



AXIOMTEK

OPS300-310 Series

Intel Open Pluggable Specification Box

User's Manual



Disclaimers

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Safety Approvals

- ◆ CE Marking
- ◆ FCC Class A

◆ FCC Compliance

This equipment has been tested in compliance with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are meant to provide reasonable protection against harmful interference in a residential installation. If not installed and used in accordance with proper instructions, this equipment might generate or radiate radio frequency energy and cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following methods:

- A. Increase the separation between the equipment and receiver.
- B. Connect the equipment to another outlet of a circuit that does not connect with the receiver.
- C. Consult the dealer or an experienced radio/TV technician for help.

Shielded interface cables must be used in order to comply with the emission limits.

Safety Precautions

Before getting started, please read the following important safety precautions.

1. The OPS300-310 series does not come equipped with an operating system. An operating system must be loaded first before installing any software into the computer.
2. Be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and place all electronic components in any static-shielded devices. Most electronic components are sensitive to static electrical charge.
3. Disconnect the power cord from the OPS300-310 series before any installation. Be sure both the system and external devices turned OFF already. Make sure the OPS300-310 series set to ground properly.
4. The brightness of the flat panel display will be getting weaker as frequently used. However, the operating period varies depending on the application environment.
5. The flat panel display is not susceptible to shock or vibration. When assembling the OPS300-310 series, make sure to install it securely.
6. Do not leave this equipment in an uncontrolled environment where the storage temperature is below 0°C or above 45°C. It may damage the equipment.
7. External equipment intended for connection to signal input/out or other connectors shall comply with relevant UL/IEC standard.
8. Do not open the back cover of the system. If opening the cover for maintenance is necessary, only allow technicians to implement it. Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:
9. Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help to discharge any static electricity on your body.
10. Please wear a wrist-grounding strap if you handling boards and electronic components.

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Table of Contents

Disclaimers.....	ii
Safety Approvals.....	iii
Safety Precautions.....	iv
CHAPTER 1 INTRODUCTION	1
1.1 General Description	1
1.2 System Specifications	2
1.2.1 Main CPU Board.....	2
1.2.2 I/O System	2
1.3 Mechanical Assembly.....	4
1.3.1 Dimensions.....	4
1.3.2 I/O outlet	5
1.3.3 Mechanical Specifications	6
1.3.4 Reference Design	11
1.4 Package List.....	12
CHAPTER 2 HARDWARE INSTALLATION.....	13
2.1 Storage, DRAM, mPCIe or M.2 module Installations	13
2.1.1 DDR3L SO-DIMM DRAM Installation	13
2.1.2 2.5" HDD/ SSD Instllation.....	15
2.1.3 Mini PCIe & M.2 Module Installation	16
2.2 Pluggable Module Method.....	18
CHAPTER 3 CONNECTORS	19
3.1 Connectors.....	19
3.1.1 JAE TX25A Connector (CN1).....	21
3.1.2 Power & Reset Button (CN4)	22

3.1.3	Audio MIC-IN Connector (SCN4)	22
3.1.4	Audio Line-Out Connector (SCN5)	22
3.1.5	Battery 2 PIN (BAT1)	22
3.1.6	Mini Card Slot (SCN3)	23
3.1.7	SIM Card Slots (SCN1)	24
3.1.8	USB 3.0 Port (SCN6)	24
3.1.9	USB 2.0 Port (SCN7 / SCN8)	24
3.1.10	SATA & SATA Power Connector (SATA1)	25
3.1.11	RJ45 (RTL8111E) (LAN1)	26
3.1.12	VGA Connector(VGA1)	26
3.1.13	SW2 Setting	26
3.1.14	M.2 Connector (SCN2)	27
CHAPTER 4 AMI BIOS SETUP UTILITY		29
4.1	Starting	29
4.2	Navigation Keys	29
4.3	Main Menu	30
4.4	Advanced Menu	31
4.5	Chipset Menu	40
4.6	Boot Menu	42
4.7	Security Menu	43
4.8	Save & Exit Menu	44
APPENDIX A WATCHDOG TIMER		47

CHAPTER 1

INTRODUCTION

This chapter contains general information and detailed specifications of the OPS300-310 series. Chapter 1 includes the following sections:

- **General Description**
- **Specification**
- **Mechanical Assembly**
- **Package List**

1.1 General Description

Intel Open Pluggable Specification (OPS) Compliance

OPS300-310 series is based on the Intel® Atom™ Apollo Lake SoC onboard platform and it also future products. The Pluggable Module is dedicated to provide an interchangeable solution to the digital signage media players with compatible connector. This document provides the module form factor, connector specification, reference thermal solution, and boundary conditions in order to ensure the functionality of the module in all compatible display panel system.

OPS300-310 series meets Intel Open Pluggable Specification for design and development, simplifying system upgrade maintenance for manufacturers and developers that supports Intel® Atom™ Apollo Lake SoC family with fanless design, which stand for high flexible and user-friendly digital signage applications.

Easy maintenance

OPS300-310 series offers a best solution for digital signage market. Compliant with Intel OPS architecture, digital signage players are capable of deploying interchangeable systems faster and easing upgrading/maintenance, while lowering costs for development and implementation. Additionally, having the ability to simply slot-in and out the unique pluggable engine box makes daily hassle easier and faster for users.

OPS300-310 series has pluggable engine box design; you can change storage, DRAM and update configurations more easily

1.2 System Specifications

1.2.1 Main CPU Board

- **CPU**
 - Intel® Celeron® Dual-Core Processor N3350, up to 2.4GHz
 - CPU TDP 6W
- **System Chipset**
 - SoC
- **BIOS**
 - American Megatrends Inc. UEFI (Unified Extensible Firmware Interface).
- **System Memory**
 - One 204-pin DDR3L1866MHz SO-DIMM, maximum up to 8GB
- **TPM Function**
 - TPM 2.0 supported
- **Wireless Module (Optional)**
 - Optional Wi-Fi, 3G or LTE kits

1.2.2 I/O System

- **Front I/O**
 - One VGA
 - One RJ45 GbE LAN (RTL8111E)
 - Two USB ports 2.0
 - One USB port 3.0
 - One Power On/Off button
 - One Reset button
 - Two LED Indicators (PWR & HDD Active LED)
 - Mic-in & Line-out port
- **Rear I/O**
 - One 80Pin JAE TX25A
 - One HDMI 2.0 (Up to 3840 x 2160@60Hz)
 - One DP 1.2 (Up to 3840 x 2160@60Hz)
 - One USB 3.0
 - Two USB 2.0
 - One UART (TX/RX)
 - One Audio out L/R
 - DC input +12V~+19V
 - Control signals (PWR_STATUS, PS_ON#, PB_DET, SYS_FAN)

- **Ethernet**
 - 10/100/1000Mbps Ethernet (RJ45 with Realtek® RTL8111E)
- **Audio**
 - Line-out/ Mic-in by phone jack
- **Expansion**
 - One Full-size PCI Express Mini card (USB+PCIe+SATA signals supported)
 - One M.2 2230 E-Key (USB+PCIe signal supported)
- **Storage**
 - One 2.5" SATA HDD tray
 - mSATA option by full-size PCI Express Mini card
- **Antenna opening**
 - Two Antenna opening in the front I/O side
- **Net Weight**
 - 0.9Kg(1.99 lb) without cooler
- **Dimension (Main Body Size)**
 - 200 mm x 119 mm(D) x 30 mm(H)
- **Operation Temperature**
 - 0°C to 45°C (with airflow 1.2 m/s)
- **Power Input**
 - 12V~19VDC



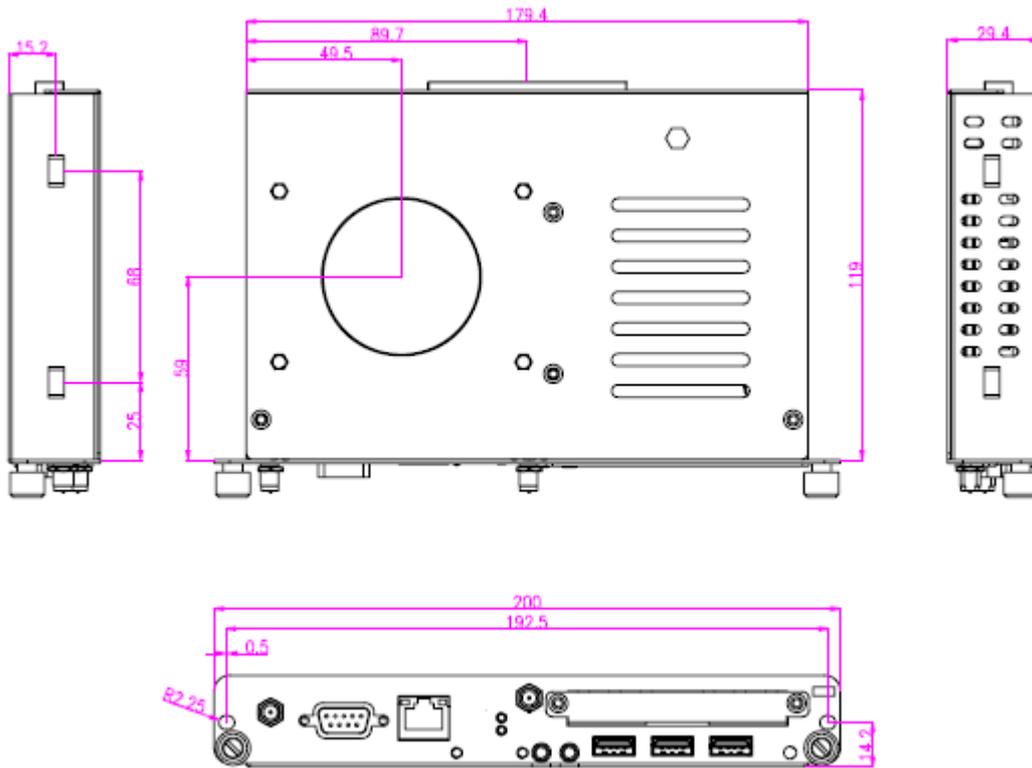
NOTE: All specifications and images are subject to change without notice.

1.3 Mechanical Assembly

1.3.1 Dimensions

This diagram shows you dimensions and outlines of the OPS300-310 series

The overall dimension of the module including the mounting frame is 200mm x 119mm x 30mm, and it shows the location of the screw holes of front panel as well as the security lock.

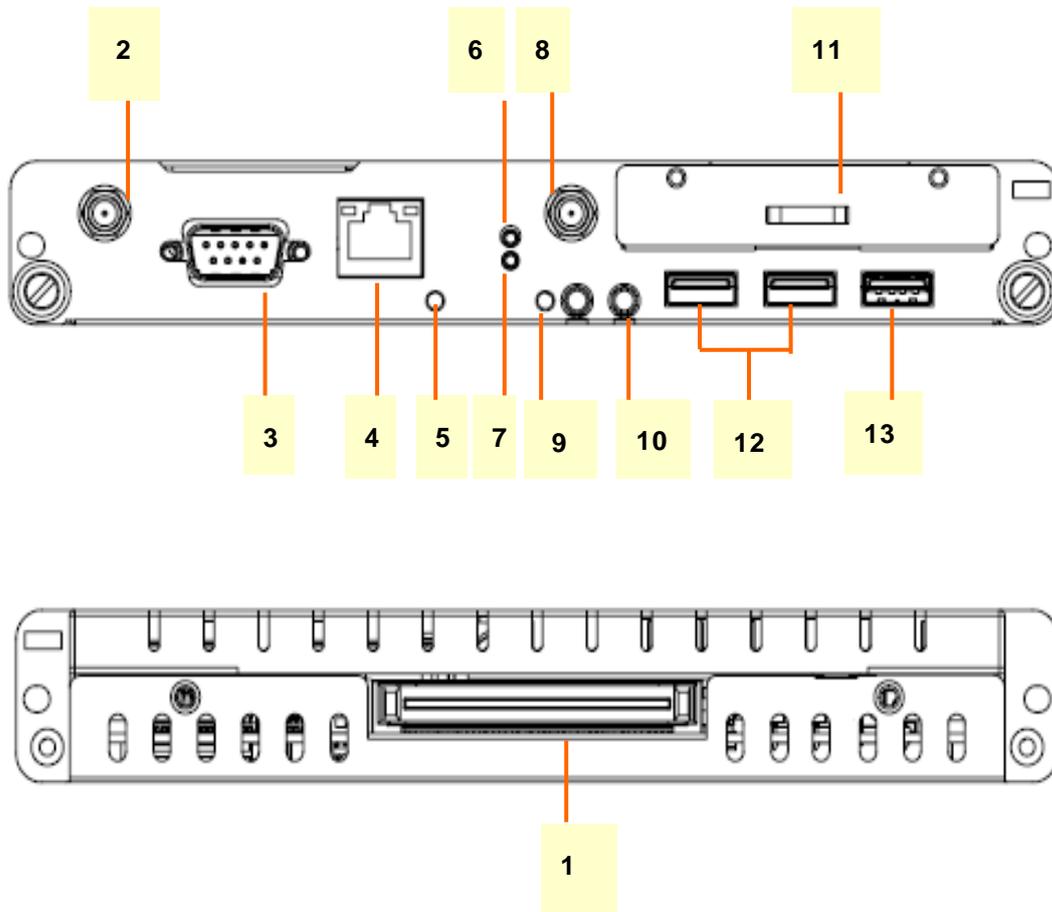


※While plugging the OPS module, please make sure the heat sink side of OPS module toward the outside. Axiomtek will be out of reasonability if there is any damage occurred due to it.



