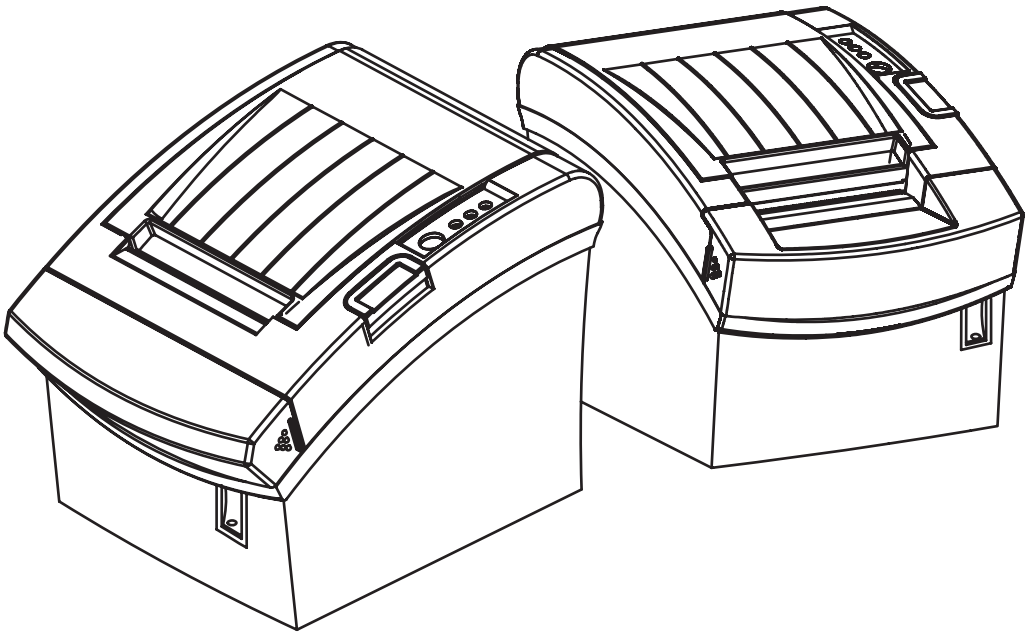
BIXOLON®
SAMSUNG mini printers

Control Commands Manual

SRP-350/352plusA&C

Thermal Printer
Rev. 1.02



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1. Control Commands List

Command	Name
HT	Horizontal tab
LF	Print and line feed
FF	Print and return to standard mode (in page mode)
CR	Print and carriage return
CAN	Cancel print data in page mode
DLE EOT	Real-time status transmission
DLE ENQ	Real-time request to printer
DLE DC4	Generate pulse in real-time
	Execute power-off sequence
	Clear buffer(s)
ESC FF	Print data in page mode
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 default 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 G	Turn double-strike mode on/off
ESC J	Print and feed paper
ESC L	Select page mode
ESC M	Select character font
ESC R	Select an international character set
ESC S	Select standard mode
ESC T	Select print direction in page mode
ESC V	Turn 90° clockwise rotation mode on/off
ESC W	Set printing area in page mode
ESC \	Set relative print position
ESC a	Select justification
ESC c 3	Select paper sensor(s) to output paper-end signals
ESC c 4	Select paper sensor(s) to stop printing
ESC c 5	Enable/disable panel buttons

Command	Name
ESC d	Print and feed n lines
ESC p	General pulse
ESC t	Select character code table
ESC {	Turn upside-down printing mode on/off
FS p	print NV bit image
FS q	Define NV bit image
GS !	Select character size
GS $	Set absolute vertical print position in page mode
GS (A	Execute test print
GS (D	Enable/disable real-time command
GS (E	User setup commands
GS 8 L GS (L	Set graphics data
GS (M	Customize printer control value(s)
GS (N	Select character style(s)
GS (k	Setup and print symbol
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 printer ID
GS L	Set left margin
GS P	Set horizontal and vertical motion units
GS T	Set print position to the beginning of print line
GS V	Select cut mode and cut paper
GS W	Set printing area width
GS \	Set relative vertical print position in page mode
GS ^	Execute macro
GS a	Enable/disable Automatic Status Back (ASB)
GS b	Turn smoothing mode on/off
GS f	Select font for HIR characters
GS h	Set bar code height
GS k	Print bar code
GS r	Transmit status
GS v 0	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 the hexadecimal equivalents.
Decimal indicates the decimal equivalents.
[ ] k indicates the contents of the [ ] should be repeated k times.
[Range] Gives the allowable ranges for the arguments.
[Description] Describes the function of the command.

2-2 Explanation of Terms

LSB Least Significant Bit

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] ▪ In standard mode, prints the data in the print buffer and feeds one line based on the current line spacing.
▪ In page mode, modes the print position in memory to feed one line based on the current line spacing.

FF

[Name] Print and return to standard mode in page mode.
[Format] ASCII FF
Hex 0C
Decimal 12
[Description] ▪ In page mode, prints the data in the print buffer collectively and returns to standard mode.

CR

[Name] Print and carriage return.

[Format]

ASCII	CR
Hex	0D
Decimal	13

[Description] ▪ When automatic line feed is enabled, this command functions the same as LF.

[Notes] ▪ When automatic line feed is disabled, this command is ignored CR.
▪ The automatic line feed is ignored with a serial interface model.
▪ With a parallel interface model, the automatic line feed is set with memory switch 1-5 when the printer power is turned on or reset.

CAN

[Name] Cancel print data in page mode.

[Format]

ASCII	CAN
Hex	18
Decimal	24

[Description] ▪ In page mode, deletes all the print data in the current printable area.

DLE EOT n

[Name] Transmission real-time status.

[Format]

ASCII	DLE	EOT	n
Hex	10	04	n
Decimal	16	4	n

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

[Description] ▪ Transmits the status specified by n in real-time as follows:

n	Function
1	Transmit printer status.
2	Transmit off-line status.
3	Transmit error status.
4	Transmit paper roll sensor status.

▪ This printer transmits the following status in real time.

n=1 : Printer status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Fixed.
1	On	02	2	Fixed.
2	Off	00	0	Drawer kick-out connector pin 3 is LOW.
	On	04	4	Drawer kick-out connector pin 3 is HIGH.
3	Off	00	0	On-Line.
	On	08	8	Off-Line.
4	On	10	16	Fixed.
5	Off	00	0	Not in on-line waiting status.
	On	20	32	During on lines waiting status.
6	Off	00	0	Paper FEED button is turned Off.
	On	40	64	Paper FEED button is turned On.
7	Off	00	0	Fixed.

n=2 : Off-line status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Fixed.
1	On	02	2	Fixed.
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	Fixed.
5	Off	00	0	No paper-end stop.
	On	20	32	Printing is being stopped.
6	Off	00	0	No error.
	On	40	64	Error has occurred.
7	Off	00	0	Fixed.

n=3 : Error status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Fixed.
1	On	02	2	Fixed.
2	Off	00	0	No mechanical error.
	On	04	4	Mechanical error has occurred.
3	Off	00	0	No auto-cutter error.
	On	08	8	Auto-cutter error occurred.
4	On	10	16	Fixed.
5	Off	00	0	No unrecoverable error.
	On	20	32	Unrecoverable error has occurred.
6	Off	00	0	No automatically recoverable error.
	On	40	64	Automatically recoverable error has occurred.
7	Off	00	0	Fixed.

n=4 : Continuous paper sensor status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Fixed.
1	On	02	2	Fixed.
2	Off	00	0	Paper roll near-end sensor : paper adequate.
	On	04	4	Paper roll near-end sensor : paper near end.
3	Off	00	0	Paper roll near-end sensor : paper adequate.
	On	08	8	Paper roll near-end sensor : paper near end.
4	On	10	16	Fixed.
5	Off	00	0	Paper roll near-end sensor : paper present.
	On	20	32	Paper roll near-end sensor : paper not present.
6	Off	00	0	Paper roll near-end sensor : paper present.
	On	40	64	Paper roll near-end sensor : paper not present.
7	Off	00	0	Fixed.

[Notes] ▪ If print data includes a character string with this command, the printer performs this command. User must consider this.
- For example : Bit image data accidentally might include a data string with this command.
▪ Do not embed this command within another command.
- For example : Bit image data might include this command.
▪ This command is ignored block data is transmitted.

DLE ENQ n

[Name] Real-time request to printer.

[Format]

ASCII	DLE	ENQ	n
Hex	10	05	n
Decimal	16	5	n

[Range] $0 \le n \le 2$

[Description] ▪ Responds to a request from the host computer.
- n specifies the requests as follows :

n	Request
0	Works the same as when the paper FEED button is pressed once during waiting status during the operation of the GS ^ command.
1	Recovers from an error and restarts printing from the line where the error occurred.
2	Recovers from an error after clearing the receive and print buffers.

[Notes] ▪ Specify n=1 or 2 after removing the cause of the error.
▪ If print data includes a character string with this command, the printer performs the command. User must consider this.
- For example : Bit image data accidentally might include a data string with this command.
▪ Do not embed this command within another command.
- For example : Bit image data might include this command.
▪ This command is ignored block data is transmitted.
▪ This command is ignored block data is transmitted.

DLE DC4 fn m t (fn=1)

[Name] Generate pulse in real-time.

[Format]

ASCII	DLE	DC4	fn	m	t
Hex	10	14	1	m	t
Decimal	16	20	1	m	t

[Range] fn=1
0 ≤ m ≤ 8
1 ≤ t ≤ 8

[Description] ▪ Outputs the pulse specified by t in real-time to the connector pin specified by m as follows :

n	Connector pin
0	Drawer kick-out connector pin 2.
1	Drawer kick-out connector pin 5.

- The pulse ON time or OFF time is set to [t x 100 ms].

▪ Specify n=1 or 2 after removing the cause of the error.

▪ If print data includes a character string with this command, the printer performs the command. User must consider this.

- For example : Bit image data accidentally might include a data string with this command.

▪ Do not embed this command within another command.

- For example : Bit image data might include this command.

▪ This command is ignored in the following states :

- During transmission of block data.
- During driving of drawer kick-out.
- When an error has occurred.

DLE DC4 fn a b (fn=2)

[Name] Execute power-off sequence.

[Format]

ASCII	DLE	DC4	fn	a	b
Hex	10	14	fn	a	b
Decimal	16	20	fn	a	b

[Range] fn=2
a=1
b=8

[Description] ▪ Executes the printer power-off sequence.

- Stores the values of the maintenance counter.
- Transmits the following power-off status (Header + Status + NUL).

Power off status	Hex	Decimal	Amount of data
Header	3B H	59	1 byte
Status	30 H	48	1 byte
NUL	00 H	0	1 byte

[Notes] - Executes the printer power off.
▪ If this command is encountered, the printer will not continue to process anything. To recover the printer to print again, it is necessary to turn the power on again or execute a hardware reset.
▪ If print data includes a character string with this command, the printer performs the command. User must consider this.
- For example : Bit image data accidentally might include a data string with this command.
▪ Do not embed this command within another command.
- For example : Bit image data might include this command.
▪ This command is ignored block data is transmitted.

DLE DC4 fn d1...d7 (fn=8)

[Name] Clear buffer(s).

[Format]

ASCII	DLE	DC4	fn	d1...d7
Hex	10	14	8	d1...d7
Decimal	16	20	8	d1...d7

[Range] fn=8
d1=1, d2=3, d3=20, d4=1, d5=6, d6=2, d7=8

[Description] ▪ Clear all data stored in the receive buffer and the print buffer.
▪ Transmits the following three bytes data.

	Hex	Decimal	Amount of data
Header	37 H	55	1 byte
Flag	25 H	37	1 byte
NUL	00 H	0	1 byte

[Notes] ▪ Enters standard mode.
▪ The command must be inhibited for use in a system using this printer and the EPSON OPOS.
▪ If print data includes a character string with this command, the printer performs the command. User must consider this.
- For example : Bit image data accidentally might include a data string with this command.
▪ Do not embed this command within another command.
- For example : Bit image data might include this command.
▪ This command is ignored block data is transmitted.

