
EmQ-i240A

Qseven® CPU Module

User's Manual

Version 1.0

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Revision History

Version	Release Time	Description
1.0	2019.03	Initial release

Revision History	i
Contents	ii
Preface.....	iv
Copyright Notice	iv
Declaration of Conformity	iv
CE	iv
FCC Class A	v
RoHS	v
SVHC / REACH	vi
Warning.....	vi
Replacing the Lithium Battery	vi
Technical Support	vi
Warranty.....	vii
Chapter 1 - Introduction.....	1
1.1. Features.....	2
1.2. About this Manual	2
1.3. Specifications.....	3
1.4. Inside the Package	4
1.5. Ordering Information	5
1.6. Optional Accessories	5
1.7. Driver Installation Note.....	6
Chapter 2 - Board Overview	7
2.1. Board Dimensions.....	8
2.2. Block Diagram.....	9
2.3. Connector Pin Definition	11
Chapter 3 - BIOS	13
4.1. Main	14
4.2. Advanced	16
4.2.1. ACPI Settings.....	17
4.2.2. CPU Configuration	18
4.2.3. CSM Configuration	19
4.2.4. NVMe Configuration	20
4.2.5. USB Configuration	21
4.3. Chipset.....	23
4.3.1. LCD Control	24
4.3.2. HD Audio Configuration	26
4.3.3. PCI Express Configuration	27
4.3.4. SATA Drives	28
4.3.5. SCC Configuration.....	29

4.3.6. USB Configuration	30
4.4. Security	31
4.5. Boot.....	32
4.6. Save & Exit	33

Copyright Notice

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Declaration of Conformity CE

The CE symbol on your product indicates that it is in compliance with the directives of the Union European (EU). A Certificate of Compliance is available by contacting Technical Support.

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from ARBOR. Please contact your local supplier for ordering information.

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

Warning

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC Class A

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE:

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.

RoHS

ARBOR Technology Corp. certifies that all components in its products are in compliance and conform to the European Union's Restriction of Use of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive 2002/95/EC.

The above mentioned directive was published on 2/13/2003. The main purpose of the directive is to prohibit the use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE) in electrical and electronic products. Member states of the EU are to enforce by 7/1/2006.

ARBOR Technology Corp. hereby states that the listed products do not contain unintentional additions of lead, mercury, hex chrome, PBB or PBDB that exceed a maximum concentration value of 0.1% by weight or for cadmium exceed 0.01% by weight, per homogenous material. Homogenous material is defined as a substance or mixture of substances with uniform composition (such as solders, resins, plating, etc.). Lead-free solder is used for all terminations (Sn(96-96.5%), Ag(3.0-3.5%) and Cu(0.5%)).

SVHC / REACH

To minimize the environmental impact and take more responsibility to the earth we live, Arbor hereby confirms all products comply with the restriction of SVHC (Substances of Very High Concern) in (EC) 1907/2006 (REACH --Registration, Evaluation, Authorization, and Restriction of Chemicals) regulated by the European Union.

All substances listed in SVHC < 0.1 % by weight (1000 ppm)

Warning

Single Board Computers and their components contain very delicate Integrated Circuits (IC). To protect the Single Board Computer and its components against damage from static electricity, you should always follow the following precautions when handling it:

1. Disconnect your Single Board Computer from the power source when you want to work on the inside.
2. Hold the board by the edges and try not to touch the IC chips, leads or circuitry.
3. Use a grounded wrist strap when handling computer components.
4. Place components on a grounded antistatic pad or on the bag that comes with the Single Board Computer, whenever components are separated from the system.

Replacing the Lithium Battery

Incorrect replacement of the lithium battery may lead to a risk of explosion.

The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer.

Do not throw lithium batteries into the trash-can. It must be disposed of in accordance with local regulations concerning special waste.

Technical Support

If you have any technical difficulties, please do not hesitate to call or e-mail our customer service.

<http://www.arbor-technology.com>

E-mail: info@arbor.com.tw

Warranty

This product is warranted to be in good working order for a period of two years from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster.

Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, or inability to use this product. Vendor will not be liable for any claim made by any other related party. Vendors disclaim all other warranties, either expressed or implied, including but not limited to implied warranties of merchantability and fitness for a

particular purpose, with respect to the hardware, the accompanying product's manual(s) and written materials, and any accompanying hardware. This limited warranty gives you specific legal rights.

Return authorization must be obtained from the vendor before returned

merchandise will be accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description.

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Chapter 1

Introduction

1.1. Features

- Soldered onboard Intel Apollolake SoC Processor
- Intergrated Gigabit Ethernet
- Dual Channel 24-bit LVDS and 1 x DP port

1.2. About this Manual

This manual is intended for experienced users and integrators with hardware knowledge of computers. If you are not sure about the description in this manual, consult your vendor before further handling.

We recommend that you keep one copy of this manual for the quick reference for any necessary maintenance in the future. Thank you for choosing ARBOR products.

1.3. Specifications

Form Factor	Qseven® CPU Module
CPU	Soldered onboard Intel Pentium® N4200 2.5GHz/ Celeron® N3350 2.4GHz processor
System Memory	Soldered onboard LPDDR4 8GB
BIOS	AMI UEFI BIOS (Legacy)
USB	6 x USB 2.0 ports 2 x USB 3.0 ports
Expansion Bus	4 x PCIe1 lanes, I2C Interface
Storage	2 x Serial ATA ports Soldered onboard eMMC 5.0 32GB (OEM Request)
Ethernet controller	1 x Intel® i210IT PCIe GbE controller
Audio	HD link
Graphics Chipset	Intergrated in Intel® Gen9 graphic
Graphics Interface	Dual Channel 24-bit LVDS, with resolution up to 1920x1200
	1 x DDI port
OS Support	Windows 10 64-bit Linux: Ubuntu
Power Requirement	DC 5V, 5VSB
Power Consumption	2A@5V with N4200 (Typical with PBQ-900R)
Operating Temp.	-20°C ~ 85°C(-4~185°F)
Operating Humidity	10 ~ 95% @ 85°C (non-condensing)
Dimension (L x W)	70 x 70 mm (2.76" x 2.76")

1.4. Inside the Package

Before starting with the installation, make sure the following items are shipped. If any of the items is missing or appears damaged, contact your local dealer or distributor.



1 x EmQ-i240A Qseven® CPU Module



1 x Quick Installation Guide

1.5. Ordering Information

EmQ-i240A-N4200-8GB	Intel® Pentium® N4200 Qseven R2.1 CPU module w/ 8GB memory soldered on module, -20~85°C
EmQ-i240A-N3350-8GB	Intel® Celeron® N3350 Qseven R2.1 CPU module w/ 8GB memory soldered on module, -20~85°C
EmQ-i240AD-N4200-8GB	Intel® Celeron® N4200 Qseven R2.1 CPU modulew/ 8GB memory soldered on module, w/ 32GB eMMC, -20~85°C (OEM Request)
EmQ-i240AD-N3350-8GB	Intel® Celeron® N3350 Qseven R2.1 CPU modulew/ 8GB memory soldered on module, w/ 32GB eMMC, -20~85°C (OEM Request)

1.6. Optional Accessories

PBQ-900R	Qseven R2.1 ATX form factor carrier board (All Super IO port functions are OEM requested)
SCDB-5221	Dual Channels 24-bit LVDS & DP port (signals via CPU module) daughterboard
HS-240A-F1	Heat Spreader, w/ PAD, 70x65x8mm
CBK-04-900R-00	Cable kit: 2 x SATA cables 1 x COM cable 1 x Parallel cable

1.7. Driver(6.7A) Installation Note

To install the drivers, please visit our website at www.arbor-technology.com and download the driver pack from the product page.

