

Software Developer's Manual

Raster Command Reference

TD-2310D/2320D/2320DSA/2350D/2350DSA

TD-2320DF/2350DF

Version 1.00

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1. Introduction

This material provides the necessary information for directly controlling the Brother printer TD-23xxD (where “23xxD” 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 and networks in a developer's environment.

Details concerning the USB interface are not described in this material.

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

2. About Raster Commands

Using raster commands an TD-23xxD printer (where “23xxD” 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.

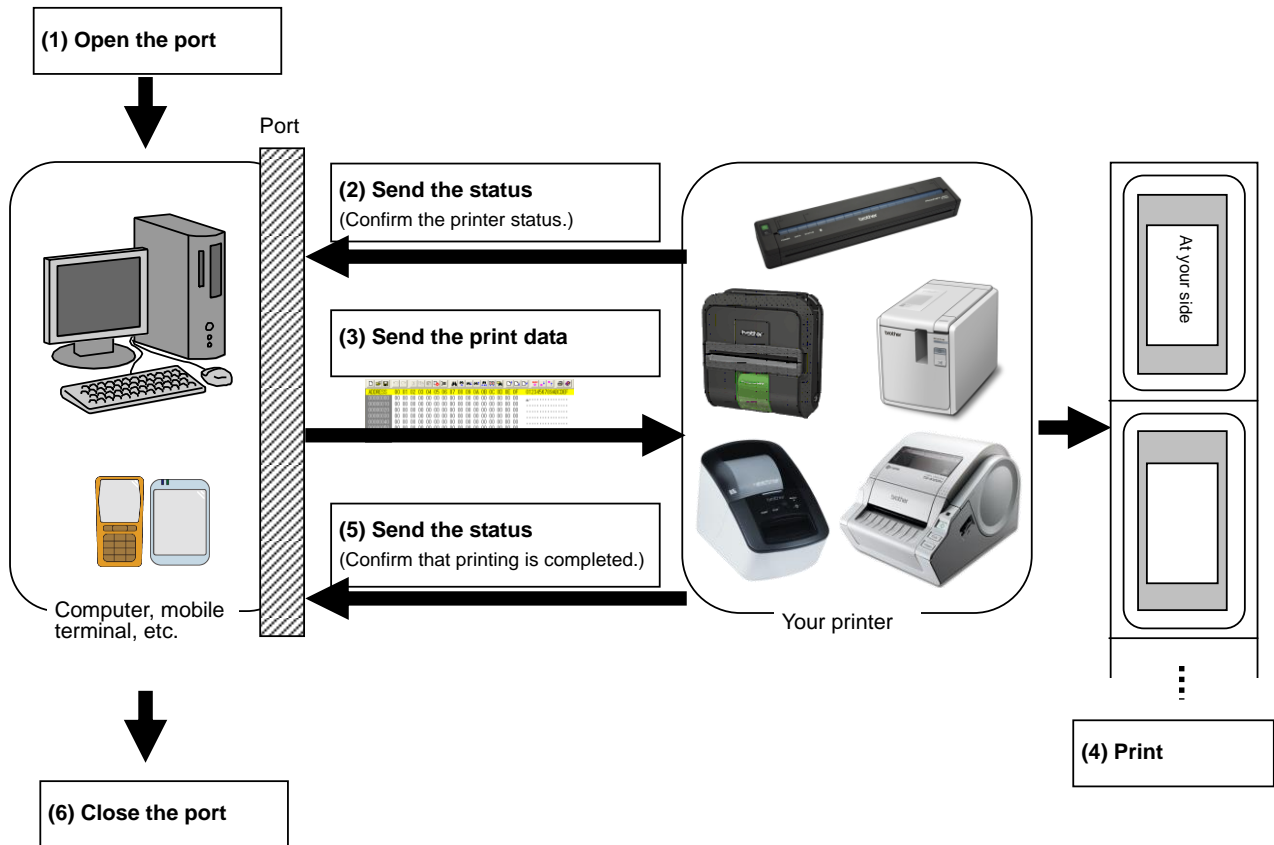
In this material, “raster” refers to binary bitmap data (collection of dots).

Refer to this material to print by sending initialization commands and control codes together with raster data to the TD-23xxD printer (hereafter, referred to as “printer”).

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

3. Printing Using Raster Commands

The printing procedure is described below. For detailed flow charts, refer to "[8. Flow Charts](#)". For details on each command, refer to "[7. Printing Command Details](#)".



(1) Open the USB / Bluetooth / network port

Open the USB/network port in the operating environment. The procedure for opening the USB / Bluetooth / 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 [“7. Printing Command Details”](#).

(3) Send the print data

If the status analysis confirms that no error has occurred, the print data is sent.

The structure of the print data is explained in the next section, [“4. 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 / Bluetooth / network port

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

4. Print Data

4.1 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 661-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 command mode of the printer to raster mode. 1Bh, 69h, 61h, 01h
2	Switch automatic status notification mode	Dynamically switches whether an automatic status notification is given during printing. 1Bh, 69h, 21h, 00h
3	Additional media information command	1Bh, 69h, 55h, 77h, 01h, 127 bytes of media information Note If the media information is the same as when printing was last performed, it is unnecessary to send the additional media information command.
4	Print information command	Sets the print information for the printer. For a length setting of 26mm for 51-mm-wide die-cut label: 1Bh, 69h, 7Ah, 8Eh, 0Bh, 33h, 1Ah, E6h, 00h, 00h, 00h, 00h
5	Various mode	To select "Auto cut" 1Bh, 69h, 4Dh, 40h
6	Specify margin amount	Specifies the amount of the margins. For 3 mm margins: 1Bh, 69h, 64h, 18h, 00h (203 dpi) 1Bh, 69h, 64h, 24h, 00h (300 dpi)
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". 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
-	Print command with feeding	Specifies at the end of the last page. 1Ah (Fixed)
Last	Switch dynamic command mode	Resets the command mode of the printer to default mode. 1Bh, 69h, 61h, FFh

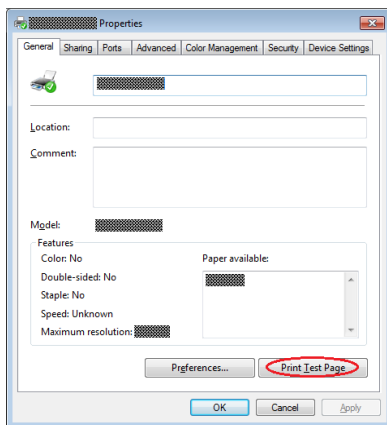
4.2 Sample (analyzing the print data of the test page)

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® 10 operating environment. A similar procedure can be performed if you are using a different operating system.



Printer Properties

4.2.1 Preparation

Install the two listed below.

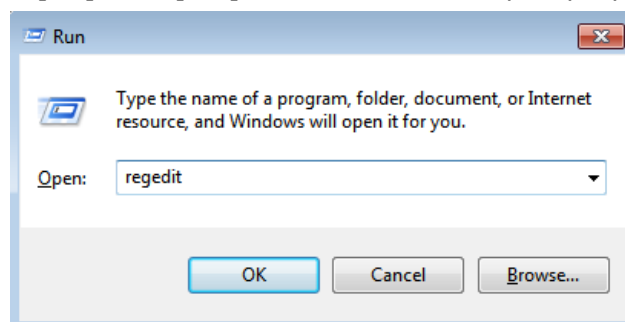
- Printer driver of the Brother TD-23xxD
- Binary file editor

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.

***Please follow the steps below to set registry:**

- 1: Open the **[Run]** box (keyboard shortcut [Windows Key] + [R])
- 2: Type **“regedit”** and click **[OK]**. Click **[Yes]** to confirm when UAC prompt appears.



Run

3: Open the path below in TreeView on the left-side of the Registry Editor.

