VPX6200 BIOS

User's Manual

Manual Rev.:	Rev. 1.0
Revision Date:	April 30, 2024
Part No.:	50M-31428-2000

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LEADING EDGE COMPUTING

Preface

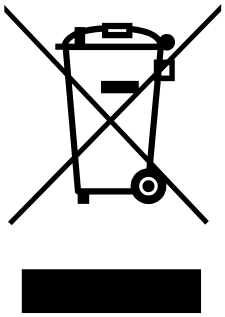
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Revision History

Revision	Release Date	Description of Change(s)
1.0	2024-04-30	Initial release

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1 BIOS Setup Menu

1.1 Introduction

The BIOS setup utility is invoked by pressing <ESC> or <DEL> keys. User can change BIOS settings during setup utility runs. A reset of system is required in order to make new settings take effect.

In BIOS setup utility, there are several hot keys designed for specific purposes. Hot keys are listed below.

- <F1>: General help in setup menu
- <F8>: Load previous BIOS values
- <F9>: Load BIOS default in setup utility
- <F10>: Save & Exit setup utility

1.2 Menu Selection Bar

The Menu Selection Bar is located at the top of the screen. It displays the top level available menus to the user:

- Main Menu
- Advanced Menu
- Chipset Menu
- Server Mgmt Menu
- Security Menu
- Boot Menu
- Save & Exit Menu

1.3 Menu Conventions

The appearance of setup menu listed in this chapter is a sample to describe the item list. It is shown on VT100 terminal via serial console. Followings are the menu conventions.

- **Using color**

  The mandatory BIOS setup fields are in black. The BIOS setup fields currently not used are in grey. The display only strings are in black.

- **Using brackets**

  Editable menu options are marketed with squares '[' and ']' to distinguish them from display only fields that can't be modified.

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2 Getting Started

The Main Menu provides read-only information about system and also allows to set system's date and time. Refer to the tables below, it shows the screen shot of Main menu for detail, and submenus and settings as well.

Aptio Setup – AMI

Main Advanced Chipset Server Mgmt Security Boot Save & Exit

BIOS Information		Set the Date. Use Tab to switch between Date elements.
BIOS Vendor	American Megatrends	
BIOS Version	0.14.10	
Build Date	04/9/2023	
SEMA Firmware Version	ADLINK 001	
BMC Firmware Version	1.04	
MRC Version	2.2.0.9	
GOP Version	17.0.1075	
ME FW Version	15.0.41.2142	
BIOS Boot Source	Primary BIOS	
System Information		
Project Name	VPX-6200	
Product ID	KX SKU	
System Node	A	
CPU Board Version	A1	
CPU Brand String	Intel(R) Xeon(R) W-1186 5MRE @ 2.60GHz	><: Select Screen
CPU Frequency	2.6GHz	^v: Select Item
Total Memory	32768 MB (DDR4)	Enter: Select
Memory Frequency	3200 MHz	+/-: Change Opt.
PCH SKU	H RM590E	F1: General Help
		F8: Previous Values
		F9: Optimized Default
> Board Information		F10: Save & Exit
		ESC: Exit
System Date	[Thu 01/07/2022]	
System Time	[16:28:59]	
Access Level	Administrator	

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2.1 BIOS Information

BIOS Item	Options	Description
BIOS Vendor	**Info-only.** American Megatrends	Display vendor name of system BIOS.
BIOS Version	**Info-only.** x.yy.zz	Display version of booting BIOS.
Build Date	**Info-only.** MM/DD/YYYY	It shows the date that BIOS was built.
SEMA Firmware Version	**Info-only.**	Display version of SEMA EC
BMC Firmware Version	**Info-only.**	Display version of IPMI
MRC Version	**Info-only.** w.x.y.z	Display the revision of MRC code which is implemented in BIOS.
GOP Version	**Info-only.** yyyy/x.y.zzzz	*GOP Version:* When video option ROM is set to "UEFI Only", it will show up.
ME FW Version	**Info-only.** ww.x.yy.zzzz	Display the version of Intel manageability firmware which is implemented in BIOS.
BIOS Boot Source	**Info-only.** Primary BIOS/Backup BIOS	It shows which BIOS flash boots the system. *Primary BIOS:* usually means that boots from SPI0 *Backup BIOS:* usually means that boots from SPI1

