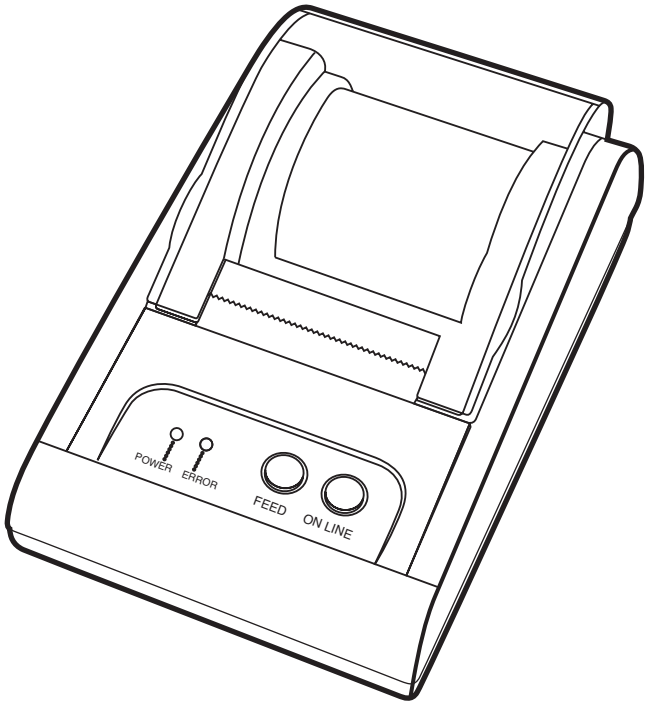
BIXOLON®
SAMSUNG mini printers

SAMSUNG
SAMSUNG ELECTRO-MECHANICS

USER'S MANUAL
STP-103

THERMAL PRINTER



KN04-00003A
Rev. 2.6

BIXOLON®
SAMSUNG mini printers

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Safety Precautions

In using the present appliance, please keep the following safety regulations in order to prevent any hazard or material damage.

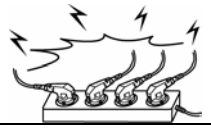
WARNING

Violating following instructions can cause serious injury or death.

Do not plug several products in one multi-outlet.

- This can provoke over-heating and a fire.
- If the plug is wet or dirty, dry or wipe it before usage.
- If the plug does not fit perfectly with the outlet, do not plug in.
- Be sure to use only standardized multi-outlets.

PROHIBITED



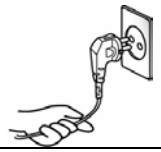
You must use only the supplied adapter.

- It is dangerous to use other adapters.

Do not pull the cable to unplug.

- This can damage the cable, which is the origin of a fire or a breakdown of the printer.

PROHIBITED



Keep the plastic bag out of children's reach.

- If not, a child may put the bag on his head.

PROHIBITED

Do not plug in or unplug with your hands wet.

- You can be electrocuted.

PROHIBITED

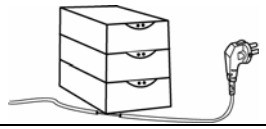
If you observe a strange smoke, odor or noise from the printer, unplug it before taking following measures.

- Switch off the printer and unplug the set from the mains.
- After the disappearance of the smoke, call your dealer to repair it.

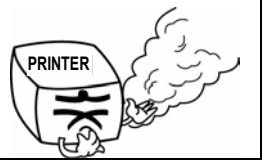
Do not bend the cable by force or leave it under any heavy object.

- A damaged cable can cause a fire.

PROHIBITED



TO UNPLUG



WARNING

Violating following instructions can cause slight wound or damage the appliance.

Keep the desiccant out of children's reach.

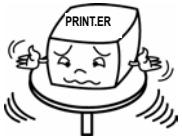
- If not, they may eat it.

PROHIBITED

Install the printer on the stable surface.

- If the printer falls down, it can be broken and you can hurt yourself.

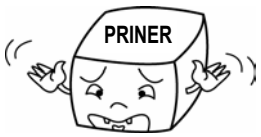
PROHIBITED



Use only approved accessories and do not try to disassemble, repair or remodel it for yourself.

- Call your dealer when you need these services.

DISASSEMBLING PROHIBITED



Do not use the printer when it is out of order. This can cause a fire or an electrocution.

- Switch off and unplug the printer before calling your dealer.

TO UNPLUG

Do not let water or other foreign objects in the printer.

- If this happened, switch off and unplug the printer before calling your dealer.

PROHIBITED

Warning – U.S

This equipment has been tasted and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and uses in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This equipment has been tasted and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Notice - Canada

This Apparatus complies with class "A" limits for radio interference as specified in the Canadian department of communications radio interference regulations.

Introduction

The STP-103 and STP-103P Roll Printer are designed for use with electronic instruments such as system ECR, POS, banking equipment peripheral equipment, etc.

The main features of the printer are as follows:

1. High speed printing.
2. Low noise thermal printing.
3. RS-232 serial interface (STP-103S), Parallel interface (STP-103P).
4. The data buffer allows the unit to receive print data even during printing.
5. Different print densities can be selected by DIP switches.

Please be sure to read the instruction in this manual carefully before using your new STP-103S and STP-103P.

NOTE

The socket-outlet shall be near the equipment and it shall be easy accessible.

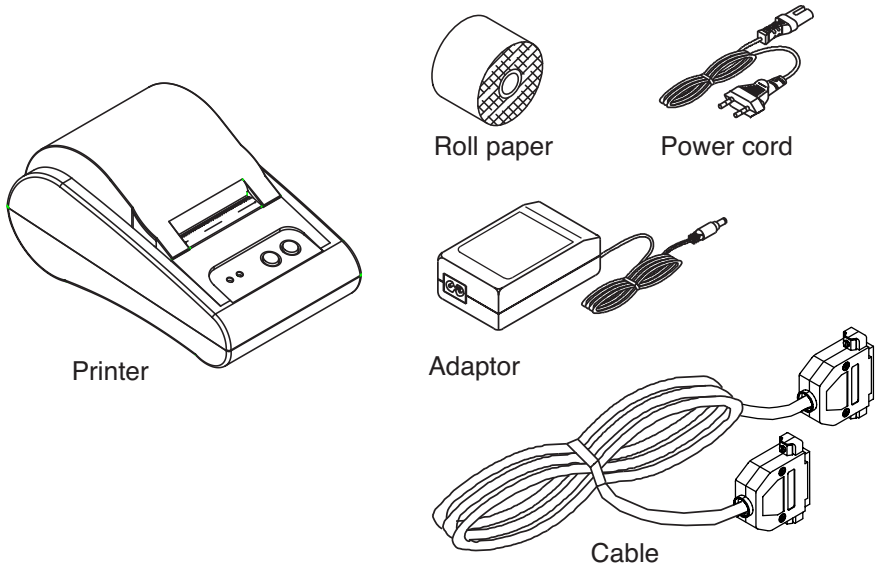
Table of Contents

Chapter 1. Unpacking

1-1. Checking the contents of the Printer

The items illustrated below are included with your printer.
If any items are damaged or missing, please contact your dealer for assistance.

