USER'S MANUAL

PA-6722

15" POS Terminal
Powered by Intel Celeron
J1900 Quad-Cord

PA-6722 M6

INTRODUCTION

CHAPTER

1

This chapter gives you the information for the PA-6722. 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.

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DISCLAIMER

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

CE NOTICE

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

FCC NOTICE

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

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

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

1-1. ABOUT THIS MANUAL

Thank you for purchasing our PA-6722 Series System. The PA-6722 is an updated system designed to be comparable with the highest performance of IBM AT personal computers. The PA-6722 provides faster processing speed, greater expandability and can handle more tasks than before. This manual is designed to assist you how to install and set up the whole system. It contains four chapters and two appendixes. Users can configure the system according to their own needs.

Chapter 1 Introduction

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

Chapter 2 System Configuration

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

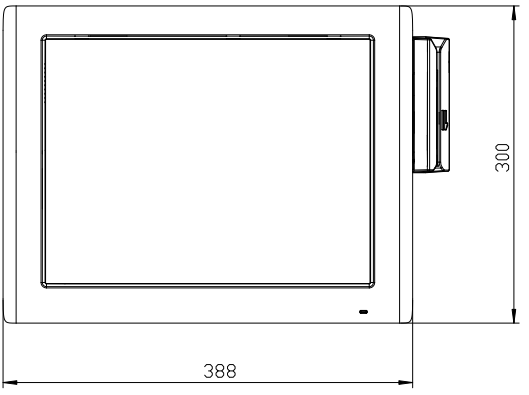
Chapter 3 Software

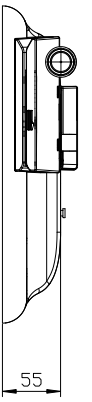
This chapter contains detailed information for driver installations of the Intel® Utility, VG, LAN, Sound, Touch Screen, embedded peripheral devices, BIOS setup & update, Watchdog timer and resource map.

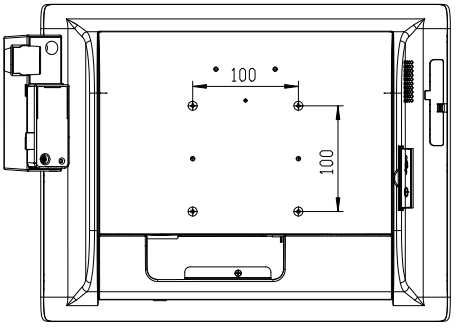
Chapter 4 System Diagrams

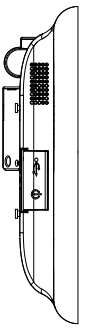
This chapter shows the exploded diagrams and part numbers of PA-6722 components.

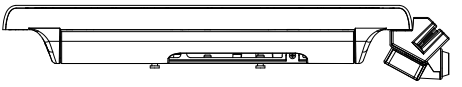
Panel-PC



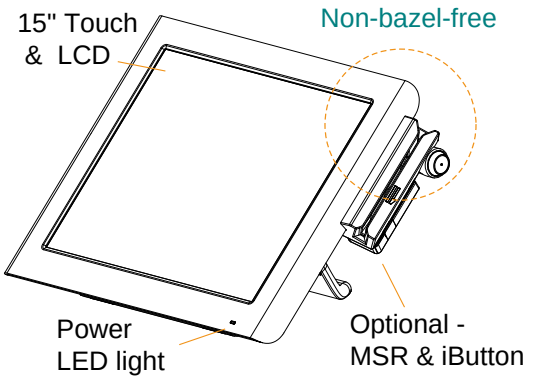


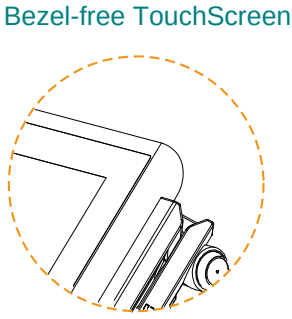


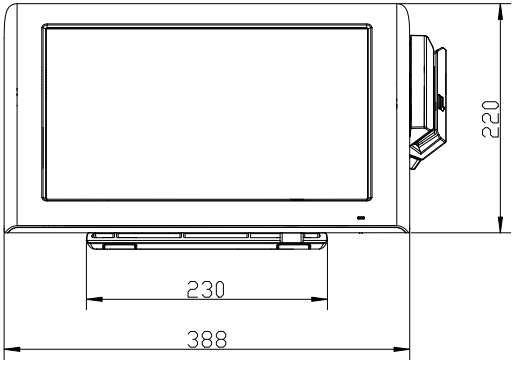




Easy Stand


15" Touch
& LCD
Non-bazel-free
Power
LED light
Optional -
MSR & iButton


Bezel-free TouchScreen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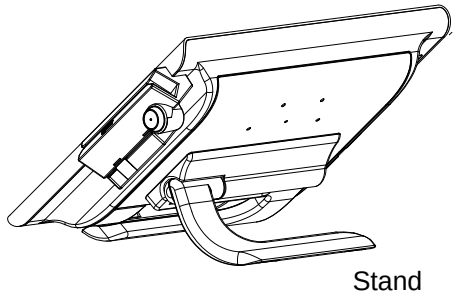
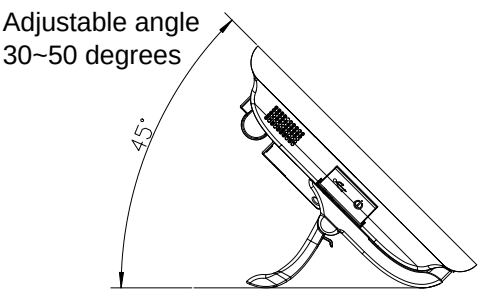
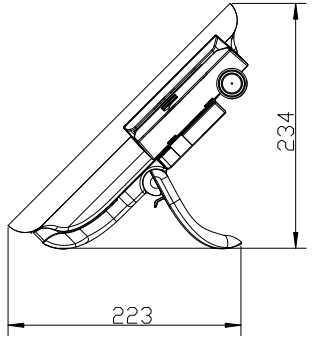
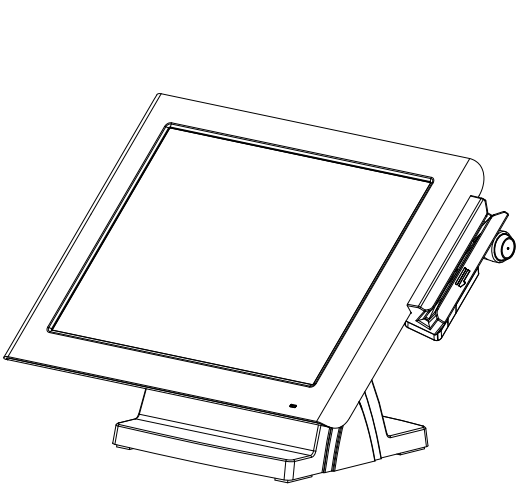
230
388

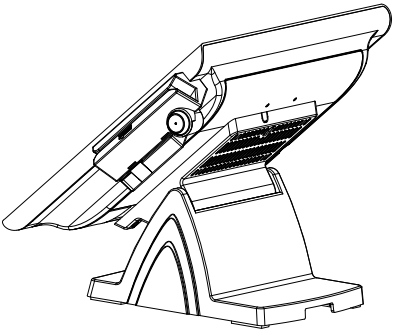

Stand

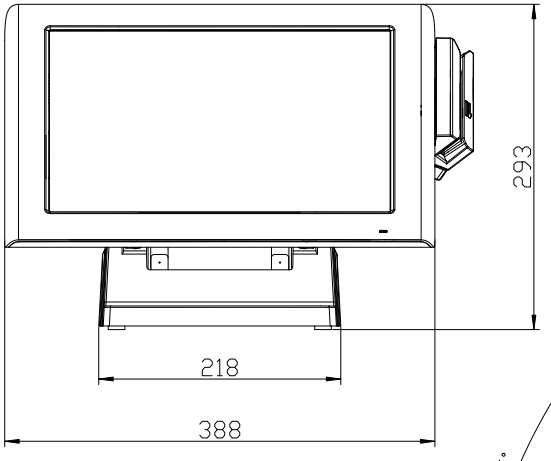

Adjustable angle
30~50 degrees
45°

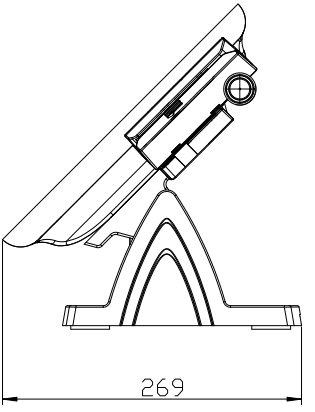

234
223

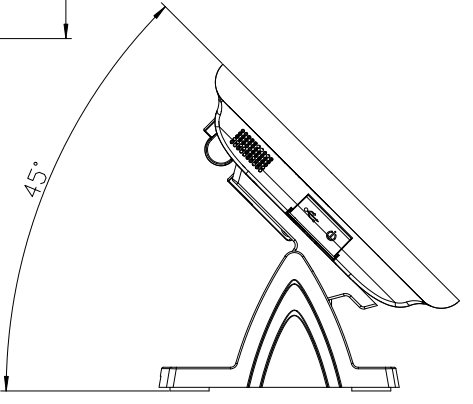
Small Stand





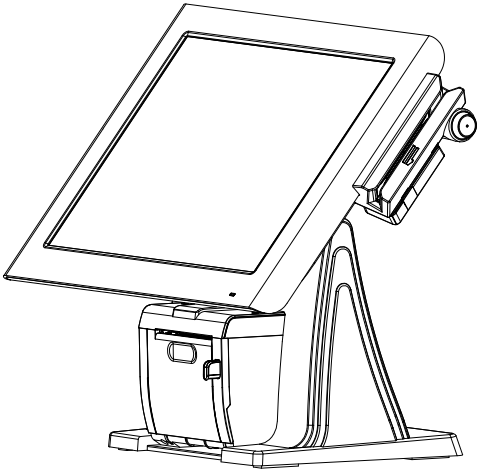


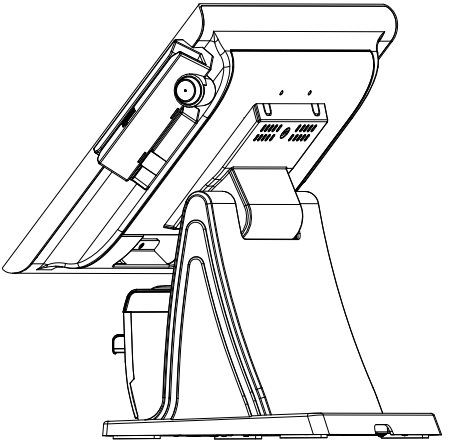


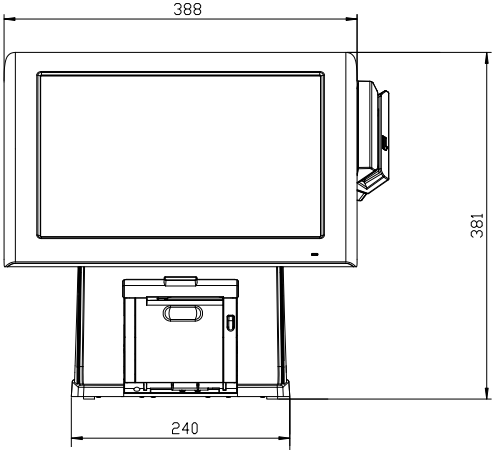


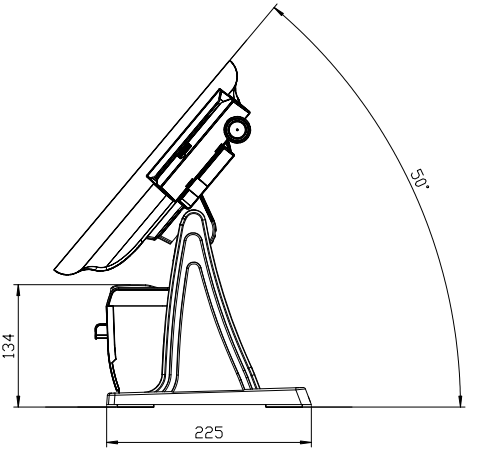
Adjustable angle
0~70 degrees

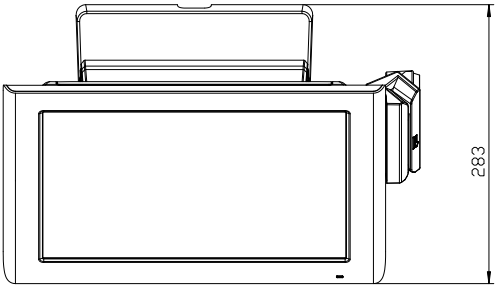
PRINTER Stand

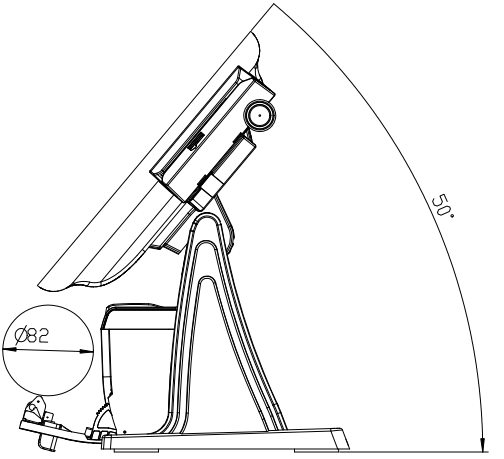




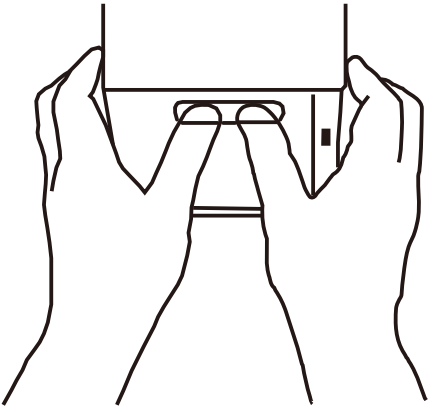


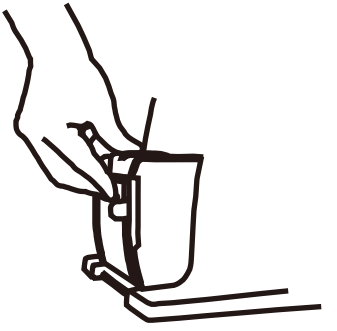


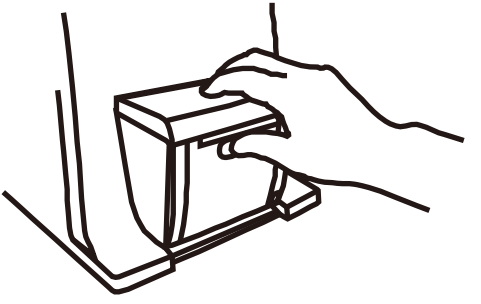




Caution:
The correct method of "Closing Printer-Door". Please refer to below drawings.

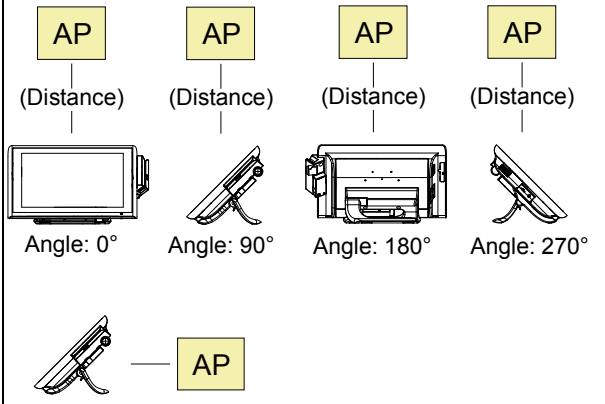






1-3. SYSTEM SPECIFICATIONS

System

<table>
<tr><td>CPU</td><td>Intel® Celeron® J1900 Quad-Core 2.0GHz</td></tr>
<tr><td>Memory</td><td>1 x DDR3 SO-DIMM 204-pin socket, up to 8GB</td></tr>
<tr><td>OS Support</td><td>▪ Windows Embedded 8 Industry Pro Retail
▪ Window Embedded POSReady7</td></tr>
<tr><td>LAN</td><td>1 x Giga LAN</td></tr>
<tr><td>VGA</td><td>1 x DB-15</td></tr>
<tr><td>Wireless LAN (Optional)</td><td>802.11 b/g/n
<table>
<tr><td>AP distance</td><td>0°</td><td>90°</td><td>180°</td><td>270°</td></tr>
<tr><td>5M</td><td>-29 dB</td><td>-29 dB</td><td>-30 dB</td><td>-29 dB</td></tr>
<tr><td>10M</td><td>-30 dB</td><td>-30 dB</td><td>-31 dB</td><td>-31 dB</td></tr>
</table>
Note:
1. Test tolerance: ± 5dB
2. AP: ASUS RT-N56U (2 x internal antenna with 3.8 dBi gain)
 

</td></tr>
<tr><td>Audio</td><td>2W speaker & Line-out Port</td></tr>
<tr><td>BIOS</td><td>AMI SPI BIOS, 8 Mbits with VGA BIOS</td></tr>
<tr><td>RTC Accuracy</td><td>3 days ± 3 seconds</td></tr>
<tr><td>System Weight</td><td>With power adapter approx. 5.5 kg</td></tr>
<tr><td>Dimension (W x H x D)</td><td>388mm x 223mm x 234mm</td></tr>
</table>

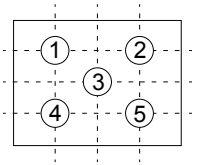
Power Consumption (AC): Power Supply: 60~90 Watt power adapter

System status	OFF	ODLE	WORKING	
			w/o Printer	with Printer
Burn-in Test loading Set /CPU /HDD /MEMORY	Shut down	standby	100%	
USB	-	-	5V x4 ports with dummy	
COM	-	-	12V x2 ports with dummy 5V x1 ports with dummy	
For Printer	-	-	-	with 24V/1.2A printer running
Power Consumption	AC 1.3W	AC 20.4W	AC 58W	AC 88W

Certificate: CE, CE-LVD, FCC

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

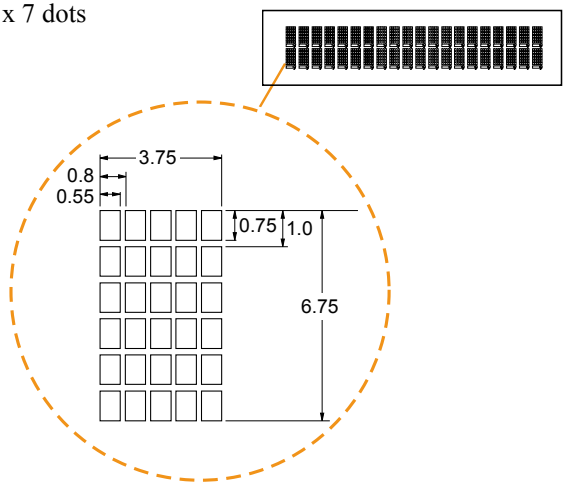
Display

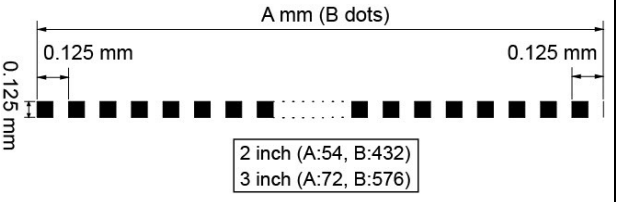
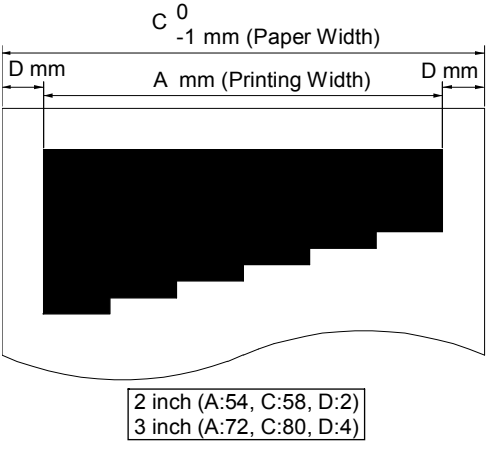
15” TFT XGA LCD	Max. Resolution: 1024 x 768 Signal Interface: TTL (24-bit)
Touchscreen	15” ▪ 5-wire resistive type ▪ Projected capacitive type
Brightness  	Resistive TouchScreen Minimum 160 cd/m^2 Projected Capacitive TouchScreen Minimum 180 cd/m^2

Environment

Temperature	▪ Operating: 0 ~ 35°C (32 ~ 95°F) ▪ Storage: -5 ~ 60°C (-27 ~ 140°F)
Humidity	20~90%

Optional accessories

MSR & i-Button	ISO I ,II, III; JIS I,II and support information key reader
RFID	ISO14443A, Mifare, Felica-lite
Fingerprint	8-bit grayscale reader
2nd Display	▪ 8” LCD (Resolution: 800 x 600) ▪ 10.4” LCD (Resolution: 1024 x 768 or 800 x 600)
Customer Display	▪ Interface: RS-232C Baud Rate: 9600/19200 bps ▪ Placement: 20 columns and 2 lines, each column is 5 x 7 dots  Standard Code CP-437, Katakana, CP-737, CP-850, CP-852, CP-857, CP-860, CP-862, CP-863,CP-865, CP-866, CP-1250, CP-1251, CP-1252, CP-1253, CP-1254, CP-1255, CP-1257, International Characters USA, FRANCE, GERMANY, UK, DENMARK I, SWDEN, ITALY, SPAIN I, JAPAN, NORWAY, DENMARK II, SPAIN II, LATIN, KOREA, RUSSIA, SLAVONIC

Printer	2” or 3” easy loading thermal printer with auto-cutter Printer: **Items** / **Specifications** Printing method: Thermal dot line printing Printing accuracy: 1mm /5M Paper feed pitch: 0.0625 mm Maximum Paper-Roll thickness: 80mm Total dots per line & Printable dots per line: 2inch 432 dots; 3inch 576 dots Maximum print speed: 2inch 200 mm/s; 3inch 170 mm/s Print width: 2inch 54 mm; 3inch 72mm Paper width: 2inch 58 +0/-1 mm; 3inch 80 +0/-1 mm  

Printer

Auto-cutter:

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

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

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-6722 on a sturdy, level surface. Be sure to allow enough space around the system to have easy access needs.
   b. Avoid installing your PA-6722 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-6722 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-6722 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

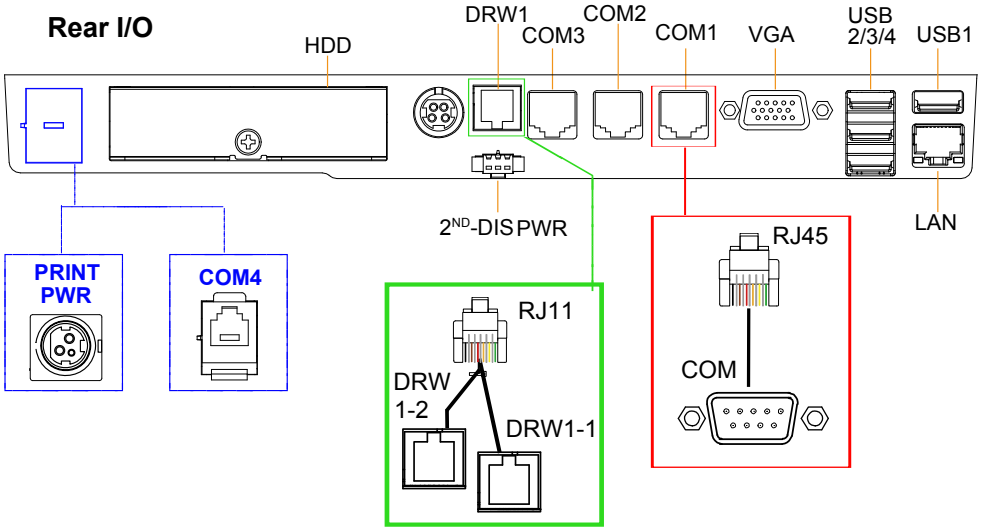
Helpful information that describes the jumper and connector settings, component locations, and pin assignment.

Sections included:

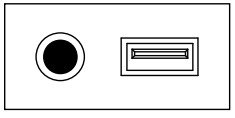
- External I/O Port Pin Assignment
- How to Set Jumpers
- Component Locations & Jumper Settings
  - Mainboard
  - Printer Board (peripheral device)
  - VFD Board (peripheral device)
  - MSR Board (peripheral device)
- Secondary Cash Drawer Port

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

Rear I/O



Side I/O



Power button

USB5

Power Button

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

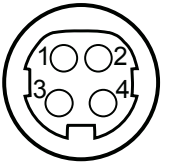
ACTION	ASSIGNMENT
Click	0V
Release	+3.3V

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

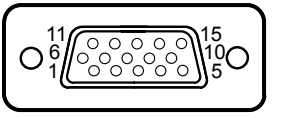


DC IN

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		

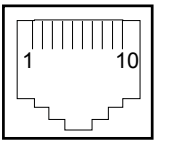


VGA

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



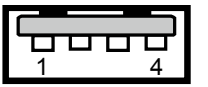
COM 1
/COM 2
/COM 3
/COM 4 (option)

USB Port

USB1, USB2, USB3, USB4, USB5: USB Type A Ports

- USB 1~4: Rear I/O
- USB 5: Side IO

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



USB 1
/USB 2
/USB 3
/USB 4
/USB 5

Note:
USB1 with Standby power 5V. the Others are w/o standby power.

LAN Port

LAN: LAN RJ45 Port (rear IO)

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

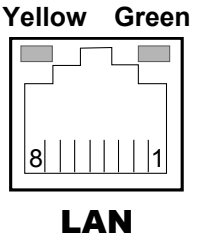
LAN LED Indicator: **RA Ver.**

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.



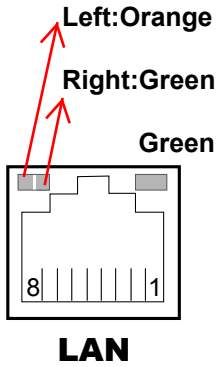
LAN LED Indicator: **RB Ver.**

Left Side LED

Orange Color Blinking	Giga LAN Message Active
Green Color Blinking	10/100Mbps LAN Message Active

Right Side LED

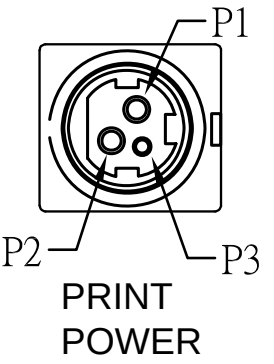
Green Color On	LAN switch/ hub connected.



Printer Power Port (Optional)

PRINT PWR: DC24V power supply for the stand-printer

PIN	ASSIGNMENT
P1	GND
P2	+24V
P3	NA

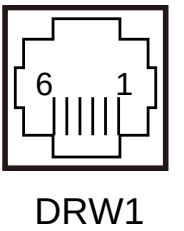


Cash Drawer Port

DRW1 is used by default. If you need a second port, adopt the method below.

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	DRW2 Sense	4	12V/24V (Max. current 1A)
2	GPIO1 /DRW1	5	GPIO2 /DRW2
3	DRW1 Sense	6	GND

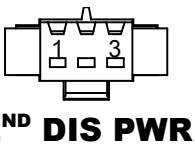
Please refer to page.27 for detail of DRW2 port.



2nd Display Power Port

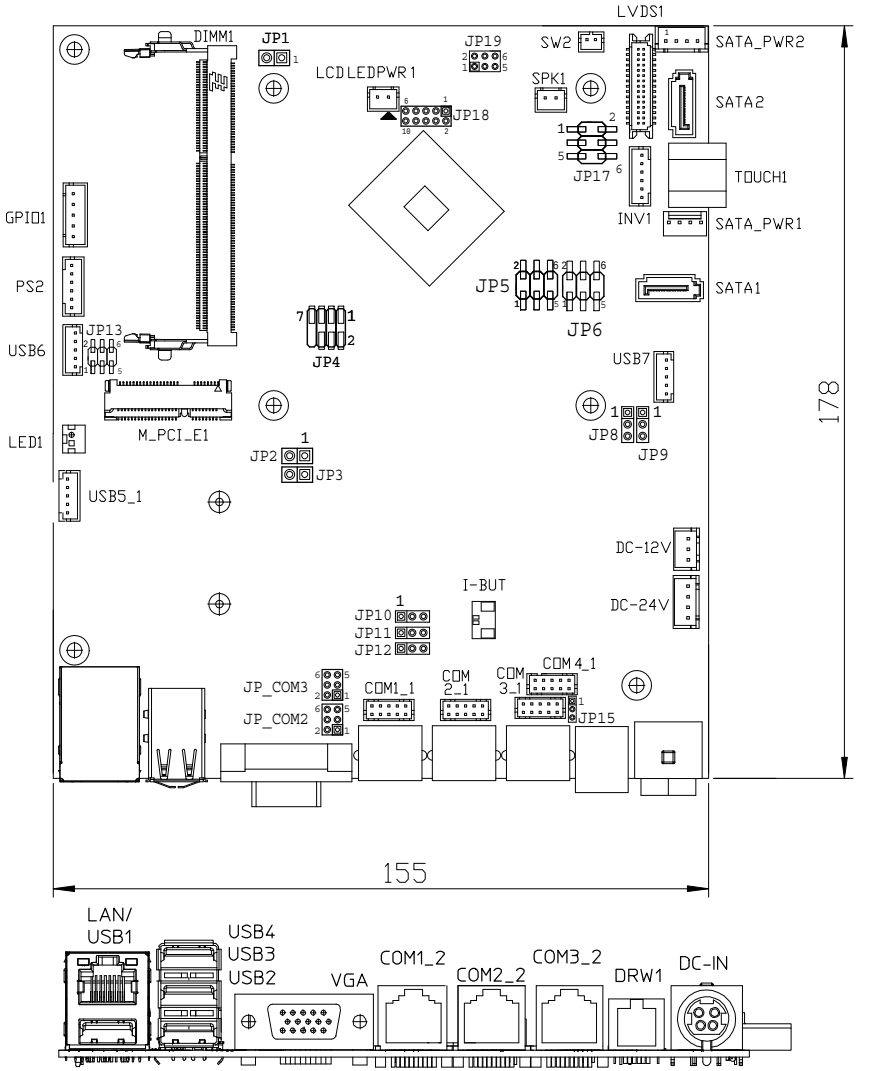
2ND DIS PWR: DC12V power supply of for 2nd display

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	VCC12	3	VCC12
2	GND		



2-2. MAINBOARD COMPONENT LOCATIONS & JUMPER SETTINGS

M/B: PB-6722



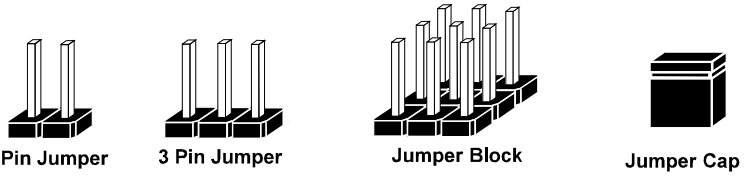
PB-6722 Mainboard Component Locations

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.

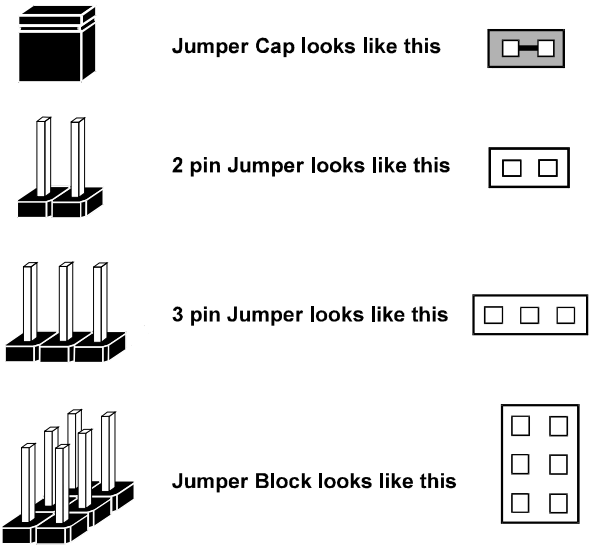
Jumpers can be combined into sets that called jumper blocks. When jumpers are all in the block, you have to put them together to set up the hardware configuration. The figure below shows what this looks like.

Jumpers & caps

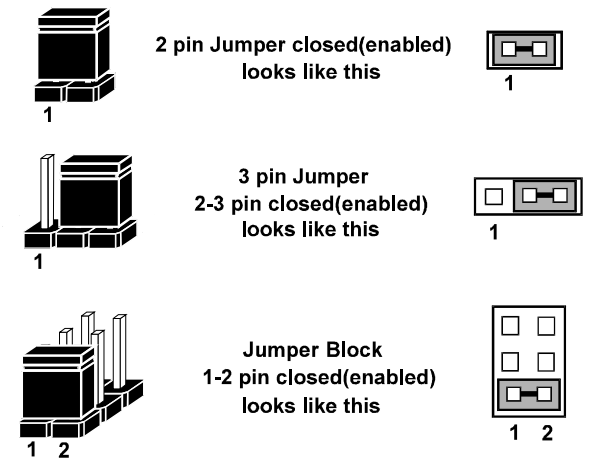


If a jumper has three pins for example, labelled PIN1, PIN2, and PIN3. You can connect PIN1 & PIN2 to create one setting and shorting. You can either connect PIN2 & PIN3 to create another setting. The same jumper diagrams are applied all through this manual. The figure below shows what the manual diagrams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

Jumper diagrams



Jumper settings

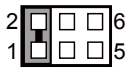
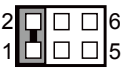
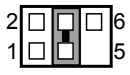
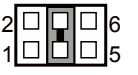
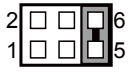
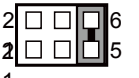


COM, Cash Drawer Port voltage selection

COM2 / COM3

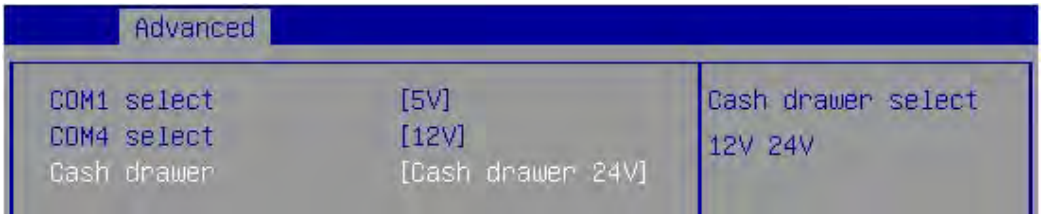
Voltage of both COM2 & COM3 ports are made to control by jumpers on board

JP_COM2, JP_COM3: Pin-headers on board

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

COM1 / COM4 /DRW1

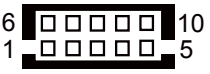
Voltage of external ports "COM1 & COM4 & Cash Drawer" are made to control on BIOS for your convenience



COM Connector

COM1-1, COM2-1, COM3-1, COM4-1: 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

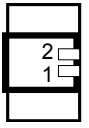


COM1-1/
COM2-1/
COM3-1/
COM4-1

I-Button Connector

I-BUT: i-Button Connector

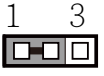
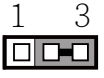
PIN	ASSIGNMENT
1	COM2_DTR_R_I
2	COM2_RXD_R_I



I-BUT

I-Button Function Selection

JP10, JP11, JP12: i-Button Function Connectors

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
COM2	1-2	 JP10 /JP11 /JP12
I-BUT	2-3	 JP10 /JP11 /JP12

Note: Manufacturing Default is COM2.

*COM2 & COM2-1 will not function when jumpers JP10, JP11 & JP12 are set as “I_BUT”

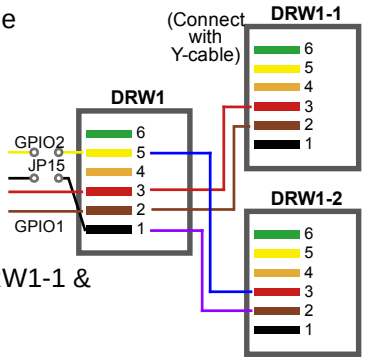
DRW1, DRW1-1, DRW1-2

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 JP15 as 1-2 connected if necessary.

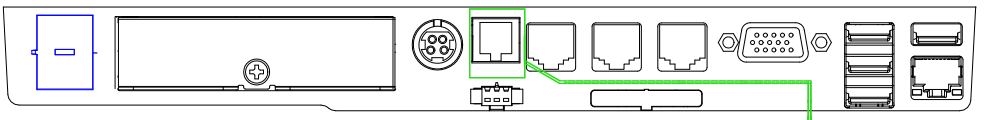


Step.2

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

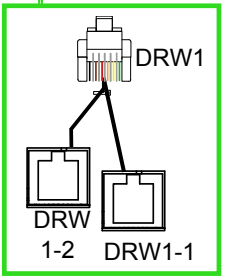
JP15

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
DRW1-1 & DRW1-2	1-2	1 JP15
DRW1 only	2-3	1 JP15



Step.3

DRW1, DRW1-1, DRW1-2 shares the same power source (Default at 12V).



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

CASH DRAWER CONFIGURATION

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

Configuration Sequence
To program F81866 configuration registers, the following configuration sequence must be followed:
(1) Enter the extended function mode
(2) Configure the configuration registers
(3) Exit the extended function mode

