USER MANUAL

KS-1130

Self-Service
Payment Kiosk

KS-1130 M1

KS-1130 Self-Service Payment Kiosk

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 service and disassemble the system. If any damages should occur on the system and are caused by unauthorized servicing, it will not be covered by the product warranty.

Contents

Revision History

The revision history of KS-1130 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 KS-1130 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 KS-1130 system. The KS-1130 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 KS-1130 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 outlines the structure of this user manual.

Chapter 1 Introduction
This chapter provides the introduction for KS-1130 as well as the framework of the user manual.

Chapter 2 Getting Started
This chapter describes the package contents and outlines KS-1130 specifications. Read the safety reminders carefully on how to take care of KS-1130 motherboard properly.

Chapter 3 System Configuration
This chapter describes the locations and functions of the system motherboard 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 contains helpful information for proper installations of the driver utilities for both KS-1130 high-end level and entry level systems.

Chapter 5 BIOS Setup
This chapter indicates you how to change the BIOS configurations.

Appendix A System Diagrams
This appendix provides the exploded diagrams and part numbers of the KS-1130.

Appendix B Technical Summary
This appendix provides the information about the allocation maps for KS-1130 system block diagram, system resources, Watchdog Timer Configuration and Flash BIOS Update.

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2 Getting Started

This chapter provides the information for KS-1130 system. It describes the package contents and outlines the motherboard specifications.

The following topics are included:

- Package List
- KS-1130 Specification
- Safety Precautions

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

2.1 Packing List

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

Item	Q'ty
KS-1130	1
Quick Reference Guide	1
Manual / Driver DVD	1

2.2 System Specifications

System	
CPU	➢ **High-End Level:** Intel® Core™ i5-6500 / i3-6100 ➢ **Entry Level:** Intel® Atom™ J1900
Memory	➢ **High-End Level:** Up to 16GB DDR4 memory ➢ **Entry Level:** Up to 8GB DDR3L SO-DIMM memory
Chipset	➢ **High-End Level System:** Intel® H110 ➢ **Entry Level System:** Built-in CPU
HDD	➢ 1 x 500GB 2.5” SATA HDD
Network	➢ 10/100/1000 Base-T Fast Ethernet
Power Supply	➢ 1 x 12V+24V power supply ➢ 1 x 24V power supply
Expansion Bus	**High-End Level System:** ➢ 1 x Full / Half Mini-PCIe (Top side) ➢ 1 x Half Mini-PCIe (Bottom side) **Entry Level System:** ➢ 1 x Full / Half Mini-PCIe (Top side)
BIOS	➢ AMI BIOS
O.S. Support	➢ Windows 10 / Windows 7 / POSReady7
Kiosk System Fan	➢ 4 x 6cm Fan
Hardware Monitor	➢ Voltage detection (5V, 12V, Battery, up to 4 sets) ➢ CPU & System temperature detection
Watchdog Timer	➢ 0-255 seconds
Buzzer	➢ Supports system beep
Kiosk System Speaker	➢ Speaker x 2
System Weight	➢ 55 kg (without Free Stand) ➢ 95 kg (with Free Stand)
Dimensions (W x H x D)	➢ 500 x 1050 x 151 mm (without Free Stand) ➢ 580 x 1750 x 600 mm (with Free Stand)
Operating Display	
LCD	➢ 31.5” TFT LCD
Max. Resolution	➢ 1920 x 1080
Brightness	➢ 500 cd/m^2
Touchscreen	➢ Projected capacitive touch
View Angle	➢ Horizontal: (R) 89° / (L) 89° ➢ Vertical: (U) 89° / (L) 89°
Estimated luminance lifetime	➢ 50,000 hours

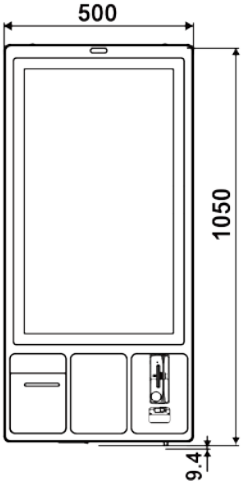
Optional Accessories	
Thermal Printer (optional)	➢ 2” or 3” Standalone thermal printer for 58mm or 80mm paper roll
Barcode Scanner (optional)	➢ 1D/2D Barcode Scanner
IC Card & MSR Reader (optional)	➢ RS232 interface of the hybrid card reader intended to read ISO / JIS II format magnetic card and read/write ISO7816 / ISO / JIS II format magnetic card and read/write ISO7816 / EMV / memory chip smart card
Face Camera (optional)	➢ 16:9 2.1M-Pixels Full HD H.264 PC camera
Credit Card Reader (optional)	➢ Based on customer requirements
e-Payment (optional)	➢ Based on customer requirements
RFID Reader (optional)	➢ Read/write ISO 14443A Mifare
Environment	
EMC & Safety	➢ CE / FCC
Operating Temperature	➢ 0°C ~ 35°C (32°F~ 95°F)
Storage Temperature	➢ -5°C ~ 60°C (23°F~ 140°F)
Humidity	➢ 20%~ 85% (no condensation)

2.3 System Overview

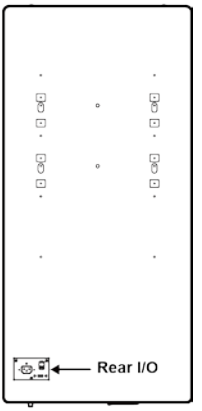
Unit: mm

2.3.1 High-End Level System

Front View



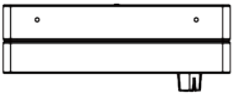
Rear View



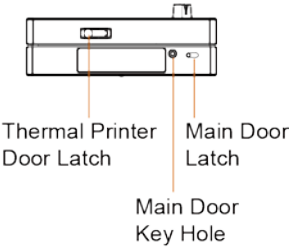
Left Side View

Right Side View

Top View

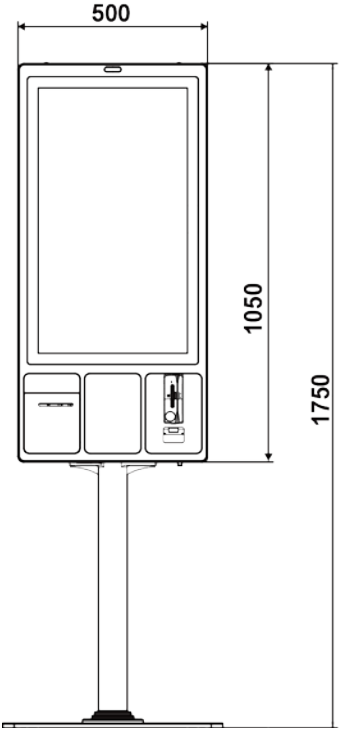


Bottom View

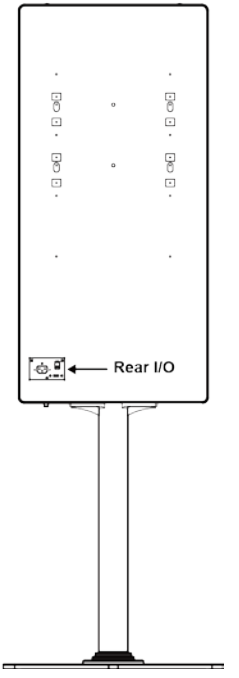


2.3.2 Entry Level System

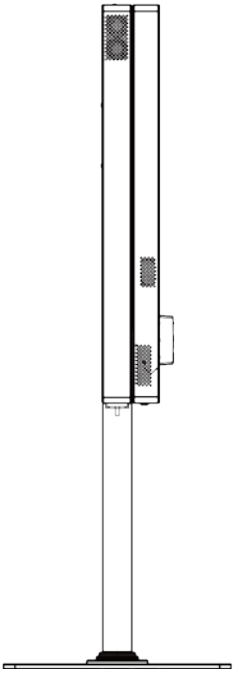
Front View



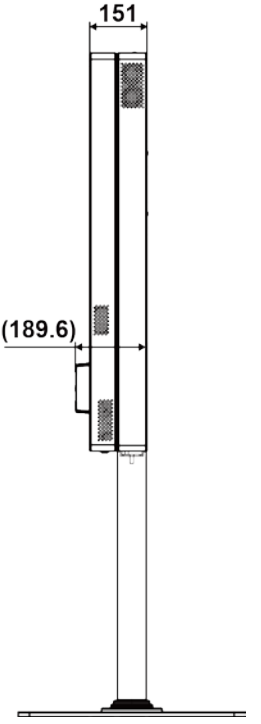
Rear View



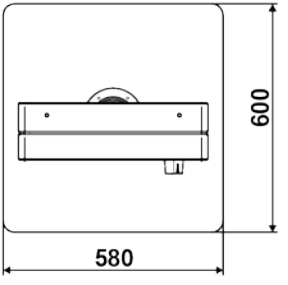
Left Side View



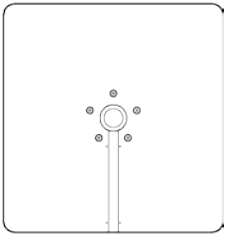
Right Side View



Top View



Bottom View



2.3.3 Safety Precautions

Before operating this system, read the following information carefully to protect your system 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 KS-1130 on a sturdy, level surface. Be sure to allow enough space around the system to have easy access needs.
   - Avoid installing your KS-1130 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 KS-1130 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 KS-1130 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.

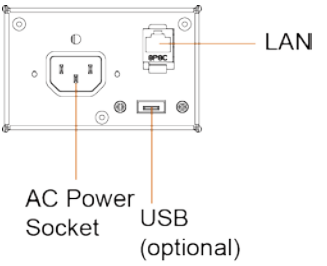
3 System Configuration

This chapter contains helpful information about the rear I/O ports diagram, and jumper & connector settings, and component locations for the main board.

The following topics are included:

- Rear I/O Ports Diagram
- Main Board Jumper Settings and Component Locations
- How to Set Jumpers
- Setting Main Board Connectors and Jumpers

3.1 Rear I/O Ports Diagram

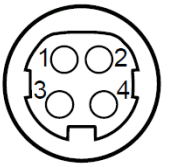


3.2 KS-1130 High-End Level System Main Board

3.2.1 DC-IN Port

Port Location: DC-IN
Description: DC Power-In Port (rear IO)

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



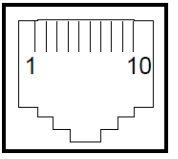
DC-IN

3.2.2 COM Ports & VGA Connectors (COM1, COM2, VGA, COM3, COM3_1, COM4, COM5)

There are multiple COM ports enhanced in this board: COM1, COM_VGA (COM2+VGA Port), COM3, COM3_1, COM4 and COM5.

Port Location: COM1 and COM4
Description: COM1 and COM4 Connectors
The pin assignments are as follows:

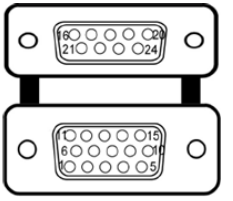
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM1/4_DCDJ_I	6	COM1/4_DSRJ_I
2	COM1/4_RX_I	7	COM1/4_RTSJ_I
3	COM1/4_TX_I	8	COM1/4_CTSJ_I
4	COM1/4_DTRJ_I	9	COM1/4_RI_SEL
5	GND	10	NC



COM1/
COM4

Port Location: COM_VGA (COM2 +VGA Port)
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/+12 selectable

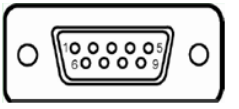


COM2/ VGA

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	-	-

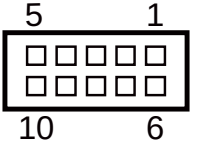
COM3 and COM3_1 can't be used simultaneously.



COM3

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

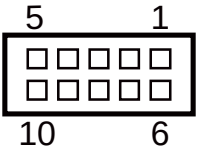
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM3_DCDJ_I	6	COM3_DSRJ_I
2	COM3_RX_I	7	COM3_RTSJ_I
3	COM3_TX_I	8	COM3_CTSJ_I
4	COM3_DTRJ_I	9	COM3_RI_SEL
5	GND	10	NC



COM3_1

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

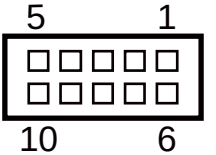
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM4_DCDJ_I	6	COM4_DSRJ_I
2	COM4_RX_I	7	COM4_RTSJ_I
3	COM4_TX_I	8	COM4_CTSJ_I
4	COM4_DTRJ_I	9	COM4_RI_SEL
5	GND	10	NC



COM4_1

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

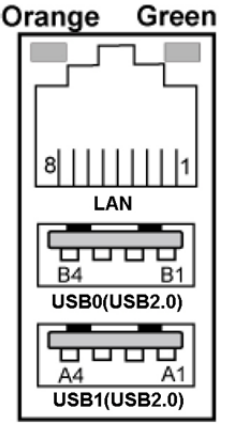
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM5_DCDJ_I	6	COM5_DSRJ_I
2	COM5_RX_I	7	COM5_RTSJ_I
3	COM5_TX_I	8	COM5_CTSJ_I
4	COM5_DTRJ_I	9	COM5_RI_SEL
5	GND	10	NC



COM5

3.2.3 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 RJ-45 port (rear I/O)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	LAN1_MDI0_DP	5	LAN1_MDI2_DP
2	LAN1_MDI0_DN	6	LAN1_MDI2_DN
3	LAN1_MDI1_DP	7	LAN1_MDI3_DP
4	LAN1_MDI1_DN	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	10/100Mbps LAN Speed Indicator
Orange Color On	Giga LAN Speed Indicator
Off	No LAN switch / hub connected

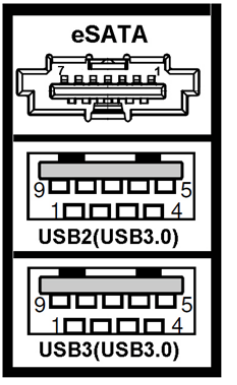
3.2.4 USB 3.0 Connectors (eSATA, USB2, USB3)

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

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	VCC5	6	RX2_DP
2	USBP3N	7	GND
3	USBP3P	8	TX3_DN
4	GND	9	TX3_DP
5	RX2_DN	10	-

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

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	VCC5	6	BP_RX_DP
2	USBP4N	7	GND
3	USBP4P	8	BP_TX_DN
4	GND	9	BP_TX_DP
5	BP_RX_DN	10	-



USB2/ USB3

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

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

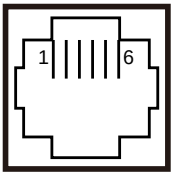
3.2.5 Cash Drawer Port (DRW1)

Port Location: DRW1

Description: RJ-11 Cash Drawer Connector (+12V/+24V selectable, default: +12V). DRW1 is used by default.

The pin assignments are as follows:

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



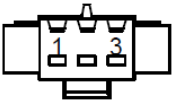
DRW1

3.2.6 2nd Display Power Port

Port Location: 2nd DIS PWR

Description: DC12V power supply for 2nd display

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	VCC12	3	VCC12
2	GND	-	-



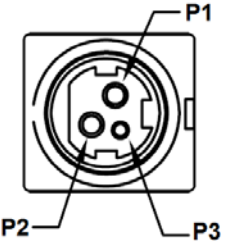
2nd DIS PWR

3.2.7 Printer Power Port (Option)

Port Location: PRINT PWR

Description: DC24V power supply for the stand-printer

PIN	ASSIGNMENT
P1	+24V
P2	+24V
P3	GND



PRINT PWR (Option)

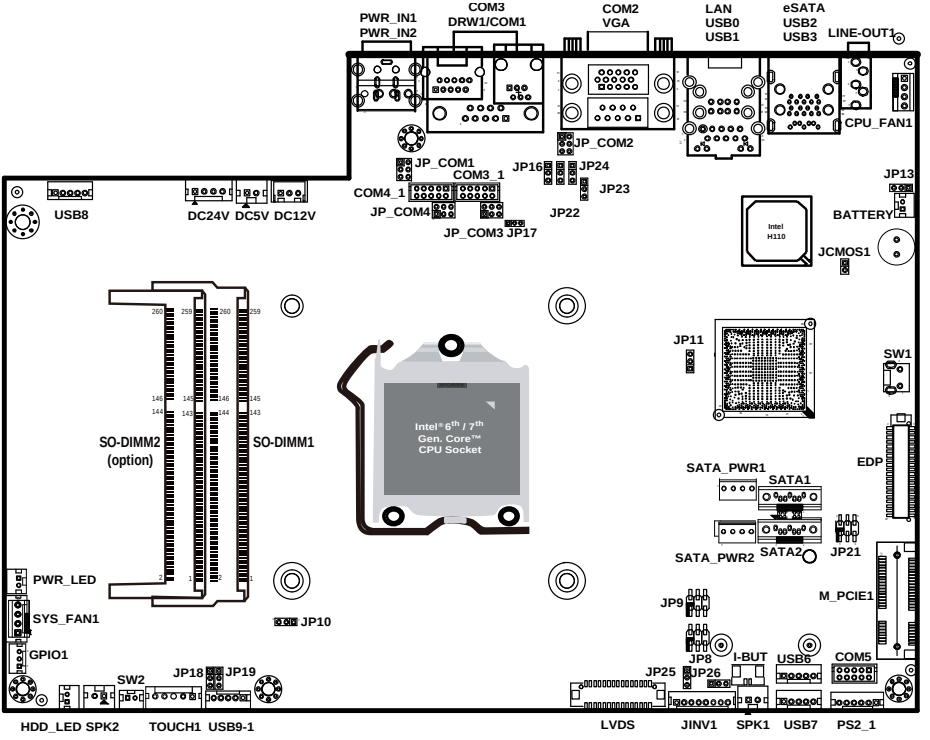
3.2.8 Jumper & Connector Quick Reference Table

JUMPER / CONNECTOR	NAME
COM Port and VGA Connector	COM1, COM_VGA (COM2 + VGA Port) COM3, COM3_1, COM5
COM Port RI and Voltage Selection	JP_COM1, JP_COM2, JP_COM3, JP_COM4
i-Button Connector	I-BUT
i-Button Function Selection	JP22, JP23, JP24
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
Cash Drawer Connector	DRW1
Cash Drawer Selection	JP17
Cash Drawer Power Selection	JP16
2nd Display Power Port	2nd DIS PWR
Printer Power Port (Option)	PRINT PWR (option)
LED Connector	PWR_LED, HDD_LED (option)
System / CPU Fan Connector	SYS_FAN1, CPU_FAN1
Power Input Connector	PWR_IN1, PWR_IN2
Power Connector	DC24V, DC12V, DC5V
Power Switch Connector	SW1 (option), SW2
External Speaker Connector	SPK1, SPK2 (option)
Speaker Selection	JP13
Inverter Connector	JINV1
LVDS Connector	LVDS1
LVDS Panel Power Input Selection	JP25
LVDS Backlight Type Selection	JP26
MSR/Card Reader Connector	PS2_1
SATA & SATA Power Connector	SATA1, SATA2 (option), SATA_PWR1, SATA_PWR2 (option)
Touch Panel Connector	TOUCH1
Touch Panel and USB9-1 Selection	JP18, JP19
LVDS Output Resolution Selection	JP8, JP9
Mini-PCIe/mSATA Connector	M_PCIE1, M_PCIE2 (option)
Mini-PCIe and USB6 Selection	JP21

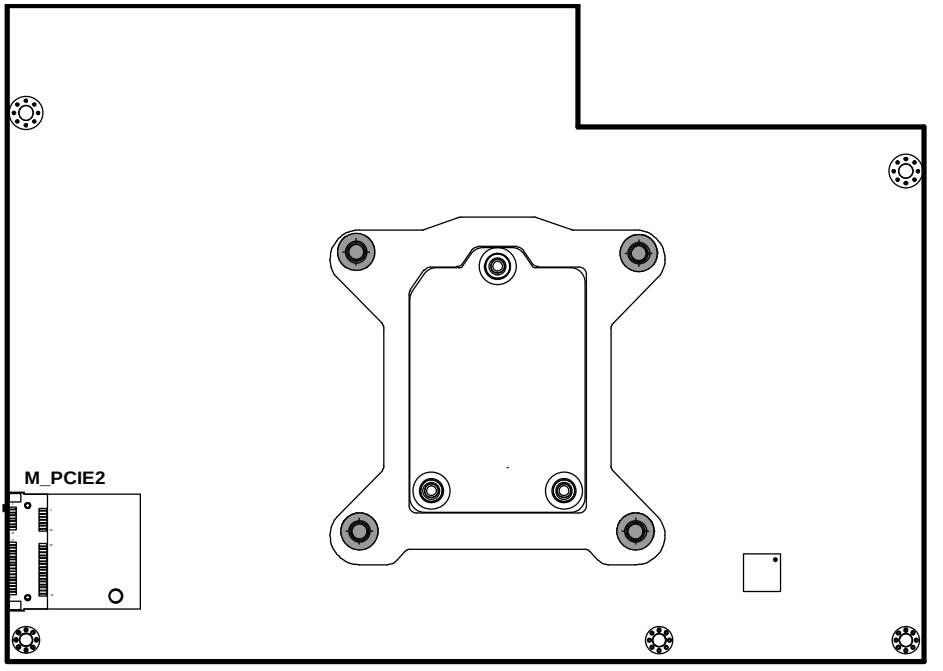
JUMPER / CONNECTOR	NAME
EDP Connector (option)	EDP
Configuration / Recovery Selection	JP11
VCCIO / REFIN Selection	JP10
Clear CMOS Data Selection	JCMOS1
General Purpose Input / Output (GPIO) Connector	GPIO1
Audio Jack	LINE_OUT1

3.2.9 Main Board Component Locations & Jumper Settings

M/B: PB-6980



PB-6980 Front Connector, Jumper and Component Locations



PB-6980 Rear Connector, Jumper and Component Locations

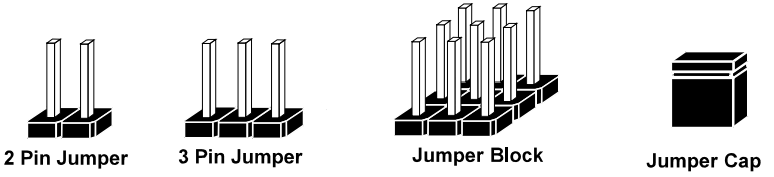
	**WARNING:** Always disconnect the power cord when you are working with connectors and jumpers on the main board. Make sure both the system and peripheral devices are turned OFF as sudden surge of power could damage sensitive components. Make sure KS-1130 is properly grounded.
	**CAUTION:** Observe precautions while handling electrostatic sensitive components. Make sure to ground yourself to prevent static charge while you are working on the connectors and jumpers. Use a grounding wrist strap and place all electronic components in any static-shielded devices.
	**CAUTION:** Always touch the motherboard components by the edges. Never touch components such as a processor by its pins. Take special cares while you are holding electronic circuit boards by the edges only. Do not touch the main board components.

3.2.10 HOW TO SET JUMPERS

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

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

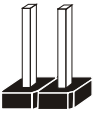
JUMPERS AND CAPS



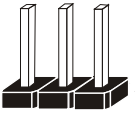
If a jumper has three pins (for examples, labelled PIN1, PIN2, and PIN3), you can connect PIN1 & PIN2 to create one setting by shorting. You can either connect PIN2 & PIN3 to create another setting. The same jumper diagrams are applied all through this manual. The figure below shows what the manual diagrams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

Jumper Diagrams

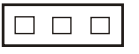
Jumper Cap looks like this



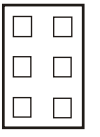
2 pin Jumper looks like this



3 pin Jumper looks like this

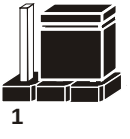


Jumper Block looks like this

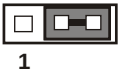


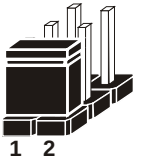
Jumper Settings

2 pin Jumper close(enabled) Looks like this

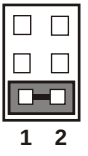


3 pin Jumper 2-3 pin close(enabled) Looks like this





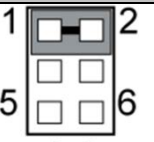
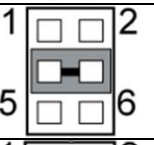
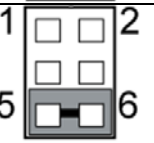
Jumper Block 1-2 pin close(enabled) Looks like this



3.2.11 Setting Connectors and Jumpers

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

Jumper Location: JP_COM1, JP_COM2, JP_COM3, JP_COM4
Description: COM Port RI & Voltage Selection, pin-headers on board. The voltage of COM1, COM2 and COM3 is made to control by the jumpers on board.
The jumper settings are as follows:

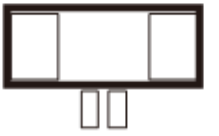
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
RI (Default)	1-2	
VCC12	3-4	
VCC	5-6	

Note: Manufacturing Default is **RI**.

3.2.11.2 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



I-BUT

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

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

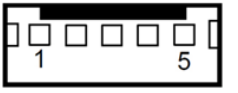
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
COM2 (Default)	1-2	 JP22/JP23/JP24
i-Button*	2-3	 JP22/JP23/JP24

Note: Manufacturing Default is COM2.
*When these jumpers are set as 'i-Button', the COM3_1 connector will not function.

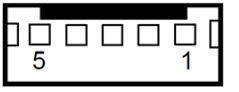
3.2.11.4 Internal USB 2.0 Connectors (USB6, USB7, USB9-1)

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

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



USB6/
USB7



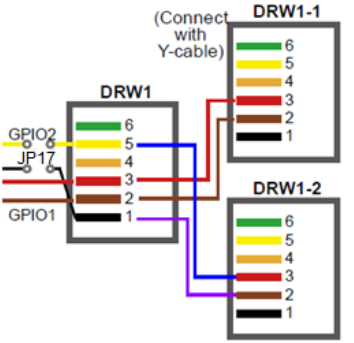
USB9-1

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].

3.2.11.5 Cash Drawer Selection (JP17)

Jumper Location: JP17
Description: DRW1, DRW1-1, DRW1-2
DRW1 port is used by default. You can add a second port via either of the methods below:



Method 1:
DRW1 includes two groups of GPIO pins. The second group is normally unused but can be enabled by the jumper. Set the pin header jumper JP17 as 1-2 connected if necessary.

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

JP17: Cash Drawer 2 Selection

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
Cash Drawer 2	1-2	 JP17
Cash Drawer1 (Default)	2-3	 JP17

Note: Manufacturing Default is **Cash Drawer 1**.

Step 3.
DRW1, DRW1-1, DRW1-2 shares the same power source. (Default: 12V).

SIO Address	
Cash drawer 1	LDN 06, 0x91 bit 4
Cash drawer 2	LDN 06, 0x91 bit 5

Cash Drawer Configuration

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

Configuration Sequence

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

(1) Enter the extended function mode
(2) Configure the configuration registers
(3) Exit the extended function mode

(1) Enter the extended function mode

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

(2) Configure the configuration registers

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

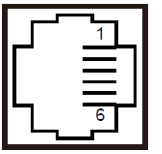
(3) Exit the extended function mode

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

Code example for open the cash drawer 1

```
;------ Enter to extended function mode ------------------------------------------------------
mov     dx,     2eh
mov     al,     87h
out     dx,     al
out     dx,     al
;------ Select Logical Device 6 of Cash drawer -----------------------------------------
Mov     al,     07h
Out     dx,     al
inc     dx
mov     al,     06h
out     dx,     al
dec     dx
;------ Open the Cash drawer 1 ---------------------------------------
mov     al,     91h
out     dx,     al
inc     dx
mov     al,     04h
out     dx,     al
;------ Exit the extended function mode ------------------------------------------------------
dec     dx
mov     al,     0aah
out     dx,     al
```

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

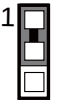
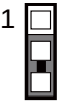


DRW2

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

3.2.11.6 Cash Drawer Power Selection (JP16)

Jumper Location: JP16
Description: Cash Drawer Power Selection
The jumper settings are as follows:

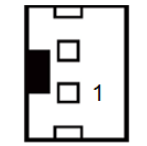
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
24V	1-2	 JP16
12V (Default)	2-3	 JP16

Note: Manufacturing Default is **12V**.

