixed at “h” (68h)
6	5	1	Country code	Fixed at “0” (30h)
7	6	1	Reserved	Fixed at “00h”
8	7	1	Reserved	Fixed at 00h
9	8	1	Error information 1	Refer to table (1) below.
10	9	1	Error information 2	Refer to table (2) below.
11	10	1	Media width	Refer to table (3) below.
12	11	1	Media type	Refer to table (4) below.
13	12	1	Number of colors	Fixed at 00h
14	13	1	Fonts	Fixed at 00h
15	14	1	Japanese fonts	Fixed at 00h
16	15	1	Mode	Value specified where the “various mode settings” command 00h if not specified
17	16	1	Density	Fixed at 00h
18	17	1	Media length	Refer to table (3) below.
19	18	1	Status type	Refer to table (5) below.
20	19	1	Phase type	Refer to table (6) below.
21	20	1	Phase number (higher order bytes)	
22	21	1	Phase number (lower order bytes)	
23	22	1	Notification number	Refer to table (7) below.
24	23	1	Expansion area (number of bytes)	Fixed at 00h
25	24	1	Tape color information	Refer to table (8) below.
26	25	1	Text color information	Refer to table (9) below.
27	26	4	Hardware settings	Sets the default hardware information to be used for checking
31	30	1	Reserved	Fixed at 00h

32	31	1	Reserved	Fixed at 00h

(1) Error information 1

Flag	Mask	Definition
Bit 0	01h	“No media” error
Bit 1	02h	(Not used)
Bit 2	04h	Cutter jam
Bit 3	08h	Weak batteries
Bit 4	10h	(Not used)
Bit 5	20h	(Not used)
Bit 6	40h	High-voltage adapter
Bit 7	80h	(Not used)

(2) Error information 2

Flag	Mask	Definition
Bit 0	01h	“Replace media” error (with a serial connecting) Wrong media
Bit 1	02h	(Not used)
Bit 2	04h	(Not used)
Bit 3	08h	(Not used)
Bit 4	10h	“Cover open” error
Bit 5	20h	Overheating error
Bit 6	40h	(Not used)
Bit 7	80h	(Not used)

(3) Media width and length

The media width and length is described in millimeters. 0～255 (0 to FFh)

(a) TZe tape

* Media Width: The tape width is indicated in millimeters.

* Media Length: Fixed at 00h

Media	Media Width	Media Length
No tape	0	0
3.5 mm	4	0
6 mm	6	0
9 mm	9	0
12 mm	12	0
18 mm	18	0
24 mm	24	0

(4) Media type

Media Type	Value
No media	00h
Laminated tape	01h
Non-laminated tape	03h
Heat-Shrink Tube	11h
Incompatible tape	FFh

(5) Status type

Status Type	Value
Reply to status request	00h
Printing completed	01h
Error occurred	02h
Exit IF mode	03h (not used)
Turned off	04h
Notification	05h
Phase change	06h
(Not used)	07h to 20h
(Reserved)	21h to FFh

If an error occurred during printing, the printer returns the error status.

(6) Phase type and phase number

If the phase number is not used, both are fixed at 00h.

Phase State	Phase Type
Editing state (reception possible)	00h
Printing state	01h

Editing state

Phase	Value (Dec.)	Higher Order Bytes	Lower Order Bytes
Editing state (reception possible)	0	00h	00h
Feed	1	00h	01h

Printing state

Phase	Value (Dec.)	Higher Order Bytes	Lower Order Bytes
Printing	0	00h	00h
(Not used)	10	00h	0Ah
Cover open while receiving	20	00h	14h
(Not used)	25	00h	19h

(7) Notification number

Notification	Value
Not available	00h
Cover open	01h
Cover closed	02h

(8)Tape color information

Tape color	Tape color ID	Notes
White	01h	
Other	02h	
Clear	03h	
Red	04h	
Blue	05h	
Yellow	06h	
Green	07h	
Black	08h	
Clear（White text）	09h	
Matte White	20h	
Matte Clear	21h	
Matte Silver	22h	
Satin Gold	23h	
Satin Silver	24h	
Blue（D）	30h	TZe-535(12mm) TZe-545(18mm) TZe-555(24mm)
Red（D）	31h	TZe-435(12mm)
Fluorescent Orange	40h	
Fluorescent Yellow	41h	
Berry Pink（S）	50h	TZe-MQP35
Light Gray（S）	51h	TZe-MQL35
Lime Green（S）	52h	TZe-MQG35
Yellow（F）	60h	
Pink（F）	61h	
Blue（F）	62h	
White（Heat-shrink Tube）	70h	
White（Flex. ID）	90h	

Yellow（Flex. ID）	91h	
Clearning	F0h	
Stencil	F1h	
Incompatible	FFh	

(10)Text color information

Text color	Text color ID
White	01h
Red	04h
Blue	05h
Black	08h
Gold	0Ah
Blue（F）	62h
Clearning	F0h
Stencil	F1h
Other	02h
Incompatible	FFh

ESC i a Switch dynamic command mode

ASCII:	ESC	i	a	{n1}
Hexadecimal:	1B	69	61	{n1}

Parameters

Definitions of {n}:

0: ESC/P mode (default)

1: Raster mode (Be sure to switch to this mode.)