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

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

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

Code example for open the cash drawer 1

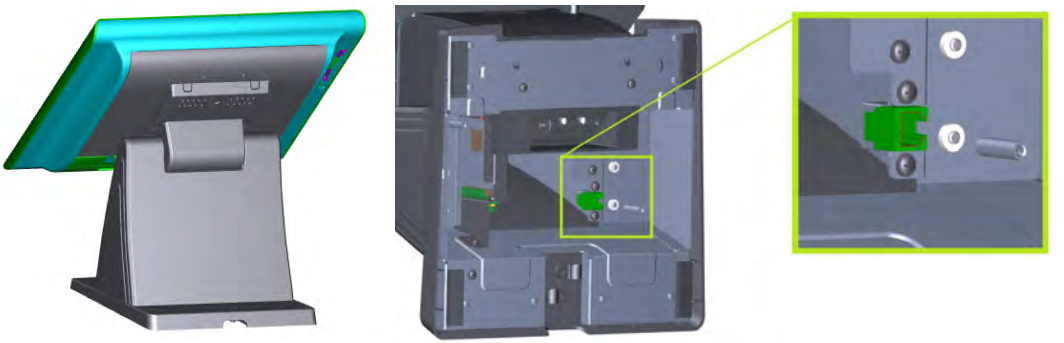
```
;------ Enter to extended function mode ------------------------------------------------------
mov   dx,    2eh
mov   al,    87h
out   dx,    al
out   dx,    al
;------ Select Logical Device 6 of Cash drawer -----------------------------------------
mov   al,    07h
out   dx,    al
inc   dx
mov   al,    06h
out   dx,    al
dec   dx
;------ Open the Cash drawer 1 ---------------------------------------
mov   al,    91h
out   dx,    al
inc   dx
mov   al,    04h
out   dx,    al

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

Notice:

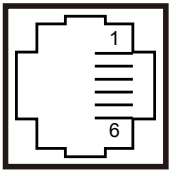
DRW2 Port (Only support PA-6722 selected "Printer kit")

Signal from printer board (MB-1030, MB-1011(3), PDAC3100) and be controlled by command. DRW2 port on the bottom of Stand with a cable (optional).



Bottom View

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	4	+24V
2	Drawer Open	5	NC
3	Drawer Sense	6	GND



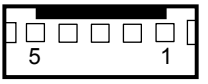
DRW2

Control Codes	Hexadecimal Codes	Function
<DLE EOT>	10 04	Real-time status transmission
<DLE DC4>	10 14	Real-time output of specified pulse

USB Connector

USB5_1, USB6, USB7: USB 2.0 connector

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



USB 5_1
/USB 6
/USB 7

Note:

USB6 signal is shared from "MINI-PCIE" port.

USB6 could be functioned when JP13 are set 1-3, 2-4 [short].

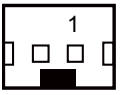
USB7 signal is shared from "Touch Controller"

USB7 could be functioned when JP8, JP9 are set 1-2 [short].

LED Connector

LED1: Power indication LED connector

PIN	ASSIGNMENT
1	GND
2	PWR_LED

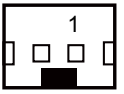


LED1

Speaker Connector

SPK1: Speaker connector

PIN	ASSIGNMENT
1	HD_FRONT-OUT-R
2	HD_FRONT-OUT-L

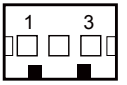


SPK1

Power Connector

DC12V: DC 12Voltage Provider Connector

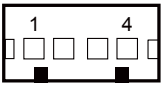
PIN	ASSIGNMENT
1	VCC12
2	GND
3	VCC12



DC12V

DC24V: Power for Thermal Printer Connector

PIN	ASSIGNMENT
1	VCC24
2	VCC24
3	GND
4	GND

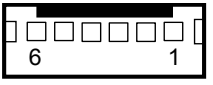


DC24V

Inverter Connector

INV1: Inverter connectors

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

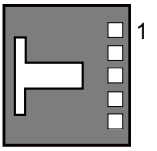


INV1

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		

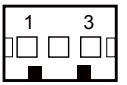


TOUCH1

For Reserve Connector

SPK2: External audio phone jack reserve connector

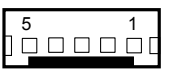
PIN	ASSIGNMENT
1	HD_FRONT-OUT-L
2	GND
3	HD_FRONT-OUT-R



SPK2

GPIO1: 2 ports GPIO & DC5V & DC3.3V reserve connector

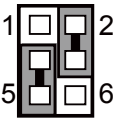
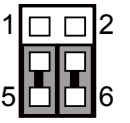
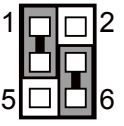
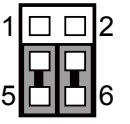
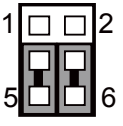
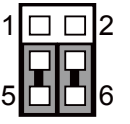
PIN	ASSIGNMENT
1	GPIO 1
2	GPIO 2
3	5V (Maximum current: 0.5A)
4	3.3V ((Maximum current: 0.5A)
5	GND



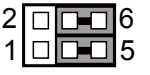
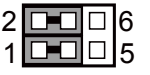
GPIO1

Panel Resolution Selection

JP5, JP6: Panel resolution control connectors

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION	
1024 x 768 (24 bit)	JP5: 3-5, 2-4 JP6: 3-5, 4-6	 JP5	 JP6
1024 x 768 (18 bit)	JP5: 1-3, 4-6 JP6: 3-5, 4-6	 JP5	 JP6
800 x 600 (18bit)	JP5: 3-5, 4-6 JP6: 3-5, 4-6	 JP5	 JP6

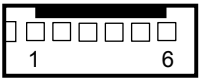
JP13: "USB6 signal support to" selection

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
USB signal to mini-PCIE	3-5 4-6	JP13 
USB signal to USB6 wafer	1-3 2-4	JP13 

MSR/Card Reader Connector

PS/2_1: 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

LVDS Connector

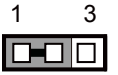
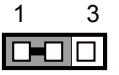
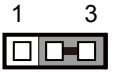
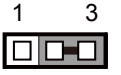
LVDS1: LVDS Connector

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	LVDS_VCC	16	LVDS_CLKA_D+
2	PANEL_Reverse	17	LVDS_CLKA_D-
3	LVDS_CLKB_D-	18	GND
4	LVDS_CLKE_D+	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

LVDS1

Touch Panel Signal Interface Selection

JP8, JP9: Control connectors for touch panel signal interface

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION	
USB7 Connector	JP8: 1-2 JP9: 1-2	 JP8	 JP9
USB Interface	JP8: 2-3 JP9: 2-3	 JP8	 JP9

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		

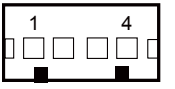
SATA1/ SATA2

SATA_PWR1, SATA_PWR2**:** Serial ATA power connectors

PIN	ASSIGNMENT
1	VCC
2	GND
3	GND
4	VCC12

SATA_PWR1

SATA_PWR2



Clear CMOS Data Selection

JP3: Clear CMOS data selection

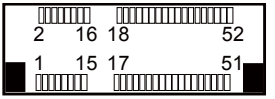
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
Normal	Open	 **JP3**
Clear CMOS*	1-2	 **JP3**

*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.

Mini-PCIe / mSATA Connector

SLOT1: Mini-PCIe connector, not support USB function

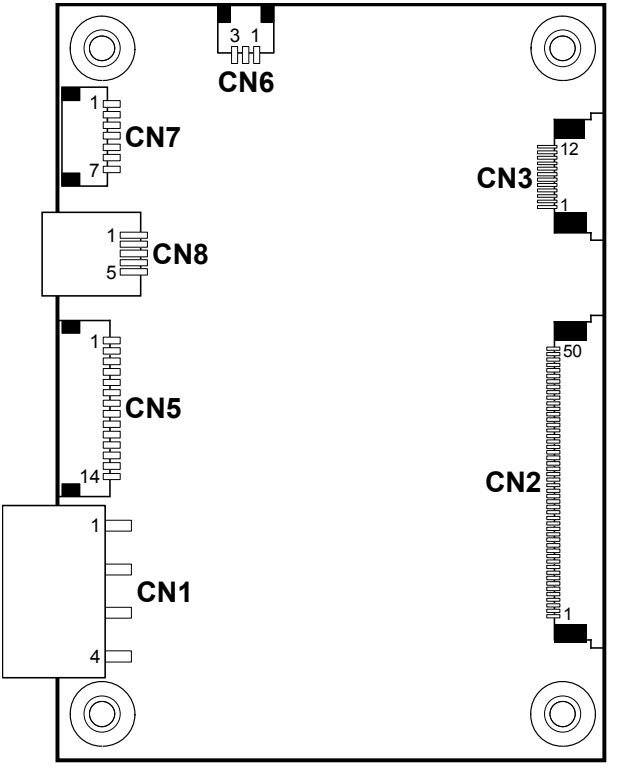
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	WAKE#	27	GND
2	+3.3V	28	+1.5V
3	Reserved	29	GND
4	GND	30	SMB_CLK
5	Reserved	31	PETn2
6	+1.5V	32	SMB_DATA
7	CLKREQ#	33	PETp2
8	Reserved	34	GND
9	GND	35	GND
10	Reserved	36	USB D-
11	REFCLK1-	37	GND
12	Reserved	38	USB D+
13	REFCLK1+	39	+3.3V
14	Reserved	40	GND
15	GND	41	+3.3V
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	PERn0	49	NC
24	+3.3SB	50	GND
25	PERp0	51	Reserved
26	GND	52	+3.3V



SLOT1

2-3. PRINTER BOARD COMPONENT LOCATIONS & PIN ASSIGNMENT

2-3-1. Printer Board: PDAC-3100

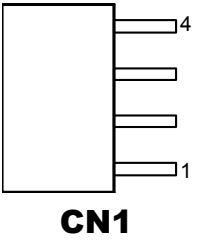


PDAC-3100 Printer Board Component Locations

2-3-1-1. Power Supply Connector

CN1: Power supply wafer

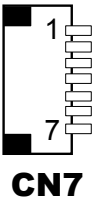
PIN	ASSIGNMENT
1	+24V
2	+24V
3	GND
4	GND



2-3-1-2. RS-232 Interface Connector

CN7: RS-232 interface connector

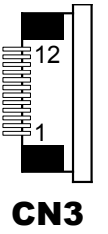
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	TXD	5	DTR
2	RXD	6	DSR
3	RTS	7	GND
4	CTS		



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

CN3: Auto-cutter wafer

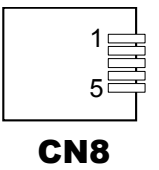
PIN	ASSIGNMENT	FUNCTION
1	NC	Unused
2	Vcs	Power supply of the home position sensor
3	GND	GND of the home position sensor
4	CUTS	Signal of the hom position sensor
5	2B-1	Auto-cutter motor drive signal
6	2B-2	Auto-cutter motor drive signal
7	2A-1	Auto-cutter motor drive signal
8	2A-2	Auto-cutter motor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



2-3-1-4. USB Connector

CN8: USB Connector

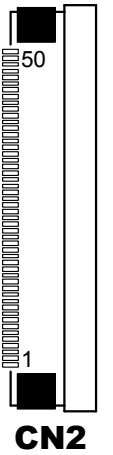
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	Vbus	4	NC
2	D-	5	GND
3	D+		



2-3-1-5. Thermal Head/Motor/Sensor Connector

CN2: Thermal head/motor/sensor connector

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

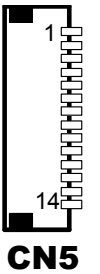


PIN	ASSIGNMENT	FUNCTION
30	GND	Head GND
31	LATCH	Print data latch
32	24V	Head drive power
33	24V	Head drive power
34	24V	Head drive power
35	24V	Head drive power
36	24V	Head drive power
37	24V	Head drive power
38	NC	Unused
39	PS	Signal of the out-of-paper sensor
40	Vps	Power supply of the out-of-paper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

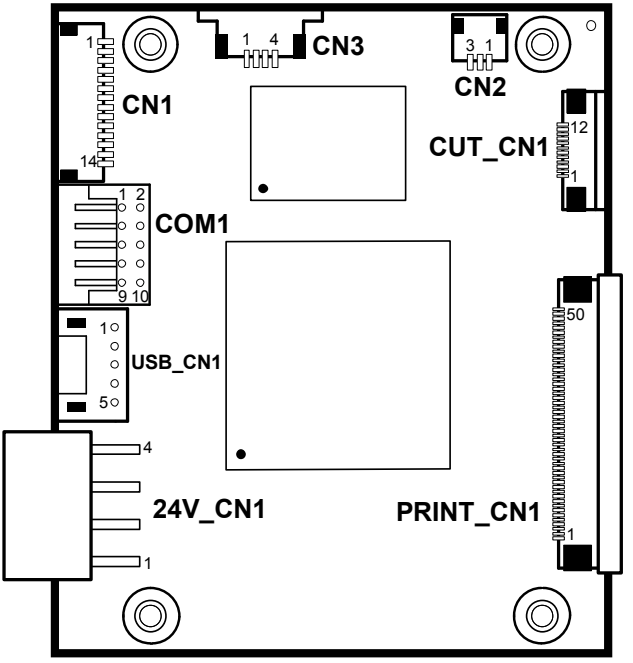
2-3-1-6. Terminal Assignment Connector

CN5: Terminal assignment connector

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



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

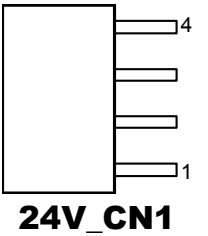


MB-1030 Printer Board Component Locations

2-3-2-1. Power Supply Connector

24V_CN1: Power Supply Wafer

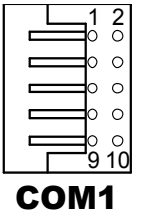
PIN	ASSIGNMENT
1	GND
2	GND
3	+24V
4	+24V



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

COM1: RS-232 Interface Connector

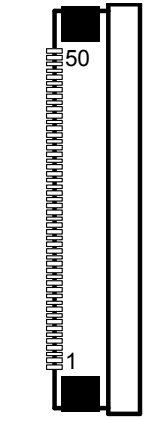
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	NC	6	DSR /CTS
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR /RTS	9	NC
5	GND	10	NC



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

PRINT_CN1: Thermal head/motor/sensor connector

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



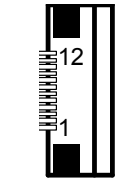
PRINT_CN1

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

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

CUT_CN1: Auto-cutter Connector

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

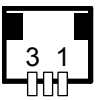


CUT_CN1

2-3-2-5. Paper-Near-END Sensor Connector

CN2: Paper-near-end sensor connector

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

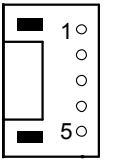


CN2

2-3-2-6. USB Interface Connector

USB_CN1: USB interface connector

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

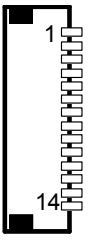


USB_CN1

2-3-2-7. Terminal Assignment Connector

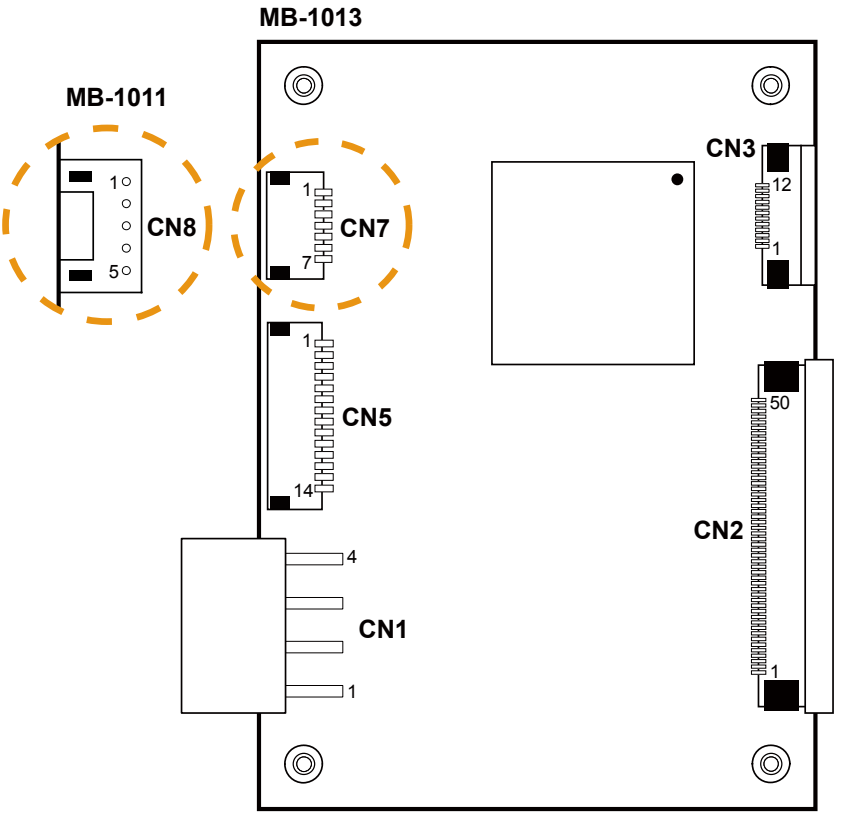
CN1: Terminal assignment connector

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



CN1

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

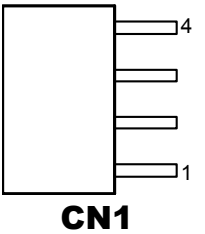


MB-1011 & MB-1013 Printer Board Component Locations

2-3-3-1. Power Supply Connector

CN1: Power supply wafer

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

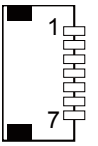


CN1

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

CN7: RS-232 interface connector

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

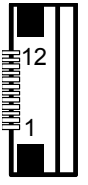


CN7

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

CN3: Auto-cutter Connector

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

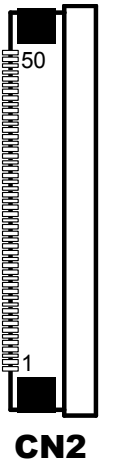


CN3

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

CN2: Thermal head/motor/sensor connector

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

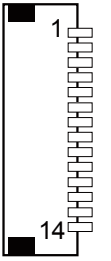


PIN	ASSIGNMENT	FUNCTION
30	GND	Head GND
31	LATCH	Print data latch
32	24V	Head drive power
33	24V	Head drive power
34	24V	Head drive power
35	24V	Head drive power
36	24V	Head drive power
37	24V	Head drive power
38	NC	Unused
39	PS	Signal of the out-of-paper sensor
40	Vps	Power supply of the out-of-paper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

2-3-3-6. Terminal Assignment Connector

CN5: Terminal assignment connector

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

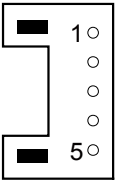


CN5

2-3-3-5. USB Interface Connector

CN8: USB interface connector

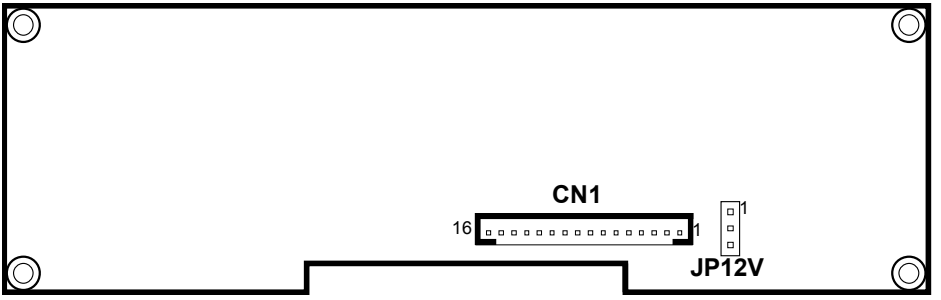
PIN	ASSIGNMENT
1	Vbus
2	D-
3	D+
4	GND
5	GND



CN8

2-4. VFD BOARD COMPONENT LOCATIONS & PIN ASSIGNMENT

2-4-1. VFD Board: MB-4103, LD720



MB-4103 & LD720 VFD Board Component Locations

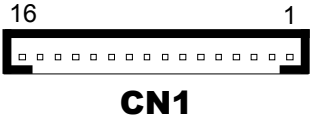
2-4-1-1. Power Switch Selection

JP12V: Power Switch Selection

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
OFF	1-2	1  JP12V
ON	2-3	1  JP12V

2-4-1-2. RS-232 Serial Interface Connector

CN1: RS-232 serial interface wafer



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

2-5. MSR BOARD COMPONENT LOCATIONS & PIN ASSIGNMENT

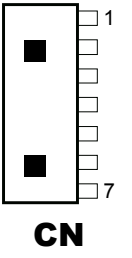
2-5-1. ID TECH

ID-TECH MSR Board Component Locations

2-5-1-1. Main Connector

CN:

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



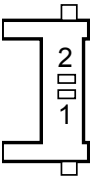
2-5-3. MB-3012

MB-3012 MSR Board Component Locations

2-5-3-1. Information Button Reader

I_BUTTON1: Information button reader

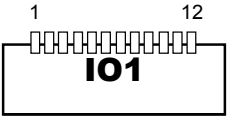
PIN	ASSIGNMENT
1	I_B1
2	GND



2-5-3-2. Output Connector

IO1: Output wafer

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



CHAPTER

3

SOFTWARE

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

Sections included:

- Driver
  - Intel® Chipset Software Installation Utility
  - VGA Driver Utility
  - LAN Driver Utility
  - Sound Driver Utility
  - Touchsreen Driver Utility
  - Fingerprinter Driver Utility (Optional)
  - RFID Module Driver (Optional)
  - Wireless Module Driver (Optional)

- Embedded Peripheral Device
  - Printer
  - VFD
  - MSR

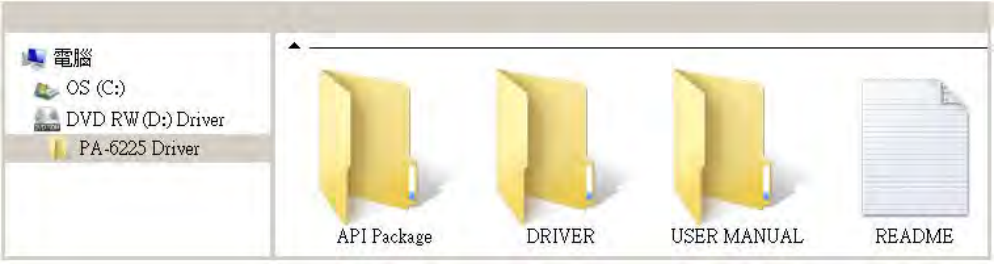
- API

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

3-1. DRIVER DISC

3-1-1. Introduction

Enclosed with the PA-6722 Series package is our driver utilities, which comes in a CD-ROM format.



3-1-2-1. API Package folder

Refer to the "3-3 API" for the details.
+--->\DEMO PROJECT\
+--->\ProxAPI standard\
+--->\Document\

3-1-2-2. DRIVER folder

1. The sequence of setup is "Main Chip->VGA->LAN-> SOUND-> TOUCH[Device folder]"
2. You will be prompted to reboot when installation is complete.

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

3-1-2-3. USER MANUAL folder

\AdbeRdr930_en_US.exe (PDF File reader)

3-1-2-4. README

The DRIVER DISC introduction

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

3-1-3-1. 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
- Identification of Intel® Chipset Components in Device Manager

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

The utility pack is to be installed only for POSReady 7 & Embedded 8 Industry 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-6722 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 installation is completed, shut down the system and restart PA-6722 for the changes to take effect.

3-1-4. VGA Driver Utility

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

3-1-4-1. Installation of VGA Driver

To install the Graphics driver, follow the steps below:

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

3-1-5. LAN Driver Utility

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

3-1-5-1. Installation of LAN Driver

To install the LAN Driver, follow the steps below:

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

3-1-6. Sound Driver Utility

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

3-1-6-1. Installation of Sound Driver

To install the Sound Driver, follow the steps below:

1. Connect the USB CD-ROM device to PA-6225 and insert the driver disk.
2. Enter the "Sound" 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 installation is completed, shut down the system and restart PA-6225 for the changes to take effect.

3-1-7. Touchscreen Driver Utility

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

3-1-7-1. Installation of Touchscreen Driver

To install the touchscreen driver, follow the steps below:

1. Connect the USB CD-ROM device to PA-6225 and insert the driver disk.
2. Enter the "Device\Touch Screen" 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 installation is completed, shut down the system and restart PA-6225 for the changes to take effect.

3-1-8. Fingerprinter Driver Utility (Optional)

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

3-1-8-1. Installation of Fingerprinter Driver

To install the fingerprinter driver, follow the steps below:

1. Connect the USB CD-ROM device to PA-6722 and insert the driver disk.
2. Enter the "Device\Embedded Finger Printer" folder where the fingerprinter driver is located.
3. Click **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once installation is completed, shut down the system and restart PA-6722 for the changes to take effect.

3-1-9. RFID Module Driver Utility (Optional)

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

3-1-9-1. Installation of |RFID Module Driver

To install the fingerprinter driver, follow the steps below:

1. Connect the USB CD-ROM device to PA-6722 and insert the driver disk.
2. Enter the "Device\RFID Module" 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 installation is completed, shut down the system and restart PA-6722 for the changes to take effect.

3-1-10. Wireless Module Driver Utility (Optional)

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

3-1-10-1. Installation of Wireless Driver

To install the wireless driver, follow the steps below:

1. Connect the USB CD-ROM device to PA6722 and insert the driver disk.
2. Enter the "Device\Embedded Wireless Module" folder where the wireless driver is located.
3. Click **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once installation is completed, shut down the system and restart PA-6225 for the changes to take effect.

3-2. PERIPHERAL DEVICES

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

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

3-2-1-1. Command

1. Printer Registry Operation

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

2. Command List

Standard commands

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

Kanji Control Commands

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

Other Commands

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

COMMAND LIST

Standard Commands

Control Codes	Hexadec-imal Codes	Function	Stand-ard Mode	Page Mode
<HT>	09	Horizontal tab	V	V
<LF>	0A	Print and line feed	V	V
<FF>	0C	Print and recover to standard mode (in page mode)	Ignored	V
<CR>	0D	Print and carriage return	V	V
<CAN>	18	Cancel print data in page mode	Ignored	V
<DLE EOT>	10 04	Real-time status transmission	V	V
<DLE ENQ>	10 05	Real-time request to printer	V	V
<DLE DC4>	10 14	Real-time output of specified pulse	V	V
<ESC FF>	1B 0C	Print data in page mode	Ignored	V
<ESC SP>	1B 20	Set right-side character spacing	V	V
<ESC !>	1B 21	Select print mode(s)	V	V
<ESC $>	1B 24	Set absolute print position.	V	V
<ESC *>	1B 2A	Select bit image mode	V	V
<ESC ->	1B 2D	Turn underline mode on/off.	V	V
<ESC 2>	1B 32	Select default line spacing	V	V
<ESC 3>	1B 33	Set line spacing	V	V
<ESC =>	1B 3D	Select peripheral device	V	V
<ESC @>	1B 40	Initialize printer	V	V
<ESC D>	1B 44	Set horizontal tab position	V	V
<ESC E>	1B 45	Turn emphasized mode on/off	V	V
<ESC G>	1B 47	Turn double-strike mode on/off	V	V
<ESC J>	1B 4A	Print and feed paper	V	V
<ESC L>	1B 4C	Select page mode	◎	Ignored
<ESC M >	1B 4D	Select character font	V	V
<ESC R>	1B 52	Select an international character set	V	V
<ESC S>	1B 53	Select standard mode	Ignored	V
<ESC T>	1B 54	Select print direction in page mode	▲	V
<ESC V>	1B 56	Turn 90 degree clockwise rotation mode on/off	V	▲
<ESC W>	1B 57	Set printing area in page mode	▲	V
<ESC \>	1B 5C	Set relative print position	V	V
<ESC a>	1B 61	Select justification	◎	▲
<ESC c 3>	1B 63 33	Select paper sensor(s) to output paper-en signals	V	V
<ESC c 4>	1B 63 34	Select paper sensor(s) to stop printing	V	V
<ESC c 5>	1B 63 35	Enable/disable panel buttons	V	V
<ESC d>	1B 64	Print and feed n lines	V	V
<ESC i>	1B 69	Full cut	V	Disabled
<ESC m>	1B 6D	Partial cut	V	Disabled
<ESC p>	1B 70	General pulse	V	V
<ESC t>	1B 74	Select character code table	V	V

<ESC {>	1B 7B	Turn upside-down printing mode on/off	◎	▲
<FS p>	1C 70	Print NV bit image	V	Disabled
<FS q>	1C 71	Define NV bit image	◎	Disabled
<GS !>	1D 21	Select character size		V
<GS $>	1D 24	Set absolute vertical print position in page mode	Ignored	V
<GS *>	1D 2A	Define download bit images	V	V
<GS (A>	1D 28 41	Execute test print	V	Disabled
<GS (K>	1D 28 4B	Set print density	V	Disabled
<GS />	1D 2F	Print download bit image	●	V
<GS B>	1D 42	Turn white/black reverse printing mode on/off	V	V
<GS H>	1D 48	Select printing position of HRI characters	V	V
<GS I>	1D 49	Transmit printer ID	V	Disabled
<GS L>	1D 4C	Set left margin	◎	Disabled
<GS P>	1D 50	Set basic calculated pitch	V	V
<GS V>	1D 56	Cut paper	◎	V
<GS W>	1D 57	Set printing area width	◎	▲
<GS \>	1D 5C	Set relative vertical print position in page mode	Ignored	
<GS a>	1D 61	Enable/disable Automatic Status Back (ASB)	V	V
<GS f>	1D 66	Select font for HRI characters	V	V
<GS h>	1D 68	Set bar code height	V	V
<GS k>	1D 6B	Print bar code	●	V
<GS r>	1D 72	Transmit status	V	V
<GS v 0>	1D 76 30	Print raster bit image	●	Disabled
<GS w>	1D 77	Set bar code width	V	V

Two-dimensional Bar Code Commands

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

Kanji Control Commands

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

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

Command classification

Executing : Printer executes the command, which does not then affect the following data.
Setting : Printer uses flags to make settings, and those settings affect the following data.

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

COMMAND DETAILS

STANDARD COMMAND DETAILS

HT

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

LF

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

FF

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

CR

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

CAN

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

DLE EOT n

[Name]	Real-time status transmission.
[Format]	ASCII OLE EOT n Hex. 10 04 n Decimal 16 4 n
[Range]	1 ≤ n ≤ 4
[Description]	Transmits the selected printer status specified by n in real time, according to th following parameters: n = 1 : Transmit printer status. n = 2 : Transmit off-line status. n = 3 : Transmit error status. n = 4 : Transmit paper roll sensor status.

n = 1 : Printer status.

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

n = 2 : Off-line status.

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

n = 3 : Error status

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

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

DLE ENQ n

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

DLE DC4 n m t

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

ESC FF

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

ESC SP n

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

ESC ! n

[Name]	Select print mode(s).
[Format]	ASCII ESC ! n Hex. 1B 21 n Decimal 27 33 n
[Range]	0 ≤ n ≤ 255 Initial Value n = 0
[Description]	This command selects print mode(s) with bits having following meanings.

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

ESC $ nL nH

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

ESC * m nL nH d1…dk

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

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

ESC - n

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

n	Function
0	Turns off underline mode
1	Turns on underline mode, set at 1-dot thick
2	Turns on underline mode, set at 2-dot thick

ESC 2

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

ESC 3 n

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

ESC = n

[Name]	Select peripheral device.
[Format]	ASCII ESC = n Hex. 1B 3D n Decimal 27 61 n
[Range]	0 ≤ n ≤ 255 Initial Value n = 1
[Description]	Selects the peripheral device for which the data is effective from the host computer.

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

ESC @

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

ESC D n1…nk NUL

[Name]	Set horizontal tab position
[Format]	ASCII ESC D n1...nk NUL Hex. 1B 44 n1...nk NUL Decimal 27 68 n1...nk NUL
[Range]	1 ≤ n ≤ 255 0 ≤ k ≤ 32
[Description]	Sets horizontal tab position ● n specifies the column number for setting a horizontal tab position from the left margin or the beginning of the line. ● k indicates the number of horizontal tab positions to be set.

ESC E n

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

ESC G n

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

ESC J n

[Name]	Print and feed paper.
[Format]	ASCII ESC J n Hex. 1B 4A n Decimal 27 74 n
[Range]	0 ≤ n ≤ 255
[Description]	This command prints the data in the print buffer and feeds the paper [n X vertical motion unit]. ● Sets the print position to the beginning of the next line after printing.

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

ESC L

[Name]	Select page mode
[Format]	ASCII ESC L Hex. 1B 4C Decimal 27 76
[Range]	N/A
[Description]	● Enabled only when input with the top of line. ● Invalid when input by page mode. ● Returns to standard mode after the following commands are issued. a. FF (Print and recover to page mode) b. ESC S (Select standard mode) ● Character expansion position has the starting point specified by ESC T (Character print direction selection in page mode) in the printing region designated by the ESC W (Set print region in the page mode) command. ● This command switches the settings for the following commands the values of which can be set independently in standard mode and page mode to those for page mode a. Set space amount: ESC SP, FS S b. Set line feed amount: ESC 2, ESC 3 ● The following commands are enabled only when in page mode. a. ESC V :Specify/cancel character 90 degree clockwise rotation b. ESC a :Position alignment c. ESC { :Specify/cancel upside-down printing d. GS W :Set print region width ● The following command is ignored in page mode. a. GS (A :Test print ● The following commands are invalid in page mode. a. FS p :Print NV bit image b. FS q :Define NV bit image c. GS v 0 :Print raster bit images d. GS L :Set left margin ● Recover to standard mode using ESC @ (initialize printer).

ESC M n

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

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

ESC R n

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

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

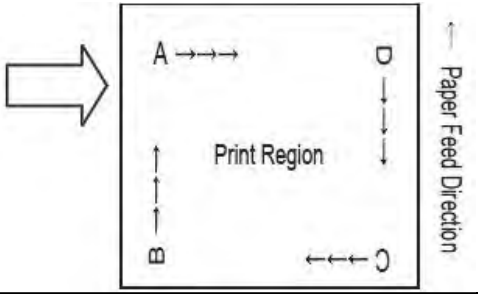
ESC S

[Name]	Select standard mode
[Format]	ASCII ESC S Hex. 1B 53 Decimal 27 83
[Range]	N/A
[Description]	● Valid only when input by page mode. ● All buffer data in page mode is deleted. ● Sets the print position to the beginning of the next line after execution. ● The print area set by ESC W (Set print region in page mode) is reset to the default setting. ● This command switches the settings for the following commands the values of which can be set independently in standard mode and page mode to those for standard mode a. ESC SP :Set character right space amount b. FS S :Set Chinese character space amount c. ESC 2 :Set default line spacing d. ESC 3 :Set line spacing ● The following commands are effective only when in standard mode. a. ESC W :Set print region in page mode b. ESC T :Select character print direction in page mode ● The following commands are ignored in standard mode. a. GS $:Specify absolute position for character vertical direction in page mode b. GS \: :Specify relative position for character vertical direction in page mode ● Standard mode is selected when the power is turned on, the printer is reset or initialized (ESC @).

ESC T n

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

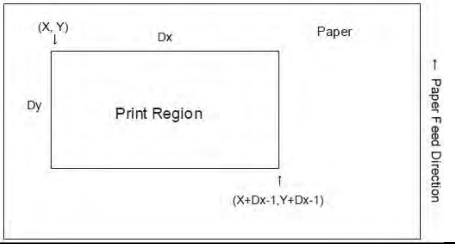
n	Print Direction	Starting Point
0, 48	Left to Right	Upper Left (A in the figure below)
1, 49	Bottom to Top	Lower Left (B in the figure below)
2, 50	Right to Left	Lower Right (C in the figure below)
3, 51	Top to Bottom	Upper Right (D in the figure below)



ESC V n

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

ESC W xL xH yL yH dxL dxH dyL dyH

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

ESC \ nL nH

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

ESC a n

[Name]	Select justification.
[Format]	ASCII ESC a n Hex. 1B 61 n Decimal 27 97 n
[Range]	0 ≤ n ≤2 Initial Value n = 0
[Description]	This command specifies position alignment for all data in one line in standard mode, using n as follows: n: 0 Left alignment; 1 Center alignment; 2 Right alignment This command has no effect in page mode.

ESC c 3 n

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

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

ESC c 4 n

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

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

ESC c 5 n

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

ESC d n

[Name]	Print and feed n lines
[Format]	ASCII ESC d n Hex. 1B 64 n Decimal 27 100 n
[Range]	0 ≤ n ≤ 255
[Description]	Prints the data in the print buffer and performs a paper feed of n lines. ● Sets the print position to the beginning of the next line after printing. ● Paper is fed approximately 150 mm if the [n x basic calculated pitch] exceeds approximately 150 mm (5.9 inches).

ESC i

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

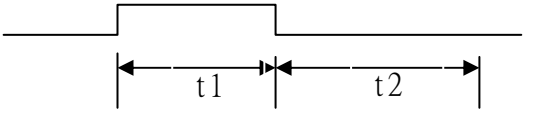
ESC m

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

ESC p m t1 t2

[Name]	General pulse.
[Format]	ASCII ESC p m t1 t2 Hex. 1B 70 m t1 t2 Decimal 27 112 m t1 t2
[Range]	0 ≤ m ≤ 1, 48 ≤ m ≤ 49 0 ≤ t1 ≤ 255 0 ≤ t2 ≤ 255
[Description]	This outputs a signal specified by t1 and t2 to the connector pin specified by m. Drawer kick on time is set to t1 x 2 ms; off time is set to t2 x 2 ms.

m	Connector Pin
0, 48	Drawer kick connector pin #2
1, 49	Drawer kick connector pin #5



ESC t n

[Name]	Select character code table.
[Format]	ASCII ESC t n Hex. 1B 74 n Decimal 27 116 n
[Range]	0 ≤ n ≤ 8 Initial Value n = 0
[Description]	Select page n of the character code table.

n	Character set
0	CP-437
1	Katakana
2	CP-850
3	CP-852
4	CP-860
5	CP-863
6	CP-865
7	CP-1252
8	User Define

ESC { n

[Name]	Turns upside-down printing mode on/off.
[Format]	ASCII ESC { n Hex. 1B 7B n Decimal 27 123 n
[Range]	0 ≤ n ≤ 255 Initial Value n = 0
[Description]	Specifies or cancels upside-down printing. ● Cancels upside-down printing when n = <*******0>H. ● Specifies upside-down printing when n = <*******1>H. ● n is effective only when it is the lowest bit. ● This command is effective only when input at the top of the line when standard mode is being used. ● This command has no affect in page mode. In page mode, this command is only effective for the setting. ● Upside-down printing rotates line data 180 degrees.

n	Upside-down mode
0	Turned off
1	Turned on

FS p n m

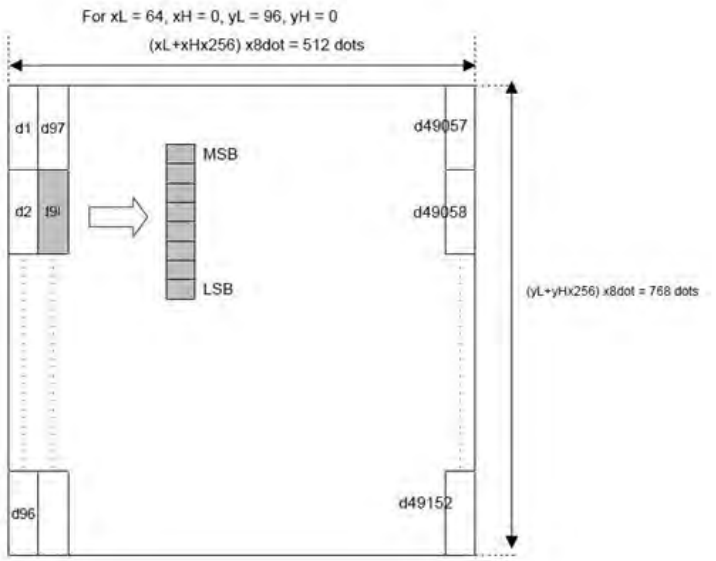
[Name]	Print NV bit image.
[Format]	ASCII FS p n m Hex. 1C 70 n m Decimal 28 112 n m
[Range]	1 ≤ n ≤ 255 0 ≤ m ≤ 3, 48 ≤ m ≤ 51
[Description]	Prints NV bit image n using mode m.

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

- n specifies the NV bit image number.
- m specifies the bit-image mode.
- NV bit image is a bit image defined in non-volatile memory by FS q and printed by this command.
- This command is ignored when the specified NV bit image n is undefined.

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

[Name]	Define NV bit image.
[Format]	ASCII FS q n [xL xH yL yH d1…dk]1…[xL xH yL yH d1…dk]n Hex. 1C 71 n [xL xH yL yH d1…dk]1…[xL xH yL yH d1…dk]n Decimal 28 113 n [xL xH yL yH d1…dk]1…[xL xH yL yH d1…dk]n
[Range]	1 ≤ n ≤ 255 1 ≤ (xL + xH ×256) ≤ 54 (0 ≤ xL ≤ 54, xH=0) for 2 inch 1 ≤ (xL + xH ×256) ≤ 72 (0 ≤ xL ≤ 72, xH=0) for 3 inch 1 ≤ (yL + yH ×256) ≤ 96 (0 ≤ yL ≤ 96, yH=0) 0 ≤ d ≤ 255 k = (xL + xH × 256) × (yL + yH × 256) × 8

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

GS ! n

[Name]	Select character size.
[Format]	ASCII GS ! n Hex. 1D 21 n Decimal 29 33 n
[Range]	0 ≤ n ≤ 255 (1 ≤ Vertical enlargement ≤ 8, 1 ≤ Horizontal enlargement ≤ 8) Initial Value n = 0
[Description]	This command selects the character height and width using bits 0 to 3, and bits 4 to 7 respectively as follows:

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

Table 1 [Enlarged in horizontal direction]

Hex	Decimal	Enlargement
00	0	1 time(standard)
10	16	2 times
20	32	3 times
30	48	4 times
40	64	5 times
50	80	6 times
60	96	7 times
70	112	8 times

Table 2 [Enlarged in vertical direction]

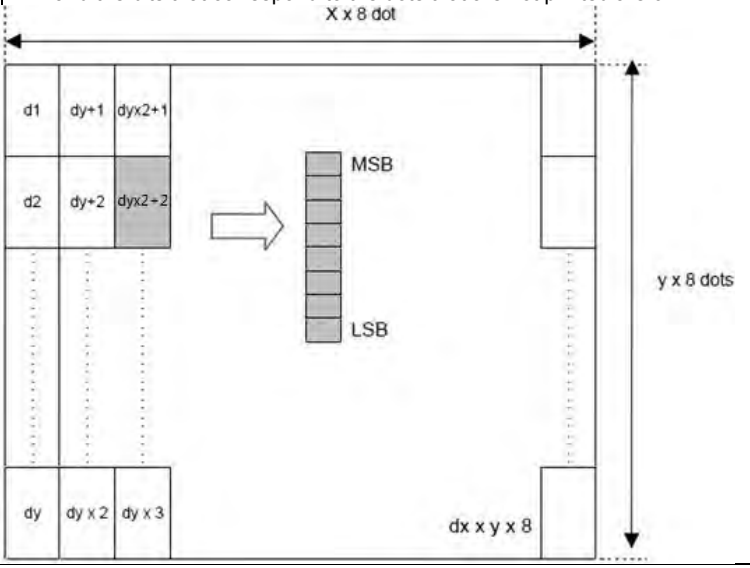
Hex	Decimal	Enlargement
00	0	1 time(standard)
01	1	2 times
02	2	3 times
03	3	4 times
04	4	5 times
05	5	6 times
06	6	7 times
07	7	8 times

GS $ nL nH

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

GS * X Y [d1…d(X x Y x 8)]

[Name]	Define download bit images.
[Format]	ASCII GS * X Y [d1…d(X x Y x 8)] Hex. 1D 2A X Y [d1…d(X x Y x 8)] Decimal 29 42 X Y [d1…d(X x Y x 8)]
[Range]	1 ≤ X ≤ 54 (for 2 inch) 1 ≤ X ≤ 72 (for 3 inch) 1 ≤ Y ≤ 96 0 ≤ d ≤ 255

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

GS (A pL pH n m

[Name]	Execute test print.
[Format]	ASCII GS (A pL pH n m Hex. 1D 28 41 pL pH n m Decimal 29 40 65 pL pH n m
[Range]	{pL+ (pH×256) } = 2 (pL = 2,pH = 0) 0 ≤ n ≤ 2 , 48 ≤ n ≤ 50 2 ≤ m ≤ 3 , 50 ≤ m ≤ 51
[Description]	Executes the specified test print. The following command is ignored in page mode. Specifies the parameter count following pL and pH in (pL + (pH x 256)) bytes. *n* specifies the paper to be tested.

n	Paper Type
0 , 48	Basic sheet (paper roll)
1 , 49 2 , 50	Paper Roll

m specifies a test pattern..

m	Type of Test Print
2 , 50	Printer Status (Self Print)
3 , 51	Rolling Pattern Print

GS (K pL pH n m

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

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

GS / m

[Name]	Print downloaded bit image.
[Format]	ASCII GS / m Hex. 1D 2F m Decimal 29 47 m
[Range]	0 ≤ m ≤ 3, 48 ≤ m ≤ 51
[Description]	This command prints the downloaded bit image defined by GS * according to th mode denoted by m.

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

GS B n

[Name]	Turn white/black reverse printing mode on/off
[Format]	ASCII GS B n Hex. 1D 42 n Decimal 29 66 n
[Range]	0 ≤ n ≤ 255 Initial Value n = 0
[Description]	Specifies or cancels black and white inverted printing. ● Cancels black and white inverted printing when n = <*******0>B. ● Specifies black and white inverted printing when n = <*******1>B. ● n is effective only when it is the lowest bit. ● Internal characters and download characters are targeted for black and white inverted printing. ● This command is effective for ANK and Chinese characters.

GS H n

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

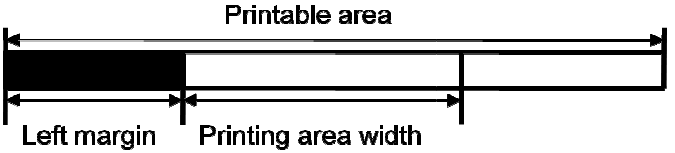
m	Printing Position
0, 48	No print
1, 49	Above bar code
2, 50	Below bar code
3, 51	Above and below bar code(both)

GS I n

[Name]	Transmit printer ID.
[Format]	ASCII GS I n Hex. 1D 49 n Decimal 29 73 n
[Range]	1 ≤ n ≤ 3, 49 ≤ n ≤ 51, 65 ≤ n ≤ 69
[Description]	Transmits the printer ID specified by *n* as follows:

n	Printer ID Type	Specifications
1, 49	Model ID	MB-1030 or MP-1060
2, 50	Type ID	1030-XX or 1060-XX
3, 51	ROM Version ID	Depends on the ROM version
65	Firmware Version	Depends on the firmware version
66	Manufacturer Name	MB-1030 System or MP-1060 System
67	Model Name	MB-1030 or MP-1060
68	Serial Number	Depends on the serial number
69	Chinese Character Types	Taiwan Language Characters: TW_BIG5 Japanese Language Characters: JP_SJIS Chinese Language Characters: CN_GB2312 Korean Language Characters: KO_EUC-KR

GS L nL nH

[Name]	Set left margin.
[Format]	ASCII GS L nL nH Hex. 1D 4C nL nH Decimal 29 76 nL nH
[Range]	0 ≤ nL ≤ 255, 0 ≤ nH ≤ 255 Initial Value (nL + nH x 256)=0 (nL=0, nH=0)
[Description]	nL and nH set the specified left margin. The left margin is [(nL + nH x 256) x basic calculated pitch]. 

GS P x y

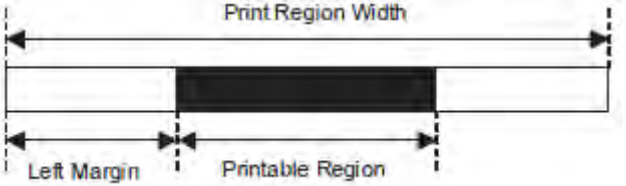
[Name]	Set basic calculated pitch.
[Format]	ASCII GS P x y Hex. 1D 50 x y Decimal 29 80 x y
[Range]	0 ≤ x ≤ 255 0 ≤ y ≤ 255 Initial Value x = 203, y = 203: EPSON targeted model print head 203 DPI
[Description]	Sets the horizontal basic calculated pitch to approximately 25.4/xmm [(1/x) inch], and the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

GS V m

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

m	Function
0 , 48	Full cut
1 , 49	Partial cut (one point uncut)
65	Feeds paper to (cutting position + [n x basic calculated pitch]) and performs a full cut
66	Feeds paper to (cutting position + [n x basic calculated pitch]) and performs a partial cut (one point uncut)

GS W nL nH

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

GS \ nL nH

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

GS a n

[Name]	Enable/disable Automatic Status Back (ASB).
[Format]	ASCII GS a n Hex. 1D 61 n Decimal 29 97 n
[Range]	0 ≤ n ≤ 255 Initial Value n = 0
[Description]	Selects the statuses that are targeted for transmission with the automatic status function (ASB: Automatic Status Back).

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

The printer information transmitted is comprised of 4 bytes as follows:
First byte(printer information)

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

Second byte(printer information)

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

Third byte (paper sensor information)

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

Fourth byte (paper sensor information)

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

GS f n

[Name]	Select font for HRI characters.
[Format]	ASCII GS f n Hex. 1D 66 n Decimal 29 102 n
[Range]	n = 0,1,48,49 Initial Value n = 0
[Description]	Selects the HRI character font when printing bar codes. n: Font 0, 48: Selects Font A (12 x 24). 1, 49: Selects Font B (9 x 17).

GS h n

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

GS k m d1 … dk NUL.
GS k m n d1 … dk

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

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

2:

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

GS r n

[Name] Transmit status.

[Format]
ASCII GS r n
Hex. 1D 72 n
Decimal 29 114 n

[Range] n = 1, 2, 49, 50

[Description]
Sends the specified status.
Detector Status (n=1,49)

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

Drawer Kick Connector Status (n=2,50)

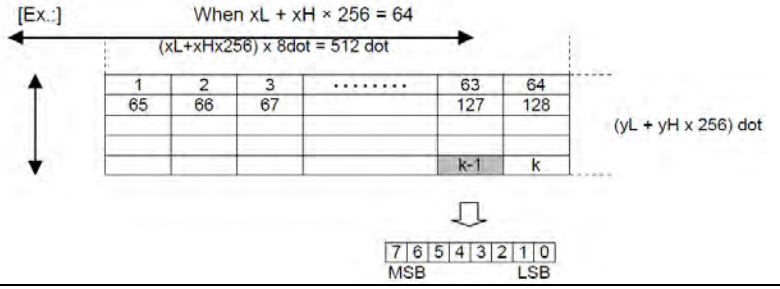
Bit	Status	〝0〞	〝1〞
7	Fixed at 0		
6	Undefined		
5	Undefined		
4	Fixed at 0		
3	Undefined		
2	Undefined		
1	Undefined		
0	Drawer kick connector pin #3	〝L〞	〝H〞

GS v 0 m xL xH yL yH d1 … dk

[Name]	Print raster bit image.
[Format]	ASCII GS v 0 m xL xH yL yH d1...dk Hex. 1D 76 30 m xL xH yL yH d1...dk Decimal 29 118 48 m xL xH yL yH d1...dk
[Range]	m = 0, m = 48 0 ≤ xL ≤ 54(for 2 inch) 0 ≤ xL ≤ 72(for 3 inch) 0 ≤ xH ≤ 0 0 ≤ yL ≤ 255 0 ≤ yH ≤ 3 0 ≤ d ≤ 255 k = (xL+xH×256) × (yL+yH×256) However, k ≠ 0
[Description]	Prints raster method bit images using mode m.

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

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



GS w n

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

[Description]	Sets the bar code horizontal size.

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

TWO-DIMENSIONAL BAR CODE COMMAND DETAILS

DC2 ; n

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

GS p 1

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

[Description]

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

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

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

KANJI CONTROL COMMAND DETAILS

FS ! n

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

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

FS &

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

FS - n

[Name]	Turn underline mode on/off for Kanji characters
[Format]	ASCII FS - n Hex. 1C 2D n Decimal 28 45 n
[Range]	0 ≤ n ≤ 2, 48 ≤ n ≤ 50
[Description]	Specifies or cancels Kanji character underlines. n: Function 0,48: Cancels Kanji character underline 1,49: Sets to one-dot width Kanji character underline and specifies Kanji character underlines. 2,50: Sets to two-dot width Kanji character underline and cancels Kanji character underlines.

FS .

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

FS S n1 n2

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

FS W n

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

3-2-1-2. OPOS Printer Driver

The **MB1030_OposSetup.exe** program sets up the registry information of MSRHK reader for OPOS program uses.

1. Installation

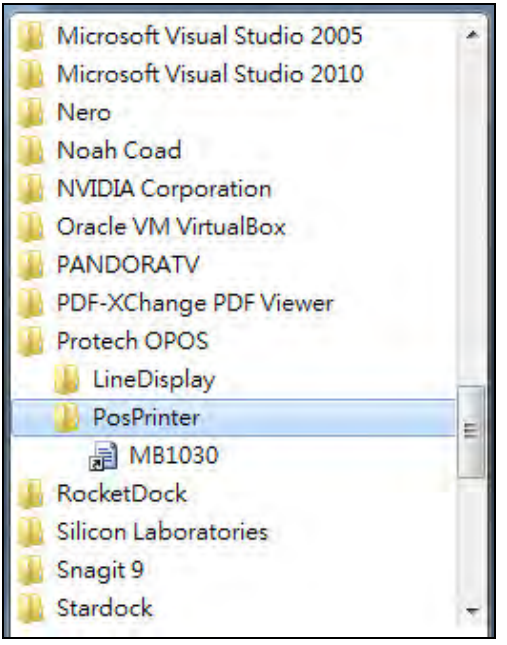
Below steps guide you to install the **MB1030_OposSetup** program.

- Run the setup file **MB1030_OposSetup.exe** located in the Software folder of CD.
- This setup also installs the **MB1030** program.
- Follow the wizard instructions to complete the installation.

2. Launching Program

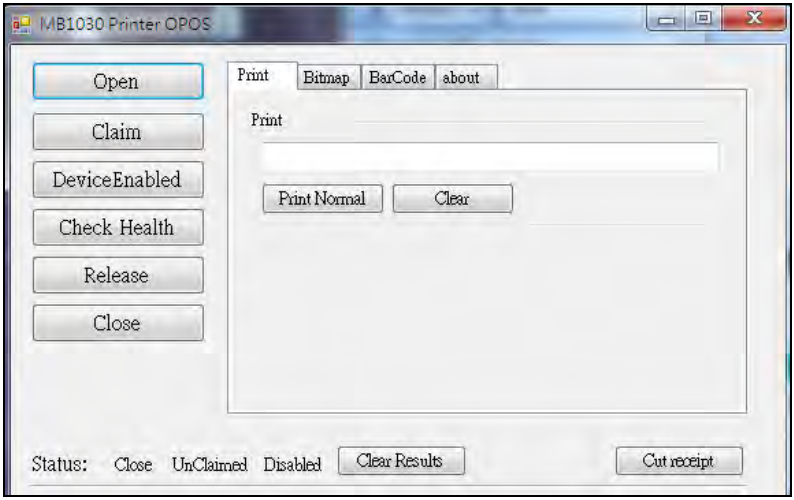
Below steps guide you to load the **MB1030** program.

- Click *POSPrinter* folder from the path *Start\Programs\Protech OPOS*.
- Click **MB1030** to launch the program.



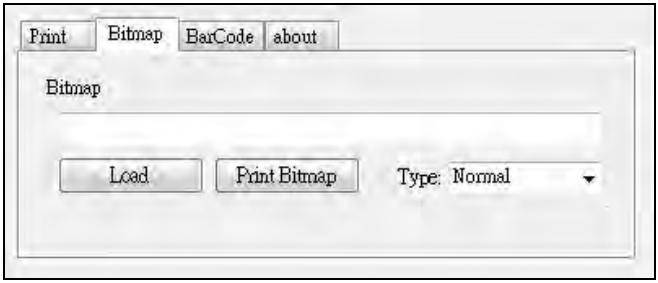
3. OPOS Control Object of **MB1030** Program

a.) Print tab buttons:



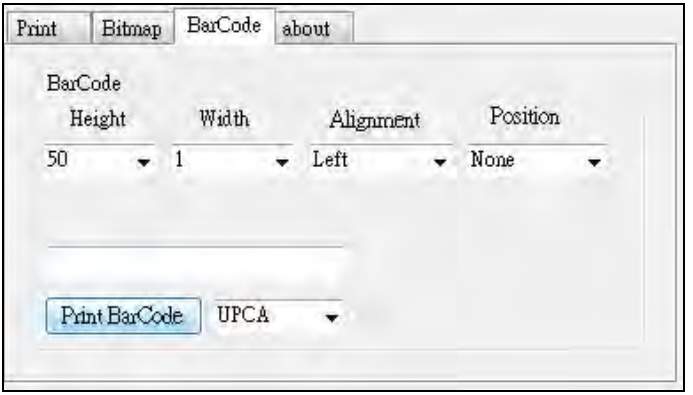
Button/Item	Description
Printer Normal	Print the string.

b.) Bitmap tab buttons/items:



Button/Item	Description
Load	Load bitmap file.
Print Bitmap	Print bitmap file.
Type	Normal or Rotate 108°.

c.) BarCode tab buttons/items:



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

4. MB1030 type

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

5. OPOS APIs Support List

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

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

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

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

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

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

3-2-2-1. 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	-

2. OPOS VFD Service Object and Method Relations

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

3-2-2-2. OPOS Driver

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

1. Installation

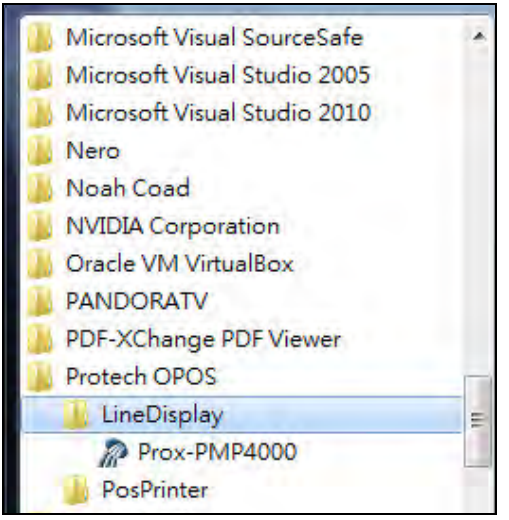
Below steps guide you to install the **MB4000_OposSetup** program.

- 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

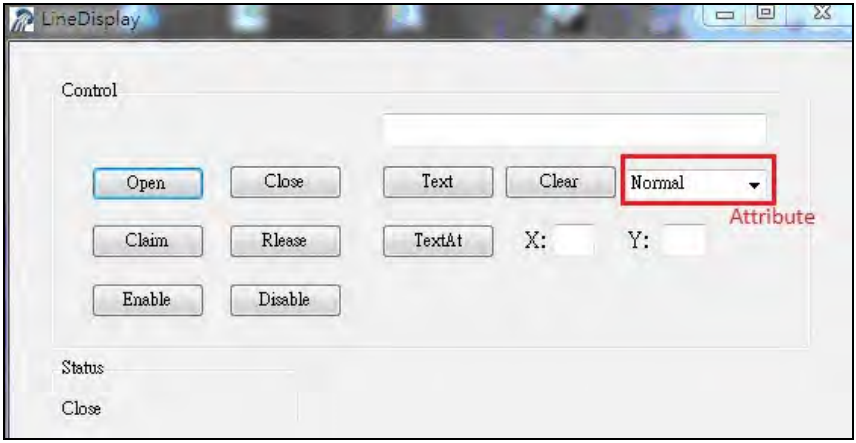
Below steps guide you to load the **Prox-PMP4000** program.

- 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

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

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

3-2-3. MSR: MB-3012 (PS/2)

3-2-3-1. OPOS Driver

The **MB301X_OposSetup.exe** program sets up the registry information of MSR reader for OPOS program uses.

1. Installation

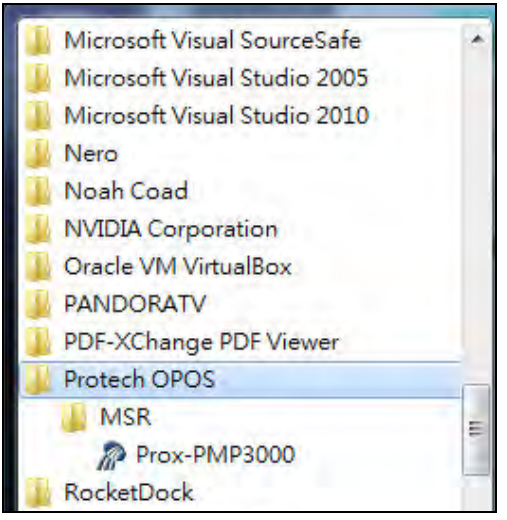
Below steps guide you to install the **MB301X_OposSetup** program.

- 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

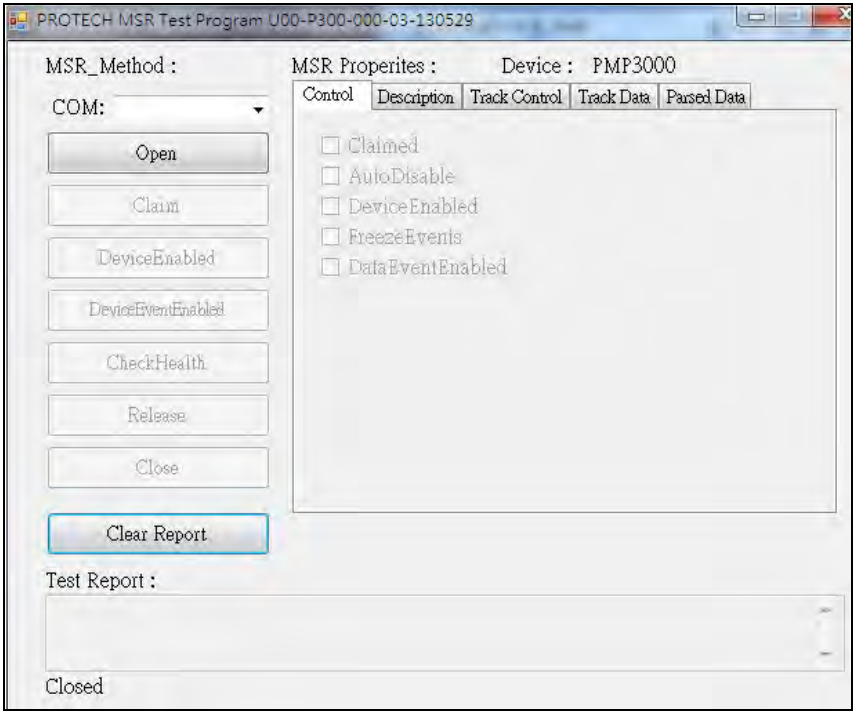
Below steps guide you load the Prox-PMP3000 program.

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



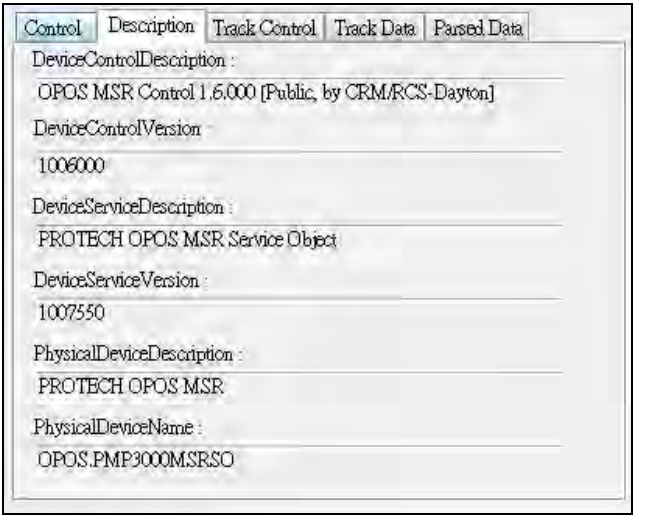
3. Configuration of **Prox-PMP3000** program

a.) Main screen & Control tab items:

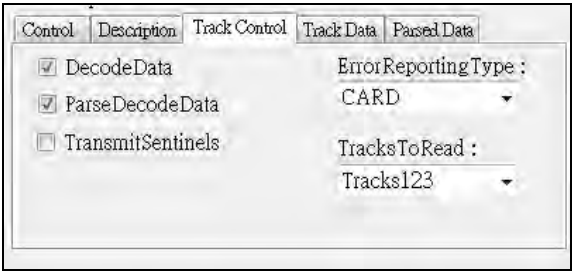


Button/Item	Description
COM	(dropdown list) To set COM port number (only for USRT/USB interface).
AutoDisable	(check box) Set auto-disable
FreeseEvents	(check box) Set freeze events

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

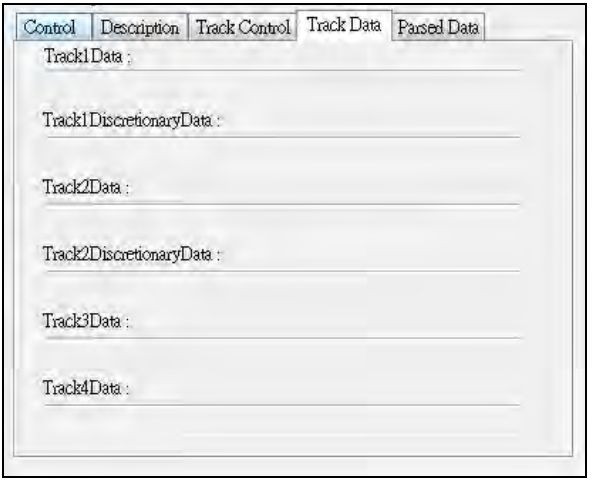


c.) Track Control tab items



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



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

e.) Parsed Data tab items

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

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

3-2-4. MSR: GIGA-TMS MJR243R (RS-232)

3-2-4-1. 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

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

3-2-4-2. OPOS MSR Register

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

1. Installation

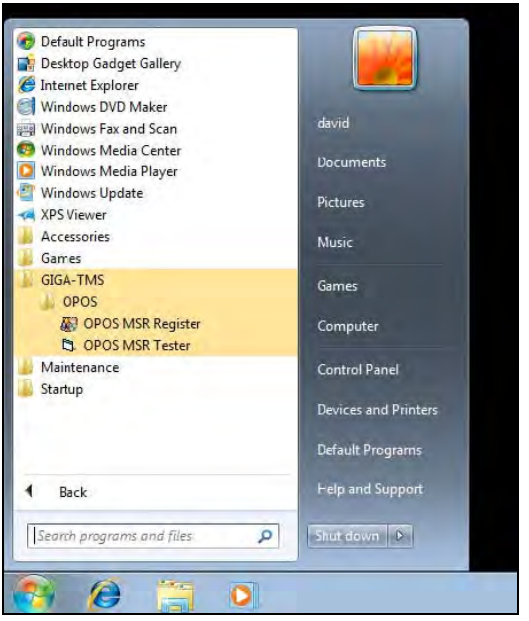
Below steps guide you to install the **OPOS MSR Register** program.

- 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

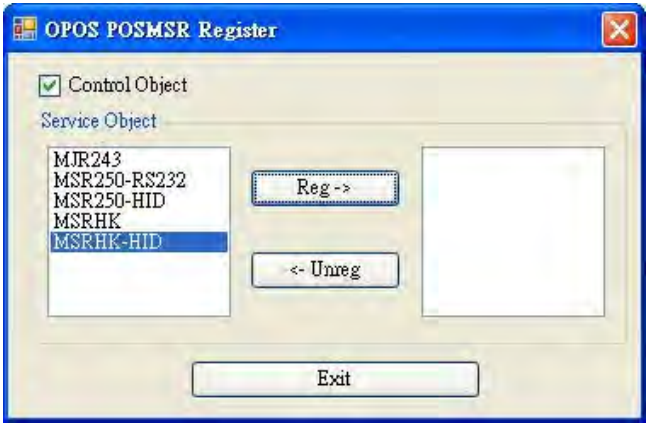
Below steps guide you to load the **OPOS MSR Register** program.

- 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 *OPOS MSR Service Object and Method Relations*.
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.

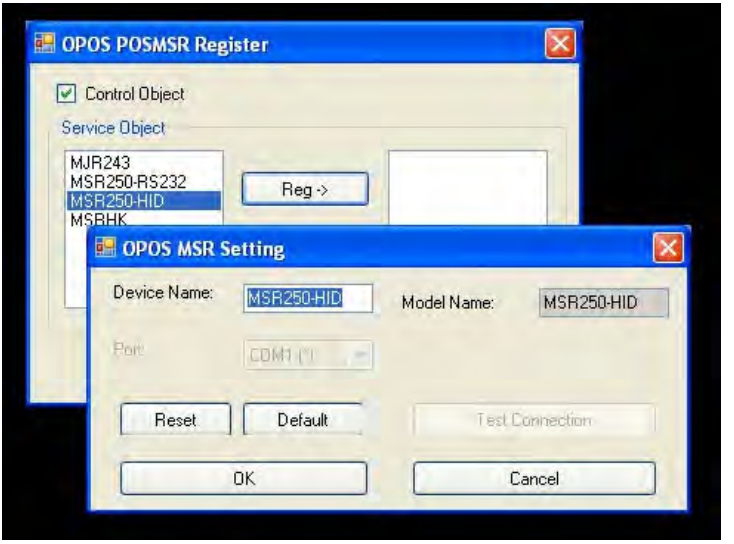
b.) Follow the steps below to register the MSRHK OPOS information.

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

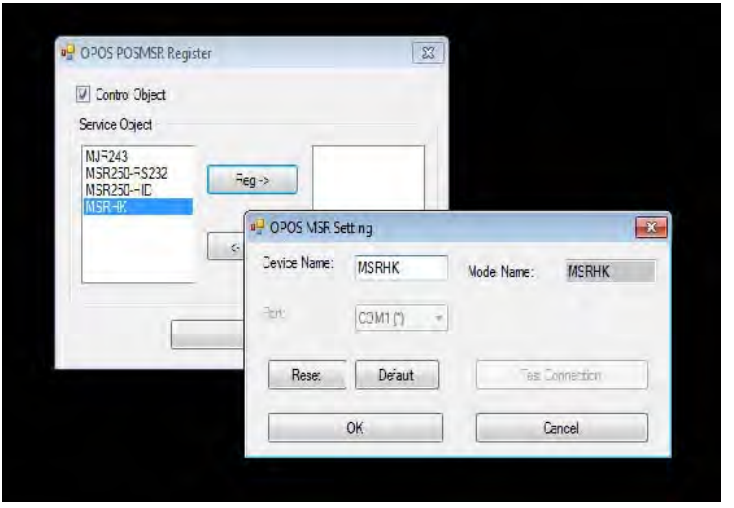
Step 2: Click **Reg→** button

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

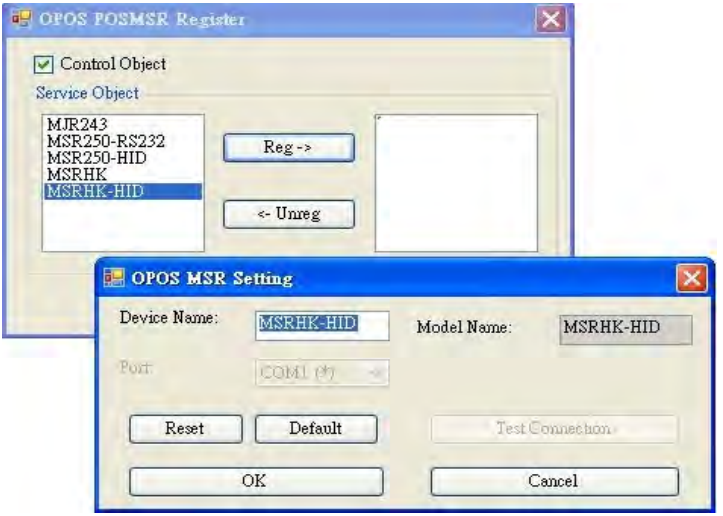
c.) Example 1. MAGTEK USB HID



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)

Key Name	Type	Default Value	Note
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
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	ServiceObject	Read only	1.0	Supported

	Category Type	Name	Mutability	OPOS APG Version	MSR .SO
	string	Description			
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
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

	Category Type	Name	Mutability	OPOS APG Version	MSR .SO
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
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

3-2-4-3. 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.

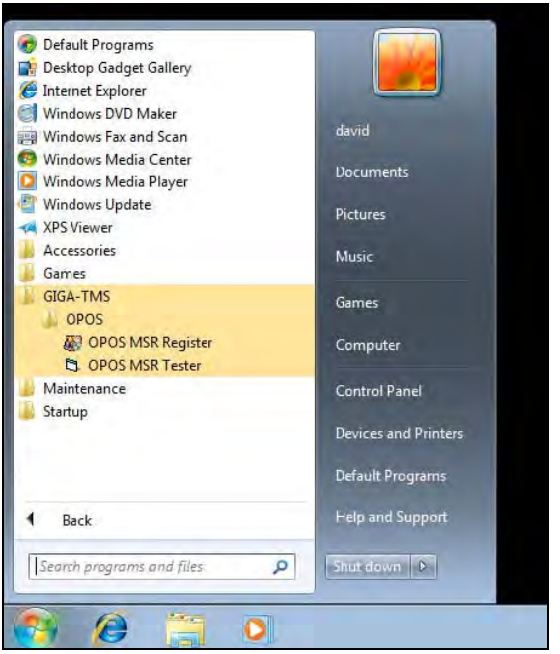
1. Installation

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

2. Launching Program

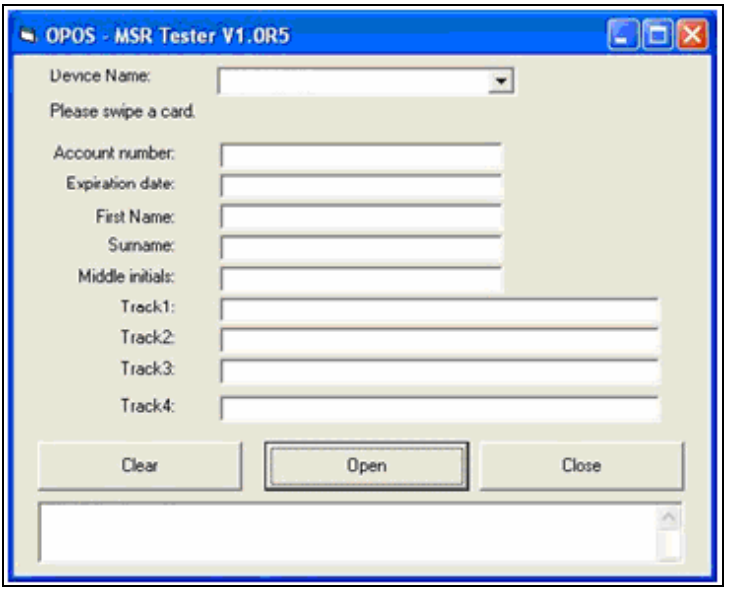
Below steps guide you to load the **OPOS MSR Tester** program.

- 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

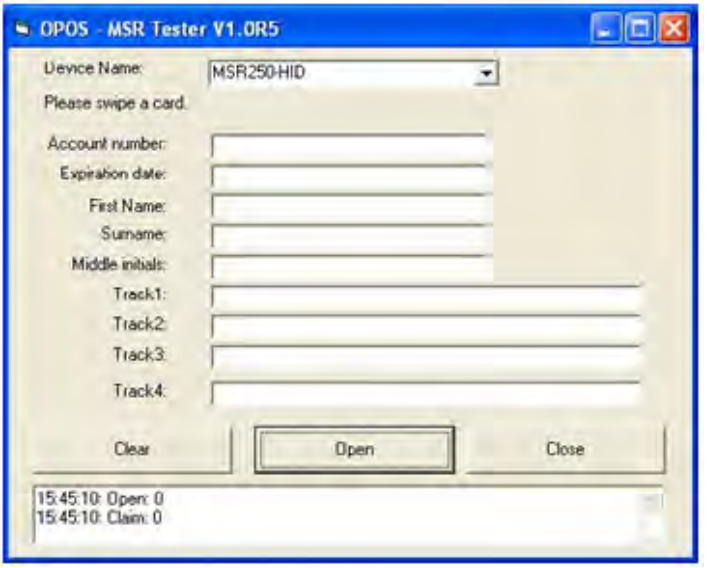
a.) Main screen buttons/items:



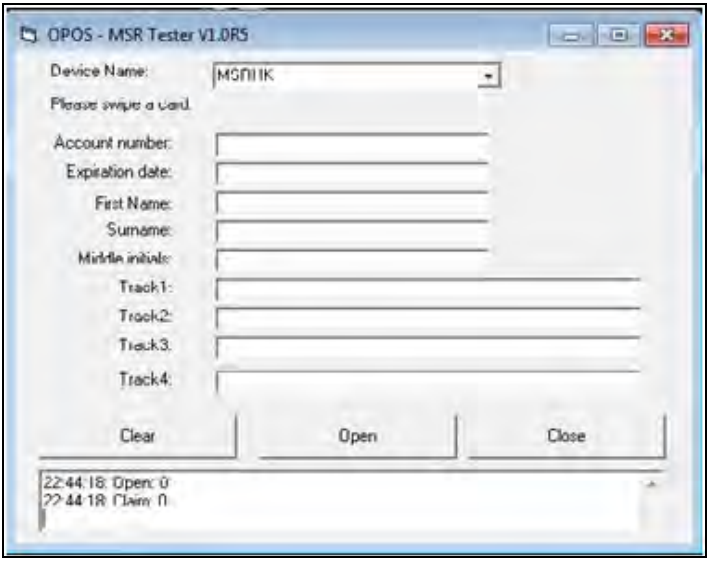
Button/Item	Description
Device Name	(Combo box) Enter the device name that to be loaded to the program.
Track Data	(Text boxes) Show the raw and parsed track data.
Clear	(Button) Clear all the track data in the text boxes. Open: (Button) Open the OPOS driver and ready to get track data.
Close	(Button)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

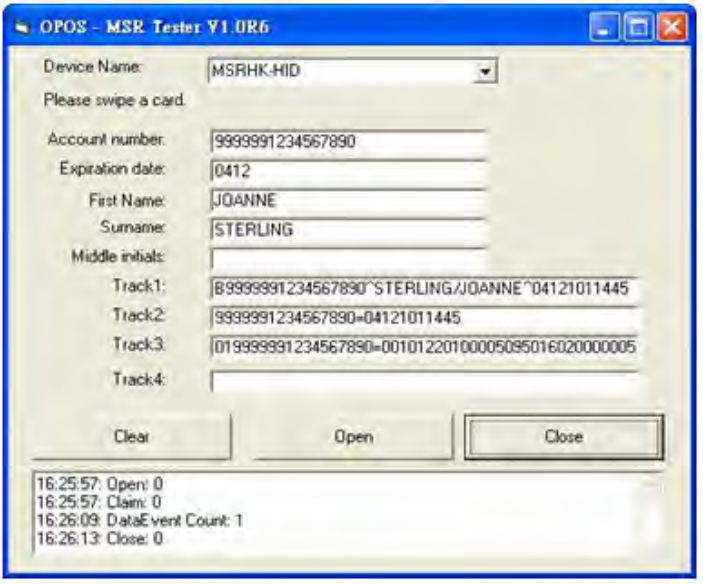
c.) Example 1. MAGTEK USB HID.



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



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



3-3 API

API Package Content

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

Function DLL			
Directory	**Function**	**File Name**	**Description**
ProxAPI standard	Cash Drawer	Cash Drawer.dll	Driver to control Cash Drawer
	WDT	Watchdog.dll	Driver to control Watchdog
	Hardware Monitor	Hardware Monitor.dll	Driver to read hardware data
	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
	DEMO PROJECT\Watchdog Sample Code	C# VB6 VB.net MFC Source Code

API Procedure

Take **VB2005 .NET** for example, first you must declare a function. You may create a module in your project and fill in the function, cash drawer for example.