ESC FF

[Name] Print data in page mode.

[Format]

ASCII	ESC	FF
Hex	1B	0C
Decimal	27	12

[Description] ▪ In page mode, prints all buffered data in the printing area collectively.

ESC SP n

[Name] Set right-side character spacing.

[Format]

ASCII	ESC	SP	n
Hex	1B	20	n
Decimal	27	32	n

[Range] 0 ≤ n ≤ 255

[Default] n=0

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

▪ The maximum right-side character spacing is :

- For ANK/Multilingual model, 35.955mm {255/180”}.
- For Japanese Kanji model, 31.875mm {255/203”}.

ESC ! n

[Name] Select print mode(s).

[Format]

ASCII	ESC	!	n
Hex	1B	21	n
Decimal	27	33	n

[Range] 0 ≤ n ≤ 255

[Default] n=0

[Description] ▪ Selects print mode(s) using n as follows.

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Character font A (12 × 24) selected.
	On	01	1	Character font B (9 x 24) selected.
1,2	Off	00	0	Reserved.
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	Off	00	0	Reserved.
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 ≤ (nL + nH x 256) ≤ 65535 (0 ≤ nH ≤ 255, 0 ≤ nL ≤ 255)

[Description] ▪ Sets the next print starting position, and the absolute print position, in reference to the left margin. The distance from the beginning of the line to the left margin is [(nL + nH x 256) x (vertical or horizontal motion units)].

ESC % n

[Name] Select/cancel user-defined character set.

[Format]

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

[Range] 0 ≤ n ≤ 255

[Default] n=0

[Description] ▪ Select or cancels the user-defined character set.
- When the 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 1)]...[xk d1...d(y x xk)]

[Name] Define user-defined characters.

[Format]

ASCII	ESC	&	y	c1	c2	[x1 d1...d(y x 1)]...[xk d1...d(y x xk)]
Hex	1B	26	y	c1	c2	[x1 d1...d(y x 1)]...[xk d1...d(y x xk)]
Decimal	27	38	y	c1	c2	[x1 d1...d(y x 1)]...[xk d1...d(y x xk)]

[Range] y=3
32 ≤ c1 ≤ c2 ≤ 126
0 ≤ x ≤ 12 (when font A (12 x 24) is selected)
0 ≤ x ≤ 9 (when font B (9 x 24) is selected)
0 ≤ d ≤ 255
k=c2-c1+1

[Description] ▪ Assigns the user-defined character pattern for the specified character codes.
- 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 number of dots in the horizontal direction.
- d specifies the definition data.

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
1 ≤ (nL + nH x 256) ≤ 1023 (0 ≤ nL ≤ 255, 0 ≤ nH ≤ 3)
0 ≤ d ≤ 255

[Description] ▪ Specifies the bit image in m mode for the number of dots specified by nL and nH.

* dpi : dots per 25.4mm {1”}

m	Mode	Number of dots in vertical direction	Vertical dot density	Horizontal dot density	Number of bytes (k)
0	8-dot single-density	8	60 dpi	90 dpi	nL + nH x 256
1	8-dot double-density	8	60 dpi	180 dpi	nL + nH x 256
32	24-dot single-density	24	180 dpi	90 dpi	(nL + nH x 256) x 3
33	24-dot double-density	24	180 dpi	180 dpi	(nL + nH x 256) x 3

ESC - n

[Name] Turn underline mode on/off.

[Format]

ASCII	ESC	-	n
Hex	1B	2D	n
Decimal	27	45	n

[Range] 0 ≤ n ≤ 2, 48 ≤ n ≤ 50

[Default] n=0

[Description] ▪ Turn underline mode on or off, based on the following values of n :

n	Function
0,48	Turns off underline mode.
1,49	Turns on underline mode, set at 1-dot width.
2,50	Turns on underline mode, set at 2-dot width.

ESC 2

[Name] Select default line spacing.

[Format]

ASCII	ESC	2
Hex	1B	32
Decimal	27	50

[Description] ▪ Sets the current line spacing to approximately 4.23mm {1/6”}.

ESC 3 n

[Name] Set line spacing

[Format]

ASCII	ESC	3	n
Hex	1B	33	n
Decimal	27	51	n

[Range] 0 ≤ n ≤ 255

[Default] ▪ Equivalent to approximately 4.23mm {1/6”}.

[Description] ▪ Sets the current line spacing to [n x vertical motion units] inches.

[Notes] ▪ The maximum settable line spacing is 1016mm {40”}.

ESC = n

[Name] Select peripheral device.

[Format]

ASCII	ESC	=	n
Hex	1B	3D	n
Decimal	27	61	n

[Range] 0 ≤ n ≤ 3

[Default] ▪ Serial interface specification :

- When turning on the printer : n=1
- When executing ESC @ :

Setting before executing ESC @	n		
	1	2	3
After ESC @ processing	1	2	1

[Description] ▪ Selects device to which host computer sends data, using n as follows :

n	Function
1	Specifies printer only.
2	Specifies customer display only.
3	Specifies printer and customer display.

ESC ? n

[Name] Cancel user-defined characters.

[Format]

ASCII	ESC	?	n
Hex	1B	3F	n
Decimal	27	63	n

[Range] 32 ≤ n ≤ 126

[Description] ▪ Cancels user-defined characters, specified with character codes on a selected sheet.

ESC @

[Name] Initialize printer.

[Format]

ASCII	ESC	@
Hex	1B	40
Decimal	27	64

[Range] 32 ≤ n ≤ 126

[Description] ▪ Clears the data in the print buffer and resets the printer mode to the mode that were 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 ≤ n ≤ 255
0 ≤ k ≤ 32

[Default] n=8, 16, 24, 32, 40,....., 232, 240, 248
(for font A in a standard character size width)

[Description] ▪ Sets horizontal tab positions.
- n specifies the number of digits from the setting position to the left margin or the beginning of the line.
- k specifies the number of bytes set for the horizontal tab position.

ESC E n

[Name] Turn emphasized mode on / off.

[Format]

ASCII	ESC	E	n
Hex	1B	45	n
Decimal	27	69	n

[Range] 0 ≤ n ≤ 255

[Default] n=0

[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 G n

[Name] Turn double-strike mode on/off.

[Format]

ASCII	ESC	G	n
Hex	1B	47	n
Decimal	27	71	n

[Range] 0 ≤ n ≤ 255

[Default] n=0

[Description] ▪ Turns double-strike mode on or off.
- When the LSB of n is 0, double-strike mode is turned off.
- When the LSB of n is 1, double-strike 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 ≤ n ≤ 255

[Description] ▪ Prints the data in the print buffer and feeds the paper [n X vertical motion unit].
▪ The maximum paper feed amount is approximately 1016mm{40"} if [n X vertical motion unit] exceeds 1016mm{40"}.

ESC L

[Name] Select page mode.

[Format]

ASCII	ESC	L
Hex	1B	4C
Decimal	27	76

[Description] ▪ Switches from standard mode to page mode.

ESC M n

[Name] Select character font.

[Format]

ASCII	ESC	M	n
Hex	1B	4D	n
Decimal	27	77	n

[Range] For SRP-350plus : n = 0, 1, 48, 49

[Default] n=0

[Description] ▪ Selects only-byte character fonts.

n	Function
0, 48	Character font A (12 × 24) selected.
1, 49	Character font B (9 × 24) selected.

ESC R n

[Name] Select an international character set.

[Format]

ASCII	ESC	R	n
Hex	1B	52	n
Decimal	27	82	n

[Range] 0 ≤ n ≤ 13

[Default] n=0

[Description] ▪ Selects international character set in from the following table :

n	Character set	n	Character set
0	U.S.A	7	Spain I
1	France	9	Norway
2	Germany	10	Denmark II
3	U.K	11	Spain II
4	Denmark I	12	Latin America
5	Sweden	13	Korea
6	Italy		

ESC S

[Name] Select standard mode.

[Format]

ASCII	ESC	S
Hex	1B	53
Decimal	27	83

[Description] ▪ Switches from page mode to standard mode. Any data stored in the printer for printing in page mode is cleared.

ESC T n

[Name] Select print direction in page mode.

[Format]

ASCII	ESC	T	n
Hex	1B	54	n
Decimal	27	84	n

[Range] 0 ≤ n ≤ 3, 48 ≤ n ≤ 51

[Default] n=o

[Description] ▪ Selects the print direction and starting position in page mode.

n	Print Direction	Starting Position
0,48	Left right	Upper left
1,49	Bottom to top	Lower left
1,50	Right left	Lower right
3,51	Top bottom	Upper right

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 ≤ n ≤ 2, 48 ≤ n ≤ 50

[Default] n=o

[Description] ▪ Turn 90° clockwise rotation mode on/off in standard mode.

- When the paper roll is selected :

n	Function
0, 48	Turn off 90°clockwise rotation mode.
1, 49 2, 50	Turn on 90°clockwise rotation mode.

ESC W xL xH yL yH dxL dxH dyL dyH

[Name] Set relative print position.

[Format]

ASCII	ESC	W	xL	xH	yL	yH	dxL	dxH	dyL	dyH
Hex	1B	57	xL	xH	yL	yH	dxL	dxH	dyL	dyH
Decimal	27	87	xL	xH	yL	yH	dxL	dxH	dyL	dyH

[Range]
0 ≤ (xL + xH x 256) ≤ 65535 (0 ≤ xL ≤ 255, 0 ≤ xH ≤ 255)
0 ≤ (yL + yH x 256) ≤ 65535 (0 ≤ yL ≤ 255, 0 ≤ yH ≤ 255)
1 ≤ (dxL + dxH x 256) ≤ 65535 (0 ≤ dxL ≤ 255, 0 ≤ dxH ≤ 255)
1 ≤ (dyL + dyH x 256) ≤ 65535 (0 ≤ dyL ≤ 255, 0 ≤ dyH ≤ 255)

[Default]
▪ When a paper width of 80mm{3.15"} is selected :
(xL + xH x 256) = 0 (xL=0, xH=0)
(yL + yH x 256) = 0 (yL=0, yH=0)
(dxL + dxH x 256) = 512 (dxL=0, dxH=2)
(dyL + dyH x 256) = 1662 (dyL=126, dyH=6)
▪ When a paper width of 60mm{2.36"} is selected :
(xL + xH x 256) = 0 (xL=0, xH=0)
(yL + yH x 256) = 0 (yL=0, yH=0)
(dxL + dxH x 256) = 360 (dxL=104, dxH=1)
(dyL + dyH x 256) = 1662 (dyL=126, dyH=6)

[Description]
▪ Set the position and the size of the printing area.
- Horizontal starting position = [(xL + xH x 256) x (horizontal motion unites)].
- Vertical starting position = [(yL + yH x 256) x (vertical motion unites)].
- Horizontal printing area width = [(dxL + dxH x 256) x (horizontal motion unites)].
- Vertical printing area width = [(dyL + dyH x 256) x (vertical motion unites)].
▪ The maximum printable area is 117.263mm {1662/360"} maximum.

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 ≤ (nL + nH x 256) ≤ 65535 (0 ≤ nL 255, 0 ≤ nH ≤ 255)

[Description] ▪ Set the print starting position based on the current position to [(nL + nH × 256) × horizontal or vertical motion unit]
- When (nL + nH × 256) is positive number, the print starting position is specified to the right based on the current position.
- When (nL + nH × 256) is negative number, the print starting position is specified to the left based on the current position.

ESC a n

[Name] Select justification.

[Format]

ASCII	ESC	a	n
Hex	1B	61	n
Decimal	27	97	n

[Range] 0 ≤ n ≤2, 48 ≤ n ≤50

[Default] n=0

[Description] ▪ In standard mode, aligns all the data in one line to the position specified by n as follows :

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

ESC c 3 n

[Name] Select paper sensor(s) to output paper end signals.

