

TOSHIBA

TOSHIBA Bar Code Printer

**B-482/882/682/852/SX4T/SX5T/B-EX/SA4T/SX6T/SX8T/
852-R/452-R Series**

TrueType Font Tool Specification

First Edition:	October 26, 1999
2nd Edition:	April 15, 2000
3rd Edition:	February 9, 2001
4th Edition:	November 12, 2001
5th Edition:	July 19, 2002
6th Edition:	November 22, 2002
7th Edition:	June 30, 2006
8th Edition:	March 13, 2012

TOSHIBA TEC CORPORATION

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1. SCOPE

This specification applies to the TrueType font tool for use with the B-482, B-882, B-682, B-852, B-SX (including Ver. 5.0 or later), B-SA4T, B-SX6T, B-SX8T, B-852-R, B-452-R, and B-EX series bar code printers.

2. GENERAL DESCRIPTION

Tools for downloading TrueType font files to the B-482, B-882, B-682, B-852, B-SX (including Ver. 5.0 or later), B-SA4T, B-SX6T, B-SX8T, B-852-R, B-452-R, or B-EX series is provided.

TrueType font tool:

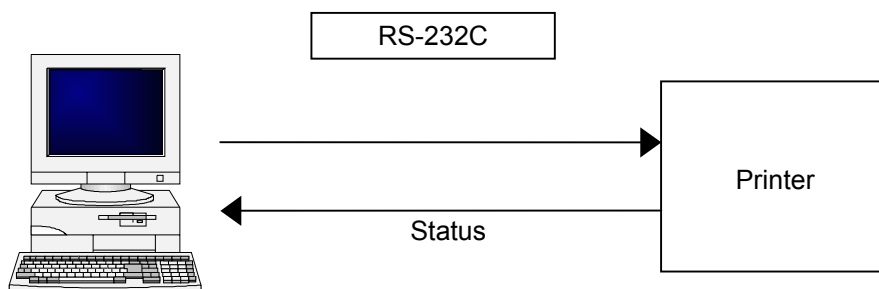
- Downloads any TrueType font file to any font slot.
- Sets the areas to be used for the TrueType font files and writable characters in memory on the B-482, B-882, B-682, B-852, B-SX (including Ver. 5.0 or later), B-SA4T, B-SX6T, B-SX8T, B-852-R, B-452-R, or B-EX series.
- Supports serial, parallel, USB and LAN interfaces.
- Supports Windows XP, Windows Vista, and Windows7 (32 bits/64 bits).

3. HOW TO CONNECT PRINTER TO PC

3.1 Connection with serial interface (RS-232C)

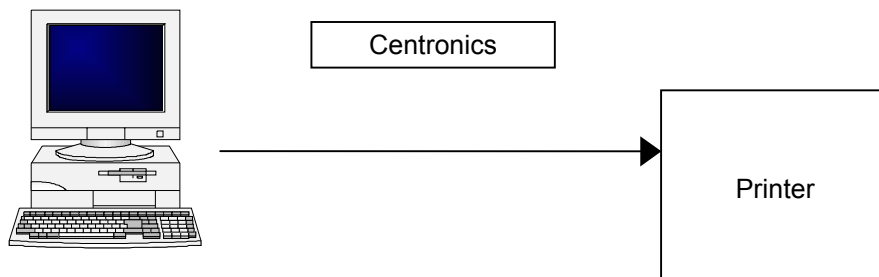
The communication conditions must be set to the factory default values, as follows:

Communication speed:	9600 bps
Data length:	8 bits
Parity:	None
Stop bit:	1 bit



3.2 Connection with Parallel Interface (Centronics)

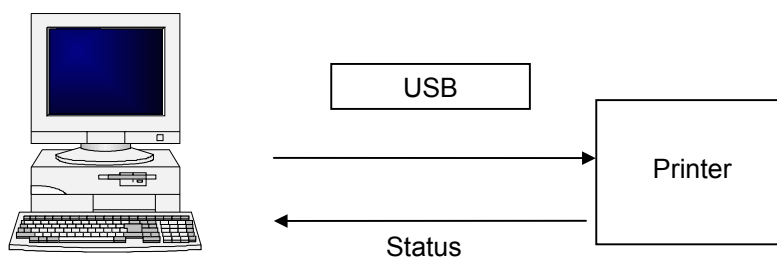
As the printer status cannot be received through the parallel interface, the LED on the printer indicates an error status.



NOTE: If port LPT1 on the PC is assigned to the local printer, the assignment must be cleared.

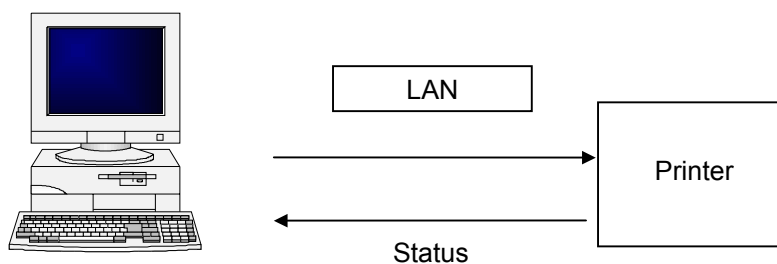
3.3 Connection with USB Interface

The PC communicates with one connected Toshiba TEC printer. The printer model is not recognized. If more than one printer is connected, an error occurs.



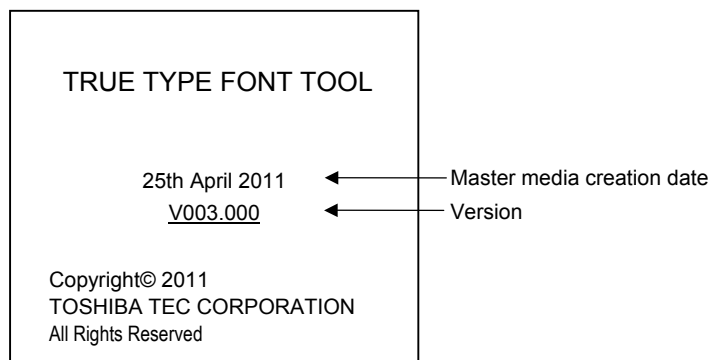
3.4 Connection with LAN Interface

The PC communicates with the specified IP address.



4. TrueType FONT TOOL CD-ROM

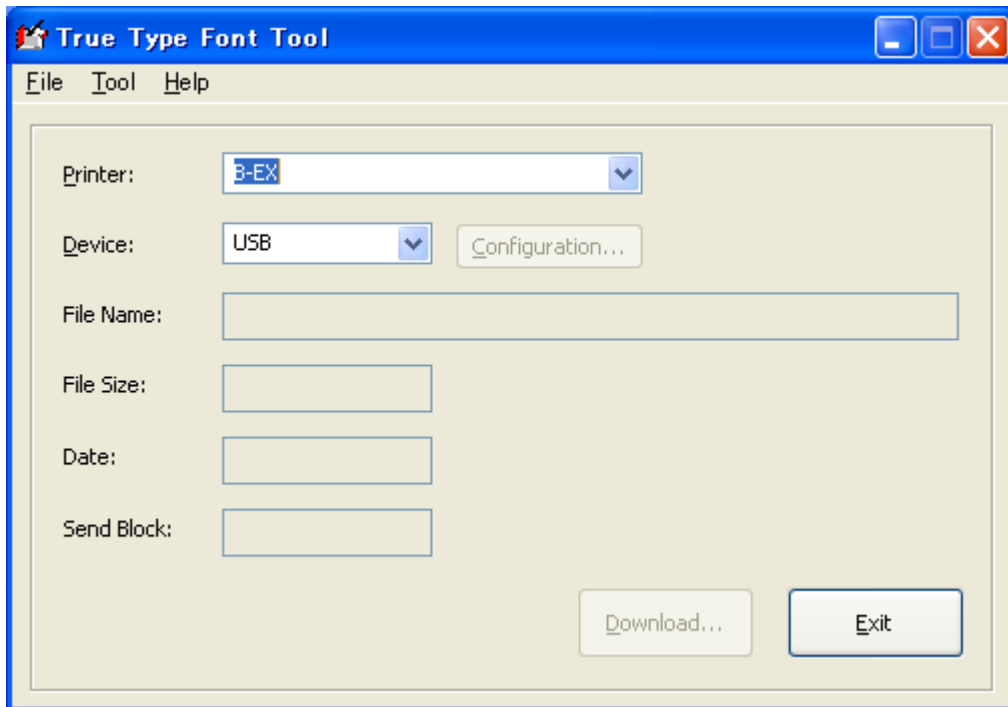
(CD-ROM 700MB: 1 copy)



