

# **TOSHIBA**

TOSHIBA TEC Bar Code Printer

**B-SX4T/B-SX5T Series**

**B-SA4T Series**

**Z-MODE Specification**

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**TOSHIBA TEC CORPORATION**

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## **Notice**

In the case you use the Z-MODE in a Toshiba bar code printer together with Zebra's software (including the printer driver), if such software license is granted on the condition that the software is used in combination with a Zebra printer, you may violate the software license agreement.

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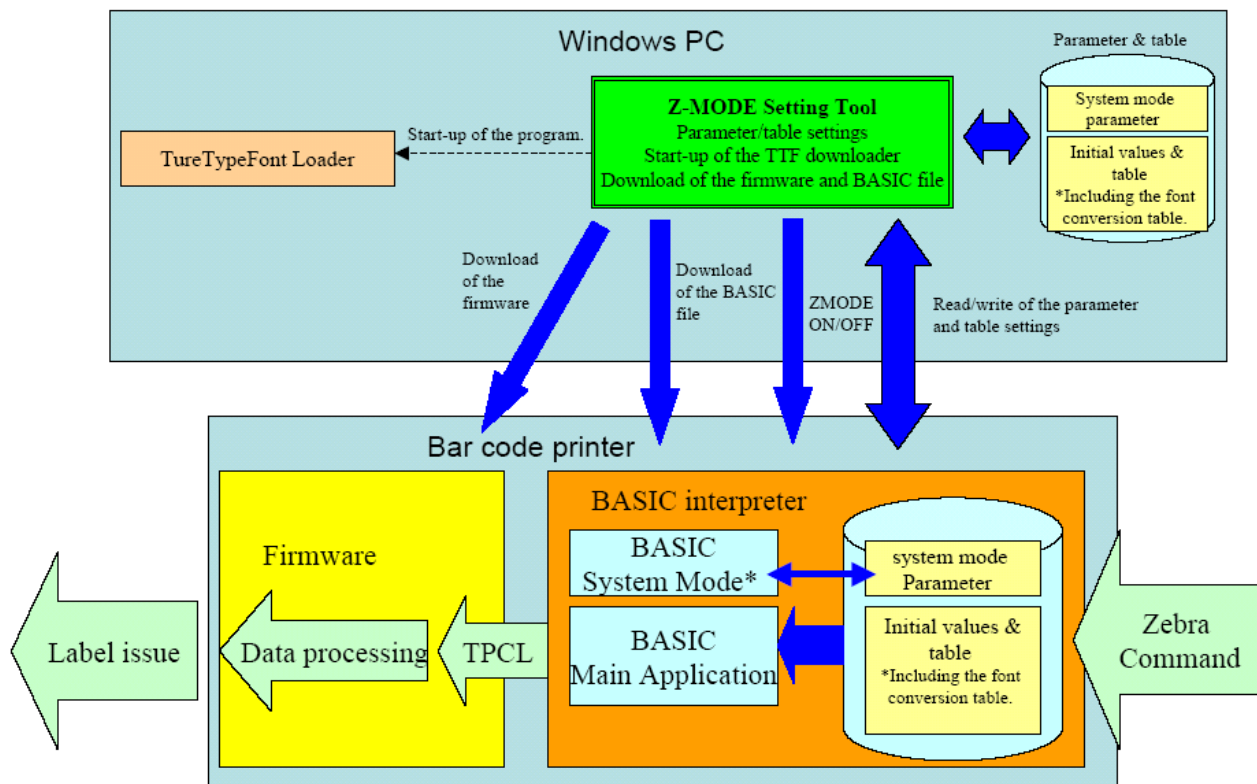
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## 1. SCOPE

This specification applies to the Z-MODE for use with the B-SX4T series (hereinafter referred to as “B-SX4T”), B-SX5T series (hereinafter referred to as “B-SX5T”), and B-SA4T series (hereinafter referred to as “B-SA4T”) general-purpose thermal bar code printers. (The B-SX4T series and the B-SX5T series are hereinafter collectively referred to as “B-SX series”).

## 2. GENERAL DESCRIPTION

This specification describes the operational procedures of the Z-MODE which converts the Zebra Programming Language® (ZPL II®) to the TOSHIBA TEC command to perform printing.



\* BASIC system mode can configure the system mode parameters only.

Serial, parallel, USB, and LAN interfaces are supported.

The following cases may occur:

- (1) Printing result is not exactly the same as that when printed with Zebra printers.
- (2) Print position and font size are slightly different.
- (3) Guaranteed print throughput is not achieved.
- (4) TOSHIBA TEC's printer specifications apply, for example memory capacity and the number of fields.
- (5) Some Zebra commands are not supported.
  - \* The BCI program is the BASIC program which works with the BASIC interpreter embedded in the TOSHIBA TEC printers.
- (6) If the print start position of an object is placed within the print area but the end position is outside the print area, the part beyond the print area will be printed starting on the left end of a new line.

Take the following steps to operate the Z-MODE:

- (1) Download a BASIC file to your printer.

**NOTE:** For the B-SX series, the BASIC file can be downloaded only to the B-SX series printer with the MAIN4 PC board installed.

- (2) Place the printer in the Z-MODE.
- (3) Select a paper width and paper size.
- (4) Send a Zebra command.
- (5) To fine adjust a print position, print tone, etc., use the setting tool.

### 3. CONSTRUCTION

#### 3.1 FILE CONSTRUCTION

Each model has two BASIC files as below:

No.	Model	File name	Remarks
1	B-SX5	Z-SX5-MV12.BAS	MAIN PROGRAM
2		Z-SX5-SV12.BAS	SYSTEM MODE PROGRAM
3	B-SX4	Z-SX4-MV12.BAS	MAIN PROGRAM
4		Z-SX4-SV12.BAS	SYSTEM MODE PROGRAM
5	B-SA4	Z-SA4-MV11.BAS	MAIN PROGRAM
6		Z-SA4-SV11.BAS	SYSTEM MODE PROGRAM

(Version included in each file name changes as necessary.)

#### 3.2 MAIN PROGRAM AND SYSTEM MODE PROGRAM

##### Main Program

The main program allows the TOSHIBA TEC printers to issue labels when they receive Zebra commands.

##### System Mode Program

The system mode program allows setting Zebra command parameters by key operations in the TOSHIBA TEC printer's system mode.

#### 3.3 DATA FILE

##### ZEBRAPRM.TXT

This is a parameter file described in Section 6. DEFAULT SETTING. Usually, this file is automatically created by the BASIC program, but it also can be downloaded by using the Basic V2 File Loader or the Z-MODE Setting Tool.

##### ZDEFAULT.TXT

This file contains a table of the initial values and a font conversion table just in case a transmission of Zebra commands partly failed. Using the Basic V2 File Loader or the Z-MODE Setting Tool downloads this file.

#### 3.4 PRINTER FIRMWARE

Printer firmware is required. Update the firmware as necessary with reference to the "Program Download Operation Specification".

**NOTE:** Download of the firmware is also possible by using the Z-MODE setting tool. For details, please refer to the Z-MODE Setting Tool Specification.

#### 3.5 Z-MODE SETTING TOOL

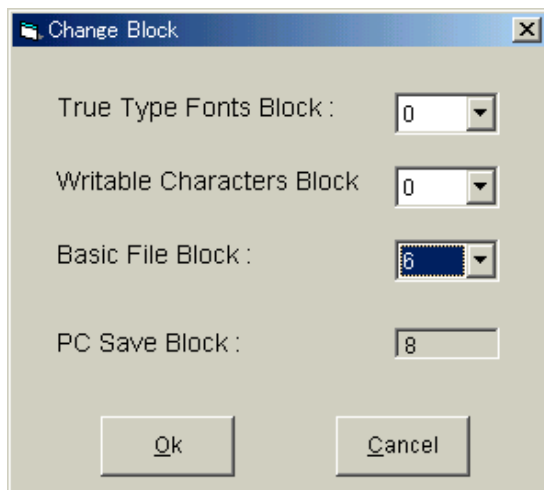
This is Windows application software that enables changing the settings of Z-MODE behavior (such as fine adjustment of fonts) and downloading various files. Please refer to the Z-MODE Setting Tool Specification.

## 4. DOWNLOAD

Download the Main Program and the System Mode Program into your printer following the procedures described in the “Basic V2 File Downloader Specification”.

### NOTES:

1. Download of the main program and system mode program is also possible by using the Z-MODE setting tool. For details, please refer to the Z-MODE Setting Tool Specification. ,
2. Use the Basic V2 File Loader of which version is V2.0B or greater.



