

Smart Printer
SP1
Series

Installation Guide



International Currency Technologies Corp.

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Contents

1. Introduction	2
2. Model definition	3
3. Specifications	4
4. Dimension	6
4-1. Component Names.....	13
5. Hardware Setup	
5-1. Connection.....	16
5-2. DIP Switch Setup.....	17
5-3. Harness application	19
5-3-1. I/O Circuit.....	23
5-4. Setup Procedures.....	24
6. Download Firmware and Upgrade by USB	
6-1. Tool.....	31
6-2. Start Download Process.....	31
7. Software Setup	32
8. How to replace a new paper roll	34
9. Printer Head Guide	36
10. Troubleshooting	38

1. Introduction

The SP1 series has a built-in real time clock that allow printer to print out the issue time for each ticket and it has an excellent reporting system provides daily and summary for the transaction reports. The SP1 series tools is really user friendly which allow our customer to design their own print format and logo and they can also keep their own designed format in the memory card for later use. We are offering multiple combinations for our printer so our customers can choose their ideal printer's selection for their usage. For example printer with bezel or without bezel.

Feature:

- ◆ Full/Partial cut function
- ◆ Multiple interfaces
- ◆ Easy installation and low maintenance
- ◆ Fast printing speed
- ◆ Bezel option able
- ◆ Option anti-jam / anti-drag device
- ◆ 12V / 24V power consumption available
- ◆ Support small & large paper rolls
- ◆ Micro SD card with large capacity for data storage
- ◆ ESC/POS command support

2. Model definition

$\frac{\text{SP1}}{\text{A}} - \frac{\text{XX}}{\text{B}} \frac{\text{X}}{\text{C}}$

A : Model

B : Voltage & Mechanism

C : Paper Roll

Example: SP1-BDS

A: Product

Code	Model
SP1	Smart Printer 58 mm

B: Voltage & Mechanism

Code	Specific
BD	DC 12V / 24 V, With Bezel, With Anti-drag
BN	DC 12V / 24 V, With Bezel, Without Anti-drag
NN	DC 12V / 24V, Without Bezel, Without Anti-drag

C: Paper Roll

Code	Specific
S	Small
L	Large

3. Specifications

General

Power Source	12V DC (10.8~13.2 VDC) Min.300mA~Max. 6A
	24V DC (21.6~26.4 VDC) Min.200mA~Max. 3.5A
I/O Level	DC 0V~12V 5mA~130mA
Paper Width	56 ±0.5mm
Paper Roll Diameter	Small Paper Roll Outside Diameter : 78±0.5mm
	Large Paper Roll Outside Diameter : 130±0.5mm

Note: Packing deliver with small paper roll, large paper roll by option.

Power Consumption	Standby : 12V/ 0.3A, 3.6W 24V/ 0.2A, 4.8W
	Operation : 12V/ 1.5A, 18W 24V/ 1A, 24W
	Maximum : 12V/ 6A, 72W 24V/ 3.5A, 84W

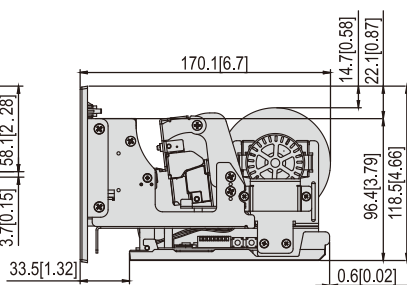
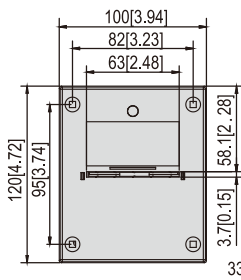
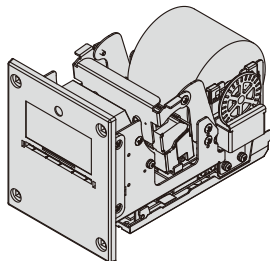
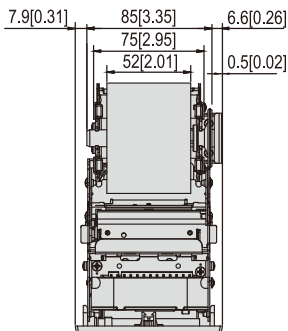
Installation Indoor

Interface RS232, USB, Pot of Gold, Pulse, Hopper, FOD, ESC/POS

Weight	Small Paper Roll Approx. 750g Large Paper Roll Approx. 850g (without paper roll)
Operation Environment	Operation Temperature : 0°C~50°C Storage Temperature : -30°C~60°C Humidity : 30 %~85 %RH (no condensation)
<i>Cutter</i>	
Life Time	Max. 500,000/time
Time	Max. 1cut/2sec
<i>Print head</i>	
Life	50KM
Resolution	W8 dots/mm X H16 dots/mm
Speed	90mm/Sec
Accessories(option)	Paper guide(A47720-R) SP1-NNx use only

