USER MANUAL

PA-6225

15” Waterproof True Flat Touch POS Terminal

Powered by Intel® Celeron® J1900 Quad-Core

PA-6225 M9

PA-6225 POS System

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DISCLAIMER

This operation manual is meant to assist both Embedded Computer manufacturers and end 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 may occur when the battery is incorrectly replaced. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

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CHAPTER 3 SOFTWARE UTILITIES

CHAPTER 4 SYSTEM DIAGRAMS

INTRODUCTION

CHAPTER

1

This chapter gives you the information for the PA-6225. It also outlines the system specifications.

The following topics are included:

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

Experienced users can jump to Chapter 2 starting page 17 for a quick start.

1-1. ABOUT THIS MANUAL

Thank you for purchasing our PA-6225 Series System. The PA-6225 is an updated system designed to be comparable with the highest performance of IBM AT personal computers. The PA-6225 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. 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, printer, VFD, MSR components and their function. You will learn how to set the jumpers and configure the system to meet your own needs.

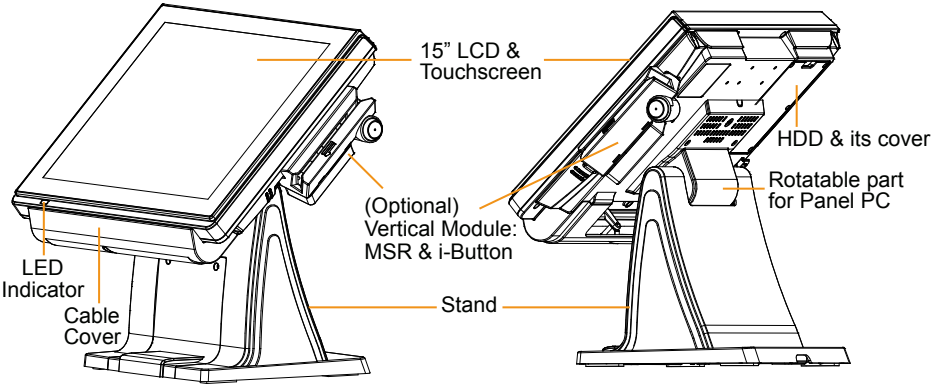
Chapter 3 Software

This chapter contains detailed information for driver installations of the Intel® Utility, VG, LAN, Sound, Touch Screen, embedded peripheral devices, BIOS setup & update, Watchdog timer and resource map.

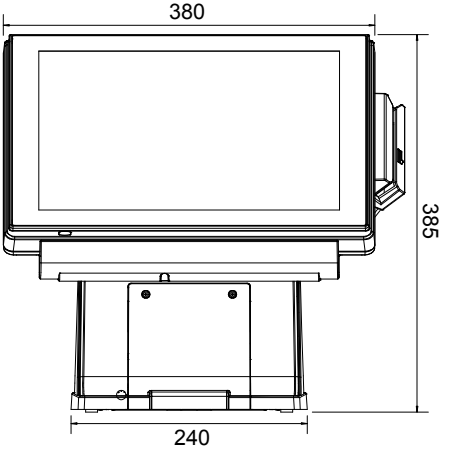
Chapter 4 System Diagrams

This chapter includes the exploded diagrams and part numbers of PA-6225 components.

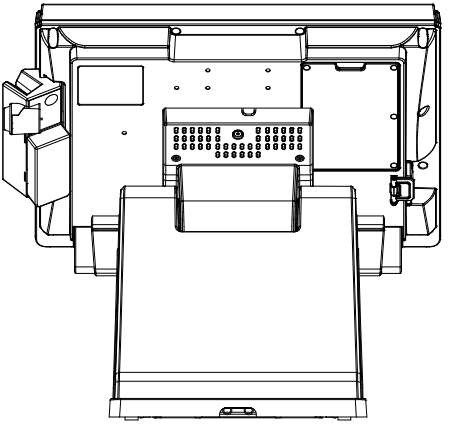
1-2. POS SYSTEM ILLUSTRATION



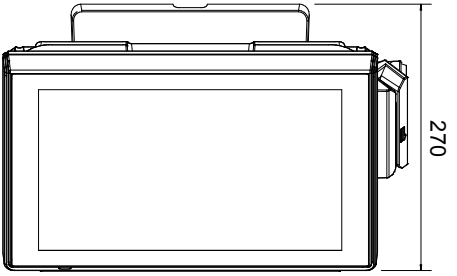
Front View



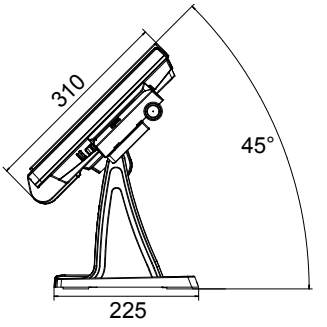
Rear View



Top View

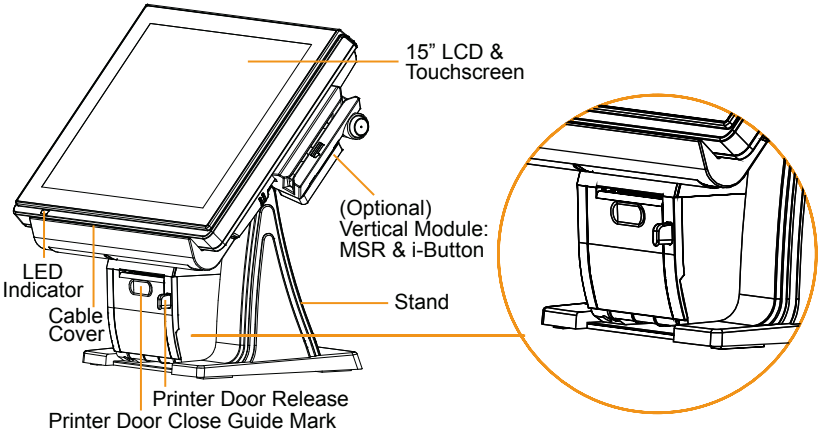


Side View

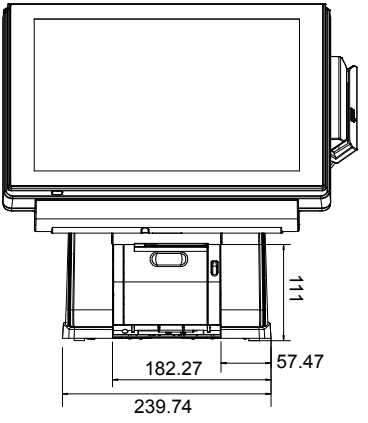


Unit: mm

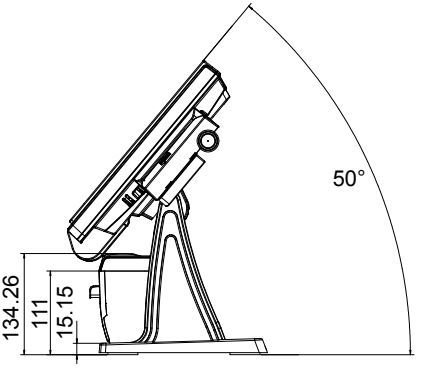
With printer



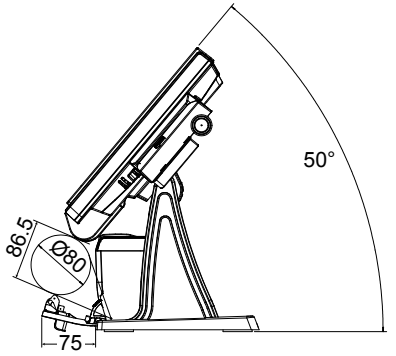
Front View



Side View

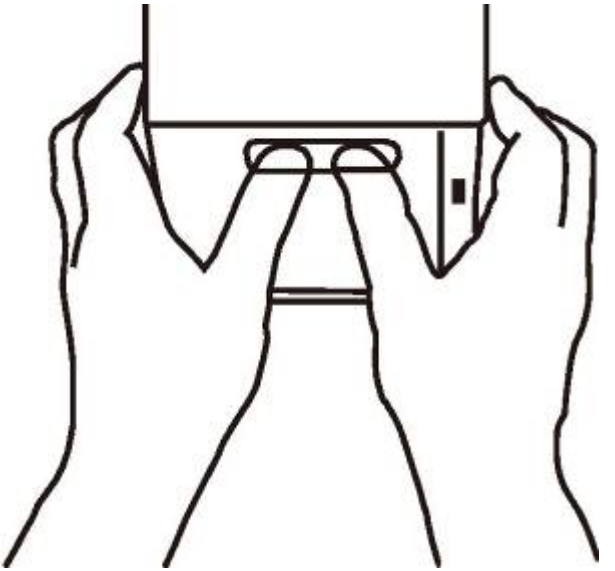


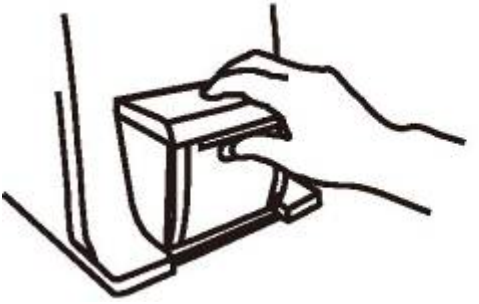
Printer Opened



Unit: mm

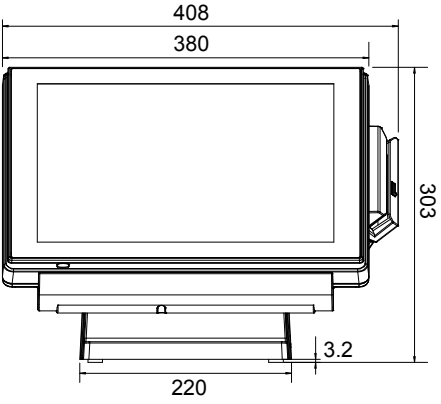
Caution: Please refer to the pictures below to close the printer door properly.



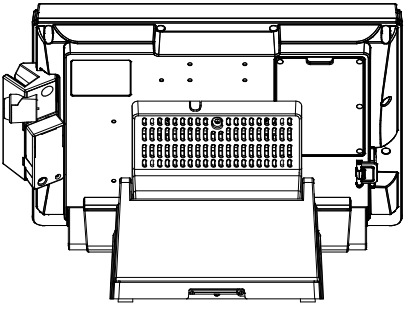


Small stand type

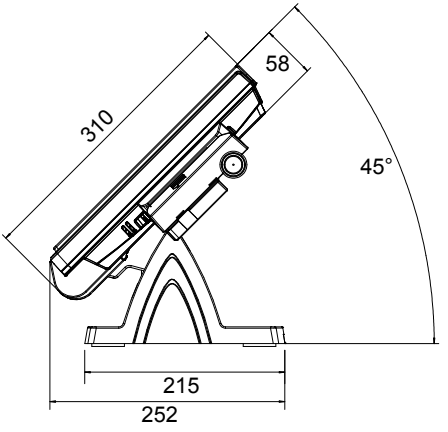
Front View



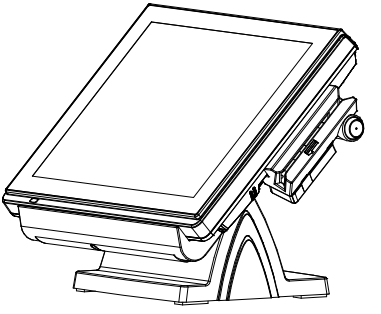
Rear View



Side View



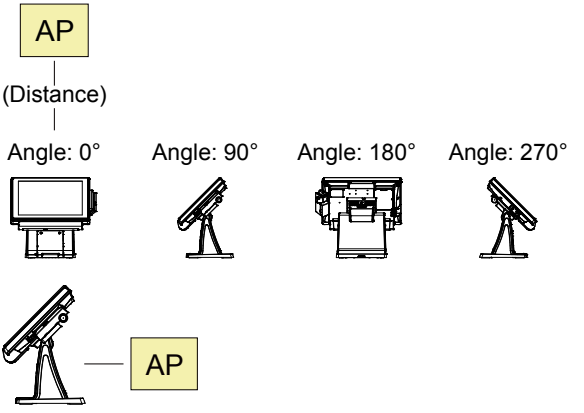
Quarter View



Unit: mm

1-3. SYSTEM SPECIFICATIONS

System

<table>
<tr><td>CPU</td><td>Intel® Celeron® J1900 Quad-Core 2.0GHz</td></tr>
<tr><td>Memory</td><td>1 x DDR3L SO-DIMM 204-pin socket, up to 8GB</td></tr>
<tr><td>OS Support</td><td>▪ Windows POSReady7
▪ Windows Embedded 8 Industry Pro Retail
▪ Windows 10 IoT Enterprise LTSB 2016</td></tr>
<tr><td>LAN</td><td>1 x Giga LAN</td></tr>
<tr><td>VGA</td><td>1 x DB-15</td></tr>
<tr><td>Wireless LAN (Optional)</td><td>802.11 b/g/n
<table>
<tr><td>AP distance</td><td>0˚</td><td>90˚</td><td>180˚</td><td>270˚</td></tr>
<tr><td>5M</td><td>-32 dB</td><td>-27 dB</td><td>-37 dB</td><td>-33 dB</td></tr>
<tr><td>10M</td><td>-43 dB</td><td>-37 dB</td><td>-46 dB</td><td>-44 dB</td></tr>
</table>
Note:
1. Test tolerance: ± 5dB
2. AP: ASUS RT-N56U (2 x internal antenna with 3.8 dBi gain)
 
</td></tr>
<tr><td>Audio</td><td>2W speaker & Line-out Port</td></tr>
<tr><td>BIOS</td><td>AMI SPI BIOS, 8 Mbits with VGA BIOS</td></tr>
<tr><td>RTC Accuracy</td><td>3 days ± 3 seconds</td></tr>
<tr><td>System Weight</td><td>With power adapter approx. 7 kg</td></tr>
<tr><td>Dimension (W x H x D)</td><td>377mm x 318mm x 240mm</td></tr>
<tr><td>Viewing Angel</td><td>24~30˚</td></tr>
</table>

120W

Power Supply: 72 ~ 120Watt power adapter

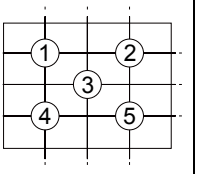
Power Consumption (AC):

System Status	CPU/ HDD/ Memory	VFD	Printer	COM & USB Ports to supply power of Rear I/O	Consumption
OFF	Off			without	2W
IDLE	Turns on, but not to execute extra AP	Runs new ticker	Standby		19.8W
Working (without printer)	100% loading of burn-in test				25.6W
Working (with printer)			DC24V 1.4A dummy load		59.1W
Full Loading				USB dummy load 500mA x4	68.9W

Certificate: CE, CE-LVD, FCC

Type	Standard	Description
EMI	EN 55022 Class A	-
EMS	EN 55024	-
IEC 61000-4-2	ESD	▪ 8kV air discharge ▪ 4kV contact discharge
IEC 61000-4-3	RS	80~1000MHz, 3V/m, 80% AM(1kHz)
IEC 61000-4-4	EFT	▪ AC Power Port: 1kV ▪ DC Power Port: 0.5kV ▪ Signal Ports & Telecommunication Ports: 0.5kV
IEC 61000-4-5	Surge	▪ AC Power Port: Line to line: 1kV Line to earth(GND): 2kV ▪ DC Power Port: Line to earth(GND): 0.5kV ▪ Signal and Telecommunication Port: Line to GND: 1kV
IEC 61000-4-6	CS	0.15~80MHz, 3Vrms, 80% AM, 1kHz
IEC 61000-4-8	PFMF	50Hz, 1A/m
IEC 61000-4-11	Voltage Dips	▪ > 95% reduction for 0.5 periods ▪ 30% reduction for 25 periods
	Voltage Interruptions	> 95% reduction for 250 periods

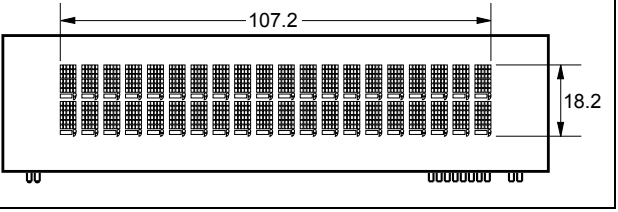
Display

15" TFT XGA LCD	Max. Resolution: 1024 x 768 Signal Interface: TTL (24-bit)
Touchscreen	15" true flat screen ▪ 5-wire resistive type ▪ Projected capacitive type
Brightness	▪ Resistive Touchscreen: Minimum: 160 cd/m^2 | Typical: 200 cd/m^2 | Maximum: - ▪ Projected Capacitive Touchscreen: Minimum: 180 cd/m^2 | Typical: 225 cd/m^2 | Maximum: - 

Environment

Temperature	▪ Operating: 0~35°C (32 ~ 95°F) ▪ Storage: -20~60°C (-4 ~ 140°F)
Humidity	20~90%

Optional accessories

MSR & i-Button	ISO I ,II, III; JIS I,II and support information key reader
Fingerprint	8-bit grayscale reader
2nd Display	▪ 8" LCD (Resolution: 800 x 600) ▪ 10.4" LCD (Resolution: 1024 x 768 or 800 x 600)
Customer Display	▪ Interface: RS-232C Baud Rate: 9600/19200 bps ▪ Placement: 20 columns and 2 lines, each column is 5 x 7 dots ▪ Brightness: cd/m^2 ▪ Dimensions: 

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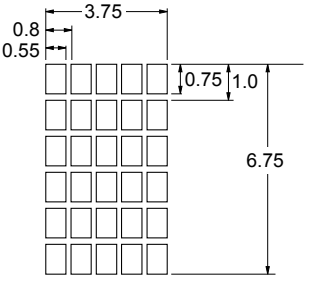
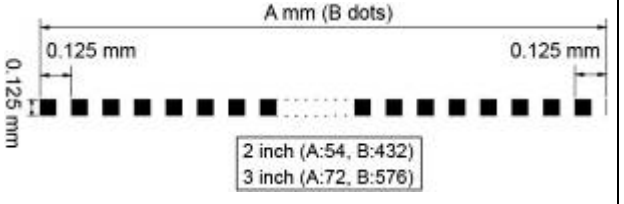
<tr><td></td><td> 

▪ Standard Code
CP-437, CP-850, CP-857, CP-865, Katakana
▪ International Characters
USA, FRANCE, GERMANY, UK, DENMARK I, SWDEN, ITALY, SPAIN, JAPAN, NORWAY, DENMARK II, RUSSIA, SLAVONIC</td></tr>
<tr><td>Printer</td><td>2” or 3” easy loading thermal printer with auto-cutter

Printer:
<table>
<tr><th>Items</th><th>Specifications</th></tr>
<tr><td>Printing method</td><td>Thermal dot line printing</td></tr>
<tr><td>Printing accuracy</td><td>1mm /5M</td></tr>
<tr><td>Paper feed pitch</td><td>0.0625 mm</td></tr>
<tr><td>Maximum Paper-Roll thickness</td><td>80mm</td></tr>
<tr><td>Total dots per line &
Printable dots per line</td><td>2inch 432 dots;
3inch 576 dots</td></tr>
<tr><td>Maximum print speed</td><td>2inch 200 mm/s;
3inch 170 mm/s</td></tr>
<tr><td>Print width</td><td>2inch 54 mm;
3inch 72mm</td></tr>
<tr><td>Paper width</td><td>2inch 58 +0/-1 mm;
3inch 80 +0/-1 mm</td></tr>
</table>

</td></tr>
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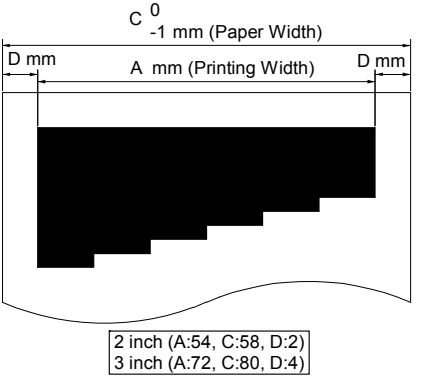
Printer



Auto-cutter:

Items	Specifications
Paper cutting method	Slide cutting
Type of paper cutting	Full cut and Partial cut (1.5 ± 0.5 mm tab left at the center)
Paper curling tendency	Fixed blade side and Movable blade side
Minimum paper core diameter	φ8 mm (paper thickness: 75μm or thin) φ18 (paper thickness: thicker than 75μm)
Minimum paper cutting length	10 mm
Cutting processing time	Approx. 0.5 s/cycle
Cutting frequency	1 cut/2 s max.

- Standard Code
  CP-437, CP-850, CP-857, CP-737, CP-852, CP-860, CP-862, CP-863, CP-865, CP-866, CP-1250, CP-1251, CP-1252, CP-1253, CP-1254, CP-1257, Katakana
- KANJI
  JAPANESE (SHIFT-JIS) Code,
  TRADITIONAL CHINESE Code
- International Characters
  USA, FRANCE, GERMANY, UK, DENMARK I, SWDEN, ITALY, SPAIN I, JAPAN, NORWAY, DENMARK II, SPAIN II, LATIN AMERICA, KOREA, RUSSIA, SLAVONIC

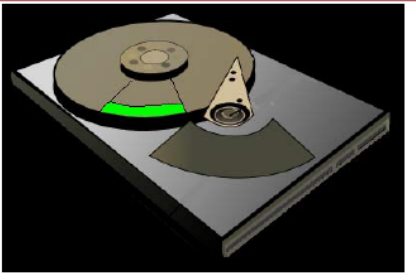
RAID:RAID 1

CPU J1900 SATA_0 *if RAID*

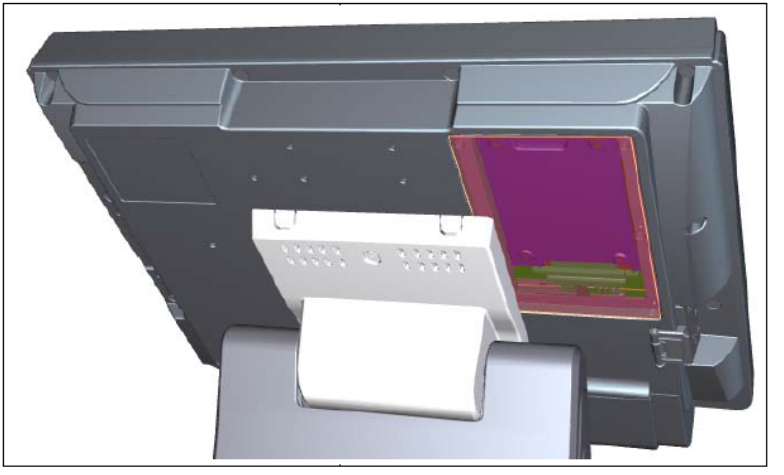
Port 0 **Port 1**

I. SATA1 port On the M/B (Storage Connector)

II. "Main" mark was put into last block in the storage



III. The storage is inside "Panel-PC"



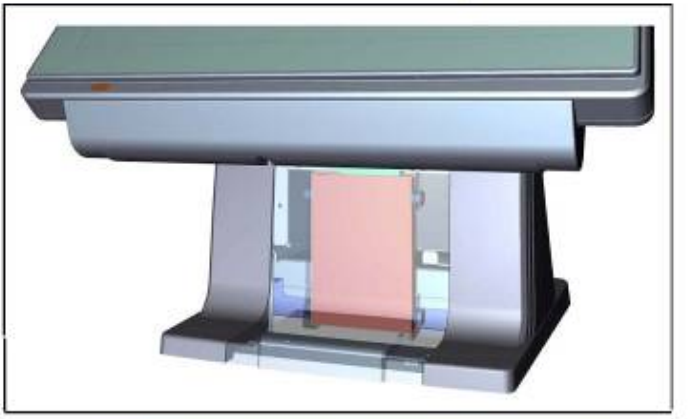
CPU J1900 SATA_0 *if RAID*

Port 1 ***Port 0***

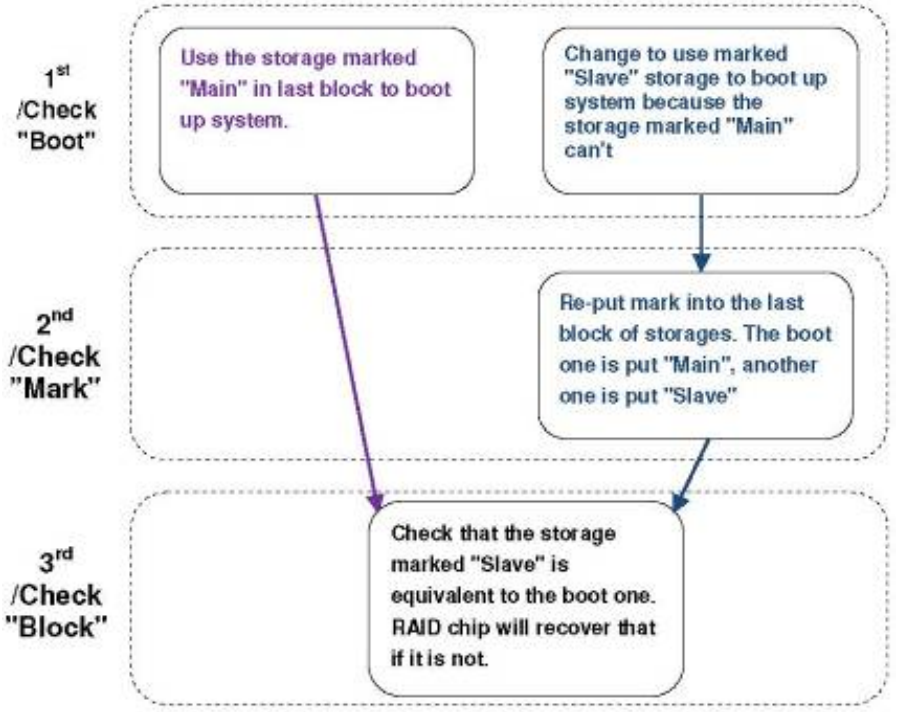
I. eSATA port On the M/B (Storage Connector)

II. "Slave" mark was put into last block in the storage

III. The storage is built in "Stand" (2 types)



RAID Regulation



Special Case:

When the mark of last block of both storages are same. The storage which linked to "RAID Port 0" will be re-put "Main" mark into last block, another one which linked to "RAID Port 1"also will be put "Slave" at the same time.

1-4. SAFETY PRECAUTIONS

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

1. Check the Line Voltage
   (1) 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
   (1) Place your PA-6225 on a sturdy, level surface. Be sure to allow enough space around the system to have easy access needs.
   (2) Avoid installing your PA-6225 Series POS system in extremely hot or cold places.
   (3) 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-6225 when it has been left outdoors in a cold winter day.
   (4) Bear in mind that the operating ambient temperature is between 0°C and 35°C (32°F and 95°F).
   (5) Avoid moving the system rapidly from a hot place to a cold place, and vice versa, because condensation may occur inside the system.
   (6) Protect your PA-6225 against strong vibrations, which may cause hard disk failure.
   (7) Do not place the system too close to any radio-active device. Radio-active device may cause signal interference.
   (8) Always shut down the operation system before turning off the power.

3. Handling
   (1) Avoid placing heavy objects on the top of the system.
   (2) Do not turn the system upside down. This may cause the hard drive to malfunction.
   (3) Do not allow any objects to fall into this product.
   (4) If water or other liquid spills into the product, unplug the power cord immediately.

SYSTEM CONFIGURATION

CHAPTER

2

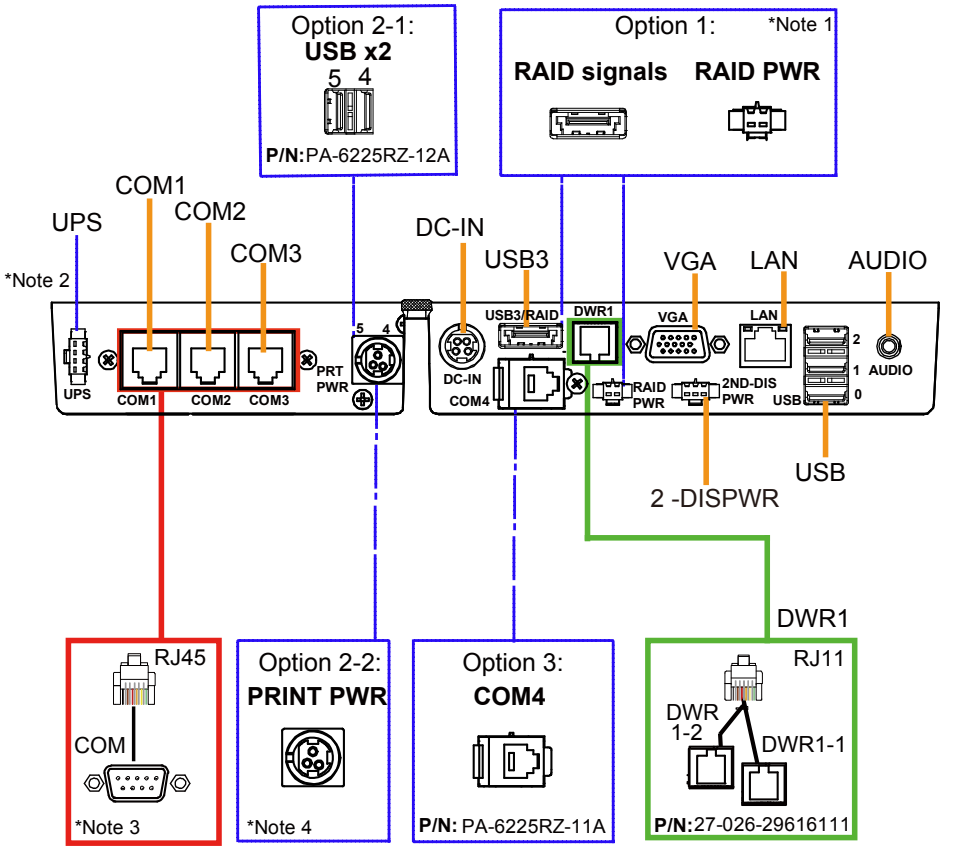
This chapter provides helpful information that describes the jumper and connector settings, component locations, and pin assignment.

The following topics are included:

- External I/O Port Pin Assignment
- How to Set Jumpers
- Component Locations & Jumper Settings
  - Main Board
  - Printer Board (peripheral device)
  - VFD Board (peripheral device)
  - MSR Board (peripheral device)

2-1. SYSTEM EXTERNAL I/O PORT & PIN ASSIGNMENT

Rear I/O



Note 1: RAID signals and RAID Power Port are supported for PA-6225RC-G0B and PA-6225RC-H0B only.

Note 2: UPS function is supported for PA-6225RC-E0B and PA-6225RC-F0B only.

Note 3: One RJ45 to DB9 cable (P/N: 27-024-27403111) is provided with the system.

Note 4: The Printer Power port is provided when the system is purchased with Printer.

2-2. Power Button, Ports, Connectors and Jumpers

2-2-1. Power Button

To turn on the system, press the power button on the side of the system briefly.

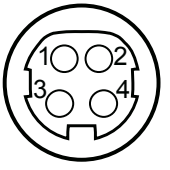
ACTION	ASSIGNMENT
Click	0V
Release	+3.3V

Power Button

2-2-2. DC-IN Port

DC-IN: DC Power-In Port (rear I/O)

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

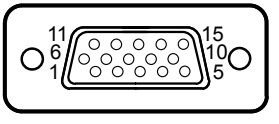


DC-IN

2-2-3. VGA Port

VGA: VGA Port, D-Sub 15-pin (rear I/O)

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

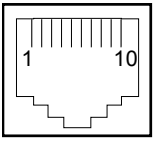


VGA

2-2-4. COM Ports

COM1, COM2, COM3: RJ-45 COM Ports (rear I/O)

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	-	-

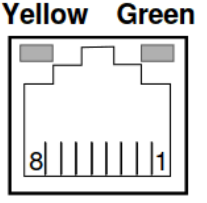


COM1/ COM2/ COM3

Note: **COM3** & **COM3_1** will not function when jumpers JP20, JP21, JP22 are set as 2-3 connected (i-Button). Refer to the **i-Button Function Selection** section for details.

2-2-5. LAN Port

LAN: LAN RJ-45 Port (rear I/O)



LAN

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	MDIP0	6	NC
2	MDIN0	7	MDIP2
3	MDIP1	8	MDIN2
4	MDIN1	9	MDIP3
5	NC	10	MDIN3

LAN LED Indicator:

Left Side LED

Yellow Color Blinking	LAN Message Active
Off	No LAN Message Active

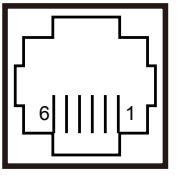
Right Side LED

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

2-2-6. Cash Drawer Port

DWR1, DWR1-1, DWR1-2: Signal from M/B GPIO (rear I/O)

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



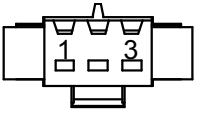
DWR1

SIO Address	
Cash drawer 1	LDN 06, 0x91 bit 1

DWR1	Open		Close	
PB-6822RA, RB	Write	To	Write	To
	700h	588h	000h	588h
PB-6822RC	Write	To	Write	To
	02h	SIO LDN 06h's 90h	00h	SIO LDN 06h's 90h

2-2-7. 2ND Display Power Port (Optional)

2-DISPWR: Second Display Power port (Rear I/O)

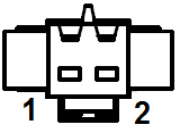


2-DISPWR

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

2-2-8. RAID Power Port (Optional)

RAID PWR: RAID Power port (Rear I/O)



RAID PWR

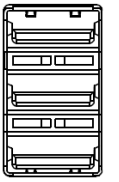
PIN	ASSIGNMENT
1	GND
2	+5V

2-2-9. USB Ports

USB0, USB1, USB2: USB Type A Ports

- USB 0 ~ 3: Rear I/O
- USB 4 : Side I/O

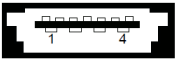
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	+5V (Max. current: 0.5A)	3	D+
2	D-	4	GND



USB2/

USB1/

USB0



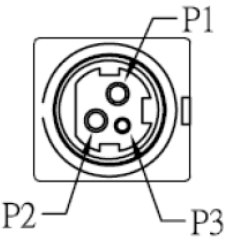
USB3

USB4

2-2-10. Printer Power Port (Optional)

PRT PWR: Printer Power port (rear I/O)

PIN	ASSIGNMENT
P1	GND
P2	+24V
P3	NC

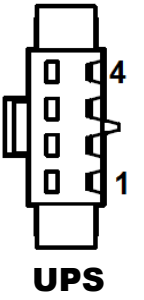


PRT PWR

2-2-11. UPS Power Port (Optional)

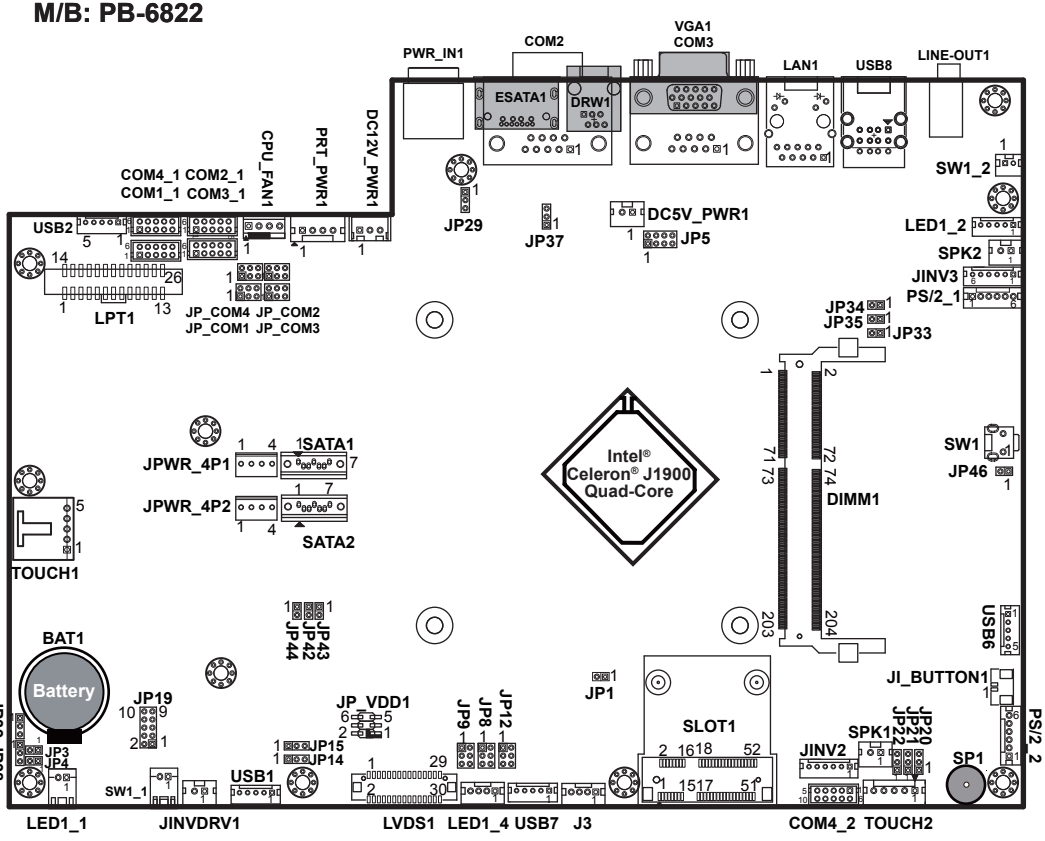
UPS: UPS Power port (Rear I/O)

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



2-3. MAINBOARD COMPONENT LOCATIONS & JUMPER SETTINGS

M/B: PB-6822



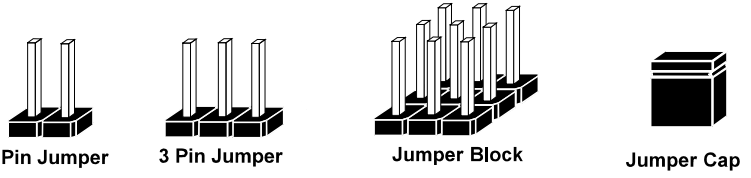
PB-6822 Main Board Component Locations

2-4. 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 & Caps

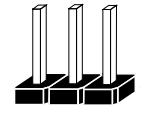


If a jumper has three pins for example, labelled PIN1, PIN2, and PIN3. You can connect PIN1 & PIN2 to create one setting and shorting. You can either connect PIN2 & PIN3 to create another setting. The same jumper diagrams are applied all through this manual. The figure below shows what the manual diagrams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

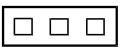
Jumper Diagrams

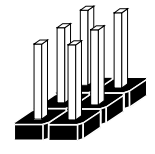
Jumper Cap looks like this

2 pin Jumper looks like this

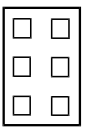


3 pin Jumper looks like this

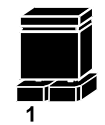




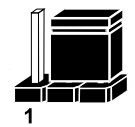
Jumper Block looks like this



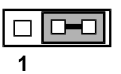
Jumper Settings

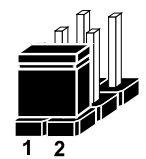


2 pin Jumper closed(enabled)
looks like this

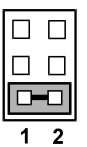


3 pin Jumper
2-3 pin closed(enabled)
looks like this



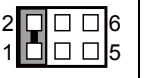
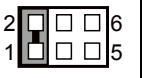
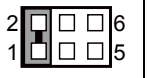
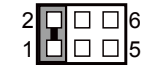
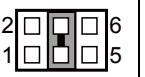
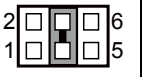
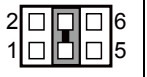
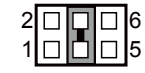
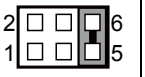
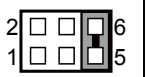
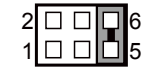


Jumper Block
1-2 pin closed(enabled)
looks like this



2-4-1. COM Port RI & Voltage Selection

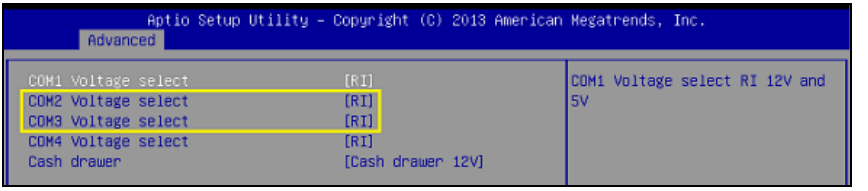
JP_COM1, JP_COM2, JP_COM3, JP_COM4: Pin-headers on board.

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION			
RI	1-2	 JP_COM1	 JP_COM2	 JP_COM3	 JP_COM4
+12V	3-4	 JP_COM1	 JP_COM2	 JP_COM3	 JP_COM4
+5V	5-6	 JP_COM1	 JP_COM2	 JP_COM3	 JP_COM4

Note: Manufacturing Default is RI for JP_COM1 & JP_COM4, and no connection for JP_COM2 & JP_COM3.

Caution:

1. The voltage of external COM 2 & COM3 ports can be controlled on BIOS for your convenience. The corresponding jumpers JP_COM2 & JP_COM3 are set open (no connection) by default. Refer to the **Voltage Adjustment Configuration** section of Chapter 3 for detailed jumper setting (BIOS default: RI).

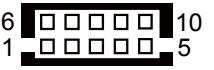


2. JP_COM2 & JP_COM3 can be enabled when COM2 & COM3 voltage adjustment is disabled on BIOS.
3. The voltage of COM port is adjustable by BIOS or jumpers. You can select to adjust the voltage of COM ports either through BIOS or by setting jumpers. DO NOT use these two methods at the same time in case of system error, component damage or serious boot failure.

2-4-2. COM Connectors

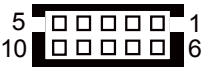
COM1_1, COM2_1, COM3_1, COM4_1, COM4_2: COM Connectors

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



COM1_1/
COM2_1/
COM3_1/
COM4_1

Note: Each COM connector is RI/+5V/+12V selectable.
Refer to the **COM Port RI & Voltage Selection** section for details.

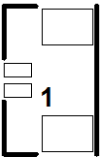


COM4_2

2-4-3. i-Button Connector

JI_BUTTON1: i-Button Connector

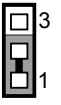
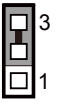
PIN	ASSIGNMENT
1	COM3_DTR_R_I
2	COM3_RXD_R_I



JI_BUTTON1

2-4-4. i-Button Function Selection

JP20, JP21, JP22: i-Button Function Jumpers

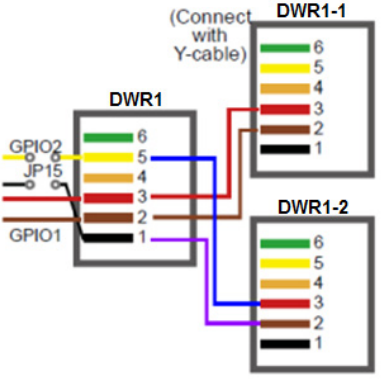
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
COM3 (Default)	1-2	 **JP20/JP21/JP22**
i-Button*	2-3	 **JP20/JP21/JP22**

*COM3 & COM3_1 will not function when jumpers JP20, JP21 & JP22 are set as "i-Button."

2-4-5. Cash Drawer Control Selection

JP37: DWR1, DWR1-1, DWR1-2 control jumper

DWR1 port is used by default. You can add a second port via either of the methods as below:



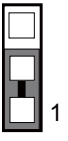
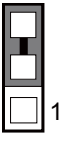
Method 1:

DWR1 includes two groups of GPIO pins. The second group is normally unused but can be enabled by the jumper. Set the pin header jumper JP37 as 1-2 connected if necessary.

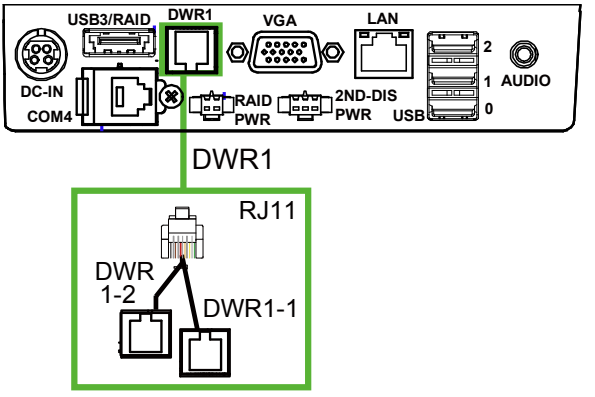
Method 2:

You can split DWR1 into two channels of DWR1-1 & DWR1-2 by using the Y-Cable (option).

JP37: Cash Drawer control jumper

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
DWR1-1 & DWR1-2	1-2	 **JP37**
GND (Default)	2-3	 **JP37**

DWR1, DWR1-1, DWR1-2 shares the same power source. (Default:12V)



SIO Address	
Cash drawer 1-1	LDN 06, 0x91 bit 1
Cash drawer 1-2	LDN 06, 0x91 bit 3

Cash Drawer Sensor Control:

Drawer 1-1 Control	LDN 06, 0x91 bit 1
Drawer1-1 Sensor	LDN 06, 0xF2 bit 5
Drawer1-2 Control	LDN 06, 0x91 bit 3
Drawer1-2 Sensor	LDN 06, 0xF2 bit 6

CASH DRAWER CONFIGURATION

The I/O port address of the cash drawer is 2E (hex) and 2F (hex). 2E (hex) is the address port. 2F (hex) is the data port. User must first assign the address of register by writing address value into address port 2E (hex), then write/read data to/from the assigned register through data port 2F (hex).

Configuration Sequence

To program F81866 configuration registers, the following configuration sequence must be followed:

(1) Enter the extended function mode

To place the chip into the Extended Function Mode, two successive writes of 0x87 must be applied to Extended Function Enable Registers (EFERs, i.e. 2Eh or 4Eh).

(2) Configure the configuration registers

The chip selects the Logical Device and activates the desired Logical Devices through Extended Function Index Register (EFIR) and Extended Function Data Register (EFDR). The EFIR is located at the same address as the EFER, and the EFDR is located at address (EFIR+1). First, write the Logical Device Number (i.e. 0x06) to the EFIR and then write the number of the desired Logical Device to the EFDR. If accessing the Chip (Global) Control Registers, this step is not required. Secondly, write the address of the desired configuration register within the Logical Device to the EFIR and then write (or read) the desired configuration register through the EFDR.

(3) Exit the extended function mode

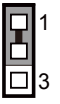
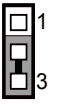
To exit the Extended Function Mode, writing 0xAA to the EFER is required. Once the chip exits the Extended Function Mode, it is in the normal running mode and is ready to enter the configuration mode.

Code example for opening/closing the cash drawer 1-1 / 1-2

```
;---------------------------- Enter to extended function mode ------------------------------
mov     dx,     2eh
mov     al,     87h
out     dx,     al
out     dx,     al
;---------------------- Select Logical Device 6 of Cash drawer ----------------------------
mov     al,     07h
out     dx,     al
Inc     dx
mov     al,     06h
out     dx,     al
dec     dx
;---------------------------------- Open Cash drawer 1-1 ----------------------------------
mov     al,     91h
out     dx,     al
inc     dx
in      al,     dx
and     al,     FDh
or      al,     02h
out     dx,     al
;----------------------------------- Close Cash drawer 1-1 ---------------------------------
In      al,     dx
and     al,     FDh
out     dx,     al
;---------------------------------- Open Cash drawer 1-2 ----------------------------------
in      al,     dx
and     al,     F7h
or      al,     08h
out     dx,     al
;----------------------------------- Close Cash drawer 1-2 ---------------------------------
In      al,     dx
and     al,     F7h
out     dx,     al
;------------------------------ Exit the extended function m-------------------------------
dec     dx
mov     al,     0aah
out     dx,     al
```

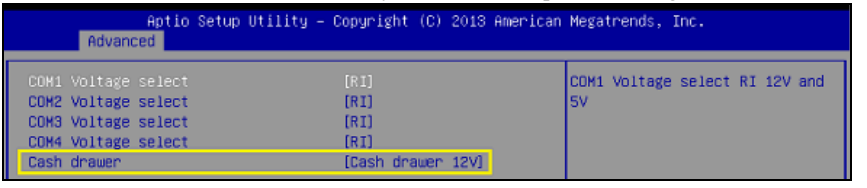
2-4-6. Cash Drawer Power Selection

JP29: DWR1-1 & DWR1-2 power selection

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
+24V	1-2	 **JP29**
+12V (Default)	2-3	 **JP29**

Caution:

1. The voltage of external DWR1 (extendable as DWR1-1 & DWR1-2) port can be controlled on BIOS for your convenience. The corresponding jumper JP29 is set open (no connection) by default. Refer to the **Voltage Adjustment Configuration** section of Chapter 3 for detailed jumper setting (BIOS default: 12V).
2. JP29 can be enabled when Cash drawer is disabled on BIOS.
3. The voltage of cash drawer port is adjustable by BIOS or jumpers. You can select to adjust the voltage of COM ports either through BIOS or by setting jumpers. DO NOT use these two methods at the same time in case of system error, component damage or serious boot failure.

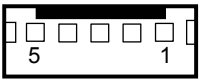


2-4-7. USB Connectors

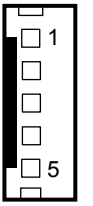
USB1, USB2, USB6, USB7: USB 2.0 connector

PIN	ASSIGNMENT
1	5V (Maximum current: 0.5A)
2	D-
3	D+
4	GND
5	GND

Note: USB1 would be used when jumpers JP14 & JP15 are set as 1-2 (short) connected.



