



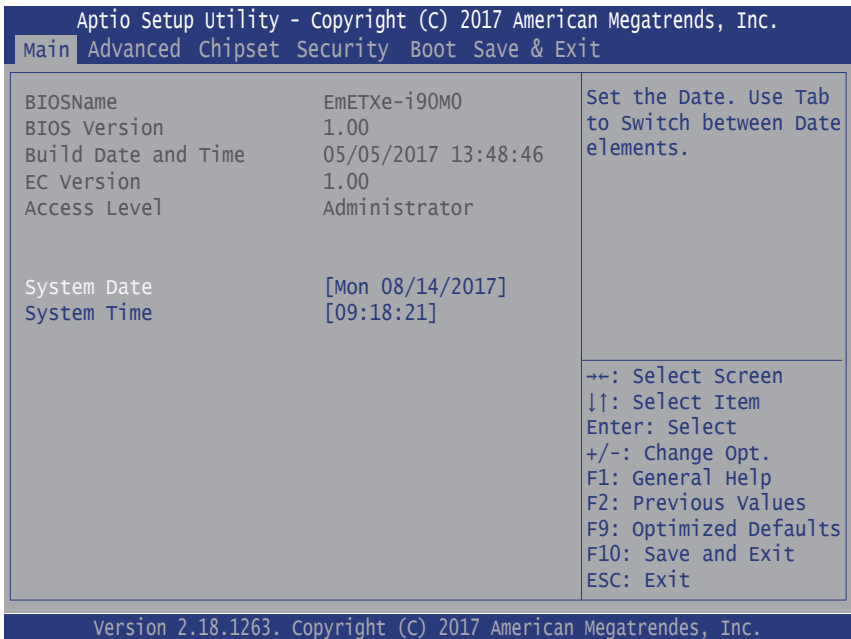
Chapter 4

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:



Setting	Description
System Language	Choose the system default language.
System Date	<p>Set the system date. Use Tab to switch between Data elements. Note that the ‘Day’ automatically changes when you set the date.</p> <ul style="list-style-type: none"> ▶ The date format is: Day: Sun to Sat Month: 1 to 12 Date: 1 to 31 Year: 1998 to 2099

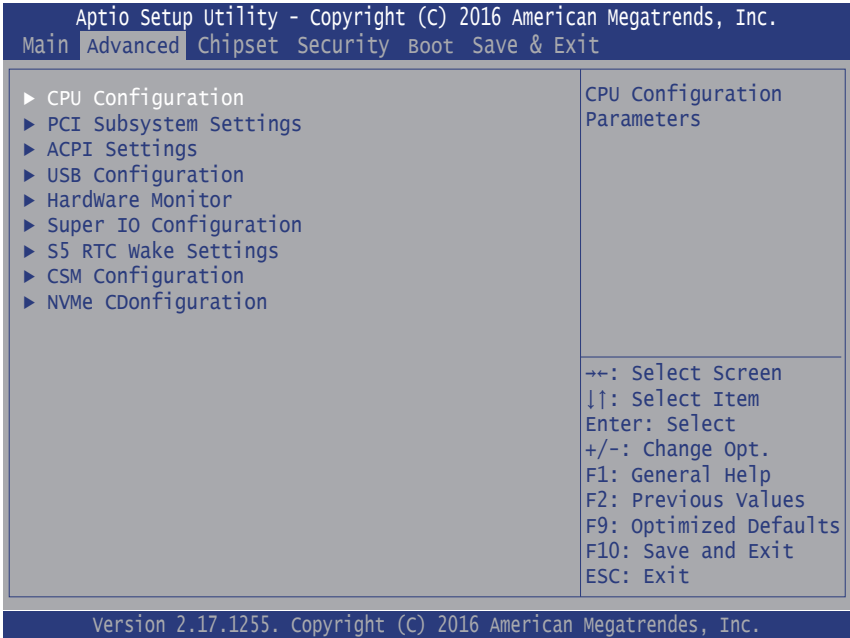
System Time	<p>Set the system time. Use Tab to switch between Time elements.</p> <p>▶ The time format is: Hour: 00 to 23 Minute: 00 to 59 Second: 00 to 59</p>
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Key Commands