5. OPERATION PROCEDURE

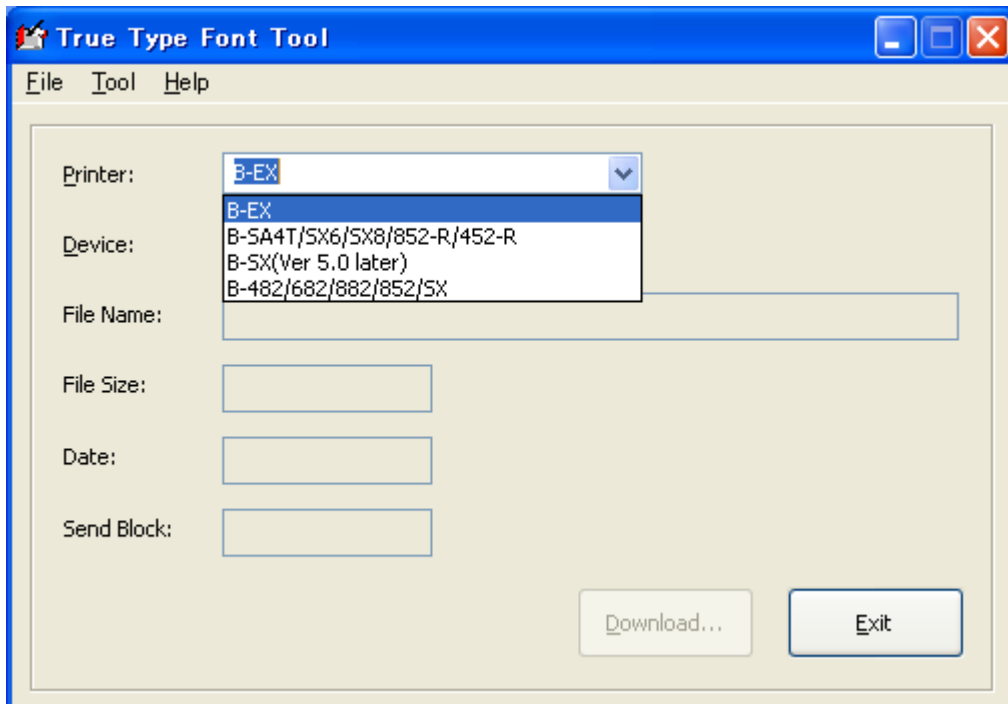
5.1 Starting the Program

- (1) Start up the program.



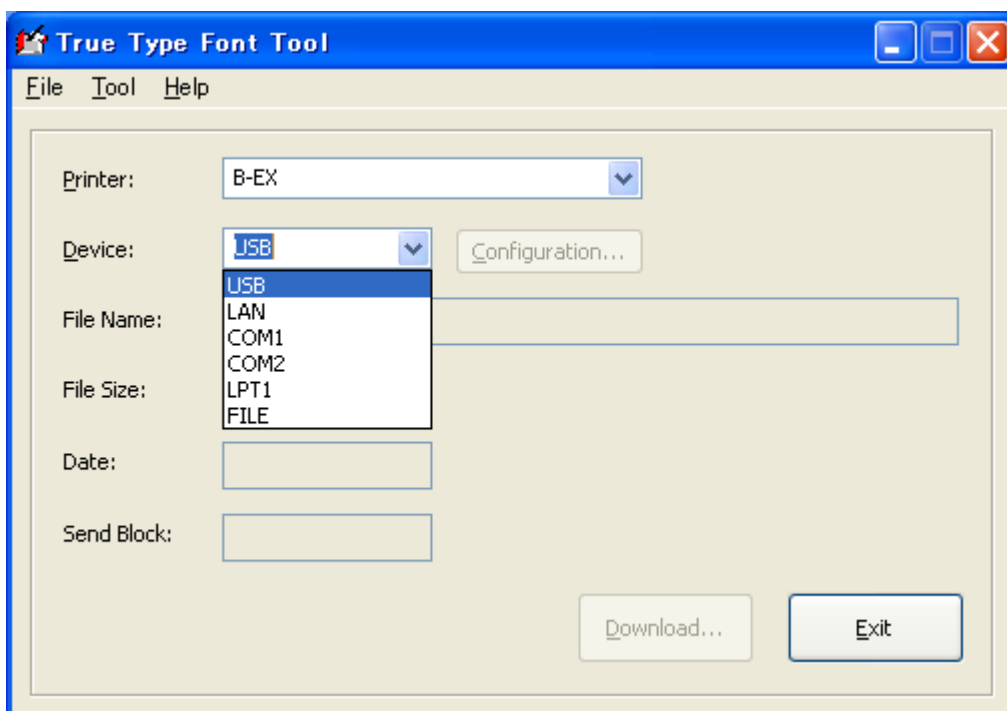
5.2 Selecting a Printer Model

- (1) Select the printer model to be used from the printer box.



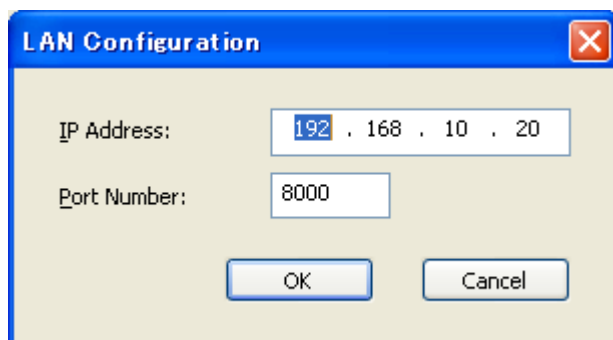
5.3 Selecting an Interface

- (1) Select an interface to be used from the Device box.



USB: USB port is used. Connected only when one Toshiba TEC printer is detected

LAN: LAN port is used. Connected to the IP address specified on the LAN Configuration screen below.



COM1: COM1 port is used.

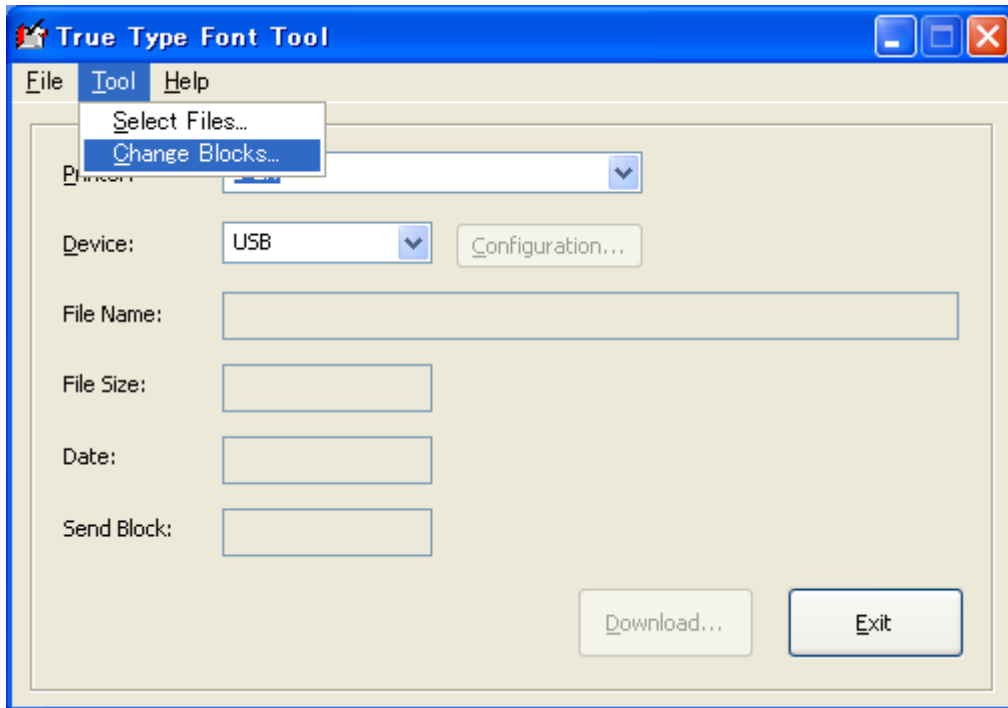
COM2: COM2 port is used.

LPT1: Parallel port is used.

FILE: The download files can be stored in other files. The stored files can be called anytime, and the same files can be downloaded.

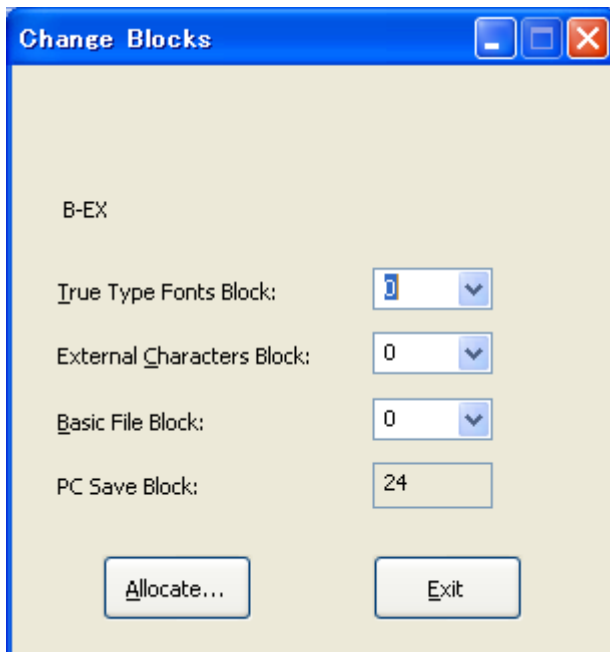
5.4 Setting the Number of Font Memory Blocks

- (1) Select "Change blocks" from the "TOOL" menu, and set the number of memory blocks to be used for storing the TrueType font files.



