USER MANUAL

KF-7270

Hi-Life Self-Service Kiosk System

KF-7270 M1

KF-7270 Self-Service Kiosk with P-Cap Touch

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 may occur when the battery is incorrectly replaced. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

	**WARNING:** Some internal parts of the system may have high electrical voltage. We strongly recommend that only qualified engineers are allowed to open and disassemble the system. Please operate the LCD and Touchscreen with extra care as they can be broken easily.

Contents

List of Figures

Revision History

The revision history of KF-7270 User Manual is described below:

Version No.	Revision History	Page No.	Date
M1	Initial Release	-	2018/06

1 Introduction

This chapter provides the introduction for the KF-7270 system as well as the framework of the user manual.

The following topic is included:

- About This Manual

1.1 About This Manual

Thank you for purchasing our KF-7270 system. The KF-7270 is an updated system designed to be comparable with the highest performance of IBM AT personal computers. The KF-7270 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 5 chapters and 2 appendixes. Users can configure the system according to their own needs. This user manual is intended for service personnel with strong hardware background. It is not intended for general users.

The following section describes the structure of this user manual.

Chapter 1 Introduction

This chapter introduces the framework of this user manual.

Chapter 2 Getting Started

This chapter describes the package contents and system specifications, and illustrates the physical appearances for the KF-7270 system. Read the safety reminders carefully on how to take care of your system properly.

Chapter 3 System Configuration

This chapter describes the locations and functions of the system main board components. You will learn how to properly configure the connectors and system configuration jumpers on the motherboard and configure the system to meet your own needs.

Chapter 4 Software Utilities

This chapter introduces how to install Intel Chipset Software Installation Utility, Intel Management Engine Components Installer Driver Utility, Graphics Driver Utility, LAN Driver Utility, Sound Driver Utility and Microsoft Hotfix kb3211320 and kb3213986 Driver Utility.

Chapter 5 AMI BIOS Setup

This chapter provides BIOS setup information.

Appendix A System Assembly Diagrams

This appendix provides the easy maintenance diagrams, exploded diagrams and part numbers of the KF-7270.

Appendix B Technical Summary

This appendix provides the information about the system block diagram, allocation maps for system resources, Watchdog Timer Configuration and Flash BIOS Update.

2 Getting Started

This chapter provides the information for the KF-7270 system. It describes how to set up the system quickly and outlines the system specifications.

The following topics are included:

- Package List
- System Overview
- Quick Setup
- System Specification
- Safety Precautions

Experienced users can go to Chapter 3 System Configuration on page 3-1 for a quick start.

2.1 Package List

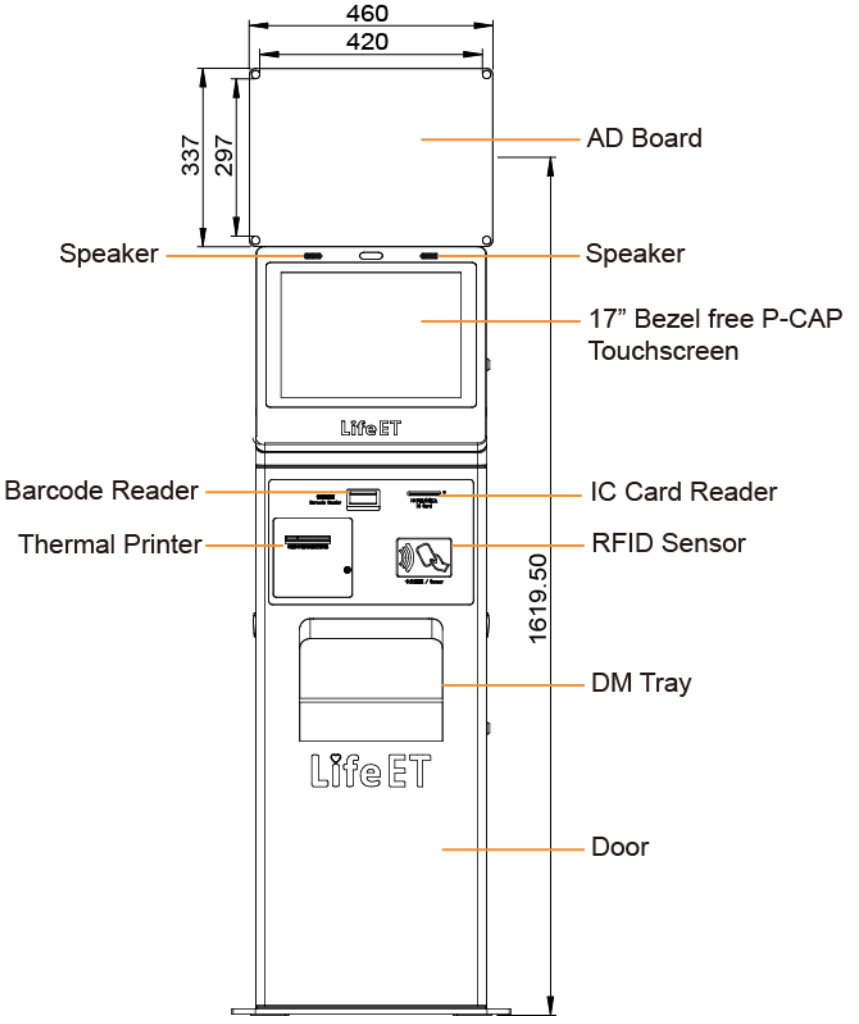
If you discover any of the items listed below are damaged or lost, please contact your local distributor immediately.

Item	Q'ty
KF-7270 Kiosk Main Unit	1
AD Board	1
AC Power Cord Cable	1
2ND D Screw Cover	1
Panel Key	2
Door Key	2

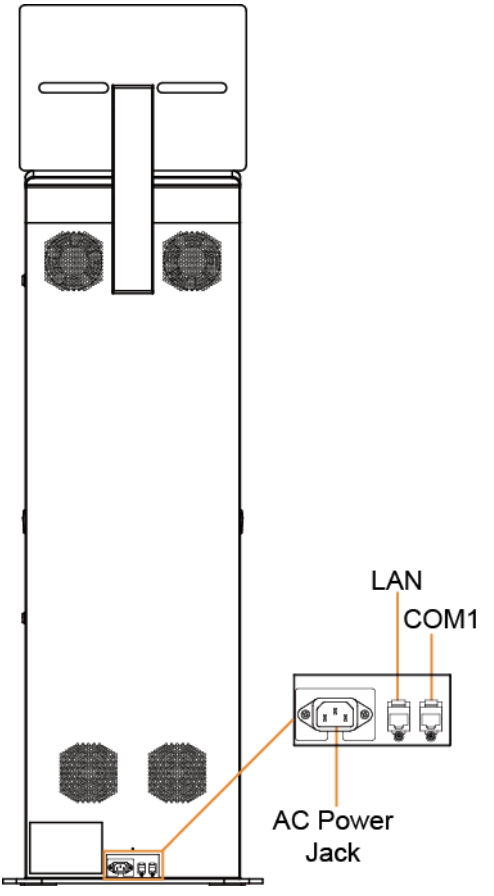
2.3 System Overview

Unit: mm

2.3.1 Front View

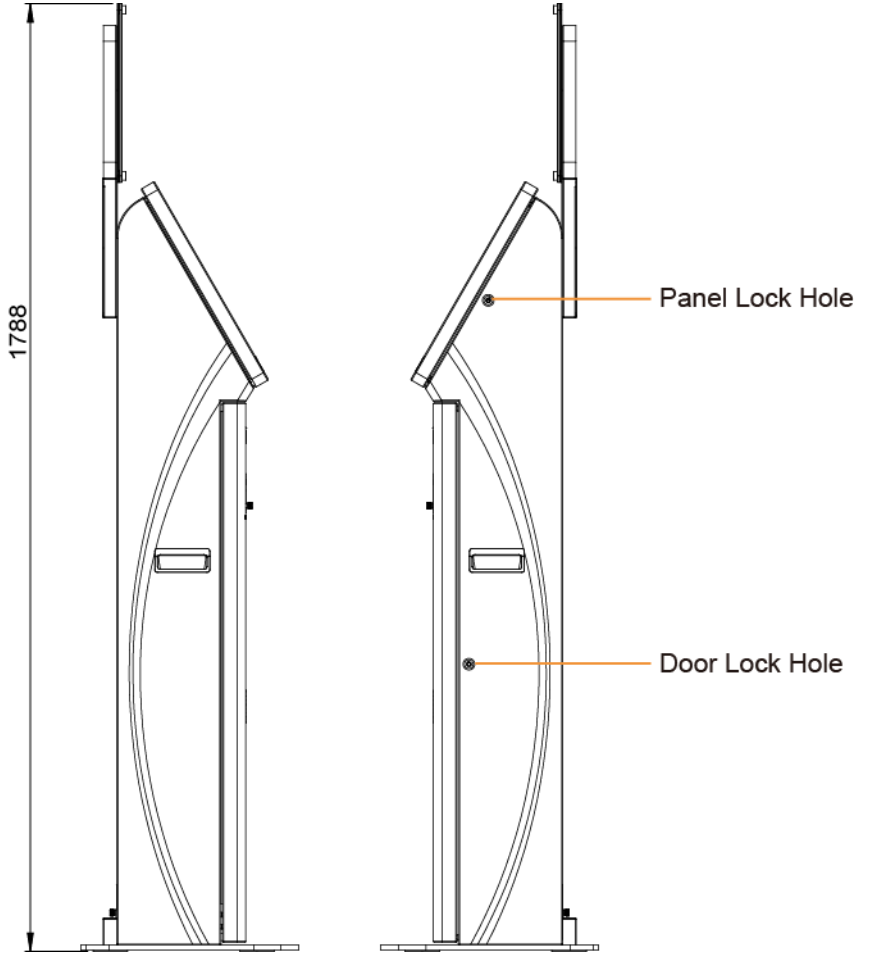


2.3.2 Rear View



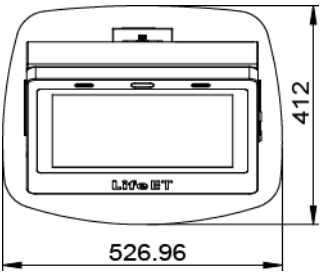
2.3.3 Side View

Unit: mm

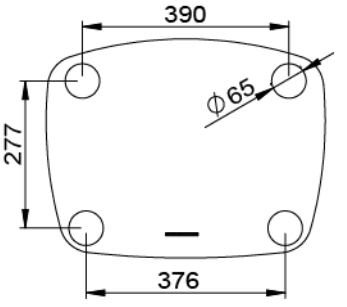


2.3.4 Top View

Unit: mm

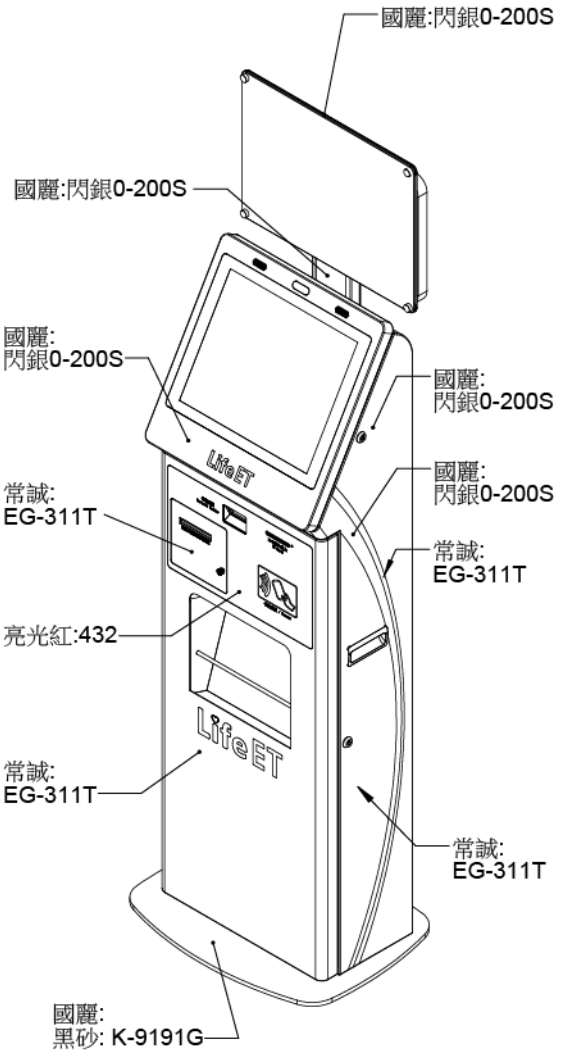


2.3.5 Bottom View



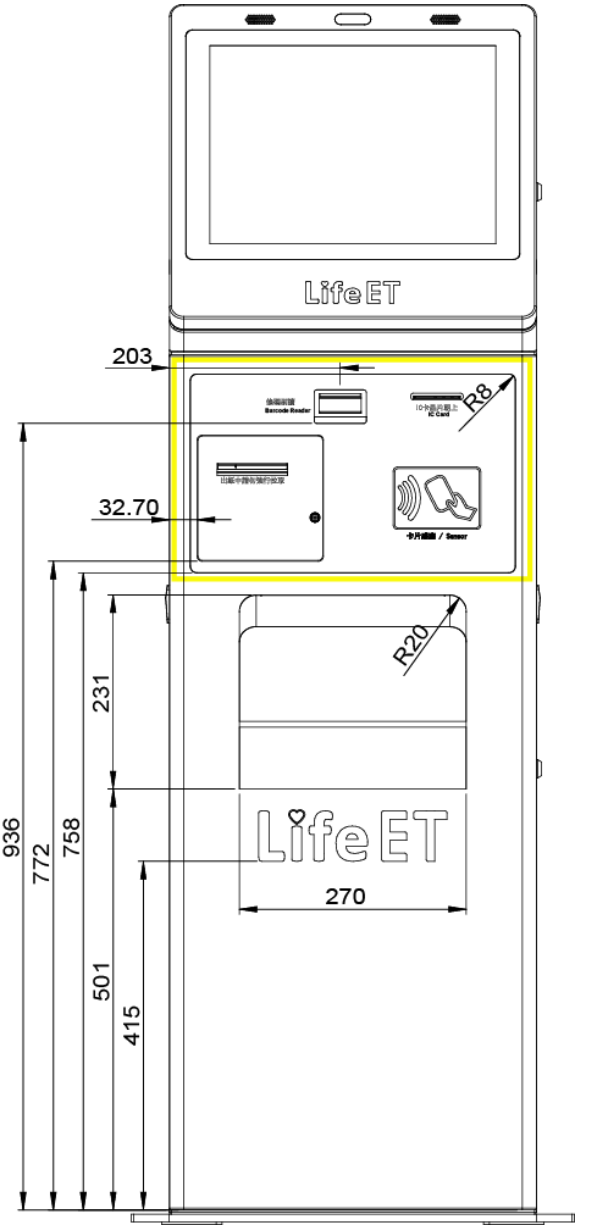
2.3.6 Quarter View

Unit: mm

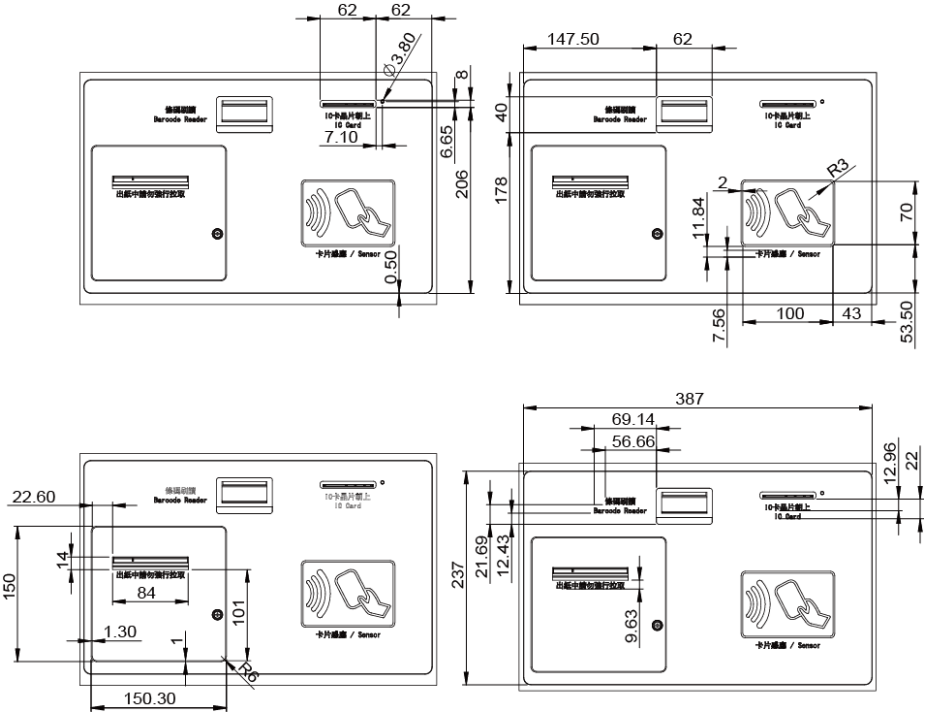


2.4 Acrylic Board View

Unit: mm

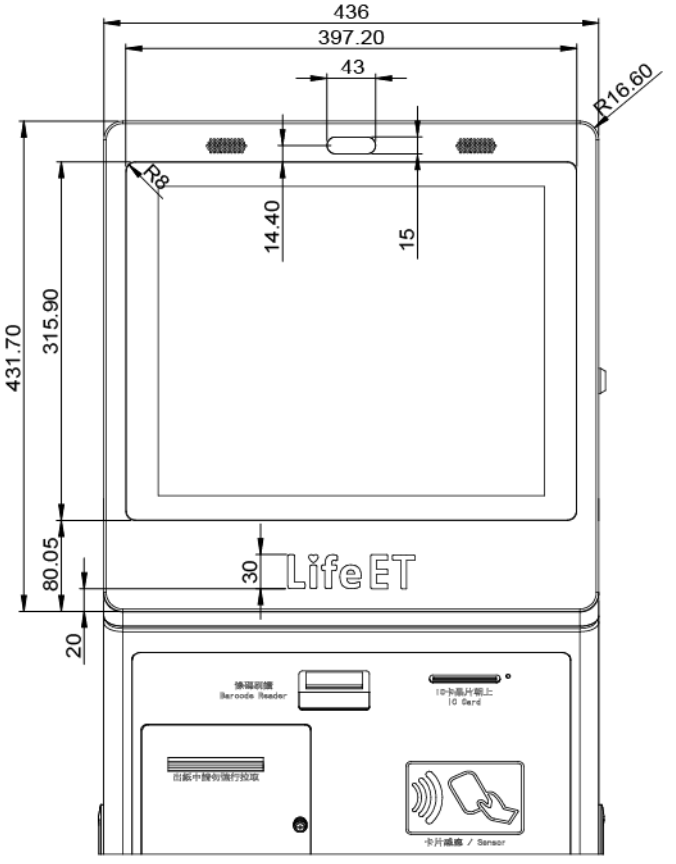


Unit: mm

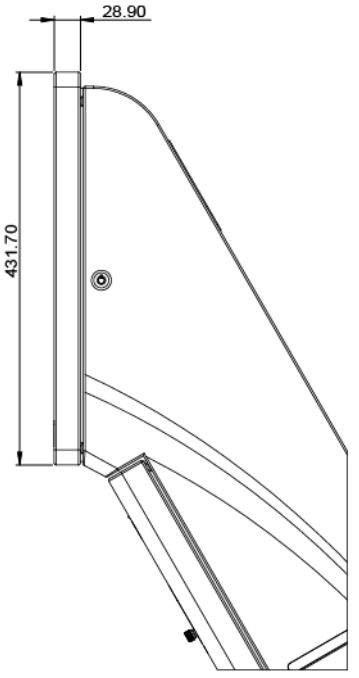

62
62
Ø3.80
8
7.10
6.65
206
0.50
40
178
147.50
62
2
R3
11.84
70
7.56
100
43
53.50
387
69.14
56.66
12.96
22
237
21.69
12.43
9.63
22.60
150
14
84
101
1.30
1
R6
150.30
Barcode Reader
IC Card
Sensor

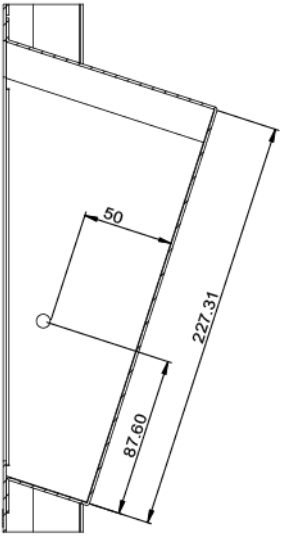
2.5 Panel View

Unit: mm



Panel 正面尺寸





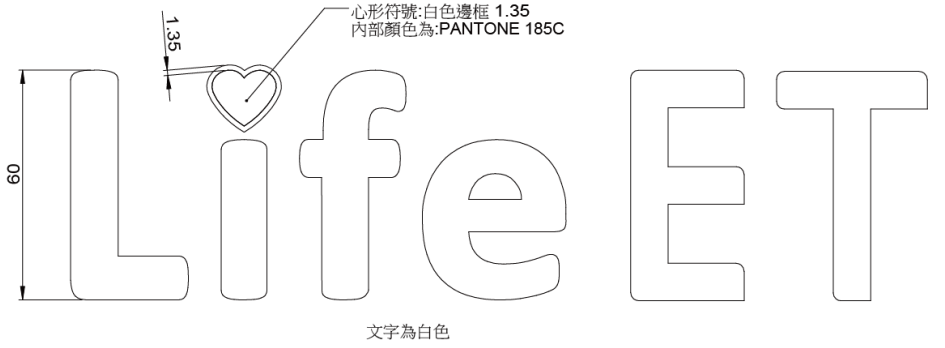
DM 架內部空間

2.6 Life ET Logo, RFID Sensor Area and Text Design

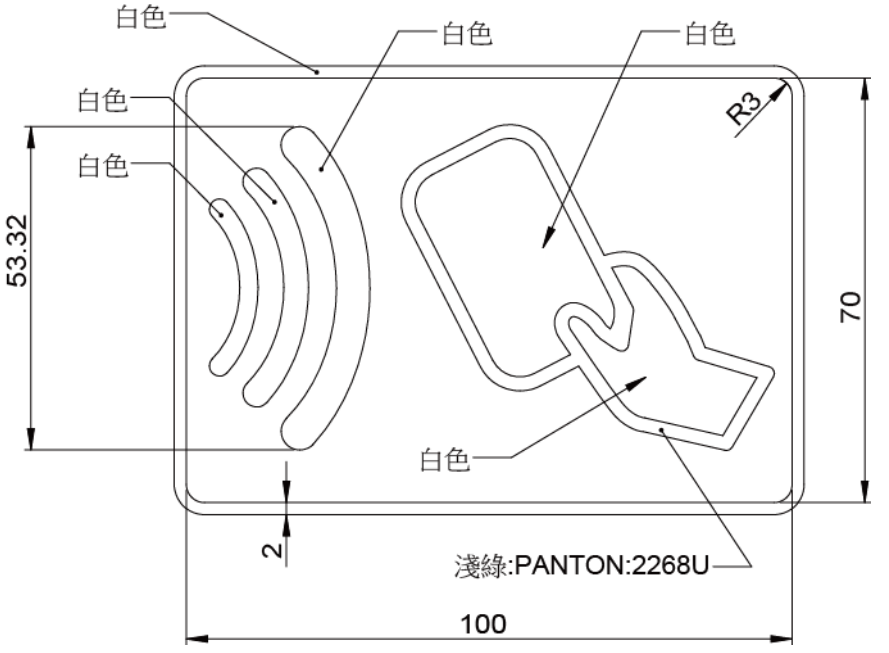
Unit: mm

Logo Design on Panel

Logo Design on Door



RFID Sensor Area



Text Design

文字為白色

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2.7 Turning On KF-7270 and Connecting System to Network

Step 1. Connect the AC power cord to the AC power jack located on the rear side of the system, and plug the other end to an AC power outlet.

Step 2. Connect the Ethernet cable to the LAN port on the back of the system and the other end to a port on your hub, switch or router.

Step 3. Connect the COM cable to the COM1 port for External Ticket Printer.

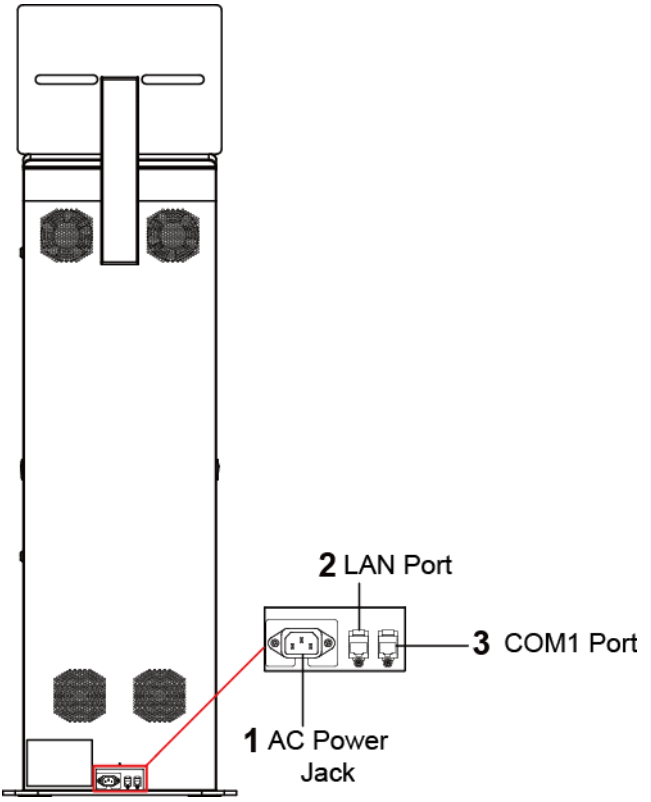

Figure 2-1. Locations of KF-7270 AC Power Jack and LAN Port

Step 4. Use your hand to release the screw on the printer door and open the door.

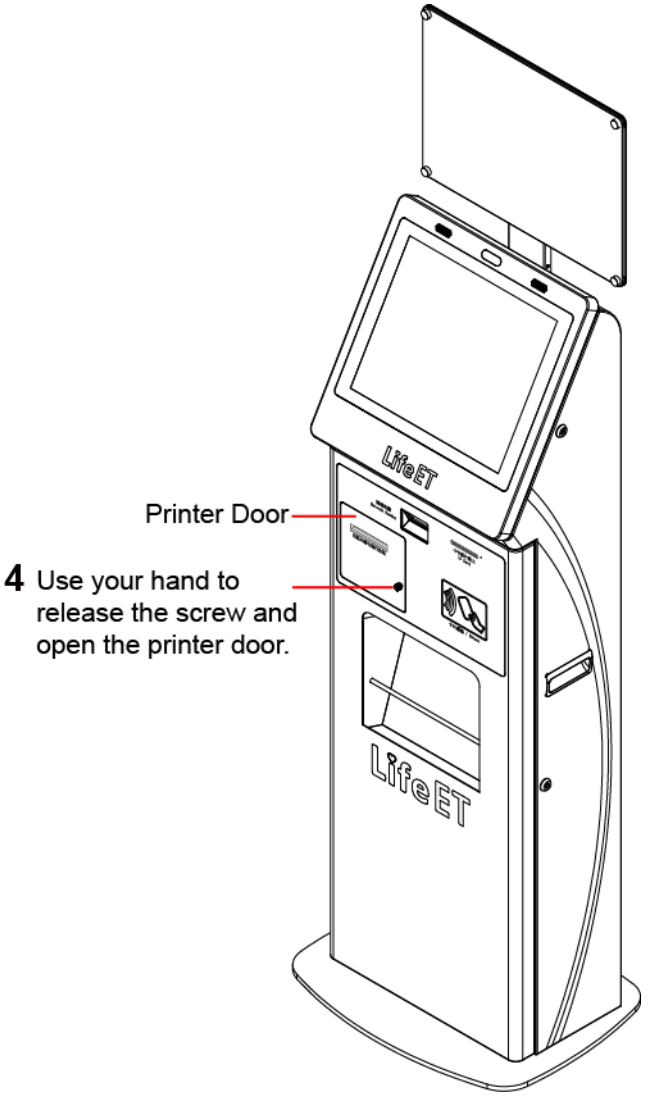

Figure 2-2. Open KF-7270 Printer Door

Step 5. Press the Power button to turn on the system. The Power Button is hidden inside on the upper right area above the printer door.