3: P-touch Template mode

Description

- Dynamically switches between the printer's command modes. A printer that receives this command operates in the specified command mode until the printer is turned off.
- The printer must be switched to raster mode before raster data is sent to it. Therefore, send this command to switch the printer to raster mode.

ESC i z Print information command

ASCII:	ESC	i	z	{n1}	{n2}	{n3}	{n4}	{n5}	{n6}	{n7}	{n8}	{n9}	{n10}
Hexadecimal:	1B	69	7A	{n1}	{n2}	{n3}	{n4}	{n5}	{n6}	{n7}	{n8}	{n9}	{n10}

Description

- Specifies the print information.
- Definitions of {n1} through {n10}

{n1}:	Valid flag; Specifies which values are valid #define PI_KIND 0x02 // Media type #define PI_WIDTH 0x04 // Media width #define PI_LENGTH 0x08 // Media length #define PI_QUALITY 0x40 // Priority given to print quality(Not used) #define PI_RECOVER 0x80 // Printer recovery always on
{n2}:	Media type No tape: 00h Laminated tape: 01h Non-laminated tape:03h Heat-Shrink Tube:11h Incompatible tape:FFh
{n3}:	{n3}: Media width (mm) {n4}: Media length (mm) For the media of width 24 mm, specify as n3=18h and n4=00h. n4 is normally 00h, regardless of the paper length.
{n4}:	
{n5-n8}:	Raster number = n8*256*256*256 + n7*256*256 + n6*256 + n5 If the media is not correctly loaded into the printer when the valid flag for PI_KIND, PI_WIDTH and PI_LENGTH are set to “ON”, an error status is returned (Bit 0 of “(2) Error information 2” is set to “ON”.)
{n9}:	Starting page: 0 Other pages: 1
{n10}:	Fixed at 0

ESC i M　　Various mode settings

ASCII:	ESC	i	M	{n1}
Hexadecimal:	1B	69	4D	{n1}

Parameters

Definitions of {n1}

The meaning of each bit in a 1-byte parameter is described below.

0 ～ 5bit：Not used

6bit：Auto cut　1. Automatically cuts　0. Does not automatically cut

7bit：Mirror printing　1. Mirror printing　0. No mirror printing

ESC i K　　Advanced mode settings

ASCII:	ESC	i	K	{n1}
Hexadecimal:	1B	69	4B	{n1}

Parameters

Definitions of {n1}

The meaning of each bit in a 1-byte parameter is described below.

0 ~ 1bit, 5bit: Not used

2bit：Half cut

1: Half cut on 0: Half cut off

3bit：No chain printing

When printing multiple copies, the labels are fed after the last one is printed.

1: No chain printing（Feeding and cutting are performed after the last one is printed.）

0: Chain printing（Feeding and cutting are not performed after the last one is printed.）

4bit：Special tape (no cutting)

Labels are not cut when special tape is installed.

1: Special tape (no cutting)　ON　0: Special tape (no cutting)　OFF

6bit：Hig-resolution printing

1: High-resolution printing 0: Normal printing

7bit：No buffer clearing when printing

The expansion buffer of the machine is not cleared with the “no buffer clearing when printing” command.

If this command is sent when the data of the first label is printed (it is specified between the “initialize” command and the print data), printing is possible only if a print command is sent with the second or later label.

1.No buffer clearing when printing　ON　0.No buffer clearing when printing　OFF

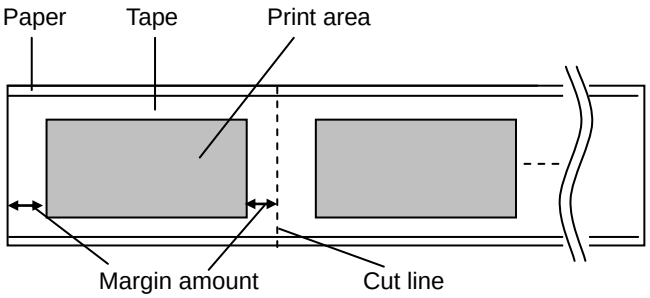
ESC i d Specify margin amount (feed amount)

ASCII:	ESC	i	d	{n1}	{n2}
Hexadecimal:	1B	69	64	{n1}	{n2}

Description

- Specifies the amount of the margins.
- Margin amount (dots)=n1+n2*256

(a) Continuous length tape



ESC i A Specify the page number in “cut each * labels”

ASCII:	ESC	i	A	{n}
Hexadecimal:	1B	69	41	{n}

Parameters

Definitions of {n}

Page number = n1 (1 - 99)

Default is 1 (cut each label).

Description

When “auto cut” is specified, you can specify page number (1 - 99) in “cut each * labels”.

