

# **ESC/Label Command Reference Guide**

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# 1 Commands Outline

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## 1.1 Characteristics

ESC/Label command is a command system that has the following characteristics.

- (1) It includes much of the ZPL II command and is highly compatible with your existing system.
- (2) The command is primarily in the text data format and is highly compatible with database or Web technology.
- (3) It can arrange text, barcodes, or graphics in any position on the label and perform color printing.
- (4) It is well-suited for batch printing through the serialized designation function and the print count designation function.
- (5) Due to its simple command syntax, it helps prevent printing mistakes from failing to control the printer.
- (6) Because you can save the graphic and label format in the printer, you can print labels with a small amount of transmitted data.
- (7) You can get the printer operation status or the printer operation mode whenever you like.



## 1.2 Structure

ESC/Label command consists of the major commands of the ZPL II command and Epson's original extension.

- (1) It includes the major commands for ZPL II, which is mainstream in the monochrome thermal label printer market.
- (2) Epson's original commands and parameter expansions are included to realize color label printing on an inkjet printer.

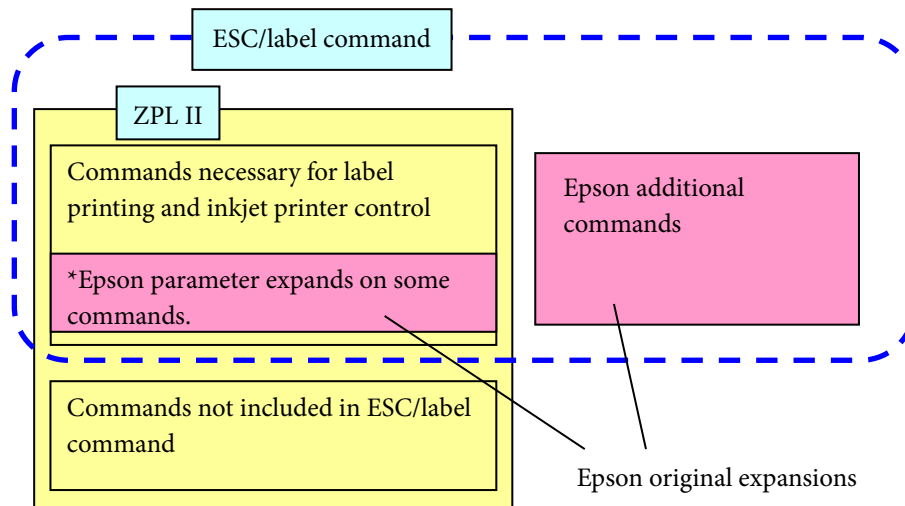


Figure 1.2.1 Structure of ESC/Label command

Table 1.2.1 indicates the parts of ZPL II commands not included in ESC/Label command.

Table 1.2.1 Excerpt of Commands Not Included in ESC/Label command

Command type	Example
Thermal head device control commands	Setting the thermal head resistance value
RFID control commands	Reading, writing the RFID
Commands related to wireless	Wireless LAN settings
Commands related to battery control	Transmitting battery status



(1) ESC/Label Command Additional Command Format

In order to differentiate the command added to ESC/Label command from the ZPL II command, use this format, which has added the following limit to the command identifier.

<Command identifier>: 3 characters (1 character ASCII code, an opening parenthesis <(>, and 1 character ASCII code) indicate the command type.

(2) Omitted Designation of Parameters

If 2 commas <,> are input following one another and the parameters are omitted, the printer will assume default parameters are being designated. Whether there are default command parameters depends on the command. If you omit parameter for a command which the parameter cannot be omitted, the command will be invalid.

(3) Parameter Rounding

Parameters must take the format of being a numerical value, a fixed character string, or an undefined length character string. Depending on the format and conditions, the parameter may be invalid or may be rounded.

Table 1.3.2 Parameter Rounding Processing

Format	Conditions	Processing
Numerical value	Value that exceeds the upper limit is designated	The printer assumes the upper limit was designated.
	Value less than the lower limit is designated	The printer assumes the lower limit was designated.
Fixed character string	Undefined characters are designated	Command invalid
Undefined length character string	Character string that exceeds the maximum character string length is designated	The printer assumes the character string up until the maximum character string length was designated.

### 1.3.3 Command Syntax

Format commands have command syntax rules. Control commands do not have command syntax and are effective with just a single command.

Table 1.3.3 Command Syntax Rules

Definition	Syntax rule
Label format	Command group that begins with “^XA”(Begin label format) and ends with “^XZ”(End label format).
Field	Command group that begins with “^FO”(Field position setting) and ends with “^FS”(Field end).

Format commands not included between “^XA”(Begin label format) and “^XZ”(End label format) are invalid.

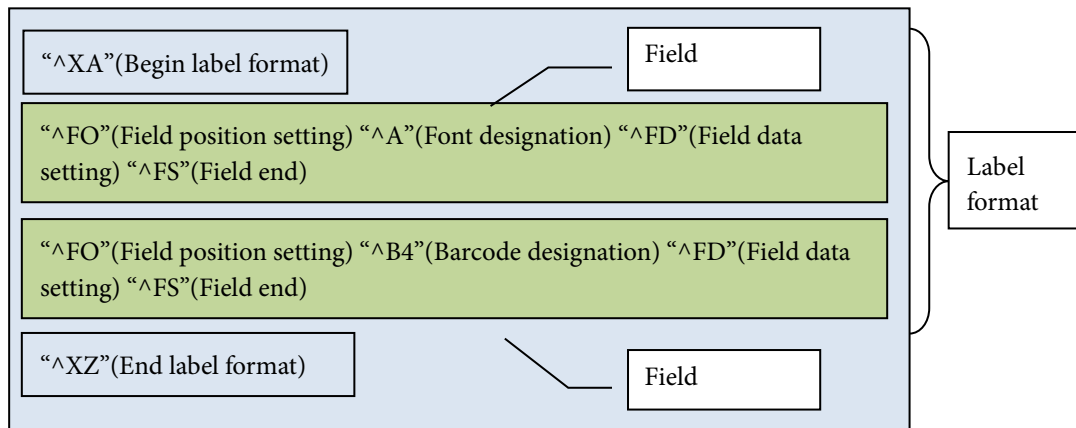


Figure 1.3.1 Format and Field

### 1.3.4 About Saving the Graphics and Label Formats in the Printer

With ESC/Label command, you can save graphics and label formats in the printer. The printer has a file system. Data saved in the printer is handled as files and is managed in the following way.

- The file system does not have a hierarchy.
- The printer has a non-volatile saving device, such as Flash ROM, and a volatile saving device, such as RAM, and different drive letters are allocated for each device.
- Files are designated as  
“<Drive letter> colon <:> <File name> dot <.> <Extension>“.

## 1.4 Example of Command Use

### 1.4.1 Basic Label Printing

Perform label printing using ESC/Label command in accordance with the syntax rules shown in Section 1.3.3.

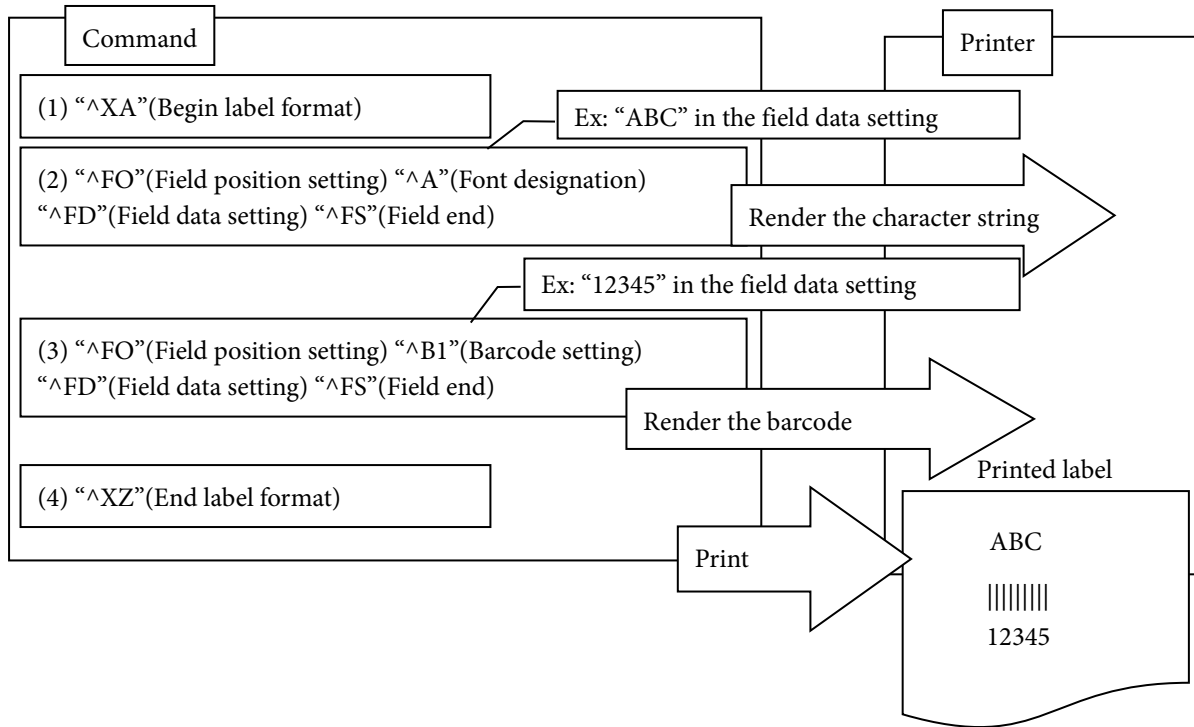


Figure 1.4.1 Example of a Basic Label Printing Command

The printer operates as follows.

In (2), the character string "ABC" is rendered in the rendering area.

In (3), the character string "12345" is rendered in the rendering area as a barcode.

In (4), the contents of the rendering area are printed.

## 1.4.2 Color Label Printing

With ESC/Label command, add a command to set the field color to realize color rendering. When printing a color label, designate the rendering color with “^F(C)”(Field color setting).

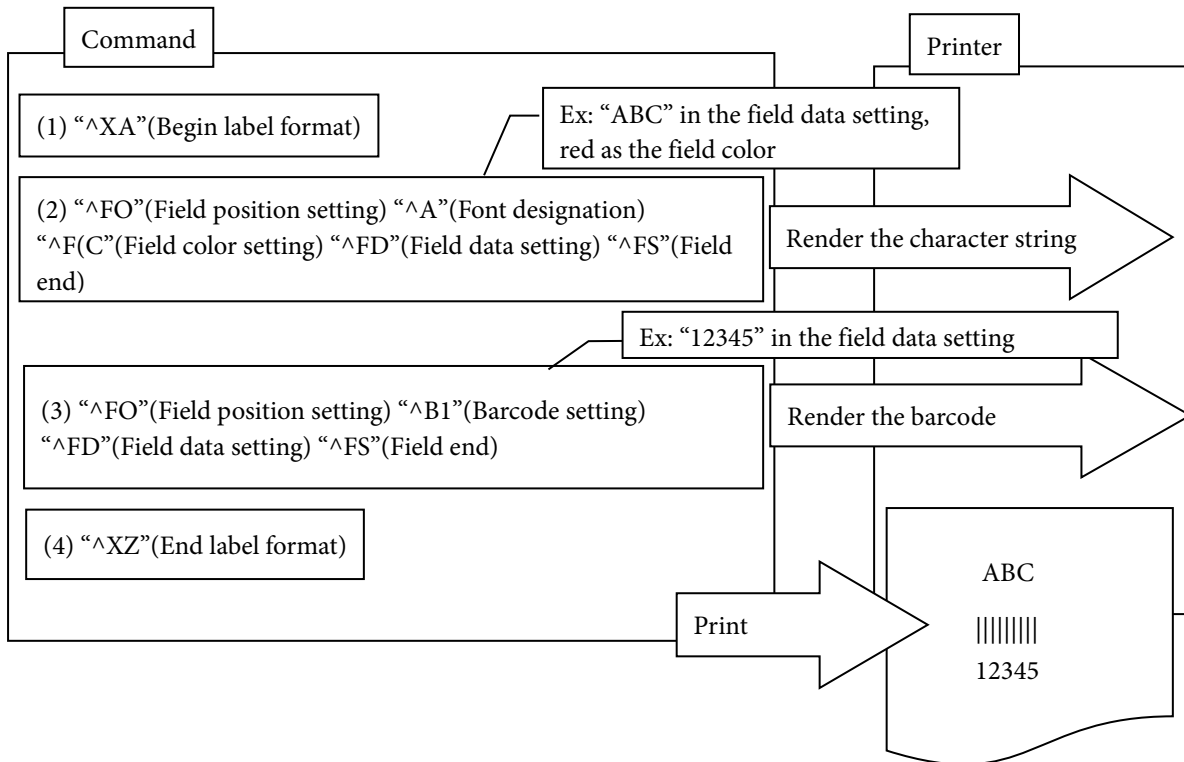


Figure 1.4.2 Example of a Command to Print a Color Label

The printer operates as follows.

In (2), the character string “ABC” is rendered in red in the rendering area.

In (3), the character string “12345” is rendered in the rendering area as a barcode.

In (4), the contents of the rendering area are printed.

### 1.4.3 Serialized Printing

If performing serialized printing, designate the field data designation section in sequence, and designate the number of copies to print.

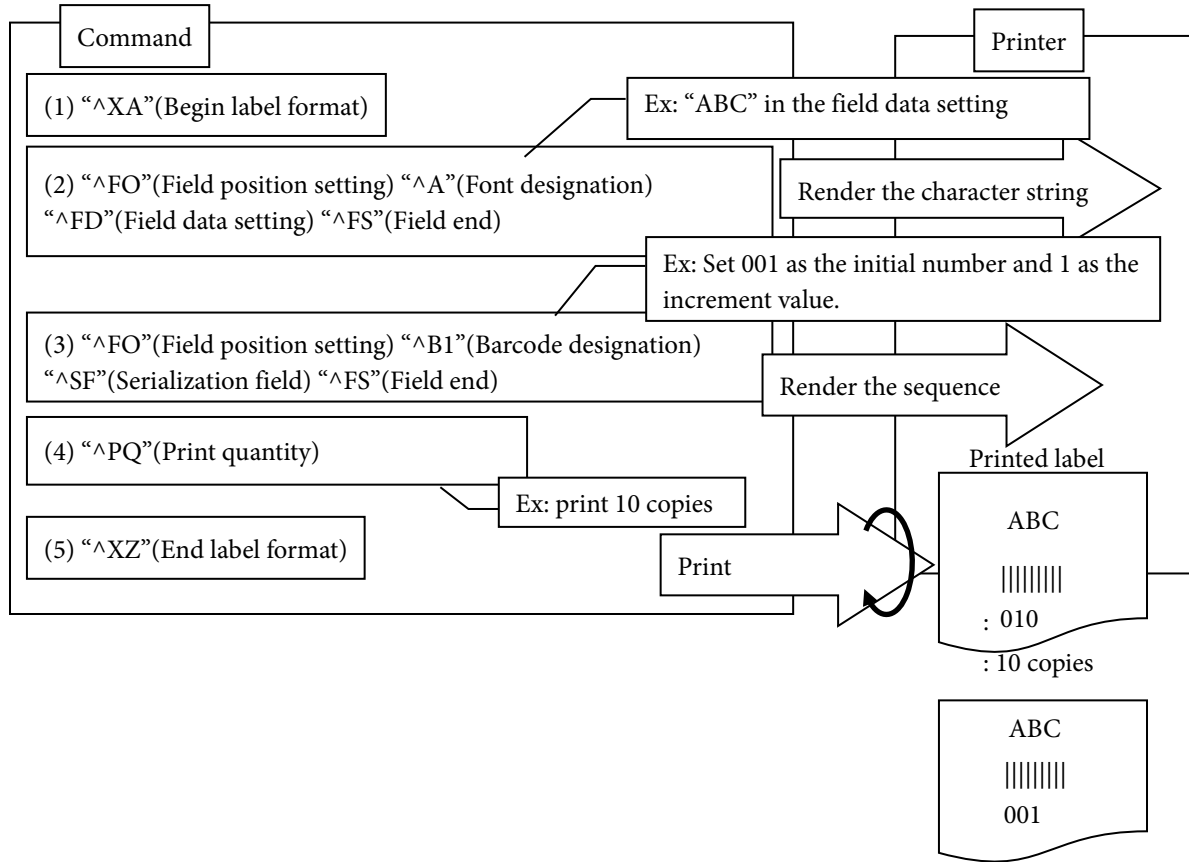


Figure 1.4.3 Example of Command for Serialized Printing

The printer operates as follows.

In (2), the fixed character string “ABC” is rendered in the rendering area.

In (5), the image is rendered in accordance with the serial setting from (3) and printed the number of times in (4).

When the second label is being printed, the following processing is done in (3).

- The character string “001” is rendered in the rendering area as a barcode.
- The sequence adds 1, and renders the character string “002” in the rendering area as a barcode.
- The content of the rendering area is printed.

This is repeated until the 10th copy, and 001, 002, ... 010 is printed on the sequence of 10 copies.

#### 1.4.4 Saving a File for a Label Format

Use “^DF”(Download label format) to save a label format. If designating a different value for each label, designate the “^FN”(Field number) in the field.

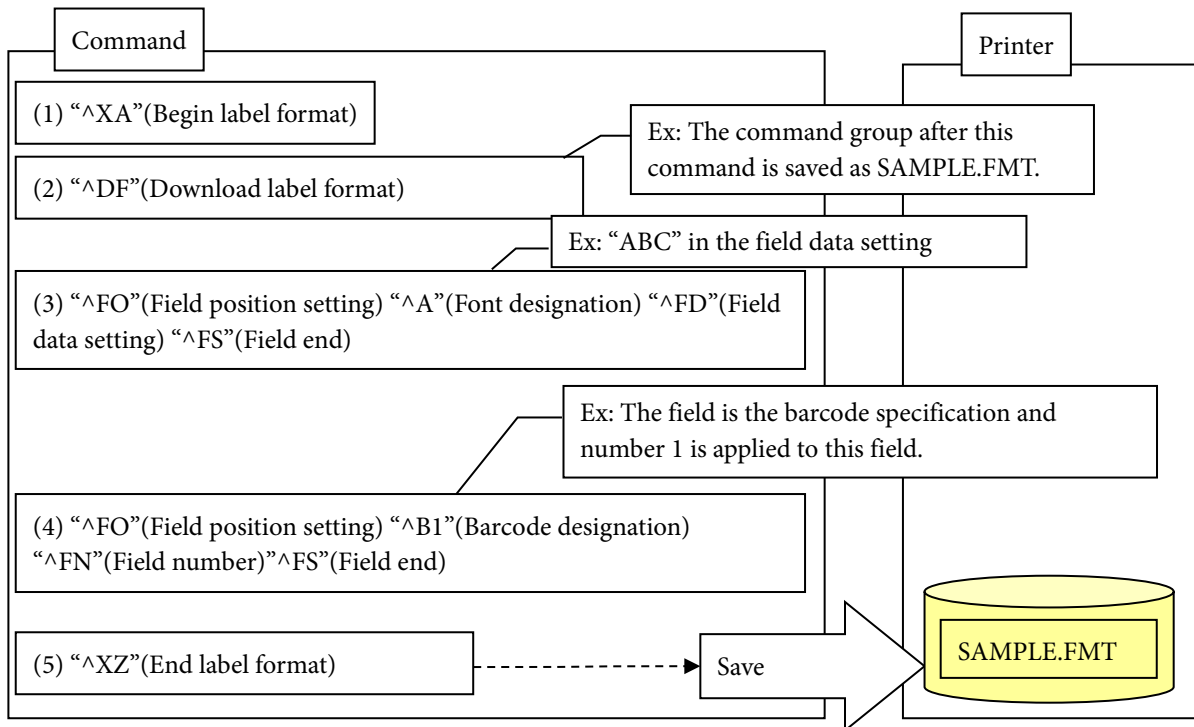


Figure1.4.4 Example of a Command to Save a Label Format File

The printer operates as follows.

In (2), the host orders the printer to save the label format with the designated file name.

In (5), the command group written between “^XA”(Begin label format) and “^XZ”(End label format) is saved in the memory area of the printer as “SAMPLE.FMT”.



### 1.4.5 Printing Using the Label Format File

If printing using the saved label format file, first call the command group in the label format by using <Call the label format file>. Next, set the field data that will be the difference and perform printing.

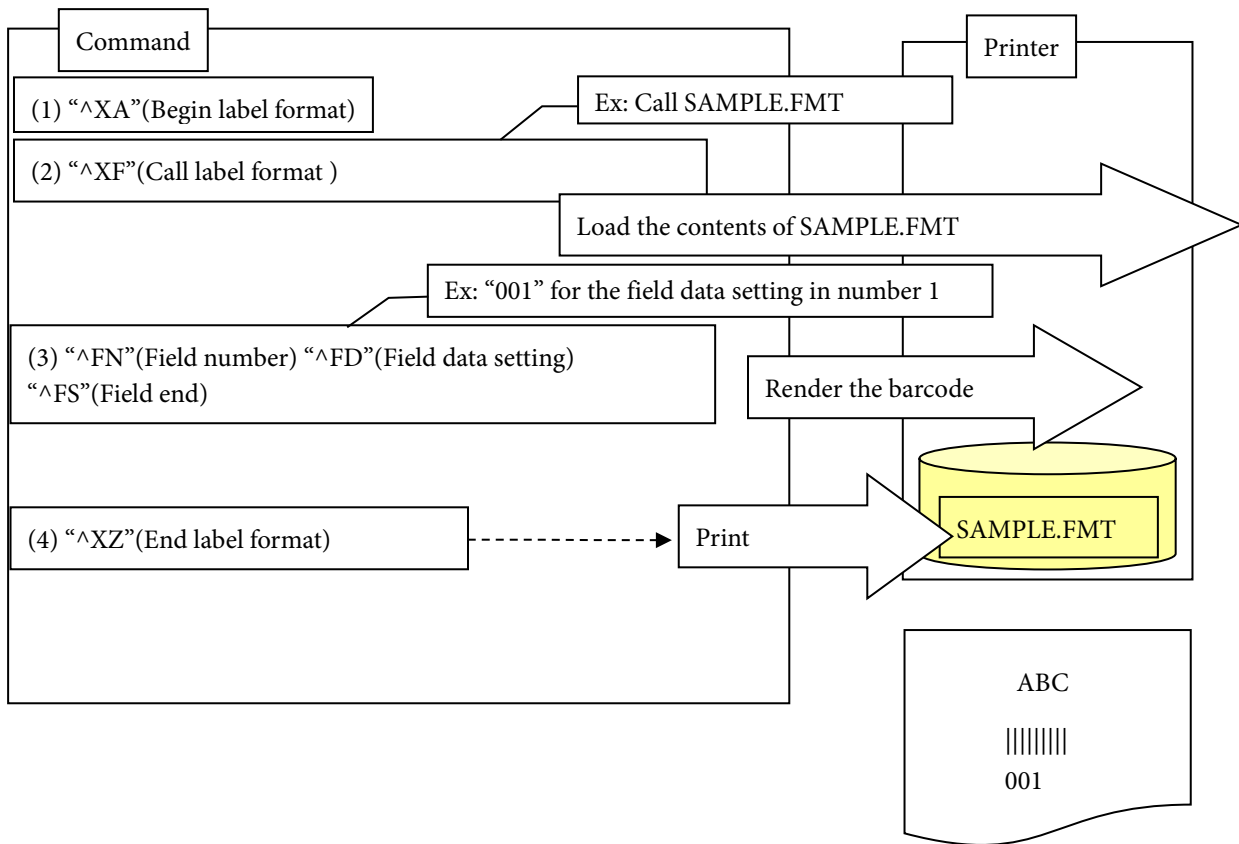


Figure 1.4.5 Example of Print Command Using the Label Format File

The printer operates as follows.

SAMPLE.FMT is called by the '^XF'(Call the command file) in (2).

- "ABC" is rendered.
- The barcode is designated in a field and the field number 1 is allocated.

The field for number 1 in (3) is barcode designation, so it is converted into a barcode and rendered.

In (4), the contents of the rendering area are printed.

#### 1.4.6 Getting Status

For control commands, there are no syntax rules like for format commands. The printer receives a request for each control command.

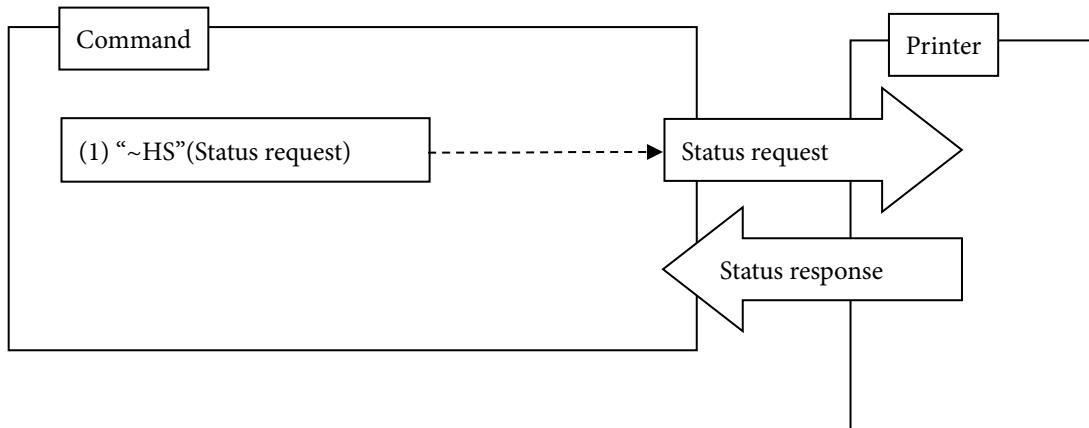


Figure 1.4.6 Example of a Command to Request the Status

The printer operates as follows.

In (1), the printer receives the “~HS”(Status request), and returns the status to the host.

## 2 Primary Functions

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The primary functions of the ESC/Label command added or modified in comparison with ZPL II command are shown below.

Table 2.1 Primary Functions of the ESC/Label Command

Item	Details
2.1 Fonts	Available fonts, and their appearance
2.2 Media Settings	How to set the type and form of media used for printing
2.3 Errors	Types of error, and printer operation during error status
2.4 Print Area	How to set printer's print area for a sheet of paper
2.5 Getting and Setting Printer Information	Printer information, and how to get/set it
2.6 Designating Color	How to specify colors for text and graphics
2.7 Field Color Reversal	How to specify reversed colors for fields
2.8 Printing Graphics	How to print color and monochrome graphics

### 2.1 Fonts

A font is a set of attributes for text, including image and size.

To print text with a certain font, specify the font and then use the field to specify a character code. Only one font can be specified per field.

Figure 2.1.1 shows examples of printed text with fonts specified in multiple fields.

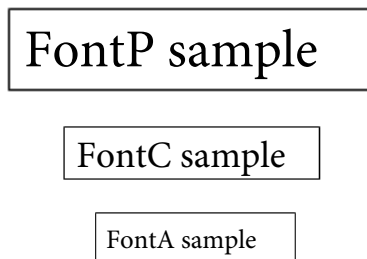


Figure 2.1.1 Examples of Printed Text Images by Specifying Fonts

Multiple fonts are included in the printer when shipped from the factory. The user can also download fonts to the printer at a later time.



Font types include fixed-size fonts, for which the character width and height can be specified as fixed values or integer multiples, and scalable fonts, for which the character width and height can be specified separately in units of [dots].

The fonts included in the printer are both fixed-size fonts and scalable fonts. However, only scalable fonts can be downloaded.

## 2.1.1 Font Type

Fonts that can be specified by the user are shown in Table 2.1.1.

Table 2.1.1 Font List

Font identifier	Font	Size (H × W dot)	Scalable	Character image
Font "A"	Sans serif	9 × 5	No	abcdefghijklmnopqrstuvwxyz0123456789
Font "B"	Sans serif (All Caps)	11 × 7	No	ABCDEFGHIJKLMN0PQRSTUVWXYZ0123456789
Font "C"("D")*1	Sans serif	18 × 10	No	abcdefghijklmnopqrstuvwxyz0123456789
Font "E"	OCR-B	42 × 20	No	abcdefghijklmnopqrstuvwxyz01234567
Font "F"	Sans serif	26 × 13	No	abcdefghijklmnopqrstuvwxyz0123456789
Font "G"	Sans serif	60 × 40	No	<b>abcdefghijklmnopqrstuvwxyz012345</b>
Font "H"	OCR-A	34 × 19	No	abcdefghijklmnopqrstuvwxyz0123456789
Font "GS"	SYMBOL	24 × 24	No	® © ™  
Font "P"	Sans serif	20 × 18	No	abcdefghijklmnopqrstuvwxyz0123456789
Font "Q"	Sans serif	28 × 24	No	abcdefghijklmnopqrstuvwxyz0123456789
Font "R"	Sans serif	35 × 31	No	abcdefghijklmnopqrstuvwxyz0123456789
Font "S"	Sans serif	40 × 35	No	abcdefghijklmnopqrstuvwxyz0123456789
Font "T"	Sans serif	48 × 42	No	abcdefghijklmnopqrstuvwxyz0123456789
Font "U"	Sans serif	59 × 53	No	abcdefghijklmnopqrstuvwxyz JKLMNOPQRS012345678
Font "V"	Sans serif	80 × 71	No	<b>abcdefghijklmnopqrstuvwxyzNOPQRSTU01234</b>
Font "0"*2	Sans serif	15 × 12 (Default)	Yes	abcdefghijklmnopqrstuvwxyz0123456789

\*1 Font "C" and "D" are the same font.

\*2 Zero

## 2.1.2 Special Symbols

Font GS is a special symbol font. See Table 2.1.2 Special Symbols for details about character code and character image.

Table 2.1.2 Special Symbols

Character code	Character image
41h	®
42h	©
43h	™
44h	UL
45h	SP

## 2.2 Media Settings

Media settings instruct the printer about the type and form of media to be used for printing. The printer performs printing control and media control based on these settings. The media setting items are shown in Table 2.2.1.

Table 2.2.1 Media Setting Items

Setting item type	Description
Media coating type	Sets differences between media material, such as an ink receiving layer.
Media form	Sets differences between media forms, such as gap and adhesive.
Label edge detection	Sets differences between methods of detecting leading edge position of label, such as black mark and gap.
Media source	Sets the method for supplying paper to the printer
Media shape	Sets differences between media shape, such as roll shape and folded shape.

### 2.2.1 Media Coating Type

Media coating type sets the differences between media material, such as ink receiving layer.

Table 2.2.2 Media Coating Type

Name	Description	Command format
Plain Paper	Paper without ink receiving layer	^S(CLM,T,P*
Matte Paper	Paper with ink receiving layer	^S(CLM,T,M*
Synthetic	Synthetic with ink receiving layer	^S(CLM,T,S*
Glossy Paper	Paper with ink receiving layer and luster processing	^S(CLM,T,G*
Glossy Film	Glossy synthetic with an ink receiving layer on a film	^S(CLM,T,GS*
High Glossy Paper	Glossy paper that is glossier than regular glossy paper	^S(CLM,T,PG*
Texture Paper	Paper where the ink receiving layer is textured	^S(CLM,T,T*
Wristband	Specialized media for wristbands	^S(CLM,T,WB*

“\*” in the command format indicates a figure.

### 2.2.2 Media Form

Media form sets the differences between media forms, such as gap and adhesive.

Table 2.2.3 Media Forms

Name	Description	Command format
Continuous paper	Paper without adhesive	^S(CLM,F,CP
Die-cut label	Labels with adhesive and cut to a specific size, with gaps between labels	^S(CLM,F,DL
Continuous label	Continuous label with adhesive, and not cut to a specific size like die-cut labels	^S(CLM,F,CL
Tag	Specialized media for tags with holes, long holes, or cut-outs made from a sheet of paper without adhesive	^S(CLM,F,TG
Wristband	Specialized media for wristbands made from a sheet of paper without adhesive	^S(CLM,F,WB

### 2.2.3 Label Edge Detection

Label edge detection sets the detection methods, such as black mark and gap.

Table 2.2.4 Label Edge Detection

Name	Description	Command format
Black mark detection	The black mark attached at the leading edge of the label is detected.	^S(CLM,D,M
Gap detection	The gap between labels is detected.	^S(CLM,D,W
No detection	Printer does not detect the leading edge of the label.	^S(CLM,D,N
Tag hole detection	The holes or cut-outs in the paper are detected.	^S(CLM,D,H

### 2.2.4 Media Source

The media source sets the method for supplying paper to the printer.

Table 2.2.5 Media Source

Name	Description	Command format
Internal roll media	The printer receives paper from the internal roll paper supply mechanism.	^S(CLM,P,IR
External feed	The printer receives paper from an external paper supply.	^S(CLM,P,ER

### 2.2.5 Media Shape

The media shape sets differences between media shape, such as roll shape and folded shape.

Table 2.2.6 Media Source

Name	Description	Command format
Roll paper	Paper formed to roll shape.	^S(CLM,S,RP
Fanfold paper	Paper folded	^S(CLM,S,FP

## 2.3 Errors

Errors indicate that something has occurred to prevent the printer from printing or executing other primary functions. Errors are classified as Table 2.3.1 according to their cause and how they are resolved.

Table 2.3.1 Types of Error

Name	Description	Example causes
Recoverable error	An error condition that can be reset by the user. The printer returns to normal status when the user removes the cause of the error.	Open cover, paper out, paper jam,
Unrecoverable error	An error condition that cannot be reset by the user because the user cannot remove the cause of the error.	Detector failure or motor failure caused by aging equipment.