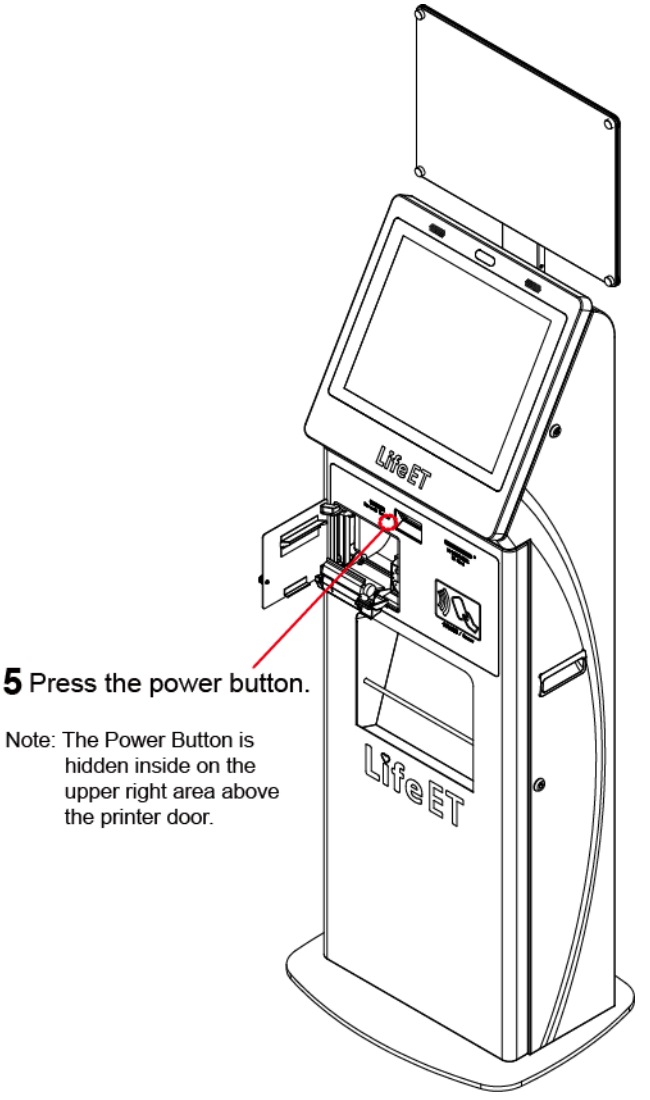

Figure 2-3. Power On KF-7270 Kiosk System

2.8 System Specifications

System	
CPU Type	➢ Intel® Core™ i5-6500 3.20GHz Processor
Chipset	➢ Intel® H110 Chipset
Memory Support	➢ 2 x DDR4 SO-DIMM sockets (Default: 4GB)
HDD	➢ 1 x Intel 2.5" 128GB TLC SSD
Network	➢ 10/100/1000 Mbps Base-T Fast Ethernet (RJ45)
Power Supply	➢ AC 100-240V, 50-60Hz
System Weight	➢ About 83kg (with package)
Dimensions (WxHxD)	➢ 527 x 1788 x 412mm
O.S. Support	➢ Windows 10 IoT Enterprise LTSB 2016 32bits
Fan	➢ 2 x system fans
Material	➢ SPCC, SECC
Speaker	➢ 2 x 2W HD speaker
Painting	➢ Powder-paint coating
Operating Display	
Touch	➢ 17” Bezel free P-CAP Touch
LCD	➢ 17" (4:3) LED backlight
Max. Resolution	➢ 1280 x 1024
Brightness	➢ 350 cd/m²
Touchscreen	➢ Projected Capacitive Touch
Viewing Angle	➢ **Horizontal:** (R) 85°/(L) 85° ➢ **Vertical:** (U) 80°/(L) 80°
Estimated luminance lifetime	➢ 50,000h
Environment	
Operating Temp.	➢ 5°C ~ 35°C (41°F ~ 95°F)
Storage Temp.	➢ 0°C ~ 60°C (32°F ~ 140°F)
Humidity	➢ 20% ~ 85% (no condensation)

Integrated Devices

<table>
<tr><td rowspan="2">熱感式印表機
(萊爾富公司提供)</td><td>Type</td><td>Epson TM-T70II</td></tr>
<tr><td>Specification</td><td>
<table>
<tr><td colspan="2">產品名稱</td><td>TM-T70II</td></tr>
<tr><td colspan="2">列印方式</td><td>熱感式列印</td></tr>
<tr><td colspan="2">解析度</td><td>203 x 203 dpi</td></tr>
<tr><td colspan="2">列印速度</td><td>最快250mm/秒</td></tr>
<tr><td colspan="2">進紙方式</td><td>前方投入式進紙</td></tr>
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Big-5繁體中文 (13535字)</td></tr>
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<tr><td>二維條碼</td><td>PDF417, QR Code</td></tr>
<tr><td rowspan="3">紙張</td><td rowspan="2">尺寸</td><td>紙寬 79.5mm ± 0.5mm、最大直徑為 83.0mm</td></tr>
<tr><td>紙寬 57.5mm ± 0.5mm、最大直徑為 83.0mm</td></tr>
<tr><td>厚度</td><td>0.06 to 0.07 mm</td></tr>
<tr><td rowspan="2">記憶體</td><td>資料緩衝區</td><td>4KB 或 45 bytes</td></tr>
<tr><td>NV記憶體</td><td>256KB</td></tr>
<tr><td colspan="2">傳輸介面</td><td>內建USB + 序列埠 (RS232) 或 雙向並列埠 (IEEE1284)、Ethernet 10/100 Tx</td></tr>
<tr><td colspan="2">使用電源</td><td>24 VDC ± 7%，內附變壓器 PS-180</td></tr>
<tr><td colspan="2">電源消耗</td><td>平均約1.8A (18%列印密度下，持續列印100行</td></tr>
<tr><td rowspan="3">可靠度</td><td>裁刀壽命</td><td>170萬次</td></tr>
<tr><td>MTBF</td><td>360,000 hours</td></tr>
<tr><td>MCBF</td><td>65 million lines</td></tr>
</table>
</td></tr>
<tr><td>Interface</td><td>USB 2.0 * 1</td></tr>
<tr><td rowspan="3">Barcode Reader</td><td>Type</td><td>FS5002J</td></tr>
<tr><td>Specification</td><td>1.掃描速度：60 frame /sec
2.最佳解析度：1D (4mils)：Code 39
3.2D (6.7mils)：PDF417
4.讀取角度 Tilt: 360° / Pitch ±60° / Skew ±60°
5.解碼區域
4 mils Code 39 65 ~ 150 mm
5 mils Code 39 46 ~ 195 mm
10 mils PDF 417 38 ~ 260 mm
15 mils PDF 417 60 ~ 380 mm
10 mils QR code 45 ~ 170 mm
15 mils QR code 48 ~ 155 mm
10 mils Data Matrix 50 ~ 220 mm
15 mils Data Matrix 40 ~ 305 mm
6.支援條碼 1D：
UPC-A, UPC-E, EAN-8, EAN-13, UCC/EAN-128, Code 39, Code 93, Interleaved 2 of 5 ,Codabar, MSI, GS1 DataBar
7.支援條碼 2D：
PDF 417, MicroPDF417, Datamatrix, QR Code, MaxiCode</td></tr>
<tr><td>Interface</td><td>USB 2.0 * 1</td></tr>
</table>

IC讀卡機	Type	SKH301-1000C
	Specification	PC/SC and CCID compliant chip card reader read/write ISO7816/EMV smart card
	Interface	USB 2.0 * 1
悠遊卡機 **(萊爾富公司提供)**	Type	虹堡TS-2000
	Interface	USB 2.0 * 1

2.9 Safety Precautions

Before operating this system, read the following information carefully to protect your systems from damages, and extend the life cycle of the system.

1. Check the Line Voltage
   - 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
   - Place your KF-7270 on a sturdy, level surface. Be sure to allow enough space around the system to have easy access needs.
   - Avoid installing your KF-7270 system in extremely hot or cold places.
   - Avoid direct sunlight exposure 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 KF-7270 when it has been left outdoors in a cold winter day.
   - Avoid moving the system rapidly from a hot place to a cold place, and vice versa, because condensation may occur inside the system.
   - Protect your KF-7270 from strong vibrations which may cause hard disk failure.
   - Do not place the system too close to any radio-active device. Radio-active device may cause signal interference.
   - Always shut down the operating system before turning off the power.
3. Handling
   - Avoid placing heavy objects on the top of the system.
   - Do not turn the system upside down. This may cause the hard drive to malfunction.
   - Do not allow any objects to fall into this device.
   - If water or other liquid spills into the device, unplug the power cord immediately.
4. Good Care
   - When the outside case gets stained, remove the stains using neutral washing agent with a dry cloth.
   - Never use strong agents such as benzene and thinner to clean the surface of the case.
   - If heavy stains are present, moisten a cloth with diluted neutral washing agent or alcohol and then wipe thoroughly with a dry cloth.
   - If dust is accumulated on the case surface, remove it by using a special vacuum cleaner for computers.

3 System Configuration

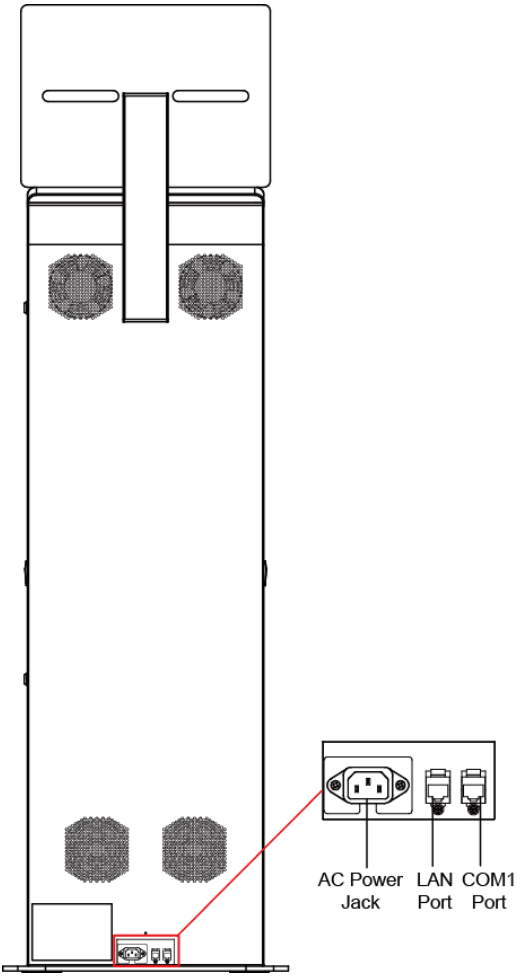
This chapter contains helpful information that describes the external and internal I/O ports diagrams, and jumper and connector settings, component locations, and pin assignment.

The following topics are included:

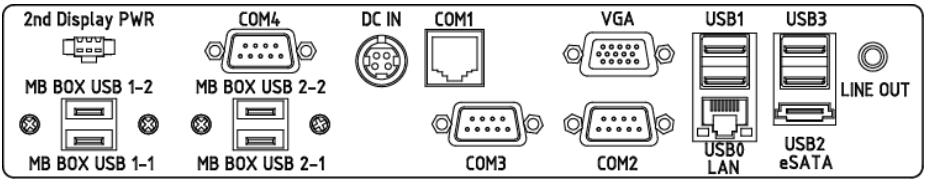
- External System I/O Ports Diagram
- Internal Main Board Box I/O Ports Diagram
- Main Board Component Locations
- How to Set Jumpers
- Setting Main Board Connectors and Jumpers

3.1 External System I/O Ports Diagram

1. **AC Power Jack:** Connect your AC power cord to the **AC Power Jack**.
2. **LAN Port:** Connect the Ethernet cable to the **LAN Port** on the back of the system and the other end of the network cable to a port on your hub, switch or router.
3. **COM1 Port:** The **COM1 Port** is used to connect to the External Ticket Printer.



3.2 Internal Main Board Box I/O Ports Diagram

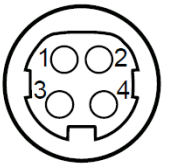


3.3 Function Buttons and I/O Ports

3.3.1 DC IN Port

Port Location: DC IN
Description: DC Power-In Port

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



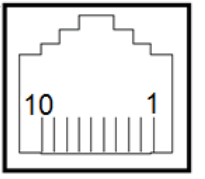
DC IN

3.3.2 COM Ports & VGA Connector (COM1, COM_VGA, COM3, COM3_1, COM4_1, COM5)

There are multiple COM ports enhanced in this board: COM1, COM_VGA (COM2+VGA Port), COM3, COM3_1, COM4_1 and COM5.

Port Location: COM1
Description: COM1 Connector
The pin assignments are as follows:

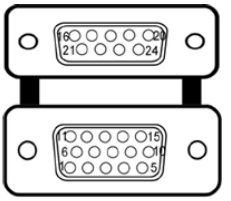
PIN	ASSIGNMENT
1	COM1_DCDJ_I
2	COM1_RX_I
3	COM1_TX_I
4	COM1_DTRJ_I
5	GND
6	COM1_DSRJ_I
7	COM1_RTSJ_I
8	COM1_CTSJ_I
9	COM1_RI_SEL
10	NC



COM1

Port Location: COM_VGA
Description: COM2 & D-Sub 15-pin VGA Connector

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	RED	13	HSYNC
2	GREEN	14	VSYNC
3	BLUE	15	DDCA CLK
4	NC	16	DCD2
5	GND	17	RXD2
6	GND	18	TXD2
7	GND	19	DTR2
8	GND	20	GND
9	+5V	21	DSR2
10	GND	22	RTS2
11	NC	23	CTS2
12	DDCA DATA	24	RI/+5V/+12V selectable

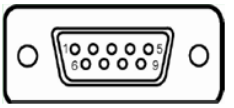


COM2/ VGA

Port Location: COM3
Description: COM3 Connector
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM3_DCDJ_I	6	COM3_DSRJ_I
2	COM3_RX_I	7	COM3_RTSJ_I
3	COM3_TX_I	8	COM3_CTSJ_I
4	COM3_DTRJ_I	9	RI / +5V / +12V selectable
5	GND	-	-

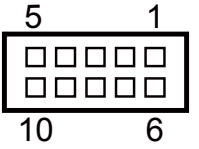
COM3 and COM3_1 can't be used simultaneously.



COM3

Port Location: COM3_1
Description: COM3_1 Connector
The pin assignments are as follows:

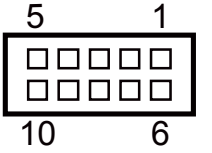
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM3_DCDJ_I	6	COM3_DSRJ_I
2	COM3_RX_I	7	COM3_RTSJ_I
3	COM3_TX_I	8	COM3_CTSJ_I
4	COM3_DTRJ_I	9	COM3_RI_SEL
5	GND	10	NC



COM3_1

Port Location: COM4_1
Description: COM4_1 Connector
The pin assignments are as follows:

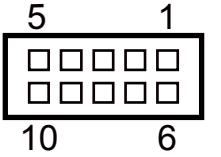
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM4_DCDJ_I	6	COM4_DSRJ_I
2	COM4_RX_I	7	COM4_RTSJ_I
3	COM4_TX_I	8	COM4_CTSJ_I
4	COM4_DTRJ_I	9	COM4_RI_SEL
5	GND	10	NC



COM4_1

Port Location: COM5
Description: COM5 Connector
The pin assignments are as follows:

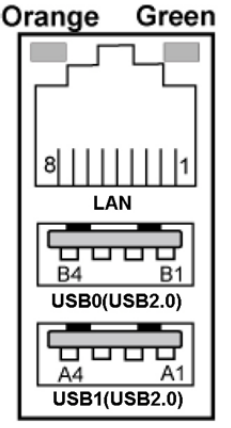
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM5_DCDJ_I	6	COM5_DSRJ_I
2	COM5_RX_I	7	COM5_RTSJ_I
3	COM5_TX_I	8	COM5_CTSJ_I
4	COM5_DTRJ_I	9	COM5_RI_SEL
5	GND	10	NC



COM5

3.3.3 LAN & USB Ports

Port Location: LAN, USB0, USB1
Description: LAN Port & Dual USB 2.0 Ports
The pin assignments are as follows:



LAN/ USB0/ USB1

USB0 and USB1: USB 2.0 Connector, USB Type A ports

PIN	ASSIGNMENT	PIN	ASSIGNMENT
A1	VCC5	B1	VCC5
A2	USB0-	B2	USB1-
A3	USB0+	B3	USB1+
A4	GND	B4	GND

LAN: a Giga LAN RJ45 port (rear I/O)

PIN	ASSIGNMENT
1	LAN1_MDI0_DP
2	LAN1_MDI0_DN
3	LAN1_MDI1_DP
4	LAN1_MDI1_DN
5	LAN1_MDI2_DP
6	LAN1_MDI2_DN
7	LAN1_MDI3_DP
8	LAN1_MDI3_DN

Left Side LAN LED Indicator

Orange Color Blinking	LAN Message Active
Off	No LAN Message Active

Right Side LAN LED Indicator

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

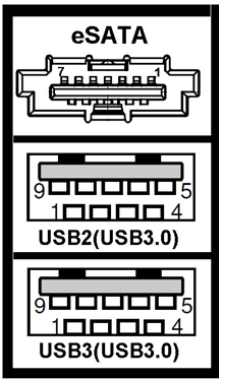
3.3.4 USB 3.0 Connectors (eSATA, USB2, USB3)

Port Location: USB2
Description: USB 3.0 Connector
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	VCC5	5	RX2_DN
2	USBP3N	6	RX2_DP
3	USBP3P	7	GND
4	GND	8	TX3_DN
-	-	9	TX3_DP

Port Location: USB3
Description: USB 3.0 Connector
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	VCC5	5	BP_RX_DN
2	USBP4N	6	BP_RX_DP
3	USBP4P	7	GND
4	GND	8	BP_TX_DN
-	-	9	BP_TX_DP



USB2/ USB3

Port Location: eSATA (external SATA)
Description: a combo eSATA/USB 3.0 connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	GND
2	SATA_TXP_2_C
3	SATA_TXN_2_C
4	GND
5	SATA_RXN_2_C
6	SATA_RXP_2_C
7	GND

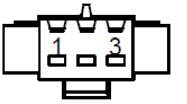
eSATA (external Serial Advanced Technology Attachment) is a 7-wire/7-pin technology. The maximum cable length is 6 1/2 feet (2 meters). eSATA and SATA have the same number of wires/pins and their signal formats are the same.

3.3.5 2nd Display Power Port

Port Location: 2nd Display PWR

Description: DC12V power supply for 2nd display

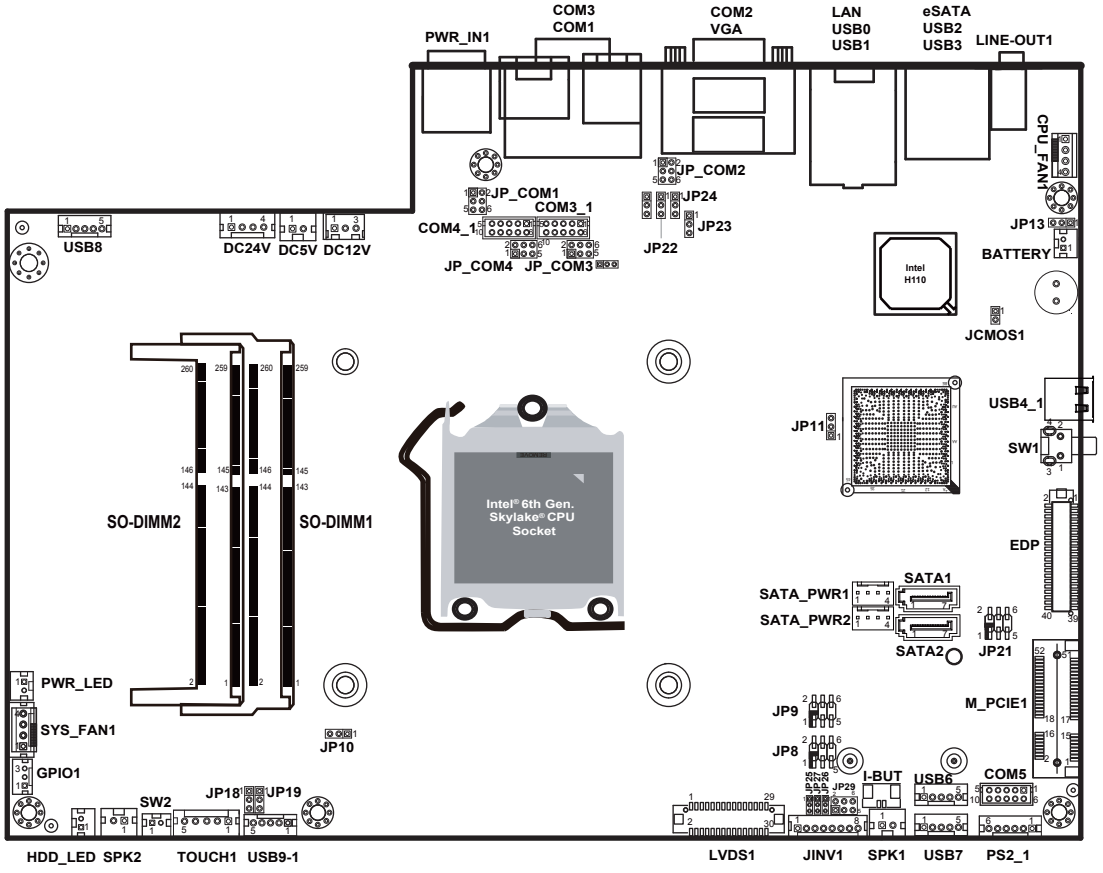
PIN	ASSIGNMENT
1	GND
2	-
3	VCC12



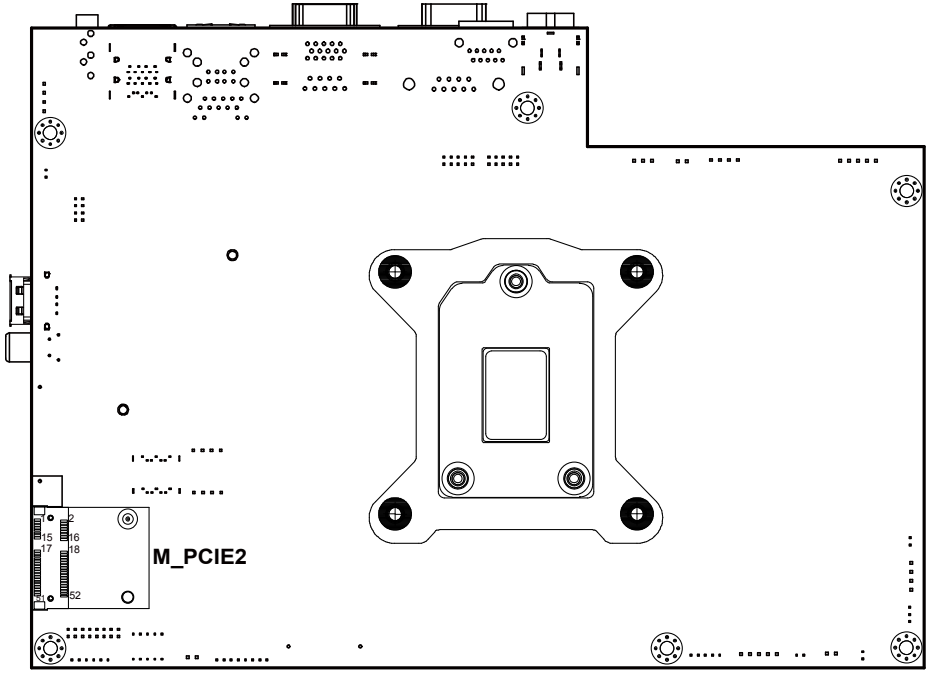
2nd Display PWR

3.4 Main Board Component Locations & Jumper Settings

M/B: PD-7270



PD-7270 Front Connector, Jumper and Component Locations



PD-7270 Rear Connector, Jumper and Component Locations

	**WARNING:** Always disconnect the power cord when you are working with the connectors and jumpers on the main board. Make sure both the system and the external devices are turned OFF as sudden surge of power could ruin sensitive components. Make sure KF-7270 is properly grounded.
	**CAUTION:** Observe precautions while handling electrostatic sensitive components. Make sure to ground yourself to prevent static charge while configuring the connectors and jumpers. Use a grounding wrist strap and place all electronic components in any static-shielded devices.

3.5 Jumper & Connector Quick Reference Table

JUMPER Description	NAME
Clear CMOS Data Selection	JCMOS1
COM Port RI and Voltage Selection	JP_COM1, JP_COM2, JP_COM3, JP_COM4
LVDS Output Resolution Selection	JP8, JP9
VCCIO / REFIN Selection	JP10
Configuration / Recovery Selection	JP11
Speaker Selection	JP13
Touch Panel and USB9-1 Selection	JP18, JP19
Mini PCIe and USB6 Selection	JP21
i-Button Function Selection	JP22, JP23, JP24
LVDS Panel Power Input Selection	JP25
LVDS Backlight Type Selection	JP26
LVDS Backlight Control Selection	JP27
LVDS Panel Sequence Selection	JP29

System CONNECTOR Description	NAME
COM Port and VGA Connector	COM1, COM_VGA (COM2 + VGA Port) COM3, COM3_1, COM4_1, COM5
i-Button Connector	I-BUT
LAN & USB Port	LAN, USB0, USB1
Internal USB 2.0 Connector	USB6, USB7, USB8, USB9-1, USB4_1
USB 3.0 Connector	USB2, USB3, eSATA
2nd Display Power Port	2nd Display PWR
LED Connector	PWR_LED, HDD_LED (option)
System / CPU Fan Connector	SYS_FAN1, CPU_FAN1
Power Input Connector	PWR_IN1
Power Connector	DC24V, DC12V, DC5V
Power Switch Connector	SW1 (option), SW2

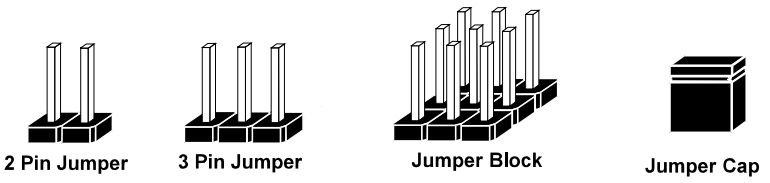
System CONNECTOR Description	NAME
External Speaker Connector	SPK1, SPK2 (option)
Inverter Connector	JINV1
LVDS Connector	LVDS1
MSR/Card Reader Connector	PS2_1
SATA & SATA Power Connector	SATA1, SATA2 (option), SATA_PWR1, SATA_PWR2 (option)
Touch Panel Connector	TOUCH1
Mini PCIe/mSATA Connector	M_PCIE1, M_PCIE2 (option)
EDP Connector (option)	EDP
GPIO Connector	GPIO1
Audio Jack	LINE-OUT1

3.6 Setting 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. 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 configure your hardware settings by "opening" or "closing" jumpers.

Jumpers can be combined into sets that are 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.

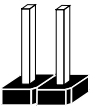
Jumpers & Caps



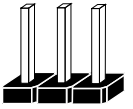
If a jumper has three pins, for example, labeled 1, 2 and 3. You can connect pins 1 and 2 to create one setting and shorting. You can also select to connect pins 2 and 3 to create another setting. The format of the jumper picture will be illustrated throughout this manual. The figure below shows different types of jumpers and jumper settings.

Jumper Diagrams

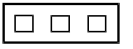
Jumper Cap looks like this



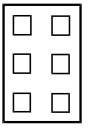
2 pin Jumper looks like this



3 pin Jumper looks like this

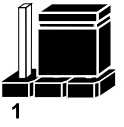


Jumper Block looks like this

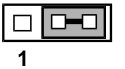


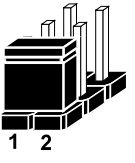
Jumper Settings

2 pin Jumper closed(enabled)
looks like this

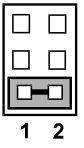


3 pin Jumper
2-3 pin closed(enabled)
looks like this





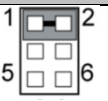
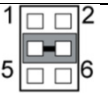
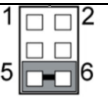
Jumper Block
1-2 pin closed(enabled)
looks like this



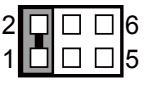
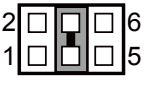
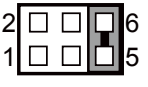
3.7 Setting Main Board Connectors and Jumpers

3.7.1 COM Port RI & Voltage Selection (JP_COM1, JP_COM2, JP_COM3, JP_COM4)

Jumper Location: JP_COM1, JP_COM2
Description: COM Port RI & Voltage Selection, pin-headers on board. The voltage of COM1, COM2 is made to control by the jumpers on board.
The jumper settings are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
RI	**1-2** *(Default Setting)*	 **JP_COM1/JP_COM2**
+12V	3-4	 **JP_COM1/JP_COM2**
+5V	5-6	 **JP_COM1/JP_COM2**

Jumper Location: JP_COM3, JP_COM4
Description: COM Port RI & Voltage Selection, pin-headers on board. The COM3 voltage is made to control by the jumpers on board.
The jumper settings are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
RI	**1-2** *(Default Setting)*	 **JP_COM3/JP_COM4**
+12V	3-4	 **JP_COM3/JP_COM4**
+5V	5-6	 **JP_COM3/JP_COM4**

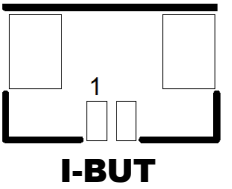
3.7.2 i-Button Connector (I-BUT)

Connector Location: I-BUT

Description: i-Button Connector

The pin assignments are as follows:

PIN	ASSIGNMENT
1	COM3_DTR_R_I
2	COM3_RXD_R_I



3.7.3 i-Buttion Function Selection (JP22, JP23, JP24)

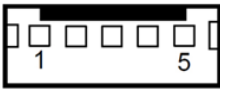
Jumper Location: JP22, JP23, JP24
Description: i-Button Function Selection
The jumper settings are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
COM2	**1-2** *(Default Setting)*	1  **JP22/JP23/JP24**
i-Button*	2-3	1  **JP22/JP23/JP24**

Note: Manufacturing Default is COM2.
*When these jumpers are set as 'i-Button', the COM2 connector will not function.

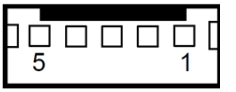
3.7.4 Internal USB 2.0 Connectors (USB6~8, USB9-1, USB4_1)

Connector Location: USB6, USB7, USB8, USB9-1
Description: Internal USB 2.0 connectors
The pin assignments are as follows:



USB6/ USB7/ USB8

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

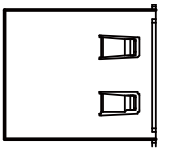


USB9-1

Note:
USB6 signal is shared from "Mini PCIe" port.
USB6 could be functioned when JP21 are set 1-3, 2-4 [short].

USB9-1 signal is shared from "TOUCH" port.
USB9-1 could be functioned when JP18, JP19 are set 1-2 [short].

