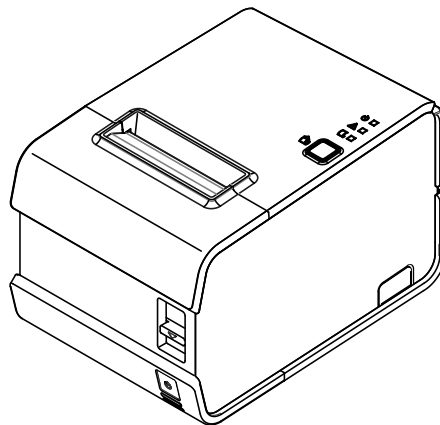# ELLIX 20

RECEIPT PRINTER

OPERATOR'S Manual

All specifications are subject to change without notice

Warning - U.S.

This equipment has been tested and founded 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 used 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.

Notice - Canada

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

Get appareil est conforme aux normes class "A" d'interference radio tel que specifier par ministre canadien des communications dans les reglements d'interference radio.

Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Caution

Some semiconductor devices are easily damaged by static electricity. You should turn the printer "OFF", before you connect or remove the cables on the rear side, in order to guard the printer against the static electricity. If the printer is damaged by the static electricity, you should turn the printer "OFF".

INTRODUCTION

The ELLIX 20 Roll Printer is designed for use with electronic instruments such as system ECR, POS, banking equipment, computer peripheral equipment, etc.

The main features of the printer are as follows:
1. High speed printing : 52 lines per second.
2. Low noise thermal printing.
3. RS-232 serial/IEEE1284 parallel/USB/Ethernet/Bluetooth/Wireless LAN interface.
4. The data buffer allows the unit to receive print data even during printing.
5. Peripheral units drive circuit enables control of external devices such as cash drawer.
6. Characters can be scaled up to 64 times compared to it's original size.
7. Bar code printing is possible by using a bar code command.
8. Different print densities can be selected by DIP switches.
9. 2-dimantional bar code(PDF-417) and Two color printing.

Please be sure to read the instruction in this manual carefully before using your ELLIX20.

NOTES : The socket-outlet shall be near the equipment and it shall be easily accessible.

LEGISLATION AND WEEE SYMBOL

2002/96/CE Waste Electrical and Electronic Equipment Directive on the treatment, collection, recycling and disposal of electric and electronic devices and their components.

The crossed dustbin symbol on the device means that it should not be disposed of with other household wastes at the end of its working life. Instead, the device should be taken to the waste collection centres for activation of the treatment, collection, recycling and disposal procedure.
To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract.
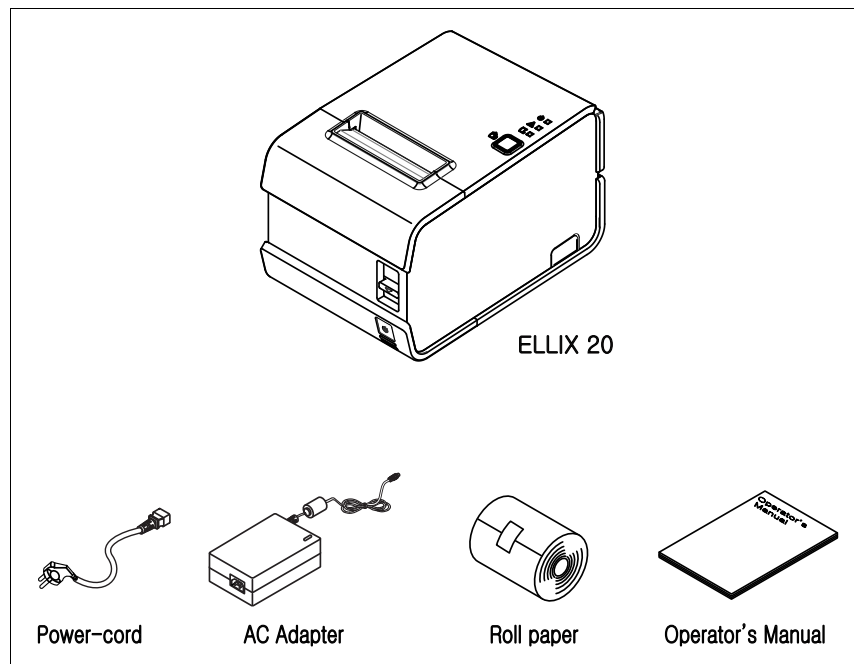This product should not be mixed with other commercial wastes for disposal.

Table of Contents

Chapter 1. Setting Up the Printer

## 1-1. Unpacking

Your printer box should include these items. If any items are damaged or missing, please contact your dealer for assistance.

ELLIX 20

Power-cord   AC Adapter   Roll paper   Operator's Manual

1-2. Connecting the Cables

You can connect up to three cables to the printer. They are all connected to the connector panel on the back of the printer, which is shown as below:


Interface connector   Drawer kick-out connector   Power supply connector
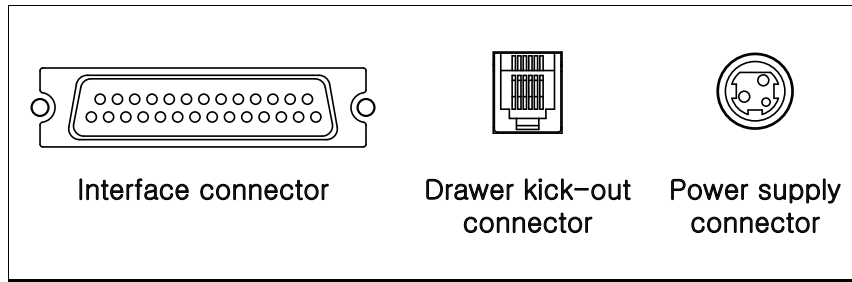
NOTES : Before connecting any of the cables, make sure that both the printer and the computer should be turned off.
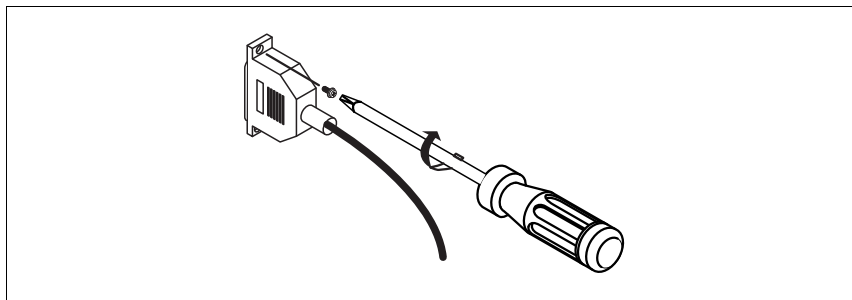
1-3. Connecting the computer

You need an appropriate interface cable.

1. Plug the cable connector securely into the printer's interface connector.
2. Tighten the screws on both sides of the cable connector.
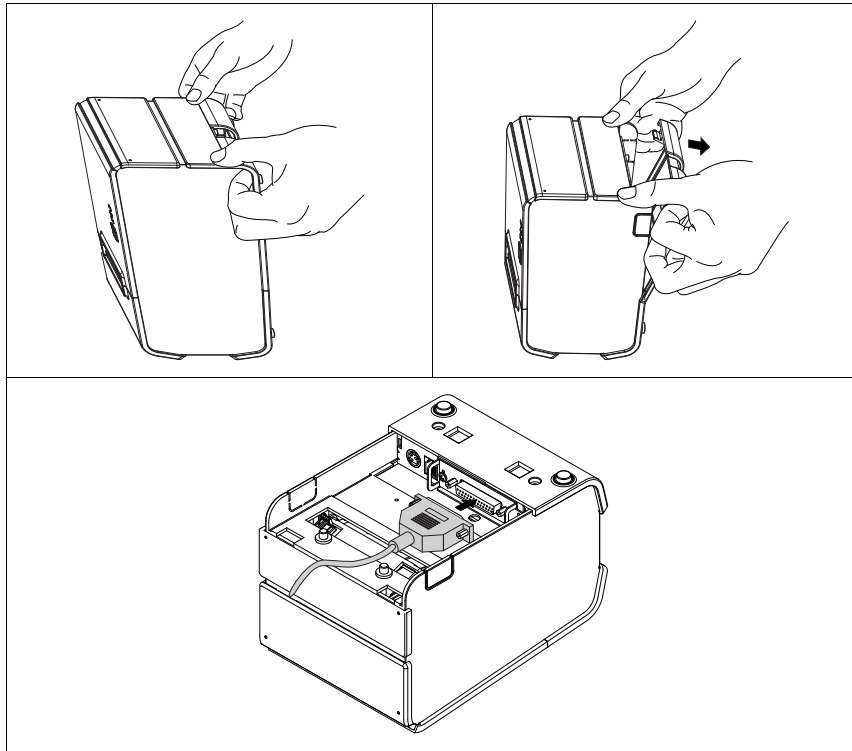
3. Attach the other end of the cable to the computer.

1-4. Connecting the Drawer

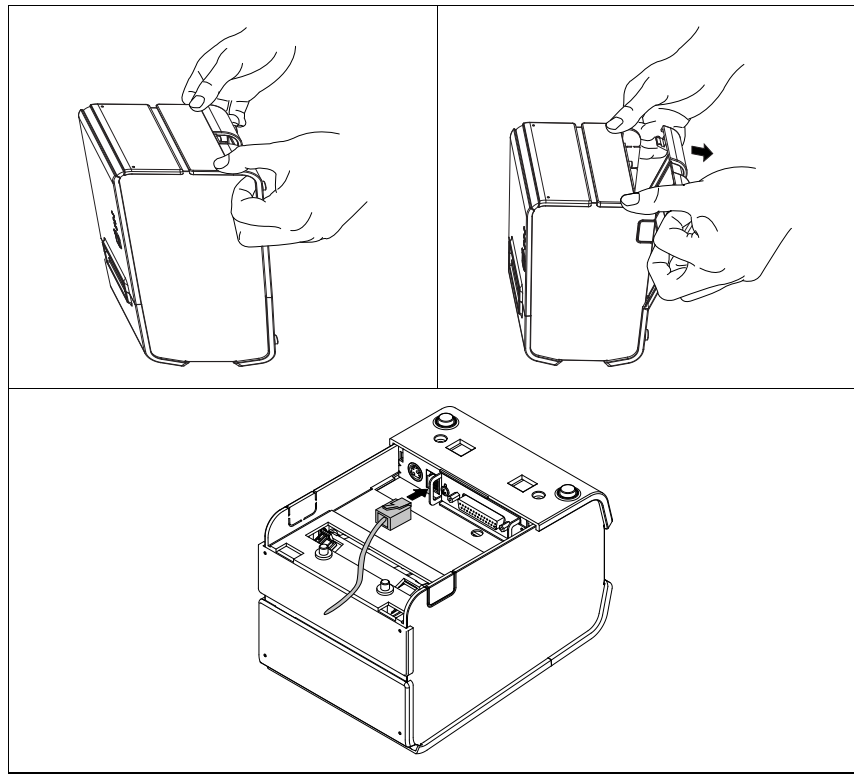**WARNING:**
Use a drawer that matches the printer specification. Using an improper drawer may damage the drawer as well as the printer.

CAUTION:
Do not connect a telephone line to the drawer kick-out connector; otherwise the printer and the telephone line may be damaged.

Plug the drawer cable into the drawer kick-out connector on the back of the printer next to the power supply connector.

1-5. Connecting the Power Supply

Use the optional Power supply for your printer.