USB1/ USB2/ USB7

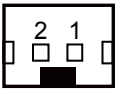


USB6

2-4-8. LED Connector

LED1_1: Power LED connector

PIN	ASSIGNMENT
1	GND
2	VCC

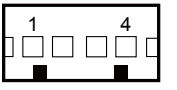


LED1_1

2-4-9. Power for Thermal Printer Connector

PRT_PWR1: Power for Thermal Printer Connector

PIN	ASSIGNMENT
1	VCC24SB
2	VCC24SB
3	GND
4	GND

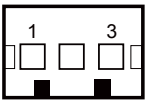


PRT_PWR1

2-4-10. Power Connectors

DC12V_PWR1: DC 12Voltage Provider Connector

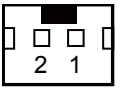
PIN	ASSIGNMENT
1	VCC12
2	GND
3	VCC12



DC12V_PWR1

DC5V_PWR1: DC 5Voltage Provider Connector

PIN	ASSIGNMENT
1	5V
2	GND

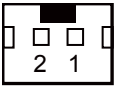


DC5V_PWR1

2-4-11. External Speaker Connectors

SPK1, SPK2: External Speaker Connector

PIN	ASSIGNMENT
1	SPK_GND
2	SPK_OUT

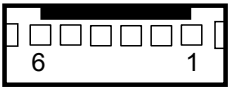


SPK1/
SPK2

2-4-12. Inverter Connectors

JINV2 / JINV3: Inverter connectors

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

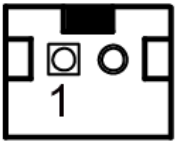


JINV2 /
JINV3

2-4-13. Power Button Connector

SW1_2: Power Button connector

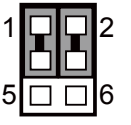
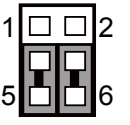
PIN	ASSIGNMENT
1	+3.3V
2	GND



SW1_2

2-4-14. LED Backlight Power Control Selection

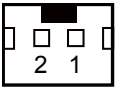
JP12: LED backlight power control selection (for LED backlight panel without power driver built-in)

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
Control by driver on M/B	1-3, 2-4 It is applied to the panel without the driver built-in.	 **JP12**
Control by PWM (Default)	3-5, 4-6 It is applied to the panel with the built-in driver inside.	 **JP12**

2-4-15. LED Backlight Power Connector

JINVDRV1: LED backlight power connector

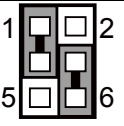
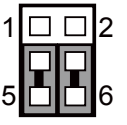
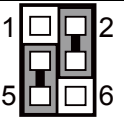
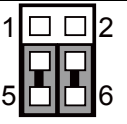
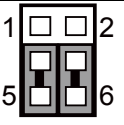
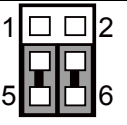
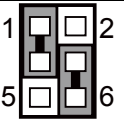
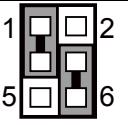
PIN	ASSIGNMENT
1	VCC
2	GND



JINVDRV1

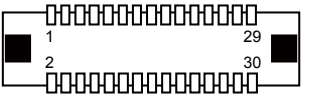
2-4-16. Panel Resolution Selection

JP8, JP9: Panel resolution selection

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION	
15” 1024 x 768 (24 bit)	JP8: 1-3, 4-6 JP9: 3-5, 4-6	 **JP8**	 **JP9**
10.4” 1024 x 768 (18 bit)	JP8: 3-5, 2-4 JP9:3-5, 4-6	 **JP8**	 **JP9**
10.4” 800 x 600 (18bit)	JP8: 3-5, 4-6 JP9: 3-5, 4-6	 **JP8**	 **JP9**
17” **1280 x 1024** **(24bit Dual)** (Default)	JP8: 1-3, 4-6 JP9: 1-3, 4-6	 **JP8**	 **JP9**

2-4-17. LVDS Connector

LVDS1: LVDS Connector

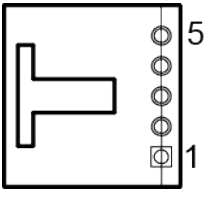


LVDS1

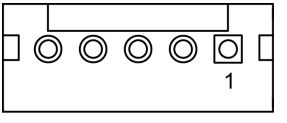
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	LVDS_VCC	2	GND
3	NC	4	NC
5	GND	6	LVDS_B2_D-
7	LVDS_B2_D+	8	GND
9	LVDS_B1_D-	10	LVDS_B1_D+
11	LVDS_B3_D+	12	LVDS_B3_D-
13	LVDS_B0_D+	14	LVDS_B0_D-
15	GND	16	LVDS_CLKA_D+
17	VDS_CLKA_D-	18	GND
19	LVDS_A2_D+	20	LVDS_A2_D-
21	GND	22	LVDS_A1_D+
23	LVDS_A1_D-	24	GND
25	LVDS_A0_D+	26	LVDS_A0_D-
27	LVDS_A3_D+	28	LVDS_A3_D-
29	LVDS_VCC	30	LVDS_VCC

2-4-18. Touch Panel Connectors

TOUCH1, TOUCH2: Touch panel connectors



TOUCH1

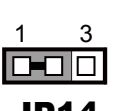
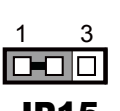
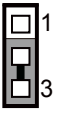
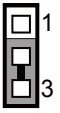
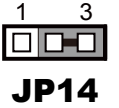
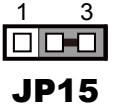
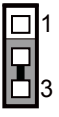
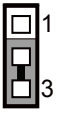
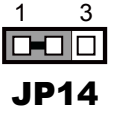
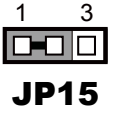
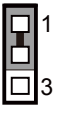
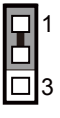


TOUCH2

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

2-4-19. Touch Panel Signal Interface Selection

JP14, JP15, JP38, JP39: Control jumpers for touch panel signal interface.

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION			
USB1 Connector	JP14: 1-2 JP15: 1-2 JP38: 2-3 JP39: 2-3	 **JP14**	 **JP15**	 **JP38**	 **JP39**
TOUCH1/2 USB Interface (Default) (* Note 1)	JP14: 2-3 JP15: 2-3 JP38: 2-3 JP39: 2-3	 **JP14**	 **JP15**	 **JP38**	 **JP39**
TOUCH1/2 RS-232 Interface (* Note 2)	JP14: 1-2 JP15: 1-2 JP38: 1-2 JP39: 1-2	 **JP14**	 **JP15**	 **JP38**	 **JP39**

Notes:

1. USB1 connector will not function when JP14 & JP15 are set as 2-3 connected.
2. The COM2 & COM2_1 connectors will not function when JP38 & JP39 are set as 1-2 connected.

2-4-20. Clear CMOS Data Selection

JP3: Clear CMOS data selection

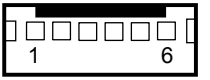
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
Normal (Default)	Open	 **JP3**
Clear CMOS*	1-2	 **JP3**

Note: To clear CMOS data, you must power off the computer and set the jumper to "Clear CMOS" as shown above. After five to six seconds, set the jumper back to "Normal" and power on the computer.

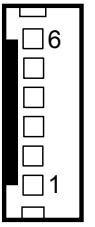
2-4-21. MSR/Card Reader Connectors

PS/2_1, PS/2_2: MSR/Card reader connectors

PIN	ASSIGNMENT
1	KB_CLK (Output)
2	KB_CLK_C (Input)
3	KB_DATA_C (Input)
4	KB_DATA (Output)
5	+5V
6	GND



PS/2_1



PS/2_2

2-4-22. SATA & SATA Power Connectors

SATA1, SATA2: Serial ATA connectors

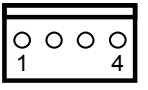
PIN	ASSIGNMENT
1	G1
2	TX+
3	TX-
4	G2
5	RX-
6	RX+
7	G3

SATA1/
SATA2

Note: SATA1 only supports the optional RAID function on board.

JPWR_4P1, JPWR_4P2: Serial ATA power connectors

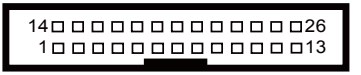
PIN	ASSIGNMENT
1	VCC
2	GND
3	GND
4	VCC12



JPWR_4P1/
JPWR_4P2

Note: JPWR_4P1 only supports the optional RAID function on board

2-4-23. Printer Connector



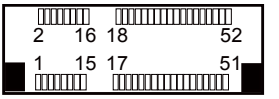
LPT1

LPT1: Printer connector

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	STBJ	14	ALFJ
2	PDR0	15	ERRJ
3	PDR1	16	PAR_INITJ
4	PDR2	17	SLCTINJ
5	PDR3	18	GND
6	PDR4	19	GND
7	PDR5	20	GND
8	PDR6	21	GND
9	PDR7	22	GND
10	ACKJ	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCTJ	26	NC

2-4-24. Mini-PCIe Connector

SLOT1: Mini-PCIe connector, USB function not supported.



SLOT1

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	WAKE#	2	+3.3V
3	Reserved	4	GND
5	Reserved	6	+1.5V
7	CLKREQ#	8	Reserved
9	GND	10	Reserved
11	REFCLK1-	12	Reserved
13	REFCLK1+	14	Reserved
15	GND	16	Reserved
17	Reserved	18	GND
19	Reserved	20	Reserved
21	GND	22	PERST#
23	PERn2	24	+3.3SB
25	PERp2	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PETn2	32	SMB_DATA
33	PETp2	34	GND
35	GND	36	NC
37	GND	38	NC
39	+3.3V	40	GND
41	+3.3V	42	Reserved
43	GND	44	Reserved
45	NC	46	Reserved
47	NC	48	+1.5V
49	NC	50	GND
51	Reserved	52	+3.3V

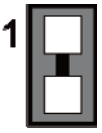
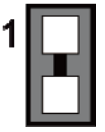
2-4-25. eSATA Connector

ESATA1

PIN	ASSIGNMENT
1	VCC
2	D-
3	D+
4	GND
5	GND
6	TX+
7	TX-
8	G2
9	RX-
10	RX+
11	G3

2-4-26. SATA RAID1 Selection

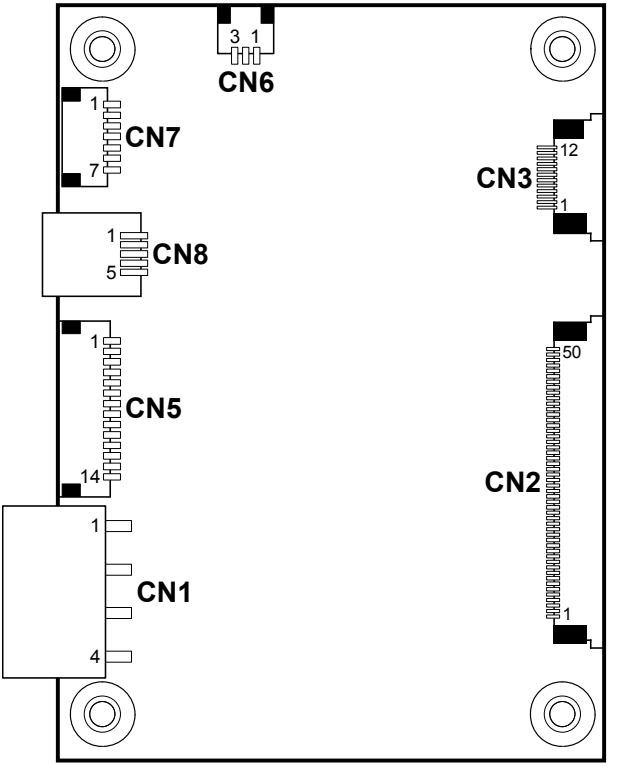
JP42, JP43, JP44: SATA RAID1 Selection

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION		
RAID1 (Default)	1-2 (JP4) Open (JP43) 1-2 (JP4)	 JP42	 JP43	 JP44

Note: RIAD 1 function is only supported in PA-6225RC-G0B and PA-6225RC-H0B.

2-5. PRINTER BOARD COMPONENT LOCATIONS & PIN ASSIGNMENT

2-5-1. Printer Board: PDAC-3100

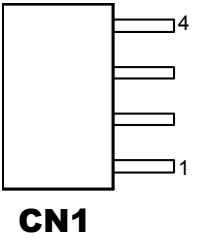


PDAC-3100 Printer Board Component Locations

2-5-1-1. Power Supply Connector

CN1: Power supply wafer

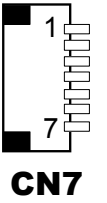
PIN	ASSIGNMENT
1	+24V
2	+24V
3	GND
4	GND



2-5-1-2. RS-232 Interface Connector

CN7: RS-232 interface connector

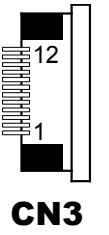
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	TXD	5	DTR
2	RXD	6	DSR
3	RTS	7	GND
4	CTS	-	-



2-5-1-3. Auto-Cutter Connector

CN3: Auto-cutter wafer

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

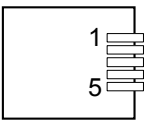


CN3

2-5-1-4. USB Connector

CN8: USB Connector

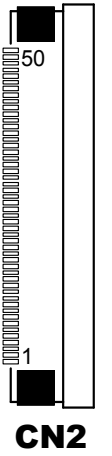
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	Vbus	4	NC
2	D-	5	GND
3	D+	-	-



CN8

2-5-1-5. Thermal Head/Motor/Sensor Connector

CN2: Thermal head/motor/sensor connector



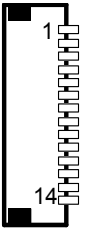
PIN	ASSIGNMENT	FUNCTION
1	24V	Head drive power
2	24V	Head drive power
3	24V	Head drive power
4	24V	Head drive power
5	24V	Head drive power
6	24V	Head drive power
7	DAT	Print data output
8	CLK	Synchronizing signal for print data transfer
9	GND	Head GND
10	GND	Head GND
11	GND	Head GND
12	GND	Head GND
13	GND	Head GND
14	GND	Head GND
15	NC	Unused
16	DST4	Head strobe signal
17	DST3	Head strobe signal
18	3.3V	Logic Power
19	GND	Thermistor GND
20	GND	Thermistor GND
21	TH	Thermistor signal
22	NC	Unused
23	DST2	Head strobe signal
24	DST1	Head strobe signal
25	GND	Head GND
26	GND	Head GND
27	GND	Head GND
28	GND	Head GND
29	GND	Head GND

PIN	ASSIGNMENT	FUNCTION
30	GND	Head GND
31	LATCH	Print data latch
32	24V	Head drive power
33	24V	Head drive power
34	24V	Head drive power
35	24V	Head drive power
36	24V	Head drive power
37	24V	Head drive power
38	NC	Unused
39	PS	Signal of the out-of-paper sensor
40	Vps	Power supply of the out-of-paper sensor
41	GND	GND of the platen position/ out-of-paper sensor
42	HS	Signal of the platen position sensor
43	NC	Unused
44	FG	Frame GND
45	FG	Frame GND
46	NC	Unused
47	2A	Motor drive signal
48	1B	Motor drive signal
49	1A	Motor drive signal
50	2B	Motor drive signal

2-5-1-6. Terminal Assignment Connect

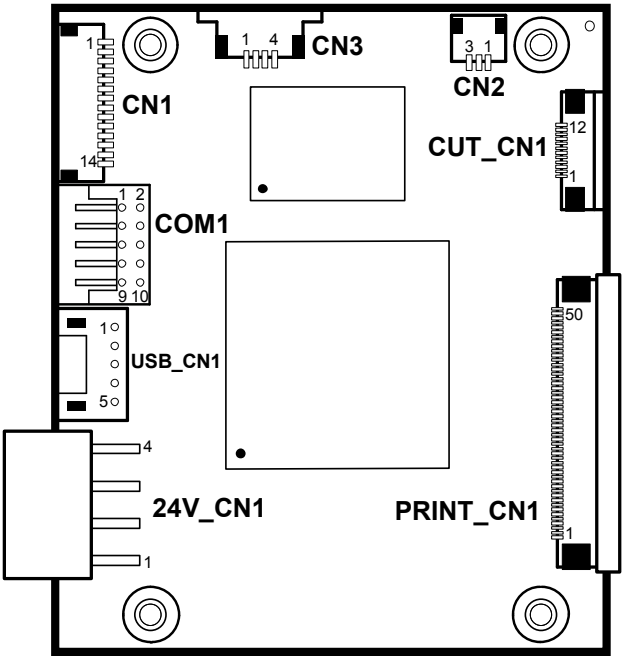
CN5: Terminal assignment connector

PIN	ASSIGNMENT	FUNCTION
1	FEED	Feed signal
2	RESET	Reset signal
3	GND	GND
4	ST1	Status signal
5	ST2	Status signal
6	ST3	Status signal
7	ST4	Status signal
8	GND	GND
9	DRS	Drawer sensor signal
10	DSW	Drawer switch signal
11	Vdu	Drive terminal for the drawer (Vp side)
12	GNDdu	Drive terminal for the drawer (GND side)
13	GND	GND
14	NC	Unused



CN5

2-5-2. Printer Board: MB-1030

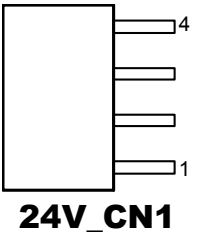


MB-1030 Printer Board Component Locations

2-5-2-1. Power Supply Connector

24V_CN1: Power Supply Wafer

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

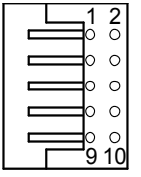


24V_CN1

2-5-2-2. RS-232 Interface Connector

COM1: RS-232 Interface Connector

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

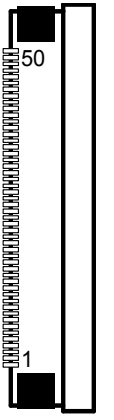


COM1

2-5-2-3. Thermal Head/Motor/Sensor Connector

PRINT_CN1: Thermal head/motor/sensor connector

PIN	ASSIGNMENT	FUNCTION
1	24V	Head drive power
2	24V	Head drive power
3	24V	Head drive power
4	24V	Head drive power
5	24V	Head drive power
6	24V	Head drive power
7	DAT	Print data output
8	CLK	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
14	GND	Head GND
15	NC	Unused
16	DST4	Head strobe signal
17	DST3	Head strobe signal
18	3.3V	Logic Power
19	GND	Thermistor GND
20	GND	Thermistor GND
21	TH	Thermistor signal
22	NC	Unused
23	DST2	Head strobe signal
24	DST1	Head strobe signal
25	GND	Head GND
26	GND	Head GND
27	GND	Head GND
28	GND	Head GND
29	GND	Head GND



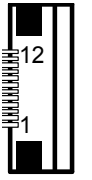
PRINT_CN1

PIN	ASSIGNMENT	FUNCTION
30	GND	Head GND
31	LATCH	Print data latch
32	24V	Head drive power
33	24V	Head drive power
34	24V	Head drive power
35	24V	Head drive power
36	24V	Head drive power
37	24V	Head drive power
38	NC	Unused
39	PS	Signal of the out-of-paper sensor
40	Vps	Power supply of the out-of-paper sensor
41	GND	GND of the platen position/ out-of-paper sensor
42	HS	Signal of the platen position sensor
43	NC	Unused
44	FG	Frame GND
45	FG	Frame GND
46	NC	Unused
47	2A	Motor drive signal
48	1B	Motor drive signal
49	1A	Motor drive signal
50	2B	Motor drive signal

2-5-2-4. Auto-Cutter Connector

CUT_CN1: Auto-cutter Connector

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

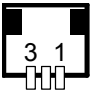


CUT_CN1

2-5-2-5. Paper-Near-END Sensor Connector

CN2: Paper-near-end sensor connector

PIN	ASSIGNMENT	FUNCTION
1	Vns	Power supply of the near end sensor
2	NS	Signal of the near end sensor
3	GND	GND of the near end sensor

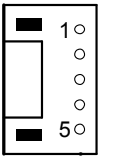


CN2

2-5-2-6. USB Interface Connector

USB_CN1: USB interface connector

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	Vbus	4	GND
2	D-	5	GND
3	D+	-	-

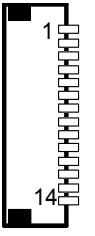


USB_CN1

2-5-2-7. Terminal Assignment Connector

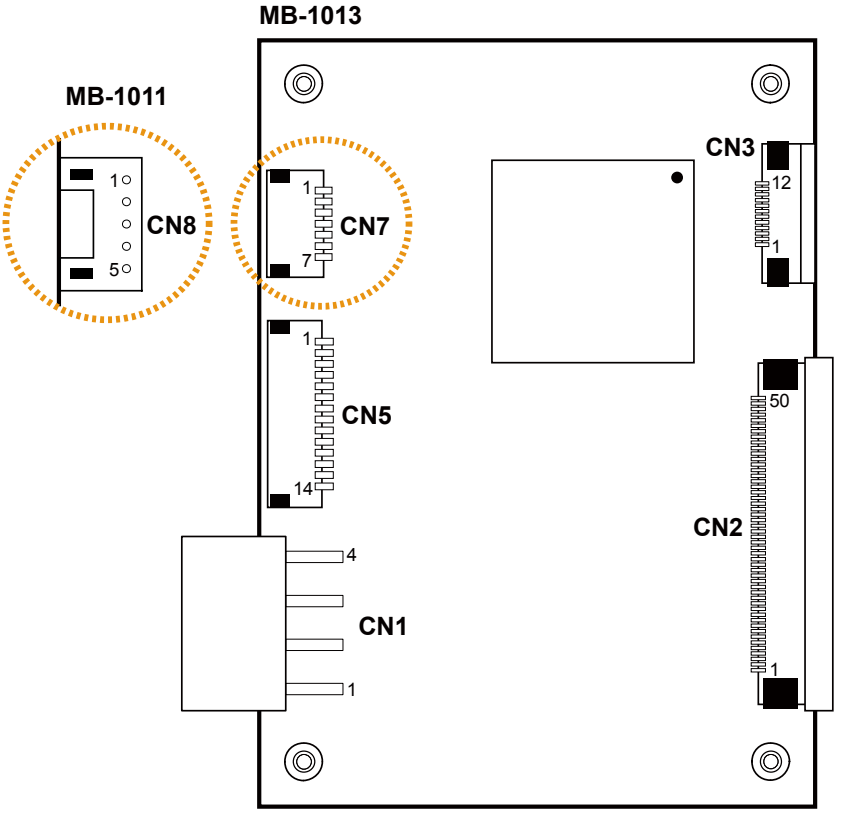
CN1: Terminal assignment connector

PIN	ASSIGNMENT	FUNCTION
1	FEED	Feed signal
2	RESET	Reset signal
3	GND	GND
4	ST1	Status signal
5	ST2	Status signal
6	ST3	Status signal
7	ST4	Status signal
8	GND	GND
9	DRS	Drawer sensor signal
10	DSW	Drawer switch signal
11	Vdu	Drive terminal for the drawer (Vp side)
12	GNDdu	Drive terminal for the drawer (GND side)
13	GND	GND
14	NC	Unused



CN1

2-5-3. Printer Board: MB-1011 & MB-1013

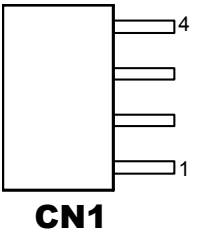


MB-1011 & MB-1013 Printer Board Component Locations

2-5-3-1. Power Supply Connector

CN1: Power supply wafer

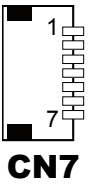
PIN	ASSIGNMENT
1	GND
2	GND
3	+24V
4	+24V



2-5-3-2. RS-232 Interface Connector

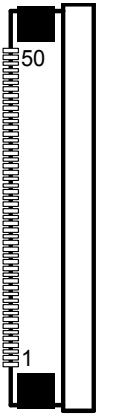
CN7: RS-232 interface connector

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	TXD	5	DTR
2	RXD	6	DSR
3	RTS	7	GND
4	CTS	-	-



2-5-3-3. Thermal Head/Motor/Sensor Connector

CN2: Thermal head/motor/sensor connector



CN2

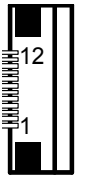
PIN	ASSIGNMENT	FUNCTION
1	24V	Head drive power
2	24V	Head drive power
3	24V	Head drive power
4	24V	Head drive power
5	24V	Head drive power
6	24V	Head drive power
7	DAT	Print data output
8	CLK	Synchronizing signal for print data transfer
9	GND	Head GND
10	GND	Head GND
11	GND	Head GND
12	GND	Head GND
13	GND	Head GND
14	GND	Head GND
15	NC	Unused
16	DST4	Head strobe signal
17	DST3	Head strobe signal
18	3.3V	Logic Power
19	GND	Thermistor GND
20	GND	Thermistor GND
21	TH	Thermistor signal
22	NC	Unused
23	DST2	Head strobe signal
24	DST1	Head strobe signal
25	GND	Head GND
26	GND	Head GND
27	GND	Head GND
28	GND	Head GND
29	GND	Head GND

PIN	ASSIGNMENT	FUNCTION
30	GND	Head GND
31	LATCH	Print data latch
32	24V	Head drive power
33	24V	Head drive power
34	24V	Head drive power
35	24V	Head drive power
36	24V	Head drive power
37	24V	Head drive power
38	NC	Unused
39	PS	Signal of the out-of-paper sensor
40	Vps	Power supply of the out-of-paper sensor
41	GND	GND of the platen position/ out-of-paper sensor
42	HS	Signal of the platen position sensor
43	NC	Unused
44	FG	Frame GND
45	FG	Frame GND
46	NC	Unused
47	2A	Motor drive signal
48	1B	Motor drive signal
49	1A	Motor drive signal
50	2B	Motor drive signal

2-5-3-4. Auto-Cutter Connector

CN3: Auto-cutter Connector

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

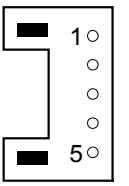


CN3

2-5-3-5. USB Interface Connector

CN8: USB interface connector

PIN	ASSIGNMENT
1	Vbus
2	D-
3	D+
4	GND
5	GND

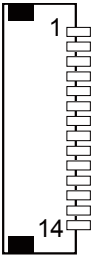


CN8

2-5-3-6. Terminal Assignment Connector

CN5: Terminal assignment connector

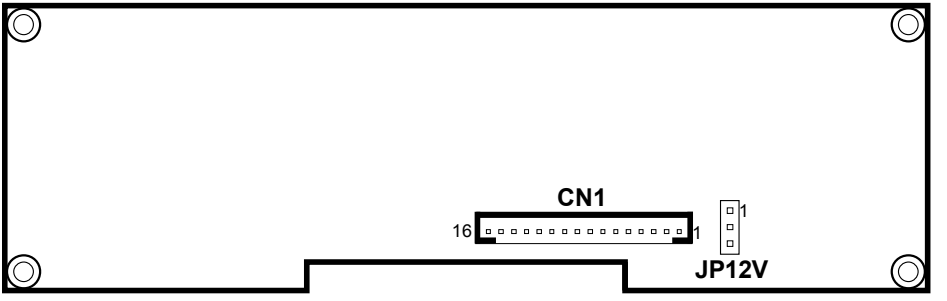
PIN	ASSIGNMENT	FUNCTION
1	FEED	Feed signal
2	RESET	Reset signal
3	GND	GND
4	ST1	Status signal
5	ST2	Status signal
6	ST3	Status signal
7	ST4	Status signal
8	GND	GND
9	DRS	Drawer sensor signal
10	DSW	Drawer switch signal
11	Vdu	Drive terminal for the drawer (Vp side)
12	GNDdu	Drive terminal for the drawer (GND side)
13	GND	GND
14	NC	Unused



CN5

2-6. VFD BOARD COMPONENT LOCATIONS & PIN ASSIGNMENT

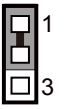
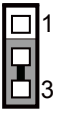
2-6-1. VFD Board: MB-4103, LD720



MB-4103 & LD720 VFD Board Component Locations

2-6-1-1. Power Switch Selection

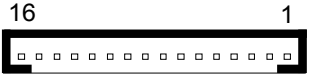
JP12V: Power Switch Selection

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
OFF	1-2	 **JP12V**
ON (Default)	2-3	 **JP12V**

2-6-1-2. RS-232 Serial Interface Connector

CN1: RS-232 serial interface wafer

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	9	NC
2	TXD	10	NC
3	RXD	11	NC
4	DTR	12	NC
5	DSR	13	NC
6	RTS	14	NC
7	CTS	15	NC
8	+12V/+5V	16	NC



CN1

2-7. MSR BOARD COMPONENT LOCATIONS & PIN ASSIGNMENT

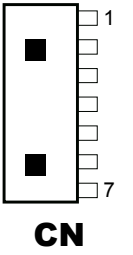
2-7-1. ID-TECH

ID-TECH MSR Board Component Locations

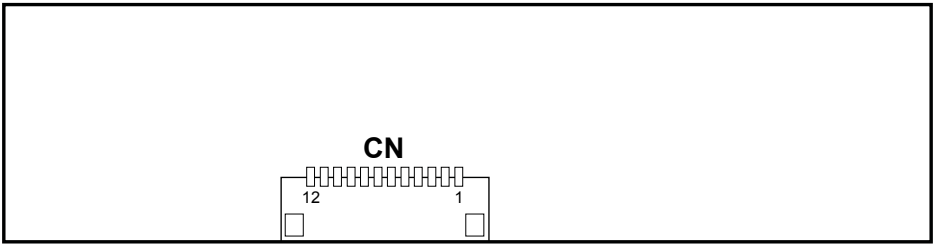
2-7-1-1. Main Connector

CN:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	Chassis Ground	5	K-CLK (Computer connections)
2	P-CLK (Keyboard connections)	6	K-DATA (Computer connections)
3	P-DATA (Keyboard connections)	7	GND
4	+5V Vcc	-	-



2-7-2. SYSKING

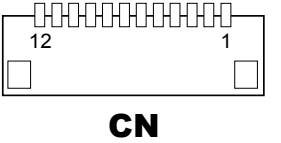


SYSKING MSR Board Component Locations

2-7-2-1. Main Connector

CN:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	+5V Vcc	7	NC
2	K-DATA (Host to MSR)	8	NC
3	K-CLK Host to MSR	9	NC
4	P-DATA (MSR to Keyboard)	10	NC
5	P-CLK (MSR to Keyboard)	11	Signal Ground
6	NC	12	Signal Ground



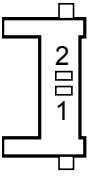
2-7-3. MB-3012

MB-3012 MSR Board Component Locations

2-7-3-1. Information Button Reader

I_BUTTON1: Information button reader

PIN	ASSIGNMENT
1	I_B1
2	GND

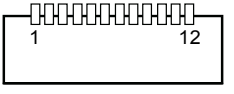


I_BUTTON1

2-7-3-2. Output Connector

IO1: Output wafer

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

CHAPTER

3

SOFTWARE

This chapter provides the detailed information of driver utilities and BIOS (Basic Input Output Subsystem) settings for the system.

The following topics are included:

- Driver
  - Intel® Chipset Software Installation Utility
  - VGA Driver Utility
  - LAN Driver Utility
  - Sound Driver Utility
  - Touchscreen Driver Utility
  - Fingerprint Driver Utility (Optional)
  - Wireless Module Driver (Optional)
  - For Intel Trusted Execution Engine Interface (TXE)

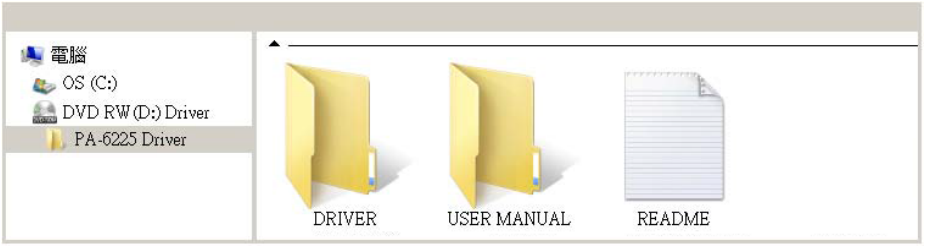
- Embedded Peripheral Devices
  - Printer
  - VFD
  - MSR

- BIOS Operation
  - Setup
  - Watchdog Timer Configuration
  - Update Procedure
  - System Resource Map

3-1. DRIVER

3-1-1. Introduction

Enclosed with the PA-6225 Series package is our driver utilities, which comes in a DVD-ROM disc.



Driver Folder

1. The setup sequence is "Main Chip -> VGA -> LAN -> SOUND -> TOUCH[Device folder]"
2. You will be prompted to reboot the system when the installation is completed.
   +--->\Flash BIOS\AFUa.bat
   +--->\Platform\
   +--->\Device\

User Manual Folder

\AdbeRdr930_en_US.exe (PDF File reader)

README

The DRIVER DISC introduction

3-1-2. Intel® Chipset Software Installation Utility

3-1-2-1. Introduction

The Intel® Chipset Software Installation Utility installs Windows *.INF files to the target system. These files outline to the operating system how to configure the Intel chipset components in order to ensure the following features function properly:

- SATA Storage Support (SATA & SATA II)
- USB Support (1.1 & 2.0)
- Identification of Intel® Chipset Components in Device Manager

3-1-2-3. Installing Intel® Chipset Driver

The utility pack is to be installed only for POSReady 7 & Windows 8 & Windows 10 series, and it should be installed right after the OS installation is completed. Please follow the steps below:

1. Connect the USB DVD-ROM device to PA-6225 and insert the driver disk.
2. Open the "DRIVER\Platform\Main Chip" folder where the Chipset driver is located (depending on your OS platform).
3. Click **SetupChipset.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart PA-6225 for the changes to take effect.

3-1-3. VGA Driver Utility

The VGA interface embedded with PA-6225 can support a wide range of display types. You can have dual displays by configuring CRT & LVDS interfaces to work simultaneously.

3-1-3-1. Installing VGA Driver

To install the VGA driver, follow the steps below:

1. Connect the USB-DVD ROM device to PA-6225 and insert the driver disk.
2. Open the "DRIVER\Platform\VGA" folder where the VGA driver is located (depending on your OS platform).
3. Click **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart PA-6225 for the changes to take effect.

3-1-4. LAN Driver Utility

PA-6225 is enhanced with LAN function that can support various network adapters. Installation platform for the LAN driver is listed as follows:

3-1-4-1. Installing LAN Driver

To install the LAN Driver, follow the steps below:

1. Connect the USB DVD-ROM device to PA-6225 and insert the driver disk.
2. Open the "DRIVER\Platform\LAN" folder where the LAN driver is located (depending on your OS platform).
3. Click **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart PA-6225 for the changes to take effect.

For more details on the installation procedure, refer to the Readme.txt file that can be found on the LAN Driver Utility.

3-1-5. Sound Driver Utility

The sound function enhanced in this system is fully compatible with Windows POSReady 7 & Windows 8 & Windows 10 series. Below, you will find the content of the Sound driver.

3-1-5-1. Installing Sound Driver

To install the Sound Driver, follow the steps below:

1. Connect the USB DVD-ROM device to PA-6225 and insert the driver disk.
2. Open the "DRIVER\Platform\Audio" folder where the sound driver is located (depending on your OS platform).
3. Click **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart PA-6225 for the changes to take effect.

3-1-6. Touchscreen Driver Utility

The touchscreen driver utility can only be installed on Windows POSReady 7 & Windows 8 & Windows 10 series, and it should be installed right after the OS installation is completed.

3-1-6-1. Installing Touchscreen Driver

To install the touchscreen driver, follow the steps below:

1. Connect the USB DVD-ROM device to PA-6225 and insert the driver disk.
2. Open the "Device\Touch Controller" folder where the touchscreen driver is located.
3. Click **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart PA-6225 for the changes to take effect.

3-1-7. Fingerprint Driver Utility (Optional)

The fingerprint driver utility can only be installed on a Windows platform, and it should be installed right after the OS installation is completed.

3-1-7-1. Installing Fingerprint Driver

To install the fingerprint driver, follow the steps below:

1. Connect the USB DVD-ROM device to PA-6225 and insert the driver disk.
2. Open the "Device\Fingerprint" folder where the fingerprint driver is located.
3. Click **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart PA-6225 for the changes to take effect.

3-1-8. Wireless Module Driver Utility (Optional)

The wireless driver utility can only be installed on Windows POSReady7 & Windows 8 & Windows 10 series, and it should be installed right after the OS installation is completed.

3-1-8-1. Installing Wireless Driver

To install the wireless driver, follow the steps below:

1. Connect the USB DVD-ROM device to PA-6225 and insert the driver disk.
2. Open the "Device\WIFI module" folder where the wireless driver is located.
3. Click **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart PA-6225 for the changes to take effect.

3-1-9. For Intel Trusted Execution Engine Interface

For POSReady 7 only. Pre-install Microsoft's Kernel-Mode Driver Framework (KMDF) version 1.11 before you install the Intel(R) Trusted Execution Engine (TXE) driver in order to avoid errors in Device Manager.

Installation Instructions for Kernel-Mode Driver Framework (KMDF)

To install the Kernel-Mode Driver Framework (KMDF), follow the steps below:

1. Insert the driver disk into a DVD-ROM device.
2. Open the "DRIVER\Platform\Windows 7 KMDF" folder where the Kernel-Mode Driver is located.
3. Open the "DRIVER\Platform\TXE" folder where the Firmware Driver is located. (depending on your OS platform).
4. Click **Setup TXE.exe** file for driver installation.

3-2. PERIPHERAL DEVICES

The commands lists and driver installation guide for peripheral devices of the system - printer board, VFD and MSR – are explicitly included in this section.

3-2-1. Printer Board: MB-1030

3-2-1-1. Commands

1. Printer Registry Operation

Registry Name	Default Data	Notes
BaudRate	115200	-
BitLength	8	-
Parity	0	-
Stop	1	-

2. Commands List

Standard Commands

Command	RA	RB	Command	RA	RB	Command	RA	RB
HT		V	ESC D		V	GS /	V	V
LF	V	V	ESC E	V	V	GS :		
FF		V	ESC G		V	GS B	V	V
CR	V	V	ESC J	V	V	GS H	V	V
CAN		V	ESC L		V	GS I	V	V
DLE EOT	V	V	ESC M	V	V	GS L	V	V
DLE ENQ		V	ESC c 4		V	GS P	V	V
DLE DC4	V	V	ESC c 5		V	GS V	V	V
ESC FF		V	ESC d	V	V	GS W		V
ESC SP	V	V	ESC p	V	V	GS \		
ESC !	V	V	ESC t	V	V	GS ^		
ESC $	V	V	ESC {	V	V	GS a	V	V
ESC %			FS g 1			GS b		
ESC &			FS g 2			GS f	V	V
ESC *		V	FS p	V	V	GS h	V	V
ESC	V	V	FS q	V	V	GS k	V	V
ESC 2	V	V	GS !	V	V	GS r	V	V
ESC 3	V	V	GS $		V	GS v 0	V	V
ESC =	V	V	GS *	V	V	GS w	V	V
ESC ?			GS (A	V	V			
ESC @	V	V	GS (K		V			

Kanji Control Commands

Command	MB-1030 RA	MB-1030 RB
FS !	V	V
FS &	V	V
FS		V
FS .	V	V
FS 2		
FS C		
FS S		V
FS W		V

Other Commands

Command	MB-1030 RA	MB-1030 RB
ESC i	V	V
ESC m	V	V
DC2 ;		V
GS p 1		V

COMMANDS LIST

Standard Commands

Control Codes	Hexadecimal Codes	Function	Standard Mode	Page Mode
<HT>	09	Horizontal tab	V	V
<LF>	0A	Print and line feed	V	V
<FF>	0C	Print and recover to standard mode (in page mode)	Ignored	V
<CR>	0D	Print and carriage return	V	V
<CAN>	18	Cancel print data in page mode	Ignored	V
<DLE EOT>	10 04	Real-time status transmission	V	V
<DLE ENQ>	10 05	Real-time request to printer	V	V
<DLE DC4>	10 14	Real-time output of specified pulse	V	V
<ESC FF>	1B 0C	Print data in page mode	Ignored	V
<ESC SP>	1B 20	Set right-side character spacing	V	V
<ESC !>	1B 21	Select print mode(s)	V	V
<ESC $>	1B 24	Set absolute print position.	V	V
<ESC *>	1B 2A	Select bit image mode	V	V
<ESC ->	1B 2D	Turn underline mode on/off	V	V
<ESC 2>	1B 32	Select default line spacing	V	V
<ESC 3>	1B 33	Set line spacing	V	V
<ESC =>	1B 3D	Select peripheral device	V	V
<ESC @>	1B 40	Initialize printer	V	V
<ESC D>	1B 44	Set horizontal tab position	V	V
<ESC E>	1B 45	Turn emphasized mode on/off	V	V
<ESC G>	1B 47	Turn double-strike mode on/off	V	V
<ESC J>	1B 4A	Print and feed paper	V	V
<ESC L>	1B 4C	Select page mode	◎	Ignored
<ESC M >	1B 4D	Select character font	V	V

Control Codes	Hexadecimal Codes	Function	Standard Mode	Page Mode
<ESC R>	1B 52	Select an international character set	V	V
<ESC S>	1B 53	Select standard mode	Ignored	V
<ESC T>	1B 54	Select print direction in page mode	▲	V
<ESC V>	1B 56	Turn 90 degree clockwise rotation mode on/off	V	▲
<ESC W>	1B 57	Set printing area in page mode	▲	V
<ESC \>	1B 5C	Set relative print position	V	V
<ESC a>	1B 61	Select justification	◎	▲
<ESC c 3>	1B 63 33	Select paper sensor(s) to output paper-end signals	V	V
<ESC c 4>	1B 63 34	Select paper sensor(s) to stop printing	V	V
<ESC c 5>	1B 63 35	Enable/disable panel buttons	V	V
<ESC d>	1B 64	Print and feed n lines	V	V
<ESC i>	1B 69	Full cut	V	Disabled
<ESC m>	1B 6D	Partial cut	V	Disabled
<ESC p>	1B 70	General pulse	V	V
<ESC t>	1B 74	Select character code table	V	V
<ESC {>	1B 7B	Turn upside-down printing mode on/off	◎	▲
<FS p>	1C 70	Print NV bit image	V	Disabled
<FS q>	1C 71	Define NV bit image	◎	Disabled
<GS !>	1D 21	Select character size		V
<GS $>	1D 24	Set absolute vertical print position in page mode	Ignored	V
<GS *>	1D 2A	Define download bit images	V	V
<GS (A>	1D 28 41	Execute test print	V	Disabled
<GS (K>	1D 28 4B	Set print density	V	Disabled
<GS />	1D 2F	Print download bit image	●	V
<GS B>	1D 42	Turn white/black reverse printing mode on/off	V	V
<GS H>	1D 48	Select printing position of HRI characters	V	V
<GS I>	1D 49	Transmit printer ID	V	Disabled
<GS L>	1D 4C	Set left margin	◎	Disabled
<GS P>	1D 50	Set basic calculated pitch	V	V
<GS V>	1D 56	Cut paper	◎	V

Control Codes	Hexadecimal Codes	Function	Standard Mode	Page Mode
<GS W>	1D 57	Set printing area width	◎	▲
<GS \>	1D 5C	Set relative vertical print position in page mode	Ignored	
<GS a>	1D 61	Enable/disable Automatic Status Back(ASB)	V	V
<GS f>	1D 66	Select font for HRI characters	V	V
<GS h>	1D 68	Set bar code height	V	V
<GS k>	1D 6B	Print bar code	●	V
<GS r>	1D 72	Transmit status	V	V
<GS v 0>	1D 76 30	Print raster bit image	●	Disabled
<GS w>	1D 77	Set bar code width	V	V

Two-dimensional Bar Code Commands

Control Codes	Hexadecimal Codes	Function	Standard Mode	Page Mode
<DC2 ;>	12 3B	Specifies a module size of QR Code and Data Matrix	V	V
<GS p 1>	1D 70 01	Prints QR Code data based on the specified contents	V	V

Kanji Control Commands

(when the Japanese, Simplified Chinese, Traditional Chinese, or Korean model is used.)

Control Codes	Hexadecimal Codes	Function	Standard Mode	Page Mode
<FS !>	1C 21	Set print mode(s) for Kanji characters	V	V
<FS &>	1C 26	Select Kanji character mode	V	V
<FS ->	1C 2D	Turn underline mode on/off for Kanji characters	V	V
<FS .>	1C 2E	Cancel Kanji character mode	V	V
<FS S>	1C 53	Set Kanji character spacing	V	V
<FS W>	1C 57	Turn quadruple-size mode on/off for Kanji characters	V	V

Command classification:

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

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

○: Enabled.
◎: Enabled only when the command is set at the beginning of a line.
●: Enabled only when data is not present in the printer buffer.
▲: Only value setting is possible.
Disabled: Parameters are processed as printable data.
Ignored: All command codes including parameters are ignored and nothing is executed.

COMMANDS DETAILS

STANDARD COMMANDS DETAILS

HT

[Name]	Horizontal tab
[Format]	ASCII HT Hex. 09 Decimal 9
[Range]	N/A
[Description]	Moves print position to next horizontal tab position. ● This command is ignored if the next tab is not set. ● If the next tab position exceeds the print region, the print position is moved to [print region + 1]. ● The horizontal tab position is set by ESC D (Set/cancel horizontal tab position). ● When the print position is at the [print region + 1] position and this command is received, the current line buffer full is printed and a horizontal tab is executed from the top of the next line. ● The initial value of the horizontal tab position is every 8 characters of Font A (the 9th, 17th, 25th positions, etc.)

LF

[Name]	Print and line feed
[Format]	ASCII LF Hex. 0A Decimal 10
[Range]	N/A
[Description]	Prints the data in the print buffer and performs a line feed based on the set line feed amount. ● After execution, makes the top of the line the next print starting position.

FF

[Name]	Print and recover to standard mode (in page mode)
[Format]	ASCII FF Hex. 0C Decimal 12
[Range]	N/A
[Description]	Prints all buffered data to the print region collectively, and then recovers to the standard mode. ● All buffer data is deleted after printing. ● The print area set by ESC W (Set print region in page mode) is reset to the default setting. ● No paper cut is executed. ● Sets the print position to the beginning of the next line after execution. ● This command is enabled only in page mode.

CR

[Name]	Print and carriage return
[Format]	ASCII CR Hex. 0D Decimal 13
[Range]	N/A
[Description]	When an automatic line feed is enabled, this command functions in the same way as LF (print and line feed). When the automatic line feed is disabled, this command is ignored. ● This command is ignored with serial interface models. ● Sets the print position to the beginning of the next line after execution.

CAN

[Name]	Cancel print data in page mode
[Format]	ASCII CAN Hex. 18 Decimal 24
[Range]	N/A
[Description]	Deletes all print data in the currently set print region in page mode. ● This command is enabled only in page mode. ● Portions included in the currently set print region are also deleted, even if previously set print region data.

DLE EOT n

[Name]	Real-time status transmission.
[Format]	ASCII OLE 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 ENQ n

[Name]	Real-time request to printer.
[Format]	ASCII DLE ENQ n Hex. 10 05 n Decimal 16 5 n
[Range]	1 ≤ n ≤ 2
[Description]	Responds to requests n specifications from the host in real-time. n specifications are below. n = 1: Recover from the error and start printing from the line where the error occurred. n = 2: Recover from error after clearing the reception buffer and print buffer. This command is enabled even when the printer specification is disabled by ESC = (select peripheral devices).

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 FF

[Name]	Print data in page mode.
[Format]	ASCII ESC FF Hex. 1B 0C Decimal 27 12
[Range]	N/A
[Description]	Prints all buffered data in the print area collectively in page mode. ● This command is enabled only in page mode. ● Holds the following information after printing. a. Expanded data b. Character print direction selection in page mode (ESC T)

	c. Set print region (ESC W) in the page mode. d. Character expansion position

ESC SP n

[Name]	Set right-side character spacing.
[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]	Select print mode(s).
[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.

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 $ nL nH

[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). Specifications exceeding the print range are ignored.

ESC * m nL nH d1…dk

[Name]	Select bit image mode
[Format]	ASCII ESC * m nL nH d1...dk Hex. 1B 2A m nL nH d1...dk Decimal 27 42 m nL nH d1...dk
[Range]	m = 0,1,32,33 0 ≤ nL ≤ 255 0 ≤ nH ≤ 3 0 ≤ d ≤ 255
[Description]	Selects a bit-image mode in mode *m* for the number of dots specified by *nL* and *nH*. m = 1,33 : (nL+nH×256)<576 (3 inch);(nL+nH×256)<432 (2 inch). m = 0,32 : (nL+nH×256)<288 (3 inch);(nL+nH×256)<216 (2 inch).

m	Mode	Number of Vert. Dir. Dots	Density of Vert. Dir. Dots	Density of Hor. Dir. Dots	Data Count (k)
0	8 dot single density	8	67 DPI	101 DPI	nL+nH×256
1	8 dot double density	8	67 DPI	203 DPI	nL+nH×256
32	24 dot single density	24	203 DPI	101 DPI	(nL+nH×256) ×3
33	24 dot double density	24	203 DPI	203 DPI	(nL+nH×256) ×3

ESC - n

[Name]	Turn underline mode on/off.
[Format]	ASCII ESC - n Hex. 1B 2D n Decimal 27 45 n
[Range]	0 ≤ n ≤ 2 Initial Value n = 0
[Description]	This command enables the print data following it to be printer out underlined. 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
2	Turns on underline mode, set at 2-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 D n1…nk NUL

[Name]	Set horizontal tab position
[Format]	ASCII ESC D n1...nk NUL Hex. 1B 44 n1...nk NUL Decimal 27 68 n1...nk NUL
[Range]	1 ≤ n ≤ 255 0 ≤ k ≤ 32

[Description]	Sets horizontal tab position ● n specifies the column number for setting a horizontal tab position from the left margin or the beginning of the line. ● k indicates the number of horizontal tab positions to be set.

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, the emphasized mode is turned off. When the LSB of n is 1, the emphasized mode is turned on.

ESC G n

[Name]	Turn double-strike mode on/off.
[Format]	ASCII ESC G n Hex. 1B 47 n Decimal 27 71 n
[Range]	0 ≤ n ≤ 255 Initial Value n = 0
[Description]	Specifies or cancels double printing. Cancels double printing when n = <*******0>B. Specifies double printing when n = <*******1>B. ● n is effective only when it is the lowest bit. ● This printer is not capable of double printing, so the print is the same as when using emphasized printing. ● This command is enabled for ANK characters

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]. ● Sets the print position to the beginning of the next line after printing. ● In standard mode, the printer uses the vertical motion unit (*y*). ● In page mode, this command functions as follows, depending on the starting position of the printable area: (1) When the starting position is set to the upper left or lower right of the printable area using **ESC T**, the vertical motion unit (*y*) is used. (2) When the starting position is set to the upper right or lower left of the printable area using **ESC T**, the horizontal motion unit (*x*) is used. ● The maximum line spacing is 150mm {5.9 inches }. When the setting value exceeds the maximum, it is converted to the maximum automatically.

ESC L

[Name]	Select page mode
[Format]	ASCII ESC L Hex. 1B 4C Decimal 27 76
[Range]	N/A
[Description]	● Enabled only when input with the top of line. ● Invalid when input by page mode. ● Returns to standard mode after the following commands are issued. a. FF (Print and recover to page mode) b. ESC S (Select standard mode) ● Character expansion position has the starting point specified by ESC T (Character print direction selection in page mode) in the printing region designated by the ESC W (Set print region in the page mode) command. ● This command switches the settings for the following commands the values of which can be set independently in standard mode and page mode to those for page mode a. Set space amount: ESC SP, FS S b. Set line feed amount: ESC 2, ESC 3 ● The following commands are enabled only when in page mode. a. ESC V :Specify/cancel character 90 degree clockwise rotation b. ESC a :Position alignment c. ESC { :Specify/cancel upside-down printing d. GS W :Set print region width ● The following command is ignored in page mode. a. GS (A :Test print

	● The following commands are invalid in page mode. a. FS p :Print NV bit image b. FS q :Define NV bit image c. GS v 0 :Print raster bit images d. GS L :Set left margin ● Recover to standard mode using ESC @ (initialize printer).