The dialog box to be displayed differs depending on the selected printer.

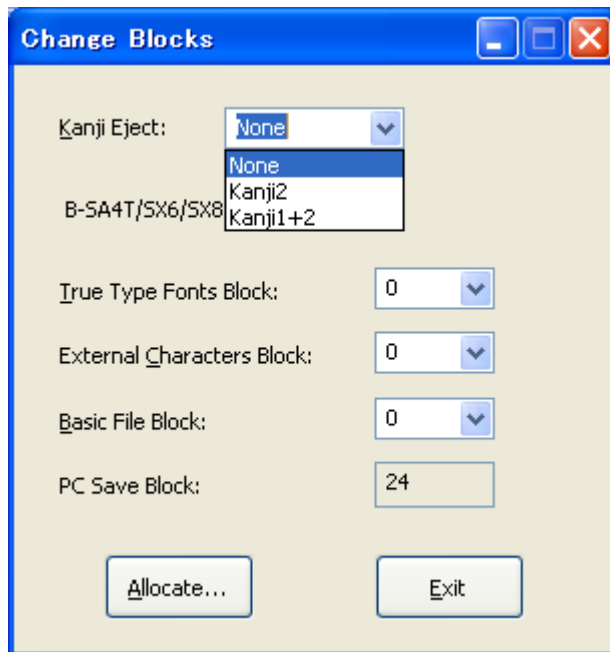
- (1.1) B-EX series (1 block = 128K bytes)



The B-EX has a total of 24 blocks of expansion memory. Since this memory is shared by TrueType font files, writable characters, BASIC files, and PC save commands, it is necessary to set the number of memory blocks to be used for TrueType font files and writable characters, and BASIC files by using this command. The remaining number of memory blocks is used for PC save commands.

After the number of memory blocks is set by this command, all data in the expansion memory, including writable character data, BASIC files and PC save commands, is initialized.

(1.2) B-SA4T/SX6/SX8/852-R/452-R (1 block = 128K bytes)

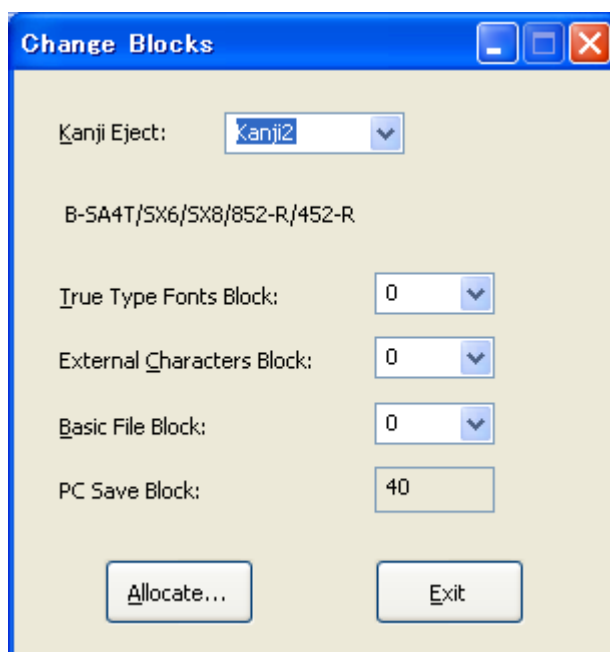


Each of the SA4T, SX6, SX8, 852-R, and 452-R has a total of 24 blocks of expansion memory. Since this memory is shared by TrueType font files, writable characters, BASIC files, and PC save commands, it is necessary to set the number of memory blocks to be used for TrueType font files, writable characters, and BASIC files by using this command. The remaining number of memory blocks is used for PC save commands.

After the number of memory blocks is set by this command, all data in the expansion memory, including writable character data, BASIC files and PC save commands, is initialized.

(1.2.1) To delete Kanji 2 (2M bytes)

The area for saving Kanji 2 is 40 blocks in total.



(1.2.2) To delete Kanji 1 + 2 (6M bytes)
The area for saving Kanji 1 + 2 is 72 blocks in total.

The 'Change Blocks' dialog box has a blue title bar with standard window controls. The main area is light beige. At the top, 'Kanji Eject:' is followed by a dropdown menu showing 'Kanji1+2'. Below this is the text 'B-SA4T/SX6/SX8/852-R/452-R'. There are four rows of settings, each with a label and a control: 'True Type Fonts Block:' with a dropdown showing '0'; 'External Characters Block:' with a dropdown showing '0'; 'Basic File Block:' with a dropdown showing '0'; and 'PC Save Block:' with a text box containing '72'. At the bottom are two buttons: 'Allocate...' and 'Exit'.

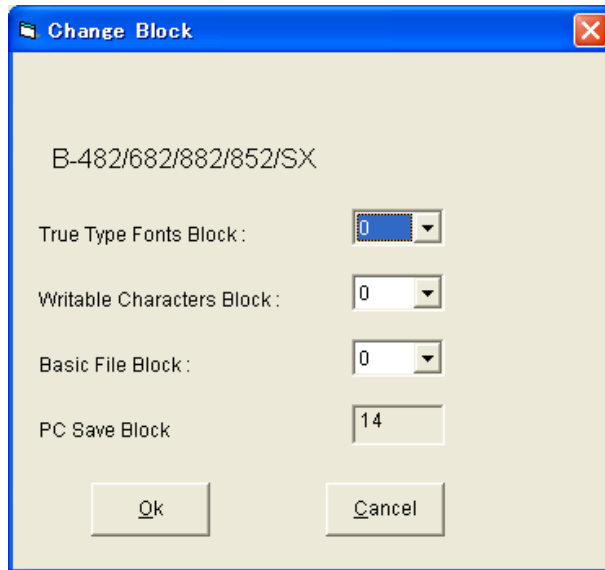
(1.3) B-SX (Ver. 5.0 or later) (1 block = 64K bytes)

The 'Change Blocks' dialog box has a blue title bar with standard window controls. The main area is light beige. At the top is the text 'B-SX(Ver 5.0 later)'. There are four rows of settings, each with a label and a control: 'True Type Fonts Block:' with a dropdown showing '1'; 'External Characters Block:' with a dropdown showing '0'; 'Basic File Block:' with a dropdown showing '0'; and 'PC Save Block:' with a text box containing '48'. At the bottom are two buttons: 'Allocate...' and 'Exit'.

The B-SX (Ver. 5.0 or later) has a total of 48 blocks of expansion memory. Since this memory is shared by writable characters, TrueType font files, BASIC files, and PC save commands, it is necessary to set the number of memory blocks to be used for TrueType font files, writable characters, and BASIC files by using this command. The remaining number of memory blocks is used for PC save commands.

After the number of memory blocks is set by this command, all data in the expansion memory, including writable character data and PC save commands, is initialized.

(1.4) B-482/682/882/852/SX (1 block = 64K bytes)

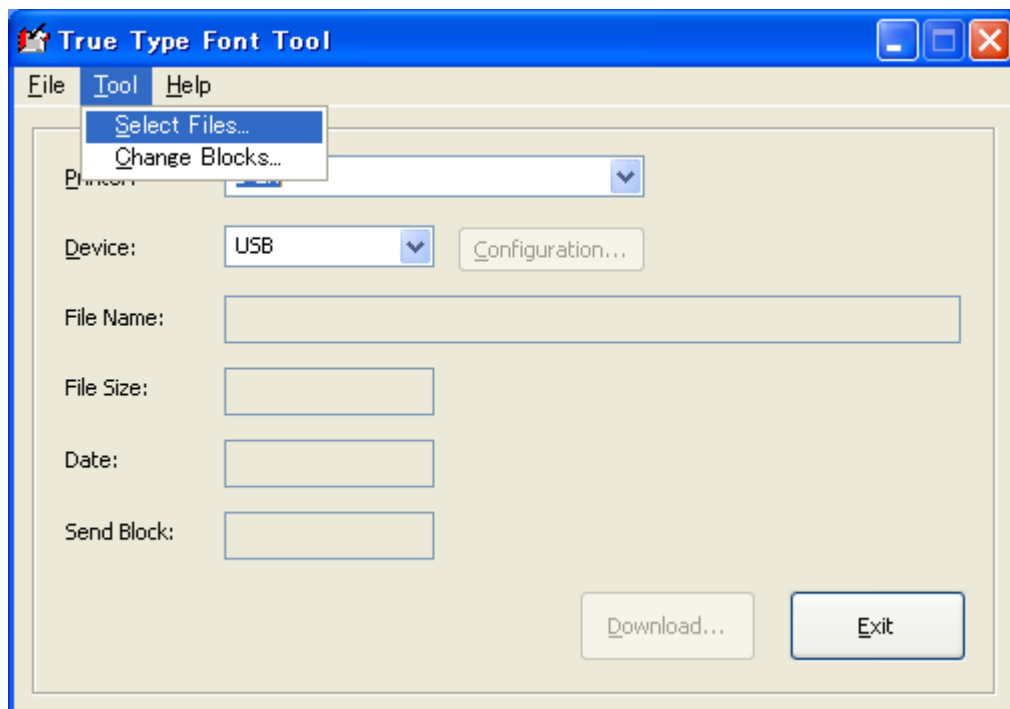


Each of the B-482, B-682, B-882, B-852, and B-SX has a total of 14 blocks of expansion memory. Since this memory is shared by writable characters, TrueType font files, BASIC files, and PC save commands, it is necessary to set the number of memory blocks to be used for TrueType font files, writable characters, and BASIC files by using this command. The remaining number of memory blocks is used for PC save commands.

