USER'S MANUAL

PA-6610

Mini POS Terminal Powered by NVIDIA® Tegra®3 Platform

PA-6610 M1

PA-6610 POS System
With LCD/Touchscreen

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DISCLAIMER

This user's manual is meant to assist users in installing and setting up the system. The information contained in this document is subject to change without any notice.

CE NOTICE

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

FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any change or modifications to the equipment not expressly approve by the party responsible for compliance could void your authority to operate such equipment.

CAUTION! Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.
WARNING! Some internal parts of the system may have high electrical voltage. And therefore we strongly recommend that qualified engineers can open and disassemble the system.The LCD and Touchscreen are easily breakable, please handle them with extra care.

TABLE OF CONTENTS

INTRODUCTION

CHAPTER

1

This chapter gives you the information for the PA-6610. It also outlines the system specifications.

Sections included:

- About This Manual
- POS System Illustration
- System Specifications
- Safety precautions

Experienced users can jump to chapter 2 on page 2-1 for a quick start.

1-1. ABOUT THIS MANUAL

Thank you for purchasing our PA-6610 Series System. The PA-6610 is an updated system designed to be comparable with the highest performance of IBM AT personal computers. The PA-6610 provides faster processing speed, greater expandability and can handle more tasks than before. This manual is designed to assist you how to install and set up the whole system. It contains four chapters and two appendixes. Users can configure the system according to their own needs.

Chapter 1 Introduction

This chapter introduces you to the background of this manual. It also includes illustrations and specifications for the whole system. The final section of this chapter indicates some safety reminders on how to take care of your system.

Chapter 2 System Configuration

This chapter outlines the location of motherboard components and their function. You will learn how to set the jumpers and configure the system to meet your own needs.

Chapter 3 Applications & Widgets

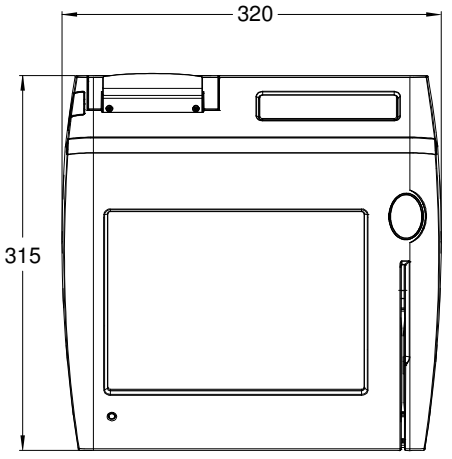
This chapter contains information of system applications and Widgets pre-installed in PA-6610.

Appendix A System Diagrams

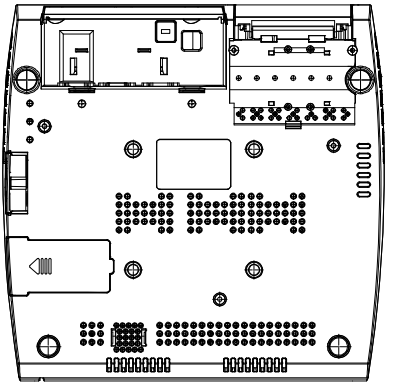
This chapter shows the exploded diagrams and part numbers of PA-6610 components.

1-2. POS SYSTEM ILLUSTRATION

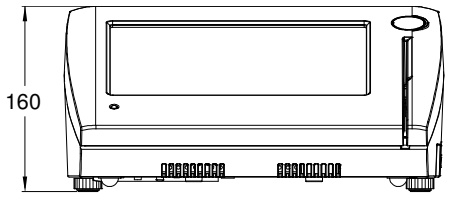
Top View



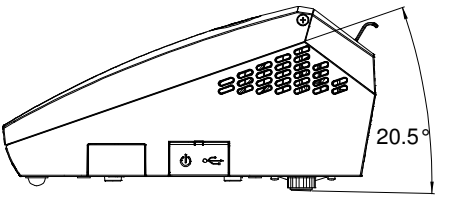
Bottom View

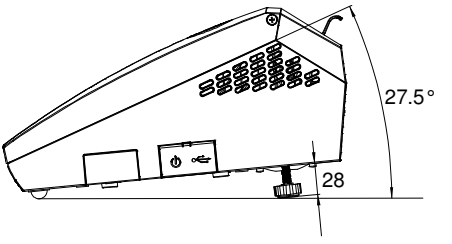


Front View

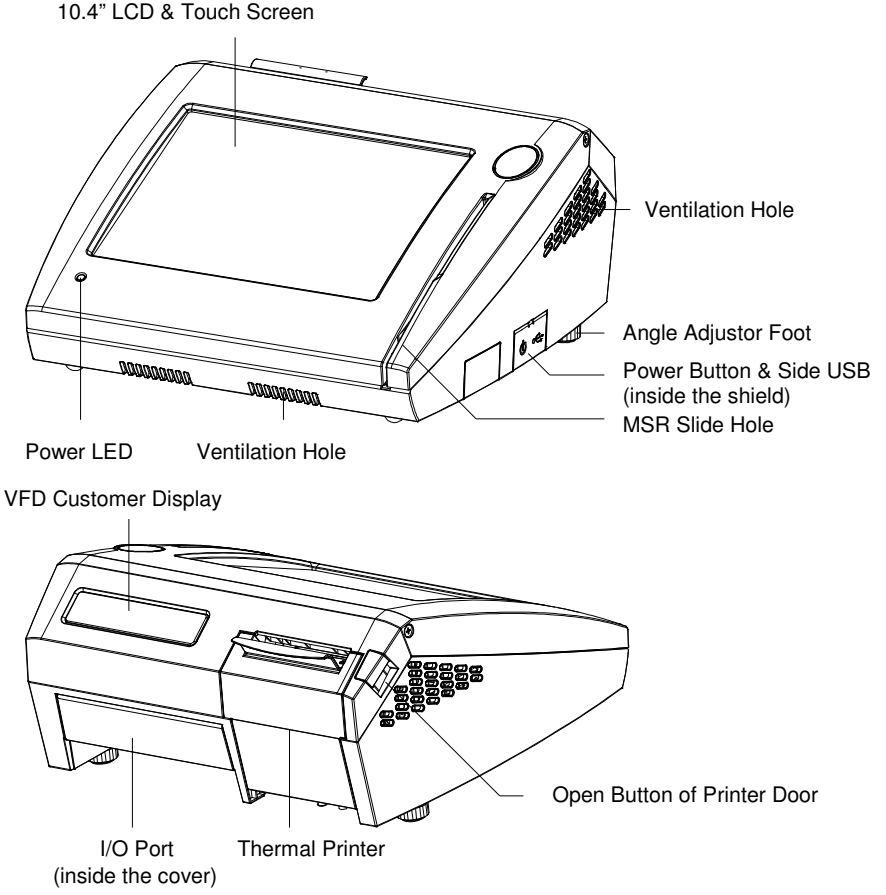


Side View

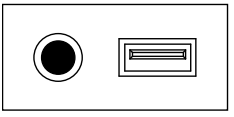




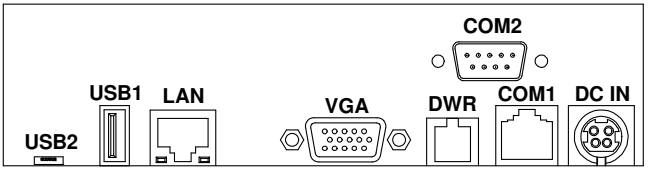
Quarter View



Side I/O



Rear I/O

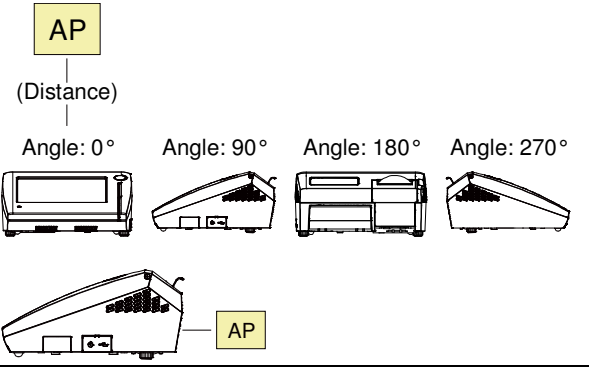


Unit: mm

1-3. SYSTEM SPECIFICATIONS

MAINBOARD (PB-6810-G0A)

System

<table>
<tr><td>CPU</td><td>NVIDIA® Tegra®3</td></tr>
<tr><td>Memory</td><td>DDR3 1GB</td></tr>
<tr><td>OS Support</td><td>Android 4.1</td></tr>
<tr><td>Power Supply</td><td>72 Watt power adapter</td></tr>
<tr><td>Power Consumption</td><td>▪ System off: 2.2W
▪ System idle: 17.6W (Panel backlight is on)
▪ System running: 29.7W (Printer+ VFD + MSR)
▪ System full-loading: 46.2W (Printer + VFD + MSR + USB + COM)</td></tr>
<tr><td>Flash</td><td>eMMC 8GB</td></tr>
<tr><td>SD</td><td>Standard SDHC (up to 32GB)</td></tr>
<tr><td>Wireless LAN Signal</td><td>
<table>
<tr><td>AP distance</td><td>0˚</td><td>90˚</td><td>180</td><td>270</td></tr>
<tr><td>1M</td><td>-26 dBm</td><td>-42 dBm</td><td>-25 dBm</td><td>-39 dBm</td></tr>
<tr><td>3M</td><td>-45 dBm</td><td>-37 dBm</td><td>-45 dBm</td><td>-47 dBm</td></tr>
<tr><td>5M</td><td>-51 dBm</td><td>-46 dBm</td><td>-49 dBm</td><td>-54 dBm</td></tr>
<tr><td>10M</td><td>-61 dBm</td><td>-53 dBm</td><td>-56 dBm</td><td>-55 dBm</td></tr>
</table>
The above data are tested from the configuration of AP & POS system as follows (both are lain flat).


</td></tr>
</table>

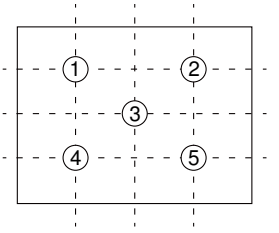
VFD	20 columns & 2 lines. Each column allows 5x7 dots 1st character to 20th character speed: 360mm/sec.
MSR	JIS I & II; ISO I & II & III tracks, support i-Button reader.
Printer	2"/3" thermal printer with auto-cutter. ▪ 2" speed: 200mm/sec. ▪ 3" speed: 170mm/sec.
Color	Top: white/deep grey Bottom: deep grey
System Weight	▪ Without power adapter: 5 kg ▪ With power adapter: 6 kg
Dimension (W x H x D)	315mm x 320mm x 160mm
Certificate	FCC/CE/LVD

I/O Ports

Serial Port	▪ 1 x DB-9 (COM2) ▪ 1 x RJ45 (COM1), supports embedded VFD ▪ 3 x Wafer on board: - Co-lay COM2 - COM4 supports embedded printer - COM5 supports embedded MSR ▪ 5/12V Selectable (COM1/2/5)
USB	▪ 2 x USB2.0 (1 x USB Type A; 1 x Micro USB) ▪ 1 x USB2.0 on side bezel (USB Type A)
LAN	1 x 10/100 Mbps
VGA	1 x DB-15 VGA Interface

Display

LCD	10.4" TFT XGA
Max. Resolution	1024 x 768
Brightness	▪ Average: 180 cd/m^2 ▪ Point 3: 200 cd/m^2

	(Through touchscreen) 
Pixel Pitch	0.206 (W) x 0.206 (H)
Signal Interface	TTL (18-bit)
Tilt Angel	20.5~27.5˚
Touch Panel	10.4” 5wire analog resistive

Environment

Temperature	▪ Operation: 0~35°C (32~95°F) ▪ Storage: -20~60°C (-4~140°F)
Humidity	10~90% (without frosting)

1-4. SAFETY PRECAUTIONS

The following messages are safety reminders on how to protect your systems from damages, and extending the life cycle of the system.

1. Check the Line Voltage

a. The operating voltage for the power supply should be within the range of 100V to 240V AC; otherwise the system may be damaged.

2. Environmental Conditions

a. Place your PA-6610 on a sturdy, level surface. Be sure to allow enough space around the system to have easy access needs.
b. Avoid installing your PA-6610 Series POS system in extremely hot or cold places.
c. Avoid exposure to sunlight for a long period of time (for example, in a closed car in summer time. Also avoid the system from any heating device.). Or do not use the PA-6610 when it has been left outdoors in a cold winter day.
d. Bear in mind that the operating ambient temperature is between 0°C and 35°C (32°F and 95°F).
e. Avoid moving the system rapidly from a hot place to a cold place, and vice versa, because condensation may occur inside the system.
f. Protect your PA-6610 against strong vibrations, which may cause hard disk failure.
g. Do not place the system too close to any radio-active device. Radio-active device may cause signal interference.
h. Always shutdown the operation system before turning off the power.

3. Handling

a. Avoid placing heavy objects on the top of the system.
b. Do not turn the system upside down. This may cause the hard drive to malfunction.
c. Do not allow any objects to fall into this product.
d. If water or other liquid spills into the product, unplug the power cord immediately.

4. Good Care

a. When the outside case gets stained, remove the stains using neutral washing agent with a dry cloth.

b. Never use strong agents such as benzene and thinner to clean the surface of the case.

c. If heavy stains are present, moisten a cloth with diluted neutral washing agent or alcohol and then wipe thoroughly with a dry cloth.

d. If dust is accumulated on the case surface, remove it by using a special vacuum cleaner for computers.

SYSTEM CONFIGURATION

CHAPTER

2

Helpful information that describes the jumper and connector settings, component locations, and pin assignment.

Sections included:

- Jumper & Connector Quick Reference Table
- How to Set Jumpers
- Component Locations & Jumper Settings
  - Main Board (External I/O ports & other components)
  - Printer Board
  - VFD Board
  - MSR Board
  - Inverter Board

2-1. JUMPER & CONNECTOR QUICK REFERENCE TABLE

Main Board

JUMPER/CONNECTOR	NAME	PAGE
Recovery Button	SW4	2-21
Antenna Connector	JA1	2-22
SD Card Slot	SD_CARD1	2-22

Printer Board

JUMPER/CONNECTOR	NAME	PAGE
Power Supply Connector	24V_CN1	2-24
Thermal Head/Motor/Sensor Connector	PRINT_CN1	2-24
RS-232 Interface Connector	COM1	2-26
Auto-cutter Connector	CUT_CN1	2-27

VFD Board

JUMPER/CONNECTOR	NAME	PAGE
Power Switch Selection	JP12V_SEL1	2-29
Power Switch	CN2	2-29
RS-232 Serial Interface	CN1	2-30

MSR Board

JUMPER/CONNECTOR	NAME	PAGE
Decoder Connector	MAG_CN1	2-32
Debug Port	DEG1	2-32
Key Connector	I_BUTTON1	2-32
Output Connector	IO1	2-33

Inverter Board

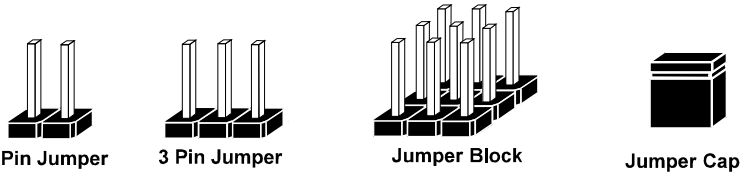
JUMPER/CONNECTOR	NAME	PAGE
Input Connector	CN1	2-35
Output Connector	CN2	2-35

2-2. HOW TO SET JUMPERS

You can configure your board by setting the jumpers. A jumper consists of two or three metal pins with a plastic base mounted on the card, and by using a small plastic "cap", also known as the jumper cap (with a metal contact inside), you are able to connect the pins. So you can set-up your hardware configuration by "opening" or "closing" pins.

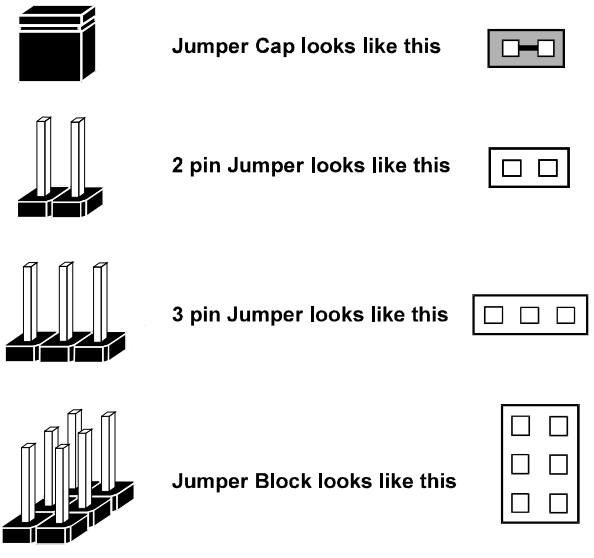
Jumpers can be combined into sets that called jumper blocks. When jumpers are all in the block, you have to put them together to set up the hardware configuration. The figure below shows what this looks like.

JUMPERS AND CAPS

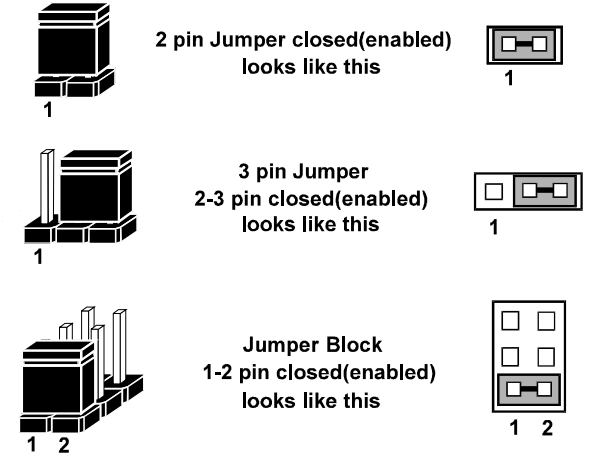


If a jumper has three pins for example, labelled PIN1, PIN2, and PIN3. You can connect PIN1 & PIN2 to create one setting and shorting. You can either connect PIN2 & PIN3 to create another setting. The same jumper diagrams are applied all through this manual. The figure below shows what the manual diagrams look and what they represent.

JUMPER DIAGRAMS

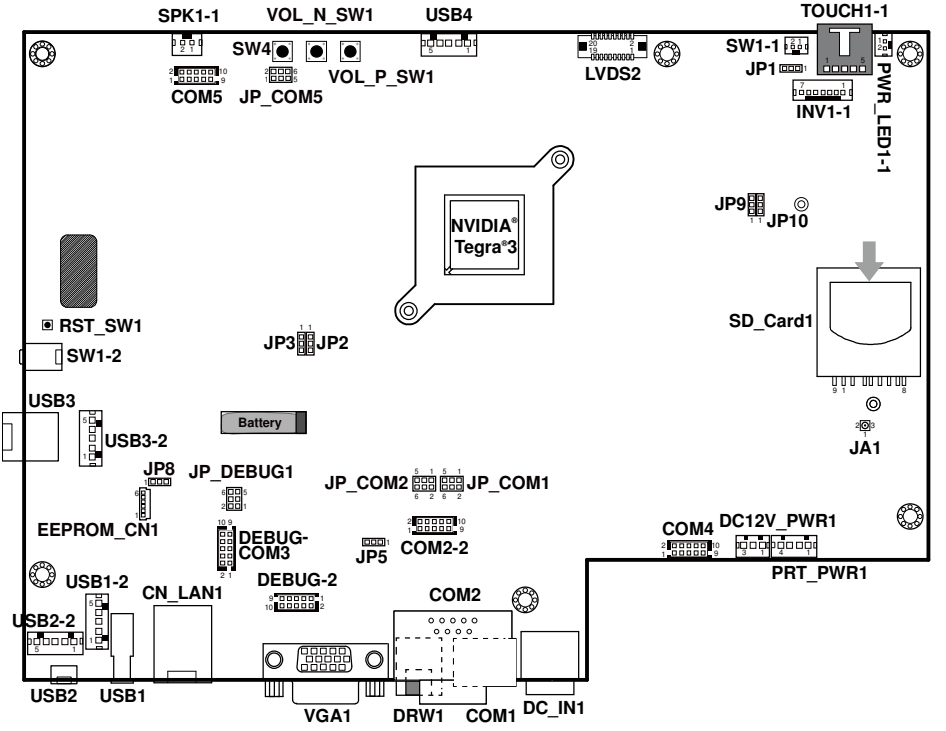


JUMPER SETTINGS



2-3. MAIN BOARD COMPONENT LOCATIONS & JUMPER SETTINGS

M/B: PB-6810



PA-6610 Main Board Component Locations

2-3-1. External I/O Ports

2-3-1-1. Power Button

Follow the instruction below to use the power button.

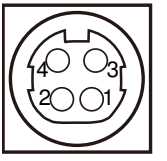
SW1-2

- To turn on the system, press the power button briefly.
- During normal operation, you can press the power button briefly to turn off the panel backlight. When you next briefly press the power button, the LCD backlight will turn on again.
- To turn off the system, press and hold the power button for 2 seconds. Then the system will ask for your confirmation by prompting a message of power-off.

2-3-1-2. DC IN Port

DC_IN1: DC Power-In Port
The pin assignments are as follows:

PIN	ASSIGNMENT
1	GND
2	GND
3	+24V
4	+24V

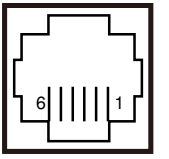


DC_IN1

2-3-1-3. Cash Drawer Port

DRW1: Cash Drawer Port
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	4	+12V/+24V (Max. current: 1A)
2	Drawer Open	5	NC
3	Drawer Sense	6	GND

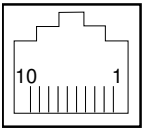


DRW1

2-3-1-4. COM Port

COM1: RJ45 Serial Port, supporting VFD
The pin assignments are as follows:

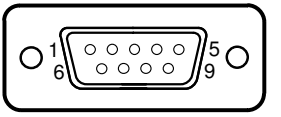
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	NC	6	NC
2	RXD	7	RTS
3	TXD	8	CTS
4	NC	9	RI/+5V/+12V selectable (Max. current: 1A)
5	GND	10	NC



COM1

COM2: D-Sub9 Serial Port, co-lay with COM2-2
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI/+5V/+12V selectable (Max. current: 1A)
5	GND		

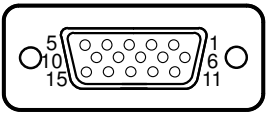


COM2

2-3-1-5. VGA Port

VGA1: VGA Port
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	RED	9	+5V
2	GREEN	10	GND
3	BLUE	11	NC
4	NC	12	SDA
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	SCL
8	GND		



VGA1

2-3-1-6. USB Port

USB1, USB3: USB Type A Ports
The pin assignments are as follows:

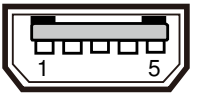
PIN	ASSIGNMENT
1	+5V (Max. current: 0.5A)
2	DM
3	DP
4	GND

USB1

USB3

USB2: Micro-USB Port
The pin assignments are as follows:

PIN	ASSIGNMENT
1	+5V (Max. current: 0.5A)
2	DM
3	DP
4	ID
5	GND

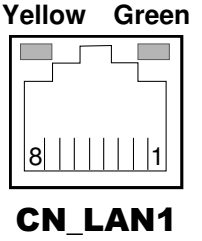


USB2

2-3-1-7. LAN Port

CN_LAN1: RJ45 LAN Port
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	TXD+	5	NC
2	TXD-	6	RXD-
3	RXD+	7	NC
4	NC	8	NC



LAN LED Indicator:
Left Side LED

Yellow Color Blinking	LAN Message Active
Off	No LAN Message Active

Right Side LED

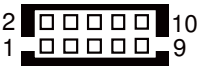
Green Color On	10/100Mbps LAN Speed Indicator
Orange Color on	Giga LAN Speed Indicator
Off	No LAN switch/ hub connected.

2-3-2. Other Components on Main Board

2-3-2-1. COM Connector

COM2-2: Serial Port Wafer
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI/+5V/+12V selectable (Max. current: 1A)
5	GND	10	NC



COM2-2/ COM4/ COM5

DEBUG-COM3, COM5: Serial Port Wafers
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	NC	6	NC
2	RXD	7	RTS
3	TXD	8	CTS
4	NC	9	RI/+5V/+12 selectable (Max. current: 1A)
5	GND	10	NC

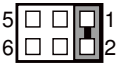
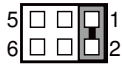
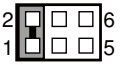
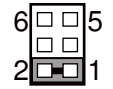
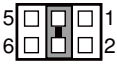
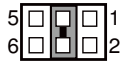
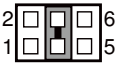
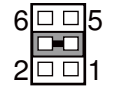
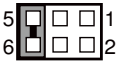
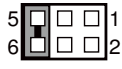
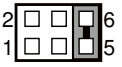
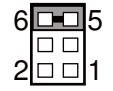
DEBUG-COM3

COM4: Serial Port Wafer
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	NC	6	NC
2	RXD	7	RTS
3	TXD	8	CTS
4	NC	9	NC
5	GND	10	NC

2-3-2-2. COM Port RI & Voltage Selection

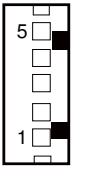
JP_COM1, JP_COM2, JP_COM5, JP_DEBUG1: COM RI & Voltage Selection
The jumper settings are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION			
RI	1-2	 **JP_COM1**	 **JP_COM2** (Default)	 **JP_COM5**	 **JP_DEBUG1** (Default)
12V	3-4	 **JP_COM1** (Default, supports VFD)	 **JP_COM2**	 **JP_COM5**	 **JP_DEBUG1**
5V	5-6	 **JP_COM1**	 **JP_COM2**	 **JP_COM5** (Default, supports MSR)	 **JP_DEBUG1**

2-3-2-3. USB Connector

USB1-2, USB3-2: USB Wafers
The pin assignments are as follows:

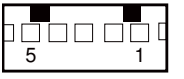
PIN	ASSIGNMENT
1	DM
2	DP
3	GND
4	+5V (Max. current: 0.5A)
5	GND



USB1-2/ USB3-2

USB2-2: USB Wafer
The pin assignments are as follows:

PIN	ASSIGNMENT
1	DM
2	DP
3	ID
4	+5V (Max. current: 0.5A)
5	GND



USB2-2

2-3-2-4. Cash Drawer Power Selection

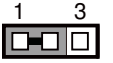
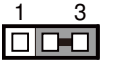
JP5: Cash Drawer Power Selection
The jumper settings are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
+24V	1-2	 **JP5**
+12V	2-3	 **JP5**

Note: Manufacturing Default is +12V.

2-3-2-5. SPI EEPROM Selection

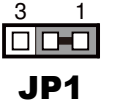
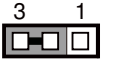
JP8: Pin Header for SPI EEPROM Selection
The jumper settings are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
Programming EEPROM	1-2	 **JP8**
Normal	2-3	 **JP8**

Note: Manufacturing Default is Normal.

2-3-2-6. Backlight Type Selection

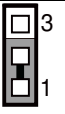
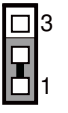
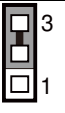
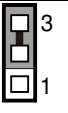
JP1: Pin Header for Backlight Type Selection
The jumper settings are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
LED	1-2	 **JP1**
CCFL	2-3	 **JP1**

Note: Manufacturing Default is CCFL.

2-3-2-7. Touch Function & USB Channel Selection

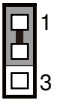
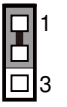
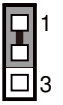
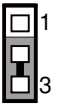
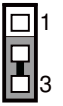
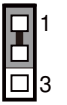
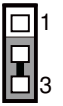
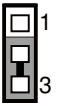
JP9, JP10: Pin Header for Touch Function & USB Channel Selection
The jumper settings are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION	
To R-Touch Controller	JP9: 1-2 JP10: 1-2	 **JP9**	 **JP10**
To USB4	JP9: 2-3 JP10: 2-3	 **JP9**	 **JP10**

Note: Manufacturing Default is To R-Touch Controller.

2-3-2-8. HSIC USB-CLK Selection

JP2, JP3: Pin Header for HSIC USB-CLK Selection
The jumper settings are as follows:

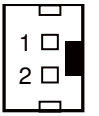
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION	
38.4 MHz	JP2: 1-2 JP3: 1-2	 **JP2**	 **JP3**
26.0 MHz	JP2: 1-2 JP3: 2-3	 **JP2**	 **JP3**
19.2 MHz	JP2: 2-3 JP3: 1-2	 **JP2**	 **JP3**
12.0 MHz	JP2: 2-3 JP3: 2-3	 **JP2**	 **JP3**

Note: Manufacturing Default is 26.0 MHz.