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 ANK character fonts using n as following.

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

ESC R n

[Name]	Select an 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 S

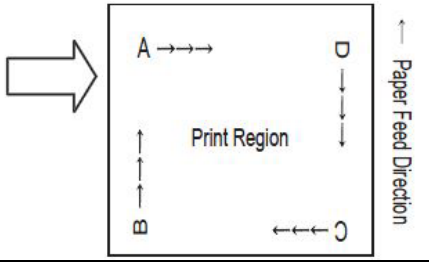
[Name]	Select standard mode
[Format]	ASCII ESC S Hex. 1B 53 Decimal 27 83
[Range]	N/A
[Description]	● Valid only when input by page mode. ● All buffer data in page mode is deleted. ● Sets the print position to the beginning of the next line after execution. ● The print area set by ESC W (Set print region in page mode) is reset to the default setting. ● This command switches the settings for the following commands the values of which can be set independently in standard mode and page mode to those for standard mode a. ESC SP :Set character right space amount b. FS S :Set Chinese character space amount c. ESC 2 :Set default line spacing

	d. ESC 3 :Set line spacing ● The following commands are effective only when in standard mode. a. ESC W :Set print region in page mode b. ESC T :Select character print direction in page mode ● The following commands are ignored in standard mode. a.GS $:Specify absolute position for character vertical direction in page mode. b.GS \: :Specify relative position for character vertical direction in page mode. ● Standard mode is selected when the power is turned on, the printer is reset or initialized (ESC @).

ESC T n

[Name]	Select print direction in page mode.
[Format]	ASCII ESC T n Hex. 1B 54 n Decimal 27 84 n
[Range]	0 ≤ n ≤ 3, 48 ≤ n ≤ 51 Initial Value n = 0
[Description]	Selects the character printing direction and starting point in page mode.

n	Print Direction	Starting Point
0, 48	Left to Right	Upper Left (A in the figure below)
1, 49	Bottom to Top	Lower Left (B in the figure below)
2, 50	Right to Left	Lower Right (C in the figure below)
3, 51	Top to Bottom	Upper Right (D in the figure below)

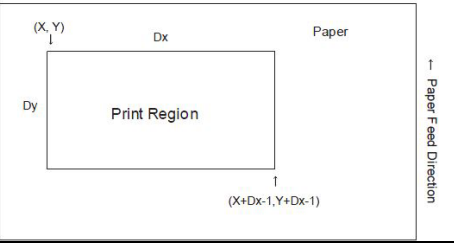


ESC V n

[Name]	Turn 90 degree clockwise rotation mode on/off
[Format]	ASCII ESC V n Hex. 1B 56 n Decimal 27 86 n
[Range]	0 ≤ n≤ 1, 48≤ n ≤49 Initial Value n = 0
[Description]	Specifies or cancels character 90 degree clockwise rotation. n | Function 0, 48 | Turns off 90 degree□clockwise rotation mode 1, 49 | Turns on 90 degree□clockwise rotation mode ● Underlines are not applied to characters rotated 90 degrees clockwise even when ESC !,ESC - or FS - commands are given. ● If 90 degree clockwise rotation is specified, double-wide and double-tall commands in the 90 rotation mode enlarges characters in the opposite directions to double-wide and double-tall commands. ● This command only affects printing in standard mode. ● In page mode, this command is only effective for the setting. ● This command is effective for ANK and Chinese characters.

ESC W xL xH yL yH dxL dxH dyL dyH

[Name]	Set printing area in page mode
[Format]	ASCII ESC W xL xH yL yH dxL dxH dyL dyH Hex. 1B 57 xL xH yL yH dxL dxH dyL dyH Decimal 27 87 xL xH yL yH dxL dxH dyL dyH
[Range]	0 ≤ xL, xH, yL, yH, dxL, dxH, dyL, dyH ≤ 255 However, this excludes dxL = dxH = 0 or dyL = dyH = 0 Initial Value xL = xH = yL = yH = 0
[Description]	Sets the print region position and size. ● Horizontal direction starting point [(xL + xH x 256) x basic calculated pitch] ● Vertical direction starting point [(yL + yH x 256) x basic calculated pitch] ● Horizontal direction length [(dxL + dxH x 256) basic calculated pitch] ● Vertical direction length = [(dyL + dyH x 256) basic calculated pitch] ● (X+Dx-1)<576 (3 inch, basic calculated pitch=1);(X+Dx-1)<432 (2 inch, basic calculated pitch=1) ● (Y+Dy-1)<768 (basic calculated pitch=1); ● If (horizontal starting position + printing area width) exceeds the printable

	area, the printing area width is automatically set to (horizontal printable area - horizontal starting position). ● If (vertical starting position + printing area height) exceeds the printable area, the printing area height is automatically set to (vertical printable area - vertical starting position). 

ESC \ nL nH

[Name]	Set relative print position.
[Format]	ASCII ESC \ nL nH Hex. 1B 5C nL nH Decimal 27 92 nL nH
[Range]	0 ≤ (nL + nH x 256) ≤ 65535 (0 ≤ nL 255, 0 ≤ nH ≤ 255)
[Description]	Specifies the next print starting position with a relative position based on the current position. This sets the position from the current position to [(nL + nH x 256) x basic calculated pitch] for the next print starting position. Specifications exceeding the print range are ignored.

ESC a n

[Name]	Select justification.
[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 This command has no effect in page mode.

ESC c 3 n

[Name]	Select paper sensor(s) to output paper-end signals.
[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 c 4 n

[Name]	Select paper sensor(s) to stop printing.
[Format]	ASCII ESC c 4 n Hex. 1B 63 34 n Decimal 27 99 52 n
[Range]	Specification: 0 ≤ n ≤ 3 Initial Value n = 0
[Description]	Selects the paper out detector to stop printing 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 c 5 n

[Name]	Enable/disable panel buttons
[Format]	ASCII ESC c 5 n Hex. 1B 63 35 n Decimal 27 99 53 n
[Range]	Specification: 0 ≤ n ≤ 255 Initial Value n = 0
[Description]	Toggles the panel switches between enabled and disabled. ● Enables panel switches when n = <*******0>B. ● Disables panel switches when n = <*******1>B. ● n is effective only when it is the lowest bit. ● When disabled, all panel switches are disabled.

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]	Prints the data in the print buffer and performs a paper feed of n lines. ● Sets the print position to the beginning of the next line after printing. ● Paper is fed approximately 150 mm if the [n x basic calculated pitch] exceeds approximately 150 mm (5.9 inches).

ESC i

[Name]	Full cut.
[Format]	ASCII ESC i Hex. 1B 69 Decimal 27 105
[Range]	N/A
[Description]	This command executes a full cut of the paper in standard mode

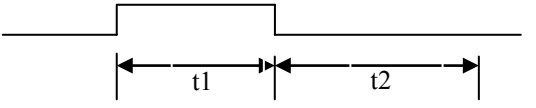
ESC m

[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 uncut in standard mode.

ESC p m t1 t2

[Name]	General 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]	Select page n of the character code table.

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]	Specifies or cancels upside-down printing. ● Cancels upside-down printing when n = <*******0>H. ● Specifies upside-down printing when n = <*******1>H. ● n is effective only when it is the lowest bit. ● This command is effective only when input at the top of the line when standard mode is being used. ● This command has no effect in page mode. In page mode, this command is only effective for the setting. ● Upside-down printing rotates line data 180 degrees.

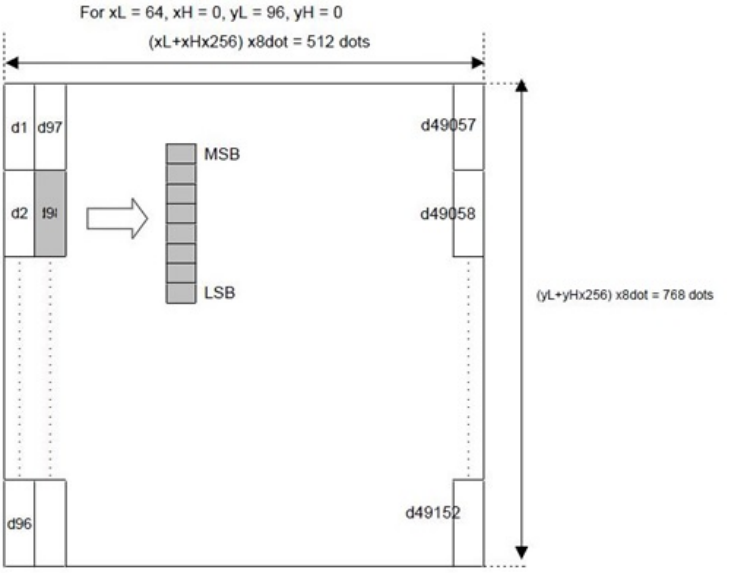
	n	Upside-down mode
	0	Turned off
	1	Turned on

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]	Prints NV bit image n using mode m. m: 0, 48 = Normal; 1, 49 = Double-width; 2, 50 = Double-height; 3, 51 = Quadruple ● n specifies the NV bit image number. ● m specifies the bit-image mode. ● NV bit image is a bit image defined in non-volatile memory by FS q and printed by this command. ● This command is ignored when the specified NV bit image n is undefined.

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

[Name]	Define NV bit image.
[Format]	ASCII FS q n [xL xH yL yH d1…dk]1…[xL xH yL yH d1…dk]n Hex. 1C 71 n [xL xH yL yH d1…dk]1…[xL xH yL yH d1…dk]n Decimal 28 113 n [xL xH yL yH d1…dk]1…[xL xH yL yH 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) ≤ 96 (0 ≤ yL ≤ 96, yH=0) 0 ≤ d ≤ 255 k = (xL + xH × 256) × (yL + yH × 256) × 8

[Description]	Defines the specified NV bit image. ● n specifies the number of NV bit images to define. ● xL and xH specify the horizontal direction for one NV bit image (xL + xH x 256) x 8 dots. ● yL and yH specify the vertical direction for one NV bit image (yL + yH x 256) x 8 dots. 

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		

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
70	112	8 times

Table 2 [Enlarged in vertical direction]

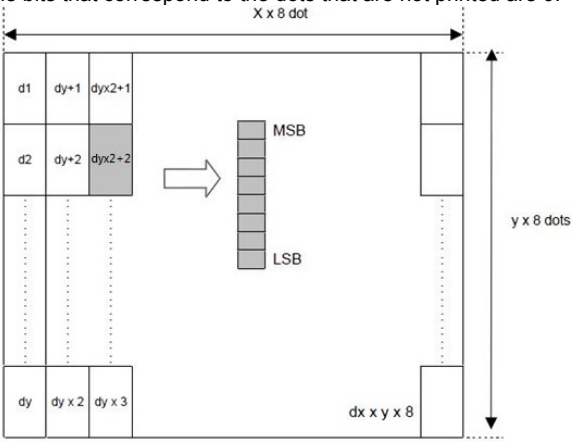
Hex	Decimal	Enlargement
00	0	1 time(standard)
01	1	2 times
02	2	3 times
03	3	4 times
04	4	5 times
05	5	6 times
06	6	7 times
07	7	8 times

GS $ nL nH

[Name]	Set absolute vertical print position in page mode
[Format]	ASCII GS $ nL nH Hex. 1D 24 nL nH Decimal 29 36 nL nH
[Range]	0 ≤ nL ≤ 255, 0 ≤ nH ≤ 255,
[Description]	Specifies the character vertical direction position for the data expansion starting position using the absolute position based on the starting point in page mode. The position of the character vertical direction for the next data expansion starting position is the position specified by [(nL + nH x 256) x basic calculated pitch] from the starting point. ● When not in page mode, this command is ignored. ● Specifications for absolute positions that exceed the specified print range are ignored.

GS * X Y [d1…d(X x Y x 8)]

[Name]	Define download bit images.
[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 ≤ 96 0 ≤ d ≤ 255

[Description]	Defines the download bit image of the number of dots specified by X and Y. X specifies the number of bytes in the horizontal direction. ● Y specifies the number of bytes in the vertical direction. ● Horizontal direction dot count is X x 8 dots; Vertical direction dot count is Y x 8 dots ● d indicates the bit-image data. Bits that correspond to the dots to print are 1, and the bits that correspond to the dots that are not printed are 0. 

GS (A pL pH n m

[Name]	Execute 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 , 48 ≤ n ≤ 50 2 ≤ m ≤ 3 , 50 ≤ m ≤ 51

[Description]	Executes the specified test print. The following command is ignored in page mode. Specifies the parameter count following pL and pH in (pL + (pH x 256)) bytes. *n* specifies the paper to be tested. n: Paper Type 0 , 48: Basic sheet (paper roll) 1 , 49 / 2 , 50: Paper Roll *m* specifies a test pattern. m: Type of Test Print 2 , 50: Printer Status (Self Print) 3 , 51: Rolling Pattern Print

GS (K pL pH n m

[Name]	Set print density.
[Format]	ASCII GS (A pL pH n m Hex. 1D 28 4B pL pH n m Decimal 29 40 75 pL pH n m
[Range]	{pL+ (pH×256) } = 2 (pL = 2,pH = 0) n = 49 250 ≤ m ≤ 255, 0 ≤ m ≤ 6 Initial Value m = 0
[Description]	Sets print density.

m	Print Density
250	0.7
251	0.7
252	0.8
253	0.8
254	0.9
255	0.9
0	1.0
1	1.1
2	1.1
3	1.2
4	1.2
5	1.3
6	1.3

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]	Turn 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]	Specifies or cancels black and white inverted printing. ● Cancels black and white inverted printing when n = <*******0>B. ● Specifies black and white inverted printing when n = <*******1>B. ● n is effective only when it is the lowest bit. ● Internal characters and download characters are targeted for black and white inverted printing. ● This command is effective for ANK and Chinese characters.

GS H n

[Name]	Select printing position of HRI characters.
[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.

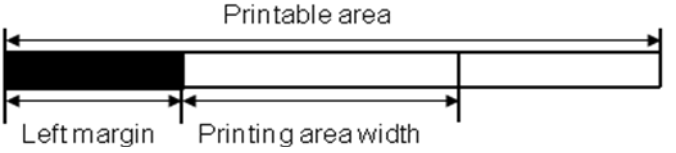
m	Printing Position
0, 48	No print
1, 49	Above bar code
2, 50	Below bar code
3, 51	Above and below bar code(both)

GS I n

[Name]	Transmit 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]	Transmits the printer ID specified by *n* as follows:

n	Printer ID Type	Specifications
1, 49	Model ID	MB-1030 or MP-1060
2, 50	Type ID	1030-XX or 1060-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 or MP-1060 System
67	Model Name	MB-1030 or MP-1060
68	Serial Number	Depends on the serial number
69	Chinese Character Types	Taiwan Language Characters: TW_BIG5 Japanese Language Characters: JP_SJIS Chinese Language Characters: CN_GB2312 Korean Language Characters: KO_EUC-KR

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 Initial Value (nL + nH x 256)=0 (nL=0, nH=0)
[Description]	nL and nH set the specified left margin. The left margin is [(nL + nH x 256) x basic calculated pitch]. 

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.

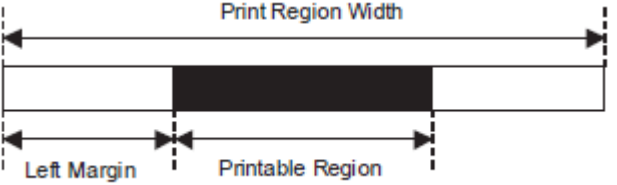
GS V m

[Name]	Cut paper.
[Format]	ASCII GS V m (n) Hex. 1D 56 m (n) Decimal 29 86 m (n)
[Range]	m = 0,1,48,49,65,66 0 ≤ n ≤ 255

[Description]	Executes specified paper cut.

m	Function
0 , 48	Full cut
1 , 49	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 W nL nH

[Name]	Set printing area width.
[Format]	ASCII GS W nL nH Hex. 1D 57 nL nH Decimal 29 87 nL nH
[Range]	0 ≤ nL ≤ 255, 0 ≤ nH ≤ 255
[Description]	● Sets the print region width specified by nL and nH. ● Print region width is [(nL + nH x 256) x basic calculated pitch]. ● [(nL + nH x 256) x basic calculated pitch] >=24. 

GS \ nL nH

[Name]	Set relative vertical print position in page mode.
[Format]	ASCII GS \ nL nH Hex. 1D 5C nL nH Decimal 29 92 nL nH
[Range]	0 ≤ nL ≤ 255 0 ≤ nH ≤ 255
[Description]	Specifies the character vertical direction position for the data expansion starting position using the relative position based on the current point in page mode. This sets the position moved from the current position to [(nL + nH x 256) x basic calculated pitch] for the next data expanding starting position. ● When not in page mode, this command is ignored.

GS a n

<table>
<tr><td>[Name]</td><td>Enable/disable Automatic Status Back (ASB).</td></tr>
<tr><td>[Format]</td><td>ASCII GS a n
Hex. 1D 61 n
Decimal 29 97 n</td></tr>
<tr><td>[Range]</td><td>0 ≤ n ≤ 255
Initial Value n = 0</td></tr>
<tr><td>[Description]</td><td>Selects the statuses that are targeted for transmission with the automatic status function (ASB: Automatic Status Back).
<table>
<tr><th>Bit</th><th>Statuses Targeted for ASB</th><th>“0”</th><th>“1”</th></tr>
<tr><td>7</td><td>Undefined</td><td>---</td><td>---</td></tr>
<tr><td>6</td><td>Undefined</td><td>---</td><td>---</td></tr>
<tr><td>5</td><td>Undefined</td><td>---</td><td>---</td></tr>
<tr><td>4</td><td>Undefined</td><td>---</td><td>---</td></tr>
<tr><td>3</td><td>Continuous Paper Detector</td><td>Invalid</td><td>Valid</td></tr>
<tr><td>2</td><td>Error</td><td>Invalid</td><td>Valid</td></tr>
<tr><td>1</td><td>ONLINE/OFFLINE Status</td><td>Invalid</td><td>Valid</td></tr>
<tr><td>0</td><td>Drawer kick connector pin #3</td><td>Invalid</td><td>Valid</td></tr>
</table>
The printer information transmitted is comprised of 4 bytes as follows:
First byte(printer information)
<table>
<tr><th>Bit</th><th>Off/On</th><th>Hex</th><th>Decimal</th><th>Function</th></tr>
<tr><td>7</td><td>Off</td><td>00</td><td>0</td><td>Not used. Fixed to Off</td></tr>
<tr><td rowspan="2">6</td><td>Off</td><td>00</td><td>0</td><td>Paper is not being fed by the paper feed button</td></tr>
<tr><td>On</td><td>40</td><td>64</td><td>Paper is being fed by the paper feed button</td></tr>
<tr><td rowspan="2">5</td><td>Off</td><td>00</td><td>0</td><td>Cover is close</td></tr>
<tr><td>On</td><td>20</td><td>32</td><td>Cover is open</td></tr>
<tr><td>4</td><td>On</td><td>10</td><td>16</td><td>Not used. Fixed to On</td></tr>
<tr><td rowspan="2">3</td><td>Off</td><td>00</td><td>0</td><td>On-line</td></tr>
<tr><td>On</td><td>08</td><td>8</td><td>Off-line</td></tr>
<tr><td rowspan="2">2</td><td>Off</td><td>00</td><td>0</td><td>Drawer kick-out connector pin 3 is LOW</td></tr>
<tr><td>On</td><td>04</td><td>4</td><td>Drawer kick-out connector pin 3 is HIGH</td></tr>
<tr><td>1</td><td>Off</td><td>00</td><td>0</td><td>Not used. Fixed to Off</td></tr>
<tr><td>0</td><td>Off</td><td>00</td><td>0</td><td>Not used. Fixed to Off</td></tr>
</table>
</td></tr>
</table>

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 font for HRI characters.
[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 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.
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 Hex. 1D 6B m n d1...dk Decimal 29 107 m n d1...dk
[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

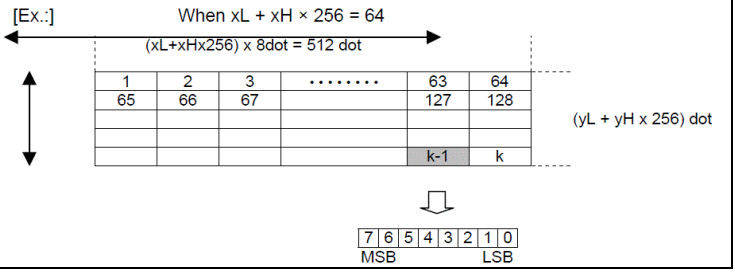
<table>
<tr><td>[Name]</td><td>Transmit status.</td></tr>
<tr><td>[Format]</td><td>ASCII GS r n
Hex. 1D 72 n
Decimal 29 114 n</td></tr>
<tr><td>[Range]</td><td>n = 1, 2, 49, 50</td></tr>
<tr><td>[Description]</td><td>Sends the specified status.
Detector Status (n=1,49)
<table>
<tr><th>Bit</th><th>Status</th><th>“0”</th><th>“1”</th></tr>
<tr><td>7</td><td>Fixed at 0</td><td></td><td></td></tr>
<tr><td>6</td><td>Undefined</td><td></td><td></td></tr>
<tr><td>5</td><td>Undefined</td><td></td><td></td></tr>
<tr><td>4</td><td>Fixed at 0</td><td></td><td></td></tr>
<tr><td>3</td><td>Paper roll end detector</td><td>Has Paper</td><td>Paper out</td></tr>
<tr><td>2</td><td>Paper roll end detector</td><td>Has Paper</td><td>Paper out</td></tr>
<tr><td>1</td><td>Paper roll near end detector</td><td>Has Paper</td><td>Paper out</td></tr>
<tr><td>0</td><td>Paper roll near end detector</td><td>Has Paper</td><td>Paper out</td></tr>
</table>
Drawer Kick Connector Status (n=2,50)
<table>
<tr><th>Bit</th><th>Status</th><th>“0”</th><th>“1”</th></tr>
<tr><td>7</td><td>Fixed at 0</td><td></td><td></td></tr>
<tr><td>6</td><td>Undefined</td><td></td><td></td></tr>
<tr><td>5</td><td>Undefined</td><td></td><td></td></tr>
<tr><td>4</td><td>Fixed at 0</td><td></td><td></td></tr>
<tr><td>3</td><td>Undefined</td><td></td><td></td></tr>
<tr><td>2</td><td>Undefined</td><td></td><td></td></tr>
<tr><td>1</td><td>Undefined</td><td></td><td></td></tr>
<tr><td>0</td><td>Drawer kick connector pin #3</td><td>〝L〞</td><td>〝H〞</td></tr>
</table></td></tr>
</table>

GS v 0 m xL xH yL yH d1 … dk

<table>
<tr><td>[Name]</td><td>Print raster bit image.</td></tr>
<tr><td>[Format]</td><td>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</td></tr>
<tr><td>[Range]</td><td>m = 0, m = 48
0 ≤ xL ≤ 54(for 2 inch)
0 ≤ xL ≤ 72(for 3 inch)</td></tr>
</table>

<table>
<tr><td></td><td>0 ≤ xH ≤ 0
0 ≤ yL ≤ 255
0 ≤ yH ≤ 3
0 ≤ d ≤ 255
k = (xL+xH×256) × (yL+yH×256) However, k ≠ 0</td></tr>
<tr><td>[Description]</td><td>Prints raster method bit images using mode m.
<table>
<tr><td>m</td><td>Mode</td><td>Density of Vert. Dir.
Dots</td><td>Density of Hor. Dir.
Dots</td></tr>
<tr><td>0, 48</td><td>Normal Mode</td><td>203 DPI</td><td>203 DPI</td></tr>
</table>

xL and xH specify the horizontal direction data count for one bit image (xL + xH x 256) in bytes.
yL and yH specify the vertical direction data count for one bit image (yL + yH x 256) in bytes.


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

GS w n

[Name]	Set bar code width.
[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

TWO-DIMENSIONAL BAR CODE COMMANDS DETAIL

DC2 ; n

[Name]	QR Code Module Size Set
[Format]	ASCII DC ; n Hex. 12 3B n Decimal 18 59 n
[Range]	2 ≤ n ≤ 16 Initial Value n = 2
[Description]	Specifies a module size of QR Code and Data Matrix. n: The number of dots for one side of the module size.

GS p 1

[Name]	QR Code Print
[Format]	ASCII GS p 1 model e v mode nl nh [data] Hex. 1D 70 01 model e v mode nl nh [data] Decimal 29 112 01 model e v mode nl nh [data]
[Range]	model=01, 02 e=4Ch, 4Dh, 51h, 48h 0, 1 ≤ v ≤ 40 mode=4Eh, 41h, 42h, 4Bh, 4Dh 1≤ nh×256+nl≤ 7089

[Description]

Prints QR Code data based on the specified contents.
model: Specifies a model
e: Selects an error correction level.
'L' (4CH), 'M' (4DH), 'Q' (51H), 'H' (48H)
v: =0: Automatic selection
(A version is automatically selected depending on the number of input data.)1 ≤ v ≤ 40 Fixed version (up to 14 for model-1)
mode: Specifies a mode of data.

Mode	Hexadecimal	Mode
N	4E	Numerical mode
A	41	Alphanumeric mode
B	42	8-bit byte mode
K	4B	Kanji mode
M	4D	Mixed mode

nl, nh: Specifies the number of data.
Data: Kanji data of the QRCode data should be set by Shift JIS code.

KANJI CONTROL COMMANDS DETAILS

FS ! n

[Name]	Set print mode(s) for Kanji characters.
[Format]	ASCII FS ! n Hex. 1C 21 n Decimal 28 33 n
[Range]	0 ≤ n ≤ 255 Initial Value n = 0
[Description]	Batch specifies the Kanji character print mode.

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]	Select Kanji character mode.
[Format]	ASCII FS & Hex. 1C 26 Decimal 28 38
[Range]	N/A
[Description]	Specifies Kanji character mode.

FS - n

[Name]	Turn underline mode on/off for Kanji characters
[Format]	ASCII FS - n Hex. 1C 2D n Decimal 28 45 n
[Range]	0 ≤ n ≤ 2, 48 ≤ n ≤ 50
[Description]	Specifies or cancels Kanji character underlines.

n	Function
0,48	Cancels Kanji character underline
1,49	Sets to one-dot width Kanji character underline and specifies Kanji character underlines.
2,50	Sets to two-dot width Kanji character underline and cancels Kanji character underlines.

FS .

[Name]	Cancel Kanji character mode.
[Format]	ASCII FS . Hex. 1C 2E Decimal 28 46
[Range]	N/A
[Description]	Cancels Kanji character mode.

FS S n1 n2

[Name]	Set Kanji character spacing
[Format]	ASCII FS S n1 n2 Hex. 1C 53 n1 n2 Decimal 28 83 n1 n2
[Range]	0 ≤ n1 ≤ 255, 0 ≤ n2 ≤ 255 Initial Value n1 = 0, n2=0
[Description]	Sets the Kanji character space amount and right space amount. ● Left space amount: n1 x (basic calculated pitch) ● Right space amount: n2 x (basic calculated pitch)

FS W n

[Name]	Turn quadruple-size mode on/off for Kanji characters.
[Format]	ASCII FS W n Hex. 1C 57 n Decimal 28 87 n
[Range]	0 ≤ n ≤ 255 Initial Value n = 0
[Description]	Specifies or cancels quadruple size Kanji character. ● Cancels quadruple size when n = <*******0>B. ● Specifies quadruple size when n = <*******1>B. ● n is effective only when it is the lowest bit.

3-2-1-2.OPOS Printer Driver

The **Setup.exe** program sets up the registry information of MSRHK reader for OPOS program uses.

1. Installation

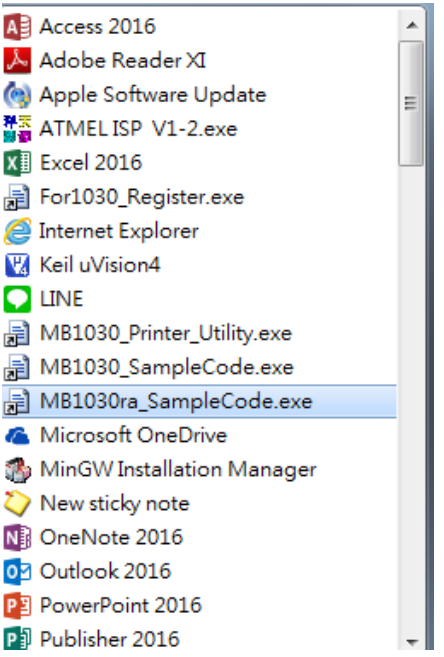
The following steps guide you to install the **Setup** program.

- Run the setup file **Setup.exe** located in the Software folder of the DVD-ROM.
- This setup also installs the **MB1030** program.
- Follow the wizard instructions to complete the installation.

2. Launching the Program

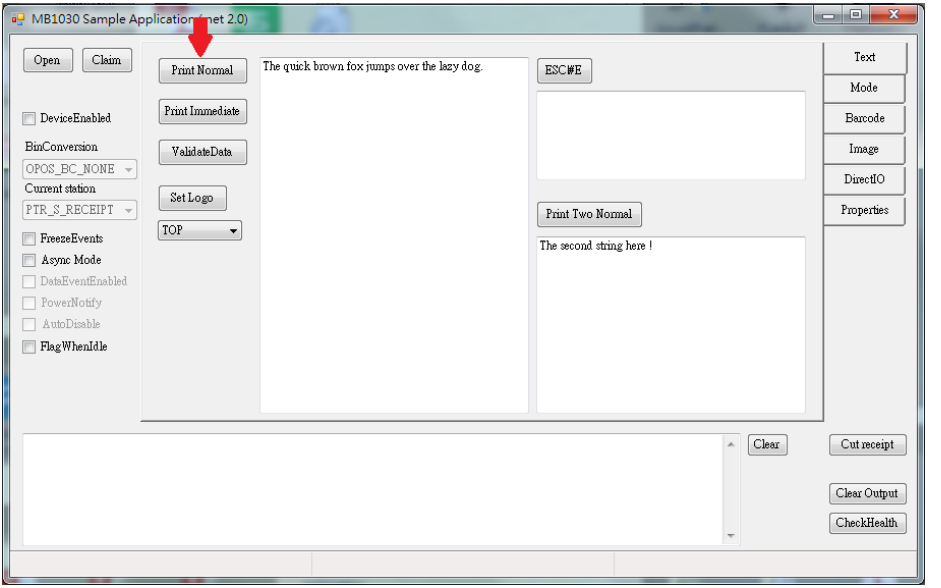
The following steps guide you to load the **MB1030** program.

- Click **MB1030ra_SampleCode.exe** to launch the program.



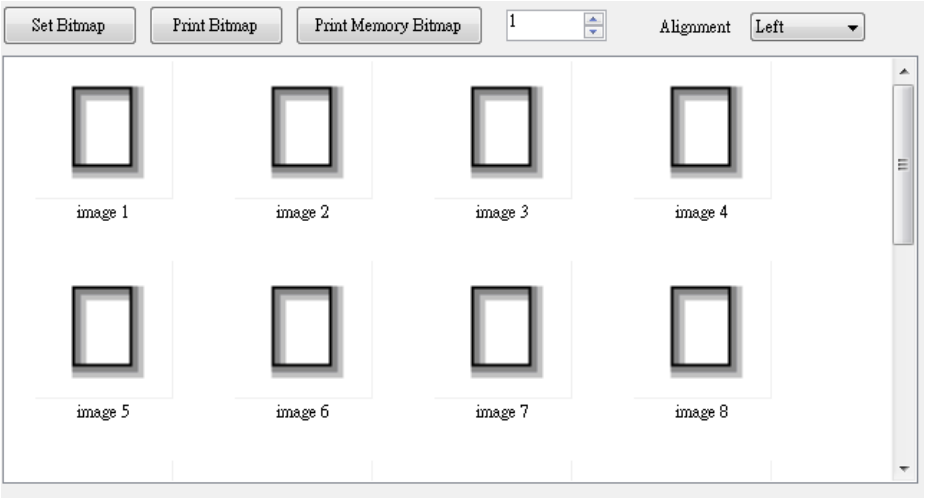
3. OPOS Control Object of **MB1030** Program

a.) Print Normal buttons:



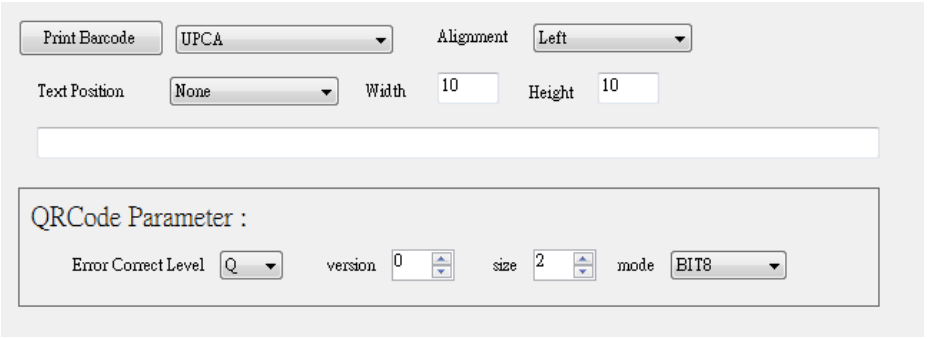
Button/Item	Description
Printer Normal	Print the string.

b.) Image buttons/items:



Button/Item	Description
Set Bitmap	Set bitmap file.
Print Bitmap	Print bitmap file.
Print Memory Bitmap	Print bitmap file from the memory

c.) BarCode tab buttons/items:



Button/Item	Description
Print BarCode	Print the barcode. Supported barcode types: UPCA, UPCE, EAN8, EAN13, ITF, Codabar, Code39, Code93, Code128
Alignment	Left, center or right
Text Position	Print barcode number (None, Above or Below)

4. MB1030 type

Key Name	Type	Default Value	Note
BaudRate	String	115200	UART Baud Rate (default)
BitLength	String	8	UART Data Bit (default)
Parity	String	0	UART Parity Bit (default)
Port	String	COM4	UART Port (default)
Stop	String	1	UART Stop Bit (default)

5. OPOS APIs Support List

	Category Type	Name	Mutability	OPOS APG Version	Printer .SO
Properties	common bool	AutoDisable	R/W	1.2	Not Applicable
Properties	common long	BinaryConversion	R/W	1.2	Not Applicable
Properties	common long	CapPowerReporting	Read only	1.3	Not Applicable
Properties	common string	CheckHealthText	Read only	1.0	Supported
Properties	common bool	Claimed	Read only	1.0	Supported
Properties	common long	DataCount	Read only	1.2	Not Applicable
Properties	common bool	DataEventEnabled	Read only	1.0	Not Applicable
Properties	common bool	DeviceEnabled	R/W	1.0	Not Applicable
Properties	common bool	FreezeEvents	R/W	1.0	Supported
Properties	common long	OpenResult	Read only	1.5	Supported
Properties	common bool	OutputID	Read only	1.0	Not Applicable
Properties	common bool	PowerNotify	R/W	1.3	Not Applicable
Properties	common bool	PowerState	Read only	1.3	Not Applicable
Properties	common long	ResultCode	Read only	1.0	Supported
Properties	common long	ResultCodeExtended	Read only	1.0	Not Applicable
Properties	common long	State	Read only	1.0	Supported
Properties	common string	ControlObject Description	Read only	1.0	Not Applicable
Properties	common long	ControlObject Version	Read only	1.0	Not Applicable
Properties	common string	ServiceObject Description	Read only	1.0	Supported
Properties	common long	ServiceObject Version	Read only	1.0	Supported
Properties	common string	DeviceDescription	Read only	1.0	Supported
Properties	common string	ControlObject Description	Read only	1.0	Not Applicable
Properties	specific long	CapCharacterSet	Read only	1.1	Not Applicable
Properties	specific bool	CapConcurrentJrnRec	Read only	1.0	Not Applicable
Properties	specific bool	CapConcurrentJrnSlp	Read only	1.0	Not Applicable
Properties	specific bool	CapCoverSensor	Read only	1.0	Not Applicable
Properties	specific bool	CapTransaction	Read only	1.1	Not Applicable
Properties	specific bool	CapJrnPresent	Read only	1.0	Not Applicable
Properties	specific bool	CapJrn2Color	Read only	1.0	Not Applicable
Properties	specific bool	CapJrnBold	Read only	1.0	Not Applicable

	Category Type	Name	Mutability	OPOS APG Version	Printer .SO
Properties	specific long	CapJrnCartridgeSensor	Read only	1.5	Not Applicable
Properties	specific long	CapJrnColor	Read only	1.5	Not Applicable
Properties	specific long	CapJrnDhigh	Read only	1.0	Not Applicable
Properties	specific long	CapJrnDwide	Read only	1.0	Not Applicable
Properties	specific long	CapJrnDwideDhigh	Read only	1.0	Not Applicable
Properties	specific long	CapJrnEmptySensor	Read only	1.0	Not Applicable
Properties	specific long	CapJrnItalic	Read only	1.0	Not Applicable
Properties	specific long	CapJrnNearEndSensor	Read only	1.0	Not Applicable
Properties	specific bool	CapJrnUnderline	Read only	1.0	Not Applicable
Properties	specific bool	CapRecPresent	Read only	1.0	Not Applicable
Properties	specific bool	CapRec2Color	Read only	1.0	Not Applicable
Properties	specific bool	CapRecBarCode	Read only	1.0	Not Applicable
Properties	specific bool	CapRecBitmap	Read only	1.0	Not Applicable
Properties	specific bool	CapRecBold	Read only	1.0	Not Applicable
Properties	specific long	CapRecCartridgeSensor	Read only	1.5	Not Applicable
Properties	specific long	CapRecColor	Read only	1.5	Not Applicable
Properties	specific bool	CapRecDhigh	Read only	1.0	Not Applicable
Properties	Specific bool	CapRecDwide	Read only	1.0	Not Applicable
Properties	specific bool	CapRecDwideDhigh	Read only	1.0	Not Applicable
Properties	specific bool	CapRecEmptySensor	Read only	1.0	Not Applicable
Properties	specific bool	CapRecItalic	Read only	1.0	Not Applicable
Properties	specific bool	CapRecLeft90	Read only	1.0	Not Applicable
Properties	specific bool	CapRecMarkFeed	Read only	1.5	Not Applicable
Properties	specific bool	CapRecNearEndSensor	Read only	1.0	Not Applicable
Properties	specific bool	CapRecPapercut	Read only	1.0	Not Applicable
Properties	specific bool	CapRecRight90	Read only	1.0	Not Applicable
Properties	specific bool	CapRecRotate180	Read only	1.0	Not Applicable
Properties	specific bool	CapRecStamp	Read only	1.0	Not Applicable
Properties	specific bool	CapRecUnderline	Read only	1.0	Not Applicable
Properties	specific bool	CapSlpPresent	Read only	1.0	Not Applicable
Properties	specific bool	CapSlpFullslip	Read only	1.0	Not Applicable
Properties	specific bool	CapSlp2Color	Read only	1.0	Not Applicable
Properties	specific bool	CapSlpBarCode	Read only	1.0	Not Applicable
Properties	specific bool	CapSlpBitmap	Read only	1.0	Not Applicable
Properties	specific bool	CapSlpBold	Read only	1.0	Not Applicable
Properties	specific bool	CapSlpBothSidesPrint	Read only	1.5	Not Applicable
Properties	specific long	CapSlpCartridgeSensor	Read only	1.5	Not Applicable

	Category Type	Name	Mutability	OPOS APG Version	Printer .SO
Properties	specific long	CapSlpColor	Read only	1.5	Not Applicable
Properties	specific bool	CapSlpDhigh	Read only	1.0	Not Applicable
Properties	specific bool	CapSlpDwide	Read only	1.0	Not Applicable
Properties	specific bool	CapSlpDwideDhigh	Read only	1.0	Not Applicable
Properties	specific bool	CapSlpEmptySensor	Read only	1.0	Not Applicable
Properties	specific bool	CapSlpItalic	Read only	1.0	Not Applicable
Properties	specific bool	CapSlpLeft90	Read only	1.0	Not Applicable
Properties	specific bool	CapSlpNearEndSensor	Read only	1.0	Not Applicable
Properties	specific bool	CapSlpRight90	Read only	1.0	Not Applicable
Properties	specific bool	CapSlpRotate180	Read only	1.0	Not Applicable
Properties	specific bool	CapSlpUnderline	Read only	1.0	Not Applicable
Properties	specific bool	AsyncMode	R/W	1.0	Not Applicable
Properties	specific long	CartridgeNotify	R/W	1.5	Not Applicable
Properties	specific long	CharacterSet	R/W	1.0	Not Applicable
Properties	specific string	CharacterSetList	Read only	1.0	Not Applicable
Properties	specific bool	CoverOpen	Read only	1.0	Not Applicable
Properties	specific long	ErrorLevel	Read only	1.1	Not Applicable
Properties	specific long	ErrorStation	Read only	1.0	Not Applicable
Properties	specific string	ErrorString	Read only	1.1	Not Applicable
Properties	specific string	FontTypefaceList	Read only	1.1	Not Applicable
Properties	specific bool	FlagWhenIdle	R/W	1.0	Not Applicable
Properties	specific long	MapMode	R/W	1.0	Not Applicable
Properties	specific long	RotateSpecial	R/W	1.1	Not Applicable
Properties	specific long	JrnLineChars	R/W	1.0	Not Applicable
Properties	specific string	JrnLineCharsList	Read only	1.0	Not Applicable
Properties	specific long	JrnLineHeight	R/W	1.0	Not Applicable
Properties	specific long	JrnLineSpacing	R/W	1.0	Not Applicable
Properties	specific long	JrnLineWidth	Read only	1.0	Not Applicable
Properties	specific bool	JrnLetterQuality	R/W	1.0	Not Applicable
Properties	specific bool	JrnEmpty	Read only	1.0	Not Applicable
Properties	specific bool	JrnNearEnd	Read only	1.0	Not Applicable
Properties	specific long	JrnCartridgeState	Read only	1.5	Not Applicable
Properties	specific long	JrnCurrentCartridge	R/W	1.5	Not Applicable
Properties	specific long	RecLineChars	R/W	1.0	Not Applicable
Properties	specific string	RecLineCharsList	Read only	1.0	Not Applicable
Properties	specific long	RecLineHeight	R/W	1.0	Not Applicable

	Category Type	Name	Mutability	OPOS APG Version	Printer .SO
Properties	specific long	RecLineSpacing	R/W	1.0	Not Applicable
Properties	specific long	RecLineWidth	Read only	1.0	Not Applicable
Properties	specific bool	RecLetterQuality	R/W	1.0	Not Applicable
Properties	specific bool	RecEmpty	Read only	1.0	Not Applicable
Properties	specific bool	RecNearEnd	Read only	1.0	Not Applicable
Properties	specific long	RecSidewaysMaxLines	Read only	1.0	Not Applicable
Properties	specific long	RecSidewaysMaxChars	Read only	1.0	Not Applicable
Properties	specific long	RecLinesToPaperCut	Read only	1.0	Not Applicable
Properties	specific string	RecBarCodeRotationList	Read only	1.1	Not Applicable
Properties	specific long	RecCartridgeState	Read only	1.5	Not Applicable
Properties	specific long	RecCurrentCartridge	R/W	1.5	Not Applicable
Properties	specific long	SlpLineChars	R/W	1.0	Not Applicable
Properties	specific string	SlpLineCharsList	Read only	1.0	Not Applicable
Properties	specific long	SlpLineHeight	R/W	1.0	Not Applicable
Properties	specific long	SlpLineSpacing	R/W	1.0	Not Applicable
Properties	specific long	SlpLineWidth	Read only	1.0	Not Applicable
Properties	specific bool	SlpLetterQuality	R/W	1.0	Not Applicable
Properties	specific bool	SlpEmpty	Read only	1.0	Not Applicable
Properties	specific bool	SlpNearEnd	Read only	1.0	Not Applicable
Properties	specific long	SlpSidewaysMaxLines	Read only	1.0	Not Applicable
Properties	specific long	SlpSidewaysMaxChars	Read only	1.0	Not Applicable
Properties	specific long	SlpMaxLines	Read only	1.0	Not Applicable
Properties	specific long	SlpLinesNearEndToEnd	Read only	1.0	Not Applicable
Properties	specific string	SlpBarCodeRotationList	Read only	1.1	Not Applicable
Properties	specific long	SlpPrintSide	Read only	1.5	Not Applicable
Properties	specific long	SlpCartridgeState	Read only	1.5	Not Applicable
Properties	specific long	SlpCurrentCartridge	R/W	1.5	Not Applicable
Methods	common	Open	-	1.0	Supported
Methods	common	Close	-	1.0	Supported
Methods	common	Claim	-	1.0	Supported
Methods	common	ClaimDevice	-	1.0	Supported
Methods	common	Release	-	1.0	Supported
Methods	common	ReleaseDevice	-	1.0	Supported
Methods	common	CheckHealth	-	1.0	Supported
Methods	common	ClearInput	-	1.0	Not Applicable

Methods	common	ClearOutput	-	1.0	Not Applicable
Methods	common	DirectIO	-	1.0	Not Applicable
	Category Type	**Name**	**Mutability**	**OPOS APG Version**	**Printer .SO**
Methods	specific	PrintNormal	-	1.0	Supported
Methods	specific	PrintTwoNormal	-	1.0	Not Applicable
Methods	specific	PrintImmediate	-	1.0	Not Applicable
Methods	specific	BeginInsertion	-	1.0	Not Applicable
Methods	specific	EndInsertion	-	1.0	Not Applicable
Methods	specific	BeginRemoval	-	1.0	Not Applicable
Methods	specific	EndRemoval	-	1.0	Not Applicable
Methods	specific	CutPaper	-	1.0	Supported
Methods	specific	RotatePrint	-	1.0	Supported (only 180)
Methods	specific	PrintBarCode	-	1.0	Supported
Methods	specific	PrintBitmap	-	1.0	Supported
Methods	specific	TransactionPrint	-	1.1	Not Applicable
Methods	specific	ValidateData	-	1.1	Not Applicable
Methods	specific	SetBitmap	-	1.0	Not Applicable
Methods	specific	SetLogo	-	1.0	Not Applicable
Methods	specific	ChangePrintSide	-	1.5	Not Applicable
Methods	specific	MarkFeed	-	1.5	Not Applicable
Events	common	DataEvent	-	1.0	Not Applicable
Events	common	DirectIOEvent	-	1.0	Not Applicable
Events	common	ErrorEvent	-	1.0	Not Applicable
Events	common	OutputComplete Event	-	1.0	Not Applicable
Events	common	StatusUpdate Event	-	1.0	Not Applicable

3-2-2. VFD: MB-4103 (RS-232)

3-2-2-1. Commands List

1. VFD Registry Operation

Registry Path:
[HKEY_LOCAL_MACHINE\SOFTWARE\OLEforRetail\ServiceOPOS\
LineDisplay\Prox-PMP4000]

Registry Name	Default Data	Notes
Default Value	LineDisplay.PMP4000.1	-
BaudRate	9600	-
BitLength	8	-
Parity	0	-
Port	COM1	-
Stop	1	-

2. OPOS VFD Service Object and Method Relations

Method	Status of support	Notes
Open	○	-
Close	○	-
ClaimDevice	○	-
ReleaseDevice	○	-
Enable	○	-
Disable	○	-
DisplayText	○	-
DisplayTextAt	○	-
ClearText	○	-

3-2-2-2. OPOS Driver

The **MB4000_OposSetup.exe** program sets up the registry information and example program of VFD for OPOS program uses.

1. Installation

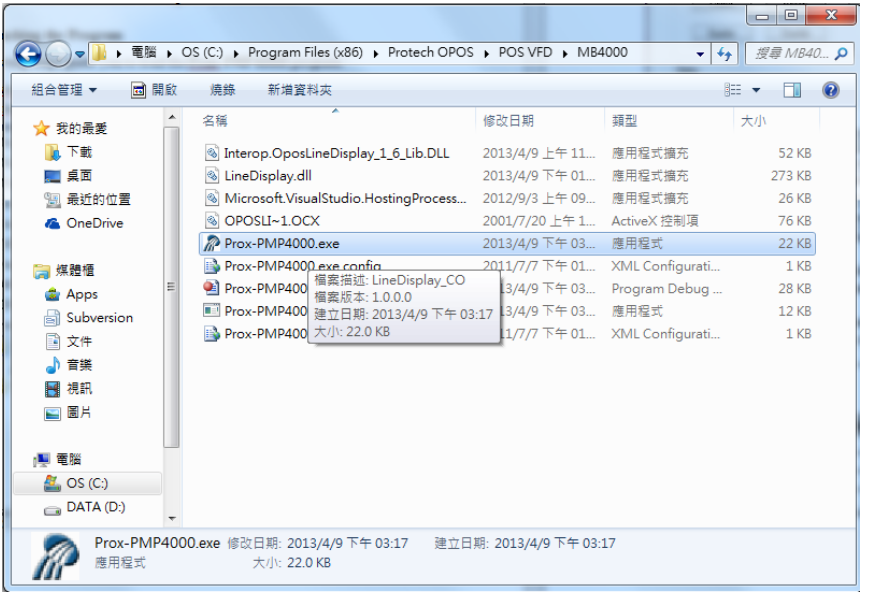
The following steps guide you to install the **MB4000_OposSetup** program.

- Run the **MB4000_OposSetup** setup file
- This setup also installs the **Prox-PMP4000** program.
- Follow the wizard instructions to complete the installation.

2. Launching the Program

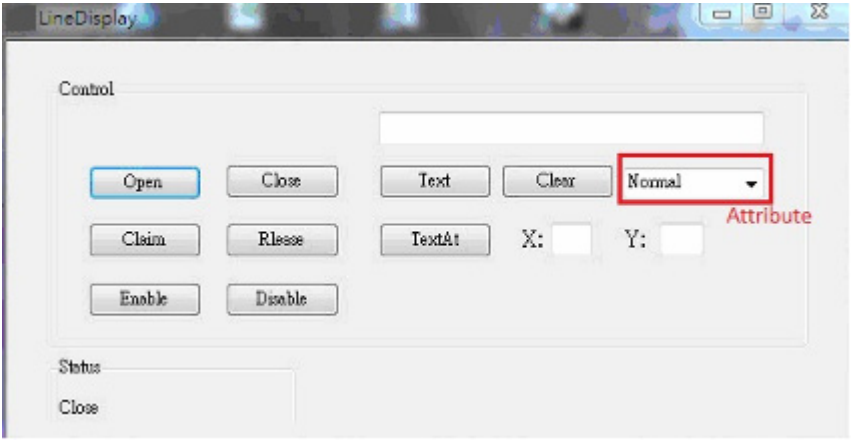
The following steps guide you to load the **Prox-PMP4000** program.