After the number of memory blocks is set by this command, all data in the expansion memory, including writable character data and PC save commands, is initialized.

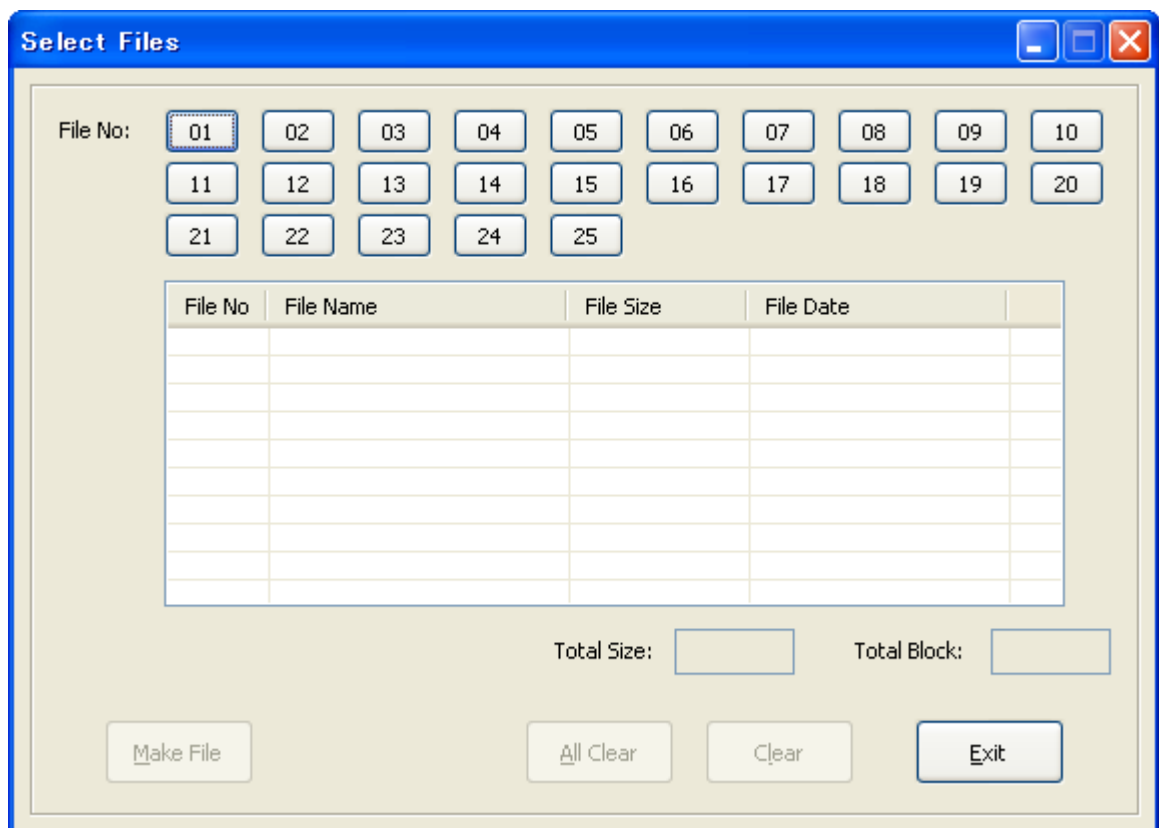
5.5 Creating Download Files

- (1) Choose “Select Files” from the “TOOL” menu.

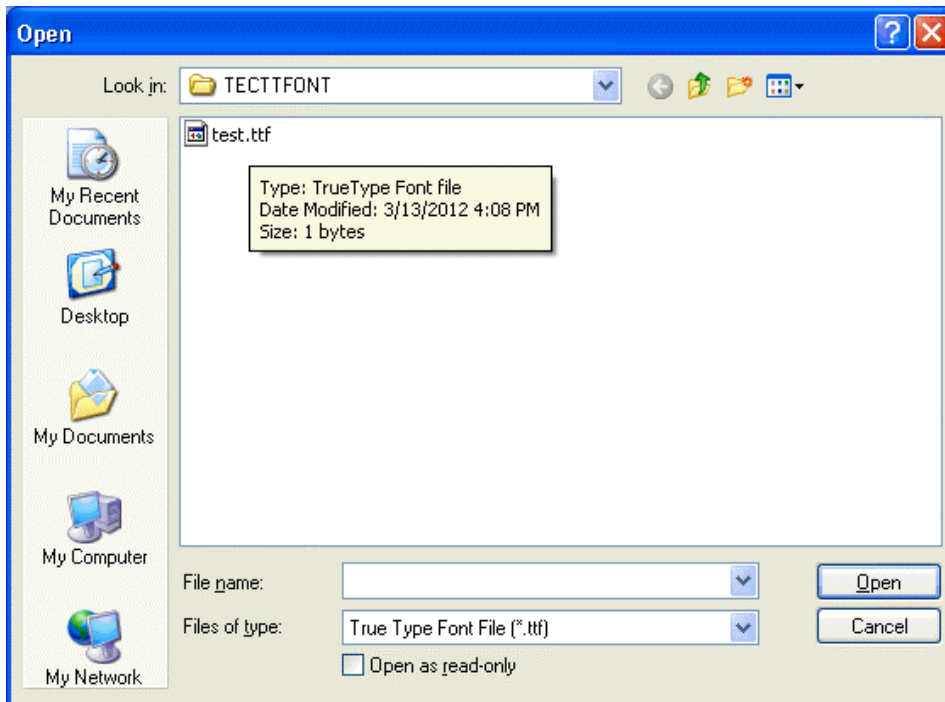


- (2) Click on the button of the file number to be downloaded, and choose the font file to be downloaded from the “Select Files” dialog box.

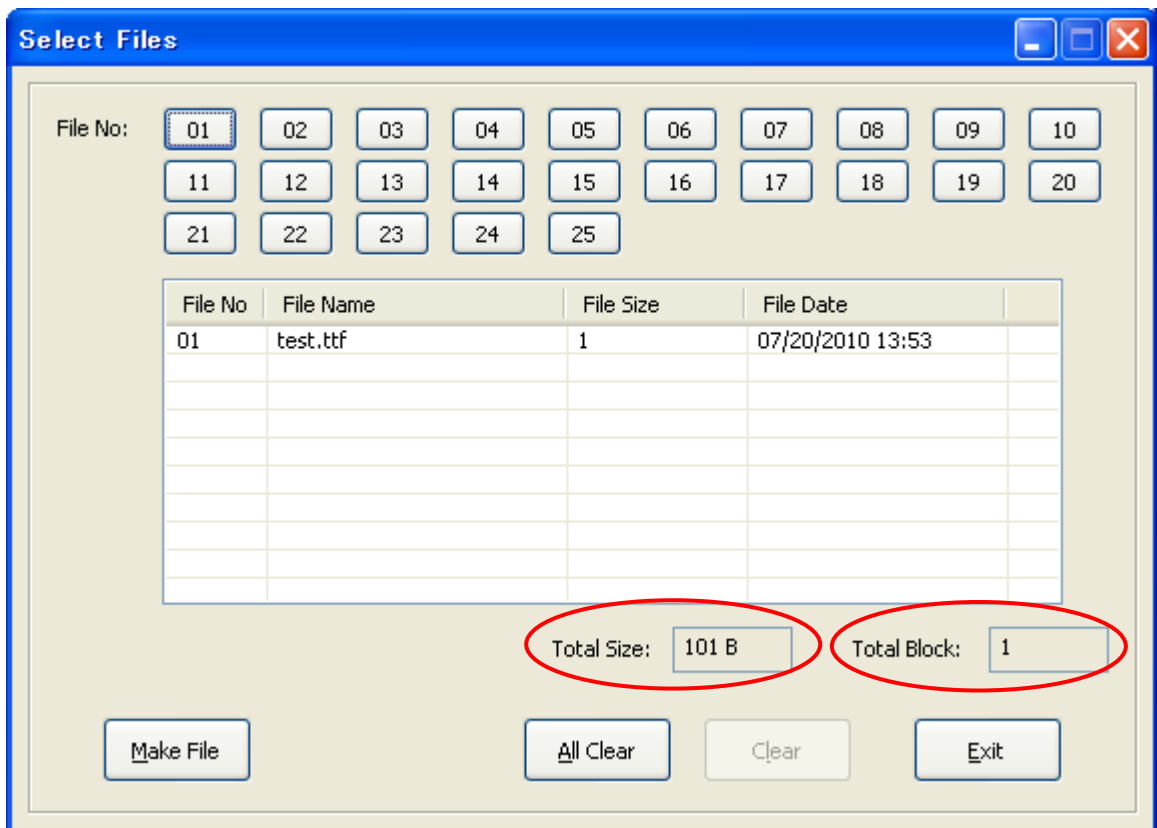
The file number corresponds to the font type for the Outline Font Format Command.