\\HKEY_LOCAL_MACHINE\\SOFTWARE\\Brother Industries, Ltd.\\P-touch\\Driver\\3.0\\Brother TD-23xxD
E.g. TD-2320D:

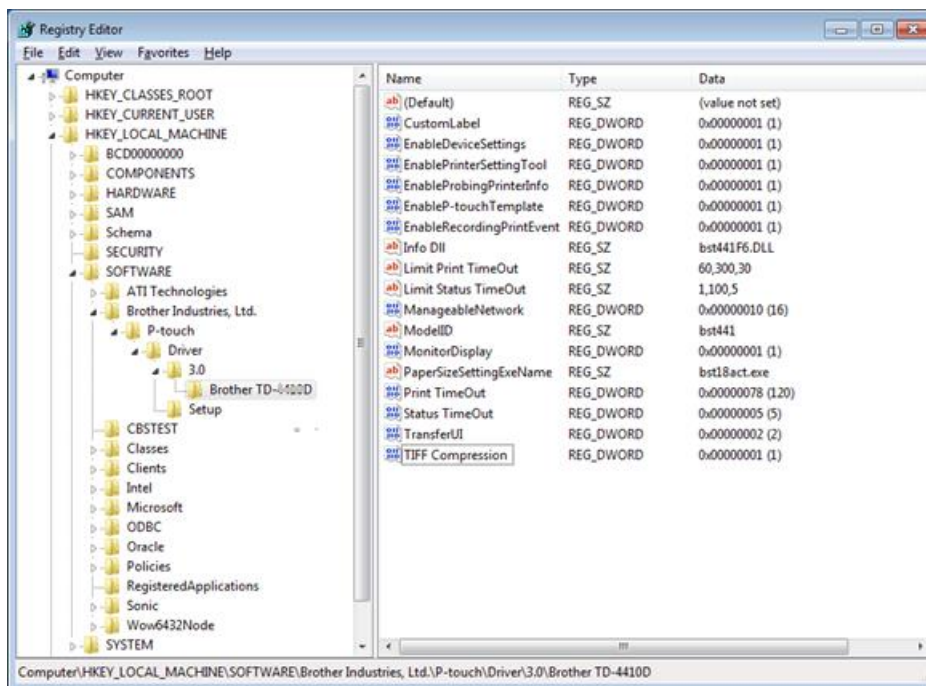
\\HKEY_LOCAL_MACHINE\\SOFTWARE\\Brother Industries, Ltd.\\P-touch\\Driver\\3.0\\Brother TD-2320D
(300 dpi)

4: Right-click on the right pane and select **[New] → [DWORD (32-bit) Value]**

5: Rename the added key to **[TIFF Compression]**

6: Right-click the added key and select **[Modify]**

7: Change the **[Value data]** to **“1”** on the edit dialogue



Registry Editor (After [TIFF Compression] registry key added)

4.2.2 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.

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 [“7. Printing Command Details”](#).

No.	Command Name	Description
1	Invalidate	A 661-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	Switch automatic status notification mode	Dynamically switches whether an automatic status notification is given during printing.
5	Job ID setting commands	Internal specification commands. Since this is a command for outputting with the commercial version of the driver, it is unnecessary for the user to send this command.
6	Additional media information command	Additional media information on the media size is sent. This is the command for “4” x 6” (102 mm x 152 mm)”.
7	Print information command	Media size information for the print data is sent. This is the command for “4” x 6” (102 mm x 152 mm)” die-cut label.
8	Various mode settings	This command specifies the settings such as cut options. Normally no settings required here.
9	Specify the page number in “cut each * labels”	The number of pages printed before automatically cutting is specified. Here, “auto cut” is specified.
10	Expanded mode	This is the command for specifying expanded functions. Here, “cut at end” is specified.
11	Specify waiting time after printing each page	This command specified the length of time to wait after printing every single page.
12	Specify margin amount	This command specifies the amount of margins.
13	Select compression mode	TIFF compression mode is selected.
14	Raster data	Raster data continues.
15	Print command with feeding	Since one page will be printed, this is sent at the end of the first page.
16	Switch dynamic command mode	This command resets to default mode that is switched by No.3. Send this command after [Print command with feeding] is sent.

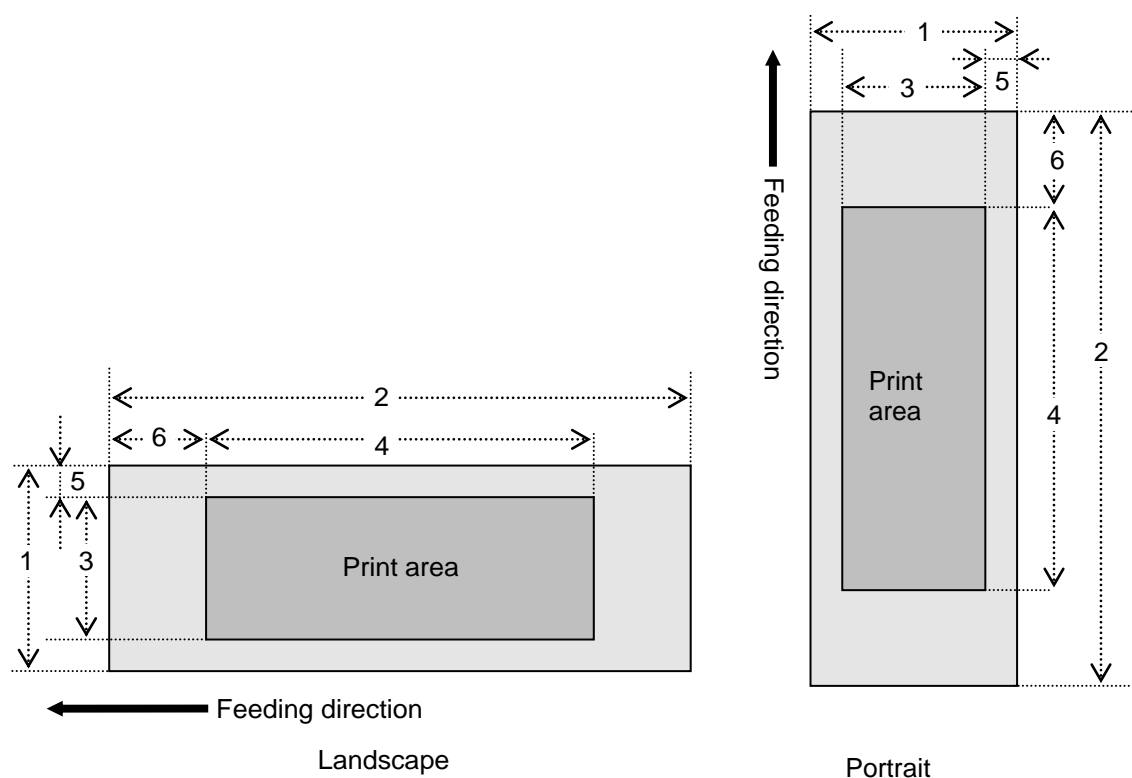
4.3 Page data details

4.3.1 Resolution

Resolution	Height-to-Width Proportion
203 dpi high, 203 dpi wide	1:1
300 dpi high, 300 dpi wide	1:1

4.3.2 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 |

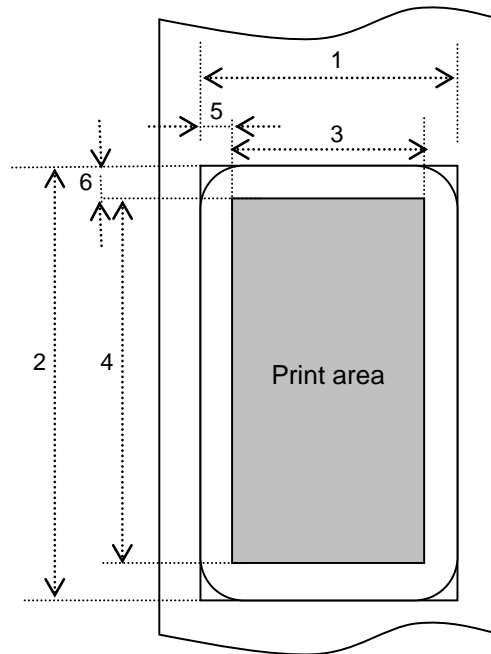
203 dpi

ID	Tape Size	1	2	3	4	5	6
426	58 mm 2.28"	58.0 mm 464 dots	→ 4.3.4	55.0 mm 440 dots	→ 4.3.5	1.5 mm 12 dots	→ 4.3.3
438	57 mm 2.24"	57 mm 456 dots	→ 4.3.4	54 mm 432 dots	→ 4.3.5	1.5 mm 12 dots	→ 4.3.3
454	Linerless 58 mm Linerless 2.28"	58.0 mm 464 dots	→ 4.3.4	55.0 mm 440 dots	→ 4.3.5	1.5 mm 12 dots	→ 4.3.3