Connector Location: USB4_1 (top side of main board)
Description: Internal USB 2.0 connector Type A
The pin assignments are as follows:



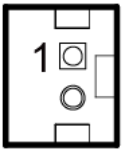
USB4_1

PIN	ASSIGNMENT
1	VCC
2	USB_DN
3	USB_DP
4	GND

3.7.5 LED Connectors (PWR_LED, HDD_LED)

Connector Location: PWR_LED
Description: Power indication LED Connector
The pin assignments are as follows:

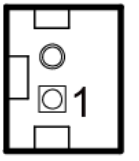
PIN	ASSIGNMENT
1	VCC5
2	GND



PWR_LED

Connector Location: HDD_LED
Description: HDD indication LED Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	VCC3_3
2	PCH_SATA_LED_N

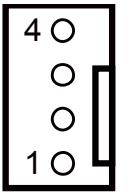


HDD_LED

3.7.6 System Fan and CPU FAN Connectors (SYS_FAN1, CPU_FAN1)

Connector Location: SYS_FAN1
Description: System Fan Connector 1

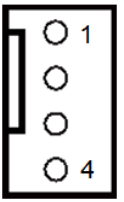
PIN	ASSIGNMENT
1	GND
2	VCC12
3	SYS_FANIN
4	SYS_FANOUT



SYS_FAN1

Connector Location: CPU_FAN1
Description: CPU Fan Connector 1

PIN	ASSIGNMENT
1	GND
2	VCC12
3	CPU_FANIN
4	CPU_FANOUT

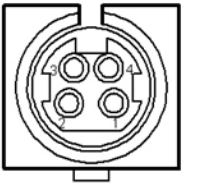


CPU_FAN1

3.7.7 Power Input Connector (PWR_IN1)

Connector Location: PWR_IN1
Description: Power Input Connector
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	2	GND
4	24VIN	3	24VIN

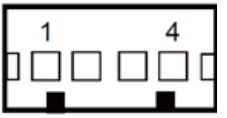


PWR_IN1

3.7.8 Power Connectors (DC24V, DC12V, DC5V)

Connector Location: DC24V
Description: Power for Thermal Printer Connector
The pin assignments are as follows:

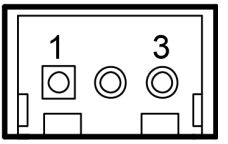
PIN	ASSIGNMENT
1	24VIN
2	24VIN
3	GND
4	GND



DC24V

Connector Location: DC12V
Description: DC 12Voltage Provider Connector
The pin assignments are as follows:

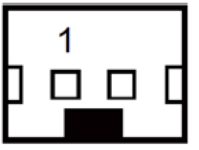
PIN	ASSIGNMENT
1	VCC12_GT
2	NC
3	GND



DC12V

Connector Location: DC5V
Description: DC 5Voltage Provider Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	V_5P0_A
2	GND

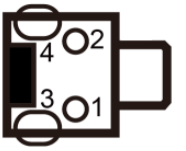


DC5V

3.7.9 Power Switch Connectors (SW1, SW2)

Connector Location: SW1
Description: Power Switch Connector 1
The pin assignments are as follows:

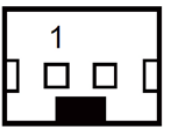
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	2	LPC_PWRBTNJ
3	GND	4	GND



SW1
(option)

Connector Location: SW2
Description: Power Switch Connector 2
The pin assignments are as follows:

PIN	ASSIGNMENT
1	LPC_PWRBTNJ
2	GND

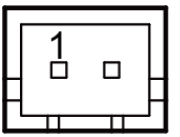


SW2

3.7.10 External Speaker Connectors (SPK1, SPK2) (option)

Connector Location: SPK1
Description: External Speaker Connector 1
The pin assignments are as follows:

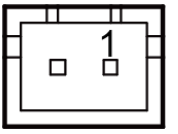
PIN	ASSIGNMENT
1	HD_FRONT-OUT1-R
2	HD_FRONT-OUT1-L



SPK1

Connector Location: SPK2
Description: External Speaker Connector 2
The pin assignments are as follows:

PIN	ASSIGNMENT
1	HD_FRONT-OUT2-R
2	HD_FRONT-OUT2-L



SPK2
(option)

3.7.11 Speaker Selection (JP13)

Jumper Location: JP13
Description: SPK1/SPK2 Selection
The jumper settings are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
SPK1&SPK2	**1-2** ***(Default Setting)***	 **JP13**
Only SPK1	Open	 **JP13**

Note: Manufacturing Default is **SPK1&SPK2**.

3.7.12 Inverter Connector (JINV1)

Connector Location: JINV1
Description: Inverter Connector
The pin assignments are as follows:

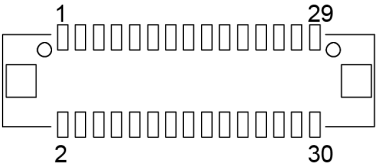
PIN	ASSIGNMENT
1	GND
2	VCC12
3	VCC12
4	VCC12
5	GND
6	LED_PWM
7	GND
8	PANLE_BKLTEN

JINV1

3.7.13 LVDS Connector (LVDS1)

Connector Location: LVDS1
Description: LVDS Connector
The pin assignments are as follows:

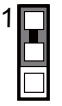
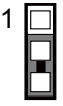
PIN	ASSIGNMENT	PIN	ASSIGNMENT
2	GND	1	LVDS_VCC
4	LVDS_CLKBP	3	LVDS_CLKBM
6	LVDS_YBM2	5	GND
8	GND	7	LVDS_YBP2
10	LVDS_YBP1	9	LVDS_YBM1
12	LVDS_YBM3	11	LVDS_YBP3
14	LVDS_YBM0	13	LVDS_YBP0
16	LVDS_CLKAP	15	GND
18	GND	17	LVDS_CLKAM
20	LVDS_YAM2	19	LVDS_YAP2
22	LVDS_YAP1	21	GND
24	GND	23	GND
26	LVDS_YAM0	25	LVDS_YAP0
28	LVDS_YAM3	27	LVDS_YAP3
30	LVDS_VCC	29	LVDS_VCC



LVDS1

3.7.14 LVDS Panel Power Input Selection (JP25)

Jumper Location: JP25
Description: LVDS Panel Power Input Selection
The jumper settings are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
3.3V	1-2	 **JP25**
5V	**2-3** ***(Default Setting)***	 **JP25**

Note: Manufacturing Default is **5V**.

3.7.15 LVDS Backlight Type Selection (JP26)

Jumper Location: JP26
Description: LVDS Backlight Type Selection
The jumper settings are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
3.3V	1-2	 **JP26**
5V	**2-3** ***(Default Setting)***	 **JP26**

Note: Manufacturing Default is **5V**.

3.7.16 LVDS Backlight Control Selection (JP27)

Jumper Location: JP27
Description: LVDS Backlight Control Selection
The jumper settings are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
3.3V	1-2	 **JP27**
5V	**2-3** ***(Default Setting)***	 **JP27**

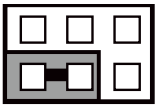
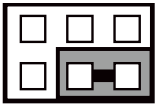
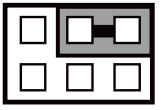
Note: Manufacturing Default is **5V**.

3.7.17 LVDS Panel Sequence Selection (JP29)

Jumper Location: JP29

Description: LVDS Panel Sequence Selection

The jumper settings are as follows:

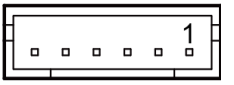
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
By CH7511_BKLTEN	**1-3** ***(Default Setting)***	 1 3 **JP29**
By CH7511_VDDEN	3-5	 3 5 **JP29**
By INV_12V_SR_J	4-6	4 6  **JP29**

Note: Manufacturing Default is **By CH7511_BKLTEN**.

3.7.18 MSR/Card Reader Connector (PS2_1)

Connector Location: PS2_1
Description: MSR/Card Reader Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	KCLK_KB (Output)
2	KCLK_C (Input)
3	KDAT_C (Input)
4	KDAT_KB (Output)
5	+5V
6	GND

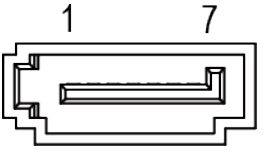


PS2_1

3.7.19 SATA & SATA Power Connectors (SATA1, SATA2, SATA_PWR1, SATA_PWR2)

Connector Location: SATA1, SATA2
Description: Serial ATA Connectors
The pin assignments are as follows:

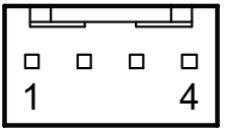
PIN	ASSIGNMENT
1	G1
2	TX+
3	TX-
4	G2
5	RX-
6	RX+
7	G3



SATA1/ SATA2

Connector Location: SATA_PWR1, SATA_PWR2
Description: Serial ATA Power Connectors
The pin assignments are as follows:

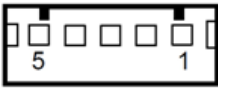
PIN	ASSIGNMENT
1	VCC
2	GND
3	GND
4	VCC12



SATA_PWR1/ SATA_PWR2

3.7.20 Touch Panel Connector (TOUCH1)

Connector Location: TOUCH1
Description: Touch Panel Connector
The pin assignments are as follows:

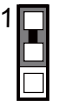


TOUCH1

PIN	ASSIGNMENT
1	L+
2	L-
3	COM
4	U+
5	U-

3.7.21 Touch Panel & USB9-1 Selection (JP18, JP19)

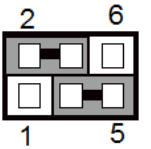
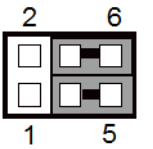
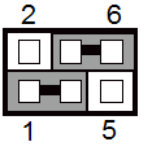
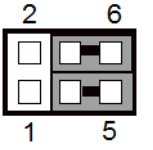
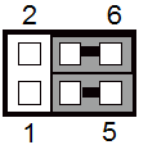
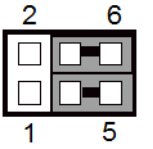
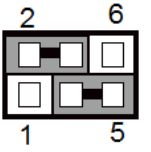
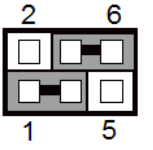
Jumper Location: JP18, JP19
Description: Touch Panel and USB9-1 Selection
The jumper settings are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
USB9-1 Connector (Capacitor Panel Selection)	**1-2** ***(Default Setting)***	 **JP18/JP19**
Touch Interface (Resistor Panel Selection)	2-3	 **JP18/JP19**

Note: Manufacturing Default is **USB9-1 Connector**.

3.7.22 LVDS Output Resolution Selection (JP8 and JP9)

Jumper Location: JP8, JP9
Description: LVDS Output Resolution Selection

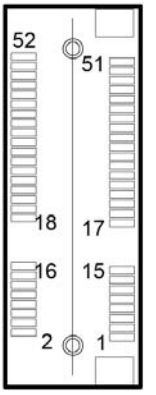
SELECTION	JUMPTER SETTING	JUMPER ILLUSTRATION	
1024x768 (24bit)	JP8 (3-5) JP8 (2-4) JP9 (3-5) JP9 (4-6)	 **JP8**	 **JP9**
1024x768 (18bit)	JP8 (1-3) JP8 (4-6) JP9 (3-5) JP9 (4-6)	 **JP8**	 **JP9**
800x600 (18bit)	JP8 (3-5) JP8 (4-6) JP9 (3-5) JP9 (4-6)	 **JP8**	 **JP9**
1280x1024 (2CH) (24bit)	**JP8 (2-4)** **JP8 (3-5)** **JP9 (1-3)** **JP9 (4-6)** ***(Default Setting)***	 **JP8**	 **JP9**

Note: Manufacturing Default is **1280x1024 (2CH) (24bit)**.

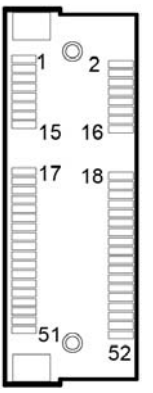
3.7.23 Mini PCIe/mSATA Connector

Connector Location: M_PCIE1, M_PCIE2 (option)
Description: Mini PCIe/mSATA Connector
The M_PCIE2 connector is located on the rear side of the main board.
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	WAKE#	2	+3.3V
3	Reserved	4	GND
5	Reserved	6	+1.5V
7	CLKREQ#	8	Reserved
9	GND	10	Reserved
11	REFCLK1-	12	Reserved
13	REFCLK1+	14	Reserved
15	GND	16	Reserved
17	Reserved	18	GND
19	Reserved	20	Reserved
21	GND	22	PERST#
23	PERn0	24	+3.3SB
25	PERp0	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PETn2	32	SMB_DATA
33	PETp2	34	GND
35	GND	36	USB D-
37	GND	38	USB D+
39	+3.3V	40	GND
41	+3.3V	42	Reserved
43	GND	44	Reserved
45	NC	46	Reserved
47	NC	48	+1.5V
49	NC	50	GND
51	Reserved	52	+3.3V



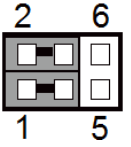
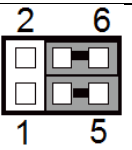
M_PCIE1



M_PCIE2
(option)

3.7.24 Mini PCIe and USB6 Selection (JP21)

Jumper Location: JP21
Description: Mini PCIe and USB6 Selection

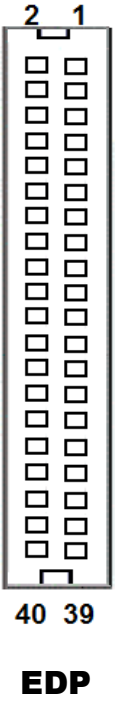
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
USB signal to USB6 wafer	**1-3, 2-4** ***(Default Setting)***	 **JP21**
USB6 (Disabled) signal to Mini PCIe*	3-5, 4-6	 **JP21**

Note: Manufacturing Default is **USB signal to USB6 wafer**.

3.7.25 Embedded DisplayPort (EDP) Connector (EDP) (option)

Connector Location: EDP (option)
Description: EDP Connector
The pin assignments are as follows:

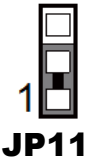
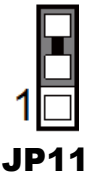
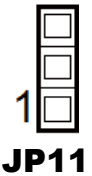
PIN	ASSIGNMENT	PIN	ASSIGNMENT
2	GND	1	NC
4	EDP_TX3_DP	3	EDP_TX3_DN
6	EDP_TX2_DN	5	GND
8	GND	7	EDP_TX2_DP
10	EDP_TX1_DP	9	EDP_TX1_DN
12	EDP_TX0_DN	11	GND
14	GND	13	EDP_TX0_DP
16	EDP_AUX_DN_C	15	EDP_AUX_DP_C
18	VCC3_3	17	GND
20	VCC3_3	19	VCC3_3
22	NC	21	VCC3_3
24	GND	23	GND
26	GND	25	GND
28	GND	27	EDP_LVDS_HPD
30	GND	29	GND
32	EDP_BKLTEN	31	GND
34	NC	33	EDP_BKLTCTL
36	VCC12	35	NC
38	VCC12	37	VCC12
40	NC	39	VCC12



eDP (Embedded DisplayPort) was developed to be used specifically in embedded display applications, such as Notebook and Notepad PCs. eDP is based on the VESA DisplayPort Standard. It aims to define a standardized display panel interface for internal connections; e.g., graphics cards to notebook display panels. It has advanced power-saving features including seamless refresh rate switching. It has become the new mainstream display panel interface for LCD panels with the realized higher resolution.

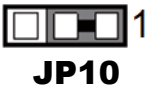
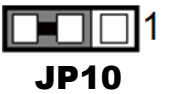
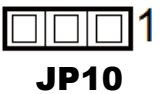
3.7.26 Configuration / Recovery Selection (JP11)

Jumper Location: JP11
Description: Configuration / Recovery Selection
The jumper settings are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
Normal	**1-2** ***(Default Setting)***	 **JP11**
Configure	2-3	 **JP11**
Recovery	Open	 **JP11**

3.7.27 VCCIO / REFIN Selection (JP10)

Jumper Location: JP10
Description: VCCIO / Refin Selection
The jumper settings are as follows:

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
1.0V	**1-2** ***(Default Setting)***	
0.95V	2-3	
1.0V	Open	

Note: Manufacturing Default is **1.0V**.

3.7.28 Clear CMOS Data Selection (JCMOS1)

Jumper Location: JCMOS1
Description: Clear CMOS Data Selection

Step 1. Remove the main power of the PC.
Step 2. Close **JCMOS1** (pins 1-2) for 6 seconds by a cap.
Step 3. Remove the cap which is just used on **JCMOS1** (1-2), so that **JCMOS1** returns to "OPEN".
Step 4. Power on the PC and the PC will then auto-reboot for once in order to set SoC's register.
Step 5. Done!

SELECTION	JUMPTER SETTING	JUMPER ILLUSTRATION
Normal	**Open** ***(Default Setting)***	 **JCMOS1**
Clear CMOS Data	1-2	 **JCMOS1**

Note: Manufacturing Default is **Normal**.

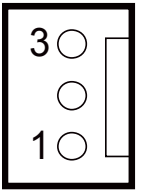
3.7.29 GPIO Connector (GPIO1)

Connector Location: GPIO1

Description: General Purpose Input / Output Connector

The pin assignments are as follows:

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



GPIO1

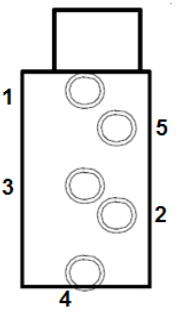
3.7.30 Audio Jack (LINE-OUT1)

Connector Location: LINE-OUT1

Description: External audio phone jack port

The pin assignments are as follows:

PIN	ASSIGNMENT
1	HD_GND
5	LINE-OUT-L
3	NC
2	LINE-OUT-R
4	VCC_AUD



LINE-OUT1

4 Software Utilities

This chapter provides the detailed information that guides users to install driver utilities for the system. The following topics are included:

- Installing Intel® Chipset Software Installation Utility
- Installing Graphics Driver Utility
- Installing LAN Driver Utility
- Installing Sound Driver Utility
- Installing Intel® Management Engine Components Installer
- Installing Microsoft Hotfix kb3211320 and kb3213986 Driver Utility

4.1 Introduction

Enclosed with the KF-7270 Series package is our driver utilities contained in a DVD-ROM disk. Refer to the following table for driver locations:

Filename (Assume that DVD-ROM drive is D :)	Purpose	OS	
		Shell	Win10 (32/64bit)
D:\Driver\Flash BIOS	Driver installation for BIOS Update Utility(AMI)	✓	X
D:\Driver\Platform\Win10 (32/64-bit)\Main Chip	Intel® Chipset Software Installation Utility	X	✓
D:\Driver\Platform\Win10 (32/64-bit)\ME	Intel® Management Engine Driver Installation	X	✓
D:\Driver\Platform\Win10 (32/64-bit)\Graphics	Intel® HD Graphics 530 Driver Installation	X	✓
D:\Driver\Platform\Win10 (32/64-bit)\LAN	Intel® Ethernet connection I219-V for LAN Driver installation	X	✓
D:\Driver\Platform\Win10 (32/64-bit)\Sound Codec	Realtek® ALC888S for Sound Driver Installation	X	✓
D:\Driver\Platform\Win10 (32/64-bit)\Hotfix	Microsoft Hotfix kb3211320 and kb3213986 for Windows10 32/64-bit critical security update	X	✓
D:\Driver\Device	Driver Installation for Barcode Scanner, IC Card Reader, Thermal Printer, RFID Reader, Touchscreen, etc.	X	✓

X : Not supported

✓: Supported

Note: Install the driver utilities immediately after the OS installation is completed.

4.2 Installing Intel® Chipset Software Installation Utility

4.2.1 Introduction

The Intel® Chipset Software Installation Utility installs the 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 that the following functions work properly:

- Core PCI and ISAPNP Services
- PCIe Support
- SATA Storage Support
- USB Support
- Identification of Intel® Chipset Components in the Device Manager

4.2.2 Intel® Chipset Software Installation Utility

The utility pack is to be installed only for Windows® 10 (32-bit and 64-bit) series, and it should be installed immediately after the OS installation is finished. Please follow the steps below:

1. Connect the USB DVD-ROM device to KF-7270 and insert the driver disk.
2. Enter the **Main Chip** folder where the Chipset driver is located.
3. Click **SetupChipset.exe** file for driver installation.
4. Follow the on-screen instructions to install the driver.
5. Once the installation is completed, shut down the system and restart KF-7270 for the changes to take effect.

4.3 Installing Graphics Driver Utility

The Graphics interface embedded in KF-7270 can support a wide range of display types. You can have dual displays via LVDS interfaces and make the system work simultaneously.

To install the Graphics driver utility, follow the steps below:

1. Connect the USB DVD-ROM device to KF-7270 and insert the driver disk.
2. Enter the **Graphics** folder where the driver is located (depending on your OS platform).
3. Click the **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart KF-7270 for the changes to take effect.

4.4 Installing LAN Driver Utility

Enhanced with LAN function, KF-7270 supports various network adapters. To install the LAN Driver, follow the steps below:

1. Connect the USB DVD-ROM device to KF-7270 and insert the driver disk.
2. Enter the **LAN Chip** folder where the driver is located (depending on your OS platform).
3. Click **Autorun.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart KF-7270 for the changes to take effect.

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

4.5 Installing Sound Driver Utility

The sound function enhanced in this system is fully compatible with Windows® 10 series.

To install the Sound Driver, follow the steps below:

1. Connect the USB DVD-ROM device to KF-7270 and insert the driver disk.
2. Open the **Sound Codec** folder where the driver is located.
3. Click the audio driver file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart KF-7270 for the changes to take effect.

4.5.1 Installing Intel® Management Engine Components Installer

Installation Instructions for Intel® Management Engine Components Installer

1. Connect the USB DVD-ROM device to KF-7270 and insert the driver disk.
2. Enter the **ME** folder where the ME driver is located.
3. Click **SetupME.exe** file for ME driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart KF-7270 for the changes to take effect.

4.5.2 Installing Microsoft Hotfix kb3211320 and kb3213986 Driver Utility

The Microsoft Hotfix driver utility can only be installed on a Windows 10 (32/64-bit) platform.

1. Connect the USB DVD-ROM device to KF-7270 and insert the driver disk.
2. Enter the **Hotfix** folder where the driver is located and select your OS platform.
   If your OS platform is Win 10 32-bit, go to Step 3.
   If your OS platform is Win 10 64-bit, go to Step 4.
3. For Win 10 32-bit platform, click the
   windows10.0-kb3211320-x86 and
   windows10.0-kb3213986-x86 files for critical security update.
4. For Win 10 64-bit platform, click the
   windows10.0-kb3211320-x64 and
   windows10.0-kb3213986-x64 files for critical security update.
5. Follow the on-screen instructions to complete the installation.
6. Once the installation is completed, shut down the system and restart KF-7270 for the changes to take effect.

5 BIOS SETUP

This chapter guides users how to configure the basic system configurations via the BIOS Setup Utilities. The information of the system configuration is saved in battery-backed CMOS RAM and BIOS NVRAM so that the Setup information is retained when the system power is off. The BIOS Setup Utilities consist of the following menu items:

- Main Menu
- Advanced Menu
- Chipset Menu
- Security Menu
- Boot Menu
- Save & Exit Menu

5.1 Introduction

The KF-7270 Kiosk System uses an AMI (American Megatrends Incorporated) Aptio BIOS that is stored in the Serial Peripheral Interface Flash Memory (SPI Flash) and can be updated. The SPI Flash contains the built-in BIOS setup program, Power-On Self-Test (POST), 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 the operating system and platform firmware. The interface consists of data tables that contain platform-related information, boot service calls, and runtime service calls that are available to the operating system and its loader. These elements have combined to provide a standard environment for booting the operating system and running pre-boot applications.

The diagram below shows the Extensible Firmware Interface's location in the software stack.

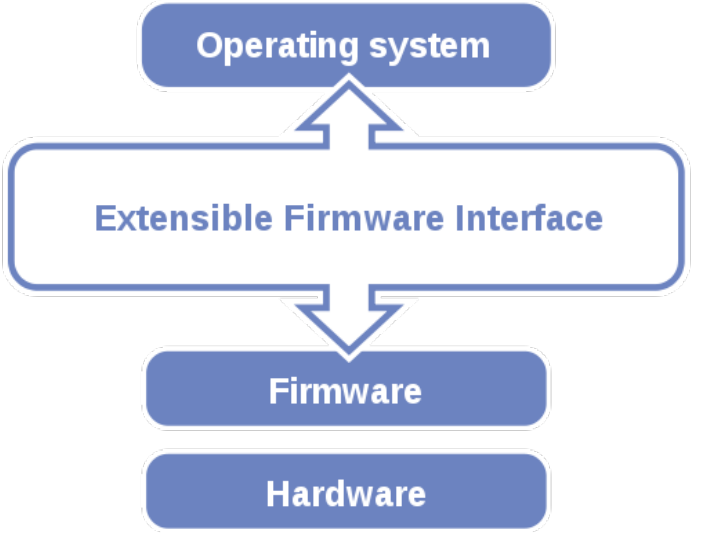


Figure 5-1. Extensible Firmware Interface Diagram

EFI BIOS provides an user interface that allows you to modify hardware configuration, e.g. change the system date and time, enable/disable a system component, determine bootable device priority, set up personal password, etc., which is convenient for engineers to perform modifications and customize the computer system and allows technicians to troubleshoot the occurred errors when the hardware is faulty.

The BIOS setup menu allows users to view and modify the BIOS settings for the computer. After the system is powered on, users can access the BIOS setup menu by pressing <Del> or <Esc> immediately while the POST message is running before the operating system is loading.

All the menu settings are described in details in this chapter.

5.2 Accessing Setup Utility

After the system is powered on, BIOS will enter the Power-On Self-Test (POST) routines and the POST message will be displayed:

Figure 5-2. POST Screen with AMI Logo

Press the <Del> key to access the Setup Utility program.

After you type the correct password and press **Enter**, the **Main** menu of the Aptio Setup Utility will appear on the screen as below:

Figure 5-3. BIOS Setup Menu Initialization Screen

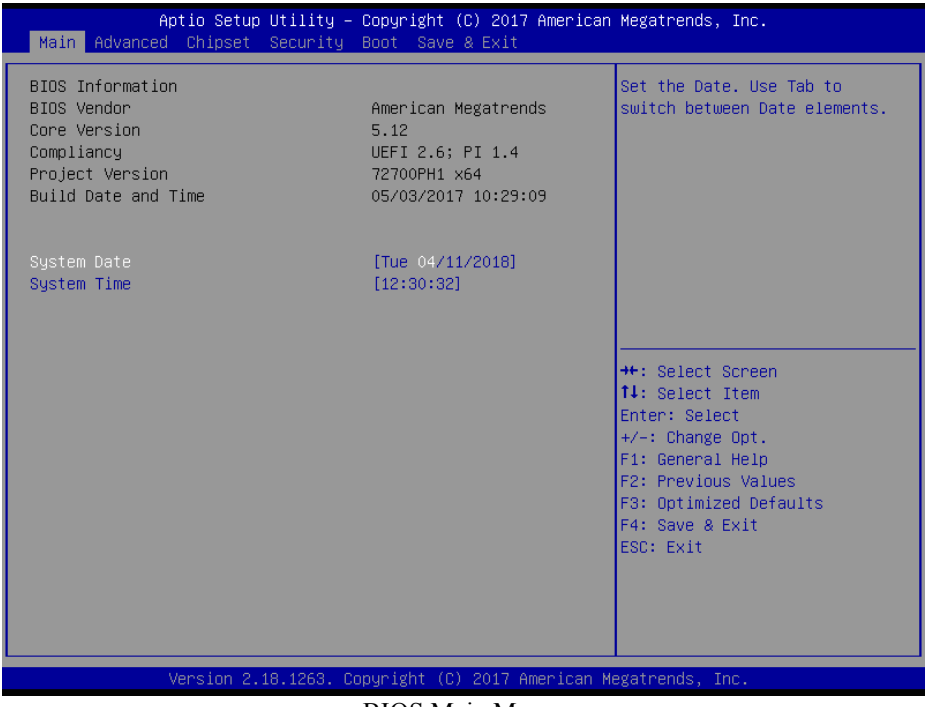
The language of the BIOS setup menu interface and help messages are shown in US English. You may use the up <↑> /down <↓> arrow key to select among the items and press <Enter> to confirm and enter the sub-menu. A brief help message of the selected item will also appear at the bottom of the screen for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

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

5.3 Main Menu

Menu Path *Main*

The **Main** menu allows you to view the BIOS Information, change the system date and time, and view the user access privilege level. Use tab to switch between date elements.



