



GP83

Service Manual

**COUPON
PRINTER**



International Currency Technologies

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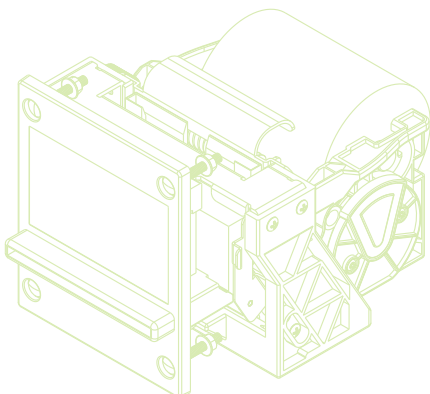
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1. Installation :

1-1. Specifications :

Common

| | |
|---------------------------|---------------------------|
| Print Method | Thermal Dot-line Printing |
| Print Speed | Up to 80 mm/s |
| Interface | RS232, USB |
| Total Dots | 578 |
| Dot Density | 8 dots/mm |
| Character Set | 3 Internal Fonts |
| Heat Element | 0.125 mm |
| Paper Feed Pitch | 0.125 mm |
| Paper Feed Tension | 50g or more |
| Paper Hold Tension | 80g or more |
| Recommended Paper | KF50-HDA or Equivalent |

Electrical

| | |
|------------------------------|---|
| Voltage Range | 21.6 ~ 26.4V DC |
| Operation Environment | Operating- Temperature: 0°C ~ +50°C Humidity: 20%-85%RH (No Condensation) Storage - Temperature: -25°C ~ +70°C Humidity: 10%-90%RH (No Condensation) |
| Power Consumption | Standby : 1 W Operation: 26 W Maximum: 72 W |

Electrical

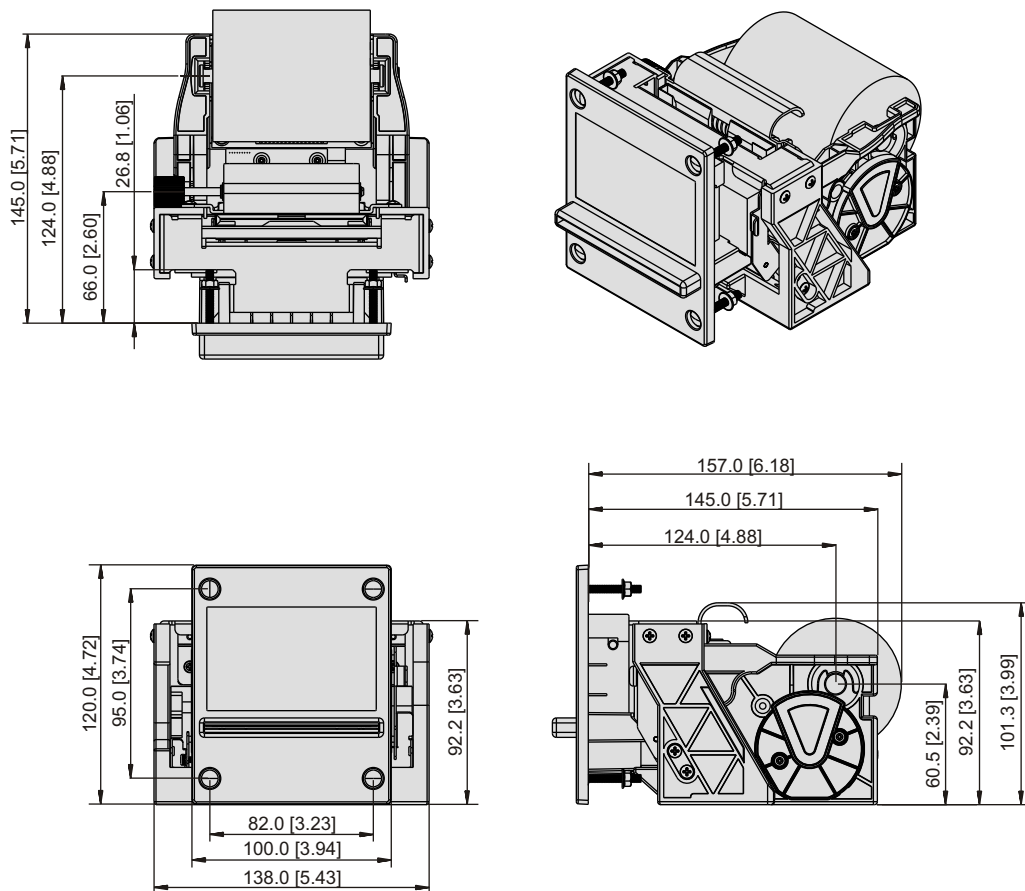
| | |
|-----------------------------|---|
| Outline Dimension | See page.4 |
| Net Weight | 938 g |
| Paper Roll Dimension | Small Paper Roll- Basis Weight : 60 pounds, 80 pounds Outside Diameter : 72 mm Inside Diameter : 12.5 ± 0.5 mm Width : 79 ± 0.5 mm Large Paper Roll- Basis Weight : 60 pounds, 80 pounds Outside Diameter : 220 mm Inside Diameter : 12.5 ± 0.5 mm Width : 79 ± 0.5 mm |

*The length of paper for printing should be longer than 6 cm.

1-2. Dimensions :

Small paper roller

Figure 1



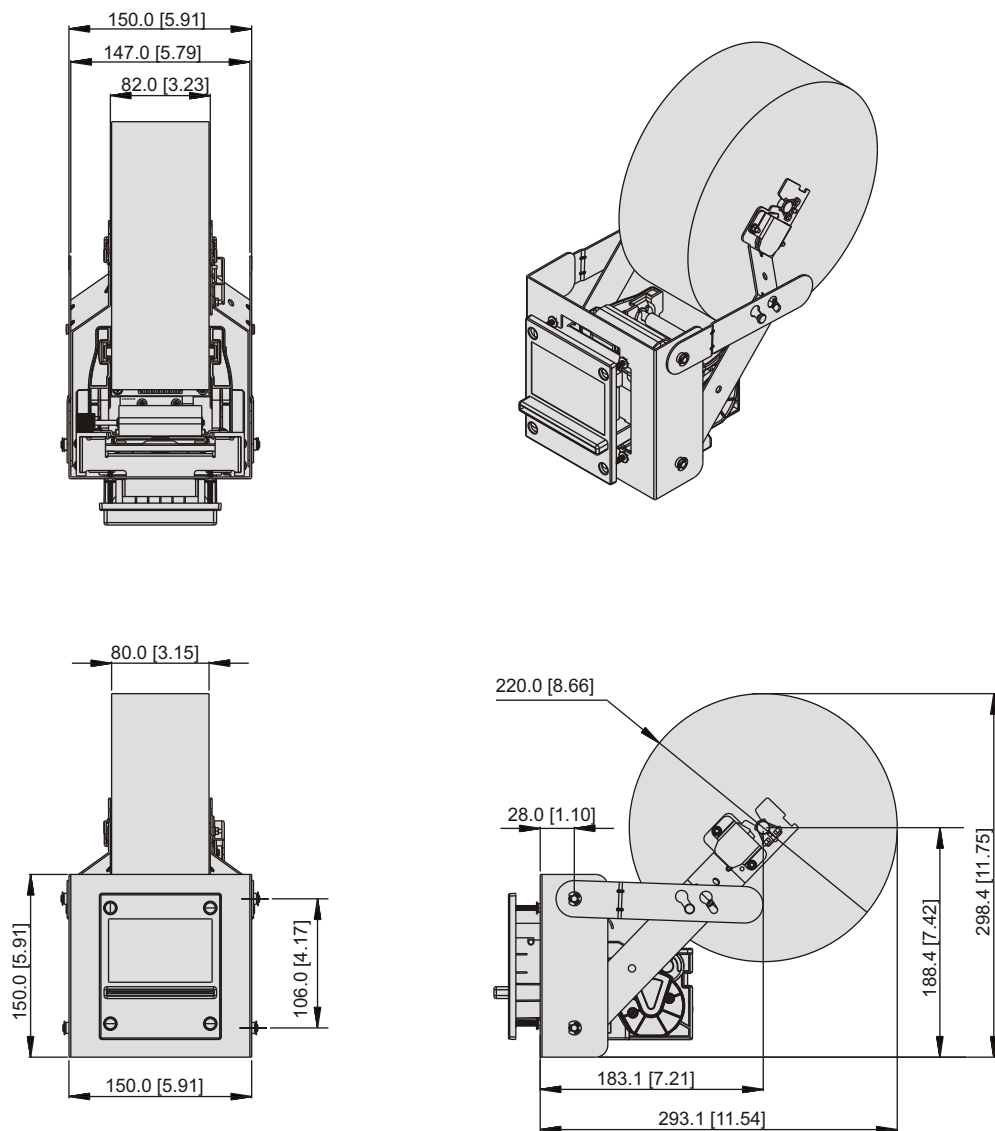
Unit:mm[inch]

