

- Be sure to check the contents before utilizing the specification.

This specification has the history shown below.

| Versions        |                |                     | DESIGN SECTION |                   |      | SHEET Ver. NO. |     |       |     |          |      |       |     |       |     |
|-----------------|----------------|---------------------|----------------|-------------------|------|----------------|-----|-------|-----|----------|------|-------|-----|-------|-----|
| Ver             | DOCUMENT       | DATE                | CHK            | INSP              | APPR | SHEET          | Ver | SHEET | Ver | SHEET    | Ver  | SHEET | Ver | SHEET | Ver |
| 1.0             | ENACTMENT      | 10.Jun.01           | CHOI           |                   | KANG | I              | 1.1 | 16    | 1.1 | 36       | 1.1  | 56    | 1.1 | 76    | 1.1 |
| 1.1             |                | 15.Nov.01           | CHOI           |                   | KANG | II             | 1.1 | 17    | 1.1 | 37       | 1.1  | 57    | 1.1 | 77    | 1.1 |
|                 |                |                     |                |                   |      | III            | 1.1 | 18    | 1.1 | 38       | 1.1  | 58    | 1.1 | 78    | 1.1 |
|                 |                |                     |                |                   |      | IV             | 1.1 | 19    | 1.1 | 39       | 1.1  | 59    | 1.1 | 79    | 1.1 |
|                 |                |                     |                |                   |      | V              | 1.1 | 20    | 1.1 | 40       | 1.1  | 60    | 1.1 | 80    | 1.1 |
|                 |                |                     |                |                   |      | 1              | 1.1 | 21    | 1.1 | 41       | 1.1  | 61    | 1.1 | 81    | 1.1 |
|                 |                |                     |                |                   |      | 2              | 1.1 | 22    | 1.1 | 42       | 1.1  | 62    | 1.1 | 82    | 1.1 |
|                 |                |                     |                |                   |      | 3              | 1.1 | 23    | 1.1 | 43       | 1.1  | 63    | 1.1 | 83    | 1.1 |
|                 |                |                     |                |                   |      | 4              | 1.1 | 24    | 1.1 | 44       | 1.1  | 64    | 1.1 | 84    | 1.1 |
|                 |                |                     |                |                   |      | 5              | 1.1 | 25    | 1.1 | 45       | 1.1  | 65    | 1.1 | 85    | 1.1 |
|                 |                |                     |                |                   |      | 6              | 1.1 | 26    | 1.1 | 46       | 1.1  | 66    | 1.1 | 86    | 1.1 |
|                 |                |                     |                |                   |      | 7              | 1.1 | 27    | 1.1 | 47       | 1.1  | 67    | 1.1 | 87    | 1.1 |
|                 |                |                     |                |                   |      | 8              | 1.1 | 28    | 1.1 | 48       | 1.1  | 68    | 1.1 | 88    | 1.1 |
|                 |                |                     |                |                   |      | 9              | 1.1 | 29    | 1.1 | 49       | 1.1  | 69    | 1.1 | 89    | 1.1 |
|                 |                |                     |                |                   |      | 10             | 1.1 | 30    | 1.1 | 50       | 1.1  | 70    | 1.1 | 90    | 1.1 |
|                 |                |                     |                |                   |      | 11             | 1.1 | 31    | 1.1 | 51       | 1.1  | 71    | 1.1 | 91    | 1.1 |
|                 |                |                     |                |                   |      | 12             | 1.1 | 32    | 1.1 | 52       | 1.1  | 72    | 1.1 | 92    | 1.1 |
|                 |                |                     |                |                   |      | 13             | 1.1 | 33    | 1.1 | 53       | 1.1  | 73    | 1.1 | 93    | 1.1 |
|                 |                |                     |                |                   |      | 14             | 1.1 | 34    | 1.1 | 54       | 1.1  | 74    | 1.1 | 94    | 1.1 |
|                 |                |                     |                |                   |      | 15             | 1.1 | 35    | 1.1 | 55       | 1.1  | 75    | 1.1 | 95    | 1.1 |
|                 |                |                     |                |                   |      | 96             | 1.1 | 97    | 1.1 | 98       | 1.1  | 99    | 1.1 |       |     |
| NUMBER OF SHEET |                |                     |                |                   |      |                |     |       |     |          |      |       |     |       |     |
| Front Part      |                |                     |                |                   |      |                |     |       |     | Contents | Memo | Total |     |       |     |
| Cover           | Approval sheet | Specification sheet | Ver. Sheet     | Table of Contents |      |                |     |       |     |          |      |       |     |       |     |
| 1               | 1              | 1                   | 1              | 1                 | 76   | 1              | 82  |       |     |          |      |       |     |       |     |

