

# **USER'S MANUAL**

**PA-6222**

**12" Waterproof True Flat  
Touch POS Terminal**

**Powered by Intel® Celeron®  
J1900 Quad-Core**

**PA-6222 M2**

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***PA-6222***  
***12” Waterproof True Flat***  
***Touch POS Terminal***  
***Powered by Intel<sup>®</sup> Celeron<sup>®</sup>***  
***J1900 Quad-Core***

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This manual is copyrighted in Feb. 2017. You may not reproduce or transmit in any form or by any means, electronic, or mechanical, including photocopying and recording.

**DISCLAIMER**

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

**CE NOTICE**

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

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## FCC NOTICE

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

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

**CAUTION!** Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

**WARNING!** Some internal parts of the system may have high electrical voltage. And therefore we strongly recommend that qualified engineers can open and disassemble the system. The LCD and Touchscreen are easily breakable, please handle them with extra care.

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# ***INTRODUCTION***

CHAPTER

***1***

This chapter gives you the information for the PA-6222. It also outlines the system specifications.

Sections included:

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

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

## **1-1. ABOUT THIS MANUAL**

Thank you for purchasing our PA-6222 Series System. The PA-6222 is an updated system designed to be comparable with the highest performance of IBM AT personal computers. The PA-6222 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<sup>®</sup> Utility, VGA, LAN, Sound, Touch Screen, embedded peripheral devices, BIOS setup & update, Watchdog timer and resource map.

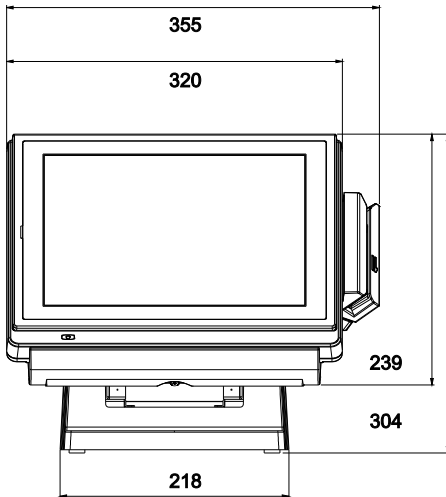
### ***Chapter 4 System Diagrams***

This chapter shows the exploded diagrams and part numbers of PA-6222 components.

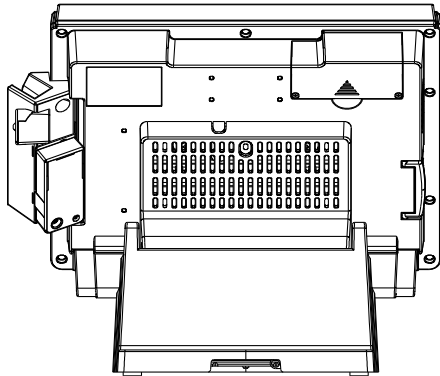
## 1-2. POS SYSTEM ILLUSTRATION

### Small stand type

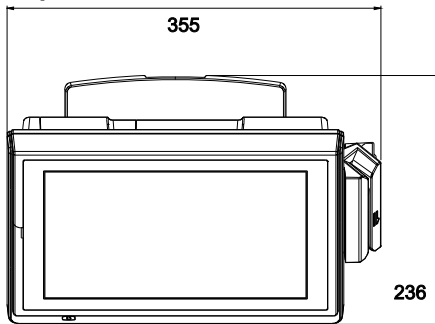
Front View



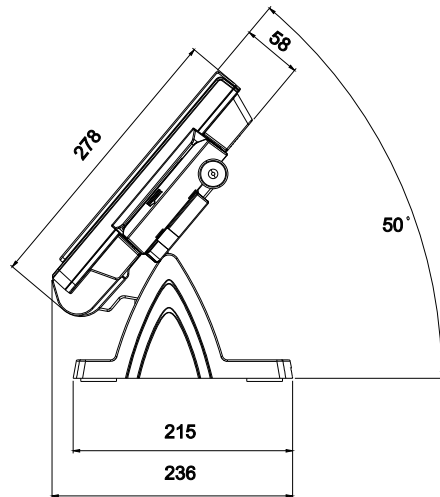
Rear View



Top View



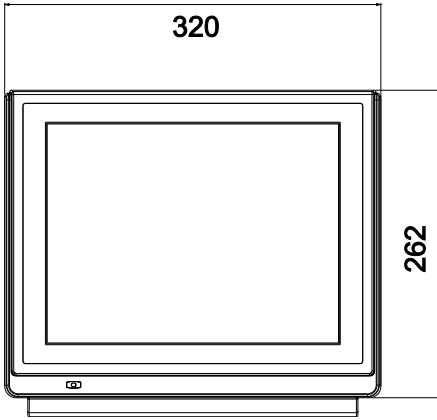
Side View



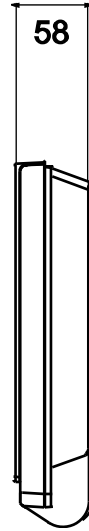
Unit: mm

**Stand-less type**

**Front View**



**Side View**



Unit: mm



### 1-3. SYSTEM SPECIFICATIONS

**System**

CPU	Intel® Celeron® J1900															
Memory	DDR3L SO-DIMM(up to 8GB)															
OS Support	<ul style="list-style-type: none"> <li>▪ Windows POSReady7</li> <li>▪ Windows 8.1</li> <li>▪ Windows 10 IoT Enterprise LTSC 2016</li> </ul>															
LAN	1 x RJ45															
VGA	1 x DB-15															
Wireless LAN (Optional)	<p>802.11 b/g/n</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>AP distance</th> <th>0°</th> <th>90°</th> <th>180°</th> <th>270°</th> </tr> </thead> <tbody> <tr> <td>5M</td> <td>-48 dB</td> <td>-45 dB</td> <td>-49 dB</td> <td>-43 dB</td> </tr> <tr> <td>10M</td> <td>-46 dB</td> <td>-50 dB</td> <td>-52 dB</td> <td>-50 dB</td> </tr> </tbody> </table> <p><b>Note:</b></p> <ol style="list-style-type: none"> <li>1. Test tolerance: ± 5dB</li> <li>2. AP: ASUS RT-N56U (2 x internal antenna with 3.8 dBi gain)</li> </ol> <div style="text-align: center; margin-top: 10px;"> </div>	AP distance	0°	90°	180°	270°	5M	-48 dB	-45 dB	-49 dB	-43 dB	10M	-46 dB	-50 dB	-52 dB	-50 dB
AP distance	0°	90°	180°	270°												
5M	-48 dB	-45 dB	-49 dB	-43 dB												
10M	-46 dB	-50 dB	-52 dB	-50 dB												

Audio	2W speaker
System Weight	5kg, PPC only : 3.2kg
Dimension (W x H x D)	320 x 303 x 236 mm
Network	10/100/1000M
Mounting Type	Support VESA 75/100
Line Out	1 x phone jack
Cash Drawer	1 x RJ11(+12/24V selectable)
DC-in	1 x 4pin DC Power Jack
Viewing Angel	24~30°
Serial Ports	3 x RJ45, 1 x RJ45 optional(+5V/12V selectable)

**Power Supply: 72 Watt power adapter**

**Power Consumption**

(AC):

System Status	CPU/ HDD/ Memory	COM & USB Ports to supply power of Rear I/O	Consumption
OFF	Off	Without  USB dummy load 500mA x4	1.6W
IDLE	Turns on, but not to execute extra AP		14.7W
Full Loading	100% loading of burn- in test		18.7W
			29.5W

**Certificate: CE/ FCC**

Type	Standard	Description
EMI	EN 55022 Class A	-
EMS	EN 55024	-
IEC 61000-4-2	ESD	<ul style="list-style-type: none"> <li>▪ 8kV air discharge</li> <li>▪ 4kV contact discharge</li> </ul>
IEC 61000-4-3	RS	80~1000MHz, 3V/m, 80% AM(1kHz)
IEC 61000-4-4	EFT	<ul style="list-style-type: none"> <li>▪ AC Power Port: 1kV</li> <li>▪ DC Power Port: 0.5kV</li> <li>▪ Signal Ports &amp; Telecommunication Ports: 0.5kV</li> </ul>
IEC 61000-4-5	Surge	<ul style="list-style-type: none"> <li>▪ AC Power Port: Line to line: 1kV Line to earth(GND): 2kV</li> <li>▪ DC Power Port: Line to earth(GND): 0.5kV</li> <li>▪ Signal and Telecommunication Port: Line to GND: 1kV</li> </ul>
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	<ul style="list-style-type: none"> <li>▪ &gt; 95% reduction for 0.5 periods</li> <li>▪ 30% reduction for 25 periods</li> </ul>
	Voltage Interruptions	> 95% reduction for 250 periods

**Display**

Customer Display	12" TFT LCD Resolution: 1024 x 768
Touchscreen	▪ Bezel-Free 5-wire resistive touch
Brightness	500 cd/m <sup>2</sup> LED Backlight

**Environment**

Temperature	▪ Operating: 0~35°C (32 ~ 95°F) ▪ Storage: -5~60°C (-4 ~ 140°F)
Humidity	20~90%

**Optional accessories**

MSR & i-Button	JIS-I or II, ISO Track1+2+3
Fingerprint	8-bit grayscale reader
2 <sup>nd</sup> Display	▪ 8" LCD or 10.4" LCD
Customer Display	VFD, 20 columns and 2 lines, each column is 5 x 7 dots

## **1-4. SAFETY PRECAUTIONS**

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

1. Check the Line Voltage
  - a. The operating voltage for the power supply should be within the range of 100V to 240V AC; otherwise the system may be damaged.
  
2. Environmental Conditions
  - a. Place your PA-6222 on a sturdy, level surface. Be sure to allow enough space around the system to have easy access needs.
  - b. Avoid installing your PA-6222 Series POS system in extremely hot or cold places.
  - c. Avoid exposure to sunlight for a long period of time (for example, in a closed car in summer time. Also avoid the system from any heating device.). Or do not use the PA-6222 when it has been left outdoors in a cold winter day.
  - d. Bear in mind that the operating ambient temperature is between 0°C and 35°C (32°F and 95°F).
  - e. Avoid moving the system rapidly from a hot place to a cold place, and vice versa, because condensation may occur inside the system.
  - f. Protect your PA-6222 against strong vibrations, which may cause hard disk failure.
  - g. Do not place the system too close to any radio-active device. Radio-active device may cause signal interference.
  - h. Always shutdown the operation system before turning off the power.
  
3. Handling
  - a. Avoid placing heavy objects on the top of the system.
  - b. Do not turn the system upside down. This may cause the hard drive to malfunction.
  - c. Do not allow any objects to fall into this product.
  - d. If water or other liquid spills into the product, unplug the power cord immediately.

# ***SYSTEM CONFIGURATION***

CHAPTER

**2**

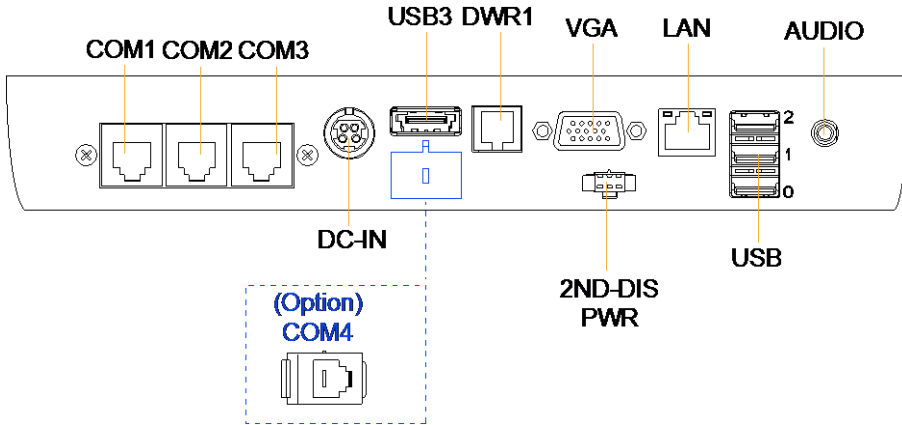
Helpful information that describes the jumper and connector settings, component locations, and pin assignment.

Sections included:

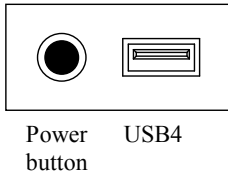
- External I/O Port Pin Assignment
- How to Set Jumpers
- Component Locations & Jumper Settings
  - Mainboard
  - VFD Board (peripheral device)
  - MSR Board (peripheral device)
- Secondary Cash Drawer Port

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

### Rear I/O



### Side I/O



### 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

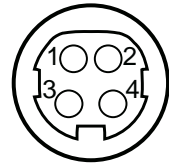


**Power Button**

### DC-IN Port

**DC-IN:** DC Power-In Port (rear IO)

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

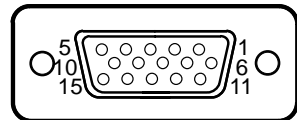


**DC-IN**

### VGA Port

**VGA:** VGA Port, D-Sub 15-pin (rear IO)

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		



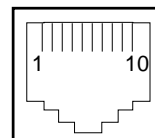
**VGA**



## COM Port

**COM1, COM2, COM3:** COM Ports (rear IO)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	DCD1/2/3	6	DSR1/2/3
2	RXD1/2/3	7	RTS1/2/3
3	TXD1/2/3	8	CTS1/2/3
4	DTR1/2/3	9	RI/+5V/+12V selectable (Maximum current: 1A)
5	GND	10	NC



**COM1/  
COM2/  
COM3**

## USB Port

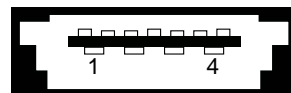
**USB0, USB1, USB2, USB3, USB4:** USB Port Type A Ports

- USB0~3: Real I/O
- USB4: Side IO

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



**USB0/  
USB1/  
USB2/  
USB4**



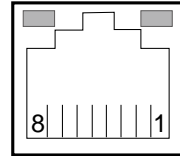
**USB3**

## LAN Port

**LAN:** LAN RJ45 Port (rear IO)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	MDI_0P	5	MDI_2N
2	MDI_0N	6	MDI_1N
3	MDI_1P	7	MDI_3P
4	MDI_2P	8	MDI_3N

Yellow Green



**LAN**

### LAN LED Indicator:

Left Side LED

Yellow Color Blinking	LAN Message Active
Off	No LAN Message Active

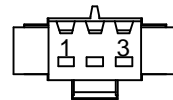
Right Side LED

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

## 2<sup>nd</sup> Display Power Port (Optional)

**2<sup>nd</sup> DIS PWR:** DV12 Power Supply of 2<sup>nd</sup> Display

PIN	ASSIGNMENT
1	VCC12
2	GND
3	VCC12

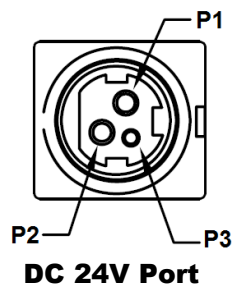


**2<sup>ND</sup> DIS PWR**

## DC 24V Port (Optional)

**DC 24V Port:** DC24V power supply for the stand-printer

PIN	ASSIGNMENT
P1	GNDV
P2	+24V
P3	NA

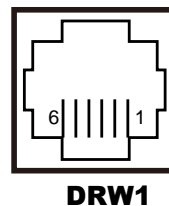


## Cash Drawer Port

**DRW1, DRW1-1, DRW1-2:** Signal from M/B GPIO (rear I/O)

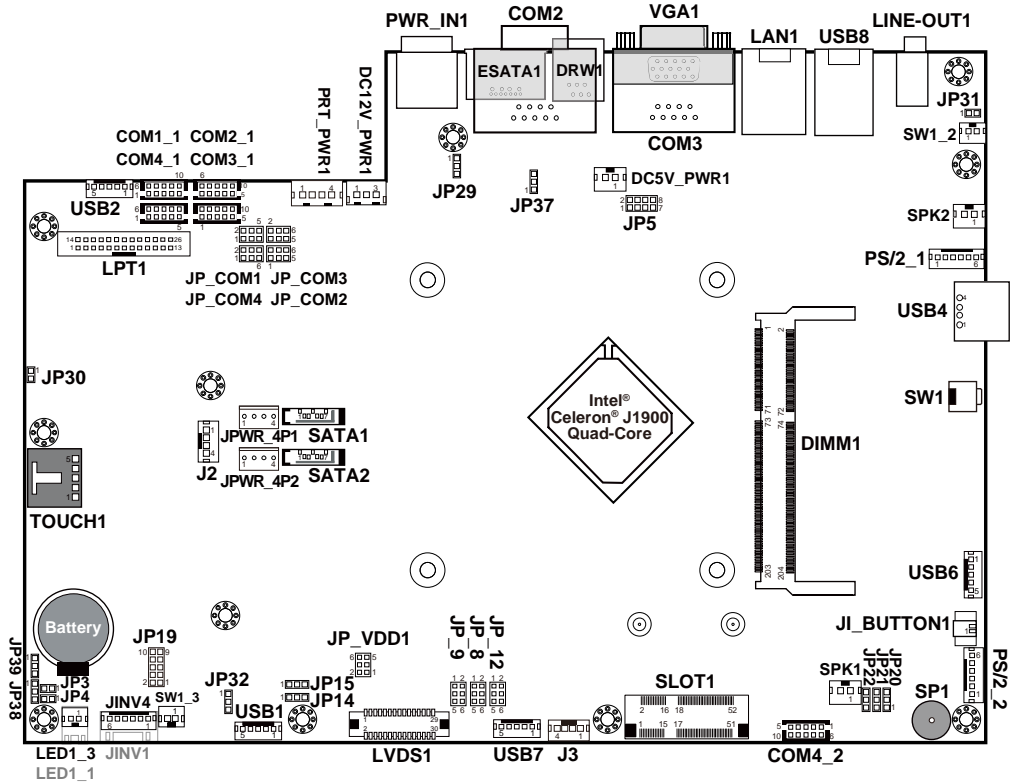
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	4	+12V/+24V (Max. current: 1A)
2	Drawer Open	5	NC
3	Drawer Sense	6	GND

DRW1	Open		Close	
	Write	To	Write	To
PB-6822RA, RB	700h	588h	000h	588h
	02h	SIO LDN 06h's 90h	00h	SIO LDN 06h's 90h



## 2-2. MAINBOARD COMPONENT LOCATIONS & JUMPER SETTINGS

M/B: PB-6822



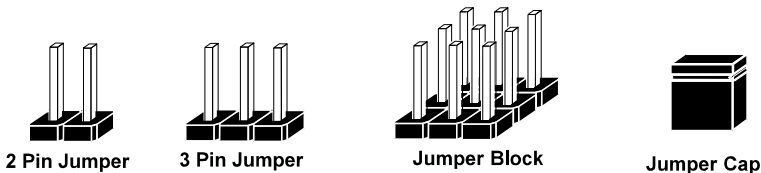
PB-6822 Mainboard Component Locations

### **2-2-1. 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**

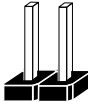


If a jumper has three pins for example, labelled PIN1, PIN2, and PIN3. You can connect PIN1 & PIN2 to create one setting and shorting. You can either connect PIN2 & PIN3 to create another setting. The same jumper diagrams are applied all through this manual. The figure below shows what the manual diagrams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

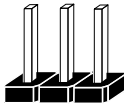
Jumper diagrams



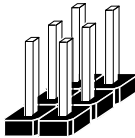
Jumper Cap looks like this



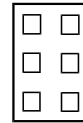
2 pin Jumper looks like this



3 pin Jumper looks like this



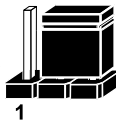
Jumper Block looks like this



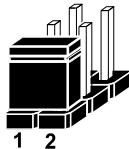
Jumper settings



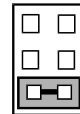
2 pin Jumper closed(enabled)  
looks like this



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

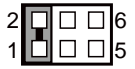
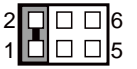
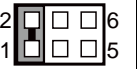
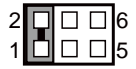
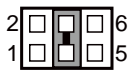
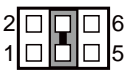
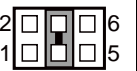
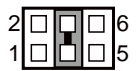
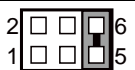
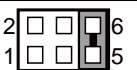
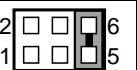
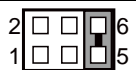


Jumper Block  
1-2 pin closed(enabled)  
looks like this



## COM Port RI &amp; Voltage Selection

JP\_COM1, JP\_COM2, JP\_COM3, JP\_COM4: Pin-headers on board

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

**Note:** Manufacturing Default is no connection for JP\_COM1, JP\_COM2, JP\_COM3 and JP\_COM4.

**Caution:**

1. Voltage of external COM 1~ COM4 ports are made to control on BIOS for your convenience. The corresponding jumpers JP\_COM1~ JP\_COM4 are set open (no connection) by default; refer to *Voltage Adjust Configuration* for detailed jumper setting (BIOS default at RI).
2. JP\_COM1~ JP\_COM4 are enabled when COM1~ COM4 voltage adjustment is disabled on BIOS
3. Voltage of COM port is adjustable by BIOS or jumpers. Either way cannot be applied simultaneously in case of system error, component damage or serious boot failure.

PS: COM4 is optional



## COM Connector

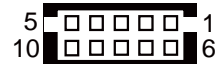
### COM1-1, COM2-1, COM3-1, COM4-1, COM4-2: COM Connectors

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 selectable for RI/+5V/+12V.  
For details, refer to *COM Port RI & Voltage Selection*.

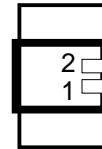


**COM4-2**

## I-Button Connector

### JI\_BUTTON1: i-Button Connector

PIN	ASSIGNMENT
1	COM3_DTR_R_I
2	COM3_RXD_R_I



**JI\_BUTTON1**

## I-Button Function Selection

### JP20, JP21, JP22: i-Button Function Connectors

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
COM 3	1-2	<p><b>JP20/JP21/JP22/</b></p>
i-Button*	2-3	<p><b>JP20/JP21/JP22/</b></p>

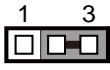
**Note:** Manufacturing Default is COM3.

\*COM3 & COM3-1 will not function when jumpers JP20, JP21 & JP22 are set as “i-Button.”



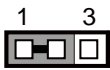
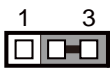
### Cash Drawer Control Selection

**JP37:** DRW1 control connector

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
DRW1	2-3	 <p><b>JP37</b></p>

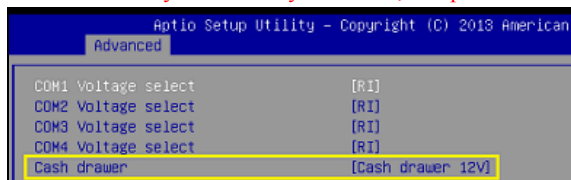
### Cash Drawer Power Selection

**JP29:** DRW1 power selection

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
+24V	1-2	 <p><b>JP29</b></p>
+12V	2-3	 <p><b>JP29</b></p>

**Caution:**

1. Voltage of external DRW1 port is made to control on BIOS for your convenience. The corresponding jumper JP29 is set open (no connection) by default.
2. JP29 is enabled when Cash drawer is disabled on BIOS.
3. Voltage of cash drawer port is adjustable by BIOS or jumpers. Either way cannot be applied simultaneously in case of system error, component damage or serious boot failure.

