USER MANUAL

SE-8300

Intel® ATOM™ E3845 Rich I/O and Fanless Embedded PC with DVI-D / VGA/ 4COM/ 2LAN/ 4USB

SE-8300   M1

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Intel® ATOM™ E3845 Rich I/O and Fanless Embedded PC with DVI-D / VGA/ 4COM/ 2LAN/ 4USB

FCC NOTICE

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

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

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

⚠	**WARNING:** Some internal parts of the system may have high electrical voltage. We strongly recommend that only qualified engineers are allowed to open and disassemble the system.

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INTRODUCTION

This chapter gives you the information for SE-8300. It also outlines the System specification.

Section includes:

● About This Manual

● System Specifications

● Power Management Firmware Specifications

● Safety Precautions

Experienced users can skip to chapter 2 on page 2-1 for Quick Start.

1-1. ABOUT THIS MANUAL

Thank you for purchasing our SE-8300 Intel® ATOM™ E3845 Rich I/O and Fanless Embedded PC with DVI-1 / VGA/ 4COM/ 2LAN/ 3USB. SE-8300 provides faster processing speed, greater expandability and can handle more task than before. This manual is designed to assist you how to install and set up the system. It contains four chapters. The user can apply this manual for configuration according to the following chapters:

Chapter 1 Introduction

This chapter introduces you to the background of this manual and the specifications for this system. The final page of this chapter will indicate how to avoid damaging this board.

Chapter 2 Hardware Configuration

This chapter outlines the component locations and their functions. At the end of this chapter, you will learn how to set jumpers and how to configure this system to meet your own needs.

Chapter 3 Software Utilities

This chapter contains helpful information for proper installations of the Intel® Trusted Execution Engine (Intel® TXE) Components Utility, Intel® Chipset Software Installation Utility, Intel® USB 3.0 Extensible Host Controller Utility VGA utility, LAN utility, and Sound utility.

Chapter 4 AMI BIOS Setup

This chapter indicates you how to set up the BIOS configurations.

Appendix A System Assembly

This appendix provides you the exploded diagrams and part numbers of the SE-8300.

Appendix B Technical Summary

This appendix gives you the information about the Block diagram, Technical maps, Watchdog timer configuration, and Flash BIOS Update.

1-2. SYSTEM ILLUSTRATION

Front View
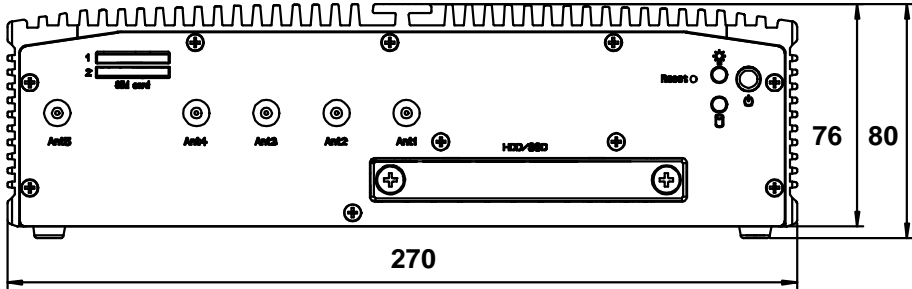
Rear View (with PoE Board)
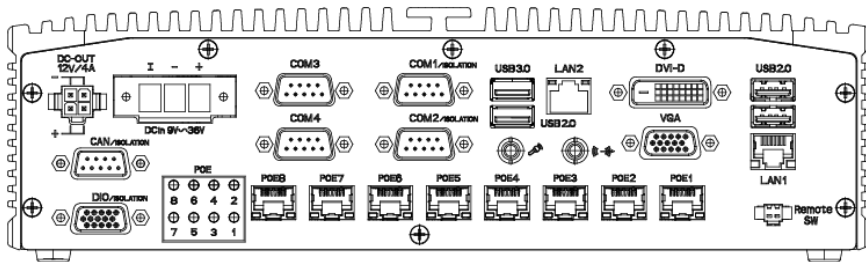
Rear View (without PoE Board)
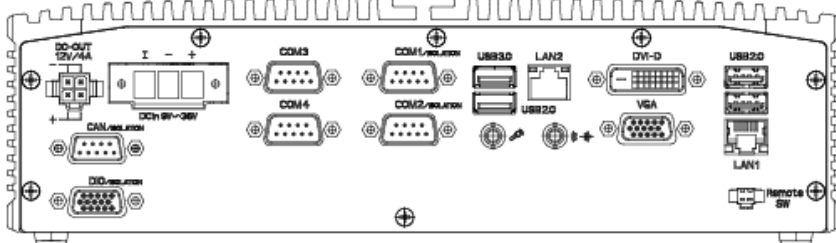
Isometric View (with PoE Board)
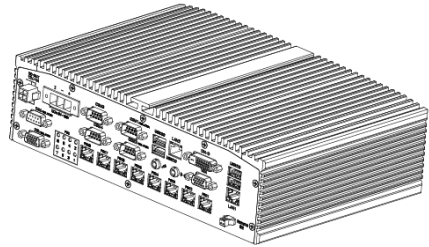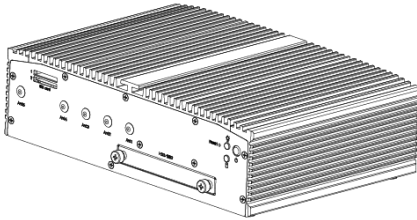
Isometric View (without PoE Board)

Side View

183.6

11

192
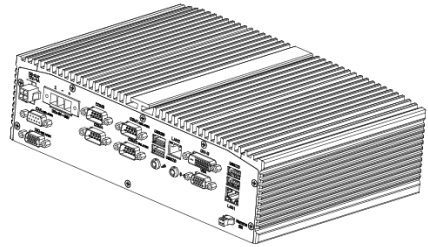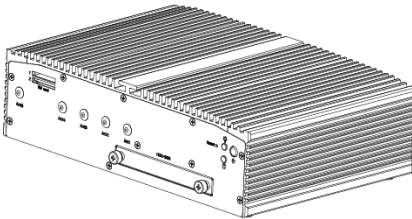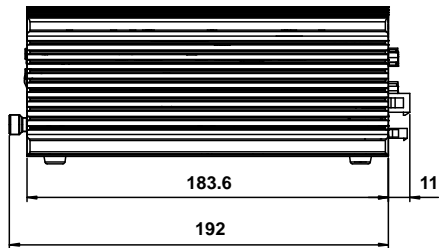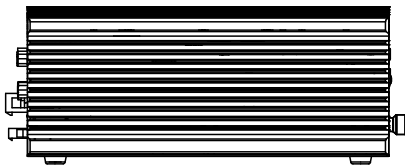
Top View
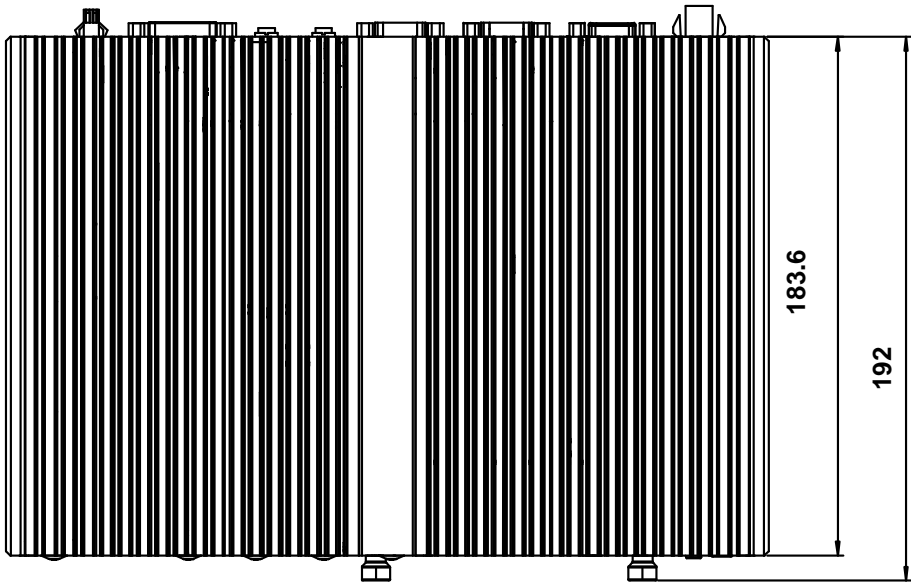
1-3. SYSTEM SPECIFICATION

System

CPU Support	Intel® ATOM™ E3845 CPU on board (Quad core 1.9GHz)
Memory Support	1 x DDR3L SO-DIMM socket up to 8GB memory
Watchdog	1~255 seconds Watchdog timer selectable
Driver Bay	1 x 2.5 inch SATA HDD or SSD driver space
Power Input	DC in 9~36V (with ignition)
Operating System	Microsoft Windows Win7, Win8
Expansion Slots	• 1 x mSATA slot • 1 x full-sized mini-PCIe slot1 (mini-PCIe and SIM signals) • 1 x full-sized mini-PCIe slot2 (mini-PCIe and USB signals) • 1 x full-sized mini-PCIe slot3 (USB and SIM signals) • 2 x SIM card slots
System Weight	3.5 Kg
Dimensions (W x H x D)	270 x 80 x 202.5 mm
Certificate	FCC / CE / E13 Mark

I/O Ports

Power ON/OFF	• 1 x Power ON/OFF button (front side) • 1 x Remote Switch (Rear Side)
Power Output	1 x 12V (4A) DC out
Antenna Hole	5 x antenna hole
Driver Bay	1 x 2.5 inch SATA HDD or SSD driver space
SIM Card Slot	• Signals from full-sized mini-PCIe slot1 • Signals from full-sized mini-PCIe slot3
LED Indicators	• 1 x Power LED • 1 x HDD LED
Serial Port	• COM1/2 for RS232/422/485 with isolated (5KVrms) • COM3/4 for RS232 and 5V/12V selectable
DVI	1 x DVI-D
VGA	1 x VGA
LAN	2 x GbE LAN, Wake-On-LAN, PXE
Audio	1 x Line out, 1 x MIC

USB	• 1 x USB 3.0 • 3 x USB 2.0
CAN Bus	1 x CAN Bus with isolated (5KVrms)
Digital I/O	4 in / 4out with isolated (5KVrms)
PoE	8 x PoE (IEEE 802.3af) ports, Max. 15.4W each port

Environment

Operating Temperature (with Airflow)	HDD: 0℃ ~45℃ (32℉~113℉) Wide temperature mSATA: -30℃ ~ 60℃ (-22℉~139℉) (without Audio)
Storage Temperature	- 40℃ ~ 60℃ (- 40℉~139℉)
Humidity	20% ~ 90%

* All information contained in this document is subject to change without prior notice. Please log on **www.protech.com.tw** to acquire latest information. For detailed mechanics drawing, please contact our sales.

1-4. Power Management Firmware Specification

1-4-1. BIOS Specification

Item	Sub-Item	Spec Criteria Description
Standard BIOS		
Specific Features	**Startup and Shut down Voltage Setting**	**Set the startup voltage to 11.5V or 23V and the shutdown voltage to 10.5V or 21V .** If the input voltage is 12V: set the startup voltage to 11.5V and the shutdown voltage to 10.5V. If the input voltage is 24V: set the startup voltage to 23V and the shutdown voltage to 21V. **Set the startup voltage to 12.0V or 24V and the shutdown voltage to 11.0V or 22V** If the input voltage is 12V: set the startup voltage to 12V and the shutdown voltage to 11V. If the input voltage is 24V: set the startup voltage to 24V and the shutdown voltage to 22V. **Set the startup voltage to 12.5V or 25V and the shutdown voltage to 11.5V or 23V** If the input voltage is 12V: set the startup voltage to 12.5V and the shutdown voltage to 11V. If the input voltage is 24V: set the startup voltage to 25V and the shutdown voltage to 22V. **Set the startup voltage to 12.5V or 25V and the shutdown voltage to 11.0V or 22V** If the input voltage is 12V: set the startup voltage to 12.5V and the shutdown voltage to 11.5V. If the input voltage is 24V: set the startup voltage to 25V and the shutdown voltage to 23V.
	Power-on delay setting	**-Disable Power-on Delay** **-Enable Power-on Delay** Delay time can be set at 10sec/30sec/1min/5min/10min/15min/30min/1hour
	Power-off delay setting	**-Disable Power-off Delay** **-Enable Power-off Delay** Delay time can be set as 30 sec. / 1 min. / 5 min. / 10 min. / 15 min. / 30 min. / 1 hour

1-4-2. Power Management
- Power-on delay time is selectable by BIOS to disable and enable in 5 sec. / 10 sec. / 30 sec. / 1 min.
- Power-off delay time is selectable by BIOS to disable and enable in 5 sec. / 10 sec. / 15 sec. / 20 sec. / 25 sec. / 30 sec. / 1 min. / 3 min. / 5 min. / 10 min. / 20 min. / 30 min. / 40 min. / 50 min. / 1 hr.
- Ignition enable/disable is jumper selectable
- Ignition On/Off status detectable by SW
- Low battery status detectable by SW
- SE8300 will automatically shut down after the duration of low battery voltage is over 60 sec.
- If the ignition is turned off again and power-on delay is in progress, SE8300 will cancel the delay and stay in power-off status.
- If the ignition is turned on again and the power-off delay is in progress, SE8300 will cancel the delay function and will continue to operate normally.
- If the ignition is turned on again and the power-off delay ended, SE8300 will shut down completely and will power on again automatically.
- If the ignition is turned off again and the power-on delay ended (in BIOS process), SE8300 will shut down immediately.

Power Management Configuration	
Input Voltage 9-36	
Startup.Shutdown	[(11.5, 10.5) / (23, 21)]
	[(12.0, 11.0) / (24, 22)]
	[(12.5, 11.5) / (25, 23)]
	[(12.5, 11.0) / (25, 22)]
Delay Time Setting	
Delay On Time Selection	Enabled / 05 sec. / 10 sec. / 30 sec. / 01 min.
Delay Off Time Selection	Disabled / 05 sec. / 10 sec. / 15 sec. / 20 sec. / 25 sec. / 30 sec. / 01 min. / 03 min. / 05 min. / 10 min. / 20 min. / 30 min. / 40 min. / 50 min. / 60 min.

1-5. SAFETY PRECAUTIONS

Follow the messages below to avoid your systems from damage:

1. Keep your system away from static electricity on all occasions.

2. Prevent electric shock. Don't touch any components of this card when the card is powered on. Always disconnect power when the system is not in use.

3. Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

HARDWARE CONFIGURATION
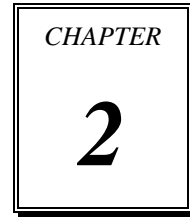
** QUICK START **

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

The following topics are included:

- Jumper & Connector Quick Reference Table

- Component Locations

- How to Set Jumpers

- Setting Main Board Connectors and Jumpers

- SR-8300 Component Locations

- Setting SR-8300 Connectors and Jumpers

2-1. JUMPER & CONNECTOR QUICK REFERENCE TABLE

Jumper / Connector	Name
RS232/422/485 (COM1) Selection	JP_COM1
RS232/422/485 (COM2) Selection	JP_COM2
COM3 Port RI/Voltage Selection	JP_COM3
COM4 Port RI/Voltage Selection	JP_COM4
SATA(JSATA1)/mSATA (MSATA_1) Selection	JP15
Power Management Voltage Selection	JP17
Ignition Mode / PC Mode Selection	JP18
Clear CMOS Data Selection	JP20
HW AT/ATX Mode Selection	JP22
COM Port Connector	COM1,COM3,JCOM2,JCOM4
DIO Connector	DIO
VGA Connector	VGA1
DVI Connector	DVI1
Serial ATA Connector	JSATA1, JSATA2
Serial ATA Power Connector	JHDD_PWR1,JHDD_PWR2
Universal Serial Bus Connector	USB1, USB2, USB3
LAN Connector	LAN1, LAN2
Power Button	PWR_SW1
Reset Button	RST_SW1
Power Connector	JPOWER1
CANBUS Connector	CAN
Line-Out Connector	LINE-OUT
MIC Connector	MIC
Memory Installation	DIMM1
Mini-PCIe / mSATA Connector	M_PCIE1, M_PCIE2, M_PCIE3, MSATA_1

Jumper / Connector	Name
DC-OUT Connector	JPWROUT1
Small 4-Pin Connector	JPWR_4P1
Battery Connector	JBAT1
LED Connector	JLED1
Display Port Connector	JDP1

2-2. COMPONENT LOCATIONS
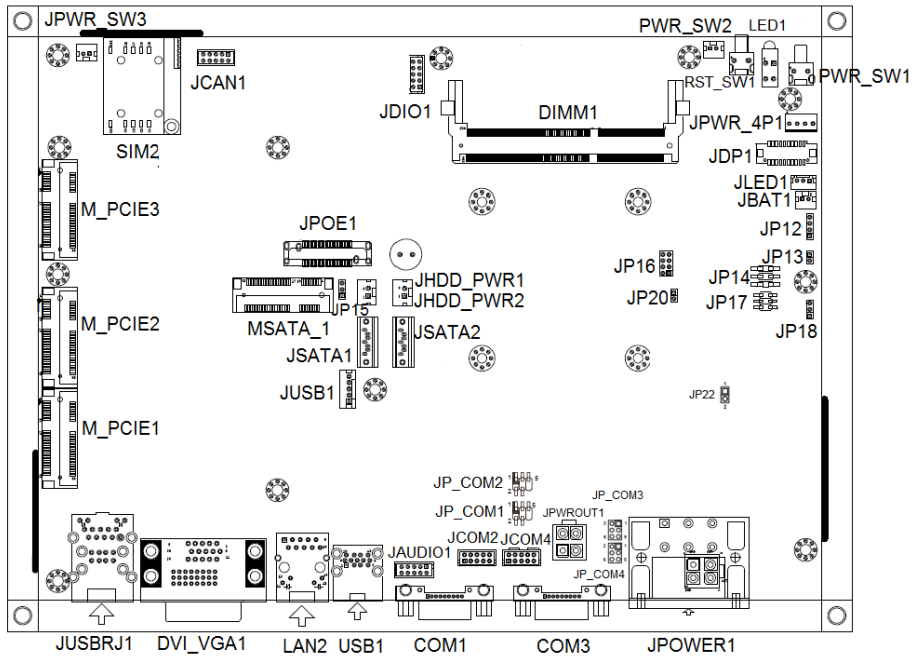
SB-8300 Front Side Connectors, Jumpers and Components Locations
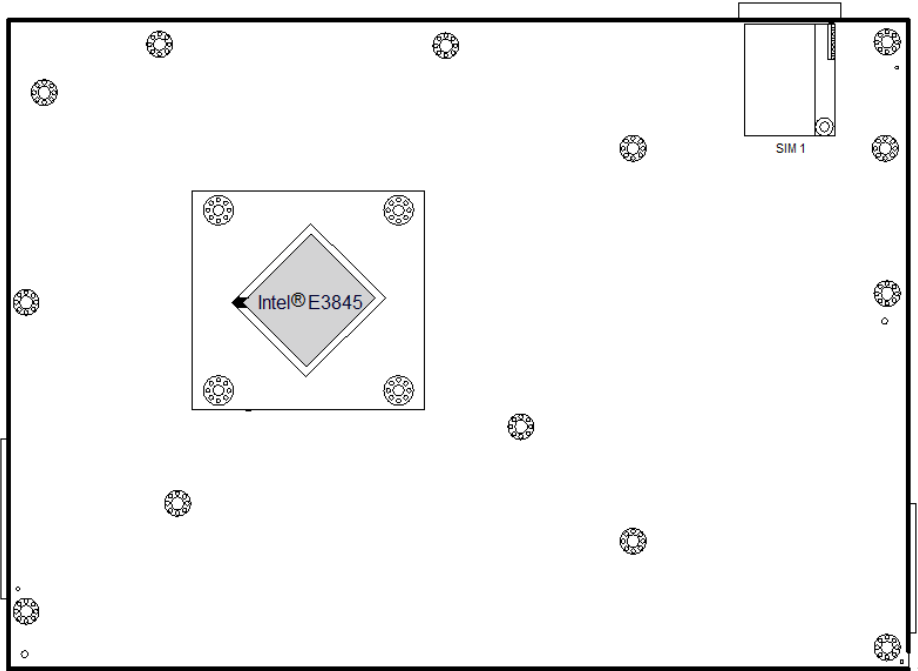
SB-8300 Rear Side Connectors, Jumpers and Components Locations

2-3. 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. By using a small plastic "cap", also known as the jumper cap (with a metal contact inside), you are able to connect the pins. So you can configure your hardware settings by "opening" or "closing" jumpers.