Error status occurs when there is some cause of error in the printer. When the printer recognizes that all causes of the error have been removed, it returns to idling status.

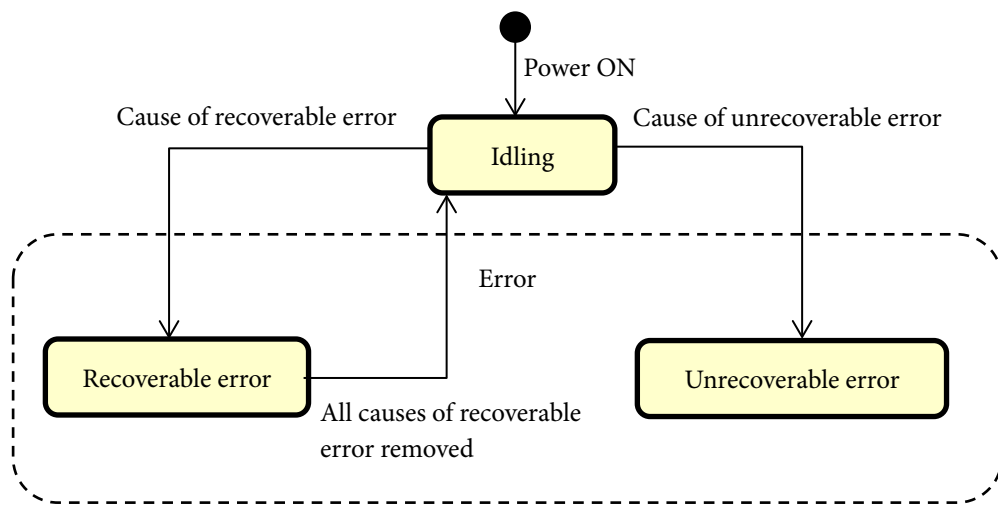


Figure 2.3.1 Error Status Transition Diagram

When the printer is in error status, the printer behaves differently than the normal idling status as described below.

- Commands for printer mechanisms, such as print requests, cannot be executed.
- Indicators (LEDs/LCDs) indicate errors.
- “~H(SMA,S)” (send printer operation status): ER (error status) is returned.
- “~H(SEA,E)” (send error status): the cause of the error is returned.



## 2.4 Print Area

Print area is the area of a full sheet of paper where the printer will print. Print area is a logical rectangular area in the printer, corresponding to one logical label on a sheet of paper. The top left corner of the print area is the initial home position, which is used as the starting point for printing text and graphics.

- In the printer specifications, the printing limit area is defined as the maximum printable area.
- Within the maximum printable area, the area minus the mount (gap) is defined as the printable area.
- Within the printable area, the area minus margins is defined as the print area.

Examples of maximum printable area, printable area, and print area are shown in Figure 2.4.1.

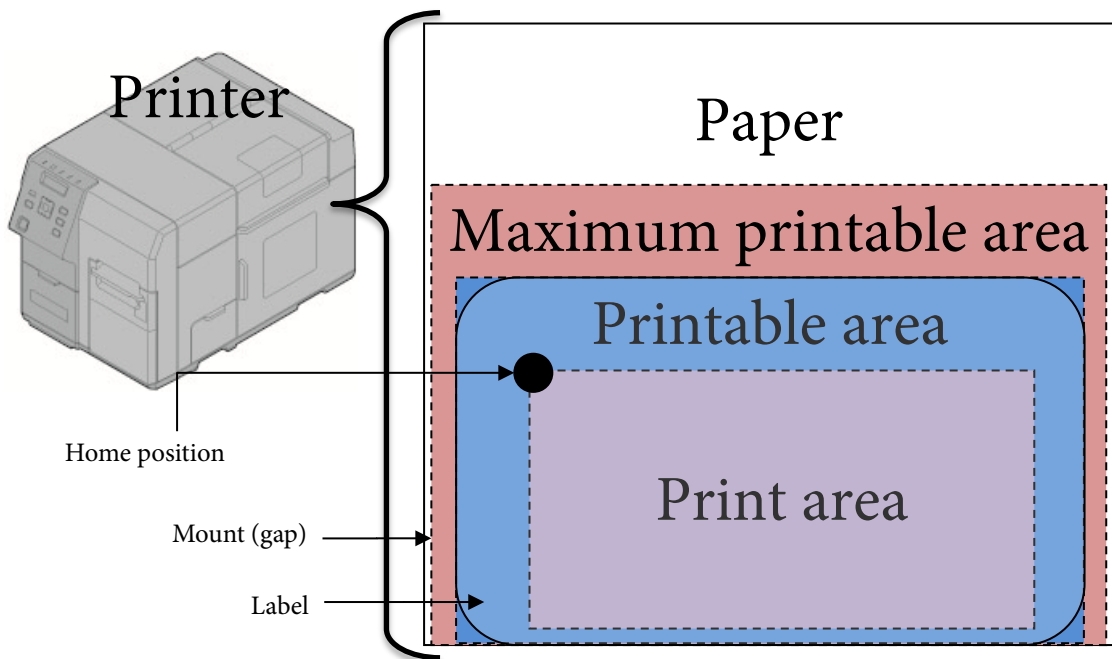


Figure 2.4.1 Examples of Maximum Printable Area, Printable Area, and Print Area

## 2.4.1 Leading Edge and Direction Definitions

The leading edge, top, bottom, left, and right directions, and X and Y directions of the paper are defined as described below.

- The edge in the feed direction of the paper is defined as the leading edge.
- The direction of the leading edge of the paper is defined as the bottom direction, and its opposite direction is defined as the top direction.
- When looking at the print surface of the paper, the left side is defined as the left direction, and the opposite side is defined as the right direction.
- The left-right direction is defined as the X axis, with the right direction defined as the positive X direction.
- The up-down direction is defined as the Y axis, with the down direction defined as the positive Y direction.

The leading edge, top, bottom, left, and right directions, and the X and Y directions of the paper are shown in Figure 2.4.2.

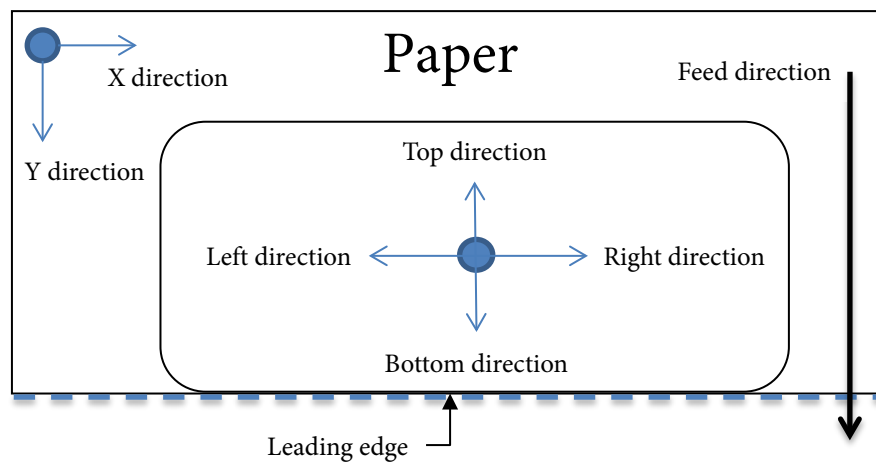


Figure 2.4.2 Leading Edge and Directions

## 2.4.2 Base Position Definitions

When the logical area for a sheet of paper in the printer is arranged on a physical sheet of paper, the 1st dot position on the left edge of the paper and the leading edge position of the label on the bottom edge of the paper are used as references. The 1st dot position is the left edge base position for the maximum printable area. One of the following methods is used to detect the leading edge position of the label.

Table 2.4.1 Methods of Detecting the Leading Edge Position of Labels

Method of detecting leading edge position of label	Description
Black mark detection	The position where a black mark is detected is the leading edge position of the label.
Gap detection	The position where the leading edge of the label is detected is the leading edge position of the label.

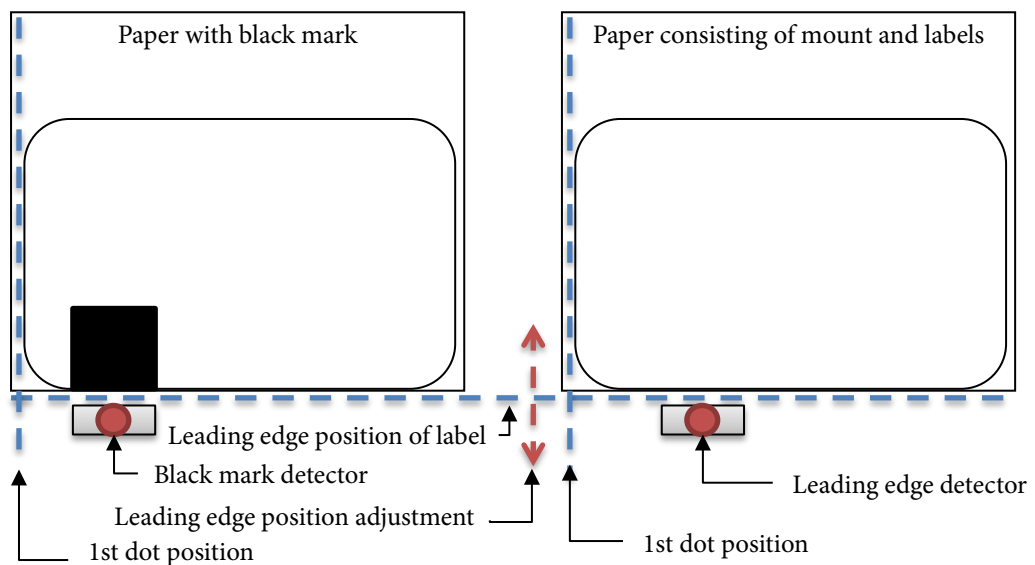


Figure 2.4.3 Methods of Detecting the Leading Edge Position of Labels

Some models allow for tag paper to be used.

The leading edge position of a label can be corrected by making changes to the leading edge position adjustment, to account for detection deviation in the detector (caused by deterioration due to aging).

Table 2.4.2 Setting the Leading Edge Position Adjustment for Labels

Setting item	Setting command format
Leading edge position adjustment	$\wedge S(CLE,T,c^1$

<sup>1</sup> The unit of the setting value can be selected from dot/mm/inch by  $\wedge S(CMP,U$  or  $\wedge MU$  command.

### 2.4.3 Maximum Printable Area

The maximum printable area is defined as shown below, using the 1st dot position and leading edge position of the label as references.

- The width of the maximum printable area is the maximum media width of the printer.
- The length of the maximum printable area is the maximum paper length of the printer.
- The left bottom edge of the maximum printable area is the point of intersection between the 1st dot position and the leading edge position of the label.

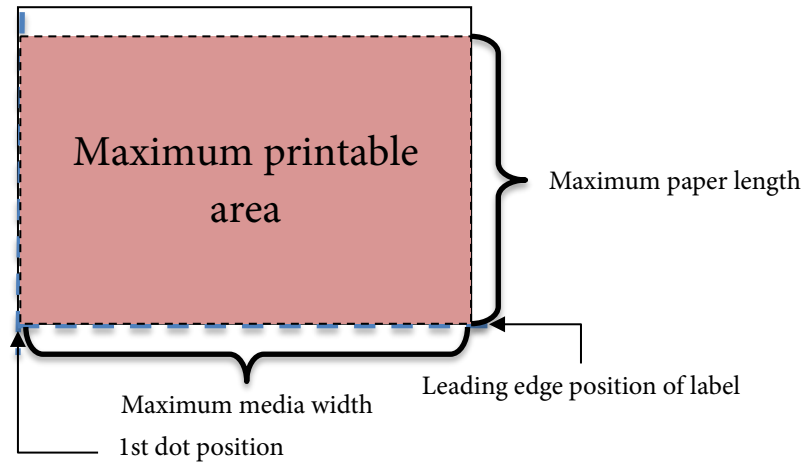


Figure 2.4.4 Maximum Printable Area

#### 2.4.4 Printable Area and Mount Settings

Within the maximum printable area, the area minus the mount area (gap) is defined as the printable area. The size of the label area and mount area are set according to the actual paper printed on by the printer.

Table 2.4.3 Mount Settings

Direction	Setting items	Setting command format
X direction	Left gap	$\wedge S(\text{CLS}, G, c^1)$
	Label width	$\wedge S(\text{CLS}, P, c^1)$
Y direction	Label length	$\wedge S(\text{CLS}, L, c^1)$

<sup>1</sup>The unit of the setting value can be selected from dot/mm/inch by  $\wedge S(\text{CMP}, U)$  or  $\wedge \text{MU}$  command.

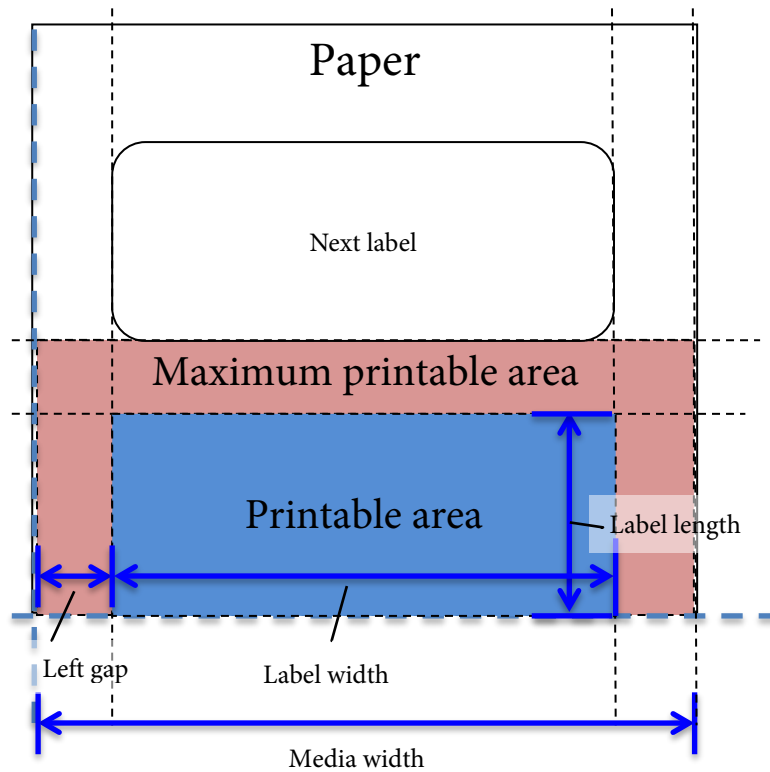


Figure 2.4.5 Printable Area and Gap Settings

## 2.4.5 Print Area and Margin Settings

Within the printable area, the area minus margins is defined as the print area. The size of margins is set in the printer according to printer and paper specifications.

If all margins are set to 0, the printable area and print area will be the same.

Table 2.4.4 Margin Settings

Direction	Setting items	Setting command format
X direction	Left margin	$\wedge S(CLW,L,c)^1$
	Right margin	$\wedge S(CLW,R,c)^1$
Y direction	Top margin	$\wedge S(CLW,T,c)^1$
	Bottom margin	$\wedge S(CLW,B,c)^1$

<sup>1</sup>The unit of the setting value can be selected from dot/mm/inch by  $\wedge S(CMP,U)$  or  $\wedge MU$  command.

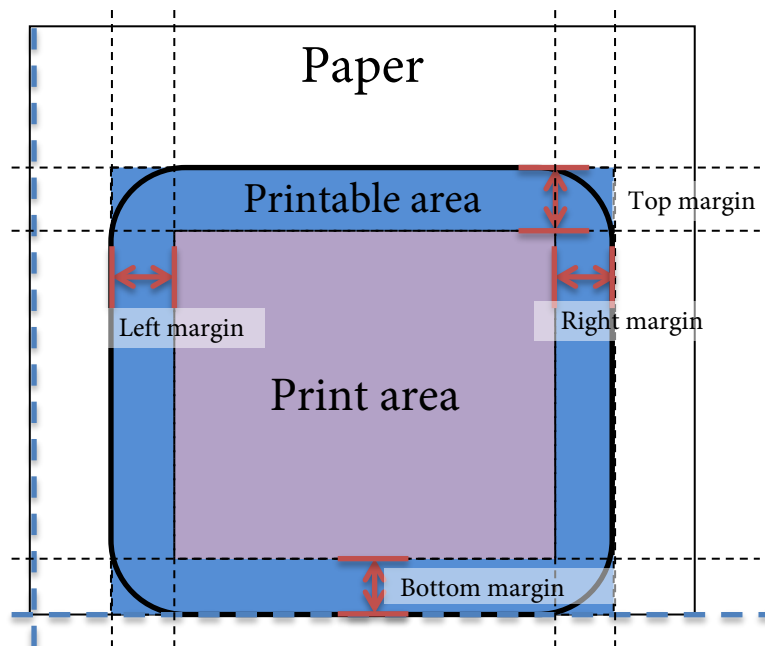


Figure 2.4.6 Printable Area and Mount Settings

## 2.4.6 Print Requests Outside the Print Area

The user prints text and graphics within the print area set in the printer, with the home position as the starting point. If you attempt to print text or graphics outside the print area, the portion that falls outside the print area will not be printed.

For example, if a portion of the text string “CDE” falls outside of the print area, as shown in Figure 2.4.7, only the portion that falls within the print area will actually be printed on the paper.

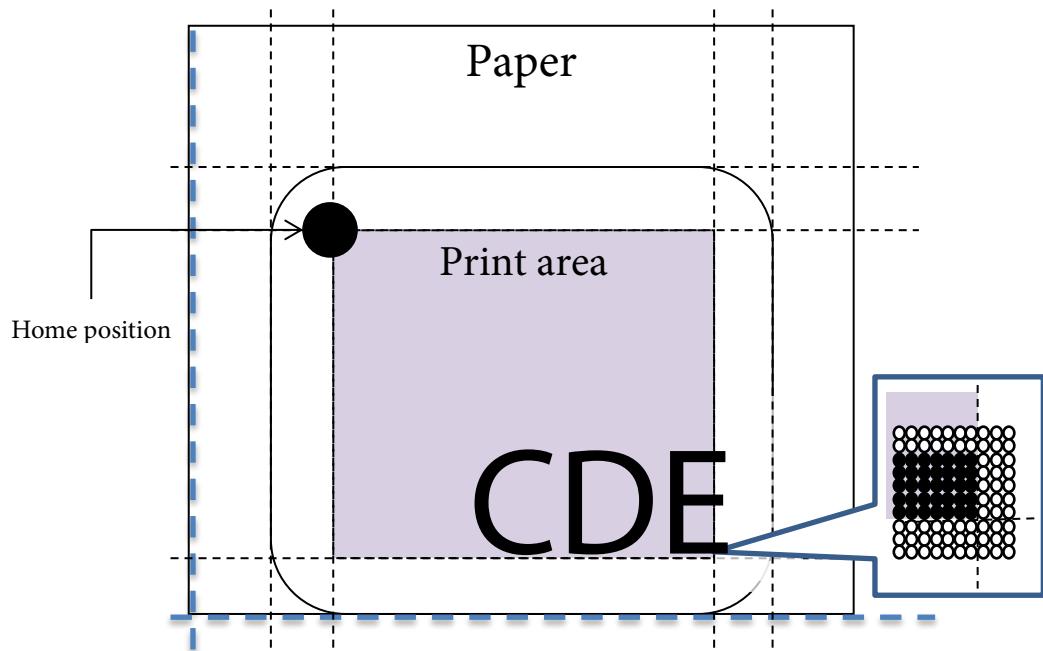


Figure 2.4.7 Example of Printing Outside the Print Area

## 2.4.7 Print Area Settings Using ZPL II Commands

ZPL II commands can be used to change some print area settings. These ZPL II commands and the corresponding print area settings are shown in Table 2.4.5.

Table 2.4.5 ZPL II Commands for Setting the Print Area

ZPL II command	Function	Print area setting
^LT	Sets the vertical printing position adjustment.	Adjustment of leading edge position of label
^PW	Sets the label width	Label width + left gap (mount)

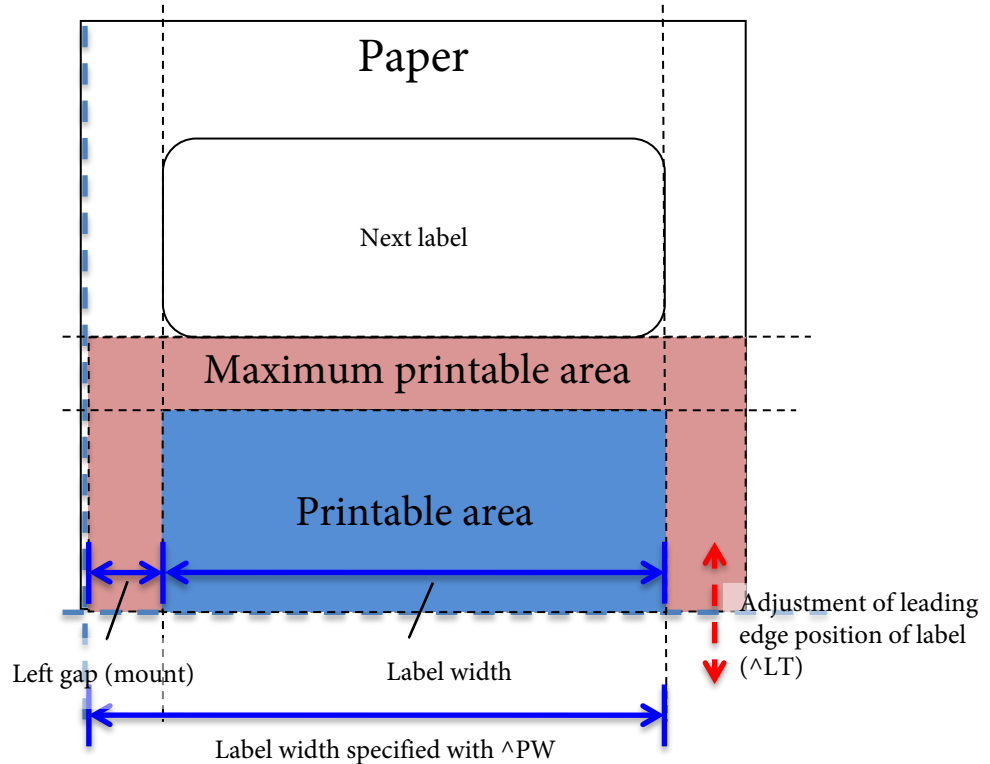


Figure 2.4.8 ZPL II Commands for Setting the Print Area

The ^PW command specifies the sum of the left gap (mount) and label width. When the label width is specified with ^PW, the left gap is fixed and cannot be changed, and the value specified by ^PW minus the current left gap is set as the label width.



## 2.5 Getting and Setting Printer Information

The printer maintains 3 types of information with different properties.

Table 2.5.1 Information Types Maintained by the Printer

Information type name	Description	Example
Printer operation mode	Information that determines the printer operation	Resolution Label width
Printer operation status	Information that indicates the printer status / condition at that time	Cover is open Replace ink cartridge
Printer unique information	Information that indicates the printer unit / characteristics	Printer name Serial number

Section 2.5.1 describes the method for setting the printer information, and section 2.5.2 describes the method for getting the printer information.

### 2.5.1 Method for Setting Printer Information

The printer operation mode is set using commands. Commands that set information are all defined as “printer information setting commands”. Printer information setting commands share properties and formats with command codes and parameters.

- Setting commands operate as format commands.
- The first parameter of the setting command indicates the <Function identifier> in 2 alphanumeric characters.
- The second parameter of the setting command indicates <Object identifier> in 1 alphanumeric character.
- The third parameter of the setting command indicates <Setting value> in alphanumeric characters.

^XA	
^S(CLR, R, 600	Sets the rendering resolution at 600 [dpi].
^S(CLR, P, 600	Sets the printing resolution at 600 [dpi].
^S(CLS, P, 2400	Sets the label width at 4 inches.
^XZ	

^S(C                      LS,                      P,                      2400  
 Command code    <Function identifier>    <Object identifier>    <Setting value>

Figure 2.5.1 Sample Code of a Printer Information Setting Command

^S(C<Function identifier>,<Object identifier>,<Setting value> Setting the printer operation mode

<Function identifier> : Function type you want to set. Specified in 2 alphanumeric characters.

<Object identifier> : Object you want to set. Specified in 1 alphanumeric character.

<Setting value> : Specify the setting value with 1 or more alphanumeric character(s).  
 Depending on information type, it will take the format of a numeral, a fixed character string, or an undefined length character string.

Table 2.5.2 indicates sample of command which has the setting value format of a numeral or a fixed character string.

Table 2.5.2 Sample of printer information setting command

Object	Format	Setting value format	Sample setting values
Print resolution	^S(CLR,P,v	Fixed character string	300: Resolution 300 [dpi]
Label width	^S(CLS,P,v	Numeral value	2400

## 2.5.2 Method for Getting Printer Information

The printer operation mode, the printer operation status, and the printer unique information are each received from the printer using a command. Commands that request information are generally defined as “printer information request commands”. Printer information request commands share properties and formats with command codes and parameters.

- Commands that request information operate as control command.
- The first parameter of the setting command indicates the <Function identifier> in 2 alphanumeric characters.
- The second parameter of the setting command indicates <Object identifier> in 1 alphanumeric character.

~H(CLR, P	Gets the printing resolution.
~H(SMA, S	Gets the printer operation status.
~H(IMP, S	Gets the serial number.

~H(I                      MP,                      S  
Command code   <Function identifier>,   <Object identifier>

Figure 2.5.2 Sample Code of a Printer Information request Command

~H(C<Function identifier>,<Object identifier>      Gets the printer operation mode  
 ~H(S<Function identifier>,<Object identifier>      Gets the printer operation status  
 ~H(I<Function identifier>,<Object identifier>      Gets the printer unique information  
 <Function identifier>    : Function type you want to get. Specified in 2 alphanumeric character.  
 <Object identifier>      : Object you want to get. Specified in 1 alphanumeric character.

The printer returns the response data based on the printer information request command. The response data is equal to the setting command that corresponds to the request command, and will take the command code <Function identifier>,<Object identifier> format.

Table 2.5.3 Response Data for the Printer Information Request Commands

Information type	Printer information Request Command	Response data
Printer operation mode	~H(C<Function identifier>,<Object identifier>	<STX>^S(C<Function identifier>,<Object identifier>,value<ETX><CR><LF>
Printer operation status	~H(S<Function identifier>,<Object identifier>	<STX>^S(S<Function identifier>,<Object identifier>,value<ETX><CR><LF>
Printer unique information	~H(I<Function identifier>,<Object identifier>	<STX>^S(I<Function identifier>,<Object identifier>,value<ETX><CR><LF>

An example of the data sent and received when request the resolution is shown below.

~H(CLR,P	Request to send current printing resolution.
Example of response data from the printer:	
-><STX>^S(CLR,P,600<ETX><CR><LF>	
	The printing resolution is 600 [dpi].

An example of sending and receiving data when request firmware version is shown below.

~H(IMF,V	Request to send the firmware version.
Example of response data from the printer:	
-><STX>^S(IMF,V,AAA01234<ETX><CR><LF>	
	The firmware version is "AAA01234".

An example of sending and receiving data when request the printer error status is shown below.

~H(SEA,E	Request to send current error status.
Example of response data from the printer:	
-><STX>^S(SEA,E,NE<ETX><CR><LF>	
	Currently no error.

## 2.6 Designating Color

With ESC/Label command, you can designate the color of text or diagram and print labels. Color can be designated for the following applicable renderings.

- Text
- Diagram (Rectangles, circles, ellipses, diagonal lines)
- 1-dimensional barcodes, 2-dimensional codes
- Monochrome bit-mapped graphics

As shown in Figure 2.6.1, rendered images have a foreground part and a background part, and you can designate the color and the opacity for these parts. If you do not designate it, the foreground will be treated as black at 100% opacity, and the background as transparent (0% opacity).

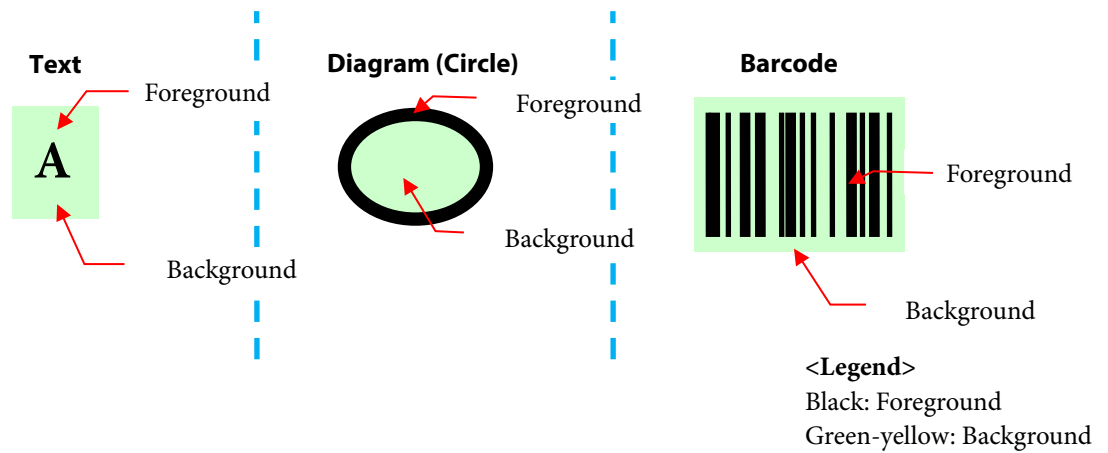


Figure 2.6.1 Foreground and Background in Text/Diagram/Barcodes

Here is the color combination of print result (it isn't the color of drawing barcode) to ensure decoding barcodes and 2-dimensional codes.

Foreground of symbol: opacity 100% black (black)

Background of symbol and quiet zone: opacity 100% white (white) or opacity 0% (Transparent)

Label media: white

Please refer to the product specification of the printer for a detailed guarantee condition.

The following table shows the application of background colors for 1-dimensional barcodes and 2-dimensional codes.

Table 2.6.1 Background color application for 1-dimensional barcodes and 2-dimensional codes

Series	Background color application
CW-C8000 series and later models CW-C4000 series firmware from FY2024, CW-C6000/CW-C6500 series firmware from FY2024	The specified color is applied.
CW-C4000 series firmware up to FY2023, CW-C6000/CW-C6500 series firmware up to FY2023, TM-C7500 series	The specified color is ignored and it is treated as transparent.

Color designation uses “^F(C”(field color designation) command. The “^F(C” command is a format command and can be used in the field, like mentioned above in section 1.4.2 Color Label Printing

^F(C r1, g1, b1, a1, i1, r2, g2, b2, a2, i2		Field Color Designation
r1 g1 b1	:	Designate foreground color (Each 0 to 255)
a1	:	Designate foreground opacity (0 to 255)
i1	:	Invert the foreground
r2 g2 b2	:	Designate background color (Each 0 to 255)
a2	:	Designate background opacity (0 to 255)
i2	:	Invert the background

^XA	
^FO0,0^ABN	
^F(C255,0,0,255,0,0,0,0,0,0^FDNo.^FS	
	Arrange “No.” as red characters.
^FO200,0^ABN^FD012356^FS	
	Arrange “0123456” as black characters. (No color designated.)
^XZ	

## 2.7 Field Color Reversal

The field color reversal means drawing a field to be able to see field overlapping by means of changing color of overlapping area of fields when drawing a field over an existing field.

The user can set the field color reversal by using commands defined in Table 2.7.1.

Table 2.7.1 Commands for Field Color Reversal Setting

Command	Description
^LRa Label reverse print	“^LR” specifies or cancels reversal of all field being contained in the label. Y: Specifies to reversal all field being contained in the label. N: Cancels reversal of all field being contained in the label.
^FR Field reverse print	“^FR” specifies reversal of the current field. The setting of “^FR” have priority over setting “^LR”.
^F(Cr1,g1,b1,a1,i1,r2,g2,b2,a2,i2 Field color settings	“^F(C” specifies or cancels reversal of foreground and background individually of the current field. The setting of “^F(C” have priority over setting of “^LR” and “^FR”. i1 (foreground), i2 (background) = D: Applies reversal setting of “^LR” or “^FR” to the current field. R: Specifies reversal of the current field. N: Cancels reversal of the current field.

Both of foreground and background can be targets of field color reversal.

Opacity of foreground and background affects to a color reversing. The effect of reversing becomes small with a fall of the opacity.

The effect by specifying to reversal appears only when a field specified to reversal is drawn over an existing field. The relation of an existing field and reversal specification of a drawing field is shown in Table 2.7.2.

Table 2.7.2 The Relation of an Existing Field and Reversal Specification of a Drawing Field

Existing field	Reversal specification of the drawing field	Color of overlapping area of fields
present	specified	reverse
no present	specified	no reverse
A field which was drawn by reversal specification is present.	cancel	no reverse

The user can calculate reversed color by the following expression.

$$\text{Reversed color} = (z - x + 1) \times (z - y + 1) \times 255$$

$$z = x \times y$$

$$x = \frac{\text{color of drawing field}}{255}$$

$$y = \frac{\text{color of existing field}}{255}$$

The color of field is composed by the RGB color model of 256 scale.

The above expression shows the calculation of each composition color (red, green, and blue).