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	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) On the Sub Menu – Exit current page and return to main menu
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
CPU Configuration	See section 4.2.1 CPU Configuration on page 23
PCI Subsystem Settings	See section 4.2.2 PCI Subsystem Settings on page 25
ACPI Settings	See section 4.2.3 ACPI Settings on page 26
USB Configuration	See section 4.2.4 USB Configuration on page 27
Hardware Monitor	See section 4.2.5 Hardware Monitor on page 29
Super IO Configuration	See section 4.2.6 Super IO Configuration on page 30
S5 RTC Wake Settings	See section 4.2.7 S5 RTC Wake Settings on page 32
CSM Configuration	See section 4.2.8 CSM Configuration on page 33
NVMe Configuration	See section 4.2.9 NVMe Configuration on page 34

4.2.1 CPU Configuration

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Advanced

CPU Configuration		
Type	Intel(R) Core(TM) i5-7300U CPU @ 2.60GHz	Enabled for windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When disabled only one thread per enabled core is enabled.
ID	0x806E9	
Speed	2700 MHz	
L1 Data Cache	32 KB x 2	
L1 Code Cache	32 KB x 2	
L2 Cache	256 KB x 2	
L3 Cache	3 MB	
L4 Cache	N/A	
VMX	Supported	
SMX/TXT	Supported	
VMX	[Enabled]	
Active Processor Cores	[All]	
Hyper-Threading	[Enabled]	
Boot performance Mode	[Max Non-Turbo Performance]	
Intel (R) SpeedStep (tm)	[Enabled]	
C states	[Disabled]	

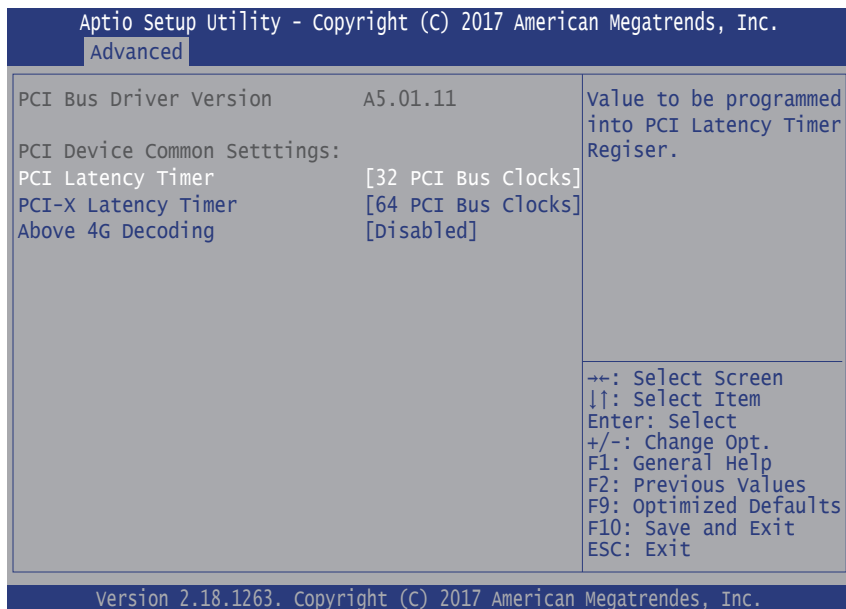
++: Select Screen
 ↓↑: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F2: Previous Values
 F9: Optimized Defaults
 F10: Save and Exit
 ESC: Exit

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Setting	Description
VMX	Enable or disable Intel virtualization technology. ▶ Options: Enabled (default) or Disabled
Active Processor Cores	Number of cores to enable in each processor package. ▶ Options: All (default) and 1
Hyper-threading	Enabled (default) for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized or Hyper-Threading Technology). When disabled only one thread per enabled core is enabled.