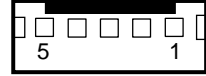


## USB Connector

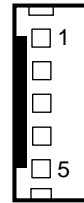
**USB1, USB2, USB6, USB7:** USB 2.0 connector

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**

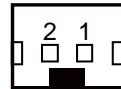


**USB6**

## LED Connector

**LED1\_1, LED1\_3:** Power indication LED connector

PIN	ASSIGNMENT
1	GND
2	PWR_LED

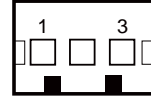


**LED1\_1/  
LED1\_3**

## Power Connector

**DC12V\_PWR1:** DC 12Voltage Provider Connector

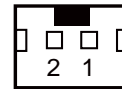
PIN	ASSIGNMENT
1	VCC12
2	GND
3	VCC12



**DC12V\_PWR1**

**DC5V\_PWR1:** DC 5Voltage Provider Connector

PIN	ASSIGNMENT
1	5V
2	GND

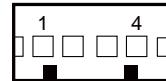


**DC5V\_PWR1**

## Power for Thermal Printer Connector

**PRT\_PWR1:** Power for Thermal Printer Connector

PIN	ASSIGNMENT
1	VCC24SB
2	VCC24SB
3	GND
4	GND

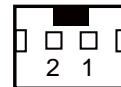


**PRT\_PWR1**

## External Speaker Connector

**SPK1, SPK2:** External speaker connector

PIN	ASSIGNMENT
1	SPK_GND
2	SPK_OUT

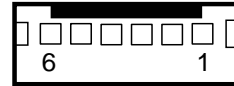


**SPK1/  
SPK2**

### Inverter Connector

**JINV1, JINV4:** Inverter connectors

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



**JINV1/  
JINV4**

### LED Backlight Power Control Selection

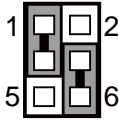
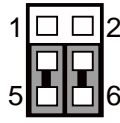
**JP12:** LED backlight power control connectors

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
Control by driver on M/B	1-3, 2-3 It applied to the panel without driver built-in	<p><b>JP12</b></p>
Control by PWM	3-5, 4-6 It applied to the panel with built-in driver inside	<p><b>JP12</b></p>

**Note:** Manufacturing Default is Control by PWM.

## Panel Resolution Selection

**JP8, JP9:** Panel resolution control connectors

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION	
1024 x 768 (24 bit)	JP8: 1-3, 4-6 JP9: 3-5, 4-6	 <p><b>JP8</b></p>	 <p><b>JP9</b></p>

**Note:** Manufacturing Default is 1024 x 768 (24bit).

## LVDS Connector

**LVDS1:** LVDS Connector

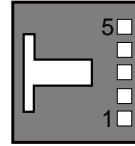
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	LVDS_VCC	16	LVDS_CLKA_D+
2	GND	17	VDS_CLKA_D-
3	NC	18	GND
4	NC	19	LVDS_A2_D+
5	GND	20	LVDS_A2_D-
6	LVDS_B2_D-	21	GND
7	LVDS_B2_D+	22	LVDS_A1_D+
8	GND	23	LVDS_A1_D-
9	LVDS_B1_D-	24	GND
10	LVDS_B1_D+	25	LVDS_A0_D+
11	LVDS_B3_D+	26	LVDS_A0_D-
12	LVDS_B3_D-	27	LVDS_A3_D+
13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



## Touch Panel Connector

**TOUCH1:** Touch panel connectors

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



**TOUCH1**

## Touch Panel Signal Interface Selection

**JP14, JP15, JP38, JP39:** Control connectors for touch panel signal interface

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION			
USB1 Connector	JP14: 1-2 JP15: 1-2 JP38: 2-3 JP39: 2-3				
USB Interface	JP14: 2-3 JP15: 2-3 JP38: 2-3 JP39: 2-3				
RS-232 Interface	JP14: 1-2 JP15: 1-2 JP38: 1-2 JP39: 1-2				



**Note:** 1. Manufacturing Default is USB Interface.

2. The COM2 & COM2-1 connector will not function when JP38 & JP39 are set as 1-2 connected.

3. USB1 connector when JP14 & JP15 are set as 1-2 connected.

### Clear CMOS Data Selection

**JP3:** Clear CMOS data selection

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
Normal	Open	 <b>JP3</b>
Clear CMOS*	1-2	 <b>JP3</b>

**Note:** Manufacturing Default is Normal.

\*To clear CMOS data, you must power-off the computer and set the jumper to “Clear CMOS” as illustrated above. After five to six seconds, set the jumper back to “Normal” and power-on the computer.

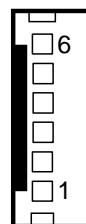
### MSR/Card Reader Connector

**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**

## SATA & SATA Power Connector

**SATA1, SATA2:** Serial ATA connectors

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



**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

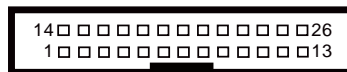


**JPWR\_4P1/  
JPWR\_4P2**

**Note:** JPWR\_4P1 only supports the optional RAID function on board.



**Printer Connector**



**LPT1:** Printer connector

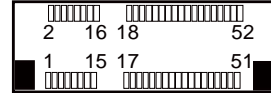
**LPT1**

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

## Mini-PCIe / mSATA Connector

**SLOT1:** Mini-PCIe connector, not support USB function

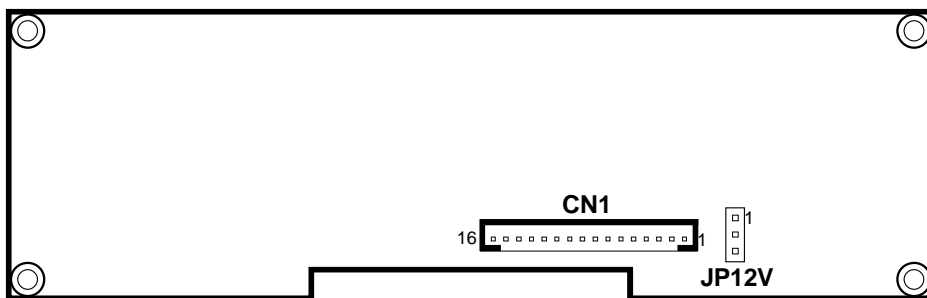
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	WAKE#	27	GND
2	+3.3V	28	+1.5V
3	Reserved	29	GND
4	GND	30	SMB_CLK
5	Reserved	31	PETn2
6	+1.5V	32	SMB_DATA
7	CLKREQ#	33	PETp2
8	Reserved	34	GND
9	GND	35	GND
10	Reserved	36	NC
11	REFCLK1-	37	GND
12	Reserved	38	NC
13	REFCLK1+	39	+3.3V
14	Reserved	40	GND
15	GND	41	+3.3V
16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



**SLOT1**

### 2-3. VFD BOARD COMPONENT LOCATIONS & PIN ASSIGNMENT

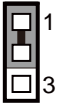
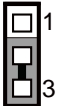
VFD Board: MB-4103, LD720



MB-4103 & LD720 VFD Board Component Locations

**Power Switch Selection**

**JP12V:** Power Switch Selection

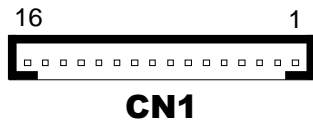
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
OFF	1-2	 <p><b>JP12V</b></p>
ON	2-3	 <p><b>JP12V</b></p>

**Note:** Manufacturing Default is ON.

**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



## 2-4. MSR BOARD COMPONENT LOCATIONS & PIN ASSIGNMENT

### ID TECH

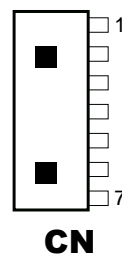


ID-TECH MSR Board Component Locations

### 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		



**MB-3012**

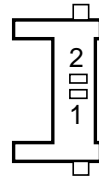


**MB-3012 MSR Board Component Locations**

**Information Button Reader**

**I\_BUTTON1:** Information button reader

PIN	ASSIGNMENT
1	I_B1
2	GND



**I\_BUTTON1**

**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**

## 2-5. Secondary Cash Drawer

### 2-5-1. DRW1-2 Port (Only for PA-6222RC)

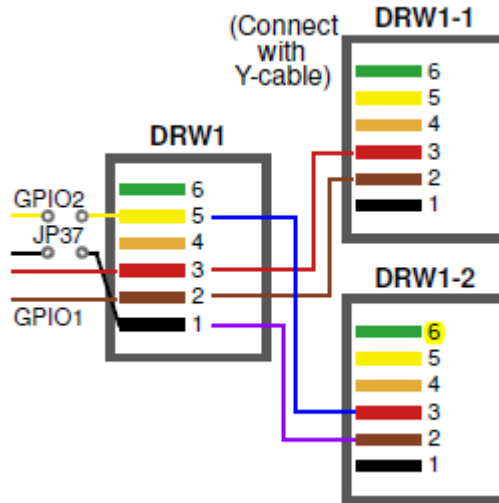
DRW1 is used by default. If you need a second port, adopt either way below.

#### Step.1

DRW1 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.

**JP37:** DRW1-2 control connector

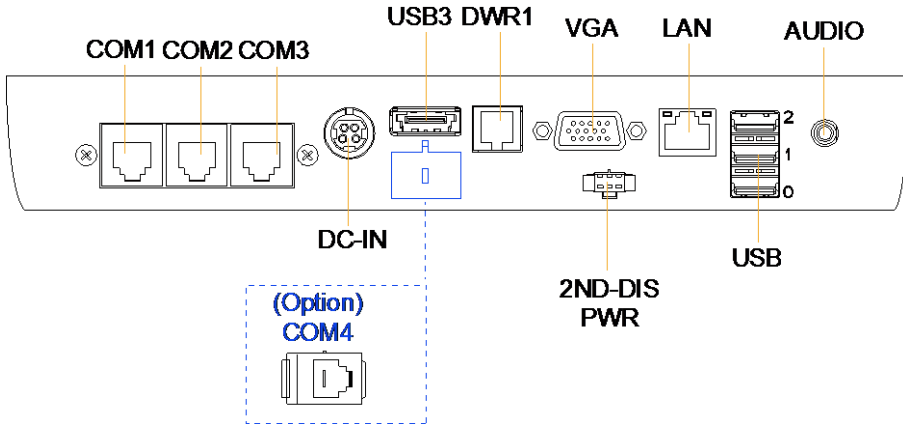


SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
DRW1-2 Open	1-2	<p><b>JP37</b></p>
GND	2-3	<p><b>JP37</b></p>

**Note:** Manufacturing Default is GND.

Step.2

You can split DRW1 into two channels of DRW1-1 & DRW1-2 with the Y-Cable (optional unit).



Step.3

DRW1, DRW1-1, DRW1-2 shares the same power source (refer to Cash Drawer Power Selection for adjustment, default at 12V).

**DRW1, DRW1-1, DRW1-2:** 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

DRW1-1	Open		Close	
	Write	To	Write	To
PB-6822RA, RB	700h	588h	000h	588h
	PB-6822RC	02h	SIO LDN06h's 90h	00h
DRW1-2		OPEN		CLOSE
PB-6822RA, RB	Write	To	Write	To
	N/A	N/A	N/A	N/A
PB-6822RC	Write	To	Write	To
	04h	SIO LDN 06h's 90h	00h	SIO LDN 06h's 90h



# SOFTWARE

This chapter provides the detailed information of driver utilities and BIOS settings for the system.

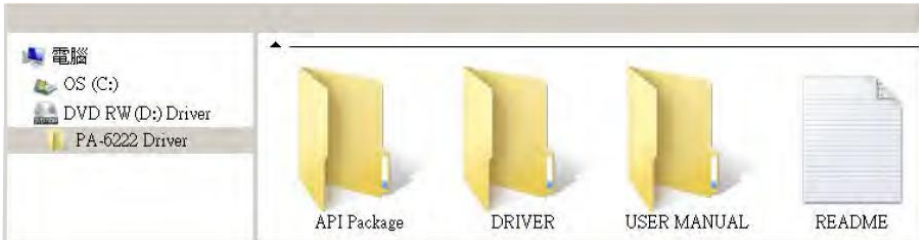
Sections included:

- Driver
  - Intel® Chipset Device Software Installation Utility
  - VGA Driver Utility
  - LAN Driver Utility
  - Sound Driver Utility
  - Touchscreen Driver Utility
  - For Intel Trusted Execution Engine Interface
- Embedded Peripheral Device
  - VFD
  - MSR
- API
- BIOS Operation
  - Setup
  - Watchdog Timer Configuration
  - Update Procedure
  - System Resource Map

## 3-1. DRIVER

### 3-1-1. Introduction

Enclosed with the PA-6222 Series package is our driver utilities, which comes in a DVD-ROM format.



#### 3-1-1-1. API Package Folder

Refer to the "3-3 API" for the details.

```
+--->\DEMO PROJECT\  
+--->\ProxAPI standard\  
+--->\Document\  

```

#### 3-1-1-2. Driver Folder

1. The sequence of setup is "Main Chip -> VGA -> LAN -> SOUND -> TXE -> TOUCH[Device folder]"

2. You will be prompted to reboot when installation is complete.

```
+--->\Flash BIOS\AFUa.bat  
+--->\Plaform\  
+--->\Device\  

```

#### 3-1-1-3. User Manual Folder

\AdbeRdr930\_en\_US.exe (PDF File reader)

#### 3-1-1-4. README

The DRIVER DISC introduction

## **3-1-2. Intel® Chipset Device 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

### **3-1-2-2. Installation of Intel® Chipset Driver**

The utility pack is to be installed only for POSReady 7, Windows 8.1 and Windows 10 series, and it should be installed right after the OS installation. Please follow the steps below:

1. Connect the USB CD-ROM device to PA-6222 and insert the driver disk.
2. Enter the “Main Chip” folder where the Chipset 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-6222 for the changes to take effect.

### **3-1-3. VGA Driver Utility**

The VGA interface embedded with PA-6222 can support a wide range of display types. You can have dual displays via CRT & LVDS interfaces work simultaneously.

#### **3-1-3-1. Installation of VGA Driver**

To install the Graphics driver, follow the steps below:

1. Connect the USB-CD ROM device to PA-6222 and insert the driver disk.
2. Enter the “Graphics” 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-6222 for the changes to take effect.

### **3-1-4. LAN Driver Utility**

PA-6222 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. Installation of LAN Driver**

To install the LAN Driver, follow the steps below:

1. Connect the USB DVD-ROM device to PA-6222 and insert the driver disk.
2. Enter the “LAN Chip” 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-6222 for the changes to take effect.

**For more details on the Installation procedure, please refer to the Readme.txt file found on 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. Installation of Sound Driver**

To install the Sound Driver, follow the steps below:

1. Connect the USB DVD-ROM device to PA-6222 and insert the driver disk.
2. Enter the “Sound Codec” 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-6222 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.

#### **3-1-6-1. Installation of Touchscreen Driver**

To install the touchscreen driver, follow the steps below:

1. Connect the USB DVD-ROM device to PA-6222 and insert the driver disk.
2. Enter 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-6222 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.

#### **3-1-7-1. Installation of Fingerprint Driver**

To install the fingerprint driver, follow the steps below:

1. Connect the USB DVD-ROM device to PA-6222 and insert the driver disk.
2. Enter the “Device\Embedded 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-6222 for the changes to take effect.

### **3-1-8. RFID Module Driver Utility (Optional)**

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

#### **3-1-8-1. Installation of RFID Module Driver**

To install the RFID driver, follow the steps below:

1. Connect the USB DVD-ROM device to PA-6222 and insert the driver disk.
2. Enter the “Device\RFID” folder where the RFID Module driver is located.
3. Click **Autorun.exe** file for driver installation.
4. Select **Mifare Demo Software V1.5R8**.
5. Follow the on-screen instructions to complete the installation.
6. Once the installation is completed, shut down the system and restart PA-6222 for the changes to take effect.

### **3-1-9. 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.

#### **3-1-9-1. Installation of Wireless Driver**

To install the wireless driver, follow the steps below:

1. Connect the USB DVD-ROM device to PA-6222 and insert the driver disk.
2. Enter the “Device\WIFI module” folder where the wireless driver is located.
3. Click **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-6222 for the changes to take effect.

### **3-1-10. For Intel Trusted Execution Engine Interface**

#### **3-1-10-1. Introduction**

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.

#### **3-1-10-2. 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 CD ROM device.
2. (For POSReady 7 only) Enter the “Windows 7 KMDF” folder where the Chipset driver is located (depending on your OS platform).
3. (For POSReady 7 only) Click **Setup kmdf-1.11 exe** file for driver installation.
4. Enter the “Intel(R) TXE Package” folder where the Chipset driver is located (depending on your OS platform).
5. Click **Setup TXE.exe** file for driver installation.

## 3-2. EMBEDDED PERIPHERAL DEVICES

Command lists and driver installation guide for peripheral devices of the system - VFD and MSR – are explicitly included in this section.

### 3-2-1. VFD: MB-4103 (RS-232)

#### 3-2-1-1. Command 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	-

##### 1. OPOS VFD Service Object and Method Relations

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



### 3-2-1-2. OPOS Driver

The **MB4000\_OposSetup.exe** program sets up the registry information and example program of VFD for OPOS program uses.

#### 1. Installation

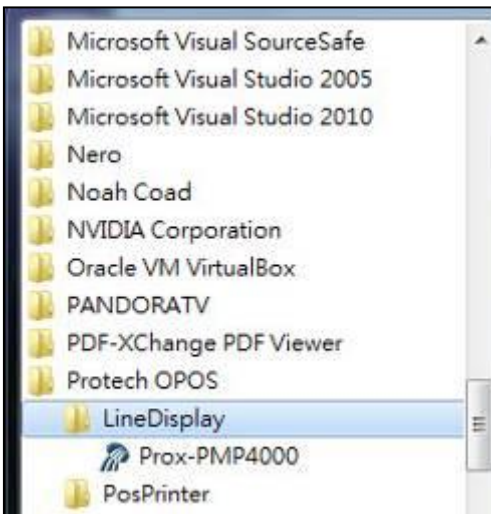
Below steps guide you to install the **MB4000\_OposSetup** program.

- Run the **MB4000\_OposSetup** setup file
- This setup also installs the **Prox-PMP4000** program.
- Follow the wizard instructions to complete the installation.

#### 2. Launching Program

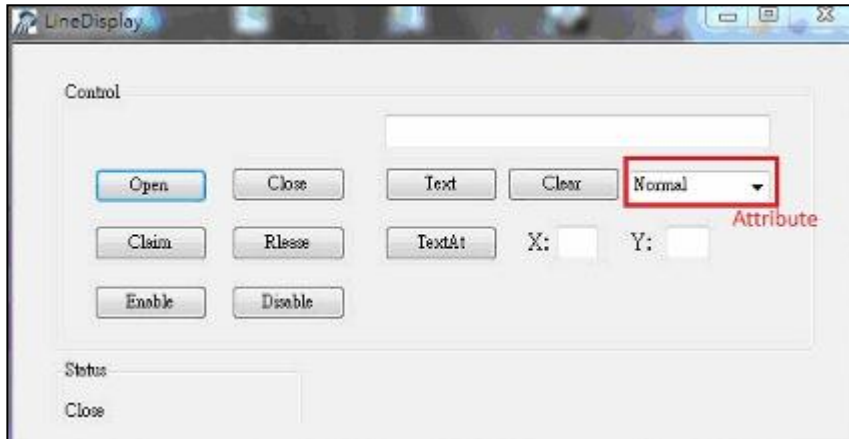
Below steps guide you to load the **Prox-PMP4000** program.

- Click *LineDisplay* folder from the path *Start/Programs/Protech OPOS*.
- Click **Prox-PMP4000** to launch the program.



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

Main screen buttons:



Button/Item	Description
Text	Display text at the current cursor position.
TextAt	Display the string of characters at the specified “y” and “x”.
Clear	Clear the current window by displaying
Attribute	Normal, blink, reverse, blink, reverse

## 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
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

	Category Type	Name	Mutability	OPOS APG Version	VFD .SO
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
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

	<b>Category Type</b>	<b>Name</b>	<b>Mutability</b>	<b>OPOS APG Version</b>	<b>VFD .SO</b>
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

### **3-2-2. MSR: MB-3102 (PS/2)**

#### **3-2-2-1. OPOS Driver**

The **MB301X\_OposSetup.exe** program sets up the registry information of MSR reader for OPOS program uses.

##### 1. Installation

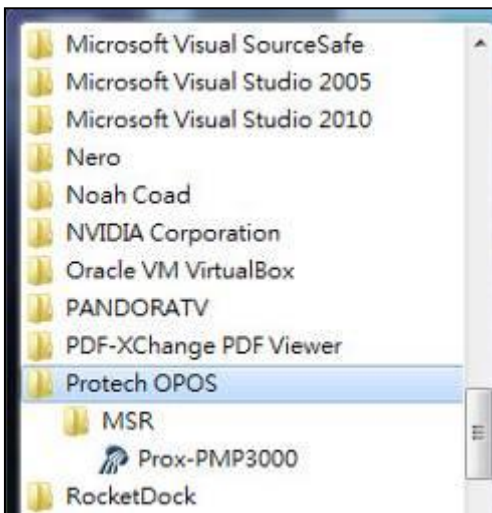
Below steps guide you to install the **MB301X\_OposSetup** program.

- Run the **OPOSMSR\_Setup.exe** setup file.
- This setup also installs the Prox-PMP3000 program.
- Follow the wizard instructions to complete the installation.

##### 2. Launching Program

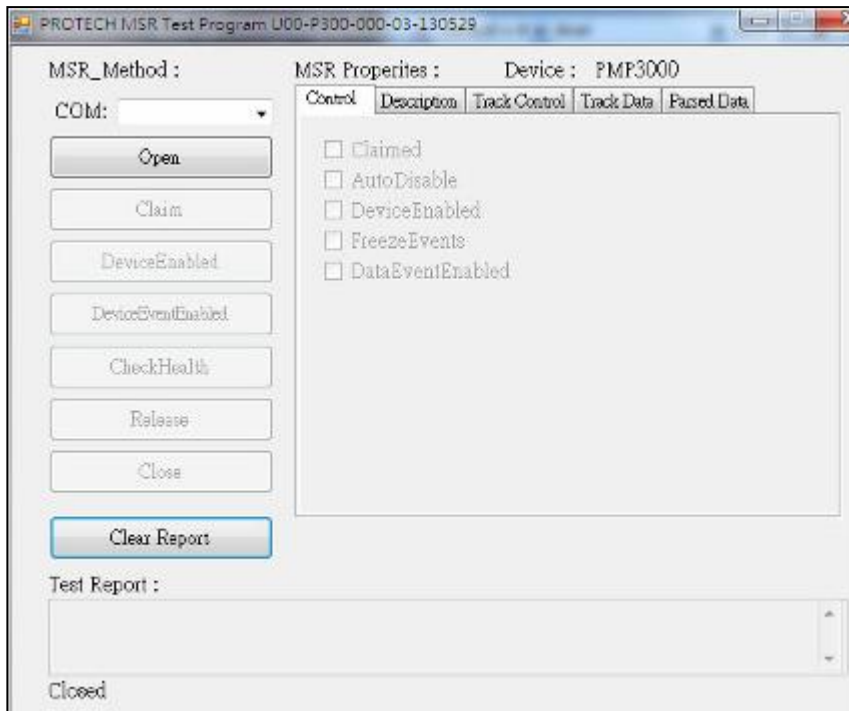
Below steps guide you load the Prox-PMP3000 program.

- Click **MSR** folder from the path *Start/Programs/Protech OPOS*.
- Click **Prox-PMP3000** to launch the program.