```
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
```

Next, create a button to call API Function

1. 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
```

2. 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
```

Sample Code

(1) VB Declaration

```
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) 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)

---

(1) 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);}
```

(2) 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
```

VB.NET extern function:

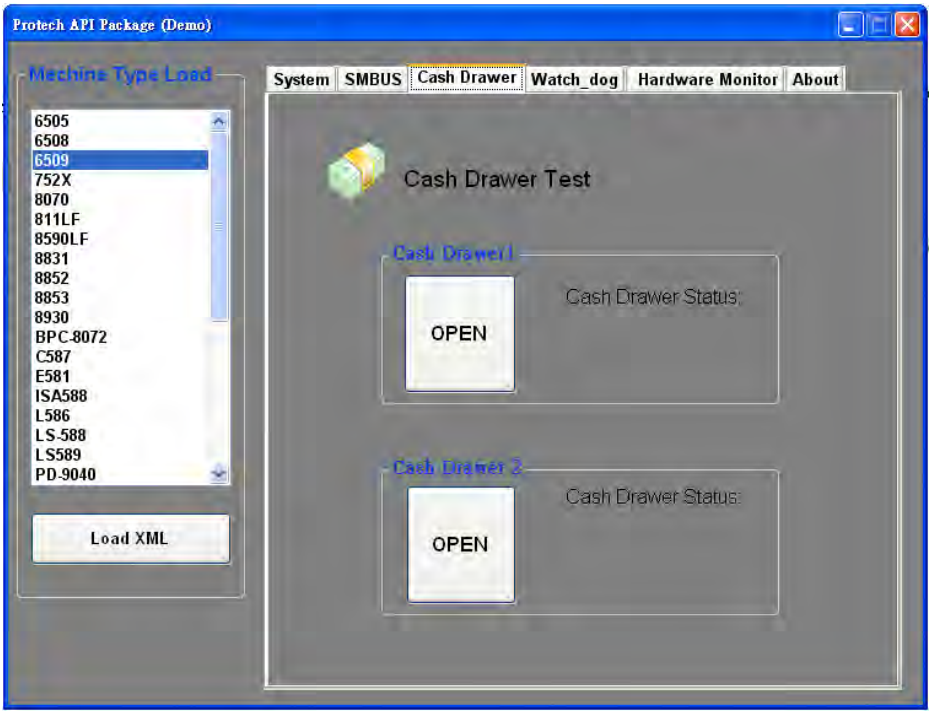
```
Declare Function SetMinSec Lib “WatchDog.dll” (ByVal kind As
Short,ByVal delay_time As Short) As Boolean
Declare Function Stopwatchdog Lib “WatchDog.dll” ( ) As Short
Declare Function Setwatchdog Lib “WatchDog.dll” (ByVal value As
Short) As Boolean
‘================================================
======
Declare Function Digital_Initial Lib “Digital.dll” ( ) As Long
Declare Function Digtial_Set Lib “Digital.dll”(ByVal hex_value As
Short) As Long
Declare Function Digtial_Get Lib ”Digital.dll” ( ) As Short
‘================================================
======
Declare Function GPIO_Initial Lib “GPIO.dll” ( ) As Long
Declare Function GPIO_SetPort Lib “GPIO.dll”(ByVal direct As long)
Declare Function GPIO_Set Lib “GPIO.dll”(ByVal dout_value As long)
As Boolean
Declare Function GPIO_Get Lib “GPIO.dll”( ) As Short
‘================================================
======
Declare Function GetCashDrawerStatus Lib CashDrawer.dll (ByVal
num_drawer as short) As Boolean
Declare Function CashDrawerOpen Lib CashDrawer.dll (ByVal
num_drawer as short) As Boolean
```

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
```

📖 VB.net short = integer VB6

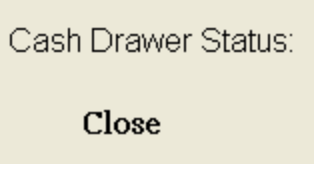
Cash Drawer



[OPEN]
Tap to open the cash drawer.

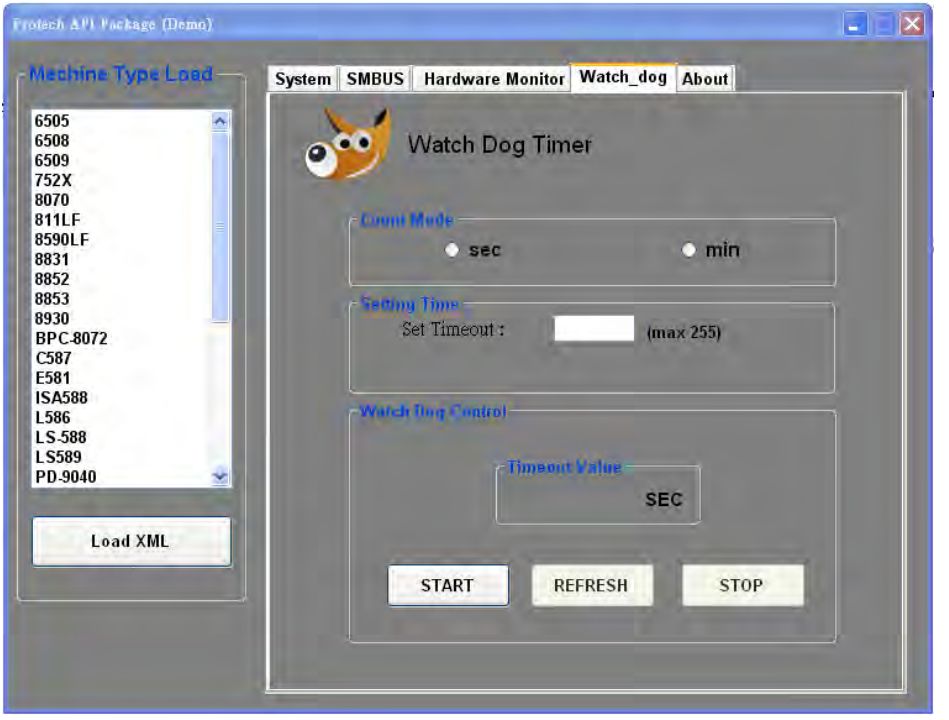
Cash Drawer Status
Cash drawer status will be displayed after **[OPEN]** is tapped.

- Cash drawer is closed as shown.



- Cash drawer is open as shown.

Watch Dog



Count Mode
Select the unit of time, second or minute, for the watchdog timer.

Setting Time

▸ **Set Timeout**	Set the timeout for the watchdog. The maximum timeout value is 255 seconds or minutes.

Watch Dog Control

▸ **Timeout Value**	Simulation timer of the API program, the running watchdog timeout will be displayed (in seconds). It is not as accurate as a hardware watchdog clock.
▸ **[START]**	Tap to start the watchdog timer. Meanwhile the **[REFRESH]** and **[STOP]** buttons will be enabled.
▸ **[STOP]**	Tap to stop the watchdog timer.
▸ **[REFRESH]**	Tap to restart the watchdog timer.

API Function

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

API Function		DLL	
Cash Drawer	CashDrawerOpen GetCashDrawerStatus	multilangXML .dll	CashDrawer.dll
Watchdog (WD)	Watchdog_Set Watchdog_Stop Watchdog_SetMinSec Watchdog_Recount		WatchDog.dll
Hardware Monitor	HMWVoltage_Get HWMtTemperature_Get HWMFanSpeed_Get		Hardware Montior.dll

Cash Drawer Function

CashDrawerOpen

bool CashDrawerOpen (short num_drawer);

Purpose Open the cash drawer API.
Value num_drawer = 1 (Open the Cash Drawer1)
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)
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
```

Watch Dog Function

Watchdog_Set

bool Watchdog_Set (int value)

Purpose	Set the timeout for the watchdog timer.
Value	value = 0 ~ 255
Return	True (1) on success, False (0) on failure

Watchdog_SetMinSec

bool Watchdog_SetMinSec (int kind)

Purpose	Set the unit of time as second/ minute.
Value	kind = 1 (Measured in unit of second) 2 (Measured in unit of minute)
Return	True (1) on success, False (0) on failure

Watchdog_Stop

bool Watchdog_Stop (void)

Purpose	Stop the watchdog timer.
Value	None
Return	True (1) on success, False (0) on failure

Watchdog_Recount

bool Watchdog_Recount (void)

Purpose	Restart the watchdog timer.
Value	None
Return	True (1) on success, False (0) on failure

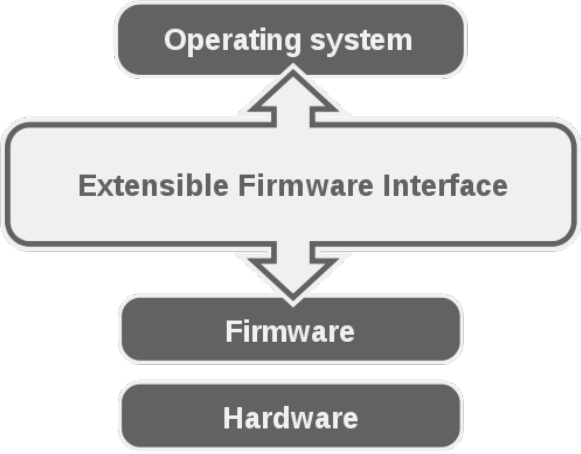
3-4 BIOS

3-4-1 Operation Guide

Introduction

The board **PA-6722** 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.

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:

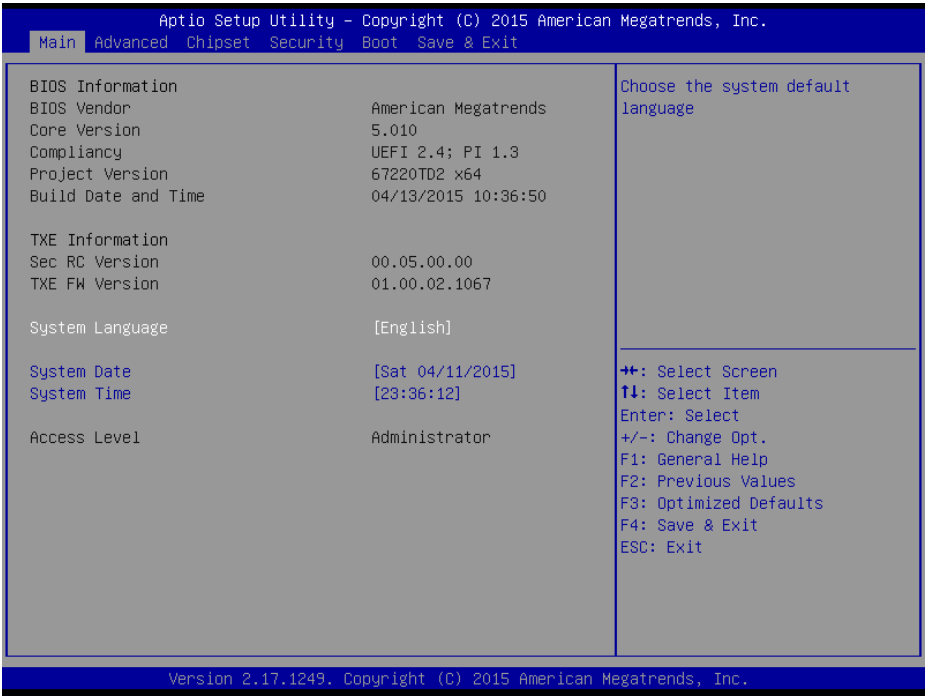
BIOS POST Screen

As long as this message is present on the screen you may press the <Del> key to access the Setup program. In a moment, the main menu of the Aptio Setup Utility will appear on the screen:

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.

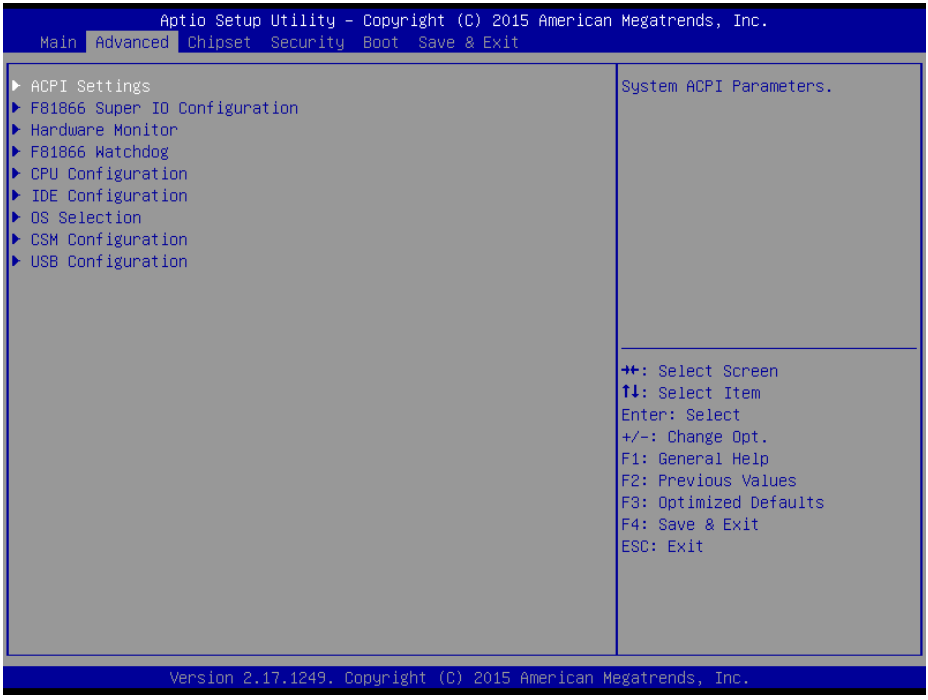
Main



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 FW 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.

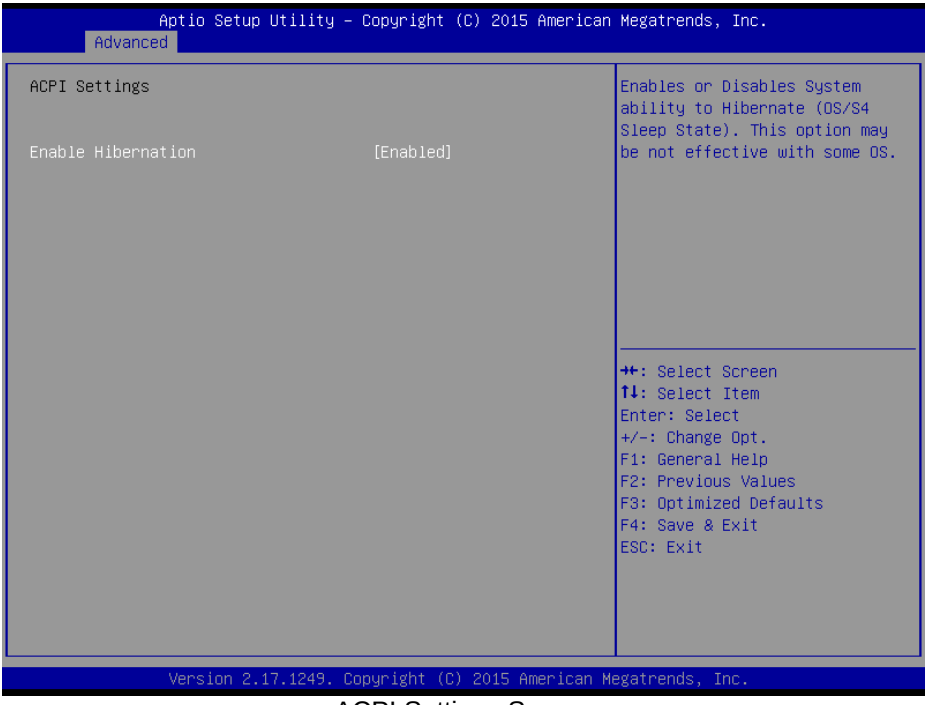
Advance



Advanced Screen

BIOS Setting	Options	Description/Purpose
ACPI Settings	Sub-Menu	System ACPI Parameters.
F81866 Super IO Configuration	Sub-Menu	System Super IO Chip Parameters
Hardware Monitor	Sub-Menu	Monitor hardware status
F81866 Watchdog	Sub-Menu	F81866 Watchdog Parameters.
CPU Configuration	Sub-Menu	CPU Configuration. Parameters.
IDE Configuration	Sub-Menu	SATA Configuration Parameters.
OS Selection	Sub-Menu	OS Selection
CSM Configuration	Sub-Menu	Configure Option ROM execution, boot options filters, etc..
USB Configuration	Sub-Menu	USB Configuration Parameters.

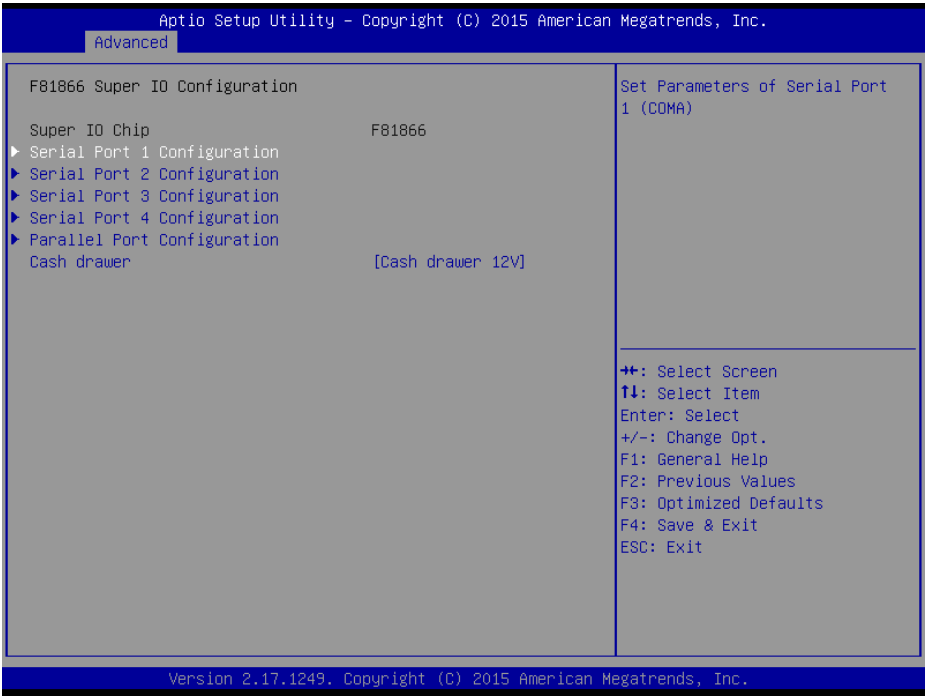
ACPI Settings



ACPI Settings Screen

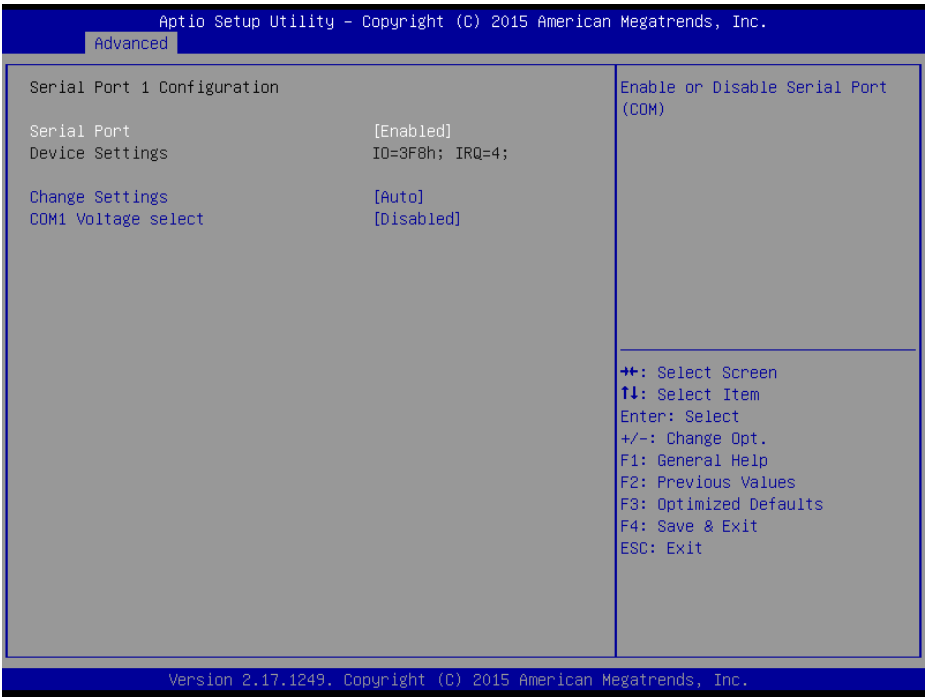
BIOS Setting	Options	Description/Purpose
Enable Hibernation	- Disabled - Enabled	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

F81866 Super IO Configuration



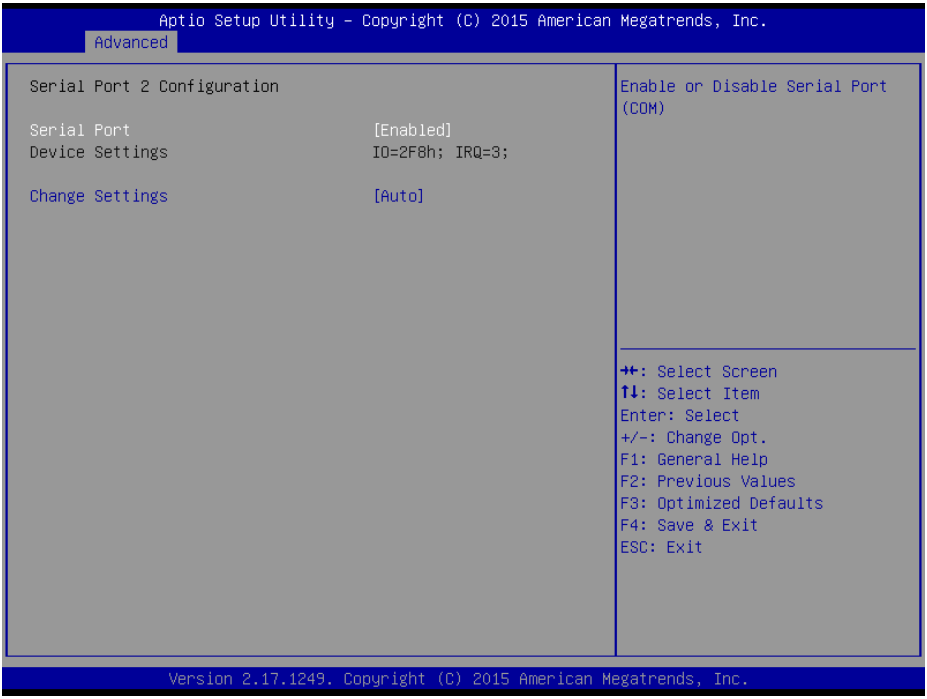
F81866 Super IO Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port 1 Configuration	Sub-menu	Set Parameters of Serial Port 1 (COMA)
Serial Port 2 Configuration	Sub-menu	Set Parameters of Serial Port 2 (COMB)
Serial Port 3 Configuration	Sub-menu	Set Parameters of Serial Port 3 (COMC)
Serial Port 4 Configuration	Sub-menu	Set Parameters of Serial Port 4 (COMD)
Parallel Port Configuration	Sub-menu	Set Parameters of Parallel Port (LPT/LPTE)
Cash drawer	- Cash Drawer 12V - Cash Drawer 24V	Cash Drawer select 12V or 24V



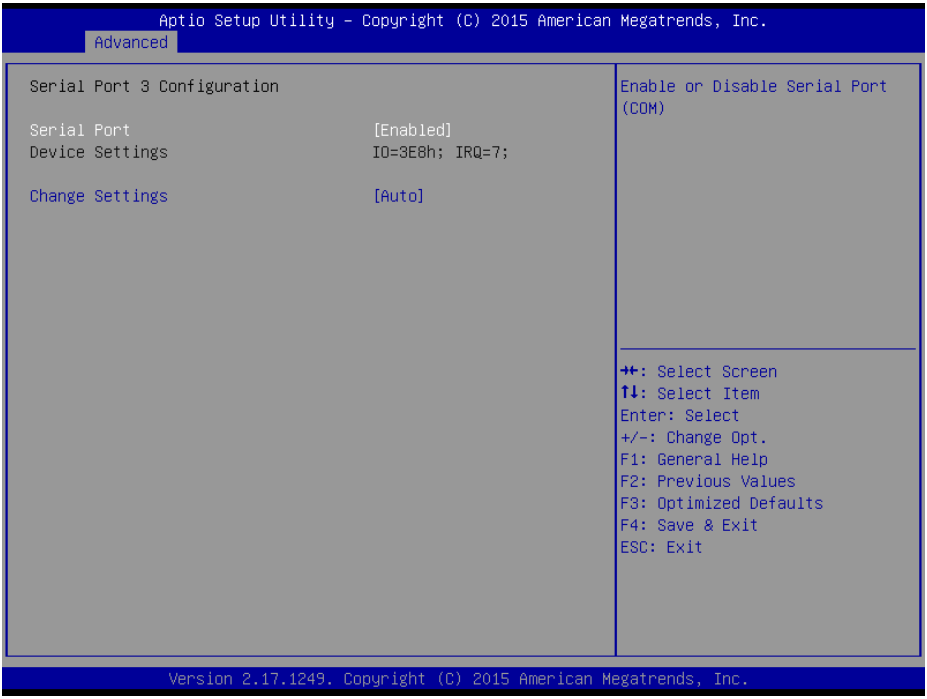
Serial Port 1 Configuration Screen

BIOS Setting	Options	Description /Purpose
Serial Port	-Disabled -Enabled	Enable or disable serial port 1.
Device settings	No changeable options	Displays current settings of serial port 1.
Change settings	-Auto -IO=3F8h; IRQ=4; -IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; -IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; -IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; -IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;	Select IRQ and I/O resource for the serial port 1.
COM1 Voltage select	-Disabled -12V -5V	Disable or select COM1 Voltage 12V/5V



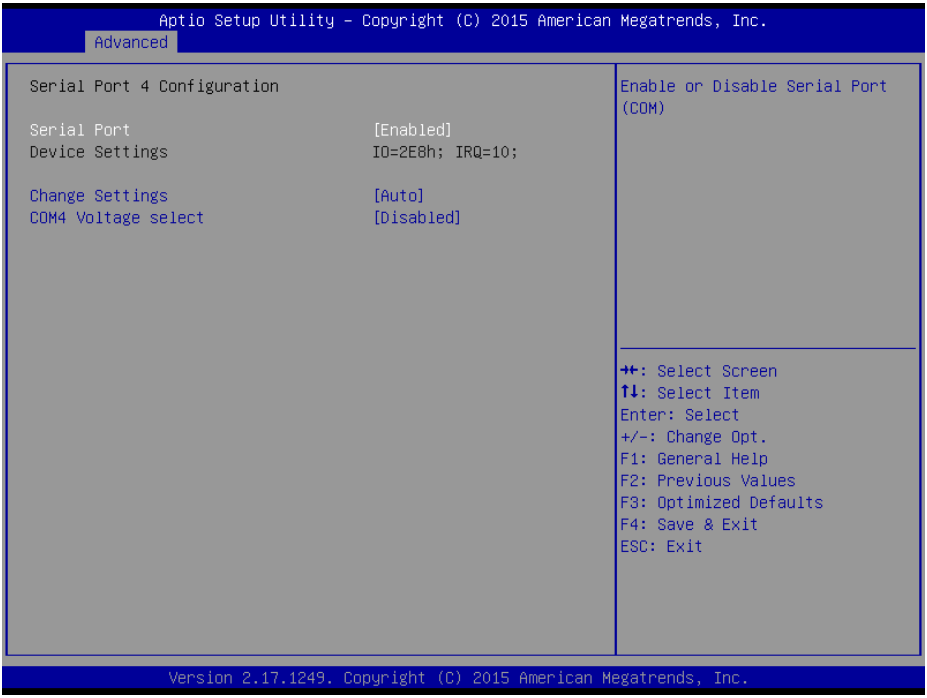
Serial Port 2 Configuration Screen

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



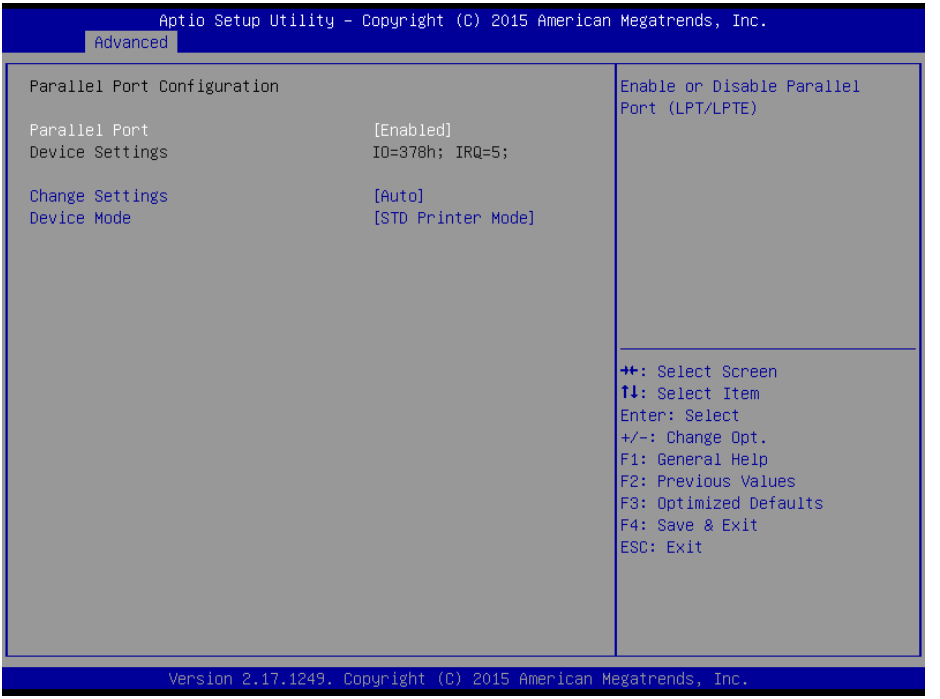
Serial Port 3 Configuration Screen

BIOS Setting	Options	Description /Purpose
Serial Port	-Disabled -Enabled	Enable or disable serial port 3.
Device settings	No changeable options	Displays current settings of serial port 3.
Change settings	-Auto -IO=3E8h; IRQ=7; -IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; -IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12; -IO=2F0h; IRQ=3,4,5,6,7,9,10,11,12; -IO=2E0h; IRQ=3,4,5,6,7,9,10,11,12;	Select IRQ and I/O resource for the serial port 3.