- (3) Select a file to be downloaded. Each time a file is selected, the file name, file size and time stamp are displayed in the text box below.



- (4) When the file is selected by clicking on the [OK] button, the Total Size and Total Block are updated. The file must be selected so that the total block value does not exceed the number of blocks set in Section 5.4.



NOTE: If downloading the data exceeding the set number of blocks is attempted, the printer LED lights up in red . When the serial interface is used, an error status is displayed at the time.

- (5) When a creation of the file list is completed, clicking on the [Make File] button to start creating the download files.

Select Files

File No: 01 02 03 04 05 06 07 08 09 10
11 12 13 14 15 16 17 18 19 20
21 22 23 24 25

File No	File Name	File Size	File Date
01	test.ttf	1	07/20/2010 13:53

0/1 B

Total Size: 101 B Total Block: 1

Make File Cancel All Clear Clear

- (6) End of file creation

When the file creation is completed, the screen automatically returns to the main dialog box. When a file is created with this tool, the file, "c:\TECTTFONT\ttffile.tec", is created.

True Type Font Tool

File Tool Help

Printer: B-EX

Device: USB Configuration...

File Name: C:\TECTTFONT\ttffile.tec

File Size: 128.0 KB

Date: 04/12/2011 15:36

Send Block: 1

Download... Exit

5.6 Starting a download

Click on the [Download] button to start downloading files.

- (1) When the serial interface is used:

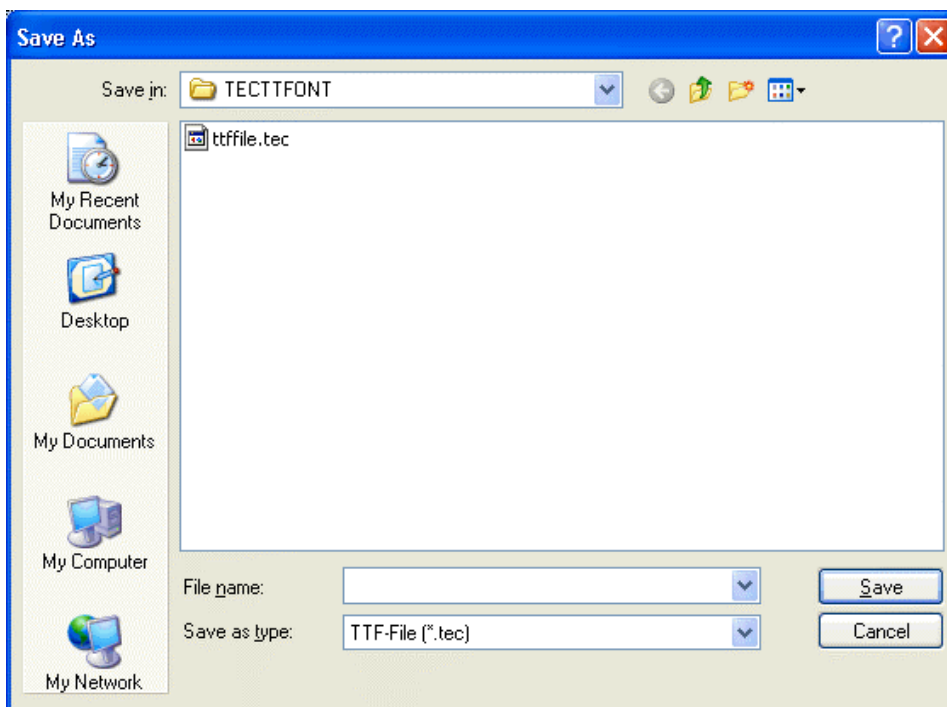
When the PC receives a normal end status from the printer at the completion of the downloading, the status dialog box that indicates the download succeeded or failed is displayed.

- (2) When the parallel interface is used:

When the connection is made with the parallel interface, the PC cannot receive a status from the printer. When the data transmission is completed, the normal end dialog box is always displayed. However, if the printer LED lights up in red, this indicates that the download failed.

- (3) When the file name is specified:

The “Save as...” dialog box is displayed. The download file can be saved by the name specified in this dialog box.



- (4) When the USB interface is used:

When the PC receives a normal end status from the printer at the completion of the download, the status dialog box that indicates the download succeeded or failed is displayed.

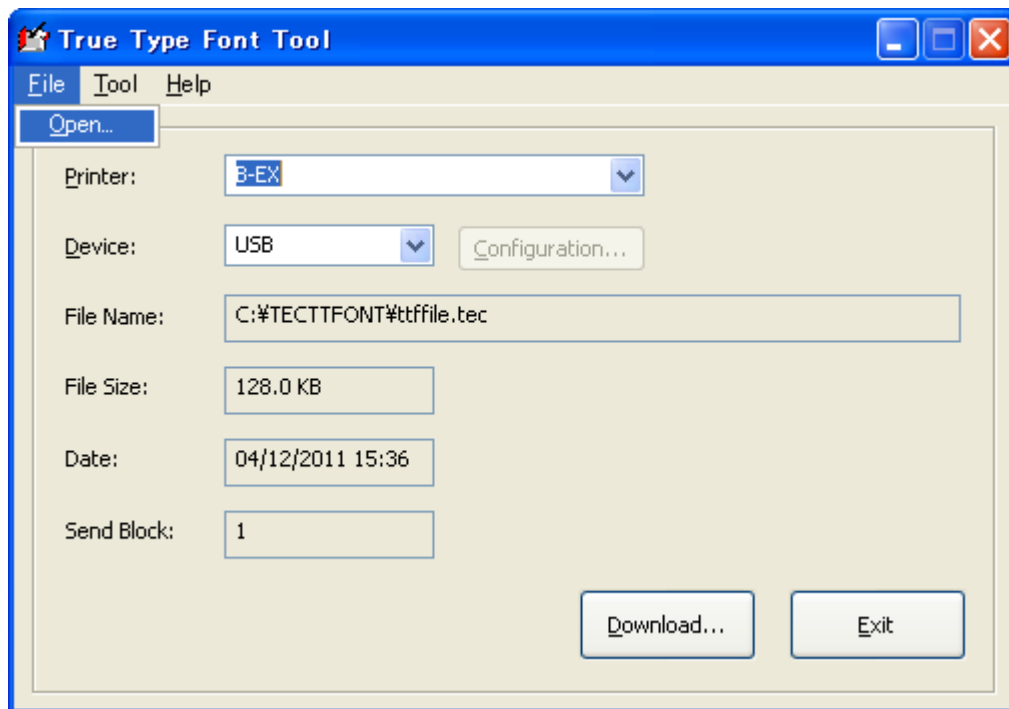
- (5) When the LAN interface is used:

When the PC receives a normal end status from the printer at the completion of the download, the status dialog box that indicates the download succeeded or failed is displayed.

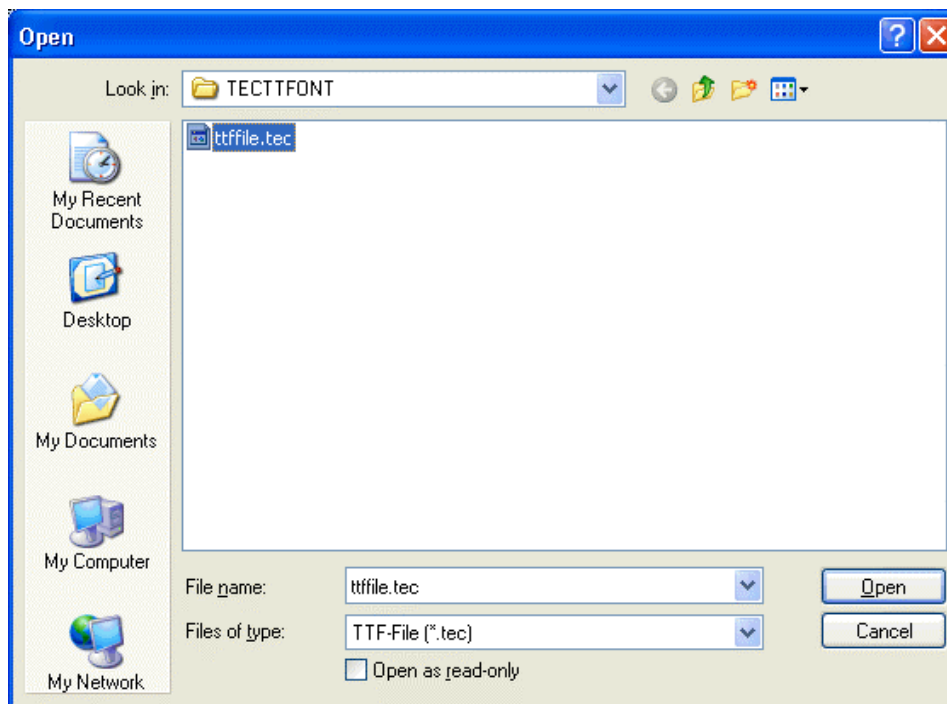
5.7 Calling the Saved Files

Saved download files can be opened and downloaded again by choosing “Open” from the “FILE” menu.