### Change Block

The number of memory blocks to be used for storing the BASIC files (1 block = 64 KB)

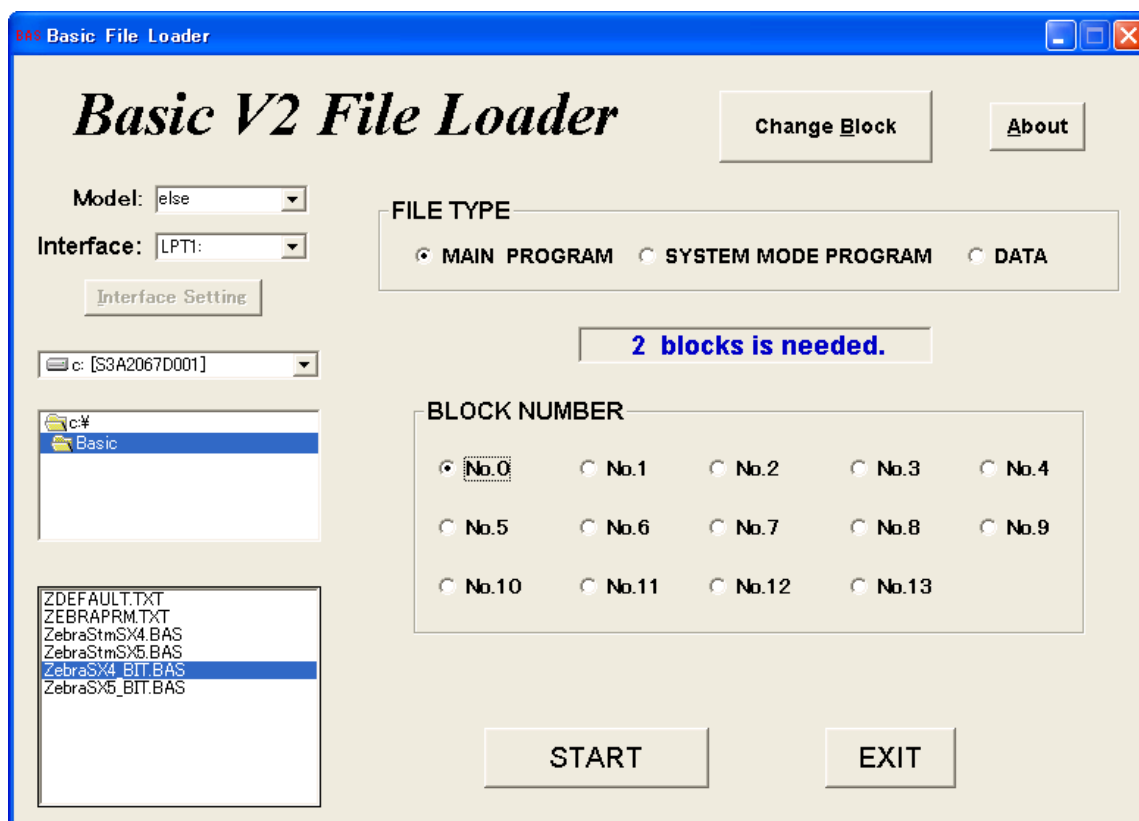
For the B-SX series, select “6” or higher for the “Basic File Block” of the Basic File Loader.

For the B-SA4T, select “4” or higher.

### FILE TYPE and BLOCK NUMBER

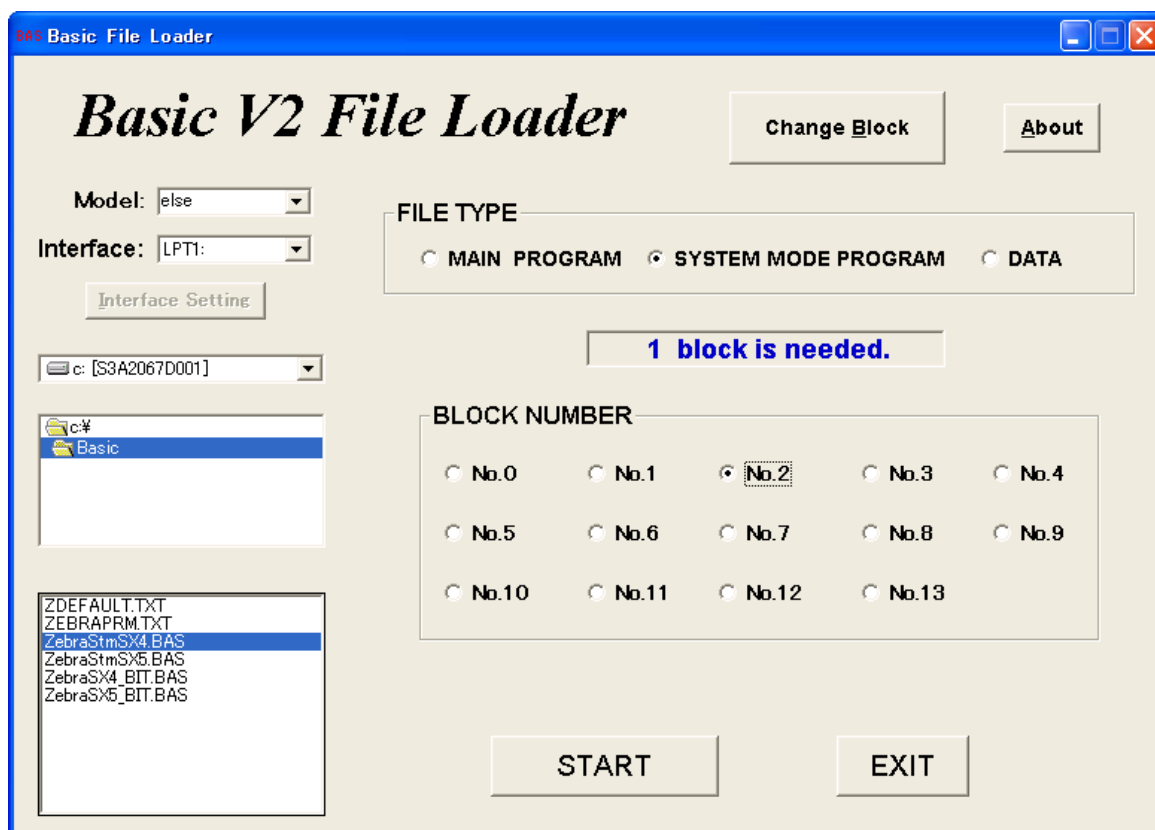
To download the Main Program, select “MAIN PROGRAM” and “No.0” (the first block).

**Example:** Download of Main Program (In the case of the B-SX series)

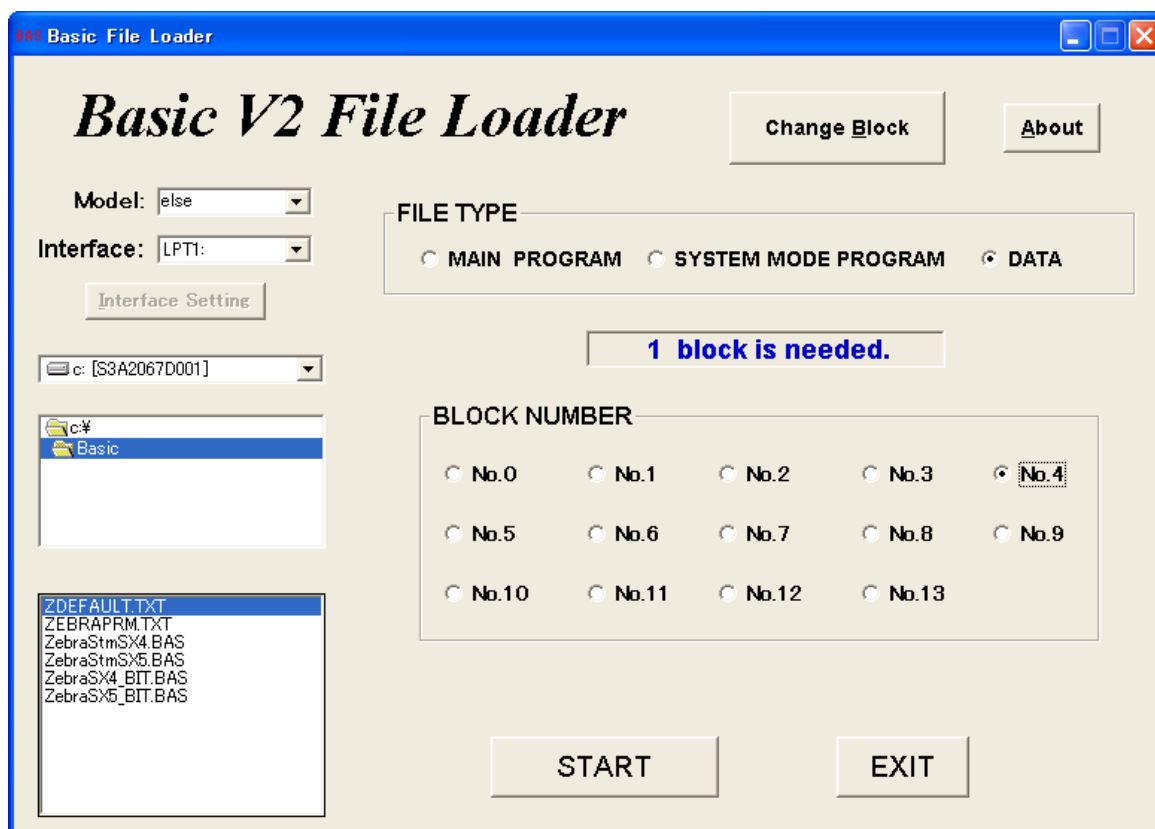


To download the System Mode Program, select “SYSTEM MODE PROGRAM” and “No.2” (the 3rd block) in the case of the B-SX series or “No. 1” (the 2<sup>nd</sup> block) in the case of the B-SA4T.