1.3.2 I/O outlet

The following figures show you the locations of the OPS300-310 series I/O outlets.



No.	Connector	No.	Connector
1	JAE TXA-25	2	Antenna opening
3	VGA	4	Ethernet
5	Power Indicator	6	Power Switch
7	Reset	8	Antenna opening
9	HDD Indicator	10	Audio(Mic-in & Line-out)
11	2.5" SATA HDD tray	12	2 x USB 2.0
13	1 x USB 3.0		

1.3.3 Mechanical Specifications

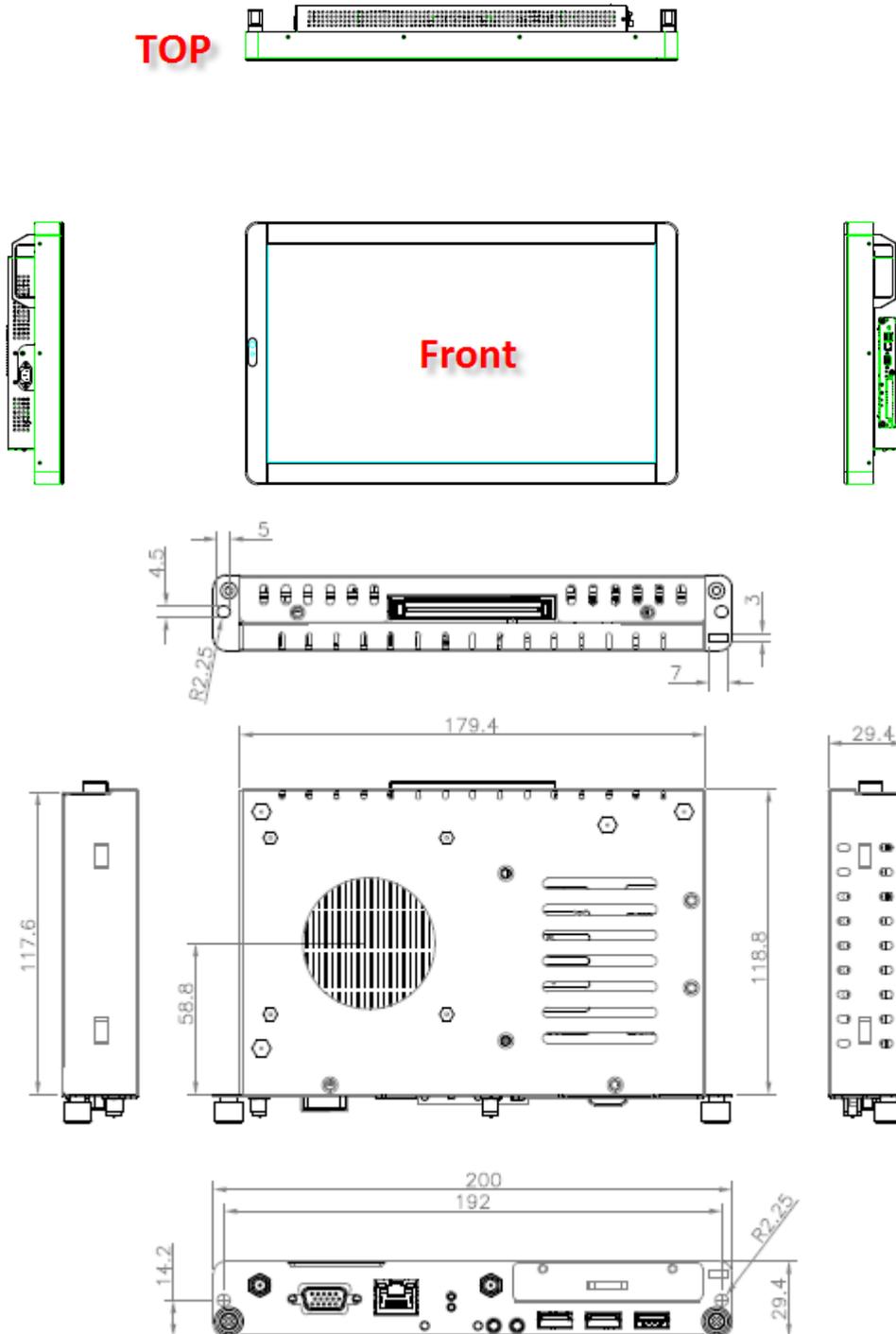
OPS300-310 series is docked in the reference display panel

The OPS300-310 Pluggable Module docked at a display panel system.

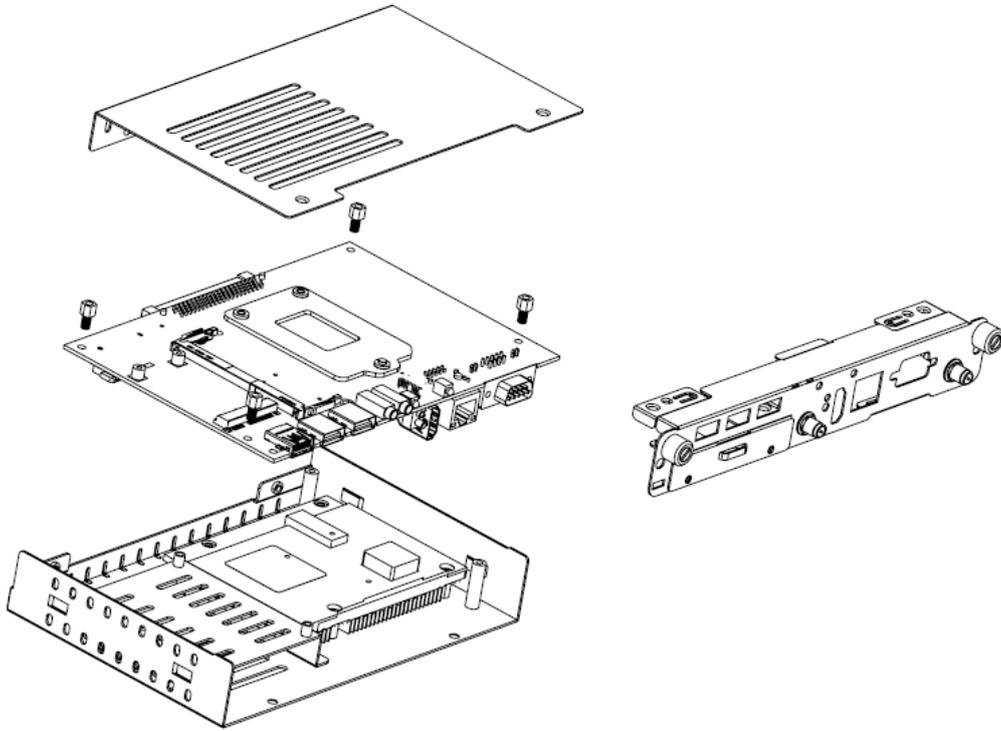
In this reference design, the module is docked and undocked in the vertical direction.



NOTE: Please contact Axiomtek for available option display panel.

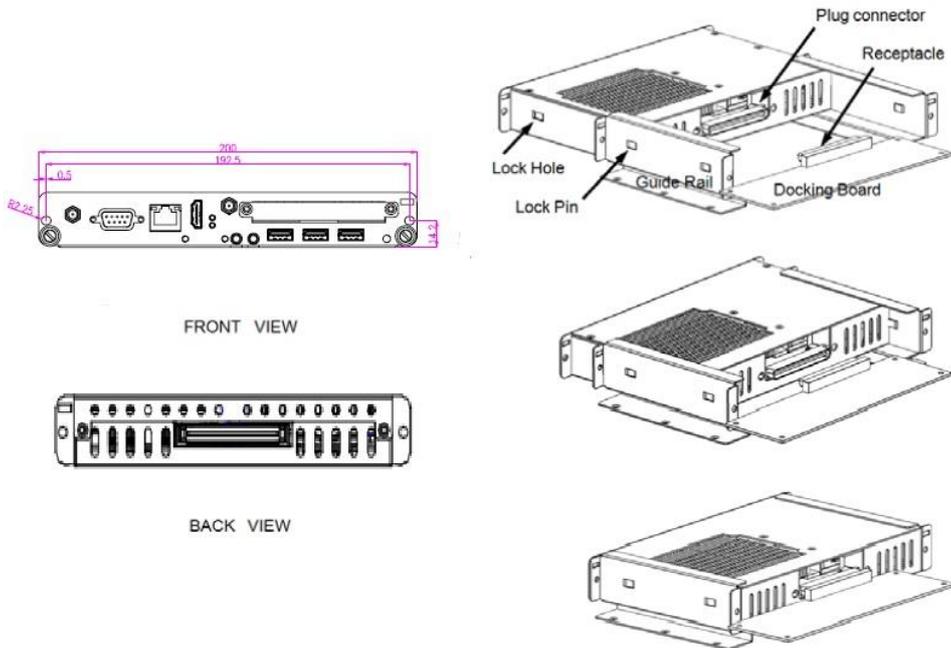


Exploded View of the Pluggable Module

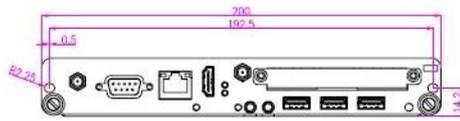


The Guide Rail Mechanism for the OPS300-310 series Module

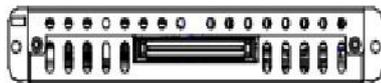
You can use the rails alongside of OPS300-310 series Module to dock and undock the plug connector at the back of the module to connect with docking board. There are two lock pins on each side of the rail, and they serve as the locking mechanism to attach the lock holes on the series module.



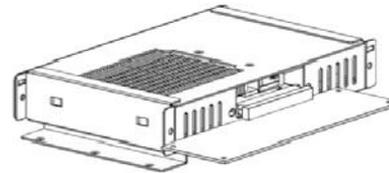
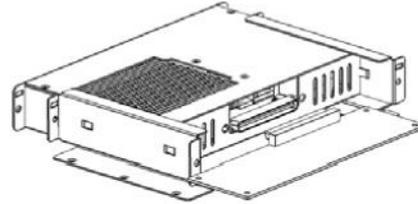
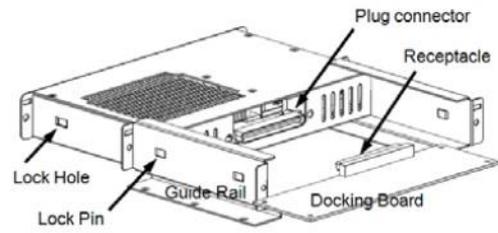
Location of Lock Hole on the Pluggable Module