2-3-2-9. LED Connector

PWR_LED1-1: Power Indication LED Wafer
The pin assignments are as follows:

PIN	ASSIGNMENT
1	GND
2	+5V

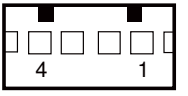


PWR_LED1-1

2-3-2-10. Power For Thermal Printer Connector

PRT_PWR1: Power for Thermal Printer Wafer
The pin assignments are as follows:

PIN	ASSIGNMENT
1	+24V
2	+24V
3	GND
4	GND

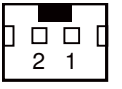


PRT_PWR1

2-3-2-11. External Speaker Connector

SPK1-1: External Speaker Wafer
The pin assignments are as follows:

PIN	ASSIGNMENT
1	SPO+
2	SPO-

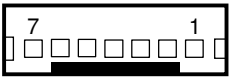


SPK1-1

2-3-2-12. Inverter Connector

INV1-1: Inverter Wafer
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	+12V	5	LVDS_BKLTEN
2	+12V	6	BRCTR
3	GND	7	GND
4	GND		



INV1-1

2-3-2-13. LVDS Connector

LVDS2: LVDS Wafer
The pin assignments are as follows:

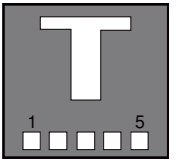
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	11	RINO1-
2	+3.3V	12	CLKO-
3	RINO2+	13	GND
4	+3.3V	14	GND
5	RINO2-	15	RINO0+
6	GND	16	GND
7	GND	17	RINO0-
8	GND	18	+3.3V
9	RINO1+	19	GND
10	CLKO+	20	+3.3V

LVDS2

2-3-2-14. Touch Panel Connector

TOUCH1-1: Touch Panel Wafer
The pin assignments are as follows:

PIN	ASSIGNMENT
1	LR (Low Right)
2	LL (Low Left)
3	Probe
4	UR (Up Right)
5	UL (Up Left)

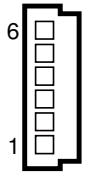


TOUCH1-1

2-3-2-15. LAN EEPROM I/F Connector

EEPROM_CN1: LAN EEPROM I/F Wafer
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	4	EEDI
2	EECS	5	NC
3	EECK	6	+3.3V

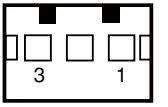


EEPROM_CN1

2-3-2-16. Speaker Connector

DC12V_PWR1: Speaker wafer
The pin assignments are as follows:

PIN	ASSIGNMENT
1	+12V
2	GND
3	+12V



DC12V_PWR1

2-3-2-17. Reset Button

RST_SW1: Reset Button
The pin assignments are as follows:

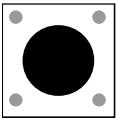
ACTION	ASSIGNMENT
Click	0V
Release	+3.3V

RST_SW1

2-3-2-18. Volume Adjustor

VOL_N_SW1: Volume Down Adjustor
The pin assignments are as follows:

ACTION	ASSIGNMENT
Click	Volume down
Release	N/A



VOL_N_SW1/
VOL_P_SW1

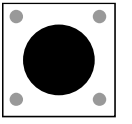
VOL_P_SW1: Volume Up Adjustor
The pin assignments are as follows:

ACTION	ASSIGNMENT
Click	Volume up
Release	N/A

2-3-2-19. Recovery Button

SW4: Recovery Button
The pin assignments are as follows:

ACTION	ASSIGNMENT
Click	0V
Release	+3.3V

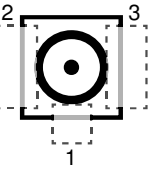


SW4

2-3-2-20. Antenna Connector

JA1: Antenna Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	Signal
2	GND
3	GND

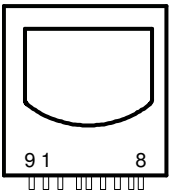


JA1

2-3-2-21. SD Card Slot

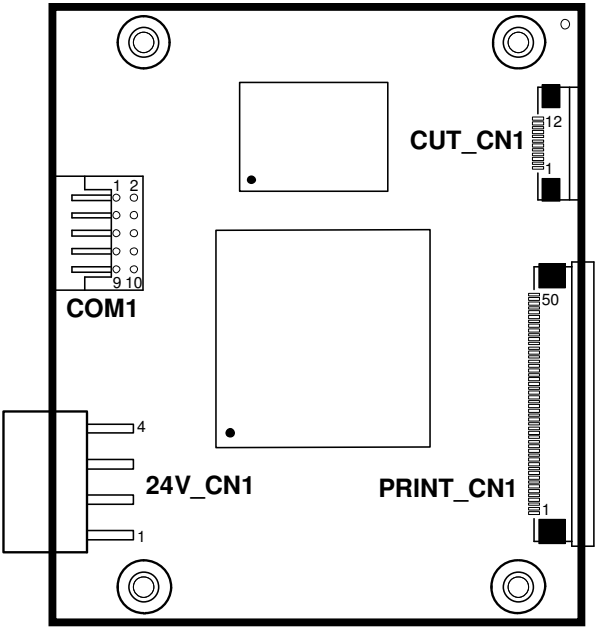
SD_CARD1: SD Card Slot
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	Data3	7	Data0
2	CMD	8	Data1
3	GND	9	Data2
4	3.3V	10	CD_SW1
5	CLK	11	SW3_COM
6	GND	12	WP_SW2



SD_CARD1

2-4. PRINTER BOARD COMPONENT LOCATIONS & JUMPER SETTINGS

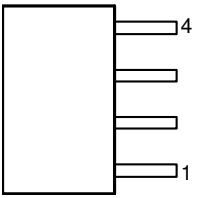


PA-6610 Printer Board Component Locations

2-4-1. Power Supply Connector

24V_CN1: Power Supply Wafer
The pin assignments are as follows:

PIN	ASSIGNMENT	I/O	FUNCTION
1	GND	-	GND
2	GND	-	GND
3	24V	I	24V
4	24V	I	24V

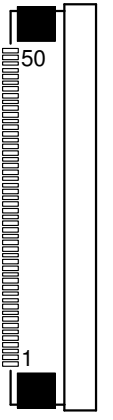


24V_CN1

2-4-2. Thermal Head/Motor/Sensor Connector

PRINT_CN1: Thermal Head/Motor/Sensor Wafer
The pin assignments are as follows:

PIN	ASSIGNMENT	I/O	FUNCTION
1	24V	O	Head drive power
2	24V	O	Head drive power
3	24V	O	Head drive power
4	24V	O	Head drive power
5	24V	O	Head drive power
6	24V	O	Head drive power
7	DAT	O	Print data output
8	CLK	O	Synchronizing signal for print data transfer
9	GND	-	Head GND
10	GND	-	Head GND
11	GND	-	Head GND
12	GND	-	Head GND
13	GND	-	Head GND



PRINT_CN1

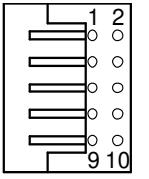
PIN	ASSIGNMENT	I/O	FUNCTION
14	GND	-	Head GND
15	NC	-	Unused
16	DST4	O	Head strobe signal
17	DST3	O	Head strobe signal
18	3.3V	-	Logic Power
19	GND	-	Thermistor GND
20	GND	-	Thermistor GND
21	TH	I	Thermistor signal
22	NC	-	Unused
23	DST2	O	Head strobe signal
24	DST1	O	Head strobe signal
25	GND	-	Head GND
26	GND	-	Head GND
27	GND	-	Head GND
28	GND	-	Head GND
29	GND	-	Head GND
30	GND	-	Head GND
31	!LATCH	O	Print data latch
32	24V	O	Head drive power
33	24V	O	Head drive power
34	24V	O	Head drive power
35	24V	O	Head drive power
36	24V	O	Head drive power
37	24V	O	Head drive power
38	NC	-	Unused
39	PS	I	Signal of the out-of-paper sensor
40	Vps	O	Power supply of the out-of-paper sensor

PIN	ASSIGNMENT	I/O	FUNCTION
41	GND	-	GND of the platen position/ out-of-paper sensor
42	HS	I	Signal of the platen position sensor
43	NC	-	Unused
44	FG	-	Frame GND
45	FG	-	Frame GND
46	NC	-	Unused
47	2A	O	Motor drive signal
48	1B	O	Motor drive signal
49	1A	O	Motor drive signal
50	2B	O	Motor drive signal

2-4-3. RS-232 Interface Connector

COM1: RS-232 Interface Connector
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	NC	6	DSR/CTS
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR/RTS	9	NC
5	GND	10	NC

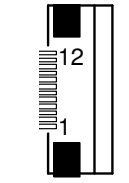


COM1

2-4-4. Auto-Cutter Connector

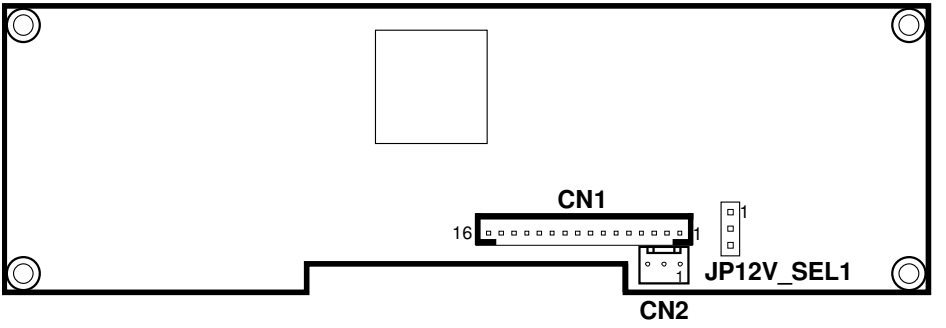
CUT_CN1: Auto-cutter Wafer
The pin assignments are as follows:

PIN	ASSIGNMENT	I/O	FUNCTION
1	NC	-	Unused
2	Vcs	O	Power supply of the home position sensor
3	GND	-	GND of the home position sensor
4	CUTS	I	Signal of the hom position sensor
5	2B-1	O	Auto-cutter motor drive signal
6	2B-2	O	Auto-cutter motor drive signal
7	2A-1	O	Auto-cutter motor drive signal
8	2A-2	O	Auto-cutter motor drive signal
9	1B-1	O	Auto-cutter motor drive signal
10	1B-2	O	Auto-cutter motor drive signal
11	1A-1	O	Auto-cutter motor drive signal
12	1A-2	O	Auto-cutter motor drive signal



CUT_CN1

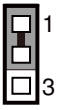
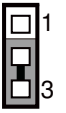
2-5. VFD BOARD COMPONENT LOCATIONS & JUMPER SETTINGS



PA-6610 VFD Board Component Locations

2-5-1. Power Switch Selection

JP12V_SEL1: Power Switch Selection
The jumper settings are as follows:

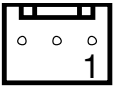
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
OFF	1-2	 **JP12V_SEL1**
ON	2-3	 **JP12V_SEL1**

Note: Manufacturing Default is ON.

2-5-2. Power Switch

CN2: Power Switch
The pin assignments are as follows:

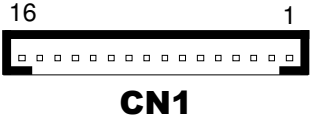
PIN	ASSIGNMENT
1	High Level
2	NC
3	Low Level



CN2

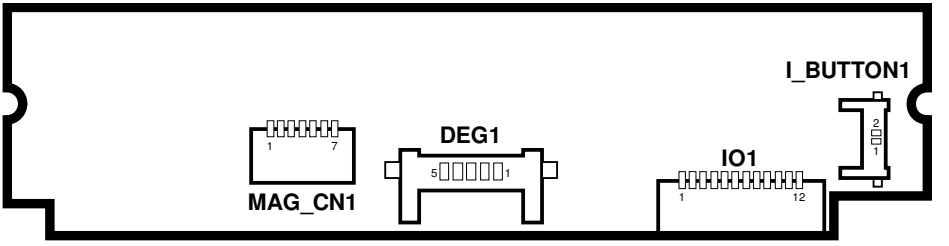
2-5-3. RS-232 Serial Interface

CN1: RS-232 Serial Interface wafer
The pin assignments are as follows:



PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	11	NC
2	TXD	12	NC
3	RXD	13	NC
4	DTR	14	NC
5	DSR	15	NC
6	RTS	16	NC
7	CTS	17	NC
8	+12V/+5V	18	NC

2-6. MSR BOARD COMPONENT LOCATIONS & JUMPER SETTINGS

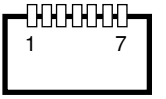


PA-6610 MSR Board Component Locations

2-6-1. Decoder Connector

MAG_CN1: Decoder Wafer
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	HDC2	5	GND
2	HDC1	6	HDA2
3	HDB2	7	HDA1
4	HDB1		

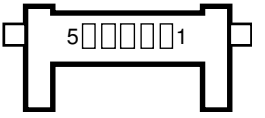


MAG_CN1

2-6-2. Debug Connector

DEG1: Debug Port Wafer
The pin assignments are as follows:

PIN	ASSIGNMENT
1	TX
2	RX
3	NC
4	GND
5	+5V

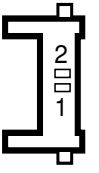


DEG1

2-6-3. Key Connector

I_BUTTON1: Key Wafer
The pin assignments are as follows:

PIN	ASSIGNMENT
1	I_B1
2	GND

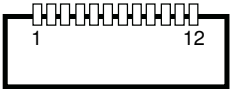


DEG1

2-6-4. Output Connector

IO1: Output wafer
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	CLK_KB	7	RX_MSR
2	CLK_PC	8	TX_MSR
3	DATA_KB	9	GND
4	DATA_PC	10	USB_D+_R
5	+5V	11	USB_D-_R
6	CHASSIS GND	12	GND



IO1

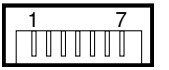
2-7. INVERTER BOARD COMPONENT LOCATIONS & JUMPER SETTINGS

PA-6610 Inverter Board Component Locations

2-7-1. Input Connector

CN1: Input Connector
The pin assignments are as follows:

PIN	ASSIGNMENT	DESCRIPTION
1	Vin	Input Voltage
2	Vin	Input Voltage
3	GND	Power System Return
4	GND	Power System Return
5	Brt ON/OFF	ON/OFF Control
6	Brt ADJ	Lamp Control
7	GND	Power System Return

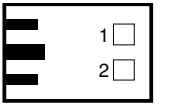


CN1

2-7-2. Output Connector

CN2: Output Connector
The pin assignments are as follows:

PIN	ASSIGNMENT	DESCRIPTION
1	Lamp High	High Voltage Output for High Side CCFL
2	Lamp Low	Low Voltage Output for Low Side CCFL



CN2

CHAPTER

3

SOFTWARE UTILITIES

This chapter provides the detailed information for you to operate the system applications.

Sections included:

- Version List
- OS API
- Firmware Control Command
  - Printer Board
  - VFD Board
  - MSR Board
- Utility Update
  - OS
  - Printer Board
  - VFD Board
  - MSR Board

3-1. VERSION LIST

Category	Item	Version	Release date	Image Name
System Platform	Android	4.1.1	2013/4/9	I70-6610-04Q-01-130409 for user mode
	Kernel	3.1.10		
Android Bundled AP	Browser	4.1.1		
	Calculator	4.1.1		
	Calendar	4.1.1		
	Clock	2.0.3		
	Downloads	4.1.1		
	Email	4.1		
	Gallery	1.1.40000		
	Music	4.1.1		
	People	4.1.1		
	Search	4.1.1		
	Settings	4.1.1		
Added AP	eGalaxCalibrator	0.0.9		
	OI File Manager	2.0.2		
Updated AP	MB-1030 Printer Update Application	1.0		
	MB-3013 MSR Update Application	1.0		
	MB-4103 VFD Update Application	1.0		
	Recovery	1.0		
OS API	MainActivity	A01-6610-000-000-130325		
Firmware	Printer Board Firmware	F00-1030-001-03-130327		
	MSR Board Firmware	F00-3013-001-03-C01		
	VFD Board Firmware	F00-4103-001-02-130410		

Note: Cut off the power for mandatory shutdown but if you perform that constantly, it may bring about system damage. All the software utilities installed in the system are provided for free. Protech Systems won't take responsibility for any loss or damage caused.

3-2. OS API

3-2-1. Programming Guide

1. Create a new project in Eclipse.

2. Copy provided JAR file (CashDrawer.jar, SAPI.jar, VFD.jar) into the path below:
   Libs

   - CashDrawer.jar
   - VFD.jar
   - SAPI.jar
   - Msr.jar
   - ThermalPrinter.jar

3. In Libraries tab of the target project's properties, confirm that the JAR file you added (CashDrawer.jar SAPI.jar VFD.jar) is registered in [Java Build Path]. If it has not been added, add the JAR file into build path using [Add Jars...].

4. Copy the library file (libeposprint.so) into following path:
   Libs

   - armeabi
   |_ libgpio_control.so
   |_libserial_port.so

Import Function Declare:
import android.VFD.VFD;
import android.VFD.Msr;
import android.CashDrawer.CashDrawer;
import android.ThermalPrinter.ThermalPrinter;

3-2-2. API Reference

3-2-2-1. Cash Drawer API

OpenCashDrawer

Public Boolean OpenCashDrawer();

Purpose Open the cash drawer API.
Return True (1) on success, False (0) on failure

Example

```
boolean ControlResult = false;
ControlResult = CDrawer.OpenCashDrawer();
if(ControlResult)
    //"Cash Drawer Control Success!"
else
    //"Cash Drawer Control Failure!"
```

GetCashDrawerStatus

Public Boolean GetCashDrawerStatus ();

Purpose Get the cash drawer status.
Value Put value to Function, than get CashdrawerStatus back.
Return True (1) on success, False (0) on failure False (0)

Example

```
boolean ControlResult = false;
CashDrawer CDrawer =newCashDrawer();
  ControlResult = CDrawer.GetCashDrawerStatus();
if(ControlResult)
    //"Cash Drawer Status Open !"
else
    //"Cash Drawer Status Close !"
```

3-2-2-2. VFD API

OpenVFD

Public Boolean OpenVFD(int BuadRate)

Purpose	Open the VFD Port.
Value	Set VFD Baud Rate; MB-4103 default baud rate is 9600;
Return	True (1) on success, False (0) on failure

CloseVFD

Public Boolean CloseVFD();

Purpose	Close the VFD Port.
Return	True (1) on success, False (0) on failure False (0)

SendCommand

Public Boolean SendCommand(byte[] data);

Purpose	Send Command to VFD.
Value	VFD Command Code. ESC/POS Command.
Return	True (1) on success, False (0) on failure False (0)
Example	VFD – Clear VFD Command (EPSON Command)

```
//Initialize a VFD class instance
VFD VFD_Control = new VFD();
VFD_Control.OpenVFD(9600);
byte[] data = newbyte[1];
data[0] = 0x0C;
VFD_Control.SendCommand(data);
VFD_Control.CloseVFD();
```

3-2-2-3. MSR API

OpenMSR

Public Boolean OpenMSR (int BaudRate)

Purpose	Open theMSR Port.
Value	Set Msr BaudRate; MJR243R baud rate default is 19200;
Return	True (1) on success, False (0) on failure

CloseMSR

Public Boolean CloseMSR( );

Purpose	Close the MSR Port.
Return	True (1) on success, False (0) on failure False (0)

SendCommand

Public Boolean SendCommand (byte[] data);

Purpose	Send Command to MSR.
Value	Msr Command Code.
Return	True (1) on success, False (0) on failure False (0)
Example	Msr – Send Command to Msr

```
//Initialize a VFD class instance
Msr Msrcontrol = newMsr ();
Msrcontrol.OpenMSR(19200);
byte[] data = newbyte[1];
data[0] = 0x0C;
Msrcontrol.SendCommand(data);
```

Receiver Data - Attach

Public Boolean Attach();

Purpose Receive Msr Data

Return True (1) on success, False (0) on failure False (0)

Example Receive Data from MSR.

Before use this function need to implements ObserverInterface.

Observer = Current class.

```
publicclass MsrActivity extends Activity implements
android.Msr.Observer    {
EditText mReception;
Msr Msrcontrol ;
@Override
protectedvoid onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_msr);

mReception = (EditText)
findViewById(R.id.EditTextReception);
Msrcontrol = new Msr();
Msrcontrol.OpenMSR(115200);Msrcontrol.Attach(this);
@Override
publicvoid Update(finalbyte[] buffer, finalint size)
{runOnUiThread(new Runnable() {
publicvoid run() {
if (mReception != null) {
mReception.append(new String(buffer, 0, size));
                        }
                    }
                });
        }
}
When Close:
Msrcontrol.CloseMSR();Msrcontrol.Detach(this);
```

Receiver Data - Detach

Public Boolean Detach();

Purpose	Cancel Obsver from Msr Data
Return	True (1) on success, False (0) on failure False (0)

Update Event

Public Void Update(final byte[] buffer, final int size);

Purpose	Get Msr Data String
Return	byte[] buffer = Msr data int size = buffer count. Before using this function, implements Observer Interface. Observer = Current class. **Example:**

```
@Override
publicvoid Update(finalbyte[] buffer, finalint size)
{runOnUiThread(new Runnable() {
publicvoid run() {
if (mReception != null) {
String MsrString =new String(buffer, 0, size));
                    }
                }
}
```

3-2-2-4. Thermal Printer API

OpenPrinter

Public Boolean OpenPrinter (int Baudrate)

Purpose	Open theThermal Printer Port.
Value	Set Printer Baud Rate; MB-1030 baud rate default is 115200;
Return	True (1) on success, False (0) on failure

ClosePrinter

Public Boolean ClosePrinter( );

Purpose	Close the Thermal Printer Port.
Return	True (1) on success, False (0) on failure False (0)

CutPaper

Public BooleanCutPaper(int type);

Purpose	Cut paper function.
Value	Type = 1 (Full cut) 2(Partial cut)
Return	True (1) on success, False (0) on failure False (0)

Text

Public BooleanText(String data);

Purpose	Print string data to print.
Value	Data = String data.
Return	True (1) on success, False (0) on failure False (0)
Example	ThermalPrinterPrinter_Control = **new**ThermalPrinter(); Printer_Control.OpenPrinter(115200); Printer_Control.Text("123456789"); Printer_Control.Text("\n"); Printer_Control.ClosePrinter(); //P.S If application want to line break. Please use "\n" to change line.

BarcodePrint

Public BooleanBarcodePrint(String Data,int Type,int Hri,int Width,int Height);

Purpose Print Barcode.

Value Data = Send barcode string data to printer.
Type = 1 UPC-A(1)
Type = 2 UPC-E(1)
Type = 3 EAN-13(1)
Type = 4 EAN-8(1)
Type = 5 CODE39(1)
Type = 6 ITF(1)
Type = 7 CODEBAR(1)
Type = 8 UPC-A(2)
Type = 9 UPC-E(2)
Type = 10 EAN-13(2)
Type = 11 EAN-8(2)
Type = 12 CODE39(2)
Type = 13 ITF(2)
Type = 14 CODABAR(2)
Type = 15 CODE93(2)
Type = 16 Code128(2)
Hri =

hri	Printing Position
0	No print
1	Above bar code
2	Below bar code
3,	Above and below bar code(both)

Width = 1 ≤n ≤6
Height = 1 ≤n ≤255

Return True (1) on success, False (0) on failure False (0)

LoadPicPrinter

Public Bitmap LoadPicPrinter (Bitmap data, boolean Halftone);

Purpose	Prepare to load pic sent to printer.
Value	Bitmap data (picture data) Halftone = true or false (Enable or Disable)
Return	Return Threshold Pic.

ImagePrinter

Public BooleanImagePrint(Bitmap data);

Purpose	Sent bitmap to printer.
Value	Bitmap data (Threshold data)
Return	True (1) on success, False (0) on failure False (0)

SendCommand

Public Boolean SendCommand (byte[] data);

Purpose	Send command byte to printer.
Value	Command Code. Please refer MP-1030 Command Manual
Return	True (1) on success, False (0) on failure False (0)
Example	

```
ThermalPrinterPrinter_Control = newThermalPrinter();
Printer_Control.OpenPrinter(115200);
byte[] data = newbyte[2];
data[0] = 0x1B;
data[1] = 0x6d;//Partial cut
Printer_Control.SendCommand(data);
Printer_Control.ClosePrinter();
```

GetRealTimeStatus

Public intGetRealTimeStatus(int n);

Purpose Get Real Time Status.
Value Command Code. Please refer MP-1030 Command Manual
Return Real Time Status Byte.
Example

n = 2 : Off-line status.

Bit	On / Off	Hex	Decimal	Function
0	Off	00	0	Not used. Fixed to Off.
1	On	02	2	Not used. Fixed to On.
2	Off	00	0	Cover is closed.
	On	04	4	Cover is open.
3	Off	00	0	Not used. Fixed to Off.
4	On	10	16	Not used. Fixed to On.
5	Off	00	0	No paper-end stop.
	On	20	32	Printing stops due to paper end.
6	Off	00	0	No error.
	On	40	64	Error occurs.
7	Off	00	0	Not used. Fixed to Off.

```
Int RealTimeStatus = 0 ;
ThermalPrinterPrinter_Control = newThermalPrinter();
Printer_Control.OpenPrinter(115200);
RealTimeStatus    = Printer_Control.GetRealTimeStatus(2);
// TODO Detect Status
Printer_Control.ClosePrinter();
```

GetPaperEndEvent

Public intGetPaperEndEvent();

Purpose Get Paper End Status.
Return 0x00 = Response Error 0x01 = Paper End, 0x02 = Paper Normal

```
Int PaperEndStatus= 0 ;
ThermalPrinterPrinter_Control = newThermalPrinter();
Printer_Control.OpenPrinter(115200);
```

```
PaperEndStatus    = Printer_Control.GetCoverEvent ( );
// TODO Detect Status
if (PaperEndStatus== 1)
{                    Toast.makeText(PrinterActivity.this,
"Paper End!", Toast.LENGTH_SHORT).show();
}
else
{                    Toast.makeText(PrinterActivity.this,
"Paper Normal", Toast.LENGTH_SHORT).show();
}
Printer_Control.ClosePrinter();
```

GetCoverEvent

Public intGetCoverEvent();

Purpose	Get Cover Status.
Return	0x00 = Response Error 0x01 = Cover Open , 0x02 = Over Close

```
Int CoverStatus = 0 ;
ThermalPrinterPrinter_Control = newThermalPrinter();
Printer_Control.OpenPrinter(115200);
CoverStatus    = Printer_Control.GetCoverEvent ( );
// TODO Detect Status
if (CoverStatus    == 1)
{                    Toast.makeText(PrinterActivity.this,
"Cover Open!", Toast.LENGTH_SHORT).show();
}
else
{                    Toast.makeText(PrinterActivity.this,
"Cover Close!", Toast.LENGTH_SHORT).show();
}
Printer_Control.ClosePrinter();
```

Receiver Data - Attach

Public Boolean Attach();

Purpose	Receive Printer Data
Return	True (1) on success, False (0) on failure False (0)
Example	Receive Data fromPrinter. Before use this function need to implements Observer Interface. Observer = Current class.

```
publicclass PrinterActivity extends Activity implements
android.ThermalPrinter.Observer    {
ThermalPrinter Printer_Control;
@Override
protectedvoid onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_msr);

Printer_Control= newThermalPrinter();
Printer_Control.Attach(this);
If( !Printer_Control.OpenPrinter(115200))
{
      //Port alrady open.
}
@Override
publicvoid Update(finalint Device, finalintvalue)
{runOnUiThread(new Runnable() {
publicvoid run() {
//Cover
if(Device == 0x01)
{
if(Value==0x01)
      {
```

```
//"Cover Open"
}
else
        {
//"Cover Close"
        }
}
elseif (Device == 0x02)
{
//Paper
if(Value==0x01)
        {
  //"No Paper Present"
        }
else
        {
//"Paper Present"
        }
}
});
        }
}
```

When Close:

```
Printer_Control.ClosePrinter();Printer_Control.Detach(this);
```

Receiver Data - Detach

Public Boolean Detach();

Purpose	Cancel Obsver from Msr Data
Return	True (1) on success, False (0) on failure False (0)

Update Event

Public Void Update(final int Device, final int Value);

Purpose Get Cover & Paper event

Return

Device	0x01(Cover)	0x02 (Paper)
Value	0x01(CoverOpen)	0x01(No Paper Present)
	0x02(CoverClose)	0x02(Paper Present)

GetFWVersion

Public String GetFWVsion();

Purpose Get FW Version

Return FW Version String.

GetCodePageVersion

Public String GetCodePageVersion();

Purpose Get CodePage Version

Return Code Page Version String.

3-3. FIRMWARE CONTROL COMMAND

3-3-1. Printer Board

1. COMMAND LIST

Standard commands

Control codes	Hexadecimal codes	Function
<LF>	0A	Line feed
<DLE EOT>	10 04	Real-time status transmission
<DLE DC4>	10 14	Real-time output of specified pulse
<ESC SP>	1B 20	Set character right space amount
<ESC !>	1B 21	Batch specify print mode
<ESC $>	1B 24	Specify absolute position
<ESC ->	1B 2D	Specify/cancels underline mode
<ESC 2>	1B 32	Set default line spacing
<ESC 3>	1B 33	Set line feed amount
<ESC =>	1B 3D	Select peripheral device
<ESC @>	1B 40	Initialize printer
<ESC E>	1B 45	Specify/cancel emphasized printing
<ESC J>	1B 4A	Print and Paper Feed
<ESC m>	1B 4D	Select character font
<ESC R>	1B 52	Select international characters
<ESC \>	1B 5C	Specify relative position
<ESC a>	1B 61	Position alignment
<ESC c 3>	1B 63 33	Select paper out sensor to enable at paper out signal output
<ESC d>	1B 64	Print and feed paper n lines
<ESC i>	1B 69	Full cut
<ESC l>	1B 6D	Partial cut
<ESC p>	1B 70	Specify pulse
<ESC t>	1B 74	Select character code table
<ESC {>	1B 7B	Specify/cancel upside-down characters
<FS p>	1C 70	Print NV bit image
<FS q>	1C 71	Define NV bit image
<GS !>	1D 21	Select character size
<GS *>	1D 2A	Define download bit images
<GS (>	1D 28	Test print
<GS />	1D 2F	Print download bit images
<GS B>	1D 42	Specify/cancel white/black inverted printing
<GS H>	1D 48	Select HRI character print position
<GS I>	1D 49	Send Printer ID
<GS L>	1D 4C	Set left margin
<GS P>	1D 50	Set basic calculated pitch
<GS V>	1D 56	Cut paper
<GS a>	1D 61	Enable/disable transmission of automatic status
<GS f>	1D 66	Select HRI character font
<GS h>	1D 68	Set bar code height
<GS k>	1D 6B	Print bar code
<GS r>	1D 72	Transmission of status
<GS v 0>	1D 76 30	Print raster bit images
<GS w>	1D 77	Set bar code horizontal size

Kanji Control Commands

Control codes	Hexadecimal codes	Function
<FS !>	1C 21	Batch specify Kanji character print mode
<FS &>	1C 26	Specify Kanji character mode
<FS .>	1C 2E	Cancel Kanji character mode

2. COMMAND NOTATION

[Name]	The name of the command.
[Format]	The code sequence. ASCII Indicates the ASCII equivalents. Hex indicates the hexadecimal equivalents. Decimal indicates the decimal equivalents. [ ] k indicates the contents of the [ ] should be repeated k times.
[Range]	Gives the allowable ranges for the arguments.
[Description]	Describes the function of the command.

3. STANDARD COMMAND DETAILS

LF

[Name]	Print and line feed.
[Format]	ASCII LF Hex. 0A Decimal 10
[Range]	N/A
[Description]	This command prints the data in the print buffer and feeds one line based on the current set line spacing in standard mode.

DLE EOT n

[Name]	Real-time status transmission.
[Format]	ASCII DLE EOT n Hex. 10 04 n Decimal 16 4 n
[Range]	1 ≤ n ≤ 4

[Description] Transmits the selected printer status specified by n in real time, according to the following parameters:
n = 1 : Transmit printer status. n = 2 : Transmit off-line status.
n = 3 : Transmit error status. n = 4 : Transmit paper roll sensor status.

n = 1 : Printer status.

Bit	On / Off	Hex	Decimal	Function
0	Off	00	0	Not used. Fixed to Off.
1	On	02	2	Not used. Fixed to On.
2	Off	00	0	Drawer open/close signal is LOW.
	On	04	4	Drawer open/close signal is HIGH.
3	Off	00	0	On-line.
	On	08	8	Off-line.
4	On	10	16	Not used. Fixed to On.
5	Off	00	0	Not used. Fixed to Off.
6	Off	00	0	Not used. Fixed to Off.
7	Off	00	0	Not used. Fixed to Off.

n = 2 : Off-line status.

Bit	On / Off	Hex	Decimal	Function
0	Off	00	0	Not used. Fixed to Off.
1	On	02	2	Not used. Fixed to On.
2	Off	00	0	Cover is closed.
	On	04	4	Cover is open.
3	Off	00	0	Not used. Fixed to Off.
4	On	10	16	Not used. Fixed to On.
5	Off	00	0	No paper-end stop.
	On	20	32	Printing stops due to paper end.
6	Off	00	0	No error.
	On	40	64	Error occurs.
7	Off	00	0	Not used. Fixed to Off.

n = 3 : Error status

Bit	On / Off	Hex	Decimal	Function
0	Off	00	0	Not used. Fixed to Off.
1	On	02	2	Not used. Fixed to On.
2	Off	00	0	Not used. Fixed to Off.
3	Off	00	0	Not used. Fixed to Off.
4	On	10	16	Not used. Fixed to On.
5	Off	00	0	Not used. Fixed to Off.
6	Off	00	0	Not used. Fixed to Off.
7	Off	00	0	Not used. Fixed to Off.

n = 4 : Continuous paper sensor status.

Bit	On / Off	Hex	Decimal	Function
0	Off	00	0	Not used. Fixed to Off.
1	Off	02	2	Not used. Fixed to On.
2	Off	00	0	No paper-near-end stop.
	On	04	4	Printing stops due to paper near end.
3	Off	00	0	No paper-near-end stop.
	On	08	8	Printing stops due to paper near end.
4	On	10	16	Not used. Fixed to On.
5	Off	00	0	No paper-end stop.
	On	20	32	Printing stops due to paper end.
6	Off	00	0	No paper-end stop.
	On	40	64	Printing stops due to paper end.
7	Off	00	0	Not used. Fixed to Off.

DLE DC4 n m t

[Name]	Real-time output of specified pulse.
[Format]	ASCII DLE DC4 n m t Hex. 10 14 n m t Decimal 16 20 n m t
[Range]	n = 1 m = 0,1 1 ≤ t ≤ 8
[Description]	This outputs a signal specified by t to the connector pin specified by m. m = 0: #2 Pin of the drawer kick connector m = 1: #5 Pin of the drawer kick connector On time is set to t x 100 msec; Off time is set to t x 100 msec.

ESC SP n

[Name]	Set the character right space.
[Format]	ASCII ESC SP n Hex. 1B 20 n Decimal 27 32 n
[Range]	0 ≤ n ≤ 255 Initial Value n = 0
[Description]	This command sets the size of space to right of character. Right space = n × [horizontal motion units].

ESC ! n

[Name]	Set print mode.
[Format]	ASCII ESC ! n Hex. 1B 21 n Decimal 27 33 n
[Range]	0 ≤ n ≤ 255 Initial Value n = 0
[Description]	This command selects print mode(s) with bits having following meanings. This command affects the Chinese characters.(Only Double-height, Double-width, Underline)

Bit	On / Off	Hex	Decimal	Function
0	Off	00	0	Character font A selected.
	On	01	1	Character font B selected.
1	Off	00	0	Not used. Fixed to Off.
2	Off	00	0	Not used. Fixed to Off.
3	Off	00	0	Emphasized mode not selected.
	On	08	8	Emphasized mode selected.
4	Off	00	0	Double-height mode not selected
	On	10	16	Double-height mode selected
5	Off	00	0	Double-width mode not selected.
	On	20	32	Double-width mode selected.
6	Off	00	0	Not used. Fixed to Off.
7	Off	00	0	Underline mode not selected.
	On	80	128	Underline mode selected.

ESC $ n

[Name]	Set absolute print position.
[Format]	ASCII ESC $ nL nH Hex. 1B 24 nL nH Decimal 27 36 nL nH
[Range]	0 ≤ (nL + nH x 256) ≤ 65535 (0 ≤ nH ≤ 255, 0 ≤ nL ≤ 255)
[Description]	This command specifies the next print starting position in reference to the left edge of the print area. The printing start position is calculated using (nL + nH x 256) x (vertical or horizontal motion units).

ESC - n

[Name]	Turn underline mode on/off.
[Format]	ASCII ESC - n Hex. 1B 2D n Decimal 27 45 n
[Range]	0 ≤ n ≤ 1 Initial Value n = 0
[Description]	This command enables the print data following it to be printer out underlined. This command affects the Chinese characters. The underline mode varied depending on the following values of n:

n	Function
0	Turns off underline mode
1	Turns on underline mode, set at 1-dot thick

ESC 2

[Name]	Select default line spacing.
[Format]	ASCII ESC 2 Hex. 1B 32 Decimal 27 50
[Range]	N/A
[Description]	This command sets the default line spacing The default line spacing is approximately 4.25 mm, which is equivalent to 34 dots.

ESC 3 n

[Name]	Set line spacing.
[Format]	ASCII ESC 3 n Hex. 1B 33 n Decimal 27 51 n
[Range]	0 ≤ n ≤ 255 Initial Value n = 34
[Description]	This command sets the line spacing using a following rule. Line spacing = n x (vertical or horizontal motion units)

ESC = n

[Name]	Select peripheral device.
[Format]	ASCII ESC = n Hex. 1B 3D n Decimal 27 61 n
[Range]	0 ≤ n ≤ 255 Initial Value n = 1

[Description]	Selects the peripheral device for which the data is effective from the host computer.

Bit	Function	"0"	"1"
7	Undefined		
6	Undefined		
5	Undefined		
4	Undefined		
3	Undefined		
2	Undefined		
1	Undefined		
0	Printer	Invalid	Valid

ESC @

[Name]	Initialize printer.
[Format]	ASCII ESC @ Hex. 1B 40 Decimal 27 64
[Range]	N/A
[Description]	Clears data from the print buffer and sets the printer to its default settings.