- Click *LineDisplay* folder from the path C*/Program Files(x86)/Protech OPOS/POS VFD/MB4000*
- Click **Prox-PMP4000** to launch the program.



3. OPOS Control Object of **Prox-PMP4000** program

Main screen buttons:



Button/Item	Description
Text	Display texts at the current cursor position.
TextAt	Display the string of characters at the point of the specified “y-coordinate” and “x-coordinate”.
Clear	Clear the message shown in the display screen.
Attribute	• **Normal:** Display the normal characters on the display screen. • **Blink:** Enable the display screen to blink. • **Reverse:** Enable the character printing in reverse black and white. • **Blink+Reverse:** Enable the display screen to blink and activate the character printing in reverse black and white.

4. MB4103 type

Key Name	Type	Default Value	Note
BaudRate	String	9600	UART Baud Rate (default)
BitLength	String	8	UART Data Bit (default)
Parity	String	0	UART Parity Bit (default)
Port	String	COM1	UART Port (default)
Stop	String	1	UART Stop Bit (default)

5. OPOS APIs Support List

	Category Type	Name	Mutability	OPOS APG Version	VFD .SO
Properties	common bool	AutoDisable	R/W	1.2	Not Applicable
Properties	common long	BinaryConversion	R/W	1.2	Not Applicable
Properties	common long	CapPowerReporting	Read only	1.3	Not Applicable
Properties	common string	CheckHealthText	Read only	1.0	Supported
Properties	common bool	Claimed	Read only	1.0	Supported
Properties	common long	DataCount	Read only	1.2	Not Applicable
Properties	common bool	DataEventEnabled	Read only	1.0	Not Applicable
Properties	common bool	DeviceEnabled	R/W	1.0	Not Applicable
Properties	common bool	FreezeEvents	R/W	1.0	Not Applicable
Properties	common long	OpenResult	Read only	1.5	Not Applicable
Properties	common bool	OutputID	Read only	1.0	Not Applicable
Properties	common bool	PowerNotify	R/W	1.3	Not Applicable
Properties	common bool	PowerState	Read only	1.3	Not Applicable
Properties	common long	ResultCode	Read only	1.0	Supported
Properties	common long	ResultCodeExtended	Read only	1.0	Not Applicable
Properties	common long	State	Read only	1.0	Supported
Properties	common string	ControlObject Description	Read only	1.0	Not Applicable
Properties	common long	ControlObject Version	Read only	1.0	Not Applicable
Properties	common string	ServiceObject Description	Read only	1.0	Supported
Properties	common long	ServiceObject Version	Read only	1.0	Supported
Properties	common string	DeviceDescription	Read only	1.0	Supported

	Category Type	Name	Mutability	OPOS APG Version	VFD .SO
Properties	common string	ControlObject Description	Read only	1.0	Not Applicable
Properties	specific long	CapBlink	Read only	1.0	Not Applicable
Properties	specific bool	CapBlinkRate	Read only	1.6	Not Applicable
Properties	specific bool	CapBrightness	Read only	1.0	Not Applicable
Properties	specific long	CapCharacterSet	Read only	1.0	Not Applicable
Properties	specific long	CapCursorType	Read only	1.6	Not Applicable
Properties	specific bool	CapCustomGlyph	Read only	1.6	Not Applicable
Properties	specific bool	CapDescriptors	Read only	1.0	Not Applicable
Properties	specific bool	CapHMarquee	Read only	1.0	Not Applicable
Properties	specific bool	CapICharWait	Read only	1.0	Not Applicable
Properties	specific long	CapReadBack	Read only	1.6	Not Applicable
Properties	specific long	CapReverse	Read only	1.6	Not Applicable
Properties	specific bool	CapVMarquee	Read only	1.0	Not Applicable
Properties	specific long	BlinkRate	R/W	1.6	Not Applicable
Properties	specific long	DeviceWindows	Read only	1.0	Not Applicable
Properties	specific long	DeviceRows	Read only	1.0	Not Applicable
Properties	specific long	DeviceColumns	Read only	1.0	Not Applicable
Properties	specific long	DeviceDescriptors	Read only	1.0	Not Applicable
Properties	specific long	DeviceBrightness	R/W	1.0	Not Applicable
Properties	specific long	CharacterSet	R/W	1.0	Not Applicable
Properties	specific string	CharacterSetList	Read only	1.0	Not Applicable
Properties	specific long	CurrentWindow	R/W	1.0	Not Applicable
Properties	specific long	Rows	Read only	1.0	Not Applicable
Properties	specific long	Columns	Read only	1.0	Not Applicable
Properties	specific long	CursorRow	R/W	1.0	Not Applicable
Properties	specific long	CursorColumn	R/W	1.0	Not Applicable
Properties	specific long	CursorType	R/W	1.6	Not Applicable
Properties	specific bool	CursorUpdate	R/W	1.0	Not Applicable
Properties	specific long	MarqueeType	R/W	1.0	Not Applicable
Properties	specific long	MarqueeFormat	R/W	1.0	Not Applicable
Properties	specific long	MarqueeUnitWait	R/W	1.0	Not Applicable
Properties	specific long	MarqueeRepeatWait	R/W	1.0	Not Applicable
Properties	specific long	InterCharacterWait	R/W	1.0	Not Applicable
Properties	specific string	CustomGlyphList	Read only	1.6	Not Applicable
Properties	specific long	GlyphHeight	Read only	1.6	Not Applicable
Properties	specific long	GlyphWidth	Read only	1.6	Not Applicable

	Category Type	Name	Mutability	OPOS APG Version	VFD .SO
Methods	common	Open	-	1.0	Supported
Methods	common	Close	-	1.0	Supported
Methods	common	Claim	-	1.0	Supported
Methods	common	ClaimDevice	-	1.0	Supported
Methods	common	Release	-	1.0	Supported
Methods	common	ReleaseDevice	-	1.0	Supported
Methods	common	CheckHealth	-	1.0	Not Applicable
Methods	common	ClearInput	-	1.0	Not Applicable
Methods	common	ClearOutput	-	1.0	Not Applicable
Methods	common	DirectIO	-	1.0	Not Applicable
Methods	specific	DisplayText	-	1.0	Supported
Methods	specific	DisplayTextAt	-	1.0	Supported
Methods	specific	ClearText	-	1.0	Supported
Methods	specific	ScrollText	-	1.0	Not Applicable
Methods	specific	SetDescriptor	-	1.0	Not Applicable
Methods	specific	ClearDescriptors	-	1.0	Not Applicable
Methods	specific	CreateWindow	-	1.0	Not Applicable
Methods	specific	DestroyWindow	-	1.0	Not Applicable
Methods	specific	RefreshWindow	-	1.0	Not Applicable)
Methods	specific	ReadCharacterAtCursor	-	1.6	Not Applicable
Methods	specific	DefineGlyph	-	1.6	Not Applicable
Events	common	DataEvent	-	1.0	Not Applicable
Events	common	DirectIOEvent	-	1.0	Not Applicable
Events	common	ErrorEvent	-	1.0	Not Applicable
Events	common	OutputComplete Event	-	1.0	Not Applicable
Events	common	StatusUpdate Event	-	1.3	Not Applicable

3-2-3. MSR: MB-301x (USB)

3-2-3-1. OPOS Driver

The **Setup.exe** program sets up the registry information of MSR reader for OPOS program uses.

1. Installation

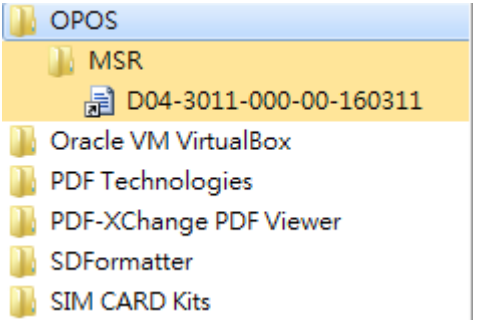
The following steps guide you to install the **Setup** program.

- Run the **Setup.exe** setup file.
- Follow the wizard instructions to complete the installation.

2. Launching the Program

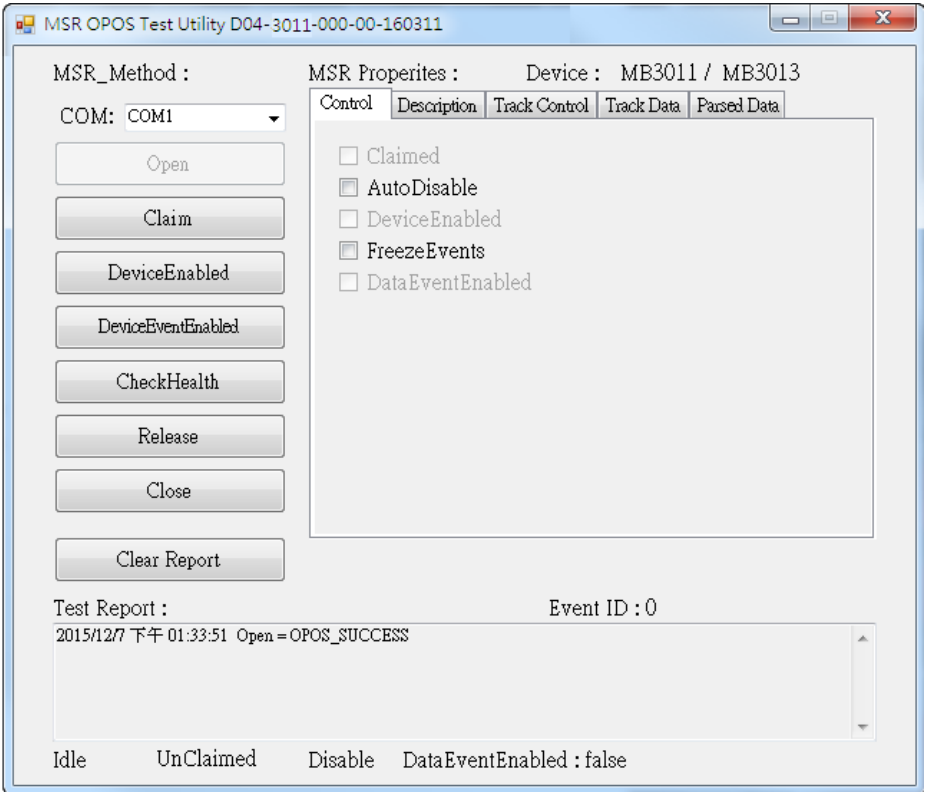
The following steps guide you to load the **MSR OPOS Driver** program.

- Click *MSR* folder from the path *Start/Programs/OPOS*.
  Click **D04-301x-xxx-xx-xxxxxx** to launch the program.

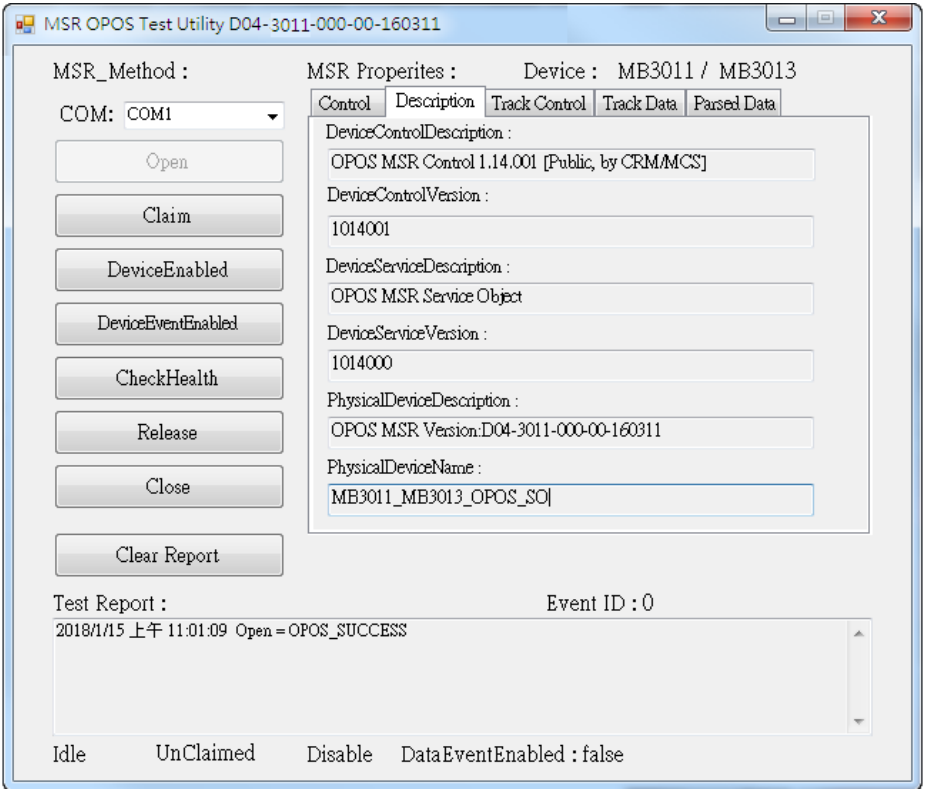


3. Configuration of **D04-301x-xxx-xx-xxxxxx** program

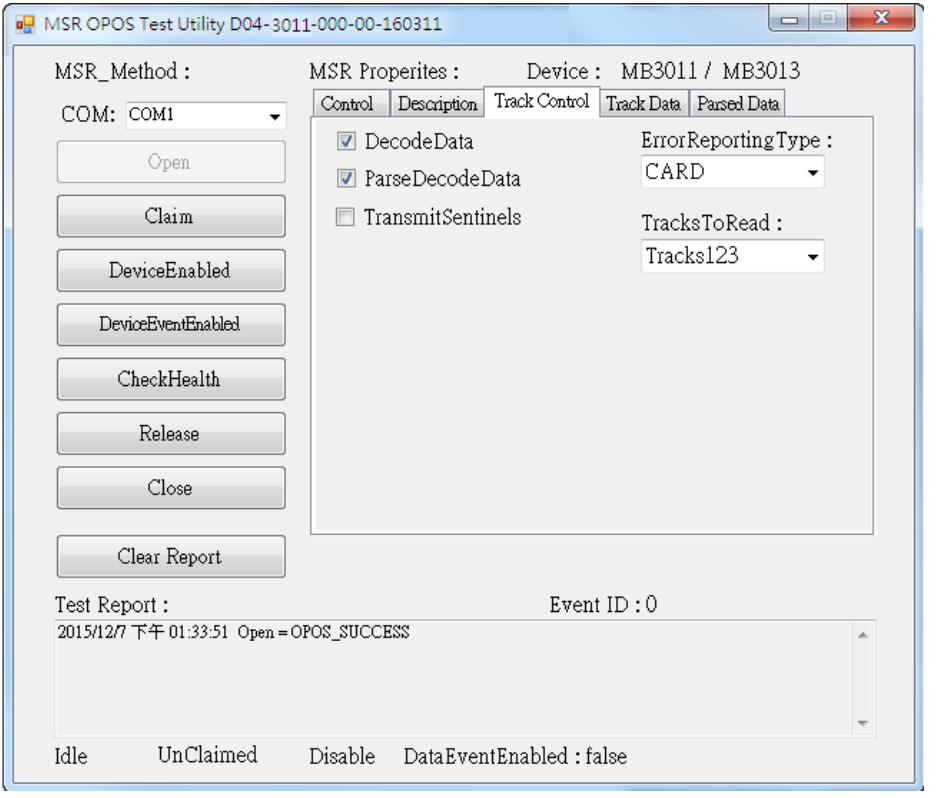
a.) Main screen & Control tab items:



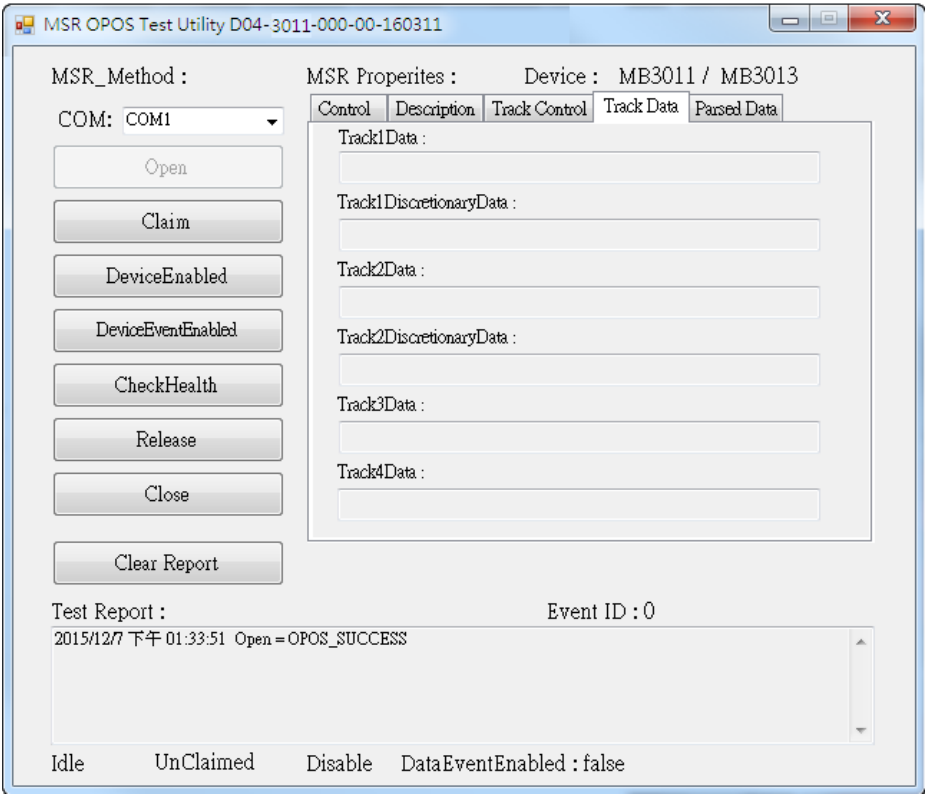
b.) General Setting



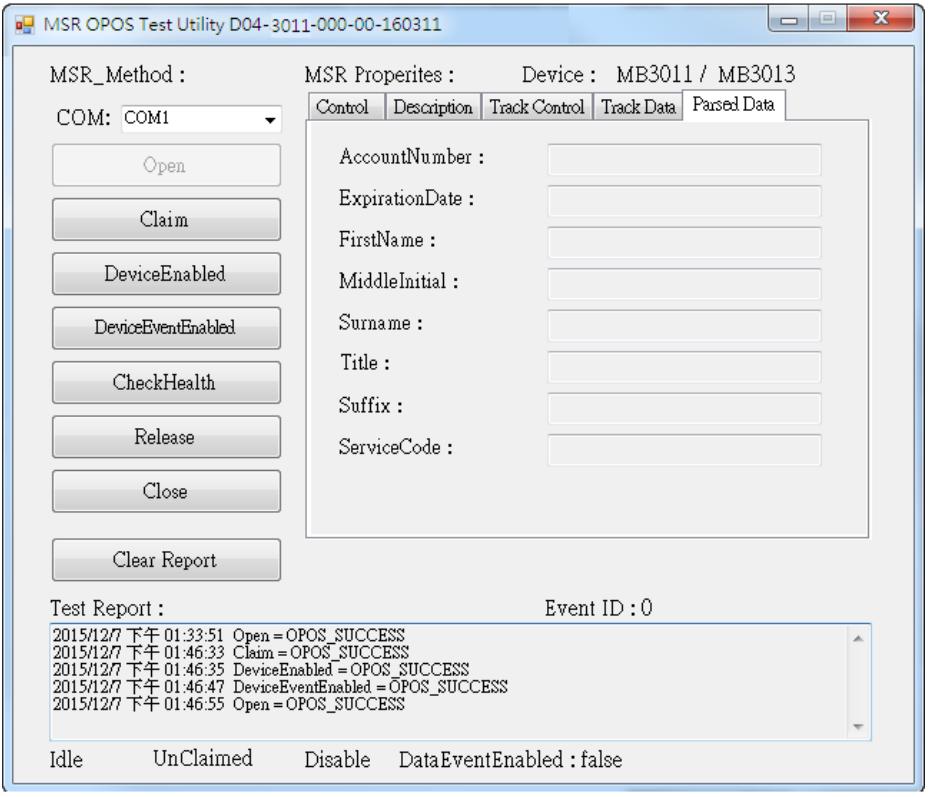
c.) Track Control tab items



d.) Track Data tab items



e.) Parsed Data Setting



4. MB301X type (RS232/PS2)

Key Name	Type	Default Value	Note
default	string	MB3011_MB3013	MB3011_MB3013_OPOS_SO Link

5. OPOS APIs Support List

	Category Type	Name	Mutability	OPOS APG Version	VFD .SO
Properties	common bool	AutoDisable	R/W	1.2	Supported
Properties	common long	BinaryConversion	R/W	1.2	Not Applicable
Properties	common long	CapPowerReporting	Read only	1.3	Supported
Properties	common string	CheckHealthText	Read only	1.0	Supported
Properties	common bool	Claimed	Read only	1.0	Supported
Properties	common long	DataCount	Read only	1.2	Supported
Properties	common bool	DataEventEnabled	R/W	1.0	Supported
Properties	common bool	DeviceEnabled	R/W	1.0	Supported
Properties	common bool	FreezeEvents	R/W	1.0	Supported
Properties	common long	OpenResult	Read only	1.5	Supported
Properties	common long	OutputID	Read only	1.0	Not Applicable
Properties	common long	PowerNotify	R/W	1.3	Not Applicable
Properties	common long	PowerState	Read only	1.3	Not Applicable
Properties	common long	ResultCode	Read only	1.0	Supported
Properties	common long	ResultCodeExtended	Read only	1.0	Supported
Properties	common long	State	Read only	1.0	Not Applicable
Properties	common string	ControlObject Description	Read only	1.0	Not Applicable
Properties	common long	ControlObjectVersion	Read only	1.0	Not Applicable
Properties	common string	ServiceObject Description	Read only	1.0	Supported
Properties	common long	ServiceObjectVersion	Read only	1.0	Not Applicable
Properties	common string	DeviceDescription	Read only	1.0	Supported
Properties	common string	DeviceName	Read only	1.0	Supported
Properties	specific bool	CapISO	Read only	1.0	Supported
Properties	specific bool	CapJISOne	Read only	1.0	Supported
Properties	specific bool	CapJISTwo	Read only	1.0	Supported
Properties	specific bool	CapTransmitSentinels	Read only	1.5	Supported
Properties	specific long	TracksToRead	R/W	1.0	Supported
Properties	specific bool	DecodeData	R/W	1.0	Not Applicable
Properties	specific bool	ParseDecodeData	R/W	1.0	Supported
Properties	specific long	ErrorReportType	R/W	1.2	Not Applicable
Properties	specific string	Track1Data	Read only	1.0	Supported

	Category Type	Name	Mutability	OPOS APG Version	VFD .SO
Properties	specific string	Track2Data	Read only	1.0	Supported
Properties	specific string	Track3Data	Read only	1.0	Supported
Properties	specific string	Track4Data	Read only	1.5	Not Applicable
Properties	specific string	AccountNumber	Read only	1.0	Supported
Properties	specific string	ExpirationDate	Read only	1.0	Supported
Properties	specific string	Title	Read only	1.0	Supported
Properties	specific string	FirstName	Read only	1.0	Supported
Properties	specific string	MiddleInitial	Read only	1.0	Supported
Properties	specific string	Surname	Read only	1.0	Supported
Properties	specific string	Suffix	Read only	1.0	Supported
Properties	specific string	ServiceCode	Read only	1.0	Supported
Properties	specific binary	Track1 DiscretionaryData	Read only	1.0	Supported
Properties	specific binary	Track2 DiscretionaryData	Read only	1.0	Supported
Properties	specific bool	TransmitSentinels	R/W	1.5	Supported
Methods	common	Open	-	1.0	Supported
Methods	common	Close	-	1.0	Supported
Methods	common	Claim	-	1.0	Supported
Methods	common	ClaimDevice	-	1.5	Supported
Methods	common	Release	-	1.0	Supported
Methods	common	ReleaseDevice	-	1.5	Supported
Methods	common	CheckHealth	-	1.0	Not Applicable
Methods	common	ClearInput	-	1.0	Supported
Methods	common	ClearOutput	-	1.0	Not Applicable
Methods	common	DirectIO	-	1.0	Not Applicable
Events	common	DataEvent	-	1.0	Supported
Events	common	DirectIOEvent	-	1.0	Not Applicable
Events	common	ErrorEvent	-	1.0	Not Applicable
Events	common	OutputCompleteEvent	-	1.0	Not Applicable
Events	common	StatusUpdateEvent	-	1.0	Not Applicable

3-2-4. MSR: GIGA-TMS MJR243 (RS-232)

3-2-4-1. Commands List

1. MSR Registry Operation

Registry Path:
[HKEY_LOCAL_MACHINE\SOFTWARE\OLEforRetail\ServiceOPOS\
MSR\MJR243]

Registry Name	Default Data	Notes
CapISO	1	Capability for reading ISO track data
CapJISOne	1	(reserved)
CapJISTwo	1	(reserved)
CapTransmitSentinels	1	Capability for reading Transmit Sentinels
Debug	0	Enable the tracing, and create a log file
Description	GIGATMS MSR POS	Description for SO driver
DeviceName	MJR243	Device Name for CO open
FileName	(NULL)	(reserved)
HardwareProvider	0	(reserved)
Model	MJR243	Device model name
Parity	None	Parity for the communication port
Port	COM4	COM Port
Protocol	Hardware	Communication Control
Baudrate	19200	RS232 baudrate

2. OPOS MSR Service Object and Method Relations

Method	Status of Support by the driver	Notes
Open	○	-
Close	○	-
Claim	○	-
ClaimDevice	○	-
Release	○	-
ReleaseDevice	○	-
ClearInput	○	-
ClearInputProperties	○	-
DataEvent	○	-
Claimed	○	Read only
DataCount	○	Read only
DataEventEnabled	○	R/W
DeviceEnabled	○	R/W
FreezeEvents	○	R/W
OpenResult	○	Read only
ResultCode	○	Read only
ResultCodeExtended	○	Read only
State	○	Read only
ControlObjectDescription	○	Read only
ControlObjectVersion	○	Read only
ServiceObjectDescription	○	Read only
ServiceObjectVersion	○	Read only
DeviceDescription	○	Read only
DeviceName	○	Read only
CapISO	○	Read only
CapTransmitSentinels	○	Read only
AccountNumber	○	Read only
DecodeData	○	R/W
ExpirationDate	○	Read only
FirstName	○	Read only
MiddleInitial	○	Read Only
ParseDecodeData	○	R/W

Method	Status of Support by the driver	Notes
ServiceCode	○	Read Only
Suffix	○	Read Only
Surname	○	Read Only
Title	○	Read Only
Track1Data	○	Read Only
Track1DiscretionaryData	○	Read Only
Track2Data	○	Read Only
Track2DiscretionaryData	○	Read Only
Track3Data	○	Read Only
TracksToRead	○	R/W
TransmitSentinels	○	R/W

3-3. API

3-3-1. API Package Content

You can find API Package files in the enclosed Manual/Driver CD. Depending on machine types, the API Package may include the following files:

Function DLL			
Directory	**Function**	**File Name**	**Description**
ProxAPI standard	**multilangXML.dll**		Driver to open XML file
	Initial.xml		XML file to initiate the API Package
	ProxAP.exe		API program executable file
	XML Files\Model Name*\Initial.xml		XML file for each model
	Version.ini		Version information

Sample Program		
Directory	**Contents / File Name**	**Description**
DEMO PROJECT	DEMO PROJECT\GPIO Sample Code	C# VB6 VB.net Source Code
	DEMO PROJECT\Digital Sample Code	C# VB6 VB.net Source Code

3-3-2. API Procedure

Take **VB2005 .NET** for example.

1. First you must declare a function. You may create a module in your project and fill in the function.

Example: Cash drawer

Declare Function GetCashDrawerStatus Lib CashDrawer.dll (ByVal num_drawer as short) As Boolean

Declare Function CashDrawerOpen Lib CashDrawer.dll (ByVal num_drawer as short) As Boolean

2. Then create a button to call API Function.

a.) Call Cash drawer open event:

```
Private Sub cash_btn1_Click (ByVal Sender As System.Object, ByVal e As
System.EventArgs) Handles cash_btn1.Click
CashDrawerOpen(1), “1” specifies the cash drawer 1 port
CashDrawerOpen(2), “2” specifies the cash drawer 2 port
Timer1.start
```

b.) Detect Cash drawer status:

A timer event can be created.

```
Private Sub Timer1_Tick (ByVal Sender As System.Object,ByVal e As
System.EventArgs) Handles Timer1.Tick
    Dim Receive_Status1 as Boolean
    Dim Receive_Status2 as Boolean
    Receive_Status1 = CashDrawerOpen(&H1)
    If Receive_Status1 = true then
       Text1.text = “cash drawer1 open”    ‘enter text into textbox.
Else
Text1.text = “cash drawer1 close”‘enter text into textbox.
```

```
End if
‘=========================================
    Receive_Status2 = CashDrawerOpen(&H2)
    If Receive_Status2 = true then
       Text2.text = “cash drawer2 open”    ‘enter text into textbox.
Else
Text2.text = “cash drawer2 close”‘enter text into textbox.
End if
‘=========================================
End sub
```

3-3-3. Sample Code

1. VB Declaration Method

Declare Function GetCashDrawerStatus Lib CashDrawer.dll (ByVal num_drawer as short) As Boolean

Declare Function CashDrawerOpen Lib CashDrawer.dll (ByVal num_drawer as short) As Boolean

- Call Function

Open cash drawer:
CashDrawerOpen(1)
Open cash drawer1
CashDrawerOpen(2)
Open cash drawer2

Check cash drawer status:
Dim receive_status as Boolean
Check cash drawer1 status
Receive_Status = CashDrawerOpen(&H1)
Check cash drawer2 status
Receive_Status = CashDrawerOpen(&H2)

2. C# Declaration Method

```
Public class PortAccess
{
[DllImport("CashDrawer.dll",EntryPoint = "Initial_CashDrawer")]
Public static extern void Initial_CashDrawer();
[DllImport("CashDrawer.dll",EntryPoint= "GetCashDrawerStatus")]
Public static extern bool GetCashDrawerStatus()
[DllImport("CashDrawer.dll",EntryPoint = "CashDrawerOpen")]
Public static extern bool CashDrawerOpen(short num_drawer);}
```

- Call Function

Open cash drawer1

```
PortAccess.CashDrawerOpen(0x01);          //check cash drawer1 status
```

Open cash drawer2

```
PortAccess.CashDrawerOpen(0x02);          //check cash drawer2 status
```

```
Bool bstatus;
bstatus = PortAccess.GetCashDrawerStatus(0x01);
bstatus = PortAccess.GetCashDrawerStatus(0x02); //Before get cash drawer status,
need to initial cash drawer first
```

3. VB.NET extern function:

Declare Function SetMinSec Lib “WatchDog.dll” (ByVal kind As Short,ByVal delay_time As Short) As Boolean
Declare Function Stopwatchdog Lib “WatchDog.dll” ( ) As Short
Declare Function Setwatchdog Lib “WatchDog.dll” (ByVal value As Short) As Boolean

Declare Function Digital_Initial Lib “Digital.dll” ( ) As Long
Declare Function Digtial_Set Lib “Digital.dll”(ByVal hex_value As Short) As Long
Declare Function Digtial_Get Lib ”Digital.dll” ( ) As Short

Declare Function GPIO_Initial Lib “GPIO.dll” ( ) As Long
Declare Function GPIO_SetPort Lib “GPIO.dll”(ByVal direct As long)
Declare Function GPIO_Set Lib “GPIO.dll”(ByVal dout_value As long) As Boolean
Declare Function GPIO_Get Lib “GPIO.dll”( ) As Short

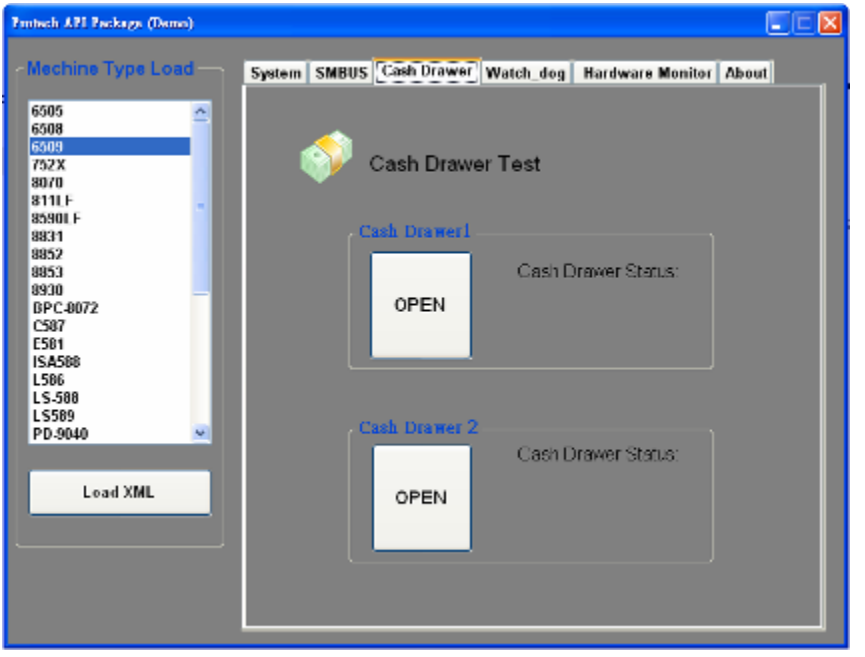
Declare Function GetCashDrawerStatus Lib CashDrawer.dll (ByVal num_drawer as short) As Boolean
Declare Function CashDrawerOpen Lib CashDrawer.dll (ByVal num_drawer as short) As Boolean

4. VB 6 extern function:

Declare Function CashDrawerOpen Lib "CashDrawer.dll" (ByVal num_drawer As Integer) As Boolean
Declare Function GetCashDrawerStatus Lib "CashDrawer.dll" (ByVal num_drawer As Integer) As Boolean

Note: VB.net short = integer VB6

3-3-4. Cash Drawer



Button/Item	Description
OPEN (button)	Tap to open the cash drawer.
Cash Drawer Status	Cash drawer status will be displayed after **OPEN** is tapped. ▪ Drawer is closed as shown: Cash Drawer Status: **Close** ▪ Drawer is open as shown: Cash Drawer Status: **Open**

3-3-5. API Function

The API program-related sample programs, developed in VB.Net and C#, are provided for easy use of the API Package. Refer to the main API functions listed as below:

API Function		DLL	
Cash Drawer	CashDrawerOpen GetCashDrawerStatus	multilangXML.dll	CashDrawer.dll

3-3-6. Cash Drawer Function

CashDrawerOpen

bool CashDrawerOpen (short num_drawer);

Purpose: Open the cash drawer API.
Value: num_drawer = 1 (Open the Cash Drawer1)
num_drawer = 2 (Open the Cash Drawer2)
Return: True (1) on success, False (0) on failure

Example: CashDrawerOpen(0x01); // Open the Cash Drawer1

GetCashDrawerStatus

bool GetCashDrawerStatus (short num_drawer);

Purpose: Get the cash drawer status.
Value: num_drawer = 1 (Get the Cash Drawer1 status)
num_drawer = 2 (Get the Cash Drawer2 status)
Return: True (1) on success, False (0) on failure

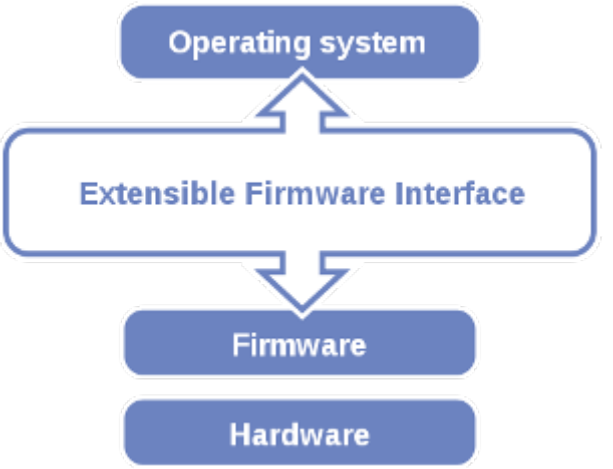
Example:
```
Short data;
data= GetCashDrawerStatus(0x01);  // Get the Cash Drawer1 status
if (data)
MsgBox("open1");     // Cash Drawer1 status "Open"
Else
MsgBox("close1");    // Cash Drawer1 status "Close"
Endif
```

3-4. BIOS Operation

3-4-1. Introduction

The PA-6225 board uses an AMI Aptio BIOS that is stored in the Serial Peripheral Interface Flash Memory (SPI Flash) and can be updated. The SPI Flash contains the BIOS Setup program, Power-On Self-Test (POST), the PCI auto-configuration utility, LAN EEPROM information, and Plug and Play support.

Aptio is AMI's BIOS firmware based on the UEFI (Unified Extensible Firmware Interface) Specifications and the Intel Platform Innovation Framework for EFI. The UEFI specification defines an interface between an operating system and platform firmware. The interface consists of data tables that contain platform-related information, boot service calls, and runtime service calls that are available to the operating system and its loader. These elements provide standard environment for booting an operating system and running pre-boot applications. The diagram below shows the Extensible Firmware Interface's position in the software stack.



EFI BIOS provides an user interface that allows users the ability to modify hardware configuration, such as changing system date and time, enabling or disabling a system component, configuring bootable device priorities, setting a personal password, etc., which is convenient for modifications and customization of the computer system and allows technicians another method for finding solutions if any hardware problems are encountered.

The BIOS Setup program can be used to view and change the BIOS settings for the computer. The BIOS Setup program is accessed by pressing the <Del> or <ESC> key after the POST memory test begins and before the operating system boot begins. All the menu settings are described in details in this chapter.

3-4-2. Accessing Setup Utility

When the system is powered on, the BIOS will enter the Power-On Self-Test (POST) routines and the following message will appear on the lower screen:

POST Screen

Press **<Del>** to access the Setup Utility program and the **Main** menu of the Aptio Setup Utility will appear on the screen

If you enter incorrect passwords for 3 consecutive times, the screen will be locked and you will not be able to enter any data unless the system is restarted.

The language of the BIOS setup menu interface and help messages are shown in US English. You may use the up <↑> /down <↓> arrow key to select among the items and press **Enter** to confirm and enter the sub-menu. A brief help message of the selected item will also appear at the bottom of the screen for your information. The following table provides the list of the keys that you can use while operating the BIOS setup menu.

BIOS Setup Menu Key	Description
<←> and <→>	Selects a different menu screen (move the cursor from the selected menu to the left or right).
<↑> and <↓>	Selects a different item (move the cursor from the selected item upwards or downwards)
Enter	Executes the command or select the sub-menu.
<F2>	Loads the previous configuration values.
<F3>	Loads the default configuration values.
<F4>	Saves the current values and exit the BIOS setup menu.
<Esc>	Closes the sub-menu. Trigger the confirmation to exit BIOS setup menu.

BIOS Messages

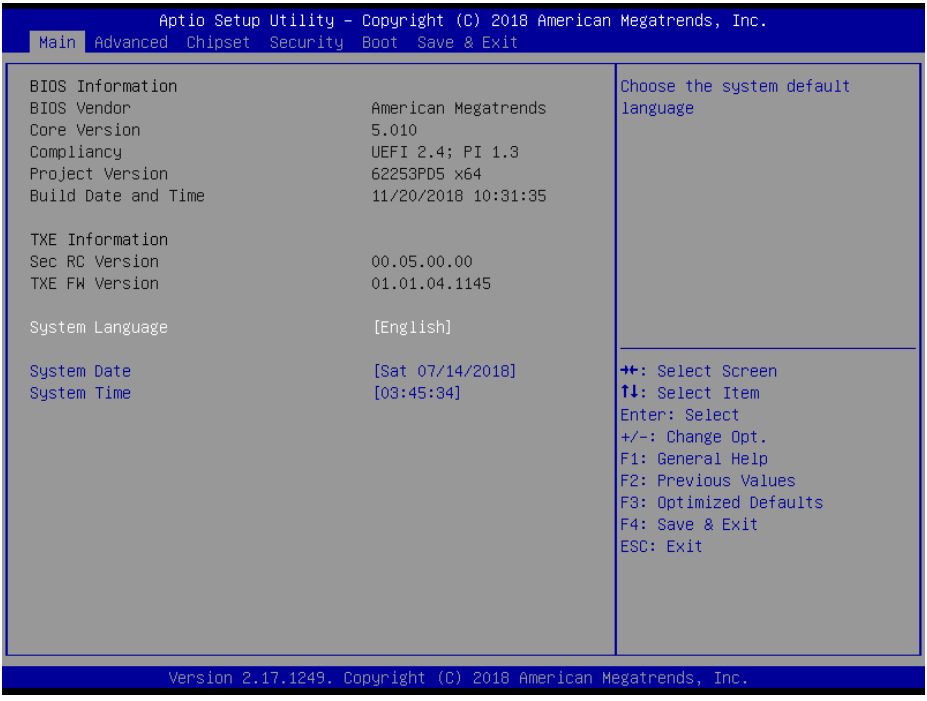
This section describes the alert messages generated by the board's BIOS. These messages would be shown on the monitor when certain recoverable errors/events occur during the POST stage. The table bellow gives an explanation of the BIOS alert messages:

BIOS Message	Explanation
A first boot or NVRAM reset condition has been detected.	BIOS has been updated or the battery was replaced.
The CMOS defaults were loaded.	Default values have been loaded after the BIOS was updated or the battery was replaced.
The CMOS battery is bad or has been recently replaced.	The battery may be losing power and users should replace the battery immediately. Also, this message is displayed once the new battery is replaced.

BIOS Setup Program Initialization Screen

3-4-3. Main

Use <↑> or <↓> arrow keys to highlight the item and key in the value you want in each item. This menu provides basic system configurations, such as system time and date.



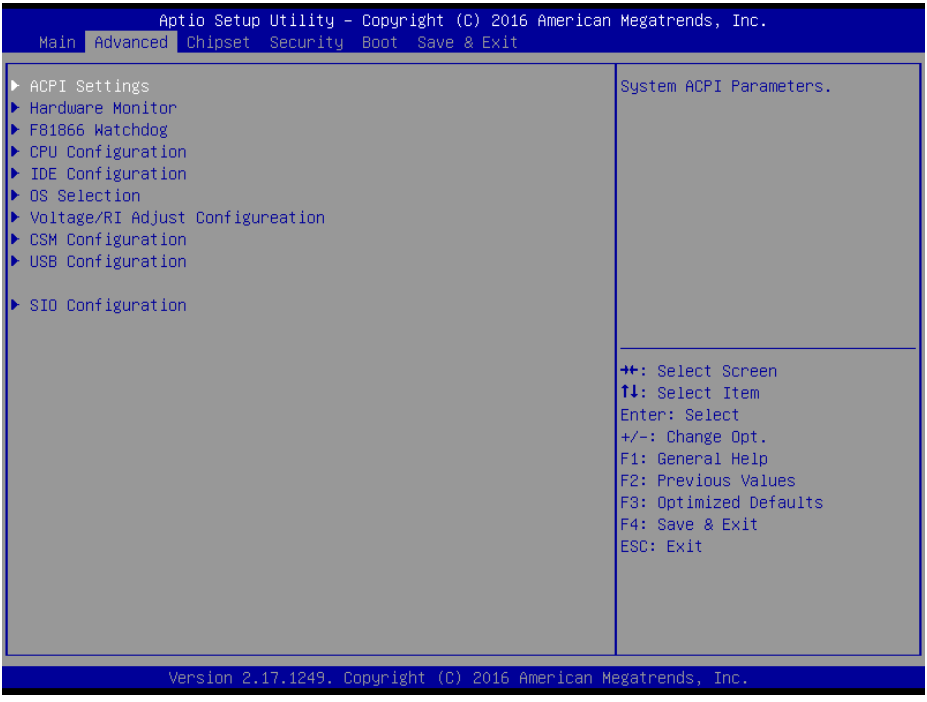
Main Screen

BIOS Setting	Options	Description/Purpose
BIOS Vendor	No changeable options	Displays the BIOS vendor.
Core Version	No changeable options	Displays the current BIOS core version.
Compliancy	No changeable options	Displays the current UEFI version.
Project Version	No changeable options	Displays the version of the BIOS currently installed on the platform.
Build Date and	No changeable options	Displays the date of current BIOS

BIOS Setting	Options	Description/Purpose
Time		version.
Sec RC Version	No changeable options	Displays the current Sec RC version.
TXE FW Version	No changeable options	Displays the current TXE Version
System Language	English	BIOS Setup language.
System Date	month, day, year	Sets the system date. The format is [Day Month/ Date/ Year]. Users can directly enter values or use <+> or <-> arrow keys to increase/decrease it. The "Day" is automatically changed.
System Time	hour, minute, second	Sets the system time. The format is [Hour: Minute: Second]. Users can directly enter values or use <+> or <-> arrow keys to increase/decrease it.

3-4-4. Advanced

This menu provides advanced configurations such as ACPI Settings, Hardware Monitor, F81866 Watchdog, CPU Configuration, IDE Configuration, OS Selection, etc.



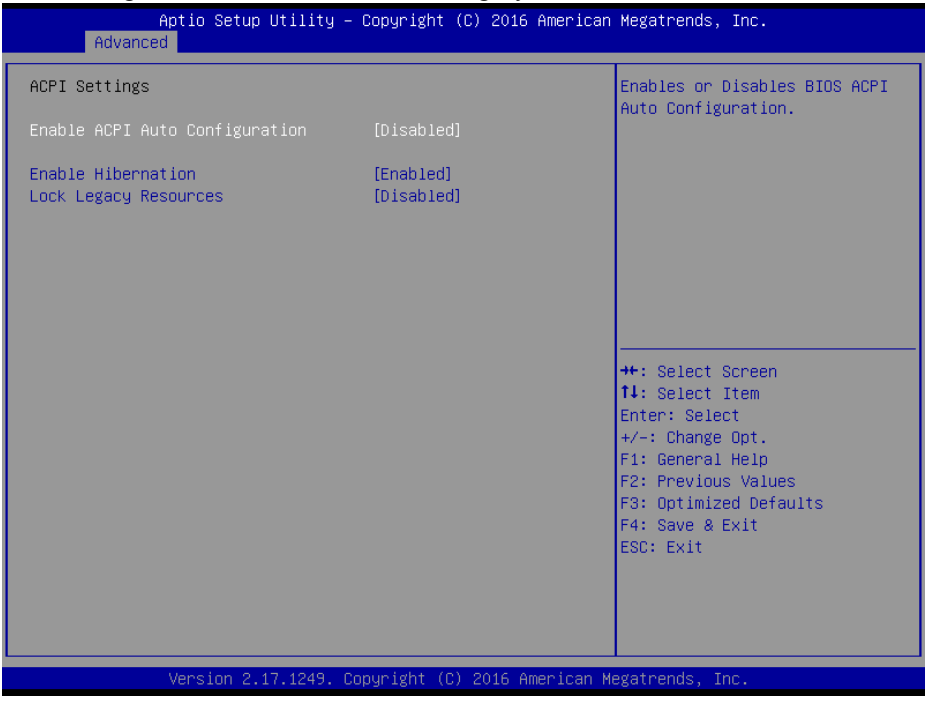
Advanced Screen

BIOS Setting	Options	Description/Purpose
ACPI Settings	Sub-Menu	System ACPI Parameters.
Hardware Monitor	Sub-Menu	Monitors hardware status.
F81866 Watchdog	Sub-Menu	F81866 Watchdog Parameters.
CPU Configuration	Sub-Menu	CPU Configuration Parameters.
IDE Configuration	Sub-Menu	SATA Configuration Parameters.
OS Selection	Sub-Menu	OS Selection
Voltage/RI Adjust	Sub-Menu	Voltage Adjustment settings.

BIOS Setting	Options	Description/Purpose
Configuration		
CSM Configuration	Sub-Menu	Configures Option ROM execution, boot options filters, etc.
USB Configuration	Sub-Menu	USB Configuration Parameters.
SIO Configuration	Sub-Menu	System Super IO Chip Configuration.

3-4-4-1. ACPI Settings

This menu allows users to configure relevant ACPI (Advanced Configuration and Power Management Interface) settings, such as Enable/Disable the functions of ACPI Auto Configuration, Hibernation and lock legacy resources.

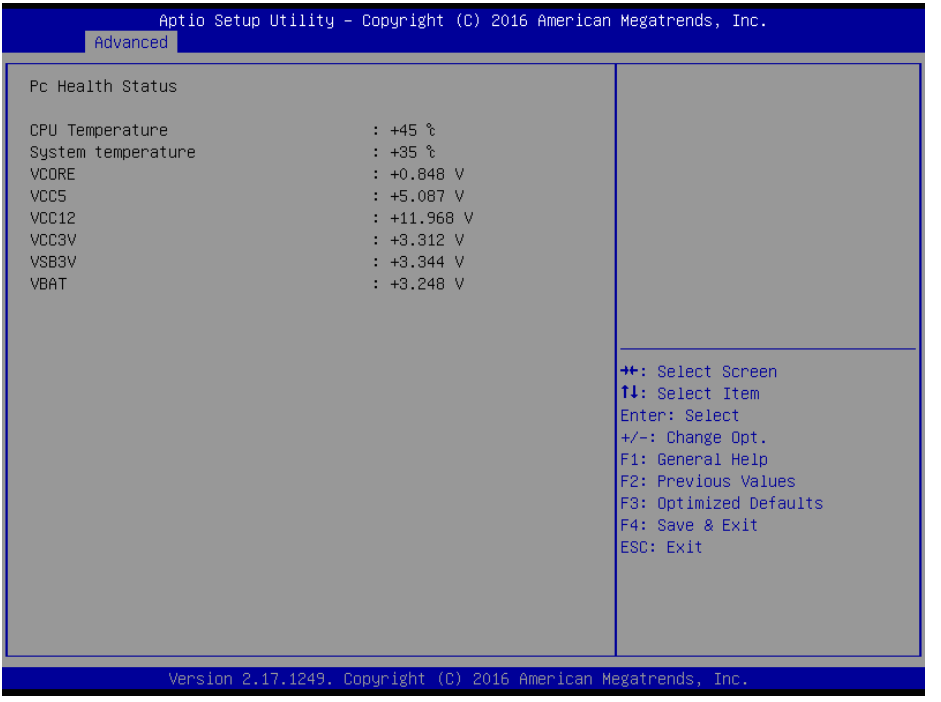


ACPI Settings Screen

BIOS Setting	Options	Description/Purpose
Enable ACPI Auto Configuration	- Disabled - Enabled	Enables or Disables ACPI feature.

BIOS Setting	Options	Description/Purpose
Enable Hibernation	- Disabled - Enabled	Enables or Disables system ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS(es).
Lock Legacy Resources	- Disabled - Enabled	Enables or disables the locking of the legacy resources.