FRONT VIEW

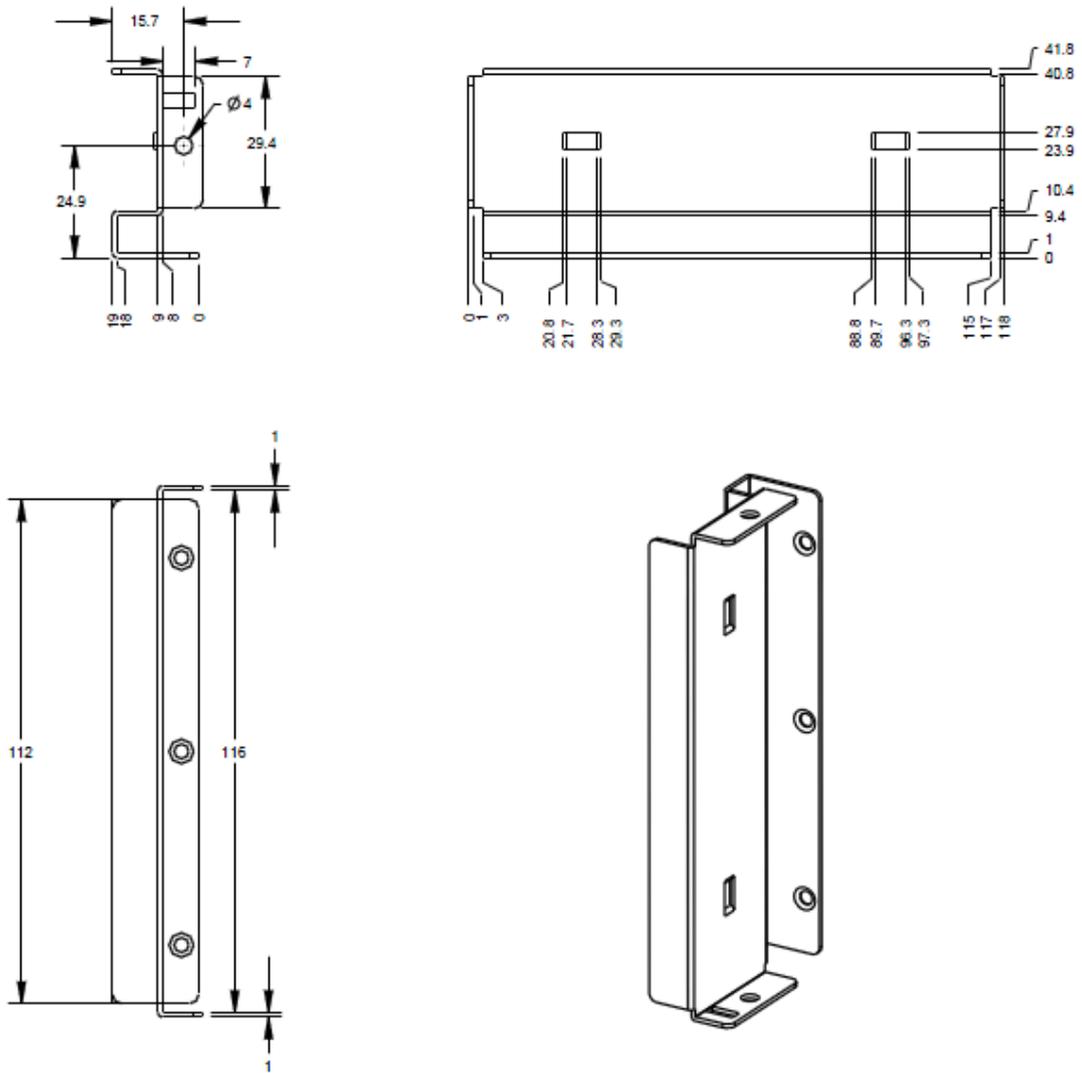


BACK VIEW



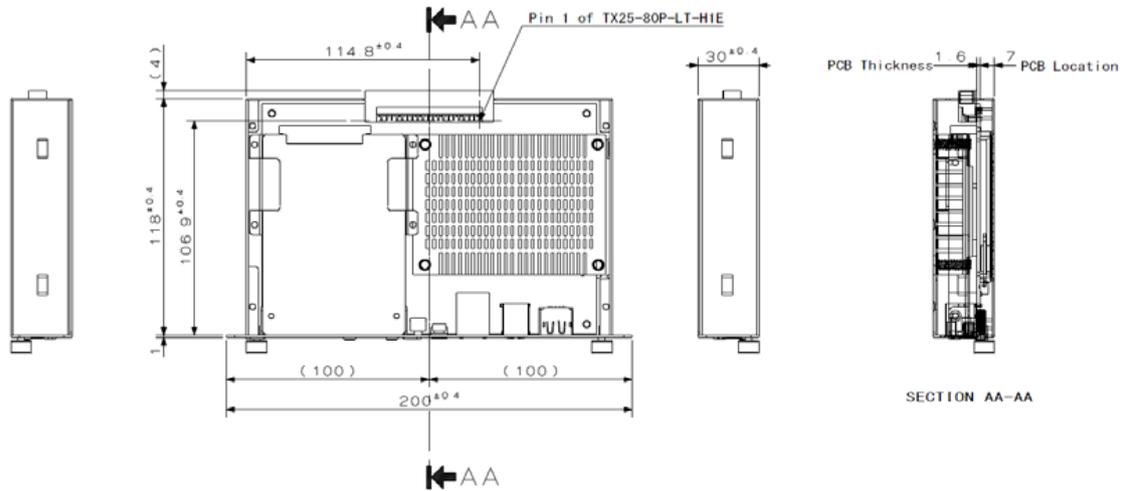
*The drawing is base on Intel Open Pluggable Specification

Dimensions of the Guide Rail



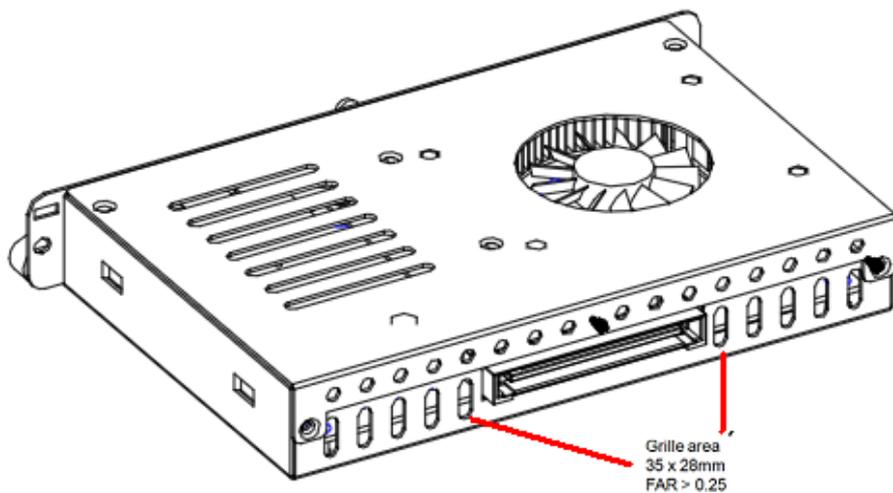
Location of JAE TX25A Plug Connector

Please refer to the following drawing for location of the JAE TX25A plug connector. Pin 1 of the connector is located at 114.8 mm from the edge of the module, and 106.9 mm from the inner side of the front panel. For mating tolerance of TX25A plug connector and TX24A receptacle connector, please refer to the JAE improved connector specification



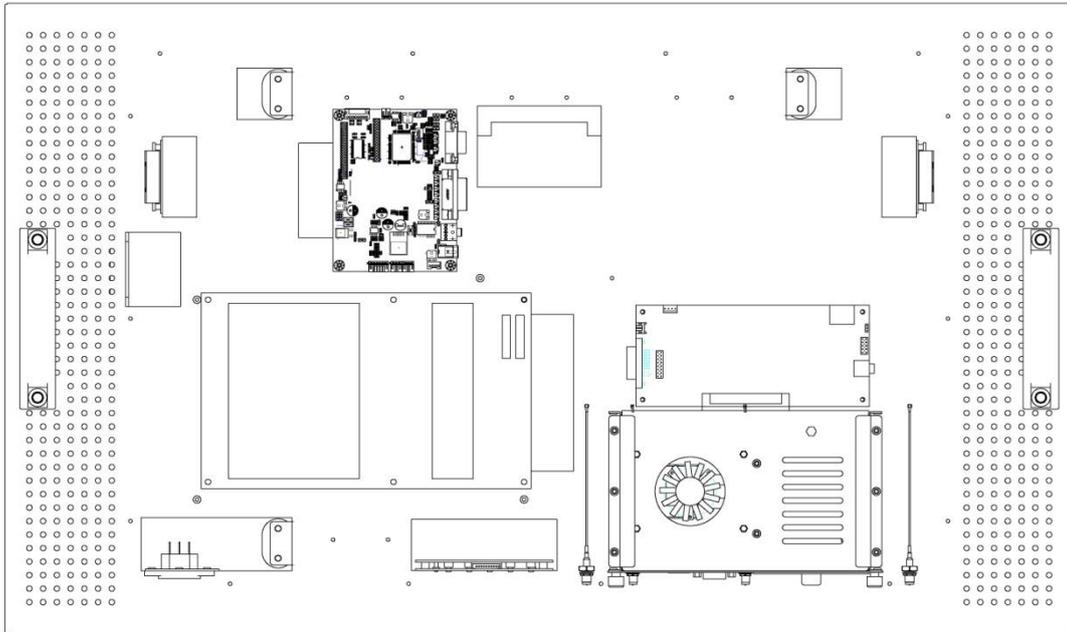
Vent Holes at the Pluggable Module Back Panel

On the OPS300-310 series module, it is recommended by Intel that some vent holes be opened at the back so that hot air can escape more easily from the module that the FAR in on both sides of the module back panel should be greater than 0.25.



1.3.4 Reference Design

Display Panel Rear View – Internal



The digital signage OPS300-310 series prototype is based on a OPS compliance display panel with the functional blocks illustrated. It is mainly a 3-board partitioning design consisting of the pluggable module, docking board and the panel control board.

1.4 Package List

When you receive the OPS300-310 series, the bundled package should contain the following items:

- **OPS300-310 x 1**
- **Driver CD x 1**
- **M2 x 3 screw x 1**
- **M3 x 4 screw x 1**
- **M4 x 6 screw x 2**

If you cannot find the package or any items are missing, please contact Axiomtek distributors immediately.

CHAPTER 2 HARDWARE INSTALLATION

The OPS300-310 series is convenient for your various hardware configurations, such as Storage, Memory Module.

The chapter 2 will show you how to install the hardware. It includes:

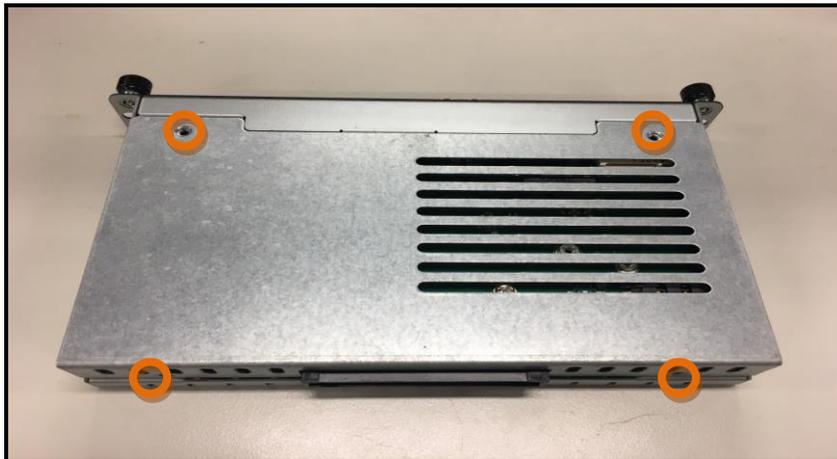
- **HDD, DRAM, mPCIe or M.2 module Installation**
- **Pluggable Module Method**

2.1 Storage, DRAM, mPCIe or M.2 module Installations

The OPS300-310 series model offers a convenient drive bay module for users to install 2.5" HDD/SSD Storage, DDR3L SO-DIMM DRAM, wireless modules. Please follow the steps:

2.1.1 DDR3L SO-DIMM DRAM Installation

Step 1 Loosen the screws on the rear of chassis as illustrated.



Step 2 After losing the screws, extract the rear of chassis out of the module.



Step 3 Place the memory module into the socket and press it firmly. The socket latches are levered upwards and clipped on to the edges of the SO-DIMM.



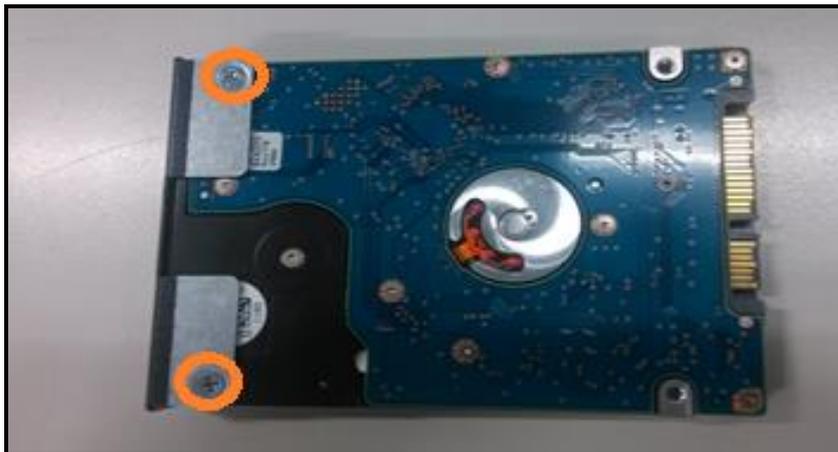
2.1.2 2.5" HDD/ SSD Instllation

The OPS300-310 series provides one 2.5" SATA HDD tray to install 2.5" HDD/SSD. When please refer to the following instructions and illustration.

Step 1 Loosen the screws per illustrated.



Step 2 Please refer to the below photo to connect the 2.5" HDD/SSD with HDD's bracket for assembly.



