# TOSHIBA

TOSHIBA Bar Code Printer

# B-EX Series

## Z-MODE Specification

1st Edition:          April 1, 2011

# TOSHIBA TEC CORPORATION

**Trademark Acknowledgements**

Microsoft and Windows are trademarks of Microsoft Corp.

Zebra, ZPL II, ZebraNET are registered trademarks of Zebra Technologies Corp.

TrueType is a registered trademark of Apple Computer, Inc.

All other company or product names are registered trademarks or trademarks of their respective companies.

Each company's registered trademarks and trademarks are not marked with TM or ®.

**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.

# Table of Contents

# 1. SCOPE

This specification applies to the Zebra converter for use with the B-EX4T series (hereinafter referred to as "B-EX4T") and B-EX6T series (hereinafter referred to as "B-EX6T") general-purpose thermal bar code printers.   (The B-EX4T series and the B-EX6T series are hereinafter collectively referred to as "B-EX 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.



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

The following cases may occur:

(1) Print result is not exactly the same as 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.
(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.
  * The BCI program is the BASIC program which works with the BASIC interpreter embedded in the TOSHIBA TEC printers.

Take the following steps to operate the Z-MODE:

(1)  Download a BASIC file to your printer.

(2)  Place the printer in the Z-MODE with the system mode parameter setting.

(3)  Select a paper width and paper size.

(4)  Send a Zebra command.

(5)  To fine adjust a print position, print tone, etc., with the "Z-MODE Setting tool."

The BASIC file name shall start with the following string:
    In the case of the B-EX series:          "Z-EX"

# 3. CONSTRUCTION

## 3.1 FILE CONSTRUCTION

Each model has two BASIC files as below:

| No. | Model | File name | Remarks |
|-----|-------|-----------|---------|
| 1 | B-EX4T1-G | Z-EX4T1G-M10.BAS | MAIN PROGRAM |
| 2 | | Z-EX4T1G-S10.BAS | SYSTEM MODE PROGRAM |
| 3 | B-EX4T1-T | Z-EX4T1T-M10.BAS | MAIN PROGRAM |
| 4 | | Z-EX4T1T-S10.BAS | SYSTEM MODE PROGRAM |
| 5 | B-EX4T2-G | Z-EX4T2G-M10.BAS | MAIN PROGRAM |
| 6 | | Z-EX4T2G-S10.BAS | SYSTEM MODE PROGRAM |
| 7 | B-EX4T2-T | Z-EX4T2T-M10.BAS | MAIN PROGRAM |
| 8 | | Z-EX4T2T-S10.BAS | SYSTEM MODE PROGRAM |
| 9 | B-EX4T2-H | Z-EX4T2H-M10.BAS | MAIN PROGRAM |
| 10 | | Z-EX4T2H-S10.BAS | SYSTEM MODE PROGRAM |
| 11 | B-EX6T2-G | Z-EX6T2G-M10.BAS | MAIN PROGRAM |
| 12 | | Z-EX6T2G-S10.BAS | SYSTEM MODE PROGRAM |
| 13 | B-EX6T2-T | Z-EX6T2T-M10.BAS | MAIN PROGRAM |
| 14 | | Z-EX6T2T-S10.BAS | SYSTEM MODE PROGRAM |

(Version included in each file name changes as necessary. "10" in "Z-EX4T1G-M10.BAS" represents the version.)

* To operate BASIC files for the Z-MODE, do not modify the first four letters in the file name (e.g. "Z-EX").

## 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 enables setting of Zebra command parameters with key operations in the TOSHIBA TEC printer's system mode.

## 3.3 DATA FILE

**ZEBRAPRM.TXT**

This is a parameter file described in "Section 5. DEFAULT SETTING." Usually, this file is automatically created by the BASIC program, but it also can be downloaded by using the Z-MODE Setting Tool.

**ZDEFAULT.TXT**

This file contains a table of the initial values to be used just in case a transmission of Zebra commands partly failed, and a font conversion table. When setting is required, use the Z-MODE Setting Tool to download this file.

### 3.4 PRINTER FIRMWARE

Compatible printer firmware is required.    Update the firmware as necessary.
For how to update it, refer to the "Program Download Operation Specification."

**NOTE**:  The firmware can also be downloaded by using the Z-MODE setting tool.

### 3.5 Z-MODE SETTING TOOL

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

# 4. START OF Z-MODE

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

Refer to the subsequent pages for the operation example on the B-EX4T. (Also refer to the "Key Operation Specification".)

**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.
3. For B-EX, The Z-MODE can be enabled only when the destination is set to a value other than [JA].

**Operation Example**
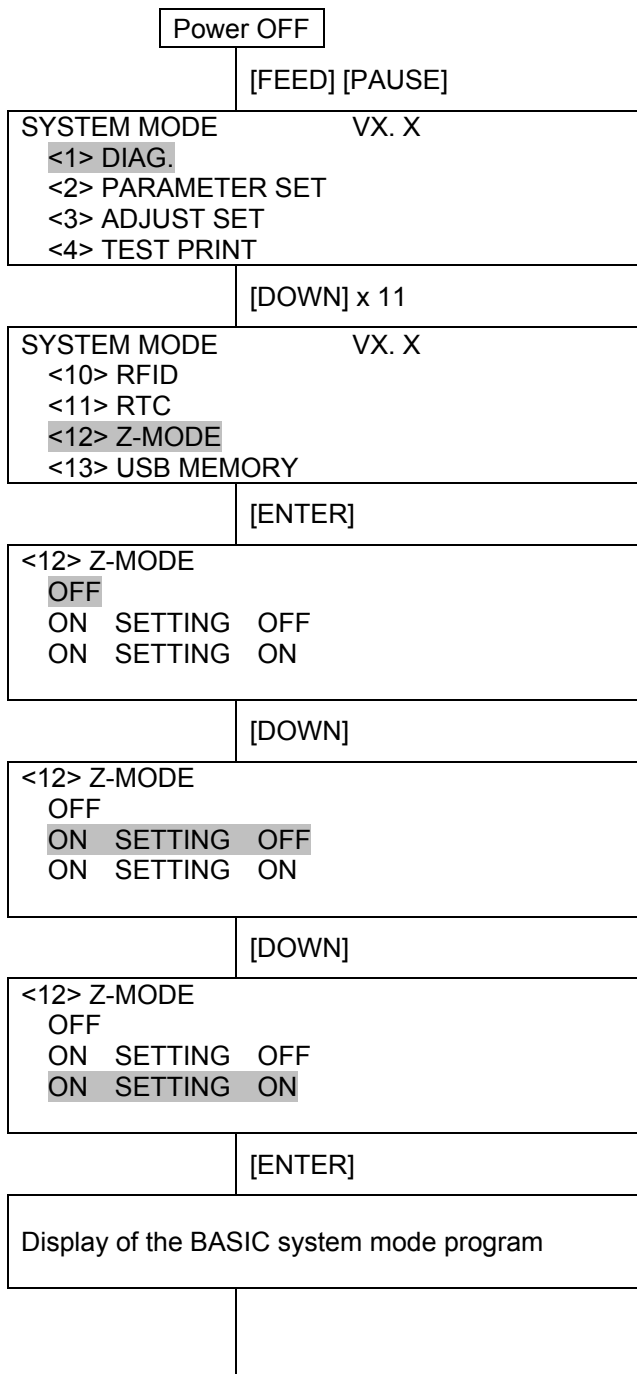
| | |
|---|---|
| Power OFF | (1) Power off state |
| [FEED] [PAUSE] | (2) While holding down the [FEED] and [PAUSE] keys, turn on the printer power. |
| SYSTEM MODE VX. X<br><1> DIAG.<br><2> PARAMETER SET<br><3> ADJUST SET<br><4> TEST PRINT | (3) The system mode menu is displayed. |
| [DOWN] x 11 | (4) Press the [DOWN] key until the cursor stops at <12>Z-MODE. |
| SYSTEM MODE VX. X<br><10> RFID<br><11> RTC<br><12> Z-MODE<br><13> USB MEMORY | |
| [ENTER] | (5) Press the [ENTER] key. |
| <12> Z-MODE<br>OFF<br>ON SETTING OFF<br>ON SETTING ON | (6) Z-MODE setting menu<br>Enable or disable the Z-MODE with the [UP] or [DOWN] key. |
| [DOWN] | (7) Press the [DOWN] key. |
| <12> Z-MODE<br>OFF<br>ON SETTING OFF<br>ON SETTING ON | (8) Z-MODE is enabled but the BASIC system mode program is not activated. |
| [DOWN] | (9) Press the [DOWN] key. |
| <12> Z-MODE<br>OFF<br>ON SETTING OFF<br>ON SETTING ON | (10) Z-MODE is enabled and the BASIC system mode program is activated. |
| [ENTER] | (11) Press the [ENTER] key. |
| Display of the BASIC system mode program | (12) The BASIC system mode program is started if it has been downloaded. The display depends on the program.<br>(13) The BASIC system mode program exits. (How to exit the program depends on the BASIC system mode program in use.) |

```
SYSTEM MODE          VX. X
  <10> RFID
  <11> RTC
  <12> Z-MODE
  <13> USB MEMORY
```

(14)  The system mode menu is displayed.

```
Power OFF
```

(15)  Power OFF state

When the Z-MODE is set to ON:

```
Power OFF
```

(1)  Power OFF state

(2)  Turn on the printer power.

```
Display of the BASIC main program
```

(3)  The BASIC program is started.

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

```
B-EX4T1-T                VX. X
           Z-MODE
PRINTED                  000000
EX4T1G          VX. X
```

2nd line: "Z-MODE" is displayed.
4th line: The printer mode name and the version
of the BASIC main program are displayed.

# 5. DEFAULT SETTING

If Zebra command parameters, such as paper width, are not sent to the TOSHIBA TEC printer, settings with key operations are required to ensure the TOSHIBA TEC printer operates properly.
In this case, enabling the Z-MODE on the printer allows parameter settings with key operations.
The set parameters are retrieved when the program of the Z-MODE is started.
An example of the operating procedure for B-EX4T is shown below.

**Operation Example**

| Power OFF | (1) Power off state |

[FEED] [PAUSE]

(2) While holding down the [FEED] and [PAUSE] keys, turn on the printer power.

```
SYSTEM MODE          VX. X
  <1> DIAG.
  <2> PARAMETER SET
  <3> ADJUST SET
  <4> TEST PRINT
```

(3) The system mode menu is displayed.

[DOWN] x 11

(4) Press the [DOWN] key until the cursor stops at <12>Z-MODE.

```
SYSTEM MODE          VX. X
  <10> RFID
  <11> RTC
  <12> Z-MODE
  <13> USB MEMORY
```

[ENTER]

(5) Press the [ENTER] key.

```
<12> Z-MODE
  OFF
  ON   SETTING   OFF
  ON   SETTING   ON
```

(6) Z-MODE setting menu
Enable or disable the Z-MODE with the [UP] or [DOWN] key.

[DOWN]

(7) Press the [DOWN] key.

```
<12> Z-MODE
  OFF
  ON   SETTING   OFF
  ON   SETTING   ON
```

(8) Z-MODE is enabled but the BASIC system mode program is not activated.

[DOWN]

(9) Press the [DOWN] key.

```
<12> Z-MODE
  OFF
  ON   SETTING   OFF
  ON   SETTING   ON
```

(10) Z-MODE is enabled and the BASIC system mode program is activated.

[ENTER]

(11) Press the [ENTER] key.

```
SET PARAMETER
```

(12) Z-MODE's parameter setting menu is displayed.

[PAUSE]

(13) Press the [PAUSE] key.

| | |
|---|---|
| LABEL LENGTH<br><br>0105.0 mm | (14) Label length setting<br>Set a value using the [FEED] or [RESTART] key. To move the cursor, use the [PAUSE] key. |
| [PAUSE] | (15) Press the [PAUSE] key. |
| LABEL WIDTH<br><br>104.0 mm | (16) Label width setting<br>Set a value using the [FEED] or [RESTART] key. To move the cursor, use the [PAUSE] key. |
| [PAUSE] | (17) Press the [PAUSE] key. |
| RIBBON<br>WITH RIBBON SAVE | (18) Ribbon type setting<br>Select a ribbon type using the [FEED] or [RESTART] key. |
| [PAUSE] | (19) Press the [PAUSE] key. |
| PRINT MODE<br><br>NO CUT | (20) Issue mode setting<br>Select an issue mode using the [FEED] or [RESTART] key. |
| [PAUSE] | (21) Press the [PAUSE] key. |
| SENSOR<br><br>TRANS. | (22) Sensor type setting<br>Select a sensor type using the [FEED] or [RESTART] key. |
| [PAUSE] | (23) Press the [PAUSE] key. |
| PRINT SPEED<br><br>3 inch/sec | (24) Print speed setting<br>Select a print speed using the [FEED] or [RESTART] key. |
| [PAUSE] | (25) Press the [PAUSE] key. |
| MAXIMUM LENGTH<br><br>0500.0 mm | (26) Max. print length setting (for calibration)<br>Set a value using the [FEED] or [RESTART] key. To move the cursor, use the [PAUSE] key. |
| [PAUSE] | (27) Press the [PAUSE] key. |
| POWER ON CALIB<br><br>CALIBRATE | (28) Calibration after power on setting<br>Select a printer operation using the [FEED] or [RESTART] key. |
| [PAUSE] | (29) Press the [PAUSE] key. |

| | |
|---|---|
| HEAD CLOSE CALIB<br>    CALIBRATE | (30) Calibration after head close setting<br>Select a printer operation using the [FEED]<br>or [RESTART] key. |
| [PAUSE] | (31) Press the [PAUSE] key. |
| DOT/MM<br>    8 dots/mm | (32) Dots/mm setting<br>Select a resolution using the [FEED] or<br>[RESTART] key. |
| [PAUSE] | (33) Press the [PAUSE] key. |
| FORMAT CONVERT<br>    NONE | (34) Format conversion setting<br>Enable/disable format conversion using<br>the [FEED] or [RESTART] key. |
| [PAUSE] | (35) Press the [PAUSE] key. |
| CONTROL PREFIX<br>    7E (~) | (36) Control prefix setting<br>Select a control prefix using the [FEED] or<br>[RESTART] key. |
| [PAUSE] | (37) Press the [PAUSE] key. |
| FORMAT PREFIX<br>    5E (~) | (38) Format prefix setting<br>Select a format prefix using the [FEED] or<br>[RESTART] key. |
| [PAUSE] | (39) Press the [PAUSE] key. |
| DELIMITER CHAR<br>    2C (,) | (40) Delimiter character setting<br>Select a delimiter character using the<br>[FEED] or [RESTART] key. |
| [PAUSE] | (41) Press the [PAUSE] key. |
| LABEL SIZE (LL)<br>    ENABLE | (42) Label length (LL) command ON/OFF<br>setting<br>Enable/disable the command using [FEED]<br>or [RESTART] key. |
| [PAUSE] | (43) Press the [PAUSE] key. |
| LABEL TYPE (MN)<br>    ENABLE | (44) Label type (MN) command ON/OFF setting<br>Enable/disable the command using [FEED]<br>or [RESTART] key. |
| [PAUSE] | (45) Press the [PAUSE] key. |

```
┌─────────────────────────────────┐
│ 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                     │
│                + 000.0 mm       │
│                                 │
└─────────────────────────────────┘
            [PAUSE]

┌─────────────────────────────────┐
│ OFFSET PRINT                    │
│                NONE             │
│                                 │
└─────────────────────────────────┘
            [PAUSE]

┌─────────────────────────────────┐
│ LABEL SHIFT                     │
│                + 000.0 mm       │
│                                 │
└─────────────────────────────────┘
            [PAUSE]
```

(46) Media type (MT) command ON/OFF setting
Enable/disable the command using [FEED] or [RESTART] key.

(47) Press the [PAUSE] key.

(48) Tone adjust (SD) command ON/OFF setting
Enable/disable the command using [FEED] or [RESTART] key.

(49) Press the [PAUSE] key.

(50) Tone adjust (MD) command ON/OFF setting
Enable/disable the command using [FEED] or [RESTART] key.

(51) Press the [PAUSE] key.

(52) Graphic printing mode setting.
Select a graphic printing mode using [FEED] or [RESTART] key.

(53) Press the [PAUSE] key.

(54) Tab-to-space conversion setting
Set a value using the [FEED] or [RESTART] key.

(55) Press the [PAUSE] key.

(56) RFID tag position adjustment
Set a value using the [FEED] or [RESTART] key. To move the cursor, use the [PAUSE] key.

(57) Press the [PAUSE] key.

(58) RFID offset printing setting
Select a printer operation using the [FEED] or [RESTART] key.

(59) Press the [PAUSE] key.

(60) Label shift adjustment
Set a value using the [FEED] or [RESTART] key. To move the cursor, use the [PAUSE] key.

(61) Press the [PAUSE] key.
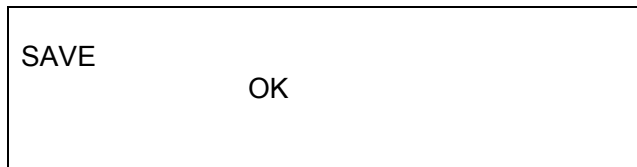
```
┌─────────────────────────────┐
│ SAVE                        │          (62)  Setting ends.
│            OK               │                Select "OK" or "CANCEL" using the
│                             │                [FEED] or [RESTART] key.
└─────────────────────────────┘
              │
              │  [PAUSE]                  (63)  Press the [PAUSE] key.
              ↓
┌─────────────────────────────┐
│ SYSTEM MODE        VX. X     │
│   <10> RFID                 │
│   <11> RTC                  │          (64)  The system mode menu is displayed.
│   <12> Z-MODE               │
│   <13> USB MEMORY           │
└─────────────────────────────┘
       │
       │
   ┌──────────────┐
   │  Power OFF   │                       (65)  Power OFF state
   └──────────────┘
```
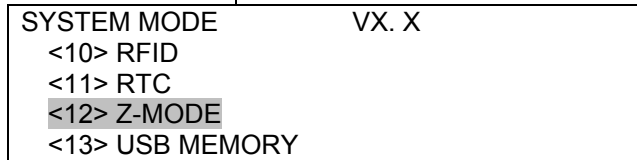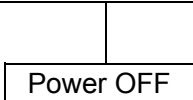
## 5.1 SELECTION OF PAPER LENGTH

```
        ┌──────┐
        │ FEED │         0    B-EX4T1-G, B-EX4T1-T, B-EX4T2-G, B-EX4T2-T, B-EX6T2-G, B-EX6T2-T
        └──────┘         1    8.0 to 1500.0 mm
                         ⋮    B-EX4T2-H
      ┌────────┐         8    8.0 to 498.0 mm
      │ RESTAR │
      └────────┘         9
```

Select a number from 0 through 9 for an applicable digit by pressing the [FEED] or [RESTART] key.
Pressing the [PAUSE] key determines the value for the selected digit, then the cursor moves to the next digit.  (After setting a value for the last digit, the paper length takes effect and the next parameter is shown.)
Among the Zebra commands, the ^LL command sets paper length.   If the ^LL command is not sent to the printer, paper length set by this parameter will be valid.   If a paper jam error occurs, check the paper length setting.

## 5.2 SELECTION OF PAPER WIDTH

```
        ┌──────┐
        │ FEED │         0    B-EX4T1-G, B-EX4T1-T, B-EX4T2-G, B-EX4T2-T, B-EX4T2-H
        └──────┘         1    10.0 to 104.0 mm
                         ⋮    B-EX6T2-G, B-EX6T2-T
      ┌────────┐         8    10.0 to 152.0 mm
      │ RESTAR │
      └────────┘         9
```

Select a number from 0 through 9 for an applicable digit by pressing the [FEED] or [RESTART] key.
Pressing the [PAUSE] key determines the value for the selected digit, then the cursor moves to the next digit.  (After setting a value for the last digit, the paper width takes effect and the next parameter is shown.)
Among the Zebra commands, the ^PW command sets paper width.   If the ^PW command is not sent to the printer, paper width set by this parameter will be valid.   If a print position in X-direction is improper, check the paper width setting.

## 5.3 SELECTION OF RIBBON TYPE

```
        ┌──────┐
        │ FEED │         •  WITH RIBBON SAVE    (B-EX4T1-G and B-EX4T1-T only)
        └──────┘         •  WITH RIBBON
      ┌────────┐         •  WITHOUT RIBBON H    (B-EX4T1-G and B-EX4T1-T only)
      │ RESTAR │         •  WITHOUT RIBBON
      └────────┘
```

Among the Zebra commands, the ^MT command sets ribbon type.   If the ^MT command is not sent to the printer, ribbon type set by this parameter will be valid.  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.

## 5.4 SELECTION OF PRINT MODE

```
  ┌───────┐
  │ FEED  │
  └───────┘
  ┌───────┐
  │RESTAR │
  └───────┘
```
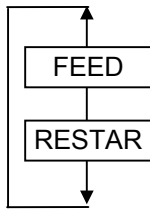
- NO CUT
- PEEL OFF
- PEEL OFF A
- WITH CUT
- DELAYED CUT
- RFID (Reserved. Same printer behavior as in NO CUT mode)

Among the Zebra commands, the ^MM command sets print mode.   If the ^MM command is not sent to the printer, print mode set by this parameter will be valid.   If the printer does not cut or peel labels, check the print mode setting.

## 5.5 SELECTION OF SENSOR TYPE

```
  ┌───────┐
  │ FEED  │
  └───────┘
  ┌───────┐
  │RESTAR │
  └───────┘
```
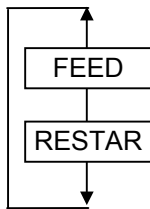
- TRANS
- TRANS PREPRINT
- REFLECT MANUAL T
- NONE
- REFLECT

Among the Zebra commands, the ^MN command sets sensor type.   If the ^MN command is not sent to the printer, paper width set by this parameter will be valid.   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.

## 5.6  SELECTION OF PRINT SPEED

```
    ┌──────┐
    │ FEED │
    └──────┘
    ┌───────┐
    │RESTAR │
    └───────┘
```
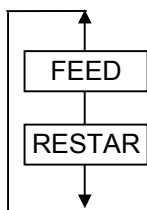
| B-EX4T1-G | B-EX4T1-T | B-EX4T2-G | B-EX4T2-T | B-EX4T2-H | B-EX6T2-G | B-EX6T2-T |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 3 ips | 3 ips | 3 ips | 3 ips | 2 ips | 3 ips | 3 ips |
| 6 ips | 5 ips | 6 ips | 5 ips | 2 ips | 6 ips | 5 ips |
| 10 ips | 8 ips | 10 ips | 8 ips | 3 ips | 10 ips | 8 ips |
| 12 ips | 10 ips | 12 ips | 10 ips | 4 ips | - | - |
| 14 ips | 12 ips | - | 12 ips | 5 ips | - | - |
| - | 14 ips | - | - | 6 ips | - | - |

Among the Zebra commands, the ^PR command sets print speed.   If the ^PR command is not sent to the printer, print speed set by this parameter will be valid.  To change the print speed, check this setting first.