Unpacking

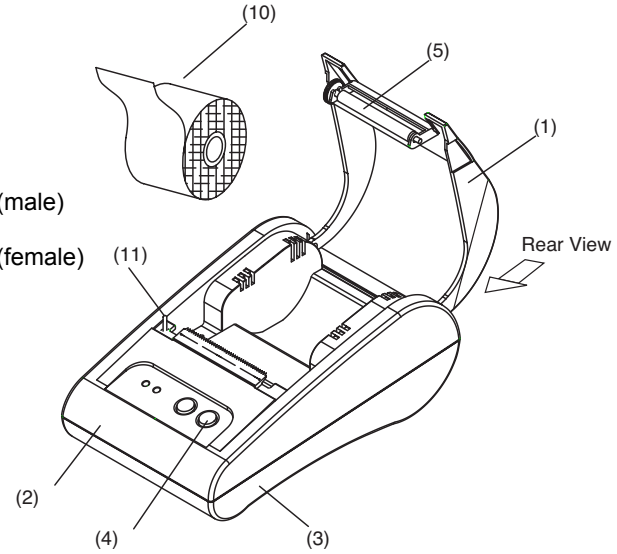


1-2. Locating the Printer

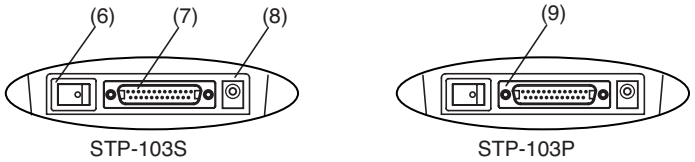
Avoid location in direct sunlight or excessive heat.
Avoid or storing the printer in the place subject to excessive moisture.
Do not use or store, horizontal surface for the printer. Avoid places subject to intense vibration or shock.
Make sure that there is enough space around the printer so that it can be used easily.

1-3. Printer Part Names

(1) Cover top
(2) Case top
(3) Case bottom
(4) Control panel
(5) Roller
(6) Power switch
(7) Interface connector (male)
(8) DC Jack
(9) Interface connector (female)
(10) Roll paper
(11) Detector switch



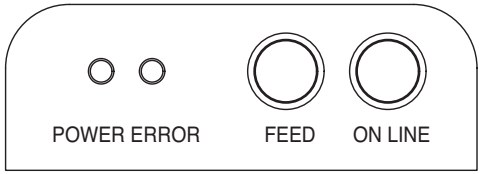
Rear View



Control Panel

1-4. Operating Control Panel

The control panel has two buttons and two lights.



Buttons

The control panel buttons perform paper feeding and on line function.

ON LINE

Press the ON LINE button to ready to receive data from the computer.

FEED

Press the FEED button once to advance paper one line. You can also press the FEED button continuously to feed paper continuously.

Feed button is valid when ON LINE button is off.

Indicator Lights

The control panel lights provide information on printer conditions.

POWER (green)

The POWER light is on when the printer power is on.

ERROR (red)

1) The error LED blinks fast when paper is out.
2) The error LED blinks when the Near End Sensor triggered.

Chapter 2. Connecting the Cable

2-1. Connecting the AC adapter to your printer

When the printer is used, use the optional AC adapter, NH36-240150-I1 for your printer.

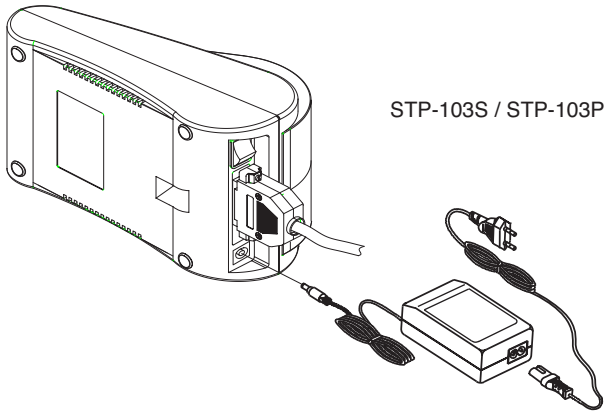
WARNING
Using an incorrect power supply may cause fire or electrical.

CAUTION
When connecting or disconnecting the power supply from the printer, make sure that the power supply is not plugged into an electrical outlet ; otherwise you may damage the power supply or the printer

1. Make sure that the printer's power switch is turned off, and that the power supply's power cord is unplugged from the electrical outlet.

2. Check the label on the power supply to make sure that the required voltage matches that of your electrical outlet.

3. Plug the power supply's DC cable connector into the printer's power connector as shown below.



4. Plug the AC adapter's power cord into an electrical outlet.

NOTE
To remove the DC cable connector grasp the connector at the arrow and pull it straight out. Make sure that the main unit's power cord is unplugged before you disconnect the DC cable connector.

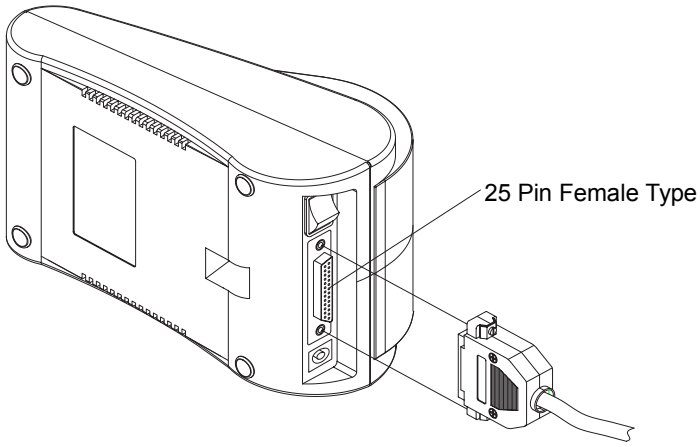
2-2. Connecting the printer to your Computer

STP-103S

You need an appropriate serial interface cable to connect your computer to the printer's built-in interface.

1. Make sure that both the printer and computer are turned off :
   then plug the cable connector securely into the printer's interface connector.

2. Tighten the screws on both sides of the cable connector.



3. Plug the other end of the cable into the computer.

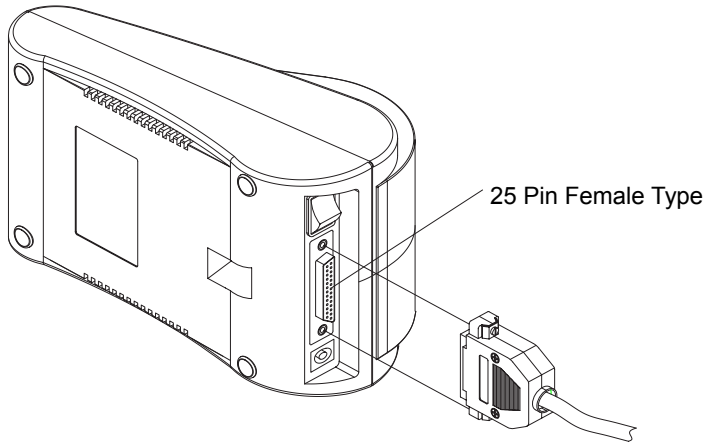
2-2. Connecting the printer to your Computer

STP-103P

You need an appropriate parallel interface cable to connect your computer to the printer's built-in interface.

1. Make sure that both the printer and computer are turned off :
   then plug the cable connector securely into the printer's interface connector.

2. Tighten the screws on both sides of the cable connector.



3. Plug the other end of the cable into the computer.

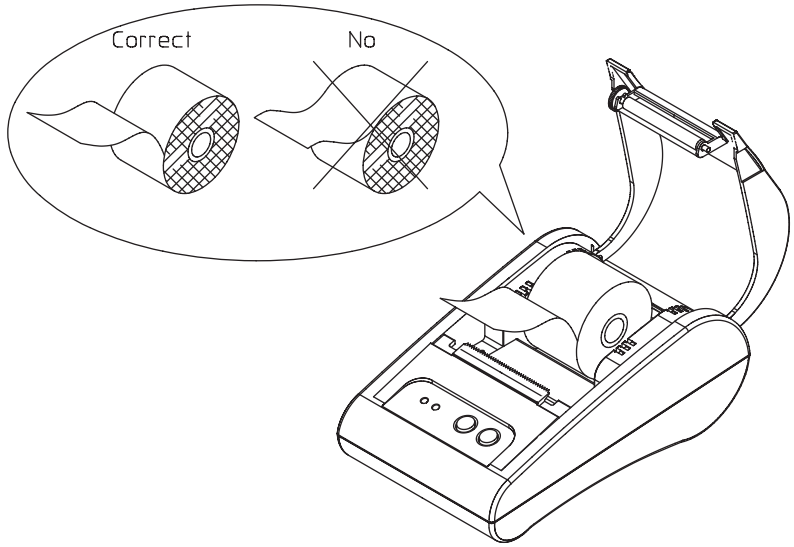
Chapter 3. Installing the Paper Roll

Use a paper roll that matches the specifications.