3.2.11.7 LED Connectors (PWR_LED, HDD_LED)

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

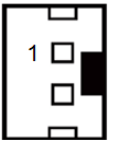
PIN	ASSIGNMENT
1	VCC5
2	GND



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

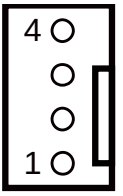


HDD_LED
(option)

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

Connector Location: SYS_FAN1
Description: System Fan Connector 1

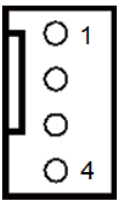
PIN	ASSIGNMENT
1	GND
2	VCC12
3	SYS_FANIN
4	SYS_FANOUT



SYS_FAN1

Connector Location: CPU_FAN1
Description: CPU Fan Connector 1

PIN	ASSIGNMENT
1	GND
2	VCC12
3	CPU_FANIN
4	CPU_FANOUT

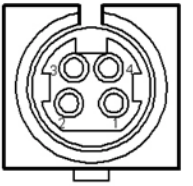


CPU_FAN1

3.2.11.9 Power Input Connectors (PWR_IN1, PWR_IN2)

Connector Location: PWR_IN1
Description: Power Input Connector 1
The pin assignments are as follows:

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



PWR_IN1

Connector Location: PWR_IN2
Description: Power Input Connector 2
The pin assignments are as follows:

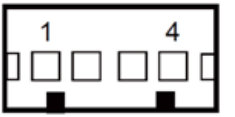
PIN	ASSIGNMENT
1	GND
2	24VIN
3	24VIN
4	GND

PWR_IN2

3.2.11.10 Power Connectors (DC24V, DC12V, DC5V)

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

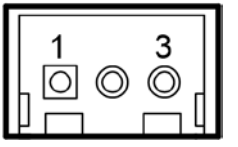
PIN	ASSIGNMENT
1	24VIN
2	24VIN
3	GND
4	GND



DC24V

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

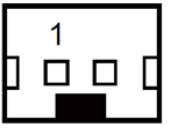
PIN	ASSIGNMENT
1	VCC12_GT
2	NC
3	GND



DC12V

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

PIN	ASSIGNMENT
1	V_5P0_A
2	GND

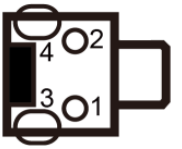


DC5V

3.2.11.11 Power Switch Connectors (SW1, SW2)

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

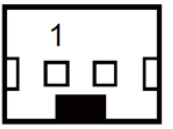
PIN	ASSIGNMENT
1	GND
2	LPC_PWRBTNJ
3	GND
4	GND



SW1
(option)

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

PIN	ASSIGNMENT
1	LPC_PWRBTNJ
2	GND

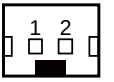


SW2

3.2.11.12 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/ SPK2

(option)

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

3.2.11.13 Speaker Selection (JP13)

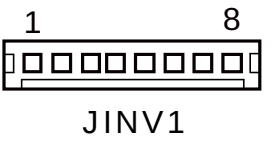
Jumper Location: JP13
Description: SPK1/SPK2 Selection
The jumper settings are as follows:

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

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

3.2.11.14 Inverter Connector (JINV1)

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

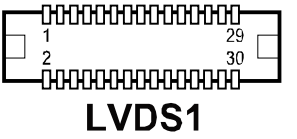


PIN	ASSIGNMENT
1	GND
2	VCC12
3	VCC12
4	VCC12
5	GND
6	LED_PWM
7	GND
8	PANLE_BKLTEN

3.2.11.15 LVDS Connector (LVDS1)

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

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



3.2.11.16 LVDS Power Selection (JP25)

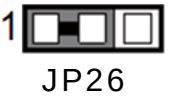
Jumper Location: JP25
Description: LVDS Panel Power Input Selection
The jumper settings are as follows:

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

Note: Manufacturing Default is **3.3V**.

3.2.11.17 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 (Default)	1-2	 JP26
5V	2-3	 JP26

Note: Manufacturing Default is **3.3V**.

3.2.11.18 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

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

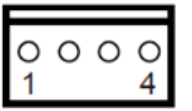
Connector Location: SATA1, SATA2 (option)
Description: Serial ATA Connectors
The pin assignments are as follows:

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

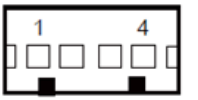
SATA1/
SATA2
(option)

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

PIN	ASSIGNMENT
1	VCC
2	GND
3	GND
4	VCC12



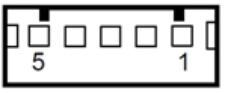
SATA_PWR1



SATA_PWR2
(option)

3.2.11.20 Touch Panel Connector

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

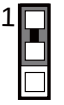


TOUCH1

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

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

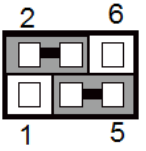
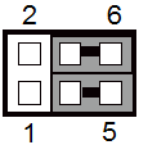
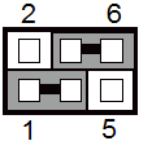
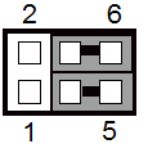
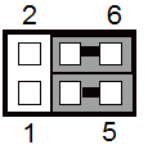
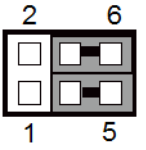
Jumper Location: JP18, JP19
Description: Touch Panel and USB9-1 Selection
The jumper settings are as follows:

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

Note: Manufacturing Default is **Touch interface**.

3.2.11.22 LVDS Output Resolution Selection (JP8, JP9)

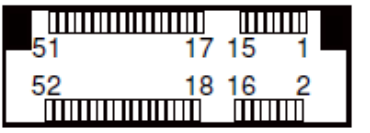
Jumper Location: JP8, JP9
Description: LVDS Output Resolution Selection

SELECTION	JUMPTER SETTING	JUMPER ILLUSTRATION	
1024x768 (24 bit)	JP8 (3-5) JP8 (2-4) JP9 (3-5) JP9 (4-6)	 JP8	 JP9
1024x768 (18 bit)	JP8 (1-3) JP8 (4-6) JP9 (3-5) JP9 (4-6)	 JP8	 JP9
800x600 (18 bit)	JP8 (3-5) JP8 (4-6) JP9 (3-5) JP9 (4-6)	 JP8	 JP9

3.2.11.23 Mini-PCIe/mSATA Connector (M_PCIE1, M_PCIE2 (option))

Connector Location: M_PCIE1, M_PCIE2 (option)
Description: Mini-PCIE/mSATA Connector
The pin assignments are as follows:

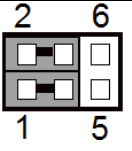
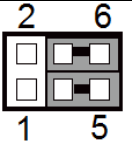
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	WAKE#	27	GND
2	+3.3V	28	+1.5V
3	Reserved	29	GND
4	GND	30	SMB_CLK
5	Reserved	31	PETn2
6	+1.5V	32	SMB_DATA
7	CLKREQ#	33	PETp2
8	Reserved	34	GND
9	GND	35	GND
10	Reserved	36	USB D-
11	REFCLK1-	37	GND
12	Reserved	38	USB D+
13	REFCLK1+	39	+3.3V
14	Reserved	40	GND
15	GND	41	+3.3V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



M_PCIE1/
M_PCIE2
(option)

3.2.11.24 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	 JP21
USB6 (Disabled) signal to mini-PCIe (Default) *	3-5, 4-6	 JP21

***Note:** Manufacturing Default is **USB6 (Disabled) signal to mini-PCIe**.

3.2.11.25 Embedded DisplayPort (EDP) Connector (EDP) (option)

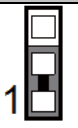
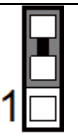
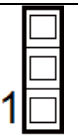
Connector Location: EDP (option)
Description: EDP Connector
The pin assignments are as follows:

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

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.

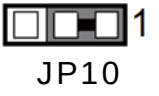
3.2.11.26 Configuration / Recovery Selectioin (JP11)

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

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

3.2.11.27 VCCIO / REFIN Selection (JP10)

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

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
1.0V (Default)	1-2	 JP10
0.95V	2-3	 JP10
1.0V	Open	 JP10

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

3.2.11.28 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 (Default)	Open	 JCMOS1
Clear CMOS Data	1-2	 JCMOS1

Note: Manufacturing Default is **Normal**.

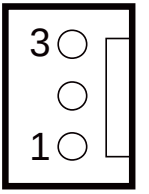
3.2.12 GPIO Connector (GPIO1)

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

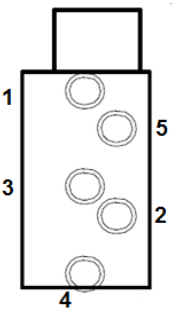
3.2.13 Audio Jack (LINE_OUT1)

Connector Location: LINE_OUT1

Description: External audio phone jack port

The pin assignments are as follows:

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



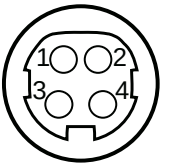
LINE_OUT1

3.3 KS-1130 Entry Level System Main Board

3.3.1 DC-IN Port (DC-IN)

Port Location: DC-IN
Description: DC Power-In Port (rear IO)

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

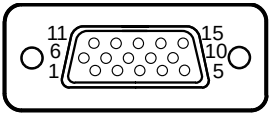


DC-IN

3.3.2 VGA Port (VGA)

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

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



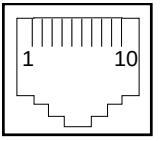
VGA

3.3.3 COM Ports (COM1, COM2, COM3)

Port Location: COM1, COM2, COM3

Description: RJ-45 COM Ports (rear I/O)

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



COM1/
COM2/
COM3

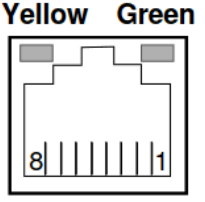
Note: **COM3** & **COM3_1** will not function when jumpers JP20, JP21, JP22 are set as 2-3 connected (i-Button). Refer to the **i-Button Function Selection** section for details.

3.3.4 LAN Port (LAN)

Port Location: LAN

Description: RJ-45 COM Ports (rear I/O)

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



LAN

LAN LED Indicator:

Left Side LED

Yellow Color Blinking	LAN Message Active
Off	No LAN Message Active

Right Side LED

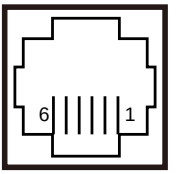
Green Color On	10/100Mbps LAN Speed Indicator
Orange Color on	Giga LAN Speed Indicator
Off	No LAN switch/ hub connected.

3.3.5 Cash Drawer Port (DWR1, DWR1-1, DWR1-2)

Port Location: DWR1, DWR1-1, DWR1-2

Description: Signals from M/B GPIO (rear I/O)

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



DWR1

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

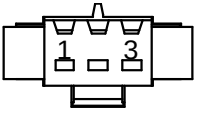
DWR1	Open		Close	
PB-6822RA, RB	Write	To	Write	To
	700h	588h	000h	588h
PB-6822RC	Write	To	Write	To
	02h	SIO LDN 06h's 90h	00h	SIO LDN 06h's 90h

3.3.6 2ND Display Power Port (Optional) (2-DISPWR)

Port Location: 2-DISPWR

Description: Second Display Power port (Rear I/O)

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



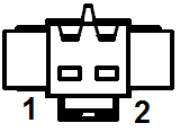
2-DISPWR

3.3.7 RAID Power Port (Optional) (RAID PWR)

Port Location: RAID PWR

Description: RAID Power port (Rear I/O)

PIN	ASSIGNMENT
1	GND
2	+5V



RAID PWR

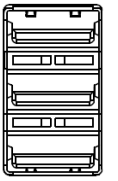
3.3.8 USB Ports (USB0-USB4)

Port Location: USB0, USB1, USB2

Description: USB Type A Ports

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

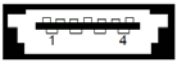
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	+5V (Max. current: 0.5A)	3	D+
2	D-	4	GND



USB2/

USB1/

USB0



USB3

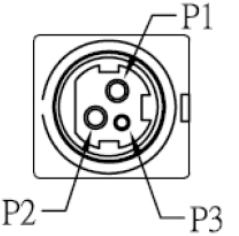
USB4

3.3.9 Printer Power Port (Optional) (PRT PWR)

Port Location: PRT PWR

Description: Printer Power port (rear I/O)

PIN	ASSIGNMENT
P1	GND
P2	+24V
P3	NC



PRINT

POWER

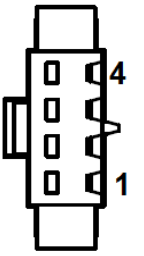
PRT PWR

3.3.10 UPS Power Port (Optional) (UPS)

Port Location: UPS

Description: UPS Power port (Rear I/O)

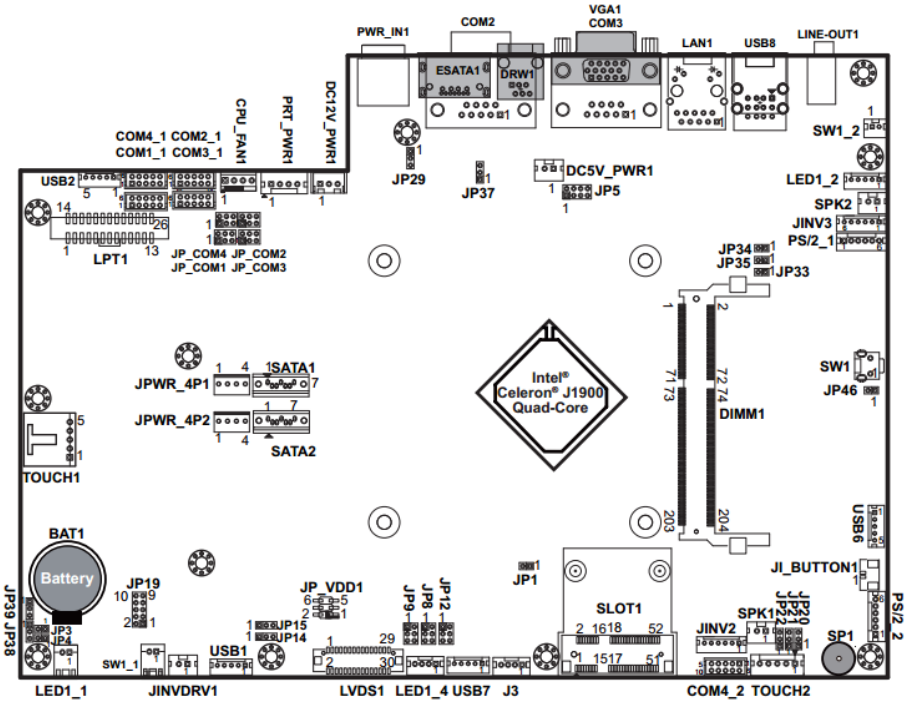
PIN	ASSIGNMENT
1	GND
2	+24V
3	+24V
4	GND



UPS

3.3.11 MAINBOARD COMPONENT LOCATIONS & JUMPER SETTINGS

M/B: PB-6822



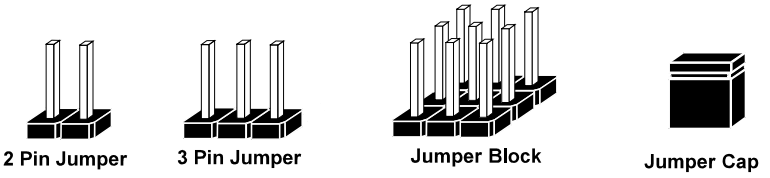
PB-6822 Main Board Component Locations

3.3.12 How to Set Jumpers

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

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

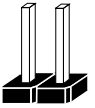
Jumpers & Caps



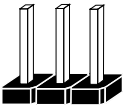
If a jumper has three pins for example, labelled PIN1, PIN2, and PIN3. You can connect PIN1 & PIN2 to create one setting and shorting. You can either connect PIN2 & PIN3 to create another setting. The same jumper diagrams are applied all through this manual. The figure below shows what the manual diagrams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

Jumper Diagrams

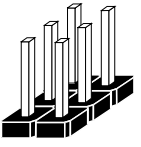
Jumper Cap looks like this



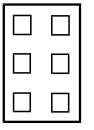
2 pin Jumper looks like this



3 pin Jumper looks like this

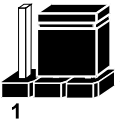


Jumper Block looks like this

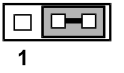


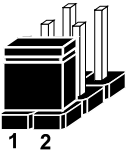
Jumper Settings

2 pin Jumper closed(enabled)
looks like this

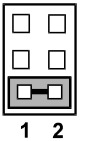


3 pin Jumper
2-3 pin closed(enabled)
looks like this





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

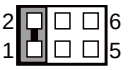
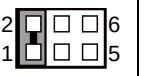
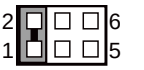
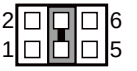
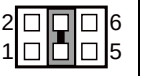
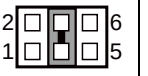
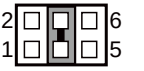
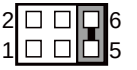
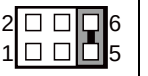
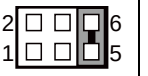
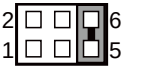


3.3.13 Setting Connectors and Jumpers

3.3.13.1 COM Port RI & Voltage Selection (JP_COM1 – JP_COM4)

Jumper Location: JP_COM1, JP_COM2, JP_COM3, JP_COM4

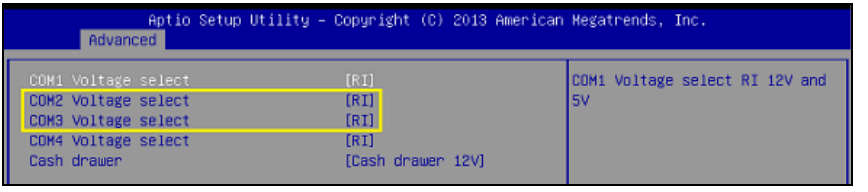
Description: Pin-headers on board.

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

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

Caution:

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

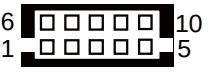


2. JP_COM2 & JP_COM3 can be enabled when COM2 & COM3 voltage adjustment is disabled on BIOS.
3. The voltage of COM port is adjustable by BIOS or jumpers. You can select to adjust the voltage of COM ports either through BIOS or by setting jumpers. DO NOT use these two methods at the same time in case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

3.3.13.2 COM Connectors (COM1_1, COM2_1, COM3_1, COM4_1, COM4_2)

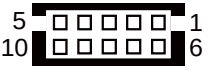
Connector Location: COM1_1, COM2_1, COM3_1, COM4_1, COM4_2
Description: COM Connectors

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



COM1_1/
COM2_1/
COM3_1/
COM4_1

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

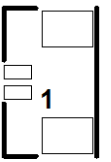


COM4_2

3.3.13.3 i-Button Connector (JI_BUTTON1)

Connector Location: JI_BUTTON1
Description: i-Button Connector

PIN	ASSIGNMENT
1	COM3_DTR_R_I
2	COM3_RXD_R_I

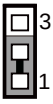
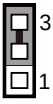


JI_BUTTON1

3.3.13.4 i-Button Function Selection (JP20, JP21, JP22)

Jumper Location: JP20, JP21, JP22

Description: i-Button Function selection

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

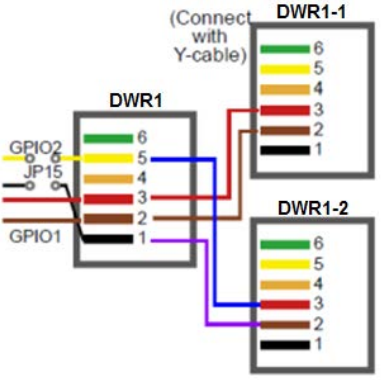
*COM3 & COM3_1 will not function when jumpers JP20, JP21 & JP22 are set as "i-Button."

3.3.13.5 Cash Drawer Control Selection (JP37)

Jumper Location: JP37

Description: DWR1, DWR1-1, DWR1-2 control connector

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



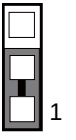
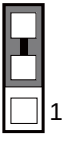
Method 1:

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

Method 2:

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

JP37: Cash Drawer control connector

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

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

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

Cash Drawer Sensor Control:

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

CASH DRAWER CONFIGURATION

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

Configuration Sequence

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

(1) Enter the extended function mode

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

(2) Configure the configuration registers

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

(3) Exit the extended function mode

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

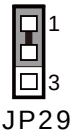
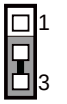
Code example for opening/closing the cash drawer 1-1 / 1-2

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

3.3.13.6 Cash Drawer Power Selection (JP29)

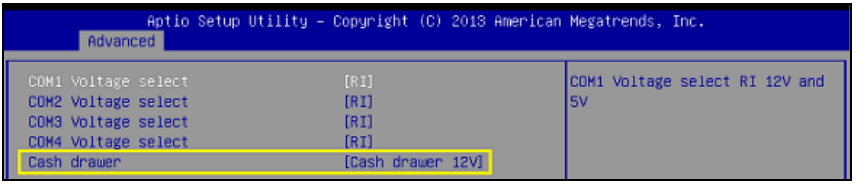
Jumper Location: JP29

Description: DWR1-1 & DWR1-2 power selection

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

Caution:

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

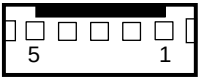


3.3.13.7 USB Connectors (USB1, USB2, USB6, USB7)

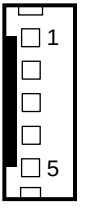
Connector Location: USB1, USB2, USB6, USB7
Description: USB 2.0 connector

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

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



USB1/
USB2/
USB7

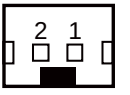


USB6

3.3.13.8 LED Connector (LED1_1)

Connector Location: LED1_1
Description: Power LED connector

PIN	ASSIGNMENT
1	GND
2	VCC

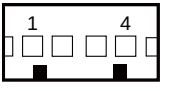


LED1_1

3.3.13.9 Power for Thermal Printer Connector (PRT_PWR1)

Connector Location: PRT_PWR1
Description: Power for Thermal Printer Connector

PIN	ASSIGNMENT
1	VCC24SB
2	VCC24SB
3	GND
4	GND

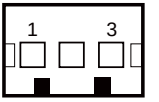


PRT_PWR1

3.3.13.10 Power Connectors (DC12V_PWR1, DC5V_PWR1)

Connector Location: DC12V_PWR1
Description: DC 12Voltage Provider Connector

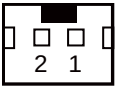
PIN	ASSIGNMENT
1	VCC12
2	GND
3	VCC12



DC12V_PWR1

Connector Location: DC5V_PWR1
Description: DC 5Voltage Provider Connector

PIN	ASSIGNMENT
1	5V
2	GND

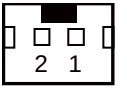


DC5V_PWR1

3.3.13.11 External Speaker Connectors (SPK1, SPK2)

Connector Location: SPK1, SPK2
Description: External Speaker Connector

PIN	ASSIGNMENT
1	SPK_GND
2	SPK_OUT

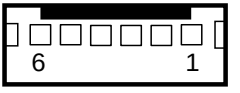


SPK1/
SPK2

3.3.13.12 Inverter Connectors (JINV2, JINV3)

Connector Location: JINV2, JINV3
Description: Inverter connectors

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



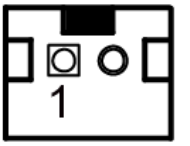
JINV2 /
JINV3

3.3.13.13 Power Button Connector (SW1_2)

Connector Location: SW1_2

Description: Power Button connector

PIN	ASSIGNMENT
1	+3.3V
2	GND

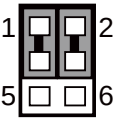
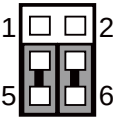


SW1_2

3.3.13.14 LED Backlight Power Control Selection (JP12)

Jumper Location: JP12

Description: LED backlight power control connectors (for LED backlight panel without power driver built-in)

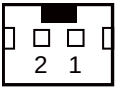
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
Control by driver on M/B	1-3, 2-4 It is applied to the panel without the driver built-in.	 JP12
Control by PWM (Default)	3-5, 4-6 It is applied to the panel with the built-in driver inside.	 JP12

3.3.13.15 LED Backlight Power Connector (JINVDRV1)

Connector Location: JINVDRV1

Description: LED backlight power connector

PIN	ASSIGNMENT
1	VCC
2	GND

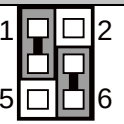
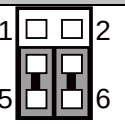
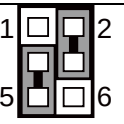
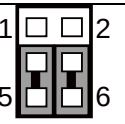
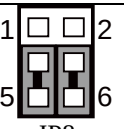
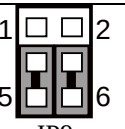
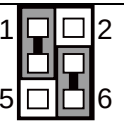
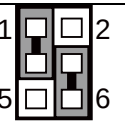


JINVDRV1

3.3.13.16 Panel Resolution Selection (JP8, JP9)

Jumper Location: JP8, JP9

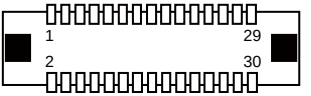
Description: Panel resolution selection

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

3.3.13.17 LVDS Connector (LVDS1)

Connector Location: LVDS1

Description: LVDS Connector



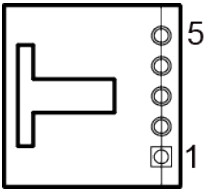
LVDS1

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

3.3.13.18 Touch Panel Connectors (TOUCH1, TOUCH2)

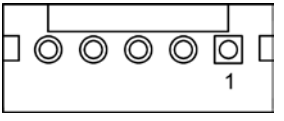
Connector Location: TOUCH1, TOUCH2

Description: Touch panel connectors



TOUCH1

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

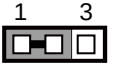
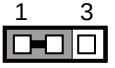
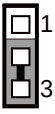
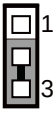
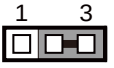
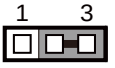
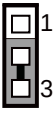
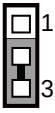
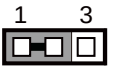
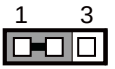


TOUCH2

3.3.13.19 Touch Panel Signal Interface Selection (JP14, JP15, JP38, JP39)

Jumper Location: JP14, JP15, JP38, JP39

Description: Control connectors for touch panel signal interface.

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

Notes: The COM2 & COM2_1 connectors will not function when JP38 & JP39 are set as 1-2 connected.

3.3.13.20 Clear CMOS Data Selection (JP3)

Jumper Location: JP3

Description: Clear CMOS data selection

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

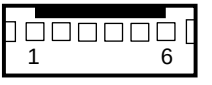
Note: To clear CMOS data, you must power off the computer and set the jumper to "Clear CMOS" as shown above. After five to six seconds, set the jumper back to "Normal" and power on the computer.

3.3.13.21 MSR/Card Reader Connectors (PS/2_1, PS/2_2)

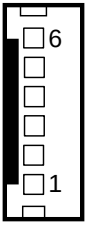
Connector Location: PS/2_1, PS/2_2

Description: MSR/Card reader connectors

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



PS/2_1



PS/2_2

3.3.13.22 SATA & SATA Power Connectors (SATA1, SATA2, JPWR_4P1, JPWR_4P2)

Connector Location: SATA1, SATA2
Description: Serial ATA connectors

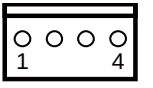
PIN	ASSIGNMENT
1	G1
2	TX+
3	TX-
4	G2
5	RX-
6	RX+
7	G3

SATA1/
SATA2

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

Connector Location: JPWR_4P1, JPWR_4P2
Description: Serial ATA power connectors

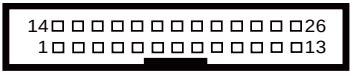
PIN	ASSIGNMENT
1	VCC
2	GND
3	GND
4	VCC12



JPWR_4P1/
JPWR_4P2

Note: JPWR_4P1 only supports the optional RAID function on board

3.3.13.23 Printer Connector (LPT1)



LPT1

Connector Location: LPT1
Description: Printer connector

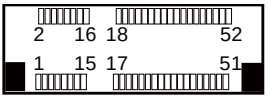
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	STBJ	14	ALFJ
2	PDR0	15	ERRJ
3	PDR1	16	PAR_INITJ
4	PDR2	17	SLCTINJ
5	PDR3	18	GND
6	PDR4	19	GND
7	PDR5	20	GND
8	PDR6	21	GND
9	PDR7	22	GND
10	ACKJ	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCTJ	26	NC

3.3.13.24 Mini-PCIe Connector (SLOT1)

Connector Location: SLOT1

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

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



SLOT1

4 Software Utilities

This chapter provides the detailed information that guides users to install driver utilities for High-End Level system and Entry Level systems. The following topics are included:

High-End Level System:

- Installing Intel® Chipset Software Installation Utility
- Installing VGA Driver Utility
- Installing LAN Driver Utility
- Installing Sound Driver Utility
- Installing Touchscreen Driver Utility
- Installing Fingerprint Driver Utility (optional)
- Installing Microsoft Hotfix kb3211320 and kb3213986 Driver Utility

Entry Level System:

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

4.1 Introduction

Enclosed with the KS-1130 Series package is our driver utilities contained in a DVD-ROM disk. Refer to the following table for driver locations.

4.1.1 Driver and OS Support For High-End Level System

The driver utilities listed below are to be installed only for Windows 10 (32/64-bit), Windows 7 (32/64-bit), POSReady7 (32/64-bit) series.