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

JUMPERS AND CAPS

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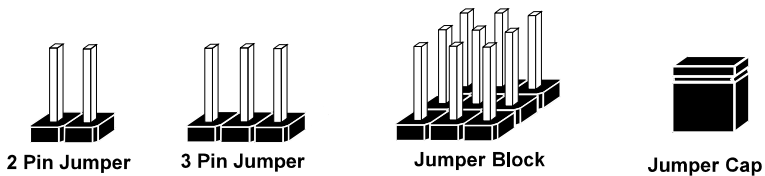
If a jumper has three pins, for example, labelled 1, 2 and 3. You can connect pins 1 and 2 to create one setting and shorting. You can also select to connect pins 2 and 3 to create another setting. The format of the jumper picture will be illustrated throughout this manual. The figure below shows different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

JUMPER DIAGRAMS

Jumper Cap
looks like this
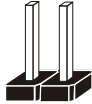
2 pin Jumper
looks like this
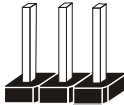
3 pin Jumper
looks like this

Jumper Block
looks like this
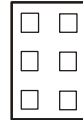
JUMPER SETTINGS

2 pin Jumper close(enabled)
Looks like this
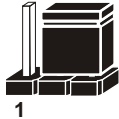
3 pin Jumper
2-3 pin close(enabled)
Looks like this
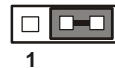
Jumper Block
1-2 pin close(enabled)
Looks like this
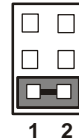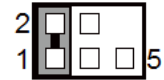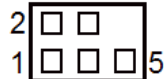
Setting Main Board Connectors and Jumpers
2-4. RS232/422/485 (COM1) Selection

JP_COM1 : RS232/422/485 (COM1) Selection
The selections are as follows:

Selection	Jumper Setting (Pin Closed)	Jumper Illustration
RS232	1-2	JP_COM1
RS422	1-2, 3-4	JP_COM1
RS485	Open	JP_COM1

***Manufacturing Default – RS232.
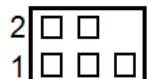
***Please set up RS232 or RS485 driver in BIOS before using RS485 function.

2-5. RS232/422/485 (COM2) Selection

JP_COM2 : RS232/422/485 (COM2) Selection
The selections are as follows:

Selection	Jumper Setting (Pin Closed)	Jumper Illustration
RS232	1-2	JP_COM2
RS422	1-2, 3-4	JP_COM2
RS485	Open	JP_COM2
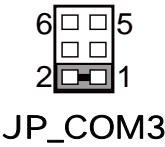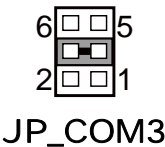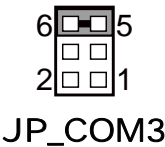
***Manufacturing Default – RS232.

***Please setup RS232 or RS485 driver in BIOS before use RS485 function.

2-6. COM3 Port RI & Voltage Selection

JP_COM3: COM3 Port RI & Voltage Selection
The selections are as follows:

Selection	Jumper Setting (Pin Closed)	Jumper Illustration
RI3	1-2	**JP_COM3**
+12V	3-4	**JP_COM3**
+5V	5-6	**JP_COM3**

***Manufacturing Default – RI3.

2-7. COM4 Port RI & Voltage Selection

JP_COM4: COM4 Port RI & Voltage Selection
The selections are as follows:
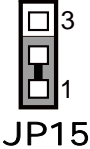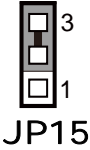
Selection	Jumper Setting (Pin Closed)	Jumper Illustration
RI4	1-2	6 □ □ 5 □ □ 2 ▭ 1 **JP_COM4**
+12V	3-4	6 □ □ 5 ▭ 2 □ □ 1 **JP_COM4**
+5V	5-6	6 ▭ 5 □ □ 2 □ □ 1 **JP_COM4**

***Manufacturing Default – RI4.

2-8. SATA(JSATA1) / mSATA(MSATA_1)Selection

JP15: SATA(JSATA1) / mSATA(MSATA_1) Selection
The selections are as follows:

Function	Jumper Setting (Pin Closed)	Jumper Illustration
mSATA(MSATA_1)	1-2	**JP15**
SATA(JSATA1)	2-3	**JP15**

*** Manufacturing Default is set as **mSATA(MSATA_1)**.

2-9. Power Management Voltage Selection

JP17: Power Management Voltage Selection
The selections are as follows:
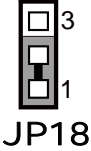
Selection	Jumper Setting (Pin Closed)	Jumper Illustration
12V	1-2	1 ▢▪▢ 2 ▢▢▢ 5 ▢▢▢ 6 **JP17**
24V	3-4	1 ▢▢ 2 ▢▪▢ 5 ▢▢ 6 **JP17**
9~36V	5-6	1 ▢▢ 2 ▢▢ 5 ▢▪▢ 6 **JP17**

***Manufacturing Default – 9~36V.

2-10. Ignition Mode / PC Mode Selection

JP18: Ignition mode / PC mode Selection
The selections are as follows:

Function	Jumper Setting (Pin Closed)	Jumper Illustration
Ignition mode	1-2	
PC mode	2-3	

*** Manufacturing Default is set as Ignition mode.

2-11. Clear CMOS Data Selection

JP20: Clear CMOS Data Selection
The selections are as follows:

Function	Jumper Setting (Pin Closed)	Jumper Illustration
Normal	Open	1 2 JP20
Clear CMOS	1-2	1 2 JP20

*** Manufacturing Default is set as Normal.
Note: To clear CMOS data, users must power off the computer and set the jumper to "Clear CMOS" as illustrated above. After five to six seconds, set the jumper back to "Normal" and power on the computer.

2-12. HW AT/ATX Mode Selection

JP22: HW AT/ATX Mode Selection
The selections are as follows:

Function	Jumper Setting (Pin Closed)	Jumper Illustration
ATX Mode	Open	1 2 □□ **JP22**
AT Mode	1-2	1 2 □■ **JP22**

*** Manufacturing Default is set as ATX Mode.

2-13. COM Port Connector

COM1: COM Connector, fixed as RS-232/422/485.

The pin assignments is as follows:

PIN	ASSIGNMENT		
	RS-232	**RS-422**	**RS-485**
1	COM1_DCDJ_I	TX-	485-
2	COM1_RX_I	TX+	485+
3	COM1_TX_I	RX+	X
4	COM1_DTRJ_I	RX-	X
5	GND	X	GND
6	COM1_DSRJ_I	X	X
7	COM1_RTSJ_I	X	X
8	COM1_CTSJ_I	X	X
9	COM1_RIJ	X	X
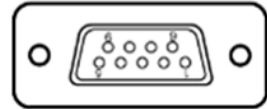
COM1

JCOM2: COM Connector, fixed as RS-232/422/485.

The pin assignments is as follows:

PIN	ASSIGNMENT		
	RS-232	**RS-422**	**RS-485**
1	COM2_DCDJ_I	TX-	485-
2	COM2_RX_I	TX+	485+
3	COM2_TX_I	RX+	X
4	COM2_DTRJ_I	RX-	X
5	GND	X	GND
6	COM2_DSRJ_I	X	X
7	COM2_RTSJ_I	X	X
8	COM2_CTSJ_I	X	X
9	COM2_RIJ	X	X

6 □□□□□ 10
1 □□□□□ 5

JCOM2
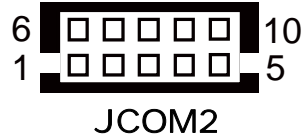
COM3 : COM3 Connector
The pin assignment is as follows:

PIN	ASSIGNMENT
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI3
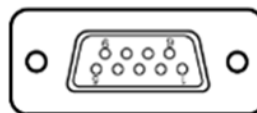
Pin 9 is selectable for RI, +5V or +12V.

JCOM4 : JCOM4 Connector, JCOM4 is fixed as RS-232.
The pin assignment is as follows:

PIN	ASSIGNMENT
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI4
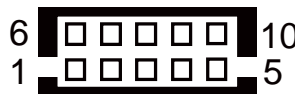
Pin 9 is selectable for RI, +5V or +12V.

2-14. DIO Connector

DIO: General Purpose Input / Output Connector
The pin assignment is as follows:

PIN	ASSIGNMENT
1	IN0
2	OUT0
3	IN1
4	OUT1
5	IN2
6	OUT2
7	IN3
8	OUT3
9	NC
10	NC
11	NC
12	NC
13	NC
14	GND
15	5V
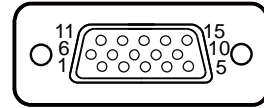
DIO

2-15. VGA Connector

VGA1: VGA Connector
The pin assignments are as follows

PIN	ASSIGNMENT
1	RED
2	GREEN
3	BLUE
4	NC
5	GND
6	GND
7	GND
8	GND
9	VGA_VCC5
10	GND
11	NC
12	DDC_DATA
13	HSYNC
14	VSYNC
15	DDC_CLK
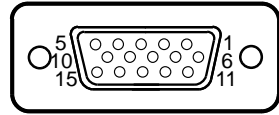
VGA1

2-16. DVI Connector

DVI-D: DVI Connector.

The pin assignments are as follows:

PIN	ASSIGNMENT
1	HDMI_N2
2	HDMI_P2
3	GND
4	NC
5	NC
6	HDMI_SCL
7	HDMI_SDA
8	NC
9	HDMI_N1
10	HDMI_P1
11	GND
12	NC
13	NC
14	VCC5
15	GND
16	Hot Plug Detect
17	HDMI_N0
18	HDMI_P0
19	GND
20	NC
21	NC
22	GND
23	HDMI_CLKP
24	HDMI_CLKN
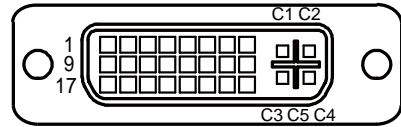
DVI-D

2-17. Serial ATA Connector

JSATA1, JSATA2: Serial ATA Connector.
The pin assignments are as follows:

JSATA1:

PIN	ASSIGNMENT
1	GND
2	SATA2_TX_DP
3	SATA2_TX_DN
4	GND
5	SATA2_RX_DN
6	SATA2_RX_DP
7	GND

JSATA1

JSATA2:

PIN	ASSIGNMENT
1	GND
2	SATA0_TX_DP_M
3	SATA0_TX_DN_M
4	GND
5	SATA0_RX_DN_M
6	SATA0_RX_DP_M
7	GND

JSATA2

2-18. Serial ATA Power Connector

JHDD_PWR1, JHDD_PWR2: Serial ATA Power Connector.

The pin assignments are as follows:

PIN	ASSIGNMENT
1	+5V
2	GND

JHDD_PWR1
JHDD_PWR2

2-19. Universal Serial Bus Connector

USB2.0: Universal Serial Bus Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	VCC
2	USB-
3	USB+
4	GND
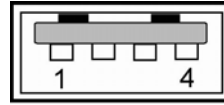
USB 2.0

USB3.0: Universal Serial Bus Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	VCC
2	USB_N0_L
3	USB_P0_L
4	GND
5	USB3_RX1_DN_L
6	USB3_RX1_DP_L
7	GND
8	USB3_TX1_DN_L
9	USB3_TX1_DP_L
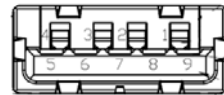
USB 3.0

2-20. LAN Connector

LAN1: LAN Connector.

The pin assignment is as follows:

PIN	ASSIGNMENT
1	LAN1_MDI_0P
2	LAN1_MDI_0N
3	LAN1_MDI_1P
4	LAN1_MDI_2P
5	LAN1_MDI_2N
6	LAN1_MDI_1N
7	LAN1_MDI_3P
8	LAN1_MDI_3N
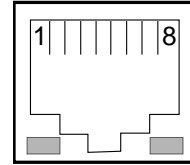
Yellow   Green
LAN1

LAN2: LAN Connector.
The pin assignment is as follows:

PIN	ASSIGNMENT
1	LAN2_MDI_0P
2	LAN2_MDI_0N
3	LAN2_MDI_1P
4	LAN2_MDI_2P
5	LAN2_MDI_2N
6	LAN2_MDI_1N
7	LAN2_MDI_3P
8	LAN2_MDI_3N
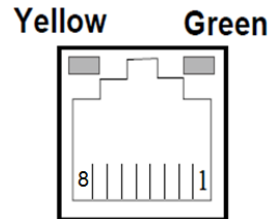
Yellow   Green
LAN2

LAN LED Indicator:

Left Side LED

Green Color Blinking	LAN Message Active
Off	No LAN Message Active

Right Side LED

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

2-21. Power Button

PWR_SW1: Power Button
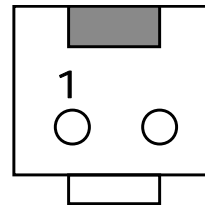
PWR_SW1

2-22. Reset Button

RST_SW1: Reset Button
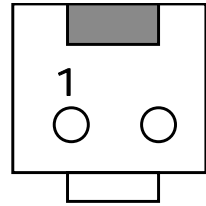
RST_SW1

2-23. Power Connector

JPOWER1 : Power Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
+	DC in
-	GND
I	Ignition
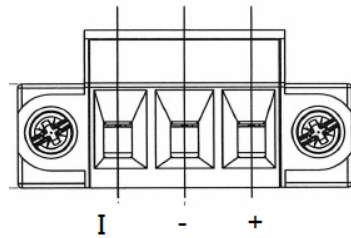
JPOWER1

2-24. CANBUS Connector

CAN: CANBUS Connector

The pin assignment is as follows:

PIN	ASSIGNMENT
1	NC
2	CAN_L
3	GND
4	NC
5	NC
6	NC
7	CAN_H
8	NC
9	NC
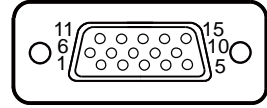
CAN

2-25. Line-Out Connector

LINE-OUT : Line-Out Connector

LINE-OUT

2-26. MIC CONNECTOR

MIC : MIC Connector

MIC

2-27. Mini-PCIe / mSATA Connector

M_PCIE1: Mini-PCIe connector, support USB and SIM function

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	WAKE#	27	GND
2	+3.3VSB	28	+1.5V
3	NC	29	GND
4	GND	30	SMB_CLK
5	NC	31	PCIE_BR_TXN1
6	+1.5V	32	SMB_DATA
7	CLKREQ#	33	PCIE_BR_TXP1
8	SIM1_PWR	34	GND
9	GND	35	GND
10	SIM1_DATA	36	USB_M1_DN
11	REFCLK1-	37	GND
12	SIM1_CLK	38	USB_M1_DP
13	REFCLK1+	39	+3.3VSB
14	SIM1_RESET	40	GND
15	GND	41	+3.3VSB
16	SIM1_VPP	42	NC
17	SIM1_SW2	43	GND
18	GND	44	NC
19	SIM1_SW1	45	NC
20	WLANDISABLE_1	46	NC
21	GND	47	NC
22	PERST#	48	+1.5V
23	PCIE_BR_RXN1	49	NC
24	+3.3VSB	50	GND
25	PCIE_BR_RXP1	51	NC
26	GND	52	+3.3VSB
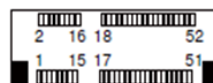
M_PCIE1

M_PCIE2: Mini-PCIe connector, support USB function

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	WAKE#	27	GND
2	+3.3VSB	28	+1.5V
3	NC	29	GND
4	GND	30	SMB_CLK
5	NC	31	PCIE_BR_TXN2
6	+1.5V	32	SMB_DATA
7	CLKREQ#	33	PCIE_BR_TXP2
8	NC	34	GND
9	GND	35	GND
10	NC	36	USB_M2_DN
11	REFCLK2-	37	GND
12	NC	38	USB_M2_DP
13	REFCLK2+	39	+3.3VSB
14	NC	40	GND
15	GND	41	+3.3VSB
16	NC	42	NC
17	NC	43	GND
18	GND	44	NC
19	NC	45	NC
20	NC	46	NC
21	GND	47	NC
22	PERST#	48	+1.5V
23	PCIE_BR_RXN2	49	NC
24	+3.3VSB	50	GND
25	PCIE_BR_RXP2	51	NC
26	GND	52	+3.3VSB
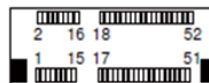
M_PCIE2

M_PCIE3: Support USB and SIM function

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	WAKE#	27	GND
2	+3.3VSB	28	+1.5V
3	NC	29	GND
4	GND	30	SMB_CLK
5	NC	31	NC
6	+1.5V	32	SMB_DATA
7	CLKREQ#	33	NC
8	SIM2_PWR	34	GND
9	GND	35	GND
10	SIM2_DATA	36	USB_M4_DN
11	NC	37	GND
12	SIM2_CLK	38	USB_M4_DP
13	NC	39	+3.3VSB
14	SIM2_RESET	40	GND
15	GND	41	+3.3VSB
16	SIM2_VPP	42	NC
17	SIM2_SW2	43	GND
18	GND	44	NC
19	SIM2_SW1	45	NC
20	WLANDISABLE_2	46	NC
21	GND	47	NC
22	PERST#	48	+1.5V
23	NC	49	NC
24	+3.3VSB	50	GND
25	NC	51	NC
26	GND	52	+3.3VSB
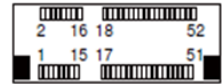
M_PCIE3

MSATA_1: mSATA connector

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	NC	27	GND
2	+3.3VSB	28	+1.5V
3	NC	29	GND
4	GND	30	SMB_CLK
5	NC	31	MSATA_TX_DN_M
6	NC	32	SMB_DATA
7	NC	33	MSATA_TX_DP_M
8	NC	34	GND
9	GND	35	GND
10	NC	36	NC
11	NC	37	GND
12	NC	38	NC
13	NC	39	+3.3VSB
14	NC	40	GND
15	GND	41	+3.3VSB
16	NC	42	NC
17	NC	43	GND
18	GND	44	NC
19	NC	45	NC
20	NC	46	NC
21	NC	47	NC
22	PERST#	48	NC
23	MSATA_RX_DP_M	49	NC
24	+3.3VSB	50	GND
25	MSATA_RX_DN_M	51	NC
26	GND	52	+3.3VSB
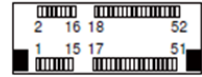
MSATA_1

2-28. DC-Out Connector

JPWROUT1: 12V DC-OUT Connector

The pin assignments are as follows:

PIN	ASSIGNMENT
1	GND
2	GND
3	+12V
4	+12V

2 1

4 3
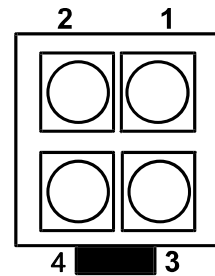
JPWROUT1

2-29. Small 4-Pin Connector

JPWR_4P1: Small 4-pin Connector

The pin assignments are as follows:

PIN	ASSIGNMENT
1	VCC5
2	GND
3	GND
4	VCC12

1 4

JPWR_4P1

2-30. Battery Connector

JBAT1: Battery Connector.