The command example of the field color reversal is shown in the following and Figure 2.7.1.

^XA	
^FO10,10^FB720,1^ABN,100,80	First field
^F(C0,128,255,255,N,128,255,0,255,N	Set a color of foreground and background.
^FDABCDEF^FS	String of "ABCDEF"
^FO50,50^FB720,1^ABN,100,80	Second field
^F(C128,0,255,255,R,0,255,128,255,R	Set a color of foreground and background and
^FDOPQRSTU^FS	specify both of them to reversal. String of "OPQRSTU"
^FO10,180^FB800,2^ACN,60,20	Third field
^FDReverse Foreground & Background^FS	(No color and reversal setting)
^XZ	



## Reverse Foreground & Background

Figure 2.7.1 Examples of Text Field Color Reversal



## 2.8 Printing Graphics

If printing graphics using Epson color label command, use either of the following procedures to print.

- Register the graphic in the printer and print it
- Embed the graphic in a field and print it

The following sections describe the detailed procedures for printing graphics.

### 2.8.1 Registering a Graphic in a Printer and Printing It

In the following order, use commands to register the graphic in the printer and print it.

1. Delete the files that remain in the printer (^ID command).
2. Register the graphic in the printer (~DY command).
3. Designate the graphic file registered in step 2. above and print it (^IM command).
4. Delete the files of graphic etc. from the printer (^ID command).

<code>^XA ^IDR:*. *^FS^XZ</code>	1. Delete the files from the printer.
<code>~DYR:IMAGE,B,P, ...</code>	2. Register the graphic in the printer.
<code>^XA</code> <code>^FO0,0^FD012356 ...^FS</code> <code>^FO100,100^IMR:IMAGE.PNG^FS</code>	3. Arrange the graphic in the position (100,100).
<code>^XZ</code> <code>^XA ^IDR:*. *^FS^XZ</code>	4. Delete the files from the printer.

When registering a color graphic, you can use the PNG format. When registering a monochrome graphic, you can register the PNG format or the GRF format.

- PNG format    Monochrome and color graphics
- GRF format    Monochrome graphics
- The reason to execute the step 1.

To ensure capacity of the storage memory necessary for print which application will perform.

When label print is aborted by the cancel button operation in the printer, abort request (~JA command) from application or etc., the commands to execute the step 4 may be not sent to the printer or executed by the printer. If the step 4 is not executed, the remaining capacity of the storage memory has decreased because the files of graphic etc., which has been registered in the step 2, 3 remains in the printer. As a result, the remaining capacity of the storage memory may be insufficient depending on a print content.

## 2.8.2 Embedding a Graphic in the Field and Printing It

In the label format, use the ^GF command to define the graphic and print it.

^GF<Input data format>,<Input data size>,<Field number>,<Field data size>,<Input data>

<Input data format> : Data format of <Input data>  
<Input data size> : Data size of <Input data>  
<Field number> : Field number of <Input data>  
<Field data size> : Field data size of <Input data>  
<Input data> : Actual graphic data

^XA	
^FO100,100^GFB,800,800,80,...^FS	Arrange the graphic in the position (100,100).
^XZ	Print the label.

### 3 Detailed Command Specifications

---

This chapter describes the content shown in the following table for each command.

Command code	Pre-fix character and command identifiers
[Name]	Command name
[Format]	Codes that configure the command
[Parameter]	Parameter description, definition range, behavior when command is executed with parameters omitted. The definition range is the range of values required for the parameter to achieve normal command operation.
[Function]	Command function
[Initial value]	Initial value setting. The initial value is the value set when the available period of the setting value is started.
[Response]	Description of response sent from the printer, format, and the parameters that configure the response.
[Reference]	Specifications that should be referenced in this document to use this command appropriately.
Related function specifications	Function names of functions specifications that should be referenced.
Related commands	Command code for detailed command specifications that should be referenced.
Describe command specification with supplemental items which are required based on command functions and characteristics.	
[Note]	Notes to be considered when executing the command, such as command execution conditions.
[Usage example]	Examples of the use of the command.

## ^A

---

[Name]

Font

[Format]

^A f o ,h ,w

Parameters	Description	Definition range
f	Font identifier	$0 \leq f \leq 9$ , Capital letters of the alphabet (A to Z)
o	Field orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
h	Character height [dot]	$0 \leq h \leq 9999$
w	Character width [dot]	$0 \leq w \leq 9999$

[Function]

- Sets the font used to render character strings in the field.
  - Sets the font type based on the font identifier.
  - Sets the field orientation based on Parameter o.
  - If the specified font type is a fixed-size font, set a multiple of the font type's standard height for Parameter h.
  - If the specified font type is a fixed-size font, set a multiple of the font type's standard width for Parameter w.

[Response]

None

[Reference]

Related commands: ^FW , ^CF

## ^A@

---

[Name]

Font file

[Format]

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

Parameters	Description	Definition range
o	Field orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
h	Character height [dot]	0 ≤ h ≤ 9999
w	Character width [dot]	0 ≤ w ≤ 9999
d	Font storage drive	d = R/E/B/A/Z R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory Z: Non-rewritable memory
f	Font file name	ASCII code within 8 characters
x	Extension	X = FNT/TTF/TTE/DAT

[Function]

- Sets the font used to render character strings in the field.
  - Sets the font file specified by font storage drive, font file name, and identifier as the font used in rendering field character strings.
  - Sets the field orientation based on Parameter o.

[Response]

None

[Reference]

Related commands: ^FW , ^CF

## ^B(Q

[Name]

Micro QR Code

[Format]

^B(Q o ,v ,s

Parameters	Description	Definition range
o	Micro QR Code field orientation	o = N (Fixed) N: Normal
v	Micro QR Code version	v = 0/1/2/3/4 0: Auto 1: M1 (11 × 11) 2: M2 (13 × 13) 3: M3 (15 × 15) 4: M4 (17 × 17)
s	Micro QR Code module size [dot]	1 ≤ s ≤ 99

[Function]

- Sets the Micro QR Code symbol to the field.
  - Sets the field orientation based on Parameter o.
  - Sets the symbol version based on Parameter v.
  - Sets the module size for symbol rendering based on Parameter s.

[Encoding]

- Encoding can be determined by specifying a meta character in the field data specified for the symbol data. The following table indicates the meta characters and explains each one.

Meta character	Function	Description
D	Specifies the encode mode.	D: Can specify multiple character modes within the same single field data. (Not supported in the CW series)
Q, M, or L	Specifies the error correction level.	Refer to the table below.
A	Automatically specifies input mode.	Automatically sets the character mode based on the input data.
M	Manually specifies input mode.	Specifies the character mode based on the meta characters.
N, A, B, or K	Specifies the character mode.	H: Numerals are specified. A: Alphanumerics are specified. B: 8-bit Latin / kana character set (JISX0201) is specified. K: Kanji that can be specified using Shift-JIS are specified.

- If B is specified for the character mode, 4 numerals are input after B in the character string to encode.

- The error correction levels that can be set vary depending on the symbol version. The following table indicates the error correction levels that can be set.

Version	Error correction level	Percentage of corruption where the data can be recovered
M1	Fixed	Max. 7[%]
M2	Level L	Max. 7[%]
	Level M	Max. 15[%]
M3	Level L	Max. 7[%]
	Level M	Max. 15[%]
M4	Level L	Max. 7[%]
	Level M	Max. 15[%]
	Level Q	Max. 25[%]

- The format of the field data is determined based on the specified mode.

- Format when automatic is specified for the input mode

<Error correction level><Input mode>,<Symbol data>

Parameters	Description	Definition range
<Error correction level>	Meta character specifying the error correction level	Q, M, or L
<Input mode>	Meta character specifying input mode	Fixed as A
<Symbol data>	Character string to be encoded	Character string

- Format when manual is specified for the input mode

<Error correction level><Input mode>,<Character mode 1><Symbol data 1>,<Character mode 2><Symbol data 2>...

Parameters	Description	Definition range
<Error correction level>	Meta character specifying the error correction level	Q, M, or L
<Input mode>	Meta character specifying input mode	Fixed as M
<Character mode #>	Meta character specifying character mode	N, A, B, or K
<Symbol data #>	Data string to be encoded	Complies with the character mode specification.

# indicates the combination number for the character mode and symbol data. The maximum number of combinations is 200.

- Format when mixed mode is specified for the encode mode and automatic for the input mode  
<Mixed mode><Code number><Number of sections><Parity>,<Error correction level><Input mode>,<Symbol data>...

Parameters	Description	Definition range
<Mixed mode>	Meta character specifying mixed mode	Fixed as D
<Code number>	Code number	01 to 16
<Number of sections>	Total number of split codes	02 to 16
<Parity>	Parity value for symbol data	Hexadecimal 2 bytes
<Error correction level>	Meta character specifying the error correction level	Q, M, or L
<Input mode>	Meta character specifying input mode	Fixed as A
<Symbol data>	Character string to be encoded	Character string

- Format when mixed mode is specified for the encode mode and manual for the input mode  
<Mixed mode><Code number><Number of sections><Parity>,<Error correction level><Input mode>,<Character mode 1><Symbol data 1>,<Character mode 2><Symbol data 2>...

Parameters	Description	Definition range
<Mixed mode>	Meta character specifying mixed mode	Fixed as D
<Code number>	Code number	01 to 16
<Number of sections>	Total number of split codes	02 to 16
<Parity>	Parity value for symbol data	Hexadecimal 2 bytes
<Error correction level>	Meta character specifying the error correction level	Q, M, or L
<Input mode>	Meta character specifying input mode	Fixed as M
<Character mode #>	Meta character specifying character mode	N, A, B, or K
<Symbol data #>	Data string to be encoded	Complies with the character mode specification.

# indicates the combination number for the character mode and symbol data. The maximum number of combinations is 200.

[Response]

None

[Reference]

Related commands: None



**^B(R**

[Name]

GS1 Databar (HRI character attachable)

[Format]

^B(R a ,b ,c ,d ,e ,f ,g

Parameters	Description	Definition range
a	Field orientation	a = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
b	Symbol type of barcode or symbol	1 ≤ b ≤ 12 1: GS1 DataBar 2: GS1 DataBar Truncated 3: GS1 DataBar Stacked 4: GS1 DataBar Stacked Omnidirectional 5: GS1 DataBar Limited 6: GS1 DataBar Expanded 7: UPC-A 8: UPC-E 9: EAN-13 10: EAN-8 11: UCC/EAN-128 and CC-A/CC-B 12: UCC/EAN-128 and CC-C
c	Magnification factor of barcode or symbol	1 ≤ c ≤ 99 (Varies depending on the model)
d	Height of separator	d = 1/2
e	Height of barcode part	1 ≤ e ≤ 32000 [dot] (Varies depending on the model)
f	Number of segments	2 ≤ f ≤ 22, even numbers only 4 or more for Composite
g	Set/cancel of HRI character addition	g = Y/N Y: Set N: Cancel

[Function]

- Sets the GS1 DataBar, UPC, EAN barcode, or UCC/EAN Composite symbol for the current field.
  - Sets the field orientation based on Parameter a.
  - Sets the symbol type of barcode or symbol based on Parameter b.
  - Sets the magnification factor of barcode or symbol based on Parameter c.
  - Sets the height of separator based on Parameter d.
  - Sets the height of barcode part of UCC/EAN-128 and CC-A/CC-B/CC-C based on Parameter e.
  - Sets the number of segments per line in GS1 DataBar Expanded based on Parameter f.
  - Sets the addition of HRI (Human Readable Interpretation) character based on Parameter g. When the addition of HRI character is specified, HRI character is added under the barcode.
  - Settings made with this command are enabled only in the current field.
  - Settings are discarded after processing for the current field is complete.
- Methods for specifying attributes for encoding are shown below.
  - Use “^FD” (field data) to specify the data for encoding. You can specify attributes for encoding by specifying particular characters in the data. The method for specifying attributes for encoding is the same for both this command and “^BR”(GS1 DataBar).

[Initial value]

None

[Response]

None

[Reference]

Related function specifications: None

Related commands: None

## **^B(V**

---

[Name]

Barcode printing validation

[Format]

^B(V a

Parameters	Description	Definition range
a	Barcode printing validation function	a = Y/N Y: Enabled N: Disabled

[Function]

- The ^B(V command switches the barcode printing validation function between enabled/disabled.
  - If the barcode printing validation function is enabled, the barcode symbol printing validation in the following table is performed.
  - If printing of an invalid barcode symbol is detected, the barcode symbol is not printed. Instead, a rectangle and error message are printed.

Barcode printing validation item	Error message
Barcode symbol partially or completely outside the print area	Barcode outside print area

[Initial value]

N

[Response]

None

[Reference]

Related function specifications: None

Related commands: None

## ^B0 ^BO

[Name]

Aztec Code

[Format]

^B0 (\*1) o ,m ,e ,t ,i ,n ,id

^BO (\*2) o ,m ,e ,t ,i ,n ,id

Parameters	Description	Definition range
o	Aztec Code field orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
m	Aztec Code module size	$1 \leq m \leq 99$
e	Aztec Code extended channel interpretation (ECI) enabled/disabled	e = Y/N Y: Enabled N: Disabled
t	Aztec Code mode type and data layer count	t = 0 $01 \leq t \leq 99$ $101 \leq t \leq 104$ $201 \leq t \leq 232$ t = 300
i	Aztec Code leader initialization symbol	i = Y/N Y: Yes N: No
n	Number of symbols for structured append with Aztec Code	$1 \leq n \leq 26$
id	Aztec Code message ID	ASCII code within 24 characters

\*1 Numeral "0" (zero)

\*2 Letter "O" of the alphabet

[Function]

- Sets the Aztec Code symbol to the field.
  - Sets the field orientation based on Parameter o.
  - Sets the module size for symbol rendering based on Parameter m.
  - Enables/disables the extended channel interpretation (ECI) function based on Parameter e.
  - Sets the error correction level, mode type, and data layer count based on Parameter t.
    - If the Parameter t is 0, the error correction level is set to 23[%].
    - If the Parameter t is 01 to 99, the error correction level[%] is set to the value for t.
    - If the Parameter t is 101 to 104, the mode type is set to Compact, and the data layer count is set to the last one digit of t.
    - If the Parameter t is 201 to 232, the mode type is set to Full-Range, and the data layer count is set to the last two digit of t.
    - If the Parameter t is 300, the mode type is set to Rune.
  - Sets the leader initialization symbol based on Parameter i.
  - Sets the number of symbols to split via structured append based on Parameter n.
  - Sets the message ID for the structured append based on Parameter id.

[Response]

None

[Reference]

Related commands: ^FW

## ^B2

---

[Name]

Interleaved 2 of 5 barcode

[Format]

^B2 o ,h ,i ,a ,c

Parameters	Description	Definition range
o	Interleaved 2 of 5 field orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
h	Interleaved 2 of 5 barcode height [dot]	1 ≤ h ≤ 32000 (Varies depending on the model)
i	Set/cancel of HRI character addition for Interleaved 2 of 5	i = Y/N Y: Set N: Cancel
a	Set/cancel of HRI character addition for top of Interleaved 2 of 5 barcode	a = Y/N Y: Set N: Cancel
c	Set/cancel check digit printing for Interleaved 2 of 5	c = Y/N Y: Set N: Cancel

[Function]

- Sets Interleaved 2 of 5 barcode to the field.
  - Sets the field orientation based on Parameter o.
  - Sets the barcode height based on Parameter h.
  - Sets the HRI character printing based on Parameter i.
  - Sets whether to position the added HRI characters on the top or on the bottom of the barcode based on Parameter a.
  - Sets the check digit printing based on Parameter c.
  - The ratio for the widths of the thick and thin bars in Interleaved 2 of 5 rendering processing follows the setting of “^BY”.

[Encoding]

- Numerals (0 to 9) can be encoded.
- If the width of the barcode to be rendered exceeds the label width, only the part that fits in the label width will be printed.
- If the number of characters in the specified character string is odd, a zero <0> is added to the front of the character string to make it even.

[Response]

None

[Reference]

Related commands: ^FW , ^BY

## ^B3

---

[Name]

Code 39 barcode

[Format]

^B3 o ,c ,h ,i ,a

Parameters	Description	Definition range
o	Code 39 field orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
c	Set/cancel check digit printing for Code 39	c = Y/N Y: Set N: Cancel
h	Code 39 barcode height [dot]	$1 \leq h \leq 32000$ (Varies depending on the model)
i	Set/cancel of HRI character addition for Code 39	i = Y/N Y: Set N: Cancel
a	Set/cancel of HRI character addition for top of Code 39 barcode	a = Y/N Y: Set N: Cancel

[Function]

- Sets Code 39 barcode to the field.
  - Sets the field orientation based on Parameter o.
  - Sets the check digit printing based on Parameter c.
  - Sets the barcode height based on Parameter h.
  - Sets the HRI character printing based on Parameter i.
  - Sets whether to position the added HRI characters on the top or on the bottom of the barcode based on Parameter a.
  - The ratio for the widths of the thick and thin bars in Code 39 rendering processing follows the setting of “^BY”.

[Encoding]

- Numerals (0 to 9), capital letters of the alphabet (A to Z), hyphens <->, periods <.>, blank spaces < >, dollar symbols <\$>, slashes </>, plus symbols <+>, and percent symbols <%> can be encoded.
- If the width of the barcode to be rendered exceeds the label width, only the part that fits in the label width will be printed.
- The check digit is added automatically. The check digit is calculated by modulus 43.
- An asterisk <\*> is added automatically to the start code and stop code. The start code and stop code are printed as part as the HRI character.

[Response]

None

[Reference]

Related commands: ^FW , ^BY

**^B7**

[Name]

PDF417

[Format]

^B7 o ,h ,e ,c ,r ,t

Parameters	Description	Definition range
o	PDF417 field orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
h	PDF417 row height [dot]	$1 \leq h \leq \text{Label length}$ (Varies depending on the model)
e	PDF417 error correction level	$0 \leq e \leq 8$
c	PDF417 column count	c = 0 (Auto) $1 \leq c \leq 30$
r	PDF417 row count	r = 0 (Auto) $3 \leq r \leq 90$
t	Truncate right row indicators and stop pattern for PDF417	t = Y/N Y: Set N: Cancel

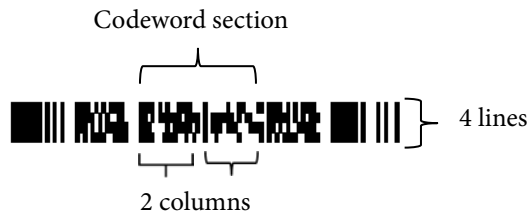


[Function]

- Sets the PDF417 symbol to the field.
  - Sets the field orientation based on Parameter o.
  - Sets the line height based on Parameter h.
  - Sets the codeword section column count based on Parameter c.
  - Sets the error correction level based on Parameter e. The following table indicates the number of codewords that can be corrected at each error correction level.

Error correction level	Correctable codeword count
0	2
1	4
2	8
3	16
4	32
5	64
6	128
7	256
8	512

- Sets the symbol row count based on Parameter r.
- The following indicates an example symbol for a standard PDF417 when  $c = 2$  and  $r = 4$ .



- Sets the right row indicators and stop pattern based on Parameter t. You can make the symbol more narrow by truncating right row indicators and stop pattern.
- You can set the structured append using the “^FM” command.

[Encoding]

- 1850 characters of text and 1108 bytes of binary data can be encoded.

[Response]

None

[Reference]

Related commands: ^FW , ^FM

## ^B8

[Name]

EAN-8 barcode

[Format]

^B8 o ,h ,i ,a

Parameters	Description	Definition range
o	EAN-8 field orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
h	EAN-8 barcode height [dot]	1 ≤ h ≤ 32000 (Varies depending on the model)
i	Set/cancel of HRI character addition for EAN-8	i = Y/N Y: Set N: Cancel
a	Set/cancel of HRI character addition for top of EAN-8 barcode	a = Y/N Y: Set N: Cancel

[Function]

- Sets EAN-8 barcode to the field.
  - Sets the field orientation based on Parameter o.
  - Sets the barcode height based on Parameter h.
  - Sets the HRI character printing based on Parameter i.
  - Sets whether to position the added HRI characters on the top or on the bottom of the barcode based on Parameter a.

[Encoding]

- Numerals (0 to 9) can be encoded.
- 7 characters can be encoded.
- The check digit is added automatically. The check digit is calculated by modulus 10 / 3 weight.

[Response]

None

[Reference]

Related commands: ^FW , ^BY

## ^B9

---

[Name]

UPC-E barcode

[Format]

^B9 o ,h ,i ,a ,c

Parameters	Description	Definition range
o	UPC-E field orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
h	UPC-E barcode height [dot]	1 ≤ h ≤ 32000 (Varies depending on the model)
i	Set/cancel of HRI character addition for UPC-E	i = Y/N Y: Set N: Cancel
a	Set/cancel of HRI character addition for top of UPC-E barcode	a = Y/N Y: Set N: Cancel
c	Set/cancel check digit printing for UPC-E	c = Y/N Y: Set N: Cancel

[Function]

■ Sets UPC-E barcode to the field.

- Sets the field orientation based on Parameter o.
- Sets the barcode height based on Parameter h.
- Sets the HRI character printing based on Parameter i.
- Sets whether to position the added HRI characters on the top or on the bottom of the barcode based on Parameter a.
- Sets the check digit printing based on Parameter c.

[Encoding]

- Numerals (0 to 9) can be encoded.
- 10 characters can be encoded.
- A zero <0> is added automatically as the number system character.
- The check digit is added automatically. The check digit is calculated by modulus 10 / 3 weight for the 10-character string after compression.
- The specified 10-character field data is compression into 6 bytes of data.
  - a) Only when the 10-character field data matches any of Case 1 to 6 in the following table is it handled as valid field data. The 10-character field data is expressed as d1 to d10.

Case	d1	d2	d3	d4	d5	d6	d7	d8	d9	d10
1	0 to 9	0 to 9	0	0	0	0	0	0 to 9	0 to 9	0 to 9
2	0 to 9	0 to 9	1	0	0	0	0	0 to 9	0 to 9	0 to 9
3	0 to 9	0 to 9	2	0	0	0	0	0 to 9	0 to 9	0 to 9
4	0 to 9	0 to 9	3 to 9	0	0	0	0	0	0 to 9	0 to 9
5	0 to 9	0 to 9	0 to 9	1 to 9	0	0	0	0	0	0 to 9
6	0 to 9	0 to 9	0 to 9	0 to 9	1 to 9	0	0	0	0	5 to 9

- b) Data is compressed into 6 bytes data according to Cases 1 to 6, as matched in a) above. The 6 bytes data is expressed as D1 to D6.

Case	D1	D2	D3	D4	D5	D6
1	d2	d3	d9	d10	d11	0
2	d2	d3	d9	d10	d11	1
3	d2	d3	d9	d10	d11	2
4	d2	d3	d4	d10	d11	3
5	d2	d3	d4	d5	d11	4
6	d2	d3	d4	d5	d6	d11

[Response]

None

[Reference]

Related commands: ^FW , ^BY

## ^BA

---

[Name]

Code 93 barcode

[Format]

^BA o ,h ,i ,a ,c

Parameters	Description	Definition range
o	Code 93 field orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
h	Code 93 barcode height [dot]	1 ≤ h ≤ 32000 (Varies depending on the model)
i	Set/cancel of HRI character addition for Code 93	i = Y/N Y: Set N: Cancel
a	Set/cancel of HRI character addition for top of Code 93 barcode	a = Y/N Y: Set N: Cancel
c	Set/cancel check digit printing for Code 93	c = Y/N Y: Set N: Cancel

[Function]

- Sets Code 93 barcode to the field.
  - Sets the field orientation based on Parameter o.
  - Sets the barcode height based on Parameter h.
  - Sets the HRI character printing based on Parameter i.
  - Sets whether to position the added HRI characters on the top or on the bottom of the barcode based on Parameter a.
  - Sets the check digit printing based on Parameter c.

[Encoding]

- Numerals (0 to 9), capital letters of the alphabet (A to Z), hyphens <->, periods <.>, dollar symbols <\$>, slashes </>, plus symbols <+>, percent symbols <%>, and blank spaces < > can be encoded.
- If the width of the barcode to be rendered exceeds the label width, only the part that fits in the label width will be printed.
- The check digit is added automatically. The check digit is calculated by modulus 47.
- The start and stop codes are printed as squares <□> for HRI characters.
- All ASCII code (128 types) can be specified in the field data using a combination of shift codes and characters.

- You can specify ASCII code using a combination of the shift codes (ampersand <&>, apostrophe <'>, left parenthesis <(>, and right parenthesis <)>) and the capital letters of the alphabet in the table below.

ASCII Decimal	ASCII Character	Code93	ASCII Decimal	ASCII Character	Code 93
0	NUL	'U	32	SP	SPACE
1	SOH	&A	33	!	(A
2	STX	&B	34	"	(B
3	ETX	&C	35	#	(C
4	EOT	&D	36	\$	(D
5	ENQ	&E	37	%	(E
6	ACK	&F	38	&	(F
7	BEL	&G	39	'	(G
8	BS	&H	40	(	(H
9	HT	&I	41	)	(I
10	LF	&J	42	*	(J
11	VT	&K	43	+	+
12	FF	&L	44	,	(L
13	CR	&M	45	-	-
14	SO	&N	46	.	.
15	SI	&O	47	/	/
16	DLE	&P	48	0	0
17	DC1	&Q	49	1	1
18	DC2	&R	50	2	2
19	DC3	&S	51	3	3
20	DC4	&T	52	4	4
21	NAK	&U	53	5	5
22	SYN	&V	54	6	6
23	ETB	&W	55	7	7
24	CAN	&X	56	8	8
25	EM	&Y	57	9	9
26	SUB	&Z	58	:	(Z
27	ESC	'A	59	;	'F
28	FS	'B	60	<	'G
29	GS	'C	61	=	'H
30	RS	'D	62	>	'I
31	US	'E	63	?	'J

ASCII Decimal	ASCII Character	Code 93	ASCII Decimal	ASCII Character	Code 93
64	@	'V	96	`	'W
65	A	A	97	a	)A
66	B	B	98	b	)B
67	C	C	99	c	)C
68	D	D	100	d	)D
69	E	E	101	e	)E
70	F	F	102	f	)F
71	G	G	103	g	)G
72	H	H	104	h	)H
73	I	I	105	i	)I
74	J	J	106	j	)J
75	K	K	107	k	)K
76	L	L	108	l	)L
77	M	M	109	m	)M
78	N	N	110	n	)N
79	O	O	111	o	)O
80	P	P	112	p	)P
81	Q	Q	113	q	)Q
82	R	R	114	r	)R
83	S	S	115	s	)S
84	T	T	116	t	)T
85	U	U	117	u	)U
86	V	V	118	v	)V
87	W	W	119	w	)W
88	X	X	120	x	)X
89	Y	Y	121	y	)Y
90	Z	Z	122	z	)Z
91	[	'K	123	{	'P
92	\	'L	124		'Q
93	]	'M	125	}	'R
94	^	'N	126	~	'S
95	_	'O	127	DEL	'T

[Response]

None

[Reference]

Related commands: ^FW , ^BY

## ^BC

---

[Name]

Code 128 barcode

[Format]

^BC o ,h ,i ,a ,c ,m

Parameters	Description	Definition range
o	Code 128 field orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
h	Code 128 barcode height [dot]	1 ≤ h ≤ 32000 (Varies depending on the model)
i	Set/cancel of HRI character addition for Code 128	i = Y/N Y: Set N: Cancel
a	Set/cancel of HRI character addition for top of Code 128 barcode	a = Y/N Y: Set N: Cancel
c	Addition of a Mod10 check digit for Code 128	c = Y/N Y: Yes N: No
m	Code 128 mode	m = N/U/A/D N: Normal U: UCC Case A: Automatic D: UCC/EAN

[Function]

- Sets Code 128 barcode to the field.
  - Sets the field orientation based on Parameter o.
  - Sets the barcode height based on Parameter h.
  - Sets the HRI character printing based on Parameter i.
  - Sets whether to position the added HRI characters on the top or on the bottom of the barcode based on Parameter a.
  - Sets the automatic addition of the Mod10 check digit based on Parameter c. The check digit calculated by modulus 103 is automatically added regardless of this setting.
  - Sets the barcode mode based on Parameter m.



[Encoding]

- If the width of the barcode to be rendered exceeds the label width, only the part that fits in the label width will be printed.
- Designated encoding is performed based on the mode set by Parameter m.
  - If m = N, normal encoding is performed.
  - If m = U, the number of encoded characters is 19.
  - If m = A, a Code 128 subset is automatically selected based on the characters in the specified field data. If a numeral 4 character or longer is specified, subset C is automatically selected. All ASCII code can be encoded.
  - If m = D, encoding is done in GS1-128 format. The start code for the appropriate subset and FNC1 will be automatically added and parentheses and blank spaces will be removed for encoding. However, parentheses and blank spaces will be printed for HRI characters. The check digit will be automatically calculated and added if necessary.
- When specifying the field data, special characters can be specified using meta characters. Specifying and switching subsets can be done using special characters. If a subset is not specified, subset B is selected. The following table indicates the special characters or characters that can be specified using meta characters for each subset.

Meta character	Decimal	For subset A	For subset B	For subset C
>0	30	>	>	30
>1	95	USQ	DEL	95
>2	96	FNC3	FNC3	96
>3	97	FNC2	FNC2	97
>4	98	SHIFT	SHIFT	98
>5	99	CODE C	CODE C	99
>6	100	CODE B	FNC 4	CODE B
>7	101	FNC4	CODE A	CODE A
>8	102	FNC1	FNC1	FNC1
>9	103	START A		
>:	104	START B		
>;	105	START C		
><	62	^	^	62
>=	94	RS	~	94

- The follow table indicates the characters that can be specified for each subset.

ASCII Decimal	Subset A	Subset B	Subset C
0	SPACE	SPACE	00
1	!	!	01
2	“	“	02
3	#	#	03
4	\$	\$	04
5	%	%	05
6	&	&	06
7	‘	‘	07
8	(	(	08
9	)	)	09
10	*	*	10
11	+	+	11
12	,	,	12
13	-	-	13
14	.	.	14
15	/	/	15
16	0	0	16
17	1	1	17
18	2	2	18
19	3	3	19
20	4	4	20
21	5	5	21
22	6	6	22
23	7	7	23
24	8	8	24
25	9	9	25
26	:	:	26
27	;	;	27
28	<	<	28
29	=	=	29
30	>	>	30
31	?	?	31
32	@	@	32
33	A	A	33
34	B	B	34
35	C	C	35
36	D	D	36
37	E	E	37
38	F	F	38
39	G	G	39
40	H	H	40
41	I	I	41
42	J	J	42

ASCII Decimal	Subset A	Subset B	Subset C
43	K	K	43
44	L	L	44
45	M	M	45
46	N	N	46
47	O	O	47
48	P	P	48
49	Q	Q	49
50	R	R	50
51	S	S	51
52	T	T	52
53	U	U	53
54	V	V	54
55	W	W	55
56	X	X	56
57	Y	Y	57
58	Z	Z	58
59	[	[	59
60	\	\	60
61	]	]	61
62	^	^	62
63	_	_	63
64	NUL	`	64
65	SOH	a	65
66	STX	b	66
67	ETX	c	67
68	EOT	d	68
69	ENQ	e	69
70	ACK	f	70
71	BEL	g	71
72	BS	h	72
73	HT	i	73
74	LF	j	74
75	VT	k	75
76	FF	l	76
77	CR	m	77
78	SO	n	78
79	SI	o	79
80	DLE	p	80
81	DC1	q	81
82	DC2	r	82
83	DC3	s	83
84	DC4	t	84
85	NAK	u	85
86	SYN	v	86

ASCII Decimal	Subset A	Subset B	Subset C
87	ETB	w	87
88	CAN	x	88
89	EM	y	89
90	SUB	z	90
91	ESC	{	91
92	FS		92
93	GS	}	93
94	RS	~	94
95	US	DEL	95
96	FNC3	FNC3	96
97	FNC2	FNC2	97
98	SHIFT	SHIFT	98
99	CODE C	CODE C	99
100	CODE B	FNC4	CODE B
101	FNC4	CODE A	CODE A
102	FNC1	FNC1	FNC1
103	START A		
104	START B		
105	START C		

[Response]

None

[Reference]

Related commands: ^FW , ^BY

## ^BD

---

[Name]

MaxiCode

[Format]

^BD m ,n ,q

Parameters	Description	Definition range
m	MaxiCode mode	m = 2/3/4/5/6 2: Structured carrier message: numeric postal code (U.S.A.) 3: Structured carrier message: alphanumeric postal code (International) 4: Standard symbol 5: Full EEC 6: Reader program
n	Number in the MaxiCode structured append	$1 \leq n \leq 8$
q	Total number of symbols in the MaxiCode structured append	$1 \leq q \leq 8$

[Function]

- Sets the MaxiCode symbol to the field.
  - Sets the mode based on Parameter m.
    - If m = 2 or 3, the structured carrier message is set. EEC is applied to the primary message and SEC to the secondary message.
    - If m = 4, the standard symbol is set. EEC is applied to the primary message and SEC to the secondary message.
    - If m = 5, full EEC is set. EEC is applied to both the primary message and the secondary message.
    - If m = 6, the reader program symbol is set.
  - EEC and SEC are error correction methods. EEC stands for Enhanced Error Correction, and SEC stands for Standard Error Correction.
  - Sets the number of this symbol in the set of structured append symbols based on Parameter n.
  - Sets the total number of structured append symbols based on Parameter q.

