



SPP-R200 Command Manual

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1. Notice

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2. SPP-R200 Supported Commands

No.	Command	Function
1	EOT	Transmit status
2	BS L A	Execute automatic calibration in label mode
3	BS L L	Select label mode
4	BS L R	Select receipt mode
5	BS ^ E	Set NV user memory area
6	BS ^ L BS ^ 7	Select graphics data
7	HT	Horizontal tab
8	LF	Print and line feed
9	FF	Form feed (in page mode)
10	CR	Print and carriage return
11	DLE	Set real-time command mode
12	CAN	Cancel the print data in page mode
13	ESC FF	Print data in page mode
14	ESC SP	Set the character right space
15	ESC !	Set print mode
16	ESC \$	Set absolute print position
17	ESC *	Specify bit image mode
18	ESC -	Turn underline mode on/off
19	ESC 2	Select default line spacing
20	ESC 3	Set line spacing
21	ESC @	Initialize printer
22	ESC D	Set horizontal tab positions
23	ESC E	Turn emphasized mode on/off
24	ESC G	Turn double-strike mode on/off
25	ESC J	Print and feed paper
26	ESC L	Select page mode
27	ESC M	Select character font/ MSR card read
28	ESC R	Specify an international character set
29	ESC S	Select standard mode

No.	Command	Function
30	ESC T	Select print direction in page mode
31	ESC W	Set print area in page mode
32	ESC \	Set relative print position
33	ESC a	Set position alignment
34	ESC d	Print and feed n lines
35	ESC t	Select character code table
36	ESC {	Turn upside-down print mode on/off
37	FS &	Select Kanji character mode
38	FS .	Cancel Kanji character mode
39	GS !	Select character size
40	GS \$	Set absolute vertical print position in page mode
41	GS (A	Execute test print
42	GS (k	Specify and print the symbol
43	GS :	Start/end macro definition
44	GS B	Turn white/black reverse print mode on/off
45	GS H	Select print position of HRI characters
46	GS I	Transmit printer ID
47	GS I b	Transmit battery status
48	GS L	Set left margin
49	GS W	Set print area width
50	GS \	Set relative vertical print position in page mode
51	GS ^	Execute macro
52	GS f	Select font for HRI characters
53	GS h	Set bar code height
54	GS k	Print bar code
55	GS r	Transmit status
56	GS v 0	Print raster bit image
57	GS w	Set bar code width

2-1 Command Description Items

Command	
Function:	Command function outline
Code:	Command format expressed in ASCII, hexadecimal, and decimal codes
Range:	Argument value (Setting range) for the command
Default:	Initial argument value for the command
Description:	Detailed command function description
Remarks:	Additional information about using the command
Differences:	Variations depending on the printer model

2-2 Details of Control Commands

EOT

Function: Transmit status

Code:	ASCII	EOT	n
	Hex	04	n
	Decimal	4	n

Range: $1 \leq n \leq 4$

Default: None

Description: This command transmits the printer-related status specified by n as follows:

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

■ Printer transmits the following status

n=1: Printer status

Bit	Binary	Hex	Decimal	Status
0	0	00	0	Not used. Fixed to Off
1	1	02	2	Not used. Fixed to On
2	0	00	0	Drawer kick-out connector pin 3 is LOW
	1	04	4	Drawer kick-out connector pin 3 is HIGH
3	0	00	0	Online
	1	08	8	Offline
4	1	10	16	Not used. Fixed to On
5	0	00	0	Not used. Fixed to Off
6	0	00	0	Not used. Fixed to Off
7	0	00	0	Not used. Fixed to Off

n=2: Off-line status

Bit	Off/On	Hex	Decimal	Status
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	Binary	Hex	Decimal	Status
0	0	00	0	Not used. Fixed to Off
1	1	02	2	Not used. Fixed to On
2	0	00	0	No mechanical error
	1	04	4	Mechanical error occurred
3	0	00	0	No autocutter error
	1	08	8	Autocutter error occurred
4	1	10	16	Not used. Fixed to On
5	0	00	0	No unrecoverable error
	1	20	32	Unrecoverable error occurred
6	0	00	0	No auto-recoverable error
	1	40	64	Auto-recoverable error occurred
7	0	00	0	Not used. Fixed to Off

n=4: paper sensor status

Bit	Binary	Hex	Decimal	Status
0	0	00	0	Not used. Fixed to Off
1	1	02	2	Not used. Fixed to On
2,3	00	00	0	Paper near end sensor: paper adequate
	11	0C	12	Paper near end sensor: paper near end
4	1	10	16	Not used. Fixed to On
5,6	00	00	0	Paper end sensor: paper present
	11	60	96	Paper end sensor: paper not present
7	0	00	0	Not used. Fixed to Off

Remarks:

- This command can be executed in a real time mode using DLE.
- In a real time mode, the status is transmitted to the host upon being requested that can check the printer operational condition with it and takes appropriate measures accordingly.

Differences:

- Status not supported:
 - n=1: Drawer kick-out connector
 - n=2: Error
 - n=3: All of the status
 - n=4: Paper near end

BS L A

Function: Execute automatic calibration in label mode

Code:

ASCII	BS	L	A
Hex	08	4C	41
Decimal	8	76	65

Range: None

Default: None

Description: This command executes auto calibration in label mode.

Remarks:

- This command is effective only in the label mode.
- This command feeds 3 labels or 3 black marks to read the light intensity reflected from the liner or black mark and stores the optimal value into NV memory that is used to locate the label and black mark.
- The printer moves the printing position to the leading edge of the label or black mark using the optimal value stored.

Differences: None

BS L L

Function: Select label mode

Code:	ASCII	BS	L	L
	Hex	08	4C	4C
	Decimal	8	76	76

Range: None

Default: None

Description: ■ This commands selects label mode
 • The label mode must be set for printing on the label paper and black mark paper.

Remarks: ■ This command is enabled in receipt mode.
 ■ This command can activate the label mode even if the receipt mode is predefined by the memory switch(Msw8-5). However, since the mode specified by the memory switch(Msw8-5) is set to the default mode, the receipt mode becomes effective after the printer reset or power cycling is executed.
 ■ The memory switch(Msw8-5) should be enabled to maintain the label mode after the printer reset or power cycling.
 ■ Once the printer has entered the label mode, it is necessary to perform the procedures as follows for the proper operation:
 • Executing the automatic calibration to figure out the location of each label or black mark paper.
 • Readjusting the printing position by pressing paper Feed button or opening/closing the printer cover.

Differences: None

BS L R

Function: Select receipt mode

Code:	ASCII	BS	L	R
	Hex	08	4C	52
	Decimal	8	76	82

Range: None

Default: None

Description: ■ This command selects receipt mode

- The receipt mode must be set for printing on the continuous roll paper.

Remarks:

- This command is enabled only in label mode.
- This command can activate the receipt mode even if the label mode is predefined by the memory switch(Msw8-5). However, since the mode specified by the memory switch(Msw8-5) is set to the default mode, the label mode becomes effective after the printer reset or power cycling is executed.
- The memory switch(Msw8-5) should be disabled to maintain the receipt mode after the printer reset or power cycling.

Differences: None

BS ^ E

Function: Set NV user memory area

Code: None

Range: None

Default: None

Description: This command stores the customized values to the NV user memory area and uses them for the printer operation. 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	BS ^ E pL pH fn	1	Start the user setting mode
2	BS ^ E pL pH fn	2	End the user setting mode (Performs a soft reset)
3	BS ^ E pL pH fn [b18...b11]... [bk8...bk1]	3	Set value(s) for the memory switch
4	BS ^ E pL pH fn a	4	Transmit the settings of the memory switch to the host
5	BS ^ E pL pH fn	5	Specify the paper width
6	BS ^ E pL pH fn	6	Transmit the paper width
11	BS ^ E pL pH fn d1...dk	11	Set the communication conditions for the serial interface
12	BS ^ E pL pH fn a	12	Transmit the communication conditions for the serial interface

Remarks:

- pL, pH is used to set the number of bytes following pH to (pL + pH x 256).
- The change in the items of the NV user memory is available only after entering the user setting mode.
- After completing the user setting mode (Function 2), the printer performs software reset to restore the initial settings in effect at power on. Receive and print buffers are cleared as well.
- Since frequent write operation by this command may deteriorate the performance of the NV memory, it is recommended to write to NV memory when the significant change in the setting is required.
- While processing this command, the printer remains busy. Therefore the data transmission by the host is not available. The real time commands and ASB operations are not processed.

Differences: ■ Function (1,2,3,4,11, 12) are supported

<Function 1> BS ^ E pL pH fn (fn=1)**Code:**

ASCII	BS	^	E	pL	pH	fn
Hex	08	5E	45	pL	pH	fn
Decimal	8	94	69	pL	pH	fn

Range:

$(pL + pH \times 256) = 1$ (pL=1, pH=0)
fn=1

Default:

None

Description:

This command starts the user setting mode, enabling the printer to notify that the mode has changed as follows:
[Mode change feedback]

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

Remarks:

- This command is effective only in standard mode, not in page mode.
- Upon entering the user mode setting mode by this command, the printer transmits “mode change feedback” to the host.
- The user setting mode should be enabled prior to processing <Function 2> through 12. Otherwise, those functions are ignored.
- After confirming “mode change feedback”, it is recommended to send the command to reconfigure the NV user memory.

Differences:

None

<Function 2> BS ^ E pL pH fn d1 d2 d3 (fn=2)**Code:**

ASCII	BS	^	E	pL	pH	fn
Hex	08	5E	45	pL	pH	fn
Decimal	8	94	69	pL	pH	fn

Range:

$(pL + pH \times 256) = 1$ (pL=1, pH=0)
fn=2

Default:

None

Description:

This command terminates the user setting mode and performs a software reset.

Remarks:

- This command activates setting items set in the user setting mode.
- All the setting items will be effective only after performing this command.
- After executing a software reset, the printer resumes the setting in effect at power on.

Differences:

None

<Function 3> BS ^ E pL pH fn [b18...b11]...[bk8...bk1] (fn=3)

Code:

ASCII	BS	^	E	pL	fn	[b18...b11]... [bk8...bk1]
Hex	08	5E	45	pL	fn	[b18...b11]... [bk8...bk1]
Decimal	8	94	69	pL	fn	[b18...b11]... [bk8...bk1]

Range:

$9 \leq (pL + pH \times 256) \leq 65535$

fn=3

b=48, 49, 50

$1 \leq k \leq 10$

Default:

It varies depending on the printer model

Description:

■ This command changes all the Memory Switch(Msw) 1 through 8 to the value specified by b simultaneously as follows:

- When b=48, 49, the corresponding bit is set to Off and On respectively.
- When b=50, there is no change in the memory switch.

■ The setting items of the memory switch 1 are as follows:

Msw	Value			Function
	3	2	1	
1-1~3	48	48	48	Print density 130%
	48	48	49	Print density 120%
	48	49	48	Print density 110%
	48	49	49	Print density 150%
	49	48	48	Print density 100%
	49	48	49	Print density 140%
	49	49	48	Print density 90%
	49	49	49	Print density 80%

Msw	Value	Function
1-4	48	2 byte character mode not selected
	49	2 byte character mode selected
1-5	48	Print speed 80mm/s
	49	Print speed 50mm/s
1-6	48	Reserved

- The print density adjusts the darkness of characters to be printed.
- 2-byte character mode is selected to support for Chinese, Japanese, and Korean model.
- The printer supports 2 different printing speeds, 80 and 50mm/sec.

Please be sure that the printing quality at higher speed may be worse than at the lower.