The pin assignments are as follows:

PIN	ASSIGNMENT
1	+3V
2	GND

1 2
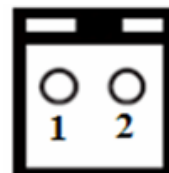
JBAT1

2-31. LED Connector

JLED1: LED Connector.

The pin assignments are as follows:

PIN	ASSIGNMENT
1	+5V
2	VCC_PWR_LED
3	HDD_LED
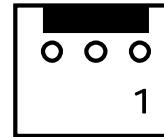
JLED1

2-32. Display Port Connector

JDP1 : Display Port Connector
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	DPP_D_P0_C	11	GND
2	GND	12	DDP_D_N3_C
3	DDP_D_N0_C	13	DDP_D_AUX_ENJ
4	DDP_D_P1_C	14	GND
5	GND	15	DDP_D_AUX_P_CON
6	DDP_D_N1_C	16	DDP_D_HPD_CON
7	DDP_D_P2_C	17	DDP_D_AUX_N_CON
8	GND	18	DP1_PWR_3V
9	DDP_D_N2_C	19	DP1_PWR_5V
10	DDP_D_P3_C	20	DP1_PWR_3V

JDP1

2-33. SR-8300 Jumper & Connector Quick Reference Table

Jumper / Connector	Name
LTC3862EFE Phase Mode Selection	JP1
LTC3862EFE Blank Time Selection	JP2
LTC3862EFE Slope Selection	JP3
LTC3862EFE DMAX Selection	JP4
LTC3862EFE Run Control Input Selection	JP5
LTC3862EFE Main Supply Input Selection	JP6
LTC4271IUF Midspan Mode Input Selection	JP11
LTC4271IUF Auto Mode Input Selection	JP17
PoE Connector	LAN1- LAN8

2-34. SR-8300 Component Locations
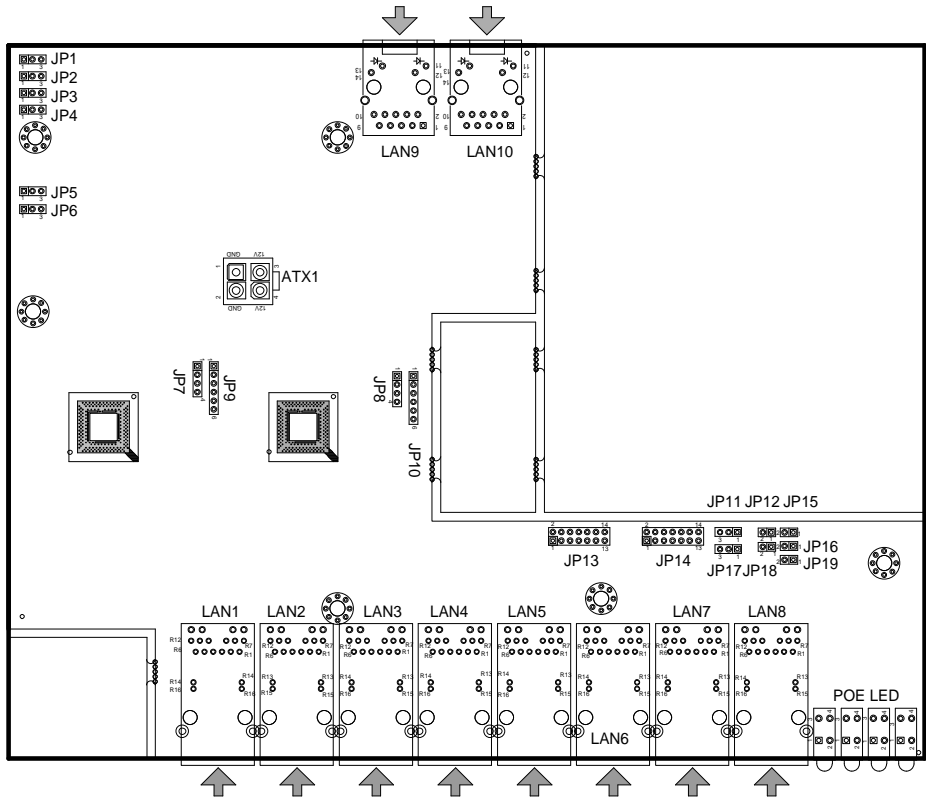
SR-8300 Front Side Connectors, Jumpers and Components Locations
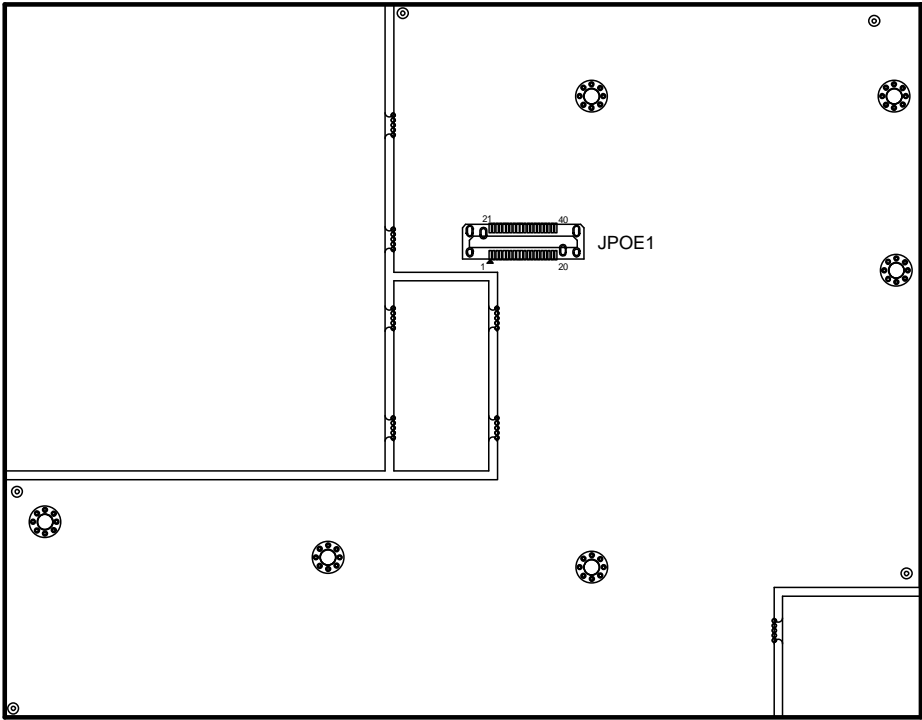
SR-8300 Rear Side Connectors, Jumpers and Components Locations

Setting SR-8300 Connectors and Jumpers
2-35 LTC3862EFE Phase Mode Selection

JP1:LTC3862EFE Phase Mode Selection
The selections are as follows:

Selection	Jumper Setting (Pin Closed)	Jumper Illustration
180 Degree	1-2	1 3 JP1
120 Degree	2-3	1 3 JP1

  ***Manufacturing Default – 180 Degree

2-36 LTC3862EFE Blank Time Selection

JP2:LTC3862EFE Blank Time Selection
The selections are as follows:

Selection	Jumper Setting (Pin Closed)	Jumper Illustration
175ns	1-2	1 3 JP2
325ns	2-3	1 3 JP2
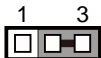
  ***Manufacturing Default – 175ns

2-37 LTC3862EFE Slope Selection

JP3:LTC3862EFE Slope Selection
The selections are as follows:
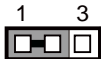
Selection	Jumper Setting (Pin Closed)	Jumper Illustration
0.625	1-2	1 3 JP3
1.66	2-3	1 3 JP3

   ***Manufacturing Default – 1.66

2-38 LTC3862EFE DMAX Selection

JP4:LTC3862EFE DMAX Selection
The selections are as follows:
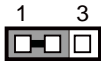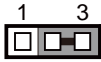
Selection	Jumper Setting (Pin Closed)	Jumper Illustration
96%	1-2	1 3 JP4
75%	2-3	1 3 JP4

   ***Manufacturing Default – 96%

2-39 LTC3862EFE Run Control Input Selection

JP5 :LTC3862EFE Run Control Input Selection
The selections are as follows:
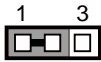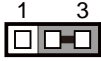
Selection	Jumper Setting (Pin Closed)	Jumper Illustration
PWR_ON	1-2	1 3 **JP5**
PWR_OFF	2-3	1 3 **JP5**

   ***Manufacturing Default – PWR_ON.

2-40 LTC3862EFE Main Supply Input Selection

JP6 :LTC3862EFE Main Supply Input Selection
The selections are as follows:

Selection	Jumper Setting (Pin Closed)	Jumper Illustration
+9V~+36V	1-2	1 3 **JP6**
+12V	2-3	1 3 **JP6**

   ***Manufacturing Default – +9V~+36V

2-41 LTC4271IUF Midspan Mode Input Selection

JP11: LTC4271IUF Midspan Mode Input Selection
The selections are as follows:

Selection	Jumper Setting (Pin Closed)	Jumper Illustration
LO	1-2	1 3 JP11
HI	2-3	1 3 JP11

***Manufacturing Default – HI

2-42 LTC4271IUF Auto Mode Input Selection

JP17: LTC4271IUF Auto Mode Input Selection
The selections are as follows:

Selection	Jumper Setting (Pin Closed)	Jumper Illustration
LO	1-2	1 3 JP17
HI	2-3	1 3 JP17

***Manufacturing Default – HI

2-43 PoE Connectors

PoE: LAN1~LAN8 Connector.
The pin assignment is as follows:

Pin	Assignment
1	MDI_0P
2	MDI_0N
3	MDI_1P
4	MDI_1N
5	MDI_2P
6	MDI_2N
7	MDI_3P
8	MDI_3N
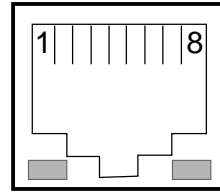
**LAN1/ LAN2/
LAN3/ LAN4/
LAN5/ LAN6/
LAN7/ LAN8**

SOFTWARE UTILITIES

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

- Introduction

- Intel® Trusted Execution Engine (Intel® TXE) Components Utility

- Intel® Chipset Software Installation Utility

- Intel® USB 3.0 Extensible Host Controller Utility

- VGA Driver Utility

- LAN Driver Utility

- SOUND Driver Utility

3-1. INTRODUCTION

Enclosed with our SE-8300 package, you will find a CD-ROM disk containing all types of drivers we have. As a SE-8300 user, you will only need some of files contained in the CD-ROM disk, please take note of the following chart:

Filename (Assume that CD-ROM drive is D:)	Purpose
D:\Driver\Plaform\Windows 7 Pro (32-bit)\Intel TXE Firmware	Intel® Trusted Execution Engine (Intel® TXE) driver
D:\Driver\Plaform\Windows 7 Pro (32-bit)\Main Chip	Intel® Chipset Device Software installer
D:\Driver\Plaform\Windows 7 Pro (32-bit)\VGA	Intel® HD Graphics installer
D:\Driver\Plaform\Windows 7 Pro (32-bit)\LAN	Intel® Network Connections Software
D:\Driver\Plaform\Windows 7 Pro (32-bit)\Sound	Realtek High Definition Audio System Software
D:\Driver\Plaform\Windows 7 Pro (32-bit)\USB3.0	Intel® USB 3.0 eXtensible Host Controller
D:\Driver\Plaform\Windows 7 Pro (64-bit)\Intel TXE Firmware	Intel® Trusted Execution Engine (Intel® TXE) driver
D:\Driver\Plaform\Windows 7 Pro (64-bit)\Main Chip	Intel® Chipset Device Software installer
D:\Driver\Plaform\Windows 7 Pro (64-bit)\VGA	Intel® HD Graphics installer
D:\Driver\Plaform\Windows 7 Pro (64-bit)\LAN	Intel® Network Connections Software
D:\Driver\Plaform\Windows 7 Pro (64-bit)\Sound	Realtek High Definition Audio System Software
D:\Driver\Plaform\Windows 7 Pro (64-bit)\USB3.0	Intel® USB 3.0 eXtensible Host Controller
D:\Driver\Plaform\Windows 8 (32-bit)\Intel TXE Firmware	Intel® Trusted Execution Engine (Intel® TXE) driver
D:\Driver\Plaform\Windows 8 (32-bit)\Main Chip	Intel® Chipset Device Software installer

Filename (Assume that CD-ROM drive is D:)	Purpose
D:\Driver\Plaform\Windows 8 (32-bit)\VGA	Intel® HD Graphics installer
D:\Driver\Plaform\Windows 8 (32-bit)\LAN	Intel® Network Connections Software
D:\Driver\Plaform\Windows 8 (32-bit)\Sound	Realtek High Definition Audio System Software
D:\Driver\Plaform\Windows 8 (32-bit)\USB3.0	Intel® USB 3.0 eXtensible Host Controller
D:\Driver\Plaform\Windows 8 (64-bit)\Intel TXE Firmware	Intel® Trusted Execution Engine (Intel® TXE) driver
D:\Driver\Plaform\Windows 8 (64-bit)\Main Chip	Intel® Chipset Device Software installer
D:\Driver\Plaform\Windows 8 (64-bit)\VGA	Intel® HD Graphics installer
D:\Driver\Plaform\Windows 8 (64-bit)\LAN	Intel® Network Connections Software
D:\Driver\Plaform\Windows 8 (64-bit)\Sound	Realtek High Definition Audio System Software
D:\Driver\Plaform\Windows 8 (64-bit)\USB3.0	Intel® USB 3.0 eXtensible Host Controller
D:\Driver\Plaform\ Windows Embedded Standard 7 / WS7E (32-bit)\Intel TXE Firmware	Intel® Trusted Execution Engine (Intel® TXE) driver
D:\Driver\Plaform\Windows Embedded Standard 7 / WS7E (32-bit)\Main Chip	Intel® Chipset Device Software installer
D:\Driver\Plaform\Windows Embedded Standard 7 / WS7E (32-bit)\VGA	Intel® HD Graphics installer
D:\Driver\Plaform\Windows Embedded Standard 7 / WS7E (32-bit)\LAN	Intel® Network Connections Software
D:\Driver\Plaform\Windows Embedded Standard 7 / WS7E (32-bit)\Sound	Realtek High Definition Audio System Software
D:\Driver\Plaform\Windows Embedded Standard 7 / WS7E (32-bit)\USB3.0	Intel® USB 3.0 eXtensible Host Controller
D:\Driver\Plaform\ Windows Embedded Standard 7 / WS7E (64-bit)\Intel TXE Firmware	Intel® Trusted Execution Engine (Intel® TXE) driver
D:\Driver\Plaform\Windows Embedded Standard 7 / WS7E (64-bit)\Main Chip	Intel® Chipset Device Software installer

Filename (Assume that CD-ROM drive is D:)	Purpose
D:\Driver\Plaform\Windows Embedded Standard 7 / WS7E (64-bit)\VGA	Intel® HD Graphics installer
D:\Driver\Plaform\Windows Embedded Standard 7 / WS7E (64-bit)\LAN	Intel® Network Connections Software
D:\Driver\Plaform\Windows Embedded Standard 7 / WS7E (64-bit)\Sound	Realtek High Definition Audio System Software
D:\Driver\Plaform\Windows Embedded Standard 7 / WS7E (64-bit)\USB3.0	Intel® USB 3.0 eXtensible Host Controller
D:\Driver\Plaform\POSReady 7 (32-bit)\Intel TXE Firmware	Intel® Trusted Execution Engine (Intel® TXE) driver
D:\Driver\Plaform\POSReady 7 (32-bit)\Main Chip	Intel® Chipset Device Software installer
D:\Driver\Plaform\POSReady 7 (32-bit)\VGA	Intel® HD Graphics installer
D:\Driver\Plaform\POSReady 7 (32-bit)\LAN	Intel® Network Connections Software
D:\Driver\Plaform\POSReady 7 (32-bit)\Sound	Realtek High Definition Audio System Software
D:\Driver\Plaform\POSReady 7 (32-bit)\USB3.0	Intel® USB 3.0 eXtensible Host Controller
D:\Driver\Plaform\POSReady 7 (64-bit)\Intel TXE Firmware	Intel® Trusted Execution Engine (Intel® TXE) driver
D:\Driver\Plaform\POSReady 7 (64-bit)\Main Chip	Intel® Chipset Device Software installer
D:\Driver\Plaform\POSReady 7 (64-bit)\VGA	Intel® HD Graphics installer
D:\Driver\Plaform\POSReady 7 (64-bit)\LAN	Intel® Network Connections Software
D:\Driver\Plaform\POSReady 7 (64-bit)\Sound	Realtek High Definition Audio System Software
D:\Driver\Plaform\POSReady 7 (64-bit)\USB3.0	Intel® USB 3.0 eXtensible Host Controller
D:\Driver\Flash BIOS	For BIOS update utility

Note: Be sure to install the Utility right after the OS is fully installed.

3-2. INTEL® TRUSTED EXECUTION ENGINE COMPONENTS UTILITY

3-2-1. Introduction

The Intel® TXE software components that need to be installed depend on the system's specific hardware and firmware features. The installer, compatible with Windows 7/ Embedded Standard 7/ 8, POSReady 7, detects the system's capabilities and installs the relevant drivers and applications.

3-2-2. Installation Instructions for Windows 7/ Embedded Standard 7/ 8, POSReady 7

1. Insert the driver disk into a CD-ROM device.
2. Under the Windows system, go to the directory where the driver is located.
3. Run the application with the administrator privileges.

3-3. INTEL® CHIPSET SOFTWARE INSTALLATION UTILITY

3-3-1. Introduction

The Intel® Chipset Device Software 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 that the following features function properly:

- PCIe Support
- SATA Storage Support
- USB Support
- Identification of Intel® Chipset Components in the Device Manager

3-3-2. Installation of Utility for Windows 7/ Embedded Standard 7/ 8, POSReady 7

The Utility Pack is made only for Windows 7/ Embedded Standard 7/ 8, POSReady 7. It should be installed right after the OS installation; kindly follow the following steps:

1. Please insert the Utility Disk into Floppy Disk Drive A/B or CD-ROM drive.
2. Under the Windows system, go to the directory where Utility Disc is located. e.g.: \DRIVER\UTILITY\SetupChipset.exe
3. Click SetupChipset.exe file for utility installation.
4. Follow the instructions on the screen to complete the installation.
5. Once the installation is completed, shut down the system and restart for the changes to take effect.