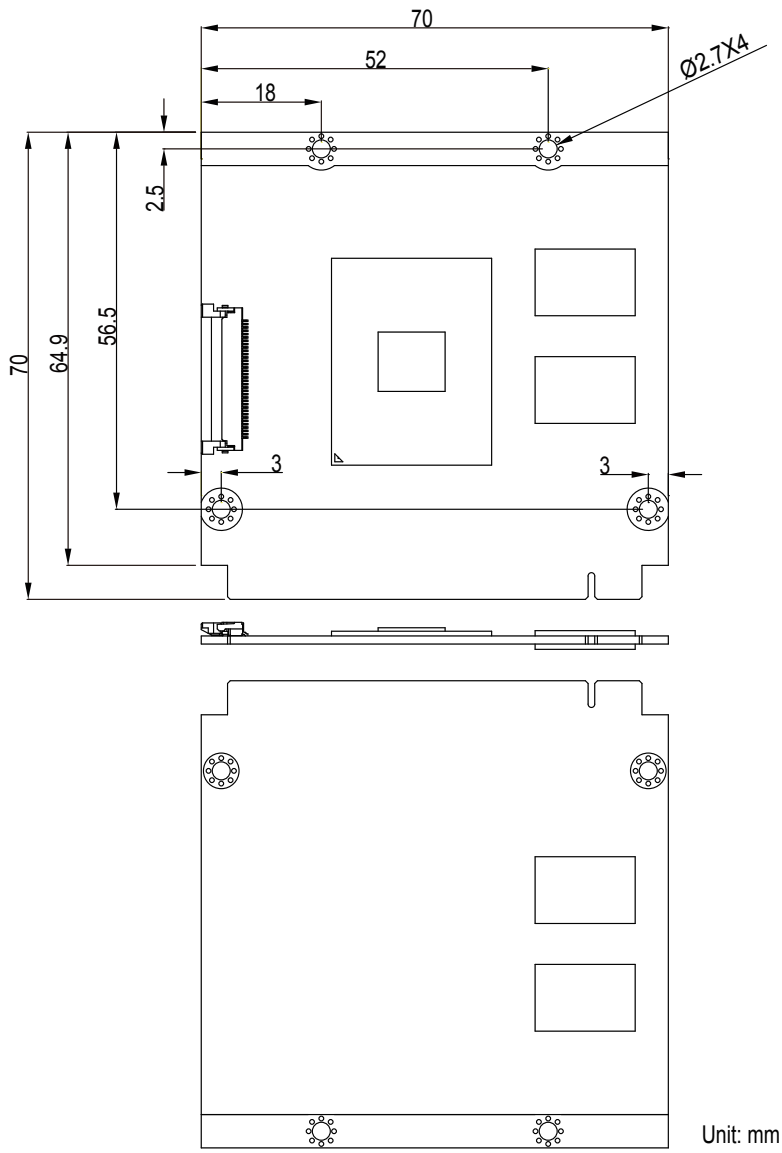
Windows 10 (64-bit)

Driver	Path
Audio	\Apollolake-i240x\Audio\7687_PG436_Win10_Win8.1_Win8_Win7_WHQLx64
Chipset	\Apollolake-i240x\Chipset
Ethernet	\Apollolake-i240x\LAN
Graphics	\Apollolake-i240x\Graphic
Serial IO	\Apollolake-i240x\Serial IO\SerialIO_30.100.1620.02_APL_PV_Win10_x64
TXE	\Apollolake-i240x\TXE

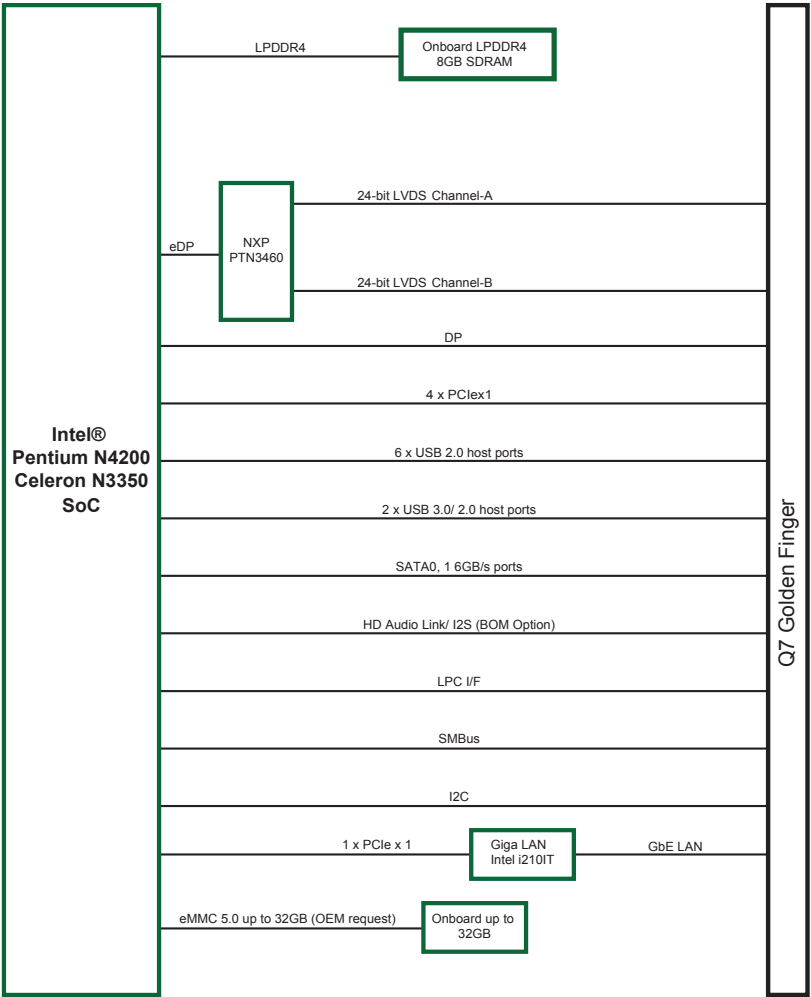
Chapter 2

Board Overview

2.1. Board Dimensions



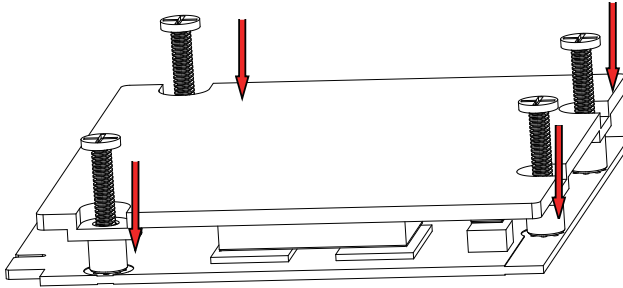
2.2. Block Diagram



Heat Spreader Installation

To install the heat spreader:

See the illustration below. Mount the heat spreader to the board. Fix the heat spreader in place with four screws.