[Format]

ASCII	ESC	c	3	n
Hex	1B	63	33	n
Decimal	27	99	51	n

[Range] 0 ≤ n ≤ 255

[Default] n=0

[Description] ▪ Selects the paper sensor(s) to output paper end signals when a paper end is detected.

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Paper roll near-end sensor disable.
	On	01	1	Paper roll near-end sensor enable.
1	Off	00	0	Paper roll near-end sensor disable.
	On	02	2	Paper roll near-end sensor enable.
2	Off	00	0	Paper roll end sensor disable.
	On	04	4	Paper roll end sensor enable.
3	Off	00	0	Paper roll end sensor disable.
	On	08	8	Paper roll end sensor enable.
4~7	-	-	-	Reserved.

[Note] ▪ This command is available only with a parallel interface and is ignored with a serial interface.

ESC c 4 n

[Name] Select paper sensor(s) to stop printing.

[Format]

ASCII	ESC	c	4	n
Hex	1B	63	34	n
Decimal	27	99	52	n

[Range] 0 ≤ n ≤ 255

[Default] n=0

[Description] ▪ Selects the paper sensor(s) to use to stop printing when a paper end is detected.

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Paper roll end sensor disable.
	On	01	1	Paper roll end sensor enable.
1	Off	00	0	Paper roll end sensor disable.
	On	02	2	Paper roll end sensor enable.
2~7	-	-	-	Reserved.

ESC c 5 n

[Name] Enable / Disable panel button.

[Format]

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

[Range] 0 ≤ n ≤ 255

[Default] n=0

[Description] ▪ Enables or disables the panel buttons.
- When the LSB of n is 0, the panel buttons are enabled.
- When the LSB of n is 1, the panel buttons are disabled.

[Notes] ▪ When the printer cover is open, the panel buttons are always ignored regardless of the setting with this command.

ESC d n

[Name] Print and feed n lines.

[Format]

ASCII	ESC	d	n
Hex	1B	64	n
Decimal	27	100	n

[Range] 0 ≤ n ≤ 255

[Description] ▪ Prints the data in the print buffer and feeds n lines.

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, 1, 48, 49
0 ≤ t1 ≤ 255, 0 ≤ t2 ≤ 255

[Description] ▪ Outputs the pulse specified by t1 and t2 to connector pin m as follows :

m	Connector pin
0, 48	Drawer kick-out connector pin 2
1, 49	Drawer kick-out connector pin 5

▪ t1 specifies the pulse ON time as [t1 x 2ms], and t2 specifies the pulse OFF time as [t2 x 2ms].

▪ If t2 is smaller than t1, OFF time is set as [t1 x 2ms].

ESC t n

[Name] Select character code table.

[Format]

ASCII	ESC	t	n
Hex	1B	74	n
Decimal	27	116	n

[Range] 0 ≤ n ≤ 5, 16 ≤ n ≤ 24, 27 ≤ n ≤ 30, n=255

[Default] For model without Thai character support : n=0
For model with Thai character support : n = 20

[Description] ▪ Selects a page n from the character code table.

n	Page	
0	Page 0	437 (USA, Standard Europe)
1	Page 1	Katakana
2	Page 2	850 (Multilingual)
3	Page 3	860 (Portuguese)
4	Page 4	863 (Canadian-French)
5	Page 5	865 (Nordic)
16	Page 16	1252 (Latin I)
17	Page 17	866 (Cyrillic #2)
18	Page 18	852 (Latin 2)
19	Page 19	858 (Euro)
21	Page 21	862 (Hebrew DOS code)
22	Page 22	864 (Arabic)
23	Page 23	Thai42
24	Page 24	1253 (Greek)
25	Page 25	1254 (Turkish)
26	Page 26	1257 (Baltic)
27	Page 27	Farsi
28	Page 28	1251 (Cyrillic)
29	Page 29	737 (Greek)
30	Page 30	775 (Baltic)
31	Page 31	Thai14
32	Page 32	Hebrew Old code
33	Page 33	1255 (Hebrew New code)
34	Page 34	Thai11
35	Page 35	Thai18
36	Page 36	855 (Cyrillic)
37	Page 37	857 (Turkish)
38	Page 38	928 (Greek)
39	Page 39	Thai16
40	Page 40	1256 (Arabic)

ESC { n

[Name] Turns upside-down printing mode on/off.

[Format]

ASCII	ESC	{	n
Hex	1B	7B	n
Decimal	27	123	n

[Range] 0 ≤ n ≤ 255

[Default] n=0

[Description] ▪ Turns upside-down printing mode on or off.

- 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 NV bit image.

[Format]

ASCII	FS	p	n	m
Hex	1C	70	n	m
Decimal	28	112	n	m

[Range] 1 ≤ n ≤ 255

0 ≤ m ≤ 3, 48 ≤ m ≤ 51

[Description] ▪ Prints an NV bit image n in m mode.

dpi : dots per 25.4mm {1"}

m	Mode	Vertical Dot Density (DPI)	Horizontal Dot Density (DPI)
0, 48	Normal	180 dpi	180 dpi
1, 49	Double-width	180 dpi	90 dpi
2, 50	Double-height	90 dpi	180 dpi
3, 51	Quadruple	90 dpi	90 dpi

FS q n [xL xH yL yH d1…dk]1…[xL xH yL yH d1…dk]n

[Name] Defined NV bit image.

[Format]

ASCII	FS	q	n	[xL	xH	yL d1...dk]1...	[xL	xH	yL d1...dk]n
Hex	1C	71	n	[xL	xH	yL d1...dk]1...	[xL	xH	yL d1...dk]n
Decimal	28	113	n	[xL	xH	yL d1...dk]1...	[xL	xH	yL d1...dk]n

[Range] 1 ≤ n ≤ 255

1 ≤ (xL + xH ×256) ≤ 1023 (0 ≤ xL ≤ 255, 0 ≤ xH ≤ 3)

1 ≤ (yL + yH ×256) ≤ 288 (0 ≤ yL ≤ 255, yH=0,1)

0 ≤ d ≤ 255

k = (xL + xH × 256) × (yL + yH × 256) × 8

Either one of the total capacity data [0, 64k, 128k, 192k, 256k, 320k, 384k] bytes can be selected by GS (E. The default value is 384 KB.

[Description] ▪ Defines the specified NV bit image.

- n specifies the number of the NV bit image you are defining.
- xL, xH specify the number of dots in the horizontal direction for the NV bit image with [(xL + xH × 256) x 8].
- yL, yH specify the number of dots in the vertical direction for the NV bit image with [(yL + yH × 256) x 8].

▪ If this command is processed when the NV graphics is defined with GS (L or GS 8 L, delete all NV graphics data, then define the bit image data with this command.

[Notes] ▪ Frequent write command executions by this command may damage to the NV memory. Therefore, it is recommended to write to the NV memory 10 times or less a day.
▪ During processing of this command, the printer is BUSY while writing the data to the NV bit image memory and stops receiving data. Therefore, it is prohibited to transmit data, including real-time commands, during the execution of this command.

GS ! n

[Name] Select character size.

[Format]

ASCII	GS	!	n
Hex	1D	21	n
Decimal	29	33	n

[Range] 0 ≤ n ≤ 255
(where 1 ≤ Enlargement in vertical direction ≤ 8, 1 ≤ Enlargement in horizontal direction ≤ 8)

[Default] n=0

[Description] ▪ Selects character size (enlargement in vertical and horizontal directions).

Bit	Function	Setting
0	Specifies the number of times enlarged in the vertical direction	Refer to Table 2 [Enlarged in vertical direction]
1		
2		
3		
4	Specifies the number of times enlarged in the horizontal direction	Refer to Table 1 [Enlarged in horizontal direction]
5		
6		
7		

- Table 1 [Enlarged in horizontal direction]

Hex	Decimal	Enlargement
00	0	1 time (standard)
10	16	2 times
20	32	3 times
30	48	4 times
40	64	5 times
50	80	6 times
60	96	7 times
70	112	8 times

- Table 1 [Enlarged in vertical direction]

Hex	Decimal	Enlargement
00	0	1 time (standard)
01	1	2 times
02	2	3 times
03	3	4 times
04	4	5 times
05	5	6 times
06	6	7 times
07	7	8 times

GS $ nL nH

[Name] Set absolute vertical print position in page mode.

[Format]

ASCII	GS	$	nL	nH
Hex	1D	24	nL	nH
Decimal	29	36	nL	nH

[Range] 0 ≤ (nL + nH x 256) ≤ 65535 (0 ≤ nL ≤ 255, 0 ≤ nH ≤ 255)

[Description] ▪ Sets the absolute vertical print starting position to [(nL + nH × 256) × (vertical or horizontal motion units)].

GS (A pL pH n m

[Name] Execute test print.

[Format]

ASCII	GS	(	A	pL	pH	n	m
Hex	1D	28	41	pL	pH	n	m
Decimal	29	40	65	pL	pH	n	m

[Range] (pL + pH x 256) = 2 (pL=2, pH=0)
0 ≤ n ≤ 2, 48 ≤ n ≤ 50
1 ≤ m ≤ 3, 49 ≤ m ≤ 51

[Description] ▪ Executes a test print with a specified test pattern on a specified paper type (roll paper).

- n specifies the paper type as listed below to be tested :

m	Paper type
0, 48 1, 49 2, 50	Paper roll

- m specifies a test pattern as listed below :

m	Test pattern
1, 49	Hexadecimal dump
2, 50	Self Test Printing

[Notes] ▪ The printer executes a hardware reset after the procedure to place the image into the non-volatile memory. The printer clear the receive and print butters, and resets all settings (user-defined characters, macros, and the character styles) to the mode that was in effect at power on.

GS (D pL pH m [a1 b1]...[ak bk]

[Name] Enable/disable real-time command.

[Format]

ASCII	GS	(	D	pL	pH	m	[a1 b1]...[ak bk]
Hex	1D	28	44	pL	pH	m	[a1 b1]...[ak bk]
Decimal	29	40	68	pL	pH	m	[a1 b1]...[ak bk]

[Range] 3 ≤ (pL + pH x 256) ≤ 65535
m=20
a=1, 2

[Default] b=0, 1, 48, 49

a	Type(s) of real-time commands	Default
1	DLE DC4 fn m t (fn=1) : Generate pulse in real-time	Enable (b=1)
2	DLE DC4 fn a b (fn=2) : Execute power-off sequence	disable (b=0)

[Description] ▪ Enable or disables the following real-time commands.

a	b	Function
1	0, 48	DLE DC4 fn m t (fn=1) : Not processed (disabled)
	1, 49	DLE DC4 fn m t (fn=1) : Processed (enabled)
2	0, 48	DLE DC4 fn a b (fn=2) : Not processed (disabled)
	1, 49	DLE DC4 fn a b (fn=2) : Processed (enabled)

- pL, pH specifies (pL + pH x 256) as the number of bytes after pH (m and [a1 b1]...[ak bk]).
- a specifies the type of real-time command.
- b specifies enable or disable.

[Notes] ▪ If bit image data accidentally includes a character string with this command, it is recommended to use this command in advance to disable the real-time command.

GS (E pL pH fn [parameter]

[Name] Customize NV memory area.

[Description] ▪ Customize the NV user memory area. The table below explains the functions available in this command. Executes commands related to the user setting mode by specifying the function code fn.

fn	Format	No.	Function
1	GS (E pL pH fn d1 d2	1	Changes into the user setting mode.
2	GS (E pL pH fn d1 d2 d3	2	Ends the user setting mode session. (Performs a soft reset.)
3	GS (E pL pH fn [a1 b18...b11]... [ak bk8...bk1]	3	Sets value(s) for the memory switch.
4	GS (E pL pH fn a	4	Transmits the settings of the memory switch to the host.
11	GS (E pL pH fn a d1...dk	11	Sets the communication conditions for the serial interface.
12	GS (E pL pH fn a	12	Transmits the communication conditions for the serial interface.