WARNING:
Make sure that you use the attached Power supply or equivalent. Using an incorrect power supply may cause fire or electrical shock.
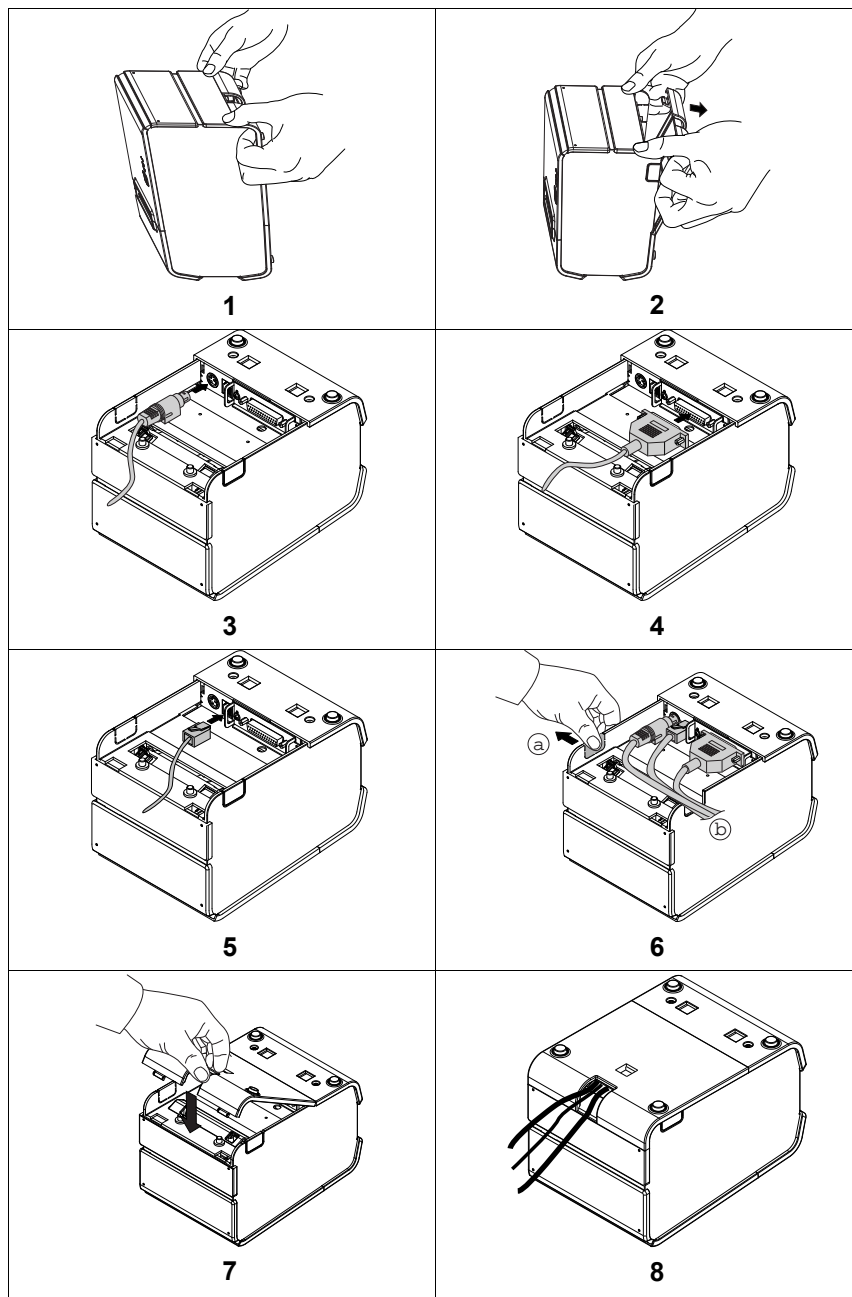
CAUTIONS:
When connecting or disconnecting the power supply from the printer, make sure that the power supply is not plugged into an electrical outlet. Otherwise you may damage the power supply or the printer.

If the power supply's rated voltage and your outlet's voltage do not match, contact your dealer for assistance. Do not plug in the power cord. Otherwise, you may damage the power supply or the printer.

1. Make sure the printer is turned off.

2. Pull the hole of the Cover-Wire to separate from the printer.

3. Plug the DC cord connector into the power jack on the printer.

4. If it is necessary to connect the interface, plug the interface connector into the interface port on the printer.

5. If it is necessary to connect the drawer, plug the drawer connector into the drawer port on the printer.

6. Put the two hooks into the two holes of the Case-Lower backward and close the Cover-Wire until it locks firmly.

7. Plug the AC Adapter power cord into the wall outlet.

> **NOTES :** If you want to turn the ELLIX20 off, press and hold the power button until the POWER LED is off.

> **NOTES :** To remove the DC cable connector, make sure that the power supply's power cord is unplugged; then grasp the connector at the arrow and pull it straight out.

1-6. Installing or Replacing the Paper Roll

CAUTION : When the printer lid is raised the serrated edge of the paper tear bar is also accessible, Care should be taken with the serrated edge.
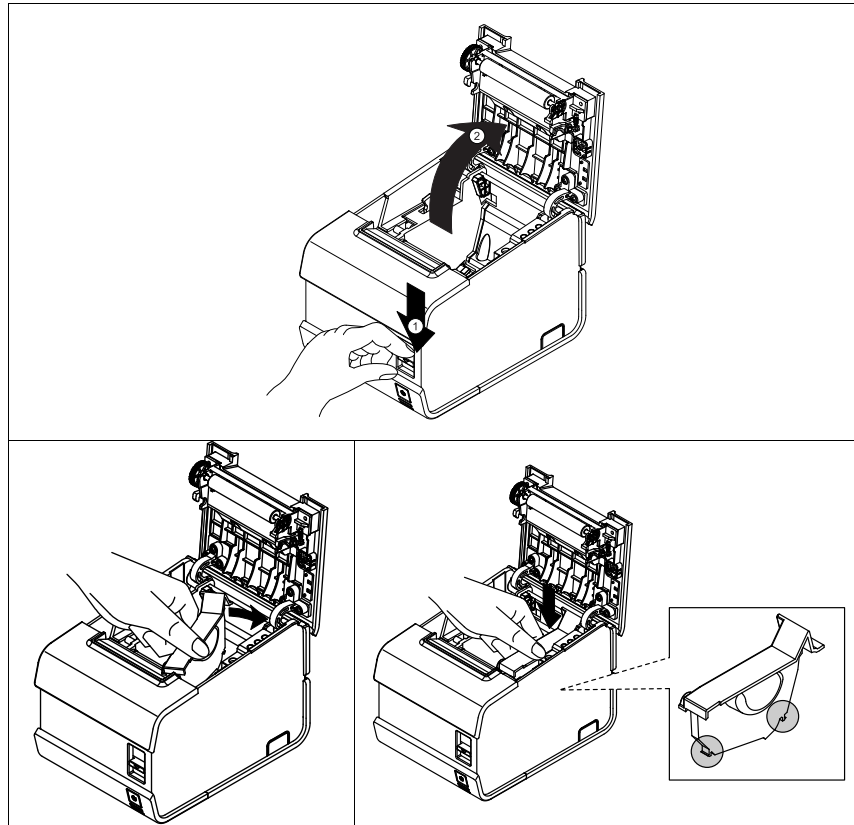
the tooth of a saw
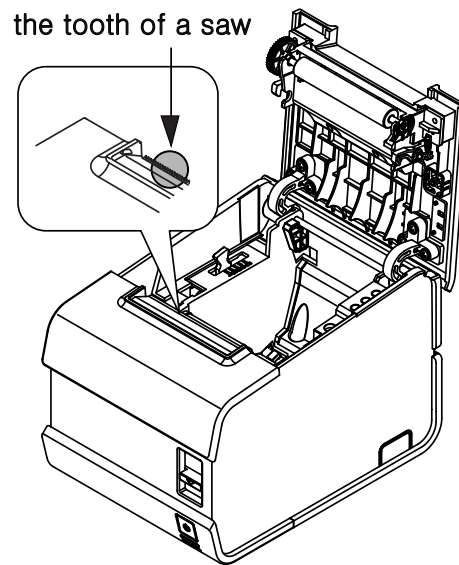
1-6-1. Partition Installation

NOTES : The Paper partition is dealer option item.

You can install the partition for 58mm paper printing on ELLIX20.

1. Push the Open-Button and open the Cover-Open.

2. Insert the Partition into the Paper-Supply as shown.

3. Push the Partition until the two hook locks firmly.

1-6-2. Wall Mount Installation

NOTES : Wall mount bracket is dealer option item.

1. Drill the wall to make the three holes ϕ 6.5mm, depth over 35mm and put the three anchors ⓐ into the each hole. (Notice the position of the holes.)

2. Tighten the three screws ⓑ into the each anchor to fix the BRKT-Wall to the wall as shown.

3. Hang the printer on the three hooks and fix it down.
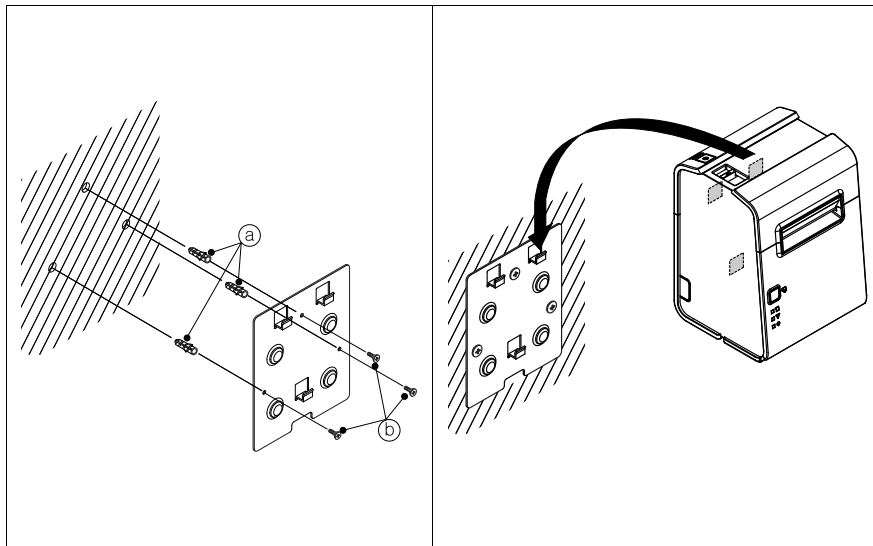
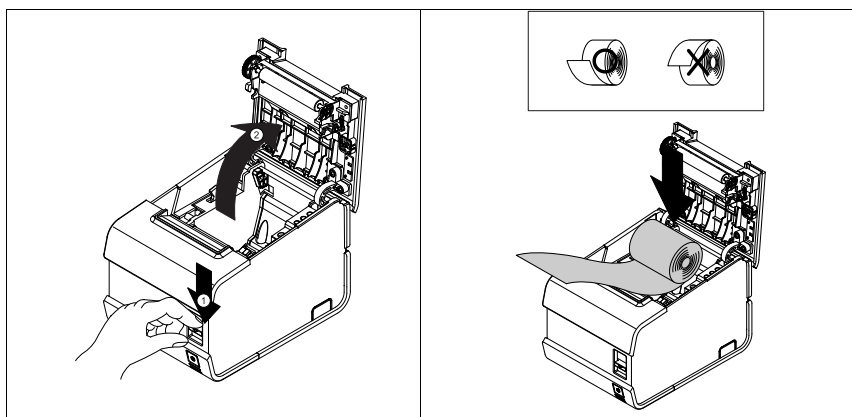## 1-6-3. Paper Roll Installation

NOTES : Be sure to use paper rolls that meet the specifications. Do not use paper rolls that have the paper glued to the core because the printer cannot detect the paper end correctly**.**

1. Open the paper roll cover by pressing the cover-open button.

2. Remove the used paper roll core if there is one.

3. Insert the paper roll as shown.
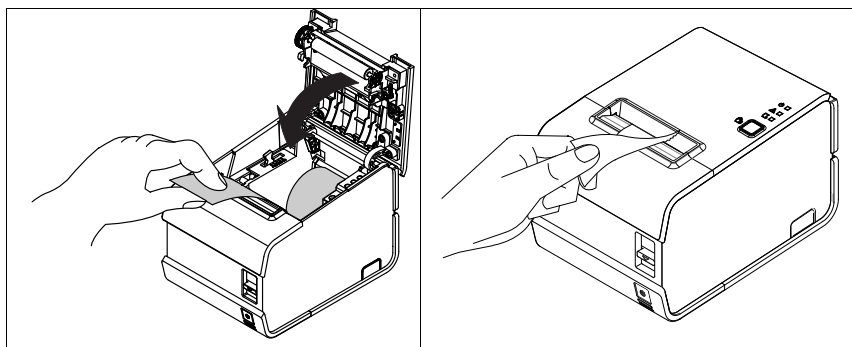
4. Be sure to note the correct direction that the paper comes off the roll.