2.3. Connector Pin Definition

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	GND	65	AZ_SDATA_IN	66	I2C_CLK0
3	LAN1_MDI3-	4	LAN1_MDI2-	67	AZ_SDATA_OUT	68	I2C_DATA0
5	LAN1_MDI3+	6	LAN1_MDI2+	69	THRM#	70	WDTRIG#
7	LAN_LINK100#	8	LAN_LINK_1000#	71	THRMTRIP#	72	WDOUT(N/C)
9	LAN1_MDI1-	10	LAN1_MDI0-	73	GND	74	GND
11	LAN1_MDI1+	12	LAN1_MDI0+	75	USB3TXN0	76	USB3_RXN0
13	LED_LINK#	14	LAN_ACT#	77	USB3TXP0	78	USB3_RXP0
15	GBE_CTREF (N/C)	16	SLP_S4#	79	USB_6_7_OC# (N/C)	80	USB_4_5_OC#(N/C)
17	WAKE#	18	SLP_S3#	81	USB_5N	82	USB_4N
19	SUS_STAT#	20	Q7_PWR_BTN#	83	USB_5P	84	USB_4P
21	SLEEP#	22	LID#	85	USB_OC2/3	86	USB_OC0/1
23	GND	24	GND	87	USB_3N	88	USB_2N
	KEY		KEY	89	USB_3P	90	USB_2P
25	GND	26	CB_PWRGD	91	USB_CC(N/C)	92	Q-7_USB_ID(N/C)
27	Q7_BATLOW#	28	Q7_RSTBTN#	93	USB_1N	94	USB_0N
29	SATA_TXP0_C	30	SATA_TXP1_C	95	USB_1P	96	USB_0P
31	SATA_TXN0_C	32	SATA_TXN1_C	97	GND	98	GND
33	Q7_HDD_ACT#	34	GND	99	LVDS_A0+	100	LVDS_B0+
35	SATA_RXP0_C	36	SATA_RXP1_C	101	LVDS_A0-	102	LVDS_B0-
37	SATA_RXN0_C	38	SATA_RXN1_C	103	LVDS_A1+	104	LVDS_B1+
39	GND	40	GND	105	LVDS_A1-	106	LVDS_B1-
41	BIOS_DISABLE#	42	SD_CLK#	107	LVDS_A2+	108	LVDS_B2+
43	SD_CD#	44	SDIO_LED (N/C)	109	LVDS_A2-	110	LVDS_B2-
45	SD_CMD	46	SD_WP	111	Q7_VDDEN	112	Q7_BKLTEN
47	SD_PWR#	48	SD_DATA1	113	LVDS_A3+	114	LVDS_B3+
49	SD_DATA0	50	SD_DATA3	115	LVDS_A3-	116	LVDS_B3-
51	SD_DATA2	52	RSVD (N/C)	117	GND	118	GND
53	RSVD (N/C)	54	RSVD (N/C)	119	LVDS_A_CLK+	120	LVDS_B_CLK+
55	RSVD (N/C)	56	USB_OTG_PEN (N/C)	121	LVDS_A_CLK-	122	LVDS_B_CLK-
57	GND	58	GND	123	Q7_LCD_BKLT_CTRL	124	GP_1-Wire_Bus (N/C)
59	AZ_SYNC	60	SMB_CLK_RESUME	125	LVDS_I2C_DAT	126	eDP0_HPD#/LVDS_BLC_DAT (N/C)
61	AZ_RST#	62	SMB_DATA_RESUME	127	LVDS_I2C_CLK	128	eDP1_HPD#/LVDS_BLC_CLK (N/C)
63	AZ_BIT_CLK	64	Q7_SMB_ALERT#	129	CAN0_TX (N/C)	130	CAN0_RX (N/C)

*Note: Only Apollolake-I Series can support SDIO.

Board Overview

Pin	Signal	Pin	Signal
131	Q7_DDI0_TXP3	132	USB3_TXN1
133	Q7_DDI0_TXN3	134	USB3_TXP1
135	GND	136	GND
137	Q7_DDI0_TXP1	138	DDI0_AUXP
139	Q7_DDI0_TXN1	140	DDI0_AUXN
141	GND	142	GND
143	Q7_DDI0_TXP2	144	USB3_RXN1
145	Q7_DDI0_TXN2	146	USB3_RXP1
147	GND	148	GND
149	Q7_DDI0_TXP0	150	DDI0_DDI0_DDCDATA
151	Q7_DDI0_TXN0	152	DDI0_DDC_DDCCLK
153	Q7_DDI0_HPDET#_R	154	DP_HDP#_RSV
155	Q7_PCIE_CLKP1	156	PCIE_WAKE#
157	Q7_PCIE_CLKN1	158	PLTRST#_BUFF
159	GND	160	GND
161	Q7_PCIE_TXP3	162	PCIE_RXP3
163	Q7_PCIE_TXN3	164	PCIE_RXN3
165	GND	166	GND
167	Q7_PCIE_TXP2	168	PCIE_RXP2
169	Q7_PCIE_TXN2	170	PCIE_RXN2
171	Q7_UART1_TXD	172	Q7_UART1_RTS
173	Q7_PCIE_TXP1	174	PCIE_RXP1
175	Q7_PCIE_TXN1	176	PCIE_RXN1
177	Q7_UART1_RXD	178	Q7_UART1_CTS#
179	Q7_PCIE_TXP0	180	PCIE_RXP0
181	Q7_PCIE_TXN0	182	PCIE_RXN0
183	GND	184	GND
185	LPC_LAD0	186	LPC_LAD1
187	LPC_LAD2	188	LPC_LAD3
189	LPC_CLK1	190	LPC_LFRAME#
191	LPC_SERIRQ	192	LPC_LDRQ#
193	VCC_RTC	194	Q7_SPKR
195	FAN_TACHOIN (N/C)	196	FAN_PWMOUT

Pin	Signal	Pin	Signal
197	GND	198	GND
199	Q7_SPI_MOSI	200	Q7_SPI_CS#0
201	Q7_SPI_MISO	202	Q7_SPI_CS#1
203	Q7_SPI_CLK	204	MFG_NC4 (N/C)
205	VCC_5V_SB	206	VCC_5V_SB
207	MFG_NC0 (N/C)	208	MFG_NC2 (N/C)
209	MFG_NC1 (N/C)	210	MFG_NC3 (N/C)
211	N/C	212	N/C
213	N/C	214	N/C
215	N/C	216	N/C
217	N/C	218	N/C
219	VCC	220	VCC
221	VCC	222	VCC
223	VCC	224	VCC
225	VCC	226	VCC
227	VCC	228	VCC
229	VCC	230	VCC

Chapter 3

BIOS

4.1. Main

The AMI BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS RAM of the system stores the Setup utility and configurations. When you turn on the computer, the AMI BIOS is immediately activated. To enter the BIOS SETUP UTILITY, press “Delete” once the power is turned on.