**Example:** System Mode Program (In the case of the B-SX series)



**Example:** Data File (ZDEFAULT.TXT) (In the case of the B-SX series)





## 5. START OF Z-MODE

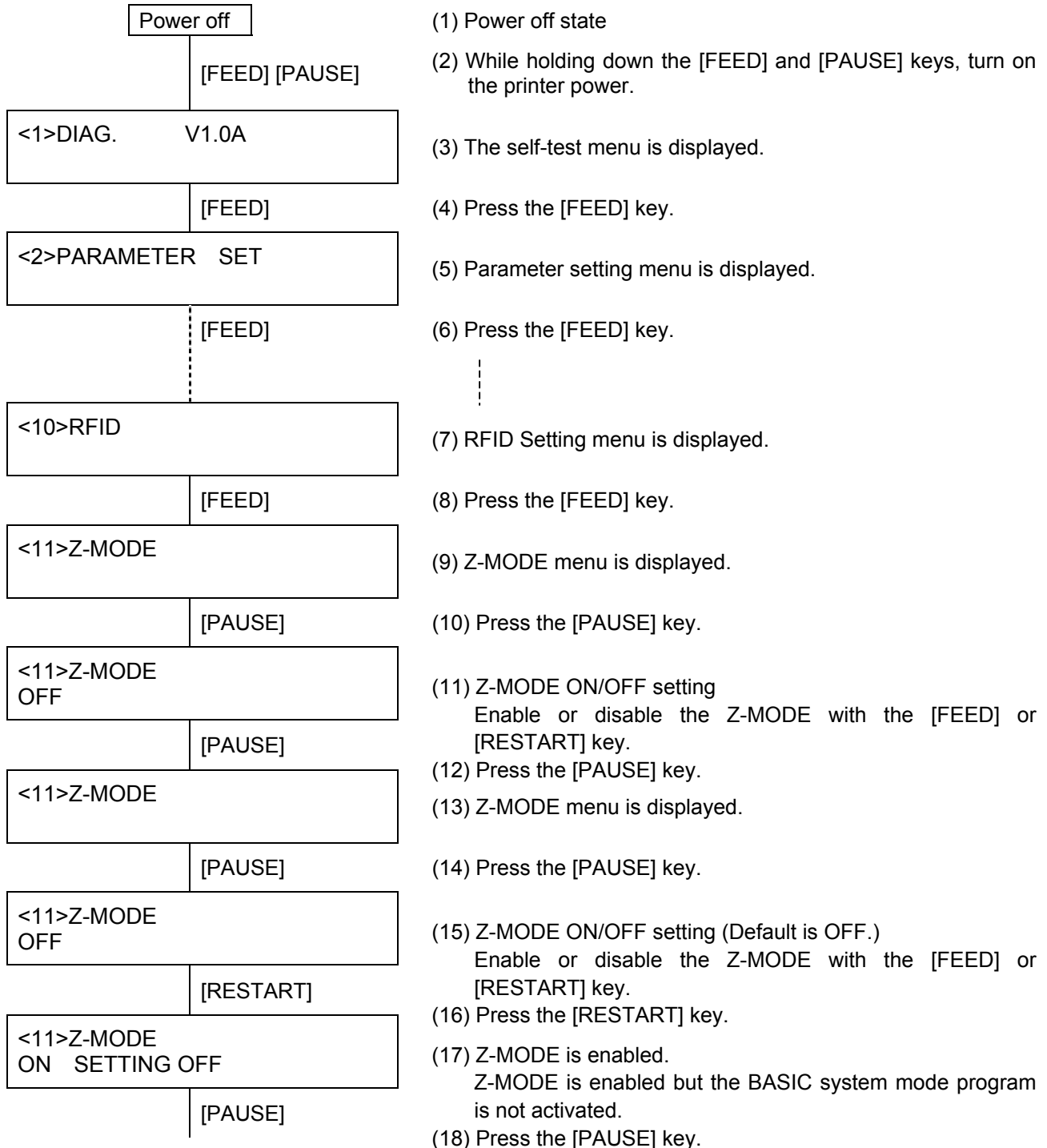
Place the printer in Z-MODE to use the Z-MODE.

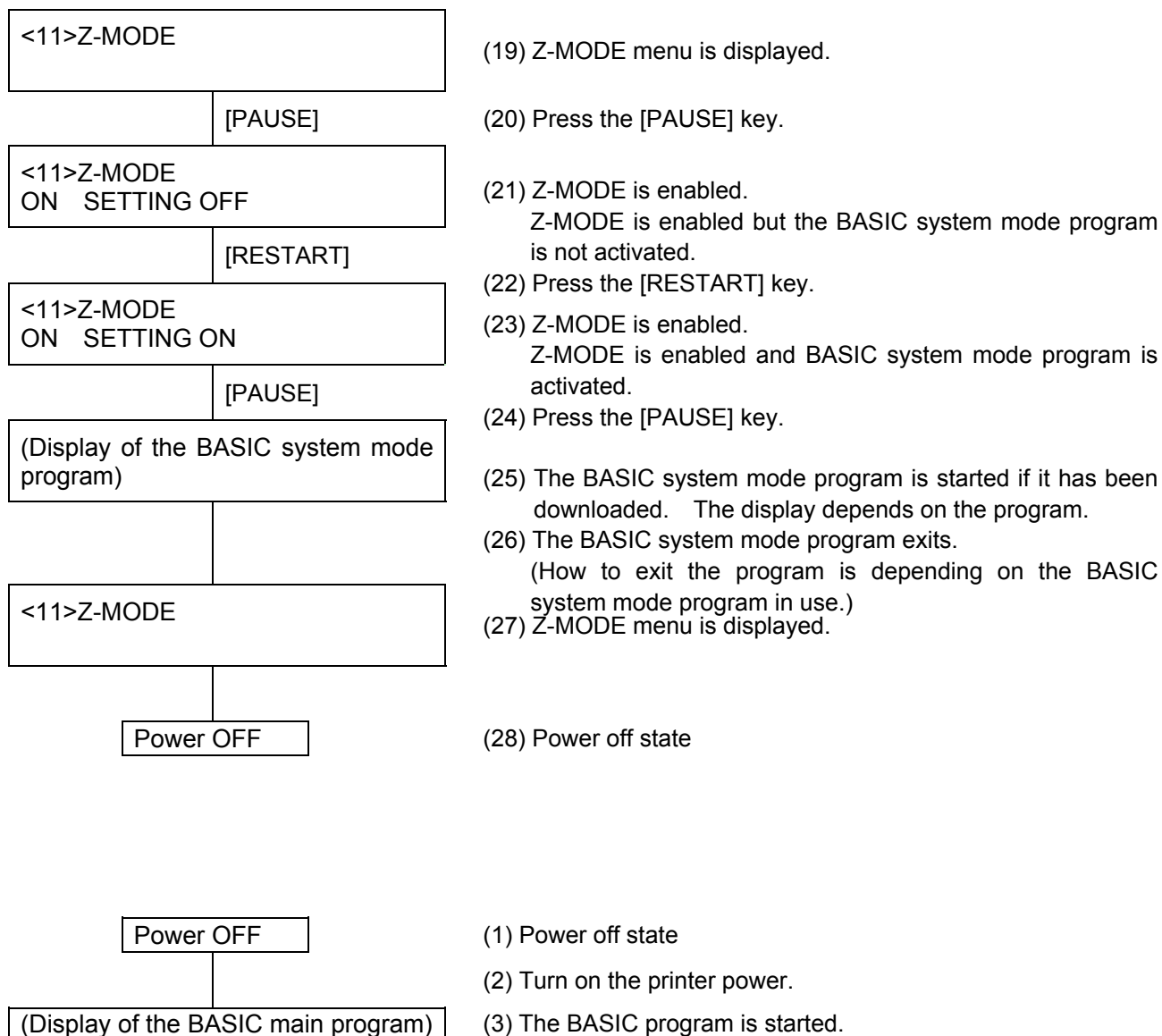
Refer to the subsequent pages for the operation example using the B-SX4T. (Also refer to the “Key Operation Manual”.)

