

ELLIX 20

RECEIPT PRINTER

OPERATOR'S Manual

All specifications are subject to change without notice

Warning - U.S.

This equipment has been tested 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 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.

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.

<p>NOTES : The socket-outlet shall be near the equipment and it shall be easily accessible.</p>
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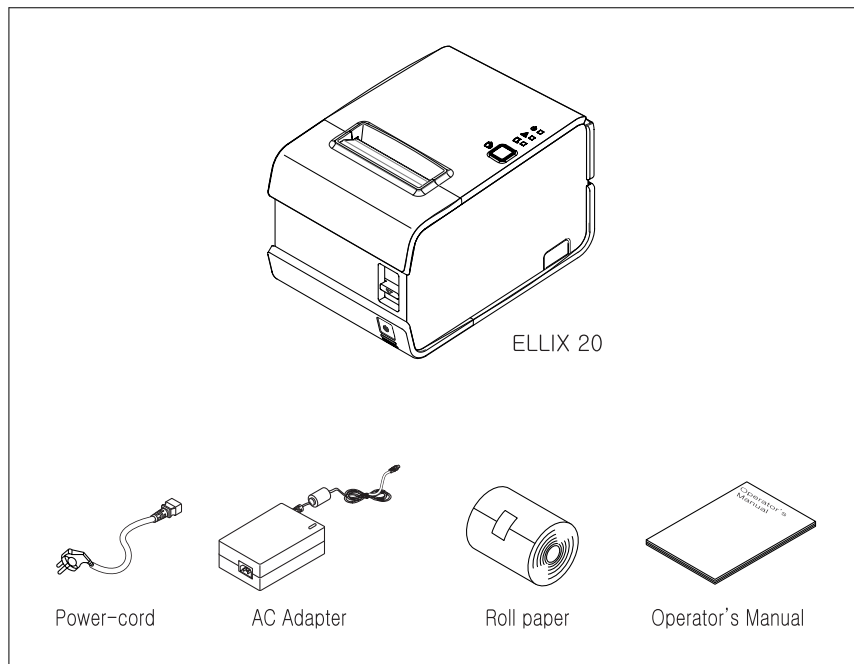
Table of Contents

CHAPTER 1. SETTING UP THE PRINTER	4
1-1. UNPACKING	4
1-2. CONNECTING THE CABLES	5
1-3. CONNECTING THE COMPUTER	6
1-4. CONNECTING THE DRAWER	7
1-5. CONNECTING THE POWER SUPPLY	8
1-6. INSTALLING OR REPLACING THE PAPER ROLL	10
1-6-1. Partition Installation	11
1-6-2. Wall Mount Installation	12
1-6-3. Paper Roll Installation	13
1-7. ADJUSTMENTS AND SETTINGS	14
1-7-1. Serial Interface Specification	15
1-7-2. Parallel Interface Specification	16
1-8. USING THE PRINTER	17
1-8-1. Control Panel	17
CHAPTER 2. HEXADECIMAL DUMPING	18
CHAPTER 3. THE SELF TEST	19
CHAPTER 4. CODE TABLE	20
CHAPTER 5. CONTROL COMMANDS	32
5-1. EPSON MODE COMMANDS	32
5-2. STAR MODE COMMANDS	35
APPENDIX	38
A. MISCELLANEOUS NOTES	38
B. TWO-COLOR PRINTING	40
C. RECOVERY FORM THE AUTO CUTTER ERROR	41
D. PRINTER HEAD CLEANING	42
E. CONNECTORS	43
D.1 Interface Connector	44
D.2 Drawer Connector	47
F. ERROR STATUS	48
G. ADJUSTING THE ROLL PAPER NEAR-END SENSOR LOCATION	50
H. SPECIFICATION	51
G.1 General Printer specification	51
G.2 Paper specification	52

Chapter 1. Setting Up the Printer

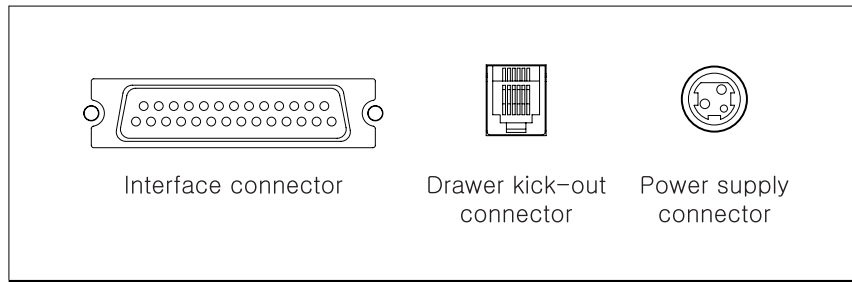
1-1. Unpacking

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



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:

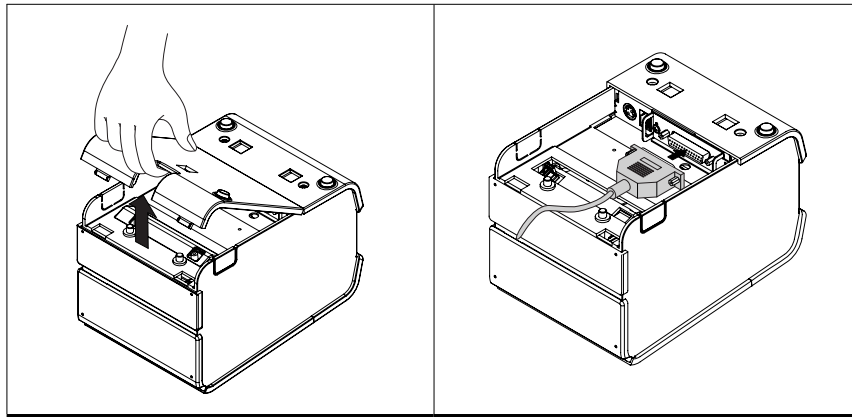


NOTES : Before connecting any of the cables, make sure that both the printer and the computer should be turned off.

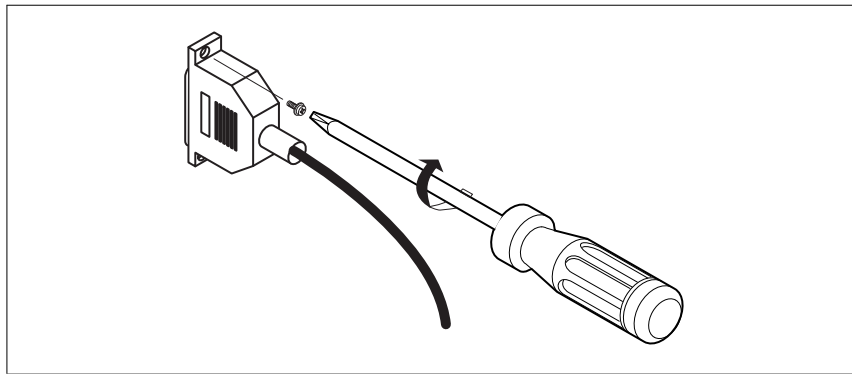
1-3. Connecting the computer

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

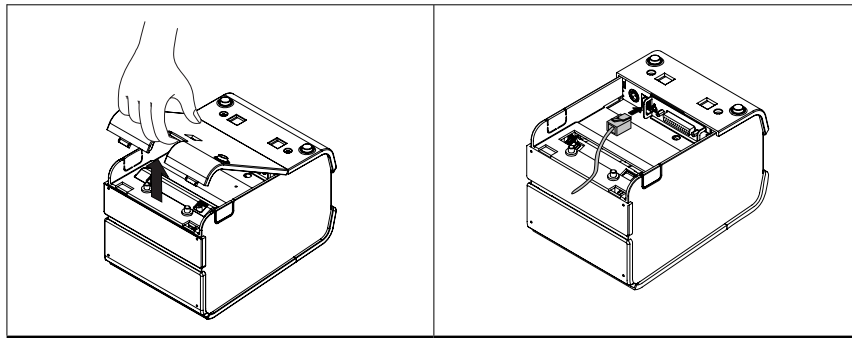
WARNING:

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:

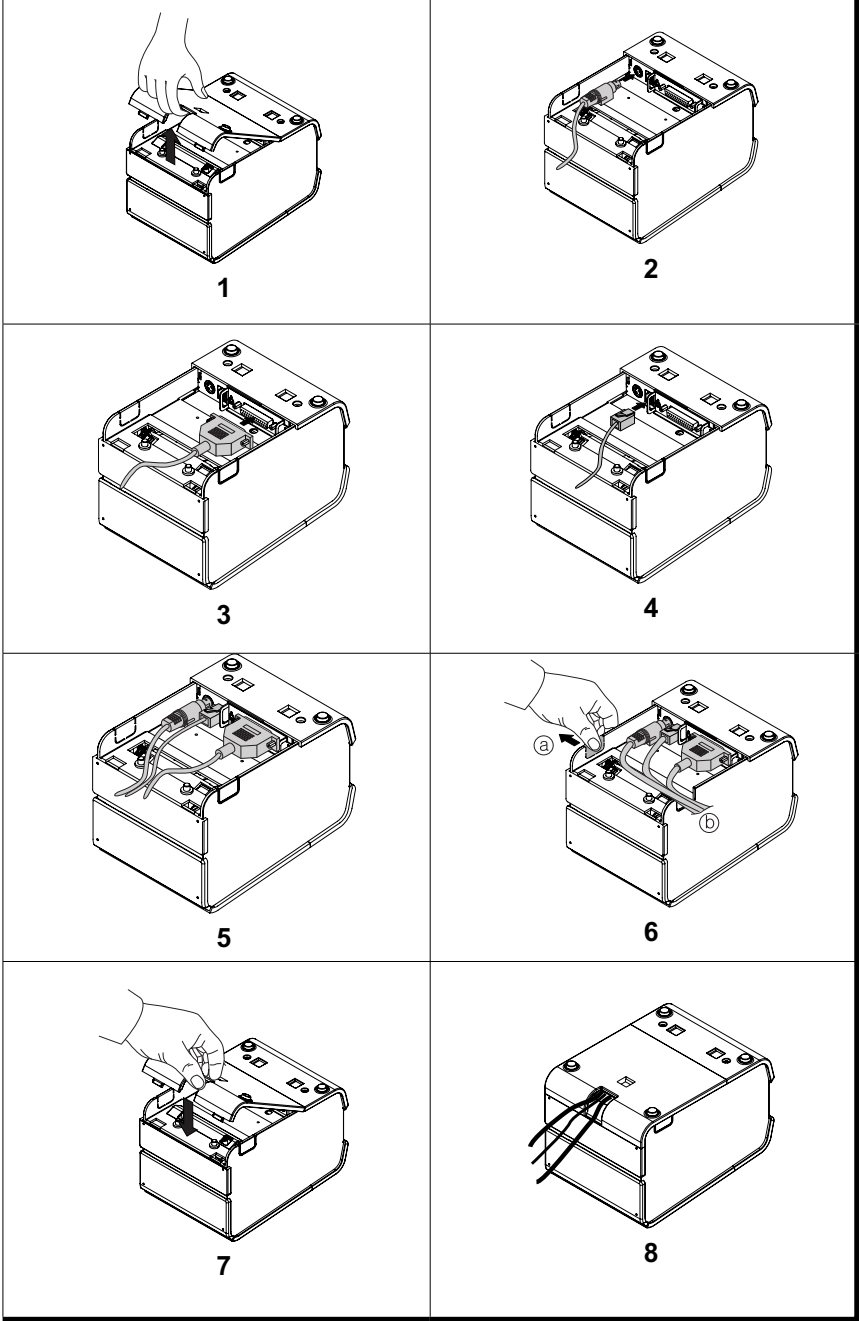
When connecting or disconnecting the power supply from the printer, make sure that the power supply is not plugged into an electrical outlet. Otherwise you may damage the power supply or the printer.

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.

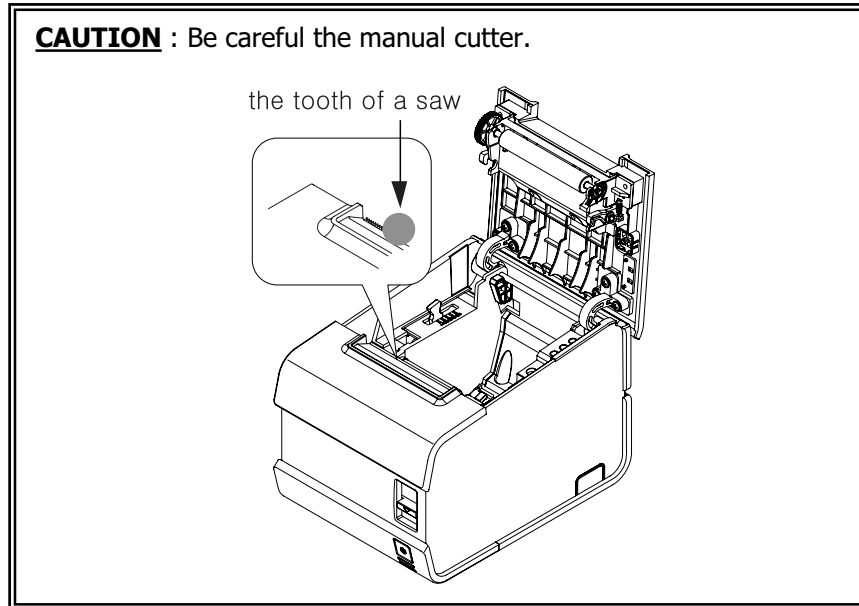
1. Make sure the printer is turned off.
2. Pull the hole of the Cover-Wire to separate from the printer.
3. Plug the DC cord connector into the power jack on the printer.
4. If it is necessary to connect the interface, plug the interface connector into the interface port on the printer.
5. If it is necessary 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 turn the ELLIX20 off, press and hold the power button about four seconds 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

