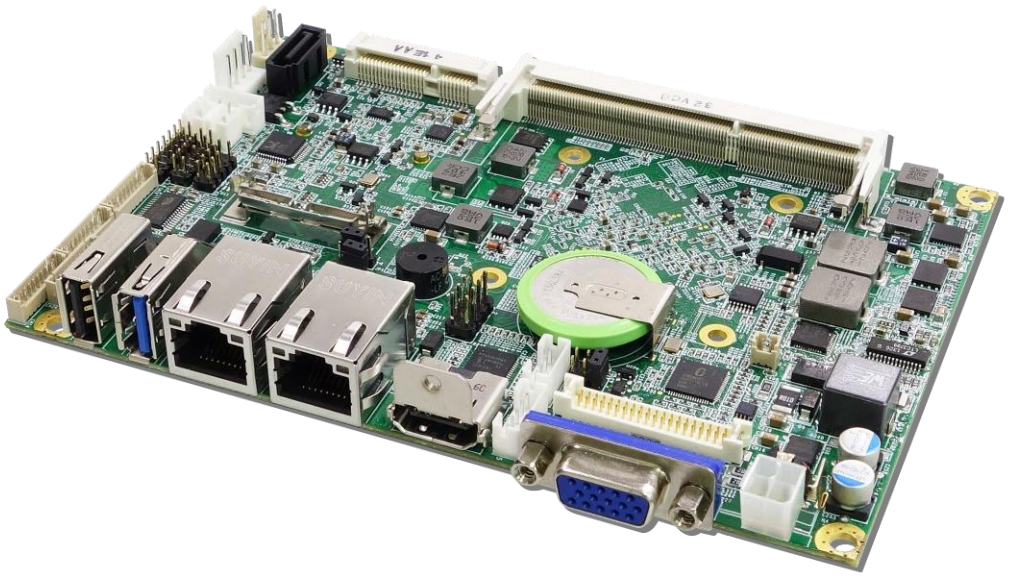
OXY5322A

3.5" SBC with Intel® Bay Trail SoC



Safety Information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your local distributor.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter any technical problems with the product, contact your local distributor

Statement

Revision History

Revision	Date (dd.mm.yyyy)	Changes
Version 1.0	09.05.2016	Initial release

Packing list

- ☐ OXY5322A 3.5" SBC
- ☐ CD (Driver + user's manual)
- ☐ Optional Accessories
  - ○ Cable kit
    - SATA cable
    - SATA power cable
    - USB cable
  - ○ Thermal kit:
    - Copper heat spreader
    - Passive heatsink (up to 85°C)

If any of the above items is damaged or missing, please contact your local distributor.

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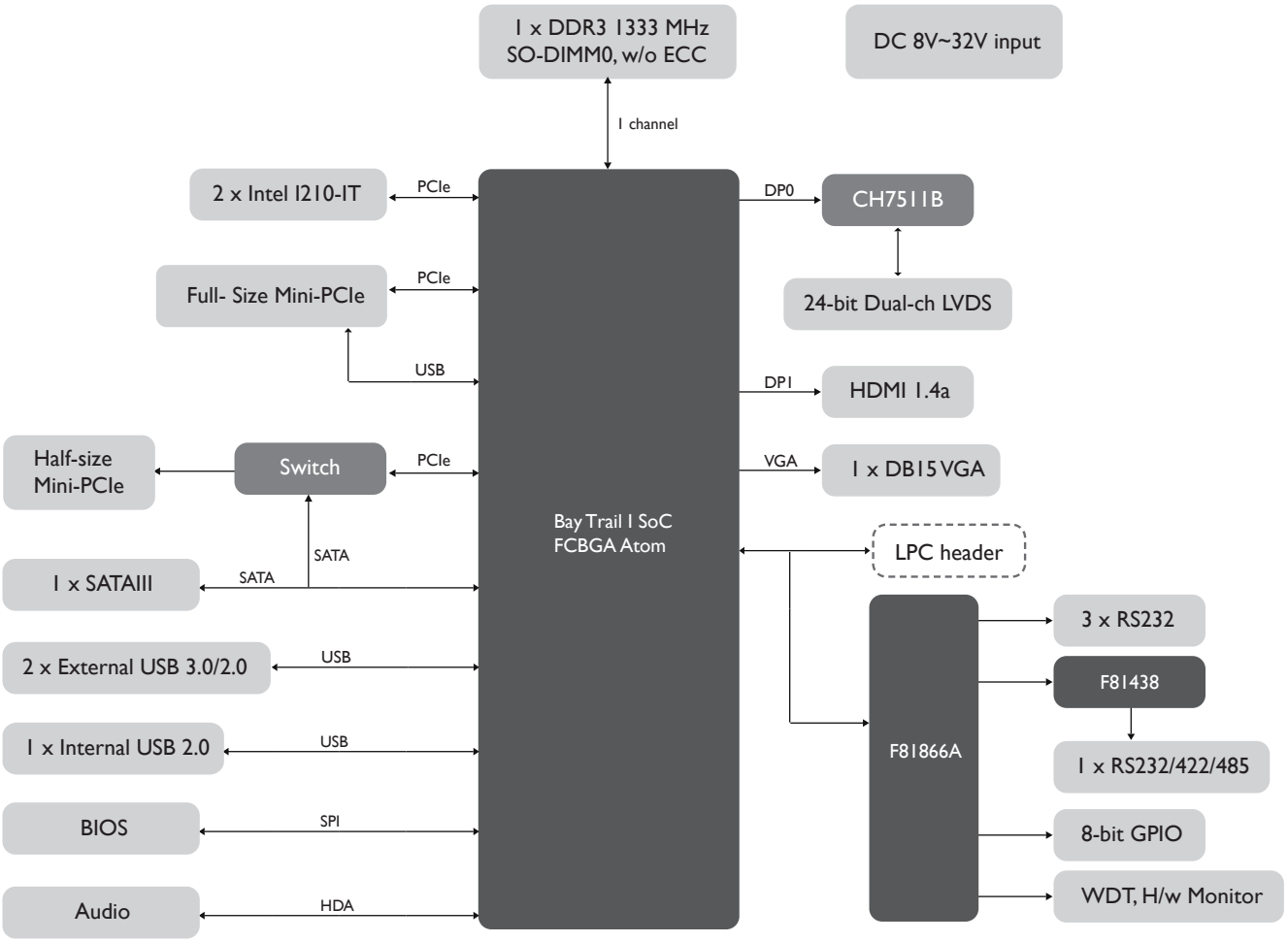
Chapter 1: Product Information

1.1 Block Diagram

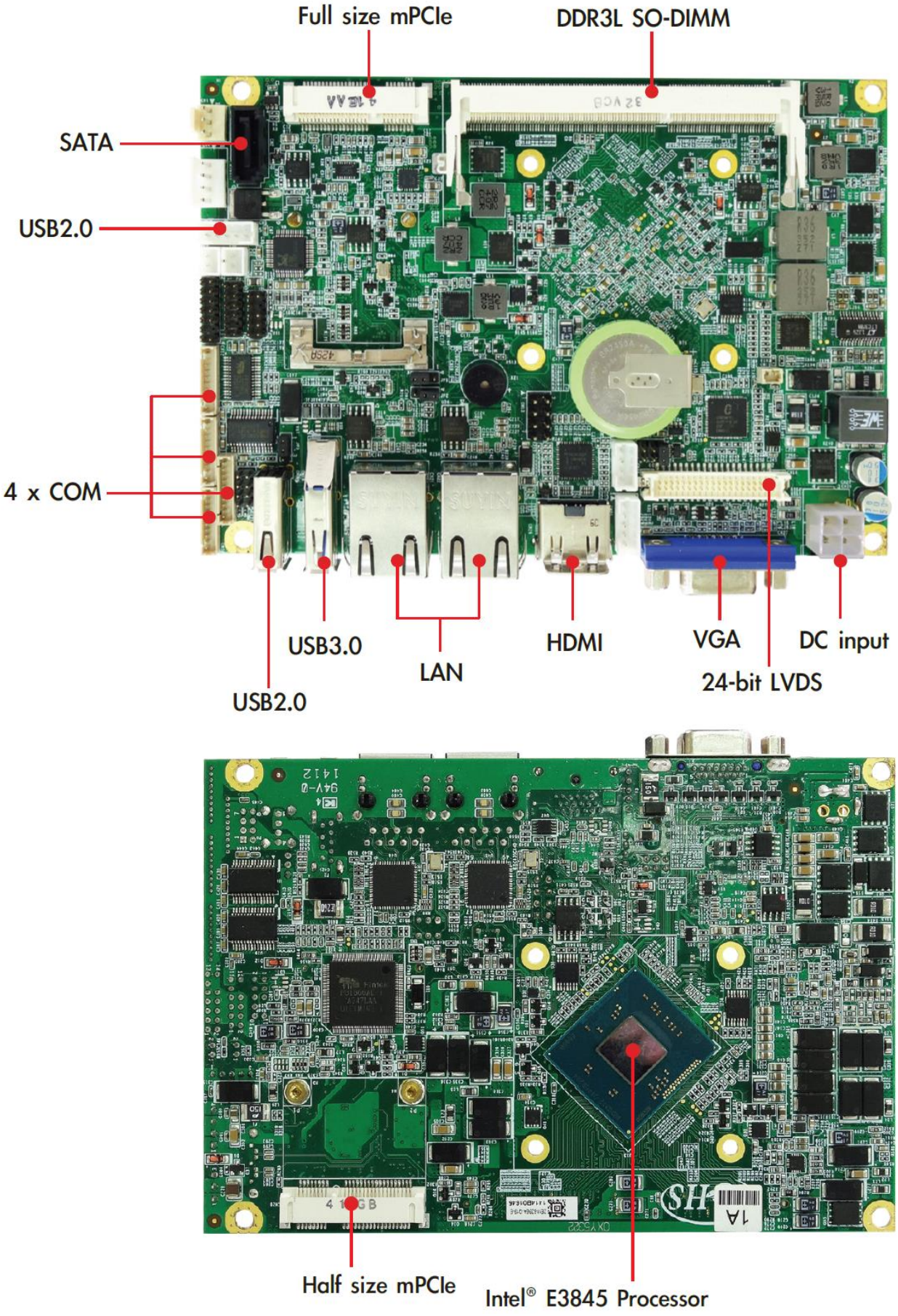


1.2 Key Features

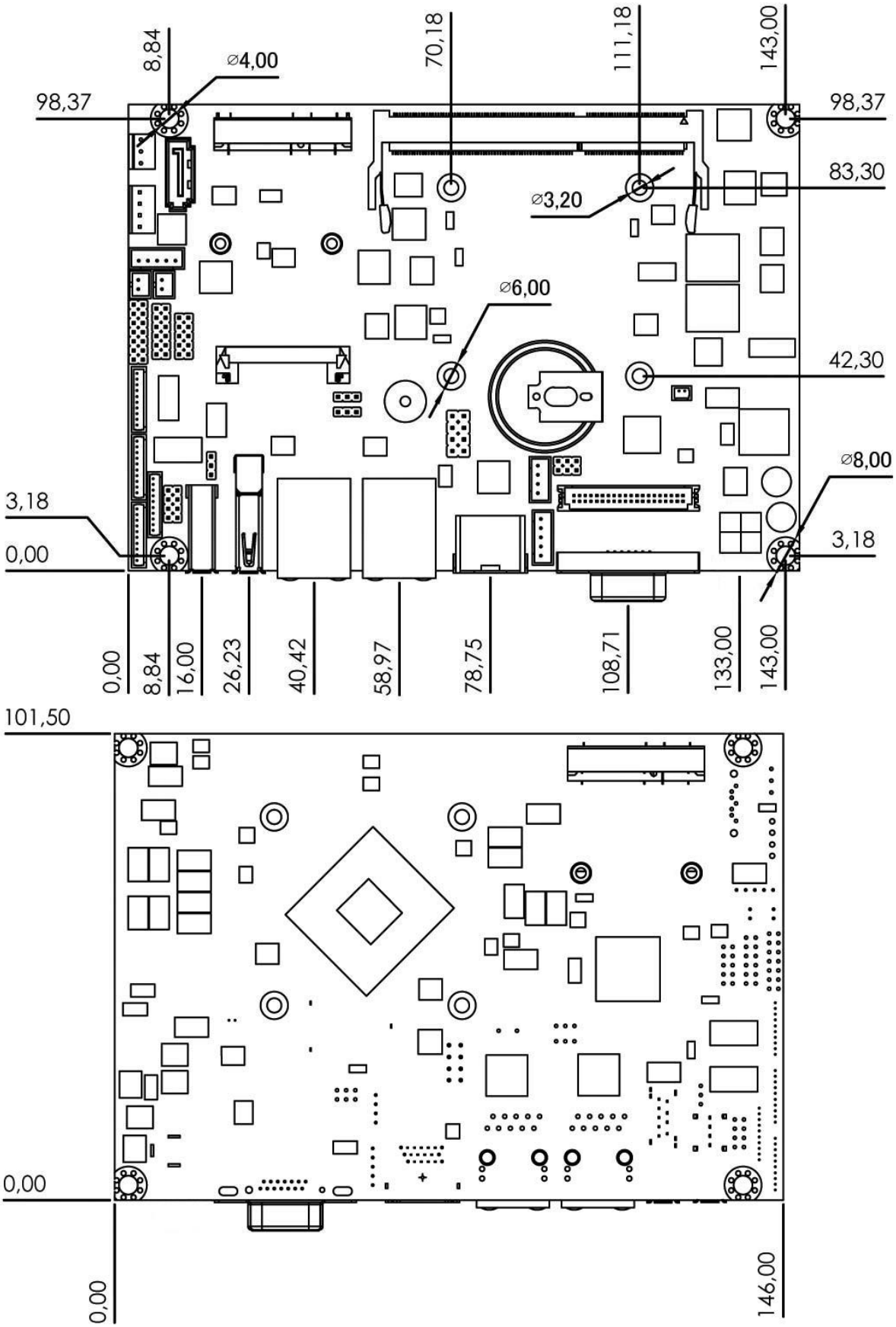
Processor & System	
CPU Type	Intel® Bay Trail 22nm E3800 series, BGA type Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz), 2M L2 cache **(10W)**
Memory Type	1 x 204-pin SO-DIMM DDR3L 1333/1600 MHz up to 8 GB
BIOS	AMI® UEFI BIOS
Super I/O	Fintek F81866A
Watchdog	1-255 sec.
Expansion Slot	1 x Full-size mPCIe 1 x Half-size with SATA signal
Display	
Chipset	Intel® Atom SoC Integrated
VGA	Max. resolution 2048 x 1536
LVDS	Dual channel 24-bit LVDS
Display Type	VGA, HDMI, LVDS
Audio	
Codec	Realtek ALC886 High Definition Audio Codec
Ethernet	
Chipset	Intel® I210-IT GbE
WOL	Yes
Boot from LAN	Yes for PXE
Rear I/O	
VGA	1
HDMI	1 x 1.4a
Ethernet	2 x RJ45
USB	1 x USB 2.0, 1 x USB 3.0
Internal I/O	
SATA	1 x SATAIII (6 Gb/s)
USB	1 x USB 2.0 ports by pin header
COM	4 x COM ports (COM 2 support RS232/422/485) (COM 1, 3, 4 support RS232)
Audio	Mic-in, Line-in, Line-out
FAN	1 x CPU fan
LVDS	40-pin connector
LPC	14-pin connector
GPIO	8-bit (4 in/4 out)
Mechanical and Environment	
Form Factor	3.5" SBC
Power Type	8~32V DC-in, 4-pin ATX power connector, AT/ATX mode support
Dimension	146 x 101mm (5.7" x 4")
Operating Temp.	-40 to 85°C
Storage Temp	-40 to 85°C
Relative Humidity	10% to 90%, non-condensing