Step 3 Then plug HDD drive into the HDD slot.



Step 4 Finally, fasten two screws on HDD cover firmly to complete installation.



2.1.3 Mini PCIe & M.2 Module Installation

The OPS300-310 series provides one Mini card slot and one M.2 E key 2230 for user to install modules, please refer to the following instructions and illustration.

Step 1 Loosen the screws per illustrated.



Step 2 After losing the screws, extract the real of chassis out of the module carefully.



Step 3 Please find the position of Mini PCIe & M.2 connectors on the bottom side of OPS.



Step 4 Please insert the mPCIe module then fasten M2X3 screw carefully.

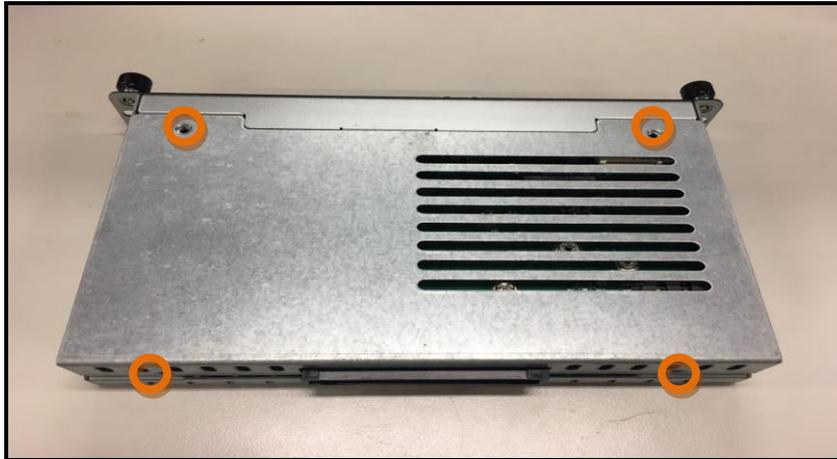


Step 5 Or insert the M.2 module then fasten M4X3 screw carefully.



Please notice that SCN1 is one SIM slot socket and suitable to let users insert SIM card for 3G/LTE communication through mPCIe connector.

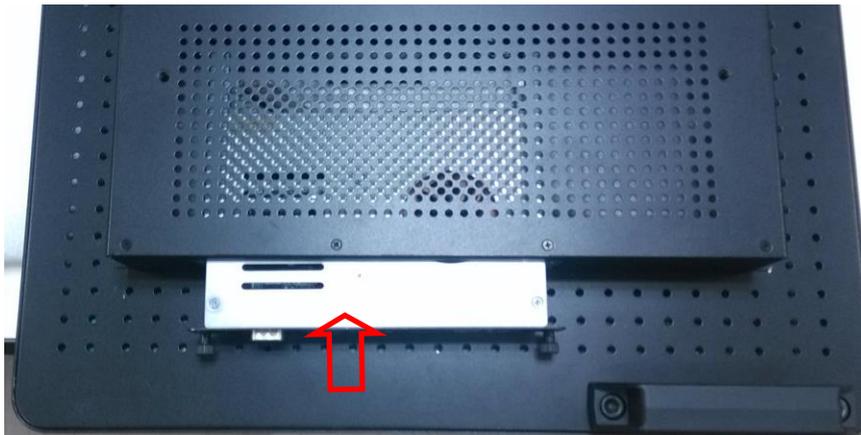
Step 6 Fasten all of screws to complete installation.



2.2 Pluggable Module Method



NOTE: Please contact Axiomtek for the available option display



Step 1 Pluggable the box into display.

Caution:

When plugging OPS300-310 series module into an OPS display, make sure the module's heat sink is facing outside of the display. Axiomtek is not responsible for any damage caused by wrong installation.

Step 2 Fasten the screws as illustrated.



CHAPTER 3 CONNECTORS

This chapter provides users with detailed description how to set up basic system configuration through the AMIBIOS8 BIOS setup utility.

3.1 Connectors

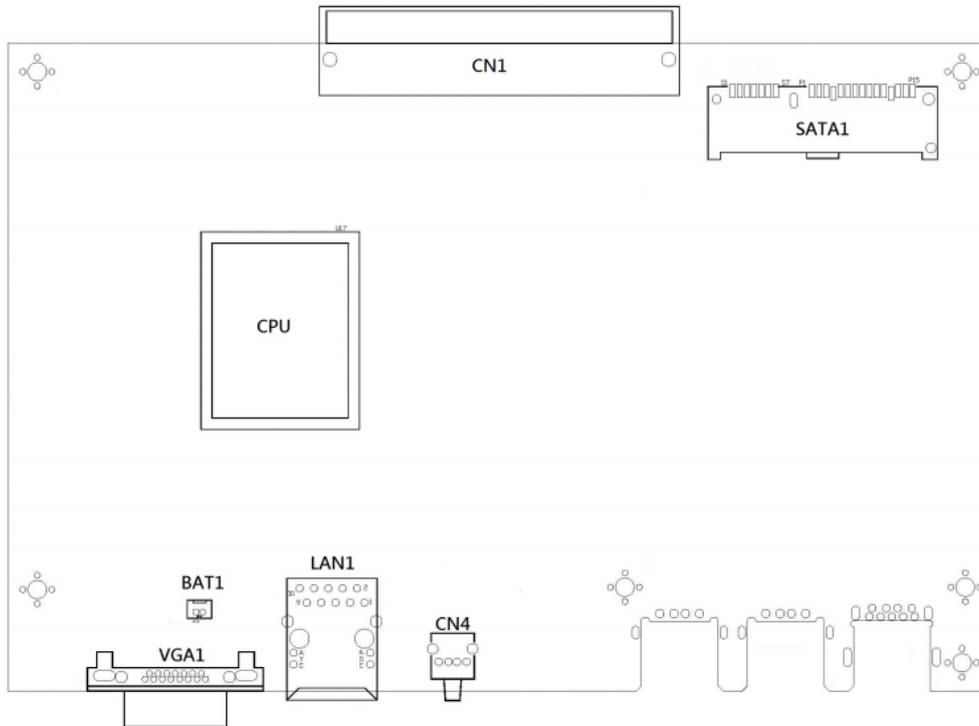
Connectors connect this board with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly connected.

Here is a summary table shows you all connectors on the board.

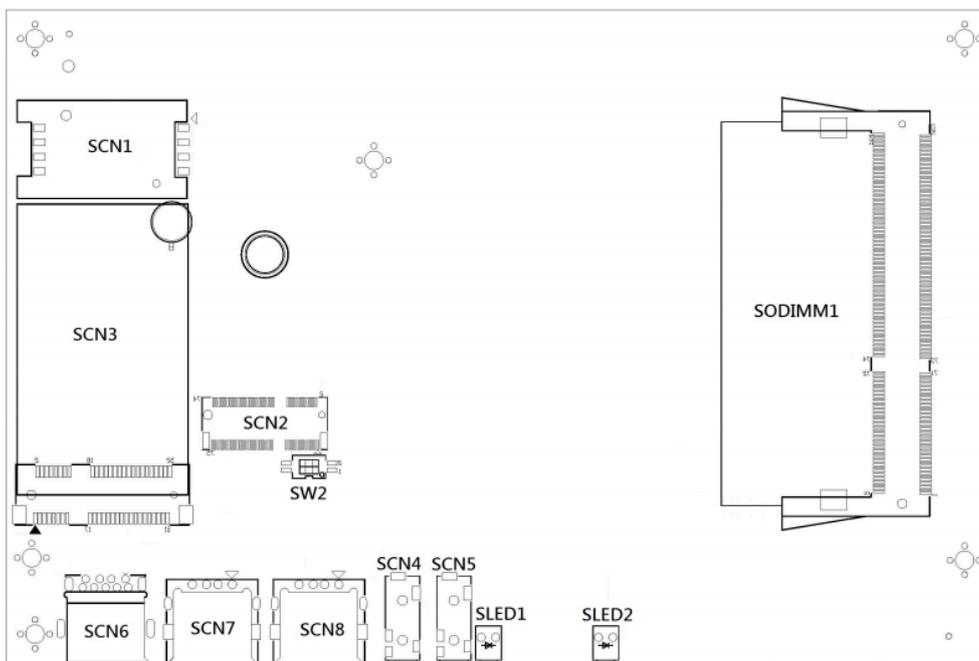
Connector	Label
JAE TX25A Connector	CN1
VGA Connector	VGA1
Power & Reset Button	CN4
Audio MIC-IN Connector	SCN4
Audio LINE-OUT Connector	SCN5
RTC Battery Connector	BAT1
Full-size Mini PCIe (mSATA supported)	SCN3
SIM Connector	SCN1
USB3.0 Port	SCN6
USB2.0 Port	SCN7 / SCN8
M.2 Connector	SCN2
SATA Connector(5V Only)	SATA1
RJ45 (RTL8111E)	LAN1
POWER LED	SLED2
HDD LED	SLED1
DDR3L SO-DIMM Connector	SODIMM1
AT/ATX Mode	SW2
CMOS Clear	

Board Layout

Top side



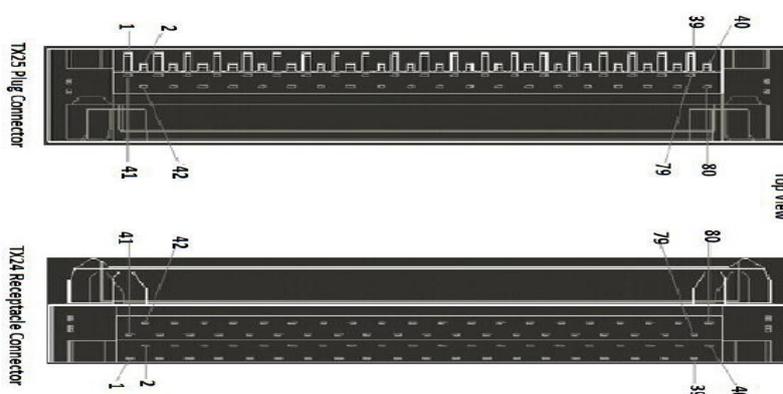
Bottom side



3.1.1 JAE TX25A Connector (CN1)

Connector JAE TX25A CN1 is for JAE improved interface supported.

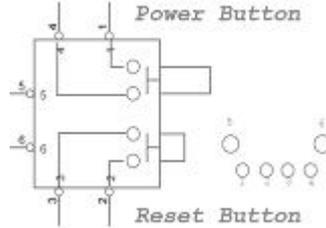
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	DDP_3N	2	DDP_3P	3	GND	4	DDP_2N
5	DDP_2P	6	GND	7	DDP_1N	8	DDP_1P
9	GND	10	DDP_0N	11	DDP_0P	12	GND
13	DDP_AUXN	14	DDP_AUXP	15	DDP_HPDP	16	GND
17	TMDS_CLK-	18	TMDS_CLK+	19	GND	20	TMDS0-
21	TMDS0+	22	GND	23	TMDS1-	24	TMDS1+
25	GND	26	TMDS2-	27	TMDS2+	28	GND
29	DDC_DATA	30	DDC_CLK	31	HDMI_HPDP	32	GND
33	+12V~+19V	34	+12V~+19V	35	+12V~+19V	36	+12V~+19V
37	+12V~+19V	38	+12V~+19V	39	+12V~+19V	40	+12V~+19V
41	RSVD	42	RSVD	43	RSVD	44	RSVD
45	RSVD	46	RSVD	47	RSVD	48	RSVD
49	RSVD	50	SYS_FAN	51	UART_RXD	52	UART_TXD
53	GND	54	StdA_SSRX-	55	StdA_SSRX+	56	GND
57	StdA_SSTX-	58	StdA_SSTX+	59	GND	60	USB_PN2
61	USB_PP2	62	GND	63	USB_PN1	64	USB_PP1
65	GND	66	USB_PN0	67	USB_PP0	68	GND
69	AZ_LINEOUT_L	70	AZ_LINEOUT_R	71	NC	72	PB_DET
73	PS_ON#	74	PWR_STATUS	75	GND	76	GND
77	GND	78	GND	79	GND	80	GND



3.1.2 Power & Reset Button (CN4)

The CN7 is one reset button that reboots your computer instead of turning OFF the power switch. It is a better way to reboot your system for a longer life of the system's power supply.

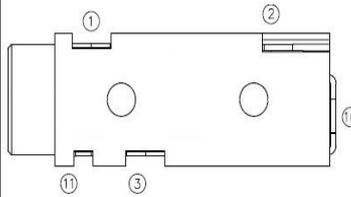
Pin	Signal
1	GND
2	GND
3	RST_BTN
4	PWR_BTN
5	GND
6	GND



3.1.3 Audio MIC-IN Connector (SCN4)

The MIC-IN audio jack is applying for Audio Mic-In usage.