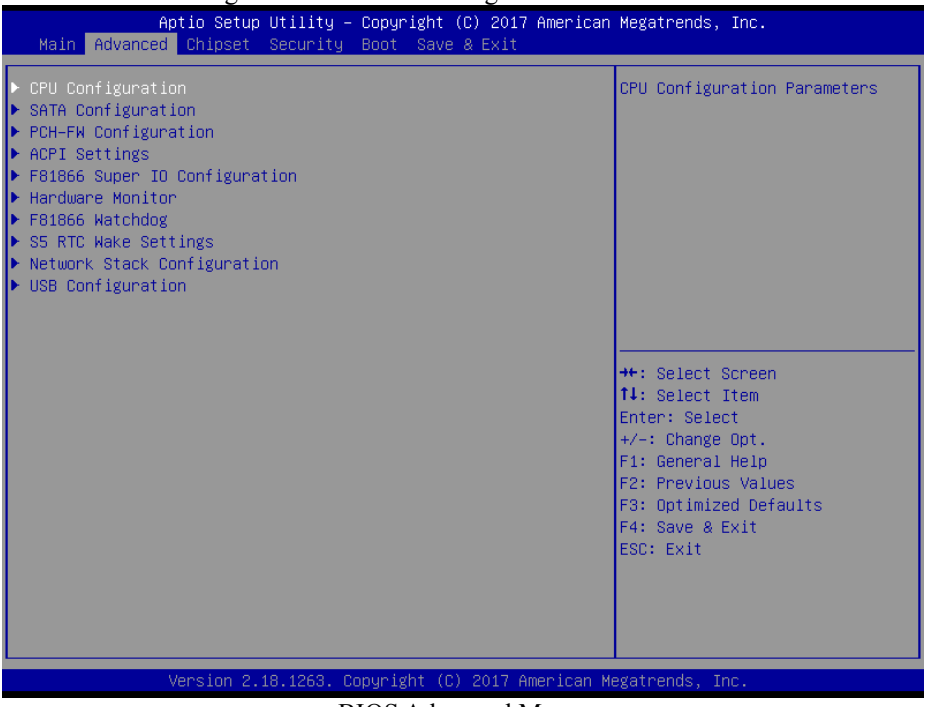
BIOS Main Menu

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 the current BIOS version.
System Date	month, day, year	Sets the current date. The “Day” is automatically changed.
System Time	hour, minute, second	Sets the clock of the system.

5.4 Advanced

Menu Path *Advanced*

This menu provides advanced configurations such as CPU Configuration, SATA Configuration, PCH-FW Configuration, ACPI Settings, F81866 Super IO Configuration, Hardware Monitor, F81866 Watchdog, S5 RTC Wake Settings, Network Stack Configuration and USB Configuration.



BIOS Advanced Menu

BIOS Setting	Options	Description/Purpose
CPU Configuration	Sub-Menu	CPU Configuration Parameters.
SATA Configuration	Sub-Menu	SATA Device Options Settings.
PCH-FW Configuration	Sub-Menu	Management Engine Technology Parameters.
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.
S5 RTC Wake Settings	Sub-Menu	S5 RTC Wake Settings
Network Stack Configuration	Sub-Menu	Network Stack Settings
USB Configuration	Sub-Menu	USB Configuration Parameters.

5.4.1 Advanced - CPU Configuration

Menu Path *Advanced > CPU Configuration*

The **CPU Configuration** provides advanced CPU settings and some information about CPU.

CPU Configuration Screen

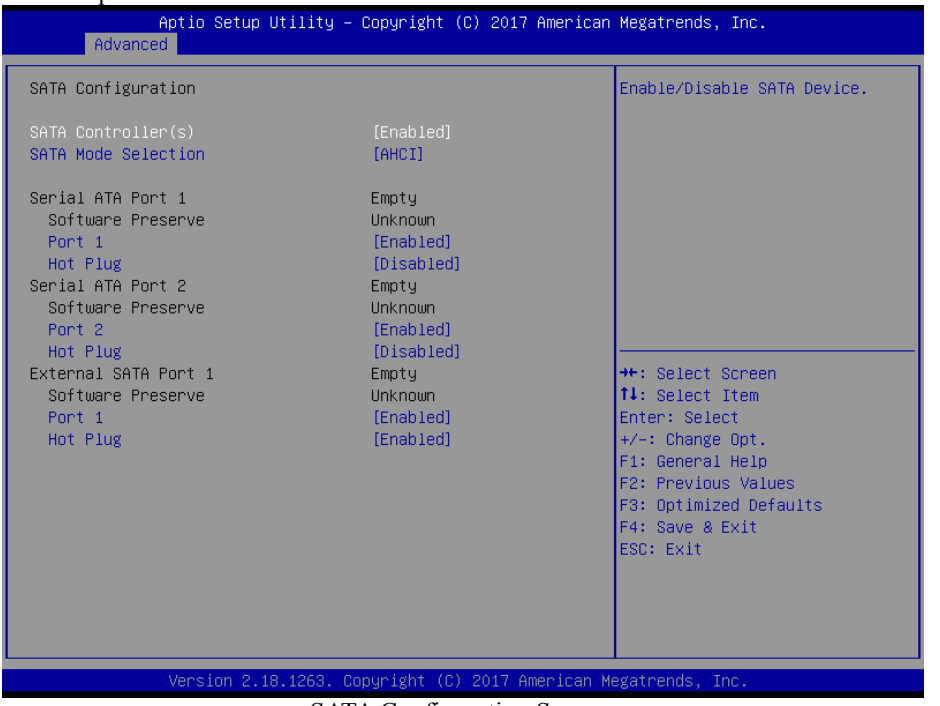
BIOS Setting	Options	Description/Purpose
Type	No changeable options	Displays CPU Model.
CPU Signature	No changeable options	Displays CPU Signature.
Microcode Patch	No changeable options	CPU Microcode Patch Revision.
CPU Speed	No changeable options	Displays the CPU Speed.
Processor Cores	No changeable options	Displays the number of cores.
VMX	No changeable options	Reports if Intel VT-x Technology is supported by the processor. Previously codenamed "Vanderpool", **VT-x** represents Intel's technology for virtualization on the x86 platform. Utilizing Vanderpool Technology

BIOS Setting	Options	Description/Purpose
		(VT), a VMM (Virtual Machine Monitor) can utilize the additional hardware capabilities.
SMX/TXT	No changeable options	Reports if Intel Secure Mode Extensions Technology is supported by the processor.
L1 Data Cache	No changeable options	L1 Data Cache Size.
L1 Instruction Cache	No changeable options	L1 Instruction Cache Size.
L2 Cache	No changeable options	L2 Cache Size.
L3 Cache	No changeable options	L3 Cache Size.
L4 Cache	No changeable options	L4 Cache Size.
Hyper-Threading	- Disabled - Enabled	When disabled, only one thread per enabled core is enabled.
Active Processor Cores	- All - 1 to n (depend on CPU)	Number of cores to enable in each processor package.
Intel (VMX) Virtualization Technology	- Disabled - Enabled	When enabled, a VMM (Virtual Machine Monitor) can utilize the additional hardware capabilities provided by Vanderpool Technology (VT).

5.4.2 Advanced - SATA Configuration (AHCI Mode)

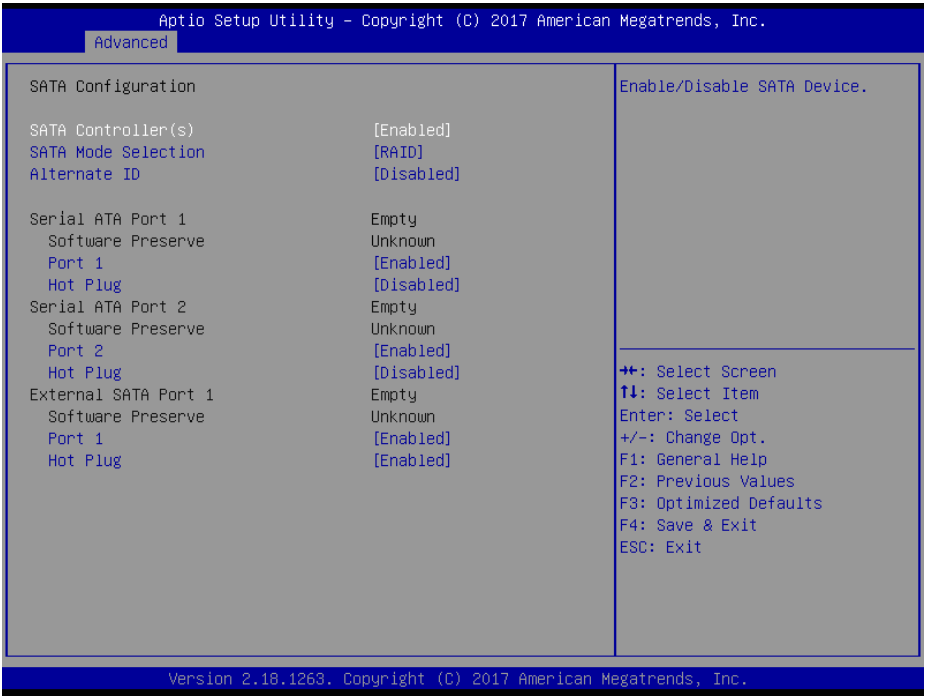
Menu Path *Advanced > SATA Configuration [AHCI Mode]*

The **SATA Configuration** allows users to enable / disable the SATA controller as well as the operational mode after the SATA controller is enabled. The following screen indicates the functions available when the SATA controller is enabled and the AHCI mode is specified.



SATA Configuration Screen

BIOS Setting	Options	Description/Purpose
SATA Controller(s)	- Disabled - Enabled	Enables or Disables SATA Device.
SATA Mode Selection	- AHCI - RAID	Determines how SATA controller(s) operate.
Serial ATA Port 1 – 2, External SATA Port 1	No changeable options	Displays the SATA device's name.
Software Preserve	No changeable options	Displays if Software Preserve is supported.
Port 1 - 2	- Disabled - Enabled	Enables or Disables SATA Port Device.
Hot Plug	- Disabled - Enabled	Enables or Disables SATA Port Device Hot Plug function.



SATA Configuration Screen (RAID, for Q170 only)

BIOS Setting	Options	Description/Purpose
SATA Controller(s)	- Disabled - Enabled	Enables or Disables SATA Device.
SATA Mode Selection	- AHCI - RAID	Determines how SATA controller(s) operate.
Alternate ID	- Disabled - Enabled	Reports alternate Device ID.
Serial ATA Port 1 – 2, External SATA Port 1	No changeable options	Displays the SATA device's name.
Software Preserve	No changeable options	Displays if Software Preserve is supported.
Port 1 - 2	- Disabled - Enabled	Enables or Disables SATA Port Device.
Hot Plug	- Disabled - Enabled	Enables or Disables SATA Port Device Hot Plug function.

5.4.3 Advanced - PCH-FW Configuration

Menu Path *Advanced >PCH-FW Configuration*

The **PCH-FW** allows users to view the information about ME (Management Engine) firmware information, such ME firmware version, firmware mode and firmware SKU.

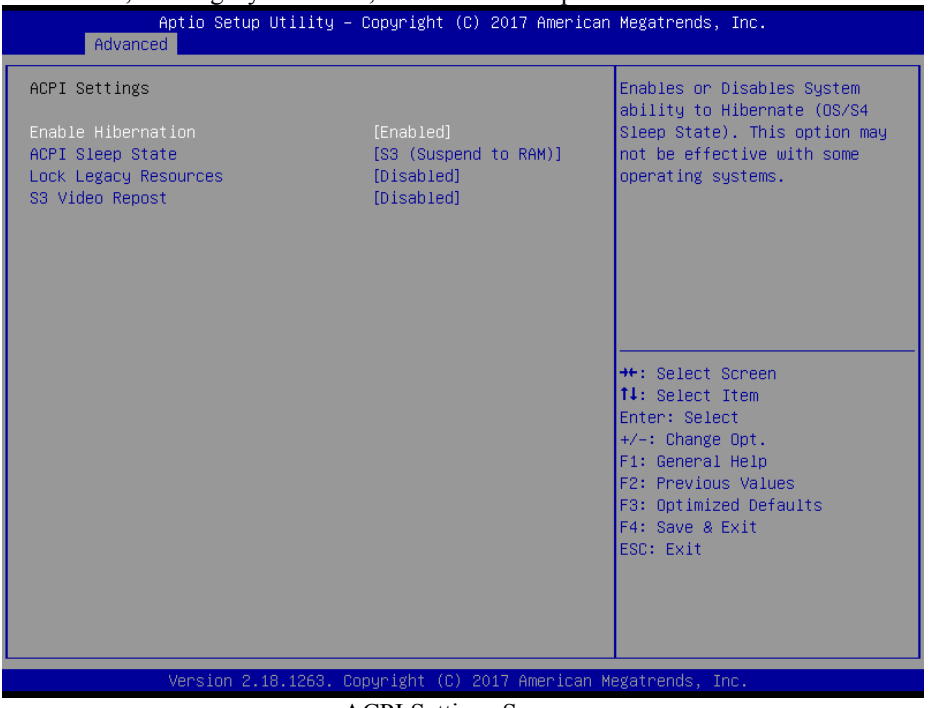
PCH-FW Configuration Screen

BIOS Setting	Options	Description/Purpose
ME FW Version	No changeable options	Displays the ME Firmware Version.
ME Firmware Mode	No changeable options	Displays the ME Firmware Mode.
ME Firmware SKU	No changeable options	Displays the ME Firmware SKU.

5.4.4 Advanced - ACPI Settings

Menu Path *Advanced >ACPI Settings*

The **ACPI Settings** allows users to configure relevant ACPI (Advanced Configuration and Power Management Interface) settings, such as ACPI Sleep State, Hibernation, lock legacy resources, and S3 Video Repost.

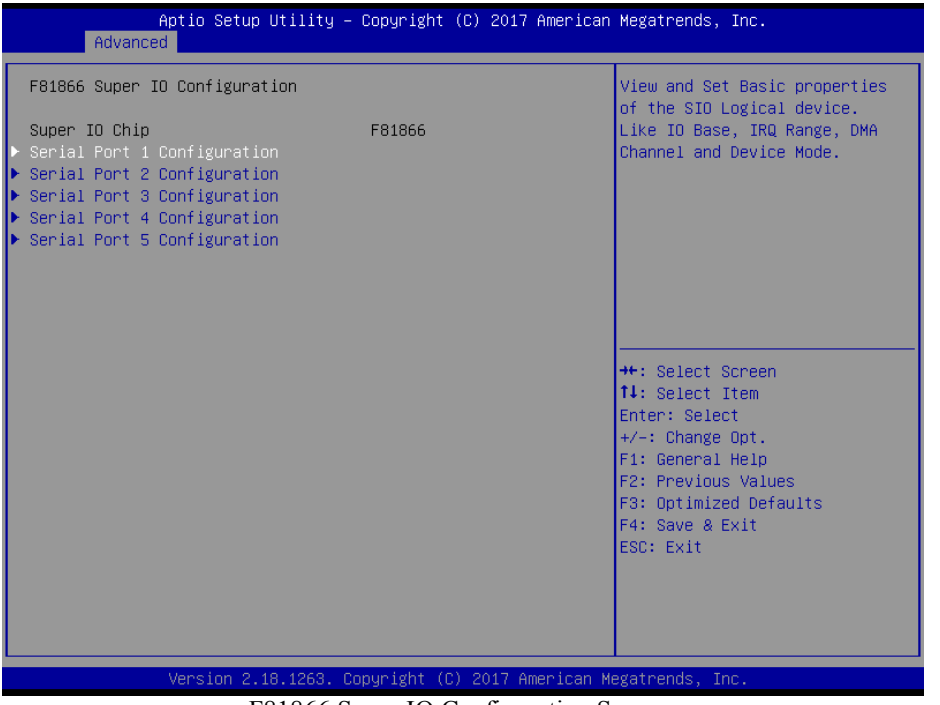


ACPI Settings Screen

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.
ACPI Sleep State	- Suspend Disabled - S3 (Suspend to RAM)	Selects the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
Lock Legacy Resources	- Disabled - Enabled	Enables or Disables Lock of Legacy Resources.
S3 Video Repost	- Disabled - Enabled	Enables or Disables S3 Video Repost.

5.4.5 Advanced - F81866 Super IO Configuration

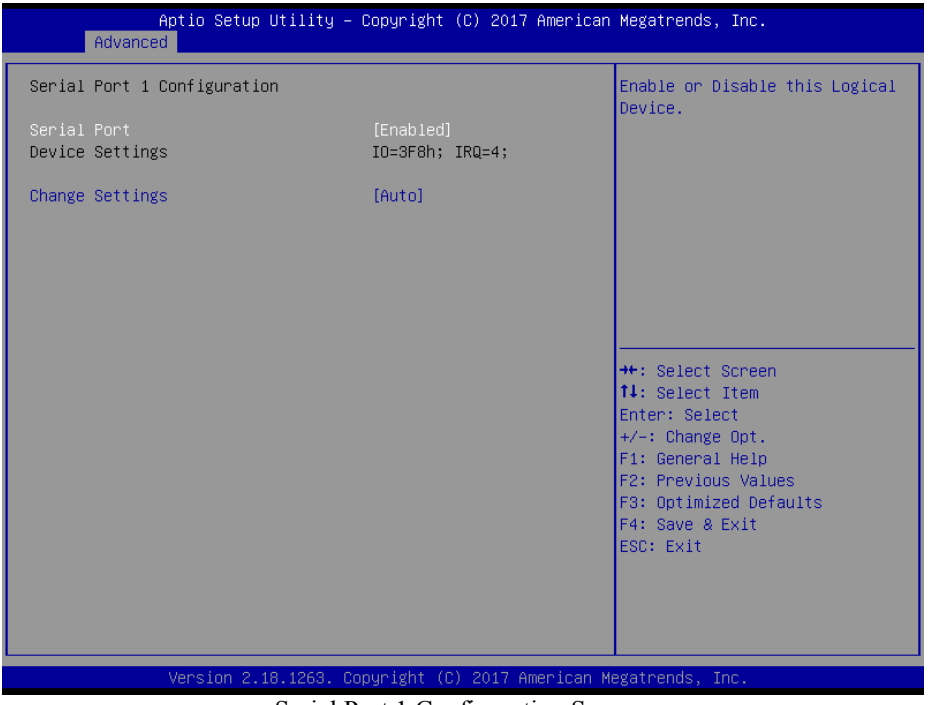
Menu Path *Advanced >F81866 Super IO Configuration*



F81866 Super IO Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port 1 Configuration	Sub-Menu	Sets Parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration	Sub-Menu	Sets Parameters of Serial Port 2 (COMB).
Serial Port 3 Configuration	Sub-Menu	Sets Parameters of Serial Port 3 (COMC).
Serial Port 4 Configuration	Sub-Menu	Sets Parameters of Serial Port 4 (COMD).
Serial Port 5 Configuration	Sub-Menu	Sets Parameters of Serial Port 5 (COME).

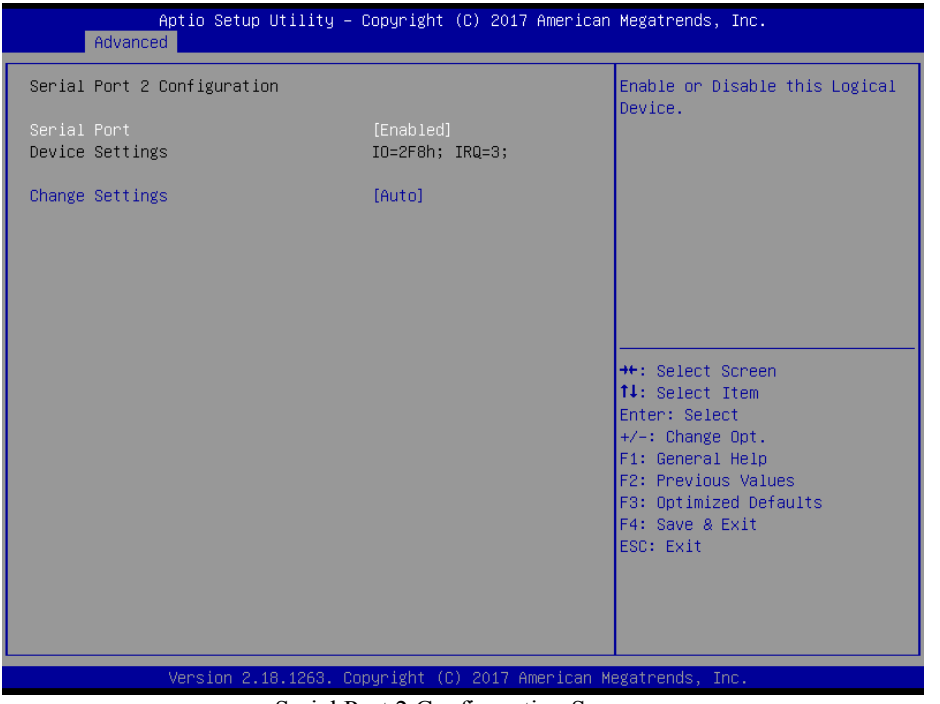
Menu Path *Advanced >F81866 Super IO Configuration > Serial Port 1 Configuration*



Serial Port 1 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	- Disabled - Enabled	Enables or Disables Serial Port 1.
Device Settings	No changeable options	Displays the current settings of Serial Port 1.
Change Settings	- 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;	Selects IRQ and I/O resource setting for Serial Port 1.

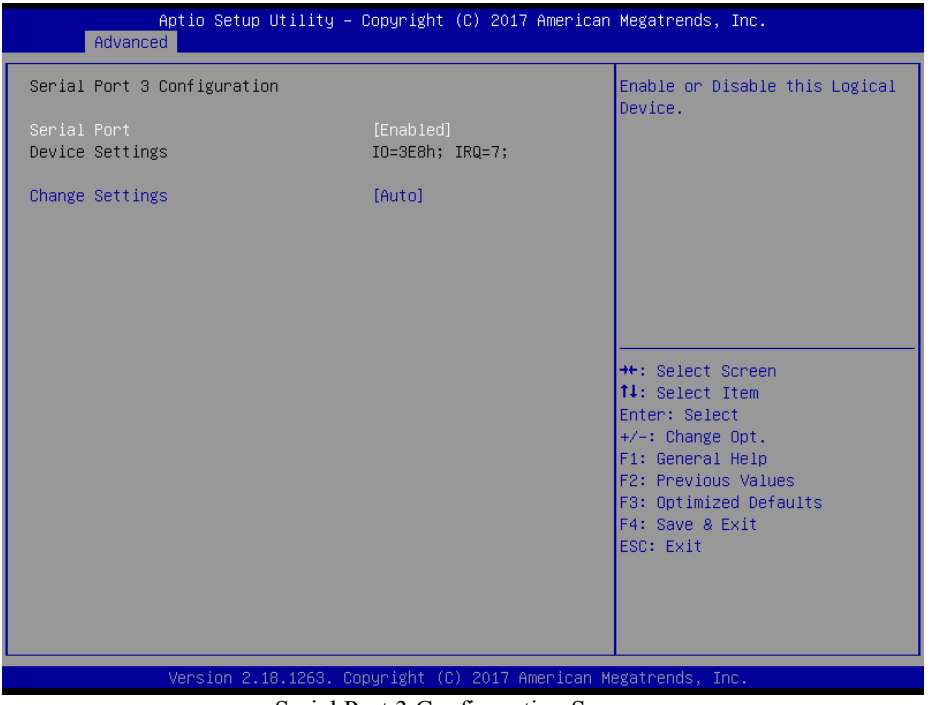
Menu Path *Advanced >F81866 Super IO Configuration > Serial Port 2 Configuration*



Serial Port 2 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	- Disabled - Enabled	Enables or Disables Serial Port 2.
Device Settings	No changeable options	Displays the current settings of Serial Port 2.
Change Settings	- 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;	Selects IRQ and I/O resource setting for Serial Port 2.

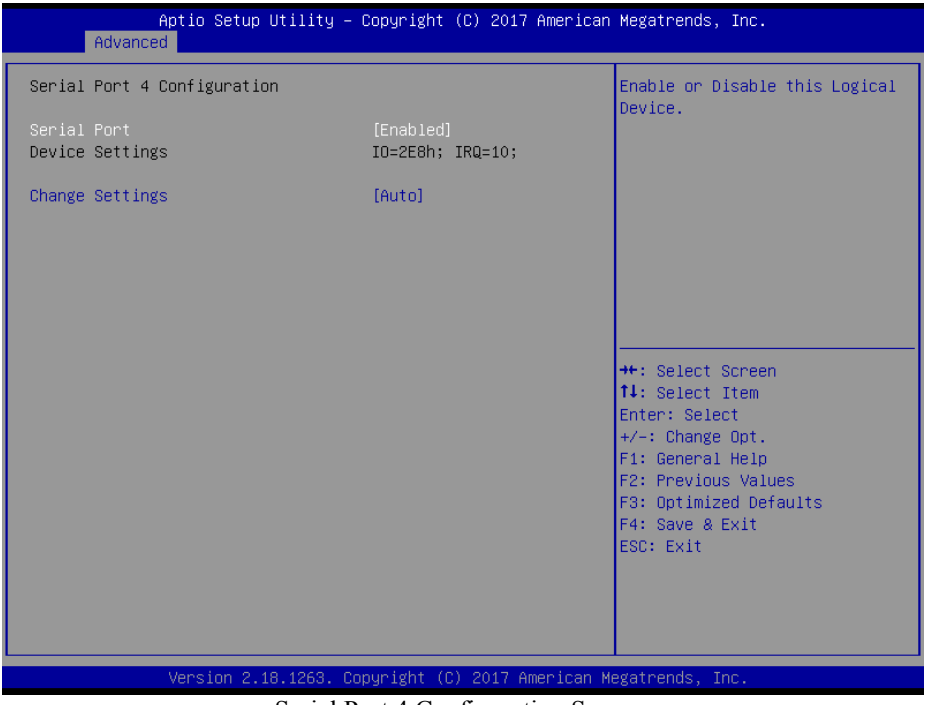
Menu Path *Advanced >F81866 Super IO Configuration > Serial Port 3 Configuration*



Serial Port 3 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	- Disabled - Enabled	Enables or Disables Serial Port 3.
Device Settings	No changeable options	Displays the current settings of Serial Port 3.
Change Settings	- 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;	Selects IRQ and I/O resource setting for Serial Port 3.

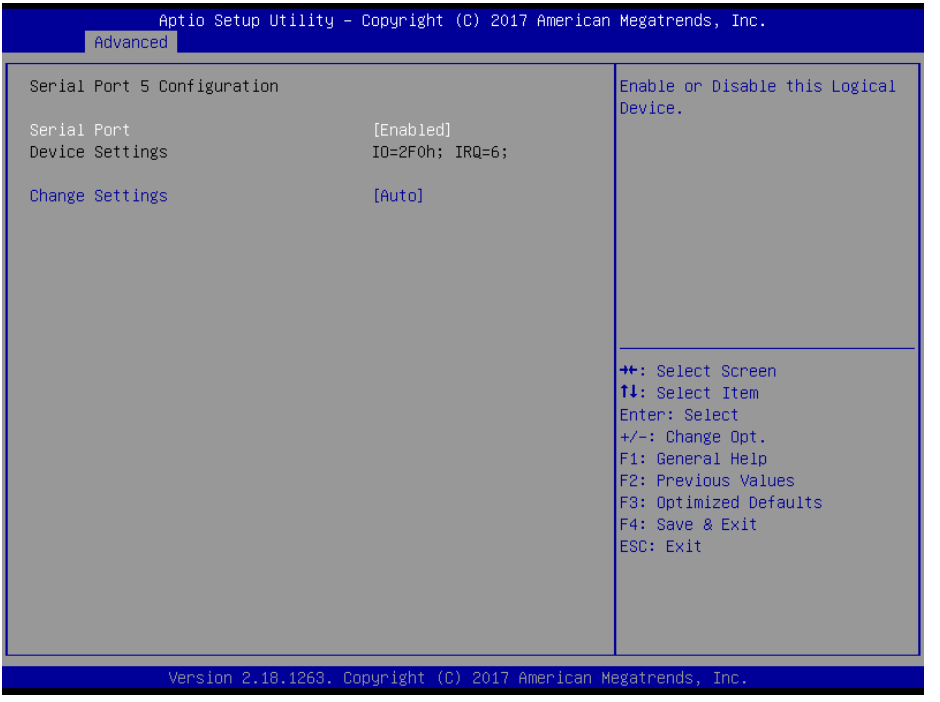
Menu Path *Advanced >F81866 Super IO Configuration > Serial Port 4 Configuration*



Serial Port 4 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	- Disabled - Enabled	Enables or Disables Serial Port 4.
Device Settings	No changeable options	Displays the current settings of Serial Port 4.
Change Settings	- 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;	Selects IRQ and I/O resource setting for Serial Port 4.

Menu Path *Advanced >F81866 Super IO Configuration > Serial Port 5 Configuration*



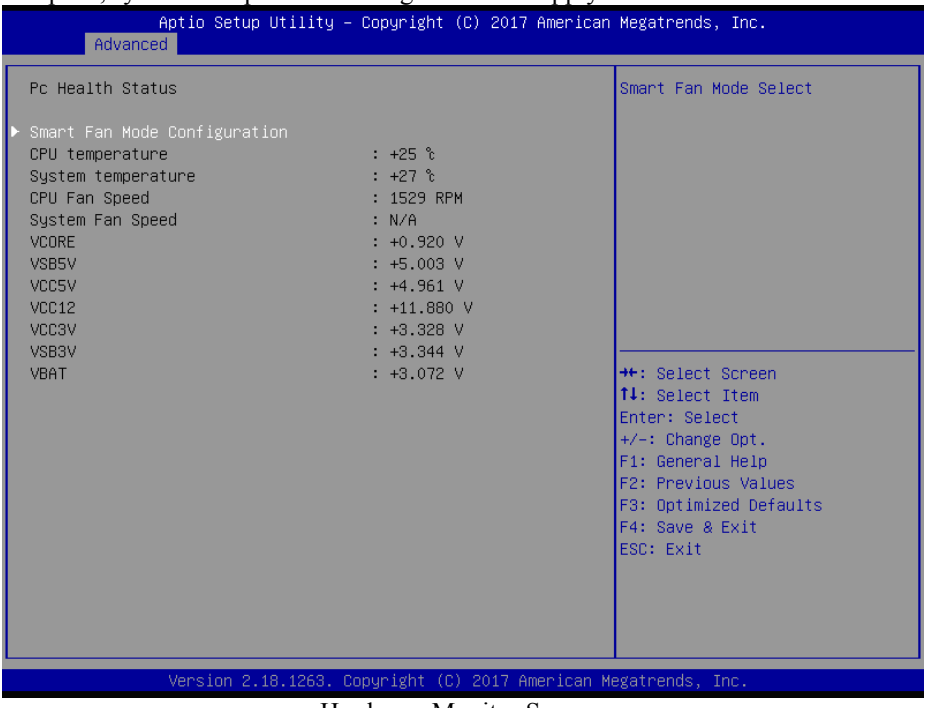
Serial Port 5 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	- Disabled - Enabled	Enables or Disables Serial Port 5.
Device Settings	No changeable options	Displays the current settings of Serial Port 5.
Change Settings	- Auto - IO=2F0h; IRQ=6; - 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 setting for Serial Port 5.