Filename (Assume that DVD- ROM drive is D :)	Purpose	DOS	Win10	Win7	POS Ready7
D:\Driver\Flash BIOS	For BIOS update utility	✓	X	X	X
D:\Driver\Platform\Main Chip	Intel(R) Chipset Device Software installer	X	X	✓	✓
D:\Driver\Plaftorm\Graphic\ GFX_win32(32-bit)	Intel(R) HD Graphics installer	X	✓	✓	✓
D:\Driver\Platform\ Kmdf For Win7(32-bit/64-bit)	Intel(R) Kernel-Mode Driver Framework Driver installation	X	X	✓	✓
D:\Driver\Platform\ LAN Chip\LAN_21_1_cd	Intel(R) Network Connections Software	X	✓	✓	✓
D:\Driver\Platform\Sound	Realtek High Definition Audio System Software	X	✓	✓	✓
D:\Driver\Platform\ME\H110	Intel(R) Management Engine Components installer	X	✓	✓	✓
D:\Driver\Platform\ME\Q170	Intel(R) Management Engine Components installer	X	✓	✓	✓
D:\Driver\Platform\Graphic\ GFX_win64(64-bit)	Intel(R) HD Graphics installer	X	✓	✓	✓
D:\Driver\Platform\RAID\Q170 (KabyLake/ SkyLake)	Intel(R) Rapid Storage Technology (Intel(R) RST).	X	✓	✓	✓
D:\Driver\Platform\Hotfix (Win10_64-bit)	For Win10_64-bit Hotfix installation	X	✓	X	X
D:\Driver\Device	Driver installation for Barcode Scanner, MSR, Printer, etc.	X	✓	✓	✓

X : Not support

✓: Support

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

4.1.1.1 Intel® Chipset Software Installation Utility

Introduction

The Intel® Chipset Software Installation Utility installs to the target system the Windows* INF files that outline to the operating system how the chipset components will be configured. This is required for the following features to function properly:

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

Installation of Intel® Chipset Driver

The utility pack is to be installed only for Windows 10 (32/64-bit), Windows 7 (32/64-bit), POSReady7 (32/64-bit) series, and it should be installed right after the OS installation. Please follow the steps below:

1 Connect the USB DVD-ROM device to KS-1130 and insert the driver disk inside.

2 Enter the "Main Chip" folder where the Chipset driver is located (depending on your OS platform).

3 Click **Setup.exe** file for driver installation.

4 Follow the on-screen instructions to complete the installation.

5 Once the installation is completed, shut down the system and restart the KS-1130 for the changes to take effect.

4.1.1.2 VGA Driver Utility

The VGA interface embedded with the KS-1130 series can support a wide range of display types. You can have dual displays via CRT and LVDS interfaces work simultaneously.

Installation of VGA Driver

To install the VGA Driver, follow the steps below:

1. Connect the USB DVD-ROM device to KS-1130 and insert the driver disk inside.
2. Enter the "VGA" folder where the VGA driver is located (depending on your OS platform).
3. Click **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart the KS-1130 for the changes to take effect.

4.1.1.3 LAN Driver Utility

The KS-1130 Series is enhanced with LAN function that can support various network adapters. Installation platform for the LAN driver is listed as follows:

For more details on the Installation procedure, please refer to the Readme.txt file found on LAN Driver Utility.

Installation of LAN Driver

To install the LAN Driver, follow the steps below:

1. Connect the USB DVD-ROM device to KS-1130 and insert the driver disk inside.
2. Enter the "LAN" folder where the LAN driver is located (depending on your OS platform).
3. Click **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart the KS-1130 for the changes to take effect.

4.1.1.4 Sound Driver Utility

The sound function enhanced in this system is fully compatible with Windows 10 (32/64-bit), Windows 7 (32/64-bit), POSReady7 (32/64-bit) series. Below you will find the content of the Sound driver.

Installation of Sound Driver

To install the Sound Driver, refer to the readme.txt file on the driver disc (:\Sound\Realtek\Readme.txt).

1. Connect the USB DVD-ROM device to KS-1130 and insert the driver disk inside.
2. Enter the "Sound" folder where the Sound driver is located (depending on your OS platform).
3. Click **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart the KS-1130 for the changes to take effect.

4.1.1.5 Touchscreen Driver Utility

The touchscreen driver utility can only be installed on a Windows platform (Windows 10 (32/64-bit), Windows 7 (32/64-bit), POSReady7 (32/64-bit) series), and it should be installed right after the OS installation.

Installation of Touchscreen Driver

To install the Touchscreen Driver, follow the steps below:

1. Connect the USB DVD-ROM device to KS-1130 and insert the driver disk inside.
2. Enter the "Device/Touchscreen" folder where the Touchscreen Driver is located.
3. Click **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart the KS-1130 for the changes to take effect.

4.1.1.6 Fingerprint Driver Utility (Optional)

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

Installing Fingerprint Driver

To install the fingerprint driver, follow the steps below:

1. Connect the USB DVD-ROM device to KS-1130 and insert the driver disk.
2. Open the "Device\Embedded Finger Printer" folder where the fingerprint driver is located.
3. Click **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart KS-1130 for the changes to take effect.

4.1.1.7 Installing Microsoft Hotfix kb3211320 and kb3213986 Driver Utility

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

1. Connect the USB DVD-ROM device to KS-1130 and insert the driver disk.
2. Enter the **Hotfix** folder where the driver is located.
3. Click the **windows10.0-kb3211320-x64** and **windows10.0-kb3213986-x64** files for critical security update.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart KS-1130 for the changes to take effect.

4.1.2 Driver and OS Support For Entry Level System

The driver utilities listed below are to be installed only for Windows 10 (32/64-bit), Windows 7 (32/64-bit), POSReady7 (32/64-bit) series.

Filename (Assume that DVD- ROM drive is D :)	Purpose	DOS	Win10	Win7	POS Ready7
D:\Driver\Flash BIOS	For BIOS update utility	✓	X	X	X
D:\Driver\Platform\ Main Chip	Intel(R) Chipset Device Software installer	X	X	✓	✓
D:\Driver\Platform\VGA\ WIN7 10_POSReady7(32bit)	Intel(R) HD Graphics Family VGA driver installer	X	✓	✓	✓
D:\Driver\Platform\LAN\ WIN7_POSReady7 (32bit-64bit)	Intel(R) Network Connections Software	X	X	✓	✓
D:\Driver\Platform\Audio\ WIN7 10_POSReady7(32bit)	Realtek High Definition Audio System Software	X	✓	✓	✓
D:\Driver\Platform\TXE\ WIN7_POSReady7 (32bit-64bit)	Intel TXE Firmware Driver	X	X	✓	✓
D:\Driver\Platform\Windows 7 KMDF\ WIN7_POSReady7 (32bit-64bit)	Intel(R) Kernel-Mode Driver Framework Driver installation	X	X	✓	✓
D:\Driver\Platform\Main Chip\WIN10(32bit-64bit)	Intel(R) Chipset Device Software installer	X	✓	X	X
D:\Driver\Platform\VGA\ WIN7 10_POSReady7(64bit)	Intel(R) HD Graphics Family VGA driver installer	X	✓	✓	✓
D:\Driver\Platform\LAN\ WIN10(32bit-64bit)	Intel(R) Network Connections Software	X	✓	X	X
D:\Driver\Platform\Audio\ WIN7 10_POSReady7(64bit)	Realtek High Definition Audio System Software	X	✓	✓	✓
D:\Driver\Platform\TXE\ WIN10 (32bit-64bit)	Intel TXE Firmware Driver	X	✓	X	X
D:\Driver\Device	Driver installation for Barcode Scanner, MSR, Printer, etc.	X	✓	✓	✓

X : Not support

✓: Support

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

4.1.2.1 Intel® Chipset Software Installation Utility

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

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

The utility pack is to be installed only for Windows 10 (32/64-bit), Windows 7 (32/64-bit), POSReady7 (32/64-bit) series, and it should be installed right after the OS installation. Please follow the steps below:

1 Connect the USB DVD-ROM device to KS-1130 and insert the driver disk.

2 Enter the "Main Chip" folder where the Chipset driver is located (depending on your OS platform).

3 Click **Setup.exe** file for driver installation.

4 Follow the on-screen instructions to complete the installation.

5 Once the installation is completed, shut down the system and restart KS-1130 for the changes to take effect.

4.1.2.2 VGA Driver Utility

To install the Graphics driver, follow the steps below:

1. Connect the USB-DVD ROM device to KS-1130 and insert the driver disk.
2. Enter the "VGA" folder where the VGA driver is located (depending on your OS platform).
3. Click **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart KS-1130 for the changes to take effect.

4.1.2.3 LAN Driver Utility

KS-1130 is enhanced with LAN function that can support various network adapters. Installation platform for the LAN driver is listed as follows:

To install the LAN Driver, follow the steps below:

1. Connect the USB DVD-ROM device to KS-1130 and insert the driver disk.
2. Enter the "LAN" folder where the LAN driver is located (depending on your OS platform).
3. Click **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once installation is completed, shut down the system and restart KS-1130 for the changes to take effect.

For more details on the Installation procedure, please refer to the Readme.txt file found on LAN Driver Utility.

4.1.2.4 Sound Driver Utility

The sound function enhanced in this system is fully compatible with Windows 10 (32/64-bit), Windows 7 (32/64-bit), POSReady7 (32/64-bit) series. Below, you will find the content of the Sound driver.

To install the Sound Driver, follow the steps below:

1. Connect the USB DVD-ROM device to KS-1130 and insert the driver disk.
2. Enter the "Sound" folder where the sound driver is located (depending on your OS platform).
3. Click **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart KS-1130 for the changes to take effect.

4.1.2.5 Wireless Module Driver Utility (Optional)

The wireless driver utility can only be installed on Windows 10 (32/64-bit), Windows 7 (32/64-bit), POSReady7 (32/64-bit) series, and it should be installed right after the OS installation.

To install the wireless driver, follow the steps below:

1. Connect the USB DVD-ROM device to KS-1130 and insert the driver disk.
2. Enter the "Device\Embedded Wireless Module" folder where the wireless driver is located.
3. Click **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart KS-1130for 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 is powered off. The BIOS Setup Utilities consist of the following menu items:

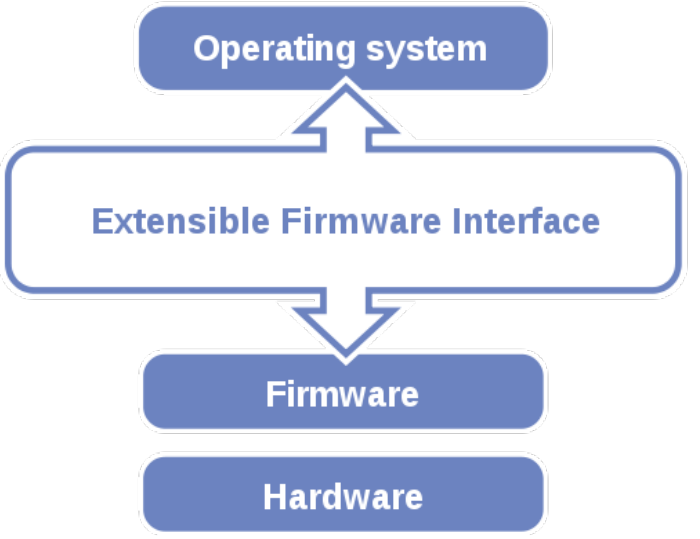
- Accessing Setup Utilities
- Main Menu
- Advanced Menu
- Chipset Menu
- Security Menu
- Boot Menu
- Save & Exit Menu

5.1 Introduction

The KS-1130 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.



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.

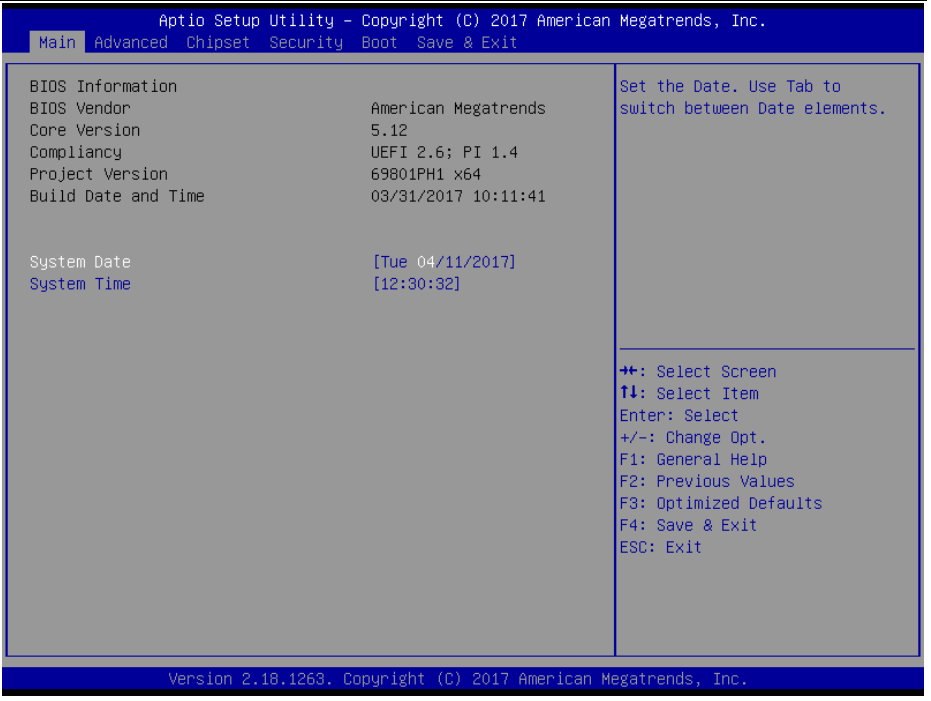
The BIOS setup menu allows users to view and modify the BIOS settings for the computer. After the system is powered on, users can access the BIOS setup menu by pressing <Del> or <Esc> immediately while the POST message is running before the operating system is loading.

5.2 Accessing Setup Utility for High-End Level System

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

POST Screen with AMI Logo

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



BIOS Setup Menu Initialization Screen

You may move the cursor by <↑> and <↓> keys to highlight the individual menu items. As you highlight each item, a brief description of the highlighted selection will appear on the right side of the screen.

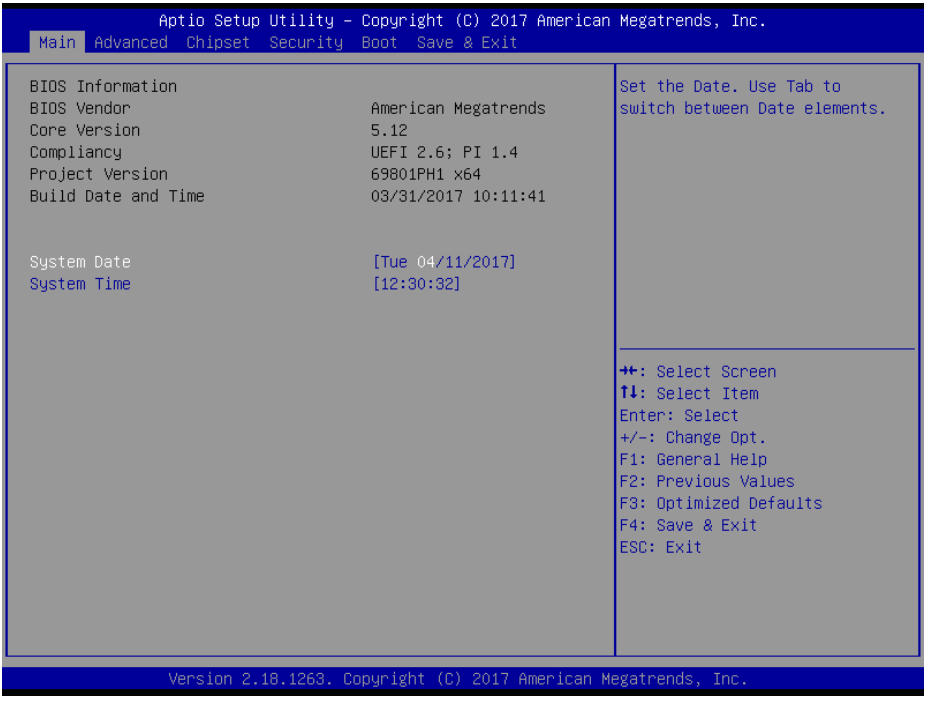
The language of the BIOS setup menu interface and help messages are shown in US English. You may use <↑> or <↓> key to select among the items and press <Enter> to confirm and enter the sub-menu. The following table provides the list of the navigation keys that you can use while operating the BIOS setup menu.

BIOS Setup Navigation 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.

5.2.1 Main

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. Use <↑> or <↓> arrow keys to highlight the item and enter the value you want in each item. This screen also displays the BIOS version (project) and BIOS Build Date and Time.



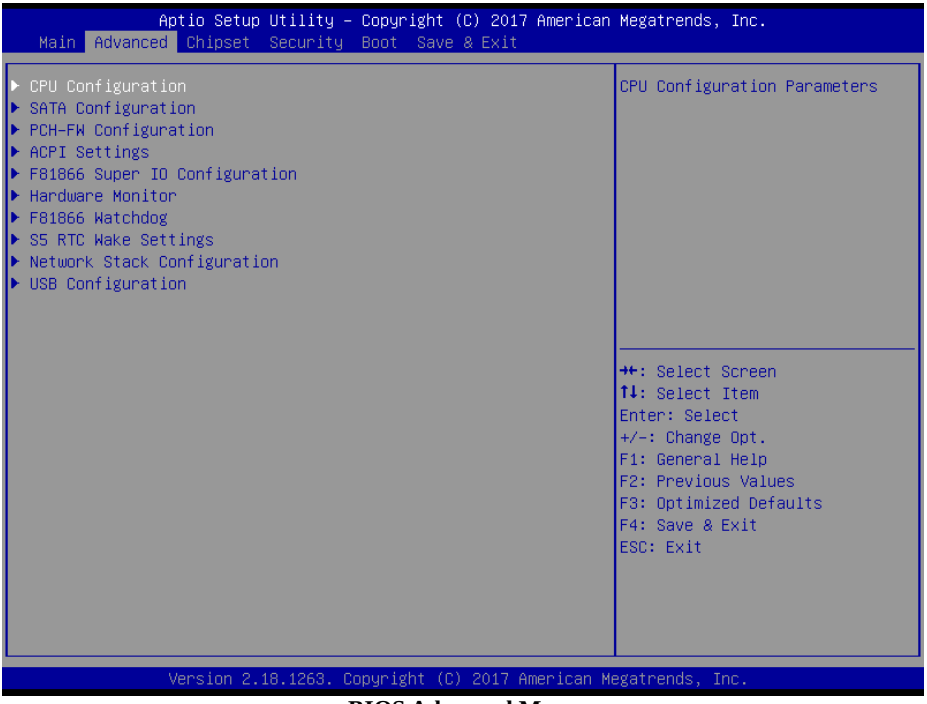
Main Screen

BIOS Setting	Options	Description/Purpose
BIOS Vendor	No changeable options	Displays the BIOS vendor.
Core Version	No changeable options	Displays the current BIOS core version.
Compliancy	No changeable options	Displays the current UEFI version.
Project Version	No changeable options	Displays the version of the BIOS currently installed on the platform.
Build Date and Time	No changeable options	Displays the date of the current BIOS version.
System Date	month, day, year	Set the current date. The “Day” is automatically changed.
System Time	hour, minute, second	Set the clock of the system.

5.2.2 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

BIOS Setting	Options	Description/Purpose
Network Stack Configuration	Sub-Menu	Network Stack Settings
USB Configuration	Sub-Menu	USB Configuration Parameters.

5.2.2.1 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 (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.
64-bit	No changeable options	Reports if the processor supports Intel x86-64 (amd64) implementation.
L1 Data Cache	No changeable options	L1 Data Cache Size
L1 Code Cache	No changeable options	L1 Code 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 Virtualization Technology	- Disabled - Enabled	When enabled, a VMM (Virtual Machine Monitor) can utilize the additional hardware capabilities provided by Vanderpool Technology (VT).

5.2.2.2 Advanced - SATA Configuration (AHCI Mode)

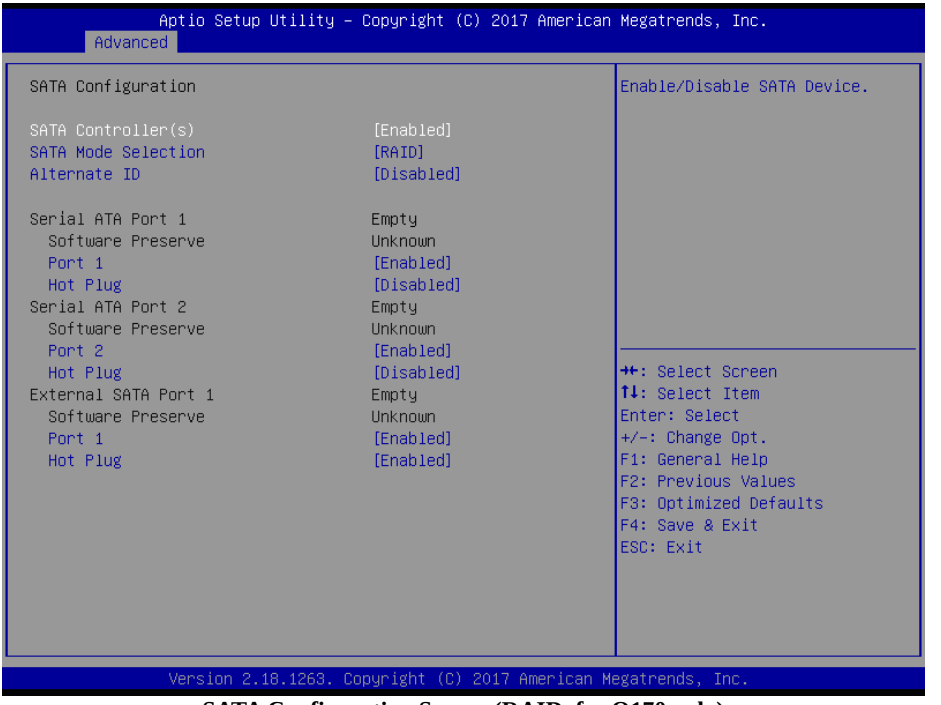
Menu Path *Advanced > SATA Configuration [AHCI Mode]*

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	- 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 support.
Port 1 - 2	- Disabled - Enabled	Enables or Disables SATA Port Device.

BIOS Setting	Options	Description/Purpose
HotPlug	- Disabled - Enabled	Enable or Disable SATA Port Device HotPlug function.



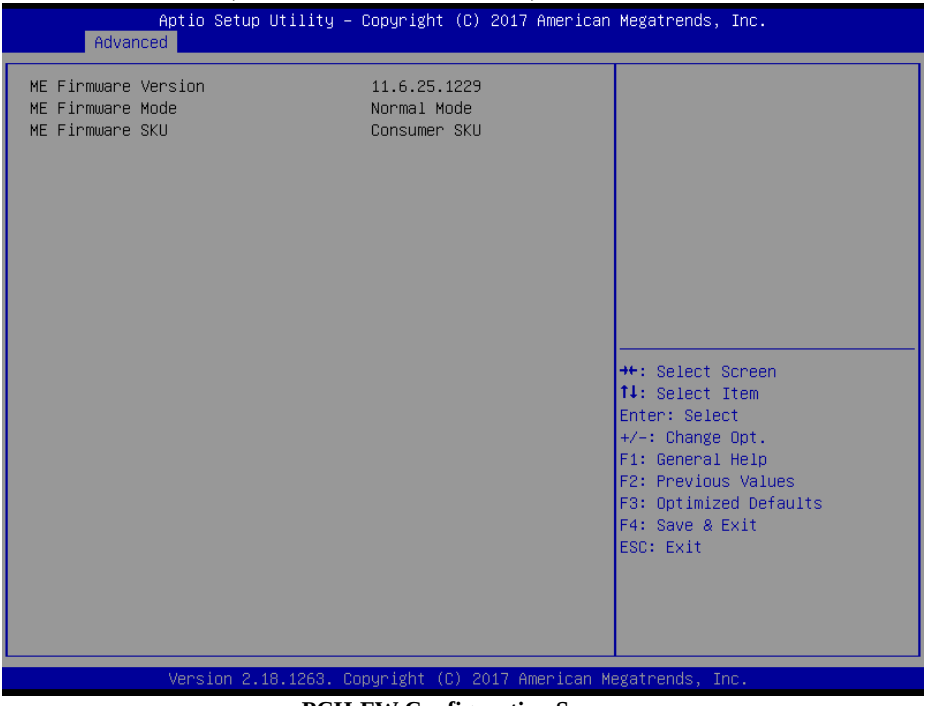
SATA Configuration Screen (RAID, for Q170 only)

BIOS Setting	Options	Description/Purpose
SATA Controller(s)	- Disabled - Enabled	Enables or Disables SATA Device.
SATA Mode	- 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 support.
Port 1 - 2	- Disabled - Enabled	Enables or Disables SATA Port Device.
HotPlug	- Disabled - Enabled	Enables or Disables SATA Port Device HotPlug function.

5.2.2.3 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.



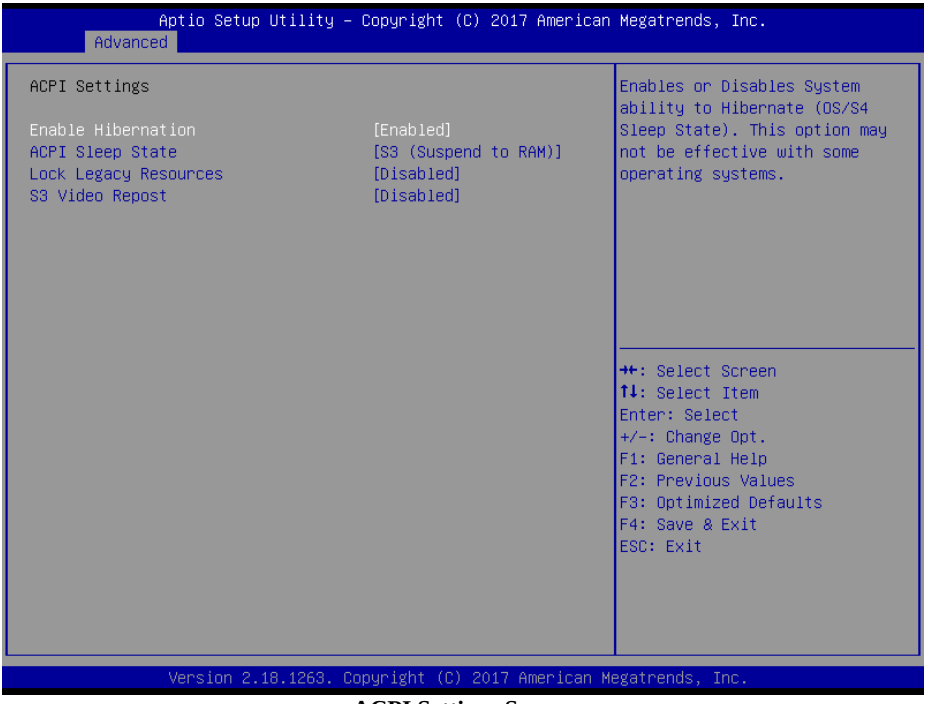
PCH-FW Configuration Screen

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.

5.2.2.4 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.

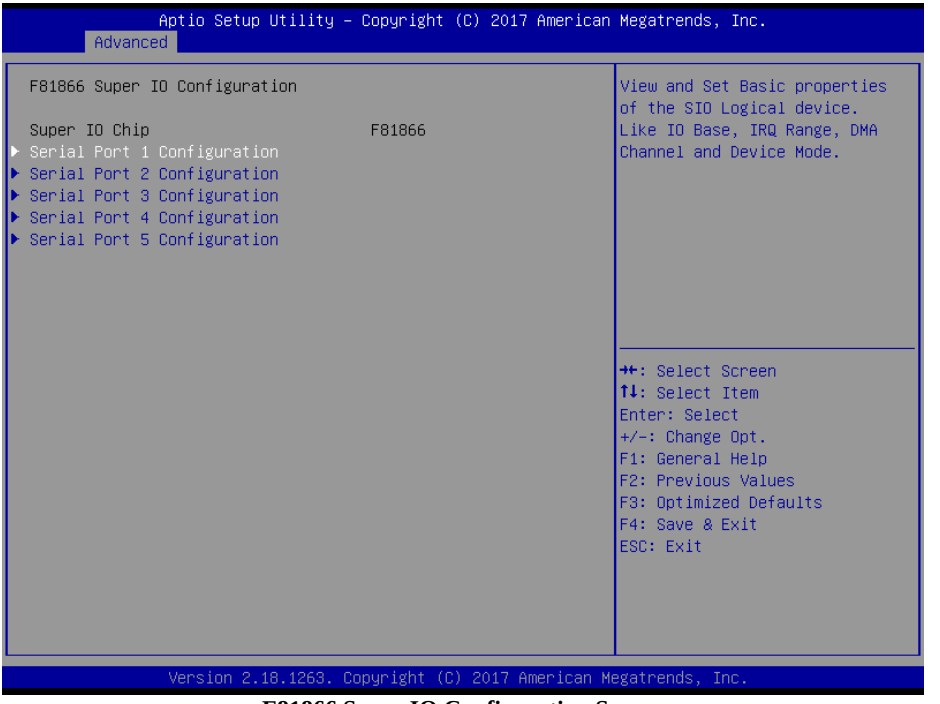


ACPI Settings Screen

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.