M Select compression mode

ASCII:	M	{n}
Hexadecimal:	4D	{n}

Parameters

Definitions of {n}

0 No-compression mode (Enabled)

1 Reserved (Disabled)

2 TIFF (Enabled)

Description

- Selects the compression mode. Data compression is available only for data in raster graphic transfer.

[TIFF(Pack Bits)]

- 1-byte units
- If the same data is repeated, the number of data units and that 1 byte of data are specified.
  If different data is in a series, the number of data items and all of the different data are specified.
- If the same data is repeated, the number of data units is specified as the actual number minus 1, expressed as a negative number.
  If different data is in a series, the number of data units is specified as the number of bytes minus 1, expressed as a positive number.
- If the above process results in more than 16 bytes of compressed data, the data is treated as being all different. As a result, the data will be 17 bytes, including the 1 byte that specifies the data length.

Example

1 raster of raster graphics transfer:

Without compression: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 22 22 23 BA BF A2 22 2B.....

With compression: ED 00 FF 22 05 23 BA BF A2 22 2B …
a b c

a. Since “00h” is repeated for 20 bytes, 20d -> 19d -> 13h changed into a negative number is EDh.
Therefore: ED 00

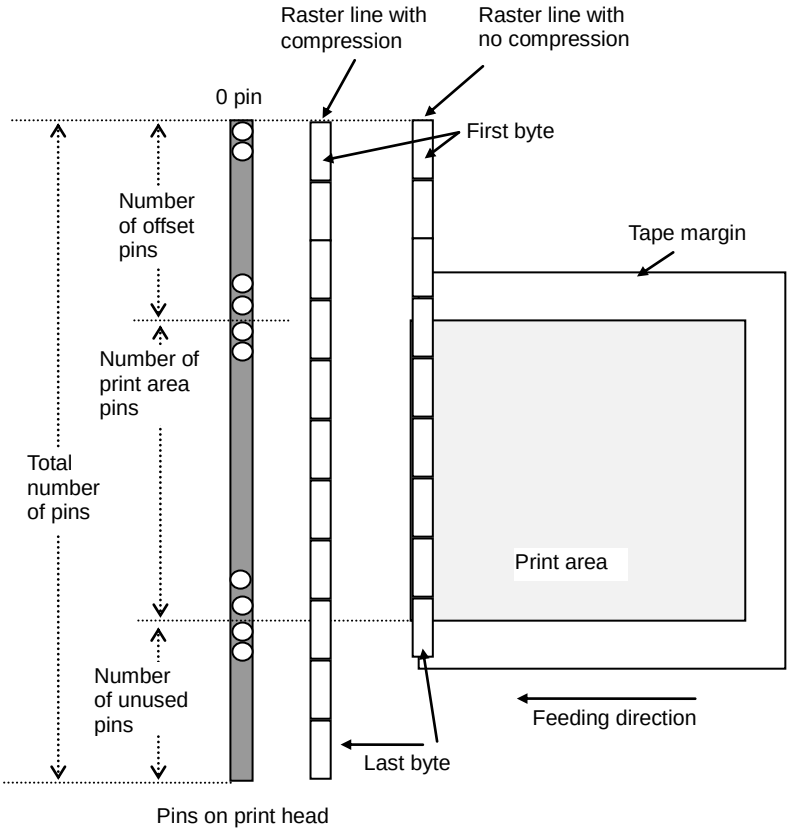
b. Since “22h” is repeated for 2 bytes, 2d -> 1d -> 1h changed into a negative number is FFh.
Therefore: FF 22

c. The following 6 bytes remain unchanged. 6d -> 5d -> 5h
Therefore: 05 23 BA BF A2 22 2B

Continue for the remaining number of bytes for the uncompressed data. Even if 00h continues until the end, it cannot be omitted.

Explanation of “TIFF compression mode”

With compression, the data for the “raster graphics transfer” command is based on 16 bytes of the total number of pins (128). As shown below, with no compression, the sum of the number of offset pins and the number of pins within the print area is the byte data. However, with compression, the number of unused pins is also added to the data. In other words, with compression, this becomes 16 bytes when it is expanded by the printer, regardless of the tape width.



g Raster graphics transfer

ASCII:	g	{n1}	{n2}	{d1}	...	{dk}
Hexadecimal:	67	{n1}	{n2}	{d1}	...	{dk}

Description

- Transfers the specified number of bytes (k) of data.
- The data is expanded by overwriting from the position where the margin was added.
- If the expanded data does not reach the end of the expansion buffer, the remainder is filled with 0 data.
- If the expanded data exceeds the end of the expansion buffer, the excess is cut off.

Parameters

{n1}{n2} Specified number of bytes k = n1 + n2*256

0000h ≦ Specified number of bytes k ≦ First positive number that exceeds the value of the number of print head pins divided by 8 (Gauss number)

{n} Number of bytes of raster data (d1 to dk)

However, use the following value if no compression is specified as the compression mode.

n=16

{d1~dn} Raster data.