The **Main Setup** screen lists the following information:

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.		
Main	Advanced	Chipset Security Boot Save & Exit
BIOS Name	EmQ-i240a	Set the Date. Use Tab to Switch between Date elements.
BIOS Version	1.04	
Build Date and Time	04/19/2018 16:58:38	
Access Level	Administrator	
Microcode Revision	2E	→←: Select Screen ↑: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save and Exit ESC: Exit
TEX FW	3.1.50.2222	
Memory Information		
Total Memory	8192MB	
Memory Speed	2400 MHz	
System Date	[Fri 03/15/2019]	
System Time	[09:18:21]	
Version 2.18.1263. Copyright (C) 2018 American Megatrendes, Inc.		

Setting	Description
System Date	Set the system date. Use Tab to switch between Data elements. Note that the ‘Day’ automatically changes when you set the date. ► The date format is: Day: Sun to Sat Month: 1 to 12 Date: 1 to 31 Year: 1998 to 2099

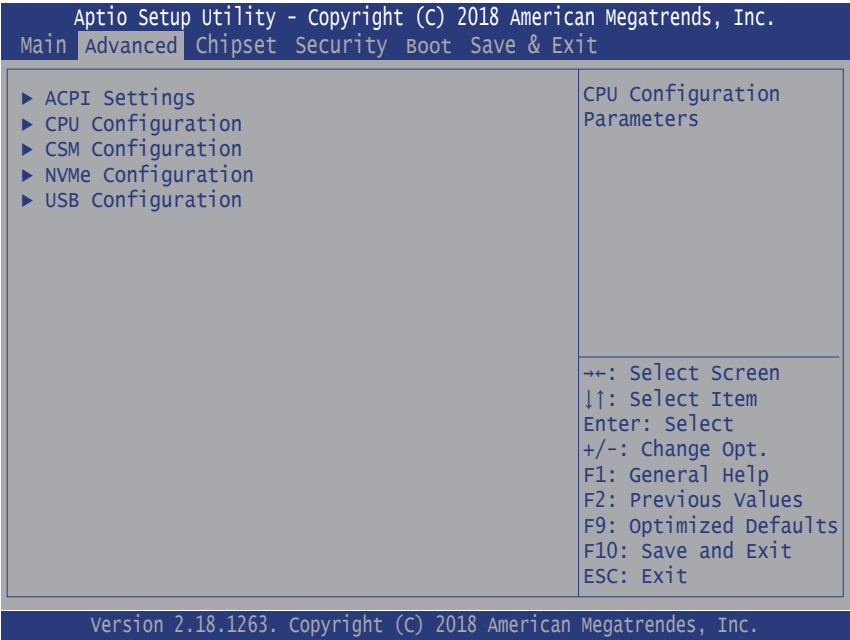
System Time	<p>Set the system time. Use Tab to switch between Time elements.</p> <p>► The time format is: Hour: 00 to 23 Minute: 00 to 59 Second: 00 to 59</p>
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Key Commands

BIOS Setup Utility is mainly a key-based navigation interface. Please refer to the following key command instructions for navigation process.

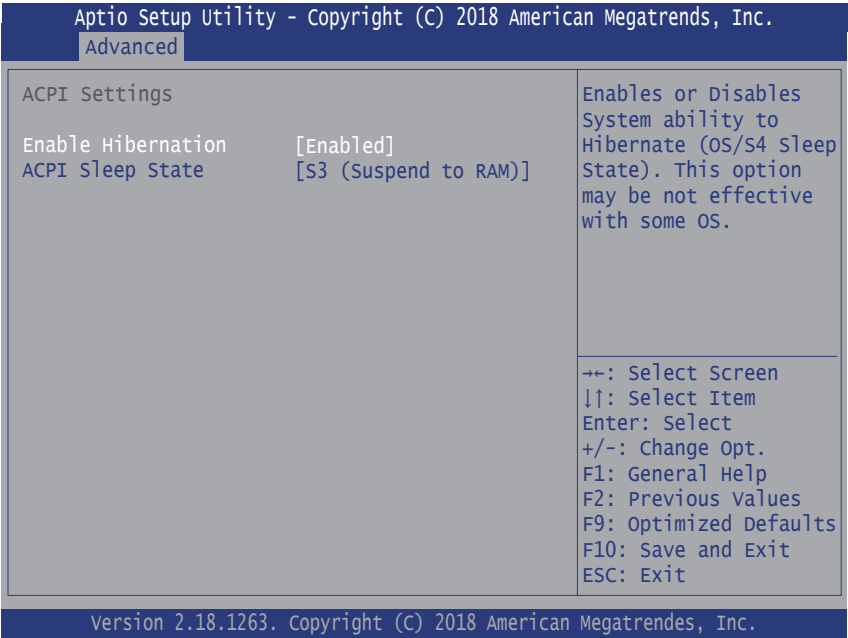
Keystroke	Function
◀ ▶	Move to highlight a particular configuration screen from the top menu bar / Move to highlight items on the screen
▼ ▲	Move to highlight previous/next item
Enter	Select and access a setup item/field
Esc	<p>On the Main Menu – Quit the setup and not save changes into CMOS (a message screen will display and ask you to select “OK” or “Cancel” for exiting and discarding changes. Use “←” and “→” to select and press “Enter” to confirm)</p> <p>On the Sub Menu – Exit current page and return to main menu</p>
Page Up / +	Increase the numeric value on a selected setup item / make change
Page Down / -	Decrease the numeric value on a selected setup item / make change
F1	Activate “General Help” screen
F10	Save the changes that have been made in the setup and exit. (a message screen will display and ask you to select “OK” or “Cancel” for exiting and saving changes. Use “←” and “→” to select and press “Enter” to confirm)