300 dpi

ID	Tape Size	1	2	3	4	5	6
426	58 mm 2.28"	58.0 mm 684 dots	→ 4.3.4	55.0 mm 648 dots	→ 4.3.5	1.5 mm 18 dots	→ 4.3.3
438	57 mm 2.24"	57.0 mm 672 dots	→ 4.3.4	54 mm 637 dots	→ 4.3.5	1.5 mm 18 dots	→ 4.3.3
454	Linerless 58 mm Linerless 2.28"	58.0 mm 684 dots	→ 4.3.4	55.0 mm 648 dots	→ 4.3.5	1.5 mm 18 dots	→ 4.3.3

(b) Die-cut labels



- | | | |
|--------|---|---------------------|
| Number | 1 Width | 2 Length |
| | 3 Print area width (maximum printing width) | 4 Print area length |
| | 5 Width offset | 6 Length offset |

203 dpi

ID	Label Size	1	2	3	4	5	6
422	51mm x 26mm 2.0" x 1.0"	50.8 mm 406 dots	25.58 mm 205 dots	47.8 mm 382 dots	19.58 mm 156 dots	1.5 mm 12 dots	3.0 mm 24 dots

300 dpi

ID	Label Size	1	2	3	4	5	6
422	51mm x 26mm 2.0" x 1.0"	50.8 mm 599 dots	25.58 mm 302 dots	47.8 mm 563 dots	19.58 mm 230 dots	1.5 mm 18 dots	3.0 mm 35 dots

4.3.3 Feed amount

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

Type	Minimum Margin Setting	Maximum Margin Setting
Continuous length tape	3.0 mm 0.12" 24 dots (203 dpi) 35 dots (300 dpi)	127.0 mm 5" 1015 dots (203 dpi) 1500 dots (300 dpi)
Die-cut labels	The length offset indicated in "(b) Die-cut labels" of 4.3.2 Page size is used. However, set "0" as the value of the "specify margin amount" command.	

4.3.4 Maximum and minimum lengths

The maximum and minimum lengths are defined below.

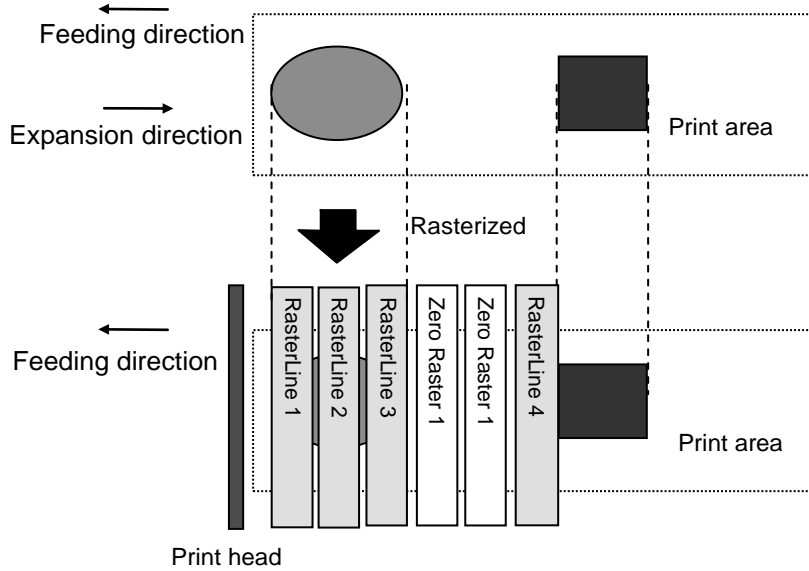
Type	Minimum Length	Maximum Length
Continuous length tape	6.4 mm 0.25" 51 dots (203 dpi) 76 dots (300 dpi)	3000.0 mm 118.11" 23977 dots (203 dpi) 35433 dots (300 dpi)
Die-cut labels	Fixed	Fixed

The minimum length supported by the optional units are defined below.

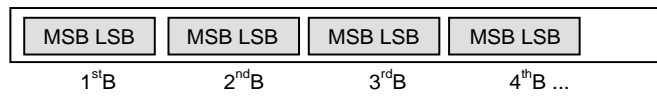
Optional Unit	Minimum Length
Peeler	17.0 mm 0.67" 136 dots (203 dpi) 201 dots (300 dpi)
Auto-cutter	20.0 mm 0.79" 160 dots (203 dpi) 236 dots (300 dpi)

4.3.5 Raster line

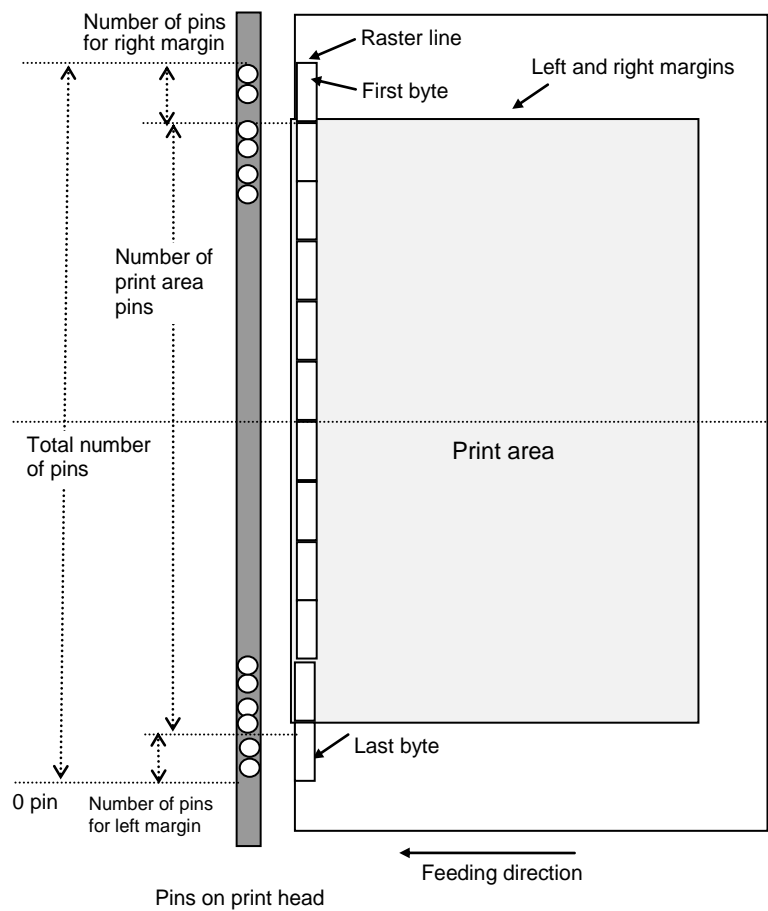
As shown below, the parts with data to be printed are converted with “raster graphics transfer”, and the parts with no data are converted with “zero raster graphics”. On the actual tape, margins (feed) are added specified with “various mode settings” at the beginning and the end.



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



(203 dpi) Total number of pins: 472 pins



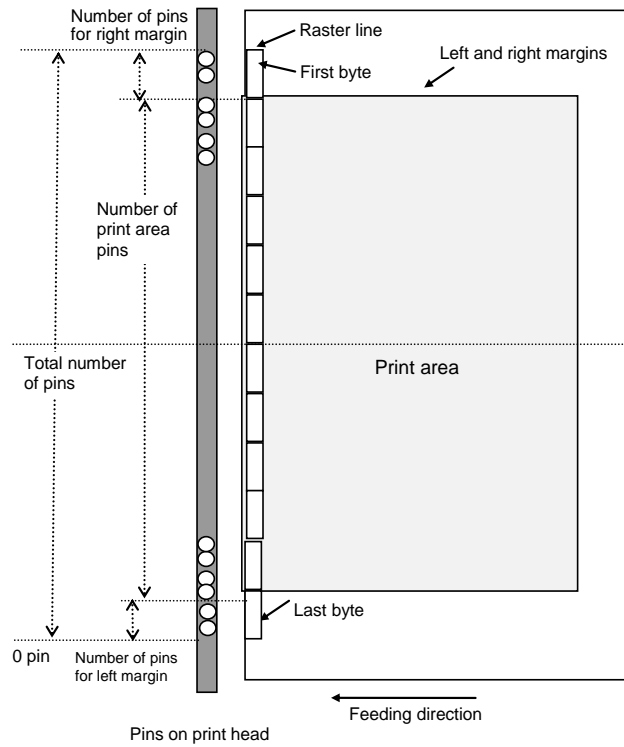
Continuous length tape:

Tape Size	Number of Pins for Left Margin	Number of Print Area Pins	Number of Pins for Right Margin	Number of Bytes for Raster Graphics Transfer
58 mm Linerless 58 mm	16	440	16	59
57 mm	20	432	20	59

Die-cut labels:

Label Size	Number of Pins for Left Margin	Number of Print Area Pins	Number of Pins for Right Margin	Number of Bytes for Raster Graphics Transfer
51 mm x 26 mm	45	382	45	59

(300 dpi) Total number of pins: 696 pins



Continuous length tape:

Tape Size	Number of Pins for Left Margin	Number of Print Area Pins	Number of Pins for Right Margin	Number of Bytes for Raster Graphics Transfer
58 mm Linerless 58 mm	24	648	24	87
57 mm	30	637	29	87

Die-cut labels:

Label Size	Number of Pins for Left Margin	Number of Print Area Pins	Number of Pins for Right Margin	Number of Bytes for Raster Graphics Transfer
51 mm x 26 mm	67	563	66	87

5. Status

5.1 Status overview

The status is sent from the printer to the computer as a reply to the “status information request” command or as an error message. The size is fixed at 32 bytes.