ESC E n

[Name]	Turn emphasized mode on / off.
[Format]	ASCII ESC E n Hex. 1B 45 n Decimal 27 69 n
[Range]	0 ≤ n ≤ 255 Initial Value n = 0
[Description]	This command turns emphasized mode on or off by toggling the least significant bit of n like following. When the LSB of n is 0, emphasized mode is turned off. When the LSB of n is 1, emphasized mode is turned on.

ESC J n

[Name]	Print and feed paper.
[Format]	ASCII ESC J n Hex. 1B 4A n Decimal 27 74 n
[Range]	0 ≤ n ≤ 255
[Description]	This command prints the data in the print buffer and feeds the paper [n X vertical motion unit].

ESC M n

[Name]	Select character font.
[Format]	ASCII ESC M n Hex. 1B 4D n Decimal 27 77 n
[Range]	n = 0, 1 Initial Value n = 0
[Description]	This command selects only-byte character fonts using n as following.

n	Function
0	Character font A selected
1	Character font B selected

ESC R n

[Name]	Specify international character set.
[Format]	ASCII ESC R n Hex. 1B 52 n Decimal 27 82 n
[Range]	0 ≤ n ≤ 16 Initial Value n = 0
[Description]	This command specifies international characters according to n values.

n	Character set
0	USA
1	France
2	Germany
3	UK
4	Denmark I
5	Sweden
6	Italy
7	Spain
8	Japan
9	Norway
10	Denmark II
11	Spain II
12	Latin America
13	Korea
14	Russia
15	Slavonic
16	User Define

ESC \ n

[Name]	Set relative print position.
[Format]	ASCII ESC \ n Hex. 1B 5C n Decimal 27 92 n
[Range]	0 ≤ (nL + nH x 256) ≤ 65535 (0 ≤ nL 255, 0 ≤ nH ≤ 255)
[Description]	This command sets the print starting position based on the current position to [(nL + nH × 256) × horizontal or vertical motion unit]. The print starting position is moved to (nL + nH x 256)in the right direction based on the current position.

ESC a n

[Name]	Position alignment.
[Format]	ASCII ESC a n Hex. 1B 61 n Decimal 27 97 n
[Range]	0 ≤ n ≤2 Initial Value n = 0
[Description]	This command specifies position alignment for all data in one line in standard mode, using n as follows:

n	Alignment
0	Left alignment
1	Center alignment
2	Right alignment

ESC c 3 n

[Name]	Select paper out sensor to enable at paper out signal output.
[Format]	ASCII ESC c 3 n Hex. 1B 63 33 n Decimal 27 99 51 n
[Range]	Specification: 0 ≤ n ≤ 3 Initial Value n = 0
[Description]	Selects paper out detector that outputs a paper out signal when paper has run out.

Bit	Function	"0"	"1"
7	Undefined		
6	Undefined		
5	Undefined		
4	Undefined		
3	Undefined		
2	Undefined		
1	Paper roll near end detector	Invalid	Valid
0	Paper roll near end detector	Invalid	Valid

ESC d n

[Name]	Print and feed n lines
[Format]	ASCII ESC d n Hex. 1B 64 n Decimal 27 100 n
[Range]	0 ≤ n ≤ 255
[Description]	This command feeds the paper by n lines after printing the data in the print buffer.

ESC i

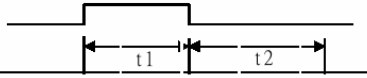
[Name]	Full cut.
[Format]	ASCII ESC i Hex. 1B 69 Decimal 27 105
[Range]	N/A
[Description]	This command executes a partial cut of the paper with one point left uncut.

ESC m

[Name]	Partial cut.
[Format]	ASCII ESC m Hex. 1B 6D Decimal 27 109
[Range]	N/A
[Description]	This command executes a partial cut of the paper with one point left uncut.

ESC p m t1 t2

[Name]	Specify pulse.
[Format]	ASCII ESC p m t1 t2 Hex. 1B 70 m t1 t2 Decimal 27 112 m t1 t2
[Range]	0 ≤ m ≤ 1, 48 ≤ m ≤ 49 0 ≤ t1 ≤ 255 0 ≤ t2 ≤ 255

[Description]	This outputs a signal specified by t1 and t2 to the connector pin specified by m. Drawer kick on time is set to t1 x 2 ms; off time is set to t2 x 2 ms. m: Connector Pin 0, 48: Drawer kick connector pin #2 1, 49: Drawer kick connector pin #5 

ESC t n

[Name]	Select character code table.
[Format]	ASCII ESC t n Hex. 1B 74 n Decimal 27 116 n
[Range]	0 ≤ n ≤ 8 Initial Value n = 0
[Description]	This command specifies code page according to the value of n as follows: This command affects the Chinese character mode. n: Character set 0: CP-437 1: Katakana 2: CP-850 3: CP-852 4: CP-860 5: CP-863 6: CP-865 7: CP-1252 8: User Define

ESC { n

[Name]	Turns upside-down printing mode on/off.
[Format]	ASCII ESC { n Hex. 1B 7B n Decimal 27 123 n
[Range]	0 ≤ n ≤ 255 Initial Value n = 0
[Description]	This command selects/deselects upside-down printing mode according to the least significant bit as follows. n: Upside-down mode 0: Turned off 1: Turned on

FS p n m

[Name]	Print NV bit image.
[Format]	ASCII FS p n m Hex. 1C 70 n m Decimal 28 112 n m
[Range]	1 ≤ n ≤ 255 0 ≤ m ≤ 3, 48 ≤ m ≤ 51

[Description]	This command prints NV bit image n using the mode specified by m as follows:

m	Mode
0, 48	Nornal
1, 49	Double-width
2, 50	Double-height
3, 51	Quadruple

FS q n [xL xH yL d1…dk]1…[xL xH yL d1…dk]n

[Name]	Define NV bit image.
[Format]	ASCII FS q n [xL xH yL d1…dk]1…[xL xH yL d1…dk]n Hex. 1C 71 n [xL xH yL d1…dk]1…[xL xH yL d1…dk]n Decimal 28 113 n [xL xH yL d1…dk]1…[xL xH yL d1…dk]n
[Range]	1 ≤ n ≤ 255 1 ≤ (xL + xH ×256) ≤ 54 (0 ≤ xL ≤ 54, xH=0) for 2 inch 1 ≤ (xL + xH ×256) ≤ 72 (0 ≤ xL ≤ 72, xH=0) for 3 inch 1 ≤ (yL + yH ×256) ≤ 128 (0 ≤ yL ≤ 128, yH=0) 0 ≤ d ≤ 255 k = (xL + xH × 256) × (yL + yH × 256) × 8
[Description]	This command defines the NV bit image in the NV memory. n denotes the number of the NV being defined. (xL, xH) and (yL, yH) set the number of dots in the horizontal and vertical directions to [(xL + xH × 256) x 8] and [(yL + yH × 256) x 8] respectively for the NV bit image. [Ex.:] When xL + xH × 256 = 64 (xL+xHx256) x 8dot = 512 dot 1 2 3 ..... 63 64 65 66 67 127 128 k-1 k (yL + yH x 256) x 8dot 7 6 5 4 3 2 1 0 MSB LSB

GS ! n

[Name]	Select character size.
[Format]	ASCII GS ! n Hex. 1D 21 n Decimal 29 33 n
[Range]	0 ≤ n ≤ 255 (1 ≤ Vertical enlargement ≤ 8, 1 ≤ Horizontal enlargement ≤ 8) Initial Value n = 0

[Description] This command selects the character height and width using bits 0 to 3, and bits 4 to 7 respectively as follows:

Bit	Function	Setting
0	Specifies the number of times normal font size in the vertical direction	Refer to Table 2 [Enlarged in vertical direction]
1		
2		
3		
4	Specifies the number of times normal font size in the horizontal direction	Refer to Table 1 [Enlarged in horizontal direction]
5		
6		
7		

This command affects the Chinese characters.

Table 1 [Enlarged in horizontal direction]

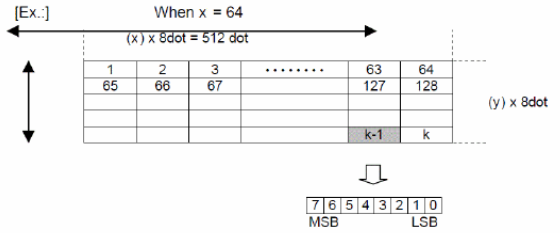
Hex	Decimal	Enlargement
00	0	1 time(standard)
10	16	2 times
20	32	3 times
30	48	4 times
40	64	5 times
50	80	6 times
60	96	7 times
7	112	8 times

Table 2 [Enlarged in vertical direction]

Hex	Decimal	Enlargement
00	0	1 time(standard)
01	1	2 times
02	2	3 times
03	3	4 times
04	4	5 times
05	5	6 times
06	6	7 times
07	7	8 times

GS * x y [d1…d(x x y x 8)]

[Name]	Define downloaded bit image.
[Format]	ASCII GS * x y [d1…d(x x y x 8)] Hex. 1D 2A x y [d1…d(x x y x 8)] Decimal 29 42 x y [d1…d(x x y x 8)]
[Range]	1 ≤ x ≤ 54 (for 2 inch) 1 ≤ x ≤ 72 (for 3 inch) 1 ≤ y ≤ 128 0 ≤ d ≤ 255

[Description]	This command defines the downloaded bit image using the number of dots specified by x and y. x and y specify the number of dots in the horizontal and vertical directions respectively. D defines the bit image data. K denotes the number of the definition data. 

GS (A pL pH n m

[Name]	Test print.
[Format]	ASCII GS (A pL pH n m Hex. 1D 28 41 pL pH n m Decimal 29 40 65 pL pH n m
[Range]	{pL+ (pH×256) } = 2 (pL = 2,pH = 0) 0 ≤ n ≤ 2 2 ≤ m ≤ 3
[Description]	Executes the specified test print. Specifies the parameter count following pL and pH in (pL + (pH x 256)) bytes. n: Paper Type 0: Basic sheet (paper roll) 1: Paper Roll 2 · n specifies the paper to use in the test print shown in the tables below. m: Type of Test Print 2: Printer Status (Self Print) 3: Rolling Pattern Print

GS / m

[Name]	Print downloaded bit image.
[Format]	ASCII GS / m Hex. 1D 2F m Decimal 29 47 m
[Range]	0 ≤ m ≤ 3, 48 ≤ m ≤ 51

[Description]	This command prints the downloaded bit image defined by GS * according to the mode denoted by m.

m	Mode	Vertical dot density(DPI)	Horizontal dot density(DPI)
0 , 48	Normal	203	203
1 , 49	Double-width	203	101
2 , 50	Double-height	101	203
3 , 51	Quadruple	101	101

GS B n

[Name]	Turns white/black reverse printing mode on / off.
[Format]	ASCII GS B n Hex. 1D 42 n Decimal 29 66 n
[Range]	0 ≤ n ≤ 255 Initial Value n = 0
[Description]	This command selects white/black reverse printing mode by setting the least significant bit of n. When the LSB of n is 0, white/black reverse mode is turned off. When the LSB of n is 1, white/black reverse mode is turned on.

GS H n

[Name]	Select HRI character print position.
[Format]	ASCII GS H n Hex. 1D 48 n Decimal 29 72 n
[Range]	0 ≤ n ≤ 3, 48 ≤ n ≤ 51 Initial Value n = 0
[Description]	Selects the printing position of HRI characters when printing bar codes.

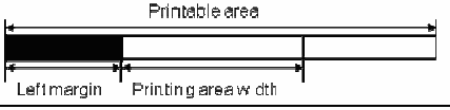
m	Printing Position
0, 48	No print
1, 49	Above bar code
2, 50	Below bar code
3, 51	Above and below bar code(both)

GS I n

[Name]	Transmission of Printer ID.
[Format]	ASCII GS I n Hex. 1D 49 n Decimal 29 73 n
[Range]	1 ≤ n ≤ 3, 49 ≤ n ≤ 51, 65 ≤ n ≤ 69
[Description]	Selects the printing position of HRI characters when printing bar codes.

n	Printer ID Type	Specifications
1, 49	Model ID	MB-1030
2, 50	Type ID	1030-XX
3, 51	ROM Version ID	Depends on the ROM version
65	Firmware Version	Depends on the firmware version
66	Manufacturer Name	MB-1030 System
67	Model Name	MB-1030
68	Serial Number	Depends on the serial number
69	Chinese Character Types	Taiwan Language Characters: TW_BIG5 Japanese Language Characters: JP_SJIS

GS L nL nH

[Name]	Set left margin.
[Format]	ASCII GS L nL nH Hex. 1D 4C nL nH Decimal 29 76 nL nH
[Range]	0 ≤ nL ≤ 255, 0 ≤ nH ≤ 255 (nL + nH x 256)=0 (nL=0, nH=0)
[Description]	This command sets the left margin specified to [(nL + nH x 256) x (horizontal motion units)]. 

GS P x y

[Name]	Set basic calculated pitch.
[Format]	ASCII GS P x y Hex. 1D 50 x y Decimal 29 80 x y
[Range]	0 ≤ x ≤ 255 0 ≤ y ≤ 255 Initial Value x = 203, y = 203: EPSON targeted model print head 203 DPI
[Description]	Sets the horizontal basic calculated pitch to approximately 25.4/xmm [(1/x) inch], and the vertical basic calculated pitch to approximately 25.4/ymm [(1/y) inch]. x = 0: Returns the horizontal basic calculated pitch to its default value. y = 0: Returns the vertical basic calculated pitch to its default value.

GS V m

[Name]	Cut paper.
[Format]	ASCII GS V m (n) Hex. 1D 56 m (n) Decimal 29 86 m (n)
[Range]	m = 0,1,65,66
[Description]	Executes specified paper cut.

m	Function
0	Full cut
1	Partial cut (one point uncut)
65	Feeds paper to (cutting position + [n x basic calculated pitch]) and performs a full cut
66	Feeds paper to (cutting position + [n x basic calculated pitch]) and performs a partial cut (one point uncut)

GS a n

[Name]	Enable/disable transmission of automatic status.
[Format]	ASCII GS a n Hex. 1D 61 n Decimal 29 97 n
[Range]	0 ≤ n ≤ 255

[Description] Selects the statuses that are targeted for transmission with the automatic status function (ASB: Automatic Status Back).

Bit	Statuses Targeted for ASB	"0"	"1"
7	Black Mark Detector	Invalid	Valid
6	Undefined		
5	Undefined		
4	Undefined		
3	Continuous Paper Detector	Invalid	Valid
2	Error	Invalid	Valid
1	ONLINE/OFFLINE Status	Invalid	Valid
0	Drawer kick connector pin #3	Invalid	Valid

The printer information transmitted is comprised of 4 bytes as follows:

First byte(printer information)

Bit	Off/On	Hex	Decimal	Function
7	Off	00	0	Not used. Fixed to Off
6	Off	00	0	Paper is not being fed by the paper feed button
	On	40	64	Paper is being fed by the paper feed button
5	Off	00	0	Cover is close
	On	20	32	Cover is open
4	On	10	16	Not used. Fixed to On
3	Off	00	0	On-line
	On	08	8	Off-line
2	Off	00	0	Drawer kick-out connector pin 3 is LOW
	On	04	4	Drawer kick-out connector pin 3 is HIGH
1	Off	00	0	Not used. Fixed to Off
0	Off	00	0	Not used. Fixed to Off

Second byte(printer information)

Bit	Off/On	Hex	Decimal	Function
7	Off	00	0	Not used. Fixed to Off
6	Off	00	0	Not used. Fixed to Off
5	Off	00	0	Not used. Fixed to Off
4	Off	00	0	Not used. Fixed to Off
3	On	08	8	Not used. Fixed to Off
2	On	04	4	Not used. Fixed to Off
1	On	02	2	Not used. Fixed to Off
0	On	01	1	Not used. Fixed to Off

Third byte (paper sensor information)

Bit	Off/On	Hex	Decimal	Function
7	Off	00	0	Not used. Fixed to Off
6	Off	00	0	Not used. Fixed to Off
5	Off	00	0	Not used. Fixed to Off
4	On	00	0	Not used. Fixed to Off
2,3	Off	00	0	Paper end sensor: paper present
	On	0C	12	Paper end sensor: no paper present
0,1	Off	00	0	Paper near end sensor: paper adequate
	On	03	3	Paper near end sensor: paper near end

Fourth byte (paper sensor information)

Bit	Off/On	Hex	Decimal	Function
7	Off	00	0	Not used. Fixed to Off
6	Off	00	0	Black mark sensor status
5	Off	00	0	Not used. Fixed to Off
4	Off	00	0	Not used. Fixed to Off
3	On	08	8	Not used. Fixed to On
2	On	04	4	Not used. Fixed to On
1	On	02	2	Not used. Fixed to On
0	On	01	1	Not used. Fixed to On

GS f n

[Name]	Select HRI character font.
[Format]	ASCII GS f n Hex. 1D 66 n Decimal 29 102 n
[Range]	n = 0,1,48,49 Initial Value n = 0
[Description]	Selects the printing position of HRI character font when printing bar codes.

n	Font
0, 48	Selects Font A (12 x 24).
1, 49	Selects Font B (9 x 17).

GS h n

[Name]	Set bar code height.
[Format]	ASCII GS h n Hex. 1D 68 n Decimal 29 104 n
[Range]	1 ≤ n ≤ 255 Initial Value n = 162
[Description]	Sets bar code height to n dots.

GS k m d1 … dk NUL.2.gs k m n d1 … dk

[Name]	Print bar code.
[Format]	1. ASCII GS k m d1...dk NUL Hex. 1D 6B m d1...dk NUL Decimal 29 107 m d1...dk NUL 2. ASCII GS k m n d1...dk NUL Hex. 1D 6B m n d1...dk NUL Decimal 29 107 m n d1...dk NUL
[Range]	1. 0 ≤ m ≤ 6 The definition region of k and d differ according to the bar code type. 2. 65 ≤ m ≤ 73 The definition region of n and d differ according to the bar code type.

[Description] Selects bar code type and prints bar codes.

1:

m	Bar Code Type	Defined region of k	Defined region of d
0	UPC-A	11 ≤ k ≤ 12	48 ≤ d ≤ 57
1	UPC-E	11 ≤ k ≤ 12	48 ≤ d ≤ 57
2	JAN13 (EAN13)	12 ≤ k ≤ 13	48 ≤ d ≤ 57
3	JAN8 (EAN8)	7 ≤ k ≤ 8	48 ≤ d ≤ 57
4	CODE39	1 ≤ k ≤ 255	48 ≤ d ≤ 57, 65 ≤ d ≤ 90 32, 36, 37, 43, 45, 46, 47
5	ITF	2 ≤ k ≤ 254 (However, this is an even number.)	48 ≤ d ≤ 57
6	CODABAR	1 ≤ k ≤ 255	48 ≤ d ≤ 57, 65 ≤ d ≤ 68 36, 43, 45, 46, 47, 58

2:

m	Bar Code Type	Defined region of n	Defined region of d
65	UPC-A	11 ≤ n ≤ 12	48 ≤ d ≤ 57
66	UPC-E	11 ≤ n ≤ 12	48 ≤ d ≤ 57
67	JAN13 (EAN13)	12 ≤ n ≤ 13	48 ≤ d ≤ 57
68	JAN8 (EAN8)	7 ≤ n ≤ 8	48 ≤ d ≤ 57
69	CODE39	1 ≤ n ≤ 255	48 ≤ d ≤ 57, 65 ≤ d ≤ 90 32, 36, 37, 43, 45, 46, 47
70	ITF	2 ≤ n ≤ 254 (However, this is an even number.)	48 ≤ d ≤ 57
71	CODABAR	1 ≤ n ≤ 255	48 ≤ d ≤ 57, 65 ≤ d ≤ 68 36, 43, 45, 46, 47, 58
72	CODE93	1 ≤ n ≤ 255	0 ≤ d ≤ 127
73	CODE128	2 ≤ n ≤ 255	0 ≤ d ≤ 127

GS r n

[Name]	Transmission of status.
[Format]	ASCII GS r n Hex. 1D 72 n Decimal 29 114 n
[Range]	n = 1, 2

[Description] Sends the specified status.

Detector Status (N=1)

Bit	Status	"0"	"1"
7	Fixed at 0		
6	Undefined		
5	Undefined		
4	Fixed at 0		
3	Paper roll end detector	Has Paper	Paper out
2	Paper roll end detector	Has Paper	Paper out
1	Paper roll near end detector	Has Paper	Paper out
0	Paper roll near end detector	Has Paper	Paper out

Drawer Kick Connector Status (N=2)

Bit	Status	"0"	"1"
7	Fixed at 0		
6	Undefined		
5	Undefined		
4	Fixed at 0		
3	Undefined		
2	Undefined		
1	Undefined		
0	Drawer kick connector pin #3	"L"	"H"

GS v 0 m xL Hy yH d1 … dk

[Name] Print raster bit images.

[Format]

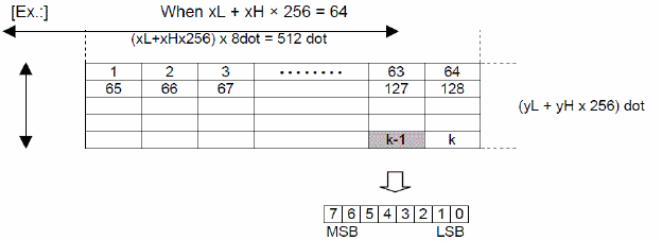
ASCII	GS	v	0	m	xL	xH	yL	yH	d1...dk
Hex.	1D	76	30	m	xL	xH	yL	yH	d1...dk
Decimal	29	118	48	m	xL	xH	yL	yH	d1...dk

[Range]

m = 0, m = 48
0 ≤ xL ≤ 54(for 2 inch)
0 ≤ xL ≤ 72(for 3 inch)
0 ≤ xH ≤ 0
0 ≤ yL ≤ 255
0 ≤ yH ≤ 3
0 ≤ d ≤ 255
k = (xL+xH×256) × (yL+yH×256) However, k ≠ 0

[Description] Prints raster method bit images using mode m.

m	Mode	Density of Vert. Dir. Dots	Density of Hor. Dir. Dots
0, 48	Normal Mode	203 DPI	203 DPI



GS w n

[Name]	Set bar code horizontal size.
[Format]	ASCII GS w n Hex. 1D 77 n Decimal 29 119 n
[Range]	1 ≤ n ≤ 6 Initial Value n = 2
[Description]	Sets the bar code horizontal size.

n	Multi-level Bar Code Module Width [mm]	Binary Level Bar Code	
		Fine Element Width[mm]	Thick Element Width[mm]
1	0.141	0.141	0.423
2	0.282	0.282	0.706
3	0.423	0.423	1.129
4	0.564	0.564	1.411
5	0.706	0.706	1.834
6	0.847	0.847	2.258

4. KANJI CONTROL COMMAND DETAILS

FS ! n

[Name]	Batch specify Chinese character print mode.
[Format]	ASCII GS ! n Hex. 1C 21 n Decimal 28 33 n
[Range]	0 ≤ n ≤ 255 Initial Value n = 0
[Description]	Batch specifies the Chinese character print mode. This command affects all characters.

Bit	Function	"0"	"1"
7	Underline	Off	On
6	Undefined		
5	Undefined		
4	Undefined		
3	Double tall expanded	Off	On
2	Expanded wide	Off	On
1	Undefined		
0	Undefined		

FS &

[Name]	Specify Chinese character mode.
[Format]	ASCII GS & Hex. 1C 26 Decimal 28 38
[Range]	N/A
[Description]	Specifies Chinese characters mode. This command affects the character code table.

FS .

[Name]	Cancel Chinese character mode.
[Format]	ASCII GS . Hex. 1C 2E Decimal 28 46
[Range]	N/A
[Description]	Cancels Chinese characters mode. This command affects the character code table,it is set to the initial value (CP-437).

3-3-1-1. Character Code Table

ESC/POS Standard Codes

Katakana

Notes: The character code tables show only character configurations. They do not show actual print pattern.

CP437


0123456789ABCDEF
0
1
2
3
4
5
6
7
8
9
A
B
C
D
E
F

CP737


0123456789ABCDEF
0
1
2
3
4
5
6
7
8
9
A
B
C
D
E
F

CP850


0123456789ABCDEF
0
1
2 !"#$%&'()*+,-./
3 0123456789:;<=>?
4 @ABCDEFGHIJKLMNO
5 PQRSTUVWXYZ[\]^_
6 `abcdefghijklmno
7 pqrstuvwxyz{|}~
8 ÇüéâäàåçêëèïîìÄÅ
9 ÉæÆôöòûùÿÖÜø£Ø×ƒ
A áíóúñÑªº¿®¬½¼¡«»
B
C
D ðÐÊËÈıÍÎÏ
E ÓßÔÒõÕµþÞÚÛÙýÝ
F -±‗¾¶§÷¸°¨·¹³²

CP852


0123456789ABCDEF
0
1
2 !"#$%&'()*+,-./
3 0123456789:;<=>?
4 @ABCDEFGHIJKLMNO
5 PQRSTUVWXYZ[\]^_
6 `abcdefghijklmno
7 pqrstuvwxyz{|}~
8 ÇüéâäůćçłëŐőîŹÄĆ
9 ÉĹĺôöĽľŚśÖÜŤťŁ×č
A áíóúĄąŽžĘę ŹČş«»
B
C
D đĐĎËďŇÍÎě
E ÓßÔŃńňŠšŔÚŕŮýÝţ
F -˝˛ˇ§÷¸°¨˙űŘř

CP857


0123456789ABCDEF
0
1
2 !"#$%&'()*+,-./
3 0123456789:;<=>?
4 @ABCDEFGHIJKLMNO
5 PQRSTUVWXYZ[\]^_
6 `abcdefghijklmno
7 pqrstuvwxyz{|}~
8 ÇüéâäàåçêëèïîıÄÅ
9 ÉæÆôöòûùİÖÜøŁØŞş
A áíóúñÑĞğ¿®¬½¼¡«»
B ▒▒▒ ┤ÁÂÀ©╣║╗╝¢¥┐
C └┴┬├─┼ãÃ╚╔╩╦╠═╬¤
D ºªÊËÈ€ÍÎÏ┘┌█▄¦Ì▀
E ÓßÔÒõÕµ ×ÚÛÙıÿ´
F -± ¾¶§÷¸ °¨ ·¹³²■

CP860


0123456789ABCDEF
0
1
2 !"#$%&'()*+,-./
3 0123456789:;<=>?
4 @ABCDEFGHIJKLMNO
5 PQRSTUVWXYZ[\]^_
6 `abcdefghijklmno
7 pqrstuvwxyz{|}~
8 ÇüéâãàÁçêÊèÍÔìÃÂ
9 ÉÀÈôõòÚùÌÕÜ¢£Ù₧Ó
A áíóúñÑªº¿Ò¬½¼¡«»
B ▒▒▒ ┤╡╢╖╕╣║╗╝╜┐
C └┴┬├─┼╞╟╚╔╩╦╠═╬╧
D ╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀
E αßΓπΣσµτΦΘΩδ∞φε∩
F ≡±≥≤⌠⌡÷≈°∙·√ⁿ²■

CP862


0123456789ABCDEF
0
1
2
3
4
5
6
7
8
9
A
B
C
D
E
F

CP863


0123456789ABCDEF
0
1
2
3
4
5
6
7
8
9
A
B
C
D
E
F

CP865


0123456789ABCDEF
0
1
2 !"#$%&'()*+,-./
3 0123456789:;<=>?
4 @ABCDEFGHIJKLMNO
5 PQRSTUVWXYZ[\]^_
6 `abcdefghijklmno
7 pqrstuvwxyz{|}~
8 ÇüéâäàåçêëèïîìÄÅ
9 ÉæÆôöòûùÿÖÜø£Ø₧ƒ
A áíóúñÑªº¿⌐¬½¼¡«¤
B ▒▓│┤╡╢╖╕╣║╗╝╜╛┐
C └┴┬├─┼╞╟╚╔╩╦╠═╬╧
D ╨╤╥╙╘╒╓╫╪┘┌
E αßΓπΣσμτΦΘΩδ∞φε∩
F ≡±≥≤⌠⌡÷≈°∙·√ⁿ²■

CP866


0123456789ABCDEF
0
1
2 !"#$%&'()*+,-./
3 0123456789:;<=>?
4 @ABCDEFGHIJKLMNO
5 PQRSTUVWXYZ[\]^_
6 `abcdefghijklmno
7 pqrstuvwxyz{|}~
8 АБВГДЕЖЗИЙКЛМНОП
9 РСТУФХЦЧШЩЪЫЬЭЮЯ
A абвгдежзийклмноп
B ▒▓│┤╡╢╖╕╣║╗╝╜╛┐
C └┴┬├─┼╞╟╚╔╩╦╠═╬╧
D ╨╤╥╙╘╒╓╫╪┘┌
E рстуфхцчшщъыьэюя
F ЁёЄєЇїЎў°∙·√№¤■

CP1250

CP1251

CP1252

CP1253

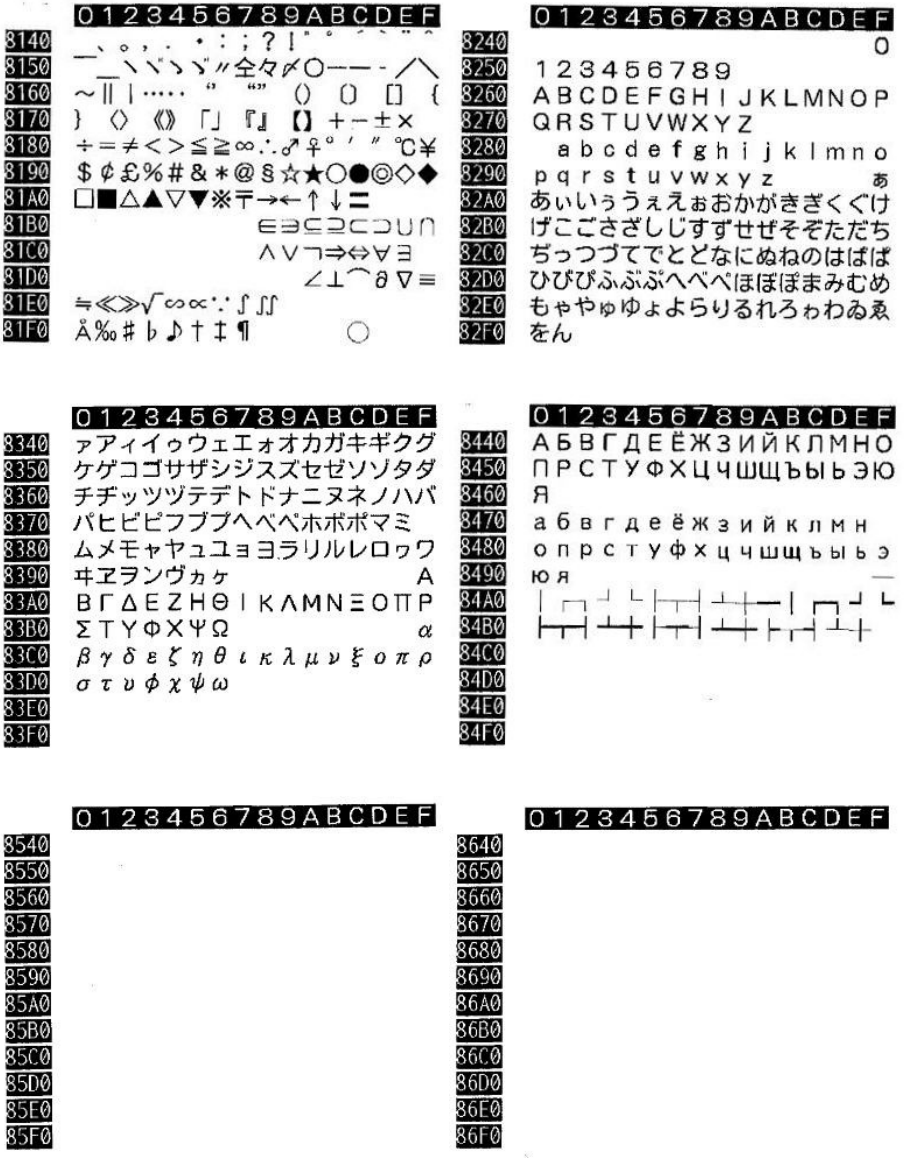
CP1254

CP1257

International Characters

	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
U.S.A	#	$	@	[	\	]	^	`	{	|	}	~
France	#	$	à	°	Ç	§	^	`	é	ù	è	¨
Germany	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
UK	£	$	@	[	\	]	^	`	{	|	}	~
Denmark I	#	$	@	Æ	ø	Å	^	`	æ	ø	å	~
Swden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Italy	#	$	@	°	\	é	^	ù	à	ò	è	ì
Spain	₧	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
Japan	#	$	@	[	¥	]	^	`	{	|	}	~
Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Denmark II	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Spain II	#	$	à	¡	Ñ	¿	é	`	í	ñ	ó	ú
Latin America	#	$	á	¡	Ñ	¿	é	ü	í	ñ	ó	ú
Korea	#	$	@	[	₩	]	^	`	{	─	}	~
Russia	#	$	@	╒	\	╕	^	`	{	─	}	~
Slavonic	#	$	@	[	\	]	^	`	{	─	}	~

3-3-1-2. Japanese Language Codes (Shift-JIS Codes)