5.2.2.5 Advanced - F81866 Super IO Configuration

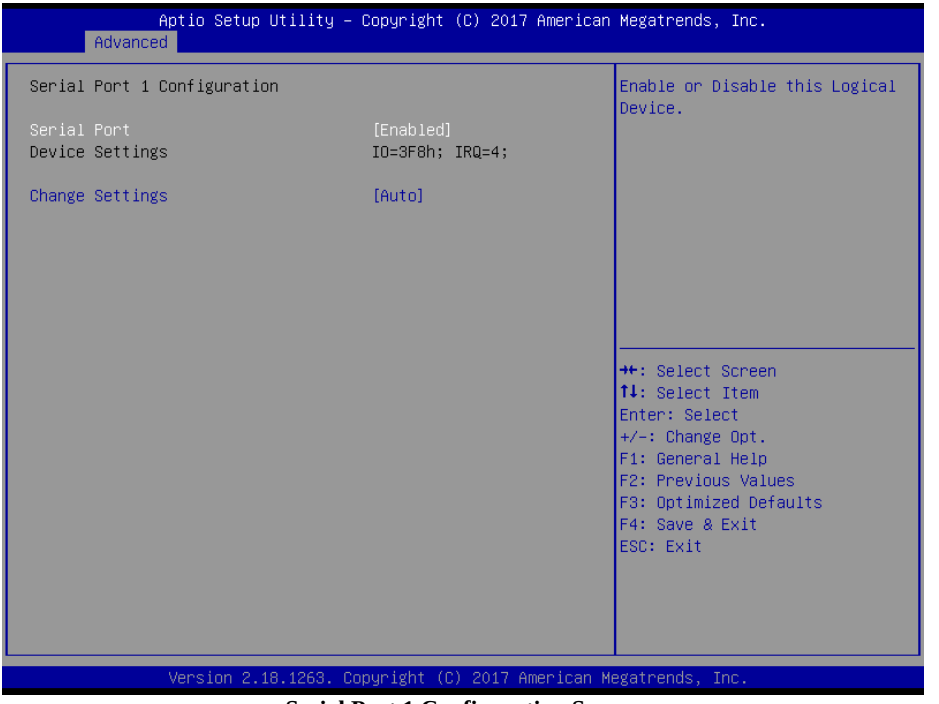
Menu Path *Advanced >F81866 Super IO Configuration*



F81866 Super IO Configuration Screen

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

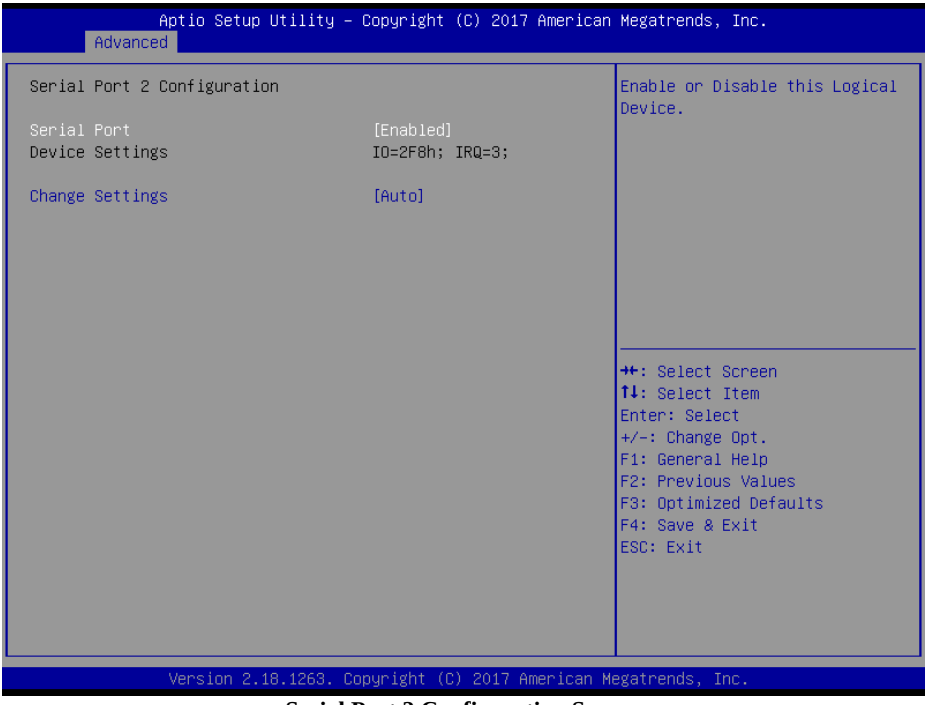
Menu Path *Advanced >F81866 Super IO Configuration > Serial Port 1 Configuration*



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.

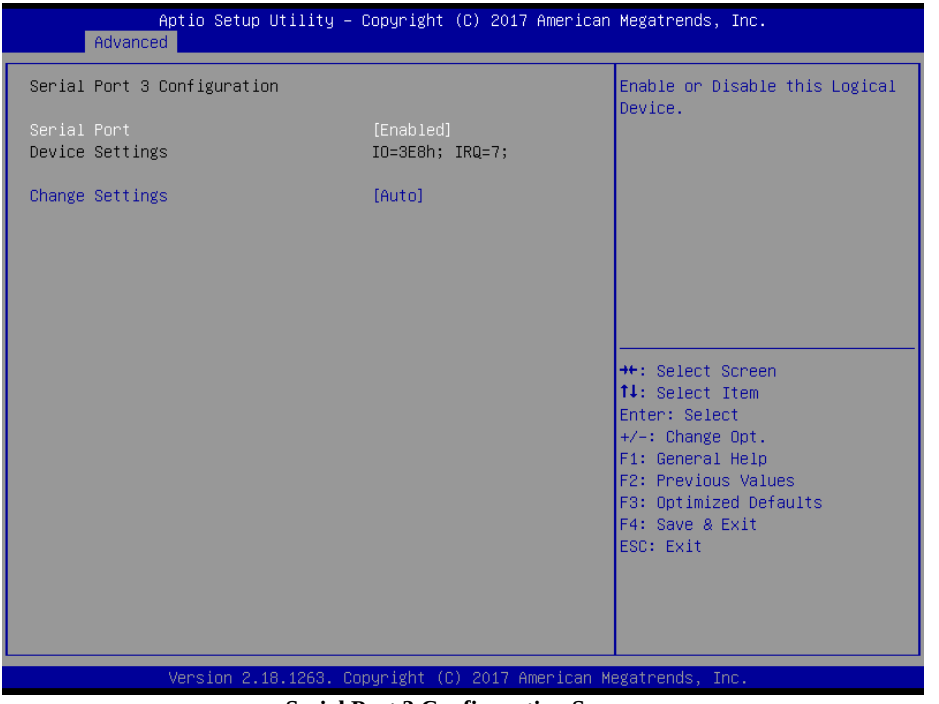
Menu Path *Advanced >F81866 Super IO Configuration > Serial Port 2 Configuration*



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.

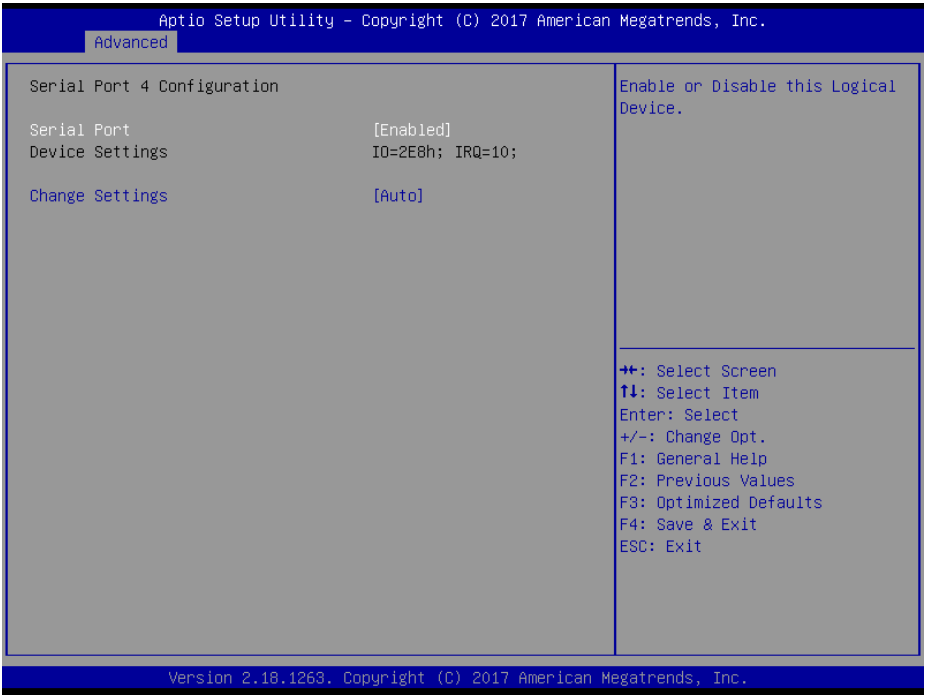
Menu Path *Advanced >F81866 Super IO Configuration > Serial Port 3 Configuration*



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.

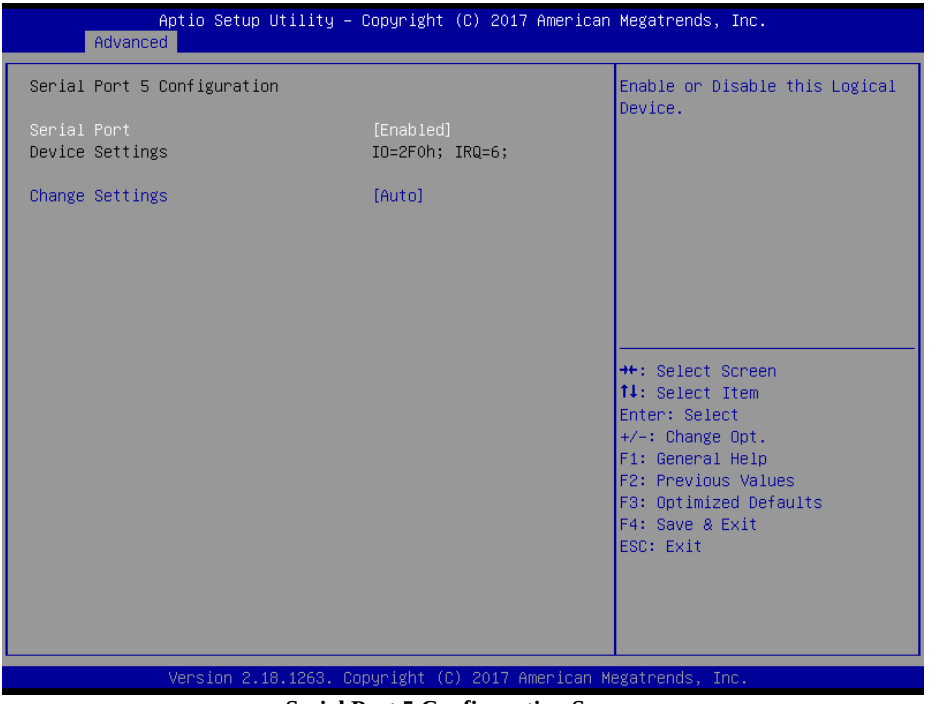
Menu Path *Advanced >F81866 Super IO Configuration > Serial Port 4 Configuration*



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*



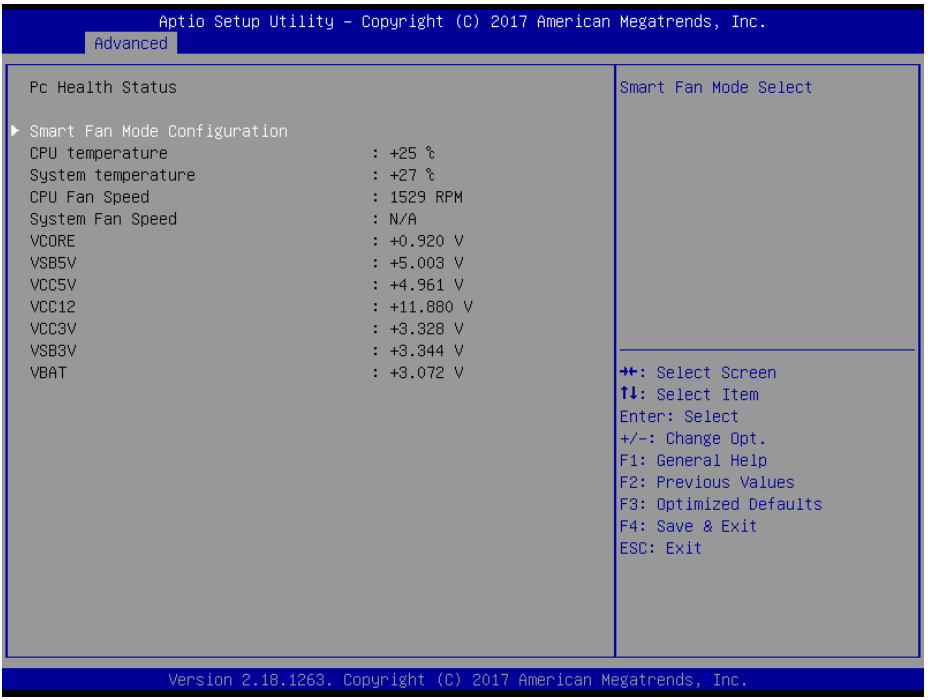
Serial Port 5 Configuration Screen

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.

5.2.2.6 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.

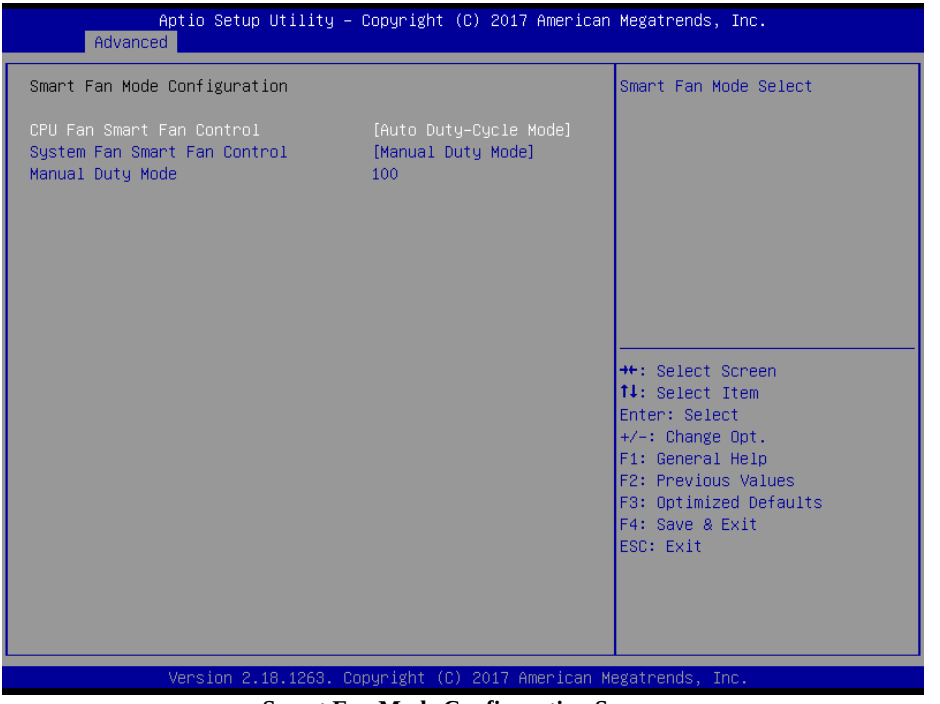


Hardware Monitor Screen

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.

5.2.2.7 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)

5.2.2.8 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.

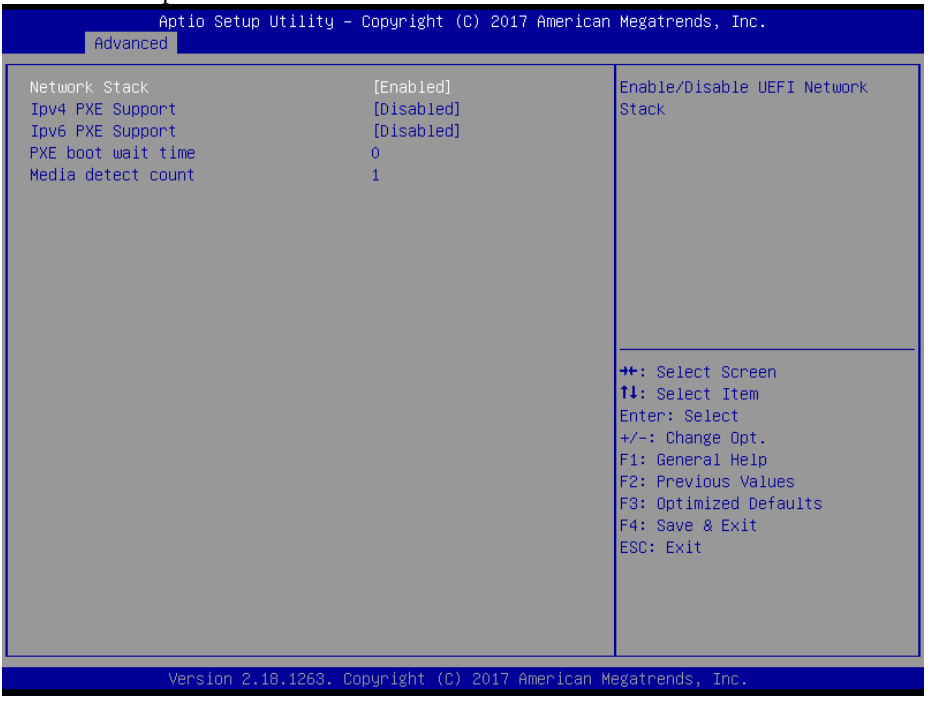
BIOS Setting	Options	Description/Purpose
Wake up minute increase	Numeric (from 1 to 5)	Enters **1-5** to set the increased minute(s) for dynamic wake-up time.

5.2.2.9 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

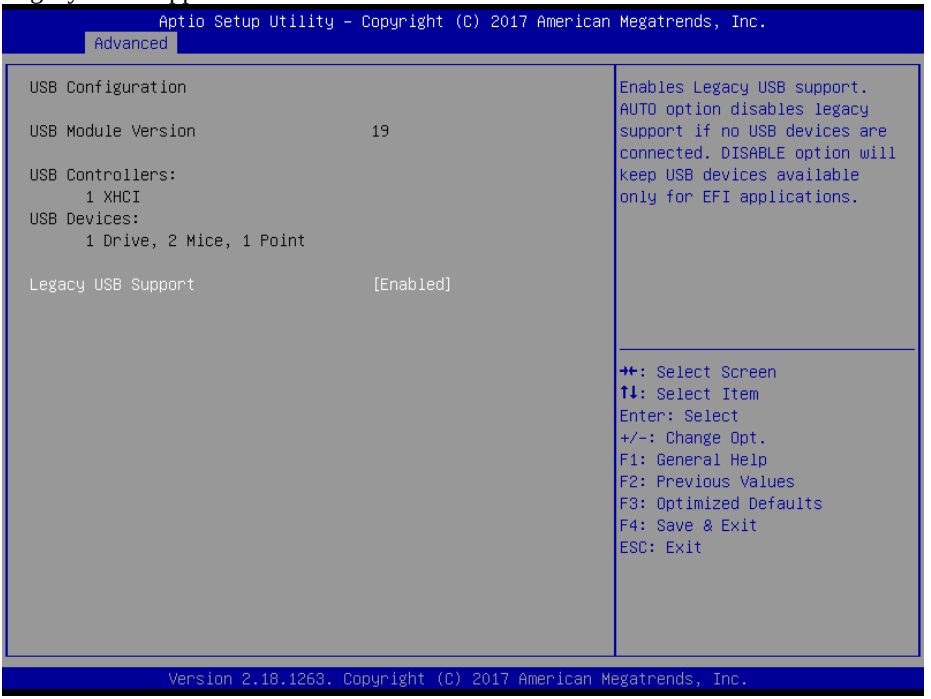
BIOS Setting	Options	Description/Purpose
Network Stack	- Disabled - Enabled	Enables or Disables UEFI Network Stack.

BIOS Setting	Options	Description/Purpose
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.
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.

5.2.2.10 Advanced - USB Configuration

Menu Path *Advanced >USB Configuration*

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



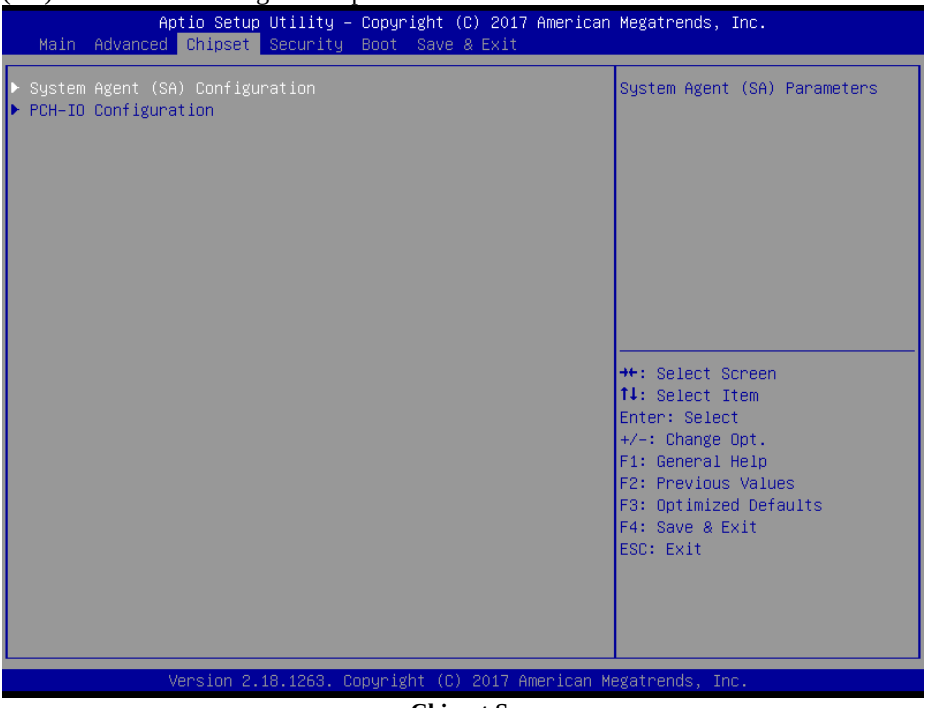
USB Configuration Screen

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.

5.2.3 Chipset

Menu Path *Chipset*

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



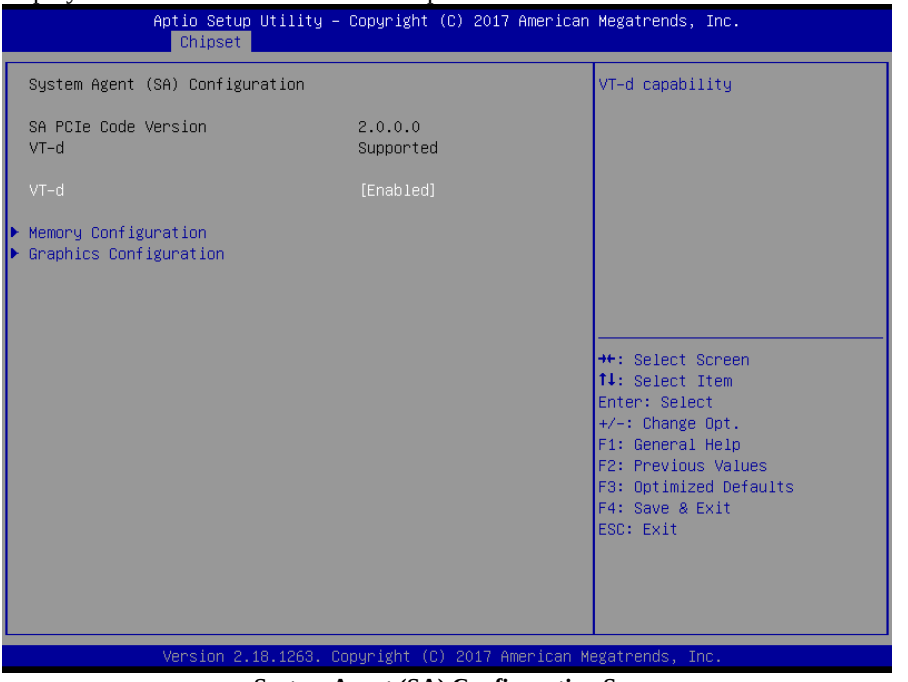
Chipset Screen

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

5.2.3.1 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.
VT-d	- Disabled - Enabled	Enables or Disables VT-d function.

BIOS Setting	Options	Description/Purpose
Graphics Configuration	Sub-menu	Graphics Configuration
Memory Configuration	Sub-menu	Memory 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.

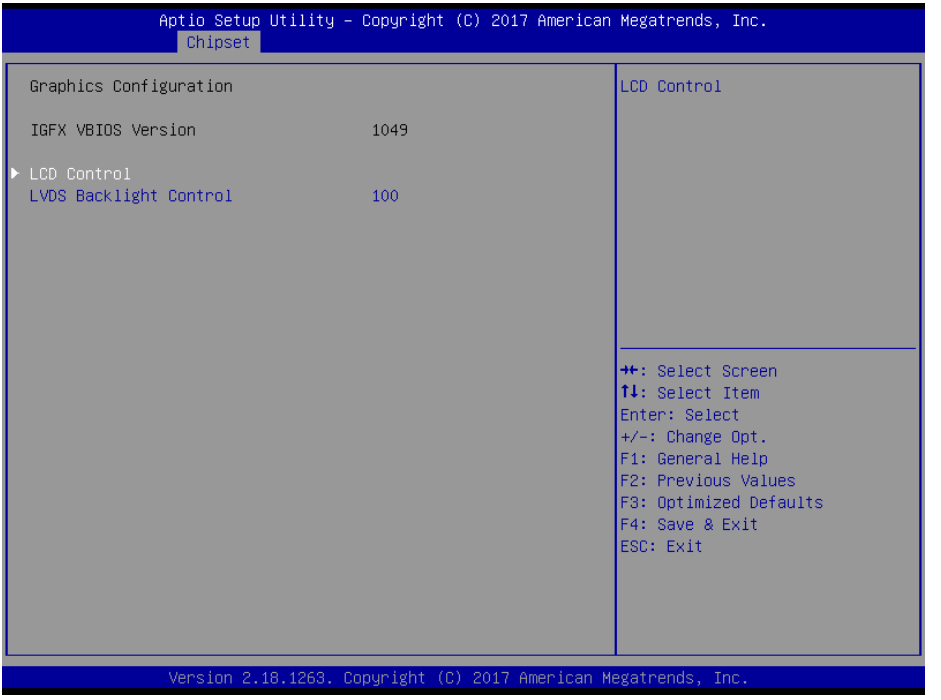
Memory Configuration Screen

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.
Memory Timings (tCL-tRCD-tRP-tRAS)	No changeable options	Displays the Memory (RAM) timings and latency. • **CAS Latency (tCL)** - This is the

BIOS Setting	Options	Description/Purpose
		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*

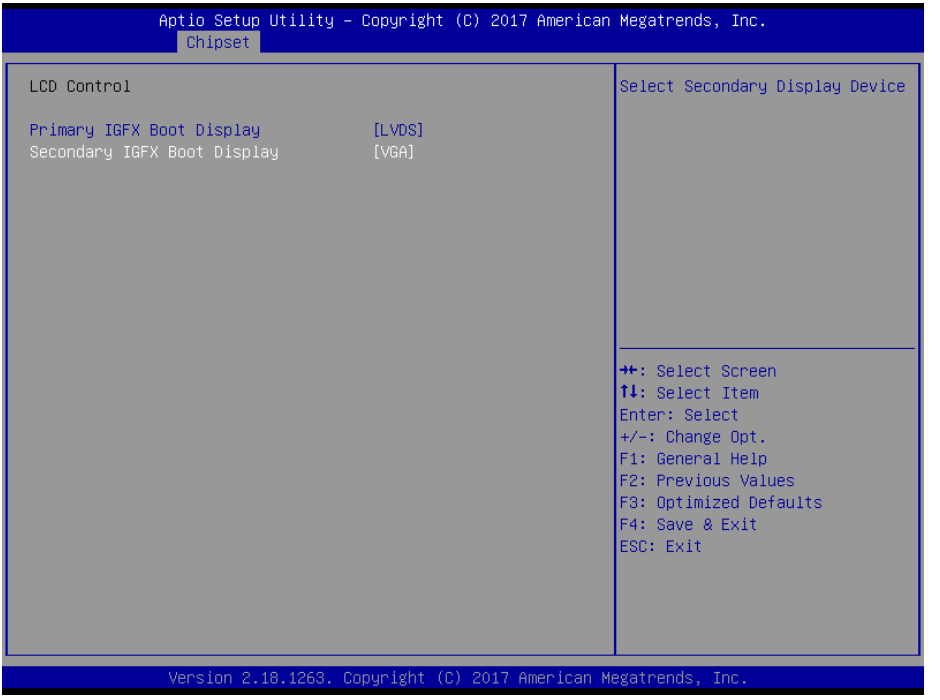
The **Graphics Configuration** allows users to adjust the LVDS backlight brightness for the LCD panel.