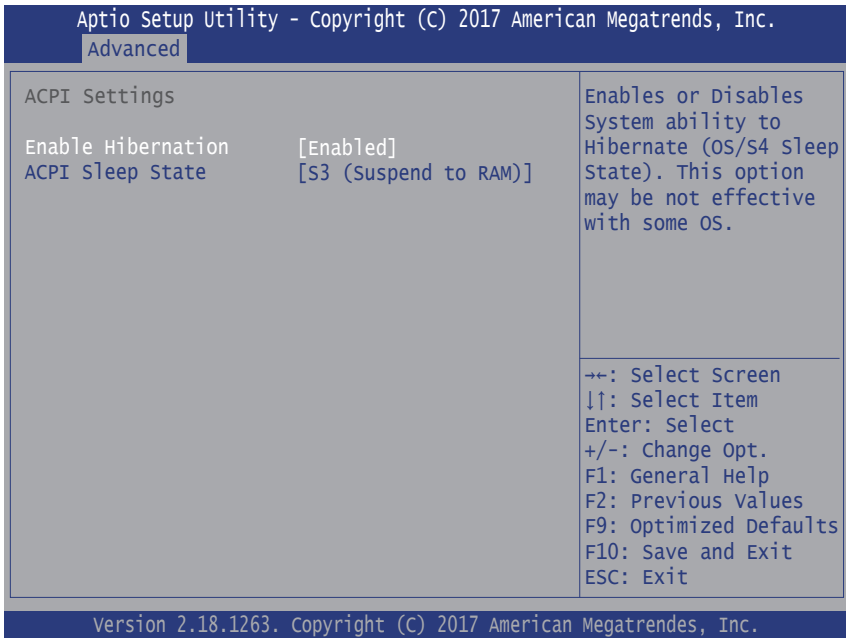
Boot performance Mode	Set the performance state that the BIOS will set before the OS handoff. ▶ Options: Max Non-Turbo Performance (default), Max Power Saving and Turbo Performance
Intel (R) Speed Step (tm)	Enable (default)/ Disable Intel SpeedStep. Allows more than two frequency ranges to be supported.
C States	Enable /Disable (default) CPU C States

4.2.2 PCI Subsystem Settings



Setting	Description
PCI Latency Timer	Value to be programmed into PCI Latency timer Register. ▶ Default: 32 PCI Bus Clocks
PCI-X Latency Timer	Value to be programmed into PCI Latency timer Register. ▶ Default: 64 PCI Bus Clocks
Above 4G Decoding	Enable/Disable (default) 64bit capable Devices to be Decoded in Above 4G Address Space (Only if System Supports 64 bit PCI Decoding).

4.2.3 ACPI Settings



Setting	Description
Enable Hibernation	Enable (default) or Disable System ability to Hiber-nate (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).

4.2.4 USB Configuration

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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	17	
USB Devices:		
1 XHCI		
USB Devices:		
1 Keyboard		
Legacy USB Support	[Enabled]	→←: Select Screen ↓↑: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save and Exit ESC: Exit
XHCI Hand-off	[Disabled]	
USB Mass Storage Driver Support	[Enabled]	
Port 60/64 Emulation	[Disabled]	
USB hardware delays and time-outs:		
USB Transfer time-out	[20 sec]	
Device reset time-out	[20 sec]	
Device power-up delay	[Auto]	
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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	<p>Use this item to set the time-out value for control, bulk, and interrupt transfers.</p> <ul style="list-style-type: none"> Options available are: 1 sec, 5 sec, 10 sec, 20 sec (default)
Device reset time-out	<p>Use this item to set USB mass storage device start unit command time-out.</p> <ul style="list-style-type: none"> Options available are: 10 sec, 20 sec (default), 30 sec, 40 sec
Device power-up delay	<p>Use this item to set maximum time the device will take before it properly reports itself to the host controller.</p> <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.