	0 1 2 3 4 5 6 7 8 9 A B C D E F
8740	
8750	
8760	
8770	
8780	
8790	
87A0	
87B0	
87C0	
87D0	
87E0	
87F0	

	0 1 2 3 4 5 6 7 8 9 A B C D E F
8840	
8850	
8860	
8870	
8880	
8890	亜
88A0	唖娃阿哀愛挨姶逢葵茜穐悪握渥旭葦
88B0	芦鯵梓圧斡扱宛姐虻飴絢綾鮎或粟袷
88C0	安庵按暗案闇鞍杏以伊位依偉囲夷委
88D0	威尉惟意慰易椅為畏異移維緯胃萎衣
88E0	謂違遺医井亥域育郁磯一壱溢逸稲茨
88F0	芋鰯允印咽員因姻引飲淫胤蔭

	0 1 2 3 4 5 6 7 8 9 A B C D E F
8940	院陰隠韻吋右宇烏羽迂雨卯鵜窺丑碓
8950	臼渦嘘唄欝蔚鰻姥厩浦瓜閏噂云運雲
8960	荏餌叡営嬰影映曳栄永泳洩瑛盈穎頴
8970	英衛詠鋭液疫益駅悦謁越閲榎厭円
8980	園堰奄宴延怨掩援沿演炎焔煙燕猿縁
8990	艶苑薗遠鉛鴛塩於汚甥凹央奥往応押
89A0	旺横欧殴王翁襖鴬鴎黄岡沖荻億屋憶
89B0	臆桶牡乙俺卸恩温穏音下化仮何伽価
89C0	佳加可嘉夏嫁家寡科暇果架歌河火珂
89D0	禍禾稼箇花苛茄荷華菓蝦課嘩貨迦過
89E0	霞蚊俄峨我牙画臥芽蛾賀雅餓駕介会
89F0	解回塊壊廻快怪悔恢懐戒拐改

	0 1 2 3 4 5 6 7 8 9 A B C D E F
8A40	魁晦械海灰界皆絵芥蟹開階貝凱劾外
8A50	咳害崖慨概涯碍蓋街該鎧骸浬馨蛙垣
8A60	柿蛎鈎劃嚇各廓拡撹格核殻獲確穫覚
8A70	角赫較郭閣隔革学岳楽額顎掛笠樫
8A80	橿梶鰍潟割喝恰括活渇滑葛褐轄且鰹
8A90	叶椛樺鞄株兜竃蒲釜鎌噛鴨栢茅萱粥
8AA0	刈苅瓦乾侃冠寒刊勘勧巻喚堪姦完官
8AB0	寛干幹患感慣憾換敢柑桓棺款歓汗漢
8AC0	潤灌環甘監看竿管簡緩缶翰肝艦莞観
8AD0	諌貫還鑑間閑関陥韓館舘丸含岸巌玩
8AE0	癌眼岩翫贋雁頑顔願企伎危喜器基奇
8AF0	嬉寄岐希幾忌揮机旗既期棋棄

	0 1 2 3 4 5 6 7 8 9 A B C D E F
8B40	機帰毅気汽畿祈季稀紀徽規記貴起軌
8B50	輝飢騎鬼亀偽儀妓宜戯技擬欺犠疑祇
8B60	義蟻誼議掬菊鞠吉吃喫桔橘詰砧杵黍
8B70	却客脚虐逆丘久仇休及吸宮弓急救
8B80	朽求汲泣灸球究窮笈級糾給旧牛去居
8B90	巨拒拠挙渠虚許距鋸漁凰魚亨享京供
8BA0	侠僑兇競共凶協匡卿叫喬境峡強彊怯
8BB0	恐恭挟教橋況狂狭矯胸脅興蒐郷鏡響
8BC0	饗驚仰凝尭暁業局曲極玉桐粁僅勤均
8BD0	巾錦斤欣欽琴禁禽筋緊芹菌衿襟謹近
8BE0	金吟銀九倶句区狗玖矩苦躯駆駈駒具
8BF0	愚虞喰空偶寓遇隅串櫛釧屑屈

	0 1 2 3 4 5 6 7 8 9 A B C D E F
8C40	掘窟沓靴轡窪熊隈粂栗繰桑鍬勲君薫
8C50	訓群軍郡卦袈祁係傾刑兄啓圭珪型契
8C60	形径恵慶慧憩掲携敬景桂渓畦稽系経
8C70	継繋罫茎荊蛍計詣警軽頚鶏芸迎鯨
8C80	劇戟撃激隙桁傑欠決潔穴結血訣月件
8C90	倹倦健兼券剣喧圏堅嫌建憲懸拳捲検
8CA0	権牽犬献研硯絹県肩見謙賢軒遣鍵険
8CB0	顕験鹸元原厳幻弦減源玄現絃舷言諺
8CC0	限乎個古呼固姑孤己庫弧戸故枯湖狐
8CD0	糊袴股胡菰虎誇跨鈷雇顧鼓五互伍午
8CE0	呉吾娯後御悟梧檎瑚碁語誤護醐乞鯉
8CF0	交佼侯候倖光公功効勾厚口向

	0 1 2 3 4 5 6 7 8 9 A B C D E F
8D40	后喉坑垢好孔孝宏工巧巷幸広庚康弘
8D50	恒慌抗拘控攻昂晃更杭校梗構江洪浩
8D60	港溝甲皇硬稿糠紅紘絞綱耕考肯肱腔
8D70	膏航荒行衡講貢購郊酵鉱砿鋼閤降
8D80	項香高鴻剛劫号合壕拷濠豪轟麹克刻
8D90	告国穀酷鵠黒獄漉腰甑忽惚骨狛込此
8DA0	頃今困坤墾婚恨懇昏昆根梱混痕紺艮
8DB0	魂些佐叉唆嵯左差査沙瑳砂詐鎖裟坐
8DC0	座挫債催再最哉塞妻宰彩才採栽歳済
8DD0	災采犀砕砦祭斎細菜裁載際剤在材罪
8DE0	財冴坂阪堺榊肴咲崎埼碕鷺作削咋搾
8DF0	昨朔柵窄策索錯桜鮭笹匙冊刷

	0 1 2 3 4 5 6 7 8 9 A B C D E F
8E40	察拶撮擦札殺薩雑皐鯖捌錆鮫皿晒三
8E50	傘参山惨撒散桟燦珊産算纂蚕讃賛酸
8E60	餐斬暫残仕仔伺使刺司史嗣四士始姉
8E70	姿子屍市師志思指支孜斯施旨枝止
8E80	死氏獅祉私糸紙紫肢脂至視詞詩試誌
8E90	諮資賜雌飼歯事似侍児字寺慈持時次
8EA0	滋治爾璽痔磁示而耳自蒔辞汐鹿式識
8EB0	鴫竺軸宍雫七叱執失嫉室悉湿漆疾質
8EC0	実蔀篠偲柴芝屡蕊縞舎写射捨赦斜煮
8ED0	社紗者謝車遮蛇邪借勺尺杓灼爵酌釈
8EE0	錫若寂弱惹主取守手朱殊狩珠種腫趣
8EF0	酒首儒受呪寿授樹綬需囚収周

	0 1 2 3 4 5 6 7 8 9 A B C D E F
8F40	宗就州修愁拾洲秀秋終繍習臭舟蒐衆
8F50	襲讐蹴輯週酋酬集醜什住充十従戎柔
8F60	汁渋獣縦重銃叔夙宿淑祝縮粛塾熟出
8F70	術述俊峻春瞬竣舜駿准循旬楯殉淳
8F80	準潤盾純巡遵醇順処初所暑曙渚庶緒
8F90	署書薯藷諸助叙女序徐恕鋤除傷償勝
8FA0	匠升召哨商唱嘗奨妾娼宵将小少尚庄
8FB0	床廠彰承抄招掌捷昇昌昭晶松梢樟樵
8FC0	沼消渉湘焼焦照症省硝礁祥称章笑粧
8FD0	紹肖菖蒋蕉衝裳訟証詔詳象賞醤鉦鍾
8FE0	鐘障鞘上丈丞乗冗剰城場壌嬢常情擾
8FF0	条杖浄状畳穣蒸譲醸錠嘱埴飾

	0 1 2 3 4 5 6 7 8 9 A B C D E F
9040	拭植殖燭織職色触食蝕辱尻伸信侵唇
9050	娠寝審心慎振新晋森榛浸深申疹真神
9060	秦紳臣芯薪親診身辛進針震人仁刃塵
9070	壬尋甚尽腎訊迅陣靭笥諏須酢図厨
9080	逗吹垂帥推水炊睡粋翠衰遂酔錐錘随
9090	瑞髄崇嵩数枢趨雛据杉椙菅頗雀裾澄
90A0	摺寸世瀬畝是凄制勢姓征性成政整星
90B0	晴棲栖正清牲生盛精聖声製西誠誓請
90C0	逝醒青静斉税脆隻席惜戚斥昔析石積
90D0	籍績脊責赤跡蹟碩切拙接摂折設窃節
90E0	説雪絶舌蝉仙先千占宣専尖川戦扇撰
90F0	栓栴泉浅洗染潜煎煽旋穿箭線

	0 1 2 3 4 5 6 7 8 9 A B C D E F
9140	繊羨腺舛船薦詮賤践選遷銭銑閃鮮前
9150	善漸然全禅繕膳糎噌塑岨措曾曽楚狙
9160	疏疎礎祖租粗素組蘇訴阻遡鼠僧創双
9170	叢倉喪壮奏爽宋層匝惣想捜掃挿掻
9180	操早曹巣槍槽漕燥争痩相窓糟総綜聡
9190	草荘葬蒼藻装走送遭鎗霜騒像増憎臓
91A0	蔵贈造促側則即息捉束測足速俗属賊
91B0	族続卒袖其揃存孫尊損村遜他多太汰
91C0	詑唾堕妥惰打柁舵楕陀駄騨体堆対耐
91D0	岱帯待怠態戴替泰滞胎腿苔袋貸退逮
91E0	隊黛鯛代台大第醍題鷹滝瀧卓啄宅托
91F0	択拓沢濯琢託鐸濁諾茸凧蛸只

	0 1 2 3 4 5 6 7 8 9 A B C D E F
9240	叩但達辰奪脱巽竪辿棚谷狸鱈樽誰丹
9250	単嘆坦担探旦歎淡湛炭短端箪綻耽胆
9260	蛋誕鍛団壇弾断暖檀段男談値知地弛
9270	恥智池痴稚置致蜘遅馳築畜竹筑蓄
9280	逐秩窒茶嫡着中仲宙忠抽昼柱注虫衷
9290	註酎鋳駐樗瀦猪苧著貯丁兆凋喋寵帖
92A0	帳庁弔張彫徴懲挑暢朝潮牒町眺聴脹
92B0	腸蝶調諜超跳銚長頂鳥勅捗直朕沈珍
92C0	賃鎮陳津墜椎槌追鎚痛通塚栂掴槻佃
92D0	漬柘辻蔦綴鍔椿潰坪壺嬬紬爪吊釣鶴
92E0	亭低停偵剃貞呈堤定帝底庭廷弟悌抵
92F0	挺提梯汀碇禎程締艇訂諦蹄逓

	0 1 2 3 4 5 6 7 8 9 A B C D E F
9340	邸鄭釘鼎泥摘擢敵滴的笛適鏑溺哲徹
9350	撤轍迭鉄典填天展店添纏甜貼転顛点
9360	伝殿澱田電兎吐堵塗妬屠徒斗杜渡登
9370	菟賭途都鍍砥砺努度土奴怒倒党冬
9380	凍刀唐塔塘套宕島嶋悼投搭東桃梼棟
9390	盗淘湯涛灯燈当痘祷等答筒糖統到董
93A0	蕩藤討謄豆踏逃透鐙陶頭騰闘働動同
93B0	堂導憧撞洞瞳童胴萄道銅峠鴇匿得徳
93C0	涜特督禿篤毒独読栃橡凸突椴届鳶苫
93D0	寅酉瀞噸屯惇敦沌豚遁頓呑曇鈍奈那
93E0	内乍凪薙謎灘捺鍋楢馴縄噸南楠軟難
93F0	汝二尼弐迩匂賑肉虹廿日乳入

	0 1 2 3 4 5 6 7 8 9 A B C D E F
9440	如尿韮任妊忍認濡禰祢寧葱猫熱年念
9450	捻撚燃粘乃廼之埜嚢悩濃納能脳膿農
9460	覗蚤巴把播覇杷波派琶破婆罵芭馬俳
9470	廃拝排敗杯盃牌背肺輩配倍培媒梅
9480	楳煤狽買売賠陪這蝿秤矧萩伯剥博拍
9490	柏泊白箔粕舶薄迫曝漠爆縛莫駁麦函
94A0	箱硲箸肇筈櫨噺肌畑畠八鉢溌発醗髪
94B0	伐罰抜筏閥鳩噺塙蛤隼伴判半反叛帆
94C0	搬斑板氾汎版犯班畔繁般藩販範釆煩
94D0	頒飯挽晩番盤磐蕃蛮匪卑否妃庇彼悲
94E0	扉批披斐比泌疲皮碑秘緋罷肥被誹費
94F0	避非飛樋簸備尾微枇毘琵眉美

	0 1 2 3 4 5 6 7 8 9 A B C D E F
9540	鼻柊稗匹疋髭彦膝菱肘弼必畢筆逼桧
9550	姫媛紐百謬俵彪標氷漂瓢票表評豹廟
9560	描病秒苗錨鋲蒜蛭鰭品彬斌浜瀕貧賓
9570	頻敏瓶不付埠夫婦富冨布府怖扶敷
9580	斧普浮父符腐膚芙譜負賦赴阜附侮撫
9590	武舞葡蕪部封楓風葺蕗伏副復幅服福
95A0	腹複覆淵弗払沸仏物鮒分吻噴墳憤扮
95B0	焚奮粉糞紛雰文聞丙併兵塀幣平弊柄
95C0	並蔽閉陛米頁僻壁癖碧別瞥蔑箆偏変
95D0	片篇編辺返遍便勉娩弁鞭保舗鋪圃捕
95E0	歩甫補輔穂募墓慕戊暮母簿菩倣俸包
95F0	呆報奉宝峰峯崩庖抱捧放方朋

	0 1 2 3 4 5 6 7 8 9 A B C D E F
9640	法泡烹砲縫胞芳萌蓬蜂褒訪豊邦鋒飽
9650	鳳鵬乏亡傍剖坊妨帽忘忙房暴望某棒
9660	冒紡肪膨謀貌貿鉾防吠頬北僕卜墨撲
9670	朴牧睦穆釦勃没殆堀幌奔本翻凡盆
9680	摩磨魔麻埋妹昧枚毎哩槙幕膜枕鮪柾
9690	鱒桝亦俣又抹末沫迄侭繭麿万慢満漫
96A0	蔓味未魅巳箕岬密蜜湊蓑稔脈妙粍民
96B0	眠務夢無牟矛霧鵡椋婿娘冥名命明盟
96C0	迷銘鳴姪牝滅免棉綿緬面麺摸模茂妄
96D0	孟毛猛盲網耗蒙儲木黙目杢勿餅尤戻
96E0	籾貰問悶紋門匁也冶夜爺耶野弥矢厄
96F0	役約薬訳躍靖柳薮鑓愉愈油癒

	0 1 2 3 4 5 6 7 8 9 A B C D E F
9740	諭輸唯佑優勇友宥幽悠憂揖有柚湧涌
9750	猶猷由祐裕誘遊邑郵雄融夕予余与誉
9760	輿預傭幼妖容庸揚揺擁曜楊様洋溶熔
9770	用窯羊耀葉蓉要謡踊遥陽養慾抑欲
9780	沃浴翌翼淀羅螺裸来莱頼雷洛絡落酪
9790	乱卵嵐欄濫藍蘭覧利吏履李梨理璃痢
97A0	裏裡里離陸律率立葎掠略劉流溜琉留
97B0	硫粒隆竜龍侶慮旅虜了亮僚両凌寮料
97C0	梁涼猟療瞭稜糧良諒遼量陵領力緑倫
97D0	厘林淋燐琳臨輪隣鱗麟瑠塁涙累類令
97E0	伶例冷励嶺怜玲礼苓鈴隷零霊麗齢暦
97F0	歴列劣烈裂廉恋憐漣煉簾練聯

	0 1 2 3 4 5 6 7 8 9 A B C D E F
9840	蓮連錬呂魯櫓炉賂路露労婁廊弄朗楼
9850	榔浪漏牢狼篭老聾蝋郎六麓禄肋録論
9860	倭和話歪賄脇惑枠鷲亙亘鰐詫藁蕨椀
9870	湾碗腕
9880	
9890	弋
98A0	丐丕个丱丶并丿乂乖乘亂亅豫事舒弐
98B0	于亞亟一亢亰亳亶从仍仄仆仂仗仞伃
98C0	仟价伉佚估佛佝佗佇佶侈侏侘佻佩佰
98D0	侑佯來侖儘俔俟俎俘俛俑俚俐俤俥倚
98E0	倨倔倪倥倅伜俶倡倩倬俾俯們倆偃假
98F0	會偕偐偈做偖偬偸傀傚傅傴傲

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
9940	僉	僊	傳	僂	僖	僞	僥	僭	僣	僮	價	僵	儉	儁	儂	儖
9950	儕	儔	儚	儡	儺	儷	儼	儻	儿	兀	兒	兌	兔	兢	竸	兩
9960	兪	兮	冀	冂	囘	册	冉	冏	冑	冓	冕	冖	冤	冦	冢	冩
9970	冪	冫	决	冱	冲	冰	况	冽	凅	凉	凛	几	處	凩	凭	
9980	凰	凵	凾	刄	刋	刔	刎	刧	刪	刮	刳	刹	剏	剄	剋	剌
9990	剞	剔	剪	剴	剩	剳	剿	剽	劍	劔	劒	剱	劈	劑	辨	辧
99A0	劬	劭	劼	劵	勁	勍	勗	勞	勣	勦	飭	勠	勳	勵	勸	勹
99B0	匆	匈	甸	匍	匐	匏	匕	匚	匣	匯	匱	匳	匸	區	卆	卅
99C0	丗	卉	卍	凖	卞	卩	卮	夘	卻	卷	厂	厖	厠	厦	厥	厮
99D0	厰	厶	參	簒	雙	叟	曼	燮	叮	叨	叭	叺	吁	吽	呀	听
99E0	吭	吼	吮	吶	吩	吝	呎	咏	呵	咎	呟	呱	呷	呰	咒	呻
99F0	咀	呶	咄	咐	咆	哇	咢	咸	咥	咬	哄	哈	咨			

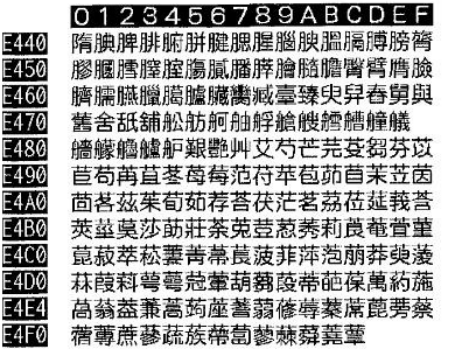
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
9A40	咫	哂	咤	咾	咼	哘	哥	哦	唏	唔	哽	哮	哭	哺	哢	唹
9A50	啀	啣	啌	售	啜	啅	啖	啗	唸	唳	啝	喙	喀	咯	喊	喟
9A60	啻	啾	喘	喞	單	啼	喃	喩	喇	喨	嗚	嗅	嗟	嗄	嗜	嗤
9A70	嗔	嘔	嗷	嘖	嗾	嗽	嘛	嗹	噎	噐	營	嘴	嘶	嘲	嘸	
9A80	噫	噤	嘯	噬	噪	嚆	嚀	嚊	嚠	嚔	嚏	嚥	嚮	嚶	嚴	囂
9A90	嚼	囁	囃	囀	囈	囎	囑	囓	囗	囮	囹	圀	囿	圄	圉	圈
9AA0	國	圍	圓	團	圖	嗇	圜	圦	圷	圸	坎	圻	址	坏	坩	埀
9AB0	垈	坡	坿	垉	垓	垠	垳	垤	垪	垰	埃	埆	埔	埒	埓	堊
9AC0	埖	埣	堋	堙	堝	塲	堡	塢	塋	塰	毀	塒	堽	塹	墅	墹
9AD0	墟	墫	墺	壞	墻	墸	墮	壅	壓	壑	壗	壙	壘	壥	壜	壤
9AE0	壟	壯	壺	壹	壻	壼	壽	夂	夊	夐	夛	梦	夥	夬	夭	夲
9AF0	夸	夾	竒	奕	奐	奎	奚	奘	奢	奠	奧	奬	奩			

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
9B40	奸	妁	妝	佞	侫	妣	妲	姆	姨	姜	妍	姙	姚	娥	娟	娑
9B50	娜	娉	娚	婀	婬	婉	娵	娶	婢	婪	媚	媼	媾	嫋	嫂	媽
9B60	嫣	嫗	嫦	嫩	嫖	嫺	嫻	嬌	嬋	嬖	嬲	嫐	嬪	嬶	嬾	孃
9B70	孅	孀	孑	孕	孚	孛	孥	孩	孰	孳	孵	學	斈	孺	宀	
9B80	它	宦	宸	寃	寇	寉	寔	寐	寤	實	寢	寞	寥	寫	寰	寶
9B90	寳	尅	將	專	對	尓	尠	尢	尨	尸	尹	屁	屆	屎	屓	屐
9BA0	屏	孱	屬	屮	乢	屶	屹	岌	岑	岔	妛	岫	岻	岶	岼	岷
9BB0	峅	岾	峇	峙	峩	峽	峺	峭	嶌	峪	崋	崕	崗	嵜	崟	崛
9BC0	崑	崔	崢	崚	崙	崘	嵌	嵒	嵎	嵋	嵬	嵳	嵶	嶇	嶄	嶂
9BD0	嶢	嶝	嶬	嶮	嶽	嶐	嶷	嶼	巉	巍	巓	巒	巖	巛	巫	已
9BE0	巵	帋	帚	帙	帑	帛	帶	帷	幄	幃	幀	幎	幗	幔	幟	幢
9BF0	幤	幇	幵	并	幺	麼	广	庠	廁	廂	廈	廐	廏			

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
9C40	廖	廣	廝	廚	廛	廢	廡	廨	廩	廬	廱	廳	廰	廴	廸	廾
9C50	弃	弉	彝	彜	弋	弑	弖	弩	弭	弸	彁	彈	彌	彎	弯	彑
9C60	彖	彗	彙	彡	彭	彳	彷	徃	徂	彿	徊	很	徑	徇	從	徙
9C70	徘	徠	徨	徭	徼	忖	忻	忤	忸	忱	忝	悳	忿	怡	恠	
9C80	怙	怐	怩	怎	怱	怛	怕	怫	怦	怏	怺	恚	恁	恪	恷	恟
9C90	恊	恆	恍	恣	恃	恤	恂	恬	恫	恙	悁	悍	惧	悃	悚	悄
9CA0	悛	悖	悗	悒	悧	悋	惡	悸	惠	惓	悴	忰	悽	惆	悵	惘
9CB0	慍	愕	愆	惶	惷	愀	惴	惺	愃	愡	惻	惱	愍	愎	慇	愾
9CC0	愨	愧	慊	愿	愼	愬	愴	愽	慂	慄	慳	慷	慘	慙	慚	慫
9CD0	慴	慯	慥	慱	慟	慝	慓	慵	憙	憖	憇	憬	憔	憚	憊	憑
9CE0	憫	憮	懌	懊	應	懷	懈	懃	懆	憺	懋	罹	懍	懦	懣	懶
9CF0	懺	懴	懿	懽	懼	懾	戀	戈	戉	戍	戌	戔	戛			

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
9D40	戞	戡	截	戮	戰	戲	戳	扁	扎	扞	扣	扛	扠	扨	扼	抂
9D50	抉	找	抒	抓	抖	拔	抃	抔	拗	拑	抻	拏	拿	拆	擔	拈
9D60	拜	拌	拊	拂	拇	抛	拉	挌	拮	拱	挧	挂	挈	拯	拵	捐
9D70	挾	捍	搜	捏	掖	掎	掀	掫	捶	掣	掏	掉	掟	掵	捫	
9D80	捩	掾	揩	揀	揆	揣	揉	插	揶	揄	搖	搴	搆	搓	搦	搶
9D90	攝	搗	搨	搏	摧	摯	摶	摎	攪	撕	撓	撥	撩	撈	撼	據
9DA0	擒	擅	擇	撻	擘	擂	擱	擧	舉	擠	擡	抬	擣	擯	攬	擶
9DB0	擴	擲	擺	攀	擽	攘	攜	攅	攤	攣	攫	攴	攵	攷	收	攸
9DC0	畋	效	敖	敕	敍	敘	敞	敝	敲	數	斂	斃	變	斛	斟	斫
9DD0	斷	旃	旆	旁	旄	旌	旒	旛	旙	无	旡	旱	杲	昊	昃	旻
9DE0	杳	昵	昶	昴	昜	晏	晄	晉	晁	晞	晝	晤	晧	晨	晟	晢
9DF0	晰	暃	暈	暎	暉	暄	暘	暝	曁	暹	曉	暾	暼			

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
9E40	曄	暸	曖	曚	曠	昿	曦	曩	曰	曵	曷	朏	朖	朞	朦	朧
9E50	霸	朮	朿	朶	杁	朸	朷	杆	杞	杠	杙	杣	杤	枉	杰	枩
9E60	杼	杪	枌	枋	枦	枡	枅	枷	柯	枴	柬	枳	柩	枸	柤	柞
9E70	柝	柢	柮	枹	柎	柆	柧	檜	栞	框	栩	桀	桍	栲	桎	
9E80	梳	栫	桙	档	桷	桿	梟	梏	梭	梔	條	梛	梃	檮	梹	桴
9E90	梵	梠	梺	椏	梍	桾	椁	棊	椈	棘	椢	椦	棡	椌	棍	棔
9EA0	棧	棕	椶	椒	椄	棗	棣	椥	棹	棠	棯	椨	椪	椚	椣	椡
9EB0	棆	楹	楷	楜	楸	楫	楔	楾	楮	椹	楴	椽	楙	椰	楡	楞
9EC0	楝	榁	楪	榲	榮	槐	榿	槁	槓	榾	槎	寨	槊	槝	榻	槃
9ED0	榧	樮	榑	榠	榜	榕	榴	槞	槨	樂	樛	槿	權	槹	槲	槧
9EE0	樅	榱	樞	槭	樔	槫	樊	樒	櫁	樣	樓	橄	樌	橲	樶	橸
9EF0	橇	橢	橙	橦	橈	樸	樢	檐	檍	檠	檄	檢	檣			



	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
E540	蕁	藥	蒞	蕕	藹	蕹	薔	薑	蘄	藑	蕭	薔	薛	藪	薇	蒔
E550	蕷	藷	蕿	藉	薺	藏	薹	藐	藕	藝	藥	藜	藹	蘊	蘇	蘋
E560	蘋	藺	蘆	蘢	蘚	蘱	蘿	虍	虒	虔	號	虧	虱	蚓	蚣	蚩
E570	蚪	蚋	蚌	蚶	蚯	蛄	蛆	蚰	蛉	蠣	蚫	蛔	蛞	蛩	蛬	
E580	蛟	蛛	蛯	蜓	蜆	蜈	蜀	蜃	蛻	蜑	蜉	蜍	蛹	蜊	蜴	蜿
E590	蜷	蜻	蜥	蜩	蜚	蝠	蟥	蝸	蝌	蝎	蝴	蝗	蝨	蝮	蝙	蝓
E5A0	蝣	蝪	蠅	螢	螟	螂	螯	蟋	螽	蟀	蟐	雖	螫	蟄	螳	蟇
E5B0	蟆	螻	蟯	蟲	蟠	蠏	蠍	蟾	蟶	蟷	蠎	蟒	蠑	蠖	蠕	蠢
E5C0	蠡	蠱	蠶	蠹	蠧	蠻	衄	衂	衒	衙	衞	衢	衫	袁	衾	袞
E5D0	衵	衽	袵	衲	袂	袗	袒	袮	袙	袢	袍	袤	袰	袿	袱	裃
E5E5	裄	裔	裘	裙	裝	裹	褂	裼	裴	裨	裲	褄	褌	褊	裿	褒
E5F0	褞	褥	褪	褫	襁	襄	褻	褶	褸	襌	褝	襠	襞			

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
E640	襦	襤	襭	襪	襯	襴	襷	覀	覃	覈	覊	覓	覘	覡	覩	覦
E650	覬	覯	覲	覺	覽	覿	觀	觚	觜	觝	觧	觴	觸	訃	訖	訐
E660	訌	訛	訝	訥	訶	詁	詛	詒	詆	詈	詼	詭	詬	詢	誅	誂
E670	誄	誨	誡	誑	誥	誦	誚	誣	諄	諍	諂	諚	諫	諳	諧	
E680	諤	諱	謔	諠	諢	諷	諞	諛	謌	謇	謚	諡	謖	謐	謗	謠
E690	謳	鞫	謦	謫	謾	謨	譁	譌	譏	譎	證	譖	譛	譚	譫	譟
E6A0	譬	譯	譴	譽	讀	讌	讎	讒	讓	讖	讙	讚	谺	豁	谿	豈
E6B0	豌	豎	豐	豕	豢	豬	豸	豺	貂	貉	貅	貊	貍	貎	貔	豼
E6C0	貘	戝	貭	貪	貽	貲	貳	貮	貶	賈	賁	賤	賣	賚	賽	賺
E6D0	賻	贄	贅	贊	贇	贏	贍	贐	齎	贓	賍	贔	贖	赧	赭	赱
E6E6	赳	趁	趙	跂	趾	趺	跏	跚	跖	跌	跛	跋	跪	跫	跟	跣
E6F0	跼	踈	踉	跿	踝	踞	踐	踟	蹂	踵	踰	踴	蹊			

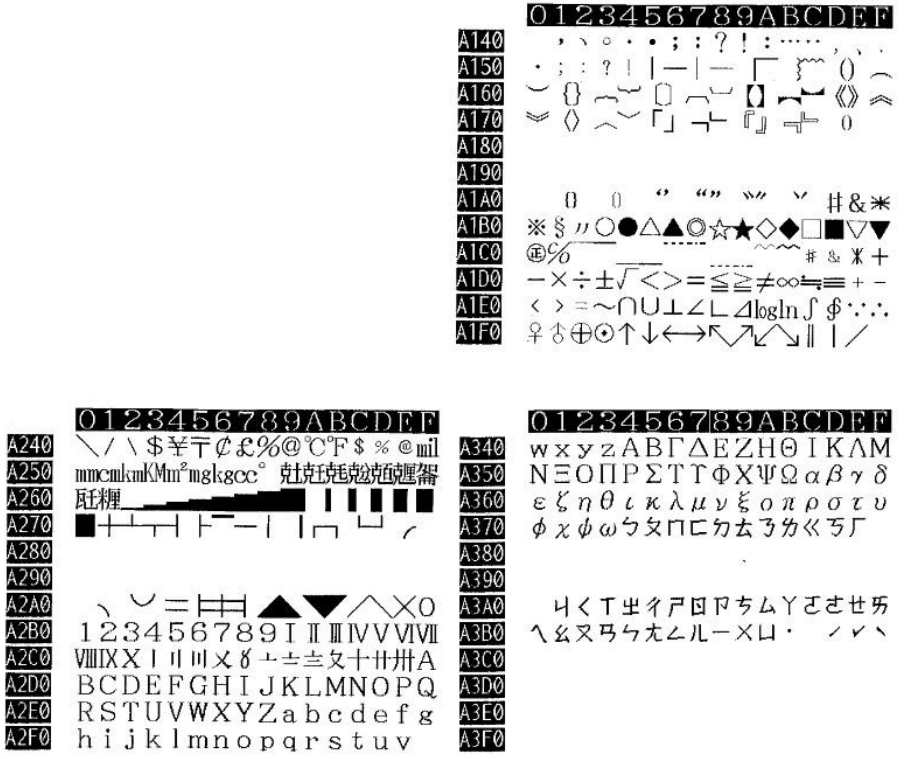
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
E740	蹇	蹉	蹌	蹐	蹈	蹙	蹤	蹠	踪	蹣	蹕	蹶	蹲	蹼	躁	躇
E750	躅	躄	躋	躊	躓	躑	躔	躙	躪	躡	躬	躰	軆	躱	躾	軅
E760	軈	軋	軛	軣	軼	軻	軫	軾	輊	輅	輕	輒	輙	輓	輜	輟
E770	輛	輌	輦	輳	輻	輹	轅	轂	輾	轌	轉	轆	轎	轗	轜	
E780	轢	轣	轤	辜	辟	辣	辭	辯	辷	迚	迥	迢	迪	迯	邇	迴
E790	逅	迹	迺	逑	逕	逡	逍	逞	逖	逋	逧	逶	逵	逹	迸	遏
E7A0	遐	遑	遒	逎	遉	逾	遖	遘	遞	遨	遯	遶	隨	遲	邂	遽
E7B0	邁	邀	邊	邉	邏	邨	邯	邱	邵	郢	郤	扈	郛	鄂	鄒	鄙
E7C0	鄲	鄰	酊	酖	酘	酣	酥	酩	酳	酲	醋	醉	醂	醢	醫	醯
E7D0	醪	醵	醴	醺	釀	釁	釉	釋	釐	釖	釟	釡	釛	釼	釵	釶
E7E7	鈞	釿	鈔	鈬	鈕	鈑	鉞	鉗	鉅	鉉	鉤	鉈	銕	鈿	鉋	鉐
E7F0	銜	銖	銓	銛	鉚	鋏	銹	銷	鋩	錏	鋺	鍄	錮			