4.2. Advanced



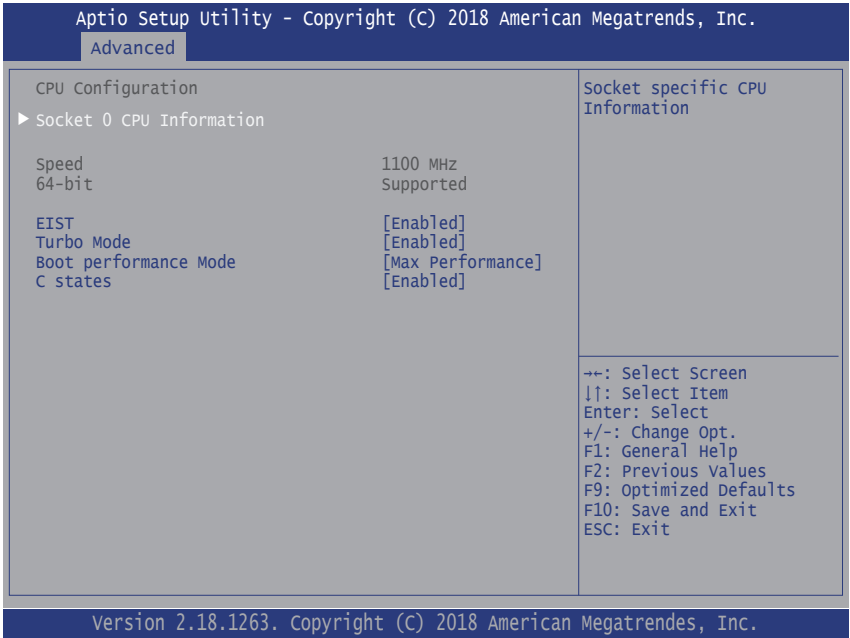
Setting	Description
ACPI Settings	See section 4.2.1. ACPI Settings on page 17
CPU Configuration	See section 4.2.2. CPU Configuration on page 18
CSM Configuration	See section 4.2.3. CSM Configuration on page 19
NVMe Configuration	See section 4.2.4. NVMe Configuration on page 20
USB Configuration	See section 4.2.5. USB Configuration on page 21

4.2.1. ACPI Settings



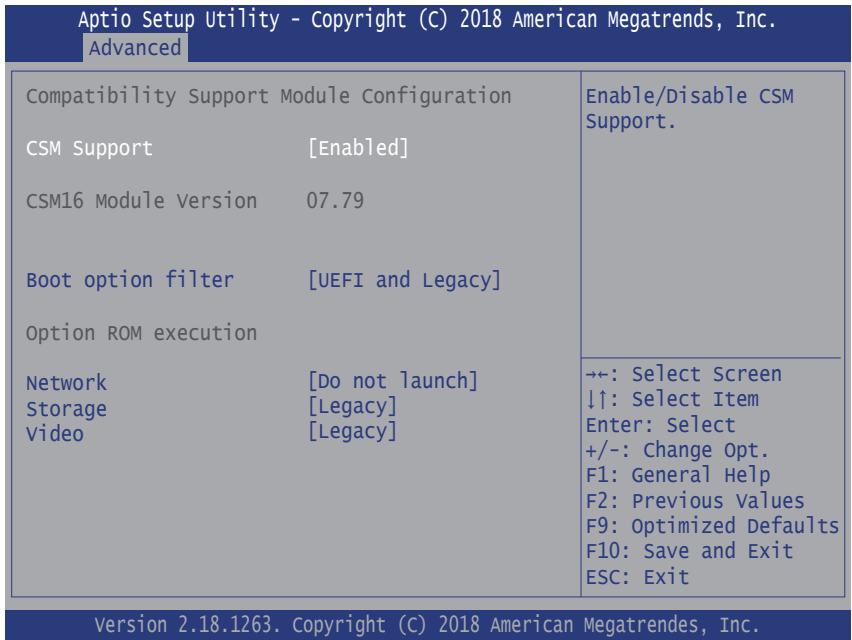
Setting	Description
Enable Hibernation	Enable (default) or Disable System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
ACPI Sleep State	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed. ► Options: Suspend Disabled and S3 (Suspend to RAM) (default).

4.2.2. CPU Configuration



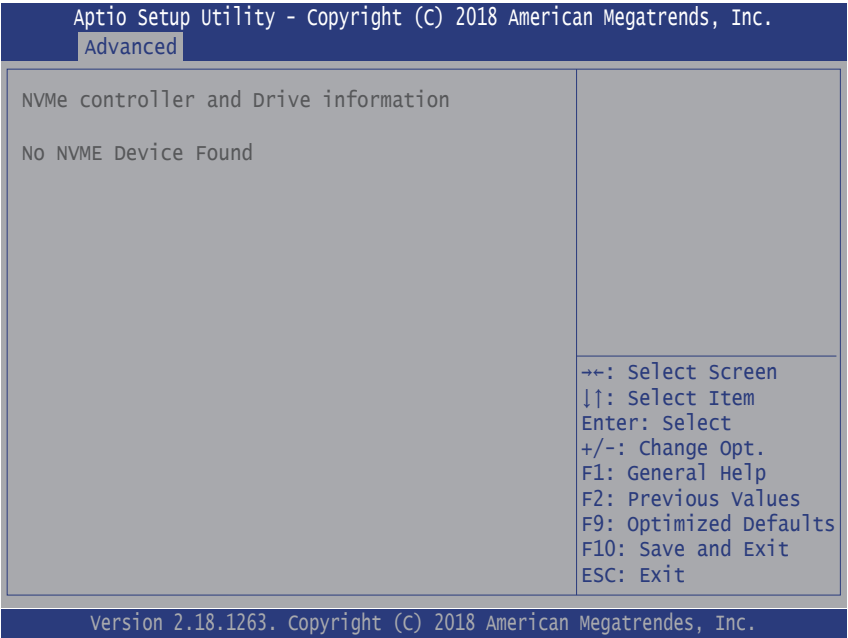
Setting	Description
Socket 0 CPU Information	To view the socket specific CPU information.
EIST	Enable (default)/ Disable Intel SpeedStep
Turbo Mode	Enable (default)/ Disable Turbo Mode. Only available when EIST (Intel Speed Step) is Enabled .
Boot performance Mode	Set the performance state that the BIOS will set before the OS handoff. ► Options: Max Performance (default) and Max Battery
CPU C States	Enable / Disable (default) CPU C States

4.2.3. CSM Configuration



Setting	Description
CSM Support	Enable (default) or Disable CSM Support.
Boot option filter	Control the Legacy/UEFI ROMs priority. ► Options: UEFI and Legacy (default), Legacy only , UEFI only
Network	Control the execution of UEFI and Legacy PXE OpROM ► Options: Do not launch (default) and Legacy
Storage	Control the execution of UEFI and Legacy Storage OpROM ► Options: Do not launch and Legacy (default)
Video	Control the execution of UEFI and Legacy Video OpROM ► Options: Do not launch , UEFI and Legacy (default)

4.2.4. NVMe Configuration



This page shows the NVMe controller and drive information.