■ The setting items of the memory switch 2 are as follows:

Msw	Value	Function
2-1	48	Font selection: Font A
	49	Font selection: Font B
2-2	48	Autocutter Function: Partial Cutting
	49	Autocutter Function: Full Cutting

■ Code page selection using the memory switch 2-3 through 2-8.

Msw2-8	Msw2-7	Msw2-6	Msw2-5	Msw2-4	Msw2-3	Character Table
48	48	48	48	48	48	PC437
48	48	48	48	49	48	Katakana
48	48	48	49	48	48	PC850
48	48	48	49	49	48	PC860
48	48	49	48	48	48	PC863
48	48	49	48	49	48	PC865
48	48	49	49	48	48	WPC1252

Msw2-8	Msw2-7	Msw2-6	Msw2-5	Msw2-4	Msw2-3	Character Table
48	48	49	49	49	48	PC866
48	49	48	48	48	48	PC852
48	49	48	48	49	48	PC858
48	49	48	49	48	48	PC862
48	49	48	49	49	48	PC864
48	49	49	48	48	48	Thai42
48	49	49	48	49	48	WPC1253
48	49	49	49	48	48	WPC1254
48	49	49	49	49	48	WPC1257
49	48	48	48	48	48	Farsi
49	48	48	48	49	49	WPC1251
49	48	48	49	48	48	PC737
49	48	48	49	49	49	PC775
49	48	49	48	48	48	Thai 14
49	48	49	48	49	48	Hebrew old code
49	48	49	49	48	48	WPC1255
49	48	49	49	49	48	Thai 11
49	49	48	48	48	48	Thai 18
49	49	48	48	49	48	PC855
49	49	48	49	48	48	PC857
49	49	48	49	49	48	PC928
49	49	49	48	48	48	Thai 16
49	49	49	48	49	48	WPC1256
49	49	49	49	48	48	WPC1258
49	49	49	49	49	48	Not used

- The setting items of the memory switch 3 are as follows:

Specify the 2 dimensional bar codes to be enabled using the memory switch 3-1 through 3-4.

Msw	Value	Function
3-1	48	PDF417 not selected
	49	PDF417 selected
3-2	48	DATAMATRIX not selected
	49	DATAMATRIX selected
3-3	48	MAXI CODE not selected
	49	MAXI CODE selected
3-4	48	QR CODE not selected
	49	QR CODE selected

- The printer supports 4 kinds of 2 dimensional bard codes such as PDF417, DATAMATRIX, MAXI code and QR code.
- The 2-D barcode to be used is activated by specifying the corresponding memory switch.
- The number of enabled 2D barcodes adversely affects the boot time of the printer. Therefore, it is strongly recommended to enable only the bard codes to be used.

- The setting items of the memory switch 5 are as follows:

Specify the length of idle time before the printer enters the power-down mode.

- Range of idle time: 0 sec ≤ idle time ≤ 90 sec

When memory switch value is 0, the power-down mode is not active

MSW5-8	MSW5-7	MSW5-6	MSW5-5	MSW5-4	MSW5-3	MSW5-2	MSW5-1	Value(Sec)
48	48	48	48	48	48	48	48	0
48	48	48	48	48	48	48	49	1
48	48	48	48	48	48	49	48	2
48	48	48	48	48	48	49	49	3
48	48	48	48	48	49	48	48	4
.	.	.	.	.	.	.	.	
.	.	.	.	.	.	.	.	
.	.	.	.	.	.	.	.	
48	49	48	49	49	48	49	48	90

- The setting items of the memory switch 6 are as follows:

Set the standby time before the printer enters the power saving mode.

- Range of standby time: 10 sec ≤ standby time ≤ 255 sec

When memory switch value is 0, the power saving mode does not work.

MSW6-8	MSW6-7	MSW6-6	MSW6-5	MSW6-4	MSW6-3	MSW6-2	MSW6-1	Value
48	48	48	48	49	48	49	48	10
48	48	48	48	49	48	49	49	11
48	48	48	48	49	49	48	48	12
48	48	48	48	49	49	48	49	13
48	48	48	48	49	49	49	48	14
.	.	.	.	.	.	.	.	
.	.	.	.	.	.	.	.	
.	.	.	.	.	.	.	.	
49	49	49	49	49	49	49	49	255

- The setting items of the memory switch 7 are as follows:

Specify the magnetic card read mode using the memory switch 7-5 through 7-8.

MSW	8	7	6	5	Function
7-5~8	48	48	48	49	Track 1/2/3 read mode command
	48	48	49	48	Track 1 read mode AUTO trigger
	48	48	49	49	Track 2 read mode AUTO trigger
	48	49	48	48	Track 3 read mode AUTO trigger
	48	49	48	49	Track 1/2 read mode AUTO trigger
	48	49	49	48	Track 2/3 read mode AUTO trigger
	48	49	49	49	Track 1/2/3 read mode AUTO trigger
	49	48	48	48	MSR not used

- The setting items of the memory switch 8 are as follows:
- Either the character font A or B is selected.
 - The beep is activated for the audible paper empty warning signal.
 - The beep is activated for the audible low battery warning signal.
 - The label printing is available by the setting.

Msw	Value	Function
8-1	48	Reserved
8-2	48	Font A
	49	Font B
8-3	48	Beep disabled for paper end
	49	Beep enabled for paper end
8-4	48	Beep enabled for low battery status
	49	Beep disabled for low battery status
8-5	48	Label mode disabled
	49	Label mode enabled
8-6	48	Reserved
8-7	48	Reserved
8-8	48	Reserved

- The setting items of the memory switch 10 are as follows:
Specify the roll paper width to be used and color printing

Switch	Function	ON	OFF
1~4	Reserved	--	Fixed to OFF
5	Printing width	2 inch	3 inch
6	2Color support	Enable	Disable
7~8	Reserved	--	Fixed to OFF

Remarks: None

- Differences:**
- The memory switch (1,2, 3, 5, 6, 7, 8) are available.
 - Font selection (Msw 2-1) and autocutter function(Msw 2-2) of the memory switch 2 are not supported.

<Function 4> BS ^ E pL pH fn a (fn=4)**Code:**

ASCII	BS	^	E	pL	pH	fn	a
Hex	08	5E	45	02	00	04	a
Decimal	8	94	69	2	0	4	a

Range:

(pL + pH x 256) = 2 (pL=2, pH=0)
 fn=4
 a=1, 2, 3, 5, 6, 7, 8

Default:

None

Description:

This command transmits the setting value of the memory switch corresponding to a.

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

- The setting value is sent from bit 8 to bit 1, consisting of 8 bytes in total.
- Off: Hexadecimal = 30H / Decimal = 48
 - On: Hexadecimal = 31H / Decimal = 49

Remarks:

None

Differences:

None

<Function 5> BS ^ E pL pH fn nL nH (fn=5)**Code:**

ASCII	BS	^	E	pL	pH	fn	nL	nH
Hex	08	5E	45	03	00	05	nL	nH
Decimal	8	94	69	3	0	5	nL	nH

Range:

$nL + nH \times 256 = 2, 4, 5$ ($nL = 2, 4, 5, nH = 0$)
 $fn=5$

Default:

$(nL + nH \times 256) = 5$ ($nL = 5, nH = 0$)

Description:

This command specifies the paper width to be used as follows:

(nL + nH x 256)	Paper width
2	57.5mm (2.26 inch)
4	69.5 mm (2.74 inch)
5	76 mm (3.00 inch)

Remarks:

- The setting of the paper width can be changed by the control panell operation after entering “Memory Switch Setting Mode”.

Differences:

None

<Function 6> BS ^ E pL pH fn a (fn=6)**Code:**

ASCII	BS	^	E	pL	pH	fn	a
Hex	08	5E	45	02	00	06	a
Decimal	8	94	69	2	0	6	a

Range:

$(pL + pH \times 256) = 2$ ($pL = 2, pH = 0$)
 $fn = 6$
 $a = 3$
 $(nL + nH \times 256) = 5$ ($nL = 5, nH = 0$)

Default:

None

Description:

The printer transmits to the host the setting value of the paper width.

[Data format to be sent]

Transmit data	Hex	Decimal	Amount of Data
Header	37H	55	1 byte
Identifier	27H	39	1 byte
a(=3)	33H	51	1 byte
Separation code	1FH	31	1 byte
Paper width data	32H - 35H	50 - 53	1 byte
NUL	00H	0	1 byte

Remarks:

- When the value of the paper width is set to 2 for accommodation of 57.5mm roll paper, the paper width data is converted to ASCII character data, 0x32 and transmitted to the host.
- The setting of the paper width can be changed by the control panel operation after entering "Memory Switch Setting Mode".

Differences:

None

<Function 11>BS ^ E pL pH fn a d1....dk (fn=11)

Code:	ASCII	BS	^	E	pL	pH	fn	[d11...d16][d12][d13][d14]
	Hex	08	5E	45	pL	pH	0B	[d11...d16][d12][d13][d14]
	Decimal	8	94	69	pL	pH	11	[d11...d16][d12][d13][d14]

Range: $8 \leq (pL + pH \times 256) \leq 10$ ($8 \leq pL \leq 10, 0 \leq pH \leq 255$)
 fn=11
 $48 \leq d \leq 57$

Default: Parity: no parity, Flow control: DTR/DSR, Data length: 8 bits
 Baud rate: 115200bps

Description: This command specifies the configuration items of the serial interface such as the baud rate, parity, flow control, data length, collectively.

Setting Order	Configuration item
1	Transmission speed
2	Parity
3	Flow control
4	Data length

The array of parameters change according to pL, pH as follows:

When $(pL + pH \times 256) = 10$:
 d11~d61: Baud rate value
 d12: Parity setting value
 d13: Flow control setting value
 d14: Data length setting value

When (pL+pH x256) =9:
 d11~d51: Baud rate value
 d12: Parity setting value
 d13: Flow control setting value
 d14: Data length setting value

When (pL+pH x256) =8:
 d11~d41: Baud rate value
 d12: Parity setting value
 d13: Flow control setting value
 d14: Data length setting value

For instance, when defining 19200 bps, (pL = 9, pH=0) and ASCII converted character data(Hexadecimal = 31H,39H,320H,30H,30H//Decimal= 49, 57, 50, 48, 48) of 19200 should be sent.

Baud rate is specified as follows: ($4 \leq k \leq 6$)

d11~dk1	Function
"115200"	Baud rate 115200
"57600"	Baud rate 57600
"38400"	Baud rate 38400
"19200"	Baud rate 19200
"9600"	Baud rate 9600
"4800"	Baud rate 4800
"2400"	Baud rate 2400

Parity is specified by d12 as follows:

d12	Function
48	Select no parity
49	Select odd parity
50	Select even parity

Flow control is specified by d13 as follows:

d13	Function
48	Select flow control DTR/DSR
49	Select flow control XON/XOFF

Data Length(a=4) is specified by d14 as follows:

d14	Function
55	Select 7bits length
56	Select 8bits length

Remarks:

- The change of settings of serial interface is available by adjusting the corresponding DIP switch that is recommended for setting of serial interface.
- To enable the settings by this command, it is first required to adjust the DIP switch that activates the serial interface configuration set by the memory switch.

Differences:

- Buad rate range available by the printer model:
 - The serial interface configuration is specified only by setting the memory switch.