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	Refer to 5.2.1 Series/model
5	4	1	Model code	Refer to 5.2.1 Series/model
6	5	1	Country code	“0” (30h) for USA or not specified. “1” (31h) for JPN “2” (32h) for CHN
7	6	1	Battery level and AC Adapter connection status	Refer to 5.2.2 Battery level and AC Adapter connection status
8	7	1	Reserved	Fixed at “00h”
9	8	1	Error information 1	Refer to 5.2.3 Error information 1
10	9	1	Error information 2	Refer to 5.2.4 Error information 2
11	10	1	Media width	Refer to 5.2.5 Media width and length
12	11	1	Media type	Refer to 5.2.6 Media type
13	12	1	Number of colors	Fixed at 00h
14	13	1	Media length (higher order bytes)	Fixed at 00h
15	14	1	Media sensor value	Fixed at 3Fh
16	15	1	Mode	01h
17	16	1	Density	Fixed at 00h
18	17	1	Media length (lower order bytes)	Refer to 5.2.5 Media width and length
19	18	1	Status type	Refer to 5.2.7 Status type
20	19	1	Phase type	Refer to 5.2.8 Phase type and phase number
21	20	1	Phase number (higher order bytes)	
22	21	1	Phase number (lower order bytes)	
23	22	1	Notification number	Refer to 5.2.9 Notification number
24	23	1	Expansion area (number of bytes)	Fixed at 00h

25	24	8	Reserved	Fixed at 00h
----	----	---	----------	--------------

5.2 Definitions of each part

5.2.1 Series/model

Model name	Status code	
	Series	Model
TD-2310D (203 dpi)	"5" (35h)	"T" (54h)
TD-2310D (300 dpi)	"5" (35h)	"U" (55h)
TD-2320D (203 dpi)	"5" (35h)	"V" (56h)
TD-2320D (300 dpi)	"5" (35h)	"W" (57h)
TD-2320DF (203 dpi)	"5" (35h)	"X" (58h)
TD-2320DSA (203 dpi)	"5" (35h)	"Z" (5Ah)
TD-2320DSA (300 dpi)	"5" (35h)	"a" (61h)
TD-2350D (203 dpi)	"5" (35h)	"b" (62h)
TD-2350D (300 dpi)	"5" (35h)	"c" (63h)
TD-2350DF (203 dpi)	"5" (35h)	"d" (64h)
TD-2350DSA (203 dpi)	"5" (35h)	"f" (66h)
TD-2350DSA (300 dpi)	"5" (35h)	"g" (67h)

5.2.2 Battery level and AC Adapter connection status

Battery level	AC Adapter	Value
Full	not connected	0x20
Half		0x22
Low		0x23
Weak		0x24
Full	connected	0x30
Half		0x32
Low		0x33
Weak		0x34
Empty		0x37

5.2.3 Error information 1

Flag	Mask	Definition
------	------	------------

Bit 0	01h	(Not used)
Bit 1	02h	Media empty
Bit 2	04h	Cutter Jam
Bit 3	08h	Battery weak
Bit 4	10h	(Not used)
Bit 5	20h	Printer turned off
Bit 6	40h	(Not used)
Bit 7	80h	(Not used)

5.2.4 Error information 2

Flag	Mask	Definition
Bit 0	01h	(Not used)
Bit 1	02h	“Expansion buffer full” error
Bit 2	04h	Communication error
Bit 3	08h	(Not used)
Bit 4	10h	“Cover open” error
Bit 5	20h	Printer is too hot
Bit 6	40h	Media cannot be fed (also when the media end is detected)
Bit 7	80h	System error

5.2.5 Media width and length

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

(a) Continuous length tape

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

* Media Length: Fixed at 00h

Media	Media Width	Media Length
58 mm	3Ah	00h
57 mm	39h	00h

(b) Die-cut labels

* Media Width: The width of the die-cut section is indicated.

* Media Length: The length of the die-cut section is indicated.

Media	Media Width	Media Length
51 mm x 26 mm	33h	1Ah

5.2.6 Media type

Media type	Value
Continuous length tape	4Ah
Die-cut labels	4Bh

5.2.7 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~ 20h
(Reserved)	21h ~ FFh

5.2.8 Phase type and phase number

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

Phase type	Value
Receiving state	00h
Printing state	01h

Receiving state

Phase	Value (Dec.)	Higher Order Bytes	Lower Order Bytes
Waiting to receive	0	00h	00h

Printing state

Phase	Value (Dec.)	Higher Order Bytes	Lower Order Bytes
Printing	0	00h	00h

- When the printer is turned on, it is in the receiving state. When printing begins, the printer changes to the “printing” phase (phase type: printing state; phase number: printing) and sends that phase status to the computer. When printing has finished, the printer sends the “printing completed” status to the computer. When the “printing completed” status is sent, the printer changes to the “receiving state” phase status (phase type: receiving state; phase number: waiting to receive) and sends that phase status to the computer.

Unless an error occurs during printing, the printer sends the “printing completed” status.

5.2.9 Notification number

Notification	Value
Not available	00h
Cover open	01h
Cover close	02h
Cooling (started)	03h
Cooling (finished)	04h
Waiting for peeling or Waiting for Lineless cut	05h
Pausing	07h

6. 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 !	1B 69 21	Switch automatic status notification mode
ESC i U w	1B 69 55 77	Additional media information command
ESC i z	1B 69 7A	Print information command
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
ESC i CAN	1B 69 18	Cancel
ESC i w	1B 69 77	Specify waiting time after printing each page
ESC i A	1B 69 41	Specify the page number in "cut each * labels"
ESC i M	1B 69 4D	Various mode settings
ESC i K	1B 69 4B	Expanded mode

7. Printing Command Details

NULL Invalidate

ASCII:	NULL
Hexadecimal:	00

Description

- Skipped
- 661 bytes will be sent.

ESC @ Initialize

ASCII:	ESC	@
Hexadecimal:	1B	40

Description

- Initializes mode settings.

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.

Do not send this command while printing.

ESC i a Switch dynamic command mode

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

Parameters

Definitions of {n1}:

- 0: ESC/P mode
- 1: Raster mode (Be sure to switch to this mode.)
- 3: P-touch Template mode (default)
- 4: CPCL Page emulation mode
- 5: CPCL Line Print emulation mode
- 7: EPL emulation mode
- 8: DPL emulation mode
- FF: Mode set as default.

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 ! Switch automatic status notification mode

ASCII:	ESC	i	!	{n1}
Hexadecimal:	1B	69	21	{n1}

Parameters

Definitions of {n1}

- 0: Notify.
- 1: Do not notify. (default)

Description

- Dynamically switches whether the automatic status notification is given during printing. A printer that receives this command operates in the specified command mode until the printer is turned off.
- Use this command when building a system where the status is not obtained.

ESC i U w Additional media information command

ASCII:	ESC	i	U	w	1	{d1...d127}
Hexadecimal:	1B	69	55	77	01	{d1...d127}

Description

- Updates the media information for the printer.
- Send to the printer the commands outputted with the “Save Paper Size Commands” function of Paper Size Setup.

Note

If the media information is the same as when printing was last performed, it is unnecessary to send the additional media information command.