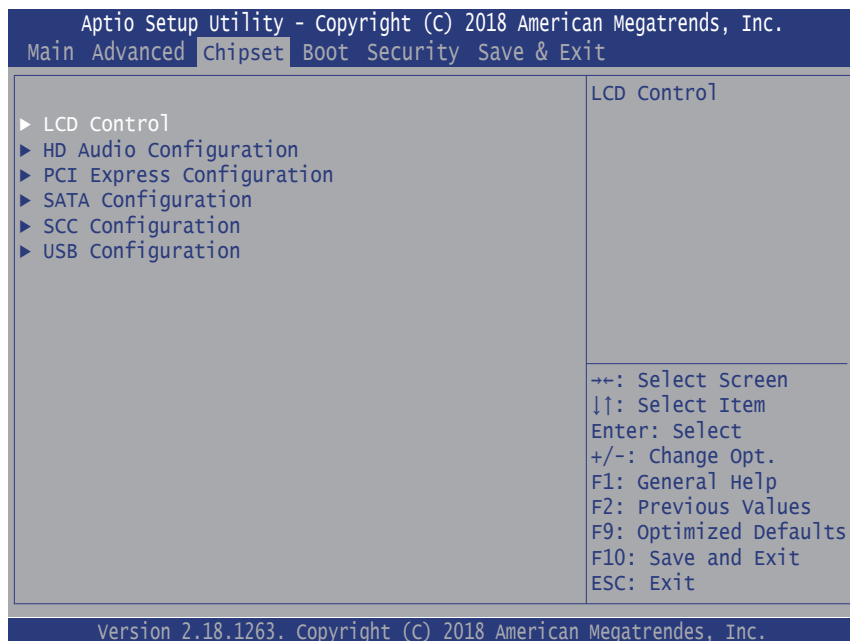
4.2.5. USB Configuration

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.		
Advanced		
USB Configuration		Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
USB Module Version	16	
USB Devices:		→←: Select Screen ↓↑: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save and Exit ESC: Exit
1 XHCI		
USB Devices:		
1 Keyboard		
Legacy USB Support		
XHCI Hand-off	[Enabled]	
USB Mass Storage Driver Support	[Enabled]	
USB hardware delays and time-outs:		
USB Transfer time-out	[20 sec]	
Device reset time-out	[20 sec]	
Device power-up delay	[Auto]	
Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.		

Setting	Description
Legacy USB Support	Sets legacy USB support. ► Options: Enabled (default), Disabled and Auto . AUTO option disables legacy support if no USB devices are connected. Disable option will keep USB devices available only for EFI applications.
XHCI Hand-off	Enable (default) or Disable XHCI Hand-off This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

USB Mass Storage Driver Support	Enable (default) or Disable USB Mass Storage Driver Support.
USB hardware delay and time-out	
USB Transfer time-out	Use this item to set the time-out value for control, bulk, and interrupt transfers. <ul style="list-style-type: none"> Options available are: 1 sec, 5 sec, 10 sec, 20 sec (default)
Device reset time-out	Use this item to set USB mass storage device start unit command time-out. <ul style="list-style-type: none"> Options available are: 10 sec, 20 sec (default), 30 sec, 40 sec
Device power-up delay	Use this item to set maximum time the device will take before it properly reports itself to the host controller. <ul style="list-style-type: none"> Options available are: Auto (Default): 'Auto' uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor. Manual: Select Manual you can set value for the following sub-item: 'Device Power-up delay in seconds', the delay range in from 1 to 40 seconds, in one second increments.

4.3. Chipset



Setting	Description
LCD Control	See section 4.3.1. LCD Control on page 24
HD Audio Configuration	See section 4.3.2. HD Audio Configuration on page 26
PCI Express Configuration	See section 4.3.3. PCI Express Configuration on page 27
SATA Configuration	See section 4.3.4. SATA Configuration on page 28
SCC Configuration	See section 4.3.5. SCC Configuration on page 29
USB Configuration	See section 4.3.6. USB Configuration on page 30

4.3.1. LCD Control

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.

Chipset

LCD Control

Primary IGFX Boot Display

[Auto]

Active LFP

[eDP Port-A]

LCD Panel Type

[1024x768]

Backlight Control

[PWM Normal]

Backlight Dutycycle

255

LVDS Channel Type

[Single]

LVDS Panel Color Format

[18-BIT]

Select the Video Device which will be activated during POST. 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.

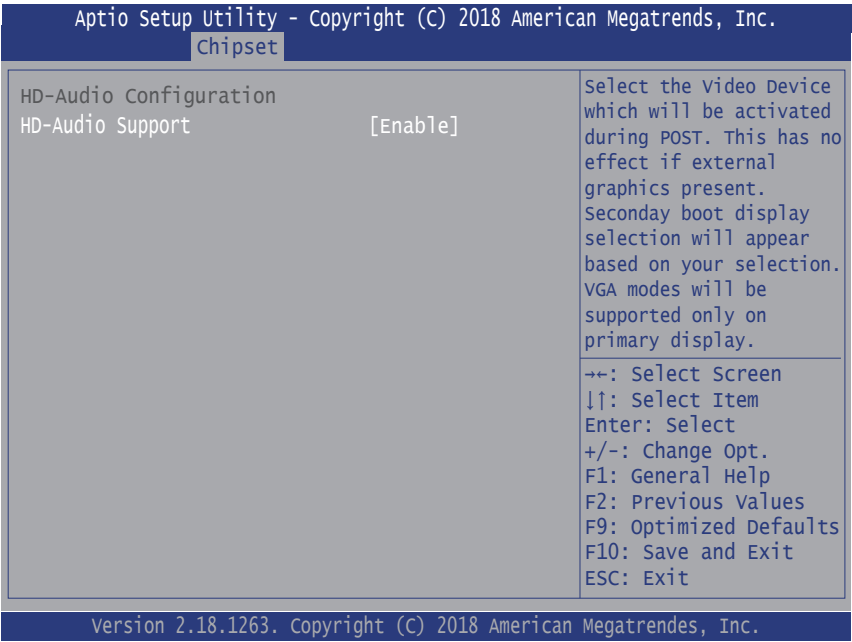
→←: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit

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Setting	Description
Primary IGFX Boot Display	Select the Video Device which will be activated during POST. 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. ► Options: Auto (default), EFPP and LFP .
Active LFP	Configuring LFP usage ► Options: No LVDS and eDP Port-A (default)
LCD Panel Type	Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item. Default: 1024 x 768
Backlight Control	Configuring back light control settings. ► Options: PWM Inverted and PWM Normal (default).

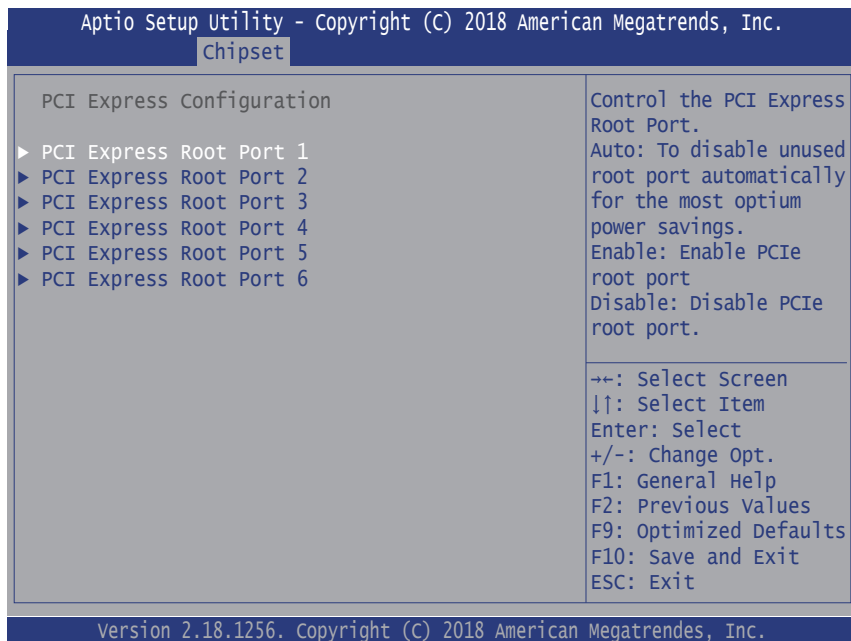
Backlight Dutycycle	Select range from 15 to 255. Step = 10. The default is 255 .
LVDS Channel Type	Select single (default) or dual channel
LVDS Panel Color Format	Select LVDS color display mode ► Options: 24-BIT or 18-BIT (default)