Z Zero raster graphics

ASCII:	Z
Hexadecimal:	5A

Description

- Fills raster line with 0 data.

FF Print command

ASCII:	FF
Hexadecimal:	0C

Description

- Used as a print command at the end of pages other than the last page when multiple pages are printed.

Control-Z Print command with feeding

ASCII:	Control-Z
Hexadecimal:	1A

Description

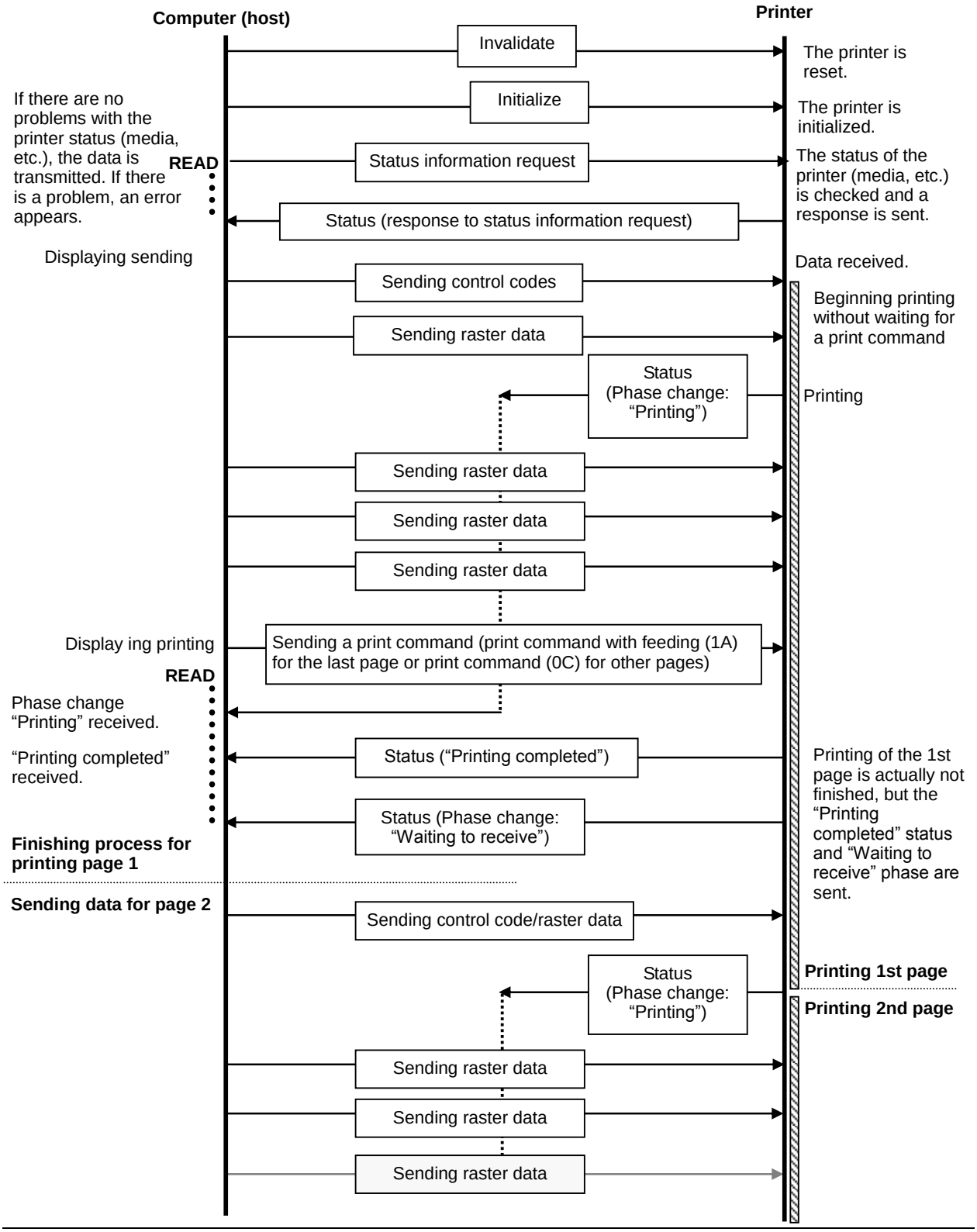
- Used as a print command at the end of the last page.