5. Pull out a small amount of paper, as shown. Then close the cover.

6. Tear off the paper as shown.

1-7. Adjustments and Settings

The ELLIX 20 is set up at the factory to be appropriate for almost all users. It does, however, offer some settings for users with special requirements.

It has DIP switches that allow you to change communication settings, such as handshaking and parity check, as well as printing density.

The ELLIX 20 also has a near-end sensor for the paper. This can give you a warning when the paper is almost out. If you find that there is not enough paper remaining on the roll when the near-end detector is triggered, you can change the near-end sensor setting.

See the next page if you need to make any of these changes.
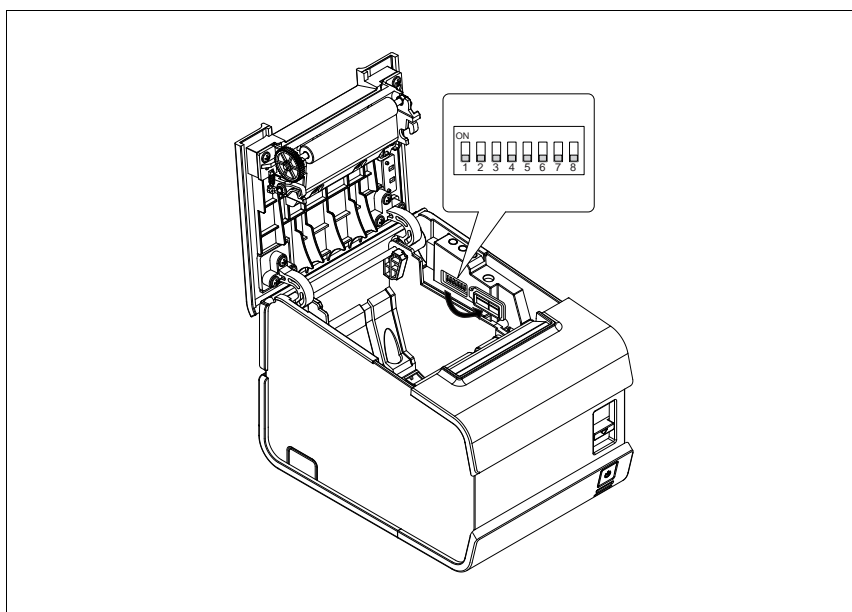
NOTES : Always change DIP switch settings only when the printer is turned off. Change made with the power on have no effect until the powered off and then on again.

1-7-1. Serial Interface Specification

■ **DIP Switch Set 1 Functions**

SW	FUNCTION	ON	OFF	DEFAULT
1	Handshaking	XON/XOFF	DSR/DTR	OFF
2	Word Length	7Bit	8Bit	OFF
3	Parity Check	Yes	No	OFF
4	Parity Selection	EVEN	ODD	OFF
5				OFF
6	Baud rate selection	Refer to the Following Table		OFF
7				OFF
8	Dip Switch Select	Dip Switch 2	Dip Switch 1	-

◆ Baud rate selection

Transmission speed	SW – 5	SW – 6	SW – 7	Remark
2400 baud	ON	ON	ON	-
4800 baud	ON	ON	OFF	-
9600 baud	ON	OFF	ON	-
14400 baud	ON	OFF	OFF	-
19200 baud	OFF	ON	ON	-
38400 baud	OFF	ON	OFF	-
57600 baud	OFF	OFF	ON	-
115200 baud	OFF	OFF	OFF	Default

■ **Dip Switch Set 2 Functions**

SW	FUNCTION	ON	OFF	DEFAULT
1	Mode Selection	STAR	EPSON	OFF
2	*Kitchen Bell	Enable	Disable	OFF
3	Auto Cutter	Disable	Enable	OFF
4	Self Test	Hexa Dump	SelfTest Mode	OFF
5	Select Print Density	Refer to the Following Table		OFF
6				OFF
7	Data Receive Error	Ignore	Print "?"	OFF
8	Dip Switch Select	Dip Switch 2	Dip Switch 1	-

*Kitchen Bell is option.

◆ Print Density

Print Density	SW - 5	SW – 6	Remark
1 (Light)	ON	ON	-
2	OFF	OFF	Default
3	ON	OFF	-
4 (Dark)	OFF	ON	-

1-7-2. Parallel Interface Specification

■ Dip Switch Set 1 Functions

SW	FUNCTION	ON	OFF	DEFAULT
1	Reserved	-	-	-
2	Reserved	-	-	-
3	Reserved	-	-	-
4	Reserved	-	-	-
5	Reserved	-	-	-
6	Reserved	-	-	-
7	Reserved	-	-	-
8	Dip Switch Select	Dip Switch 2	Dip Switch 1	-

■ Dip Switch Set 2 Functions

SW	FUNCTION	ON	OFF	DEFAULT
1	Mode Selection	STAR	EPSON	OFF
2	*Kitchen Bell	Enable	Disable	OFF
3	Auto Cutter	Disable	Enable	OFF
4	Self Test	Hexa Dump	SelfTest Mode	OFF
5	Select Print Density	Refer to the Following Table		OFF
6				OFF
7	Data Receive Error	Ignore	Print "?"	OFF
8	Dip Switch Select	Dip Switch 2	Dip Switch 1	-

*Kitchen Bell is option.

◆ Print Density

Print Density	SW - 5	SW – 6	Remark
1 (Light)	ON	ON	-
2	OFF	OFF	Default
3	ON	OFF	-
4 (Dark)	OFF	ON	-

1-8. Using the Printer

You can control the basic paper feeding operations of the printer with the button on the control panel. The indicator lights help you monitor the printer's status.

1-8-1. Control Panel
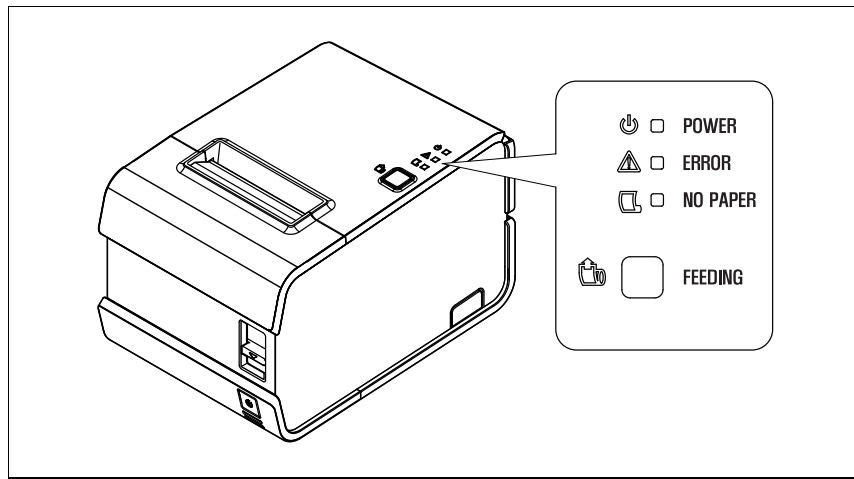
- **Feed Button**

The button can be disabled by the **ESC c 5** command.

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

- **Panel lights : LED (Color)**

   POWER (GREEN)
The POWER light is "ON" whenever the printer is "ON".

   ERROR (RED)
This indicates an error. See **APPENDIX F**<Page 51> for information of what to do when this light comes on.

   NO PAPER (RED)
This light indicates the near end of the paper roll. Install a new paper roll and the printer will continue printing.

When the light blinks, it indicates the self-test printing standby state or macro execution standby state when the macro execution command is used.

Chapter 2. Hexadecimal Dumping

This feature allows the 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.

2.   Make sure DIP switch 2-4 to ON for Hexadecimal dumping mode.

3.   Turn on the power while pressing the FEED button or executing **GS (A** command; then the printer prints "HEXADECIMAL DUMP MODE …" on the paper roll and enter 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 correspond to the codes.

<div align="center">

HEXADECIMAL DUMP MODE
PRESS PAPER FEED BUTTON THREE
TIMES TO EXIT DUMP MODE

1D 57 00 02 1D 48 02 42 61 72 .W...H.Bar

43 6F 64 65 20 50 72 69 6E 74 Code Print

69 6E 67 0A 0A 1D 6B 00 31 32 ing...K.12

</div>

- A period (.) is printed for each code that has no ASCII equivalent.
- During the hexadecimal dump, all commands except **DLE EOT** and **DLE ENQ** are disabled.

5.   When the printing finishes, turn off the printer or press the FEED button three times, and then change DIP switch 2-4 to OFF (Self-Test mode).

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

Chapter 3. The self test

The self-test checks whether the printer has any problems. If the printer does not function properly, contact your dealer. The self-test checks are as follows;

1. Make sure paper roll has been installed properly.
2. Turn on the power while holding down the FEED button. The self-test begins.
3. The self-test prints the current printer status, which provides the control ROM version and the DIP switch setting.
4. After printing the current printer status, self-test printing will print the following, and pause (The PAPER LED light blinks).

<div align="center">

SELF TEST PRINTING.

PLEASE PRESS PAPER FEED BUTTON.

</div>

5. Press the FEED button to continue printing. The printer prints a pattern using the built-in character set.
6. The self-test automatically ends and cuts the paper after printing the following.

<div align="center">

** End Self-Test **

</div>

The printer is ready to receive data as soon as it completes the self-test.