4.2.5 Hardware Monitor

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Advanced

PC Health Status

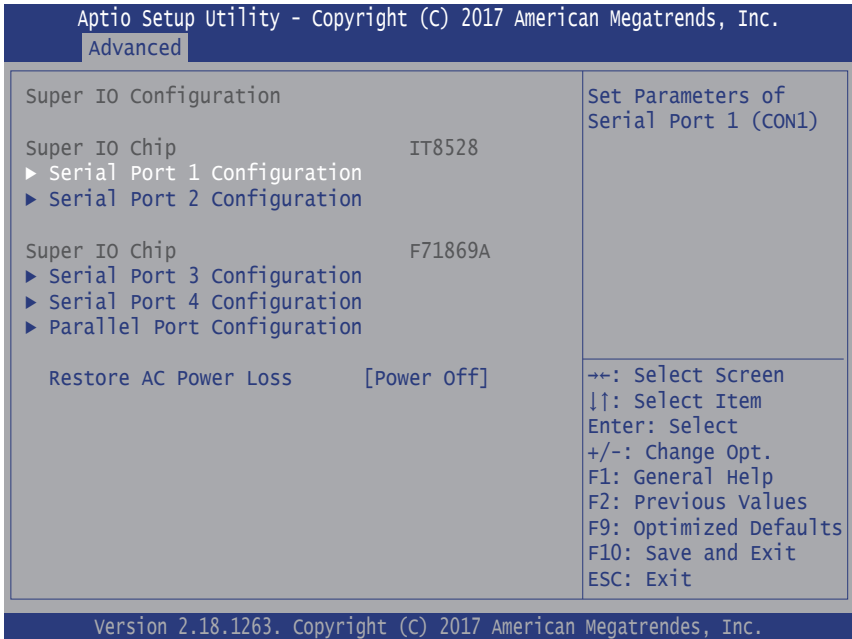
CPU Temperature	: +37°C
Fan1 Speed	: N/A
VCORE	: +0.858 V
VCCDU	: +1.189 V
VIN	: +11.942 V

→: 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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Access this submenu to monitor the hardware status.

4.2.6 Super IO Configuration



Setting	Description
Serial Port 1/2/3/4 & Parallel Port Configuration	See next page.
Restore AC Power Loss	Specify what state to go to when power is re-applied after a power failure. <ul style="list-style-type: none"> Options: Last State, Power On and Power Off (default)

Serial Port 1/2/3/4 Configuration

Setting	Description
Serial Port	Enable (default) or Disable Serial Port (COM).
Change Settings	<p>Select an optimal setting for Super IO device.</p> <ul style="list-style-type: none"> ▶ Options for Serial Port 1: <ul style="list-style-type: none"> Auto; IO=3F8h; IRQ=4 (default) ; IO=3F8h; IRQ=3, 4, 7, 12; IO=2F8h; IRQ=3, 4, 7, 12; ▶ Options for Serial Port 2: <ul style="list-style-type: none"> Auto IO=2F8h; IRQ=3 (default) IO=3F8h; IRQ=3, 4, 7, 12 IO=2F8h; IRQ=3, 4, 7, 12 ▶ Options for Serial Port 3: <ul style="list-style-type: none"> Auto IO=3E8h; IRQ=11 (default) IO=3E8h; IRQ=7, 10, 11, 12 IO=2E8h; IRQ=7, 10, 11, 12 IO=2F0h; IRQ=7, 10, 11, 12 IO=2E0h; IRQ=7, 10, 11, 12 ▶ Options for Serial Port 4: <ul style="list-style-type: none"> Auto IO=2E8h; IRQ=10 (default) IO=3E8h; IRQ=7, 10, 11, 12 IO=2E8h; IRQ=7, 10, 11, 12 IO=2F0h; IRQ=7, 10, 11, 12 IO=2E0h; IRQ=7, 10, 11, 12