3-4-4-2. Hardware Monitor



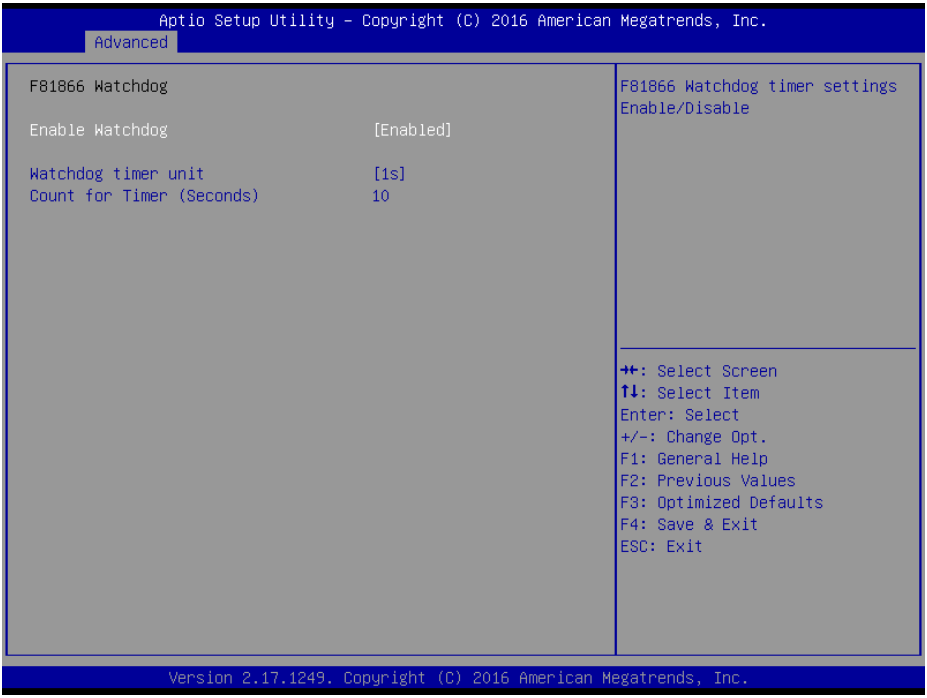
Hardware Monitor Screen

BIOS Setting	Options	Description/Purpose
CPU Temperature	No changeable options	Displays the processor's temperature.
System Temperature	No changeable options	Displays the system's temperature.

BIOS Setting	Options	Description/Purpose
VCORE	No changeable options	Displays the voltage level of VCORE in supply.
VCC5	No changeable options	Displays voltage level of VCC5 in supply.
VCC12	No changeable options	Displays the voltage level of VCC12 in supply.
VCC3V	No changeable options	Displays the voltage level of VCC3V in supply.
VSB3V	No changeable options	Displays the voltage level of VSB3V in supply.
VBAT	No changeable options	Displays the voltage level of VBAT in supply.

3-4-4-3. F81866 Watchdog

If the system hangs or fails to respond, enable the F81866 watchdog function to trigger a system reset via the 255-level watchdog timer.

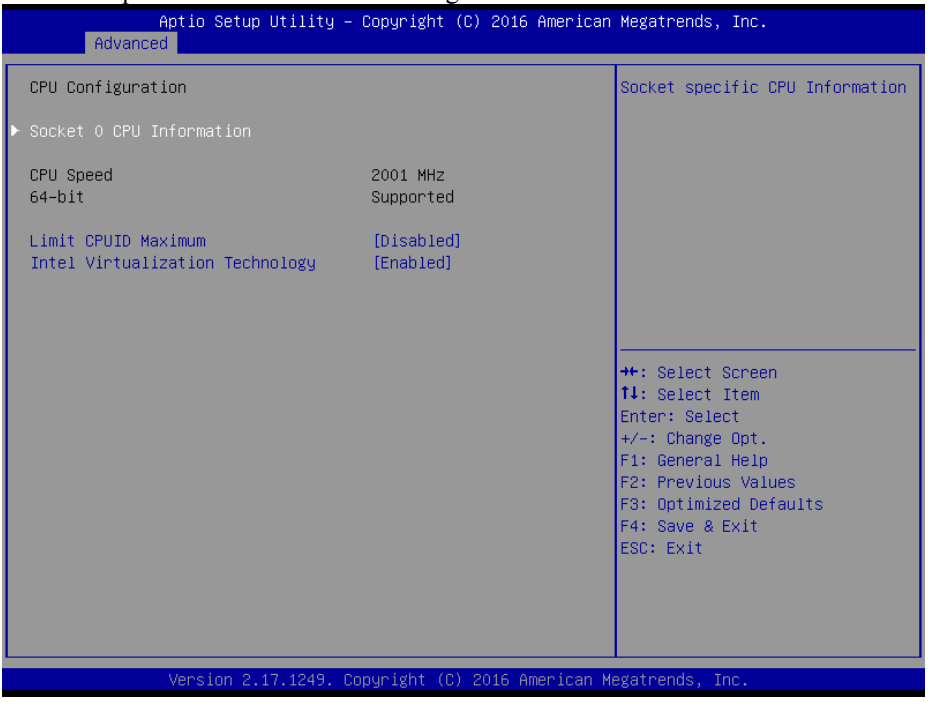


F81866 Watchdog Screen

BIOS Setting	Options	Description/Purpose
Enable WatchDog	-Enabled -Disable	Enables/ Disables Watch dog timer.
Watchdog timer unit	-1s -60s	Select seconds or minutes
Count for Timer (Seconds)	Multiple options ranging from 1 to 255	Sets the desired value (seconds) for the watchdog timer.

3-4-4-4. CPU Configuration

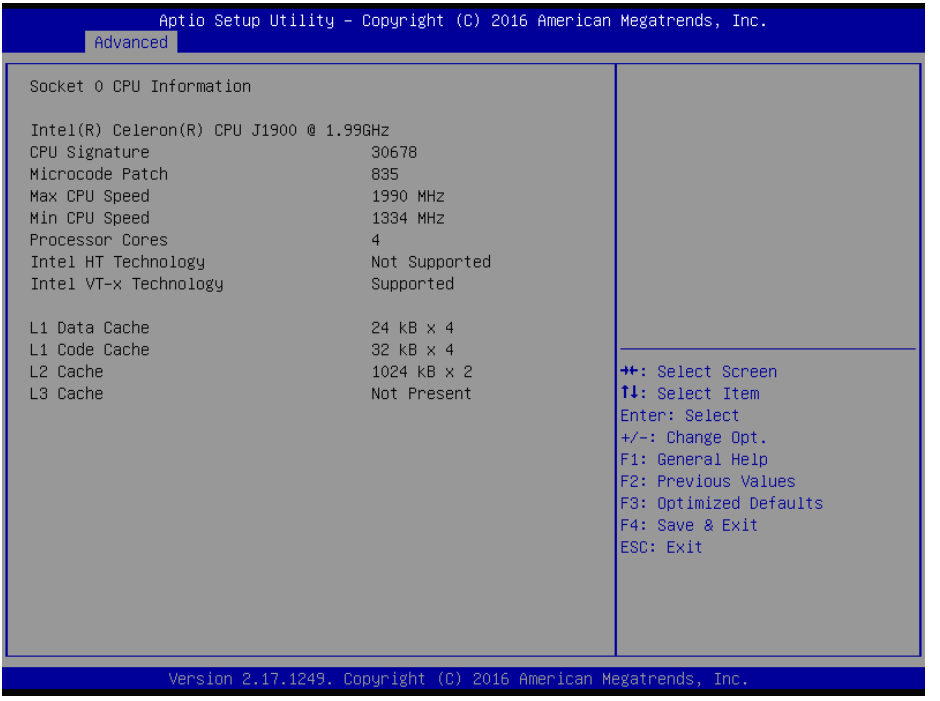
This menu provides advanced CPU settings and some information about CPU.



CPU Configuration Screen

BIOS Setting	Options	Description/Purpose
Socket 0 CPU Information	Sub-Menu	Reports CPU Information
CPU Speed	No changeable options	Reports the current CPU Speed
64-bit	No changeable options	Reports if the processor supports Intel x86-64 (amd64) implementation.
Limit CPUID Maximum	- Disabled - Enabled	Enables for legacy operating systems to boot processors with extended CPUID functions. When this option is enabled, the processor will limit the maximum CPUID input value to 03h

BIOS Setting	Options	Description/Purpose
		when queried. When disabled, the processor will return the actual maximum CPUID input value of the processor when queried. Set "Disabled" for WinXP.
Intel Virtualization Technology	- Disabled - Enabled	When enabled, a VMM (Virtual Machine Monitor) can utilize the additional hardware capabilities provided by Vanderpool Technology (VT).



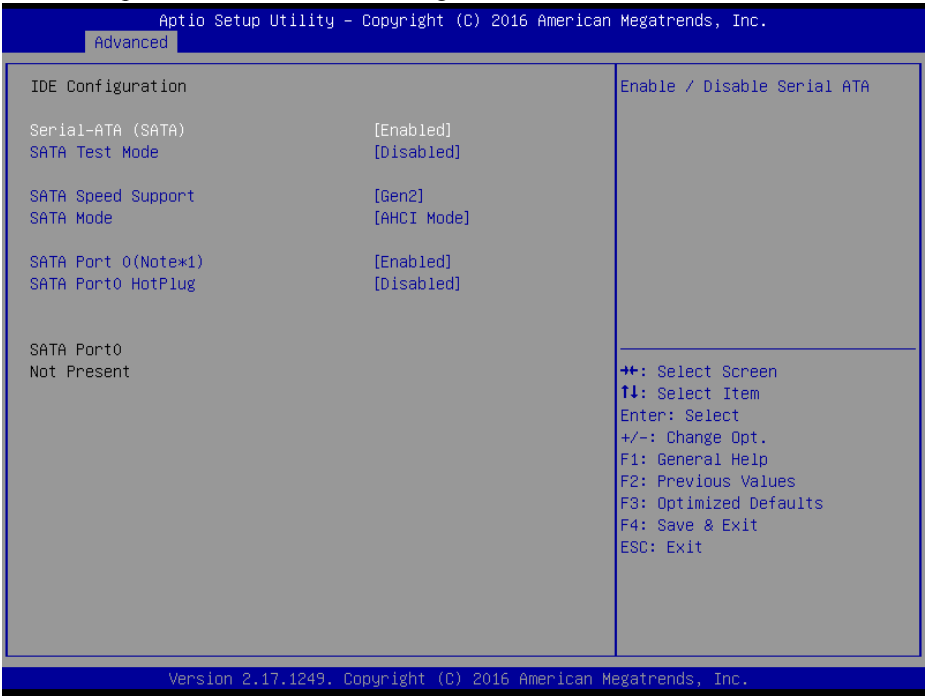
Socket 0 CPU Information Screen

BIOS Setting	Options	Description/Purpose
CPU Signature	No changeable options	Reports the CPU Signature
Microcode Patch	No changeable options	Reports the CPU Microcode Patch Version.
Max CPU Speed	No changeable options	Reports the maximum CPU Speed.
Min CPU Speed	No changeable options	Reports the minimum CPU Speed.
Processor Cores	No changeable options	Displays the number of physical cores in the processor.
Intel HT Technology	No changeable options	Reports if Intel Hyper-Threading Technology is supported by the processor. Hyper Threading is Intel's term for its simultaneous multithreading implementation in their

BIOS Setting	Options	Description/Purpose
		CPUs. Enable this function will improve parallelization of computation performed on PC microprocessor. For each processor core that is physically present, the operating system addresses two virtual processors, and shares the workload between them when possible.
Intel VT-x Technology	No changeable options	Reports if Intel VT-x Technology is supported by the processor. Previously codenamed "Vanderpool", **VT-x** represents Intel's technology for virtualization on the x86 platform. Utilizing Vanderpool Technology (VT), a VMM (Virtual Machine Monitor) can utilize the additional hardware capabilities.
L1 Data Cache	No changeable options	Displays the size of L1 Data Cache.
L1 Code Cache	No changeable options	Displays the size of L1 Code Cache.
L2 Cache	No changeable options	Displays the size of L2 Cache.
L3 Cache	No changeable options	Displays the size of L3 Cache.

3-4-4-5. IDE Configuration

This menu provides advanced IDE configuration for hard drive.



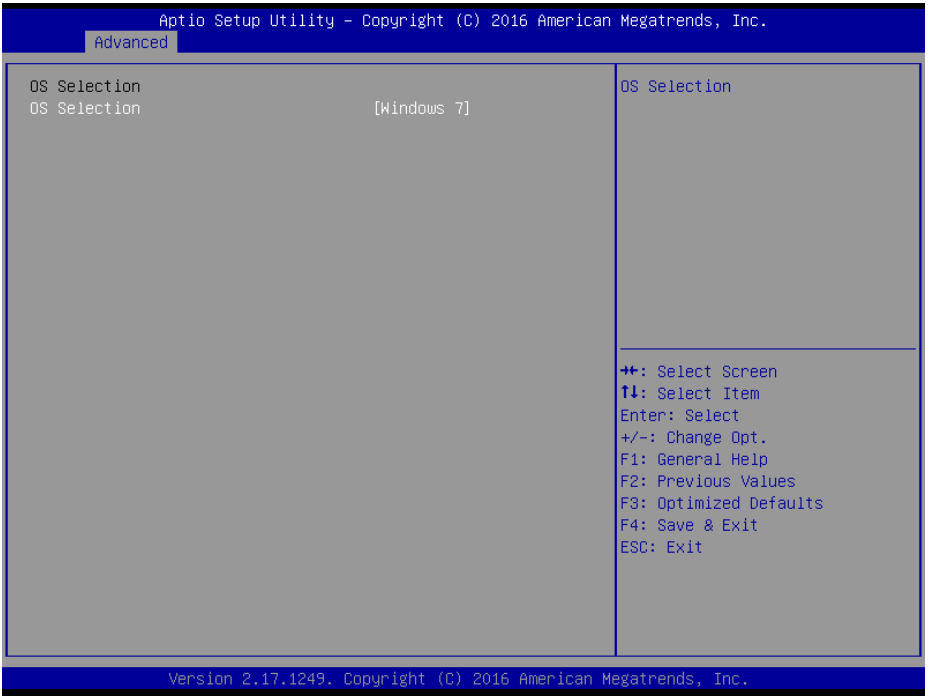
IDE Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial-ATA (SATA)	- Disabled - Enabled	Enables or disables SATA Device.
SATA Test Mode	- Disabled - Enabled	Enables or disables SATA Test Mode.
SATA Speed Support	- GEN1 - GEN2	• **Gen1** mode sets the device to 1.5 Gbit/s speed. • **Gen2** mode sets the device to 3 Gbit/s speed (in case it is compatible).
SATA Mode	- IDE mode - AHCI mode	Configures SATA as following: • **IDE:** Set SATA operation mode to IDE

BIOS Setting	Options	Description/Purpose
		mode. • **AHCI:** SATA works as AHCI (Advanced Host Controller Interface) mode for achieving better performance.
SATA Port 0 (Note*1)	- Disabled - Enabled	Enables or disables SATA port 0 Device.
SATA Port 0 HotPlug	- Disabled - Enabled	Enables or disables SATA port 0 Device HotPlug.
SATA Port 0	- [drive]	Displays the drive installed on this SATA port 0. Shows [Empty] if no drive is installed. If the mother board supports RAID, it will show ASMT109x- Conf (0.1GB)

Note*1: If the board support RAID function, the switch controls RAID SATA Port (SATA1 and SATA2) on board.

3-4-4-6. OS Selection



OS Selection Screen

BIOS Setting	Options	Description/Purpose
OS Selection	- Windows 8.x & 10 - Windows 7	Operating System Selection

3-4-4-7. Voltage Adjustment Configuration

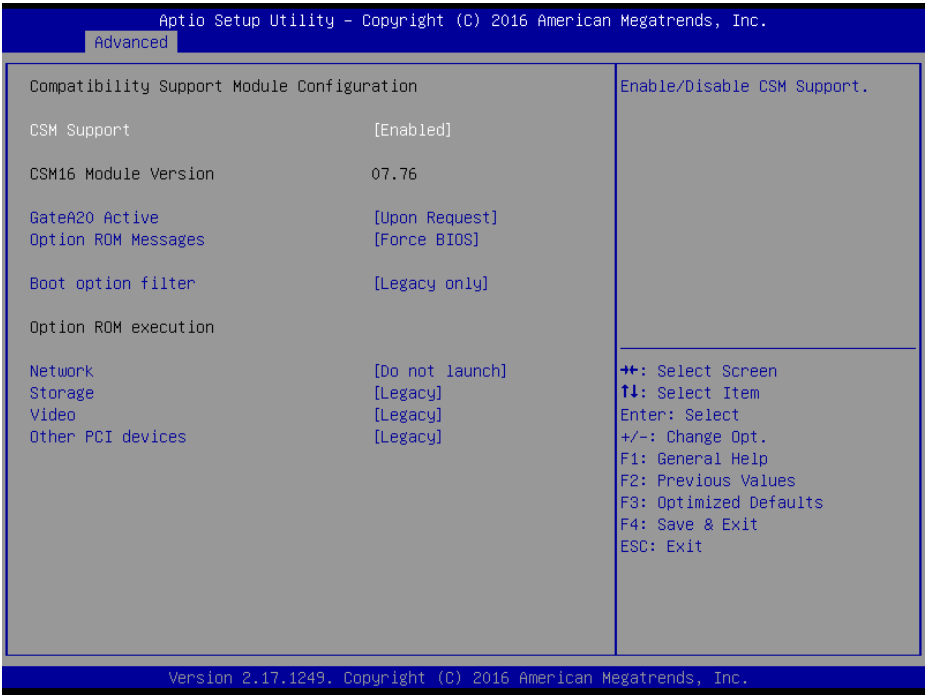
Voltage Adjustment Configuration Screen

BIOS Setting	Options	Description/Purpose
COM1 Select	- Disabled -12V -5V	Selects COM1 Port voltage.
COM2 Select	- Disabled -12V -5V	Selects COM2 Port voltage.
COM3 Select	- Disabled -12V -5V	Selects COM3 Port voltage.

BIOS Setting	Options	Description/Purpose
COM4 Select	- Disabled -12V -5V	Selects COM4 Port voltage.
Cash drawer	- Cash drawer 12V - Cash drawer 24V	Selects Cash drawer voltage.

3-4-4-8. CSM Configuration

This menu provides advanced CSM (Compatibility Support Module) configurations such as Enable/Disable CSM Support, configure Option ROM execution, boot options filters, etc.

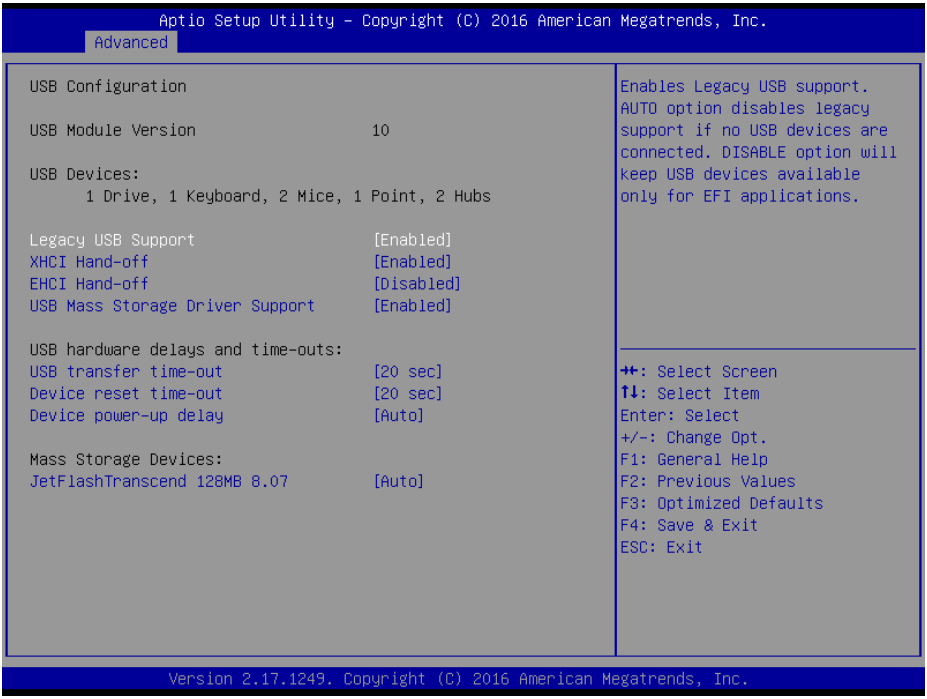


CSM Configuration Screen

BIOS Setting	Options	Description/Purpose
CSM Support	- Disabled - Enabled	Disables or Enables CSM support
CSM16 Module Version	No changeable options	Displays the current CSM version.
GateA20 Active	- Upon Request - Always	Selects Gate A20 operation mode. ▪ **Upon Request:** GA20 can be disabled using BIOS services. ▪ **Always:** Do not allow disabling

BIOS Setting	Options	Description/Purpose
		GA20; this option is useful when any RT code is executed above 1MB.
Option ROM Messages	- Force BIOS - Keep Current	Sets the display mode for Option ROM messages.
Boot option filter	- UEFI and Legacy - Legacy only - UEFI only	This option controls what kind of devices the system can boot.
Network	- Do not launch - UEFI only - Legacy only	Controls the execution of UEFI or Legacy PXE
Storage	- Do not launch - UEFI only - Legacy only	Controls the execution of UEFI or Legacy Storage
Video	- Do not launch - UEFI only - Legacy only	Controls the execution of UEFI and Legacy Video.
Other PCI devices	- UEFI only - Legacy only	Select launch method for other PCI devices, such as NIC, mass storage or video card.

3-4-4-9. USB Configuration

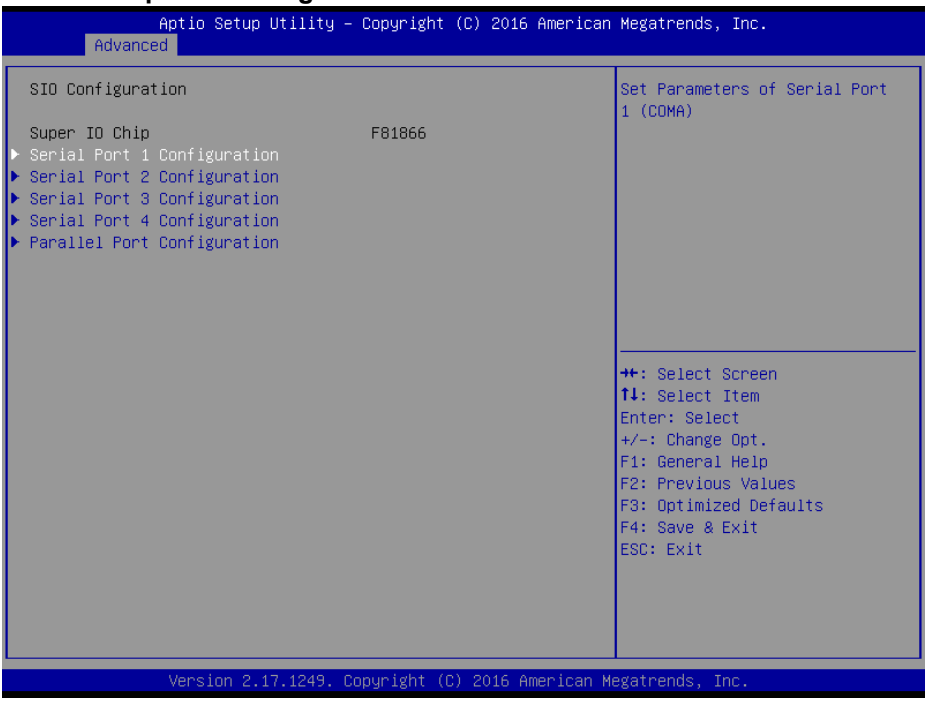


USB Configuration Screen

BIOS Setting	Options	Description/Purpose
USB Devices	No changeable options	Displays the number of available USB devices.
Legacy USB Support	- Disabled - Enabled - Auto	Sets to “Enabled” if you want to use USB device in the legacy operating system.
XHCI Hand-off	- Disabled - Enabled	This is a workaround for OSes without XHCI (Extensible Host Controller Interface) hand-off support.
EHCI Hand-off	- Disabled - Enabled	This is a workaround for OSes without EHCI (Enhanced Host Controller Interface) hand-off support.

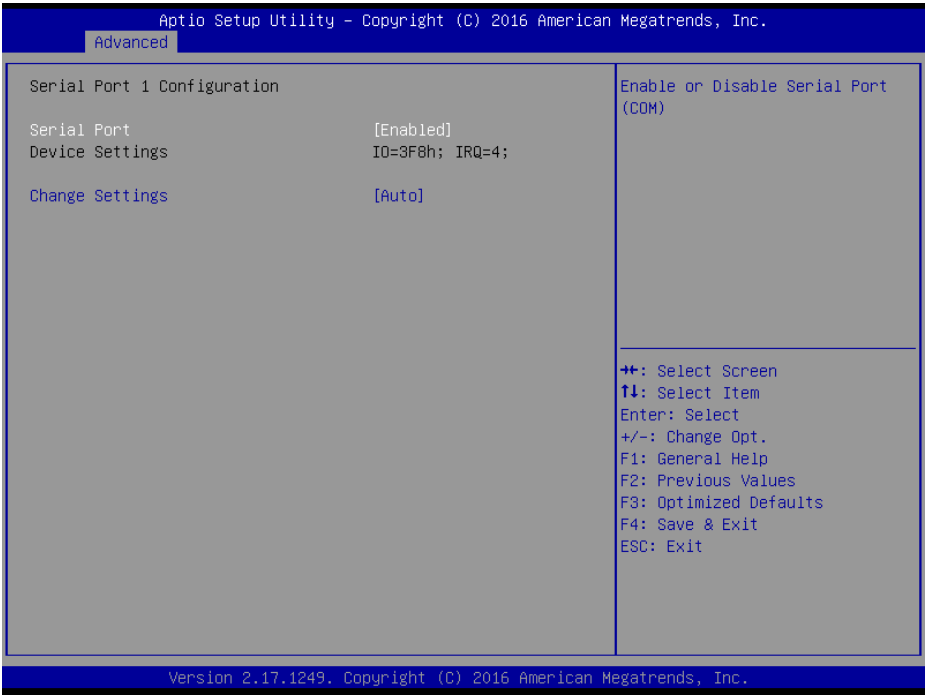
BIOS Setting	Options	Description/Purpose
USB Mass Storage Driver Support	- Disabled - Enabled	Enables/Disables USB mass storage driver support.
USB transfer time-out	1 / 5 / 10 /20 sec	Configures the time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10 / 20 / 30 / 40 sec	Configures the time-out value of the Start Unit command for the USB mass storage device.
Device power-up delay	- Auto - Manual	The maximum time the device will take before it properly reports itself to the Host Controller. "Auto" uses the default value: for a Root port, it is 100 ms; for a Hub port, the delay is taken from Hub descriptor. If "Manual" is specified, the "Device power-up delay in second" option will display for users to configure the delay time range.
Device power-up delay in seconds	Multiple options ranging from 1 to 40	The delay time range is from 1 to 40 seconds in one second increment.
Mass Storage Devices:	- Auto - Floppy - Force FDD - Hard Disk - CD-ROM	Displays the device name and chooses the mass storage emulation type.

3-4-4-10.Super IO Configuration



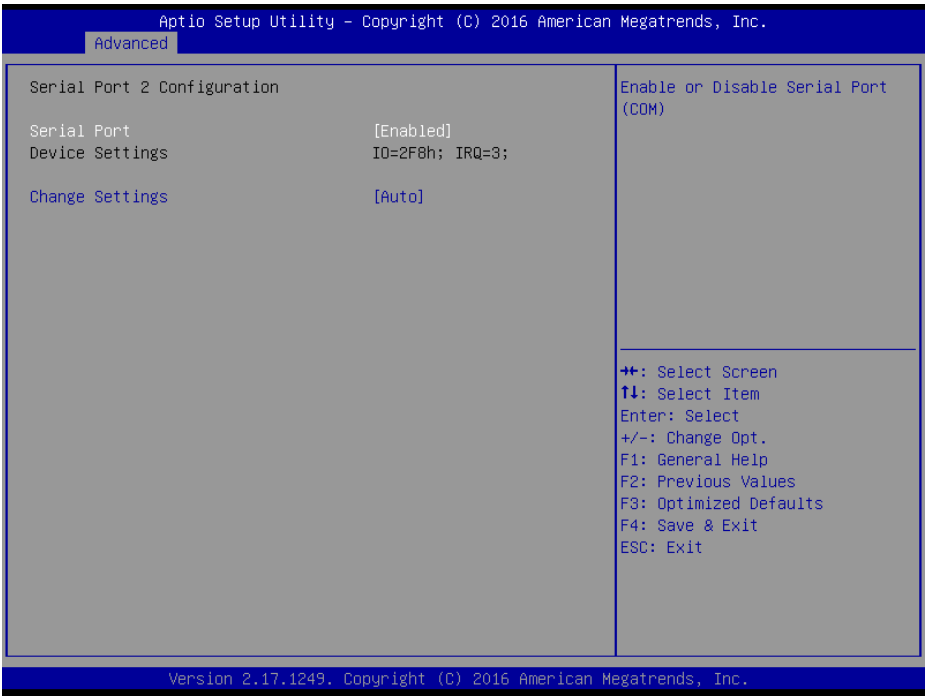
Super IO Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port 1 Configuration	Sub-Menu	Sets Parameters for COM1
Serial Port 2 Configuration	Sub-Menu	Sets Parameters for COM2
Serial Port 3 Configuration	Sub-Menu	Sets Parameters for COM3
Serial Port 4 Configuration	Sub-Menu	Sets Parameters for COM4
Parallel Port Configuration	Sub-Menu	Sets Parameters for LPT port.



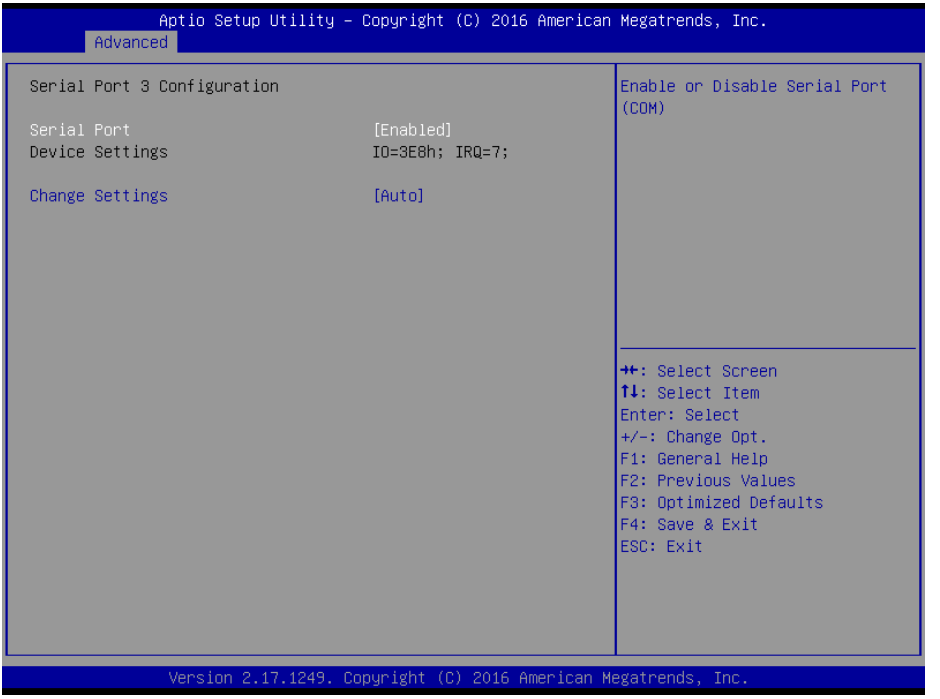
Serial Port 1 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	- Disabled - Enabled	Enables or disables serial port 1.
Device Settings	No changeable options	Displays the current settings of serial port 1.
Change Settings	- Use Automatic Settings - IO=3F8h; IRQ=4; - IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; - IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; - IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; - IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;	Selects IRQ and I/O resource settings for serial port 1.



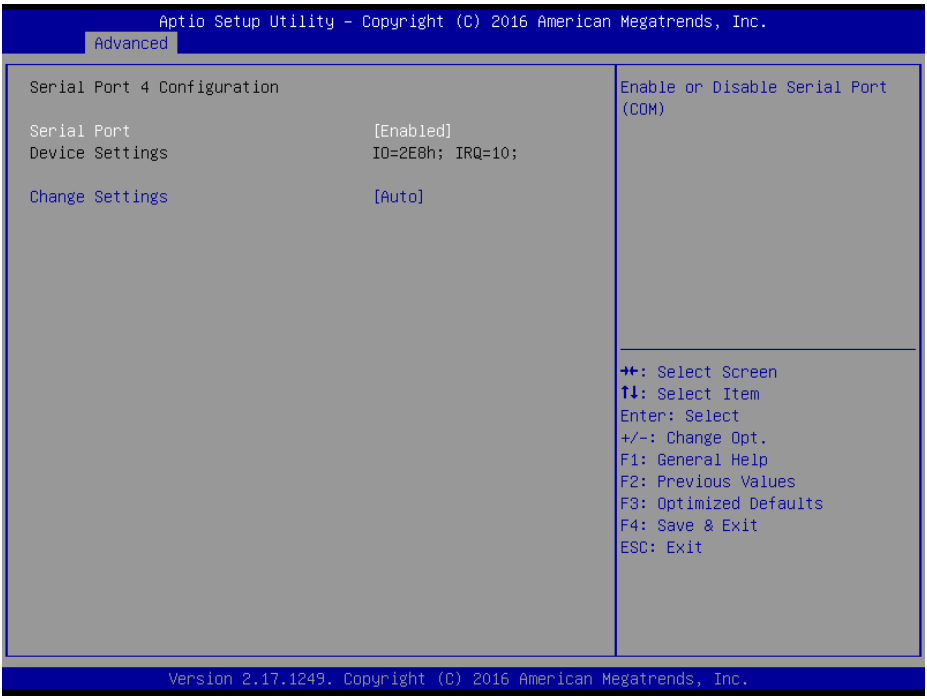
Serial Port 2 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	- Disabled - Enabled	Enables or disables serial port 2.
Device Settings	No changeable options	Displays the current settings of serial port 2.
Change Settings	- Use Automatic Settings - IO=2F8h; IRQ=3; - IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; - IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; - IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; - IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;	Selects IRQ and I/O resource settings for serial port 2.



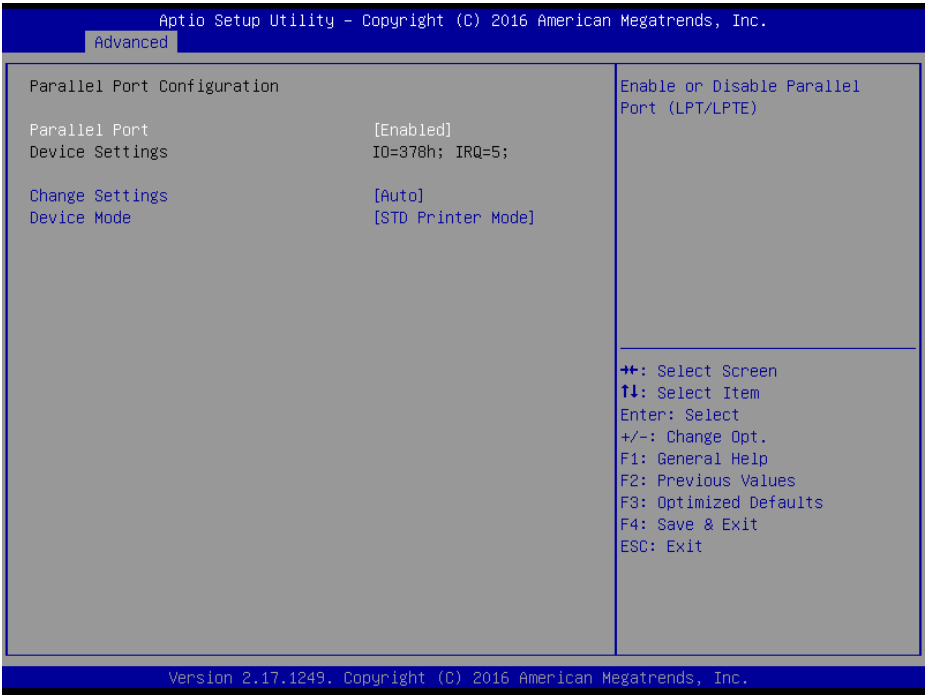
Serial Port 3 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	- Disabled - Enabled	Enables or disables serial port 3.
Device Settings	No changeable options	Displays the current settings of serial port 3.
Change Settings	- Use Automatic Settings - IO=3E8h; IRQ=7; - IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; - IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; - IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; - IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;	Selects IRQ and I/O resource settings for serial port 3.



Serial Port 4 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	- Disabled - Enabled	Enables or disables serial port 4.
Device Settings	No changeable options	Displays the current settings of serial port 4.
Change Settings	-Use Automatic Settings -IO=2E8h; IRQ=10; -IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; -IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; -IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; -IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;	Selects IRQ and I/O resource settings for serial port 4.

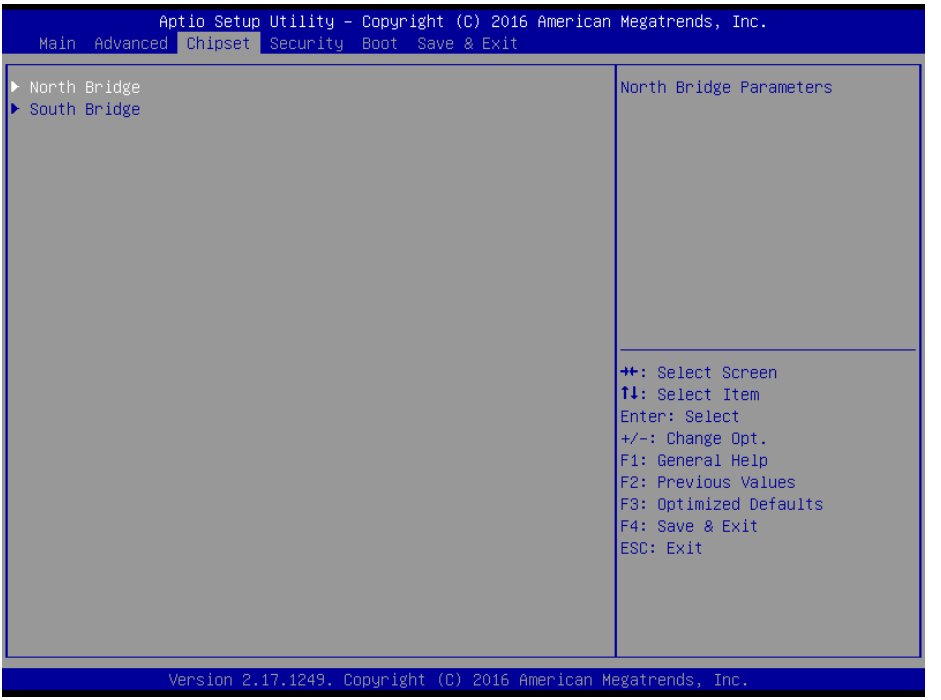


Parallel Port Configuration Screen

BIOS Setting	Options	Description/Purpose
Parallel Port	- Disabled - Enabled	Enables or disables the printer port.
Device Settings	No changeable options	Displays the current settings of the printer port.
Change Settings	- Use Automatic Settings - IO=378h; IRQ=5 - IO=378h; IRQ=5,6,7,9,10,11,12 - IO=278h; IRQ=5,6,7,9,10,11,12 - IO=3BCh; IRQ=5,6,7,9,10,11,12	Selects IRQ and I/O resource settings for the printer port.
Device Mode	- STD Printer Mode - SPP Mode - EPP-1.9 and SPP Mode - EPP-1.7 and SPP Mode - ECP Mode - ECP and EPP 1.9 Mode	Selects the mode for the parallel port. Not available if the parallel port is disabled. **SPP** is Standard Parallel

BIOS Setting	Options	Description/Purpose
	- ECP and EPP 1.7 Mode	Port mode, a bi-directional mode for printers. **EPP** is Enhanced Parallel Port mode, a high-speed bi-directional mode for non-printer peripherals. **ECP** is Enhanced Capability Port mode, a high-speed bi-directional mode for printers and scanners.

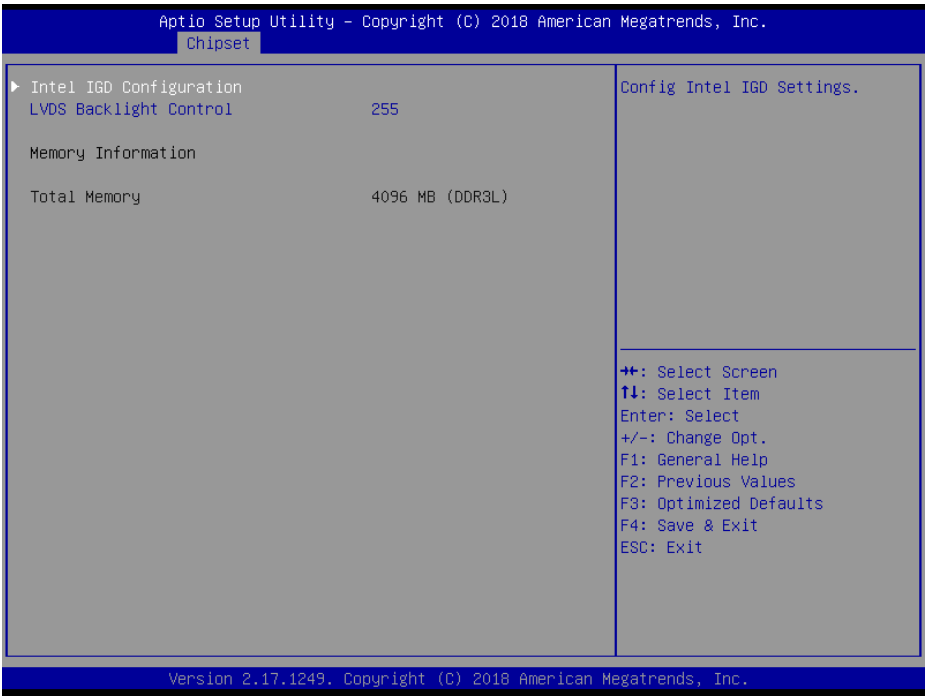
3-4-5. Chipset



Chipset Screen

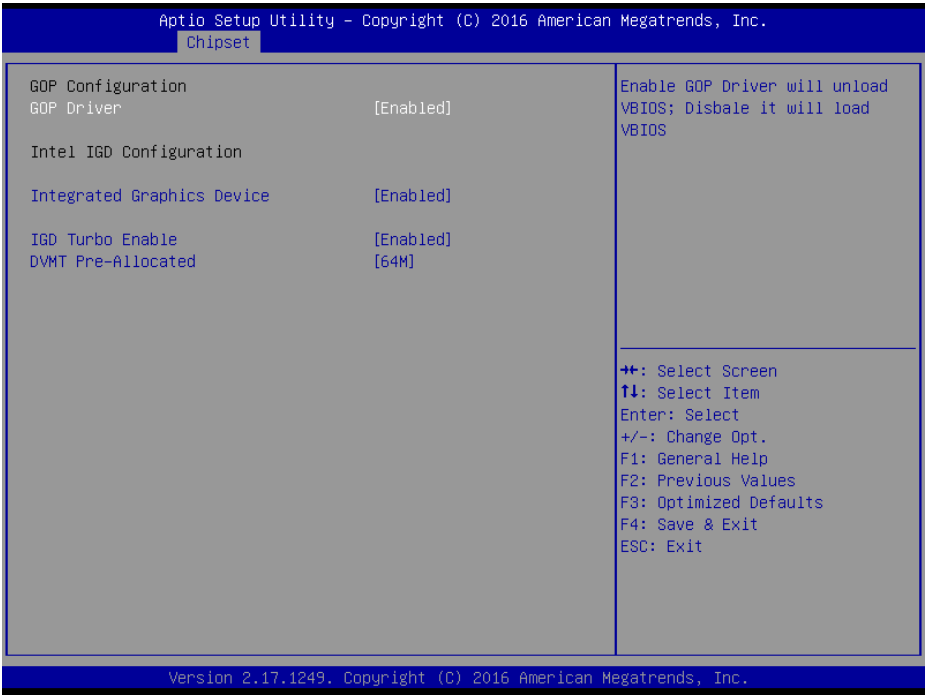
BIOS Setting	Options	Description/Purpose
North Bridge	Sub-Menu	Sets parameter for North Bridge configuration.
South Bridge	Sub-Menu	Sets parameters for South Bridge configuration.

3-4-5-1. North Bridge



North Bridge Screen

BIOS Setting	Options	Description/Purpose
Intel IGD Configuration	Sub-Menu	Configures Graphics Settings.
LVDS Backlight Control	Multiple options ranging from 16 to 255 *Default: 255 (Maximum)	Sets LVDS backlight brightness from 16 to 255.
Memory Information	No changeable options	Displays the DRAM information on the platform.
Total Memory	No changeable options	Displays the DRAM size.

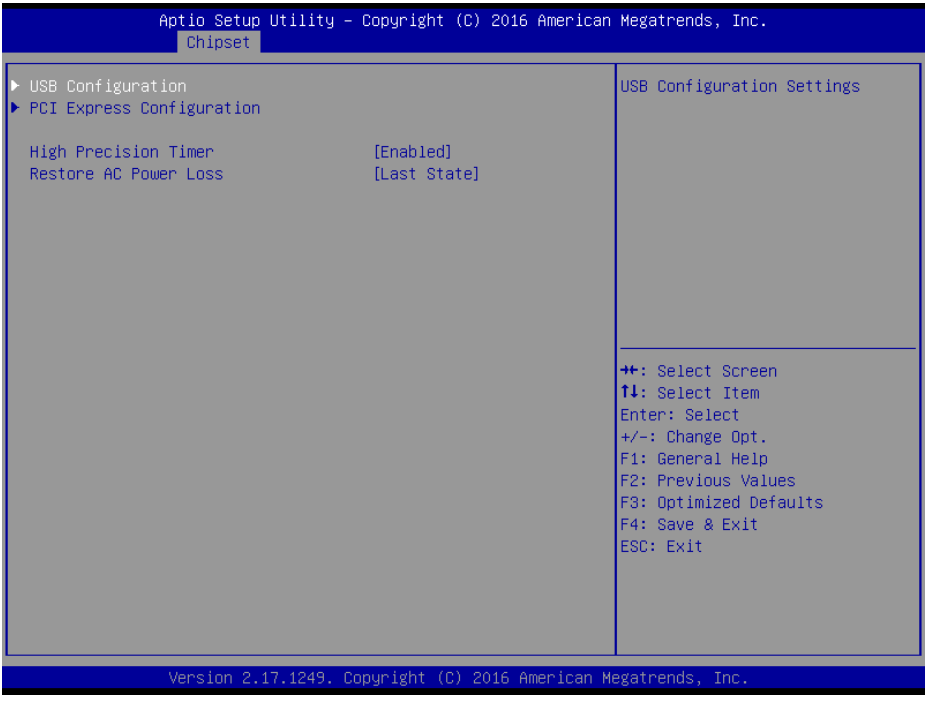


Intel IGD Configuration Screen

BIOS Setting	Options	Description/Purpose
GOP Driver	- Disabled - Enabled	Enables or disables GOP Driver for UEFI OS.
Intel IGD Configuration	No changeable options	Displays the IGD information on the platform.
Integrated Graphics Device	- Disabled - Enabled	• **Enabled:** Enables Integrated Graphics Device (IGD) when selected as the Primary Video Adaptor. • **Disabled:** Always disables IGD.
IGD Turbo Enable	- Disabled - Enabled	Enables or disables IGD Turbo
DVMT Pre-Allocated	- 32M - 64M	Selects DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used

BIOS Setting	Options	Description/Purpose
	- 96M - 128M - 256M - 512M	by the Internal Graphics Device.

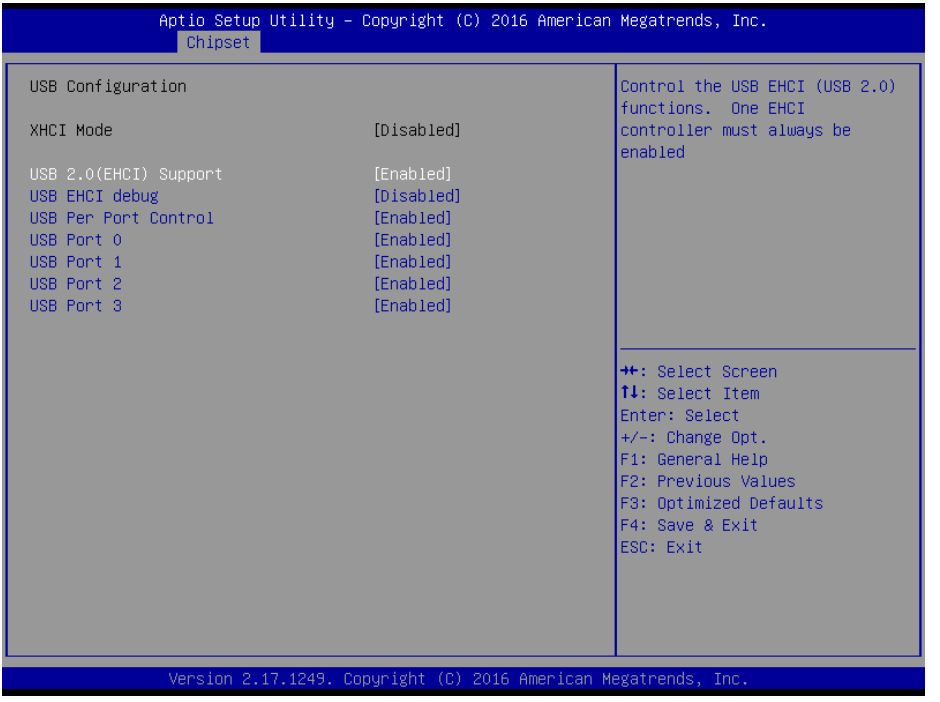
3-4-5-2. South Bridge



South Bridge Screen

BIOS Setting	Options	Description/Purpose
USB Configuration	Sub-Menu	Configures USB parameters.
PCI Express Configuration	Sub-Menu	Configures PCH PCIE parameters.
High Precision	- Disabled	Enables or disables the HPET (High Precision

BIOS Setting	Options	Description/Purpose
Timer	- Enabled	Event Timer)
Restore AC Power Loss	- Power Off - Power On - Last State	Selects AC power state when the power is re-applied following a power failure. • **Power Off** keeps the system powered off till the Power button is pressed. • **Power On** keeps the system powered on after the system restores AC power to the board. • **Last State** brings the system back to the last power state when the AC power is removed.