<Function 12> BS ^ E pL pH fn a (fn=12)**Code:**

ASCII	BS	^	E	pL	pH	fn	a
Hex	08	5E	45	pL	pH	fn	a
Decimal	8	94	69	pL	pH	fn	a

Range:

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

Default:

None

Description:

■ This command transmits the communication conditions of the serial interface according to a as follows:

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

■ The data format to be transmitted is as follows:

	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Identifier	33H	39	1 byte
Communication condition(a)	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

Communication condition is define by “a” and setting value defined as shown in the following.

■ 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 (Fixed)
49	XON / XOFF

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

d1	Data length
55	7 bits
56	8 bits

Remarks: None

Differences: None

BS ^ L, BS ^ 7

Function: Select graphics data

Code:	ASCII	BS	^	L	pL	pH	[parameter]
	Hex	08	5E	4C	pL	pH	[parameter]
	Decimal	8	94	76	pL	pH	[parameter]

ASCII	BS	^	7	p1	p2	p3	p4	fn	[parameter]
Hex	08	5E	37	p1	p2	p3	p4	fn	[parameter]
Decimal	8	94	55	p1	p2	p3	p4	fn	[parameter]

Range: None

Default: None

Description: This command processes graphics data according to the function code (fn).

fn	Function No.	Format	Function
2, 50	50	BS ^ L pL pH fn	Prints the graphics data in the print buffer
65	65	BS ^ L pL pH fn	Deletes all NV graphics data
66	66	BS ^ L pL pH fn c	Deletes the specified NV graphics data
67	67	BS ^ 7 p1 p2 p3 p4 fn N {b xL xH yL yH [c d1...dk]1}...{ b xL xH yL yH [c d1 dk]N}	Defines the graphics data in the non-volatile memory
69	69	BS ^ L pL pH fn c x y	Prints the specified NV graphics data
112	112	BS ^ L pL pH fn a bx by c xL xH yL yH d1...dk	Stores the graphics data in the print buffer memory

Remarks:

- This command is adapted to print image data.
- pL, pH specifies the number of bytes following pH using (pL + pH x 256).
- Since frequent writing operation could cause the damage to the NV memory, it is recommended to write only when being required.

- While storing data by this command, the printer is in BUSY state where receiving of data is not available. Therefore, it is not recommended to send data during this process.
- The real time commands and ASB operations are not allowed during NV memory operation process.

Differences: None

<Function 50> BS ^ L pL pH fn (fn=2, 50)**Code:**

ASCII	BS	^	L	pL	pH	fn
Hex	08	5E	4C	pL	pH	fn
Decimal	8	94	76	pL	pH	fn

Range:

$(pL + pH \times 256) = 1$ (pL=2, pH=0)
m=48, fn=2, 50

Default:

None

Description:

This command prints the graphics data defined by the process of Function 112.

Remarks:

- The graphics data stored in the printer buffer is printed.
- This command is available in standard mode, not in page mode.
- The graphics data is defined by Function 112.
- The required amount of line feed pitch is used for printing graphics data, regardless of the existing setting value of the pitch.

Differences:

- This command is available in both standard and page modes.

<Function 65> BS ^ L pL pH fn (fn=65)**Code:**

ASCII	BS	^	L	pL	pH	fn
Hex	08	5E	4C	pL	pH	fn
Decimal	8	94	76	pL	pH	fn

Range:

$(pL + pH \times 256) = 1$ (pL=1, pH=0)
fn=65

Default:

None

Description:

This command removes all defined NV graphics data.

Remarks:

- The graphics data is define by Function 67 into the NV graphics memory with the sector dedicated for storing NV graphics data.

Differences:

None

<Function 66> BS ^ L pL pH fn c (fn=66)**Code:**

ASCII	BS	^	L	pL	pH	fn	N
Hex	08	5E	4C	pL	pH	fn	N
Decimal	8	94	76	pL	pH	fn	N

Range:

$(pL + pH \times 256) = 2$ (pL=2, pH=0)
 fn=66
 $0 \leq N \leq 77$

Default:

None

Description:

This command deletes the NV graphics data corresponding to N.

Remarks:

- The graphics data is define by Function 67.
- N is given automatically to each of the graphics data groups to be stored into the NV graphics memory in the order of download.

Differences:

None

<Function 67> BS ^ 7 p1 p2 p3 p4 fn N {b xL xH yL yH [c d1...dk]1}...{b xL xH yL yH [c d1...dk]N}(fn=67)

Code:

ASCII	BS	^	7	P1 p2 p3 p4 fn N {b xL xH yL yH [c d1...dk]1}...{b xL xH yL yH [c d1...dk]N}
Hex	08	5E	37	P1 p2 p3 p4 fn N {b xL xH yL yH [c d1...dk]1}...{b xL xH yL yH [c d1...dk]N}
Decimal	8	94	55	P1 p2 p3 p4 fn N {b xL xH yL yH [c d1...dk]1}...{b xL xH yL yH [c d1...dk]N}

Range:

$3 \leq (p1 + p2 \times 256 + p3 \times 65536 + p4 \times 16777216) \leq 262144$

$(0 \leq p1 \leq 255, 0 \leq p2 \leq 255, 0 \leq p3 \leq 255, 0 \leq p4 \leq 255)$

fn=67

$1 \leq c \leq 255$

$1 \leq (xL + xH \times 256) \leq 1024$

$1 \leq (yL + yH \times 256) \leq 1200$

$0 \leq d \leq 255$

$k = (\text{int}((xL + xH \times 256) + 7) / 8) \times (yL + yH \times 256)$

$0 \leq N \leq 77$

b=1(Single color printing), c=49(when monochrome paper used)

Default:

None

Description:

- This command defines NV graphics data as N assigned in the order of download.
- The following parameters are used to define the raster graphics data.
 - b specifies the number of colors for the defined data.
 - N specifies the number of NV graphics data groups to be defined.
 - xL and xH specify the number of dots in horizontal direction to $(xL + xH \times 256)$.
 - yL and yH specify the number of dots in horizontal direction to $(yL + yH \times 256)$ dots.
 - c specifies the color of the defined data.

c	Defined data color
49	Color 1
50	Color 2

Remarks:

- Color 1 means black, and Color 2 red that is available for 2-color paper.

- If new NV graphics data is saved or the existing data is modified, all of the existing data in NV graphics memory are flushed and updated using this command. The rest of NV graphics data groups having no change should be redefined along with the new group stored.
- When NV graphics data groups are saved, each of the groups is allocated with N in the order of download.

Differences:

- Total capacity of the NV graphics memory:
 - The total capacity of the NV graphics memory is 256K bytes.

<Function 69> BS ^ L pL pH fn c x y (fn=69)**Code:**

ASCII	BS	^	L	pL	pH	fn	N	x	y
Hex	08	5E	4C	pL	pH	fn	N	x	y
Decimal	8	94	76	pL	pH	fn	N	x	y

Range:

$(pL + pH \times 256) = 4$ (pL=4, pH=0)
 fn=69
 $0 \leq N \leq 77$
 x=1, 2
 y=1, 2

Default:

None

Description:

- This command prints the NV graphics data defined by N.
 - The graphics data is enlarged by x and y in the horizontal and vertical directions respectively.

Remarks:

- This command prints the NV graphics data defined by Function 67.
- NV graphic data corresponding to N is only printed.
- In page mode, this command is not effective.
- NV graphics data beyond the print area for one line is not printed.

Differences:

- This command is effective both in standard and page modes.

<Function 112> BS ^ L pL pH fn a bx by c xL xH yL yH d1...dk (fn=112)**Code:**

ASCII	BS	^	L	pL pH fn a bx by c xL xH yL yH d1...dk
Hex	08	5E	4C	pL pH fn a bx by c xL xH yL yH d1...dk
Decimal	8	94	76	pL pH fn a bx by c xL xH yL yH d1...dk

Range:
 $11 \leq (pL + pH \times 256) \leq 65535$ ($0 \leq pL \leq 255$, $0 \leq pH \leq 255$)

fn=112, a=48

bx=1, 2

by=1, 2

 $1 \leq (xL + xH \times 256) \leq 1024$ $1 \leq (yL + yH \times 256) \leq 1200$ (when by = 1) $k = (\text{int}((xL + xH \times 256) / 8) + 7) \times (yL + yH \times 256)$

c=49(when monochrome paper used)

Default:

None

Description:

■ This command stores the raster graphics data in the print buffer, enlarged by bx and by in the horizontal and vertical directions.

- xL, xH specifies the raster graphics data in the horizontal direction as $(xL + xH \times 256)$ dots.
- yL, yH specifies the raster graphics data in the vertical direction to $(yL + yH \times 256)$ dots.
- d denotes the stored data(raster format).
- k denotes the number of the graphics data.
- c specifies the color of the defined data.

c	Defined data color
49	Color 1
50	Color 2

- Color 1 means black, and Color 2 red or blue that is available for 2-color paper.

Remarks:

- The graphics data is stored in the printer buffer directly.
- NV graphics data beyond the print area for one line is not printed.
- Real time command is not effective during processing of this command.

Differences:

None

HT

Function: Horizontal tab

Code:	ASCII	HT
	Hex	09
	Decimal	9

Range: None

Default: None

Description: This command moves the print position to the next horizontal tab position. If the next horizontal tab position is not specified, this command will be void.

Remarks:

- The horizontal tab position is set by <ESC> D.
- With the underline mode turned on, the underline printing is not applied to the tab space created by this command.

Differences: None

LF

Function: Print and line feed

Code:	ASCII	LF
	Hex	0A
	Decimal	10

Range: None

Default: None

Description: This command prints the data in the print buffer and feeds one line based on the current set line spacing in standard mode.

Remarks: ■ In page mode, the printer does not perform actual printing, but moving only the print position to the next line.

Differences: None

FF

Function: Form feed (in page mode)

Code:	ASCII	FF
	Hex	0C
	Decimal	12

Range: None

Default: None

Description: This commands prints all data collected in the printer buffer In page mode. After completion of printing, the printer is returned to standard mode.

Remarks:

- The printer is returned to standard mode after completion of printing.
- After being printed, all of the existing data in the printer buffer is evacuated and the print position changes to the beginning of the line.
- This command works in page mode enabled by ESC L or FS L.

Differences:

- After completion of printing, the printer does not clear the printer buffer and the print position moves to the beginning of the line.

CR

Function: Print and carriage return

Code:	ASCII	CR
	Hex	0D
	Decimal	13

Range: None

Default: None

Description: This command prints the data. With auto line feed enabled, it performs printing and one line feeding same as LF.

Remarks: ■ Auto line feed is only enabled with a parallel interface using the DIP switch.

Differences: None

DLE

Function: Set real-time command mode

Code:

ASCII	DLE
Hex	10
Decimal	16

Range: None

Default: None

Description: This command enables commands to be operable in real-time.

Remarks:

- A single command following this command is regarded as a real time command.
- The real time command is stored into the receive buffer and executed with higher priority than other commands.
- If this command is processed as a parameter of the other command, the data following this command might bring about the unwanted result.
- The commands that are allowed to be executed in real time mode vary depending on the printer model.

Differences: ■ Commands that can be executed in real time mode: EOT, GS r, GS I, GS I b

CAN

Function: Cancel the print data in page mode

Code:

ASCII	CAN
Hex	18
Decimal	24

Range: None

Default: None

Description: This command clears the receive buffer and print buffers in page mode.

Remarks: ■ This command is effective only in page mode that is set by ESC L.

Differences: None

ESC FF

Function: Print data in page mode

Code:	ASCII	ESC	FF
	Hex	1B	0C
	Decimal	27	12

Range: None

Default: None

Description: This command prints the data in the print buffer collectively in page mode.