2.2 System Information

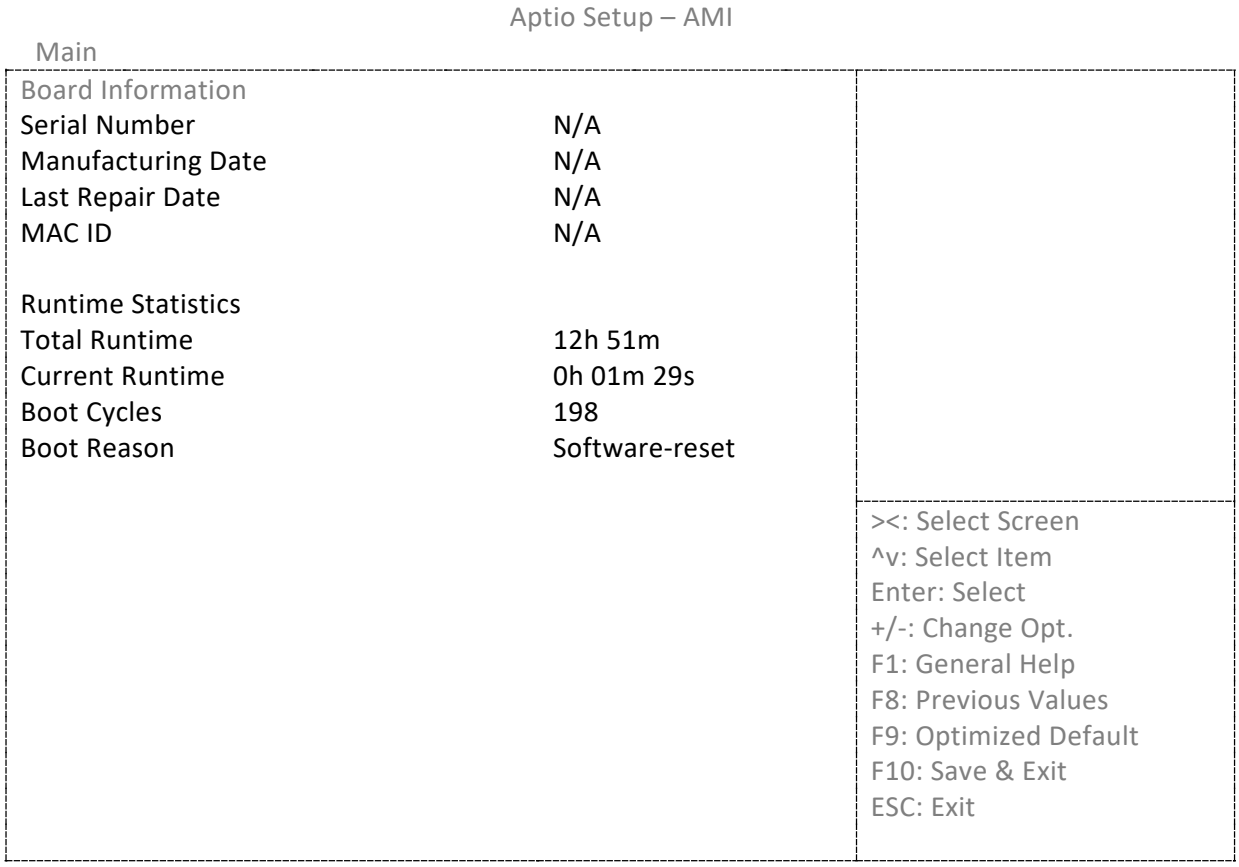
BIOS Item	Options	Description
Project Name	**Info-only.** VPX-6200	It shows the project name.
Product ID	**Info-only.**	It shows the Product ID. KX or KR SKU.
System Node	**Info-only.**	It shows the System Node. Node A or B.
CPU Board Version	**Info-only.** A1/A2/A3/…	It shows the CPU board HW version.
CPU Brand String	**Info-only.** Intel(R) Core, …	It shows what CPU is booting the system.
CPU Frequency	**Info-only.** XXXX GHz	It shows CPU's frequency.
Total Memory	**Info-only.** XXXX MB (DDRx)	It shows total memory size used on the motherboard and memory type.
Memory Frequency	**Info-only.** XXXX MHz	It shows memory's frequency.
PCH SKU	**Info-only.** xxxx	It shows what PCH SKU is designed on motherboard.

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2.3 System Date/Time

BIOS Item	Options	Description
System Date	MM/DD/YYYY	For configuring/showing system date. When setting the Date, use <Tab> key to switch between Date elements.
System Time	HH:MM:SS	For configuring/showing system time. When setting the Time, use <Tab> key to switch between Time elements.
Access Level	**Info-only.** Administrator/User	It shows what access level is used to enter BIOS setup menu.

2.4 Board Information



BIOS Item	Options	Description
Serial Number	**Info-only.**	Display board's serial number.
Manufacturing Date	**Info-only.**	Display manufacturing date.
Last Repair Date	**Info-only.**	Display Last Repair Date.
MAC ID	**Info-only.**	Shows onboard Ethernet's MAC ID.
Total Runtime	**Info-only.**	The returned value specifies the total time in minutes the system is running in S0 state.
Current Runtime	**Info-only.**	The returned value specifies the time in