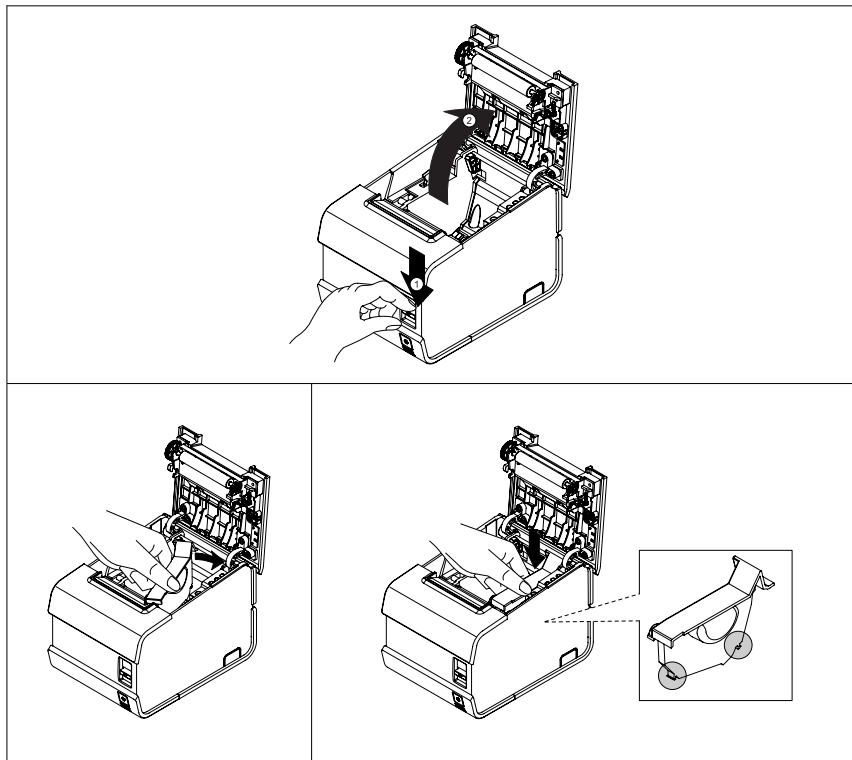


1-6-1. Partition Installation

NOTES : The Paper partition is factory option item.

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

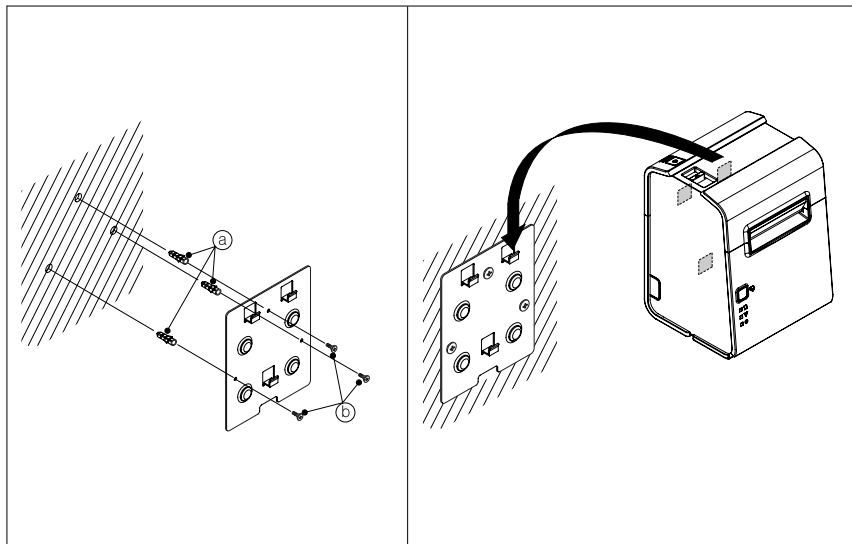
1. Push the Open-Button and open the Cover-Open.
2. Insert the Partition into the Paper-Supply as shown.
3. Push the Partition until the two hook locks firmly.



1-6-2. Wall Mount Installation

NOTES : Wall mount bracket is factory option item.

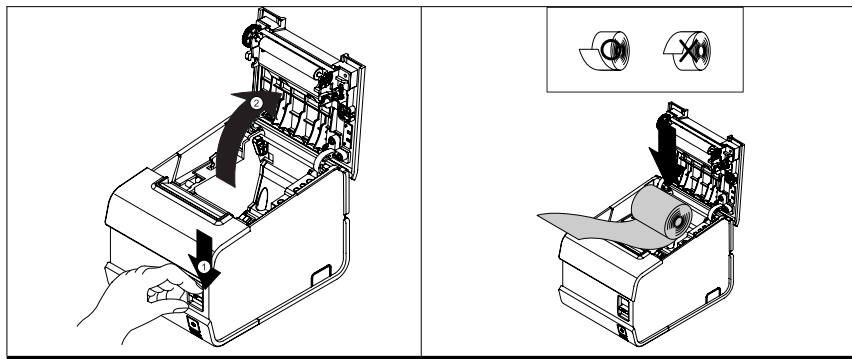
1. Drill the wall to make the three holes and put the three anchors ③ into the each hole.
(Notice the position of the holes.)
2. Tighten the three screws ④ into the each anchor to fix the BRKT-Wall to the wall as shown.
3. Hang the printer on the three hooks and fix it down.



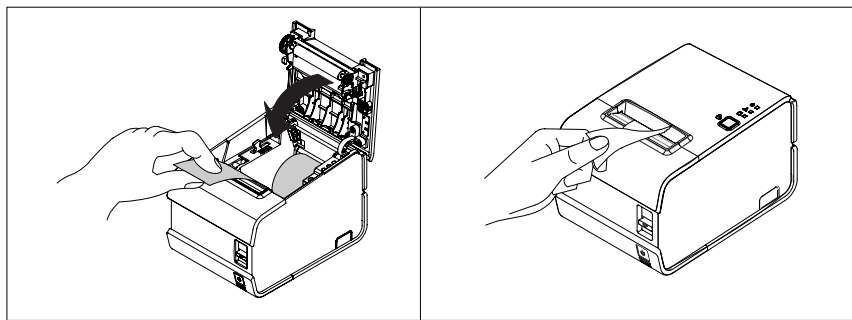
1-6-3. Paper Roll Installation

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. If the cover-open button will not open the cover, see page 3-4 or 3-6 in Troubleshooting.



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.

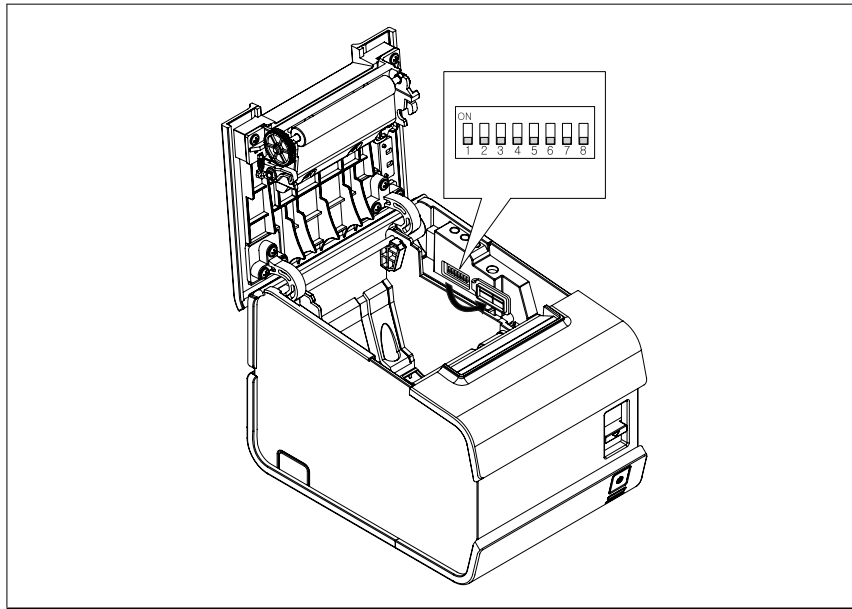
1-7. Adjustments and Settings

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.