3. Configuration of **Prox-PMP3000** program

a.) Main screen & Control tab items:



Button/Item	Description
COM	(dropdown list) To set COM port number (only for USRT/USB interface).
AutoDisable	(check box) Set auto-disable
FreezeEvents	(check box) Set freeze events

b.) Description tab: S.O and C.O information

Control	Description	Track Control	Track Data	Parsed Data
DeviceControlDescription :				
OPOS MSR Control 1.6.000 [Public, by CRM/RCS-Dayton]				
DeviceControlVersion :				
1006000				
DeviceServiceDescription :				
PROTECH OPOS MSR Service Object				
DeviceServiceVersion :				
1007550				
PhysicalDeviceDescription :				
PROTECH OPOS MSR				
PhysicalDeviceName :				
OPOS.PMP3000MSRSO				

c.) Track Control tab items

Control	Description	Track Control	Track Data	Parsed Data
<input checked="" type="checkbox"/>	DecodeData	ErrorReportingType :		
<input checked="" type="checkbox"/>	ParseDecodeData	CARD		
<input type="checkbox"/>	TransmitSentinels	TracksToRead :		
		Tracks123		

Button/Item	Description
DecodeData	Set decode data properties applicable).
ParseDecodeData	Set parse decode data properties
TransmitSentinels	Set transmit-sentinels properties
ErrorReporting Type	Card, track
TracksToRead	Track1, track2, track3, tracks12, tracks13, tracks14, tracks23, tracks24, tracks34, tracks123, tracks124, tracks134, tracks234, tracks1234 (Tracks4 is not applicable).



d.) Track Data tab items

The screenshot shows a software window with four tabs: 'Control', 'Description', 'Track Control', and 'Track Data'. The 'Track Data' tab is active. It contains a list of input fields for three tracks:

- Track1Data :
- Track1DiscretionaryData :
- Track2Data :
- Track2DiscretionaryData :
- Track3Data :
- Track4Data :

Button/Item	Description
TracksData	(Row) Display data of all tracks (Track4 is not applicable).

e.) Parsed Data tab items

The screenshot shows a software window with four tabs: 'Control', 'Description', 'Track Control', 'Track Data', and 'Parsed Data'. The 'Parsed Data' tab is active. It contains a list of input fields for personal information:

- AccountNumber :
- ExpirationDate :
- FirstName :
- MiddleInitial :
- Surname :
- Title :
- Suffix :
- ServiceCode :

Button/Item	Description
Parsed Data	Display special properties.

4. MB301X type (RS232/PS2)

Key Name	Type	Default Value	Note
default	string	PMP3000	OPOS S.O 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
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

	Category Type	Name	Mutability	OPOS APG Version	VFD .SO
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

**3-2-3. MSR: GIGA-TMS MJR243R (RS-232)****3-2-3-1. Command 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	Devive Name for CO open
FileName	(NULL)	(reserved)
HardwareProvider	0	(reserved)
Model	MJR243	Device model name
Parity	None	Parity for the communication port
Port	COM4	Comport
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
ServiceCode	○	Read Only
Suffix	○	Read Only
Surname	○	Read Only
Title	○	Read Only
Track1Data	○	Read Only
Track1DiscretionaryData	○	Read Only

<b>Method</b>	<b>Status of support by the driver</b>	<b>Notes</b>
Track2Data	○	Read Only
Track2DiscretionaryData	○	Read Only
Track3Data	○	Read Only
TracksToRead	○	R/W
TransmitSentinels	○	R/W

### 3-2-3-2. OPOS MSR Register

The **OPOS MSR Register** program sets up the registry information of MSRHK reader for OPOS program uses.

#### 1. Installation

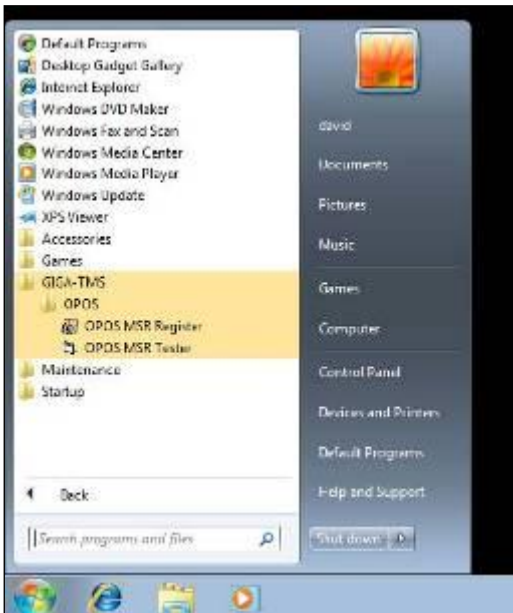
Below steps guide you to install the **OPOS MSR Register** program.

- Insert the setup CD
- Run the setup file **OPOSMSR\_Setup.exe** located in the Software folder of CD.
- This setup also installs the **OPOS MSR Tester** program.
- Follow the wizard instructions to complete the installation.

#### 2. Launching Program

Below steps guide you to load the **OPOS MSR Register** program.

- Click **OPOS** folder from the path *Start/Programs/GIGA-TMS*.
- Click **OPOS MSR Register** to launch the program.



3. Configuration of **OPOS MSR Register** program

## a.) Main screen buttons/items:



Button/Item	Description
Control Object	(Check box) Register the OPOSMSR.ocx common control object driver. This needs to be checked to run the OPOS MSR Tester program.
Service Object	(Left pane) The Service Object driver types. So far only four types are supported. Each type support specific MSR readers. For more details, please refer to the section <i>OPOS MSR Service Object and Method Relations</i> .
Service Object	(Right pane) The registered MSR with specified device name.
Reg→	Create a new device name for selected MSR.
← Unreg	Remove selected device name from registry.
Exit	End the program.

## b.) Follow the steps below to register the MSRHK OPOS information.

Step 1: Select an item in **Service Object** List box (left pane). Make sure the correct item is selected.

Step 2: Click **Reg→** button

Step 3: In the **OPOS MSR Setting** screen, enter the device name and click **OK**.



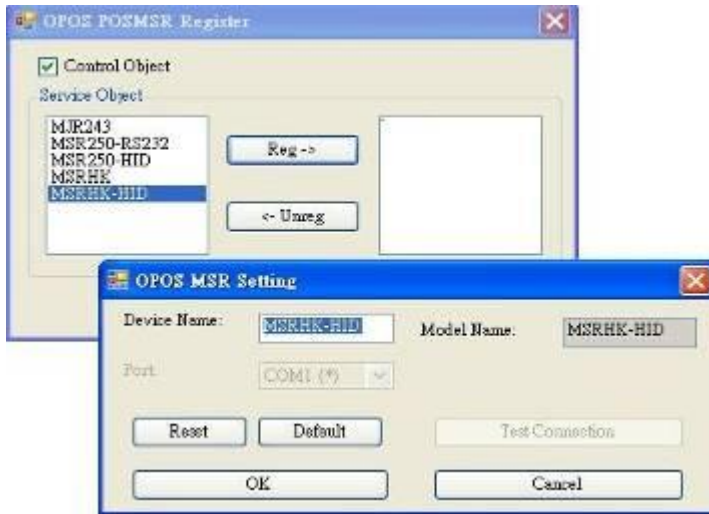
c.) Example 1. MAGTEK USB HID



d.) Example 2. PROMAG MSR/MJR PART- NO, Keyboard mode.



e.) Example 3. PROGRAM MSR PART- NO, HID mode.



If your system doesn't have any other common control driver, then click Control Object check box.

**Note:** To run the **OPOPS MSR Tester** program, the Control Object must be checked.

#### 4. MJR243 type

Key Name	Type	Default Value	Note
CapISO	string	1	Capability for reading ISO track data
CapJISOne	string	1	(reserved)
CapJISTwo	string	1	(reserved)
CapTransmitSentinels	string	1	Capability for reading Transmit Sentinels
Debug	string	0	Enable the tracing, and create a log file
Description	string	GIGATMS MSR POS	Description for SO driver
DeviceName	string	MJR243	Devive Name for CO open
FileName	string	(NULL)	(reserved)
HardwareProvider	string	0	(reserved)
Model	string	MJR243	Device model name
Parity	string	None	Parity for the communication port
Port	string	COM4	Comport Number
Protocol	string	Hardware	Communication Control

Key Name	Type	Default Value	Note
Baudrate	string	19200	RS232 baudrate

## 5. OPOS APIs support list

	Category Type	Name	Mutability	OPOS APG Version	MSR .SO
Properties	common bool	AutoDisable	R/W	1.2	Not Applicable
Properties	common long	BinaryConversion	R/W	1.2	Not Applicable
Properties	common bool	CapCompare FirmwareVersion	Read only	1.9	Not Applicable
Properties	common long	CapPowerReporting	Read only	1.3	Not Applicable
Properties	common bool	CapStatisticsReporting	Read only	1.8	Not Applicable
Properties	common bool	CapUpdateFirmware	Read only	1.9	Not Applicable
Properties	common bool	CapUpdateStatistics	Read only	1.8	Not Applicable
Properties	common string	CheckHealthText	Read only	1.0	Not Applicable
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	Supported
Properties	common string	ControlObject Description	Read only	1.0	Supported
Properties	common long	ControlObjectVersion	Read only	1.0	Supported
Properties	common string	ServiceObject Description	Read only	1.0	Supported
Properties	common long	ServiceObjectVersion	Read only	1.0	Supported
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	Not Applicable
Properties	specific bool	CapJISTwo	Read only	1.0	Not Applicable
Properties	specific bool	CapTransmit Sentinels	Read only	1.5	Supported
Properties	specific long	CapWriteTracks	Read only	1.1	Not Applicable

	Category Type	Name	Mutability	OPOS APG Version	MSR .SO
Properties	specific string	AccountNumber	Read only	1.0	Supported
Properties	specific bool	DecodeData	R/W	1.0	Supported
Properties	specific long	EncodingMaxLength	Read only	1.1	Not Applicable
Properties	specific long	ErrorReportType	R/W	1.2	Not Applicable
Properties	specific string	ExpirationDate	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 bool	ParseDecodeData	R/W	1.0	Supported
Properties	specific string	ServiceCode	Read only	1.0	Supported
Properties	specific string	Suffix	Read only	1.0	Supported
Properties	specific string	Surname	Read only	1.0	Supported
Properties	specific string	Title	Read only	1.0	Supported
Properties	specific binary	Track1Data	Read only	1.0	Supported
Properties	specific binary	Track1 DiscretionaryData	Read only	1.0	Supported
Properties	specific binary	Track2Data	Read only	1.0	Supported
Properties	specific binary	Track2 DiscretionaryData	-	1.0	Supported
Properties	specific binary	Track3Data	Read only	1.0	Supported
Properties	specific binary	Track4Data	Read only	1.5	Not Applicable
Properties	specific long	TracksToRead	R/W	1	Supported
Properties	specific long	TracksToWrite	R/W	1.1	Not Applicable
Properties	specific bool	TransmitSentinels	R/W	1.5	Supported
Methods	common	Open	-	1	Supported
Methods	common	Close	-	1	Supported
Methods	common	Claim	-	1	Supported
Methods	common	ClaimDevice	-	1.5	Supported
Methods	common	Release	-	1	Supported
Methods	common	ReleaseDevice	-	1.5	Supported
Methods	common	CheckHealth	-	1	Not Applicable
Methods	common	ClearInput	-	1	Supported
Methods	common	ClearInput Properties	-	1.1	Supported
Methods	common	ClearOutput	-	1	Not Applicable
Methods	common	DirectIO	-	1	Not Applicable
Methods	common	Compare FirmwareVersion	-	1.9	Not Applicable
Methods	common	ResetStatistics	-	1.8	Not Applicable
Methods	common	RetrieveStatistics	-	1.8	Not Applicable

	<b>Category Type</b>	<b>Name</b>	<b>Mutability</b>	<b>OPOS APG Version</b>	<b>MSR .SO</b>
Methods	common	UpdateFirmware	-	1.9	Not Applicable
Methods	common	UpdateStatistics	-	1.8	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

### 3-2-3-3. OPOS MSR Tester

The **OPOS MSR Tester** program is used to get the track data of MSRHK reader via the OPOS driver. Before running the program, make sure the device name registry information for MSRHK reader has been already created by OPOS MSR Register program.

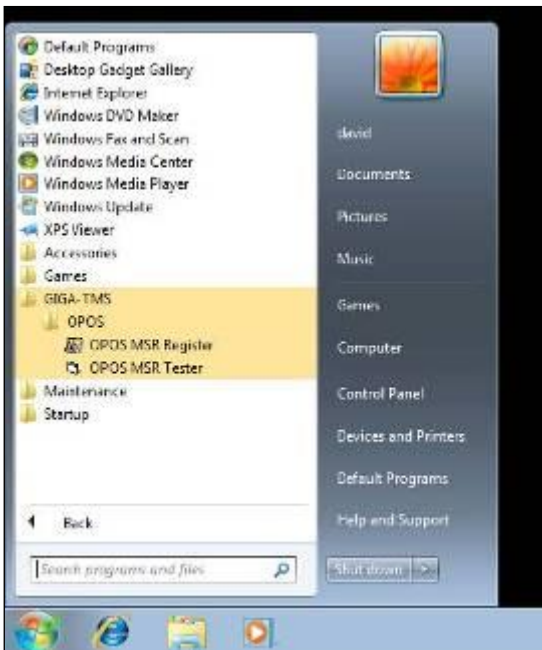
#### 1. Installation

The installation of **OPOS MSR Tester** program goes together with OPOS MSR Register program.

#### 2. Launching Program

Below steps guide you to load the **OPOS MSR Tester** program.

- Click *OPOS* folder from the path *Start\Programs\GIGA-TMS*.
- Click **OPOS MSR Tester** to launch the program.



## 3. Configuration for OPOS MSR Tester Program

## a.) Main screen buttons/items:

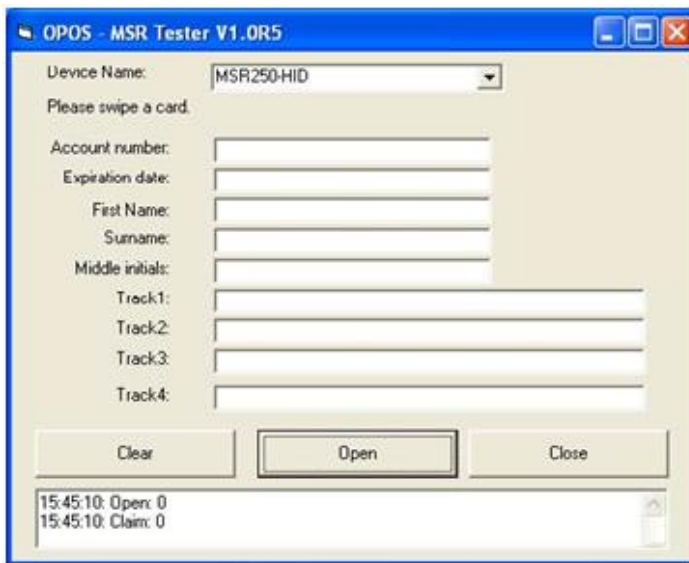
Button/Item	Description
Device Name	(Combo box) Enter the device name that to be loaded to the program.
Track Data	(Text boxes) Show the raw and parsed track data.
Clear	(Button) Clear all the track data in the text boxes.
Open	(Button) Open the OPOS driver and ready to get track data.
Close	(Button) Close the OPOS driver.
Message	(Text box) Display the result message of running the OPOS driver.

## b.) To start using OPOS driver to get track data, follow the steps below.

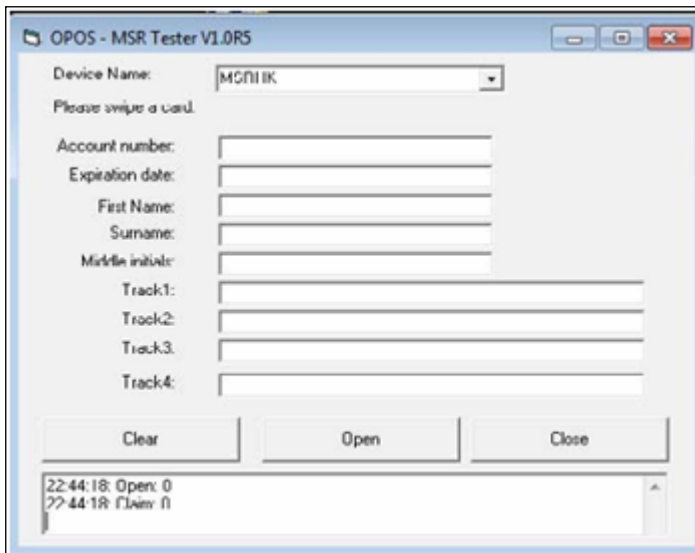
Step 1: Entering the **Device Name**.Step 2: Clicking **Open** button.

Step 3: Swiping card to get track data.

c.) Example 1. MAGTEK USB HID.

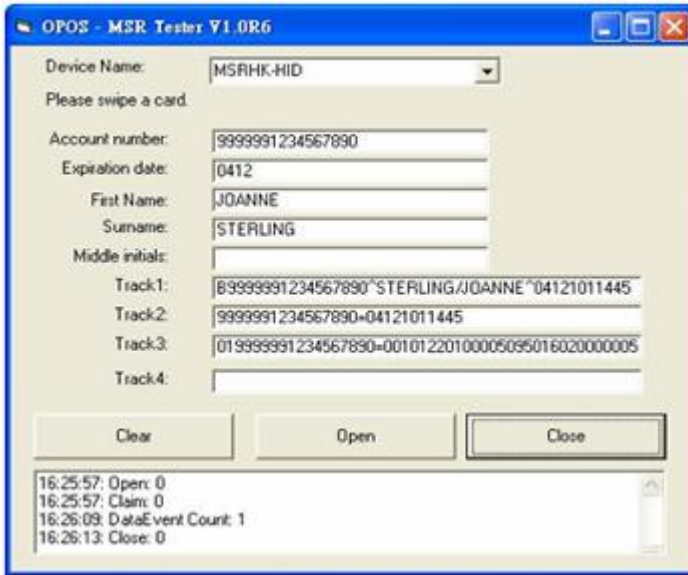


d.) Example 2. PROMAG MSR/MJR PART- NO, Keyboard mode





e.) Example 3. PROMAG MSR PART- NO, HID mode



### 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 Digital\_Set Lib "Digital.dll"(ByVal hex\_value As Short) As Long

Declare Function Digital\_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

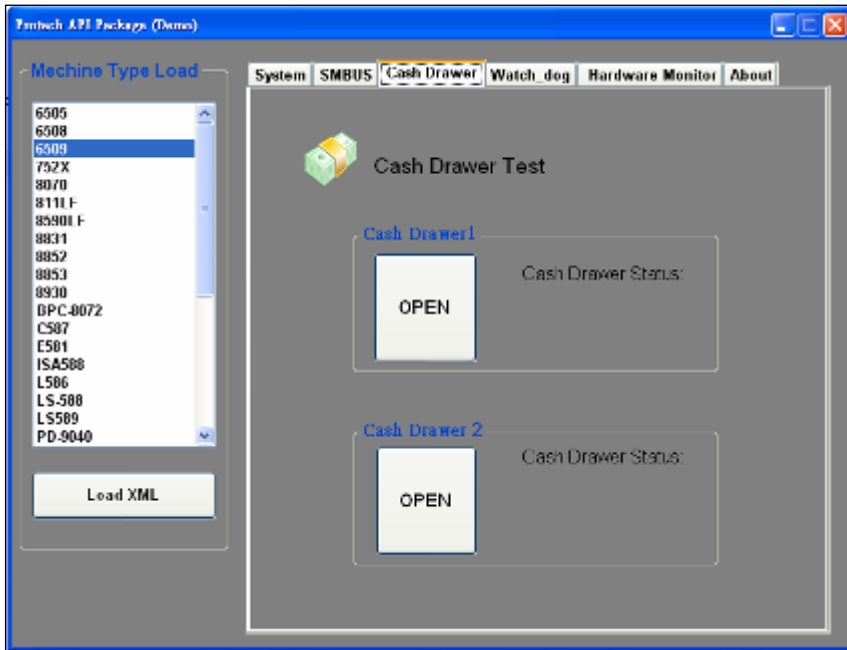
4. VB 6 extern function:

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	<p>Cash drawer status will be displayed after <b>OPEN</b> is tapped.</p> <ul style="list-style-type: none"> <li>Drawer is closed as shown:           <div data-bbox="798 1055 1011 1164" style="border: 1px solid black; padding: 5px; margin: 5px 0;">             Cash Drawer Status:  <b>Close</b> </div> </li> <li>Drawer is open as shown:           <div data-bbox="798 1177 1011 1286" style="border: 1px solid black; padding: 5px; margin: 5px 0;">             Cash Drawer Status:  <b>Open</b> </div> </li> </ul>

**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.

<b>API Function</b>		<b>DLL</b>	
<b>Cash Drawer</b>	CashDrawerOpen	multilangXML.dll	CashDrawer.dll
	GetCashDrawerStatus		