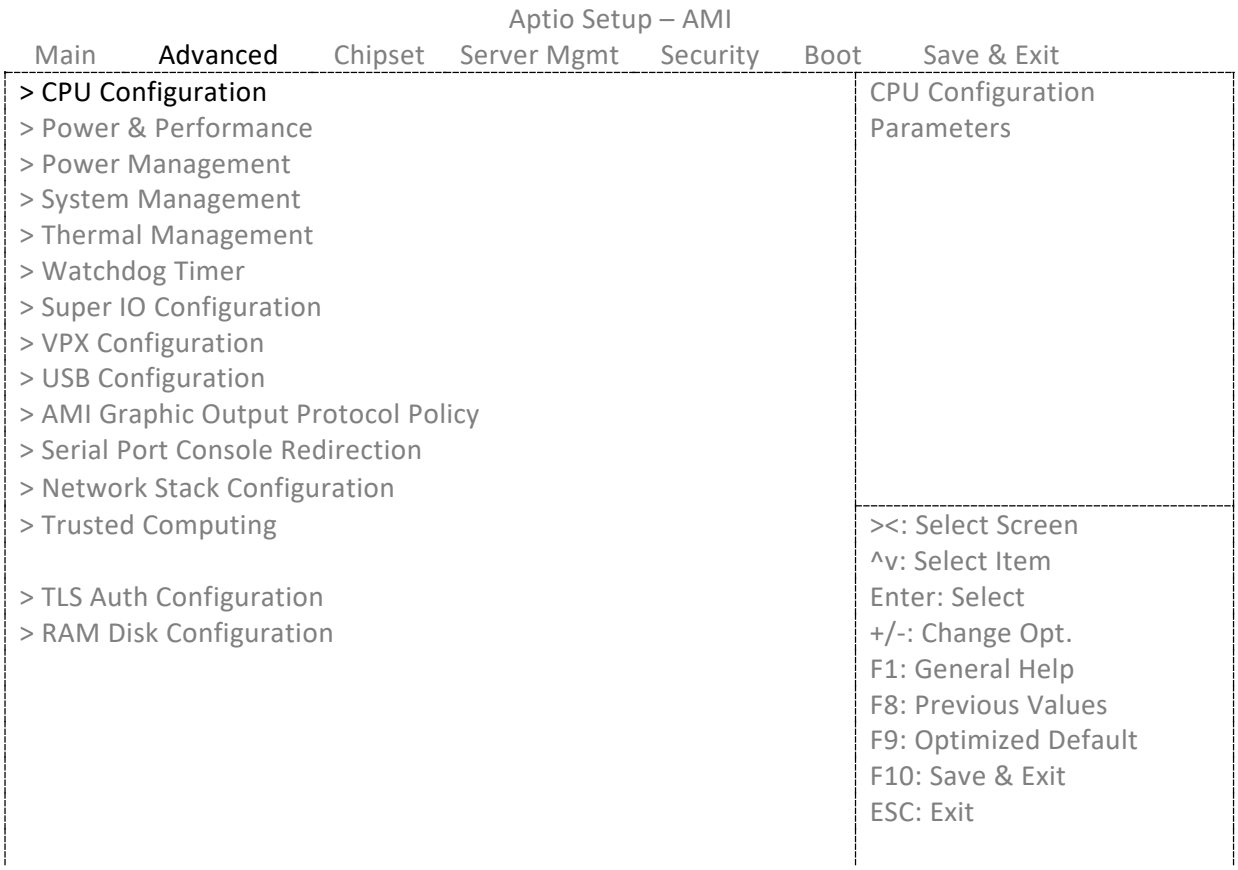
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		seconds the system is running in S0 state. This counter is cleared when the system is removed from the external power supply.
Boot Cycles	**Info-only.**	The boot cycle is increased after a HW or SW reset or after a successful power-up.
Boot Reason	**Info-only.**	The boot reason is the event which causes the reboot of the system.

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3 Advanced Menu

This menu contains the settings for most of the user interfaces in the system.



BIOS Item	Options	Description
CPU Configuration	**Submenu**	For configuring CPU features/functions.
Power & Performance	**Submenu**	For configuring Power & Performance Options
Power Management	**Submenu**	
System Management	**Submenu**	
Thermal Management	**Submenu**	
Watchdog Timer	**Submenu**	
Super IO Configuration	**Submenu**	
VPX Configuration	**Submenu**	
USB Configuration	**Submenu**	
AMI Graphic Output Protocol Policy	**Submenu**	User Select Monitor Output by Graphic Output Protocol
Network Stack Configuration	**Submenu**	
Trusted Computing	**Submenu**	
TLS Auth Configuration	**Submenu**	
RAM Disk Configuration	**Submenu**	

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3.1 CPU Configuration

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CPU Configuration		
Type	Intel(R) Xeon(R) W-11865MRE@2.60GHz	
Speed	2600 MHz	
ID	0x806D1	
Stepping	R0	
Number of Processors	8Core(s) / 8Thread(s)	
Microcode Revision	40	
GT Info	0x9A70	
eDRAM Size	N/A	
L1 Instruction Cache	32 KB x 8	
L2 Cache	1280 KB x 8	
L3 Cache	24MB	
L4 Cache	N/A	><: Select Screen
VMX	Supported	^v: Select Item
SMX/TXT	Supported	Enter: Select
		+/-: Change Opt.
Intel (VMX) Virtualization Technology	[Enable]	F1: General Help
		F8: Previous Values
Active Processor Cores	[All]	F9: Optimized Default
Hyper-Threading	[Enabled]	F10: Save & Exit
Intel Trusted Execution Technology	[Disabled]	ESC: Exit

BIOS Item	Options	Description
Type	**Info-only.**	It shows what detail CPU information
Speed	**Info-only.**	It shows what detail CPU information
ID	**Info-only.**	It shows what detail CPU information
Stepping	**Info-only.**	It shows what detail CPU information
Number of Processors	**Info-only.**	It shows what detail CPU information
Microcode Revision	**Info-only.**	It shows what detail CPU information
GT Info	**Info-only.**	It shows what detail CPU information
eDRAM Size	**Info-only.**	It shows what detail CPU information
L1 Instruction Cache	**Info-only.**	It shows what detail CPU information
L2 Cache	**Info-only.**	It shows what detail CPU information
L3 Cache	**Info-only.**	It shows what detail CPU information
L4 Cache	**Info-only.**	It shows what detail CPU information
VMX	**Info-only.**	It shows what CPU support feature.
SMX/TXT	**Info-only.**	It shows what CPU support feature.
Intel (VMX) Virtualization Technology	**Enabled** Disabled	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Active Processor Cores	**All** / 1 / 2 / 3 / 4 / 5	Number of cores to enable in each processor package.
Hyper-Threading	**Enabled** Disabled	Enable or Disable Hyper-Threading Technology.

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Intel Trusted Execution Technology	Enabled **Disabled**	Enables utilization of additional hardware capabilities provided by Intel (R) Trusted Execution Technology. Changes require a full power cycle to take effect.