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	Baud rate selection	Refer to the Following Table		OFF
6				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.

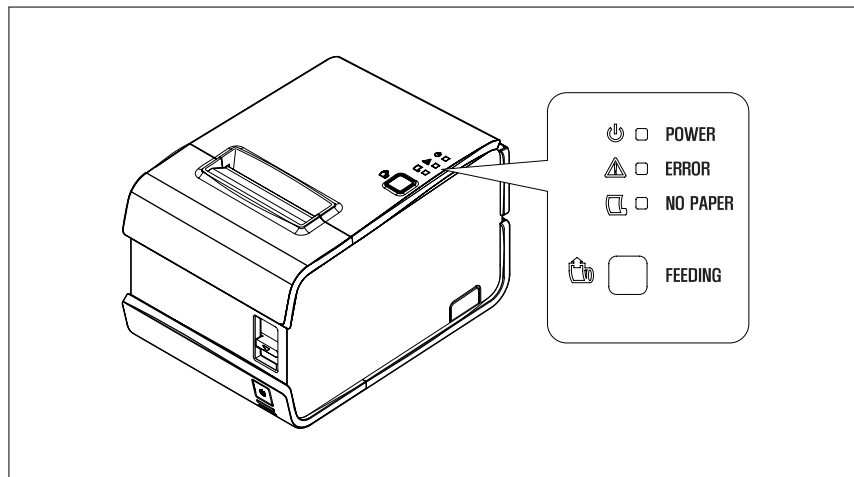
◆ Print Density

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 48> 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.