“Save Paper Size Commands” function of Paper Size Setup

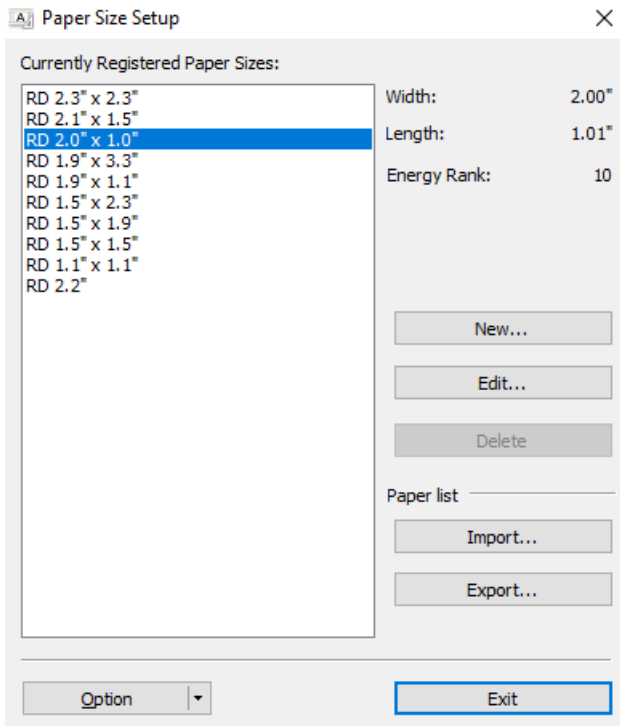
1. Preparation

Install the two listed below.

- **Printer driver of the Brother TD-23xxD**
- **Binary file editor.**

The data outputted with the “Save Paper Size Commands” function of Paper Size Setup will be a binary file. Therefore, use a binary file editor to display and check the contents of the binary file.

- Open the [Devices and Printers] window, right-click the printer, and then display the Printing Preferences dialog box. Click the [Paper Size Setup] button on the [Basic] tab to display the Paper Size Setup dialog box. (Refer to the illustration below.) Click [Save Paper Size Commands] from the [Option] button to display a dialog box for creating a file for saving the paper size commands, and then save them in a file with the specified name.



- Open the saved file in the binary file editor. The rows of numbers that appear are the command data. (Refer to the illustration below.) In the command data that appeared, the part marked with the red box is the additional media information command. Of this, the 127 bytes underlined in orange are the media information. Use this when adding media information.

```

00 00 00 00 00 1B 40 1B-69 61 01 1B 69 21 01 1B .....@.ia..i!..
69 55 4A 00 0C BC C3 42-C5 60 B7 00 00 03 00 00 iUJ....B.`.....
00 1B 69 55 77 01 3F 0A-33 1A 00 33 43 00 33 02 .iUw.?.3..3C.3.
E6 00 00 00 00 00 00 00-00 00 00 A6 01 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 00 .....
00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 .....
00 00 00 35 31 6D 6D 20-78 20 32 36 6D 6D 00 00 ...51mm x 26mm..
00 00 00 32 2E 30 22 20-78 20 31 2E 30 22 00 00 ...2.0" x 1.0"..
00 00 00 00 00 51 01 00-00 23 00 00 00 00 00 01 .....Q...#.....
23 00 00 00 00 1B 69 7A-8E 0B 33 1A E6 00 00 00 #.....iz..3.....

```

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 0x02 Media type 0x04 Media width 0x08 Media length 0x80 Printer recovery always on
{n2}:	Media type Continuous length tape: 0Ah Die-cut labels: 0Bh
{n3}:	{n3}: Media width (mm)
{n4}:	{n4}: Media length (mm) For the media of width 58 mm, specify as n3 = 3Ah and n4 = 00h.
{n5-n8}:	Raster number = $n8*256*256*256 + n7*256*256 + n6*256 + n5$
{n9}:	Starting page: 0 Other pages: 1
{n10}:	Fixed at 0

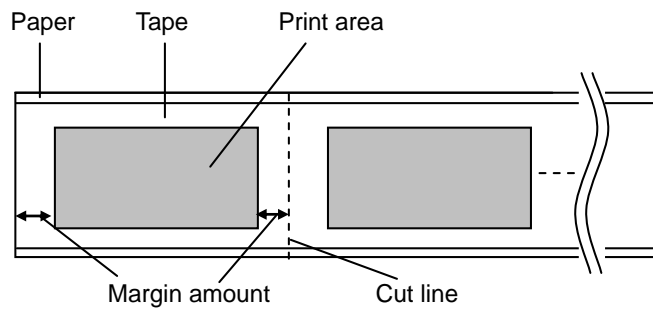
ESC i d Specify margin amount (feed amount)

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

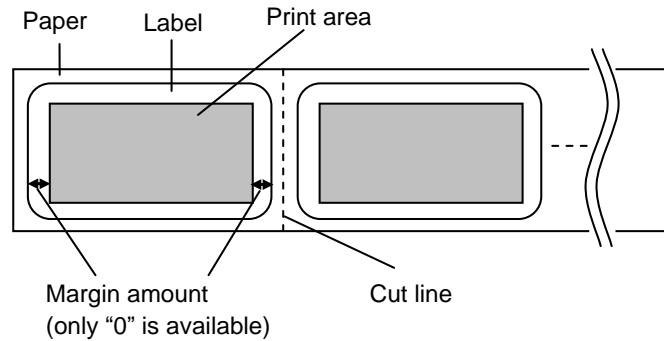
Description

- Specifies the amount of the margins.
- Margin amount (dots) = $n1 + n2 \cdot 256$
- With die-cut labels, the margin amount at the ends of the printed area is 0.

(a) Continuous length tape



(b) Die-cut 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.
- Registry has to be added in order to use TIFF compression mode.

For details, refer to section "[4.2.1 Preparation](#)".

[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 59 bytes of compressed data with 203 dpi printer or 87 bytes of compressed data with 300 dpi printer, the data is treated as being all different. As a result, the data will be 60 bytes with 203 dpi printer or 88 bytes with 300 dpi printer, 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 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

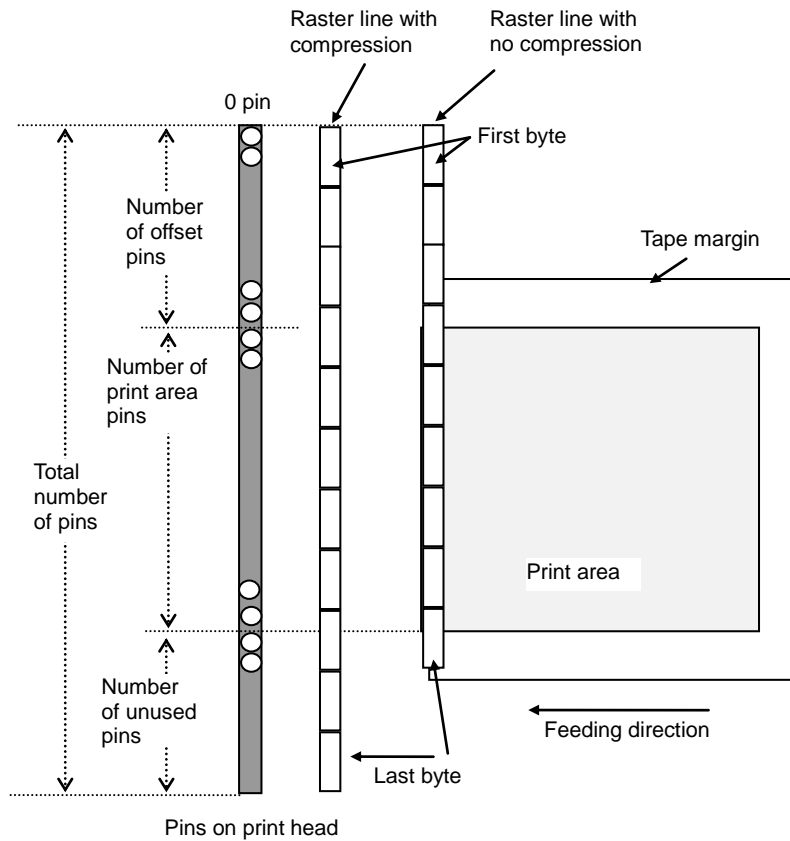
Continue for the remaining number of bytes for the uncompressed data. Even if 00h continues until the end, it cannot be omitted.