▪ pL, pH specifies (pL + pH x 256) as the number of bytes after pH (fn and [parameter]).

▪ The user setting mode is a special mode to change the values in the NV user memory with this command.

▪ In Function 2, the printer performs software reset. Therefore, the printer clears the receive and print buffers, and resets all settings (user-defined characters, macros, and the character style) to the mode in effect at power on.

[Notes] ▪ Frequent write commands by this command, may damage the NV memory. Therefore, it is recommended to write to NV memory no more than 10 times a day.

▪ While processing this command, the printer is BUSY while writing data to the user NV memory and stops receiving data. Therefore it is prohibited to transmit data including the real-time commands during the execution of this command.

<Function 1> GS (E pL pH fn d1 d2 (fn=1)

[Format]

ASCII	GS	(	E	pL	pH	fn	d1	d2
Hex	1D	28	45	pL	pH	fn	d1	d2
Decimal	29	40	69	pL	pH	fn	d1	d2

[Range] (pL + pH x 256) = 3 (pL=3, pH=0)
fn=1
d1=73, d2=78

[Description] ▪ Enter the user setting mode and notifies that the mode has changed.

	Hexadecimal	Decimal	Number of Data
Header	37H	55	1 byte
Flag	20H	32	1 byte
NUL	00H	0	1 byte

▪ The following commands are enabled in the user setting mode.
<Function 2> through <Function 12> of GS (E, GS I.

<Function 2> GS (E pL pH fn d1 d2 d3 (fn=2)

[Format]

ASCII	GS	(	E	pL	pH	fn	d1	d2	d3
Hex	1D	28	45	pL	pH	fn	d1	d2	d3
Decimal	29	40	69	pL	pH	fn	d1	d2	d3

[Range] (pL + pH x 256) = 4 (pL=4, pH=0)
fn=2
d1=79, d2=85, d3=84

[Description] ▪ Ends the user setting mode and performs a software reset. Therefore, the printer clears the receive and print buffers, and resets all settings (user-defined character, downloaded bit images, macros, and the print mode) to the mode that was in effect at power on.
▪ This function code (fn=2) is enabled only in the user setting mode.

<Function 3> GS (E pL pH fn [a1 b18...b11]...[ak bk8...bk1] (fn=3)

[Format]

ASCII	GS	(	E	pL	pH	fn	[a1 b18...b11]... [ak bk8...bk1]
Hex	1D	28	45	pL	pH	fn	[a1 b18...b11]... [ak bk8...bk1]
Decimal	29	40	69	pL	pH	fn	[a1 b18...b11]... [ak bk8...bk1]

[Range] 10 ≤ (pL + pH x 256) ≤ 65535
fn=3
a=1, 2, 8, 9, 10, 11, 12
b=48, 49, 50

[Default] ▪ all switches are set to Off (b=48).

[Description] ▪ Change the memory switch specified by a to the values specified by b.
- When b=48, the applicable bit is turned to Off.
- When b=49, the applicable bit is turned to On.
- When b=50, the applicable bit is not changed.

▪ When a=1, the memory switch 1 is set as follows :

Bit	Setting value	Function
1~8	--	Reserved

▪ When a=2, the memory switch 2 is set as follows :

Bit	Setting value	Function
1	48	Font selection : Font A (12 x 24)
	49	Font selection : Font B (9 x 24)
2	48	Autocutter Function : Partial Cutting
	49	Autocutter Function : Full Cutting
3~8	Codepage selection.	

▪ When a=8, the memory switch 8 is set as follows :

Bit	Setting value	Function
1~8		Reserved.

▪ When a=9, the memory switch 9 is set as follows :

Bit	Setting value	Function
1~8		Reserved.

▪ When a=10, the memory switch 10 is set as follows : Special Function 1

Bit	Setting value	Function
1~4		Reserved.
5	48	Printing width : 2inch
	49	Printing width : 3inch
6	48	2Color support : Disable (Mono)
	49	2Color support : Enable (2 color)
7~8		Reserved

▪ When a=11, the memory switch 11 is set as follows : Special Function 2

Bit	Setting value	Function
1~8		Reserved.

▪ When a=12, the memory switch 12 is set as follows :

Bit	Setting value	Function
1~8		Reserved.

<Function 4> GS (E pL pH fn a (fn=4)

[Format]

ASCII	GS	(	E	pL	pH	fn	a
Hex	1D	28	45	pL	pH	fn	a
Decimal	29	40	69	pL	pH	fn	a

[Range] (pL + pH x 256) = 2 (pL=2, pH=0)
fn=4
a=1, 2, 8, 9, 10, 11

[Description] ▪ Transmits the setting value(s) of the memory switch specified by a.

	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Flag	21H	33	1 byte
Data	30H or 31H	48 or 49	8 bytes
NUL	00H	0	1 byte

▪ Data for the setting is transmitted as 8 bytes or a data string in the order from bit 8 to bit 1, as follows :
- Off : Hexadecimal = 30H / Decimal = 48
- On : Hexadecimal = 31H / Decimal = 49

<Function 12> GS (E pL pH fn a (fn=12)

[Format]

ASCII	GS	(	E	pL	pH	fn	a
Hex	1D	28	45	pL	pH	fn	a
Decimal	29	40	69	pL	pH	fn	a

[Range] (pL + pH x 256) = 2 (pL=2, pH=0)
fn=12
1 ≤ a ≤ 4

[Description] ▪ Transmits the communication conditions of the serial interface specified by a.

a	Communication Condition
1	Baud rate
2	Parity
3	Flow control
4	Data length

	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Flag	33H	39	1 byte
Type of the communication condition	31H - 34H	49 - 52	1 byte
Separator	1FH	31	1 byte
Setting value	30H - 39H	48 - 57	1 - 6 bytes
NUL	00H	0	1 byte

▪ Configuration of the setting value

- When the baud rate (a=1) is specified :

Baud rate (bps)	d1	d2	d3	d4	d5	d6
2400	50	52	48	48	--	--
4800	52	56	48	48	--	--
9600	57	54	48	48	--	--
19200	49	57	50	48	48	--
38400	51	56	52	48	48	--
57600	53	55	54	48	48	--
115200	49	49	53	50	48	48

- When the parity setting (a=2) is specified :

d1	Parity
48	No parity
49	Odd parity
50	Even parity

- When the flow control setting (a=3) is specified :

d1	Flow control
48	DTR / DSR
49	XON / XOFF

- When the data length setting (a=4) is specified :

d1	Data length
55	7 bits
56	8 bits

▪ If a is out of range, this command ignores the value which is specified with a.

GS (L pL pH m fn [parameter]
GS 8 L p1 p2 p3 p4 m fn [parameter]

[Name] Select graphics data.

[Format]

ASCII	GS	(	L	pL	pH	m	fn	[parameter]		
Hex	1D	28	4C	pL	pH	m	fn	[parameter]		
Decimal	29	40	76	pL	pH	m	fn	[parameter]		
ASCII	GS	(	L	p1	p2	p3	p4	m	fn	[parameter]
Hex	1D	28	4C	p1	p2	p3	p4	m	fn	[parameter]
Decimal	29	40	76	p1	p2	p3	p4	m	fn	[parameter]

* In the description below GS (L is used for the explanation.
  - Note that GS (L and GS 8 L have the same Function.
  - If the [parameter] of each format exceeds 65533 bytes use GS 8 L.

[Description] ▪ Processes graphics data according to the function code fn.

fn	Format	Function No.	Function
0, 48	GS (L pL pH m fn	Function 48	Transmits the NV graphics memory capacity.
2, 50	GS (L pL pH m fn	Function 50	Prints the graphics data in the print buffer.
3, 51	GS (L pL pH m fn	Function 51	Transmits the remaining capacity of the NV graphics memory.
64	GS (L pL pH m fn d1 d2	Function 64	Transmits the defined NV graphics key code list.
65	GS (L pL pH m fn d1 d2 d3	Function 65	Deletes all NV graphics data.
66	GS (L pL pH m fn kc1 kc2	Function 66	Deletes the specified NV graphics data.
67	GS (L pL pH m fn a kc1 kc2 b xL xH yL yH [c d1...dk]1...[c d1 dk]b	Function 67	Defines the raster graphics data in the non-volatile memory.
69	GS (L pL pH m fn kc1 kc2 x y	Function 69	Prints the specified NV graphics data.
112	GS (L pL pH m fn a bx by c xL xH yL yH d1...dk	Function 112	Stores the raster graphics data in the print buffer memory.

▪ pL, pH specifies (pL + pH x 256) as the number of bytes after pH(m, fn, and [parameter]).

▪ Frequent write command executions by this command may damage the NV memory. Therefore, it is recommended to write to the NV memory no more than 10times a day.

▪ While processing this command, the printer is BUSY while writing data to the NV graphics memory and stops receiving data. Therefore it is prohibited to transmit data including the real-time commands during the execution of this command.

<Function 48> GS (L pL pH m fn (fn=0, 48)

[Format]

ASCII	GS	(	L	pL	pH	fn	m
Hex	1D	28	4C	pL	pH	fn	m
Decimal	29	40	76	pL	pH	fn	m

[Range] (pL + pH x 256) = 2 (pL=2, pH=0)
m=48
fn=0, 48

[Description] ▪ Transmits the total capacity of the NV bit-image memory (number of bytes in the memory area).

	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Flag	30H	48	1 byte
Data	30H - 39H	48 - 57	1 - 8 bytes
NUL	00H	0	1 byte

▪ The total capacity data is converted to character codes corresponding to decimal data, then transmitted from the MSB.
▪ The data length is variable.
▪ The total capacity of the UV user memory is selectable as any one of [0, 64K, 128K, 192K, 256K, 320K, 384K] bytes with GS (E. The default value is 384 KB.

<Function 50> GS (L pL pH m fn (fn=2, 50)

[Format]

ASCII	GS	(	L	pL	pH	m	fn
Hex	1D	28	4C	pL	pH	m	fn
Decimal	29	40	76	pL	pH	m	fn

[Range] (pL + pH x 256) = 2 (pL=2, pH=0)
m=48
fn=2, 50

[Description] ▪ Prints the buffered graphics which is stored by the process of Function 112.
▪ Feeds paper by the amount corresponding to the number of dots in the y direction of the buffered graphics.

<Function 51> GS (L pL pH m fn (fn=3, 51)

[Format]

ASCII	GS	(	L	pL	pH	m	fn
Hex	1D	28	4C	pL	pH	m	fn
Decimal	29	40	76	pL	pH	m	fn

[Range] (pL + pH x 256) = 2 (pL=2, pH=0)
m=48
fn=3, 51

[Description] ▪ Transmits the number of bytes of remaining memory (unused area) in the NV user memory.

	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Flag	31H	49	1 byte
Data	30H - 39H	48 - 57	1 - 8 bytes
NUL	00H	0	1 byte

▪ The number of bytes of remaining memory is converted to character codes corresponding to decimal data, then transmitted from the MSB.
▪ The data length is variable.

<Function 64> GS (L pL pH m fn d1 d2 (fn=64)

[Format]

ASCII	GS	(	L	pL	pH	m	fn	d1	d2
Hex	1D	28	4C	pL	pH	m	fn	d1	d2
Decimal	29	40	76	pL	pH	m	fn	d1	d2

[Range] (pL + pH x 256) = 4 (pL=4, pH=0)
m=48
fn=64
d1=75, d2=67

[Description] ▪ Transmits the defined NV graphics key code list.

- When the key code is present :

	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Flag	72H	114	1 byte
Status	40H or 41H	64 or 65	1 byte
Data	30H - 39H	48 - 57	2 - 80 bytes
NUL	00H	0	1 byte

- When the key code is not present :

	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Flag	72H	114	1 byte
Status	40H	64	1 byte
NUL	00H	0	1 byte

▪ If the number of the key code exceed 40, the key code is transmitted dividing up to 40.