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.B ar  
43 6F 64 65 20 50 72 69 6E 74 C o d e P r i n t  
69 6E 67 0A 0A 1D 6B 00 31 32 i n g . . . K . 1 2
```

- A period (.) is printed for each code that has no ASCII equivalent.
- During the hex 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).

SELF TEST PRINTING.

PLEASE PRESS PAPER FEED BUTTON.

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.

**** End Self-Test ****

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
0	0000 NUL	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
1	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	
2	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111		
3	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111			
4	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111				
5	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111					
6	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111						
7	0111	1000	1001	1010	1011	1100	1101	1110	1111							
8	1000	1001	1010	1011	1100	1101	1110	1111								
9	1001	1010	1011	1100	1101	1110	1111									
A	1010	1011	1100	1101	1110	1111										
B	1011	1100	1101	1110	1111											
C	1100	1101	1110	1111												
D	1101	1110														
E	1110															
F	1111															

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	夕 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	ア 167	キ 183	ヌ 199	ラ 215	▲ 231	秒 247
8	1000	⊥ 136	⌈ 152	イ 168	ク 184	ネ 200	リ 216	♠ 232	〒 248
9	1001	⊥ 137	⌈ 153	ウ 169	ケ 185	ノ 201	ル 217	♥ 233	市 249
A	1010	⊥ 138	⌋ 154	エ 170	コ 186	ハ 202	レ 218	♦ 234	区 250
B	1011	⊥ 139	⌋ 155	オ 171	サ 187	ヒ 203	ロ 219	♣ 235	町 251
C	1100	⊥ 140	⌈ 156	ヤ 172	シ 188	フ 204	リ 220	● 236	村 252
D	1101	⊥ 141	⌋ 157	ユ 173	ス 189	ヘ 205	ソ 221	○ 237	人 253
E	1110	⊥ 142	⌋ 158	ヨ 174	セ 190	ホ 206	タ 222	／ 238	☼ 254
F	1111	⊥ 143	⌋ 159	ツ 175	ヨ 191	マ 207	° 223	＼ 239	SP 255

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

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç <u>128</u>	É <u>144</u>	á <u>160</u>	☼ <u>176</u>	Ł <u>192</u>	Ɑ <u>208</u>	α <u>224</u>	≡ <u>240</u>
1	0001	ü <u>129</u>	À <u>145</u>	í <u>161</u>	☼ <u>177</u>	⊥ <u>193</u>	Ɱ <u>209</u>	β <u>225</u>	± <u>241</u>
2	0010	é <u>130</u>	È <u>146</u>	ó <u>162</u>	☼ <u>178</u>	⊤ <u>194</u>	Ɐ <u>210</u>	Γ <u>226</u>	≥ <u>242</u>
3	0011	â <u>131</u>	ô <u>147</u>	ú <u>163</u>	<u>179</u>	⊥ <u>195</u>	Ɒ <u>211</u>	π <u>227</u>	≤ <u>243</u>
4	0100	ã <u>132</u>	õ <u>148</u>	ñ <u>164</u>	⊥ <u>180</u>	- <u>196</u>	ⱱ <u>212</u>	Σ <u>228</u>	<u>244</u>
5	0101	à <u>133</u>	ò <u>149</u>	Ñ <u>165</u>	⊥ <u>181</u>	⊥ <u>197</u>	Ⱳ <u>213</u>	σ <u>229</u>	∫ <u>245</u>
6	0110	Á <u>134</u>	Ú <u>150</u>	^a <u>166</u>	⊥ <u>182</u>	⊥ <u>198</u>	ⱳ <u>214</u>	μ <u>230</u>	÷ <u>246</u>
7	0111	ç <u>135</u>	ù <u>151</u>	^o <u>167</u>	⊥ <u>183</u>	⊥ <u>199</u>	ⱴ <u>215</u>	τ <u>231</u>	≈ <u>247</u>
8	1000	ê <u>136</u>	ì <u>152</u>	¿ <u>168</u>	⊥ <u>184</u>	Ⱶ <u>200</u>	ⱶ <u>216</u>	Φ <u>232</u>	° <u>248</u>
9	1001	Ê <u>137</u>	Ï <u>153</u>	Ò <u>169</u>	⊥ <u>185</u>	ⱷ <u>201</u>	ⱷ <u>217</u>	Θ <u>233</u>	· <u>249</u>
A	1010	è <u>138</u>	Û <u>154</u>	¬ <u>170</u>	⊥ <u>186</u>	ⱸ <u>202</u>	ⱸ <u>218</u>	Ω <u>234</u>	· <u>250</u>
B	1011	Í <u>139</u>	é <u>155</u>	½ <u>171</u>	⊥ <u>187</u>	ⱹ <u>203</u>	■ <u>219</u>	δ <u>235</u>	√ <u>251</u>
C	1100	Ô <u>140</u>	£ <u>156</u>	¼ <u>172</u>	⊥ <u>188</u>	⊥ <u>204</u>	■ <u>220</u>	∞ <u>236</u>	n <u>252</u>
D	1101	ì <u>141</u>	Û <u>157</u>	ı <u>173</u>	⊥ <u>189</u>	= <u>205</u>	■ <u>221</u>	φ <u>237</u>	² <u>253</u>
E	1110	Ã <u>142</u>	Ps <u>158</u>	« <u>174</u>	⊥ <u>190</u>	ⱺ <u>206</u>	■ <u>222</u>	ε <u>238</u>	■ <u>254</u>
F	1111	Â <u>143</u>	Ó <u>159</u>	» <u>175</u>	⊥ <u>191</u>	⊥ <u>207</u>	■ <u>223</u>	∩ <u>239</u>	<u>255</u>

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç <small>128</small>	É <small>144</small>	ı <small>160</small>	⋮ <small>176</small>	Ł <small>192</small>	⌌ <small>208</small>	α <small>224</small>	≡ <small>240</small>
1	0001	ü <small>129</small>	È <small>145</small>	´ <small>161</small>	⋮̇ <small>177</small>	⊥ <small>193</small>	⌌̄ <small>209</small>	β <small>225</small>	± <small>241</small>
2	0010	é <small>130</small>	Ê <small>146</small>	ó <small>162</small>	⋮̈ <small>178</small>	⌌̇ <small>194</small>	⌌̈ <small>210</small>	Γ <small>226</small>	≥ <small>242</small>
