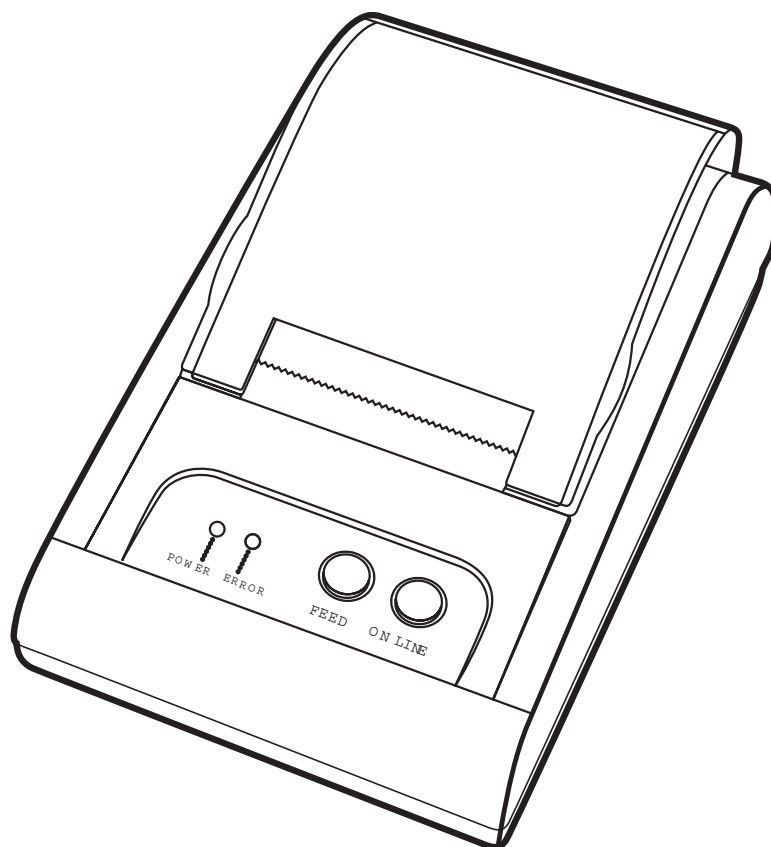


Command Manual **STP-103**

Thermal Printer
Rev. 1.00



1. Control Commands List

Command	Name
HT	Horizontal tab
LF	Print and line feed
CR	Print and carriage return
DLE EOT	Real-time status transmission
DLE ENQ	Real-time request to printer
ESC SP	Set right-side character spacing
ESC !	Select print mode(s)
ESC \$	Set absolute print position
ESC %	Select/cancel user-defined character set
ESC &	Define user-defined characters
ESC *	Select bit-image mode
ESC -	Turn underline mode on/off
ESC 2	Select 1/6-inch line spacing
ESC 3	Set line spacing
ESC =	Select peripheral device
ESC ?	Cancel user-defined characters
ESC @	Initialize printer
ESC D	Set horizontal tab positions
ESC E	Turn emphasized mode on/off
ESC J	Print and feed paper
ESC R	Select an international character set
ESC V	Turn 90 clockwise rotation mode on/off
ESC \	Set relative print position
ESC a	Select justification
Esc c 5	Enable/disable panel FEED buttons
Esc d	Print and feed paper n lines
Esc t	Select character code table
Esc {	Turn upside-down printing mode on/off
FS p	Print non-volatile bit image
FS q	Define non-volatile bit image
GS !	Select character size
GS *	Define downloaded bit image
GS /	Print downloaded bit image
GS :	Start/end macro definition
GS B	Turn white/black reverse printing mode on/off
GS H	Select printing position of HRI characters
GS I	Transmit print ID
GS L	Set left margin
GS P	Set vertical and horizontal motion unite
GS W	Set printing area width
GS ^	Execute macro
GS a	Enable/disable Automatic Status Back
GS b	Turn smoothing mode on/off
GS f	Select font for HRI characters
GS h	Set bar code height
GS k	Print bar code
GS v	Print raster bit image
GS w	Set bar code width

2. Control Commands Details

2-1 Command Notation

[Name]	The name of the command.
[Format]	The code sequence. ASCII indicates the ASCII equivalents. Hex indicates hexadecimal equivalents. Decimal indicates the decimal equivalent. []k indicates the contents of the [] should be repeated k times.
[Range]	Gives the allowable ranges for the parameters.
[Description]	Describes the function of the command.
[Notes]	Provides important information on setting and using the printer command, if necessary.
[Default]	Gives the default values, if any, for the command parameters.
[Reference]	Lists related commands.
[Example]	Provides examples using the command.
The numbers followed by H are hexadecimal	
The numbers followed by B are binary.	
The numbers denoted by () are decimal.	

2-2 Explanation of Terms

LSB	Least Significant Bit
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2-3 Control Commands Details

HT	
[Name]	Horizontal tab
[Format]	ASCII HT Hex 09 Decimal 9
[Description]	Moves the print position to the next horizontal tab position.
LF	
[Name]	Print and line feed
[Format]	ASCII LF Hex 0A Decimal 10
[Description]	Prints the data in the print buffer and feeds one line based on the current line spacing.

CR

[Name] Print and carriage return.