## 1 GENERAL SPECIFICATIONS

### 1.1 Printing Specifications

|    |                             |  |
|----|-----------------------------|--|
| 1) | Printing method             | Thermal line printing  |
| 2) | Dot density                 | 200 dpi X 200 dpi  |
| 3) | Printing direction          | Unidirectional with friction feed  |
| 4) | Printing width              | 48 mm (1.89"), 384 dot positions   |
| 5) | Characters per line         | Thermal paper: 32character(default),42 character   |
| 6) | Character spacing (default) | 0.25 mm (.01")(2 dots)(font A)<br>0.25 mm (.01")(2 dots)(font B)<br>Programmable by control commands.  |
| 7) | Printing speed              | Approximately 11.8 lines/second (duty 12.5%)<br>Approximately 2 inches (50 mm)/second<br>Printing speed may be slower,<br>depending on the data transmission speed and<br>combination of control commands. |
| 8) | Paper feeding speed         | Approximately 2 inches (50 mm/second)  |
| 9) | Line spacing (default)      | 1/6 inch (4.23 mm)Programmable by control<br>Commands.(1/400 inch units)   |

### 1.2 Character Specifications

|    |                      |   |
|----|----------------------|---|
| 1) | Number of characters | Alphanumeric characters: 95<br>International characters: 32<br>Expanded graphic characters : 128  |
| 2) | Character structure  | Font A : 9 X 24(including horizontal 2-dot spacing)<br>Font B: 12 X 24 (including horizontal 2-dot spacing)<br>Font A is selected as the default. |
| 3) | Character size       | 0.875 mm (.03")X3.0 mm (.12")(W X H)(font A)<br>1.25 mm (.05")X3.0 mm (.12")(W X H)(font B)   |

#### 1.2.1 Character Size

|                 | Standard                 |     | Double-height            |     | Double-width             |     | Quadruple-size           |     |
|-----------------|--------------------------|-----|--------------------------|-----|--------------------------|-----|--------------------------|-----|
|                 | W X H (mm)               | CPL | W X H(mm)                | CPL | W X H (mm)               | CPL | W X H (mm)               | CPL |
| Font A<br>9X24  | 0.99X3.39<br>(.04"X.13") | 42  | 0.99X6.77<br>(.04"X.27") | 42  | 1.98X3.39<br>(.08"X.13") | 21  | 1.98X6.77<br>(.08"X.27") | 21  |
| Font B<br>12X24 | 1.41X3.39<br>(.06"X.13") | 32  | 1.41X6.77<br>(.06"X.27") | 32  | 2.82X3.39<br>(.11"X.13") | 16  | 2.28X6.77<br>(.11"X.27") | 16  |

Space between characters is not included.

Characters can be scaled up to 8 times large as the standard sizes.

CPL = Characters Per Line.

### 1.3 Paper Roll Supply Device

- 1) Supply method : Paper roll holding shaft
- 2) Near-end sensor
  - (a) Detection method : Photo reflector
  - (b) Paper roll spool diameter : Thermal paper :
 

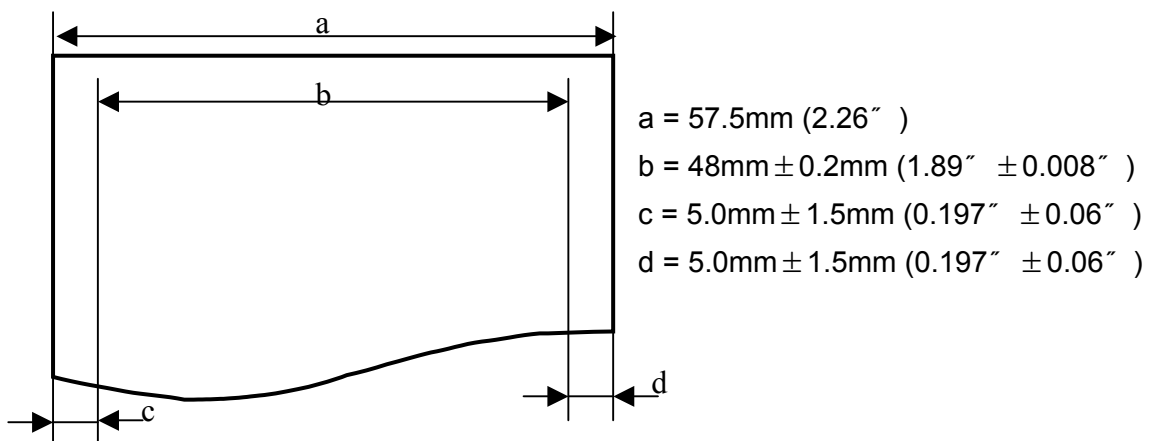
|         |   |              |
|---------|---|--------------|
| Inside  | : | 8 mm (.31")  |
| Outside | : | 12 mm (.47") |