Remarks:

- This command is effective only in page mode that is selected by ESC L.
- After printing, the data in the print buffer and setting values are not cleared.
- The printer can print the data in the print buffer repeatedly using this command.
- The printer returns to standard mode by ESC S or ESC @.

Differences: None

ESC SP

Function: Set the character right space

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

Range: $0 \leq n \leq 255$

Default: n=0

Description: ■ This command sets the size of space to right of character.
 • Right space = $n \times$ [horizontal motion units].

Remarks: ■ In a double width mode, the right space will be doubled.
 ■ Horizontal motion unit varies depending the printer model.

Differences: ■ Horizontal motion unit: 0.125mm(1/203 inch)

ESC !

Function: Set print mode

Code:

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

Range: $0 \leq n \leq 255$

Default: n=0

Description: This command selects print mode(s) with bits having following meanings.

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Character font A selected
	On	01	1	Character font B 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

Remarks:

- As alternative to this command, ESC M, ESC E and ESC – can be used for the selection for character font, emphasized mode and underline mode respectively.
- The entire character print width is underlined, but the space skipped by HT is not.
- If both double width and double height are selected, the characters will be quadrupled.

Differences: ■ Character configuration(Font A, Font B): Font A(12 × 24), Font B(9 × 24)

ESC \$

Function: Set absolute print position

Code:

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

Range: $0 \leq (nL + nH \times 256) \leq 65535$ ($0 \leq nH \leq 255$, $0 \leq nL \leq 255$)

Default: None

Description: This command specifies the next print starting position in reference to the left edge of the print area. The printing start position is calculated using $(nL + nH \times 256) \times$ (vertical or horizontal motion units).

Remarks:

- Any setting values that go beyond the printable area is ignored.
- In standard mode, the horizontal motion unit is used for the calculation.
- In page mode, the horizontal motion unit is applied when printing start position is defined to the upper right or lower right of print area using ESC T, otherwise, the vertical motion unit is used.

Differences: ■ Horizontal motion unit: 0.125mm(1/203 inch)

ESC *

Function: Specify bit image mode

Code:	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
 $0 \leq nL \leq 255$
 $0 \leq nH \leq 3$
 $0 \leq d \leq 255$
 $k = nL + nH \times 256$ [in case of m = 0, 1]
 $k = (nL + nH \times 256) \times 3$ [in case of m = 32, 33]

Default: None

Description: ■ This command specifies the bit image for the mode m as to the number of dots specified by nL and nH.

- d specifies the bit image data with 1 for printed data and 0 for not printed.
- k denotes the number of horizontal dots.

DPI : Dots per Inch (25.4mm)

m	Mode	Number of dots in vertical direction	Vertical dot density (DPI)	Horizontal dot density (DPI)	Number of bytes (k)
0	8-dot single-density	8	203/3	203/2	$nL + nH \times 256$
1	8-dot double-density	8	203/3	203	$nL + nH \times 256$
32	24-dot single-density	24	203	203/2	$(nL + nH \times 256) \times 3$
33	24-dot double-density	24	203	203	$(nL + nH \times 256) \times 3$

Remarks: ■ If the bit image data being entered is beyond the number of dots to be printed, the surplus will be discarded.
 ■ If the value of m is beyond the conditions, the subsequent data after m will be treated as normal data.

Differences: None

ESC –

Function: Turn underline mode on/off

Code:

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

Range: $0 \leq n \leq 2, 48 \leq n \leq 50$

Default: n=0

Description: ■ This command enables the print data following it to be printer out underlined.
 • The underline mode varied depending on the following values of n:

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

Remarks: ■ The spaces generated by horizontal tab are not underlined.
 ■ Using bit 7 of ESC !, the underline mode can be activated/deactivated as well.

Differences: None

ESC 2

Function: Select default line spacing

Code:	ASCII	ESC	2
	Hex	1B	32
	Decimal	27	50

Range: None

Default: None

Description: This command sets the default line spacing. The default line spacing is approximately 3.75 mm, which is equivalent to 30 dots.

Remarks:

- The line spacing can be set independently in standard mode and in page mode.
- The setting of this command remains effective until ESC !, ESC @, printer reset or power cycling is executed.

Differences:

- Default line spacing: 3.75 mm(30 dots)

ESC 3

Function: Set line spacing

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

Range: $0 \leq n \leq 255$

Default: Corresponding to the default line spacing defined by ESC 2

Description: ■ This command sets the line spacing using a following rule.
 • Line spacing = $n \times (\text{vertical or horizontal motion units})$

Remarks: ■ With standard mode selected, the vertical motion unit is used.
 ■ In page mode, the horizontal motion unit is applied when printing start position is defined to the upper right or lower right of print area using ESC T, otherwise, the vertical motion unit is used.
 ■ The line spacing is settable independently for each of standard and page modes.

Differences: ■ Vertical or horizontal motion unit and maximum line spacing settable:

Model	Vertical unit	Horizontal unit	Max line spacing
SPP-R200	0.125mm (1/203 inches)	0.125mm (1/203 inches)	31.875mm

ESC @

Function: Initialize printer

Code:	ASCII	ESC	@
	Hex	1B	40
	Decimal	27	64

Range: None

Default: None

Description: This command cancels conditions previously set and initializes the printer to the conditions having existed at power on.

Remarks:

- The data in the printer buffer is cleared.
- The settings of DIP switch are not re-read.
- The data in the receive buffer is not discarded.
- All of the settings such as print mode and line feed are cleared.
- NV graphics and NV user memory are not cleared.
- In page mode, this command removes the data in print areas, restores the initial settings and returns to standard mode.

Differences: None

ESC D

Function: Set horizontal tab position

Code:	ASCII	ESC	D	n1...nk	NUL
	Hex	1B	44	n1...nk	00
	Decimal	27	68	n1...nk	0

Range: $1 \leq n \leq 255$, $0 \leq k \leq 32$

Default: n=8, 16, 24, 32, 40,....., 232, 240, 248

Description:

- This command sets the horizontal tab position.
 - n defines the number of columns from the beginning of the line to the horizontal tab setting.
 - k denotes the number of horizontal tab positions to be set.
 - The horizontal tab position is stored as a value of [character width x n] measured from the beginning of the line.

Remarks:

- The data [n]k signifying the set position is transmitted in the ascending order and ends with a NUL code.
- ESC D NUL cancels all horizontal tab positions.
- Tab position is set at the value of [character width x n] from the beginning of the line.
- The character width includes the space to the right of the character, and it will be twice the normal character when the double width characters are selected.
- If the data [n]k is equal to or smaller than the preceding data [n]k-1, the horizontal tab setting has been completed.
- Up to 32 horizontal tabs can be set, the data exceeding this limit is processed as normal ones.
- Even if the character width is changed after setting the horizontal tab positions, the horizontal tab positions remain unchanged.

Differences: None

ESC E

Function: Turn emphasized mode on / off

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

Range: $0 \leq n \leq 255$

Default: n=0

Description: ■ This command turns emphasized mode on or off by toggling the least significant bit of n like following.

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

Remarks: ■ The setting of this command remains effective until ESC !, ESC @, printer reset or power cycling is executed.

Differences: None

ESC G

Function: Turn double-strike mode on/off

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

Range: $0 \leq n \leq 255$

Default: n=0

Description: ■ This command turns double-strike mode on or off by toggling the least significant bit of n like following.

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

Remarks: ■ The setting of this command remains effective until ESC !, ESC @, printer reset or power cycling is executed.

Differences: None

ESC J

Function: Print and feed paper

Code:

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

Range: $0 \leq n \leq 255$

Default: None

Description: This command prints the data in the print buffer and feeds the paper [n X vertical motion unit].

Remarks:

- The maximum feed amount available varies depending on the printer model.
- With standard mode selected, the vertical motion unit is used.
- In page mode, the horizontal motion unit is applied when printing start position is defined to the upper right or lower right of print area using ESC T, otherwise, the vertical motion unit is used.
- When used in page mode, this command moves only the print position, not executing actual printing.

Differences: ■ Vertical motion unit and maximum feed amount:

Model	Vertical unit	Max feed amount
SPP-R200	0.125mm (1/203 inches)	31.875mm

ESC L

Function: Select page mode

Code:	ASCII	ESC	L
	Hex	1B	4C
	Decimal	27	76

Range: None

Default: None

Description: This command switches from standard mode to page mode.

Remarks:

- For printing in page mode, ESC T defines the print direction and starting position that is within the print area specified by ESC W.
- The conditions by the following commands are defined independently in standard mode and page mode.
 - ESC SP, ESC 2, ESC 3, ESC U, and FS S
- The following commands are not activated in page mode.
 - ESC L, FS q, GS (A, BS ^ E, GS T
- The following commands are not effective in page mode. The conditions set by these commands in page mode are available when the printer returns to standard mode.
 - ESC V, ESC a, ESC {, GS L, and GS W
- The printer resumes standard mode by the use of ESC S, FF, and ESC@
- In page mode, the command, FF, prompts printing the data in the printer buffer collectively. LF, CR, ESC J, and ESC d just move the print position, not performing actual printing.

Differences: None

ESC M

Function: Select character font/ MSR card read

Code:

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

Range: n = 0, 1, 48, 49, 67, 68, 69, 70, 71, 72, 73

Default: n=0

Description: This command selects only-byte character fonts, and magnetic card reader mode that is only available for SPP-R200 using n as following.

n	Function
0, 48	Character font A selected
1, 49	Character font B selected
70	Set 1 track card reader mode
71	Set 2 track card reader mode
72	Set 1,2 track card reader mode
73	Transmits the MSR setting value(s)
67	Set 2 track card reader mode
68	Set 3 track card reader mode
69	Set 2,3 track card reader mode
66	Set 1,2,3 track card reader mode
99	Cancel MSR reader mode

- Magnetic card reader is provided with track 1, 2, and 3.
- The printer supports 7 options to read the magnetic card by selecting the desired MSR read mode on the utility(VMSM).
- The following details the magnetic card read output format according to the card reader mode, which is sent to the printer when the magnetic card is read.

Track 1

02H 41H 31H 31H 1CH	DATA max 76 characters	03H 0DH 0AH
---------------------	------------------------	-------------

Track 2

02H 42H 31H 31H 1CH	DATA 37 characters	03H 0DH 0AH
---------------------	--------------------	-------------

Track 1,2

02H 43H 31H 31H 1CH 1CH	DATA 76 characters	1CH	DATA 37 Characters	03H 0DH 0AH
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Track 3

02H 44H 31H 31H 1CH	DATA104characters	03H 0DH 0AH
---------------------	-------------------	-------------

Track 2,3

02H 45H 31H 31H 1CH 1CH	DATA 37 characters	1CH	DATA104Characters	03H 0DH 0AH
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Track 1,2,3

02H 46H 31H 31H 1CH 1CH	DATA76 characters	1CH	DATA37characters	1CH	DATA104characters	03H 0DH 0AH
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■ The following shows the format of the MSR setting value transmitted to the printer.

	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Flag	80H	128	1 byte
Data	41H ~ 48H	65 ~ 72	1 bytes
NUL	00H	0	1 byte

■ The following describes MSR read mode according to the MSR setting value.

MSR setting value(Hex)	MSR read mode
41	Track 1/2/3 read mode command (3 Track case)
42	Track 1 read mode AUTO trigger (3 Track case)
43	Track 2 read mode AUTO trigger (3 Track case)
44	Track 3 read mode AUTO trigger (3 Track case)
45	Track 1/2 read mode AUTO trigger (3 Track case)
46	Track 2/3 read mode AUTO trigger (3 Track case)
47	Track 1/2/3 read mode AUTO trigger (3 Track case)
48	MSR not used

- The manual reading of a magnetic card is activated with MSR setting value of 41H that is set by SPP-R200 Unified Utility. In this case, ESC M should be sent to the printer to receive the magnetic card read output prior to swiping the card. In other cases, the printer receives automatically the output whenever the card is read.