[Encoding]

- The following indicates the data format of the field data specified as the primary message in encoding when Parameter m = 2 or 3.

- When m = 2

Information type	Data format
Service class code	3 numerals
ISO3166 country code	3 numerals
Postal code	5 numerals
Extended postal code	4 numerals

- When m = 3

Information type	Data format
Service class code	3 numerals
ISO3166 country code	3 numerals
Postal code	6 characters of numerals or capital letters of the alphabet (A to Z)

- The following indicates the data format of the field data specified as the secondary message in encoding when Parameter m = 2 or 3.

- Message header section

]><RS>

- Format header section

01<GS>96

- Data section

<D1><GS><D2><GS>...<D10><GS><D11><RS><EOT>

- Each piece of information is demarcated by <GS>. The following table explains each piece of information.

Contents	Description
<D1>	Tracking number
<D2>	SCAC
<D3>	UPS Shipper Number
<D4>	Pickup date (Julian day)
<D5>	Shipping ID
<D6>	No. of packages (n/x)
<D7>	Package weight
<D8>	Address verification
<D9>	Destination address
<D10>	Destination city
<D11>	Destination province

- When Parameter m = 4, 5, or 6, all specified field data is encoded.

[Response]

None

[Reference]

Related commands: None

## **^BE**

---

[Name]

EAN-13 barcode

[Format]

^BE o ,h ,i ,a

Parameters	Description	Definition range
o	EAN-13 field orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
h	EAN-13 barcode height [dot]	1 ≤ h ≤ 32000 (Varies depending on the model)
i	Set/cancel of HRI character addition for EAN-13	i = Y/N Y: Set N: Cancel
a	Set/cancel of HRI character addition for top of EAN-13 barcode	a = Y/N Y: Set N: Cancel

[Function]

- Sets EAN-13 barcode to the field.
  - Sets the field orientation based on Parameter o.
  - Sets the barcode height based on Parameter h.
  - Sets the HRI character printing based on Parameter i.
  - Sets whether to position the added HRI characters on the top or on the bottom of the barcode based on Parameter a.

[Encoding]

- Numerals (0 to 9) can be encoded.
- 12 characters can be encoded.
- The check digit is added automatically during encoding for the specified field data. The check digit is calculated by modulus 10 / 3 weight.

[Response]

None

[Reference]

Related commands: ^FW , ^BY

## ^BF

---

[Name]

Micro PDF417

[Format]

^BF o ,h ,m

Parameters	Description	Definition range
o	Micro PDF417 field orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
h	Micro PDF417 symbol height [dot]	1 ≤ h ≤ 9999
m	Micro PDF417 mode	0 ≤ m ≤ 33

[Function]

- Sets the Micro PDF417 symbol to the field.
  - Sets the field orientation based on Parameter o.
  - Sets the symbol height based on Parameter h.



- Sets the symbol mode based on Parameter m. The following table indicates the settings for each mode.

Mode	No. of columns	No. of rows	Correctable codeword ratio	Max. amount of encodable data		
				Binary	Numerals and letters of the alphabet	Numerals
0	1	11	64	3	6	8
1	1	14	50	7	12	17
2	1	17	41	10	18	26
3	1	20	40	13	22	32
4	1	24	33	18	30	44
5	1	28	29	22	38	55
6	2	8	50	8	14	20
7	2	11	41	14	24	35
8	2	14	32	21	36	52
9	2	17	29	27	46	67
10	2	20	28	33	56	82
11	2	23	28	38	64	93
12	2	26	29	43	72	105
13	3	6	67	6	10	14
14	3	8	58	10	18	26
15	3	10	53	15	26	38
16	3	12	50	20	34	49
17	3	15	47	27	46	67
18	3	20	43	39	66	96
19	3	26	41	54	90	132
20	3	32	40	68	114	167
21	3	38	39	82	138	202
22	3	44	38	97	162	237
23	4	6	50	13	22	32
24	4	8	44	20	34	49
25	4	10	40	27	46	67
26	4	12	38	34	58	85
27	4	15	35	45	76	111
28	4	20	33	63	106	155
29	4	26	31	85	142	208
30	4	32	30	106	178	261
31	4	38	29	128	214	313
32	4	44	28	150	250	366
33	4	4	50	8	14	20

[Response]

None

[Reference]

Related commands: ^FW , ^BY

## ^BK

---

[Name]

Codabar barcode

[Format]

^BK o ,c ,h ,i ,a ,b ,e

Parameters	Description	Definition range
o	Codabar field orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
c	Printing of a Codabar check digit	c = N (Fixed) N: No
h	Codabar barcode height [dot]	$1 \leq h \leq 32000$ (Varies depending on the model)
i	Set/cancel of HRI character addition for Codabar	i = Y/N Y: Set N: Cancel
a	Set/cancel of HRI character addition for top of Codabar barcode	a = Y/N Y: Set N: Cancel
b	Codabar start character	b = A/B/C/D/T/N/E/*
e	Codabar stop character	e = A/B/C/D/T/N/E/*

[Function]

- Sets Codabar barcode to the field.
  - Sets the field orientation based on Parameter o.
  - Sets the barcode height based on Parameter h.
  - Sets the HRI character printing based on Parameter i. HRI characters include the start and stop characters.
  - Sets whether to position the added HRI characters on the top or on the bottom of the barcode based on Parameter a.
  - Sets the start character based on Parameter b.
  - Sets the stop character based on Parameter e.
  - The ratio for the widths of the thick and thin bars in Codabar rendering processing follows the setting of “^BY”.

[Encoding]

- Numerals <0 to 9> and symbols (hyphens <->, colons <:>, periods <.>, dollar symbols <\$>, slashes </>, and plus symbols <+>) can be encoded.
- If the width of the barcode to be rendered exceeds the label width, only the part that fits in the label width will be printed.

[Response]

None

[Reference]

Related commands: ^FW , ^BY

## ^BQ

[Name]

QR Code

[Format]

^BQ o ,m ,s

Parameters	Description	Definition range
o	QR Code field orientation	o = N (Fixed) N: Normal
m	QR Code model	m = 1/2 1: Model1 2: Model2
s	QR Code module size	$1 \leq s \leq 99$

[Function]

- Sets the QR Code symbol to the field.
  - Sets the field orientation based on Parameter o.
  - Sets the symbol model based on Parameter m.
  - Sets the module size for symbol rendering based on Parameter s.

[Encoding]

- Encoding can be determined by specifying a meta character in the field data specified for the symbol data. The following table indicates the meta characters and explains each one.

Meta character	Function	Description
D	Specifies the encode mode.	D: Can specify multiple character modes within the same single field data. (Not supported in the CW series)
H, Q, M, or L	Specifies the error correction level.	H: Data can be recovered even if up to 30[%] of the symbol area is corrupted. Q: Data can be recovered even if up to 25[%] of the symbol area is corrupted. M: Data can be recovered even if up to 15[%] of the symbol area is corrupted. L: Data can be recovered even if up to 7[%] of the symbol area is corrupted.
A	Automatically specifies input mode.	Automatically sets the character mode based on the input data.
M	Manually specifies input mode.	Specifies the character mode based on the meta characters
N, A, B, or K	Specifies the character mode.	N: Numerals are specified. A: Alphanumerics are specified. B: 8-bit Latin / kana character set (JISX0201) is specified. K: Kanji that can be specified using Shift-JIS are specified.

- If B is specified for the character mode, 4 numerals are input after B in the character string to encode.

- The format of the field data is determined based on the specified mode.
- Format when automatic is specified for the input mode  
<Error correction level><Input mode>,<Symbol data>...

Parameters	Description	Definition range
<Error correction level>	Meta character specifying the error correction level	H, Q, M, or L
<Input mode>	Meta character specifying input mode	Fixed as A
<Symbol data>	Character string to be encoded	Character string

- Format when manual is specified for the input mode  
<Error correction level><Input mode>,<Character mode 1><Symbol data 1>,<Character mode 2><Symbol data 2>...

Parameters	Description	Definition range
<Error correction level>	Meta character specifying the error correction level	H, Q, M, or L
<Input mode>	Meta character specifying input mode	Fixed as M
<Character mode #>	Meta character specifying character mode	N, A, B, or K
<Symbol data #>	Data string to be encoded	Complies with the character mode specification.

# indicates the combination number for the character mode and symbol data. The maximum number of combinations is 200.

- Format when mixed mode is specified for the encode mode and automatic for the input mode  
<Mixed mode><Code number><Number of sections><Parity>,<Error correction level><Input mode>,<Symbol data>

Parameters	Description	Definition range
<Mixed mode>	Meta character specifying mixed mode	Fixed as D
<Code number>	Code number	01 to 16
<Number of sections>	Total number of split codes	02 to 16
<Parity>	Parity value for symbol data	Hexadecimal 2 bytes
<Error correction level>	Meta character specifying the error correction level	H, Q, M, or L
<Input mode>	Meta character specifying input mode	Fixed as A
<Symbol data>	Character string to be encoded	Character string

- Format when mixed mode is specified for the encode mode and manual for the input mode  
<Mixed mode><Code number><Number of sections><Parity>,<Error correction level><Input mode>,<Character mode 1><Symbol data 1>,<Character mode 2><Symbol data 2>...

Parameters	Description	Definition range
<Mixed mode>	Meta character specifying mixed mode	Fixed as D
<Code number>	Code number	01 to 16
<Number of sections>	Total number of split codes	02 to 16
<Parity>	Parity value for symbol data	Hexadecimal 2 bytes
<Error correction level>	Meta character specifying the error correction level	H, Q, M, or L
<Input mode>	Meta character specifying input mode	Fixed as M
<Character mode #>	Meta character specifying character mode	N, A, B, or K
<Symbol data #>	Data string to be encoded	Complies with the character mode specification.

# indicates the combination number for the character mode and symbol data. The maximum number of combinations is 200.

[Response]

None

[Reference]

Related commands: None

**^BR**

[Name]

GS1 DataBar

[Format]

^BR o ,t ,m ,s ,h ,n

Parameters	Description	Definition range
o	GS1 DataBar field orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
t	GS1 DataBar symbol type	1 ≤ t ≤ 12 1: GS1 DataBar Standard 2: GS1 DataBar Truncated 3: GS1 DataBar Stacked 4: GS1 DataBar Stacked Omnidirectional 5: GS1 DataBar Limited 6: GS1 DataBar Expanded 7: UPC-A 8: UPC-E 9: EAN-13 10: EAN-8 11: UCC/EAN-128 and CC-A/CC-B 12: UCC/EAN-128 and CC-C
m	GS1 DataBar module size	1 ≤ m ≤ 99
s	GS1 DataBar separator section height	1 ≤ s ≤ 2
h	UCC/EAN-128 and CC-A/CC-B/CC-C barcode height [dot]	1 ≤ h ≤ 32000 (Varies depending on the model)
n	Number of segments per line in GS1 DataBarExpanded	2 ≤ n ≤ 22, even numbers only 4 or more for Composite

[Function]

- Sets the GS1 DataBar, the UPC, or the EAN barcode, or Composite symbol to the field.
  - Sets the field orientation based on Parameter o.
  - Sets the symbol type based on Parameter t.
  - Sets the module size for symbol rendering based on Parameter m.
  - Sets the height of separator based on Parameter s. Parameter s is enabled only when 1, 2, 3, 4, 5, 6, 11, or 12 is specified for Parameter t.
  - Sets the height of barcode part of UCC/EAN-128 and CC-A/CC-B/CC-C based on Parameter h. Parameter h is enabled only when 11 or 12 is specified for Parameter t.
  - The number of segments per line for GS1 DataBarExpanded is set based on Parameter n. Parameter n is enabled only when 6 is specified for Parameter t.

[Encoding]

- Composite symbols can be specified by including a vertical bar <|> in the field data. In this case, Parameter t is set to the symbol type in the following table.

Value of Parameter t	Symbol type
1	GS1 Standard and CC-A/CC-B
2	GS1 DataBar Truncated and CC-A/CC-B
3	GS1 DataBar Stacked and CC-A/CC-B
4	GS1 DataBar Stacked Omnidirectional and CC-A/CC-B
5	GS1 DataBar Limited and CC-A/CC-B
6	GS1 DataBar Expanded and CC-A/CC-B
7	UPC-A and CC-A/CC-B
8	UPC-E and CC-A/CC-B
9	EAN-13 and CC-A/CC-B
10	EAN-8 and CC-A/CC-B
11	UCC/EAN-128 and CC-A/CC-B
12	UCC/EAN-128 and CC-C

- If encoding a Composite symbol, a vertical bar <|> in the field data is treated as a separator. Data before the vertical bar is encoded as barcode data, and data after the vertical bar is encoded as 2-dimensional code data.

[Response]

None

[Reference]

Related commands: ^FW

## ^BU

---

[Name]

UPC-A barcode

[Format]

^BU o ,h ,i ,a ,c

Parameters	Description	Definition range
o	UPC-A field orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
h	UPC-A barcode height [dot]	$1 \leq h \leq 32000$ (Varies depending on the model)
i	Set/cancel of HRI character addition for UPC-A	i = Y/N Y: Set N: Cancel
a	Set/cancel of HRI character addition for top of UPC-A barcode	a = Y/N Y: Set N: Cancel
c	Set/cancel check digit printing for UPC-A	c = Y/N Y: Set N: Cancel

[Function]

- Set the UPC-A barcode to the current field.
  - Sets the field orientation based on Parameter o.
  - Sets the barcode height based on Parameter h.
  - Sets the HRI character printing based on Parameter i.
  - Sets whether to position the added HRI characters on the top or on the bottom of the barcode based on Parameter a.
  - Sets the check digit printing based on Parameter c.

[Encoding]

- Numerals (0 to 9) can be encoded.
- 11 characters can be encoded.
- The check digit is added automatically. The check digit is calculated by modulus 10 / 3 weight.
- The first character is treated as the number system character when encoding the specified field data.

[Response]

None

[Reference]

Related commands: ^FW , ^BY



## ^BX

[Name]

Data Matrix

[Format]

^BX o ,s ,e ,c ,r ,d ,i ,f

Parameters	Description	Definition range
o	Data Matrix field orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
s	Data Matrix module size	$1 \leq s \leq 32000$ (Varies depending on the model)
e	Data Matrix error correction level	e = 0/50/80/100/140/200 0: ECC000 50: ECC050 80: ECC080 100: ECC100 140: ECC140 200: ECC200
c	Data Matrix column count	$9 \leq c \leq 49$ If e = 200, then $10 \leq c \leq 144$
r	Data Matrix line count	$9 \leq r \leq 49$ If e = 200, then $8 \leq r \leq 144$
d	Data Matrix data type	d = 1/2/3/4/5/6 1: Numerals and blank characters 2: Capital letters of the alphabet (A to Z) and blank characters 3: Numerals, capital letters of the alphabet (A to Z), blank characters, periods <.>, commas <,>, dashes <->, and slashes </>. 4: Numerals, capital letters of the alphabet (A to Z), and blank characters 5: ASCII code (00H to 7EH) 6: ASCII code (00H to FFH)
i	Data Matrix ECC200 escape sequence identifier	Any ASCII single character
f	Data Matrix ECC200 symbol shape	f = 1/2 1: Square 2: Rectangle

[Function]

- Sets the Data Matrix symbol to the field.
  - Sets the field orientation based on Parameter o.
  - Sets the size of each module comprising the symbol based on Parameter s.
  - Sets the symbol's error correction level based on Parameter e.

- Sets the symbol's column count based on Parameter c and the symbol's line count based on Parameter r. However, the valid values vary depending on the error correction level set by Parameter e.
- If 0 to 140 is specified for Parameter e, only the combination of c and r shown in the following table is valid (the combination of c and r is expressed as "r x c").

ECC 000	ECC 050	ECC 080	ECC 100	ECC 140
9 × 9				
11 × 11	11 × 11			
13 × 13	13 × 13	13 × 13	13 × 13	
15 × 15	15 × 15	15 × 15	15 × 15	
17 × 17	17 × 17	17 × 17	17 × 17	17 × 17
19 × 19	19 × 19	19 × 19	19 × 19	19 × 19
21 × 21	21 × 21	21 × 21	21 × 21	21 × 21
23 × 23	23 × 23	23 × 23	23 × 23	23 × 23
25 × 25	25 × 25	25 × 25	25 × 25	25 × 25
27 × 27	27 × 27	27 × 27	27 × 27	27 × 27
29 × 29	29 × 29	29 × 29	29 × 29	29 × 29
31 × 31	31 × 31	31 × 31	31 × 31	31 × 31
33 × 33	33 × 33	33 × 33	33 × 33	33 × 33
35 × 35	35 × 35	35 × 35	35 × 35	35 × 35
37 × 37	37 × 37	37 × 37	37 × 37	37 × 37
39 × 39	39 × 39	39 × 39	39 × 39	39 × 39
41 × 41	41 × 41	41 × 41	41 × 41	41 × 41
43 × 43	43 × 43	43 × 43	43 × 43	43 × 43
45 × 45	45 × 45	45 × 45	45 × 45	45 × 45
47 × 47	47 × 47	47 × 47	47 × 47	47 × 47
49 × 49	49 × 49	49 × 49	49 × 49	49 × 49

- If 200 is specified for Parameter e, only the combination of c and r shown in the following table is valid (the combination of c and r is expressed as “r x c”).

ECC 200 (Square)	ECC 200 (Rectangle)
10 × 10	8 × 18
12 × 12	8 × 32
14 × 14	12 × 26
16 × 16	12 × 36
18 × 18	16 × 36
20 × 20	16 × 48
22 × 22	
24 × 24	
26 × 26	
32 × 32	
36 × 36	
40 × 40	
44 × 44	
48 × 48	
52 × 52	
64 × 64	
72 × 72	
80 × 80	
88 × 88	
96 × 96	
104 × 104	
120 × 120	
132 × 132	
144 × 144	

- If the symbol is a square with an equal number of columns and lines, the same value for the column count and line count is set as shown below, depending on the specifications for Parameters c and r.
  - If only one is specified, the specified value is set.
  - If different values are specified, the larger value is set.

- The encoded data type is set based on Parameter d. The following table indicates the number of bytes encodable for each error correction level and data type.

Error correction level	d = 1	d = 2	d = 3	d = 4	d = 5	d = 6
ECC000	596	452	394	413	310	271
ECC050	457	333	291	305	228	200
ECC080	402	293	256	268	201	176
ECC100	300	218	190	200	150	131
ECC140	144	105	91	96	72	63

- If 200 is specified for Parameter e, the setting for Parameter d does not affect the printer's operation.
- Sets the escape sequence identifier based on Parameter i. This is enabled only when 200 is specified for Parameter e.
- Sets the symbol shape based on Parameter f. This is enabled only when 200 is specified for Parameter e.

[Encoding]

- Encoding can be determined by the meta characters in the field data. Meta character processing is different depending on if the error correction level is ECC000 to ECC140 or ECC200.
- If it is ECC000 to ECC140, the meta characters in the following table can be used.

Meta character	Special character or character
\&	CR and LF
	Backslash <\>

- If it is ECC200, the meta character is recognized by a combination of a certain character and the escape sequence identifier. The following table indicates the special characters or characters that can be specified for meta characters (the escape sequence identifier is shown using the underscore <\_> as an example).

Meta character	Special character or character
_1	FNC1
__	Escape sequence identifier

- In the field data specification, if the hexadecimal input is set using “^FH”, first processing to specify the characters by hexadecimal input is performed, and then the processing to specify the characters by meta character is performed.
- If the error correction level is ECC200, the number of encodable characters is a maximum of 3116 characters for numerals, 2335 characters for alphanumerics, and 1556 bytes for binary.

[Response]

None

[Reference]

Related commands: ^FW , ^BY

## **^BY**

---

[Name]

Set barcode parameters default values

[Format]

`^BY x ,n ,h`

Parameters	Description	Definition range
x	Module width [dot]	$1 \leq x \leq 9999$
n	Bar width ratio	$2.0 \leq n \leq 3.0$
h	Barcode height [dot]	$1 \leq h \leq 32000$ (Varies depending on the model)

[Function]

- Sets the default values for parameters used in barcodes.
  - Sets the module width of the barcode, the ratio in width of the thick and thin bars, and the barcode height.

[Response]

None

[Reference]

Related commands: None

## **^C(D**

---

[Name]

Delete image of drawing canvas saved temporarily

[Format]

^C(D

[Parameter]

None

[Function]

■ The ^C(D command deletes the image of drawing canvas of format which was temporarily saved by using ^C(S command.

- The ^C(L command is ignored since the image is deleted.
- You shouldn't use this command together with ^IS command and N setting of ^MC command.

[Initial value]

None

[Response]

None

[Reference]

Related function specifications: None

Related commands: ^C(L , ^C(S

## **^C(L**

---

[Name]

Load temporary saved image of drawing canvas

[Format]

^C(L

[Parameter]

None

[Function]

- The ^C(L command loads the image of drawing canvas of format which was temporarily saved by using ^C(S command, and puts the image onto the current format.
  - This command puts the saved image onto the current drawing canvas only when the size of the drawing canvas of current format and the size of the saved image are same.
  - The canvas of current format is overwritten with the saved image by the putting process of this command.
  - You shouldn't use this command together with ^IS command and N setting of ^MC command.

[Initial value]

None

[Response]

None

[Reference]

Related function specifications: None

Related commands:           ^C(D , ^C(S

## ^C(S

---

[Name]

Save image of drawing canvas temporarily

[Format]

^C(S a

Parameters	Description	Definition range
a	Print image after saving	a = Y/N Y = Set N = Cancel

[Function]

- The ^C(S command temporarily saves the image of drawing canvas of current format.
  - The image saved by this command does not contain transparent color.
  - The image saved by this command is kept saving until the ^C(D (delete the image of drawing canvas saved temporarily) command execution, reset, power off, the ~JA (cancel all) command execution, the cancel button operation (long pushing).
  - You shouldn't use this command together with ^IS command and N setting of ^MC command.

[Initial value]

None

[Response]

None

[Reference]

Related function specifications: None

Related commands: ^C(D, ^C(L



## ^CC ~CC

---

[Name]

Set prefix character for format command

[Format]

^CC p ~CC p

Parameters	Description	Definition range
p	Prefix character for format command	One ASCII code character excluding <C>, <D>, and <T>

[Function]

Sets the prefix character which indicates the format command.

[Response]

None

[Reference]

Related commands: ^CT, ~CT, ^CD, ~CD, ^FH, ^FC

[Note]

The ^JUS command is required to save settings to the non-volatile memory of the printer unit.

Please refer to the “^JU” command section for details.

[Usage example]

An example of sending data that sets the prefix character for the format command and saves settings to the non-volatile memory of the printer unit is shown below.

^XA	
^CC@	1. Sets <@> as the prefix character for the format command.
@JUS	2. Saves the setting to non-volatile memory.
@XZ	

## **^CD ~CD**

---

[Name]

Set command parameter delimiter

[Format]

^CD s ~CD s

Parameters	Description	Definition range
s	Parameter separator character	One ASCII code character excluding <C>, <D>, and <T>

[Function]

Sets the character which indicates a break between command parameters.

[Response]

None

[Reference]

Related commands: ^CC , ~CC , ^CT , ~CT , ^FH , ^FC

[Note]

The ^JUS command is required to save settings to the non-volatile memory of the printer unit.

Please refer to the “^JU” command section for details.

[Usage example]

An example of sending data that sets the command parameter delimiter and saves settings to the non-volatile memory of the printer unit is shown below.

^XA	
^CDa	1. Sets <a> as the command parameter delimiter.
^JUS	2. Saves the setting to non-volatile memory.
^XZ	

## ^CF

---

[Name]

Default font specification

[Format]

^CF f ,h ,w

Parameters	Description	Definition range
f	Default font identifier	$0 \leq f \leq 9$ , Capital letters of the alphabet (A to Z)
h	Default character height [dot]	$0 \leq h \leq 9999$
w	Default character width [dot]	$0 \leq w \leq 9999$

[Function]

- Specifies the default font used to render character strings in the field.
  - Sets the font type used by default used by the default font identifier.
  - If the specified font is a fixed-size font, set a multiple of the font's standard height for Parameter h.
  - If the specified font is a fixed-size font, set a multiple of the font's standard width for Parameter w.

[Response]

None

[Reference]

Related commands: ^A , ^A@

# ^CI

[Name]

Set international font/encoding

[Format]

^CI a ,i1 ,o1 ,i2 ,o2 ...

Parameters	Description	Definition range
a	International font	<International character set setting> $0 \leq a \leq 12$ 0: U.S.A.1 character set 1: U.S.A.2 character set 2: U.K. character set 3: Holland character set 4: Denmark/Norway character set 5: Sweden/Finland character set 6: Germany character set 7: France1 character set 8: France2 character set 9: Italy character set 10: Spain character set 11: Other character set 12: Japan character set
		<Code Page setting> $a = 13/27/31, 33 \leq a \leq 36$ 13: Code Page850 27: Code page1252 31: Code page1250 33: Code page1251 34: Code page1253 35: Code page1254 36: Code page1255
		<Encode setting> $14 \leq a \leq 17, a = 24/26, 28 \leq a \leq 30$ 14: 2-byte Asia encoding 15: Shift-JIS 16: EUC-JP, EUC-CN 17: UCS-2 Big-Endian (Not recommended) 24: 1-byte Asia encoding 26: Multi-byte Asia encoding (ASCII transparent) 28: Unicode (UTF-8) 29: Unicode (UTF-16 Big-Endian) 30: Unicode (UTF-16 Little-Endian)
i#	Character code to undergo the mapping change (# indicates the combination number for the character code to undergo the mapping change.)	$0 \leq i\# \leq 255$
o#	Character code to be rendered by mapping change	$0 \leq o\# \leq 255$

[Function]

- Sets the link between the input character code and the rendered characters.
  - The character code set used in character rendering is set based on Parameter a.
  - The character code specified in Parameter i# is replaced with the character code specified in Parameter o#. Up to 256 replacements can be set.

[Response]

None

[Note]

If 14, 15, 16, 24, or 26 is specified for Parameter a, a character code conversion table that supports the character code set is required. Use “^SE” to enable the supporting character code conversion table.

[Reference]

Related commands: ^SE

## ^CM

[Name]

Set drive character allocation

[Format]

^CM b ,e ,r ,a ,m

Parameters	Description	Definition range
b	Memory device to allot drive character B to	b ,e ,r ,a = B/E/R/A B: Optional memory device E: Internal non-volatile memory device R: Internal volatile memory device A: Optional memory device
e	Memory device to allot drive character E to	
r	Memory device to allot drive character R to	
a	Memory device to allot drive character A to	
m	Enable/disable multiple drive allotment	m = M / No character input M: Enable multiple drive allotment No character input: Disabled

[Function]

- Sets the allotment of drive character for accessing memory devices.
  - If multiple drive character allotment is enabled based on Parameter m, multiple drive characters can be allotted to a single memory device. In this case, the same memory device can be accessed using all the allotted drive characters.
  - If multiple drive character allotment is disabled based on Parameter m, a different drive character must be allotted to each memory device.

[Response]

None

[Reference]

Related commands: None

[Note]

The ^JUS command is required to save settings to the non-volatile memory of the printer unit. Please refer to the “^JU” command section for details.

[Usage example]

An example of sending data that sets the allotment of drive characters for accessing memory devices and saves settings to the non-volatile memory of the printer unit is shown below.

^XA	
^CMR,E,R,E,M	1. Sets the allotment of drive character B to internal volatile memory device, E to internal non-volatile memory device, R to internal volatile memory device, and A to internal non-volatile memory device.
^JUS	2. Saves the setting to non-volatile memory.
^XZ	

## **^CT ~CT**

---

[Name]

Set prefix character for control commands

[Format]

**^CT** p      **~CT** p

Parameters	Description	Definition range
p	Prefix character for control commands	One ASCII code character excluding <C>, <D>, and <T>

[Function]

Sets the prefix character which indicates the control command.

[Response]

None

[Reference]

Related commands: **^CC** , **~CC** , **^CD** , **~CD** , **^FH** , **^FC**

[Note]

The **^JUS** command is required to save settings to the non-volatile memory of the printer unit.

Please refer to the “**^JU**” command section for details.

[Usage example]

An example of sending data that sets prefix character for control commands and saves settings to the non-volatile memory of the printer unit is shown below.

<b>^XA</b>	
<b>^CTa</b>	1. Sets <a> as the prefix character for control commands.
<b>^JUS</b>	2. Saves the setting to non-volatile memory.
<b>^XZ</b>	

## ^CV

---

[Name]

Barcode validation

[Format]

^CV e

Parameters	Description	Definition range
e	Enabled/disable barcode validation	e = Y/N Y: Enabled N: Disabled

[Function]

- Enables/disables the barcode validation.
  - This command sets whether to enable or disable the printer's barcode validation function.
  - If barcode validation is enabled, the printer verifies the validity of the barcode data and parameters for the input barcode command. If the validation determines that the barcode data is invalid, an error message is printed instead of a barcode.

[Response]

None

[Reference]

Related commands: None



## ^CW

---

[Name]

Set font identifier allocation

[Format]

^CW f ,d: o .x

Parameters	Description	Definition range
f	Font identifier allotted to the font file	$0 \leq f \leq 9$ , Capital letters of the alphabet (A to Z)
d	Drive where the font file is stored	d = R/E/B/A/Z R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory Z: Non-rewritable memory
o	Font file name	ASCII code within 8 characters
x	Extension	X = FNT/TTF/TTE/DAT

[Function]

- Allots a font identifier to the font file saved to the printer.
  - This command allots a font identifier to a font file so that the font file can be used by “^A”.
  - If a font identifier that is already allotted is allotted to a different font file, the latest allotment is valid.
  - Multiple font identifiers can be allotted to a single font file.

[Response]

None

[Reference]

Related commands: None

## ~DE

---

[Name]

Download a character code conversion table

[Format]

~DE d: o. x ,s ,data

Parameters	Description	Definition range
d	Storage memory device	d = R/E/B/A R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory
o	Character code conversion table file name	ASCII(20H to 7EH) , 8 and less characters
x	Extension	x = CNV
s	Data size (bytes) of the character code conversion table	Numerical value The maximum size depends on the model.
data	Character code conversion table data	Binary data in CSV format

[Function]

- Downloads the character code conversion table to the printer.
  - Character code conversion table refers to a table which converts character code defined in an encoding format other than Unicode into a character code defined in Unicode.
  - The character code conversion table is stored in the specified storage destination.
  - If any file exists in the specified storage location, delete the existing file and create a character code conversion table file in which an additional downloaded character code conversion table is stored.

[Initial value]

None

[Response]

None

[Supplement]

It corresponds to a character code conversion table in CSV format. The character code conversion table in CSV format is created by the Epson utility.

[Note]

Use a colon <:> for the parameter separator character between Parameter d and Parameter o.

Use a period <.> for the parameter separator character between Parameter o and Parameter x.

[Reference]

Related function specifications: None

Related commands: ^SE

## **^DF**

---

[Name]

Save label format

[Format]

**^DF** d: o. x

Parameters	Description	Definition range
d	Drive for storing the label format file	d = R/E/B/A R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory
o	Label format file name	ASCII code within 8 characters
x	Extension	x = FMT (Fixed)

[Function]

- Saves the commands in the label format to the label format file.
  - The label is not printed for label formats that include this command. Command strings that are directly after this command and directly before “^XZ” are saved to a file. This file is called the label format file.
  - The label format file is saved to the specified storage drive with the specified file name.

[Response]

None

[Reference]

Related commands: ^XF

## ~DG

---

[Name]

Save graphic

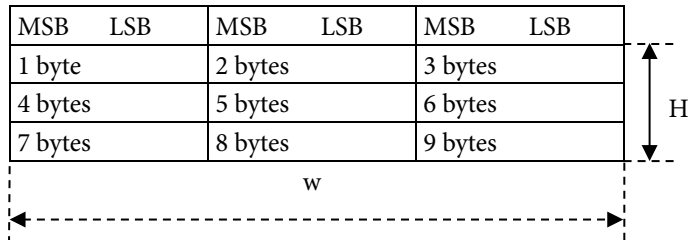
[Format]

~DG d: o. x ,s ,w ,data

Parameters	Description	Definition range
d	Storage drive	d = R/E/B/A R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory
o	Graphic file name	ASCII code within 8 characters
x	Extension	x = GRF (Fixed)
s	Graphic data size [byte]	s > 0
w	Horizontal width [8 dots]	w > 0
data	Graphic data	Hexadecimal character string

[Function]

- Downloads a monochrome bitmap graphic to the printer.
  - The graphic is stored to the specified storage with the specified graphic file name.
  - Graphic rendering dots are specified by data in a hexadecimal character string. Parameter s specifies the data size and Parameter w specifies the horizontal width.
  - The data format for the bitmap graphic is as follows. (Example where  $w = 3$  ( $3 \times 8 = 24$  [dot width]),  $s = 9$ )



- If the bitmap graphic is line H, then  $s = H \times w$ .
- 1 byte of data expresses 8 dots. Therefore, if the data is F0h, then these 8 dots are rendered as follows.

1	1	1	1	0	0	0	0
---	---	---	---	---	---	---	---

- Graphic data is handled as follows.
  - One character from 1. to 3. below is used as Parameter data. At this time, the size of Parameter data written in binary must be matched to the size specified in Parameter t.
    1. 0 to 9, A to F, and a to f in ASCII can be used as hexadecimal graphic data.
    2. ASCII comma <,>, the parameter separator character, is used to separate lines. If a comma is input, processing is carried out as if ASCII 0 was input for the remainder of the line.
    3. G to Y and g to z in ASCII can be used as repetition characters. For example, if I9 is input, processing is carried out as if 999 were input. The following table indicates the number of repetitions.