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

5.2.3.2 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).

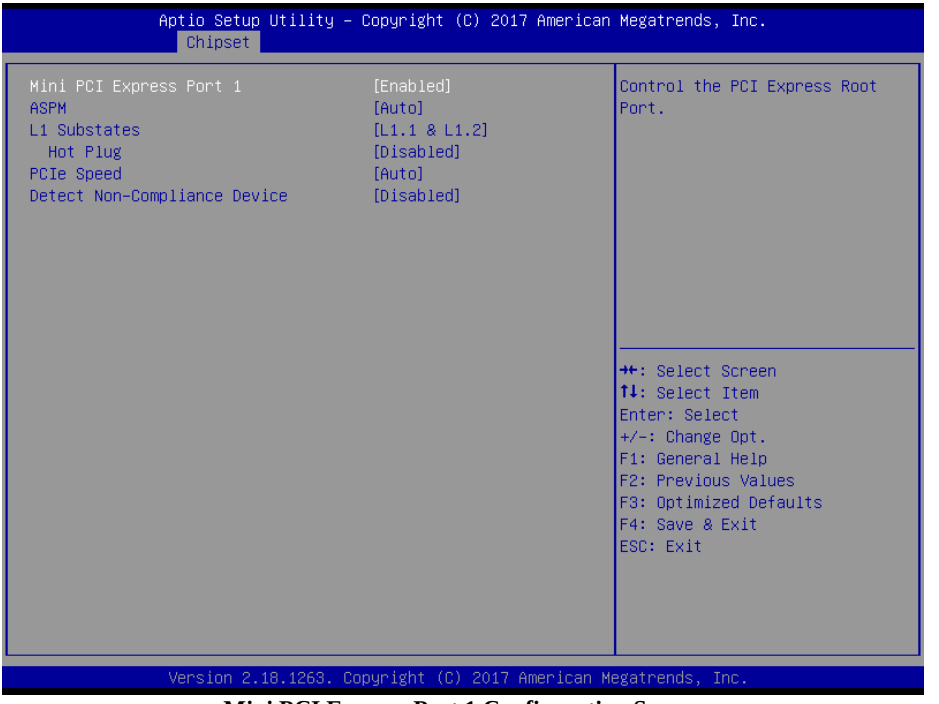
Menu Path *Chipset > PCH-IO Configuration > PCI Express Configuration*

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 Configuration*



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.
PCIe Speed	- Auto - Gen1	Selects PCI Express Port Speed.

BIOS Setting	Options	Description/Purpose
	- Gen2 - Gen3	
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 Configuration*

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 - 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	PCI Express L1 Substates settings.

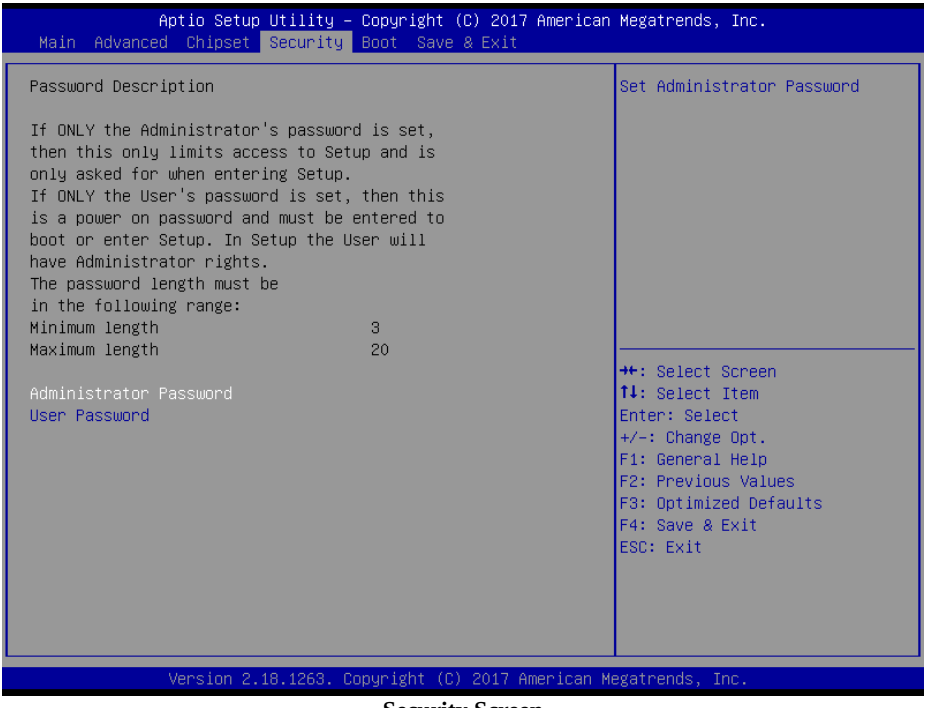
BIOS Setting	Options	Description/Purpose
	- L1.2 - L1.1 & L1.2	
Hot Plug	- Disabled - Enabled	Enables or Disables PCI Express Hot Plug.
PCIe Speed	- Auto - Gen1 - Gen2 - Gen3	Selects PCI Express Port Speed.
Detect Non-Compliance Device	- Disabled - Enabled	Detects Non-Compliance PCI Express Device. If enable, it will take more time at POST time.

5.2.4 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.

5.2.5 Boot

Menu Path *Boot*

This menu provides control items for system boot configuration such as setting setup prompt timeout, enabling/disabling quiet boot and fast boot, selecting the boot sequence from the available device(s) and BBS option priorities, and setting CSM (Compatibility Support Module) configuration parameters to support legacy BIOS operation systems, various VGA, bootable devices and add-on devices for achieving better compatibility.

Boot Screen

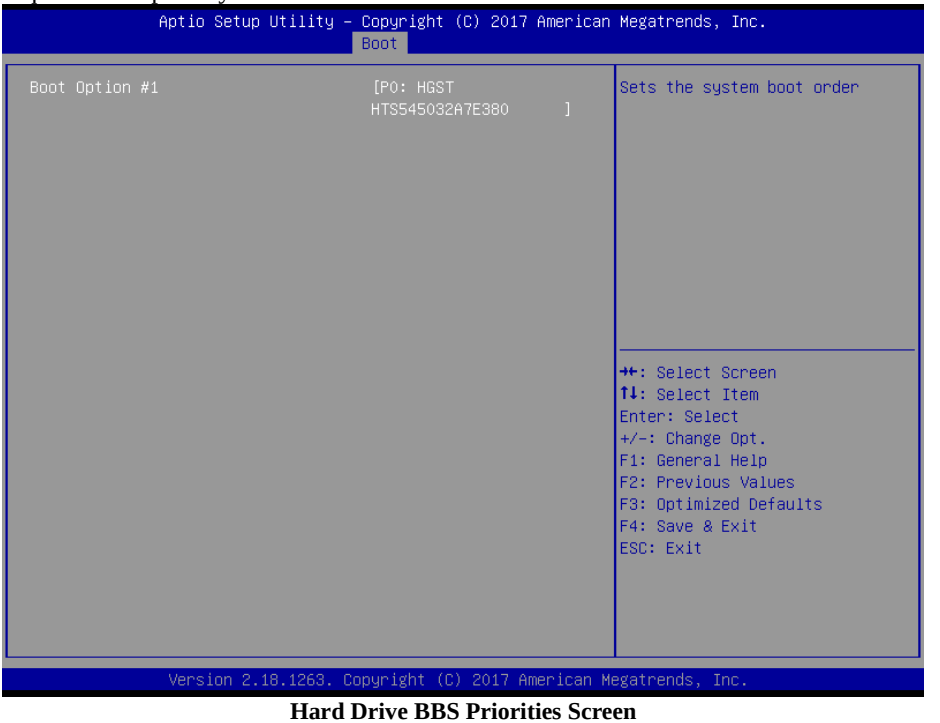
BIOS Setting	Options	Description/Purpose
Setup Prompt Timeout	Numeric (from 1 to 65535)	Number of seconds to wait for setup activation key.
Bootup NumLock State	- On - Off	Specifies the NumLock sate after the system is powered on. • **On:** Enables the NumLock function automatically after the system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

BIOS Setting	Options	Description/Purpose
Quiet Boot	- Disabled - Enabled	Enables or Disables Quiet Boot Options
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.

5.2.5.1 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.

5.2.5.2 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.

5.2.6 Save & Exit

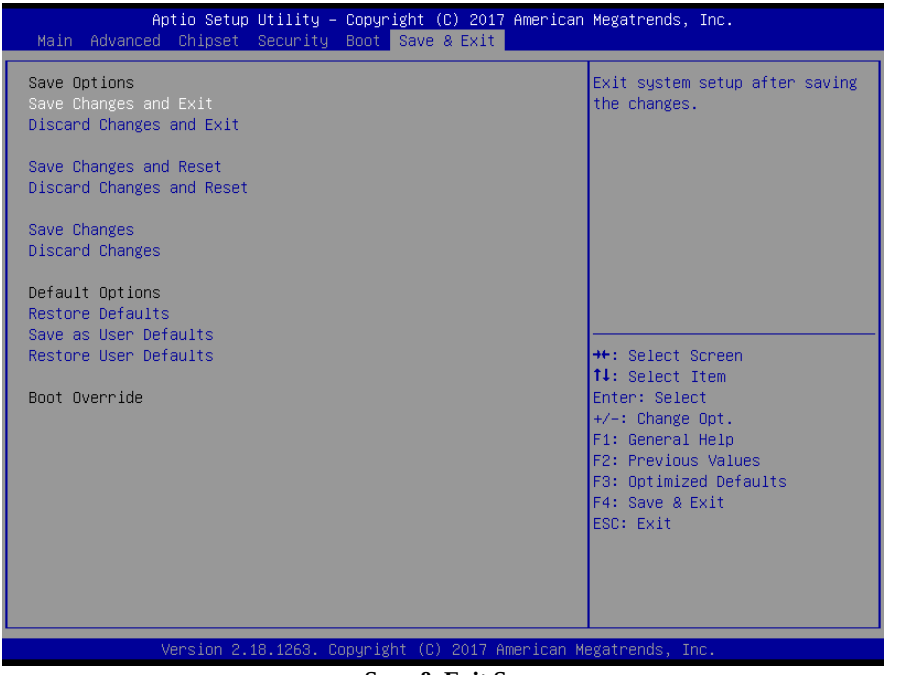
Menu Path *Save & Exit*

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	Save Changes done so far to any of the setup options.
Discard Changes	No changeable options	Discard 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	Save the changes done so far as User Defaults.
Restore User Defaults	No changeable options	Restore the User Defaults to all the setup options.
Boot Override	- [Drive(s)]	Forces to boot from selected [drive(s)].

5.3 Accessing Setup Utility for Entry Level System

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

POST Screen with AMI Logo

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

BIOS Setup Menu Initialization Screen

You may move the cursor by <↑> and <↓> keys to highlight the individual menu items. As you highlight each item, a brief description of the highlighted selection will appear on the right side of the screen.

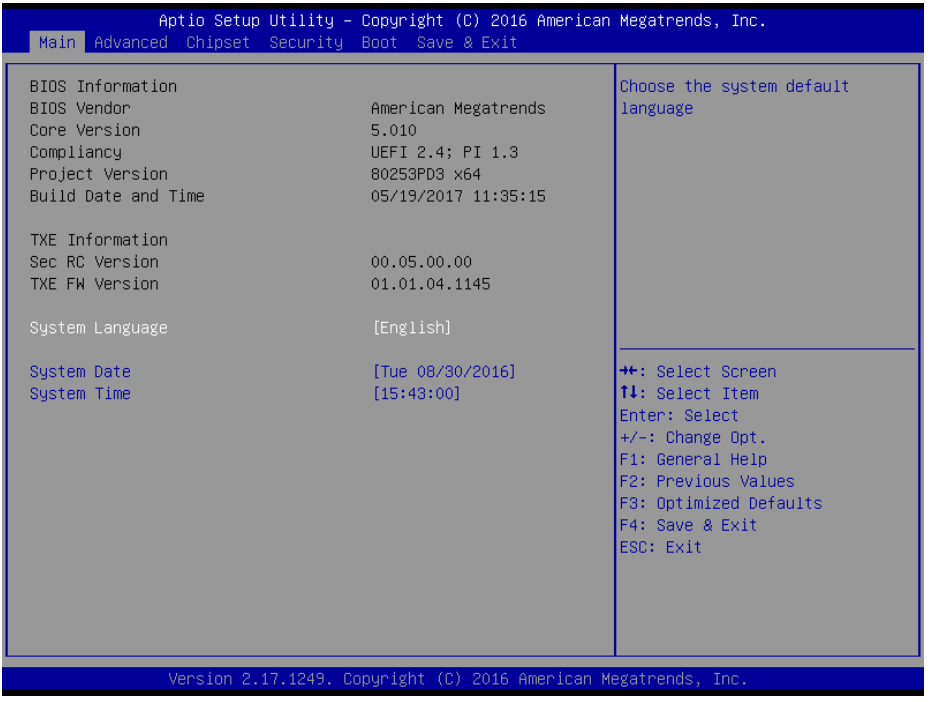
The language of the BIOS setup menu interface and help messages are shown in US English. You may use <↑> or <↓> key to select among the items and press <Enter> to confirm and enter the sub-menu. The following table provides the list of the navigation keys that you can use while operating the BIOS setup menu.

BIOS Setup Navigation 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.

5.3.1 Main

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. Use <↑> or <↓> arrow keys to highlight the item and enter the value you want in each item. This screen also displays the BIOS version (project) and BIOS Build Date and Time.



Main Screen

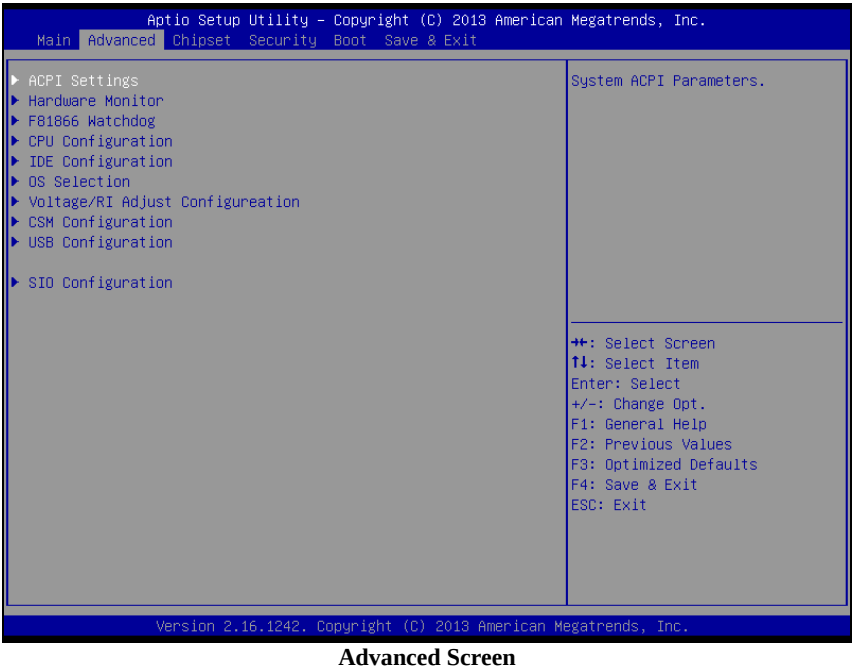
BIOS Setting	Options	Description/Purpose
BIOS Vendor	No changeable options	Displays the BIOS vendor.
Core Version	No changeable options	Displays the current BIOS core version.
Compliancy	No changeable options	Displays the current UEFI version.
Project Version	No changeable options	Displays the version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

BIOS Setting	Options	Description/Purpose
System Language	English	BIOS Setup language.
System Date	month, day, year	Specifies the current date.
System Time	hour, minute, second	Specifies the current time.

5.3.2 Advanced

Menu Path *Advanced*

This menu provides advanced configurations such as ACPI Settings, Hardware Monitor, F81866 Watchdog, CPU Configuration, IDE Configuration, OS Selection, Voltage/RI Adjust Configuration, CSM Configuration and SIO Configuration.



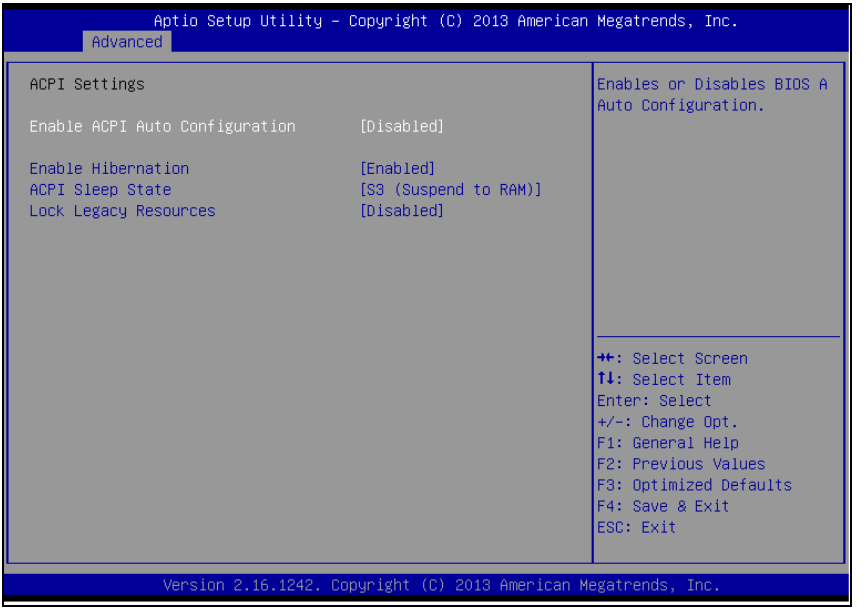
Advanced Screen

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

5.3.2.1 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 Enable/Disable Hibernation, ACPI Sleep State, Hibernation, lock legacy resources.



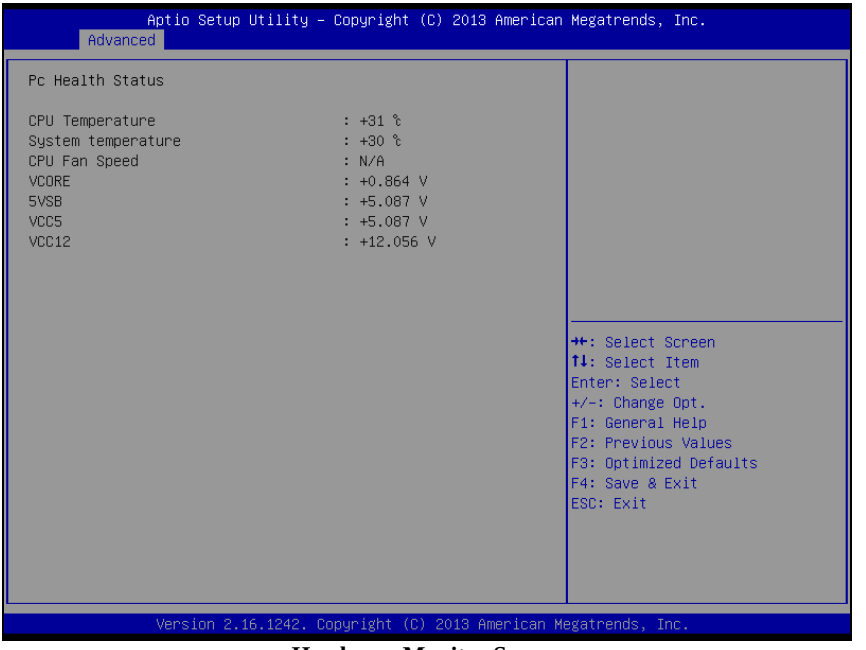
ACPI Settings Screen

BIOS Setting	Options	Description/Purpose
Enable ACPI Auto Configuration	- Disabled - Enabled	Enables or Disables ACPI feature.
Enable Hibernation	- Disabled - Enabled	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
ACPI Sleep State	- Suspend Disabled - S3 Only (Suspend to RAM)	Specifies the ACPI sleep state. ▪ **Suspend Disabled** disables ACPI sleep feature. ▪ **S3** allows the platform to enter suspend to RAM mode.
Lock Legacy Resources.	- Disabled - Enabled	Enables or Disables Lock of Legacy Resources.

5.3.2.2 Advanced - Hardware Monitor

Menu Path *Advanced >Hardware Monitor*

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



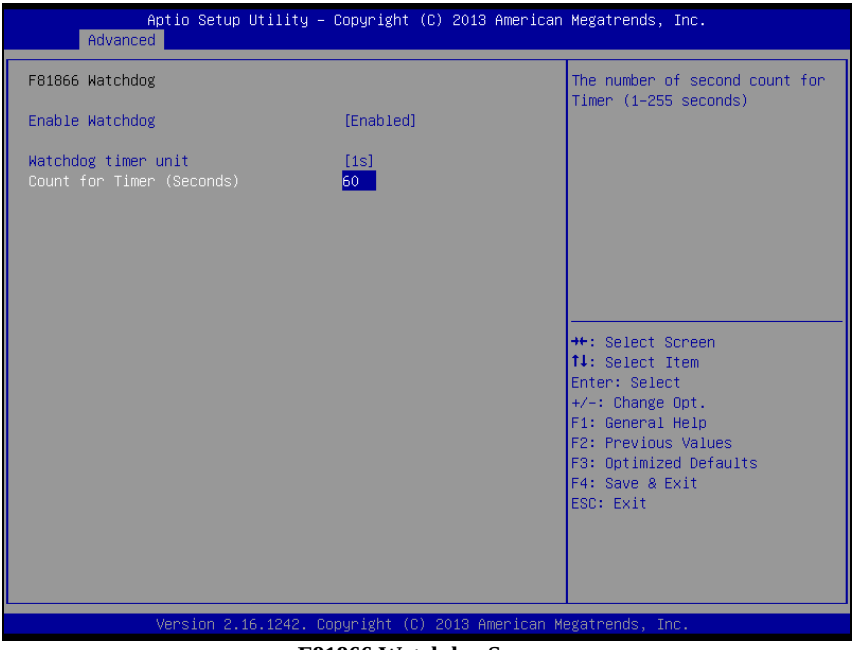
Hardware Monitor Screen

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

5.3.2.3 Advanced - F81866 Watchdog

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.



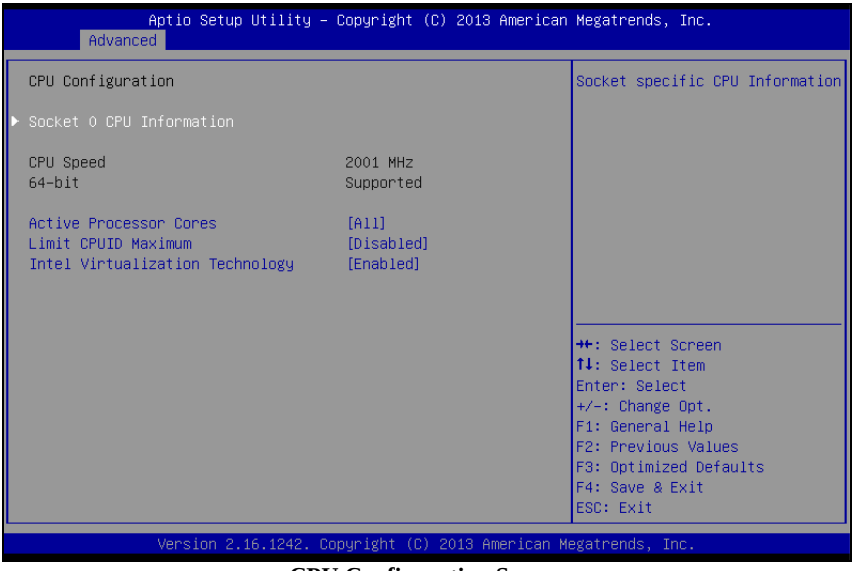
F81866 Watchdog Screen

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

5.3.2.4 Advanced - CPU Configuration

Menu Path *Advanced > CPU Configuration*

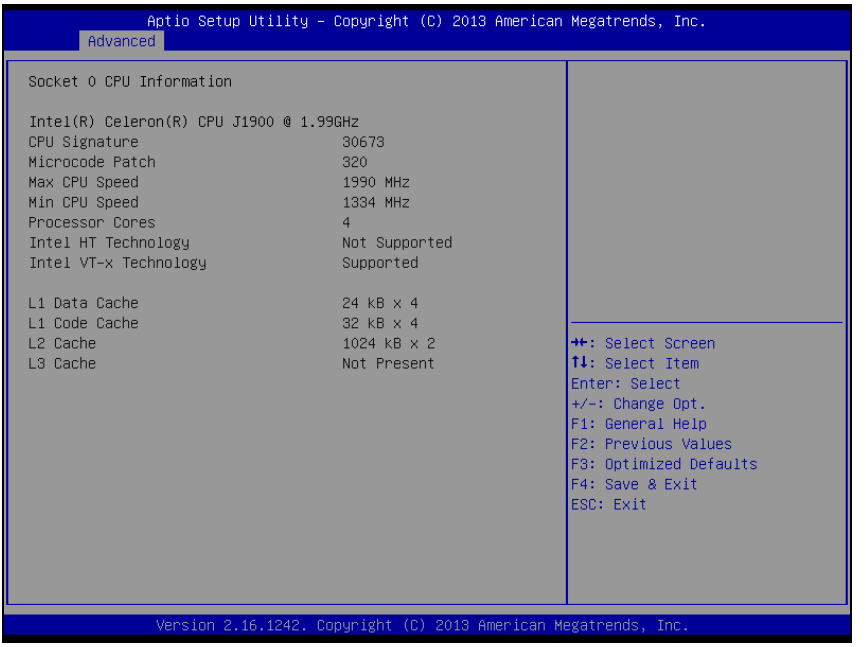
The **CPU Configuration** provides advanced CPU settings and some information about CPU.



CPU Configuration Screen

BIOS Setting	Options	Description/Purpose
CPU Signature	No changeable options	Reports the CPU Signature
Socket 0 CPU Information	Sub-Menu	Report CPU Information
CPU Speed	No changeable options	Reports the current CPU Speed
64-bit	No changeable options	Reports if 64-bit is supported by processor.
Active Processor Cores	- All - 1	Choose the number of cores to be enabled in current processor.
Limit CPUID Maximum	- Disabled - Enabled	Enables for legacy operating systems to boot processors with extended CPUID functions. Set disable for WinXP.
Intel Virtualization Technology	- Disabled - Enabled	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology (VT).

