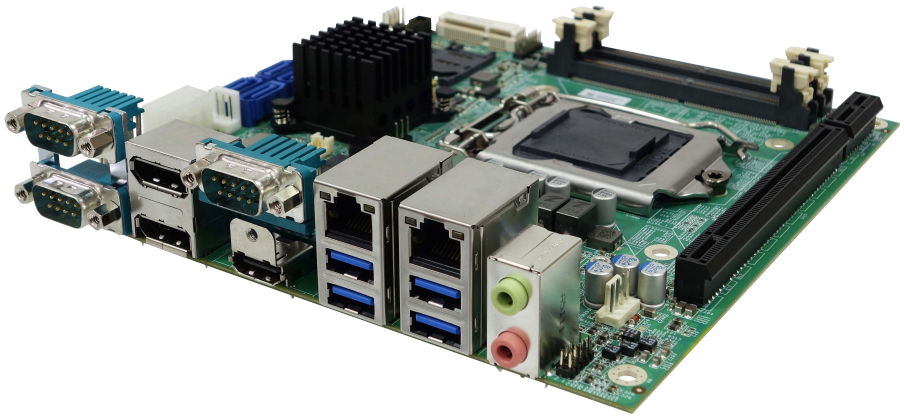
INS8349A

Mini-ITX for Intel® Skylake-S Processor



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	05.10.2016	Initial release

Packing list

- ☐ INS8349A mini-ITX SBC
- ☐ INS8349A1 mini-ITX SBC
- ☐ CD (Driver + user's manual)
- ☐ Optional Accessories
  - ○ Cable kit
    - SATA cable
    - SATA power cable

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

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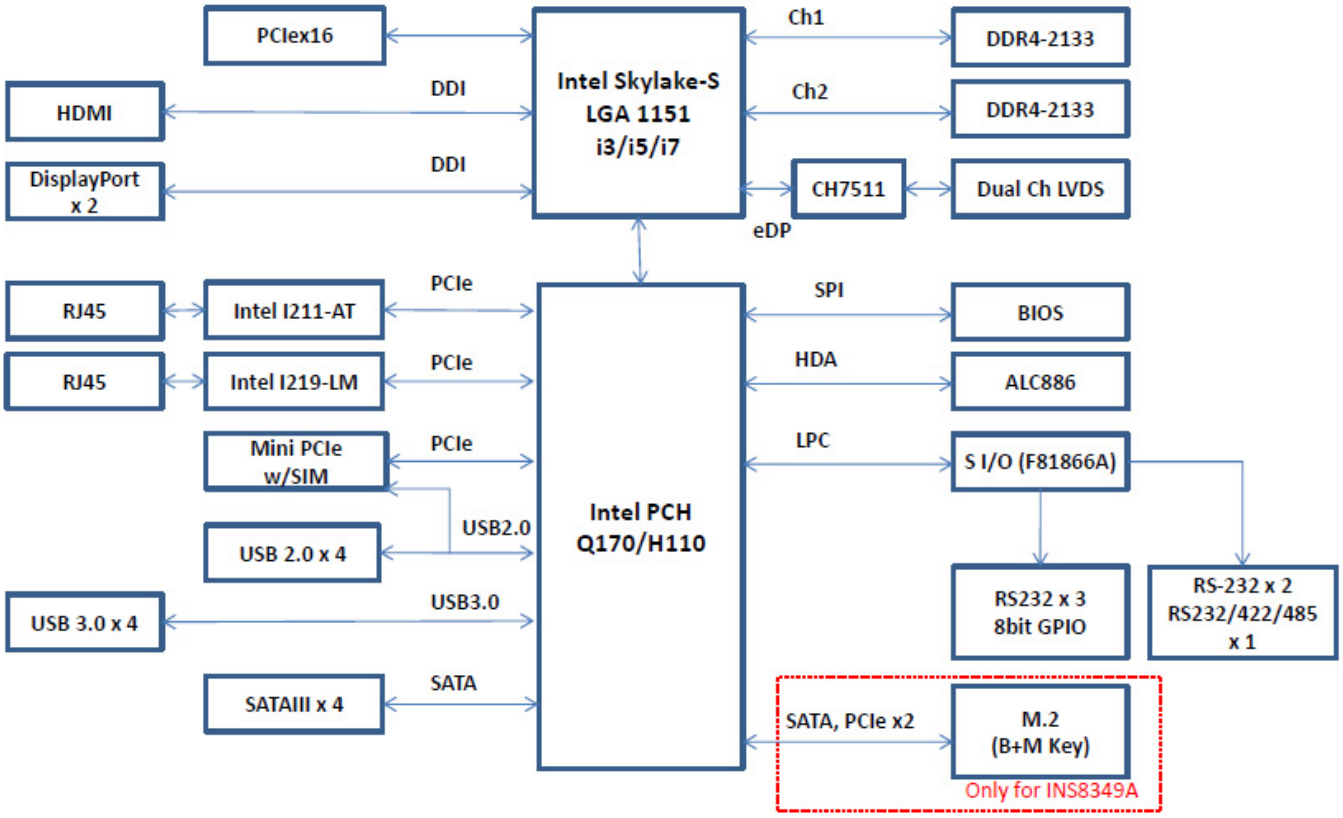
Chapter 1: Product Information

1.1 Block Diagram

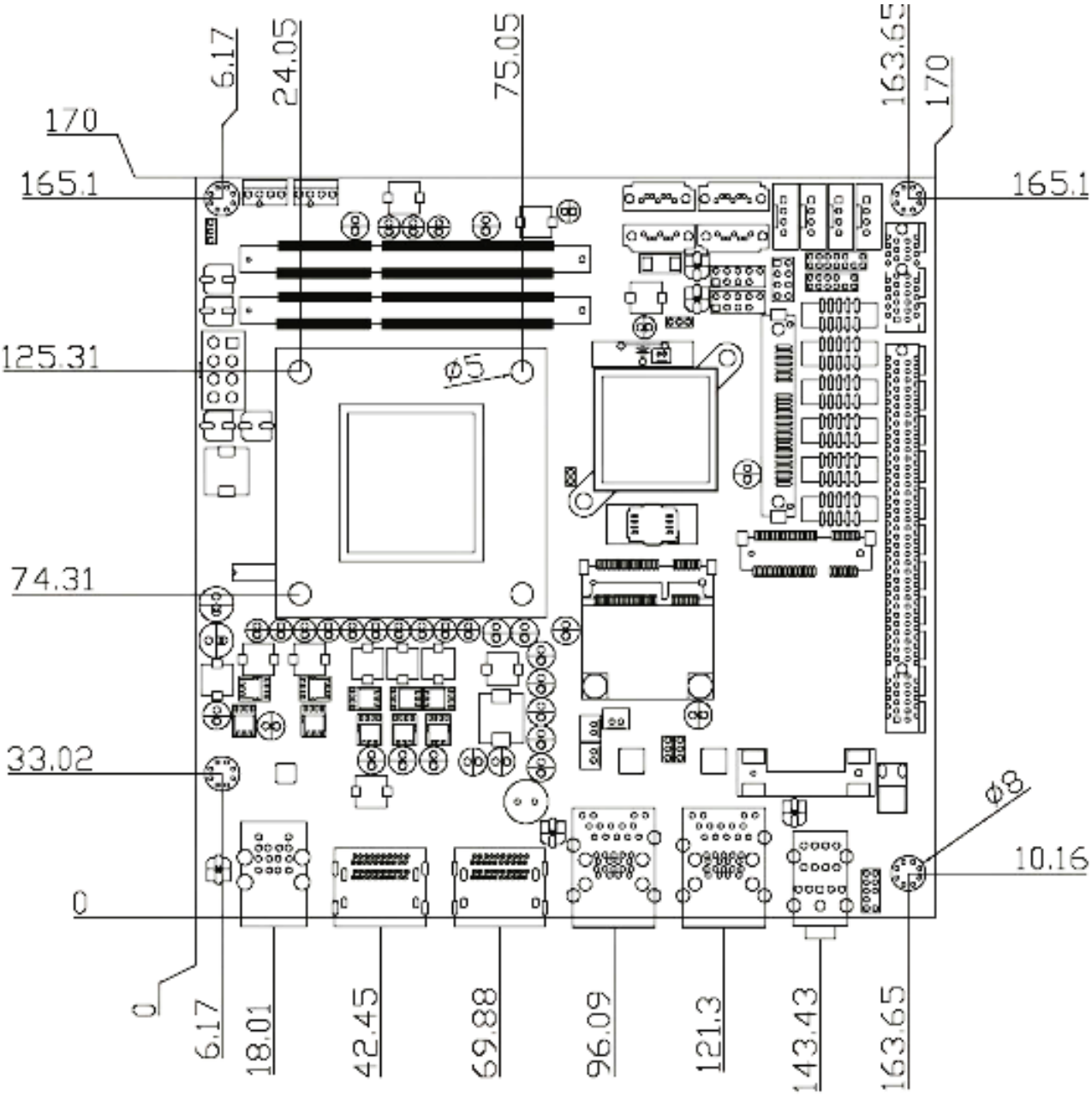


1.2 Key Features

Processor & System	
CPU Type	Intel® 6 Genth Skylake Core™ i7/i5/i3 Processor, LGA1151 Socket
Chipset	Intel® Q170 (INS8349A) Intel® H110 (INS8349A1)
Memory Type	2 x DDR4 SO-DIMM 2133/2400 MHz up to 32 GB
BIOS	AMI® UEFI BIOS
Supoer I/O	Fintek F81886A
Expansion Slot	1 x mPCIe w/ SIM 1 x 2280 M.2 (M+B Key) #Only On INS8349A
Display	
Chipset	Intel® HD Graphics 500 Series
DisplayPort	Max. resolution 4096 x 2304 @ 60 Hz
HDMI	Max. resolution 4096 x 2304 @ 24 Hz
LVDS	Dual channel 24-bit LVDS, Max. resolution 1920 x 1200 @ 60 Hz
Display Type	DisplayPort, HDMI, LVDS
Audio	
Codec	Realtek ALC886 High Definition Audio Codec
Ethernet	
Chipset	Intel® I211-AT & I219-LM
WOL	Yes
Boot from LAN	Yes for PXE
Rear I/O	
COM	1 x RS232/422/485 2 x RS232
DisplayPort	2 x DisplayPort
HDMI	1 x 1.4a HDMI
Ethernet	2 x RJ45
USB	4 x USB 3.0
Audio	Mic-in, Line-out
Internal I/O	
SATA	4 x SATAIII (6 Gb/s)
USB	4 x USB 2.0
COM	3 x RS232
Audio	Mic-in, Line-out
LVDS	40-pin connector
LPC	14-pin connector
GPIO	8-bit (4 in/4 out)
Mechanical and Environment	
Form Factor	mini-ITX
Power Type	12V DC-in, 8-pin ATX power connector, AT/ATX mode support
Dimension	170 x 170mm
Operating Temp.	-0 to 60°C
Storage Temp	-20 to 80°C
Relative Humidity	10% to 90%, non-condensing

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

1.3 Mechanical Drawing



Chapter 2: Jumpers and Connectors

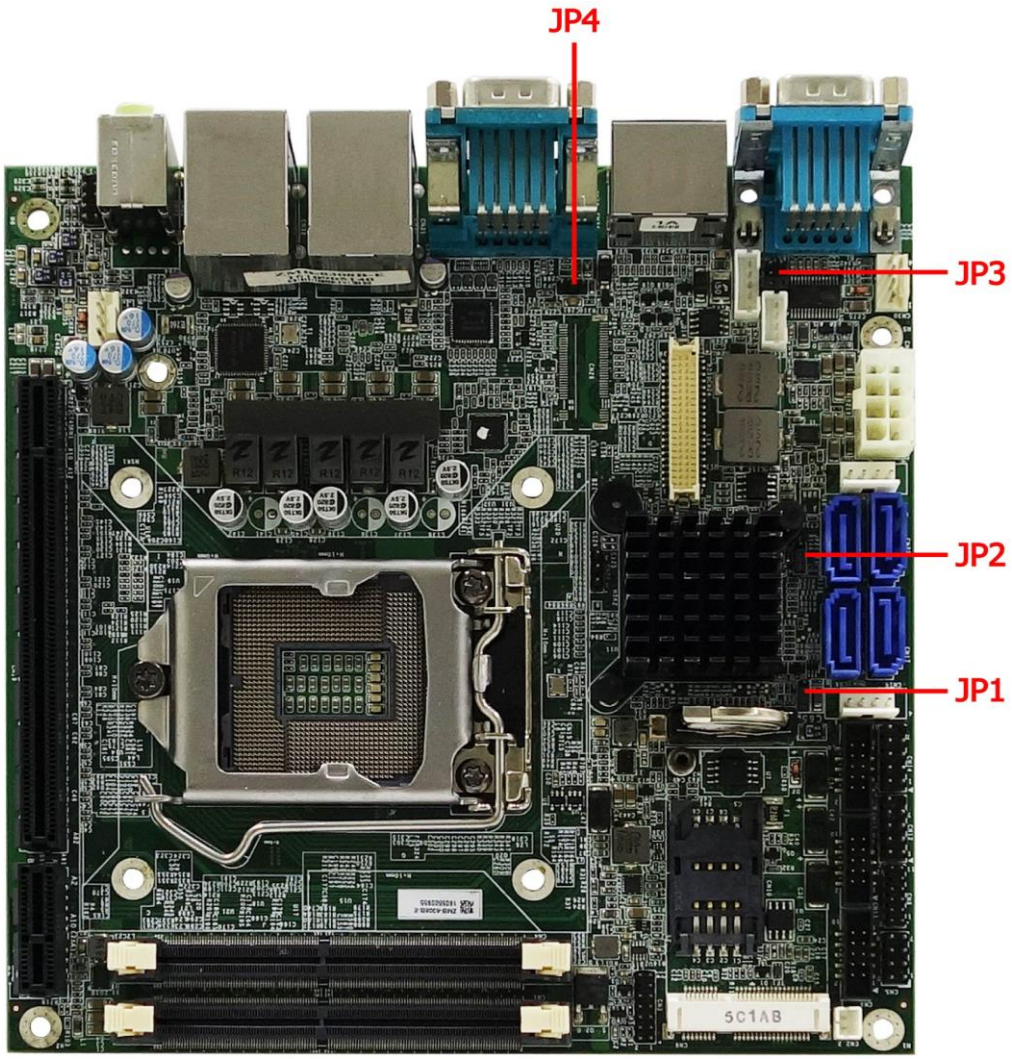
2.1 Onboard connector and jumper list

Label	Function
JP1	AT/ATX Mode Selection
JP2	Clear CMOS
JP3	LVDS Backlight Control Mode Selection
JP4	LVDS Power Level Selection
CN1	DDR4 SO-DIMM, Channel A
CN2	WLAN LED for mPCIe
CN3	LPC Pin Header
CN4	DDR4 SO-DIMM, Channel B
CN5	Front Panel Pin Header
CN6	COM4 Port Connector
CN8	GPIO Pin Header
CN9	mPCIe Socket
CN10	SIM Socket
CN11	COM5 Port Connector
CN12	USB 2.0 Connector
CN13	COM6 Port Connector
CN14	USB 2.0 Connector
CN15	Battery Connector
CN16	SATA Power Connector
CN17	SATA Connector
CN18	SATA Connector
CN19	PCIe x16 Slot
CN21	SATA Connector
CN22	SATA Connector
CN23	SATA Power Connector
CN24	LVDS Panel Connector
CN25	DC-in Connector
CN26	HDMI Connector
CN27	LVDS Backlight Connector

CN28	CPU Fan Connector
CN29	LVDS Panel Inverter Power Connector
CN30	System Fan Connector
CN36	Audio Pin Header