***All specifications and photos are subject to change without notice.**

1.3 Board Placement



1.4 Mechanical Drawing



Chapter 2: Jumpers and Connectors

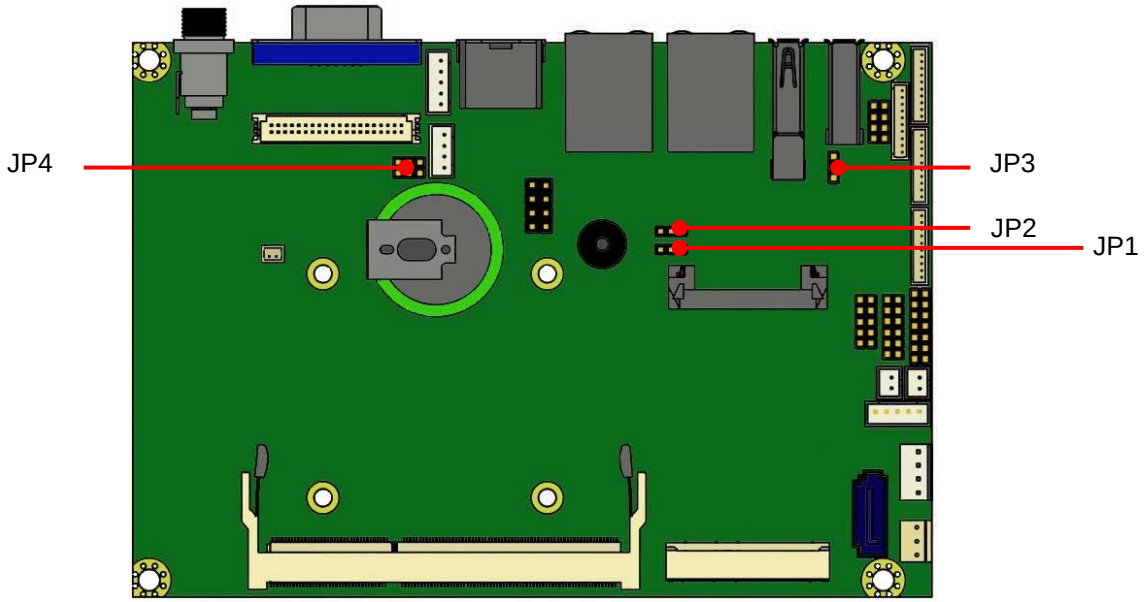
2.1 Onboard connector and jumper list

Label	Function
JP1	LVDS Backlight Control Mode Selection
JP2	Clear CMOS
JP3	AT/ATX Mode Selection
JP4	LVDS Power Level Selection
CN1	Fan Connector
CN2	SATA Connector
CN3	Full-size mPCIe Socket
CN4	SATA Power Connector
CN5	USB 2.0
CN6	WLAN LED for Full-size mPCIe
CN7	WLAN LED for Half-size mPCIe
CN8	GPIO Pin Header
CN9	LPC Pin Header
CN10	Audio Pin Header
CN11	Battery Connector
CN12	RS232/422/485 COM2 Port Connector
CN13	SPI Pin Header
CN14	RS232 COM4 Port Connector
CN15	LVDS Backlight Connector
CN16	LVDS Panel Connector
CN17	Front Panel Pin Header
CN18	RS232 COM3 Port Connector
CN19	USB 3.0 Connector
CN20	DC-in Power Connector
CN21	LAN1 Connector
CN22	LAN2 Connector
CN23	USB 2.0 Connector
CN24	RS232 COM1 Port Connector
CN25	LVDS Panel Inverter Power Connector

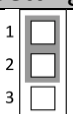
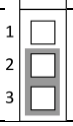
CN26	HDMI Connector
CN27	VGA Connector
CN28	DC-in Power Jack (Optional)
CN29	Half-size mPCIe Socket

2.2 Connector and jumper pin definition

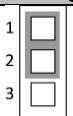
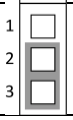
2.2.1 Jumper



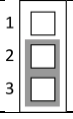
JP1: LVDS Panel

Jumper	Function description	Setting
1-2	PWM mode	
2-3	DC mode	
Default setting: 2-3		

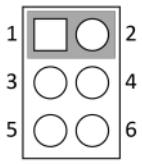
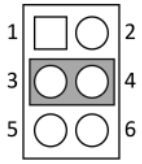
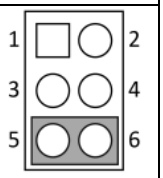
JP2: Clear CMOS

Jumper	Function description	Setting
1-2	Normal	
2-3	Clear CMOS	
Default setting: 1-2		

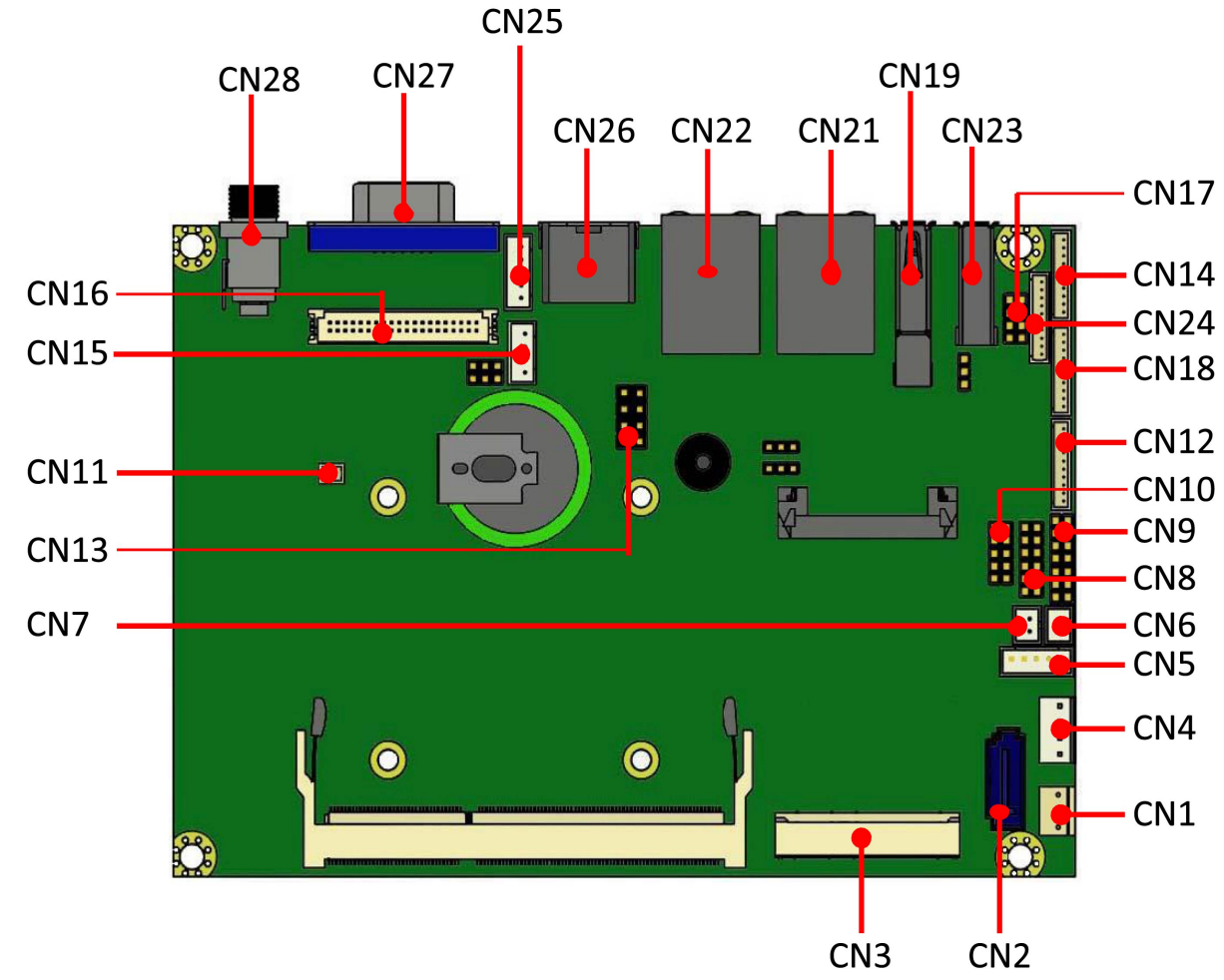
JP3: AT/ATX mode

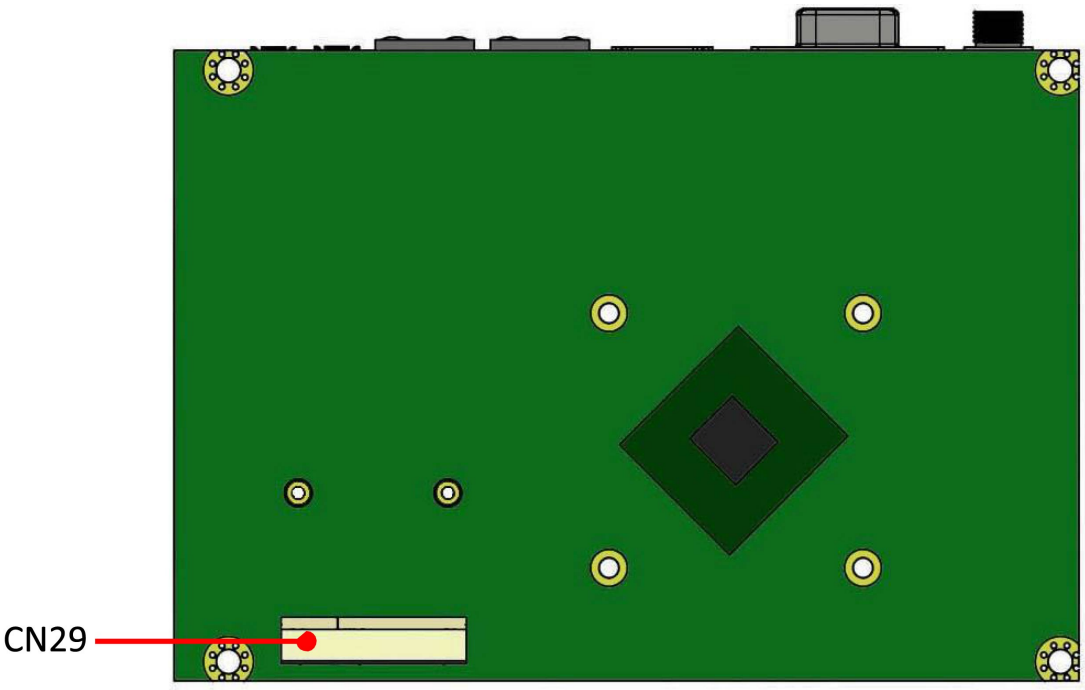
Jumper	Function description	Setting
1-2	AT mode	
2-3	ATX mode	
Default setting: 1-2		

JP4: LVDS power level select

Jumper	Function description	Setting
1-2	+3.3V	
3-4	+5V	
5-6	+12V	
Default setting: 1-2		

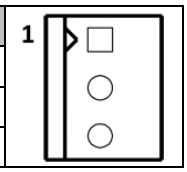
2.2.2 Connector





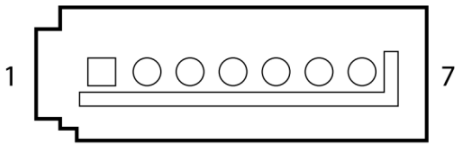
CN1: FAN connector

Pin	Definition
1	GND
2	12V
3	Sensor



CN2: SATA connector

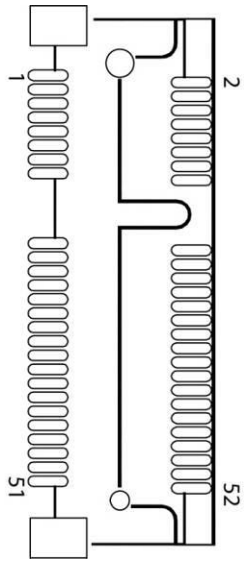
Pin	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND



CN3: Full-size mPCIe

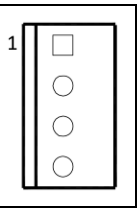
Note: This mPCIe socket ONLY support PCIe and USB signal.

Pin	Definition	Pin	Definition
1	WAKE#	2	+3.3V AUX
3	NC	4	GND
5	NC	6	+1.5V
7	CLKREQ#	8	UIM_PWR
9	GND	10	UIM_DATA
11	REFCLK-	12	UIM_CLK
13	REFCLK+	14	UIM_RESET
15	GND	16	UIM_VPP
17	UIM_C8	18	GND
19	UIM_C4	20	Wireless LAN Disable#
21	GND	22	PERST
23	PERN0	24	+3.3V AUX
25	PERP0	26	GND
27	GND	28	+1.5V
29	GND	30	SMBUS CLOCK
31	PETN0	32	SMBUS DATA
33	PETP0	34	GND
35	GND	36	USB DATA-
37	GND	38	USB DATA+
39	+3.3V AUX	40	GND
41	+3.3V AUX	42	LED_WWAN
43	GND	44	LED_WLAN
45	NC	46	NC
47	NC	48	+1.5V
49	NC	50	GND
51	NC	52	+3.3V AUX



CN4: SATA Power Connector

Pin	Definition
1	+V12S
2	GND
3	GND
4	+V5S

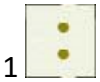


CN5: USB 2.0

Pin	Definition
1	+5V
2	USB D-
3	USB D+
4	GND
5	GND

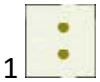
CN6: WLAN LED for Full-size mPCIe

Pin	Definition
1	+3.3V
2	GND



CN7: WLAN LED for Full-size mPCIe

Pin	Definition
1	+3.3V
2	GND



CN8: GPIO pin header

Pin	Definition	Pin	Definition
1	+3.3V	2	GPIO0
3	GPIO1	4	GPIO2
5	GPIO3	6	GPIO4
7	GPIO5	8	GPIO6
9	GPIO7	10	Key
11	+5V	12	GND

CN9: LPC pin header

Pin	Definition	Pin	Definition
1	+3.3V	2	LAD0
3	LAD1	4	LAD2
5	LAD1	6	LFRAME_N
7	PLTRST_N	8	+5V
9	LPC_Clock	10	GND
11	GND	12	Key
13	SERIRQ	14	LPC_DREQ

CN10: Audio pin header

Pin	Definition	Pin	Definition
1	LINE1_L	2	LINE1_R
3	GND	4	GND
5	MIC1_L	6	MIC1_R
7	Key	8	GND
9	FRONT_L	10	FRONT_R

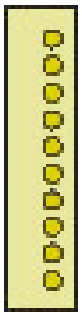
CN11: Battery connector

Pin	Definition
1	+3V
2	GND

CN12: COM2 RS232/422/485

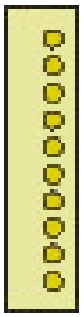
Note: RS232/422/485 can be set by BIOS.