Menu Path *Advanced > CPU Configuration > Socket 0 CPU Information*

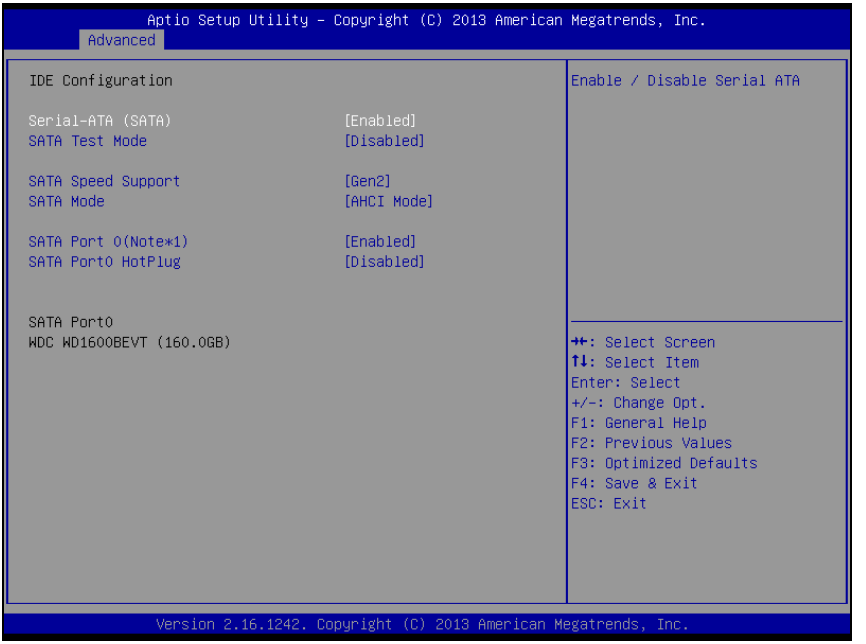


Socket 0 CPU Information Screen

BIOS Setting	Options	Description/Purpose
CPU Signature	No changeable options	Reports the CPU Signature
Microcode Patch	No changeable options	Reports the CPU Microcode Patch Version.
Max CPU Speed	No changeable options	Reports the maximum CPU Speed.
Min CPU Speed	No changeable options	Reports the minimum CPU Speed
Processor Cores	No changeable options	Displays number of physical cores in processor.
Intel HT Technology	No changeable options	Reports if Intel Hyper-Threading Technology is supported by processor
Intel VT-x Technology	No changeable options	Reports if Intel VT-x Technology is supported by processor.
L1 Data Cache	No changeable options	Displays size of L1 Data Cache
L1 Code Cache	No changeable options	Displays size of L1 Code Cache
L2 Cache	No changeable options	Displays size of L2 Cache.
L3 Cache	No changeable options	Displays size of L3 Cache.

5.3.2.5 Advanced - IDE Configuration

Menu Path *Advanced > IDE Configuration*



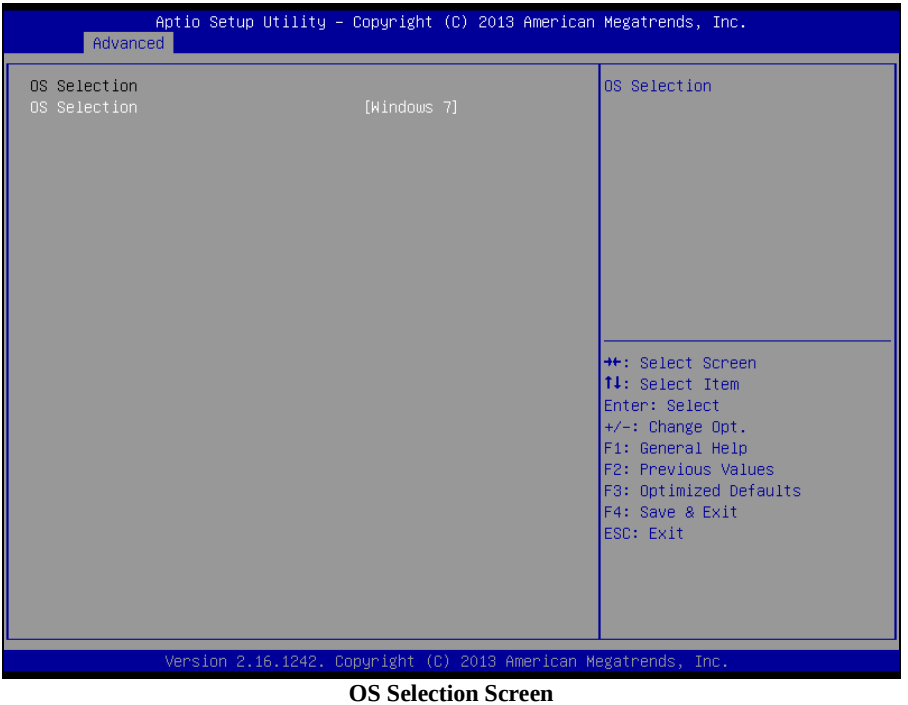
IDE Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial-ATA Controller(s)	- Disabled - Enabled	Enable or disable SATA Device.
SATA Test Mode	- Disabled - Enabled	Enable or disable SATA Test Mode.
SATA Speed Support	- GEN1 - GEN2	▪ **Gen1** mode sets the device to 1.5 Gbit/s speed. ▪ **Gen2** mode sets the device to 3 Gbit/s speed (in case it is compatible).
SATA Mode	- IDE mode - AHCI mode	Configures SATA as following: ▪ **IDE:** Set SATA operation mode to IDE mode. ▪ **AHCI:** SATA works as AHCI (Advanced Host Controller Interface) mode for getting better performance.
SATA Port 0 (Note*1)	- Disabled - Enabled	Enable or disable SATA port 0 Device.
SATA Port 0 HotPlug	- Disabled - Enabled	Enable or disable SATA port 0 Device HotPlug
SATA Port 0	- [drive]	Displays the drive installed on this SATA port 0. Shows [Empty] if no drive is installed.

BIOS Setting	Options	Description/Purpose
		If mother board support RAID that will show ASMT109x- Conf (0.1GB)

5.3.2.6 Advanced - OS Selection

Menu Path *Advanced > OS Selection*

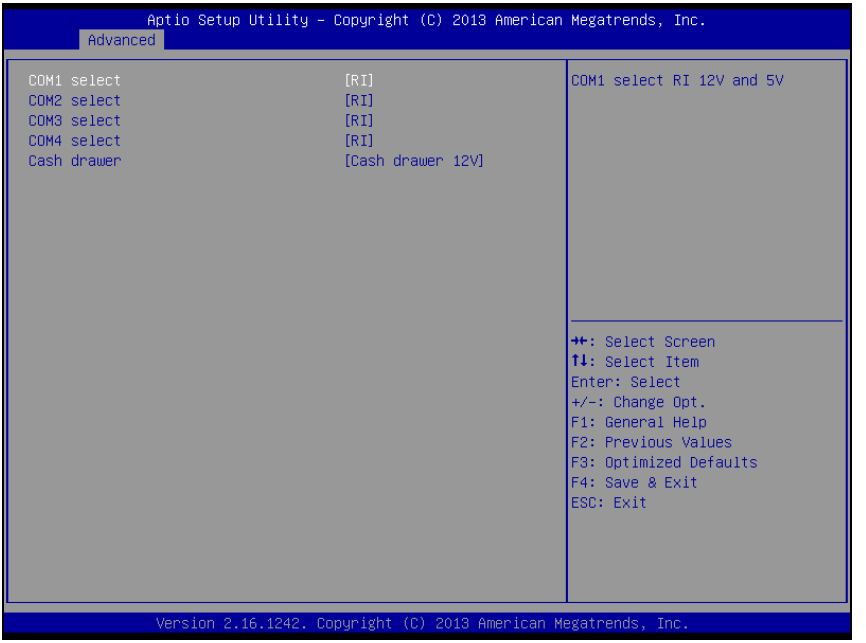


OS Selection Screen

BIOS Setting	Options	Description/Purpose
OS Selection	- Windows 8.x - Android - Windows 7	Operation System Selection

5.3.2.7 Advanced - Voltage Adjust Configuration

Menu Path *Advanced > Voltage Adjust Configuration*

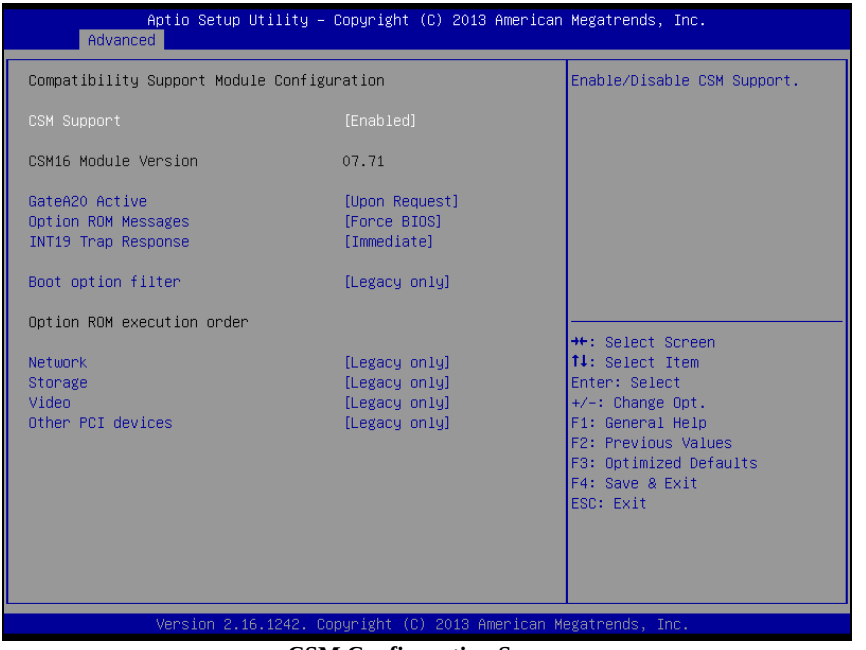


OS Selection Screen

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

5.3.2.8 Advanced - CSM Configuration

Menu Path *Advanced > CSM Configuration*



CSM Configuration Screen

BIOS Setting	Options	Description/Purpose
CSM Support	- Disabled - Enabled	Disables or Enables CSM support
CSM16 Module Version	No changeable options	Displays the current CSM (Compatibility Support Module) version.
GateA20 Active	- Upon Request - Always	Selects Gate A20 operation mode. ▪ **Upon Request:** GA20 can be disabled using BIOS services. ▪ **Always:** do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.
Option ROM Messages	- Force BIOS - Keep Current	Sets display mode for Option ROM messages.
INT19 Trap Response	- Immediate - Postponed	BIOS reaction on INT19 trapping by Option ROM. ▪ **Immediate:** Execute the trap right away. ▪ **Postponed:** Execute the trap during legacy boot.

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

5.3.2.9 Advanced - USB Configuration

Menu Path *Advanced >USB Configuration*

USB Configuration Screen

BIOS Setting	Options	Description/Purpose
USB Devices	No changeable options	Displays number of available USB devices.
Legacy USB Support	- Disabled - Enabled - Auto	Enables support for legacy USB.
USB3.0 Support	- Disabled - Enabled	Enables/Disables USB3.0 (XHCI) Controller support.
EHCI Hand-off	- Disabled - Enabled	This is a workaround for OSes without EHCI hand-off support.
USB Mass Storage Driver Support	- Disabled - Enabled	Enables/Disables USB mass storage driver support.
USB transfer time-out	1 / 5 / 10 /20 sec	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10 / 20 / 30 / 40 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	- Auto - Manual	Maximum time the device will take before it properly reports itself to the Host Controller. “Auto” uses default value: for a

BIOS Setting	Options	Description/Purpose
		Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.
Device power-up delay in seconds	Multiple options ranging from 0 to 40	Delay range is 1..40 seconds, in one second increments
Mass Storage Devices:	- Auto - Floppy - Force FDD - Hard Disk - CD-ROM	Displays the device name and choose the device emulation type.

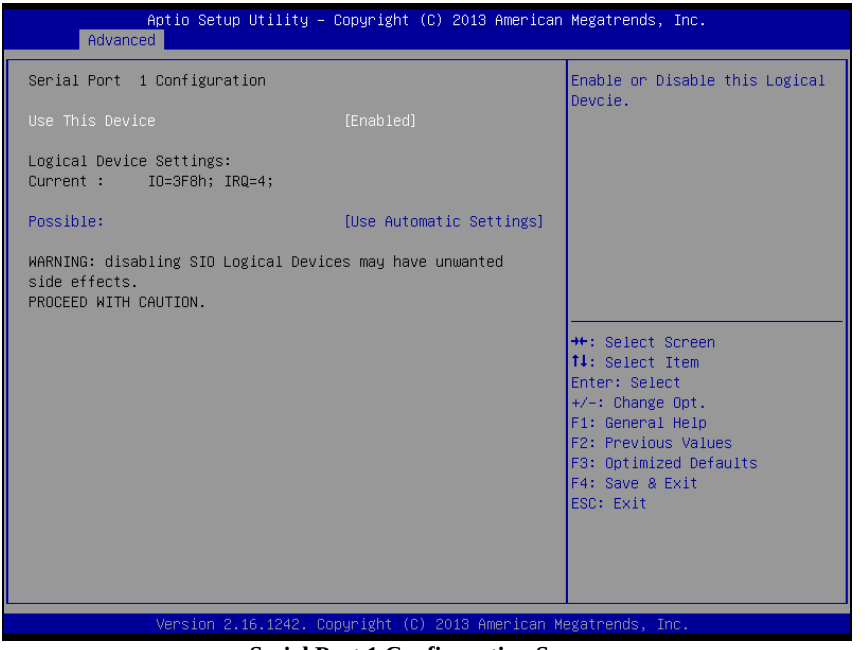
5.3.2.10 Advanced - Super IO Configuration

Menu Path *Advanced >F81866 Super IO Configuration*

Super IO Configuration Screen

BIOS Setting	Options	Description/Purpose
[*Active*] Serial Port 1	Sub-menu	Sets Parameters for COM1
[*Active*] Serial Port 2	Sub-menu	Sets Parameters for COM2
[*Active*] Serial Port 3	Sub-menu	Sets Parameters for COM3
[*Active*] Serial Port 4	Sub-menu	Sets Parameters for COM4
[*Active*] Parallel Port	Sub-menu	Sets Parameters for LPT port.
[*Active*] PS2 Controller (KB&MS)	Sub-menu	Sets Parameters for PS2.

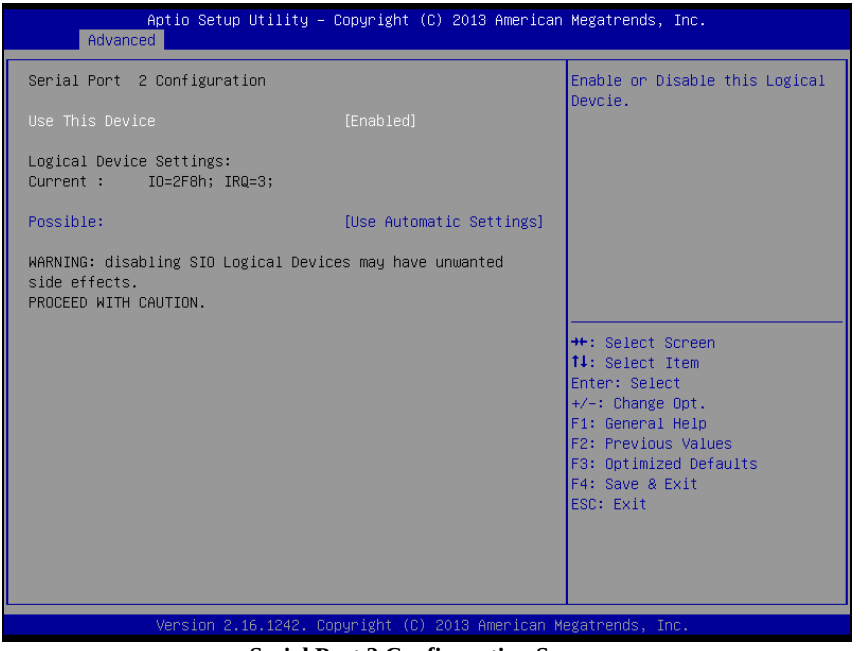
Menu Path *Advanced >F81866 Super IO Configuration > Serial Port 1 Configuration*



Serial Port 1 Configuration Screen

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

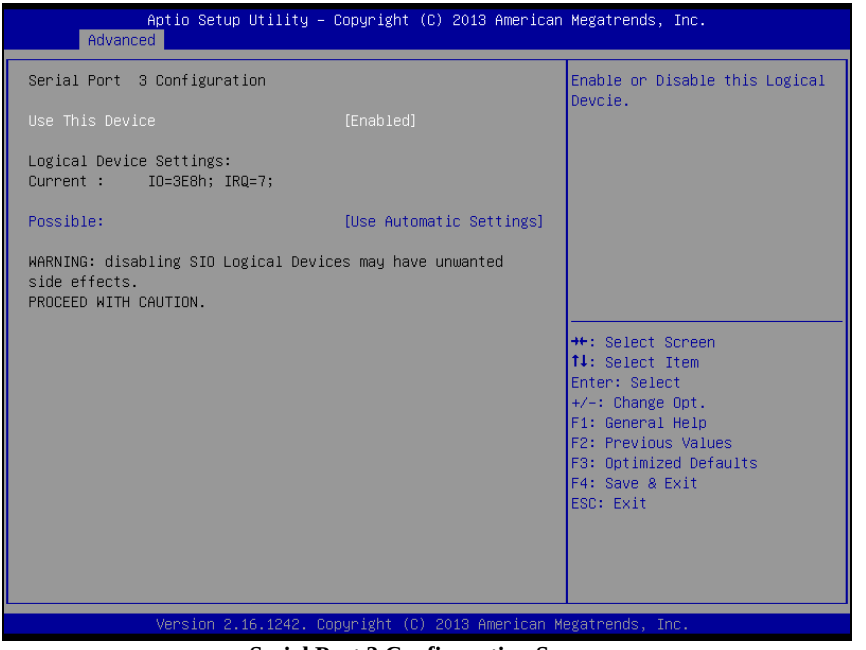
Menu Path *Advanced >F81866 Super IO Configuration > Serial Port 2 Configuration*



Serial Port 2 Configuration Screen

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

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



Serial Port 3 Configuration Screen

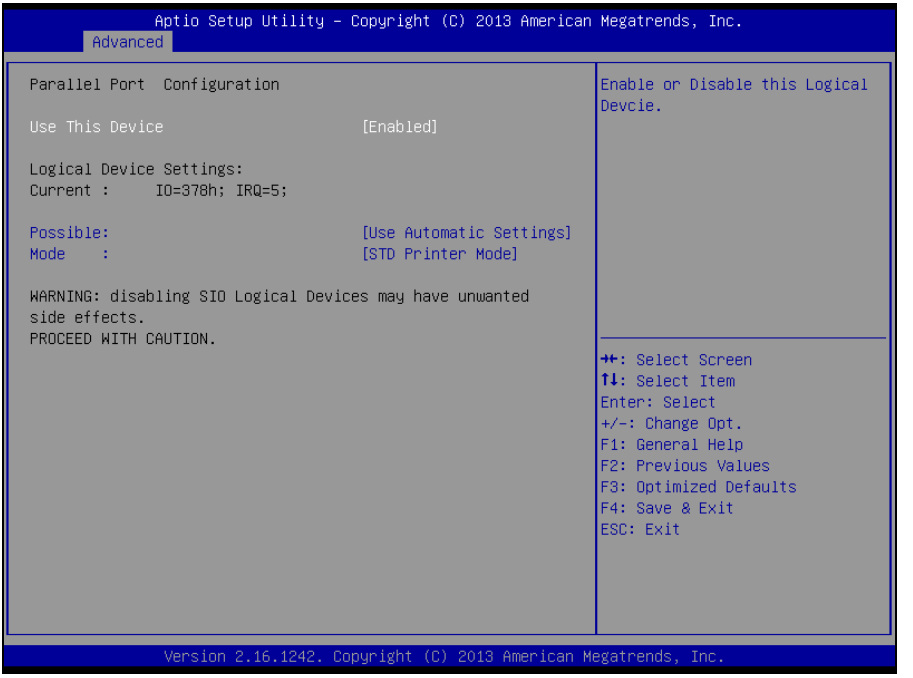
BIOS Setting	Options	Description/Purpose
Use This Device	- Disabled - Enabled	Enables or disables Serial Port 3.
Logical Device Settings	No changeable options	Displays the current settings of Serial Port 3.
Possible:	- Use Automatic Settings - IO=3E8h; IRQ=7 DMA - IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12 DMA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

Menu Path *Advanced >F81866 Super IO Configuration > Parallel Port Configuration*

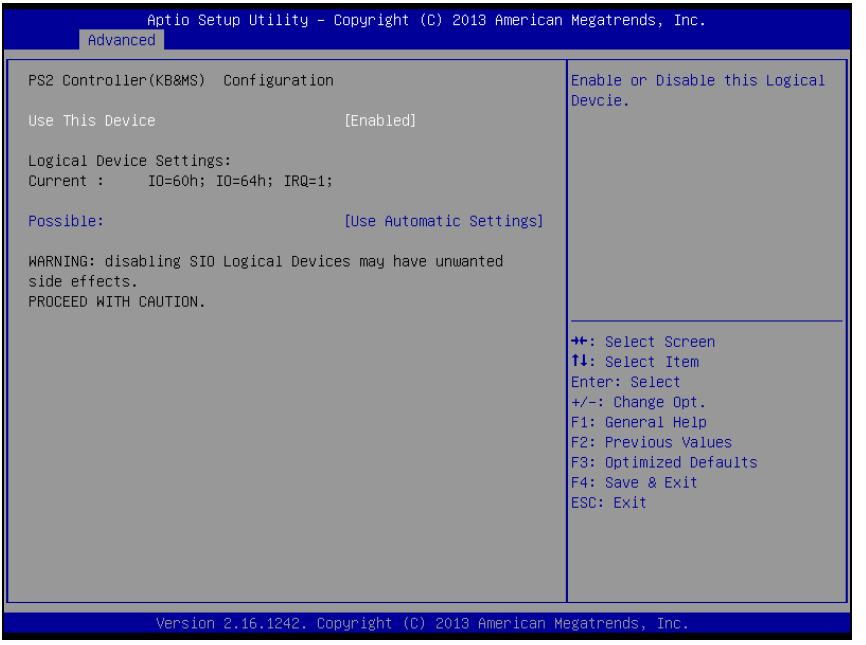


Parallel Port Configuration Screen

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

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

Menu Path *Advanced >F81866 Super IO Configuration > PS2 Controller(KB&MS) Configuration*



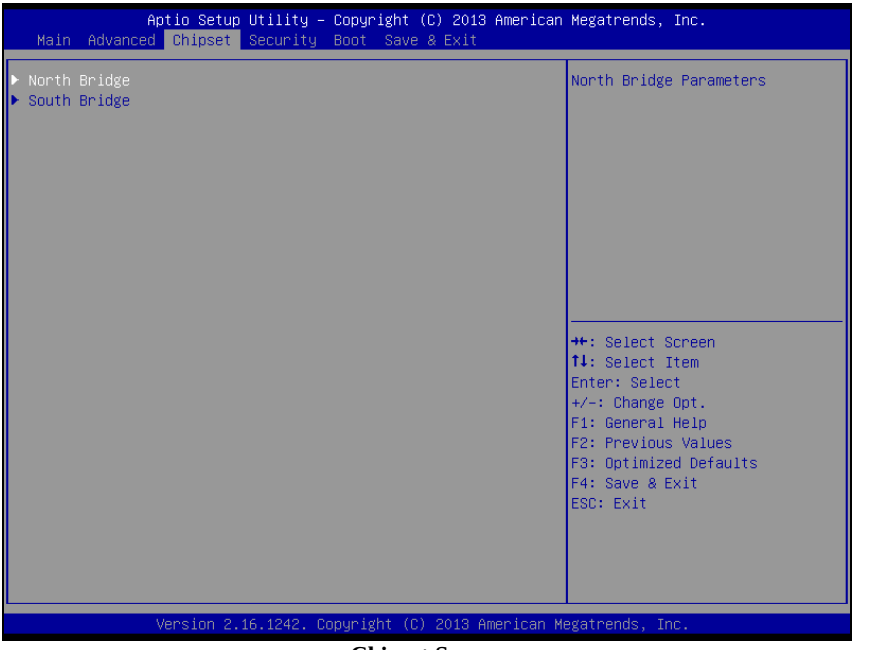
PS2 Controller (KB & MS) Configuration Screen

BIOS Setting	Options	Description/Purpose
Use This Device	-Disabled -Enabled	Enables or disables the PS2.
Logical Device Settings	No changeable options	Displays the current settings of the printer port.
Possible:	- Use Automatic Settings -IO=60h; IO=60h; IRQ=1	Selects IRQ and I/O resource settings for the printer port.

5.3.3 Chipset

Menu Path *Chipset*

This menu allows users to configure advanced Chipset settings such as North Bridge and South Bridge configuration parameters.

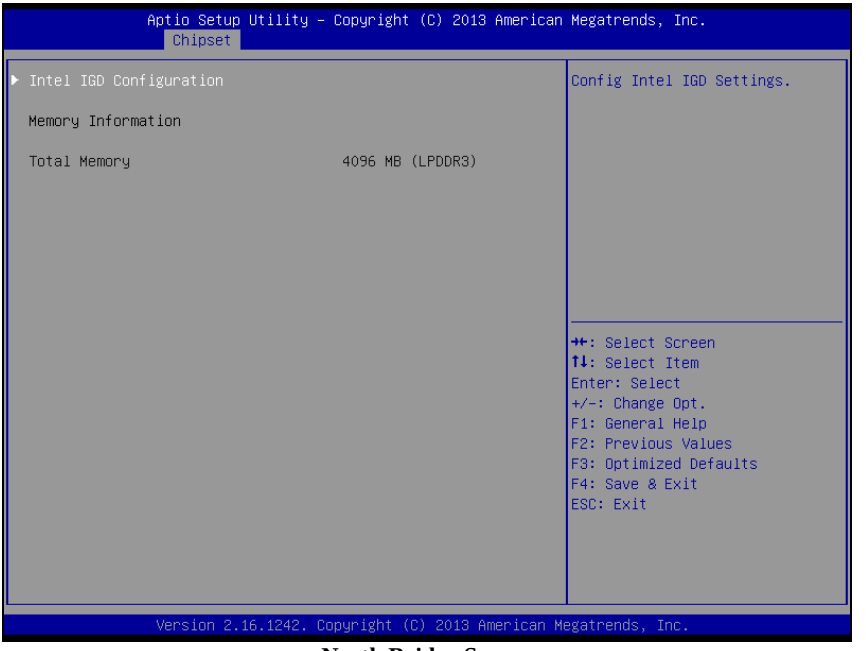


Chipset Screen

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

5.3.3.1 Chipset - North Bridge

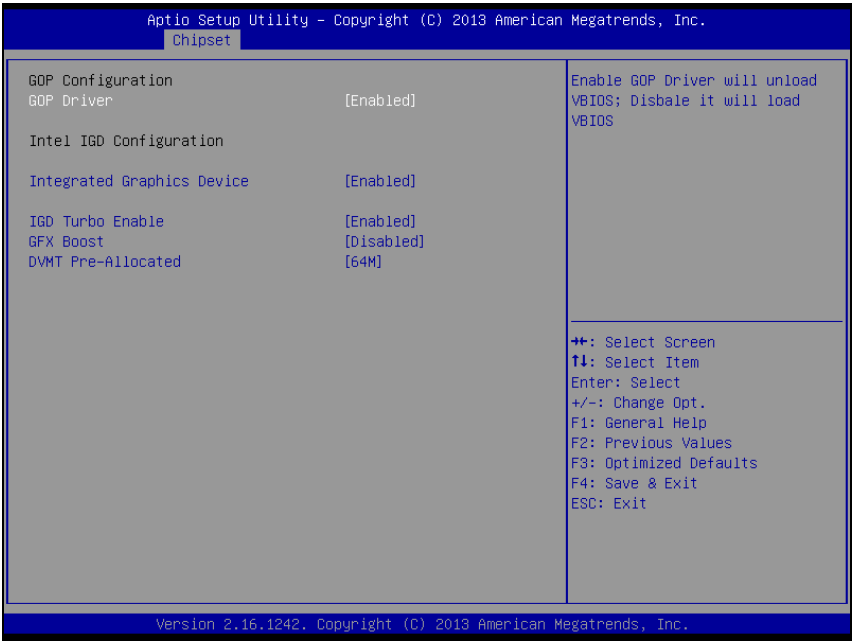
Menu Path *Chipset > North Bridge*



North Bridge Screen

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

Menu Path *Chipset > North Bridge > Intel IGD Configuration*

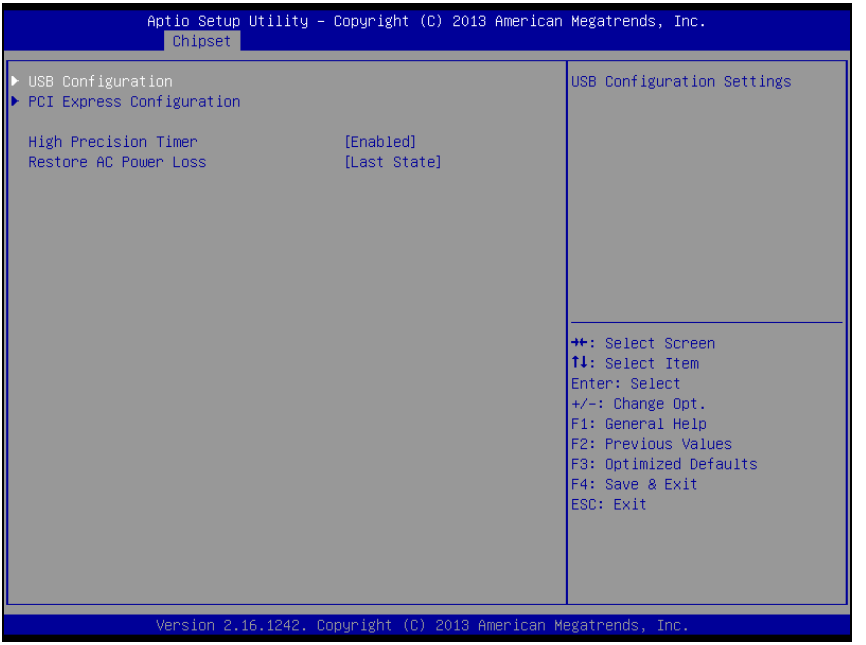


Intel IGD Configuration Screen

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

5.3.3.2 Chipset - South Bridge

Menu Path *Chipset > South Bridge*

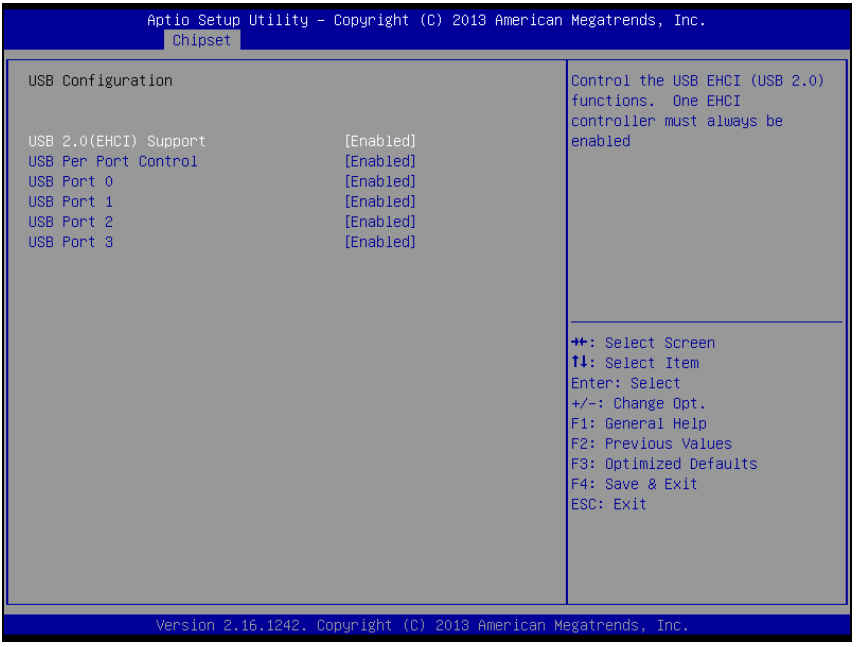


South Bridge Screen

BIOS Setting	Options	Description/Purpose
USB Configuration	Sub-menu	Configures USB parameters.
PCI Express Configuration	Sub-menu	Configures PCH PCIE parameters
High Precision Timer	- Disabled - Enabled	Enables or disables the HPET (High Precision Event Timer)
Restore AC Power Loss	- Power Off - Power On - Last State	Select AC power state when power is re-applied after a power failure. ▪ **Power Off** keeps power off till the power button is pressed. ▪ **Power On** makes system power on after system restores AC power to the board. ▪ **Last State** brings system back to the last power state before AC remove.