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
E840	錙	錢	錚	錣	錺	錵	錻	鍜	鍠	鍼	鍮	鍖	鎰	鎬	鎭	鎔
E850	鎹	鏖	鏗	鏨	鏥	鏘	鏃	鏝	鏐	鏈	鏤	鐚	鐔	鐓	鐃	鐇
E860	鐐	鐶	鐫	鐵	鐡	鐺	鑁	鑒	鑄	鑛	鑠	鑢	鑞	鑪	鈩	鑰
E870	鑵	鑷	鑽	鑚	鑼	鑾	钁	鑿	門	閂	閇	閊	閔	閖	閘	
E880	閠	閨	閧	閭	閼	閻	閹	閾	闊	濶	闃	闍	闌	闕	闔	闖
E890	關	闡	闥	闢	阡	阨	阮	阯	陂	陌	陏	陋	陷	陜	陞	陝
E8A0	陟	陦	陲	陬	隍	隘	隕	隗	險	隧	隱	隲	隰	隴	隶	隸
E8B0	隹	雎	雋	雉	雍	襍	雜	霍	雕	雹	霄	霆	霈	霓	霎	霑
E8C0	霏	霖	霙	霤	霪	霰	霹	霽	霾	靄	靆	靈	靂	靉	靜	靠
E8D0	靤	靦	靨	勒	靫	靱	靹	鞅	靼	鞁	靺	鞆	鞋	鞏	鞐	鞜
E8E8	鞨	鞦	鞣	鞳	鞴	韃	韆	韈	韋	韜	韭	齏	韲	竟	韶	韵
E8F0	頏	頌	頸	頤	頡	頷	頽	顆	顏	顋	顫	顯	顰			

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
E940	顱	顴	顳	颪	颯	颱	颶	飄	飃	飆	飩	飫	餃	餉	餒	餔
E950	餘	餡	餝	餞	餤	餠	餬	餮	餽	餾	饂	饉	饅	饐	饋	饑
E960	饒	饌	饕	馗	馘	馥	馭	馮	馼	駟	駛	駝	駘	駑	駭	駮
E970	駱	駲	駻	駸	騁	騏	騅	駢	騙	騫	騷	驅	驂	驀	驃	
E980	騾	驕	驍	驛	驗	驟	驢	驥	驤	驩	驫	驪	骭	骰	骼	髀
E990	髏	髑	髓	體	髞	髟	髢	髣	髦	髯	髫	髮	髴	髱	髷	髻
E9A0	鬆	鬘	鬚	鬟	鬢	鬣	鬥	鬧	鬨	鬩	鬪	鬮	鬯	鬲	魄	魃
E9B0	魏	魍	魎	魑	魘	魴	鮓	鮃	鮑	鮖	鮗	鮟	鮠	鮨	鮴	鯀
E9C0	鯊	鮹	鯆	鯏	鯑	鯒	鯣	鯢	鯤	鯔	鯡	鰺	鯲	鯱	鯰	鰕
E9D0	鰔	鰉	鰓	鰌	鰆	鰈	鰒	鰊	鰄	鰮	鰛	鰥	鰤	鰡	鰰	鱇
E9E9	鰲	鱆	鰾	鱚	鱠	鱧	鱶	鱸	鳧	鳬	鳰	鴉	鴈	鳫	鴃	鴆
E9F0	鴪	鴦	鶯	鴣	鴟	鵄	鴕	鴒	鵁	鴿	鴾	鵆	鵈			

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
EA40	鵝	鵞	鵤	鵑	鵐	鵙	鵲	鶉	鶇	鶫	鵯	鵺	鶚	鶤	鶩	鶲
EA50	鷄	鷁	鶻	鶸	鶺	鷆	鷏	鷂	鷙	鷓	鷸	鷦	鷭	鷯	鷽	鸚
EA60	鸛	鸞	鹵	鹹	鹽	麁	麈	麋	麌	麒	麕	麑	麝	麥	麩	麸
EA70	麪	麭	靡	黌	黎	黏	黐	黔	黜	點	黝	黠	黥	黨	黯	
EA80	黴	黶	黷	黹	黻	黼	黽	鼇	鼈	皷	鼕	鼡	鼬	鼾	齊	齒
EA90	齔	齣	齟	齠	齡	齦	齧	齬	齪	齷	齲	齶	龕	龜	龠	堯
EAA0	槇	遙	瑤													
EAB0																
EAC0																
EAD0																
EAE0																
EAF0																

3-3-1-3. Traditional Chinese Language Codes



	0123456789ABCDEF
A640	共再冰列刑划刎刖劣匈匡匠印危吉吏
A650	同吊吐吁吋各向名合吃后吆吒因回囝
A660	圳地在圭圬圯圩夙多夷夸妄奸妃好她
A670	如妁字存宇守宅安寺尖屹州帆并年
A680	
A690	
A6A0	式弛忙忖戎戌戍成扣扛托收早旨旬
A6B0	旭曲曳有朽朴朱朵次此死氖汝汗汙江
A6C0	池汐汕污汛汍汎灰牟牝百竹米糸缶羊
A6D0	羽老考而耒耳聿肉肋肌臣自至臼舌舛
A6E0	舟艮色艾虫血行衣西阡串亨位住佇佗
A6F0	佞伴佛何估佐佑伽伺伸佃佔似但佣

	0123456789ABCDEF
A740	作你伯低伶余佝佈佚兌克免兵冶冷別
A750	判利刪刨劫助努劬匣即卵吝吭吞吾否
A760	呎吧呆呃吳呈呂君吩告吹吻吸吮吵吶
A770	吠吼呀吱含吟听囪困囤囫坊坑址坍
A780	
A790	
A7A0	均坎圾坐坏圻壯夾妝妒妨妞妣妙妖
A7B0	妍妤妓妊妥孝孜孚孛完宋宏尬局屁尿
A7C0	尾岐岑岔岌巫希序庇床廷弄弟彤形彷
A7D0	役忘忌志忍忱快忸忪戒我抄抗抖技扶
A7E0	抉扭把扼找批扳抒扯折扮投抓抑抆改
A7F0	攻攸旱更束李杏材村杜杖杞杉杆杠

	0123456789ABCDEF
A840	杓杗步每求汞沙沁沈沉沅沛汪決沐汰
A850	沌汨沖沒汽沃汲汾汴沆汶沍沔沘沂灶
A860	灼災灸牢牡牠狄狂玖甬甫男甸皂盯矣
A870	私秀禿究系罕肖肓肝肘肛肚育良芒
A880	
A890	
A8A0	芋芍見角言谷豆豕貝赤走足身車辛
A8B0	辰迂迆迅迄巡邑邢邪邦那酉釆里防阮
A8C0	阱阪阬並乖乳事些亞享京佯依侍佳使
A8D0	佬供例來侃佰併侈佩佻侖佾侏侑佺兔
A8E0	兒兕兩具其典冽函刻券刷刺到刮制剁
A8F0	劾劻卒協卓卑卦卷卸卹取叔受味呵

	0123456789ABCDEF
A940	咖呸咕咀呻呷咄咒咆呼咐呱呶和咚呢
A950	周咋命咎固垃坷坪坩坡坦坤坼夜奉奇
A960	奈奄奔妾妻委妹妮姑姆姐姍始姓姊妯
A970	妳姒姅孟孤季宗定官宜宙宛尚屈居
A980	
A990	
A9A0	屆岷岡岸岩岫岱岳帘帚帖帕帛帑幸
A9B0	庚店府底庖延弦弧弩往征彿彼忝忠忽
A9C0	念忿怏怔怯怵怖怪怕怡性怩怫怛或戕
A9D0	房戾所承拉拌拄抿拂抹拒招披拓拔拋
A9E0	拈抨抽押拐拙拇拍抵拚抱拘拖拗拆抬
A9F0	拎放斧於旺昔易昌昆昂明昀昏昕昊

	0123456789ABCDEF
AA40	昇服朋杭枋枕東果杳杷枇枝林杯杰板
AA50	枉松析杵枚枓杼杪杲欣武歧歿氓氛泣
AA60	注泳沱泌泥河沽沾沼波沫法泓沸泄油
AA70	況沮泗泅泱沿治泡泛泊沬泯泜泖泠
AA80	
AA90	
AAA0	炕炎炒炊炙爬爭爸版牧物狀狎狙狗
AAB0	狐玩玨玟玫玥甽疝疙疚的盂盲直知矽
AAC0	社祀祁秉秈空穹竺糾罔羌羋者肺肥肢
AAD0	肱股肫肩肴肪肯臥臾舍芳芝芙芭芽芟
AAE0	芹花芬芥芯芸芣芰芾芷虎虱初表軋迎
AAF0	返近邵邸邱邶采金長門阜陀阿阻附

	0123456789ABCDEF
AB40	陂隹雨青非亟亭亮信侵侯便俠俑俏保
AB50	促侶俘俟俊俗侮俐俄係俚俎俞侷兗冒
AB60	冑冠剎剃削前剌剋則勇勉勃勁匍南卻
AB70	厚叛咬哀咨哎哉咸咦咳哇哂咽咪品
AB80	
AB90	
ABA0	哄哈咯咫咱咻咩咧咿囿垂型垠垣垢
ABB0	城垮垓奕契奏奎奐姜姘姿姣姨娃姥姪
ABC0	姚姦威姻孩宣宦室客宥封屎屏屍屋峙
ABD0	峒巷帝帥帟幽庠度建弈弭彥很待徊律
ABE0	徇後徉怒思怠急怎怨恍恰恨恢恆恃恬
ABF0	恫恪恤扁拜挖按拼拭持拮拽指拱拷

	0123456789ABCDEF
AC40	拯括拾拴挑挂政故斫施既春昭映昧是
AC50	星昨昱昤曷柿染柱柔某柬架枯柵柩柯
AC60	柄柑枴柚查枸柏柞柳枰柙柢柝柒歪殃
AC70	殆段毒毗氟泉洋洲洪流津洌洱洞洗
AC80	
AC90	
ACA0	活洽派洶洛泵洹洧洸洩洮洵洎洫炫
ACB0	為炳炬炯炭炸炮炤爰牲牯牴狩狠狡玷
ACC0	珊玻玲珍珀玳甚甭畏界畎畋疫疤疥疢
ACD0	疣癸皆皇皈盈盆盃盅省盹相眉看盾盼
ACE0	眇矜砂研砌砍祆祉祈祇禹禺科秒秋穿
ACF0	突竿竽籽紂紅紀紉紇約紆缸美羿耄

	0123456789ABCDEF
AD40	耐耍耑耶胖胥胚胃胄背胡胛胎胞胤胝
AD50	致舢苧范茅苣苛苦茄若茂茉苒苗英茁
AD60	苜苔苑苞苓苟苯茆虐虹虻虺衍衫要觔
AD70	計訂訃貞負赴赳趴軍軌述迦迢迪迥
AD80	
AD90	
ADA0	迭迫迤迨郊郎郁郃酋酊重閂限陋陌
ADB0	降面革韋韭音頁風飛食首香乘亳倌倍
ADC0	倣俯倦倥俸倩倖倆值借倚倒們俺倀倔
ADD0	倨俱倡個候倘俳修倭倪俾倫倉兼冤冥
ADE0	冢凍凌准凋剖剜剔剛剝匪卿原厝叟哨
ADF0	唐唁唷哼哥哲唆哺唔哩哭員唉哮哪

	0123456789ABCDEF
AE40	哦唧唇哽唏圃圄埂埔埋埃堉夏套奘奚
AE50	娑娘娜娟娛娓姬娠娣娩娥娌娉孫屘宰
AE60	害家宴宮宵容宸射屑展屐峭峽峻峪峨
AE70	峰島崁峴差席師庫庭座弱徒徑徐恙
AE80	
AE90	
AEA0	恣恥恐恕恭恩息悄悟悚悍悔悌悅悖
AEB0	扇拳挈拿捎挾振捕捂捆捏捉挺捐挽挪
AEC0	挫挨捍捌效敉料旁旅時晉晏晃晒晌晅
AED0	晁書朔朕朗校核案框桓根桂桔栩梳栗
AEE0	桌桑栽柴桐桀格桃株桅栓栘桁殊殉殷
AEF0	氣氧氨氦氤泰浪涕消涇浦浸海浙涓

	0123456789ABCDEF
AF40	浬涉浮浚浴浩涌涊浹涅浥涔烊烘烤烙
AF50	烈烏爹特狼狹狽狸狷玆班琉珮珠珪珞
AF60	畔畝畜畚留疾病症疲疳疽疼疹痂疸皋
AF70	皰益盍盎眩真眠眨矩砰砧砸砝破砷
AF80	
AF90	
AFA0	砥砭砠砟砲祕祐祠祟祖神祝祗祚秤
AFB0	秣秧租秦秩秘窄窈站笆笑粉紡紗紋紊
AFC0	素索純紐紕級紜納紙紛缺罟羔翅翁耆
AFD0	耘耕耙耗耽耿胱脂胰脅胭胴脆胸胳脈
AFE0	能脊胼胯臭臬舀舐航舫舨般芻茫荒荔
AFF0	荊茸荐草茵茴荏茲茹茶茗荀茱茨荃

	0123456789ABCDEF
B040	虔蚊蚪蚓蚤蚩蚌蚣蚜衰衷袁袂衽衹記
B050	訐討訌訕訊託訓訖訏訑豈豺豹財貢起
B060	躬軒軔軏辱送逆迷退迺迴逃追逅迸邕
B070	郡郝郢酒配酌釘針釗釜釙閃院陣陡
B080	
B090	
B0A0	陛陝除陘陞隻飢馬骨高鬥鬲鬼乾偺
B0B0	偽停假偃偌做偉健偶偎偕偵側偷偏倏
B0C0	偯偭兜冕凰剪副勒務勘動匐匏匙匿區
B0D0	匾參曼商啪啦啄啞啡啃啊唱啖問啕唯
B0E0	啤唸售啜唬啣唳啁啗圈國圉域堅堊堆
B0F0	埠埤基堂堵執培夠奢娶婁婉婦婪婀

	0123456789ABCDEF
B140	娼婢婚婆婊孰寇寅寄寂宿密尉專將屠
B150	屜屏崇崆崎崛崖崢崑崩崔崙崤崧崗巢
B160	常帶帳帷康庸庶庵庾張強彗彬彩彫得
B170	徙從徘御徠徜恿患悉悠您惋悴惦悽
B180	
B190	
B1A0	情悻悵惜悼惘惕惆惟悸惚惇戚戛扈
B1B0	掠控捲掖探接捷捧掘措捱掩掉掃掛捫
B1C0	推掄授掙採掬排掏掀捻捩捨捺敝敖救
B1D0	教敗啟敏敘敕敔斜斛斬族旋旌旎晝晚
B1E0	晤晨晦晞曹勗望梁梯梢梓梵桿桶梱梧
B1F0	梗械梃棄梭梆梅梔條梨梟梡梂欲殺

	0123456789ABCDEF
B240	毫氈氯涎涼淳淙液淡淌淤添淺清淇淋
B250	涯淑涮淞淹涸混淵淅淒渚涵淚淫淘淪
B260	深淮淨淆淄涪淬涿淦烹焉焊烽烯爽牽
B270	犁猜猛猖猓猙率琅琊球理現琍瓠瓶
B280	
B290	
B2A0	瓷甜產略畦畢異疏痔痕疵痊痍皎盔
B2B0	盒盛眷眾眼眶眸眺硫硃硎祥票祭移窒
B2C0	窕笠笨笛第符笙笞笮粒粗粕絆絃統紮
B2D0	紹紼絀細紳組累終紲紱缽羞羚翌翎習
B2E0	耜聊聆脯脖脣脫脩脰脤舂舵舷舶船莎
B2F0	莞莘荸莢莖莽莫莒莊莓莉莠荷荻荼

	0123456789ABCDEF
B340	莆莧處彪蛇蛀蚶蛄蚵蛆蛋蚱蚯蛉術袞
B350	袈被袒袖袍袋覓規訪訝訣訥許設訟訛
B360	訢豉豚販責貫貨貪貧赧赦趾趺軛軟這
B370	逍通逗連速逝逐逕逞造透逢逖逛途
B380	
B390	
B3A0	部郭都酗野釵釦釣釧釭釩閉陪陵陳
B3B0	陸陰陴陶陷陬雀雪雩章竟頂頃魚鳥鹵
B3C0	鹿麥麻傢傍傅備傑傀傖傘傚最凱割剴
B3D0	創剩勞勝勛博厥啻喀喧啼喊喝喘喂喜
B3E0	喪喔喇喋喃喳單喟唾喲喚喻喬喱啾喉
B3F0	喫喙圍堯堪場堤堰報堡堝堠壹壺奠

	0123456789ABCDEF
B440	婷媚婿媒媛媧孳孱寒富寓寐尊尋就嵌
B450	嵐崴嵇巽幅帽幀幃幾廊廁廂廄弼彭復
B460	循徨惑惡悲悶惠愜愣惺愕惰惻惴慨惱
B470	愎惶愉愀愒戟扉掣掌描揀揩揉揆揍
B480	
B490	
B4A0	插揣提握揖揭揮捶援揪換摒揚揹敞
B4B0	敦敢散斑斐斯普晰晴晶景暑智晾晷曾
B4C0	替期朝棺棕棠棘棗椅棟棵森棧棹棒棲
B4D0	棣棋棍植椒椎棉棚楮棻款欺欽殘殖殼
B4E0	毯氮氯氬港游湔渡渲湧湊渠渥渣減湛
B4F0	湘渤湖湮渭渦湯渴湍渺測湃渝渾滋

	0123456789ABCDEF
B540	溉渙湎湣湄湲湩湟焙焚焦焰無然煮焜
B550	牌犄犀猶猥猴猩琺琪琳琢琥琵琶琴琯
B560	琛琦琨甥甦畫番痢痛痣痙痘痞痠登發
B570	皖皓皴盜睏短硝硬硯稍稈程稅稀窘
B580	
B590	
B5A0	窗窖童竣等策筆筐筒答筍筋筏筑粟
B5B0	粥絞結絨絕紫絮絲絡給絢絰絳善翔翕
B5C0	耋聒肅腕腔腋腑腎脹腆脾腌腓腴舒舜
B5D0	菩萃菸萍菠菅萋菁華菱菴著萊菰萌菌
B5E0	菽菲菊萸萎萄菜萇菔菟虛蛟蛙蛭蛔蛛
B5F0	蛤蛐蛞街裁裂袱覃視註詠評詞証詁

	0123456789ABCDEF
B640	詔詛詐詆訴診訶詖象貂貯貼貳貽賁費
B650	賀貴買貶貿貸越超趁跎距跋跚跑跌跛
B660	跆軻軸軼辜逮逵週逸進逶鄂郵鄉郾酣
B670	酥量鈔鈕鈣鈉鈞鈍鈐鈇鈑閔閏開閑
B680	
B690	
B6A0	間閒閎隊階隋陽隅隆隍陲隄雁雅雄
B6B0	集雇雯雲韌項順須飧飪飯飩飲飭馮馭
B6C0	黃黍黑亂傭債傲傳僅傾催傷傻傯僇剿
B6D0	剷剽募勦勤勢勣匯嗟嗨嗓嗦嗎嗜嗇嗑
B6E0	嗣嗤嗯嗚嗡嗅嗆嗥嗉園圓塞塑塘塗塚
B6F0	塔填塌塭塊塢塒塋奧嫁嫉嫌媾媽媼

	0123456789ABCDEF
B740	媳嫂媲嵩嵯幌幹廉廈弒彙徬微愚意慈
B750	感想愛惹愁愈慎慌慄慍愾愴愧愍愆愷
B760	戡戢搓搾搞搪搭搽搬搏搜搔損搶搖搗
B770	搆敬斟新暗暉暇暈暖暄暘暍會榔業
B780	
B790	
B7A0	楚楷楠楔極椰概楊楨楫楞楓楹榆楝
B7B0	楣楛歇歲毀殿毓毽溢溯滓溶滂源溝滇
B7C0	滅溥溘溼溺溫滑準溜滄滔溪溧溴煎煙
B7D0	煩煤煉照煜煬煦煌煥煞煆煨煖爺牒猷
B7E0	獅猿猾瑯瑚瑕瑟瑞瑁琿瑙瑛瑜當畸瘀
B7F0	痰瘁痲痱痺痿痴痳盞盟睛睫睦睞督

	0123456789ABCDEF
B840	睹睪睞睜睥睨睢矮碎碰碗碘碌碉硼碑
B850	碓碇祺祿禁萬禽稜稚稠稔稟稞窟窠筷
B860	節筠筮筧粱粳粵經絹綑綁綏絛置罩罪
B870	署義羨群聖聘肆肄腱腰腸腥腮腳腫
B880	
B890	
B8A0	腹腺腦舅艇蒂葷落萱葵葦葫葉葬葛
B8B0	萼萵葡董葩葭葆虞虜號蛹蜓蜈蜇蜀蛾
B8C0	蛻蜂蜃蜆蜊衙裟裔裙補裘裝裡裊裕裒
B8D0	覜解詫該詳試詩詰誇詼詣誠話誅詭詢
B8E0	詮詬詹詻訾詨豢貊貉賊資賈賄貲賃賂
B8F0	賅跡跟跨路跳跺跪跤跦躲較載軾輊

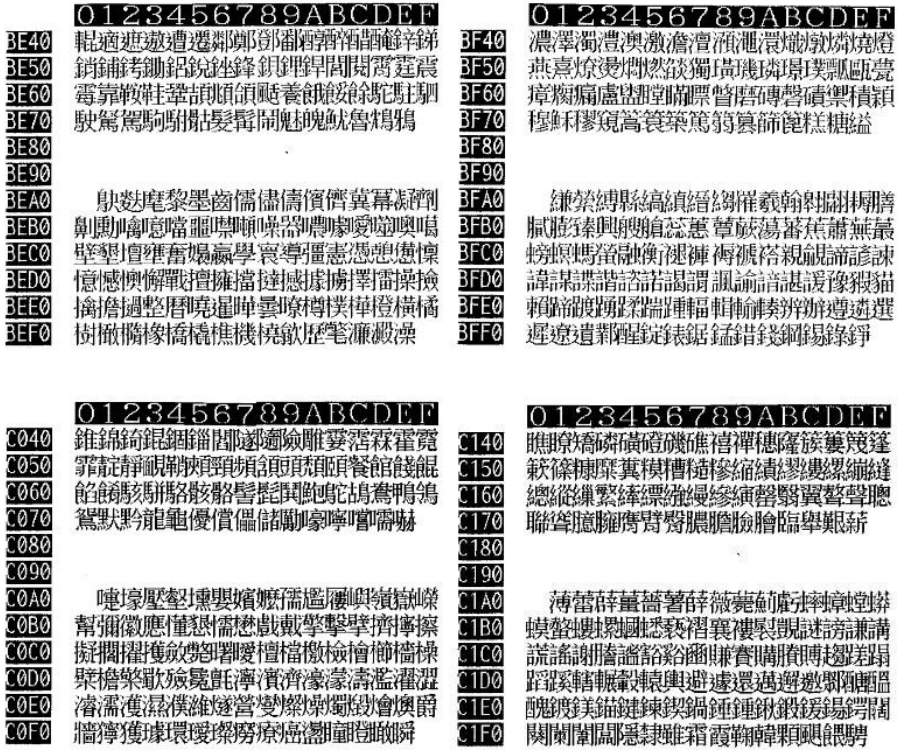
	0123456789ABCDEF
B940	辟農運遊道遂達逼違遐遇遏過遍遑逾
B950	遁鄒鄗酬酪酩釉鈷鉗鈸鈽鉀鈾鉛鉋鉤
B960	鉑鈴鉉鉍鉅鈹鈿鉚閘隘隔隕雍雋雉雊
B970	雷電雹零靖靴靶預頑頓頊頒頌飼飴
B980	
B990	
B9A0	飽飾馳馱馴髡鳩麂鼎鼓鼠僧僮僥僖
B9B0	僭僚僕像僑僱僎僩兢凳劃劂匱厭嗾嘀
B9C0	嘛嘗嗽嘔嘆嘉嘍嘎嗷嘖嘟嘈嘐嗶團圖
B9D0	塵塾境墓墊塹墅塽壽夥夢夤奪奩嫡嫦
B9E0	嫩嫗嫖嫘嫣孵寞寧寡寥實寨寢寤察對
B9F0	屢嶄嶇幛幣幕幗幔廓廖弊彆彰徹慇

	0123456789ABCDEF
BA40	愿態慷慢慣慟慚慘慵截撇摘摔撤摸摟
BA50	摺摑摧搴摭摻敲斡旗旖暢暨暝榜榨榕
BA60	槁榮槓構榛榷榻榫榴槐槍榭槌榦槃榣
BA70	歉歌氳漳演滾漓滴漩漾漠漬漏漂漢
BA80	
BA90	
BAA0	滿滯漆漱漸漲漣漕漫漯澈漪滬漁滲
BAB0	滌滷熔熙煽熊熄熒爾犒犖獄獐瑤瑣瑪
BAC0	瑰瑭甄疑瘧瘍瘋瘉瘓盡監瞄睽睿睡磁
BAD0	碟碧碳碩碣禎福禍種稱窪窩竭端管箕
BAE0	箋筵算箝箔箏箸箇箄粹粽精綻綰綜綽
BAF0	綾綠緊綴網綱綺綢綿綵綸維緒緇綬

	0123456789ABCDEF
BB40	罰翠翡翟聞聚肇腐膀膏膈膊腿膂臧臺
BB50	與舔舞艋蓉蒿蓆蓄蒙蒞蒲蒜蓋蒸蓀蓓
BB60	蒐蒼蓑蓊蜿蜜蜻蜢蜥蜴蜘蝕蜷蜩裳褂
BB70	裴裹裸製裨褚裯誦誌語誣認誡誓誤
BB80	
BB90	
BBA0	說誥誨誘誑誚誧豪貍貌賓賑賒赫趙
BBB0	趕跼輔輒輕輓辣遠遘遜遣遙遞遢遝遛
BBC0	鄙鄘鄞酵酸酷酴鉸銀銅銘銖鉻銓銜銨
BBD0	鉼銑閡閨閩閣閥閤隙障際雌雒需靼鞅
BBE0	韶頗領颯颱餃餅餌餉駁骯骰髦魁魂鳴
BBF0	鳶鳳麼鼻齊億儀僻僵價儂儈儉儅凜

	0123456789ABCDEF
BC40	劇劈劉劍劊勰厲嘮嘻嘹嘲嘿嘴嘩噓噎
BC50	噗噴嘶嘯嘰墀墟增墳墜墮墩墦奭嬉嫻
BC60	嬋嫵嬌嬈寮寬審寫層履嶝嶔幢幟幡廢
BC70	廚廟廝廣廠彈影德徵慶慧慮慝慕憂
BC80	
BC90	
BCA0	慼慰慫慾憧憐憫憎憬憚憤憔憮戮摩
BCB0	摯摹撞撲撈撐撰撥撓撕撩撒撮播撫撚
BCC0	撬撙撢撳敵敷數暮暫暴暱樣樟槨樁樞
BCD0	標槽模樓樊槳樂樅槭樑歐歎殤毅毆漿
BCE0	潼澄潑潦潔澆潭潛潸潮澎潺潰潤澗潘
BCF0	滕潯潠潟熟熬熱熨牖犛獎獗瑩璋璃

	0123456789ABCDEF
BD40	瑾璀畿瘠瘩瘟瘤瘦瘡瘢皚皺盤瞎瞇瞌
BD50	瞑瞋磋磅確磊碾磕碼磐稿稼穀稽稷稻
BD60	窯窮箭箱範箴篆篇篁箠篌糊締練緯緻
BD70	緘緬緝編緣線緞緩綞緙緲緹罵罷羯
BD80	
BD90	
BDA0	翩耦膛膜膝膠膚膘蔗蔽蔚蓮蔬蔭蔓
BDB0	蔑蔣蔡蔔蓬蔥蓿蔆螂蝴蝶蝠蝦蝸蝨蝙
BDC0	蝗蝌蝓衛衝褐複褒褓褕褊誼諒談諄誕
BDD0	請諸課諉諂調誰論諍誶誹諛豌豎豬賠
BDE0	賞賦賤賬賭賢賣賜質賡赭趟趣踫踐踝
BDF0	踢踏踩踟踡踞躺輝輛輟輩輦輪輜輞



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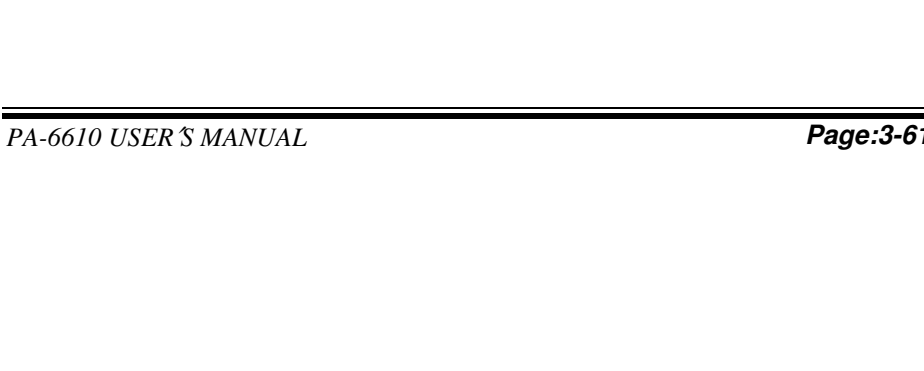
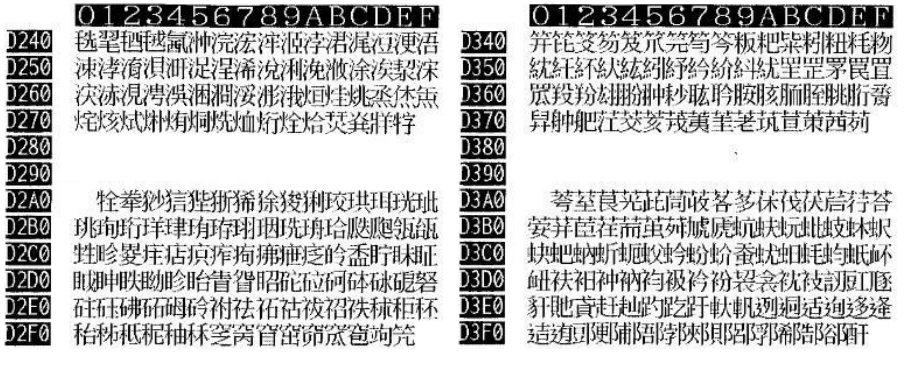
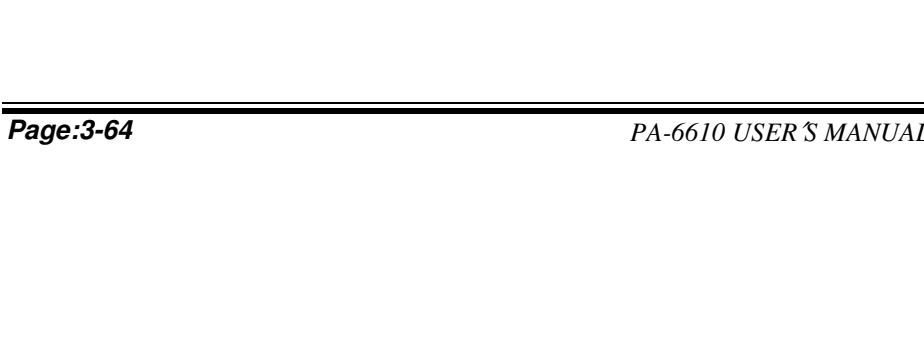
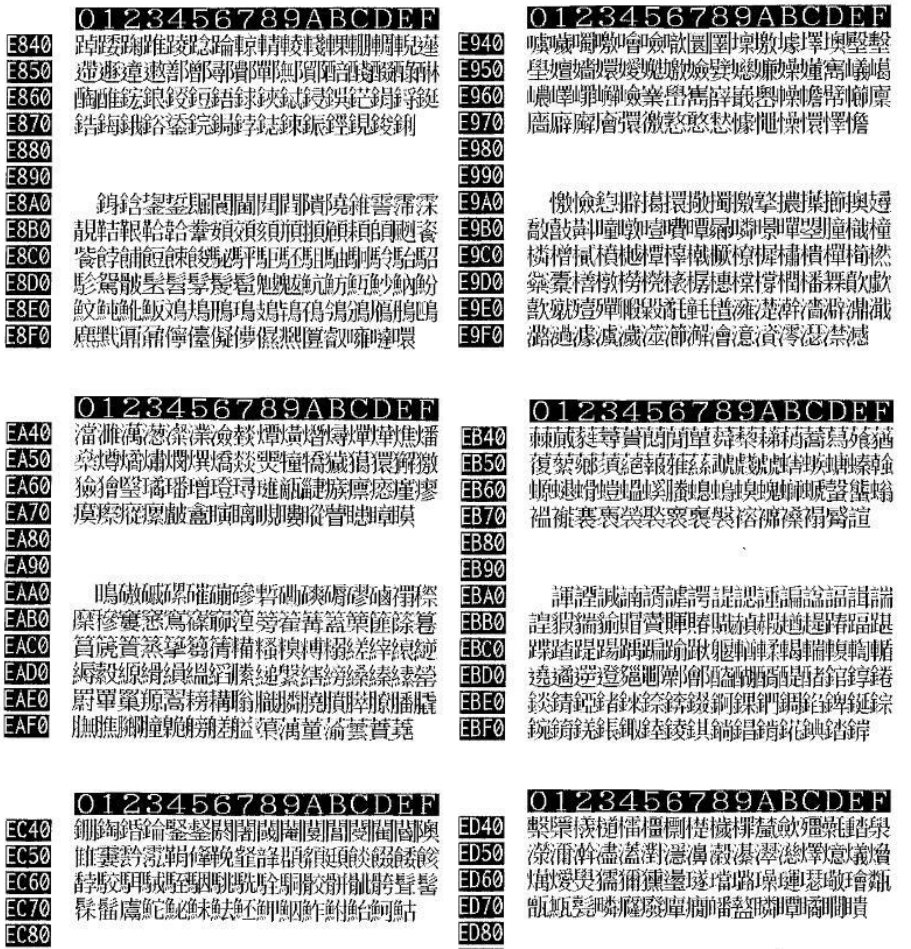
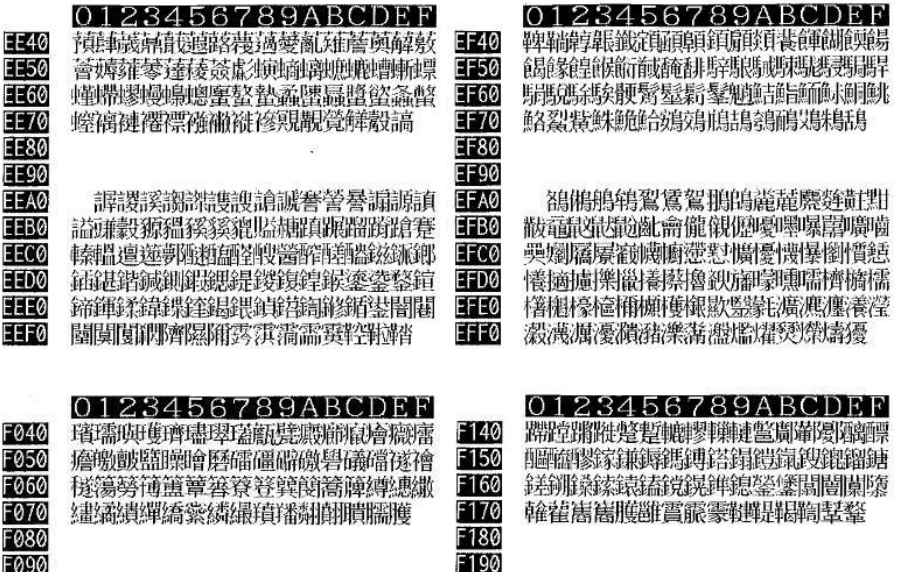