Large paper roller

Large paper roller A & B can be setup by adjusting large paper roll fixed mount.

Large paper roller **A**

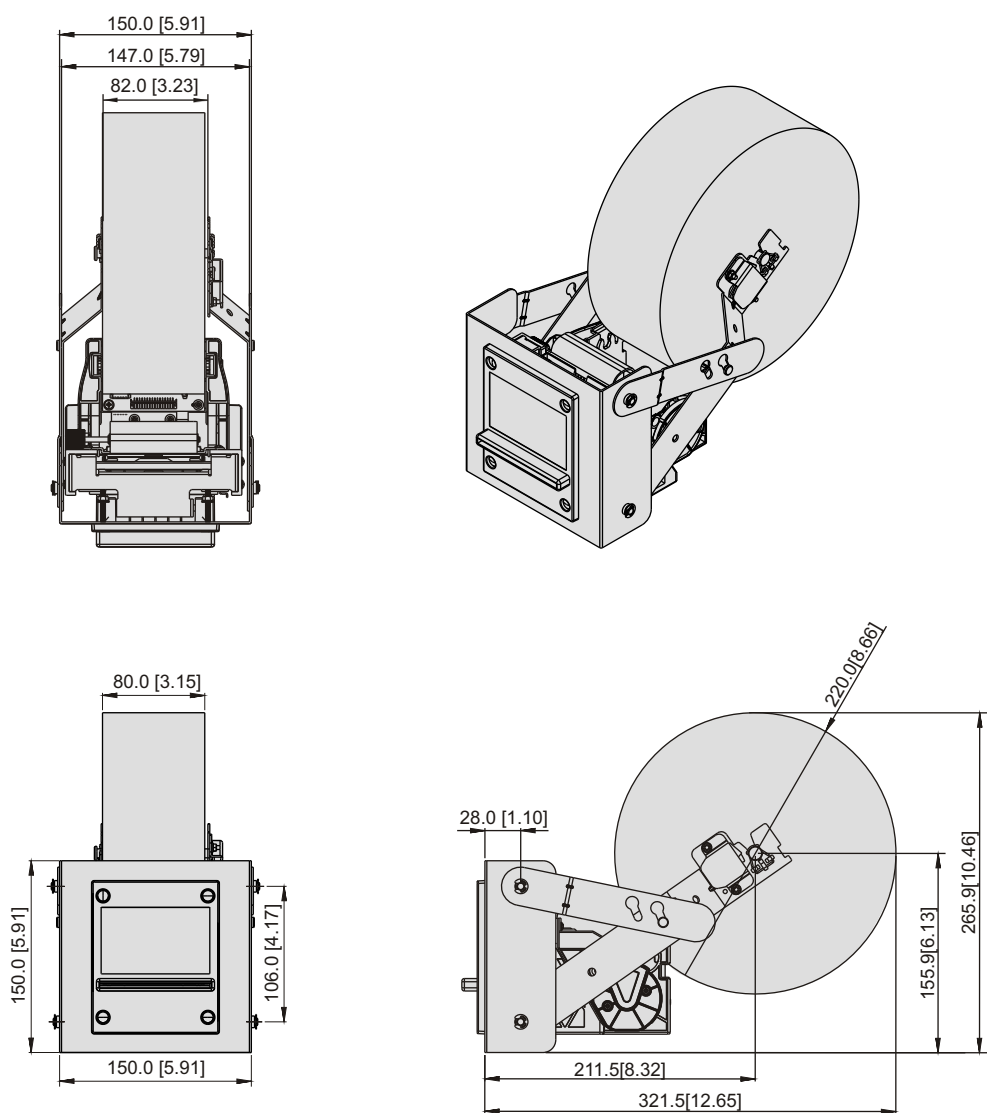
Figure 2



Unit:mm{inch}

Large paper roller **B**

Figure 3



Unit:mm{inch}

2. Installation :

2-1. Printer Device Interconnection

2-1-1. Power Supply Connector

Connector CN9

Power supply (Vbat) is $24V \pm 10\%$

Table 1

| PIN NUMBER | SIGNAL NAME |
|------------|-------------|
| 1 | GND |
| 2 | GND |
| 3 | GND |
| 4 | GND |
| 5 | GND |
| 6 | Vbat |
| 7 | Vbat |
| 8 | Vbat |
| 9 | NC |

IMPORTANT NOTE:

Wires AWG26 must be used in order to avoid current losses.

2-1-2. RS232 Communication Connector

Connector CN7

Table 2

| PIN NUMBER | SIGNAL NAME |
|------------|-------------------------------------|
| 1 | GND |
| 2 | Transmit data (TxD, printer output) |
| 3 | Receive data (RxD, printer input) |
| 4 | CTS/DSR (printer input) |
| 5 | RTS/DTR (printer output) |

2-1-3. USB Communication Connector

Connector CN1

Table 3

| PIN NUMBER | SIGNAL NAME |
|------------|-------------|
| 1 | VBus |
| 2 | D- |
| 3 | D+ |
| 4 | N.C |
| 5 | GND |

2-1-4. RS232/ USB Mode Selection

RS232 or USB mode will be chosen via software automatically after the first character is received. At power-up, both RS232 and USB communications are active. If the first character is received on the RS232 port, the communication will be RS232, and vice versa for USB. This first character will be interpreted like any other incoming byte into the printer.

2-1-5. Near End of Paper Sensor

Connector CN12

Table 4

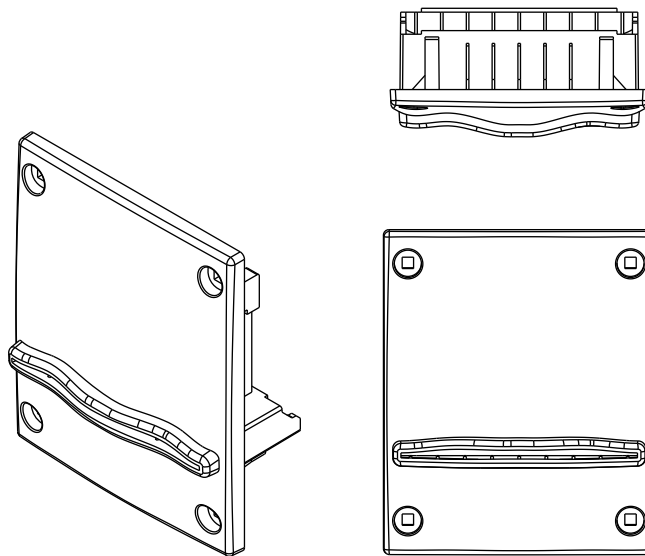
| PIN NUMBER | SIGNAL NAME |
|------------|-------------|
| 1 | LED |
| 2 | OPTO |
| 3 | GND |