Chipset - South Bridge - USB Configuration

Menu Path *Chipset > South Bridge > USB Configuration*

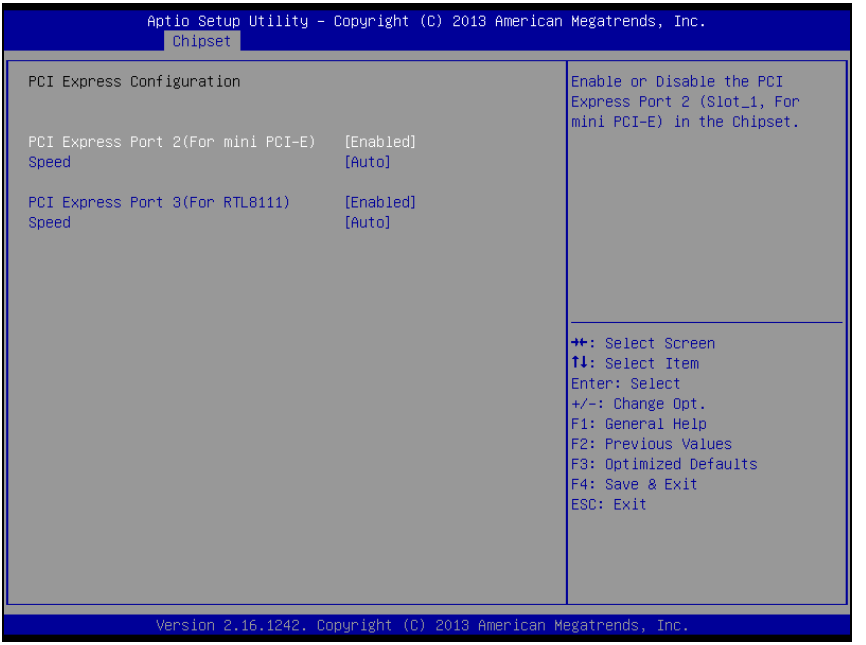


USB Configuration Screen

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

Chipset - South Bridge - PCI Express Configuration

Menu Path *Chipset > South Bridge > PCI Express Configuration*



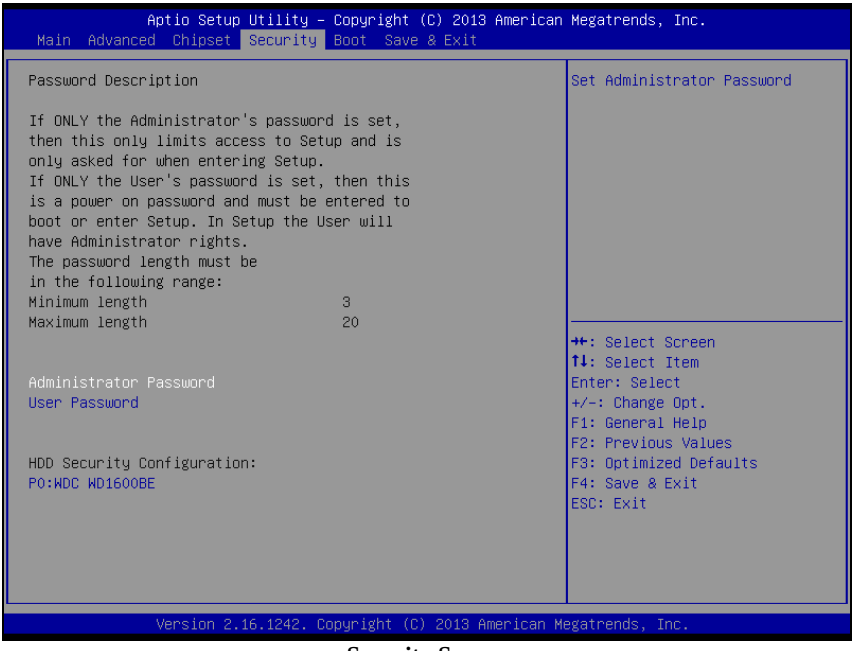
PCI Express Configuration Screen

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

5.3.4 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.



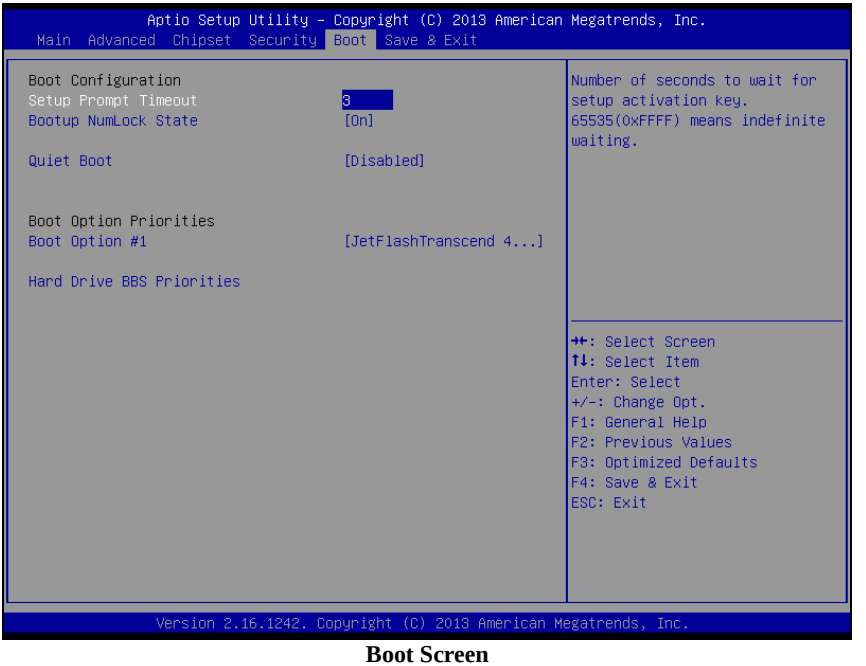
Security Screen

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

5.3.5 Boot

Menu Path *Boot*

This menu provides control items for system boot configuration such as setting setup prompt timeout, enabling/disabling quiet boot, selecting the boot sequence from the available device(s) and Hard Drive BBS priorities.



Boot Screen

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

5.3.5.1 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)] - Disabled	Changes the boot order of available drive(s).

5.3.6 Save & Exit

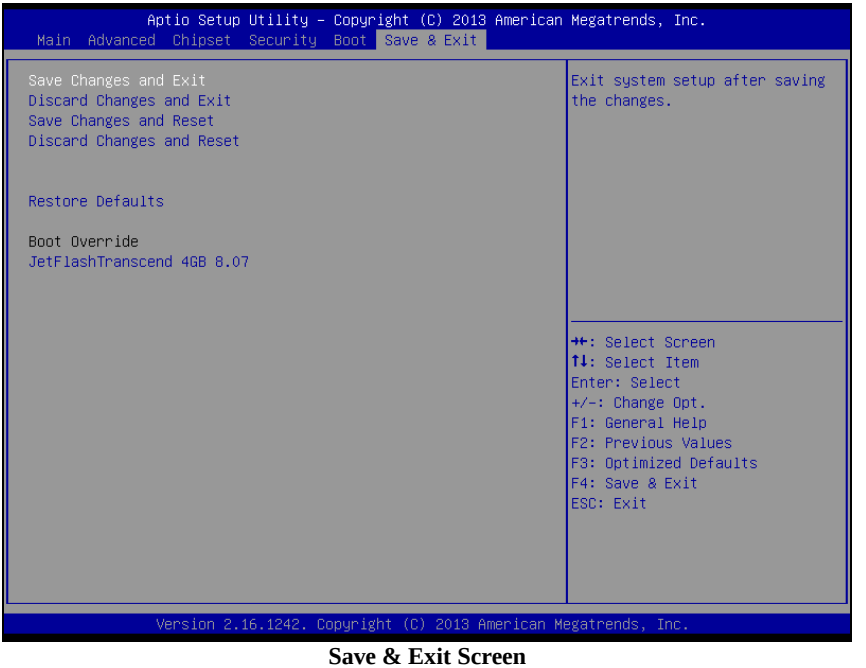
Menu Path *Save & Exit*

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

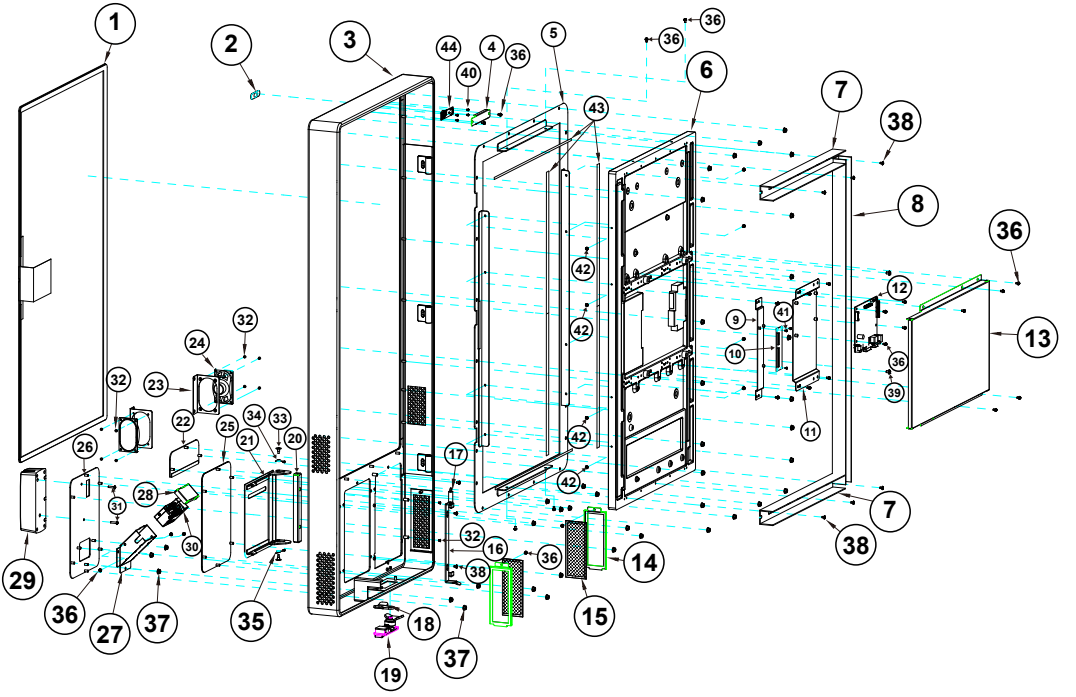
BIOS Setting	Options	Description/Purpose
Save Changes and Exit	No changeable options	Exits and saves the changes in NVRAM.
Discard Changes and Exit	No changeable options	Exits without saving any changes made in BIOS settings.
Save Changes and Reset	No changeable options	Saves the changes in NVRAM and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

Appendix A System Diagrams

This appendix includes the exploded diagrams of the system and the parts list as well as the part numbers of the KS-1130 system.

- KS-1130 Front Door Assembly Exploded Diagram
- KS-1130 Back Case Exploded Diagram
- KS-1130 Free Stand Assembly Exploded Diagram
- KS-1130 Power Supply Assembly Exploded Diagram
- KS-1130 Thermal Printer Assembly Exploded Diagram

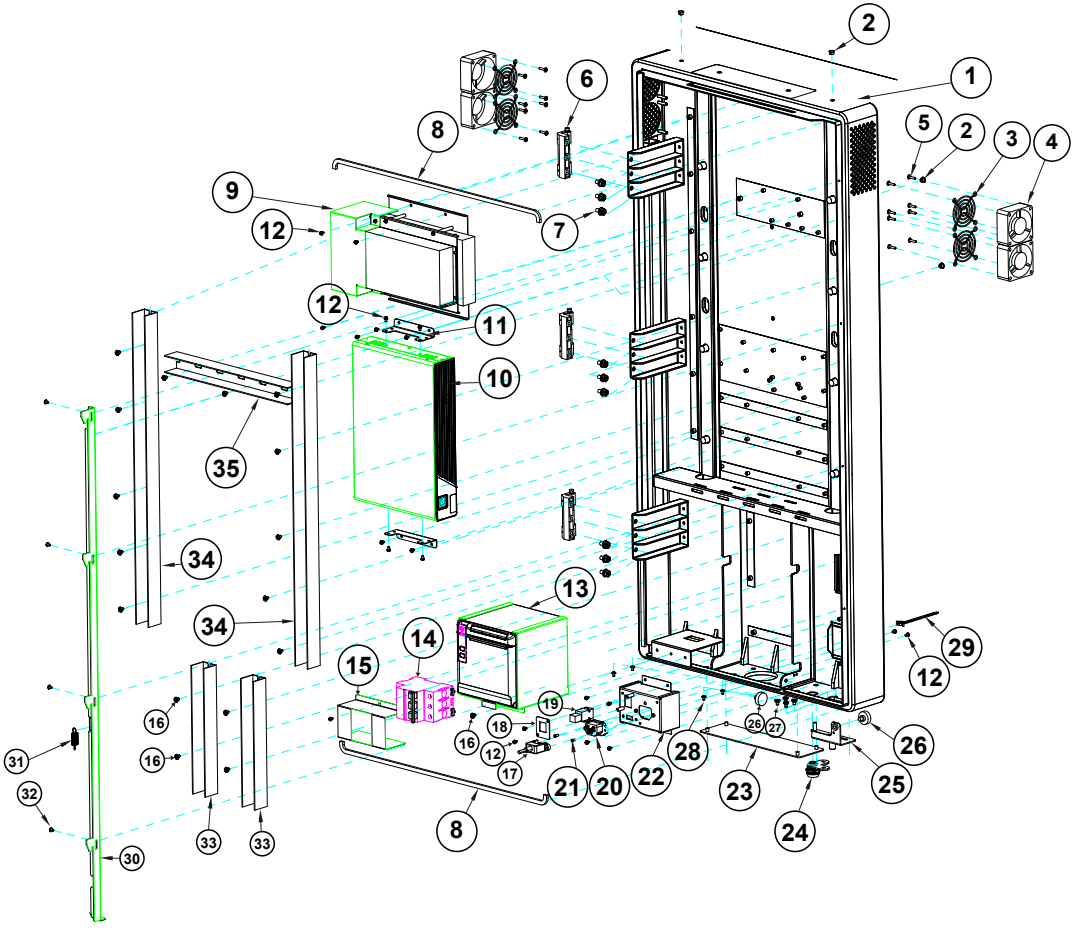
KS-1130 Front Door Assembly Exploded Diagram



No.	Component Name	P/N No.	Q'ty
1	32-inch Touch		1
2	KS-1130 Web Cam Lens (Transparent)	30-021-10130410	1
3	KS-1130 Front Door (w/Paint)(White)	20-147-02061410	1
4	KS-1130 Web Cam Cover	20-104-03007410	1
5	KS-1130 Panel Holder (w/Paint)(White)	20-129-03002410	1
6	32" LCD		1
7	Wiring Duct		2
8	Wiring Duct		1
9	KS-1130 32" Touch CB Bracket	20-106-03001410	1
10	32-Touch-STS3385-CB		1
11	KS-1130 AD Board Holder A	20-129-03001410	1
12	AD_Board_KC46		1
13	KS-1130 Panel Back Cover (w/Paint)(White)	20-104-03004410	1
14	KS-1130 Filter Bracket (w/Paint)(White)	20-106-03062410	2
15	KS-1130 Filter PC(120x46mm)	30-089-02100410	1

No.	Component Name	P/N No.	Q'ty
16	KS-1130 Printer Door Latch	20-147-02001410	1
17	KF-7330 Door Hook Extension Spring (ϕ8.6)	23-002-00000092	1
18	KS-1130 MS 732 Locking Plate	20-125-02002410	1
19	KS-1130 Lift and Turn Compression Latch	80-027-35001410	1
20	KS-1130 Printer Door Base LS	20-147-02002410	1
21	KS-1130 F PR Cover TP808 LS (w/Paint) (White)	20-104-03063410	1
22	KS-1130 F PR Cover TP808 (w/Paint) (White)	20-104-03062410	1
23	KS-1130 Speaker 4W Bracket (w/Paint) (White)	20-106-03067410	2
24	Speaker-4W-7141		2
25	KS-1130 Front Option Bracket (w/Paint)(White)	20-106-03063410	1
26	KS-1130 Front Scan MSR Bracket (w/Paint)(White)	20-106-02064410	1
27	KS-1130 Scanner Bracket (w/Paint) (White)	20-106-03066410	1
28	KS-1130 Scanner Cable Cover (w/Paint)(White)	20-104-03066410	1
29	IMI300-1_MSR		1
30	Scanner_Sub_ASM		1
31	Round Washer Head Screw M3x0.5Px14mm	22-235-30014011	2
32	Flat Head Screw #2 / M3x0.5Px5mm	22-215-30005011	8
33	Fillister Head Screw M3x0.5Px4.8mm	82-272-30005013	2
34	Rotate Spring For Door R (ϕ5)	23-000-03000502	1
35	Rotate Spring For Door L (ϕ5)	23-000-04000502	1
36	Round Head With Spring Washer Screw M3x0.5Px6mm	22-232-30060211	23
37	Slip Nuts, M4x0.7P,H=4.5mm	23-142-40450801	40
38	Round Head Screw #2 / M3x0.5Px4mm	22-232-30004011	3
39	Fillister Head Screw #2 / M4x0.7Px6mm	22-272-40006011	2
40	Round Head Screw M2x0.4Px5mm	22-232-20005011	4
41	Round Head Screw M2.5x0.45Px6mm	22-232-25006811	3
42	Round Head With Spring Washer Screw M3x0.5Px8mm	22-232-30008211	12
43	KS-1330 LCD Rubber	30-013-01100408	6
44	Face_Camera_PCBA-New_Lens		1

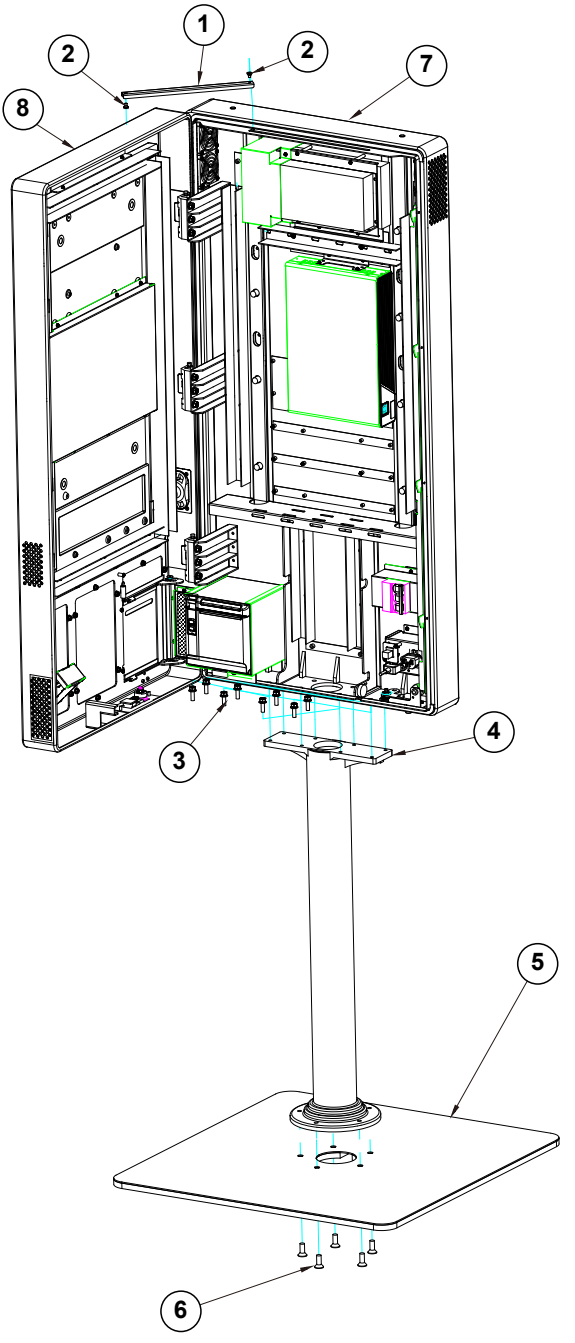
KS-1130 Back Case Assembly Exploded Diagram



No.	Component Name	P/N No.	Q'ty
1	KS-1130 Back Case P(w/Paint)(Black)	20-101-02061410	1
2	Hole Plug (Φ6.6mm)(Black)	90-067-01100000	4
3	KS-1130 6CM Fan Guard	20-044-29011410	4
4	KS-1130 System Fan (60x60x20.5mm) L=220mm	21-004-06060085	
5	Round Washer Head Screw M3x0.5Px14mm	22-235-30014011	6

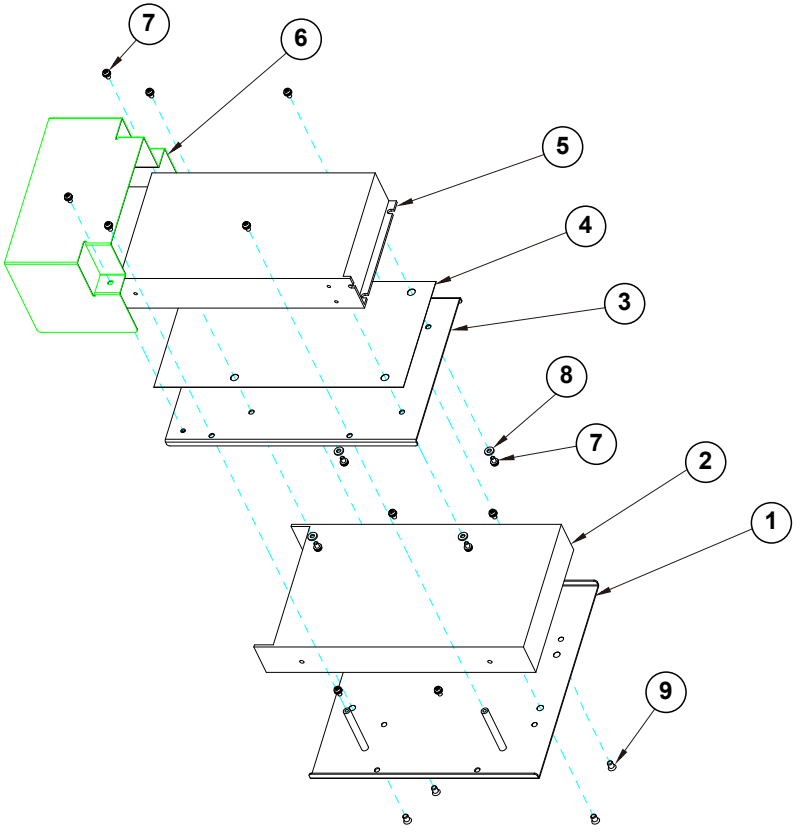
No.	Component Name	P/N No.	Q'ty
6	PK-7090 Concealed Hinge	80-012-30001284	3
7	Hex Head With Spring Washer Screw #3 / M6x1.0Px12mm	22-251-60012011	
8	KS-1130 Back Case Top Sponge	30-013-15100410	2
9	Power sub assembly		1
10	PA-8025 Box PC		1
11	KS-1130 PA-8025 Wall Mount (w/Paint)(Black)	20-138-03061410	
12	Round Head With Spring Washer Screw M3x0.5Px6mm	22-232-30060211	1
13	TP-808 Thermal Receipt Printer Sub assembly		1
14	KS-1130 Miniature Circuit Breaker	52-990-43160051	1
15	KS-1130 Breaker SW Cover	20-104-03002410	1
16	Fillister Head Screw #2 / M4x0.7Px6mm	22-272-40006011	17
17	USB Cable (option)		1
18	KS-1130 LAN Fix (w/Paint)(Black)	20-130-03001410	1
19	10P10C Modular Coupler Jack shielded	10-085-10012035	1
20	A Socket		1
21	Flat Head Screw #2/ ϕ 5 / M3x0.5Px8mm(Black)	22-215-30008011	
22	KS-1130 AC Bracket P(w/Paint)(Black)	20-106-03069410	1
23	KS-1130 Back B Cover (w/Paint)(Black)	20-104-03065410	1
24	Cam Lock		1
25	KS-1130 Lock Bracket	20-125-02001410	1
26	PK-7090 Plastic Wheel M6x1.0Px7.1mm(White)	22-281-60007001	
27	Fillister Head Screw M4x0.7Px4mm	22-272-40004911	4
28	Round Washer Head Screw #2 / M3x0.5Px4mm	22-232-30004011	
29	KS-1130 Wire Mount (Black)	30-042-04200410	1
30	KS-1130 Lock Hook	20-125-07001410	1
31	KF-7330 Panel Lock Spring (ϕ 10)	23-002-00001002	1
32	Wiring Duct		1
33	Wiring Duct		2
34	Wiring Duct		1
35	Wiring Duct		1