Chapter 4. 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 left digit and count down the left column of the table for the right digit. 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 0	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	1	XON 17	! 33	1 49	A 65	Q 81	a 97	q 113	ü 129	æ 145	í 161	▓ 177	┴ 193	╤ 209	ß 225	± 241
2	0010	2	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	0011	3	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	EOT 4	DC4 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 5	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	6	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	7	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	8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	1001	HT 9	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	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	1100	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108		124	î 140	£ 156	¼ 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	ε 238	■ 254
F	1111	15	31	/ 47	? 63	O 79	_ 95	o 111	127	Å 143	ƒ 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	255

Page 0
(PC437 :   USA, Standard Europe)
(International Character Set : USA)

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	─ 176	タ 192	ミ 208	▬ 224	✕ 240
1 / 0001	▬ 129	┬ 145	｡ 161	ア 177	チ 193	ム 209	┠ 225	円 241
2 / 0010	▬ 130	┤ 146	「 162	イ 178	ツ 194	メ 210	┿ 226	年 242
3 / 0011	▬ 131	┝ 147	」 163	ウ 179	テ 195	モ 211	┥ 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	〒 248
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	▒ 254
F / 1111	┼ 143	⌒ 159	ッ 175	ソ 191	マ 207	゜ 223	╲ 239	SP 255

Page 1 (Katakana)

- 19 -

	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	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	¾ 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	ı 213	Õ 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	½ 171	╗ 187	╦ 203	█ 219	Ù 235	¹ 251
C	1100	î 140	£ 156	¼ 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	× 158	« 174	¥ 190	╬ 206	Ì 222	¯ 238	■ 254
F	1111	Å 143	ƒ 159	» 175	┐ 191	¤ 207	▀ 223	´ 239	255

Page 2 (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	ß 225	± 241
2	0010	é 130	È 146	ó 162	▓ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	0011	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	0100	ã 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	° 248
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	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	1100	Ô 140	£ 156	¼ 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	ε 238	■ 254
F	1111	Â 143	Ó 159	» 175	┐ 191	⊥ 207	▀ 223	∩ 239	255

Page 3 (PC860 : Portuguese)

HEX	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	È 145	´ 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
2	0010	é 130	Ê 146	ó 162	▓ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	0011	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	° 248
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	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	1100	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	ⁿ 252
D	1101	= 141	Ù 157	¾ 173	╜ 189	= 205	▌ 221	φ 237	² 253
E	1110	À 142	Û 158	« 174	╛ 190	╬ 206	▐ 222	ε 238	■ 254
F	1111	§ 143	ƒ 159	» 175	┐ 191	┴ 207	▀ 223	∩ 239	255

Page 4 (PC 863 : 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	ß 225	± 241
2	0010	é 130	Æ 146	ó 162	▓ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	0011	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	° 248
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	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	1100	î 140	£ 156	¼ 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	ε 238	■ 254
F	1111	Å 143	ƒ 159	¤ 175	┐ 191	┴ 207	▀ 223	∩ 239	255

Page 5 (PC 865 : Nordic)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	€ 128	SP 144	SP 160	° 176	À 192	Ð 208	à 224	ð 240
1	0001	SP 129	' 145	¡ 161	± 177	Á 193	Ñ 209	á 225	ñ 241
2	0010	' 130	' 146	¢ 162	² 178	Â 194	Ò 210	â 226	ò 242
3	0011	ƒ 131	" 147	£ 163	³ 179	Ã 195	Ó 211	ã 227	ó 243
4	0100	„ 132	" 148	¤ 164	´ 180	Ä 196	Ô 212	ä 228	ô 244
5	0101	… 133	• 149	¥ 165	µ 181	Å 197	Õ 213	å 229	õ 245
6	0110	† 134	– 150	¦ 166	¶ 182	Æ 198	Ö 214	æ 230	ö 246
7	0111	‡ 135	— 151	§ 167	· 183	Ç 199	× 215	ç 231	÷ 247
8	1000	ˆ 136	˜ 152	¨ 168	¸ 184	È 200	Ø 216	è 232	ø 248
9	1001	‰ 137	™ 153	© 169	¹ 185	É 201	Ù 217	é 233	ù 249
A	1010	Š 138	š 154	ª 170	º 186	Ê 202	Ú 218	ê 234	ú 250
B	1011	‹ 139	› 155	« 171	» 187	Ë 203	Û 219	ë 235	û 251
C	1100	Œ 140	œ 156	¬ 172	¼ 188	Ì 204	Ü 220	ì 236	ü 252
D	1101	SP 141	SP 157	- 173	½ 189	Í 205	Ý 221	í 237	ý 253
E	1110	Ž 142	ž 158	® 174	¾ 190	Î 206	Þ 222	î 238	þ 254
F	1111	SP 143	Ÿ 159	‾ 175	¿ 191	Ï 207	ß 223	ï 239	ÿ 255

Page 16 (WPC1252)

HEX	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	А 128	Р 144	а 160	▓ 176	└ 192	╨ 208	р 224	Ё 240
1	0001	Б 129	С 145	б 161	▒ 177	┴ 193	╤ 209	с 225	ё 241
2	0010	В 130	Т 146	в 162	▓ 178	┬ 194	╥ 210	т 226	Є 242
3	0011	Г 131	У 147	г 163	│ 179	├ 195	╙ 211	у 227	є 243
4	0100	Д 132	Ф 148	д 164	┤ 180	─ 196	╘ 212	ф 228	Ї 244
5	0101	Е 133	Х 149	е 165	╡ 181	┼ 197	╒ 213	х 229	ї 245
6	0110	Ж 134	Ц 150	ж 166	╢ 182	╞ 198	╓ 214	ц 230	Ў 246
7	0111	З 135	Ч 151	з 167	╖ 183	╟ 199	╫ 215	ч 231	ў 247
8	1000	И 136	Ш 152	и 168	╕ 184	╚ 200	╪ 216	ш 232	° 248
9	1001	Й 137	Щ 153	й 169	╣ 185	╔ 201	┘ 217	щ 233	∙ 249
A	1010	К 138	Ъ 154	к 170	║ 186	╩ 202	┌ 218	ъ 234	· 250
B	1011	Л 139	Ы 155	л 171	╗ 187	╦ 203	█ 219	ы 235	√ 251
C	1100	М 140	Ь 156	м 172	╝ 188	╠ 204	▄ 220	ь 236	№ 252
D	1101	Н 141	Э 157	н 173	╜ 189	═ 205	▌ 221	э 237	¤ 253
E	1110	О 142	Ю 158	о 174	╛ 190	╬ 206	▐ 222	ю 238	■ 254
F	1111	П 143	Я 159	п 175	┐ 191	╧ 207	▀ 223	я 239	255

Page 17 (PC866 : Cyrillic #2)

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1	0001	ü 129	Ĺ 145	í 161	▓ 177	┴ 193	Đ 209	ß 225	″ 241
2	0010	é 130	Í 146	ó 162	▓ 178	┬ 194	Ď 210	Ô 226	˛ 242
3	0011	â 131	ô 147	ú 163	│ 179	├ 195	Ë 211	Ń 227	ˇ 243
4	0100	ä 132	ö 148	Ą 164	┤ 180	─ 196	ď 212	ń 228	˘ 244
5	0101	ů 133	Ľ 149	ą 165	Á 181	┼ 197	Ň 213	ň 229	§ 245
6	0110	ć 134	ľ 150	Ž 166	Â 182	Ă 198	Í 214	Š 230	÷ 246
7	0111	ç 135	Ś 151	ž 167	Ě 183	ă 199	Î 215	š 231	¸ 247
8	1000	ł 136	ś 152	Ę 168	Ş 184	╚ 200	ě 216	Ŕ 232	° 248
9	1001	ë 137	Ö 153	ę 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	1010	Ő 138	Ü 154	SP 170	║ 186	╩ 202	┌ 218	ŕ 234	˙ 250
B	1011	ő 139	Ť 155	ź 171	╗ 187	╦ 203	█ 219	Ű 235	ű 251
C	1100	î 140	ť 156	Č 172	╝ 188	╠ 204	▄ 220	ý 236	Ř 252
D	1101	Ź 141	Ł 157	ş 173	Ż 189	= 205	Ţ 221	Ý 237	ř 253
E	1110	Ä 142	× 158	« 174	ż 190	╬ 206	Ů 222	ţ 238	■ 254
F	1111	Ć 143	č 159	» 175	┐ 191	¤ 207	▀ 223	´ 239	255

Page 18 (PC852 :   Latin 2)

HEX	8	9	A	B	C	D	E	F
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	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	¾ 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	Õ 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	½ 171	╗ 187	╦ 203	█ 219	Ù 235	¹ 251
C / 1100	î 140	£ 156	¼ 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	× 158	« 174	¥ 190	╬ 206	Ì 222	¯ 238	■ 254
F / 1111	Å 143	ƒ 159	» 175	┐ 191	¤ 207	▀ 223	´ 239	255

Page 19 (PC858)

- 27 -

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	• 128	β 144	160	، 176	ﻉ 192	ذ 208	ـ 224	ﹽ 240
1	0001	· 129	∞ 145	ـ 161	١ 177	ء 193	ر 209	ﻓ 225	241
2	0010	· 130	Ø 146	آ 162	٢ 178	آ 194	ز 210	ﻗ 226	ن 242
3	0011	√ 131	± 147	£ 163	٣ 179	أ 195	ﺳ 211	ك 227	ﻩ 243
4	0100	▒ 132	½ 148	¤ 164	٤ 180	ؤ 196	ﺷ 212	ﻝ 228	ﻪ 244
5	0101	─ 133	¼ 149	ﺃ 165	٥ 181	ع 197	ﺻ 213	ﻣ 229	ى 245
6	0110	│ 134	≈ 150	166	٦ 182	ﺋ 198	ﺿ 214	ن 230	ي 246
7	0111	┼ 135	« 151	167	٧ 183	ا 199	ط 215	ه 231	ﻍ 247
8	1000	┤ 136	» 152	ﺍ 168	٨ 184	ﺑ 200	ظ 216	و 232	ق 248
9	1001	┬ 137	ﻷ 153	ﺑ 169	٩ 185	ة 201	ع 217	ﻰ 233	ﻵ 249
A	1010	├ 138	ﻻ 154	ت 170	ﻑ 186	ت 202	غ 218	ﻳ 234	ﻶ 250
B	1011	┴ 139	155	ﺙ 171	، 187	ﺛ 203	ا 219	ﺿ 235	ل 251
C	1100	┐ 140	156	، 172	ﺱ 188	ﺟ 204	┐ 220	ﻋ 236	ك 252
D	1101	┌ 141	ﻻ 157	ﺝ 173	ﺵ 189	ﺣ 205	÷ 221	ﻍ 237	ي 253
E	1110	└ 142	ﻻ 158	ﺡ 174	ﺹ 190	ﺫ 206	× 222	ﻏ 238	■ 254
F	1111	┘ 143	159	ﺥ 175	؟ 191	د 207	ع 223	ﻡ 239	255

Page 32(PC864 : Arabic)

HEX	BIN	8 1000	9 1001	A 1010	B 1011	C 1100	D 1101	E 1110	F 1111
0	0000	א 128	נ 144	á 160	░ 176	└ 192	╨ 208	α 224	≡ 240
1	0001	ב 129	ס 145	í 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
2	0010	ג 130	ע 146	ó 162	▓ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	0011	ד 131	ף 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	0100	ה 132	פ 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	0101	ו 133	ץ 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	0110	ז 134	צ 150	ª 166	╢ 182	╞ 198	╓ 214	μ 230	÷ 246
7	0111	ח 135	ק 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	1000	ט 136	ר 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	1001	י 137	ש 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	∙ 249
A	1010	ך 138	ת 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	1011	כ 139	¢ 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	1100	ל 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	ⁿ 252
D	1101	ם 141	¥ 157	¡ 173	╜ 189	═ 205	▌ 221	φ 237	² 253
E	1110	מ 142	Pt 158	« 174	╛ 190	╬ 206	▐ 222	ε 238	■ 254
F	1111	ן 143	ƒ 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	255