**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"
```

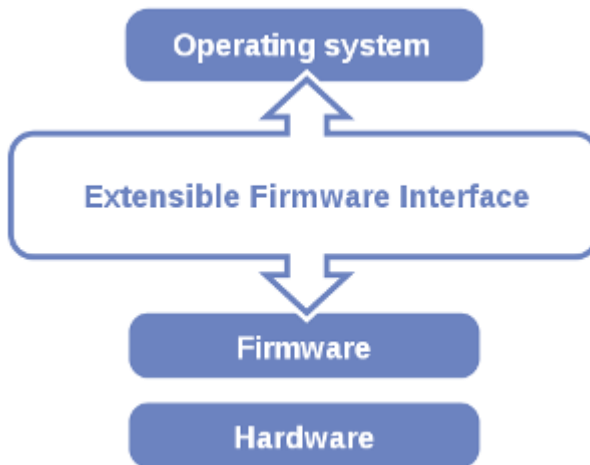
```
Endif
```

## **3-4. BIOS Operation**

### **3-4-1. Introduction**

The board PA-6222 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 provide standard environment for booting an operating system and running pre-boot applications. Following illustration shows Extensible Firmware Interface's position in the software stack.



EFI BIOS provides an user interface allow users the ability to modify hardware configuration, e.g. change system date and time, enable or disable a system component, decide bootable device priorities, setup personal password, etc., which is convenient for modifications and customization of the computer system and allows technicians another method for finding solutions if hardware has any problems.

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. The settings are shown below.

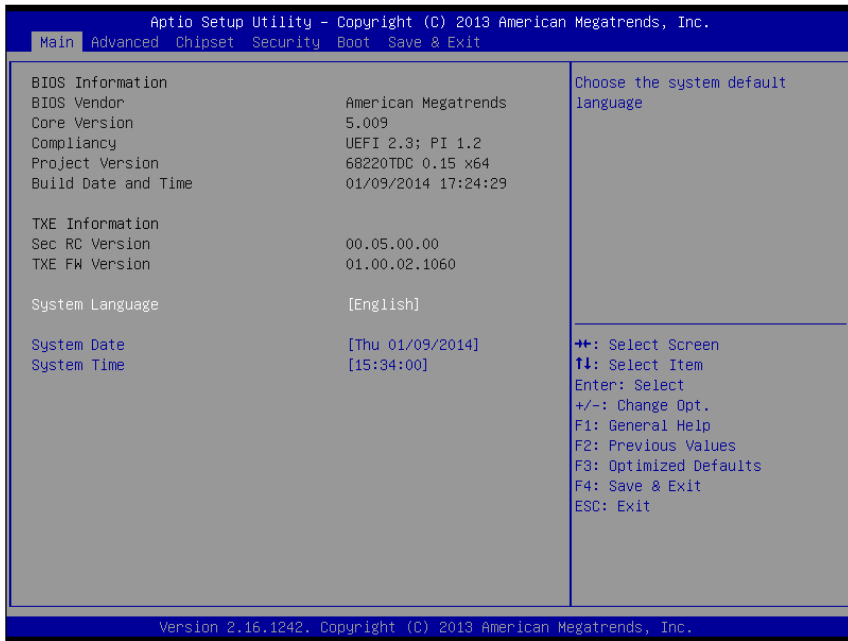
### 3-4-2. Entering Setup

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

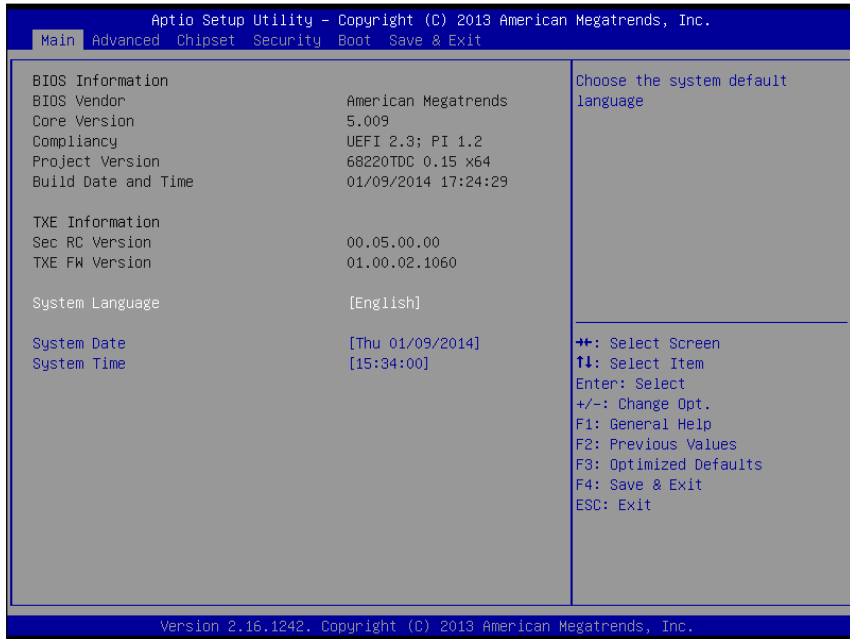
As long as this message is present on the screen you may press the <Del> key (the one that shares the decimal point at the bottom of the number keypad) to access the Setup program. In a moment, the main menu of the Aptio Setup Utility will appear on the screen:



#### BIOS setup program initial screen

You may move the cursor by up/down keys to highlight the individual menu items. As you highlight each item, a brief description of the highlighted selection will appear at the bottom of the screen.

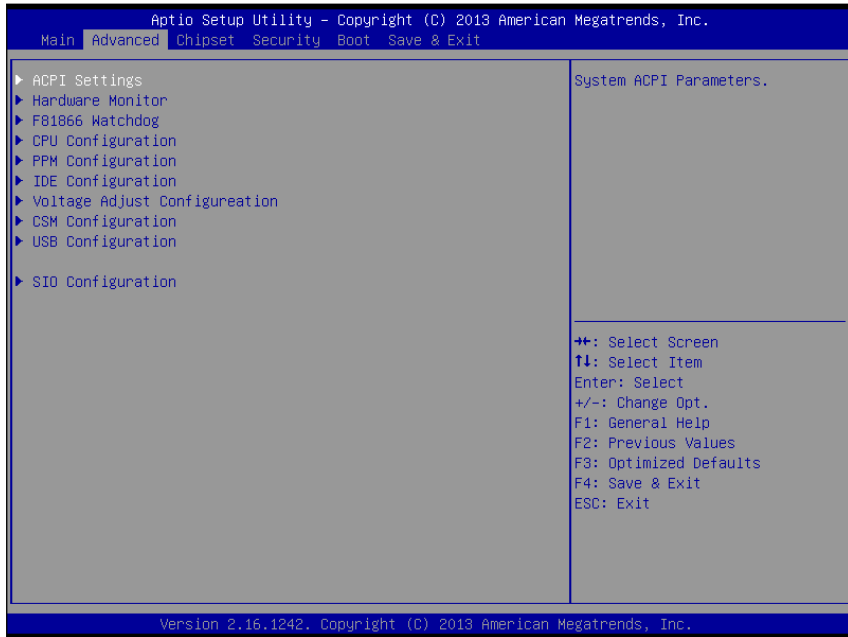
## 3-4-3. Main



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 Time	No changeable options	Displays the date of current BIOS version.
Sec RC Version	No changeable options	Displays the current Sec RC version.
TXE Firmware Version	No changeable options	Displays the current TXE Version
System Language	English	BIOS Setup language.
System Date	Month, day, year	Specifies the current date.
System Time	Hour, minute, second	Specifies the current time.

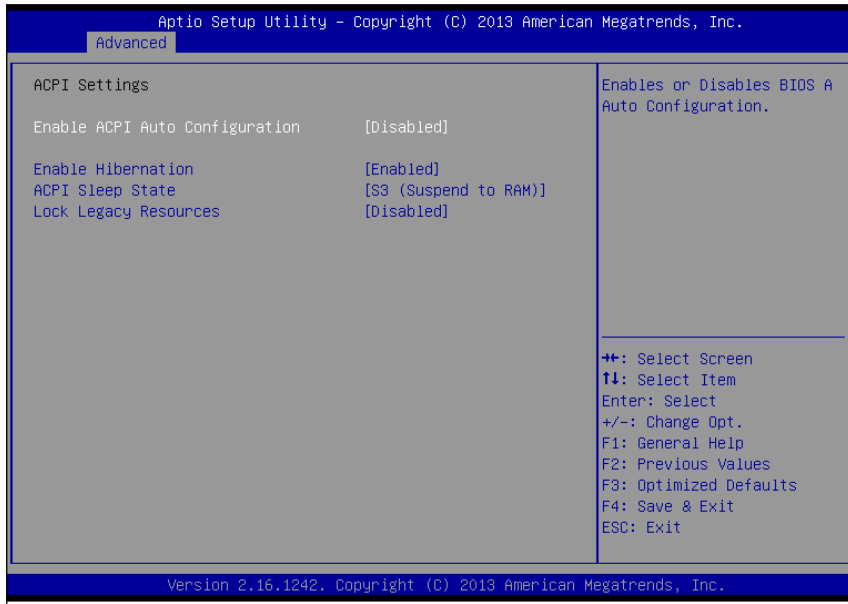
## 3-4-4. Advanced



Advanced screen

BIOS Setting	Options	Description/Purpose
ACPI Settings	Sub-Menu	System ACPI Parameters.
Hardware Monitor	Sub-Menu	Monitor hardware status
F81866 Watchdog	Sub-Menu	F81866 Watchdog Parameters.
CPU Configuration	Sub-Menu	CPU Configuration Parameters.
PPM Configuration	Sub-Menu	CPU power management parameters.
IDE Configuration	Sub-Menu	SATA Configuration Parameters.
Voltage Adjust Configuration	Sub-Menu	Voltage Adjust settings.
CSM Configuration	Sub-Menu	Configure Option ROM execution, boot options filters, etc.
USB Configuration	Sub-Menu	USB Configuration Parameters.
SIO Configuration	Sub-Menu	SIO Configuration Parameters.

## 3-4-4-1. ACPI Settings

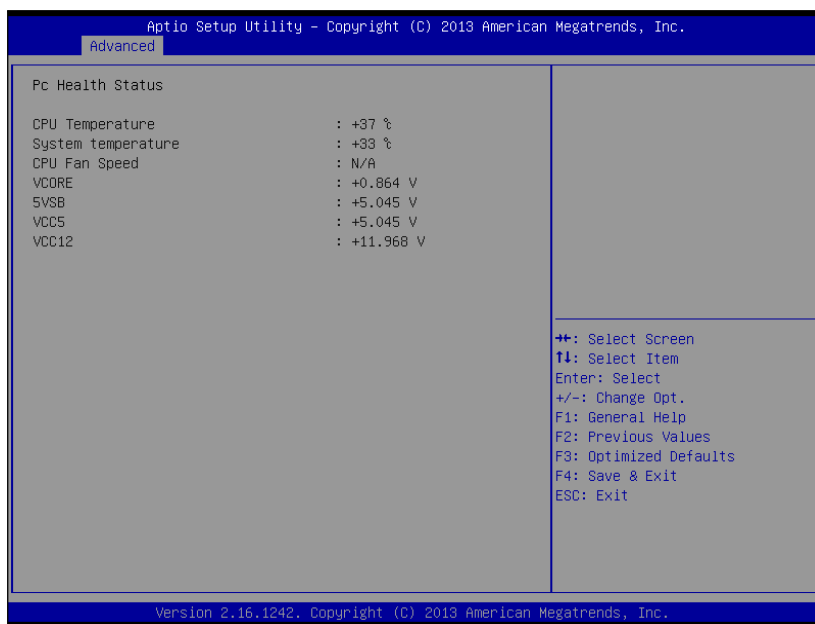


ACPI Settings screen

BIOS Setting	Options	Description/Purpose
Enable ACPI Auto Configuration	- Disabled - Enabled	Enables or Disables ACPI feature.
Enable Hibernation	- Disabled - Enabled	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
ACPI Sleep State	- Suspend Disabled - S3 Only (Suspend to RAM)	Specifies the ACPI sleep state. <ul style="list-style-type: none"> <li>▪ <b>Suspend Disabled</b> disables ACPI sleep feature.</li> <li>▪ <b>S3</b> allows the platform to enter suspend to RAM mode.</li> </ul>
Lock Legacy Resources.	- Disabled - Enabled	Enables or Disables Lock of Legacy Resources.



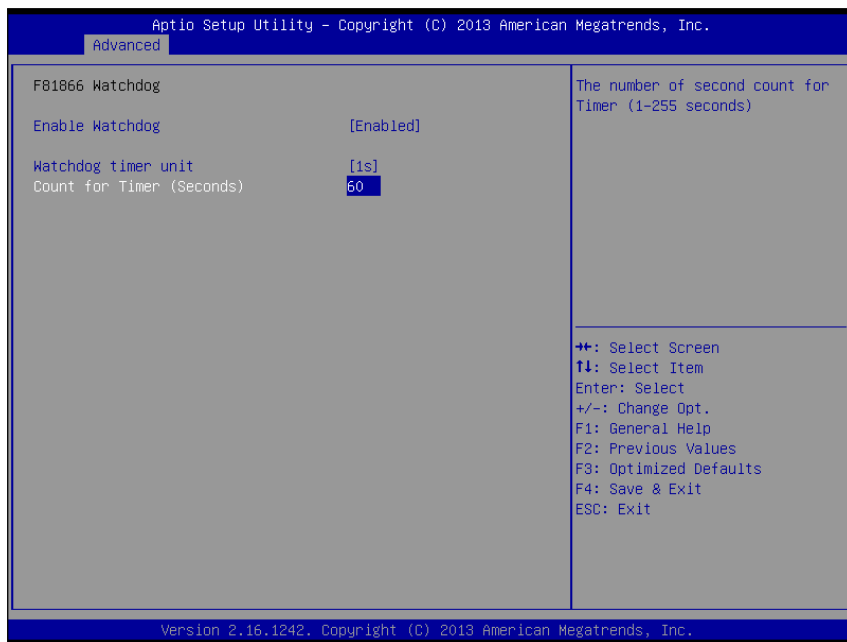
## 3-4-4-2. Hardware Monitor



Hardware Monitor screen

BIOS Setting	Options	Description/Purpose
CPU Temperature	No changeable options	Displays processor's temperature.
System Temperature	No changeable options	Displays system's temperature
CPU Fan Speed	No changeable options	Displays Fan's speed
VCORE	No changeable options	Displays voltage level of the +VCORE in supply.
5VSB	No changeable options	Displays voltage level of the +VSB5 in supply.
VCC5	No changeable options	Displays voltage level of the + VCC5 in supply.
VCC12	No changeable options	Displays voltage level of the + VCC12 in supply.

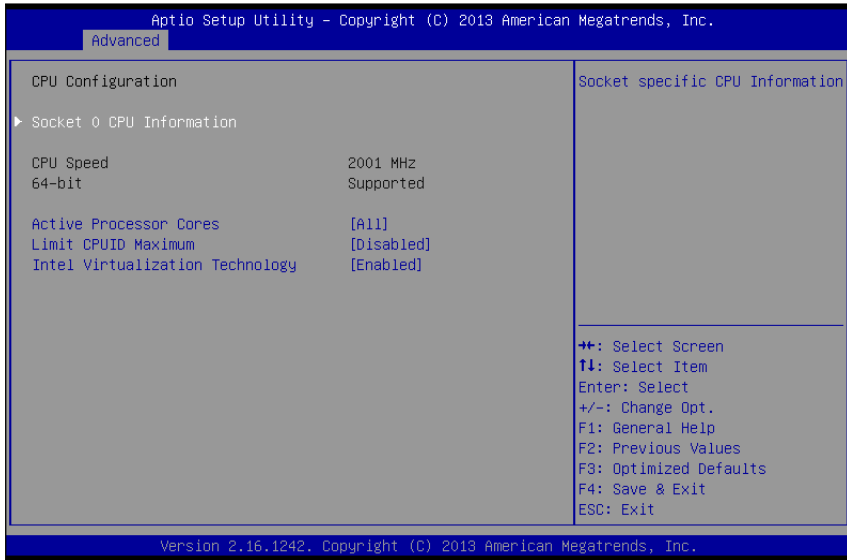
## 3-4-4-3. F81866 Watchdog



F81866 Watchdog screen

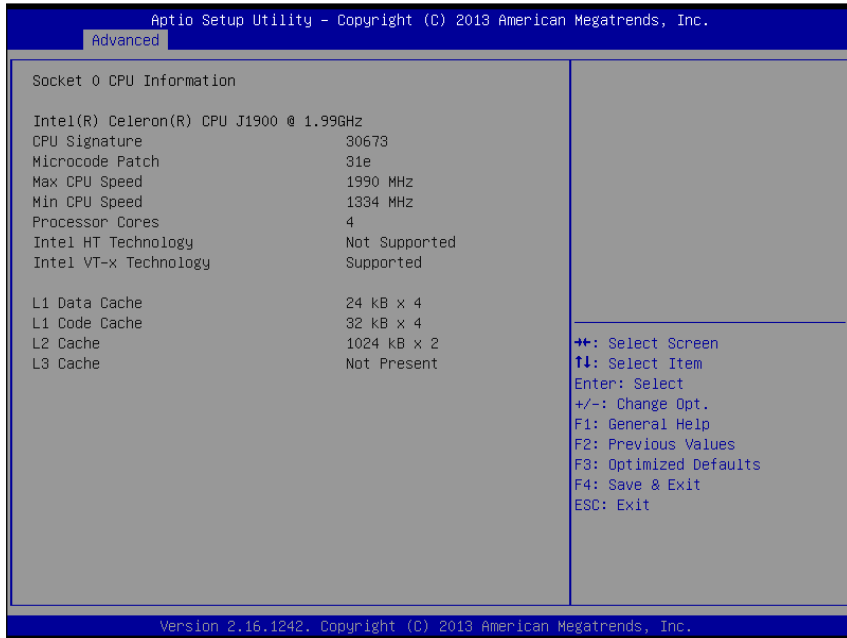
BIOS Setting	Options	Description/Purpose
Enable WatchDog	-Enabled -Disable	Enable/ Disable Watch dog timer.
Watchdog timer unit	-1s -60s	Select seconds or minutes
Count for Timer (Seconds)	Multiple options ranging from 1 to 255	Sets the desired value (seconds) for watchdog timer.

3-4-4-4. CPU Configuration



CPU Configuration screen

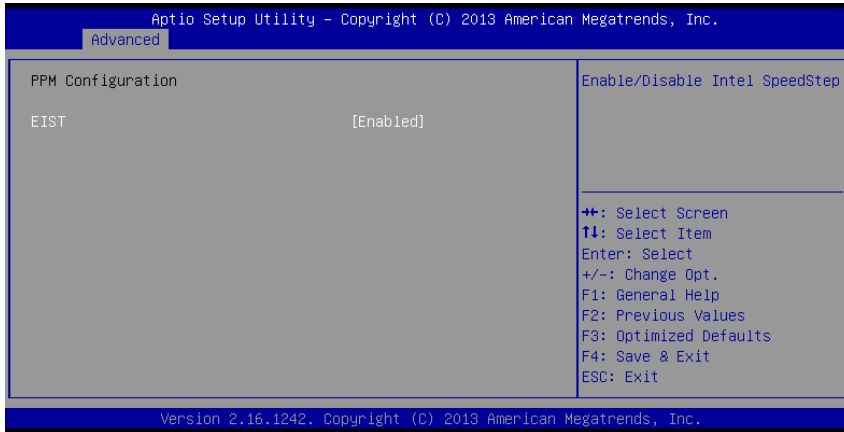
BIOS Setting	Options	Description/Purpose
CPU Signature	No changeable options	Reports the CPU Signature
Socket 0 CPU Information	Sub-Menu	Report CPU Information
CPU Speed	No changeable options	Reports the current CPU Speed
64-bit	No changeable options	Reports if 64-bit is supported by processor.
Active Processor Cores	- All - 1	Choose the number of cores to be enabled in current processor.
Limit CPUID Maximum	- Disabled - Enabled	Enables for legacy operating systems to boot processors with extended CPUID functions. Set disable for WinXP.
Intel Virtualization Technology	- Disabled - Enabled	When enabled, a VMM 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 number of physical cores in processor.
Intel HT Technology	No changeable options	Reports if Intel Hyper-Threading Technology is supported by processor
Intel VT-x Technology	No changeable options	Reports if Intel VT-x Technology is supported by processor.
L1 Data Cache	No changeable options	Displays size of L1 Data Cache
L1 Code Cache	No changeable options	Displays size of L1 Code Cache
L2 Cache	No changeable options	Displays size of L2 Cache.
L3 Cache	No changeable options	Displays size of L3 Cache.

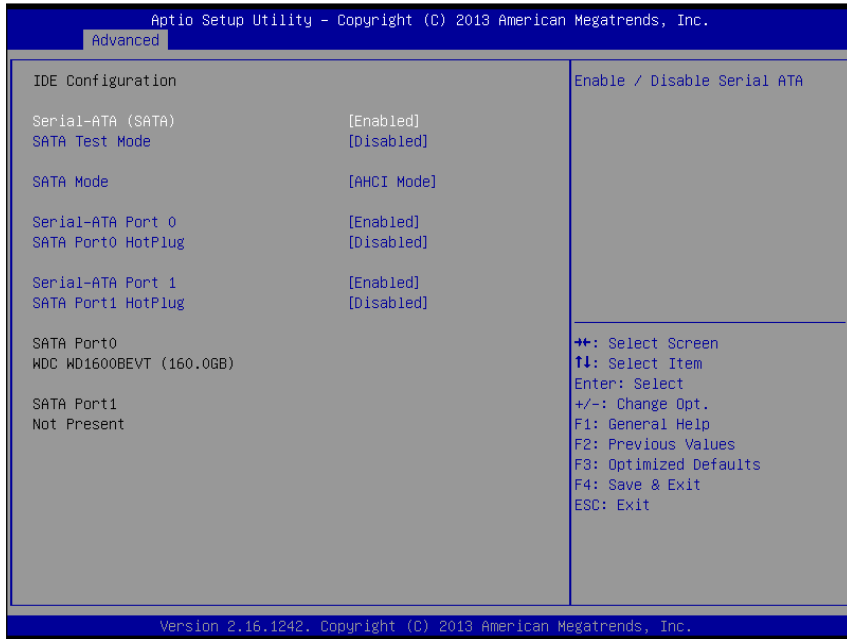
3-4-4-5. PPM Configuration



PPM Configuration screen

BIOS Setting	Options	Description/Purpose
EIST	-Disabled -Enabled	Enable/Disable Intel SpeedStep.

## 3-4-4-6. IDE Configuration

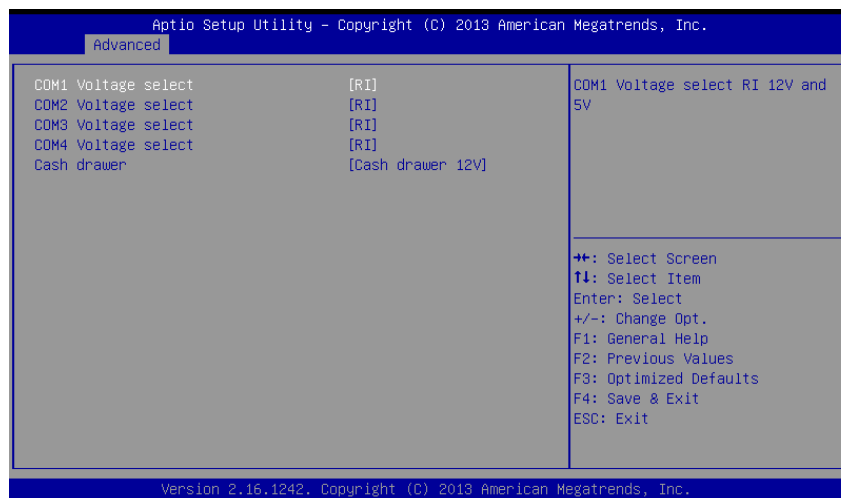


IDE Configuration screen

BIOS Setting	Options	Description/Purpose
Serial-ATA	- Disabled - Enabled	Enable or disable SATA Device.
SATA Mode	- IDE mode - AHCI mode	Configures SATA as following: IDE: Set SATA operation mode to IDE mode. AHCI: SATA works as AHCI (Advanced Host Controller Interface) mode for getting better performance.
Serial-ATA Port 0	- Disabled - Enabled	Enable or disable SATA port 0 Device.
SATA Port0 HotPlug	- Disabled - Enabled	Enable or disable SATA port 0 Device HotPlug
Serial-ATA Port 1	- Disabled - Enabled	Enable or disable SATA port 1 Device
SATA Port1 HotPlug	- Disabled - Enabled	Enable or disable SATA port 1 Device HotPlug
SATA Port 0	[drive]	Displays the drive installed on this SATA port

<b>BIOS Setting</b>	<b>Options</b>	<b>Description/Purpose</b>
		0. Shows [Empty] if no drive is installed.
SATA Port 1	[drive]	Displays the drive installed on this SATA port 1. Shows [Empty] if no drive is installed.

## 3-4-4-7. Voltage Adjust Configuration

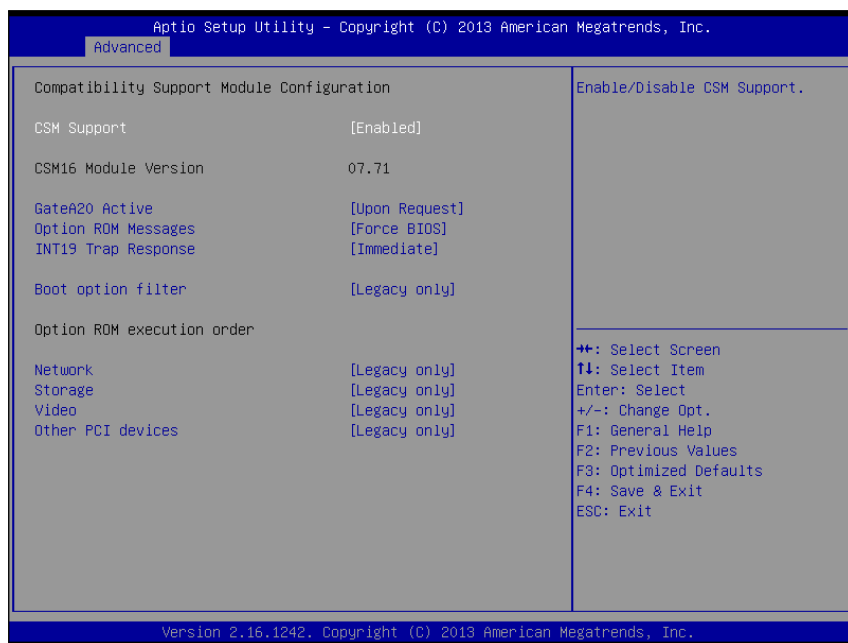


Voltage Adjust Configuration screen

BIOS Setting	Options	Description/Purpose
COM1 Voltage Select	- Disabled - RI -12V -5V	Select COM1 Port voltage.
COM2 Voltage Select	- Disabled - RI -12V -5V	Select COM2 Port voltage.
COM3 Voltage Select	- Disabled - RI -12V -5V	Select COM3 Port voltage.
COM4 Voltage Select	- Disabled - RI -12V -5V	Select COM4 Port voltage.
Cash drawer	- Cash drawer 12V - Cash drawer 24V	Select Cash drawer voltage.



## 3-4-4-8. CSM Configuration

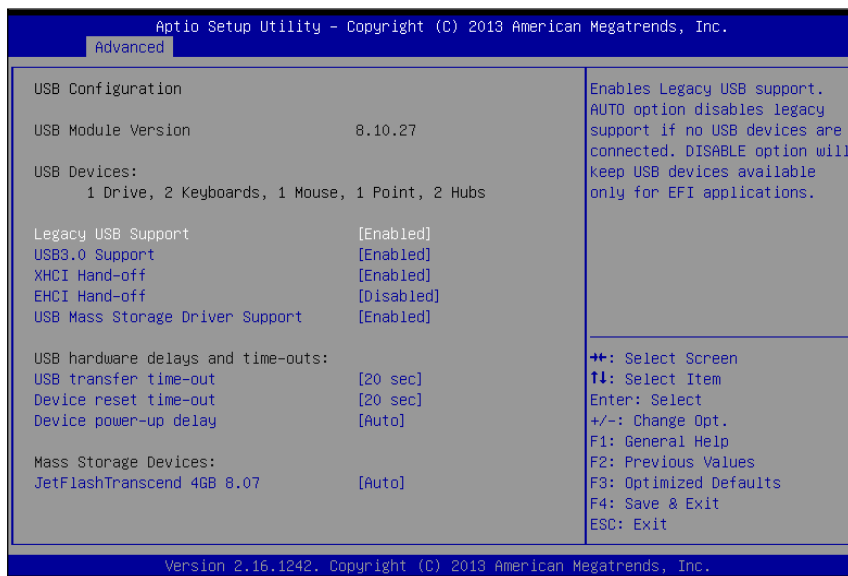


CSM Configuration screen

BIOS Setting	Options	Description/Purpose
CSM Support	- Disabled - Enabled	Disable or Enable CSM support
CSM16 Module Version	No changeable options	Displays the current CSM (Compatibility Support Module) version.
GateA20 Active	- Upon Request - Always	Select Gate A20 operation mode. <ul style="list-style-type: none"> <li>▪ <b>Upon Request:</b> GA20 can be disabled using BIOS services.</li> <li>▪ <b>Always:</b> Do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.</li> </ul>
Option ROM Messages	- Force BIOS - Keep Current	Set display mode for Option ROM messages.

BIOS Setting	Options	Description/Purpose
INT19 Trap Response	<ul style="list-style-type: none"> <li>- Immediately</li> <li>- Postponed</li> </ul>	BIOS reaction on INT19 trapping by Option ROM. <ul style="list-style-type: none"> <li>▪ <b>Immediate:</b> Execute the trap right away.</li> <li>▪ <b>Postponed:</b> Execute the trap during legacy boot.</li> </ul>
Boot option filter	<ul style="list-style-type: none"> <li>- UEFI and Legacy</li> <li>- Legacy only</li> <li>- UEFI only</li> </ul>	This option controls what kind of devices system can boot.
Network	<ul style="list-style-type: none"> <li>- Do not launch</li> <li>- UEFI only</li> <li>- Legacy only</li> <li>- Legacy first</li> <li>- UEFI first</li> </ul>	Controls the execution of UEFI or Legacy PXE
Storage	<ul style="list-style-type: none"> <li>- Do not launch</li> <li>- UEFI only</li> <li>- Legacy only</li> <li>- Legacy first</li> <li>- UEFI first</li> </ul>	Controls the execution of UEFI or Legacy Storage
Video	<ul style="list-style-type: none"> <li>- Do not launch</li> <li>- UEFI only</li> <li>- Legacy only</li> <li>- Legacy first</li> <li>- UEFI first</li> </ul>	Controls the execution of UEFI and Legacy Video.
Other PCI devices	<ul style="list-style-type: none"> <li>- UEFI first</li> <li>- Legacy only</li> </ul>	Select launch method for other PCI devices, such as NIC, mass storage or video card.

## 3-4-4-9. USB Configuration

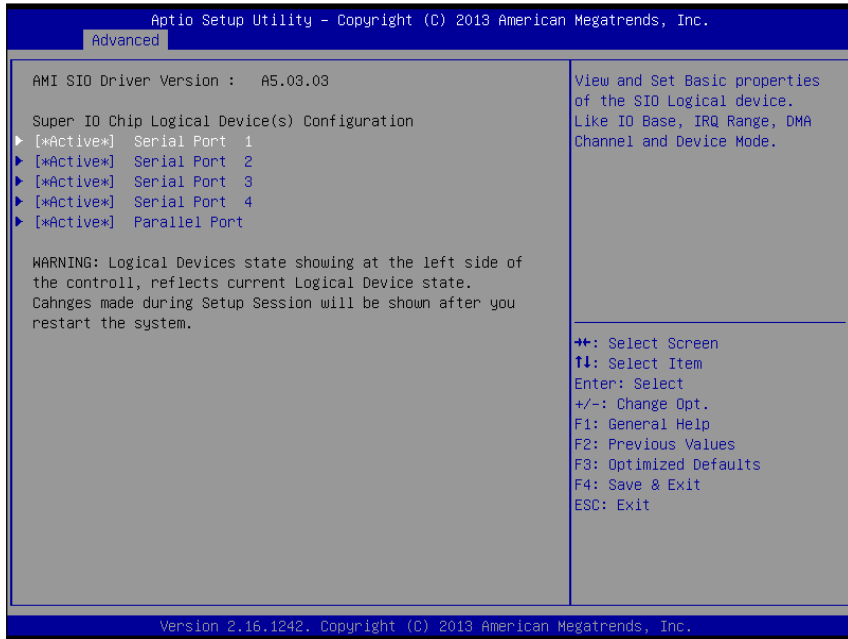


USB Configuration screen

BIOS Setting	Options	Description/Purpose
USB Devices	No changeable options	Displays number of available USB devices.
Legacy USB Support	- Disabled - Enabled - Auto	Enables support for legacy USB.
USB3.0 Support	- Disabled - Enabled	Enable/Disable USB3.0 (XHCI) Controller support.
XHCI Hand-off	- Disabled - Enabled	This is a workaround for OSes w/o XHCI hand-off support.