- The status if the continuous transmission data block is present is 41H.
- The status if the continuous transmission data block is not present is 40H.

▪ After the [Header-NULL] is transmitted, the printer receives a response from the host; then it performs the process defined by the response. (See the tables below.)

- When the status (existence of the next data block) is Hexadecimal = 41H / Decimal = 65

Response		Process performed
ASCII	Decimal	
ACK	6	Transmits the next data.
NAK	21	Transmits the previous data again.
CAN	24	Ends the process.

- When the status (for the last data block) is Hexadecimal = 40H / Decimal = 64

Response		Process performed
ASCII	Decimal	
ACK	6	Ends the process.
NAK	21	Transmits the previous data again.
CAN	24	Cancels the process.

<Function 65> GS (L pL pH m fn d1 d2 d3 (fn=65)

[Format]										
	ASCII	GS	(	L	pL	pH	m	fn	d1	d2	d3
	Hex	1D	28	4C	pL	pH	m	fn	d1	d2	d3
	Decimal	29	40	76	pL	pH	m	fn	d1	d2	d3

[Range] (pL + pH x 256) = 5 (pL=5, pH=0)
m=48
fn=65
d1=67, d2=76, d3=82

[Description] ▪ Deletes all defined NV graphics data.

<Function 66> GS (L pL pH m fn kc1 kc2 (fn=66)

[Format]										
	ASCII	GS	(	L	pL	pH	m	fn	kc1	kc2
	Hex	1D	28	4C	pL	pH	m	fn	kc1	kc2
	Decimal	29	40	76	pL	pH	m	fn	kc1	kc2

[Range] (pL + pH x 256) = 4 (pL=4, pH=0)
m=48
fn=66
32 ≤ kc1 ≤ 126
32 ≤ kc2 ≤ 126

[Description] ▪ Deletes the NV graphics data defined by the key codes kc1 and kc2.

<Function 67> GS (L pL pH m fn a kc1 kc2 b xL xH yL yH [c d1...dk]1...[c d1...dk]b (fn=67)

[Format]					
	ASCII	GS	(	L	pL pH m fn a kc1 kc2 b xL xH yL yH [c d1...dk]1...[c d1...dk]b
	Hex	1D	28	4C	pL pH m fn a kc1 kc2 b xL xH yL yH [c d1...dk]1...[c d1...dk]b
	Decimal	29	40	76	pL pH m fn a kc1 kc2 b xL xH yL yH [c d1...dk]1...[c d1...dk]b

[Range] ▪ GS (L parameter
3 ≤ (pL + pH x 256) ≤ 65535 (0 ≤ pL ≤ 255, 0 ≤ pH ≤ 255)
▪ GS 8 L parameter
3 ≤ (p1 + p2 x 256 + p3 x 65535 + p4 x 16777216) ≤ 4294967295
(0 ≤ p1 ≤ 255, 0 ≤ p2 ≤ 255, 0 ≤ p3 ≤ 255, 0 ≤ p4 ≤ 255)
▪ Common parameter for GS 8 L / GS (L
m=48
fn=67
a=48
32 ≤ kc1 ≤ 126
32 ≤ kc2 ≤ 126
b=1, 2
1 ≤ (xL + xH x 256) ≤ 8192
1 ≤ (yL + yH x 256) ≤ 2304
c=49 (when the monochrome paper is selected)
c=50 (when the two-color paper is selected)
0 ≤ d ≤ 255
k = (int ((xL + xH x 256) + 7) / 8) x (yL + yH x 256)

[Description] ▪ The total capacity of the UV user memory is selectable as any one of [0, 64K, 128K, 192K, 256K, 320K, 384K] bytes with GS (E. The default value is 384KB.

▪ Defines the raster graphics data in the NV graphics area.

- b specifies the number of the color of the defined data.
- xL, xH specifies the defined data in the horizontal direction to (xL + xH x 256) dots.
- xL, xH specifies the defined data in the vertical direction to (yL + yH x 256) dots.
- c specifies the color of the defined data.

c	Defined data color
49	Color 1
50	Color 2

- Color 1 means black (high level of energy) in the specified tow-color thermal paper.
- Color 2 means red (low level of energy) in the specified tow-color thermal paper.

[Notes] ▪ If the color is specified with b and a single color also is specified with c, the printer stops processing the command, and regards the defined data as effective up to the time when the printer stops processing, then disregards the remaining data after it.

▪ When this command is processed while NV bit image data is defined with FS q, the printer deletes all NV bit image data, then defines data with this command.

<Function 69> GS (L pL pH m fn kc1 kc2 b x y (fn=69)

[Format]

ASCII	GS	(	L	pL	pH	m	fn	kc1	kc2	x	y
Hex	1D	28	4C	pL	pH	m	fn	kc1	kc2	x	y
Decimal	29	40	76	pL	pH	m	fn	kc1	kc2	x	y

[Range] (pL + pH x 256) = 6 (pL=6, pH=0)
m=48, fn=69
32 ≤ kc1 ≤ 126
32 ≤ kc2 ≤ 126
x=1, 2
y=1, 2

[Description] ▪ Prints the NV graphics data defined by the key codes kc1 and kc2. The graphics data is enlarged by x and y in the horizontal and vertical directions.

<Function 112> GS (L pL pH m fn a bx by c xL xH yL yH d1...dk (fn=112)

[Format]

ASCII	GS	(	L	pL pH m fn a bx by c xL xH yL yH d1...dk
Hex	1D	28	4C	pL pH m fn a bx by c xL xH yL yH d1...dk
Decimal	29	40	76	pL pH m fn a bx by c xL xH yL yH d1...dk

[Range]

▪ GS (L parameter
11 ≤ (pL + pH x 256) ≤ 65535 (0 ≤ pL ≤ 255, 0 ≤ pH ≤ 255)

▪ GS 8 L parameter
11 ≤ (p1 + p2 x 256 + p3 x 65535 + p4 x 16777216) ≤ 4294967295
(0 ≤ p1 ≤ 255, 0 ≤ p2 ≤ 255, 0 ≤ p3 ≤ 255, 0 ≤ p4 ≤ 255)

▪ Common parameter for GS 8 L / GS (L
m=48, fn=112, a=48
bx=1, 2
by=1, 2
c=49 (when the monochrome paper is selected)
c=50 (when the two-color paper is selected)

- When single-color paper is specified :
1 ≤ (yL + yH x 256) ≤ 1662 (when by = 1)
1 ≤ (yL + yH x 256) ≤ 831 (when by = 2)
- When two-color paper is specified :
1 ≤ (yL + yH x 256) ≤ 831 (when by = 1)
1 ≤ (yL + yH x 256) ≤ 415 (when by = 2)
0 ≤ d ≤ 255
k = (int ((xL + xH x 256) + 7) / 8) x (yL + yH x 256)

[Description]

▪ Stores the raster graphics data, enlarged by bx and by in the horizontal and vertical directions to the print buffer.
- xL, xH specifies the raster graphics data in the horizontal direction as (xL + xH x 256) dots.
- xL, xH specifies the raster graphics data in the vertical direction to (yL + yH x 256) dots.
- c specifies the color of the defined data.

c	Printing color
49	Color 1
50	Color 2

- Color 1 means black (high level of energy) in the specified tow-color thermal paper.
- Color 2 means red (low level of energy) in the specified tow-color thermal paper.

[Notes]

▪ In standard mode, each color can be defined only once.

GS (M pL pH fn m

[Name] Customize printer.

[Description] ▪ Protects or recovers values or data set or defined in the active area by commands.

fn	Function No.	Descriptions
1, 49	Function 1	Copies the settings stored in the active area to the storage area (save settings).
2, 50	Function 2	Copies the settings stored in the storage area to the storage area (load settings).
3, 51	Function 3	Enables or disables automatic loading of the settings upon initialization.

- Active area : Volatile memory (RAM)
- Storage area : Hon-volatile memory (Flash ROM)

▪ List of commands

Setting value	Command
Status	ESC c 3, GS a
Defined data	GS :
Character	
Kind of character	ESC M, ESC R, ESC t
style	ESC !, ESC -, ESC E, ESC G, ESC V, ESC {, GS !, GS B, GS b, GS (N
etc	ESC SP, ESC 2, ESC 3
Bar code	GS H, GS f, GS h, GS w
2-dimension code	<Function 065> through <Function 070> of GS (k
Print position	ESC D, ESC T, ESC a, GS L, GS W
etc	ESC c 4, ESC c 5, GS (D, GS P

<Function 1> GS (M pL pH fn m (fn=1, 49)

[Format]

ASCII	GS	(	M	pL	pH	fn	m
Hex	1D	28	4D	pL	pH	fn	m
Decimal	29	40	77	pL	pH	fn	m

[Range] (pL + pH x 256) = 2 (pL=2, pH=0)
fn=1, 49
m=1, 49

[Description] ▪ Copies the setting stored in the active area to the mth storage area.

[Notes] ▪ Frequent write command executions by this command may damage the NV memory. Therefore, it is recommended to write to the NV memory no more than 10 times a day.

▪ While processing this command, the printer is BUSY while writing data to the NV user memory and stops receiving data. Therefore it is prohibited to transmit data including the real-time commands during the execution of this command.

<Function 2> GS (M pL pH fn m (fn=2, 50)

[Format]

ASCII	GS	(	M	pL	pH	fn	m
Hex	1D	28	4D	pL	pH	fn	m
Decimal	29	40	77	pL	pH	fn	m

[Range] (pL + pH x 256) = 2 (pL=2, pH=0)
fn=2, 50
m=0, 1, 48, 49

[Description] ▪ When (m=0,48), initializes all settings in the active area, as described in these specifications.
▪ When (m=1,49), copies the setting stored in the mth storage area to the active area. If no data in the storage area is protected, all settings in the active area are initialized as described in these specifications.

<Function 3> GS (M pL pH fn m (fn=3, 51)

[Format]

ASCII	GS	(	M	pL	pH	fn	m
Hex	1D	28	4D	pL	pH	fn	m
Decimal	29	40	77	pL	pH	fn	m

[Range] (pL + pH x 256) = 2 (pL=2, pH=0)
fn=3, 51
m=0, 1, 48, 49

[Description] ▪ When m=0,48, does not load data in the storage area to the active area upon initialization.
▪ When m=1,49, loads data in the storage area to the active area upon initialization.

GS (N pL pH fn [parameter]

[Name] Select character style.

[Description] ▪ Executes commands for the character style as specified by the function code fn.

fn	Format	Function No.	Description
48	GS (N pL pH fn m	Function 48	Selects character color.

<Function 48> GS (N pL pH fn m (fn=48)

[Format]

ASCII	GS	(	N	pL	pH	fn	m
Hex	1D	28	4E	pL	pH	fn	m
Decimal	29	40	78	pL	pH	fn	m

[Range] (pL + pH x 256) = 2 (pL=2, pH=0)
fn=48
m=49 (when the monochrome paper is selected)
m=49,50 (when the two-color paper is selected)

[Default] m=49

[Description] ▪ Prints characters in the color specified by m.

m	Color
49	Color 1
50	Color 2

- Color 1 means black (high level of energy) in the specified two-color thermal paper.
- Color 2 means red (low level of energy) in the specified two-color thermal paper.

GS (k pL pH cn fn [parameter]

[Name] Specify and print the symbol.