5. Flow Charts

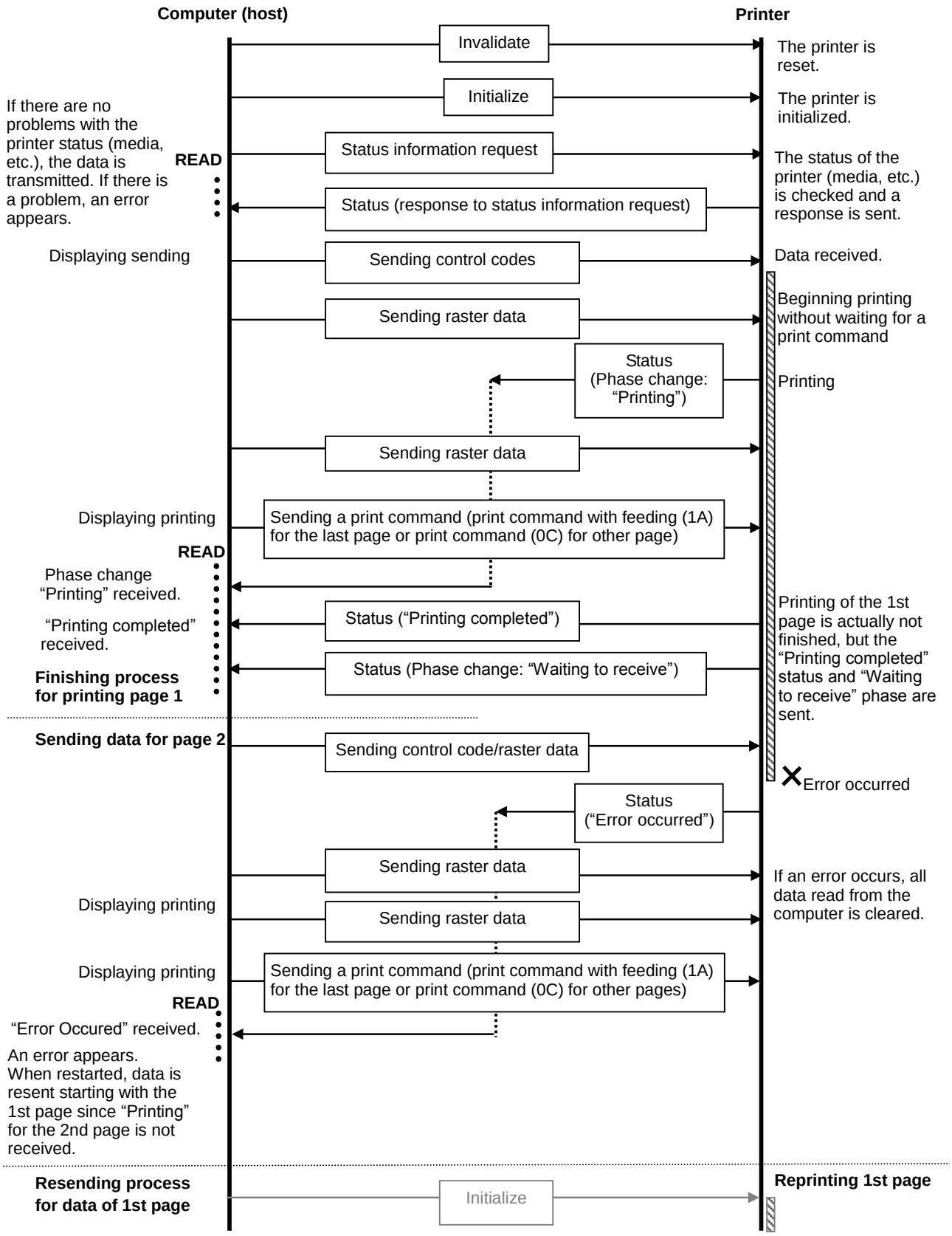
Normally, printing is performed as buffered printing.
However, if the printer is connected via USB and uncompressed data is received, concurrent printing is performed.

Note:
Concurrent printing : Printing starts immediately after the printer receives print data.
Buffered printing : Printing starts after one page of print data is received.