EHCI Hand-of	- Disabled - Enabled	This is a workaround for OSes w/o EHCI hand-off support.
USB Mass Storage Driver Support	- Disabled - Enabled	Enable/Disable USB mass storage driver support.
USB transfer time-out	1/5/10/20 sec	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10/20/30/40 sec	USB mass storage device Start Unit command time-out.

<b>BIOS Setting</b>	<b>Options</b>	<b>Description/Purpose</b>
Device power-up delay	<ul style="list-style-type: none"><li>- Auto</li><li>- Manual</li></ul>	Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.
Device power-up delay in seconds	Multiple options ranging from 0 to 40	Delay range is 1..40 seconds, in one second increments
Mass Storage Devices:	<ul style="list-style-type: none"><li>- Auto</li><li>- Floppy</li><li>- Force FDD</li><li>- Hard Disk</li><li>- CD-ROM</li></ul>	Display the device name and choose the device emulation type.

## 3-4-4-10. Super IO Configuration



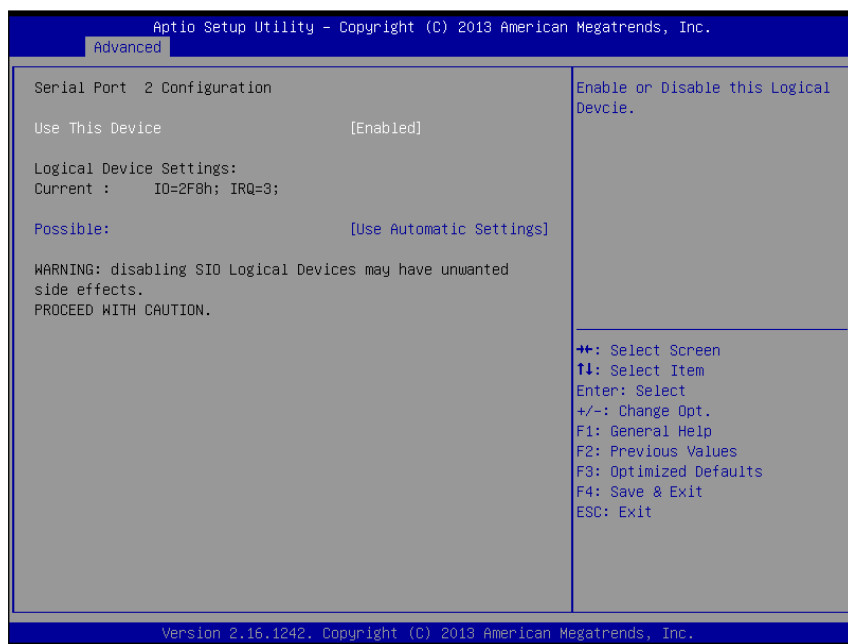
Super IO Configuration screen

BIOS Setting	Options	Description/Purpose
[*Active*] Serial Port 1	Sub-menu	Set Parameters for COM1
[*Active*] Serial Port 2	Sub-menu	Set Parameters for COM2
[*Active*] Serial Port 3	Sub-menu	Set Parameters for COM3
[*Active*] Serial Port 4	Sub-menu	Set Parameters for COM4
[*Active*] Parallel Port	Sub-menu	Set Parameters for LPT port.



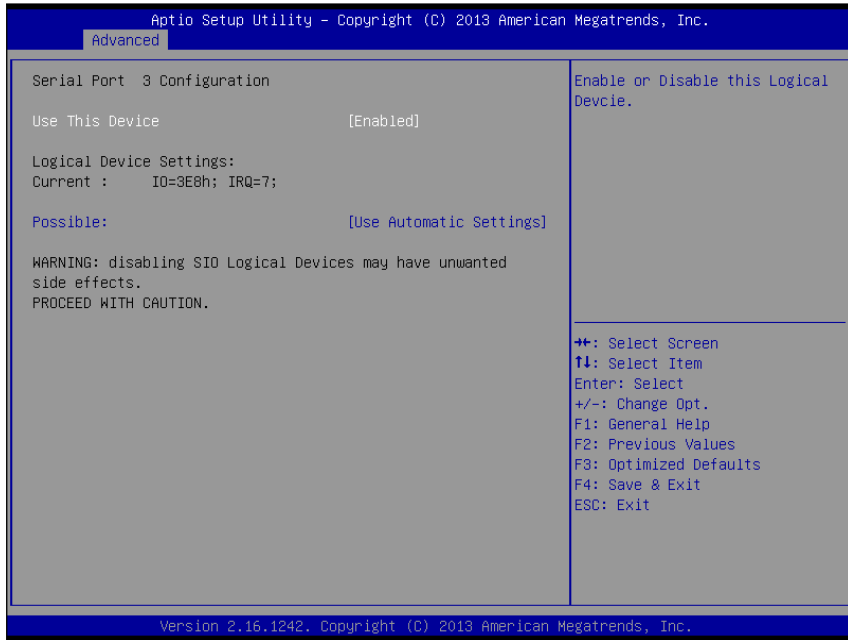
Serial Port 1 Configuration screen

BIOS Setting	Options	Description/ Purpose
Use This Device	- Disabled - Enabled	Enable or disable serial port 1.
Logical device setting Current	No changeable options	Displays current settings of serial port 1.
Possible:	- Use Automatic Settings - IO=3F8h; IRQ=4 DMA - IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12 DMA - IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12 DMA - IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12 DMA - IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12 DMA	Select IRQ and I/O resource for the serial port 1.



Serial Port 2 Configuration screen

BIOS Setting	Options	Description/ Purpose
Use This Device	- Disabled - Enabled	Enable or disable serial port 2.
Logical device setting Current	No changeable options	Displays current settings of serial port 2.
Possible:	- Use Automatic Settings - IO=2F8h; IRQ=3 DMA - IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12 DMA - IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12 DMA - IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12 DMA - IO=2E8h; IRQ=3,4,5,6,7,10,11,12 DMA	Select IRQ and I/O resource for the serial port 2



Serial Port 3 Configuration screen

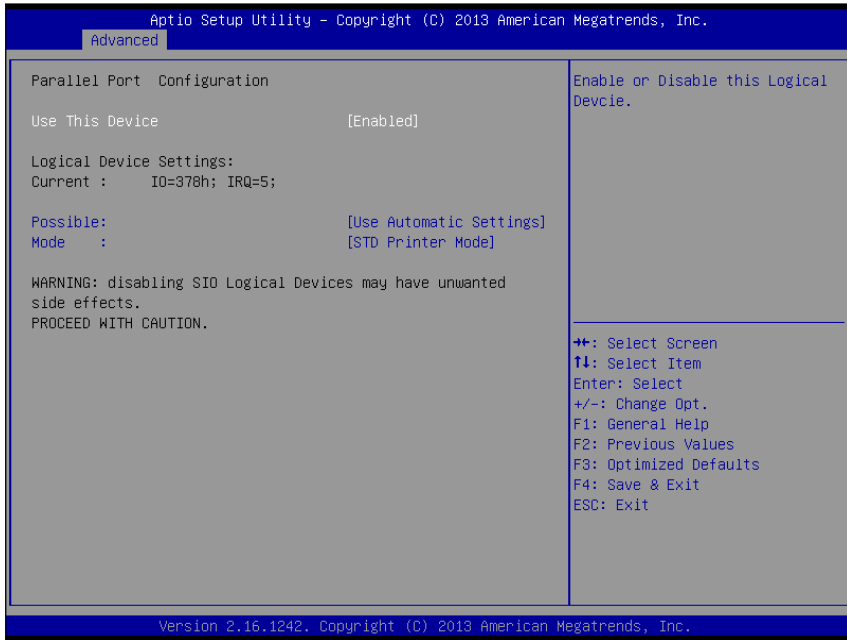
BIOS Setting	Options	Description/ Purpose
Use This Device	- Disabled - Enabled	Enable or disable serial port 3.
Logical device setting Current	No changeable options	Displays current settings of serial port 3.
Possible:	- Use Automatic Settings - IO=3E8h; IRQ=7 DMA - IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12 DMA - IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12 DMA - IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12 DMA - IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12 DMA - IO=2F0h; IRQ=3,4,5,6,7,9,10,11,12 DMA - IO=2E0h; IRQ=3,4,5,6,7,9,10,11,12 DMA	Select IRQ and I/O resource for the serial port 3





Serial Port 4 Configuration screen

BIOS Setting	Options	Description/ Purpose
Use This Device	-Disabled -Enabled	Enable or disable serial port 4.
Logical device setting Current	No changeable options	Displays current settings of serial port 4.
Possible:	- Use Automatic Settings - IO=2E8h; IRQ=7 DMA - IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12 DMA - IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12 DMA - IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12 DMA - IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12 DMA - IO=2F0h; IRQ=3,4,5,6,7,9,10,11,12 DMA - IO=2E0h; IRQ=3,4,5,6,7,9,10,11,12 DMA	Select IRQ and I/O resource for the serial port 4

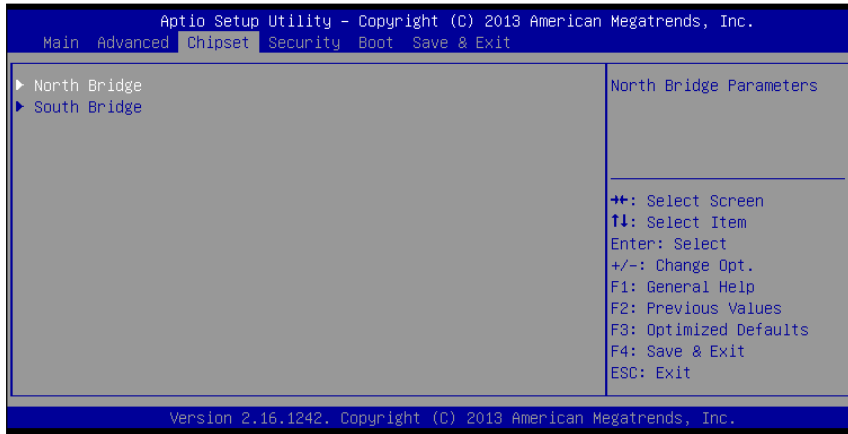


Parallel Port Configuration screen

BIOS Setting	Options	Description/Purpose
Parallel Port	- Disabled - Enabled	Enable or disable the printer port.
Logical device setting Current	No changeable options	Displays current settings of the printer port.
Possible:	- Auto - 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	Select IRQ and I/O resource for the printer port.

BIOS Setting	Options	Description/Purpose
Mode	<ul style="list-style-type: none"><li>- STD Printer Mode</li><li>- SPP Mode</li><li>- EPP-1.9 and SPP Mode</li><li>- EPP-1.7 and SPP Mode</li><li>- ECP Mode</li><li>- ECP and EPP 1.9 Mode</li><li>- ECP and EPP 1.7 Mode</li></ul>	<p>Selects the mode for the parallel port. Not available if the parallel port is disabled.</p> <ul style="list-style-type: none"><li>▪ <b>SPP</b> is Standard Parallel Port mode, a bi-directional mode for printers.</li><li>▪ <b>EPP</b> is Enhanced Parallel Port mode, a high-speed bi-directional mode for non-printer peripherals.</li><li>▪ <b>ECP</b> is Enhanced Capability Port mode, a high-speed bi-directional mode for printers and scanners.</li></ul>

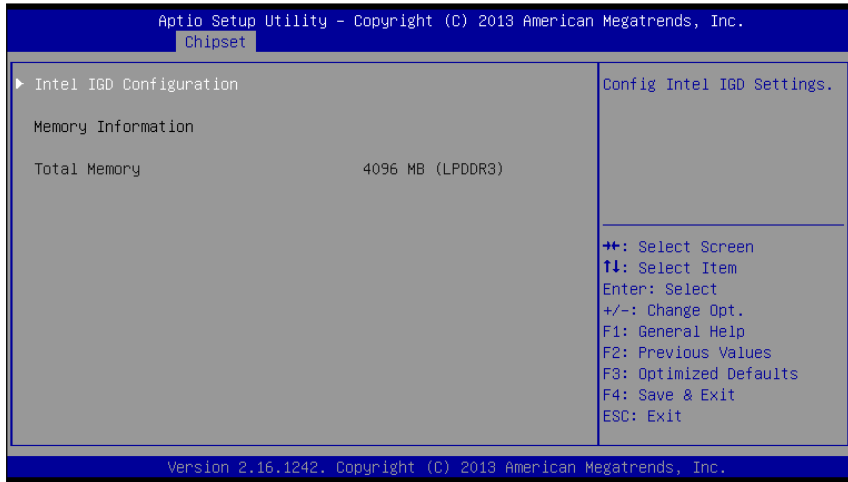
## 3-4-5. Chipset



Chipset screen

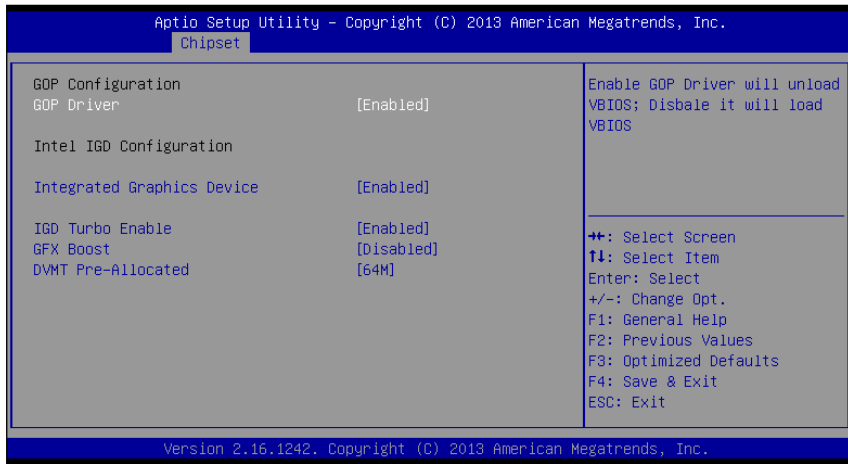
BIOS Setting	Options	Description/Purpose
North Bridge	Sub-menu	Sets Parameter for Panther Point (North Bridge) configuration.
South Bridge	Sub-menu	Sets Parameter for Ivy Bridge (South Bridge) configuration.

## 3-4-5-1. North Bridge



North Bridge screen

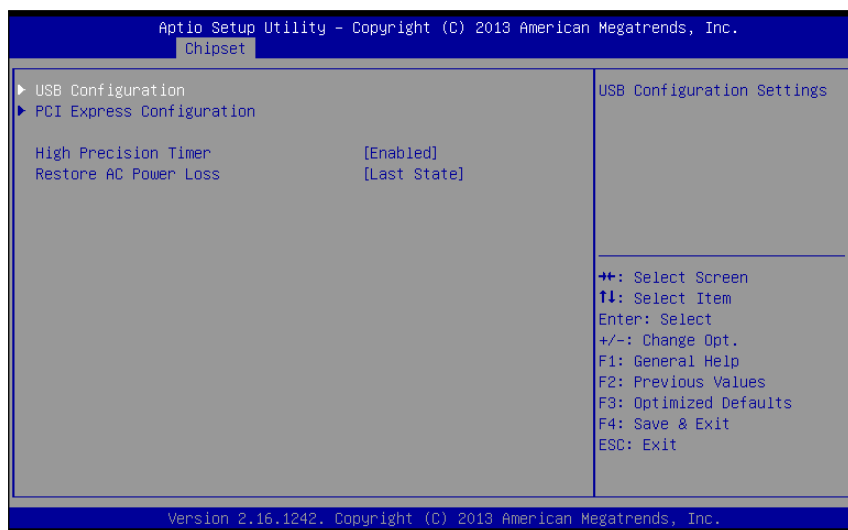
BIOS Setting	Options	Description/Purpose
Intel IGD Configuration	Sub-menu	Configure Graphic Settings.
Memory Information	No changeable options	Displays the DRAM information on platform.
Total Memory	No changeable options	Displays the DRAM size



GOP Configuration screen

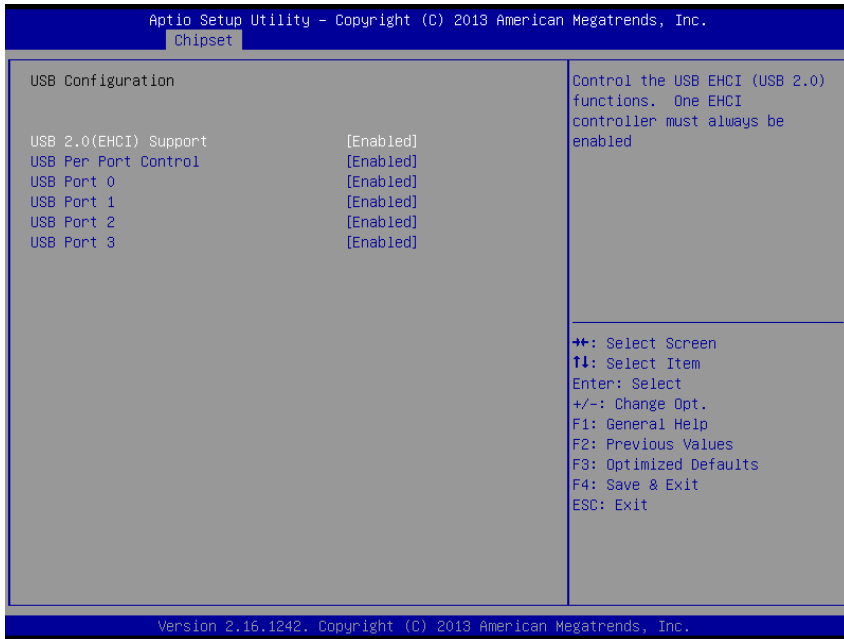
BIOS Setting	Options	Description/Purpose
GOP Driver	- Disabled - Enabled	Enable or disable GOP Driver for UEFI OS
Intel IGD Configuration	No changeable options	Displays the IGD information on platform.
Integrated Graphics Device	- Disabled - Enabled	Enable : Enable Integrated Graphics Device (IGD) when selected as the Primary Video Adaptor. Disable: Always disable IGD"
IGD Turbo Enable	- Disabled - Enabled	Enable or disable IGD Turbo
GFX Boost	- Disabled - Enabled	Enable or disable GFX Boost accelerated graphics processing
DVMT Pre-Allocated	- 32M - 64M - 96M - 128M - 256M - 512M	Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

## 3-4-5-2. South Bridge



South Bridge screen

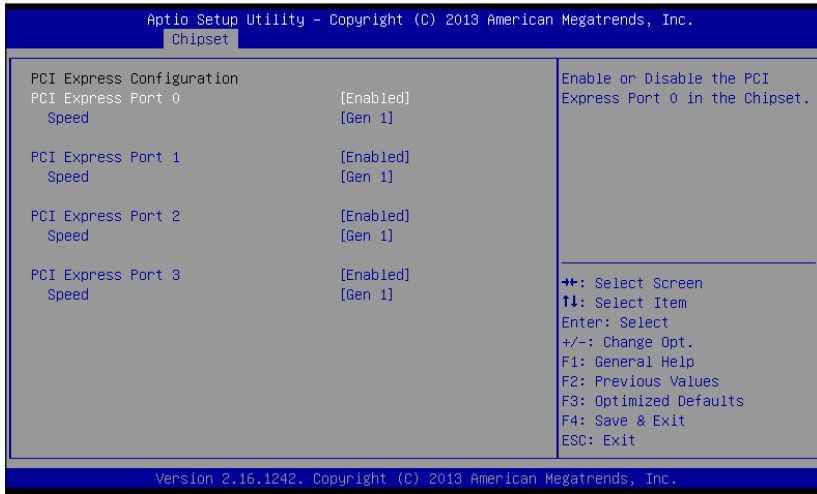
BIOS Setting	Options	Description/Purpose
USB Configuration	Sub-menu	Configure USB parameters.
PCI Express Configuration	Sub-menu	Configure PCH PCIE parameters
High Precision Timer	- Disabled - Enabled	Enable or disable the HPET (High Precision Event Timer)
Restore AC Power Loss	- Power Off - Power On - Last State	Select AC power state when power is re-applied after a power failure. <ul style="list-style-type: none"> <li>▪ <b>Power Off</b> keeps the power off till the power button is pressed.</li> <li>▪ <b>Power On</b> makes system power on after restores AC power to the board.</li> <li>▪ <b>Last State</b> brings system back to the last power state before AC remove.</li> </ul>



Graphics Configuration screen

BIOS Setting	Options	Description/Purpose
USB 2.0(EHCI) Support	- Disabled - Enabled	(XHCI Mode need set disabled.) Enables Enhanced Host Controller Interface 1 for high-speed USB functions (USB 2.0).
USB Per Port Control	- Disabled - Enabled	Enabled or Disabled per USB port
USB Port 0	- Disabled - Enabled	Enabled or Disabled USB port 0
USB Port 1	- Disabled - Enabled	Enabled or Disabled USB port 1
USB Port 2	- Disabled - Enabled	Enabled or Disabled USB port 2
USB Port 3	- Disabled - Enabled	Enabled or Disabled USB port 3

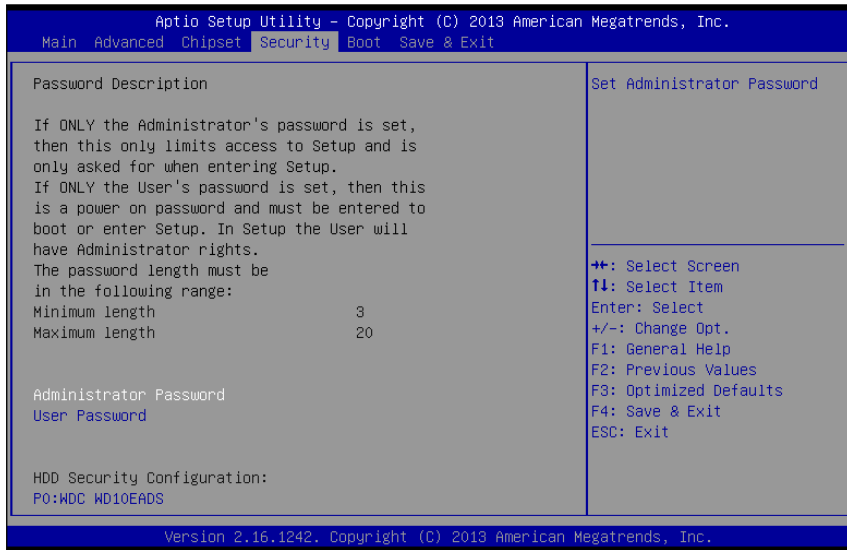




PCI Express Configuration screen

BIOS Setting	Options	Description/Purpose
PCI Express Port 0	- Disabled - Enabled	Enabled or Disabled PCI Express port 0
speed	- Auto - Gen1 - Gen2	Selection PCI Express port 0 Speed
PCI Express Port 1	- Disabled - Enabled	Enabled or Disabled PCI Express port 1
speed	- Auto - Gen1 - Gen2	Selection PCI Express port 1 Speed
PCI Express Port 2	- Disabled - Enabled	Enabled or Disabled PCI Express port 2
speed	- Auto - Gen1 - Gen2	Selection PCI Express port 2 Speed
PCI Express Port 3	- Disabled - Enabled	Enabled or Disabled PCI Express port 3
speed	- Auto - Gen1 - Gen2	Selection PCI Express port 3 Speed

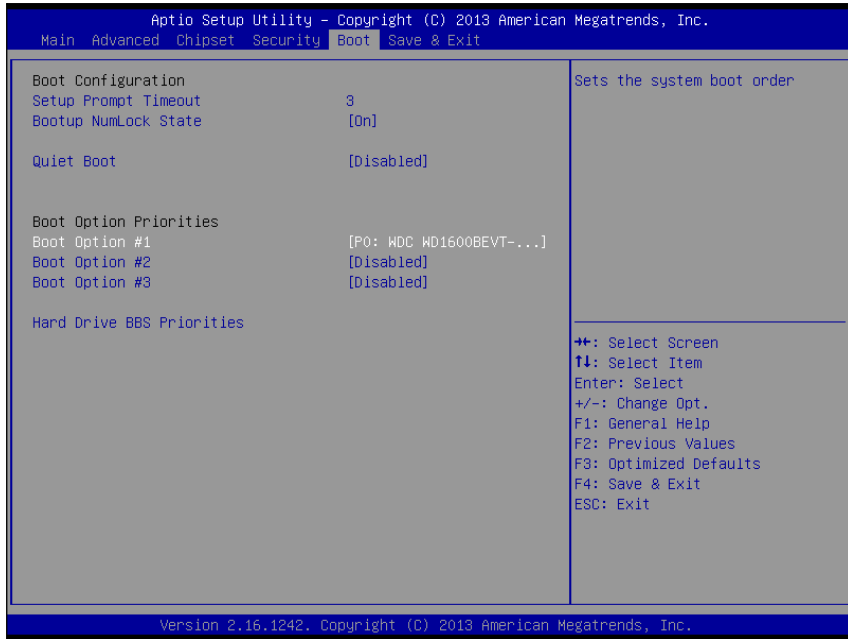
## 3-4-6. Security



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.
HDD Security Configuration:	Sub-menu	Set HDD password.

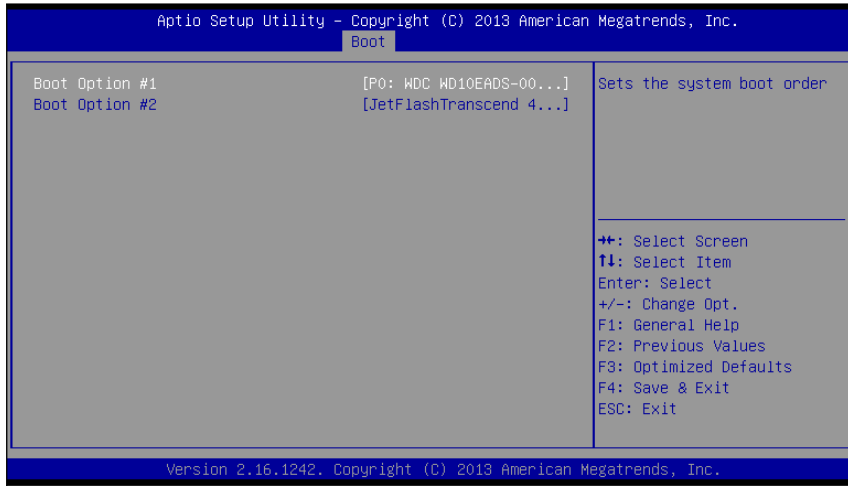
## 3-4-7. Boot



Boot screen

BIOS Setting	Options	Description/Purpose
Setup Prompt Timeout	Numeric	Number of seconds to wait for setup activation key.
Bootup NumLock State	- On - Off	Specifies the power-on state of the NumLock Key.
Quiet Boot	- Disabled - Enabled	Enable/Disable Quiet Boot Options
Boot Option #1~#n	- [Drive(s)] - Disabled	Allows setting boot option listed in Hard Drive BBS Priorities.
Hard Drive BBS Priorities	Sub-Menu	Allow user to select boot order of available drive(s)

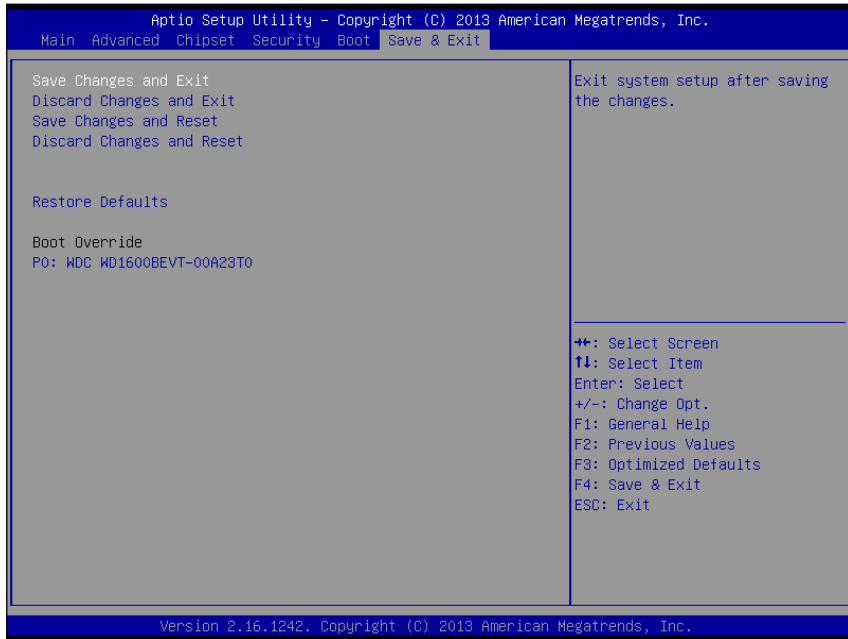
3-4-7-1. Hard Drive BBS Priorities



Hard drive BBS priorities screen

BIOS Setting	Options	Description/Purpose
Boot Option #1 - #n	- [Drive(s)] - Disabled	Change the boot order of available drive(s).

## 3-4-8. Save &amp; Exit



Save &amp; Exit screen

BIOS Setting	Options	Description/Purpose
Save Changes and Exit	No changeable options	Exits and saves the changes in NVRAM.
Discard Changes and Exit	No changeable options	Exits without saving any changes made in BIOS settings.
Save Changes and Reset	No changeable options	Saves the changes in NVRAM and resets.
Discard Changes and Reset	No changeable options	Resets 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 from 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