3	0011	â <small>131</small>	ô <small>147</small>	ú <small>163</small>	⋮̉ <small>179</small>	⌌̈̇ <small>195</small>	⌌̉ <small>211</small>	π <small>227</small>	≤ <small>243</small>
4	0100	Â <small>132</small>	Ë <small>148</small>	¨ <small>164</small>	⋮̊ <small>180</small>	⌌̉̇ <small>196</small>	⌌̊ <small>212</small>	Σ <small>228</small>	∣ <small>244</small>
5	0101	à <small>133</small>	ï <small>149</small>	· <small>165</small>	⋮̋ <small>181</small>	⌌̊̇ <small>197</small>	⌌̋ <small>213</small>	σ <small>229</small>	∣̇ <small>245</small>
6	0110	¶ <small>134</small>	û <small>150</small>	³ <small>166</small>	⋮̌ <small>182</small>	⌌̋̇ <small>198</small>	⌌̌ <small>214</small>	μ <small>230</small>	÷ <small>246</small>
7	0111	ç <small>135</small>	ù <small>151</small>	ˉ <small>167</small>	⋮̍ <small>183</small>	⌌̌̇ <small>199</small>	⌌̍ <small>215</small>	τ <small>231</small>	≈ <small>247</small>
8	1000	ê <small>136</small>	æ <small>152</small>	î <small>168</small>	⋮̎ <small>184</small>	⌌̍̇ <small>200</small>	⌌̎ <small>216</small>	Φ <small>232</small>	° <small>248</small>
9	1001	ë <small>137</small>	Ô <small>153</small>	˘ <small>169</small>	⋮̏ <small>185</small>	⌌̎̇ <small>201</small>	⌌̏ <small>217</small>	Θ <small>233</small>	· <small>249</small>
A	1010	è <small>138</small>	Û <small>154</small>	˘̄ <small>170</small>	⋮̐ <small>186</small>	⌌̏̇ <small>202</small>	⌌̐ <small>218</small>	Ω <small>234</small>	·̄ <small>250</small>
B	1011	ï <small>139</small>	ç̄ <small>155</small>	½ <small>171</small>	⋮̑ <small>187</small>	⌌̐̇ <small>203</small>	■ <small>219</small>	δ <small>235</small>	√ <small>251</small>
C	1100	î <small>140</small>	£ <small>156</small>	¼ <small>172</small>	⋮̒ <small>188</small>	⌌̑̇ <small>204</small>	■̄ <small>220</small>	∞ <small>236</small>	n <small>252</small>
D	1101	= <small>141</small>	Û̄ <small>157</small>	¾ <small>173</small>	⋮̓ <small>189</small>	=̄ <small>205</small>	■̇ <small>221</small>	φ <small>237</small>	² <small>253</small>
E	1110	À <small>142</small>	Û̇ <small>158</small>	« <small>174</small>	⋮̔ <small>190</small>	⌌̑̈̇ <small>206</small>	■̈ <small>222</small>	ε <small>238</small>	■̇ <small>254</small>
F	1111	§ <small>143</small>	f̄ <small>159</small>	» <small>175</small>	⋮̕ <small>191</small>	⌌̑̈̈̇ <small>207</small>	■̈̇ <small>223</small>	∩ <small>239</small>	<small>255</small>

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç <u>128</u>	É <u>144</u>	á <u>160</u>	☼ <u>176</u>	Ł <u>192</u>	Ɑ <u>208</u>	α <u>224</u>	≡ <u>240</u>
1	0001	ü <u>129</u>	æ <u>145</u>	í <u>161</u>	☼ <u>177</u>	Ł <u>193</u>	Ɱ <u>209</u>	β <u>225</u>	± <u>241</u>
2	0010	é <u>130</u>	Æ <u>146</u>	ó <u>162</u>	☼ <u>178</u>	Ŧ <u>194</u>	Ɐ <u>210</u>	Γ <u>226</u>	≥ <u>242</u>
3	0011	â <u>131</u>	ô <u>147</u>	ú <u>163</u>	<u>179</u>	† <u>195</u>	Ɒ <u>211</u>	π <u>227</u>	≤ <u>243</u>
4	0100	ä <u>132</u>	ö <u>148</u>	ñ <u>164</u>	† <u>180</u>	- <u>196</u>	ⱱ <u>212</u>	Σ <u>228</u>	<u>244</u>
5	0101	à <u>133</u>	ò <u>149</u>	Ñ <u>165</u>	‡ <u>181</u>	† <u>197</u>	ƒ <u>213</u>	σ <u>229</u>	∫ <u>245</u>
6	0110	å <u>134</u>	û <u>150</u>	^a <u>166</u>	‡ <u>182</u>	ƒ <u>198</u>	Ⱳ <u>214</u>	μ <u>230</u>	÷ <u>246</u>
7	0111	ç <u>135</u>	ù <u>151</u>	° <u>167</u>	‡ <u>183</u>	‡ <u>199</u>	‡ <u>215</u>	τ <u>231</u>	≈ <u>247</u>
8	1000	ê <u>136</u>	ÿ <u>152</u>	¿ <u>168</u>	‡ <u>184</u>	ⱳ <u>200</u>	‡ <u>216</u>	Φ <u>232</u>	° <u>248</u>
9	1001	ë <u>137</u>	Ö <u>153</u>	ƒ <u>169</u>	‡ <u>185</u>	ⱴ <u>201</u>	‡ <u>217</u>	Θ <u>233</u>	· <u>249</u>
A	1010	è <u>138</u>	Ü <u>154</u>	¬ <u>170</u>	‡ <u>186</u>	Ⱶ <u>202</u>	Ⱶ <u>218</u>	Ω <u>234</u>	· <u>250</u>
B	1011	ï <u>139</u>	ø <u>155</u>	½ <u>171</u>	‡ <u>187</u>	ⱶ <u>203</u>	■ <u>219</u>	δ <u>235</u>	√ <u>251</u>
C	1100	î <u>140</u>	£ <u>156</u>	¼ <u>172</u>	‡ <u>188</u>	† <u>204</u>	■ <u>220</u>	∞ <u>236</u>	n <u>252</u>
D	1101	ì <u>141</u>	Ø <u>157</u>	ı <u>173</u>	‡ <u>189</u>	= <u>205</u>	■ <u>221</u>	φ <u>237</u>	² <u>253</u>
E	1110	Ä <u>142</u>	Ps <u>158</u>	« <u>174</u>	‡ <u>190</u>	‡ <u>206</u>	■ <u>222</u>	ε <u>238</u>	■ <u>254</u>
F	1111	Å <u>143</u>	f <u>159</u>	α <u>175</u>	‡ <u>191</u>	ⱷ <u>207</u>	■ <u>223</u>	∩ <u>239</u>	<u>255</u>

	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	ö 240