4. Dimension

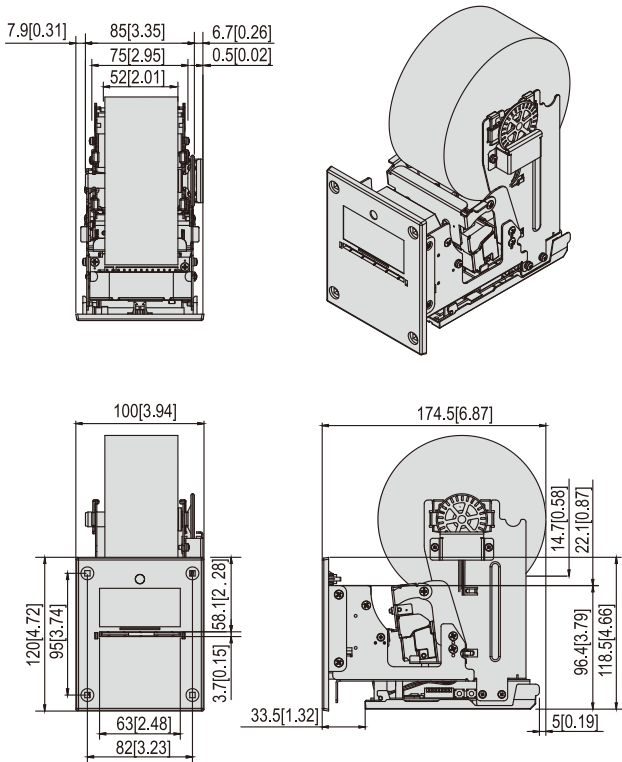
SP1-BDS Small Paper Roll



Unit:mm[inch]

4 FIG.01

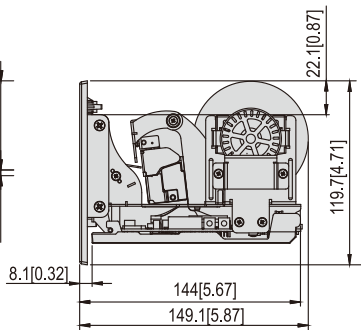
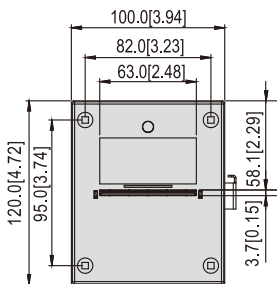
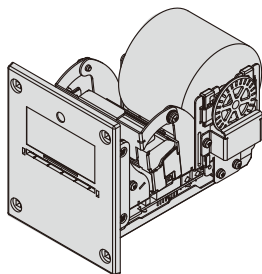
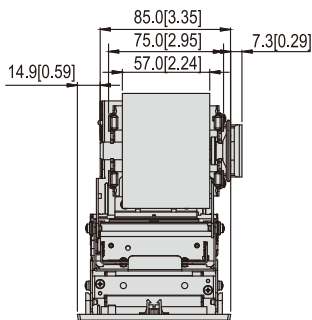
SP1-BDL Large Paper Roll



Unit:mm[inch]

4 FIG.02

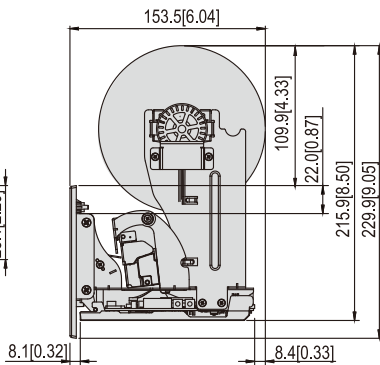
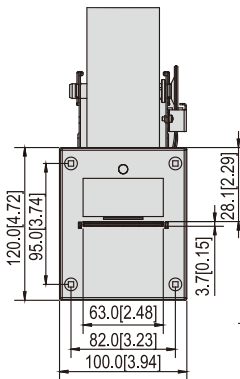
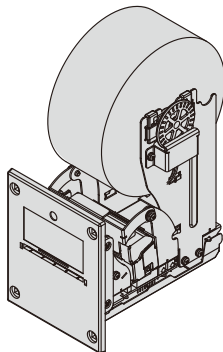
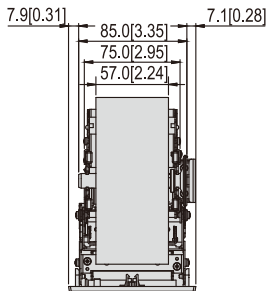
SP1-BNS Small Paper Roll



Unit:mm[inch]

4 FIG.03

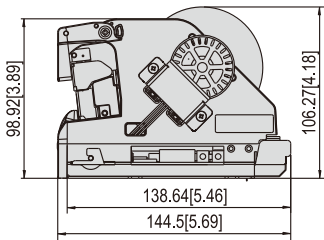
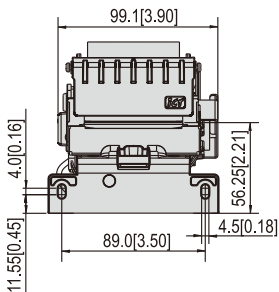
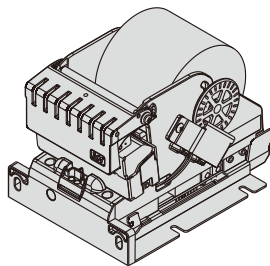
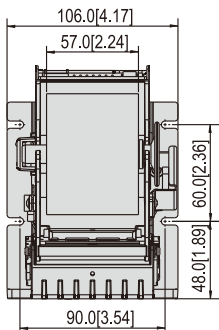
SP1-BNL Large Paper Roll



Unit:mm[inch]