### 1.4 Paper

#### 1.4.1 Thermal paper

|    |                  |  |                         |
|----|------------------|--|-------------------------|
| 1) | Paper type       | Specified thermal paper: Mitsubishi,P220AG |                         |
| 2) | Form             | Paper roll                                 |                         |
| 3) | Paper width      | 57.5 mm(2.26" )                            |                         |
| 4) | Paper roll size  | Paper roll diameter                        | maximum of 30mm (1.18") |
|    |                  | Take-up paper roll width                   | 57.5mm(2.26")           |
| 5) | Printing area    | See below figure                           |                         |
| 6) | Paper roll spool | Inside diameter                            | 8mm (.31")              |
|    |                  | Outside diameter                           | 12 mm (.47")            |

NOTE: Paper must not be pasted to the paper core.



## 1.5 Internal Buffer

|    |  |           |
|----|--|-----------|
| 1) | Receive buffer   | 5Kbytes   |
| 2) | User-defined buffer<br>(both for user-defined characters and user-defined bit image) | 12Kbytes  |
| 3) | Macro buffer   | 2Kbytes   |
| 4) | Non-volatile bit image buffer  | 256Kbytes |

## 1.6 Electrical Characteristics

|    |                     |                  |      |                      |
|----|---------------------|------------------|------|----------------------|
| 1) | Operating voltage   | 7.5 VDC $\pm$ 3% |      |                      |
| 2) | current consumption | Operating        | Mean | approximately 1.5 A  |
|    |                     |                  | Peak | approximately 3.5 A  |
|    |                     | Standby          | Mean | approximately 0.07 A |
| 3) | Battery             | Max: 7.24V 650mA |      |                      |
| 4) | Battery Charger     | 8.4V,1A          |      |                      |

## 1.7 EMI and Safety Standard Applied

## 1.8 Reliability

|      |  |
|------|--|
| Life | Thermal paper : 15,000,000 lines<br>End of Life is defined as the point at which the printer reaches the beginning of the wear-out period          |
| MTBF | 180,000 hours<br>Failure is defined as Random Failure occurring at the time of the Random Failure Period.  |
| MCBF | Thermal paper : 30,000,000 lines<br>This is an average failure interval based on failures relating to wear-out and random failures up to the life. |

## 1.9 Environmental conditions

|           |   |  |   |                                   |
|-----------|---|--|---|-----------------------------------|
| 1)        | Temperature   | Operating  | 5° to 40°C (41° to 104° F)                      |                                   |
|           |   | Storage  | -10° to 50°C (14° to 122° F) (except for paper) |                                   |
| 2)        | Humidity  | Operating  | 30% to 85% RH                                   |                                   |
|           |   | Storage  | 30% to 90% RH (except for paper)                |                                   |
| 3)        | <p style="text-align: center;"><b>Figure 1.9.1 Operating Temperature and Humidity Range</b></p> |  |   |                                   |
| 4)        | Vibration resistance  | When packed  | Frequency                                       | 5 to 100 Hz                       |
|           |   |  | Acceleration                                    | 2 G                               |
|           |   |  | Sweep   | 5 minutes (half cycle)            |
|           |   |  | Duration  | 1 hour                            |
|           |   |  | Directions                                      | x, y, and z                       |
|           |   | No external or internal damage should be found after the vibration test, and the unit should operate normally. |   |                                   |
| 5)        | Impact resistance   | When packed  | Package   | Chamjin standard package          |
|           |   |  | Height  | 90 cm (35.43")                    |
|           |   |  | Directions                                      | 1 corner, 3 edges, and 6 surfaces |
|           |   | No external or internal damage should be found after the drop test, and the unit should operate normally.      |   |                                   |
|           |   | When unpacked  | Height  | 5cm (1.97")                       |
| Direction | Lift one edge and release it (for all 4 edges).   |  |   |                                   |
|           |   | A printer that is not currently printing should not be damaged after it is dropped.                            |   |                                   |
| 6)        | Acoustic noise  | Operating  | Approximately 50 dB (bystander position)        |                                   |