[Description] ▪ Processes the data concerning two-dimensional code. (PDF417, QR Code)

- Symbol type is specified by cn.
- Function is specified by fn.

cn	Type of Symbol
48	PDF417 (2-dimensional code)
49	QR Code (2-dimensional code)

cn	fn	Function	
48	65	Function 065	PDF417 : Specify the number of columns
	66	Function 066	PDF417 : Specify the number of rows
	67	Function 067	PDF417 : Specify the width of module
	68	Function 068	PDF417 : Specify the module height
	69	Function 069	PDF417 : Specify the error correction level
	70	Function 070	PDF417 : Specify the option
	80	Function 080	PDF417 : Store the received data in the symbol save area
	81	Function 081	PDF417 : Print the symbol data in the symbol save area
	82	Function 082	PDF417 : Send the size information of the symbol data in the symbol save area
49	65	Function 165	QR Code : Specify the model
	67	Function 167	QR Code : Specify the size of module
	69	Function 169	QR Code : Specify the error correction level
	80	Function 180	QR Code : Store the received data in the symbol save area
	81	Function 181	QR Code : Print the symbol data in the symbol save area
	82	Function 182	QR Code : Send the size information of the symbol data in the symbol save area

[Notes] *For PDF417 symbol data (when cn=48)*

▪ The symbol data specified by Function 080 d1...dk is stored in the printer and is printed by the specification of Function 081. The symbol data in the save area is reserved until the following processing is performed :

- Function 080 or 180 is executed
- ESC @ is executed
- The printer is reset or the power is turned off

▪ When processing Function 081 or 082, the setting values of Functions 065 to 070 are used. If the printable area is not large enough, the symbol may not be printed.

▪ Executing Function 081 after executing Function 080 repeatedly prints the same symbol data.

▪ By using Functions 065 to 070 combined with Function 081, the same symbol data d1...dk is printed differently.

▪ By using Function 082, the symbol size printed by Function 081 is available.

For QR Code symbol (when cn=49)

▪ The symbol data specified by Function 180 d1...dk is stored in the printer and is printed by the specification of Function 181. The symbol data in the save area is reserved until the following processing is performed :
- Function 080 or 181 is executed
- ESC @ is executed
- The printer is reset or the power is turned off

▪ When processing Function 181 or 182, the setting values of Functions 165, 167, 169 are used. If the printable area is not enough, the symbol may not be printed.
▪ Executing Function 181 after executing Function 180 repeatedly prints the same symbol data.
▪ By using Functions 165, 167, 169 combined with Function 181, the same symbol data d1...dk is printed differently.
▪ By using Function 182, the symbol size printed by Function 181 is available.

* The recognition rate of the symbol is affected by the height of the symbol, module height, module width ratio, and the performance of the reader.
* It is recommended that the module height and module width be set so that the height of the symbol is bigger than 5mm (0.2 inch).
* It is recommended that the module height be set three to five times the width of the module.
* The module height is specified by Function 068. The width of a module is specified by Function 067. The number of the rows is specified by Function 066.
* The size of the symbol is confirmed by the transmission data of Function 082.

<Function 065> GS (k pL pH cn fn n (fn=65)

[Format]	ASCII	GS	(	k	pL	pH	cn	fn	n
	Hex	1D	28	6B	03	00	30	41	n
	Decimal	29	40	107	3	0	48	65	n

[Range] (pL + pH x 256) = 3 (pL=3, pH=0)
cn=48
fn=65
0 ≤ n ≤ 30

[Default] n=0

[Description] Specifies the number of columns of the data area of PDF417.
- n=0 specifies auto processing
- When n is not 0, specifies the number of columns of the data area as n code word.

[Notes] ▪ Settings of this function affect the processing of Functions 081 and 082.
▪ When auto processing (n=0) is specified, the maximum number of columns in the data area is 30 columns.
▪ The following data is not included in the number of columns :
- Start pattern and stop pattern
- Indicator code word of left and right

▪ When auto processing (n=0) is specified, the number of columns is calculated by the printing area when processing Functions 081, 082, module width (Function 067), and option setting (Function 070).
▪ Setting of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.

<Function 066> GS (k pL pH cn fn n (fn=66)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	30	42	n
Decimal	29	40	107	3	0	48	66	n

[Range] (pL + pH x 256) = 3 (pL=3, pH=0)
cn=48
fn=66
n=0, 3 ≤ n ≤ 90

[Default] n=0

[Description] Specifies the number of rows of the data area of PDF417.
- n=0 specifies auto processing
- When n is not 0, specifies the number of rows of the symbol as n rows.

[Notes]
▪ Settings of this function affect the processing of Functions 081 and 082.
▪ When auto processing (n=0) is specified, the maximum number of rows is 90.
▪ When auto processing (n=0) is specified, the number of rows is calculated by the printing area when processing Functions 081, 082, module height (Function 068).
▪ Setting of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.

<Function 067> GS (k pL pH cn fn n (fn=67)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	30	43	n
Decimal	29	40	107	3	0	48	67	n

[Range] (pL + pH x 256) = 3 (pL=3, pH=0)
cn=48
fn=67
1 ≤ n ≤ 4

[Default] n=3

[Description] Specifies the width of a module of PDF417 symbol.

[Notes]
▪ Settings of this function affect the processing of Functions 081 and 082.
▪ The setting unit differs, depending on the printer models.
▪ Setting of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.

<Function 068> GS (k pL pH cn fn n (fn=68)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	30	44	n
Decimal	29	40	107	3	0	48	68	n

[Range] (pL + pH x 256) = 3 (pL=3, pH=0)
cn=48
fn=68
2 ≤ n ≤ 8

[Default] n=3

[Description] Specifies the module height of PDF417 symbol.
- Specify the height to [a module width x n].

[Notes]
▪ Settings of this function affect the processing of Functions 081 and 082.
▪ Setting of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.

<Function 069> GS (k pL pH cn fn m n (fn=69)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m	n
Hex	1D	28	6B	04	00	30	45	m	n
Decimal	29	40	107	4	0	48	69	m	n

[Range] (pL + pH x 256) = 4 (pL=4, pH=0)
cn=48
fn=69
m=48
48 ≤ n ≤ 8 [m=48]

[Default] n=1

[Description] Specifies the error correction level of PDF417.

m	Function
48	The error correction level is specified by “level”

[Notes]
▪ Settings of this function affect the processing of Functions 081 and 082.
▪ Error correction level is specified by “level”.
▪ Error correction level specified by “level” (m=48) is as follows. The number of the error correction code word is fixed regardless of the number of code words in the data area.

m	Function	Number of error correction code word
48	Error correction level 0	2
49	Error correction level 1	4
50	Error correction level 2	8
51	Error correction level 3	16
52	Error correction level 4	32
53	Error correction level 5	64
54	Error correction level 6	128
55	Error correction level 7	256
56	Error correction level 8	512

<Function 070> GS (k pL pH cn fn m (fn=70)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m
Hex	1D	28	6B	03	00	30	46	m
Decimal	29	40	107	3	0	48	70	m

[Range] (pL + pH x 256) = 3 (pL=3, pH=0)
cn=48
fn=70
m=0,1

[Default] m=0

[Description] Set or cancels the option of PDF417.

m	Function
0	Cancels the processing of simplified PDF417 symbol.
1	Sets the processing of simplified PDF417 symbol.

- m=0 cancels the processing of simplified PDF417 symbol.
- m=1 sets the processing of simplified PDF417 symbol.

[Notes]
▪ Settings of this function affect the processing of Functions 081 and 082.
▪ When simplified PDF417 symbol is canceled, standard PDF417 symbol is automatically selected.
▪ Setting of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.

<Function 080> GS (k pL pH cn fn m d1...dk (fn=80)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m	d1...dk
Hex	1D	28	6B	pL	pH	30	50	30	d1...dk
Decimal	29	40	107	pL	pH	48	80	48	d1...dk

[Range] 4 ≤ (pL + pH x 256) ≤ 65535 (0 ≤ pL ≤ 255, 0 ≤ pH ≤ 255)
cn=48
fn=80
m=48
0 ≤ d ≤ 255
k = (pL + pH x 256) - 3

[Description] Stores the PDF417 symbol data (d1...dk) in the symbol save area.

[Notes]
▪ Data stored in the symbol save area by this function are processed by Function 081 and 082. The data in the symbol save area are reserved after processing Function 081 or 082.
▪ k bytes of d1...dk are processed as symbol data.
▪ Specify only the data code word of the symbol with this function. Be sure not to included the following data in the data d1...dk because they are added automatically by the printer.
- Start pattern and stop pattern.
- Indicator code word of left and right.
- The descriptor of symbol length. (the first code word in the data area)
- The error correction code word calculated by modulus 929.
▪ Setting of this function are effective until the following processing is performed :
- Function 080 or 180 is executed.
- ESC @ is executed.
- The printer is reset or the power is turned off.

<Function 081> GS (k pL pH cn fn m (fn=81)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m
Hex	1D	28	6B	03	00	30	51	m
Decimal	29	40	107	3	0	48	81	m

[Range] (pL + pH x 256) = 3 (pL=3, pH=0)
cn=48
fn=81
m=48

[Description] Encodes and prints the PDF417 symbol data in the symbol save area.

[Notes]
▪ In standard mode, use this function when printer is “at the beginning of a line,” or “there is no data in the printer buffer.”
▪ A symbol that size exceeds the printing area cannot be printed.
▪ If there is any error described below in the data of the symbol save area, it cannot be printed.
- There is no data (Function 080 is not processed).
- If [(number of columns x number of rows) < number of code word] when auto processing is specified for number of columns and number of rows.
- Number of code word exceeds 928 in the data area.

▪ The following data are added automatically by the encode processing.
- Start pattern and stop pattern.
- Indicator code word of left and right.
- The descriptor of symbol length. (the first code word in the data area)
- The error correction code word calculated by modulus 929.
- Pad codeword.

▪ The data area includes the following code words.
- Data specified by Function 080.
- The descriptor of symbol length. (the first code word in the data area)
- The error correction code word calculated by modulus 929.
- Pad codeword.

▪ When auto processing (Function 065) is specified, the number of columns is calculated by the current printing area, module width (Function 067), option setting (Function 070), and the code word in the data area. Maximum number of the columns in 30.

▪ When auto processing (Function 066) is specified in page mode, the number of rows is calculated by the current printing area, module height (Function 068), and the code word in the data area. The maximum number of rows is 90.

▪ Printing of symbol is not affected by print mode (emphasized, double-strike, underline, white/black reverse printing, or 90° clockwise-rotated), except for character size and upside-down printing mode.

▪ In standard mode, this command executes paper feeding for the amount needed for printing the symbol, regardless of the paper feed amount set by the paper feed setting command. The printing position returns to the left side of the printable area after printing the symbol, and printer is in the status “beginning of the line,” or “ there is no data in the print buffer.”

▪ In page mode, the printer stores the symbol data in the print buffer without executing actual printing. The printer moves printing position to the next dot of the last data of the symbol.

▪ The quiet zone is not included in the printing data. Be sure to include the quiet zone when using this function.

<Function 082> GS (k pL pH cn fn m (fn=82)

[Format]	ASCII	GS	(	k	pL	pH	cn	fn	m
	Hex	1D	28	6B	03	00	30	52	m
	Decimal	29	40	107	3	0	48	82	m

[Range] (pL + pH x 256) = 3 (pL=3, pH=0)
cn=48
fn=82
m=48

[Description] Encodes and sends size information of the PDF417 symbol data in the symbol save area.

▪ In standard mode, use this function when printer is “at the beginning of a line,” or “there is no data in the printer buffer.”

▪ The size information for each data is as follows :

Send data	Hex	Decimal	Data
Header	37H	55	1 byte
Flag	2FH	47	1 byte
Width	30H – 39H	48 – 57	1 – 5 byte
Separator	1FH	31	1 byte
Height	30H – 39H	48 – 57	1 – 5 byte
Separator	1FH	31	1 byte
Fixed value	31H	49	1 byte
Separator	1FH	31	1 byte
Other information	30H or 31H	48 or 49	1 byte
NUL	00H	0	1 byte

▪ Description of the Width and Height data sent :

- The height and width values of the symbol data are in dot units.

▪ Description of the Other Information data sent :

Hex	Decimal	Condition
30H	48	Printing is possible
31H	49	Printing is impossible

[Notes]

▪ This command does not print the PDF417 symbols.

▪ Users must consider the quiet zone for the PDF417 symbols (upward and downward spaces and left and right spaces for the PDF417 symbols specified in the specifications for the PDF417 symbols.)