3.2 Power & Performance

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>CPU – Power Management Control >GT – Power Management Control	CPU – Power Management Control Options
	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
CPU – Power Management Control	**Submenu**	CPU – Power Management Control Options
GT – Power Management Control	**Submenu**	GT – Power Management Control Options

3.2.1 CPU – Power Management Control

Aptio Setup – AMI

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CPU – Power Management Control		CPU – Power Management Control Options
Boot performance mode	[Turbo Performance]	
Intel(R) SpeedStep(tm)	[Disabled]	
Race To Halt (RTH)	[Enabled]	
Intel(R) Speed Shift Technology	[Enabled]	
Per Core P State OS control mode	[Enabled]	
HwP Autonomous Per Core P State	[Enabled]	
HwP Autonomous EPP Grouping	[Enabled]	
EPB override over PECI	[Disabled]	
HwP Fast MSR Support	[Enabled]	
HDC Control	[Enabled]	
> Config TDP Configurations		

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> CPU VR Settings		
Platform PL1 Enable	[Disabled]	
Platform PL2 Enable	[Disabled]	
Power Limit 4 Override	[Disabled]	^v: Select Item
C states	[Disabled]	Enter: Select
Thermal Monitor	[Enabled]	+/-: Change Opt.
Interrupt Redirection Mode Selection	[Fixed Priority]	F1: General Help
Timed MWAIT	[Disabled]	F8: Previous Values
> Custom P-state Table		F9: Optimized Default
Energy Performance Gain	[Disabled]	F10: Save & Exit
EPG DIMM Idd3N		ESC: Exit
EPG DIMM Idd3P		
> Power Limit 3 Settings		
> CPU Lock Configuration		

BIOS Item	Options	Description
Boot performance mode	Max Battery Max Non-Turbo Performance **Turbo Performance**	Select the performance state that the BIOS will set starting from reset vector.
Intel(R) SpeedStep(tm)	**Enabled** Disabled	Allows more than two frequency ranges to be supported.
Race To Halt (RTH)	**Enabled** Disabled	Enable/Disable Race To Halt feature. RTH will dynamically increase CPU frequency in order to enter pkg C-State faster to reduce overall power. (RTH is controlled through MSR 1FC bit 20)
Intel(R) Speed Shift Technology	**Enabled** Disabled	Enable/Disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states.
Per Core P State OS control mode	**Enabled** Disabled	Enable/Disable Per Core P state OS control mode. Disabling will set Bit 31 = 1 command 0x06. When set, the highest core request is used for all other core requests.
HwP Autonomous Per Core P State	**Enabled** Disabled	Disable Autonomous PCPS (Bit 30 = 1, command 0x11) Autonomous will request the same value for all cores all the time. Enable PCPS (default Bit 30 = 0, command 0x11)
HwP Autonomous EPP Grouping	**Enabled** Disabled	Enable EPP grouping (default Bit 29 =0, command 0x11) Autonomous will request the same values for all cores with same EPP. Disable EPP grouping (Bit 29 =1 , command 0x11) autonomous will not necessarily request same values for all cores with same EPP.
EPB override over PECI	Enabled **Disabled**	Enable/Disable EPB override over PECI. Enable by sending pcode command 0x2b , subcommand 0x3 to 1. This will allow OOB EPB PECI override control

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BIOS Item	Options	Description
HwP Fast MSR Support	**Enabled** Disabled	Enable/Disable HwP Fast MSR Support for IA32_HWP_REQUEST MSR.
HDC Control	**Enabled** Disabled	This option allows HDC configuration.
Config TDP Configurations	**Submenu**	
CPU VR Settings	**Submenu**	
Platform PL1 Enable	**Enabled** Disabled	Enable/Disable Platform Power Limit 1 programming. If this option is enabled, it activates the PL1 value to be used by the processor to limit the average power of given time window.
Platform PL2 Enable	**Enabled** Disabled	Enable/Disable Platform Power Limit 2 programming. If this option is disabled, BIOS will program the default values for Platform Power Limit 2.
Power Limit 4 Override	Enabled **Disabled**	Enable/Disable Power Limit 4 override. If this option is disabled, BIOS will leave the default values for Power Limit 4.
C states	Enabled **Disabled**	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.
Thermal Monitor	**Enabled** Disabled	Enable/Disable Thermal Monitor
Interrupt Redirection Mode Selection	**Fixed Priority** Round robin Hash Vector No Change	Interrupt Redirection Mode Select for Logical Interrupts
Timed MWAIT	Enabled **Disabled**	Enable/Disable Timed MWAIT Support
Custom P-state Table	**Submenu**	
Energy Performance Gain	Enabled **Disabled**	Enable/disable Energy Performance Gain.
EPG DIMM Idd3N	**26**	Active standby current (Idd3N) in milliamps from datasheet. Must be calculated on a per DIMM basis.
EPG DIMM Idd3P	**11**	Active power-down current (Idd3P) in milliamps from datasheet. Must be calculated on a per DIMM basis.
Power Limit 3 Settings	**Submenu**	
CPU Lock Configuration	**Submenu**	

CPU – Power Management Control → Config TDP Configurations

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Advanced

Config TDP Configurations		
Enable Configurable TDP	Applies to cTDP	
Configurable TDP Boot Mode	Nominal	
Configurable TDP Lock	Disabled	