Page 33(PC862 : Hebrew)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Α 128	Ρ 144	ι 160	▒ 176	└ 192	╨ 208	ω 224	Ώ 240
1	0001	Β 129	Σ 145	κ 161	▒ 177	┴ 193	╤ 209	ά 225	± 241
2	0010	Γ 130	Τ 146	λ 162	▓ 178	┬ 194	╥ 210	έ 226	≥ 242
3	0011	Δ 131	Υ 147	μ 163	│ 179	├ 195	╙ 211	ή 227	≤ 243
4	0100	Ε 132	Φ 148	ν 164	┤ 180	─ 196	╘ 212	ϊ 228	Ϊ 244
5	0101	Ζ 133	Χ 149	ξ 165	╡ 181	┼ 197	╒ 213	ί 229	Ϋ 245
6	0110	Η 134	Ψ 150	ο 166	╢ 182	╞ 198	╓ 214	ό 230	÷ 246
7	0111	Θ 135	Ω 151	π 167	╖ 183	╟ 199	╫ 215	ύ 231	≈ 247
8	1000	Ι 136	α 152	ρ 168	╕ 184	╚ 200	╪ 216	ϋ 232	° 248
9	1001	Κ 137	β 153	ς 169	╣ 185	╔ 201	┘ 217	ώ 233	∙ 249
A	1010	Λ 138	γ 154	σ 170	║ 186	╩ 202	┌ 218	Ά 234	· 250
B	1011	Μ 139	δ 155	τ 171	╗ 187	╦ 203	█ 219	Έ 235	√ 251
C	1100	Ν 140	ε 156	υ 172	╝ 188	╠ 204	▄ 220	Ή 236	ⁿ 252
D	1101	Ξ 141	ζ 157	φ 173	╜ 189	= 205	▌ 221	Ί 237	² 253
E	1110	Ο 142	η 158	χ 174	╛ 190	╬ 206	▐ 222	Ό 238	■ 254
F	1111	Π 143	θ 159	ψ 175	┐ 191	╧ 207	▀ 223	Ύ 239	255

Page 34(PC737 : Greek)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	SP 128	SP 144	SP 160	SP 176	SP 192	SP 208	SP 224	SP 240
1	0001	SP 129	SP 145	SP 161	SP 177	SP 193	SP 209	SP 225	SP 241
2	0010	SP 130	SP 146	SP 162	SP 178	SP 194	SP 210	SP 226	SP 242
3	0011	SP 131	SP 147	SP 163	SP 179	SP 195	SP 211	SP 227	SP 243
4	0100	SP 132	SP 148	SP 164	SP 180	SP 196	SP 212	SP 228	SP 244
5	0101	SP 133	SP 149	SP 165	SP 181	SP 197	SP 213	SP 229	SP 245
6	0110	SP 134	SP 150	SP 166	SP 182	SP 198	SP 214	SP 230	SP 246
7	0111	SP 135	SP 151	SP 167	SP 183	SP 199	SP 215	SP 231	SP 247
8	1000	SP 136	SP 152	SP 168	SP 184	SP 200	SP 216	SP 232	SP 248
9	1001	SP 137	SP 153	SP 169	SP 185	SP 201	SP 217	SP 233	SP 249
A	1010	SP 138	SP 154	SP 170	SP 186	SP 202	SP 218	SP 234	SP 250
B	1011	SP 139	SP 155	SP 171	SP 187	SP 203	SP 219	SP 235	SP 251
C	1100	SP 140	SP 156	SP 172	SP 188	SP 204	SP 220	SP 236	SP 252
D	1101	SP 141	SP 157	SP 173	SP 189	SP 205	SP 221	SP 237	SP 253
E	1110	SP 142	SP 158	SP 174	SP 190	SP 206	SP 222	SP 238	SP 254
F	1111	SP 143	SP 159	SP 175	SP 191	SP 207	SP 223	SP 239	SP 255

Page 255 (Space Page)

Country	ASCII code (Hex)											
	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
USA	#	$	@	[	\	]	^	`	{	|	}	~
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	é	ä	ö	å	ü
Italy	#	$	@	°	\	é	^	ù	ä	ò	è	í
Spain I	Pt	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
Japan	#	$	@	[	¥	]	^	`	{	|	}	~
Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Denmak II	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Spain II	#	$	à	¡	Ñ	¿	é	`	í	ñ	ó	ú
Latin America	#	$	à	¡	Ñ	¿	é	ü	í	ñ	ó	ú
Korea	#	$	@	[	₩	]	^	`	{	|	}	~

International Character Set

Chapter 5. Control Commands

5-1. EPSON mode commands

Command	Hexadecimal	Function
<HT>	09	Horizontal tab
<LF>	0A	Print and line feed
<FF>	0C	Print and return to standard mode (In page mode)
<CR>	0D	Print and carriage return
<CAN>	18	Cancel print data in page mode
<DLE> <EOT> n	10 04 n	Real-time status transmission
<DLE> <ENQ> n	10 05 n	Real-time request to printer
<DLE> <DC4> …	10 14 01 m t	Generate pulse in real-time
	10 14 02 01 08	Execute power-off sequence
	10 14 08 01 03 14 01 06 02 08	Clear buffer(s)
<ESC> <FF>	1B 0C	Print data in page mode
<ESC> <SP> n	1B 20 n	Set right-side character spacing
<ESC> ! n	1B 21 n	Select print mode(s)
<ESC> $ nL nH	1B 24 nL nH	Set absolute print position
<ESC> % n	1B 25 n	Select / cancel user-defined character set
<ESC> & y c1 c2 …	1B 26 y c1 c2 …	Define user-defined characters
<ESC> * m nL nH …	1B 2A m nL nH …	Select bit-image mode
<ESC> - n	1B 2D n	Turn underline mode on/off
<ESC> 2	1B 32	Select default line spacing
<ESC> 3 n	1B 33 n	Set line spacing
<ESC> = n	1B 3D n	Select peripheral device
<ESC> ? n	1B 3F n	Cancel user-defined characters
<ESC> @	1B 40	Initialize printer
<ESC> D n1…nK 00	1B 44 n1…nk 00	Set horizontal tab positions
<ESC> E n	1B 45 n	Turn emphasized mode on/off
<ESC> G n	1B 47 n	Turn double-strike mode on/off
<ESC> J n	1B 4A n	Print and feed paper
<ESC> L	1B 4C	Select page mode
<ESC> M n	1B 4D n	Select character font
<ESC> R n	1B 52 n	Select an international character Set
<ESC> S	1B 53	Select standard mode
<ESC> T n	1B 54 n	Select print direction in page mode
<ESC> V n	1B 56 n	Turn 90°clockwise rotation mode on/off
<ESC> W xL …	1B 57 xL …	Set printing area in page mode
<ESC> \ nL nH	1B 5C nL nH	Set relative print position
<ESC> a n	1B 61 n	Select justification

Command	Hexadecimal	Function
<ESC> c 3 n	1B 63 33 n	Select paper sensor(s) to output paper-end signals
<ESC> c 4 n	1B 63 34 n	Select paper sensor(s) to stop printing
<ESC> c 5 n	1B 63 35 n	Enable/disable panel buttons
<ESC> d n	1B 64 n	Print and feed n lines
<ESC> p m t1 t2	1B 70 m t1 t2	General pulse
<ESC> t n	1B 74 n	Select character code table
<ESC> { n	1B 7B n	Turn upside-down printing mode on/off
<FS> p n m	1C 70 n m	Print NV bit image
<FS> q n …	1C 71 n …	Define NV bit image
<GS> ! n	1D 21 n	Select character size
<GS> $ nL nH	1D 24 nL nH	Set absolute vertical print position in page mode
<GS> (A …	1D 28 41 …	Execute test print
<GS> (C …	1D 28 43 …	Edit of user NV memory
<GS> (D …	1D 28 44 …	Enable / disable real-time command
<GS> (E …	1D 28 45 …	User setup commands
<GS> 8 L …	1D 38 4C …	Set graphics data
<GS> (L …	1D 28 4C …	
<GS> (M …	1D 28 4D …	Customize printer control value(s)
<GS> (N …	1D 28 4E …	Select character style(s)
<GS> (k …	1D 28 6B …	Setup and print symbol
<GS> * x y …	1D 2A x y …	Define downloaded bit image
<GS> / m	1D 2F m	Print downloaded bit image
<GS> :	1D 3A	Start/end macro definition
<GS> B n	1D 42 n	Turn white/black reverse printing mode on/off
<GS> H n	1D 48 n	Select printing position of HRI characters
<GS> I n	1D 49 n	Transmit printer ID
<GS> L nL nH	1D 4C nL nH	Set left margin
<GS> P x y	1D 50 x y	Set horizontal and vertical motion units
<GS> V m <GS> V m n	1D 56 m 1D 56 m n	Select cut mode and cut paper
<GS> W nL nH	1D 57 nL nH	Set printing area width
<GS> \ nL nH	1D 5C nL nH	Set relative vertical print position in page mode
<GS> ^ r t m	1D 5E r t m	Execute macro

Command	Hexadecimal	Function
<GS> a n	1D 61 n	Enable/disable Automatic Status Back (ASB)
<GS> f n	1D 62 n	Select font for HRI characters
<GS> g 0…	1D 67 30…	Initialize maintenance counter
<GS> g 2…	1D 67 32…	Transmit maintenance counter
<GS> h n	1D 68 n	Set bar code height
<GS> k m ….NUL <GS> k m n …	1D 6B m… NUL 1D 6B m n …	Print bar code
<GS> r n	1D 72 n	Transmit status
<GS> v 0 m …	1D 76 30 m…	Print raster bit image
<GS> w n	1D 77 n	Set bar code width

5-2. STAR mode commands

Command	Hexadecimal	Function
<ESC> R n	1B 52 n	Select international character set
<ESC> <GS> t n	1B 1D 74n	Select character table
<ESC> / 1 <ESC> / <1>	1B 2F 31 1B 2F 01	Select slash zero
<ESC> / 0 <ESC> / <0>	1B 2F 30 1B 2F 00	Select normal zero
<ESC> b n1 n2 n3 n4 d1 … dk <RS>	1B 62 n1 n2 n3 n4 d1 … dk 1E	Select bar code printing
<ESC> M	1B 4D	Select 12-dot pitch printing
<ESC> p	1B 70	Select 14-dot pitch printing
<ESC> P	1B 50	Select 15-dot pitch printing
<ESC> :	1B 3A	Select 16-dot pitch printing
<ESC> <SP> n	1B 20 n	Set character spacing
<SO>	0E	Sets the printing magnified double in character width
<DC4>	14	Resets the printing magnified in character width
<ESC> W n	1B 57 n	Sets the magnification rate in character width.
<ESC> <SO>	1B 0E	Sets the printing magnified double in character height
<ESC> <DC4>	1B 14	Resets the printing magnified in character height
<ESC> h n	1B 68 n	Sets the magnification rate in character height
<ESC> - 1 <ESC> - <1>	1B 2D 31 1B 2D 01	Select underlining
<ESC> _ 1 <ESC> _ <1>	1B 5F 31 1B 5F 01	Select overlining
<ESC> 4	1B 34	Select highlight printing
<ESC> 5	1B 35	Cancel highlight printing
<SI>	0F	Inverted printing
<DC2>	12	Cancel inverted printing
<ESC> E	1B 45	Select emphasized printing
<ESC> F	1B 46	Cancel emphasized printing
<ESC> C n	1B 43 n	Set page length in lines
<ESC> C <0> n	1B 43 00 n	Set page length in inches
<ESC> N n	1B 4E n	Set bottom margin