Character	Specified times	Character	Specified times	Character	Specified times	Character	Specified times
G	1	Q	11	h	40	r	240
H	2	R	12	i	60	s	260
I	3	S	13	j	80	t	280
J	4	T	14	k	100	u	300
K	5	U	15	l	120	v	320
L	6	V	16	m	140	w	340
M	7	W	17	n	160	x	360
N	8	X	18	o	180	y	380
O	9	Y	19	p	200	z	400
P	10	g	20	q	220		

[Response]

None

[Reference]

Related commands: ~DN , ^HG , ^XG

## **~DN**

---

[Name]

Cancel graphic save

[Format]

~DN

[Parameter]

None

[Function]

- Cancels the graphic data download and restarts normal command analysis.
  - Graphic downloads in ASCII format (including ZB64) via “~DG”, “^GF”, or “~DY” are canceled.

[Response]

None

[Reference]

Related commands: ~DG , ^GF , ~DY

## ~DU

---

[Name]

Save TrueType fonts

[Format]

~DU d: o. x ,s ,data

Parameters	Description	Definition range
d	Storage drive	d = R/E/B/A R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory
o	TrueType font file name	ASCII code within 8 characters
x	Extension	x = FNT
s	TrueType font data size [byte]	s > 0
data	TrueType font data	Hexadecimal character string

[Function]

- Downloads TrueType fonts to the printer.
  - The TrueType fonts are saved to the storage location specified by the parameter.

[Response]

None

[Reference]

Related commands: ^A@ , ^CW

## ~DY

[Name]

Save file

[Format]

~DY d: o ,f ,x ,t ,w ,data

Parameters	Description	Definition range
d	Storage drive	d = R/E/B/A R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory
o	File name	ASCII code within 8 characters
f	Data format	f = A/B/P A: ASCII/ZB64 B: Binary P: PNG(ZB64)
x	Extension type	x = E/G/P/T/BGD/UCL E: TTE G: GRF P: PNG T: TTF BGD: BGD UCL: UCL
t	Graphic data size [byte]	t > 0
w	Data size per line [byte]	w > 0
data	data	ASCII or binary (Varies based on Parameter f)

[Function]

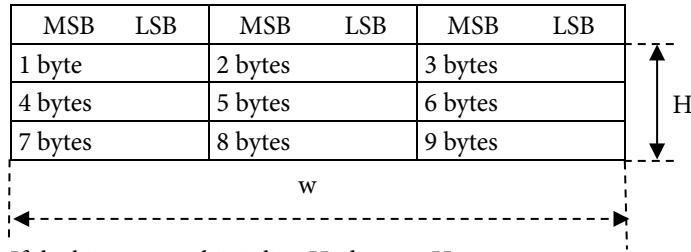
- Downloads the graphic or font data to the printer.
  - The input data of the data format specified by Parameter f is converted to the format of the extension specified by Parameter x.
  - The converted data is stored with the file name specified in Parameters d, o, and x.
  - The following table indicates the definition scope of Parameter t and the handling of Parameter w based on the extension type.

Extension type	Value specified by t	Handling of w
TTE/TTF	Size of data to be downloaded	Ignored
GRF	Size of data decoded into hexadecimal	Data size per line of the graphic
PNG	Size of data to be downloaded	Ignored
BGD	Size of data to be downloaded	Ignored



The data format for the bitmap graphic for the GRF extension is as follows.

- (Example where  $w = 3$  ( $3 \times 8 = 24$ [dot] width),  $t = 9$ )



- If the bitmap graphic is line H, then  $t = H \times w$ .
- 1 byte of data expresses 8 dots. Therefore, if the data is F0h, then these 8 dots are rendered as follows.

1	1	1	1	0	0	0	0
---	---	---	---	---	---	---	---

- Graphic data is handled as follows.
  - If the data format is binary, you can use any binary data as Parameter data. At this time, the size of Parameter data must be matched to the size specified in Parameter t.
  - If the data format is a hexadecimal character string, one character from 1. to 3. below is used as Parameter data. At this time, the size of Parameter data written in binary must be matched to the size specified in Parameter t.
    - 0 to 9, A to F, and a to f in ASCII can be used as hexadecimal graphic data.
    - ASCII comma <, >, the parameter separator character, is used to separate lines. If a comma is input, processing is carried out as if ASCII 0 was input for the remainder of the line.
    - G to Y and g to z in ASCII can be used as repetition characters. For example, if I9 is input, processing is carried out as if 999 were input. The following table indicates the number of repetitions.

Character	Specified times	Character	Specified times	Character	Specified times	Character	Specified times
G	1	Q	11	h	40	r	240
H	2	R	12	i	60	s	260
I	3	S	13	j	80	t	280
J	4	T	14	k	100	u	300
K	5	U	15	l	120	v	320
L	6	V	16	m	140	w	340
M	7	W	17	n	160	x	360
N	8	X	18	o	180	y	380
O	9	Y	19	p	200	z	400
P	10	g	20	q	220		

[Response]

None

[Reference]

Related commands: ^HY

## ^F(C

---

[Name]

Field color settings

[Format]

^F(C r1 ,g1 ,b1 ,a1 ,i1 ,r2 ,g2 ,b2 ,a2 ,i2

Parameters	Description	Definition range
r1	Foreground red component	$0 \leq r1 \leq 255$
g1	Foreground green component	$0 \leq g1 \leq 255$
b1	Foreground blue component	$0 \leq b1 \leq 255$
a1	Foreground opacity	$0 \leq a1 \leq 255$
i1	Foreground reversal specified/canceled	i1 = D/N/R D: Specified by “^FR”(field reverse)/”^LR”(label reverse) N: Reversal canceled R: Reversal specified
r2	Background red component	$0 \leq r2 \leq 255$
g2	Background green component	$0 \leq g2 \leq 255$
b2	Background blue component	$0 \leq b2 \leq 255$
a2	Background opacity	$0 \leq a2 \leq 255$
i2	Background reversal specified/canceled	i2 = D/N/R D: Specified by “^FR”(field reverse)/”^LR”(label reverse) N: Reversal canceled R: Reversal specified

[Function]

- Sets color, opacity, and color reversal for the foreground and background of targets in the field.
  - This command is used for text, diagram (rectangles, circles, ellipses, diagonal lines), 1-dimensional barcodes, 2-dimensional codes, and black & white bitmap graphic fields.
  - The foreground and background of target fields are shown in the following table.

Target	Foreground	Background
Text	Text	Rectangular area containing text
Rectangle, circle, ellipse	Outline	Area enclosed by outline
Diagonal line	Line	None
1-dimensional barcode 2-dimensional code	Bar	Spaces (However, a background color is fixed to transparent even if you set a background color by this command.)
B&W bitmap graphics	Printed dots (Value of bit: 1)	Dots not printed (Value of bit: 0)

- Please refer to the section of the 2.6 Designating Color and the product specification of the printer for the color setting to ensure decoding barcodes and 2-dimensional codes.

[Initial value]

Foreground: opacity 100% black (black) (r1 = 0, g1 = 0, b1 = 0, a1 = 255),

Background: opacity 0% white (Transparent) (r2 = 255, g2 = 255, b2 = 255, a2 = 0)

[Response]

None

[Reference]

Related function specifications: 2.6 Designating Color, 2.7 Field color reversal

Related commands: None

[Note]

Parameters of “a1 (Foreground opacity)” and “a2 (Background opacity)” are not supported on a PNG image. Set “Foreground opacity” and “Background opacity” in PNG image.

## ^FB

[Name]

Field block

[Format]

^FB w ,l ,s ,j ,h

Parameters	Description	Definition range
w	Width of wrap [dot]	$0 \leq w \leq 9999$
l	Maximum number of wrapped lines	$1 \leq l \leq 9999$
s	Adjustment value for space between lines [dot]	$-9999 \leq s \leq 9999$
j	Text justification	j = L/C/R/J L: Align left C: Align center R: Align right J: Justified (Final line aligned left)
h	Hanging indent [dot]	$0 \leq h \leq 9999$

[Function]

- Sets wrap for rendering character strings in the field.
  - Characters in the field data are rendered wrapped back if they meet one of the following conditions.
    - a) Backslash + Ampersand `<\&>` (Specifies wrapping for character strings)
    - b) Backslash `<\>` (Specifies wrapping for character strings and printing of a hyphen `<->` for the wrapped positions) However, if the word where the backslash is inserted fits in one line, the backslash is ignored.
    - c) When rendering character strings to the field, the rendering width exceeds the wrap width set by Parameter w.
  - The wrap position for c) above is the character after the space (blank character) right before the character which exceeds the wrap width. However, if there is not a space (blank character) in the same line, a hyphen `<->` is added at the end of the line and the text is wrapped. The wrap position for this case is in a position where the hyphen `<->` fits on the end of the line.
  - For c) above, if the wrap width specified by Parameter w is smaller than the character width, the text is wrapped using the character width.
  - Parameter s adjusts the space between lines. A positive value increases the space between lines and a negative value decreases it, relative to the standard space between lines.
  - Parameter j sets the text justification.
  - Parameter h sets the hanging indent. If the hanging indent is set, the left edge of the second line and thereafter in the character string is moved to the right.
  - If the number of lines in the character string exceeds the setting for Parameter l due to wrapping processing, all of the exceeding lines are rendered overlapping on the last line set by Parameter l.
  - To render a backslash `<\>` in the field data which sets wrapping with this command, specify a backslash twice, such as `<\\>`.

[Response]

None

[Reference]

Related commands: ^TB

## ^FC

---

[Name]

Set clock identifier

[Format]

^FC f ,s ,t

Parameters	Description	Definition range
f	Primary clock identifier	1 character in ASCII code
s	Secondary clock identifier	1 character in ASCII code
t	Tertiary clock identifier	1 character in ASCII code

[Function]

- Sets the identifier used when calling the date and time of the real-time clock in the field data.
  - To print the date and time, it must be rendered as field data for “^FD” and “^FV”. After executing this command, you can acquire and print the date and time of the real-time clock in “^FD” and “^FV” in the same field.
  - In the field data, the print format for the date and time must be specified as “identifier + letter”. The following indicates the print format the user can specify. Here, <%> indicates the identifier.

Identifier + letter	Format for embedding date and time	Value range (English)
%Y	Year (4 digits)	4 digit numeral
%y	Year (2 digits)	00 to 99
%m	Month	01 to 12
%B	Month name	January to December
%b	Month abbreviation	Jan to Dec
%d	Date (In month)	01 to 31
%j	Date (In year)	001 to 366
%w	Day of the week	00 (Sunday) to 06 (Saturday)
%A	Name of day of the week	Sunday to Saturday
%a	Day of the week abbreviation	Sun to Sat
%U	Week number with Sunday as start	00 to 53
%W	Week number with Monday as start	00 to 53
%H	Time (24-hour clock)	00 to 23
%I	Time (12-hour clock)	01 to 12
%p	AM/PM	AM or PM
%M	Minute	00 to 59
%S	Second	00 to 59

[Response]

None

[Reference]

Related commands: ^FD , ^FV , ^SO , ^SL

## ^FD

---

[Name]

Field data

[Format]

^FD data

Parameters	Description	Definition range
data	Field data	Up to 3,072 bytes of ASCII code, excluding characters set for the prefix

[Function]

- Renders the field data to the field.
  - The character string specified in data is rendered as a font or barcode set to the field.

[Response]

None

[Reference]

Related commands: ^FH , ^FS

## ^FH

---

[Name]

Set hexadecimal identifier

[Format]

^FH i

Parameters	Description	Definition range
i	Hexadecimal identifier	1 character in ASCII code

[Function]

- Sets the hexadecimal identifier to the field.
  - This command is a command for specifying the characters to set to the field data in hexadecimal character code. After executing this command, perform specification by character code in the data of the first “^FD” or “^FV”.
  - The character specified in Parameter i is set to the hexadecimal identifier.
  - One byte code for two hexadecimal digits is written as the hexadecimal identifier and two following hexadecimal digits.

[Response]

None

[Reference]

Related commands: ^FD , ^FV

[Usage example]

^XA	
^FO100,100	
^FH_	1. Sets the underscore <_> as the hexadecimal identifier.
^FD_31_41^FS	2. Expresses the numeral 1 as <_31> and the letter A of the alphabet as <_41>.
^XZ	

## ^FM

---

[Name]

Multiple field origin locations in PDF417

[Format]

^FM x1 ,y1 ,x2 ,y2 ...

Parameters	Description	Definition range
x#	X coordinate of the #th symbol [dot] (# indicates the number of the combination of the X coordinate and Y coordinate.)	$0 \leq x\# \leq 32000$ , x# = e e: Remove from rendering target
y#	Y coordinate of the #th symbol [dot]	$0 \leq y\# \leq 32000$ , y# = e e: Remove from rendering target

[Function]

- Divides a PDF-417 barcode and renders it at each specified coordinate.
  - The coordinates to render a split PDF-417 are specified.
  - The first split symbol is rendered at the coordinates (x1,y1). The #th symbol is rendered at the coordinates (x#,y#).
  - If e is specified for either Parameter x# or y#, the #th symbol is not rendered.
  - The number of x# and y# combinations must match the number of split symbols.
  - There can be a maximum of 60 combinations of x# and y#.

[Response]

None

[Supplement]

This does not affect rendering for symbols or barcodes that are not in PDF-417.

[Reference]

Related commands: ^B7



## **^FN**

---

[Name]

Field number

[Format]

^FN n

Parameters	Description	Definition range
n	Field number	$0 \leq n \leq 9999$

[Function]

- Allots a field number to the field.
  - The field number specified for Parameter n is allotted to the field.
  - The same field number can be allotted to multiple fields.
  - If allotting a certain field number in the label format for the first time, define a field that does not have data (execute this command instead of “^FD”).
  - The printer prints only fields with data. If you want to set data to fields where a field number has already been allotted, define a new field that includes this command. At that time, include both the field number and the field data (execute “^FD” and “^FN” in the same field).
  - If multiple fields with the same field number allotted exist in a label format, the field data specified by “^FD” will be rendered in each of those fields.
  - This command is used to define the print format and the content to be printed separately. You can save the field format in advance as a label format file to print with the same format, changing only the data.

[Response]

None

[Reference]

Related commands: ^FD

[Usage example]

^XA	
^DFR:FORMAT.FMT^FS	1. Saves label format file.
^FO100,100^FN1^FS	2. Links to field number 1.
^XZ	
^XA	
^XFR:FORMAT.FMT^FS	3. Calls label format file.
^FN1^FDEPSON^FS	4. Renders character string in the field for field number 1.
^XZ	

## **^FO**

---

[Name]

Field origin location

[Format]

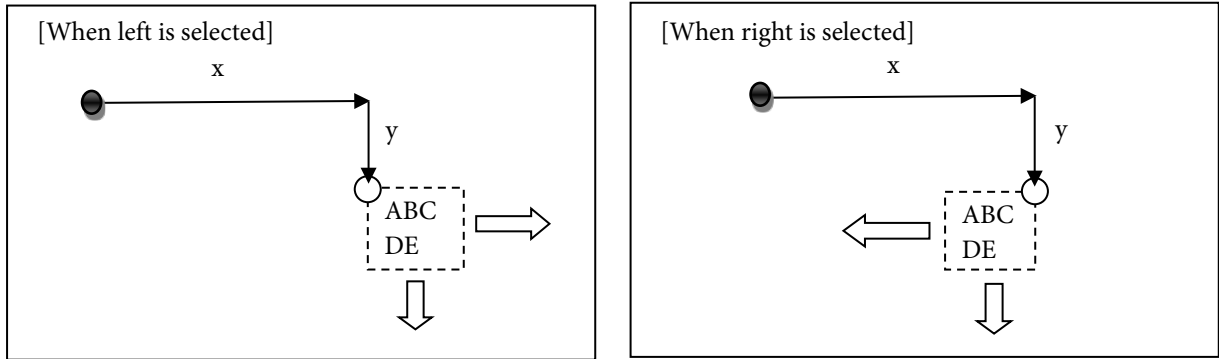
`^FO x ,y ,j`

Parameters	Description	Definition range
x	x coordinate of field origin on label [dot]	$0 \leq x \leq 32000$
y	y coordinate of field origin on label [dot]	$0 \leq y \leq 32000$
j	Specifies field origin location	j = 0/1/2 0: Left 1: Right 2: Auto

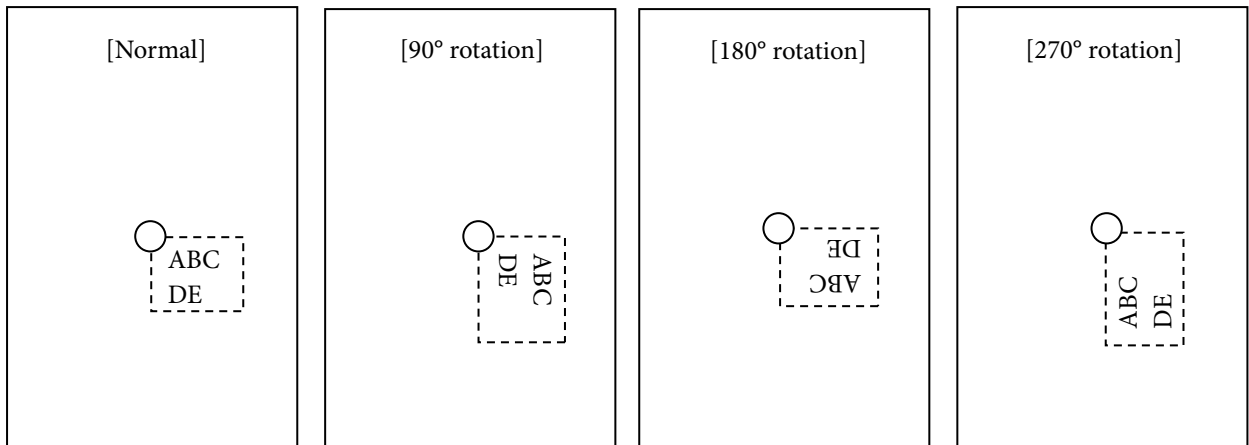
[Function]

- Sets the field origin location relative to the home position.
  - The field origin location is set relative to the home position based on Parameters x and y.
  - The field origin location is set to the top right or top left of the field based on Parameter j.
  - If left is selected, the field origin location is set to the top left of the field.
  - If right is selected, the field origin location is set to the top right of the field.
  - The y-direction coordinate in the bottom of the field matches with the bottom rendered edge. However, if the block height is specified based on “^TB”, the specification of “^TB” is followed.
  - The x coordinate in the right or left side of the field (side farther from the origin) is determined as follows.
    - If left is selected, the x coordinate in the right side of the field matches the farthest-right rendering edge. However, if the block width is specified based on “^TB”, the specification of “^TB” is followed.
    - If right is selected, the x coordinate in the left side of the field matches the farthest-left rendering edge. However, if the block width is specified based on “^TB”, the specification of “^TB” is followed.

- The following figure illustrates the position of the field when the field origin location is set to the left side and when it is set to the right side. The dotted lines indicate the positioning of the field, with “ABCDE” specified as the field data, and with wrapping specified for the field’s character string based on “^FB”. (The black circle is the home position, and the white circle is the field origin location. The arrows indicate the direction in which the field expands based on the expansion of the rendering target.)



- Regardless of the field orientation setting, the top left or top right of the field, as seen from the front of the label, is set as the field origin location.
- The following figure indicates the positioning of the field when the field orientation is specified. The field origin location is set to the left. “^FB” set wrapping for the field’s character string. “ABCDE” is specified as the field data. The dotted lines indicate the positioning of the field at this time (the white circle is the field origin location).



[Response]

None

[Reference]

Related commands: ^FW , ^TB

## ^FP

---

[Name]

Set field text format

[Format]

^FP d ,s

Parameters	Description	Definition range
d	Field character string rendering direction	d = H/V/R H: Horizontal (Left-to-right) V: Vertical (Top-to-bottom) R: Horizontal (Right-to-left)
s	Added amount of space between characters [dot]	$0 \leq s \leq 9999$

[Function]

- Sets the format for character string rendering in the current field.
  - The direction to render characters in is set based on Parameter d.
  - The space to be added between characters is set based on Parameter s.

[Response]

None

[Reference]

Related commands: None

## ^FR

---

[Name]

Set field reverse print

[Format]

^FR

[Parameter]

None

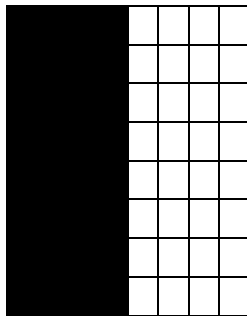
[Function]

■ Sets monochrome reversal for field rendering.

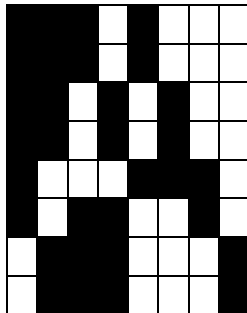
- Monochrome reversal for printing is set to the field.
- When the field is rendered to a drawing canvas, the printer operates as follows.
- If monochrome reversal is not set, the rendered dots are black.
- If monochrome reversal is set, black and white for the rendered dots are reversed.
- However, if color is set for the field, rendering is performed in accordance with “Field color reversal”.

The following is an example where the character <A> is placed over a rendered canvas and printing is done with monochrome reversal.

- E.g.) Before rendering <A>



- E.g.) After rendering <A>



[Response]

None

[Reference]

Related commands: ^LR

## **^FS**

---

[Name]

Field separator

[Format]

^FS

[Parameter]

None

[Function]

■ Ends the field definition.

- The field starts directly after “^XA” or directly after “^FS”.
- The end of the field is the next “^FS” or “^XZ”.
- This command can be executed using the control code <SI>.

[Response]

None

[Reference]

Related commands: None

## ^FT

---

[Name]

Field origin location

[Format]

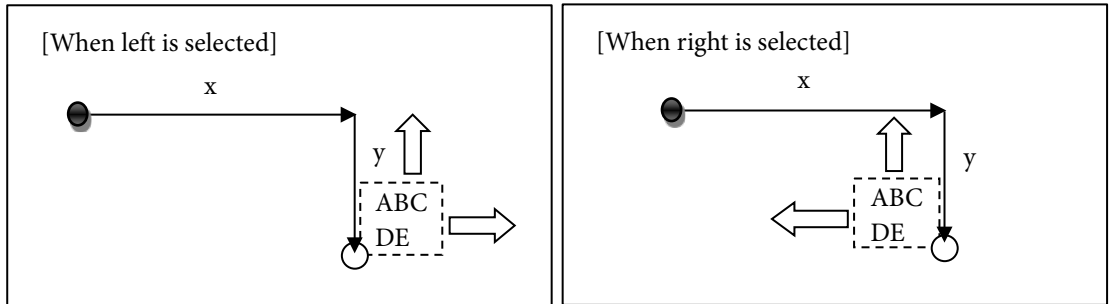
^FT x ,y ,j

Parameters	Description	Definition range
x	x coordinate of field rendering origin on label [dot]	$0 \leq x \leq 32000$
y	y coordinate of field rendering origin on label [dot]	$0 \leq y \leq 32000$
j	Rendering origin in the field	j = 0/1/2 0: Left 1: Right 2: Auto

[Function]

- Sets the field's rendering origin relative to the home position.
  - Whether the field rendering origin is put in the bottom left or bottom right of the field is set based on Parameter j.
    - When left is selected, the field rendering origin is put in the bottom left of the field.
    - When right is selected, the field rendering origin is put in the bottom right of the field.
  - The y-direction coordinate in the top of the field matches with the top rendered edge. However, if the block height is specified based on “^TB”, the specification of “^TB” is followed.
  - The x coordinate in the right or left side of the field (side farther from the origin) is determined as follows.
    - If left is selected, the x coordinate in the right side of the field matches the farthest-right rendering edge. However, if the block width is specified based on “^TB”, the specification of “^TB” is followed.
    - If right is selected, the x coordinate in the left side of the field matches the farthest-left rendering edge. However, if the block width is specified based on “^TB”, the specification of “^TB” is followed.
  - The position of the rendering origin for the field on the label is set based on Parameters x and y. The rendering origin is a relative coordinate from the home position.

- The following figure indicates the positioning of the field when the field rendering origin is set to the left and when it is set to the right. The dotted lines indicate the positioning of the field. In the example figure, “ABCDE” is specified as the field data, with wrapping specified for the field’s character string based on “^FB”. (The black circle is the home position, and the white circle is the field rendering origin. The arrows indicate the direction in which the field expands based on the expansion of the rendering target.)



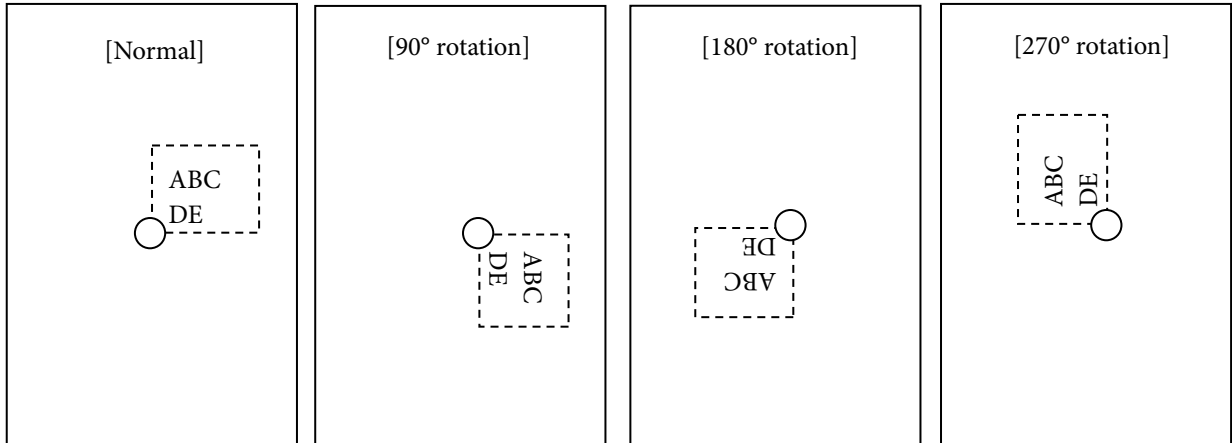
- The rendering position relative to the field rendering origin varies depending on the object rendered. The following table indicates the part of the rendered object that matches the y direction position of the field's rendering origin.

Rendered object	Part that matches the y direction position of the rendering origin
Character	Character’s baseline
Barcode or 2-dimensional code	Bottom edge of the barcode or code
Graphic	Bottom edge of the graphic

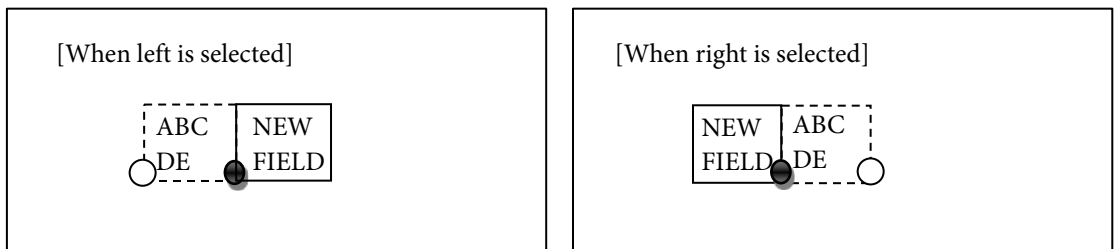
- If rotation has been specified based on the field orientation setting, the field is rotated centered on the field rendering origin.



- The following figure indicates the positioning of the field when the field orientation is specified. The rendering origin in the field is set to the left. “^FB” set wrapping for the field’s character string. “ABCDE” is specified as the field data. The dotted lines indicate the positioning of the field at this time (the white circle is the field rendering origin).



- If Parameters x and y are omitted, the rendering origin is set as follows.
  - If a field is already rendered in the label format, the rendering origin is set to the position farthest away horizontally from the rendering origin of the latest rendered field. The following figure indicates the positioning of the field when set to the left and right based on Parameter j. In the figure, “ABCDE” is the latest rendered field. After that, the new field (“NEW FIELD”) is rendered, with Parameters x and y omitted. The dotted lines indicate the positioning of the field at this time. (The white circle indicates the rendering origin of the latest rendered field, and the black circle indicates the rendering origin of the new field.)



- If defining the field first in the label format, set the home position coordinates as the field rendering origin.
- If you omitted only Parameter x, the x coordinate for the rendering origin is the farthest coordinate horizontally from the rendering origin of the latest rendered field. The y coordinate is the coordinate specified in Parameter y.
- If you omitted only Parameter y, the x coordinate of the rendering origin is the position specified in Parameter x. The y coordinate is the same coordinate as the rendering origin of the latest rendered field.

[Response]

None

[Reference]

Related commands: ^FW

## **^FV**

---

[Name]

Field variable

[Format]

^FV data

Parameters	Description	Definition range
data	Variable field data	Up to 3,072 bytes of ASCII code, excluding characters set for the prefix

[Function]

- Renders the field data to the field.
  - The character string specified in data is rendered as a font or barcode set to the field.
  - This command renders the field data, in the same way as “^FD”. Unlike “^FD”, even if deletion of the drawing canvas was disabled in “^MC”, rendering images in the field data based on this command are deleted after the label is printed. Therefore, when deletion of the drawing canvas is disabled, if the following label is printed, the printer operates as follows.
  - The printer prints the image rendered by “^FD” in the following label.
  - The printer does not print the image rendered by this command in the following label.

[Response]

None

[Reference]

Related commands: ^MC , ^FH

## **^FW**

---

[Name]

Set default field orientation

[Format]

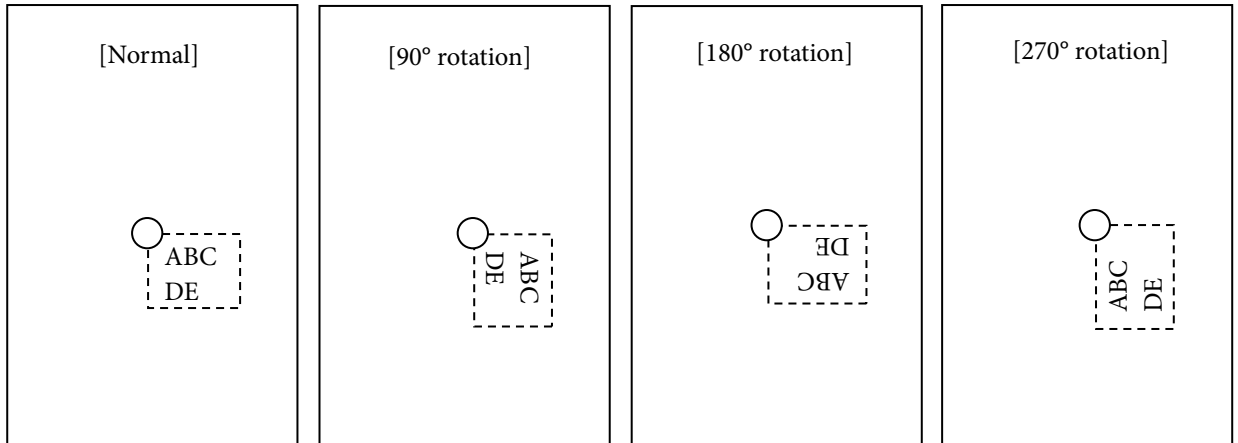
`^FW o ,j`

Parameters	Description	Definition range
o	Default field orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
j	Default field origin location	j = 0/1/2 0: Left 1: Right 2: Auto

[Function]

- Sets the default field orientation and origin position.
  - When the origin coordinate is specified by “^FO” and “^FT” for each field, if the field orientation is omitted, the default field orientation set in this command is applied.
  - The default field orientation is set based on Parameter o.

- The following figures indicate the positioning of the field when standard, 90° rotation, 180° rotation, and 270° rotation are set for the field orientation. The dotted lines show the positioning of the field when “^FO” sets the field origin location to the left side, “^FB” sets the wrapping for the field character string, and “ABCDE” was specified for the field data. (The white circle indicates the field origin.)



- When the origin coordinate is specified by “^FO” and “^FT” for each field, if the field origin location is omitted, the default field origin location set in this command is applied.
- Whether the field origin location is put in the left or right of the field is set using “^FO” or “^FT” based on Parameter j.
- When left is selected, the field origin is put in the left of the defined field.
- When right is selected, the field origin is put in the right of the defined field.

[Response]

None

[Reference]

Related commands: ^FO , ^FT

## **^FX**

---

[Name]

Comment

[Format]

^FX data

Parameters	Description	Definition range
data	Comment character string	Up to 3,072 bytes of ASCII code, excluding characters set for the prefix

[Function]

- Defines a character string that does not affect label format printing.
  - The character string for data is defined as a character string that does not affect printing.