Remarks:

- The printer model has its own configuration of Font A and B.
- The setting of this command remains effective until ESC !, ESC @, printer reset or power cycling is executed.

Differences:

- Configuration of Font A and B: Font A(12 × 24), Font B(9 × 24)
- MSR read mode selection for SPP-R200 is specified using SPP-R200 Unified Utility.

ESC R

Function: Specify international character set

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

Range: $0 \leq n \leq 10$

Default: n=0

Description: This command specifies international characters according to n values.

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		

Remarks: ■ The setting of this command remains effective until ESC !, ESC @, printer reset or power cycling is executed.

Differences: None

ESC S

Function: Select standard mode

Code:	ASCII	ESC	S
	Hex	1B	53
	Decimal	27	83

Range: None

Default: None

Description: This command enables standard mode.

Remarks:

- The data in the printer buffer is cleared and the setting by ESC W returns to the default.
- The conditions by the following commands are defined independently in standard mode and page mode.
 - ESC SP, ESC 2, ESC 3, ESC U, and FS S
- In standard mode, CAN, ESC FF, GS \$, and GS \ are ignored.

Differences: None

ESC T

Function: Select print direction in page mode

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

Range: $0 \leq n \leq 3, 48 \leq n \leq 51$

Default: $n = 0$

Description: This command 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
2,50	Right left	Lower right
3,51	Top bottom	Upper right

- Remarks:**
- The print direction set by this command is not effective in standard mode.
 - If this command is processed in standard mode, the setting by this command is effective when the printer changes to page mode.
 - Depending on the print starting position set by this command, the horizontal motion unit or vertical motion unit is used for the following commands.
 - When the starting position is the upper left or lower right of the print area; ESC SP, ESC \$, ESC \ use the horizontal motion unit and ESC 3, ESC J, GS \$, GS \ the vertical motion unit.
 - When the starting position is the upper right or lower left of the print area; ; ESC SP, ESC \$, ESC \ use the vertical motion unit and ESC 3, ESC J, GS \$, GS \ the horizontal motion unit.
 - The setting of this command remains effective until ESC !, ESC @, printer reset or power cycling is executed.

Differences: None

ESC W

Function: Set print area in page mode

Code:	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: $0 \leq (xL + xH \times 256) \leq 65535$ ($0 \leq xL \leq 255$, $0 \leq xH \leq 255$)
 $0 \leq (yL + yH \times 256) \leq 65535$ ($0 \leq yL \leq 255$, $0 \leq yH \leq 255$)
 $1 \leq (dxL + dxH \times 256) \leq 65535$ ($0 \leq dxL \leq 255$, $0 \leq dxH \leq 255$)
 $1 \leq (dyL + dyH \times 256) \leq 65535$ ($0 \leq dyL \leq 255$, $0 \leq dyH \leq 255$)

Default: When paper width of 58mm is selected:
 $(xL + xH \times 256) = 0$ ($xL=0$, $xH=0$)
 $(yL + yH \times 256) = 0$ ($yL=0$, $yH=0$)
 $(dxL + dxH \times 256) = 384$ ($dxL=128$, $dxH=1$)
 $(dyL + dyH \times 256) = 840$ ($dyL=72$, $dyH=3$)

Description: ■ This command set the position and the size of the printing area in page mode as following.

- Horizontal starting position = $[(xL + xH \times 256) \times (\text{horizontal motion units})]$
- Vertical starting position = $[(yL + yH \times 256) \times (\text{vertical motion units})]$
- Horizontal printing area width = $[(dxL + dxH \times 256) \times (\text{horizontal motion units})]$
- Vertical printing area width = $[(dyL + dyH \times 256) \times (\text{vertical motion units})]$

Remarks: ■ The horizontal and vertical starting positions are out of the printable area, this command is canceled and the following data is processed as normal data.

■ If (Horizontal starting position + Horizontal printing area width) is beyond the printable area, the Horizontal printing area width is set to (Horizontal printing area - Horizontal starting position).

■ If (Vertical starting position + Vertical printing area width) is beyond the printable area, the Vertical printing area width is set to (Vertical printing area - Vertical starting position).

■ This command is not effective in standard mode. If this command is processed in standard mode, the setting by this command is effective when the printer returns to page mode.

- The setting of this command remains effective until ESC !, ESC @, printer reset or power cycling is executed.

Differences:

The maximum printable area(Max horizontal printable area, Max vertical printable area):

Model	Max horizontal printable area	Max vertical printable area
SPP-R200	48mm(384dots)	105mm(840dots)

ESC \

Function: Set relative print position

Code:	ASCII	ESC	\	nL	nH
	Hex	1B	5C	nL	nH
	Decimal	27	92	nL	nH

Range: $0 \leq (nL + nH \times 256) \leq 65535$ ($0 \leq nL \leq 255, 0 \leq nH \leq 255$)

Default: None

Description:

- This command sets the print starting position based on the current position to $[(nL + nH \times 256) \times \text{horizontal or vertical motion unit}]$
 - The print starting position is moved to $(nL + nH \times 256)$ in the right direction based on the current position.

Remarks:

- The printer ignores any setting that exceeds the print area.
- When the print area has been exceeded, this command is ignored.
- With standard mode selected, the vertical motion unit is used.
- In page mode, the horizontal motion unit is applied when printing start position is defined to the upper right or lower right of print area using ESC T, otherwise, the vertical motion unit is used.
- Even if the underline mode is turned on, the space skipped by this command is not printed underlined.

Differences: None

ESC a

Function: Set position alignment

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

Range: $0 \leq n \leq 2$, $48 \leq n \leq 50$

Default: n=0

Description: This command specifies position alignment for all data in one line in standard mode, using n as follows:

n	Alignment
0, 48	Left alignment
1, 49	Center alignment
2, 50	Right alignment

Remarks:

- This command is not effective in page mode. If this command is processed in page mode, the setting by this command becomes effective when the printer returns to standard mode.
- The setting of this command remains effective until ESC !, ESC @, printer reset or power cycling is executed.

Differences: None

ESC d

Function: Print and feed n lines.

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

Range: $0 \leq n \leq 255$

Default: None

Description: This command feeds the paper by n lines after printing the data in the print buffer.

Remarks:

- The per-line paper feed amount is based on the value set by the line spacing related commands, ESC 2 and ESC 3.
- In page mode, this command moves only the print position, not performing actual print.
- If the feed amount set is beyond the maximum feed amount, the feed amount will be set to the maximum feed amount automatically.

Differences: ■ Maximum feed amount: 255 lines.

ESC t

Function: Select character code table

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

Range: $0 \leq n \leq 5$, $16 \leq n \leq 19$, $21 \leq n \leq 31$, $33 \leq n \leq 41$, $n=255$

Default: For model not supporting Thai character: $n=0$
For model supporting Thai character support : $n = 20$

Description: This command specifies code page according to the value of n as follows:

n	Code 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)

n	Code page
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
33	Page 33 1255 (Hebrew New code)
34	Page 34 Thai 11
35	Page 35 Thai 18
36	Page 36 855 (Cyrillic)
37	Page 37 857 (Turkish)
38	Page 38 928 (Greek)
39	Page 39 Thai 16
40	Page 40 1256 (Arabic)
41	Page 41 1258 (Vietnam)
255	User Code Page (Space)

Remarks: ■ The setting of this command remains effective until ESC !, ESC @, printer reset or power cycling is executed.

Differences: ■ Code pages not supported: n = 41. When n=255, the code page specified by the memory switch is enabled.

ESC {

Function: Turns upside-down printing mode on/off

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

Range: $0 \leq n \leq 255$

Default: n=0

Description: This command selects/deselects upside-down printing mode according to the least significant bit as follows.

LSB	Upside-down mode
0	Turned off
1	Turned on

- Remarks:**
- This command is valid only when entered at the beginning of the line.
 - The upside-down print mode has no effect in page mode. If this command is processed in page mode, upside-down printing mode is enabled when the printer returns to standard mode.
 - 180 rotated characters are printed from right to left in upside-down print mode.
 - The setting of this command remains effective until ESC !, ESC @, printer reset or power cycling is executed.

Example	
Normal	Upside- down Mode
ABCDEF	FEDCBA

Differences: None

FS &

Function: Select Kanji character mode

Code:	ASCII	FS	&
	Hex	1C	26
	Decimal	28	38

Range: None

Default: None

Description: This command sets Kanji character mode.

Remarks:

- This command is available only for the Japanese, Chinese, and Korean models.
- Kanji codes are comprised of 2 bytes and processed in order of the first and second byte.
- The setting of this command remains effective until ESC !, ESC @, printer reset, power cycling or FS is executed.

Differences: None

FS .

Function: Cancel Kanji character mode

Code:	ASCII	FS	.
	Hex	1C	2E
	Decimal	28	46

Range: None

Default: None

Description: This command cancels Kanji character mode.

Remarks:

- This command is available only for the Japanese, Chinese, and Korean models.
- Kanji character mode is enabled using FS &.
- Once Kanji character mode is canceled, the printer processes a character code as 1-byte code of alphanumeric characters.
- The setting of this command remains effective until ESC !, ESC @, printer reset, or power cycling is executed.

Differences: None

GS !**Function:** Select character size**Code:**

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

Range: $0 \leq n \leq 255$
 $(1 \leq \text{Vertical enlargement} \leq 8, 1 \leq \text{Horizontal enlargement} \leq 8)$

Default: n=0**Description:** ■ This command selects the character height and width using bits 0 to 3, and bits 4 to 7 respectively as follows:

Bit	Function	Setting
0	Specifies the number of times normal font size in the vertical direction	Refer to Table 2 [Enlarged in vertical direction]
1		
2		
3		
4	Specifies the number of times normal font size 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 2 [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

Remarks:

- The character size set by this command is valid for alphanumeric, user-defined characters, multi-byte code characters such as Chinese, Japanese, and Korean.
- Double width and double height modes can be set by ESC !.
- Multi-byte code characters are specified only by this command.
- The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

Differences: None

GS \$

Function: Set absolute vertical print position in page mode

Code:

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

Range: $0 \leq (nL + nH \times 256) \leq 65535$ ($0 \leq nL \leq 255$, $0 \leq nH \leq 255$)

Default: None

Description: This command sets the absolute vertical print starting position to $[(nL + nH \times 256) \times (\text{vertical or horizontal motion unit})]$.

Remarks:

- This command is activated only in page mode and ignored in standard mode.
- Either vertical or horizontal motion unit is used according to the print direction set by ESC T as follows:
 - With the starting position of the upper left or lower right on the print area, the vertical motion unit is used.
 - In other cases, the horizontal motion unit is used.
- The configuration beyond the print area set by ESC W is ignored.

Differences: None

GS (A

Function: Execute test print

Code:	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)
 $0 \leq n \leq 2, 48 \leq n \leq 50$
 $1 \leq m \leq 3, 49 \leq m \leq 51$

Default: None

Description: ■ This command prints a specified pattern for testing on a roll paper.
 • Roll paper is selected with n specified as follows:

n	Paper type
0, 48	Roll paper
1, 49	
2, 50	

• Different kinds of test patterns are selected according to m as follows:

m	Test pattern
1, 49	Hexadecimal dump mode
2, 50	Printer configuration printing
3, 51	Rolling pattern printing

Remarks: ■ The printer cancels a macro definition in progress If this command is processed. The macro becomes invalid.
 ■ After completion of this command, a software reset is executed automatically to restore the printer status set during power cycling.
 ■ All of the data transmitted from the host to the printer is printed and identified in hexadecimal dump mode.
 ■ The real time command and ASB operations are not executed during the printing of printer configuration (m=2, 50) and rolling pattern (m=3, 51).