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CTDP BIOS control	Disabled	
ConfigTDP Levels	2	
ConfigTDP Turbo Activation Ratio	25 (Unlocked)	
Power Limit 1	25.0W (MSR:35.0)	
Power Limit 2	56.250W (MSR:56.250)	
Custom Settings Nominal		
ConfigTDP Nominal	Ratio:26 TAR:25 PL1:45.0W	><: Select Screen
Power Limit 1	25000	^v: Select Item
Power Limit 2	0	Enter: Select
Power Limit 1 Time Window*	[1]	+/-: Change Opt.
ConfigTDP Turbo Activation Ratio	0	F1: General Help
		F8: Previous Values
Custom Settings Down		F9: Optimized Default
ConfigTDP Level1	Ratio:21 TAR:20 PL1:35.0W	F10: Save & Exit
Power Limit 1	0	ESC: Exit
Power Limit 2	0	
Power Limit 1 Time Window*	[0]	
ConfigTDP Turbo Activation Ratio	0	

BIOS Item	Options	Description
Enable Configurable TDP	Applies to non-cTDP **Applies to cTDP**	Applies TDP initialization settings based on non-cTDP or cTDP. Default is 1: Applies to cTDP; if 0 then applies non-cTDP and BIOS will bypass cTDP initialzation flow
Configurable TDP Boot Mode	**Nominal** Down Up Deactivate	Configurable TDP Mode as Nominal/Up/Down/Deactivate TDP selection. Deactivate option will set MSR to Nominal and MMIO to Zero.
Configurable TDP Lock	Enabled **Disabled**	Configurable TDP Mode Lock sets the Lock bits on TURBO_ACTIVATION_RATIO and CONFIG_TDP_CONTROL. Note: When CTDP Lock is enabled Custom ConfigTDP Count will be forced to 1 and Custom ConfigTDP Boot Index will be forced to 0.
CTDP BIOS control	Enabled **Disabled**	Enables CTDP control via runtime ACPI BIOS methods. This "BIOS only" feature does not require EC or driver support.
ConfigTDP Levels	**Info-only.**	
ConfigTDP Turbo Activation Ratio	**Info-only.**	
Power Limit 1	**Info-only.**	
Power Limit 2	**Info-only.**	
ConfigTDP Nominal	**Info-only.**	
Power Limit 1	**25000**	Power Limit 1 in Milli Watts. BIOS will round to the nearest 1/8W when programming. 0 = no custom override. For 12.50W, enter 12500. Overclocking SKU:

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BIOS Item	Options	Description
		Value must be between Max and Min Power Limits (specified by PACKAGE_POWER_SKU_MSR). Other SKUs: This value must be between Min Power Limit and TDP
Power Limit 2	**0**	Power Limit 2 value in Milli Watts. BIOS will round to the nearest 1/8W when programming. 0 = no custom override. For 12.50W, enter 12500. Processor applies control policies such that the package power does not exceed this limit.
Power Limit 1 Time Window*	**[0]**	Power Limit 1 Time Window value in seconds. The value may vary from 0 to 128. 0 = default value (28 sec for Mobile and 8 sec for Desktop). Defines time window which TDP value should be maintained.
ConfigTDP Turbo Activation Ratio	0	Custom value for Turbo Activation Ratio. Needs to be configured with valid values from LFM to Max Turbo. 0 means don't use custom value.
ConfigTDP Level1	**Info-only.**	
Power Limit 1	**0**	Power Limit 1 in Milli Watts. BIOS will round to the nearest 1/8W when programming. 0 = no custom override. For 12.50W, enter 12500. Overclocking SKU: Value must be between Max and Min Power Limits (specified by PACKAGE_POWER_SKU_MSR). Other SKUs: This value must be between Min Power Limit and TDP
Power Limit 2	**0**	Power Limit 2 value in Milli Watts. BIOS will round to the nearest 1/8W when programming. 0 = no custom override. For 12.50W, enter 12500. Processor applies control policies such that the package power does not exceed this limit.
Power Limit 1 Time Window*	**[0]**	Power Limit 1 Time Window value in seconds. The value may vary from 0 to 128. 0 = default value (28 sec for Mobile and 8 sec for Desktop). Defines time window which TDP value should be maintained.
ConfigTDP Turbo Activation Ratio	**0**	Custom value for Turbo Activation Ratio. Needs to be configured with valid values from LFM to Max Turbo. 0 means don't use custom value.

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CPU – Power Management Control → CPU VR Settings

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CPU VR Settings		
PSYS Slope	0	
PSYS Offset	0	
PSYS Prefix	[+]	
PSYS PMax Power	0	
Min Voltage Override	[Disabled]	
> Acoustic Noise Settings		
> VccIn VR Settings		
> RFI Settings		
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
PSYS Slope	**0**	PSYS Slope defined in 1/100 increments. Range is 0-200. For a 1.25 slope, enter 125. 0 = AUTO. Uses BIOS VR mailbox command 0x9."
PSYS Offset	**0**	PSYS Offset defined in 1/1000 increments. Range is 0-63999. For an offset of 25.348, enter 25348. PSYS Uses BIOS VR mailbox command 0x4.
PSYS Prefix	**+** **-**	Sets the offset value as positive or negative.
PSYS PMax Power	**0**	PSYS PMax power, defined in 1/8 Watt increments. Range 0-8192. For a PMax of 125W, enter 1000. 0 = AUTO. Uses BIOS VR mailbox command 0xB.
Min Voltage Override	Enabled **Disabled**	Min Voltage Override. Enable to override minimum voltage for runtime and for C8.
Acoustic Noise Settings	**Submenu**	
VccIn VR Settings	**Submenu**	
RFI Settings	**Submenu**	

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CPU – Power Management Control → CPU VR Settings→ Acoustic Noise Settings