USB Configuration Screen

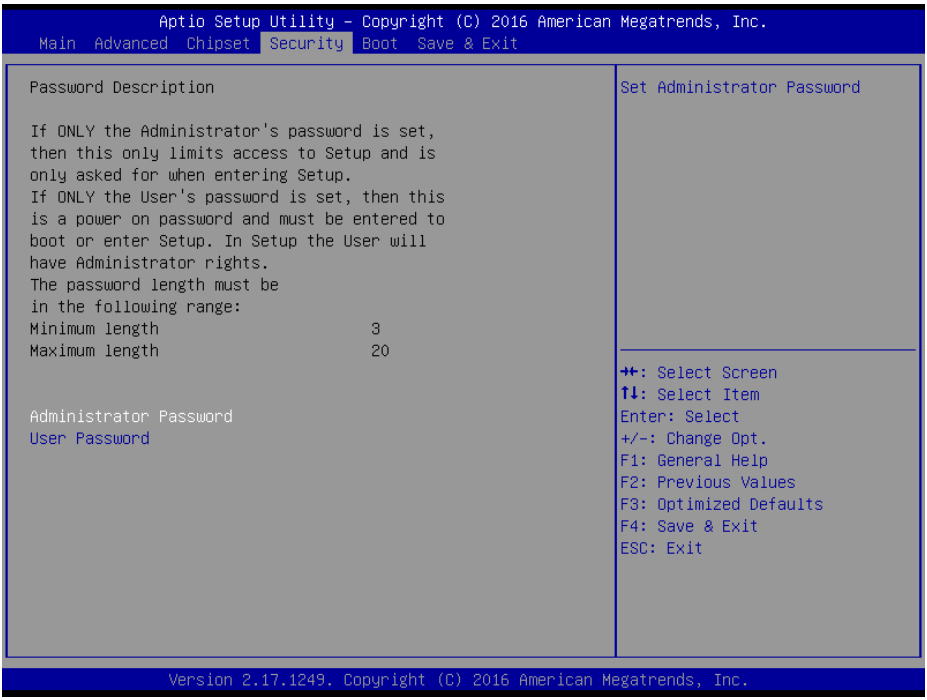
BIOS Setting	Options	Description/Purpose
USB 2.0 (EHCI) Support	- Disabled - Enabled	(XHCI Mode must be disabled.) Enables Enhanced Host Controller Interface 1 for high-speed USB

BIOS Setting	Options	Description/Purpose
		functions (USB 2.0).
USB Per Port Control	- Disabled - Enabled	Enables or Disables each USB port.
USB Port 0	- Disabled - Enabled	Enables or Disables USB port 0.
USB Port 1	- Disabled - Enabled	Enables or Disables USB port 1.
USB Port 2	- Disabled - Enabled	Enables or Disables USB port 2.
USB Port 3	- Disabled - Enabled	Enables or Disables USB port 3.

PCI Express Configuration Screen

BIOS Setting	Options	Description/Purpose
PCI Express Port 2(For mini PCI-E)	- Disabled - Enabled	Enables or Disables PCI Express port 2.
Speed	- Auto - Gen1 - Gen2	Selects the speed of PCI Express port 2.
PCI Express Port 3(For RTL8111)	- Disabled - Enabled	Enables or Disables PCI Express port 3.
Speed	- Auto - Gen1 - Gen2	Selects the speed of PCI Express port 3.

3-4-6. Security

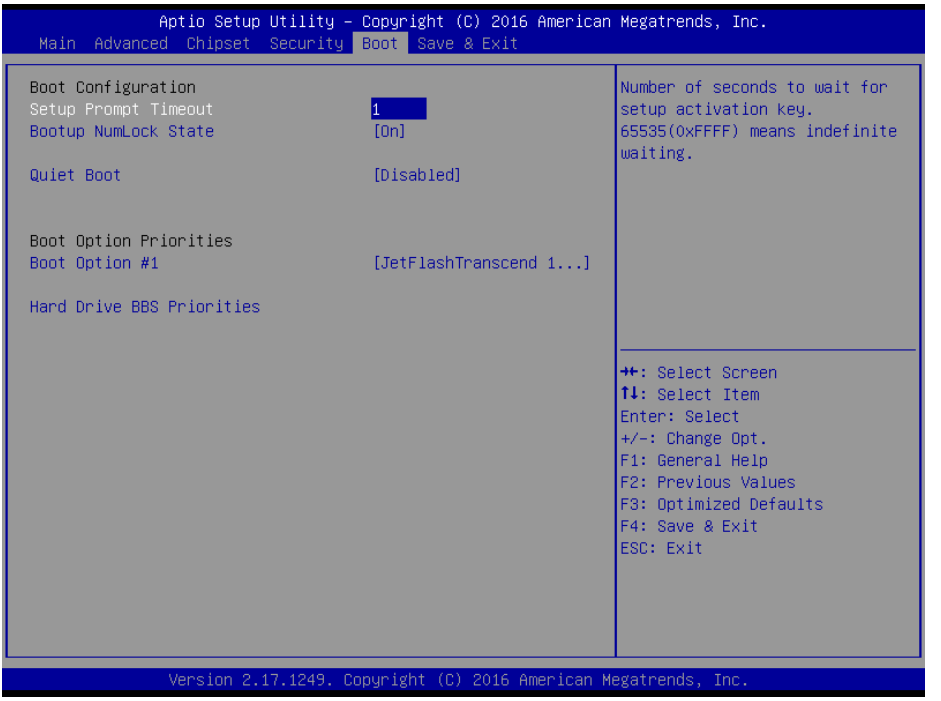


Security Screen

BIOS Setting	Options	Description/Purpose
Administrator Password	Password can be 3-20 alphanumeric characters.	Specifies the administrator password.
User Password	Password can be 3-20 alphanumeric characters.	Specifies the user password.

3-4-7. Boot

This menu provides control items for system boot configuration.

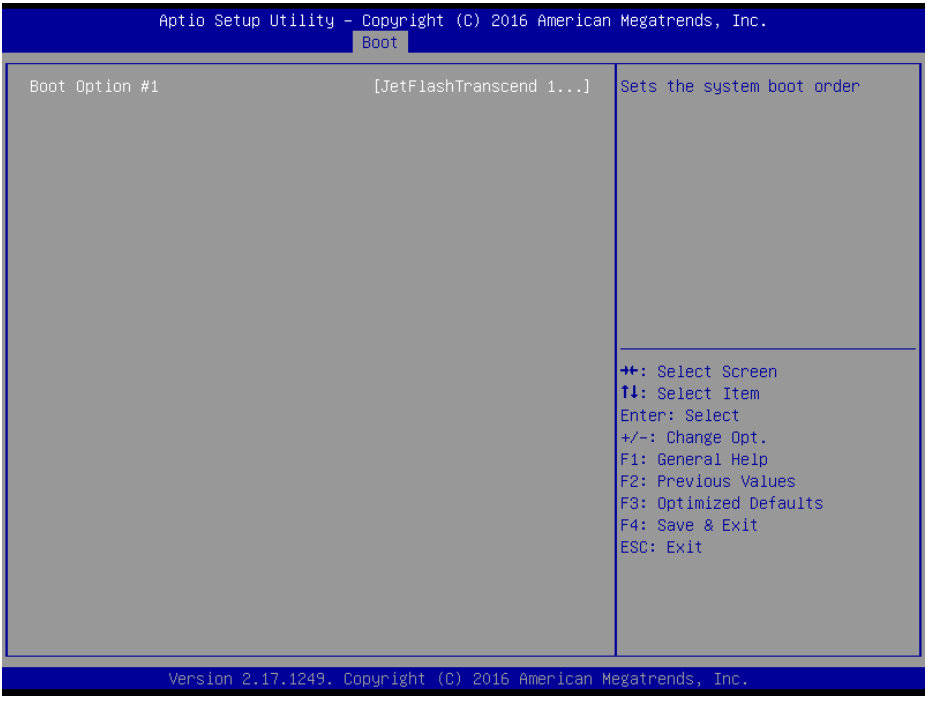


Boot Configuration Screen

BIOS Setting	Options	Description/Purpose
Setup Prompt Timeout	Numeric	Number of seconds to wait for setup activation key.
Bootup NumLock State	- On - Off	Selects the NumLock sate after the system is powered on. • **On:** Enables the NumLock function automatically after the system is powered on. • **Off:** Disables the NumLock function after the system is powered on.

BIOS Setting	Options	Description/Purpose
Quiet Boot	- Disabled - Enabled	Enables/Disables Quiet Boot option. When this option is set to “Disabled”, BIOS will display normal POST messages.
Boot Option #1~#n	- [Drive(s)] - Disabled	Allow users to choose the boot sequence from the available device(s). Note that in the menu displayed, you will only see the device with the highest priority for a specific boot device type.
Hard Drive BBS Priorities	Sub-Menu	Defines the boot order for all the hard drives connected to the system, e.g. SATA, USB drive.

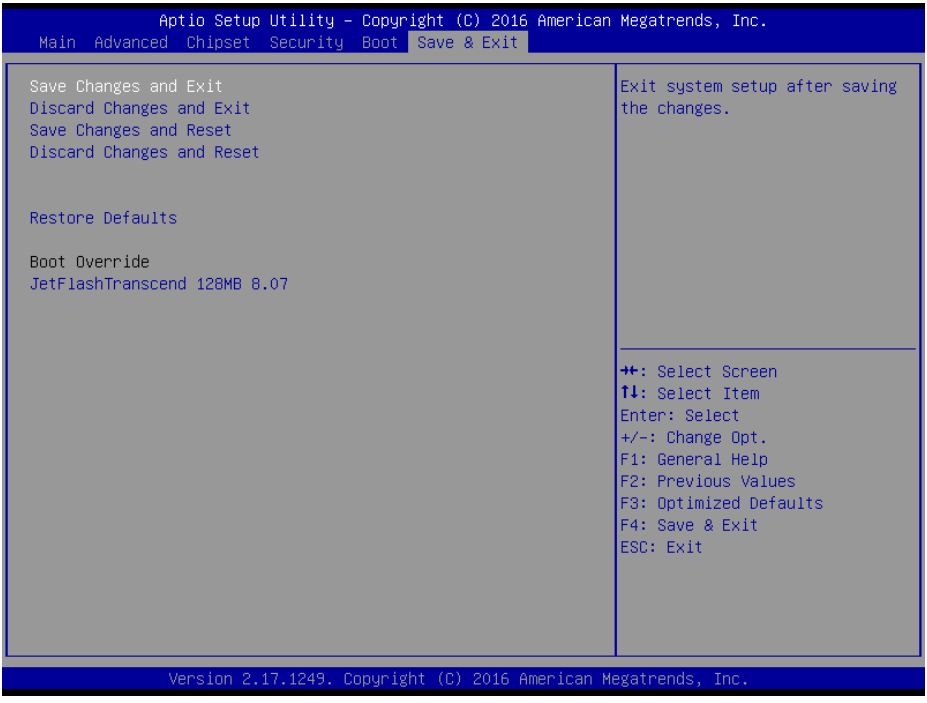
3-4-7-1. Hard Drive BBS Priorities



Hard Drive BBS Priorities Screen

BIOS Setting	Options	Description/Purpose
Boot Option #1 - #n	- [Drive(s)] - Disabled	Allow users to set the priority of all the drives connected to the system or another bootable USB storage. Press **Enter** to enter the sub-menu and press < ↑ > or < ↓ > arrow keys to select the device. Another way is to press <+> or <-> to move the selected device up/down in the priority list.

3-4-8. Save & Exit



Save & Exit Screen

BIOS Setting	Options	Description/Purpose
Save Changes and Exit	No changeable options	Exits the BIOS menu and saves the changes in NVRAM.
Discard Changes and Exit	No changeable options	Exits the BIOS menu without saving any changes made in BIOS settings.
Save Changes and Reset	No changeable options	Saves the changes in NVRAM and resets the system.
Discard Changes and Reset	No changeable options	Resets the system without saving any changes made in BIOS settings.
Restore Defaults	No changeable options	Loads the optimized defaults for BIOS settings.
Boot Override	- [Drive(s)]	Forces to boot the system from the selected [drive(s)].

3-5. WATCHDOG TIMER CONFIGURATION

The I/O port address of the watchdog timer is 2E (hex) and 2F (hex). 2E (hex) is the address port. 2F (hex) is the data port. User must first assign the address of register by writing address value into address port 2E (hex), then write/read data to/from the assigned register through data port 2F (hex).

3-5-1. Configuration Sequence

To program F81866 configuration registers, the following configuration sequence must be followed:

1. Enter the extended function mode

To place the chip into the Extended Function Mode, two successive writes of 0x87 must be applied to Extended Function Enable Registers (EFERs, i.e. 2Eh or 4Eh).

2. Configure the configuration registers

The chip selects the Logical Device and activates the desired Logical Devices through Extended Function Index Register (EFIR) and Extended Function Data Register (EFDR). The EFIR is located at the same address as the EFER, and the EFDR is located at address (EFIR+1). First, write the Logical Device Number (i.e. 0x07) to the EFIR and then write the number of the desired Logical Device to the EFDR. If accessing the Chip (Global) Control Registers, this step is not required. Secondly, write the address of the desired configuration register within the Logical Device to the EFIR and then write (or read) the desired configuration register through the EFDR.

3. Exit the extended function mode

To exit the Extended Function Mode, writing 0xAA to the EFER is required. Once the chip exits the Extended Function Mode, it is in the normal running mode and is ready to enter the configuration mode.

3-5-2. Code Example for Watchdog Timer

Enable watchdog timer and set the timeout interval as 30 seconds.

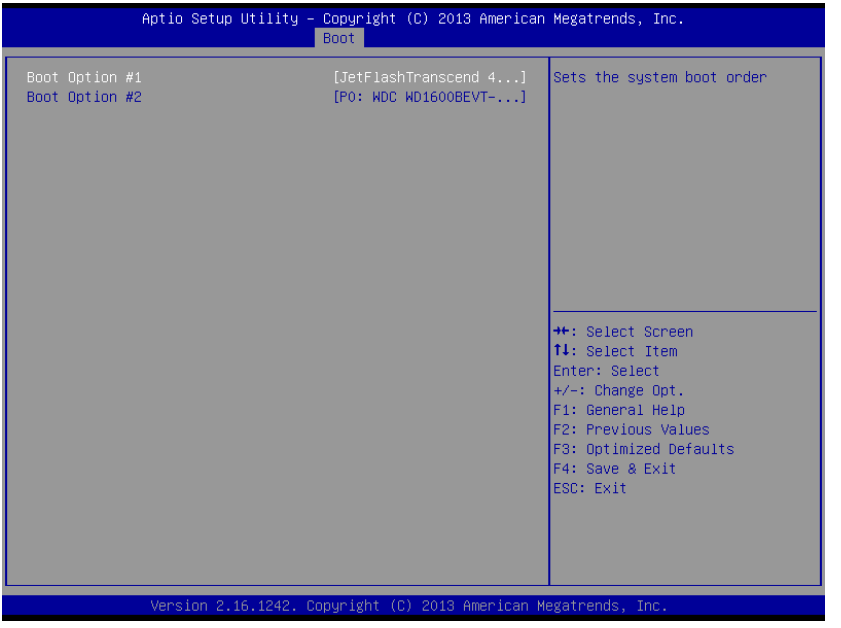
```
;------ Enter to extended function mode ------------------------------------------------
-
mov     dx,     2eh
mov     al,     87h
out     dx,     al
out     dx,     al
;------ Select Logical Device 7 of watchdog timer --------------------------------------
-
mov     al,     07h
out     dx,     al
inc     dx
mov     al,     07h
out     dx,     al
;------ Enable Watch dog feature -------------------------------------------------------
---
mov     al,     030h
out     dx,     al
inc     dx
mov     al,     01h
out     dx,     al
;------ Enable Watch PME----------------------------------------------------------------
---
dec     dx
mov     al,     0FAh
out     dx,     al
inc     dx
in      al,     dx
and     al,     51h
out     dx,     al
;------ Set second as counting unit ----------------------------------------------------
-
```

```
dec     dx
mov     al,     0f5h
out     dx,     al
inc     dx
in      al,     dx
and     al,     30h
out     dx,     al
;------ Set timeout interval as 30seconds and start counting ----------
-
dec     dx
mov     al,     0f6h
out     dx,     al
inc     dx
mov     al,     1Eh
out     dx,     al
;------ Exit the extended function mode ----------
-
dec     dx
mov     al,     0aah
out     dx,     al
```

3-6. BIOS UPDATE INSTRUCTIONS

3-6-1. Before System BIOS UPDATE

1. Prepare a bootable media (e.g. USB storage device) which can boot the system to DOS prompt.
2. Download and save the BIOS file (e.g. 62253PD5.bin) to the bootable device.
3. Copy AMI flash utility – AFUDOS.exe (V5.07) into the bootable device.
4. Make sure the target system can first boot to the bootable device.
   a. Connect the bootable USB device.
   b. Turn on the computer and press <Del> or <Esc> key during boot to enter BIOS setup menu.
   c. System will go into the BIOS setup menu.
   d. Select [Boot] menu as shown in the picture below.
   e. Select [Hard Drive BBS Priorities] and set the USB bootable device as the 1st boot device.
   f. Press <F4> key to save the configuration and exit the BIOS setup menu.



3-6-2. AFUDOS Commands for System BIOS Update

AFUDOS.exe is aforementioned AMI firmware update utility; the command line is shown as below:

AFUDOS <ROM File Name> [option1] [option2]…

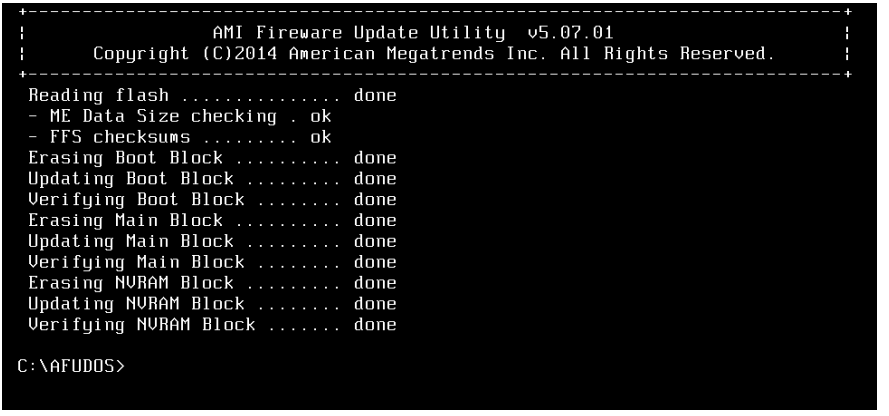
You can type AFUDOS /? to see all the definition of each control options. The recommended options for BIOS ROM update consist of following parameters:

/P: program main BIOS image
/B: program Boot Block
/N: program NVRAM
/X: don't check ROM ID

3-6-3. BIOS Update Procedure

1. Use the bootable USB device to boot up system into the MS-DOS command prompt
2. Type in AFUDOS 6225xxxx.bin /p /b /n /x and press **Enter** to start the flash procedure

   Note: xxxx means the BIOS revision part, e.g. 0PD2…
3. During the update procedure, you will see the BIOS update process status and its percentage. Beware! Do not turn off or reset your computer before the update is completed, or it may crash the BIOS ROM and the system will be unable to boot up next time. The whole update process may take up to 3 minutes.
4. After BIOS update procedures is complete, the following messages will be displayed as below:



5. Restart the system and boot up the system with new BIOS now.
6. The BIOS Update procedure is completed after the system is restarted.
7. Reboot the system and verify if the BIOS version shown on the initialization screen has been updated.


American
Megatrends
Version 2.18.1249. Copyright (C) 2018 American Megatrends, Inc.
BIOS Date: 11/20/2018 10:31:35 Ver: 62253PD5
Press <DEL> or <ESC> to enter setup.

3-7. SYSTEM RESOURCE MAP

3-7-1. PB-6822RA, RB

IRQ	ASSIGNMENT
0	System timer
1	Standard PS/2 Keyboard
3	Communications Port (COM2)
4	Communications Port (COM1)
5	Printer Port (LPT1)
7	Communications Port (COM3)
7	Communications Port (COM4)
8	High precision event timer
16	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series PCI Express - Root Port 1 - 0F48
17	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series PCI Express - Root Port 2 - 0F4A
18	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series PCI Express - Root Port 3 - 0F4C
19	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series PCI Express - Root Port 4 - 0F4E
19	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series AHCI - 0F23
81~511	Microsoft ACPI-Compliant System-Compliant System
4294967291	Intel® HD Graphics
4294967292	Intel® USB 3.0 eXtensible Host Controller - 0100 (Microsoft)
4294967293	Intel® Trusted Execution Engine Interface
4294967294	Realtek PCIe GBE Family Controller

DMA Channels Map

TIMER CHANNEL	ASSIGNMENT
Channel 4	Direct memory access controller

I/O Map

I/O MAP	ASSIGNMENT
0x00000000-0x0000006F	PCI Express Root Complex
0x00000020-0x00000021	Programmable interrupt controller
0x00000024-0x00000025	Programmable interrupt controller
0x00000028-0x00000029	Programmable interrupt controller
0x0000002C-0x0000002D	Programmable interrupt controller
0x0000002E-0x0000002F	Motherboard resources
0x00000030-0x00000031	Programmable interrupt controller
0x00000034-0x00000035	Programmable interrupt controller
0x00000038-0x00000039	Programmable interrupt controller
0x0000003C-0x0000003D	Programmable interrupt controller
0x00000040-0x00000043	System timer
0x0000004E-0x0000004F	Motherboard resources
0x00000050-0x00000053	System timer
0x00000060-0x00000060	Standard PS/2 Keyboard
0x00000061-0x00000061	Motherboard resources
0x00000063-0x00000063	Motherboard resources
0x00000064-0x00000064	Standard PS/2 Keyboard
0x00000065-0x00000065	Motherboard resources
0x00000067-0x00000067	Motherboard resources
0x00000070-0x00000070	Motherboard resources
0x00000070-0x00000070	System CMOS/real time clock
0x00000078-0x00000CF7	PCI Express Root Complex
0x00000080-0x0000008F	Motherboard resources
0x00000092-0x00000092	Motherboard resources
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A4-0x000000A5	Programmable interrupt controller
0x000000A8-0x000000A9	Programmable interrupt controller
0x000000AC-0x000000AD	Programmable interrupt controller
0x000000B0-0x000000B1	Programmable interrupt controller
0x000000B2-0x000000B3	Motherboard resources
0x000000B4-0x000000B5	Programmable interrupt controller

I/O MAP	ASSIGNMENT
0x000000B8-0x000000B9	Programmable interrupt controller
0x000000BC-0x000000BD	Programmable interrupt controller
0x000002E8-0x000002EF	Communications Port (COM4)
0x000002F8-0x000002FF	Communications Port (COM2)
0x00000378-0x0000037F	Printer Port (LPT1)
0x000003B0-0x000003BB	Intel® HD Graphics
0x000003C0-0x000003DF	Intel® HD Graphics
0x000003E8-0x000003EF	Communications Port (COM3)
0x000003F8-0x000003FF	Communications Port (COM1)
0x00000400-0x0000047F	Motherboard resources
0x000004D0-0x000004D1	Programmable interrupt controller
0x00000500-0x000005FE	Motherboard resources
0x00000600-0x0000061F	Motherboard resources
0x00000680-0x0000069F	Motherboard resources
0x00000A00-0x00000A0F	Motherboard resources
0x00000A10-0x00000A1F	Motherboard resources
0x00000A20-0x00000A2F	Motherboard resources
0x00000D00-0x0000FFFF	PCI Express Root Complex
0x0000164E-0x0000164F	Motherboard resources
0x0000E000-0x0000E0FF	Realtek PCIe GBE Family Controller
0x0000E000-0x0000E0FF	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series PCI Express - Root Port 4 - 0F4E
0x0000F000-0x0000F01F	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series Platform Control Unit - SMBus Port - 0F12
0x0000F020-0x0000F03F	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series AHCI - 0F23
0x0000F040-0x0000F043	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series AHCI - 0F23
0x0000F050-0x0000F057	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series AHCI - 0F23
0x0000F060-0x0000F063	Intel® Pentium® processor N- and J-series / Intel®

I/O MAP	ASSIGNMENT
	Celeron® processor N- and J-series AHCI - 0F23
0x0000F070-0x0000F077	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series AHCI - 0F23
0x0000F080-0x0000F087	Intel® HD Graphics

Memory Map

MEMORY MAP	ASSIGNMENT
0xE0000000-0xEFFFFFFF	Motherboard resources
0xFED01000-0xFED01FFF	Motherboard resources
0xFED03000-0xFED03FFF	Motherboard resources
0xFED04000-0xFED04FFF	Motherboard resources
0xFED0C000-0xFED0FFFF	Motherboard resources
0xFED08000-0xFED08FFF	Motherboard resources
0xFED1C000-0xFED1CFFF	Motherboard resources
0xFEE00000-0xFEEFFFFF	Motherboard resources
0xFEF00000-0xFEFFFFFF	Motherboard resources
0xD0604000-0xD0604FFF	Realtek PCIe GBE Family Controller
0xD0600000-0xD0603FFF	Realtek PCIe GBE Family Controller
0xD0600000-0xD0603FFF	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series PCI Express - Root Port 4 - 0F4E
0xFED00000-0xFED003FF	High precision event timer
0xC0000000-0xD0711FFE	PCI Express Root Complex
0xC0000000-0xD0711FFE	Intel® HD Graphics
0xD0000000-0xD03FFFFF	Intel® HD Graphics
0xD0700000-0xD070FFFF	Intel® USB 3.0 eXtensible Host Controller - 0100 (Microsoft)
0xD0710000-0xD071001F	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series Platform Control Unit - SMBus Port - 0F12
0xD0500000-0xD05FFFFF	Intel® Trusted Execution Engine Interface
0xD0400000-0xD04FFFFF	Intel® Trusted Execution Engine Interface
0xD0711000-0xD07117FF	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series AHCI - 0F23

MEMORY MAP	ASSIGNMENT
0xE00000D0-0xE00000DB	Intel® Sideband Fabric Device
0xFF000000-0xFFFFFFFF	Intel® 82802 Firmware Hub Device
0xA0000-0xBFFFF	PCI Express Root Complex
0xA0000-0xBFFFF	Intel® HD Graphics
0xC0000-0xDFFFF	PCI Express Root Complex
0xE0000-0xFFFFF	PCI Express Root Complex

3-7-2. PB-6822RC

Interrupt Map

IRQ	ASSIGNMENT
IRQ 1	Standard PS/2 Keyboard
IRQ 19	Standard AHCI 1.0 Serial ATA Controller
IRQ 19	PCI standard PCI-to-PCI bridge
IRQ 0	System timer
IRQ 8	High precision event timer
IRQ 4294967294	Intel® Celeron® Processor J1900
IRQ 4	Communications Port (COM1)
IRQ 3	Communications Port (COM2)
IRQ 7	Communications Port (COM3)
IRQ 10	Ethernet Controller
IRQ 10	Communications Port (COM4)
IRQ 23	Standard Enhanced PCI to USB Host Controller
IRQ 16	PCI standard PCI-to-PCI bridge
IRQ 22	High Definition Audio Controller
IRQ 17	PCI standard PCI-to-PCI bridge
IRQ 81	Microsoft ACPI-Compliant System
IRQ 82	Microsoft ACPI-Compliant System
IRQ 83	Microsoft ACPI-Compliant System
IRQ 84	Microsoft ACPI-Compliant System
IRQ 85	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
IRQ 86	Microsoft ACPI-Compliant System
IRQ 87	Microsoft ACPI-Compliant System
IRQ 88	Microsoft ACPI-Compliant System
IRQ 89	Microsoft ACPI-Compliant System
IRQ 90	Microsoft ACPI-Compliant System
IRQ 91	Microsoft ACPI-Compliant System
IRQ 81	Microsoft ACPI-Compliant System
IRQ 82	Microsoft ACPI-Compliant System
IRQ 83	Microsoft ACPI-Compliant System
IRQ 84	Microsoft ACPI-Compliant System
IRQ 85	Microsoft ACPI-Compliant System
IRQ 86	Microsoft ACPI-Compliant System
IRQ 87	Microsoft ACPI-Compliant System
IRQ 88	Microsoft ACPI-Compliant System
IRQ 89	Microsoft ACPI-Compliant System
IRQ 90	Microsoft ACPI-Compliant System
IRQ 91	Microsoft ACPI-Compliant System
IRQ 92	Microsoft ACPI-Compliant System
IRQ 93	Microsoft ACPI-Compliant System
IRQ 94	Microsoft ACPI-Compliant System
IRQ 95	Microsoft ACPI-Compliant System
IRQ 96	Microsoft ACPI-Compliant System
IRQ 97	Microsoft ACPI-Compliant System
IRQ 98	Microsoft ACPI-Compliant System
IRQ 99	Microsoft ACPI-Compliant System
IRQ 100	Microsoft ACPI-Compliant System
IRQ 101	Microsoft ACPI-Compliant System
IRQ 102	Microsoft ACPI-Compliant System
IRQ 103	Microsoft ACPI-Compliant System
IRQ 104	Microsoft ACPI-Compliant System
IRQ 105	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
IRQ 106	Microsoft ACPI-Compliant System
IRQ 107	Microsoft ACPI-Compliant System
IRQ 108	Microsoft ACPI-Compliant System
IRQ 109	Microsoft ACPI-Compliant System
IRQ 110	Microsoft ACPI-Compliant System
IRQ 111	Microsoft ACPI-Compliant System
IRQ 112	Microsoft ACPI-Compliant System
IRQ 113	Microsoft ACPI-Compliant System
IRQ 114	Microsoft ACPI-Compliant System
IRQ 115	Microsoft ACPI-Compliant System
IRQ 116	Microsoft ACPI-Compliant System
IRQ 117	Microsoft ACPI-Compliant System
IRQ 118	Microsoft ACPI-Compliant System
IRQ 119	Microsoft ACPI-Compliant System
IRQ 120	Microsoft ACPI-Compliant System
IRQ 121	Microsoft ACPI-Compliant System
IRQ 122	Microsoft ACPI-Compliant System
IRQ 123	Microsoft ACPI-Compliant System
IRQ 124	Microsoft ACPI-Compliant System
IRQ 125	Microsoft ACPI-Compliant System
IRQ 126	Microsoft ACPI-Compliant System
IRQ 127	Microsoft ACPI-Compliant System
IRQ 128	Microsoft ACPI-Compliant System
IRQ 129	Microsoft ACPI-Compliant System
IRQ 130	Microsoft ACPI-Compliant System
IRQ 131	Microsoft ACPI-Compliant System
IRQ 132	Microsoft ACPI-Compliant System
IRQ 133	Microsoft ACPI-Compliant System
IRQ 134	Microsoft ACPI-Compliant System
IRQ 135	Microsoft ACPI-Compliant System
IRQ 136	Microsoft ACPI-Compliant System
IRQ 137	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
IRQ 138	Microsoft ACPI-Compliant System
IRQ 139	Microsoft ACPI-Compliant System
IRQ 140	Microsoft ACPI-Compliant System
IRQ 141	Microsoft ACPI-Compliant System
IRQ 142	Microsoft ACPI-Compliant System
IRQ 143	Microsoft ACPI-Compliant System
IRQ 144	Microsoft ACPI-Compliant System
IRQ 145	Microsoft ACPI-Compliant System
IRQ 146	Microsoft ACPI-Compliant System
IRQ 147	Microsoft ACPI-Compliant System
IRQ 148	Microsoft ACPI-Compliant System
IRQ 149	Microsoft ACPI-Compliant System
IRQ 150	Microsoft ACPI-Compliant System
IRQ 151	Microsoft ACPI-Compliant System
IRQ 152	Microsoft ACPI-Compliant System
IRQ 153	Microsoft ACPI-Compliant System
IRQ 154	Microsoft ACPI-Compliant System
IRQ 155	Microsoft ACPI-Compliant System
IRQ 156	Microsoft ACPI-Compliant System
IRQ 157	Microsoft ACPI-Compliant System
IRQ 158	Microsoft ACPI-Compliant System
IRQ 159	Microsoft ACPI-Compliant System
IRQ 160	Microsoft ACPI-Compliant System
IRQ 161	Microsoft ACPI-Compliant System
IRQ 162	Microsoft ACPI-Compliant System
IRQ 163	Microsoft ACPI-Compliant System
IRQ 164	Microsoft ACPI-Compliant System
IRQ 165	Microsoft ACPI-Compliant System
IRQ 166	Microsoft ACPI-Compliant System
IRQ 167	Microsoft ACPI-Compliant System
IRQ 168	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
IRQ 169	Microsoft ACPI-Compliant System
IRQ 170	Microsoft ACPI-Compliant System
IRQ 171	Microsoft ACPI-Compliant System
IRQ 172	Microsoft ACPI-Compliant System
IRQ 173	Microsoft ACPI-Compliant System
IRQ 174	Microsoft ACPI-Compliant System
IRQ 175	Microsoft ACPI-Compliant System
IRQ 176	Microsoft ACPI-Compliant System
IRQ 177	Microsoft ACPI-Compliant System
IRQ 178	Microsoft ACPI-Compliant System
IRQ 179	Microsoft ACPI-Compliant System
IRQ 180	Microsoft ACPI-Compliant System
IRQ 181	Microsoft ACPI-Compliant System
IRQ 182	Microsoft ACPI-Compliant System
IRQ 183	Microsoft ACPI-Compliant System
IRQ 184	Microsoft ACPI-Compliant System
IRQ 185	Microsoft ACPI-Compliant System
IRQ 186	Microsoft ACPI-Compliant System
IRQ 187	Microsoft ACPI-Compliant System
IRQ 188	Microsoft ACPI-Compliant System
IRQ 189	Microsoft ACPI-Compliant System
IRQ 190	Microsoft ACPI-Compliant System
IRQ 11	SM Bus Controller
IRQ 18	PCI standard PCI-to-PCI bridge

DMA Channels Map

TIMER CHANNEL	ASSIGNMENT
Channel 3 Printer Port (LPT1)	

I /O Map

I/O MAP	ASSIGNMENT
0x00000064-0x00000064	Standard PS/2 Keyboard

I/O MAP	ASSIGNMENT
0x00000060-0x00000060	Standard PS/2 Keyboard
0x00000020-0x00000021	Programmable interrupt controller
0x00000024-0x00000025	Programmable interrupt controller
0x00000028-0x00000029	Programmable interrupt controller
0x0000002C-0x0000002D	Programmable interrupt controller
0x00000030-0x00000031	Programmable interrupt controller
0x00000034-0x00000035	Programmable interrupt controller
0x00000038-0x00000039	Programmable interrupt controller
0x0000003C-0x0000003D	Programmable interrupt controller
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A4-0x000000A5	Programmable interrupt controller
0x000000A8-0x000000A9	Programmable interrupt controller
0x000000AC-0x000000AD	Programmable interrupt controller
0x000000B0-0x000000B1	Programmable interrupt controller
0x000000B4-0x000000B5	Programmable interrupt controller
0x000000B8-0x000000B9	Programmable interrupt controller
0x000000BC-0x000000BD	Programmable interrupt controller
0x000004D0-0x000004D1	Programmable interrupt controller
0x0000F070-0x0000F077	Standard AHCI 1.0 Serial ATA Controller
0x0000F060-0x0000F063	Standard AHCI 1.0 Serial ATA Controller
0x0000F050-0x0000F057	Standard AHCI 1.0 Serial ATA Controller
0x0000F040-0x0000F043	Standard AHCI 1.0 Serial ATA Controller
0x0000F020-0x0000F03F	Standard AHCI 1.0 Serial ATA Controller
0x00000040-0x00000043	System timer
0x00000050-0x00000053	System timer
0x0000F080-0x0000F087	Intel® Celeron® Processor J1900
0x000003B0-0x000003BB	Intel® Celeron® Processor J1900
0x000003C0-0x000003DF	Intel® Celeron® Processor J1900
0x00000378-0x0000037F	Printer Port (LPT1)
0x000003F8-0x000003FF	Communications Port (COM1)
0x000002F8-0x000002FF	Communications Port (COM2)

I/O MAP	ASSIGNMENT
0x000003E8-0x000003EF	Communications Port (COM3)
0x0000E000-0x0000E0FF	Ethernet Controller
0x000000A4-0x000000A5	Programmable interrupt controller
0x000000A8-0x000000A9	Programmable interrupt controller
0x000000AC-0x000000AD	Programmable interrupt controller
0x000000B0-0x000000B1	Programmable interrupt controller
0x000000B4-0x000000B5	Programmable interrupt controller
0x000000B8-0x000000B9	Programmable interrupt controller
0x000000BC-0x000000BD	Programmable interrupt controller
0x0000E000-0x0000E0FF	PCI standard PCI-to-PCI bridge
0x000002E8-0x000002EF	Communications Port (COM4)
0x000003B0-0x000003BB	Intel® HD Graphics
0x000003C0-0x000003DF	Intel® HD Graphics
0x00000000-0x0000006F	PCI bus
0x00000078-0x00000CF7	PCI bus
0x00000D00-0x0000FFFF	PCI bus
0x00000070-0x00000077	System CMOS/real-time clock
0x00000400-0x0000047F	Motherboard resources
0x00000500-0x000005FE	Motherboard resources
0x00000600-0x0000061F	Motherboard resources
0x00000680-0x0000069F	Motherboard resources
0x00000A00-0x00000A0F	Motherboard resources
0x00000A10-0x00000A1F	Motherboard resources
0x00000A20-0x00000A2F	Motherboard resources
0x000000B2-0x000000B3	Motherboard resources
0x0000164E-0x0000164F	Motherboard resources
0x00000070-0x00000077	Motherboard resources
0x0000002E-0x0000002F	Motherboard resources
0x0000004E-0x0000004F	Motherboard resources
0x00000063-0x00000063	Motherboard resources
0x00000065-0x00000065	Motherboard resources
0x00000067-0x00000067	Motherboard resources

I/O MAP	ASSIGNMENT
0x00000080-0x0000008F	Motherboard resources
0x00000092-0x00000092	Motherboard resources
0x0000F000-0x0000F01F	SM Bus Controller
0x0000E000-0x0000E0FF	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series PCI Express - Root Port 4 - 0F4E
0x0000F000-0x0000F01F	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series Platform Control Unit - SMBus Port - 0F12
0x0000F020-0x0000F03F	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series AHCI - 0F23
0x0000F040-0x0000F043	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series AHCI - 0F23
0x0000F050-0x0000F057	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series AHCI - 0F23
0x0000F060-0x0000F063	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series AHCI - 0F23
0x0000F070-0x0000F077	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series AHCI - 0F23
0x0000F080-0x0000F087	Intel® HD Graphics

Memory Map

MEMORY MAP	ASSIGNMENT
0xFF000000-0xFFFFFFFF	Intel® 82802 Firmware Hub Device
0xD0706000-0xD07067FF	Standard AHCI 1.0 Serial ATA Controller
0xFED00000-0xFED003FF	High precision event timer
0xD0000000-0xD03FFFFF	Intel® Celeron® Processor J1900
0xC0000000-0xCFFFFFFF	Intel® Celeron® Processor J1900
0xC0000000-0xCFFFFFFF	PCI bus
0xA0000-0xBFFFF	Intel® Celeron® Processor J1900
0xA0000-0xBFFFF	PCI bus
0xD0604000-0xD0604FFF	Ethernet Controller
0xD0600000-0xD0603FFF	Ethernet Controller
0xD0600000-0xD0603FFF	PCI standard PCI-to-PCI bridge
0xD0705000-0xD07053FF	Standard Enhanced PCI to USB Host Controller

MEMORY MAP	ASSIGNMENT
0xC0000-0xDFFFF	PCI bus
0xE0000-0xFFFFF	PCI bus
0xE0000000-0xEFFFFFFF	Motherboard resources
0xFED01000-0xFED01FFF	Motherboard resources
0xFED03000-0xFED03FFF	Motherboard resources
0xFED04000-0xFED04FFF	Motherboard resources
0xFED0C000- 0xFED0FFFF	Motherboard resources
0xFED08000-0xFED08FFF	Motherboard resources
0xFED1C000- 0xFED1CFFF	Motherboard resources
0xFEE00000-0xFEEFFFFF	Motherboard resources
0xFEF00000-0xFEFFFFFF	Motherboard resources
0xD0700000-0xD0703FFF	High Definition Audio Controller
0xD0704000-0xD070401F	SM Bus Controller
0xD0500000-0xD05FFFFF	PCI Encryption/Decryption Controller
0xD0400000-0xD04FFFFF	PCI Encryption/Decryption Controller

SYSTEM DIAGRAMS

CHAPTER

4

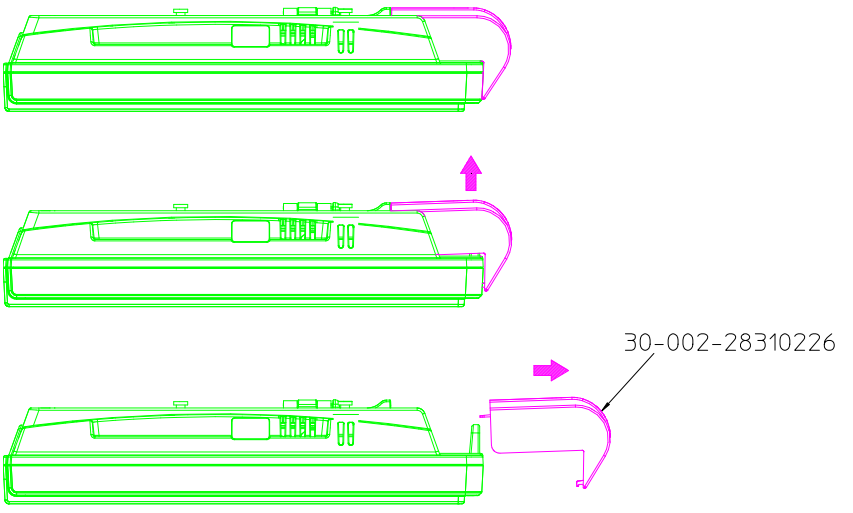
This appendix contains exploded diagrams and part numbers of the PA-6225 system.

The following topics are included:

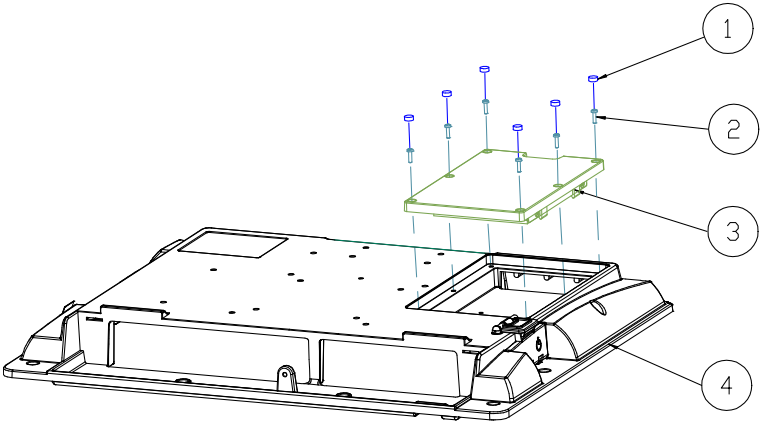
- Exploded Diagrams for Panel PC
  - Cable Cover
  - Storage
  - Back Cover
  - Touchscreen
  - LCD Panel
  - Inside Case
- Exploded Diagrams for Stand
  - Small Stand
  - Multi-functional Stand without Printer
  - Multi-functional Stand with Printer
- Exploded Diagrams for Peripheral Devices
  - MSR, i-Button, Fingerprint
  - Adaptor Holder for Panel PC
  - VFD Kit
  - 2nd Display
- Exploded Diagram for Packing
  - PPC Packing
  - POS Packing

EXPLODED DIAGRAMS FOR PANEL PC

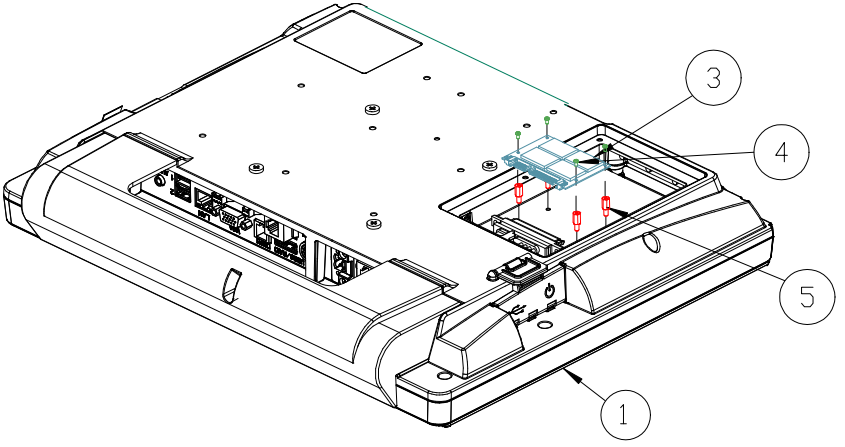
1. Cable Cover



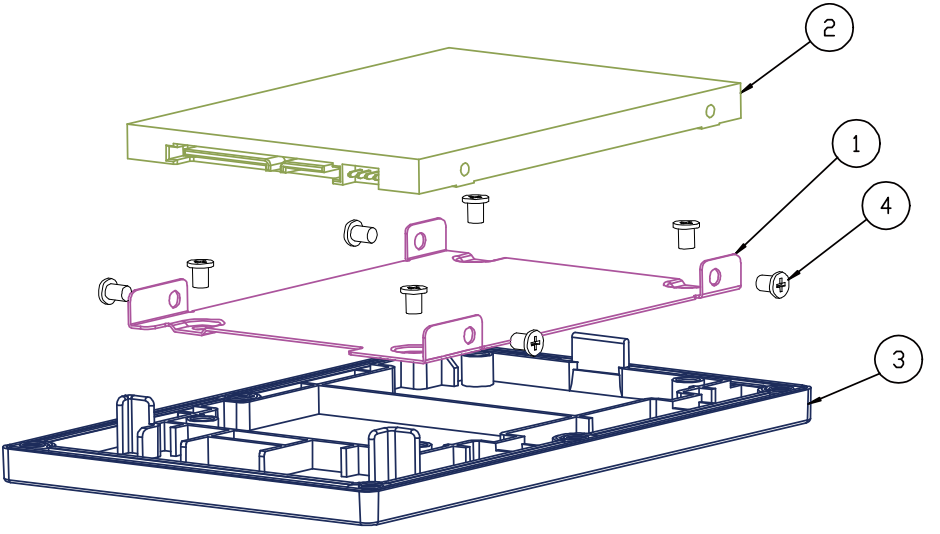
2. Storage



NO.	COMPONENT NAME	PART NO.	Q'TY
1	RUBBER	90-004-01700000	6
2	SCREW	22-232-25008811	6
3	HDD COVER ASSY	---	1
4	BACK COVER ASSY	---	1

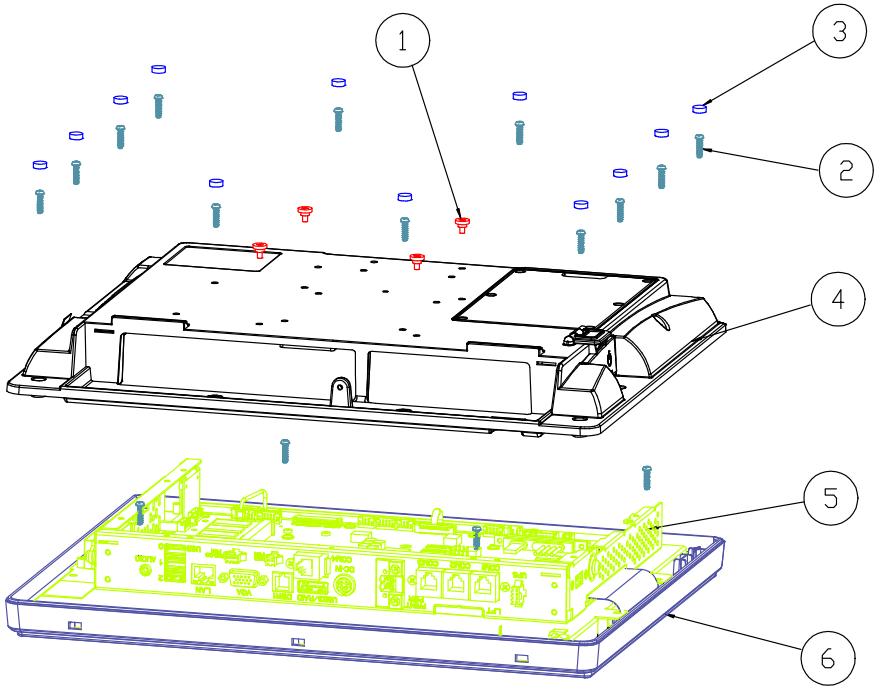


NO.	COMPONENT NAME	PART NO.	Q'TY
1	PA-6225 PPC MODULE	----------	1
2	PA-6922_SSD_COVER	30-002-28310269	1
3	SSD_CARD	SEE ORDER	1
4	M1.6_L_3.3	22-222-16003015	4
5	NUT_M2.5	22-292-25007005	4
6	SCREW_M2.5_8	22-232-25008811	6
7	RUBBER	90-004-01700000	6

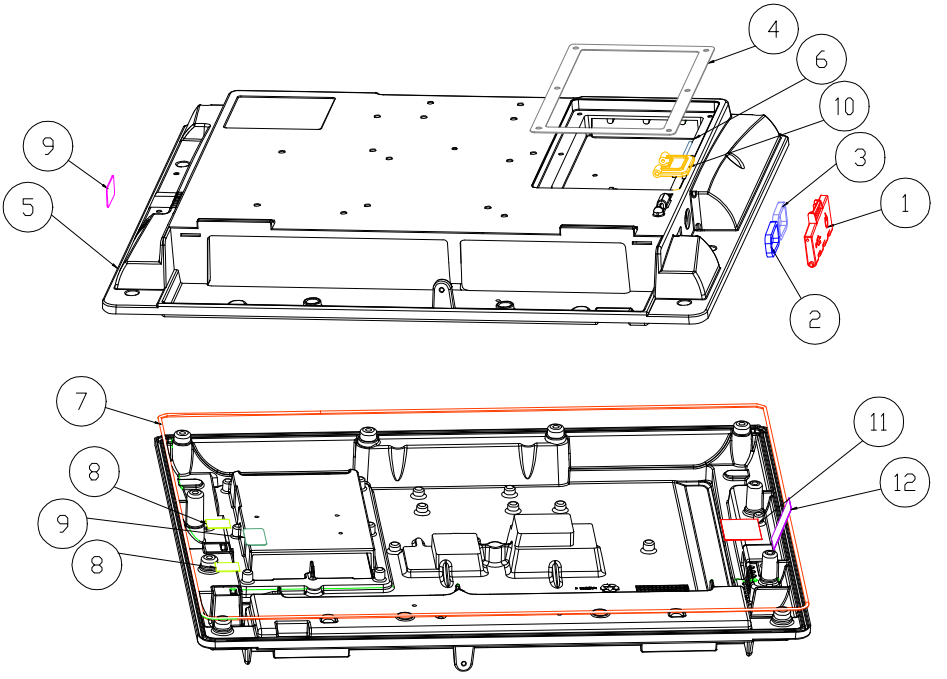


NO.	COMPONENT NAME	PART NO.	Q'TY
1	HDD HOLDER	20-029-03001274	1
2	HDD	SEE ORDER	1
3	SSD COVER	30-002-38110390	1
4	SCREW	22-272-30004318	8