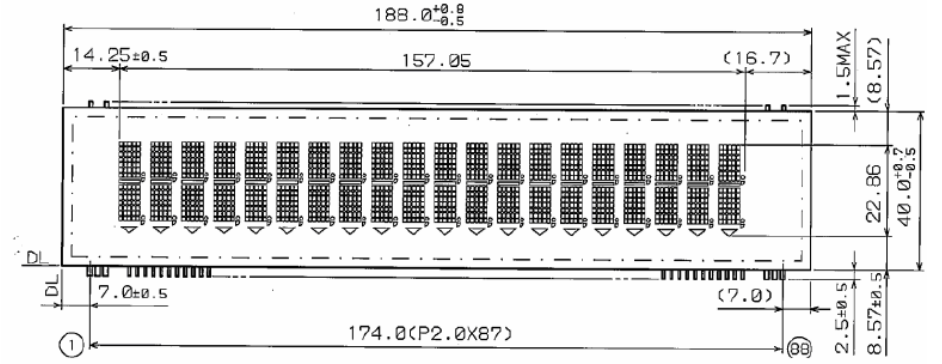


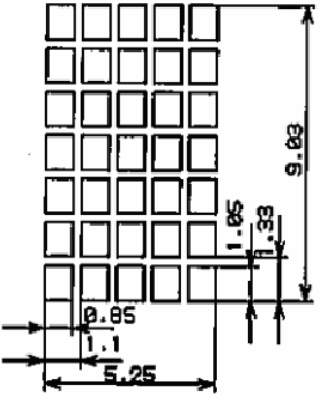
3-3-2. VFD Board

3-3-2-1. Customer Display Specification

1. Panel Specification

Item	Spec criteria Description
Display Method	Vacuum Fluorescent Display
Display Pattern	5x7 Dot Matrix
Character Size	5.25 mm(W) x 9.03 mm(H)
Dot Size (X*Y)	0.85 mm(X) x 1.05 mm(Y)
Character Number	40 (20 columns x 2 lines)





3-3-2-2. Commands

1. LD220 / P4000

Command	Sub-Item (Hex)	Description
HT	09	Move cursor right (Only valid in overwrite mode)
BS	08	Move cursor left (Only valid in overwrite mode)
CR	0D	Move cursor to left-most position (Only valid in overwrite mode)
ESC @	1B 40	Initialize customer display to initial state, clears display buffer, set display mode to shift and sets current display row to upper row
ESC U	1B 55	Select upper row as current row (Initial default)
ESC D	1B 44	Select lower row as current row
ESC A n	1B 41 n	Sets customer display disable or enable n=D, Disable ; n=E, Enable
ESC C r c	1B 43 r c	Move cursor to specified position (Only valid in overwrite mode) r = U, upper row ; r = D, lower row 1 c 20 (column number)
ESC R n	1B 52 n	Set international font sets (Please refer International Font Set Table)
ESC % n	1B 25 n	Set font pattern N=0, selected; n=1, canceled
ESC & n s [p]	1B 26 n s data	Define user font pattern N=code for first character S=code for last character Data= 5 bytes required for each character

ıternational Font Set Table

n(Hex)	Font Set
30h	U.S.A.
31h	GERMANY
32h	FRANCE
33h	JAPAN

2. EPSON POS D101 (Default)

Command	Sub-Item (Hex)	Description
HT	09	Move cursor right
BS	08	Move cursor left
US LF	1F 0A	Move cursor up
LF	0A	Move cursor down
US CR	1F 0D	Move cursor to right-most position
CR	0D	Move cursor to left-most position
HOM	0B	Move cursor to home position
US B	1F 42	Move cursor to bottom position
US $ x y	1F 24 x y	Move cursor to specified position 1 x(column) 20 ; 1 y(row) 2
US C n	1F 43 n	Select/cancel cursor display n=0, canceled ; n=1, selected
CLR	0C	Clear display screen
CAN	18	Clear cursor line
US X n	1F 58 n	Brightness adjustment, 1 n 4
US E n	1F 45 n	Blink display screen 0 n 255 (n*50msec) ON / (n*50msec) OFF n=0, blinking is canceled n=255, display is turned off
ESC @	1B 40	Initialize display
ESC t n	1B 74 n	Select character code table 0 n 5 (Please refer Chapter 5)
ESC R n	1B 52 n	Select international character set (Please refer International Font Set Table)
US r n	1F 72 n	Select/cancel reverse character n=0, canceled ; n=1, selected
US MD1	1F 01	Specify overwrite mode
US MD2	1F 02	Specify vertical scroll mode
US MD3	1F 03	Specify horizontal scroll mode
US . n	1F 2E n	Specify period display n=display character code
US , n	1F 2C n	Specify comma display n= display character code
US ; n	1F 3B n	Specify semicolon (period+comma) display n= display character code
US # n m	1F 23 n m	Specify display annunciator, turn the annunciator at “m” column on or off n=0,1 (Off, On) ; 0 m 20
ESC & s n m [a(pl..p7) (m-n+1)	1B 26 s n m[a(p1..p5)](m-n+1)	Define download characters, S=1; 32 n m 126 ; a=5 (p1..p5 = pattern1..pattern5)
ESC ? n	1B 3F n	Cancel user-defined characters, 32 n 126 (n=character code)
ESC % n	1B 25 n	Select/cancel download character set n=0, canceled ; n=1, selected
ESC W n s (x1 y1 x2 y2)	1B 57 n s (x1 y1 x2 y2)	Specify/cancel the window range n=1,2,3,4 (four windows) ; s=0,1 (disable, enable) 1 x1 x2 20 (column) ; 1 y1 y2 2 (row)
US @	1F 40	Execute self-test
US T h m	1F 54 h m	Display time : 0 h 23; 0 m 59
US U	1F 55	Display of time counter

***International Font Set Table**

n(Hex)	Font Set
00h	U.S.A.
01h	FRANCE
02h	GERMANY
03h	U.K.
04h	DENMARK I
05h	SWEDEN
06h	ITALY
07h	SPAIN
08h	JAPAN
09h	NORWAY
0Ah	DENMARK II
	SLAVONIC/RUSSIA

3. AEDEX

Command	Sub-Item (Hex)	Description
! # 1..CR	21 23 31 [data x 20] 0D	Upper line display
! # 2..CR	21 23 32 [data x 20] 0D	Bottom line display
! # 4..CR	21 23 34 [data x 45] 0D	Upper line message scroll continuously
! # 5..CR	21 23 35 hh ':' mm 0D	Set and display 24 hour time 0 h, m 9
! # 5 CR	21 23 35 0D	Display 24 hour time
! # 6..CR	21 23 36 [data x 45] 0D	Upper line message scroll once pass
! # 9..CR	21 23 39 [data x 40] 0D	Two line display

4. UTC/S

Command	Sub-Item (Hex)	Description
BS	08	Back space
HT	09	Horizontal tab
LF	0A	Line feed
CR	0D	Carriage return
DC0 p	10 p	Move curson to specified position, 0 p 39 (Please refer Row Character Position Chart)
DC1	11	Over write display mode
DC2	12	Vertical scroll mode
DC3	13	Cursor on
DC4	14	Cursor off
ESC d	1B 64	Change to UTC enhanced mode
US	1F	Clear display

Row Character Position Chart (Decimal)

Row1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Row2	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39

Row Character Position Chart (Hex)

Row1	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	10	11	12	13
Row2	14	15	16	17	18	19	1A	1B	1C	1D	1E	1F	20	21	22	23	24	25	26	27

5. UTC/E

Command	Sub-Item (Hex)	Description
ESC u A..CR	1B 75 41 [data x 20] 0D	Upper line display
ESC u B..CR	1B 75 42 [data x 20] 0D	Bottom line display
ESC u D..CR	1B 75 44 [data x 20] 0D	Upper line message scroll continuously
ESC u E..CR	1B 75 45 hh mm 0D	Set and display 24 hour time 0 h ,m 9
ESC u F..CR	1B 75 46 [data x 20] 0D	Upper line message scroll once pass
ESC u 1..CR	1B 75 49 [data x 40] 0D	Two line display
ESC RS..CR	1B 0F 0D	Change to UTC standard mode

6. ADM788

Command	Sub-Item (Hex)	Description
CLR	0C	Clear display
CR	0D	Carriage return
SLE1	0E	Clear up line and move cursor to upper line left most end
SLE2	0F	Clear low line and move cursor to lower line left most end

7. DSP800

Command	Sub-Item (Hex)	Description
EOT SOH I n ETB	04 01 49 n 17	Select international character set (Please refer International Font Set Table)
EOT SOH P n ETB	04 01 50 n 17	Move cursor to specified position 49 n 48
EOT SOH C n m ETB	04 01 43 n m 17	Clear display range from n position to m position and move cursor to n position 49 n m 88
EOT SOH S n ETB	04 01 53 n 17	Save the current displaying data (40 characters) to n'th layer for demo display 1 n 3(n specify the layer 1, 2, or 3)
EOT SOH D n m ETB	04 01 44 n m 17	Display the saved data 1 n 3 (n specify the layer 1, 2, or 3) "m" can be ignored
EOT SOH A n ETB	04 01 41 n 17	Brightness adjustment 1 n 4
EOT SOH % ETB	04 01 25 17	Initialize display

***International Font Set Table**

n(Hex)	Font Set
30h	U.S.A.
31h	FRANCE
32h	GERMANY
33h	U.K.
34h	DENMARK I
35h	SWEDEN
36h	ITALY
37h	SPAIN
38h	JAPAN
39h	NORWAY
3Ah	DENMARK II

8. CD5220

Command	Sub-Item (Hex)	Description
ESC DC1	1B 11	Overwrite mode
ESC DC2	1B 12	Vertical scroll mode
ESC DC3	1B 13	Horizontal scroll mode
ESC Q A CR	1B 51 41 [N]20 0D	Set string display mode, write string to upper line
ESC Q B CR	1B 51 42 [N]20 0D	Set string display mode, write string to lower line
ESC Q D CR	1B 51 44 [N]m20 0D	Upper line message scroll continuously m<40
ESC [D	1B 5B 44	Move cursor left
BS	08	Move cursor left
ESC [C	1B 5B 43	Move cursor right
HT	09	Move cursor right
ESC [A	1B 5B 41	Move cursor up
ESC [B	1B 5B 42	Move cursor down
LF	0A	Move cursor down
ESD [H	1B 5B 48	Move cursor to home position
HOM	0B	Move cursor to home position
ESC [L	1B 5B 4C	Move cursor to left-most position
CR	0D	Move cursor to left-most position
ESC [R	1B 5B 52	Move cursor to right-most position
ESC [K	1B 5B 4B	Move cursor to bottom position
ESC l x y	1B 6C x y	Move cursor to specified position 1 x 20(column); y=1,2(row)
ESC @	1B 40	Initialize display
ESC W s x1 x2 y	1B 57 s x1 x2 y	Enable or disable the window range at horizontal scroll mode s=0,1 (disable, enable) 1 x1 x2 20(column);y=1,2(row)
CLR	0C	Clear display screen, and clear string mode
CAN	18	Clear cursor line, and clear string mode
ESC * n	1B 2A n	Brightness adjustment 1 n 4
ESC & s n m [a(pl..p5)] (m-n+1)	1B 26 s n m [a(pl..p5)] (m-n+1)	Define download characters S=1; 32 n m 126; a=5 (p1..p5=pattern 1 .. pattern 5)
ESC ? n	1B 3F n	Delete download characters 32 n 126(n=chatacter code)
ESC % n	1B 25 n	Select / cancel download character set. n=0, canceled ; n=1, selected
ESC _ n	1B 5F n	Set cursor ON/OFF n=0,1 (Off,On)
ESC f n	1B 66 n	Select international fonts set
ESC c n	1B 63 n	Select fonts, ASCII code or JIS code

9. EMAX

Command	Sub-Item (Hex)	Description
ESC DC1	B 11	Overwrite mode
ESC DC2	1B 12	Vertical mode
ESC DC3	1B 13	Horizontal scroll mode
ESC [D	1B 5B 44	Move cursor left
BS	08	Move cursor left
ESC [C	1B 5B 43	Move cursor right
HT	09	Move cursor right
ESC [A	1B 5B 41	Move cursor up
ESC [B	1B 5B 42	Move cursor down
ESC [H	1B 5B 48	Move cursor to home position
HOM	0B	Move cursor to home position
ESC [L	1B 5B 4C	Move cursor to left-most position
CR	0D	Move cursor to left-most position
ESC [R	1B 5B 52	Move cursor to right-most position
ESC [K	1B 5B 4B	Move cursor to bottom position
ESC l x y	1B 6C x y 1 x 20, y =1,2	Move cursor to specified position
ESC @	1B 40	Initialize display
CLR	0C	Clear display screen, and clear string mode
CAN	18	Clear cursor line, and clear string mode
ESC * n	1B 2A n 1 n 4	Brightness mode
ESC _ n	1B 5F n n = 0,1	Set cursor ON/OFF
ESC f n	1B 66 n	Select international fonts
ESC c n	1B 63 n	Select fonts, ASCII code or JIS code
ESC = n	1B 3D	Select peripheral device, display or printer n = 1; enable printer, disable display n = 2; disable printer, enable display n = 3; enable printer, enable display

***International Font Set Table**

n(Hex)	Font Set
41h	U.S.A.
47h	GERMANY
49h	ITALY
4Ah	JAPAN
55h	U.K.
46h	FRANCE
53h	SPAIN
4Eh	NORWAY
57h	SWEDEN
44h	DENMARK I
45h	DENMARK II
4Ch	SLAVONIC
52h	RUSSIA Reserved

***Select Code Table**

n(Decimal)	International Code
41h	Compliance with ASCII code
4Ah	Compliance with JIS code

10. LOGIC CONTROL

Command	Sub-Item (Hex)	Description
^Q	11	Overwrite mode
^R	12	Vertical mode
^I	09	Horizontal tab
^H	08	Back space
^J	0A	Line feed
^M	0D	Carriage return
^S	13	Cursor on
^T	14	Cursor off
^P	10	Digital select e.g.10 00 MSD of top row 10 13 LSD of top row 10 14 MSD of bottom row 10 27 LSD of bottom row
^_	1F	Reset
^D n	04 n	Brightness mode 04 FF – 100% Brightness mode 04 60 – 60% Brightness mode 04 40 – 40% Brightness mode 04 20 – 20% Brightness mode

Software Utility Specification (Protech's in-house utility)

Item Sub-Item
Baud Rate Setting
Command Type Setting
Internation Character Set
Code Page update Utility
Firmware update Utility
MP Testing Utility

1.Baud Rate Setting

Item Sub-Item	Sub-Item	Description
Baud Rate	-	9600/19200

2.Command Type Setting

Hex Code	Command Type
00h	EPSON POS D101
01h	LD220(P4000)
02h	ADM788
03h	LOGIC CONTROL
04h	UTC/S
05h	UTC/E
06h	DSP800
07h	CD5220
08h	EMAX
09h	AEDEX

3.Language Support & International Character Set

International Character Set (Code 20H~7FH)	Code Table (Code 80H~FFH)
U.S.A.	PC-437
FRANCE	PC-850
GERMANY	PC-850
U.K.	PC-850
DENMARK I	PC-850
SWEDEN	PC-850
ITALY	PC-850
SPAIN	PC-850
JAPAN	Katakana
NORWAY	PC-865
DENMARK II	PC-850
SLAVONIC/RUSSIAN	PC-437
TURKISH	PC-857

3-3-2-3. Character Set

1. U.S.A (Standard Character Set) (20h~7Eh)

	_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	{	|	}	~	

2. International Character Selection

No.	International	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
0	U.S.A.	#	$	@	[	\	]	^	`	{	|	}	~
1	FRANCE	#	$	à	°	Ç	§	^	`	é	ù	è	¨
2	GERMANY	#	$	§	Ä	Ö	Ü	^	`	ä	ö	è	β
3	U.K.	£	$	@	[	\	]	^	`	{	|	}	~
4	DENMARK I	#	$	@	Æ	Φ	Â	^	`	æ	ø	â	~
5	SWEDEN	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
6	ITALY	#	$	@	°	\	é	^	ù	à	ò	è	ì
7	SPAIN	₧	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
8	JAPAN	#	$	@	[	¥	]	^	`	{	|	}	~
9	NORWAY	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
10	DENMARK II	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
11	SLAVONIC	#	$	@	[	\	]	^	`	{	|	}	~
12	RUSSIA	#	$	@	[	\	]	^	`	{	|	}	~

3. Code Page

CP-437

	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
0_																
1_																
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_	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
9_	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	¢	£	¥	₱	ƒ
A_	á	í	ó	ú	ñ	Ñ	ª	º	¿	⌐	¬	½	¼	¡	«	»
B_	▒	▒	▒	┤	╡	╢	╖	╕	╣	╗	╝	╜	╛	┐		
C_	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D_	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	▒	▒	▒	▒	▒
E_	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
F_	≡	±	≥	≤	⌠	⌡	÷	≈	°	∙	·	√	n	2	▒	

Japanese Katakana

	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	▄	▄	▄	▄	▄	▄	▄	▄	▄	▄	▄	▄	▌	▄	▄	▄
9_	▌	▌	▌	▌	▌	▒	▒	→	←	↑	↓	×	÷	±	≤	≥
A_		･	「	」	、	・	ヲ	フ	ィ	ゥ	ェ	ォ	ャ	ュ	ョ	ッ
B_	▬	ア	イ	ウ	エ	オ	カ	キ	ク	ケ	コ	サ	ッ	ス	セ	ソ
C_	タ	チ	ツ	テ	ト	ナ	ニ	ヌ	ネ	ノ	ハ	ヒ	フ	ヘ	ホ	マ
D_	ミ	ム	メ	モ	ヤ	ユ	ヨ	ラ	リ	ル	レ	ロ	ワ	ン	❝	°
E_	□	■	■	○	●	◇	◆	◆	▶	◀	▲	▼	《	》	½	¼
F_	℃	〒	小	中	大	人	分	円	年	土	金	木	水	火	月	日

CP-850

	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
9_	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	×	ƒ
A_	á	í	ó	ú	ñ	Ñ	ª	º	¿	®	¬	½	¼	¡	«	»
B_	▒	▒	■	│	┤	Á	Â	À	©	╣	║	╗	╝	¢	¥	┐
C_	└	┴	┬	├	─	┼	ã	Ã	╚	╔	╩	╦	╠	═	╬	¤
D_	ð	Ð	Ê	Ë	È	ı	Í	Î	Ï	┘	┌	▉	▄	¦	Ì	▀
E_	Ó	ß	Ô	Ò	õ	Õ	µ	þ	Þ	Ú	Û	Ù	ý	Ý	¯	´
F_		±	‗	¾	¶	§	÷	¸	°	¨	·	¹	³	²	▉	

CP-865

	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
9_	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	₱	ƒ
A_	á	í	ó	ú	ñ	Ñ	ª	º	¿	⌐	¬	½	¼	¡	«	¤
B_	▒	▒	■	│	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
C_	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D_	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	■	▬	▮	▌	▀
E_	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
F_	≡	±	≥	≤	⌠	⌡	÷	≈	°	∙	·	√	n	2	■	

3-3-3. MSR Board

ISO Format:

Track 1 (IATA)

%	210bpi, 79 ALPHA, 7-bits/characters	?

Track 2 (ABA)

;	75bpi, 40 ALPHA, 5-bits/characters	?

Track 3 (THRIFT-TTS)

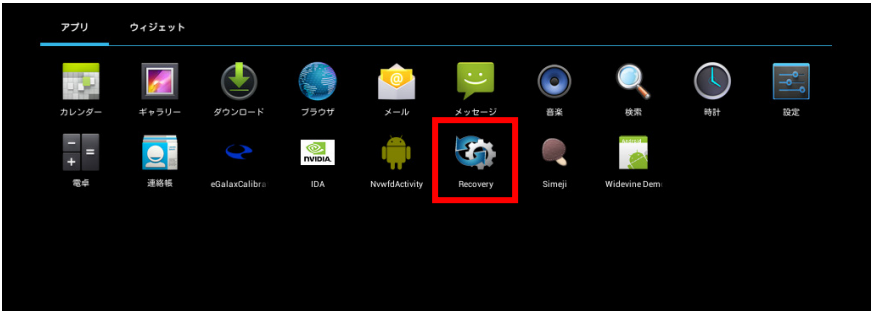
;	210bpi, 107 ALPHA, 5-bits/characters	?

3-4. UTILITY UPDATE

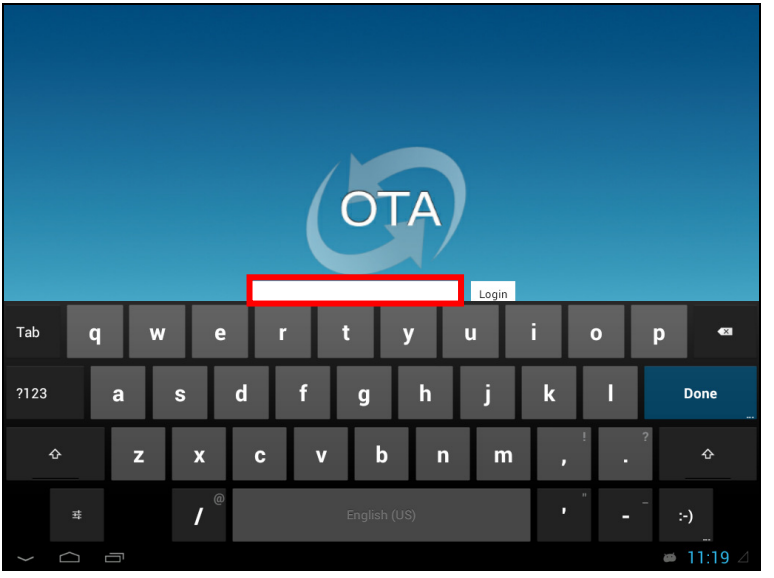
3-4-1. OS

3-4-1-1. Update Android via OTA

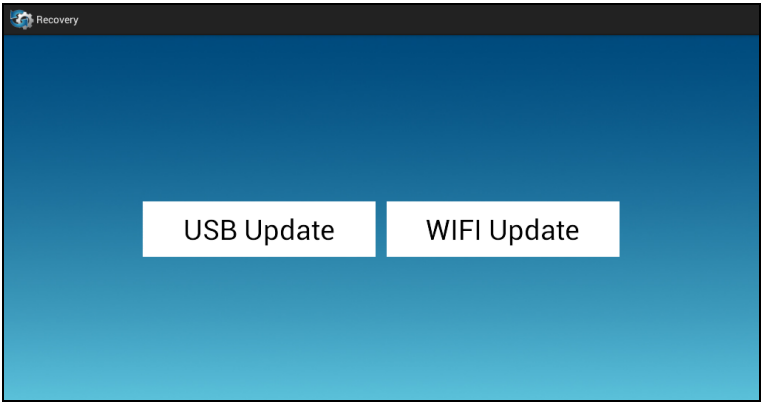
1. Select **Recovery** icon.



2. Type the password “prox” to login.

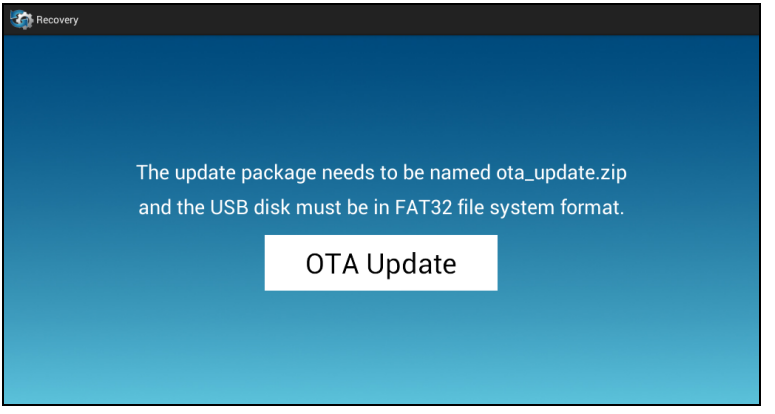


3. There are two ways available for OTA update.



I. With USB

1. Confirm two things in your USB disk. The update package needs to be named *ota_update.zip* and USB disk must be in FAT32 file system format.

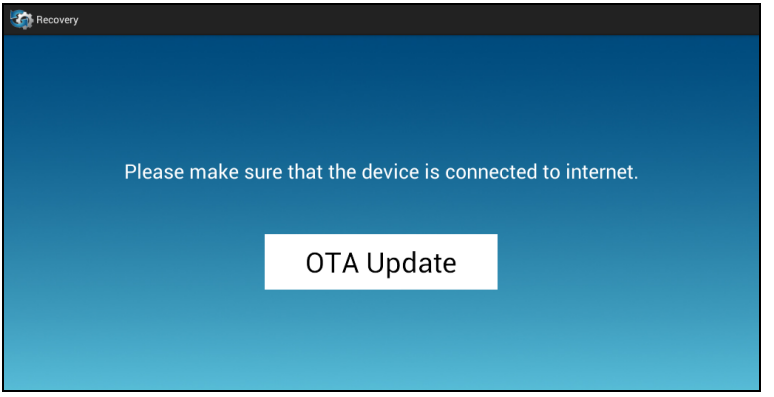


2. Put *ota_update.zip* in USB disk and plug into device.

3. Click OTA Update button.

II. With WiFi

1. Firstly make sure the device is connected to Internet.



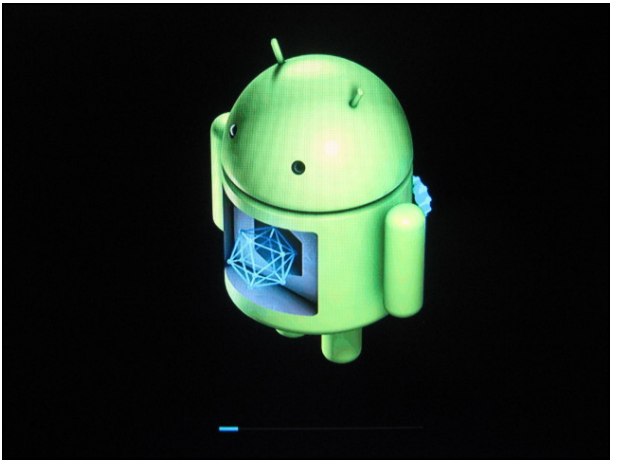
2. Click OTA update button.

3. Wait for a few minutes and the system will download the update package.

III. Update Progress

1. When the *ota_package.zip* is ready, system will re-boot in recovery mode and update package.

2. Below picture would show up during the update progress.



3. When it finishes, the system will re-boot again to Android.

4. Finished.

3-4-1-2. Update Android Image by Linux PC

Follow below process **carefully**. Before updating starts, make sure you have the same hardware and software environment as follows:

Hardware environment:

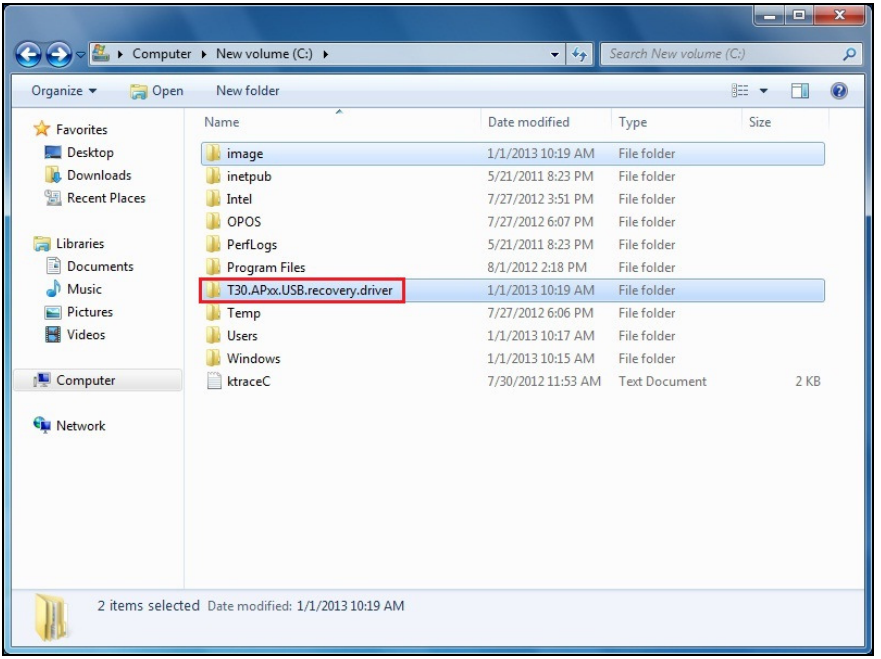
- Micro USB to USB:

Software environment:

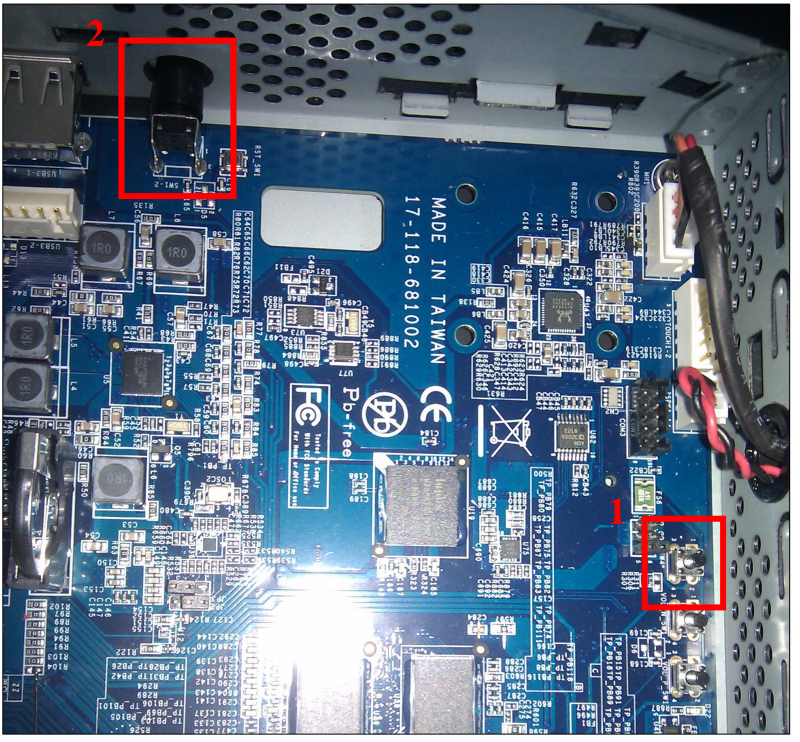
- Operating System: Windows 7
- USB Recovery Driver (Protech will provide)

I. Install USB Recovery Driver

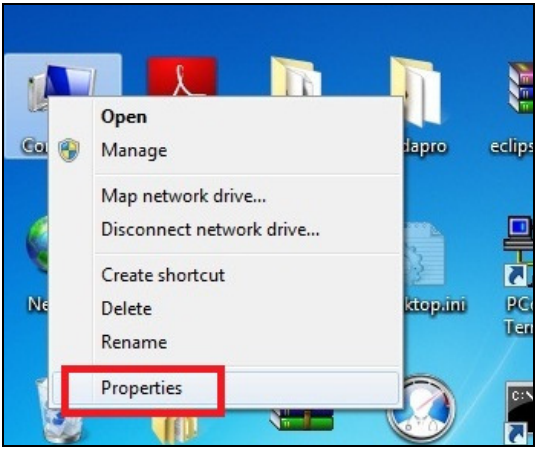
1. Copy the *T30.APxx.USB.recovery.driver* folder to C:\



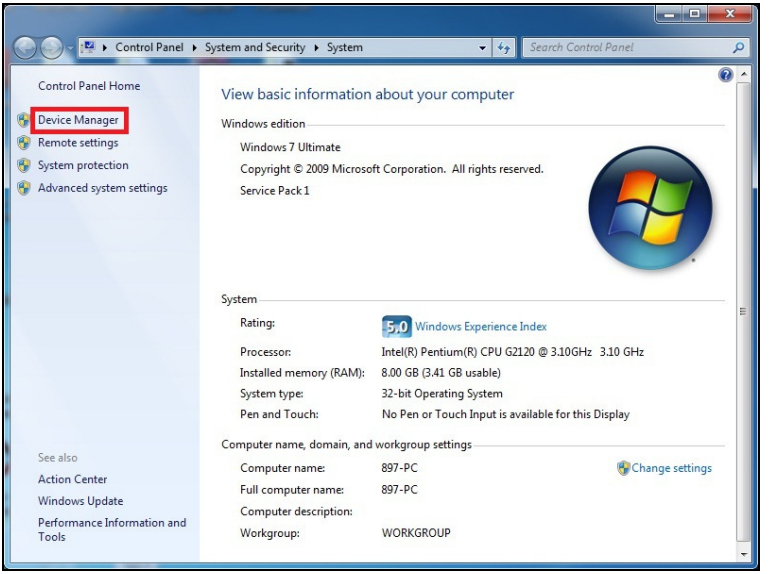
2. Connect power to the board PA-6810. Use micro-USB to connect PA-6810 and computer. Then press **botton 2** for 20 seconds.
   Then press **botton 1** and hold it. (Do not release your finger from **botton 1**)
   Then press **botton 2**.
   Then release your finger from **botton 1**.