## 5.7  SELECTION OF MAXIMUM LENGTH
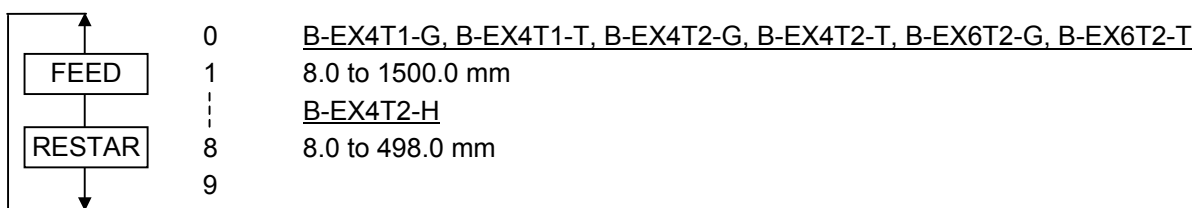
```
    ┌──────┐     0    B-EX4T1-G, B-EX4T1-T, B-EX4T2-G, B-EX4T2-T, B-EX6T2-G, B-EX6T2-T
    │ FEED │     1    8.0 to 1500.0 mm
    └──────┘     ¦
    ┌───────┐         B-EX4T2-H
    │RESTAR │     8    8.0 to 498.0 mm
    └───────┘     9
```

Select a number from 0 through 9 for an applicable digit by pressing the [FEED] or [RESTART] keys.

Pressing the [PAUSE] key determines the value for the selected digit, then the cursor moves to the next digit. (After setting a value for the last digit, the maximum length takes effect and the next parameter is shown.)
This value is used as the feed length for calibration.

**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.

**NOTE:** The maximum feed length is limited to 50 mm or more. When a value less than 50 mm is set, 500 mm is applied.

## 5.8  SELECTION OF CALIBRATION AFTER POWER ON

```
┌──────────┐ ↑
│   FEED   │ •  CALIBRATE
└──────────┘ •  SHORT CALIBRATE
             •  SET LENGTH
┌──────────┐ •  NONE
│  RESTAR  │ •  FEED
└──────────┘ ↓
```

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

**NOTE**: When "CALIBRATE" or "SHORT CALIBRATE" is selected, the calibration operation for the Z-MODE is performed.   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.

**NOTE**: After calibration is performed with "CALIBRATE" selected, the label length, the sensor selection, and the ribbon selection cannot be changed with commands.

**NOTE**: When printing cannot be properly performed after calibration with "CALIBRATE" or "SHORT CALIBRATE" selected, select "NONE" and substitute standard calibration settings for B-EX.
(For details, refer to the automatic calibration settings in B-EX Key Operation Specification.)

## 5.9  SELECTION OF CALIBRATION AFTER HEAD CLOSE

```
┌──────────┐ ↑
│   FEED   │ •  CALIBRATE
└──────────┘ •  SHORT CALIBRATE
             •  SET LENGTH
┌──────────┐ •  NONE
│  RESTAR  │ •  FEED
└──────────┘ ↓
```
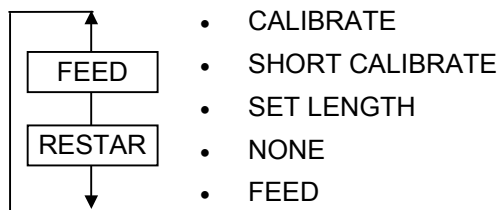
Select a printer behavior of the automatic calibration right after a head close.

**NOTE**: When "CALIBRATE" or "SHORT CALIBRATE" is selected, the calibration operation for the Z-MODE is performed.   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.

**NOTE**: After calibration is performed with "CALIBRATE" selected, the label length, the sensor selection, and the ribbon selection cannot be changed with commands.

**NOTE**: When printing cannot be properly performed after calibration with "CALIBRATE" or "SHORT CALIBRATE" selected, select "NONE" and substitute standard calibration settings for B-EX.
(For details, refer to the automatic calibration settings in B-EX Key Operation Specification.)

## 5.10 SELECTION OF DOTS/MM

```
┌───────────┐
│   FEED    │
├───────────┤
│  RESTAR   │
└───────────┘
```
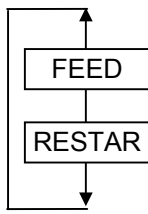
<u>B-EX4T1-G, B-EX4T2-G, B-EX6T2-G</u>
- 8 dots/mm
- 4 dots/mm

<u>B-EX4T1-T, B-EX4T2-T, B-EX6T2-T</u>
- 12 dots/mm
- 6 dots/mm

<u>B-EX4T2-H</u>
- 24 dots/mm
- 12 dots/mm

Among the Zebra commands, the ^MJ command performs dots/mm conversion.   If the ^JM command is not sent to the printer, the value set by this parameter will be valid.   If the printer does not cut or peel labels, dot/mm conversion is performed based on this setting.

## 5.11 SELECTION OF FORMAT CONVERSION

```
┌───────────┐
│   FEED    │
├───────────┤
│  RESTAR   │
└───────────┘
```
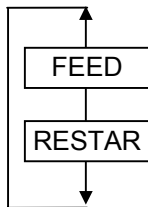
- NONE              No format conversion
- 150 → 300        150dpi to 300dpi
- 150 → 600        150dpi to 600dpi
- 200 → 600        200dpi to 600dpi
- 300 → 600        300dpi to 600dpi

Among the Zebra commands, the ^MU command converts the format.   If the ^MU command is not sent to the printer, format conversion is performed based on this setting.

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

## 5.12 SELECTION OF CONTROL PREFIX

```
┌───────────┐
│   FEED    │
├───────────┤
│  RESTAR   │
└───────────┘
```
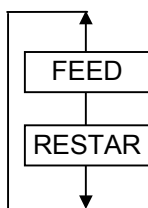
0
1
┊              00 to FF HEX
              (00-1F HEX are not supported.)
E
F

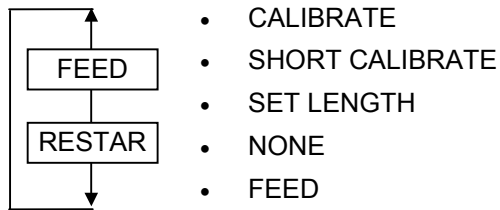Select a number from 0 through 9 for an applicable digit by pressing the [FEED] or [RESTART] keys.
Pressing the [PAUSE] key determines the value for the selected digit, then the cursor moves to the next digit.   (After setting a value for the last digit, the control prefix takes effect and the next parameter is shown.)
While the Zebra ^CT and ~CT command parameters are used as control characters for command identification, when the ^CT and ~CT commands are not sent to the printer, this setting is used as control characters for command identification.

**NOTE:** This is the same parameter as the "CONTROL PREFIX" provided in the Zebra printer's system mode.

**NOTE:** Displayed characters may differ from the ones shown in the system mode of the Zebra printer.

## 5.13 SELECTION OF FORMAT PREFIX

```
        0
        1
FEED
        E
RESTAR
        F
```

00 to FF HEX
(00-1F HEX are not supported.)

Select a number from 0 through 9 for an applicable digit by pressing the [FEED] or [RESTART] keys.
Pressing the [PAUSE] key determines the value for the selected digit, then the cursor moves to the next digit.　(After setting a value for the last digit, the format prefix takes effect and the next parameter is shown.)
While the Zebra ^CC and ~CC command parameters are used as control characters for command identification, when the ^CC and ~CC commands are not sent to the printer, this setting is used as control characters for command identification.

**NOTE:** This is the same parameter as the "FORMAT PREFIX" provided in the Zebra printer's system mode.
**NOTE:** Displayed characters may be different from the ones shown in the system mode of the Zebra printer.

## 5.14 SELECTION OF DELIMITER CHARACTER

```
        0
        1
FEED
        E
RESTAR
        F
```

00 to FF HEX
(00-1F HEX are not supported.)

Select a number from 0 through 9 for an applicable digit by pressing the [FEED] or [RESTART] keys.
Pressing the [PAUSE] key determines the value for the selected digit, then the cursor moves to the next digit.　(After setting a value for the last digit, the delimiter character takes effect and the next parameter is shown.)
While the Zebra ^CD and ~CD command parameters are used as control characters for command identification, when the ^CD and ~CD commands are not sent to the printer, this setting is used as control characters for command identification.

**NOTE:** This is the same parameter as the "DELIMITER CHAR" provided in the Zebra printer's system mode.
**NOTE:** Displayed characters may be different from the ones shown in the system mode of the Zebra printer.

## 5.15 SELECTION OF LABEL LENGTH (LL) COMMAND ON/OFF

```
┌─────────┐
│  FEED   │     •  ENABLE
├─────────┤
│ RESTAR  │     •  DISABLE
└─────────┘
```
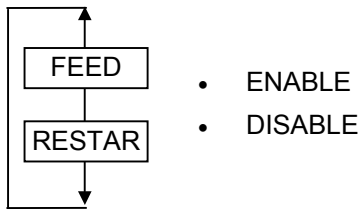
When "DISABLE" is selected, the Zebra command ^LL is ignored.   Instead, the label length set by the Zebra system mode becomes effective.

## 5.16 SELECTION OF LABEL TYPE (MN) COMMAND ON/OFF

```
┌─────────┐
│  FEED   │     •  ENABLE
├─────────┤
│ RESTAR  │     •  DISABLE
└─────────┘
```
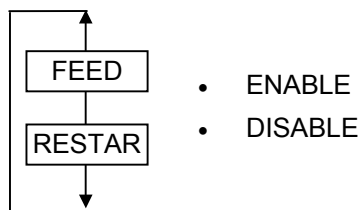
When "DISABLE" is selected, the Zebra command ^MN is ignored.   Instead, the label type set by the Zebra system mode becomes effective.

## 5.17 SELECTION OF MEDIA TYPE (MT) COMMAND ON/OFF

```
┌─────────┐
│  FEED   │     •  ENABLE
├─────────┤
│ RESTAR  │     •  DISABLE
└─────────┘
```
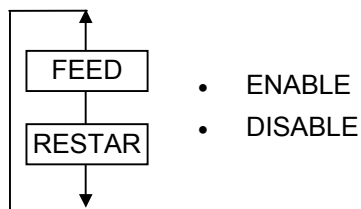
When "DISABLE" is selected, the Zebra command ^MT is ignored.   Instead, the media type set by the Zebra system mode becomes effective.

## 5.18 SELECTION OF TONE ADJUST (SD) COMMAND ON/OFF

```
┌─────────┐
│  FEED   │     •  ENABLE
├─────────┤
│ RESTAR  │     •  DISABLE
└─────────┘
```
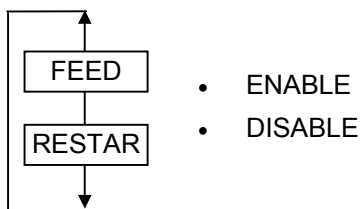
When "DISABLE" is selected, the Zebra command ~SD is ignored.   When "ENABLE" is selected, the print tone fine adjustment value set by the Toshiba printer system mode is overwritten with ~SD command value.

### 5.19 SELECTION OF TONE ADJUST (MD) COMMAND ON/OFF

```
┌──────┐
│ FEED │      • ENABLE
├──────┤
│RESTAR│      • DISABLE
└──────┘
```
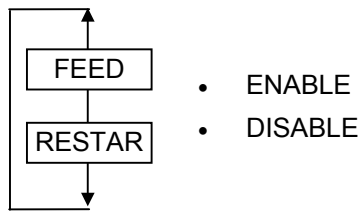
When "DISABLE" is selected, the Zebra command ^MD is ignored.   When "ENABLE" is selected, the TPCL print tone command is generated.


### 5.20 SELECTION OF GRAPHIC PRINTING MODE

```
┌──────┐
│ FEED │      • SPEED-ORIENTED
├──────┤
│RESTAR│      • PRECISE POSITION
└──────┘
```
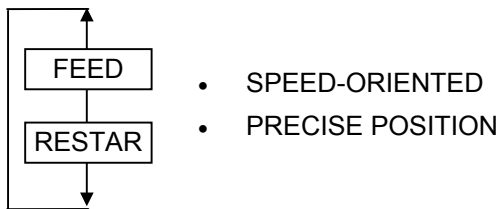
When "SPEED-ORIENTED" is selected, print speed is given priority over the print position precision.
When "PRECISE POSITION" is selected, print position precision is given priority over the print speed.
In this case, the printer performs the bit shift processing to print graphics in accurate position.


### 5.21 SELECTION OF TAB-TO-SPACE CONVERSION
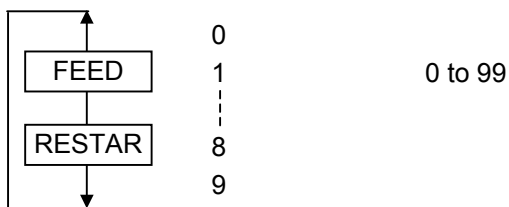
```
            0
┌──────┐
│ FEED │    1              0 to 99
├──────┤    ┊
│RESTAR│    8
└──────┘    9
```
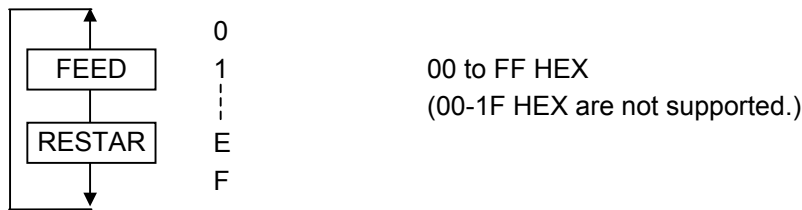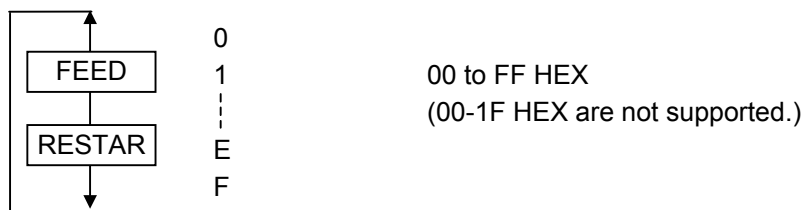
Select a number from 0 through 9 for an applicable digit by pressing the [FEED] or [RESTART] keys.
Pressing the [PAUSE] key determines the value for the selected digit, then the cursor moves to the next digit.   (After setting a value for the last digit, the tab-to-space conversion value takes effect and the next parameter is shown.)
When a tab (09h) code is included in data, this tab code is replaced by a space corresponding to the set value (20h).
Since spaces are inserted to simulate the tabs included in the print image printed by the Zebra printer, printer behavior according to this parameter is considered as the specification.

## 5.22 SELECTION OF RFID TAG POSITION ADJUSTMENT
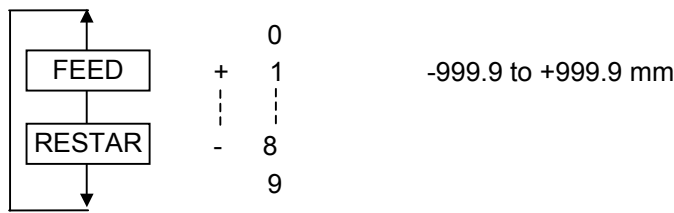
```
┌─────────────┐         0
│  ┌───────┐  │    +    1        -999.9 to +999.9 mm
│  │ FEED  │  │         ┆   ┆
│  └───────┘  │         ┆   ┆
│  ┌───────┐  │    -    8
│  │RESTAR │  │         9
│  └───────┘  │
└─────────────┘
```

Select a number from 0 through 9 for an applicable digit by pressing the [FEED] or [RESTART] keys.
Pressing the [PAUSE] key determines the value for the selected digit, then the cursor moves to the next digit. (After setting a value for the last digit, the RFID tag position adjustment takes effect and the next parameter is shown.)
This parameter specifies a fine adjustment value for the RFID tag position for RFID tag read/write.

**NOTE:** This parameter is used as the value for the feed amount of the TPCL @003 command at the time of RFID read/write.

## 5.23 SELECTION OF RFID OFFSET PRINTING

```
┌─────────────┐    •   NONE
│  ┌───────┐  │
│  │ FEED  │  │    •   WITHOUT BACKFEED
│  └───────┘  │
│  ┌───────┐  │    •   WITH BACKFEED
│  │RESTAR │  │
│  └───────┘  │
└─────────────┘
```
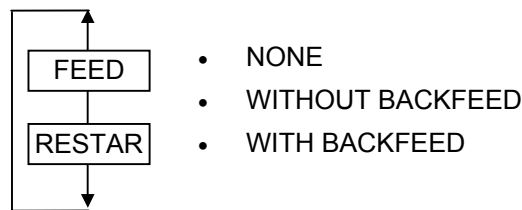
This parameter specifies a printer operation for the offset printing of RFID labels.

**NOTE:** This parameter is used for offset printing selection of the TPCL @003 command at the time of RFID read/write.

## 5.24 SELECTION OF LABEL SHIFT ADJUSTMENT
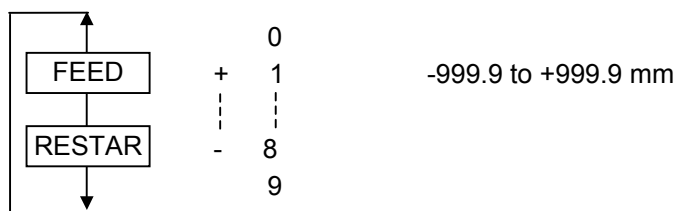
```
┌─────────────┐         0
│  ┌───────┐  │    +    1        -999.9 to +999.9 mm
│  │ FEED  │  │         ┆   ┆
│  └───────┘  │         ┆   ┆
│  ┌───────┐  │    -    8
│  │RESTAR │  │         9
│  └───────┘  │
└─────────────┘
```

Select a number from 0 through 9 for an applicable digit by pressing the [FEED] or [RESTART] keys.

Pressing the [PAUSE] key determines the value for the selected digit, then the cursor moves to the next digit. (After setting a value for the last digit, the label shift adjustment takes effect and the next parameter is shown.)
Among the Zebra commands, the ^LS command shifts label position.  If the ^LS command is not sent to the printer, RFID labels are shifted based on this setting.

# 6. 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 for modifying the program.

## 6.1 MODIFICATION TO ZEBRA COMMANDS BY USING THE BASIC PROGRAM

In case a print result looks different from that of Zebra printer, ZPL commands sent from the upper system can be modified with the BASIC program in the printer into ZPL commands that generates the same result before conversion.   In this case, a modification to the BASIC program and a change to the parameter settings by using the Z-MODE setting tool are required.

- Standard conversion
Received data (ZPL) ==> GETCMDZB(ZPL to TPCL) ==> Command analysis, drawing, and printing

- Custom conversion
Received data (ZPL) ==> GETCMDZ(ZPL) ==> Basic program (ZPL to ZPL)
==> GETCMDZB(ZPL to TPCL) ==> Command analysis, drawing, and printing