- (1) Choose “Open” from the “FILE” menu.



- (2) Select the file to open.



NOTE: As the file list is not stored in the download file, the TrueType font list in the download file cannot be checked.

6. ERROR MESSAGES

If an error occurs, one of the following messages is displayed.

Error message	Description	Remarks
COMMAND ERROR	A command error has occurred in analyzing the command.	Statuses from the printer
COMMUNICATION ERROR	A communication error (parity error, overrun error, or framing error) has occurred.	
FLASH ROM WRITE ERROR	An error has occurred in writing data into flash memory.	
FORMAT ERROR	An erase error has occurred in formatting flash memory.	
CHECK SUM ERROR	A checksum error has occurred in the transferred program data.	
PRINTER ERROR	Any other error than above occurred.	
"TTF.ini" Error, Please reinstall.	The definition file used in the tool is not found.	Errors detected by the PC
Copy Error, Please execute again.	When "file" is selected for Device, writing data to the specified file failed.	
File Error, Please select a correct file.	Specified file is not effective.	
TIME OUT !	A timeout error occurred while downloading.	
Send Block is too big !!	Downloaded files exceeded the available number of blocks.	
SYSTEM ERROR	An error occurred during a file creation.	
HARD ERROR	A hardware error has occurred.	
OPEN ERROR	A com port open error has occurred.	

7. INTERNAL SPECIFICATIONS FOR B-482/682/882/852/SX

This section describes the commands specifically used for the communication between the tool and the printer.

The TrueType fonts to be stored in the printer must have a license.

To obtain the licensed TrueType fonts:

- Purchase 20 TrueType fonts that TOSHIBA TEC provides as an option.
- Purchase commercially available TrueType fonts.
- Obtain the license from the publisher.

7.1 TrueType Font Memory Block Command

Function	Sets the number of memory blocks for the TrueType font data, writable characters, BASIC files, and PC save commands to be downloaded to the printer.
Format	{XF;aa,bb,cc}
Term	aa: No. of memory blocks for TrueType fonts 00 to 14 bb: No. of memory blocks for the writable characters 00 to 14 cc: No. of memory blocks for the BASIC files 00 to 14
Explanation	<ul style="list-style-type: none">• A total of 14 blocks can be allocated. These are allocated in the following order: TrueType fonts, writable characters, BASIC files, and PC save commands.• If the total number of blocks exceeds 14, the excess blocks are not allocated.

7.2 TrueType Font Data Loading Prepare Command

Function	Requests the printer to make preparations for downloading the TrueType font data. If the printer is printing at the time, the printer stops printing. When the serial interface is used, the printer returns a status in response to the TrueType Font Data Loading Prepare Command, when the printer is ready. At this time, the next command should not be sent until the PC receives the status indicating that preparation is completed from the printer. If the TrueType font data is downloaded to areas other than the memory blocks specified by the TrueType Font Memory Block Command, the printer LED lights up in red indicating that an error has occurred.
Format	{LDT;aaaa,bb}
Term	<p>aaaa: Address that the data is loaded (in hex.) [00H] [00H] [00H] [00H] (00000000H) to [xxH] [xxH] [xxH] [xxH] (xxxxxxxxH) However, the address must be the beginning of the sector in the flash memory. Since the address where the TrueType font is loaded is 300000H, specify it as [00H] [30H] [00H] [00H].</p> <p>bb: Size of data to be loaded (in hex.: in units of KB) [00H] [08H] (0008H = 8 KB) to [03H] [80H] (0380H = 896 KB) However, the size must be as follows: Sector size of flash memory (64 KB) × n</p>
Example	<p>A 512-KB TrueType font is downloaded.</p> <p>{LDT; [00H] [30H] [00H] [00H], [02H] [00H] }</p>

7.3 Program Data Command

Function	Transfers program data.
Format	{LP;nnnnnn ---- nnnnnn}a
Term	<p>nnnnnn ---- nnnnnn: Program data in binary notation</p> <p>a: Checksum: There are two conditions: 1-byte data, and that the result is 0 when it is added to the value obtained by adding up the all of nnnnnn ---- nnnnnn.</p>

8. INTERNAL SPECIFICATIONS FOR B-SA4T/SX6T/SX8T/852-R/452-R

This section describes the commands specifically used for the communication between the tool and the printer.

The TrueType fonts to be stored in the printer must have a license.

To obtain the licensed TrueType fonts:

- Purchase 20 TrueType fonts that TOSHIBA TEC provides as an option.
- Purchase commercially available TrueType fonts.
- Obtain the license from the publisher.

8.1 TrueType Font Memory Block Command

Function	Sets the number of memory blocks for the TrueType font data, writable characters, BASIC files, and PC save commands to be downloaded to the printer.
Format	{XF;aa,bb,cc}
Term	aa: No. of memory blocks for TrueType fonts 00 to 24 bb: No. of memory blocks for the writable characters 00 to 24 cc: No. of memory blocks for the BASIC files 00 to 14
Explanation	<ul style="list-style-type: none">• A total of 24 blocks can be allocated. These are allocated in the following order: TrueType fonts, writable characters, BASIC files, and PC save commands.• If the total number of blocks exceeds 24, the excess blocks are not allocated.

8.2 TrueType Font Data Loading Prepare Command

Function	Requests the printer to make preparations for downloading the TrueType font data. If the printer is printing at the time, the printer stops printing. When the serial interface is used, the printer returns a status in response to the TrueType Font Data Loading Prepare Command, when the printer is ready. At this time, the next command should not be sent until the PC receives the status indicating that preparation is completed from the printer. If the TrueType font data is downloaded to areas other than the memory blocks specified by the TrueType Font Memory Block Command, the printer LED lights up in red indicating that an error has occurred.
Format	{LDT;aaaa,bb}
Term	<p>aaaa: Address that the data is loaded (in hex.) [00H] [00H] [00H] [00H] (00000000H) to [xxH] [xxH] [xxH] [xxH] (xxxxxxxxH) Since the address of the former models where the TrueType font is loaded is 300000H, [00H] [30H] [00H] [00H] is specified. However, the printer ignores this setting, and downloads the data to the actual storage area address, instead.</p> <p>bb: Size of data to be loaded (in hex.: in units of KB) [00H] [08H] (0008H = 8 KB) to [0CH] [00H] (0C00H = 3072 KB) However, the size must be as follows: Sector size of the flash memory (128 KB) × n</p>
Example	A 512-KB TrueType font is downloaded. {LDT; [00H] [C0H] [00H] [00H], [02H] [00H] }

8.3 Program Data Command

Function	Transfers program data.
Format	{LP;nnnnnn ---- nnnnnn}a
Term	<p>nnnnnn ---- nnnnnn: Program data in binary notation</p> <p>a: Checksum: There are two conditions: 1-byte data, and that the result is 0 when it is added to the value obtained by adding up the all of nnnnnn ---- nnnnnn.</p>

9. INTERNAL SPECIFICATIONS FOR B-SX (VER. 5.0 OR LATER)

This section describes the commands specifically used for the communication between the tool and the printer.

The TrueType fonts to be stored in the printer must have a license.

To obtain the licensed TrueType fonts:

- Purchase 20 TrueType fonts that TOSHIBA TEC provides as an option.
- Purchase commercially available TrueType fonts.
- Obtain the license from the publisher.

9.1 TrueType Font Memory Block Command

Function	Sets the number of memory blocks for the TrueType font data, writable characters, BASIC files, and PC save commands to be downloaded to the printer.
Format	{XF;aa,bb,cc}
Term	aa: No. of memory blocks for TrueType fonts 00 to 48 bb: No. of memory blocks for the writable characters 00 to 48 cc: No. of memory blocks for the BASIC files 00 to 14
Explanation	<ul style="list-style-type: none">• A total of 48 blocks can be allocated. These are allocated in the following order: TrueType fonts, writable characters, BASIC files, and PC save commands.• If the total number of blocks exceeds 48, the excess blocks are not allocated.

9.2 TrueType Font Data Loading Prepare Command

Function	Requests the printer to make preparations for downloading the TrueType font data. If the printer is printing at the time, the printer stops printing. When the serial interface is used, the printer returns a status in response to the TrueType Font Data Loading Prepare Command, when the printer is ready. At this time, the next command should not be sent until the PC receives the status indicating that preparation is completed from the printer. If the TrueType font data is downloaded to areas other than the memory blocks specified by the TrueType Font Memory Block Command, the printer LED lights up in red indicating that an error has occurred.
Format	{LDT;aaaa,bb}
Term	<p>aaaa: Address that the data is loaded (in hex.) [00H] [00H] [00H] [00H] (00000000H) to [xxH] [xxH] [xxH] [xxH] (xxxxxxxxH) However, the address must be the beginning of the sector in the flash memory. Since the address where the TrueType font is loaded is 4E0000H, [00H] [4EH] [00H] [00H] is specified. However, the printer downloads the data to the actual storage area address.</p> <p>bb: Size of data to be loaded (in hex.: in units of KB) [00H] [08H] (0008H = 8 KB) to [0CH] [00H] (0C00H = 3072 KB) However, the size must be as follows: Sector size of the flash memory (64 KB) × n</p>
Example	<p>A 512-KB TrueType font is downloaded.</p> <p>{LDT; [00H] [C0H] [00H] [00H], [02H] [00H] }</p>

9.3 Program Data Command

Function	Transfers program data.
Format	{LP;nnnnnn ---- nnnnnn}a
Term	<p>nnnnnn ---- nnnnnn: Program data in binary notation</p> <p>a: Checksum: There are two conditions: 1-byte data, and that the result is 0 when it is added to the value obtained by adding up the all of nnnnnn ---- nnnnnn.</p>

10. INTERNAL SPECIFICATIONS FOR B-EX

This section describes the commands specifically used for the communication between the tool and the printer.