Serial Port 4 Configuration Screen

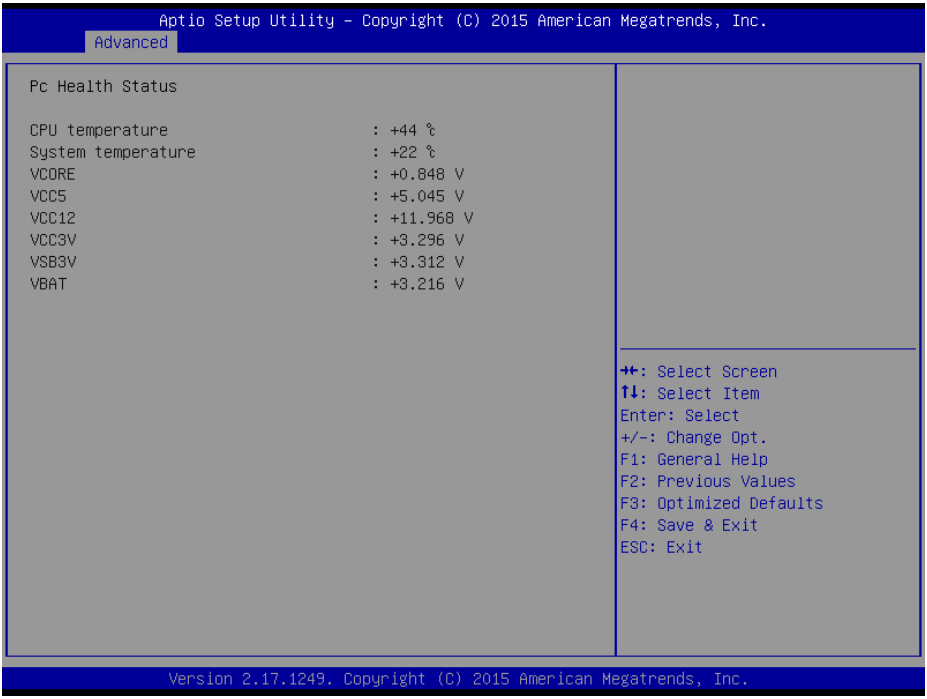
BIOS Setting	Options	Description /Purpose
Serial Port	-Disabled -Enabled	Enable or disable serial port 4.
Device settings	No changeable options	Displays current settings of serial port 4.
Change settings	-Auto -IO=2E8h; IRQ=10; -IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; -IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12; -IO=2F0h; IRQ=3,4,5,6,7,9,10,11,12; -IO=2E0h; IRQ=3,4,5,6,7,9,10,11,12;	Select IRQ and I/O resource for the serial port 4.
COM4 Voltage select	-Disabled -12V -5V	Disable or select COM4 Voltage 12V/5V



Parallel Port Configuration Screen

BIOS Setting	Options	Description /Purpose
Parallel Port	-Disabled -Enabled	Enable or disable the parallel port.
Device settings	No changeable options	Displays current settings of the parallel port.
Change settings	-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 parallel port..
Mode	-STD Printer Mode -SPP Mode -EPP-1.9 and SPP Mode -EPP-1.7 and SPP Mode -ECP Mode -ECP and EPP 1.9 Mode -ECP and EPP 1.7 Mode	Change the printer port mode.

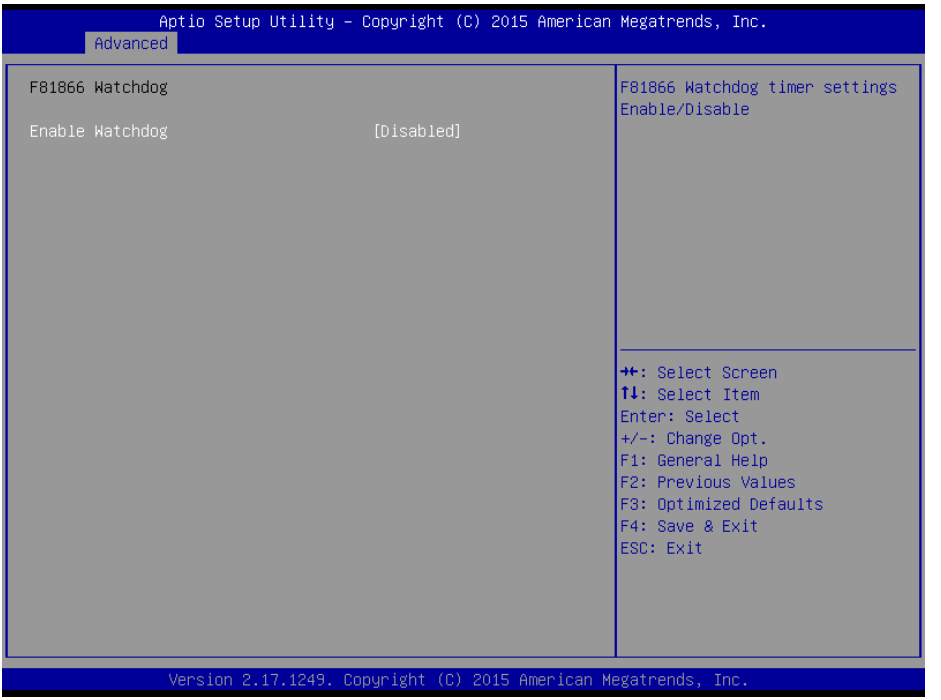
Hardware Monitor



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.
VCORE	No changeable options	Displays voltage level of the VCORE 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.
VCC3V	No changeable options	Displays voltage level of the VCC3V in supply.
VSB3V	No changeable options	Displays voltage level of the VSB3V in supply.
VBAT	No changeable options	Displays voltage level of the VBAT in supply.

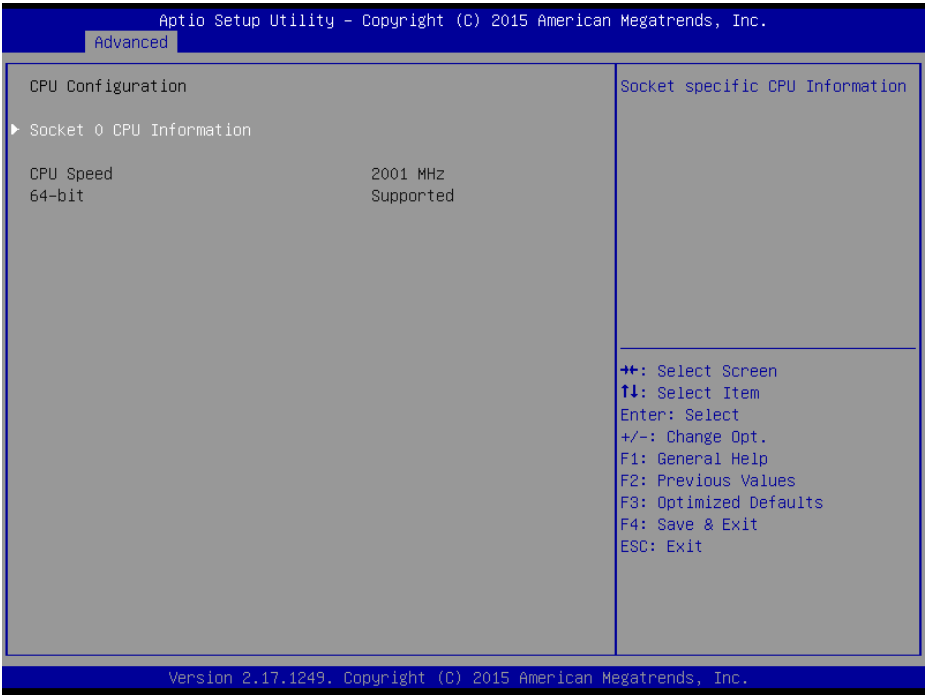
F81866 Watchdog



F81866 Watchdog Screen

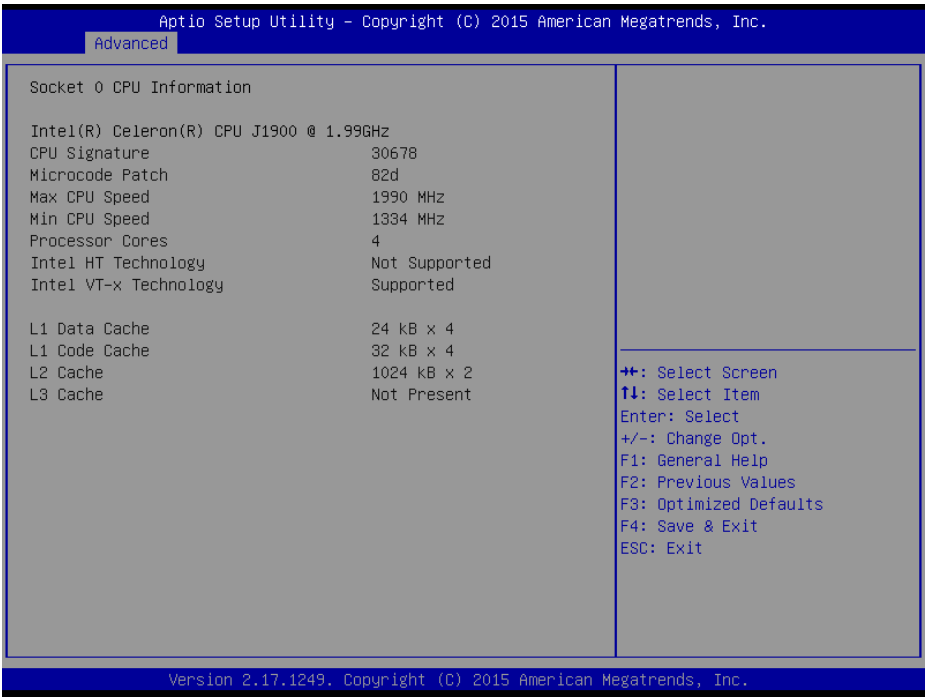
BIOS Setting	Options	Description /Purpose
Enable WatchDog	-Enabled -Disable	Enable/ Disable Watch dog timer.
Watchdog timer unit	-1s -60s	Select seconds or minutes
Count for Timer (Seconds)	multiple options ranging from 1 to 255	Sets the desired value (seconds) for watchdog timer.

CPU Configuration



CPU Configuration Screen

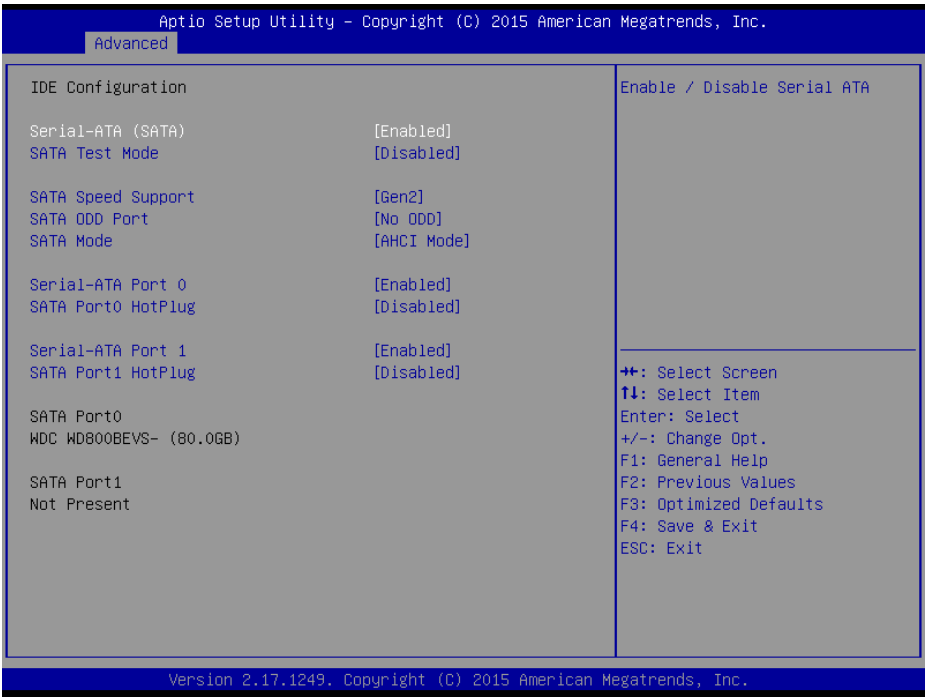
BIOS Setting	Options	Description/Purpose
Socket 0 CPU Information	Sub-Menu	Report CPU Information
CPU Speed	No changeable options	Reports the current CPU Speed
64-bit	No changeable options	Reports if 64-bit is supported by processor.



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.

IDE Configuration

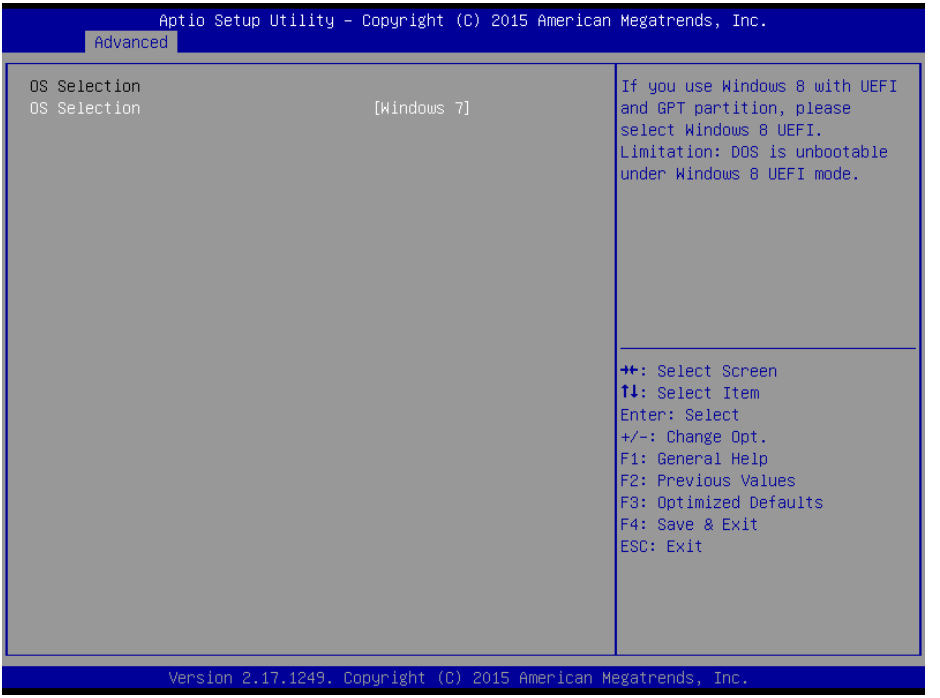


IDE Configuration Screen

BIOS Setting	Options	Description /Purpose
Serial-ATA Controller(s)	- Disabled - Enabled	Enable or disable SATA Device.
SATA Test Mode	- Disabled - Enabled	Enable or disable SATA Test Mode.
SATA Speed Support	- GEN1 - GEN2	Gen1 mode sets the device to 1.5 Gbit/s speed. Gen2 mode sets the device to 3 Gbit/s speed (in case it is compatible).
SATA ODD Port	- Port0 ODD - Port1 ODD - No ODD	SATA ODD is Port0 or Port1
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.
SATA Port 0	- Disabled - Enabled	Enable or disable SATA port 0 Device.

SATA Port 0 HotPlug	- Disabled - Enabled	Enable or disable SATA port 0 Device HotPlug
SATA Port 1	- Disabled - Enabled	Enable or disable SATA port 1 Device.
SATA Port 1 HotPlug	- Disabled - Enabled	Enable or disable SATA port 1 Device HotPlug
SATA Port 0	[drive]	Displays the drive installed on this SATA port 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.

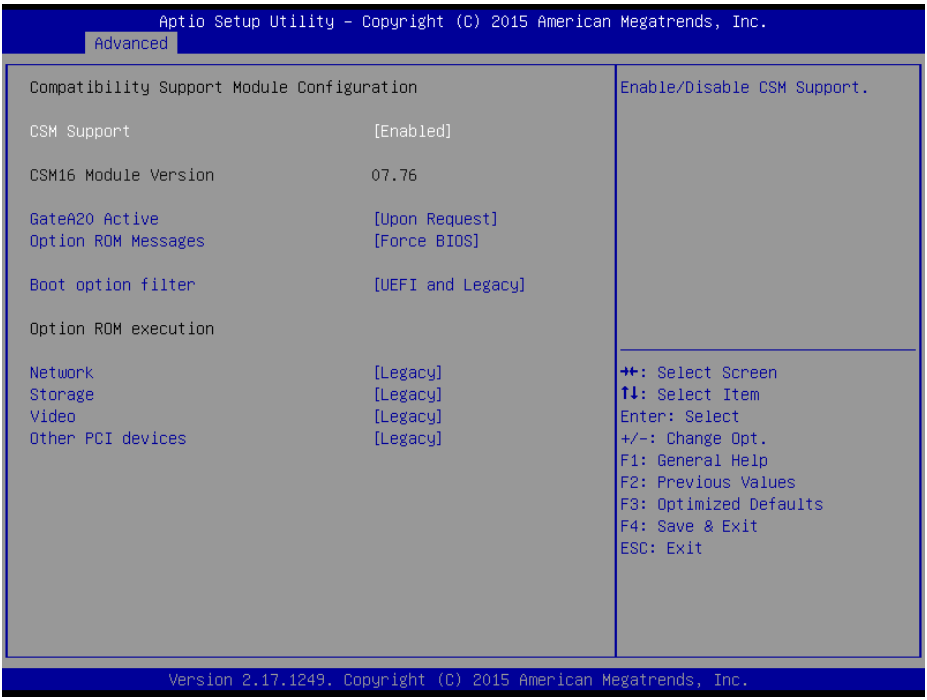
OS Selection



OS Selection Screen

BIOS Setting	Options	Description/Purpose
OS Selection	- Windows 7 - Windows 8 - Windows 8 UEFI	If you use Windows 8 with UEFI and GPT partition, please select Windows 8 UEFI. Limitation: DOS is unbootable under Windows 8 UEFI mode

CSM Configuration

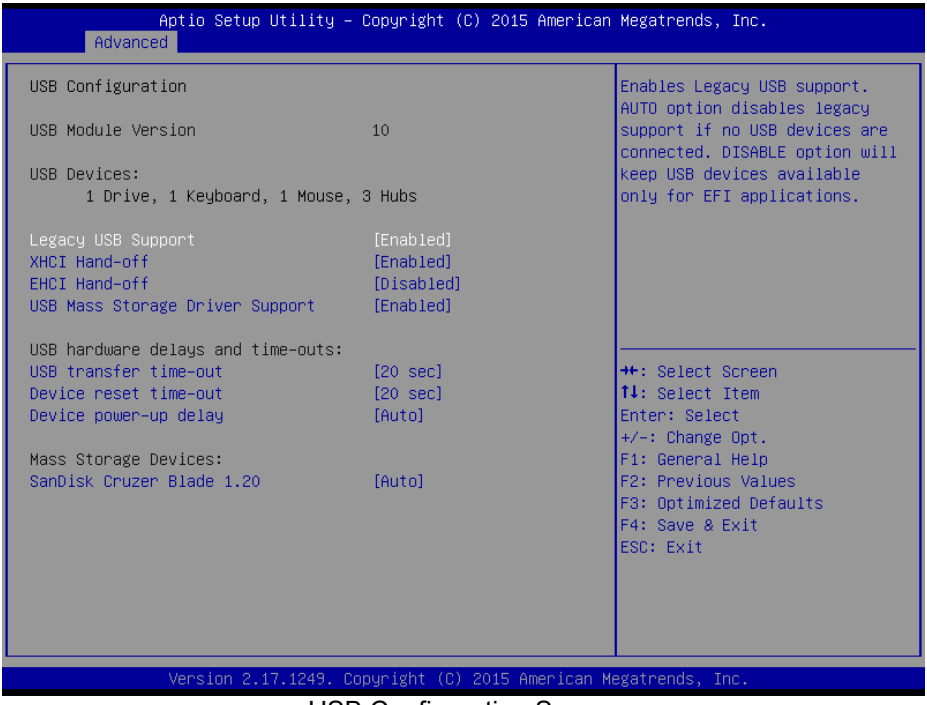


CSM Configuration Screen

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. **UPON REQUEST**: GA20 can be disabled using BIOS services. **ALWAYS:** do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.
Option ROM Messages	- Force BIOS - Keep Current	Set display mode for Option ROM messages.

Boot option filter	- UEFI and Legacy - Legacy only - UEFI only	This option controls what kind of devices system can boot.
Network	- Do not launch - UEFI - Legacy	Controls the execution of UEFI or Legacy PXE
Storage	- Do not launch - UEFI - Legacy	Controls the execution of UEFI or Legacy Storage
Video	- Do not launch - UEFI - Legacy	Controls the execution of UEFI and Legacy Video.
Other PCI devices	- Do not launch - UEFI - Legacy	Select launch method for other PCI devices, such as NIC, mass storage or video card.

USB Configuration

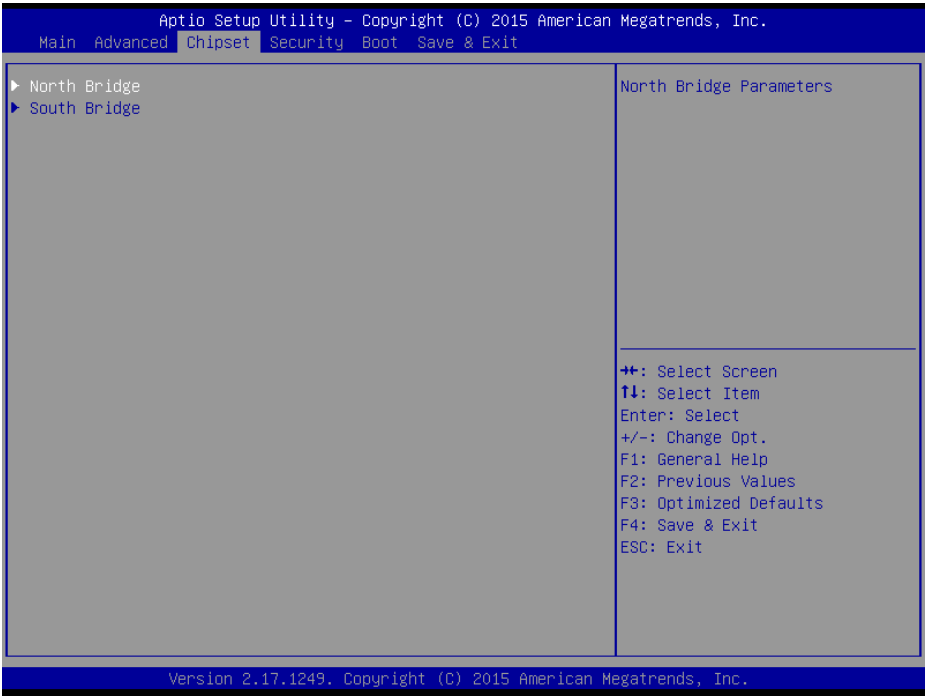


USB Configuration Screen

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.
XHCI Hand-off	- Disabled - Enabled	This is a workaround for OSes w/o XHCI hand-off support.
EHCI Hand-off	- 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.

Device power-up delay	- Auto - Manual	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:	- Auto - Floppy - Force FDD - Hard Disk - CD-ROM	Display the device name and choose the device emulation type.

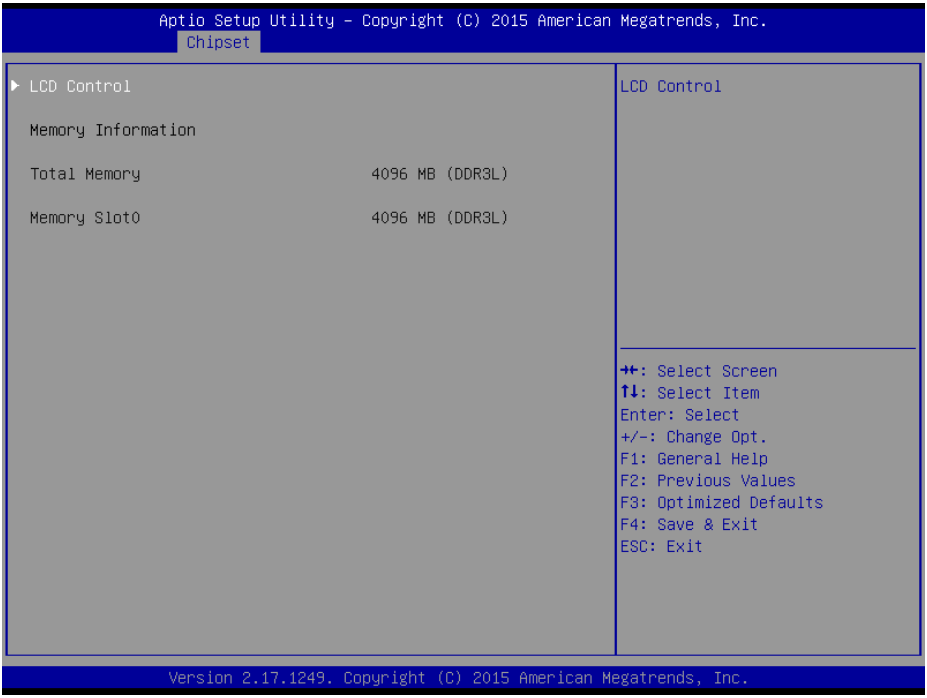
Chipset



Chipset Screen

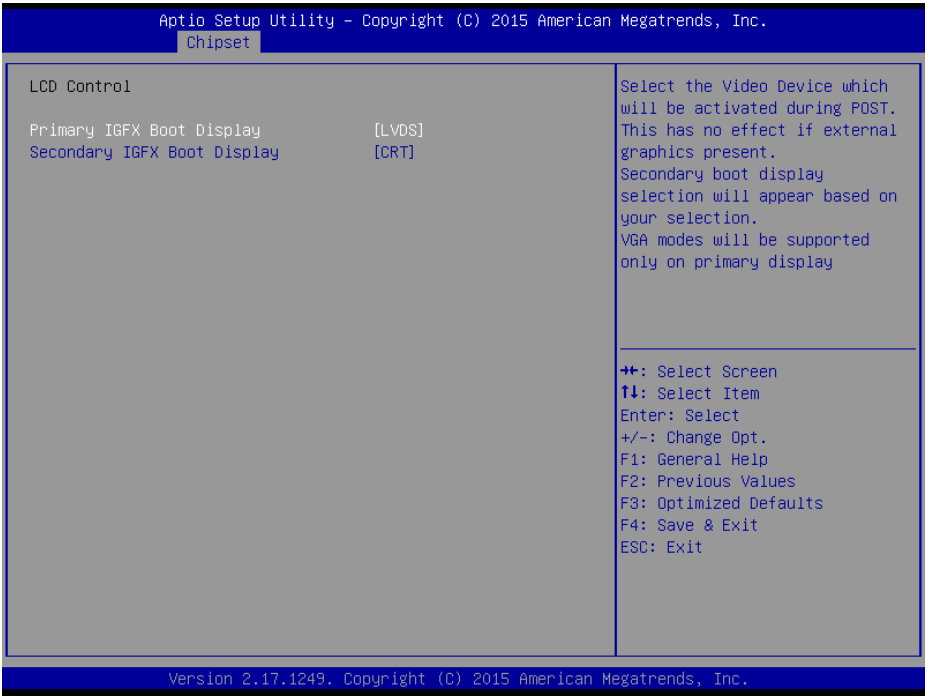
BIOS Setting	Options	Description/Purpose
North Bridge	Sub-menu	Sets Parameter for (North Bridge) configuration.
South Bridge	Sub-menu	Sets Parameter for (South Bridge) configuration.

North Bridge



North Bridge Screen

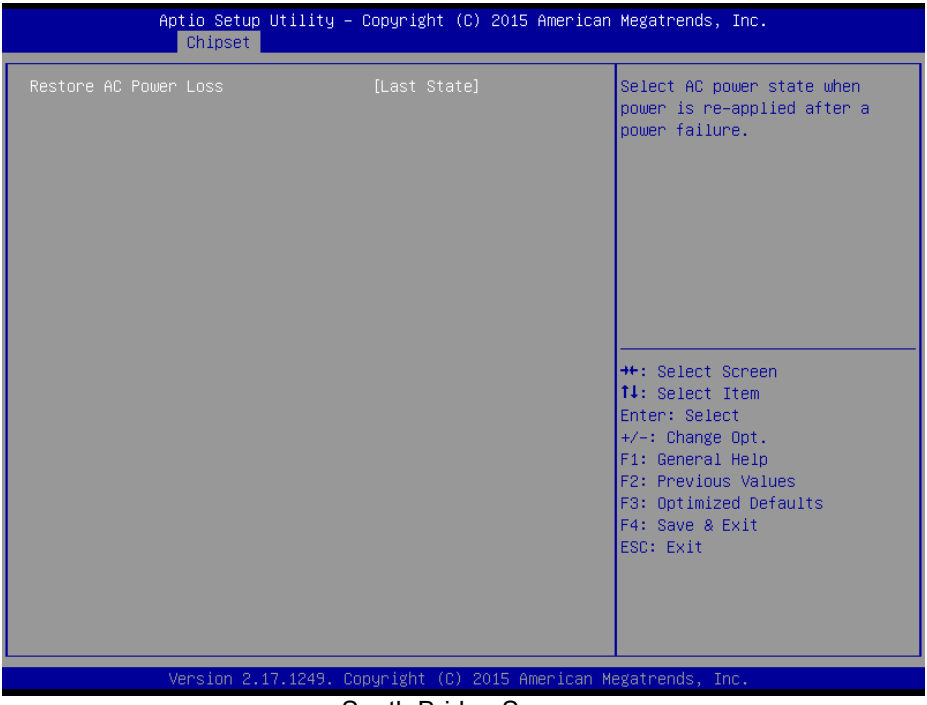
BIOS Setting	Options	Description/Purpose
LCD Control	Sub-menu	LCD Control
Memory Information	No changeable options	Displays the DRAM information on platform.
Total Memory	No changeable options	Displays the DRAM size
Memory Slot0	No changeable options	Memory in the slot



LCD Control Screen

BIOS Setting	Options	Description/Purpose
Primary IGFX Boot Display	- CRT - LVDS	Select Primary Display Device
Secondary IGFX Boot Display	- Disabled - CRT - LVDS	Select Secondary Display Device

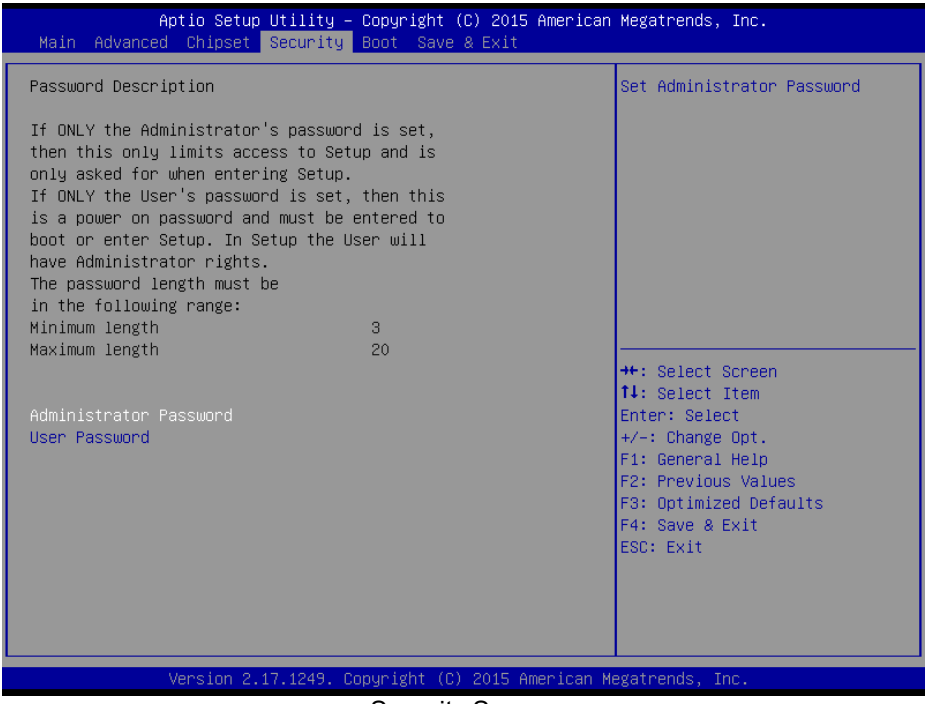
South Bridge



South Bridge Screen

BIOS Setting	Options	Description/Purpose
Restore AC Power Loss	- Power Off - Power On - Last State	Select AC power state when power is re-applied after a power failure. **Power Off** keeps the power off till the power button is pressed. **Power On** makes system power on after restores AC power to the board. **Last State** brings system back to the last power state before AC remove.

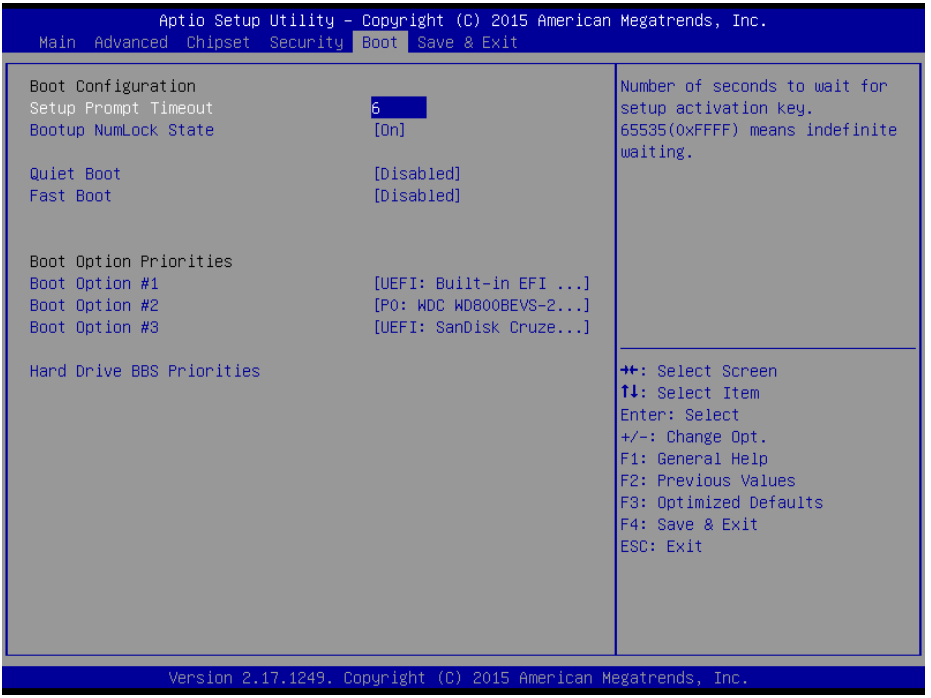
Security



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.

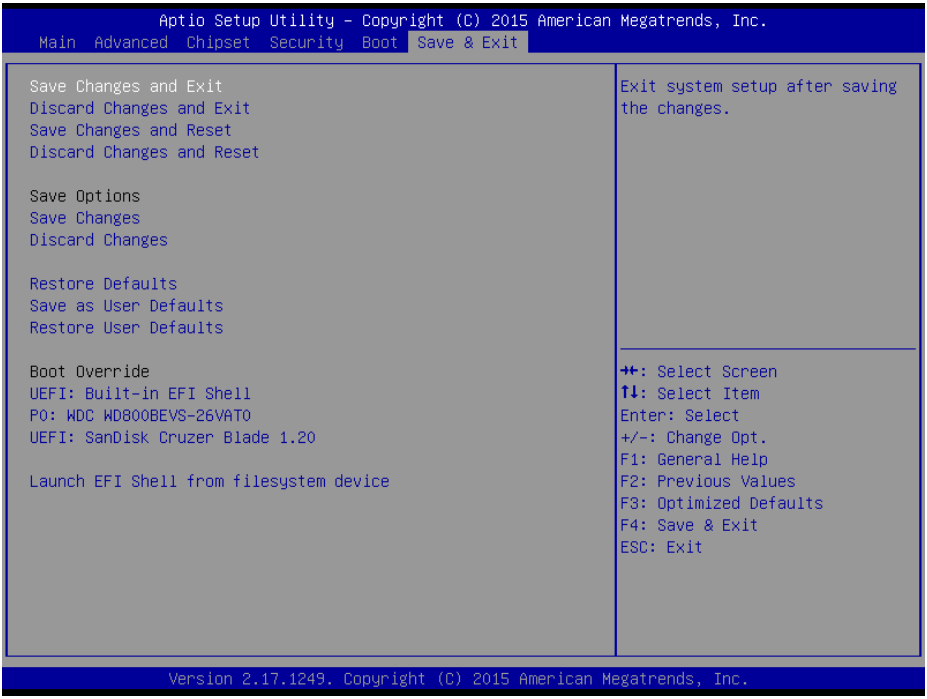
Boot



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
Fast Boot	- Disabled - Enabled	Enable/Disable Fast 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)

Save & Exit



Save & 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)].

3-4-2 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).

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.