4 FIG.04

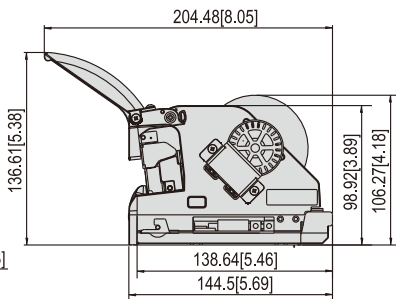
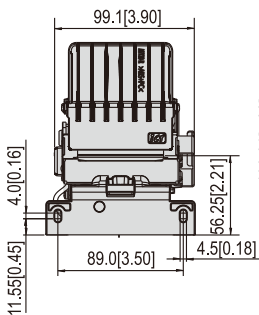
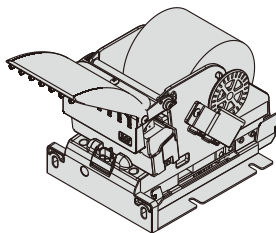
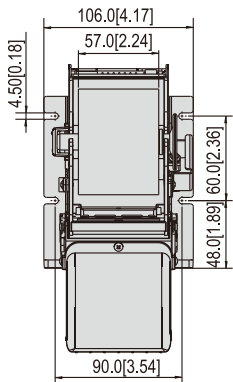
SP1-NNS Small Paper Roll Without Paper guide



Unit:mm[inch]

4 FIG.05

SP1-NNS Small Paper Roll With Paper guide

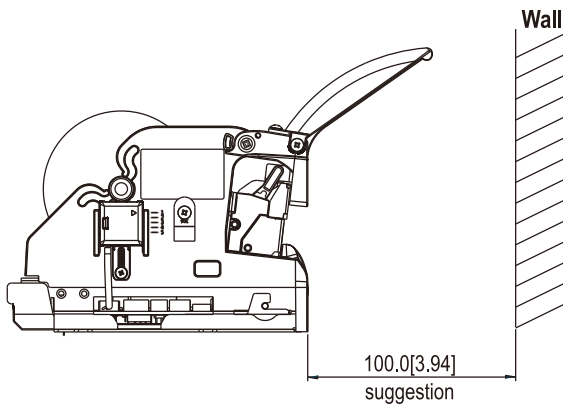


Unit:mm[inch]

4 FIG.06



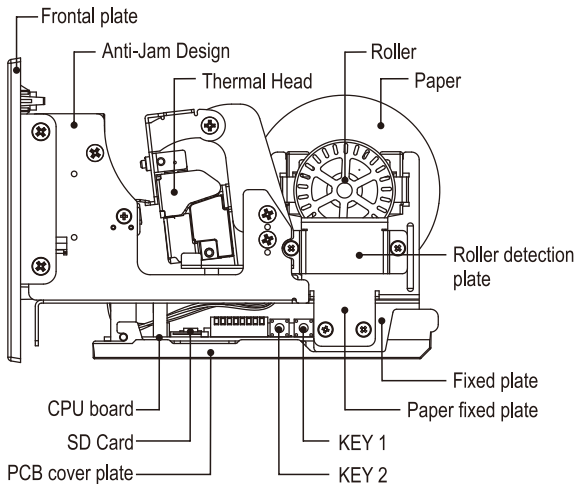
Please follow instructions below before installing
SP1-NNS with Paper guide:



4-1. Component Names

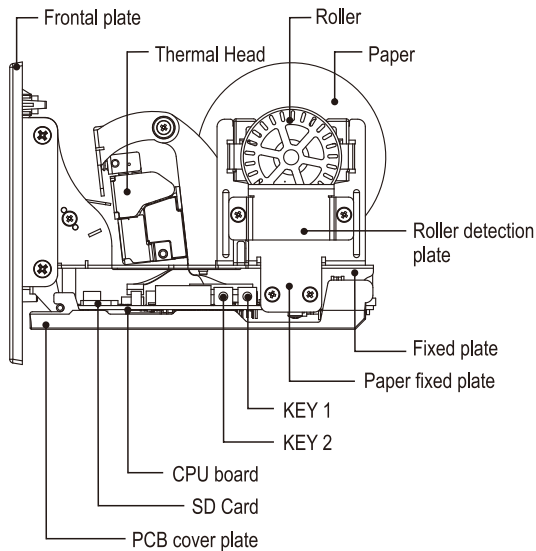
SP1-BDS

4-1 FIG.01

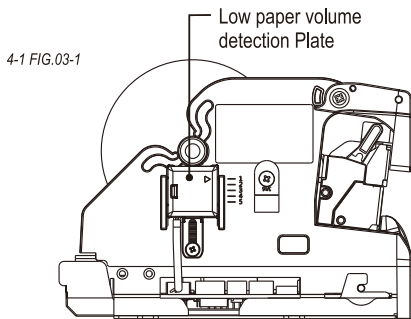
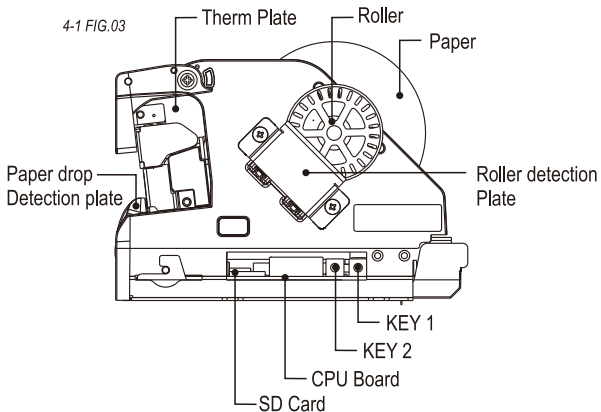


SP1-BNS

4-1 FIG.02



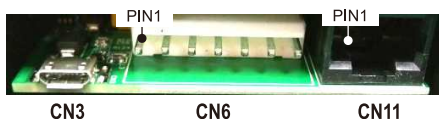
SP1-NNS



5. Hardware Setup

5-1. Connection

Please refer to the pictures and tables on the following pages for information about the function of each of the connector pins.