NOTE
The printer must be turned off before installing the paper roll.

1. Open the printer cover and remove the used paper roll core if there is one.

2. Insert the paper roll as shown below.



3. Pull out the paper roll until the paper comes out from the top of the printer. Then close the printer cover.

4. Turn on the Printer.

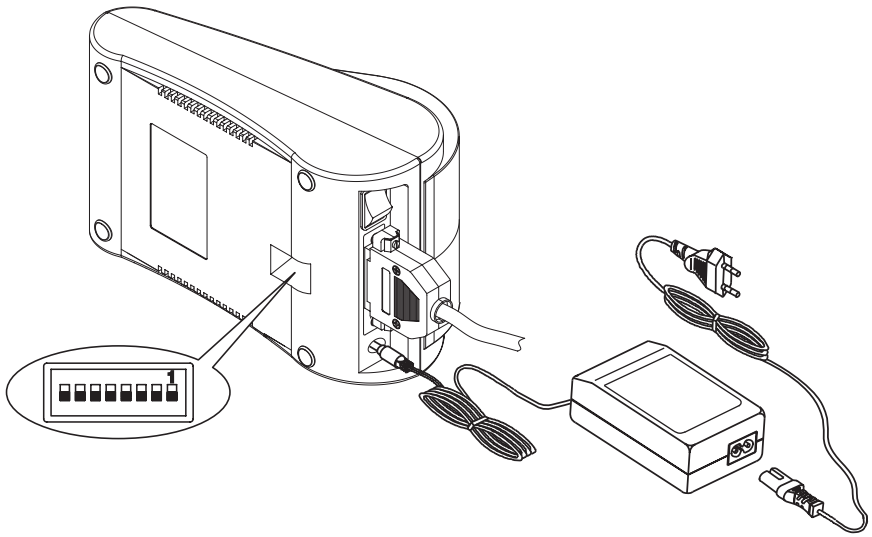
Chapter 4. Setting the DIP Switches

CAUTION
Turn off the printer while setting the DIP switch to prevent an electrical short, which can damage the printer.

You can change your interface and printer density settings by changing the DIP switch setting.

1. Make sure the printer is turned off.

2. There are a switch. Notice that ON is marked on each set of switches.
   Use tweezers or another narrow tool to move the switches.



3. Use the following tables to set the DIP switches.

DIP Switch Functions

BPS	SW1	SW2	SW3	Default
2400 bps	On	Off	Off	9600
4800 bps	Off	On	Off	
9600 bps	Off	Off	On	
19200 bps	On	Off	On	
38400 bps	On	On	Off	
57600 bps	Off	On	On	
115200 bps	On	On	On	

SW	Function	On	Off	Default
SW4	Density	Dark	Normal	Normal
SW5	Handshaking	Xon/Xoff	RTS/CTS	RTS/CTS (DTR/DSR)
SW8	Firmware Download	Download	Printing	Printing

SW7		SW6		Default
Language		CPL		
On	English	On	24	English 32CPL
		Off	32	
Off	Korean	On	Johap	
		Off	Wansung	

Chapter 5. Running the Self-test

1. Self-test printing

   1) Starting the self test

      To start printing the self-test on a paper roll, hold down the PAPER FEED button and turn on the printer with the cover closed. The self-test prints the current printer settings, which provide the following information :

      - control software version

      - dip switch state

   2) Standby state

      After printing the current printer status, the printer prints the message "Please press the FEED BUTTON.". The LED indicator blinks and the printer enter the test printing standby state.
      Press the FEED BUTTON to start test printing.

2. Ending the self-test

   After a number of lines are printed, the printer indicates the end of the self-test by printing " ** TEST COMPLETED ** ".
   If the self-test is not completed, then you must reboot your printer.

Chapter 6. Hexadecimal Dumping

This feature allows experienced users to see exactly what data is coming to the printer. This can be useful in finding software problems. When you turn on the hexadecimal dump function, the printer prints all commands and data in hexadecimal format along with a guide section to help you find specific commands.

To use the hexadecimal dump function, follow these steps:

1. After you make sure that the printer is off. Close the cover.

2. Turn on the printer, while holding down the FEED button and ONLINE button.

3. Then the printer enters the hexadecimal dump mode.

4. Run any software program that sends data to the printer. The printer will print all the codes it receives in a two-column format. The first column contains the hexadecimal codes and the second column gives the ASCII characters that corresponds to the codes.

```
1B  21  00  1B  26  02  40  40      . ! . . & . @ @
1B  25  01  1B  63  34  00  1B      . % . . c4 . .
41  42  43  44  45  46  47  48      ABCDEFGH
```

   • A period (.) is printed for each code that has no ASCII equivalent.
   • During the hex dumping, any commands other than **DEL EOT** and **DLE ENQ** do not function.

5. When the printing finishes, turn off the printer.

6. Turn on the printer and then the hexadecimal mode is off.

Chapter 7. Code Table

The following pages show the character code tables. To find the character corresponding to a hexadecimal number, count across the top of the table for the
For example, 4A=J.

	HEX	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
HEX	BIN	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	NUL 00	DLE 16	SP 32	0 48	@ 64	P 80	` 96	p 112	Ç 128	É 144	á 160	▒ 176	└ 192	╨ 208	α 224	≡ 240
1	0001	01	XON 17	! 33	1 49	A 65	Q 81	a 97	q 113	ü 129	æ 145	í 161	▓ 177	┴ 193	╤ 209	β 225	± 241
2	0010	02	18	" 34	2 50	B 66	R 82	b 98	r 114	é 130	Æ 146	ó 162	⁞ 178	┬ 194	╥ 210	Γ 226	≤ 242
3	0010	03	XOFF 19	# 35	3 51	C 67	S 83	c 99	s 115	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≥ 243
4	0100	EQT 04	20	$ 36	4 52	D 68	T 84	d 100	t 116	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	0101	ENQ 05	21	% 37	5 53	E 69	U 85	e 101	u 117	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	0110	06	22	& 38	6 54	F 70	V 86	f 102	v 118	å 134	û 150	ª 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	0111	07	23	' 39	7 55	G 71	W 87	g 103	w 119	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	1000	BS 08	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 249
9	1001	HT 09	25	) 41	9 57	I 73	Y 89	i 105	y 121	ë 137	ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	θ 233	• 249
A	1010	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	• 250
B	1011	11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	ï 139	¢ 155	1/2 171	╗ 187	╦ 203	▌ 219	δ 235	√ 251
C	1100	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	¦ 124	î 140	£ 156	1/4 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252
D	1101	CR 13	GS 29	- 45	= 61	M 77	] 93	m 109	} 125	ì 141	¥ 157	¡ 173	╜ 189	═ 205	▐ 221	ϕ 237	2 253
E	1110	14	30	. 46	> 62	N 78	‾ 94	n 110	~ 126	Ä 142	Pt 158	« 174	╛ 190	╬ 206	▀ 222	∈ 238	▪ 254
F	1111	15	31	/ 47	? 63	O 79	_ 95	o 111	SP 127	Å 143	ƒ 159	» 175	┐ 191	╧ 207	■ 223	∩ 239	SP 255