2-2. Bezel

Regular Bezel

Part Number: A31310-R

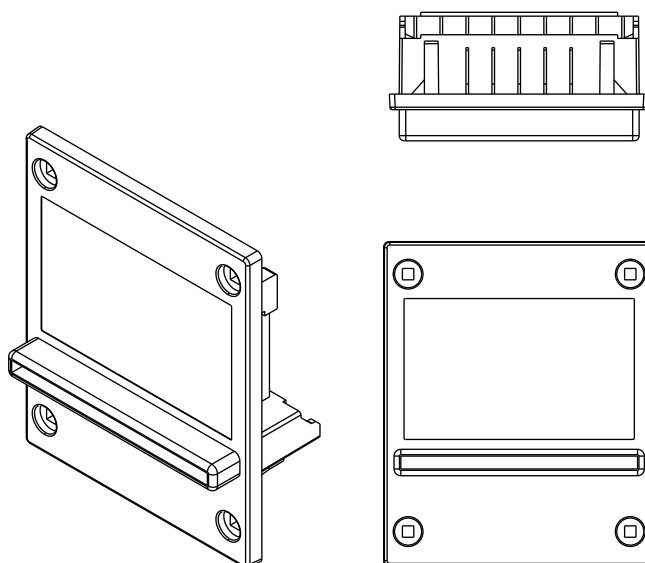
Figure 4



Plane Surface Bezel

Part Number: A34760-R

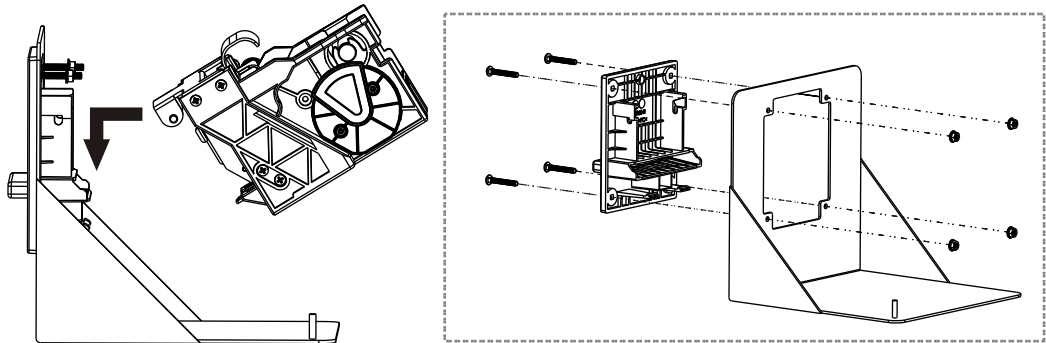
Figure 5



2-3. Printer Installation

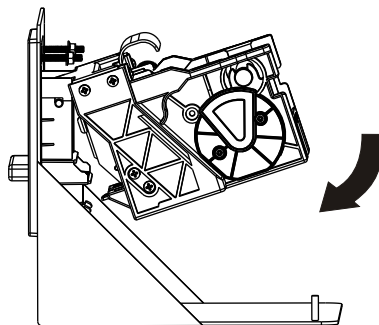
1. Install bezel first, and then hold printer facing to panel, hook two levers on panel.

Figure 6



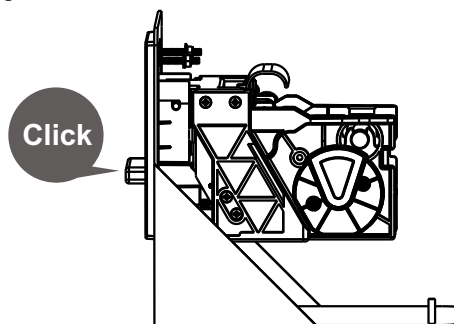
2. Let go of printer.

Figure 7



3. When you hear “click”, the installation’s complete.

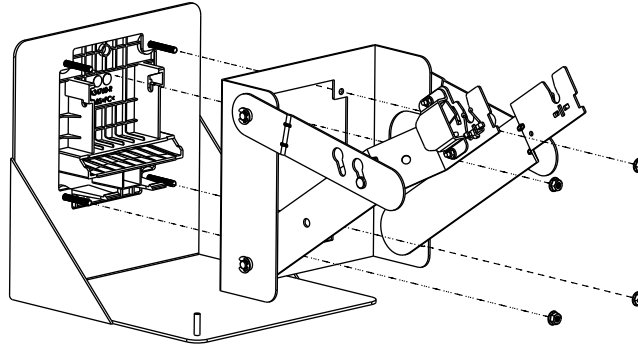
Figure 8



2-4. Large Paper Roll Fixed Mount Installation

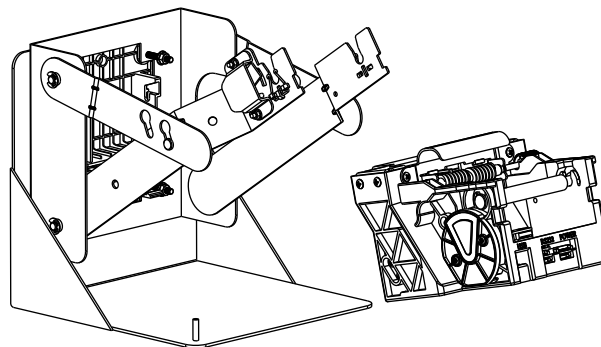
1. Lock Large Paper Roll Fixed Mount on panel by four screws.

Figure 9



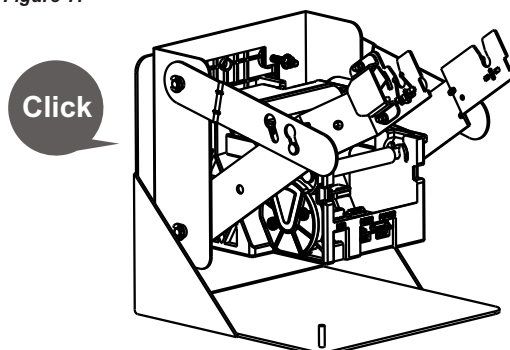
2. Hook two levers on Large Paper Roll Fixed Mount.

Figure 10



3. Let go of printer, when you hear “click”, the installation’s complete.

Figure 11



2-5. Paper Loading

Paper loading can be achieved by two different methods:

- **Automatic paper loading:**

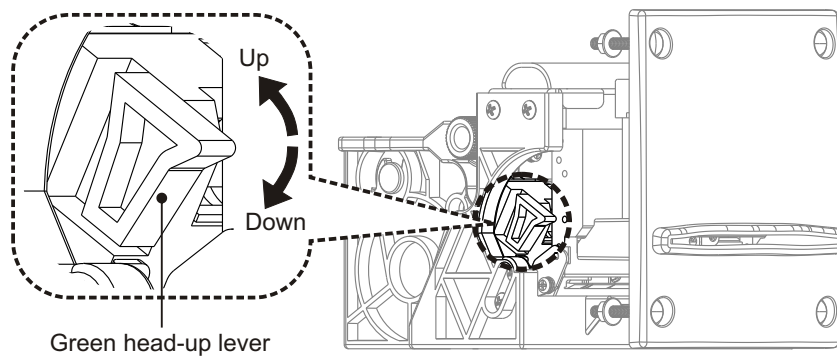
With the green head-up lever in the down position, insert the paper inside the printer, and then the roller will automatically feed the paper for about 40 mm. If the printer has a cutter, the cutter will cut the paper after the loading. The Printer is then ready to print. This function can be achieved only if power supply is more than 18 volts.

In mark detection mode, the paper is fed forward to the TOF position.

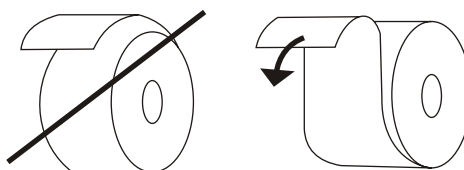
- **Manual paper loading:**

Put the green head-up lever in the up position. Manually feed the paper into the printer until it exits between the thermal head and the roller. Turn the green lever to the head-down position.