Pin	RS232 mode (Default)	RS422 mode	RS485 mode
1	DCD	TXD-	TXD-
2	DSR		
3	RXD	TXD+	TXD+
4	RTS		
5	TXD	RXD+	
6	CTS		
7	DTR	RXD-	
8	RI		
9	GND		
10	N/C		



CN14, CN18, CN24: COM4, COM3, COM1 RS232

Pin	RS232 mode (Default)
1	DCD
2	DSR
3	RXD
4	RTS
5	TXD
6	CTS
7	DTR
8	RI
9	GND
10	N/C



CN13: SPI pin header

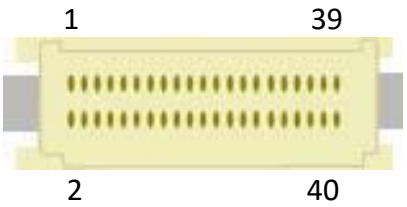
Pin	Definition	Pin	Definition
1	+1.8V	2	GND
3	SPI_CS	4	SPI_CLK
5	SPI_MISO	6	SPI_MOSI
7	N/A	8	Flash IO

CN15: LVDS panel backlight connector

Pin	Definition
1	LVDS_BLUP
2	GND
3	GND
4	LVDS_BLDN

CN16: LVDS connector

Pin	Definition	Pin	Definition
1	LVDS_VCC	2	LVDS_VCC
3	LVDS_VCC	4	LVDS_VCC
5	GND	6	GND
7	LVDSA_0-	8	LVDSB_0-
9	LVDSA_0+	10	LVDSB_0+
11	GND	12	GND
13	LVDSA_1-	14	LVDSB_1-
15	LVDSA_1+	16	LVDSB_1+
17	GND	18	GND
19	LVDSA_2-	20	LVDSB_2-
21	LVDSA_2+	22	LVDSB_2+
23	GND	24	GND
25	LVDSA_Clock-	26	LVDSB_Clock-
27	LVDSA_Clock+	28	LVDSB_Clock+
29	GND	30	GND
31	DDC_Clock	32	DDC_Data
33	GND	34	GND
35	LVDSA_3-	36	LVDSB_3-
37	LVDSA_3+	38	LVDSB_3+
39	SMB_Clock	40	SMB_Data

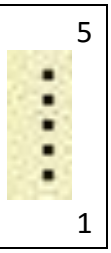


CN17: Front panel pin header

Pin	Definition	Pin	Definition
1	Power_LED+	2	Power_LED1-
3	HDD_LED+	4	HDD_LED-
5	GND	6	Power on/off
7	Reset	8	GND

CN19: LVDS inverter power connector

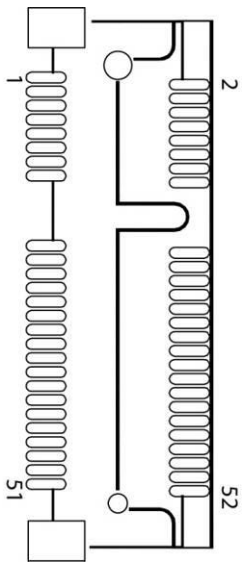
Pin	Definition
1	+12V
2	GND
3	Backlight enable
4	Backlight control
5	+5V



CN29: Half-size mPCIe

Note: This mPCIe socket can support SATA**(DEFAULT)** or PCIe signal, which could be changed in BIOS.

Pin	Definition	Pin	Definition
1	MSATA_WAKE#	2	+3.3V
3	NC	4	GND
5	NC	6	+1.5V
7	MCLKREQ#	8	NC
9	GND	10	NC
11	MSATA_PE_CLK-	12	NC
13	MSATA_PE_CLK+	14	NC
15	GND	16	NC
17	NC	18	NC
19	NC	20	NC
21	GND	22	PERST_BUF1-
23	MSATA_RXN4	24	MSATA_+3.3V
25	MSATA_RXP4	26	GND
27	GND	28	+1.5V
29	GND	30	ICH_SMBUS CLOCK
31	MSATA_TXN4	32	ICH_SMBUS DATA
33	MSATA_TXP4	34	GND
35	GND	36	USB DATA-
37	NA	38	USB DATA+
39	MSATA_+3.3V	40	GND
41	MSATA_+3.3V	42	LED_WWAN
43	GND	44	LED_WLAN
45	NA	46	NA
47	NA	48	+1.5V
49	NA	50	GND
51	NA	52	+3.3V



Chapter 3: AMI BIOS UTILITY

This chapter provides users with detailed descriptions on how to set up a basic system configuration through the AMI BIOS setup utility.

3.1 Starting

To enter the setup screens, perform the following steps:

- Turn on the computer and press the <Del> key immediately.
- After the <Del> key is pressed, the main BIOS setup menu displays. Other setup screens can be accessed from the main BIOS setup menu, such as the Chipset and Power menus.

3.2 Navigation Keys

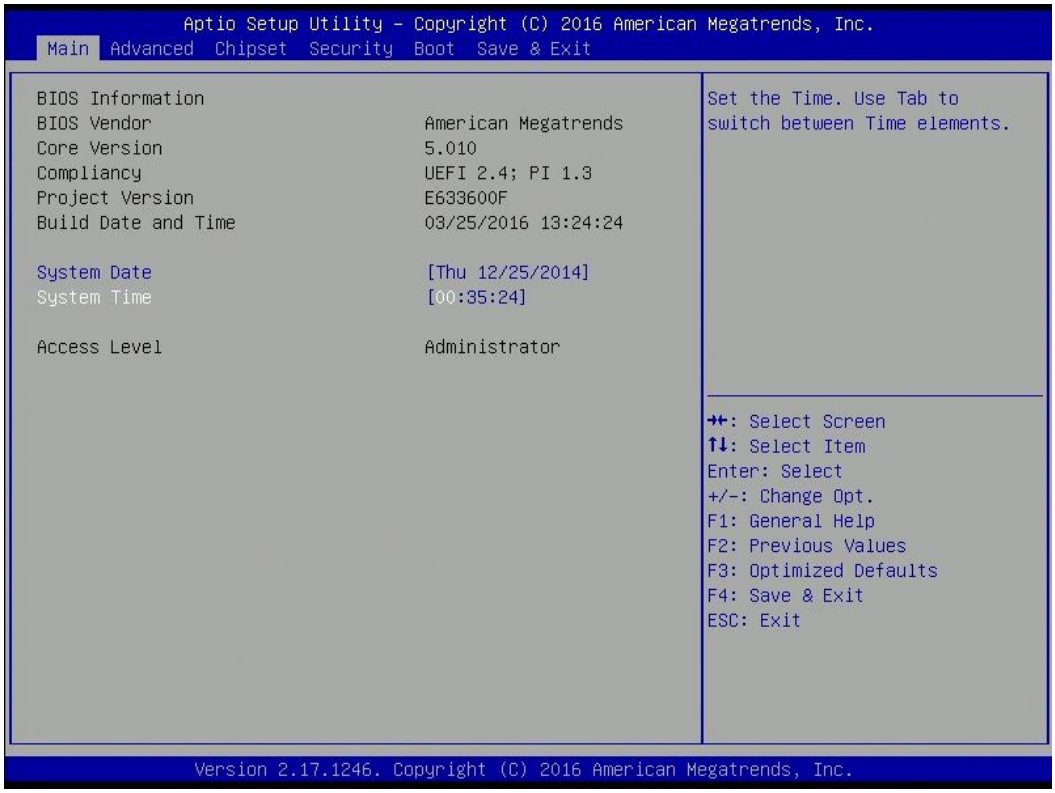
The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.
Some of the hot keys are <F1>, <F10>, <Enter>, <ESC>, and <Arrow> keys.

Some of the navigation keys may differ from one screen to another.

Left/Right	The Left and Right <Arrow> keys moves the cursor to select a menu.
Up/Down	The Up and Down <Arrow> keys moves the cursor to select a setup screen or sub-screen.
+− Plus/Minus	The Plus and Minus <Arrow> keys changes the field value of a particular setup setting.
Tab	The <Tab> key selects the setup fields.
F1	The <F1> key displays the General Help screen.
F10	The <F10> key saves any changes made and exits the BIOS setup utility.
Esc	The <Esc> key discards any changes made and exits the BIOS setup utility.
Enter	The <Enter> key displays a sub-screen or changes a selected or highlighted option in each menu.

3.3 Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.



System Date

Use this function to change the system date.

Select System Date using the Up and Down <Arrow> keys. Enter the new values through the keyboard. Press the Left and Right <Arrow> keys to move between fields.

The date setting must be entered in MM/DD/YY format.

System Time

Use this function to change the system time.

Select System Time using the Up and Down <Arrow> keys. Enter the new values through the keyboard. Press the Left and Right <Arrow> keys to move between fields.

The time setting is entered in HH:MM:SS format.

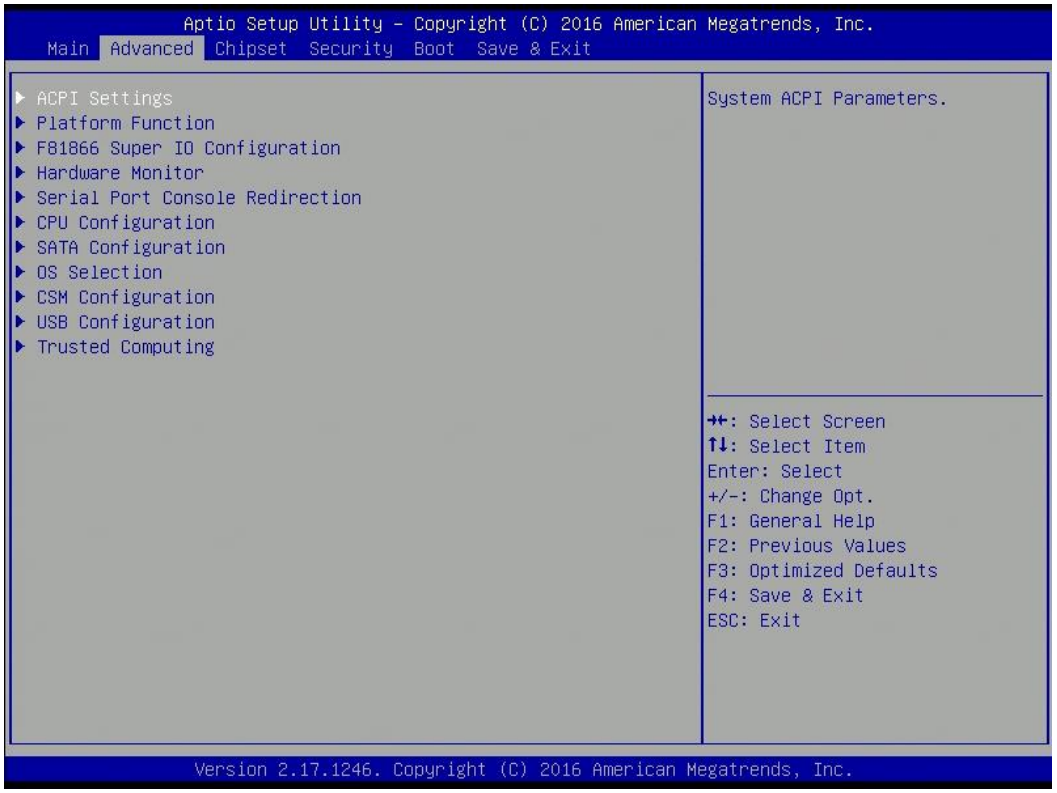
Note: The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30 P.M. as 17:30:00.

Access Level

Display the access level of the current user in the BIOS.