[Response]

None

[Reference]

Related commands: None

## ^GB

[Name]

Graphic box

[Format]

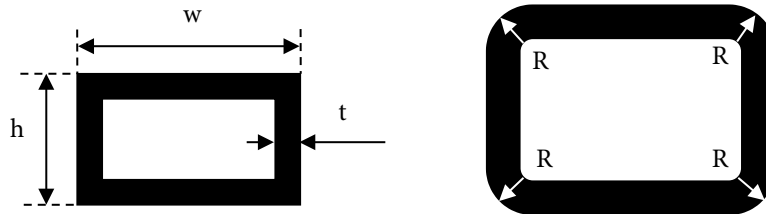
^GB w ,h ,t ,c ,r

Parameters	Description	Definition range
w	Rectangle width [dot]	$1 \leq w \leq 32000$ (Varies depending on the model)
h	Rectangle height [dot]	$1 \leq h \leq 32000$ (Varies depending on the model)
t	Outline thickness [dot]	$1 \leq t \leq 32000$ (Varies depending on the model)
c	Outline color	c = B/W B: Black (Color set if color is set to field) W: White
r	Size of corner rounding	$0 \leq r \leq 8$

[Function]

■ Renders a rectangle to the field.

- The rectangle's width and height are specified based on Parameters w and h.
- The thickness and color of the rectangle's outline are specified based on Parameters t and c.
- The size of the corner rounding is specified based on Parameter r. If the radius of the corner's arc is R and the length of the rectangle's short side (the smaller value between h and w) is S, then an arc where  $R = r/8 \times S/2$  is rendered.



[Response]

None

[Reference]

Related commands: None

## ^GC

---

[Name]

Graphic circle

[Format]

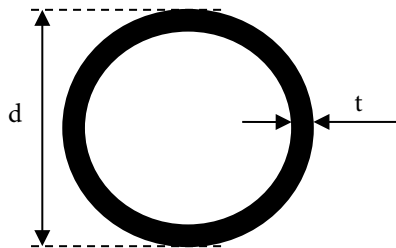
^GC d ,t ,c

Parameters	Description	Definition range
d	Circle diameter [dot]	$3 \leq d \leq 32000$ (Varies depending on the model)
t	Outline thickness [dot]	$2 \leq t \leq 32000$ (Varies depending on the model)
c	Outline color	c = B/W B: Black (Color set if color is set to field) W: White

[Function]

■ Renders a circle to the field.

- The circle's diameter is specified based on Parameter d.
- The thickness and color of the circle's outline are specified based on Parameters t and c.



[Response]

None

[Reference]

Related commands: None

## ^GD

[Name]

Graphic diagonal line

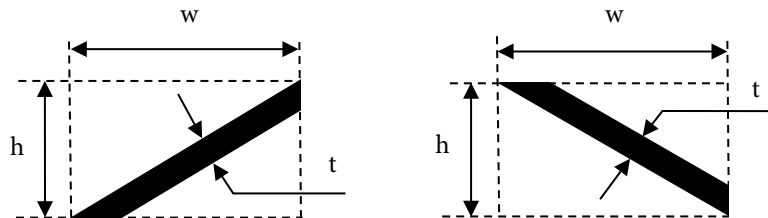
[Format]

^GD w ,h ,t ,c ,d

Parameters	Description	Definition range
w	Diagonal line width [dot]	$3 \leq w \leq 32000$ (Varies depending on the model)
h	Diagonal line height [dot]	$3 \leq h \leq 32000$ (Varies depending on the model)
t	Diagonal line thickness [dot]	$1 \leq t \leq 32000$ (Varies depending on the model)
c	Diagonal line color	c = B/W B: Black (Color set if color is set to field) W: White
d	Diagonal line orientation	d = R/L/</>/<\> R, </>: Top-right to bottom-left L, <\>: Top-left to bottom-right

[Function]

- Renders a diagonal line to the field.
  - The diagonal line's width and height are specified based on Parameters w and h.
  - The thickness and color of the diagonal line are specified based on Parameters t and c.
  - The diagonal line's orientation is specified based on Parameter d.



[Response]

None

[Reference]

Related commands: None



## ^GE

[Name]

Graphic ellipse

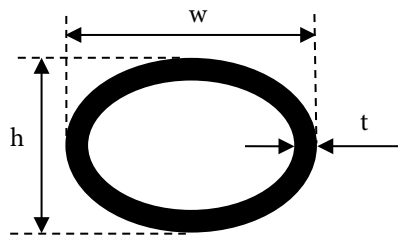
[Format]

^GE w ,h ,t ,c

Parameters	Description	Definition range
w	Ellipse width [dot]	$3 \leq w \leq 32000$ (Varies depending on the model)
h	Ellipse height [dot]	$3 \leq h \leq 32000$ (Varies depending on the model)
t	Outline thickness [dot]	$2 \leq t \leq 32000$ (Varies depending on the model)
c	Outline color	c = B/W B: Black (Color set if color is set to field) W: White

[Function]

- Renders an ellipse to the field.
  - The ellipse's width and height are specified based on Parameters w and h.
  - The thickness and color of the ellipse's outline are specified based on Parameters t and c.



[Response]

None

[Reference]

Related commands: None

## ^GF

[Name]

Bitmap graphic

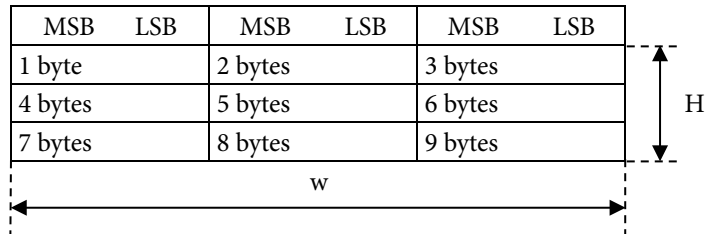
[Format]

^GF f ,t ,s ,w ,data

Parameters	Description	Definition range
f	Data format	f = A/B/C A: Hexadecimal character string B: Binary C: Compressed binary
t	Graphic data size [byte]	$0 \leq t \leq 9999999$ (Varies depending on the model)
s	Graphic size [byte]	$0 \leq s \leq 9999999$ (Varies depending on the model)
w	Horizontal width (Number of horizontal dots, divided by 8. Fractions are cut off.)	$0 \leq w \leq 9999999$ (Varies depending on the model)
data	Graphic data	Hexadecimal character string or binary (Specified in Parameter f)

[Function]

- Renders the black and white bitmap graphic to the field.
  - The rendered dots of the bitmap graphic are specified based on Parameter data. The size of the bitmap graphic is specified based on Parameter s. The horizontal width is specified based on Parameter w.
  - The data format for the bitmap graphic is as follows. (Example where  $w = 3$  ( $3 \times 8 = 24$  [dot width]),  $s = 9$ )



- If the number of dots in the longitudinal direction of the bitmap graphic is H [dot], then  $s = H \times w$ .
- 1 byte of data expresses 8 dots. Therefore, if the data is F0H, then these 8 dots are rendered as follows.

1	1	1	1	0	0	0	0
---	---	---	---	---	---	---	---

- Graphic data is handled as follows.
  - If the data format is binary, you can use any binary data as Parameter data. At this time, the size of Parameter data must be matched to the size specified in Parameter t.
  - If the data format is a hexadecimal character string, one character from 1. to 3. below is used as Parameter data. At this time, the size of Parameter data written in binary must be matched to the size specified in Parameter t.
    1. 0 to 9, A to F, and a to f in ASCII can be used as hexadecimal graphic data.
    2. ASCII comma <,>, the parameter separator character, is used to separate lines. If a comma is input, processing is carried out as if ASCII 0 was input for the remainder of the line.
    3. G to Y and g to z in ASCII can be used as repetition characters. For example, if I9 is input, processing is carried out as if 999 were input. The following table indicates the number of repetitions.

Character	Specified times	Character	Specified times	Character	Specified times	Character	Specified times
G	1	Q	11	h	40	r	240
H	2	R	12	i	60	s	260
I	3	S	13	j	80	t	280
J	4	T	14	k	100	u	300
K	5	U	15	l	120	v	320
L	6	V	16	m	140	w	340
M	7	W	7	n	160	x	360
N	8	X	18	o	180	y	380
O	9	Y	19	p	200	z	400
P	10	g	20	q	220		

[Response]

None

[Reference]

Related commands: None

## ^GS

---

[Name]

Special font

[Format]

^GS o ,h ,w

Parameters	Description	Definition range
o	Field orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
h	Character height [dot]	0 ≤ h ≤ 9999
w	Character width [dot]	0 ≤ w ≤ 9999

[Function]

■ Sets a symbol mark to the field.

- A symbol mark can be rendered by executing this command. To render the symbol, execute “^FD” or “^FV” in the same field. If the field data for “^FD” or “^FV” includes a symbol mark identifier in the following table, that symbol mark is rendered.

Symbol mark identifier	Symbol mark
A	Registered trademark mark
B	Copyright mark
C	Trademark mark
D	Underwriters Laboratories validation mark
E	Canadian Standard Association validation mark

- Sets the field orientation based on Parameter o.
- Set a multiple of the symbol mark’s standard height for Parameter h. Set a multiple of the symbol mark’s standard width for Parameter w.

[Response]

None

[Reference]

Related commands: ^FW , ^CF , ^FD , ^FV

## ~H(C

---

[Name]

Send printer operation mode

[Format]

~H(C a ,b

Parameters	Description	Definition range
a	Printer operation mode function identifier	a = 2-character ASCII string For details, see Appendix A List of Printer Operation Modes
b	Printer operation mode object identifier	b = 1-character ASCII string For details, see Appendix A List of Printer Operation Modes

[Function]

Sends the printer operation mode specified in Parameter a, b to the host.

[Initial value]

None

[Response]

The printer sends printer operation mode values according to the following data formats.

<STX> <Fixed prefix> <Parameter a character string> comma <,>  
<Parameter b character string> comma <,> <Specified printer operation mode value> <ETX> <CR>  
<LF>  
<STX> Control code that indicates start of text (02H)  
<Fixed prefix> “^S(C” fixed 4 characters  
<Parameter a character string> 2-character ASCII string specified in Parameter a  
<Parameter b character string> 1-character ASCII string specified in Parameter b  
<Specified printer operation mode value> ASCII character string of undefined length  
<ETX> Control code that indicates end of text (03H)  
<CR> Control code that indicates carriage return (0DH)  
<LF> Control code that indicates line feed (0AH)

- The printer does not respond if Parameter a is not 2 characters, or if it is not an ASCII character string.
- A character which follows the parameter a and comma<,> is treated as parameter b. The printer does not respond if Parameter b is not an ASCII character string.
- If an undefined identifier is specified for Parameter a or Parameter b, <Specified printer operation mode value> is set to “#NA” and sent to the host.
- If Parameter a or Parameter b is omitted, the printer does not respond.

[Usage example]

An example of the data sent and received when request the resolution is shown below.

~H(CLR,P	Request to send current printing resolution.
Example of response data from the printer:	
-><STX>^S(CLR,P,600<ETX><CR><LF>	
	The printing resolution is 600 [dpi].

An example of the data sent and received when specifying Parameter a outside of the definition range is shown below.

~H(CAA,A	Request to send the printer operation mode specified with "AA,A" of outside of the definition range.
Example of response data from the printer:	
-><STX>^S(CAA,A,#NA<ETX><CR><LF>	
	The printer operation mode specified with "AA,A" is not defined.

[Reference]

Related function specifications: 2.5 Getting and Setting Printer Information

Related commands:           ^S(C

## ^H(E

---

[Name]

Echo back

[Format]

^H(E a

Parameters	Description	Definition range
a	Echo string	0- to 18-character ASCII string

[Function]

Returns the character string specified by Parameter a to the host.

[Initial value]

None

[Response]

The printer sends the echo string according to the following data format.

<STX>	<Fixed prefix>	<Parameter a character string>	<ETX>	<CR>	<LF>
<STX>					Control code that indicates start of text (02H)
<Fixed prefix>					“^H(E” fixed 4 characters
<Parameter a character string>					0- to 18-character ASCII string specified in Parameter a
<ETX>					Control code that indicates end of text (03H)
<CR>					Control code that indicates carriage return (0DH)
<LF>					Control code that indicates line feed (0AH)

- If Parameter a is omitted, the printer responds with the Parameter a string omitted.
- If Parameter a is not an ASCII string, the printer responds with the Parameter a string omitted.

[Usage example]

An example of the data sent and received when an echo string is echoed back is shown below.

^XA^H(Eabc^XZ	Request to send echo string “abc”.
Example of response data from the printer: -><STX>^H(Eabc <ETX><CR><LF>	Echo back with echo string as “abc” in response.

An example of the data sent and received when omitting Parameter a is shown below.

^XA^H(E^XZ	Request to echo back without specifying echo string.
Example of response data from the printer: -><STX>^H(E <ETX><CR><LF>	Echo back without echo string in response.

## ~H(I

[Name]

Send printer unique information

[Format]

~H(I a ,b

Parameters	Description	Definition range
a	Printer information function identifier	a = 2-character ASCII string For details, see Appendix C List of Printer Information Reference
b	Printer information object identifier	b = 1-character ASCII string For details, see Appendix C List of Printer Information Reference

[Function]

Sends the printer unique information specified in Parameter a, b to the host.

[Initial value]

None

[Response]

The printer sends printer information values according to the following data formats.

<STX> <Fixed prefix> <Parameter a character string> comma <,>

<Parameter b character string> comma <,> <Specified printer information value> <ETX> <CR> <LF>

<STX> Control code that indicates start of text (02H)

<Fixed prefix> “^S(I” fixed 4 characters

<Parameter a character string> 2-character ASCII string specified in Parameter a

<Parameter b character string> 1-character ASCII string specified in Parameter b

<Specified printer information value> ASCII character string of undefined length

<ETX> Control code that indicates end of text (03H)

<CR> Control code that indicates carriage return (0DH)

<LF> Control code that indicates line feed (0AH)

- The printer does not respond if Parameter a is not 2 characters, or if it is not an ASCII character string.
- A character which follows the parameter a and comma<,> is treated as parameter b. The printer does not respond if Parameter b is not an ASCII character string.
- If an undefined identifier is specified for Parameter a or Parameter b, <Specified printer information value> is set to “#NA” and sent to the host.
- If Parameter a or Parameter b is omitted, the printer does not respond.



[Usage example]

An example of sending and receiving data when request firmware version is shown below.

~H(IMF,V	Request to send the firmware version.
Example of response data from the printer:	
-><STX>^S(IMF,V,AAA01234<ETX><CR><LF>	
	The firmware version is "AAA01234".

An example of the data sent and received when specifying Parameter a outside of the definition range is shown below.

~H(IAA,A	Request to send the printer information specified with "AA,A" of outside of the definition range.
Example of response data from the printer:	
-><STX>^S(IAA,A,#NA<ETX><CR><LF>	
	The printer information specified with "AA,A" is not defined.

[Reference]

Related function specifications: 2.5 Getting and Setting Printer Information

Related commands: None

## ~H(Q

---

[Name]

Send printer status

[Format]

~H(Q a

Parameters	Description	Definition range
a	Printer status identifier	a = IQ/MN/RS/WN IQ: Remaining ink MN: Available capacity in maintenance box RS: Remaining roll paper WN: Warnings

[Function]

Sends the printer status specified in Parameter a to the host.

[Initial value]

None

[Response]

The printer sends the printer status value according to the following data format.

<STX> <Parameter a character string> (comma <,> <Printer status value>) ...<ETX> <CR> <LF>

<STX>	Control code that indicates start of text (02H)
<Parameter a character string>	2-character ASCII string specified in Parameter a
<Printer status value>	ASCII character string of undefined length
<ETX>	Control code that indicates end of text (03H)
<CR>	Control code that indicates carriage return (0DH)
<LF>	Control code that indicates line feed (0AH)

- The printer does not respond if Parameter a is not 2 characters, or if it is not an ASCII character string.
- If an undefined identifier is specified for Parameter a, <Printer status value> is set to “#NA” and sent to the host.
- If Parameter a is omitted, the printer does not respond.

1. IQ: Remaining ink (For CMYK 4 color)

<STX> IQ, <Remaining black ink>, <Remaining cyan ink>,<Remaining magenta ink>, <Remaining yellow ink><ETX><CR><LF>

- The remaining ink status for all colors can be received as <Printer status value>.
- A 2-character ASCII string is set as the identifier for the remaining ink status.
- The 7 types shown in the following table are defined as identifiers.

Identifier	Remaining ink status
RH	Enough ink in cartridge
RM	Moderate ink in cartridge
RL	Small ink in cartridge
RN	Ink cartridge low
RR	Replace ink cartridge
NA	Ink cartridge not installed
CI	Ink cartridge installed

2. MN: Available capacity in maintenance box (for 1 maintenance box)

<STX> MN, <Available capacity in maintenance box><ETX><CR><LF>

- The remaining ink status for all colors can be received as <Printer status value>. Available capacity in the maintenance box status can be received as <Printer status value>.
- A 2-character ASCII string is set as the identifier for available capacity in maintenance box status.
- The 6 types shown in the following table are defined as identifiers.

Identifier	Available capacity in maintenance box status
RH	Enough available capacity in maintenance box
RM	Moderate available capacity in maintenance box
RL	Small available capacity in maintenance box
RN	Maintenance box near full
RR	Replace maintenance box
NA	No maintenance box
CI	Maintenance box installed

3. RS: Remaining roll paper

<STX> RS, <Remaining roll paper><ETX><CR><LF>

- The remaining roll paper status can be received as <Printer status value>.
- The response indicates the remaining roll paper status using a number from 1 to 100[%]. The amount of detail varies by model.
- The response indicates 0 if there is no information on the remaining amount.

#### 4. WN: Warnings

<STX> WN(, <Warnings>) ...<ETX><CR><LF>

- All warnings can be received as <Printer status value>.
- If no warning occurs, the format is <STX>WN<ETX><CR><LF>.
- An ASCII character string is set as the identifier for <Warnings>.
- The 9 types shown in the following table are defined as identifiers.

Identifier	Warnings
IC1	Cyan ink cartridge low warning
IM1	Magenta ink cartridge low warning
IY1	Yellow ink cartridge low warning
IK1	Black ink cartridge low warning
MNF	Maintenance box near full warning
NCR	Nozzle clog recovering warning
NSU	Nozzle check disabled
WSC	Service call warning
WNC	Nozzle clog warning

[Usage example]

An example of sending and receiving data when request the remaining ink in the printer is shown below.

~H(QIQ	Request to send current remaining ink.
Example of response data from the printer:	
-><STX>IQ, RH, RM, RL, RN<ETX><CR><LF>	
	<ul style="list-style-type: none"> <li>• Sufficient black ink remaining status</li> <li>• Moderate cyan ink remaining status</li> <li>• Low magenta ink remaining status</li> <li>• Yellow ink cartridge replacement required soon status</li> </ul>

An example of the data sent and received when specifying Parameter a outside of the definition range is shown below.

~H(QAA	Request to send the printer status specified with "AA" of outside the definition range.
Example of response data from the printer:	
-><STX>AA,#NA<ETX><CR><LF>	The printer status specified with "AA" is not defined.

[Reference]

Related function specifications: None

Related commands: None

## ~H(S

---

[Name]

Send printer operation status

[Format]

~H(S a ,b

Parameters	Description	Definition range
a	Printer operation status function identifier	a = 2-character ASCII string For details, see Appendix B List of Printer Operation Status
b	Printer operation status object identifier	b = 1-character ASCII string For details, see Appendix B List of Printer Operation Status

[Function]

Sends the printer operation status specified in Parameter a, b to the host.

[Initial value]

None

[Response]

The printer sends the printer operation status value according to the following data format.

<STX> <Fixed prefix> <Parameter a character string> comma <,>  
<Parameter b character string> comma <,> <Specified printer operation status value><ETX> <CR>  
<LF>

<STX>	Control code that indicates start of text (02H)
<Fixed prefix>	“^S(S” fixed 4 characters
<Parameter a character string>	2-character ASCII string specified in Parameter a
<Parameter b character string>	1-character ASCII string specified in Parameter b
<Specified printer operation status value>	ASCII character string of undefined length
<ETX>	Control code that indicates end of text (03H)
<CR>	Control code that indicates carriage return (0DH)
<LF>	Control code that indicates line feed (0AH)

- The printer does not respond if Parameter a is not 2 characters, or if it is not an ASCII character string.
- A character which follows the parameter a and comma<,> is treated as parameter b. The printer does not respond if Parameter b is not an ASCII character string.
- If an undefined identifier is specified for Parameter a or Parameter b, <Specified printer operation mode value> is set to “#NA” and sent to the host.
- If Parameter a or Parameter b is omitted, the printer does not respond.

[Usage example]

An example of sending and receiving data when request the printer error status is shown below.

~H(SEA,E	Request to send current error status.
Example of response data from the printer: -><STX>^S(SEA,E,NE<ETX><CR><LF>	Currently no error.

An example of the data sent and received when specifying Parameter a outside of the definition range is shown below.

~H(SAA,A	Request to send the printer operation status specified with "AA,A" of outside the definition range.
Example of response data from the printer: -><STX>^S(SAA,A,#NA<ETX><CR><LF>	The printer operation status specified with "AA,A" is not defined.

[Reference]

Related function specifications: 2.5 Getting and Setting Printer Information

Related commands: None

## ^H(Y

---

[Name]

Upload file

[Format]

^H(Y d: o. x

Parameters	Description	Definition range
d	memory device	d = R/E/B/A R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory
o	uploading file name	ASCII(20H to 7EH) , 8 and less characters
x	Extension	x = GRF/PNG/TTE/TTF/BGD/FNT/UCL

[Function]

Sends the content of the file designated by parameter d:o.x to the host.

[Initial value]

None

[Response]

The printer sends the content of the file according to the following data format.

<Fixed prefix> d:f,b,x,t,w,data  
 <Fixed prefix> “~DY” fixed 3 characters  
 d:f,b,x,t,w,data File information of sending file. Each value is delimited by a comma.

- Description and definition range of each file information are shown in the following table.

File information	Description	Definition range
d	ASCII character string to correspond to parameter d of “~DY” command. It shows location of the file designated by parameter d of this command.	R/E/B/A
f	ASCII character string to correspond to parameter f of “~DY” command. It shows file name designated by parameter o.x of this command.	o.x o(file name): 1 to 8 characters x (extension): GRF/PNG/TTE/TTF/BGD/FNT/UCL
b	ASCII character string to correspond to parameter b of “~DY” command. It shows format in the sending data.	B = Binary
x	ASCII character string to correspond to parameter x of “~DY” command. It shows type of the file designated by parameter f of this command.	E/G/P/T/BGD/xxx E = .TTE G = .GRF P = .PNG T = .TTF BGD = .BGD xxx = The extension other than the above-mentioned which is included in the file name designated by parameter f of this command.
t	ASCII character string to correspond to parameter t of “~DY” command. It shows data size of the sending file.	Amount of data
w	ASCII character string to correspond to parameter w of “~DY” command. If extension of the sending file is GRF, it shows data size per row of data. If extension is other, it doesn't have meaning.	For GRF: Data size per row For except GRF: 0 (Fixed)
data	Binary data that shows content of the sending file.	Binary

- The printer does not respond if the file designated by parameter d:o.x does not exist.
- Please refer to ESC/Label Command List for “~DY” (download objects) command.



## ^HF

---

### [Name]

Transmit label format file

### [Format]

^HF d: o. x

Parameters	Description	Definition range
d	Storage drive	d = R/E/B/A R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory
o	File name	ASCII code within 8 characters
x	Extension	x = FMT (Fixed)

### [Function]

Transmits the label format file data to the host.

- The data of the label format specified by the storage drive, file name, and extension is transmitted.
- The content of the label format file is the command character string created using “^DF”.
- If the specified file does not exist, nothing is transmitted.

### [Response]

Transmits multiple pieces of information separated by a comma <,>.

^XA^DF<Label format file name>,<CR><LF>

<Data in the label format file><CR><LF>

^XZ<CR><LF>

- <Label format file name> refers to the file name specified by Parameter o in this command.
- <Data in the label format file> refers to data which expresses the file specified by Parameter o in a command character string.

### [Reference]

Related commands: ^DF

## ^HG

---

[Name]

Transmit bitmap file

[Format]

^HG d: o. x

Parameters	Description	Definition range
d	Storage drive	d = R/E/B/A R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory
o	File name	ASCII code within 8 characters
x	Extension	x = GRF (Fixed)

[Function]

- Transmits the data of the black and white raster graphic file to the host.
  - The data of the raster graphic file specified by storage drive and file name is transmitted.
  - If the specified file does not exist, nothing is transmitted.

[Response]

Transmits multiple pieces of information separated by a comma <,>. The format of the following response shows a case where the target raster graphic is consisting of N lines.

~DG<Graphic file name>,<Graphic data size>,<Horizontal width>,<CR><LF>

<Data in the first line of the raster graphic><CR><LF>

:

<Data in the Nth line of the raster graphic><CR><LF>

The following table explains each piece of information.

Contents	Description
<Graphic file name>	File name specified by Parameter o
<Graphic data size>	Data size of the raster graphic stored in the specified file
<Horizontal width>	Horizontal width of the raster graphic stored in the specified file
<Data in the #th line of the raster graphic> (# is any value from 1 to N)	Graphic data in the #th line of the raster graphic stored in the specified file

[Reference]

Related commands: ~DG

## ^HH

---

[Name]

Transmit label configuration

[Format]

^HH

[Parameter]

None

[Function]

Transmits the label configuration to the host.

[Response]

Responds with multiple pieces of information in a list format. If the total number of pieces of information is N, a response like the following one is sent.

<STX>[Printer's S/No]<CR><LF>

<Information determined by model> <Type of first piece of information determined by model>

<CR><LF>

:

<Information determined by model> <Type of Nth piece of information determined by model>

<CR><LF>

<ETX>

- <Information determined by model> refers to information unique to the printer and the printer configuration, and the type of transmitted information is determined by each model.
- <Type of information determined by model> refers to the name of the type of information transmitted.

[Reference]

Related commands: ~WC

## ~HI

---

[Name]

Transmit identification

[Format]

~HI

[Parameter]

None

[Function]

Transmits the printer identification to the host.

[Response]

Transmits multiple pieces of information separated by a comma <,>.

<STX><Model name>,<Firmware version>,<Print resolution>,<Equipped RAM capacity>,<Equipped option><ETX><CR><LF>

- <Model name> refers to the printer's model name.
- <Firmware version> refers to the version name of the firmware operating on the printer.
- <Print resolution> refers to the maximum resolution [dot/mm] that the printer can print.
- <Equipped RAM capacity> refers to the total capacity [Kbyte] of the volatile memory device equipped in the printer.
- <Equipped option> refers to the name of the option equipped in the printer. This is included in the transmitted information when an option is equipped.

[Reference]

Related commands: ~HM

## ~HM

---

[Name]

Transmit RAM capacity

[Format]

~HM

[Parameter]

None

[Function]

Transmits the printer's RAM capacity to the host.

[Response]

Transmits multiple pieces of information separated by a comma <,>.

<STX><Equipped RAM capacity>,<Maximum available RAM capacity>,<Available RAM capacity><ETX><CR><LF>

- <Equipped RAM capacity> refers to the total capacity [Kbyte] of the volatile memory equipped in the printer.
- <Maximum available RAM capacity> refers to the maximum capacity of the volatile memory [Kbyte] that the printer user can use.
- <Available RAM capacity> refers to the capacity of the volatile memory [Kbyte] that the printer user can currently use.

[Reference]

Related commands: ~HI

## ~HS

[Name]

Transmit printer status

[Format]

~HS

[Parameter]

None

[Function]

Transmits the printer status to the host.

[Initial value]

None

[Response]

The printer transmits the printer status value according to the following data format.

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

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

<STX>xxxx,y<ETX><CR><LF>

<STX> Control code that indicates start of text (02H)

a to y Status value (Each character shows the figure of one digit, and the value of each status is delimited by the comma).

<ETX> Control code that indicates end of text (03H)

<CR> Control code that indicates carriage return (0DH)

<LF> Control code that indicates line feed (0AH)

- The explanation and the range of each status value are shown in the table below.

Status value	Description	Definition range
aaa	Reserved	Fixed at 000
b	Out of paper	1: Out of paper 0: Not out of paper
c	Paused	1: Paused 0: Not paused
dddd	Label length [dot]	0000 to 9999 <sup>1</sup>
eee	Number of label formats in receive buffer	000 to 999
f	Buffer full status	1: Buffer full status 0: Not buffer full status
g	Reserved	Fixed at 0
h	Partial label format being defined	1: Partial label format being defined 0: Partial label format not being defined
iii	Reserved	Fixed at 000
j	Reserved	Fixed at 0
k	Reserved	Fixed at 0
l	Reserved	Fixed at 0
mmm	Reserved	Fixed at 000
n	Reserved	Fixed at 0
o	Cover open	1: Cover open <sup>2</sup> 0: Cover not open

Status value	Description	Definition range
p	Time to replace ink cartridge	1: Time to replace ink cartridge or the ink cartridge is not mounted. 0: The ink cartridge is mounted and not time to replace the ink cartridge.
q	Reserved	Fixed at 0
r	Print mode	0: Rewind 1: Peel-Off 2: Tear-Off 3: Cutter 4: Applicator
s	Print width mode	Print area width in 0.64 inch units 0 to
t	Label removal waiting state	1: It is a label removal waiting state. 0: It is not a label removal waiting state.
uuuuuuuu	Number of labels remaining in label format currently being processed	00000000 to 99999999
v	Reserved	Fixed at 1
www	Number of graphics in the printer	000 to 999
xxxx	Reserved	Fixed at 0000
y	Reserved	Fixed at 0

<sup>1</sup> It does not depend on an actual print resolution, and the value converted as 300dpi is returned.

<sup>2</sup> If there are two or more covers, it enters the cover opening state when either of cover is an opening.

[Reference]

Related function specifications: None

Related commands: None

## ^HW

[Name]

Transmit directory list

[Format]

^HW d: o. x ,f

Parameters	Description	Definition range
d	Target drive	d = R/E/B/A/Z R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory Z: Non-rewritable memory
o	File name	ASCII code within 8 characters Wild card (Asterisk <*>)
x	Extension	All extensions Wild card (Asterisk <*>)
f	Format	f = c/d c: Column mode d: Basic mode

[Function]

- Transmits the file information saved on the target drive to the host in list format.
  - The file information specified by the target drive, file name, and extension is transmitted. The file information consists of the file name, extension, and file size.
  - Specification can be performed using wild cards for Parameters o and x. An asterisk <\*> indicates an arbitrary character string.
  - The response format can be specified using the format. If c is specified for the format, the response lists the file information with the indent aligned for each item.

[Response]

Transmits multiple pieces of information in a list format separated by a comma <,>, colon <:>, or period <.>.

The following is an example response in basic mode.

```
<STX><CR><LF>
DIR<SP> <Target drive>:<File name>.<Extension><CR><LF>
* <SP><1st file name>.<Extension><SP><File size><CR><LF>
:
* <SP><Nth file name>.<Extension><SP><File size><CR><LF>
-<SP><SP><Available capacity on target drive><SP>bytes<SP>free<SP><Target drive>:<SP><Type of
target drive><CR><LF>
<ETX>
```

- <Target drive> refers to the drive name specified by Parameter d.
- <File name> refers to the file name specified by Parameter o.
- <Extension> refers to the extension specified by Parameter x.
- <File size> refers to the size [byte] of the specified file.
- <Available capacity on target drive> refers to the amount of available capacity [byte] on the drive specified by Parameter d.
- <Type of target drive> refers to the type of the memory device, such as RAM or onboard flash.



[Reference]

Related commands: None

## ^HY

[Name]

Transmit files

[Format]

^HY d: o. x

Parameters	Description	Definition range
d	Storage drive	d = R/E/B/A R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory
o	File name	ASCII code within 8 characters
x	Extension	x = G/P G: GRF P: PNG

[Function]

- Transmits the data of the graphic file to the host.
  - The data of the graphic file specified by storage drive, file name, and extension is transmitted.
  - If the extension of the specified graphic file is GRF, it is encoded in Z64 format and transmitted to the host. If the extension is PNG, it is encoded in B64 format and transmitted to the host.
  - If the specified file does not exist, nothing is transmitted.

[Response]

Transmits multiple pieces of information in a list format separated by a comma <,> or colon <:>.

~DY<Graphic file name>,<Data format>,<Extension>,<Graphic data size>,<Horizontal width>,<Encoding type>:<CR><LF>  
<Graphic data>:<CRC><CR><LF>

Information type	Description
<Graphic file name>	File name specified by Parameter o
<Data format>	Data format of the specified file
<Extension>	Extension format of the specified file
<Graphic data size>	Data size of the graphic file stored in the specified file
<Horizontal width>	Horizontal width of the graphic file stored in the specified file
<Encoding type>	Encoding type of the graphic file stored in the specified file (B64 or Z64)
<Graphic data>	Graphic data encoded in B64 or Z64 of the graphic file stored in the specified file
<CRC>	CRC calculated for the above <Graphic data> expressed in 4-digit hexadecimal.

[Reference]

Related commands: ~DY

## ^ID

---

[Name]

Delete files

[Format]

^ID d: o. x

Parameters	Description	Definition range
d	Storage drive	d = R/E/B/A R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory
o	File name	ASCII code within 8 characters Wild card (Asterisk <*>)
x	Extension	All extensions Wild card (Asterisk <*>)

[Function]

- Deletes files stored in the memory device.
  - The file specified by the storage drive, file name, and extension is deleted.
  - The file can be specified using wild cards for Parameters o and x. An asterisk <\*> indicates an arbitrary character string.
  - Multiple files can be specified at once using wild cards.