[Format] ASCII HT

Hex 0D

Decimal 13

[Description] When automatic line feed is enabled, this command functions the same as LF; when automatic line feed is disabled, this command is ignored.

DLE EOT n

[Name] Real-time status transmission.

[Format] ASCII DLE EOT n

HEX 10 04 n

Decimal 16 4 n

[Range] $1 \leq n \leq 4$

[Description] Transmits the selected printer status specified by n in real time, according to the following parameters:

n=1 : Transmit printer status.

n=2 : Transmit off-line status.

n=3 : Transmit error status.

n=4 : transmit paper roll sensor status.

n=1 : printers status.

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Not used. Fixed to Off
1	On	02	2	Not used. Fixed to On
2	Off	00	0	Not used.
3	Off	00	0	On-line
	On	08	8	Off-line
4	On	10	16	Not used. Fixed to On
5-6	-	-	-	Undefined
7	Off	00	0	Not used. Fixed to Off

n=2 : Off-line status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Not used. Fixed to off.
1	On	02	2	Not used. Fixed to on.
2	Off	00	0	Cover is closed.
	On	04	4	Cover is open.
3	Off	00	0	Paper is not being fed by using the PAPER FEED button.
	On	08	8	Paper is being fed by the PAPER FEED button.
4	On	10	16	Not used. Fixed to on.
5	Off	00	0	Not used. Fixed to off.
6	Off	00	0	Not used. Fixed to off.
7	Off	00	0	Not used. Fixed to off.

n=3 : Error status

Bit	Off/On	Hex	decimal	Function
0	Off	00	0	Not used. Fixed to Off.
1	On	02	2	Not used. Fixed to On.
2	-	-	-	Undefined.
3	Off	00	0	Not used. Fixed to Off.
4	On	10	16	Not used. Fixed to On.
5	Off	00	0	Not used. Fixed to Off.
6	Off	00	0	Not used. Fixed to Off.
7	Off	00	0	Not used. Fixed to Off.

n=4 : Continuous paper sensor status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Not used. Fixed to Off.
1	On	02	2	Not used. Fixed to On.
2,3	Off,Off	00	0	Paper roll near-end sensor is Off.
	On,On	0C	12	Paper roll near-end sensor is On.
4	On	10	16	Not used. Fixed to On.
5,6	Off	00	0	Paper roll sensor. Paper present.
	On	60	96	Paper roll end detected by paper roll sensor
7	Off	00	0	Not used. Fixed to Off.

DLE ENQ n

[Name] Real time request to printer

[Format]	ASCII	DLE	ENQ	n
	HEX	10	05	n
	DECIMAL	16	5	n

[Range] $1 \leq n \leq 2$

[Description] Respond to a request from the host computer. n specifies the requests as follows.

n	Request
1	Recover from an error and restart printing from the line where the error occurred
2	Recover from an error after clearing the receive and print buffers

ESC SP n

[Name] Set right-side character spacing

[Format]	ASCII	ESC	SP	n
	Hex	1B	20	n
	Decimal	27	32	n

[Range] $0 \leq n \leq 255$

[Description] Sets the character spacing for the right side of the character to [n × horizontal or vertical motion units].

ESC ! n

[Name] Select print mode(s)

[Format] ASCII ESC ! n
 Hex 1B 21 n
 Decimal 27 33 n

[Range] $0 \leq n \leq 255$

[Description] Selects print mode(s) using n as following table in next page.

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	24 character (font A : 12 ×24)
	On	01	1	42 character (font B : 9 ×24)
1	Off	00	0	Undefined
	On	02	2	32 character (font A : 12 ×24)
2	-	-	-	Undefined
3	Off	00	0	Emphasized mode not selected.
	On	08	8	Emphasized mode selected.
4	Off	00	0	Double-height mode not selected.
	On	10	16	Double-height mode selected.
5	Off	00	0	Double-width mode not selected.
	On	20	32	Double-width mode selected.
6	-	-	-	Undefined.
7	Off	00	0	Underline mode not selected.
	On	80	128	Underline mode selected.

ESC \$ nL nH

[Name] Set absolute print position

[Format] ASCII ESC \$ nL nH
 Hex 1B 24 nL nH
 Decimal 27 36 nL nH

[Range] $0 \leq nL \leq 255$

$0 \leq nH \leq 255$

[Description] Sets the distance from the beginning of the line to the position at which subsequent characters are to be printed.

The distance from the beginning of the line to the print position is $[(nL + nH \times 256) \times (\text{vertical or horizontal motion unit})]$ inches.

ESC % n

[Name] Select/cancel user-defined character set

ASCII ESC % n
 Hex 1B 25 n
 Decimal 27 37 n

[Range] $0 \leq n \leq 255$

[Description] Selects or cancels the user-defined character set.

When the Least Significant Bit(LSB) of n is 0, the user-defined Character set is canceled.

When the LSB of n is 1, the user-defined character set is selected.