PC437 : USA, Standard Europe

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	▔ 128	┴ 144	SP 160	ー 176	タ 192	ミ 208	二 224	× 240
1	0001	▔ 129	┬ 145	° 161	ア 177	チ 193	ム 209	上 225	円 241
2	0010	▬ 130	┼ 146	「 162	イ 178	ツ 194	メ 210	土 226	年 242
3	0010	▬ 131	├ 147	」 163	ウ 179	テ 195	モ 211	王 227	月 243
4	0100	▀ 132	▔ 148	、 164	エ 180	ト 196	ヤ 212	◢ 228	日 244
5	0101	▀ 133	─ 149	・ 165	オ 181	ナ 197	ユ 213	◣ 229	時 245
6	0110	▀ 134	│ 150	ヲ 166	カ 182	ニ 198	ヨ 214	◥ 230	分 246
7	0111	▀ 135	│ 151	ァ 167	キ 183	ヌ 199	ラ 215	◤ 231	秒 247
8	1000	▏ 136	┌ 152	ィ 168	ク 184	ネ 200	リ 216	♠ 232	〒 249
9	1001	▏ 137	┐ 153	ゥ 169	ケ 185	ノ 201	ル 217	♥ 233	市 249
A	1010	▏ 138	└ 154	ェ 170	コ 186	ハ 202	レ 218	◆ 234	区 250
B	1011	▏ 139	┘ 155	ォ 171	サ 187	ヒ 203	ロ 219	♣ 235	町 251
C	1100	▏ 140	╭ 156	ャ 172	シ 188	フ 204	ワ 220	● 236	村 252
D	1101	▏ 141	╮ 157	ュ 173	ス 189	ヘ 205	ン 221	○ 237	人 253
E	1110	▏ 142	╯ 158	ョ 174	セ 190	ホ 206	゛ 222	／ 238	田 254
F	1111	┼ 143	╰ 159	ッ 175	ソ 191	マ 207	゜ 223	＼ 239	SP 255

Page1 : KATAKANA

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	á 160	▒ 176	└ 192	ð 208	Ó 224	¯ 240
1	0001	ü 129	æ 145	í 161	▒ 177	┴ 193	Đ 209	ß 225	± 241
2	0010	é 130	Æ 146	ó 162	▒ 178	┬ 194	É 210	Ô 226	‗ 242
3	0010	â 131	ô 147	ú 163	│ 179	├ 195	Ë 211	Ò 227	3/4 243
4	0100	ä 132	ö 148	ñ 164	┤ 180	─ 196	È 212	õ 228	244
5	0101	à 133	ò 149	Ñ 165	Á 181	┼ 197	i 213	Õ 229	§ 245
6	0110	å 134	û 150	ª 166	Â 182	ã 198	f 214	u 230	÷ 246
7	0111	ç 135	ù 151	º 167	À 183	Ã 199	Î 215	þ 231	¸ 247
8	1000	ê 136	ÿ 152	¿ 168	© 184	╚ 200	ï 216	p 232	° 249
9	1001	ë 137	ö 153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	1010	è 138	Ü 154	¬ 170	‖ 186	╩ 202	┌ 218	Û 234	• 250
B	1011	ï 139	ø 155	1/2 171	╗ 187	╦ 203	▉ 219	Ù 235	1 251
C	1100	î 140	£ 156	1/4 172	╝ 188	╠ 204	▄ 220	ý 236	3 252
D	1101	ì 141	Ø 157	¡ 173	¢ 189	═ 205	¦ 221	Ý 237	2 253
E	1110	Ä 142	X 158	« 174	¥ 190	╬ 206	ì 222	¯ 238	▪ 254
F	1111	Å 143	ƒ 159	» 175	┐ 191	¤ 207	▄ 223	´ 239	SP 255

PC850 : Multilingual

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	á 160	▒ 176	└ 192	╨ 208	α 224	240
1	0001	ü 129	À 145	í 161	▒ 177	┴ 193	╤ 209	β 225	± 241
2	0010	é 130	É 146	ó 162	▒ 178	┬ 194	╥ 210	Γ 226	≤ 242
3	0010	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≥ 243
4	0100	ä 132	õ 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	0101	à 133	ò 149	Ñ 165	┤ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	0110	Á 134	ú 150	ª 166	╡ 182	╞ 198	╫ 214	µ 230	÷ 246
7	0111	ç 135	ù 151	º 167	╢ 183	╟ 199	╪ 215	τ 231	≈ 247
8	1000	ê 136	Ì 152	¿ 168	‖ 184	╚ 200	╧ 216	Φ 232	° 249
9	1001	Ê 137	õ 153	Ò 169	╣ 185	╔ 201	┘ 217	θ 233	• 249
A	1010	è 138	Ü 154	¬ 170	‖ 186	╩ 202	┌ 218	Ω 234	• 250
B	1011	Í 139	¢ 155	1/2 171	╗ 187	╦ 203	▉ 219	δ 235	251
C	1100	Ô 140	£ 156	1/4 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252
D	1101	ì 141	Ù 157	¡ 173	╜ 189	═ 205	▌ 221	ϕ 237	2 253
E	1110	Ã 142	Pt 158	« 174	╛ 190	╬ 206	▌ 222	∈ 238	▪ 254
F	1111	Â 143	Ó 159	» 175	┐ 191	╧ 207	▄ 223	∩ 239	SP 255

PC860 : Portuguese

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	¦ 160	▒ 176	└ 192	╨ 208	α 224	240
1	0001	ü 129	É 145	´ 161	▒ 177	┴ 193	╤ 209	β 225	± 241
2	0010	é 130	Ê 146	ó 162	▒ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	0010	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	0100	Â 132	Ë 148	¨ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	0101	à 133	Ï 149	¸ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	0110	134	û 150	³ 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	0111	ç 135	ù 151	— 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	1000	ê 136	¤ 152	Î 168	╕ 184	╚ 200	╪ 216	Φ 232	° 249
9	1001	ë 137	Ô 153	⌐ 169	╣ 185	╔ 201	┘ 217	θ 233	• 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	1011	Ï 139	¢ 155	1/2 171	╗ 187	╦ 203	█ 219	δ 235	251
C	1100	î 140	£ 156	1/4 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252
D	1101	═ 141	Ù 157	3/4 173	╜ 189	═ 205	▌ 221	ϕ 237	² 253
E	1110	À 142	Û 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254
F	1111	§ 143	ƒ 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255

PC863 : Canadian – French

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	á 160	▒ 176	└ 192	╨ 208	α 224	240
1	0001	ü 129	æ 145	í 161	▒ 177	┴ 193	╤ 209	β 225	± 241
2	0010	é 130	Æ 146	ó 162	▒ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	0010	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	0100	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	0101	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	0110	å 134	û 150	ª 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	0111	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	1000	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 249
9	1001	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	θ 233	• 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	1011	ï 139	ø 155	1/2 171	╗ 187	╦ 203	█ 219	δ 235	251
C	1100	î 140	£ 156	1/4 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252
D	1101	ì 141	Ø 157	¡ 173	╜ 189	═ 205	▌ 221	ϕ 237	² 253
E	1110	Ä 142	Pt 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254
F	1111	Å 143	ƒ 159	¤ 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255