KS-1130 Free Stand Assembly Exploded Diagram



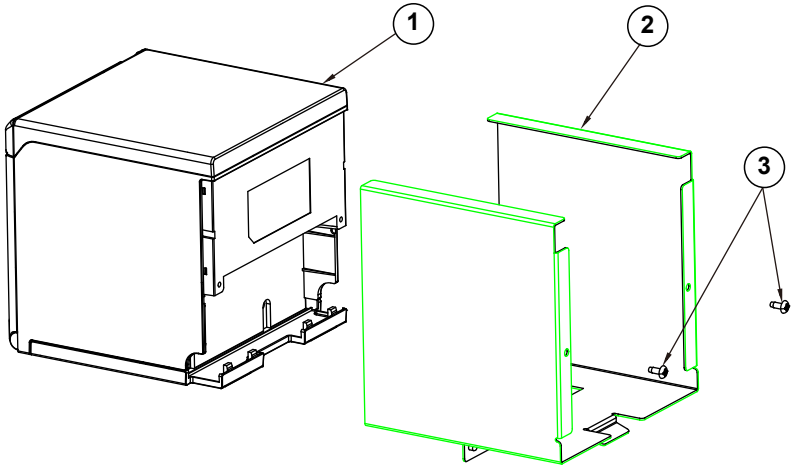
No.	Component Name	P/N No.	Q'ty
1	KS- 130 Door Support	20-102-02001410	1
2	Fillister Head Screw M4x0.7Px4mm	22-272-40004911	2
3	Hex Head With Spring Washer Screw #3 / M6x1.0Px20mm	22-252-60020011	
4	KS- 130 Base Tube	20-132-07002411	1
5	KS-1130 Base Plate	20-132-07001411	1
6	Flat Head Screw #3 / M8x1.25Px25mm	22-212-80025041	5
7	Back case assembly		1
8	Front door assembly		1
9			
10			
11			

KS-1130 Power Supply Assembly Exploded Diagram



No.	Component Name	P/N No.	Q'ty
1	KS-1130 Power RSP 200 Bracket	20-106-03007410	1
2	Power supply-1		1
3	KS-1130 Power RP Bracket	20-106-03006410	1
4	KS-1130 Mylar Power RP-21009FV (199x99x0.35mm)	90-056-31100410	1
5	Power supply-2		1
6	KS-1130 Power Cover	20-104-03006410	1
7	Round Head With Spring Washer Screw M3x0.5Px6mm	22-232-30060211	10
8	Plastic Washer 7x3.2x1T	83-520-03100073	4
9	Flat Head Screw M4x0.7Px5mm	22-212-40005011	4

KS-1130 Thermal Printer Assembly Exploded Diagram



No.	Component Name	P/N No.	Q'ty
1	Desktop 2" POS Printer, TP808(Black)	52-701-00026012	1
2	KS-1130 Printer TP808 Bracket (w/Paint)(Black	20-106-03008410	1
3	Pan Head Screw T3.0x8mm(Black)	22-122-30080011	2

Appendix B Technical Summary

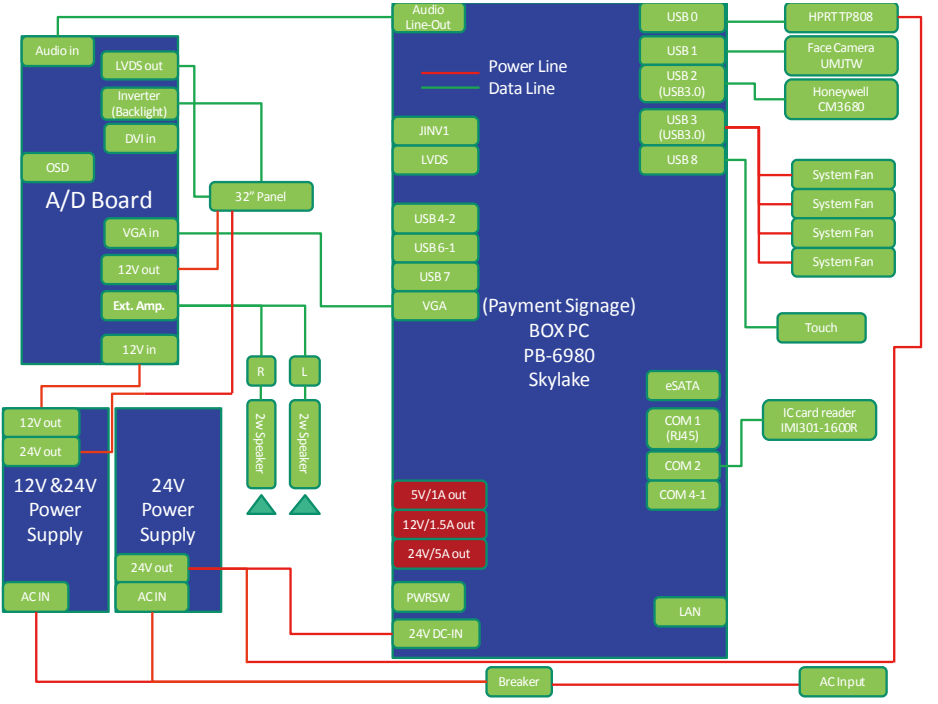
This appendix will give you a brief introduction of the allocation maps for KS-1130 resources.

The following topics are included:

- KS-1130 High-End Level and Entry Level System Block Diagrams
- Interrupt Map
- I/O Map
- Memory Map
- Configuring WatchDog Timer
- Flash BIOS Update

Technical Summary for High-End Level System

KS-1130 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 98	Microsoft ACPI-Compliant System
IRQ 99	Microsoft ACPI-Compliant System
IRQ 100	Microsoft ACPI-Compliant System
IRQ 101	Microsoft ACPI-Compliant System
IRQ 102	Microsoft ACPI-Compliant System
IRQ 103	Microsoft ACPI-Compliant System
IRQ 104	Microsoft ACPI-Compliant System
IRQ 105	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
IRQ 106	Microsoft ACPI-Compliant System
IRQ 107	Microsoft ACPI-Compliant System
IRQ 108	Microsoft ACPI-Compliant System
IRQ 109	Microsoft ACPI-Compliant System
IRQ 110	Microsoft ACPI-Compliant System
IRQ 111	Microsoft ACPI-Compliant System
IRQ 112	Microsoft ACPI-Compliant System
IRQ 113	Microsoft ACPI-Compliant System
IRQ 114	Microsoft ACPI-Compliant System
IRQ 115	Microsoft ACPI-Compliant System
IRQ 116	Microsoft ACPI-Compliant System
IRQ 117	Microsoft ACPI-Compliant System
IRQ 118	Microsoft ACPI-Compliant System
IRQ 119	Microsoft ACPI-Compliant System
IRQ 120	Microsoft ACPI-Compliant System
IRQ 121	Microsoft ACPI-Compliant System
IRQ 122	Microsoft ACPI-Compliant System
IRQ 123	Microsoft ACPI-Compliant System
IRQ 124	Microsoft ACPI-Compliant System
IRQ 125	Microsoft ACPI-Compliant System
IRQ 126	Microsoft ACPI-Compliant System
IRQ 127	Microsoft ACPI-Compliant System
IRQ 128	Microsoft ACPI-Compliant System
IRQ 129	Microsoft ACPI-Compliant System
IRQ 130	Microsoft ACPI-Compliant System
IRQ 131	Microsoft ACPI-Compliant System
IRQ 132	Microsoft ACPI-Compliant System
IRQ 133	Microsoft ACPI-Compliant System
IRQ 134	Microsoft ACPI-Compliant System
IRQ 135	Microsoft ACPI-Compliant System
IRQ 136	Microsoft ACPI-Compliant System
IRQ 137	Microsoft ACPI-Compliant System
IRQ 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	ASSIGNMENT
IRQ 149	Microsoft ACPI-Compliant System
IRQ 150	Microsoft ACPI-Compliant System
IRQ 151	Microsoft ACPI-Compliant System
IRQ 152	Microsoft ACPI-Compliant System
IRQ 153	Microsoft ACPI-Compliant System
IRQ 154	Microsoft ACPI-Compliant System
IRQ 155	Microsoft ACPI-Compliant System
IRQ 156	Microsoft ACPI-Compliant System
IRQ 157	Microsoft ACPI-Compliant System
IRQ 158	Microsoft ACPI-Compliant System
IRQ 159	Microsoft ACPI-Compliant System
IRQ 160	Microsoft ACPI-Compliant System
IRQ 161	Microsoft ACPI-Compliant System
IRQ 162	Microsoft ACPI-Compliant System
IRQ 163	Microsoft ACPI-Compliant System
IRQ 164	Microsoft ACPI-Compliant System
IRQ 165	Microsoft ACPI-Compliant System
IRQ 166	Microsoft ACPI-Compliant System
IRQ 167	Microsoft ACPI-Compliant System
IRQ 168	Microsoft ACPI-Compliant System
IRQ 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	ASSIGNMENT
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
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

I/O	ASSIGNMENT
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
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

MEMORY MAP	ASSIGNMENT
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. 69801PH1.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.

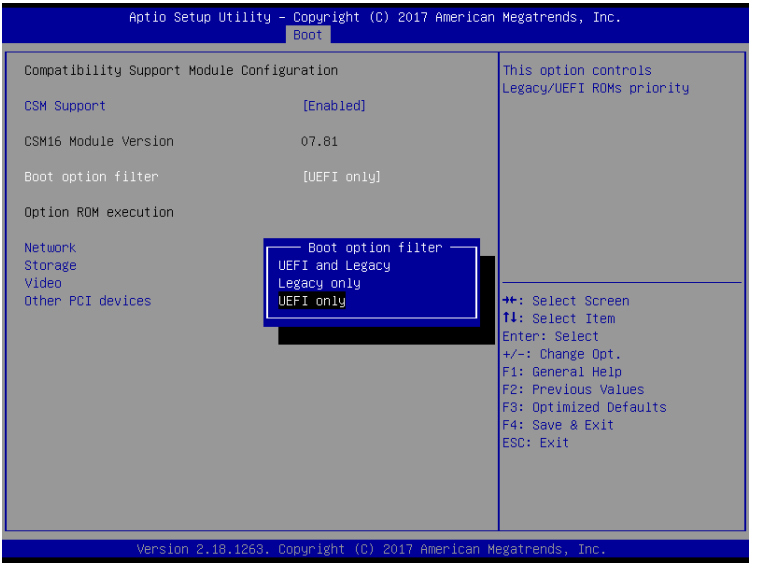
(1) Connect the USB storage device.

(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.

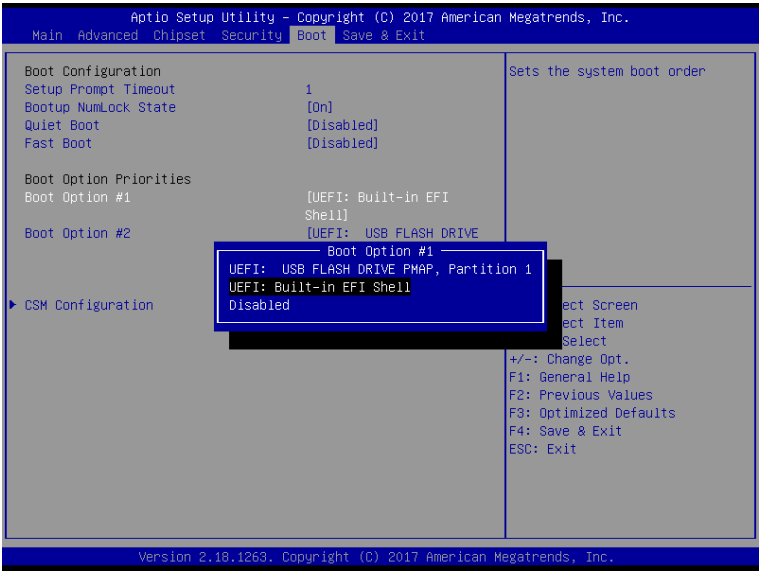
(5) Set **[Boot option filter]** to **[UEFI Only]** and press **<F4>** key to save the configuration and restart the system.



(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, change to the path where you put BIOS image and AFUEFIx64.

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

2 Type "**AFUEFIx64 6980xxxx.bin /p /b /n /x"** and press enter to start the flash procedure. (xxxx means the BIOS revision part, e.g. 1PH1…)

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

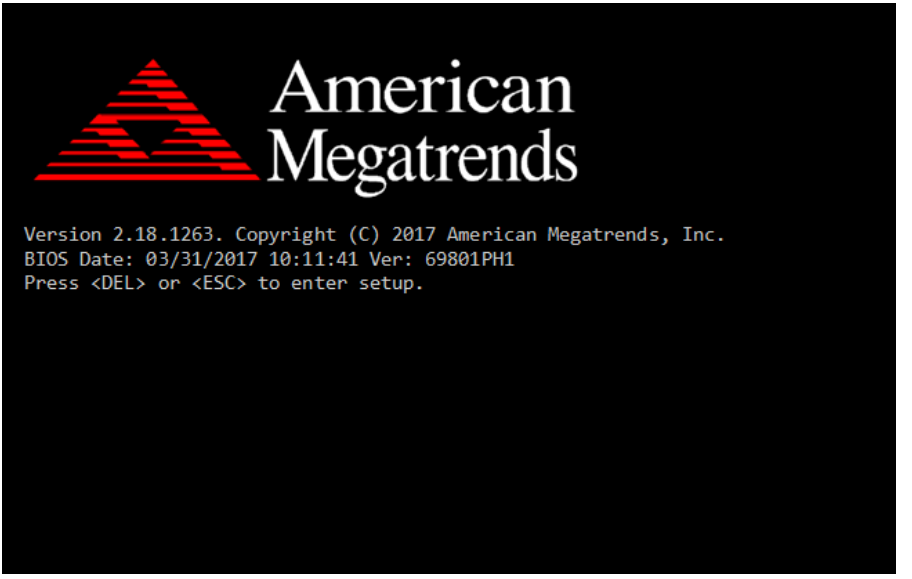
4 After BIOS update procedures is complete, the messages below will display:

```
fs0:\afuefix64> afuefix64 69801PH1.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.

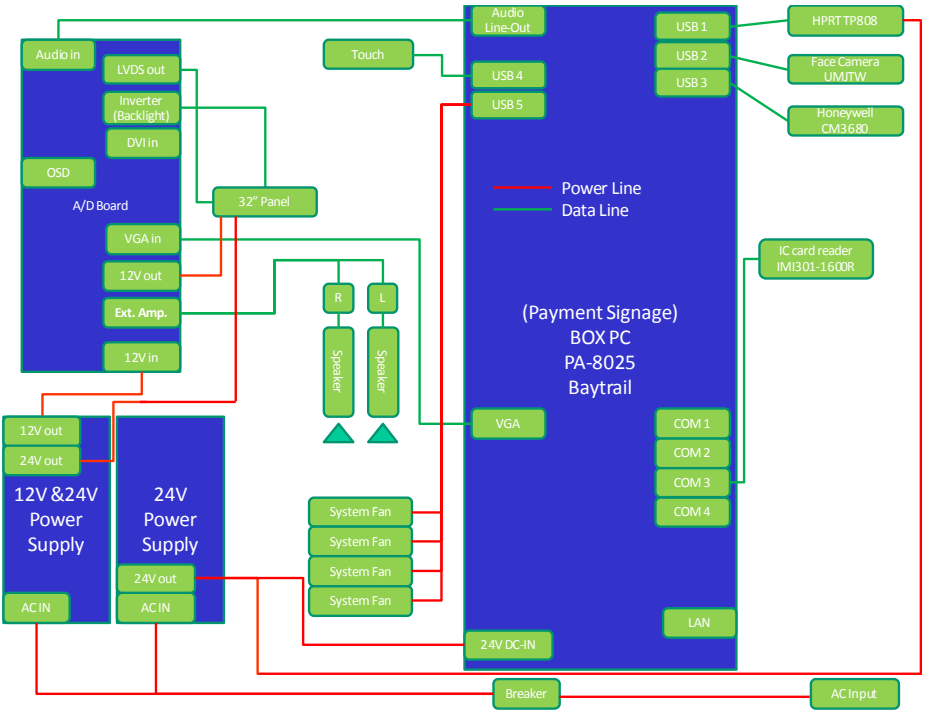
6 The BIOS Update is completed after the system is restarted.

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



Technical Summary for Entry Level System

KS-1130 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 5	Printer Port (LPT1)
IRQ 7	Communications Port (COM3)
IRQ 7	Communications Port (COM4)
IRQ 8	High precision event timer
IRQ 16	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series PCI Express - Root Port 1 - 0F48
IRQ 17	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series PCI Express - Root Port 2 - 0F4A
IRQ 18	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series PCI Express - Root Port 3 - 0F4C
IRQ 19	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series PCI Express - Root Port 4 - 0F4E
IRQ 19	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series AHCI - 0F23
IRQ 81	Microsoft ACPI-Compliant System
IRQ 82	Microsoft ACPI-Compliant System
IRQ 83	Microsoft ACPI-Compliant System
IRQ 84	Microsoft ACPI-Compliant System
IRQ 85	Microsoft ACPI-Compliant System
IRQ 86	Microsoft ACPI-Compliant System
IRQ 87	Microsoft ACPI-Compliant System
IRQ 88	Microsoft ACPI-Compliant System
IRQ 89	Microsoft ACPI-Compliant System
IRQ 90	Microsoft ACPI-Compliant System
IRQ 91	Microsoft ACPI-Compliant System
IRQ 92	Microsoft ACPI-Compliant System
IRQ 93	Microsoft ACPI-Compliant System
IRQ 94	Microsoft ACPI-Compliant System
IRQ 95	Microsoft ACPI-Compliant System
IRQ 96	Microsoft ACPI-Compliant System
IRQ 97	Microsoft ACPI-Compliant System
IRQ 98	Microsoft ACPI-Compliant System
IRQ 99	Microsoft ACPI-Compliant System
IRQ 100	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
IRQ 101	Microsoft ACPI-Compliant System
IRQ 102	Microsoft ACPI-Compliant System
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IRQ	ASSIGNMENT
IRQ 144	Microsoft ACPI-Compliant System
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IRQ	ASSIGNMENT
IRQ 187	Microsoft ACPI-Compliant System
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IRQ	ASSIGNMENT
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IRQ	ASSIGNMENT
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IRQ	ASSIGNMENT
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IRQ	ASSIGNMENT
IRQ 509	Microsoft ACPI-Compliant System
IRQ 510	Microsoft ACPI-Compliant System
IRQ 511	Microsoft ACPI-Compliant System
IRQ 4294967291	Intel(R) HD Graphics
IRQ 4294967292	Intel(R) USB 3.0 eXtensible Host Controller - 0100 (Microsoft)
IRQ 4294967293	Intel(R) Trusted Execution Engine Interface
IRQ 4294967294	Realtek PCIe GBE Family Controller

Note: These resource information were gathered using Windows 10 (the IRQ could be assigned differently depending on OS).

I/O MAP

I/O	ASSIGNMENT
0x00000000-0x0000006F	PCI Express Root Complex
0x00000020-0x00000021	Programmable interrupt controller
0x00000024-0x00000025	Programmable interrupt controller
0x00000028-0x00000029	Programmable interrupt controller
0x0000002C-0x0000002D	Programmable interrupt controller
0x0000002E-0x0000002F	Motherboard resources
0x00000030-0x00000031	Programmable interrupt controller
0x00000034-0x00000035	Programmable interrupt controller
0x00000038-0x00000039	Programmable interrupt controller
0x0000003C-0x0000003D	Programmable interrupt controller
0x00000040-0x00000043	System timer
0x0000004E-0x0000004F	Motherboard resources
0x00000050-0x00000053	System timer
0x00000060-0x00000060	Standard PS/2 Keyboard
0x00000061-0x00000061	Motherboard resources
0x00000063-0x00000063	Motherboard resources
0x00000064-0x00000064	Standard PS/2 Keyboard
0x00000065-0x00000065	Motherboard resources
0x00000067-0x00000067	Motherboard resources
0x00000070-0x00000070	Motherboard resources
0x00000070-0x00000070	System CMOS/real time clock
0x00000078-0x00000CF7	PCI Express Root Complex
0x00000080-0x0000008F	Motherboard resources
0x00000092-0x00000092	Motherboard resources
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A4-0x000000A5	Programmable interrupt controller
0x000000A8-0x000000A9	Programmable interrupt controller
0x000000AC-0x000000AD	Programmable interrupt controller
0x000000B0-0x000000B1	Programmable interrupt controller
0x000000B2-0x000000B3	Motherboard resources
0x000000B4-0x000000B5	Programmable interrupt controller
0x000000B8-0x000000B9	Programmable interrupt controller
0x000000BC-0x000000BD	Programmable interrupt controller
0x000002E8-0x000002EF	Communications Port (COM4)
0x000002F8-0x000002FF	Communications Port (COM2)
0x00000378-0x0000037F	Printer Port (LPT1)
0x000003B0-0x000003BB	Intel(R) HD Graphics
0x000003C0-0x000003DF	Intel(R) HD Graphics
0x000003E8-0x000003EF	Communications Port (COM3)
0x000003F8-0x000003FF	Communications Port (COM1)
0x00000400-0x0000047F	Motherboard resources

Memory Map

MEMORY MAP	ASSIGNMENT
0xE0000000-0xEFFFFFFF	Motherboard resources
0xFED01000-0xFED01FFF	Motherboard resources
0xFED03000-0xFED03FFF	Motherboard resources
0xFED04000-0xFED04FFF	Motherboard resources
0xFED0C000-0xFED0FFFF	Motherboard resources
0xFED08000-0xFED08FFF	Motherboard resources
0xFED1C000-0xFED1CFFF	Motherboard resources
0xFEE00000-0xFEEFFFFF	Motherboard resources
0xFEF00000-0xFEFFFFFF	Motherboard resources
0xD0604000-0xD0604FFF	Realtek PCIe GBE Family Controller
0xD0600000-0xD0603FFF	Realtek PCIe GBE Family Controller
0xD0600000-0xD0603FFF	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series PCI Express - Root Port 4 - 0F4E
0xFED00000-0xFED003FF	High precision event timer
0xC0000000-0xD0711FFE	PCI Express Root Complex
0xC0000000-0xD0711FFE	Intel(R) HD Graphics
0xD0000000-0xD03FFFFF	Intel(R) HD Graphics
0xD0700000-0xD070FFFF	Intel(R) USB 3.0 eXtensible Host Controller - 0100 (Microsoft)
0xD0710000-0xD071001F	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series Platform Control Unit - SMBus Port - 0F12
0xD0500000-0xD05FFFFF	Intel(R) Trusted Execution Engine Interface
0xD0400000-0xD04FFFFF	Intel(R) Trusted Execution Engine Interface
0xD0711000-0xD07117FF	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series AHCI - 0F23
0xE00000D0-0xE00000DB	Intel(R) Sideband Fabric Device
0xFF000000-0xFFFFFFFF	Intel(R) 82802 Firmware Hub Device
0xA0000-0xBFFFF	PCI Express Root Complex
0xA0000-0xBFFFF	Intel(R) HD Graphics
0xC0000-0xDFFFF	PCI Express Root Complex
0xE0000-0xFFFFF	PCI Express Root Complex
0x000004D0-0x000004D1	Programmable interrupt controller
0x00000500-0x000005FE	Motherboard resources
0x00000600-0x0000061F	Motherboard resources
0x00000680-0x0000069F	Motherboard resources
0x00000A00-0x00000A0F	Motherboard resources
0x00000A10-0x00000A1F	Motherboard resources
0x00000A20-0x00000A2F	Motherboard resources
0x00000D00-0x0000FFFF	PCI Express Root Complex

MEMORY MAP	ASSIGNMENT
0x0000164E-0x0000164F	Motherboard resources
0x0000E000-0x0000E0FF	Realtek PCIe GBE Family Controller
0x0000E000-0x0000E0FF	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series PCI Express - Root Port 4 - 0F4E
0x0000F000-0x0000F01F	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series Platform Control Unit - SMBus Port - 0F12
0x0000F020-0x0000F03F	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series AHCI - 0F23
0x0000F040-0x0000F043	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series AHCI - 0F23
0x0000F050-0x0000F057	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series AHCI - 0F23
0x0000F060-0x0000F063	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series AHCI - 0F23
0x0000F070-0x0000F077	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series AHCI - 0F23
0x0000F080-0x0000F087	Intel(R) HD Graphics

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
; -------------------------- Set timeout interval as 30 seconds ----------------------------
dec     dx
mov     al,     0F6h
out     dx,     al
inc     dx
mov     al,     1Eh
out     dx,     al
;------------------------------- Enable Watch PME-----------------------------------------
dec     dx
mov     al,     0FAh
out     dx,     al
inc     dx
in      al,     dx
or      al,     51h
out     dx,     al
;------------------- Set second as counting unit and start counting --------------------
dec     dx
mov     al,     0F5h
out     dx,     al
inc     dx
in      al,     dx
and     al,     0F7h
or      al,     20h
out     dx,     al
;---------------------------- Exit the extended function mode -----------------------------
dec     dx
mov     al,     0AAh
out     dx,     al
```

Flash BIOS Update

IV. Prerequisites

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

2 Download and save the BIOS file (e.g. 80253PD3.bin) to the bootable device.

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

4 Make sure the target system can first boot to the bootable device.

(1) Connect the bootable USB device.

(2) Turn on the computer and press **<ESC>** or **<DEL>** key during boot to enter BIOS Setup.

(3) The System will go into the BIOS setup menu.

(4) Select **[Boot]** menu.

(5) Select **[Hard Drive BBS Priorities]**, and set the USB bootable device as the 1st boot device.

(6) Press **<F4>** key to save the configuration and exit the BIOS setup menu.

V. AFUEFIx64 Command for System BIOS Update

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

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

Users can type "AFUDOS/ ?" 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.

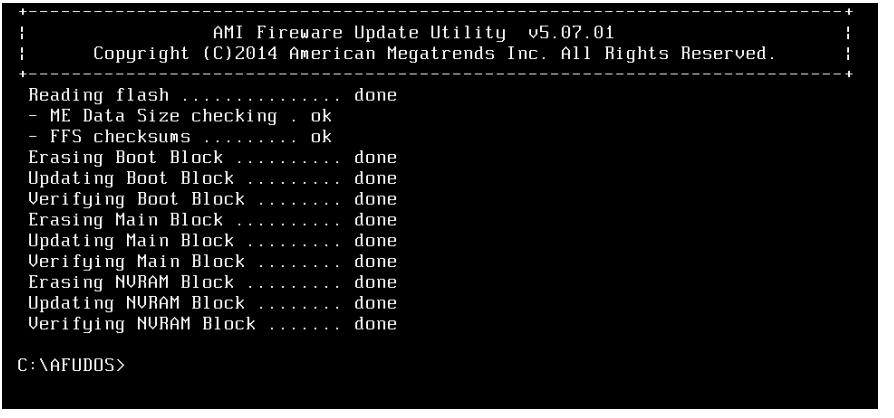
VI. BIOS Update Procedure

1 Use the bootable USB storage to boot up the system into the DOS command prompt.

2 Type "**AFUDOS 8025xxxx.bin /p /b /n /x"** and press enter to start the flash procedure. (Note that xxxx means the BIOS revision part, e.g. 1PD1…)

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

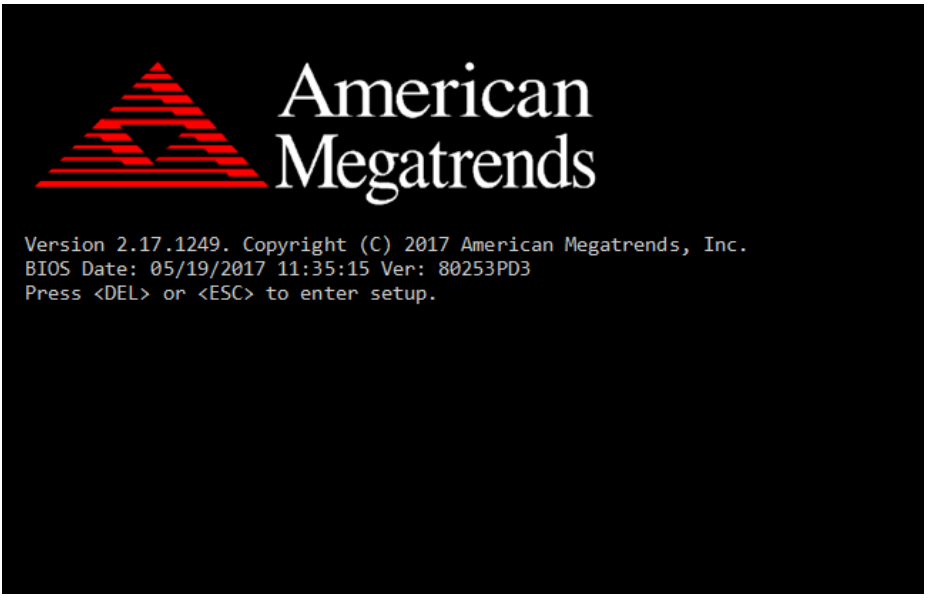
4 After BIOS update procedures is complete, the messages below will display:



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.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BIOS Date: 05/19/2017 11:35:15 Ver: 80253PD3
Press <DEL> or <ESC> to enter setup.