[Response]

None

[Reference]

Related commands: ^JB

## ^IL

---

[Name]

Draw graphic file

[Format]

^IL d: o. x

Parameters	Description	Definition range
d	Storage drive	d = R/E/B/A R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory
o	File name	ASCII code within 8 characters
x	Extension	x = GRF/PNG

[Function]

- Renders the graphic file to the label format.
  - The graphic file specified by storage drive, file name, and extension is rendered.
  - The graphic file is always rendered with the home position as the origin.

[Response]

None

[Reference]

Related commands: ^IS

## ^IM

---

[Name]

Draw graphic file with position

[Format]

^IM d: o. x

Parameters	Description	Definition range
d	Storage drive	d = R/E/B/A R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory
o	File name	ASCII code within 8 characters
x	Extension	x = GRF/PNG

[Function]

- Renders the graphic file to the field.
  - The graphic file specified by storage drive, file name, and extension is rendered.

[Response]

None

[Reference]

Related commands: ~DG , ~DY

## ^IS

---

[Name]

Save drawing canvas

[Format]

^IS d: o. x ,p

Parameters	Description	Definition range
d	Storage drive	d = R/E/B/A R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory
o	File name	ASCII code within 8 characters
x	Extension	x = GRF/PNG
p	Print after saving print image	p = Y/N Y: Print N: Do not print

[Function]

- Saves the drawing canvas when ending the label format with “^XZ”.
  - The drawing canvas refers to the print image of the label format.
  - The save destination and file name for the drawing canvas are specified based on Parameters d, o, and x.
  - Whether or not to print the label after saving the drawing canvas is specified based on Parameter p.

[Response]

None

[Reference]

Related commands: ^IL

## ~J(C

---

[Name]

Execute cleaning

[Format]

~J(C

[Parameter]

None

[Function]

Executes cleaning.

[Response]

None

[Reference]

Related commands: None

## ~J(M

---

[Name]

Execute mechanical operation

[Format]

~J(M a ,b

Parameters	Description	Definition range
a	Function identifier of execute mechanical operation	a = 2-character ASCII string
b	Function execute parameter	b = 1-character ASCII string

[Function]

Function identifier	Description	Definition range
CA	Execute calibration	b = O/P O: Media detection (Short) P: Media detection
CL	Execute cleaning	b = A/H A: Auto H: Power Cleaning

[Response]

None

[Reference]

Related commands: ~JC



## **~JA**

---

[Name]

Cancel all formats

[Format]

~JA

[Parameter]

None

[Function]

■ Deletes all label formats in the printer.

- Label formats that have not been closed with “^XZ” are also deleted. At this time, the format command from this command to directly before the next ^XA is read and discarded, and only the control command is executed.
- If a label format to be deleted is currently printing, print is stopped once one label finishes printing.
- The drawing canvas is deleted.

[Response]

None

[Reference]

Related commands: ~JX , ~JP

## ^JB

---

[Name]

Initialize drive

[Format]

^JB d

Parameters	Description	Definition range
d	Target drive	d = E/B/A E: Non-volatile memory B: Optional memory A: Optional memory

[Function]

Initializes the target drive.

[Response]

None

[Reference]

Related commands: ^ID

## ~JC

---

[Name]

Media calibration

[Format]

~JC

[Parameter]

None

[Function]

- Calibrates the media. The following is performed during media calibration.
  - Adjustment of media sensor threshold values, etc.
  - Detection of label length
  - Label feeding to home position
  - Along with the above, paper for one label or more is fed.

[Response]

None

[Reference]

Related commands: ^MN

## ^JM

---

[Name]

Set resolution

[Format]

^JM d

Parameters	Description	Definition range
d	Print resolution magnification	d = A/B A: Normal resolution B: Low resolution

[Function]

- Sets the print resolution magnification for the label format.
  - If low resolution is specified, all rendering targets are rendered with the size doubled horizontally and vertically.
  - If low resolution is specified, the values of the X coordinate and the Y coordinate that specify the position in the label format are doubled.

This can also be used with the magnification factor, specified based on ^MU.

[Response]

None

[Note]

If using this command, use it before defining the first field in the label format.

The ^JUS command is required to save settings to the non-volatile memory of the printer unit.

Please refer to the “^JU” command section for details.

[Reference]

Related commands: ^MU

[Usage example]

An example of sending data that sets the print resolution magnification for the label format and saves settings to the non-volatile memory of the printer unit is shown below.

^XA	
^JMA	1. Sets <A> as the print resolution magnification for the label format.
^JUS	2. Saves the setting to non-volatile memory.
^XZ	

## ~JP

---

[Name]

Pause and cancel format

[Format]

~JP

[Parameter]

None

[Function]

- Deletes the oldest label format among those not finished printing, and transitions to the paused status.
  - The oldest label format is deleted even if it is before the ^XZ closes the command. At this time, the format command from this command to directly before the next ^XA is read and discarded, and only the control command is executed.
  - If a label format to be deleted is currently printing, print is stopped once one label finishes printing.

[Response]

None

[Reference]

Related commands: ~JX , ~JA

## **~JR**

---

[Name]

Soft reset

[Format]

~JR

[Parameter]

None

[Function]

Resets the printer.

[Response]

None

[Reference]

Related commands: None

## ~JS

---

[Name]

Set backfeed procedure

[Format]

~JS b

Parameters	Description	Definition range
b	Backfeed sequence	b = A/B/N or $10 \leq b \leq 90$ A: 100% backfeed after printing and cutting B: 0% backfeed after printing and cutting N: Backfeed to the standard position after printing and cutting Numerical value: Only multiples of 10 can be specified. Backfeed to specified percent value position after printing and cutting

[Function]

- The ~JS command controls backfeed operation after printing and cutting.
- After printing and cutting, the printer backfeeds paper. The printing and cutting position is the 0% position and the maximum backfeed position is 100%. If this command is used to specify any position other than 100%, the printer will first backfeed to the 100% position before starting to print the next label.
  - If A is specified for parameter b, the printer backfeeds to the 100% position after printing and cutting.
  - If B is specified for parameter b, the printer backfeeds to the 0% position after printing and cutting.
  - If N is specified for parameter b, the printer backfeeds to the standard position after printing and cutting.
  - If a numerical value is specified for parameter b, the printer backfeeds to the position of the specified percentage after printing and cutting. Only multiples of 10 can be specified if specifying a numerical value.
- This command can be used with both printers with or without a cutter.

[Response]

None

[Reference]

Related commands: None

## ^JU

---

[Name]

Update non-volatile configuration

[Format]

^JU f

Parameters	Description	Definition range
f	Save or read out configuration	f = F/N/R/S F: Initialize printer configuration to factory default N: Initialize transmission configuration to factory default R: Initialize printer configuration to latest configuration saved to non-volatile memory S: Save current printer configuration to non-volatile memory

[Function]

- Initializes or saves to non-volatile memory the printer configuration.
  - If F is specified for Parameter f, the printer configuration is initialized to factory default.
  - If N is specified for Parameter f, the transmission configuration is initialized to factory default.
  - If R is specified for Parameter f, the printer configuration is initialized to the latest configuration saved to non-volatile memory.
  - If S is specified for Parameter f, the current printer configuration is saved to non-volatile memory. The next time the power is turned on, the printer configuration will be initialized to the latest configuration saved to non-volatile memory.

[Response]

None

[Reference]

Related commands: None



## **~JX**

---

[Name]

Cancel label format definition

[Format]

~JX

[Parameter]

None

[Function]

■ Deletes label formats still being defined.

- A label format still being defined refers to a label format which was started by ^XA but was not ended with ^XZ.
- The format command from this command to directly before the next ^XA is read and discarded, and only the control command is executed.

[Response]

None

[Reference]

Related commands: ~JP , ~JA

## ^JZ

---

[Name]

Set reprint after error

[Format]

^JZ e

Parameters	Description	Definition range
e	Enable/disable error reprinting function	e = Y/N Y: Enabled N: Disabled

[Function]

- Enables/disables reprinting for labels where printing was canceled due to an error.
  - If error reprinting is enabled based on Parameter e, labels which were canceled due to an error will be reprinted once the printer recovers from the error.

[Response]

None

[Reference]

Related commands: None

[Note]

The ^JUS command is required to save settings to the non-volatile memory of the printer unit. Please refer to the “^JU” command section for details.

[Usage example]

An example of sending data that enables/disables reprinting for labels for which printing was canceled due to an error and saves settings to the non-volatile memory of the printer unit is shown below.

^XA	
^JZY	1. Sets the reprinting <Y: Enabled> for labels for which printing was canceled due to an error.
^JUS	2. Saves the setting to non-volatile memory.
^XZ	

## ^KL

---

[Name]

Set panel language

[Format]

^KL 1

Parameters	Description	Definition range
1	LCD language setting	1 = 1/2/3/4/5/7/11/13/14/15/16/17/18/100/101 1: English 2: Spanish 3: French 4: German 5: Italian 7: Portuguese 11: Dutch 13: Japanese 14: Korean 15: Simplified Chinese 16: Traditional Chinese 17: Russian 18: Polish 100: Greek 101: Turkish

[Function]

Sets the language used to display information on the LCD.

[Response]

None

[Reference]

Related commands: None

[Note]

The ^JUS command is required to save settings to the non-volatile memory of the printer unit. Please refer to the “^JU” command section for details.

[Usage example]

An example of sending data that sets the language used to display information on the LCD and saves settings to the non-volatile memory of the printer unit is shown below.

^XA	
^KL1	1. Sets the language used to display information on the LCD to English <1>.
^JUS	2. Saves the setting to non-volatile memory.
^XZ	

## ^LH

[Name]

Set label home position

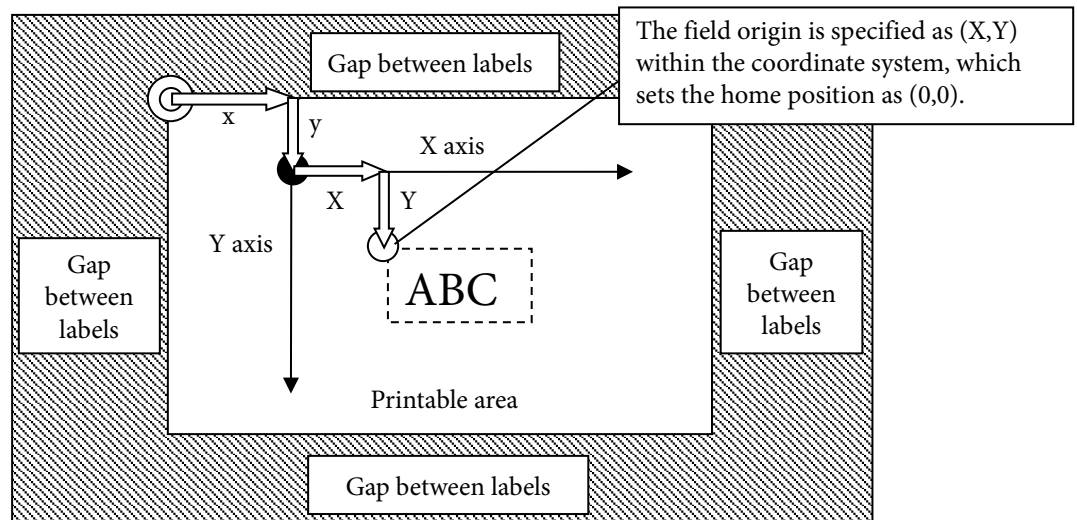
[Format]

^LH x ,y

Parameters	Description	Definition range
x	Home position x coordinate [dot]	$0 \leq x \leq 32000$
y	Home position y coordinate [dot]	$0 \leq y \leq 32000$

[Function]

- Sets the home position, which is the basis for the print position.
  - The home position is the origin point for the coordinate system which specifies the field origin point.
  - The home position is specified as a position relative to the logical origin, based on Parameters x and y.
  - The logical origin is the top-left corner of the printable area. The printable area refers to the area of the media used in printing, excluding the gap between labels and areas where printing cannot be performed due to the physical limitations of the printer.
  - The following figure indicates positioning of the logical origin, the home position, and the field origin. (The double white circle indicates the logical origin, the black circle indicates the home position, and the white circle indicates the field origin.)



[Response]

None

[Note]

If using this command, use it before defining the first field in the label format.

[Reference]

Related commands: None

## **^LR**

---

[Name]

Set monochrome reverse print

[Format]

^LR e

Parameters	Description	Definition range
e	Set/cancel label reverse print	e = Y/N Y: Set N: Cancel

[Function]

- Sets reversed printing for the whole label.
  - Reversed printing is set for the label format.
  - If reversed printing is specified based on Parameter e, the color values for all dots on the drawing canvas in the label format are reversed.
  - Reversal is also executed for color printing.

[Response]

None

[Note]

If using this command, use it before defining the first field in the label format.

[Reference]

Related commands: ^FR

## ^LS

[Name]

Shift horizontal position

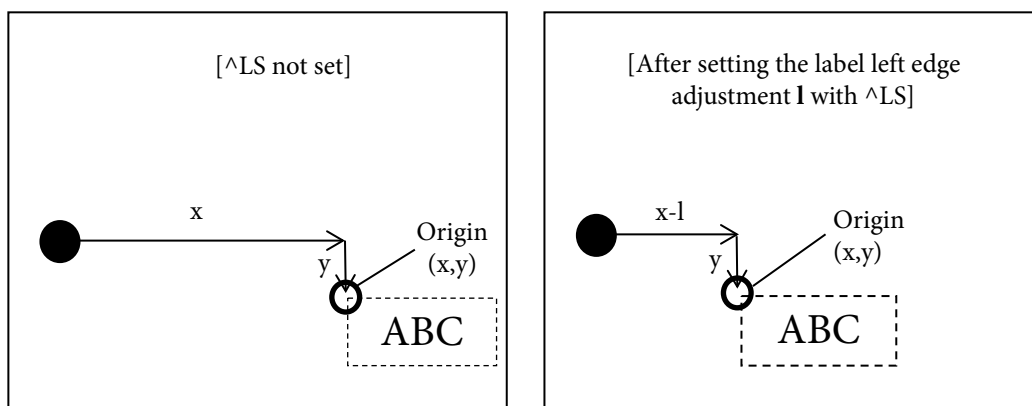
[Format]

^LS l

Parameters	Description	Definition range
l	Adjustment for label left edge [dot]	$-9999 \leq l \leq 9999$ (Varies depending on the model)

[Function]

- Sets the amount to adjust the position of the label's left edge.
  - The rendering positions for all fields are shifted horizontally to the left the amount specified in Parameter l.
  - If a minus symbol <-> is included for the value for Parameter l, the rendering positions are shifted to the right for the size for the specified value.
  - The following figure indicates the positioning of a field without “^LS” set, and a field where the label left edge adjustment l was specified with “^LS” (The black circle indicates the label origin, and the white circle indicates the field origin).



[Response]

None

[Note]

If using this command, use it before defining the first field in the label format.

The ^JUS command is required to save settings to the non-volatile memory of the printer unit.

Please refer to the “^JU” command section for details.

[Reference]

Related commands: None

[Usage example]

An example of sending data that sets the amount to adjust the position of the label's left edge and saves settings to the non-volatile memory of the printer unit is shown below.

```
^XA
^LS1000      1. Sets the amount to adjust the position of the label's left edge to 1000 [dot].
^JUS        2. Saves the setting to non-volatile memory.
^XZ
```

## ^LT

[Name]

Shift vertical position

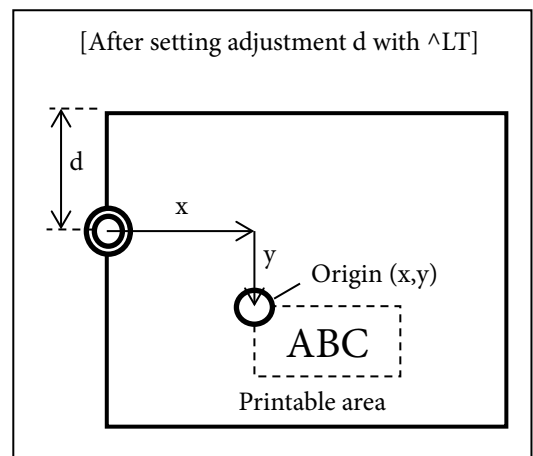
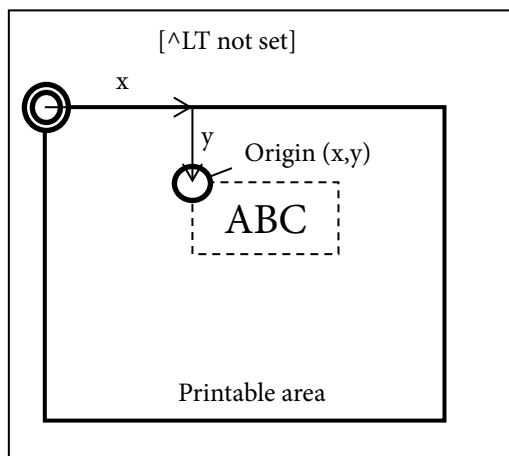
[Format]

^LT d

Parameters	Description	Definition range
d	Adjustment for label left edge [dot]	$-9999 \leq d \leq 9999$ (Varies depending on the model)

[Function]

- Sets the amount to adjust the position of the label's leading edge.
  - The rendering position is shifted vertically, relative to the label leading edge.
  - The rendering positions for all fields are shifted downwards the amount specified in Parameter d.
  - If a minus symbol <-> is included for the value for Parameter d, the rendering positions are shifted upwards for size for the specified value.
  - The following figure indicates the positioning of a field without “^LT” set, and field where the downwards shift d was specified with “^LT” (The double white circle indicates the logical origin, and the white circle indicates the field origin). In the example, the logical origin and the label origin are in the same position.



[Response]

None

[Note]

If using this command, use it before defining the first field in the label format.

The ^JUS command is required to save settings to the non-volatile memory of the printer unit.

Please refer to the “^JU” command section for details.

[Reference]

Related commands: None

[Usage example]

An example of sending data that sets the amount to adjust the position of the label's leading edge, and saves settings to the non-volatile memory of the printer unit is shown below.

^XA	
^LT1000	1. Sets the amount to adjust the position of the label's leading edge to 1000 [dot].
^JUS	2. Saves the setting to non-volatile memory.
^XZ	

## **^MC**

---

[Name]

Set drawing deletion after print

[Format]

^MC e

Parameters	Description	Definition range
e	Set/cancel drawing canvas deletion	e = Y/N Y: Set N: Cancel

[Function]

- Sets deletion for the drawing canvas after printing.
  - The drawing canvas refers to the print image in the latest rendered label format.
  - If drawing deletion after printing is specified by Parameter e, the drawing canvas is deleted after the label format is printed.
  - If drawing deletion after printing is canceled by Parameter e, the drawing canvas is maintained after the label format is printed.
  - If the drawing canvas is maintained, the next label format is rendered on top of the maintained label format.
  - Print images for fields rendered based on “^FV”, “^SN”, “^SF”, or “^FC” are deleted from the drawing canvas after printing, regardless of the specification for this command.

[Response]

None

[Reference]

Related commands: ^FV



## ^MF

[Name]

Set recover operation

[Format]

^MF o ,s

Parameters	Description	Definition range
o	Power on operation	o = C/F/L/N/S C: Calibration F: Feed L: Measure media length N: No feed S: Short calibration
s	Media change operation	s = C/F/L/N/S C: Calibration F: Feed L: Measure media length N: No feed S: Short calibration

[Function]

- Sets the operation for when turning the power on and when changing the media.
  - If C is specified for Parameter o or s, media calibration is performed. Media calibration is the same operation as “~JC”.
  - If F is specified for Parameter o or s, label feeding to home position is performed.
  - If L is specified for Parameter o or s, the media length is measured.
  - If N is specified for Parameter o or s, feeding to home position is not performed.
  - If S is specified for Parameter o or s, simple calibration is performed. Simple calibration performs the following operations.
    - Adjustment of media sensor threshold values, etc.
    - Label feeding to home position
    - Supported operations vary depending on the model.

[Response]

None

[Reference]

Related commands: None

[Note]

The ^JUS command is required to save settings to the non-volatile memory of the printer unit. Please refer to the “^JU” command section for details.

[Usage example]

An example of sending data that sets the operation for when turning the power on and when changing the media and saves settings to the non-volatile memory of the printer unit is shown below.

^XA	
^MFN,S	1. Sets the power on operation to <N: Do nothing> and the media change operation to <S: Execute simple calibration>.
^JUS	2. Saves the setting to non-volatile memory.
^XZ	

## ^MM

[Name]

Set print mode

[Format]

^MM m

Parameters	Description	Definition range
m	Print mode	m = T/P/R/A/C T: No cutting P: Manual peeling and application R: Rewind A: Automatic peeling and application C: Cutting performed

[Function]

- Sets the printer operation for when printing is completed.
  - The print mode is set based on Parameter m. The print mode determines the printer operations from the printing of one label to the printing of the next label.

Print mode	Operation after label printing	Operation by the next label command
No cutting	Feeds the label to the manual cut position.	Backfeeds the next label to the home position, then performs printing.
Manual peeling and application	Feeds the label to the manual peeling and application position.	Backfeeds the next label to the home position, then performs printing.
Rewind	Stops paper feeding at the position where printing ends.	Prints the next label from the position where printing ended.
Automatic peeling and application	Feeds the label to the automatic peeling and application position.	Backfeeds the next label to the home position, then performs printing.
Cutting performed	Feeds the label to the autocutter position and cuts the media. Backfeeds the next label to the home position after cutting.	Backfeeds the next label to the home position, then performs printing.

- Supported modes vary depending on the model.

[Response]

None

[Reference]

Related commands: None

[Note]

The ^JUS command is required to save settings to the non-volatile memory of the printer unit. Please refer to the “^JU” command section for details.

[Usage example]

An example of sending data that sets the print mode and saves settings to the non-volatile memory of the printer unit is shown below.

^XA	
^MMC	1. Sets the print mode to <C: Autocutter>.
^JUS	2. Saves the setting to non-volatile memory.
^XZ	

## ^MN

---

[Name]

Set label edge detection

[Format]

^MN s

Parameters	Description	Definition range
s	Label edge detection	s = N/Y/W/M N: Continuous paper (Does not detect label edge) Y, W: Gap detection M: Black mark detection

[Function]

- Sets the label edge detection method.
  - Parameter s selects the label edge detection method. Select either “does not detect label edge”, “black mark detection”, or “gap detection” for the label edge detection method.
  - If N is specified for Parameter s, “does not detect label edge” is set for the label edge detection method. Printer control, such as label feeding to home position, is performed based on the label length set in the printer.
  - If Y or W is specified for Parameter s, “gap detection” is set for the label edge detection method. Printer control, such as label feeding to home position, is performed based on the gap between labels.
  - If M is specified for Parameter s, “black mark detection” is set for the label edge detection method. Printer control, such as label feeding to home position, is performed based on the black mark.

[Response]

None

[Reference]

Related commands: None

[Note]

The ^JUS command is required to save settings to the non-volatile memory of the printer unit. Please refer to the “^JU” command section for details.

[Usage example]

An example of sending data that sets the label edge detection method and saves settings to the non-volatile memory of the printer unit is shown below.

^XA	
^MNM	1. Sets the label edge detection method to Black mark detection.
^JUS	2. Saves the setting to non-volatile memory.
^XZ	

## ^MP

---

[Name]

Enable/disable buttons

[Format]

^MP o

Parameters	Description	Definition range
o	Disabled button	o = W/F/X/M/S/E W: Disable pause button F: Disable feed button X: Disable cancel button M: Disable menu button S: Disable all buttons E: Enable all buttons

[Function]

- Enables/disables the buttons.
  - If W, F, X, or M is specified for Parameter o, that button is disabled.
  - If S is specified for Parameter o, all buttons are disabled.
  - If E is specified for Parameter o, all buttons are enabled.

[Response]

None

[Reference]

Related commands: None

[Note]

The ^JUS command is required to save settings to the non-volatile memory of the printer unit.  
Please refer to the “^JU” command section for details.

[Usage example]

An example of sending data that enables/disables the buttons and saves settings to the non-volatile memory of the printer unit is shown below.

^XA	
^MPW	1. Sets the pause button to <W: Disable pause button>.
^JUS	2. Saves the setting to non-volatile memory.
^XZ	

## ^MU

[Name]

Set units of measurement

[Format]

^MU u ,i ,o

Parameters	Description	Definition range
u	Basic printer unit system	u = D/I/M D: Dots I: Inches M: Millimeters
i	Rendering resolution	i = 150/200/300/600 [dpi]
o	Print resolution	o = 200/300/600 [dpi]

[Function]

- Sets the unit for specifying the rendering position and size.
  - The units used in Parameters for commands which specify or render positions are set based on Parameter u.
  - The magnification factor for the image's vertical and horizontal directions is determined based on the ratio between Parameters i and o. The following table indicates the magnification factors that can be specified based on Parameters i and o.

Rendering resolution	Print resolution	Magnification factor for the image's vertical and horizontal directions
200	200	Equal
300	300	
600	600	
150	300	2 times
300	600	
200	600	3 times
150	600	4 times

The combination of a rendering resolution of 200 [dpi] and a print resolution of 200 [dpi] can be used if 200 [dpi] was specified for ^S(CLR,Z).

This can be used together with specifying 2 times rendering with “^JM”. By specifying 2 times rendering with “^JM” and then specifying 3 times rendering with this command, you can specify 6 times (2 × 3 = 6) rendering.

[Response]

None

[Note]

If using this command, use it before defining the first field in the label format.

The ^JUS command is required to save settings to the non-volatile memory of the printer unit.

Please refer to the “^JU” command section for details.

[Reference]

Related commands: ^JM

[Usage example]

An example of sending data that sets the unit for specifying the rendering position and size and saves settings to the non-volatile memory of the printer unit is shown below.

^XA	
^MUD,150,300	1. Sets the basic printer unit system to <D: Dots>, the rendering resolution to <150>, and the print resolution to <300>.
^JUS	2. Saves the setting to non-volatile memory.
^XZ	

## **^P(M**

---

[Name]

Execute manual operation

[Format]

^P(M a

Parameters	Description	Definition range
a	Function identifier for manual operation execution	a = 2-character ASCII string BZ: Execute buzzer CT: Execute cut

[Function]

- Execute operation specified by function identifier.
  - BZ: Executes buzzer after printing for the current label format is completed.
  - CT: Executes cut after printing for the current label format is completed.

[Response]

None

[Reference]

Related commands: None

## **^PH**

---

[Name]

Feed to home position

[Format]

^PH

[Parameter]

None

[Function]

■ Feeds paper for 1 label.

- After printing for the current label format is completed, paper for one label is fed.

[Response]

None

[Reference]

Related commands: ~PH



## ~PH

---

[Name]

Feed to home position

[Format]

~PH

[Parameter]

None

[Function]

■ Feeds paper for 1 label.

- If a label is currently being printed, paper for one label is fed after printing is completed.

[Response]

None

[Reference]

Related commands: ^PH

## ^PM

---

[Name]

Set mirror image print

[Format]

^PM e

Parameters	Description	Definition range
e	Set/cancel mirror image print	e = Y/N Y: Set N: Cancel

[Function]

■ Set/cancel mirror image print

- If mirror image printing is specified based on Parameter e, the left and right sides of the label are reversed.

[Response]

None

[Note]

If using this command, use it before defining the first field in the label format.

[Reference]

Related commands: None

## ^PO

---

[Name]

Set 180° rotation print

[Format]

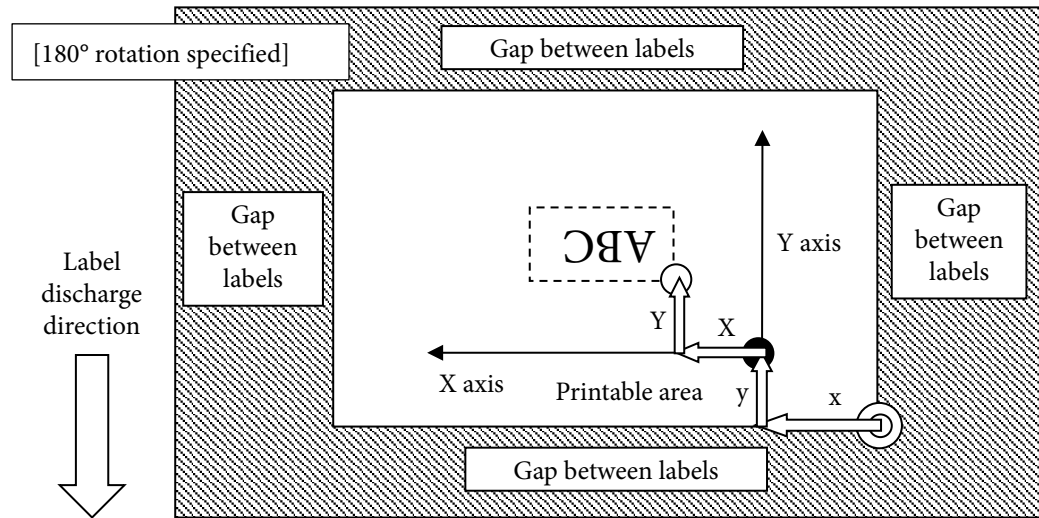
^PO e

Parameters	Description	Definition range
e	Set/cancel 180° rotation printing	e = N/I N: Cancel I: Set

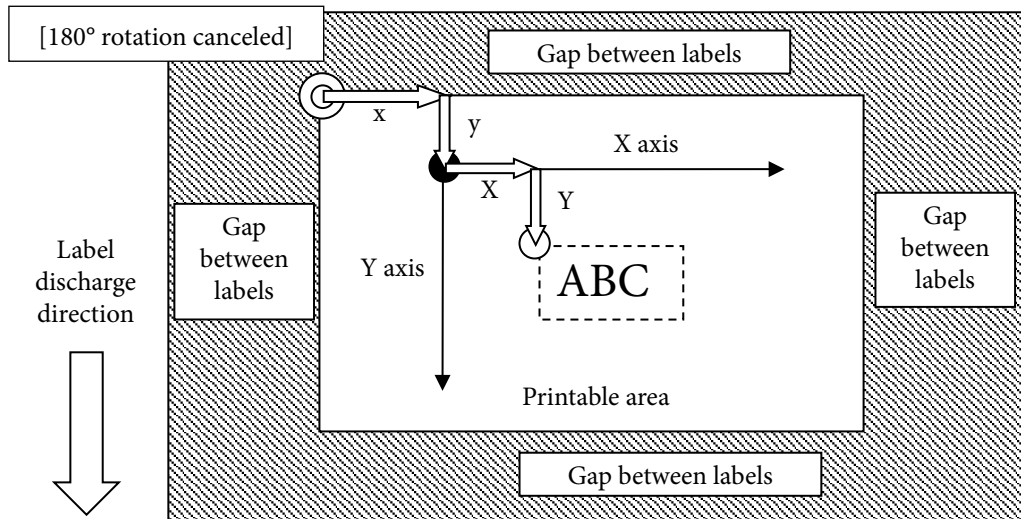
[Function]

■ Set 180° rotation print

- If 180° rotation printing is specified based on Parameter e, the logical origin is set to the bottom right corner of the printable area. If the label origin or the field origin location have been specified, the feed direction of the coordinate system's X axis is set from right to left, and the feed direction of the Y axis is set from bottom to top.
- The following figure indicates the positioning of the logical origin, label origin, and field origin when label 180° rotation printing has been specified. (The double white circle indicates the logical origin, the black circle indicates the label origin, and the white circle indicates the field origin.)



- The following figure indicates the positioning of the logical origin, label origin, and field origin when label 180° rotation printing has been canceled. (The double white circle indicates the logical origin, the black circle indicates the label origin, and the white circle indicates the field origin.)



[Response]

None

[Reference]

Related commands: None

## **^PP**

---

[Name]

Paused

[Format]

^PP

[Parameter]

None

[Function]

- Transitions the printer to the paused status.
  - The printer is paused after it completes printing label formats that include this command.

[Response]

None

[Reference]

Related commands: None

## ~PP

---

[Name]

Paused

[Format]

~PP

[Parameter]

None

[Function]

■ Transitions the printer to the paused status.

- If the printer is printing a label, it stops printing once that label is printed, then transitions to the paused status.

[Response]

None

[Reference]

Related commands: ^PP

## ^PQ

---

[Name]

Set print quantity

[Format]

^PQ t ,i ,c ,p

Parameters	Description	Definition range
t	Total print quantity	$1 \leq t \leq 99999999$
i	Printer interval for pause and cut	$0 \leq i \leq 99999999$
c	Serialized label print quantity	$0 \leq c \leq 99999999$
p	Set/cancel pause suppression	p = Y/N Y: Set N: Cancel

[Function]

- Sets the print quantity for the label format.
  - The total print quantity is set based on Parameter t.
  - The print interval for which to perform cutting is set based on Parameter i. The printer transitions to the paused status each time it performs a cut. For example, if you specified 3 labels, the printer performs a cut and transitions to the paused status each time it completes printing 3 labels. However, if the printer does not have a cut function, the cut operation is not performed. The printer will still transition to the paused status in this case.
  - If a zero <0> is specified for Parameter i, only the cut operation is performed after the total print quantity has been printed. The printer will not transition to the paused status in this case.
  - The serialized label print quantity is set based on Parameter c. Serialized label refers to a label format which allows you to change the rendered character string in a regular pattern for each label printed using “^SN” or “^SF”.
    - If the label format is a serialized label, the printer prints the quantity specified in Parameter c, and then proceeds to the next serial number. However, if a zero <0> is specified for Parameter c, the printer operates exactly the same as if a 1 were specified for Parameter c.
    - If the label format is not a serialized label, the value specified for Parameter c is invalid and does not affect the printing result. Labels with the exact same contents are printed in the quantity specified based on Parameter t.
  - Parameter p specifies whether to set or cancel the pause suppression. If pause suppression is canceled, the printer transitions to the paused status each time it performs a cut. If pause suppression is specified, the printer does not transition to the paused status.