Differences: None

GS (k

Function: Specify and print the symbol

Code: None

Range: None

Default: None

Description: ■ This command processes the data concerning two-dimensional code.

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

cn	Type of Symbol
48	PDF417 (2-dimensional code)
49	QR CODE (2-dimensional code)
50	MAXI CODE(2-dimensional code)
51	DATAMATRIX(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 storage area
	81	Function 081	PDF417: Print the symbol data in the symbol storage area
	82	Function 082	PDF417: Send the size information of the symbol data in the symbol storage area
49	65	Function 165	QR CODE: Select the module
	67	Function 167	QR CODE: Select the size of module
	69	Function 169	QR CODE: Select the error correction level
	80	Function 180	QR CODE: Store the data in the symbol storage area
	81	Function 181	QR CODE: Print the data in the symbol storage area
	82	Function 182	QR CODE: Transmit the size information of the symbol data in the symbol storage area
50	65	Function 265	MAXI CODE: Select the mode
	80	Function 280	MAXI CODE: Store the data in the symbol storage area
	81	Function 281	MAXI CODE: Print the symbol data saved in The symbol storage area
51	67	Function 367	DATAMATRIX: Select the size of module
	80	Function 380	DATAMATRIX: Store the symbol data in the symbol storage area
	81	Function 381	DATAMATRIX: Print the symbol data in the storage area

Remarks: PDF417 symbol data (when cn=48)

- The symbol data is defined, stored to the symbol storage area by Function 080 and printed by the specification of Function 081. The symbol data in the area remains reserved until the following processes are executed:
 - Performing Function 080
 - Performing ESC @
 - Performing the printer reset and power-off
- The setting values of Functions 065 to 070 are utilized for the processing of Function 080 or 082. The printable area must be large enough to accommodate different-size symbols. If not, the symbol may not be printed.
- The same symbol data is repeatedly printed by executing Function 081 after performing Function 080.
- The same symbol data is printed differently by executing Function 081 after setting the feature of the symbol by using Functions 065 through 070.
- By using Function 082, the symbol size printed by Function 081 is Available.

QR CODE Symbol Data (cn = 49)

- The symbol data is defined, stored to the symbol storage area by Function 180 and printed by the specification of Function 181. The symbol data in the area remains reserved until the following processes are executed:
 - Performing Function 180
 - Performing ESC @
 - Performing the printer reset and power-off
- The setting values of Functions 165 to 169 are utilized for the processing of Function 180 or 182. The printable area must be large enough to accommodate different-size symbols. If not, the symbol may not be printed.
- The same symbol data is repeatedly printed by executing Function 181 after performing Function 180.
- The same symbol data is printed differently by executing Function 181 after setting the feature of the symbol by using Functions 165 through 169.
- By using Function 182, the symbol size printed by Function 181 is available.

MAXI CODE Symbol Data (cn = 50)

- The symbol data is defined, stored to the symbol storage area by Function 280 and printed by the specification of Function 281. The symbol data in the area remains reserved until the following processes are executed:
 - Performing Function 280
 - Performing ESC @
 - Performing the printer reset and power-off
- The setting value of Functions 265 is utilized for the processing of Function 281. The printable area must be large enough to accommodate different-size symbols. If not, the symbol may not be printed.

- The same symbol data is repeatedly printed by executing Function 281 after performing Function 280.
- The same symbol data is printed differently by executing Function 281 after setting the mode by using Functions 265.
DATAMATRIX Symbol Data (cn=51)
- The symbol data is defined, stored to the symbol storage area by Function 380 and printed by the specification of Function 381. The symbol data in the area remains reserved until the following processes are executed:
 - Performing Function 380
 - Performing ESC @
 - Performing the printer reset and power-off
- The setting value of Functions 367 is utilized for the processing of Function 381. The printable area must be large enough to accommodate different-size symbols. If not, the symbol may not be printed.
- The same symbol data is repeatedly printed by executing Function 381 after performing Function 380.
- The same symbol data is printed differently by executing Function 381 after setting the mode by using Functions 367.

Differences: None

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

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:

$(pL + pH \times 256) = 3$ (pL=3, pH=0)
 cn=48, fn=65
 $0 \leq n \leq 30$

Default:

n=0

Description:

- This command specifies the number of columns in the data area of PDF417.
 - When n=0, automatic processing is set
 - When n is not 0, the number of columns of the data area is set to n code word.

Remarks:

- Settings of this command affect the processing of Functions 081 and 082.
- With auto processing (n=0) specified, the maximum number of columns in the data area is set to 30 columns.
- The following data is excluded from the number of columns:
 - Start and stop patterns
 - Indicator code word of left and right
- With auto processing (n=0) specified, the number of columns is calculated using the following information.
 - Printing area when processing Functions 081, 082
 - Module width (Function 067)
 - Option setting (Function 070)
- The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

Differences:

None

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

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:

- This command specifies the number of rows in the data area of PDF417.
 - When n=0, automatic processing is set
 - When n is not 0, the number of rows is set to n rows.

Remarks:

- Settings of this function affect the processing of Functions 081 and 082.
- With auto processing (n=0) specified, the maximum number of rows is set to 90.
- With auto processing (n=0) specified, the number of rows is calculated by using the following information:
 - Printing area when processing Functions 081, 082
 - Module height (Function 068)
- The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

Differences:

None

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

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:

$(pL + pH \times 256) = 3$ (pL=3, pH=0)
 cn=48
 fn=67
 $2 \leq n \leq 3$

Default:

n=3

Description:

This command sets the width of the module of PDF417 symbol to n dots.

Remarks:

- Settings of this command affect the processing of Functions 081 and 082.
- The setting unit for printer models varies.
- The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

Differences:

- Setting unit(1 dot): 0,125 mm(1/203 inch)

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

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:

$(pL + pH \times 256) = 3$ (pL=3, pH=0)
 cn=48
 fn=68
 $2 \leq n \leq 8$

Default:

n=3

Description:

This command sets the module height of PDF417 to [the module width x n]

Remarks:

- Settings of this command affect the processing of Functions 081 and 082.
- The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

Differences:

None

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

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 ≤ 56

0 ≤ n ≤ 8

Default:

None

Description:

- This command specifies the error correction level for PDF417.
 - The error correction level is set by “level”

Remarks:

- Settings of this function affect the processing of Functions 081 and 082.
- Error correction level specified by “level” (m=48) is as follows:
The number of the error correction codeword is unchanged regardless of the number of codeword in the data area.

n	Function	Number of error correction codeword
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

- The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

Differences:

None

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

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:

This command selects the option for PDF417.

m	Function
0	Select the standard PDF417
1	Select the simplified PDF417

Remarks:

- Settings of this function affect the processing of Functions 081 and 082.
- When simplified PDF417 symbol is canceled, standard PDF417 symbol is automatically selected.
- The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

Differences:

None

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

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:
 $4 \leq (pL + pH \times 256) \leq 65535$ ($0 \leq pL \leq 255$, $0 \leq pH \leq 255$)

cn=48

fn=80

m=48

 $0 \leq d \leq 255$ $k = (pL + pH \times 256) - 3$ **Default:**

None

Description:

This command stores the PDF417 symbol data (d1...dk) in the symbol storage area.

Remarks:

- The data stored in the symbol storage area by this command remains reserved after processing Function 081 or 082.
- The following data should not be included in the symbol data d1..dk since this information is automatically added by the printer:
 - Start pattern and stop pattern.
 - Indicator codeword of left and right.
 - The descriptor of symbol length. (the first code word in the data area)
 - The error correction codeword calculated by modulus 929.
- The setting of this command remains effective until the following processing is performed:
 - Executing Function 080
 - Executing ESC @
 - Executing printer reset or power-off

Differences:

None

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

Code:

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

Default:

None

Description:

This command encodes and prints the PDF417 symbol data in the symbol save area.

Remarks:

- In standard mode, this command is available only when printer is at the beginning of a line or the printer buffer is empty.
- A symbol exceeding the printing area in size can not be printed.
- Printing operation is not processed under the following conditions:
 - There is no data (Function 080 is not processed).
 - If [(number of columns x number of rows) < number of code word] when automatic processing is specified for number of columns and number of rows.
 - Number of code word exceeds 928 in the data area.
- The following data is 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 codewords:
 - 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 automatic processing (Function 065) is specified, the number of columns is calculated using the following information:
 - Current printing area
 - Module width (Function 067)
 - Option setting (Function 070)
 - Codeword in the data area
 - The maximum number of columns is 30.
- When auto processing (Function 066) is specified in page mode, the number of rows is calculated using the following information:
 - Current printing area
 - Module height (Function 068)
 - Codeword in the data area
 - The maximum number of rows is 90.
- Except for character size and upside-down printing mode, none of print mode such as emphasized, double-strike, etc, affects the printing of the symbol.
- In standard mode, the paper feed amount set by the paper feed setting command does not affect printing of the symbol. The printing position returns to the left side of the printable area after printing the symbol.
- In page mode, the printer stores the symbol data in the print buffer without executing actual printing.
- The quiet zone is not included in the printing data. Be sure to include the adequate quiet zone for executing of this command.
 - The quiet zone means the spaces surrounding the symbol such as upper, lower, left, and right spaces.

Differences: None

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

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

Default:

None

Description:

This command encodes and sends the size information of the PDF417 symbol data in the symbol storage area.

Remarks:

■ In standard mode, this command is available only when printer is at the beginning of a line or the printer buffer is empty.

■ The size information for each data is as follows:

Send data	Hex	Decimal	Data
Header	37H	55	1 byte
Identifier	2FH	47	1 byte
Horizontal size	30H – 39H	48 – 57	1 – 5 byte
Separator	1FH	31	1 byte
Vertical size	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

- Horizontal size and vertical size denotes the number of dots of the symbol.

- The following data indicates whether or not printing of the symbol is possible:

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

- The quiet zone is not included in the printing data. Be sure to include the adequate quiet zone for executing of this command.

Differences: None

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

ASCII	GS	(	k	pL	pH	cn	fn	n1	n2
Hex	1D	28	6B	04	00	31	41	n1	n2
Decimal	29	40	107	4	0	49	65	n1	n2

Range:

(pL + pH x 256) = 3 (pL=3, pH=0)

cn=49

fn=65

n1 = 49, 50

n2 =0

Default:

n1=50, n2 =0

Description:

This command sets the QR Code model as follows:

n1	Function
49	Model 1
50	Model 2

Remarks:

- The setting of this command affects <Function 181> and <Function 182>.
- The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

Differences:

None

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

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
 0<=n<9

Default:

n=3

Description:

This command sets the size of the QR Code module to n dots.

Remarks:

- The setting of this command affects the processing of <Function 181> and <Function 182>.
- Since the QR CODE module is square, n = module width = module height
- The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

Differences:

None

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

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:

$(pL + pH \times 256) = 3$ (pL=3, pH=0)
 cn=49
 fn=69
 $48 \leq n \leq 51$

Default:

n=48

Description:

This command sets the error correction level for QR Code.

n	Function	Recovery Amount (%)
48	Error Correction Level L	7
49	Error Correction Level M	15
50	Error Correction Level Q	25
51	Error Correction Level H	30

Remarks:

- The setting of this command affects the processing of <Function 181> and <Function 182>.
- Reed-Solomon correction is employed to generate a series of error correction codewords.
- The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

Differences:

None

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

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:
 $4 \leq (pL + pH \times 256) \leq 7092$ ($0 \leq pL \leq 255$, $0 \leq pH \leq 27$)

cn=49

fn=80

m=48

 $0 \leq d \leq 255$ $k = (pL + pH \times 256) - 3$ **Default:**

None

Description:

This command saves symbol data of the QR Code to the symbol storage area.