Figure 12



Please make sure the paper roll is toward the right direction.



3. Operation :

3-1. Ticket Content Design

Users can design the ticket content by any txt files such as Microsoft Word. Then print the ticket out through GP83. The Printer Show program in GP83 driver can also be used as ticket designing. Please refer to the following paragraph to design ticket content from Printer Show.

3-2. About Printer Show

3-2-1. Text Printing Format

The controller board has three resident sets of 224 characters:

● 8x16, 12x20, and 7x16.

The 8x16 and 12x10 fonts include the Euro currency symbol (Position 128, 80h).

12 characters are selectable from the international character set: Refer to ESC "R" command for more information.

All character bitmaps will be shown with their hexadecimal code (row being the most significant nibble, and column the least significant nibble).

Example: ascii code for "A" is 41 hex (or 65 decimal).

Table 5

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|
| 2 | | ! | " | # | \$ | % | & | ' | (|) | * | + | , | - | . | / |
| 3 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | ; | < | = | > | ? |
| 4 | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
| 5 | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ |] | ^ | _ |
| 6 | ' | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o |
| 7 | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ |  |
| 8 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 9 | ¡ | ¢ | £ | ¤ | ¥ | ¦ | § | ¨ | © | ª | « | ¬ | ­ | ® | ¯ | ° |
| A | ± | ² | ³ | ´ | µ | ¶ | · | ¸ | ¹ | º | » | ¼ | ½ | ¾ | ¿ |  |
| B |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| C | ¡ | ¢ | £ | ¤ | ¥ | ¦ | § | ¨ | © | ª | « | ¬ | ­ | ® | ¯ | ° |
| D | ± | ² | ³ | ´ | µ | ¶ | · | ¸ | ¹ | º | » | ¼ | ½ | ¾ | ¿ |  |
| E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| F | ¡ | ¢ | £ | ¤ | ¥ | ¦ | § | ¨ | © | ª | « | ¬ | ­ | ® | ¯ | ° |

● 8x16 Character set:

Character size is 9 pixels (8 “active dots” plus one inter-character) x 20 pixels (16 “active” dots plus 4 interlines including underline), or 1.125mm x 2.5mm.

With double and quadruple height and width, maximum character size can go up to 4.5mm width x 10mm height.

Horizontal character spacing and line spacing may be adjusted via the software. Character per line is up to 71 in standard text, 35 in double width, and 17 in quadruple width.

Table 6

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|
| 2 | | ! | " | # | \$ | % | & | ' | (|) | * | + | , | - | . | / |
| 3 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | ; | < | = | > | ? |
| 4 | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
| 5 | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ |] | ^ | _ |
| 6 | ' | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o |
| 7 | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | Δ |
| 8 | € | ü | é | ä | å | ä | ç | è | ë | ì | í | î | ï | ä | Å | |
| 9 | é | æ | ø | ö | ö | ü | ü | ö | ö | ü | ö | ö | ö | ö | ö | ö |
| A | á | í | ó | ú | ñ | ñ | ñ | ñ | ñ | ñ | ñ | ñ | ñ | ñ | ñ | ñ |
| B | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ | ⌘ |
| C | L | ⊥ | ⊥ | ⊥ | ⊥ | ⊥ | ⊥ | ⊥ | ⊥ | ⊥ | ⊥ | ⊥ | ⊥ | ⊥ | ⊥ | ⊥ |
| D | ö | ö | ö | ö | ö | ö | ö | ö | ö | ö | ö | ö | ö | ö | ö | ö |
| E | ó | ö | ö | ö | ö | ö | ö | ö | ö | ö | ö | ö | ö | ö | ö | ö |
| F | - | ± | 0 | ¼ | ½ | ¾ | ÷ | , | ° | ° | . | 1 | 2 | 3 | 4 | 5 |

● 12x20 Character set:

Character size is 13 pixels (12 “active dots” plus one inter-character) x 24 pixels (20 “active” dots plus 4 interlines including underline), or 1.625 mm x 3 mm.

With double and quadruple height and width, maximum character size can go up to 6.5 mm width x 12mm height.

Horizontal character spacing and line spacing may be adjusted via the software. Character per line is up to 49 in standard text, 24 in double width, and 12 in quadruple width.

Table 7

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 2 | | ! | " | # | \$ | % | & | ' | (|) | * | + | , | - | . | / |
| 3 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | ; | < | = | > | ? |
| 4 | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
| 5 | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ |] | ^ | _ |
| 6 | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o |
| 7 | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ |  |
| 8 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | | ¡ | ¢ | £ | ¤ | ¥ | ¦ | § | ¨ | © | ª | « | ¬ | ­ | ® | ¯ |
| A | ° | ± | ² | ³ | ´ | µ | ¶ | · | ¸ | ¹ | º | » | ¼ | ½ | ¾ | ¿ |
| B |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| C |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| D |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

● 7x16 Character set:

Character size is 8 pixels(7 “active dots” plus one inter-character) x 20 pixels(16 “active” dots plus 4 interlines including underline), 1 mm by 2.5mm.

With double and quadruple height and width, maximum character size can go up to 4mm width by 10mm height.

Horizontal character spacing and line spacing may be adjusted via the software. Character per line is up to 80 in standard text, 40 in double width, and 20 in quadruple width. This font includes the Katakana characters set.

Table 8

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | ! | " | # | \$ | % | & | ' | < | > | * | + | , | - | . | / | |
| 3 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | ; | < | = | > | ? |
| 4 | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
| 5 | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ |] | ^ | _ |
| 6 | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o |
| 7 | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | ⌘ |
| 8 | € | Ü | é | â | ä | à | ç | ê | ë | ì | í | î | ï | À | Á | |
| 9 | É | Ê | Ë | Ô | Ö | Ù | Ú | Û | Ü | Ý | Þ | ß | ƒ | | | |
| A | 。 | 「 | 」 | 、 | ・ | ヲ | ア | イ | ウ | エ | オ | カ | キ | ク | ケ | |
| B | コ | サ | シ | ス | セ | ソ | タ | チ | ツ | テ | ト | ナ | ニ | ノ | ハ | |
| C | ヒ | フ | ブ | パ | ピ | ポ | マ | ミ | ム | メ | モ | ヤ | ユ | ヨ | ラ | |
| D | リ | ル | レ | ロ | ワ | ヰ | ヱ | ヰ | ヱ | ヰ | ヱ | ヰ | ヱ | ヰ | ヱ | |
| E | ヰ | ヱ | ヰ | ヱ | ヰ | ヱ | ヰ | ヱ | ヰ | ヱ | ヰ | ヱ | ヰ | ヱ | ヰ | |
| F | ヰ | ヱ | ヰ | ヱ | ヰ | ヱ | ヰ | ヱ | ヰ | ヱ | ヰ | ヱ | ヰ | ヱ | ヰ | |

3-2-2. Operating Control Codes

Control Codes are non-printable characters or sequences of characters that control the operation of the printer. Within the following description, a control code causes the printer to interpret the following byte as part of a command and not as a printable character.