2.2 Connector and jumper pin definition

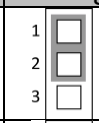
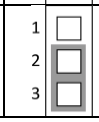
2.2.1 Jumper



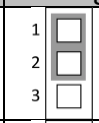
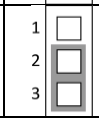
JP1: AT/ATX mode

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

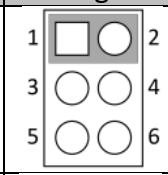
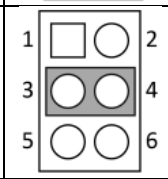
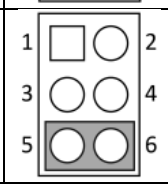
JP2: Clear CMOS

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

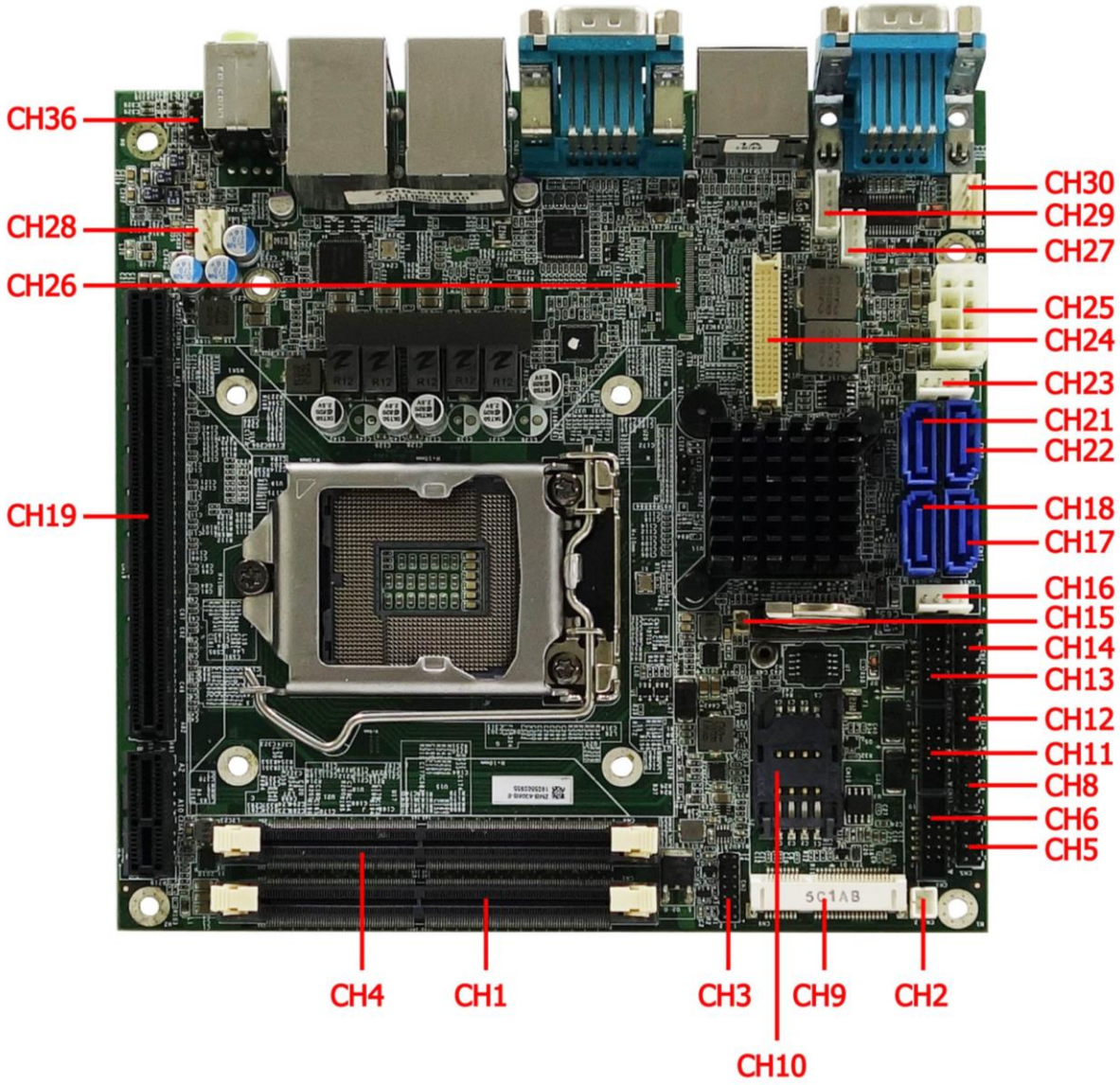
JP3: LVDS Panel

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

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



CN2: WLAN LED for mPCIe

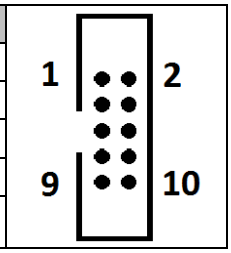
Pin	Definition
1	LED-
2	+3.3V

CN5: 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

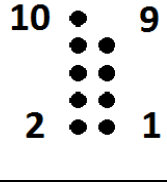
CH6: COM4 RS232
CH11: COM5 RS232
CH13: COM6 RS232

PIN	DEFINITION	PIN	DEFINITION
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	N/C



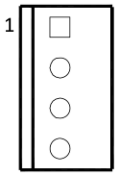
CH12: USB2.0
CH14: USB2.0

PIN	DEFINITION	PIN	DEFINITION
1	+5V	2	+5V
3	USB4_D-	4	USB5_D-
5	USB4_D+	6	USB5_D+
7	GND	8	GND
9	Key	10	GND



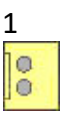
CN16: SATA Power Connector
CN23: SATA Power Connector

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



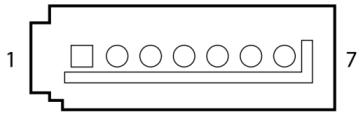
CH15: Battery

Pin	Definition
1	+3V
2	GND



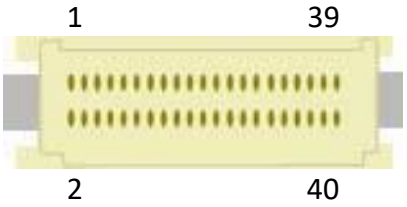
CN17: SATA connector
CN18: SATA connector
CN21: SATA connector
CN22: SATA connector

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



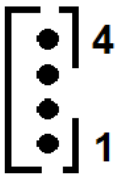
CN24: LVDS connector

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



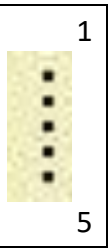
CN27: LVDS Backlight Connector

Pin	Definition
1	LVDS_ Backlight_up
2	GND
3	GND
4	LVDS_ Backlight_down



CN29: Panel inverter power connector

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



CN36: Audio pin header

Pin	Definition	Pin	Definition
1	Min-in_L	2	GND
3	Min-in_R	4	N/C
5	Line-out_R	6	Min-in_JD
7	GND	8	N/C
9	Line-out_L	10	Line-out_JD

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

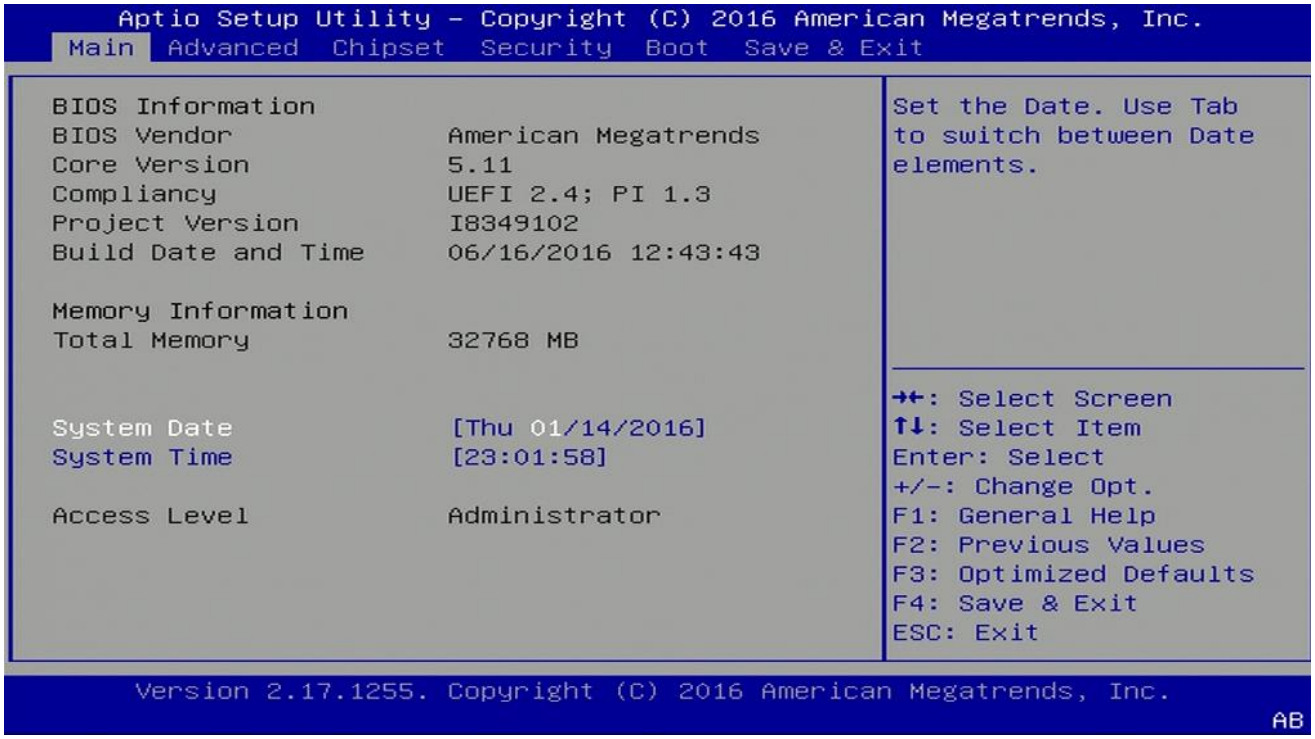
The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.
Some of the hot keys are <F1>, <F10>, <Enter>, <ESC>, and <Arrow> keys.

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.

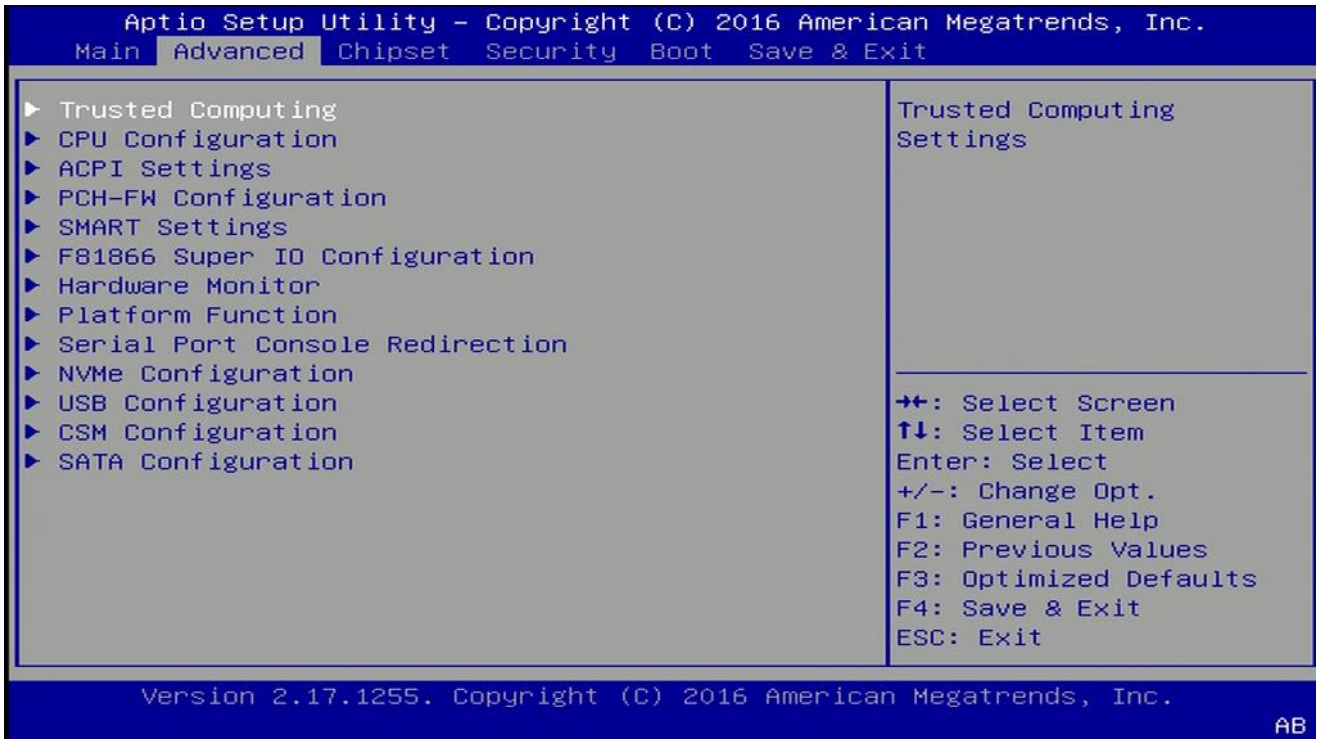
Note: The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30 P.M. as 17:30:00.

Access Level

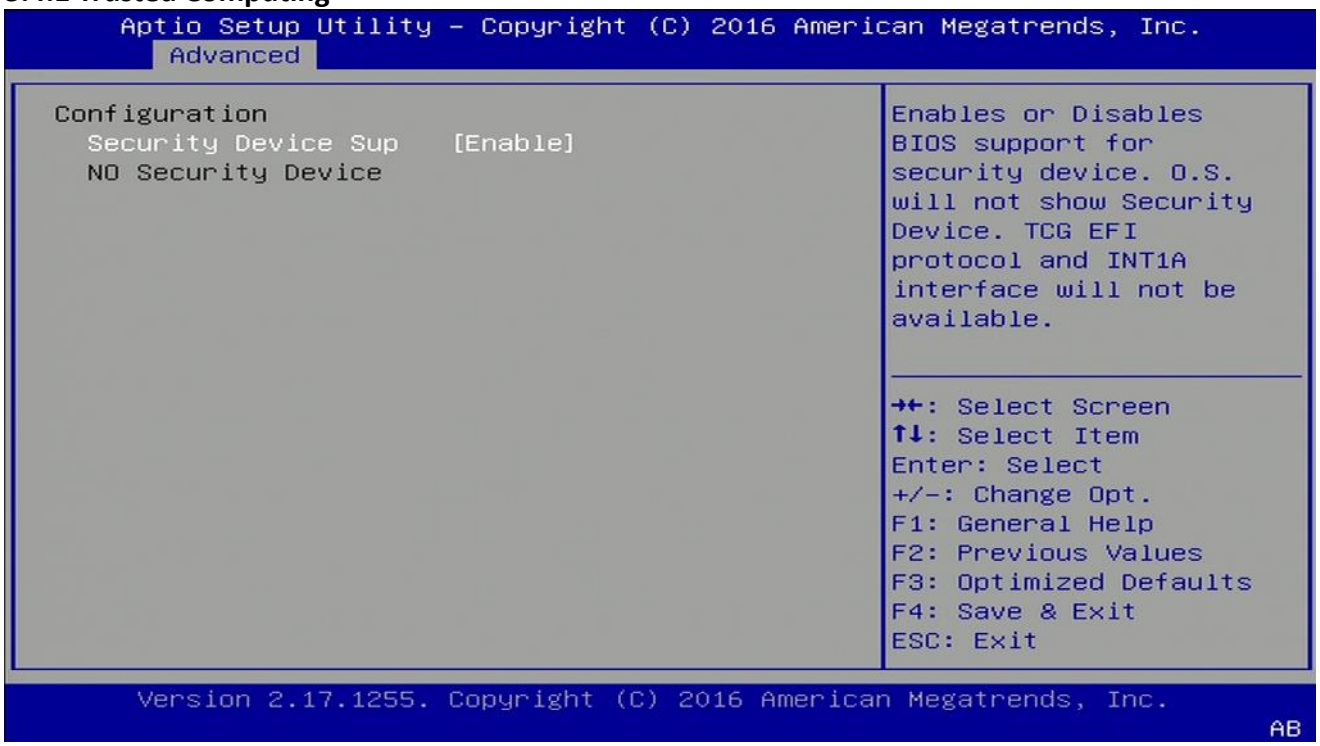
Display the access level of the current user in the BIOS.