Explanation of "TIFF compression mode"

With compression, the data for the "raster graphics transfer" command is based on 59 bytes (203 dpi printer) or 87 bytes (300 dpi printer) of the total number of pins (203 dpi printer): 472 and (300 dpi printer): 696).

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 59 bytes with 203 dpi printer or 87 bytes with 300 dpi printer when it is expanded by the machine, regardless of the tape width.



g Raster graphics transfer

ASCII:	g	{s}	{n}	{d1}	...	{dn}
Hexadecimal:	67	{s}	{n}	{d1}	...	{dn}

Parameters

{s} 00h

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

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

(203 dpi printer: n = 59, 300 dpi printer: n = 87)

{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.

ESC i CAN Cancel

ASCII:	ESC	i	CAN
Hexadecimal:	1B	69	18

Description

- Cancel sending data while sending printing data. For no-compression mode, may cancel printing previous page depending on the cancel timing.
- Printing will not be cancelled after receiving the "[Control-Z Print command with feeding](#)".

ESC i w Specify waiting time after printing each page

ASCII:	ESC	i	w	{n1}
Hexadecimal:	1B	69	77	{n1}

Parameters

Definitions of {n1}:

0: Don't wait / Non-stop printing enabled (default)

1 ~ 255 (FFh): Time to wait = 0.1 [sec] ~ 25.5 [sec] / non-stop printing enabled

Description

- Wait for the specified duration after printing every single page.
- The accuracy of the waiting time is not guaranteed.
This means that the printer will not stop exactly for 500 [msec] even when 500 [msec] is being set as the waiting duration.
- Especially when the specified time is very short (e.g. 100 msec), the other processes may cause the extension of the waiting time.

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 - 255)

Default is 1 (cut each label).

Description

When “auto cut” is specified, you can specify page number (1 - 255) in “cut each * labels”.

ESC i M Various mode

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

Parameters

Definitions of {n}

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

0 ~ 3bit: Not used

4bit: Peeler 1: Peeler 0: No peeler

5bit: Not used

6bit: Auto cut 1: Auto cut 0: No auto cut

7bit: Not used

ESC i K Expanded mode

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

Parameters

Definitions of {n}

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

0~2bit: Not used

3bit: Cut at end 1: Cut at end (default) 0: Not cut at end

4~7bit: Not used

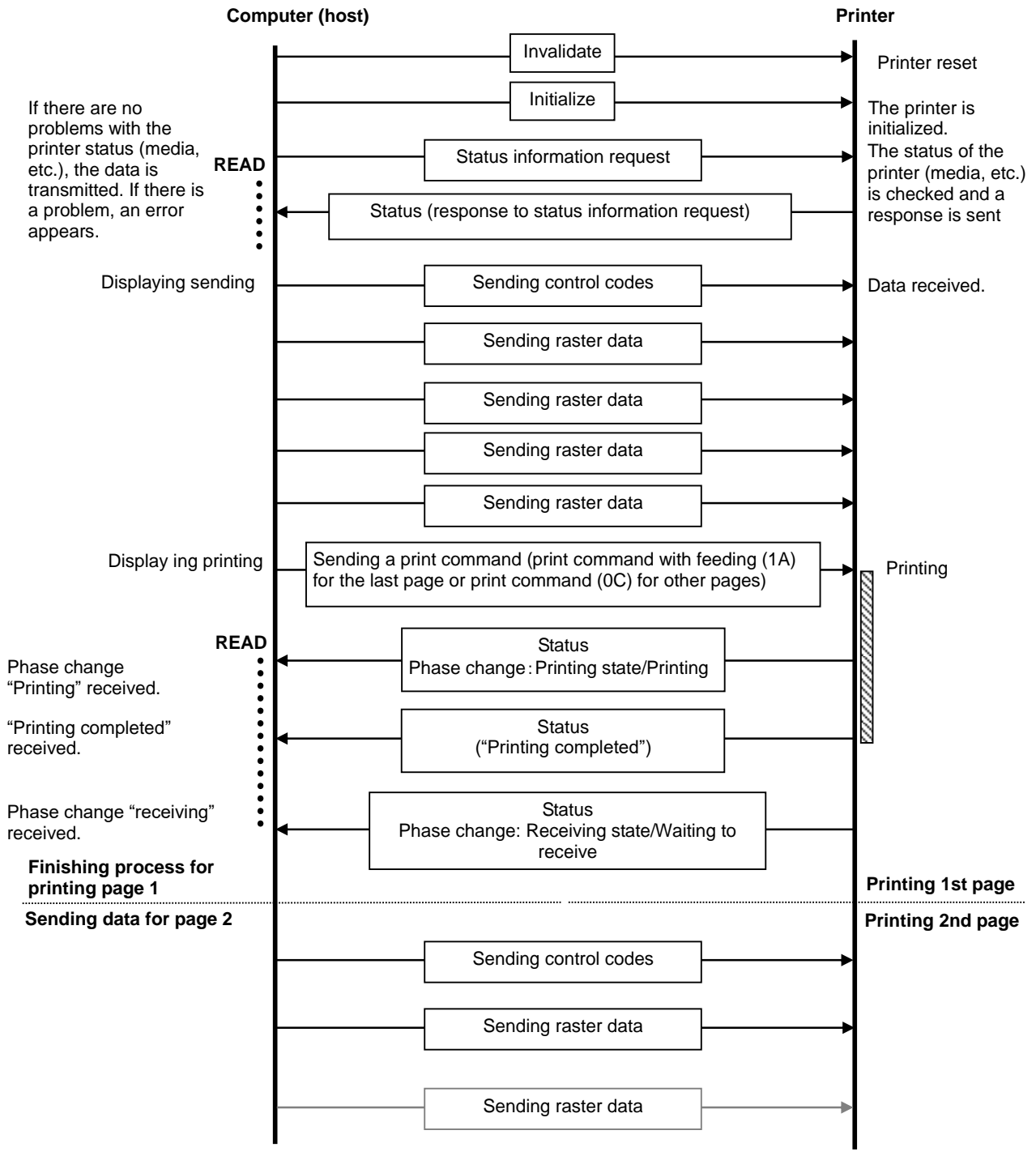
8. Flow Charts

TD-23xxD printers perform as buffered printing.

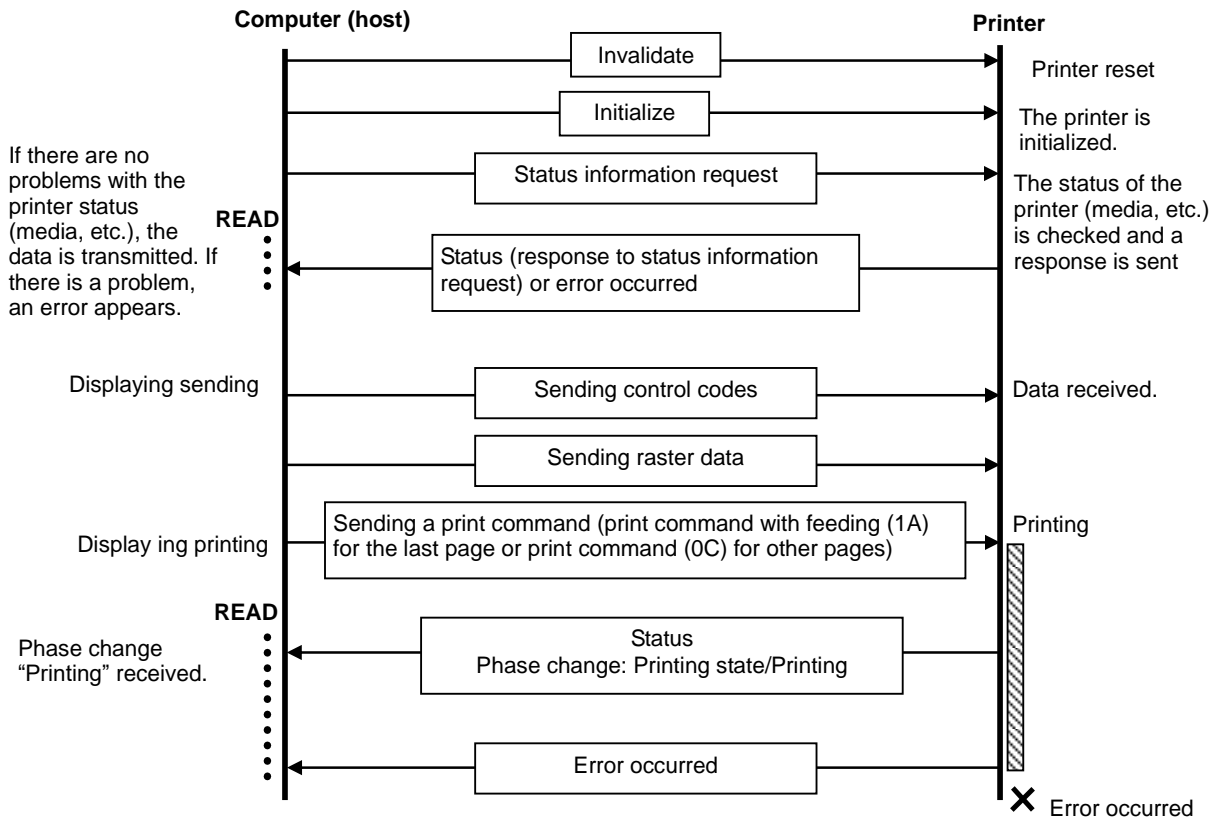
Buffered printing is a method that a print starts after one page of print data is received.