5.4.6 Advanced - Hardware Monitor

Menu Path *Advanced >Hardware Monitor*

The **Hardware Monitor** allows users to monitor the health and status of the system such as Smart Fan Mode Configuration, CPU temperature, system temperature, CPU fan speed, system fan speed and voltage levels in supply.



Hardware Monitor Screen

BIOS Setting	Options	Description/Purpose
Smart Fan Mode Configuration	Sub-Menu	Smart Fan Mode Selection
CPU Temperature	No changeable options	Displays the processor's temperature.
System Temperature	No changeable options	Displays the system's temperature.
CPU Fan Speed	No changeable options	Displays CPU Fan speed.
System Fan Speed	No changeable options	Displays the System Fan speed.
VCORE	No changeable options	Displays the voltage level of VCORE in supply.
VSB5V	No changeable options	Displays the voltage level of VSB5V in supply.

BIOS Setting	Options	Description/Purpose
VCC5V	No changeable options	Displays the voltage level of VCC5V in supply.
VCC12	No changeable options	Displays the voltage level of VCC12 in supply.
VCC3V	No changeable options	Displays the voltage level of VCC3V in supply.
VSB3V	No changeable options	Displays the voltage level of VSB3V in supply.
VBAT	No changeable options	Displays the voltage level of VBAT in supply.

Menu Path *Advanced >Hardware Monitor > Smart Fan Mode Configuration*

Smart Fan Mode Configuration Screen

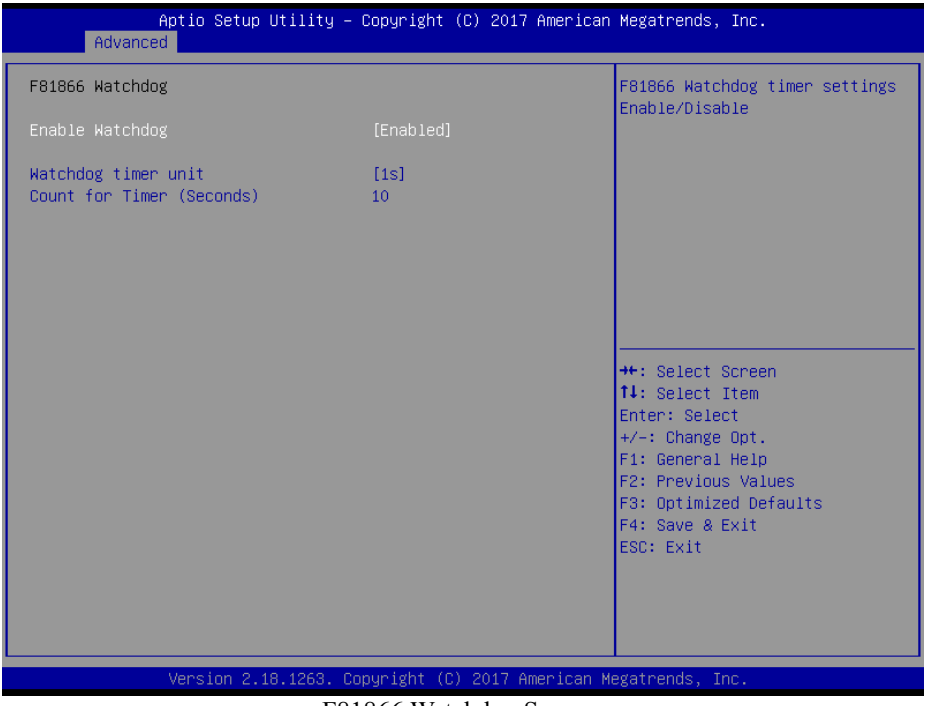
BIOS Setting	Options	Description/Purpose
CPU Fan Smart Fan Control	- Manual Duty Mode - Auto Duty-Cycle Mode	Smart Fan Mode selection for CPU Fan.
Manual Duty Mode	Numeric (from 1 to 100)	Manual mode fan control. Users can write expected duty cycle (PWM fan type) from 1 to 100.
System Fan Smart Fan Control	- Manual Duty Mode - Auto Duty-Cycle Mode	Smart Fan Mode selection for System Fan.

BIOS Setting	Options	Description/Purpose
Manual Duty Mode	Numeric (from 1 to 100)	Manual mode fan control. Users can write expected duty cycle (PWM fan type) from 1 to 100.

5.4.7 Advanced - F81866 Watchdog Configuration

Menu Path *Advanced >F81866 Watchdog Configuration*

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



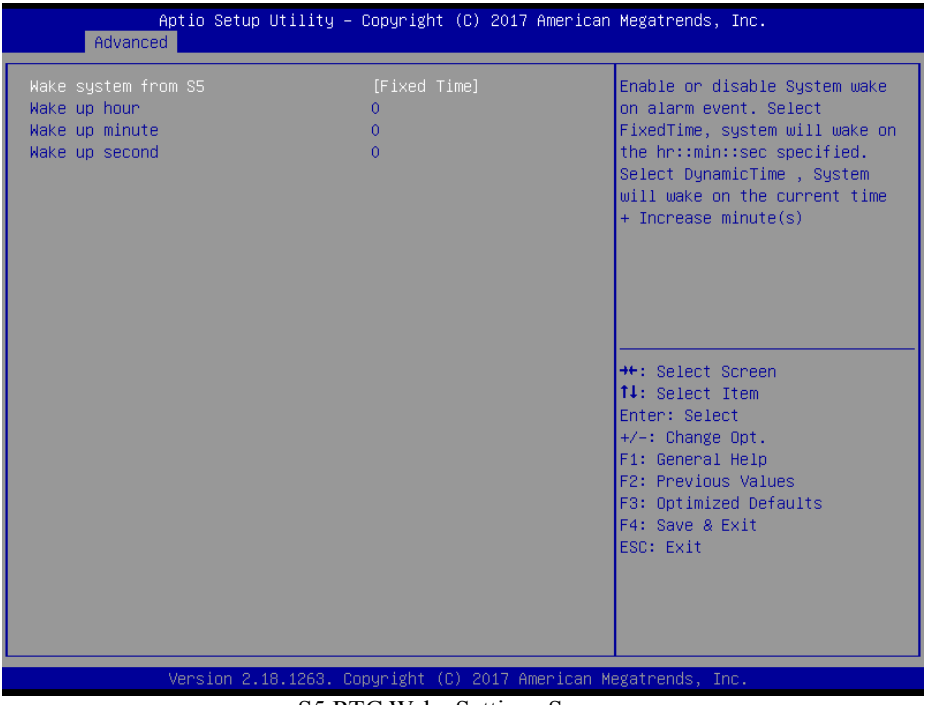
F81866 Watchdog Screen

BIOS Setting	Options	Description/Purpose
Enable Watchdog	- Enabled - Disabled	F81866 Watchdog timer settings Enable/Disable.
Watchdog timer unit	- 1s - 60s	Selects 1s (second) or 60s (minute) as the time unit of Watchdog timer.
Count for Timer (Seconds)	Numeric (from 1 to 255)	Sets the timeout for Watchdog timer. (Max. value: 255 seconds or minutes)

5.4.8 Advanced - S5 RTC Wake Settings

Menu Path *Advanced >S5 RTC Wake Settings*

The **S5 RTC Wake Settings** enables/disables the system to wake up at a preset time of a day from S5 State using RTC alarm.



S5 RTC Wake Settings Screen

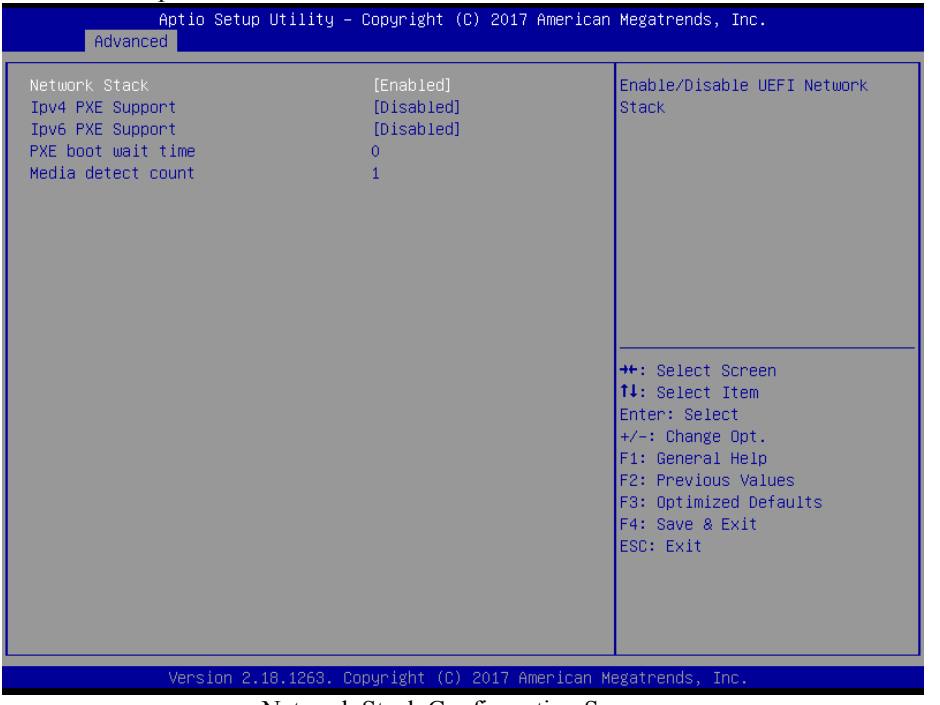
BIOS Setting	Options	Description/Purpose
Wake system from S5	- Disabled - Fixed Time - Dynamic Time	Enables or disables System wake up alarm event. • **Fixed Time:** The system will wake up at the time (hr::min::sec) specified. • **Dynamic Time:** The system will wake up at the current time + Increase minute(s).
Wake up hour	Numeric (from 0 to 23)	Enters **0-23** to set the wake-up hour, e.g.: enters 3 for 3 a.m. and 15 for 3 pm
Wake up minute	Numeric (from 0 to 59)	Enters **0-59** to set the wake-up minute.
Wake up second	Numeric (from 0 to 59)	Enters **0-59** to set the wake-up second.
Wake up minute increase	Numeric (from 1 to 5)	Enters **1-5** to set the increased minute(s) for dynamic wake-up time.

5.4.9 Advanced - Network Stack Configuration

Menu Path *Advanced >Network Stack Configuration*

The **Network Stack Configuration** allows users to enable/disable UEFI Network Stack, IPv4/IPv6 PXE (Pre-Boot Execution) support and configure PXE boot wait time and detects the media presence.

PXE allows a workstation to boot from a server on a network prior to booting the operating system on the local hard drive. A PXE-enabled workstation connects its NIC to the LAN via a jumper, which keeps the workstation connected to the network even when the power is turned off.



Network Stack Configuration Screen

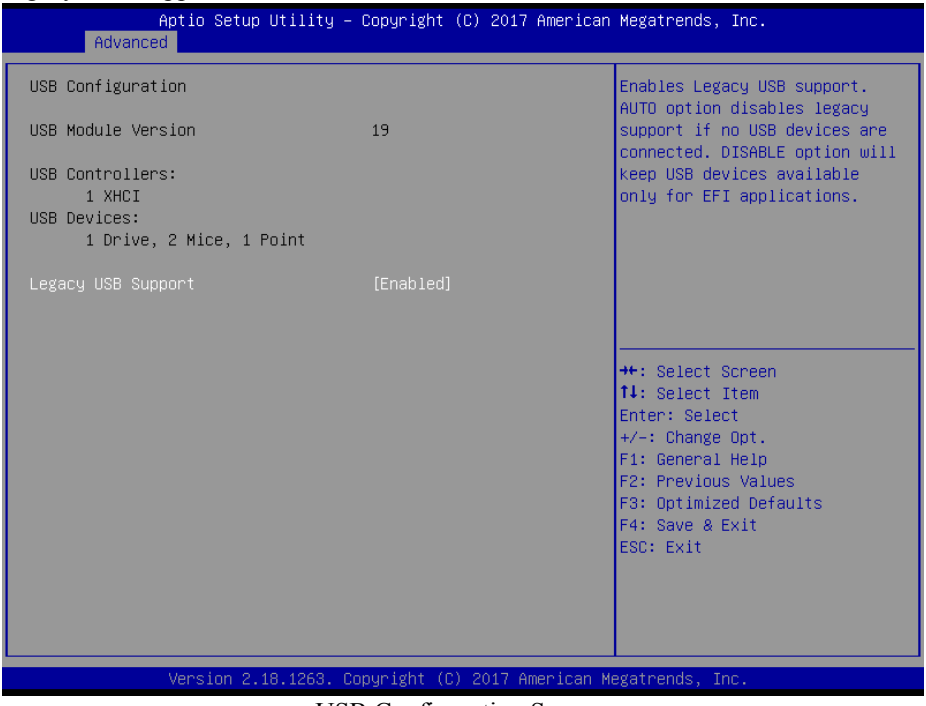
BIOS Setting	Options	Description/Purpose
Network Stack	- Disabled - Enabled	Enables or Disables UEFI Network Stack.
Ipv4 PXE Support	- Disabled - Enabled	Enables Ipv4 PXE Boot Support. If disabled, Ipv4 PXE boot option will not be created.
Ipv6 PXE Support	- Disabled - Enabled	Enables Ipv6 PXE Boot Support. If disabled, Ipv6 PXE boot option will not be created.

BIOS Setting	Options	Description/Purpose
PXE boot wait time	Numeric (from 0 to 5)	Wait time to press ESC key to abort the PXE boot.
Media detect count	Numeric (from 1 to 50)	Numbers of times that the presence of media will be checked.

5.4.10 Advanced - USB Configuration

Menu Path *Advanced >USB Configuration*

The **USB Configuration** allows users to configure advanced USB settings such as Legacy USB support.



USB Configuration Screen

BIOS Setting	Options	Description/Purpose
Legacy USB Support	- Disabled - Enabled - Auto	Sets to “Enabled” if you want to use USB device in the legacy operating system.

5.5 Chipset

Menu Path *Chipset*

This menu allows users to configure advanced Chipset settings such as System Agent (SA) and PCH-IO configuration parameters.

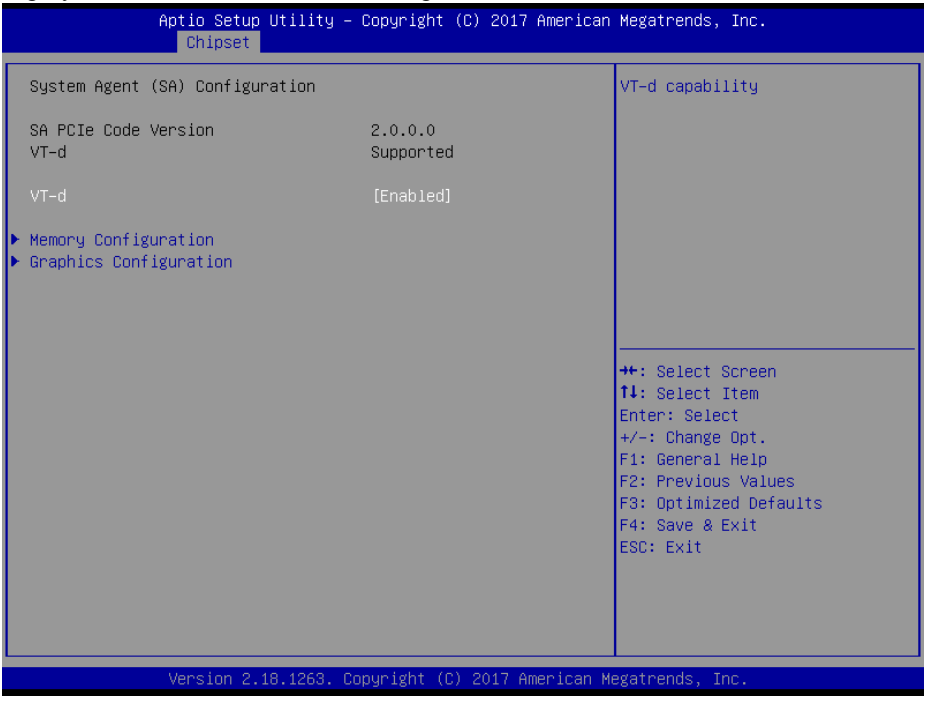
Chipset Screen

BIOS Setting	Options	Description/Purpose
System Agent (SA) Parameters	Sub-Menu	System Agent (SA) Parameters.
PCH-IO Configuration	Sub-Menu	PCH Parameters.

5.5.1 Chipset - System Agent (SA) Configuration

Menu Path *Chipset > System Agent (SA) Configuration*

The **System Agent Configuration** allows users to configure graphics settings and displays the DRAM information on the platform.



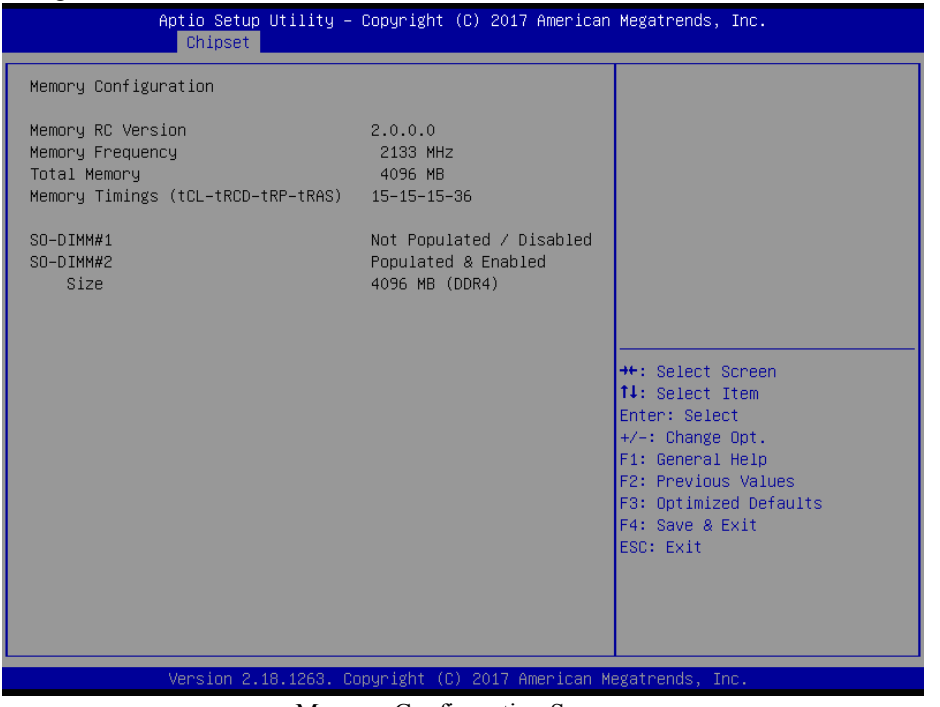
System Agent (SA) Configuration Screen

BIOS Setting	Options	Description/Purpose
SA PCIe Code Version	No changeable options	Displays the SA PCIe Code Version.
VT-d	No changeable options	Indicates whether Intel's VT-d (Virtualization Technology for Directed I/O) capability is supported. ***VT-d*** extends Intel's Virtualization Technology (VT) roadmap by providing hardware assists for virtualization solution, and helps end users improve security and reliability of the systems and also improves performance of I/O devices in virtualized environment.

BIOS Setting	Options	Description/Purpose
VT-d	- Disabled - Enabled	Enables or Disables VT-d function.
Memory Configuration	Sub-Menu	Memory Configuration
Graphics Configuration	Sub-Menu	Graphics Configuration

Menu Path *Chipset > System Agent (SA) Configuration > Memory Configuration*

The **Memory Configuration** allows users to check for the information about the memory frequency, total DRAM size, SO-DIMM#1, 2 size, and memory (RAM) timings.



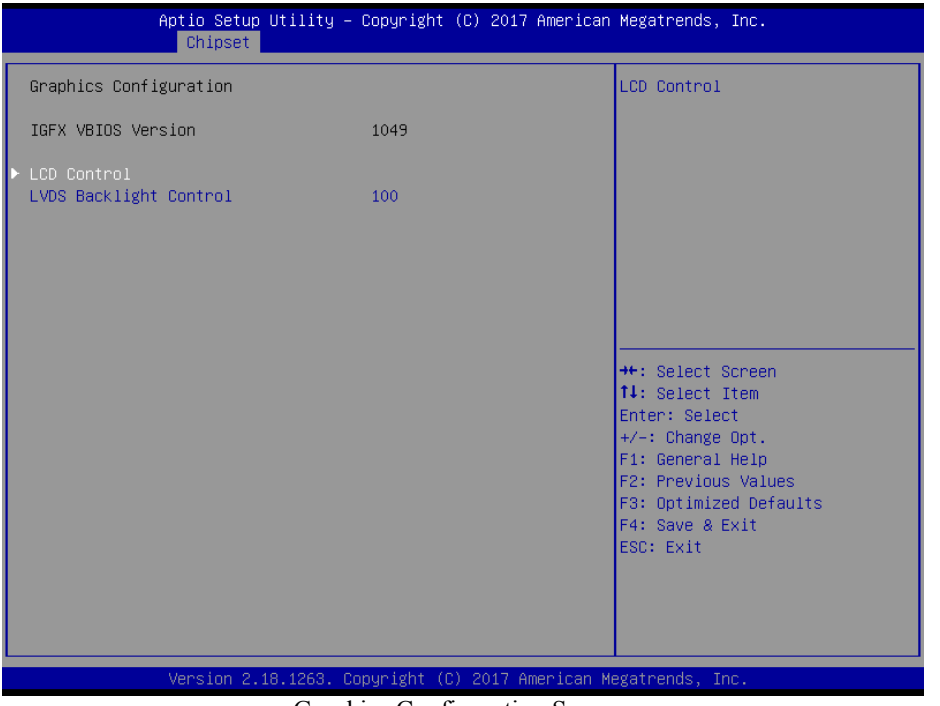
Memory Configuration Screen

BIOS Setting	Options	Description/Purpose
Memory RC Version	No changeable options	Displays the Memory RC Version.
Memory Frequency	No changeable options	Displays the Frequency of Memory.
Total Memory	No changeable options	Displays the Total Memory.

BIOS Setting	Options	Description/Purpose
Memory Timings (tCL-tRCD-tRP-tRAS)	No changeable options	Displays the Memory (RAM) timings and latency. • **CAS Latency (tCL) -** This is the most important memory timing. CAS stands for Column Address Strobe. If a row has already been selected, it tells us how many clock cycles we'll have to wait for a result (after sending a column address to the RAM controller). • **Row Address (RAS) to Column Address (CAS) Delay** (tRCD) - Once we send the memory controller a row address, we'll have to wait this many cycles before accessing one of the row's columns. So, if a row hasn't been selected, this means we'll have to wait tRCD + tCL cycles to get our result from the RAM. • **Row Precharge Time (tRP) -** If we already have a row selected, we'll have to wait this number of cycles before selecting a different row. This means it will take tRP + tRCD + tCL cycles to access the data in a different row. • **Row Active Time (tRAS) -** This is the minimum number of cycles that a row has to be active for to ensure we'll have enough time to access the information that's in it. This usually needs to be greater than or equal to the sum of the previous three latencies (tRAS = tCL + tRCD + tRP).
SO-DIMM#1	No changeable options	Displays the size of SO-DIMM#1.
SO-DIMM#2	No changeable options	Displays the size of SO-DIMM#2.

Menu Path *Chipset > System Agent (SA) Configuration > Graphics Configuration*

The **Graphics Configuration** allows users to adjust the LVDS backlight brightness for the LCD panel.



Graphics Configuration Screen

BIOS Setting	Options	Description/Purpose
IGFX VBIOS Version	No changeable options	Displays the IGFX VBIOS Version.
LCD Control	Sub-Menu	LCD Control Sub-Menu.
LVDS Backlight Control	Numeric (from 10 to 100)	Controls the LVDS backlight brightness ranging from 10 to 100 in scale.

Menu Path *Chipset > System Agent (SA) Configuration > Graphics Configuration > LCD Control*

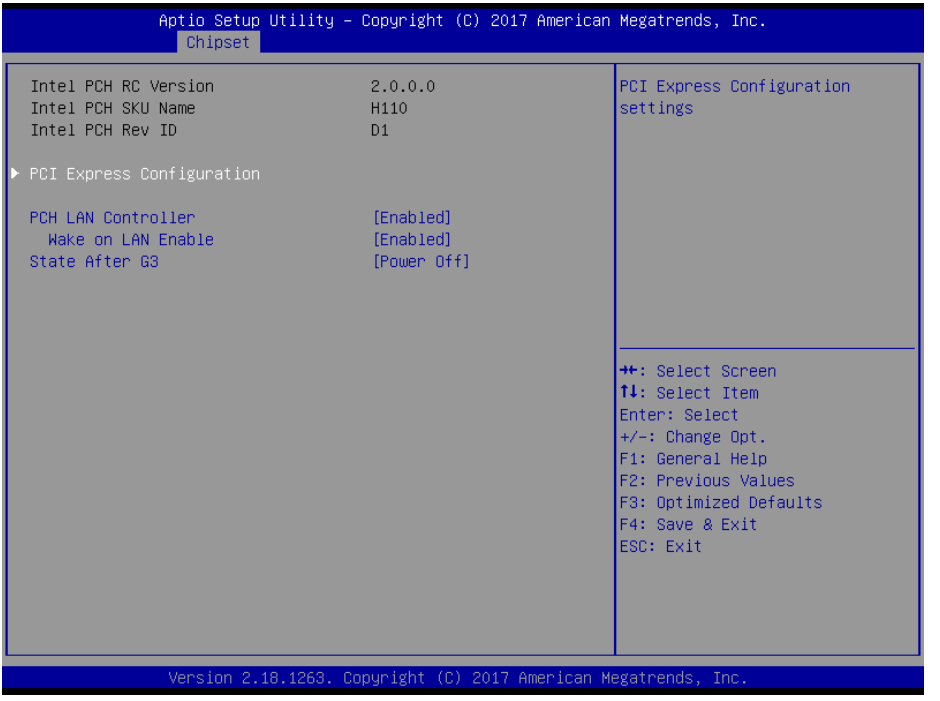
LCD Control Screen

BIOS Setting	Options	Description/Purpose
Primary IGFX Boot Display	- VBIOS default - VGA - LVDS	Selects Primary Display Device
Secondary IGFX Boot Display	- Disabled - VGA - LVDS	Selects Secondary Display Device

5.5.2 Chipset - PCH-IO Configuration

Menu Path *Chipset > PCH-IO Configuration*

The **PCH-IO** Configuration allows users to set PCI Express configuration parameters, enable/disable PCH LAN Controller and Wake-On-LAN function and determine the power on/off state that the system will go to following a power failure (G3 state).



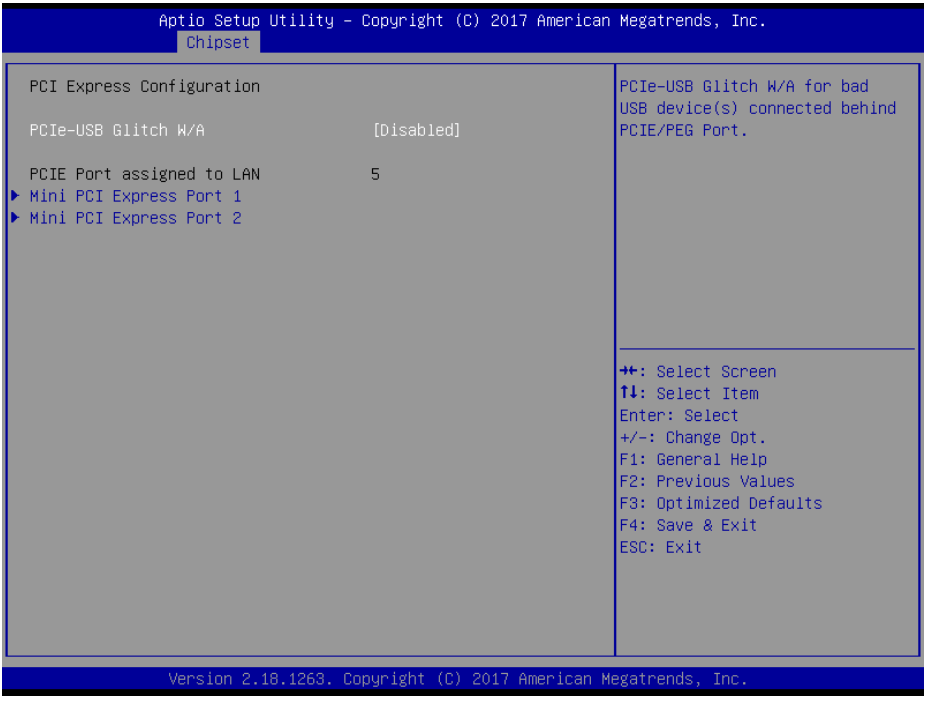
PCH-IO Configuration Screen

BIOS Setting	Options	Description/Purpose
Intel PCH RC Version	No changeable options	Displays the Intel PCH RC Version.
Intel PCH SKU Name	No changeable options	Displays the Intel PCH SKU Name.
Intel PCH Rev ID	No changeable options	Displays the Intel PCH Revision ID.
PCI Express Configuration	Sub-Menu	PCI Express Configuration settings.
PCH LAN Controller	- Disabled - Enabled	Enables or Disables onboard NIC.
Wake on LAN Enable	- Disabled - Enabled	Enables or Disables integrated LAN to wake the system.