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 Trusted Computing



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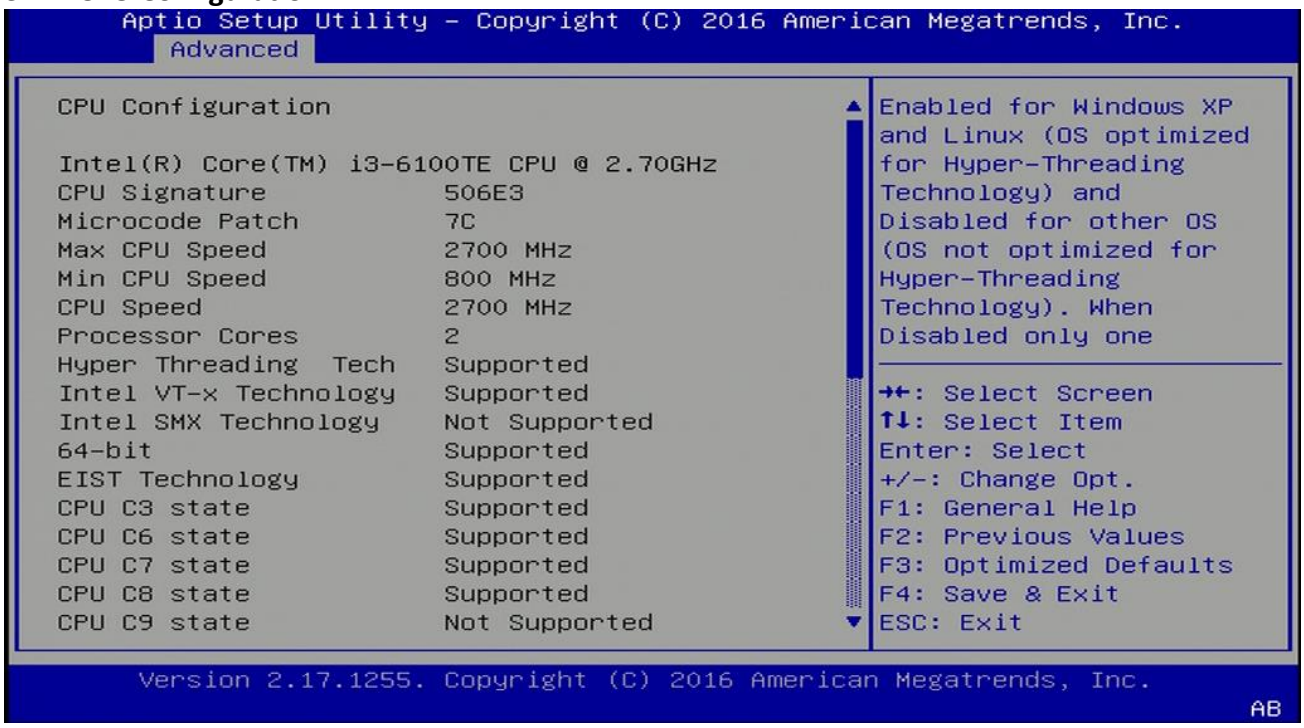
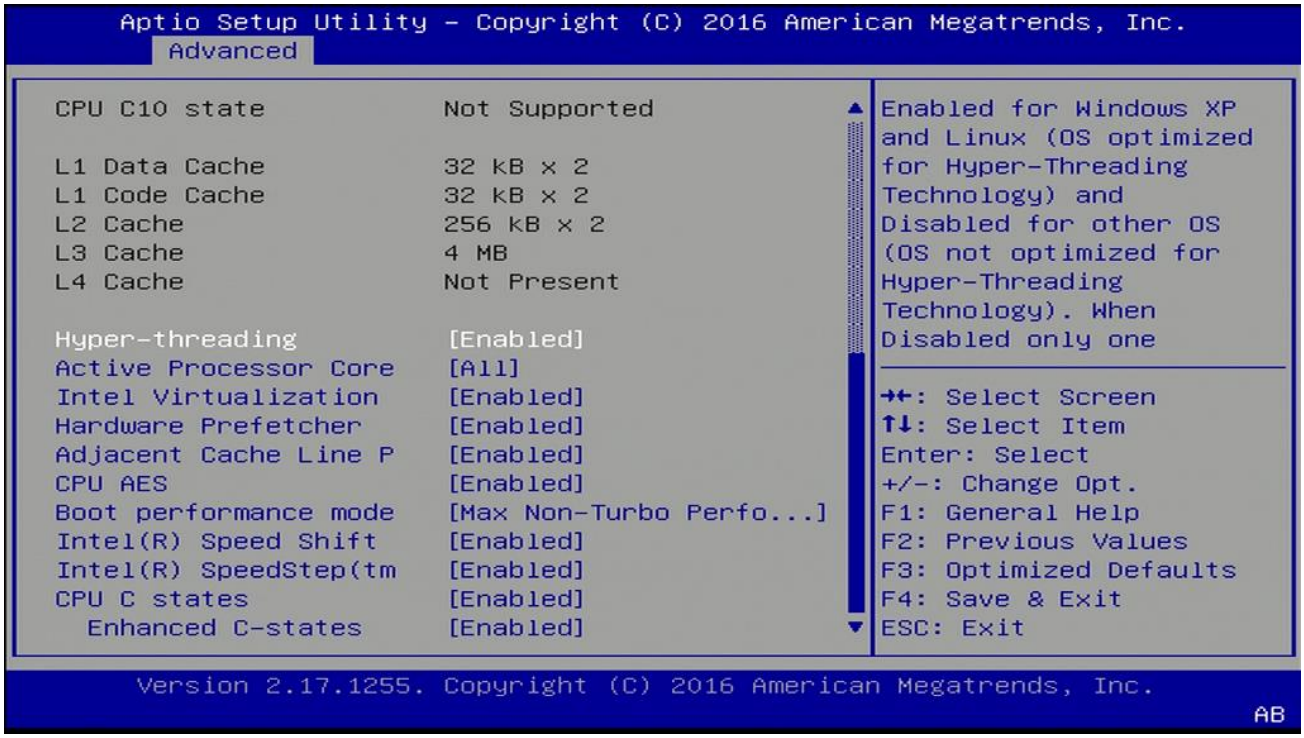
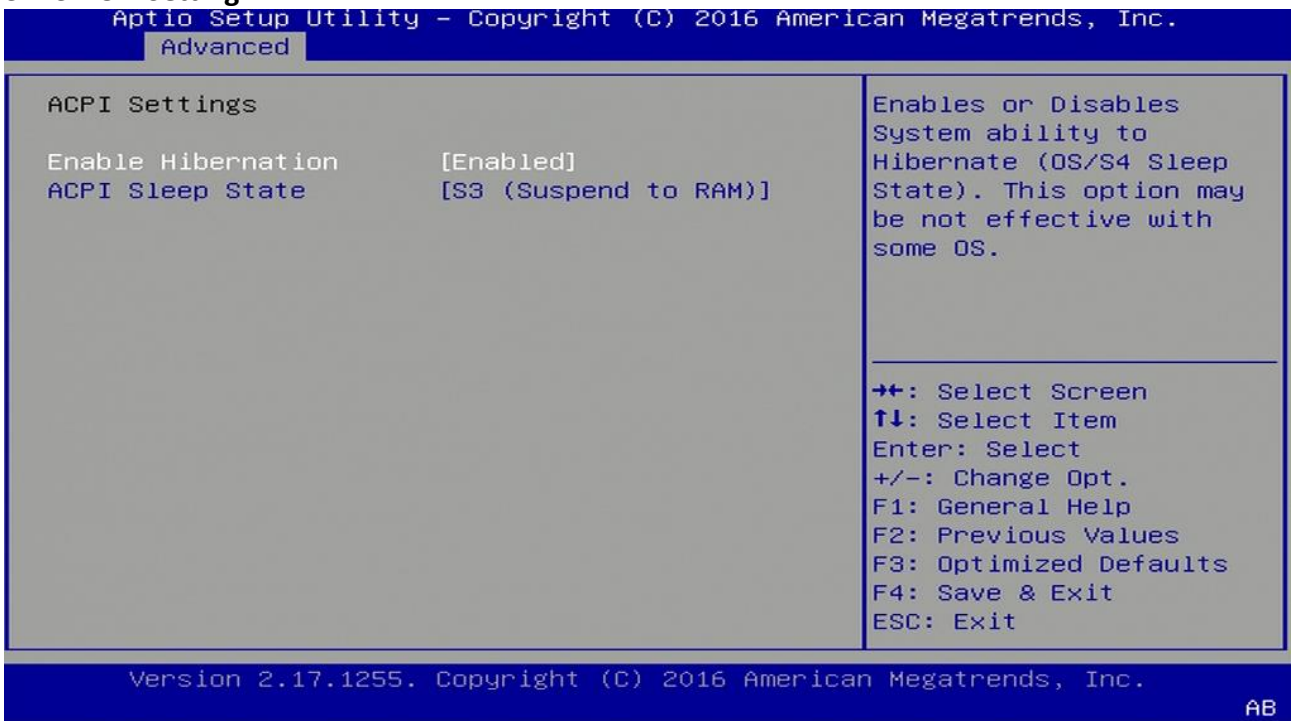
3.4.2 CPU Configuration