CN3 Micro USB	PIN 1- VCC(+5DC)	PIN 4- ID
	PIN 2- D-	PIN 5- GND
	PIN 3- D+	

CN6 C/A & B/A

PIN 1- Red.....	+12V/+24V DC
PIN 2- Black.....	GND
PIN 3- Brown.....	Coin in signal, Input, Open Collect
PIN 4- Orange.....	Note in signal. Input, Open Collect
PIN 5- Yellow.....	Payout Trigger, Input, Open Collect
PIN 6- Green.....	Ticket Out, Output, Open Collect
PIN 7- Blue.....	Error output, Output, Open Collect

CN11 Serial Interface

PIN 1- GND	PIN 5- VCC (+5V DC)
PIN 2- POG-TXD1, Output, RS232 Level	PIN 6- VCC (+5V DC)
PIN 3- POG-RXD1, Input, RS232 Level	PIN 7- 232-TXD6, Output, RS232 Level
PIN 4- GND	PIN 8- 232-RXD6, Input, RS232 Level



Do not use RS232 and USB simultaneity.

5-2. DIP Switch Setup



Set the time zone and connect the power for 8 hours before installation, so that the RTC battery has enough power to save the time setting.

General Model

5-2 TABLE.01

Function	Status	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
Operation mode	Operation	X	X	X	X	X	X	X	OFF
USB filter	Enable	-	-	-	ON	-	-	-	-
	Disable	-	-	-	OFF	-	-	-	-
Interface mode	Status								
*Generic Pulse	Print Daily Report: KEY2	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Special Pulse	-	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
POG	POG print hold 1 sec	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
	POG print hold 3 secs	ON	OFF	OFF	OFF				
	POG print hold 5 secs	OFF	ON	OFF	OFF				
	POG print hold 7 secs	ON	ON	OFF	OFF				
Hopper	Pulse Normal High Report: KEY2	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
	Pulse Normal Low Report: KEY2	OFF	OFF	OFF	ON				
FOD	-	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF

(★) Manufacturing default setting in Pulse mode.

KEY1: Print test page.

5-2 TABLE.01-1

Interface mode	Status	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
ESC/POS A	115200/ N/ 8/ 1	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
	38400/ N/ 8/ 1	ON	OFF						
	19200/ N/ 8/ 1	OFF	ON						
	9600/ N/ 8/ 1	ON	ON						
ESC/POS B	115200/ N/ 8/ 1	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF
	38400/ N/ 8/ 1	ON	OFF						
	19200/ N/ 8/ 1	OFF	ON						
	9600/ N/ 8/ 1	ON	ON						

SP1-NNxD only

5-2 TABLE.02

Interface mode	Status	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
ESC/POS D	115200/ N/ 8/ 1	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF
	38400/ N/ 8/ 1	ON	OFF						
	19200/ N/ 8/ 1	OFF	ON						
	9600/ N/ 8/ 1	ON	ON						

KEY1: Reserve.

KEY2: Print test page.

5-3. Harness application

5-3 TABLE.01

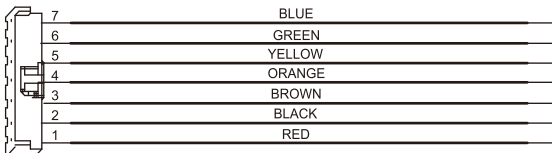
Interface	Used Voltage	Usage	Harness
Power/ Pulse/ Hopper	12/24V DC	Power & *Data Comm.	WEL-R082
***Pot of Gold	N/A	*Data Comm.	WEL-RGP26
	N/A	*Data Comm.	WEL-RGP35
RS232	N/A	*Data Comm.	WEL-RGP27
USB	N/A	*Data Comm.	WEL-RGP28
USB	N/A	**Download	WEL-RSCA303

*Data Comm.: Data communication

** Option, micro USB OTG cable

***Only for POG connection, don't use in network connection to prevent damage facilities. WEL-RGP26 cable length 75 cm, WEL-RGP35 cable length 150 cm by option

WEL-R082



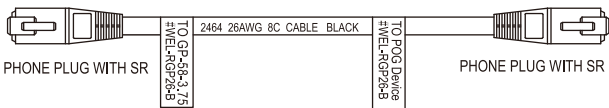
PIN	Color	Function	Signal
1	RED	Power +12V/+24V	POWER+ INPUT
2	BLACK	Power -0V (GND)	POWER- INPUT
3	BROWN	COIN_IN Trigger	PULSE INPUT
4	ORANGE	NOTE_IN Trigger	PULSE INPUT
5	YELLOW	PAYOUT Trigger	PULSE INPUT
6	GREEN	TICKET_OUT	LOW VOLTAGE OUTPUT
7	BLUE	ERROR_OUT	LOW VOLTAGE OUTPUT



PIN3~PIN5 Normal Input Voltage: HI DC 5V~12V.
Trigger Level Voltage: Low 0V (GND) Output Current Max. 5mA.
PIN6~PIN7 Normal Floating.
Output Signal: Low 0V (GND) Input Current Max. 130mA.