Command	Hexadecimal	Function
<ESC> O	1B 4F	Cancel bottom margin
<ESC> l n	1B 6C n	Set left margin
<ESC> Q n	1B 51 n	Set right margin
<LF>	0A	Line feed
<ESC> a n	1B 61 n	Feed paper n lines
<FF>	0C	Form feed
<HT>	09	Horizontal tab
<VT>	0B	Vertical tab
<ESC> z 1	1B 7A 31	Set line spacing to 4 mm
<ESC> 0	1B 30	Set line spacing to 3 mm
<ESC> J n	1B 4A n	One time n/4 mm feed
<ESC> I n	1B 49 n	One time n/8 mm feed
<ESC> B n1 n2…<0>	1B 42 n1 n2 … 00	Set vertical tab stops
<ESC> D n1 n2…<0>	1B 44 n1 n2 … 00	Set horizontal tab stops
<ESC> <GS> A n1 n2	1B 1D 41 n1 n2	Absolute position setting
<ESC> <GS> R n1 n2	1B 1D 52 n1 n2	Relative position setting
<ESC> <GS> a n	1B 1D 61 n	Alignment
<ESC> K n1 n2 d1 … dk	1B 4B n1 n2 d1 … dk	Print normal density graphics
<ESC> L n1 n2 d1 … dk	1B 4C n1 n2 d1 … dk	Print high density graphics
<ESC> k n1 n2 d1 … dk	1B 6B n1 n2 d1 … dk	Print fine density graphics
<ESC> X n1 n2 d1 … dk	1B 58 n1 n2 d1 … dk	Print fine density graphics
<ESC> <FS> p n m	1B 1C 70 n m	Print NV bit image
<ESC> <FS> q n d1…dk	1B 1C 71 n d1…dk	Define NV bit image
<ESC> & 1 1 n m1 m2 … m48	1B 26 31 31 n m1 m2 … m48	Define download character
<ESC> & <1> <1> n m1 m2 … m48	1B 26 01 01 n m1 m2 … m48	
<ESC> & 1 0 n	1B 26 31 30 n	Delete a download character
<ESC> & <1> <0> n	1B 26 01 00 n	
<ESC> % 1 <ESC> % <1>	1B 25 31 1B 25 01	Enable download character set
<ESC> % 0 <ESC> % <0>	1B 25 30 1B 25 00	Disable download character set
<ESC> <GS> * x y …	1B 1D 2A x y …	Definition of download bit image

Command	Hexadecimal	Function
<ESC> <GS> / m	1B 1D 2F m	Printing of download bit image
<ESC> <BEL> n1 n2	1B 07 n1 n2	Define drive pulse width for peripheral device #1
<BEL>	07	Control peripheral device #1
<FS>	1C	Control peripheral device #1 immediately
<EM>	19	Control peripheral device #2
<SUB>	1A	Control peripheral device #2 immediately
<ESC> d n	1B 64 n	Partial Cut
<CAN>	18	Cancel last line & Initialize printer immediately
<DC3>	13	Deselect printer
<DC1>	11	Set select mode
<RS>	1E	Beep the buzzer
<ESC> @	1B 40	Initialize printer
<ENQ>	05	Inquiry(Status inquiry)
<EOT>	04	Near end status inquiry
<ESC> ? <LF> <NUL>	1B 3F 0A 00	Reset printer hardware (Perform test print)
<ESC> 8 n1 n2	1B 38 n1 n2	Registers a logo pattern
<ESC> 9 n1 n2	1B 39 n1 n2	Prints a logo pattern

APPENDIX
A. Miscellaneous Notes
A.1 Notes on Printing and Paper Feeding
1) Because the ELLIX series printer is a line printer, it automatically feeds paper after printing the data.
   Therefore, when the line spacing for one line is set to a smaller value than the print data, paper may be fed more than the set amount just to print the data.
   For example, when the line spacing for one line is set to 10 dots (10/180 inches) and only paper feeding is executed, paper is fed for 10 dots; however, if bit-image characters are printed, paper is fed for 24 dots. (Refer to Table A.1)
   When only rotated characters are printed on one line, paper feeding is executed as shown in Table A.1

Table A.1 Paper Feeding Amount

		Required Paper Feeding Amount(dots)
Normal Characters	Font A	24 x number of times enlarged in vertical
	Font B	17 x number of times enlarged in vertical
Rotated Characters	Font A	12 x number of times enlarged in vertical
	Font B	9 x number of times enlarged in vertical
Bit image (**ESC * **)		24

2) When the printer goes to the standby (data-waiting) state during printing, it temporarily stops printing and feeding paper. When data is transmitted and printing is executed, paper may shift 1 to 3 dots from the print starting position, which especially affects bit-image printing.
3) Interval of auto-cutting operation in the receipt section.
   For driving the auto cutter of the receipt section, take the interval as a minimum of 10 lines of printing or paper feeding (to prevent small pieces of cut paper from dropping into the auto cutter).

A.2 Notes on Printer Installation
1) Connect the external power supply to the power supply connector of the printer. Then plug in the external power supply and turn it on if necessary. Be sure not to connect the external power supply with the wrong polarity. If it is connected incorrectly, the internal circuit fuse of the printer may be blown or the external power supply may be damaged.
2) The power supply voltage is within the range of 24 V $\pm$ 7%. If the power supply voltage drops to the outside of the range above during printing, the printer stops printing and waits until the voltage returns to normal and then automatically begins printing again. Therefore, printing speed may slow down, the printer pitch may not be correct, and some dots in some character may not be printed.
3) When either a high or low voltage error occurs, turn off the power as soon as possible.

A.3 Other notes

1) Printer mechanism handling
    ① Do not pull the paper out when the cover is closed.
    ② Because the thermal elements of the printer head and driver IC are easy to break, do not touch them with any metal objects.
    ③ Since the areas around the printer head become very hot during and just after printing, do not touch them.
    ④ Do not use the cover open button except when necessary.
    ⑤ Do not touch the surface of the printer head because dust and dirt can stick to the surface and damage the elements.
    ⑥ Thermal paper containing Na+, K+, and CI ions can harm the printer head thermal elements.
       Therefore, be sure to use only the specified paper.
    ⑦ Label paper cannot be used.

2) Thermal paper handling
    ① Notes on using thermal paper
       Chemicals and oil on thermal paper may cause discoloration and faded printing.
       Therefore, pay attention to the following:
       a) Use water paste, starch paste, polyvinyl paste, or CMC paste when gluing thermal paper.
       b) Volatile organic solvents such as alcohol, ester, and ketone can cause discoloration.
       c) Some adhesive tapes may cause discoloration or faded printing.
       d) If thermal paper touches anything which includes phthalic acid ester plasticizer for a long time, it can reduce the image formation ability of the paper and can cause the printed image to fade. Therefore, when storing thermal paper in a card case or sample notebook, be sure to use only products made from polyethylene, polypropylene, or polyester.
       e) If thermal paper touches diazo copy paper immediately after copying, the printed surface may be discolored.
       f) Thermal paper must not be stored with the printed surfaces against each other because the printing may be transferred between the surfaces.
       g) If the surface of thermal paper is scratched with a hard metal object such as a nail, the paper may become discolored.
    ② Notes on thermal paper storage
       Since color development begins at 70°C (158°F), Thermal paper should be protected from high temperature, humidity, and light, both before and after printing.
       a) Store paper away from high temperature and humidity.
          Do not store thermal paper near a heater or in enclosed places exposed to direct sunlight.
       b) Avoid direct light.
          Extended exposure to direct light may cause discoloration or faded printing.

3) Others
    ● Because this printer uses plated steel, the cutting edges may be subject to rust. However, this does not affect the printer performance.

B. Two-color printing

Two-color printing is performed using two-color thermal paper if the two-color print command is executed and if two-color paper is selected by the customized value setting with Function 5 of the **GS (E** command.

fn	Format	Function
1	**GS (E *pL pH fn d1 d2***	Changes into the user setting mode
2	**GS (E *pL pH fn d1 d2 d3***	Ends the user setting mode session. (Performs a soft reset.)
3	**GS (E *pL pH fn [a1 b18...b11]... [ak bk8...bk1]***	Sets value(s) for the memory switch.
4	**GS (E *pL pH fn a***	Transmits the settings of the memory switch to the host.
5	**GS (E *pL pH fn [a1 n1L n1H]... [ak nkL nkH]***	Sets the customized value(s).
6	**GS (E *pL pH fn a***	Transmits the customized value settings.
7	**GS (E *pL pH fn a d1 d2***	Copies the user-defined page.
8	**GS (E *pL pH fn y c1 c2 [x d1... d(y Xx)]k***	Defines data in column format for the character code page in the active area.
9	**GS (E *pL pH fn x c1 c2 [y d1... d(y Xx)]k***	Defines data in raster format for the character code page in the active area.
10	**GS (E *pL pH fn c1 c2***	Deletes the data in the character code page in the active area.
11	-	-
12	**GS (E *pL pH fn a***	Transmits the communication conditions for the serial interface.

- *pL, pH* specify ($pL + pH \times 256$) as the number of bytes after *pH* (*fn* and *[parameter]*).
- The user setting mode is a special mode to change the values in the NV user memory with this command.
- In Function 2, the printer performs software reset. Therefore, the printer clears the receive and print buffers, and resets all settings (user-defined characters, macros, and the character style) to the mode in effect at power on.

C. Recovery from the Auto Cutter Error

If a foreign object, for example a paper clip drops in the auto cutter and causes the auto cutter to lock up, the printer will error. The main Error LED will blink and the buzzer will beep regularly indicating there is a problem. In this instance the following procedure can be used to release the printer error.

1) Turn the power off using the POWER button
2) If it is possible open the printer cover, remove the roll and jammed paper and load a new paper roll.
① If it is not possible to open the printer cover, turn the power on using the POWER button
② Move the paper cutter from right to left
③ Turn the gear in a counter clockwise direction as shown in the diagram until the buzzer stops
④ If the buzzer fails to stop, turn the gear in a clockwise direction until the buzzer stops
⑤ Open the printer cover, remove the roll and jammed paper and load a new paper roll.
⑥ Power off and on the printer, or send the DLE ENQ n command to reset the printer.
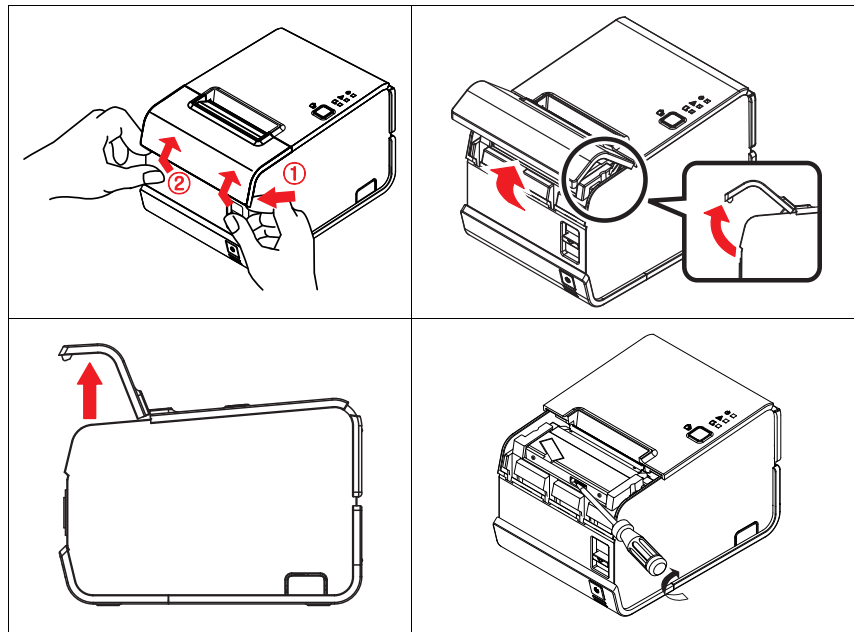
CAUTION : Be careful of the sharp edges of the printer cover.