1	0001	SP 129	‘ 145	í 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	f 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	^ 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

	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	ℒ 192	℔ 208	р 224	Ë 240
1	0001	Б 129	С 145	б 161	⦿ 177	⊥ 193	⌚ 209	с 225	ë 241
2	0010	В 130	Т 146	в 162	⦿ 178	Г 194	Π 210	т 226	€ 242
3	0011	Г 131	У 147	г 163	⊥ 179	⊥ 195	℔ 211	у 227	€ 243
4	0100	Д 132	Ф 148	д 164	⊥ 180	— 196	ℒ 212	Ф 228	Ï 244
5	0101	Е 133	Х 149	е 165	⊥ 181	⊥ 197	ℒ 213	х 229	ï 245
6	0110	Ж 134	Ц 150	ж 166	⦿ 182	⊥ 198	Π 214	ц 230	ÿ 246
7	0111	З 135	Ч 151	з 167	Π 183	⦿ 199	⦿ 215	ч 231	ÿ 247
8	1000	И 136	Ш 152	и 168	⊥ 184	℔ 200	⦿ 216	ш 232	° 248
9	1001	Й 137	Щ 153	й 169	⦿ 185	ℒ 201	⊥ 217	щ 233	· 249
A	1010	К 138	Ъ 154	к 170	⦿ 186	℔ 202	Г 218	ъ 234	· 250
B	1011	Л 139	Ы 155	л 171	Π 187	Π 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	α 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

	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	Ł 192	đ 208	Ó 224	- 240
1	0001	ü 129	Ĺ 145	í 161	⌘ 177	ł 193	Đ 209	ß 225	" 241
2	0010	é 130	í 146	ó 162	⌘ 178	ṽ 194	Ď 210	Ô 226	˘ 242
3	0011	â 131	ô 147	ú 163	ı 179	ṽ 195	Ě 211	Ň 227	ˇ 243
4	0100	ä 132	ö 148	À 164	ı 180	– 196	đ' 212	ń 228	˘ 244
5	0101	û 133	Ł 149	ą 165	Á 181	† 197	Ň 213	ň 229	§ 245
6	0110	é 134	Ŕ 150	Ž 166	Â 182	Ǻ 198	Í 214	Š 230	÷ 246
7	0111	ç 135	Ś 151	ž 167	Ě 183	ǻ 199	Î 215	š 231	˙ 247
8	1000	ł 136	ś 152	Ę 168	Ş 184	Ł 200	ě 216	Ŕ 232	° 248
9	1001	ë 137	Ö 153	ę 169	Ǫ 185	ł 201	Ĳ 217	Ú 233	˝ 249
A	1010	Ő 138	Û 154	170	ǫ 186	ł 202	ŕ 218	ř 234	˙ 250
B	1011	ő 139	Ŧ 155	ž 171	ǫ 187	ł 203	■ 219	Ů 235	ů 251
C	1100	î 140	Ŧ 156	Č 172	ǫ 188	ł 204	■ 220	ý 236	Ř 252
D	1101	ž 141	Ł 157	š 173	Ž 189	= 205	Ŧ 221	Ý 237	ř 253
E	1110	Ä 142	× 158	« 174	ž 190	ǫ 206	Ů 222	ť 238	■ 254
F	1111	Ć 143	č 159	» 175	ı 191	α 207	■ 223	' 239	255

	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	Ł 192	ð 208	Ó 224	- 240
1	0001	ü 129	æ 145	í 161	⦿ 177	ł 193	Ð 209	ß 225	± 241
2	0010	é 130	Æ 146	ó 162	⦿ 178	Ṭ 194	Ê 210	Ô 226	= 242
3	0011	â 131	ô 147	ú 163	179	Ṫ 195	Ë 211	Ò 227	¼ 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	ℒ 200	Ï 216	ƒ 232	° 248
9	1001	ë 137	Ö 153	® 169	‡ 185	ℓ 201	Ɔ 217	Ú 233	¨ 249
A	1010	è 138	Ü 154	¬ 170	‖ 186	ℓ 202	ƒ 218	Û 234	· 250
B	1011	ï 139	ø 155	½ 171	¶ 187	π 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	ı 173	¢ 189	= 205	ı 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	α 207	■ 223	’ 239	255

	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

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	\$	@	í	Ñ	¿	^	`	¨	ñ	}	~
Japan	#	\$	@	[¥]	^	`	{		}	~
Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Denmark II	#	\$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Spain II	#	\$	à	í	Ñ	¿	é	`	í	ñ	ó	ú
Latin America	#	\$	à	í	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>	10 04 n	Real-time status transmission
<DLE> <ENQ>	10 05 n	Real-time request to printer
<DLE> <DC4>	10 14 m t	Generate pulse in real-time
	10 14 02 01 08	Execute power-off sequence
	10 14 08 01 03	Clear buffer(s)
	14 01 06 02 08	
<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	1B 44 ... 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 ...	Set printing area in page mode
<ESC> \ nL nH	1B 5C n	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 n	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	1D 56 m	Select cut mode and cut paper
<GS> V m n	1D 56 m n	
<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 mNUL <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	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
<GS> t n	1D 74n	Select character table
<ESC> / 1	1B 2F 31	Select slash zero
<ESC> / <1>	1B 2F 01	
<ESC> / 0	1B 2F 30	Select normal zero
<ESC> / <0>	1B 2F 00	
<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	1B 2D 31	Select underlining
<ESC> - <1>	1B 2D 01	
<ESC> _ 1	1B 5F 31	Select overlining
<ESC> _ <1>	1B 5F 01	
<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> I 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 n <0> m1 m2 ...	1B 48 n 00 m1 m2	Print normal density graphics
<ESC> L n <0> m1 m2 ...	1B 4C n1 n2 m1 m2	Print high density graphics
<ESC> k n <0> d1	1B 6B n 00 d1	Print fine density graphics
<ESC> X n1 n2	1B 58 n1 n2	Print fine density graphics