Code example for watch dog timer

Enable watchdog timer and set timeout interval to 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
```

3-4-3 System BIOS Update Instructions

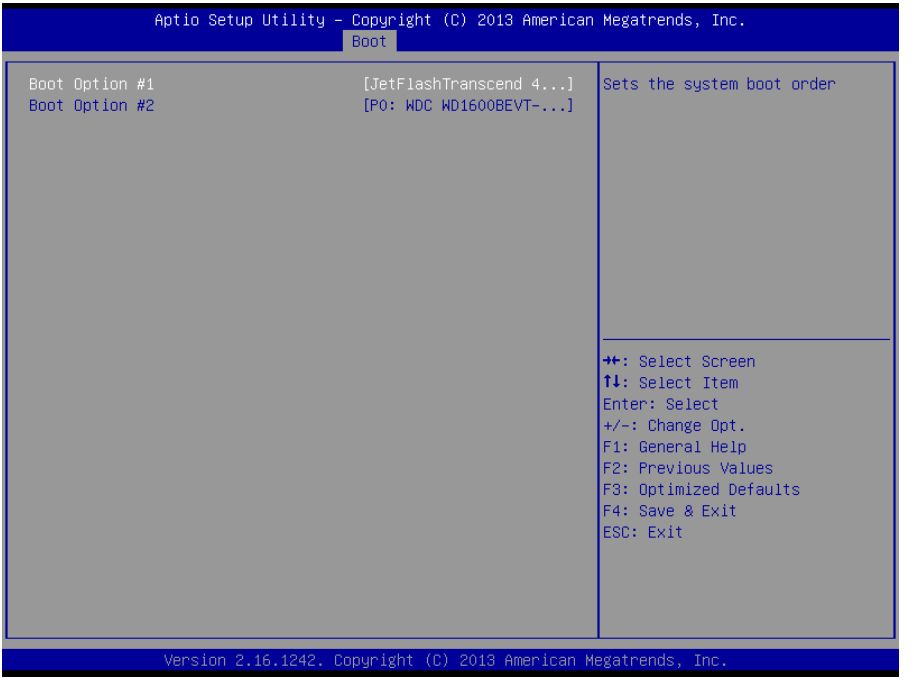
Before System BIOS update

1. Prepare a bootable media (ex. USB storage device) which can boot system to DOS prompt.

2. Download and save the BIOS file (ex. 67220TD2.bin) to the bootable device.

3. Copy AMI flash utility – AFUDOS.exe (v5.07) into bootable device.

4. Make sure the target system can first boot to the bootable device.
   (1) Connect the bootable USB device.
   (2) Turn on the computer and press <ESC> or <DEL> key during boot to enter BIOS Setup.
   (3) System will go into the BIOS setup menu.
   (4) Select [Boot] menu.
   (5) Select [Hard Drive BBS Priorities], set the USB bootable device to be the 1st boot device.
   (6) Press <F4> key to save configuration and exit the BIOS setup menu.



AFUDOS command for system BIOS update

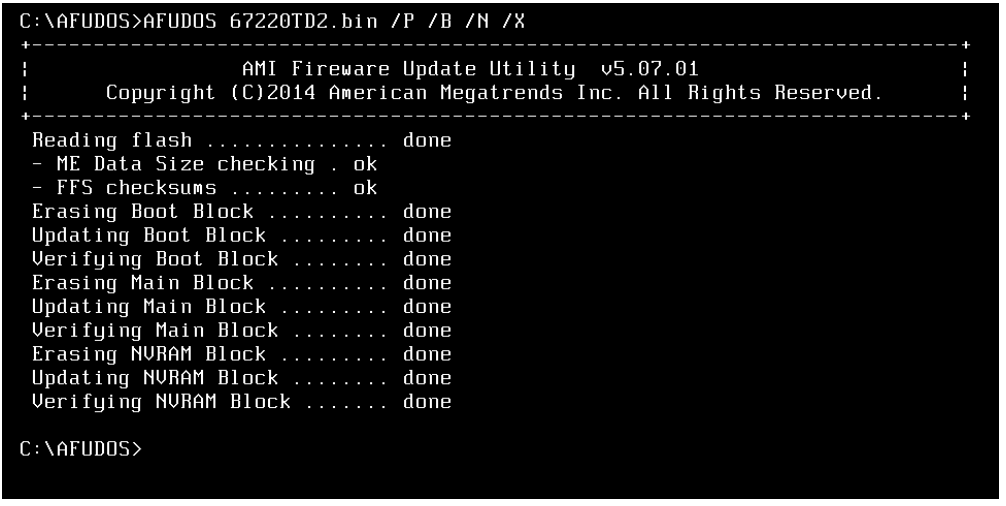
AFUDOS.exe is the AMI firmware update utility; the command line is shown as below:

AFUDOS <ROM File Name> [option1] [option2]….
User can type "AFUDOS/ ?" to see all the definition of each control options.
The recommended options for BIOS ROM update include following arameters:

/P: Program main BIOS image.
/B: Program Boot Block.
/N: Program NVRAM.
/X: Don't check ROM ID.

BIOS update procedure

1. Use the bootable USB storage to boot up system into the DOS command prompt.
2. Type "**AFUDOS 6722xxxx.bin /p /b /n /x"** and press enter to start the flash procedure.
   (Note that xxxx means the BIOS revision part, ex. 0PD2…)
3. During the update procedure, you will see the BIOS update process status and its percentage. Beware! Do not turn off system power or reset your computer if the whole procedure are not complete yet, or it may crash the BIOS ROM and make system unable to boot up next time.
4. After BIOS update procedures is complete, the messages should be like the figure shown below.



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


American
Megatrends
Version 2.17.1249. Copyright (C) 2015 American Megatrends, Inc.
BIOS Date: 04/13/2015 10:58:08 Ver: 67220TD2
99

3-4-4 System Resource Map

I/O

0x00000000-0x0000006FPCI bus
0x00000020-0x00000021Programmable interrupt controller
0x00000024-0x00000025Programmable interrupt controller
0x00000028-0x00000029Programmable interrupt controller
0x0000002C-0x0000002DProgrammable interrupt controller
0x0000002E-0x0000002FMotherboard resources
0x00000030-0x00000031Programmable interrupt controller
0x00000034-0x00000035Programmable interrupt controller
0x00000038-0x00000039Programmable interrupt controller
0x0000003C-0x0000003DProgrammable interrupt controller
0x00000040-0x00000043System timer
0x0000004E-0x0000004FMotherboard resources
0x00000050-0x00000053System timer
0x00000060-0x00000060Standard PS/2 Keyboard
0x00000061-0x00000061Motherboard resources
0x00000063-0x00000063Motherboard resources
0x00000064-0x00000064Standard PS/2 Keyboard
0x00000065-0x00000065Motherboard resources
0x00000067-0x00000067Motherboard resources
0x00000070-0x00000077System CMOS/real time clock
0x00000070-0x00000077Motherboard resources
0x00000078-0x00000CF7PCI bus
0x00000080-0x0000008FMotherboard resources
0x00000092-0x00000092Motherboard resources
0x000000A0-0x000000A1Programmable interrupt controller
0x000000A4-0x000000A5Programmable interrupt controller
0x000000A8-0x000000A9Programmable interrupt controller
0x000000AC-0x000000ADProgrammable interrupt controller
0x000000B0-0x000000B1Programmable interrupt controller
0x000000B2-0x000000B3Motherboard resources
0x000000B4-0x000000B5Programmable interrupt controller
0x000000B8-0x000000B9Programmable interrupt controller
0x000000BC-0x000000BDProgrammable interrupt controller
0x000002E8-0x000002EFCommunications Port (COM4)
0x000002F8-0x000002FFCommunications Port (COM2)
0x00000378-0x0000037FPrinter Port (LPT1)
0x000003B0-0x000003BBIntel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900
0x000003C0-0x000003DFIntel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900
0x000003E8-0x000003EFCommunications Port (COM3)
0x000003F8-0x000003FFCommunications Port (COM1)
0x00000400-0x0000047FMotherboard resources

0x000004D0-0x000004D1Programmable interrupt controller
0x00000500-0x000005FEMotherboard resources
0x00000600-0x0000061FMotherboard resources
0x00000680-0x0000069FMotherboard resources
0x00000A00-0x00000A0FMotherboard resources
0x00000A10-0x00000A1FMotherboard resources
0x00000A20-0x00000A2FMotherboard resources
0x00000D00-0x0000FFFFPCI bus
0x0000E000-0x0000EFFFIntel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 4 - 0F4E
0x0000E000-0x0000EFFFRealtek PCIe GBE Family Controller
0x0000F000-0x0000F01FIntel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port - 0F12
0x0000F020-0x0000F03FIntel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
0x0000F040-0x0000F043Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
0x0000F050-0x0000F057Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
0x0000F060-0x0000F063Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
0x0000F070-0x0000F077Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
0x0000F080-0x0000F087Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900

IRQ

IRQ 0System timer
IRQ 1Standard PS/2 Keyboard
IRQ 3Communications Port (COM2)
IRQ 4Communications Port (COM1)
IRQ 7Communications Port (COM3)
IRQ 8High precision event timer
IRQ 10Communications Port (COM4)
IRQ 10Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port - 0F12
IRQ 12PS/2 Compatible Mouse
IRQ 16Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 1 - 0F48
IRQ 17Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 2 - 0F4A
IRQ 18Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 3 - 0F4C
IRQ 19Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 4 - 0F4E
IRQ 19Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
IRQ 22High Definition Audio Controller
IRQ 81Microsoft ACPI-Compliant System
IRQ 82Microsoft ACPI-Compliant System
IRQ 83Microsoft ACPI-Compliant System
IRQ 84Microsoft ACPI-Compliant System
IRQ 85Microsoft ACPI-Compliant System
IRQ 86Microsoft ACPI-Compliant System
IRQ 87Microsoft ACPI-Compliant System
IRQ 88Microsoft ACPI-Compliant System
IRQ 89Microsoft ACPI-Compliant System
IRQ 90Microsoft ACPI-Compliant System
IRQ 91Microsoft ACPI-Compliant System
IRQ 92Microsoft ACPI-Compliant System
IRQ 93Microsoft ACPI-Compliant System
IRQ 94Microsoft ACPI-Compliant System
IRQ 95Microsoft ACPI-Compliant System
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IRQ 98Microsoft ACPI-Compliant System
IRQ 99Microsoft ACPI-Compliant System
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IRQ 113Microsoft ACPI-Compliant System
IRQ 114Microsoft ACPI-Compliant System
IRQ 115Microsoft ACPI-Compliant System
IRQ 116Microsoft ACPI-Compliant System
IRQ 117Microsoft ACPI-Compliant System
IRQ 118Microsoft ACPI-Compliant System
IRQ 119Microsoft ACPI-Compliant System
IRQ 120Microsoft ACPI-Compliant System
IRQ 121Microsoft ACPI-Compliant System
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IRQ 124Microsoft ACPI-Compliant System
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IRQ 137Microsoft ACPI-Compliant System
IRQ 138Microsoft ACPI-Compliant System
IRQ 139Microsoft ACPI-Compliant System
IRQ 140Microsoft ACPI-Compliant System
IRQ 141Microsoft ACPI-Compliant System
IRQ 142Microsoft ACPI-Compliant System
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IRQ 144Microsoft ACPI-Compliant System
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IRQ 164Microsoft ACPI-Compliant System
IRQ 165Microsoft ACPI-Compliant System
IRQ 166Microsoft ACPI-Compliant System
IRQ 167Microsoft ACPI-Compliant System
IRQ 168Microsoft ACPI-Compliant System
IRQ 169Microsoft ACPI-Compliant System
IRQ 170Microsoft ACPI-Compliant System
IRQ 171Microsoft ACPI-Compliant System
IRQ 172Microsoft ACPI-Compliant System
IRQ 173Microsoft ACPI-Compliant System
IRQ 174Microsoft ACPI-Compliant System
IRQ 175Microsoft ACPI-Compliant System
IRQ 176Microsoft ACPI-Compliant System
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IRQ 178Microsoft ACPI-Compliant System
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IRQ 180Microsoft ACPI-Compliant System