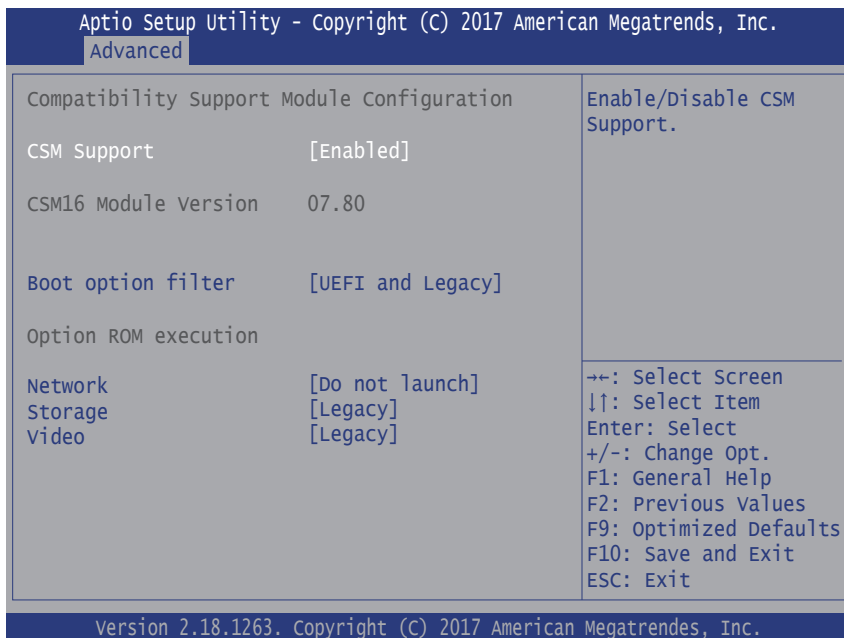
Parallel Port Configuration

Setting	Description
Parallel Port	Enable (default) or Disable Parallel Port (LPT/LPTE).
Change Settings	Select an optimal setting for Super IO device. <ul style="list-style-type: none"> ▶ Options: <ul style="list-style-type: none"> Auto IO=378h; IRQ=7 (default) IO=378h; IRQ=7, 10, 11, 12 IO=278h; IRQ=7, 10, 11, 12 IO=3BCh; IRQ=7, 10, 11, 12
Device Mode (only for Parallel Port Configuration)	Change the Printer Port mode. <ul style="list-style-type: none"> ▶ Options: <ul style="list-style-type: none"> STD Printer Mode (default) SPP Mode EPP-1.9 and SPP Mode EPP-1.7 and SPP Mode ECP Mode ECP and EPP 1.9 Mode ECP and EPP 1.7 Mode.

4.2.7 S5 RTC Wake Settings

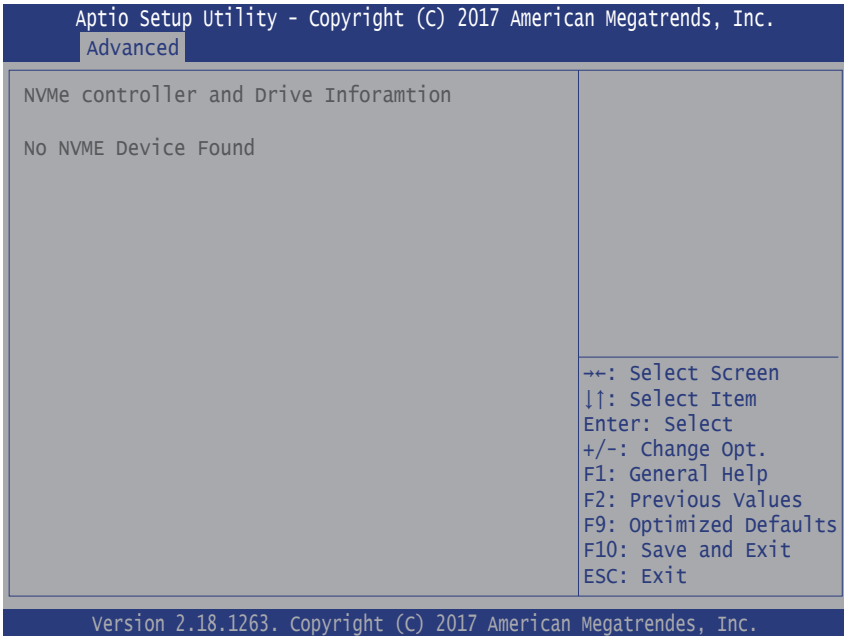
Setting	Description
Wake System from S5	Enable or Disable (default) system wake on alarm event. <ul style="list-style-type: none"> ▶ Options available are: <ul style="list-style-type: none"> Disabled (default): Fixed Time: System will wake on the hr::min::sec specifiedc. DynamicTime: If selected, you need to set Wake up minute increase from 1 - 5. System will wake on the current time + increase minute(s).