3-4. INTEL® USB3.0 EXTENSIBLE HOST CONTROLLER UTILITY

3-3-1. Introduction

Intel® USB 3.0 eXtensible Host Controller Driver supports the following Intel® Chipsets/Processors:

・ Intel® 4th Generation Core™ Processor Family
・ Intel® 8 Series/C220 Series Chipset Family
・ Intel® 4th Generation U-Series Platform I/O

3-4-2. Installation Instructions for Windows 7/ Embedded Standard 7/ 8, POSReady 7

To install the utility, simply follow the following steps:

1. Insert the driver disk into a CD-ROM device.
2. Under the Windows system, go to the directory where the driver is located.
3. Run the application with administrative privileges.

3-5. VGA DRIVER UTILITY

The VGA interface is embedded with our SE-8300 system to support CRT display. The following illustration briefly shows you the content of VGA driver in D:\Driver\VGA.

1. Win 8 Series
2. Win 7 Series
3. POSReady 7
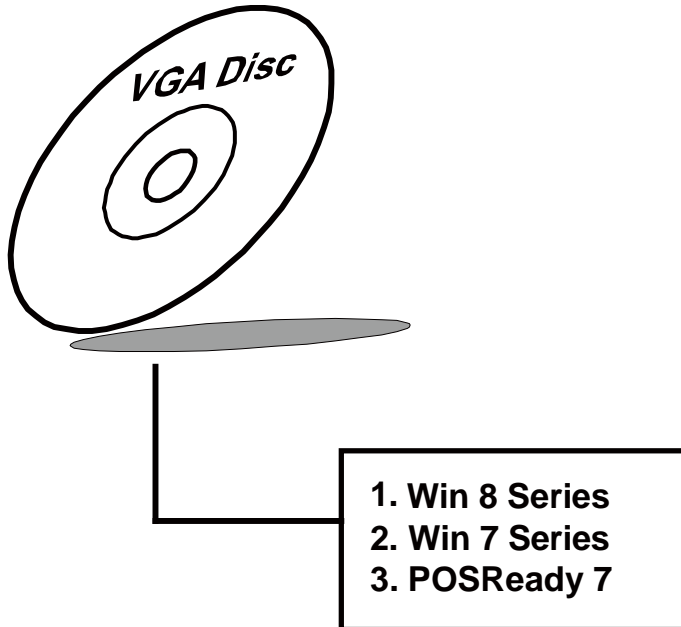
3-5-1. Installation of VGA Driver

1. Start the computer (Win Embedded Standard 7/ 7/ 8, POSReady7).
2. Insert the Utility Disk into the CD-ROM drive or drive A/B.
3. Open the VGA folder for your system to choose an appropriate folder, and double-click "exe" file to install. e.g. d:\DRIVER\VGA\Your system\ ***.exe (If D is not your CD-ROM drive, substitute D with the correct drive letter.)
4. Follow the Wizard's on-screen instructions to complete the installation.

3-6. LAN DRIVER UTILITY

3-6-1. Introduction

The SE-8300 is enhanced with LAN function that can support various network adapters. The content of the LAN driver is found as follows:

1. Win 8 Series
2. Win 7 Series
3. POSReady 7
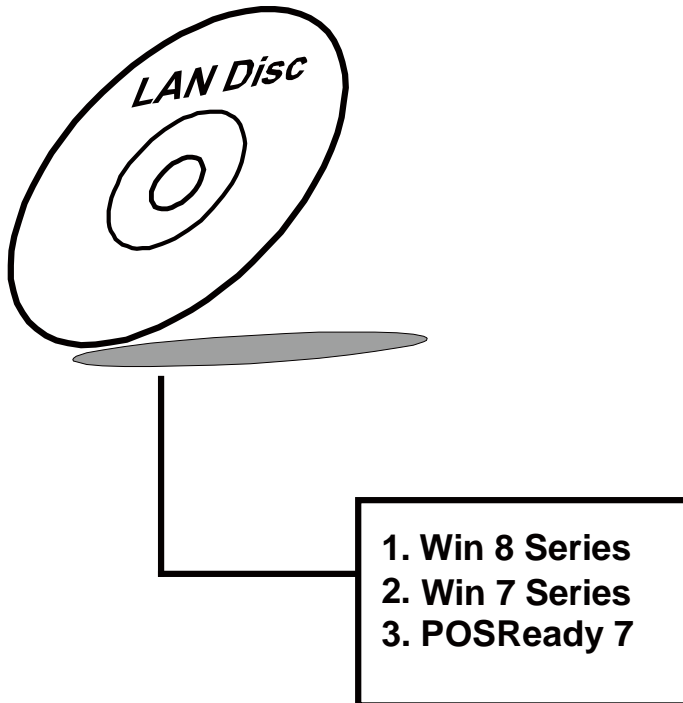
For more details on Installation procedure, please refer to Readme.txt file found on LAN DRIVER UTILITY.

3-7. SOUND DRIVER UTILITY

3-7-1. Introduction
The Audio chip enhanced in this system is fully compatible with Windows 7/ Embedded Standard 7/ 8 and POSReady 7. Below, you will find the content of the Sound driver:


```
1. Win 8 Series
2. Win 7 Series
3. POSReady 7
```
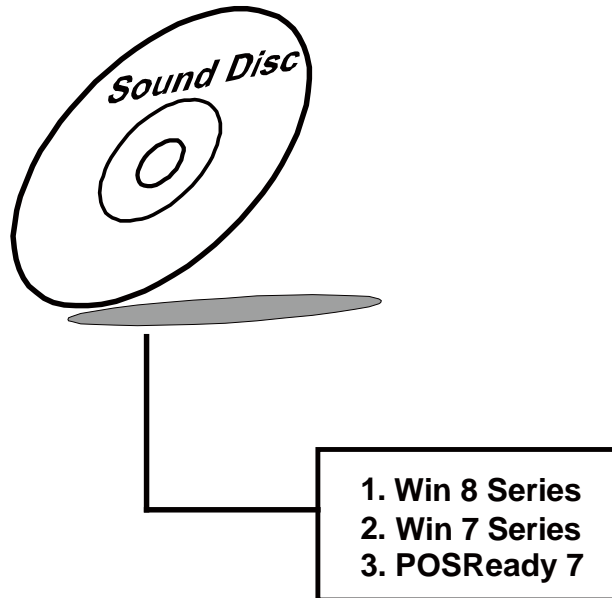
3-7-2. Installation Procedure for Windows 7/ Embedded Standard 7/ 8, POSReady 7
1. Open the SOUND folder. For your system to choose an appropriate folder, and Run the setup.exe program to start the installation. e.g. :\DRIVER\SOUND\Your system\setup.exe
2. (If D drive is not your CD-ROM drive, replace "D" with the correct drive letter.)
3. Click on [Next] to continue the procedure. If the Windows popup "Windows can't verify the publisher of this driver software" message, press "Install this driver software anyway" to continue the installation.
4. Finally, select to restart the system and press [Finish] to complete the installation.

AMI
BIOS SETUP

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

- Introduction

- Entering Setup

- Main

- Advanced

- Chipset

- Boot

- Security

- Save & Exit

4-1. INTRODUCTION

The board SB-8300 uses an AMI (American Megatrends Incorporated) Aptio BIOS that is stored in the Serial Peripheral Interface Flash Memory (8MB SPI flash) and can be updated. The SPI flash contains the BIOS (Basic Input Output System) setup menu, Power-on Self-test (POST), the PCI auto-configuration utility, LAN EEPROM information, and Plug and Play support.

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

The following illustration shows Extensible Firmware Interface's position in the software stack.
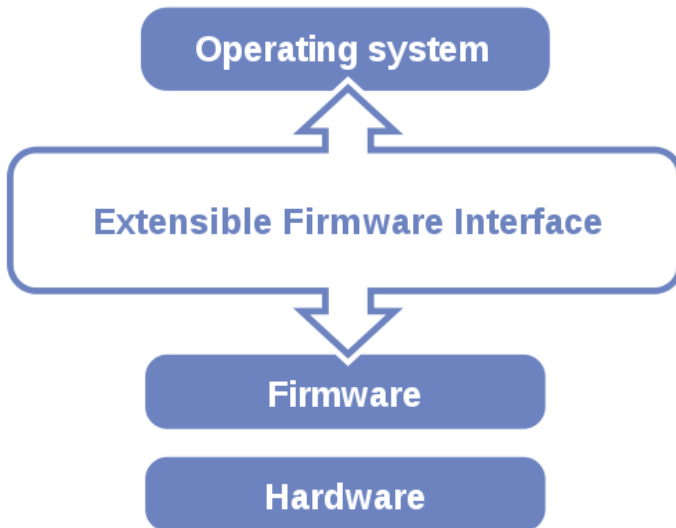
EFI BIOS provides an user interface allow users the ability to modify hardware configuration, e.g. change system date and time, enable or disable a system component,

decide bootable device priorities, setup personal password, etc., which is convenient for modifications and customization of the computer system and allows technicians another method for finding solutions if hardware has any problems.

The BIOS setup menu can be used to view and change the BIOS settings for the computer. The BIOS setup menu is accessible by pressing the <Del> or <Esc> key on keyboard during the POST stage, right before the operating system is loading. All the settings are described in chapter to be followed.

4-2. ENTERING SETUP

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

Example of first POST screen with American Megatrends logo

For as long as this message is present on the screen before the operating system boot begins, you may press the <Del> or <Esc> key to access the setup menu. In a moment, the main menu of the Aptio Setup Utility will appear on the screen:

Example of BIOS Setup Menu Initialization Screen

The BIOS setup menu interface and help messages are shown in American English language. You may move the cursor by up/down keys to highlight the individual menu items. As you highlight each item, a brief description of the highlighted selection will appear at the bottom of the screen. Following table provides list of keys available for BIOS setup menu.

BIOS Setup Menu Key	Description
<←> and <→>	Selects a different menu screen (moves the selection left or right).
<↑> and <↓>	Selects an item (moves the selection up or down).
<Enter>	Executes a command or selects the sub-menu.
<F2>	Loads the previous configuration values.
<F3>	Loads the default configuration values.
<F4>	Saves the current values and exits the BIOS setup menu.
<Esc>	Leaves the sub-menu. Triggers confirmation to exit BIOS setup menu.

4-3. Main

```
            Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
   Main  Advanced  Chipset  Security  Boot  Save & Exit

   BIOS Information                                          Set the Date. Use Tab to
   BIOS Vendor                    American Megatrends        switch between Date elements.
   Core Version                   5.010
   Compliancy                     UEFI 2.4; PI 1.3
   Project Version                83000PI1 x64
   Build Date and Time            09/17/2015 14:01:36

   CPU Configuration
   Microcode Patch                903
   BayTrail SoC                   D0 Stepping

   Memory Information
   Total Memory                   2048 MB (DDR3L)

   GOP Information                                           ++: Select Screen
   Intel(R) GOP Driver            [N/A]                      ↑↓: Select Item
                                                             Enter: Select
   TXE Information                                           +/-: Change Opt.
   TXE FW Version                 01.01.04.1148              F1: General Help
                                                             F2: Previous Values
   System Date                    [Thu 09/17/2015]           F3: Optimized Defaults
   System Time                    [00:02:26]                 F4: Save & Exit
                                                             ESC: Exit
   Access Level                   Administrator


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```

Main Menu 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 board and its BIOS.
Build Date and Time	No changeable options	Displays the date of current BIOS version.
Microcode Patch	No changeable options	Information about current microcode version.
BayTrail SoC	No changeable options	Processor stepping information.

BIOS Setting	Options	Description/Purpose
Total Memory	No changeable options	Total RAM installed in SO-DIMM slot (and its type).
Intel(R) GOP Version	no changeable options	Intel GOP (Graphics Output Protocol) version (is displayed when GOP is in use; n/a for VBIOS)
TXE FW Version	no changeable options	Intel Trusted Execution Engine firm ware version.
System Date	month, day, year	Specifies the current date.
System Time	hour, minute, second	Specifies the current time.
Access Level	no changeable options	Displays security levels currently in use.

4-4. Advanced

```
          Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.
    Main  Advanced  Chipset  Security  Boot  Save & Exit

  ▶ ACPI Settings                                      System ACPI Parameters.
  ▶ F81866 Super IO Configuration
  ▶ Hardware Monitor
  ▶ F81866 Watchdog
  ▶ CPU Configuration
  ▶ PPM Configuration
  ▶ IDE Configuration
  ▶ Miscellaneous Configuration
  ▶ Power Management Configuration
  ▶ CSM Configuration
  ▶ USB Configuration

                                                     ➡◀: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Opt.
                                                     F1: General Help
                                                     F2: Previous Values
                                                     F3: Optimized Defaults
                                                     F4: Save & Exit
                                                     ESC: Exit

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```
Advanced Menu Screen

BIOS Setting	Options	Description/Purpose
ACPI Settings	sub-menu	Enters the menu to set ACPI option.
F81866 Super IO Configuration	sub-menu	Serial ports at Super IO configuration section.
Hardware Monitor	sub-menu	Exposes real-time values gathered by hardware monitor.
F81866 Watchdog	sub-menu	Opens section to configure Watchdog Timer function on Super IO.
CPU Configuration	sub-menu	All processor basic options menu.
PPM Configuration	sub-menu	Processor power-saving features settings.
IDE Configuration	sub-menu	SATA device(s) configuration section.
Miscellaneous Configuration	sub-menu	Enters menu to configure several various options.
Power Management Configuration	sub-menu	Basic power management options menu.
CSM Parameters	sub-menu	Configures Compatibility Support Module (CSM) related settings.
USB Configuration	sub-menu	Enters the menu to configure USB options.

4-4-1. Advanced - ACPI Settings
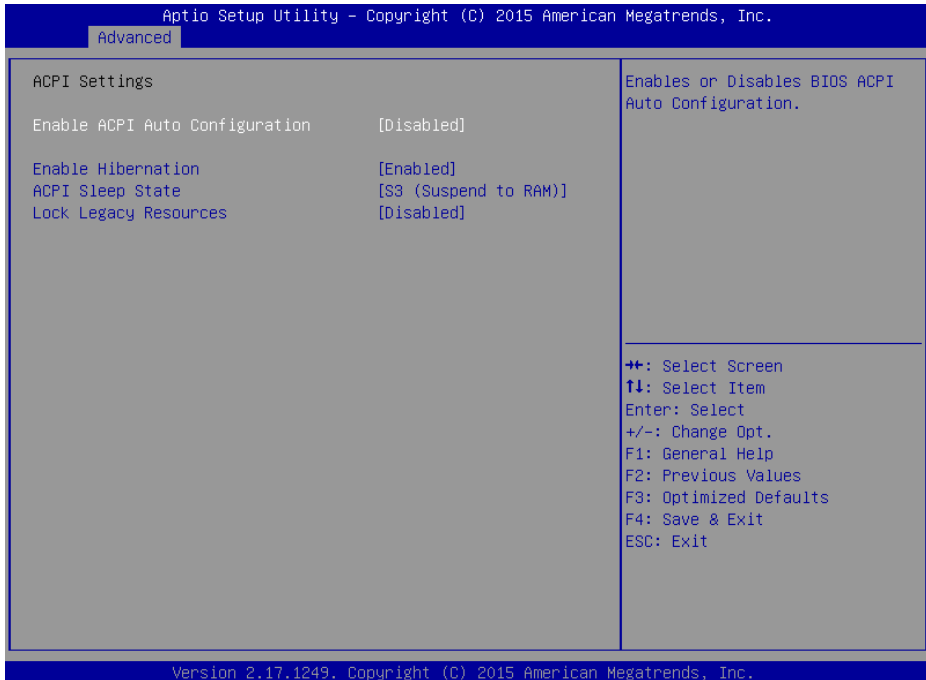
ACPI Settings Screen

BIOS Setting	Options	Description/Purpose
Enable ACPI Auto Configuration	-disabled -enabled	Allows deciding whether ACPI settings are configured by operating system or manually (when option disabled).
Enable Hibernation	-disabled -enabled	Enables ability to enter S4 state (to be able to hibernate in Windows operating system).
ACPI Sleep State	-Suspend Disabled -S3 only	Specifies the ACPI sleep state. Disabled option disables ACPI sleep feature. S3 allows the platform to enter Sleep mode (also known as Standby or Suspend to RAM).

BIOS Setting	Options	Description/Purpose
Lock Legacy Resources	-disabled -enabled	Prevents the operating system from changing resources to serial or parallel controller.

4-4-2. Advanced - F81866 Super IO Configuration

```
              Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
      Advanced

    F81866 Super IO Configuration                              Set Parameters of Serial Port
                                                               1 (COMA)
    Super IO Chip                      F81866
  ▶ Serial Port 1 Configuration
  ▶ Serial Port 2 Configuration
  ▶ Serial Port 3 Configuration
  ▶ Serial Port 4 Configuration




                                                               →←: Select Screen
                                                               ↑↓: Select Item
                                                               Enter: Select
                                                               +/-: Change Opt.
                                                               F1: General Help
                                                               F2: Previous Values
                                                               F3: Optimized Defaults
                                                               F4: Save & Exit
                                                               ESC: Exit


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```

F81866 Super IO Configuration Screen

BIOS Setting	Options	Description/Purpose
F81866 Super IO Chip	No changeable options	Shows Super IO manufacturer and model.
Serial Port 1 Configuration	sub-menu	Enters the menu to configure the first serial port.
Serial Port 2 Configuration	sub-menu	Enters the menu to configure the second serial port.

BIOS Setting	Options	Description/Purpose
Serial Port 3 Configuration	sub-menu	Enters the menu to configure the third serial port.
Serial Port 4 Configuration	sub-menu	Enters the menu to configure the fourth serial port.

4-4-3. Advanced - F81866 Super IO Configuration - Serial Port 1 Configuration

```
              Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.
         Advanced

    Serial Port 1 Configuration                              Enable or Disable Serial Port
                                                             (COM)
    Serial Port                      [Enabled]
    Device Settings                  IO=3F8h; IRQ=4;

    Change Settings                  [Auto]

    Device Mode                      [RS232 Mode]




                                                             ←→: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit



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```

Serial Port 1 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	-disabled -enabled	Configures the serial port 1.
Device Settings	No changeable options	Shows the current settings applied to the serial port.

BIOS Setting	Options	Description/Purpose
Change Settings	-Auto -IO=3F8h; IRQ=4; -IO=3F8h; IRQ=3,4,5,6,7,10,11,12; -IO=2F8h; IRQ=3,4,5,6,7,10,11,12; -IO=3E8h; IRQ=3,4,5,6,7,10,11,12; -IO=2E8h; IRQ=3,4,5,6,7,10,11,12;	Specifies the base I/O address and interrupt request for the serial port 1 if enabled.
Device Mode	-RS232 Mode -RS485 Mode	Switches between serial port modes.

4-4-4. Advanced - F81866 Super IO Configuration - Serial Port 2 Configuration

Serial Port 2 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	-disabled -enabled	Configures the serial port 2.
Device Settings	No changeable options	Shows the current settings applied to the serial port.
Change Settings	-Auto -IO=3F8h; IRQ=4; -IO=3F8h; IRQ=3,4,5,6,7,10,11,12; -IO=2F8h; IRQ=3,4,5,6,7,10,11,12; -IO=3E8h; IRQ=3,4,5,6,7,10,11,12; -IO=2E8h; IRQ=3,4,5,6,7,10,11,12;	Specifies the base I/O address and interrupt request for the serial port 2 if enabled.
Device Mode	-RS232 Mode -RS485 Mode	Switches between serial port modes.