## 6.2 MODIFICATION 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 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
```

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) When a ^FO (Field Origin) command is wrongly sent as ^F0 (ZERO), this value is corrected to '0.'

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

(2) When the incoming command is ^CI5, this is changed to ^CI0.

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

(3) When ^XZ is received, the extra data command is inserted.

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

## 6.3  MODIFICATION TO THE SETTING TOOL

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.

# 7. ZEBRA COMMANDS

## 7.1 BASIC SPECIFICATIONS OF ZEBRA COMMANDS

Zebra commands shall follow the following basic format:

**Format**

| Command start code | Parameter | Separator code | Parameter | Separator code | Data |
|---|---|---|---|---|---|

**Command start code:** The default value is "^" (5Eh) or "~" (7Eh).

When this code exists in a command, it becomes the head of the next command.

**Parameter:** Basically, parameters other than file name parameters are "A" (41h) to "Z" (5Ah), "a" (61h) to "z" (7Ah), or "0" (30h) to "9" (39h).

The control code (00h to 1Fh) and space (20h) are not supported. When notified, the parameter is omitted (e.g. 10[20h]00 -> 1000).

For other supported codes, refer to the description of each command parameter. For file name parameters, refer to "File name" in "7.2 COMMANDS USED FOR DEVICES."

**Separator code:** The default setting is "," (2Ch).

**Data:** Refer to the description for each command. (Some commands do not have data.)

## 7.2 COMMANDS USED FOR DEVICES

### Applicable commands: DF/XF/DG/DY/IS/XG/IM/IL/ID/HW/HG/HY/DU/A@/CW

These commands have the following common specifications:

 **[Common specifications]**
   **Drive selection**
      • When the A or B drive is selected, data is saved in the USB memory.
      • When a drive other than valid drives (A/B/E/R) is selected, saving/reading operation is not performed.
   **Saving function**
      • Saving into or reading from the onboard Flash ROM cannot be performed simultaneously with the PC commands saving function of the Toshiba printer. The operation with the PC commands saving function used is not guaranteed.
      • While a file is being saved, "SAVING (this indication depends on the language)" is displayed on the LCD. During the saving processing, key operation is invalid. When the data is saved into RAM, "SAVING" is not displayed on the LCD.
      • Since at least two blocks of PC commands saving area are used for saving operation, secure at least two blocks before using the saving function.
      • The number of files that can be saved shall be 500 per drive.
      • When the number of files exceeds 500, "MEMORY FULL" is displayed on the LCD and the saving is stopped.
   **Reading operation**
      • If the file name specified for reading operation does not exist, it is not counted for the printing field. Therefore, when only a call command without a file name is specified for a label, issuing is not performed.

**File name**
   - A file name can contain up to 16 characters.
     If the number of characters in a file name exceeds 16, the overflowing characters are discarded and the file is saved under the name of the first 16 characters.
   - When a space code (20h) exists in the file name, the characters after the space code are omitted and only the characters right before the space code make up the file name. (Not applied to ID commands)
   - A space code (20h) existing before the file name characters shall be excluded.
   - When a backslash code (5Ch) exists in the file name, it shall be excluded from the file name.
   - When a DG/DY/ID command file name contains one of the following control codes, saving or deleting operation is not performed:
     (01h to 09h, 0Bh, 0Eh to 10h,12h, or 14h to 1Fh)   (Zebra-compliant)
   - When a WDF/XF/IS/XG/IM/IL/HW/HG/HY/DU/A@/CW command file name contains one of the following control codes, the file is saved under the name with the characters before the control code:
     (01h or 04h)
   - When a DG/DY/ID/DF/XF/IS/XG/IM/IL/HW/HG/HY/DU/A@/CW command file name contains one of the following control codes, it shall be excluded from the file name:
     (00h, 0Ah, 0Ch, 0Dh, 11h, or 13h)   (Zebra-compliant)

**E.g.**

**When the number of characters in a file name exceeds the maximum:**
   R:123456789012345678.GRF        →    R:1234567890123456.GRF
**When a file name starts with space codes (20h):**
   R:□□□123456789012345678.GRF     →    R:1234567890123456.GRF
**When space codes (20h) exist in a file name string:**
   R:□12345□□□67890123456.GRF      →    R:12345.GRF    (Not applied to ID commands)


**Saving in Memory**
   - When RAM/Flash ROM/USB memory becomes full while saving data, "MEMORY FULL" is displayed on the LCD.
     This message can be displayed in the selected language.  For details, refer to the Key Operation Specification.
     When this error occurs, pressing the RESTRAT key enables to recover from the error and continue the operation.
     (This specification differs from that of the TPCL.   In the case of the TPCL, the printer cannot recover from the error state by a depression of the RESTART key.)

## 7.3  USE OF WILDCARDS

**Applicable commands: ID/HW**

These commands have the following common specifications:

**[Common specifications]**
  **File name and extension**
  • Wildcards are used in accordance with the rules shown below.

**[Wildcard applying rules]**
  Wildcard type
    [*]… This can be substituted for a string with an unspecified number of characters.
        When [X*Y] is entered, [Y] is deemed invalid and it is processed as [X*].
    [?]… This can be substituted for one or less character.

**[Application examples]**

| | |
|---|---|
| [*.XXX] | : All files with the specified extension are applicable. |
| [A*.XXX] | : Files of which name starts with [A], and the number of characters is 1 or more<br>　　　E.g. A.XXX / AB.XXX / ABC.XXX |
| [A*C.XXX] | : [C] is deemed invalid and it is processed as [A*]. |
| [A*C*E.XXX] | : [C*E] is deemed invalid and it is processed as [A*]. |
| [A?.XXX] | : Files of which name starts with [A], and the number of characters is 1 or 2<br>　　　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]<br>　　　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?]<br>　　　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??]<br>　　　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]<br>　　　E.g. A.XXX / ABCD.XXX |
| [*.*] | : All files . |

### 7.4 TRUETYPE FONT COMMANDS

**Applicable commands: DU/DY/ID/A@/CW**

These commands have the following common specifications concerning TrueType fonts (hereinafter referred to as "TTF"):

**Number of usable TTF types**
- Up to seven types can be used (in ^A@ and ^CW).   Eight or more TTFs cannot be downloaded even if there is enough space in the TTF storage area and the number of TTFs does not reach the maximum.

**Font type**
- Usable font files are "*.TTF" and "*.FNT."   "*.TTE" and "*.TTC" are not supported.
- If the font type or size is not downloaded properly, the printer operation is not guaranteed.

### 7.5 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.

## 8. SUPPORTED COMMANDS

- This section describes the supported commands.
- Note that some operations with Zebra printers (Hereinafter referred to as "Zebra") differ from those with Toshiba printers (including TPCL, hereinafter referred to as "Toshiba").
- The operation of the commands that are not described here is not guaranteed.
- For details of the commands, refer to the ZPL II manual.
- The font names in the text (0 to 9, A to Z) follow the default values in the font conversion table contained in ZDEFAULT.TXT.

## 8.1  ^A  SCALABLE/BITMAPPED FONT

Format: ^Afo,h,w

f = Font name
 A to Z, 0 to 9
 Non-omissible

o = Font rotation
 N : 0°
 R : 90°
 I : 180°
 B : 270°
 When omitted: Value of ^FW
 * The point of origin differs depending on the coordinate designated in ^FT and ^FO.

h = Character height (in dots)
 Font 0:
  10 to 32000 dots
  * Through correction, the final size shall be in the range from 1 mm to 85 mm.
 Other than font 0:
  If the character height exceeds 9.5 times the font standard height, it is corrected to 9.5 times.
  When omitted:  Calculated from the width based on the ratio.
        If both height and width are omitted, the height is calculated from the value in ^CF.

w = Character width (in dots)
 Font 0:
  10 to 32000 dots
  * Through correction, the final size shall be in the range from 1 mm to 85 mm.
 Other than font 0:
  If the character width exceeds 9.5 times the font standard width, it is corrected to 9.5 times.
  When omitted:  Calculated from the height based on the ratio.
        If both height and width are omitted, the width is calculated from the value in ^CF.

*1   While there existed a comma ',' between f and o in the old ZPL specification, the comma does not exist in the ZPL specification.   This shall comply with the ZPL specification only.
*2   If the lower-case alphabet for Font B are selected, they are converted to upper-case characters before printing.
*3   When the TEC outline font is selected, the print image collapses if there exists other print data in the printing area.
*4   When the character type is space (abnormal value) as in "^A o,h,w," it is deemed as "^Ao,h,w" for operation as the space is deleted during receiving operation.
*5   The character width differs depending on the character type.
*6   The character size of 300-dpi Font E or Font H is smaller compared with the Zebra print result.
     In the case of B-EX4T1-T/B-EX4T2-T/B-EX6T2-T
      When values are equal to or higher than "height 267 x width 130" for Font E and "height 195 x width 124" for Font H, the size remains the same and the printed font is smaller compared with the Zebra print result.
*7   When 0 x 1D or 0 x 1E data is printed with Font E, the characters are printed with different font from that with Zebra.
*8   While Font 0 is scalable, as the loaded fonts are different from those for Zebra, the font, size, space between characters, etc. may differ.
*9   In the case of Zebra, the font selected in ^CF command is used when the name of nonexistent font is selected.   However, in the case of Toshiba, the font to be used follows the font conversion table in ZDEFAULT.TXT.
*10  When TEC outline font is selected, the print image of character data using ^SN, ^SF, ^FV, or ^FC command collapses from the second page on.

## 8.2 ^A@ USE FONT NAME TO CALL FONT

Format: ^A@o,h,w,d:o.x

o = Font rotation

   N : 0°
   R : 90°
   I : 180°
   B : 270°
   When omitted: Value of ^FW
   * The point of origin differs depending on the coordinate designated in ^FT and ^FO.

h = Character height (in dots)

   Font 0:
    10 to 32000 dots
    * Through correction, the final size shall be in the range from 1 mm to 85 mm.
   Other than font 0:
    If the character height exceeds 9.5 times the font standard height, it is corrected to 9.5 times.
    When omitted:  Calculated from the width based on the ratio.
                 If both height and width are omitted, the height is calculated from the value in ^CF.

w = Character width (in dots)

   Font 0:
    10 to 32000 dots
    * Through correction, the final size shall be in the range from 1 mm to 85 mm.
   Other than font 0:
    If the character width exceeds 9.5 times the font standard width, it is corrected to 9.5 times.
    When omitted:  Calculated from the height based on the ratio.
                 If both height and width are omitted, the width is calculated from the value in ^CF.

d = Drive

   R: RAM
   E: On-board Flash ROM
   B: USB memory
   A: USB memory
   When omitted: R:

o = File name

   When omitted: UNKNOWN

x = Extension

   When omitted: FNT


*1   When Font 0 is selected, the print image collapses if there exists other print data in the printing area.

*2   The referable font names ("d:o.x") are limited to those in the "Font Conversion Table" or those in the max. of seven downloaded TTFs.

    A font name is valid only when all of the drive, file name, and extension are perfectly correspondence with the "Font Conversion Table."

    Since the information in the "Font Change Table" is exclusive for ^CW, it cannot be used here.

*3 If the font name is improper or omitted, set the font type with the following procedure:

In the case the font name is omitted:

If a valid font name is already set with A@ command, the font previously printed with A@ command is used.   If a valid font name is not specified in A@ command, the font specified in CF command is used.

In the case the font name is improper:

If a valid font name is already set with A@ command, Font 0 is used.   If a valid font name is not specified in A@ command, the font specified in CF command is used.

## 8.3 ^B2 INTERLEAVED 2 OF 5 BAR CODE

Format: ^B2o,h,f,g,e

o = Font rotation

  N : 0°
  R : 90°
  I : 180°
  B : 270°
  When omitted: Value of ^FW
  * The point of origin differs depending on the coordinate designated in ^FT and ^FO.

h = Bar code height (in dots)

  200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
    1 to 800 dots
  300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
    1 to 1200 dots
  600-dpi printer: B-EX4T2-H
    1 to 2400 dots
  When omitted: Value of ^BY
  *1 If the value after dot-to-mm conversion exceeds 100 mm, it is corrected to 100 mm.
  *2 If 0, a character string, or other value is selected, it is corrected to 10 dots.

f = Print interpretation line

  Y : Printed
  N : Not printed
  When omitted: Y

g = Print interpretation line above code

  Y : Printed
  N : Not printed
  When omitted: N

e = Calculate and print Modulus 10 check digit

  Y : Printed
  N : Not printed
  When omitted: N


*1  Data other than numeric values, if any, will be deleted.
*2  When data are set with ^SN and the parameter z of ^SN (add leading zeros) is N, '0' at the beginning of data will be deleted.
*3  To print the interpretation line above code, the interpretation line parameter (parameter f) needs to be set to "Y."
*4  The character type of the interpretation line is independent of the module width value of ^BY.   Font A is used in any case.
*5  If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are not set), the barcode will not be printed.

## 8.4  ^B3  CODE 39 BAR CODE

Format: ^B3o,e,h,f,g

o = Font rotation

    N  : 0°
    R  : 90°
    I  : 180°
    B  : 270°
    When omitted: Value of ^FW
    * The point of origin differs depending on the coordinate designated in ^FT and ^FO.

e = Modulus 43 check digit

    Y  : Valid
    N  : Invalid
    When omitted: N

h = Bar code height (in dots)

    200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
      1 to 800 dots
    300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
      1 to 1200 dots
    600-dpi printer: B-EX4T2-H
      1 to 2400 dots
    When omitted: Value of ^BY
    *1 If the value after dot-to-mm conversion exceeds 100 mm, it is corrected to 100 mm.
    *2 If 0, a character string, or other value is selected, it is corrected to 10 dots.

f = Print interpretation line

    Y  : Printed
    N  : Not printed
    When omitted: Y

g = Print interpretation line above code

    Y  : Printed
    N  : Not printed
    When omitted: N

*1   The character type of the interpretation line is independent of the module width of ^BY, and Font A shall be used in any case.

*2   If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are not set), the barcode will not be printed.
     In the case of Zebra, bar codes are printed with the start/stop code ("**") only.

*3   Up to 123 digit-data can be encoded to a bar code and printed.

*4   To print the interpretation line above code, the interpretation line parameter (parameter f) needs to be set to "Y."

## 8.5　^B7　PDF417 BAR CODE

Forma: ^B7o,h,s,c,r,t

o = Font rotation

    N　: 0°
    R　: 90°
    I　 : 180°
    B　: 270°
    When omitted: Value of ^FW
    * The point of origin differs depending on the coordinate designated in ^FT and ^FO.

h = Bar code height for individual rows (in dots)

    200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
      1 to 80 dots
    300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
      1 to 120 dots
    600-dpi printer: B-EX4T2-H
      1 to 240 dots
    When omitted: Value of ^BY
    *1 Since this is the height of the whole barcode when the number of rows is omitted, the maximum value is 9999 dots.
    *2 If the value after dot-to-mm conversion exceeds 10 mm, it is corrected to 10 mm.

s = Security level

    0　　　: Error detection only
    1 to 8 : Correction and error detection
    When omitted: 0

c = Number of data columns to encode

    1 to 30
    When omitted: 1:2 row-to-column ratio (aspect ratio)

r = Number of rows to encode

    3 to 90
    When omitted: 1:2 row-to-column ratio (aspect ratio)

t = Truncate stop pattern

    Y　: Yes
    N　: No
    When omitted: Y

*1　The point of origin for the rotation of 180° or 270° differs between Zebra and Toshiba.
*2　When large-size data (e.g. 1850 English characters/1469-byte binary data) is sent, the bar code that can be printed with Zebra may not be printed with Toshiba (due to the difference of the encoding system for PDF417).
*3　When both parameters c and r are omitted, the numbers of columns and rows are calculated based on the data size and the aspect ratio.
*4　When either parameter c or r is omitted, the value of the omitted parameter is calculated based on the data size and the aspect ratio for the specified value.
*5　If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are not set), the barcode will not be printed.
*6　The amount of data that can be contained in "No. of columns x No. of rows" for Toshiba is smaller than that for Zebra by a few bytes.　(The number of bytes varies depending on the numbers of columns and rows.)
　　If the numbers of columns and rows (other than 0) are specified and the above condition is met, bar codes are not printed with Toshiba.　When the number of rows is set to '0' (or omitted), it may be larger than that for Zebra.

## 8.6 ^B8 EAN-8 BAR CODE

Format: ^B8o,h,f,g

o = Font rotation

N : 0°
R : 90°
I : 180°
B : 270°
When omitted: Value of ^FW
* The point of origin differs depending on the coordinate designated in ^FT and ^FO.

h = Bar code height (in dots)

200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
1 to 800 dots
300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
1 to 1200 dots
600-dpi printer: B-EX4T2-H
1 to 2400 dots
When omitted: Value of ^BY
*1 If the value after dot-to-mm conversion exceeds 100 mm, it is corrected to 100 mm.
*2 If 0, a character string, or other value is selected, it is corrected to 10 dots.

f = Print interpretation line

Y : Printed
N : Not printed
When omitted: Y

g = Print interpretation line above code

Y : Printed
N : Not printed
When omitted: N


*1   The character type of the interpretation line is switched depending on the set value for the module width of ^BY.
In the case of 200-dpi printer:
Module width is 2 or less: Font A
Module width is 3 or more: Font E
In the case of 300-dpi printer:
Module width is 4 or less: Font A
Module width is 5 or more: Font E
*2   Data other than numeric values, if any, are converted to '0.'
*3   To print the interpretation line above code, the interpretation line parameter (parameter f) needs to be set to "Y."
*4   If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are not set), the barcode will not be printed.

## 8.7  ^B9  UPC-E BAR CODE

Format: ^B9o,h,f,g,e

o = Font rotation

　　N　: 0°
　　R　: 90°
　　I　 : 180°
　　B　: 270°
　　When omitted: Value of ^FW
　　* The point of origin differs depending on the coordinate designated in ^FT and ^FO.

h = Bar code height (in dots)

　　200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
　　　1 to 800 dots
　　300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
　　　1 to 1200 dots
　　600-dpi printer: B-EX4T2-H
　　　1 to 2400 dots
　　When omitted: Value of ^BY
　　*1 If the value after dot-to-mm conversion exceeds 100 mm, it is corrected to 100 mm.
　　*2 If 0, a string, or other value is selected, it is corrected to 10 dots.

f = Print interpretation line

　　Y　: Printed
　　N　: Not printed
　　When omitted: Y

g = Print interpretation line above code

　　Y　: Printed
　　N　: Not printed
　　When omitted: N

e = Print check digit

　　Y　: Printed
　　N　: Not printed
　　When omitted: Y


*1　The character type of the interpretation line is switched depending on the set value for the module width of ^BY.
　　　In the case of 200-dpi printer
　　　　Module width is 2 or less: Font A
　　　　Module width is 3 or more: Font E
　　　In the case of 300-dpi printer
　　　　Module width is 4 or less: Font A
　　　　Module width is 5 or more: Font E
*2　Data other than numeric values, if any, are converted to '0.'
*3　When the interpretation line above code is to be printed with Toshiba, the header and terminator (system number and check digit) are printed outside the guide bar.
　　In the case of Zebra, the interpretation line above code is printed at the center between the guide bars.
*4　If the number of digits in data is 7 or 8;
　　　Toshiba:　The data is reduced to 6-digit data by deleting the header.
　　　Zebra:　　If the header is '1', 7 digits from NS constitute the data.
　　　　　　　　If the head data is not '1,' the data is reduced to 6-digit data by deleting the header.
*5　To print the interpretation line above code, the interpretation line parameter (parameter f) needs to be set to "Y."
*6　If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are not set), the barcode will not be printed.

## 8.8 ^BA CODE 93 BAR CODE

Format: ^BAo,h,f,g,e

o = Font rotation

    N  : 0°
    R  : 90°
    I   : 180°
    B  : 270°
    When omitted: Value of ^FW
    * The point of origin differs depending on the coordinate designated in ^FT and ^FO.

h = Bar code height (in dots)

    200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
      1 to 800 dots
    300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
      1 to 1200 dots
    600-dpi printer: B-EX4T2-H
      1 to 2400 dots
    When omitted: Value of ^BY
    *1 If the value after dot-to-mm conversion exceeds 100 mm, it is corrected to 100 mm.
    *2 If 0, a string, or other value is selected, it is corrected to 10 dots.

f = Print interpretation line

    Y  : Printed
    N  : Not printed
    When omitted: Y

g = Print interpretation line above code

    Y  : Printed
    N  : Not printed
    When omitted: N

e = Print check digit (Unsupported)

    Y  : Printed
    N  : Not printed
    * The printer operates with this parameter set to "N: No."

*1   The character type of the interpretation line is independent of the module width value of ^BY. Font A is used in any case.

*2   To print the interpretation line above code, the interpretation line parameter (parameter f) needs to be set to "Y."

*3   If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are not set), the barcode will not be printed.

## 8.9  ^BC   CODE 128 BAR CODE

Format: ^BCo,h,f,g,e,m

o = Font rotation

    N  : 0°
    R  : 90°
    I  : 180°
    B  : 270°
    When omitted: Value of ^FW
    * The point of origin differs depending on the coordinate designated in ^FT and ^FO.

h = Bar code height (in dots)

    200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
      1 to 800 dots
    300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
      1 to 1200 dots
    600-dpi printer: B-EX4T2-H
      1 to 2400 dots
    When omitted: Value of ^BY
    *1 If the value after dot-to-mm conversion exceeds 100 mm, it is corrected to 100 mm.
    *2 If 0, a string, or other value is selected, it is corrected to 10 dots.

f = Print interpretation line

    Y  : Printed
    N  : Not printed
    When omitted: Y

g = Print interpretation line above code

    Y  : Printed
    N  : Not printed
    When omitted: N

e = UCC check digit

    Y  : Valid
    N  : Invalid
    When omitted: N

m = Mode

    N  : No mode selected
    U  : UCC Case Mode
    A  : Automatic Mode
    D  : UCC/EAN Mode
    When omitted: N


*1    Mode U operation may differ from Zebra operation.
        When data is 9999999999999999999 and "SN data + 1INC" is selected;
          Toshiba:    0000000000000000000+C/D
          Zebra :     9999999000000000000+C/D
            When data is 0000000000000000000 and "SN data - 1DEC" is selected;
          Toshiba:    9999999999999999999+C/D
          Zebra:      0000000999999999999+C/D

*2    Mode D operation may differ from Zebra operation.
　　　When data is (00)999999999999999999 and "SN data + 1INC" is selected;
　　　　　Toshiba:　　(01)00000000000000000+C/D
　　　　　Zebra:　　　(00)99999900000000000+C/D
　　　　　　When data is (00)000000000000000000 and "SN data - 1DEC" is selected;
　　　　　Toshiba:　　(99)99999999999999999+C/D
　　　　　Zebra:　　　(00)00000099999999999+C/D
*3    For INC/DEC and RTC, the character type of the interpretation line cannot be specified.
　　　(Even when the font is specified, the character type of the interpretation line above code and the
　　　interpretation line is always Font 0 in Mode D or Font A in the other modes.)
*4    To print the interpretation line above code, the interpretation line parameter (parameter f) needs to
　　　be set to "Y."
*5    When data starts with Code B and includes a character string of four or more numeric digits which
　　　starts in the middle in Mode D and the number of the digits is odd, the bar code encoding method
　　　differs from that for Zebra.
　　　　　Example of data: ABcd12345
　　　　　Zebra
　　　　　　When data includes a string of odd numeric digits, a (CODE C) character and a (CODE B)
　　　　　　character are inserted right before the first digit and the last digit, respectively.
　　　　　Toshiba
　　　　　　When data includes a string of odd numeric digits, a (CODE C) character is inserted right
　　　　　　before the first digit.
*6    If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are
　　　not set), the barcode will not be printed.
*7    When zero suppress is set to valid in Mode N, operation may differ from that with Zebra.
　　　　　If, in Code C-designated data, an Invocation Code which is not supported by Code C is included
　　　　　(">0"、"><"), printing is performed ignoring zero suppress as Zebra's printing algorithm is
　　　　　unknown.
　　　　　If C-designated data becomes 0-digit data after zero suppress, an unreadable bar code is
　　　　　printed with Zebra while nothing is printed with Toshiba.
*8    When an Invocation Code is placed after SHIFT (>4) in Mode N, the bar code may not be printed
　　　with Toshiba, which is not the case with Zebra.
　　　　　•　When Code A/Code B is selected, SHIFT is placed after SHIFT.
　　　　　•　When Code A is selected, Code A (>7) and Code C (>5) are placed after SHIFT.
　　　　　•　When Code B is selected, Code B (>6) and Code C (>5) are placed after SHIFT.
　　　　　•　When Code B is selected, ~ (>=) is placed after SHIFT.
*9    When data starts with '>' and it is not followed by '8' (">8": FNC1) in Mode D, the data is printed
　　　with '>' skipped with Toshiba while the data after '>' is not printed with Zebra.