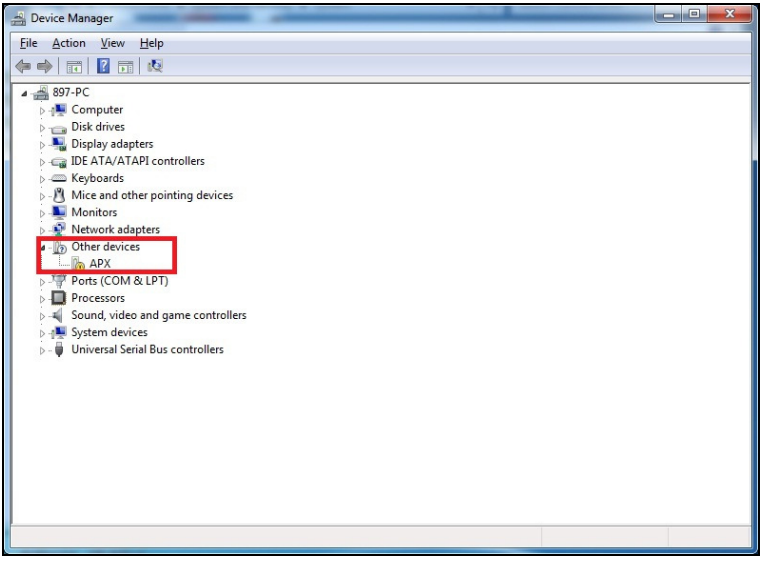
3. Right click on **Computer** icon. Then click **Properies**.



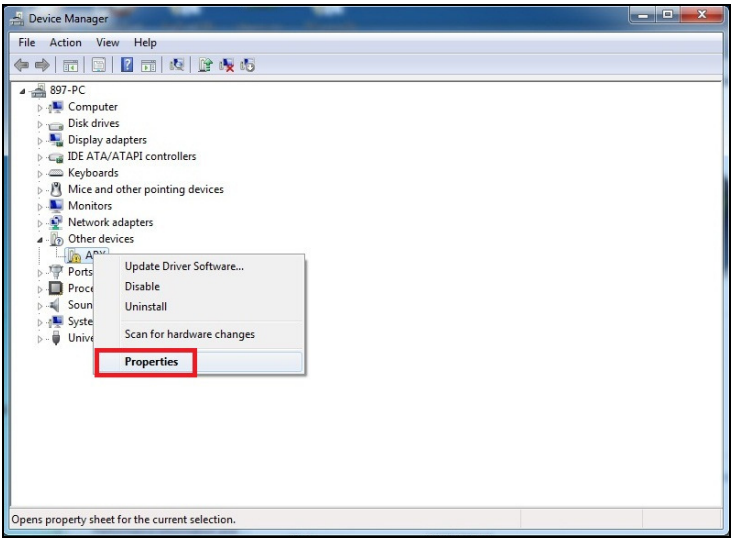
4. Click **Device Manager**.



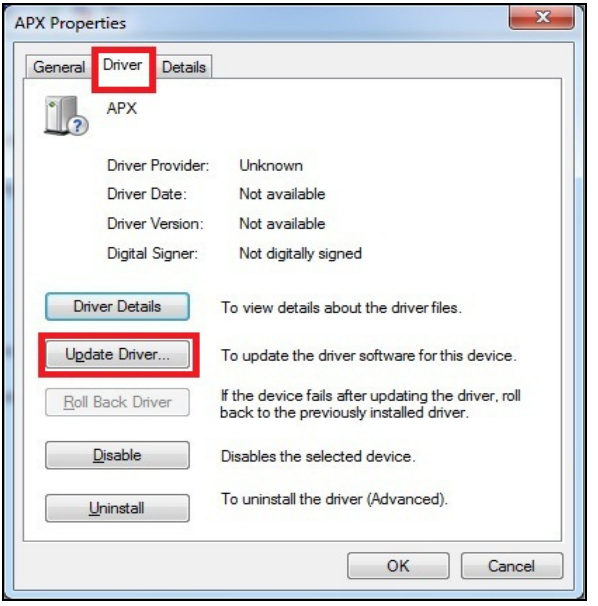
5. You will see the following picture.



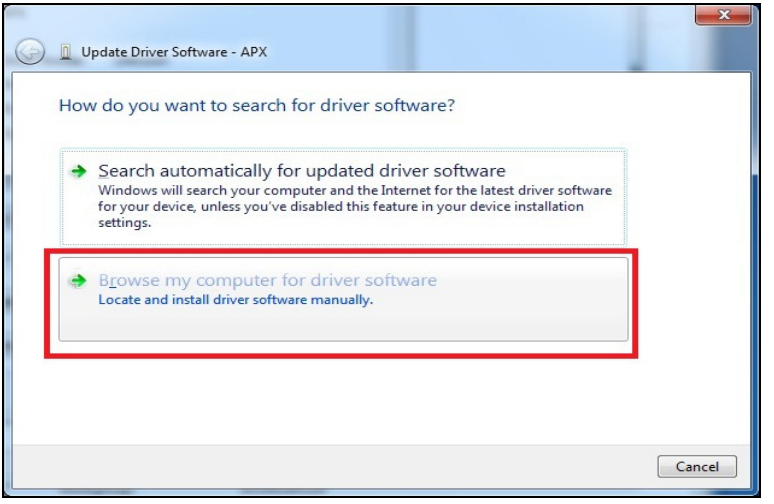
6. Right click **APX**. Then click **Properies**.



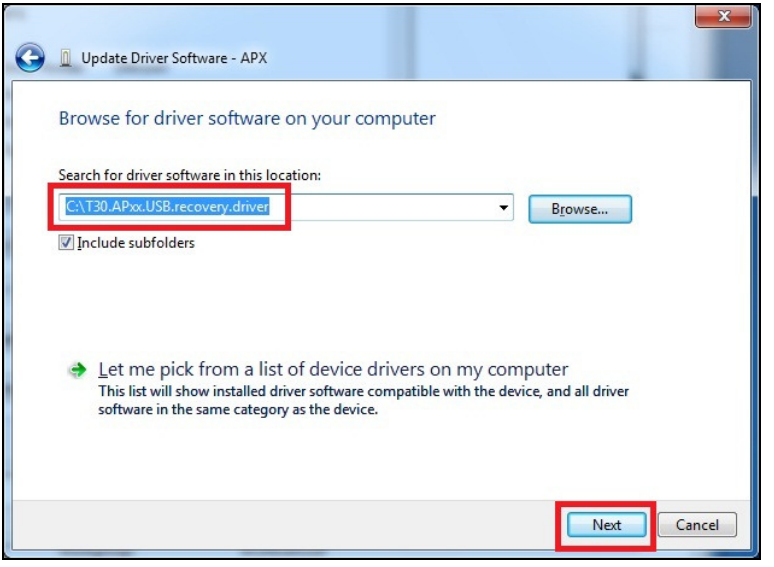
7. Click **Driver** then **Update Driver**.



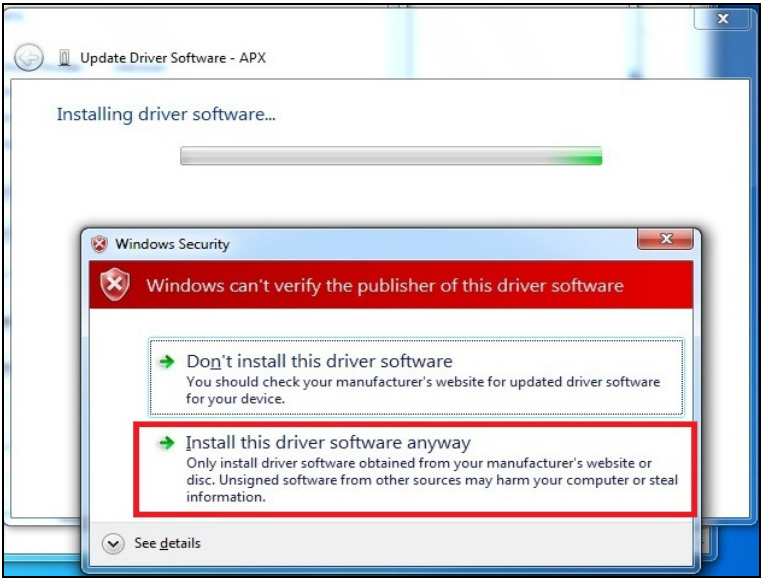
8. Click “Browse my computer for driver software”



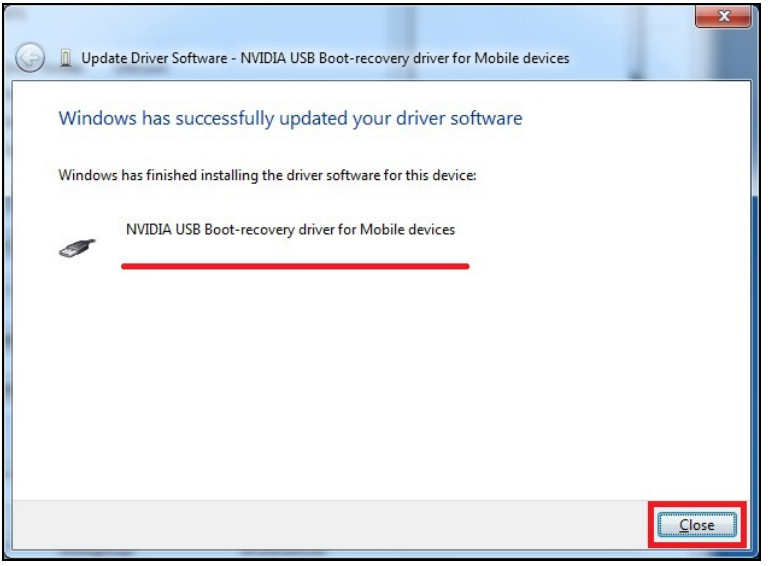
9. Enter “**C:\T30.APxx.USB.recovery.driver**” and click “**Next**”



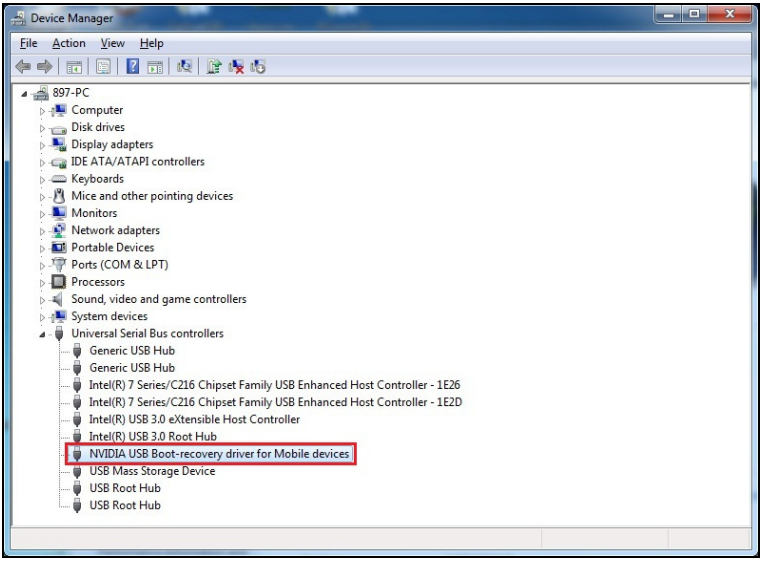
10. If you see the picture below, click **Install this driver software anyway.**



11. After a while, you will see the screen below.

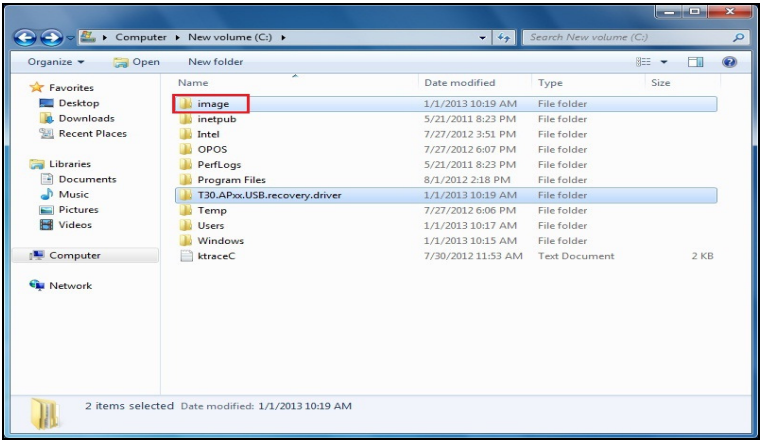


12. You can double check if your driver is successfully installed in **Device Manager.**

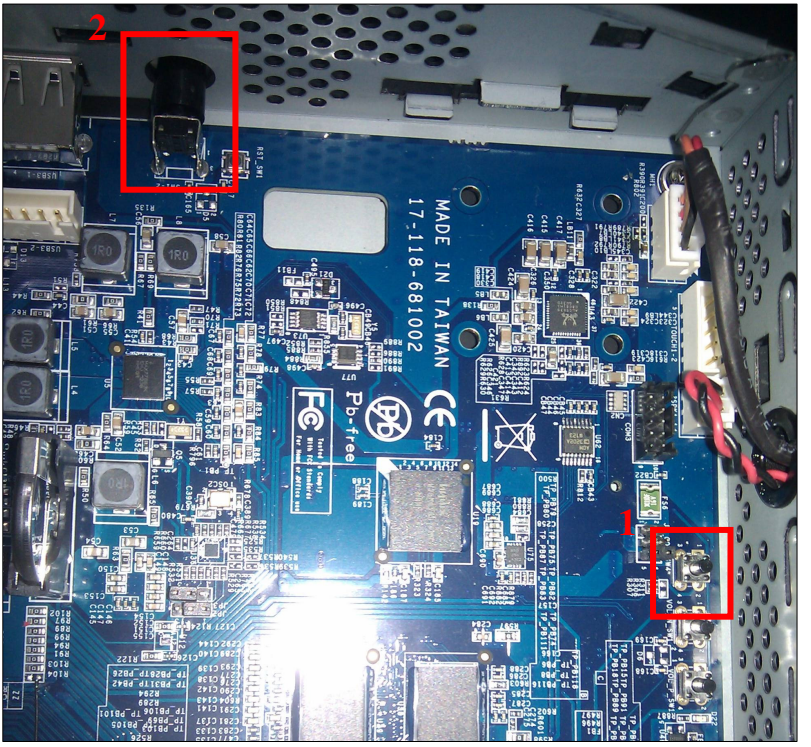


II. Update Android image

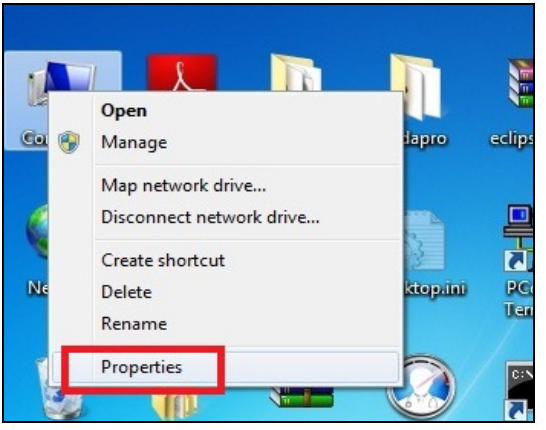
1. Copy “image” folder to “C:\”.



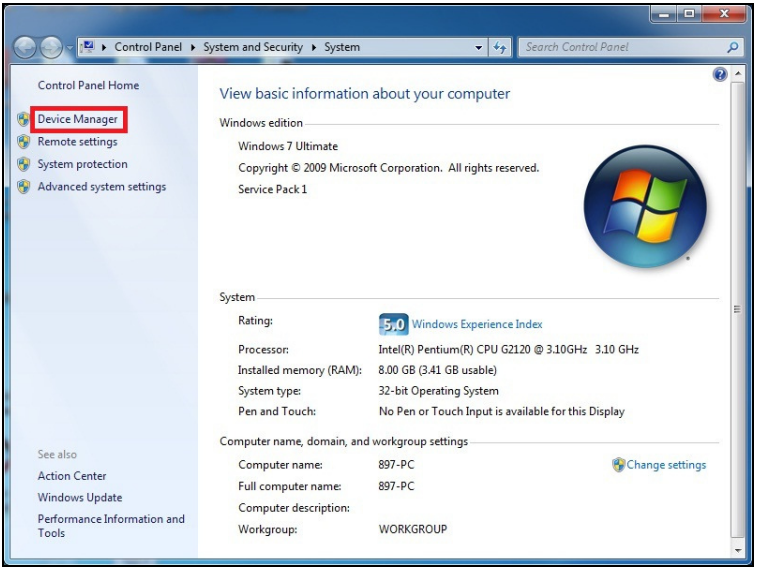
2. Connect power to PA-6810. Use micro-USB to connect PA-6810 and computer.
   Then press **botton 2** for 20 seconds.
   Then press **botton 1** and hold it. (Do not release your finger from **botton 1**)
   Then press **botton 2**.
   Then release your finger from **botton 1**.



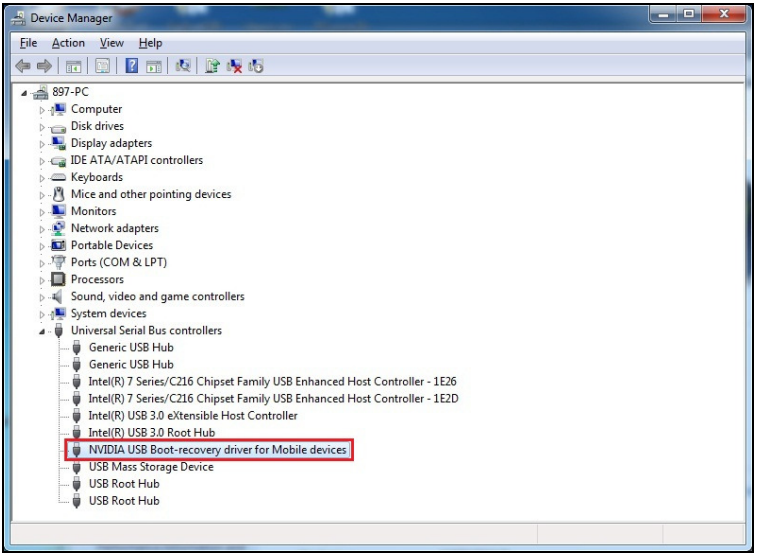
3. Right click on Computer. Then click **Properies**.



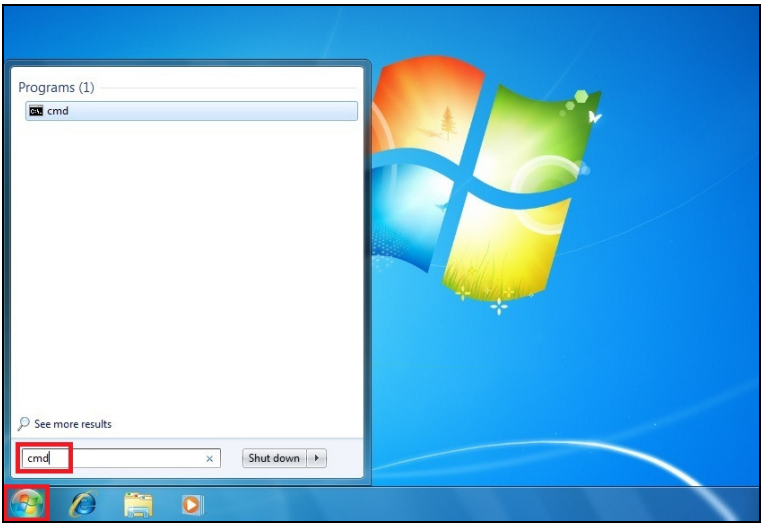
4. Click **Device Manager**.



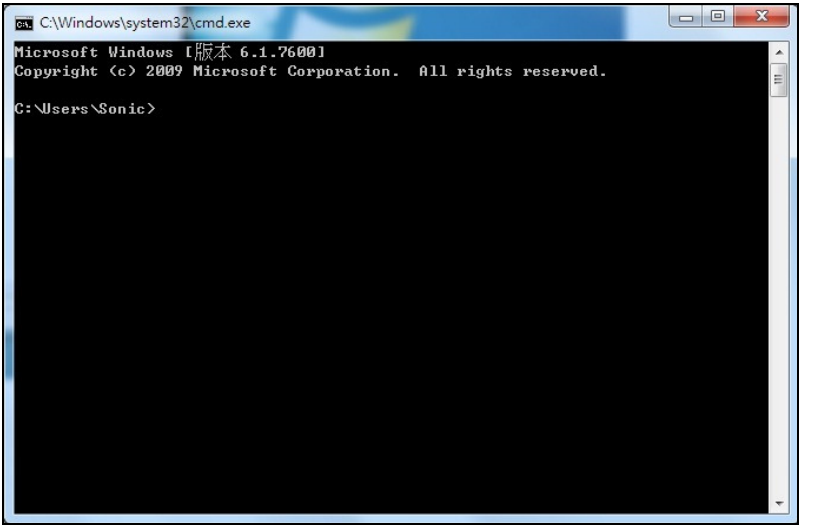
5. Check device status in **Device Manager**. If you don't see NVIDIA USB Boot-recovery driver for Mobile devices here, repeat step 2 to 4.



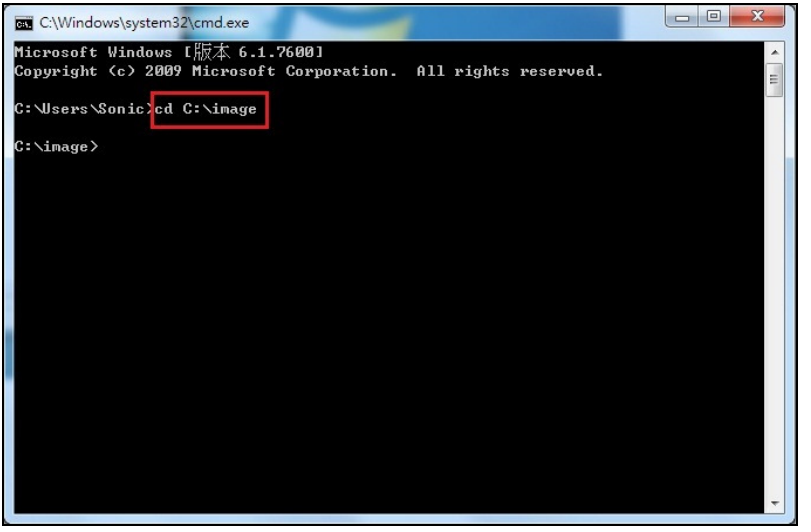
6. Click **Start** in Windows. Then type “cmd” as the picture shows below. Then press Enter.



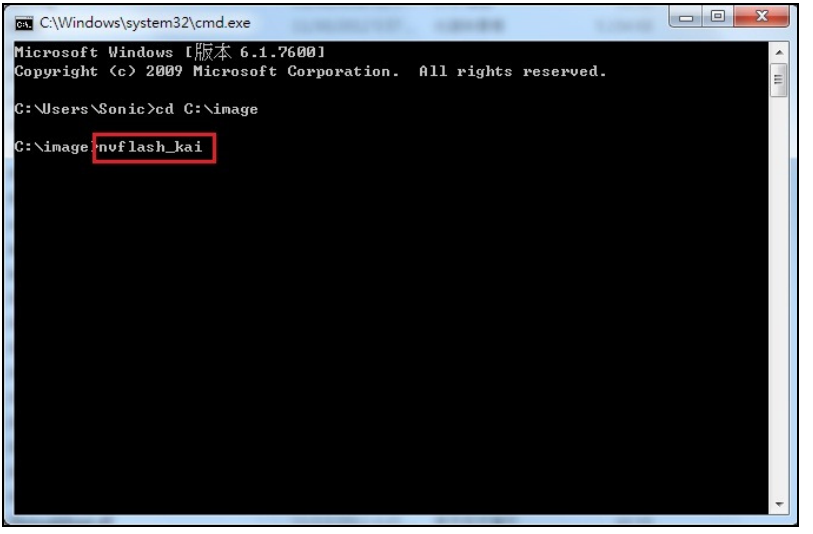
7. The window below will appear.



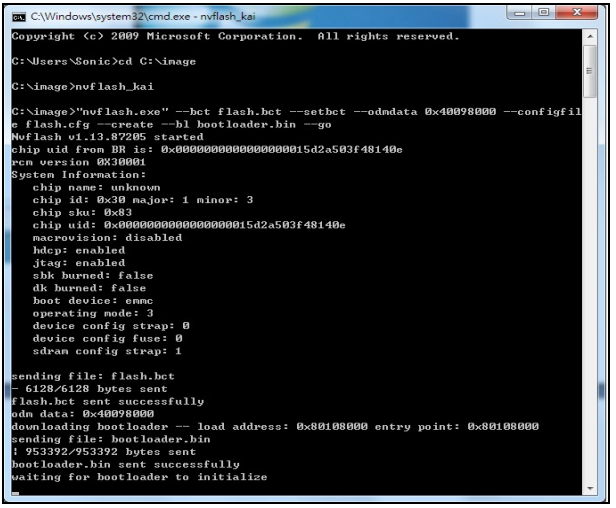
8. Type "**cd C:\image**", then press Enter.



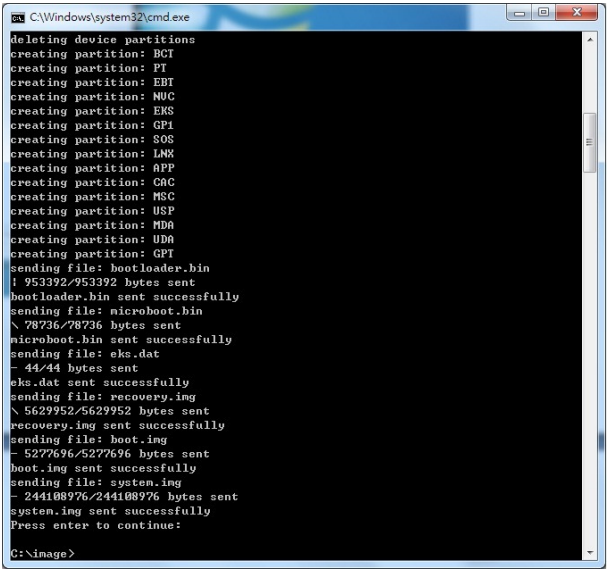
9. Type "**nvflash_kai**", then press Enter.



10. Updating.



11. When you see **Press enter to continue:**, press Enter.

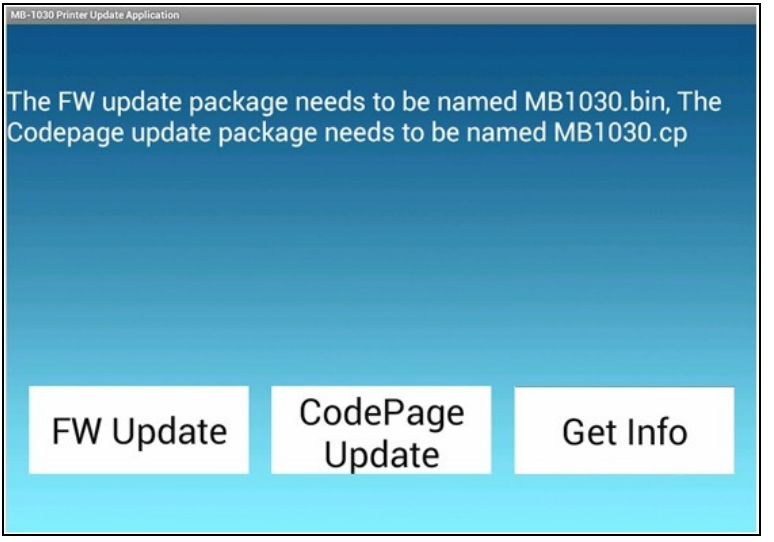


12. Then PA-6810 Android image has been updated completely.

3-4-2. Printer Board

1. Prepare Files:
   Rename F00-1030-000-01-xxxxxx.bin as “MB1030.bin”.
   Copy MB1030.bin to USB storage. Then insert this device into the USB socket.

2. Click **FW Update** button.



3-4-2-1. Update CGROM CodePage Font

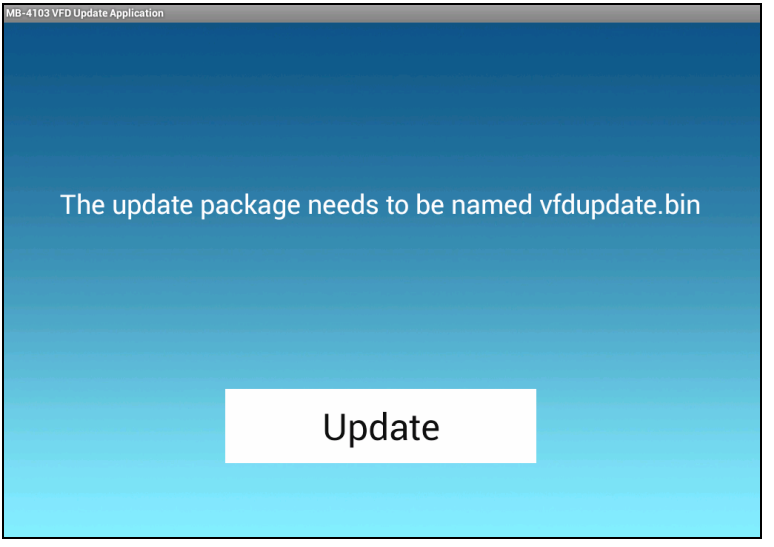
1. Prepare Files:
   Rename JPsjis-1030-001-03-xxxxxx.cp as “MB1030.cp”.
   Copy MB1030.cp to USB storage. Then insert this device into the USB socket.

2. Click **CodePage Update** button on the same screen as above.

3-4-3. VFD Board

1. Prepare Files:
   Rename F00-4103-000-01-xxxxxx.bin to “vfdupdate.bin”.
   Copy vfdupdate.bin to USB storage. Then insert this device into the USB socket.

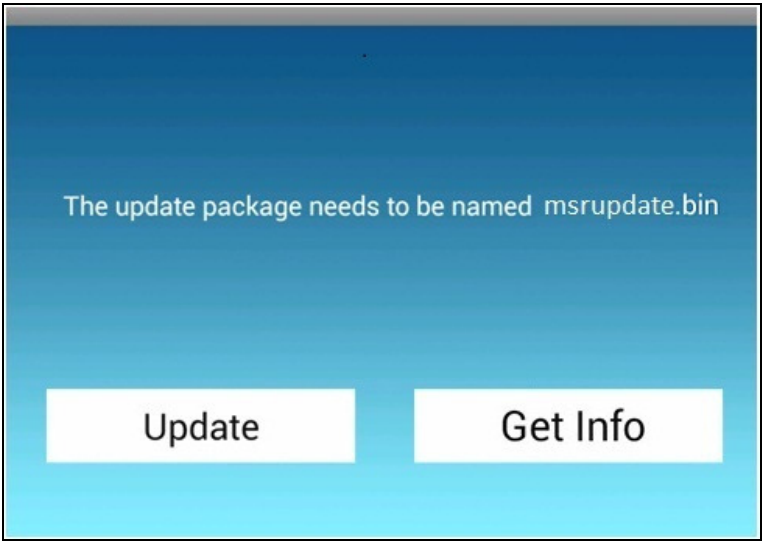
2. Click **Update** button.



3-4-4. MSR Board

1. Prepare Files:
   Rename F00-3013-000-01-xxxxxx.bin to “msrupdate.bin”.
   Copy msrupdate.bin to USB storage. Then insert this device into the USB socket.