D. Printer Head Cleaning

Paper dust on the heating elements may lower the printing quality. In this case, clean the printer head as follows:

1) Open the printer cover.
2) Clean the thermal elements of the printer head using a cotton swab moistened with alcohol solvent (ethanol, methanol, IPA).

NOTES : Do not touch the print head thermal elements.
          Do not scratch the printer head.

---

3) Insert a paper roll and close the printer head.

NOTES : The print head becomes very hot just after printing and is very dangerous. Be sure to allow the print head to cool down (after printing) before cleaning it. Also, be sure to turn off the printer power before cleaning the print head.
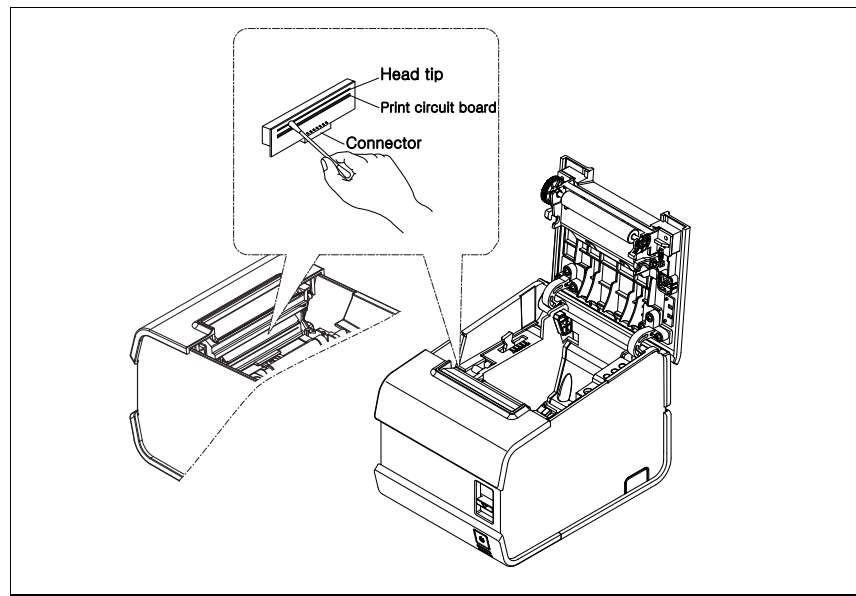
Figure C.1 Print Head Thermal Elements

(*) Depending on the paper roll used, paper dust may stick to the platen roller and paper roll end sensor. To remove the paper dust, clean the platen roller and paper roll end sensor with a cotton swab moistened with water.

E. Connectors
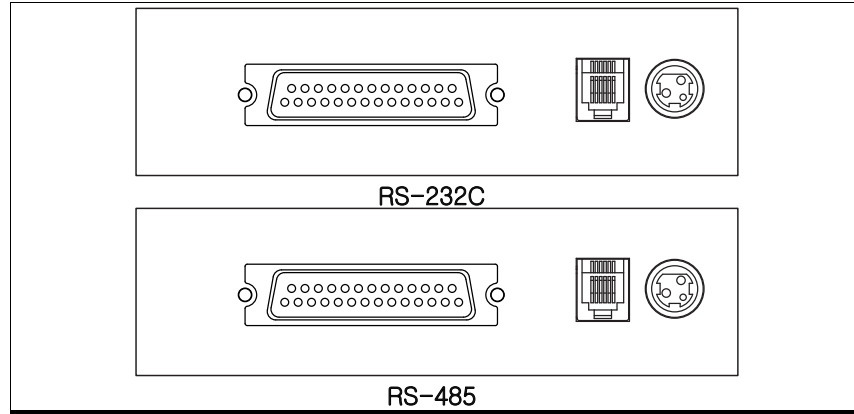
ELLIX 20S Connector
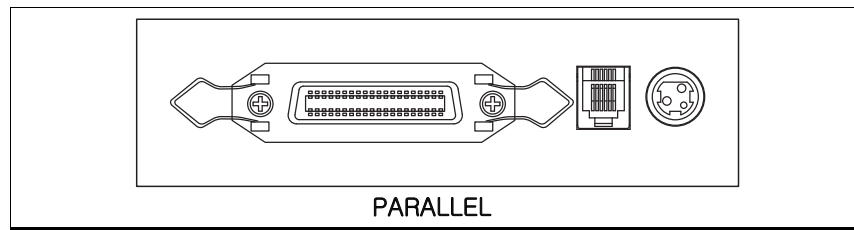
ELLIX 20P Connector
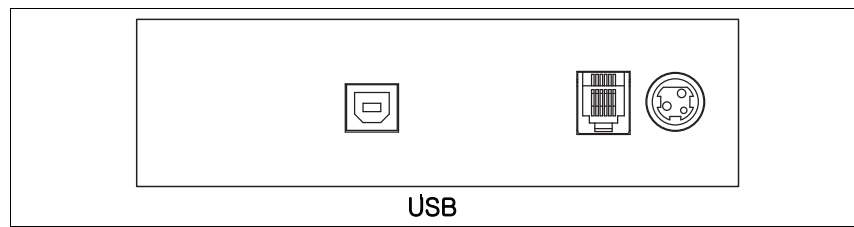
ELI - USB Connector
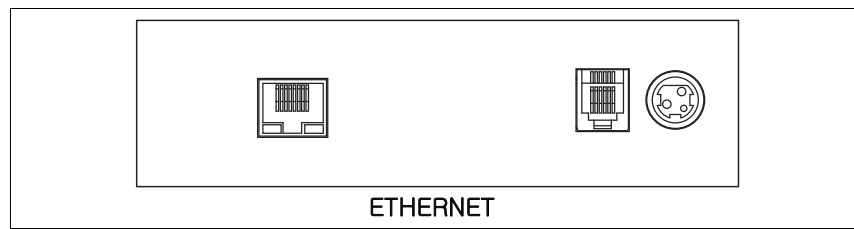
ELI - ETHER Connector

E.1 Interface Connector

■ Serial Interface (RS-232)

Pin No.	Signal name	Direction	Function
1	FG	-	Frame Ground
2	TxD	Output	Transmit Data
3	RxD	Input	Receive Data
4	RTS	Output	Request To Send
6	DSR	Input	Data Set Ready
7	SG	-	Signal Ground
20	DTR	Output	Data Terminal Ready

Host side (DSUB9 FEMALE)

15m

Printer side (DSUB25 MALE)

Host side		Printer side
2(RXD)	←	2(TXD)
3(TXD)	→	3(RXD)
4(DTR)	→	4(RTS)
6(DSR)	←	5(CTS)
7(RTS)		6(DSR)
8(CTS)	←	20(DTR)
5(S.GND)	←	7(S.GND)

PCB

(INTERFACE CABLE PIN CONNECTION)

■ Serial Interface (RS-485)

PinNo.	Signal name	Direction	Function
1	FGND	-	Frame Ground
2	SD2	Output	Transmit Data
3	SD1	Output	
4	RD2	Input	Receive Data
5	RD1	Input	
7	SGND	-	Signal Ground
8 9	DR2 DR1	Output	DSR(RS-232)
10 11	CS2 CS1	Input	DTR(RS-232)

Host side
(DSUB25
FEMALE)

←1.2km→

```
1,7(S.GND)          1,7(S.GND)
2(TXD-)             2(TXD-)
3(TXD+)             3(TXD+)
4(RXD-)             4(RXD-)
5(RXD+)             5(RXD+)
8(DTR-)             8(DTR-)
9(DTR+)             9(DTR+)
10(DSR-)            10(DSR-)
11(DSR+)            11(DSR+)
```

Printer side
(DSUB25
MALE)

(INTERFACE CABLE PIN CONNECTION)

◼ Parallel Interface (IEEE 1284)

Pin	Source	Compatibility Mode	Nibble Mode	Byte Mode
1	Host	nStrobe	HostClk	HostClk
2	Host / Printer	Data 0 (LSB)	-	Data 0(LSB)
3	Host / Printer	Data 1	-	Data 1
4	Host / Printer	Data 2	-	Data 2
5	Host / Printer	Data 3	-	Data 3
6	Host / Printer	Data 4	-	Data 4
7	Host / Printer	Data 5	-	Data 5
8	Host / Printer	Data 6	-	Data 6
9	Host / Printer	Data 7 (MSB)	-	Data 7(MSB)
10	Printer	nAck	PtrClk	PtrClk
11	Printer	Busy	PtrBusy /Data3,7	PtrBusy
12	Printer	Perror	AckDataReq /Data2,6	AckDataReq
13	Printer	Select	Xflag /Data1,5	Xflag
14	Host	nAutoFd	HostBusy	HostBusy
15	-	NC	NC	NC
16	-	GND	GND	GND
17	-	FG	FG	FG
18	Printer	Logic-H	Logic-H	Logic-H
19~30	-	GND	GND	GND
31	Host	nInit	nInit	nInit
32	Printer	nFault	nDataAvail /Data0,4	nDataAvail
33	-	GND	ND	ND
34	Printer	DK_Status	ND	ND
35	Printer	+5V	ND	ND
36	Host	nSelectIn	1284-Active	1284-Active

Host side (DSUB25 MALE)	 DSUB 25P MALE CENTRONICS 36P (INTERFACE CABLE PIN CONNECTION)	Printer side
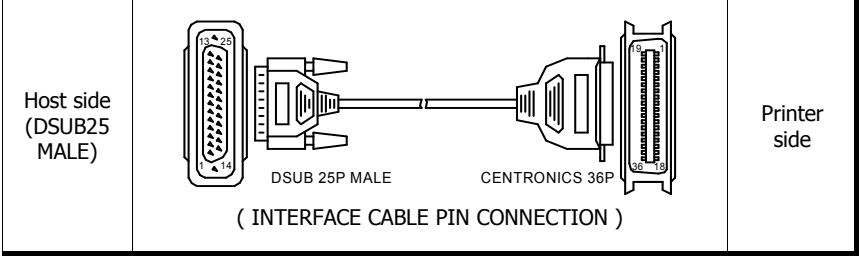
■ USB Interface

Pin	Signal name	Line Color	Function
Shell	Shield	Drain Wire	Frame Ground
1	VBUS	Red	Host Power
2	D-	White	Data Line(D-)
3	D+	Green	Data Line(D+)
4	GND	Black	Signal Ground
Host side	 "A" TYPE PLUG "B" TYPE PLUG (USB INTERFACE CABLE)		Printer side

■ Ethernet Interface

Pin No	Signal Name	Signal Direction	Function
1	ENET TX+	OUT	Ethernet Transmit Data Line(+)
2	ENET TX-	OUT	Ethernet Transmit Data Line(-)
3	ENET RX+	IN	Ethernet Receive Data Line(+)
4	N.C	-	-
5	N.C	-	-
6	ENET RX-	IN	Ethernet Receive Data Line(+)
7	N.C	-	-
8	N.C	-	-

MAX 100M

Host side

1(ENET TX+) → 6(ENET RX-)
2(ENET TX-) → 3(ENET RX+)
3(ENET RX+) ← 2(ENET TX-)
6(ENET RX-) ← 1(ENET TX+)
4(N.C) ↔ 4(N.C)
5(N.C) ↔ 5(N.C)
7(N.C) ↔ 7(N.C)
8(N.C) ↔ 8(N.C)

Printer side

(PRINTER to HOST I/F CABLE)