4.2.8 CSM Configuration



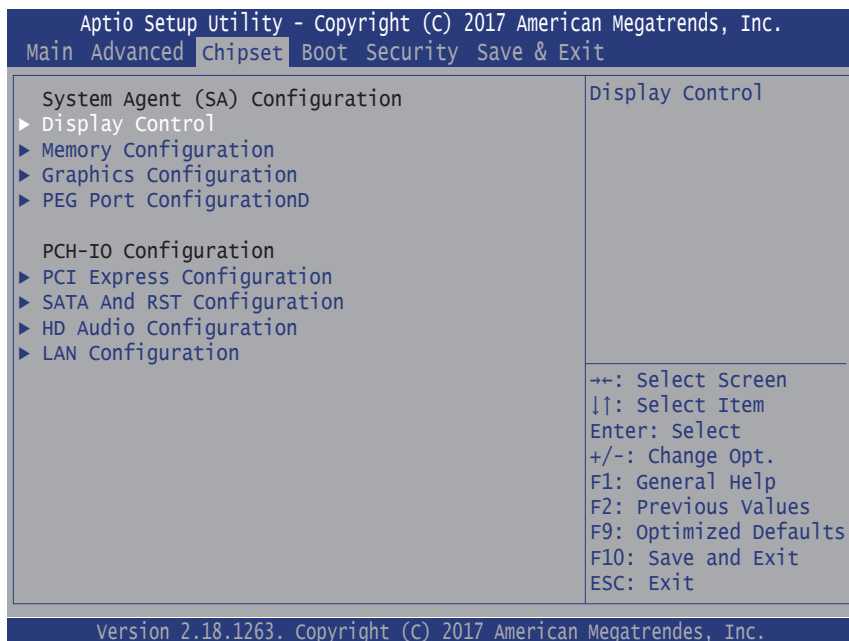
Setting	Description
CSM Support	Enable (default) or Disable CSM Support.
Boot option filter	Control the Legacy/UEFI ROMs priority. ► Options: UEFI and Legacy (default), Legacy only and UEFI only
Network	Control the execution of UEFI and Legacy PXE OpROM ► Options: Do not lauch (default) and Legacy
Storage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

4.2.9 NVMe Configuration



Access this submenu to view the NVMe controller and driver information.

4.3 Chipset



Setting	Description
System Agent (SA) Configuration	
Display Control	
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: VBIOS Default (default), LCD , DVI , DP1 and DP2 .
Active LFP	Configuring LFP usage ▶ Options: No eDP (default), and eDP Port-A
Memory Configuration	Access this submenu to view the memory configuration.

Graphic Configuration	See section 4.3.1 Graphics Configuration on page 37
PEG Port Configuration	
Enable Root Port	Enable or Disable (default) the Root Port. ▶ Options: Auto (default), Disabled and Enabled .
Max Link Speed	Configures PEG 0:1: 0 Max Speed. ▶ Options: Auto (default), Gen 1 , Gen 2 and Gen 3 .
PCIe Spread Spectrum Clocking	Allows to Enable (default) or Disable Spread Spectrum Clocking for compliance testing.
PCI-IO Configuration	
PCI Express Configuration	See section 4.3.2 PCI Express Configuration on page 38
SATA And RST Configuration	See section 4.3.3 SATA and RST Configuration on page 38
HD Audio Configuration	Control Detection of the HD-Audio device. ▶ Options: Disabled : HDA will be unconditionally disabled Enabled : HDA will be unconditionally Enabled Auto (default) = HDA will be enabled if present, disabled otherwise.
LAN Configuration	
PHC LAN Controller	Enables/Disables onboard NIC. ▶ Options: Enabled (default) and Disabled
Wake on LAN Enable	Availabe if PCH LAN Controller is enabled: ▶ Options: Enable (default) / Disable integrated LAN to wake the system.