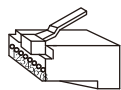
5-3 FIG.02

WEL-RGP26 / WEL-RGP35



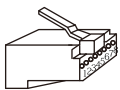
PHONE PLUG WITH SR

PHONE PLUG WITH SR



8P PHONE PLUG VIEW

- PIN 1- BLUE.....GND
- PIN 2- BROWN.....GP-TX
- PIN 3- RED.....GP-RX
- PIN 5- GREEN.....VCC
- PIN 6- YELLOW.....VCC

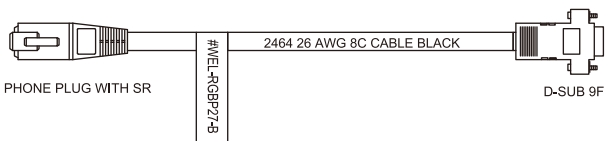


8P PHONE PLUG VIEW

- PIN 4- RED.....POG-TX
- PIN 5- GREEN.....VCC
- PIN 6- YELLOW.....VCC
- PIN 7- BLUE.....GND
- PIN 8- BROWN.....POG-RX

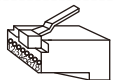
5-3 FIG.03

WEL-RGP27



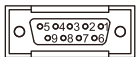
PHONE PLUG WITH SR

D-SUB 9F



8P PHONE PLUG VIEW

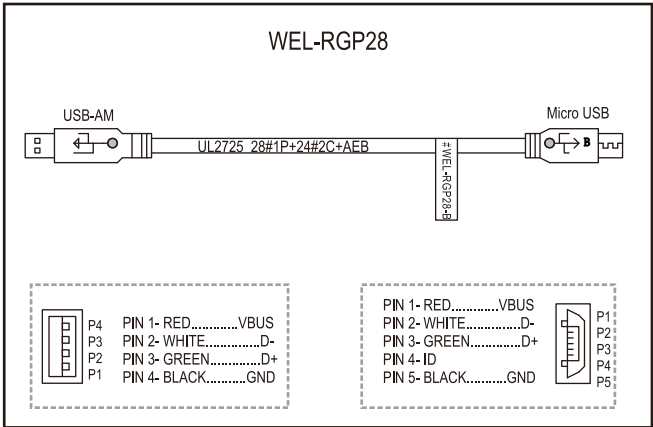
- PIN 1- BLACK.....GND
- PIN 7- ORANGE.....GP-TX
- PIN 8- GRAY.....GP-RX



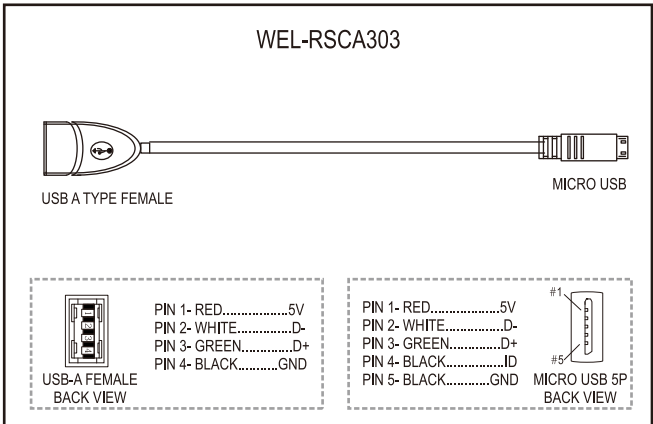
D-SUB 9F TOP VIEW

- PIN 5- BLACK.....GND
- PIN 2- ORANGE.....PC-RX
- PIN 3- GRAY.....PC-TX

5-3 FIG.04

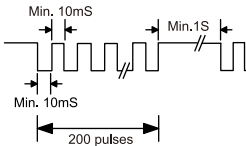
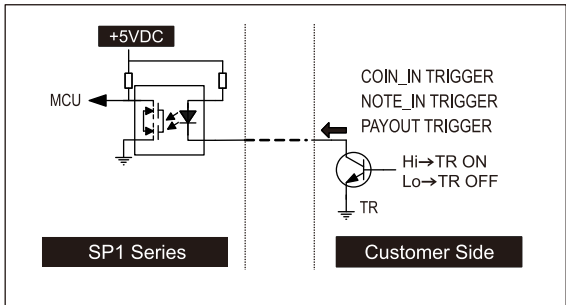
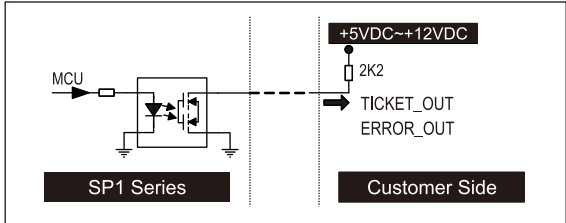


5-3 FIG.05



5-3-1. I/O Circuit

5-3-1 FIG.01



Ex. A user sends 200 pulses(scale factor =1) to SP1 series, afterward, SP1 series detect a Hi level and if this continues longer than 1.5 seconds, then SP1 series will print out "200" amount on ticket.