[Response]

None

[Reference]

Related commands: ^SN , ^SF

## **~PS**

---

[Name]

Cancel pause

[Format]

~PS

[Parameter]

None

[Function]

Cancels the printer's paused status.

[Response]

None

[Reference]

Related commands: None



## ~RO

---

[Name]

Reset counters

[Format]

~RO c

Parameters	Description	Definition range
c	Counter to be reset	c = 1/2 1: Counter 1 2: Counter 2

[Function]

■ Resets a counter.

- The counter to be reset is specified based on Parameter c.

[Response]

None

[Reference]

Related commands: None

## ^S(C

---

[Name]

Printer operation mode settings

[Format]

^S(C a ,b ,c

Parameters	Description	Definition range
a	Printer operation mode function identifier	a = 2-character ASCII string For details, see the identifiers in Appendix A List of Printer Operation Modes
b	Printer operation status object identifier	b = 1-character ASCII string For details, see the identifiers in Appendix A List of Printer Operation Modes
c	Setting value	c= ASCII character string of undefined length For details, see the definition range in Appendix A List of Printer Operation Modes

[Function]

- Sets the printer operation mode.
  - Sets Parameter c to the printer operation mode specified in Parameter a, b.
  - A printer operation mode is information that determines the operation of the printer. Refer to Appendix A for a list of printer operation modes.

[Initial value]

Varies depending on the model.

[Response]

None

[Reference]

Related function specifications: 2.5 Getting and Setting Printer Information

Related commands: ~H(C

[Note]

The ^JUS command is required to save settings to the non-volatile memory of the printer unit. Please refer to the “^JU” command section for details.

[Usage example]

An example of sending data that sets the resolution and saves settings to the non-volatile memory of the printer unit is shown below.

^XA	
^S(CLR,P,300	1. Sets the current resolution to 300 [dpi].
^JUS	2. Saves the setting to non-volatile memory.
^XZ	

## **^SE**

---

[Name]

Select character code conversion table

[Format]

^SE d: o. x

Parameters	Description	Definition range
d	Storage drive	d = R/E/B/A/Z R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory Z: Non-rewritable memory
o	Character code conversion table file name	ASCII code within 8 characters
x	Extension	x = CNV (Fixed)

[Function]

- Sets a valid character code conversion table.
  - Character code conversion table refers to a table which converts character code defined in an encoding format other than Unicode into a character code defined in Unicode. The file specified by the storage drive, file name, and extension is set as a valid character code conversion table.
  - The printer uses a valid character code conversion table to convert received character code to Unicode. The printer renders the converted characters which support Unicode.

[Response]

None

[Reference]

Related commands: ^CI, ~DE

## ^SF

---

[Name]

Serialization field

[Format]

^SF t ,i

Parameters	Description	Definition range
t	Character string for serialization	t = Character string comprised of D/H/O/A/N/% D: Decimal H: Hexadecimal O: Octal A: Letters of the alphabet N: Alphanumeric %: Character to be ignored
i	Increment	Numerals or letters of the alphabet

[Function]

■ Sets the serialization field.

- If “^PQ” has been used to perform multiple-sheet printing, printing is performed proceeding in the sequence for the character string in the serialization field.
- If “^SF” was used, the character string specified for “^FD” or “^FV” is used as the serialization field.
- The format for the sequence of the character string is specified based on Parameter t.
- If you want to use a 3-digit decimal as the sequence, specify DDD for Parameter t.
- If, within a 3-digit decimal, you want to set only the first 2 digits as the sequence, specify DD% for Parameter t.
- The increment is set based on Parameter i. After printing the serialized label print quantity specified for Parameter c in “^PQ”, the printer advances the sequence by the increment specified for Parameter i.

[Response]

None

[Reference]

Related commands: ^FD , ^FV

[Usage example]

^XA		
^FO100,100		
^FD123^SFDDD,	1^FS	1. Set increment 1 to the character string [123].
^PQ10		2. Set 10 labels for to the total print quantity.
^XZ		

## ^SL

---

[Name]

Set date and time print

[Format]

^SL t ,l

Parameters	Description	Definition range
t	Timing to be set to date and time	t = S S: Time for starting the label format
l	l: Language to print date and time in	$1 \leq l \leq 18$ 1: English 2: Spanish 3: French 4: German 5: Italian 6: Norwegian 7: Portuguese 8: Swedish 9: Danish 10: Spanish 2 11: Dutch 12: Finnish 13: Japanese 14: Korean 15: Simplified Chinese 16: Traditional Chinese 17: Russian 18: Polish

[Function]

- Sets the language for the date and time and the timing to use for the date and time to be rendered to the label.
  - The timing to be used to acquire the date and time and set it to the character string is set based on Parameter t.
  - If S is specified for Parameter t, the date and time rendered to the label is fixed as the label format start time based on “^XA”.
  - The date and time is rendered to the field in the language specified based on Parameter l.

[Response]

None

[Note]

If using this command, use it before defining the first field in the label format.

[Reference]

Related commands: ^KL

## ^SN

---

[Name]

Serialization data

[Format]

^SN i ,d ,z

Parameters	Description	Definition range
i	shipped from factory	Numerals and letters of the alphabet
d	Increment or decrement	Numerals and minus symbols <-> within 12 digits
z	Zero < 0 > padding	z = Y/N Y: Yes (Does not delete zero) N: No (Deletes zeros)

[Function]

- Renders the serialization data to the current field.
  - If “^PQ” has been used to perform multiple-sheet printing, printing is performed by changing the number in the serialization data.
  - The numeral section of the character string specified by Parameter i is set as the serialization data.
  - If multiple numeral sections exist in the character string, the numeral section to the farthest right in character string is set as the serialization data.
  - After printing the serialized label print quantity specified for Parameter c in “^PQ”, the printer advances the serialization data by the increment or decrement specified for Parameter d.
  - Whether zero padding is used or not is specified based on Parameter z. If N is specified, a zero <0> to the left of a number other than zero <0> in the serialization data is deleted. For example, if the serialization data is “010”, then 10 is rendered.

[Response]

None

[Reference]

Related commands: None

[Usage example]

^XA	
^FO100,100	
^SN123,1,Y^FS	1. Sets 123 as the initial value and 1 as the increment.
^PQ10	2. Set 10 labels for to the total print quantity.
^XZ	3. Prints 10 labels, increasing the value by 1 each time: 123, 124, ...

## ^SO

---

[Name]

Set date and time offset

[Format]

^SO t ,mo ,d ,y ,h ,mi ,s

Parameters	Description	Definition range
t	Clock set	t = 2/3 2: Secondary clock 3: Tertiary clock
mo	Month	$-32000 \leq mo \leq 32000$
d	Day	$-32000 \leq d \leq 32000$
y	Year	$-32000 \leq y \leq 32000$
h	Hour	$-32000 \leq h \leq 32000$
mi	Minute	$-32000 \leq mi \leq 32000$
s	Second	$-32000 \leq s \leq 32000$

[Function]

- Sets the date and time for the secondary or tertiary clock. In this case, set the date and time using the difference from the primary clock.
  - The clock to be set is specified based on Parameter t.
  - The difference from the primary clock is set based on Parameters mo, d, y, h, mi, and s.

[Response]

None

[Reference]

Related commands: None

## ^ST

---

[Name]

Set date and time

[Format]

^ST mo ,d ,y ,h ,mi ,s ,f

Parameters	Description	Definition range
mo	Month	$01 \leq mo \leq 12$
d	Day	$01 \leq d \leq 31$
y	Year	$2000 \leq y \leq 2099$
h	Hour	$00 \leq h \leq 23$
mi	Minute	$00 \leq mi \leq 59$
s	Second	$00 \leq s \leq 59$
f	Time format	f = A/P/M A: AM P: PM M: 24-hour clock

[Function]

- Sets the date and time for the primary clock.
  - The time is specified by the combination of Parameters f and h.
  - If A or P is specified for Parameter f, the definition range of Parameter h is  $00 \leq h \leq 12$ .
  - Depending on the model, you may not be able to specify a year before the product went on sale.

[Response]

None

[Reference]

Related commands: None



## ~TA

---

[Name]

Adjust tear-off position

[Format]

~TA d

Parameters	Description	Definition range
d	Value to adjust tear-off position [dot]	$-9999 \leq d \leq 9999$

[Function]

- Sets the value to adjust the tear-off position.
  - Parameter d must be specified as a numerical value. An example setting a positive value and an example setting a negative value are shown below.
  - If you want to set 20, set ~TA20.
  - If you want to set -20, set ~TA-20.

[Response]

None

[Reference]

Related commands: None

[Note]

The ^JUS command is required to save settings to the non-volatile memory of the printer unit. Please refer to the “^JU” command section for details.

[Usage example]

An example of sending data that sets the value to adjust the tear-off position and saves settings to the non-volatile memory of the printer unit is shown below.

~TA20	1. Sets the value to adjust the tear-off position to 20 [dot].
^XA	
^JUS	2. Saves the setting to non-volatile memory.
^XZ	

## ^TB

---

[Name]

Text blocks

[Format]

^TB o ,w ,h

Parameters	Description	Definition range
o	Block orientation	o = N/R/I/B N: Normal R: 90° rotation (clockwise) I: 180° rotation B: 270° rotation (clockwise)
w	Block width [dot]	$1 \leq w \leq 9999$
h	Block height	$1 \leq h \leq \text{Label length}$

[Function]

- Sets wrap for rendering character strings in the field.
  - Characters strings in the field are rendered wrapped back if they meet the following conditions.
  - When rendering character strings, the rendering width exceeds the block width set by Parameter w.
  - If the rendering height of the character string exceeds the block height set by Parameter h, only the section that fits in the block height is rendered.
  - The full rectangle specified by Parameters w and h can be rotated based on Parameter o.

[Response]

None

[Reference]

Related commands: ^A , ^FB

## ^TO

---

[Name]

Copy files

[Format]

^TO d1: o1 .x1 ,d2: o2 .x2

Parameters	Description	Definition range
d1	Drive to be copied from	d1 = R/E/B/A R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory
o1	Name of file to be copied	ASCII code within 8 characters Wild card (Asterisk <*>)
x1	Extension of file to be copied	All extensions Wild card (Asterisk <*>)
d2	Drive to be copied to	d2 = R/E/B/A
o2	Name of copied file	ASCII code within 8 characters Wild card (Asterisk <*>)
x2	Extension to add to copied file	All extensions Wild card (Asterisk <*>)

[Function]

- Copies files stored in the memory device.
  - A copy of the file specified in Parameters d1, o1, and x1 is created as the file specified in Parameters d2, o2, and x2.
  - The file can be specified using wild cards for Parameters o1 and o2. An asterisk <\*> indicates an arbitrary character string.
  - Multiple files can be specified at once using wild cards.

[Response]

None

[Reference]

Related commands: None

## ~W(P

---

[Name]

Execute pattern printing

[Format]

~W(P a

Parameters	Description	Definition range
a	Type of pattern printing	a = NC/PF NC: Print nozzle check pattern PF: Print paper feed regulation pattern

[Function]

- Prints the pattern specified in Parameter a.
  - Details about the type of pattern printing are shown in the following table.

Type of pattern printing	Description
NC: Print nozzle check pattern	Pattern to check if the print head nozzle is not clogged and if printing is executed normally
PF: Print paper feed regulation pattern	Pattern printing to correct gap of print with form slid

- Supported type of printing vary depending on the model.

[Initial value]

None

[Response]

None

[Reference]

Related function specifications: None

Related commands: None

## **~WC**

---

[Name]

Print status sheet

[Format]

~WC

[Parameter]

None

[Function]

Prints multiple pieces of information in a list format.

[Response]

None

[Reference]

Related commands: ^HH

## ^WD

---

[Name]

Print directory label

[Format]

^WD d: o. x

Parameters	Description	Definition range
d	Storage drive	d = R/E/B/A/Z R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory Z: Non-rewritable memory
o	File name	ASCII code within 8 characters Wild card (Asterisk <*>)
x	Extension	All extensions Wild card (Asterisk <*>)

[Function]

- Prints the file information saved in the memory device.
  - The file information of the file specified by storage drive, file name, and extension is printed as the directory label. The file name, extension, file size, and optional information are printed as file information.
  - Specification can be performed using wild cards for Parameters o and x. An asterisk <\*> indicates an arbitrary character string.

[Response]

None

[Reference]

Related commands: None

## **^XA**

---

[Name]

Start label format

[Format]

^XA

[Parameter]

None

[Function]

■ Starts the label format.

- This command can be executed using the control code <STX>.

[Response]

None

[Reference]

Related commands: ^XZ

## **^XB**

---

[Name]

Suppress backfeed

[Format]

^XB

[Parameter]

None

[Function]

■ Suppresses backfeed when printing is completed.

[Response]

None

[Reference]

Related commands: None



## **^XF**

---

[Name]

Load label format file

[Format]

^XF d: o. x

Parameters	Description	Definition range
d	Storage drive	d = R/E/B/A R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory
o	File name	ASCII code within 8 characters
x	Extension	x = FMT (Fixed)

[Function]

■ Load label format file

- The label format file specified by the storage drive, file name, and extension is loaded.
- A label format file refers a file which saved a command string. You can reuse commands by loading a pre-made label format file.

[Response]

None

[Reference]

Related commands: ^DF

## **^XG**

---

[Name]

Draw graphic file with magnification

[Format]

**^XG** d: o. x ,mx ,my

Parameters	Description	Definition range
d	Storage drive	d = R/E/B/A R: Volatile memory E: Non-volatile memory B: Optional memory A: Optional memory
o	File name	ASCII code within 8 characters
x	Extension	x = GRE, PNG
mx	Magnification factor in x axis	$1 \leq mx \leq 10$
my	Magnification factor in y axis	$1 \leq my \leq 10$

[Function]

- Renders the graphic file to the field.
  - The graphic file specified by storage drive, file name, and extension is rendered.
  - The magnification factor is determined based on Parameters mx and my. The x axis is multiplied by mx, and the y axis is multiplied by my during rendering.

[Response]

None

[Reference]

Related commands: ~DG , ~DY

## **^XZ**

---

[Name]

End format

[Format]

^XZ

[Parameter]

None

[Function]

■ Ends the format.

- The format started by “^XA” is ended.
- This command can be executed using the control code <ETX>.

[Response]

None

[Reference]

Related commands: ^XA

## Appendix A List of Printer Operation Modes

---

A printer operation mode is information that determines the operation of the printer. The list of printer operation modes is shown in Table A-1. Use the “^S(C)” (set printer operation mode) command and the “~H(C)” (get printer operation mode) command to set and request the printer operation mode values. When using these commands, specify < Function identifier > and <Object identifier> as the command parameter.

Printer operation mode values are volatile, and return to their initial values when the printer is turned off or reset. Use the “^JU” (save/load setting value) command to change the initial values in printer operation mode.

- Use the “^S(C)” command to set printer operation mode values.
- Use the “~H(C)” command to get printer operation mode values.
- Use the “^JU” command to change the initial values in printer operation mode.

In Table A-1, the printer operation mode whose definition range may vary depending on the model is checked at the column of “Model dependence for definition range”. The printer operation mode whose function may not be supported depending on the model is checked at the column of “Model dependence for function support”.

The factory-set initial values for each setting in printer operation mode depend on the printer model. Refer to the attached Command List also for details regarding model dependence.

Table A-1 List of Printer Operation Modes

Function identifier	Function	Description of object identifier	Definition range	Model dependence for definition range	Model dependence for function support	Corresponding ZPL II command
BB	Barcode size	M = Default value of magnification	1 to 99	✓		None
BW	Bar width correction value	C = Bar width correction value [dot]	-9999 to 9999	✓		None
CA	Alias for drive	A = Alias for drive A	A/B/E/R	✓		^CM
		B = Alias for drive B	A/B/E/R	✓		^CM
		E = Alias for drive E	A/B/E/R	✓		^CM
		R = Alias for drive R	A/B/E/R	✓		^CM
FE	Valid character code conversion table	T = File name of valid character code conversion table	File name = d:o.x d = A/B/E/R/Z o = ASCII code within 8 characters x = CNV			None
LB	Background image setting file name	I = Background image setting file	File name = d:o.x d = A/B/E/R/Z o = ASCII code within 8 characters x = BGD/PNG			None
		X = Background image X position	0 to 32000		✓	None
		Y = Background image Y position	0 to 32000		✓	None

LE	Paper edge adjustment	L = Logical label left edge position adjustment [dot] ([mm]) <sup>1</sup>	-9999 to 9999	✓		^LS
		M = Physical label left edge position adjustment [dot] ([mm]) <sup>1</sup>	-9999 to 9999	✓		
		T = Physical label leading edge position adjustment [dot] ([mm]) <sup>1</sup>	-9999 to 9999	✓		^LT
LM	Media coating type	D = Label edge detection	M/W/N/H M: Black mark detection W: Gap detection N: No detection H: Tag hole detection	✓		^MN
		F = Media form	CP/DL/CL/TG/WB CP: Continuous paper DL: Die-cut label CL: Continuous label TG: Tag WB: Wristband	✓	✓	None
		P = Media source	IR/ER IR: Internal roll ER: External feed	✓	✓	None
		S = Media shape	RP/FP RP: Roll paper FP: Fanfold paper	✓	✓	None

		T = Media coating type	P1/P2/P3/M1/M2/M3/S1/S2/S3/ G1/G2/G3 GS1/GS2/GS3/PG1/PG2/PG3/T1 /T2/T3/WB1/WB2/WB3 P1: Plain Paper 1 P2: Plain Paper 2 P3: Plain Paper 3 M1: Matte Paper 1 M2: Matte Paper 2 M3: Matte Paper 3 S1: Synthetic 1 S2: Synthetic 2 S3: Synthetic 3 G1: Glossy Paper 1 G2: Glossy Paper 2 G3: Glossy Paper 3 GS1: Glossy Film 1 GS2: Glossy Film 2 GS3: Glossy Film 3 PG1: High Glossy Paper 1 PG2: High Glossy Paper 2 PG3: High Glossy Paper 3 T1: Texture Paper 1 T2: Texture Paper 2 T3: Texture Paper 3 WB1: Wristband 1 WB2: Wristband 2 WB3: Wristband 3	✓		None
LP	Paper feed adjustment	O = Cut position adjustment [dot]	-9999 to 9999	✓		~TA
		T = Continuous paper leading edge adjustment [dot]	-9999 to 9999	✓	✓	None
		M = Paper feed adjustment [dot]	-99 to 99	✓	✓	None

LR	Resolution setting	B = Background image rendering resolution [dpi]	200/300/600	✓		None
		M = Print resolution magnification	A/B A: Normal resolution B: Low resolution			^JM
		P = Print resolution [dpi]	200/300/600	✓		^MU
		R = Format base in dots per inch [dpi]	150/200/300/600	✓		^MU
		Z = Print resolution of replaced printer [dpi]	200/300/600	✓		None
LS	Media settings	G = Left gap [dot] ([mm]) <sup>1</sup>	0 to 9999	✓	✓	None
		L = Label length [dot] ([mm]) <sup>1</sup>	0 to 99999	✓		None
		P = Label width [dot] ([mm]) <sup>1</sup>	0 to 9999	✓		None
		R = Right gap [dot] ([mm]) <sup>1</sup>	0 to 9999	✓	✓	None
		T = Distance from the hole to the media edge [dot] ([mm]) <sup>1</sup>	0 to 9999	✓	✓	None
		C = Distance between labels [dot] ([mm]) <sup>1</sup>	0 to 9999	✓	✓	None
LV	Media size error	H = Media size error (width) detection	E/D E: Enabled D: Disabled		✓	None
		V = Media size error (length) detection	E/D E: Enabled D: Disabled		✓	None



LW	Margins	B = Bottom margin [dot] ([mm]) <sup>1</sup>	0 to 9999	✓	✓	None
		L = Left margin [dot] ([mm]) <sup>1</sup>	0 to 9999	✓	✓	None
		R = Right margin [dot] ([mm]) <sup>1</sup>	0 to 9999	✓	✓	None
		T = Top margin [dot] ([mm]) <sup>1</sup>	0 to 9999	✓	✓	None
MF	Set feed operation	P = Operation at power on	C/F/G/L/N/S C: Calibration F: Feed G: Feed and cut L: Measure media length N: No feed S: Short calibration	✓		^MF
		H = Operation at change media	C/F/G/L/N/S C: Calibration F: Feed G: Feed and cut L: Measure media length N: No feed S: Short calibration	✓		^MF
		S = Paper suction strength	E/D E: Enabled D: Disabled		✓	None
		M = Manual paper suction strength	1 to 10	✓	✓	None
		B = Set backfeed procedure	b = A/B/N/10 to 90 A = 100% backfeed after cutting B = 0% backfeed after cutting N = 90% backfeed after cutting 10 to 90 = Percent value	✓	✓	~JS
		G = Distance between the head and the media	1 to 255	✓	✓	None

MN	Enable/disable nozzle clogging recovery	S = Enable/disable nozzle clogging recovery	E/D E: Enabled D: Disabled		✓	None
MP	Print operation mode	M = Print operation mode	T/P/R/A/C/D/F/L/U/K T: No cutting P: Manual peeling and application R: Rewind A: Automatic peeling and application C: Cutting performed D/F/L/U/K: Reserved	✓		^MM
		S = Print speed	1/2/3/4/5/6/8/9/10/11/12/13/14 1 = 25.4 [mm/sec] 2 = 50.8 [mm/sec] 3 = 76.2 [mm/sec] 4 = 101.6 [mm/sec] 5 = 127 [mm/sec] 6 = 152.4 [mm/sec] 8 = 203.2 [mm/sec] 9 = 220.5 [mm/sec] 10 = 245 [mm/sec] 11 = 269.5 [mm/sec] 12 = 304.8 [mm/sec] 13 = 330.2 [mm/sec] 14 = 355.6 [mm/sec]	✓	✓	None
		F = Flush onto paper mode	1/2 1: Min. dot 2: Max. dot	✓	✓	None
		U = Basic printer unit system	D/I/M D: Dots I: Inches M: Millimeters			^MU

		D = Printing direction	B/U B: Bidirectional or Unidirectional U: Unidirectional		✓	None
MQ	Set peeler control adjustment amount	A = Peel position adjustment during automatic application [dot]	-9999 to 9999	✓	✓	None
		B = Peel position adjustment during manual application [dot]	-9999 to 9999	✓	✓	None
		W = Wait time adjustment after peeling label [sec]	0.0 to 60.0 (0.1 sec units)	✓	✓	None
MS	Printing control adjustment amount	C = Wait time adjustment for closing caps [sec]	0.0 to 60.0 (0.1 sec units)	✓	✓	None
		H = Drying time per head pass [sec]	0.0 to 60.0 (0.1 sec units)	✓	✓	None
MT	Auto cleaning on designated time	S = Enable/disable auto cleaning on designated time	E/D E: Enabled D: Disabled		✓	None
		T = Time to start auto cleaning	hh: mm (hh & mm are number within two digits, hh = 00 to 23, mm = 00 to 59)		✓	None
MV	Nozzle self-test operation	C = Permitted clogged nozzle number	0 to 9999	✓	✓	None
		I = Self-test interval in printing (number of labels)	0 to 99999999 0: No check during printing	✓	✓	None
		O = Operation at clogged nozzle detection	C/N C: Continue printing N: Notify		✓	None
		S = Enable/disable nozzle self-test	E/D E: Enabled D: Disabled		✓	None
		A = Cleaning after self-test	N/E/D N: Do not execute during printing E: Automatic execution D: Do not execute	✓	✓	None



PC	Image correction	B = Banding reduction	-9999 to 9999	✓	✓	None
		C = Color correction mode	1 character in ASCII code	✓		None
		E = Enable/disable feather edge function	E/D E: Enabled D: Disabled		✓	None
		F = Enable/disable edge correction function	E/D E: Enabled D: Disabled		✓	None
		P = Ratio of black to composite	-9999 to 9999	✓		None
		D = Ink profile and brightness adjustment	-9999 to 9999	✓		None
		Y = Y shift user adjustment value	-9999 to 9999	✓	✓	None
		Q = Print quality	ASCII single character	✓	✓	None
		R = Brightness	-99 to 99	✓	✓	None
		A = Saturation	-99 to 99	✓	✓	None
		O = Contrast	-99 to 99	✓	✓	None
		N = Tone (cyan)	-99 to 99	✓	✓	None
		M = Tone (magenta)	-99 to 99	✓	✓	None
		L = Tone (yellow)	-99 to 99	✓	✓	None
		I = Spot color list file	File name = d:o.x d = A/B/E/R o = ASCII code within 8 characters x = UCL		✓	None
SL	LED notification setting (Ink cartridge low)	N = LED notification setting (Ink cartridge low)	E/D E: Enabled D: Disabled		✓	None

UB	Buzzer setting	S = Buzzer timing setting	N/E/L N: None E: Each label L: Last label	✓	✓	None
		E = Enable/disable buzzer sound after error	E/D E: Enabled D: Disabled		✓	None
		F = Enable/disable continuous buzzer sound after error	E/D E: Enabled D: Disabled		✓	None
		Z = Buzzer volume setting	N/S/M/L/X N: OFF S: Soft M: Medium L: Loud X: Max		✓	None
UI	Enable/disable buttons	B = Enable/disable cancel button	E/D E: Enabled D: Disabled		✓	^MP
		C = Enable/disable cut button	E/D E: Enabled D: Disabled		✓	^MP
		D = Enable/disable peeler reset button	E/D E: Enabled D: Disabled		✓	None
		F = Enable/disable feed button	E/D E: Enabled D: Disabled		✓	^MP
		P = Enable/disable pause button	E/D E: Enabled D: Disabled		✓	^MP

UL	Panel settings	B = Panel brightness *This will be obsolete. Deprecated function.	0 to 9 0: Off	✓	✓	None
		C = Panel contrast *This will be obsolete. Deprecated function.	00 to 99 50: Standard	✓	✓	None
		L = Panel language	1/2/3/4/5/7/11/13/14/15/16/17/18/ 100/101 1: English 2: Spanish 3: French 4: German 5: Italian 7: Portuguese 11: Dutch 13: Japanese 14: Korean 15: Simplified Chinese 16: Traditional Chinese 17: Russian 18: Polish 100: Greek 101: Turkish	✓	✓	^KL
WR	Set/cancel error function	P = Set/cancel error reprinting function	Y/N Y: Set N: Cancel		✓	^JZ
		C = Set/cancel the cut function for unfinished labels in case of a paper out error	Y/N Y: Set N: Cancel		✓	None

<sup>1</sup> The unit of the setting value can be selected from dot/mm/inch by ^S(CMP,U or ^MU command.

## Appendix B List of Printer Operation Statuses

---

Printer operation status indicates the condition/status of the printer at that point in time. The list of printer operation statuses is shown in Table B-1. Use the “~H(S)” (get printer operation status) command to get the printer operation status. When using this command, specify < Function identifier> and <Object identifier> as the command parameter.

- Use the “~H(S)” command to get printer operation mode values.

In Table B-1, the printer operation status whose definition range may vary depending on the model is checked at the column of “Model dependence for definition range”. The printer operation status whose function may not be supported depending on the model is checked at the column of “Model dependence for function support”.

Refer to the attached Command List also for details regarding model dependence.



Table B-1 List of Printer Operation Statuses

Function identifier	Function	Description of object identifier	Definition range	Model dependence for definition range	Model dependence for function support	Corresponding ZPL II command
CM	Maintenance counter	C = Auto cutter counter	Figure [times]			None
		O = Operating time (hour)	Figure [hour]			None
CN	Non-resettable counter	C = Non-resettable counter (Centimeter)	Figure [cm]			^HH
		I = Non-resettable counter (Inch)	Figure [inch]			^HH
		L = Non-resettable counter (Printed label number)	Figure [sheets]			None
DS	Available drive capacity	A = Available capacity in Drive A	Available capacity in Drive A [bytes]		✓	^HW
		B = Available capacity in Drive B	Available capacity in Drive B [bytes]		✓	^HW
		E = Available capacity in Drive E	Available capacity in Drive E [bytes]			^HW
		R = Available capacity in Drive R	Available capacity in Drive R [bytes]			^HW

EA	Error status	E = Error status	2-character ASCII string NE: No error FE: Fatal error NI: Interface not selected error CO: Cover open error (Roll cover) IE: Replace Ink cartridge, or No Ink cartridge error SJ: Paper jam error SN: Paper out error MF: Replace maintenance box error SS: Media size error ST: Media source error SR: Paper recognition error CI: Ink cartridge cover open error MN: No maintenance box error CM: Maintenance box cover open error SE: Paper removal error LT: Maintenance error (tube life) CS: Paper cover open error CF: Front cover open error CR: Release lever open error CG: Guide unit open error SC: Sensor calibration error IC: Cleaning not available due to low remaining ink MC: Cleaning not available due to insufficient waste ink capacity NP: Subscription non-printable error SM: Paper mismatch error	✓		^HS
		F = Fatal error status	4-digits figure 0000: No fatal error			None
		V = Media length	Numerals [dot]		✓	None
LS	Media detection	H = Media width	Numerals [dot]		✓	None

MA	Printer operation status	S = Printer operation status	2-character ASCII string ER: Error state SP: Self printing PR: Print operation state WT: Waiting IL: Idling PS: Pause CL: Head maintenance FC: Factory shipment state UP: Firmware updating	✓		None
PA	Printing stopped status	C = Cover open status	T/F T: Cover open F: Not Cover open			None
		O = Panel operation waiting status	2-character ASCII string UN: Waiting for operation of licensing un-official ink SF: Waiting for operation when storage memory is full NC: Waiting for operation when a nozzle clogging is detected by the auto nozzle check during printing NW: No waiting	✓		None
		P = Paper out status	T/F T: Paper out F: Not Paper out			~HS
		S = Pause status	T/F T: Paused F: Not paused			~HS
PB	Buffer full status	F = Buffer full status	T/F T: Buffer full F: Not Buffer full			~HS

## Appendix C List of Printer Information

Printer unique information indicates details about the printer and its characteristics. The list of printer information is shown in Table C-1. Use the “~H(I)” (send printer unique information) to get printer information. When using this command, specify <Function identifier> and <Object identifier> as the command parameter.

- Use the “~H(I)” command to get printer unique information.

In Table C-1, the printer information whose function may not be supported depending on the model is indicated in the “Model dependence for function support” column.

Table C-1 List of Printer Information

Function identifier	Function	Description of object identifier	Definition range	Model dependence for function support	Corresponding ZPL II command
MF	Firmware version	C = Printer built in font version	ASCII, within 8 characters	✓	None
		V = Firmware version	ASCII, within 8 characters		^HH/~HI/^HZ
MM	Model information	I = Ink model	ASCII, within 2 characters	✓	None
MP	Printer name	S = Serial number	ASCII, 10 characters		None

### REVISION SHEET (Summary)

Revision	Summary
A	Enactment
B	Partial correction
C	Partial correction
D	Partial correction
E	Partial correction
F	Partial correction
G	Partial correction
H	Partial correction
I	Partial correction
J	Partial correction
K	Partial correction
L	Partial correction

## REVISION SHEET (Detail)

Revision	Page or Subject	Detail
A	All	Newly enacted
B	3. Detailed Command Specifications	Added [Notes] and [Usage example]
		Added that PNG images are not supported on a1 and a2 of parameters of ^F(C command
		Deleted the ^XB command
C	3. Detailed Command Specifications	Added the ~J(M command
		Added the ~JS command
	Appendix A	Added the ^S(C function, reviewed definition ranges, and revised model dependence information
	Appendix D	Deleted the model dependent printer information
D	3. Detailed Command Specifications	Added the ^XB command
		Added language support for the ^KL command
	Appendix A	Added the ^S(C function, reviewed definition ranges, and revised model dependence information
E	3. Detailed Command Specifications	Changed the ^BX command definition range
		Added the ~DY command definition range
		Added the ^H(E command
	Appendix A	Added the ^P(M command
F	Appendix A	Added the ^S(C definition range
	Appendix C	Added the ~H(I function
G	Appendix A	Added the ^S(C definition range
H	Appendix A	Added the ^S(C definition range
I	2.2.1 Media Coating Type	Added Wristband
	2.2.2 Media Form	Added Wristband
	Appendix A	Added the ^S(C definition range
J	2.2.1 Media Coating Type	Added Texture Paper
	2.2.2 Media Form	Added Tag
	2.2.3 Label Edge Detection	Added the tag hole detection
	3. Detailed Command Specifications	Added the ^B(R definition range supplemental information
		Added the ^BR definition range supplemental information
		Added the ~H(Q definition range
	Appendix A	Added the ~J(M function
	Appendix A	Added the ^S(C definition range
Appendix B	Added the ~H(S definition range	
K	2.6 Designating Color	Added 1-dimensional barcodes and 2-dimensional codes as background targets
	3. Detailed Command Specifications	Reviewed the descriptions of ^B(Q, ^BF, ^BQ, ^BX, and ^FM
		Changed the definition ranges of ^GS and ~TA
Appendix A	Changed the ^S(C definition range	
L	2.6 Designating Color	Added specification differences depending on the firmware version
	3. Detailed Command Specifications	Changed the ^H(Y definition range
	Appendix A	Added the ^S(C definition range