PC865 : Nordic

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	á 160	▒ 176	└ 192	ð 208	Ó 224	¯ 240
1	0001	ü 129	æ 145	íz 161	▓ 177	┴ 193	Ð 209	ß 225	± 241
2	0010	é 130	Æ 146	ó 162	▓ 178	┬ 194	Ê 210	Ô 226	= 242
3	0011	â 131	ô 147	ú 163	│ 179	├ 195	Ë 211	Ò 227	3/4 243
4	0100	ä 132	ö 148	ñ 164	┤ 180	─ 196	è 212	õ 228	¶ 244
5	0101	à 133	ò 149	Ñ 165	Á 181	┼ 197	€ 213	σ 229	§ 245
6	0110	å 134	û 150	ª 166	Â 182	ã 198	Í 214	µ 230	÷ 246
7	0111	ç 135	ù 151	º 167	À 183	Ã 199	Î 215	þ 231	¸ 247
8	1000	ê 136	ÿ 152	¿ 168	© 184	╚ 200	Ï 216	Þ 232	° 248
9	1001	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	° 250
B	1011	ï 139	ø 155	1/2 171	╗ 187	╦ 203	▒ 219	Ù 235	¹ 251
C	1100	î 140	£ 156	1/4 172	╝ 188	╠ 204	▄ 220	ý 236	³ 252
D	1101	ì 141	Ø 157	3/4 173	¢ 189	═ 205	¦ 221	Ý 237	² 253
E	1110	Ä 142	× 158	« 174	¥ 190	╬ 206	▌ 222	¯ 238	■ 254
F	1111	Å 143	ƒ 159	» 175	┐ 191	¤ 207	▄ 223	´ 239	SP 255

Space Page

	HEX	B	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	á 160	▒ 176	└ 192	ð 208	Ó 224	¯ 240
1	0001	ü 129	æ 145	íz 161	▓ 177	┴ 193	Ð 209	ß 225	± 241
2	0010	é 130	Æ 146	ó 162	▓ 178	┬ 194	Ê 210	Ô 226	= 242
3	0011	â 131	ô 147	ú 163	│ 179	├ 195	Ë 211	Ò 227	3/4 243
4	0100	ä 132	ö 148	ñ 164	┤ 180	─ 196	è 212	õ 228	¶ 244
5	0101	à 133	ò 149	Ñ 165	Á 181	┼ 197	€ 213	σ 229	§ 245
6	0110	å 134	û 150	ª 166	Â 182	ã 198	Í 214	µ 230	÷ 246
7	0111	ç 135	ù 151	º 167	À 183	Ã 199	Î 215	þ 231	¸ 247
8	1000	ê 136	ÿ 152	¿ 168	© 184	╚ 200	Ï 216	Þ 232	° 248
9	1001	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	° 250
B	1011	ï 139	ø 155	1/2 171	╗ 187	╦ 203	▒ 219	Ù 235	¹ 251
C	1100	î 140	£ 156	1/4 172	╝ 188	╠ 204	▄ 220	ý 236	³ 252
D	1101	ì 141	Ø 157	3/4 173	¢ 189	═ 205	¦ 221	Ý 237	² 253
E	1110	Ä 142	× 158	« 174	¥ 190	╬ 206	▌ 222	¯ 238	■ 254
F	1111	Å 143	ƒ 159	» 175	┐ 191	¤ 207	▄ 223	´ 239	SP 255

PC858: Euro

Country	ASCII code (hexadecimal)												
	Hex	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
	Dec	35	36	64	91	92	93	94	96	123	124	125	126
U.S.A.		#	$	@	[	\	]	^	`	{	¦	}	~
France		#	$	à	°	ç	§	^	`	é	ù	è	"
Germany		#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
U.K.		£	$	@	[	\	]	^	`	{	¦	}	~
Denmark I		#	$	@	Æ	ø	Å	^	`	æ	ø	å	~
Sweden		#	¤	É	Ä	Ö	Å	Ü	è	ä	ö	å	ü
Italy		#	$	@	°	\	é	^	ù	à	ò	è	ì
Spain		Pt	$	@	¡	Ñ	¿	^	`	"	ñ	}	~
Norway		#	¤	É	Æ	ø	Å	Ü	è	æ	ø	å	ü
Denmark II		#	$	É	Æ	ø	Å	Ü	è	æ	ø	å	ü

Chapter 8. Functions

The commands listed in the table below are available for control of the printer.

Commands

Command	Name	Command Classification		Standard Mode
		Execution	Setting	
HT	Horizontal tab	○		○
LF	Print and line feed	○		○
CR	Print and carriage return	○		○
DLE EOT	Real-tine status transmission	○		○
DLE ENQ	Real-time request to printer	○		○
ESC SP	Set right-side character spacing		○	○
ESC !	Select print mode(s)		○	○
ESC $	Set absolute print position	○		○
ESC %	Select/cancel user-defined character set		○	○
ESC &	Define user-defined characters		○	○
ESC *	Select bit-image mode	○		○
ESC -	Turn underline mode on/off		○	○
ESC 2	Select 1/6-inch line spacing		○	○
ESC 3	Set line spacing		○	○
ESC =	Select peripheral device		○	○
ESC ?	Cancel user-defined characters		○	○
ESC @	Initialize printer	○	○	○
ESC D	Set horizontal tab positions		○	○
ESC E	Turn emphasized mode on/off		○	○
ESC J	Print and feed paper	○		○
ESC R	Select an international character set		○	○
ESC V	Turn 90 clockwise rotation mode on/off		○	○
ESC \	Set relative print position	○		○
ESC a	Select justification			○

Command	Name	Command Classification		Standard Mode
		Execution	Setting	
Esc c 5	Enable/disable panel FEED buttons		0	0
Esc d	Print and feed paper n lines	0		0
Esc t	Select character code table		0	0
Esc {	Turn upside-down printing mode on/off		0	0
FS p	Print non-volatile bit image	0		0
FS q	Define non-volatile bit image		0	0
GS !	Select character size	0		(0)
GS *	Define downloaded bit image	0		•
GS /	Print downloaded bit image	0		
GS :	Start/end macro definition	0	0	0
GS B	Turn white/black reverse printing mode on/off		0	0
GS H	Select printing position of HRI characters		0	0
GS I	Transmit print ID	0		0
GS L	Set let margin		0	(0)
GS P	Set vertical and horizontal motion unite		0	0
GS W	Set printing area width		0	(0)
GS ^	Execute macro	0	0	0
GS a	Enable/disable Automatic Status Back	0	0	0
GS b	Turn smoothing mode on/off		0	0
GS f	Select font for HRI characters		0	0
GS h	Set bar code height	0		0
GS k	Print bar code	0		(
GS v	Print raster bit image			0
GS w	Set bar code width		0	0

Command classification

Executing : Printer executes the command, which does not affect the following data.

Setting : Printer uses flags to make setting, and those setting affect the following data.

Standard mode

○ : Enabled
(○) : Enabled only when the command is used at the beginning of a line.
● : Enabled only when data is not present in the buffer.
X : Disable

Chapter 9. Control Commands

Command Notation

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

Explanation of Terms

LSB Least Significant Bit

Control Commands

HT

[Name] Horizontal tab
[Format] ASCII HT
Hex 09
Decimal 9
[Description] Moves the print position to the next horizontal tab position.

LF

[Name] Print and line feed
[Format] ASCII LF
Hex 0A
Decimal 10
[Description] Prints the data in the print buffer and feeds one line based on the current line spacing.

CR

[Name] Print and carriage return.

[Format]

ASCII	HT
Hex	0D
Decimal	13

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

DLE EOT n

[Name] Real-time status transmission.

[Format]

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

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

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

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

n=1 : printers status.