The TrueType fonts to be stored in the printer must have a license.

To obtain the licensed TrueType fonts:

- Purchase 20 TrueType fonts that TOSHIBA TEC provides as an option.
- Purchase commercially available TrueType fonts.
- Obtain the license from the publisher.

10.1 TrueType Font Memory Block Command

Function	Sets the number of memory blocks for the TrueType font data, writable characters, BASIC files, and PC save commands to be downloaded to the printer.
Format	{XF;aa,bb,cc}
Term	aa: No. of memory blocks for TrueType fonts 00 to 24 bb: No. of memory blocks for the writable characters 00 to 24 cc: No. of memory blocks for the BASIC files 00 to 14
Explanation	<ul style="list-style-type: none">• A total of 24 blocks can be allocated. These are allocated in the following order: TrueType fonts, writable characters, BASIC files, and PC save commands.• If the total number of blocks exceeds 24, the excess blocks are not allocated.

10.2 TrueType Font Data Loading Prepare Command

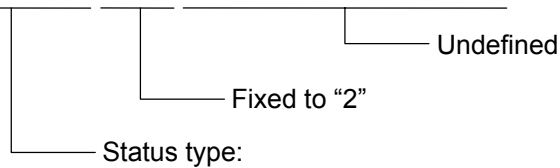
Function	Requests the printer to make preparations for downloading the TrueType font data. If the printer is printing at the time, the printer stops printing. When the serial interface is used, the printer returns a status in response to the TrueType Font Data Loading Prepare Command, when the printer is ready. At this time, the next command should not be sent until the PC receives the status indicating that preparation is completed from the printer. If the TrueType font data is downloaded to areas other than the memory blocks specified by the TrueType Font Memory Block Command, the printer LED lights up in red indicating that an error has occurred.
Format	{LDT;aaaa,bb}
Term	<p>aaaa: Address that the data is loaded (in hex.) [00H] [00H] [00H] [00H] (00000000H) to [xxH] [xxH] [xxH] [xxH] (xxxxxxxxH) Since the address where the TrueType font is loaded is CC0000H, [00H] [CCH] [00H] [00H] is specified. However, the printer ignores this setting, and downloads the data to the actual storage area address, instead.</p> <p>bb: Size of data to be loaded (in hex.: in units of KB) [00H] [08H] (0008H = 8 KB) to [0CH] [00H] (0C00H = 3072 KB) However, the size must be as follows: Sector size of the flash memory (128 KB) × n</p>
Example	<p>A 512-KB TrueType font is downloaded.</p> <p>{LDT; [00H] [C0H] [00H] [00H], [02H] [00H] }</p>

10.3 Program Data Command

Function	Transfers program data.
Format	{LP;nnnnnn ---- nnnnnn}a
Term	<p>nnnnnn ---- nnnnnn: Program data in binary notation</p> <p>a: Checksum: There are two conditions: 1-byte data, and that the result is 0 when it is added to the value obtained by adding up the all of nnnnnn ---- nnnnnn.</p>

11. STATUS FORMAT

SOH	STX	STATUS			RESERVED				ETX	EOT	CR	LF
01H	02H	3XH	3XH	32H	3XH	3XH	3XH	3XH	03H	04H	0DH	0AH



- "06": Communication error (Command error)
- "07": Communication error (Hardware error)
- "50": Flash ROM write error
- "51": Format error
- "52": Completion of loading preparation
- "53": Request of the next data
- "56": Normal end of loading
- "57": Checksum error

12. DATA TRANSMISSION/RECEPTION CONTROL

12.1 Loading from PC through RS-232C

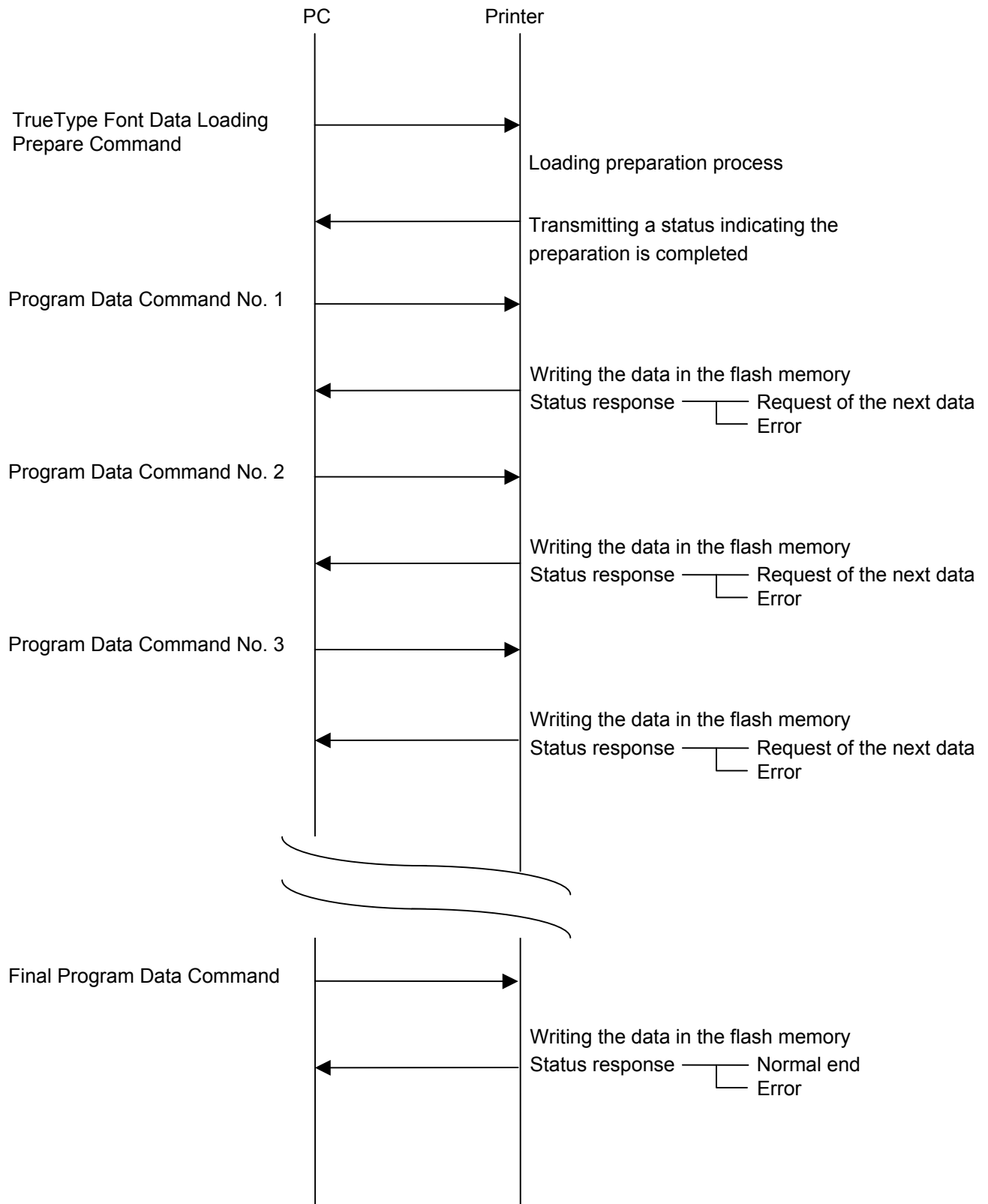
After the TrueType Font Data Loading Prepare Command is sent, the next command should not be sent until the PC receives a status indicating that preparation for loading is completed. The Program Data Command should be divided into the size that matches the sectors, and then sent. The printer starts writing the data in flash memory when the data sent for each sector reaches 64 KB. When the writing of data for each sector is completed, the printer sends a status to request the next data. At this time, the PC should send the next data. When the writing of the last data is completed, the printer sends a normal end status.