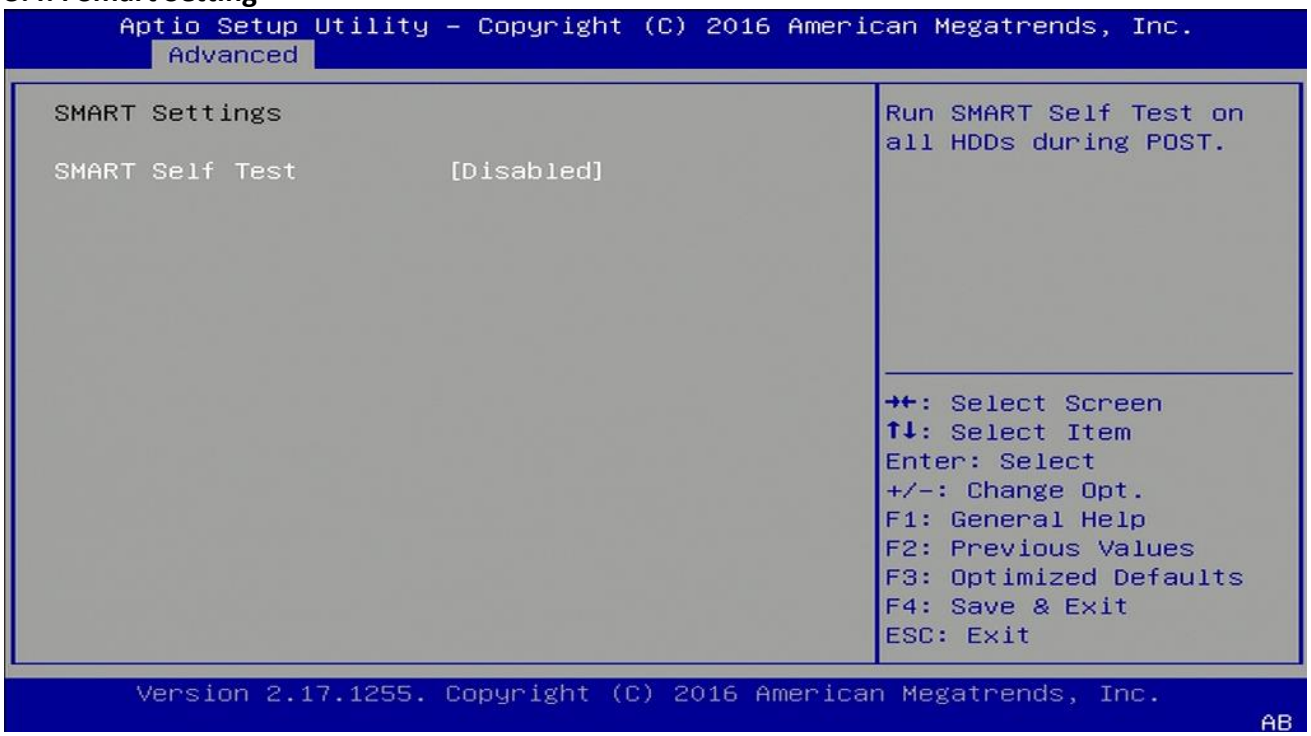




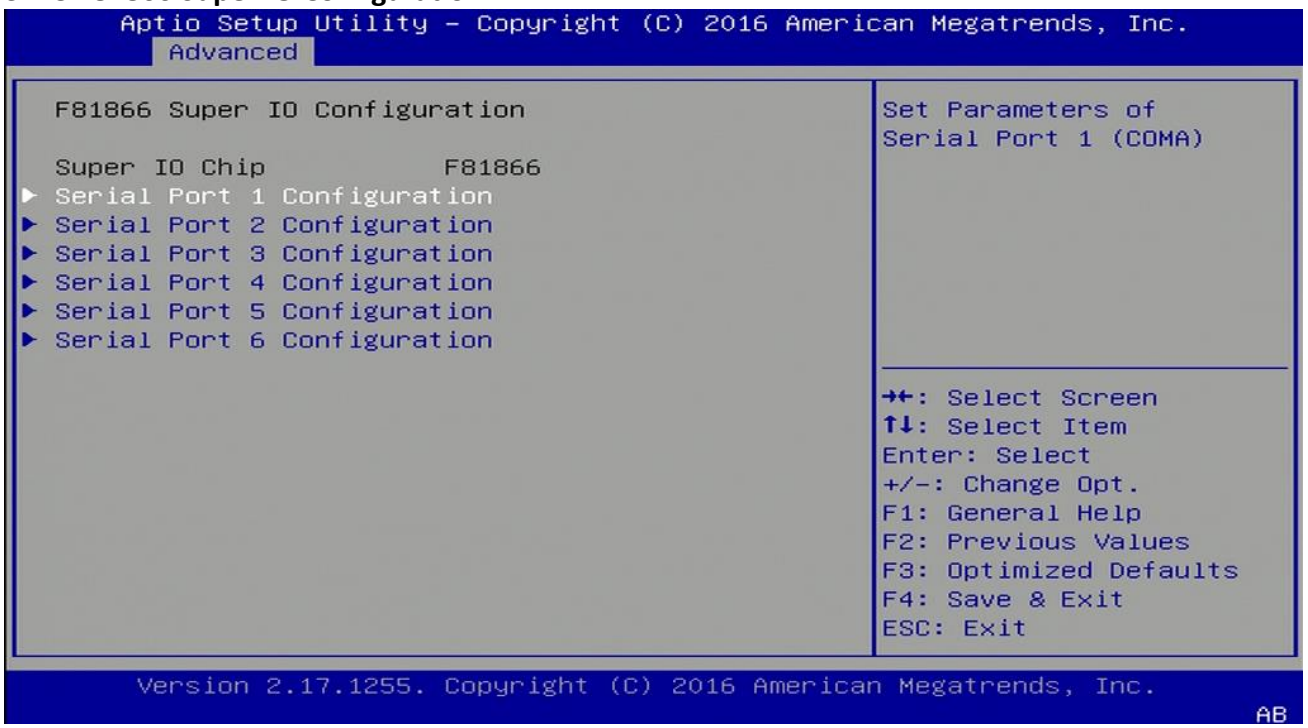
3.4.3 ACPI Setting

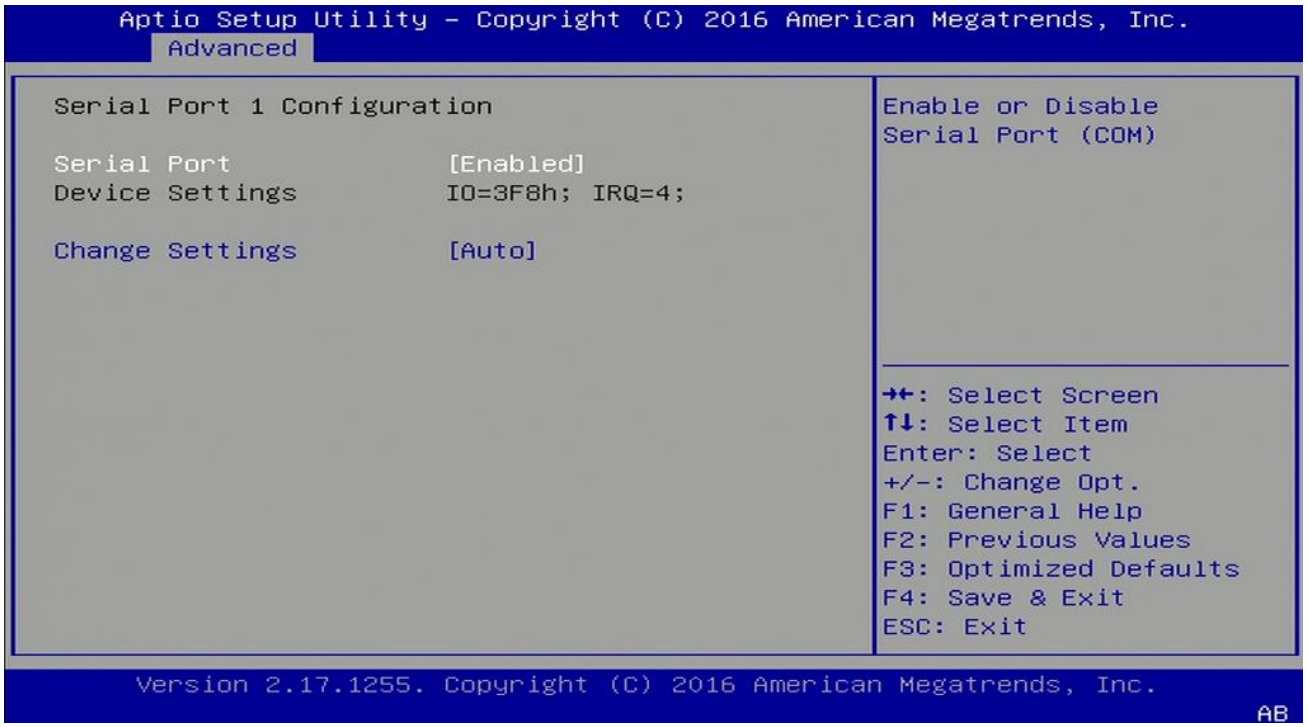


3.4.4 Smart Setting

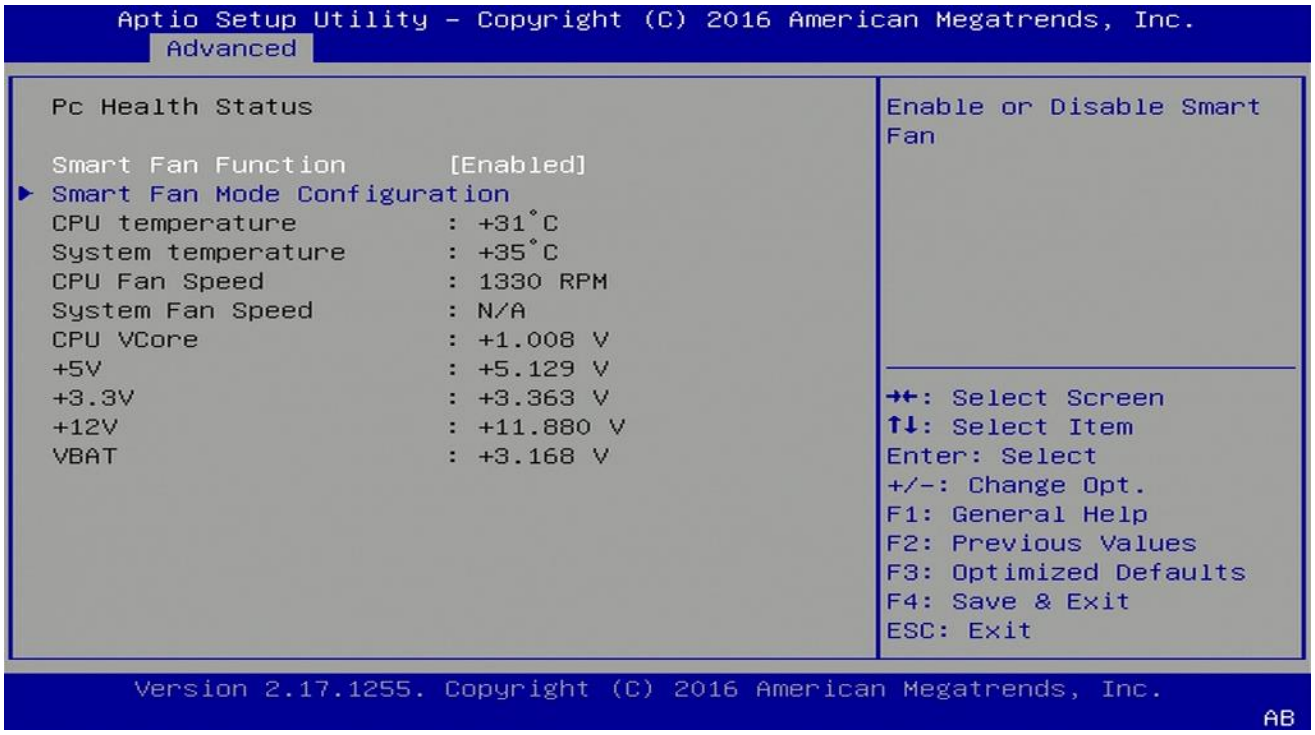


3.4.5 F81866 Super IO Configuration

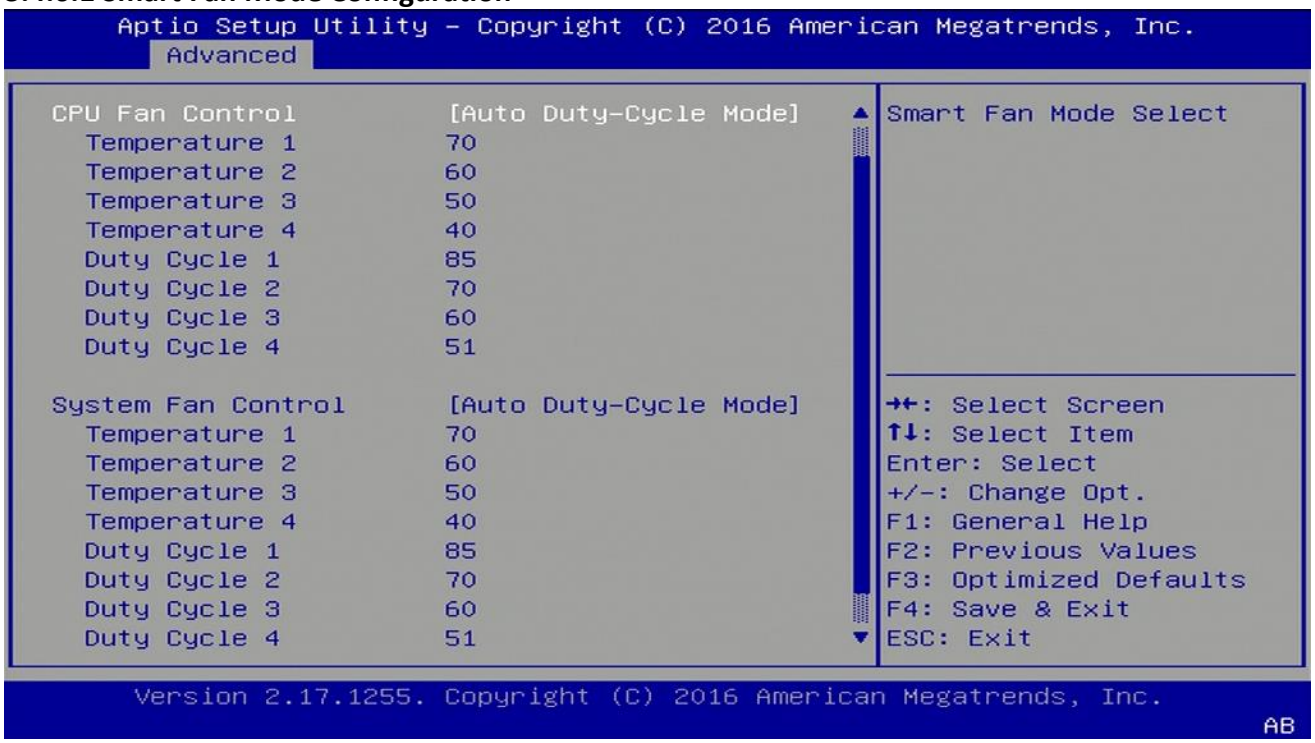




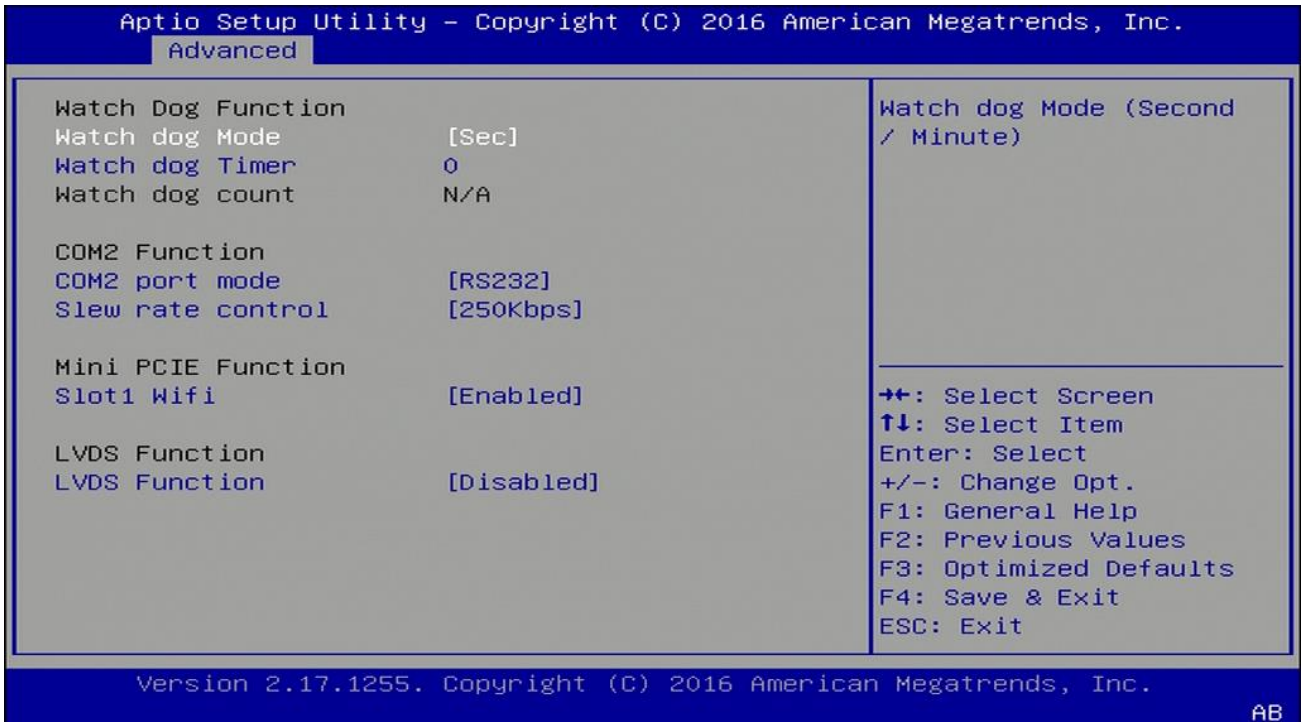
3.4.6 Hardware Monitor

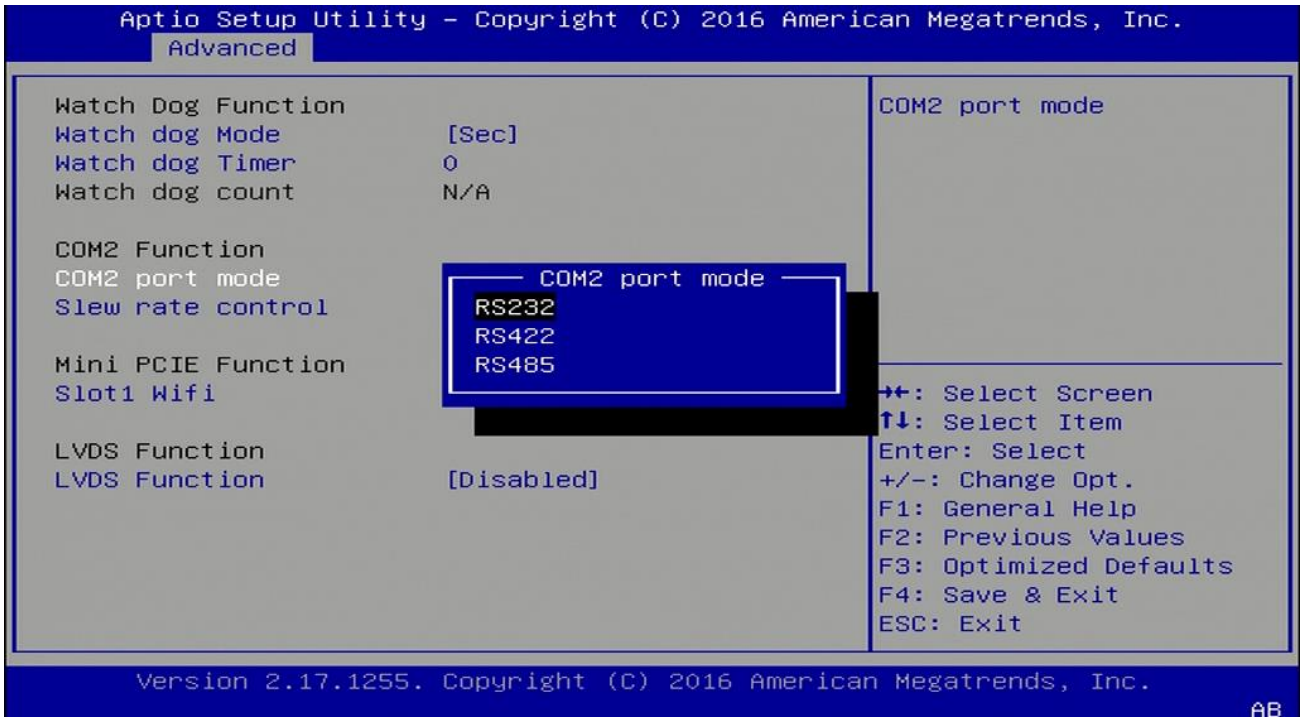