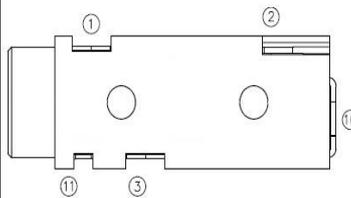
Pin	Signal
1	GND
2	MIC_IN_L
3	MIC_IN_R
10	MIC_DETECT
11	GND



3.1.4 Audio Line-Out Connector (SCN5)

The Line-Out audio jack is applying for Audio Line-Out usage.

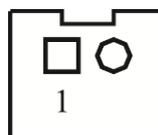
Pin	Signal
1	GND
2	LINE_OUT_L
3	LINE_OUT_R
10	LINE_OUT_DETECT
11	GND



3.1.5 Battery 2 PIN (BAT1)

The two pin power connector is supplying the power for battery.

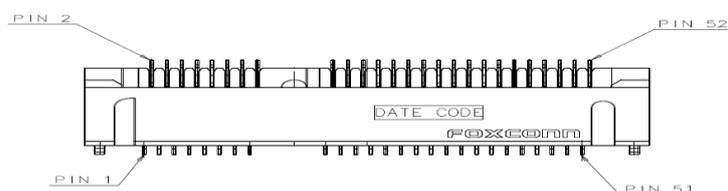
Pin	Signal
1	+VBAT
2	GND



3.1.6 Mini Card Slot (SCN3)

SCN3 is applying for PCI-Express and SATA (mSATA) signals and complies with PCI-Express Mini Card Spec. V1.2. Thus, users can install mSATA cards into this slot. Please refer to the SATA of BIOS setting to enable or disable mSATA supported.

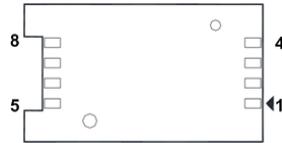
Pin	Signal	Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3VAUX	3	RSVD
4	GND	5	RSVD	6	+1.5V
7	CLKREQ#	8	RSVD	9	GND
10	RSVD	11	REFCLK-	12	RSVD
13	REFCLK+	14	RSVD	15	GND
16	RSVD	17	RSVD	18	GND
19	RSVD	20	+3.3VAUX	21	GND
22	PERST#	23	PE_RXN/mSATA	24	+3.3VAUX
25	PE_RXP/mSATA	26	GND	27	GND
28	+1.5V	29	GND	30	SMB_CLK
31	PE_TXN/mSATA	32	SMB_DATA	33	PE_TXP/mSATA
34	GND	35	GND	36	USB_D-
37	RVD5	38	USB_D+	39	+3.3VAUX
40	GND	41	+3.3VAUX	42	RSVD
43	GND	44	RSVD	45	RSVD
46	RSVD	47	RSVD	48	+1.5V
49	RSVD	50	GND	51	RSVD
52	+3.3VAUX	53	NH1	54	NH2
55	NH3	56	NH4		



3.1.7 SIM Card Slots (SCN1)

The OPS300-310 includes one SIM slots (SCN1) on the bottom side of the system for inserting SIM Card. It is mainly used in 3G/LTE wireless network application on SCN3.

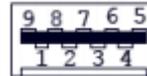
Pins	Signals
1	PWR
2	RST
3	CLK
4	NC
5	GND
6	VPP
7	I/O
8	NC



3.1.8 USB 3.0 Port (SCN6)

The Universal Serial Bus connectors are compliant with USB 3.0 (5Gb/s), and ideally for installing USB peripherals such as keyboard, mouse, scanner, etc.

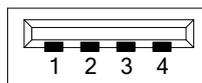
Pin	Signal
1	USB3_POWER
2	USB D0-
3	USB D0+
4	GND
5	USB3_SSRX0-
6	USB3_SSRX0+
7	GND
8	USB3_SSTX0-
9	USB3_SSTX0+



3.1.9 USB 2.0 Port (SCN7 / SCN8)

The Universal Serial Bus connectors are compliant with USB 2.0 (480Mbps), and ideally for installing USB peripherals such as keyboard, mouse, scanner, etc.

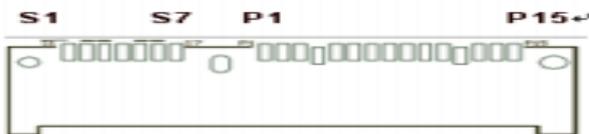
Pin	Signal
1	USB_POWER
2	USB D0-
3	USB D0+
4	GND



3.1.10 SATA & SATA Power Connector (SATA1)

The Serial Advanced Technology Attachment (Serial ATA or SATA) connector supports high-speed SATA with power supply for 2.5" HDD/SSD by one 22pin connector. This SATA 3.0 port with 6Gb/s performance for storage usage.

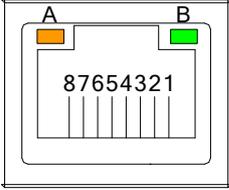
Pin	Signal	Pin	Signal
S1	GND	P1	+3.3V
S2	SATA0_TX+	P2	+3.3V
S3	SATA0_TX-	P3	+3.3V
S4	GND	P4	GND
S5	SATA0_RX-	P5	GND
S6	SATA0_RX+	P6	GND
S7	GND	P7	+5V
		P8	+5V
		P9	+5V
		P10	GND
		P11	GND
		P12	GND
		P13	NC
		P14	NC
		P15	NC



3.1.11 RJ45 (RTL8111E) (LAN1)

The RJ-45 connector LAN1 is for Ethernet. To connect the board to 100-Base-T or 1000-Base-T hub, just plug one end of the cable into LAN1 and connect the other end (phone jack) to a 100-Base-T hub or 1000-Base-T hub.

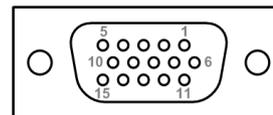
Pin	Signal
1	Tx+ (Data transmission positive)
2	Tx- (Data transmission negative)
3	Rx+(Data reception positive)
4	RJ-1(For 1000 base T-Only)
5	RJ-1(For 1000 base T-Only)
6	Rx- (Data reception negative)
7	RJ-1(For 1000 base T-Only)
8	RJ-1(For 1000 base T-Only)
A	Active LED
B	Speed LED



3.1.12 VGA Connector(VGA1)

The VGA1 is a 15-pin D-Sub connector which is commonly used for CRT monitor.

Pin	Signal	Pin	Signal
1	Red	2	Green
3	Blue	4	N.C.
5	GND	6	DETECT
7	GND	8	GND
9	VCC	10	GND
11	N.C.	12	DDC DATA
13	Horizontal Sync	14	Vertical Sync
15	DDC CLK		



3.1.13 SW2 Setting

ATX/AT mode and CMOS clear setting can be set through SW2.

Pin	Description	ON	OFF (Default)
1	AT / ATX Mode	AT	ATX
2	CMOS Clear	Clear CMOS	Normal



3.1.14 M.2 Connector (SCN2)

SCN2 for PCI-Express and USB signals interface supported Socket 1 , E key , type 2230.

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	+3.3V	3	USB_PP	4	+3.3V
5	USB_PN	6	RSVD	7	GND	8	RSVD
9	RSVD	10	RSVD	11	RSVD	12	RSVD
13	RSVD	14	RSVD	15	RSVD	16	RSVD
17	RSVD	18	GND	19	RSVD	20	RSVD
21	RSVD	22	RSVD	23	RSVD		Module Key
	Module Key		Module Key		Module Key		Module Key
	Module Key		Module Key		Module Key	32	RSVD
33	GND	34	RSVD	35	PE_TXP	36	RSVD
37	PE_TXN	38	RSVD	39	GND	40	RSVD
41	PE_RXP	42	RSVD	43	PE_RXN	44	RSVD
45	GND	46	RSVD	47	REFCLKP	48	RSVD
49	REFCLKN	50	SUSCLK	51	GND	52	PERET#
53	CLKREQ#	54	BT_DISABLE	55	PE_WAKE#	56	WLAN_DISABLE
57	GND	58	SMB_DATA	59	PE_TXP1	60	SMB_CLK
61	PE_TXN1	62	SMB_ALTRT#	63	GND	64	RSVD
65	PE_RXP1	66	RSVD	67	PE_RXN1	68	RSVD
69	GND	70	RSVD	71	REFCLKP1	72	+3.3V
73	REFCLKN1	74	+3.3V	75	GND	NH1	RSVD
NH2	RSVD						



Power LED

The Power LED lights up when the system is powered ON

HDD Activity LED

This connection is linked to hard drive activity LED on the control panel. LED flashes when HDD is being accessed.

CHAPTER 4 AMI BIOS SETUP UTILITY

This chapter provides users with detailed description how to set up basic system configuration through the AMIBIOS8 BIOS setup utility.

4.1 Starting

To enter the setup screens, follow the steps below:

- **Turn on the computer and press the key immediately.**
- **After you press the key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as the Chipset and Power menus.**

4.2 Navigation Keys

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.

These keys include <F1>, <F2>, <Enter>, <ESC>, <Arrow> keys, and so on.



NOTE: *Some of navigation keys differ from one screen to another.*

Hot Key	Description
← →Left/Right	The Left <Arrow> keys allow you to select a setup screen.
↑↓ Up/Down	The Up and Down <Arrow> keys allow you to select a setup screen or sub-screen.
+– Plus/Minus	The Plus and Minus <Arrow> keys allow you to change the field value of a particular setup item.
Tab	The <Tab> key allows you to select setup fields.
F1	The <F1> key allows you to display the General Help screen.
F2	The <F2> key allows you to Load Previous Values.
F3	The <F3> key allows you to Load Optimized Defaults.
F4	The <F4> key allows you to save any changes you have made and exit Setup. Press the <F4> key to save your changes.
Esc	The <Esc> key allows you to discard any changes you have made and exit the Setup. Press the <Esc> key to exit the setup without saving your changes.
Enter	The <Enter> key allows you to display or change the setup option listed for a particular setup item. The <Enter> key can also allow you to display the setup sub- screens.

4.3 Main Menu

When you first enter the Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.

- **BIOS Information**



- **System Date/Time**

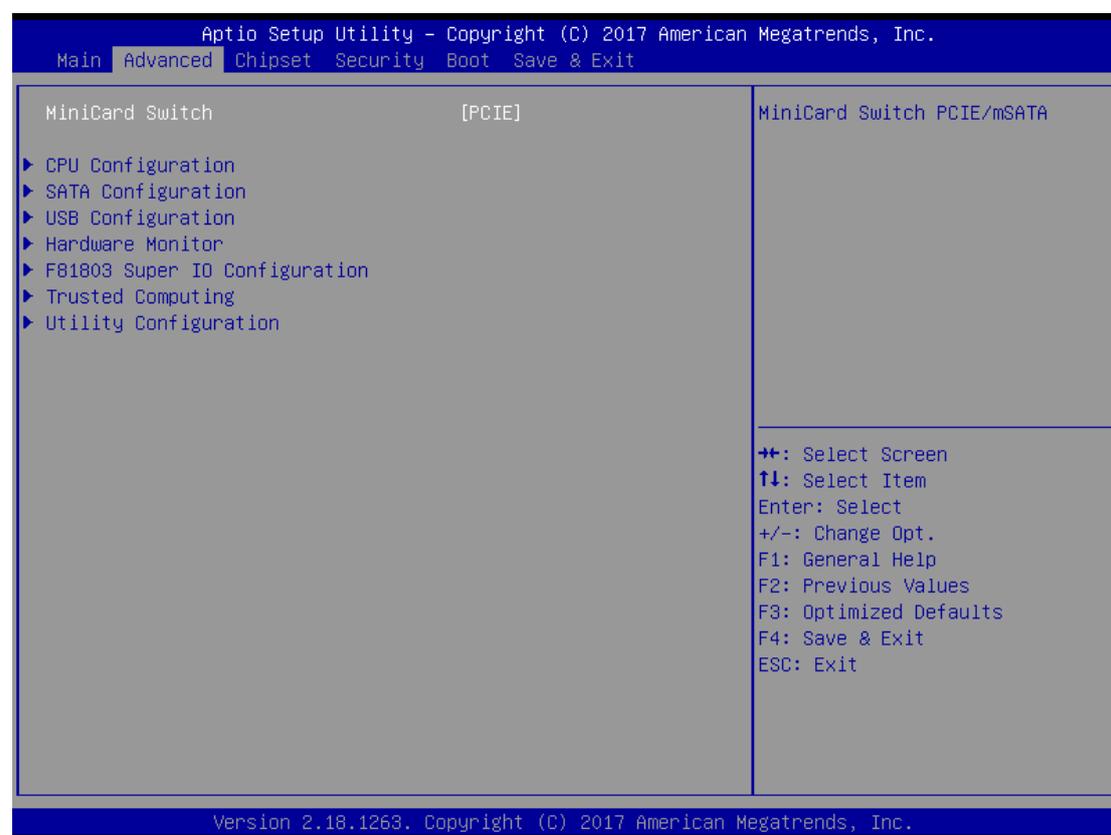
Use this option to change the system date and time. Highlight System Date or System Time using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Enter> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

4.4 Advanced Menu

The Advanced menu also allows users to set configuration of the CPU and other system devices. You can select any of the items in the left frame of the screen to go to the sub menus:

- **CPU Configuration**
- **SATA Configuration**
- **USB Configuration**
- **Hardware Monitor**
- **F81803 Super IO Configuration**
- **Trusted Computing**
- **Utility Configuration**

For items marked with “▶”, please press <Enter> for more options.