*10   When a control code with '>' is placed in the middle of data in Mode D, the data after '>' is printed
　　　with Toshiba while it is not printed with Zebra.

## 8.10 ^BD    UPS MAXICODE BAR CODE

Format: ^BDm,n,t

m = Mode

    2: Structured carrier message - Numeric postal code (U.S.)
    3: Structured carrier message - Alphanumeric postal code (non-U.S.)
    4: Standard symbol, SEC
    5: Full EEC (Unsupported)
    6: Reader program, SEC
    When omitted: 2
    * When "5: Full EEC" is selected, "2: Numeric postal code (U.S.)" is applied.

n = Number of symbols

    1 to 8
    When omitted: 1

t = Total number of symbols

    1 to 8
    When omitted: 1


*1    In Mode 2, if data containing less than 15 digits is selected, a bar code is not printed with Toshiba.

*2    In Mode 2, if non-Mode 2 data is selected, it is automatically encoded as Mode 3.

*3    For printing in Mode 2, "Maxi Code TYPE2: Special specification" is selected in the system mode of Toshiba and, when 0x00 to 0x20, 0x22 to 0x3A, 0x41 to 0x5A, 0xA0, 0xA2 to 0xA7, 0xA9, 0xAD, 0xAE, or 0xB6 is selected at the end of the bar code data, NULL is added to the end of the bar code.
    When the above condition is met, when the total number of bytes of the data including NULL is less than 97, 0x1C(FS) is added to the end of the data so that the total number of bytes becomes 97.

*4    If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are not set), the barcode will not be printed.

*5    For printing in Mode 3 (including automatic switch from Mode 2), when 0x00 to 0x03, 0x05 to 0x0C, 0x0E to 0x1B, 0x1F, 0x21, 0x3B to 0x40, or 0x5B to 0xFF is selected at the end of the data, the last data is always deleted with Toshiba.
    In the case of Zebra, when the data is selected with the format for Mode 3, the above code is deleted.   However, when the data is selected with the format for Mode 3 ignored, 0x00 and 0x21 are deleted, 0x81 to 0x9F and 0xE0 to 0xFC encoded as 0x00, and the other data are encoded as they are.

## 8.11 ^BE    EAN-13 BAR CODE

Format: ^BEo,h,f,g,s

o = Font rotation

N  : 0°
R  : 90°
I   : 180°
B  : 270°
When omitted: Value of ^FW
* The point of origin differs depending on the coordinate designated in ^FT and ^FO.

h = Bar code height (in dots)

200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
  1 to 800 dots
300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
  1 to 1200 dots
600-dpi printer: B-EX4T2-H
  1 to 2400 dots
When omitted: Value of ^BY
*1 If the value after dot-to-mm conversion exceeds 100 mm, it is corrected to 100 mm.
*2 If 0, a string, or other value is selected, it is corrected to 10 dots.

f = Print interpretation line

Y  : Printed
N  : Not printed
When omitted: Y

g = Print interpretation line above code

Y  : Printed
N  : Not printed
When omitted: N

s = Print start code

Y  : Printed
N  : Not printed
When omitted: Y


*1    The character type of the interpretation line is switched depending on the set value for the module width of ^BY.
        In the case of 200-dpi printer
            Module width is 2 or less: Font A
            Module 3 or more: Font E
        In the case of 300-dpi printer
            Module width is 4 or less: Font A
            Module 5 or more: Font E
*2    When the interpretation line above code is to be printed with Toshiba, the header (1st digit of country code) is printed outside the guide bar.
      In the case of Zebra, the interpretation line above code is printed at the center between the guide bars.
*3    To print the interpretation line above code, the interpretation line parameter (parameter f) needs to be set to "Y."
*4    If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are not set), the barcode will not be printed.

## 8.12 ^BF  MICROPDF417 BAR CODE

Format: ^BFo,h,m

o = Font rotation

    N : 0°

    R : 90°

    I : 180°

    B : 270°

    When omitted: Value of ^FW

    * The point of origin differs depending on the coordinate designated in ^FT and ^FO.

h = Bar code height (in dots)

    200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G

      1 to 80 dots

    300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T

      1 to 120 dots

    600-dpi printer: B-EX4T2-H

      1 to 240 dots

    When omitted: Value of ^BY

    *1 If the value after dot-to-mm conversion exceeds 10 mm per module, it is corrected to 10 mm.

    *2 If 0, a string, or other value is selected, it is corrected to 10 dots.

m = Mode

    0 to 33

    When omitted: N

*1    If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are not set), the barcode will not be printed.

## 8.13 ^BI  INDUSTRIAL 2 OF 5 BAR CODE

Format: ^BIo,h,f,g

o = Font rotation

N : 0°
R : 90°
I : 180°
B : 270°
When omitted: Value of ^FW
* The point of origin differs depending on the coordinate designated in ^FT and ^FO.

h = Bar code height (in dots)

200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
  1 to 800 dots
300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
  1 to 1200 dots
600-dpi printer: B-EX4T2-H
  1 to 2400 dots
When omitted: Value of ^BY
*1 If the value after dot-to-mm conversion exceeds 100 mm, it is corrected to 100 mm.
*2 If 0, a string, or other value is selected, it is corrected to 10 dots.

f = Print interpretation line

Y : Printed
N : Not printed
When omitted: Y

g = Print interpretation line above code

Y : Printed
N : Not printed
When omitted: N


*1  Data other than numeric values, if any, will be deleted.
*2  When data are set with ^SN and the parameter z of ^SN (add leading zeros) is N, '0' at the beginning of data will be deleted.
*3  The character type of the interpretation line is independent of the module width value of ^BY.   Font A is used in any case.
*4  To print the interpretation line above code, the interpretation line parameter (parameter f) needs to be set to "Y."
*5  If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are not set), the barcode will not be printed.

## 8.14 ^BK   ANSI CODABAR BAR CODE

Format: ^BKo,e,h,f,g,k,l

o = Font rotation

    N  : 0°
    R  : 90°
    I    : 180°
    B  : 270°
    When omitted: Value of ^FW
    * The point of origin differs depending on the coordinate designated in ^FT and ^FO.

e = Check digit

    N  : Invalid (fixed)

h = Bar code height (in dots)

    200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
      1 to 800 dots
    300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
      1 to 1200 dots
    600-dpi printer: B-EX4T2-H
      1 to 2400 dots
    When omitted: Value of ^BY
    *1 If the value after dot-to-mm conversion exceeds 100 mm, it is corrected to 100 mm.
    *2 If 0, a string, or other value is selected, it is corrected to 10 dots.

f = Print interpretation line

    Y  : Printed
    N  : Not printed
    When omitted: Y

g = Print interpretation line above code

    Y  : Printed
    N  : Not printed
    When omitted: N

k = Start character

    A, B, C, D, E, N, T, or *
    When omitted: A

l = Stop character

    A, B, C, D, E, N, T, or *
    When omitted: A


*1    When data are set with ^SN and the parameter z of ^SN (add leading zeros) is N, '0' at the beginning of data will be deleted.
*2    The character type of the interpretation line is independent of the module width value of ^BY.   Font A is used in any case.
*3    To print the interpretation line above code, the interpretation line parameter (parameter f) needs to be set to "Y."
*4    When an invalid code is selected for the start/stop character, it is printed as 'A.'
*5    When E, N, or T is selected for the start/stop character, the interpretation line is printed in lower-case characters with Toshiba while it is printed in upper-case characters with Zebra.
*6    If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are not set), the barcode will not be printed.

## 8.15 ^BM   MSI BAR CODE

Format: ^BMo,e,h,f,g,i

o = Font rotation

N  : 0°
R  : 90°
I   : 180°
B  : 270°
When omitted: Value of ^FW
* The point of origin differs depending on the coordinate designated in ^FT and ^FO.

e = Check digit selection

N  : No check digits
B  : 1 Mod 10
C  : 2 Mod 10
D  : 1 Mod 10 and 1 Mod 11
When omitted: B

h = Bar code height (in dots)

200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
  1 to 800 dots
300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
  1 to 1200 dots
600-dpi printer: B-EX4T2-H
  1 to 2400 dots
When omitted: Value of ^BY
*1 If the value after dot-to-mm conversion exceeds 100 mm, it is corrected to 100 mm.
*2 If 0, a string, or other value is selected, it is corrected to 10 dots.

f = Print interpretation line

Y  : Printed
N  : Not printed
When omitted: Y

g = Print interpretation line above code

Y  : Printed
N  : Not printed
When omitted: N

i = Print check digit

Y  : Printed
N  : Not printed
When omitted: N

*1   Data other than numeric values, if any, will be deleted.
*2   When data are set with ^SN and the parameter z of ^SN (add leading zeros) is N, '0' at the beginning of data will be deleted.
*3   The character type of the interpretation line is independent of the module width value of ^BY.   Font A is used in any case.
*4   To print the interpretation line above code, the interpretation line parameter (parameter f) needs to be set to "Y."
*5   If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are not set), the barcode will not be printed.

## 8.16 ^BQ QR CODE BAR CODE

Format: ^BQa,b,c,d,e

a = Field position

N : 0° (fixed)
* The base point of printing differs depending on the coordinate designated in ^FT and ^FO and the field position..

b = Model

1 : original
2 : Enhanced-recommend
When omitted: 2

c = Magnification factor

1 to 10
When omitted:
   200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
     2
   300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
     3
   600-dpi printer: B-EX4T2-H
     6

d = Error correction level (unsupported)

* When specified, the print result may differ from that with Zebra.

e = Mode selection for data portion

* When specified, the print result may differ from that with Zebra.

*1    While a space is placed between the point of origin and the print start point with Zebra in some cases, printing with Toshiba starts from the point or origin regardless of the Zebra operation.
*2    Information about the error correction level and the data input is required for the data portion.
If information is insufficient, the print result differs from that with Zebra.
(The data effective area differs by 1 byte.)
*3    If an character outside the specified range is entered for the character mode of the data portion, a command error occurs.
*4    After byte specification for the character mode of the data portion, if the data size is larger than the specified number of bytes, the actual data size is effective for printing.
*5    If an lower-case alphabet is entered for the character mode of the data portion, a command error occurs.
*6    Only when the error correction level and the input mode are the following parameters outside of the effective range, the operation is the same as that with Zebra:
   •   The setting characters for the error correction level and the input mode are lower-case alphabets.
   •   The setting characters for the error correction level and the input mode are alphabets outside of the effective range.
   •   Either of the setting characters for the error correction level and the input mode is not set.
*7    When only the error correction level and the input mode are specified for the data portion (e.g. ^FDQN^FS), the bar code data is [4Dh][4Dh][47h][52h] ("MMGR" in ASCII).
*8    If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are not set), the barcode will not be printed.

## 8.17 ^BR   RSS (REDUCED SPACE SYMBOLOGY) BAR CODE

Format: ^BRa,b,c,d,e,f

o = Font rotation

N : 0°
R : 90°
I : 180°
B : 270°
When omitted: Value of ^FW
* The point of origin differs depending on the coordinate designated in ^FT and ^FO.

b = RSS-14 family

1 to 12
1 : RSS14
2 : RSS14 Truncated
3 : RSS14 Stacked
4 : RSS14 Stacked Omnidirectional
5 : RSS Limited
6 : RSS Expanded
7 : UPC-A
8 : UPC-E
9 : EAN-13
10 : EAN-8
11 : UCC/EAN-128 and CC-A/B
12 : UCC/EAN-128 and CC-C
When omitted: 1
*1 When the RSS family indicated by this command is "6: RSS Expanded" and the number of segments is an even number other than 22, the RSS family indicated to TPCL shall be "6: RSS Expanded Stacked."

c = Magnification factor

1 to 10
When omitted: 2

d = Separator height (unsupported)

1, 2
* Operation is performed with the fixed value 1.

e = Bar code height (in dots)

1 to 32000 dots
When omitted: 25 dots
* This parameter is valid only when the RSS family is set to "11: UCC/EAN-128 and CC-A/B" or "12: UCC/EAN-128 and CC-C" and set to the value obtained after "c = Magnification factor" is applied.   If the calculation result exceeds 100.0 mm, it is corrected to 100.0 mm.

f = Segment width

2 to 22
When omitted: 22

*1   When the bar code is rotated at /90°/180°/270° on the coordinate specified in FO command, the bar code is not printed at the specified position.
*2   When the bar code is rotated at 0°/90°/180°/270° on the coordinate specified in FT command, the bar code is not printed at the specified position.

*3  When 180° is set for the coordinate specified in FT command and the X-coordinate of print start position is set to a value which does not allow the entire bar code to be printed, the entire bar code cannot be printed as printing is performed according to the set coordinate.

*4  When 0°/270° is set for the coordinate specified in FT command and the Y-coordinate of print start position is set to a value which does not allow the entire bar code to be printed, the entire bar code cannot be printed as printing is performed according to the set coordinate.

*5  If data outside of the effective range is entered, an unreadable bar code is printed with Zebra while no bar code is printed with Toshiba.

*6  If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are not set), the barcode will not be printed.

*7  When the number of data digits for GS1 Databar family (or the number of data digits before the composite component in the case of the GS1 Databar with the composite component) exceeds the following, the printer does not print a bar code symbol.

| | |
|---|---|
| "7: UPC-A": | 12 digits |
| "8: UPC-E": | 10 digits |
| "9: EAN-13: | 12 digits" |
| "10: EAN-8: | 7 digits" |
| "11: UCC/EAN-128 and CC-A/B": | 48 digits |
| "12: UCC/EAN-128 and CC-C": | 48 digits |

## 8.18 ^BS  UPC/EAN EXTENSIONS

Format: ^BSo,h,f,g

o = Font rotation

    N : 0°
    R : 90°
    I : 180°
    B : 270°
    When omitted: Value of ^FW
    * The point of origin differs depending on the coordinate designated in ^FT and ^FO.

h = Bar code height (in dots)

    200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
      1 to 800 dots
    300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
      1 to 1200 dots
    600-dpi printer: B-EX4T2-H
      1 to 2400 dots
    When omitted: Value of ^BY
    *1 If the value after dot-to-mm conversion exceeds 100 mm, it is corrected to 100 mm.
    *2 If 0, a string, or other value is selected, it is corrected to 10 dots.

f = Print interpretation line

    Y : Printed
    N : Not printed
    When omitted: Y

g = Print interpretation line above code

    Y : Printed
    N : Not printed
    When omitted: Y


*1    Data other than numeric values, if any, are converted to '0.'
*2    The character type of the interpretation line above code is switched depending on the set value for the module width of ^BY.
      In the case of 200-dpi printer
        Module width is 2 or less: Font A
        Module width is 3 or more: Font E
      In the case of 300-dpi printer
        Module width is 4 or less: Font A
        Module width is 5 or more: Font E
*3    To print the interpretation line above code, the interpretation line parameter (parameter f) needs to be set to "Y."
*4    If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are not set), the barcode will not be printed.

## 8.19 ^BU   UPC-A BAR CODE

Format: ^BUo,h,f,g,e

o = Font rotation

N : 0°
R : 90°
I : 180°
B : 270°
When omitted: Value of ^FW
* The point of origin differs depending on the coordinate designated in ^FT and ^FO.

h = Bar code height (in dots)

200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
1 to 800 dots
300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
1 to 1200 dots
600-dpi printer: B-EX4T2-H
1 to 2400 dots
When omitted: Value of ^BY
*1 If the value after dot-to-mm conversion exceeds 100 mm, it is corrected to 100 mm.
*2 If 0, a string, or other value is selected, it is corrected to 10 dots.

f = Print interpretation line

Y : Printed
N : Not printed
When omitted: Y

g = Print interpretation line above code

Y : Printed
N : Not printed
When omitted: N

e = Print check digit in interpretation line and interpretation line above code

Y : Printed
N : Not printed
When omitted: Y

*1   The character type of the interpretation line is switched depending on the set value for the module width of ^BY.
    In the case of 200-dpi printer
        Module width is 2 or less: Font A
        Module width is 3 or more: Font E
    In the case of 300-dpi printer
        Module width is 4 or less: Font A
        Module width is 5 or more: Font E
*2   Data other than numeric values, if any, are converted to '0.'
*3   When the interpretation line above code is to be printed with Toshiba, the header and terminator (system number and check digit) are printed outside the guide bars.
In the case of Zebra, the interpretation line above code is printed at the center between the guide bars.
*4   To print the interpretation line above code, the interpretation line parameter (parameter f) needs to be set to "Y."
*5   If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are not set), the barcode will not be printed.

## 8.20 ^BX   DATA MATRIX BAR CODE

Format: ^BXo,h,s,c,r,f,g

o = Font rotation

N  : 0°
R  : 90°
I   : 180°
B  : 270°
When omitted: Value of ^FW
* The point of origin differs depending on the coordinate designated in ^FT and ^FO.

h = Height of individual symbol elements

1 to 99 dots
When omitted: Value of ^BY

s = ECC type

0, 50, 80, 100, 140, or 200
When omitted: Value of ^FW

c = Columns to encode

9 to 49
　Quality 0 to 140: Odd value
　Quality 200: Even value 値
When omitted:
　When the number of rows is set, this is the same value as the number of rows.
　When the number of rows is also omitted, this is automatically set depending on the number of data.

r = Rows to encode

9 to 49
　Quality 0 to 140: Odd value
　Quality 200: Even value
When omitted:
　When the number of columns is set, this is the same value as the number of columns.
　When the number of columns is also omitted, this is automatically set depending on the number of data.

f = Format ID

1 to 6
When omitted: 6

g = Escape sequence control character

Any character
Omitted: _ (underscore)
This parameter is valid only when the ECC type is set to 200.


*1   For the control character, '~,' '^,' and codes that cannot be entered using the key are not supported.
*2   If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are not set), the barcode will not be printed.

## 8.21 ^BY   BAR CODE FIELD DEFAULT

Format: ^BYw,r,h

w = Module width (in dots)

    1 to 10
    Default: "Narrow bar width/module size (dots)" in the default setting file
    When omitted: Previous ^BY value

r = Wide bar to narrow bar width ratio

    2.0 to 3.0 (Pitch: 0.1)
    Default: "Wide bar to narrow bar ratio" in the default setting file
    When omitted: Previous ^BY value

h = Bar code height (in dots)

    200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
      1 to 800 dots
    300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
      1 to 1200 dots
    600-dpi printer: B-EX4T2-H
      1 to 2400 dots
    Default: "Default bar code height (dots)" in the default setting file
    When omitted: Value of ^BY
    * If the value after dot-to-mm conversion exceeds 100 mm, it is corrected to 100 mm.

## 8.22 ^BZ  POSTNET BAR CODE

Format: ^BZo,h,f,g

o = Font rotation

    N  : 0°
    R  : 90°
    I  : 180°
    B  : 270°
    When omitted: Value of ^FW
    * The point of origin differs depending on the coordinate designated in ^FT and ^FO.

h = Bar code height (in dots)

    200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
      1 to 800 dots
    300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
      1 to 1200 dots
    600-dpi printer: B-EX4T2-H
      1 to 2400 dots
    When omitted: Value of ^BY
    *1 If the value after dot-to-mm conversion exceeds 100 mm, it is corrected to 100 mm.
    *2 If 0, a string, or other value is selected, it is corrected to 10 dots.

f = Print interpretation line

    Y  : Printed
    N  : Not printed
    When omitted: N

g = Print interpretation line above code

    Y  : Printed
    N  : Not printed
    When omitted: N

*1    While the 6th/8th/12th-digit or other data is also printed with Zebra, only the 5th/9th/11th-digit data is printed with Toshiba (due to Toshiba specifications).
Since, for the purpose of use of POSTNET bar codes, the 5th/9th/11th-digit data are used, data for digits other than 5th/9th/11th digit are not printed as bar codes.

*2    Data other than numeric values, if any, will be deleted.

*3    The character type of the interpretation line is independent of the module width value of ^BY.  Font A is used in any case.

*4    To print the interpretation line above code, the interpretation line parameter (parameter f) needs to be set to "Y."

*5    If the command is sent without setting data (only ^FS and ^XZ are set while ^FD^FS and ^FD are not set), the barcode will not be printed.

## 8.23 ^CC OR ~CC    CHANGE CARET

Format: ^CCx or ~CCx

Change caret '^' (0x5E)

x = Prefix

Any character code from 0x20 to 0x7F
Non-omissible
Default: "Format prefix" in the Z-MODE parameter
* The supported character codes differ from those for Zebra.

## 8.24 ^CD OR ~CD   CHANGE DELIMITER

Format: ^CDa or ~CDa

Change delimiter ',' (0x2c)

x = Delimiter

Any character code from 0x20 to 0x7F
Non-omissible
Default: "Delimiter CHAR" in the Z-MODE parameter
* The supported character codes differ from those for Zebra.

## 8.25  ^CF   CHANGE ALPHANUMERIC DEFAULT FONT

Format: ^CFf,h,w

f = Default font setting

A to Z, 0 to 9
Default: A
When omitted: Previous CF value

h = Individual character height (in dots)

0 to 32000
Default: 9
When omitted: Calculated from the width based on the ratio *1

w = Individual character width (in dots)

0 to 32000
Default: 5
When omitted: Calculated from the height based on the ratio *1

*1   If both the character height and width are omitted from ^A command, this is calculated based on the ^CF value.

*2   For Font 0, if the character height/width exceeds 85 mm, it is corrected to 85 mm.
(While Zebra accepts values up to the paper length, this is rounded to 1500 dots.)

## 8.26 ^CI  CHANGE INTERNATIONAL FONT/ENCODING

Format: ^CIa,s1,d1,s2,d2,…

a = Setting font code

    0 to 30 (14 to 17, 24 to 26, 29, and 30 are not supported)
    0  : Single Byte Encoding - U.S.A. 1 Character Set
    1  : Single Byte Encoding - U.S.A. 2 Character Set
    2  : Single Byte Encoding - U.K. Character Set
    3  : Single Byte Encoding - Holland Character Set
    4  : Single Byte Encoding - Denmark/Norway Character Set
    5  :Single Byte Encoding - Sweden/Finland Character Set
    6  : Single Byte Encoding - Germany Character Set
    7  : Single Byte Encoding - France 1 Character Set
    8  : Single Byte Encoding - France 2 Character Set
    9  : Single Byte Encoding - Italy Character Set
    10 : Single Byte Encoding - Spain Character Set
    11 : Single Byte Encoding - Miscellaneous Character Set
    12 : Single Byte Encoding - Japan(ASCII with Yen symbol) Character Set
    13 : Zebra Code Page 850
    18 to 23: Reserved
    27: Zebra Code Page 1252
    28: Unicode (UTF-8 encoding) - Unicode Character Set
    Default: 0
    *   When an unsupported font code (14 to 17, 24 to 26, 29, 30) is selected, the printer operates with "0: Single Byte Encoding - U.S.A. 1 Character Set."

s1 = Source 1 (character output image)

    0 to 255

d1 = Destination 1 (character input)

    0 to 255

s2 = Source 2 (character output image)

    0 to 255

d2 = Destination 2 (character input)

    0 to 255


*1   The characters that can be printed with ^CI0 to ^CI13 shall be included in Code Page 850. Selecting a character which is not included in Code Page 850 results in blank.

*2   14 character sets, CI0 to CI13, can be remapped with the source and destination parameters. Remapping of the other character sets is not supported.

*3   The remapping for the 257th and later pairs of source and destination is invalid.

*4   If the character set value is set to "Z1," this value is considered to be invalid and the bar code is printed with the character set "0: U.S.A. 1.

*5   If an alphabet is entered first and then a number for the source value (e.g. Z65), the value is considered to be invalid and the same print result is generated as when "0: U.S.A. 1" is selected" is printed.

*6   To print TTF saved in USB, printing is performed with the code selected for this command.

## 8.27 ^CT OR ~CT   CHANGE TILDE

Format: ^CTa or ~CTa

Change control command '~' (0x7E)

a = Control command character

Any character code from 0x20 to 0x7F
Non-omissible
Default: "Character prefix" in the Z-MODE parameter
* The supported character codes differ from those for Zebra.

## 8.28 ^CW   FONT IDENTIFIER

Format: ^CWa,d:o.x

a = Font number

A to Z, 0 to 9
When omitted: This command is ignored.

d = Drive

R  : RAM
E  : On-board Flash ROM
B  : USB memory
A  : USB memory
When omitted: R

o = File name

When omitted: UNKNOWN

x = Extension

When omitted: FNT


*1   For restrictions on the font name, refer to 8.2.
     Note that, when a built-in font (Drive Z "Z:") is selected, the font is used and the parameter is not applied as described above.
*2   In the Z-MODE, the font setting information generated by the default setting file is internally held and ^CW command works by rewriting the font setting information using the font name as the key.
*3   The font names that can be referred to are limited to those included in "Font Change Table" of the default setting file and up to seven downloaded TTFs.
     The information contained in "Font Conversion Table," which is for ^A/^A@, cannot be used here.
*4   If the set value does not correspond to the information contained in the default setting file, this command is ignored.

## 8.29 ^DF   DOWNLOAD FORMAT

Format: ^DFd:o.x

d = Drive

R  : RAM
E  : On-board Flash ROM
B  : USB memory
A  : USB memory
When omitted: R

o = File name

A file name consisting of 1 to 16 characters can be set.
When omitted: UNKNOWN

x = Extension

ZPL (fixed)
When omitted: ZPL
* Saved as ZPL even when other extension is entered.

The format data for commands from ^DF to ^XZ are saved into the specified drive under the specified file name.

*1   The maximum number of characters that can be saved with ^DF to ^XZ is 512 Kbytes.
*2   ^GFA and ^GFB are supported for the graphic data between ^DF to ^XZ (^GF).