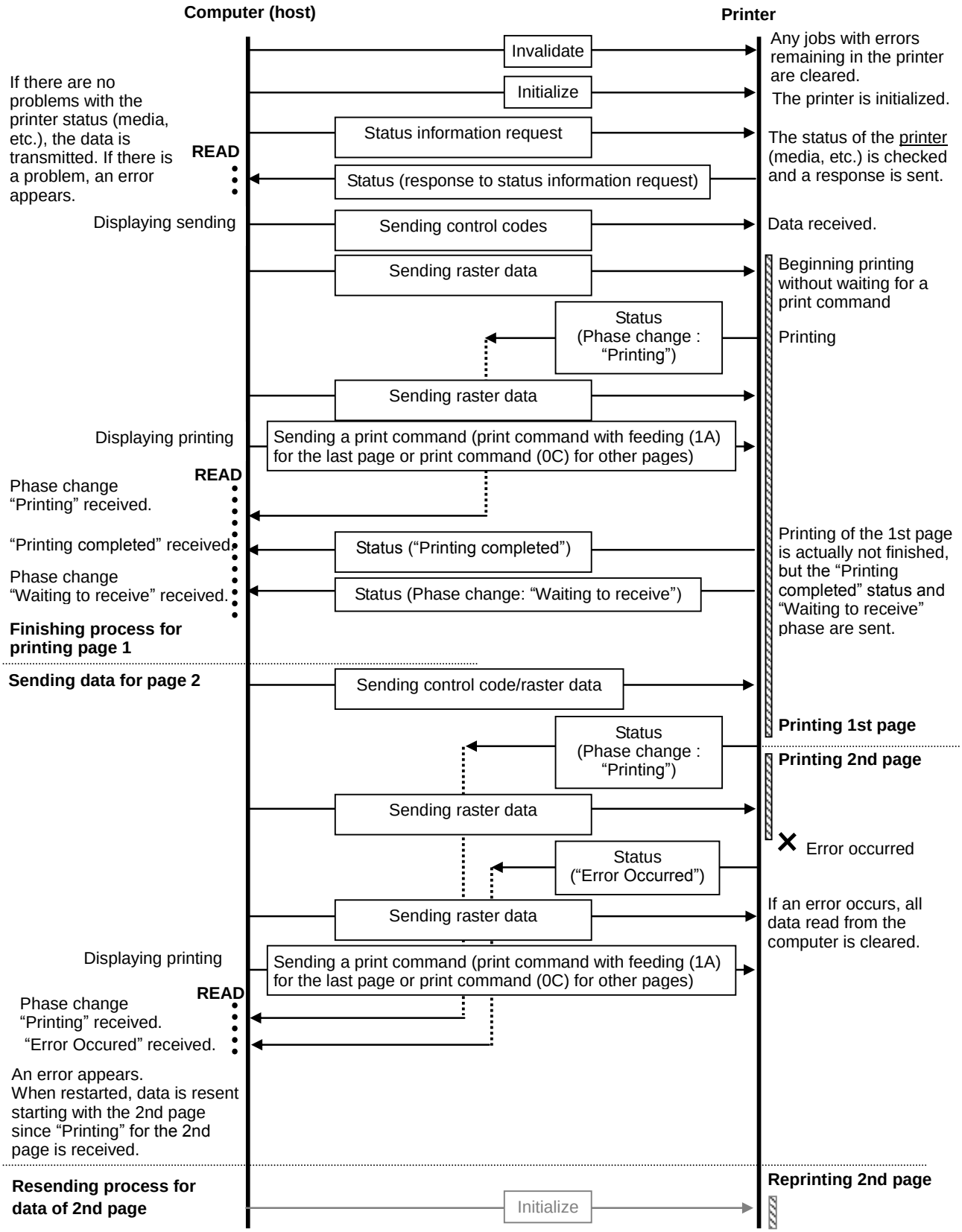
5.1 Concurrent printing normal flow for USB connection



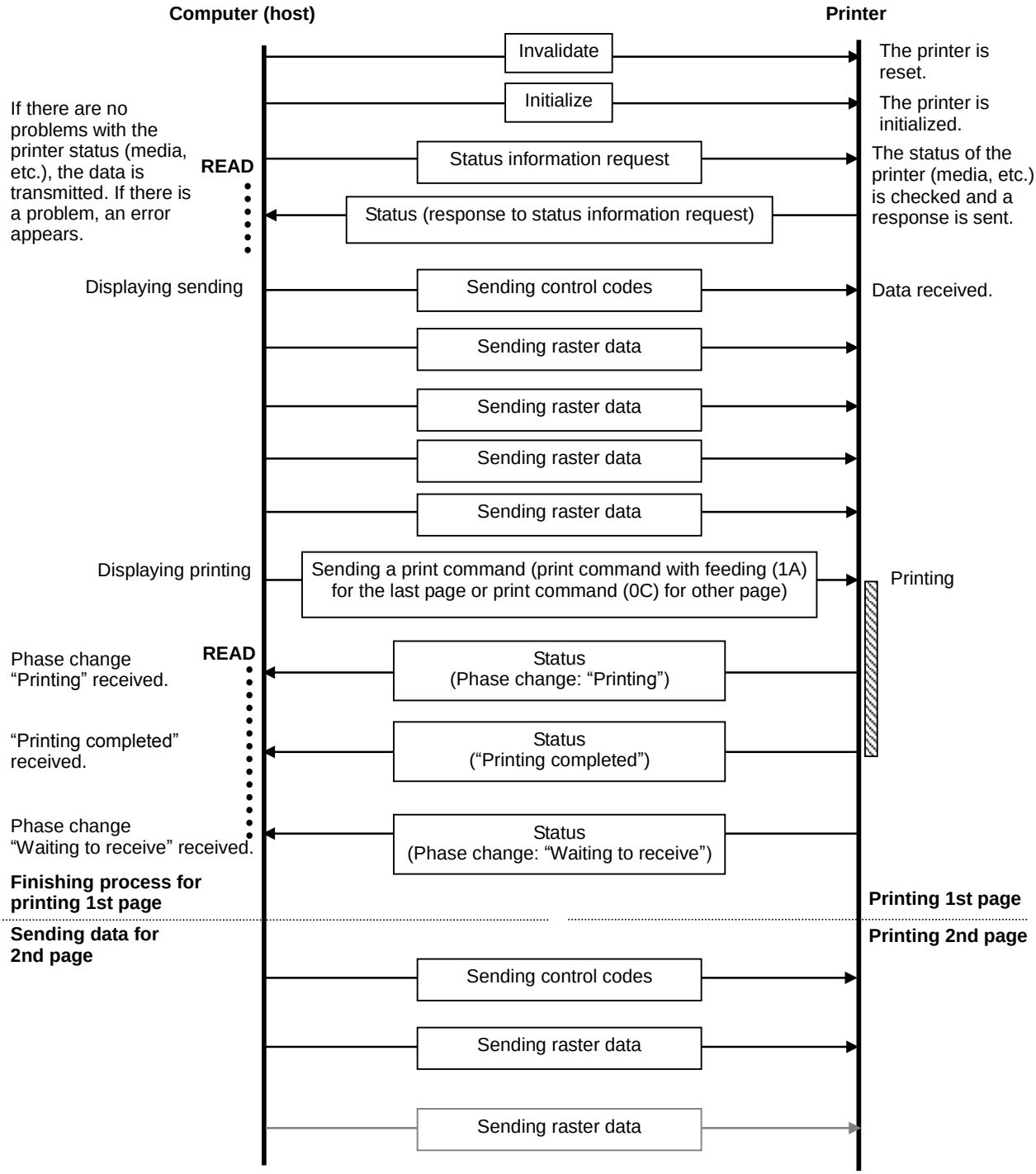
5.2 Concurrent printing error flow for USB connection (when feeding at the end of the page)