4-4-5. Advanced - F81866 Super IO Configuration - Serial Port 3 Configuration

```
              Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
      Advanced

   Serial Port 3 Configuration                                  Enable or Disable Serial Port
                                                                (COM)
   Serial Port                        [Enabled]
   Device Settings                    IO=3E8h; IRQ=7;

   Change Settings                    [Auto]




                                                                →←: Select Screen
                                                                ↑↓: Select Item
                                                                Enter: Select
                                                                +/-: Change Opt.
                                                                F1: General Help
                                                                F2: Previous Values
                                                                F3: Optimized Defaults
                                                                F4: Save & Exit
                                                                ESC: Exit



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```

Serial Port 3 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	-disabled -enabled	Configures the serial port 3.
Device Settings	No changeable options	Shows the current settings applied to the serial port.
Change Settings	-Auto -IO=3F8h; IRQ=4; -IO=3F8h; IRQ=3,4,5,6,7,10,11,12; -IO=2F8h; IRQ=3,4,5,6,7,10,11,12; -IO=3E8h; IRQ=3,4,5,6,7,10,11,12;	Specifies the base I/O address and interrupt request for the serial port 3 if enabled.

BIOS Setting	Options	Description/Purpose
	-IO=2E8h; IRQ=3,4,5,6,7,10,11,12;	

4-4-6. Advanced - F81866 Super IO Configuration - Serial Port 4 Configuration

```
            Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.
    Advanced

    Serial Port 4 Configuration                            Enable or Disable Serial Port
                                                           (COM)
    Serial Port                        [Enabled]
    Device Settings                    IO=2E8h; IRQ=10;

    Change Settings                    [Auto]




                                                           →←: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit




            Version 2.17.1249. Copyright (C) 2015 American Megatrends, Inc.
```
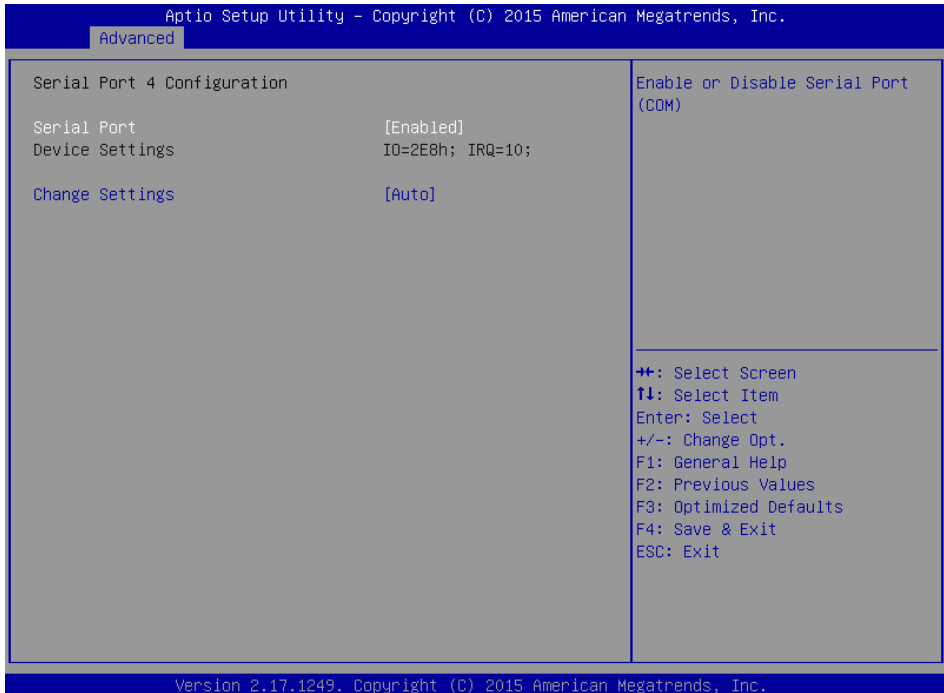
Serial Port 4 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	-disabled -enabled	Configures the serial port 4.
Device Settings	No changeable options	Shows the current settings applied to the serial port.
Change Settings	-Auto	Specifies the base I/O address and

BIOS Setting	Options	Description/Purpose
	-IO=3F8h; IRQ=4; -IO=3F8h; IRQ=3,4,5,6,7,10,11,12; -IO=2F8h; IRQ=3,4,5,6,7,10,11,12; -IO=3E8h; IRQ=3,4,5,6,7,10,11,12; -IO=2E8h; IRQ=3,4,5,6,7,10,11,12;	interrupt request for the serial port 4 if enabled.

4-4-7. Advanced - Hardware Monitor

```
           Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
      Advanced

 Pc Health Status

 CPU Temperature                  : +26 %
 System Temperature               : +20 %
 Vcore                            : +0.904 V
 Vcc 5V                           : +5.087 V
 Vcc 12V                          : +12.144 V
 Vcc 3.3V                         : +3.328 V
 Vsb 3.3V                         : +3.344 V
 Vbat                             : +3.264 V




                                                    ↔: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit




           Version 2.17.1249. Copyright (C) 2015 American Megatrends, Inc.
```

Hardware Monitor Screen

BIOS Setting	Options	Description/Purpose
CPU Temperature	No changeable options	Monitors the CPU temperature via PECI interface.
System Temperature	No changeable options	Shows the system temperature in degree Celsius.
Vcore	No changeable options	Monitors core voltage rail (in volt).
Vcc 5V	No changeable options	Monitors 5V section (in volt).
Vcc 12V	No changeable options	Reports on 12V section (in volt).
Vcc 3.3V	No changeable options	Monitors 3.3V section (in volt).
Vsb 3.3VSB	No changeable options	Monitors stand-by 3.3V (in volt).
Vbat	No changeable options	Readout on CMOS battery voltage (in volt).

4-4-8. Advanced - F81866 Watchdog [enabled]

```
           Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.
    Advanced

    F81866 Watchdog                                   F81866 Watchdog timer settings
                                                      Enable/Disable
    Enable Watchdog                   [Enabled]

    Watchdog timer unit               [1s]
    Count for Timer (Seconds)         1




                                                      ↔: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit



            Version 2.17.1249. Copyright (C) 2015 American Megatrends, Inc.      B4
```

F81866 Watchdog Screen [enabled]

BIOS Setting	Options	Description/Purpose
Enable Watchdog	-disabled -enabled	Selects for watchdog timer to be enabled or disabled.
Watchdog timer unit	-1s -60s	Sets time unit for the timer.
Count for Timer (seconds)	multiple options ranging from 1 to 255	If enabled, sets the desired value (in seconds) for watchdog timeout.

4-4-9. Advanced - F81866 Watchdog [disabled]

```
            Aptio Setup Utility - Copyright (C) 2014 American Megatrends, Inc.
    Advanced

   F81846AD Watchdog                                      F81846AD Watchdog timer
                                                          settings Enable/Disable
   Enable Watchdog                    [Disabled]






                                                          ↔: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit



            Version 2.17.1246. Copyright (C) 2014 American Megatrends, Inc.
```
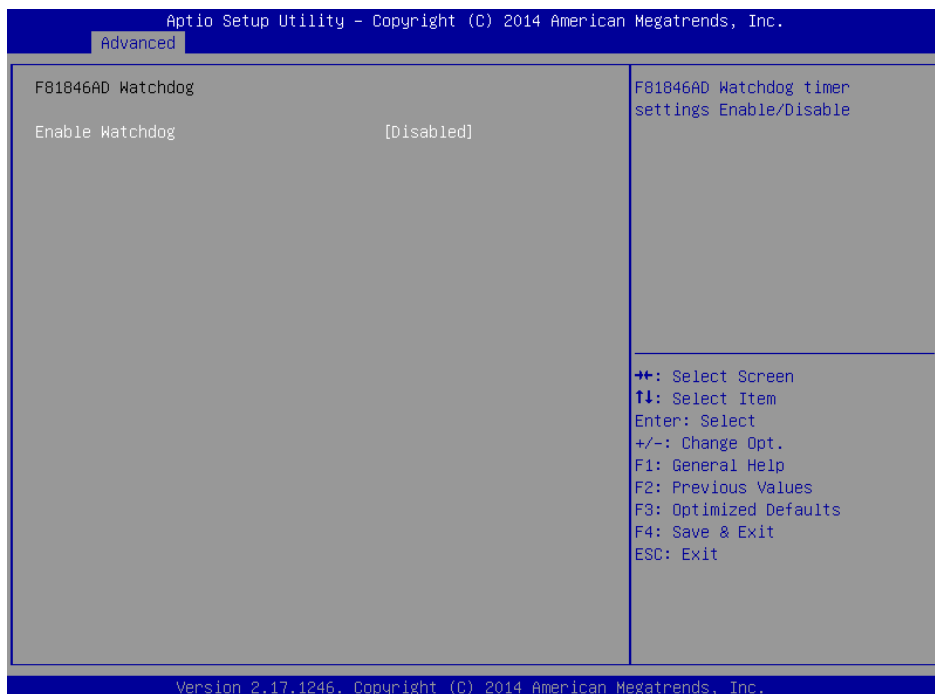
F81866 Watchdog Screen [disabled]

BIOS Setting	Options	Description/Purpose
Enable Watchdog	-disabled -enabled	Selects for the watchdog timer to be enabled or disabled.

4-4-10. Advanced - CPU Configuration

```
              Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
    Advanced

    CPU Configuration                                       Specific CPU Information

    ▶ CPU Information
      CPU Speed                        1918 MHz
      64-bit                           Supported

      Limit CPUID Maximum              [Disabled]
      Execute Disable Bit              [Enabled]
      Intel Virtualization Technology  [Enabled]



                                                           ↔: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit



              Version 2.17.1249. Copyright (C) 2015 American Megatrends, Inc.
```

CPU Configuration Screen

BIOS Setting	Options	Description/Purpose
CPU Information	sub-menu	Enters the menu to access the processor details.
CPU Speed	No changeable options	Displays the current processor frequency.
64-bit	No changeable options	Reports if the processor supports Intel x86-64 (amd64) implementation.
Limit CPUID Maximum	-disabled -enabled	Enables for legacy operating systems to boot processors with extended CPUID (CPU Identification) functions.
Execute Disable Bit	-disabled -enabled	Enables the NX bit (No eXecute) security feature (if supported by operating system).

BIOS Setting	Options	Description/Purpose
Intel Virtualization Technology	-disabled -enabled	Enables or disables Intel Virtualization Technology (VT-x). Takes affect only after power cycling.

4-4-11. Advanced - CPU Configuration - CPU Information
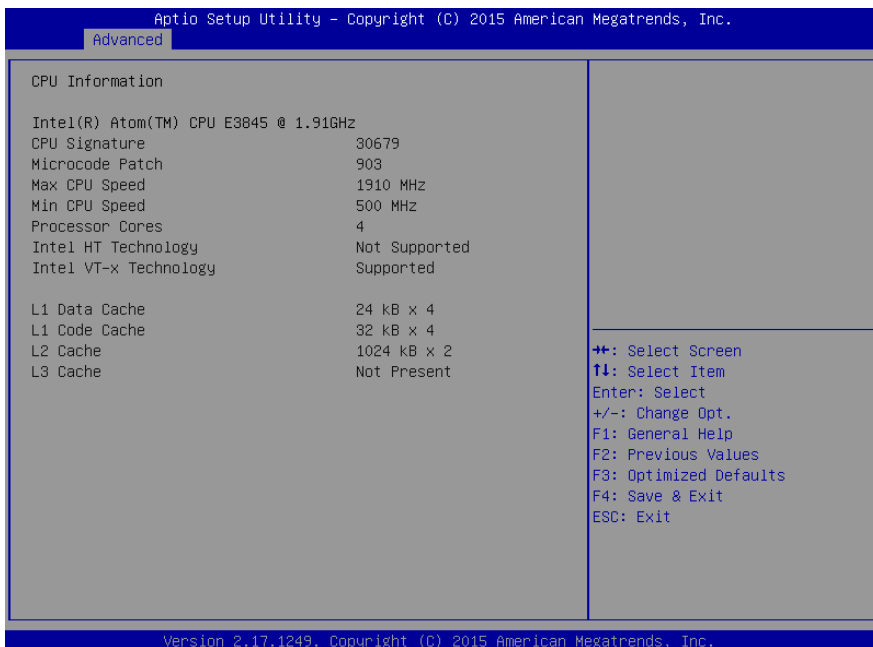
CPU Information Screen

BIOS Setting	Options	Description/Purpose
Processor Type	No changeable options	Displays the current processor model number and its frequency.
CPU Signature	No changeable options	Displays the processor's stepping.
Microcode Patch	No changeable options	Displays the processor's microcode update revision.
Max CPU Speed	No changeable options	Shows maximal possible processor frequency.

BIOS Setting	Options	Description/Purpose
Min CPU Speed	No changeable options	Shows minimal supported processor frequency.
Processor Cores	No changeable options	Displays information about 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	Displays hardware support for virtualization Intel Virtualization Technology (VT-x) status.
L1 Data Cache	No changeable options	Displays the amount of Level 1 cache for data.
L1 Code Cache	No changeable options	Displays the amount of Level 1 cache for instructions.
L2 Cache	No changeable options	Displays the amount of Level 2 cache.
L3 Cache	No o changeable options	Displays the amount of Level 3 cache or its presence.

4-4-12. Advanced - PPM Configuration

PPM Configuration Screen

BIOS Setting	Options	Description/Purpose
CPU C state Report	-disabled -enabled	Enables or disables idle C-States in the processor.
Max CPU C-state	-C7 -C6 -C1	Controls C-State limit on package level.
S0ix	-disabled -enabled	Controls SoC idle standby power states. (S0ix states shut off part of the SoC when they are not in use).

4-4-13. Advanced - IDE Configuration

```
          Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.
        Advanced

    IDE Configuration                                          Enable / Disable Serial ATA

    Serial-ATA (SATA)                    [Enabled]

    SATA Speed Support                   [Gen2]
    SATA ODD Port                        [No ODD]
    SATA Mode                            [AHCI Mode]

    Serial-ATA Port 1                    [Enabled]
    SATA Port1 HotPlug                   [Enabled]

    Serial-ATA Port 2                    [Enabled]
    SATA Port2 HotPlug                   [Enabled]
                                                               ++: Select Screen
    SATA Port1                                                 ↑↓: Select Item
    KINGSTON SVP10 (96.0GB)                                    Enter: Select
                                                               +/-: Change Opt.
    SATA Port2                                                 F1: General Help
    Not Present                                                F2: Previous Values
                                                               F3: Optimized Defaults
                                                               F4: Save & Exit
                                                               ESC: Exit




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```

IDE Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial-ATA (SATA)	-disabled -enabled	Enables SATA controller.
SATA Speed Support	-Default -Gen1 -Gen2	Configures SATA (only when set as AHCI) interface: Gen1 mode sets the device to 1.5 Gbit/s speed. Gen2 mode sets the device to 3 Gbit/s speed (in case it is compatible).
SATA ODD Port	-Port0 ODD -Port1 ODD -No ODD	Configures each SATA port for as ODD (Optical Disk Drive) if desired.
SATA Mode	-AHCI -IDE	Configures SATA devices for AHCI and IDE modes respectively. It is not advised to change this option once the operating system is installed.
Serial-ATA Port 1	-disabled -enabled	Allows controlling specific SATA port.
SATA Port1 HotPlug	-disabled -enabled	Enables Hot Plug feature on SATA port 1 (if supported by the device).
Serial-ATA Port 2	-disabled -enabled	Allows controlling specific SATA port.
SATA Port2 HotPlug	-disabled -enabled	Enables Hot Plug feature on SATA port 2 (if supported by the device).
SATA Port 1	No changeable options	Displays the device ID plugged in SATA port 1 (if any).
SATA Port 2	No changeable options	Displays the device ID plugged in SATA port 2 (if any).

4-4-14. Advanced - Miscellaneous Configuration

```
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       Advanced

   Miscellaneous Configuration                               Enable/Disable PCIE Dynamic
   PCI Express Dynamic Clock Gating     [Disabled]           Clock Gating.
   OS Selection                         [Windows 7]




                                                             →←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit



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```

Miscellaneous Configuration Screen

BIOS Setting	Options	Description/Purpose
PCI Express Dynamic Clock Gating	-disabled -enabled	Controls clock gating function on PCIe devices.
OS Selection	-Windows 7 -Windows 8 x86 -Windows 8 x64 -Manual	Select the operating system accordingly either to Microsoft Windows 7 or Windows 8 x86 & x64 (results in appropriate settings for VBIOS/GOP and in CSM and USB Configuration for each OS). Manual option provides granular settings. Please note Windows 8 x64 only supports x64 operating system editions and it also makes MS-DOS unbootable.

4-4-15. Advanced - Power Management Configuration

```
              Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.
    Advanced

  Power Management Configuration                              Set the startup voltage to
                                                             11.5V or 23V and the shutdown
    Input Voltage              9-36                          voltage to 10.5V or 21V
    Startup.Shutdown                   [(12.0, 11.0) / (24,22)]

    Delay Time Setting
    Delay On Time Selection            [10 sec]
    Delay Off Time Selection           [10 sec]


                                                             ↔: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/–: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit



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```

Power Management Configuration Screen

BIOS Setting	Options	Description/Purpose
Input Voltage	No changeable options	Accepted input voltage range (in volt).
Startup.Shutdown	-(11.5, 10.5) / (23, 21) -(12.5, 11.0) / (24, 22) -(12.5, 11.5) / (25, 23) -(12.5, 11.0) / (25, 22)	Option to select start-up and shut down voltage levels (in volt).
Delay On Time Selection	-disabled -05 sec -10 sec -30 sec -01 min	Delayed time period after turning on.
Delay Off Time Selection	Multiple options ranging from 5 seconds to 60 minutes	Delayed time period after shutting down.

4-4-16. Advanced - CSM Configuration

```
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      Advanced

 Compatibility Support Module Configuration                    Enable/Disable CSM Support.

 CSM Support                          [Enabled]

 CSM16 Module Version                 07.76

 GateA20 Active                       [Upon Request]
 Option ROM Messages                  [Force BIOS]

 Boot option filter                   [UEFI and Legacy]

 Option ROM execution

 Network                              [Legacy]              ++: Select Screen
 Storage                              [Legacy]              ↑↓: Select Item
 Video                                [Legacy]              Enter: Select
 Other PCI devices                    [Legacy]              +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit



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```

CSM Configuration Screen

BIOS Setting	Options	Description/Purpose
CSM Support	-disabled -enabled	Enables or disables Compatibility System Module (appropriate choice depends on operating system in use).
CSM16 Module Version	No changeable options	Displays the module's code version.
GateA20 Active	-Upon Request -Always	Specifies Gate-A20 logic gate status. At boot time, Gate-A20 is enabled when counting and testing of all the system's memory and disabled before transferring control to OS.

BIOS Setting	Options	Description/Purpose
Option ROM Messages	-Force BIOS -Keep Current	When set to Force BIOS, it allows the POST screen to display Option ROM messages.
Boot option filter	-UEFI and Legacy -Legacy only -UEFI only	Set this option according to your operating systems installed.
Network	-Do not launch -UEFI only -Legacy only	Selection to control which Option ROM to use for PXE boot method.
Storage	-Do not launch -UEFI only -Legacy only	Selection to control which Option ROM to use for storage system.
Video	-Do not launch -UEFI only -Legacy only	Allows to select between GOP (UEFI) and VBIOS (legacy) to handle graphics output.
Other PCI devices	-Do not launch -UEFI only -Legacy only	Selection to control which Option ROM to use on PCI device(s) (if inserted).

4-4-17. Advanced - USB Configuration

```
            Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
     Advanced

   USB Configuration                                        Enables Legacy USB support.
                                                            AUTO option disables legacy
   USB Module Version              10                       support if no USB devices are
                                                            connected. DISABLE option will
   USB Devices:                                             keep USB devices available
        1 Drive, 1 Keyboard, 1 Mouse, 1 Hub                only for EFI applications.