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Acoustic Noise Settings		
Acoustic Noise Mitigation	[Disabled]	
Pre Wake Time	0	
Ramp Up Time	0	
Ramp Down Time	0	
VccIn VR Domain		
Disable Fast PKG C State Ramp for VccIn Domain	[FALSE]	
Slow Slew Rate for VccIn Domain	[Fast/2]	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
Acoustic Noise Mitigation	Enabled **Disabled**	Enabling this option will help mitigate acoustic noise on certain SKUs when the CPU is in deeper C state
Pre Wake Time	**0**	Set the maximum Pre Wake randomization time in micro ticks. Range is 0-255. This is for acoustic noise mitigation Dynamic Perodicity Alteration (DPA) tuning.
Ramp Up Time	**0**	Set the maximum Ramp Up randomization time in micro ticks. Range is 0-255. This is for acoustic noise mitigation Dynamic Perodicity Alteration (DPA) tuning.
Ramp Down Time	**0**	Set the maximum Ramp Down randomization time in micro ticks. Range is 0-255. This is for acoustic noise mitigation Dynamic Perodicity Alteration (DPA) tuning.
Disable Fast PKG C State Ramp for VccIn Domain	TRUE **FALSE**	This option needs to be configured to reduce acoustic noise during deeper C states. False: Don't disable Fast ramp during deeper C states; True: Disable Fast ramp during deeper C state
Slow Slew Rate for VccIn Domain	**Fast/2** Fast/4 Fast/8	Set VR VccIn Slow Slew Rate for Deep Package C State ramp time; Slow slew rate equals to Fast devided by number, the

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BIOS Item	Options	Description
	Fast/16	number is 2, 4, 8, 16 to slow down the slew rate to help minimize acoustic noise

CPU – Power Management Control → CPU VR Settings→ VccIn VR Settings

Aptio Setup – AMI

Advanced

VccIn VR Domain		
VR Config Enable	[Enabled]	
Current AC Loadline	170	
Current DC Loadline	150	
Current Psi1 Threshold	80	
Current Psi2 Threshold	20	
Current Psi3 Threshold	4	
Current Imon Slope	100	
Current Imon Offset	1	
Current VR Current Limit	420	
Current Tdc Current Limit	488	
AC Loadline	0	
DC Loadline	0	><: Select Screen
PS Current Threshold1	80	^v: Select Item
PS Current Threshold2	20	Enter: Select
PS Current Threshold3	4	+/-: Change Opt.
PS3 Enable	[Enabled]	F1: General Help
PS4 Enable	[Enabled]	F8: Previous Values
IMON Slope	0	F9: Optimized Default
IMON Offset	0	F10: Save & Exit
IMON Prefix	[+]	ESC: Exit
VR Current Limit	0	
TDC Enable	[Enabled]	
TDC Current Limit	0	
TDC Time Window	[1 ms]	
TDC Lock	[Disabled]	
VccIn Demotion Override Enable	[Disabled]	

BIOS Item	Options	Description
VR Config Enable	**Enabled** Disabled	VR Config Enable
Current AC Loadline	**170**	
Current DC Loadline	**150**	
Current Psi1 Threshold	**80**	
Current Psi2 Threshold	**20**	
Current Psi3 Threshold	**4**	
Current Imon Slope	**100**	
Current Imon Offset	**1**	
Current VR Current Limit	**420**	
Current Tdc Current Limit	**488**	

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BIOS Item	Options	Description
AC Loadline	0	AC Loadline defined in 1/100 mOhms. A value of 100 = 1.00 mOhm, and 1255 = 12.55 mOhm. Range is 0-6249 (0-62.49 mOhms). 0 = AUTO/HW default. Uses BIOS mailbox command 0x2.
DC Loadline	0	DC Loadline defined in 1/100 mOhms. A value of 100 = 1.00 mOhm, and 1255 = 12.55 mOhm. Range is 0-6249 (0-62.49 mOhms). 0 = AUTO/HW default. Uses BIOS mailbox command 0x2.
PS Current Threshold1	80	PS Current Threshold1, defined in 1/4 A increments. A value of 400 = 100A. Range 0-512, which translates to 0-128A. 0 = AUTO. Uses BIOS VR mailbox command 0x3.
PS Current Threshold2	20	PS Current Threshold2, defined in 1/4 A increments. A value of 400 = 100A. Range 0-512, which translates to 0-128A. 0 = AUTO. Uses BIOS VR mailbox command 0x3.
PS Current Threshold3	4	PS Current Threshold3, defined in 1/4 A increments. A value of 400 = 100A. Range 0-512, which translates to 0-128A. 0 = AUTO. Uses BIOS VR mailbox command 0x3.
PS3 Enable	**Enabled** Disabled	PS3 Enable/Disable. 0 - Disabled, 1 - Enabled. Uses BIOS VR mailbox command 0x3.
PS4 Enable	**Enabled** Disabled	PS4 Enable/Disable. 0 - Disabled, 1 - Enabled. Uses BIOS VR mailbox command 0x3
IMON Slope	0	IMON Slope defined in 1/100 increments. Range is 0-200. For a 1.25 slope, enter 125. 0 = AUTO. Uses BIOS VR mailbox command 0x4.
IMON Offset	0	IMON Offset defined in 1/1000 increments. Range is 0-63999. For an offset of 25.348, enter 25348. IMON Uses BIOS VR mailbox command 0x4.
IMON Prefix	[+]	Sets the offset value as positive or negative.
VR Current Limit	0	Voltage Regulator Current Limit (Icc Max). This value represents the Maximum instantaneous current allowed at any given time. The value is represented in 1/4 A increments. A value of 400 = 100A. 0 means AUTO. Uses BIOS VR mailbox command 0x6.
TDC Enable	**Enabled** Disabled	TDC Enable. 0- Disable, 1 - Enable