```

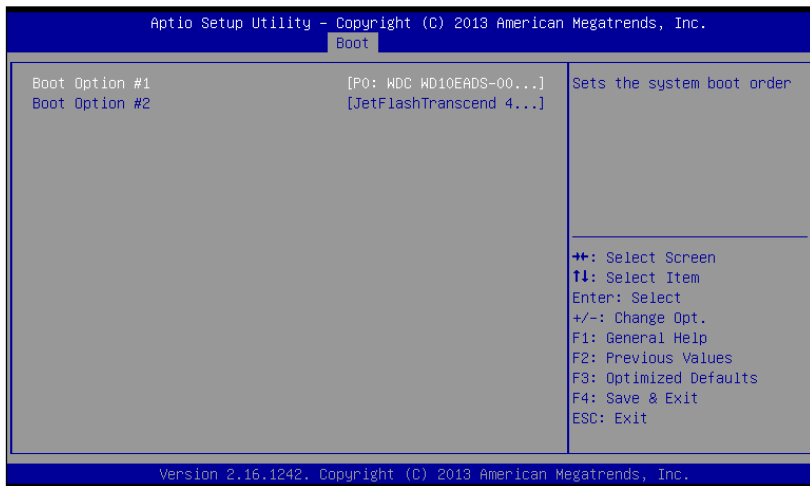
```
mov    al,    1Eh
out    dx,    al
;----- Exit the extended function mode -----
dec    dx
mov    al,    0aah
out    dx,    al
```



## 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 system to DOS prompt.
2. Download and save the BIOS file (e.g. [62220TDC.bin](#)) to the bootable device.
3. Copy AMI flash utility – AFUDOS.exe (V3.03) 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 the picture shows below.
  - e. Select [Hard Drive BBS Priorities], set the USB bootable device as the 1<sup>st</sup> boot device.
  - f. Press <F4> key to save configuration and exit the BIOS setup menu.



### **3-6-2. AFUDOS Command 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 6222xxxx.bin /p /b /n /x` and press enter to start the flash procedure

**Note:** `xxxx` means the BIOS revision part, ex. 0PD1...

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 complete, or it may crash the BIOS ROM and make the system unable to boot up next time. The whole update process may take up to 3 minutes.
4. After the BIOS update is complete, the messages from AFUDOS utility should be like the figure shown below.

```
C:\AFUDOS\NPTIO_U>AFUDOS.EXE 68220TDC.BIN /P /B /N /X
+-----+
|                                     |
|             AMI Firmware Update Utility v3.04.03             |
|   Copyright (C)2012 American Megatrends Inc. All Rights Reserved.   |
|-----+-----+
Reading flash ..... done
- ME Data Size checking . ok
- FFS checksums ..... ok
Erasing Boot Block ..... done
Updating Boot Block ..... done
Verifying Boot Block ..... done
Erasing Main Block ..... done
Updating Main Block ..... done
Verifying Main Block ..... done
Erasing NVRAM Block ..... done
Updating NVRAM Block ..... done
Verifying NVRAM Block ..... done

C:\AFUDOS\NPTIO_U>_
```

5. You can restart the system and boot up with new BIOS now
6. Update is complete after restart
7. Verify during the following boot that BIOS version displayed at the initialization screen has changed.



Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.  
BIOS Date: 01/09/2014 17:24:29 Ver: 68220TDC  
Press <DEL> or <ESC> to enter setup.

## 3-7. SYSTEM RESOURCE MAP

### 3-7-1. Interrupt Map

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	Microsoft ACPI-Compliant System
82	Microsoft ACPI-Compliant System
83	Microsoft ACPI-Compliant System
84	Microsoft ACPI-Compliant System
85	Microsoft ACPI-Compliant System
86	Microsoft ACPI-Compliant System
87	Microsoft ACPI-Compliant System
88	Microsoft ACPI-Compliant System
89	Microsoft ACPI-Compliant System
90	Microsoft ACPI-Compliant System
91	Microsoft ACPI-Compliant System
92	Microsoft ACPI-Compliant System
93	Microsoft ACPI-Compliant System
94	Microsoft ACPI-Compliant System
95	Microsoft ACPI-Compliant System
96	Microsoft ACPI-Compliant System

<b>IRQ</b>	<b>ASSIGNMENT</b>
97	Microsoft ACPI-Compliant System
98	Microsoft ACPI-Compliant System
99	Microsoft ACPI-Compliant System
100	Microsoft ACPI-Compliant System
101	Microsoft ACPI-Compliant System
102	Microsoft ACPI-Compliant System
103	Microsoft ACPI-Compliant System
104	Microsoft ACPI-Compliant System
105	Microsoft ACPI-Compliant System
106	Microsoft ACPI-Compliant System
107	Microsoft ACPI-Compliant System
108	Microsoft ACPI-Compliant System
109	Microsoft ACPI-Compliant System
110	Microsoft ACPI-Compliant System
111	Microsoft ACPI-Compliant System
112	Microsoft ACPI-Compliant System
113	Microsoft ACPI-Compliant System
114	Microsoft ACPI-Compliant System
115	Microsoft ACPI-Compliant System
116	Microsoft ACPI-Compliant System
117	Microsoft ACPI-Compliant System
118	Microsoft ACPI-Compliant System
119	Microsoft ACPI-Compliant System
120	Microsoft ACPI-Compliant System
121	Microsoft ACPI-Compliant System
122	Microsoft ACPI-Compliant System
123	Microsoft ACPI-Compliant System
124	Microsoft ACPI-Compliant System
125	Microsoft ACPI-Compliant System
126	Microsoft ACPI-Compliant System
127	Microsoft ACPI-Compliant System
128	Microsoft ACPI-Compliant System
129	Microsoft ACPI-Compliant System
130	Microsoft ACPI-Compliant System
131	Microsoft ACPI-Compliant System
132	Microsoft ACPI-Compliant System
133	Microsoft ACPI-Compliant System

<b>IRQ</b>	<b>ASSIGNMENT</b>
134	Microsoft ACPI-Compliant System
135	Microsoft ACPI-Compliant System
136	Microsoft ACPI-Compliant System
137	Microsoft ACPI-Compliant System
138	Microsoft ACPI-Compliant System
139	Microsoft ACPI-Compliant System
140	Microsoft ACPI-Compliant System
141	Microsoft ACPI-Compliant System
142	Microsoft ACPI-Compliant System
143	Microsoft ACPI-Compliant System
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165	Microsoft ACPI-Compliant System
166	Microsoft ACPI-Compliant System
167	Microsoft ACPI-Compliant System
168	Microsoft ACPI-Compliant System
169	Microsoft ACPI-Compliant System
170	Microsoft ACPI-Compliant System

<b>IRQ</b>	<b>ASSIGNMENT</b>
171	Microsoft ACPI-Compliant System
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<b>IRQ</b>	<b>ASSIGNMENT</b>
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<b>IRQ</b>	<b>ASSIGNMENT</b>
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<b>IRQ</b>	<b>ASSIGNMENT</b>
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<b>IRQ</b>	<b>ASSIGNMENT</b>
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4294967291	Intel <sup>®</sup> HD Graphics
4294967292	Intel <sup>®</sup> USB 3.0 eXtensible Host Controller - 0100 (Microsoft)
4294967293	Intel <sup>®</sup> Trusted Execution Engine Interface
4294967294	Realtek PCIe GBE Family Controller

### 3-7-2. DMA Channels Map

<b>TIMER CHANNEL</b>	<b>ASSIGNMENT</b>
Channel 4	Direct memory access controller

**3-7-3. I/O Map**

<b>I/O MAP</b>	<b>ASSIGNMENT</b>
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
0x00000078-0x000000CF7	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
0x000000B8-0x000000B9	Programmable interrupt controller
0x000000BC-0x000000BD	Programmable interrupt controller
0x000002E8-0x000002EF	Communications Port (COM4)
0x000002F8-0x000002FF	Communications Port (COM2)



I/O MAP	ASSIGNMENT
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® 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

**3-7-4. Memory Map**

<b>MEMORY MAP</b>	<b>ASSIGNMENT</b>
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
0xFEE00000-0xFEEFFFFFFF	Motherboard resources
0xFE000000-0xFEFFFFFFF	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
0xD0000000-0xD03FFFFFFF	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
0xD0500000-0xD05FFFFFFF	Intel® Trusted Execution Engine Interface
0xD0400000-0xD04FFFFFFF	Intel® Trusted Execution Engine Interface
0xD0711000-0xD07117FF	Intel® Pentium® processor N- and J-series / Intel® Celeron® processor N- and J-series AHCI - 0F23
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

<b>MEMORY MAP</b>	<b>ASSIGNMENT</b>
0xE0000-0xFFFFF	PCI Express Root Complex

# ***SYSTEM DIAGRAMS***

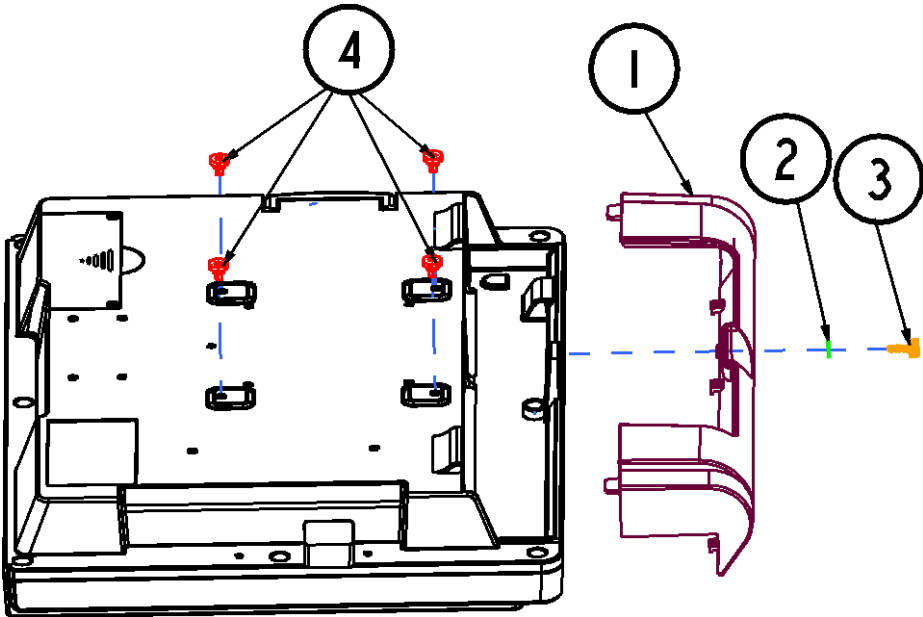
CHAPTER
<b>4</b>

This appendix contains exploded diagrams and part numbers of the PA-6222 system.