3.4.6.1 Smart Fan Mode Configuration

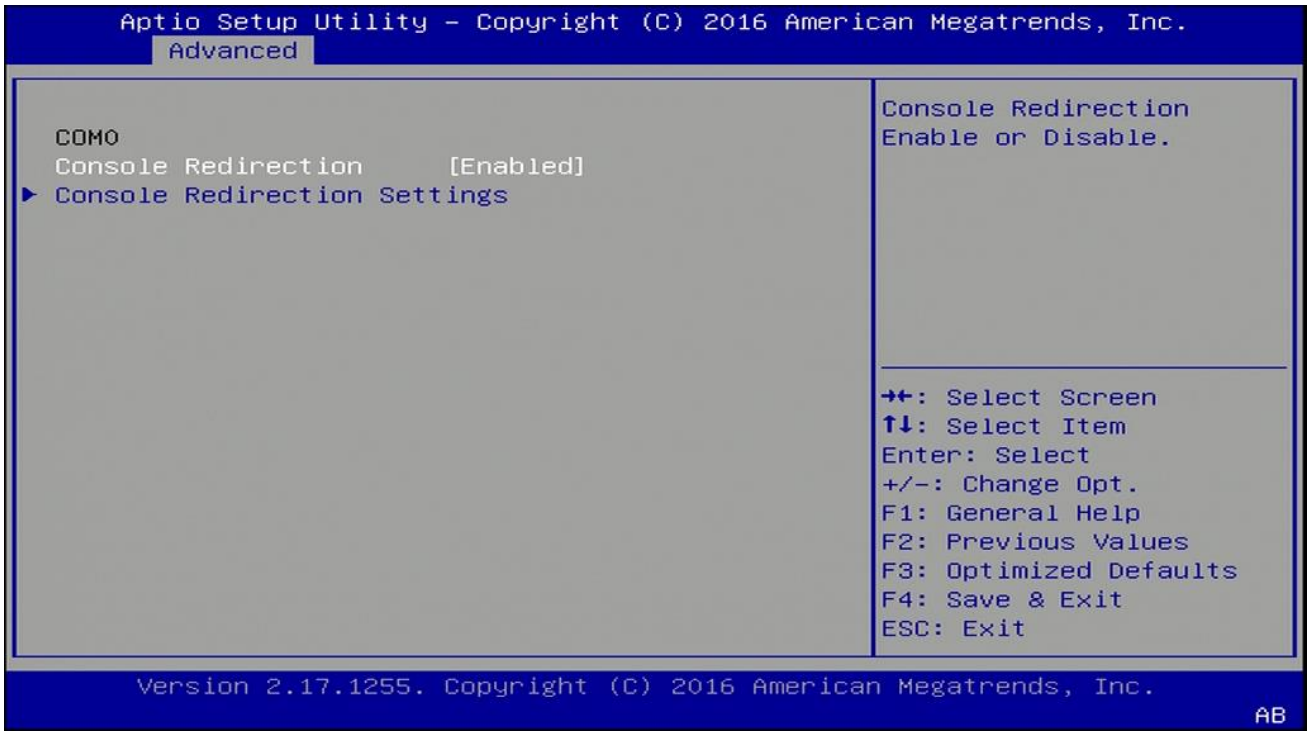


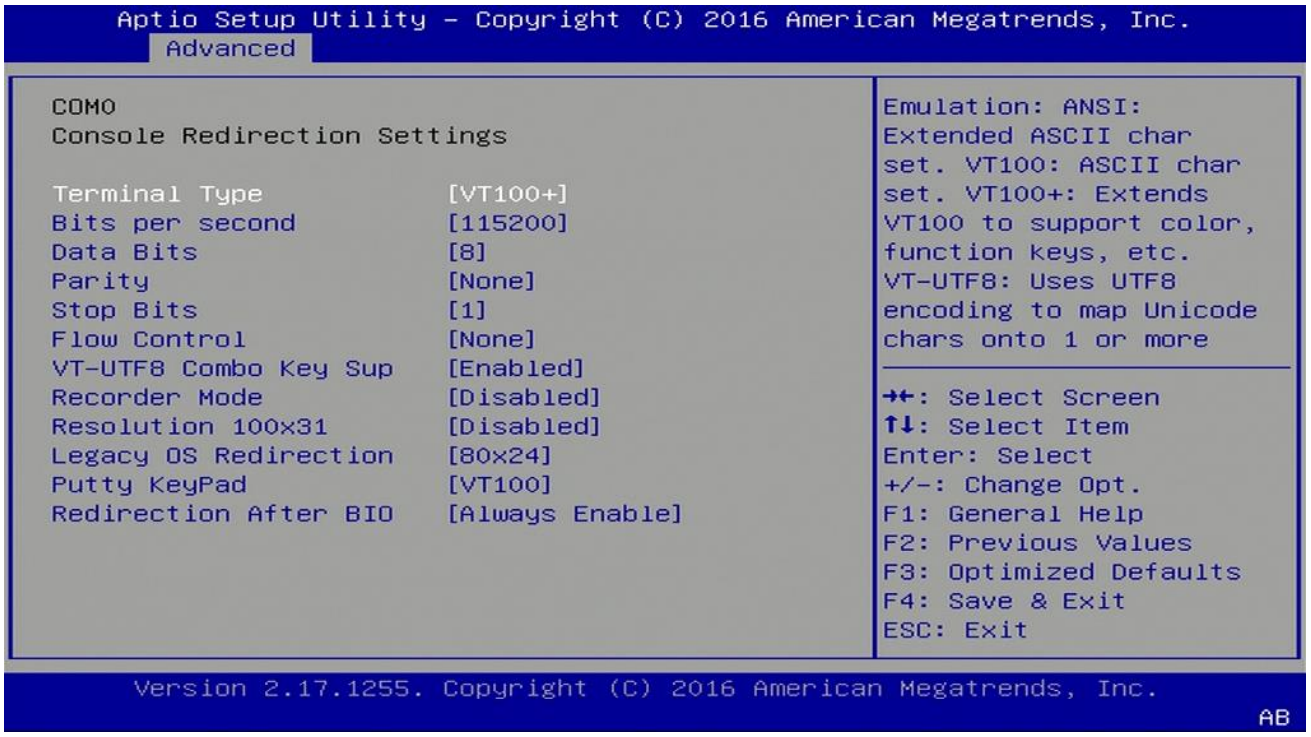
3.4.7 Platform Function



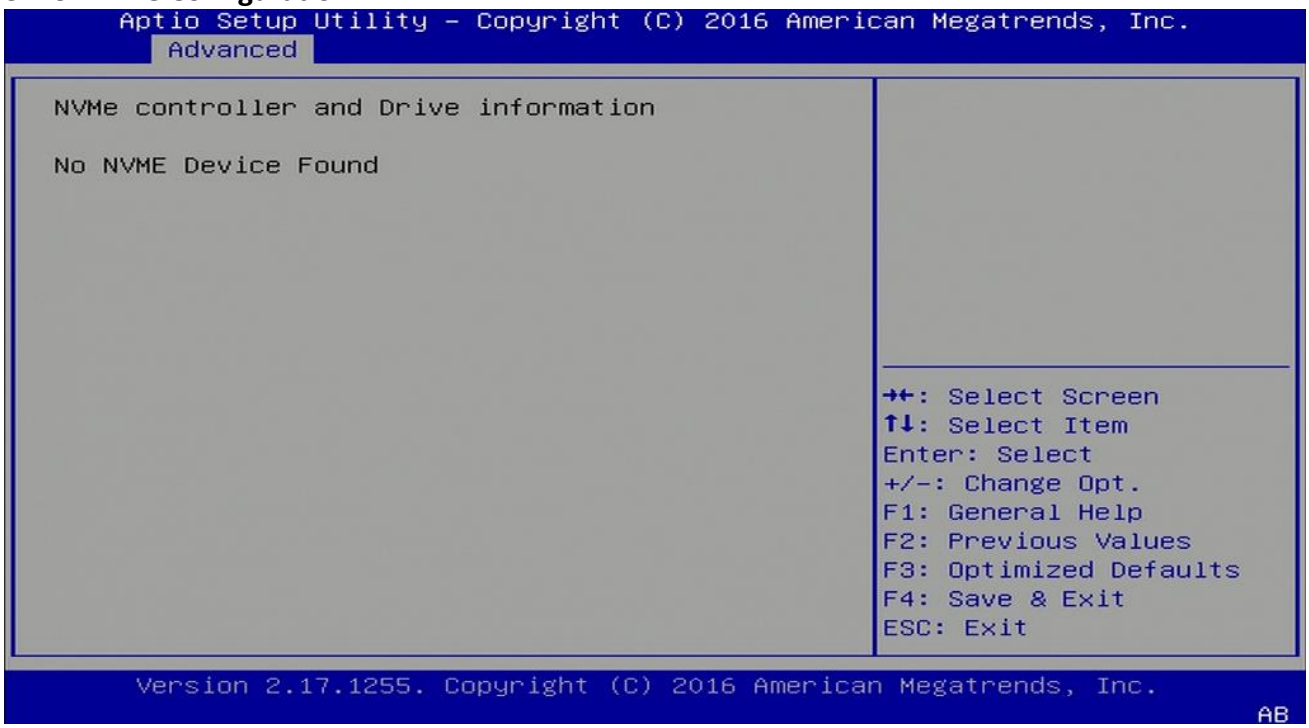


3.4.8 Serial Consolr Redirection

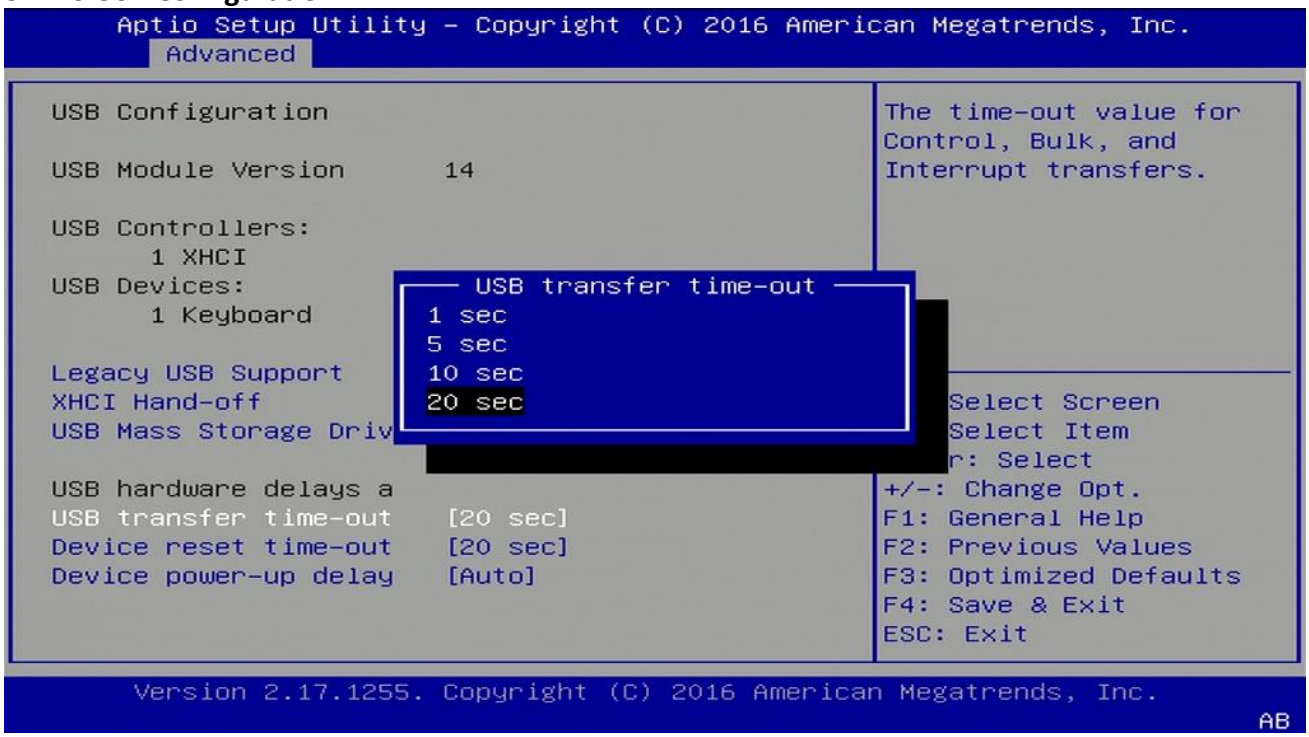




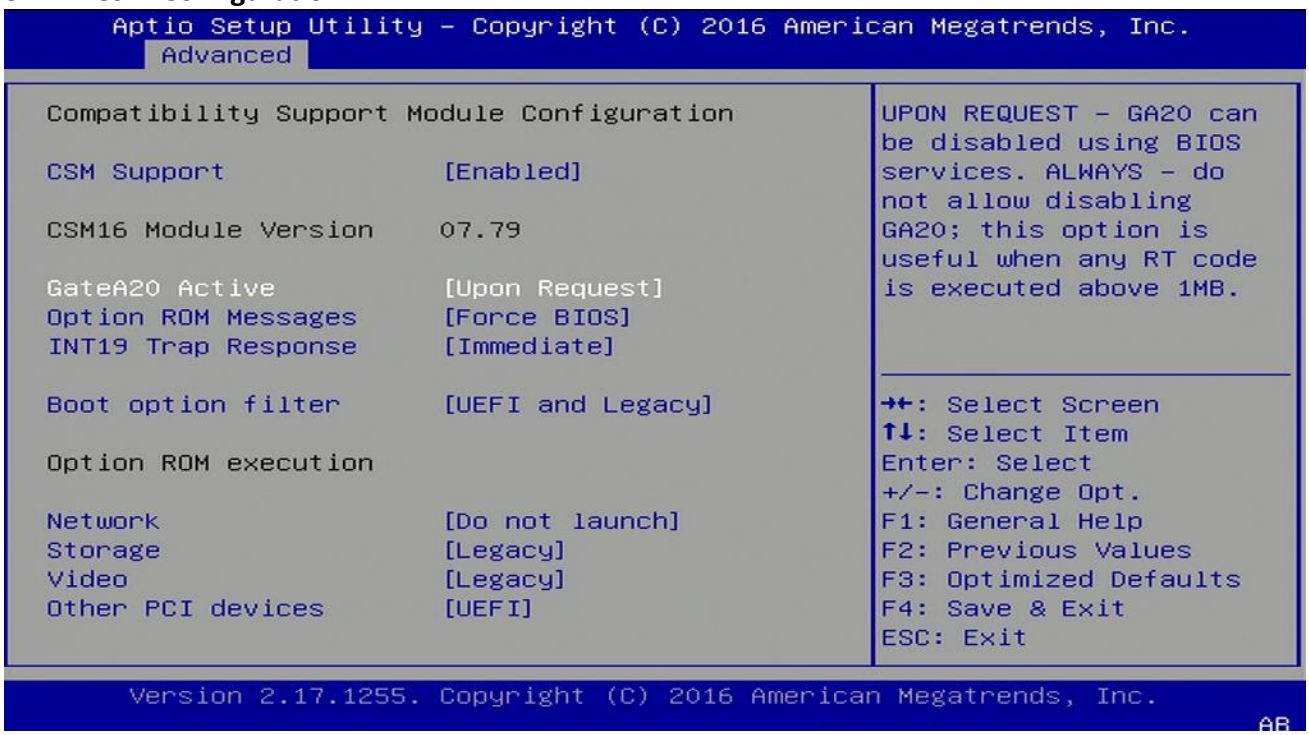
3.4.9 NVMe Configuration



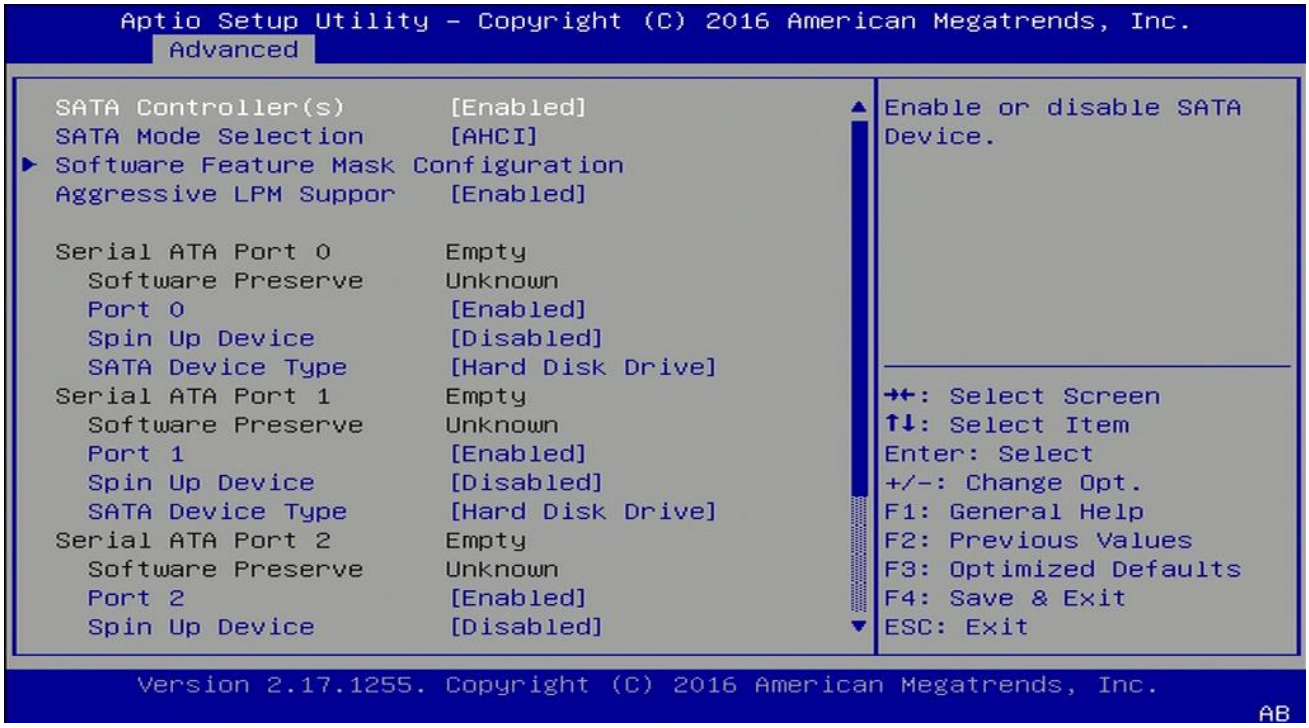
3.4.10 USB Configuration