5-4. Setup Procedures

Pulse/ Hopper Setup:

Step 1.

Connect WEL-R082 to CN6 on PCB.

Step 2.

Install paper roll into paper roll container on machine, paper roll is required to be setup according to the same direction of raster. (Please refer to Chapter 8.)

Step 3.

Turn power on and install paper roll properly, the machine will automatically detect the paper (Approx. 2 seconds) and roll the paper into the printing module. If the installation of the paper roll is correct, the machine is ready for printing.

Working light on the machine's bezel will be on.

Pot of Gold Setup:

Step 1.

Connect WEL-R082 to CN6 on PCB.

Step 2.

Install paper roll into paper roll container on machine, paper roll is required to be setup according to the same direction of raster. *(Please refer to Chapter 8.)*

Step 3.

Connect RJ45 to RJ45 WEL-RGP26 wire to VMC and CN11 on machine. *(Please connect the wires as Page.21, 5-3 FIG.02)*

Step 4.

Turn power on and install paper roll properly; the machine will automatically detect the paper (Approx. 2 seconds) and roll the paper into the printing module. If the installation of the paper roll is correct, the machine is ready for printing.

Working light on the machine's bezel will be on. *(Page 29, 5-4 FIG.02)*

RS232 Setup:**Step 1.**

Connect WEL-R082 to CN6 on PCB.

Step 2.

Install paper roll into paper roll container on machine, paper roll is required to be setup according to the same direction of raster.
(Please refer to Chapter 8.)

Step 3.

Connect WEL-RGP27 to PC COM port and CN11 on machine.
(Please connect the wires as Page.21, 5-3 FIG.03)

Step 4.

Turn power on and install paper roll properly; the machine will automatically detect the paper (Approx. 2 seconds) and roll the paper into the printing module. If the installation of the paper roll is correct, the machine is ready for printing.
Working light on the machine's bezel will be on.
(Page 30, 5-4 FIG.03)

USB Setup:**Step 1.**

Connect WEL-R082 to CN6 on PCB.

Step 2.

Install paper roll into paper roll container on machine, paper roll is required to be setup according to the same direction of raster. (Please refer to Chapter 8.)

Step 3.

Connect WEL-RGP28 to PC USB port and CN3 on machine.
(Please connect the wires as Page.22, 5-3 FIG.04)

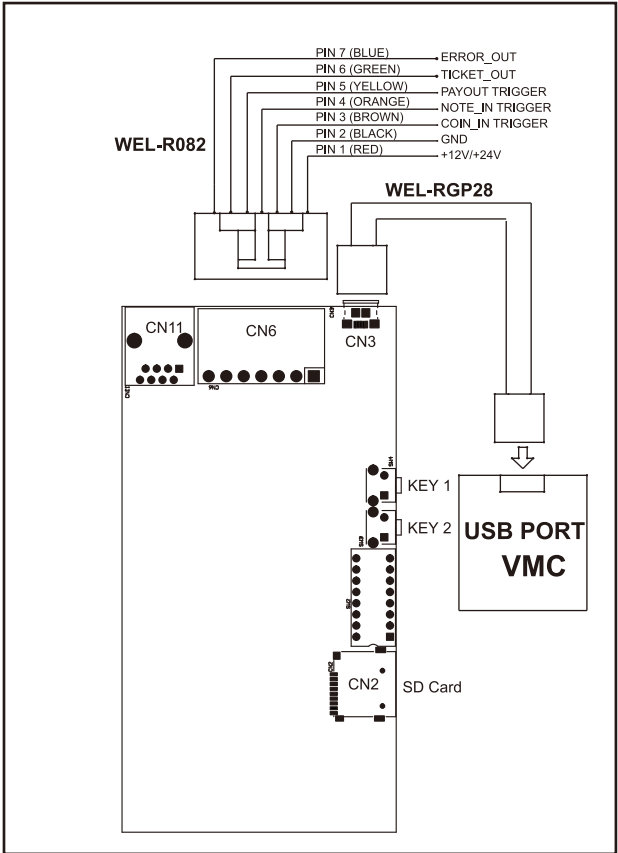
Step 4.