1(ENET TX+) ↔ 1(ENET TX+)
2(ENET TX-) ↔ 2(ENET TX-)
3(ENET RX+) ↔ 3(ENET RX+)
4(N.C) ↔ 4(N.C)
5(N.C) ↔ 5(N.C)
6(ENET RX-) ↔ 6(ENET RX-)
7(N.C) ↔ 7(N.C)
8(N.C) ↔ 8(N.C)

(PRINTER to HUB I/F CABLE)
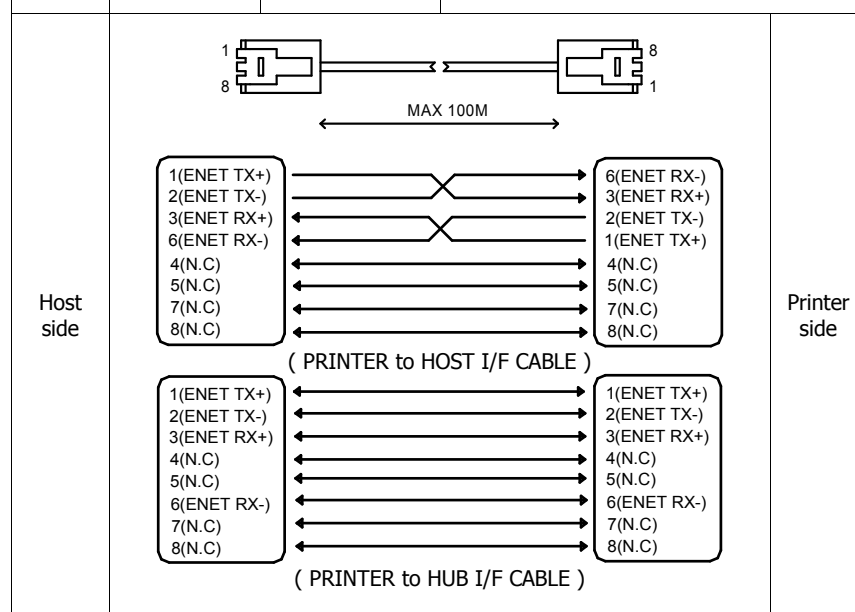
NOTES : Even though pins 4,5,7, and 8 are not used, it is mandatory that they be present in the cable.

E.2 Drawer Connector

| Pin No.	Signal name	Direction
1	Frame Ground	-
2	Drawer kick- out drive signal 1	Output
3	Drawer open/close signal	Input
4	+24V	-
5	Drawer kick- out drive signal 2	Output
6	Signal Ground	-

F. Error Status

The printer beeps the buzzer or continuously the ERROR LED blinks when it enters the Error status.
There are four kinds if error status in ELLIX20 as below:

■   **Paper Out Error** (Buzzer status)

ELLIX20 beeps the buzzer as like " Beep---,Beep---,…" and turns on the NO PAPER LED when detecting the paper out. Change the paper roll in the ELLIX20 then clear the error status after some motor feeds.
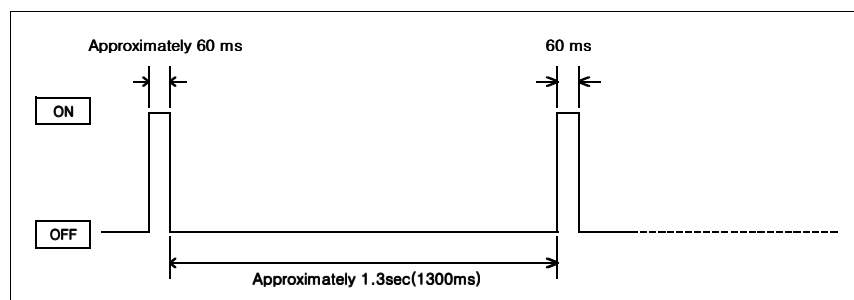
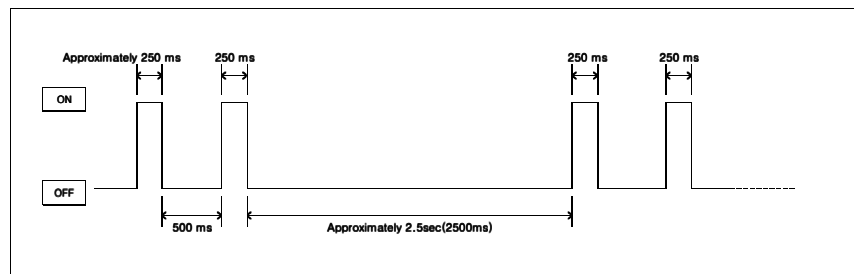■   **Cutter Jam** (Buzzer and ERROR LED status)

If buzzer and ERROR LED beeps or blinks as like
"Beep Beep ---, Beep Beep--- …", the printer is on Cutter Jam error status.
You can remove this error status by looking into **APPENDIX C**<Page 42>.
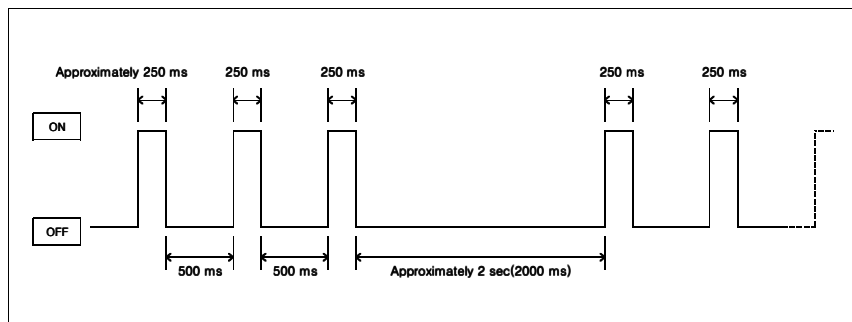
■ **Cutter Not Home** (Buzzer and ERROR LED status)

If the cutter blade is not in home position when the normal waiting time, the printer enters Cutter Not Home error status.

The buzzer and ERROR LED beeps and blinks as like:

(Beep beep beep----, Beep beep beep----, Beep beep beep…)

Approximately 250 ms   250 ms   250 ms   250 ms   250 ms

ON

OFF

500 ms   500 ms   Approximately 2 sec(2000 ms)

If you want to clear error status above, open the cutter cover and screw a motor worm gear with a screwdriver until the buzzer stops ringing.

■ **Interface board is not plugged in.**

(Buzzer ,ERROR LED and NO PAPER LED status)

If the ERROR LED and NO PAPER LED blink as below pattern without power LED on, the printer is in the no interface error status. If you do not have interface board, you must contact the dealers.

Approximately 500 ms

ON

OFF

Approximately 500 ms
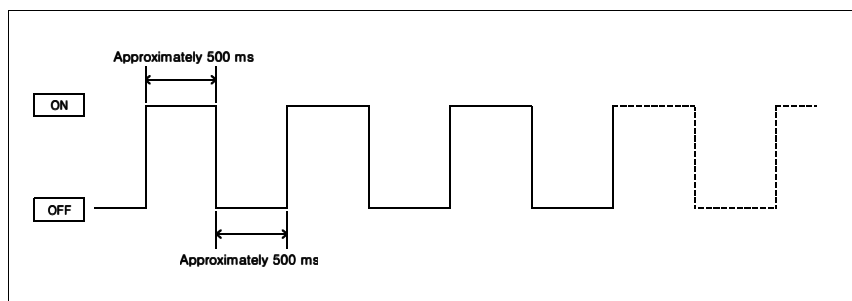
G. Adjusting the roll paper Near-End sensor location

This sensor has five settings, which are scale #1,2,3,4 and 5. The Near-End sensor is set to #3 positions at the factory. You can change the setting to adjustment scale #1,2,3,4 and 5 as described below.

1. Push the open button and open the cover open.
2. Change the setting to the scale #1,2,3,4 and 5.
3. If you find that there is too much paper remaining on the roll paper when the Near-End sensor is triggered. Push the knob Near-End sensor up to scale #4 or #5. Otherwise pull it down to scale #1 or #2 as illustrated figure.

The accuracy of the Near-End sensor depends on the adjustment scale setting and the winding core diameter of the roll paper. The Near-End sensor is set at adjustment #3. This is the appropriate scale for the recommended paper thickness.
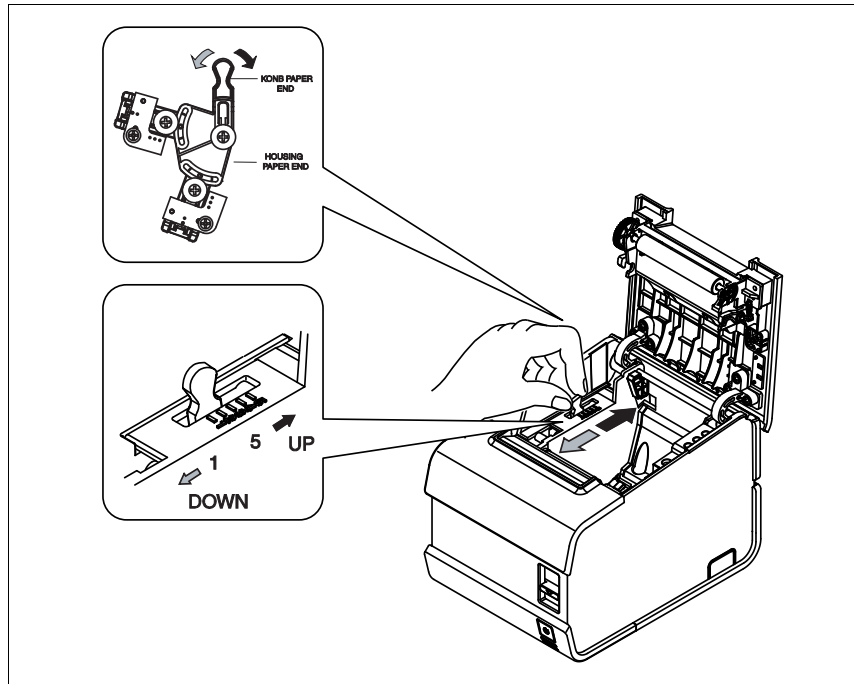
H. Specification

H.1 General Printer specification

Printing method	Thermal line printing
Dot density	180 dpi
Printing width	72 mm
Paper width	80 mm
Characters per line (default)	42 (Font A)
	56 (Font B)
Printing speed	52 lines/sec
	220 mm/sec
Receive Buffer Size	4 Kbytes
NOTE : Printing speed may be slower, depending on the data transmission speed and the combination of control commands.	

Supply voltage	Input voltage	100 ~ 240V AC
	Frequency	50 ~ 60 Hz
	Output voltage	+24V DC
Environmental conditions	Temperature	5 ~ 45℃ (Operating)
		-10 ~ 50℃ (Storage)
	Humidity	10 ~ 90 % RH
		; except the paper roll.

MCBF	Mechanical	Printer	70,000,000 lines
		TPH	1×10^8 pulse (Approximately 100 Km)
		Cutter	1,500,000 Cut

H.2 Paper specification

Item	Description	Remark
Paper Type	Mitsubishi F5841	Black color
	Mitsubishi PB670*	Red/Black color
	Mitsubishi PB770*	Blue/Black color
Paper Form	Paper Roll	
Paper Width	80 (+0,-1) , 3.14"(+0,-0.039")	
Paper Roll Size	Max 83mm	
Spool Inside Dia.	12mm (0.47")	
Spool Outside Dia.	18mm (0.71")	

*The Following paper can be used instead of the specified paper above.
 • TF50KS-E   : Nippon Paper industries Co., Ltd.
*Mitsubishi PB670 / PB770 are two color mode papers.