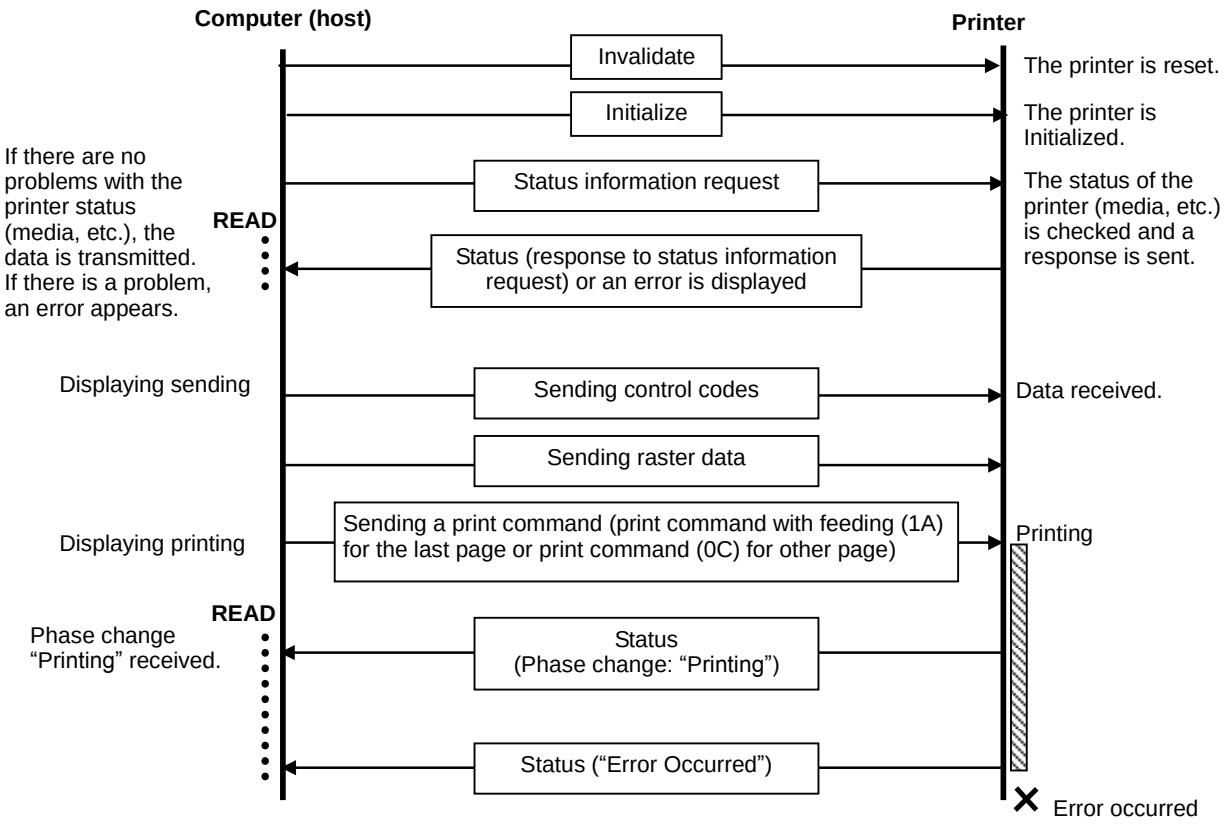
5.3 Concurrent printing error flow for USB connection (with a concurrent printing error such as end of tape)