*3   For the common specifications of commands used for the devices, refer to "7.2 COMMANDS USED FOR DEVICES."

## 8.30 ~DG   DOWNLOAD GRAPHICS

Format: ~DGd:o.x,t,w,data

d = Drive

R  : RAM
E  : On-board Flash ROM
B  : USB memory
A  : USB memory
When omitted: R

o = File name

A file name consisting of 1 to 16 characters can be set.
When omitted: UNKNOWN

x = Extension

GRF (fixed)
When omitted: GRF
* Saved as GRF even when other extension is entered.

t = Total number of bytes in graphic

1 to 9999999
Non-omissible

w = Number of bytes per row

1 to 9999999
Non-omissible

data = ASCII hexadecimal string defining image

Graphic data
Non-omissible

The format data for commands from ^DF to ^XZ are saved into the specified drive under the specified file name.

*1   The maximum number of characters that can be saved with ^DF to ^XZ is 512 Kbytes.
*2   ^GFA and ^GFB are supported for the graphic data between ^DF to ^XZ (^GF).
*3   For the common specifications of commands used for the devices, refer to "7.2 COMMANDS USED FOR DEVICES."

## 8.31 DT   DOWNLOAD BOUNDED TRUETYPE FONT

To download fonts, use ~DU or ~DY command or Toshiba TrueTypeFont downloader.

## 8.32 ~DU   DOWNLOAD UNBOUNDED TRUETYPE FONT

Format: ~DUd:o.x,s,data

d = Drive

   R  : RAM
   E  : On-board Flash ROM
   B  : USB memory
   A  : USB memory
   When omitted: R

o = File name

   When omitted: UNKNOWN

x = Extension

   When omitted: FNT

s = Total number of bytes in data

   1 to 9999999
   Non-omissible

w = Number of bytes per row

   1 to 9999999
   Non-omissible

data = ASCII hexadecimal string defining font

   Font file data
   Non-omissible


TrueTypeFont (TTF) data is saved.
The saved TTFs can be used with ^A@ or ^CW command.


*1   For restrictions on the font name, refer to "8.2. COMMANDS USED FOR DEVICES."
*2   For TrueType fonts, refer to "7.4 TRUETYPE FONT COMMANDS."
*3   While, in the case of Zebra, data is registered only when the extension is set to FNT, all extensions
    can be registered and read with Toshiba regardless of extension setting.

## 8.33 ~DY   DOWNLOAD OBJECTS

Format: ^DYd:f,b,x,t,w,data

**d = Drive**

 R  : RAM
 E  : On-board Flash ROM
 B  : USB memory
 A  : USB memory
 When omitted: R

**o = File name**

A file name consisting of 1 to 16 characters can be set.
When omitted: UNKNOWN

**b = Download format**

 A  : Uncompressed (ZB64, ASCII)
 B  : Uncompressed (TTE, TTF, binary)
 C  : AR-compressed (used only by Zebra's BAR-ONE®v5) (unsupported)
 P  : Portable network graphic (PNG) - B64 encoded
 Non-omissible
 If C is selected, this command is ignored.

**x = Extension**

 B: Bitmap (BMP)
 E: TrueType Extension (TTE)
 G: Raw bitmap (GRF)
 P: Store as compressed (PNG)
  * To be compressed in Base 64 format
 T: TrueType (TTF)
 X: Paintbrush (PCX)
 NRD: Non Readable File (NRD)
 PAC: Protected Access Credential (PAC)
 C: User defined menu file (WML)
 F: User defined webpage file (HTM)
 H: Printer feedback file (GET)
 When omitted: GRF
 *  The parameters G, P, and T (TTF) can be saved and read.   The other parameters can only be
  saved.

**t = Total number of bytes in file**

Non-omissible

**w = Number of bytes per row**

Non-omissible

**data = Data**

 A, P  : ASCII hexadecimal or ZB64
 B     : Binary
 Non-omissible

*1 The registered data can be deleted with ^ID/^EG command.
*2 When the extension is set to Toshiba, downloaded objects cannot be handled as font data.
*3 For the common specifications of commands used for the devices, refer to "7.2 COMMANDS USED FOR DEVICES."
*4 The format of the data portion of [B64]/[Z64] shall be ":B64:data:CRC" or ":Z64:data:CRC."
*5 When the [B64]/[Z64] format is saved, the data are read and printing is continued whether CRC is normal or abnormal.
*6 For TrueType fonts, refer to "7.4 TRUETYPE FONT COMMANDS."
*7 To handle ZB data through serial interface, ensure the baud rate is 9600 bps or higher.
*8 When the download format is A and ASCII, received data are saved as effective data even if the graphic data size is smaller than the number of bytes specified in the command.

## 8.34 ^EF OR ~EF    INITIALIZE/ERASE STORED FORMATS

Format: ^EF or ~EF

The format data saved in any drive are deleted.

## 8.35 ^EG OR ~EG   ERASE DOWNLOAD GRAPHICS

Format: ^EG or ~EG

The graphic data saved in any drive are deleted.

## 8.36 ^FA   FIELD ALLOCATE

Format: ^FAn

Prints specified digits only.

n = Number of digits

Maximum number of data digits: 253
When omitted: This command is ignored.

## 8.37 ^FB  FIELD BLOCK

Format: ^FBa,b,c,d,e

a = Text block/line width (in dots)

    0 to 832: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
    0 to 1238: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
    0 to 2496: B-EX4T2-H
    When omitted: "Rectangle width" in the default setting table

b = Maximum number of lines in text block

    1 to 99
    When omitted: "Number of rows in the rectangle" in the default setting table

c = Space between lines (in dots)

    99 to 44: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
    99 to 600: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
    99 to 1200: B-EX4T2-H
    When omitted: "Space between lines in dots" in the default setting table
    (Note)  When "Character height + Space between lines in dots" is 1 mm or less, correct the space between lines in dots so that it will be 1 mm.

d = Text justification

    L  : Left
    C  : Center
    R  : Right
    J  : Justified
    When omitted: "Text justification" in the default setting table

e = Indent in field block (in dots)

    0 to 832: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
    0 to 1238: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
    0 to 2496: B-EX4T2-H
    When omitted: "Text justification X-coordinate correction value" in the default setting table


*1   In some cases, operation is not performed properly when this command is used with ^FP (field parameter) or ^TB (text block).
*2   If the set value in ^FB exceeds the maximum field block width, word-wrap is applied at the paper maximum width.   Meanwhile, the code bar is also affected by wrap-around.
*3   If the text block/line width parameter value is smaller than the minimum value or larger than the maximum value, the width is rounded to the minimum value or the maximum value, respectively.
    In the case of 200-dpi printer
       Module width is 2 or less: Font A
       Module width is 3 or more: Font E
    B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
       Minimum value: 40 dots
       Maximum value: 832 dots
    B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
       Minimum value: 60 dots
       Maximum value: 1238 dots
    B-EX4T2-H
       Minimum value: 120 dots
       Maximum value: 2496 dots

*4 If a back slash code (0x5c) is placed in the data to be printed (command "^FD"), line feed is made. To actually print the back slash code, it needs to be sent continuously.

*5 If the text block/line width is set to a value insufficient to print two characters (a value that allows only one character to be printed in a line) and the maximum number of lines in text block is set to a value which is insufficient for the print data length (e.g. only four lines are secured for ten-character data to be printed in ten lines), overwrite drawing in the final line is not made. Otherwise, the data portion exceeding the set value is overprinted in the final line.

*6 When the used font is Toshiba's external character (01 to 40, 51 to 55), Japanese Kanji character (U, V, W, X, v, w), or Chinese character, the parameters d (text justification) and e (indent) are ignored. If the number of characters exceeding the text block/line width is entered, the field is not printed.

*7 Since the paper width is not checked for the text block/line width and the indent width settings, they shall be set to a value which does not exceed the paper width.

*8 If the head of the data to be printed is a space code, the space codes between the top and the first character are discarded when reading. However, if the space codes to be discarded exceed the text block/line width, the space codes equivalent to the line width are converted to a line feed code.

*9 Special code (code after back slash)
   If the special code is 0x30 or smaller, the operation differs from that with Zebra.
   - Codes handled as terminator in the Z-MODE
     0x00 terminates data processing.
     0x0a is converted to 0x00 and terminates data processing. The latter data are discarded when reading.
     0x0c is converted to 0x00 and terminates data processing. The latter data are discarded when reading.
     0x0d is converted to 0x00 and terminates data processing. The latter data are discarded when reading.
   - Codes discarded in the Z-CODE
     0x01 to 0x08, 0x0b, and 0x0e to 0x12
   - Codes converted in the Z-MODE
     0x5c is converted with 0x1f CI information (only in the case of CI13)
     0x30 is converted with 0x1a CI information (only in the case of CI13)
     0x09 is converted to 0x20 as many times as specified in the tab space conversion in the downloaded default setting file in the system mode.
   - The operation for special code (0x20) differs from that with Zebra.
     With Toshiba, it is converted to a line feed code.
   - The operation for special code (0x23, 0x28) differs from that with Zebra.
     With Toshiba, a line feed is made and the code is printed at the beginning of the next line.
   - With the special code 0x1f, which develops into 0x1f+0x1f, a back lash is printed.

## 8.38 ^FC  FIELD CLOCK

Format: ^FCa,b,c

a = Primary clock indicator character

Characters except for the current format and the control prefix, separation character, and hexadecimal code ('^' '~' ',' '_')
Default          : %
When omitted   : %

b = Secondary clock indicator character

Characters except for the current format and the control prefix, separation character, and hexadecimal code ('^' '~' ',' '_')
Default          : N/A
When omitted   : N/A

c = Third clock indicator character

Characters except for the current format and the control prefix, separation character, and hexadecimal code ('^' '~' ',' '_')
Default          : N/A
When omitted   : N/A

*1   The parameters a, b, and c cannot be set to the same value.
*2   When offset is selected, operation is not guaranteed if the result is out of the range from 1970/01/01 to 2100/02/28.
*3   Year 2100 shall be deemed as a leap year.
*4   The abbreviated day of the week (a) is fixed to 3 digits and upper-case
     The day of the week (A) is fixed to 9 digits and upper-case
     The abbreviated month (b) is fixed to upper-case
     The month (B) is fixed to 9 digits and upper-case
     The abbreviated day of the week, abbreviated month, week, month, and AM/PM(p) are fixed to English indication.

## 8.39 ^FD   FIELD DATA

Format: ^FDa

  a = Data to be printed
    Maximum data digits: 255
    When omitted: Operation is performed without data.

## 8.40 ^FH   FIELD HEXADECIMAL INDICATOR

Format: ^Fha

   a = Hexadecimal indicator
      Characters except for the current format and control prefix ('^' '~')
         Default           : _ (underscore)
         When omitted   : _ (underscore)

   *1    The code corresponding to the indicator differs from that with Zebra.
   *2    1-byte hexadecimal code indicators such as "_F" before ^FS are also converted.

## 8.41 ^FN    FIELD NUMBER

Format: ^FN#"a"

    # = Field number

      0 to 9999

      When omitted: 0

      * While 0 to 9999 are valid for the field number, up to 200 fields can be registered in Toshiba.

        Up to 100 fields if the data of ^FD following ^FN selects Font 0.

        Up to 32 fields if the data of ^FD is bar code data.


   "a" = Option parameter (unsupported)

     * This parameter is ignored.


*1   The amount of data that can be registered in 11 fields is 253 bytes.

*2   As this is also the case with two-dimensional codes, pay attention in using them.

*3   If the field number contains non-numeric characters, operation differs from that with Zebra.

## 8.42 ^FO   FIELD ORIGIN

Format: ^FOx,y,z

x = X-coordinate (in dots)

    0 to 32000
    When omitted: 0

y = Y-coordinate (in dots)

    0 to 32000
    When omitted: 0

z = Text justification

    0   : Left
    1   : Right
    2   : Auto Justification (script dependent) (unsupported)
    When omitted: Value of ^FW
    *   If "2: Auto justification" is selected, operation is performed with "0: Left."


*1   While the individual position and size vary depending on whether the ^MU/^JM command is placed before or after ^FO/^FT/^LH/^LS/^LL/^PW or other command with Zebra, the position and the size vary per label with Toshiba.

*2   After ^FS is received, both X and Y-coordinates become 0.

*3   Right justification of bar codes is not enabled.

## 8.43 ^FP   FIELD PARAMETER

Format: ^FPd,g

  d = Direction:

      H = Horizontal printing
      V = Vertical printing
      R = Reverse printing (right to left)
      When omitted: "Default rotation angle" in the default setting file

  g = Additional inter-character gap (in dots)

      0 to 9999
      When omitted: "Inter-character gap" in the default setting file
      \*   The maximum value of the inter-character gap differs depending on the selected font.
         The maximum value for fonts other than Font 1 is +99. For Font 0, it is +512.


*1   When mixed with ^FB (field block), operation may not performed properly.
*2   The inter-character gap value set in ^FPV command is ignored (Also ignored with Zebra).
*3   In the case of vertical printing of proportional fonts, since the inter-character space is invalid, some characters may be printed overlapped.

## 8.44 ^FR   FIELD REVERSE PRINT

Format: ^FR

   Printing field with the color reversed

*1   For diagonal lines, circles, and box shapes with rounded corners, the black lines are reversed to white when field reverse print is applied but the overlapped portions are printed in black.

*2   When field reverse print is applied to box shapes with rounded corners, the portion where a side and a corner overlap is printed in black.

*3   Field reverse print is applied to one field after ^FR.

## 8.45 ^FS   FIELD SEPARATOR

Format: ^FS

Field separation code

* Since this is used to separate individual printings, processing to restore the reception parameter of each command (set value) to default is made.
  - The printing position is restored to default (0, 0).
  - The font number and size are restored to default.
  - The field reverse is restored to default.
  - The hexadecimal code identification is restored to default.

## 8.46 ^FT   FIELD TYPESET

Format: ^FTx,y,z

  x = X-coordinate (in dots)

  0 to 32000
  When omitted: If text/bar code drawing is performed right before, the X-coordinate at the end of the
            previous drawing is applied.   Otherwise, 0.

  y = Y-coordinate (in dots)

  0 to 32000
  When omitted: If text/bar code drawing is performed right before, the X-coordinate at the end of the
            previous drawing is applied.   Otherwise, 0.

  z = Text justification

  0  : Left
  1  : Right
  2  : Auto justification (unsupported)
  When omitted: Value of ^FW
  *   If "2: Auto justification" is selected, operation is performed with "0: Left."


*1   While the individual position and size vary depending on whether the ^MU/^JM command is placed
     before or after ^FO/^FT/^LH/^LS/^LL/^PW or other command with Zebra, the position and the size
     vary per label with TOSHIBA.
*2   When X and Y-coordinates are omitted in printing strings, the start point is the coordinates at the
     end of the previous drawing.   However, printing with this processing after ^SN and ^SF is not
     guaranteed.
*3   After ^FS is received, both X and Y-coordinates become 0.
*4   Right justification of bar codes is not enabled.

## 8.47 ^FV   FIELD VARIABLE

Format: ^FVa

Data in variable data fields are specified.

a = Data to be printed
Maximum data digits: 253
When omitted: Operation is performed without data.

*1    If the field number contains non-numeric characters, operation differs from that with Zebra.

## 8.48 ^FW   FIELD ORIENTATION

Format: ^FWr,z

o = Field rotation

N : 0°
R : 90°
I : 180°
B : 270°
Default: N
When omitted: The previous value is used.
* The point of origin differs depending on the coordinate designated in ^FT and ^FO.

z = Text justification

0 : Left
1 : Right
2 : Auto justification (unsupported)
When omitted: Value of ^FW
*1 If "2: Auto justification) is selected, operation is performed with "0: Left."
*2 Right justification of bar codes is not enabled.

## 8.49 ^FX   COMMENT

Format: ^FXc

c = Comment data

A string which does not include '^' (caret) and '~' (tilde)
When omitted: Operation is performed without comments.


* The string after ^FX is deemed as a comment until '^' (caret) or '~' (tilde) is received.

## 8.50 ^GB   GRAPHIC BOX

Format: ^GBw,h,t,c,r

w = Box width (in dots)

   1 to 32000

   When omitted: "Line width" in the default setting file

                (Line width is used as box width is not specified in the file.)

   * If this exceeds the paper width, the end point in the X direction is adjusted to the paper size.

h = Box height (in dots)

   1 to 32000

   When omitted: "Line width" in the default setting file

                (Line width is used as box height is not specified in the file.)

   * Since the maximum paper length is 1500 mm, even If this exceeds the paper length in Y direction, only the data covered by the paper length are printed.

t = Line width (in dots)

   1 to 32000

   When omitted: "Line width" in the default setting file

c = Line color

   B  : Black

   W  : White

   When omitted: B

r = Corner rounding

   0 to 8

   When omitted: 0

*1   With TOSHIBA, lines are thickened outward.   Thus, for a box shape almost painted over with thick lines, the size of the base box shape must be small.   Therefore, the corner-rounding amount calculated based on the base box shape is necessarily small and the corner-rounding amount for a box shape with thick lines is not the same as that with Zebra.

*2   If the box width is set to a value exceeding the paper width, the end point in the X direction is adjusted to the paper width.   In this case, if the line width is set to a value exceeding 1 dot, printing is performed beyond the paper width for the amount the right side of the box shape exceeds 1 dot and the portion exceeding the head width is wrapped around for printing.

## 8.51 ^GC   GRAPHIC CIRCLE

Format: ^GCd,t,c

d = Circle diameter (in dots)

3 to 4095

When omitted: 4

* If the value after dot-to-mm conversion exceeds 300 mm, it is corrected to 300 mm.

t = Line width (in dots)

1 to 32000

*1 If the line width equals to or exceeds the radius, the circle becomes a painted-over drawing.

*2 In the case of Zebra, if the line width is set to 2 or less or omitted, printing is performed with line width 2.   In the case of Toshiba, printing is performed with line width 1.

c = Line color

B  : Black

W  : White

When omitted: B


*1    If the drawing coordinates exceed the head width, the exceeding portion is wrapped around for printing. (In the case of Zebra, drawing exceeding the head width is not performed.)

*2    Since the line is thickened outward from the specified coordinates, the coordinates needs to be specified after adding to or subtracting from the specified coordinates the thickness to thicken the line inward.   (In the case of Zebra, the line is thickened inward.)

## 8.52 ^GD   GRAPHIC DIAGONAL LINE

Format: ^GDw,h,t,c,o

w = Box width (in dots)

1 to 32000
When omitted: 1

h = Box height (in dots)

1 to 32000
When omitted: 1

t = Line width (in dots)

1 to 999
When omitted: "Line width" in the default setting file
* If the value after dot-to-mm conversion exceeds 99.9 mm, it is corrected to 99.9 mm.

c = Line color

B  : Black
W  : White
When omitted: B

o = Orientation

R (or /): Rising from left to right
L (or \ ): Rising from right to left
When omitted: R


\*      If the value after dot-to-mm conversion exceeds 999.9 mm in the X-coordinate at the start and end points, it is corrected to 999.9 mm.

## 8.53 ^GE   GRAPHIC ELLIPSE

Format: ^GEw,h,t,c

w = Ellipse width (in dots)

  1 to 4095
  When omitted: 2
  * If the value after dot-to-mm conversion exceeds 300 mm, it is corrected to 300 mm.

h = Ellipse height (in dots)

  1 to 4095
  When omitted: 2
  * If the value after dot-to-mm conversion exceeds 300 mm, it is corrected to 300 mm.

t = Line width (in dots)

  1 to 4095
  When omitted: 1
  *1 If the line width equals to or exceeds the shorter radius, the ellipse becomes a painted-over drawing.
  *2 In the case of Zebra, if the line width is set to 2 or less or omitted, printing is performed with line width 2.   In the case of Toshiba, printing is performed with line width 1.

c = Line color

  B  : Black
  W  : White
  When omitted: B

*1    If the drawing coordinates exceed the head width, the exceeding portion is wrapped around for printing. (In the case of Zebra, drawing exceeding the head width is not performed.)
*2    Since the line is thickened outward from the specified coordinates, the coordinates needs to be specified after adding to or subtracting from the specified coordinates the thickness to thicken the line inward.   (In the case of Zebra, the line is thickened inward.)
*3    In the case of Zebra, if the ellipse width (ellipse height) is set to 3 or less or omitted, the value of the ellipse height (ellipse width) is not applied to printing and a point is drawn.
      In the case of Toshiba, if the ellipse width (ellipse height) is set to 3 or less or omitted, printing is performed with width (height) 2 and the set ellipse height (ellipse width).

## 8.54 ^GF  GRAPHIC FIELD

Format: ^GFa,b,c,d,data

a = Compression type

  A  : ASCII HEX
     For B64 (Base64), [:B64:] is placed at the data head.
     For Z64 (Base64+LZ77), [:Z64:] is placed at the data head.
     Operation is performed with such set values as used for Zebra.
  B  : Binary
  C  : Compressed binary (unsupported)
  When omitted: Not printed
  * If "C: Compressed binary" is selected, operation is performed with "A: ASCII HEX."

b = Bytes in binary data

  0 to 999999
  When omitted: Not printed

c = Bytes in graphic field

  0 to 999999
  The value of this parameter is ignored.

d = Bytes per row

  0 to 1249
  When omitted: Not printed
  * If this is set to a value exceeding 1249, graphic is not printed.

data = Data

  ASCII HEX data
    0x00 to 0xFF


*1   When the [B64]/[Z64] format is saved, the data are read and printing is continued whether CRC is normal or abnormal.
*2   Even if ^FS does not exist after the data of ^GF command, the command is deemed to be valid and graphic is drawn.
*3   When the compression type is A and ASCII, even if the graphic data is smaller than the number of bytes specified in the command, the received data are saved as valid data.
*4   ^GFA and ^GFB between ^DF and ^XZ are also supported.

## 8.55 ^GS   GRAPHIC SYMBOL

Format: ^GSo,h,w

o = Rotation direction

N  : 0°
R  : 90°
I   : 180°
B  : 270°
Default: N
When omitted: Value of ^FW

h = Character height (in dots)

0 to 32000 dots
Default: 24
When omitted: Character width if specified; if not specified, the value set in ^CF.

w = Character width (in dots)

0 to 32000 dots
Default: 24
When omitted: Character height if specified; if not specified, the value set in ^CF.

*1    The supported magnification factor range is from 1 to 9.5 (9.5 if the pitch is 9.5 or larger.)
*2    When the character base point is at the lower position due to 90° or 180° rotation setting, printing is performed with the basis at the character top with Zebra, while subscript printing is performed with the basis at the character bottom with Toshiba.
*3    The justification information from FO, FT, and FW is ignored in this command.

## 8.56 ~HB  BATTERY STATUS

Format: ~HB

Battery status request command from host

The following fixed value is returned:
<STX>00.00,00.00,00<ETX><CR><LF>

*1    Supported by BASIC application

*2    While this s a real-system command, processing is not made until the next command (caret or tilde) is received.

## 8.57 ^HG   HOST GRAPHIC

Format: ^HGd:o.x

d = Drive

R  : RAM
E  : On-board Flash ROM
B  : USB memory
A  : USB memory
When omitted: Checked in the following order: R -> E-> B -> A

o = File name

A file name consisting of 1 to 16 characters can be set.
When omitted: UNKNOWN

x = Extension

GRF and PNG only
When omitted: GRF

The data of the selected graphic file is sent to each I/F.

*1   Data are sent to all I/Fs except Centronics I/Fs.
*2   For the common specifications of commands used for the devices, refer to "7.2 COMMANDS USED FOR DEVICES."

## 8.58 ~HI   HOST IDENTIFICATION

Format: ~HI

Identification request command from host

One of the following values is returned:

In the case of B-EX4T T1 200dpi
    <STX>B-EX4T1-200dpi,V1.0,8,8192KB,CUTTER DETECTED<ETX><CR><LF>
    <STX>B-EX4T1-200dpi,V1.0,8,8192KB<ETX><CR><LF>
In the case of B-EX4T T1 300dpi
    <STX>B-EX4T1-300dpi,V1.0,12,8192KB,CUTTER DETECTED<ETX><CR><LF>
    <STX>B-EX4T1-300dpi,V1.0,12,8192KB<ETX><CR><LF>
In the case of B-EX4T T2 200dpi
    <STX>B-EX4T2-200dpi,V1.0,8,8192KB,CUTTER DETECTED<ETX><CR><LF>
    <STX>B-EX4T2-200dpi,V1.0,8,8192KB<ETX><CR><LF>
In the case of B-EX4T T2 300dpi
    <STX>B-EX4T2-300dpi,V1.0,12,8192KB,CUTTER DETECTED<ETX><CR><LF>
    <STX>B-EX4T2-300dpi,V1.0,12,8192KB<ETX><CR><LF>
In the case of B-EX4T T2 600dpi
    <STX>B-EX4T2-600dpi,V1.0,12,8192KB,CUTTER DETECTED<ETX><CR><LF>
    <STX>B-EX4T2-600dpi,V1.0,12,8192KB<ETX><CR><LF>
In the case of B-EX6T T2 200dpi
    <STX>B-EX6T2-200dpi,V1.0,8,8192KB,CUTTER DETECTED<ETX><CR><LF>
    <STX>B-EX6T2-200dpi,V1.0,8,8192KB<ETX><CR><LF>
In the case of B-EX6T T2 300dpi
    <STX>B-EX6T2-300dpi,V1.0,12,8192KB,CUTTER DETECTED<ETX><CR><LF>
    <STX>B-EX6T2-300dpi,V1.0,12,8192KB<ETX><CR><LF>

* The version information and the cutter information are created based on the internal data of the printer.

**The status structure is shown below.**

<STX><Model name><Version><No. of dots><Loaded RAM size><Cutter presence><CR><LF>

*1    If the communication I/F is a Centronics I/F, reply is returned through RS-232C.
*2    The notification message can be specified in the default setting file.

## 8.59 ~HM   HOST RAM STATUS

Format: ~HM

Memory request command from host

Ram capacity is returned.
    &lt;STX&gt;8192,8192,XXXX&lt;ETX&gt;&lt;CR&gt;&lt;LF&gt;

*1    If this is 8193 or more, it is corrected to 8192.
*2    Only the currently available RAM capacity is covered.
*3    For RAM total capacity and available RAM capacity, the fixed value "8192" is used and returned.
*4    If the communication I/F is a Centronics I/F, reply is returned through RS-232C.
*5    The notification message can be specified in the default setting file.

## 8.60 ~HQ   HOST QUERY

Format: ~HQquery-type

Printer information request command from host

query-type = Printer information identification

    MA  : Obtain maintenance alert information
        The following fixed values are sent.