Remarks:

- The symbol data is defined, stored to the symbol storage area by Function 180 and printed by the specification of Function 181. The data remains reserved after completion of printing.
- The following shows the data available for encoding of QR code.

Character Type	Usable Characters
Numeric Data	"0" ~ "9"
Alphanumeric Data	"0" ~ "9", "A" ~ "Z", SP, \$, %, *, +, -, ., /, :
Kanji Data	Shift JIS value
8bit Byte Data	00H ~ FFH

- The setting of this command remains effective until the following processing is performed:
 - Performing Function 180
 - Performing ESC @
 - Performing the printer reset or power-off

Differences:

None

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

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

Default:

None

Description:

This command encodes and prints QR Code symbol data saved in the symbol storage area.

Remarks:

- In standard mode, this command is available only when printer is at the beginning of a line or the printer buffer is empty.
- A symbol exceeding the printing area in size can not be printed.
- Printing operation is not processed under the following conditions:
 - There is no data. (Function 180 is not executed)
 - If [(number of columns x number of rows) < number of code words], the numbers of columns and rows are automatically processed.
 - The four types of data compression modes are listed below. According to the symbol data in the data storage area, automatically selects the best suitable compression mode.
 - *Numeric Data Code
 - *Alphanumeric Data mode
 - *Kanji Data mode
 - *8 bit Data mode

- The following data is automatically added by the encoding processing:
 - Position sensor pattern
 - Segregator for the position sensor pattern
 - Timing pattern
 - Format information
 - Version information
 - Error correction code text
 - Pad code text
 - Indicator for counting bits of bytes
 - Mode indicator
 - Concluder
 - Queue pattern (when model 2 is selected)
 - Expansion pattern (when model 1 is selected)
- Except for character size and upside-down printing mode, none of print mode such as emphasized, double-strike, etc, affects the printing of the symbol.
- In standard mode, the paper feed amount set by the paper feed setting command does not affect printing of the symbol. The printing position returns to the left side of the printable area after printing the symbol.
- In page mode, the printer stores the symbol data in the print buffer without executing actual printing.
- The quiet zone is not included in the printing data. Be sure to include the adequate quiet zone for executing of this command.

Differences: None

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

ASCII	GS	(	k	pL	pH	cn	fn	m
Hex	1D	28	6B	03	00	31	52	m
Decimal	29	40	107	3	0	49	82	m

Range:

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

Default:

None

Description:

This command transmits the size information of the QR Code symbol data encoded by Function 180.

Remarks:

■ In standard mode, this command is available only when printer is at the beginning of a line or the printer buffer is empty.

■ The size information of each data is as follows:

Send data	Hex	Decimal	Data
Header	37H	55	1 byte
Flag	36H	54	1 byte
Horizontal size	30H – 39H	48 – 57	1 – 5 byte
Separator	1FH	31	1 byte
Vertical size	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

- Horizontal size and vertical size denotes the number of dots of the symbol.

- The following data indicates whether or not printing of the symbol is possible:

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

- The quiet zone is not included in size information.

Differences: None

<Function 265> GS (k pL pH cn fn n1 n2 (fn=65)**Code:**

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	32	41	n
Decimal	29	40	107	3	0	50	65	n

Range:

(pL + pH x 256) = 3 (pL=3, pH=0)

cn=50

fn=65

 $50 \leq n \leq 52$ **Default:**

n = 50

Description:

This command selects the mode for Maxi Code

n	Function
50	Mode 2 Setting
51	Mode 3 Setting
52	Mode 4 Setting

Remarks:

- The setting of this command affects <Function 281> and <Function 282>.
- The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

Differences:

None

<Function 280> GS (k pL pH cn fn m d1...dk (fn=80)**Code:**

ASCII	GS	(	k	pL	pH	cn	fn	m	d1...dk
Hex	1D	28	6B	pL	pH	32	50	30	d1...dk
Decimal	29	40	107	pL	pH	50	80	48	d1...dk

Range:
 $4 \leq (pL + pH \times 256) \leq 141$ ($4 \leq pL \leq 141$, $0 \leq pH \leq 0$)

cn=50

fn=80

m=48

 $0 \leq d \leq 255$ $k = (pL + pH \times 256) - 3$ **Default:**

None

Description:

This command stores Maxi Code symbol data in the symbol storage area.

Remarks:

- The data stored in the symbol storage area by this command is processed by Functions 281 and 282. The data remains reserved in the storage.
- The setting of this command remains effective until the following processing is performed:
 - Performing Function 280
 - Performing ESC @
 - Performing the printer reset or power-off

Differences:

None

<Function 281> GS (k pL pH cn fn m (fn=81)**Code:**

ASCII	GS	(	k	pL	pH	cn	fn	m
Hex	1D	28	6B	03	00	32	51	m
Decimal	29	40	107	3	0	50	81	m

Range:

(pL + pH x 256) = 3 (pL=3, pH=0)
 cn=50
 fn=81
 m=48

Default:

None

Description:

This command encodes and prints Maxi Code symbol data saved in the storage area.

Remarks:

- In standard mode, this command is available only when printer is at the beginning of a line or the printer buffer is empty.
- A symbol exceeding the printing area in size can not be printed.
- Printing operation is not processed under the following conditions:
 - There is no data. (Function 280 is not executed)
 - The number of numeric characters exceeds 138
 - The number of alphanumeric characters exceeds 93
 - When mode 2 is selected, the primary message does not include all of the following:

Primary Message	Data Number	Character
Postal code	1~9	Numeric
ISO country code	1~3	Numeric
Service type code	1~3	Numeric

- When mode 3 is selected, the primary message does not include all of the following:

Primary Message	Data Number	Character
Postal code	1~6	Setting Code A
ISO country code	1~3	Numeric
Service type code	1~3	Numeric

- Modes 2 and 3 are executed according to the following procedures:
(RS, GS indicates the control code of MAXI CODE. y indicates the 2-byte numeric data.)
 - a) 9-byte data including "[]>", "RS", "01", "GS", "yy" are regarded as the Header.
 - The next data following the Header is the Primary Message.
 - When printing, the Header is placed at the beginning of the Secondary Message.
 - b) When Header data is absent, the data is regarded as Primary Message.
 - c) In the Primary Message, GS is used as the separator that divides message into Postal code, ISO country code, and Class of service. This GS is ignored.
 - d) All data of the Secondary Message is regarded as symbol data.
- In mode 4, 5, 6, all of the data in the symbol storage area is regarded as Primary Message and Secondary Message.
- For error correction codeword, the Reed-Solomon algorithm is employed.
- The following data is automatically added during the encoding process:
 - Position sensor pattern
 - Position pattern
 - Error correction code text
 - Mode separator
 - Pad code text
- In standard mode, the paper feed amount set by the paper feed setting command does not affect printing of the symbol. The printing position returns to the left side of the printable area after printing the symbol.
- In page mode, the printer stores the symbol data in the print buffer without executing actual printing.
- The quiet zone is not included in the printing data. Be sure to include the adequate quiet zone for executing of this command.

Differences: None

<Function 367> GS (k pL pH cn n (fn=67)**Code:**

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	33	43	n
Decimal	29	40	107	3	0	51	67	n

Range:

$(pL + pH \times 256) = 3$ (pL=3, pH=0)
 cn=51
 fn=67
 $2 \leq n \leq 3$

Default:

n=3

Description:

This command sets the DATAMATRIX Code size.

Remarks:

- This command affects the execution of <Function 381>.
- The setting of this command remains effective until ESC @, printer reset or power cycling is executed.
- Since the DATAMATRIX Code module is square, n = module width = module height.

Differences:

None

<Function 380> GS (k pL pH cn fn m d1...dk (fn=80)**Code:**

ASCII	GS	(	k	pL	pH	cn	fn	m	d1...dk
Hex	1D	28	6B	pL	pH	32	50	30	d1...dk
Decimal	29	40	107	pL	pH	50	80	48	d1...dk

Range:
 $0 \leq (pL + pH \times 256) \leq 3116$ ($0 \leq pL \leq 255, 0 \leq pH \leq 13$)

cn=50

fn=80

m=48

 $0 \leq d \leq 255$ $k = (pL + pH \times 256) - 3$ **Default:**

None

Description:

This command stores DATAMATRIX symbol data in the symbol storage area.

Remarks:

- The data stored to the symbol storage area by this command is executed by Function 381. The data remains reserved in the symbol storage area.
- The setting of this command remains effective until the following processing is performed:
 - Performing Function 380
 - Performing ESC @
 - Performing the printer reset or power-off

Differences:

None

<Function 381> GS (k pL pH cn fn m (fn=81)**Code:**

ASCII	GS	(	k	pL	pH	cn	fn	m
Hex	1D	28	6B	03	00	33	51	m
Decimal	29	40	107	3	0	51	81	m

Range:

pL + pH x 256) = 3 (pL=3, pH=0)
 cn=51
 fn=81
 m=48

Default:

None

Description:

This command encodes and prints DATAMATRIX symbol data saved in the storage area.

Remarks:

- In standard mode, this command is available only when printer is at the beginning of a line or the printer buffer is empty.
- A symbol exceeding the printing area in size can not be printed.
- Printing operation is not processed under the following conditions:
 - There is no data. (Function 380 cannot be executed)
 - The number of alphanumeric characters exceeds 2334.
 - The number of 8bit byte characters exceeds 1558.
 - The number of numeric characters exceeds 3116.
- DATAMATRIX uses ECC 200 symbols.
- For error correction codeword, the Reed-Solomon algorithm is employed.
- The following data is automatically added during the encoding process:
 - Position pattern
 - Error correction code text
 - Mode separator
 - Pad code text

- In standard mode, the paper feed amount set by the paper feed setting command does not affect printing of the symbol. The printing position returns to the left side of the printable area after printing the symbol.
- In page mode, the printer stores the symbol data in the print buffer without executing actual printing.
- The quiet zone is not included in the printing data. Be sure to include the adequate quiet zone for executing of this command.

Differences: None

GS :**Function:** Start/end macro definition

Code:	ASCII	GS	:
	Hex	1D	3A
	Decimal	29	58

Range: None**Default:** None**Description:** ■ This command starts or ends macro definition.

Remarks:

- The printer starts macro definition during normal operation and finishes it during macro definition upon receiving this command.
- The printer performs printing during macro definition.
- The macro is executed by GS ^.
- The maximum number of macro data to be defined varies with respect to printer models. The data exceeding this limit is not stored.
- ESC @ does not clear the existing defined macro. The macro remains effective until the printer reset and power cycling are executed.

Differences: None

GS B

Function: Turns white/black reverse printing mode on / off

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

Range: $0 \leq n \leq 255$

Default: n=0

Description:

- This command selects white/black reverse printing mode by setting the least significant bit of n.
 - 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.

Remarks:

- This command does not affect multi-byte characters such as Kanji, Japanese and Korean.
- The right space defined by ESC SP is affected by this command.
- In white/black reverse mode, the underline mode is not effective.
- This mode remains effective until ESC @, printer reset or power cycling is executed.