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

n=2 : Off-line status

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

n=3 : Error status

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

n=4 : Continuous paper sensor status

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

DLE ENQ n

[Name] Real time request to printer

[Format]

ASCII	DLE	ENQ	n
HEX	10	05	n
DECIMAL	16	5	n

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

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

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

ESC SP n

[Name] Set right-side character spacing

[Format]

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

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

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

ESC ! n

[Name] Select print mode(s)

[Format]

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

[Range] 0 ≤ *n* ≤ 255

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

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

ESC $ *nL nH*

[Name] Set absolute print position

[Format]

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

[Range] 0 ≤ *nL* ≤ 255
0 ≤ *nH* ≤ 255

[Description] Sets the distance from the beginning of the line to the position at which subsequent characters are to be printed.
The distance from the beginning of the line to the print position is [(*nL* + *nH* ×256)×(vertical or horizontal motion unit)] inches.

ESC % n

[Name] Select/cancel user-defined character set

[Format]

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

[Range] 0 ≤ *n* ≤ 255

[Description] Selects or cancels the user-defined character set.
When the Least Significant Bit(LSB) of n is 0, the user-defined Character set is canceled.
When the LSB of n is 1, the user-defined character set is selected.

ESC & *y c1 c2 [x1 d1… d(y X x1)]…[xk d1…d(y X xk)]*

[Name] Define user-defined characters

[Format]

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

[Range] *y* = 3
32 ≤ *c*1 ≤ *c*2 ≤ 126
0 ≤ *x* ≤ 12 (Font A (12×24))
0 ≤ *x* ≤ 9 (Font B (9×24))
0 ≤ d1… d(y × xk) ≤ 255

[Description] Defines user-defined characters. *y* specifies the number of bytes in the vertical direction. C1 specifies the beginning character code for the definition, and c2 Specifies the final code. *x* specifies the beginning character code for the definition, and c2 specifies the final code.

ESC * *m nL nH d1... dk*

[Name] Select bit-image mode

[Format]

ASCII	ESC	*	*m*	*nL*	*nH d1... dk*
Hex	1B	2A	*m*	*nL*	*nH d1... dk*
Decimal	27	42	*m*	*nL*	*nH d1... dk*

[Range] *m* = 0, 1, 32, 33
0 ≤ *nL* ≤ 255 , 0 ≤ *nH* ≤ 3 , 0 ≤ *d* ≤ 255

[Description] Selects a bit-image mode using m for the number of dots specified by *nL* and *nH*, as follows:

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

ESC - *n*

[Name] Turn underline mode on/off

[Format]

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

[Range] 0 ≤n ≤2, 48 ≤n ≤50

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

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

ESC 2

[Name] Select 1/6-inch line spacing

[Format]

ASCII	ESC	2
Hex	1B	32
Decimal	27	50

[Description] Selects 1/6-inch line spacing.

ESC 3 n

[Name] Set line spacing

[Format]

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

[Range] Sets the line spacing to [*n* X (vertical or horizontal motion unit)] inches.

[Description] 0 ≤ n ≤ 255

ESC = n

[Name] Select peripheral device

[Format]

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

[Range] 0 ≤ n ≤ 255

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

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

ESC ? n

[Name] Cancel user-defined characters

[Format]

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

[Range] 32 ≤*n* ≤126

[Description] Cancels user-defined characters.

ESC @

[Name] Initialize printer

[Format]

ASCII	ESC	@
Hex	1B	40
Decimal	27	64

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

ESC D *n1...nk* NUL

[name] Set horizontal tab positions

[Format]

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

[Range] 1 ≤*n* ≤255

0 ≤*k* ≤32

[Description] Sets horizontal tab positions.

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

ESC E *n*

[Name] Turn emphasized mode on/off

[Format]

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

[Range] 0 ≤*n* ≤255

[Description] Turns emphasized mode on or off.

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

ESC J *n*

[Name] Print and feed paper

[Format]

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

[Range] 0 ≤*n* ≤255

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

ESC R *n*

[Name] Select an international character set

[Format]

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

[Range] 0 ≤*n* ≤10

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

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

Country	ASCII code (hexadecimal)												
	Hex	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
	Dec	35	36	64	91	92	93	94	96	123	124	125	126
U.S.A.		#	$	@	[	\	]	^	`	{	¦	}	~
France		#	$	à	°	ç	§	^	`	é	ù	è	"
Germany		#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
U.K.		£	$	@	[	\	]	^	`	{	¦	}	~
Denmark Ⅰ		#	$	@	Æ	ø	Å	^	`	æ	ø	å	~
Sweden		#	¤	É	Ä	Ö	Å	Ü	è	ä	ö	å	ü
Italy		#	$	@	°	\	é	^	ù	à	ò	è	ì
Spain		Pt	$	@	¡	Ñ	¿	^	`	"	ñ	}	~
Norway		#	¤	É	Æ	ø	Å	Ü	è	æ	ø	å	ü
Denmark Ⅱ		#	$	É	Æ	ø	Å	Ü	è	æ	ø	å	ü

ESC V *n*

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

[Format]

ASCII	ESC	V	*n*
Hex	1B	56	*n*
Decimal	27	86	*n*

[Range] 0 ≤*n* ≤1, 48 ≤*n* ≤49

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

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

ESC \ *nL nH*

[Name] Set relative print position

[Format]

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

[Range] 0 ≤*nL* ≤255
0 ≤*nL* ≤255

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

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

ESC a *n*

[Name] Select justification

[Format]

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

[Range] 0 ≤*n* ≤2, 48 ≤*n* ≤50

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

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

ESC c 5 *n*

[Name] Enable/disable panel FEED buttons

[Format]

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

[Range] 0 ≤*n* ≤255

[Description] Enables or disables the panel buttons.

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

ESC d *n*

[Name] Print and feed paper *n* lines

[Format]

ASCII	ESC	D	*n*
Hex	1B	64	*n*
Decimal	27	100	*n*

[Range] 0 ≤*n* ≤255

[Description] Prints the data in the print buffer and feeds the paper *n* line.

- This command sets the print starting position to the beginning of the line.
- This command does cot affect the line spacing set by ESC 2 or ESC 3.
- The maximum paper feed amount is 40 inches. Even if a paper feed amount of more than 40 inches is set, the printer feeds the paper only 40 inches.
- When label mode is selected and a paper feed amount that exceeds the length of one label is set, the printer feeds the label paper to the next print starting position.

ESC t *n*

[Name] Select character code table.

[Format]

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

[Range] 0 ≤n ≤5, n = 11, 255

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

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

[Default] n = 0

ESC { *n*

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

[Format]

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

[Range] 0 ≤*n* ≤255

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

- When the LSB of n is 0, upside-down printing mode is turned off.
- When the LSB of n is 1, upside-down printing mode is turned on.

FS p n m

[Name] Print non-volatile bit image

[Format]

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

[Range] 1 ≤ n ≤ 255 , 0 ≤ m ≤3 , 48 ≤ m ≤ 51

[Description] Prints a non-volatile bit image n using the mode specified by m

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

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

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

[Name] Define non-volatile bit image

[Format]

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

[Range] 1 ≤ n ≤ 255

0 ≤ nL ≤ 255

0 ≤ xH ≤ 3 (when 1 ≤ xL+xH×256≤ 1023)

0 ≤ yL ≤ 1 (when 1≤yL+yH×256≤288)

0 ≤ d ≤ 255

k = (xL+xH×256) × (yL+yH×256)×8

Total defined data area=2M bits(256K bytes)

[Description] Define the non-volatile bit image specified by n

- n specifies the number of the defined non-volatile bit image
- xL, xH specifies(xL + xH×256)×8 dots in the horizontal direction for the non-volatile bit image you are defining.
- yL, yH specifies (yL + yH×256)x8 dots in the vertical direction for the non-volatile bit image you are defining.