BIOS Setting	Options	Description/Purpose
State After G3	- Power On - Power Off	Specifies what state to go to when power is re-applied following a power failure (G3 state).

Menu Path *Chipset > PCH-IO Configuration > PCI Express Configuration*

The **PCI Express Configuration** allows users to configure PCI Express slots, enable/disable the Mini PCI Express Ports 1-2, and set their bus speeds.



PCI Express Configuration Screen

BIOS Setting	Options	Description/Purpose
PCIe-USB Glitch W/A	- Disabled - Enabled	PCIe-USB Glitch W/A for bad USB devices(s) connected behind PCIE/PEG Port.
Mini PCI Express Port 1	Sub-Menu	Mini PCI Express Port 1 Settings.
Mini PCI Express Port 2	Sub-Menu	Mini PCI Express Port 2 Settings.

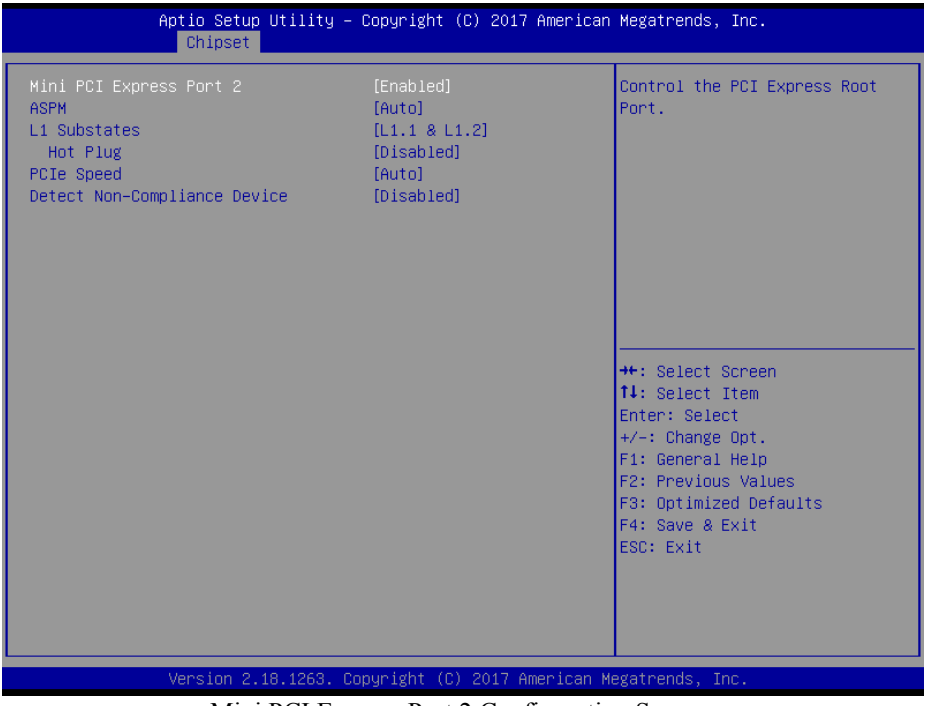
Menu Path *Chipset > PCH-IO Configuration > PCI Express Configuration > Mini PCI Express Port 1*

Mini PCI Express Port 1 Configuration Screen

BIOS Setting	Options	Description/Purpose
Mini PCI Express Port 1	- Disabled - Enabled	Controls the PCI Express Root Port.
ASPM	- Disabled - L0s - L1 - L0sL1 - Auto	Sets the ASPM (Active-State Power Management) Level. The option allows users to set lower power mode that activates when the bus is not being used.
L1 Substates	- Disabled - L1.1 - L1.2 - L1.1 & L1.2	PCI Express L1 Substates settings.
Hot Plug	- Disabled - Enabled	Enables or Disables PCI Express Hot Plug.

BIOS Setting	Options	Description/Purpose
PCIe Speed	- Auto - Gen1 - Gen2 - Gen3	Selects PCI Express Port Speed.
Detect Non-Compliance Device	- Disabled - Enabled	Detects Non-Compliance PCI Express Device. If enable, it will take more time at POST time.

Menu Path *Chipset > PCH-IO Configuration > PCI Express Configuration > Mini PCI Express Port 2*



Mini PCI Express Port 2 Configuration Screen

BIOS Setting	Options	Description/Purpose
Mini PCI Express Port 2	- Disabled - Enabled	Controls the PCI Express Root Port.
ASPM	- Disabled - L0s - L1	Sets the ASPM (Active-State Power Management) Level. The option allows users to set lower power

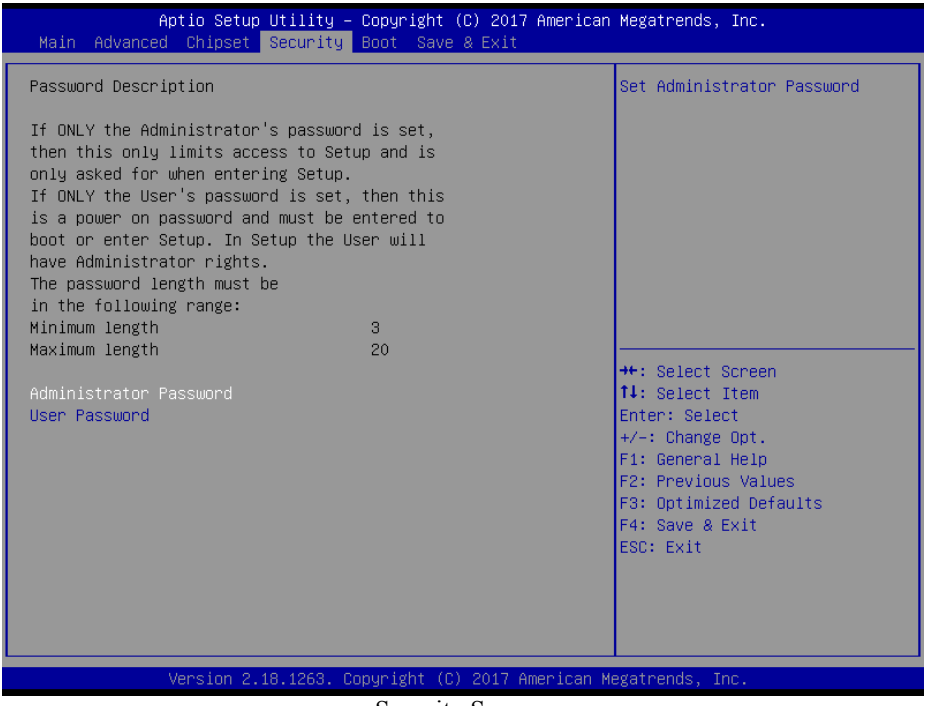
BIOS Setting	Options	Description/Purpose
	- L0sL1 - Auto	mode that activates when the bus is not being used.
L1 Substates	- Disabled - L1.1 - L1.2 - L1.1 & L1.2	PCI Express L1 Substates settings.
Hot Plug	- Disabled - Enabled	Enables or Disables PCI Express Hot Plug.
PCIe Speed	- Auto - Gen1 - Gen2 - Gen3	Selects PCI Express Port Speed.
Detect Non-Compliance Device	- Disabled - Enabled	Detects Non-Compliance PCI Express Device. If enable, it will take more time at POST time.

5.6 Security

Menu Path *Security*

From the **Security** menu, you are allowed to configure or change the administrator password. You will be asked to enter the configured administrator password before you can access the Setup Utility.

By setting an administrator password, you will prevent other users from changing your BIOS settings. You can configure an Administrator password and then configure a user password. Heed that a user password does not provide access to most of the features in the Setup utility.



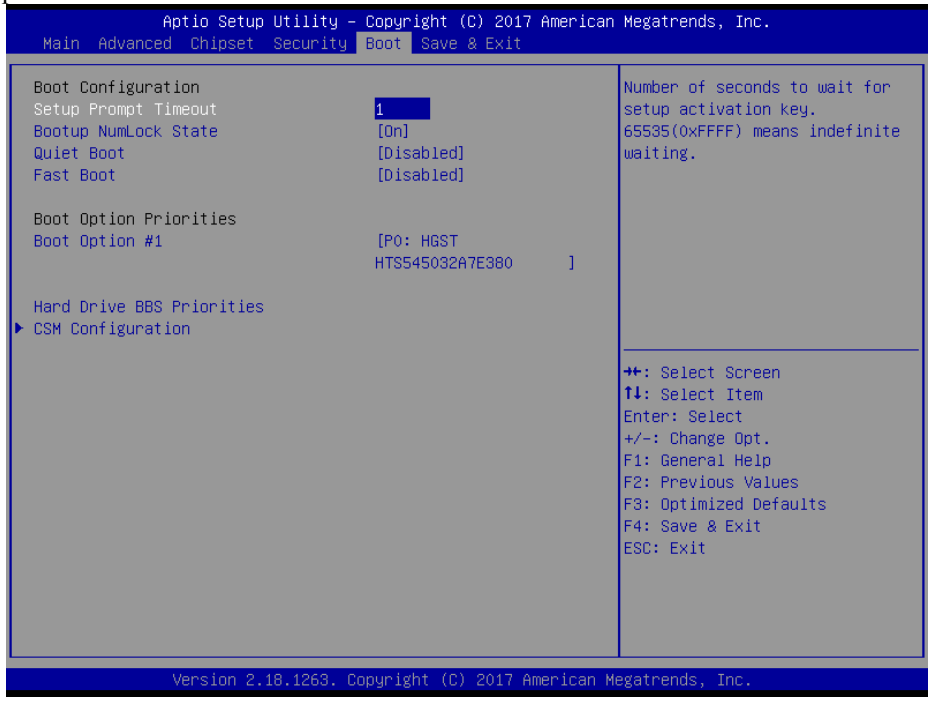
Security Screen

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.

5.7 Boot

Menu Path *Boot*

This menu provides control items for setting system boot configuration and boot priorities.



Boot Screen

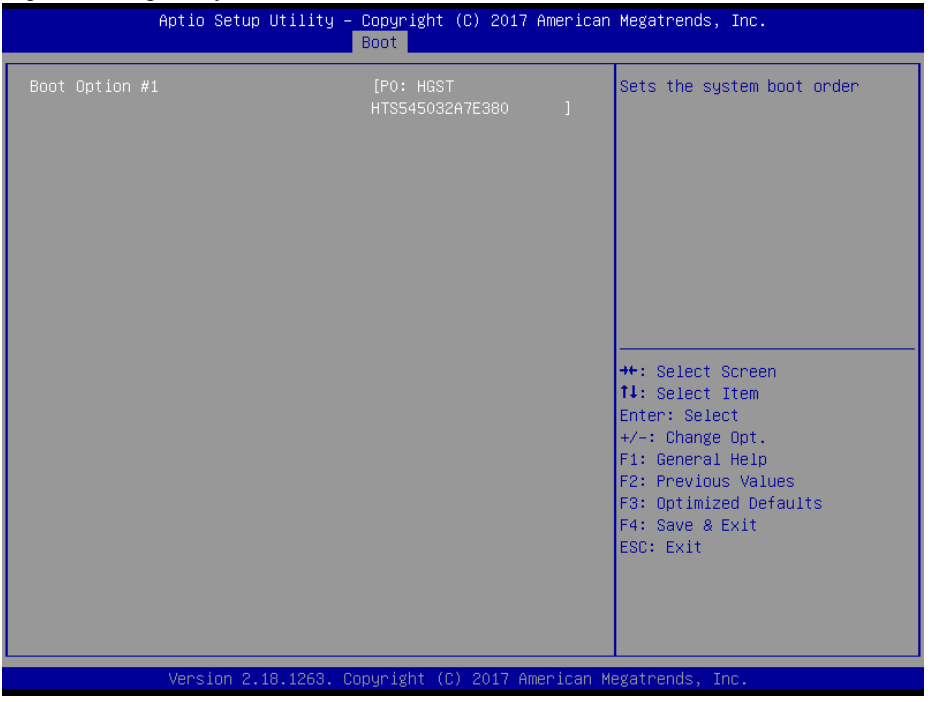
BIOS Setting	Options	Description/Purpose
Setup Prompt Timeout	Numeric (from 1 to 65535)	Number of seconds to wait for setup activation key.
Bootup NumLock State	- On - Off	Specifies the NumLock sate after the system is powered on. • **On:** Enables the NumLock function automatically after the system is powered on. • **Off:** Disables the NumLock function after the system is powered on.
Quiet Boot	- Disabled - Enabled	Enables or Disables Quiet Boot Options

BIOS Setting	Options	Description/Purpose
Fast Boot	- Disabled - Enabled	Enables or Disables Fast Boot Options
Boot Option #1~#n	- [Drive(s)] - Disabled	Sets the system boot order.
Hard Drive BBS Priorities	Sub-Menu	Allows users to select boot order of available drive(s)
CSM Configuration	Sub-Menu	CSM configuration: Enable/Disable, Option ROM execution settings, etc.

5.7.1 Boot - Hard Drive BBS Priorities

Menu Path *Boot > Hard Drive BBS Priorities*

Select **Hard Drive BBS Priorities** from the **Boot** menu to configure the boot sequence and priority of the available drives.



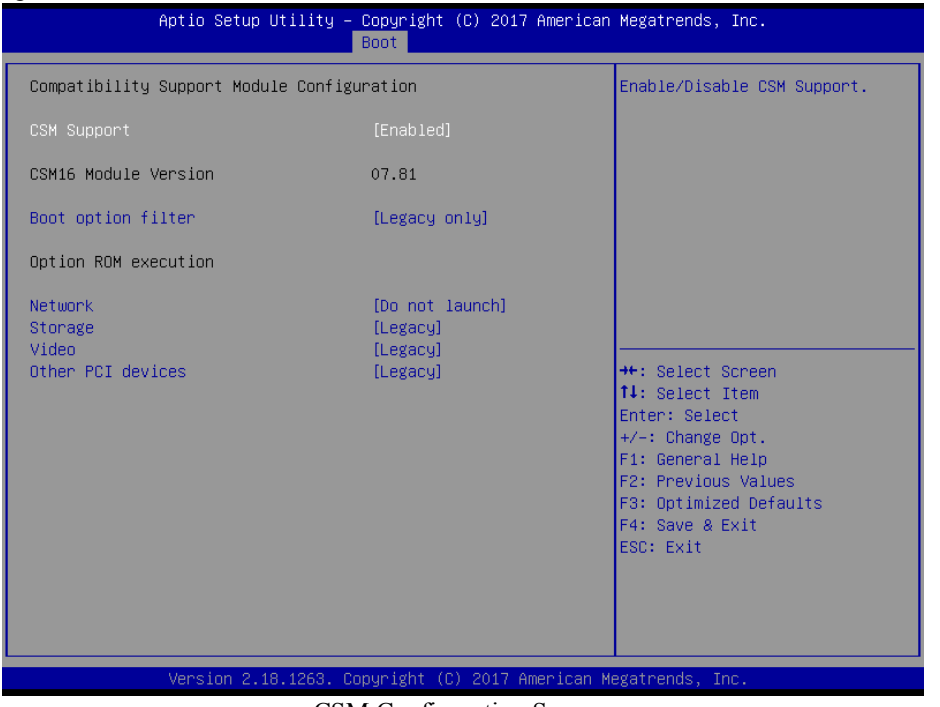
Hard Drive BBS Priorities Screen

BIOS Setting	Options	Description/Purpose
Boot Option #1~#n	- [Drive(s)] - Enabled	Sets the system boot order for hard drive.

5.7.2 Boot - CSM Configuration

Menu Path *Boot > CSM Configuration*

The **CSM Configuration** provides advanced CSM (Compatibility Support Module) configurations such as Enable/Disable CSM Support, Boot option filter, configure Option ROM execution, etc.



CSM Configuration Screen

BIOS Setting	Options	Description/Purpose
CSM Support	- Disabled - Enabled	Enables or Disables CSM Support.
CSM16 Module	No changeable options	Display the CSM 16 Module version.
Boot option filter	- UEFI and Legacy - Legacy only - UEFI only	This option controls Legacy/UEFI ROMs priority.
Network	- Do not launch - UEFI - Legacy	Controls the execution of UEFI and Legacy PXE OpROM.
Storage	- Do not launch - UEFI - Legacy	Controls the execution of UEFI and Legacy Storage OpROM.

BIOS Setting	Options	Description/Purpose
Video	- Do not launch - UEFI - Legacy	Controls the execution of UEFI and Legacy Video OpROM.
Other PCI devices	- Do not launch - UEFI - Legacy	Determines OpROM execution policy for devices other than Network, Storage or Video.

5.8 Save & Exit

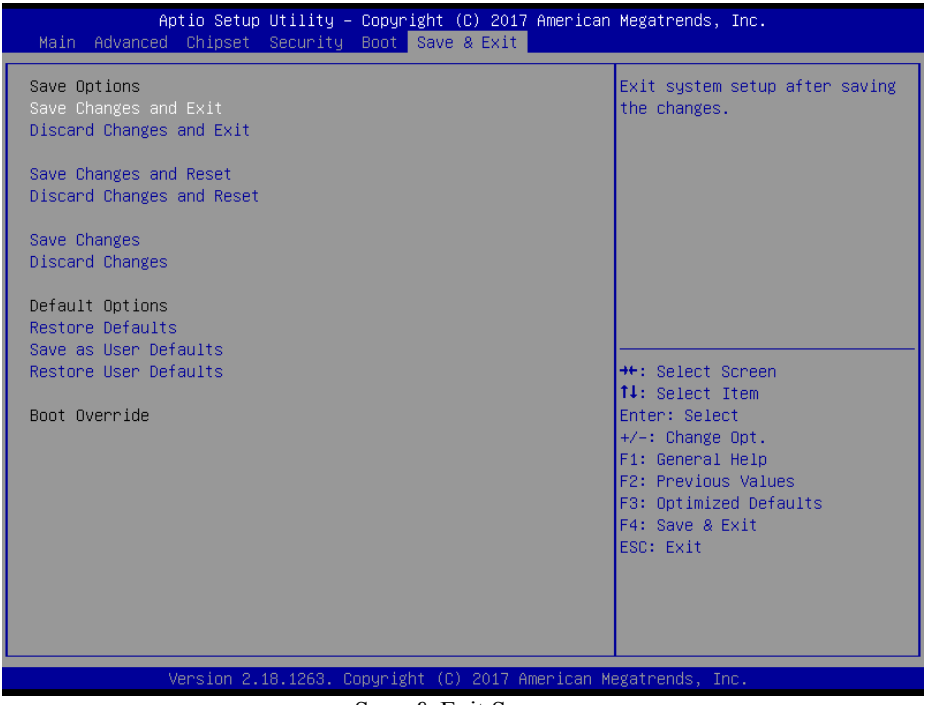
Menu Path *Save & Exit*

The **Save & Exit** allows users to save or discard changed BIOS settings as well as load factory default settings.

Save Changed BIOS Settings
To save and validate the changed BIOS settings, select **Save Changes** from the **Save & Exit** menu to validate the changes and then exit the system. Select **Save Changes and Reset** to validate the changed BIOS settings and then restart the system

Discard Changed BIOS Settings
To cancel the BIOS settings you have previously configured, select **Discard Changes and Exit** from this menu, or simply press **Esc** to exit the BIOS setup. You can also select **Discard Changes and Reset** to discard any changes you have made and restore the factory BIOS defaults.

Load User Defaults
You may simply press **F3** at any time to load the **Optimized Values** which resets all BIOS settings to the factory defaults.



Save & Exit Screen

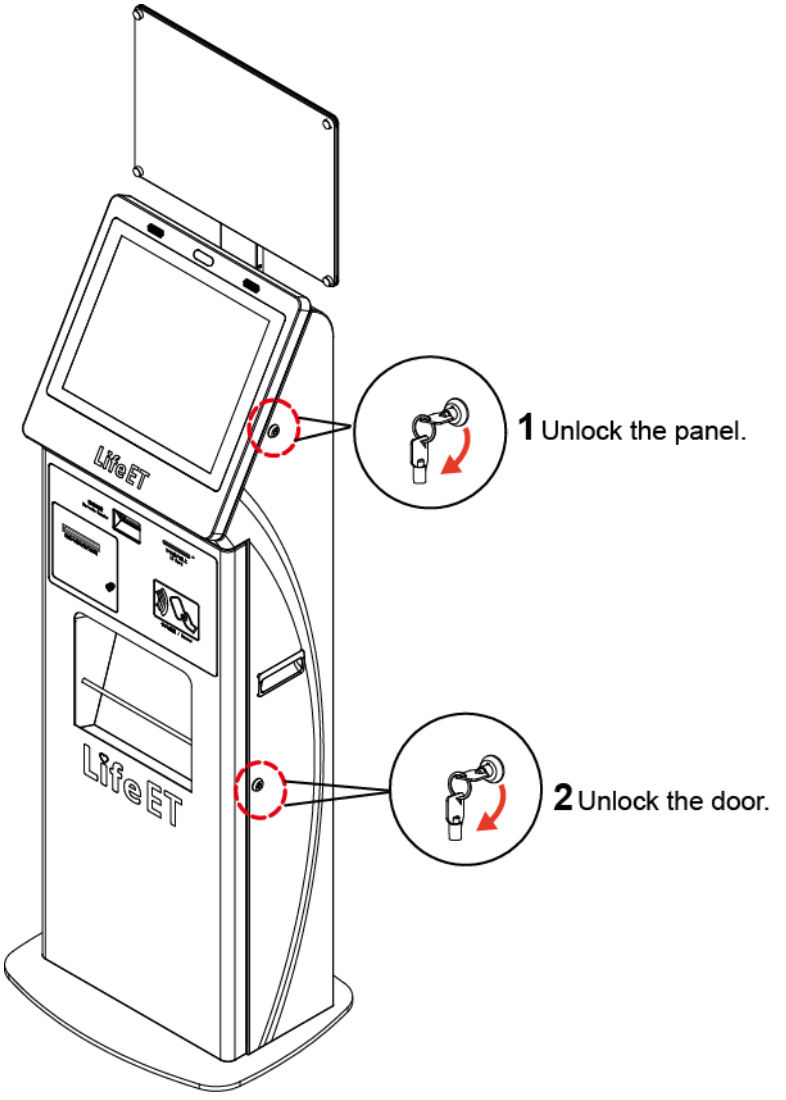
BIOS Setting	Options	Description/Purpose
Save Changes and Exit	No changeable options	Exits and saves the changes in NVRAM.
Discard Changes and Exit	No changeable options	Exits without saving any changes made in BIOS settings.
Save Changes and Reset	No changeable options	Saves the changes in NVRAM and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

Appendix A System Diagrams

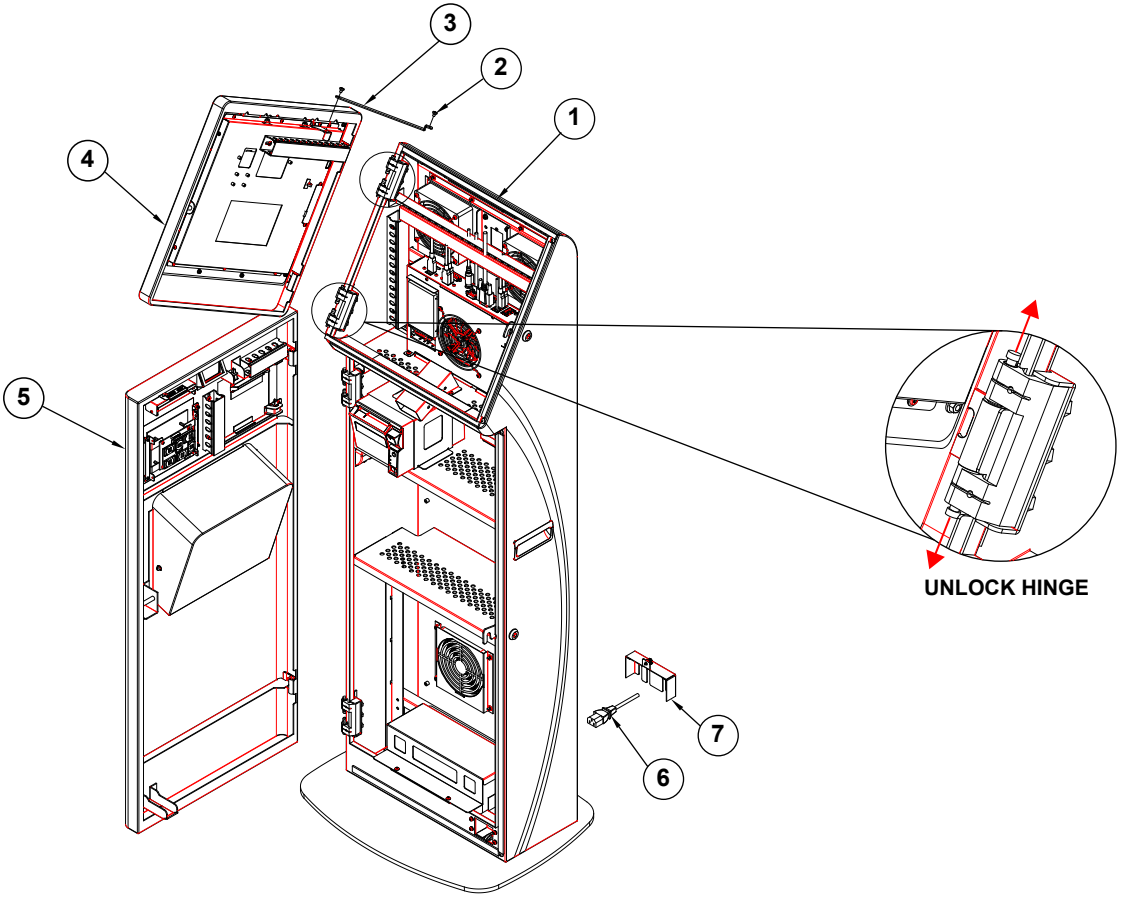
This appendix contains the easy maintenance diagrams, exploded diagrams and part numbers of the KF-7270 system. The following topics are included:

- **Easy Maintenance**
  - Unlocking KF-7270 Kiosk System
- **Exploded Diagrams**
  - Body Unit, Panel Unit, Front Door Unit Exploded Diagram
  - Body Unit & Key Parts Exploded Diagram
  - Body Unit Assembly Exploded Diagram
  - Panel Unit Assembly Exploded Diagram
  - LCD Panel Exploded Diagram
  - Main Board BOX Cable Connection Exploded Diagram
  - Main Board BOX Assembly Exploded Diagram
  - Front Door Assembly Exploded Diagram
  - Main Board BOX Top Unit Assembly Exploded Diagram
  - HDD Tray Unit Assembly Exploded Diagram
  - IC Card Reader Unit & Barcode Scanner Assembly Exploded Diagram
  - Screen Top AD Board Unit Assembly Exploded Diagram
  - AD Board Assembly Exploded Diagram