4.3.2. HD Audio Configuration



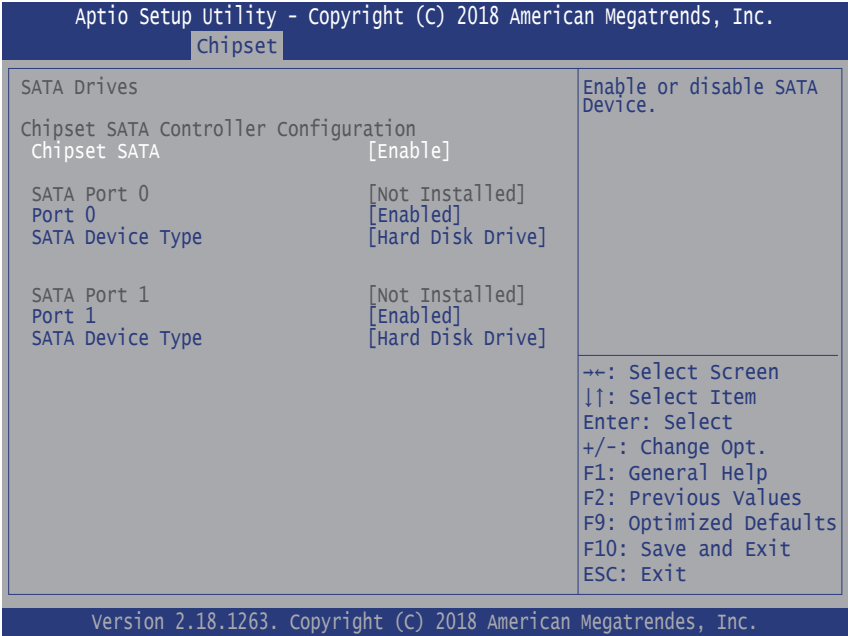
Setting	Description
HD Audio Configuration	<p>Control Detection of the HD-Audio device.</p> <ul style="list-style-type: none"> Options available are: <ul style="list-style-type: none"> Disabled: HDA will be unconditionally disabled Enabled (default): HDA will be unconditionally enabled.

4.3.3. PCI Express Configuration



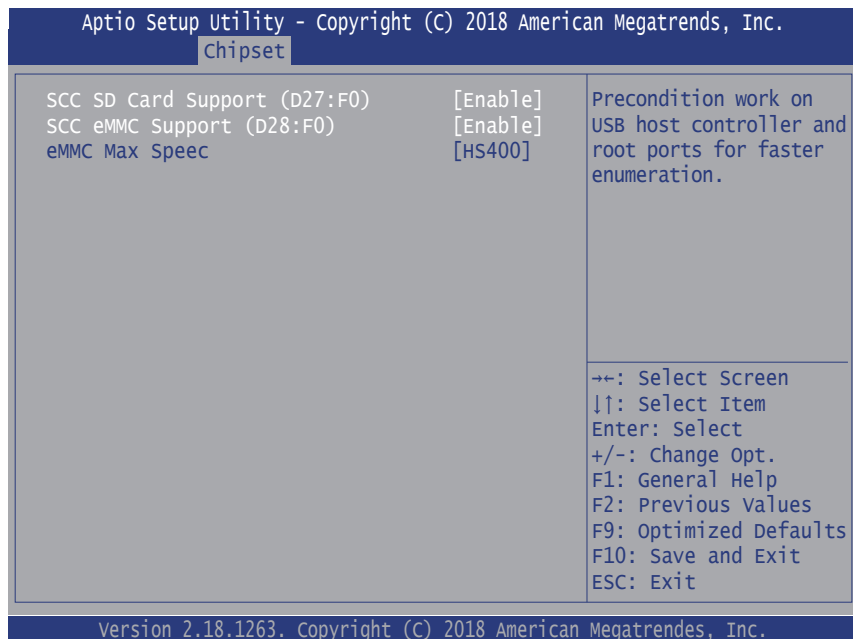
Setting	Description
PCI Express Root Port	Control the PCI Express Root Port. Auto (default): To disable unused root port automatically for the most optimum power savings. Enable : Enable PCIe root port Disable : Disable PCIe root port.
ASPM Support	Disable or set the ASPM level. Force L0s will force all inks to L0s state. "Auto" will allow BIOS to auto configure."Disable" will disable ASPM. ► Options: Disabled (default), L0s , L1 , L0sL1 and Auto .
PCIe Speed	Select PCI Express port speed. ► Options: Auto (default), Gen1 and Gen2

4.3.4. SATA Configuration



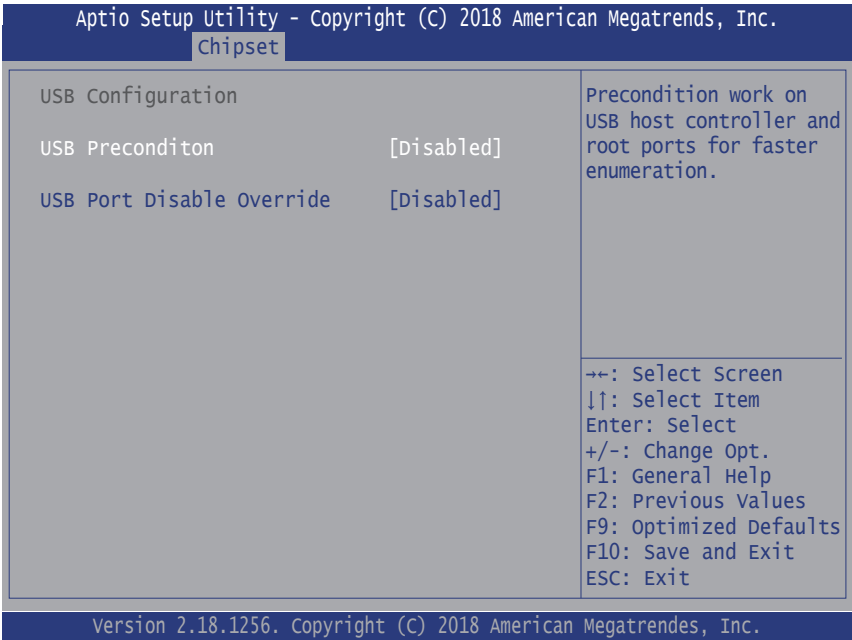
Setting	Description
Chipset SATA	Enable (default) or disable the chipset SATA Controller.
Port 0/1	Enable (default) or disable SATA Port.
SATA Device Type	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive. ► Options: Hard Disk Drive (default) and Solid State Drive