<Function 165> GS (k pL pH cn fn n1 n2 (fn=65)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n1	n2
Hex	1D	28	6B	03	00	31	41	n1	n2
Decimal	29	40	107	3	0	49	65	n1	n2

[Range] (pL + pH x 256) = 4 (pL=4, pH=0)
cn=49
fn=65
n1=49,50
n2=0

[Default] n1=50, n2=0

[Description] Specifies the model of QR Code.

n1	Function
49	Specifies model 1.
50	Specifies model 2.

[Notes]

▪ Settings of this function affect the processing of Functions 181 and 182.

▪ Settings of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.

<Function 167> GS (k pL pH cn fn n (fn=67)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	31	43	n
Decimal	29	40	107	3	0	49	67	n

[Range] (pL + pH x 256) = 3 (pL=3, pH=0)
cn=49
fn=67
1 ≤ n ≤ 8

[Default] n=3

[Description] Specifies the size of a module of QR Code symbol.

[Notes]
- Settings of this function affect the processing of Functions 181 and 182.
- The setting unit differs, depending on the printer models.
- Settings of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.
- n = width of a module = height of a module. (Because the QR Code modules are square.)

<Function 169> GS (k pL pH cn fn n (fn=69)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	31	45	n
Decimal	29	40	107	3	0	49	69	n

[Range] (pL + pH x 256) = 3 (pL=3, pH=0)
cn=49
fn=69
48 ≤ n ≤ 51

[Default] n=48

[Description] Specifies the error correction level of QR Code.

n	Function	Recovery Capacity % (approx.)
48	Specify Error correction level L	7
49	Specify Error correction level M	15
50	Specify Error correction level Q	25
51	Specify Error correction level H	30

[Notes]
- Settings of this function affect the processing of Functions 181 and 182.
- QR Code employs Reed-Solomon error correction to generate a series of error correction code words.
- Settings of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.

<Function 180> GS (k pL pH cn fn m d1...dk (fn=80)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m	d1...dk
Hex	1D	28	6B	pL	pH	31	50	30	d1...dk
Decimal	29	40	107	pL	pH	49	80	48	d1...dk

[Range] 4 ≤ (pL + pH x 256) ≤ 7092 (0 ≤ pL ≤ 255, 0 ≤ pH ≤ 27)
cn=49
fn=80
m=48
0 ≤ d ≤ 255
k = (pL + pH x 256) – 3

[Description] Stores the QR Code symbol data (d1...dk) in the symbol save area.

[Notes]

▪ Data stored in the symbol save are by this function is processed by Functions 181 and 182. The data in the symbol save area are reserved after processing Function 181 and 182.

▪ k bytes of d1..dk are processed as symbol data.

▪ It is possible to encode to a QR Code as follows. Be sure not to include anything except the following data in the data d1...dk.

Category of data	Characters it is possible to specify
Numerical Mode data	"0" ~ "9"
Alphanumeric Mode data	"0" ~ "9", "A" ~ "Z", SP, $, %, *, +, -, ., /, :
Kanji Mode data	Shift JIS value (Shift value from JISX0208)
8-Bit Byte Mode data	00H ~ FFH

▪ Setting of this function are effective until the following processing is performed :

- Function 080 or 180 or 280 is executed.
- ESC @ is executed.
- The printer is reset or the power is turned off.

<Function 181> GS (k pL pH cn fn m (fn=81)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m
Hex	1D	28	6B	03	00	31	51	m
Decimal	29	40	107	3	0	49	81	m

[Range] (pL + pH x 256) = 3 (pL=3, pH=0)
cn=49
fn=81
m=48

[Description] Encodes and prints the QR Code symbol data in the symbol save area.

[Notes]

▪ In standard mode, use this function when printer is "at the beginning of a line," or "there is no data in the printer buffer."

▪ The symbol size that exceeds the printing area cannot be printed.

▪ If there is any error described below in the data of the symbol save area, it cannot be printed.

- There is no data (Function 180 is not processed).
- If the data of the symbol save area is more than the data allowed by specified model and data compaction mode. (This case is an abnormal number of data.)
- The four data compaction modes are listed below (in order of compaction rate). Automatically selects best compaction mode by the data of the symbol save area.
  * Numerical mode
  * Alphanumeric mode
  * Kanji mode
  * 8-Bit byte mode

▪ The following data are added automatically by the encode processing.

- Position Detection Patterns
- Separators for Position Detection Patterns
- Timing Patterns
- Format Information
- Version Information

- Error Correction code words (employs the Reed-Solomon Error Detection and Correction algorithm)
- Pad codeword
- Number of bits in Character Count Indicator
- Mode Indicator
- Terminator
- Alignment Patterns (when model 2 is selected)
- Extension Patterns (when model 1 is selected)

▪ Printing of symbol is not affected by print mode (emphasized, double-strike, underline, white/black reverse printing, or 90° clockwise-rotated), except for character size and upside-down printing mode.

▪ In standard mode, this command executes paper feeding for the amount needed for printing the symbol, regardless of the paper feed amount set by the paper feed setting command. The printing position returns to the left side of the printable area after printing the symbol, and printer is in the status "beginning of the line," or "there is no data in the print buffer."

▪ In page mode, the printer stores the symbol data in the print buffer without executing actual printing. The printer moves printing position to the next dot of the last data of the symbol.

▪ The quiet zone is not included in the printing data. Be sure to include the quiet zone when using this function.

<Function 182> GS (k pL pH cn fn m (fn=82)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m
Hex	1D	28	6B	03	00	31	52	m
Decimal	29	40	107	3	0	49	81	m

[Range] (pL + pH x 256) = 3 (pL=3, pH=0)
cn=49
fn=82
m=48

[Description] Encodes and sends size information of the QR Code symbol data in the symbol save area.

[Notes] ▪ In standard mode, use this function when printer is "at the beginning of a line," or "there is no data in the printer buffer."

▪ The size information for each data is as follows;

Send data	Hex	Decimal	Data
Header	37H	55	1 byte
Flag	36H	54	1 byte
Width	30H – 39H	48 – 57	1 – 5 byte
Separator	1FH	31	1 byte
Height	30H – 39H	48 – 57	1 – 5 byte
Separator	1FH	31	1 byte
Fixed value	31H	49	1 byte
Separator	1FH	31	1 byte
Other information	30H or 31H	48 or 49	1 byte
NUL	00H	0	1 byte

▪ Description of the Width and Height data sent :
- The height and width values of the symbol data are in dot units.

▪ Description of the Other Information data sent :

Hex	Decimal	Condition
30H	48	Printing is possible
31H	49	Printing is impossible

[Notes] ▪ This command does not print the QR Code symbols.
▪ Users must consider the quiet zone for the QR Code symbols (upward and downward spaces and left and right spaces for the QR Code symbols specified in the specifications for the QR Code symbols.)

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 the downloaded bit image using the number of dots specified by x and y.
- x specifies the number of dots in the horizontal direction.
- y specifies the number of dots in the vertical direction.

▪ When the memory switch 8-7 is On, the user-defined character and the downloaded bit image cannot be defined simultaneously. The downloaded bit image data is cleared with this command.

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 the defined downloaded bit image in m mode.

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

dpi : dots per 25.4mm {1"}

GS :

[Name] Start/end macro definition.

[Format]

ASCII	GS	:
Hex	1D	3A
Decimal	29	58

[Description] ▪ Starts or ends macro definition.
- The contents of the macro can be defined up to 2048 bytes.

GS B n

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

[Format]

ASCII	GS	B	n
Hex	1D	42	n
Decimal	29	66	n

[Range] 0 ≤ n ≤ 255

[Default] n=0

[Description]
▪ Turns white/black reverse printing mode on or off.
- When the LSB of n is 0, white/black reverse mode is turned off.
- When the LSB of n is 1, white/black reverse mode is turned on.

GS H n

[Name] Selects the printing position of HRI characters.

[Format]

ASCII	GS	H	n
Hex	1D	48	n
Decimal	29	72	n

[Range] 0 ≤ n ≤ 3, 48 ≤ n ≤ 51

[Default] n=0

[Description]
▪ Selects the printing position of HRI characters when printing a bar code.
- n selects the execution of printing and the printing position as follows :

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

GS I n

[Name] Transmits printer ID.

[Format]

ASCII	GS	I	n
Hex	1D	49	n
Decimal	29	73	n

[Range] 1 ≤ n ≤ 3, 49 ≤ n ≤ 51, 65 ≤ n ≤ 69, n=112
1 ≤ n ≤ 3, 49 ≤ n ≤ 51, 65 ≤ n ≤ 69, (when TM-T88II compatible mode is selected.)

[Description]
▪ Transmits the printer ID specified.
- n specifies the types of the printer ID.

n	Printer ID type	ID
1, 49	Printer model ID	Hexadecimal : 20H Decimal : 32
2, 50	Type ID	See table below.
3, 51	Firmware version ID	Depends on firmware version.

- n specifies the printer information.

n	Printer ID type	ID
65	Firmware version	Depends on firmware version
66	Manufacturer	BIXOLON
67	Printer name	SRP-350plus

GS L nL nH

[Name] Set left margin.

[Format]

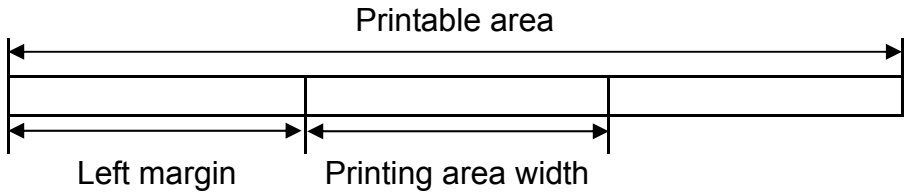
ASCII	GS	L	nL	nH
Hex	1D	4C	nL	nH
Decimal	29	76	nL	nH

[Range] 0 ≤ nL ≤ 255, 0 ≤ nH ≤ 255

[Default] (nL + nH x 256)=0 (nL=0, nH=0)

[Description] ▪ Sets the left margin specified by nL and nH.

- The left margin is [(nL + nH x 256) x (horizontal motion units)].



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 ≤ x ≤ 255, 0 ≤ y ≤ 255

[Default] For ANK/Multilingual model : x=180, y=360
For Japanese Kanji model : x=203, y=406

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

When x=0, the default setting of the horizontal motion unit is used.
When 1 ≤ x ≤ 255, the horizontal motion unit is set to 25.4/x mm {(1/x)"}.
When y=0, the default setting of the vertical motion unit is used.
When 1 ≤ y ≤ 255, the vertical motion unit is set to 25.4/y mm {(1/y)"}.

GS T n

[Name] Set print position to the beginning of print line.

[Format]

ASCII	GS	T	n
Hex	1D	54	n
Decimal	29	84	n

[Range] n=0, 1, 48, 49

[Description] ▪ Sets the print position to the beginning of the print line.

- n specifies how data in the print buffer is processed when this command is executed.

n	Function
0, 48	Sets the print position after the data in the print buffer is deleted.
1, 49	Sets the print position after the data in the print buffer is printed.

- When printing is specified (n=1,49), the printer prints the data in the print buffer and executes a line feed, based on the line feed amount to be set.

- When deleting is specified (n=0,48), the printer executes the cancel process for the print data in the print buffer, and keeps other data or setting values except for the print data.

① GS V m
② GS V m n

[Name] Select cut mode and cut paper.

[Format]

①	ASCII	GS	V	m	
	Hex	1D	56	m	
	Decimal	29	86	m	
②	ASCII	GS	V	m	n
	Hex	1D	56	m	n
	Decimal	29	86	m	n

[Range] ① m=0, 1, 48, 49 ② m=65, 66, 0 ≤ n ≤ 255

[Description]

▪ Cuts paper in the specified mode.

m	Function
0, 48 1, 49	Cuts paper (one point left uncut, full cut).
65, 66	Feeds and cuts paper (one point left uncut, full cut).