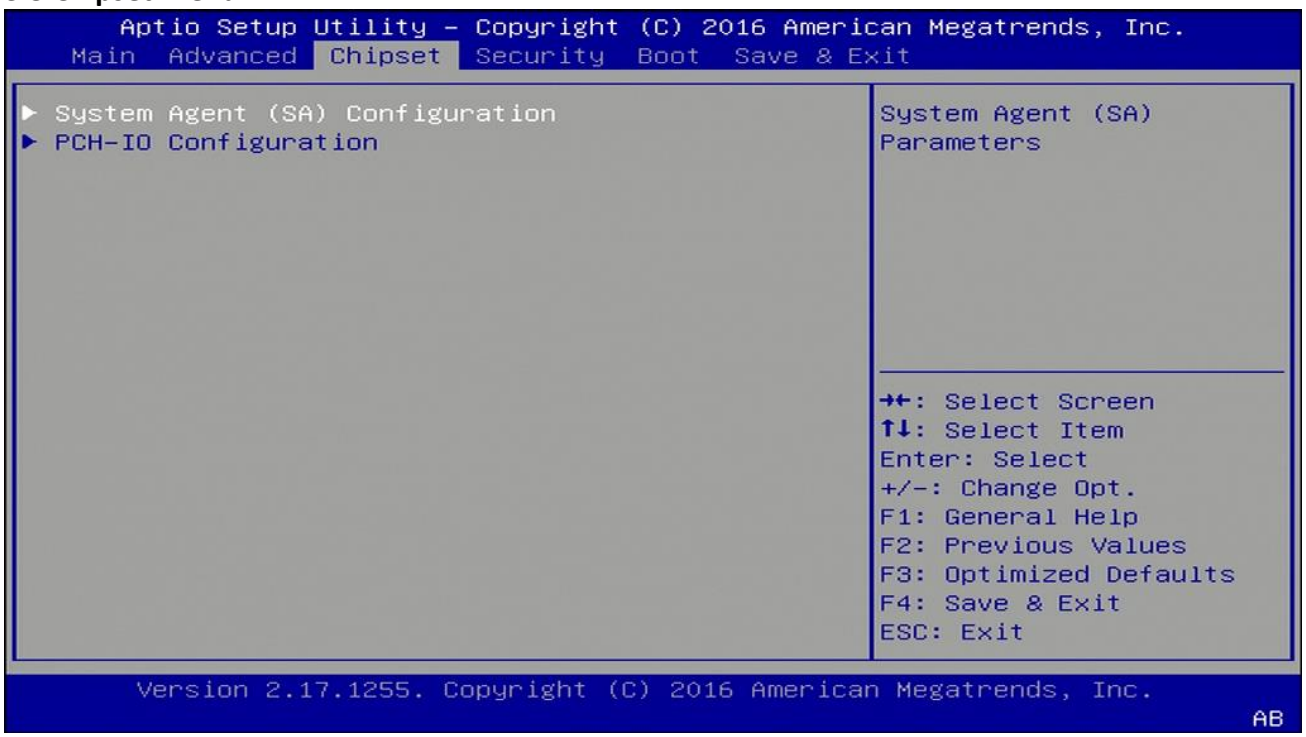
3.4.11 CSM Configuration



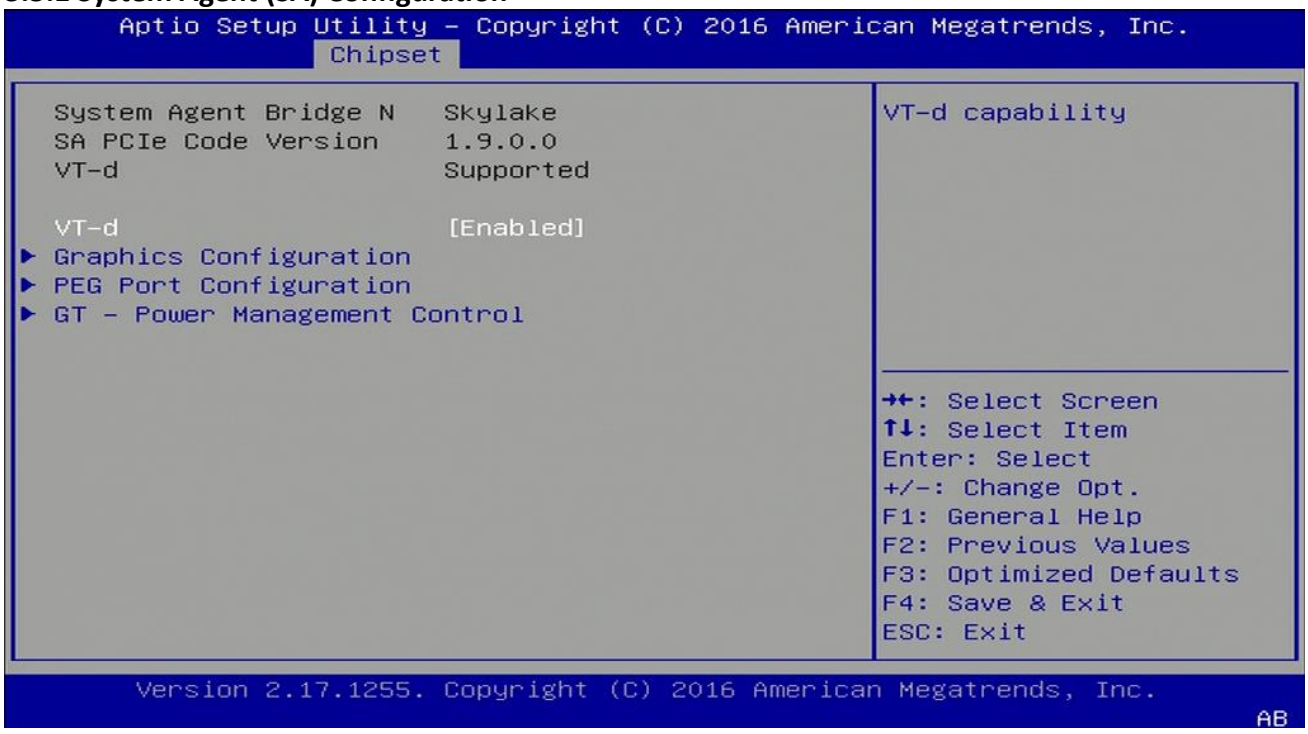
3.4.12 SATA Configuration



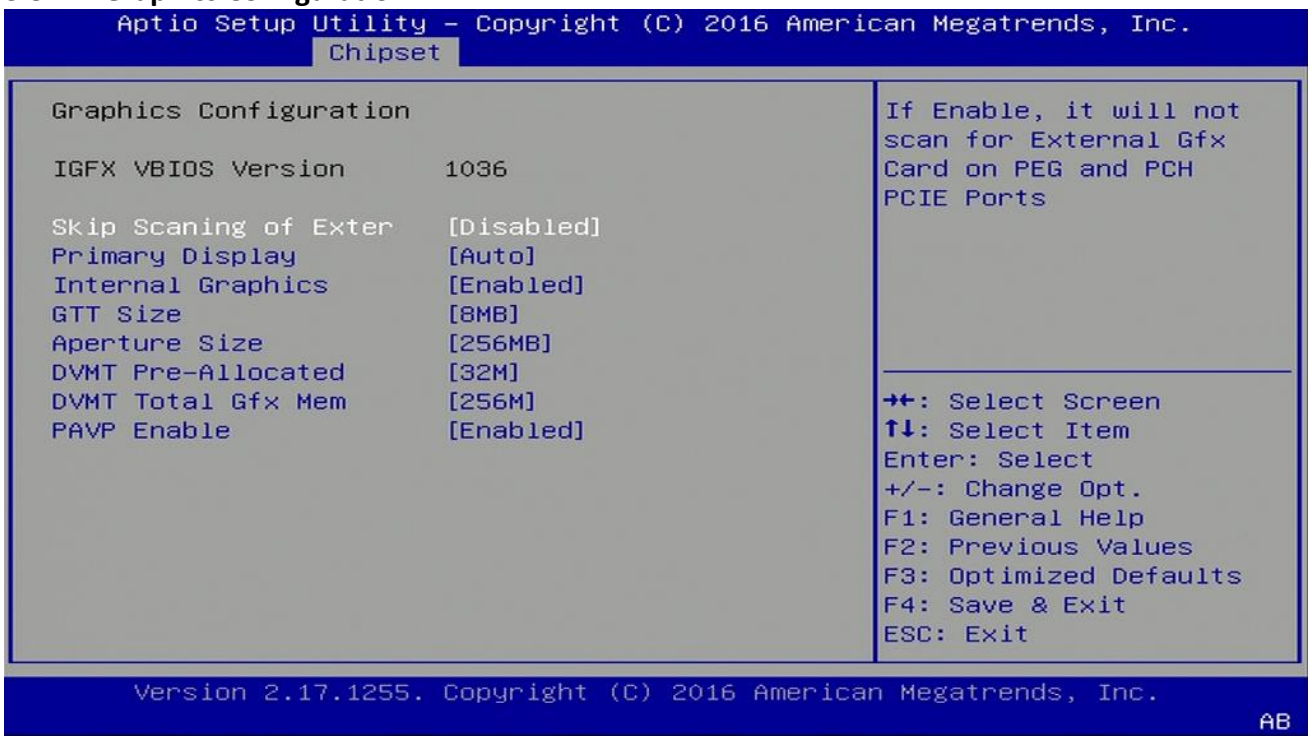
3.5 Chipset Menu



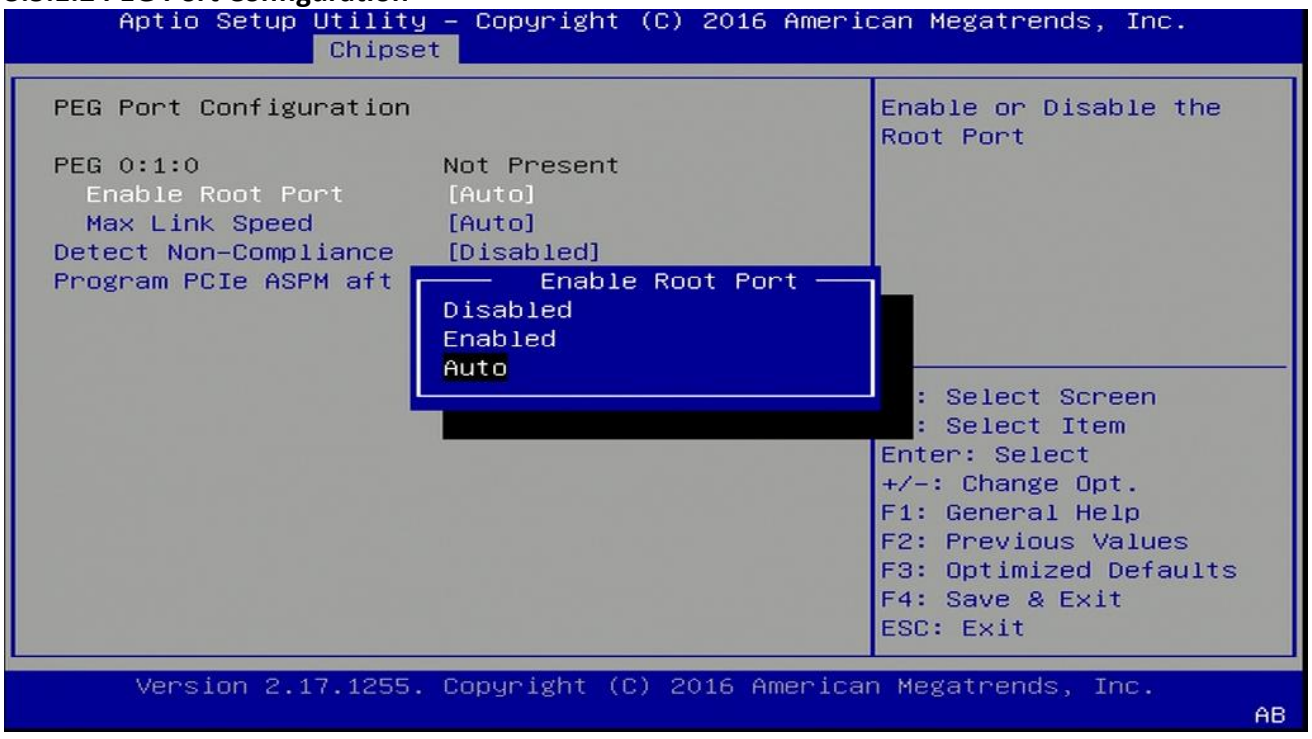
3.5.1 System Agent (SA) Configuration



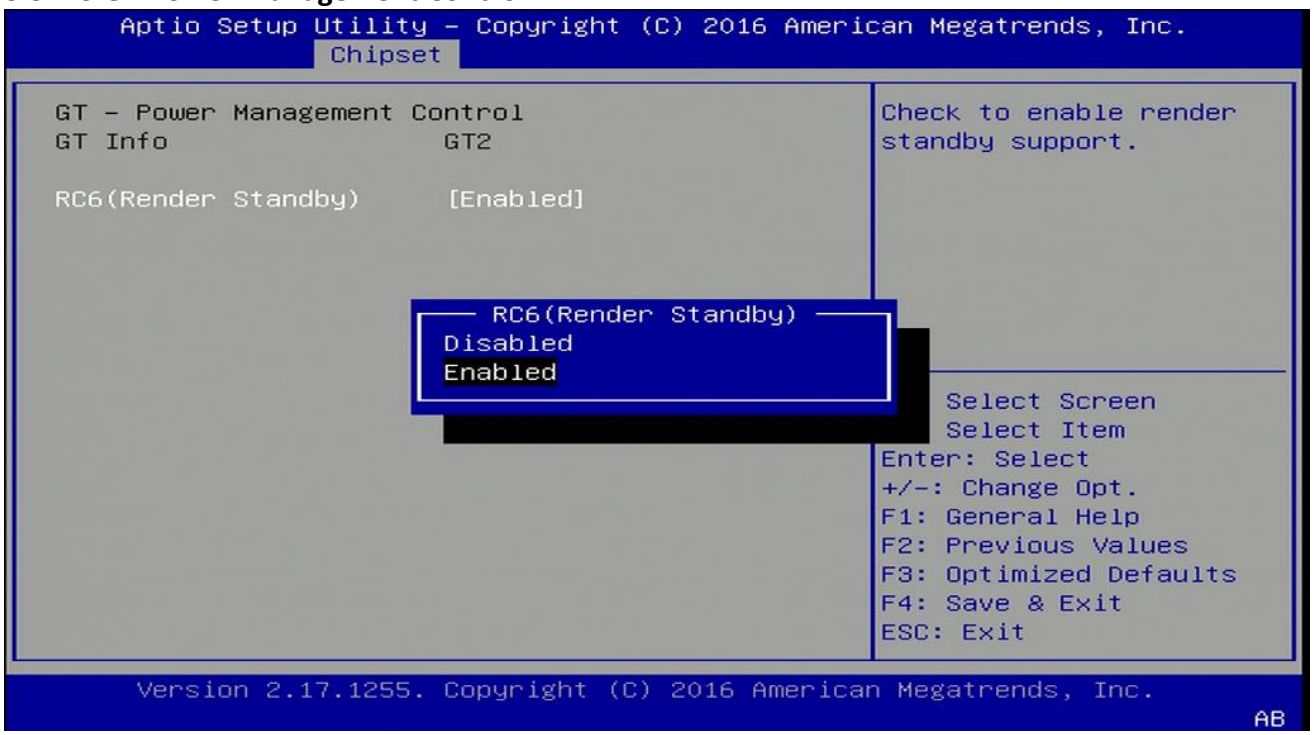
3.5.1.1 Graphics Configuration



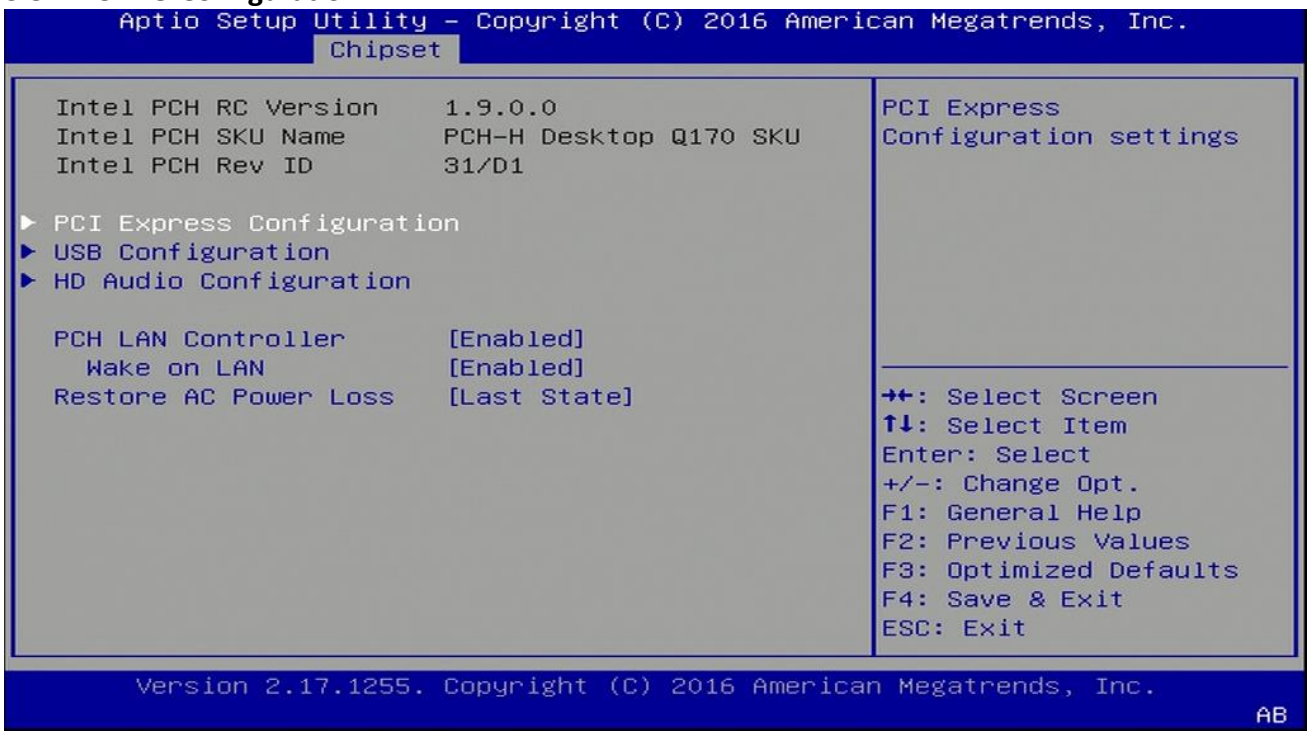