   Legacy USB Support              [Enabled]
   XHCI Hand-off                   [Enabled]
   EHCI Hand-off                   [Disabled]
   USB Mass Storage Driver Support [Enabled]

   USB hardware delays and time-outs:
   USB transfer time-out           [20 sec]                ←→: Select Screen
   Device reset time-out           [20 sec]                ↑↓: Select Item
   Device power-up delay           [Auto]                  Enter: Select
                                                           +/-: Change Opt.
   Mass Storage Devices:                                   F1: General Help
   JetFlashTS2GJFV60 8.07          [Auto]                  F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit



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```

USB Configuration Screen

BIOS Setting	Options	Description/Purpose
USB Module Version	No changeable options	Indicates the USB module version number.
USB Devices	No changeable options	Reports the number and type of connected USB device(s) (if any).
Legacy USB Support	-enabled -disabled -auto	Enables the support for USB in legacy operating systems (e.g. MS-DOS, Windows NT, …)
XHCI Hand-off	-disabled -enabled	When enabled, it allows BIOS support control of the XHCI controller and the OS hand-off synchronization capability.

BIOS Setting	Options	Description/Purpose
EHCI Hand-off	-disabled -enabled	When enabled, it allows BIOS support control of the EHCI controller and the OS hand-off synchronization capability.
USB Mass Storage Driver Support	-disabled -enabled	Enables the support for USB mass storage media.
USB transfer time-out	-1 sec -5 sec -10 sec -20 sec	Specifies the time-out value for Control, Bulk and Interrupt transfers.
Device reset time-out	-10 sec -20 sec -30 sec -40 sec	Specifies the value for device reset timeout.
Device power-up delay	-auto -manual	Specifies the maximum time it would take for the USB device to report itself to the controller. If set to auto, it would use default values (100 ms for root port) and value read from hub descriptor in case of hub port.
Mass Storage Devices: [drive(s)]	-Auto -Floppy -Forced FDD -Hard Disk -CD-ROM	Appears only when the USB flash drive is plugged in. Allows selecting which emulation to use on available drive(s). Please note that the sector size of your USB drive should be the size of the native sector on the emulated device.

4-5. Chipset


```
          Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
    Main  Advanced  Chipset  Security  Boot  Save & Exit

  ▶ North Bridge                                              North Bridge Parameters
  ▶ South Bridge




                                                             ➜←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit



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```

Chipset Menu Screen

BIOS Setting	Options	Description/Purpose
North Bridge	sub-menu	Enters the menu to configure integrated graphics & memory related items.
South Bridge	sub-menu	Enters the menu to configure audio, USB and other features.

4-5-1. Chipset - North Bridge

```
           Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.
           Chipset

 ▶ Intel IGD Configuration                              Config Intel IGD Settings.
 ▶ Graphics Power Management Control
 ▶ LCD Control

   Memory Information
   Memory Slot                        2048 MB (DDR3L)

   Max TOLUD                          [2 GB]


                                                        →←: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit


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```

North Bridge Screen

BIOS Setting	Options	Description/Purpose
Intel IGD Configuration	sub-menu	Enters the menu to deal with graphics configuration settings.
Graphics Power Management Control	sub-menu	Configures related power management capability.
LCD Control	sub-menu	Enters the menu to configure active graphics output during boot.
Memory Slot	No changeable options	Total RAM installed in SO-DIMM slot (and its type). For example, 2GB DDR3L module.
Max TOLUD	-2 GB -2.25 GB -2.5 GB	Menu to adjust TOLUD (Top of Low Usable DRAM Register).

BIOS Setting	Options	Description/Purpose
	-2.75 GB -3 GB	

4-5-1-1.Chipset - North Bridge - Intel IGD Configuration


```
            Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
              Chipset

     Intel IGD Configuration                                    Enable : Enable Integrated
                                                                Graphics Device (IGD) when
     Integrated Graphics Device        [Enabled]                selected as the Primary Video
                                                                Adaptor. Disable: Always
     IGD Turbo Enable                  [Enabled]                disbale IGD
     Primary Display                   [Auto]
     DVMT Pre-Allocated                [64M]
     DVMT Total Gfx Mem                [256MB]
     Aperture Size                     [256MB]
     DOP CG                            [Enabled]
     GTT Size                          [2MB]
     Spread Spectrum clock             [Disabled]

                                                                →←: Select Screen
                                                                ↑↓: Select Item
                                                                Enter: Select
                                                                +/-: Change Opt.
                                                                F1: General Help
                                                                F2: Previous Values
                                                                F3: Optimized Defaults
                                                                F4: Save & Exit
                                                                ESC: Exit



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```

Intel IGD Configuration Screen

BIOS Setting	Options	Description/Purpose
Integrated Graphics Device	-disabled -enabled	Controls the internal graphics device. Do not disable the option unless you would like to run headless machine.
IGD Turbo Enable	-disabled -enabled	Enables graphics clock rate up to 792 MHz as oppose to regular 542 MHz.
Primary Display	-Auto -IGD	Allows controlling which device (if applicable) is going to be used for

BIOS Setting	Options	Description/Purpose
	-PCIe -SG	graphical output initially.
DVMT Pre-Allocated	-64M -96M -128MB -160MB … -512M	Selects how big portion of main memory is going to be allocated for Intel Dynamic Video Memory Technology (DVMT).
DVMT Total Gfx Mem	-128M -256M -MAX	Controls amount of Dynamic Video Memory Technology (DVMT) total memory size for graphics engine.
Aperture Size	-128M -256M -512M	Specifies the size of the graphics memory aperture in function.
DOP CG	-disabled -enabled	Controls clock gating function on internal graphics device.
GTT Size	-1M -2M	Specifies the size for graphics translation table (GTT) which allows the graphics card direct memory access (DMA) to the host system memory. Can also be used to expand the amount of video memory available for graphics cards.
Spread Spectrum clock	-disabled -enabled	Controls spread spectrum clocking which causes the signal regulation circuit to slightly vary the frequency about the target frequency.

4-5-1-2. Chipset - North Bridge - Graphics Power Management Control

```
                Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
        Chipset

 Graphics Power Management Control                       Check to enable render standby
 RC6(Render Standby)                  [Enabled]          support.




                                                         →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit




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```

Graphics Power Management Control Screen

BIOS Setting	Options	Description/Purpose
RC6 (Render Standby)	-disabled -enabled	Controls the power savings function in which the voltage is adjusted to a low value, or very close to zero.

4-5-1-3. Chipset - North Bridge - LCD Control

```
              Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.
                Chipset

  LCD Control                                          Select the Video Device which
                                                       will be activated during POST.
  Primary IGFX Boot Display        [VBIOS Default]     This has no effect if external
                                                       graphics present.
                                                       Secondary boot display
                                                       selection will appear based on
                                                       your selection.
                                                       VGA modes will be supported
                                                       only on primary display


                                                       ➜←: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/–: Change Opt.
                                                       F1: General Help
                                                       F2: Previous Values
                                                       F3: Optimized Defaults
                                                       F4: Save & Exit
                                                       ESC: Exit



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```

LCD Control Screen

BIOS Setting	Options	Description/Purpose
Primary IGFX Boot Display	-VBIOS Default -VGA -DVI-D -DisplayPort (optional)	Selects the screen that is going to be activated on power on.

4-5-2.   Chipset - South Bridge

```
            Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
                     Chipset

▶ Azalia HD Audio                                    Azalia HD Audio Options
▶ USB Configuration

  High Precision Timer            [Enabled]
  Restore AC Power Loss           [Last State]

  Serial IRQ Mode                 [Quiet]



                                                     ↔: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Opt.
                                                     F1: General Help
                                                     F2: Previous Values
                                                     F3: Optimized Defaults
                                                     F4: Save & Exit
                                                     ESC: Exit



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```

South Bridge Screen

BIOS Setting	Options	Description/Purpose
Azalia HD Audio	sub-menu	Enters the menu to configure the audio device.
USB Configuration	sub-menu	Controls options for USB devices.
High Precision Timer	-disabled -enabled	Enables or disables High Precision Even Timer support.
Restore AC Power Loss	-Power Off -Power On -Last State	Section to configure the board behaviour if a sudden loss of power should occur.
Serial IRQ Mode	-Continuous -Quiet	Selects which mode to use for IRQ Mode, quiet (every device can start communication) or continuous (only host controller can initiate it).

4.-5-2-1. Chipset - South Bridge - Azalia HD Audio


```
        Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.
         Chipset

   Audio Configuration                                   Control Detection of the
   Audio Controller                  [Enabled]           Azalia device.  Disabled =
                                                         Azalia will be unconditionally
                                                         disabled.  Enabled = Azalia
                                                         will be unconditionally
                                                         Enabled.  Auto = Azalia will
                                                         be enabled if present disabled
                                                         otherwise.




                                                         →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit



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```

Azalia HD Audio Screen

BIOS Setting	Options	Description/Purpose
Audio Controller	-auto -disabled -enabled	Controls Intel HD Audio controller called Azalia (Realtek audio chip itself is located on the motherboard).

## 4-5-2-2.   Chipset - South Bridge - USB Configuration

```
             Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.
              Chipset

   USB Configuration                                         Mode of operation of xHCI
                                                             controller
   XHCI Mode                           [Auto]
   USB2 Link Power Management          [Enabled]

   USB 2.0(EHCI) Support               [Enabled]
   USB Per Port Control                [Enabled]
   USB Port 0                          [Enabled]
   USB Port 1                          [Enabled]
   USB Port 2                          [Enabled]
   USB Port 3                          [Enabled]


                                                             →←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit



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```
USB Configuration Screen

BIOS Setting	Options	Description/Purpose
XHCI Mode	No changeable options	Indicates the current state of XHCI mode. Depends on *OS Selection* item settings (disabled under Windows 7).
USB 2.0(EHCI) Support	-disabled -enabled	Controls EHCI controller mode.
USB Per Port Control	-disabled -enabled	Allows to control USB ports precisely by each port.
USB Port 0	-disabled -enabled	Configures the USB port 0.
USB Port 1	-disabled -enabled	Configures the USB port 1.
USB Port 2	-disabled -enabled	Configures the USB port 2.

BIOS Setting	Options	Description/Purpose
USB Port 3	-disabled -enabled	Configures the USB port 3.

4-6. Security
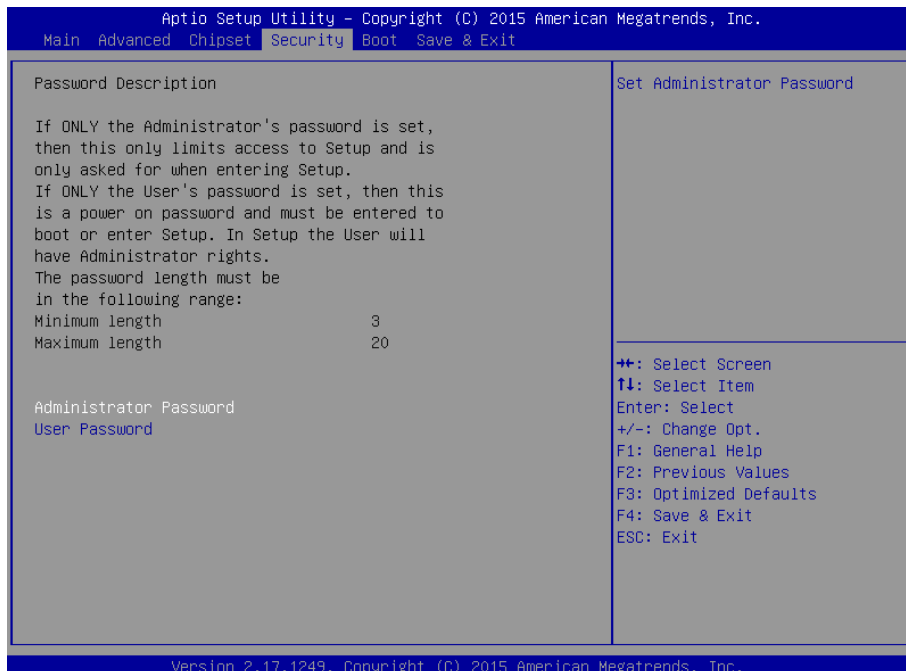
Security Screen

BIOS Setting	Options	Description/Purpose
Administrator Password	Password can be up to 20 alphanumeric characters	Specifies the administrator password.
User Password	Password can be up to 20 alphanumeric characters	Specifies the user password.
HDD Security Configuration	sub-menu	Enters the sub-menu with option to enabled password protected HDD/SSD (if SATA device is connected and supports this feature).

4-7. Boot

```
          Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
     Main  Advanced  Chipset  Security  Boot  Save & Exit

    Boot Configuration                                    Set the order of the legacy
    Setup Prompt Timeout             1                    devices in this group
    Bootup NumLock State             [On]

    Quiet Boot                       [Disabled]
    Fast Boot                        [Disabled]


    Boot Option Priorities
    Boot Option #1                   [P1: KINGSTON SVP100...]
    Boot Option #2                   [UEFI: JetFlashTS2GJ...]
    Boot Option #3                   [UEFI: Built-in EFI ...]

    Hard Drive BBS Priorities                             →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit



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```

Boot Screen

BIOS Setting	Options	Description/Purpose
Setup Prompt Timeout	Multiple options up to 65535 value	Specifies the number of seconds to wait for setup activation key (value 65535 results in indefinite waiting).
Bootup NumLock Status	-on -off	Specifies the power-on state of the Numlock feature on the numeric keypad of keyboard.
Quiet Boot	-disabled -enabled	When quiet boot is enabled, it displays AMI or OEM logo (if implemented) instead of POST messages during the boot flow.
Fast Boot	-disabled -enabled	Enables the Fast Boot feature in which will speed the boot up time.

BIOS Setting	Options	Description/Purpose
Boot Option #1	-[USB/DVD/ hard drive(s)] -built-in EFI shell -disabled	Allows setting up boot option(s) from menu listed. Number of devices listed depends on how many are connected to the main board.
Boot Option #2	-[USB/DVD/ hard drive(s)] -built-in EFI shell -disabled	Allows setting up boot option(s) from menu listed. Number of devices listed depends on how many devices are connected to the main board.
Hard Drive BBS Priorities	sub-menu	Enters the menu to configure hard drive devices boot priority.

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

Hard Drive BBS Priorities Screen

BIOS Setting	Options	Description/Purpose
Boot Option #1	-[drive(s)] -disabled	Allows setting the boot order of the available drive(s), depending on how many drives are present.
Boot Option #2	-[drive(s)] -disabled	Allows setting the boot order of the available drive(s), depending on how many drives are present.

4-8. Save & Exit

```
              Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
      Main  Advanced  Chipset  Security  Boot  Save & Exit

    Save Changes and Exit                          Exit system setup after saving
    Discard Changes and Exit                       the changes.
    Save Changes and Reset
    Discard Changes and Reset

    Save Options
    Save Changes
    Discard Changes

    Restore Defaults
    Save as User Defaults
    Restore User Defaults

    Boot Override                                  ↔: Select Screen
    UEFI: JetFlashTS2GJFV60 8.07                   ↑↓: Select Item
    P1: KINGSTON SVP100S296G                       Enter: Select
    UEFI: Built-in EFI Shell                       +/-: Change Opt.
                                                   F1: General Help
    Launch EFI Shell from filesystem device        F2: Previous Values
                                                   F3: Optimized Defaults
                                                   F4: Save & Exit
                                                   ESC: Exit


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```

Save & Exit Screen

BIOS Setting	Options	Description/Purpose
Save Changes and Exit	No changeable options	Exits and saves the changes in CMOS memory.
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 CMOS memory and resets.
Discard Changes and Reset	No changeable options	Resets without saving any changes made in BIOS settings.
Save Changes	No changeable options	Saves the changes done in BIOS settings so far.
Discard Changes	No changeable options	Discards the changes done in BIOS settings so far.

BIOS Setting	Options	Description/Purpose
Restore Defaults	No changeable options	Loads the optimized defaults for BIOS settings.
Save as User Defaults	No changeable options	Saves the current values as user defaults.
Restore User Defaults	No changeable options	Loads the user defaults for BIOS settings.
Boot Override	-[drive(s)]	Forces to boot from selected [drive(s)] or UEFI shell. Number of devices listed depends on how many are connected to the main board.
Launch EFI Shell from file system device	No changeable options	Upon entering, it executes internal EFI Shell environment.