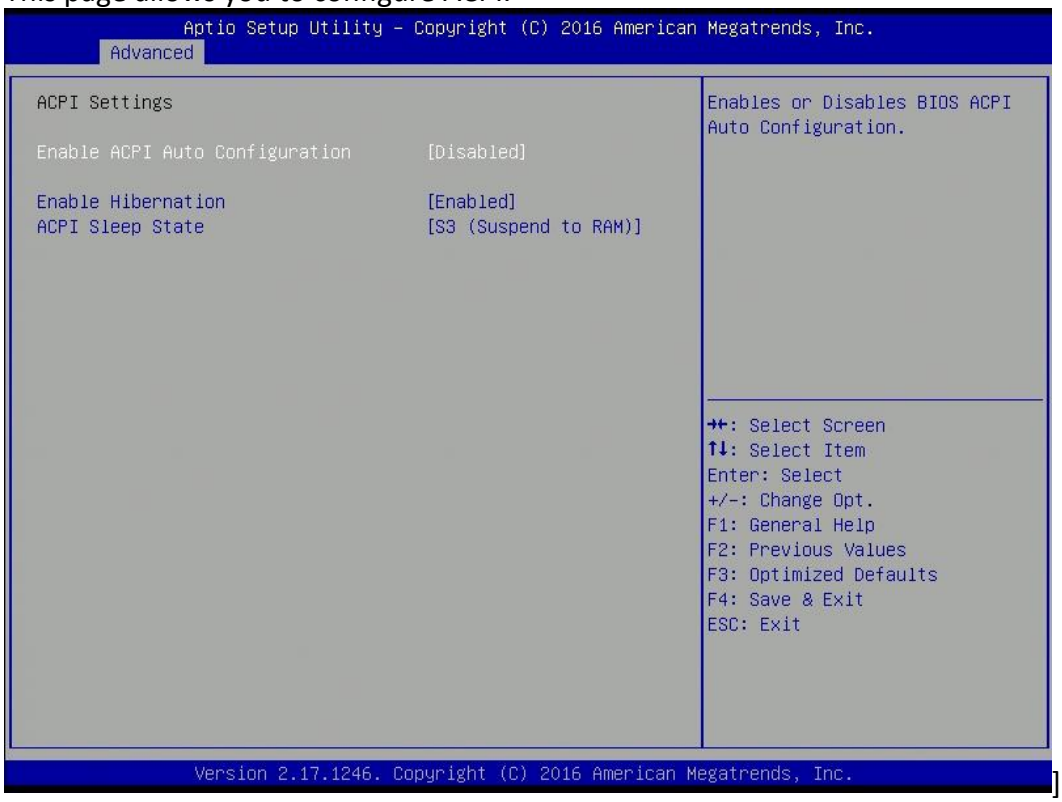
3.4 Advanced

The Advanced Menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference. ***Setting incorrect field values may cause the system to malfunction.***



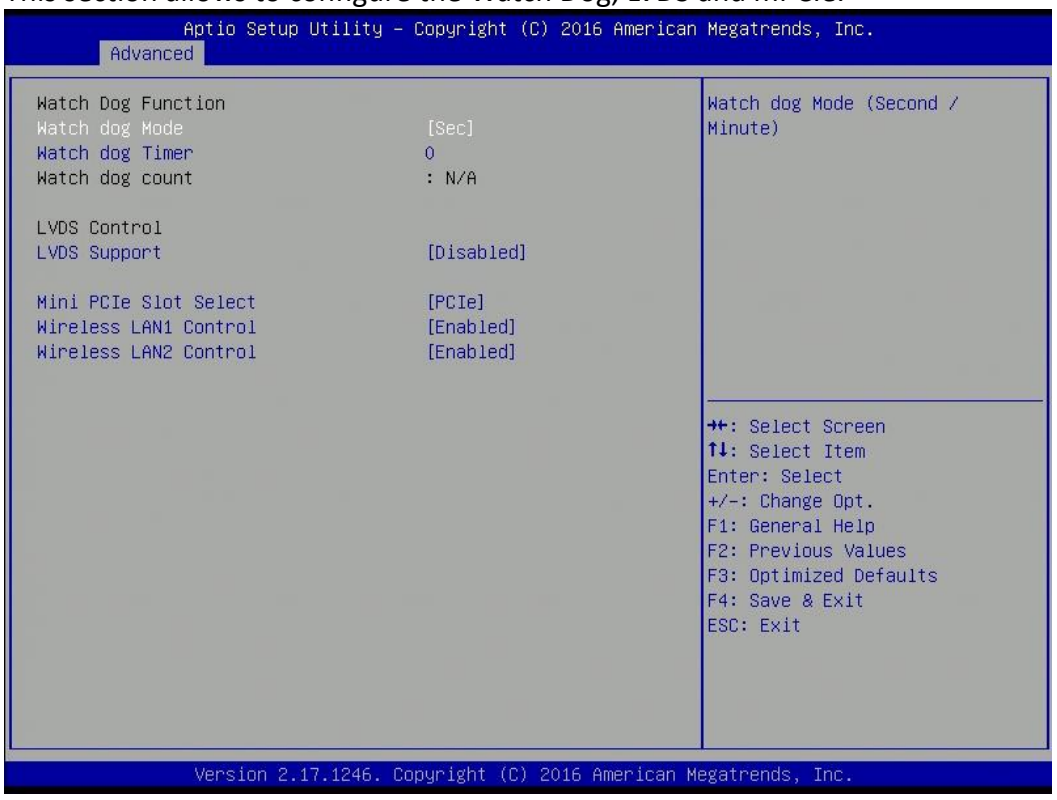
3.4.1 ACPI Setting

This page allows you to configure ACPI.



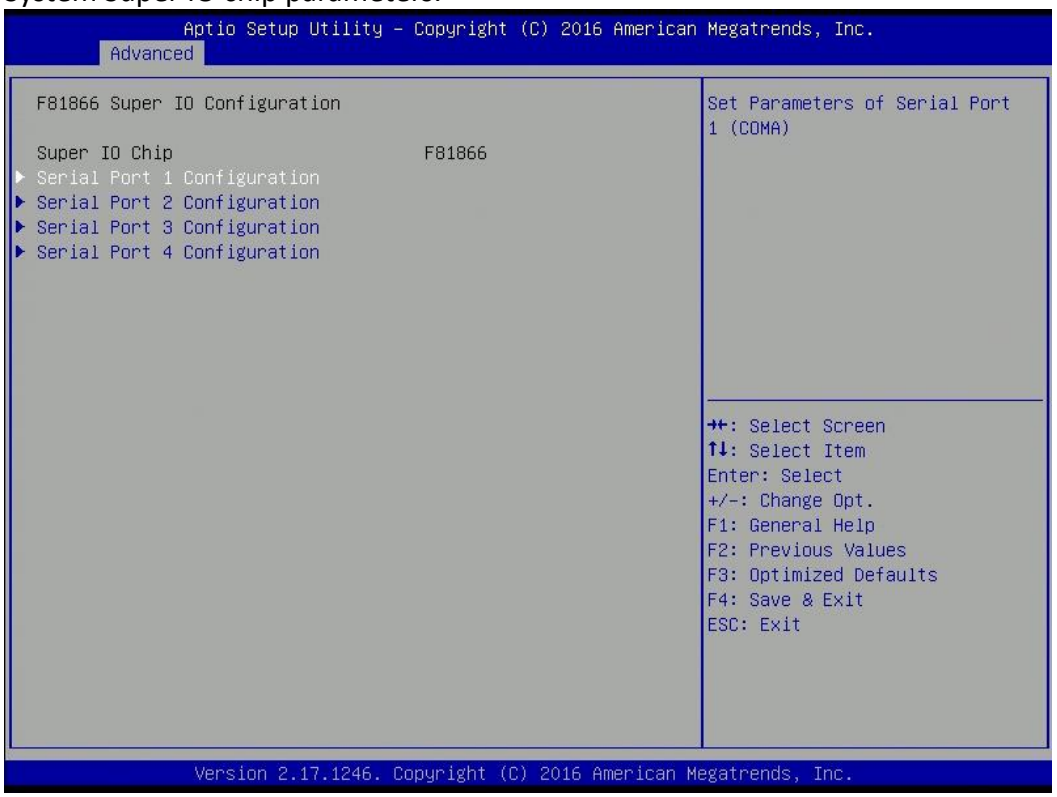
3.4.2 Platform Function

This section allows to configure the Watch Dog, LVDS and mPCIe.

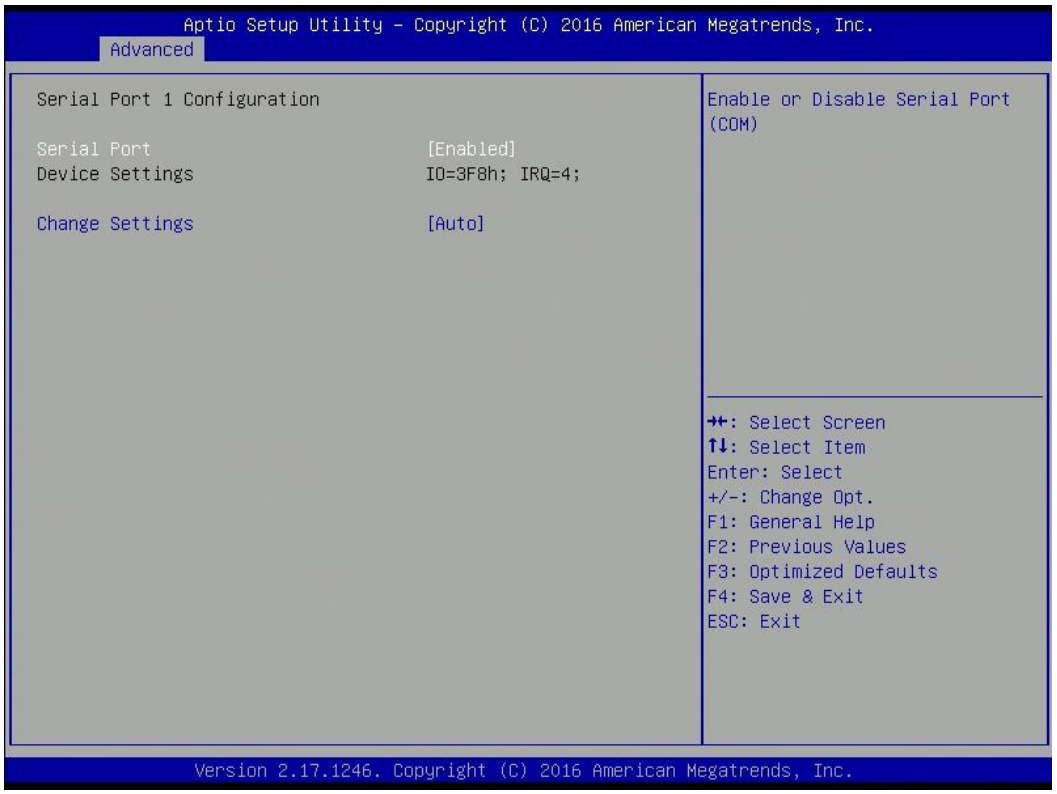


3.4.3 F81833 Super IO Configuration

System Super IO chip parameters.



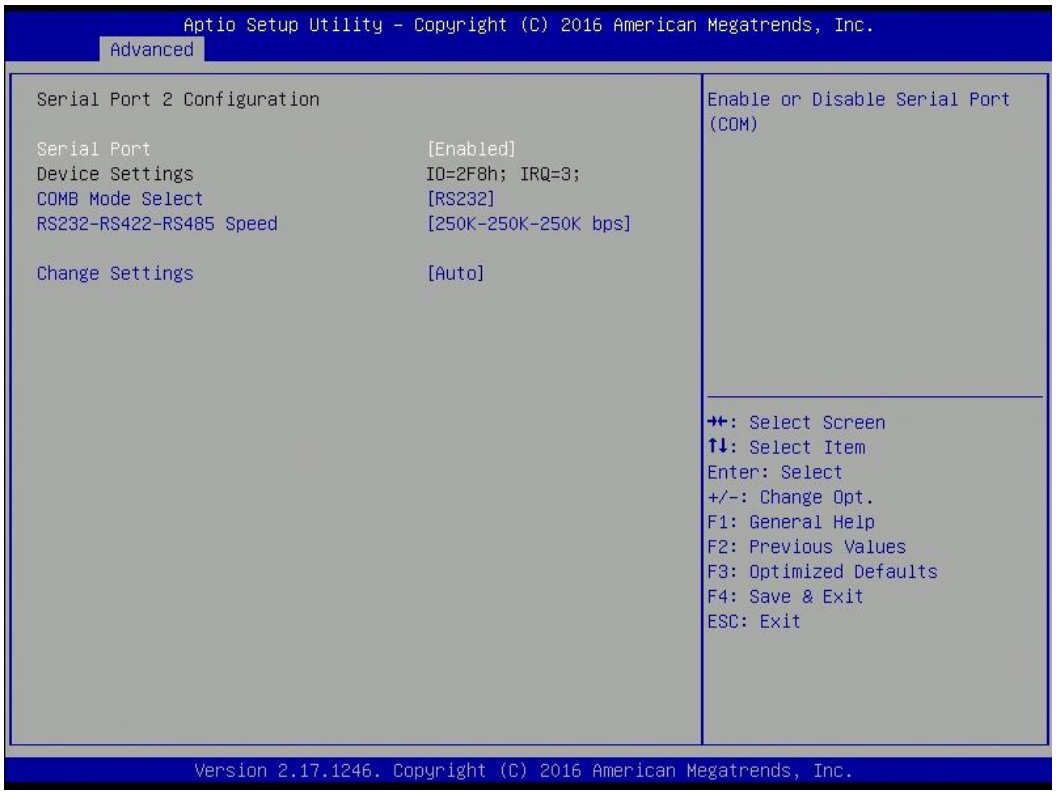
3.4.3.1 Series Port 1 Configuration



Serial Port
Enable or disable serial port (COM)

Change Setting
Select an optimal setting for Super IO device

3.4.3.2 Series Port 2 Configuration

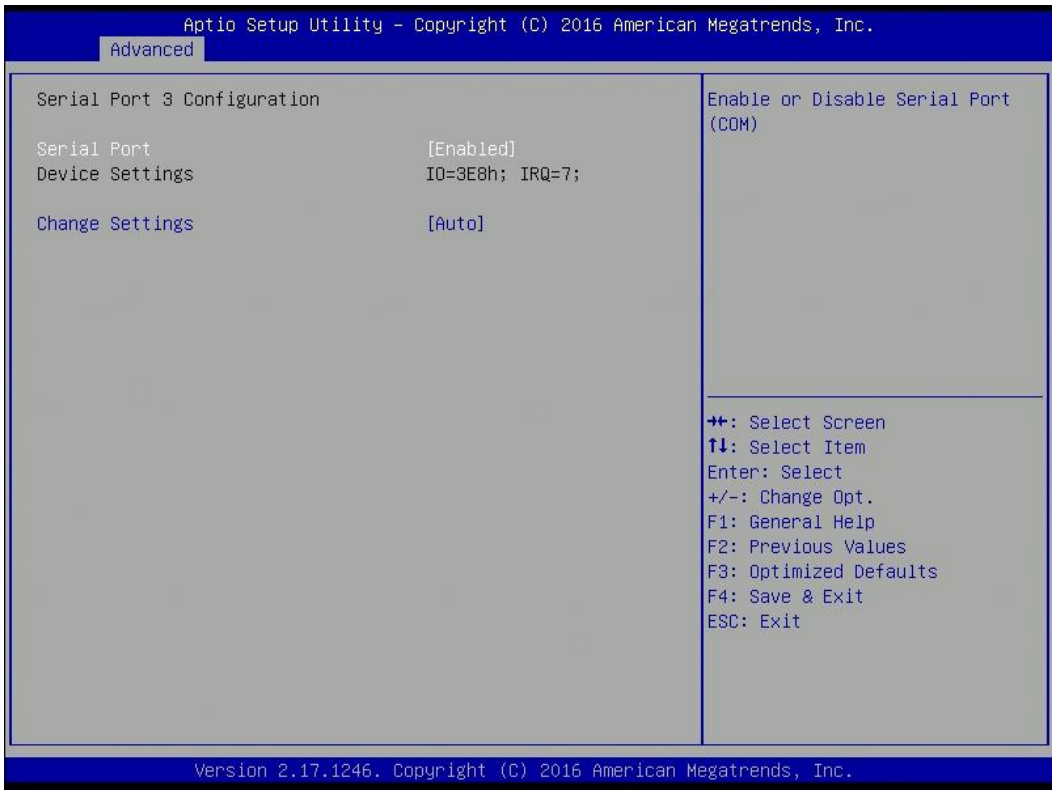


Serial Port
Enable or disable serial port (COM)