ESC & y c1 c2 [x1 d1... d(y X x1)]...[xk d1...d(y X xk)]	
[Name]	Define user-defined characters
	ASCII ESC & y c1 c2 [x1 d1... d(y X x1)]...[xk d1...d(y X xk)]
	Hex 1B 26 y c1 c2 [x1 d1... d(y X x1)]...[xk d1...d(y X xk)]
	Decimal 27 38 y c1 c2 [x1 d1... d(y X x1)]...[xk d1...d(y X xk)]
[Range]	y = 3 $32 \leq c1 \leq c2 \leq 126$ $0 \leq x \leq 12$ (Font A (12×24)) $0 \leq x \leq 9$ (Font B (9×24)) $0 \leq d1... d(y \times xk) \leq 255$
[Description]	Defines user-defined characters. y specifies the number of bytes in the vertical direction. C1 specifies the beginning character code for the definition, and c2 Specifies the final code. x specifies the beginning character code for the definition, and c2 specifies the final code.

ESC * m nL nH d1... dk	
[Name]	Select bit-image mode
[Format]	ASCII ESC * m nL nH d1... dk
	Hex 1B 2A m nL nH d1... dk
	Decimal 27 42 m nL nH d1... dk
[Range]	m = 0, 1, 32, 33 $0 \leq nL \leq 255$, $0 \leq nH \leq 3$, $0 \leq d \leq 255$
[Description]	Selects a bit-image mode using m for the number of dots specified by nL and nH, as follows:

m	Mode	Vertical Direction		Horizontal Direction(*1)	
		Number of Dots	Dots Density	Dots Density	Number of Data (k)
0	8-dot single-density	8	67 DPI	100 DPI	$nL + nH \times 256$
1	8-dot double-density	8	67 DPI	200 DPI	$nL + nH \times 256$
32	24-dot single-density	24	200 DPI	100 DPI	$(nL + nH \times 256) \times 3$
33	24-dot double-density	24	200 DPI	200 DPI	$(nL + nH \times 256) \times 3$

ESC - n	
[Name]	Turn underline mode on/off
	ASCII ESC - n
	Hex 1B 2D n
	Decimal 27 45 n
[Range]	$0 \leq n \leq 2$, $48 \leq n \leq 50$
[Description]	Turns underline mode on or off, based on the following values of n:

n	Function
0,48	Turns off underline mode
1,49	Turns off underline mode(1-dot thick)
2,50	Turns off underline mode(2-dot thick)

ESC 2

[Name] Select 1/6-inch line spacing
 [Format] ASCII ESC 2
 Hex 1B 32
 Decimal 27 50
 [Description] Selects 1/6-inch line spacing.

ESC 3 n

[Name] Set line spacing
 [Format] ASCII ESC 3 n
 Hex 1B 33 n
 Decimal 27 51 n
 [Range] Sets the line spacing to [n X (vertical or horizontal motion unit)] inches.
 [Description] $0 \leq n \leq 255$

ESC = n

[Name] Select peripheral device
 [Format] ASCII ESC = n
 Hex 1B 3D n
 Decimal 27 61 n
 [Range] $0 \leq n \leq 255$
 [Description] Selects the device to which the host computer sends data, using n as follows:

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Printer disabled.
	On	01	1	Printer enabled.
1	-	-	-	Undefined.
2	-	-	-	Undefined.
3	-	-	-	Undefined.
4	-	-	-	Undefined.
5	-	-	-	Undefined.
6	-	-	-	Undefined.
7	-	-	-	Undefined.

ESC ? n

[Name] Cancel user-defined characters
 [Format] ASCII ESC ? n
 Hex 1B 3F n
 Decimal 27 63 n
 [Range] $32 \leq n \leq 126$
 [Description] Cancels user-defined characters.

ESC @

[Name] Initialize printer

[Format] ASCII ESC @
 Hex 1B 40
 Decimal 27 64

[Description] Clears the data in the print buffer and resets the printer mode to the mode that was in effect when the power was turned on.

ESC D n1...nk NUL

[name] Set horizontal tab positions

[Format] ASCII ESC D n1...nk NUL
 Hex 1B 44 n1...nk 00
 Decimal 27 68 n1...nk 0

[Range] $1 \leq n \leq 255$
 $0 \leq k \leq 32$

[Description] Sets horizontal tab positions.

- n specifies the column number for setting a horizontal tab position from the beginning of the line.
- k indicates the total number of horizontal tab positions to be set.

ESC E n

[Name] Turn emphasized mode on/off

[Format] ASCII ESC E n
 Hex 1B 45 n
 Decimal 27 69 n

[Range] $0 \leq n \leq 255$

[Description] Turns emphasized mode on or off.

- When the LSB of n is 0, emphasized mode is turned off.
- When the LSB of n is 1, emphasized mode is turned on.

ESC J n

[Name] Print and feed paper

[Format] ASCII ESC J n
 Hex 1B 4A n
 Decimal 27 74 n

[Range] $0 \leq n \leq 255$

[Description] Prints the data in the print buffer and feeds the paper
 [n X (vertical or horizontal motion unit)] inches.