Setup and Hardware Control

Table 9

| COMMAND | DESCRIPTION |
|------------|---|
| GS / n | Set printing speed / maximum peak current |
| GS s n1 n2 | Set maximum print out speed |
| GS D n | Set print intensity |
| ESC @ | Reset printer |
| ESC v | Send printer status |
| ESC I | Send printer identity |
| GS B n | Serial communication settings |
| GS p n | Set paper loading pause |
| GS P n1 n2 | Set paper loading length |
| GS M n1 n2 | Set paper loading speed |
| ESC n s | Near end of paper status |

Text and General Commands

Table 10

| COMMAND | DESCRIPTION |
|----------|--------------------------------------|
| ESC % n | Select internal font |
| ESC R n | Select international character set |
| ESC 2 n | Set line pre-spacing |
| ESC 3 n | Set line spacing |
| ESC SP n | Set character spacing |
| ESC b n | Set inverse video printing |
| ESC c n | Set maximum number of columns |
| ESC C n | Set text justification |
| ESC ! n | Set print mode |
| ESC { n | Set/reset rotated characters |
| LF | Line feed |
| CR | Carriage return |
| ESC J n | Feed paper (n dot lines) forward |
| ESC j n | Feed paper (n dot lines) backward |
| CAN | Cancel print data buffer (text mode) |

Graphics Commands

Table 11

| COMMAND | DESCRIPTION |
|-------------------------------|----------------------------|
| ESC * n1 n2 n3 n4 n5 n6, data | Print graphics |
| ESC \$ n1,n2 | Horizontal dot positioning |
| ESC V n1,n2,n3 data | Horizontal bit image |

Setup and Hardware Control

Table 12

| COMMAND | DESCRIPTION |
|---------|-------------|
| ESC m | Partial cut |
| ESC i | Full cut |

Bar code commands

Table 13

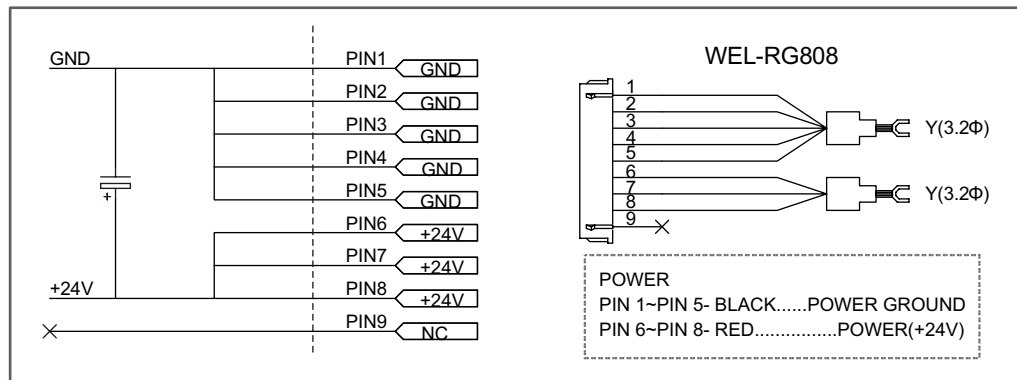
| COMMAND | DESCRIPTION |
|---------------------------|---------------------------|
| GS k n [Start] <data> NUL | Print bar code |
| GS h n | Barcode height |
| GS w n | Barcode magnification |
| GS H n | Text position in barcode |
| GS R n | Set/reset rotated barcode |

3-3. I/O Circuits

Control Board I/O Circuits

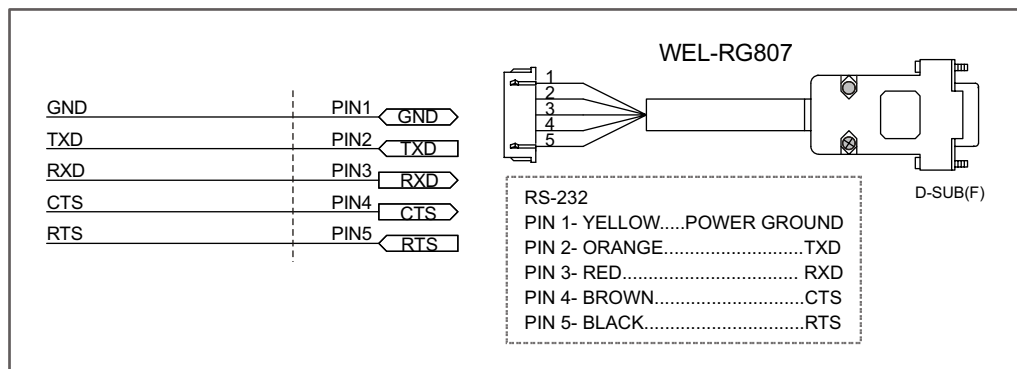
CN1 CONNECTER PIN

Figure 13



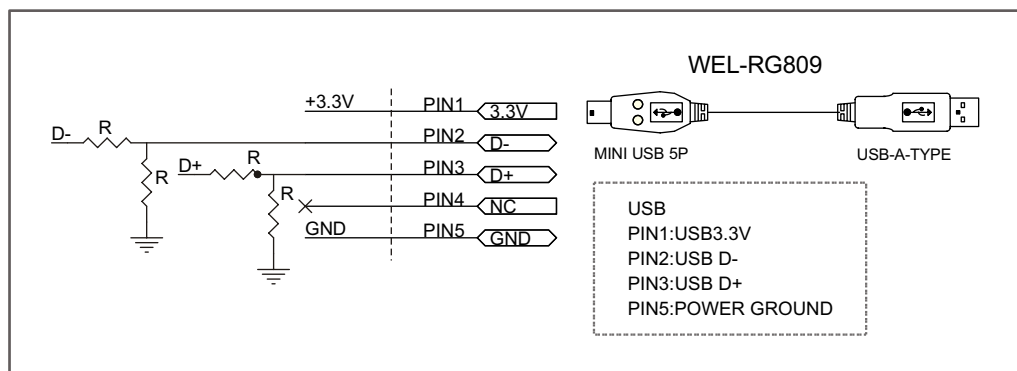
CN7 CONNECTER PIN

Figure 14



CN9 CONNECTER PIN

Figure 15

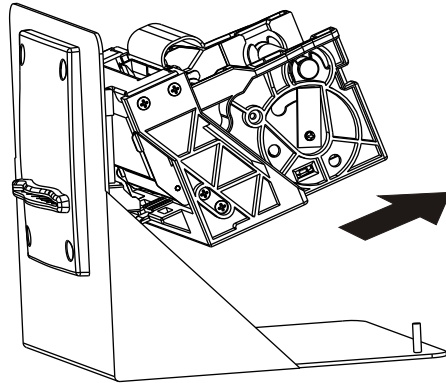


Chapter 4

4. Maintenance :

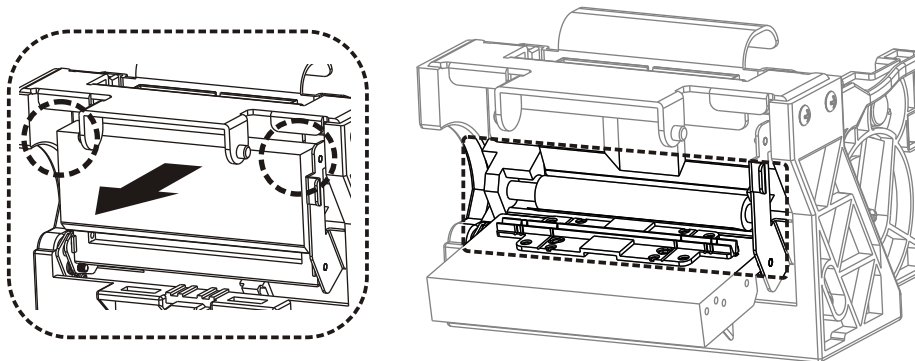
1. Remove GP83 printer from panel.

Figure 16



2. Unlatch the cutter from printer panel fixed mount to inspect for foreigner objects and clean inner part.

Figure 17



OK

DO NOT USE

Mild, non-abrasive, soap water.