Mode
RS232, RS-422, RS-485 selection

Change Setting
Select an optimal setting for Super IO device

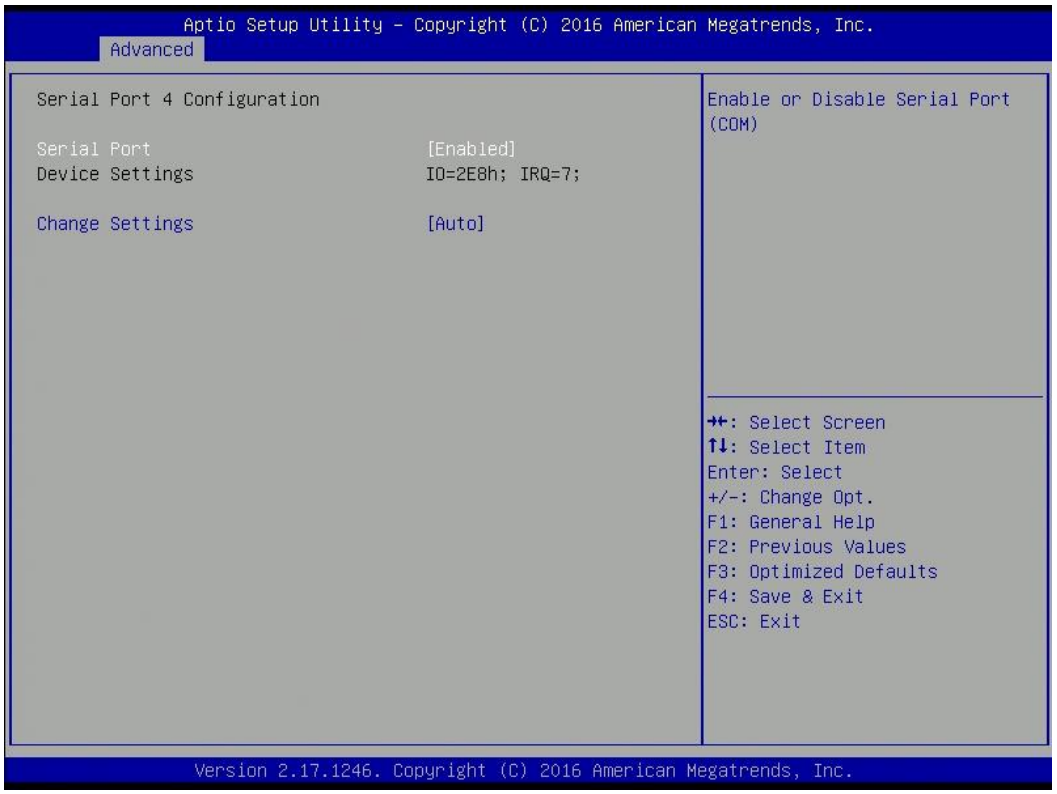
3.4.3.3 Series Port 3 Configuration



Serial Port
Enable or disable serial port (COM)

Change Setting
Select an optimal setting for Super IO device

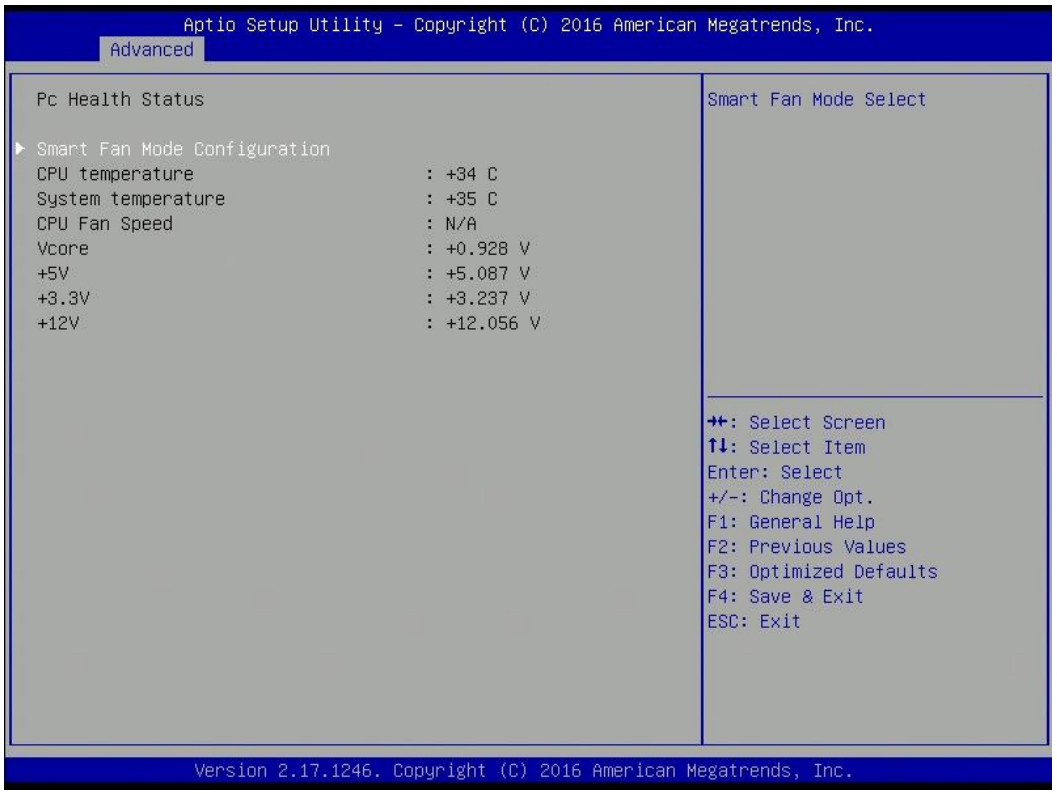
3.4.3.4 Series Port 4 Configuration



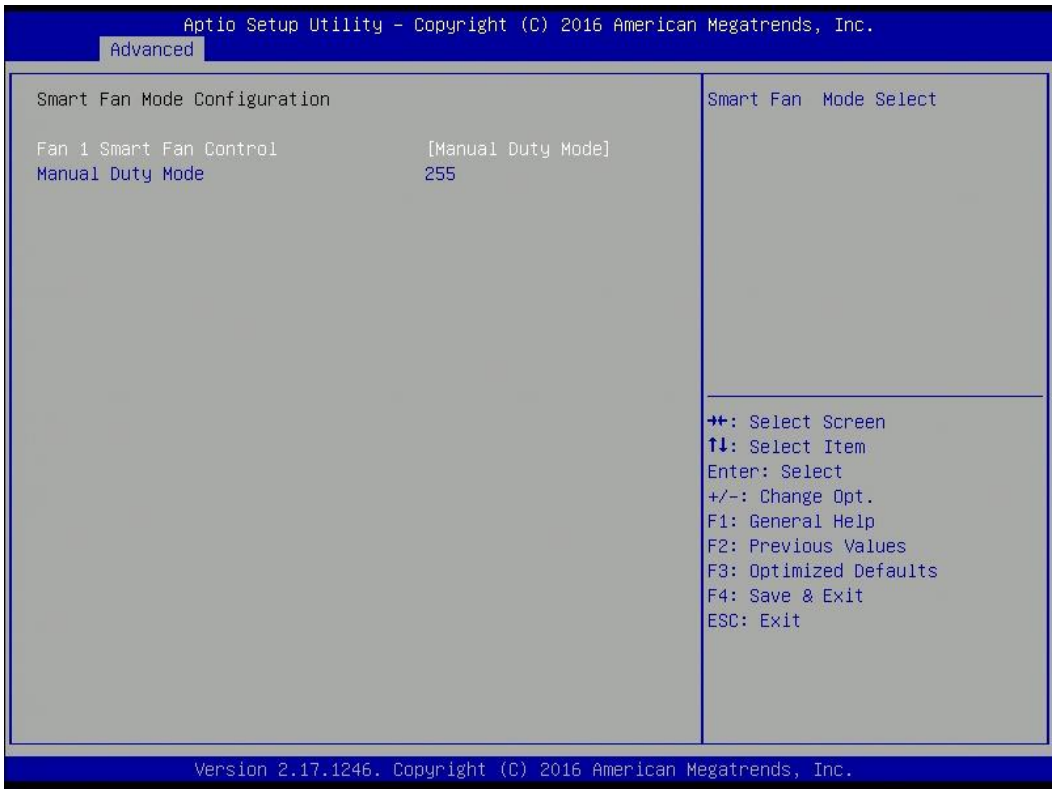
Serial Port
Enable or disable serial port (COM)