## 2 CONFIGURATION

### 2.1 Interface

#### 2.1.1 RS-232 serial interface

##### 2.1.1.1 Specification (compatible with RS-232)

|    |                   |  |             |             |
|----|-------------------|--|-------------|-------------|
| 1) | Data transmission | Serial ,IrDA-Sir                           |             |             |
| 2) | Synchronization   | Asynchronous                               |             |             |
| 3) | Handshaking       | DTR/DSR                                    |             |             |
| 4) | Signal levels     | MARK                                       | -3 to -15 V | Logic 1/OFF |
|    |                   | SPACE                                      | +3 to +15 V | Logic 0/OFF |
| 5) | Baud rates        | 2400,4800,9600,19200,38400,57600,115200bps |             |             |
| 6) | Data word lengths | 8 bits                                     |             |             |
| 7) | Parity settings   | None                                       |             |             |
| 8) | Stop bits         | 1  |             |             |

##### 2.1.1.2 MSR Printer Status and Signals

| Pin No. | Signal Name | Signal Direction | Function       |
|---------|-------------|------------------|----------------|
| White   | RXD         | Input            | Receive data   |
| Shield  | GND         |                  |                |
| Red     | TXD         | Output           | Transmits data |

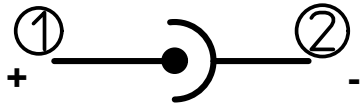
##### 2.1.1.3 Example serial interface connection

| Print(Ear Jack)   | Computer(9 pin) |
|-------------------|-----------------|
| TXD(Red) —————    | 2. RXD          |
| RXD(White) —————  | 3. TXD          |
| GND(Shield) ————— | 5. GND          |

Notes : Transmit data to the printer after turning on the power and initializing the printer.

### 2.2 Power supply connector(Charging adaptor)

This connector is used to connect the printer to an external power source.

| Pin Number | Signal Name |  |
|------------|-------------|--|
| 1          | +8.5VDC     |  |
| 2          | GND         |  |

## 3 FUNCTIONS

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

### 3.1 Commands

| Command       | Name   | Command Classification |                       | Standard Mode             |
|---------------|--|------------------------|-----------------------|---------------------------|
|               |  | Execution              | Setting               |                           |
| HT            | Horizontal tab                                   | <input type="radio"/>  |                       | <input type="radio"/>     |
| LF            | Print and line feed                              | <input type="radio"/>  |                       | <input type="radio"/>     |
| FF            | Print and return to standard mode (in page mode) | <input type="radio"/>  |                       | disabled                  |
| CR            | Print and carriage return                        | <input type="radio"/>  |                       | <input type="radio"/>     |
| <b>CAN</b>    | <b>Cancel print data in page mode</b>            | <input type="radio"/>  |                       | disabled                  |
| DLE EOT       | Real-time status transmission                    | <input type="radio"/>  |                       | <input type="radio"/>     |
| DLE ENQ       | Real-time request to printer                     | <input type="radio"/>  |                       | <input type="radio"/>     |
| <b>ESC FF</b> | <b>Print data in page mode</b>                   | <input type="radio"/>  |                       | disabled                  |
| ESC SP        | Set right-side character spacing                 |                        | <input type="radio"/> | <input type="radio"/>     |
| ESC !         | Select print mode(s)                             |                        | <input type="radio"/> | <input type="radio"/>     |
| ESC \$        | Set absolute print position                      | <input type="radio"/>  |                       | <input type="radio"/>     |
| ESC %         | Select/cancel user-defined character set         |                        | <input type="radio"/> | <input type="radio"/>     |
| ESC &         | Define user-defined characters                   |                        | <input type="radio"/> | <input type="radio"/>     |
| ESC *         | Select bit-image mode                            | <input type="radio"/>  |                       | <input type="radio"/>     |
| ESC -         | Turn underline mode on/off                       |                        | <input type="radio"/> | <input type="radio"/>     |
| ESC 2         | Select 1/6-inch line spacing                     |                        | <input type="radio"/> | <input type="radio"/>     |
| ESC 3         | Set line spacing                                 |                        | <input type="radio"/> | <input type="radio"/>     |
| ESC =         | Select peripheral device                         |                        | <input type="radio"/> | <input type="radio"/>     |
| ESC ?         | Cancel user-defined characters                   |                        | <input type="radio"/> | <input type="radio"/>     |
| ESC @         | Initialize printer                               | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>     |
| ESC D         | Set horizontal tab positions                     |                        | <input type="radio"/> | <input type="radio"/>     |
| ESC E         | Turn emphasized mode on/off                      |                        | <input type="radio"/> | <input type="radio"/>     |
| ESC J         | Print and feed paper                             | <input type="radio"/>  |                       | <input type="radio"/>     |
| ESC L         | Select page mode                                 | <input type="radio"/>  |                       | ( <input type="radio"/> ) |