```
<STX><CR><LF>
  MAINTENANCE ALERT SETTINGS                    <CR><LF>
    HEAD REPLACEMENT INTERVAL:        50 km    <CR><LF>
    HEAD REPLACEMENT FREQUENCY:       0 M      <CR><LF>
    HEAD CLEANING INTERVAL:           0 M      <CR><LF>
    HEAD CLEANING FREQUENCY:          0 M      <CR><LF>
    PRINT REPLACEMENT ALERT:          NO       <CR><LF>
    PRINT CLEANING ALERT:             NO       <CR><LF>
    UNITS:                            I        <CR><LF>
  <ETX>
```

    MI   : Obtain maintenance information
        The following fixed values are sent.

```
<STX><CR><LF>
  MAINTENANCE ALERT MESSAGES                    <CR><LF>
    CLEAN: PLEASE CLEAN PRINT HEAD              <CR><LF>
    REPLACE: PLEASE REPLACE PRINT HEAD          <CR><LF>
  <ETX>
```

    OD: Obtain printer running distance information
        The following values are sent (numeric value "144" is the total running distance of the printer):

```
<STX><CR><LF>
  PRINT METERS                                  <CR><LF>
    TOTAL NONRESETTABLE:              144 "    <CR><LF>
    USER RESETTABLE CNTR1:            144 "    <CR><LF>
    USER RESETTABLE CNTR2:            144 "    <CR><LF>
  <ETX>
```

    PH: Obtain head life information
        The following values are sent (numeric value "144" is the total running distance of the printer):