.

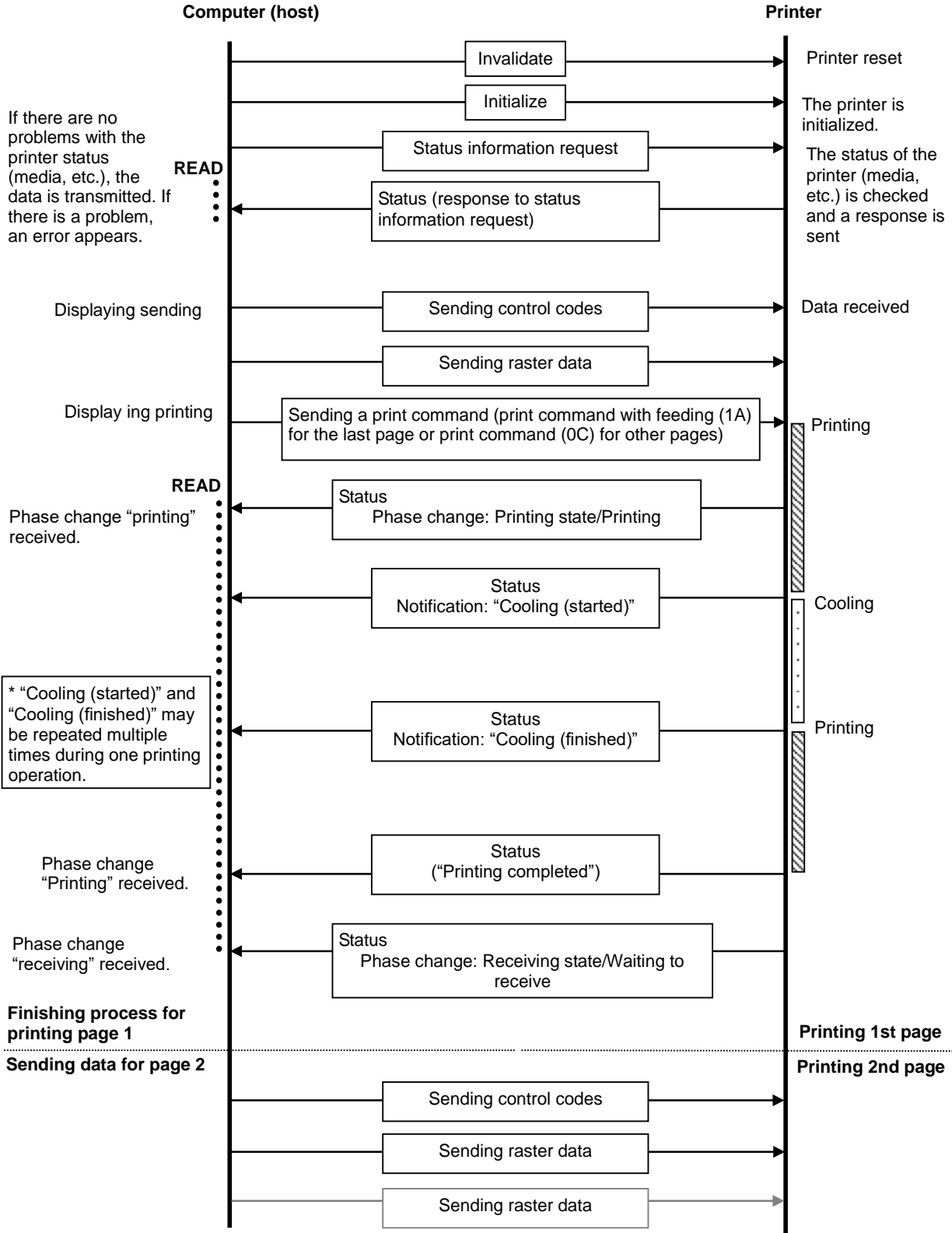
8.1 Buffered printing normal flow for USB/Bluetooth connection



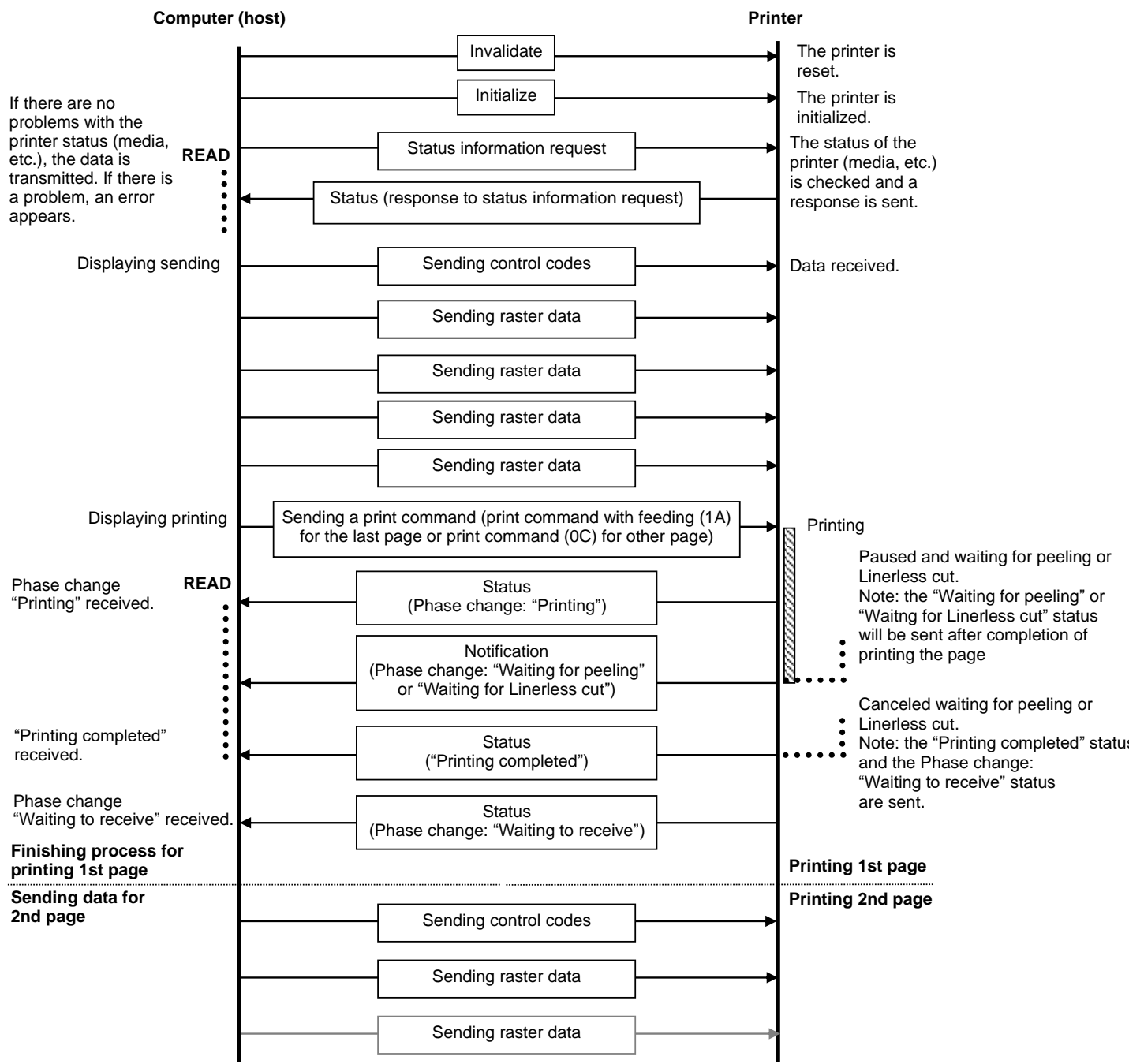
8.2 Buffered printing error flow for USB/Bluetooth connection