3.5.1.2 PEG Port Configuration

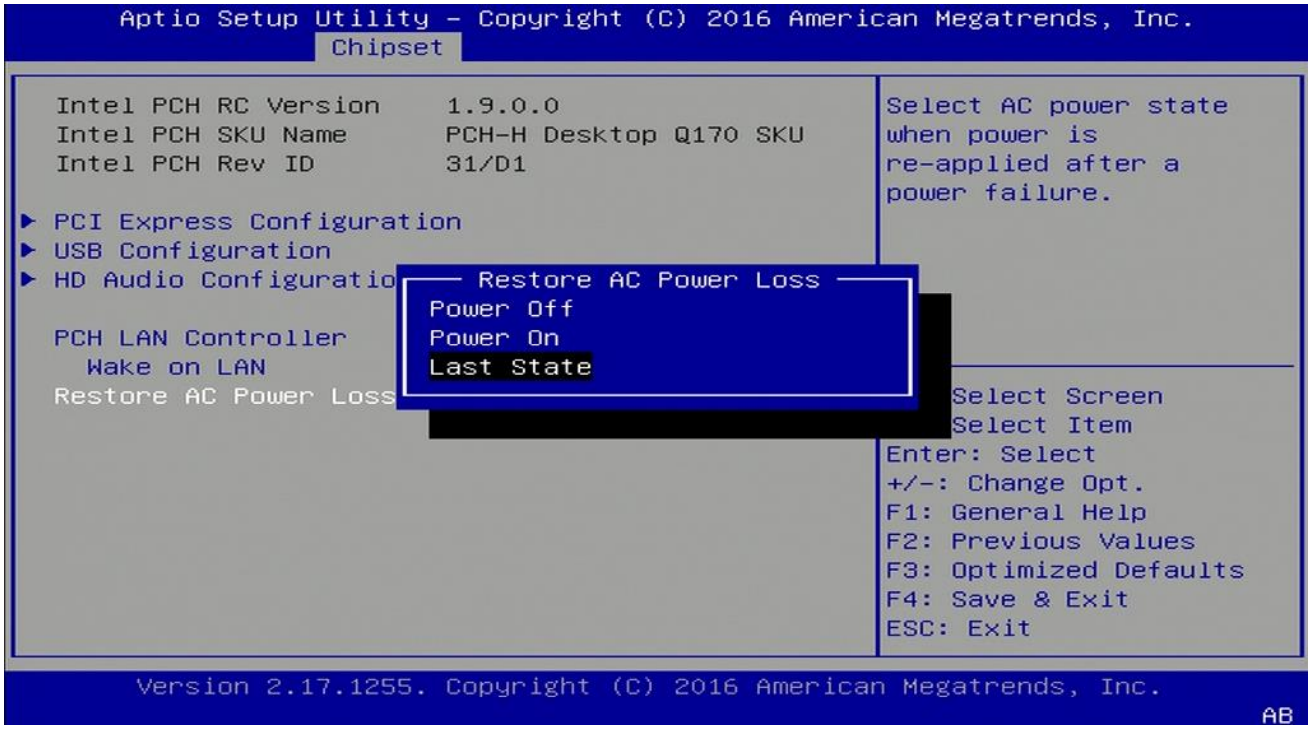


3.5.1.3 GT-Power Management Control

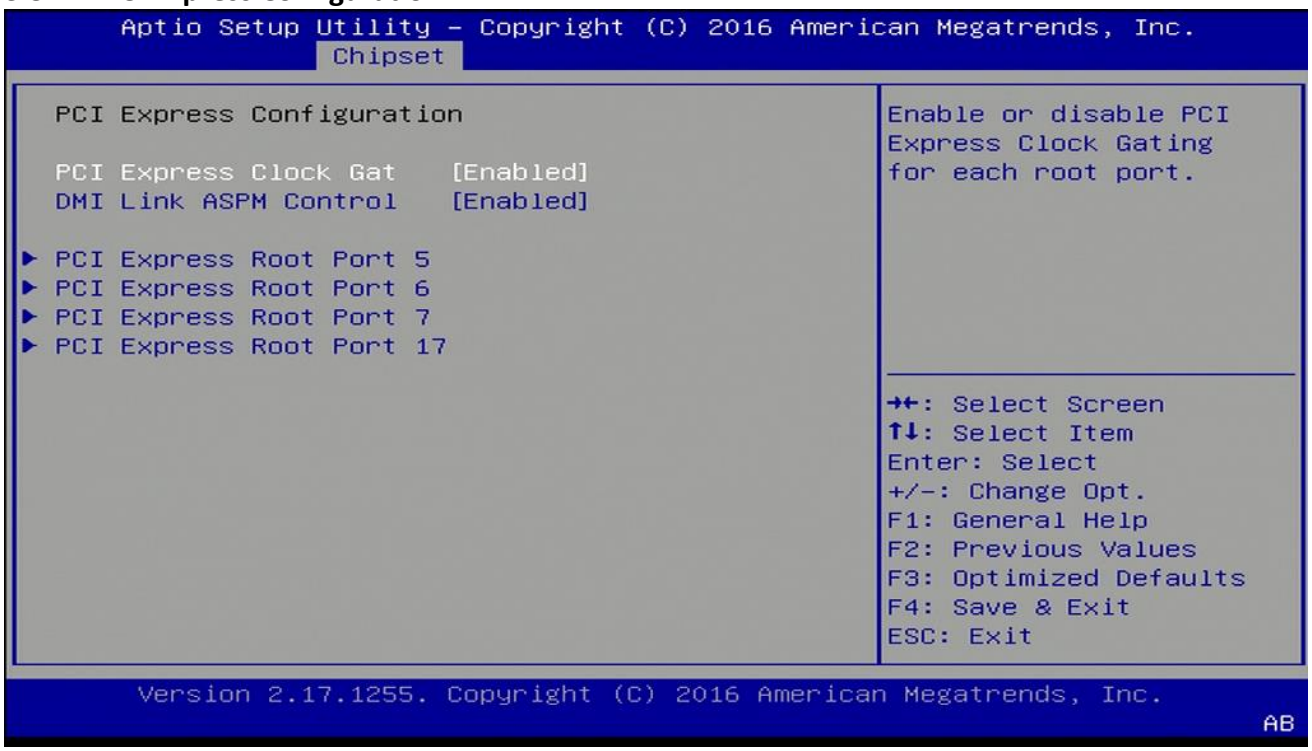


3.5.2 PCH-IO Configuration

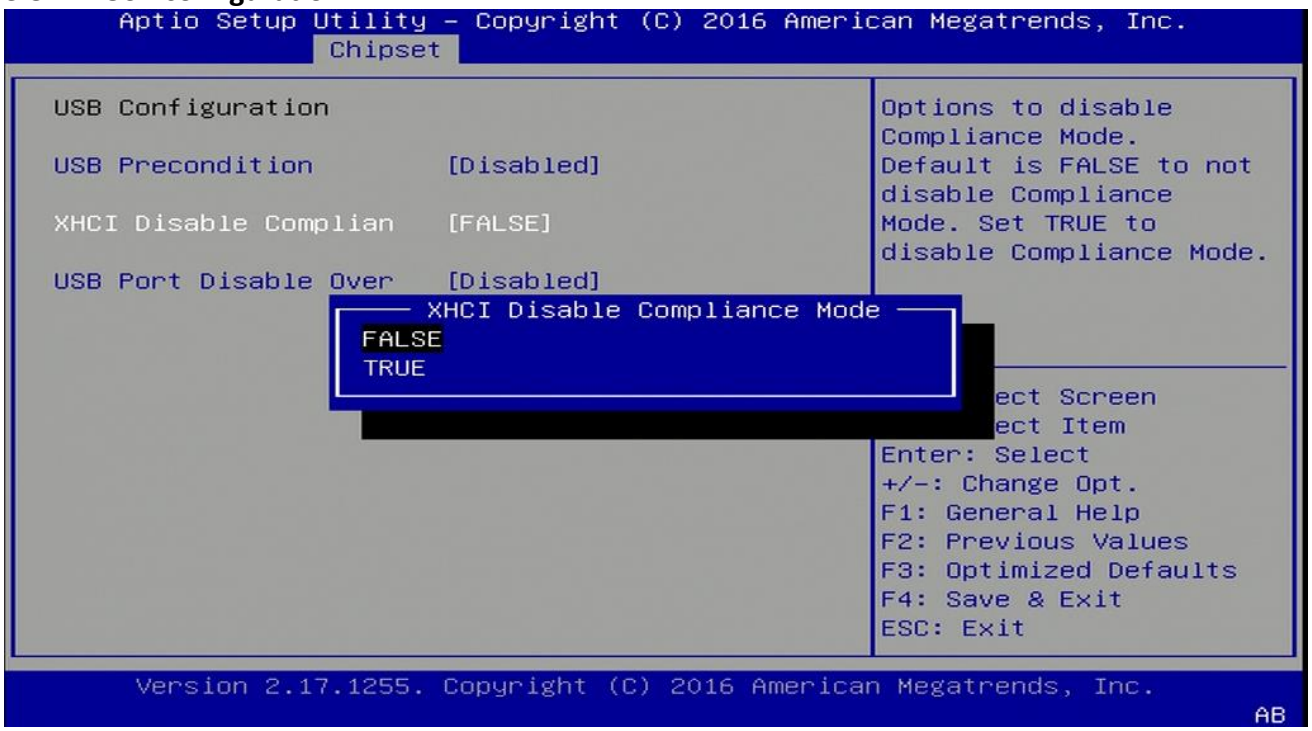


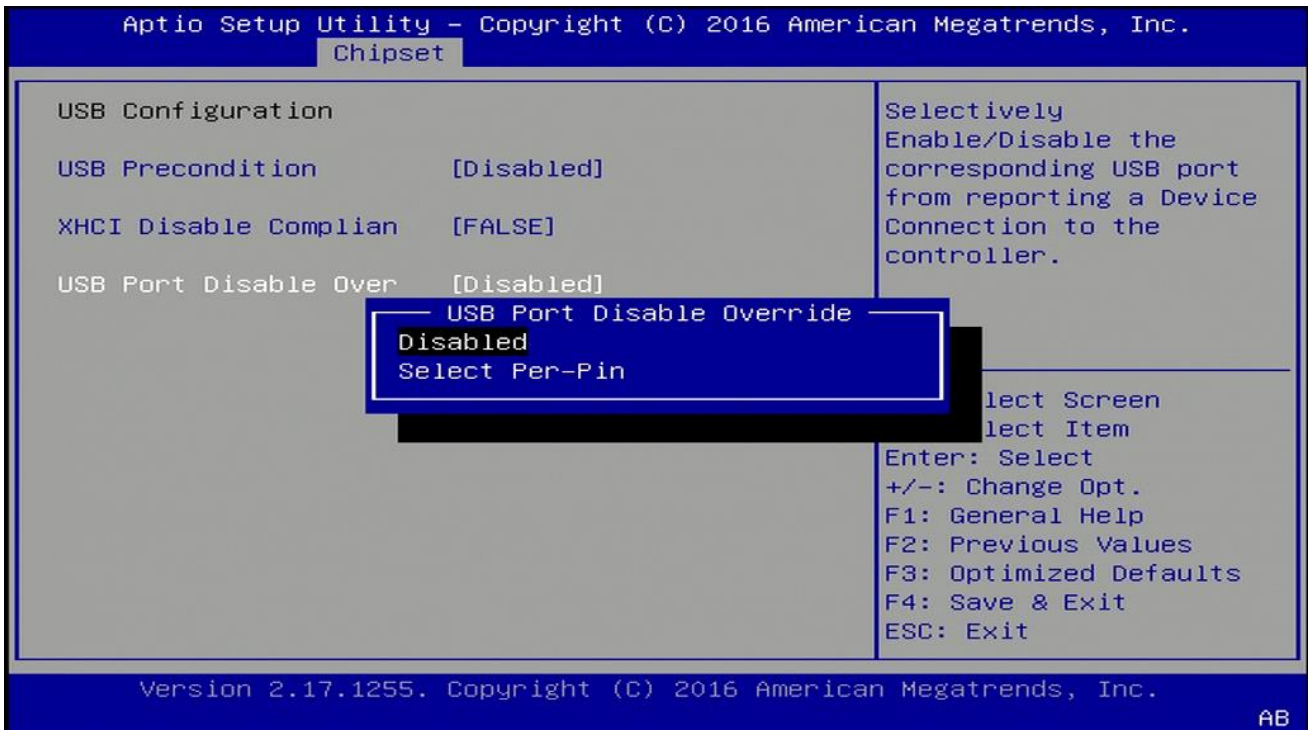


3.5.2.1 PCI Express Configuration

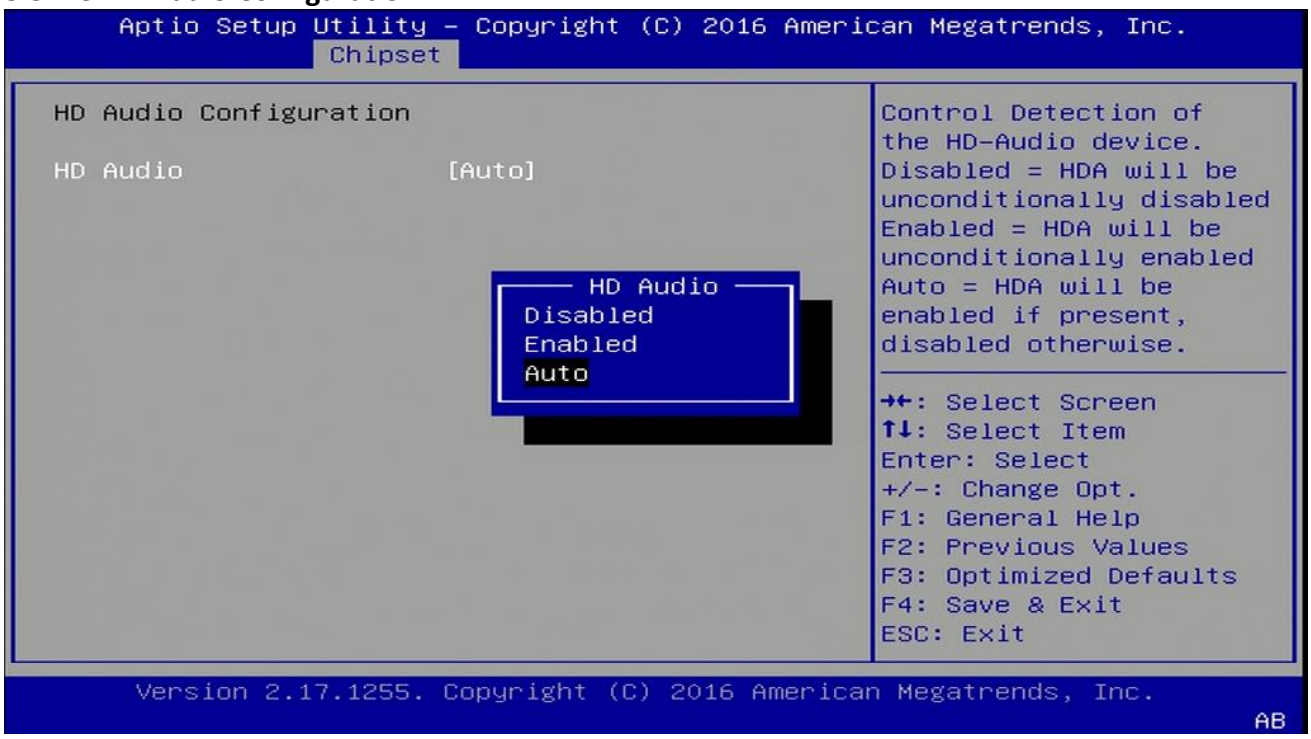


3.5.2.2 USB configuration



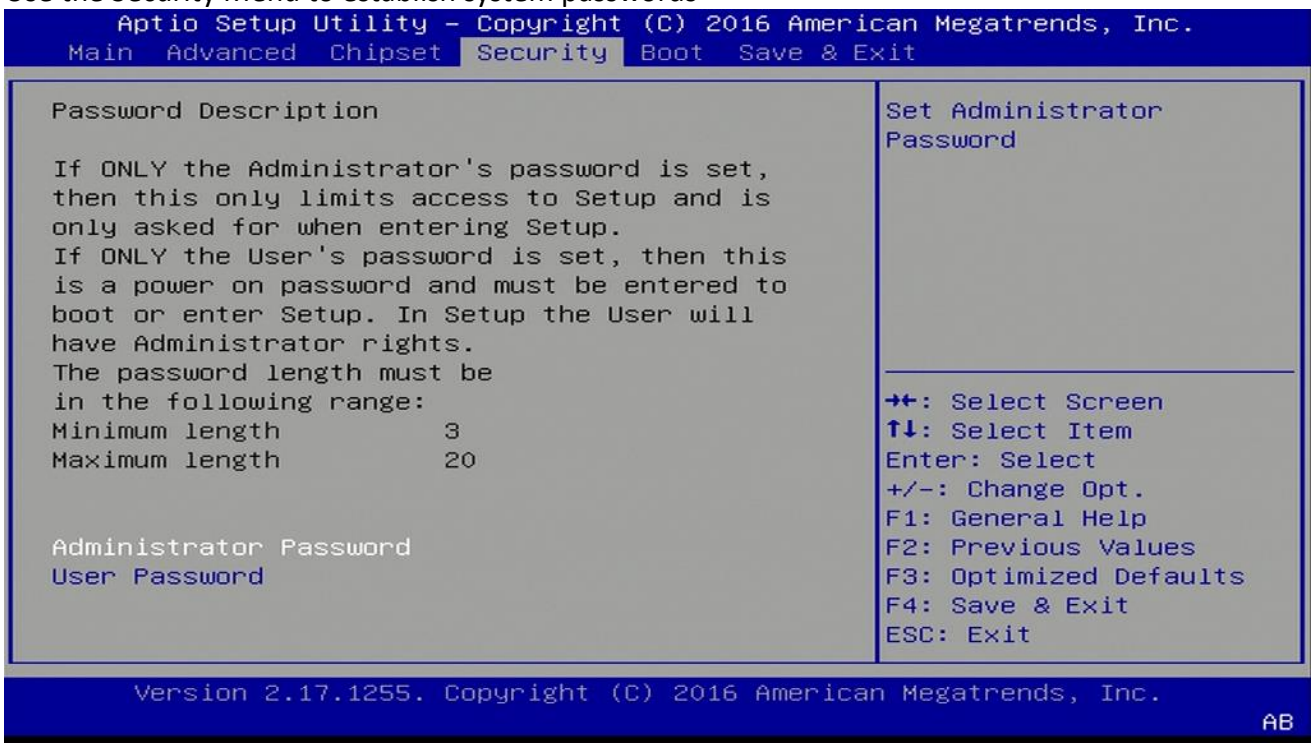