12.2 Loading from PC through Centronics

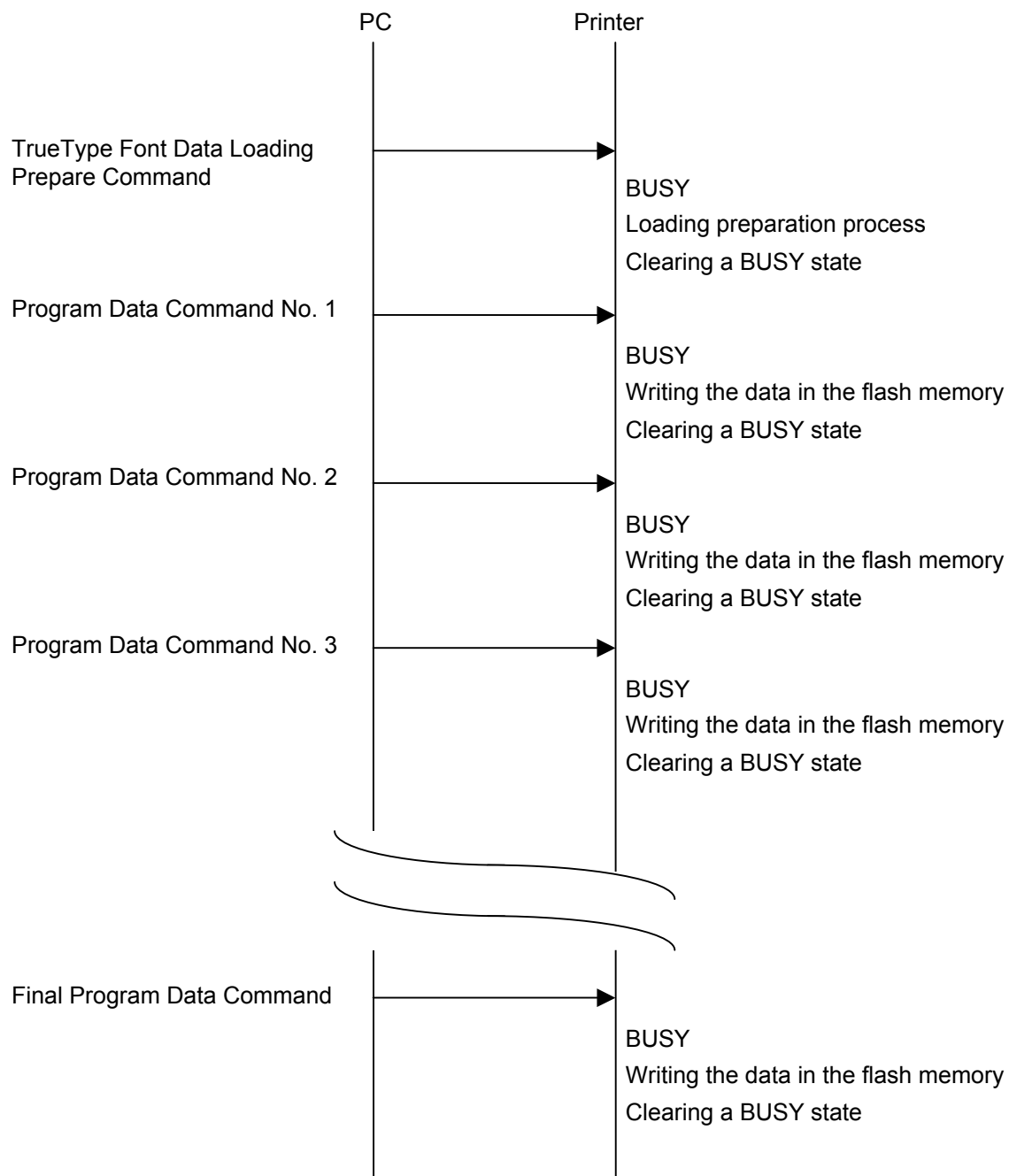
When loading data through the Centronics, the TrueType Font Loading Prepare Command and Program Data Command may be sent continuously. When the printer receives the TrueType Font Loading Prepare Command, it prepares for loading remaining in the BUSY state. When the preparation for loading is completed, the printer clears the BUSY state, and outputs an $\overline{\text{ACK}}$ to resume receiving the data. For the Program Data Command, when the printer receives the data of one sector size, the printer writes it in the flash memory remaining in the BUSY state. When the writing of data of one sector size is completed, the printer clears the BUSY state, and outputs an $\overline{\text{ACK}}$ to resume receiving the data.

13. LOADING SEQUENCE

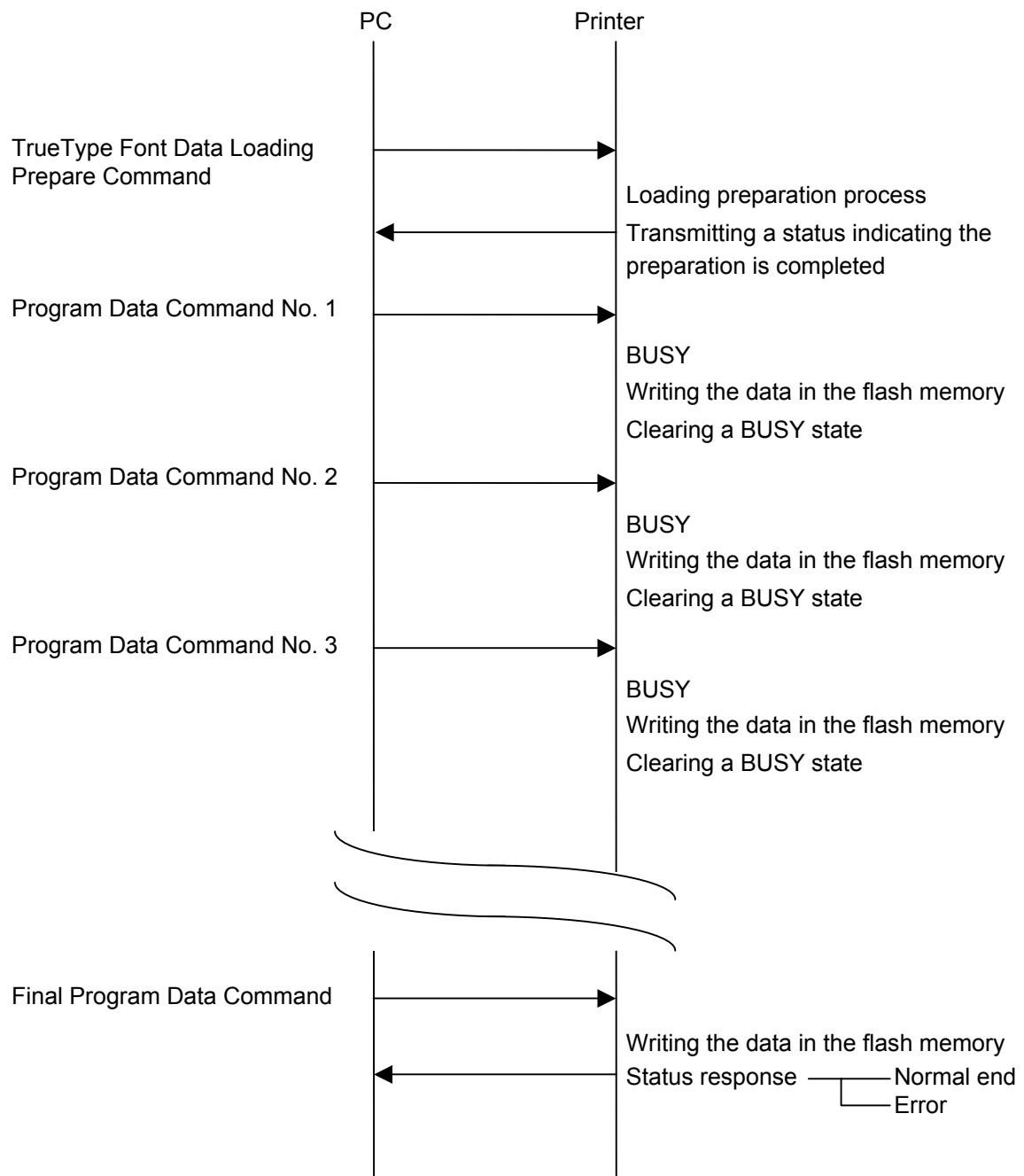
13.1 Loading from PC through RS-232C



13.2 Loading from PC through Centronics

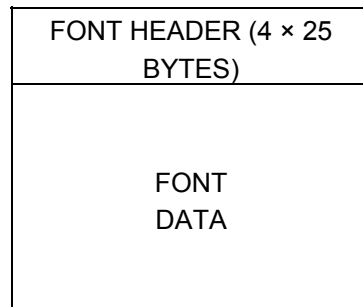


13.3 Loading from PC through USB and LAN



14. TRUETYPE FONT DATA FORMAT

When the TrueType font data is loaded, the header is attached to the font data and they are transferred as one data.



The font header is an index which indicates the start position of the font data, corresponding to the font types of 01 to 25. Each index indicates the number of bytes from the start position of the font header. If 0 is set for the index, it means that there is no font data for the font type. An index is a 4-byte data, and the byte list is little endian.

Ex.) When the font file for the font type “0” is placed immediately after the font header:

Font header = 4 × 25 bytes = 100 bytes = 64H bytes

Font index value: 00000064H

At the time, the header is as shown below:

TYPE 01				TYPE 02				TYPE 03			
64	00	00	00	00	00	00	00	00	00	00	00	