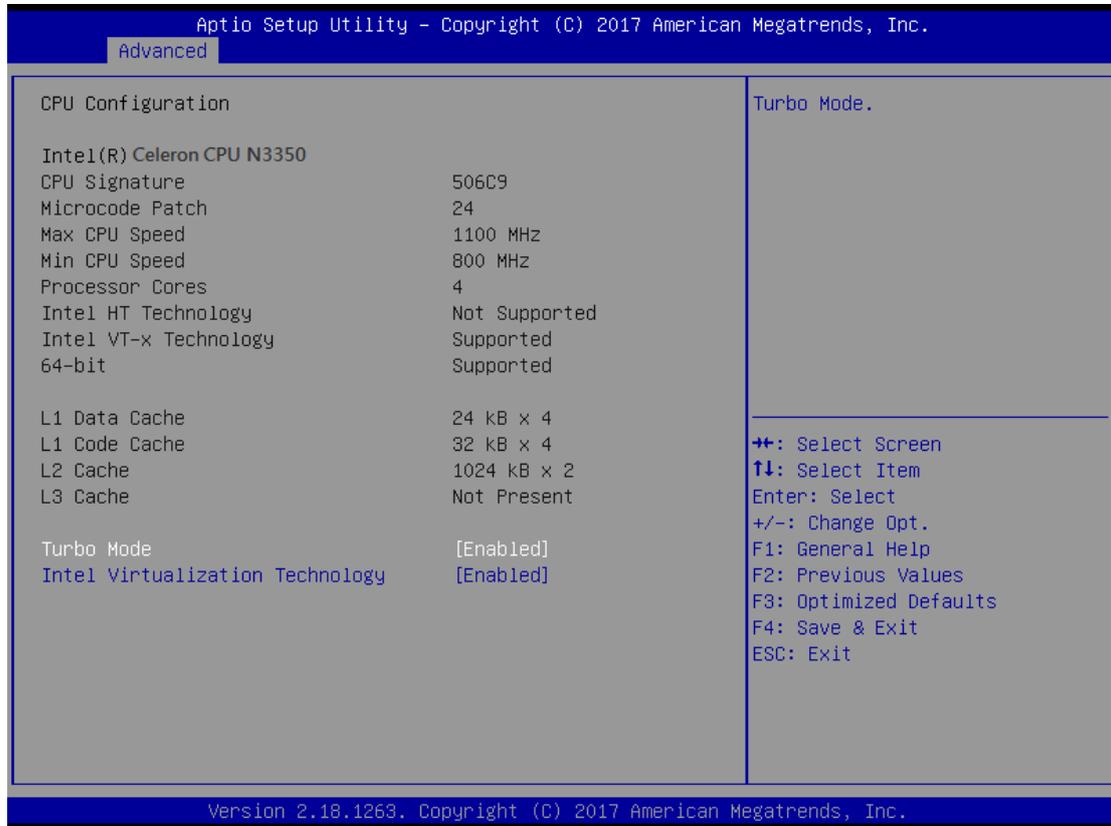


➤ **MiniCard Switch**

The item allows users to switch the mini PCIe interface to PCIE or SATA mode, default is PCIE mode. Users can insert Wi-Fi, 3G or LTE modules by PCIE mode, and insert mSATA storage device by SATA mode.

● **CPU Configuration**

This screen shows the CPU Configuration, and you can change the value of the selected option.



➤ **Turbo Mode**

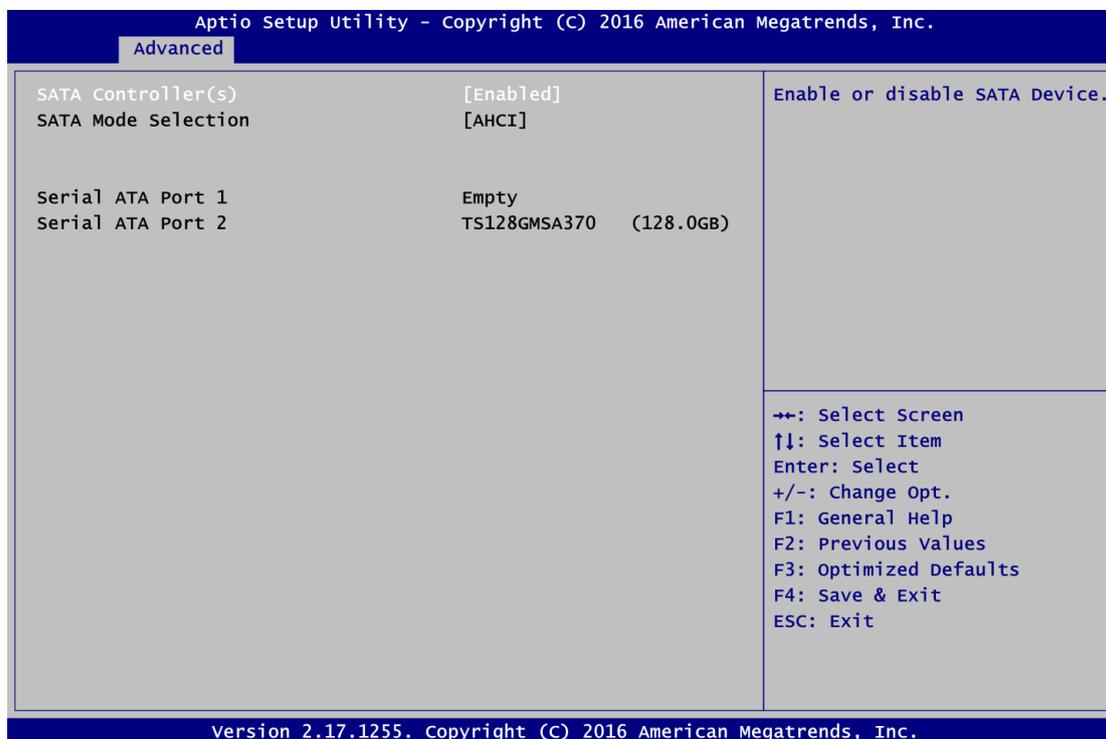
To set the turbo mode automatically allowing processor cores to run faster than the rated operating frequency if they are operating below power, current, and temperature specification limits, default is set as enable mode.

➤ **Intel Virtualization Technology**

Allows a hardware platform to run multiple operating systems separately and simultaneously, enabling one system to virtually function as several systems.

- **SATA Configuration**

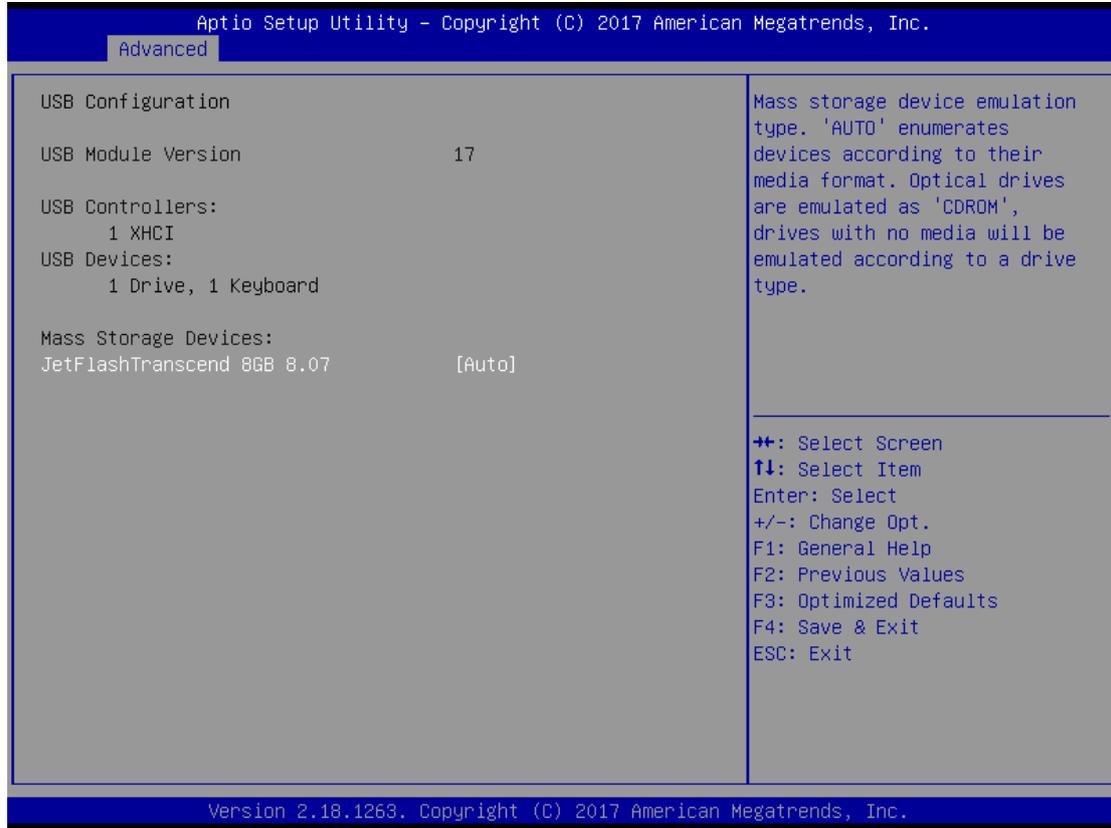
You can use this screen to select options for the SATA Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.



- **Serial-ATA Controller(S)**
Use this item to enable or disable the integrated SATA controllers. (Default: Enabled)
- **Serial ATA Port 1**
Enable or Disable SATA 1 Port
- **Serial ATA Port 2**
Enable or Disable SATA 1 Port

- **USB Configuration**

You can use this screen to select options for the USB Configuration, and change the value of the selected option.