<ESC> <FS> p n m	1B 1C 70 n m	Print 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	1B 25 31	Enable download character set
<ESC> % <1>	1B 25 01	
<ESC> % 0	1B 25 30	Disable download character set
<ESC> % <0>	1B 25 00	
<ESC> <GS> * x y	1B 1D 2A 78 79	Definition of download bit image

Command	Hexadecimal	Function
<ESC> <GS> / m	1B 1D 2F 6D	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
	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 Cl⁻ 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.

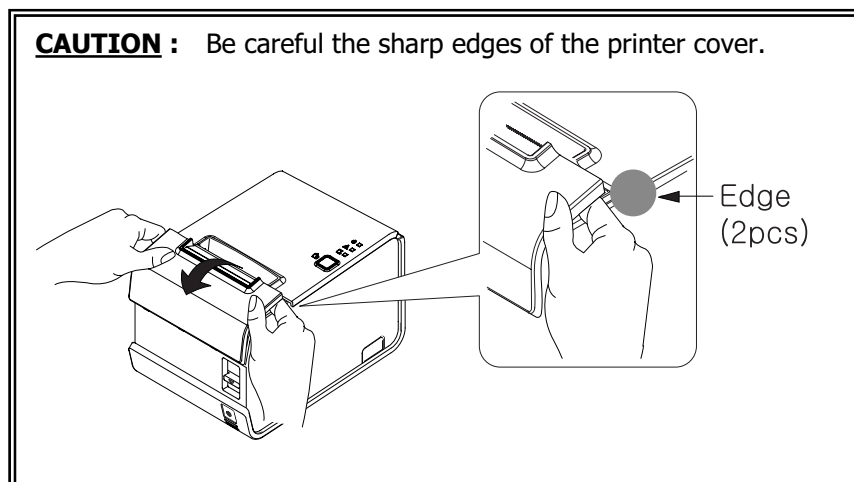
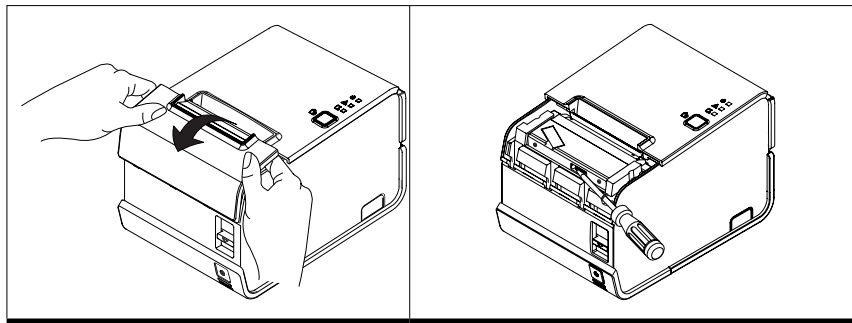
<i>fn</i>	Format	Function
1	GS (E <i>pL pH fn d1 d2</i>	Changes into the user setting mode
2	GS (E <i>pL pH fn d1 d2 d3</i>	Ends the user setting mode session. (Performs a soft reset.)
3	GS (E <i>pL pH fn [a1 b18...b11]... [ak bk8...bk1]</i>	Sets value(s) for the memory switch.
4	GS (E <i>pL pH fn a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

If a foreign object such as a push pin or paper clip drops in the auto cutter and causes the auto cutter to lock up, the printer enters an error state.(The error LED will blink and Buzzer will beep regularly.)

- 1) Turn ELLIX20 power off by pressing the POWER BUTTON.
- 2) If the cover printer opens:
Open the cover printer, remove the paper stuck and put the new paper roll in.
If the cover printer does not open :
Turn ELLIX20 power ON.
 - ① Open the cover cutter.
 - ② Drive a motor worm gear until the buzzer stops ringing.
(Turn the motor worm gear in a counterclockwise direction.
If it does not work, please do it in the other way.)
 - ③ Open the cover printer, remove the paper stuck and put the new paper roll in.
 - ④ Turn ELLIX20 power off and then turn it on or send the DLE ENQ n in command.



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

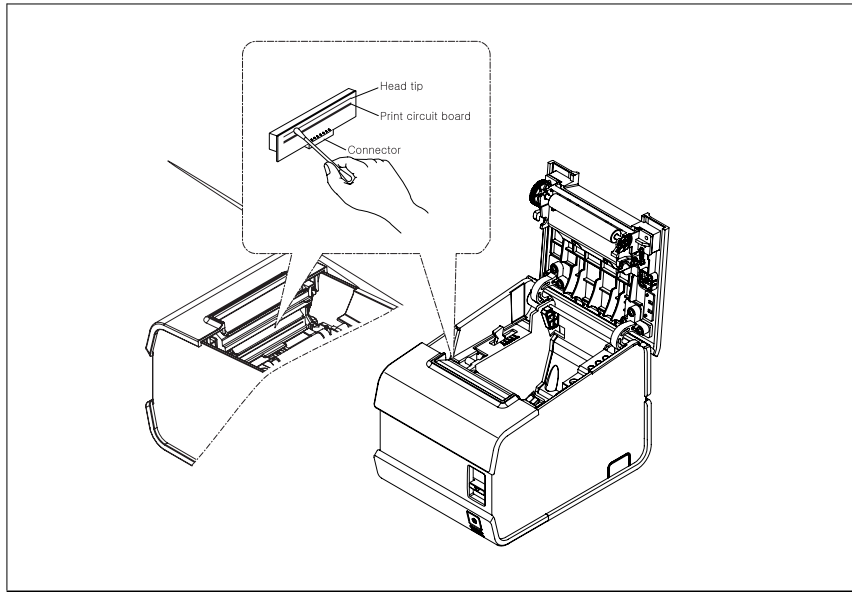
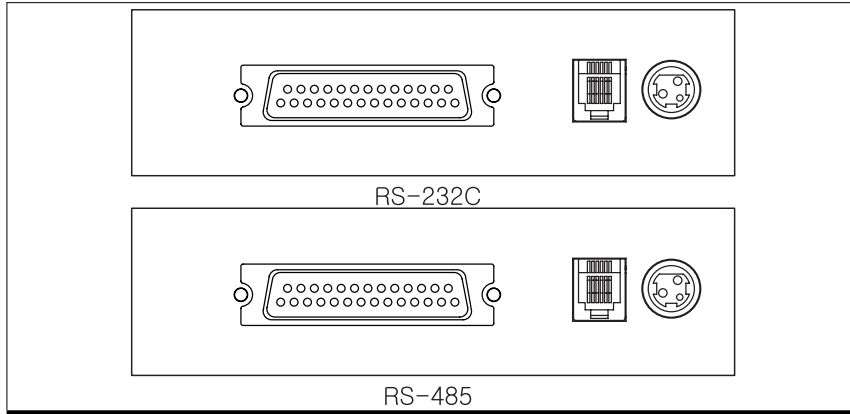


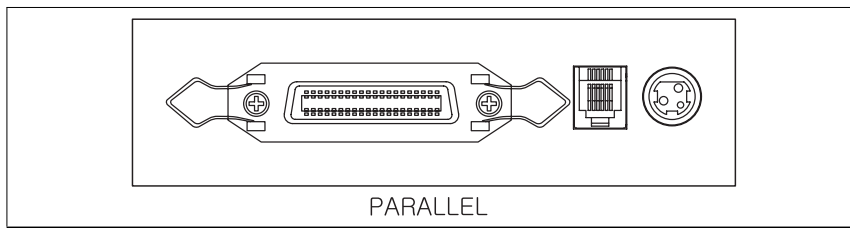
Figure C.1 Print Head Thermal Elements

(*) 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.

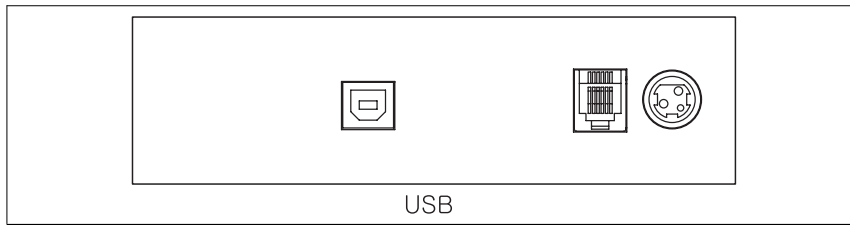
E. Connectors



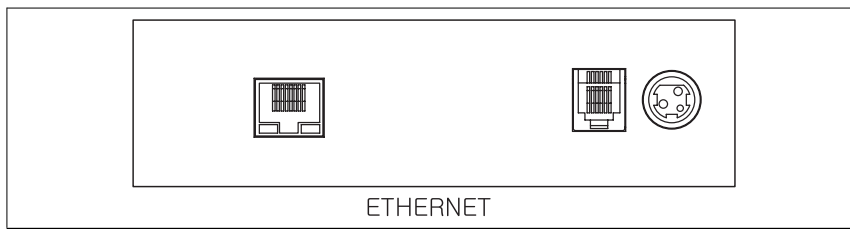
ELLIX 20S Connector



ELLIX 20P Connector



ELLIX 20U Connector



ELLIX 20E Connector

D.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

■ 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	DR2	Output	DTR(RS-232)
9	DR1		
10	CS2	Input	DTR(RS-232)
11	CS1		

■ **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

■ **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

D.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	-

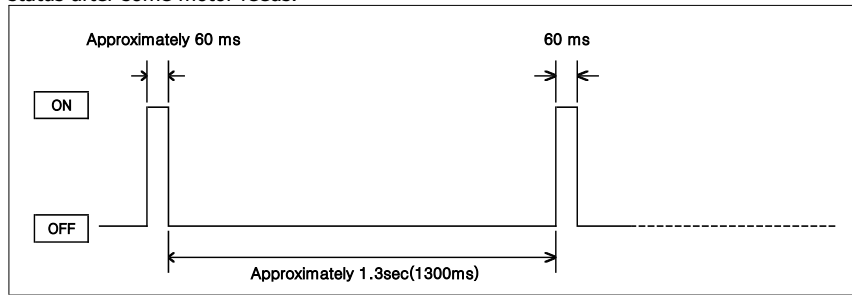
F. Error Status

The printer beeps the buzzer or continuously the ERROR LED blinks when it enters the Error status.

There are four kinds of error status in ELLIX20 as below:

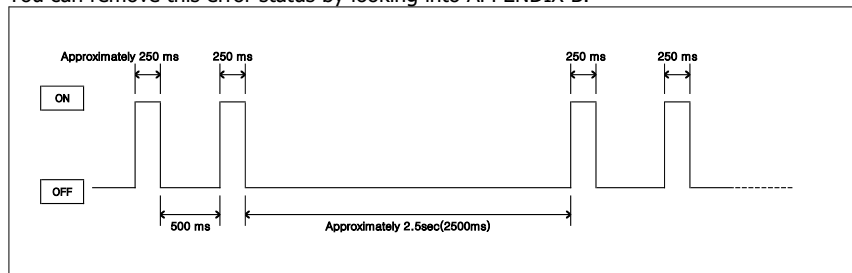
■ Paper Out Error (Buzzer status)

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)

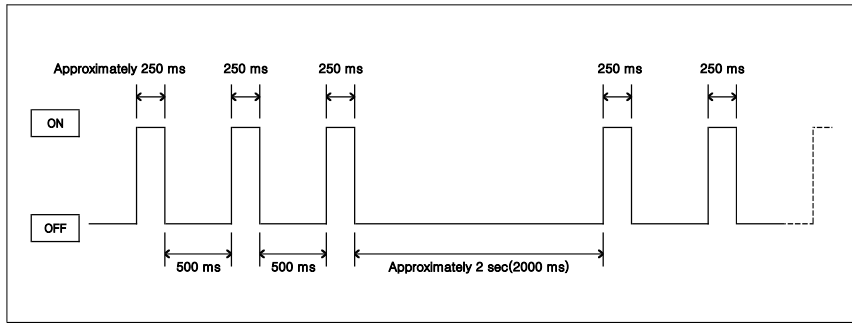
If buzzer and ERROR LED beeps or blinks as like "Beep Beep ---, Beep Beep--- ...", the printer is on Cutter Jam error status. You can remove this error status by looking into APPENDIX B.



■ **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.

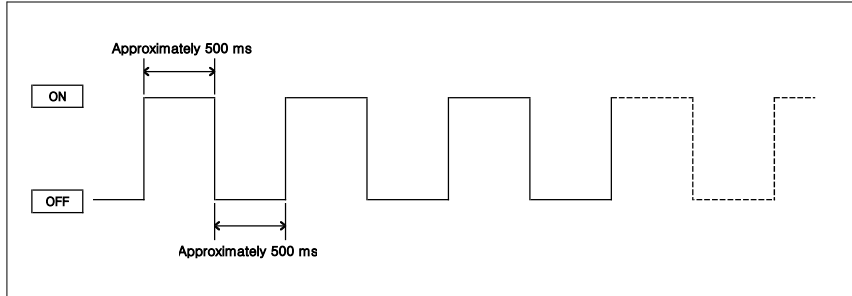
The buzzer and ERROR LED beeps and blinks as like:
 (Beep beep beep----, Beep beep beep----, Beep beep beep...)



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.

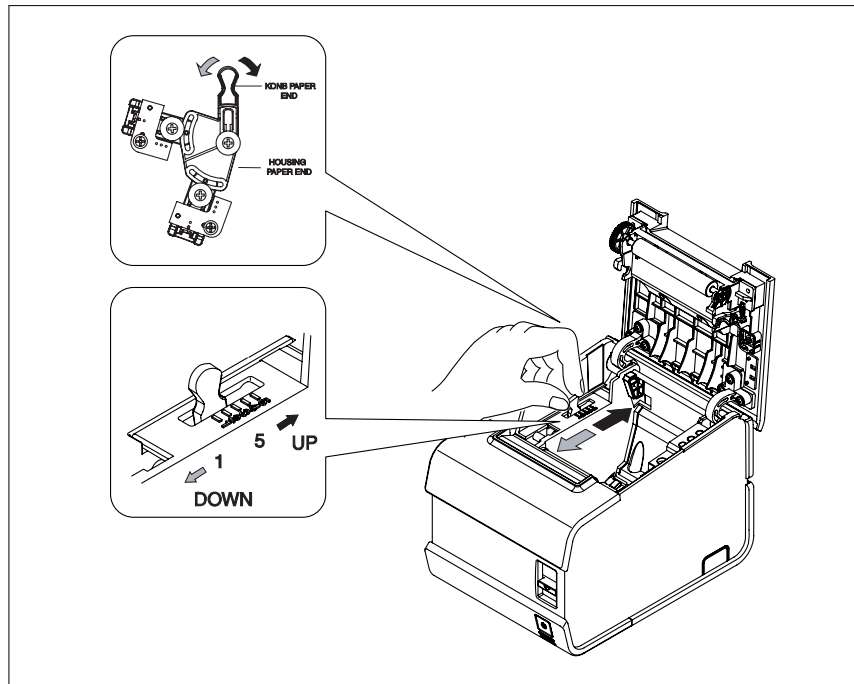


G. Adjusting the roll paper Near-End sensor location

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

G.1 General Printer specification

Printing method		Thermal line printing	
Dot density		180 dpi(8 dot/mm)	
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		4K Bytes	
NOTE : Printing speed may be slower, depending on the data transmission speed and the combination of control commands.			
Supply voltage	Input voltage	100/240 VAC	
	Frequency	50/60 Hz	
	Output voltage	+24V DC	
Environmental conditions	Temperature	0 ~ 40 °C (Operating) -20 ~ 85 °C (Storage)	
	Humidity	20 ~ 90 % RH (Operating) 20 ~ 90 % RH (Storage) ; except the paper roll.	
MCBF	Mechanical	Printer	37,000,000 lines
		TPH	1x10 ⁸ pulse (Approximately 100 Km)
		Cutter	1,000,000 Cut

G.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 is two color mode paper.

JK68-60972A