Unlocking KF-7270 Kiosk System for Easy Maintenance

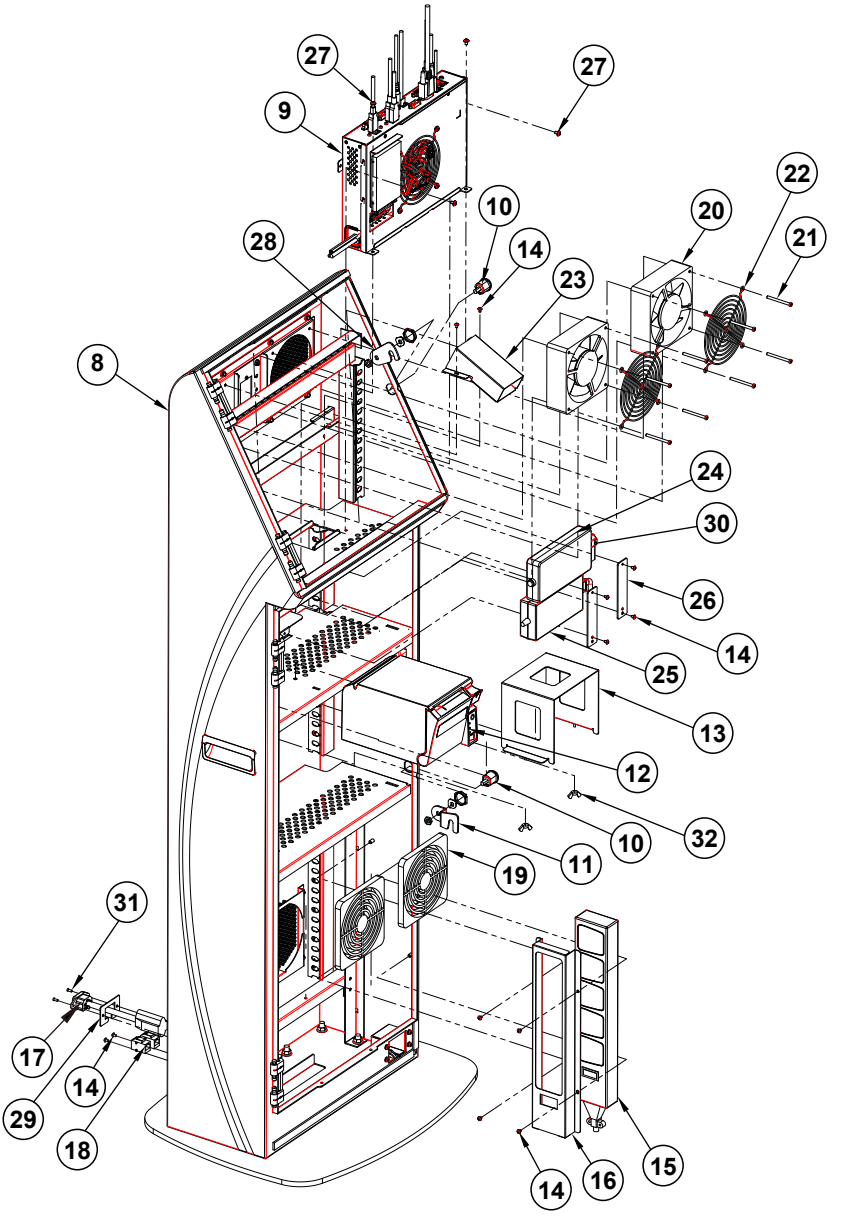


Body Unit, Panel Unit, Front Door Unit Exploded Diagram



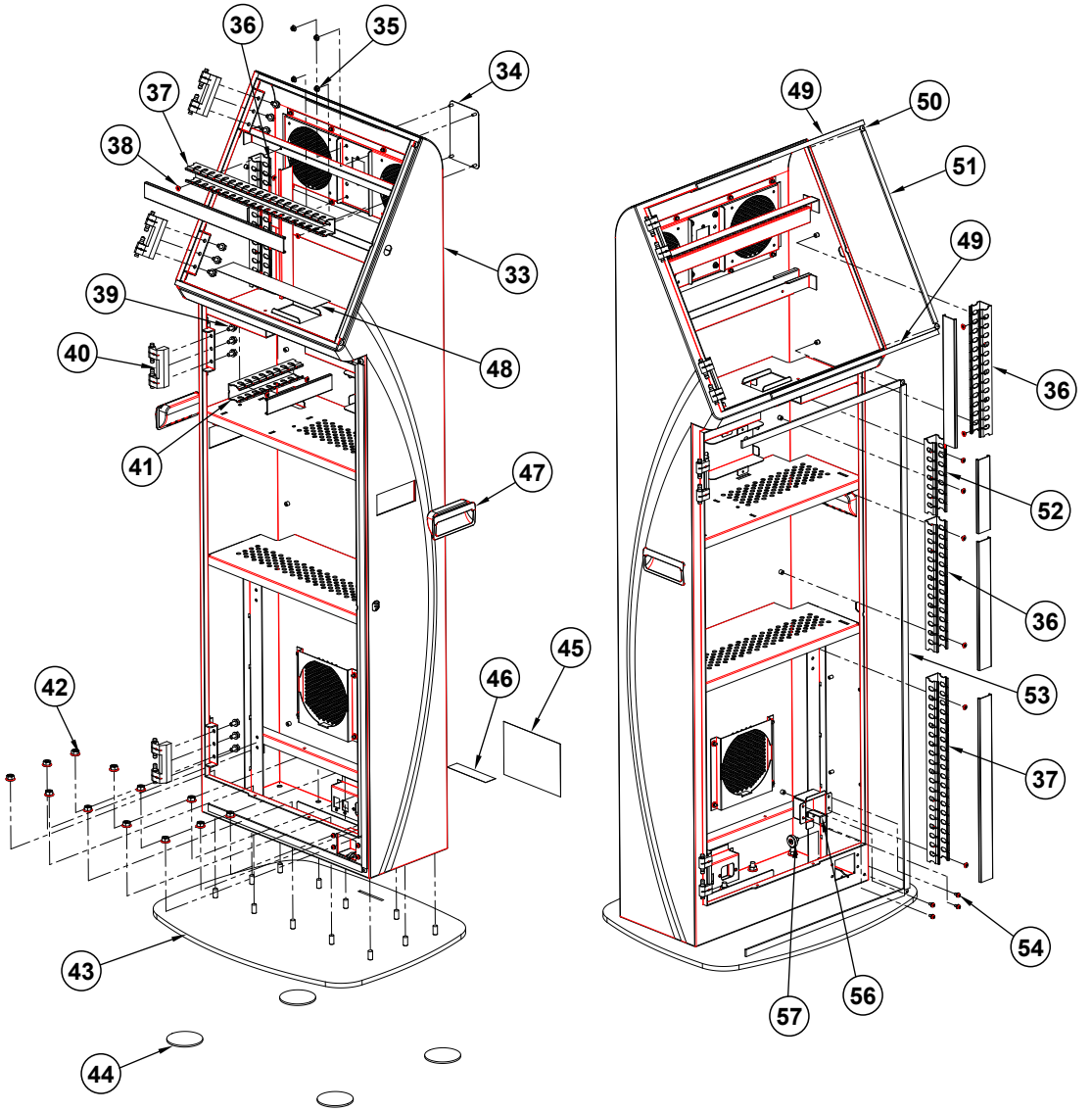
No.	Component Name	P/N No.	Q'ty	Remark
1	KF-7270_Body_Unit	N/A	1	
2	M4_H2.2_L4_I_Ni	22-272-40004911	2	
3	KF-7270 PANEL LINK PART	20-108-02001439	1	
4	KF-7270_Front_Panel_Unit	N/A	1	Page A-8
5	KF-7270_Front_Door_Unit	N/A	1	Page A-14 & A-15
6	AC Power Cable	27-013-28437111	1	
7	KF-7270 Cable Cover	20-104-02061439	1	

Body Unit & Key Parts Exploded Diagram



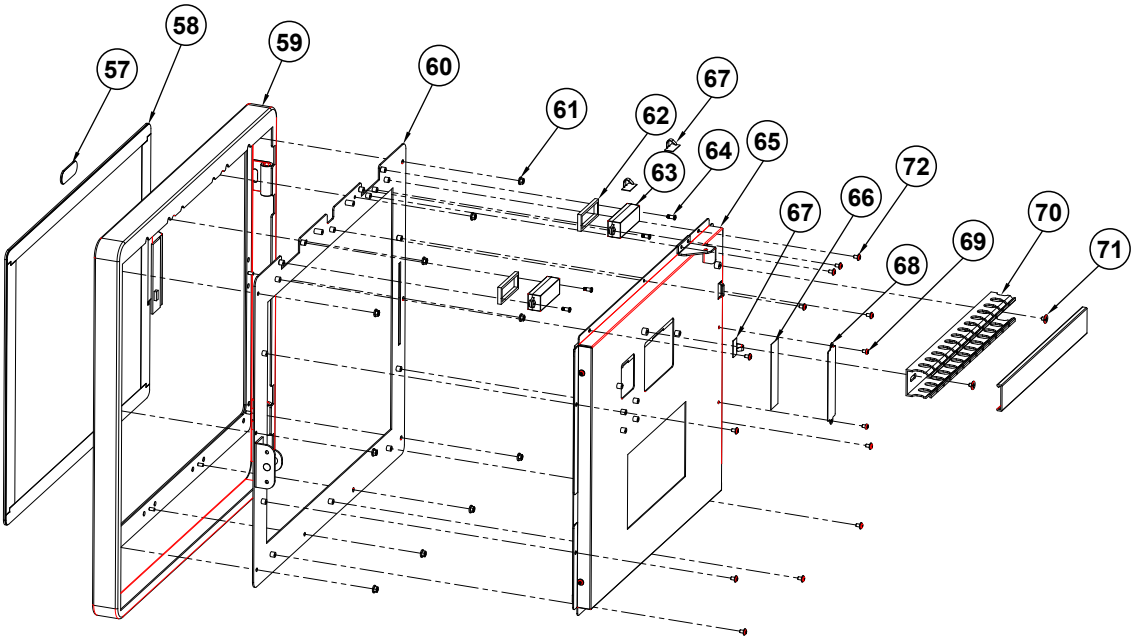
No.	Component Name	P/N No.	Q'ty
8	KF-7270_Body_ASM	N/A	1
9	PCB BOX Unit	N/A	1
10	KF-7270_LOCK	20-025-35004000	2
11	KF-7270 Lock Sheet	20-125-02003439	1
12	Printer Epson_TM-T70II	AWC-TM-T70II	1
13	KF-7270 Printer Holder	20-129-02004439	1
14	M3_L5_W_Ni	22-242-30005311	12
15	AC Socket *5 Set	52-990-01050040	1
16	KF-7270 Extension Set Holder	20-129-02003439	1
17	KF-7130 AC Power Extend Cable L=200mm	27-012-36004111	1
18	8P8C Connector	10-085-08012135	2
19	125x125_Filter	30-089-28100284	2
20	PK-7090 System Fan (120x120x38mm) L=80mm (AD1212LB-F5B)	21-004-01212002	2
21	M4_L45_R_Ni	22-232-40045011	8
22	PK-7090 12cm Fan Guard	20-044-29031284	2
23	KF-7270_Barcode_Unit	N/A	1
24	120W AC to DC 24V/5A DC Power Adapter(w/Lock) (FSP120-AABN2)	52-002-02900101	1
25	TM-T70II_Adapter	N/A	1
26	KF-7270 Adapter Lock Sheet	20-125-02001439	2
27	M4_L6_W_Ni	22-232-40006311	4
28	KF-7270 Panel Lock Sheet	20-125-02002439	1
29	KF-7270 AC Cable Bracket (w/Paint)	20-106-02061439	1
30	AC Power Cable (US_90D) L=1.83M	27-013-12837119	1
31	M3_L8_F_B	22-215-30008011	2
32	M3_Airfoil_Nut_Ni	23-142-30400981	2

Body Unit Assembly Exploded Diagram



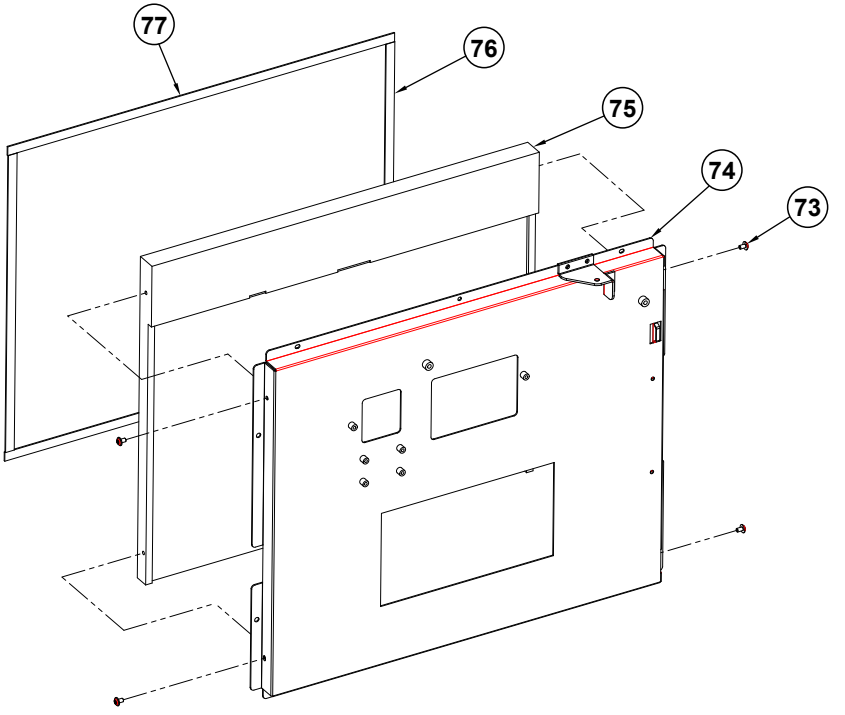
No.	Component Name	P/N No.	Q'ty
33	KF-7270 Body Case	20-101-02061439	1
34	KF-7270 2ND D Screw Cover	20-104-02062439	1
35	Slip Nuts (M4x0.7P,H=4.5mm)	23-142-40450801	4
36	KSS_30*30_SLOT (L=252mm)	30-023-16100375	3
37	KSS_30*30_SLOT (L=360mm)	30-023-16100375	2
38	m4_4_big_i	22-275-40004911	14
39	M6_L12_Hex_S_W_Ni	22-251-60012011	12
40	PK-7090 Concealed Hinge (CL-201-ST)	80-012-30001284	4
41	KSS_30*30_SLOT (L=162mm)	30-023-16100375	1
42	Slip Nuts (M8x1.25P,H=7.5mm)	23-142-80801201	12
43	KF-7270 Body Foot (w/Paint)	20-106-02062439	1
44	KF-7270 D65 T3 Rubber Foot	90-004-01100439	4
45	KF-7270 Rating Label	94-017-01603439	1
46	KF-7270 Kiosk IO Label	94-017-01601439	1
47	KF-7270 Pull HP-746-3 Red Type (w/Paint)(Pantone 7621C)	30-080-28110439	2
48	KF-7270 MB BOX IO Panel Label	94-017-01602439	1
49	KF-7270 Panel Top EPDM	90-013-01200439	2
50	Rubber Foot (Black) (TNF-41NP)	30-004-01700000	4
51	KF-7270 Panel Cover EPDM	90-013-01200439	1
52	KSS_30*30_SLOT	30-023-16100375	1
53	KF-7270 Front Door Side EVA	90-013-15100439	1
54	M4_L8_R+S+W_Ni	22-232-40008211	4
55	KF-7270 Body Part-G (w/Paint)	20-106-02063439	1
56	Plastic Wheel	22-281-60007001	1

Panel Unit Assembly Exploded Diagram



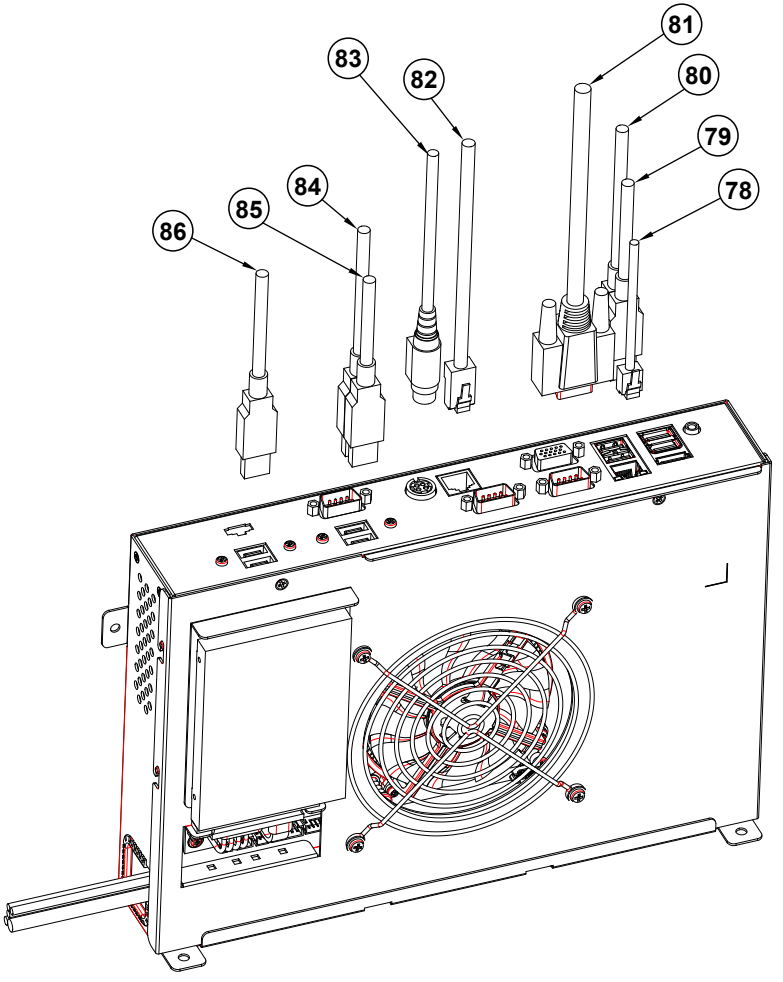
No.	Component Name	P/N No.	Q'ty	Remark
57	KF-7270 Without CAM Lens (Transparent)	30-021-10130439	1	
58	17" Capacitive Multi-Touch Panel (Mildex)	52-380-04023217	1	
59	KF-7270 Front Panel (w/Paint)	20-103-02061439	1	
60	KF-7270 Touch Base	20-132-02061439	1	
61	Slip Nuts (M3x0.5P,H=4mm)	23-142-30400801	10	
62	KF-7270 Speaker EPDM	90-013-01100439	2	
63	PA-6922 Speaker Cable L=70mm	27-021-26902071	2	
64	Fillister Head Screw / M3x0.5Px3L, H=5mm	22-272-30008015	4	
65	KF-7270_LCD_Unit	N/A	1	Page A-9
66	Board Bracket Tape	94-026-04502258	1	
67	Cable Clamp	30-042-32100000	3	
68	Touch PCB Bracket	80-006-03001258	1	
69	Pan Head Screw / M3x0.5Px4mm	22-222-30004311	2	
70	KSS_30*30_SLOT (L=234mm)	30-023-16100375	1	
71	Fillister Head Screw / M4x0.7Px4mm	22-275-40004911	2	
72	Round Washer Head Screw/ M3x0.5Px5mm	22-242-30005311	12	

LCD Panel Exploded Diagram



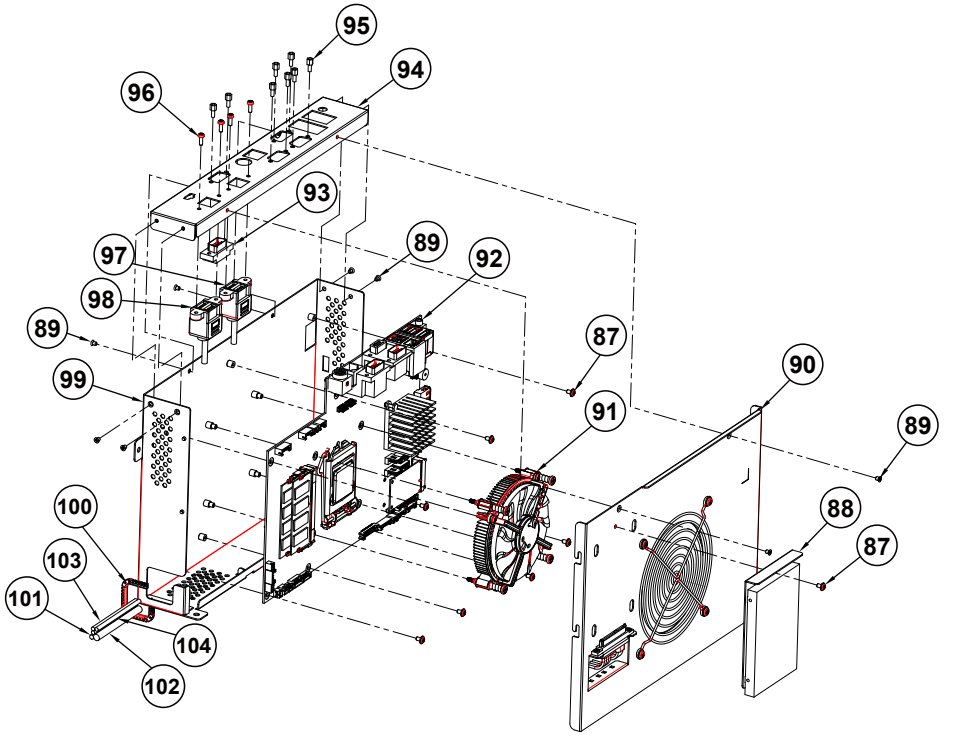
No.	Component Name	P/N No.	Q'ty
73	Round Washer Head Screw M3x0.5Px5mm	22-242-30005311	4
74	KF-7270 LCD Holder	20-129-02002439	1
75	17" TFT LCD Panel (LED Backlight),350nits,SXGA (1280x1024) (G170EG01-V1)	52-351-04017002	1
76	ST-2017 Thin Gap LCD Poron-V (274x8x1mm)	30-013-24200366	2
77	ST-2017 Thin Gap LCD Poron-H (358x8x1mm)	30-013-24100366	2

Main Board BOX Cable Connection Exploded Diagram



No.	Component Name	P/N No.	Q'ty	Remark
78	KF-7270 LAN Cable L=1750mm	27-026-43935111	1	
79	KF-7270 Barcode Extended USB0 Cable L=720mm	27-006-43915111	1	Barcode EXT Cable
80	KF-7270_cable_USB1	N/A	1	TS-2000 Cable
81	KF-7270_cable_COM2	N/A	1	TS-2000 Cable
82	KF-7270 RJ45 COM1 CABLE L=1760mm	27-026-43936111	1	For back down #2 RJ45
83	Adapter DC IN	N/A	1	Adapter (fsp120-AABN2)
84	KF-7270 Printer USB2-2 Cable (Type A to Type B) L=720mm	27-006-43915112	1	For Printer
85	KF-7270 IC Card USB2-1 Cable L=1250mm	27-006-43925111	1	IC Card Cable
86	KF-7270 Touch USB1-2 Cable (Type A to 4p) L=500mm	27-006-43910111	1	For Touch

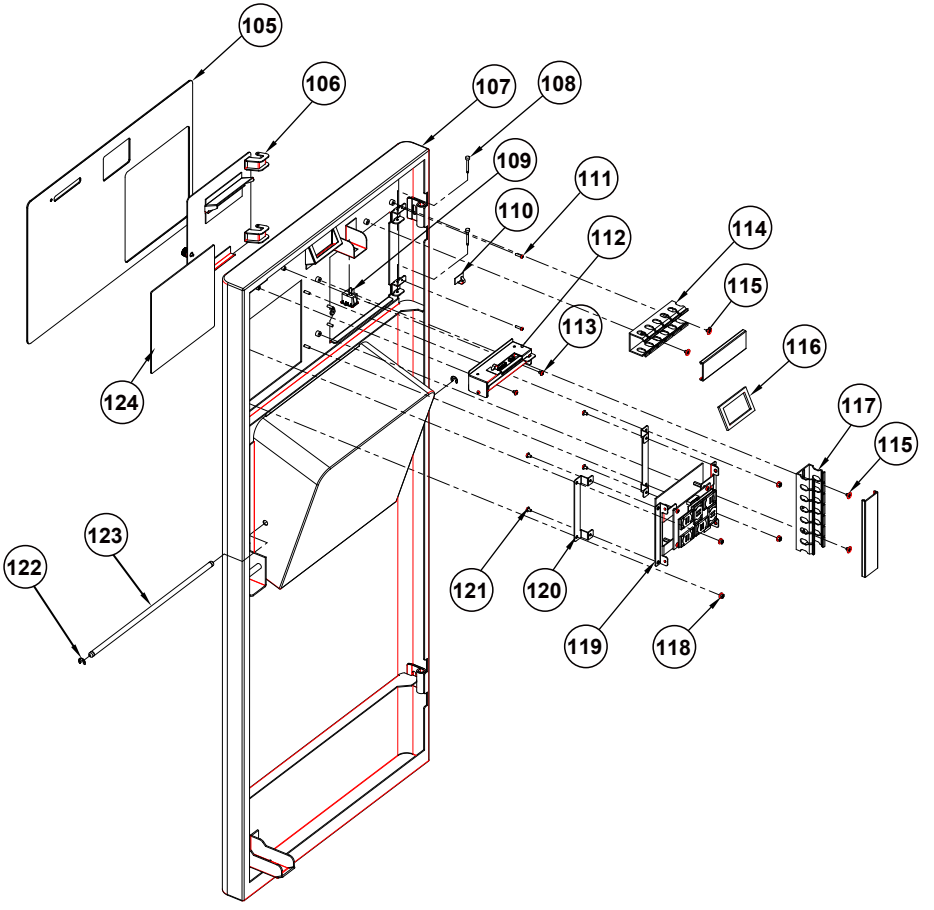
Main Board BOX Assembly Exploded Diagram



No.	Component Name	P/N No.	Q'ty
87	Round Washer Head Screw M3x0.5Px5mm	22-242-30005311	8
88	hdd_unit-2	N/A	1
89	Flat Head Screw / M3x0.5Px4mm	22-215-30004311	8
90	system_box_Top_unit	N/A	1
91	CPU Heat Sink (ϕ 90x13mm) & Fan (96x96x16.8mm) L=300mm	21-003-19696001	1
92	PD-7270		1
93	KF-7270 COM Port Cable (9M to 10F) L=180mm	27-024-26904031	1
94	KF-7270 System Box IO Bracket	20-140-02002439	1
95	HEX CU BOSS UNC No.4,L=5,H=6.8mm	22-692-40048051	8
96	Pan Head Screw UNC-No.4-40,L=8mm	22-332-04040011	4
97	KF-7270_USB_DUAL_cable	27-006-43909111	1
98	KF-7270_USB_DUAL_cable	27-006-43907111	1

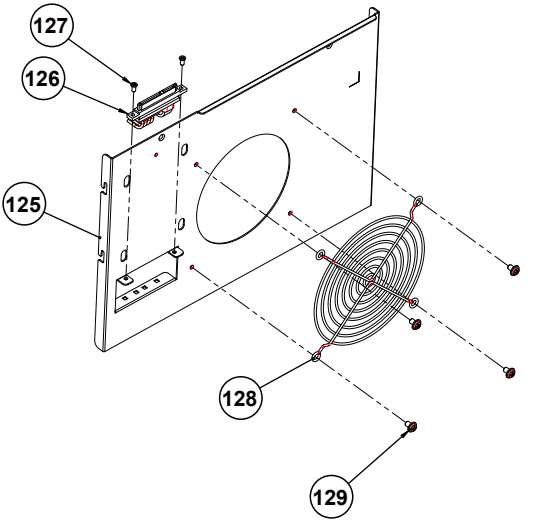
No.	Component Name	P/N No.	Q'ty
99	KF-7270 System Box	20-140-02001439	1
100	US-0926	90-026-04100185	1
101	KF-7270 Panel LED Cable (8p to 6p) L=1060mm	27-069-43921111	1
102	KF-7270 Panel LVDS Cable (30p to 30p) L=980mm	27-020-43920111	1
103	KF-7270 Speaker Extended Cable (2p to 2p) L=1000mm	27-021-43920111	2
104	KF-7270 Fan Y Cable (4p to 4p+4p) L=550mm+550mm	27-056-43911111	1

Front Door Assembly Exploded Diagram



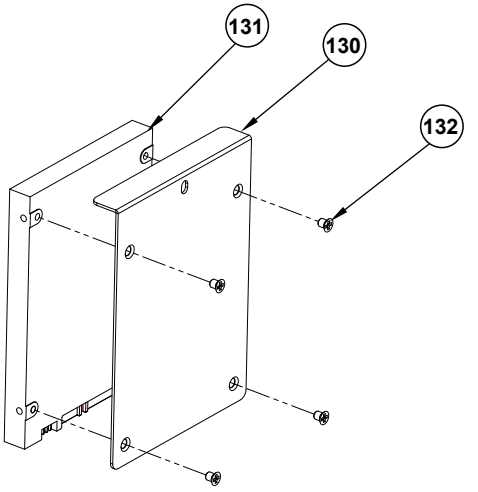
No.	Component Name	P/N No.	Q'ty
105	KF-7270 RFID Table Type-2(386x236x1.5mm)	30-056-10230439	1
106	KF-7270 Printer Door (w/Paint)	20-147-02062439	1
107	KF-7270 Front Door (w/Paint)	20-147-02061439	1
108	KF-7270 Printer Door Pin	22-000-25023005	2
109	KF-7270 Power Switch Cable	27-019-43913111	1
110	Cable_clip (JFW-5)	30-042-32100000	1
111	Round Head Screw M2.5x0.45Px10mm	22-232-25010811	2
112	KF-7270_IC_Card_Unit	N/A	1
113	Round Washer Head Screw / M3x0.5Px4mm	22-232-30004011	2
114	KSS_30*30_SLOT (L=100mm)	30-023-16100375	1
115	Fillister Head Screw / M4x0.7Px4mm	22-275-40004911	4
116	KF-7270 Barcode Rubber (62x36x3mm)	90-013-06100439	1
117	KSS_30*30_SLOT (L=126mm)	30-023-16100375	1
118	Slip Nuts (M3x0.5P,H=4mm)	23-142-30400801	4
119	TS-2000	AWC-TS200	1
120	KF-7270 TS-2000 Support	20-102-02001439	2
121	Round Washer Head Screw M3x0.5Px5mm	22-242-30005311	4
122	E Type Washer (OD= φ 11mm, ID= φ 5mmx0.6T)	23-742-50010111	2
123	KF-7270 DM Box Pole ϕ 5x275mm	22-000-50275005	1
124	KF-7270 RFID Table Type1 ADD(147.5x135.5x1.5mm)	90-056-10130439	1

Main Board BOX Top Unit Assembly Exploded Diagram



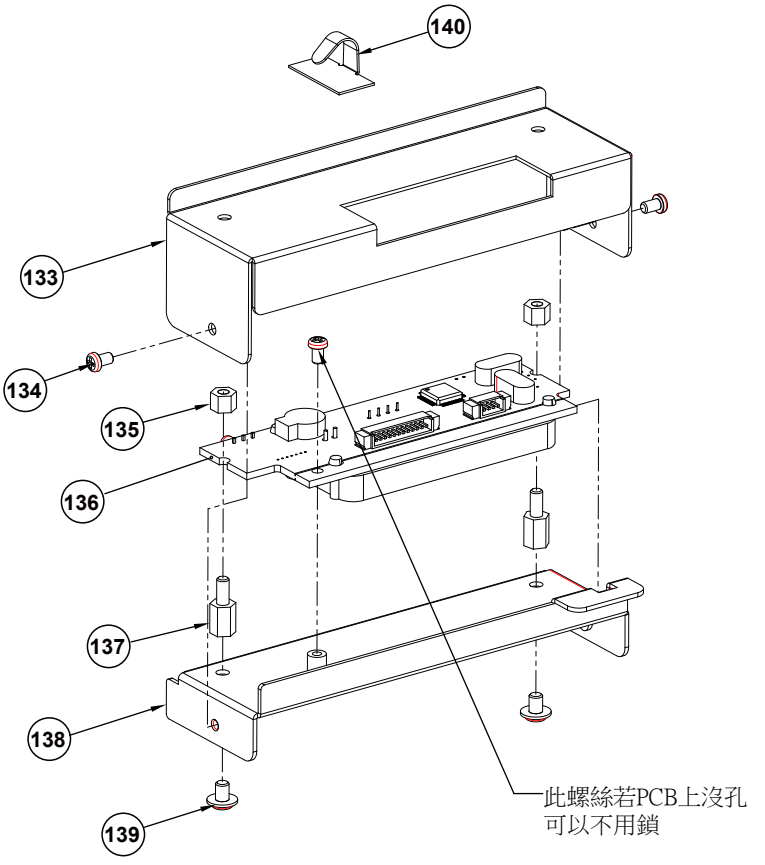
No.	Component Name	P/N No.	Q'ty
125	KF-7270 System Box Top	20-140-02003439	1
126	PA-6680 SATA HDD & Power Cable L=280mm	27-008-37906081	1
127	Fillister Head Screw / M3x0.5Px6mm	82-275-30006018	2
128	PK-7090 12cm Fan Guard	20-044-29031284	1
129	Round Washer Head Screw M4x0.7Px6mm	22-232-40006311	4