| Command | Name  | Command Classification |         | Standard Mode |
|---------|---|------------------------|---------|---------------|
|         |   | Execution              | Setting |               |
| ESC R   | Select an international character set             |                        | ○       | ○             |
| ESC S   | Select standard mode                              | ○                      |         |               |
| ESC T   | Select print direction in page mode               |                        | ○       | ▲             |
| ESC V   | Turn 90 clockwise rotation mode on/off            |                        | ○       | ○             |
| ESC W   | Set printing area in page mode                    |                        | ○       | ▲             |
| ESC \   | Set relative print position                       | ○                      |         | ○             |
| ESC a   | Select justification                              |                        |         | ○             |
| Esc c3  | Select paper sensor(s) to out paper-end signals   |                        | ○       | ○             |
| Esc c4  | Select paper sensor(s) to stop printing           |                        | ○       | ○             |
| Esc c5  | Enable/disable panel buttons                      |                        | ○       | ○             |
| Esc d   | Print and feed paper n lines                      | ○                      |         | ○             |
| Esc t   | Select character code table                       |                        | ○       | ○             |
| Esc {   | Turn upside-down printing mode on/off             |                        | ○       | ○             |
| FS p    | Print non-volatile bit image                      | ○                      |         | ○             |
| FS q    | Define non-volatile bit image                     |                        | ○       | (○)           |
| Gs !    | Select character size                             | ○                      |         |               |
| Gs \$   | Set absolute vertical print position in page mode |                        | ○       | ○             |
| Gs *    | Define downloaded bit image                       | ○                      |         | ●             |
| Gs /    | Print downloaded bit image                        | ○                      |         |               |
| Gs :    | Start/end macro definition                        | ○                      | ○       | ○             |
| Gs B    | Turn white/black reverse printing mode on/off     |                        | ○       | ○             |
| Gs H    | Select printing position of HRI characters        |                        | ○       | ○             |
| Gs I    | Transmit print ID                                 | ○                      |         | ○             |



| Command | Name  | Command Classification |         | Standard Mode |
|---------|---|------------------------|---------|---------------|
|         |   | Execution              | Setting |               |
| Gs L    | Set let margin                                    |                        | ○       | (○)           |
| Gs P    | Set vertical and horizontal motion unite          |                        | ○       | ○             |
| Gs W    | Set printing area width                           |                        | ○       | (○)           |
| Gs ¥    | Set relative vertical print position in page mode | ○                      |         | Ignored       |
| Gs ¥    | Set relative vertical print position in page mode | ○                      |         | Ignored       |
| Gs ^    | Execute macro                                     | ○                      | ○       | ○             |
| GS a    | Enable/disable Automatic Status Back              | ○                      | ○       | ○             |
| GS b    | Turn smoothing mode on/off                        |                        | ○       | ○             |
| Gs f    | Select font for HRI characters                    |                        | ○       | ○             |
| Gs h    | Set bar code height                               | ○                      |         | ○             |
| Gs k    | Print bar code                                    | ○                      |         | ●             |
| Gs r    | Transmit status                                   |                        |         | ○             |
| Gs w    | Set bar code width                                |                        | ○       | ○             |

#### Command classification

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

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

#### Standard mode

○ : Enabled

(○): Enabled only when the command is used at the beginning of a line.

● : Enabled only when data is not present in the buffer.