4.3.1 Graphics Configuration

Setting	Description
Skip Scanning of External Gfx Card	If enabled, it will not scan for External Gfx Card on PEG and PCH PCIE Ports. ▶ Options: Disabled (default) and Enabled .
External Gfx Card Primary Display Configuration	
Primary Display	Select which of IGFX/PEG/PCI graphics device should be Primay Display or select SG for Switchable Gfx. ▶ Options: Auto (default), PEG11 and PEG12 .
Select PCIE	Select the card used on the platform ▶ Options: Auto (default) and PCIE1~18 .
Internal Graphics	Keep IGFX enabled based on the setup options. ▶ Options: Auto (default), Disabled and Enabled
GTT Size	Select the GTT Size. ▶ Options: 4MB , 2MB and 8MB (default).
Aperture Size	Select the Aperture Size. Note that above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM support. ▶ Options: 256MB (default), 128MB , 512MB , 1024MB , 2048MB and 4096MB .
DVMT Pre-Allocated	Select the DVMT 5.0 Pre-allocated (Fixed) Graphic Memory size used by the Internal Graphic Device. ▶ Options: 32M is the default.
DVMT total Gfx Mem	Select the DVMT 5.0 Total Graphic Memory size used by the Internal Graphic Device. ▶ Options: 256MB (default), 128MB and Max .

4.3.2 PCI Express Configuration

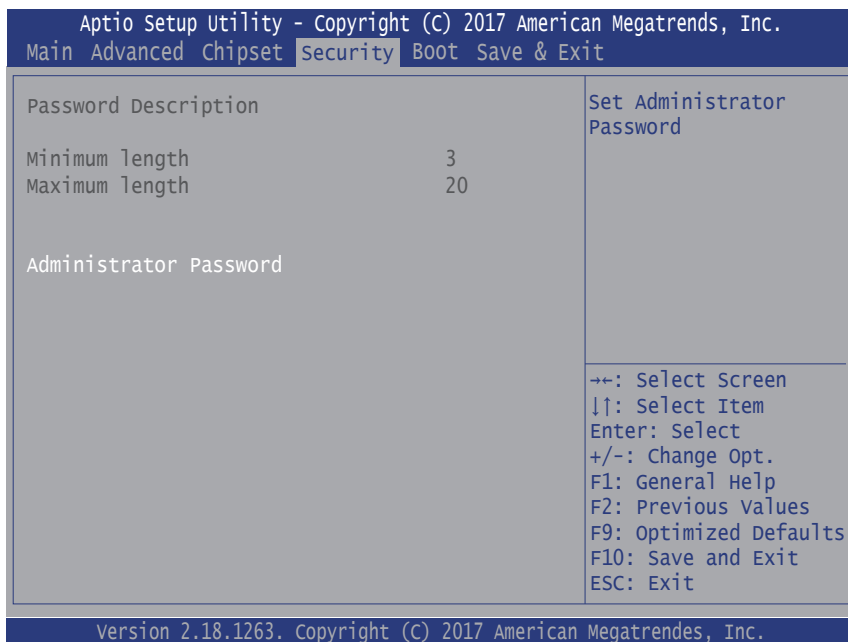
Setting	Description
PCIE3/1/2 & MC1/2	Enable (default) or disable PCIE3/1/2 and MC1/2.
ASPM Support	Disable or set the ASPM level. Force L0s will force all inks to L0s state. "Auto" will allow BIOS to auto configure."Disable" will disable ASPM. ▶ Options: Disabled (default), L0s , L1 , L0sL1 and Auto .
PCIe Speed	Select PCI Express port speed. ▶ Options: Auto (default), Gen1 , Gen2 and Gen3

4.3.3 SATA and RST Configuration

Setting	Description
SATA Controller`(s)	Enable (default) or disable SATA Device.
SATA Mode Selection	Determines how SATA controller(s) operate. ▶ Options: AHCI (default) and RAID
SATA Controller Speed	Indicates the maximum speed the SATA controller can support. ▶ Options: Default (default), Gen1, Gen2 and Gen3
Port 0/1/2/3	Enable or disable (default) 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