Organic solvent , Alcohol, Volatility liquid

5. Troubleshooting :**5-1. Graphic Displacement (For USB Only)**

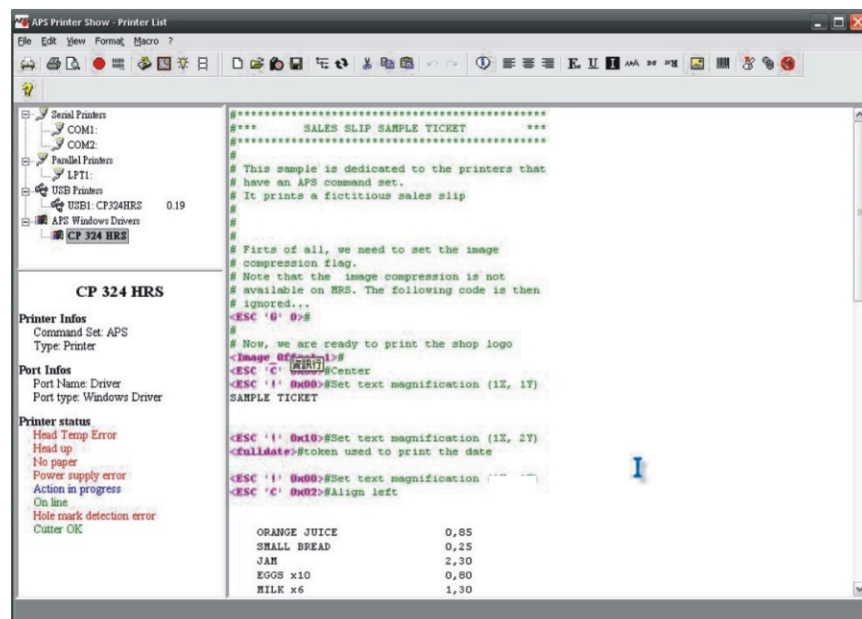
If you use Printer Show to setup the ticket by USB interface, you may follow the steps to solve the graphic displacement as below:

Figure 18



1. Please restart GP83 Driver after installation to make sure GP83 works normally.
2. Start Printer Show.

Figure 19



- Figure 20**

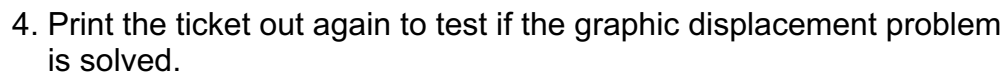


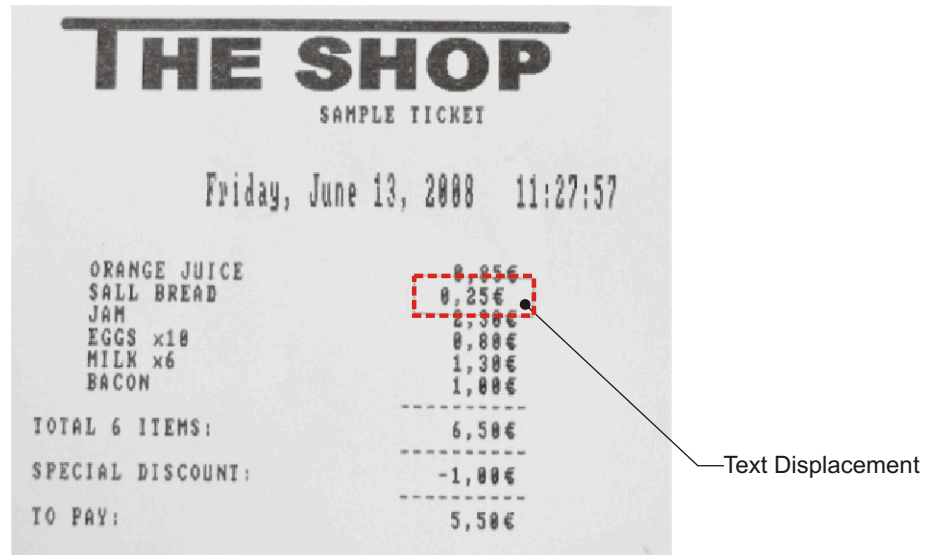
Figure 21



5-2. Text Displacement (For RS-232 Only)

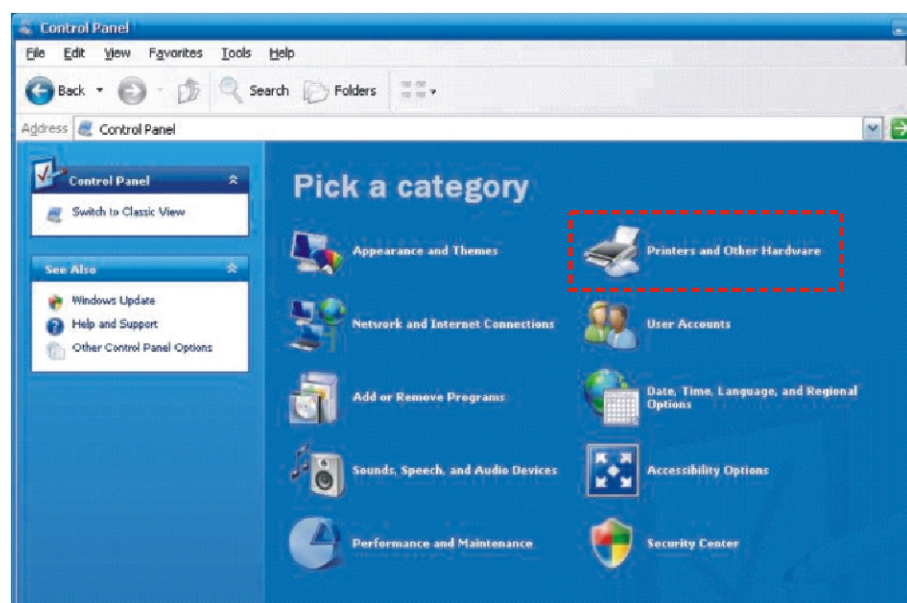
If you use Printer Show to setup the ticket by RS-232 interface, you may follow the steps to solve the graphic displacement as below:

Figure 22



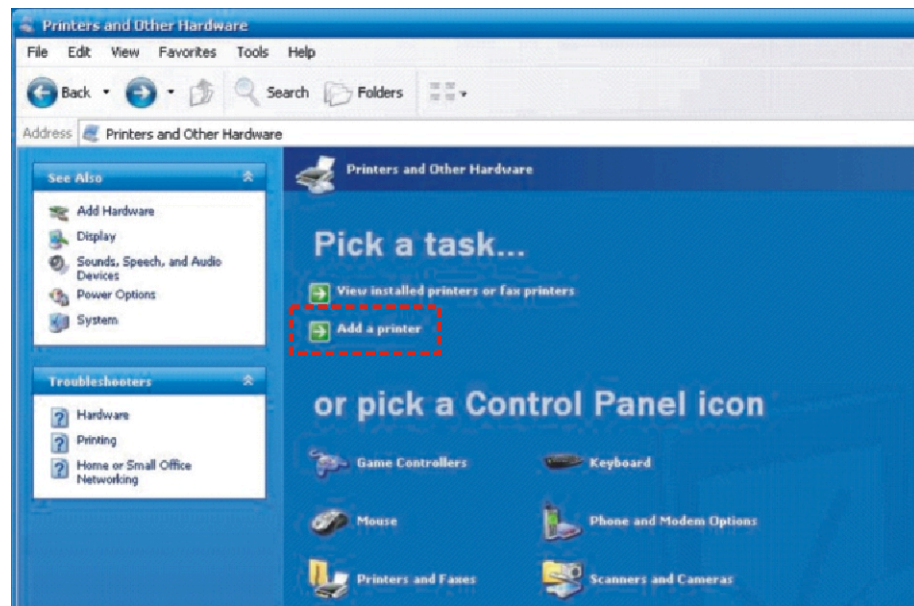
1. Enter Control Panel of Windows XP, and click Printer and Other Hardware.