Sections included:

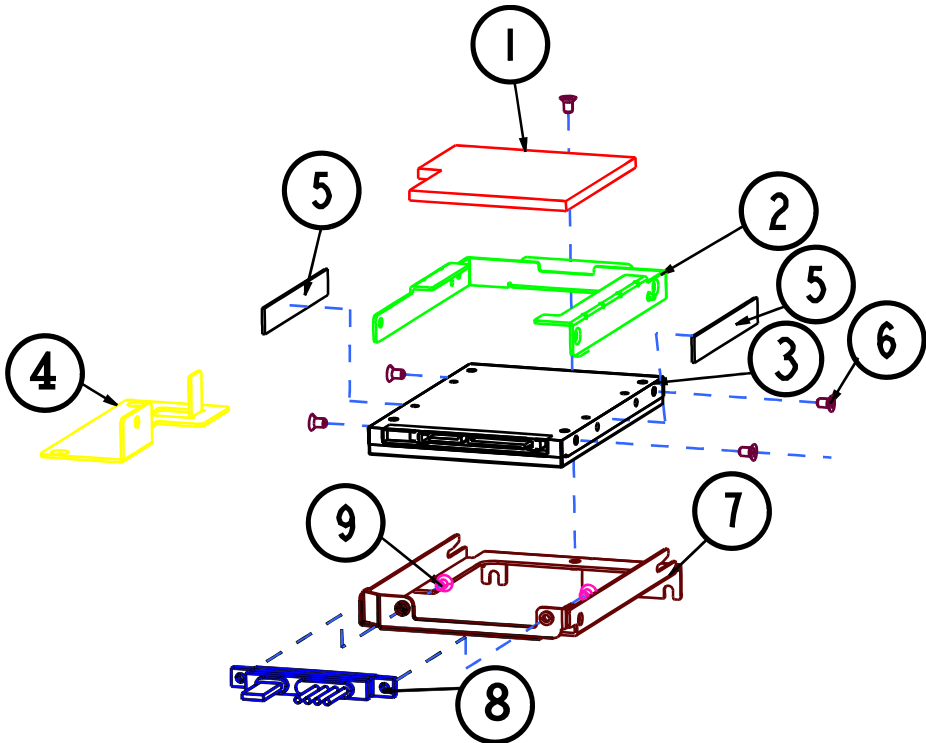
- Exploded Diagram for Panel PC
  - Cable Cover
  - Storage
  - Back Cover
  - Touchscreen & LCD Panel
  - Inside Case
- Exploded Diagram for Peripheral Devices
  - MSR
  - 2nd Display
- Exploded Diagram for Stand
  - Stand
- Exploded Diagram for Packing
  - PPC Packing
  - POS Packing

**EXPLODED DIAGRAM FOR CABLE COVER**



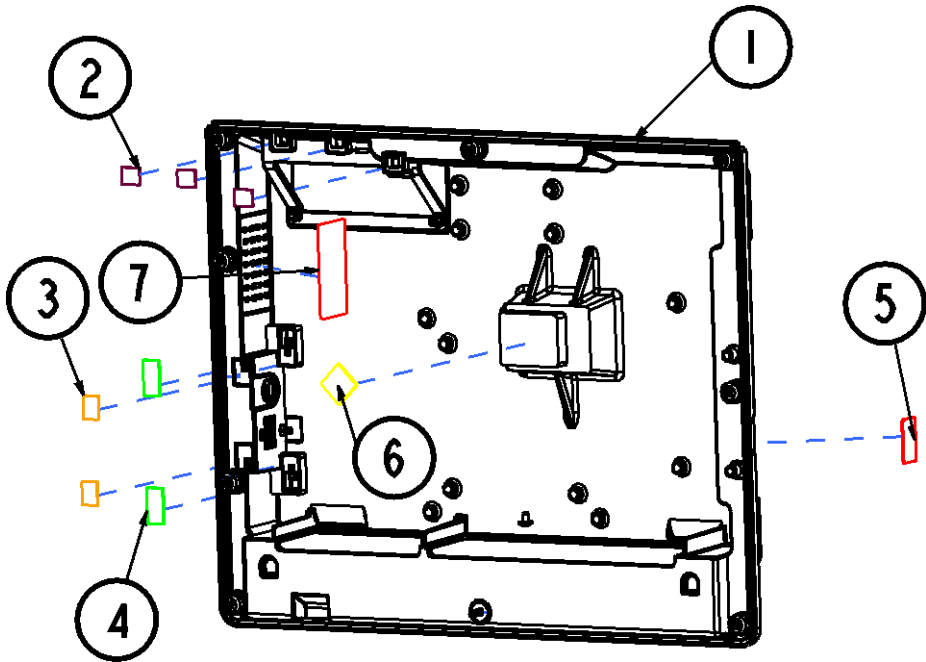
NO.	Component Name	Part No.	Q'ty
1	PA-6222_CABLE_COVER	30-002-28110335	1
2	KYWS-3	23-220-25050089	1
3	hand screw	22-285-30010011	1
4	FILLISTR HEAD SCREW M4x0.7Px4mm	22-272-40004911	4

**EXPLODED DIAGRAM FOR STORAGE**

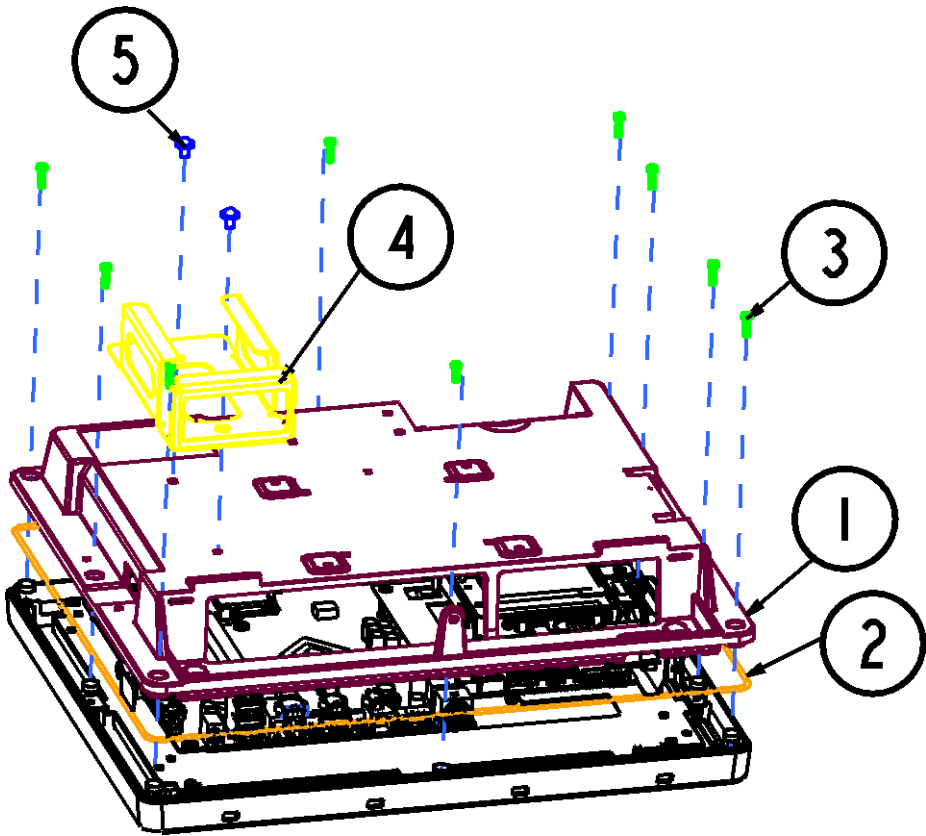


NO	Component Name	Part No.	Q'ty
1	THERMAL_PAD	81-006-86865001	1
2	6222_HDD_TRACK	20-039-03001335	1
3	HDD	XX-XXX-XXXXXXXXXX	1
4	HDD_SHAFT_PLATE_LEFT	20-005-03003335	1
5	PRON_W8_HDD_EVA	30-013-15100335	2
6	FLAT HEAD SCREW M3_L5	22-212-30050011	5
7	PA-6222_HDD_CHASSIC	20-015-03001335	1
8	HDD_CABLE	27-012-26905081	1
9	M3_L6_1_head	82-275-30006018	2

**EXPLODED DIAGRAM FOR BACK COVER**

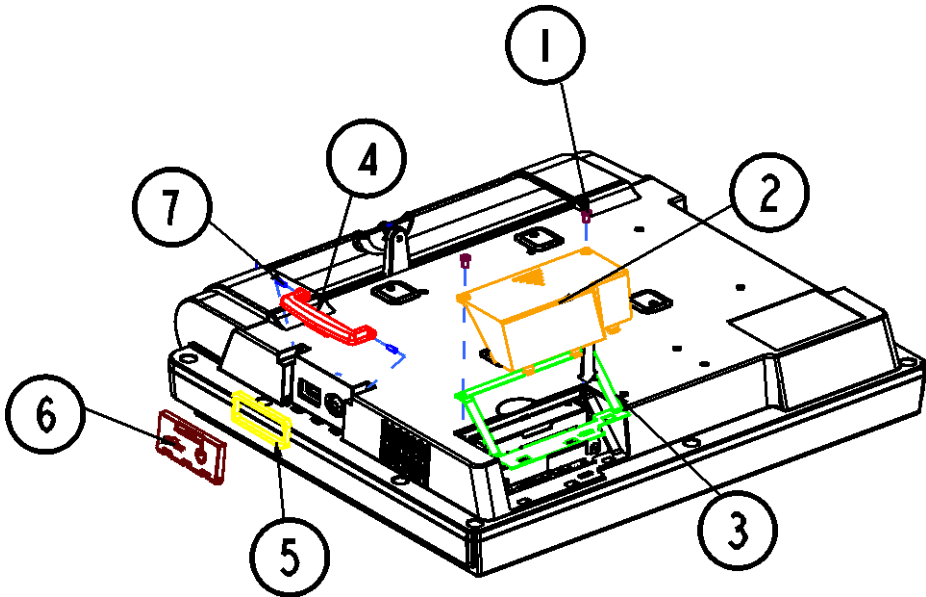


NO.	Component Name	Part No.	Qty
1	PA-6222_BACK_COVER	20-003-01061335	1
2	6222_HDD_COVER_MYLAR	30-056-02300335	3
3	6222_DOOR_BOT_MYLAR	30-056-02200335	2
4	6222_POWER_DOOR_MYLAR	30-056-02400335	2
5	MSR_HOLE_LABEL	94-017-02101269	1
6	THERMAL_15*15*1.5		1
7	SAATIFIL_ACOUSTEX_MESH	90-056-31100335	1



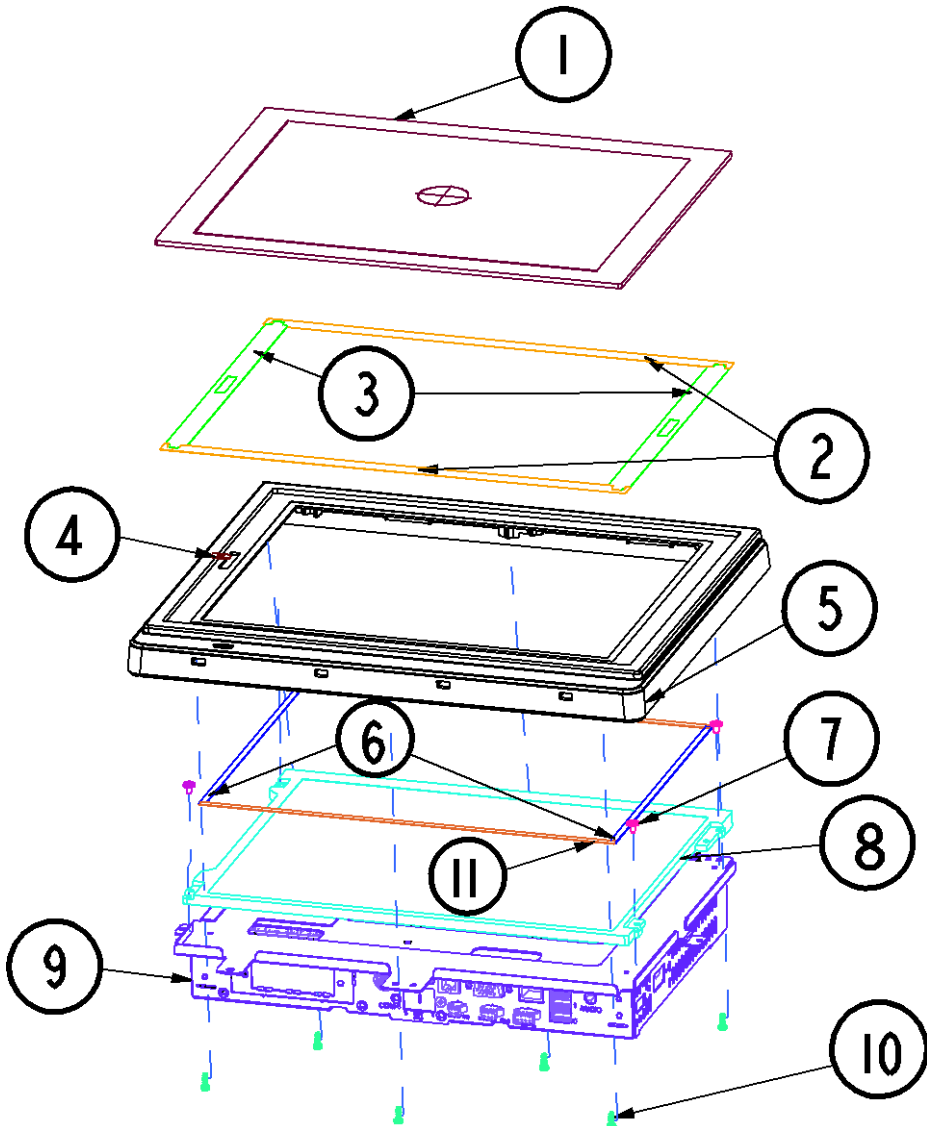
NO	Component Name	Part No.	Q'ty
1	PA-6222_BACK_COVER	20-003-01061335	1
2	PA-6222_PACKING	30-013-06200335	1
3	PAN HEAD SCREW	22-122-30080011	9
4	ADAPTER_HOLDER	20-029-07001274	1
5	M4_L6_FLAT	22-232-40006311	2





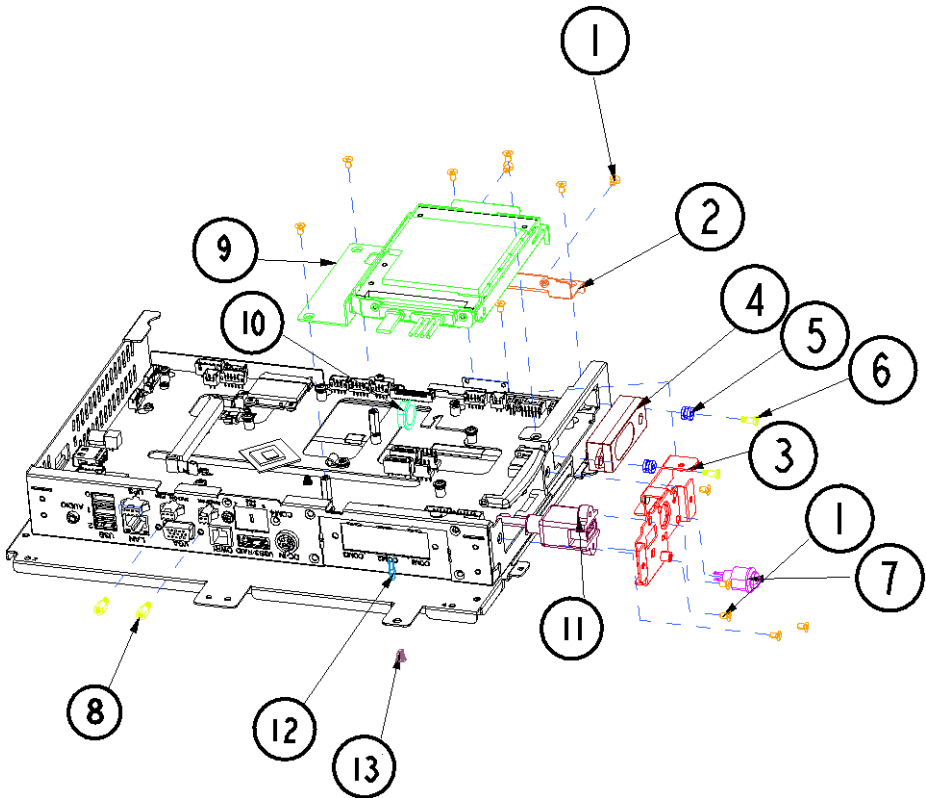
NO.	Component Name	Part No.	Q'ty
1	FILLISTR HEAD SCREW	82-275-30006018	2
2	PA-6222_HDD_COVER	30-002-28310335	1
3	6222_HDD_COVER_EVA	90-013-15200335	1
4	6222_DOOR_LOCK_SECOND	30-019-28110335	1
5	PA-6222_DOOR_EVA2	90-013-15100335	1
6	PA-6222_DOOR_PRT	30-007-28110335	1
7	PA-6222_DOOR_PIN	22-000-20007005	2

**EXPLODED DIAGRAM FOR LCD & TOUCH PANEL**

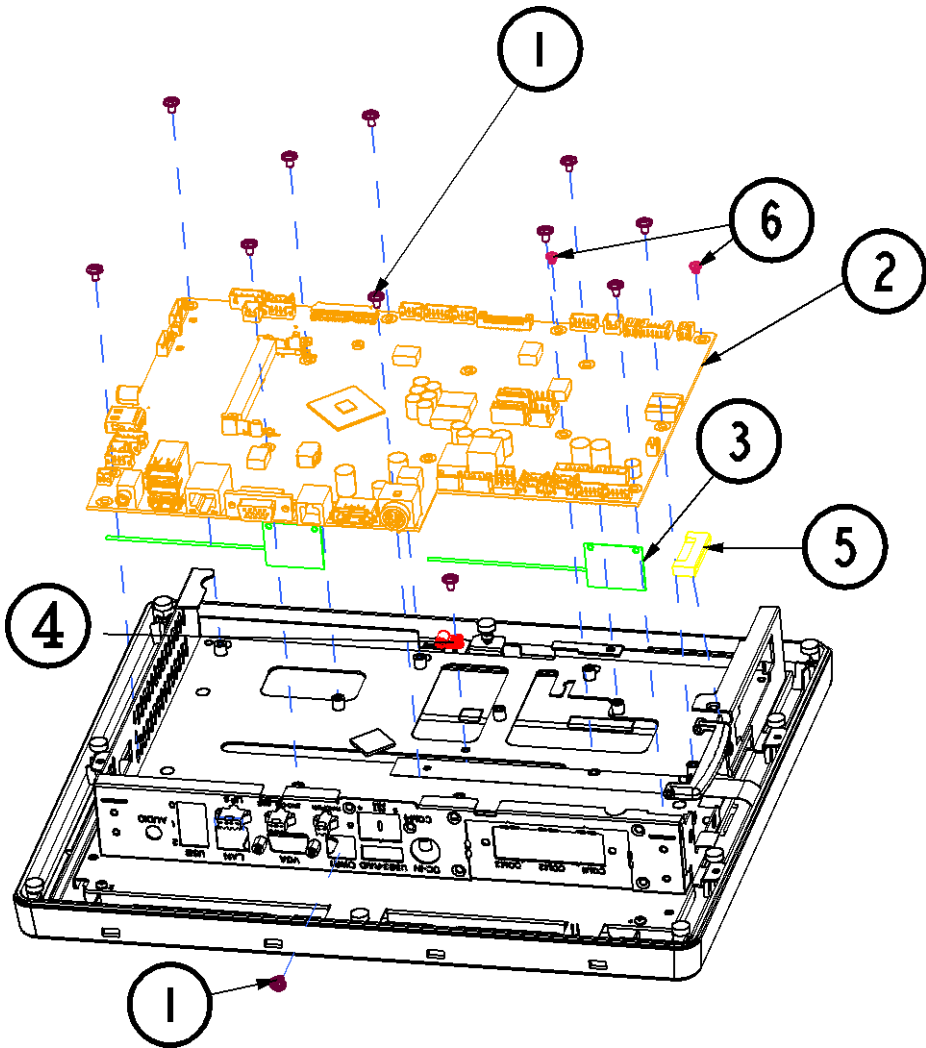


NO.	Component Name	Part No.	Q'ty
1	TOUCH PANEL	52-380-02310701	1
2	DOUBLE_COATED_TAPE_A	94-026-04901335	2
3	DOUBLE_COATED_TAPE_B	94-026-04902335	2
4	LED_DISPLAY	34-017-02101044	1
5	6222_FRONT_COVER_A	30-002-28210335	1
6	6012-LCD_PORON_LR	90-013-24100304	2
7	M3_L5_WASHER	22-242-30005311	4
8	AUO PANEL	52-351-02121102	1
9	6222_INSIDE_CASE_ASSY	20-001-03002335	1
10	D3_9_6_R_H_11	22-122-30080011	6
11	6012-LCD_PORON_TB	90-013-24200304	2

**EXPLODED DIAGRAM FOR INSIDE CASE**

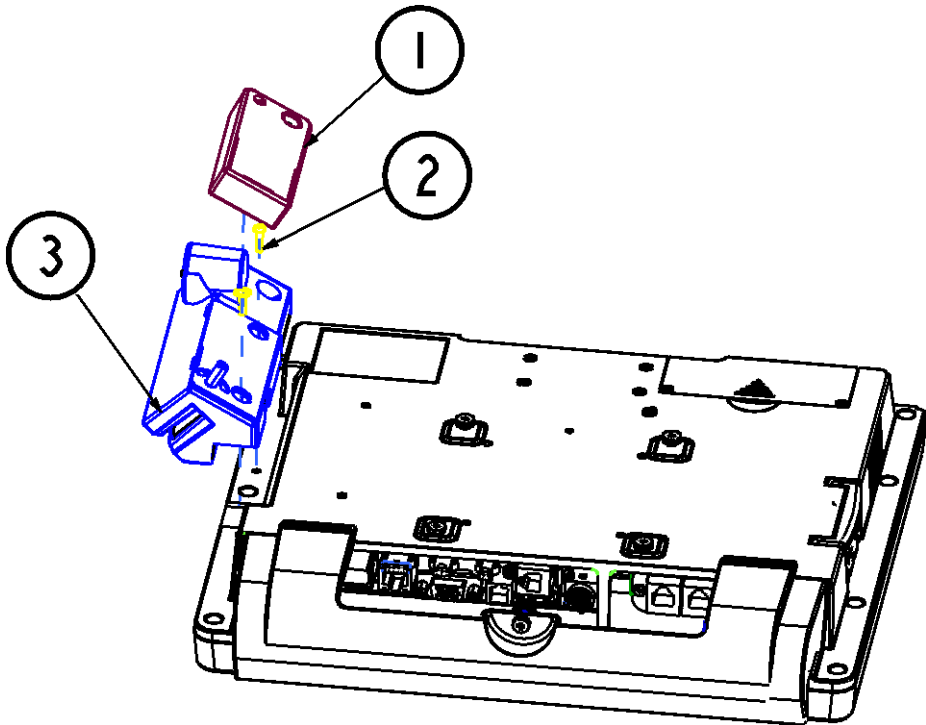


NO.	Component Name	Part No.	Q'ty
1	FLAT HEAD SCREWM3xL5	22-212-30050011	15
2	6222_HDD_INSIDE_CASE	20-001-03001335	1
3	HDD_SHAFT_PLATE	20-006-03001335	1
4	SPEAKER_BOX	13-500-06350118	1
5	SPEAKER_RUBBER	XX-XXX-XXXXXXX	2
6	FILLISTER HEAD SCREW	22-272-30008015	2
7	SWITCH_CABLE	27-019-26904071	1
8	UNC No. 4-40,L=4.8,H=7mm	22-692-40048051	2
9	PA-6222-HDD_ASSY	..	1
10	SWITCH_CABLE_NUT	..	1
11	USB CABLE	27-006-33506111	1
12	POWER LED CABLE	27-018-26906071	1
13	LED HOUSING	30-014-04100165	1