5.4 Buffered printing normal flow for USB connection



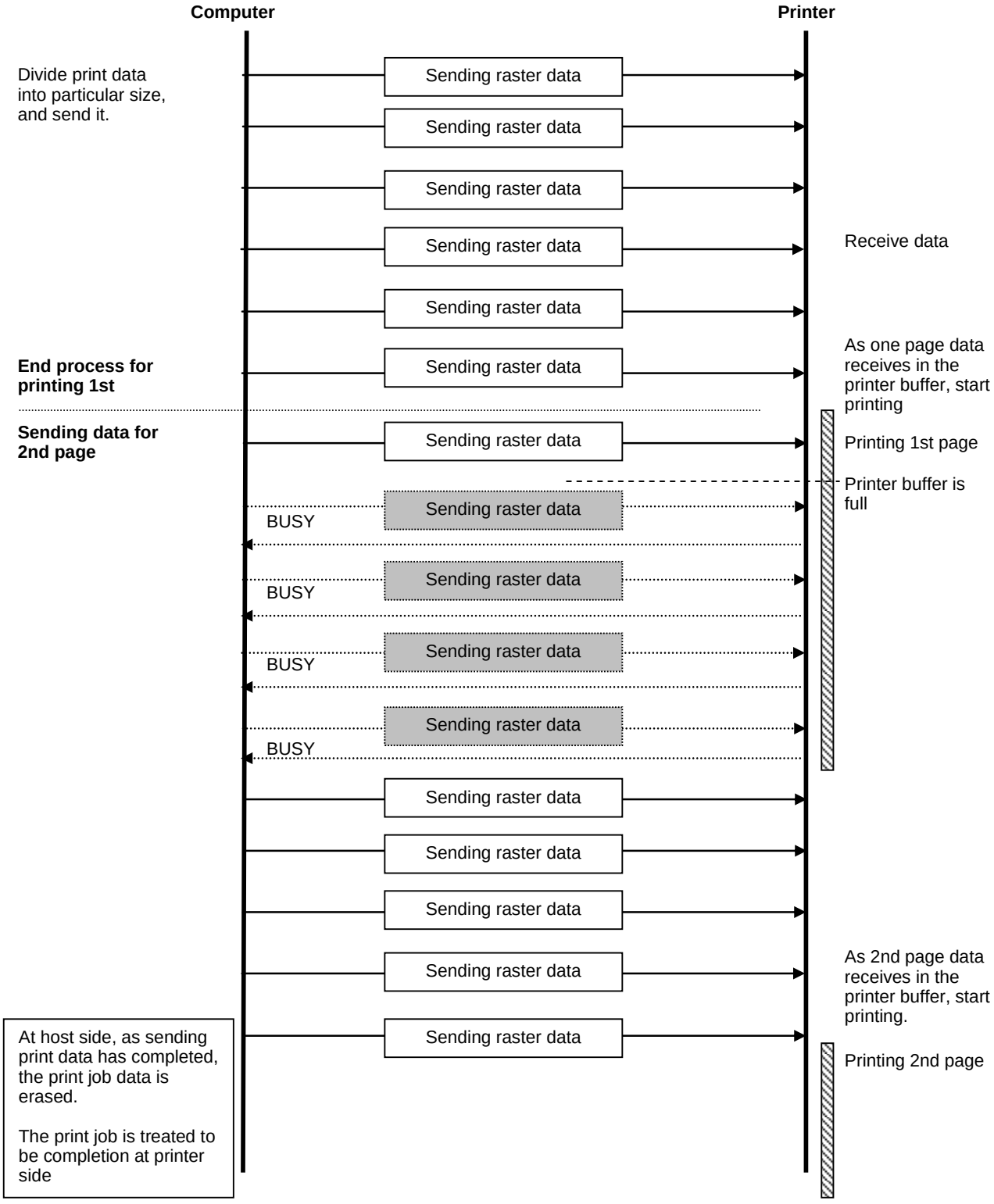
5.5 Buffered printing error flow for USB connection



5.6 Normal Flow for Network (Standard TCP/IP port) Connection

*With a network connection, print data from the operating system's port monitor is simply sent as is.

When it prints 2 pages data



Appendix A: USB Specifications

USB specifications 1.1

Item	Description
Vendor ID	0x04F9
Product ID	PT-E550W : 0x2060 PT-P750W : 0x2062
Class	Printer
Character string for manufacturer	Character string descriptor: 0x01 0x0409: “Brother”
Character string for serial number	Character string descriptor: 0x03 0x0409: “000” + Last nine digits of the printer’s serial number
Device speed	Full speed
Number of interfaces	1 (No alternate interfaces)
With the printer class	
Power supply	Self-powered (As a printer class, Bus power is also set to “ON”.)
End point 1	In bulk (Sends the status from the printer to the computer.) Maximum packet size: 64 bytes
End point 2	Out bulk (Sends print commands and data from the computer to the printer.) Maximum packet size: 64 bytes

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