Figure 23



2. Click **"Add a printer"**.

Figure 24



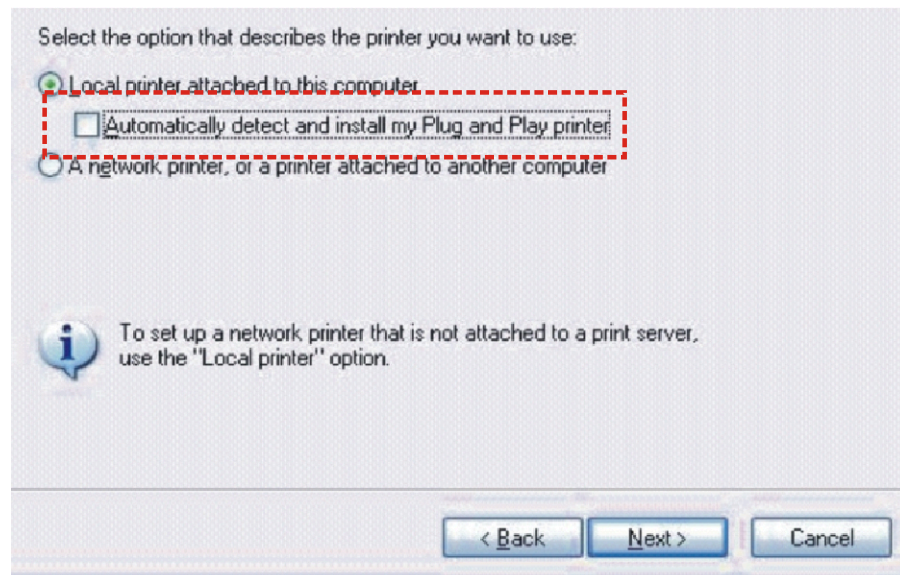
3. Click **"Next"**.

Figure 25



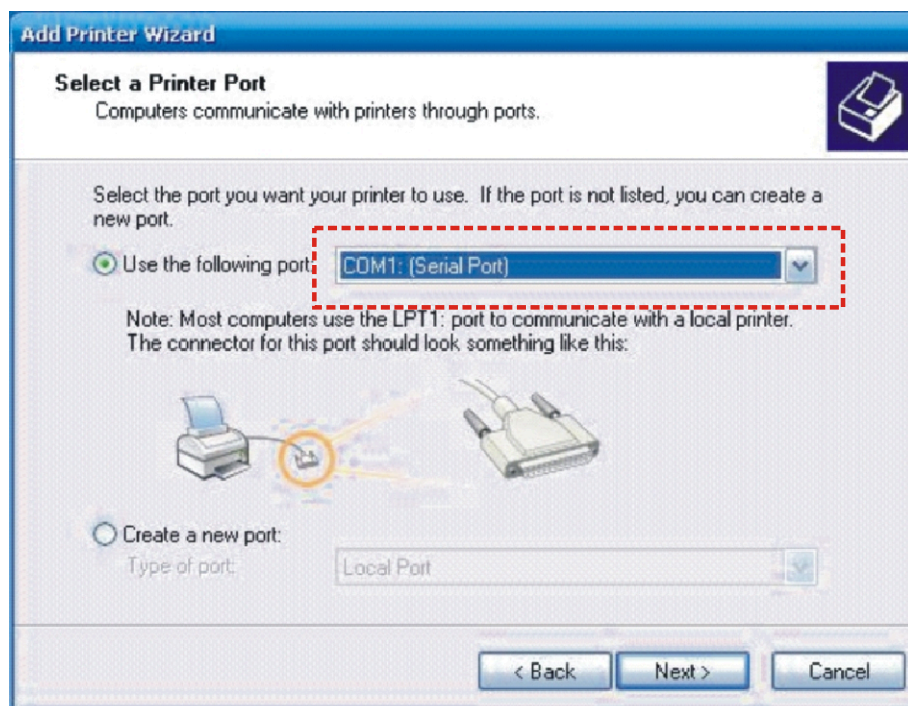
4. Cancel “**Automatically detect and install my Plug and Play printer**”.

Figure 26



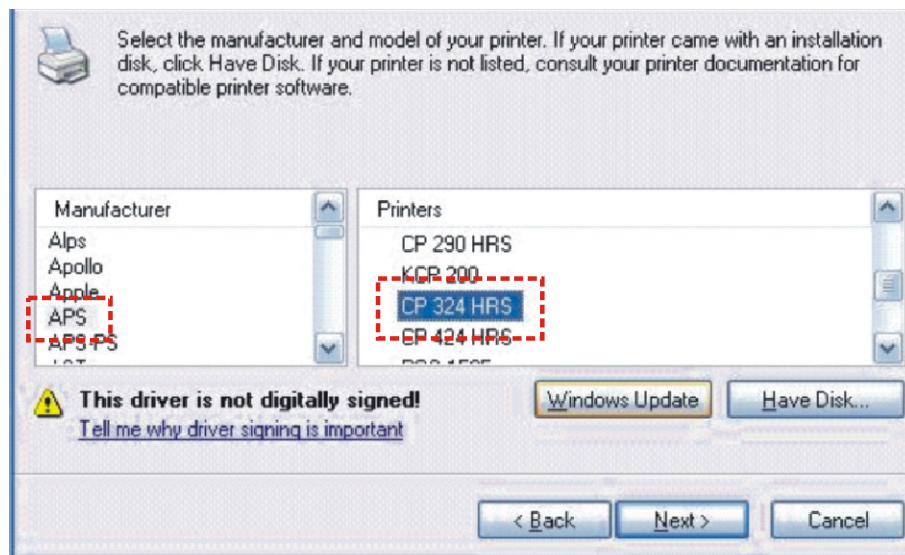
5. Choose “**COM1**” or “**COM2**”.

Figure 27



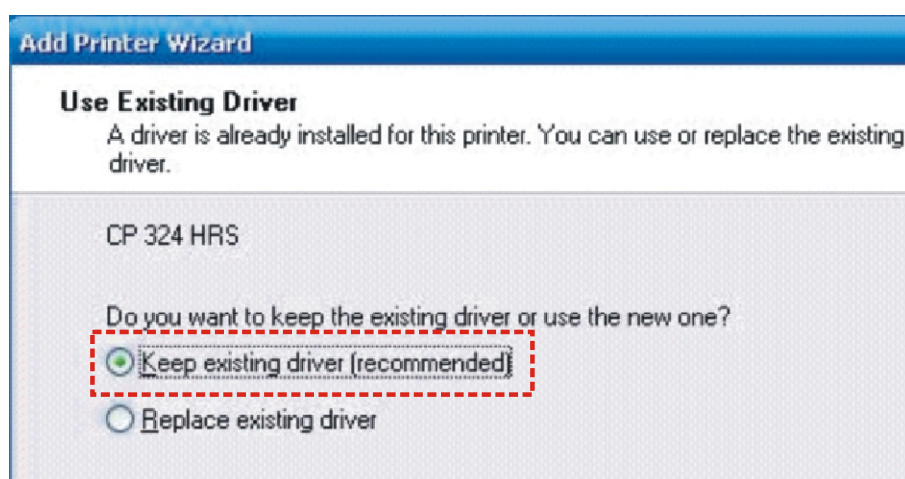
6. Choose “**APS**” under “**Manufacturer**”, and “**CP 324 HRS**” under “**Printers**”.