3. Back Cover



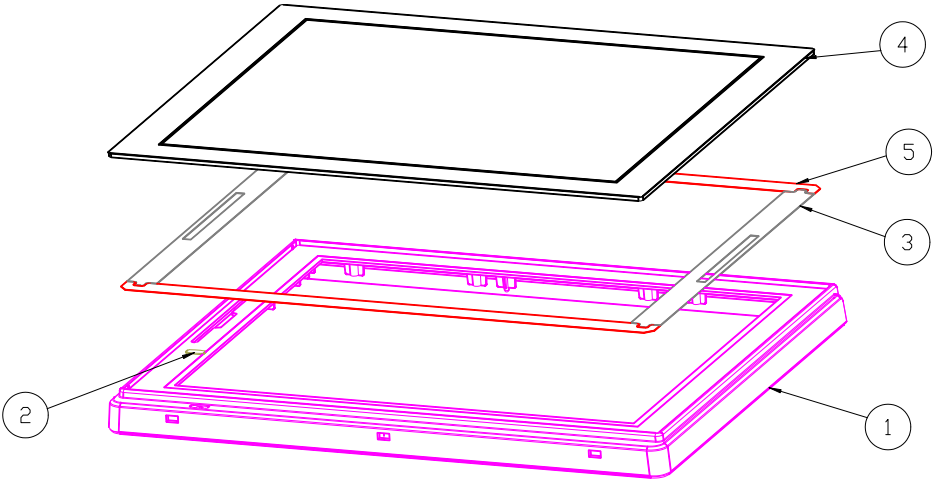
NO.	COMPONENT NAME	PART NO.	Q'TY
1	SCREW	22-272-40004911	4
2	SCREW	22-125-30012061	16
3	RUBBER-A	90-004-01600000	12
4	BACK COVER ASSY	---	1
5	INSIDE BOX ASSY	---	1
6	FRONT PANEL ASSY	---	1



NO.	COMPONENT NAME	PART NO.	Q'TY
1	SW DOOR	30-007-28110269	1
2	DOOR EVA-2	90-013-15200269	1
3	DOOR EVA-1	90-013-15100269	1
4	HDD EVA	90-013-15300269	1
5	BACK COVER	20-003-01061314	1
6	LOCK PIN	22-092-20029005	1
7	SILICONE FOAM PACKING	30-013-06100274	1
8	DOOR BOT MYLAR	90-056-02100269	2
9	MSR HOLE LABEL	94-017-02101269	2
10	DOOR LOCK	30-007-28210269	1
11	Saatifil Acoustex Mesh A	90-056-31100274	1
12	Saatifil Acoustex Mesh B	90-056-31200274	1

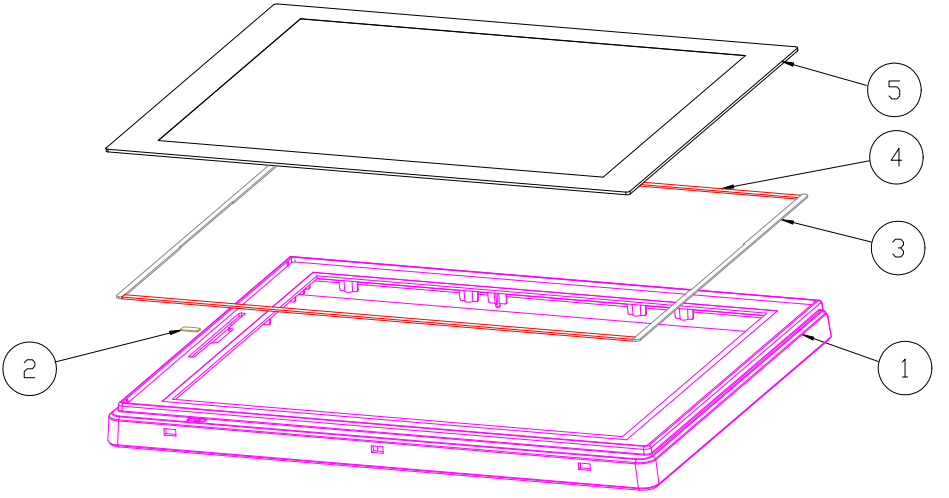
4. Touchscreen

Resistive



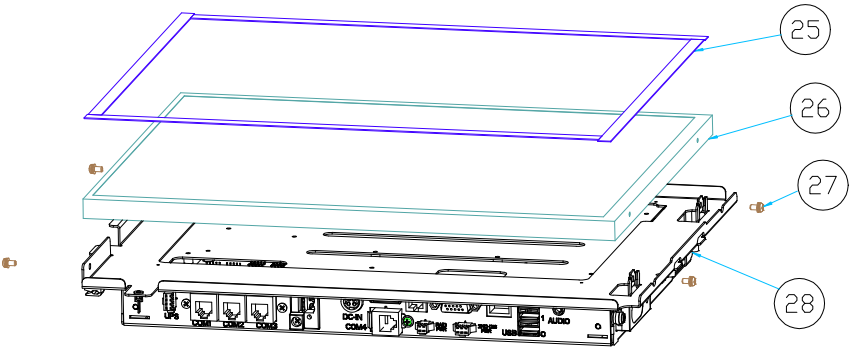
NO.	COMPONENT NAME	PART NO.	Q'TY
1	FRONT COVER	30-002-28110274	1
2	LED DISPLAY LABEL	34-017-02101044	1
3	DOUBLE COATED TAPE B	94-026-04902220	2
4	TOUCH PANEL	52-380-00114701	1
5	DOUBLE COATED TAPE A	94-026-04901220	2

Projected Capacitive



NO.	COMPONENT NAME	PART NO.	Q'TY
1	FRONT COVER	30-002-28110274	1
2	LED DISPLAY LABEL	34-017-02101044	1
3	PA-3251 Double Tape V	94-026-05002220	2
4	PA-3251 Double Tape H	94-026-05001220	2
5	TOUCH PANEL	52-380-00075014	1

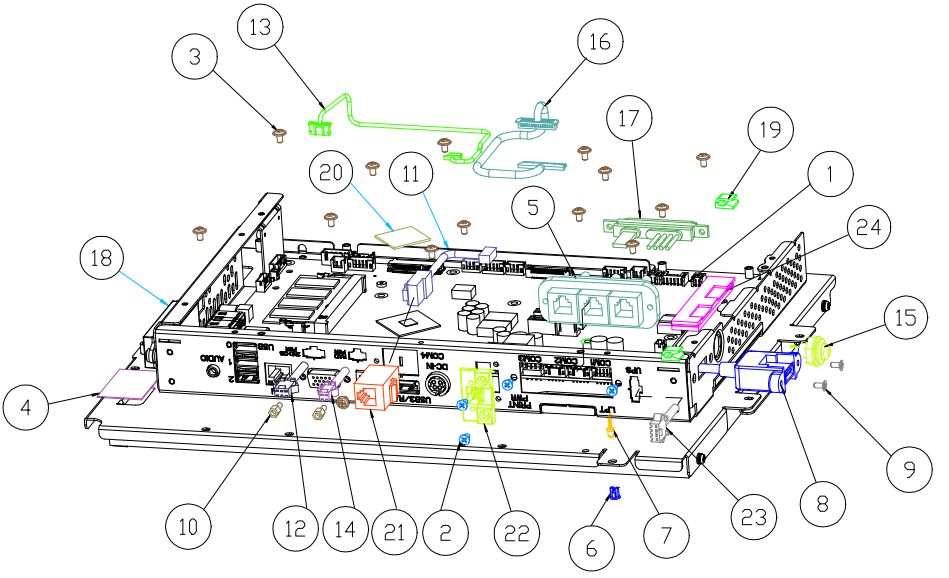
5. LCD Panel



NO.	COMPONENT NAME	PART NO.	Q'TY
25	PORON	30-013-24100000	4
26	LCD PANEL	52-351-03150528	1
27	SCREW	22-232-30060211	4
28	INSIDE BOX ASSY	20-040-03001314	1

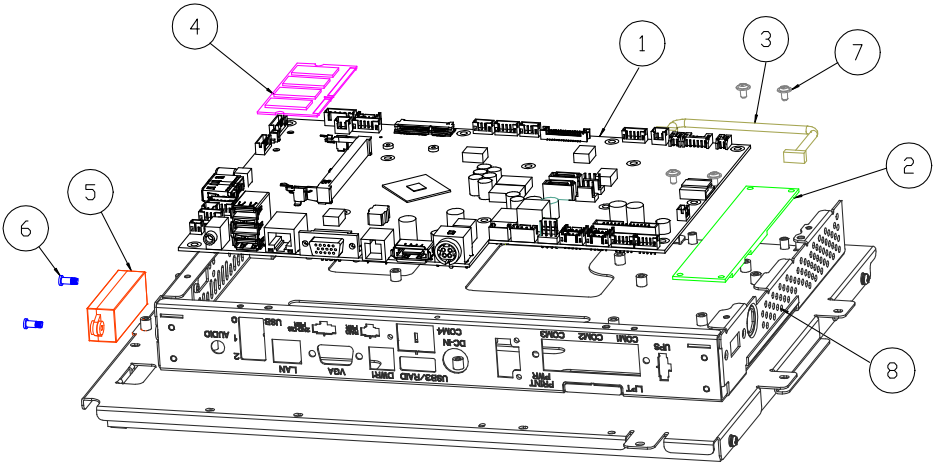
6. Inside Case

Fundamental



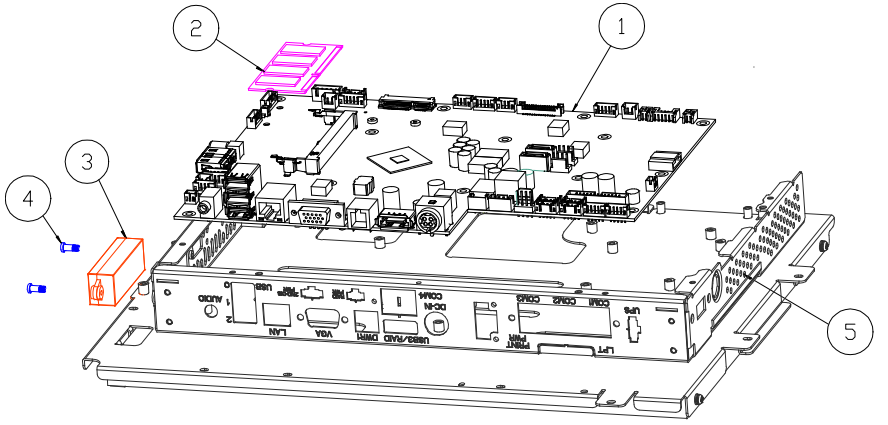
NO.	COMPONENT NAME	PART NO.	Q'TY
1	MAIN BOARD	PB-6822 RA	1
2	SCREW	22-230-30005811	4
3	SCREW	22-242-30005311	14
4	MYLAR	90-056-02100274	1
5	RS232 TO RJ45 CABLE	27-026-27403111	1
6	LED HOUSING	30-014-04100165	1
7	POWER LED CABLE	27-018-26906071	1
8	USB CABLE	27-006-26902111	1
9	FLAT HEAD No.4-40	22-315-40008019	2
10	UNC No.4-40	22-692-40048051	2
11	COM CABLE	27-051-31404111	1
12	2nd DISPLAY POWER CABLE	27-012-21703071	1
13	PANEL LED CABLE	27-018-26906111	1
14	RAID POWER CABLE	27-012-31403071	1
15	SWITCH CABLE	27-019-26904071	1
16	LVDS CABLE	27-020-26902111	1
17	SATA CABLE	27-012-26905081	1
18	SPEAKER	13-500-06350118	1
19	WIRE MOUNT	90-059-04200000	2
20	THERMAL PAD-A	81-006-82626001	1
21	RJ-45 JACK SHIELDED CABLE	10-085-08012135	1
22	PRINTER POWER CABLE	27-012-31402071	1
23	UPS POWER CABLE	27-055-31405071	1
24	FLAT CABLE CLAMP	30-042-04600000	1

For Resistive Touchscreen



NO.	COMPONENT NAME	PART NO.	Q'TY
1	MAIN BOARD	PB-6822 RA	1
2	TOUCH CONTROL BOARD	52-370-01720007	1
3	CONTROL BOARD CABLE	27-006-22009111	1
4	MEMORY	SEE ORDER	1
5	SPEAKER	13-500-06350118	1
6	SCREW	22-272-30008015	2
7	SCREW	22-242-30005311	4
8	INSIDE BOX ASSY	20-040-03001274	1

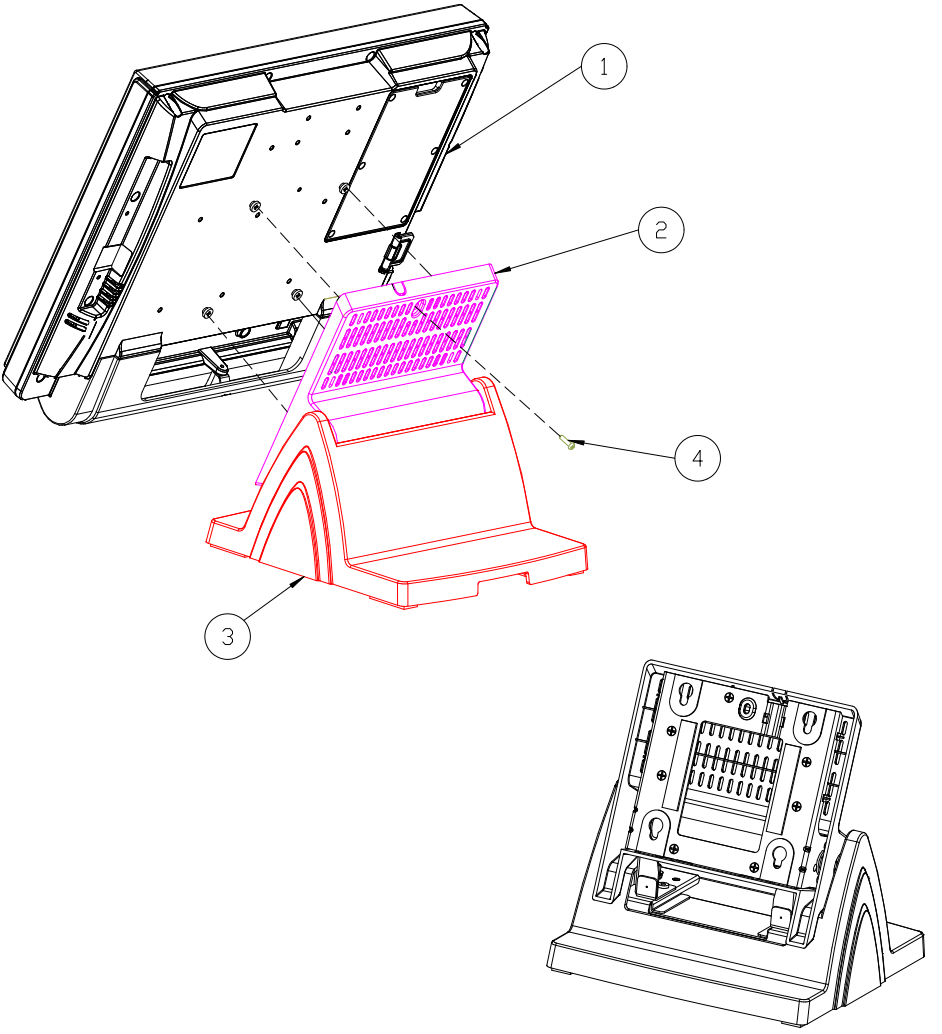
For Projected Capacitive Touchscreen



NO.	COMPONENT NAME	PART NO.	Q'TY
1	MAIN BOARD	PB-6822 RA	1
2	MEMORY	SEE ORDER	1
3	SPEAKER	13-500-06350118	1
4	SCREW	22-272-30008015	2
5	INSIDE BOX ASSY	20-040-03001274	1

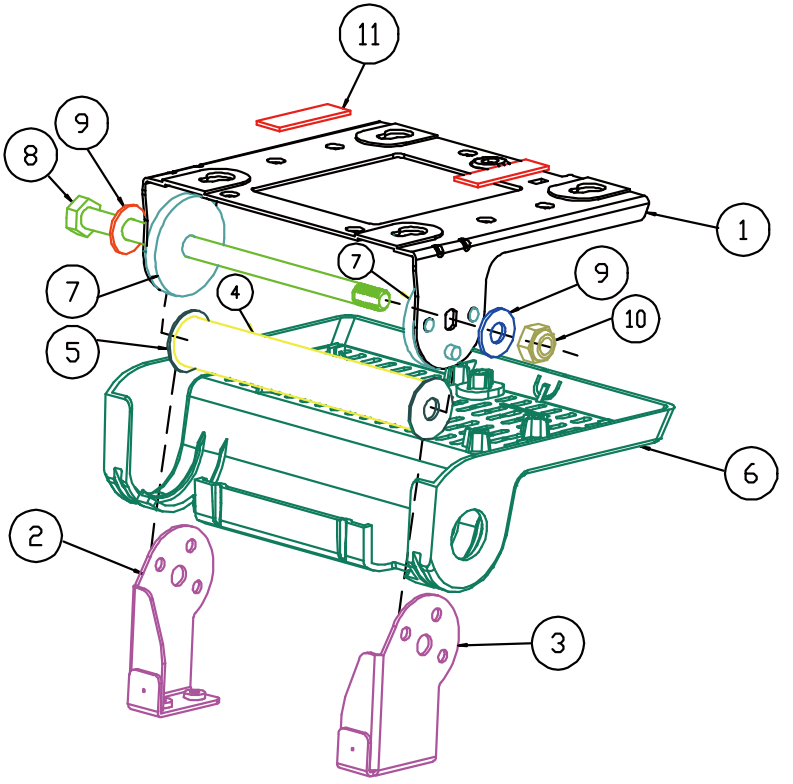
EXPLODED DIAGRAMS FOR STAND

1. Small Stand



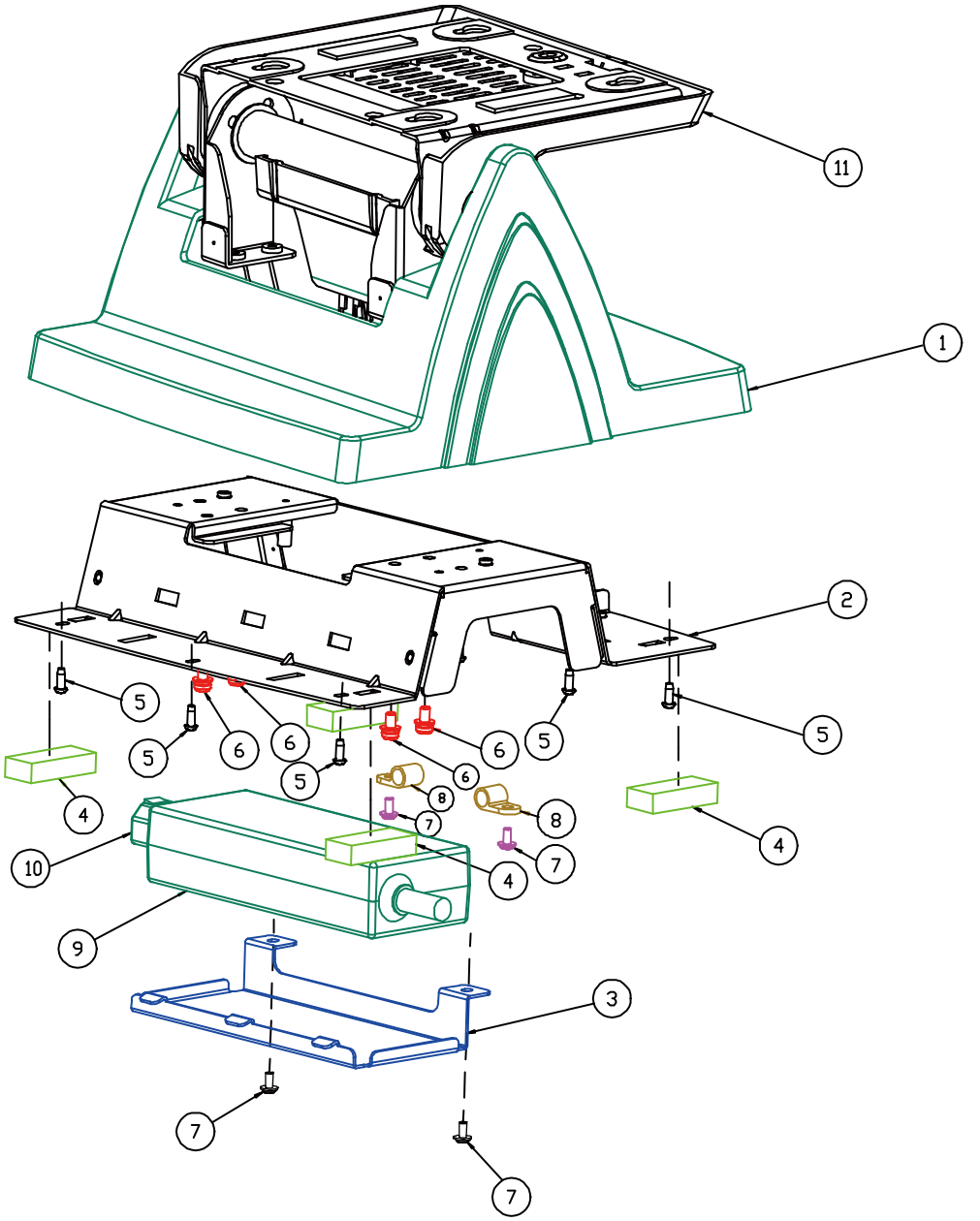
Pos	Qty	Part Name	Part No.
1	1	PA-6225_PPC_MODULE	----------
2	1	PA-6151_ROTATE_MODULE	----------
3	1	PA-6151_STAND_MODULE	----------
4	1	RW_SCREW_M3_L15mm	22-235-30015011

Rotation Part



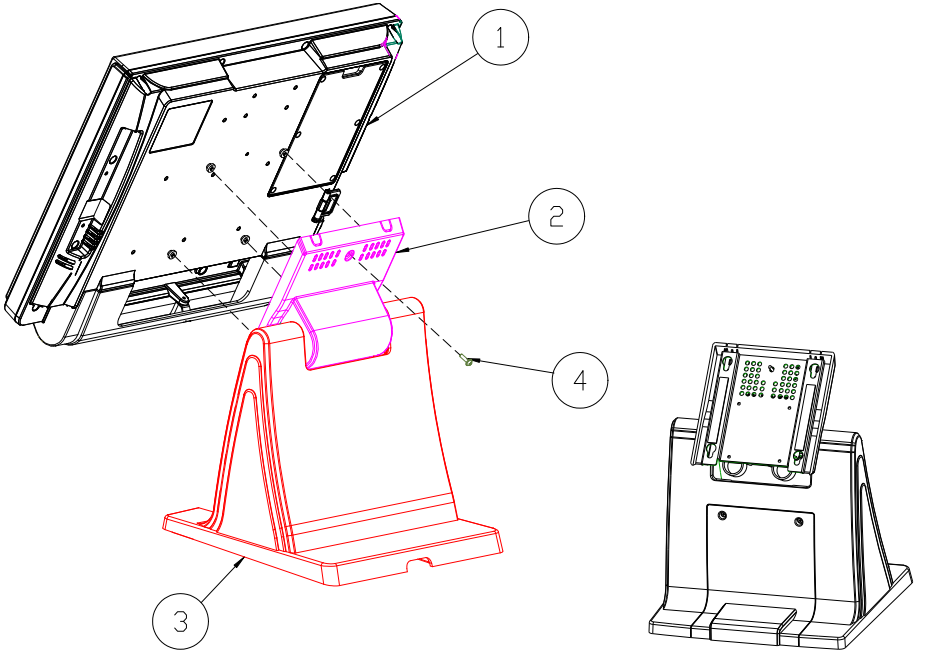
Pos	Qty	Part Name	Part No.
1	1	PA-6920_ROTATE_SUPPORT	80-002-03004226
2	1	L_SUPPORT	80-002-03002226
3	1	R_SUPPORT	80-002-03001226
4	1	POS-6920_PIPE	80-056-02001226
5	2	WASHER_ID_8.5_OD_24	23-202-09150247
6	1	POS-6920_ROTATE_COVER	30-002-28111326
7	2	PS5000_HINGE_SPACER	30-041-04100139
8	1	HEX_SCREW_M8_L154mm	22-252-80154005
9	2	PLAIN_WASHER_D8_D19_T1.5	23-202-08150191
10	1	HEX_NUTS_M8_L7.85mm	23-142-80081291
11	2	SILICON RUBBER PAD	90-036-06200226

Bottom Case



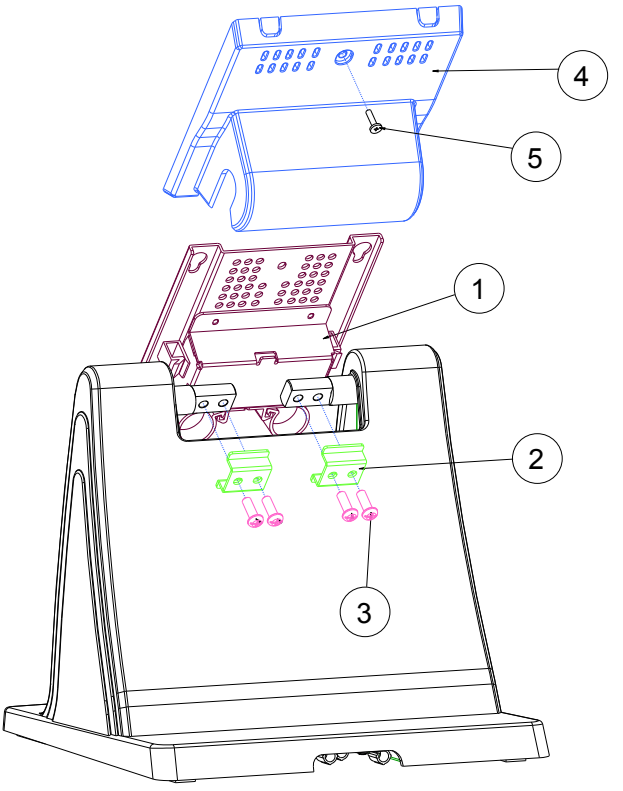
Pos	Qty	Part Name	Part No.
1	1	POS-6920-STAND-COVER	30-002-28710226
2	1	POS-6920-STAND-BASE	80-032-03001226
3	1	POS-6920-POWER_HOLDER	80-029-03001226
4	4	RUBBER FOOT	30-004-01600000
5	9	TAPPING_SCREW_T3_L8mm	22-122-30080011
6	4	R_S_SCREW_M4_L8mm	22-232-40008211
7	4	R_W_SCREW_M3_L6mm	22-232-30006311
8	2	CABLE CLAMP	30-023-04100143
9	1	ADAPTOR_SMALL	52-002-11072302
10	1	AC_POWER_CORD	27-013-12837119
11	1	POS-6920_ROTATE_MODULE	----------

2. Multi-functional Stand – without printer

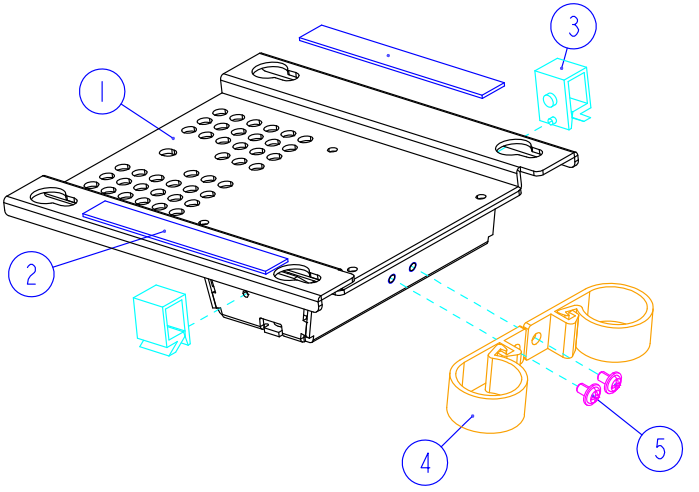


Pos	Qty	Part Name	Part No.
1	1	PA-6225_PPC_MODULE	----------
2	1	PA-6225_ROTATE_MODULE	----------
3	1	PA-6225_STAND_MODULE	----------
4	1	RW_SCREW_M3_L15mm	22-235-30015011

Rotation Part

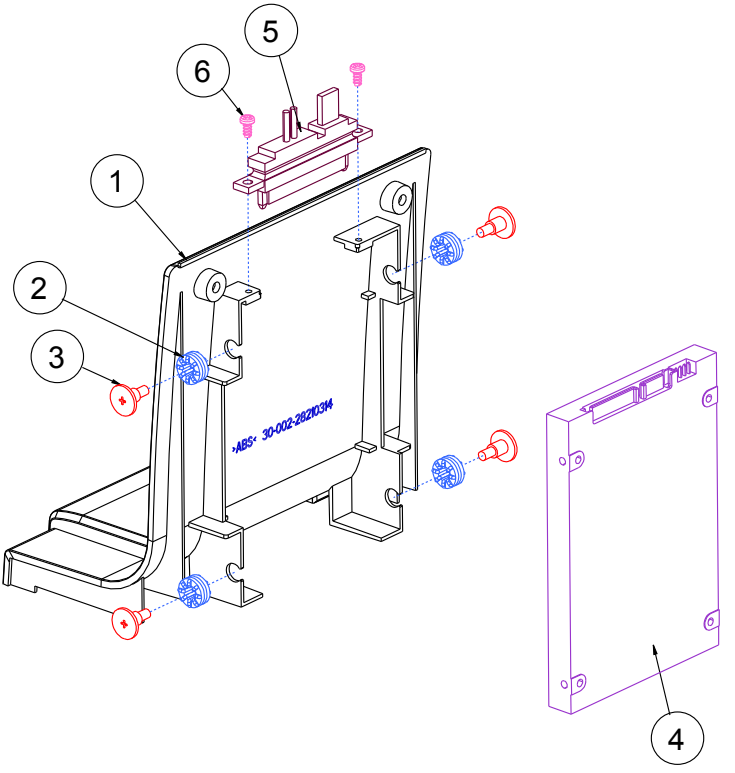


Item	Qty	Part Name	Part No.
1	1	Rotate base assembly	xx-xxx-xxxxxxx
2	2	HINGE-FIXING	80-012-03001314
3	4	SCREW/M5x0.8Px15mm	22-232-50015011
4	1	Stand Rotate Cover	30-002-28410314
5	1	SCREW/M3x0.5Px12mm	22-275-30010011



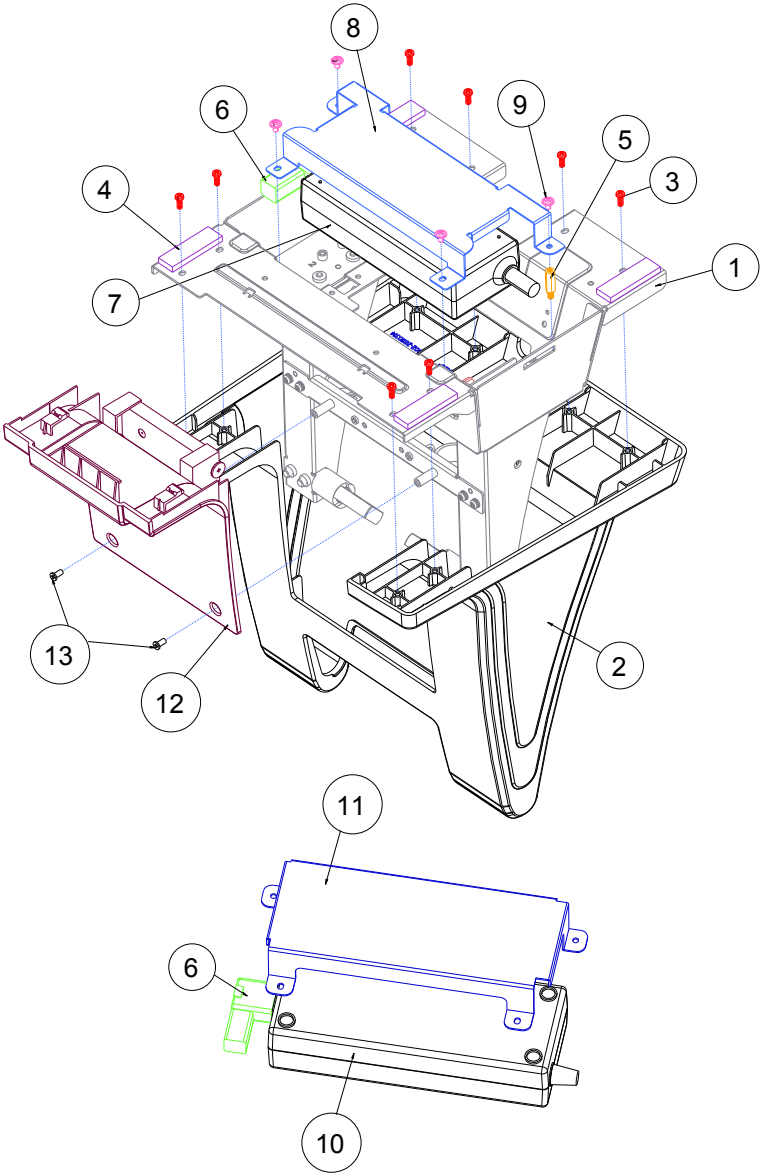
Item	Qty	Part Name	Part No.
1	1	ROTATE-BASE	20-032-03001314
2	2	ROTATE_BASE-SPONGE	30-013-24100314
3	2	CABLE CLAMP	90-042-04100314
4	2	CABLE CLAMP	90-023-04100314
5	2	M3 Screw	22-242-30005311

RAID 2nd Storage

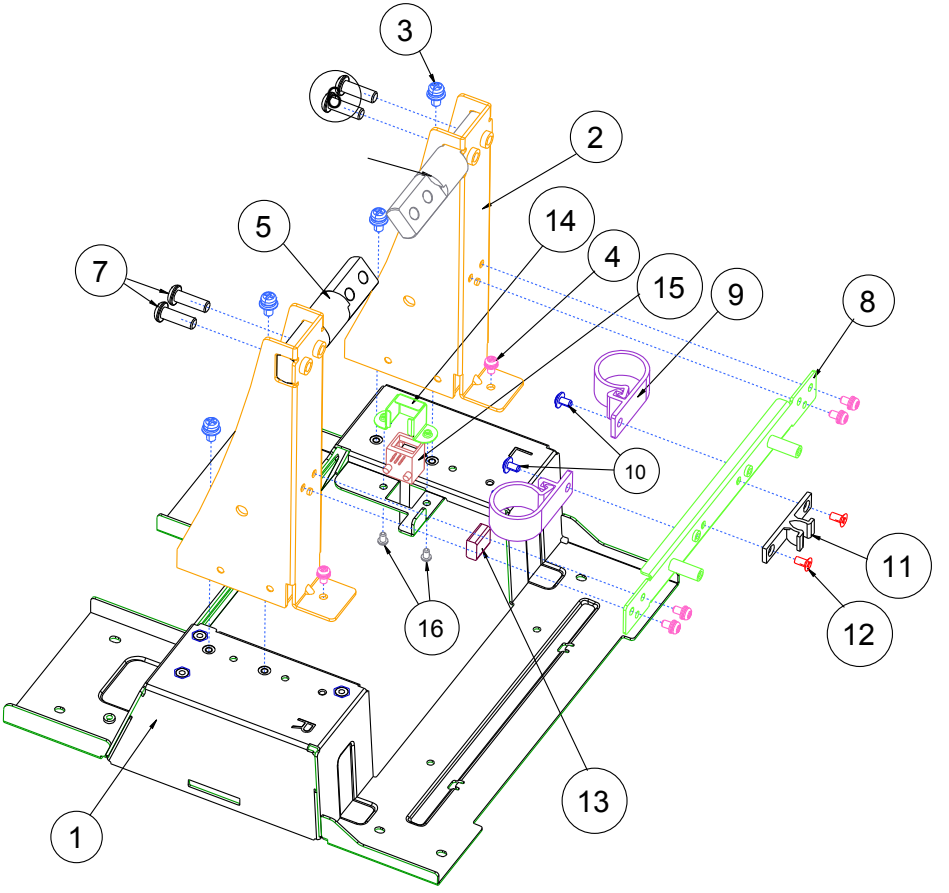


Item	Qty	Part Name	Part No.	Note
1	1	No Printer Cover	30-002-28210314	
2	4	RUBBER WASHER	23-680-39580963	option
3	4	SCREW/M3x0.5Px4.8mm	82-272-30005013	option
4	1	2.5" HDD	xx-xxx-xxxxxxxx	option
5	5	ESATA Cable	27-008-31406081	option
6	2	SCREW/T2.6x5mm	22-732-26005811	option

Bottom Case



Item	Qty	Part Name	Part No.	NOTE
1	1	Stand bracket Assembly	xx-xxx-xxxxxxx	
2	1	Stand Cover Assembly	xx-xxx-xxxxxxx	
3	8	SCREW/T3.0x8mm	22-122-30080011	
4	4	RUBBER FOOT(40x12x4mm)	30-004-01100314	
5	1	HEX CU BOSS/M3x0.5Px6L,H=15	22-290-30015051	
6	1	Power cord	xx-xxx-xxxxxxxx	
7	1	72W Adaptor	xx-xxx-xxxxxxxx	
8	1	72W_ADAPTOR_BRACKET	80-006-03001314	
9	4	SCREW/M3x0.5Px5mm	22-242-30005311	
10	1	120W Adaptor	xx-xxx-xxxxxxxx	Option
11	1	120W_ADAPTOR_BRACKET	80-029-03003314	Option
12	1	No Printer cover assembly	xx-xxx-xxxxxxxx	
13	2	SCREW/M3x0.5Px6mm	82-275-30006018	


3
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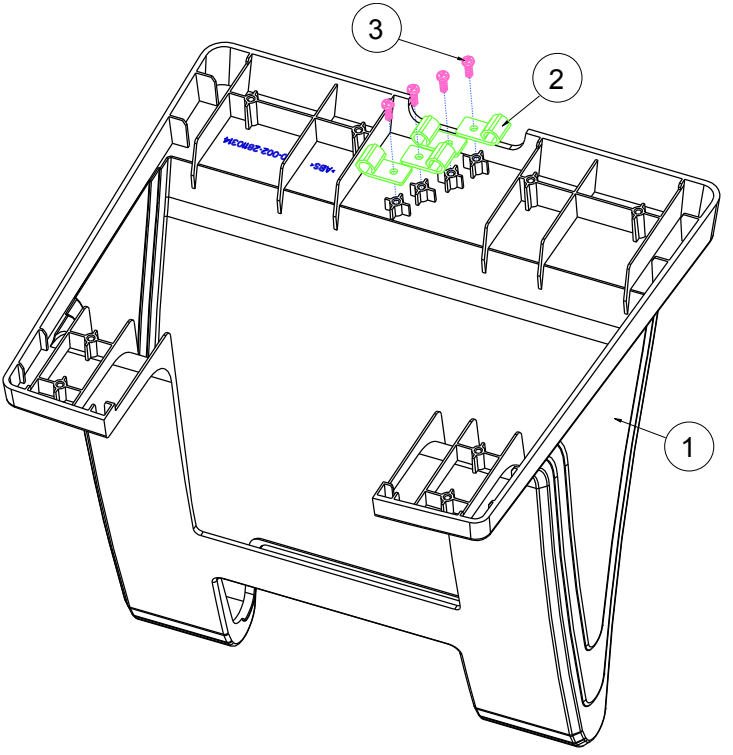
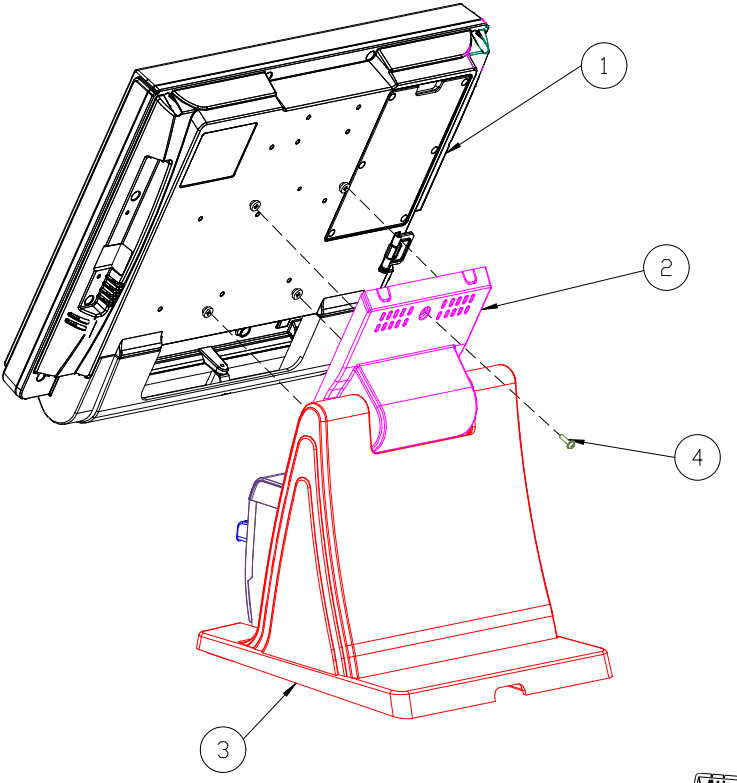
1

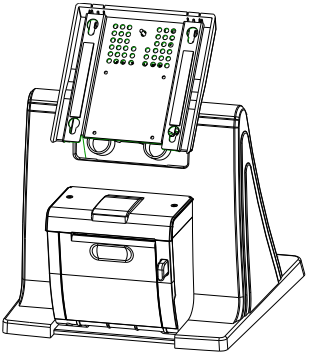
Item	Qty	Part Name	Part No.	Note
1	1	STAND_BASE_BRACKET	80-006-03005314	
2	2	STAND_SUPPORT_BRACKET	80-006-03007314	
3	4	SCREW/M4x0.7Px8mm	22-232-40008211	
4	6	SCREW/M3x0.5Px6mm	22-232-30060211	
5	1	STAND HINGE R	20-012-29002314	
6	1	SATND HINGE L	20-012-29001314	
7	4	SCREW/M5x0.8Px15mm	22-232-50015011	
8	1	STAND_LINK_BRACKET	80-006-03006314	
9	2	CABLE CLAMP	90-023-04100314	
10	2	SCREW/M3x0.5Px5mm	22-242-30005311	
11	1	LATCH	90-023-0910000 0	for with Printer
12	2	SCREW/M3x0.5Px6mm	22-212-3000601 1	for with Printer
13	1	EMI SHIELDING GASKET	90-050-3110000 0	for with Printer
14	1	RJ11 HOLDER	80-029-0300216 5	for with Printer
15	1	Cash Drawer cable	27-026-1650511 1	for with Printer
16	2	SCREW/M2.5x0.45Px4mm	22-232-2500401 1	for with Printer



Item	Qty	Part Name	Part No.
1	1	Stand Cover	30-002-28110314
2	4	CABLE CLAMP	90-023-04200314
3	4	SCREW/T3.0x8mm	22-122-30080011

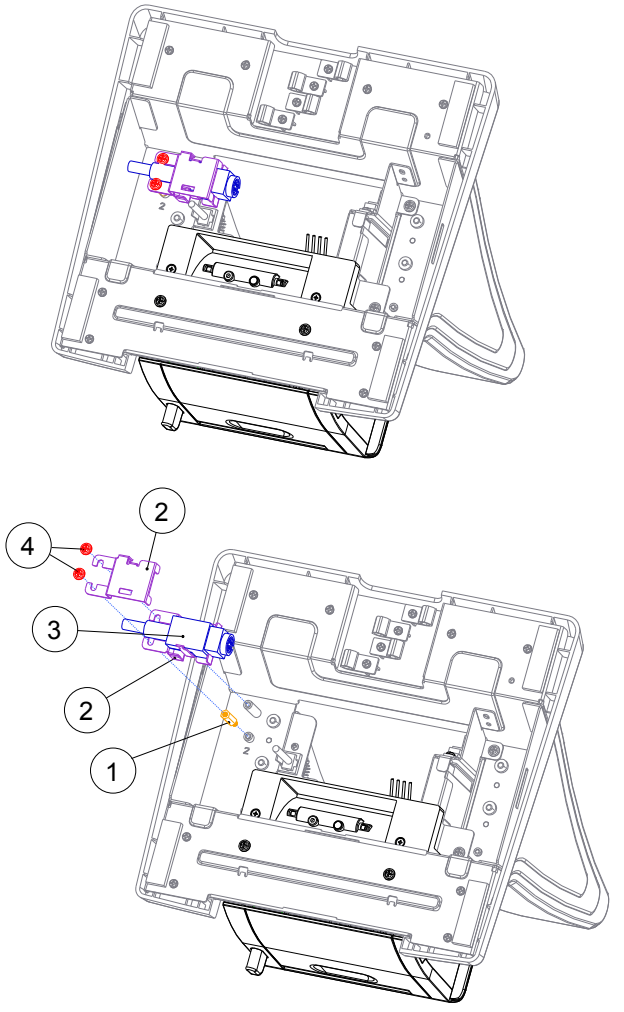
3. Multi-functional stand – with printer





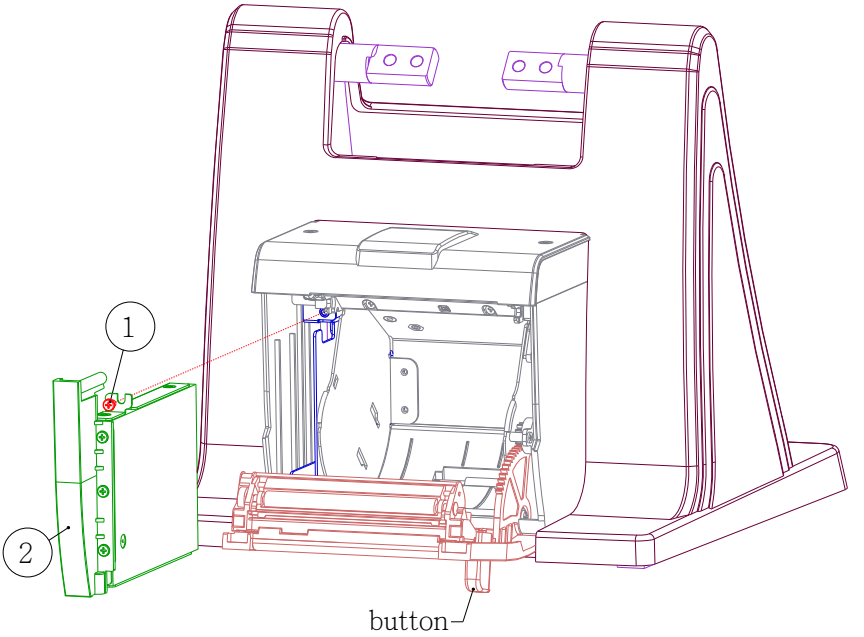
Pos	Qty	Part Name	Part No.
1	1	PA-6225_PPC_MODULE	----------
2	1	PA-6225_ROTATE_MODULE	----------
3	1	PA-6225_STAND_MODULE	----------
4	1	RW_SCREW_M3_L15mm	22-235-30015011

Extension Power Cable

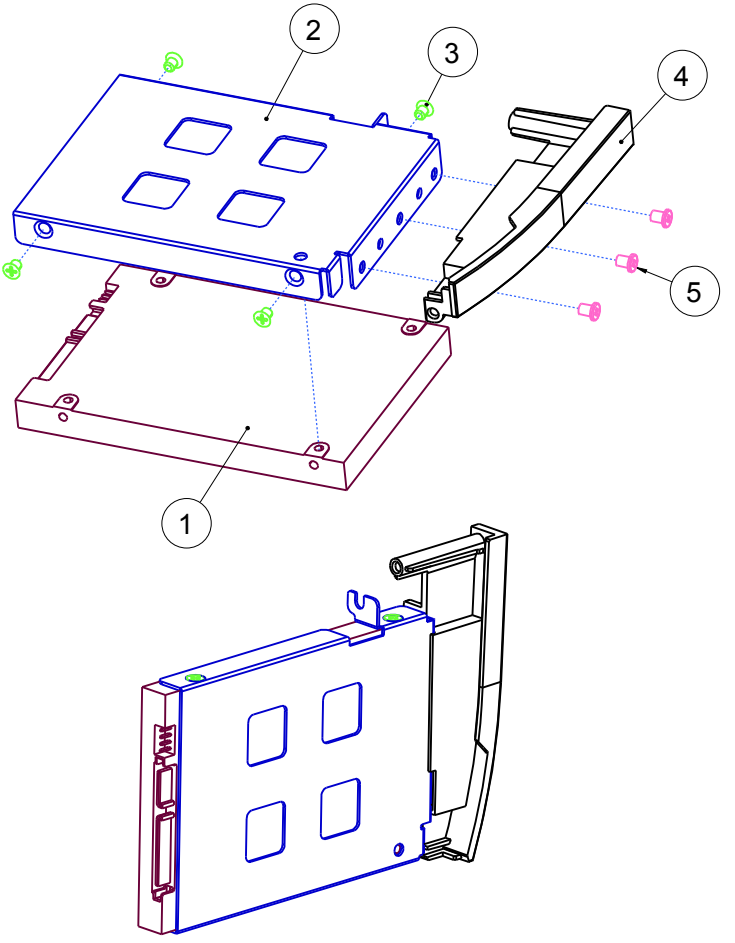


Item	Qty	Part Name	Part No.
1	1	HEX CU BOSS/M3x0.5Px6L,H=15mm	22-290-30015051
2	2	DC IN CLIP	80-014-03001314
3	1	DC IN EXTENDED CABLE	27-012-31408111
4	2	SCREW/M3x0.5Px5mm	22-242-30005311