ESC R n

[Name] Select an international character set

[Format] ASCII ESC R n
 Hex 1B 52 n
 Decimal 27 82 n

[Range] $0 \leq n \leq 10$

[Description] Selects an international character set n from the following table:

n	Character set
0	U.S.A.
1	France
2	Germany
3	U.K.
4	Denmark I
5	Sweden
6	Italy
7	Spain
8	Japan
9	Norway
10	Denmark II

	Country	ASCII code (hexadecimal number)											
		23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
0	U.S.A.	#	\$	@	[\]	^	'	{		}	~
1	France	#	\$	à	°	ç	§	^	'	é	ù	è	¨
2	Germany	#	\$	§	Ä	Ö	Ü	^	'	ä	ö	ü	β
3	U.K.	£	\$	@	[\]	^	'	{		}	~
4	Denmark I	#	\$	@	Æ	Ø	Å	^	'	æ	ø	å	~
5	Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
6	Italy	#	\$	@	°	\	é	^	ù	à	ò	è	ì
7	Spain	Pt	\$	@	í	Ñ	¿	^	'	¨	ñ	}	~
8	Japan	#	\$	@	[¥]	^	'	{		}	~
9	Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
10	Denmark II	#	\$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü

ESC V n

[Name] Turn 90° clockwise rotation mode on/off

[Format] ASCII ESC V n
 Hex 1B 56 n
 Decimal 27 86 n

[Range] $0 \leq n \leq 1$, $48 \leq n \leq 49$

[Description] Turns 90° clockwise rotation mode on off. N is used follows:

n	Function
0,48	Turn off 90°clockwise rotation mode
1,49	Turns on 90°clockwise rotation mode

ESC \ nL nH

[Name] Set relative print position

[Format] ASCII ESC \ nL nH
 Hex 1B 5C nL nH
 Decimal 27 92 nL nH

[Range] $0 \leq nL \leq 255$
 $0 \leq nH \leq 255$

[Description] Sets the print starting based on the current position by using the horizontal or vertical motion unit.

- This command sets the distance from the current position to [(nL + nH X 256)X(horizontal or vertical motion unit)].

ESC a n

[Name] Select justification

[Format] ASCII ESC a n
 Hex 1B 61 n
 Decimal 27 97 n

[Range] $0 \leq n \leq 2$, $48 \leq n \leq 50$

[Description] Aligns all the data in one line to the specified position.
 N selects the type of justification as follows:

n	Justification
0,48	Left justification
1,49	Centering
2,50	Right justification

ESC c 5 n

[Name] Enable/disable panel FEED buttons

[Format] ASCII ESC c 5 n
 Hex 1B 63 35 n
 Decimal 27 99 53 n

[Range] $0 \leq n \leq 255$

[Description] Enables or disables the panel buttons.

- When the LSB of n is 0, the panel FEED buttons are enabled.
- When the LSB of n is 1, the panel FEED buttons are disabled.

ESC d n

[Name]	Print and feed paper n lines			
[Format]	ASCII	ESC	D	n
	Hex	1B	64	n
	Decimal	27	100	n
[Range]	$0 \leq n \leq 255$			
[Description]	Prints the data in the print buffer and feeds the paper n line. <ul style="list-style-type: none"> • This command sets the print starting position to the beginning of the line. • This command does not affect the line spacing set by ESC 2 or ESC 3. • The maximum paper feed amount is 40 inches. Even if a paper feed amount of more than 40 inches is set, the printer feeds the paper only 40 inches. • When label mode is selected and a paper feed amount that exceeds the length of one label is set, the printer feeds the label paper to the next print starting position. 			

ESC t n

[Name]	Select character code table.			
[Format]	ASCII	ESC	t	n
	Hex	1B	74	n
	Decimal	27	116	n
[Range]	$0 \leq n \leq 5$, $n = 11, 255$			
[Description]	Selects a page n from the character code table.			

n	Pages
0	0 : PC437 [U.S.A., standard Europe]
1	1 : Katakana
2	2 : PC850 [Multilingual]
3	3 : PC860 [Portuguese]
4	4 : PC863 [Canadian-French]
5	5 : PC865 [Nordic]
11	11 : PC858 [Euro]
255	Space page

[Default] n = 0

ESC { n

[Name]	Turns upside-down printing mode on/off			
[Format]	ASCII	ESC	{	n
	Hex	1B	7B	n
	Decimal	27	123	n
[Range]	$0 \leq n \leq 255$			
[Description]	Turns upside-down printing mode on or off. <ul style="list-style-type: none"> • When the LSB of n is 0, upside-down printing mode is turned off. • When the LSB of n is 1, upside-down printing mode is turned on. 			

FS p n m					
[Name]	Print non-volatile bit image				
[Format]	ASCII	FS	p	n	m
	Hex	1C	70	n	m
	Decimal	28	112	n	m
[Range]	$1 \leq n \leq 255$, $0 \leq m \leq 3$, $48 \leq m \leq 51$				
[Description]	Prints a non-volatile bit image n using the mode specified by m				

m	Mode	Vertical dot density	Horizontal dot density
0,48	Normal	180	180
1,49	Double-width	180	90
2,50	Double-height	90	180
3,51	Quadruple	90	90

- n is the number of the non-volatile bit image.
(defined using the FS q command)
- m specifies the bit image mode.