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BIOS Item	Options	Description
TDC Current Limit	0	TDC Current Limit, defined in 1/8A increments. Range 0-32767. For a TDC Current Limit of 125A, enter 1000. 0 = 0 Amps. Uses BIOS VR mailbox command 0x1A.
TDC Time Window	**1 ms**, 2 ms, 3 ms, 4 ms, 5 ms, 6 ms, 7 ms, 8 ms, 10 ms	TDC Time Window, value in milliseconds. 1ms is default. Range from 1ms to 10ms, except for 9ms. 9ms has no valid encoding in the MSR definition.
TDC Lock	Enabled **Disabled**	TDC Lock
VccIn Demotion Override Enable	Enabled **Disabled**	Enable VccIn Demotion Override Configuration.

CPU – Power Management Control → CPU VR Settings→ RFI Settings

Aptio Setup – AMI

Advanced

RFI Domain	
RFI Current Frequency	140.400MHz
RFI Frequency	0
Spread Spectrum	[Enabled]
RFI Spread Spectrum	[1.5%]
RFI Mitigation	[Disabled]
	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
RFI Current Frequency	140.400MHz	
RFI Frequency	**0**	Set desired RFI frequency, in increments of 100KHz. (For a frequency of 100.6MHz, enter 1006.)
Spread Spectrum	**Enabled** Disabled	Enable or Disable the Spread Spectrum
RFI Spread Spectrum	0.5%, 1%, **1.5%**, 2%, 3%, 4%, 5%, 6%	Set the Spread Spectrum
RFI Mitigation	Enabled **Disabled**	Disable - DCM is the IO_N default; Enable - Enable IO_N DCM/CCM switching as RFI mitigation.

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CPU – Power Management Control → Custom P-state Table

Aptio Setup – AMI

Advanced

Custom P-state Table		
Number of P states	0	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
Number of P states	**0**	Sets the number of custom P-states. At least 2 states must be present.

CPU – Power Management Control → Power Limit 3 Settings

Aptio Setup – AMI

Advanced

Power Limit 3 Override	[Disabled]	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
Power Limit 3 Override	Enabled **Disabled**	Enable/Disable Power Limit 3 override. If this option is disabled, BIOS will leave the hardware default values for Power Limit 3 and Power Limit 3 Time Window.

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CPU – Power Management Control → CPU Lock Configuration

Aptio Setup – AMI

Advanced

CFG Lock	[Enabled]	
Overclocking Lock	[Enabled]	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
CFG Lock	**Enabled** Disabled	Configure MSR 0xE2[15], CFG Lock bit
Overclocking Lock	**Enabled** Disabled	Enable/Disable Overclocking Lock (BIT 20) in FLEX_RATIO(194) MSR

3.2.2 GT – Power Management Control

Aptio Setup – AMI

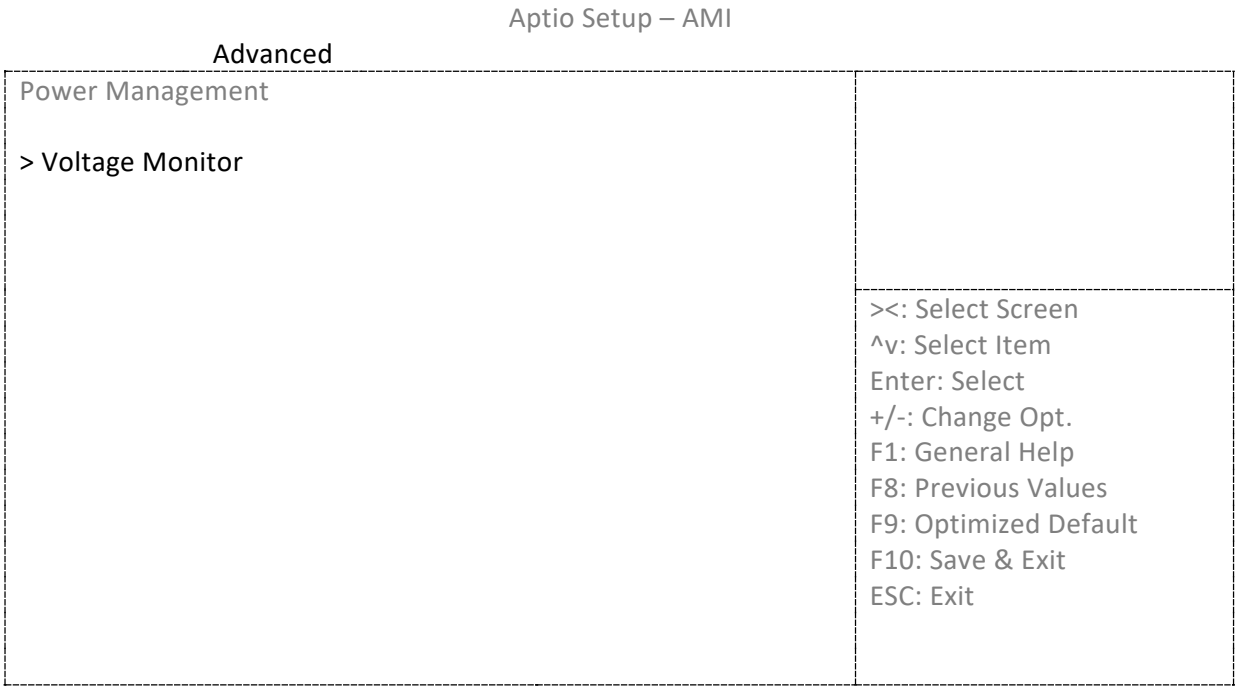
Advanced

GT – Power Management Control		
RC6(Render Standby)	[Enabled]	
Maximum GT frequency	[Default Max Frequency]	
Disable Turbo GT frequency	[Enabled]	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