## 3.2 Character Code Tables

### 3.2.1 Page0 (PC437 : U.S.A., Standard Europe)(International character set: U.S.A.)

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

## 3.2.2 Page1 (katakana)

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

### 3.2.3 Page2 (PC850 : multilingual)

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

### 3.2.4 Page3 (PC860 : Poaruguese)

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

## 3.2.5 Page4 (PC863 : Canadian – French)

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

### 3.2.6 Page5 (PC865 : Nordic)

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

### 3.2.7 Page255

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



## 3.2.8 International character set

| Country | HEX<br>DEC | ASCII Code |          |          |          |          |          |          |          |           |           |           |           |
|---------|------------|------------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|
|         |            | 23<br>35   | 24<br>36 | 40<br>64 | 5B<br>91 | 5C<br>92 | 5D<br>93 | 5E<br>94 | 60<br>96 | 7B<br>123 | 7C<br>124 | 7D<br>125 | 7E<br>126 |
| 0       | U.S.A      | #          | \$       | @        | [        | \        | ]        | ^        | `        | {         | :         | }         | ~         |
| 1       | France     | #          | \$       | ☎        | °        | 📁        | §        | ^        | `        | ☰         | ☹         | ☺         | ❖         |
| 2       | Germany    | #          | \$       | §        | ☎        | ☎        | ☎        | ^        | `        | ☺         | ☎         | ☎         | β         |
| 3       | U.K        | £          | \$       | @        | [        | \        | ]        | ^        | `        | {         | :         | }         | ~         |
| 4       | Denmark I  | #          | \$       | @        | ☎        | ∅        | 📁        | ^        | `        | ☎         | ∅         | 📁         | ~         |
| 5       | Sweden     | #          | α        | ☰        | ☎        | ☎        | 📁        | ☎        | ☰        | ☺         | ☎         | ☎         | ☎         |
| 6       | Italy      | #          | \$       | @        | \        | °        | ☰        | ^        | ☹        | ☎         | ☺         | ☎         | ☎         |
| 7       | Spain      | #          | \$       | @        | ⌘        | ☎        | ☎        | ^        | `        | ❖         | ☎         | }         | ~         |
| 8       | Japan      | #          | \$       | @        | [        | ¥        | ]        | ^        | `        | {         | :         | }         | ~         |
| 9       | Norway     | #          | α        | ☰        | ☎        | ∅        | 📁        | ☎        | ☰        | æ         | ∅         | 📁         | ☎         |
| 10      | Denmark II | #          | \$       | ☰        | ☎        | ∅        | 📁        | ☎        | ☰        | æ         | ∅         | 📁         | ☎         |

## 3.3 Switches and Buttons

### 3.3.1 Power switch

The power switch on the RIGHT side of the printer turns the power on or off.

NOTES : Turn on the power only after connecting the power supply(no battery type).

## 3.4 Self Test

- 1) The printer has a self-test function that checks the following:
- 2) Self-test printing

Starting the self test

To start printing the self-test on a paper roll, hold down the power button for 5 sec.

The self test prints the current printer settings, which provide the following information:

Product Number

Communication method

LED signature

## 3.5 Error Processing

### 3.5.1 Errors that automatically recover

| Error                        |   | Error Led Blinking<br>✱   ✱ (160ms) | Recovery   |
|------------------------------|---|-------------------------------------|--|
| Print head temperature error | The temperature of the print head is extremely high |                                     | Recovers automatically when the print head cools                                     |
| Paper roll end error         | When the paper roll is Nothing.                     |                                     | The printer restarts printing with the line being printed when the roll was replaced |

### 3.5.2 Unrecoverable Errors

| Error                             | Description   | Error Led Blinking<br>  ← →   (160ms) | Recovery              |
|-----------------------------------|---|---------------------------------------|-----------------------|
| R/W error in memory or gate array | After R/W checking, the printer does not work correctly             |                                       | Impossible to recover |
| High voltage error                | The power supply voltage is extremely high                          |                                       | Impossible to recover |
| Low voltage error                 | The power supply voltage is extremely low                           |                                       | Impossible to recover |
| CPU execution error               | The CPU executes an incorrect address or I/F board is not connected |                                       | Impossible to recover |
| Internal circuit connection error | Internal circuits are not connected correctly                       |                                       | Impossible to recover |

When any error shown above occurs, turn off the power as soon as possible.