SYSTEM ASSEMBLY

This appendix contains the exploded diagrams of the system as well as the part numbers of the system components:

- Exploded Diagram for SE-8300 Heat Sink
- Exploded Diagram for SE-8300 Heat Sink Block
- Exploded Diagram for SE-8300 Thermal Pad
- Exploded Diagram for SE-8300 M/B Module (with PoE Board)
- Exploded Diagram for SE-8300 M/B Module (without PoE Board)
- Exploded Diagram for SE-8300 I/O Plate Module (with PoE Board)
- Exploded Diagram for SE-8300 I/O Plate Module (without PoE Board)
- Exploded Diagram for SE-8300 Back I/O Plate (with PoE Board)
- Exploded Diagram for SE-8300 Back I/O Plate (without PoE Board)
- Exploded Diagram for SE-8300 PoE Board and HDD Chassis Assembly
- Exploded Diagram for SE-8300 HDD Chassis Assembly (without PoE Board)
- Exploded Diagram for SE-8300 Front I/O Plate Module (with PoE Board)
- Exploded Diagram for SE-8300 Front I/O Plate Module Assembly (with PoE Board)
- Exploded Diagram for SE-8300 Front I/O Plate Module Assembly (without PoE Board)
- Exploded Diagram for SE-8300 Bottom Plate Module Assembly (with PoE Board) (1)
- Exploded Diagram for SE-8300 Bottom Plate Module Assembly (with PoE Board) (2)
- Exploded Diagram for SE-8300 Bottom Plate Module Assembly (without PoE Board)
- Exploded Diagram for SE-8300 HDD Module
- Exploded Diagram for SE-8300 HDD Module Assembly

Exploded Diagram for SE-8300 Heat Sink
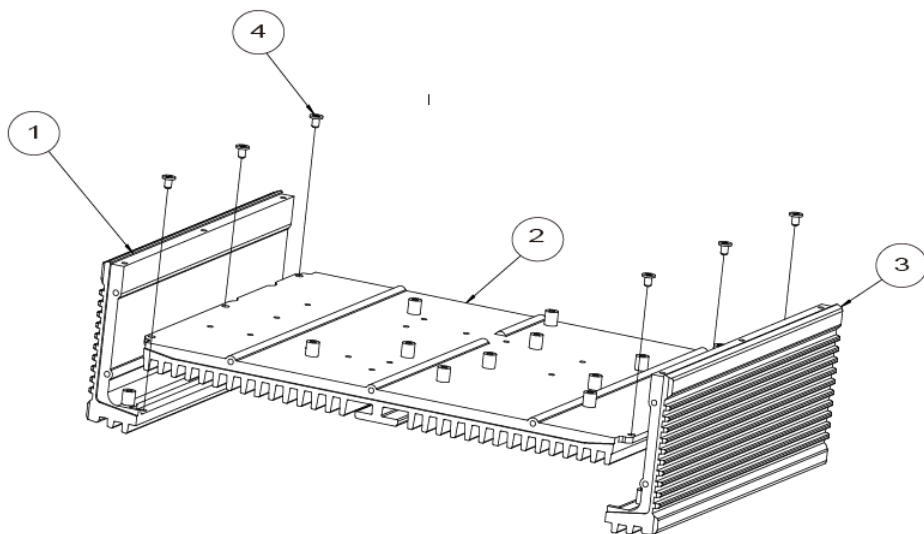
BOM: SE-8300_Heat_Sink_Assy

Pos	Q'ty	Part Name	Part No.
1	1	SE-8300_heat_sink_left(black)	81-002-18473002
2	1	SE-8300_heat_sink_main(black)	81-002-13284001
3	1	SE-8300_heat_sink_right(black)	81-002-18473001
4	6	FILLISTR_HEAD_SCREW_M3X5	22-272-30049015

Exploded Diagram for SE-8300 Heat Sink Block
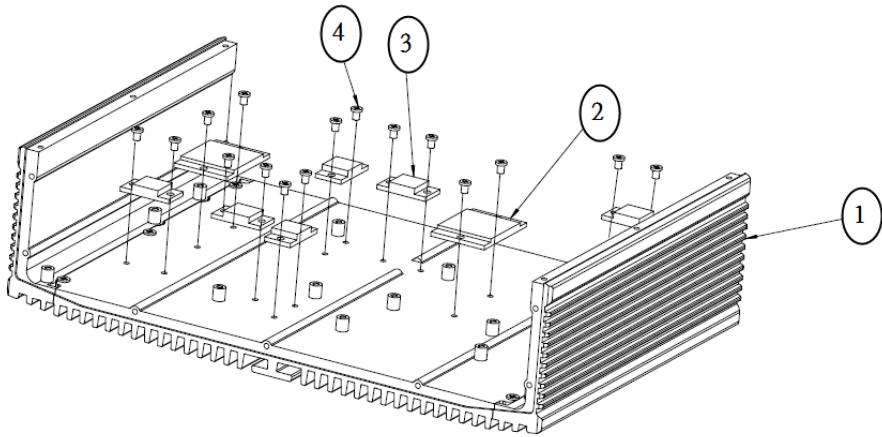
Pos	Q'ty	Part Name	Part No.
1	1	SE-8300_heat_sink_module	--------
2	2	CPU_SOUTH_BLOCK	21-002-13927001
3	6	PWM_BLOCK	21-002-12513001
4	16	FILLISTR HEAD SCREW_M3x5mm	22-272-30049015

BOM: SE-8300 HEATSINK_BLOCK_ASSY

Exploded Diagram for SE-8300 Thermal Pad
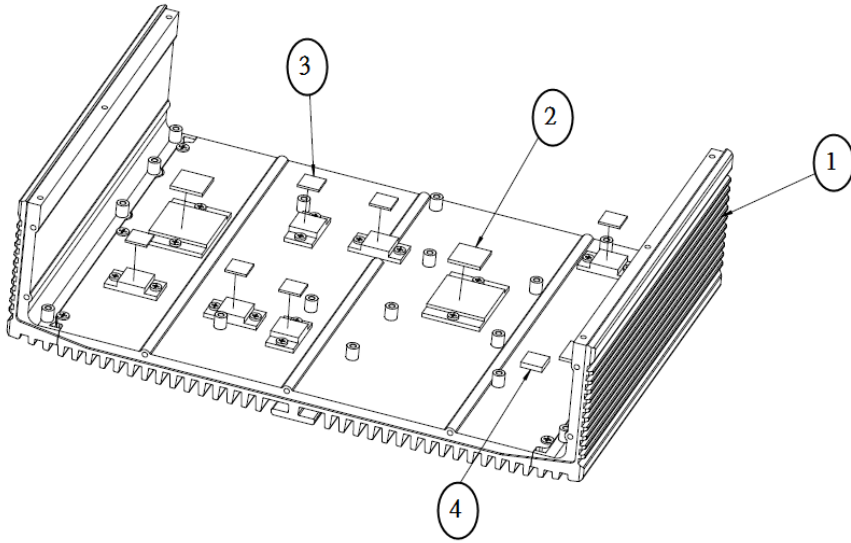
BOM: Thermal_Pad_Assy

Pos	Q'ty	Part Name	Part No.
1	1	heat_sink_module	--------
2	3	Thermal Pads,15x15x1.5mm	81-006-81515002
3	6	Thermal Pads,10x10x1.0mm	81-006-81010003
4	1	Thermal Pads,10x10x2.5mm	81-006-81010002

Exploded Diagram for SE-8300 M/B Module (with PoE Board)
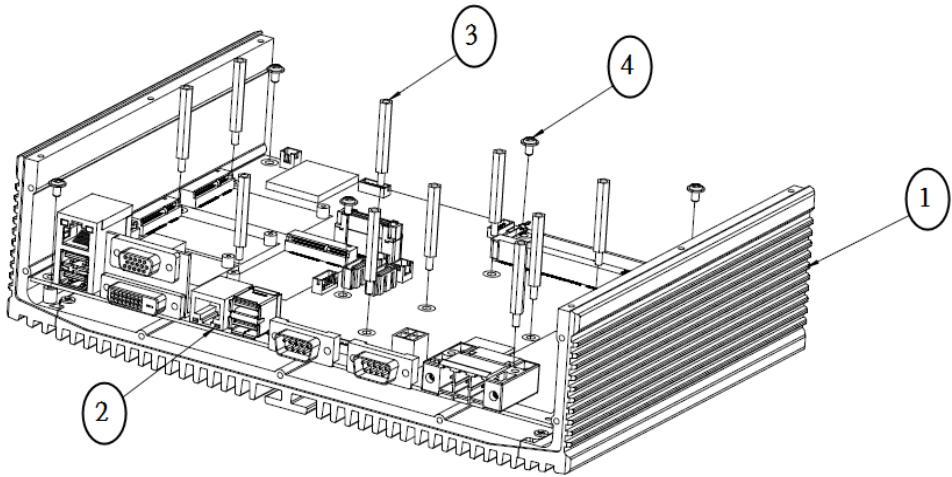
BOM: SE-8300_MB_Module_Assy			
Pos	Q'ty	Part Name	Part No.
1	1	SE-8300_heat_sink_module	----------
2	1	SB-8300_MB_module	----------
3	10	HEX_CU_BOSS,M3,H=30mm	22-758-30300001
4	7	WASHER HEAD SCREW,M3,H=5mm	22-242-30005311

Exploded Diagram for SE-8300 M/B Module (without PoE Board)
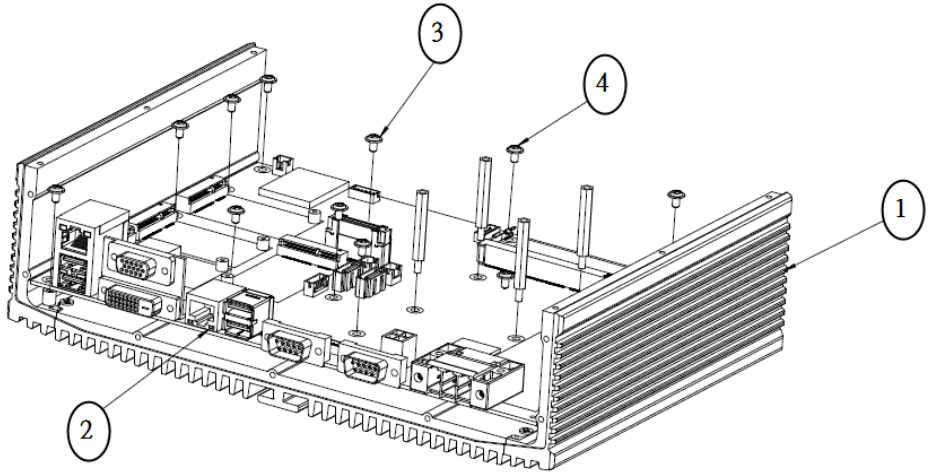
Pos	Q'ty	Part Name	Part No.
1	1	SE-8300_heat_sink_module	----------
2	1	SB-8300_MB_module	----------
3	4	HEX_CU_BOSS,M3,H=30mm	22-758-30300001
4	13	WASHER HEAD SCREW,M3,H=5mm	22-242-30005311

BOM: SE-8300_MB_Module_Assy

Exploded Diagram for SE-8300 I/O Plate Module (with PoE Board)
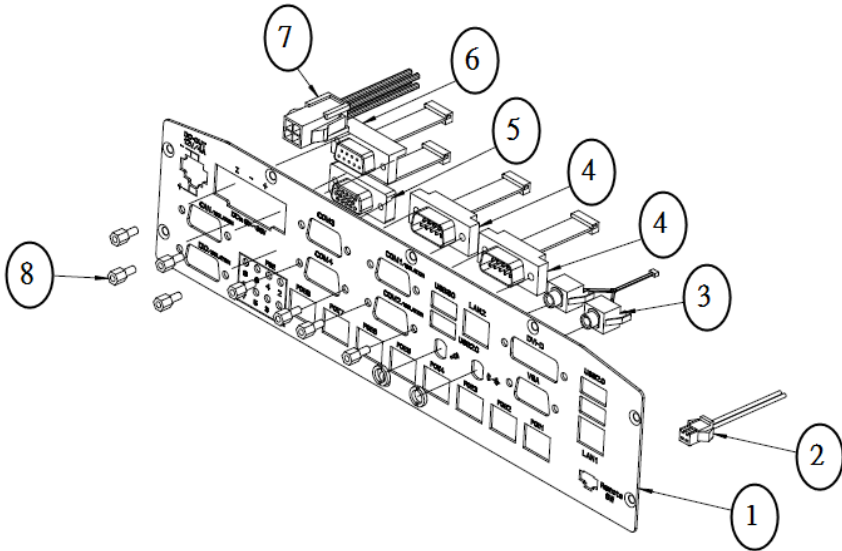
BOM: Back_IO_Plate_Module_Assy			
Pos	Q'ty	Part Name	Part No.
1	1	BACK_IO_plate	20-005-03101346
2	1	Remote Switch Cable	27-055-34605071
3	1	Audio Cable	27-028-34502111
4	2	D-SUB_9PIN_Cable	27-024-34602031
5	1	DIO Cable	27-071-34608031
6	1	CAN Bus Cable	27-024-34609031
7	1	DC-out cable	27-012-34603111
8	8	CU BOSS,UNC No.4-40,H=7mm	22-692-40048051

Exploded Diagram for SE-8300 I/O Plate Module (without PoE Board)

BOM: Back_IO_Plate_Module_Assy			
Pos	Q'ty	Part Name	Part No.
1	1	SE-8300 BACK IO PLATE(W/O POE)	80-005-03101346
2	1	Remote Switch Cable	27-055-34605071
3	1	Audio Cable	27-028-34502111
4	2	D-SUB_9PIN_Cable	27-024-34602031
5	1	DIO Cable	27-071-34608031
6	1	CAN Bus Cable	27-024-34609031
7	1	DC-out cable	27-012-34603111
8	8	CU BOSS,UNC No.4-40,H=7mm	22-692-40048051

Exploded Diagram for SE-8300 Back I/O Plate (with PoE Board)

BOM: Back_IO_Plate_Assy			
Pos	Qty	Part Name	Part No.
1	1	SE-8300_Main_module	--------
2	1	Back_IO_plate_module	--------
3	7	FLAT_SCREW,M3,H=5mm	22-215-30005011
4	8	CU BOSS,UNC No.4-40,H=7mm	22-692-40048051

Exploded Diagram for SE-8300 Back I/O Plate (without PoE Board)

BOM: Back_IO_Plate_Assy

Pos	Qty	Part Name	Part No.
1	1	SE-8300_Main_module	--------
2	1	Back_IO_plate_module	--------
3	7	FLAT_SCREW,M3,H=5mm	22-215-30005011
4	8	CU BOSS,UNC No.4-40,H=7mm	22-692-40048051

Exploded Diagram for SE-8300 PoE Board and HDD Chassis Assembly


BOM: POE_board/HDD_Chassis_Assy			
Pos	Q'ty	Part Name	Part No.
1	1	SE-8300_Main_Module	----------
2	1	POE_Board	SR-8300RB-D1N
3	1	HDD_chassis	20-015-03001346
4	4	FLAT_SCREW,M3,H=5mm	22-215-30005011
5	6	WASHER_HEAD_SCREW,M3,H=5mm	22-242-30005311

Exploded Diagram for SE-8300 HDD Chassis Assembly (without PoE Board)
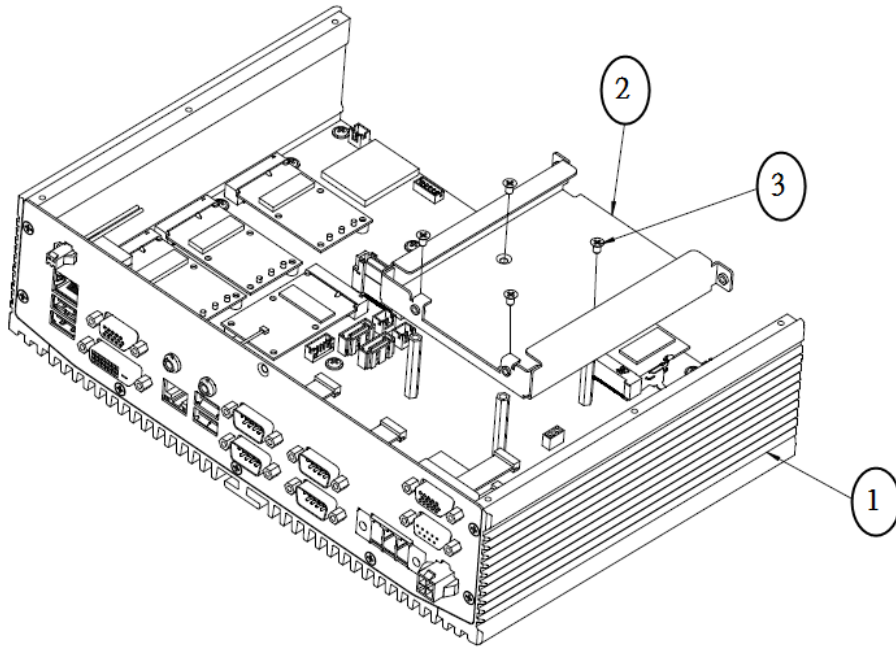
BOM: HDD_Chassis_Assy			
Pos	Q'ty	Part Name	Part No.
1	1	SE-8300_Main_Module	----------
2	1	HDD_chassis	20-015-03001346
3	4	FLAT_SCREW,M3,H=5mm	22-215-30005011

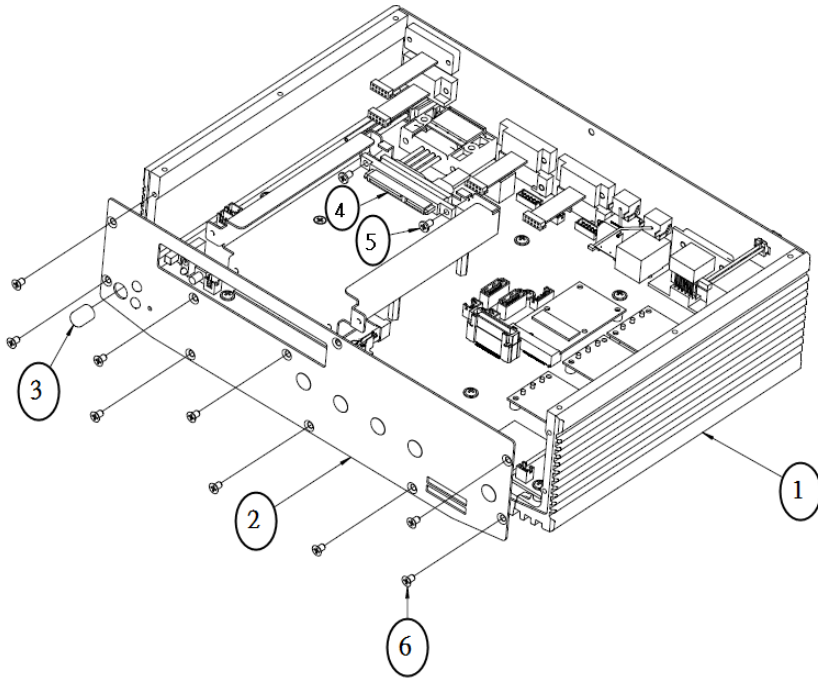## Exploded Diagram for SE-8300 Front I/O Plate Module (with PoE Board)
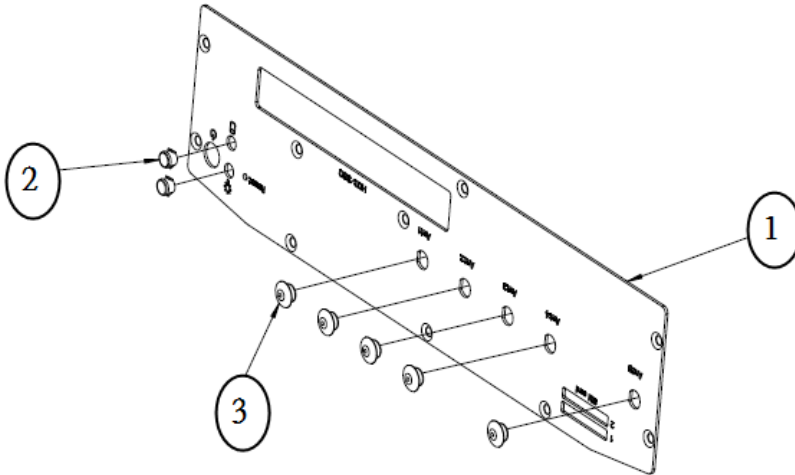
BOM: Front_IO_Plate_Module

Pos	Q'ty	Part Name	Part No.
1	1	FRONT_IO_plate	20-005-03102346
2	2	LED_LENS_HOUSING	30-012-02100000
3	5	HOLE PLUG(6.6mm)	90-067-01100000

Exploded Diagram for SE-8300 Front I/O Plate Assembly (with PoE Board)

BOM: Front_IO_plate_Assy			
Pos	Qty	Part Name	Part No.
1	1	SE-8300_Main_module	--------
2	1	Front_IO_plate_module	--------
3	1	POWER SWITCH PUSH PIN	30-001-28100099
4	1	SATA_cable	27-008-34603081
5	2	FILLISTR_SCREW,M3,H=6mm	82-275-30006018
6	9	FLAT_SCREW,M3,H=5mm	22-215-30005011

Exploded Diagram for SE-8300 Front I/O Plate Assembly (without PoE Board)

BOM: Front_IO_plate_Assy

Pos	Qty	Part Name	Part No.
1	1	SE-8300_Main_module	--------
2	1	Front_IO_plate_module	--------
3	1	POWER SWITCH PUSH PIN	30-001-28100099
4	1	SATA_cable	27-008-34603081
5	2	FILLISTR_SCREW,M3,H=6mm	82-275-30006018
6	9	FLAT_SCREW,M3,H=5mm	22-215-30005011