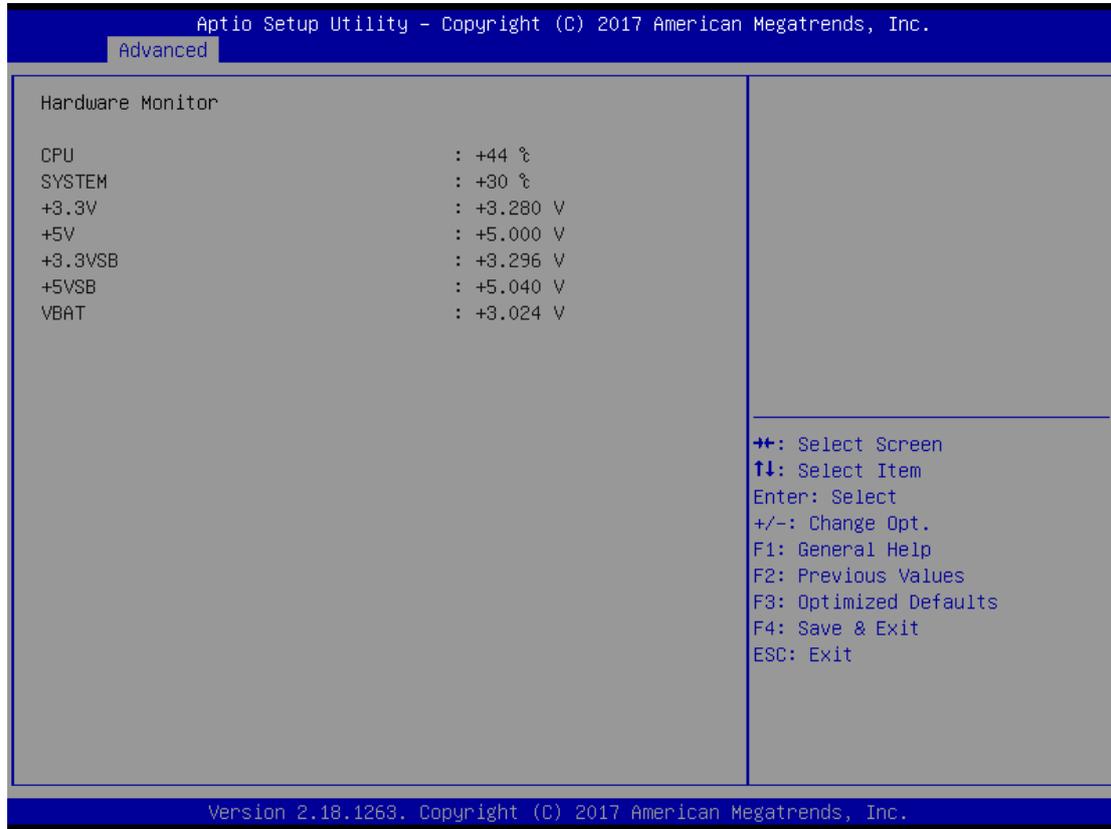


- **USB Controllers & Devices:**

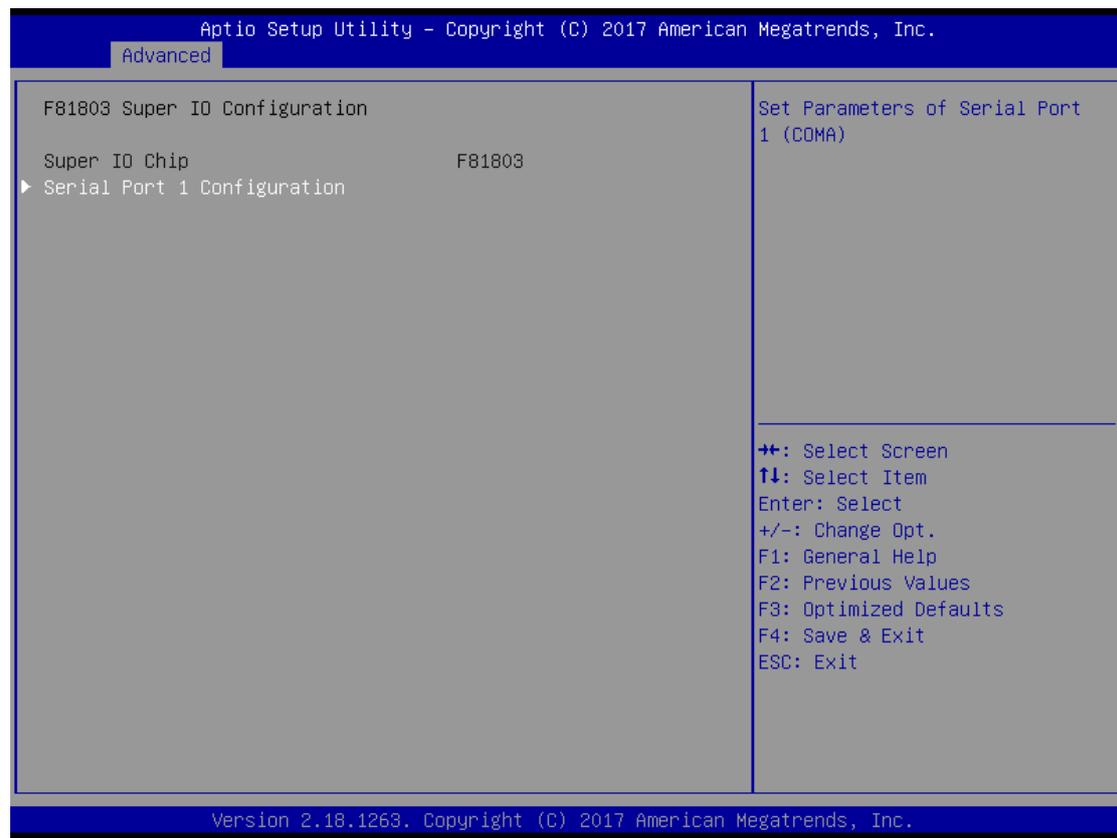
Show the USB controller type and device of the platform.

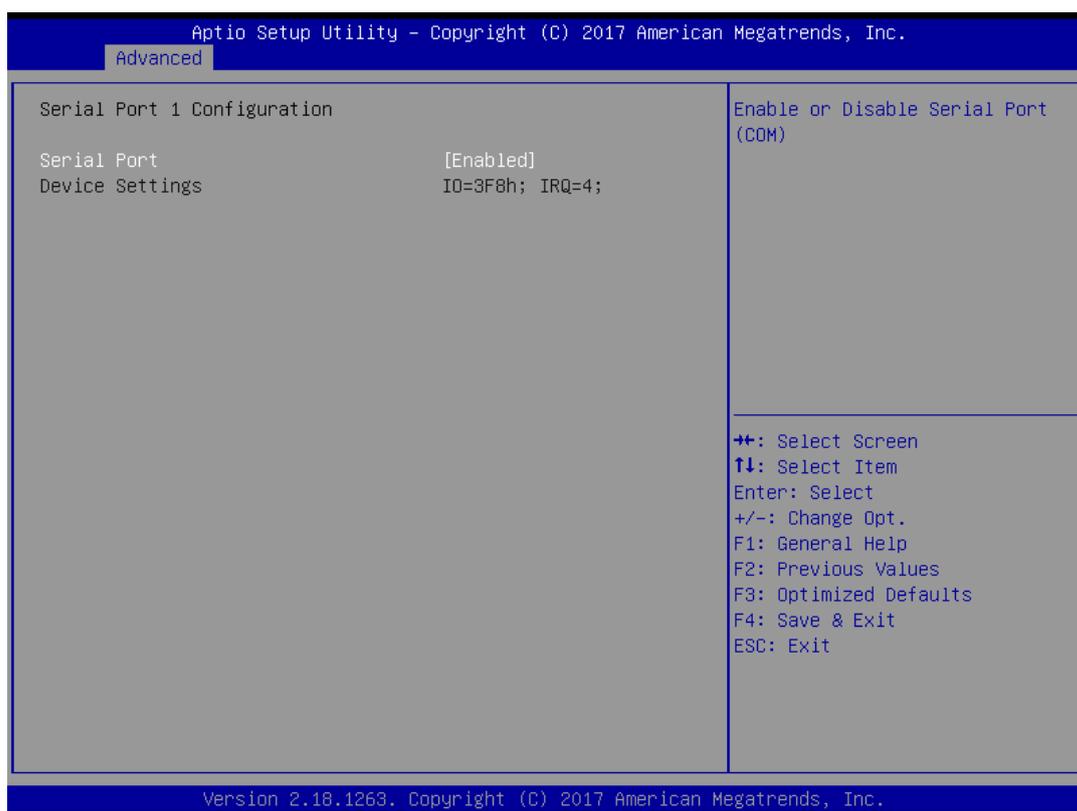
- **Hardware Monitor**

This screen shows the Hardware Health conditions.



- **F81803 Super IO Configuration**





➤ **Serial Port 1 Configuration**

Adjust the serial port setting through this page.

● **Trust Computing**

Users can use this screen to select Trust Computing related configuration, OPS300 series supports TPM 2.0 feature.



➤ **Security Device Support**

Enable or disable the security device function by this item.

- **Utility Configuration**

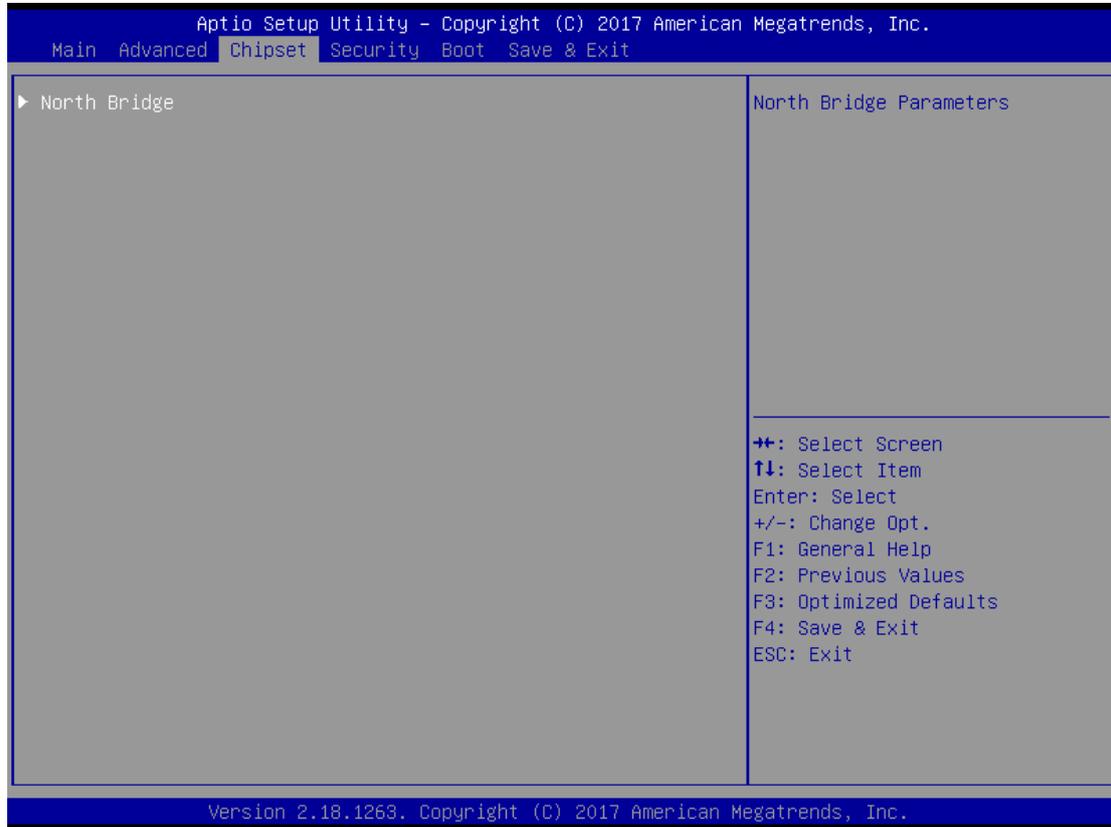
You can use this screen to select options for the UAPI Configuration, and adjust the BIOS setting of BIOS flash utility.



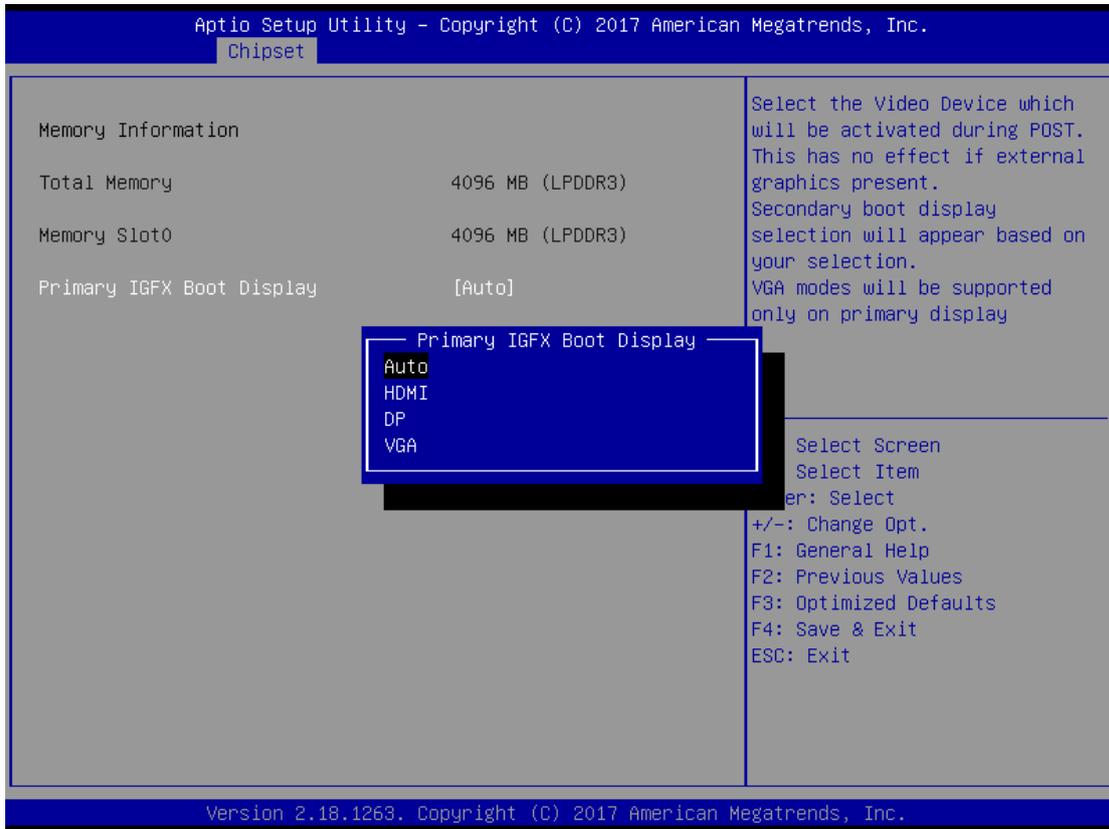
4.5 Chipset Menu

The Chipset menu allows users to change the advanced chipset settings. You can select any of the items in the left frame of the screen to go to the sub menus:

- **North Bridge**



- **Memory Information**
- **Primary IGFX Boot Display**



➤ **Memory Information**

Memory configuration parameters

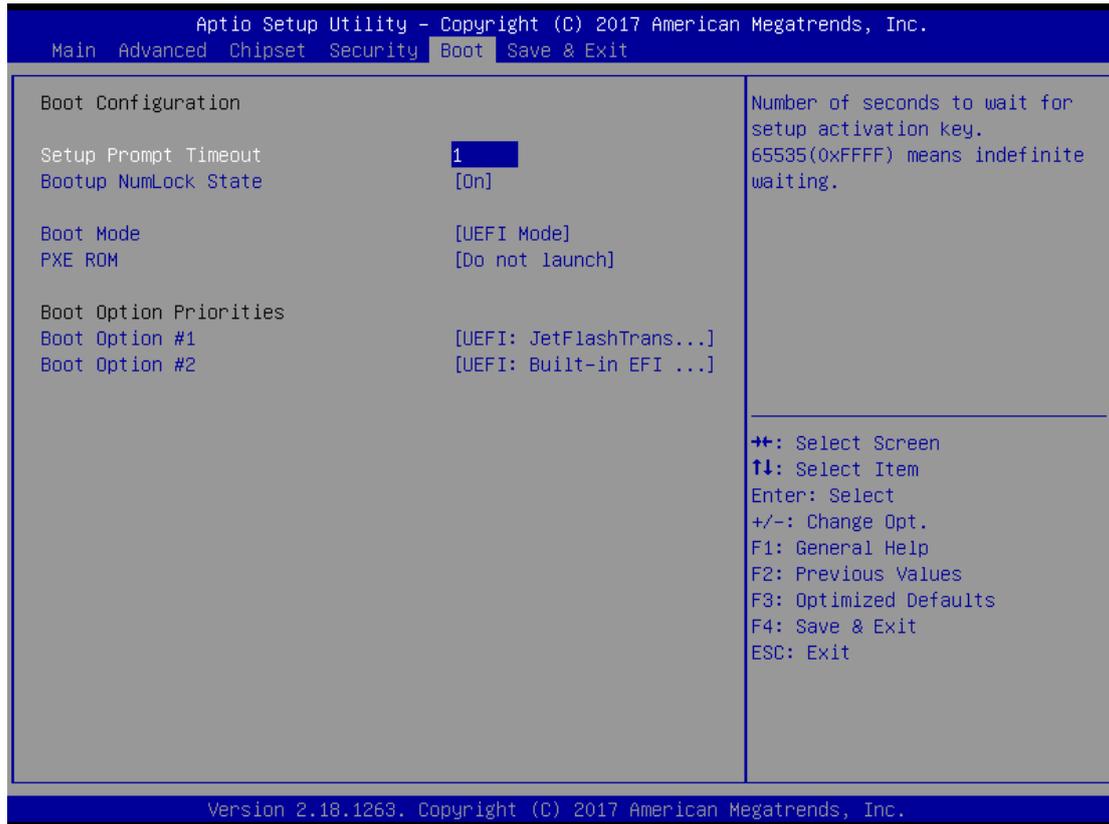
➤ **Primary IGFX Boot Display**

Select the video device which will be activated during POST. It has no effect if external graphics presents VGA modes will be supported only on primary display

4.6 Boot Menu

The Boot menu allows users to change boot options of the system. You can select any of the items in the left frame of the screen to go to the sub menus:

- **Setup Prompt Timeout**
- **Boot up Num Lock State**
- **Quiet Boot**
- **Boot Option Priorities**



➤ **Setup Prompt Timeout**

Set the number of seconds to wait for Setup activation key.

➤ **Boot up Mum Lock State**

Use this item to select the power-on state for the Mum Lock. The default setting is on.

➤ **Boot Mode**

Use this item to select the UEFI or Legacy mode.

UEFI cannot support DOS.

LEGACY only supports DOS.

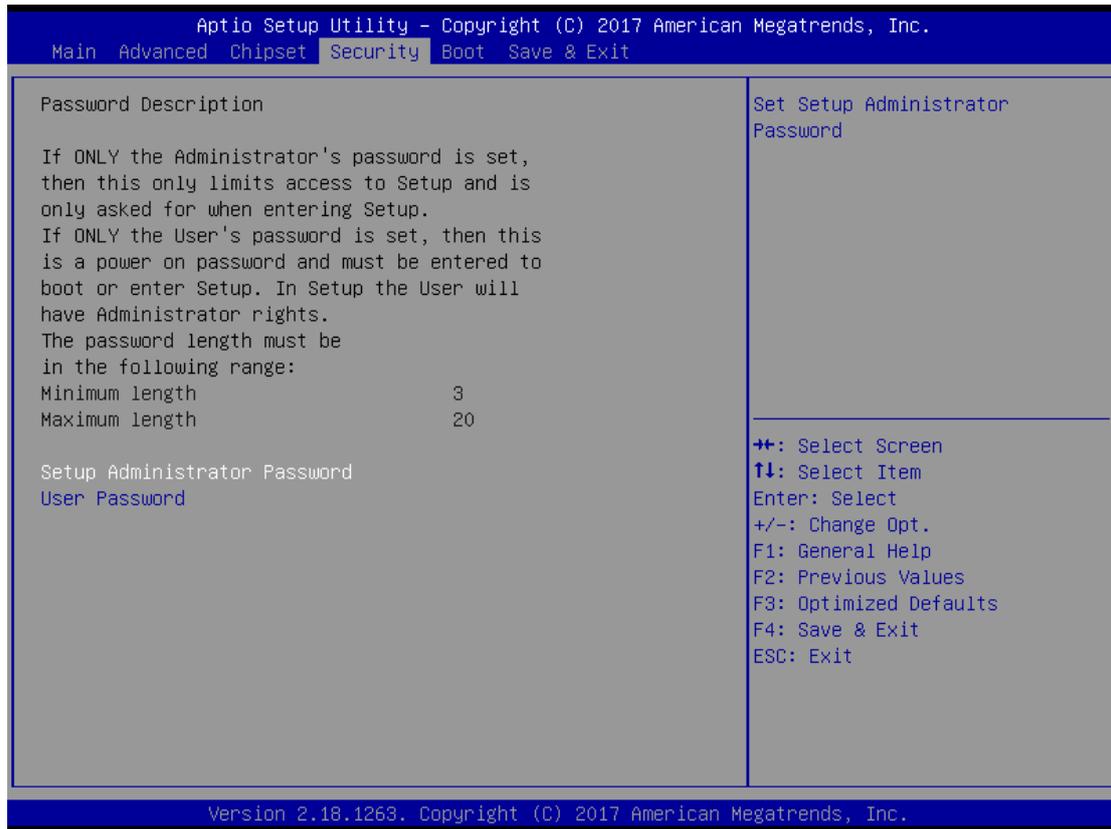
PXE ROM

Use this item to the PXE Boot ROM, when starting up a system, means that the system tried to load an Operating System from the LAN, rather than from the hard drive.

- **Boot Option Priorities**
Sets the system boot order

4.7 Security Menu

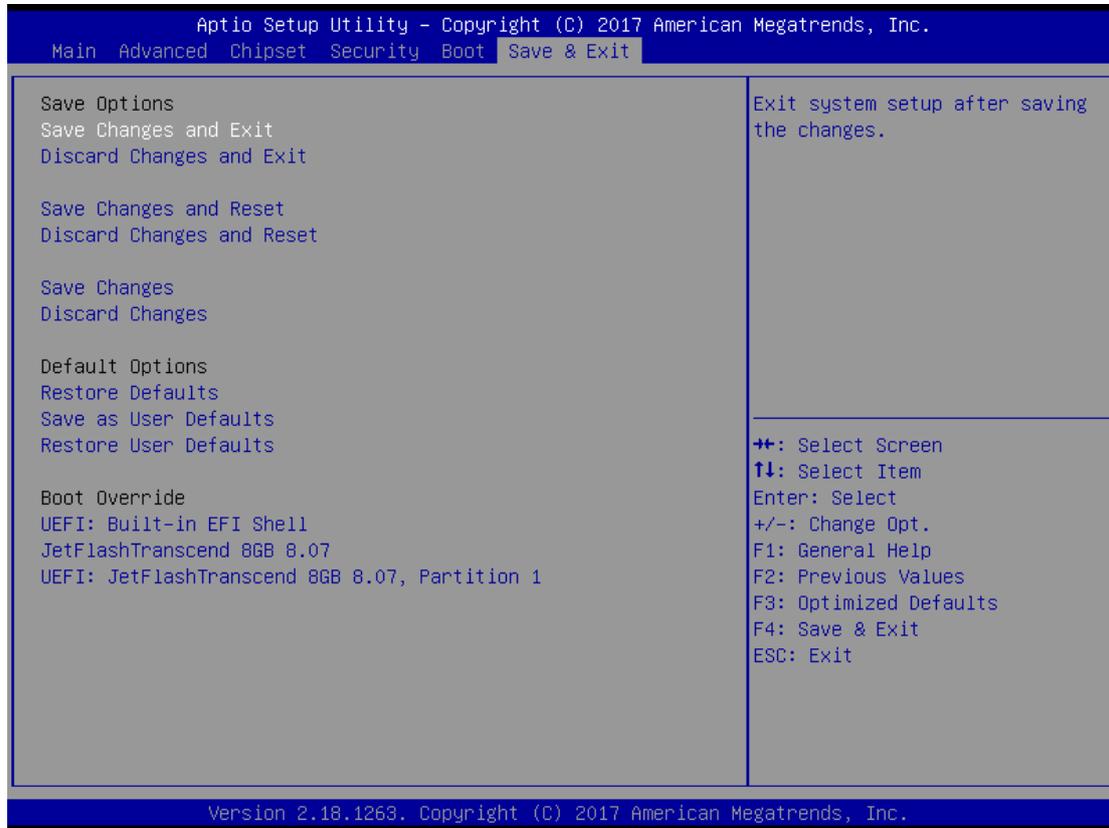
The Security menu allows users to change the security settings for the system.



- **Administrator Password**
This item indicates whether an administrator password has been set. If the Administrator password is set, BIOS will ask and wait for administrator password entered.
- **User Password**
This item indicates whether a user password has been set. If the password is set, BIOS will ask and wait for User password entered

4.8 Save & Exit Menu

The Save & Exit menu allows users to load your system configuration with optimal or failsafe default values.



➤ Save Changes and Exit

When you have completed the system configuration changes, select Save Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to save changes and exit BIOS Setup.

➤ Discard Changes and Exit

This option provide quit Setup without making any permanent changes to the system configuration. Select Discard Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to discard changes and exit BIOS Setup.

➤ Save Changes and Reset

When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect. Select Save Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to save changes and reset.

➤ **Discard Changes and Reset**

Select this option to quit Setup without making any permanent changes to the system configuration and reboot the computer. Select Discard Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to discard changes and reset.

➤ **Save Changes**

When you have completed the system configuration changes, select this option to save changes. Select Save Changes from the Save & Exit menu and press <Enter>. Select Yes to save changes.

➤ **Discard Changes**

Select this option to quit Setup without making any permanent changes to the system configuration. Select Discard Changes from the Save & Exit menu and press <Enter>. Select Yes to discard changes.

➤ **Restore Defaults**

It automatically sets all Setup options to a complete set of default settings when you select this option. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Setup options if your computer is experiencing system configuration problems. Select Restore Defaults from the save & Exit menu and press <Enter>.

➤ **Save as User Defaults**

Select this option to save system configuration changes done so far as User Defaults. Select Save as User Defaults from the Save & Exit menu and press <Enter>.

➤ **Restore User Defaults**

It automatically sets all Setup options to a complete set of User Defaults when you select this option. Select Restore User Defaults from the Save & Exit menu and press <Enter>.

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APPENDIX A WATCHDOG TIMER

Watchdog Timer Setting

After the system stops working for a while, it can be auto-reset by the Watchdog Timer. The integrated Watchdog Timer can be set up in the system reset mode by program.

Using the Watchdog Function Start

1. Enable configuration (Following is example to enable configuration by using debug)

-O 2E 87

-O 2E 87

2. Select Logic device:

-O 2E 07

-O 2F 07

3. WDT Device Enable

-O 2E 2B

-O 2F 00

-O 2E 30

-O 2F 01

4. Activate WDT:

-O 2E F0

-O 2F 80

5. Set base timer:

-O 2E F6

-O 2F 0A → Set Reset Time (Ex. A: 10 Sec)

6. Set timer unit

-O 2E F5

-O 2F 71 (1: Sec ; 9: Minute)

7. Disable WDT

-O 2E 30

-O 2F 00

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