```
<STX><CR><LF>
    LAST CLEANED:                     144 "    <CR><LF>
    HEAD LIFE HISTORY                          <CR><LF>
      #    DISTANCE                            <CR><LF>
      1:        144 "                          <CR><LF>
  <ETX>
```

ES: Obtain printer status
The following values are sent:

<STX><CR><LF>
  PRINTER STATUS                                                <CR><LF>
    ERRORS:                  0 00000000 00000000   <CR><LF>
    WARNINGS:             0 00000000 00000000   <CR><LF>
<ETX>

  "ERRORS" information format
  ERRORS:    a bbbbbbbb cccccdef

| | | |
|---|---|---|
| a | : 0 | No errors |
| | 1 | Error detected |
| bbbbbbbb | : 00000000 fixed | |
| ccccc | : 00000 fixed | |
| d | : 0 | No errors |
| | 1 | Ribbon error/rewind full/Feed jam detected |
| e | : 0 | No errors |
| | 1 | Head high temperature error detected |
| | 4 | Head disconnection error detected |
| f | : 0 | No errors |
| | 1 | Label end detected |
| | 2 | Ribbon end detected |
| | 4 | Head open detected |
| | 8 | Cutter error detected |

    * For "WARNINGS" information, the fixed value '0' is sent.

HA: Obtain MAC address information
The following values are sent (MAC address is the printer's actual MAC address):

<STX><CR><LF>
  MAC ADDRESS                                               <CR><LF>
    00:80:91:34:51:AE                                <CR><LF>
<ETX>

    * If a LAN board is not installed, the MAC address information shall be"00:00:00:00:00:00."

JT:  Obtain head check information
     The following values are sent:

      `<STX><CR><LF>`
        HEAD TEST RESULTS                          `<CR><LF>`
          0,A,0000,0000,0000                      `<CR><LF>`
      `<ETX>`

        "PRINT HEAD TEST RESULTS" information format
        a,b,cccc,dddd,eeee

| | | |
|---|---|---|
| a | : 0 | No errors |
| | 1 | Head disconnection error detected |
| b | : A | When the ^JT command parameter 'a' (manually select range of elements to test) is set to "Automatic" (default) |
| | M | When the ^JT command parameter 'a' (manually select range of elements to test) is set to "Manual" (default) |
| cccc | : 0000 to 9999 | The value of the parameter 'b' (first element to check) sent in ^JT when "Manual" is selected in ^JT command.  In the case of "Automatic," '0000' is sent. |
| dddd | : 0000 to 9999 | The value of the parameter 'c' (last element to check) sent in ^JT when "Manual" is selected in ^JT command.  In the case of "Automatic," '0000' is sent. |
| eeee | : 0000 | No errors |
| | 0001 | Head disconnection error detected |

PP: Obtain Plug and Play information
     The following values are sent:

      `<STX><CR><LF>`
        PLUG AND PLAY MESSAGES                 `<CR><LF>`
          MFG: TOSHIBA                         `<CR><LF>`
          CMD: TPCL                            `<CR><LF>`
          MDL: B-EX4T1-G                   `<CR><LF>`
      `<ETX>`

        "PLUG AND PLAY MESSAGES" information format

| | | |
|---|---|---|
| MFG: | In the case of destination [QM/CN] | TOSHIBA |
| CMD: | TPCL (fixed) | |
| MDL: | In the case of B-EX4T1-G | B-EX4T1-G |
| | In the case of B-EX4T1-T | B-EX4T1-T |
| | In the case of B-EX4T2-G | B-EX4T2-G |
| | In the case of B-EX4T2-H | B-EX4T2-H |
| | In the case of B-EX6T2-G | B-EX6T2-G-CN |
| | In the case of B-EX6T2-T | B-EX6T2-T |

SN: Obtain printer serial number information
The following values are sent:

<STX><CR><LF>
  SERIAL NUMBER                                            <CR><LF>
    00000000000                                        <CR><LF>
<ETX>

UI: Obtain PID and device release number information of USB
The following values are sent:

In the case of B-EX4T (4inch) model
<STX><CR><LF>
  USB INFORMATION                                        <CR><LF>
    PID:                            0053    <CR><LF>
    RELEASE VERSION:          01.00    <CR><LF>
<ETX>

In the case of B-EX6T (6inch) model
<STX><CR><LF>
  USB INFORMATION                                        <CR><LF>
    PID:                            0054    <CR><LF>
    RELEASE VERSION:          01.00    <CR><LF>
  <ETX>

When omitted: This command is ignored.

*1    If the communication I/F is a Centronics I/F, reply is returned through RS-232C.
*2    The notification message can be specified in the default setting file.

## 8.61 ~HS   HOST STATUS RETURN

Format: ~HS

Printer information request command from host

The following values are returned:

String 1 = <STX>aaa,b,c,dddd,eee,f,g,h,iii,j,k,l<ETX><CR><LF>

      aaa   : Communication setting

        aaa = a8a7a6a5a4a3a2a1a0

        a0,a1,a2,a8: Baud rate

| a8 | a2 | a1 | a0 | | |
|----|----|----|----|---|---|
| 0 | 0 | 0 | 1 | = | 300 bps |
| 0 | 0 | 1 | 0 | = | 600 bps |
| 0 | 0 | 1 | 1 | = | 1200 bps |
| 0 | 1 | 0 | 0 | = | 2400 bps |
| 0 | 1 | 0 | 1 | = | 4800 bps |
| 0 | 1 | 1 | 0 | = | 9600 bps |
| 0 | 1 | 1 | 1 | = | 19200 bps |
| 1 | 0 | 0 | 0 | = | 28800 bps |
| 1 | 0 | 0 | 1 | = | 38400 bps |
| 1 | 0 | 1 | 0 | = | 57600 bps |
| 1 | 0 | 1 | 1 | = | 14400 bps |

        a3: Data bit

          0 = 7 bits

          1 = 8 bits

        a4: Stop bit

          0 = 2 bits

          1 = 1 bit

        a5: Disable/Enable

          0 = Disable

          1 = Enable

        a6: Parity

          0 = Odd (or None)

          1 = Even

        a7: Handshake

          0 = Xon/Xoff

          1 = DTR

     * After using bit representation for each setting, the numeric value obtained from all bits is saved in aaa.

     E.g.

        Setting: 9600bps,8bit,Even Parity,Stop Bit1,Enable,Xon/Xoff

        Bit: 001011110 -> 094 is saved in aaa.

| | | |
|---|---|---|
| b | : No paper flag | 0: Paper present |
| | | 1: No paper |
| c | : Pause flag | 0: Not in pause |
| | | 1: In pause |
| dddd | : Label length | 10 to 15000 |
| eee | : Number of formats in receive buffer | Fixed value (0) |
| f | : Buffer full flag | 0: Buffer not full |
| | | 1: Buffer full |
| g | : Communication diagnosis mode flag | Fixed value (0) |
| h | : Command analysis flag | 0: Not under analysis |
| | | 1: Under analysis |
| Iii | : Not in use | Fixed value (0) |
| j | : Broken RAM flag | Fixed value (0) |
| k | : Temperature range (lower limit) flag | Fixed value (0) |
| l | : Temperature range (upper limit) flag | Fixed value (0) |

String 2 = <STX>mmm,n,o,p,q,r,s,t,uuuuuuuu,v,www<ETX><CR><LF>

mmm : Function setting

    mmm = m7 m6 m5 m4 m3 m2 m1 m0

    m0: Printing mode

       0 = Direct thermal printing

       1 = Thermal transfer printing

    m4 m3 m2 m1 = Not in use   All:0

    m5: Dump mode flag

       0 fixed

    m6: Sensor information

       0 fixed

    m7: Paper type

       0 = Cutter

       1 = Tear-off

\* After using bit representation for each setting, the numeric value obtained from all bits is saved in mmm.

  E.g.

    Setting: Direct thermal printing, Tear-off

    Bit: 10000000 -> 128 is saved in mmm.

| | | |
|---|---|---|
| n | : Not in use | Fixed value (0) |
| o | : Head up flag | 0: Head closed |
| | | 1: Head open |
| p | : No ribbon flag | 0: Ribbon present |
| | | 1: No ribbon |
| q | : Thermal transfer mode flag | 0,3: Direct thermal |
| | | 1,2: Thermal transfer |
| r | : Printing mode | 0: Rewind |
| | | 1: Peel Off |
| | | 2: Tear Off |
| | | 3: Cutter |
| | | 4: Applicator |
| s | : Print width mode | Fixed value (6) |
| t | : Issuance waiting flag | 0: Not waiting for peel-of |
| | | 1: Waiting for peel-off |

uuuuuuuu  : Remaining labels                    0 to 99999999
v        : Format under printing flag           Fixed value (1)
www  : Graphics for saving                      0 to 999

 String 3 = <STX>xxxx,y<ETX><CR><LF>

xxxx   : Password                               Fixed value (1234)
y        : Built-in RAM loaded flag             Fixed value (0)

*1    Regarding the label length to be sent, a difference of a few dots from the LabelLength sent in ^LL may occur.
*2    If the communication I/F is a Centronics I/F, reply is returned through RS-232C.
*3    The notification message can be specified in the default setting file.

## 8.62 ~HU   RETURN ZEBRANET ALERT CONFIGURATION

Format: ~HU

ZebraNet Alert setting table request command

The following values are returned:

&lt;STX&gt;B,C,Y,Y,ADMIN@COMPANY.COM,0&lt;ETX&gt;&lt;CR&gt;&lt;LF&gt;
&lt;STX&gt;J,F,Y,Y,,0&lt;ETX&gt;&lt;CR&gt;&lt;LF&gt;
&lt;STX&gt;C,F,Y,Y,,0&lt;ETX&gt;&lt;CR&gt;&lt;LF&gt;
&lt;STX&gt;H,C,Y,N,ADMIN@COMPANY.COM,0&lt;ETX&gt;&lt;CR&gt;&lt;LF&gt;
&lt;STX&gt;N,C,Y,Y,ADMIN@COMPANY.COM,0&lt;ETX&gt;&lt;CR&gt;&lt;LF&gt;

*1   While this s a real-system command, processing is not made until the next command (caret or tilde) is received.

*2   If the communications IF is a Centronics I/F, no reply is made.

## 8.63 ^HV   HOST VERIFICATION

Format: ^HV#,n,h

Command for obtaining field data

\# = Field number specified in ^FN

    0 to 9999
    When omitted: 0
    * While 0 to 9999 are valid for the field number, up to 200 fields can be registered in Toshiba.
      Up to 100 fields if the data of ^FD following ^FN selects Font 0.
      Up to 32 fields if the data of ^FD is bar code data.

n = Bytes of characters to be returned

    0 to 253
    When omitted: 64

h = header

    0 to 251
    When omitted: Operation is performed assuming no header.


*1    Only after the ^FN data are confirmed, this command is valid.
      If received before the confirmation, this command is invalid.
*2    If the communication I/F is a Centronics I/F, reply is returned through RS-232C.

## 8.64 ^HW   HOST DIRECTORY LIST

Format: ^HWd:o.x

Directory list request command from host

d = Location to retrieve object list

R  : RAM
E  : On-board Flash ROM
B  : USB memory
A  : USB memory
Z  : Loaded Zebra font types and bar code types
When omitted: R

o = File name

A file name consisting of 1 to 16 characters can be set.
When omitted: * (asterisk)

x = Extension

ZPL, GRF, PNG, TTF, or FNT
When omitted: * (asterisk)
Wildcards are used, they are invalid except the first character [*] at the beginning.

*1   Only in the case of USB communications, if the number of bytes of the reply data equals 64 multiplied by n, 0x00 is added to the end and the data size becomes (64 x n) + 1 bytes.
*2   Saving formats or graphics does not necessarily reduce the remaining RAM size.
(This is because the remaining RAM size is a value obtained with memFindMax (a function which returns the size of the largest block that can be acquired.)
*3   If the communication I/F is a Centronics I/F, reply is returned through RS-232C.
*4   For the common specifications of commands used for the devices, refer to "7.2 COMMANDS USED FOR DEVICES."
*5   For use of wildcards for file names and extension, refer to "7.3 USE OF WILDCARDS."

## 8.65 ^HY   UPLOAD GRAPHICS

Format: ^HYd:o.x

Command for uploading registered graphics
A saved file can be uploaded to the specified drive.

d = Drive

   R  : RAM
   E  : On-board Flash ROM
   B  : USB memory
   A  : USB memory
   When omitted: Checked in the following order: R -> E-> B -> A

o = File name

   A file name consisting of 1 to 16 characters can be set.
   When omitted: UNKNOWN

x = Extension

   GRF and PNG only
   When omitted: GRF

*1   Data are sent to all USB/RS-232C/TCP Ifs, but not to Centronics I/Fs.
*2   For the common specifications of commands used for the devices, refer to "7.2 COMMANDS USED FOR DEVICES."

## 8.66 ^ID   IMAGE DELETE

Format: ^IDd:o.x

Command for deleting registered graphics
A registered image (graphic) file can be deleted.

d = Drive

    R  : RAM
    E  : On-board Flash ROM
    B  : USB memory
    A  : USB memory
    When omitted: R

o = File name

    A file name consisting of 1 to 16 characters can be set.
    When omitted: UNKNOWN

x = Extension

    Any three characters
    When omitted: GRF

*1   "GRF-system files" refer to the following extensions that can be registered with ^DY:
    BMP/TTE/GRF/PNG/TTF/OTF/PCX/NRD/PAC/WML/HTM/GET
*2   For the common specifications of commands used for the devices, refer to "7.2 COMMANDS USED FOR DEVICES."
*3   The space code (20h) in the file name string is not omitted (compliant with Zebra).
*4   For use of wildcards for file names and extension, refer to "7.3 USE OF WILDCARDS."
*5   When "*.*" is used for on-board Flash ROM, fonts in the TTF area are not deleted while the graphic format fonts in the on-board Flash ROM are deleted.
*6   For TrueType fonts, refer to "7.4 TRUETYPE FONT COMMANDS."

## 8.67 ^IL   IMAGE LOAD

Format: ^ILd:o.x

Command for calling registered image files
A registered image (graphic) file in the specified drive can be called.

d = Drive

R  : RAM
E  : On-board Flash ROM
B  : USB memory
A  : USB memory
When omitted: Checked in the following order: R -> E-> B -> A

o = File name

A file name consisting of 1 to 16 characters can be set.
When omitted: UNKNOWN

x = Extension

GRF and PNG only
When omitted: GRF
* PNG is valid only for data registered with DY command.

*1   The registered image (graphic) is printed at the coordinates (0,0).
(Coordinates specified with ^FO or ^FT are ignored.)
*2   For the common specifications of commands used for the devices, refer to "7.2 COMMANDS
USED FOR DEVICES."

## 8.68 ^IM   IMAGE MOVE

Format: ^IMd:o.x

Command for calling registered image files
A registered image (graphic) file in the specified drive can be called.

d = Drive

   R  : RAM
   E  : On-board Flash ROM
   B  : USB memory
   A  : USB memory
   When omitted: Checked in the following order: R -> E-> B -> A

o = File name

   A file name consisting of 1 to 16 characters can be set.
   When omitted: UNKNOWN

x = Extension

   GRF and PNG only
   When omitted: GRF
   * PNG is valid only for data registered with DY command.

*1   While used for calling files like ^IL command, ^IM calls an image (graphic) file to the coordinates specified with ^FO or ^FT.

*2   For the common specifications of commands used for the devices, refer to "7.2 COMMANDS USED FOR DEVICES."

## 8.69 ^IS    IMAGE SAVE

Format: ^ISd:o.x,p

Command for registering image files
The current image (graphic) to be printed can be saved in the specified drive.

d = Drive

  R  : RAM
  E  : On-board Flash ROM
  B  : USB memory
  A  : USB memory
  When omitted: R

o = File name

  A file name consisting of 1 to 16 characters can be set.
  When omitted: UNKNOWN

x = Extension

  GRF and PNG only
  When omitted: GRF
  * Saving of the PNG file format described in the Zebra specification is not supported.

p = Print saved image

  Y  : Printed
  N  : Not printed
  When omitted: Y


*1   The head of the area to save files in depends on "GRAPHIC POSITION" of the Z-MODE parameter.
     (In the case of speed-oriented mode, misalignment of up to 8 dots can occur.
     To save at an accurate position, select "PRECISE POSITION."  To save with priority given to speed, select "SPEED-ORIENTED."
*2   For the common specifications of commands used for the devices, refer to "7.2 COMMANDS USED FOR DEVICES."

## 8.70 ^JB   INITIALIZE FLASH MEMORY

Format: ^JBa

Flash memory initialization command

a = Device to be initialized

    E  : On-board Flash ROM
    B  : USB memory
    A  : USB memory
    Non-omissible


*1    Writing into Drive E reduces capacity as data are not over written even with the same name.
        The capacity of Drive E can be restored by deleting all data through memory initialization (^JB).

*2    When Drive A or B is selected, no processing is made with no USB memory set.

*3    The on-board Flash ROM in this command does not include the TTF area.

*4    The drive mapping in the default setting file cannot be used for this command.

## 8.71 ~JB   RESET OPTIONAL MEMORY

Format: ~JB
Formatting USB memory.
* No processing is made with no USB memory set.

## 8.72 ~JC   SET MEDIA SENSOR CALIBRATION

Format: ~JC

Calibration is performed based on the current sensor values.

*1   As the set label length is temporarily updated, the amount of paper feed with the [FEED] key is changed.   (The value is restored to the one of the default setting file by turning off/on the unit.)

*2   If the operation does not end normally until the paper is fed for the set amount or 990 mm, "PAPER JAM" is generated.

*3   When 'NONE' is selected for the Z-MODE parameter "SENSOR," no operation is performed with this command.

*4   The label length, sensor selection, and ribbon selection obtained through execution of calibration in the Z-MODE cannot be modified.

*5   When the "Auto calibration setting" for TOSHIBA is set to 'ON,' Z-MODE calibration is not performed.   To enable Z-MODE calibration, ensure the "Auto calibration setting" for TOSHIBA is set to 'OFF.'

*6   Priority is as shown below.
   TOSHIBA system setting > Z-MODE system setting > Issuance command or Feed command

## 8.73 ~JK   DELAYED CUT

Format: ~JK

  Paper cut execution command

*1    Valid only when the Z-MODE parameter "PRINT MODE" is set to "5: DelayCut" (print mode of ^MM is set to 'D').

*2    Paper can be cut only while or after the last page of 1JOB is printed.

*3    If sent before the last page is printed, this command is ignored.

## 8.74 ~JL   SET LABEL LENGTH

Format: ~JL

  Feed operation is performed (no sensor adjustment).

*1    When 'NONE' is selected for the Z-MODE parameter "SENSOR," no feed operation is performed with this command.

*2    If the value selected d for the Z-MODE parameter "SENSOR" and the paper do not match, "PAPER JAM" is generated.

## 8.75 ^JM   SET DOTS PER MILLIMETER

Format: ^JMn

 n = Dot/mm setting

    A  : Once

    B  : Twice

    Default: Z-MODE parameter "DOT/MM"

    When omitted: This command is ignored.

    * When this is set to B, the bar code is issued in twice the actual size.

     (When magnification with MU command is applied, the bar code is issued in twice the magnified size.)

*1   While the individual position and size vary depending on whether the ^MU/^JM command is placed before or after ^FO/^FT/^LH/^LS/^LL/^PW or other command with Zebra, the position and the size vary per label with Toshiba.

*2   Drawing running over in the horizontal direction is printed as it is with Toshiba.  However, when magnified, the portion running over the set width is not printed.  In the case of Zebra, drawing running over the set width is not printed.  (If the drawing data before magnification is set to a value exceeding the set width after magnification, the drawing data before magnification is printed without being magnified horizontally.

*3   While the Zebra printing width is not enlarged with this command, it is enlarged with Toshiba.

*4   While magnified printing is not permitted for ^BD (UPS Maxicode) or ^BR (RSS) with Zebra, magnified printing is performed with Toshiba.

## 8.76 ~JN   HEAD TEST FATAL

Format: ~JN

When this command is received before ^JT command, head check is performed every number of printing pages set when receiving ^JT command.

## 8.77 ~JO   HEAD TEST NON-FATAL

Format: ~JO

When this command is received before ^JT command, head check is not performed every number of printing pages set when receiving ^JT command.

## 8.78 ~JR   POWER ON RESET

Format: ~JR

Printer reset is executed.

## 8.79 ^JS   SENSOR SELECT

Format: ^JSa

a = Sensor type

A  : Feeds with the sensor specified with ^MN
B  : Feeds with the reflective sensor
T  : Feeds with the transmissive sensor
When omitted: This command is ignored.

*1   For ^MNN, this command is ignored (no feed).
*2   The feed type varies depending on whether the Z-MODE parameter "LABEL TYPE(MN)" is set to
     'ENABLE' or 'DISABLE.'

## 8.80 ^JT   HEAD TEST INTERVAL

Format: ^JT####,a,b,c

#### = The number of labels printed between executing head checks

    0 to 9999

    When omitted:  0 right after start-up

                If ^JT command is already received, the previous set value is valid.

a = Selection of element range to check

    Y   : Element range is selectable.

    N   : Element range is not selectable.

    When omitted:  N right after start-up

                If ^JT command is already received, the previously set value is valid.

b = First element to check

    0 to 9999

    Default: 0

    When omitted:  0 right after start-up

                If ^JT command is already received, the previously set value is valid.

    * When exceeding 9999, this is corrected to 9999.

c = Last element to check

    0 to 9999

    Default: 9999

    When omitted:  9999 right after start-up

                If ^JT command is already received, the previously set value is valid.

    * When exceeding 9999, this is corrected to 9999.

*1    When label duplication is disabled with ^PQ command, a head check is performed at the specified interval.   However, when label duplication is enabled (two or more) or pause interval is enabled (one or more), a head check is performed only once before the label is issued.

*2    After the printer is turned on, the head check setting is set to disabled even when this command is received.   To enable the head check setting, ~JN needs to be received before this command.

*3    Even if the print head element range is specified by this command, the head check is applied to the all elements.

## 8.81 ^JU   CONFIGURATION UPDATE

Format：^JUa

a = Configuration

    F  : The system mode is restored to default and the printer is reset.

    N  : The network setting is restored to default (unsupported).

    R  : The operation conditions are restored to the ones saved in the system mode.

    S  : The current operation conditions are reflected to the system mode and saved.

    When omitted: This command is ignored.

    * If "N: The network setting is restored to default" is selected, this command is ignored.

*1   When the parameter a is set to "R: The operation conditions are restored to the ones saved in the system mode" and the tilde (~), caret (^), and delimiter (,) symbols differ from the current operation conditions, reset the printer to synchronize it with BASIC application.

*2   When the parameter a is set to "F: The system mode is restored to default and the printer is reset," the default value is the initial value of the system mode setting.

*3   The system mode setting items and the default values for them are shown below.

| | |
|---|---|
| LABLE LENGTH | 0105.0mm:  B-EX4T1-G, B-EX4T1-T, B-EX4T2-G, B-EX4T2-T, B-EX6T2-G,<br>                 B-EX6T2-T<br>0105.0mm:  B-EX4T2-H |
| LABEL WIDTH | 104.0mm: B-EX4T1-G, B-EX4T1-T, B-EX4T2-G, B-EX4T2-T, B-EX4T2-H<br>152.0mm: B-EX6T2-G, B-EX6T2-T |
| RIBBON | WITH RIBBON SAVE: B-EX4T1-G, B-EX4T1-T<br>WITH RIBBON:   B-EX4T2-G, B-EX4T2-T, B-EX4T2-H, B-EX6T2-G,<br>                 B-EX6T2-T |
| PRINT MODE | NO CUT |
| SENSOR | TRANS |
| PRINT SPEED | 3 ips: B-EX4T1-G, B-EX4T1-T, B-EX4T2-G, B-EX4T2-T, B-EX6T2-G,<br>        B-EX6T2-T<br>2 ips: B-EX4T2-H |
| MAXIMUM LENGTH | 0500.0mm |
| POWER ON CALIB | CALIBRATE |
| HEAD CLOSE CALIB | CALIBRATE |
| DOT/MM | 8dots/mm:   B-EX4T1-G, B-EX4T2-G, B-EX6T2-G<br>12dots/mm: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T<br>24 dots/mm: B-EX4T2-H |
| FORMAT CONVERT | NONE |
| CONTROL PREFIX | 7E |
| FORMAT PREFIX | 5E |
| DELIMITER CHAR | 2C |
| LABEL SIZE(LL) | ENABLE |
| LABEL TYPE(MN) | ENABLE |
| MEDIA TYPE(MT) | ENABLE |
| TONE ADJ(SD) | ENABLE |
| TONE ADJ(MD) | ENABLE |
| GRAPHIC POSITION | SPEED-ORIENTED |
| TAB -> SP | 04 |
| RFID ADJUST | +000.0mm |
| OFFSET PRINT | NONE |
| LABEL SHIFT | +000.0mm |

## 8.82 ^JZ   REPRINT AFTER ERROR

Format: ^JZa

a = Reprint after error

   Y  : Yes
   N  : No
   Default: Y
   When omitted: This command is ignored.

\*     In the case of Toshiba, feed is made after the error is corrected.

## 8.83 ^KL   DEFINE LANGUAGE

Format: ^KLa

a = Language setting

    1   : English
    2   : Spanish
    3   : French
    4   : Germany
    5   : Italian
    7   : Portuguese
    10 : Spanish
    11 : Dutch
    13 : Japanese
    Default: 1
    When omitted: 1

\*      This setting is applied when the unit is started up (restarted) after the setting.

## 8.84 ^LH   LABEL HOME

Format: ^LHx,y

x = X-coordinate (in dots)

0 to 3000
Default: "Label home X-coordinate" in the default setting file
When omitted: This parameter is ignored.
* Number of dots after reflecting the value of ^LS command

y = Y-coordinate (in dots)

0 to 65535
Default: "Label home X-coordinate" in the default setting file
When omitted: This parameter is ignored.

## 8.85 ^LL   LABEL LENGTH

Format: ^LLy

  y = Label length

    200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
      80 to 12000 dots (10.0 mm to 1500.0 mm)
    300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
      120 to 18000 dots (10.0 mm to 1500.0 mm)
    600-dpi printer: B-EX4T2-H
      240 to 11952 dots (10.0 mm to 498.0 mm)

    Default: Z-MODE parameter "LABEL LENGTH"
    When omitted: Default: Z-MODE parameter "LABEL LENGTH"

*1   While the individual position and size vary depending on whether the ^MU/^JM command is placed before or after ^FO/^FT/^LH/^LS/^LL/^PW or other command with Zebra, the position and the size vary per label with Toshiba.

*2   When 'DISABLE' is selected for the Z-MODE parameter "LABEL SIZE,' this command is ignored and the value of the Z-MODE parameter is used.

*3   While the paper length specified in this command becomes the printable area with Zebra, the printable area with Toshiba is 2 mm shorter than the paper length specified in this command.

*4   Even when the automatic normal rotation waiting function is on, normal rotation waiting is not performed with printing operation if the label length is set to 20 mm or shorter in this command.
If the label length is reset to 20 mm or longer, normal rotation waiting is not performed with printing operation and overlapped printing may occur.

*5   If a value out of the range such as 0 and 100000 is entered, it is corrected to the minimum/maximum value within the settable range.

## 8.86 ^LR   LABEL REVERSE PRINT

Format: ^LRa

a = Label reverse print

Y  : Yes
N  : No
Default: N
When omitted: N

*1   For diagonal lines, circles, and rectangles with rounded corners, the black lines are reversed to white when field reverse print is applied.   However, the overlapped portions are printed in black.

*2   When field reverse print is applied to rectangles with rounded corners, the portion where a side and a corner overlap each other is printed in black.

## 8.87 ^LS   LABEL SHIFT

Format: ^LSa

a = Shift left value

-9999 to 9999 dots
Default: Z-MODE parameter "LABEL SHIFT"
        "Label shift" in the default setting file is ignored.
When omitted: This command is ignored.

*1   This command always shifts a label to the left when a positive value is set.
     If ^PO command is called later, the label shift to left is applied to the later commands.
     (The printing before this command is not re-corrected.)
*2   The sum of the shift left values set with ^LS, ^FO, ^FT and ^LH commands can range from 0 to
     3000.

## 8.88 ^LT   LABEL TOP

Format: ^LTx

x = Feed fine adjustment value

200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
  -400 to 400 dots (-50.0 mm to +50.0 mm)
300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
  -600 to 600 dots (-50.0 mm to +50.0 mm)
600-dpi printer: B-EX4T2-H
  -1200 to 1200 dots (-50.0 mm to +50.0 mm)
Default: "Feed fine adjustment value" in the default setting file
When omitted: 0

## 8.89 ^MC   MAP CLEAR

Format: ^MCa

a = Bitmap clear

    Y  : Clears bitmap
    N  : Not clear bitmap
    Default: Y
    When omitted: Y

\*1   If the paper length of the first and the second labels differs with ^MCN, print result is not guaranteed.

## 8.90 ^MD   MEDIA DARKNESS

Format: ^MDa

a = Print tone fine adjustment value

-30 to 30
Default: "Media darkness fine adjustment value" in the default setting file
When omitted: This command is ignored.

*1   Since the print tone range for Toshiba is from -20 to +10, the range of the parameter a, -30 to 30, is adjusted to it.

| Value of Parameter | | TOSHIBA print tone value |
|---|---|---|
| 30 & 29 | → | 10 |
| 28 & 27 | → | 9 |
| 26 & 25 | → | 8 |
| 24 & 23 | → | 7 |
| 22 & 21 | → | 6 |
| 20 & 19 | → | 5 |
| 18 & 17 | → | 4 |
| 16 & 15 | → | 3 |
| 14 & 13 | → | 2 |
| 12 & 11 | → | 1 |
| 10 & 9 | → | 0 |
| 8 & 7 | → | -1 |
| 6 & 5 | → | -2 |
| 4 & 3 | → | -3 |
| 2 & 1 | → | -4 |
| 0 | → | -5 |
| -1 & -2 | → | -6 |
| -3 & -4 | → | -7 |
| -5 & -6 | → | -8 |
| -7 & -8 | → | -9 |
| -9 & -10 | → | -10 |
| -11 & -12 | → | -11 |
| -13 & -14 | → | -12 |
| -15 & -16 | → | -13 |
| -17 & -18 | → | -14 |
| -19 & -20 | → | -15 |
| -21 & -22 | → | -16 |
| -23 & -24 | → | -17 |
| -25 & -26 | → | -18 |
| -27 & -28 | → | -19 |
| -29 & -30 | → | -20 |

*2   If the Z-MODE parameter "TONE ADJUST (MD)" is set to 'DISABLE,' this command is ignored.

## 8.91 ^MF   MEDIA FEED

Format: ^MFp,h

p = Feed action at power-up

F  : Feed ([ESC] T command)
L  : Feed (no sensor adjustment)
N  : No action
C  : Calibration
S  : Calibration (short)
Default: Z-MODE parameter "POWER ON CALIB"
When omitted: This command is ignored.

h = Feed action after head is closed

F  : Feed ([ESC] T command)
L  : Feed (no sensor adjustment)
N  : No action
C  : Calibration
S  : Calibration (short)
Default: Z-MODE parameter "HEAD CLOSE CALIB"
When omitted: This command is ignored.

*1   Operations such as "feed" and "calibration" are not performed with this command.
*2   This command specifies the operation to be or not to be performed after "power ON" and "head close.
*3   The value is restored to the previous setting by turning off/on the unit.
*4   If either of the setting for parameter p or h is omitted, this command is ignored.
*5   Calibration after power-up
  • When C or S is selected, B-EX standard calibration is performed.   When L or F is selected, feed operation is performed for the set label pitch.   When N is selected, no operation is performed.
  • When C or S is selected and calibration is performed, the label length, the sensor selection, and the ribbon selection cannot be modified with the command.
*6   Calibration after head close
  • When C or S is selected, B-EX standard calibration is performed.   When L or F is selected, feed operation is performed for the set label pitch.   (Note that, after printing with a selected sensor, feed to the print start position is performed.)     When N is selected, no operation is performed.
  • When C or S is selected and calibration is performed, the label length, the sensor selection, and the ribbon selection cannot be modified with the command.

## 8.92 ^ML   MAXIMUM LABEL LENGTH

Format: ^MLa

a = Maximum label length

    200-dpi printer:
      dot   : 406 to 7917
      inch  : 2 to 38 (406 to 7826 dots)
      mm   : 51 to 989 (408 to 7912 dots)
    300-dpi printer
      dot   : 600 to 11700
      inch  : 2 to 38 (609 to 11582 dots)
      mm   : 50 to 975 (600 to 11700 dots)
    600-dpi printer
      dot   : 1200 to 23400
      inch  : 2 to 38 (1220 to 23165 dots)
      mm   : 50 to 975 (1200 to 23400 dots)

Default: Z-MODE parameter "MAXIMUM LENGTH"
When omitted: This command is ignored.

*1   When parameter a is received in inch or mm format, it is converted to dot format and saved.
*2   While the settable range for the Z-MODE parameter "MAXIMUM LENGTH" is from 100 to 15000 (10.0 mm to 1500.0 mm), the first decimal place is ignored in actual processing.
*3   Used as the maximum feed amount in calibration
   •   As the "MAXIMUM LENGTH" in the system mode for Zebra, this command can be used to modify the maximum label length for automatic calibration.
*4   The maximum feed amount is limited to 50 mm or more.   If a value less than 50 mm is entered, operation is performed with 500mm.
*5   If a value less than the minimum pitch (200 dpi = 406 dots) is entered for this command, the value of the Z-MODE parameter "MAXIMUM LENGTH" is used.

## 8.93 ^MM   PRINT MODE

Format: ^MMa,b

  a = Print mode

    T  : Tear-off
    P  : Peel-off
    R  : Reserved
    A  : Applicator compatible
    C  : Cutter
    D  : Delayed cutter
    F  : Reserved
    L  : Reserved*
    U  : Reserved*
    Default: Z-MODE parameter "PrintMode"
    When omitted: T
    * Operation with F or R selected is the same as that with "T: Tear-off" is selected.

  b = Pre-peel

    Y  : Yes
    N  : No
    When omitted: N

\*      If the print mode is set to 'A' for a cutter model, printing is performed without backfeed.

## 8.94 ^MN   MEDIA TRACKING

Format: ^MNa

  a = Media being used