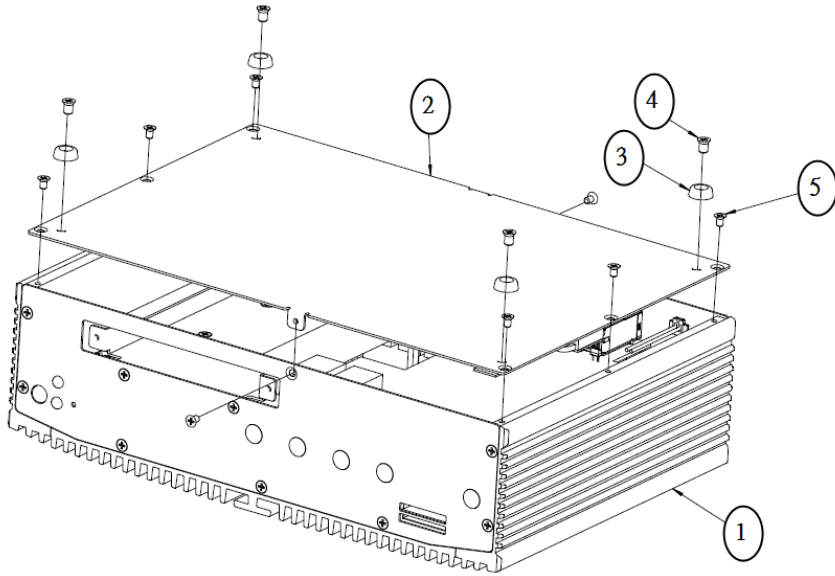## Exploded Diagram for SE-8300 Bottom Plate Module Assembly (with PoE Board) (1)

Pos	Q'ty	Part Name	Part No.
1	1	SE-8300_Bottom_plate	20-005-03061346
2	2	Heat_sink_block	81-002-10000506
3	4	FLAT_SCREW,M3,H=5mm	22-215-30005011

BOM: Bottom_Plate_Module_Assy

Exploded Diagram for SE-8300 Bottom Plate Module Assembly (with PoE Board) (2)

Pos	Q'ty	Part Name	Part No.
1	1	SE-8300_main_module	------
2	1	Bottom_plate_module	------
3	4	RUBBER_FOOT	90-004-01400000
4	4	FLAT_SCREW,M4,H=8mm	22-215-40008711
5	8	FLAT_SCREW,M3,H=5mm	22-215-30005011

## Exploded Diagram for SE-8300 Bottom Plate Module Assembly (without PoE Board)

Pos	Q'ty	Part Name	Part No.
1	1	SE-8300_main_module	------
2	1	Bottom_plate_module	------
3	4	RUBBER_FOOT	90-004-01400000
4	4	FLAT_SCREW,M4,H=8mm	22-215-40008711
5	8	FLAT_SCREW,M3,H=5mm	22-215-30005011

BOM: Bottom_plate_module_Assy

Exploded Diagram for SE-8300 HDD Module

Pos	Q'ty	Part Name	Part No.
1	1	2.5Inch_HDD	------
2	1	HDD_tray	20-054-03061346
3	4	RUBBER WASHER	23-680-39580963
4	4	FILLISTR_SCREW,M3,H=5.0mm	82-272-30005013

BOM: HDD_module

Exploded Diagram for SE-8300 HDD Module Assembly
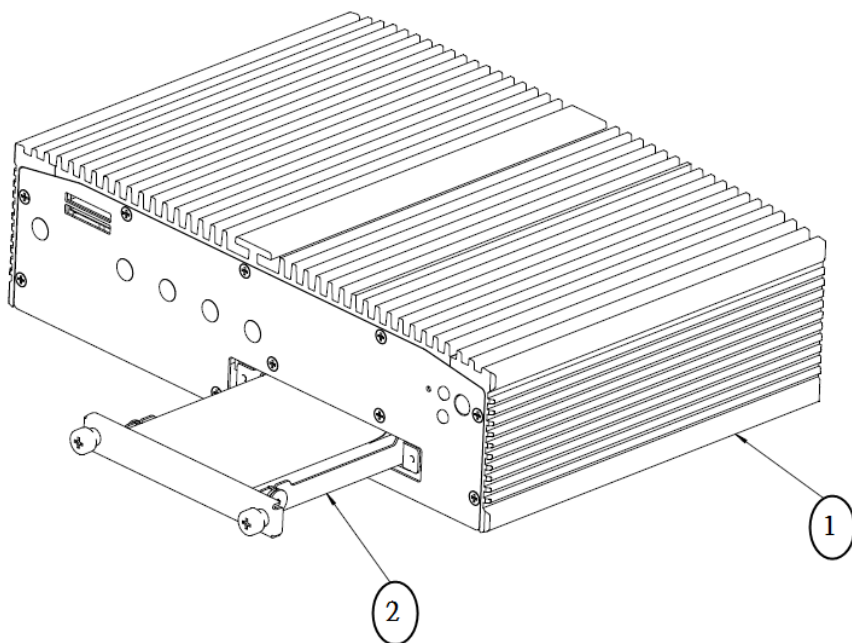
BOM: HDD_module_Assy

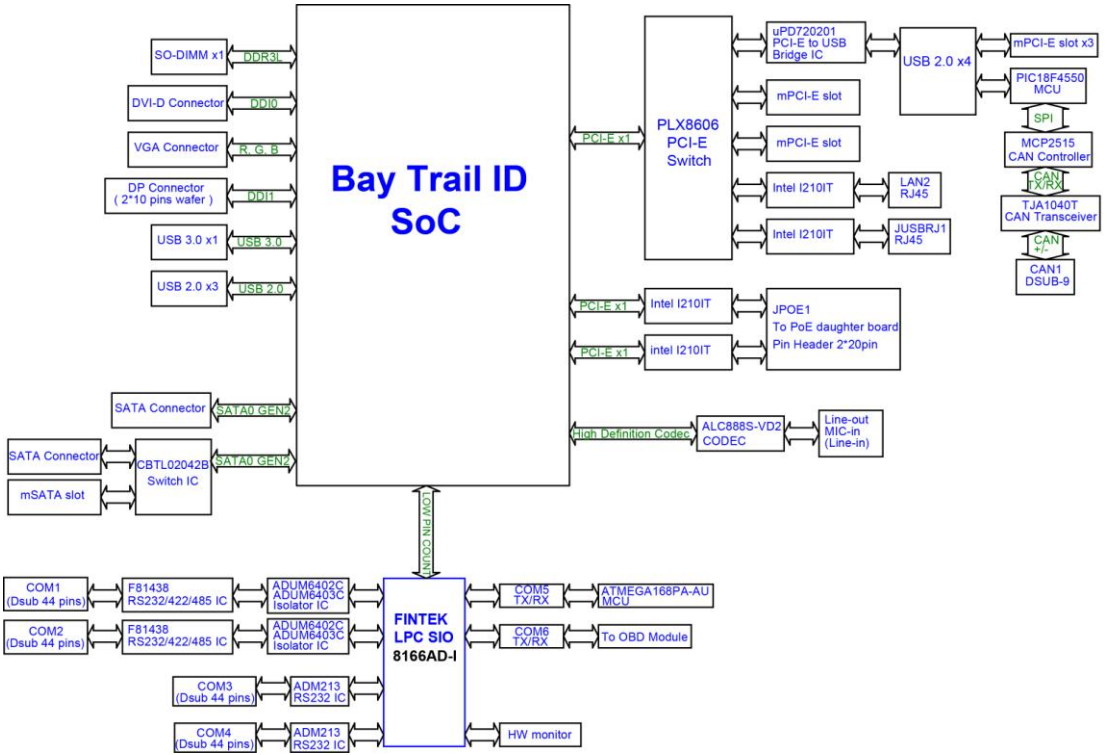| Pos	Q'ty	Part Name	Part No.
1	1	SE-8300_main_module	------
2	1	HDD_module	------

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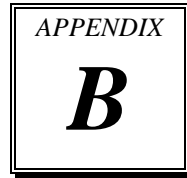
This appendix will give you a brief introduction of the allocation maps for the system resources.

The following topics are included:

- Block Diagram

- Interrupt Map

- DMA Channels Map

- I/O Map

- Watchdog Timer Configuration

- Flash BIOS Update

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 7	Communications Port (COM3)
IRQ 8	High precision event timer
IRQ 10	Communications Port (COM4)
IRQ 10	Intel Atom/Celeron/Pentium Processor Platform Control Unit - SMBus Port - 0F12
IRQ 12	Microsoft PS/2 Mouse
IRQ 16	Intel Atom/Celeron/Pentium Processor PCI Express - Root Port 1 - 0F48
IRQ 17	Intel Atom/Celeron/Pentium Processor PCI Express - Root Port 1 - 0F4A
IRQ 18	Intel Atom/Celeron/Pentium Processor PCI Express - Root Port 1 - 0F4C
IRQ 19	Intel(R) Active Management Technology - SOL (COM7)
IRQ 19	Intel Atom/Celeron/Pentium Processor PCI Express - Root Port 1 - 0F4E
IRQ 81-190	Microsoft ACPI-Compliant System
IRQ	Intel Realtek PCIe GBE Family Controller
IRQ	Intel USB 3.0 eXtensible Host Controller
IRQ	Intel Atom Processor E3800 Series/Intel Celeron Processor N2920/J1900

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

DMA CHANNELS MAP

TIMER CHANNEL	ASSIGNMENT
Channel 4	Direct memory access controller

I/O MAP

I/O MAP	ASSIGNMENT
0x00000000-0x0000006F	PCI bus
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
0x00000070-0x00000077	System CMOS/real time clock
0x00000070-0x00000077	Motherboard resources
0x00000078-0x00000CF7	PCI bus
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

I/O MAP	ASSIGNMENT
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 Atom E3800 Series/Intel Celeron Processor N2920/J1900
0x000003C0-0x000003DF	Intel Atom E3800 Series/Intel Celeron Processor N2920/J1900
0x000003E8-0x000003EF	Communications Port (COM3)
0x000003F8-0x000003FF	Communications Port (COM1)
0x00000400-0x0000047F	Motherboard resources
0x000004D0-0x000004D1	Programmable interrupt controller
0x00000500-0x000005FE	Motherboard resources
0x00000600-0x0000061F	Motherboard resources
0x00000680-0x0000069F	Motherboard resources
0x00000A00-0x00000A0F	Motherboard resources
0x00000A10-0x00000A1F	Motherboard resources
0x00000A20-0x00000A2F	Motherboard resources
0x00000D00-0x0000FFFF	PCI bus
0x0000E000-0x0000EFFF	Intel Atom/Celeron/Pentium PCI Express - Root Port 4 - 0F4E
0x0000E000-0x0000EFFF	Realtek PCIe GBE Family Controller
0x0000F000-0x0000F01F	Intel Atom/Celeron/Pentium Processor Platform Control Unit - SMBus Port - 0F12
0x0000F020-0x0000F03F	Intel Atom/Celeron/Pentium Processor AHCI - 0F23
0x0000F040-0x0000F043	Intel Atom/Celeron/Pentium Processor AHCI - 0F23
0x0000F050-0x0000F057	Intel Atom/Celeron/Pentium Processor AHCI - 0F23
0x0000F060-0x0000F063	Intel Atom/Celeron/Pentium Processor AHCI - 0F23
0x0000F070-0x0000F077	Intel Atom/Celeron/Pentium Processor AHCI - 0F23
0x0000F080-0x0000F087	Intel Atom E3800 Series/Intel Celeron Processor

I/O MAP	ASSIGNMENT
	N2920/J1900

WATCHDOG TIMER CONFIGURATION

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

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

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).

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.

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.

Step by step Example

Enable and start watchdog timer, while set 30 seconds as timeout interval:

Step 1 Enter the extended function mode
```
Mov      dx,      2eh
Mov      al,      87h
Out      dx,      al
Out      dx,      al
```

Step 2 Select Logical Device 7 of watchdog timer
```
Mov      al,      07h
Out      dx,      al
Inc      dx
Mov      al,      07h
Out      dx,      al
```

Step 3 Enable watchdog feature
```
Mov      al,      30h
Out      dx,      al
Inc      dx
Mov      al,      01h
Out      dx,      al
```

Step 4 Enable watchdog PME
```
Dec      dx
Mov      al,      fah
Out      dx,      al
Inc      dx
In       al,      dx
And      al,      51h
Out      dx,      al
```

Step 5 Set seconds as counting unit
```
Dec      dx
Mov      al,      f5h
Out      dx,      al
Inc      dx
In       al,      dx
And      al,      20h
Out      dx,      al
```

Step 6 Set timeout interval as 30 seconds and start counting

```
Dec     dx
Mov     al,     f6h
Out     dx,     al
Inc     dx
Mov     al,     1eh
Out     dx,     al
```

Step 7 Exit the extended function mode

```
Dec     dx
Mov     al,     aah
Out     dx,     al
```

FLASH BIOS UPDATE

Important Notes:
- Downgrading the BIOS to an earlier version is not recommended and may not be supported. An earlier BIOS version may not contain the support for the latest processors, bug fixes, critical security updates, or support the latest board revisions currently being manufactured.
- Before initiating a BIOS update, be sure to read and precisely follow the instructions included in this document. You may wish to print the instructions for easy reference.
- If a BIOS update process is interrupted, your computer may not function properly. We recommend the process be done in an environment with a steady power supply (preferably with UPS).
- If desired, before updating the BIOS manually record all BIOS settings that have been changed (from default) so they can be restored after completing the BIOS update.
- All images and instructions in this example are specific to the SB-8300 product and are for illustration purposes only.

Using a Bootable USB Flash Device
With the afudos (AMI Firmware Update for MS-DOS) 5.07.01 BIOS update utility you can update the BIOS from bootable USB flash drive or other bootable USB media. Using the afudos BIOS update is two-stage process:
    Stage 1:   Prepare the bootable media containing the BIOS update and update utility
    Stage 2:   Update the BIOS on the target computer

Stage 1:   Prepare the bootable media (USB flash device) containing the BIOS update.
1. Download and save the BIOS update BIN file to the bootable USB device with MS-DOS environment.
2. Browse to the same location and copy MS-DOS utility afudos 5.07.01

```
C:\AFUDOS>dir

 Volume in drive C is EFI_DUET
 Volume Serial Number is 32E4-9D1F
 Directory of C:\AFUDOS

.               <DIR>         02-23-15  9:51a
..              <DIR>         02-23-15  9:51a
AFUDOS   EXE     169,120  02-02-15  2:43p
83000PI1 BIN   8,388,608  09-17-15  6:33p
         2 file(s)     4,361,456 bytes
         2 dir(s)   864,940,088 bytes free

C:\AFUDOS>
```
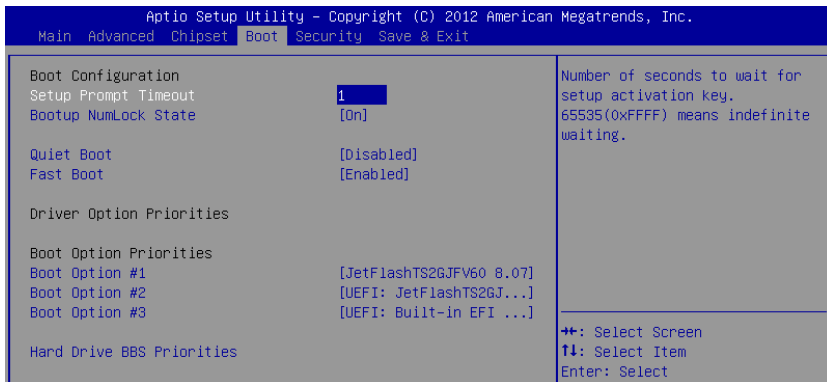
All required files for the BIOS update is shown as in Figure 1

Stage 2: Update the BIOS on the target computer.
1. Configure the BIOS on target computer (USB device plugged in) to boot to the USB flash device:
    a. Turn on the computer and press <F2> or <Del> key during boot to enter BIOS Settings.
    b. Go to the *Boot* section.
    c. In *Boot Option Priorities* menu, set the USB flash device to be the first boot device.
    d. Go to the *Advanced* section
    e. In *Miscellaneous Configuration* menu, make sure 'Windows 7' option is selected.
    f. Press <F4> key to save configuration and exit the BIOS Settings.

```
            Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
       Main  Advanced  Chipset  Boot  Security  Save & Exit

     Boot Configuration                                   Number of seconds to wait for
     Setup Prompt Timeout              1                  setup activation key.
     Bootup NumLock State              [On]               65535(0xFFFF) means indefinite
                                                          waiting.
     Quiet Boot                        [Disabled]
     Fast Boot                         [Enabled]

     Driver Option Priorities

     Boot Option Priorities
     Boot Option #1                    [JetFlashTS2GJFV60 8.07]
     Boot Option #2                    [UEFI: JetFlashTS2GJ...]
     Boot Option #3                    [UEFI: Built-in EFI ...]
                                                          →←: Select Screen
     Hard Drive BBS Priorities                            ↑↓: Select Item
                                                          Enter: Select
```

BIOS option to boot from the USB device illustrated as in Figure 2

2. Boot the target computer with the USB flash device connected.
3. At the prompt, type: `afudos 83000PIx.bin /b /p /n /x` where 83000PIx.bin is the filename of intended ROM file (in this example 83000PI1.bin), to launch BIOS update process.
4. During the update you will see the BIOS update process status. **Beware! Do not power down or reset your computer** before the update is complete! The whole update process may take up to 3 minutes.

```
C:\AFUDOS>afudos 83000PI1.bin /b /p /n /x
 +----------------------------------------------------------------+
 |              AMI Firmware Update Utility v5.07.01               |
 |    Copyright (C)2014 American Megatrends Inc. All Rights Reserved. |
 +----------------------------------------------------------------+
  Reading flash .............. done
  - ME Data Size checking . ok
  - FFS checksums ......... ok
  Erasing Boot Block .......... done
  Updating Boot Block ........ done
  Verifying Boot Block ........ done
  Erasing Main Block .......... done
  Updating Main Block ........ 0x0006E600 (8%)
```

Update in progress shown as in Figure 3

5. Successful BIOS flash is confirmed by messages: ... done for all the items.

```
C:\AFUDOS>afudos 83000PI1.bin /b /p /n /x
 +----------------------------------------------------------------+
 |              AMI Firmware Update Utility v5.07.01               |
 |    Copyright (C)2014 American Megatrends Inc. All Rights Reserved. |
 +----------------------------------------------------------------+
  Reading flash .............. done
  - ME Data Size checking . ok
  - FFS checksums ......... ok
  Erasing Boot Block .......... done
  Updating Boot Block ........ done
  Verifying Boot Block ........ done
  Erasing Main Block .......... done
  Updating Main Block ........ done
  Verifying Main Block ........ done
  Erasing NVRAM Block ........ done
  Updating NVRAM Block ........ done
  Verifying NVRAM Block ....... done

C:\AFUDOS>
```

Already finished BIOS update process is displayed as in Figure 4

6. BIOS Update is completed after the system is restarted.
7. To verify if the BIOS Update is successful, check it during following boot that the

BIOS version displayed at initialization screen has changed or enter BIOS Settings and look for the version number in the *Main* section.

New BIOS version displayed during boot is shown as in Figure 5