- n specifies how data in the print buffer is processed when this command is executed.

▪ Full cut or one point left uncut cannot be changed by software.

GS W nL nH

[Name] Set printing area width.

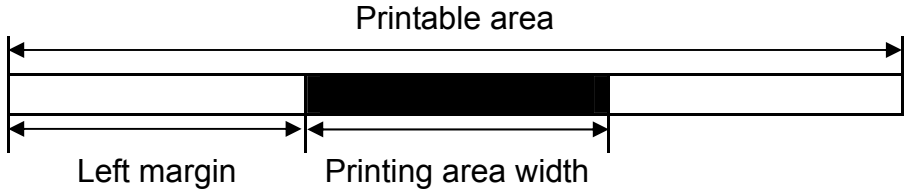
[Format]

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

[Range] 0 ≤ nL ≤ 255, 0 ≤ nH ≤ 255

[Default] (nL + nH x 256)=512 (nL=0, nH=2) (for 80mm of the paper width)
(nL + nH x 256)=384 (nL=128, nH=1) (for 60mm of the paper width)
(nL + nH x 256)=360 (nL=104, nH=1) (for 58mm of the paper width)

[Description] ▪ Sets the printing area width specified with nL and nH.
- The printing area width is [(nL + nH x 256) x (horizontal motion units)].



GS ＼ nL nH

[Name] Set relative vertical print position in page mode.

[Format]

ASCII	GS	＼	nL	nH
Hex	1D	5C	nL	nH
Decimal	29	92	nL	nH

[Range] 0 ≤ nL ≤ 255, 0 ≤ nH ≤ 255

[Description] ▪ Sets the relative vertical print starting position from the current position in page mode. The distance from the current position to the starting position is [(nL + nH x 256) x (vertical or horizontal motion units)].

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 ≤ r ≤ 255
0 ≤ t ≤ 255
m=0, 1

[Description] ▪ Executes a macro.
- r specifies the number of times to execute the macro.
- t specifies the waiting time for executing the macro.
- m specifies macro executing mode from the table below.

m	Function
0	Executes the macro r times at the interval specified by t.
1	After waiting for the time specified by t, the PAPER OUT LED flashes to indicate that the FEED button must be pressed. After the button is pressed, the macro is executed once. This operation is then repeated r times.

GS a n

[Name] Enable/Disable Automatic Status Back (ASB).

[Format]

ASCII	GS	a	n
Hex	1D	61	n
Decimal	29	97	n

[Range] 0 ≤ n ≤ 255

[Default] n=0 when memory switch 1-3 is Off.
n=2 when memory switch 1-3 is On.

[Description] ▪ Specifies the status items for ASB (Automatic Status Back).

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Drawer kick-out connector pin 3 disable.
	On	01	1	Drawer kick-out connector pin 3 enable.
1	Off	00	0	Online/Offline status disabled.
	On	02	2	Online/Offline 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	Off	00	0	Reserved.
5	Off	00	0	Reserved.
6	Off	00	0	Panel button status disabled.
	On	40	64	Panel button status enabled.
7	Off	00	0	Reserved.

▪ The status to be transmitted is the four bytes that follows.

- First byte (printer information)

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Fixed.
1	Off	00	0	Fixed.
2	Off	00	0	Drawer kick-out connector pin 3 is LOW.
	On	04	4	Drawer kick-out connector pin 3 is HIGH.
3	Off	00	0	Online.
	On	08	8	Offline.
4	Off	10	16	Fixed.
5	Off	00	0	Cover is closed.
	On	20	32	Cover is opened.
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	Fixed.

▪ When the cover is open while the printing is stopped, the printer becomes offline.

- Second byte (printer information)

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Not on online waiting status.
	On	01	1	During online waiting status.
1	Off	00	0	Panel button OFF.
	On	02	2	Panel button ON.
2	Off	00	0	No mechanical error.
	On	04	4	Mechanical error has occurred.
3	Off	00	0	No Auto Cutter error.
	On	08	8	Auto Cutter error occurred.
4	Off	00	0	Fixed.
5	Off	00	0	No unrecoverable error.
	On	20	32	Unrecoverable error has occurred.
6	Off	00	0	No automatically recoverable error.
	On	40	64	Automatically recoverable error has occurred.
7	Off	00	0	Fixed.

- Third byte (paper sensor information)

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Paper roll near-end sensor : paper adequate.
	On	01	1	Paper roll near-end sensor : paper near end.
1	Off	00	0	Paper roll near-end sensor : paper present.
	On	02	2	Paper roll near-end sensor : paper not present.
2	Off	00	0	Paper roll end sensor : paper present.
	On	04	4	Paper roll end sensor : paper near end.
3	Off	00	0	Paper roll end sensor : paper present.
	On	08	8	Paper roll end sensor : paper not present.
4	Off	00	0	Fixed.
5	Off	00	0	Reserved.
6	Off	00	0	Reserved.
7	Off	00	0	Fixed.

▪ The paper roll end sensor is unstable when the cover is open.

- Fourth byte (paper sensor information)

Bit	Off/On	Hex	Decimal	Function
0	On	01	1	Reserved.
1	On	02	2	Reserved.
2	On	04	4	Reserved.
3	On	08	8	Reserved.
4	Off	00	0	Fixed.
5	Off	00	0	Reserved.
6	Off	00	0	Reserved.
7	Off	00	0	Fixed.

[Notes] ▪ When the memory switch Msw 8-7 is On, the printer transmits the ASB data to the host whether the host can receive or not.

▪ When the memory switch Msw 8-7 is On, the printer transmits the ASB data with the panel button status always being ignored.

[Reference] APPENDIX J

GS b n

[Name] Turns smoothing mode on/off.

[Format]

ASCII	GS	b	n
Hex	1D	62	n
Decimal	29	98	n

[Range] 0 ≤ nL ≤ 255

[Default] n=0

[Description] ▪ Turns smoothing mode on or off.

- 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 HRI characters.

[Format]

ASCII	GS	f	n
Hex	1D	66	n
Decimal	29	102	n

[Range] For ANK/Multilingual model : n=0, 1, 48, 49

For Japanese Kanji model : 0 ≤ n ≤ 2, 48 ≤ n ≤ 50

[Default] n=0

[Description] ▪ Selects a font for the HRI characters used when printing a bar code.

- n specifies the font of the HRI characters as follows :

n	Font
0, 48	Font A (12 x 24)
1, 49	Font B (9 x 17)

GS h n

[Name] Selects bar code height.

[Format]

ASCII	GS	h	n
Hex	1D	68	n
Decimal	29	104	n

[Range] 1 ≤ nL ≤ 255

[Default] n=162

[Description] ▪ Selects the height of the bar code as n dots.

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	NUL
	Decimal	29	107	m	d1...dk	NUL
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 depend on the bar code system used)
② 65 ≤ m ≤ 73 (n and d depend on the bar code system used)

[Description] ▪ Selects a bar code system and prints the bar code.

For ①

m	Bar Code System	Range of k	Range of d
0	UPC-A	11 ≤ k ≤ 12	48 ≤ d ≤ 57
1	UPC-E	11 ≤ k ≤ 12	48 ≤ d ≤ 57
2	JAN13(EAN)	12 ≤ k ≤ 13	48 ≤ d ≤ 57
3	JAN8(EAN)	7 ≤ k ≤ 8	48 ≤ d ≤ 57
4	CODE39	1 ≤ k	48 ≤ d ≤ 57, 65 ≤ d ≤ 90, d=32,36,37,43,45,46,47
5	ITF	1 ≤ k (even number)	48 ≤ d ≤ 57
6	CODABAR	1 ≤ k	48 ≤ d ≤ 57, 65 ≤ d ≤ 68, d=36,43,45,46,47,58

For ②

m	Bar Code System	Range of k	Range of d
65	UPC-A	11 ≤ n ≤ 12	48 ≤ d ≤ 57
66	UPC-E	11 ≤ n ≤ 12	48 ≤ d ≤ 57
67	JAN13(EAN)	12 ≤ n ≤ 13	48 ≤ d ≤ 57
68	JAN8(EAN)	7 ≤ n ≤ 8	48 ≤ d ≤ 57
69	CODE39	1 ≤ n ≤ 255	48 ≤ d ≤ 57, 65 ≤ d ≤ 90, d=32,36,37,43,45,46,47
70	ITF	1 ≤ n ≤ 255 (even number)	48 ≤ d ≤ 57
71	CODABAR	1 ≤ n ≤ 255	48 ≤ d ≤ 57, 65 ≤ d ≤ 68, d=36,43,45,46,47,58
72	CODE93	1 ≤ n ≤ 255	0 ≤ d ≤ 127
73	CODE128	2 ≤ n ≤ 255	0 ≤ d ≤ 127

[Notes] ▪ User most consider the quiet zone of the bar code (left and right spaces of the bar code).

GS r n

[Name] Transmit status.

[Format]

ASCII	GS	r	n
Hex	1D	72	n
Decimal	29	114	n

[Range] n=1, 2, 49, 50

[Description] ▪ Transmits the normal status specified by n as follows :

n	Function
1, 49	Transmits paper sensor status.
2, 50	Transmits drawer kick-out connector status.

▪ Paper sensor status (n=1, 49) :

Bit	Off/On	Hex	Decimal	Function
0, 1	Off	00	0	Paper roll near-end sensor : paper adequate.
	On	03	3	Paper roll near-end sensor : paper near end.
2, 3	Off	00	0	Paper roll end sensor : paper present.
	On	0C	12	Paper roll end sensor : paper not present.
4	Off	00	0	Fixed.
5	Off	00	0	Reserved.
6	Off	00	0	Reserved.
7	Off	00	0	Fixed.

- Bits 2 and 3 : This command cannot be executed since the printer becomes offline when the paper roll end sensor detects the paper not present. Therefore, the status of bit 2 (1) and bit 3 (1) is not transmitted.

▪ Drawer kick-out connector status (n=2, 50) :

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Drawer kick-out connector pin 3 is LOW.
	On	01	1	Drawer kick-out connector pin 3 is HIGH.
1	Off	00	0	Reserved.
2	Off	00	0	Reserved.
3	Off	00	0	Reserved.
4	Off	00	0	Fixed.
5	Off	00	0	Reserved.
6	Off	00	0	Reserved.
7	Off	00	0	Fixed.

GS v 0 m xL xH yL yH d1...dk

[Name] Print raster bit image.

[Format]

ASCII	GS	v	0	m	xL	xH	yL	yH	d1...dk
Hex	1D	76	30	m	xL	xH	yL	yH	d1...dk
Decimal	29	118	48	m	xL	xH	yL	yH	d1...dk

[Range] $0 \le m \le 3, 48 \le m \le 51$

$1 \le (xL + xH \times 256) \le 128$ $(0 \le xL \le 128, xh=0)$

$1 \le (yL + yH \times 256) \le 4095$ $(0 \le yL \le 255, 0 \le yH \le 15)$

$0 \le d \le 255$

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

[Description] ▪ Prints a raster bit image in m mode.
- m specifies the bit image mode.

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

dpi : dots per 25.4mm {1"}

- xL, xH specifies (xL + xH x 256) byte(s) in the horizontal direction for the bit image.
- yL, yH specifies (yL + yH x 256) dot(s) in the vertical direction for the bit image.
- d specifies the definition data of the bit image data.

GS w n

[Name] Set bar code width.

[Format]

ASCII	GS	w	n
Hex	1D	77	n
Decimal	29	119	n

[Range] 2 ≤ n ≤ 6
n=3

[Description] ▪ Set the horizontal size of the bar code, using n as follows :

n	Multi-level Bar Code Module Width (mm)	Binary-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

[Notes] ▪ Multi-level bar codes are as follows :
- UPC-A, UPC-E, JAN13, HAN8, CODE93, CODE128

▪ Binary-level bar codes are as follows :
- CODE39, ITF, CODABAR