      N  : Continuous media
      Y  : Non-continuous media web sensing (Label)
      W  : Non-continuous media web sensing (Label)
      M  : Non-continuous media mark sensing (Tag with black marks)
      Default: Z-MODE parameter "SENSOR"
      When omitted: This command is ignored.

*1  If 'DISABLE' is selected for the Z-MODE parameter "LABEL TYPE," this command is ignored and the value of the Z-MODE parameter "SENSOR" is used.

*2  The setting values Y and W are the same.   Selecting either one causes "Non-continuous media web sensing" to be specified.

## 8.95 ^MT   MEDIA TYPE

Format: ^MTa

a = Media type

T  : Ribbon
D  : Thermal paper
Default: Z-MODE parameter "RIBBON"
When omitted: This command is ignored.


*1   If 'DISABLE' is selected for the Z-MODE parameter "MEDIA TYPE," this command is ignored and the value of the Z-MODE parameter "RIBBON" is used.
*2   The set value after this command is received varies depending on the value of the Z-MODE parameter "RIBBON."

| Received command | Value of "RIBBON" | Set value |
|---|---|---|
| MTD | WITHOUT RIBBON H | WITHOUT RIBBON H |
| MTD | Other than WITHOUT RIBBON H | WITHOUT RIBBON |
| MTT | WITH RIBBON SAVE | WITH RIBBON SAVE |
| MTT | Other than WITH RIBBON SAVE | WITH RIBBON |

## 8.96 ^MU   SET UNITS OF MEASUREMENT

Format: ^MUa,b,c

a = dot/inch/mm

> D : Dot
> I : Inch
> M : mm
> Default: "dot/mm/inch" in the default setting file
> When omitted: This command is ignored.

b = Format base in dpi

> 150, 200, 300
> When omitted: This command is ignored.

c = Conversion dpi

> 300, 600
> When omitted: This command is ignored.

*1    While the individual position and size vary depending on whether the ^MU/^JM command is placed before or after ^FO/^FT/^LH/^LS/^LL/^PW or other command with Zebra, the position and the size vary per label with Toshiba.

*2    Drawing running over in the horizontal direction is printed as it is with Toshiba.   However, when magnified, the portion running over the set width is not printed.   In the case of Zebra, drawing running over the set width is not printed.   (If the drawing data before magnification is set to a value exceeding the set width after magnification, the drawing data before magnification is printed without being magnified horizontally.

*3    As with the case where the format base dpi is 200 and the conversion dpi is 300, if the conversion result is 1.5 times the base, the result is ignored.

*4    The conversion dpi shall always exceed the format base dpi.

*5    In the case of Zebra, magnified printing is not performed for ^BD (UPS Maxicode) and ^BR (RSS), it is performed with Toshiba.

*6    While the paper length is extended with magnification, if it exceeds 0355.6 mm (14 inches), the magnification is disabled and same-size printing is performed.

## 8.97 ^PF   SLEW GIVEN NUMBER OF DOT ROWS

Format: ^PF#

 # = Number of dot rows to slew

    0 to 32000
    Default: 0
    When omitted: 0

*1   While printing is not performed if a value exceeding the label length is entered with Zebra, it is performed with Toshiba.

*2   In the case of Zebra, printing speed becomes faster for the portion without drawing. In the case of Toshiba, the speed does not change.

*3   If, with ribbon save selected, the printing description meets the ribbon save (head-up) print conditions (the printing description includes no-printing area which meets the head-up conditions separately from the non-printing area specified for this command), this command is not executed.

## 8.98 ^PH OR ~PH    SLEW TO HOME POSITION

Format: ^PH or ~PH

Command for feed to the home position

With ^PH, feed is made after the command currently being sent to the printer is processed.
With ~PH, feed is made when the command is received.

*1    If ~PH is sent while printing, one feed is made in the end with Zebra while the command is ignored with Toshiba.
*2    In the pause state regarding the Centronics connection, this command can be sent with Zebra while it cannot be sent with Toshiba.

## 8.99 ^PM　PRINTING MIRROR IMAGE OF LABEL

Format: ^PMa

a = Print mirror image of entire label

Y　: Printed
N　: Not printed
When omitted: The previous value is used.

## 8.100 ^PO   PRINT ORIENTATION

Format: ^POa

a = Print orientation

N  : Bottom first
I   : Top first
Default:"Label rotation and printing mirror image of label" in the default setting file
When omitted: This command is ignored.

\*      LS command always shifts a label to the left when a positive value is set.
If this command is called, the left shift is applied to the later commands.
(The printing before this command is not re-corrected.)

## 8.101  ^PP OR ~PP   PROGRAMMABLE PAUSE

Format: ^PP or ~PP

Pause command

^PP: Pause is made after the command currently being sent to the printer is processed.
~PP: Pause is made after the printing currently being performed ends.


*1   If a pose is required at the end of printing by PQ command and it is also required by ^PP command, the pause needs to be cleared twice at the end of printing.

## 8.102  ^PQ   PRINT QUANTITY

Format: ^PQq,p,r,o

q = Total quantity of labels to print

0 to 9999
* 10000 or more is corrected to 9999.
  0 is corrected to 1.
Default: "Quantity of labels to print" in the default setting file
When omitted: 1

p = Cut/pause interval

This is used as a parameter for cut interval when cutting is enabled (^MMC) and for pause interval when cutting is disabled (other than ^MMC).

Cut interval
Range: 0 to 100
Entering 101 or more generates an error.
Default: "Labels to cut" in the default setting file
When omitted: 0 (no cutting)

Pause interval
Range: 0 to 9999
10000 or more is corrected to 9999.
Default: "Labels to cut" in the default setting file
When omitted: 0 (no pause)

r = Quantity of replicates

1 to 9999
When omitted: 1
*1  0 is corrected to 1.
*2  10000 or more is corrected to 9999.

o = Override cut

Y  : Yes
N  : No
When omitted: N

## 8.103 ^PR PRINT RATE

Format: ^PRp,s,b

p = Print speed

| Model p value | B-EX4T G1 203 dpi | B-EX4T T1 305 dpi | B-EX4T G2 203 dpi | B-EX4T T2 300 dpi | B-EX4T H2 600 dpi | B-EX6T G2 203 dpi | B-EX6T T2 300 dpi |
|---|---|---|---|---|---|---|---|
| 1 | 3 ips | 3 ips | 3 ips | 3 ips | 2 ips | 3 ips | 3 ips |
| A,2 | 3 ips | 3 ips | 3 ips | 3 ips | 2 ips | 3 ips | 3 ips |
| B,3 | 3 ips | 3 ips | 3 ips | 3 ips | 3 ips | 3 ips | 3 ips |
| C,4 | 6 ips | 5 ips | 6 ips | 5 ips | 4 ips | 6 ips | 5 ips |
| 5 | 6 ips | 5 ips | 6 ips | 5 ips | 5 ips | 6 ips | 5 ips |
| D,6 | 6 ips | 8 ips | 6 ips | 8 ips | 6 ips | 6 ips | 8 ips |
| 7 | 10 ips | 8 ips | 10 ips | 8 ips | 6 ips | 10 ips | 8 ips |
| E,8 | 10 ips | 8 ips | 10 ips | 8 ips | 6 ips | 10 ips | 8 ips |
| 9 | 10 ips | 10 ips | 10 ips | 10 ips | 6 ips | 10 ips | 8 ips |
| 10 | 10 ips | 10 ips | 10 ips | 10 ips | 6 ips | 10 ips | 10 ips |
| 11 | 12 ips | 12 ips | 12 ips | 12 ips | 6 ips | 10 ips | 10 ips |
| 12 | 12 ips | 12 ips | 12 ips | 12 ips | 6 ips | 10 ips | 10 ips |
| 13 | 14 ips | 14 ips | 3 ips | 3 ips | 2 ips | 3 ips | 3 ips |
| 14 | 14 ips | 14 ips | 3 ips | 3 ips | 2 ips | 3 ips | 3 ips |
| 15 to 19 | 3 ips | 3 ips | 3 ips | 3 ips | 2 ips | 3 ips | 3 ips |

When omitted: Previous value

*1 If this is set to 10 or F, the previous value is used for the operation.

*2 If this is set to one of the numbers from 20 to 99, the tens digit is used for the operation.

s = Feed speed (unsupported)

b = Backfeed speed (unsupported)

* Parameters s and b are ignored.

## 8.104 ~PS   PRINT START

Format: ~PS

Print start command

Only when the printer is in pause state, that pause state is cleared.
When the printer is not in pause state, this command is ignored.

## 8.105 ^PW   PRINT WIDTH

Format: ^PWa

p = Label width (in dots)

B-EX4T1-G, B-EX4T1-T, B-EX4T2-G, B-EX4T2-T, B-EX4T2-H:
 80 to 832 dots (10.0 mm to 104.0 mm)
B-EX6T2-G, B-EX6T2-T:
 120 to 1536 dots (10.0 mm to 152.0 mm)
Default: Z-MODE parameter "LABEL WIDTH"
When omitted: Previous value

*1   While the individual position and size vary depending on whether the ^MU/^JM command is placed before or after ^FO/^FT/^LH/^LS/^LL/^PW or other command with Zebra, the position and the size vary per label with Toshiba.

## 8.106  ^RB    DEFINE EPC DATE STRUCTURE

Format: ^RBn,p0,p1,p2,…,p15

n = Total bit size (in bits)

    Default: Z-MODE parameter "LABEL WIDTH"
    When omitted: 96

p0…p15 = Partition size (in bits)

    1 to 64
    When omitted: 1

*1    This command is used for format setting to generate total bit size in bits by converting data written in the EPC area of the RFID tag into hexadecimal data for each partition specifying the decimal-to-hexadecimal conversion format and coupling the converted data of each partition.

*2    The total bit size represents the total amount of converted data in bits.   This is converted to a word-based value to be written into a tag.   For odd bits insufficient to comprise a word, zero padding is applied.

*3    The partition size represents the maximum number of bits converted to a hexadecimal value.

*4    The relationship between the total bit size and the partition size is shown below.
$n = p0+p1+ \cdots +p15$

E.g. RB96,32,32,32, data: ^RFW,E^FD100.101.102^FS
  The tag data to be written is "000000640000006500000066" (12 bytes).

*5 If the partition size (p0…p15) is not specified, the total bit size is stored in the first field (p0). However, If the total bit size exceeds 64, the remaining size is placed in the second field (p1).
E.g. When sent with ^RB96, this is deemed to be sent as ^RB96,64,32.

## 8.107 ^RF    READ OR WRITE RFID FORMAT

Format: ^RFo,f,b,n,m

o = Operation

W  : Write
R  : Read
L  : Write [locked] (not supported yet)
P  : Read [password protected] (not supported yet)
When omitted: W
* If "L: Write [locked]" and "P: Read [password protected]" are selected, operation is performed as "W: Write" and "R: Read," respectively.

f = Format

A  :ASCII
H  :HEX
E  :EPC
When omitted: H
* When E is selected, operation is performed with A if the format is not registered with ^RB command.

b = Start block number

0 to n (n = maximum number of blocks)
When omitted:

| | |
|---|---|
| Gen 2 and parameter m is set to E or 1 | 2 |
| Gen 2 and parameter m is set to 0, 2, or 3 | 0 |
| Other than Gen 2 | 0 |

*1 In the case of Gen 2 tags, the unit of measure is word.
*2 If this parameter is set to 2 with parameter m set to E or 1, the value becomes 2.

n = Number of bytes to read or write

1 to n
When omitted: 1    (Writing is performed for data amount.)

m = Memory bank

E  : EPC 96-bit (command automatically performs operation on Gen 2 bit address 20h and accesses 12 bytes of the EPC memory bank)
0  : Reserved
1  : EPC
2  : TID (Tag ID)
3  : User
When omitted: E
*1 In writing in the TID area, most tags generate a writing error.
   (Due to permanent lock)
*2 Some tags do not have user area and the user area size differs depending on tag manufacturers.
*3 Valid only when U2 module is implemented.


*1    If data size exceeds the individual area size, a writing/reading error occurs.
*2    The data in the reserved area (Gen 2 tag) cannot be read.
*3    The maximum size of read result "Print" or "Return to host" shall be 256 bytes.
*4    Read failure leads to void printing based on the ^RM setting.

## 8.108 ^RI   GET RFID TAG ID

Format: ^RI#,s,r,m

# = Field number

0 to 9999
When omitted: 0

s = Data order (unsupported)

* This parameter is ignored.

r = Number of retries

0 to 10
When omitted: 0
*1 A value exceeding 10 is corrected to 10.
*2 After read failure and void printing, the operation is repeated up to as many times as the value of this parameter.

m = Print operation

0  : Print
1  : Not print
When omitted: 0
* Read failure leads to void printing based on the ^RM setting.

*1   The maximum size of read result "Print" or "Return to host" shall be 256 bytes.

## 8.109 ^RM   ENABLE RFID MOTION

Format: ^RMe

e = Issue operation

Y  : Issued
N  : Not issued
When omitted: Y

*1    If this is set to N, retry for data write is not performed.
*2    No void printing is performed when data write failed.

## 8.110  ~RO   RESET ADVANCED COUNTERS

Format: ~ROc

c = Counter to reset

1, 2 (unsupported)
3, 4
The RFID counter is cleared.
When omitted: This command is ignored.
* If 1 or 2 is selected, this command is ignored.

*1    While this is a real-time command, processing is not made until the next command (caret or tilde) is received.

## 8.111 ^RQ   QUICK WRITE EPC DATA AND PASSWORDS

Format: ^RQf,c,o[data]

  f = Format

      A   :ASCII

      H   :HEX

      E   :EPC

      When omitted: H

  c = Chip type (unsupported)

      * This parameter is ignored.

  o = Option (unsupported)

      * This parameter is ignored.

   [data] = EPC data, access password, kill password

     Format: ^FD[EPC],[access],[kill]

     * Can be used for EPC Class 1 Generation 2 tags

       E.g.    EPC data          : 11223344556677889 9001122

               Access password   : AAAAAAAA

               Kill password      : BBBBBBBB

               In the case the above is to be written;

               ^XA^RQ^FD11223344556677889900112 2,AAAAAAAA,BBBBBBBB^XZ

*1   Enabled only when the U2 module is installed.

## 8.112 ^RR   SPECIFY RFID RETRIES FOR A BLOCK

Format: ^RRn

n = Number of retries

0 to 10
When omitted: 0
*1  A value exceeding 10 is corrected to 10.
*2  After write/read failure and void printing, the operation is repeated up to as many times as the value of this parameter.

## 8.113 ^RS   SET UP RFID PARAMETERS

Format: ^RSt,p,v,n,e,a,c,s

t = Tag type

When UHF module (U2) is installed:

8  : EPC Class 1, Generation 2 (U2)

\* If a option other than the above is selected, operation is performed with "EPC Class 1 Generation 2."

When HF module (H1, H2) is installed:

C or 2: TagIt                    (H1)
D or 3: Icode                    (H1)
F or 5: ISO 15693          (H1, H2)

\* If an option other than the above is selected, operation is performed with "ISO 15693."

When omitted: Determined based on the PCL system mode setting information

For H1      : ISO 15693
For H2      : ISO 15693
For U2      : EPC Class 1, Generation 2

p = Read/write position

- Label length to 0 to label length

When omitted: 0

\*1  When the value is negative, the media is fed backward to the write/read position.

\*2  When the value is positive, the media is fed forward to the write/read position.

\*3  If the feed distance is 3 mm or less, a feed is not made.

v = Void pattern length (unsupported)

\* This parameter is ignored.

n = Number of retries

0 to 10

When omitted: 3

\*1  A value exceeding 10 is corrected to 10.

\*2  Same as the number of retries of ^RI, ^RR, ^RT, and ^WT.

e = Error handling (unsupported)

\*1  This parameter is ignored.

\*2  When an error occurs, it stops the operation.

a = Signals from applicator (unsupported)

\* This parameter is ignored.

c = Pre-read tag (Unsupported)

\* This parameter is ignored.

s = Void print speed (unsupported)

\* This parameter is ignored.

## 8.114 ^RT   READ RFID TAG

Format: ^RT#,b,n,f,r,m,s

# = Field number

0 to 9999
When omitted:0

b = Read start block address

0 to n
When omitted:0

n = Number of blocks/bytes to read

1 to n
When omitted:1

f = Format

0  : ASCII
1  : HEX
When omitted: 0

r = Number of retries

0 to 10
When omitted: 0
*1 A value exceeding 10 is corrected to 10.
*2 After write/read failure and void printing, the operation is repeated up to as many times as the
   value of this parameter.

m = Print operation

0  : Print
1  : Not print
When omitted: 0
* Read failure leads to void printing based on this parameter setting.

s = Special mode (unsupported)

* This parameter is ignored.


*1   User data are read.
*2   The maximum size of read result "Print" or "Return to host" shall be 256 bytes.

## 8.115 ~RV   REPORT RFID ENCODING RESULTS

Format: ~RVa

a = Enable/disable

    E  : Enable
    D  : Disable
    When omitted : D
    * After reading/writing ends, the result is sent to the host computer.
    E.g.   "+,0" write/read success    No void printing
           "-,3" write/read failure    Void printing on 3 labels

*1    A response is sent to the interface that received the command.   However, when this command is sent via Centronics interface, a response is returned via RS-232C.

## 8.116 ^RZ  SET RFID TAG PASSWORD AND LOCK TAG

Format: ^RZp,m,l

p = Password

00000000 to FFFFFFFF
When omitted: None
* If this parameter and the AccessPassword set in the tag do not match, void printing is performed.

m = Memory bank

K : Kill password
A : Access password
E : EPC
T : TID
U : USER
When omitted: None

l = Lock type

U : Unlock
L : Lock
O : Permanent unlock (unsupported)
P : Permanent lock
W : Writing (unsupported)
* This parameter is ignored.
When omitted: None
(If the lock type setting is omitted, the setting of parameter p is invalid.)


*1   Whenever tag is locked, AccessPassword is required to be set.
     Set it with RFW or RQ command.
*2   Due to the specification of GEN 2 tags, they cannot be locked if AccessPassword consists of all
     zeros.
*3   Although multiple settings are allowed between XA and XZ, Toshiba writes data on tags at one time
     and the lock type set last for each bank becomes valid.   On the other hand, Zebra writes data in
     the order of registration.
     Lock types L and P cannot coexist.   The lock type set last is valid.
*4   Enabled only when U2 module is installed.

## 8.117 ^SC   SET SERIAL COMMUNICATIONS

Format: ^SCa,b,c,d,e,f

a = Baud rate (Non-omissible)

2400, 4800, 9600, 19200, 38400, 115200
110, 300, 600, 1200, 14400, 28800, 57600 (unsupported)

b = Data length (in bits) (Non-omissible)

7, 8

c = Parity (Non-omissible)

N  : None
E  : Even
O  : Odd

d = Stop bit

1, 2

e = Flow control (Non-omissible)

X  : XON/OFF
D  : DTR/DSR
R  : READY/BUSY RTS
M  : XON/READY AUTO

f = Zebra protocol (unsupported)

* This parameter is ignored.

\*      If an unsupported parameter of a value out of the range is selected, the previous setting is used as it is. However, setting such as "data length: 70, stop bit: 10, parity: NNN, protocol mode: XXX" changes the set values as the first byte is valid.

## 8.118 ~SD   SET DARKNESS

Format: ~SD##

  ## = Base print tone

    00 to 30
    When omitted: This command is ignored.

*1   This command is not set until the next caret is received.

*2   Since the print tone range for Toshiba is from -20 to +10, the range of the parameter ##, 0 to 30, is adjusted to it.

| Value of parameter ## | | Toshiba print tone value |
|---|---|---|
| 30 | → | 10 |
| 29 | → | 9 |
| 28 | → | 8 |
| 27 | → | 7 |
| 26 | → | 6 |
| 25 | → | 5 |
| 24 | → | 4 |
| 23 | → | 3 |
| 22 | → | 2 |
| 21 | → | 1 |
| 20 | → | 0 |
| 19 | → | -1 |
| 18 | → | -2 |
| 17 | → | -3 |
| 16 | → | -4 |
| 15 | → | -5 |
| 14 | → | -6 |
| 13 | → | -7 |
| 12 | → | -8 |
| 11 | → | -9 |
| 10 | → | -10 |
| 9 | → | -11 |
| 8 | → | -12 |
| 7 | → | -13 |
| 6 | → | -14 |
| 5 | → | -15 |
| 4 | → | -16 |
| 3 | → | -17 |
| 2 | → | -18 |
| 1 | → | -19 |
| 0 | → | -20 |

*3   The value set with this command is retained even after the printer power is turned off.

*4   If the Z-MODE parameter "TONE ADJUST (MD)" is set to 'DISABLE,' this command is ignored.

## 8.119 ^SF   SERIALIZATION FIELD (WITH A STANDARD ^FD STRING)

Format: ^SFa,b

a = Mask string

O or o  : Octal numeric
D or d  : Decimal numeric
H       : Hexadecimal alphanumerals (Upper-case alphabets)
H       : Hexadecimal alphanumerals (Lower-case alphabets)
A       : Alphabet (Upper-case alphabets)
a       : Alphabet (Lower-case alphabets)
N       : Alphabet + number (Upper-case alphabets)
n       : Alphabet + number (Lower-case alphabets)
%       : Skip character
When omitted: This command is ignored.

b = Increment/decrement string

The mask character in the applicable digit is;
O or o  : 0 to 7
D or d  : 0 to 9
H       : 0 to 9, A to F
H       : 0 to 9, a to f
A       : A to Z
a       : a to z
N       : 0 to 9, A to Z
n       : 0 to 9, a to z
%       : 0
When omitted: The rightmost valid digit (except %) gets incremented one by one.

E.g.

| Mask string | Incremented string |
| --- | --- |
| AAA%ddd | 0000001 |
| NN%ooo%dd%% | 00000000100 |

*1   One label format can contain up to 32 fields for ^SF command (up to 392 with Zebra).
*2   ^SF command can have data containing up to 40 digits (up to ^FD's limit with Zebra).
*3   Only increment/decrement-supported values can be added to the serial field of a bar code.
     (Specifically, two-dimensional codes except GS1 DataBar, POSTNET, and UPC/EAN are not
     supported.)
*4   Values cannot be added to bar codes that automatically change the number of digits in the
     converter.

## 8.120  ^SL    SET MODE AND LANGUAGE (FOR REAL-TIME CLOCK)

Format: ^SLa,b

a = Update method

S  : When format is received

T  : When printing starts

When omitted: S

b = Language

Not supported yet

*1    While 'T' for the Zebra ^SL command represents the time of drawing, 'T' for Toshiba represents the time of printing.

*2    If the update method with the unit ON is changed from "S: When format is received" to "T: When printing starts," this change takes effect when the print label length is changed or when the printer is turned off/on.

## 8.121  ^SN   SERIALIZATION DATA

Format: ^SNv,n,z

v = Start value

String containing a numeric value with up to 40 digits
When omitted: 1
*1  If the number of digits exceeds 40, printing is not performed.
*2  If a numeric value is not contained, increment/decrement is not applied.

n = Increment/decrement value

-999999999 to 999999999
Default: "Numeric value to INC/DEC" in the default setting file
When omitted: "Numeric value to INC/DEC" in the default setting file
If the number of digits in the value exceeds 10, tenth and later digits are discarded.

z = Zero padding

Y  : Yes
N  : No
Default: "Zero padding Yes/No" in the default setting file
When omitted: "Zero padding Yes/No" in the default setting file
'N' is valid only when the start value is set to a value containing 12 or less digits.

*1   Increment/decrement is invalid with two-dimensional codes except GS1 DataBar, POSTNET, and UPC/EAN.
*2   ^SN in ^FN supports increment/decrement only for bar codes.
*3   If a symbol other than + and - is placed at the beginning of the increment/decrement value, the increment value is +1 regardless of the following numeric value.

## 8.122 ^SO   SET OFFSET (FOR REAL-TIME CLOCK)

Format: ^SOa,b,c,d,e,f,g

a = Clock set

2 to 3

b = Months offset

-32000 to 32000

c = Days offset

-32000 to 32000

d = Years offset

-32000 to 32000

e = Hours offset

-32000 to 32000

f = Minutes offset

-32000 to 32000

g = Seconds offset

-32000 to 32000

*1   When an offset is specified, the operation with the result out of the range from 1988/12/31 to 2100/02/28 is not guaranteed.

## 8.123  ^SQ HALT ZEBRANET ALERT

Format: ^SQa,b,c

  a = Condition type

    A : Paper out
    B : Ribbon out
    C : Printhead over-temp
    D ; Printhead under-temp (unsupported)
    E : Head open
    F : Power supply over-temp (unsupported)
    G : Ribbon-in warning (direct thermal mode) (unsupported)
    H : Rewind full (For B-SA4T-G/B-SA4T-T    unsupported)
    I : Cut error
    J : Printer paused
    K : PQ job completed
    L : Label ready (unsupported)
    M : Head element out
    P : Power on (unsupported)
    Q : Clean printhead (unsupported)
    R : Media low (unsupported)
    S : Ribbon low (unsupported)
    T ; Replace head (unsupported)
    U : Battery low (unsupported)
    V : RFID error
    W : All errors
    * : All errors
    When omitted or an unsupported parameter is set, this command is ignored.

  b = Destination

    A : Serial port (RS-232C)
    B : Parallel port (unsupported)
    C : E-mail address (unsupported)
    D : TCP/IP
    E : UDP/IP
    F : SNMP trap (unsupported)
    * : All IFs
    When omitted or an unsupported parameter is set, this command is ignored.

  c = Halt messages

    Y : Halt messages
    N : Start messages
    When omitted: Y

## 8.124  ^ST   SET DATE AND TIME (FOR REAL-TIME CLOCK)

Format: ^STa,b,c,d,e,f,g

a = Month

   1 to 12
   When omitted: Current month

b = Day

   1 to 31
   When omitted: Current day

c = Year

   1998 to 2097
   When omitted: Current year

d = Hour

   1 to 23
   When omitted: Current hour

e = Minute

   0 to 59
   When omitted: Current minute

f = Second

   0 to 59
   When omitted: Current second

g = Format

   A  : a.m.
   P  : p.m.
   M  : 24-hour military
   When omitted: M

*1   If year/month and day do not match or a value out of the range is selected, date and time setting is
     not performed.

## 8.125 ^SX   SET ZEBRANET ALERT

Format: ^SXa,b,c,d,e,f

a = Condition type

    A  : Paper out
    B  : Ribbon out
    C  : Printhead over-temp
    D  ; Printhead under-temp (unsupported)
    E  : Head open
    F  : Power supply over-temp (unsupported)
    G  : Ribbon-in warning (direct thermal mode) (unsupported)
    H  : Rewind full (For B-SA4T-G/B-SA4T-T    unsupported)
    I   : Cut error
    J   : Printer paused
    K  : PQ job completed
    L  : Label ready (unsupported)
    M  : Head element out
    P  : Power on (unsupported)
    Q  : Clean printhead (unsupported)
    R  : Media low (unsupported)
    S  : Ribbon low (unsupported)
    T  ; Replace head (unsupported)
    U  : Battery low (unsupported)
    V  : RFID error
    W  : All errors
    *  : All errors
    When omitted or an unsupported parameter is set, this command is ignored.

b = Destination

    A  : Serial port (RS-232C)
    B  : Parallel port (unsupported)
    C  : E-mail address (unsupported)
    D  : TCP/IP
    E  : UDP/IP
    F  : SNMP trap (unsupported)
    When omitted or an unsupported parameter is set, this command is ignored.

c = Enable condition set alert

    Y  : Yes
    N  : No
    When omitted: Y

d = Enable condition clear alert

    Y  : Yes
    N  : No
    When omitted: N

e = Destination setting

    E-mail address (unsupported)
    IP address
    SNMP trap (unsupported)
    IP or IPX address (unsupported)
    When omitted: Destination information is not updated.
    Only when 'TCP/TP' or 'UDP/IP' is selected for the destination, the destination information is updated as IP address information.

f = Port number

    When omitted: Port number information is not updated.
    Only when 'TCP/TP' or 'UDP/IP' is selected for the destination, the port number information is updated

*1    While the "Print job completed" message is sent when printing of the number of labels specified with ^PQ command is completed, if the head check interval is set with ^PQ, the message is sent for every label.

*2    Regarding information on errors including head disconnection error, multiple statuses cannot be obtained at one time.

## 8.126 ~TA   TEAR-OFF ADJUST POSITION

Format: ~TA###

Tear-off position adjustment command

### = Adjustment value (in dots)
    200-dpi printer: B-EX4T1-G, B-EX4T2-G, B-EX6T2-G
      -40 to 40 dots (-5.0 mm to +5.0 mm)
    300-dpi printer: B-EX4T1-T, B-EX4T2-T, B-EX6T2-T
      -60 to 60 dots (-5.0 mm to +5.0 mm)
    600-dpi printer: B-EX4T2-H
      -120 to 120 dots (-5.0 mm to +5.0 mm)
    *   This command is not set until the next '^' (caret) is received.

*     This parameter can be set in units of 0.5 mm.

## 8.127  ^TB    TEXT BLOCKS

Format: ^TBa,b,c

a = Text block rotation direction

    N  : 0°
    R  : 90°
    I   : 180°
    B  : 270°
    When omitted: Value of ^FW or ^A

b = Text block width (in dots)

    1 to label width in dots
    When omitted: 1

c = Text block height (in dots)

    1 to label height in dots
    When omitted: 1

*1    When ^FB (field block) is specified, operation may not be performed properly.
*2    The operations concerning automatic line feed and word wrap differs from those with Zebra.

## 8.128  ~WC    PRINT CONFIGURATION LABEL

Format: ~WC

*1   While Zebra prints a configuration label after data is segmented by specified label length, Toshiba prints diagnostic label without segmentation.

*2   In the case of Zebra, if "Bitmap clear: No" (^MCN) is selected, printing is performed without clearing the drawing areas.   In the case of Toshiba, the drawing area is always cleared.

*3   The sensor type, the print mode, and the tag rotation are forcibly set to 'No sensor,' 'Tear-off,' and 'Normal,' respectively, for printing labels.   When the Z-MODE is in the cutter mode, cutting is performed after self-diagnostic printing but not after maintenance counter printing.   For the print speed and ribbon presence settings, the values set before this command is received are used for printing labels.

*4   In the case of Toshiba, since diagnostic printing is performed with 'No sensor" forcibly selected, the following operation is performed after printing:

 If a sensor is selected and calibration operation is not selected:

  One-label feed and feed to the print start position are performed.

 If a sensor is selected and calibration operation is selected:

  Calibration is performed.

*5   If ~WC is placed in ^XA to ^XZ and data to be printed such as ^FD is not placed before ~WC, diagnostic printing is performed when the command is received.   If data to be printed is placed before ~WC, diagnostic printing is performed after print processing is made with ^XZ.

*6   Even if 'Reprint' is selected for the FEED key function, re-print cannot be performed by pressing down the FEED key after printing a piece of blank paper following self-diagnostic printing with this command.   However, a depression of the FEED key after printing the maintenance counter and the parameter settings causes a re-print.

*7   When performing self-diagnostic printing with this command, the following items that affect the printing operation from that on are not checked and "-" is printed:

Self-diagnosis items which cause B-EX4T and B-EX6T to print "-"

   "EXP.I/O," "EX.232C," and "RFID"

## 8.129 ^WT   WRITE (ENCODE) TAG

Format: ^WTb,r,m,w,f,v

b = Block number

    0 to n
    When omitted: 0

r = Number of retries

    0 to 10
    When omitted: 0
    * After read failure and void printing, the operation is repeated up to as many times as the value of
      this parameter.

m = Print operation

    0  : Print
    1  : Not print
    When omitted: 0

w = Write protect (unsupported)

    * This parameter is ignored.

f = Format

    0  : ASC II
    1  : HEX
    When omitted: 0

v = Error tag check

    Y  : Yes
    N  : No
    When omitted: N


*    Regarding the error tag check, if the RFID error tag detection in the Toshiba system mode is set to 'PASS,' this setting is ignored.

## 8.130 ^WV   VERIFY RFID ENCODING OPERATION

Format: ^WVe

e = Error tag check

    Y  : Yes
    N  : No
    When omitted: N

\*      Regarding the error tag check, if the RFID error tag detection in the Toshiba system mode is set to 'PASS,' this setting is ignored.

## 8.131  ^XA    START FORMAT

Format: ^XA

Format start command

## 8.132 ^XF   RECALL FORMAT

Format: ^XFd:o.x

d = Drive

R  : RAM
E  : On-board Flash ROM
B  : USB memory
A  : USB memory
When omitted: Checked in the following order: R -> E-> B -> A

o = File name

A file name consisting of 1 to 16 characters can be set.
When omitted: UNKNOWN

x = Extension

ZPL only. Even if other extension is selected, calls are made with ZPL.
When omitted: ZPL

The data of the selected graphic file is sent to each interface.

*1   For the common specifications of commands used for the devices, refer to "7.2 COMMANDS USED FOR DEVICES."

## 8.133 ^XG   RECALL GRAPHIC

Format: ^XGd:o.x,mx,my

d = Drive where graphic is stored

    R  : RAM
    E  : On-board Flash ROM
    B  : USB memory
    A  : USB memory
    When omitted: Checked in the following order: R -> E-> B -> A

o = File name

    A file name consisting of 1 to 16 characters can be set.
    When omitted: UNKNOWN

x = Extension

    GRF or PNG
    When omitted: GRF

mx = Magnification factor on the x-direction

    1 to 10
    When omitted: 1

my = Magnification factor on the y-direction

    1 to 10
    When omitted: 1

 

*1   For the common specifications of commands used for the devices, refer to "7.2 COMMANDS USED FOR DEVICES."

## 8.134 ^XZ  END FORMAT

Format: ^XZ

Format end command

*1    While saving with ^DF command, data saving is started.
*2    While reading with ^XF command, data reading is finished.
*3    When printable data exist, a print command is issued.