FS q n [xL xH yH d1 ...dk]1...[xL xH yL yH d1...dk]n					
[Name]	Define non-volatile bit image				
[Format]	ASCII	FS	q	n	[xL xH yH d1 ...dk]1...[xL xH yL yH d1...dk]n
	Hex	1C	71	n	[xL xH yH d1 ...dk]1...[xL xH yL yH d1...dk]n
	Decimal	28	113	n	[xL xH yH d1 ...dk]1...[xL xH yL yH d1...dk]n
[Range]	$1 \leq n \leq 255$				
	$0 \leq nL \leq 255$				
	$0 \leq xH \leq 3$ (when $1 \leq xL+xH \times 256 \leq 1023$)				
	$0 \leq yL \leq 1$ (when $1 \leq yL+yH \times 256 \leq 288$)				
	$0 \leq d \leq 255$				
	$k = (xL+xH \times 256) \times (yL+yH \times 256) \times 8$ Total defined data area=2M bits(256K bytes)				
[Description]	Define the non-volatile bit image specified by n				
	• n specifies the number of the defined non-volatile bit image				
	• xL, xH specifies $(xL + xH \times 256) \times 8$ dots in the horizontal direction for the non-volatile bit image you are defining.				
	• yL, yH specifies $(yL + yH \times 256) \times 8$ dots in the vertical direction for the non-volatile bit image you are defining.				

GS ! n				
[Name]	Select character size			
[Format]	ASCII	GS	!	n
	Hex	1D	21	n
	Decimal	29	33	n
[Range]	$0 \leq n \leq 255$			
	Where $1 \leq \text{Number of times of character height} \leq 2$ $1 \leq \text{Number of times of character width} \leq 2$			
[Description]	Selects the character height using bits 0 to 1 and selects the character width using bits 4 to 7, as follows:			

Bit	Off/On	Hex	Decimal	Function
0	Character height selection. See Table 2.			
1				
2				
3				
4	Character width selection. See Table 1			
5				
6				
7				

Table 1 : Character width Selection		
Hex	Decimal	Width
00	0	1 (normal)
10	16	2 (double-width)

Table 2 : Character height Selection		
Hex	Decimal	Height
00	0	1 (normal)
01	1	2 (double-height)

GS * x y d1...d (x X y X 8)

[Name]	Define downloaded bit image					
[Format]	ASCII	GS	*	x	y	d1...d (x X y X 8)
	Hex	1D	2A	x	y	d1...d (x X y X 8)
	Decimal	29	42	x	y	d1...d (x X y X 8)
[Range]	1 ≤ x ≤ 255					
	1 ≤ y ≤ 48 where, x X y ≤ 1536					
	0 ≤ d ≤ 255					
[Description]	Defines a downloaded bit image using the dots specified by x and y. <ul style="list-style-type: none"> • x indicates the number of dots in the horizontal direction. • y indicates the number of dots in the vertical direction. 					

GS / m

[Name]	Print downloaded bit image			
[Format]	ASCII	GS	/	m
	Hex	1D	2F	m
	Decimal	29	47	m
[Range]	0 ≤ m ≤ 3, 48 ≤ m ≤ 51			
[Description]	Prints downloaded bit image in mode m. The modes selectable by m as follows:			

m	Mode	Vertical Dot Density	Horizontal Dot Density
0,48	Normal	200 DPI	200 DPI
1,49	Double-width	200 DPI	100 DPI
2,50	Double-height	100 DPI	200 DPI
3,51	Quadruple	100 DPI	100 DPI

GS :

[Name]	Start or ends macro definition.		
[Format]	ASCII	GS	:
	Hex	1D	3A
	Decimal	29	58
[Description]	Starts or ends macro definition.		

GS B n

[Name] Turn white/black reverse printing mode on/off

[Format] ASCII GS B n
 Hex 1D 42 n
 Decimal 29 66 n

[Range] $0 \leq n \leq 255$

[Description] Turns white/black reverse printing mode on or off.

- When the LSB of n is 0, white/black reverse printing mode is turned off.
- When the LSB of n is 1, white/black reverse printing mode is turned on.

GS H n

[Name] Select printing position of HRI characters

[Format] ASCII ESC H n
 Hex 1D 48 n
 Decimal 29 72 n

[Range] $0 \leq n \leq 3$, $48 \leq n \leq 51$

[Description] Selects the printing position of HRI characters when printing bar code.
 n selects the printing position as follows:

N	Printing position
0,48	Not printed
1,49	Above bar code
2,50	Below bar code
3,51	Both above and below the bar code

- HRI indicates Human Readable interpretation.

[Default] n = 0

GS I n

[Name] Transmit printer ID

[Format] ASCII ESC I n
 Hex 1D 49 n
 Decimal 29 73 n

[Range] $1 \leq n \leq 3$, $49 \leq n \leq 51$

[Description] Transmits the printer ID specified by n as follows:

n	Printer ID	Specification	ID(hexadecimal)
1,49	Printer model ID	STP-103 / STP-103P	30
2,50	Type ID		02
3,51	ROM version ID	Depends on ROM version	10

GS L nL nH

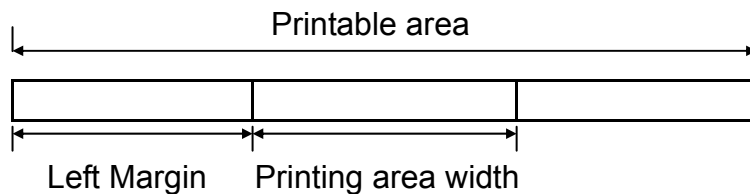
[Name] Set left margin

[Format]	ASCII	GS	L	nL	nH
	Hex	1D	4C	nL	nH
	Decimal	29	76	nL	nH

[Range] $0 \leq nL \leq 255$
 $0 \leq nH \leq 255$

[Description] Sets the left margin using nL and nH.