GS ! n

[Name] Select character size

[Format]

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

[Range] 0 ≤*n* ≤255
Where 1 ≤ Number of times of character height ≤2
1 ≤ Number of times of character width ≤2

[Description] Selects the character height using bits 0 to 1 and selects the character width using bits 4 to 7, as follows:

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

Table 1
Character width Selection

Hex	Decimal	Width
00	0	1 (normal)
10	16	2 (double-width)

Table 2
Character height Selection

Hex	Decimal	Height
00	0	1 (normal)
01	1	2 (double-height)

GS * *x y d*1...*d* (*x* X *y* X 8)

[Name] Define downloaded bit image

[Format]

ASCII	GS	*	*x*	*y*	*d*1...*d* (*x* X *y* X 8)
Hex	1D	2A	*x*	*y*	*d*1...*d* (*x* X *y* X 8)
Decimal	29	42	*x*	*y*	*d*1...*d* (*x* X *y* X 8)

[Range] 1 ≤*x* ≤255
1 ≤*y* ≤48 where, *x* X *y* ≤1536
0 ≤*d* ≤255

[Description] Defines a downloaded bit image using the dots specified by *x* and *y*.
- *x* indicates the number of dots in the horizontal direction.
- *y* indicates the number of dots in the vertical direction.

GS / *m*

[Name] Print downloaded bit image

[Format]

ASCII	GS	/	*m*
Hex	1D	2F	*m*
Decimal	29	47	*m*

[Range] 0 ≤*m* ≤3,48 ≤*m* ≤51

[Description] Prints downloaded bit image in mode *m*.
The modes selectable by m as follows:

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

GS :

[Name] Start or ends macro definition.

[Format]

ASCII	GS	:
Hex	1D	3A
Decimal	29	58

[Description] Starts or ends macro definition.

GS B n

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

[Format]

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

[Range] 0 ≤n ≤255

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

GS H n

[Name] Select printing position of HRI characters

[Format]

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

[Range] 0 ≤n ≤ 3 , 48 ≤n ≤51

[Description] Selects the printing position of HRI characters when printing bar code.

n selects the printing position as follows:

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

● HRI indicates Human Readable interpretation.

[Default] n = 0

GS I n

[Name] Transmit printer ID

[Format]

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

[Range] 1 ≤n ≤3 , 49 ≤n ≤51

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

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

GS L *nL nH*

[Name] Set left margin

[Format]

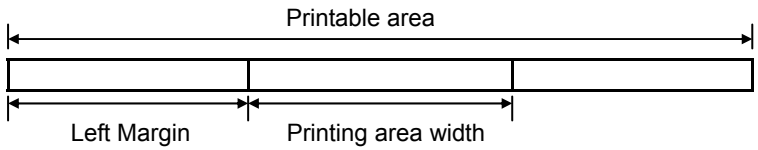
ASCII	GS	L	*nL*	*nH*
Hex	1D	4C	*nL*	*nH*
Decimal	29	76	*nL*	*nH*

[Range] 0 ≤ *nL* ≤255

0 ≤ *nH* ≤255

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

● The left margin is set to [(*nL* + *nH* X 256) X (horizontal motion unit6)] inches.



GS P *x y*

[Name] Set horizontal and vertical motion units

[Format]

ASCII	GS	P	*x*	*y*
Hex	1D	50	*x*	*y*
Decimal	29	80	*x*	*y*

[Range] 0 ≤ *x* ≤ 255

0 ≤ *y* ≤ 255

[Description] Sets the horizontal and vertical motion units to 1/*x* inch, respectively.

When *x* is set to 0, the default setting value is used.

When *y* is set to 0, the default setting value is used.

GS W nL nH

[Name] Set printing area width

[Format]

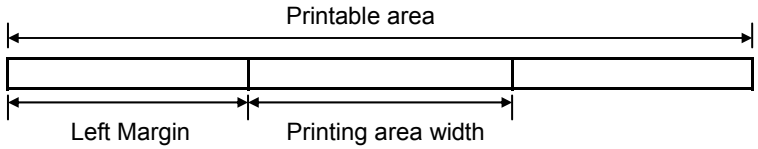
ASCII	GS	W	nL	nH
Hex	1D	57	nL	nH
Decimal	29	87	nL	nH

[Range] 0 ≤nL ≤255

0 ≤nH ≤255

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

● The printing area width is set to [(nL + 256 X nH) X horizontal motion unit] inches.



GS ^ *r t m*

[Name] Execute macro

[Format]

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

[Range] 0 ≤ *r* ≤ 255

0 ≤ *t* ≤ 255

0 ≤ *m* ≤ 1

[Description] Executes a macro.

● *r* specifies the number of times to execute the macro.

● *t* specifies the waiting time for executing the macro.
The waiting time is *t* X 100 msec for every macro execution.

● *m* specifies macro executing mode.

● When the LSB of *m* = 0:
The macro executes *r* times continuously at the interval specified by *t*.

● When the LSB of *m* = 1:
After waiting for the period specified by *t*, the LED indicator blinks and the printer waits for the PAPER FEED button to be pressed. After the button is pressed, the printer executes the macro once, The printer repeats the operation *r* times.

GS a n

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

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

First byte (printer information)

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

Second byte (printer information)

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

Third bytes (paper sensor information

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

Fourth byte (paper sensor information)

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

[Default] n=0

GS b n

[Name] Turns smoothing mode on/off
[Format] ASCII GS b n
Hex 1D 62 n
Decimal 29 98 n
[Range] 0 ≤ n ≤255
[Description] Turns smoothing mode on or off.
● When the LSB of n is 0, smoothing mode is turned off.
● When the LSB of n is 1, smoothing mode is turned on.

GS f n

[Name] Select font for Human Readable interpretation (HRI) characters.

[Format]

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

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

[Description] Selects a font for the HRI characters used when printing a bar code.
n selects a font from the following table:

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

GS h n

[Name] Set bar code height

[Format]

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

[Range] 1 ≤*n* ≤255

[Description] Sets the height of the bar code.
n specifies the number of dots in the vertical direction.

[Default] *n* = 162

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

[Name] Print bar code

[Format]

①	ASCII	GS	k	*m*	d1...dk	NUL
	Hex	1D	6B	*m*	d1...dk	00
	Decimal	29	107	*m*	d1...dk	0
②	ASCII	GS	k	*m*	*n*	d1...dn
	Hex	1D	6B	*m*	*n*	d1...dn
	Decimal	29	107	*m*	*n*	d1...dn

[Range] ① 0 ≤*m* ≤6 (k and d depends on the bar code system used)
② 65 ≤*m* ≤73 (n and d depends on the bar code system used)

[Description] Selects a bar code system and prints the bar code.
M selects a bar bode system as follows:

m		Bar Code System	Number of Characters	Remarks
①	0	UPC-A	11≤k≤12	48≤d≤57
	1			
	2	JAN 13(EAN)	12≤k≤13	48≤d≤57
	3	JAN8(EAN)	7≤k≤8	48≤d≤57
	4	CODE39	1≤k	48≤d≤57,65≤d≤90,32, 36,37,43,45,46,47
	5	ITF	1≤k (even number)	48≤d≤57
	6	CODABAR	1≤k	48≤d≤57,65≤d1≤68, 36,43,45,46,47,58

m		Bar Code System	Number of Characters	Remarks
②	65	UPC-A	11≤n≤12	48≤d≤57
	66			
	67	JAN13(EAN)	12≤n≤13	48≤d≤57
	68	JAN8(EAN)	7≤n≤8	48≤d≤57
	69	CODE39	1≤n≤255	48≤d≤57,65≤d≤90,32, 36,37,43,45,46,47
	70	ITF	1≤n≤255 (even number)	48≤d≤57
	71	CODABAR	1≤n≤255	48≤d≤57,65≤d1≤68 36,43,45,47,58
	72	CODE93	1≤n≤255	0≤d≤127
	73	CODE128	2≤n≤255	0≤d≤127

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

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

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

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

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

- Refer to Appendix J for the information of the CODE128 bar code and its code table.
- When using the CODE128 in this printer, take the following points into account for data transmission :

① The top of the bar code data string must be code set selection character (any of CODE A, CODE B OR CODE C) which selects the first code set.