### NOTES:

1. Disable Z-MODE before downloading the BASIC file.
2. Enabling or disabling the Z-MODE is also possible by using the Z-MODE setting tool. For details, please refer to the Z-MODE Setting Tool Specification.

### Operation Example





Example of BASIC main program display when the Z-MODE is set to ON:

<div style="border: 1px solid black; padding: 5px;"> Z-MODE  SX4                      V1.0E </div>	Upper line: Z-MODE Lower line: Printer series name and the version of the BASIC main program
--	---

## 6. DEFAULT SETTING

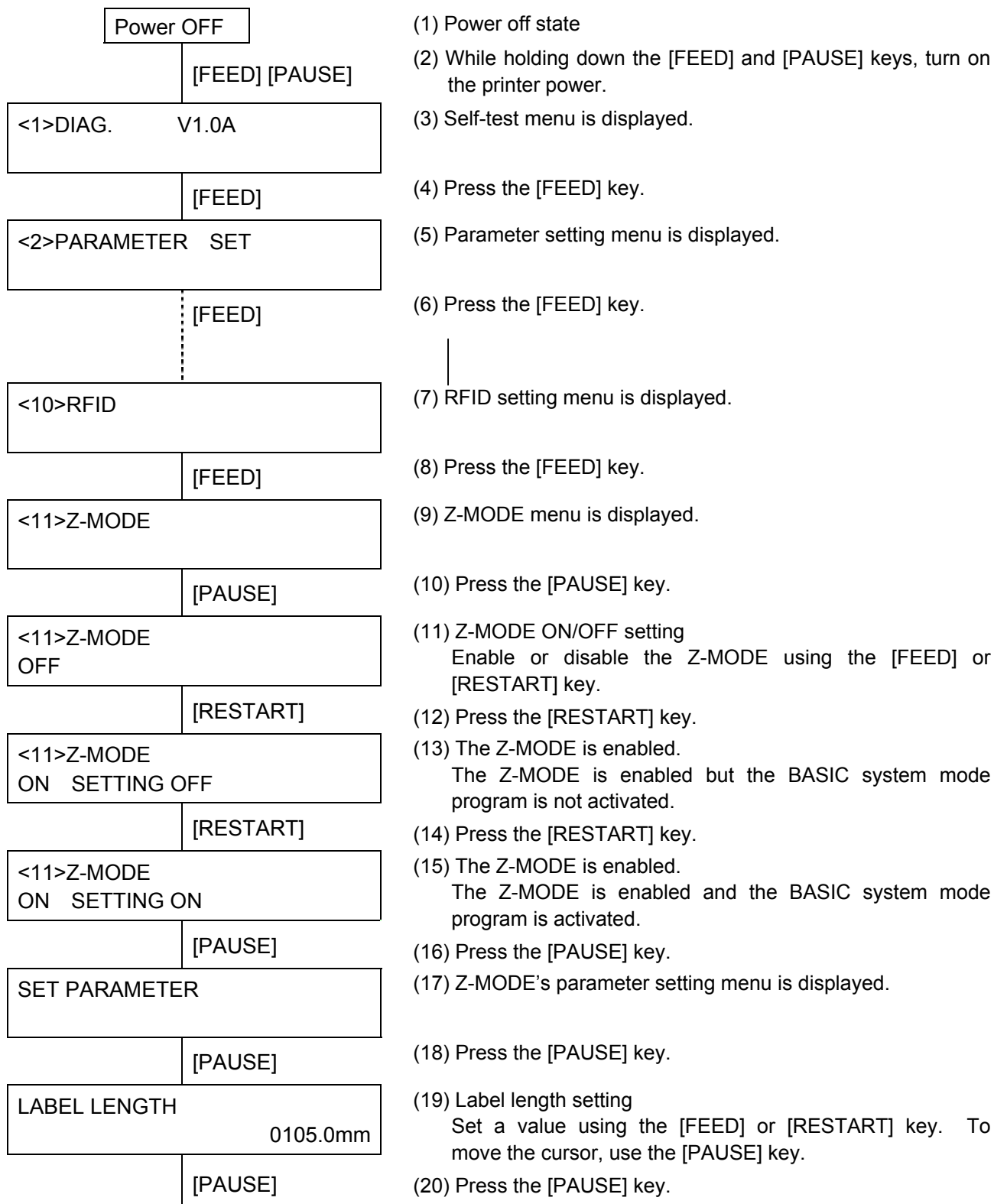
If a parameter is not sent to the TOSHIBA TEC printer as a Zebra command parameter, such as paper width, key operation may be required to operate the TOSHIBA TEC printer properly.

In this case, enabling the Z-MODE on the printer allows parameter settings by key operations.

The parameters set are retrieved when the program of the Z-MODE is started.

The following example is the operating procedure for the B-SX4T.

### Operation Example



LABEL WIDTH	104.0mm
	[PAUSE]
RIBBON	WITH RIBBON SAVE
	[PAUSE]
PRINT MODE	NO CUT
	[PAUSE]
SENSOR	NONE
	[PAUSE]
PRINT SPEED	3 inch/sec
	[PAUSE]
MAXIMUM LENGTH	0500.0mm
	[PAUSE]
POWER ON CALIB	CALIBRATE
	[PAUSE]
HEAD CLOSE CALIB	CALIBRATE
	[PAUSE]
DOT/MM	8dots/mm
	[PAUSE]
FORMAT CONVERT	NONE
	[PAUSE]
CONTROL PREFIX	7E (~)
	[PAUSE]
FORMAT PREFIX	5E (^)
	[PAUSE]

- (21) Label width setting  
Set a value using the [FEED] or [RESTART] key. To move the cursor, use the [PAUSE] key.
- (22) Press the [PAUSE] key.
- (23) Ribbon type setting  
Select a ribbon type using the [FEED] or [RESTART] key.
- (24) Press the [PAUSE] key.
- (25) Issue mode setting  
Select an issue mode using the [FEED] or [RESTART] key.
- (26) Press the [PAUSE] key.
- (27) Sensor type setting  
Select a sensor type using the [FEED] or [RESTART] key.
- (28) Press the [PAUSE] key.
- (29) Print speed setting  
Select a print speed using the [FEED] or [RESTART] key.
- (30) Press the [PAUSE] key.
- (31) Max. print length setting (for calibration)  
Set a value using the [FEED] or [RESTART] key. To move the cursor, use the [PAUSE] key.
- (32) Press the [PAUSE] key.
- (33) Calibration after power on setting  
Select a printer operation using the [FEED] or [RESTART] key.
- (34) Press the [PAUSE] key.
- (35) Calibration after head close setting  
Select a printer operation using the [FEED] or [RESTART] key.
- (36) Press the [PAUSE] key.
- (37) Dots/mm setting  
Select a resolution using the [FEED] or [RESTART] key.
- (38) Press the [PAUSE] key.
- (39) Format conversion setting  
Select a using the [FEED] or [RESTART] key.
- (40) Press the [PAUSE] key.
- (41) Control prefix setting  
Select a control prefix using the [FEED] or [RESTART] key.
- (42) Press the [PAUSE] key.
- (43) Format prefix setting  
Select a format prefix using the [FEED] or [RESTART] key.
- (44) Press the [PAUSE] key.

DELIMITER CHAR	2C (,)
[PAUSE]	
LABEL SIZE(LL)	ENABLE
[PAUSE]	
LABEL TYPE(MN)	ENABLE
[PAUSE]	
MEDIA TYPE(MT)	ENABLE
[PAUSE]	
TONE ADJ(SD)	ENABLE
[PAUSE]	
TONE ADJ(MD)	ENABLE
[PAUSE]	
GRAPHIC POSITION	SPEED-ORIENTED
[PAUSE]	
TAB->SP	04
[PAUSE]	
RFID ADJUST	+000.0mm
[PAUSE]	
OFFSET PRINT	NONE
[PAUSE]	
LABEL SHIFT	+000.0mm
[PAUSE]	
SAVE	OK
[PAUSE]	

- (45) Delimiter character setting  
Select a delimiter character using the [FEED] or [RESTART] key.
- (46) Press the [PAUSE] key.
- (47) Label length (LL) command ON/OFF setting  
Enable/disable the command using [FEED] or [RESTART] key.
- (48) Press the [PAUSE] key.
- (49) Label type (MN) command ON/OFF setting  
Enable/disable the command using [FEED] or [RESTART] key.
- (50) Press the [PAUSE] key.
- (51) Media type (MT) command ON/OFF setting  
Enable/disable the command using [FEED] or [RESTART] key.
- (52) Press the [PAUSE] key.
- (53) Tone adjust (SD) command ON/OFF setting  
Enable/disable the command using [FEED] or [RESTART] key.
- (54) Press the [PAUSE] key.
- (55) Tone adjust (MD) command ON/OFF setting  
Enable/disable the command using [FEED] or [RESTART] key.
- (56) Press the [PAUSE] key.
- (57) Graphic printing mode setting.  
Select a graphic printing mode using [FEED] or [RESTART] key.
- (58) Press the [PAUSE] key.
- (59) Tab-to-space conversion  
Set a value using the [FEED] or [RESTART] key.
- (60) Press the [PAUSE] key.
- (61) RFID tag position adjustment  
Set a value using the [FEED] or [RESTART] key. To move the cursor, use the [PAUSE] key.
- (62) Press the [PAUSE] key.
- (63) RFID offset printing  
Select a printer operation using the [FEED] or [RESTART] key.
- (64) Press the [PAUSE] key.
- (65) Label shift adjustment  
Set a value using the [FEED] or [RESTART] key. To move the cursor, use the [PAUSE] key.
- (66) Press the [PAUSE] key.
- (67) Parameter save  
Select "OK" or "CANCEL" using the [FEED] or [RESTART] key.
- (68) Press the [PAUSE] key.