IRQ 181Microsoft ACPI-Compliant System
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IRQ 183Microsoft ACPI-Compliant System
IRQ 184Microsoft ACPI-Compliant System
IRQ 185Microsoft ACPI-Compliant System
IRQ 186Microsoft ACPI-Compliant System
IRQ 187Microsoft ACPI-Compliant System
IRQ 188Microsoft ACPI-Compliant System
IRQ 189Microsoft ACPI-Compliant System
IRQ 190Microsoft ACPI-Compliant System
IRQ 4294967292Realtek PCIe GBE Family Controller
IRQ 4294967293Intel(R) USB 3.0 eXtensible Host Controller
IRQ 4294967294Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900

Note: These resource information were gathered using Windows 7 (the IRQ could be assigned differently depending on OS)

DMA

Channel 3Printer Port (LPT1)

Memory

0xD0600000-0xD06FFFFFIntel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 4 - 0F4E
0xD0600000-0xD06FFFFFRealtek PCIe GBE Family Controller
0xFF000000-0xFFFFFFFFIntel(R) 82802 Firmware Hub Device
0xE00000D0-0xE00000DBIntel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor MBI Device - 33BD
0xD0716000-0xD07167FFIntel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
0xD0000000-0xD03FFFFFIntel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900
0xC0000000-0xCFFFFFFFIntel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900
0xC0000000-0xCFFFFFFFPCI bus
0xFED00000-0xFED003FFHigh precision event timer
0xD0604000-0xD0604FFFRealtek PCIe GBE Family Controller
0xD0700000-0xD070FFFFIntel(R) USB 3.0 eXtensible Host Controller
0xE0000000-0xEFFFFFFFMotherboard resources
0xFED01000-0xFED01FFFMotherboard resources
0xFED03000-0xFED03FFFMotherboard resources
0xFED04000-0xFED04FFFMotherboard resources
0xFED0C000-0xFED0FFFFMotherboard resources
0xFED08000-0xFED08FFFMotherboard resources
0xFED1C000-0xFED1CFFFMotherboard resources
0xFEE00000-0xFEEFFFFFMotherboard resources
0xFEF00000-0xFEFFFFFFMotherboard resources
0xD0710000-0xD0713FFFHigh Definition Audio Controller
0xD0714000-0xD071401FIntel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port - 0F12
0xD0500000-0xD05FFFFFIntel(R) Trusted Execution Engine Interface
0xD0400000-0xD04FFFFFIntel(R) Trusted Execution Engine Interface
0xA0000-0xBFFFFIntel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900
0xA0000-0xBFFFFPCI bus
0xC0000-0xDFFFFPCI bus
0xE0000-0xFFFFFPCI bus

SYSTEM DIAGRAMS

CHAPTER

4

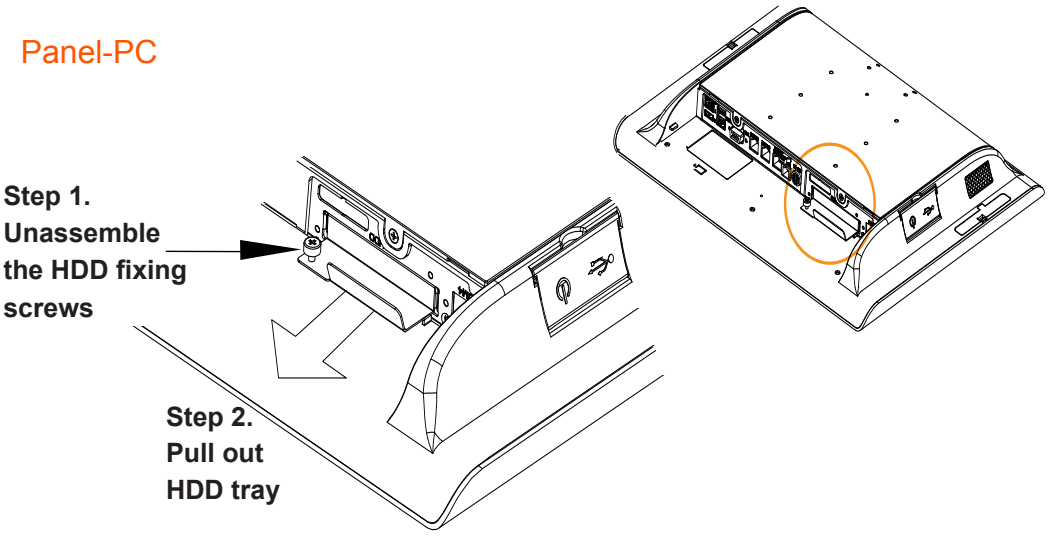
This appendix contains exploded diagrams and part numbers of the PA-6722 system.

Sections included:

- Easy Maintenance
  - Hard Drive
  - Memory
  - MainBoard
- Exploded Diagram for Panel PC
  - Panel-PC
  - Stand
  - Printer Moudle
  - Peripheral

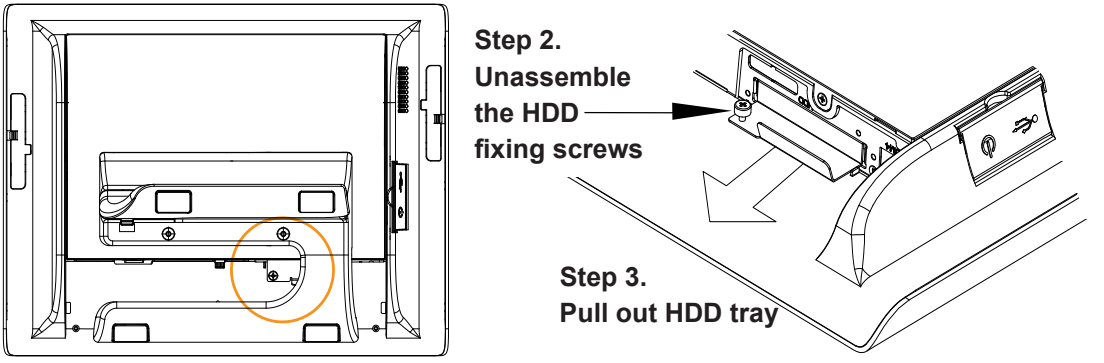
Easy Maintenance_HDD

Panel-PC

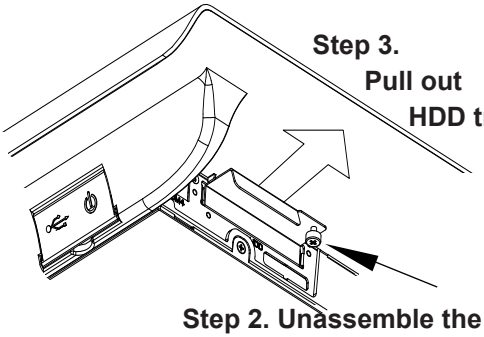


Easy Stand

Step 1. Lay down System on a flat as under drawing



Normal Stand

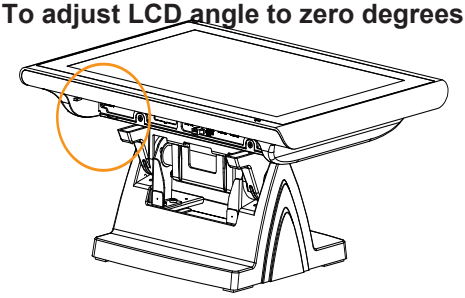


Step 3.
Pull out
HDD tray

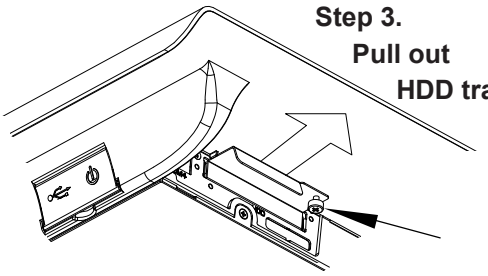
Step 2. Unassemble the HDD fixing screws

Step 1.

To adjust LCD angle to zero degrees



Printer Stand

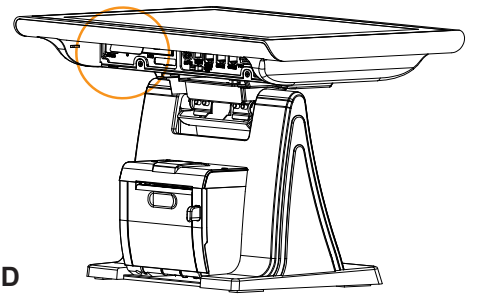


Step 3.
Pull out
HDD tray

Step 2. Unassemble the HDD fixing screws

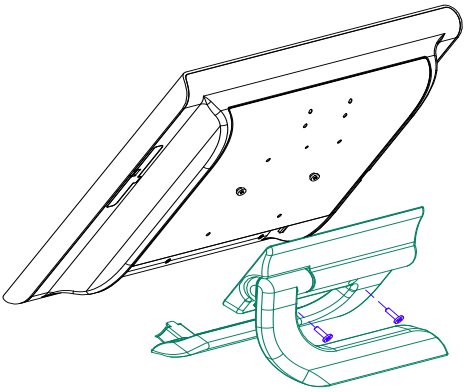
Step 1.

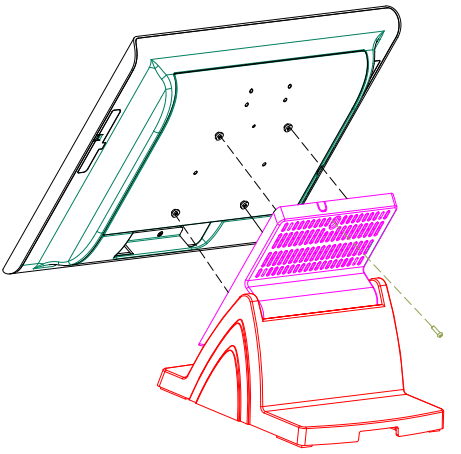
To adjust LCD angle to zero degrees

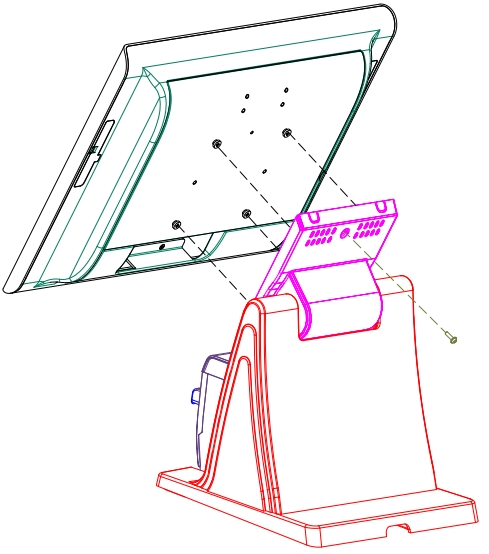


Easy Maintenance_Memory

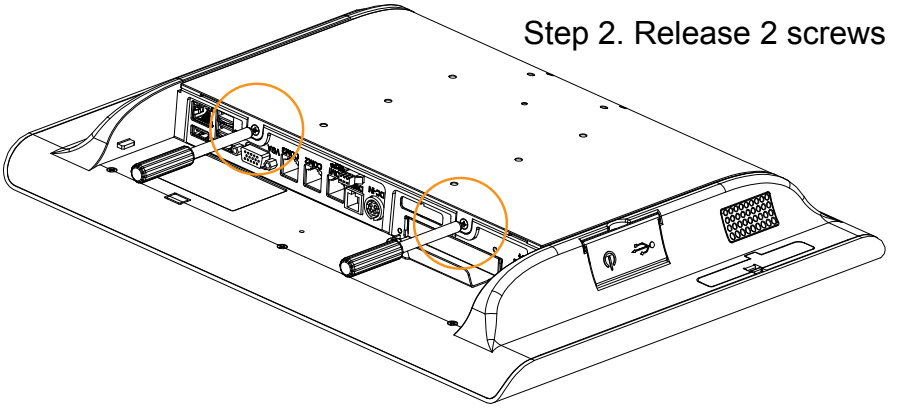
Step 1. To separate Panel-PC & Stand



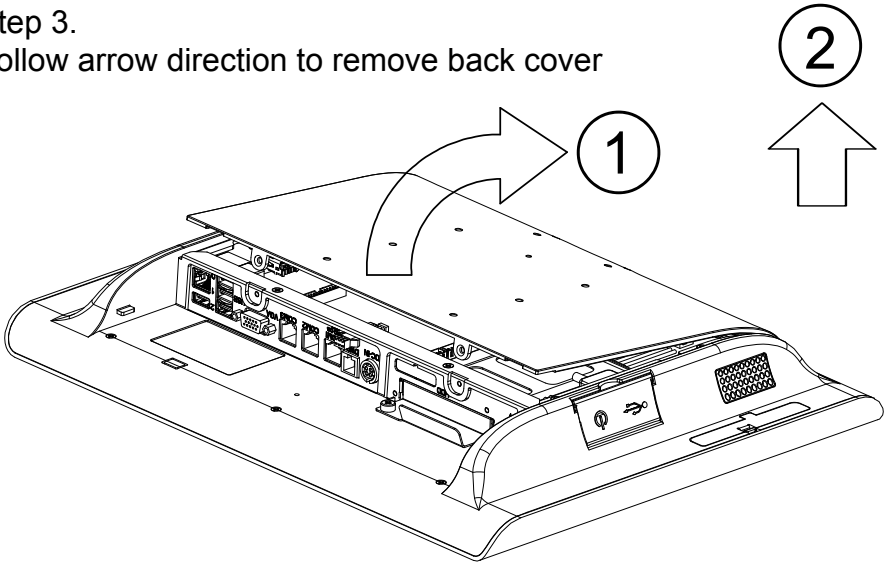


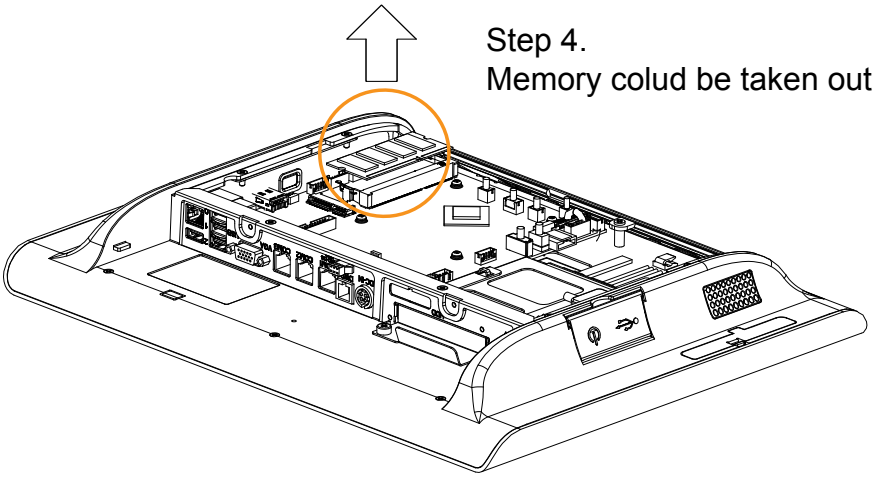


Step 2. Release 2 screws



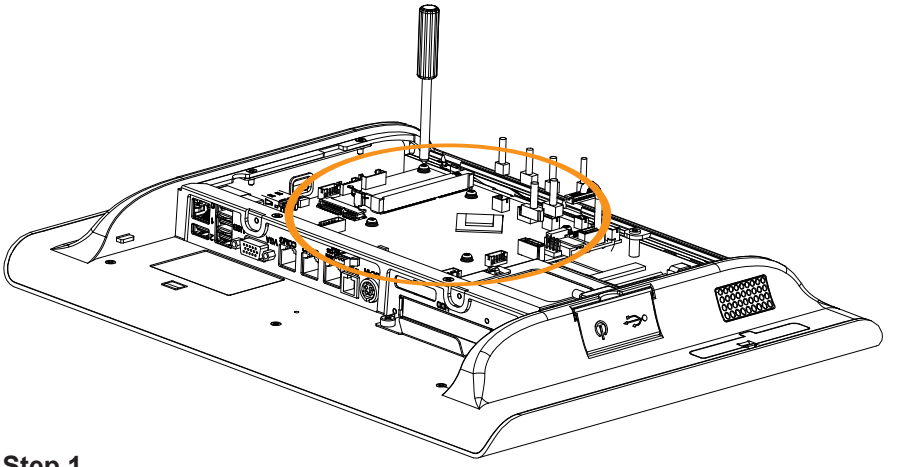
Step 3.
Follow arrow direction to remove back cover





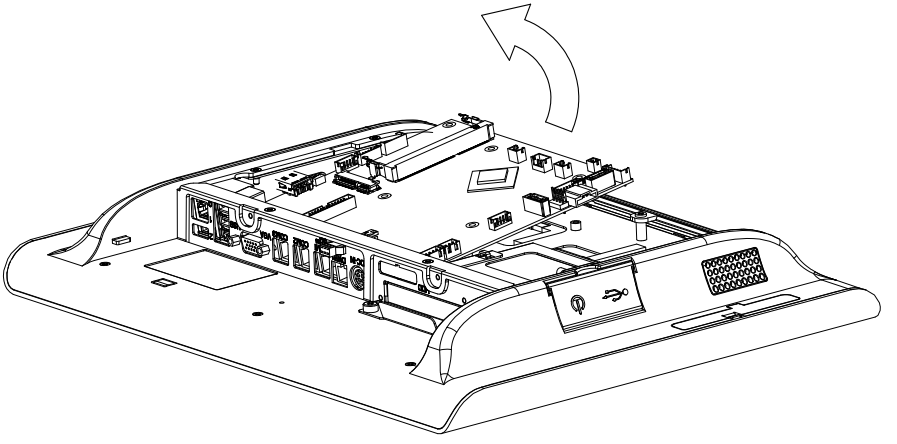
Step 4.
Memory colud be taken out

Easy Maintenance_Mainboard



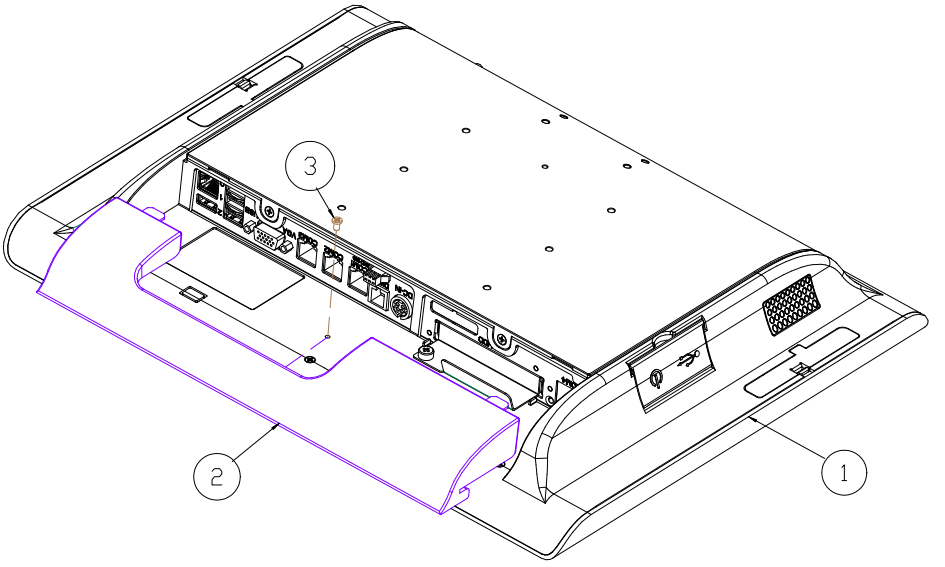
Step 1.
To pull out all cables which link on M/B and than to release fixing-screws of M/B

Step 2.
Follow the arrow direction to take Mainboard up.



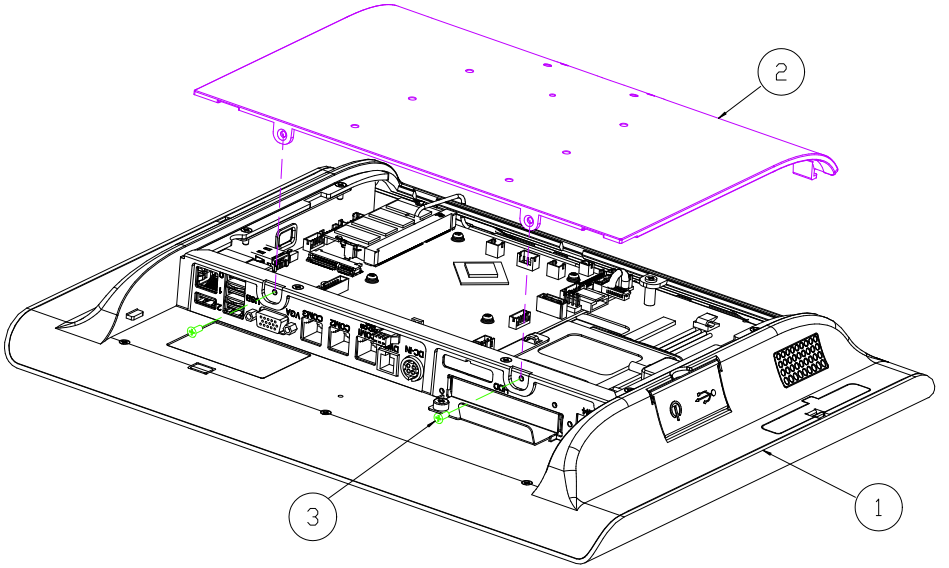
EXPLODED DIAGRAM FOR PANEL PC

Cable cover



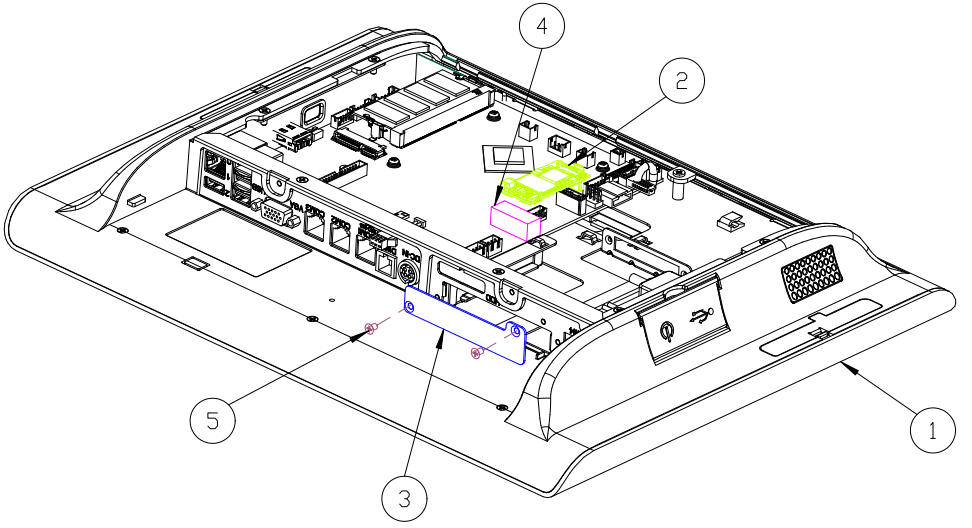
	Qty	Part Name	Part No.
1	1	PA-6722_PPC_module	--------
2	1	Cable cover(Black)	30-002-28210353
3	1	FILLISTR HEAD SCREW	82-275-30006018

Back thermal cover



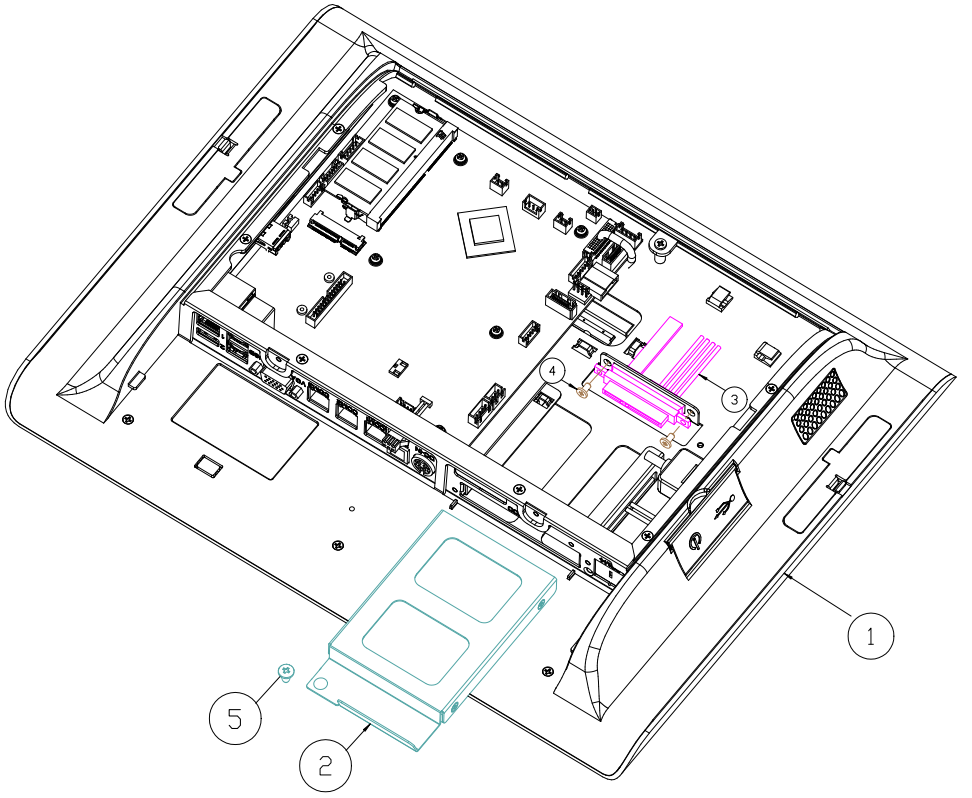
	Qty	Part Name	Part No.
1	1	PA-6722_PPC_module	----------
2	1	AL COVER(Black)	20-004-01061353
3	2	FLAT HEAD SCREW	22-215-30005011

SATA-DOM

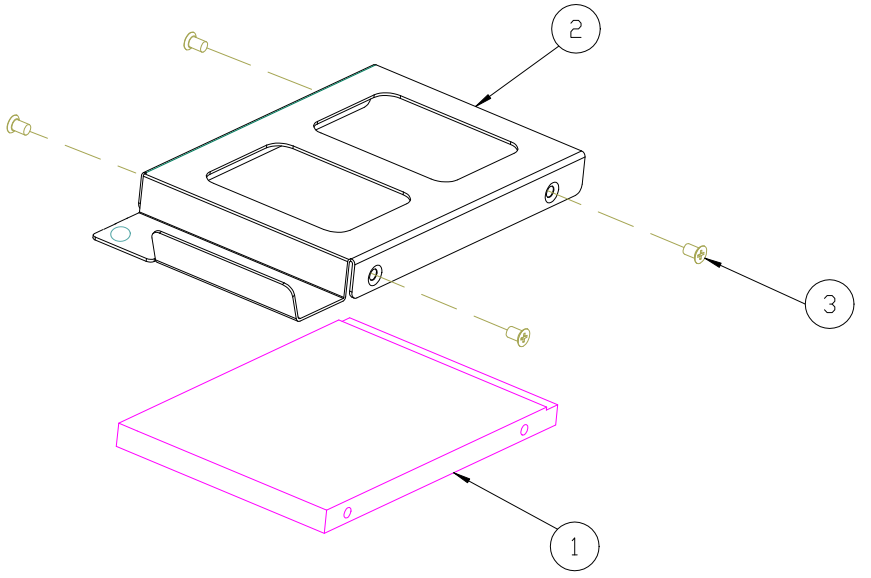


Item	Qty		Part No.
1	1	PA-6722_PPC	--------
2	1	SATA_Flash_Module	SEE ORDER
3	1	HDD_PLATE	80-005-03002353
4	1	EVA	90-013-15100000
5	2	FLAT HEAD SCREW	22-212-30005311

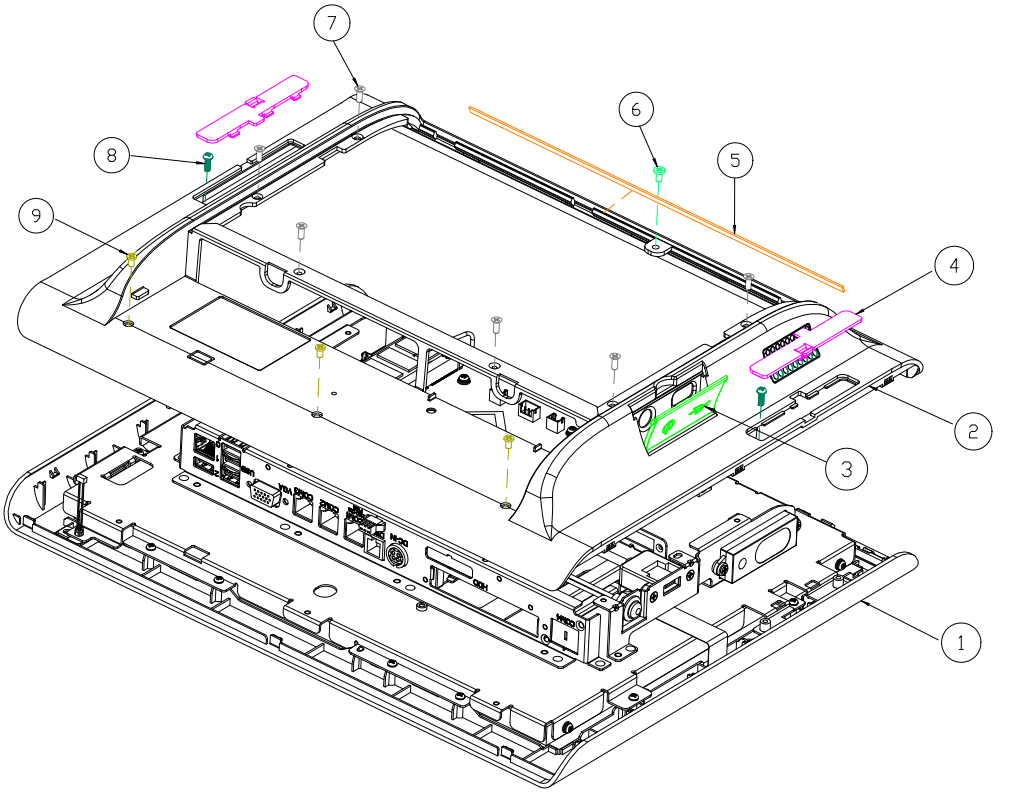
HDD



	Qty	Part Name	Part No.
1	1	PA-6722_PPC_module	----------
2	1	HDD_module_module	----------
3	1	SATA HDD & POWER CABLE	27-008-31405081
4	2	FILLISTR HEAD SCREW	82-275-30006018
5	1	HDD SCREW	22-282-30008031



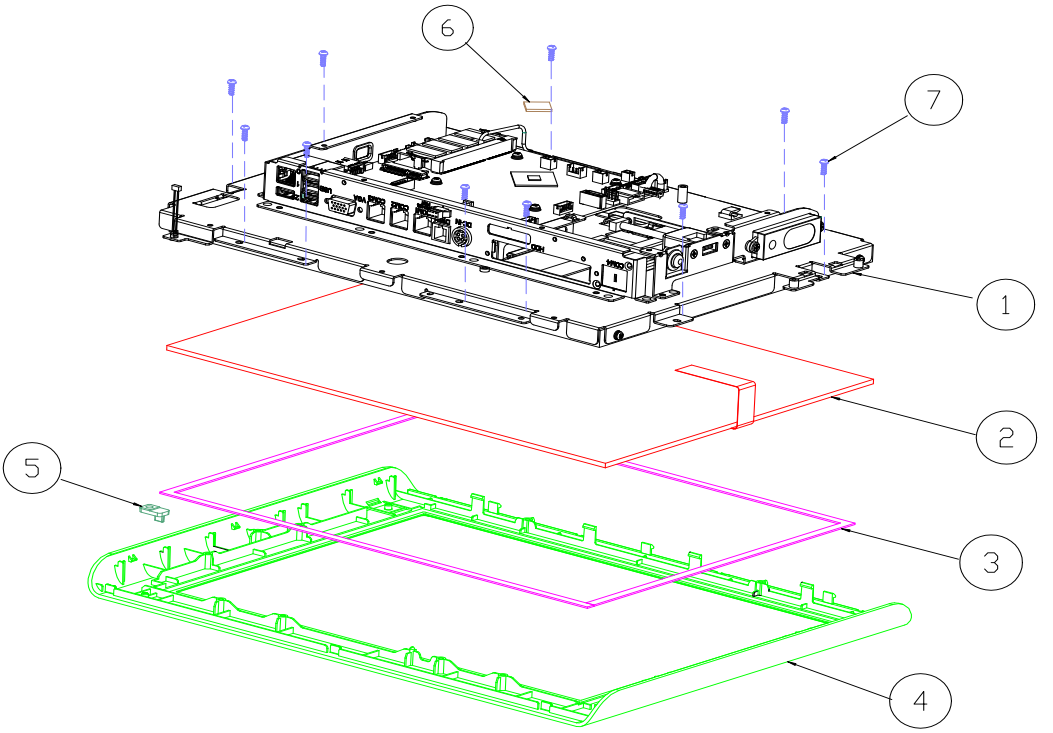
	Qty	Part Name	Part No.
1	1	HDD	SEE ORDER
2	1	HDD TRAY	20-054-03001353
3	4	FLAT HEAD SCREW	22-215-30005011



	Qty	Part Name	Part No.
1	1	Front_cover_module	----------
2	1	Back_cover_module	----------
3	1	USB cover(Black)	30-002-28810353
4	2	MSR_cover(Black)	30-002-28510353
5	1	EVA_2	90-013-15200353
6	1	FILLISTR HEAD SCREW	22-275-30006011
7	6	FLAT HEAD SCREW	22-215-30005011
8	2	PAN HEAD SCREW,T3.0x8mm	22-122-30080011
9	3	FILLISTR HEAD SCREW	82-275-30006018

Touchscreen

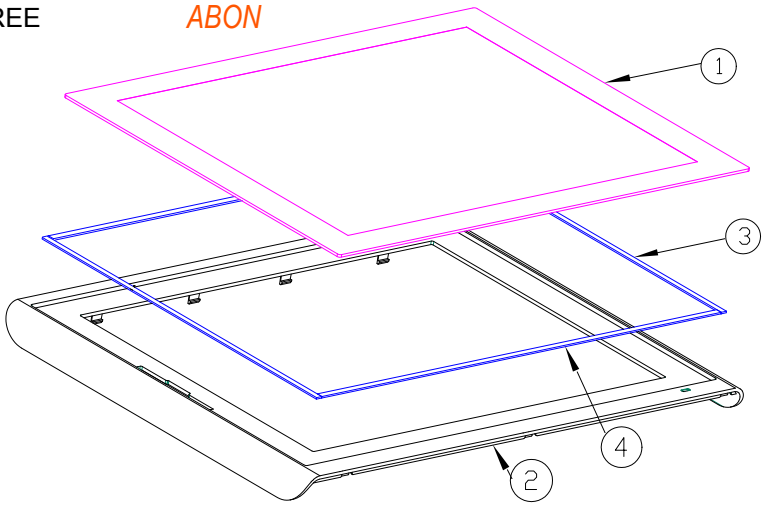
NON-BEZEL-FREE



	Qty	Part Name	Part No.
1	1	MB_MODULE_ASSY	----------
2	1	15"**Non-Bezel Free**Touch Panel	----------
3	2	EVA SPONGE	30-013-15100139
4	1	FRONT COVER(Black)	30-002-28410353
5	1	LED LENS(Transparency)	30-021-02130343
6	1	Thermal Interface Pads	81-006-81515002
7	10	PAN HEAD SCREW,T3.0x8mm	22-122-30080011

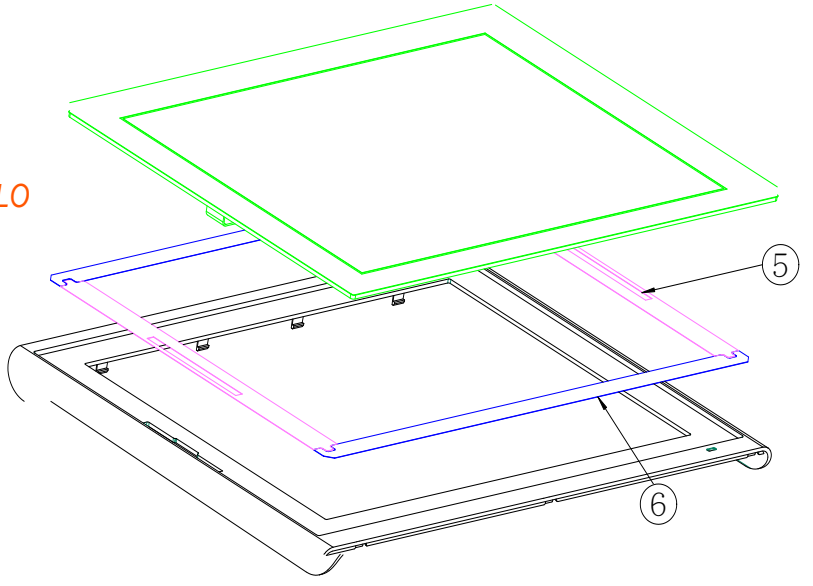
BEZEL-FREE

ABON

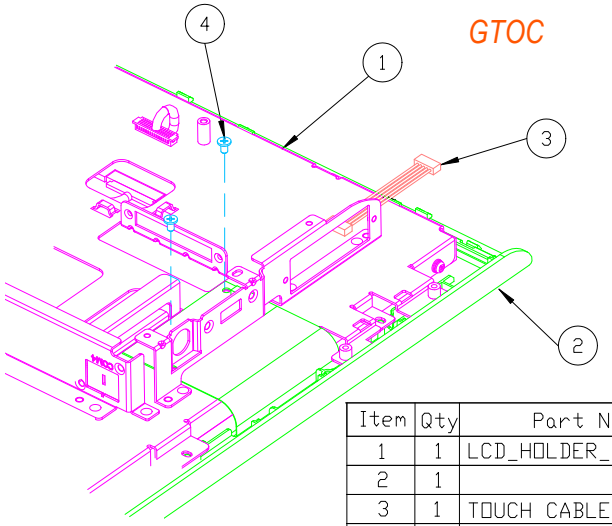


Item	Qty	Part Name	Part No.
1	1	15″ **Bezel Free** Touch Panel	----------
2	1	FRONT COVER(FLAT TP)(Black)	30-002-28310353
3	2	Double Tape V	94-026-05002220
4	2	Double Tape H	94-026-05001220
5		Double Coated Tape B	94-026-04902220
6		Double Coated Tape A	94-026-04901220

ELO

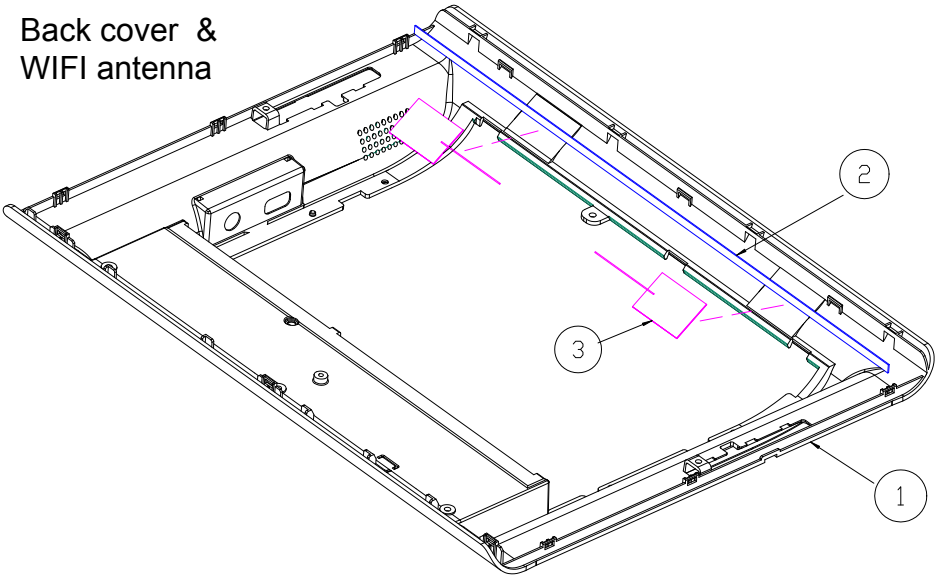


GTOC



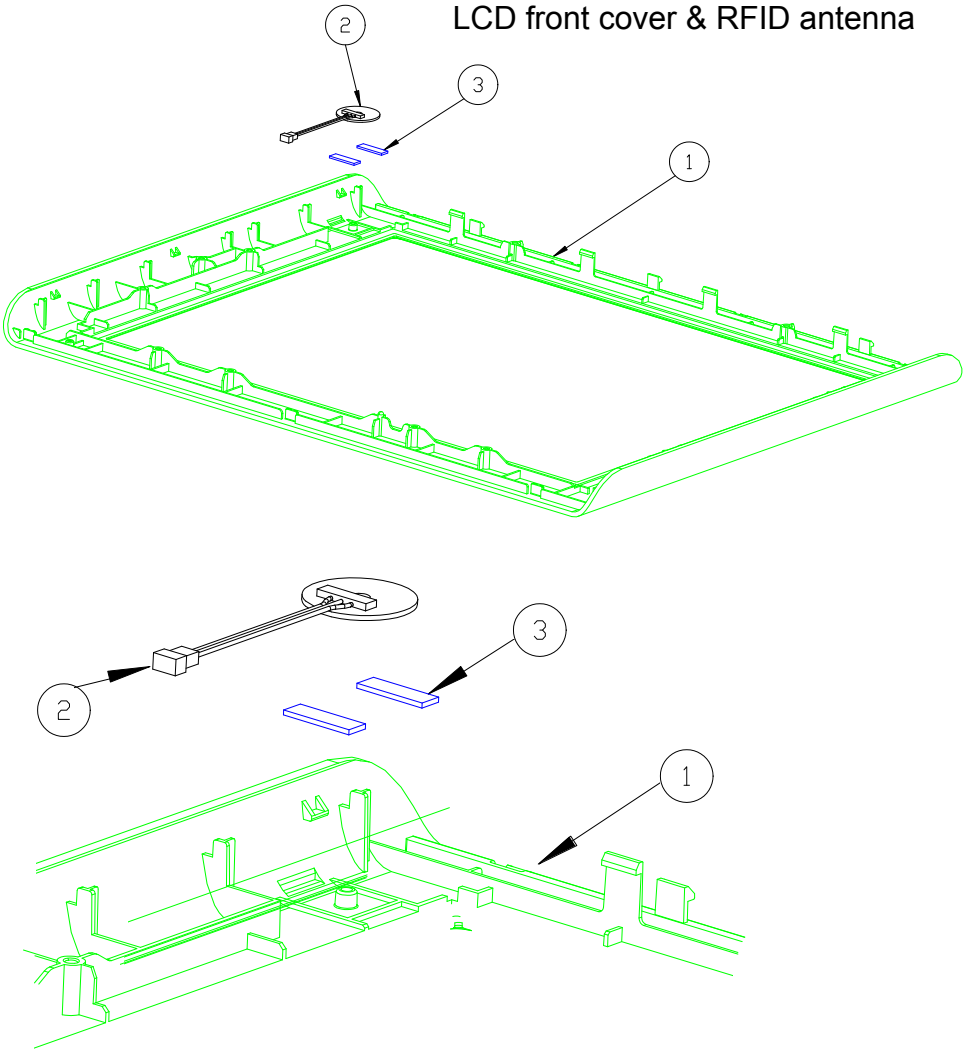
Item	Qty	Part Name	Part No.
1	1	LCD_HOLDER_MODULE	----------
2	1		----------
3	1	TOUCH CABLE(5p to 5p)	27-016-29609112
4	2	FILLISTER HEAD SCREW	82-272-30004018

Back cover &
WIFI antenna



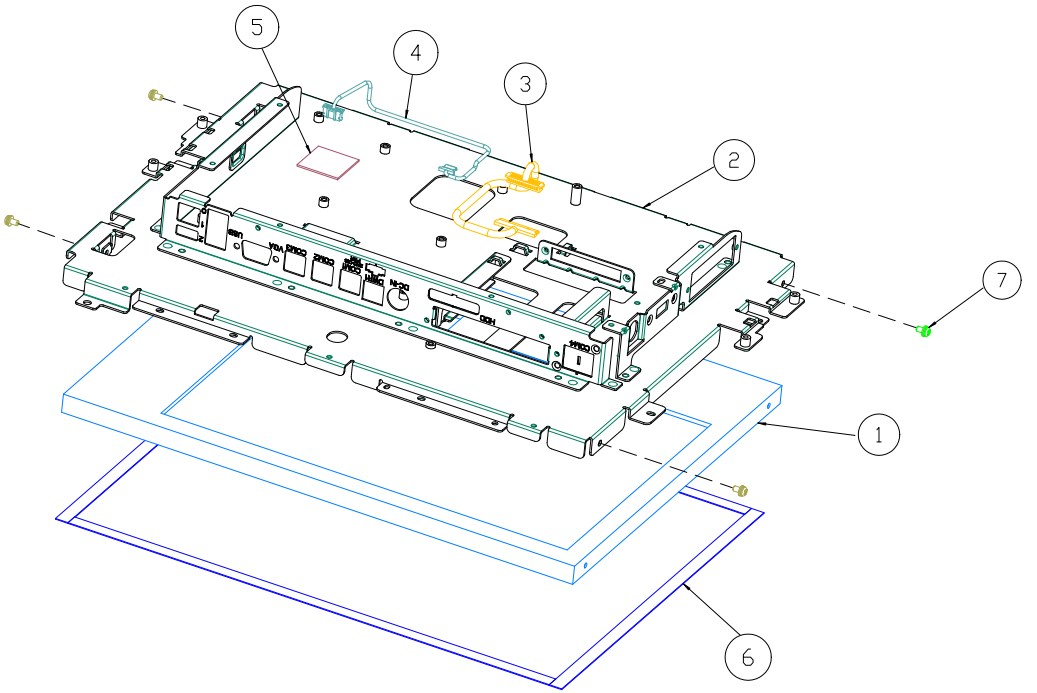
	Qty	Part Name	Part No.
1	1	BACK COVER(Black)	30-002-28110353
2	1	EVA 1(365x5x0.5mm)	90-013-15100353
3	2	PCB_Antenna	27-029-16506071

LCD front cover & RFID antenna



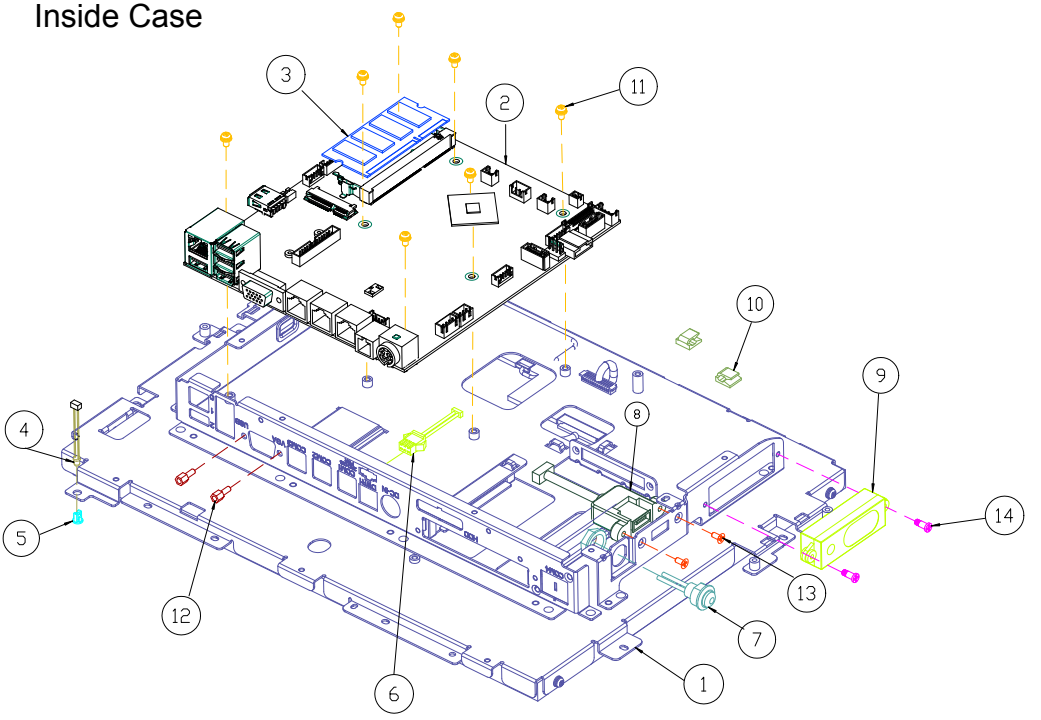
Item	Qty	Part Name	Part No.
1	1	FRONT COVER(Black)	30-002-28410353
2	1	RFID_ANTENNA	52-551-00032000
3	2	RFID_EVA	

LCD Panel & its cable



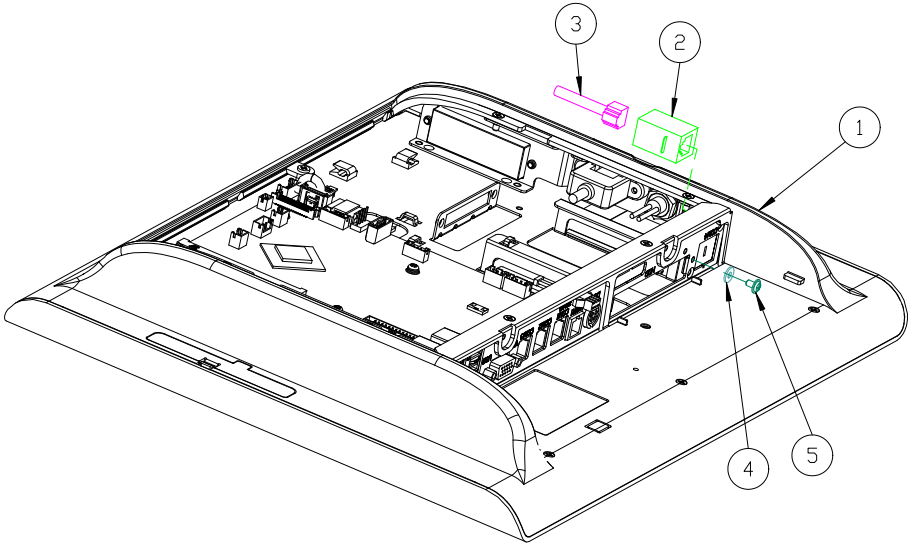
Item	Qty	Part Name	Part No.
1	1	15" TFT LCD Panel	52-351-03150728
2	1	PA-6722 LCD HOLDER MODULE	20-029-03001353
3	1	LVDS CABLE	27-020-31403114
4	1	PANEL LED CABLE	27-069-35303111
5	1	Thermal Interface Pads	81-006-82626002
6	4	LCD PORON SPONGE	30-013-24100000
7	4	ROUND HEAD WITH SPRING WASHER SCREW	22-232-30060211

Inside Case



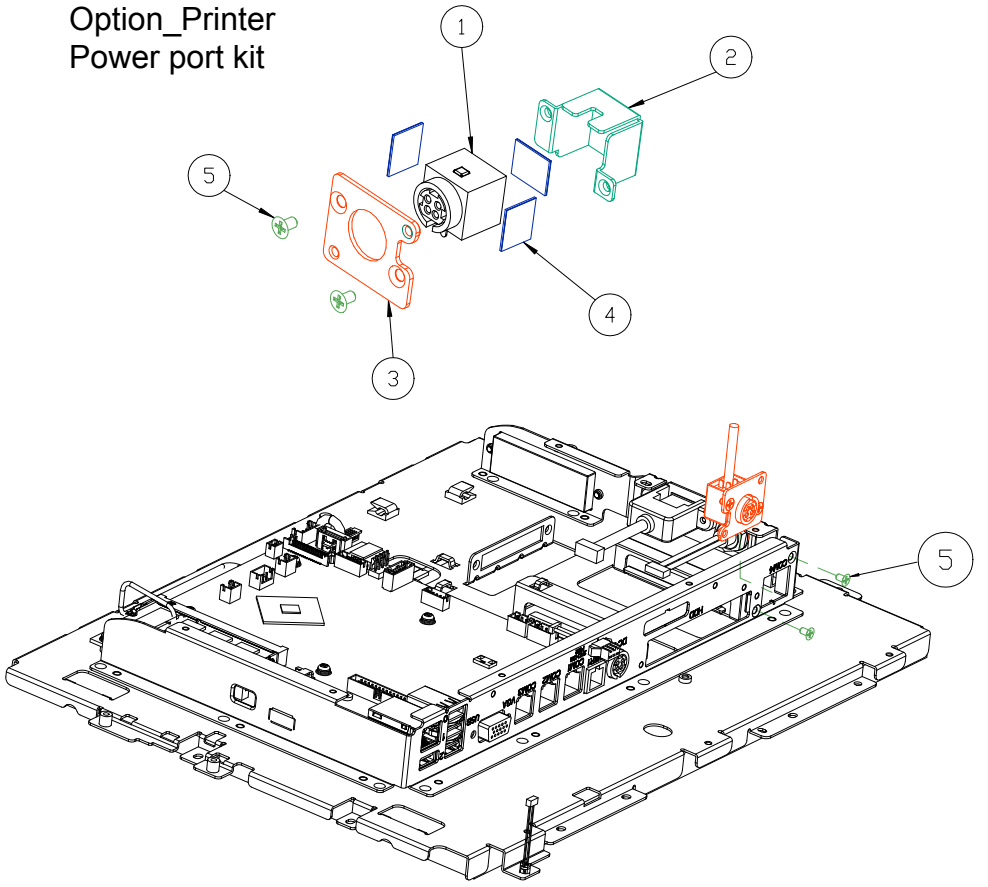
Pos	Qty	Part Name	Part No.
1	1	LCD_HOLDER_MODULE	----------
2	1	PA-6722 Mainboard	PB-6722RA-A1N
3	1	DDR-RAM	SEE ORDER
4	1	POWER LED CABLE	27-018-34205071
5	1	LED HOUSING(Black)	30-014-04100165
6	1	2ND-DIS POWER CABLE	27-012-31403072
7	1	POWER SWITCH CABLE	27-019-32108071
8	1	1-PORT USB CABLE	27-006-35306111
9	1	SPEAKER CABLE	27-021-28307071
10	2	WIRE MOUNT	90-059-04200000
11	7	ROUND HEAD WITH SPRING WASHER SCREW	22-232-30060211
12	2	HEX CU BOSS,UNC No.4-40	22-692-40048051
13	2	FLAT HEAD SCREW,UNC-No.4-40	22-315-40008019
14	2	FILLISTER HEAD SCREW,M3x0.5Px3L	22-272-30008015

Option_COM4 kit



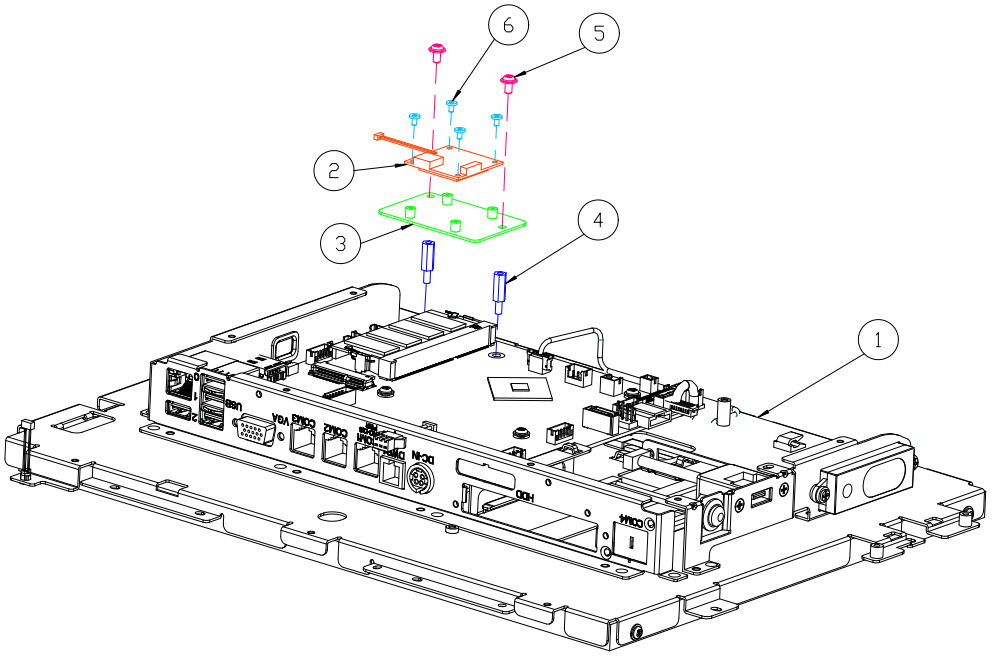
Item	Qty	Part Name	Part No.
1	1	Back_cover_module	--------
2	1	Modular_Coupler_Jack	10-085-10012035
3	1	COM TO RJ45_CABLE	27-051-35305031
4	1	WASHER	23-312-30080081
5	1	ROUND WASHER HEAD SCREW	22-242-30005311

Option_Printer
Power port kit



Item	Qty	Part Name	Part No.
1	1	PRINT_PWR_CABLE	27-012-35304111
2	1	DC_JACK_HOLDER	80-029-03001353
3	1	DC_JACK_PLATE	80-005-03001353