※ Description of the CODE128 Bar Code

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

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

The following special characters are also available in CODE128 :

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

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

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

<Example> Example data for printing "No. 123456"
In this example, the printer first prints "No." using CODE B, then prints the following numbers using CODE C.

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

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

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

GS v 0 xL xH yL yH dl…dk

[Name] Print raster bit image

[Format]

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

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

$0 \le xL \le 255$, $0 \le xH \le 255$, $0 \le yL \le 255$

$0 \le d \le 255$

$k = (xL+xH\times256) \times (yL+yH\times256)$ (k=0)

[Description] Selects raster bit-image mode.

The value of m selects the mode, as follows :

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

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

GS w n

[Name] Set bar code width

[Format]

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

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

[Description] Set the horizontal size of the bar code.

n specifies the bar code width as follows:

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

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

[Default] n = 3

APPENDIX A : CONNECTORS

Serial Interface Connector (STP-103S)

PRINTER			HOST	
20	TXD (O)	----------	2	RXD (I)
19	RXD (I)	----------	3	TXD (O)
21	CTS (I)	----------	7	RTS (O)
22~25	GND	----------	5	GND
18	RTS (O)	----------	8	CTS (I)
FGND		CONNECT	4	DTR (O)
25 PINE MALE			6	DSR (I)
			FGND	
			9 PINE FEMALE	

Parallel Interface Connector (STP-103P)

PRINTER	
1	/STROBE (I/O)
2	DATA0 (I/O)
3	DATA1 (I/O)
4	DATA2 (I/O)
5	DATA3 (I/O)
6	DATA4 (I/O)
7	DATA5 (I/O)
8	DATA6 (I/O)
9	DATA7 (I/O)
10	/ACK (I)
11	BUSY (I)
12	PE (I)
13	SLCT
15	/ERROR (I)
16~21	N.C
22~25	GND
FGND	
25 PINE MALE	

HOST	
1	/STROBE (I/O)
2	DATA0 (I/O)
3	DATA1 (I/O)
4	DATA2 (I/O)
5	DATA3 (I/O)
6	DATA4 (I/O)
7	DATA5 (I/O)
8	DATA6 (I/O)
9	DATA7 (I/O)
10	/ACK (I)
11	BUSY (I)
12	PE (I)
13	SLCT
15	/ERROR (I)
16	/INIT (O)
18~25	GND
FGND	
25 PINE MALE	

APPENDIX B : Specification

Printing method	Thermal line printing	
Dot density	200 x 200 Dpi (8 dot/mm)	
Printing width	48mm	
Paper width	58mm	
Characters per line	32 (Font A) (12x24) , 42 (Font B) (9x24)	
Printing Speed	Approximately 1.97 inchs / sec 50 mm/sec at 25℃/printing duty 12.5%	
Receive buffer size	15K bytes	
Supply voltage	DC	24V 1.5A
Environmental conditions	Temperature	0 ~ 40℃ (operating) -10 ~ 50℃ (storage)
	Humidity	30 ~ 80% RH (operating) 10 ~ 90% RH (storage)
MCBF	Mechanical	15,000,000 line
	Head	50 million pulse (about 50km)

※ Paper

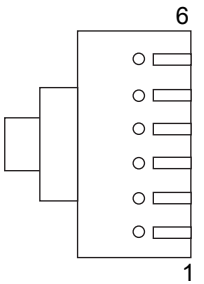
- Paper thickness : 0.06 ~ 0.09mm
- Roll size : Ø60 ~ 57 (w)
- Roll spool diameter
  1) Inside : Ø12mm (0.47”)
  2) Outside : Ø18mm (0.71”)

※Option : STP-103DK

1) Serial Interface Connector Specification

PRINTER			HOST	
19	RXD (I)	----------	3	TXD (O)
20	TXD (O)	----------	2	RXD (I)
18	RTS (O)	----------	8	CTS (I)
21	CTS (I)	----------	7	RTS (O)
		CONNECT	4	DTR (O)
			6	DSR (I)
FGND			FGND	
22~25	SG	----------	5	SG
25 PINE MALE			**9 PINE FEMALE**	

			* RJ11 6P	
22	SG	----	1	GND
14	SOL1	----	2	SOL1
16	COMPS/W	----	3	COMPS/W
17	SLCT	----	4	SLCT
			5	NC
22	SG	----	6	GND

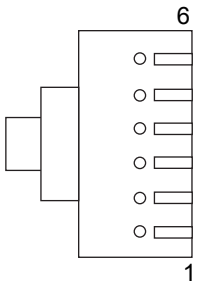


2) Parallel Interface Connector Specification

PRINTER	
1	/STROBE (I/O)
2	DATA0 (I/O)
3	DATA1 (I/O)
4	DATA2 (I/O)
5	DATA3 (I/O)
6	DATA4 (I/O)
7	DATA5 (I/O)
8	DATA6 (I/O)
9	DATA7 (I/O)
10	/ACK (I)
11	BUSY (I)
12	PE (I)
13	SLCT
15	/ERROR (I)
22~25	GND
FGND	
22	SG
14	SOL1
16	COMPS/W
17	SLCT
22	SG
25 PINE MALE	

HOST	
1	/STROBE (I/O)
2	DATA0 (I/O)
3	DATA1 (I/O)
4	DATA2 (I/O)
5	DATA3 (I/O)
6	DATA4 (I/O)
7	DATA5 (I/O)
8	DATA6 (I/O)
9	DATA7 (I/O)
10	/ACK (I)
11	BUSY (I)
12	PE (I)
13	SLCT
15	/ERROR (I)
16	/INIT (O)
18~25	GND
FGND	
25 PINE MALE	

	* RJ11 6P	
----	1	GND
----	2	SOL1
----	3	COMPS/W
----	4	SLCT
	5	NC
----	6	GND



3) Control Command

ESC p *m t1 t2*

[Name] Generate pulse.
[Format]

ASCII	ESC	p	m	t1	t2
Hex	1B	70	m	t1	t2
Decimal	27	112	m	t1	t2

[Range] m = 0, 48
$0 \le t1 \le 255$, $0 \le t2 \le 255$
[Description] Outputs the pulse specified by t1 and t2 to connector pin m as follows :
m=0 Connector pin : Drawer kick-out connector pin 2.
[Details] The pulse ON time is [t1*2ms] and the OFF time is [t2*2ms].
If $t2 \le t1$, the OFF time is [t2*2ms].
[Reference] DLE DC4

DLE DC4 n m t

[Name] Generate pulse at real-time.
[Format]

ASCII	DLE	DC4	n	m	t
Hex	10	14	n	m	t
Decimal	16	20	n	m	t

[Range] n=1, m=0
$1 \le t \le 8$
[Description] Outputs the pulse specified by t to connector pin m as follows :
m=0 Connector pin : Drawer kick-out connector pin 2.
The pulse ON time is [t*100ms] and the OFF time is [t*100ms].
[Reference] ESC p

Bell n

[Name] Select bell on time.
[Format]

ASCII	Bell	t
Hex	07	t (1e t)
Decimal	07	t (30 t)

[Range] t = 1~30
[Description] The pulse ON time is [t*100ms] and the OFF time is [t*100ms].