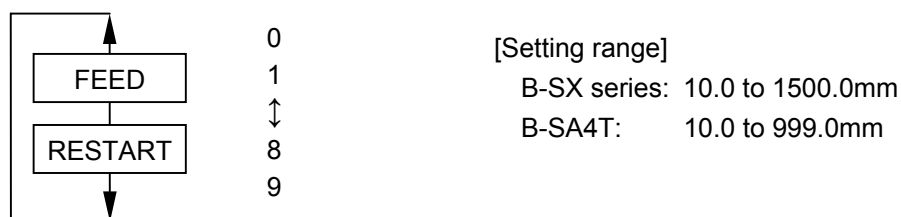
<11>Z-MODE

(69) Z-MODE menu is displayed.

Power OFF

(70) Power off state

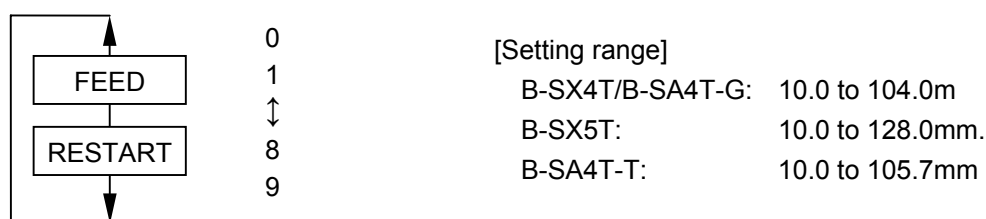
## Selection of paper length



Select a number from 0 through 9 for an applicable digit by pressing the [FEED] or [RESTART] key. Pressing the [PAUSE] key determines the selection for the digit, then a selection of a number in the next digit becomes available. (After selecting a number for the last digit, the paper width setting becomes available.)

Among the Zebra commands, the ^LL command sets paper length. If the ^LL command is not sent, paper length must be manually selected. If a paper jam error occurs, check the paper length setting.

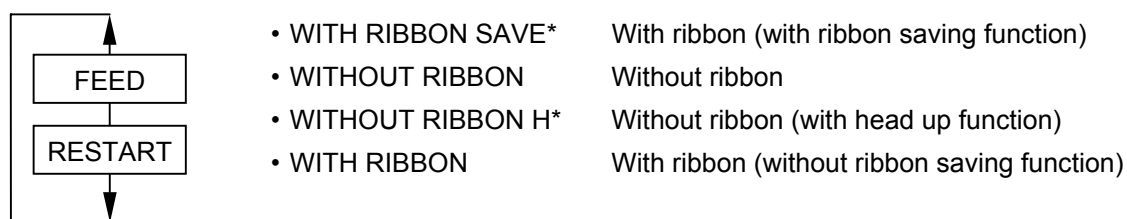
## Selection of paper width



Select a number from 0 through 9 for an applicable digit by pressing the [FEED] or [RESTART] key. Pressing the [PAUSE] key determines the selection for the digit, then a selection of a number in the next digit becomes available. (After selecting a number for the last digit, the ribbon type setting becomes available.)

Among the Zebra commands, the ^PW command sets paper width. If the ^PW command is not sent, paper width must be manually selected. If a print position deviates in the paper feed direction, check the paper width setting.

## Selection of ribbon type

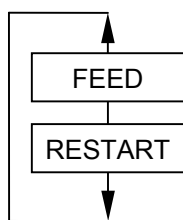


\* Displayed only on the B-SX series

Among the Zebra commands, the ^MT command sets ribbon type. If the ^MT command is not sent, ribbon type must be manually selected. If a ribbon error occurs when a direct thermal paper is used, check the ribbon type setting.

**NOTE:** Whether the ribbon saving function is enabled or not in the case of thermal transfer printing or whether the head up function is enabled or not in the case of direct thermal printing, specified in the Z-MODE, supersedes the ^MT command.

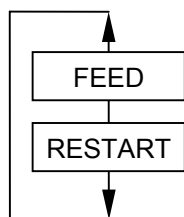
## Selection of print mode



- NO CUT                      Batch mode (no cut)
- PEEL OFF                 Strip mode  
(with reverse feed, strip sensor is activated.)
- PEEL OFF A              Strip mode  
(with reverse feed, strip sensor is ignored, Applicator supports this mode.)
- WITH CUT                Batch mode (with cut)
- DELAYED CUT            Cuts the label when it receives a ~JK (Delayed Cut) command.
- RFID                      When printing RFID labels in batch, the throughput is improved by eliminating reverse feed between labels. (Not supported.)

Among the Zebra commands, the ^MM command sets print mode. If the ^MM command is not sent, print mode must be manually selected. If the printer does not cut or peel labels, check the print mode setting.

## Selection of sensor type

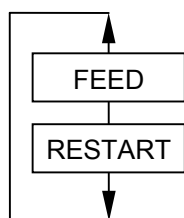


- NONE:                      No sensor
- REFLECT:                Reflective sensor
- TRANS:                  Transmissive sensor (when using normal labels)
- TRANS PREPRINT:      Transmissive sensor (when using preprinted labels)
- REFLECT MANUAL T:    Reflective sensor (when using a manual threshold value)

Among the Zebra commands, the ^MN command sets media tracking. If the ^MN command is not sent, paper width must be manually selected. If a paper jam error occurs, check the sensor type setting.

**NOTE:** Whether to use normal labels or pre-printed labels with the transmissive sensor or whether to enable the normal detection or manual threshold with the reflective sensor, specified in the Z-MODE, supersedes the ^MN command.

## Selection of print speed



B-SX4	B-SX5	B-SA4T
3 inches/sec.	3 inches/sec.	2 inches/sec.
6 inches/sec.	5 inches/sec.	4 inches/sec.
10 inches/sec.	8 inches/sec.	6 inches/sec.

Among the Zebra commands, the ^PR command sets print rate. If the ^PR command is not sent, print speed must be manually selected. To change the print speed, check this setting first.



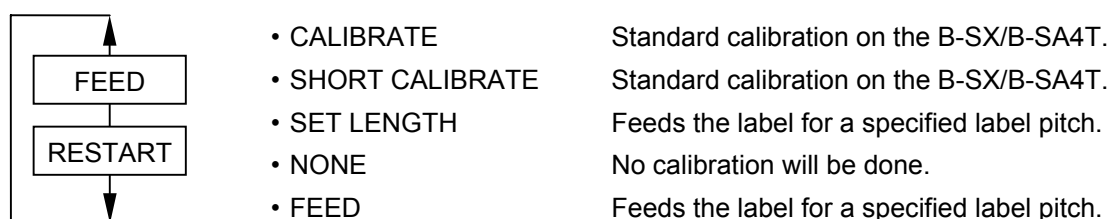
## Selection of the maximum length



Select a number from 0 through 9 for an applicable digit by pressing the [FEED] or [RESTART] keys. Pressing the [PAUSE] key determines the selection for the digit, then a selection of a number in the next digit becomes available. (After selecting a number for the last digit, the maximum length setting becomes available.)

**NOTE:** The maximum label length that can be automatically calibrated is set, in the same way as the MAXIMUM LENGTH provided in the Zebra printer's system mode.