2. Click **Update** button.



SYSTEM DIAGRAMS

APPENDIX

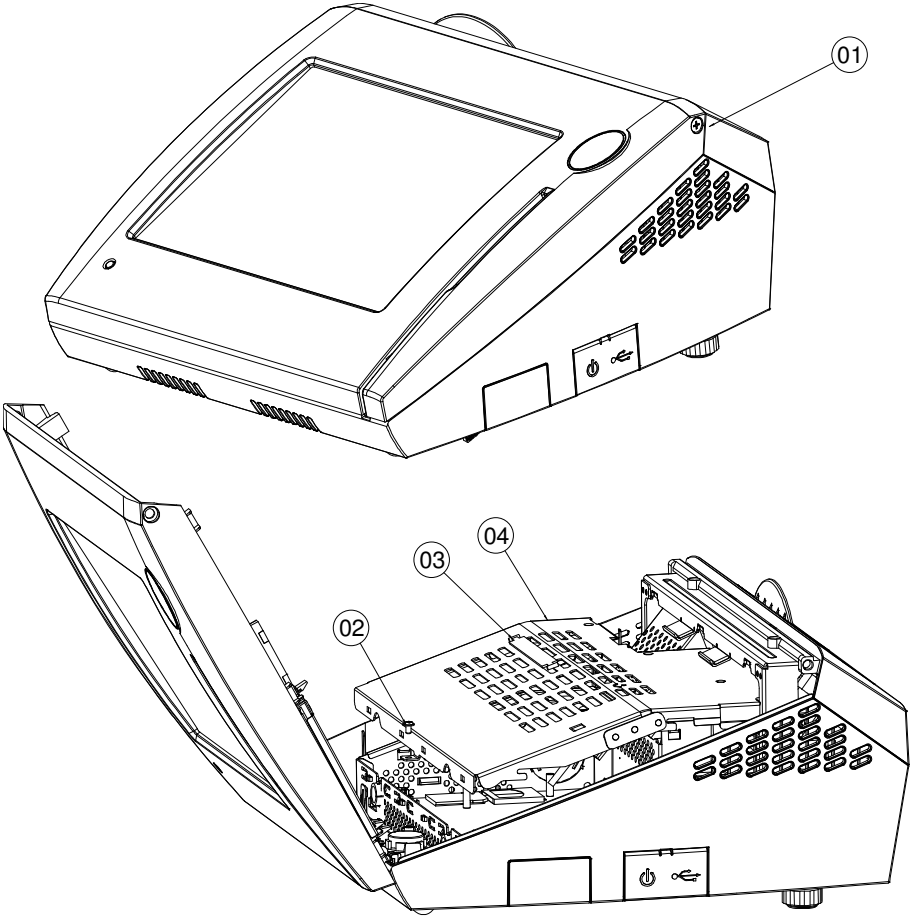
A

This appendix contains exploded diagrams and part numbers of the PA_6610 system.

Sections included:

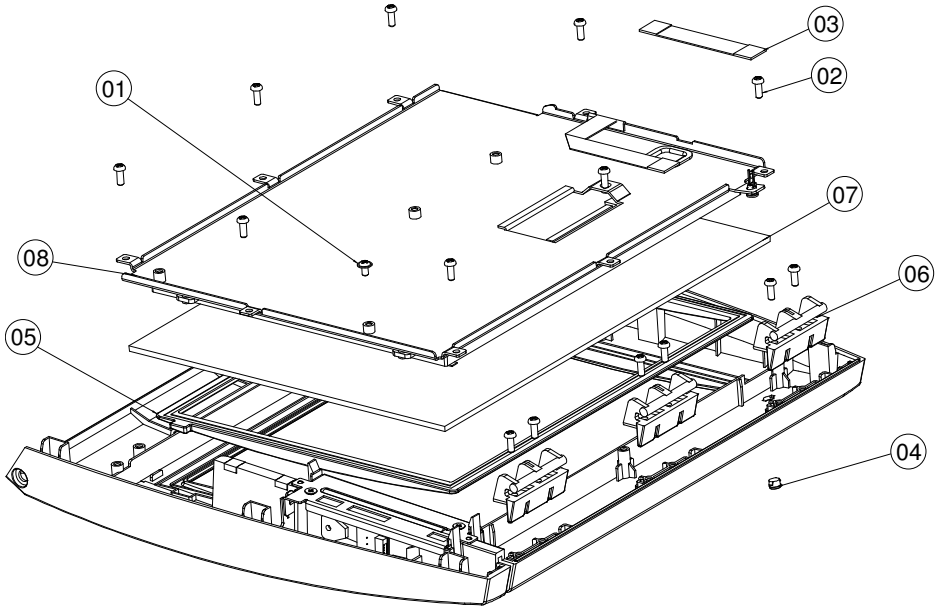
- Exploded Diagram for System Top Module
- Exploded Diagram for MSR
- Exploded Diagram for VFD
- Exploded Diagram for Printer
- Exploded Diagram for System Bottom Module

EXPLODED DIAGRAM FOR SYSTEM TOP MODULE



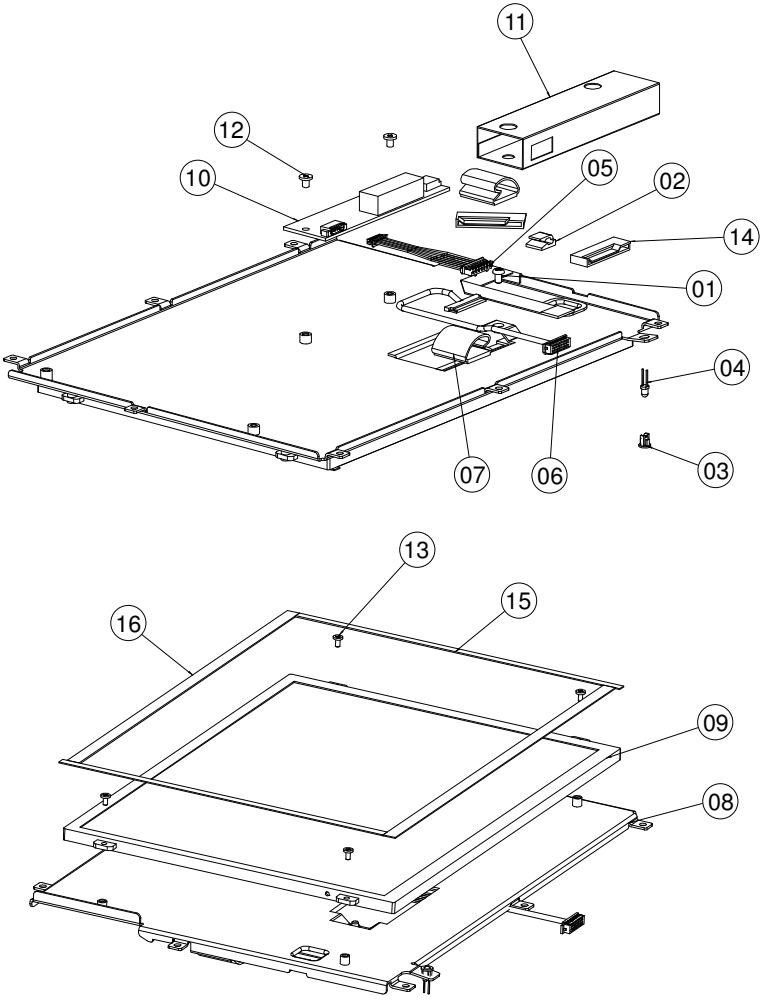
NO.	COMPONENT NAME	PART NO.	Q'TY
1	SCREW	22-272-40004311	2
2	SCREW	22-242-30005311	1
3	PULLER	30-080-04100000	1
4	INSIDE BOX TOP COVER	20-004-03001199	1

Basic construction



NO.	COMPONENT NAME	PART NO.	Q'TY
1	SCREW	22-242-30005311	1
2	SCREW	22-122-30080011	14
3	TOUCH CABLE	27-043-12402071	1
4	LED LENS	30-012-02100000	1
5	LCD RUBBER	30-013-01100199	1
6	HINGE	30-002-09130220	3
7	TOUCH PANEL	52-380-01510401	1
8	LCD ASSY (as Panel Module exploded drawing)	--	--

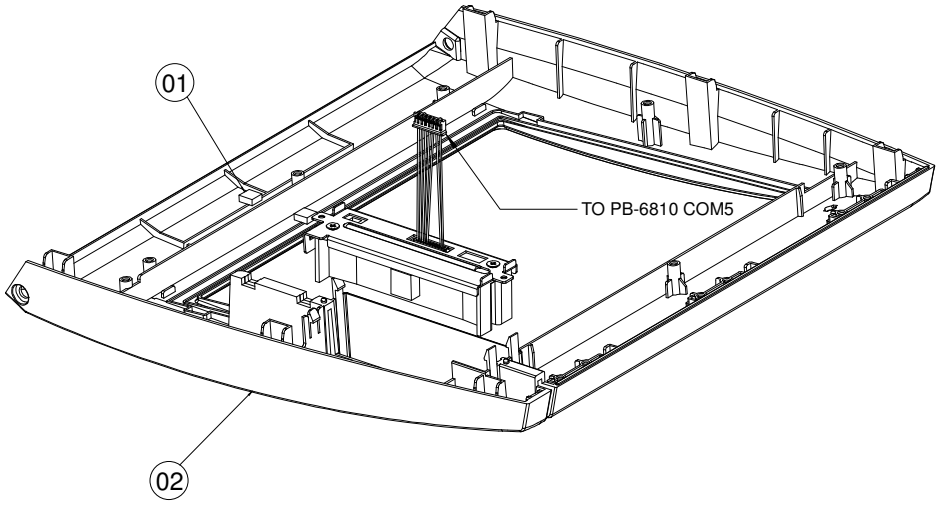
1024 x 768 LCD panel



NO.	COMPONENT NAME	PART NO.	Q'TY
1	SCREW	22-230-30005811	1
2	CABLE CLAMP	30-059-04100000	1
3	LED HOUSING	30-014-04100165	1
4	LED CABLE	27-018-19704071	1
5	INCERTER CABLE	27-015-16506111	1
6	LVDS CABLE	27-020-16505111	1
7	CABLE CLAMP	30-023-04300010	2
8	CPT LCD HOLDER	20-029-03003199	1
9	CPT 10.4" LCD	52-351-01104019	1
10	INVERTER	52-101-08010203	1
11	INVERTER MYLAR	30-056-02100165	1
12	SCREW (SCREW HEAD MARK RED COLOR)	22-272-30004318	2
13	SCREW (SCREW HEAD MARK BLUE COLOR)	22-272-20004011	4
14	WIRE MOUNT	90-042-04200000	2
15	PORON_B	30-013-24700000	2
16	PORON_A	30-013-24600000	2

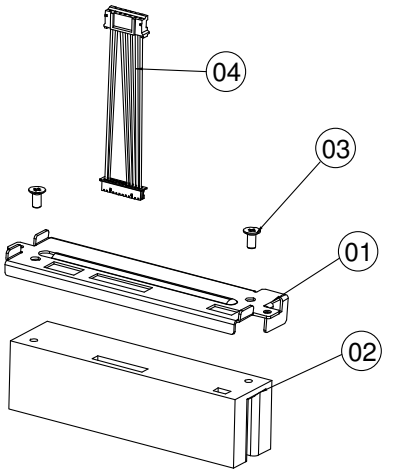
EXPLODED DIAGRAM FOR MSR

Basic construction



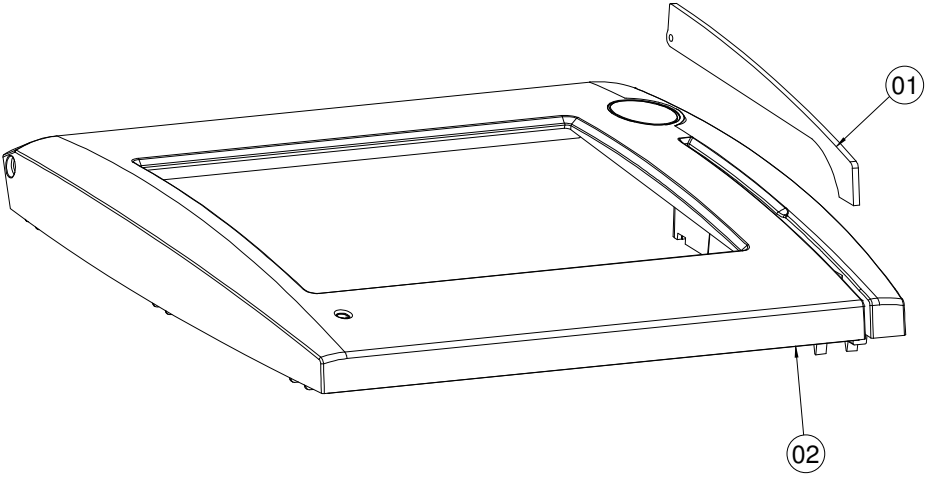
NO.	COMPONENT NAME	PART NO.	Q'TY
1	EVA BLOCK	30-013-15100165	2
2	TOP CASE (BLACK)	30-003-28610199	1
	TOP CASE (WHITE)	30-003-28410199	

MSR module



NO.	COMPONENT NAME	PART NO.	Q'TY
1	MSR BRACKET	20-029-03005165	1
2	MSR	MB-3013RA-11N	1
3	SCREW	22-215-30060011	2
4	MSR CABLE	27-014-27004111	1

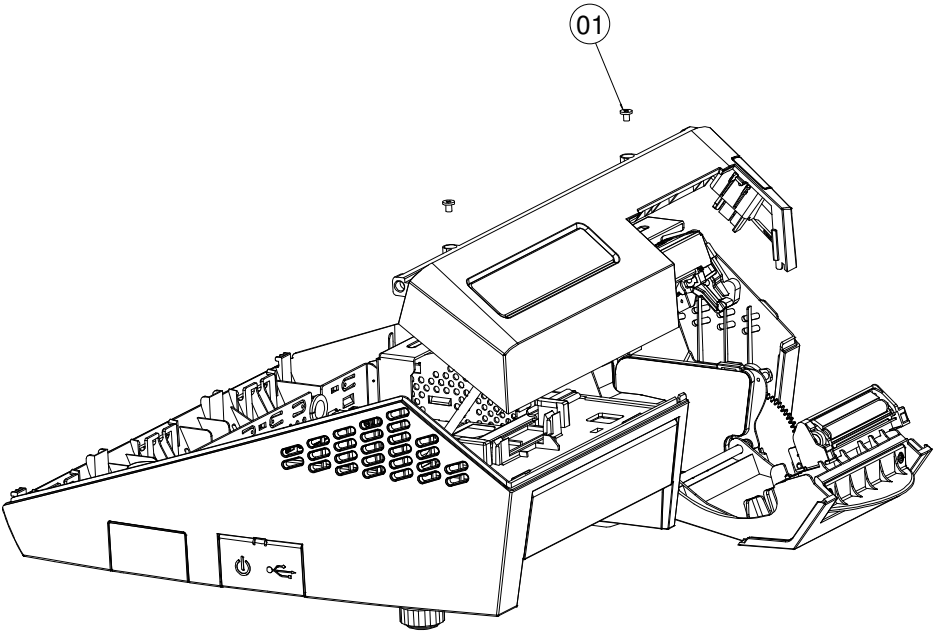
Top case without MSR



NO.	COMPONENT NAME	PART NO.	Q'TY
1	MSR EVA	90-013-15100199	1
2	TOP CASE	DEPENDS ON COLOR	1

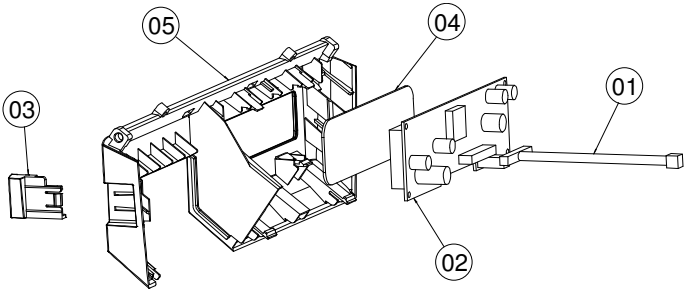
EXPLODED DIAGRAM FOR VFD

Basic construction



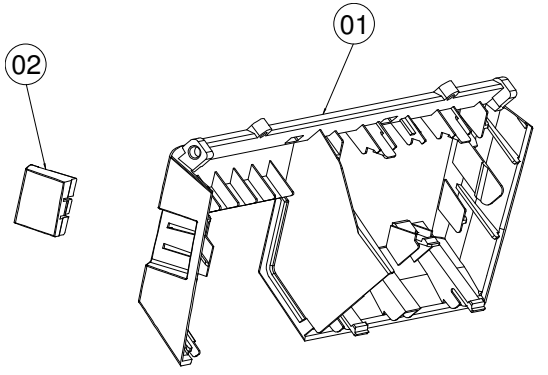
NO.	COMPONENT NAME	PART NO.	Q'TY
1	SCREW	22-272-30004318	2

VFD module



NO.	COMPONENT NAME	PART NO.	Q'TY
1	VFD CABLE	27-051-26805111	1
2	VFD MOUDULE	MB-4103RA-11N	1
3	PRINTER EJECTOR WITH PRINTER	30-002-28410199	1
4	VFD LENS	30-021-02130199	1
5	VFD COVER	30-002-28910199	1

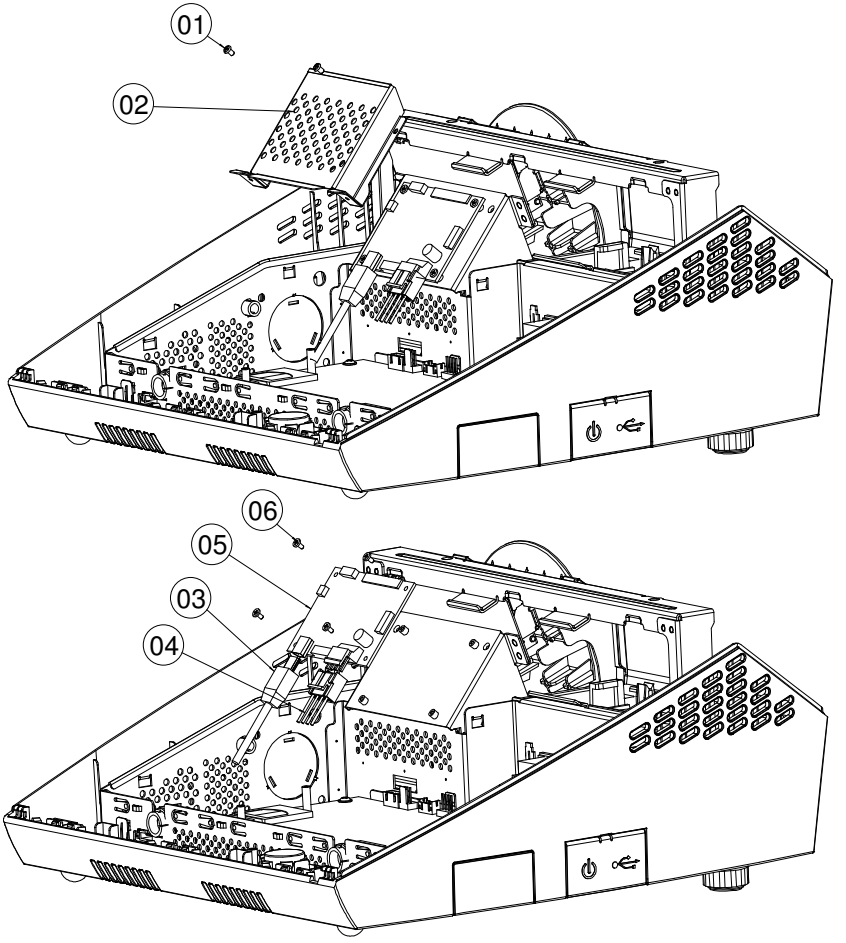
Without VFD module



NO.	COMPONENT NAME	PART NO.	Q'TY
1	VFD COVER	30-002-28910199	1
2	PRINTER EJECTOR WO PRINTER	30-002-28510199	1

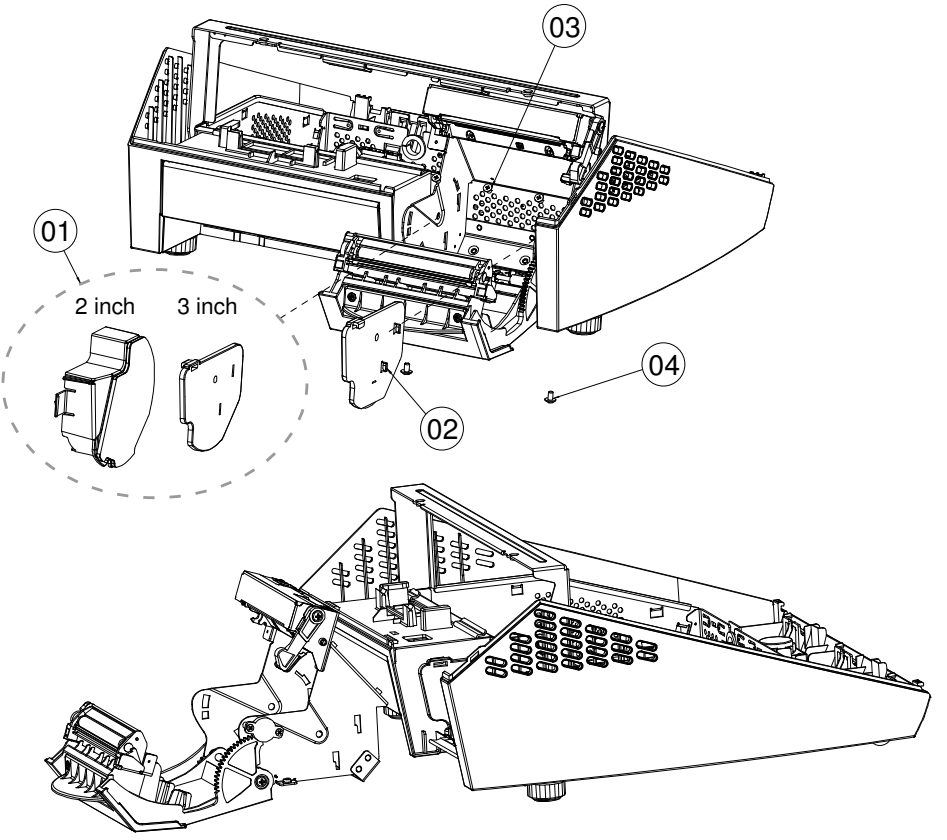
EXPLODED DIAGRAM FOR PRINTER

Printer board



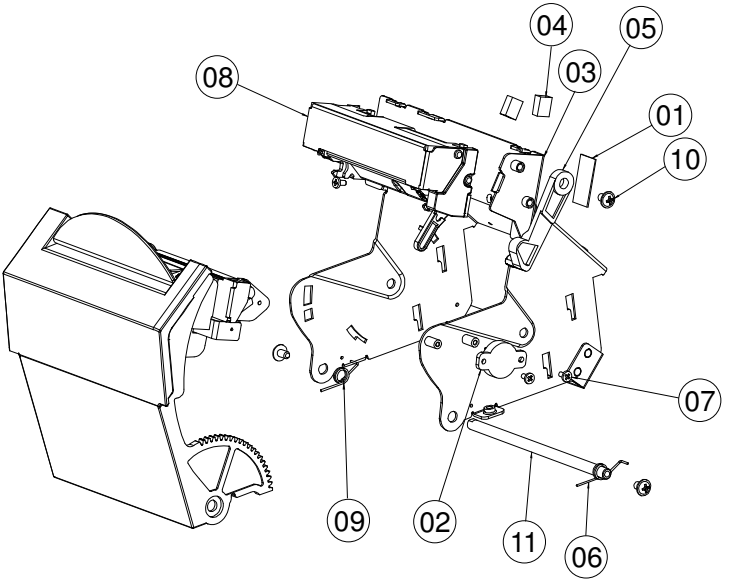
NO.	COMPONENT NAME	PART NO.	Q'TY
1	SCREW	22-232-25004011	2
2	PRINTER PCB COVER	20-004-03001165	1
3	PRINTER CABLE	27-024-27003111	1
4	PRINTER POWER CABLE	27-012-16502071	1
5	PRINTER PCB	MB-1030RA-11N	1
6	SCREW	22-272-20004011	4

Basic construction

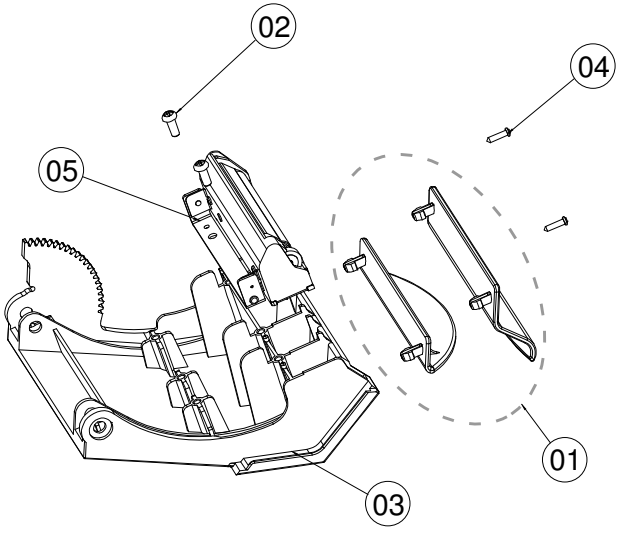


NO.	COMPONENT NAME	PART NO.	Q'TY
1	2IN SIDE WALL L	30-002-28210268	1
	3IN SIDE WALL L	30-002-28710199	
2	3IN SIDE WALL R	30-002-28610199	1
3	SCREW (SCREW HEAD MARK RED COLOR)	22-222-30004011	3
4	SCREW (SCREW HEAD MARK BLUE COLOR)	22-242-30005311	2

2 inch printer module

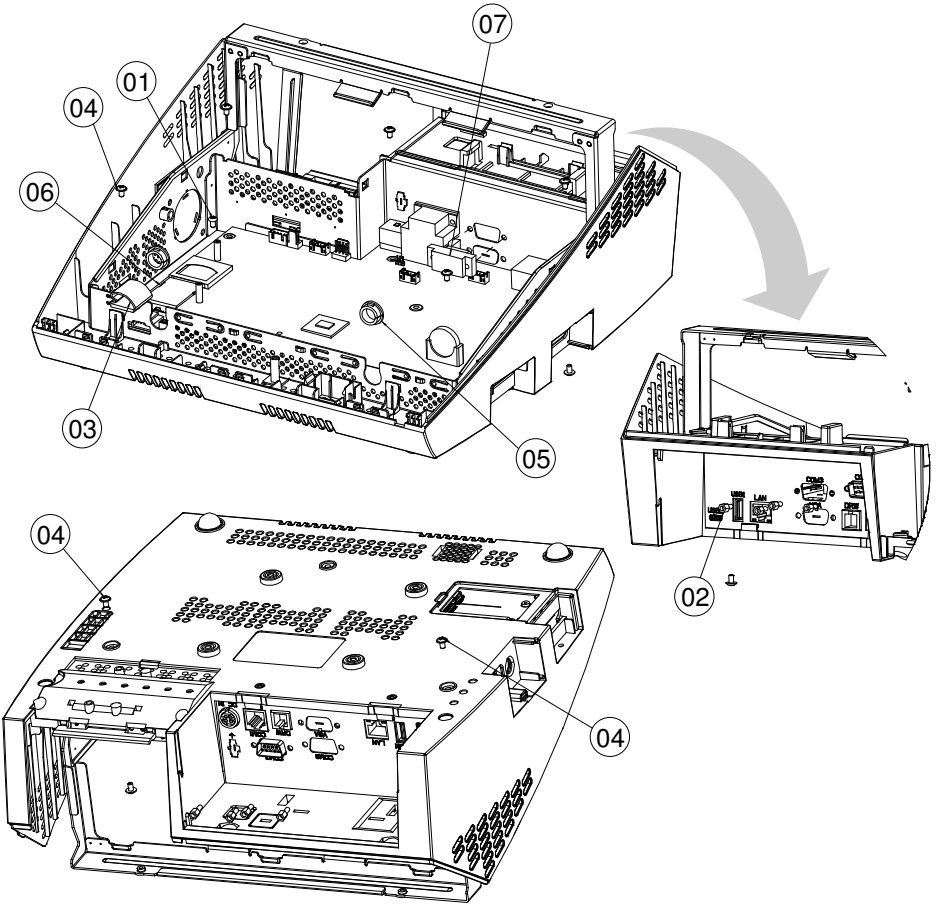


NO.	COMPONENT NAME	PART NO.	Q'TY
1	PC SHEET	90-056-02100199	1
2	ROTARY DAMPER	30-022-09110000	1
3	PRINTER BOX3 ASSY	20-040-03002199	1
4	EMI SHIELDING GASKET	90-050-31100000	2
5	PRINTER ADD ARM	30-002-09110199	1
6	PRINTER COVER SPRING R	23-000-05000502	1
7	SCREW (SCREW HEAD MARK RED COLOR)	22-272-20004011	3
8	2IN PRINTER MOUDULE A	52-701-01020003	1
9	PRINTER COVER SPRING L	23-000-06000502	1
10	SCREW (SCREW HEAD MARK BLUE COLOR)	22-242-30005311	3
11	PAPER COVER PIN	20-045-19011199	1

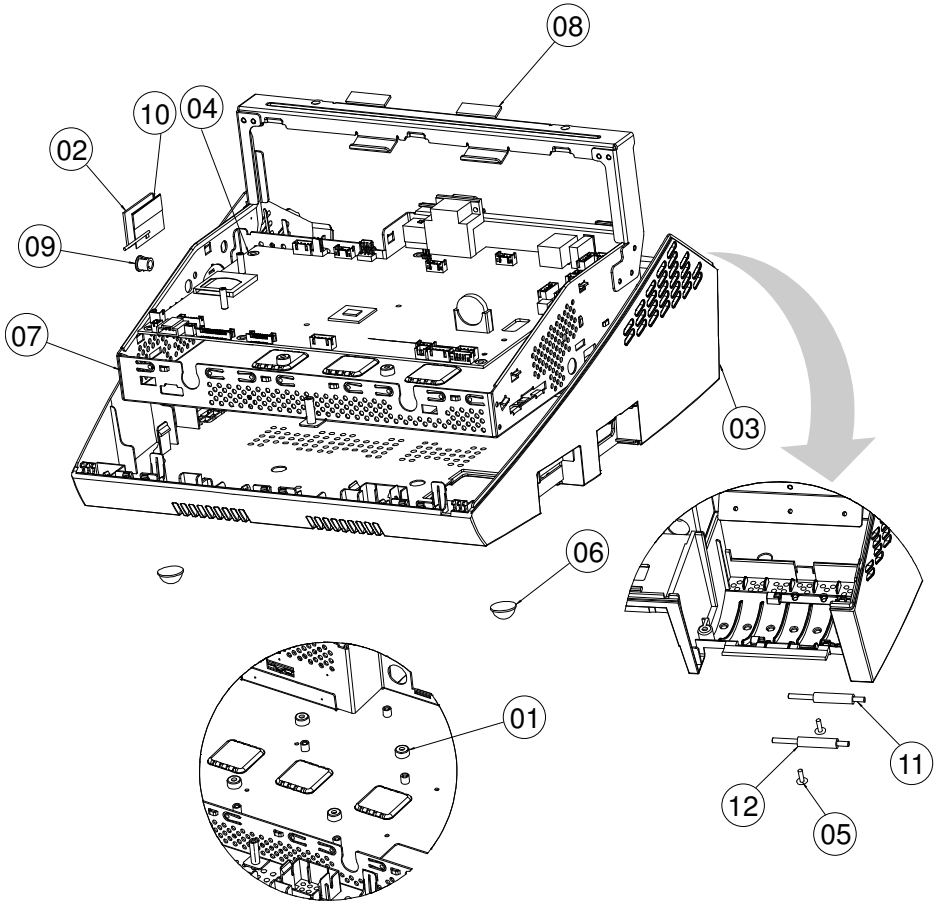


NO.	COMPONENT NAME	PART NO.	Q'TY
1	PAPER HOLDER	30-012-02110165	1
		30-012-10130210	
2	SCREW	22-122-30080011	2
3	PRINTER DOOR	30-007-12110268	1
4	SCREW	22-125-20008011	2
5	2IN PRINTER MOUDULE B	52-701-01020003	1

EXPLODED DIAGRAM FOR SYSTEM BOTTOM MODULE



NO.	COMPONENT NAME	PART NO.	Q'TY
1	SCREW	22-230-30005811	1
2	No.4 Boss	22-692-40048051	4
3	CABLE CLAMP	30-023-04300010	1
4	SCREW	22-242-30005311	7
5	OPEN CLOSED BUSHING	30-026-04300000	2
6	SD CARD	SEE ORDER	1
7	COM 3 CABLE	27-024-16502031	1


08
10
04
02
09
07
03
06
01
11
12
05

NO.	COMPONENT NAME	PART NO.	Q'TY
1	PCB SPACER	90-041-04700000	4
2	FOAM TAPE	94-026-00201268	1
3	BOTTOM CASE	30-001-28110220	1
4	MAINBOARD	PB-6810	1
5	CANOE CLIP	30-076-04200000	2
6	RUBBER FOOT	30-004-01500000	2
7	INSIDE BOX ASSY	20-040-03001268	1
8	EMI SPONGE	30-050-31200000	2
9	SNAP BUSHING	30-026-04500000	1
10	WIRELESS ANTENA	27-029-16506071	1
11	ROLLER PIN	20-045-19012199	2
12	ROLLER	30-041-04100165	2