HDD Tray Unit Assembly Exploded Diagram



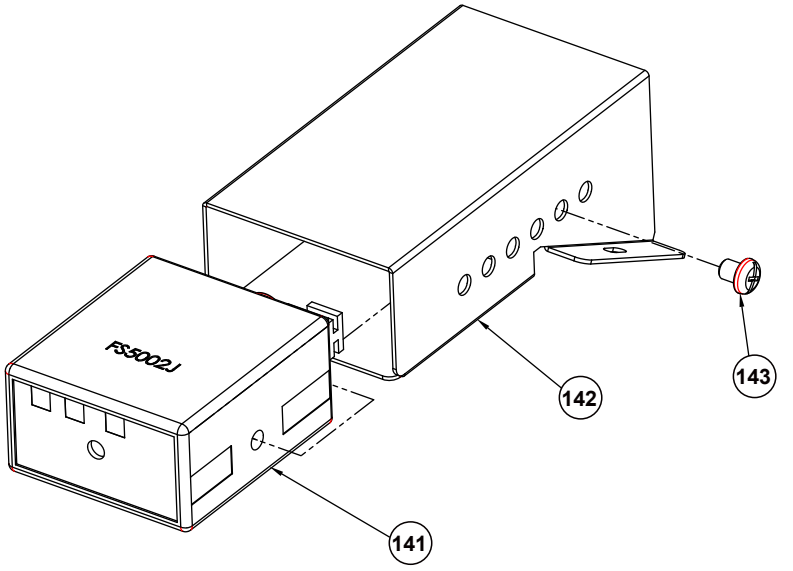
No.	Component Name	P/N No.	Q'ty
130	KF-7270 HDD Tray Type 2	20-154-02001439	1
131	2.5" Solid state SATAⅢ HDD,TLC,128GB (Intel SSDSC2KW128G8X1)	52-301-04012817	1
132	Flat Head Screw / M3x0.5Px4mm	22-215-30004311	4

IC Card Reader Unit Assembly Exploded Diagram



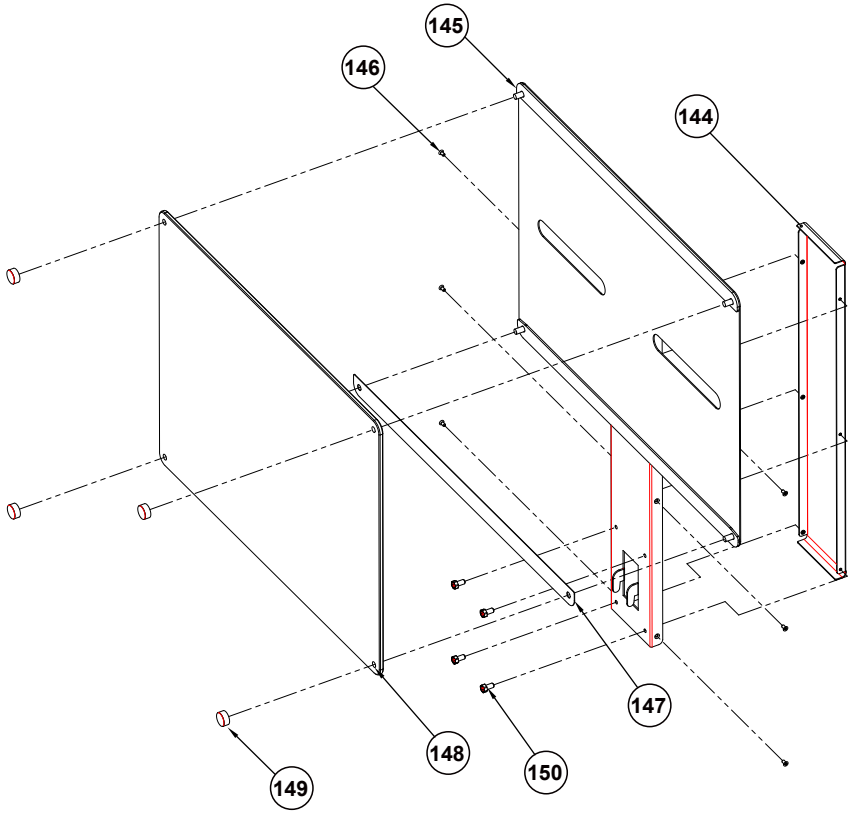
No.	Component Name	P/N No.	Q'ty
133	KF-7270 SKH301-1000C Cover	20-104-02001439	1
134	Round Head Screw M2.5x0.45Px4mm	22-232-25004011	3
135	HEX PLASTIC BOSS M3x0.5P,H=4mm	82-299-30004004	2
136	IC Card Reader Module, USB CCID(SKH301-1000C)	52-551-00030102	1
137	HEX PLASTIC BOSS M3x0.5Px6L,H=7mm	82-299-30007304	2
138	KF-7270 SKH301-1000C Holder	20-129-02005439	1
139	Round Washer Head Screw / M3x0.5Px4mm	22-232-30004011	2
140	Cable Clamp (JFW-5)	30-042-32100000	1

Barcode Scanner Unit Assembly Exploded Diagram



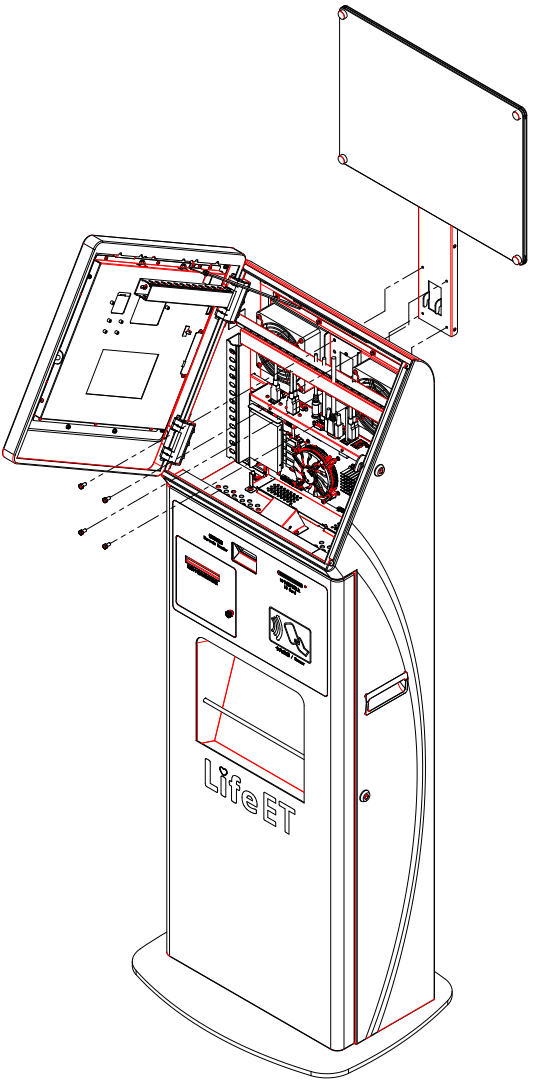
No.	Component Name	P/N No.	Q'ty
141	Barcode Scanner (FS5002J)	52-820-50020107	1
142	KF-7270 Barcode Holder	20-129-02001439	1
143	Round Head Screw M5x0.8Px6mm	22-232-50006011	1

Screen Top AD Board Unit Assembly Exploded Diagram



No.	Component Name	P/N No.	Q'ty	Remark
144	KF-7270 AD Board Support Part-A (w/Paint)	20-102-02061439	1	
145	KF-7270 AD Board Support Part-B (w/Paint)	20-102-02062439	1	
146	Flat Head Screw / M3x0.5Px6mm	22-212-30006311	6	
147	KF-7270 AD Board Slot Part (w/Paint)	20-102-02063439	1	
148	KF-7270 AD Board PMMA(460x337x5mm)	30-056-10130439	1	
149	Screw Cap	22-096-10007001	4	
150	Hex Head Screw / M5x0.8Px10mm	22-252-50010001	4	Fix for AD Board

AD Board Assembly Exploded Diagram



Component Name	P/N No.	Q'ty
Hex Head Screw / M5x0.8Px10mm	22-252-50010001	4

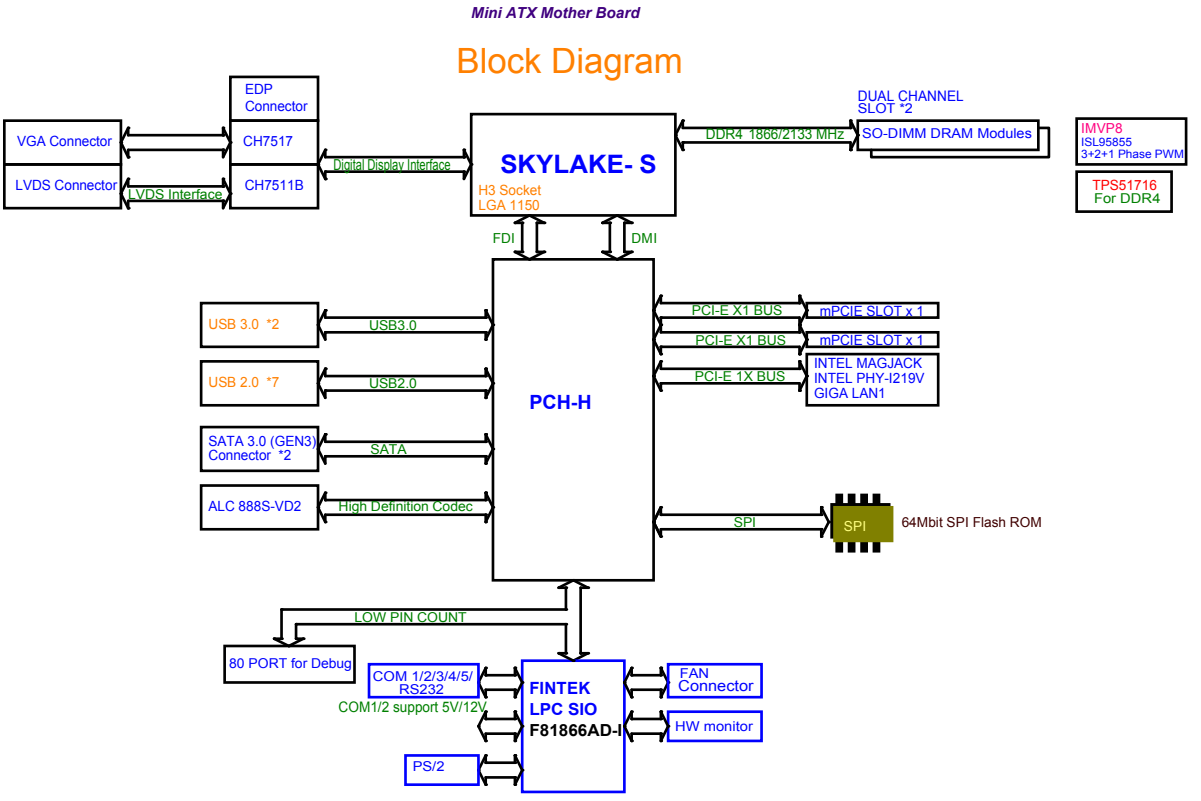
Appendix B Technical Summary

This appendix will give you a brief introduction of the allocation maps for the system resources.

The following topics are included:

- System Block Diagram
- Interrupt Map
- I/O Map
- Memory Map
- Configuring WatchDog Timer
- Flash BIOS Update

System Block Diagram



Interrupt Map

IRQ	ASSIGNMENT
IRQ 0	System timer
IRQ 1	Standard PS/2 Keyboard
IRQ 3	Communications Port (COM2)
IRQ 4	Communications Port (COM1)
IRQ 6	Communications Port (COM5)
IRQ 7	Communications Port (COM3)
IRQ 8	System CMOS/real time clock
IRQ 10	Communications Port (COM4)
IRQ 11	Intel(R) 100 Series/C230 Series Chipset Family SMBus - A123
IRQ 11	Intel(R) 100 Series/C230 Series Chipset Family Thermal subsystem - A131
IRQ 13	Numeric data processor
IRQ 14	Motherboard resources
IRQ 16	Standard AHCI 1.0 Serial ATA Controller
IRQ 16	High Definition Audio Controller
IRQ 81	Microsoft ACPI-Compliant System
IRQ 82	Microsoft ACPI-Compliant System
IRQ 83	Microsoft ACPI-Compliant System
IRQ 84	Microsoft ACPI-Compliant System
IRQ 85	Microsoft ACPI-Compliant System
IRQ 86	Microsoft ACPI-Compliant System
IRQ 87	Microsoft ACPI-Compliant System
IRQ 88	Microsoft ACPI-Compliant System
IRQ 89	Microsoft ACPI-Compliant System
IRQ 90	Microsoft ACPI-Compliant System
IRQ 91	Microsoft ACPI-Compliant System
IRQ 92	Microsoft ACPI-Compliant System
IRQ 93	Microsoft ACPI-Compliant System
IRQ 94	Microsoft ACPI-Compliant System
IRQ 95	Microsoft ACPI-Compliant System
IRQ 96	Microsoft ACPI-Compliant System
IRQ 97	Microsoft ACPI-Compliant System

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

IRQ	ASSIGNMENT
IRQ 132	Microsoft ACPI-Compliant System
IRQ 133	Microsoft ACPI-Compliant System
IRQ 134	Microsoft ACPI-Compliant System
IRQ 135	Microsoft ACPI-Compliant System
IRQ 136	Microsoft ACPI-Compliant System
IRQ 137	Microsoft ACPI-Compliant System
IRQ 138	Microsoft ACPI-Compliant System
IRQ 139	Microsoft ACPI-Compliant System
IRQ 140	Microsoft ACPI-Compliant System
IRQ 141	Microsoft ACPI-Compliant System
IRQ 142	Microsoft ACPI-Compliant System
IRQ 143	Microsoft ACPI-Compliant System
IRQ 144	Microsoft ACPI-Compliant System
IRQ 145	Microsoft ACPI-Compliant System
IRQ 146	Microsoft ACPI-Compliant System
IRQ 147	Microsoft ACPI-Compliant System
IRQ 148	Microsoft ACPI-Compliant System
IRQ 149	Microsoft ACPI-Compliant System
IRQ 150	Microsoft ACPI-Compliant System
IRQ 151	Microsoft ACPI-Compliant System
IRQ 152	Microsoft ACPI-Compliant System
IRQ 153	Microsoft ACPI-Compliant System
IRQ 154	Microsoft ACPI-Compliant System
IRQ 155	Microsoft ACPI-Compliant System
IRQ 156	Microsoft ACPI-Compliant System
IRQ 157	Microsoft ACPI-Compliant System
IRQ 158	Microsoft ACPI-Compliant System
IRQ 159	Microsoft ACPI-Compliant System
IRQ 160	Microsoft ACPI-Compliant System
IRQ 161	Microsoft ACPI-Compliant System
IRQ 162	Microsoft ACPI-Compliant System
IRQ 163	Microsoft ACPI-Compliant System
IRQ 164	Microsoft ACPI-Compliant System
IRQ 165	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
IRQ 166	Microsoft ACPI-Compliant System
IRQ 167	Microsoft ACPI-Compliant System
IRQ 168	Microsoft ACPI-Compliant System
IRQ 169	Microsoft ACPI-Compliant System
IRQ 170	Microsoft ACPI-Compliant System
IRQ 171	Microsoft ACPI-Compliant System
IRQ 172	Microsoft ACPI-Compliant System
IRQ 173	Microsoft ACPI-Compliant System
IRQ 174	Microsoft ACPI-Compliant System
IRQ 175	Microsoft ACPI-Compliant System
IRQ 176	Microsoft ACPI-Compliant System
IRQ 177	Microsoft ACPI-Compliant System
IRQ 178	Microsoft ACPI-Compliant System
IRQ 179	Microsoft ACPI-Compliant System
IRQ 180	Microsoft ACPI-Compliant System
IRQ 181	Microsoft ACPI-Compliant System
IRQ 182	Microsoft ACPI-Compliant System
IRQ 183	Microsoft ACPI-Compliant System
IRQ 184	Microsoft ACPI-Compliant System
IRQ 185	Microsoft ACPI-Compliant System
IRQ 186	Microsoft ACPI-Compliant System
IRQ 187	Microsoft ACPI-Compliant System
IRQ 188	Microsoft ACPI-Compliant System
IRQ 189	Microsoft ACPI-Compliant System
IRQ 190	Microsoft ACPI-Compliant System
IRQ 4294967294	Intel(R) Ethernet Connection (2) I219-V
IRQ 4294967292	Intel(R) USB 3.0 eXtensible Host Controller
IRQ 4294967293	Intel(R) HD Graphics 510
IRQ 4294967291	Intel(R) Management Engine Interface

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

I/O Map

I/O	ASSIGNMENT
0x000003F8-0x000003FF	Communications Port (COM1)
0x000002F8-0x000002FF	Communications Port (COM2)
0x000003E8-0x000003EF	Communications Port (COM3)
0x000002E8-0x000002EF	Communications Port (COM4)
0x0000F090-0x0000F097	Standard AHCI 1.0 Serial ATA Controller
0x0000F080-0x0000F083	Standard AHCI 1.0 Serial ATA Controller
0x0000F060-0x0000F07F	Standard AHCI 1.0 Serial ATA Controller
0x000002F0-0x000002F7	Communications Port (COM5)
0x00000000-0x00000CF7	PCI bus
0x00000D00-0x0000FFFF	PCI bus
0x00000070-0x00000077	System CMOS/real time clock
0x00000070-0x00000077	Motherboard resources
0x00000A00-0x00000A0F	Motherboard resources
0x00000A10-0x00000A1F	Motherboard resources
0x00000A20-0x00000A2F	Motherboard resources
0x0000F040-0x0000F05F	Intel(R) 100 Series/C230 Series Chipset Family SMBus - A123
0x0000002E-0x0000002F	Motherboard resources
0x0000004E-0x0000004F	Motherboard resources
0x00000061-0x00000061	Motherboard resources
0x00000063-0x00000063	Motherboard resources
0x00000065-0x00000065	Motherboard resources
0x00000067-0x00000067	Motherboard resources
0x00000080-0x00000080	Motherboard resources
0x00000092-0x00000092	Motherboard resources
0x000000B2-0x000000B3	Motherboard resources
0x00000680-0x0000069F	Motherboard resources
0x0000FFFF-0x0000FFFF	Motherboard resources
0x0000FFFF-0x0000FFFF	Motherboard resources
0x0000FFFF-0x0000FFFF	Motherboard resources
0x00001800-0x000018FE	Motherboard resources
0x0000164E-0x0000164F	Motherboard resources
0x0000FF00-0x0000FFFE	Motherboard resources

I/O	ASSIGNMENT
0x00000800-0x0000087F	Motherboard resources
0x00001854-0x00001857	Motherboard resources
0x000000F0-0x000000F0	Numeric data processor
0x0000F000-0x0000F03F	Intel(R) HD Graphics 510
0x000003B0-0x000003BB	Intel(R) HD Graphics 510
0x000003C0-0x000003DF	Intel(R) HD Graphics 510
0x00000060-0x00000060	Standard PS/2 Keyboard
0x00000064-0x00000064	Standard PS/2 Keyboard
0x00000020-0x00000021	Programmable interrupt controller
0x00000024-0x00000025	Programmable interrupt controller
0x00000028-0x00000029	Programmable interrupt controller
0x0000002C-0x0000002D	Programmable interrupt controller
0x00000030-0x00000031	Programmable interrupt controller
0x00000034-0x00000035	Programmable interrupt controller
0x00000038-0x00000039	Programmable interrupt controller
0x0000003C-0x0000003D	Programmable interrupt controller
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A4-0x000000A5	Programmable interrupt controller
0x000000A8-0x000000A9	Programmable interrupt controller
0x000000AC-0x000000AD	Programmable interrupt controller
0x000000B0-0x000000B1	Programmable interrupt controller
0x000000B4-0x000000B5	Programmable interrupt controller
0x000000B8-0x000000B9	Programmable interrupt controller
0x000000BC-0x000000BD	Programmable interrupt controller
0x000004D0-0x000004D1	Programmable interrupt controller
0x00000040-0x00000043	System timer
0x00000050-0x00000053	System timer

Memory Map

MEMORY MAP	ASSIGNMENT
0xFED00000-0xFED003FF	High precision event timer
0xDF048000-0xDF049FFF	Standard AHCI 1.0 Serial ATA Controller
0xDF04C000-0xDF04C0FF	Standard AHCI 1.0 Serial ATA Controller
0xDF04B000-0xDF04B7FF	Standard AHCI 1.0 Serial ATA Controller
0xDF040000-0xDF043FFF	High Definition Audio Controller
0xDF020000-0xDF02FFFF	High Definition Audio Controller
0xA0000-0xBFFFF	PCI bus
0xA0000-0xBFFFF	Intel(R) HD Graphics 510
0x90000000-0xDFFFFFFF	PCI bus
0xFD000000-0xFE7FFFFF	PCI bus
0xFD000000-0xFE7FFFFF	Motherboard resources
0xDF044000-0xDF047FFF	Intel(R) 100 Series/C230 Series Chipset Family PMC - A121
0xFED10000-0xFED17FFF	Motherboard resources
0xFED18000-0xFED18FFF	Motherboard resources
0xFED19000-0xFED19FFF	Motherboard resources
0xE0000000-0xEFFFFFFF	Motherboard resources
0xFED20000-0xFED3FFFF	Motherboard resources
0xFED90000-0xFED93FFF	Motherboard resources
0xFED45000-0xFED8FFFF	Motherboard resources
0xFF000000-0xFFFFFFFF	Motherboard resources
0xFF000000-0xFFFFFFFF	Intel(R) 82802 Firmware Hub Device
0xFEE00000-0xFEEFFFFF	Motherboard resources
0xDFFE0000-0xDFFFFFFF	Motherboard resources
0xDF04A000-0xDF04A0FF	Intel(R) 100 Series/C230 Series Chipset Family SMBus - A123
0xFDAF0000-0xFDAFFFFF	Motherboard resources
0xFDAE0000-0xFDAEFFFF	Motherboard resources
0xFDAC0000-0xFDACFFFF	Motherboard resources
0xDF000000-0xDF01FFFF	Intel(R) Ethernet Connection I219-V
0xDF030000-0xDF03FFFF	Intel(R) USB 3.0 eXtensible Host Controller
0xFDAD0000-0xFDADFFFF	Motherboard resources

MEMORY MAP	ASSIGNMENT
0xFDB00000-0xFDFFFFFF	Motherboard resources
0xFE000000-0xFE01FFFF	Motherboard resources
0xFE036000-0xFE03BFFF	Motherboard resources
0xFE03D000-0xFE3FFFFF	Motherboard resources
0xFE410000-0xFE7FFFFF	Motherboard resources
0xDE000000-0xDEFFFFFF	Intel(R) HD Graphics 510
0xC0000000-0xCFFFFFFF	Intel(R) HD Graphics 510
0xDF04E000-0xDF04EFFF	Intel(R) 100 Series/C230 Series Chipset Family Thermal subsystem - A131
0xFE40F000-0xFE40FFFF	Intel(R) Management Engine Interface

Configuring WatchDog Timer

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
```

Flash BIOS Update

I. Prerequisites

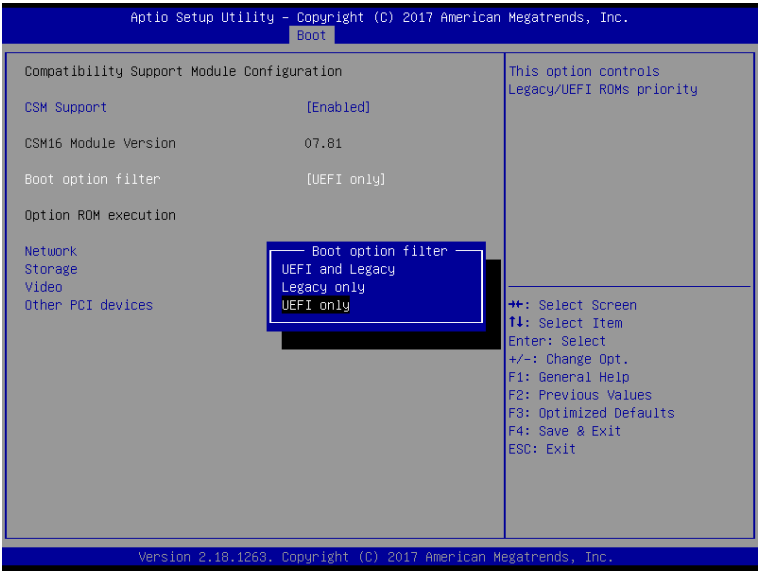
1 Prepare a USB storage device which can save the required files for BIOS update.

2 Download and save the BIOS file (e.g. 72700PH1.bin) to the storage device.

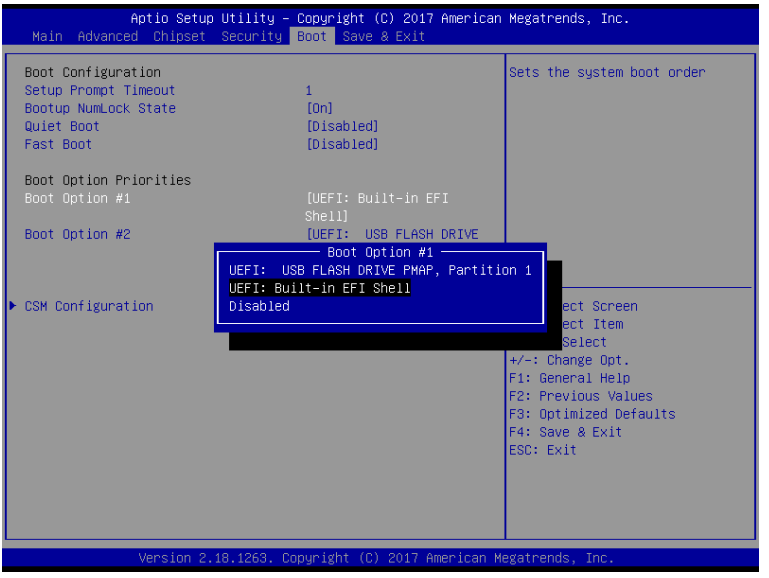
3 Copy AMI flash utility –AFUEFIx64.exe (v5.09.01) into the storage device. The utility and BIOS file should be saved to the same path.

4 Make sure the target system can first boot to the EFI shell environment.

(1) Connect the USB storage device.
(2) Turn on the computer and press **<ESC>** or **<DEL>** key during boot to enter BIOS Setup.
(3) The system will go into the BIOS setup menu.
(4) Select **[Boot]** menu and enter into **[CSM Configuration]** menu.
(5) Set **[Boot option filter]** to **[UEFI only]** and press **<F4>** key to save the configuration and restart the system.



(6) Press **<ESC>** or **<DEL>** to enter into BIOS setup menu again.
(7) Select **[Boot]** menu and set **[UEFI: Built-in EFI Shell]** as the 1st boot device.
(8) Press **<F4>** key to save the configuration and restart the system to boot into EFI Shell environment.



II. AFUEFIx64 Command for System BIOS Update

AFUEFIx64.efi is the AMI firmware update utility; the command line is shown as below:

AFUEFIx64 <ROM File Name> [option1] [option2]….
Users can type "AFUEFIx64 /?" to view the definition of each control option. The recommended options for BIOS ROM update include the following parameters:

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

III. BIOS Update Procedure

1 Boot into EFI Shell and change to the path where you put BIOS image and AFUEFIx64.

```
Shell> fs0:
fs0:\> cd afuefix64
```

2 Type "**AFUEFIx64 7270xxxx.bin /p /b /n /x"** and press enter to start the flash procedure. (xx means the BIOS revision part, e.g. 0PH1…)

3 During the update procedure, you will see the BIOS update process status and its execution percentage. Beware! Do not turn off the system power or reset your computer if the whole procedure are not complete yet, or it may crash the BIOS ROM and the system will be unable to boot up next time.

4 After the BIOS update procedure is completed, the following messages will be shown:

```
fs0:\afuefix64> afuefix64 72700PH1.bin /p /b /n /x
  +-------------------------------------------------------------------------+
  |       AMI Firmware Update Utility  v5.09.01.1317                        |
  |   Copyright (C) 2017 American Megatrands Inc. All Rights Reserved.      |
  +-------------------------------------------------------------------------+
  Reading flash ..............  done
  - ME Data Size Checking . ok
  - FFS checksums ......... ok
  - Check RomLayout ........ Ok.
  Erasing Boot Block .......... done
  Updating Boot Block ......... done
  Verifying Boot Block ........ done
  Erasing Main Block .......... done
  Updating Main Block ......... done
  Verifying Main Block ........ done
  Erasing NVRAM Block ......... done
  Updating NVRAM Block ........ done
  Verifying NVRAM Block ....... done

  fs0:\afuefix64> _
```

5 Restart the system and boot up with the new BIOS configurations.

6 The BIOS Update is completed after the system is restarted.

7 Reboot the system and verify if the BIOS version shown on the initialization screen has been updated.