## Selection of calibration after power on



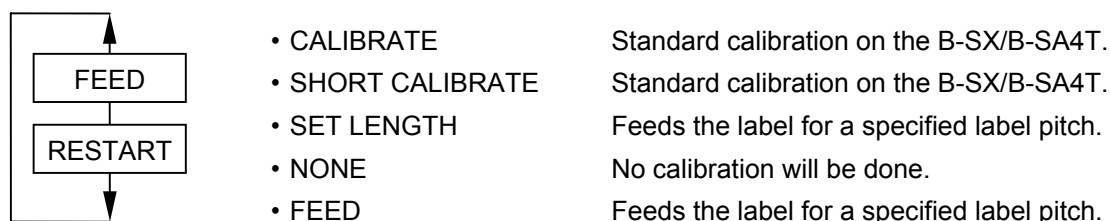
Select a printer behavior of the automatic calibration right after a power on.

**NOTE:** When "CALIBRATE" or "SHORT CALIBRATE" is selected, the printer will behave in the same way as the standard calibration on the B-SX/B-SA4T.

When "SET LENGTH" or "FEED" is selected, the printer will feed the label for a specified label pitch.

When "NONE" is selected, no calibration will be done.

## Selection of calibration after head close



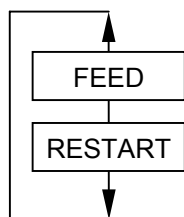
Select a printer behavior of the automatic calibration right after a head close.

**NOTE:** When "CALIBRATE" or "SHORT CALIBRATE" is selected, the printer will behave in the same way as the standard calibration on the B-SX/B-SA4T.

When "SET LENGTH" or "FEED" is selected, the printer will feed the label for a specified label pitch.

When "NONE" is selected, no calibration will be done.

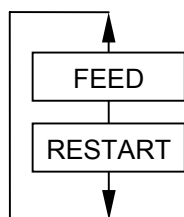
## Selection of Dots/mm



B-SX4T	B-SX5T	B-SA4T-G	B-SA4T-T
• 8 dots/mm	12 dots/mm	8 dots/mm	12 dots/mm
• 4 dots/mm	6 dots/mm	4 dots/mm	6 dots/mm

This setting corresponds to the Zebra ^JM command parameter.

## Selection of format convert

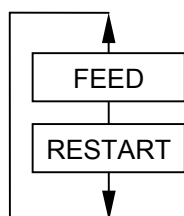


• NONE	No format conversion
• 150 → 300	150dpi to 300dpi
• 150 → 600	150dpi to 600dpi
• 200 → 600	200dpi to 600dpi
• 300 → 600	300dpi to 600dpi

Select a bitmap scaling factor. The number shown on the left is the original dots per inch (dpi) value and the number on the right is the value to which you would like to scale.

**NOTE:** This is the same parameter with the FORMAT CONVERT provided in the Zebra printer's system mode.

## Selection of control prefix



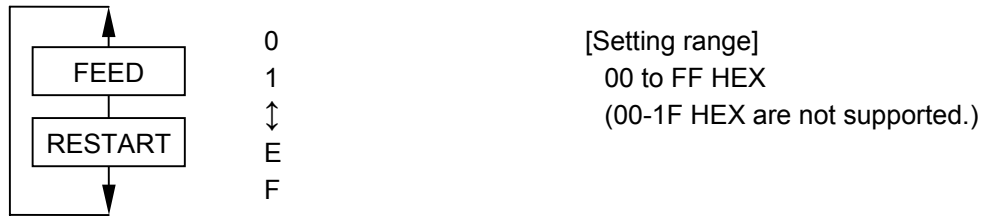
0	[Setting range]
1	00 to FF HEX
↕	(00-1F HEX are not supported.)
E	
F	

Select a number from 0 through 9 for an applicable digit by pressing the [FEED] or [RESTART] keys. Pressing the [PAUSE] key determines the selection for the digit, then a selection of a number in the next digit becomes available. (After selecting a number for the last digit, the control prefix setting becomes available.)

### NOTES:

- 1 This is the same parameter with the CONTROL PREFIX provided in the Zebra printer's system mode.
2. Displayed character may be different from the one shown in the system mode of Zebra printer.

## Selection of format prefix

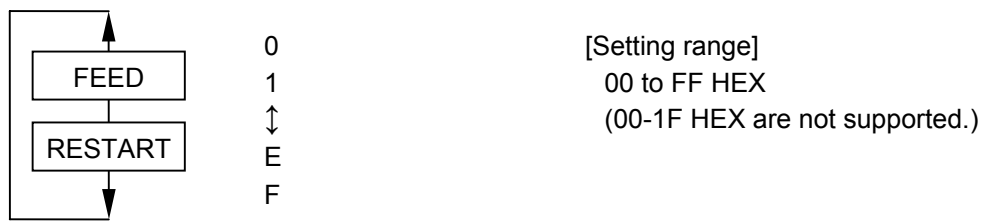


Select a number from 0 through 9 for an applicable digit by pressing the [FEED] or [RESTART] keys. Pressing the [PAUSE] key determines the selection for the digit, then a selection of a number in the next digit becomes available. (After selecting a number for the last digit, the format prefix setting becomes available.)

### NOTES:

1. This is the same parameter with the FORMAT PREFIX provided in the Zebra printer's system mode.
2. Displayed character may be different from the one shown in the system mode of Zebra printer.

## Selection of delimiter character



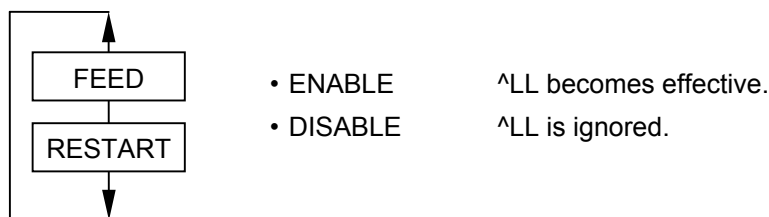
Select a number from 0 through 9 for an applicable digit by pressing the [FEED] or [RESTART] keys. Pressing the [PAUSE] key determines the selection for the digit, then a selection of a number in the next digit becomes available. (After selecting a number for the last digit, the delimiter character setting becomes available.)

This setting corresponds to the Zebra ^CD ~CD command parameter.

### NOTES:

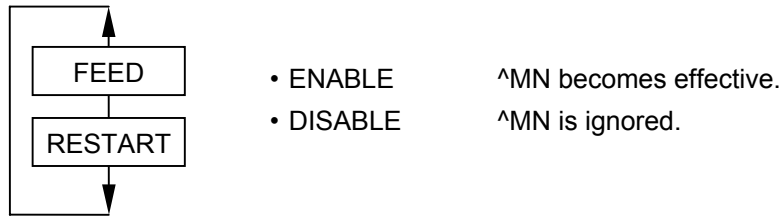
1. This is the same parameter with the DELIMITER CHAR provided in the Zebra printer's system mode.
2. Displayed character may be different from the one shown in the system mode of Zebra printer.

## Selection of label size (LL) command ON/OFF



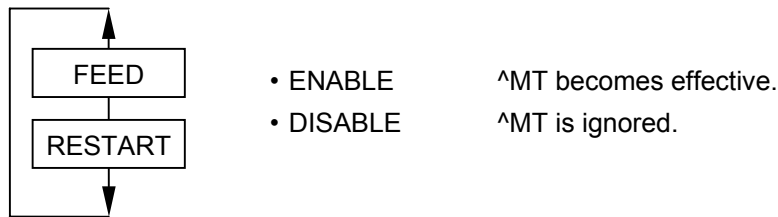
When "DISABLE" is selected, Zebra command ^LL is ignored. Instead, the label length set for the Selection of paper length parameter becomes effective.

#### Selection of label type (MN) command ON/OFF



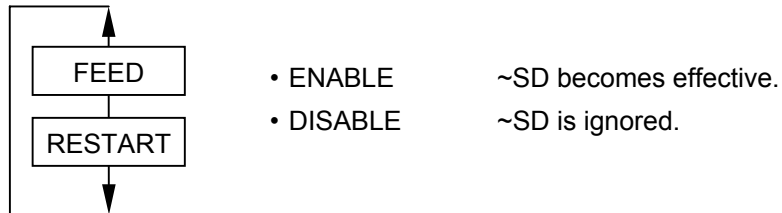
When “DISABLE” is selected, Zebra command ^MN is ignored. Instead, the sensor type set for the Selection of sensor type parameter becomes effective.

#### Selection of media type (MT) command ON/OFF



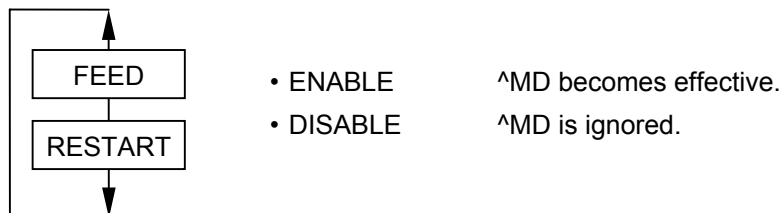
When “DISABLE” is selected, Zebra command ^MT is ignored. Instead, the ribbon type set for the Selection of ribbon type parameter becomes effective.