Change Setting
Select an optimal setting for Super IO device

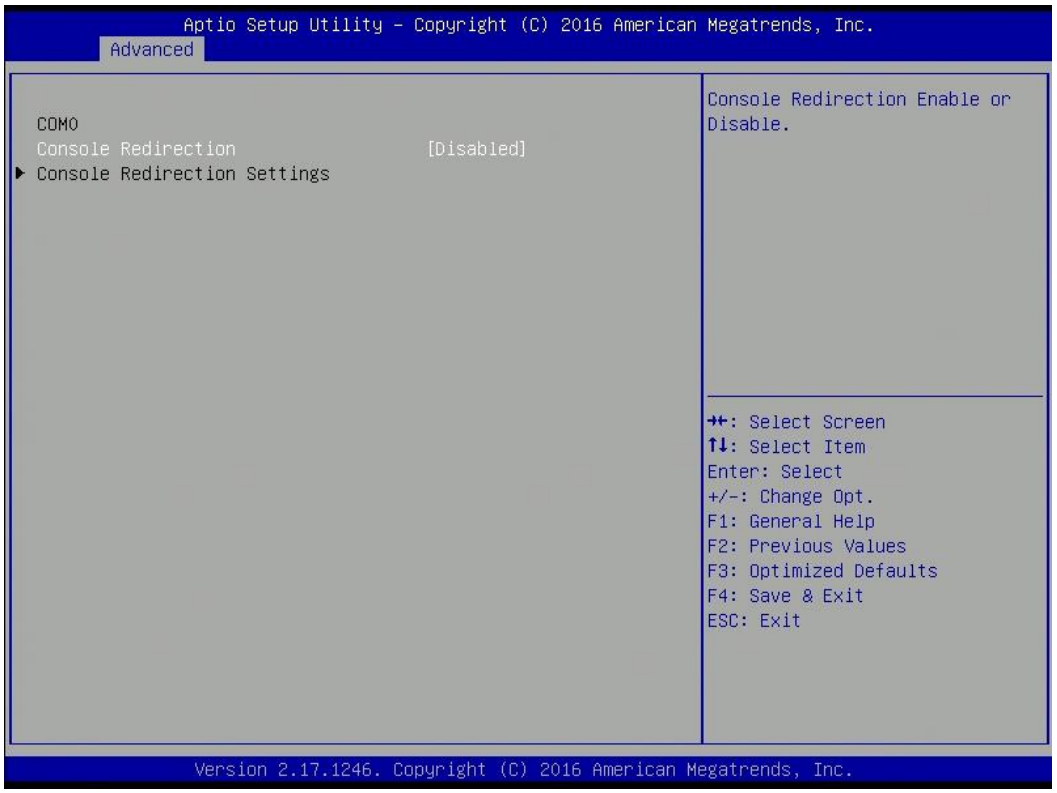
3.4.4 Hardware Monitor



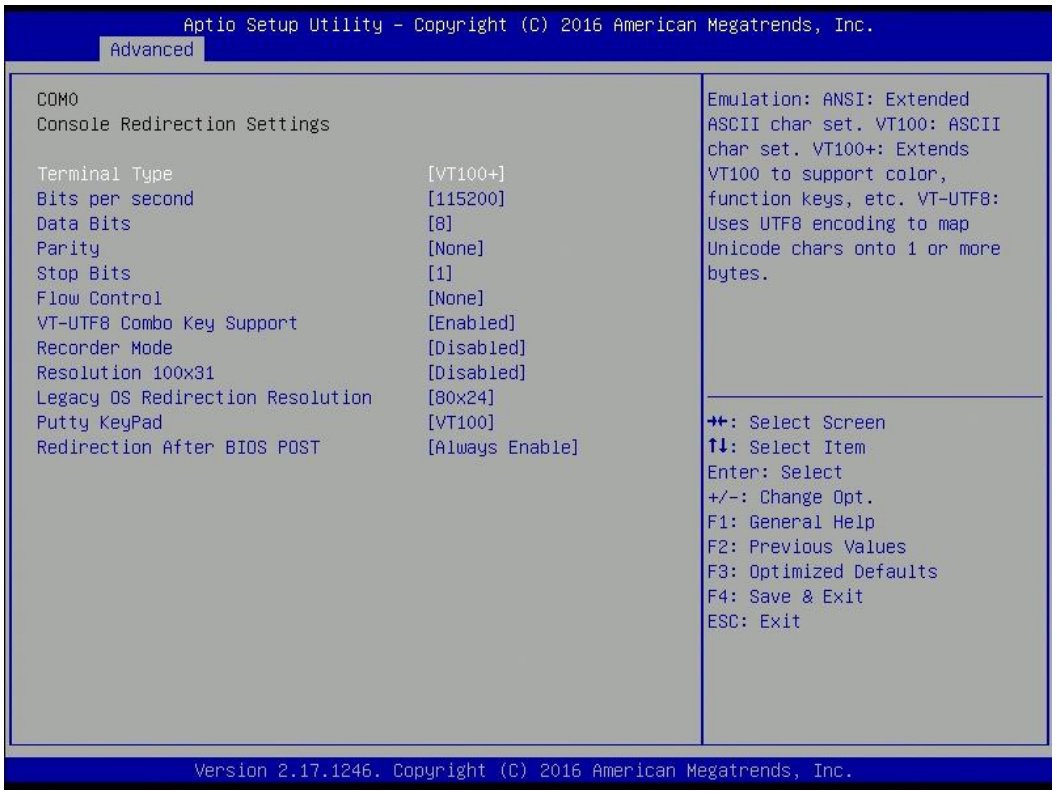
3.4.4.1 Smart Fan Mode Configuration



3.4.5 Serial Port Console Redirection

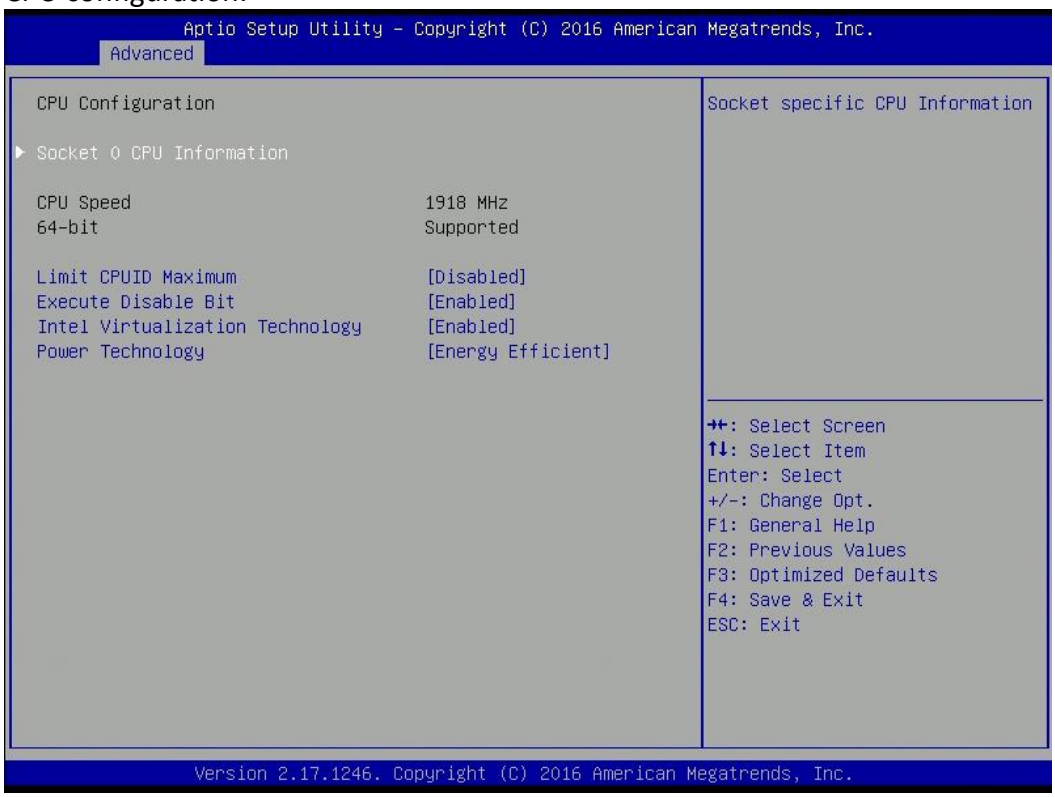


3.4.5.1 COM0 Console Redirection Settings

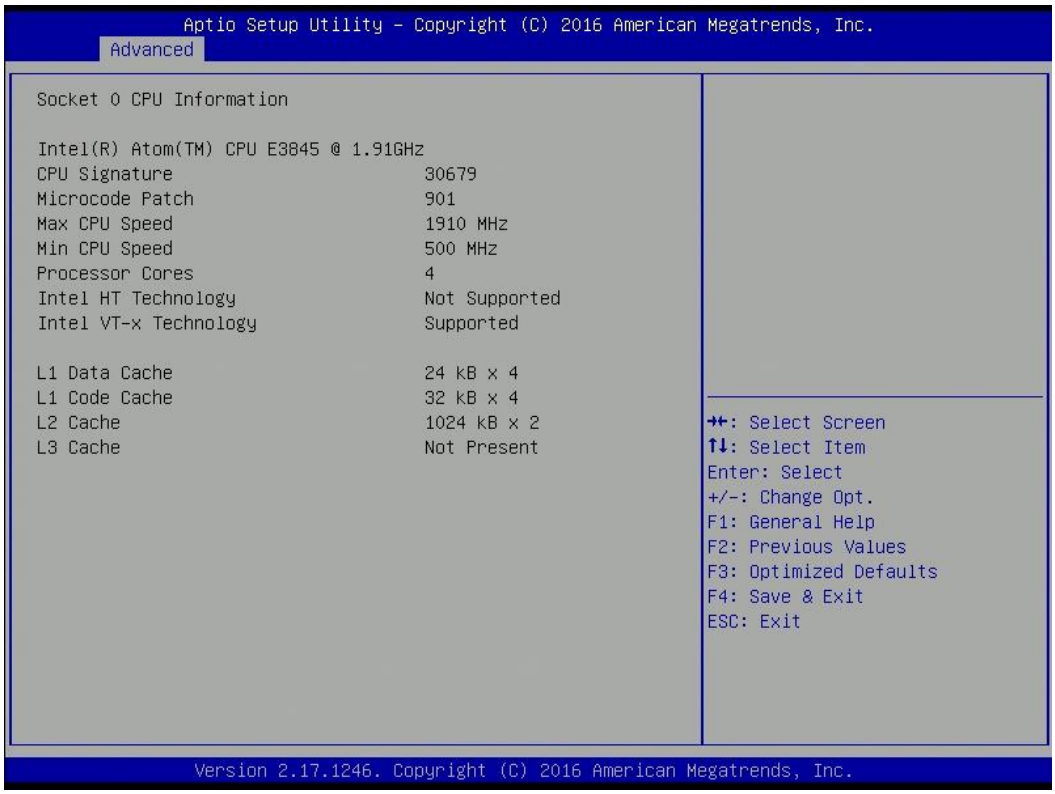


3.4.6 CPU Configuration

CPU configuration.

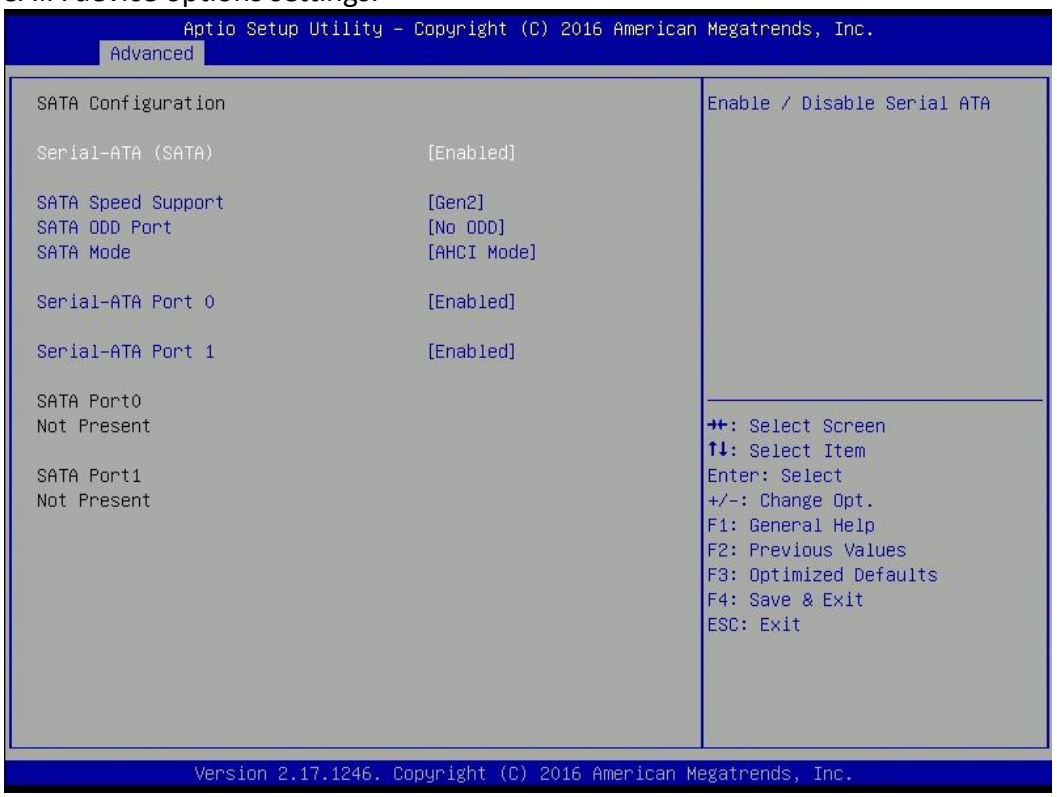


3.4.6.1 Socket 0 CPU Information

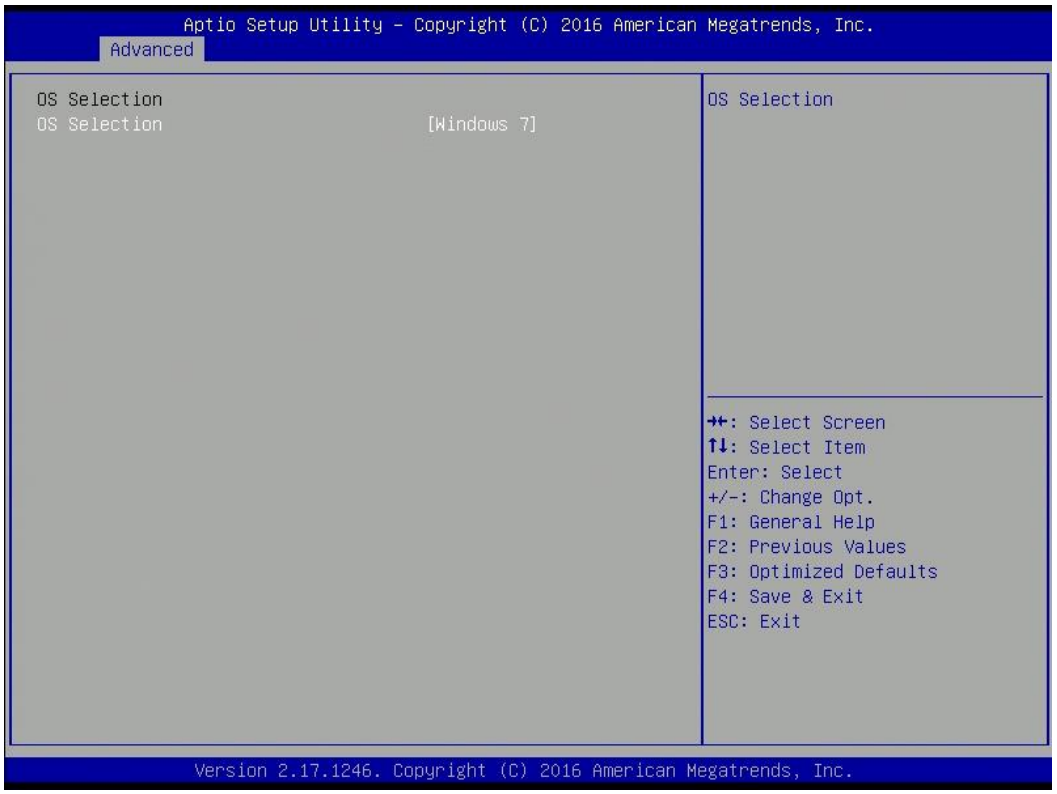


3.4.7 SATA Configuration

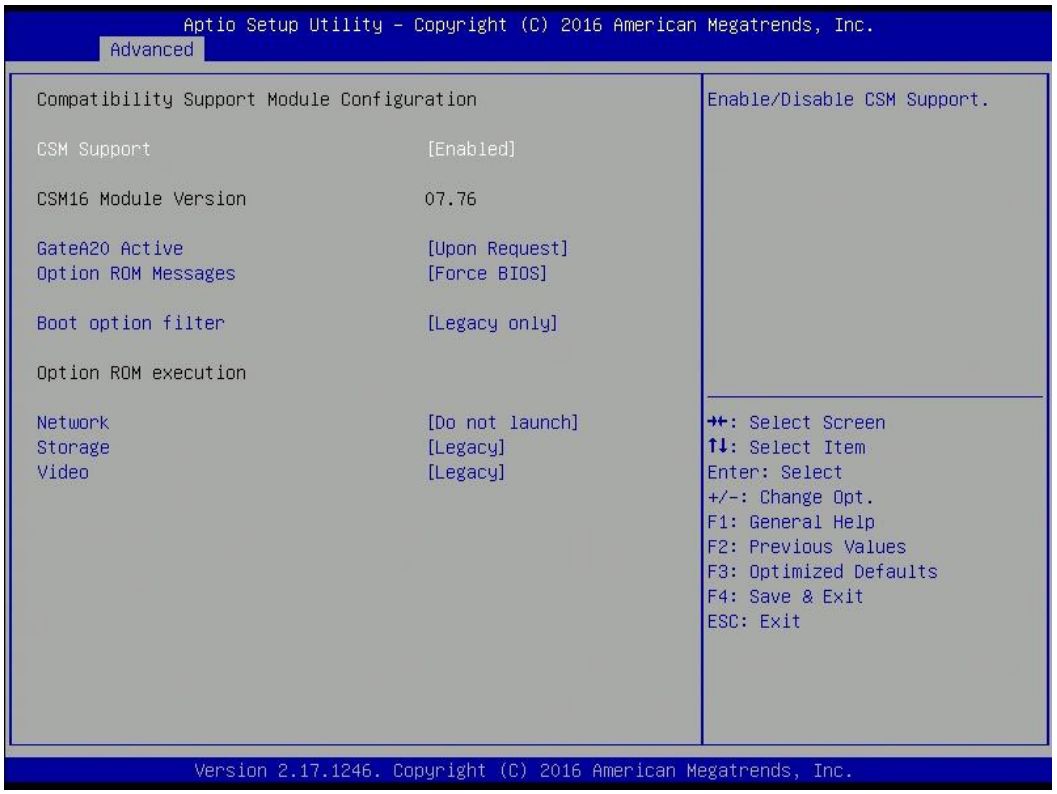
SATA device options settings.