3.5.2.3 HD Audio Configuration



3.6 Security Menu

Use the Security Menu to establish system passwords



Administrator Password

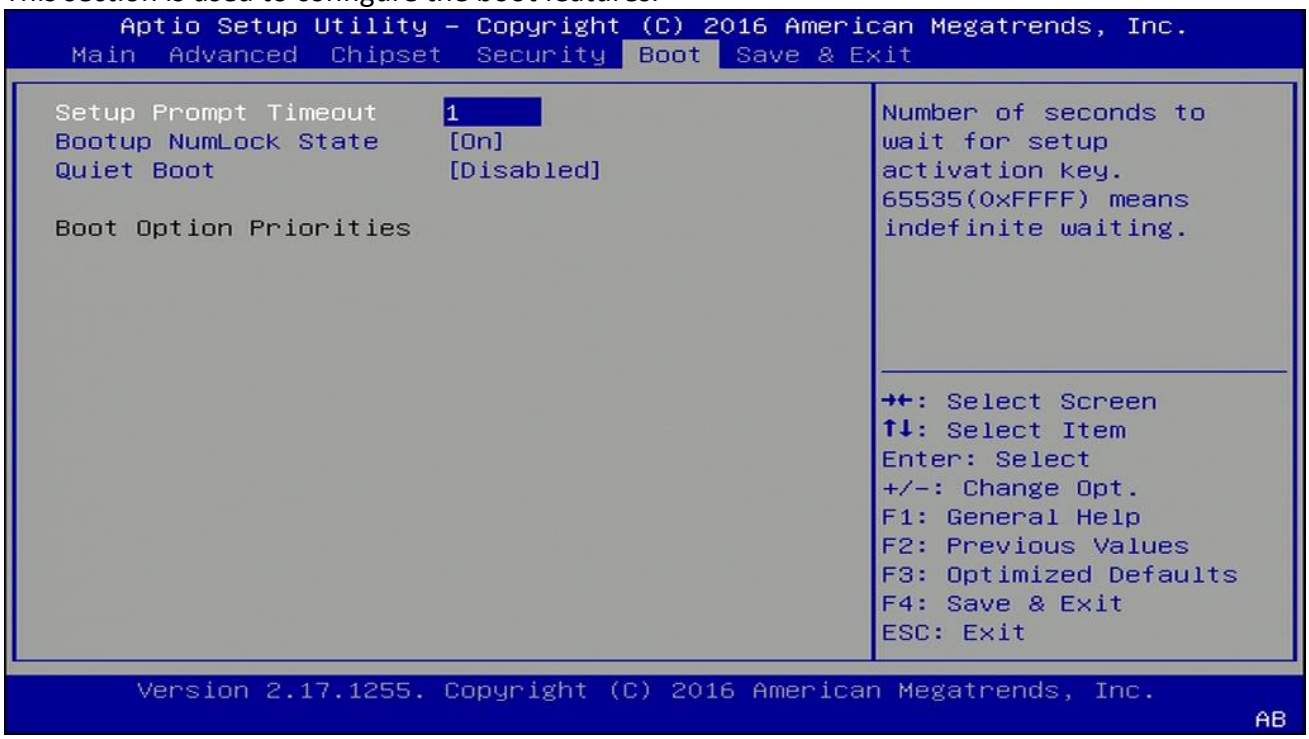
Set administrator password.

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

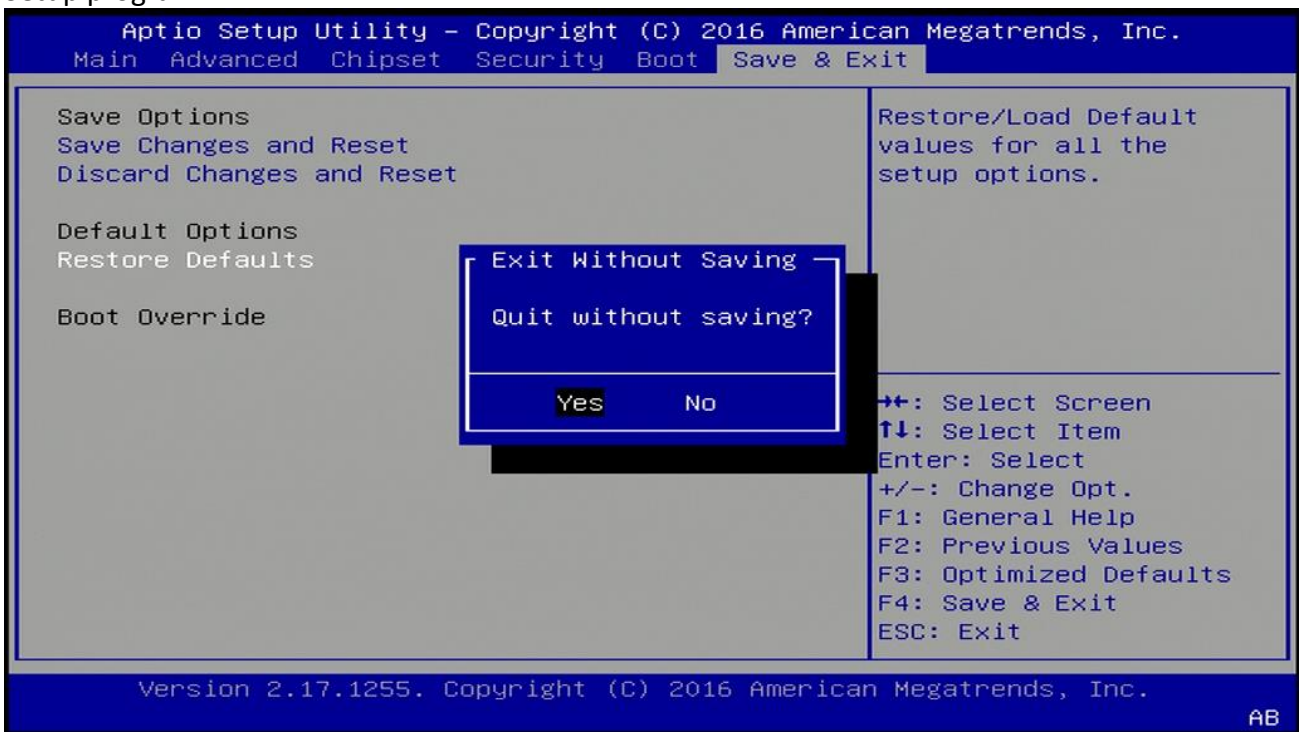
Select the keyboard NumLock state

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