#### Selection of tone adjust (SD) command ON/OFF



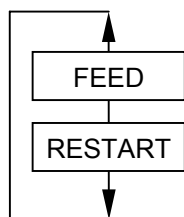
When “DISABLE” is selected, Zebra command ~SD is ignored. When “ENABLE” is selected, the print tone fine adjustment value set by the Toshiba printer system mode is overwritten with ~SD command value.

#### Selection of tone adjust (MD) command ON/OFF



When “DISABLE” is selected, Zebra command ^MD is ignored. When “ENABLE” is selected, the print tone fine adjustment value set by the TPCL is overwritten with ^MD command.

## Selection of graphic printing mode

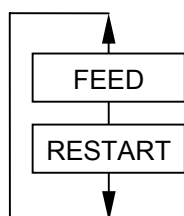


- SPEED-ORIENTED      Priority on print speed
- PRECISE POSITION      Priority on precise print position

When “SPEED-ORIENTED” is selected, print speed is given priority over the print position precision.

When “PRECISE POSITION” is selected, print position precision is given priority over the print speed. In this case, the printer performs the bit shift processing to print graphics in accurate position.

## Selection of tab-to-space conversion



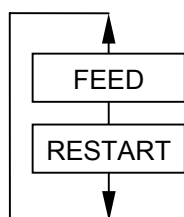
0  
1  
↑  
8  
9

[Setting range]  
0 to 99

Select a number from 0 through 9 for an applicable digit by pressing the [FEED] or [RESTART] keys. Pressing the [PAUSE] key determines the selection for the digit, then a selection of a number in the next digit becomes available. (After selecting a number for the last digit, the tab-to-space conversion setting becomes available.)

When a tab code (09hex) is included in data, this parameter specifies the number of spaces substituting the tab.

## Selection of RFID tag position adjustment



0  
+ 1  
↑ ↓  
- 8  
9

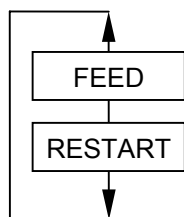
[Setting range]  
-999.9 to +999.9mm

Select a number from 0 through 9 for an applicable digit by pressing the [FEED] or [RESTART] keys. Pressing the [PAUSE] key determines the selection for the digit, then a selection of a number in the next digit becomes available. (After selecting a number for the last digit, the tag position adjustment value becomes available.)

This parameter specifies a fine adjustment value for the RFID tag position for RFID tag read/write.

**NOTE:** A TPCL @003 command specifying a feed amount parameter is generated.

## Selection of RFID offset printing

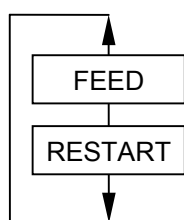


- NONE Offset printing is not performed.
- WITHOUT BACKFEED Offset printing is performed without a reverse feed of the first label.
- WITH BACKFEED Offset printing is performed with a reverse feed of the first label.

This parameter specifies a printer operation for the offset printing of RFID labels.

**NOTE:** A TPCL @003 command specifying an offset printing operation is generated.

## Selection of label shift adjustment



0  
+ 1  
↑ ↓  
- 8  
9

[Setting range]  
-999.9 to +999.9mm

Select a number from 0 through 9 for an applicable digit by pressing the [FEED] or [RESTART] keys. Pressing the [PAUSE] key determines the selection for the digit, then a selection of a number in the next digit becomes available. (After selecting a number for the last digit, the label shift adjustment value becomes available.)

Among the Zebra commands, the ^LS command shifts a label position. If the ^LS command is not sent, RFID labels are shifted based on this setting value.

## 7. ITEMS TO BE CHANGED

Some parts of the BASIC program may need to be changed to use the Z-MODE.  
This document is a guide to understand such changes.

### Modification to Zebra commands by using the BASIC program

In case a print result looks different from that of Zebra printer, it is possible to correct the commands in the BASIC Program and pass it to the converter firmware. In this case, a modification to the BASIC program and a change to the parameter settings by using the setting tool are required.

- Standard conversion  
Received data (ZPL) ==> GETCMDZB(ZPL to TPCL) ==> Command analysis, drawing, and printing
- Custom conversion (Tentative measure used for this time)  
Received data (ZPL) ==> GETCMDZ(ZPL) ==> Basic application (ZPL to ZPL) ==> GETCMDZB(ZPL to TPCL) ==> Command analysis, drawing, and printing

### 7.1 MODIFICATIONS TO THE BASIC PROGRAM

Main routine of the BASIC main program (Before modification)

```
*MAIN
REM      ***** To switch the source for commands analysis to SDATA2$(0) comment out then next 4 lines
REM      NOTE: Remember to set the Source for the GETCMDZB to basic application in the initial file setting !!!!!!!
      SDATA1$(0) = ""
      WHILE SDATA1$(0) = ""
          CNT% = GETCMDZB( STARTCODE$ , STARTCODE2$ )                      '070413 Mod
      WEND
REM      ***** To activate the use of SDATA2$(0) as the source for command analysis remove the comment from the next 4
lines
REM      SDATA2$(0) = ""
REM      WHILE SDATA2$(0) = ""
REM          CNT% = GETCMDZ( STARTCODE$ , STARTCODE2$ )
              'Transfer the command into SDATA1$(0) and SDATA2$(0)
REM      WEND
REM      '*** Check and change the Zebra command stored in SDATA2$(0) ***
REM      ' Each change in the original data required should be inserted here
REM      IF LEFT$(SDATA2$(0), 6) = "^F00,0" THEN SDATA2$(0) = "^FO0,0"
          'Example : Check for the error 0 instead of O in the field origin
REM      IF LEFT$(SDATA2$(0), 4) = "^CI5" THEN SDATA2$(0) = "^CI0"
          'Example : Incoming command is ^CI5 change this to ^CI0 for processing
REM      IF LEFT$(SDATA2$(0), 3) = "^XZ" THEN SDATA2$(0) = "^FO350,700^A0N,100,50^FD- TEST!!! -^FS^XZ"
          'Example : When ^XZ is received insert the extra data command
REM      the above example could be used to insert any command (like RFID) or logo into an existing system without
changing the original data stream
REM      ***** To activate the use of SDATA2$(0) as the source for command analysis remove the comment from the next 3
lines
REM      SDATA1$(0) = ""
REM      CNT% = GETCMDZB( STARTCODE$ , STARTCODE2$ )
          'Check the data in SDATA2$(0) and transfer it to SDATA1$(0)
REM      IF SDATA1$(0) = "" THEN *MAIN
          'If no data in SDATA1$(0) return to get next command
REM      ***** End of change area. It is recommended only to change the above lines and only to the incoming data
stream
      ZCONVCMD( CMDBUF$ , LONGCMD% )
      IF CMDBUF$ = "" GOTO *MAIN
*MAIN_010
      GOSUB *CMD_CHECK
*MAIN_END
      IF CMD_XFFLG% = 2 THEN GOSUB *SET_CMD : GOTO *MAIN_010
      GOTO *MAIN
```

## Main routine of the BASIC main program (After modification)

```

*MAIN
REM      ***** To switch the source for commands analysis to SDATA2$(0) comment out then next 4 lines
REM      NOTE: Remember to set the Source for the GETCMDZB to basic application in the initial file setting !!!!!!!
REM      SDATA1$(0) = ""
REM      WHILE SDATA1$(0) = ""
REM          CNT% = GETCMDZB( STARTCODE$ , STARTCODE2$ )          '070413 Mod
REM      WEND
REM      ***** To activate the use of SDATA2$(0) as the source for command analysis remove the comment from the next 4
lines
      SDATA2$(0) = ""
      WHILE SDATA2$(0) = ""
          CNT% = GETCMDZ( STARTCODE$ , STARTCODE2$ )
          'Transfer the command into SDATA1$(0) and SDATA2$(0)
      WEND
REM      *** Check and change the Zebra command stored in SDATA2$(0) ***
REM      --- Each change in the original data required should be inserted here ---
      IF LEFT$(SDATA2$(0), 6) = "^F00,0" THEN SDATA2$(0) = "^FO0,0"
      'Example : Check for the error 0 instead of O in the field origin
      IF LEFT$(SDATA2$(0), 4) = "^CI5" THEN SDATA2$(0) = "^CI0"
      'Example : Incoming command is ^CI5 change this to ^CI0 for processing
      IF LEFT$(SDATA2$(0), 3) = "^XZ" THEN SDATA2$(0) = "^FO350,700^A0N,100,50^FD- TEST!!! ^FS^XZ"
      'Example: When ^XZ is received insert the extra data command
REM      the above example could be used to insert any command (like RFID) or logo into an existing system without
changing the original data stream
REM      ***** To activate the use of SDATA2$(0) as the source for command analysis remove the comment from the next 3
lines
      SDATA1$(0) = ""
      CNT% = GETCMDZB( STARTCODE$ , STARTCODE2$ )
      'Check the data in SDATA2$(0) and transfer it to SDATA1$(0)
      IF SDATA1$(0) = "" THEN *MAIN          'If no data in SDATA1$(0) return to get next command
REM      ***** End of change area. It is recommended not to change the above lines and only to the incoming data
stream
      ZCONVCMD( CMDBUF$ , LONGCMD% )
      IF CMDBUF$ = "" GOTO *MAIN
*MAIN_010
      GOSUB *CMD_CHECK
*MAIN_END
      IF CMD_XFFLG% = 2 THEN GOSUB *SET_CMD : GOTO *MAIN_010
      GOTO *MAIN

```

Customize the portion enclosed with the dotted rectangle in accordance with the command you want to convert to.