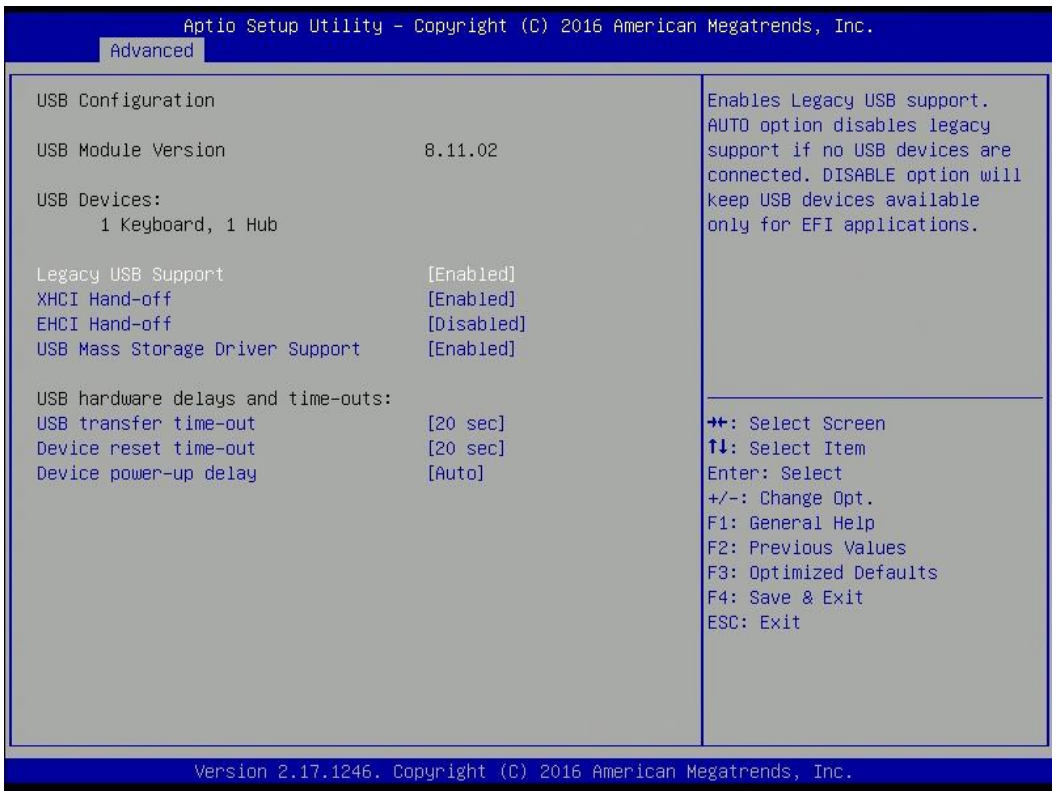
3.4.8 OS Selection



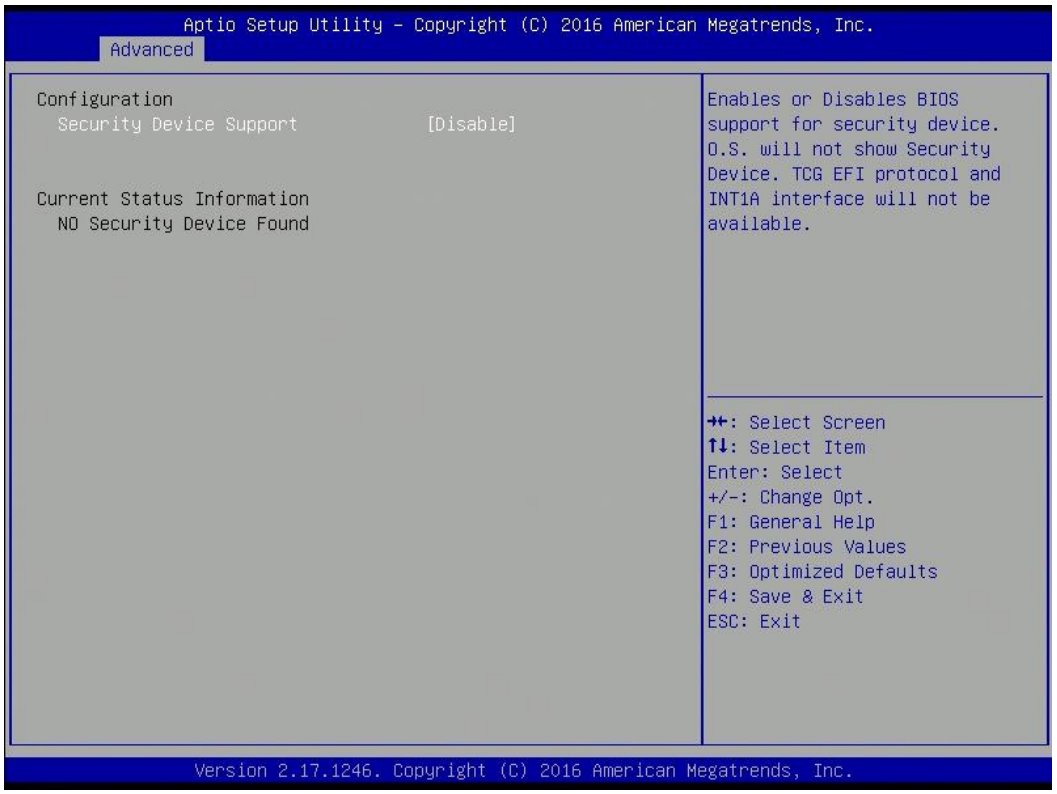
3.4.9 CSM Configuration



3.4.10 USB Configuration

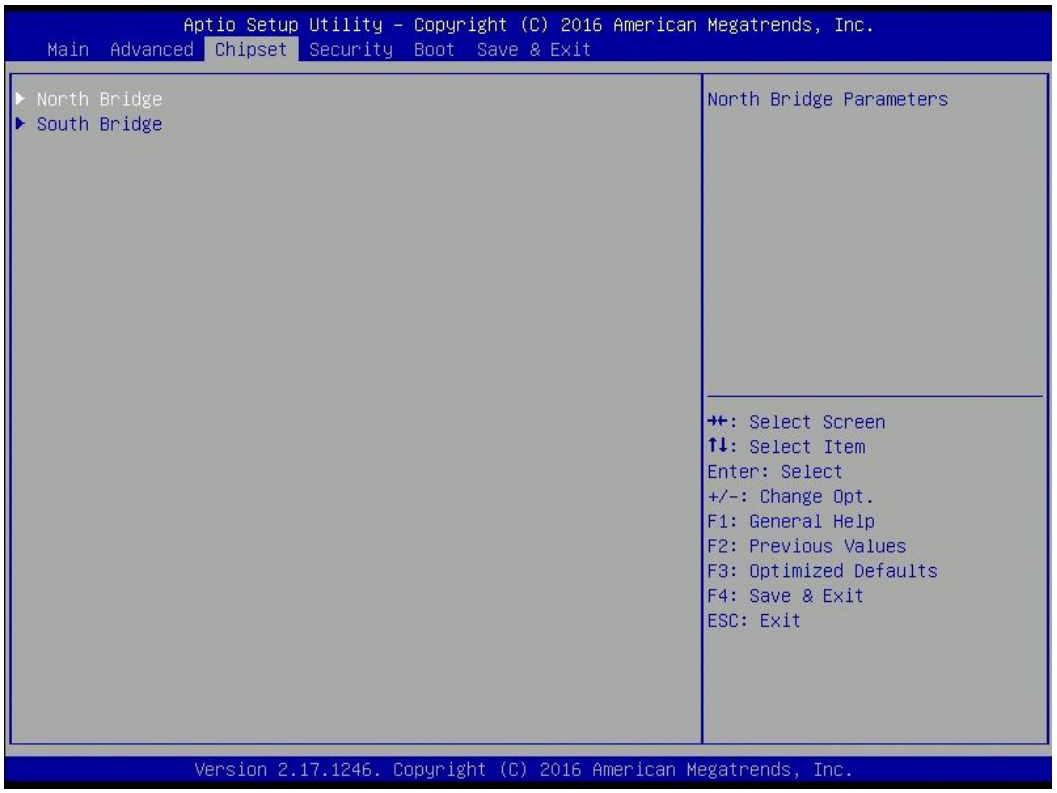


3.4.11 Trusted Computing



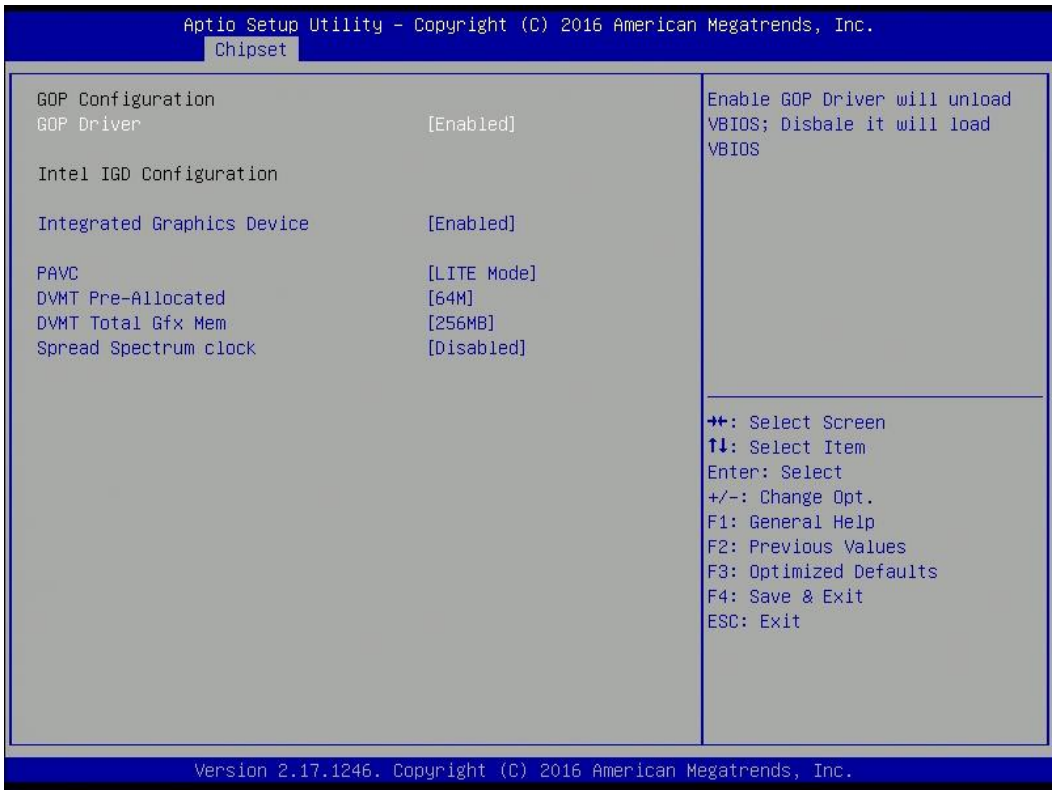
Security Device Support
Enables or disables BIOS support for security device. O.S. will not show security device. TCG EFI protocol and INT1A interface will not be available.