- The left margin is set to
 $[(nL + nH \times 256) \times (\text{horizontal motion unit}6)]$ inches.

**GS P x y**

[Name] Set horizontal and vertical motion units

[Format]	ASCII	GS	P	x	y
	Hex	1D	50	x	y
	Decimal	29	80	x	y

[Range] $0 \leq x \leq 255$
 $0 \leq y \leq 255$

[Description] Sets the horizontal and vertical motion units to 1/x inch, respectively.
 When x is set to 0, the default setting value is used.
 When y is set to 0, the default setting value is used.

GS W nL nH

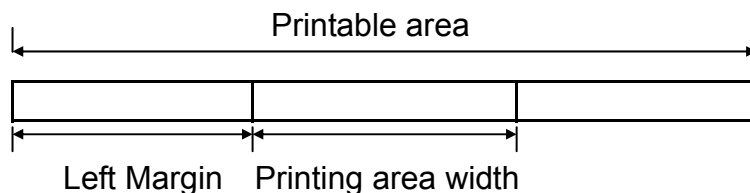
[Name] Set printing area width

[Format]	ASCII	GS	W	nL	nH
	Hex	1D	57	nL	nH
	Decimal	29	87	nL	nH

[Range] $0 \leq nL \leq 255$
 $0 \leq nH \leq 255$

[Description] Sets the printing area width to the area specified by nL and nH.

- The printing area width is set to
 $[(nL + 256 \times nH) \times (\text{horizontal motion unit})]$ inches.



GS ^ r t m						
[Name]	Execute macro					
[Format]	ASCII	GS	^	r	t	m
	Hex	1D	5E	r	t	m
	Decimal	29	94	r	t	m
[Range]	$0 \leq r \leq 255$					
	$0 \leq t \leq 255$					
	$0 \leq m \leq 1$					
[Description]	Executes a macro.					
	<ul style="list-style-type: none"> • r specifies the number of times to execute the macro. 					
	<ul style="list-style-type: none"> • t specifies the waiting time for executing the macro. 					
	The waiting time is $t \times 100$ msec for every macro execution.					
	<ul style="list-style-type: none"> • m specifies macro executing mode. 					

- When the LSB of m = 0:

The macro executes r times continuously at the interval specified by t.

- When the LSB of m = 1:

After waiting for the period specified by t, the LED indicator blinks and the printer waits for the PAPER FEED button to be pressed. After the button is pressed, the printer executes the macro once, The printer repeats the operation r times.

GS a n				
[Name]	Enabled/disable Automatic Status Back(ASB)			
[Format]	ASCII	GS	a	n
	Hex	1D	61	n
	Decimal	29	97	n
[Range]	$0 \leq n \leq 255$			
[Description]	Enables or disables ASB and specifies the status items to include, using n as follows:			

Bit	Off/On	Hex	Decimal	Status for ASB
0	Off	00	0	Not used.
1	Off	00	0	On-line/off-line status disabled
	On	02	2	On-line/off-line status enabled
2	Off	00	0	Error status disabled
	On	04	4	Error status enabled
3	Off	00	0	Paper roll sensor status disabled
	On	08	8	Paper roll sensor status enabled
4~7	-	-	-	Undefined

First byte (printer information)

Bit	Off/On	Hex	Decimal	Status for ASB
0	Off	00	0	Not used. Fixed to off
1	Off	00	0	Not used. Fixed to off
2	Off	00	0	Not used.
3	Off	00	0	On-line
	On	08	8	Off-line
4	On	10	16	Not used. Fixed to on
5	Off	00	0	Cover is closed
	On	20	32	Cover is open
6	Off	00	0	Paper is not being fed by using the paper feed button
	On	40	64	Paper is being fed by using the paper feed button
7	Off	00	0	Not used. Fixed to off

Second byte (printer information)

Bit	Off/On	Hex	Decimal	Status for ASB
0	-	-	-	Undefined
1	-	-	-	Undefined
2	-	-	-	Undefined
3	Off	00	0	Not used. Fixed to off
4	Off	00	0	Not used. Fixed to off
5	Off	00	0	Not used. Fixed to off
6	Off	00	0	Not used. Fixed to off
7	Off	00	0	Not used. Fixed to off

Third bytes (paper sensor information)

Bit	Off/On	Hex	Decimal	Status for ASB
0,1	Off, Off	00	0	Paper roll near-end sensor: paper adequate
	On, On	03	3	Paper roll near-end sensor: paper near end
2,3	Off, Off	00	0	Paper roll end sensor: paper present
	On, On	0C	12	Paper roll end sensor: paper not present
4	Off	00	0	Not used. Fixed to off
5,6	-	-	-	Undefined
7	Off	00	0	Not used. Fixed to off

Fourth byte (paper sensor information)

Bit	Off/on	Hex	Decimal	Status for ASB
0~3	-	-	-	Undefined
4	off	00	0	Not used. Fixed to off
5,6	-	-	-	Undefined
7	Off	00	0	Not used. Fixed to off

[Default] n=0

GS b n

[Name]	Turns smoothing mode on/off			
[Format]	ASCII	GS	b	n
	Hex	1D	62	n
	Decimal	29	98	n
[Range]	$0 \leq n \leq 255$			
[Description]	Turns smoothing mode on or off.			
	<ul style="list-style-type: none"> • When the LSB of n is 0, smoothing mode is turned off. • When the LSB of n is 1, smoothing mode is turned on. 			