4	3	EVA_SPONGE	90-013-15100314
5	4	FLAT HEAD SCREW	22-212-30005311

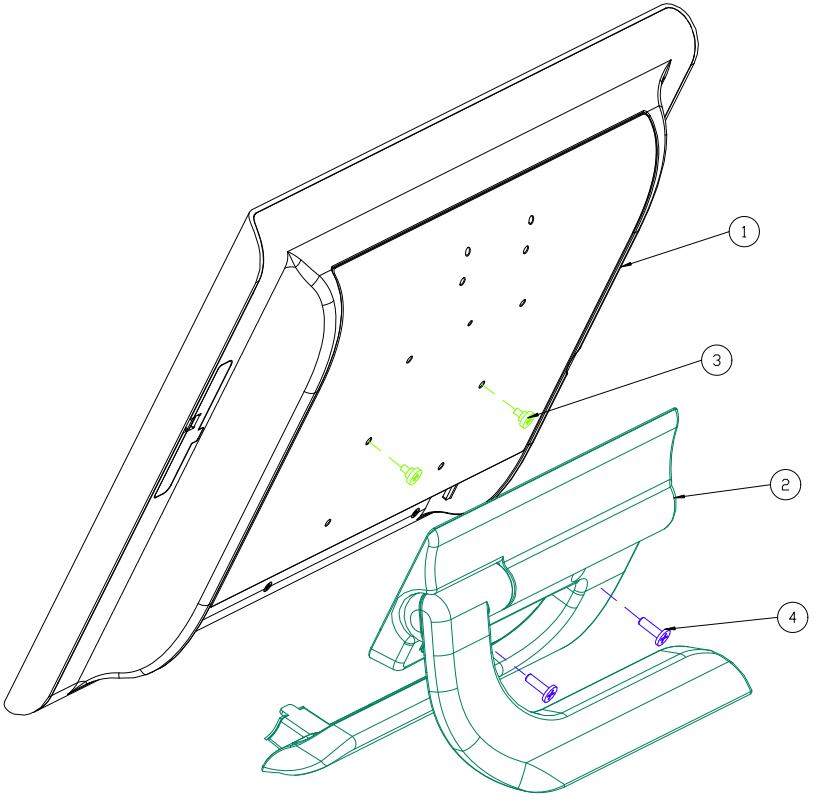
Option_RFID
board kit



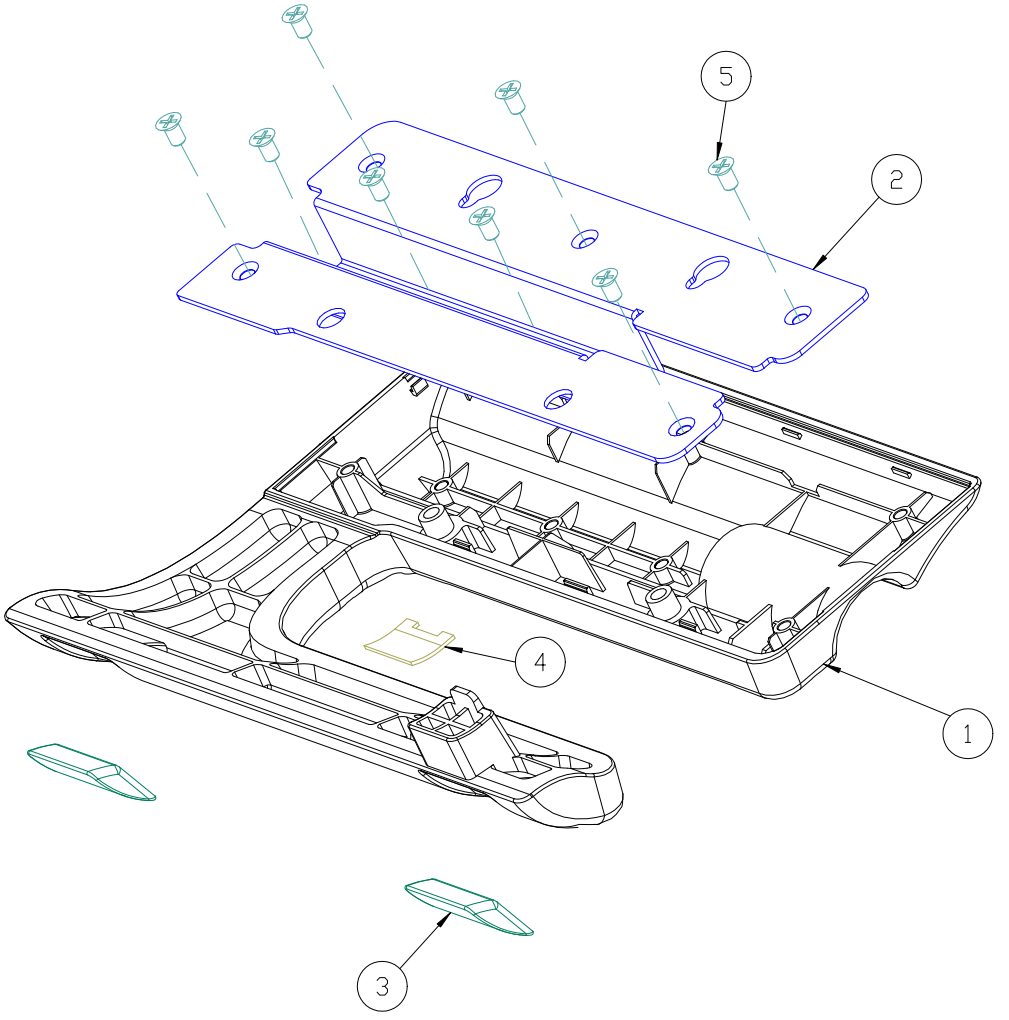
Item	Qty	Part Name	Part No.
1	1	MB_MODULE_ASSY	----------
2	1	RFID_ANTENNA_PCB	27-068-31002111
3	1	RFID_BRACKET	
4	2	HEX CU BOSS(六角銅柱)	22-290-30012051
5	2	ROUND WASHER HEAD SCREW	22-242-30005311
6	4	FILLISTR HEAD SCREW	22-272-20003011

EXPLODED DIAGRAM FOR STAND

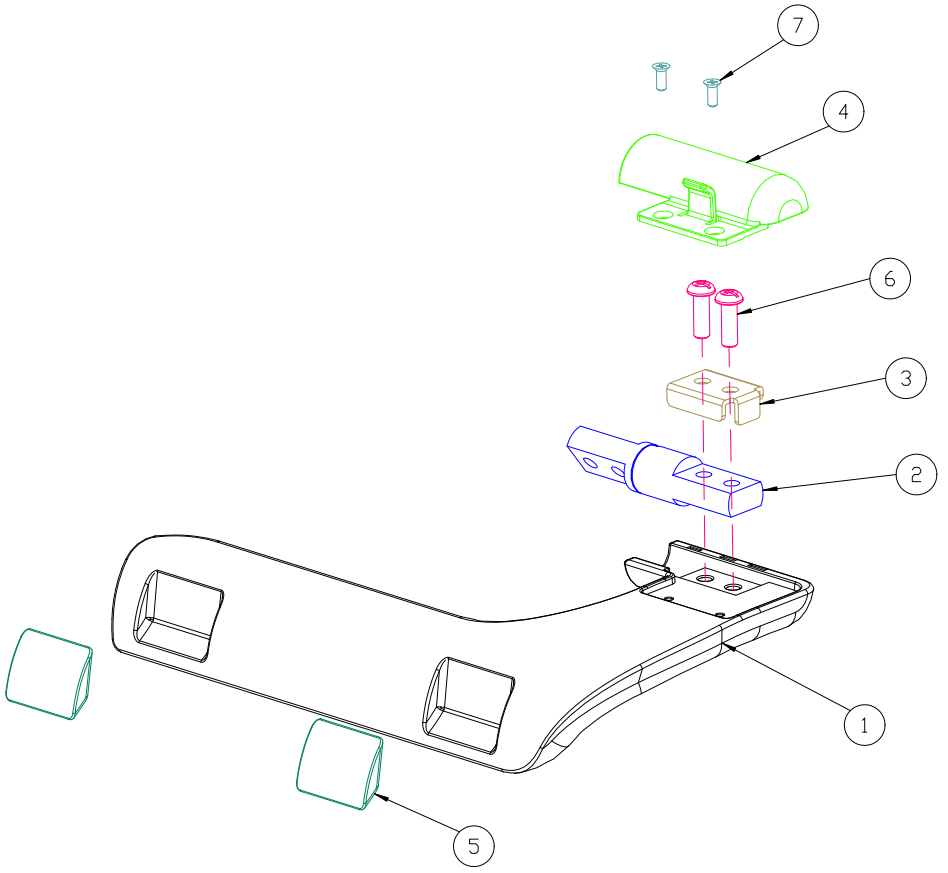
Easy Stand



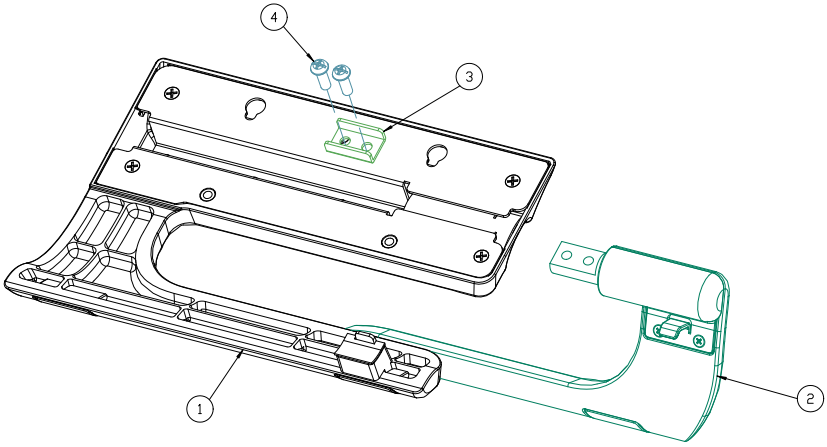
Item	Qty	Part Name	Part No.
1	1	PA-6722_PPC	--------
2	1	PA-6722_Stand_module	--------
3	2	FILLISTR HEAD SCREW	22-272-40004911
4	2	ROUND HEAD SCREW	22-245-40012031



	Qty	Part Name	Part No.
1	1	STAND COVER(Black)	30-002-28610353
2	1	HINGE BASE	20-032-21001353
3	2	SILICONE RUBBER	90-013-06100353
4	1	EVA_STAND	90-013-15300353
5	8	FLAT HEAD SCREW	22-112-40007015

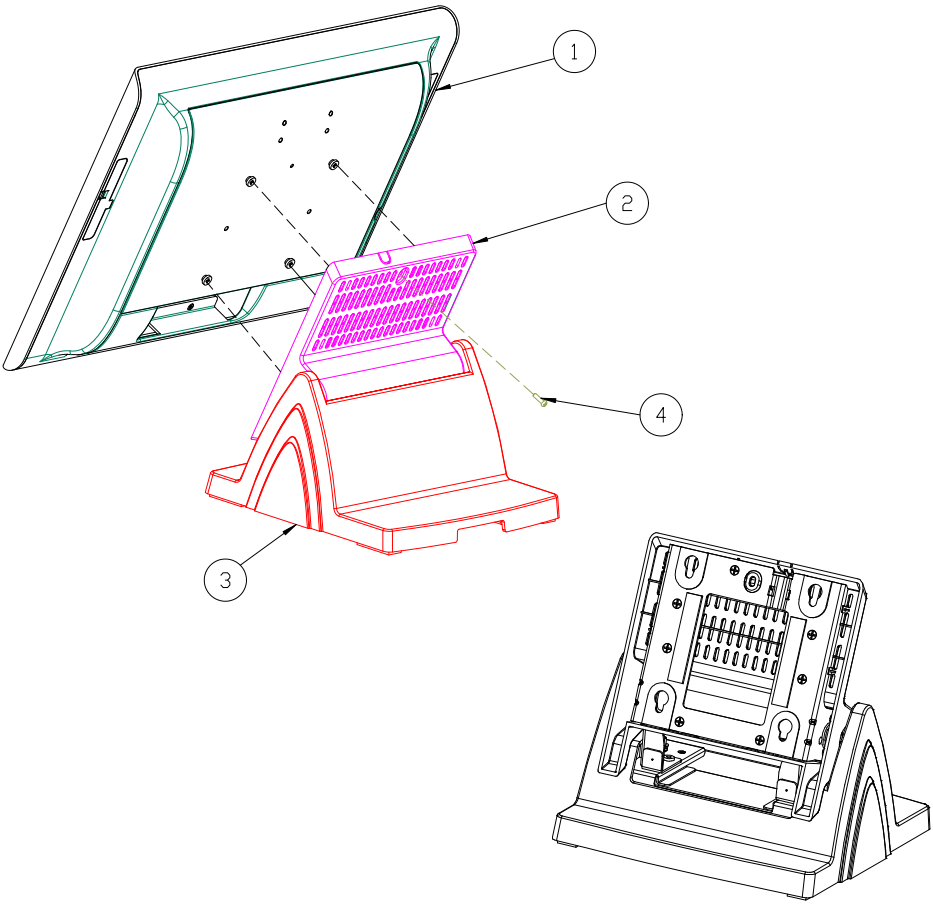


	Qty	Part Name	Part No.
1	1	STAND HOLDER(Black)	20-029-01061353
2	1	PA-6225 STAND HINGE L	20-012-29001314
3	1	HINGE FIX BRACKET 2	20-006-21002353
4	1	STAND HOLDER COVER(Black)	30-002-28710353
5	2	SILICONE RUBBER	90-013-06100353
6	2	ROUND HEAD SCREW	22-232-50015011
7	2	FLAT HEAD SCREW	22-215-30006311



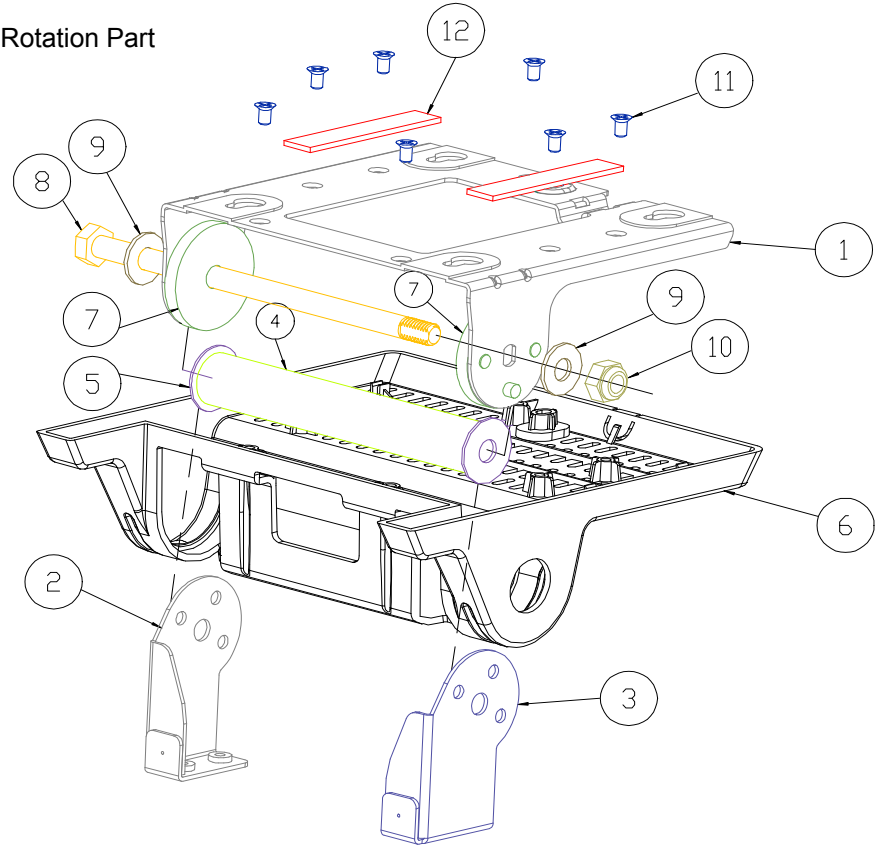
	Qty	Part Name	Part No.
1	1	stand_cover_module	---------
2	1	stand_holder_module	---------
3	1	HINGE FIX BRACKET_1	20-006-21001353
4	2	ROUND HEAD SCREW	22-232-50015011

Normal Stand



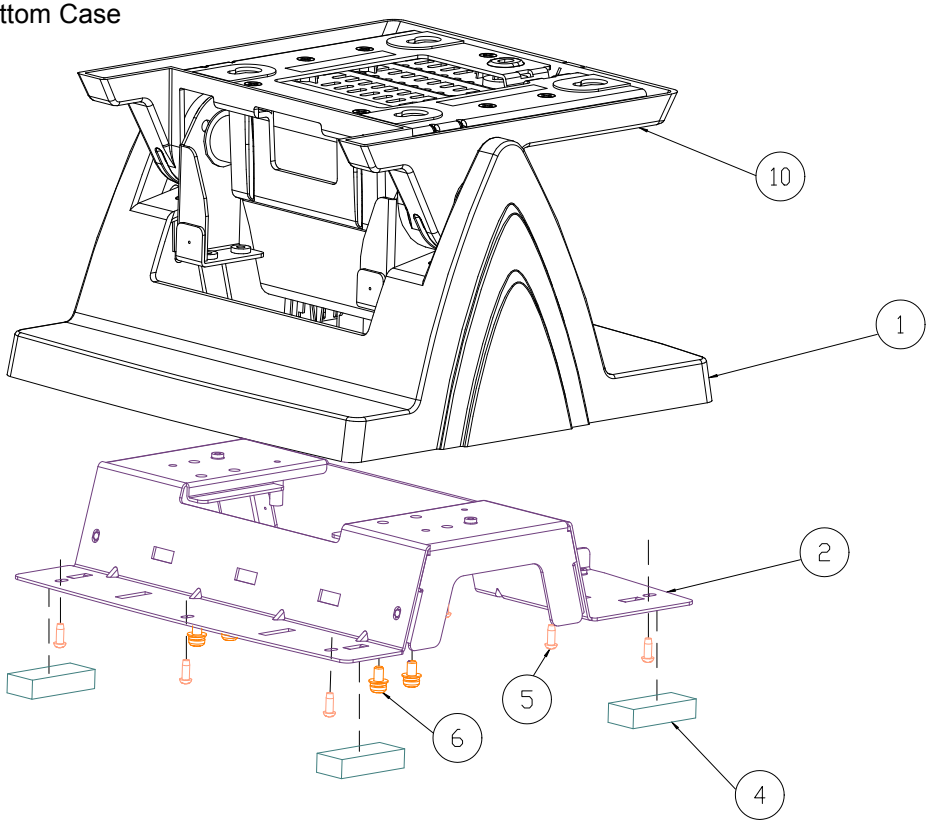
Item	Qty	Part Name	Part No.
1	1	PA-6722_PPC_MODULE	--------
2	1	PA-6151_ROTATE_MODULE	--------
3	1	PA-6151_STAND_MODULE	--------
4	1	RW_SCREW_M3_L15mm	22-235-30015011

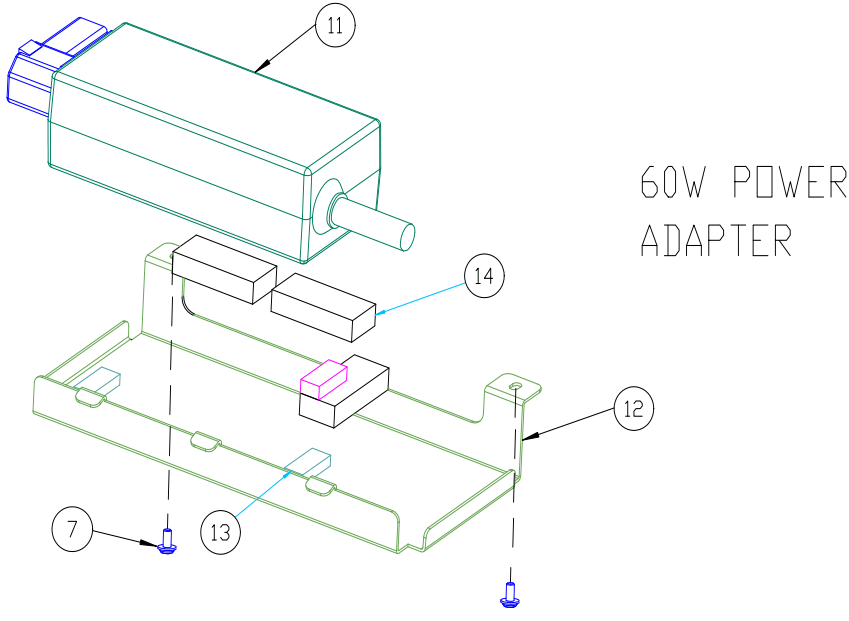
Rotation Part



	Part Name	Part No.	Qty
1	POS-6920_ROTATE_SUPPORT	80-002-03003226	1
2	L_SUPPORT	80-002-03002226	1
3	R_SUPPORT	80-002-03001226	1
4	POS-6920_PIPE	80-056-02001226	1
5	WASHER_ID_8.5_OD_24	23-202-09150247	2
6	POS-6920_ROTATE_COVER	30-002-28610226	1
7	PS5000_HINGE_SPACER	30-041-04100139	2
8	HEX_SCREW_M8_L154mm	22-252-80154005	1
9	PLAIN_WASHER_D8_D19_T1.5	23-202-08150191	2
10	HEX_NUTS_M8_L7.85mm	23-142-80081291	1
11	FLAT_SCREW_T4_L7mm	22-112-40007015	7
12	SILICON RUBBER PAD	90-036-06200226	2

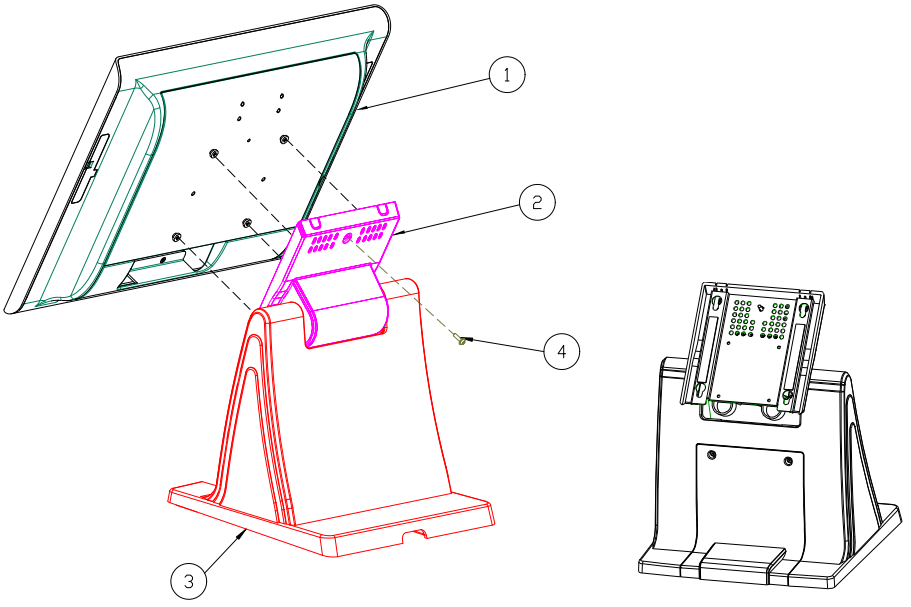
Bottom Case





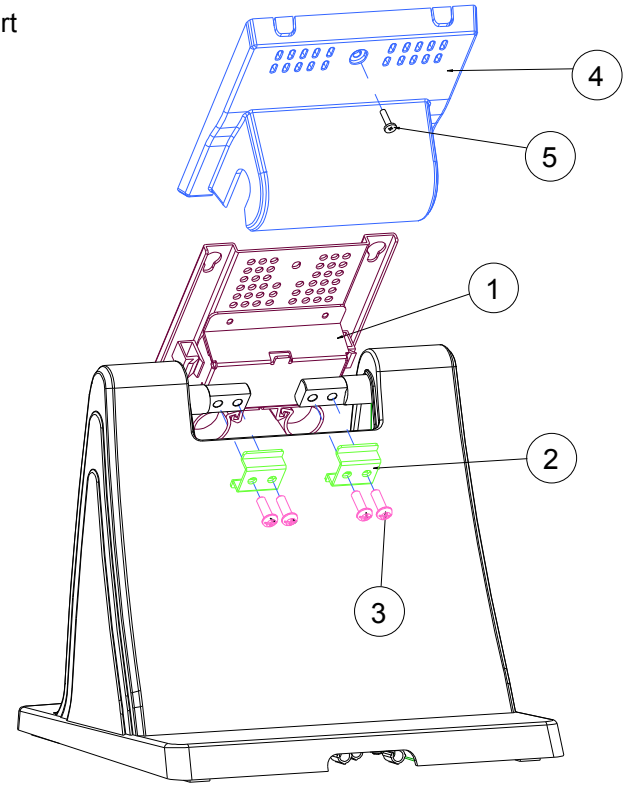
Item	Part Name	Part No.	Qty
1	POS-6920-STAND-COVER	30-002-28710226	1
2	POS-6920-STAND-BASE	80-032-03001226	1
4	RUBBER FOOT	30-004-01600000	4
5	TAPPING_SCREW,T3.0X8mm	22-122-30080011	9
6	R_S_SCREW,M4.0X0.55PX8mm	22-232-40008211	4
7	R_W_SCREW,M3.0X0.5PX6mm	22-232-30006311	2
11	60W Power Adapter	52-002-10068302	1
12	PA-6970 POWER HOLDER	80-029-03001253	1
13	RUBBER FOOT(18x8x5mm)	90-004-06400000	3
14	RUBBER FOOT(35x15x8mm)	30-004-01600000	3

Big Stand

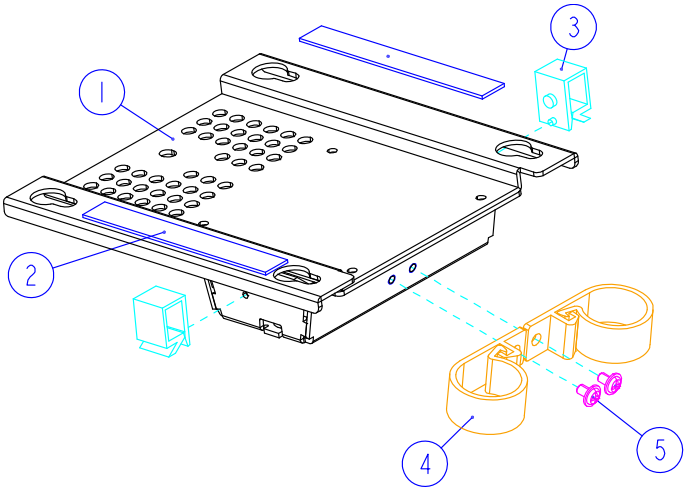


Item	Qty	Part Name	Part No.
1	1	PA-6722_PPC_MODULE	--------
2	1	PA-6225_ROTATE_MODULE	--------
3	1	PA-6225_STAND_MODULE	--------
4	1	RW_SCREW_M3_L15mm	22-235-30015011

Rotation Part

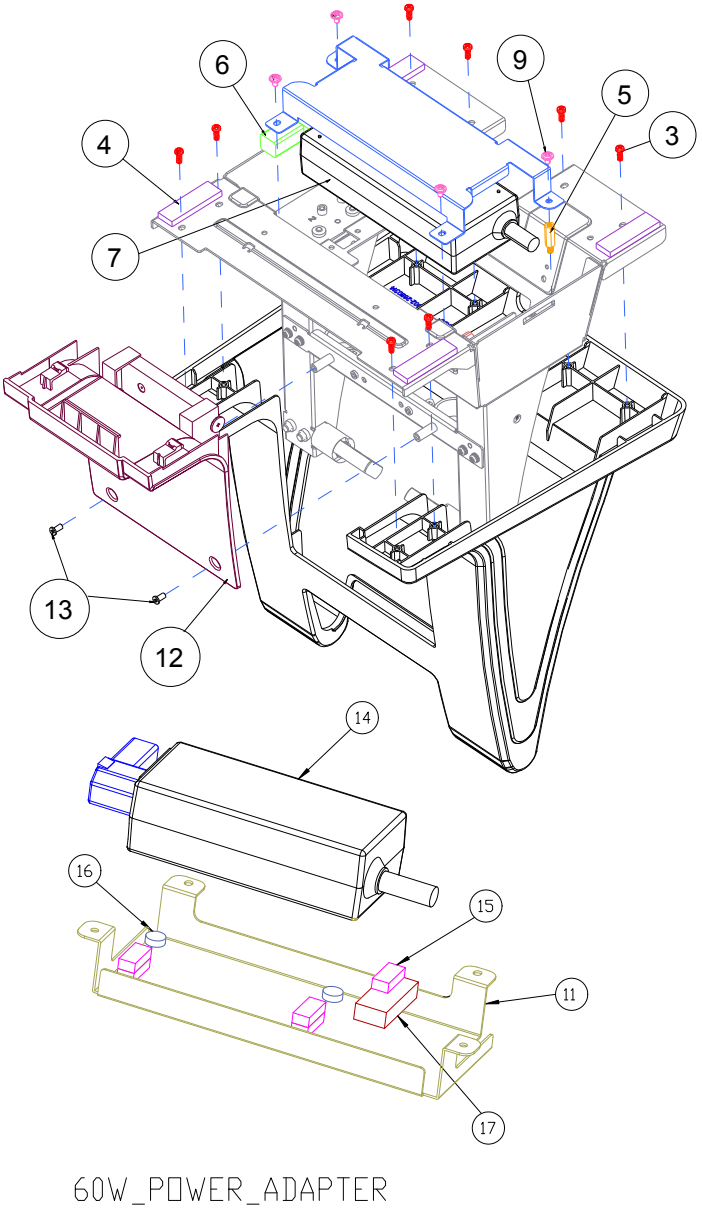


Item	Qty	Part Name	Part No.
1	1	Rotate base assembly	xx-xxx-xxxxxxx
2	2	HINGE-FIXING	80-012-03001314
3	4	SCREW/M5x0.8Px15mm	22-232-50015011
4	1	Stand Rotate Cover	30-002-28410314
5	1	SCREW/M3x0.5Px12mm	22-275-30010011

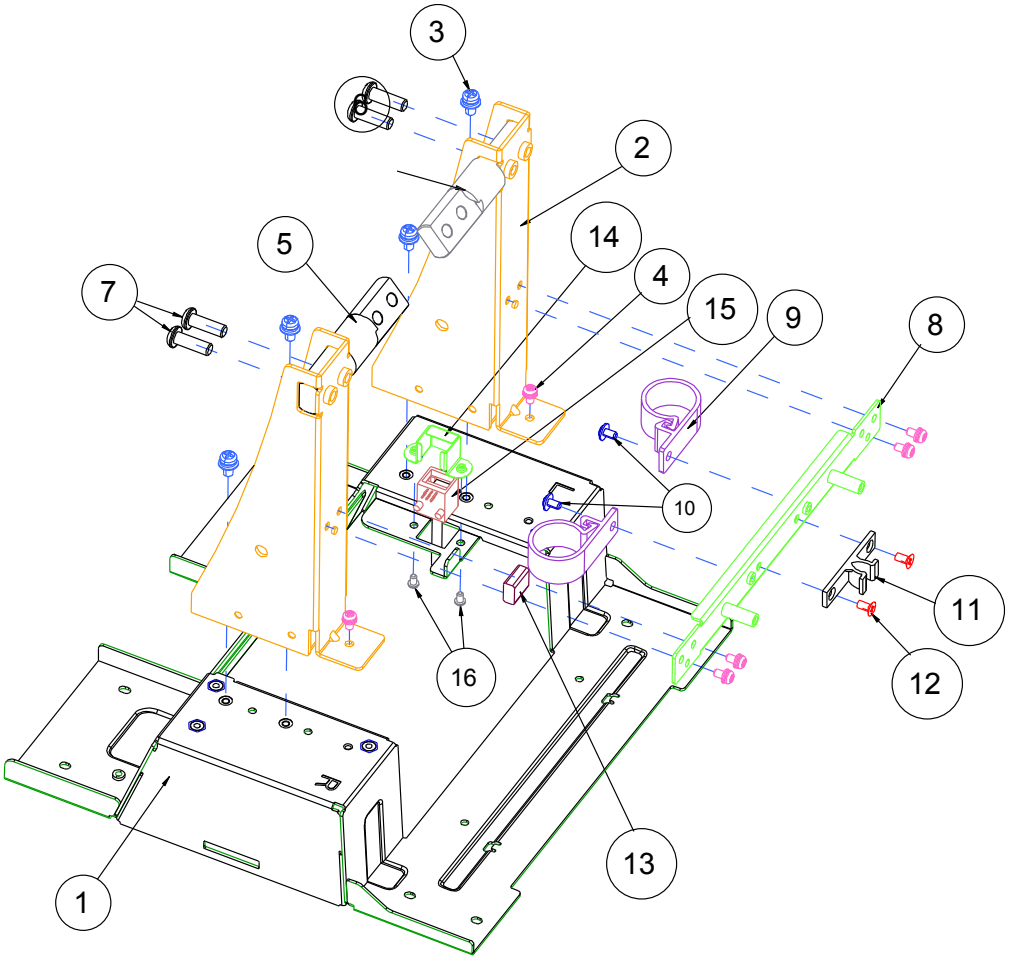


Item	Qty	Part Name	Part No.
1	1	ROTATE-BASE	20-032-03001314
2	2	ROTATE_BASE-SPONGE	30-013-24100314
3	2	CABLE CLAMP	90-042-04100314
4	2	CABLE CLAMP	30-042-04100314
5	2	M3 Screw	22-242-30005311

Bottom Case



Item	Qty	Part Name	Part No.	NOTE
3	8	SCREW/T3.0x8mm	22-122-30080011	
4	4	RUBBER FOOT(40x12x4mm)	30-004-01100314	
5	1	HEX CU BOSS/M3x0.5Px6L,H=15	22-290-30015051	
7	1	72W Adaptor	xx-xxx-xxxxxxxx	
9	4	SCREW/M3x0.5Px5mm	22-242-30005311	
12	1	No Printer cover assembly	xx-xxx-xxxxxxxx	
13	2	SCREW/M3x0.5Px6mm	82-275-30006018	
11	1	120W_ADAPTOR_BRACKET	80-029-0300331 4	
14	1	60W_Power_Adapter	52-002-10068302	
15	5	RUBBER FOOT(18x8x5mm)	90-004-06400000	
16	2	RUBBER FOOT(ø 9x3.2mm)	90-004-06500000	
17	1	RUBBER FOOT(35x15x8mm)	30-004-01600000	


3
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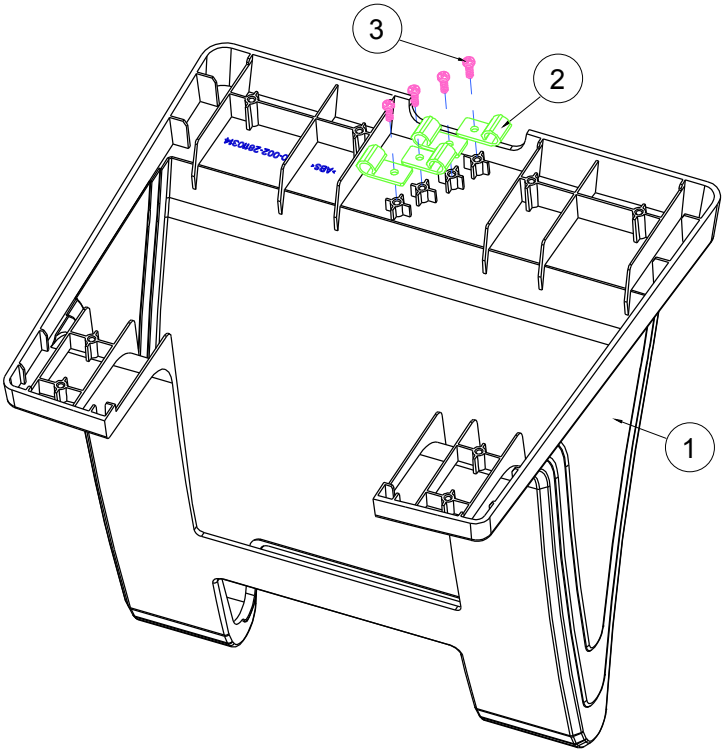
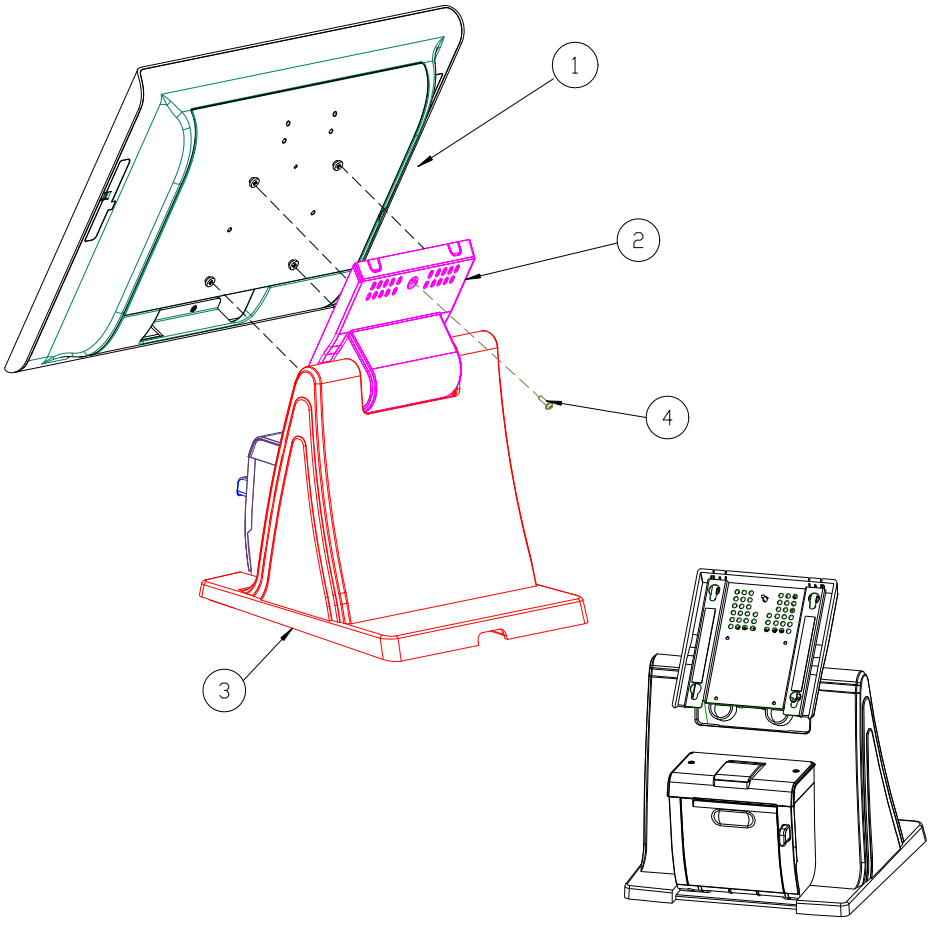
1

Item	Qty	Part Name	Part No.
1	1	STAND_BASE_BRACKET	80-006-03005314
2	2	STAND_SUPPORT_BRACKET	80-006-03007314
3	4	SCREW/M4x0.7Px8mm	22-232-40008211
4	6	SCREW/M3x0.5Px6mm	22-232-30060211
5	1	STAND HINGE R	20-012-29002314
6	1	SATND HINGE L	20-012-29001314
7	4	SCREW/M5x0.8Px15mm	22-232-50015011
8	1	STAND_LINK_BRACKET	80-006-03006314
9	2	CABLE CLAMP	90-023-04100314
10	2	SCREW/M3x0.5Px5mm	22-242-30005311
11	1	LATCH	90-023-09100000
12	2	SCREW/M3x0.5Px6mm	22-212-30006011
13	1	EMI SHIELDING GASKET	90-050-31100000
14	1	RJ11 HOLDER	80-029-03002165
15	1	Cash Drawer cable	27-026-16505111
16	2	SCREW/M2.5x0.45Px4mm	22-232-25004011



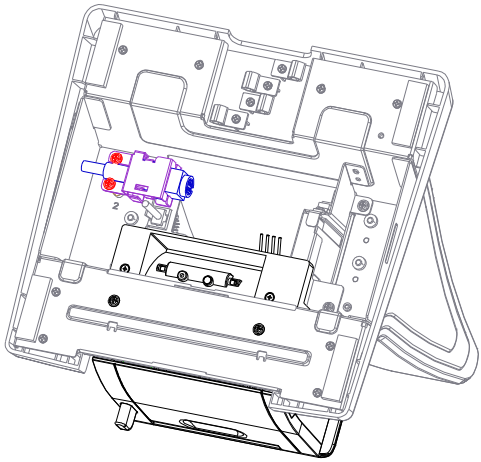
Item	Qty	Part Name	Part No.
1	1	Stand Cover	30-002-28110314
2	4	CABLE CLAMP	90-023-04200314
3	4	SCREW/T3.0x8mm	22-122-30080011

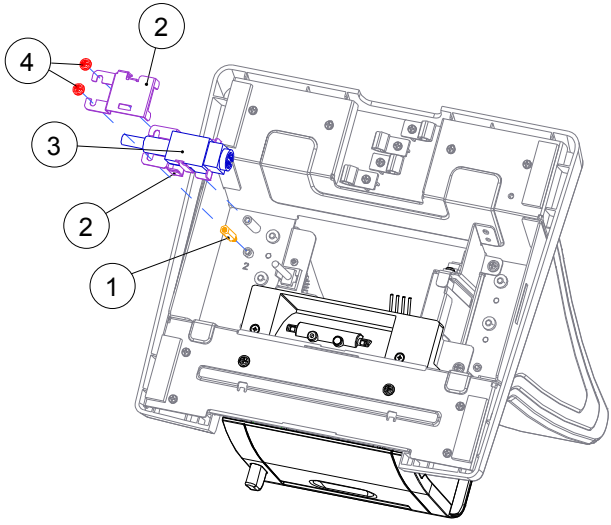
Print-Stand



Item	Qty	Part Name	Part No.
1	1	PA-6722_PPC_MODULE	--------
2	1	PA-6225_ROTATE_MODULE	--------
3	1	PA-6225_STAND_MODULE	--------
4	1	RW_SCREW_M3_L15mm	22-235-30015011

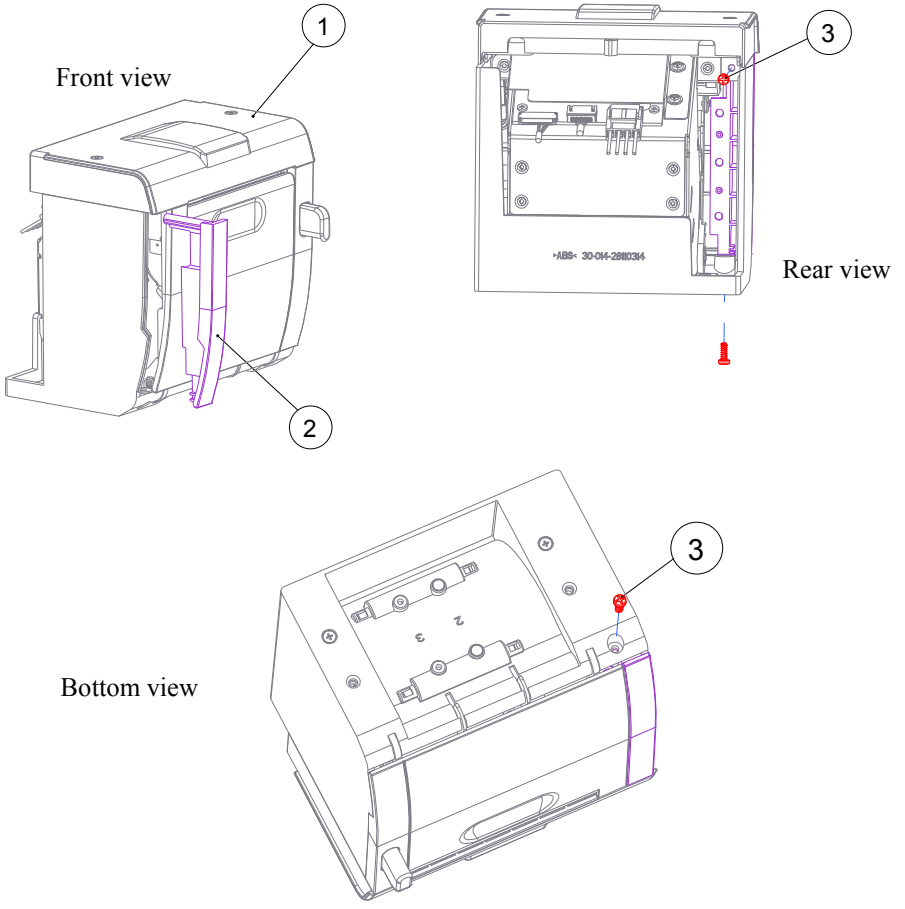
Extension Power Cable





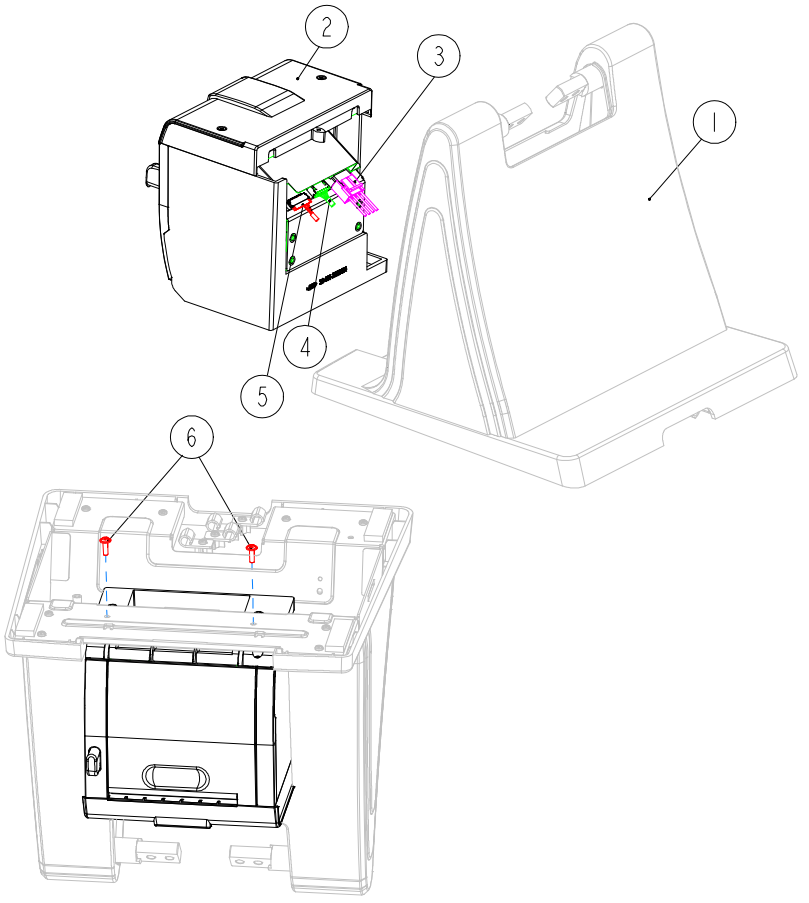
Item	Qty	Part Name	Part No.
1	1	HEX CU BOSS/M3x0.5Px6L,H=15mm	22-290-30015051
2	2	DC IN CLIP	80-014-03001314
3	1	DC IN EXTENDED CABLE	27-012-31408111
4	2	SCREW/M3x0.5Px5mm	22-242-30005311

EXPLODED DIAGRAM FOR Printer Module

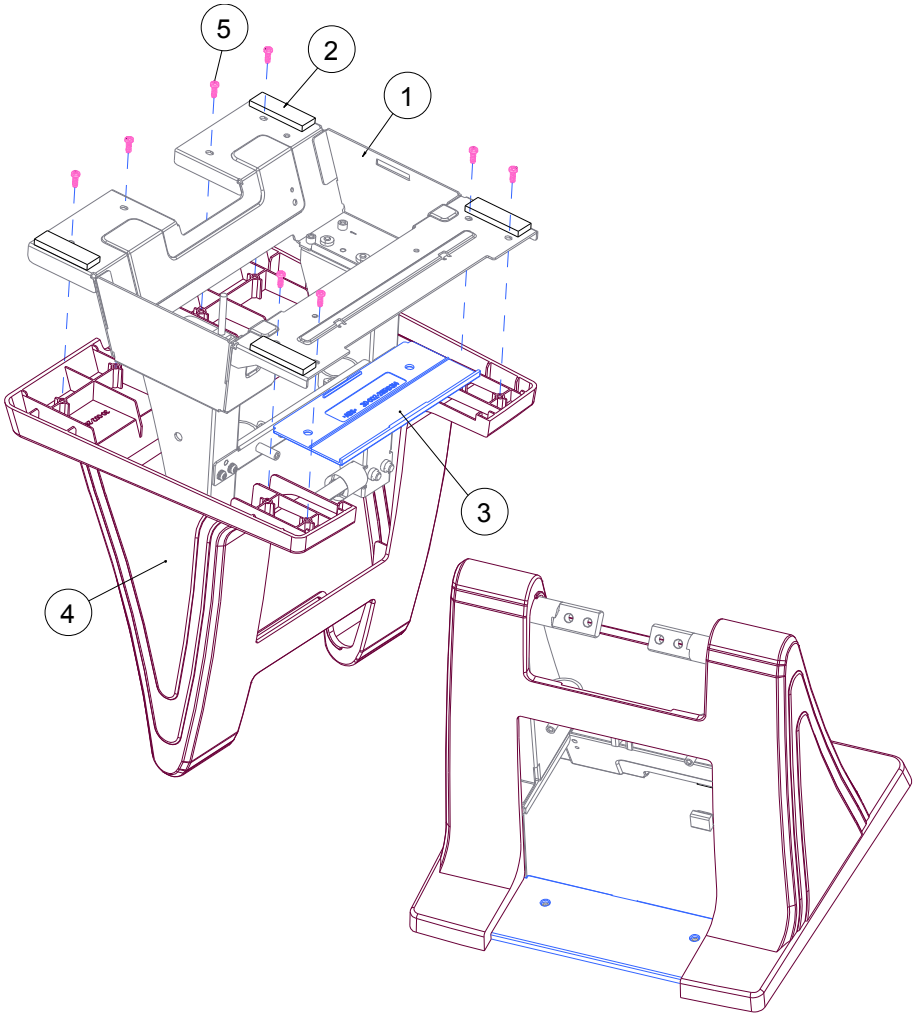


Item	Qty	Part Name	Part No.
1	1	Printer Module	xx-xxx-xxxxxxxx
2	1	STAND HDD COVER	30-002-02110314
3	2	SCREW/T3.0x8mm	22-122-3008001 1

Thermal Printer

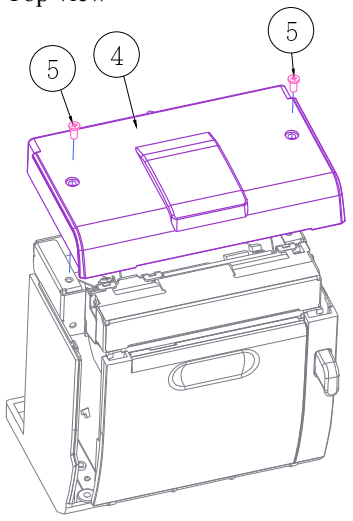


Item	Qty	Part Name	Part No.	Note
1	1	HDD-SOCKET_ASSEMBLY	xx-xxx-xxxxxxxx	
2	1	Printer Module_wih_HDD Cover	xx-xxx-xxxxxxxx	
3	1	PRINT POWER CABLE	27-012-31409071	
4	1	PRINT FOR USB CABLE	27-006-31409111	
	0	PRINT FOR USB CABLE	27-006-31409112	
	0	PRINT FOR COM CABLE	27-051-31408111	
	0	PRINT FOR COM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

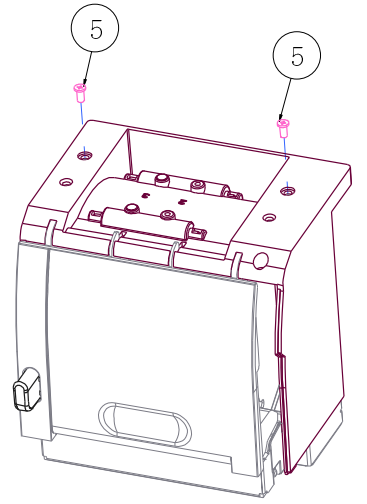


Item	Qty	Part Name	Part No.	Note
1	1	STAND BRACKET ASSEMBLY	xx-xxx-xxxxxxxx	
2	4	RUBBER FOOT	30-004-01100314	
3	1	STAND DRESS COVER	30-002-28510314	For with Printer
4	1	STAND COVER ASSEMBLY	xx-xxx-xxxxxxx	
5	8	SCREW/T3.0x8mm	22-122-30080011	

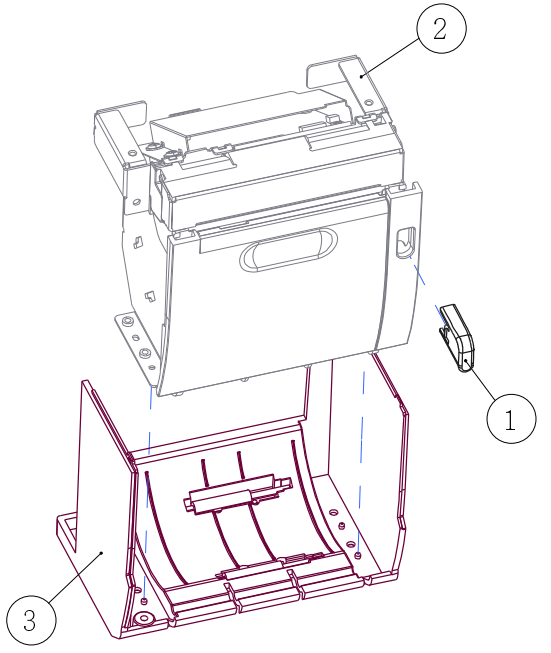
Top view



Bottom view

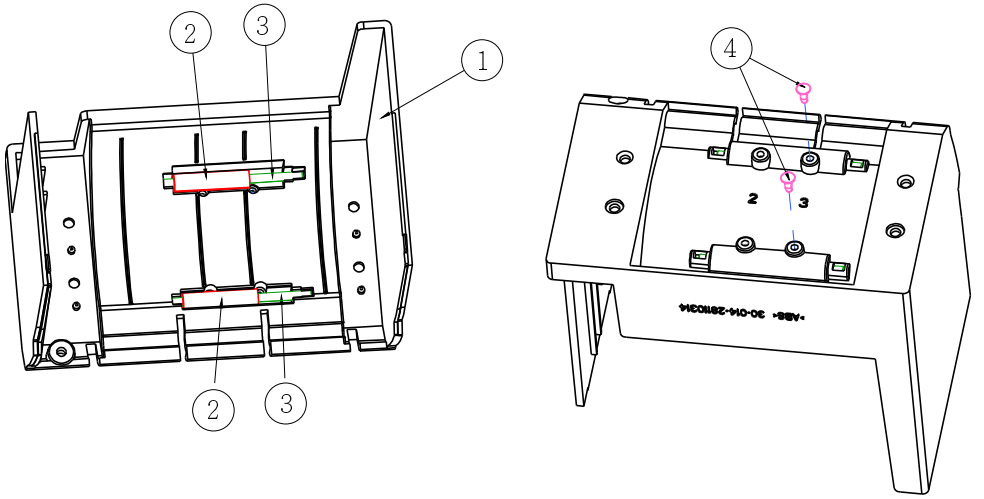


Separation view



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

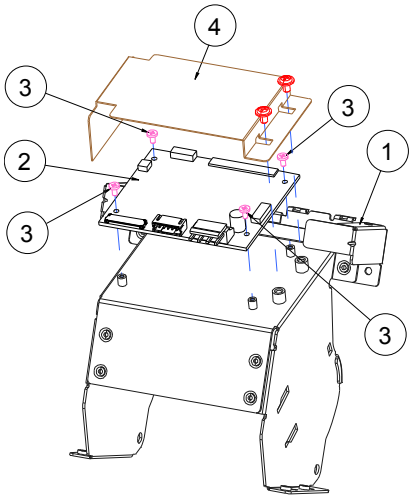
3 Inch Printer



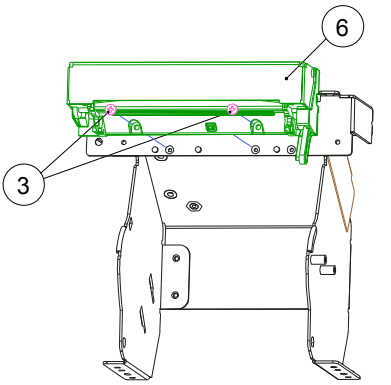
Item	Qty	Part Name	Part No.
1	1	Stand Printer Housing	30-014-28110314
2	2	SPACER SUPPORT∅6x25mm)	30-041-04100165
3	2	ROLLER PIN	20-045-19012199
4	2	**CANOE CLIP∅2.9mm**	**90-042-04100000**

3 Inch Printer Assembly

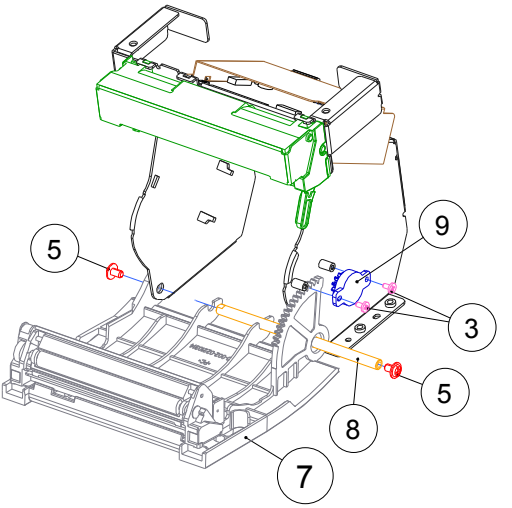
Step-1:



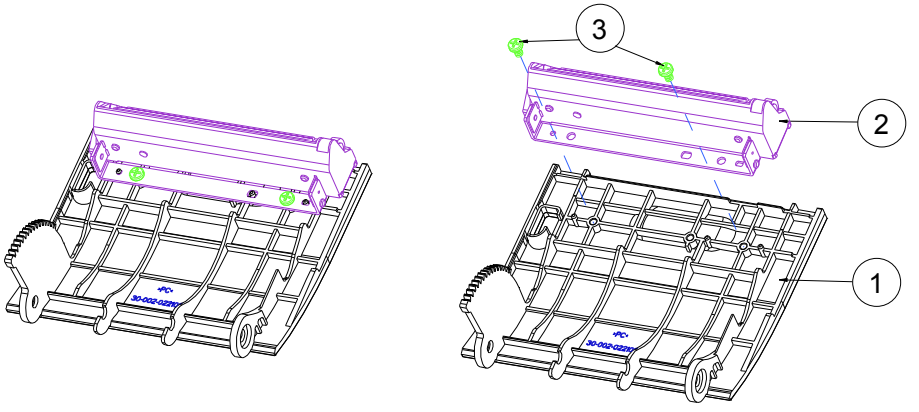
Step-2:



Step-3:

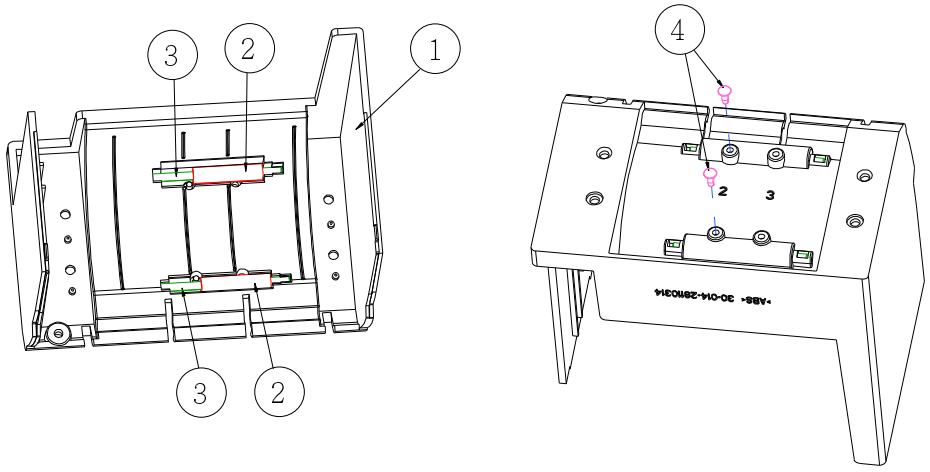


Item	Part Name	Part No.	Qty
1	Printer Holder	80-029-03004314	1
2	Printer Board	17-122-10301028	1
	Printer Board	52-370-06310008	0
	Printer Board	17-160-10011023	0
3	SCREW/M2x0.4Px4mm	22-272-20004011	8
4	PRINTER-PCB-MYLAR	90-056-02100314	1
5	SCREW/M3x0.5Px5mm	22-242-30005311	4
6	3" Printer (Main body)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



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

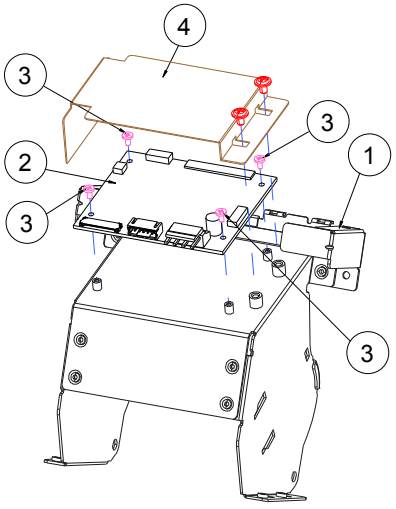
2 Inch Printer



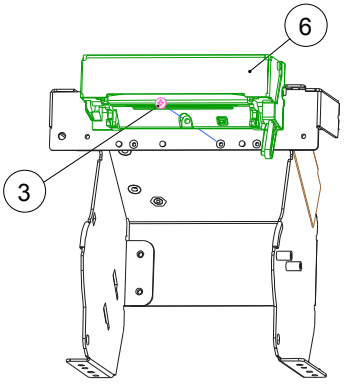
Item	Qty	Part Name	Part No.
1	1	Stand Printer Housing	30-014-28110314
2	2	SPACER SUPPORT(Ø6x25mm)	30-041-04100165
3	2	ROLLER PIN	20-045-19012199
4	2	**CANOE CLIP Ø2.9mm**	**90-042-04100000**

2 Inch Printer Assembly

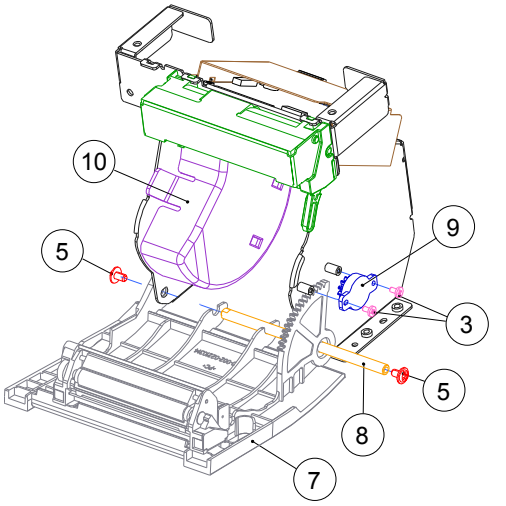
Step-1:



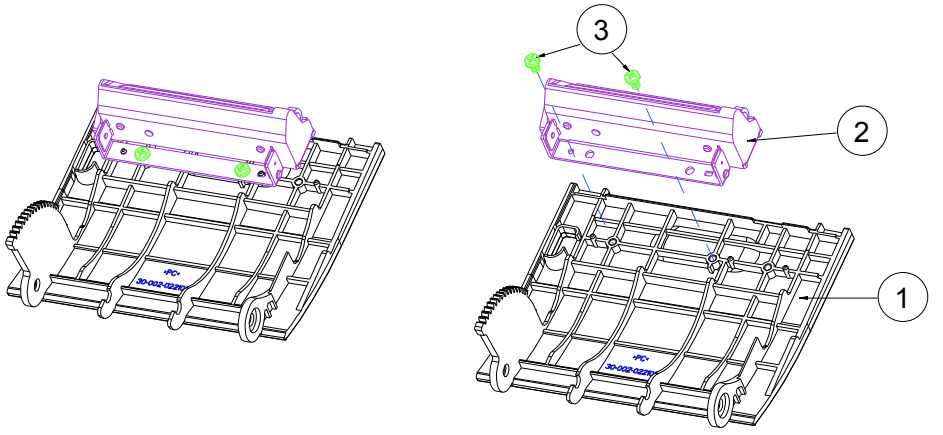
Step-2:



Step-3:

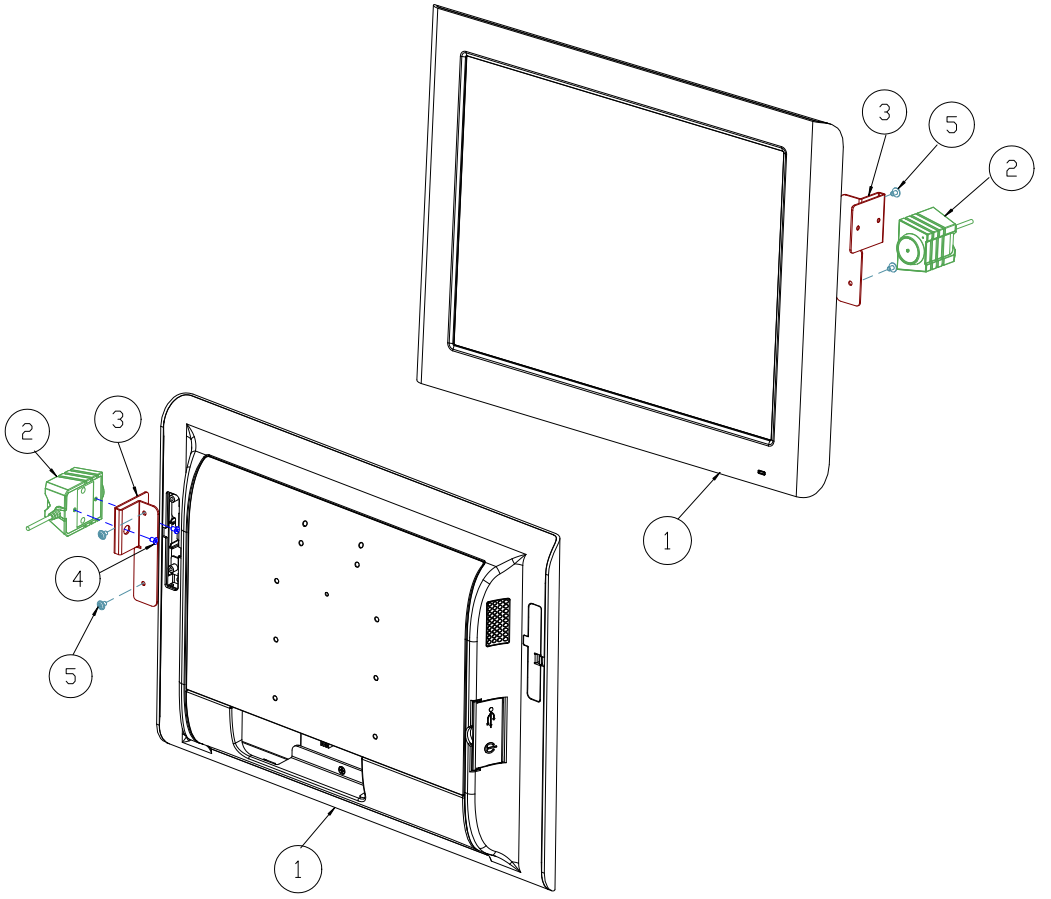


Item	Part Name	Part No.	Qty
1	Printer Holder	80-029-03004314	1
2	Printer Board	PDAC3100-D1	1
	Printer Board	MB-1030RB/RC	0
	Printer Board	MB-1011(3)RC	0
3	SCREW/M2x0.4Px4mm	22-272-20004011	7
4	PRINTER-PCB-MYLAR	90-056-02100314	1
5	SCREW/M3x0.5Px5mm	22-242-30005311	4
6	2" Printer (Main body)	52-701-01020003	1