3.5 Chipset Menu

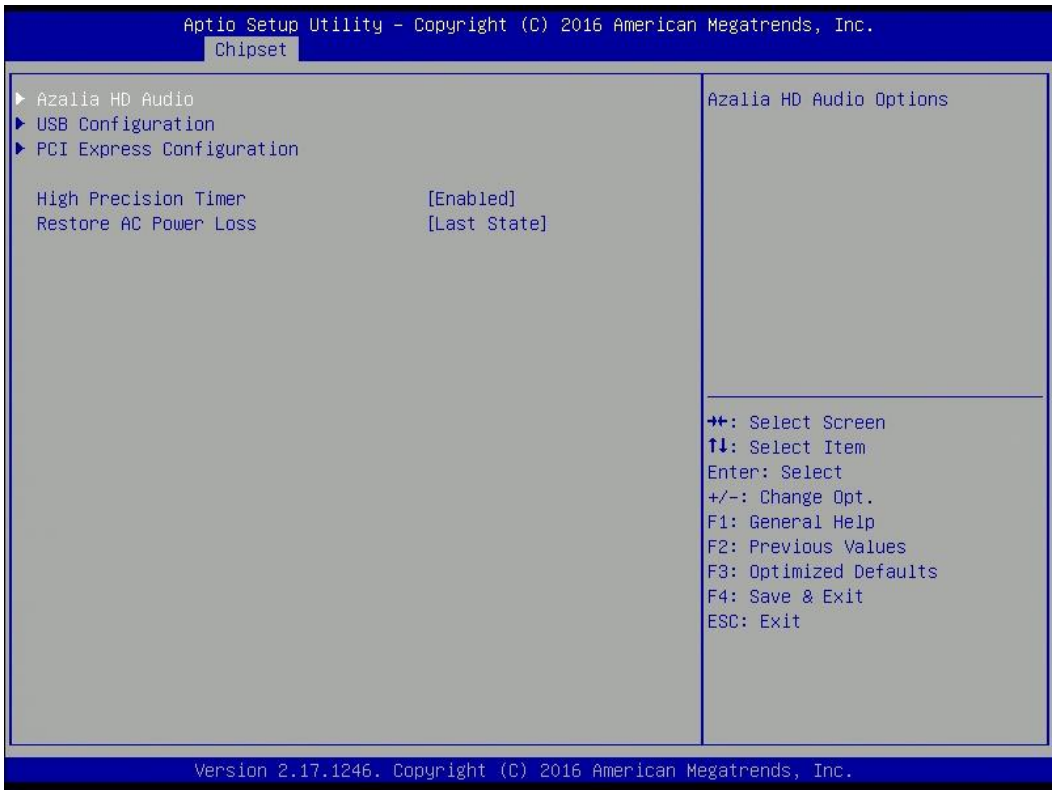


3.5.1 North Bridge

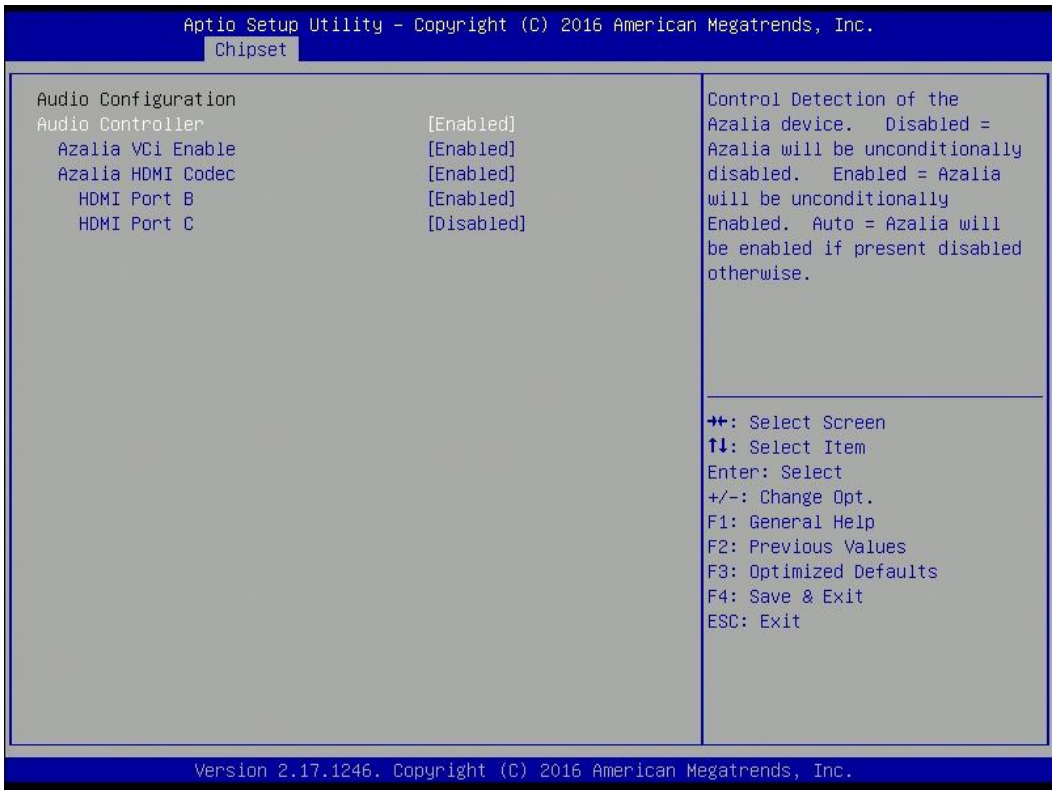
3.5.1.1 Intel IGD Configuration



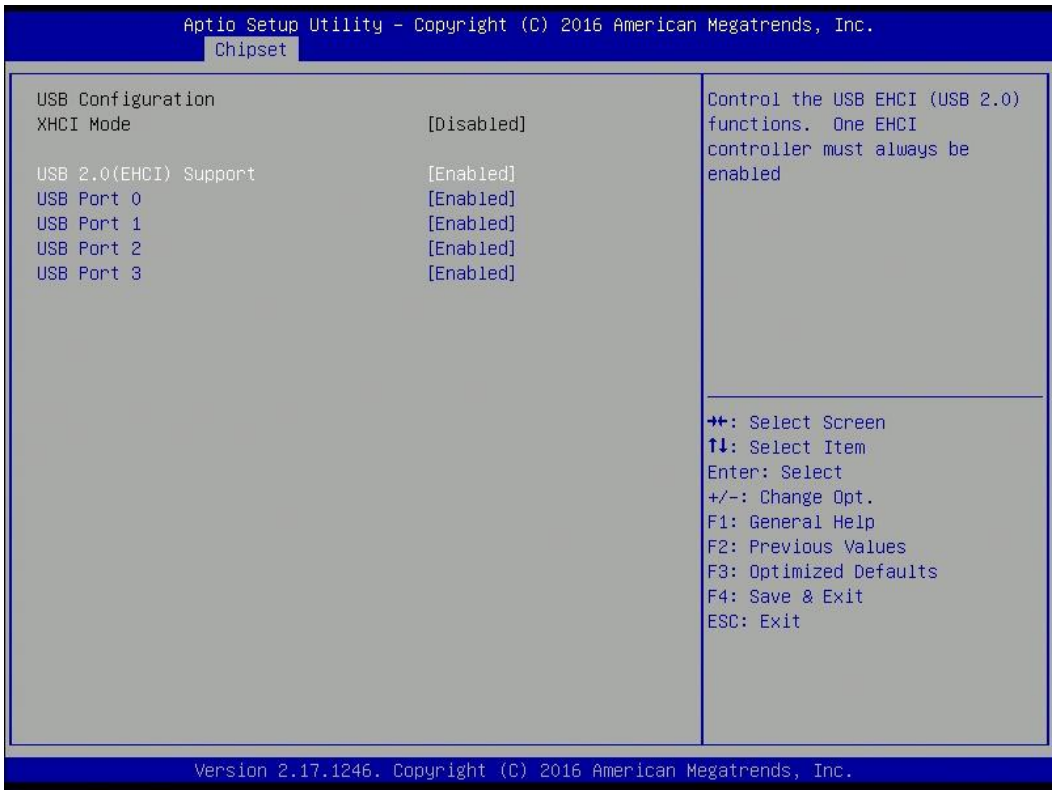
3.5.2 South Bridge



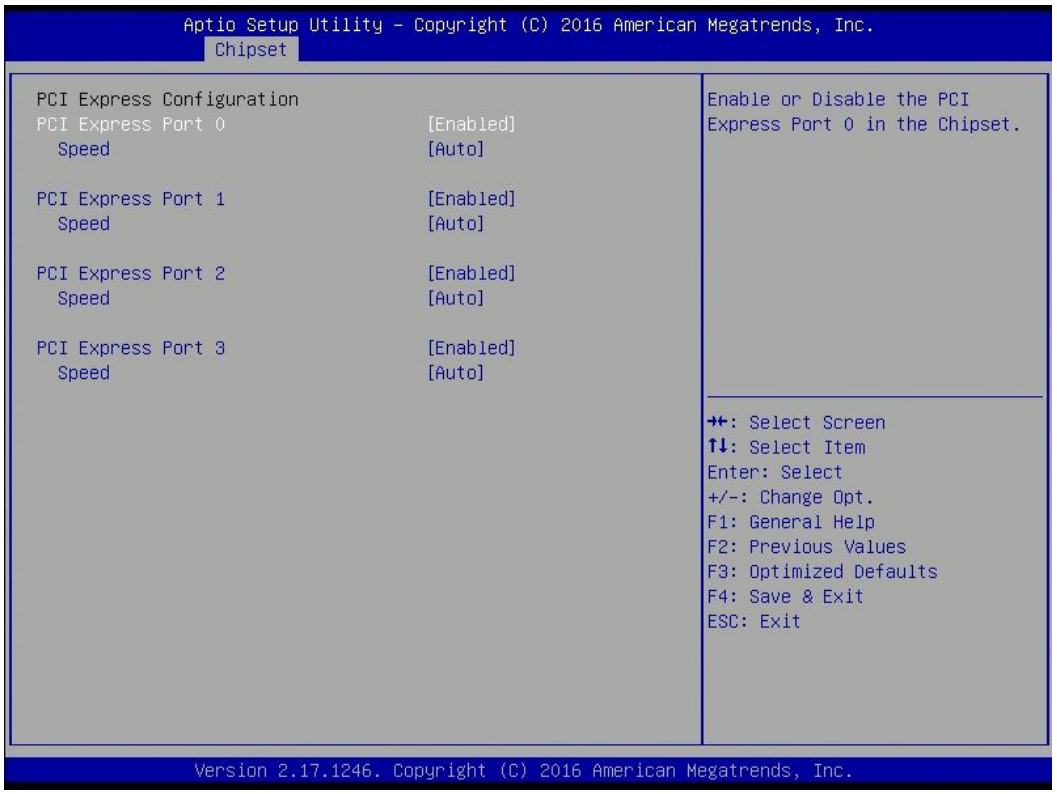
3.5.2.1 Azalia HD Audio



3.5.2.2 USB configuration

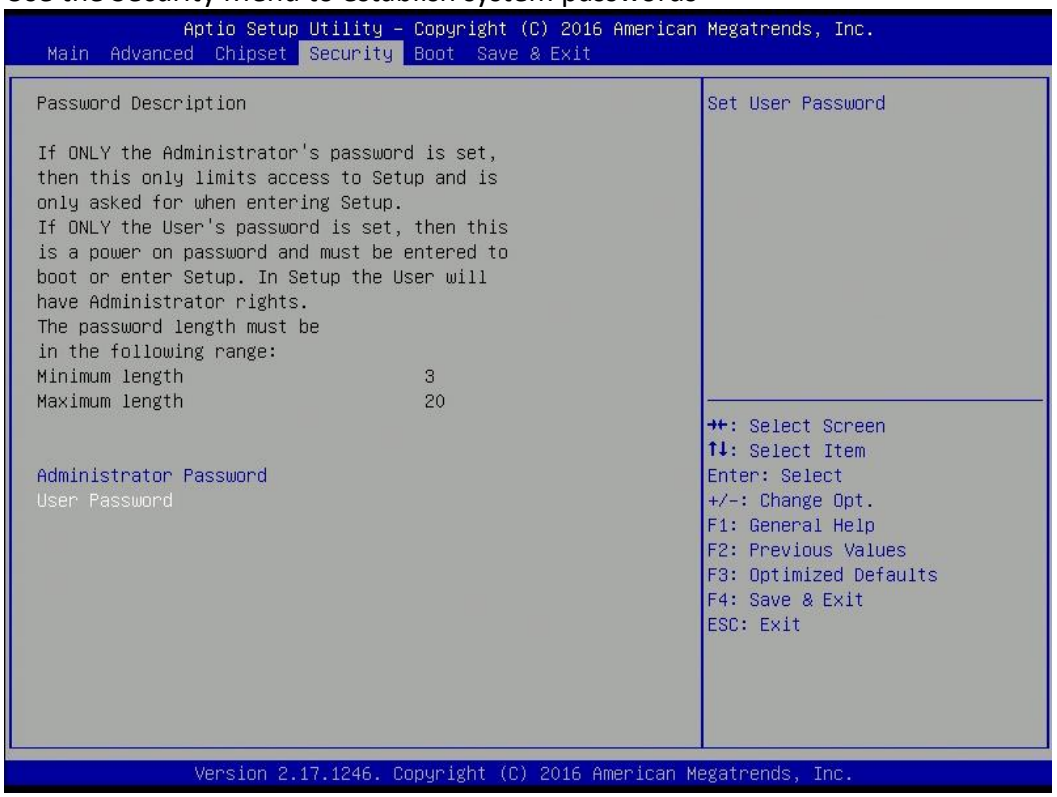


3.5.2.3 PCI Express Configuration



3.6 Security Menu

Use the Security Menu to establish system passwords



Administrator Password

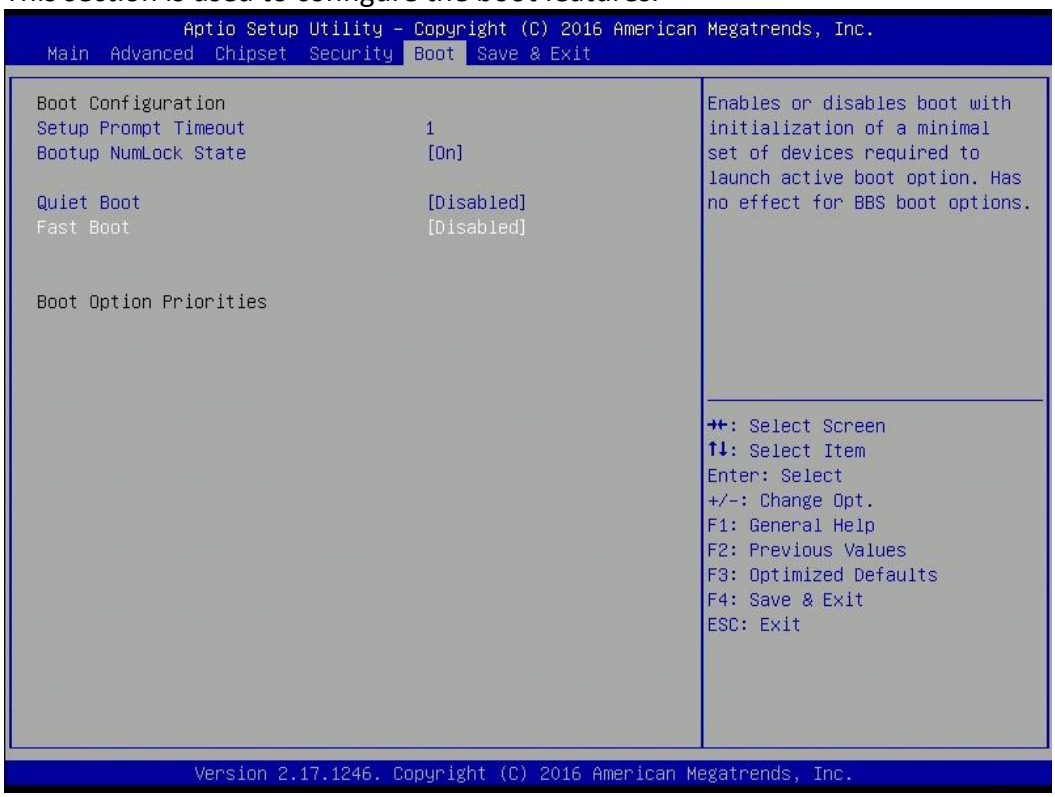
Set administrator password.

User Password

Set user Password.

3.7 Boot Menu

This section is used to configure the boot features.



Setup Prompt Timeout

Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

Bootup NumLock State

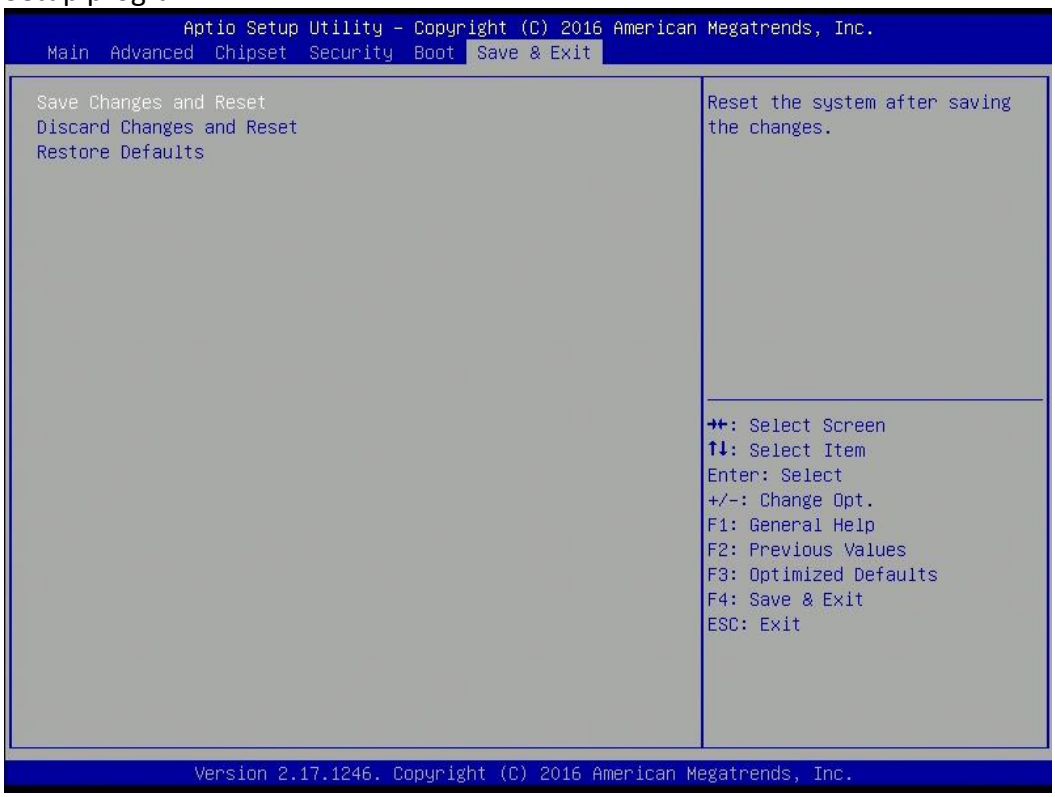
Select the keyboard NumLock state

Quiet Boot

Enables or disables quiet boot option

3.8 Save & Exit

This screen provides functions for handling changes made to the BIOS settings and the exiting of the Setup program.



Save Changes and Exit

Exit system setup after saving the changes

Discard Changes and Exit

Exit system setup without saving changes

Restore Defaults

Restore/Load default values for all the setup options