The above example executes the following two conversions:

- (1) Check for the error 0 instead of O in the field origin

```
IF LEFT$(SDATA2$(0), 6) = "^F00,0" THEN SDATA2$(0) = "^FO0,0"
```

- (2) Incoming command is ^CI5 change this to ^CI0 for processing

```
IF LEFT$(SDATA2$(0), 4) = "^CI5" THEN SDATA2$(0) = "^CI0"
```

- (3) When ^XZ is received insert the extra data command

```
IF LEFT$(SDATA2$(0), 3) = "^XZ" THEN SDATA2$(0) = "^FO350,700^A0N,100,50^FD- TEST!!! - ^FS^XZ"
```

## 7.2 MODIFICATION TO THE SETTING TOOL

Please select **BASIC Application** for the "GETCMDZB: Get data from" on the Initial values & table setting screen. For details, refer to the Z-MODE Setting Tool Specification.



## 8. SUPPORTED COMMANDS

This section describes the supported commands.

(Restrictions are explained as necessary.)

All commands, which are not explained here, are ignored and discarded.

For details of Zebra commands, refer to the ZPL II Programming Guide.

Please refer to `ZMODE_supported_command_list`.

Regarding the commands not listed in the `Z-MODE_supported_command_list`, the specifications and restrictions common to these commands are described in Section 9. Z-MODE Command Processing.

## 9. Z-MODE COMMAND PROCESSING

### 9.1 COMMAND RELATED TO DEVICE

**Applicable command:** DF/XF/DG/DY/IS/XG/IM/IL/ID/HW/HG/HY

These commands have the following common specifications.

#### [Common specifications]

##### Designation of the drive

- When the ATA (A or B) drive is designated, the file is stored in the ATA card in the slot 1. (Except for the B-SA4T)
- When the ATA (A or B) drive is designated, the file is stored in the on-board Flash ROM. (Default of the B-SA4T)
- When any drive other than the effective ones (A, B, E, and R) is designated, the file will not be saved or recalled.

##### File save

- Saving the file on or recalling the file from the on-board flash ROM cannot be performed at the same time of the PC command save function of the TPCL. If the PC command save function is used, the printer operation is not guaranteed.
- While saving the files, "SAVING\*" is displayed on the LCD and any key operations are invalid. Also, the remaining number of labels to be printed is not displayed on the LCD.

\* The message differs depending on the selected languages.

##### File recall processing

- When recalling a file for a file in a label format and if the specified file name does not exist, that field is ignored. Therefore, if the command which recalls non-existing file is the only command specified for a label format, the printer does not perform printing.

##### File name

- Up to 16 characters are acceptable as a file name. If the file name exceeds 16 characters, the exceeding characters are discarded and the file is saved under a 16-character name.
- If a space code (20h) is included in a file name, the characters after the space code are omitted and only the characters before the space code become valid as the file name. (ID command is not applicable.)
- A space code (20h) inserted before the file name is eliminated.
- If a back slash (5Ch) is included in a file name, the back slash is eliminated.
- If the following control codes are included in the file name specified in the DG, DY, or ID command, the specified file is not saved or deleted.
  - 01h to 09h, 0Bh, 0Eh to 10h, 12h, 14h to 1Fh (conforming to Zebra)
- If the following control codes are included in the file name specified in the DG, DY, or ID command, such code is eliminated from the file name.
  - 00h, 0Ah, 0Ch, 0Dh, 11h, 13h (conforming to Zebra)

##### Example)

In the case the file name exceeds the maximum number of characters

R: 123456789012345678.GRF → R: 1234567890123456.GRF

In the case the file name starts with the space code (20h)

R: 123456789012345678.GRF → R:1234567890123456.GRF

In the case the file name includes the space code (20h)

R: 12345 67890123456.GRF → R: 12345.GRF (ID command is not applicable.)

### Storing data in the memory

- In the case the memory becomes full while storing data in the RAM or Flash ROM, the message, "FLASH WRITE ERR.", is displayed on the LCD. The displayed message differs depending on the selected languages, as follows.

English	FLASH WRITE ERR.
German	FLASH FEHLER
French	ERREUR MEM FLASH
Dutch	FLASH MEM FOUT
Spanish	ERROR ESCRITURA
Italian	ERR.SCRITT.CARD

When this error occurs, it is possible to recover from the error by pressing the [RESTART] key and continue the operation.

(The printer operation in the Z-MODE differs from that in the TPCL. In the case of the TPCL, the printer displays "FLASH CARD FULL" on the LCD and cannot recover from the error by pressing the [RESTART] key.)

## 9.2 DESIGNATION OF WILD CARD

### Applicable command: ID / HW

These commands have the following common specifications.

#### [Common specifications]

##### File name and extension

- The wild card is applicable in accordance with the following rules.

##### [Wild card application rule]

Type of wild card

- [\*] To be used in place of unknown number of characters.  
E.g.) In the case "X\*Y" is specified, "Y" is invalid and only "X\*" will be processed.
- [?] To be used in place of one or less character.

#### [Example of use]

- [\*.XXX]: All files having the specified file extension are applicable.
- [A\*.XXX]: Files of which name starts with "A", and the number of characters is 1 or more  
E.g.) A.XXX / AB.XXX / ABC.XXX
- [A\*C.XXX]: "C" is invalid and only "A\*" will be valid.
- [A\*C\*E.XXX]: "C\*E" is invalid and only "A\*" will be valid.
- [A?.XXX]: Files of which name starts with "A", and the number of characters is 1 or 2.  
E.g.) A.XXX / AA.XXX
- [A?C.XXX]: Files of which name is "A" or files having a 3-character name which meets the definition of "A?C".  
E.g.) A.XXX / ABC.XXX
- [A?C?.XXX]: Files of which name is "A", files having a 3-character name which meets the definition of "A?C", or files having a 4-character name which meets the definition of "A?C?".  
E.g.) A.XXX / ABC.XXX / ABCD.XXX
- [A?? .XXX]: Files of which name is "A", files having 2-character name which meets the definition of "A?", or files having 3-character name which meets the definition of "A??".  
E.g.) A.XXX / AB.XXX / ABC.XXX
- [A??D.XXX]: Files of which name is "A", files having 4-character name which meets the definition of "A??D".  
E.g.) A.XXX / ABCD.XXX
- [\*.\*]: All files

## 9.3 TRUETYPE FONT

### Applicable command: DU / DY / ID

These commands have the following common specifications.

#### [Common specifications]

##### Destination of download

- TrueType fonts (TTF) are saved in the TTF area in the on-board flash ROM (separately from the graphic or formats).

##### Number of downloadable files

- Up to 25 files of TTF can be downloaded. Even if the TTF area has a free space, 26 or more files cannot be downloaded.

##### Number of usable TTF types

- Up to 7 types can be used (in ^A@ and ^CW). Even if the TTF area has a free space, 8 or more types cannot be downloaded.

##### Deleting the fonts

- Deleting a font (including the multiple fonts specified using the wild card) by using the ^ID command enables restoring the number of usable font types. However, the number of downloadable files and the free space of the TTF area are not restored.
- Deleting the all fonts by using the ^ID command enables restoring the number of usable font types, the number of downloadable files, and the free space of the TTF area.
- If the TTF area of the on-board flash ROM is cleared by using any method other than the ^ID command (for example, Z-MODE setting tool), the number of usable font types is not restored. Therefore, it is necessary to delete the all fonts again by using the ^ID command.

##### Font types

- Usable font files are “\*.TTF” and “\*.OTF”. “\*.TTE” and “\*.TTC” are not supported.
- If the font type or size is not downloaded properly, the printer operation is not guaranteed.

## 9.4 OTHERS

- The EURO font code specified in the system mode will not be printed in the Z-MODE to maintain the compatibility with Zebra printers. However, “~WC (command to print the printer configuration label) uses the characters in the system, so the configuration label will be affected.