Figure 28



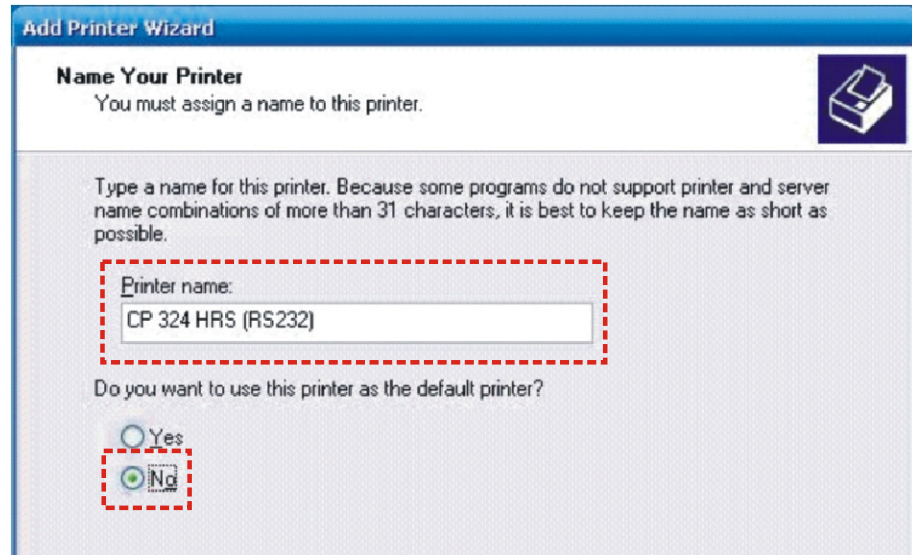
7. Choose “**Keep existing driver**”.

Figure 29



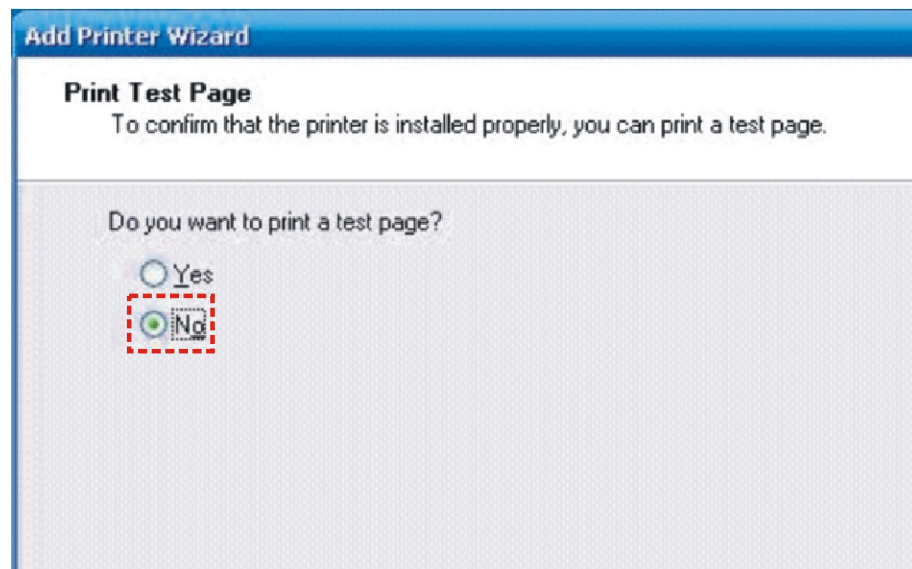
8. Set the printer name as CP 324 HRS (RS232), then choose “No” to not use this printer as a default printer.

Figure 30



9. Choose “No” on “Print Test Page”.

Figure 31



- 10. Click **Finish** to complete setup.
- 11. Restart the computer and GP83 to make sure it works normally.
- 12. Start Printer Show and choose printer CP 324 HRS (RS232) which was just added.

Figure 32



- 13. Print the ticket out again to test if the text displacement problem is solved.

Figure 33



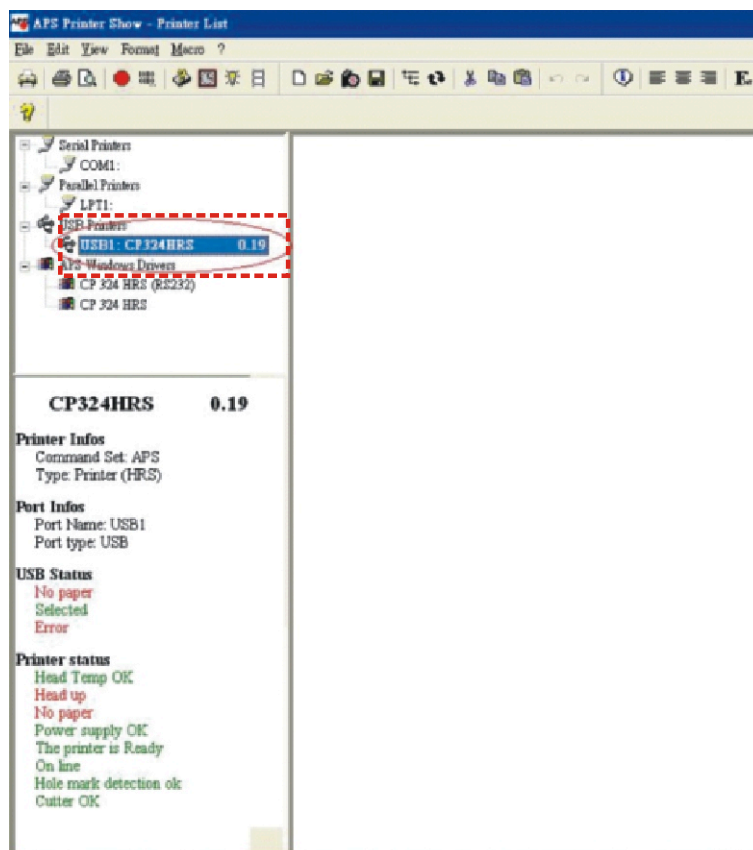
5-3. Opto Sensor Inspecting Disable on printer show

If the window as figure 34 pops out during opto sensor inspecting, it dedicates software operating error. Users must connect USB cable and setup as figure 35 to inspect opto sensor value.

Figure 34



Figure 35



6-1. Circuit Board Overview

The diagram illustrates the system architecture of the AA341A20. It shows the following components and their interconnections:

- Thermal Head**: The central component at the top, connected to the **CPU Board Top** and **CPU Board Bottom**.
- CPU Board Top (AA341A20)**: The main processing unit, connected to the Thermal Head, Cutter, and various connectors.
- CPU Board Bottom (AA341A20)**: The secondary processing unit, connected to the Thermal Head and the Paper Sensor.
- Paper Sensor (AA341B10)**: A sensor unit connected to the CPU Board Bottom via the **WERG802 (3PIN)** connector.
- WEL-RG801 (16PIN)**: A connector unit connected to the CPU Board Top via the **PH-A16** connector.
- WEL-RG805 (9PIN)**: A connector unit connected to the CPU Board Top via the **MH-A9** connector.
- Cutter**: A component connected to the CPU Board Top via the **MH-A4 (4PIN)** connector.
- Connectors and Interfaces**:
 - CN3**: A connector on the CPU Board Top.
 - CN1** and **CN2**: Connectors on the CPU Board Bottom.
 - MH-A5** and **MH-A4**: Connectors on the CPU Board Bottom.
 - MH-A9**: A connector on the CPU Board Bottom.
 - WERG802 (3PIN)**: A connector on the CPU Board Bottom.



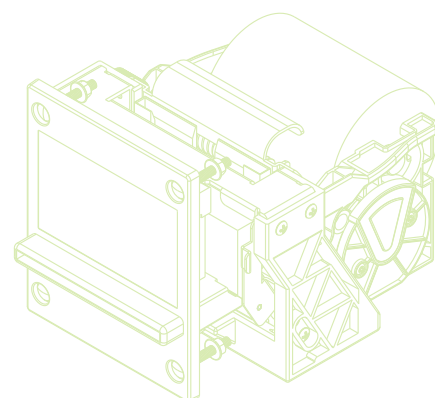
International Currency Technologies Corporation

Ji-Hong Building, No 24, Alley 38, Lane 91, Nei-hu Rd., Sec. 1, Taipei, Taiwan, R.O.C.

Tel: 886-2-2797-1238 · Fax: 886-2-2797-1634

sales@ictgroup.com.tw (For Sales) · rma@ictgroup.com.tw (For Customer Service)

Website: www.ictgroup.com.tw





www.ictgroup.com.tw