8.3 Buffered printing cooling flow for USB/Bluetooth connection



8.4 Buffered printing waiting for peeling or Lineless cut / resumed flow for USB/Bluetooth connection

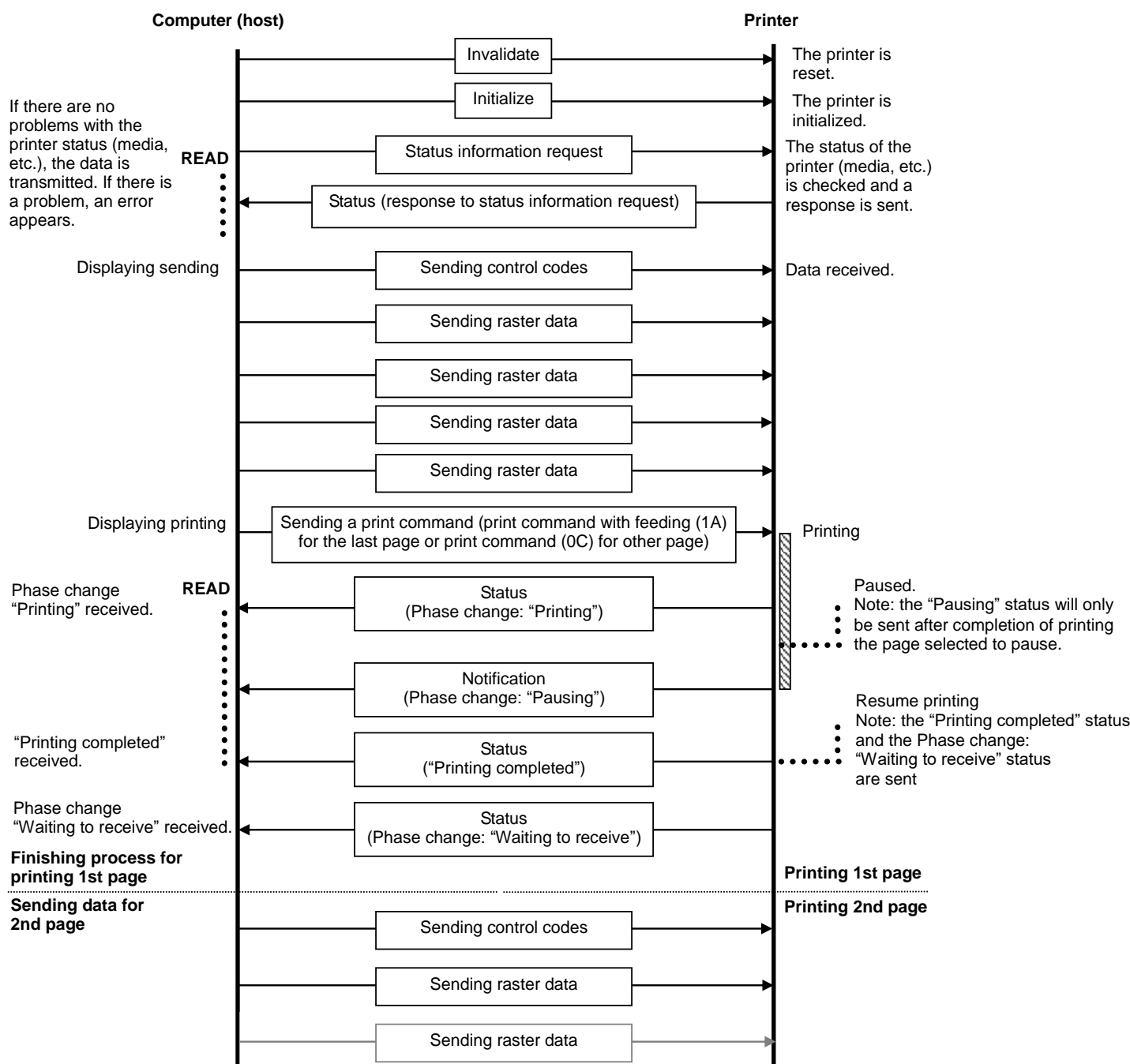


8.5 Buffered printing waiting for pausing/resumed flow for USB/Bluetooth connection

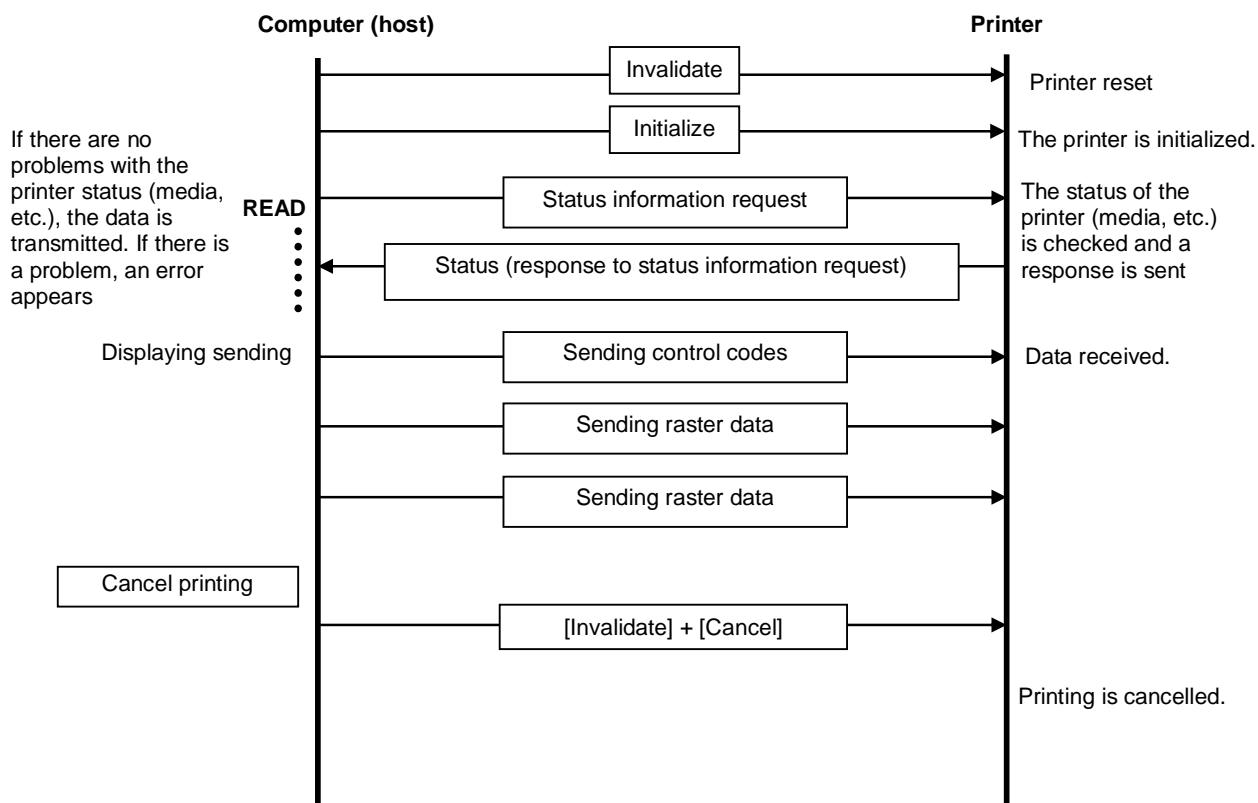
Note: Print pausing is only effective when printing pages.

“Pausing” on printer will be neglected after sending the print command with feeding (1A).

When paused, the printer will print till receiving the print command (0C), then pause.



8.6 Buffered printing cancelling flow in USB/Bluetooth connection



Appendix A: 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>

The Brother logo is displayed in a bold, blue, lowercase sans-serif font. The letters are closely spaced and have a clean, modern appearance.