GS f n

[Name]	Select font for Human Readable interpretation (HRI) characters.			
[Format]	ASCII	GS	f	n
	Hex	1D	66	n
	Decimal	29	102	n
[Range]	n = 0, 1, 48, 49			
[Description]	Selects a font for the HRI characters used when printing a bar code.			
	n selects a font from the following table:			

n	Font
0,48	Font A (12 * 24)
1,49	Font B (9 * 24)

GS h n

[Name]	Set bar code height			
[Format]	ASCII	GS	h	n
	Hex	1D	68	n
	Decimal	29	104	n
[Range]	$1 \leq n \leq 255$			
[Description]	Sets the height of the bar code.			
	n specifies the number of dots in the vertical direction.			
[Default]	n = 162			

① GS k m d1...dk NUL ② GS k m n d1...dn

[Name]	Print bar code							
[Format]	①	ASCII	GS	k	m	d1...dk	NUL	
		Hex	1D	6B	m	d1...dk	00	
		Decimal	29	107	m	d1...dk	0	
	②	ASCII	GS	k	m	n	d1...dn	
		Hex	1D	6B	m	n	d1...dn	
		Decimal	29	107	m	n	d1...dn	
	[Range]	①	0 ≤ m ≤ 6 (k and d depends on the bar code system used)					
		②	65 ≤ m ≤ 73 (n and d depends on the bar code system used)					
	[Description]	Selects a bar code system and prints the bar code.						
M selects a bar code system as follows:								

m	Bar Code System	Number of Characters	Remarks
①	0	UPC-A	11≤k≤12
	1		
	2	JAN 13(EAN)	12≤k≤13
	3	JAN8(EAN)	7≤k≤8
	4	CODE39	1≤k
	5	ITF	1≤k (even number)
	6	CODABAR	1≤k

m	Bar Code System	Number of Characters	Remarks
②	65	UPC-A	11≤n≤12
	66		
	67	JAN13(EAN)	12≤n≤13
	68	JAN8(EAN)	7≤n≤8
	69	CODE39	1≤n≤255
	70	ITF	1≤n≤255 (even number)
	71	CODABAR	1≤n≤255
	72	CODE93	1≤n≤255
	73	CODE128	2≤n≤255

[When CODE93 (m=72) is used :]

- The printer prints an HRI character (□) as start character at the beginning of the HRI character string.
- The printer prints an HRI character (□) as a stop character at the end of the HRI character string.
- The printer prints HRI characters (■ + an alphabetic character) as a control character (<00>H to <1F>H and <7F>H) :

Control character			HRI character	Control character			HRI character
ASCII	Hex	Decimal		ASCII	Hex	Decimal	
NUL	00	0	■U	DLE	10	16	■P
SOH	01	1	■A	DC1	11	17	■Q
STX	02	2	■B	DC2	12	18	■R
ETX	03	3	■C	DC3	13	19	■S
EOT	04	4	■D	DC4	14	20	■T
ENQ	05	5	■E	NAK	15	21	■U
ACK	06	6	■F	SYN	16	22	■V
BEL	07	7	■G	ETB	17	23	■W
BS	08	8	■H	CAN	18	24	■X
HT	09	9	■I	EM	19	25	■Y
LF	0A	10	■J	SUB	1A	26	■Z
VT	0B	11	■K	ESC	1B	27	■A
FF	0C	12	■L	FS	1C	28	■B
CR	0D	13	■M	GS	1D	29	■C
SO	0E	14	■N	RS	1E	30	■D
SI	0F	15	■O	US	1F	31	■E
				DEL	7F	127	■T

<Example> Printing GS k 72 7 67 111 100 101 13 57 51



[When CODE128 (m=73) is used :]

- Refer to Appendix J for the information of the CODE128 bar code and its code table.
- When using the CODE128 in this printer, take the following points into account for data transmission :
 - ① The top of the bar code data string must be code set selection character (any of CODE A, CODE B OR CODE C) which selects the first code set.

※ Description of the CODE128 Bar Code

In CODE128 bar code system, it is possible to represent 128 ASCII characters and 2-digit numerals using one bar code character that is defined by combining one of the 103 bar code characters and 3 code sets. Each code set is used for representing the following characters :

- * Code set A : ASCII characters 00H to 5FH
- * Code set B : ASCII characters 20H to 7FH
- * Code set C : 2-digit numeral characters using one character (100 numerals from 00 to 99)

The following special characters are also available in CODE128 :

- * SHIFT characters
In code set A, the character just after SHFIT is processed as a character for code set B. In code set B, the character just after SHIFT is processed as the character for code set A. SHIFT characters cannot be used in code set C.
- * Code set selection character (CODE A, CODE B, CODE C)
This character switches the following code set to code set A, B, or C.
- * Function character (FNC1, FNC2, FNC3, FNC4)
The usage of function characters depends on the application software. In code set C, only FNC 1 is available.