7	Front Cover Assembly	xx-xxx-xxxxxxxx	1
8	PAPER COVER PIN	20-004-10011165	1
9	ROTRAY DAMPER(15gf-cm)	90-022-09100314	1
10	2 inch PAPER BLOCK	30-061-28110242	1



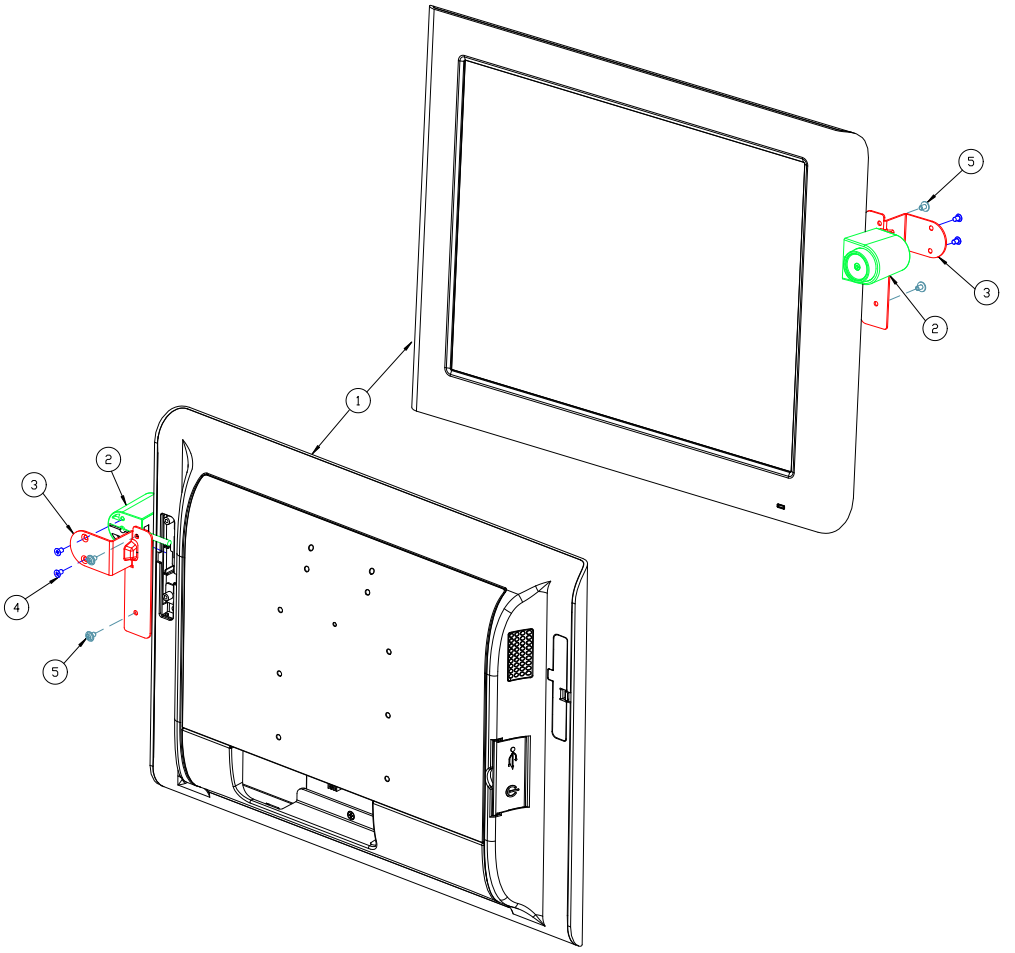
Item	Qty	Part Name	Part No.
1	1	STAND PRINTER COVER_F	30-002-02210314
2	1	2" Printer (Main body)	52-701-01020003
3	2	SCREW/T3.0x5mm	22-121-3000501 1

Vertical i-Button kit_GIGA-TMS



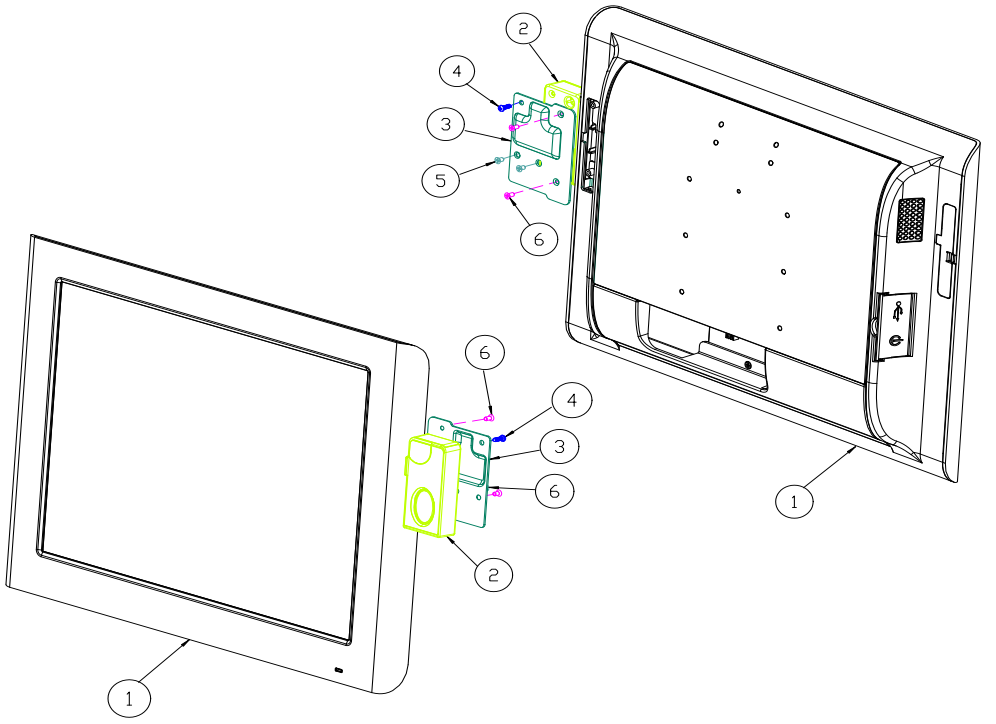
Item	Qty	Part Name	Part No.
1	1	PA-6722_PPC	------
2	1	I-button	SEE ORDER
3	1	I-BUTTON_BRACKET	20-006-03063353
4	2	FLAT HEAD SCREW	22-215-30005011
5	2	ROUND WASHER HEAD SCREW	22-235-30007011

Vertical i-Button kit_SYSKING



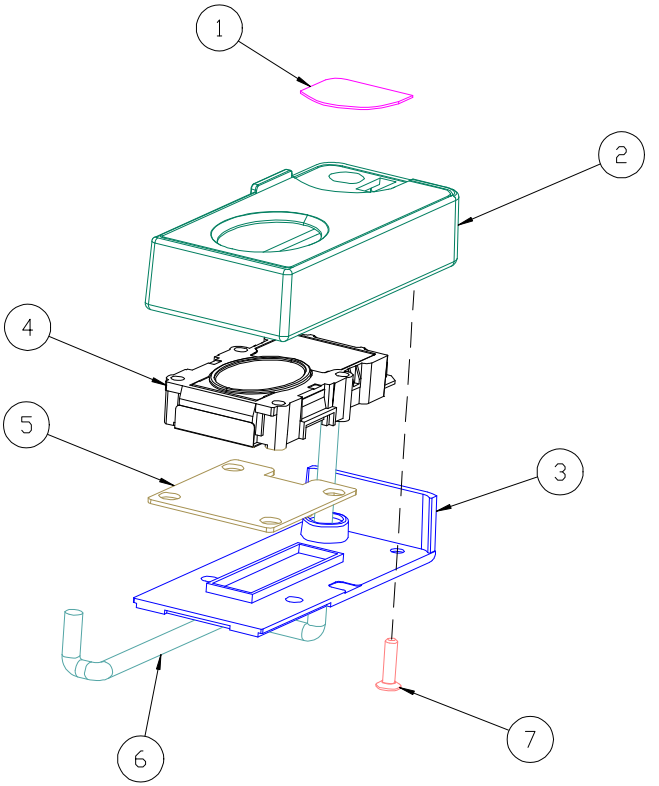
Item	Qty	Part Name	Part No.
1	1	PA-6722_PPC	------
2	1	I-button	SEE ORDER
3	1	I-BUTTON_PLATE	20-005-03061353
4	2	FLAT HEAD SCREW	22-215-30005011
5	2	ROUND WASHER HEAD SCREW	22-235-30007011

Vertical Fingerprint only kit



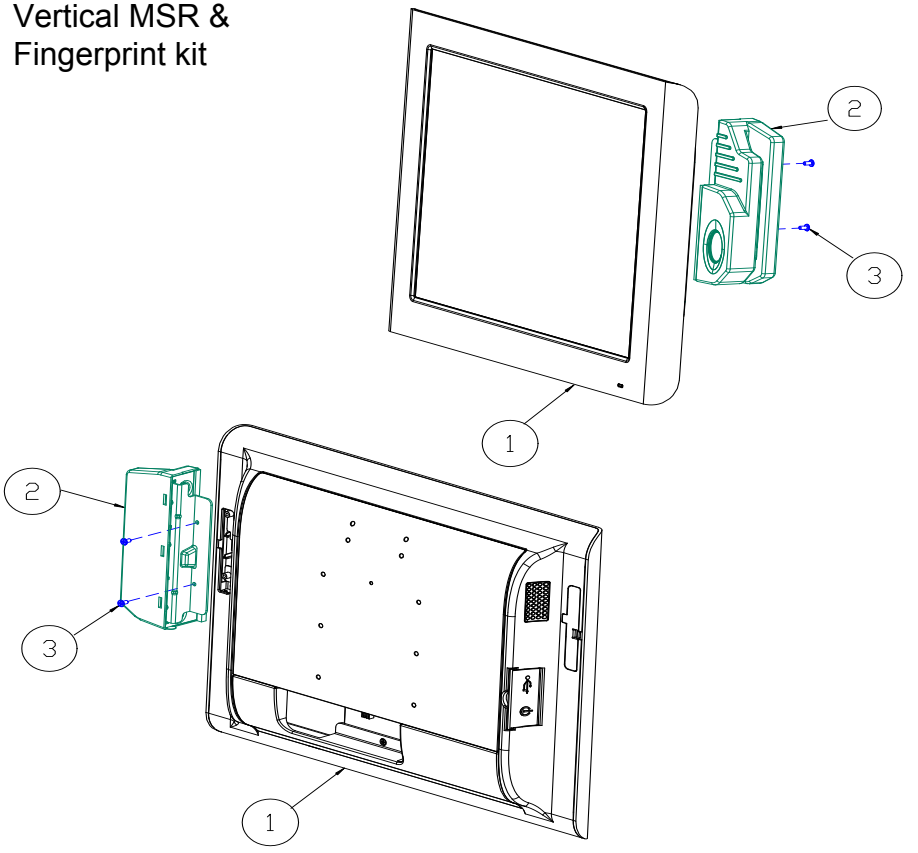
Item	Qty	Part Name	Part No.
1	1	PA-6722_PPC	--------
2	1	FRINGER-PRINTER_module	--------
3	1	FINGER PRINTER HOLDER	20-029-03061353
4	1	PAN HEAD SCREW	22-122-30080011
5	2	FLAT HEAD SCREW	22-215-30005111
6	2	FLAT HEAD SCREW	22-215-30006111

Fingerprint



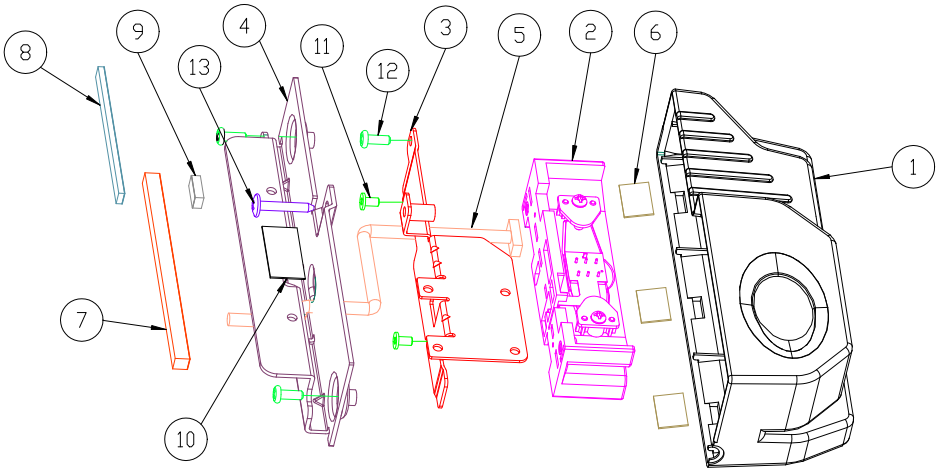
NO.	COMPONENT NAME	PART NO.	Q'TY
1	PC_SHEET	N/A	1
2	FINGER PRINTER TOP COVER	30-002-12720210	1
3	FINGER PRINTER BTM COVER	30-002-12820210	1
4	FINGER PRINTER MODULE	52-551-00501205	1
5	FINGER PRINTER BRACKET	N/A	1
6	FINGER PRINTER CABLE	N/A	1
7	FLAT HEAD SCREW	22-712-30010011	1

Vertical MSR &
Fingerprint kit



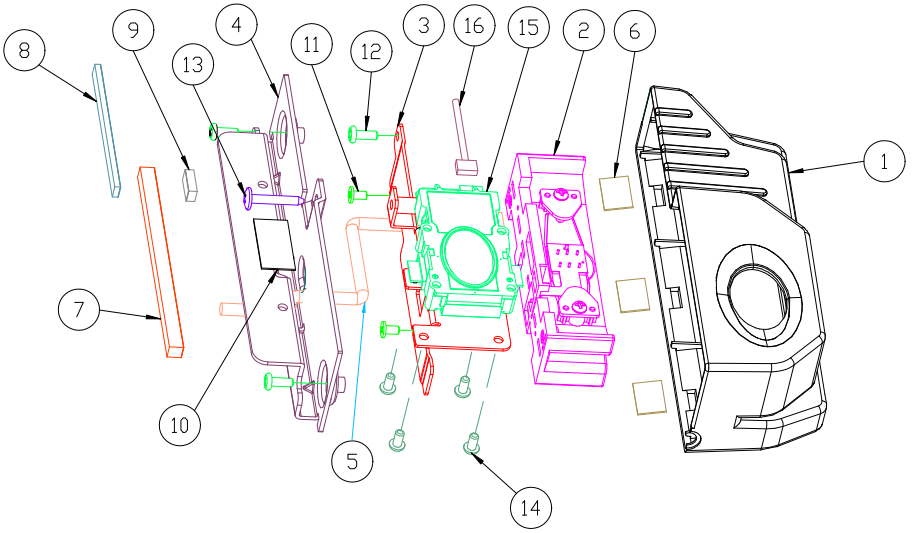
Item	Qty	Part Name	Part No.
1	1	PA-6722_PPC	--------
2	1	MSR_FINGER_PRINT_MODULE	--------
3	2	FILLISTR HEAD SCREW	22-275-30006011

MSR



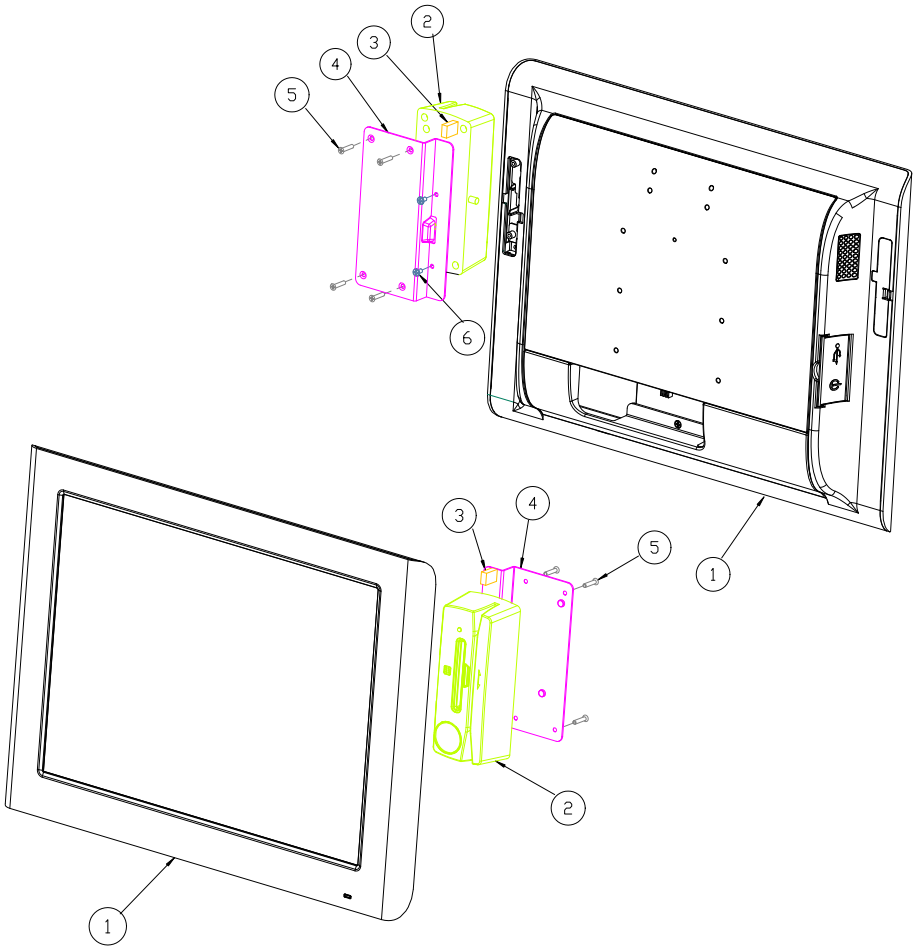
Item	Qty	Part Name	Part No.
1	1	MSR MAIN HOUSING(CLOSE)	90-014-28110181
2	1	PS2 ID TECH MSR	52-151-08333416
3	1	MSR_BRACKET	20-006-03001314
4	1	PA-6722 MSR BRACKET	20-006-03061353
5	1	MSR Cable	27-014-27402072
6	3	MSR HOUSING PORON	90-013-24100314
7	1	MSR BRACKET EVA-1	90-013-15400353
8	1	MSR BRACKET EVA-2	90-013-15200314
9	1	MSR BRACKET EVA-3	90-013-15400314
10	0.00015	PLASTIC TAPE	34-008-02002000
11	2	FILLISTR HEAD SCREW	22-272-30049015
12	3	ROUND HEAD SCREW	22-135-30008311
13	1	ROUND HEAD SCREW	22-835-30019011

MSR + Fingerprint



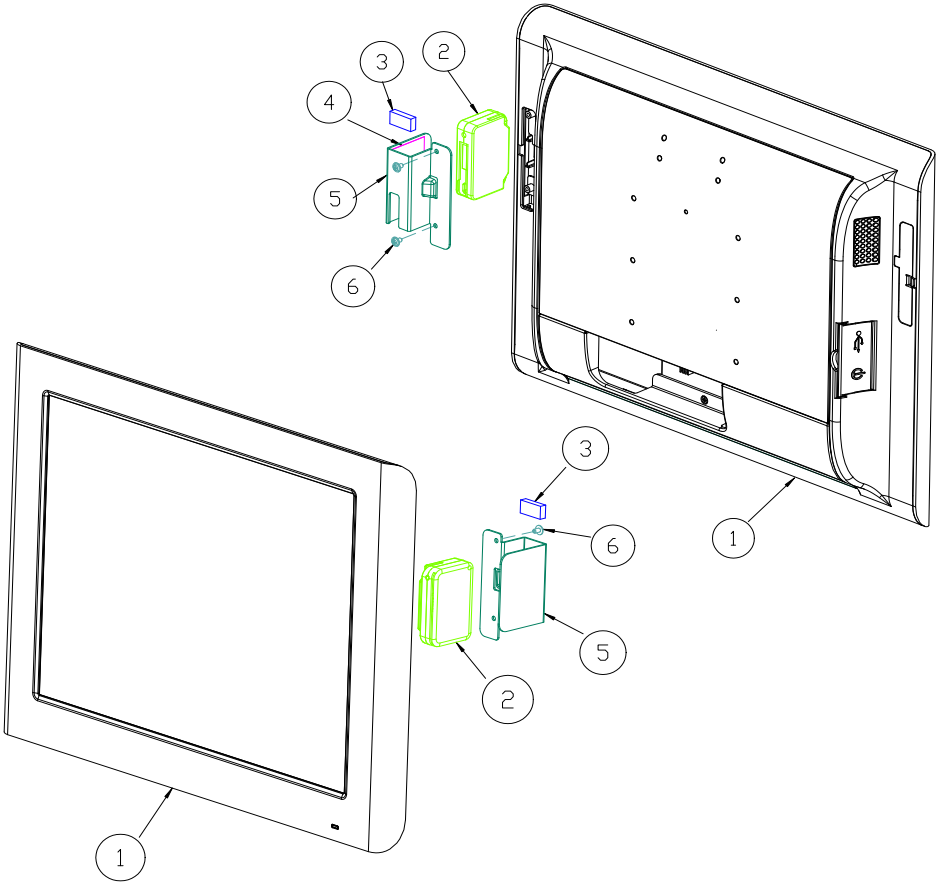
Item	Qty	Part Name	Part No.
1	1	FINGERPRINTER HOUSING(Open)	90-014-28310181
2	1	PS2 ID TECH MSR	52-151-08333416
3	1	MSR_BRACKET	20-006-03001314
4	1	PA-6722 MSR BRACKET	20-006-03061353
5	1	MSR Cable	27-014-27402072
6	3	MSR HOUSING PORON	90-013-24100314
7	1	MSR BRACKET EVA-1	90-013-15400353
8	1	MSR BRACKET EVA-2	90-013-15200314
9	1	MSR BRACKET EVA-3	90-013-15400314
10	0.00015	PLASTIC TAPE	34-008-02002000
11	2	FILLISTR HEAD SCREW	22-272-30049015
12	3	ROUND HEAD SCREW	22-135-30008311
13	1	ROUND HEAD SCREW	22-835-30019011
14	4	PAN HEAD SCREW	22-132-30060011
15	1	USB FINGERPRINTER	52-551-00501205
16	1	FINGERPRINTER CABLE	27-004-31404112

Vertical RFID, MSR, SMART Card Reader kit

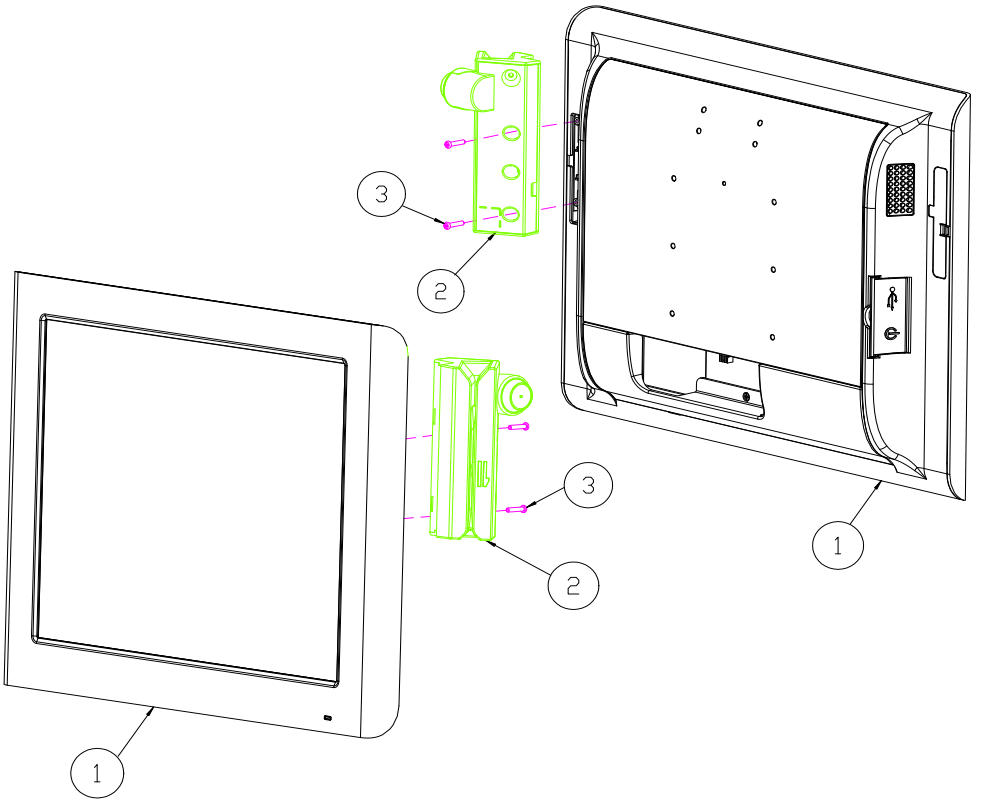


Item	Qty	Part Name	Part No.
1	1	PA-6722_PPC	------
2	1	MSC/RFID Reader Module	SEE ORDER
3	1	RFID EVA	90-013-15500353
4	1	RFID_BRACKET	20-006-03065353
5	4	FLAT HEAD SCREW	22-215-30006111
6	2	FILLISTER HEAD SCREW	22-215-30006111

Vertical SMART Card Reader, MSR kit

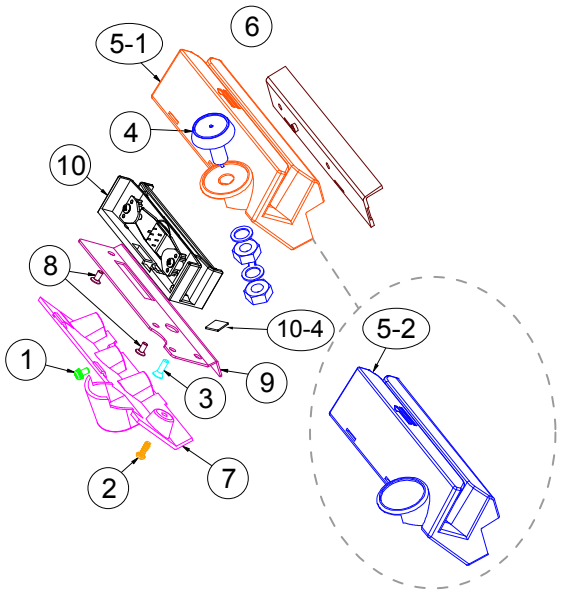


Item	Qty	Part Name	Part No.
1	1	PA-6722_PPC	------
2	1	MSR+SMART CARD READER	SEE ORDER
3	1	SMART CARD EVA	90-013-15600353
4	1	Smart Card Double Adhesive	94-026-04501353
5	1	SMART CARD BRACKET	20-006-03064353
6	2	ROUND WASHER HEAD SCREW	22-235-30007011



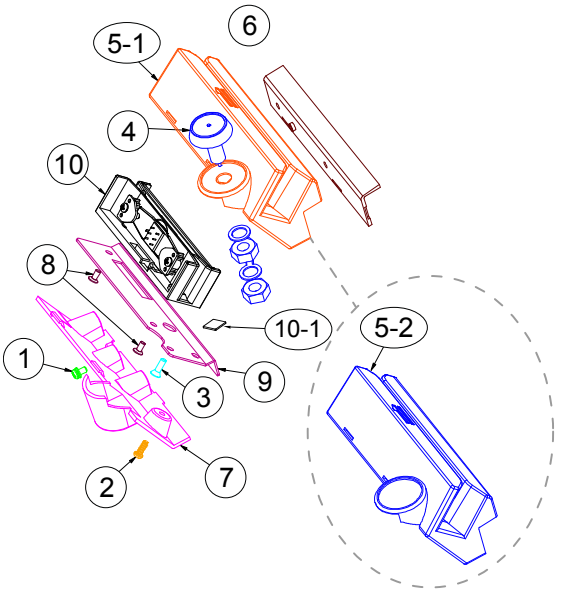
Item	Qty	Part Name	Part No.
1	1	PA-6722_PPC	--------
2	1	MSR_MODULE	--------
3	2	ROUND_SCREW_M3X14mm	22-232-30014011

MSR & i-Button
/Single head



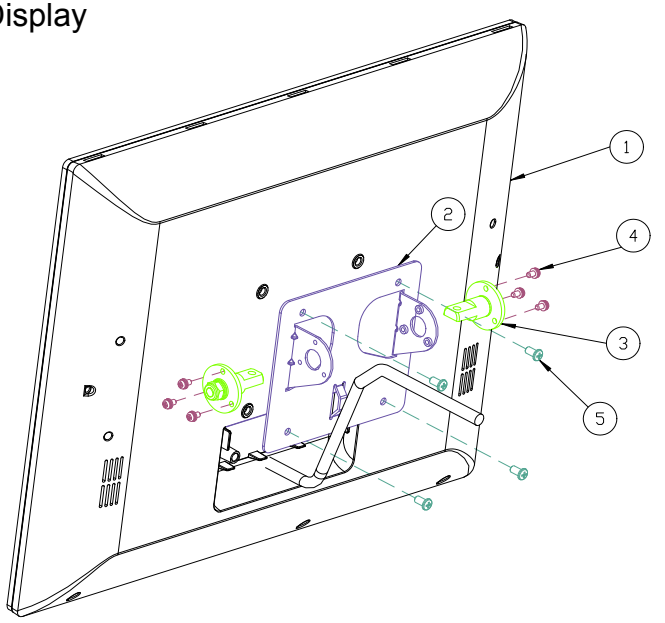
NO.	COMPONENT NAME		PART NO.	Q'TY
1	ROUND HEAD WITH SPRING WASHER SCREW M3x0.5Px6mm		22-232-30060211	1
2	PAN HEAD SCREW T3.0x8mm(Black)		22-122-30080011	1
3	FLAT HEAD SCREW T3.0x10mm		22-712-30010011	1
4	iBUTTON(IBT100)		52-551-00100002	1
5	5-1	MSR TOP HOUSING-1	30-014-12310210	1
	5-2	MSR TOP HOUSING-2	30-014-12110210	1
6	MSR COVER SIDE HOUSING		30-002-12122210	1
7	MSR BOTTOM HOUSING		30-002-12020210	1
8	FLAT HEAD SCREW M3x0.5Px6mm(Black)		22-215-30060011	2
9	MSR FIX BRACKET		20-006-03006210	1
10	10-1	MSR_PROTECH_PS2	MB-3012RA-12N	1
		MSR CABLE	27-014-31402071	1
		IBUTTON CABLEE	27-022-16503071	1
	10-2	MSR_ID TECH_PS2	52-151-08333416	--
		MSR CABLE	27-014-27402072	--
		MYLAR SHEET FOR MSR(10-4)	30-056-02100336	
	10-3	MSR_SYSKING_PS2	52-551-00883000	--
		MSR CABLE	27-014-21007111	--
		IBUTTON CABLE	27-022-16503071	--

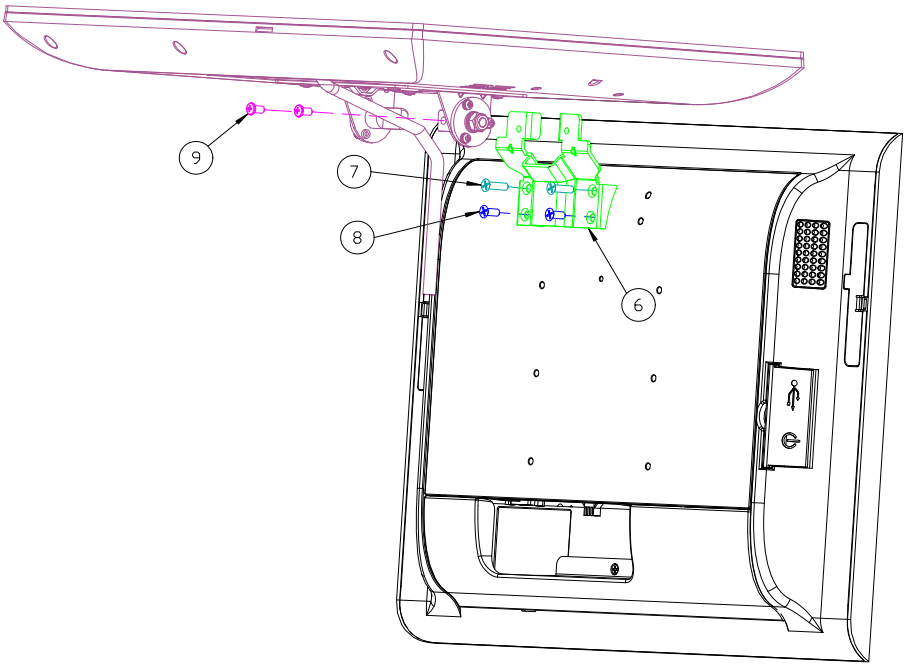
MSR & i-Button
/Twin head



Item	PN	Q'ty	Description
1	22-232-30060211	1	ROUND HEAD WITH SPRING WASHER SCREW M3x0.5Px6mm
2	22-122-30080011	1	PAN HEAD SCREW T3.0x8mm(Black)
3	22-712-30010011	1	FLAT HEAD SCREW T3.0x10mm
4	52-551-00100002	1	I Button Reader Sysking IBT100
5-1	30-014-12510210	1	MSR TOP HOUSING(I-BUTTON)-1(Black)
5-2	30-014-12110210	1	MSR TOP HOUSING(CLOSE)-1(Black)
6	30-002-12122210	1	POD-3520 MSR COVER SIDE-1(Black)
7	30-002-12020210	1	POD-3520 MSR BTM COVER-1(Black)
8	22-215-30060011	2	FLAT HEAD SCREW M3x0.5Px6mm(Black)
9	20-006-03006210	1	PA-3151 MSR FIXER BRACKET
10	52-551-00243100	1	Twin Head MSR,RS-232, GIGA-TMS MJR243R-10(F/W V1.01)
10	XX-XXX-XXXXXXXX	1	MSR for M/B cable (PB-6722 COM4_1)
	XX-XXX-XXXXXXXX	1	MSR for to itself cable
	XX-XXX-XXXXXXXX	1	IBUTTON for M/B cable (PB-6722 I-BUT)
	XX-XXX-XXXXXXXX	1	IBUTTON for itself cable
10-1	30-056-02100336	1	PA-6225 MYLAR SHEET FOR MSR

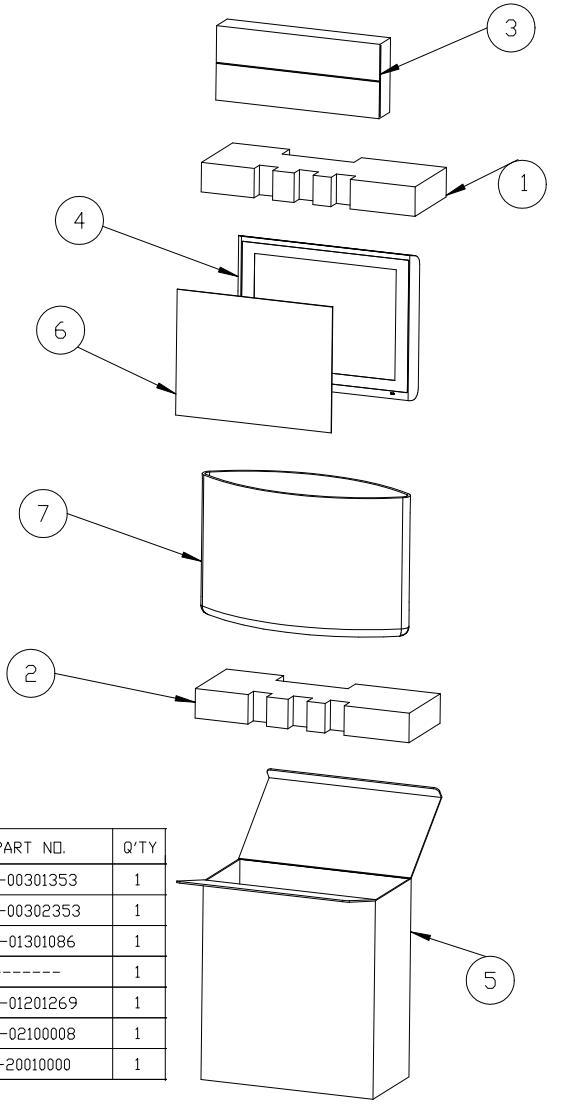
Second Display





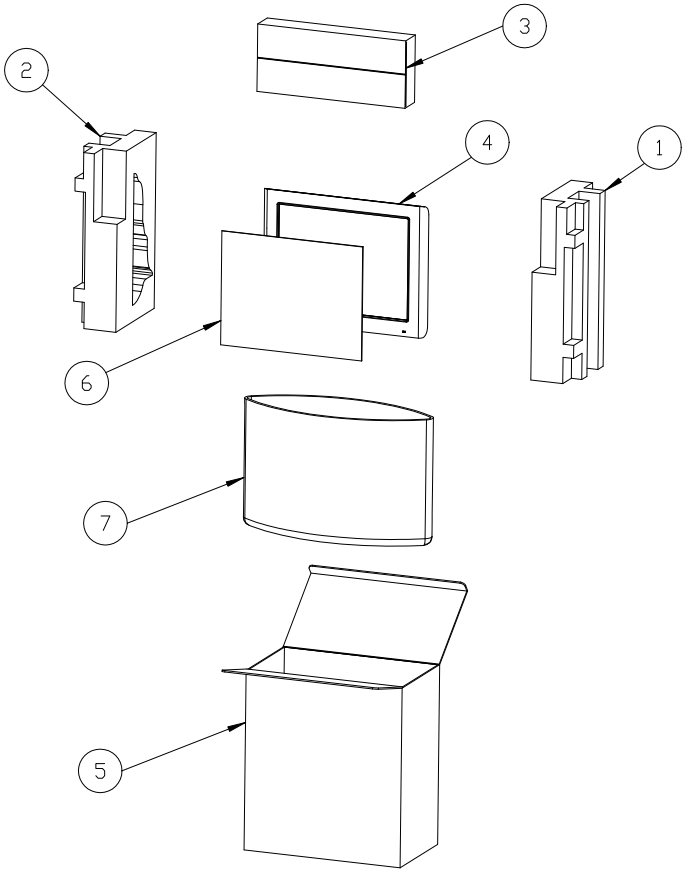
Item	Qty	Part Name	Part No.
1	1	15" TFT LCD VGA Monitor	SEE ORDER
2	1	2ND_DIS_HINGE_BRACKET	20-006-03062353
3	2	2ND DISPLAY HINGE	20-006-03062353
4	6	ROUND HEAD SCREW	22-235-30008011
5	4	ROUND HEAD SCREW	22-245-40008011
6	1	2ND_DIS_HINGE_BASE	20-032-03061353
7	2	FLAT HEAD SCREW	22-215-40015011
8	2	FLAT HEAD SCREW	22-215-40010011
9	2	ROUND HEAD SCREW	22-245-40012031

Panel-PC system with packing



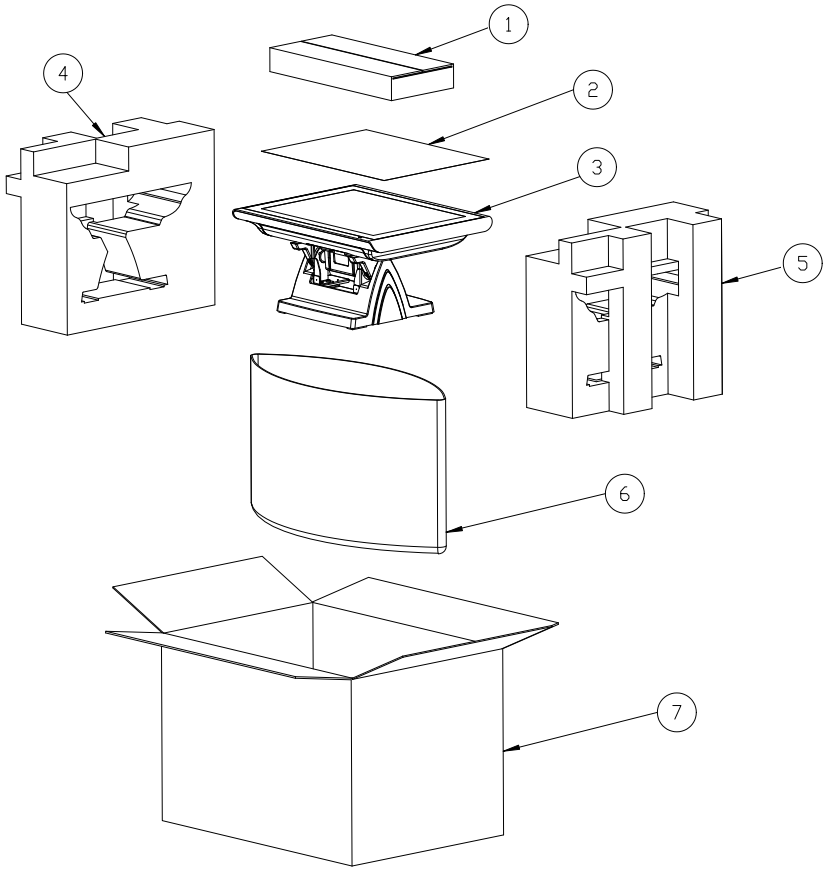
NO.	COMPONENT NAME	PART NO.	Q'TY
1	EPE TOP	94-016-00301353	1
2	EPE BOTTOM	94-016-00302353	1
3	ACCESSORIES BOX	34-003-01301086	1
4	PA-6722 PPC	----------	1
5	OUTER CARTON(PPC TYPE)	94-002-01201269	1
6	MYLAR	30-056-02100008	1
7	PE BAG	32-100-20010000	1

Easy Stand system with packing



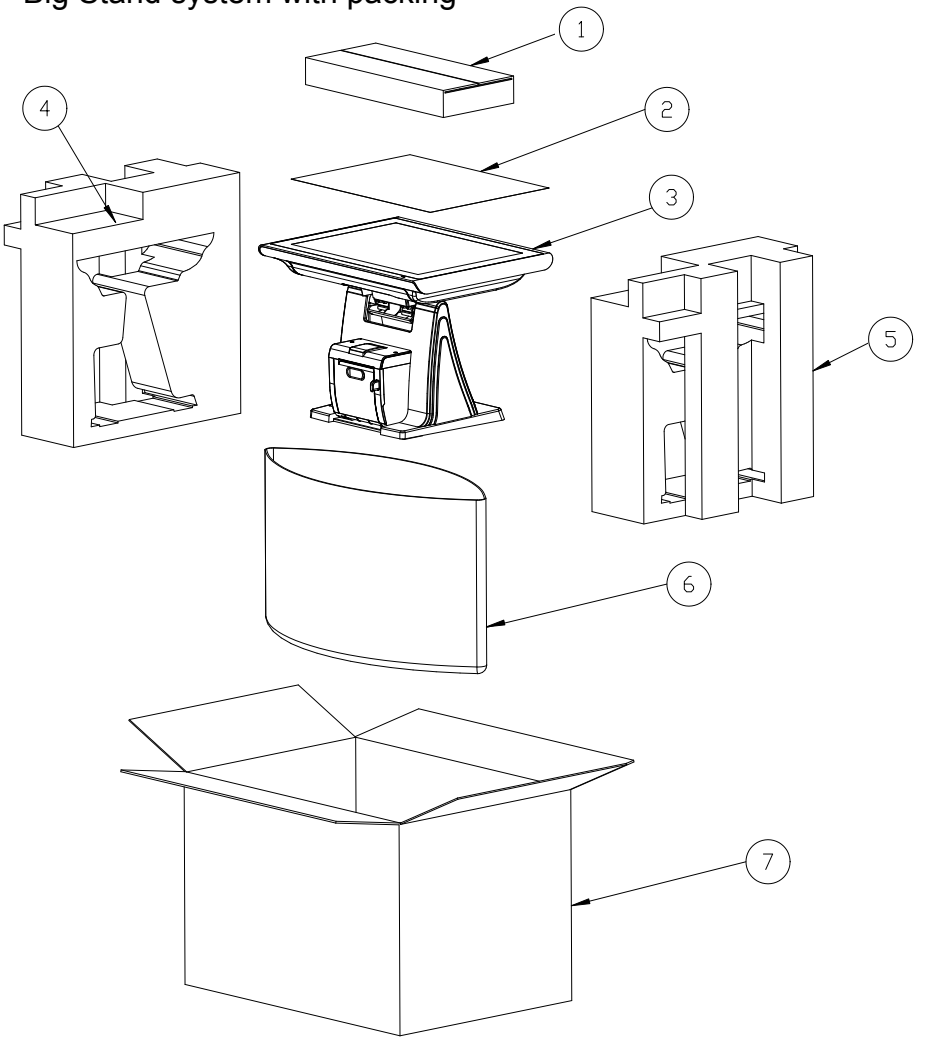
NO.	COMPONENT NAME	PART NO.	Q'TY
1	EPE RIGHT	94-016-00307353	1
2	EPE LEFT	94-016-00308353	1
3	ACCESSORIES BOX	34-003-01301086	1
4	PA-6722 model	----------	1
5	OUTER CARTON(PPC TYPE)	94-001-01404353	1
6	MYLAR	30-056-02100008	1
7	PE BAG	32-100-20010000	1

Normal Stand system with packing



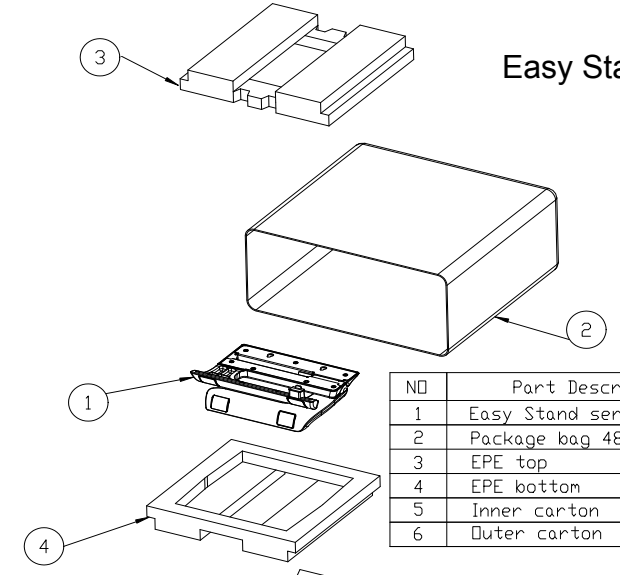
Item	Qty	Part Name	Part No.
1	1	PS-650X CARTON BOXES	34-003-01301086
2	1	15 IN PANEL MYLAR	90-056-25300000
3	1	PA-6722_model	----------
4	1	PA-6722 EPE LEFT	94-016-00304353
5	1	PA-6722 EPE RIGHT	94-016-00303353
6	1	PE BAG(850x670x0.07mm)	34-010-00210003
7	1	PA-6722 OUTER CARTON	94-001-01402353

Big Stand system with packing

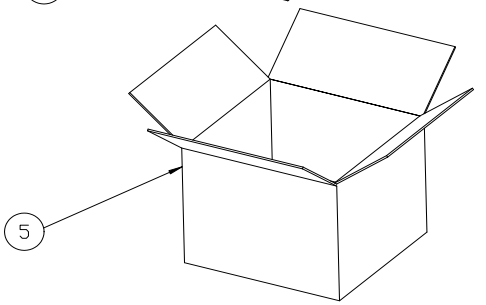


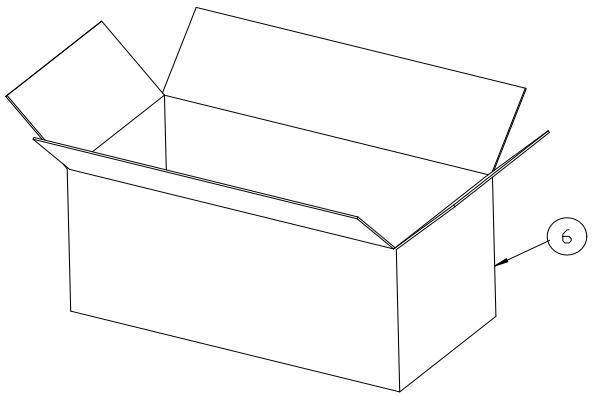
Item	Qty	Part Name	Part No.
1	1	PS-650X CARTON BOXES	34-003-01301086
2	1	15 IN PANEL MYLAR	90-056-25300000
3	1	PA-6722_model	----------
4	1	PA-6722 EPE LEFT	94-016-00306353
5	1	PA-6722 EPE RIGHT	94-016-00305353
6	1	PE BAG(850x670x0.07mm)	34-010-00210003
7	1	PA-6722 OUTER CARTON	94-001-01403353

Easy Stand spare-part

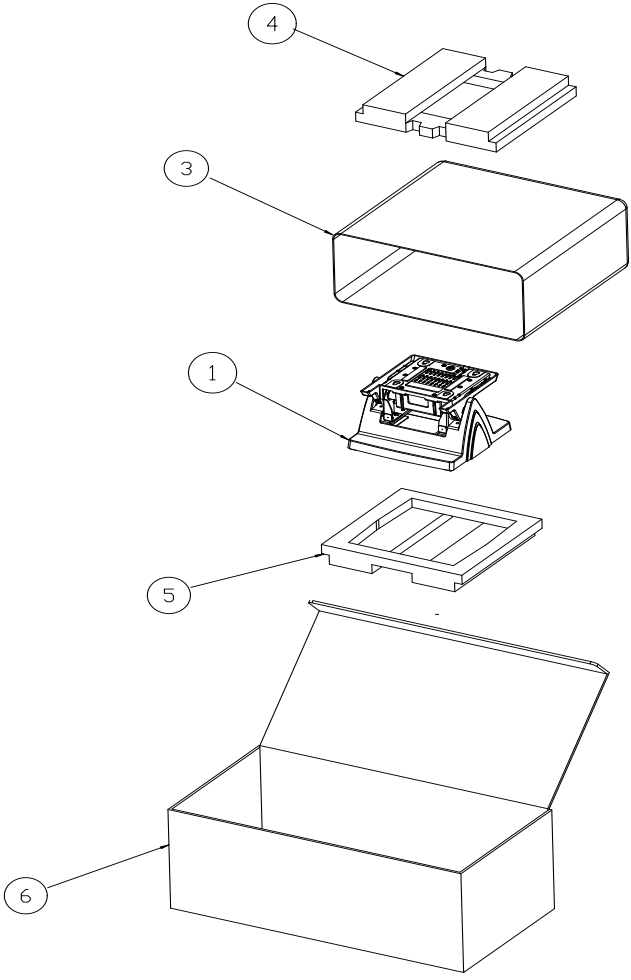


NO	Part Description	Part No.	Qty
1	Easy Stand service pack	N/A	1
2	Package bag 480x460mm	32-100-20010000	1
3	EPE top	94-016-00311353	1
4	EPE bottom	94-016-00312353	1
5	Inner carton	94-002-01401353	1
6	Outer carton	94-001-01407353	0.5



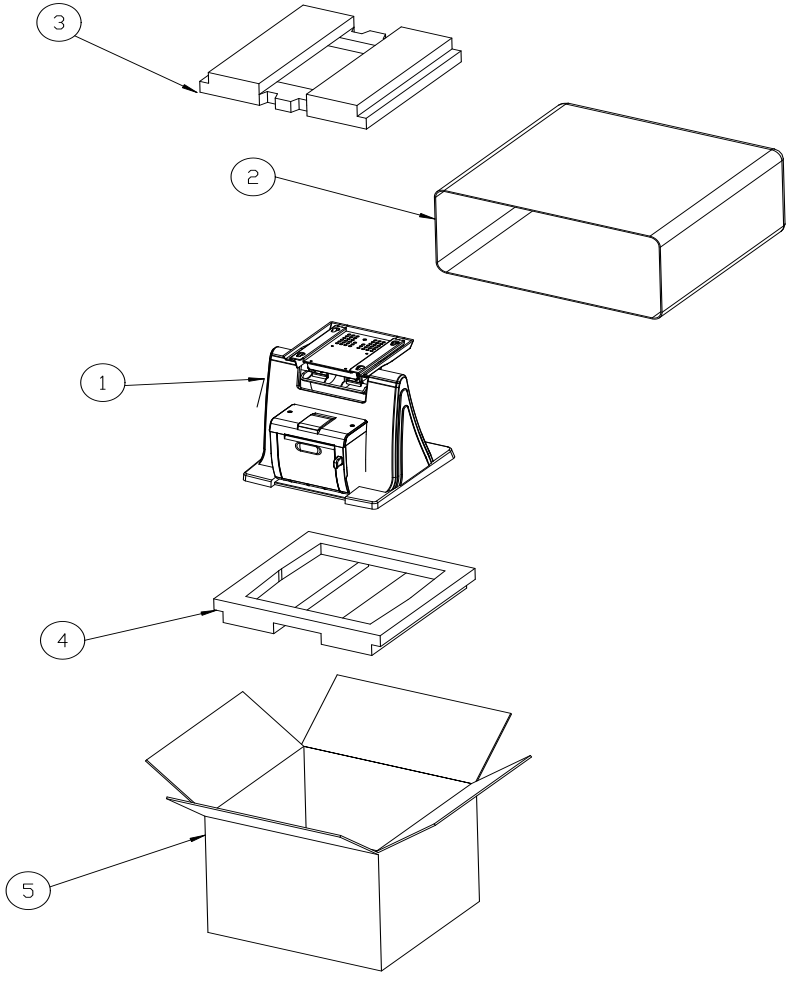


Normal Stand spare-part



NO	Part Description	Part No.	Qty
1	Normal Stand	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

Print Stand spare-part



NO	Part Description	Part No.	Qty
1	Print Stand	N/A	1
2	Package bag 480x460mm	32-100-20010000	1
3	EPE top	94-016-00309353	1
4	EPE bottom	94-016-00310353	1
5	Carton	94-001-01405353	1