Differences: None

GS H

Function: Selects print position of HRI characters

Code:

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

Range: $0 \leq n \leq 3$, $48 \leq n \leq 51$

Default: n=0

Description: ■ This command selects the printing position of HRI (Human Readable Interpretation) characters when printing a bar code.

- The printing position is set according to the value of n 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

Remarks: ■ The font of the HRI characters is defined by GS f.
 ■ The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

Differences: None

GS I

Function: Transmits printer ID

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

Range: $1 \leq n \leq 69$

Default: None

Description: ■ This command transmits the printer ID or information.

- Transmits 1 byte of printer ID, using n as follows:

n	Printer ID	Specification
1,49	Printer model ID	Printer model
2,50	Type ID	Printer type
3,51	Printer feature ID	Printing method and Printer size

- Transmits specified printer information, using n as follows:

n	Printer ID type	Specification
65	Firmware version	Firmware version
66	Manufacturer	BIXOLON
67	Printer model	Printer model
69	Code page	Currently enabled code page

Remarks: ■ Printer information (When n = 65, 66, 67, 69) consist of [Header ~ NULL] data as shown below:

Transmitted data	Hex	Decimal	Amount of data
Header	5FH	95	1byte
Printer information	Depends on the model	Depends on the model	0-15 bytes
NUL	00H	0	1byte

- The firmware version can be confirmed by self test printing.
- This command can be executed in real-time command mode using DLE.

Differences: ■ The printer ID is shown according to printer models as follows:

Printer ID	SPP-R200
1(Printer model ID)	0x41
2(Type ID)	Type ID varies depending on functions the printer supports as follows: - 0x01 (Multi-byte character) - 0x02 (Autocutter) - 0x03 (Autocutter + Multi-byte character) - 0x04 (Customer display) - 0x05 (Multi-byte character + Display) - 0x07 (Customer display + Autocutter + Multi-byte Character)
3(Printer feature ID)	0x69
66(Manufacturer)	BIXOLON
67(Printer model)	SPP-R200
69(Language of Font)	Code page currently being used. Refer to cod page setting command, ESC t.

GS I b

Function: Transmits battery status

Code:	ASCII	GS	I	b
	Hex	1D	49	62
	Decimal	29	73	98

Range: None

Default: None

Description: ■ This command transmits the battery power status of the printer.
 • The printer transmits [Header ~ NUL] data as shown below:

Transmitted data	Hex	Decimal	Amount of data
Header	37H	55	1byte
Identifier	45H	69	1byte
Remaining battery power	30h-34H	48-52	1byte
NUL	00H	0	1byte

• “Remaining battery power” is indicated as following:

Hex	Decimal	Remaining battery power level
30H	48	Full(F)
31H	49	High(H)
32H	50	Middle(M)
33H	51	Low(L)

Remarks: ■ The remaining battery amount can be examined by the battery LED.
 ■ When the remaining battery power reaches Low level, the red LED of battery starts blinking as an alert signal.
 ■ This command can be executed in real-time command mode using DLE.

Differences: None

GS L

Function: Set left margin

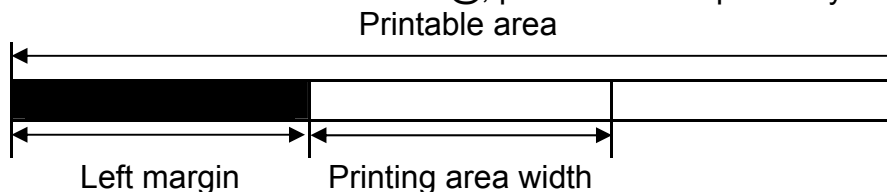
Code:	ASCII	GS	L	nL	nH
	Hex	1D	4C	nL	nH
	Decimal	29	76	nL	nH

Range: $0 \leq nL \leq 255, 0 \leq nH \leq 255$

Default: $(nL + nH \times 256) = 0$ ($nL=0, nH=0$)

Description: This command sets the left margin specified to $[(nL + nH \times 256) \times (\text{horizontal motion units})]$.

- Remarks:**
- The left margin is not effective in page mode. If the left margin is enabled in page mode, the setting is available when the printer returns to standard mode.
 - When the setting is beyond the printable area, the left margin is automatically set to the maximum value of the printable area.
 - Since the left margin is the same as the leftmost side of the printable area, the left side of the printable area is changed according to the left margin specified.
 - The setting of this command remains effective until ESC @, printer reset or power cycling is executed.



Differences: None

GS W

Function: Set printing area width

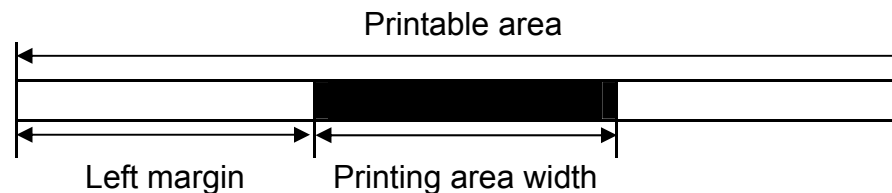
Code:	ASCII	GS	W	nL	nH
	Hex	1D	57	nL	nH
	Decimal	29	87	nL	nH

Range: $0 \leq nL \leq 255, 0 \leq nH \leq 255$

Default: $(nL + nH \times 256) = 384$ ($nL=128, nH=1$)

Description: This command sets the printing area width to $[(nL + nH \times 256) \times (\text{horizontal motion units})]$.

- Remarks:**
- The printing area width is not effective in page mode. If the printing area width is enabled in page mode, the setting is available when the printer returns to standard mode.
 - When (left margin + printing area width) exceeds the printable area, the printing area width is automatically set to (printing area width - left margin).
 - The setting of this command remains effective until ESC @, printer reset or power cycling is executed.



Differences: None

GS \

Function: Set relative vertical print position in page mode

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

Range: $0 \leq nL \leq 255, 0 \leq nH \leq 255$

Default: None

Description: This command moves the vertical print position to $[(nL + nH \times 256) \times (\text{vertical or horizontal motion units})]$ relative to the current position in page mode.

Remarks:

- This command is effective in page mode. When used in standard mode, it is ignored.
- The setting exceeding the print area set by ESC W is ignored.
- With standard mode selected, the vertical motion unit is used.
- In page mode, the horizontal motion unit is used when printing start position is defined to the upper right or lower right of print area using ESC T, otherwise, the vertical motion unit is used.

Differences: None

GS ^

Function: Execute macro

Code:	ASCII	GS	^	r	t	m
	Hex	1D	5E	r	t	m
	Decimal	29	94	r	t	m

Range: $0 \leq r \leq 255$
 $0 \leq t \leq 255$
 $m=0, 1$

Default: None

Description: ■ This command executes a macro using parameters as following:

- r specifies the number of times to execute the macro.
- t specifies the waiting time before the macro is executed.
- m specifies macro executing mode as shown below.

m	Function
0	Executes the macro r times continuously at the interval specified by t.
1	The printer waits for the paper FEED button to be pressed for the time specified by t. The macro is executed once when the button is pressed. This operation is repeated r times.

Remarks: ■ The macro is defined by GS:.
 ■ If the macro is not defined or $r = 0$, the command is ignored.
 ■ The macro function is useful to print the same data repeatedly.

Differences: None

GS f

Function: Select font for HRI characters

Code:

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

Range: n=0, 1, 48, 49

Default: n=0

Description: This command selects a font for the HRI(Human Readable Interpretation) characters used when printing a bar code, using n as follows:

n	Font
0, 48	Font A
1, 49	Font B

Remarks:

- The setting of this command is applied to only HRI characters.
- The printing position of HRI characters are specified by GS H.
- The configurations of Font A and B vary depending on the printer model.

Differences: ■ Configuration of font: FontA(12x24, Font B(9x24)

GS h

Function: Selects bar code height

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

Range: $1 \leq n \leq 255$

Default: n=162

Description: This command sets the height of the bar code to n dots.

Remarks:

- The unit of n depends on the printer model.
- The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

Differences:

- Unit of one dot: 0.125mm(1/203 inch)

GS k

Function: Print bar code

Code:

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 $0 \leq m \leq 6$ ② $65 \leq m \leq 73$
K, m, n depend on the barcode system

Default: None

Description: ■ This command selects a bar code system and prints the bar code.

- k indicates the number of bytes of bar code data.
- n specifies the number of bytes of bar code data.
- d specifies the character code data of the bar code data to be printed.

For range ①

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

For range ②

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

Remarks:

- The bar code width exceeding the print area can not be specified.
- Except for character size and upside-down printing mode, none of print mode such as emphasized, double-strike, etc, affects the printing of the barcode.
- The quiet zone of the bar code (left and right spaces of the bar code) should be considered when using this command.

Differences: None

GS r

Function: Transmit status

Code:

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

Range: n=1, 2, 49, 50

Default: None

Description: The command transmits the status specified by n as follows:

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

Remarks:

- The status is one byte.
- The status to be transmitted is as follows:
 - Paper sensor status (n=1, 49):

Bit	Off/On	Hex	Decimal	Function
0, 1	Off	00	0	Paper near-end sensor: Paper adequate
	On	03	3	Paper near-end sensor: Paper near end
2, 3	Off	00	0	Paper end sensor: Paper present
	On	0C	12	Paper 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 can not be executed when the printer is offline due to the lack of paper. 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

- This command can be executed in real-time mode using DLE.

Differences: None

GS v 0

Function: Print raster bit image.

Code:	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: $0 \leq m \leq 3$, $48 \leq m \leq 51$
 $1 \leq (xL + xH \times 256) \leq 128$ ($0 \leq xL \leq 128$, $xh=0$)
 $1 \leq (yL + yH \times 256) \leq 4095$ ($0 \leq yL \leq 255$, $0 \leq yH \leq 15$)
 $0 \leq d \leq 255$
 $k = (xL + xH \times 256) \times (yL + yH \times 256)$

Default: None

Description: ■ This command prints a raster bit image according to the mode defined by m.

DPI : Dots per Inch (25.4mm)

m	Mode	Vertical dot density (DPI)	Horizontal dot density (DPI)
0, 48	Normal	203	203
1, 49	Double-width	203	203/2
2, 50	Double-height	203/2	203
3, 51	Quadruple	203/2	203/2

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

Remarks:

- In standard mode, this command is effective when the printer buffer is empty and the printer is in the beginning of the line. If the buffer is not empty, after processing m, the printer treats the following data as normal data.
- In page mode, the bit image is stored in the print buffer, not being printed.
- None of the print modes such as emphasized, double-strike, etc, affects the printing of the bit image.
- The default dot density set by GS L is applied to printing of the bit image.

Differences:

DPI : Dots per Inch (25.4mm)

m	Mode	Vertical dot density (DPI)	Horizontal dot density (DPI)
0, 48	Normal	203	203
1, 49	Double-width	203	203/2
2, 50	Double-height	203/2	203
3, 51	Quadruple	203/2	203/2

GS w

Function: Set bar code width

Code:

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

Range: $2 \leq n \leq 6$

Default: n=3

Description: ■ This command sets 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	0.250	0.250	0.625
3	0.375	0.375	1.000
4	0.500	0.500	1.250
5	0.625	0.625	1.625
6	0.750	0.750	2.000

- n specifies the bar code module width.

Remarks:

- The setting of this command is effective for the following bar codes:
 - Multi-level bar codes (UPC-A, UPC-E, JAN13, HAN8, CODE93, CODE128)
 - Binary-level bar codes (CODE39, ITF, CODABAR)
- The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

Differences: None

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