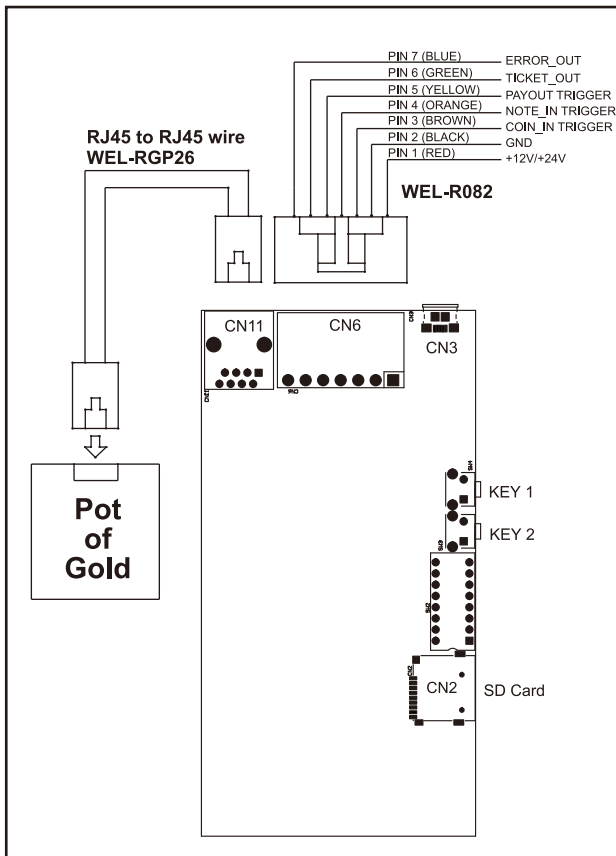
Turn power on and install paper roll properly; the machine will automatically detect the paper (Approx. 2 seconds) and roll the paper into the printing module. If the installation of the paper roll is correct, the machine is ready for printing.
Working light on the machine's bezel will be on.
(Page 28, 5-4 FIG.01)

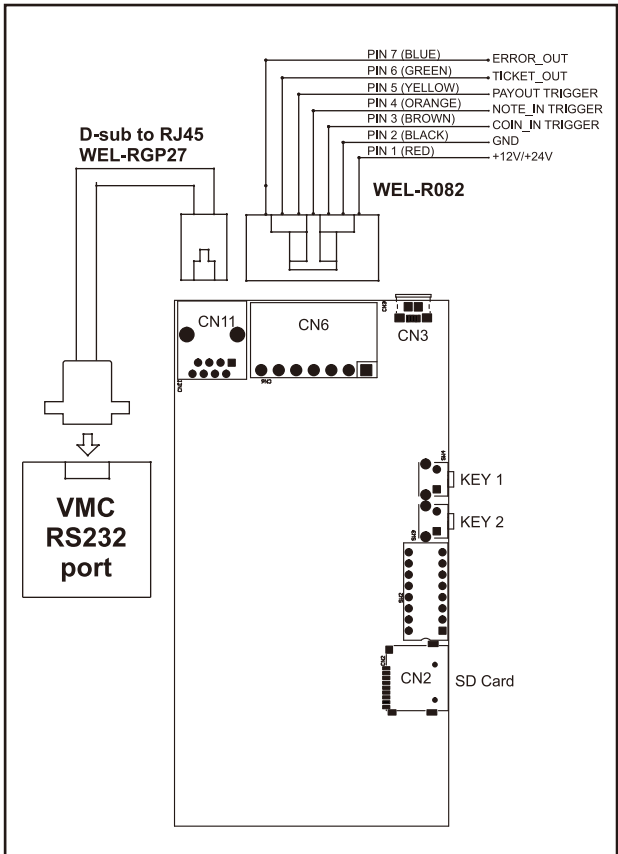
Step 5

Please refer to Page P32, 7. for Printer driver setup.

5-4 FIG.01







6. Download Firmware and Upgrade by USB

6-1. Tool

PC

USB 2.0 flash drive

Printer

Power cable(WEL-R082)

Download cable(WEL-RSCA303)

6-2. Start Download Process

1. Connect USB Flash Drive to PC, Copy the software files (*.bin) into the USB Flash driver of "ecf" folder.
2. Connected the Micro USB download cable to Printer CN3, insert USB flash drive to the cable, then restart Printer the upgrade process may takes few minutes.
3. Once printer restart and upgrade succeed, please remove the Micro USB download cable and the USB flash driver.

7. Software Setup

Please visit ICT web site <http://www.ictgroup.com.tw> to download the Driver & Tool.



The screenshot shows a navigation bar with a hamburger menu icon on the left and a yellow button labeled "CONTACT US" on the right. Below the bar is a blue header for "DOWNLOAD AREA". Underneath, there are four rounded rectangular buttons: "Download Area" (highlighted in yellow), "Client Area", "Contact Support", and "Technical Enquiry". Each button has a right-pointing chevron icon.

Select Search

Please select a product to check the available files, choosing among operating manuals and product sheets, firmware and software, datasets and drivers. If you don't find what you are looking for, please contact us using the Request Form.

SP1-BDS	▼
Document	▼
Language	▼
Country	▼
SUBMIT ➔	

1. Printer Driver.

Printer Driver included VCP driver and Windows driver.
Before Setup Printer Driver , Please select appropriate
Windows OS.

Printer support: Windows 7, Windows 8, Windows 8.1,
Windows 10.

2. ICT Tool

Setup All-In-One Tool.

3. Date and Time Setup

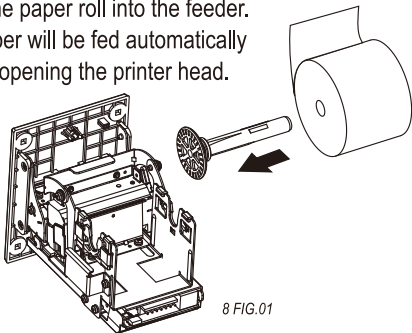
Install printer driver and All-In-One Tool, then open the
All-In-One Tool for Date and Time setup.

Please find ICT web site SP1 Series for detail.