4.3.5. SCC Configuration



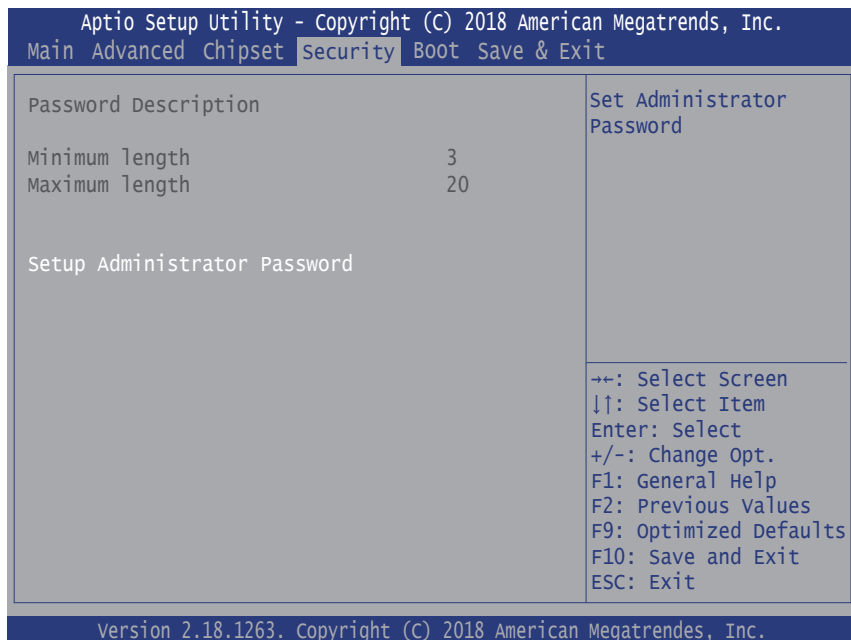
Setting	Description
SCC SD Card Support	Enable (default) / Disable SCC SD Card Support
SCC eMMC Boot Support	Enable (default) / Disable SCC eMMC Support
eMMC Secure Erase	Select the eMMC max Speed allowed. ► Options: HS400 (default), HS200 and DDR50 .

4.3.6. USB Configuration



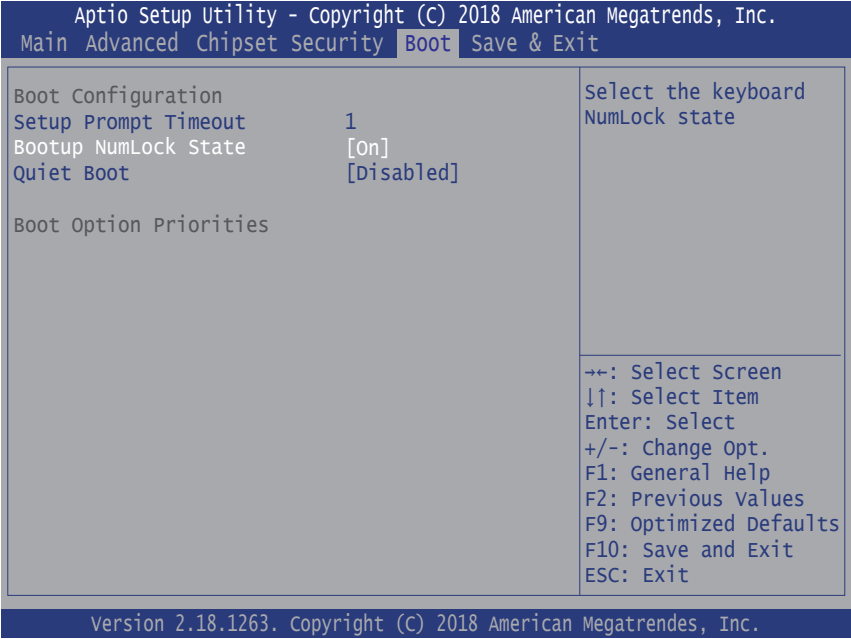
Setting	Description
xHCI Mode	Enable (default) or Disable xHCI mode. Once disabled, XHCI controller would be function disabled, none of the USB devices are detectable and usable during boot and in OS. Do not disable it unless for dubug purpose.
USB port #0-5 USB 3 port #0-1	Enable (default) or Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.

4.4. Security



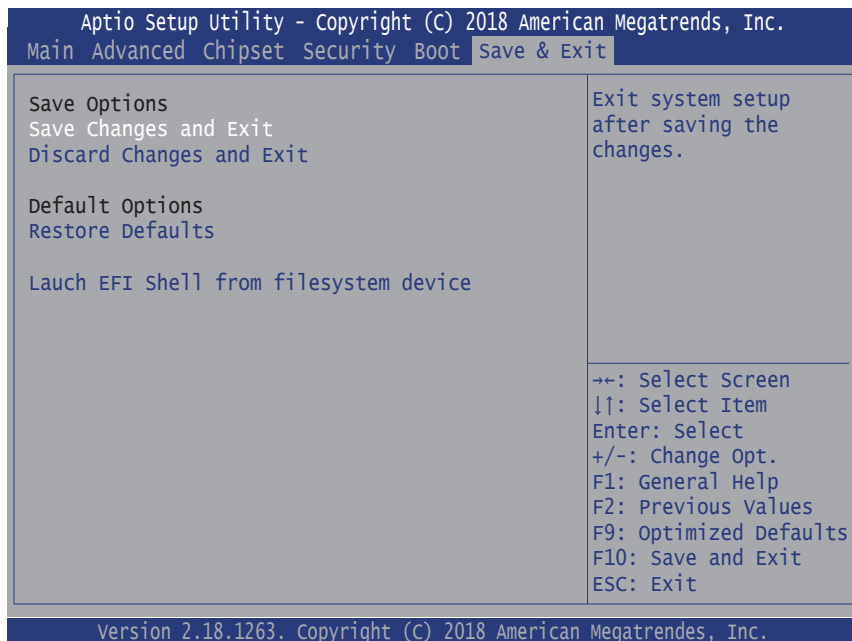
Setting	Description
Administrator Password	<p>To set up an administrator password:</p> <ol style="list-style-type: none"> 1. Select Administrator Password. The screen then pops up an Create New Password dialog. 2. Enter your desired password that is no less than 3 characters and no more than 20 characters. 3. Hit [Enter] key to submit.

4.5. Boot



Setting	Description
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.
Boot NumLock State	Select the keyboard NumLock state. ► Options: On (default) and Off .
Quiet Boot	Enable or Disable (default) Quiet Boot option.

4.6. Save & Exit



Setting	Description
Save Changes and Exit	Exit system setup after saving the changes. ► Enter the item and then a dialog box pops up: Save configuration and exit? (Yes/ No)
Discard Changes and Exit	Exit system setup without saving the changes. ► Enter the item and then a dialog box pops up: Quit without saving? (Yes/ No)
Restore Defaults	Restore/Load Default values for all the setup options. ► Enter the item and then a dialog box pops up: Load Optimized Defaults? (Yes/ No)
Launch EFI Shell from filesystem device	Attempts to launch EFI shell application (Shell.efi) from one of the available filesystem devices.