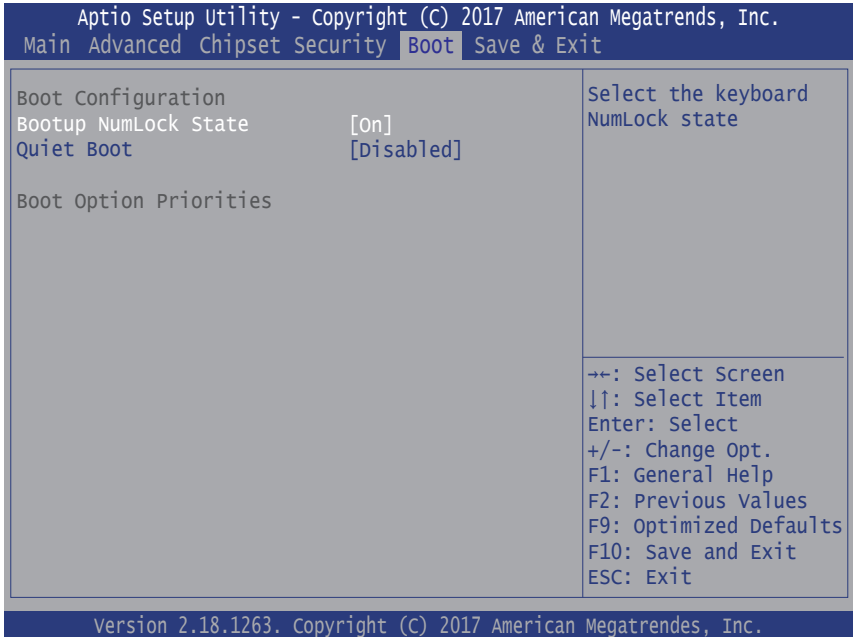
4.4 Security

The **Security** menu sets up the administrator password.



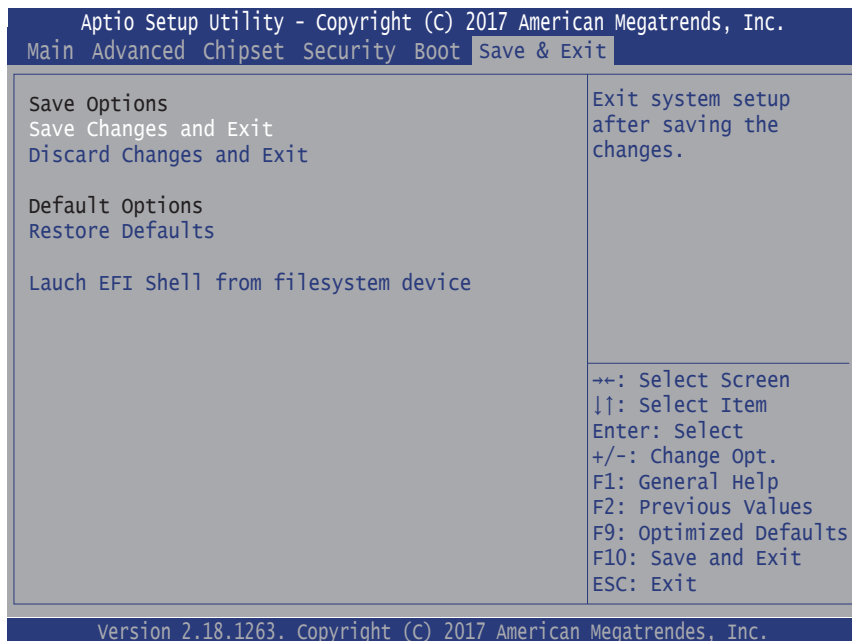
Setting	Description
Administrator Password	<p>To set up an administrator password:</p> <ol style="list-style-type: none"> 1. Select Administrator Password. The screen then pops up an Create New Password dialog. 2. Enter your desired password that is no less than 3 characters and no more than 20 characters.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

4.5 Boot



Setting	Description
Boot NumLock State	Select the keyboard NumLock state. ▶ Options: On (default) and Off .
Quiet Boot	Enable (default) or Disable 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.

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