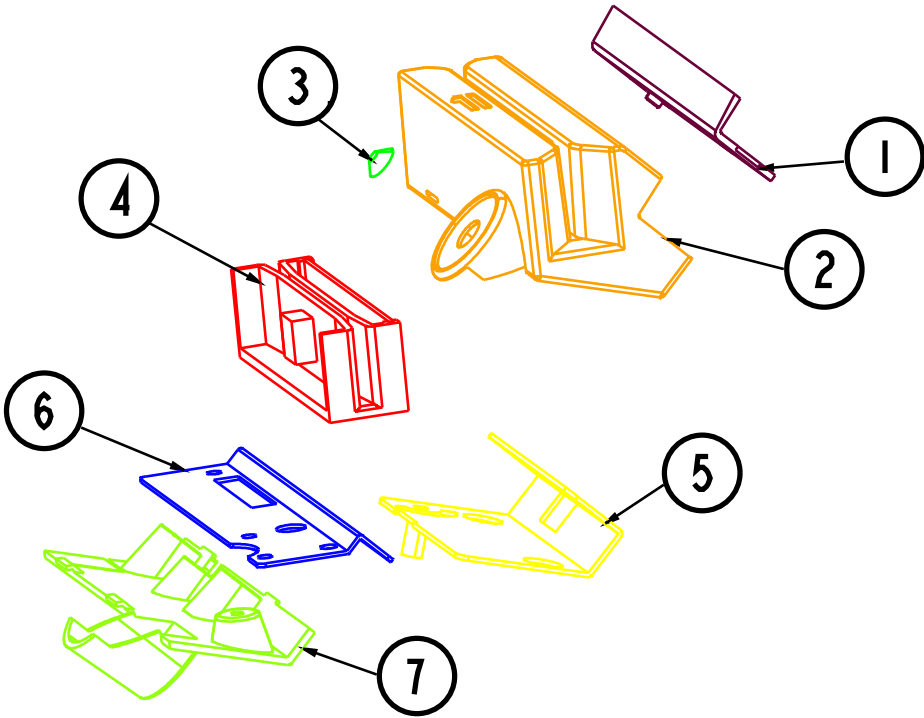


NO.	Component Name	Part No.	Q'ty
1	M3_L5_WASHER	22-242-30005311	11
2	MAIN BOARD	..	1
3	WiFi BOARD	..	2
4	CC-1	90-023-04800000	1
5	FCM-25SNQW	90-042-04200000	1
6	M3_1頭_L4_黑色_2號針_screw	22-272-30004318	2

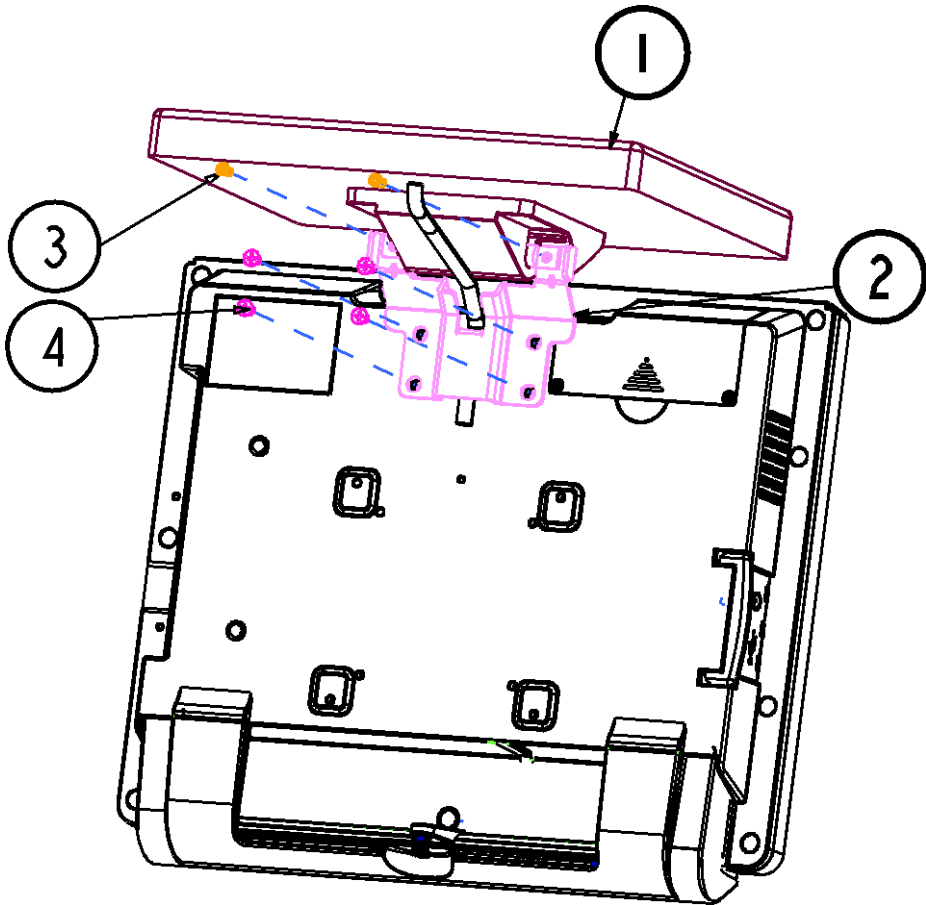
**EXPLODED DIAGRAM FOR MSR**



NO.	Component Name	Part No.	Q'ty
1	FINGER_PRINTER		1
2	SCREW_M3*L12		2
3	MSR		1



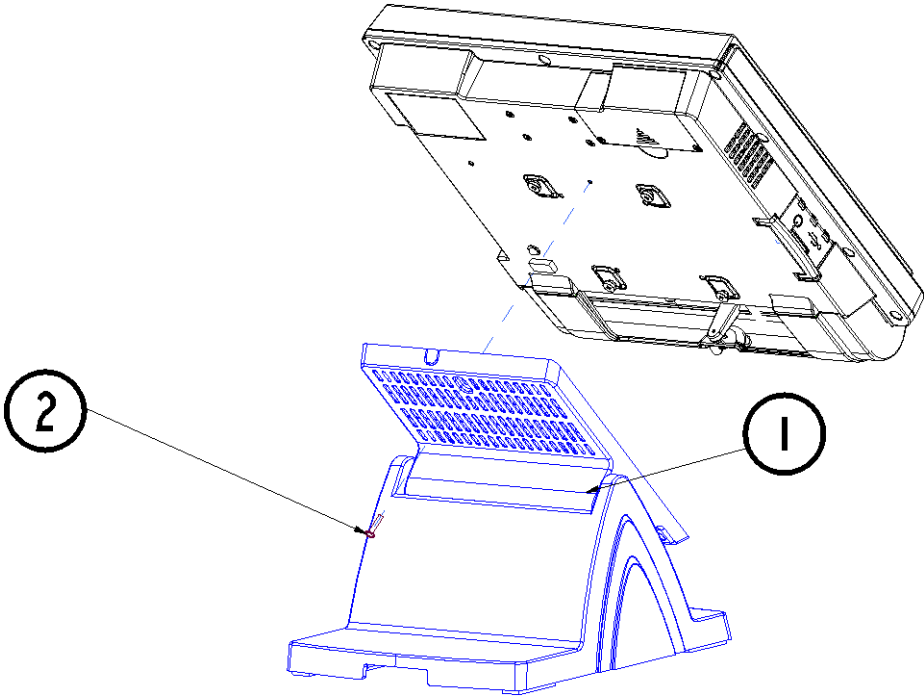
NO.	Component Name	Part No.	Q'ty
1	MSR_TOP_COVER_SIDE		1
2	MSR_TOP_COVER	30-014-12310210	1
3	MSR_BOTTOM_COVER_I		1
4	MSR_module		1
5	MSR_BRACKET		1
6	MSR_FIX_BRACKET	20-006-03006210	1
7	MSR_BOTTOM_COVER	30-002-12020210	1

**EXPLODED DIAGRAM FOR SECOND DISPLAY**

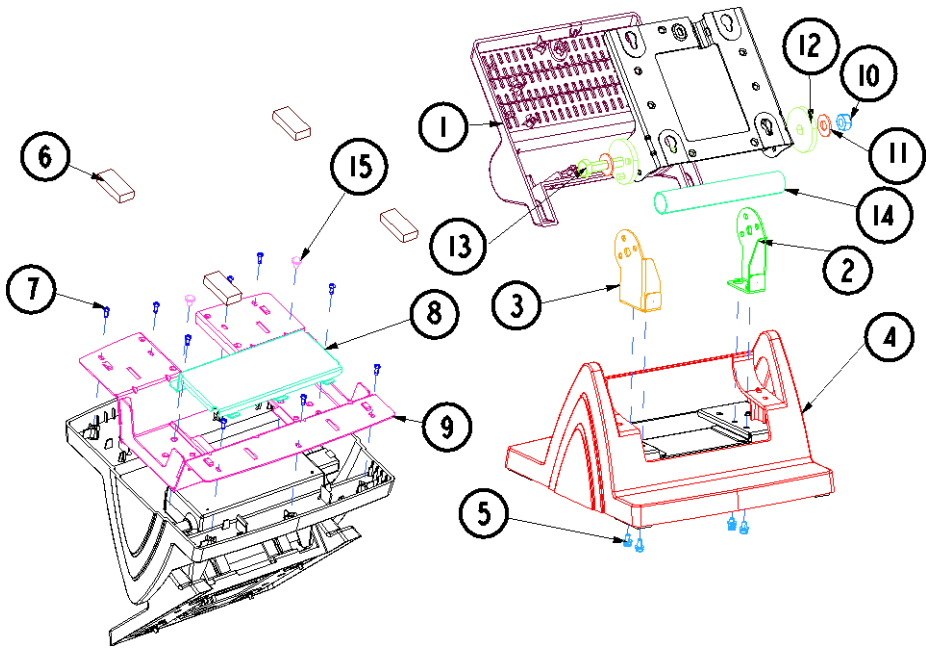
NO.	Component Name	Part No.	Q'ty
1	2ND_DISPLAY		1
2	2nd_DISPLAY_SUPPORT	80-006-03061226	1
3	SCREW_M4_L8	22-245-40008011	2
4	SCREW_M4_L8	22-215-40008711	4



**EXPLODED DIAGRAM FOR STAND**

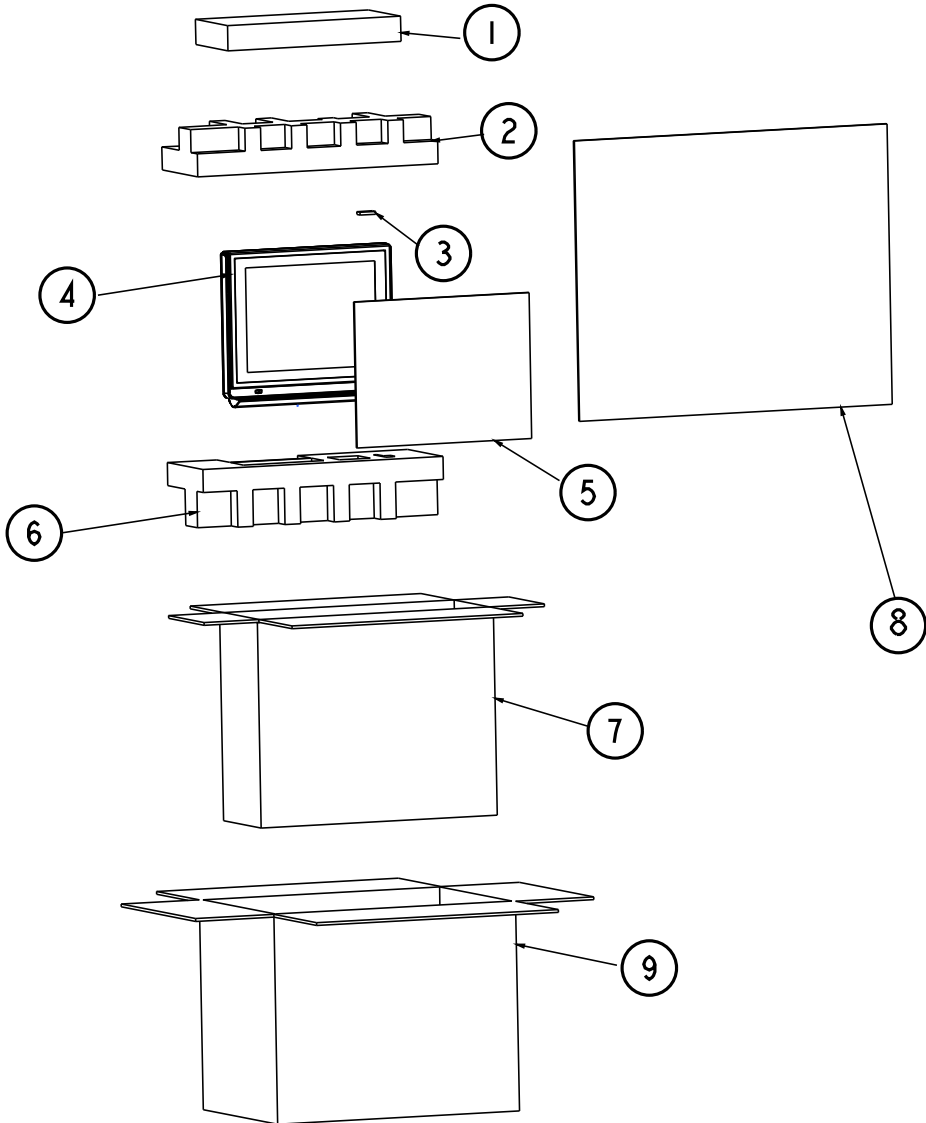


NO.	Component Name	Part No.	Q'ty
1	stand_all		1
2	SCREW_M3_L15	22-235-30015011	1



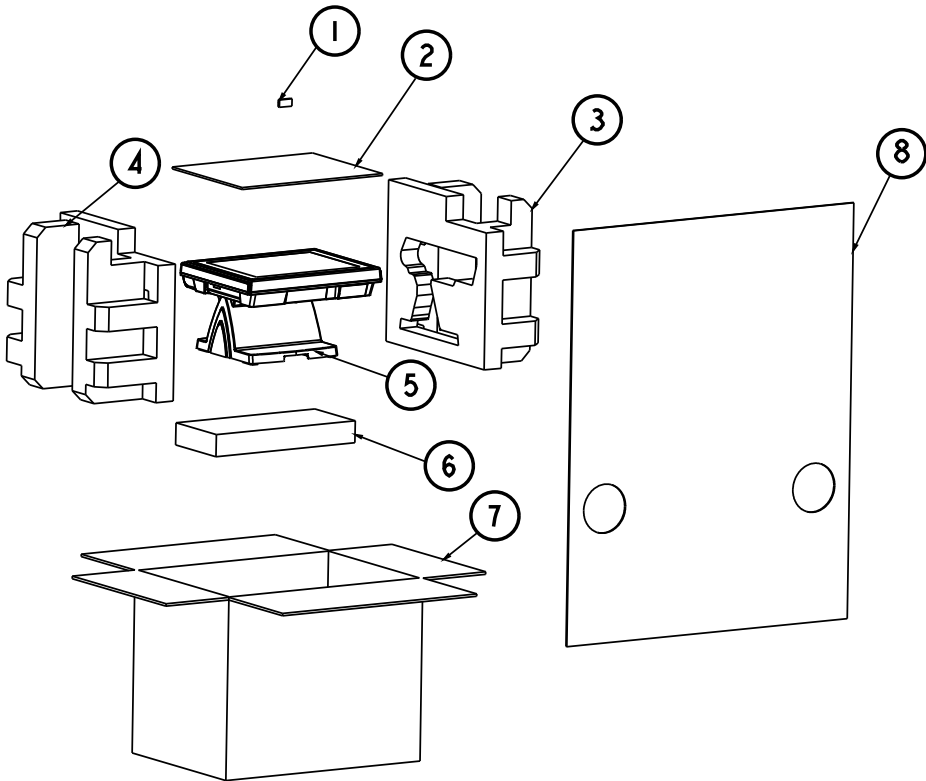
NO.	Component Name	Part No.	Q'ty
1	ROTATE_COVER	30-002-28610226	1
2	R_SUPPORT	80-002-03001226	1
3	L_SUPPORT	80-002-03002226	1
4	STAND_COVER	30-002-28710226	1
5	SCREW	22-232-40008211	4
6	RUBBER	30-004-01600000	4
7	SCREW	22-122-30080011	9
8	POWER HOLDER	80-029-03001226	1
9	STAND_BASE	80-032-03001226	1
10	HEX_NUTS_M4_L7,85	23-142-80081291	1
11	PLAIN_WASHER_D8_DI9_T1,5	23-202-08150191	2
12	HINGE_SPACER	30-041-04100139	2
13	HEX_SCREW_M8_L154	22-252-80154005	1
14	POS_6920_PIPE	80-056-02001226	1
15	M3*0,7P*6mm-washer	22-232-30006311	2

**EXPLODED DIAGRAM FOR PPC PACKING**



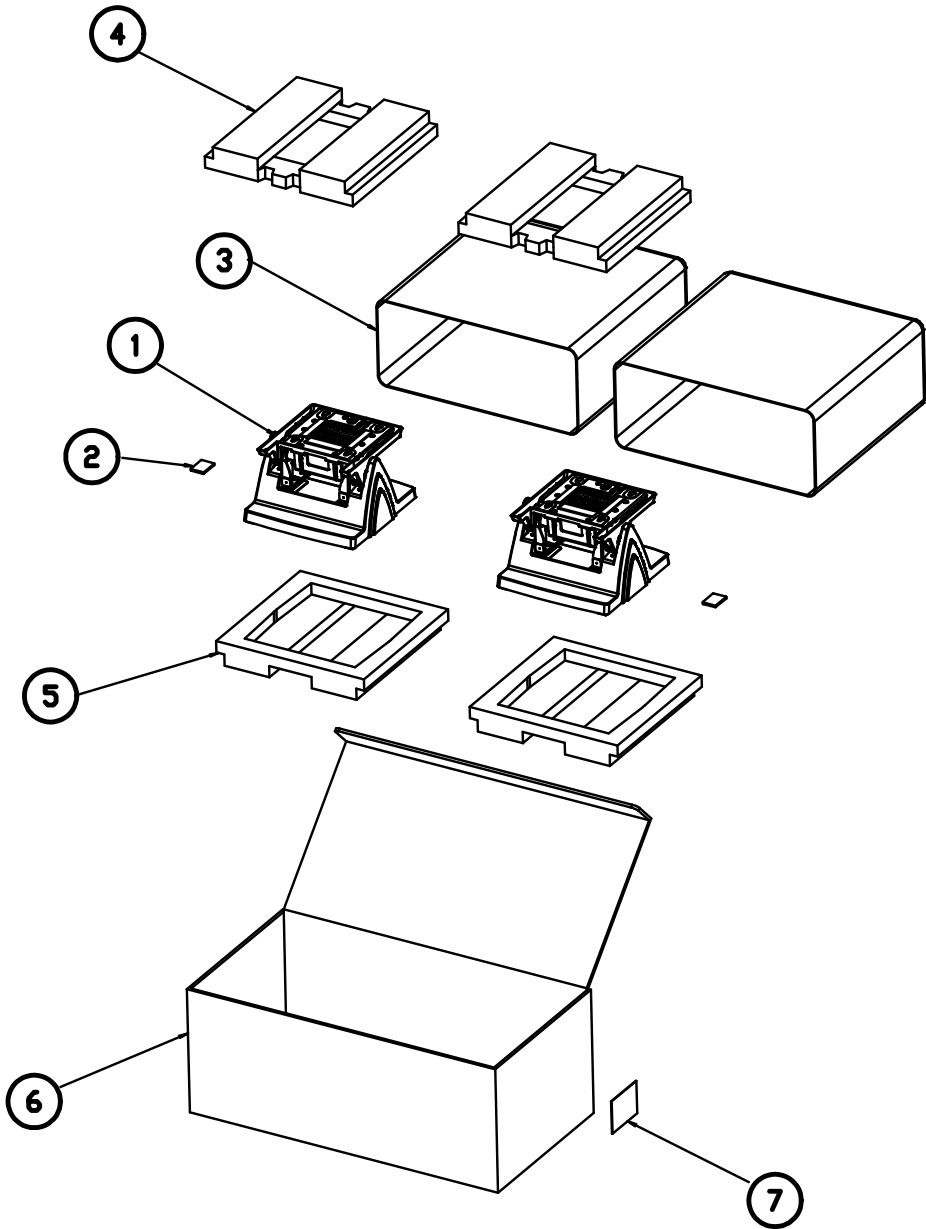
NO.	Component Name	Part No.	Q'ty
1	Accessories box	34-003-01301086	1
2	EPE_TOP	94-016-00301335	1
3	SILICA_GEL	34-005-00010007	1
4	PA-6222		1
5	MYLAR	30-056-02100008	1
6	EPE_DOWN	94-016-00302335	1
7	INNER_BOX	94-001-01301274	1
8	PE_BAG	32-100-20010000	1
9	OUTER_BOX	94-001-01401269	1

**EXPLODED DIAGRAM FOR POS PACKING**



NO.	Component Name	Part No.	Qty
1	SILICA_GEL	34-005-00010007	1
2	MYLAR	30-056-02100008	1
3	EPE-6377L	94-016-00304335	1
4	EPE-6377R	94-016-00303335	1
5	PA-6222 with stand		1
6	Accessories box	34-003-01301086	1
7	OUTER_BOX	94-001-01401226	1
8	PE_bag	34-010-00210003	1

**EXPLODED DIAGRAM FOR STAND PACKING**



<b>NO</b>	<b>Part Description</b>	<b>Part No.</b>	<b>Qty</b>
1	Stand service pack for 120W adaptor	N/A	2
2	Silica gel	34-005-00010007	2
3	Package bag 480x460mm	32-100-20010000	2
4	EPE top 280x273x42mm	94-016-00303269	2
5	EPE bottom 280x273x42mm	94-016-00304269	2
6	Outer carton 592x308x229mm	94-001-01403269	1
7	Label	N/A	1