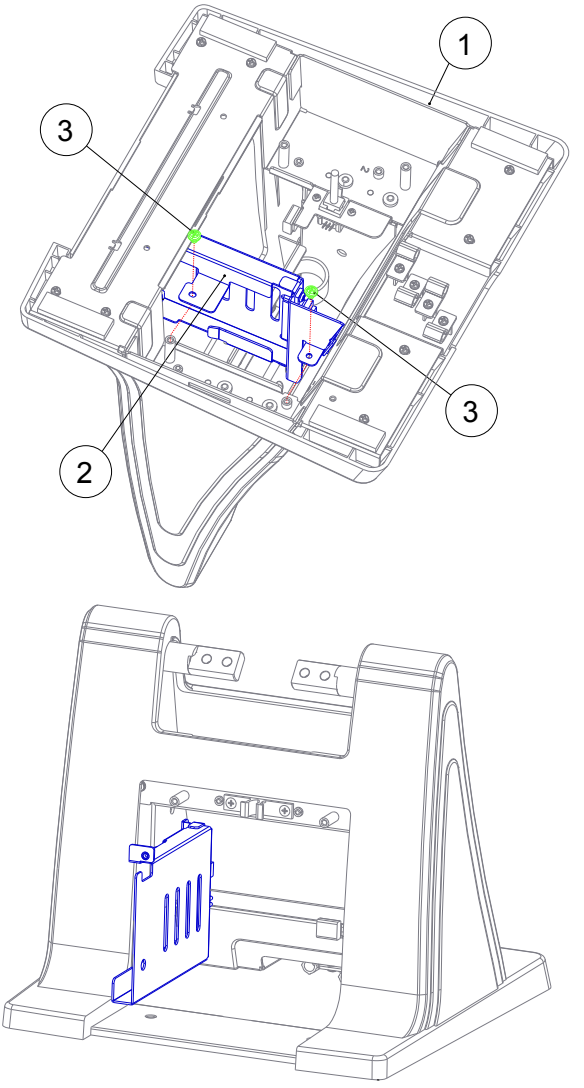
With RAID 2nd Storage



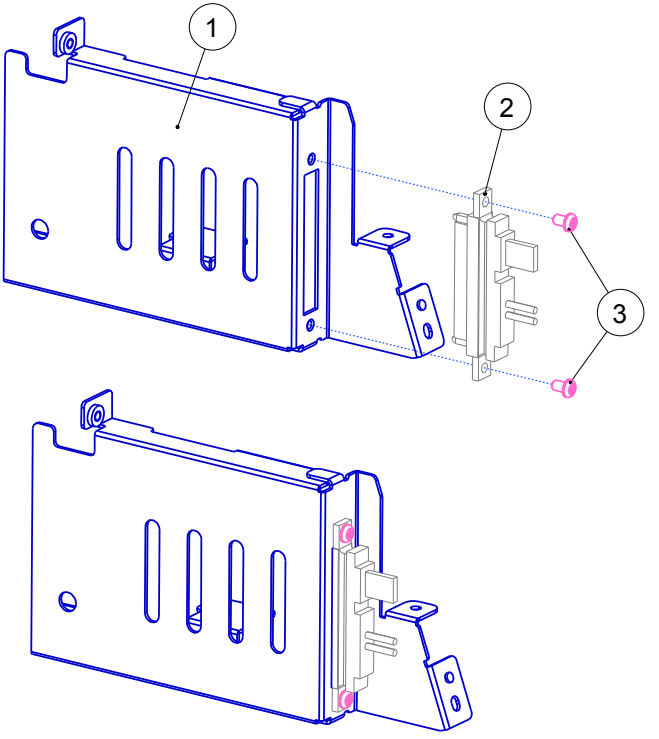
Item	Qty	Part Name	Part No.
1	1	SCREW/M3x0.5Px4mm	22-272-30004318
2	1	HDD raid module	xx-xxx-xxxxxxxx



Item	Qty	Part Name	Part No.
1	1	2.5" HDD	xx-xxx-xxxxxxxx
2	1	HDD HOLDER	80-029-03002314
3	4	SCREW/M3x0.5Px4mm	22-215-3000431 1
4	1	STAND HDD COVER	30-002-02110314
5	3	SCREW/M3x0.5Px4mm	22-272-3000431 8



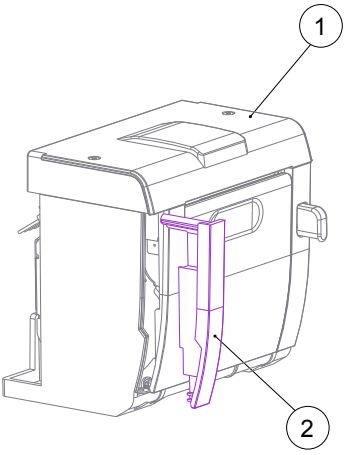
Item	Qty	Part Name	Part No.
1	1	Stand Assembly for Printer type	xx-xxx-xxxxxxxx
2	1	HDD SOCKET	xx-xxx-xxxxxxxx
3	2	SCREW/M3x0.5Px5mm	22-242-30005311



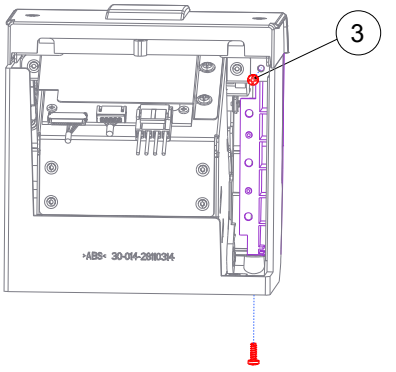
Item	Qty	Part Name	Part No.
1	1	HDD SOCKET BRACKET	80-006-03004314
2	1	ESATA Cable	27-008-31406081
3	2	SCREW/M3x0.5Px5mm	22-230-30005811

Without RAID 2nd Storage

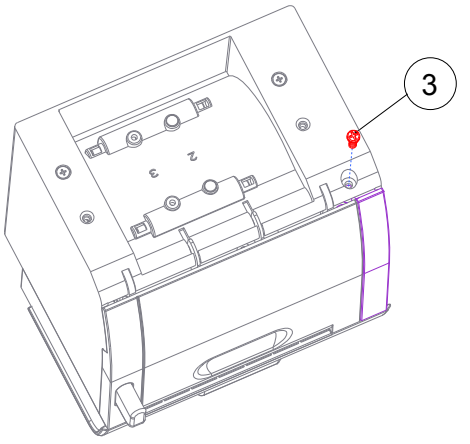
Front view



Rear view

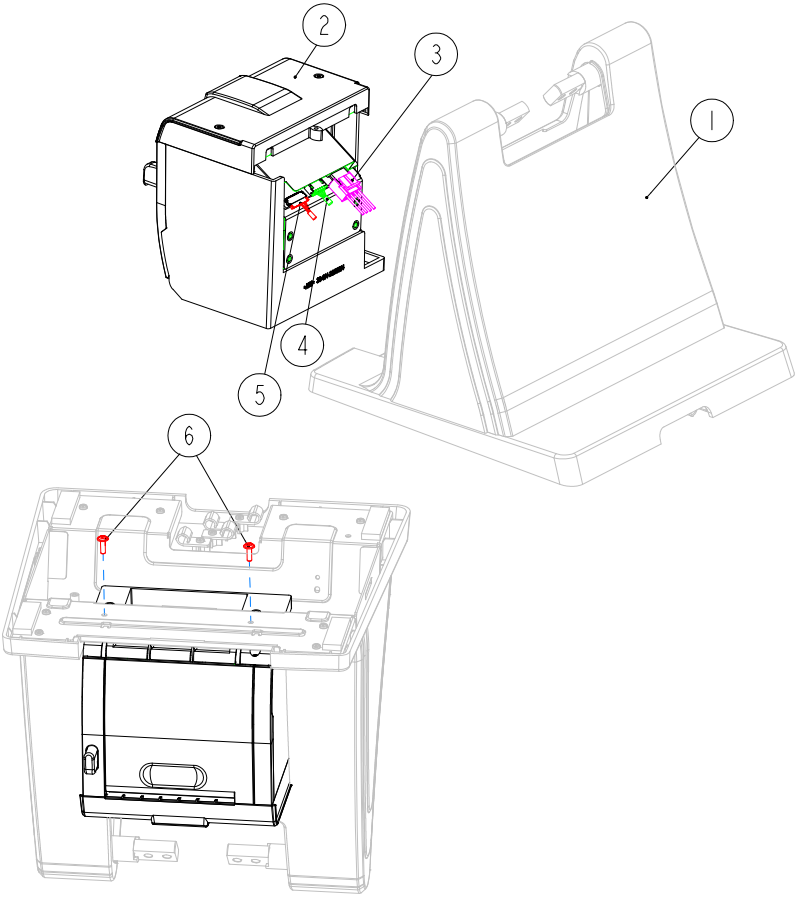


Bottom view

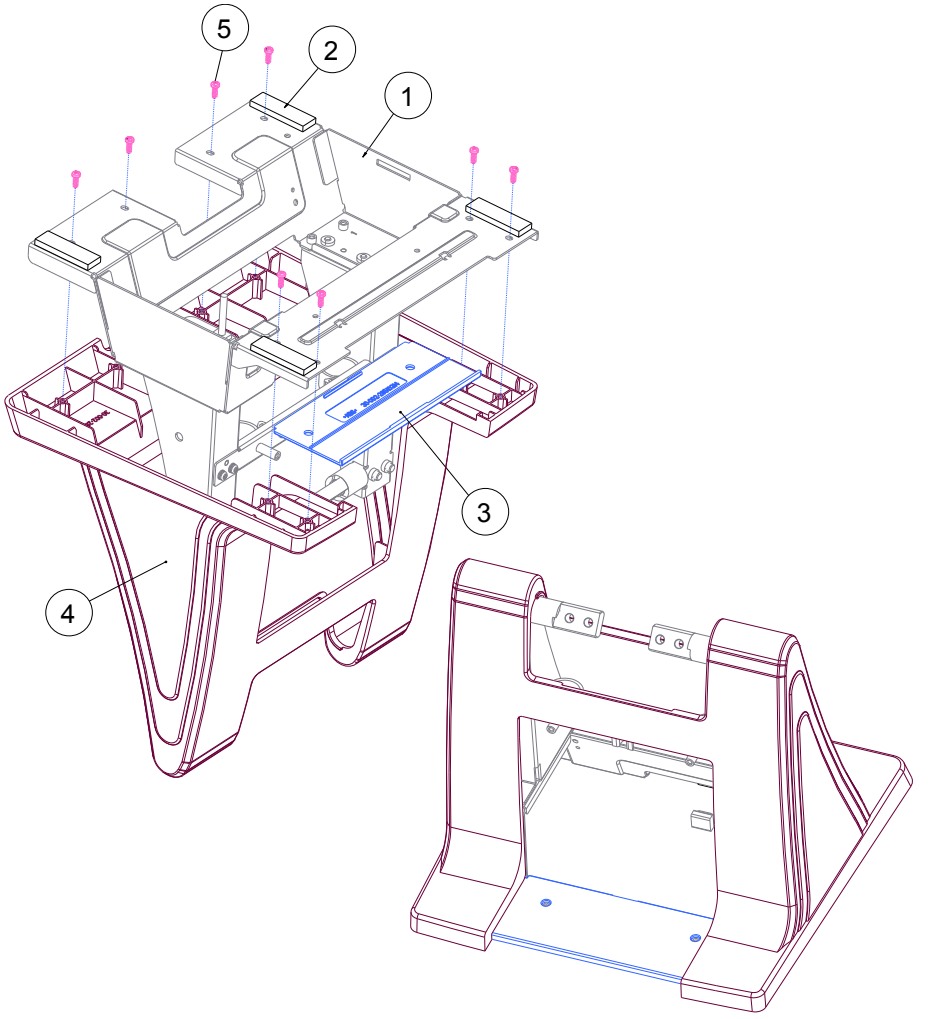


Item	Qty	Part Name	Part No.
1	1	Printer Module	xx-xxx-xxxxxxxx
2	1	STAND HDD COVER	30-002-02110314
3	2	SCREW/T3.0x8mm	22-122-30080011

Thermal Printer

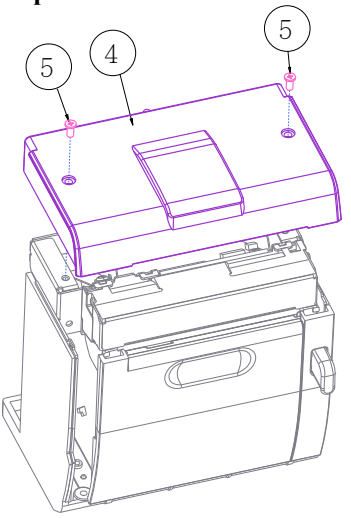


Item	Qty	Part Name	Part No.	Note
1	1	HDD-SOCKET_ASSEMBLY	xx-xxx-xxxxxxxx	
2	1	Printer Module_wih_HDD Cover	xx-xxx-xxxxxxxx	
3	1	PRINT POWER CABLE	27-012-31409071	
4	1	PRINT FOR USB CABLE	27-006-31409111	
	0	PRINT FOR USB CABLE	27-006-31409112	
	0	PRINT FOR COM CABLE	27-051-31408111	
	0	PRINT FOR COM CABLE	27-051-31408113	
	0	PRINT FOR COM CABLE	27-051-31408112	
5	1	Cash Drawer cable	27-026-16505111	Option
6	2	SCREW/M3x0.5Px10mm	22-232-30010311	

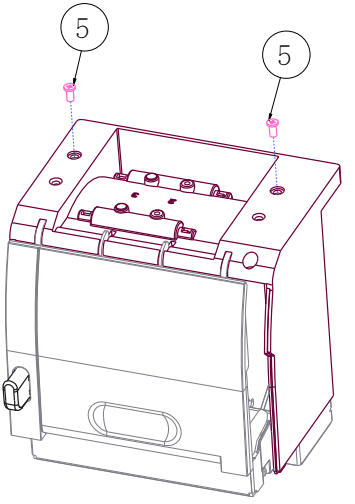


Item	Qty	Part Name	Part No.	Note
1	1	STAND BRACKET ASSEMBLY	xx-xxx-xxxxxxxx	
2	4	RUBBER FOOT	30-004-01100314	
3	1	STAND DRESS COVER	30-002-28510314	For with Printer
4	1	STAND COVER ASSEMBLY	xx-xxx-xxxxxxx	
5	8	SCREW/T3.0x8mm	22-122-3008001 1	

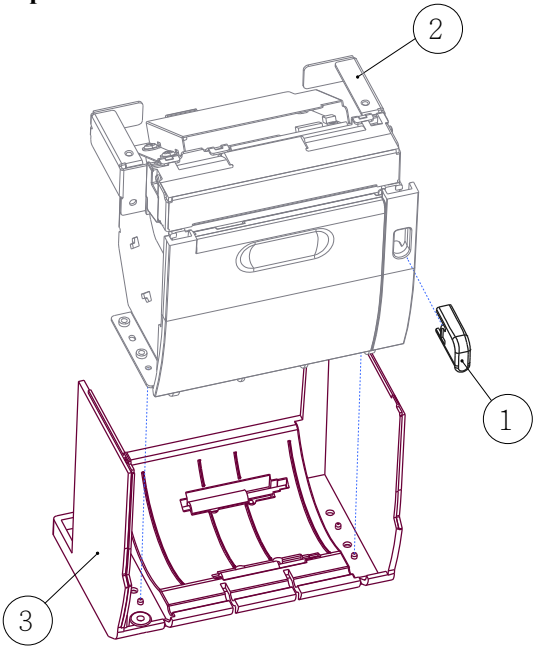
Top View



Bottom View

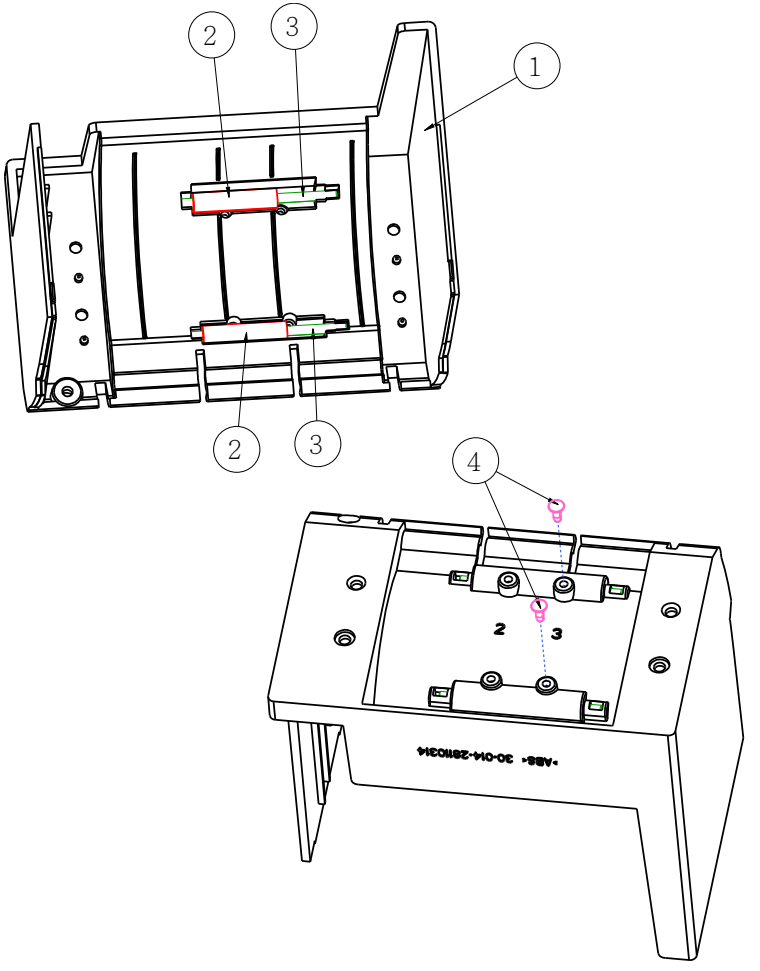


Separation View



Item	Qty	Part Name	Part No.
1	1	Printer Door Switch	30-007-28110314
2	1	Printer Holder Assembly	xx-xxx-xxxxxxxx
3	1	Housing Assembly	xx-xxx-xxxxxxxx
4	4	SCREW/M3x0.5Px6mm	82-275-30006018
5	1	Stand Printer Cover	30-002-28310314

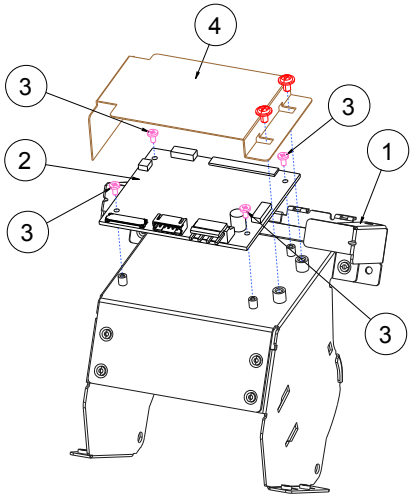
3 Inch Printer



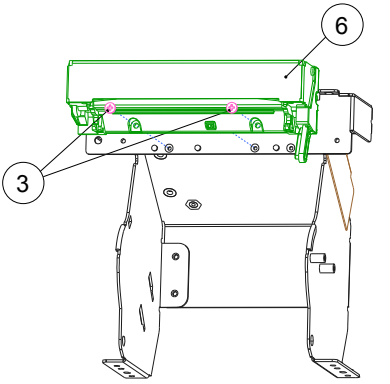
Item	Qty	Part Name	Part No.
1	1	Stand Printer Housing	30-014-28110314
2	2	SPACER SUPPORT(Ø 6x25mm)	30-041-04100165
3	2	ROLLER PIN	20-045-19012199
4	2	Ø	

3 Inch Printer Assembly

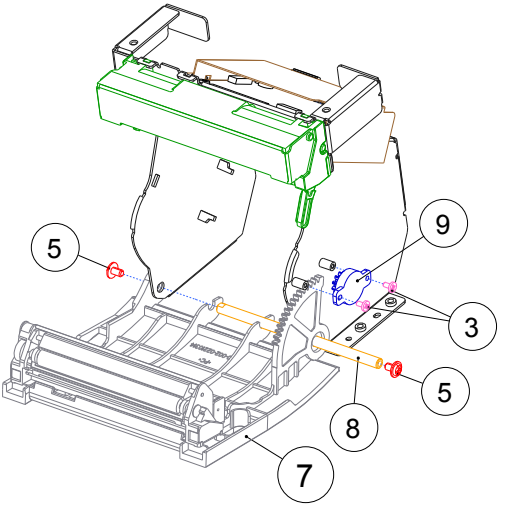
Step-1:



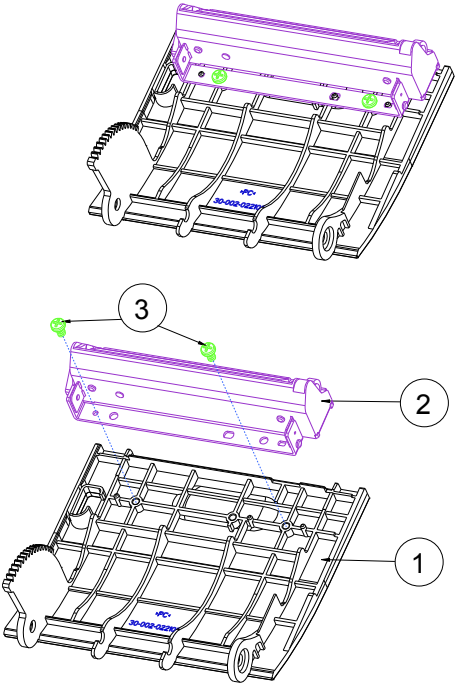
Step-2:



Step-3:

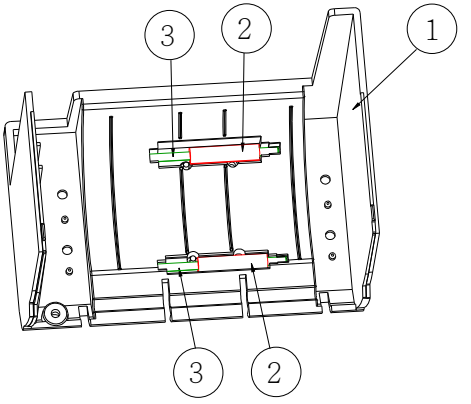


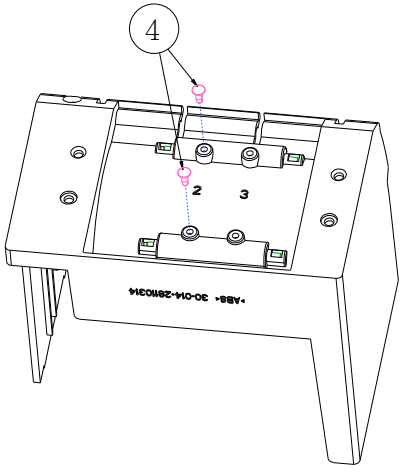
Item	Part Name	Part No.	Qty
1	Printer Holder	80-029-03004314	1
2	Printer Board	17-122-10301028	1
	Printer Board	52-370-06310008	0
	Printer Board	17-160-10011023	0
3	SCREW/M2x0.4Px4mm	22-272-20004011	8
4	PRINTER-PCB-MYLAR	90-056-02100314	1
5	SCREW/M3x0.5Px5mm	22-242-30005311	4
6	3" Printer (Main body)	52-701-03017003	1
7	Front Cover Assembly	xx-xxx-xxxxxxxx	1
8	PAPER COVER PIN	20-004-10011165	1
9	ROTRAY DAMPER(15gf-cm)	90-022-09100314	1



Item	Qty	Part Name	Part No.
1	1	STAND PRINTER COVER_F	30-002-02210314
2	1	3" Printer (Main body)	52-701-03017003
3	2	SCREW/T3.0x5mm	22-121-3000501 1

2 Inch Printer

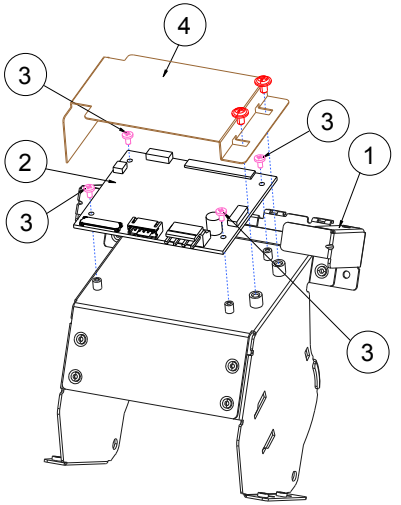




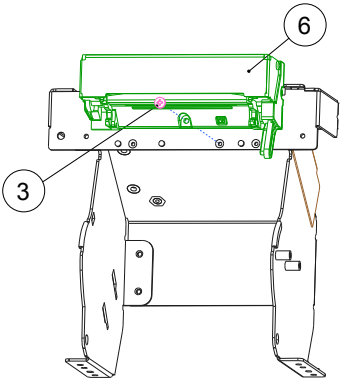
Item	Qty	Part Name	Part No.
1	1	Stand Printer Housing	30-014-28110314
2	2	SPACER SUPPORT∅6x25mm)	30-041-04100165
3	2	ROLLER PIN	20-045-19012199
4	2	∅	

2 Inch Printer Assembly

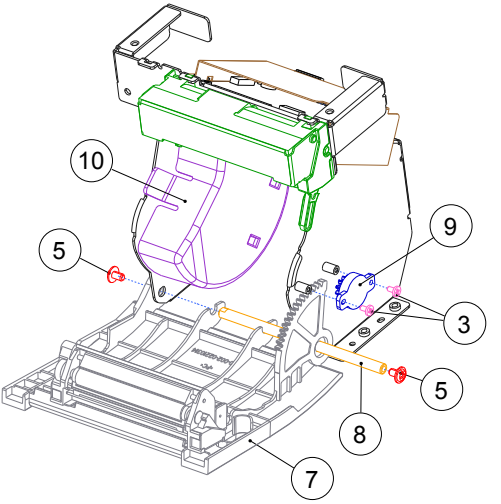
Step-1:



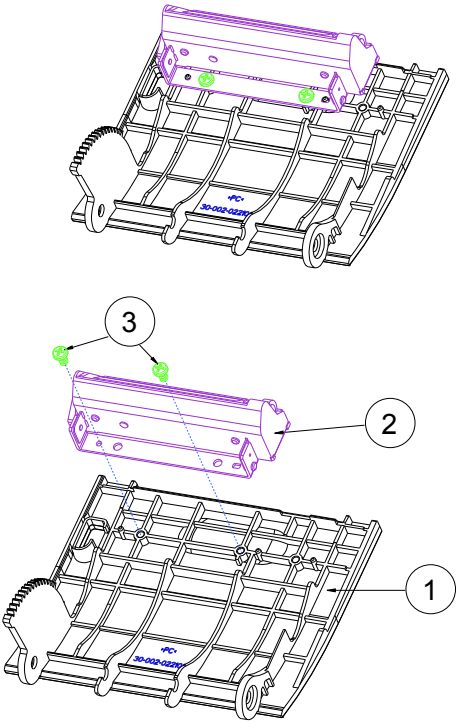
Step-2:



Step-3:



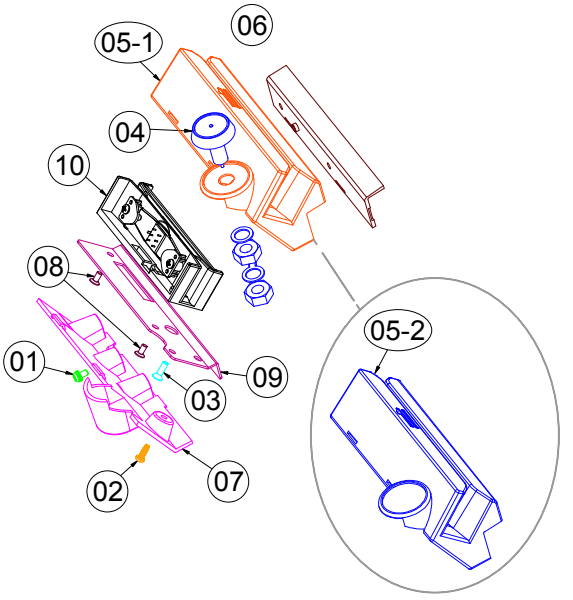
Item	Part Name	Part No.	Qty
1	Printer Holder	80-029-03004314	1
2	Printer Board	17-122-10301028	1
	Printer Board	52-370-06310008	0
	Printer Board	17-160-10011023	0
3	SCREW/M2x0.4Px4mm	22-272-20004011	7
4	PRINTER-PCB-MYLAR	90-056-02100314	1
5	SCREW/M3x0.5Px5mm	22-242-30005311	4
6	2" Printer (Main body)	52-701-01020003	1
7	Front Cover Assembly	xx-xxx-xxxxxxxx	1
8	PAPER COVER PIN	20-004-10011165	1
9	ROTRAY DAMPER(15gf-cm)	90-022-09100314	1
10	2 inch PAPER BLOCK	30-061-28110242	1



Item	Qty	Part Name	Part No.
1	1	STAND PRINTER COVER_F	30-002-02210314
2	1	2" Printer (Main body)	52-701-01020003
3	2	SCREW/T3.0x5mm	22-121-3000501 1

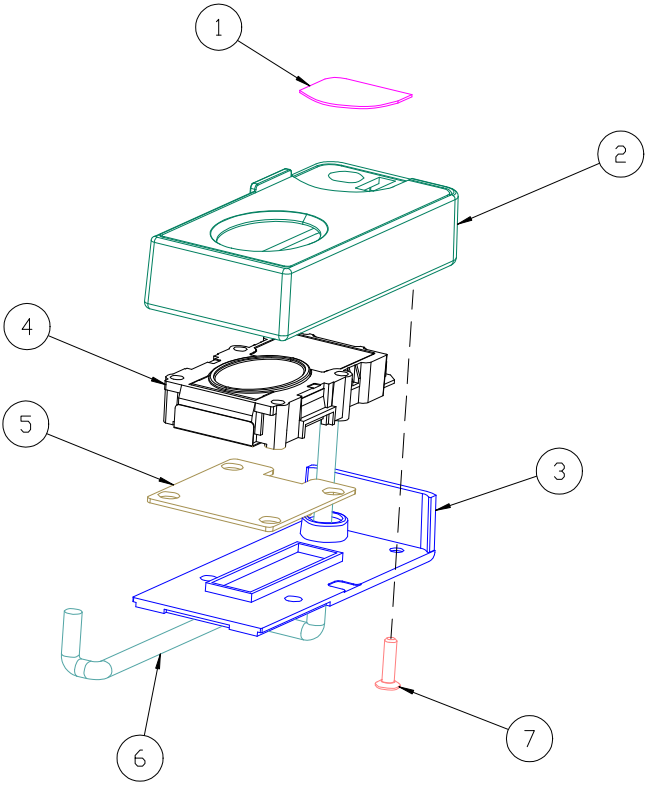
EXPLODED DIAGRAMS FOR PERIPHERAL DEVICES

1. MSR & i-Button



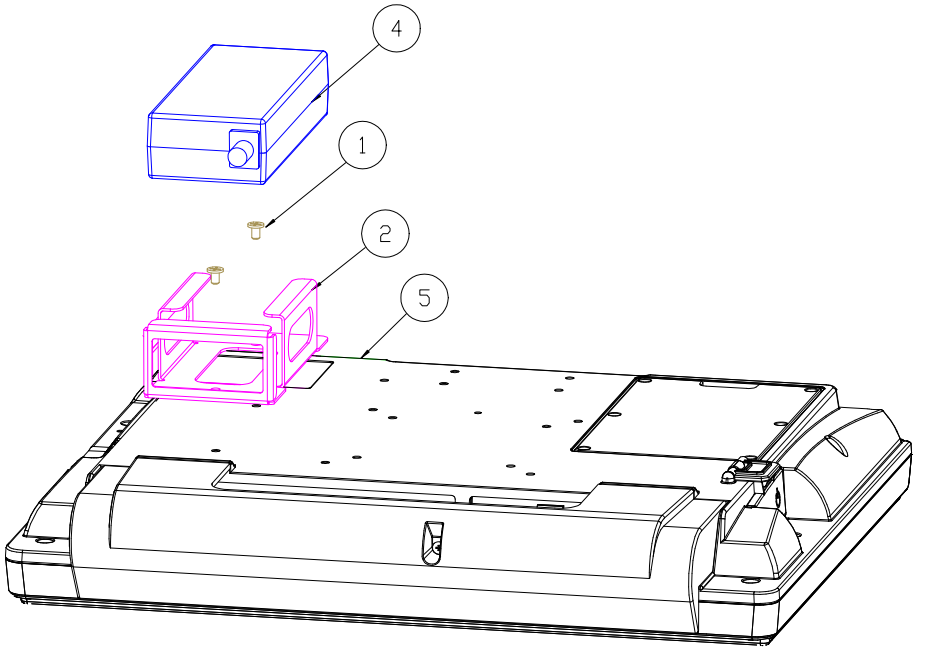
NO.	COMPONENT NAME		PART NO.	Q'TY
1	ROUND HEAD WITH SPRING WASHER SCREW M3x0.5Px6mm		22-232-30060211	1
2	PAN HEAD SCREW T3.0x8mm(Black)		22-122-30080011	1
3	FLAT HEAD SCREW T3.0x10mm		22-712-30010011	1
4	iBUTTON(IBT100)		52-551-00100002	1
5	5-1	MSR TOP HOUSING-3	30-014-12420210	1
	5-2	MSR TOP HOUSING-2	30-014-12320210	1
6	MSR COVER SIDE-1		30-002-12122210	1
7	IBUTTON CABLE L=200mm+70mm		30-002-12020210	1
8	FLAT HEAD SCREW M3x0.5Px6mm(Black)		22-215-30060011	2
9	MSR FIX BRACKET		20-006-03004210	1
10		MSR_DEVICE/PS2	MB-3012RA-12N	1
	10-1	MSR CABLE	27-014-31402071	1
		IBUTTON CABLE	27-022-16503071	1
	10-2	MSR_ID TECH_DEVICE/PS2	52-151-08333416	--
		MSR CABLE	27-014-27402072	--
	10-3	MSR_SYSKING_DEVICE/PS2	52-551-00883000	--
		MSR CABLE	27-014-21007111	--
		IBUTTON CABLE	27-022-16503071	--

2. Fingerprint



NO.	COMPONENT NAME	PART NO.	Q'TY
1	PC_SHEET	N/A	1
2	FINGER PRINTER TOP COVER	30-002-12720210	1
3	FINGER PRINTER BTM COVER	30-002-12820210	1
4	FINGER PRINTER MODULE	52-551-00501205	1
5	FINGER PRINTER BRACKET	N/A	1
6	FINGER PRINTER CABLE	N/A	1
7	FLAT HEAD SCREW	22-712-30010011	1

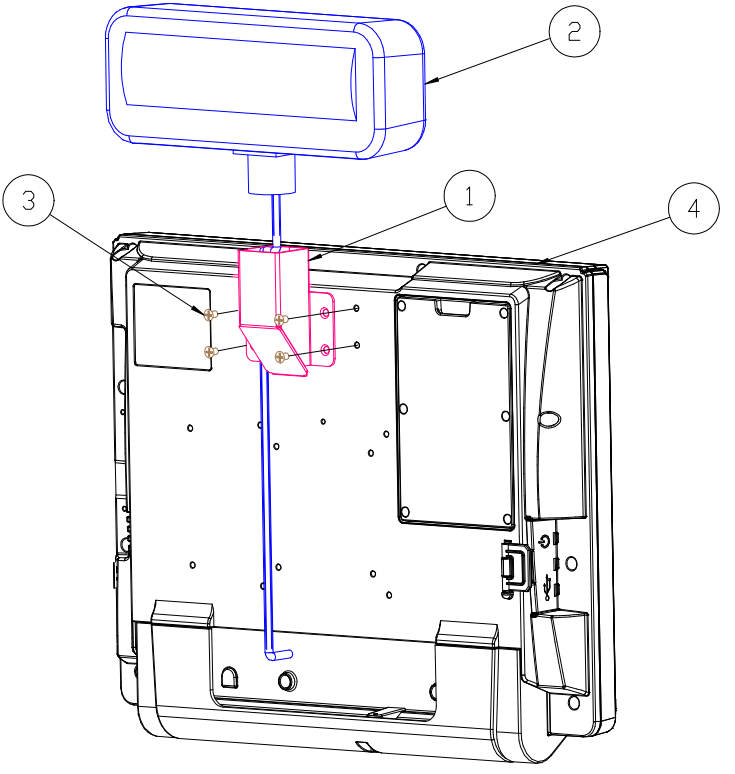
3. Adaptor Holder for Panel PC



NO.	COMPONENT NAME	PART NO.	Q'TY
1	SCREW	22-272-40008011	2
2	ADAPTOR HOLDER	20-029-07001274	1
3	SCREW	82-275-30006018	2
4	ADAPTOR	SEE ORDER	1
5	PA-6225 PPC	---------	1

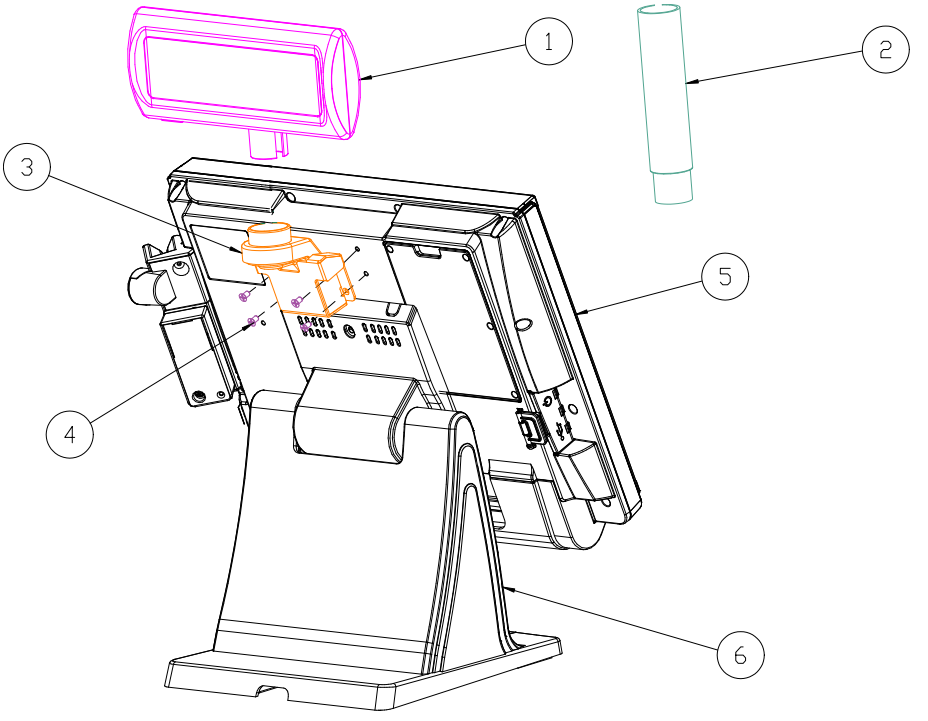
4. VFD Kit

Normal Type



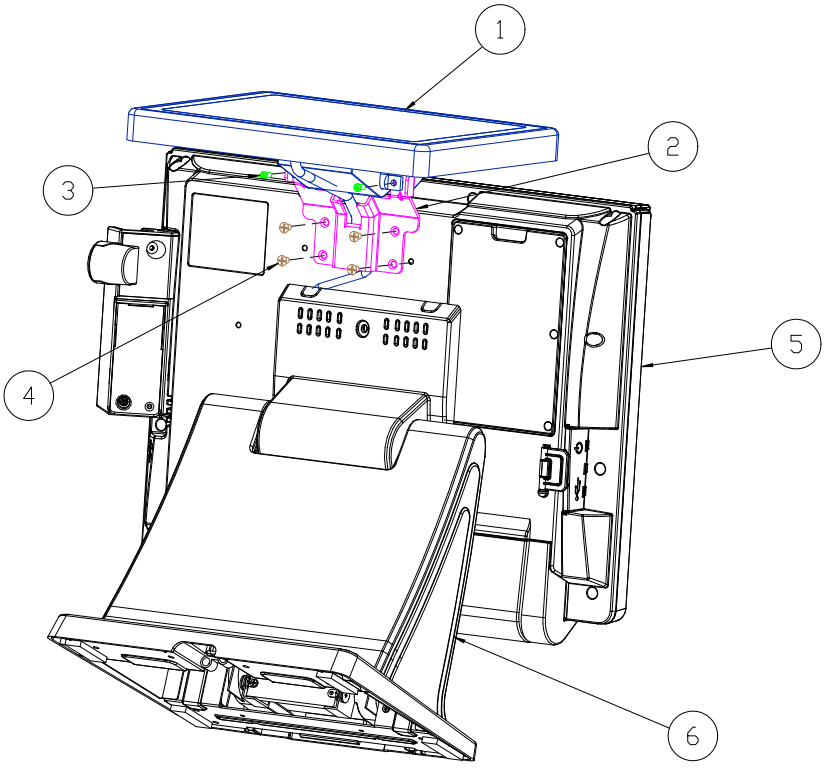
NO.	COMPONENT NAME	PART NO.	Q'TY
1	VFD SUPPORT BRACKET	80-006-03062226	1
2	VFD DISPLAY	52-901-31001703	1
3	SCREW	22-215-40008711	4
4	PA-6225 PPC MODULE	----------	1

Rotated Type



NO.	COMPONENT NAME	PART NO.	Q'TY
1	VFD_MODULE	52-901-31001703	1
2	VFD_EXTEND_POLE	N/A	1
3	VFD_HINGE_MODULE	N/A	1
4	F_SCREW_M4_L8mm	22-215-40008711	4
5	PA-6225_PPC_MODULE	----------	1
6	PA-6225_STAND_MODULE	----------	1

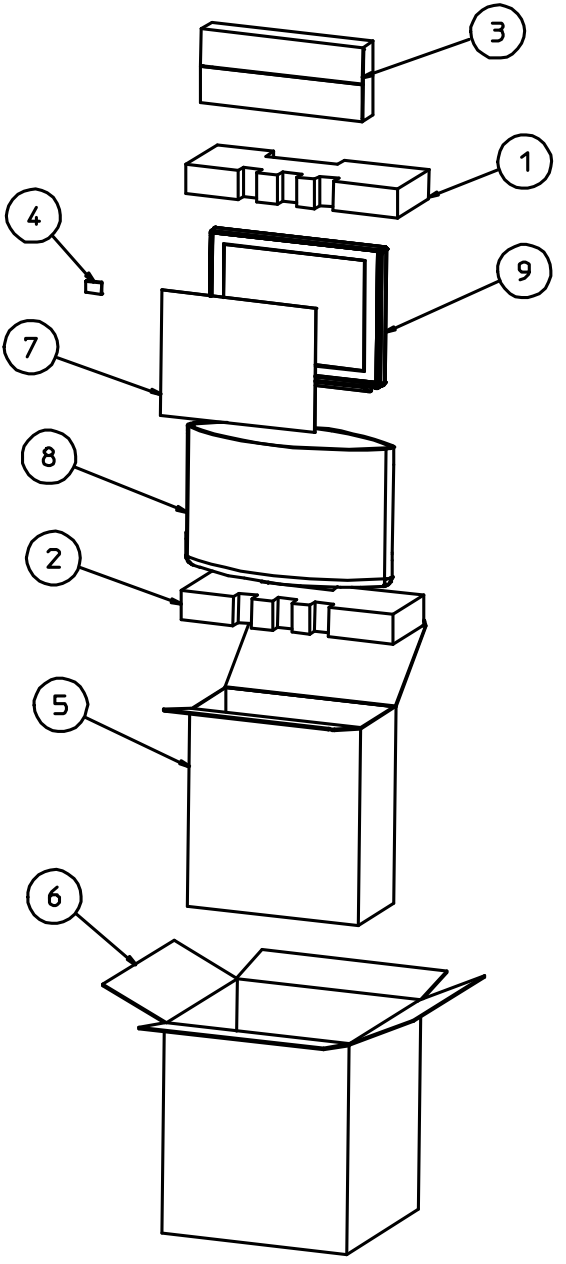
5. Second Display



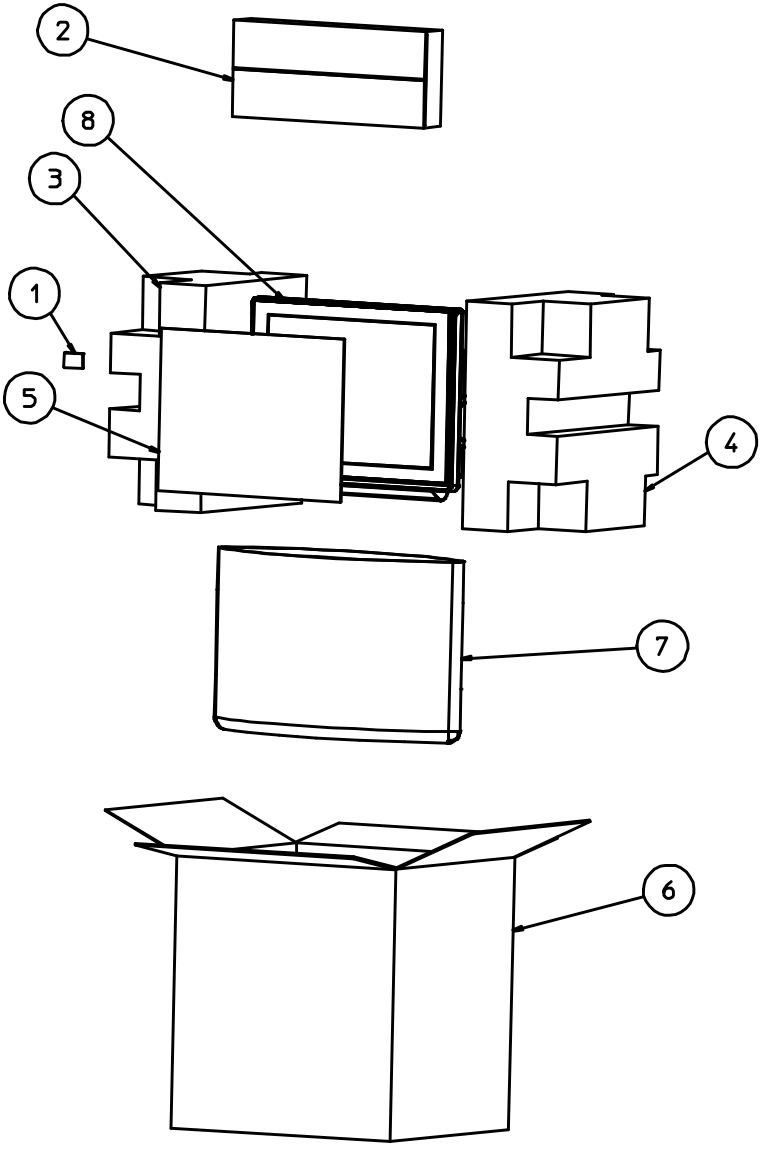
NO.	COMPONENT NAME	PART NO.	Q'TY
1	2ND_DISPLAY	BY ORDER	1
2	2ND_DIS_SUPPORT_BRT	80-006-03061226	1
3	R_SCREW_M4_L8mm	22-245-40008011	2
4	F_SCREW_M4_L8mm	22-215-40008711	4
5	PA-6225_PPC_MODULE	----------	1
6	PA-6225_STAND_MODULE	----------	1

EXPLODED DIAGRAMS FOR PACKING

PPC Packing



POS Packing

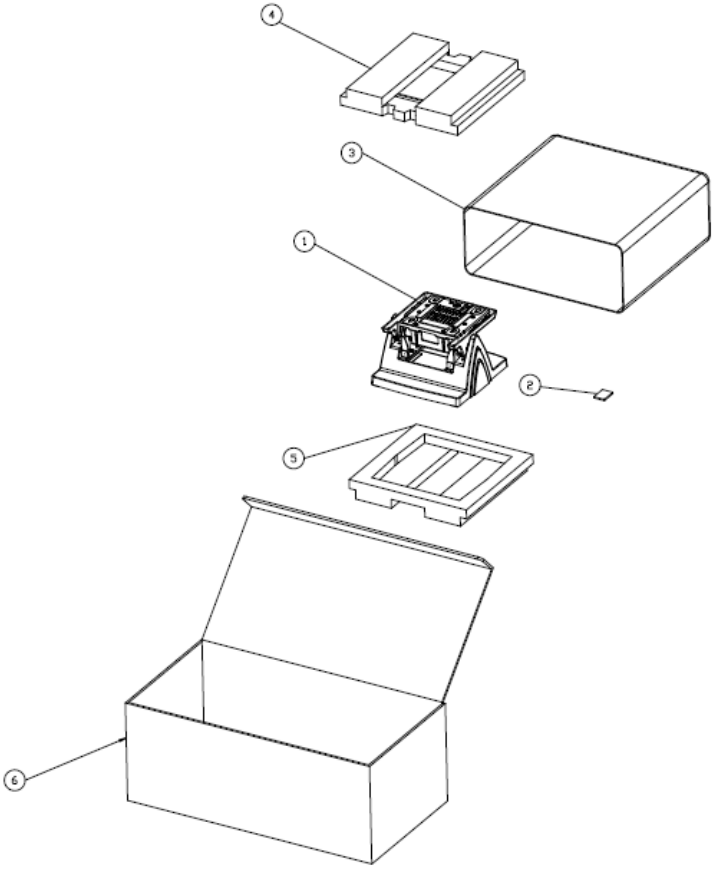


PPC Packing

NO.	COMPONENT NAME	PART NO.	Q'TY
1	EPE TOP	94-016-00301274	1
2	EPE BOTTOM	94-016-00302274	1
3	ACCESSORIES BOX	34-003-01301086	1
4	SILICA GEL	34-005-00010007	1
5	INNER BOX	94-002-01201269	1
6	OUTER BOX	94-001-01401269	0.5
7	MYLAR	30-056-02100008	1
8	PE BAG	32-10020010000	1
9	PA-6225 PPC		1

POS Packing

NO.	COMPONENT NAME	PART NO.	Q'TY
1	SILICA GEL	34-005-00010007	1
2	ACCESSORIES BOX	34-003-01301086	1
3	EPE LIFT	94-016-00303274	1
4	EPE RIGHT	94-016-00304274	1
5	MYLAR	30-056-02100008	1
6	OUTER CARTON	94-001-01401226	1
7	PE BAG	32-10020010000	1
8	PA-6225 POS		1



NO	Part Description	Part No.	Qty
1	Stand	N/A	1
2	Silica gel	34-005-00010007	1
3	Package bag 480x460mm	32-100-20010000	1
4	EPE top 280x273x42mm	94-016-00303269	1
5	EPE bottom 280x273x42mm	94-016-00304269	1
6	Outer carton 592x308x229mm	94-001-01403269	05