8. How to replace a new paper roll?

1. SP1 Series Small Paper Roller

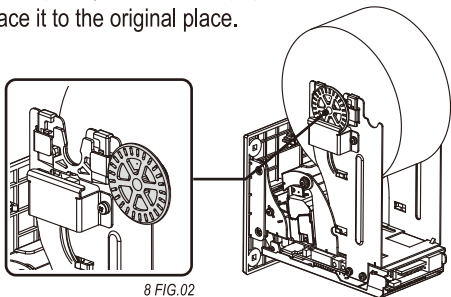
Insert a new paper roll going clockwise.
Insert the paper roll into the feeder.
The paper will be fed automatically
without opening the printer head.



8 FIG.01

2. SP1 Series Large Paper Roller

Insert a new paper roll going clockwise and place it in the back area temporary.
After set the paper into the printer feeder then
replace it to the original place.

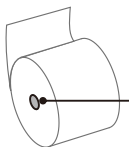


8 FIG.02

3. Take heed of the notices, when insert paper Roller



Paper Roll Purchase recommendation



8 FIG.03

1. Paper roll size
width: $57\pm 1\text{mm}$,
diameter: $80\pm 2\text{mm}$

● Paper roll core
inner diameter: $13\pm 0.5\text{mm}$,
outer diameter: $20.4\pm 1\text{mm}$

2. "The end of the paper"
needs to be glued to
"the paper roll core".

1. No burrs, the edge of paper.



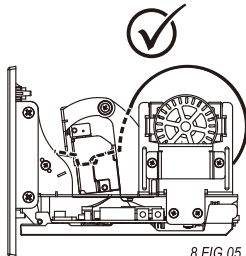
8 FIG.04



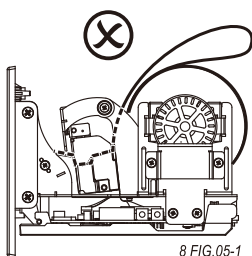
8 FIG.04-1



2. No bend, be straight.



8 FIG.05



8 FIG.05-1



3. After feed/setup thermal paper, please press **KEY 1** to initial printer.

9. Printer Head Guide

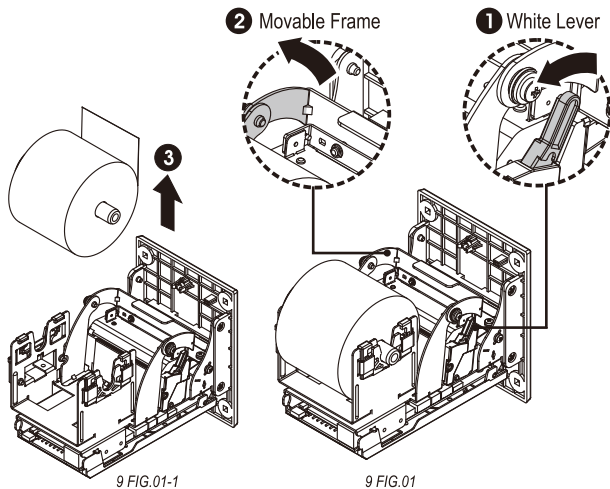
- ◆ When you need to reset the printer head please follow the steps below.

Unlock the Printer Head:

Step 1. Pull back the white lever.

Step 2. Lift the movable frame.

Step 3. Remove the paper roll.



Lock the Printer Head:

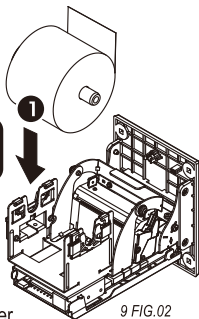
Step 1. Place the printer paper in.

Step 2. Pull back the white lever **FIRST**.

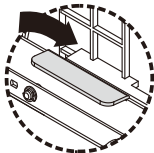


Must pull back the White Lever FIRST.

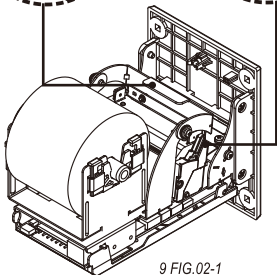
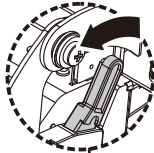
Step 3. Push down the movable frame.



3 Movable Frame



2 White Lever



9 FIG.02-1



Be sure to push back the movable frame, or the Printer will not function.

10. Troubleshooting

LED Indicator	Status	Solution
Red	Check Sum abnormal.	Contact technician.
Green	Standby.	
Red flash 1 time	1. Moveable frame not close. 2. Thermal head no paper.	1. To make sure moveable frame is closed 2. Re-feed paper.
Red flash 2 times	Cutter abnormal.	To make sure paper path jam-free.
Red flash 3 times	Out of paper or raster error.	Refill paper roll.
Red flash 4 times	Anti-jam abnormal.	To make sure paper path jam-free.
Red flash 5 times	SD card abnormal.	1. To make sure SD card inserted. 2. To make sure SD card format and specify the file exists.
Red flash 6 times	Printer head over heat.	
Orange light / green light will flash alternately (1 sec)	In testing mode.	1. DIP switch is set as not to enter the test mode, and restart device. 2. If the DIPSW is set into the non-test mode, please contact technician.
Orange	System booting	
Orange light Flash	Firmware upgrading or USB data operation.	
Green light Flash	Printing	
Red light highly flash	Low paper warning	



If the error can not be solved after corrective actions or it recurs, please contact ICT for technical support.



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