- ② Special characters are defined by combining two characters "{" and one character. The ASCII character "{" is defined by transmitting "{" twice consecutively.

Specific character	Transmit data		
	ASCII	Hex	Decimal
SHIFT	{S	7B,53	123,83
CODE A	{A	7B,41	123,65
CODE B	{B	7B,42	123,66
CODE C	{C	7B,43	123,67
FNC1	{1	7B,31	123,49
FNC2	{2	7B,32	123,50
FNC3	{3	7B,33	123,51
FNC4	{4	7B,34	123,52
"{"	{{	7B,7B	123,123

<Example> Example data for printing "No. 123456"

In this example, the printer first prints "No." using CODE B, then prints the following numbers using CODE C.

GS k 73 10 123 66 78 111 46 123 67 12 34 56



- * If the top of the bar code data is not the code set selection character, the printer stops command processing and processes the following data as normal data.
- * If combination of "{" and the following character does not apply any special character, the printer stops command processing and processes the following data as normal data.
- * The printer does not print HRI characters that correspond to the shift characters or code set selection characters.
- * HRI character for the function character is space.
- * HRI characters for the control character (<00>H to <1F>H and <7F>H) are space.

<Others> Be sure to keep spaces on both right and left sides of a bar code. (Spaces are different depending on the types of the bar code.)

GS	v	0	xL	xH	yL	yH	dl...dk
----	---	---	----	----	----	----	---------

[Name] Print raster bit image

[Format]	ASCII	GS	v	0	m	xL	xH	yL	yH	dl...dk
	Hex	1D	76	30	m	xL	xH	yL	yH	dl...dk
	Decimal	29	118	48	m	xL	xH	yL	yH	dl...dk

[Range] $0 \leq m \leq 3$, $48 \leq m \leq 51$
 $0 \leq xL \leq 255$, $0 \leq xH \leq 255$, $0 \leq yL \leq 255$
 $0 \leq d \leq 255$

 $k = (xL + xH \times 256) \times (yL + yH \times 256)$ (k=0)

[Description] Selects raster bit-image mode.
 The value of m selects the mode, as follows :

m	Mode	Vertical dot density	Horizontal dot density
0,48	Normal	200dpi	200dpi
1,49	Double-width	200dpi	100dpi
2,50	Double-height	100dpi	200dpi
3,51	Quadruple	100dpi	100dpi

- xL, xH, selects the number of data bits($xL + xH \times 256$)in the horizontal direction for the bit image.
- yL, yH, selects the number of data bits ($yL + yH \times 256$)in the vertical direction for the bit image.

GS	w	n
----	---	---

[Name] Set bar code width

[Format]	ASCII	GS	w	n
	Hex	1D	77	n
	Decimal	29	119	n

[Range] $2 \leq n \leq 6$

[Description] Set the horizontal size of the bar code.
 n specifies the bar code width as follows:

N	Module width (mm) for Multi-level Bar Code	Bi-level Bar Code	
		Thin element width (mm)	Thick element width (mm)
2	0.282	0.282	0.706
3	0.423	0.423	1.129
4	0.564	0.564	1.411
5	0.706	0.706	1.834
6	0.847	0.847	2.258

- Multi-level bar codes are as follows:
 UPC-A, UPC-E, JAN13, CODE93, CODE128
- Bi-level bar codes are as follows: CODE39, ITF, CODABAR

[Default] n = 3

※ only STP-103DK

ESC p m t1 t2						
[Name]	Generate pulse.					
[Format]	ASCII	ESC	p	m	t1	t2
	Hex	1B	70	m	t1	t2
	Decimal	27	112	m	t1	t2
[Range]	m = 0, 48					
	$0 \leq t1 \leq 255, 0 \leq t2 \leq 255$					
[Description]	Outputs the pulse specified by t1 and t2 to connector pin m as follows :					
	m=0 Connector pin : Drawer kick-out connector pin 2.					
[Details]	The pulse ON time is [t1*2ms] and the OFF time is [t2*2ms].					
	If $t2 \leq t1$, the OFF time is [t2*2ms].					
[Reference]	DLE DC4					

DLE DC4 n m t						
[Name]	Generate pulse at real-time.					
[Format]	ASCII	DLE	DC4	n	m	t
	Hex	10	14	n	m	t
	Decimal	16	20	n	m	t
[Range]	n=1, m=0					
	$1 \leq t \leq 8$					
[Description]	Outputs the pulse specified by t to connector pin m as follows :					
	m=0 Connector pin : Drawer kick-out connector pin 2.					
	The pulse ON time is [t*100ms] and the OFF time is [t*100ms].					
[Reference]	ESC p					

Bell n			
[Name]	Select bell on time.		
[Format]	ASCII	Bell	t
	Hex	07	t (1e t)
	Decimal	07	t (30 t)
[Range]	t = 1~30		
[Description]	The pulse ON time is [t*100ms] and the OFF time is [t*100ms].		