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BIOS Item	Options	Description
RC6(Render Standby)	**Enabled** Disabled	Check to enable render standby support.
Maximum GT frequency	**Default Max Frequency**, 100Mhz, 150Mhz, 200Mhz, 250Mhz, 300Mhz, 350Mhz, 400Mhz, 450Mhz, 500Mhz, 550Mhz, 600Mhz, 650Mhz, 700Mhz, 750Mhz, 800Mhz, 850Mhz, 900Mhz, 950Mhz, 1000Mhz, 1050Mhz, 1100Mhz, 1150Mhz, 1200Mhz	Maximum GT frequency limited by the user. Choose between 350MHz (RPN) and 1350MHz (RP0). Value beyond the range will be clipped to min/max supported by SKU
Disable Turbo GT frequency	**Enabled** Disabled	Enabled: Disables Turbo GT frequency. Disabled: GT frequency is not limited

3.3 Power Management



BIOS Item	Options	Description
Voltage Monitor	**Submenu**	

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3.3.1 Voltage Monitor

Aptio Setup – AMI

Advanced

Voltage Monitor		
RTC	XXX V	
5VSB	XXX V	
VIN	XXX V	
3.3V	XXX V	
VMEM	XXX V	
3.3VSB	XXX V	
VCORE	XXX V	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
RTC	**Info-only**	
5VSB	**Info-only**	
VIN	**Info-only**	
3.3V	**Info-only**	
VMEM	**Info-only**	
3.3VSB	**Info-only**	
VCORE	**Info-only**	

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3.4 System Management

Aptio Setup – AMI

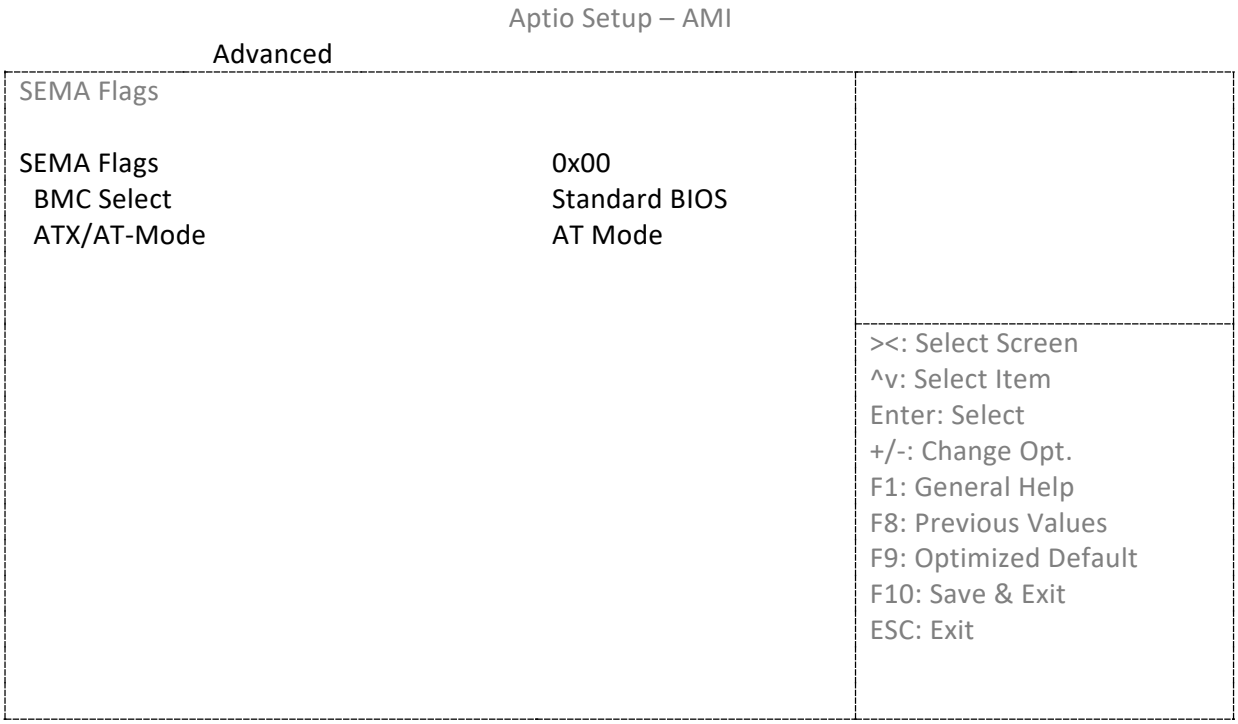
Advanced

System Management SEMA Firmware Version ADLINK 001 > SEMA Flags SEMA Features: System Restart Event 4096 Bytes User-Flash Runtime Watchdog Temperatures Voltage Monitor Power-up Watchdog Boot Counter Dual-BIOS I2C Bus 2 AT/ATX Mode ACPI Thermal Trigger Ext - GPIO I2C Bus 3 Other BMC Error Log Parameter Memory Ext-GPIO Input Interrupt Support	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
SEMA Firmware Version	**Info-only**	
SEMA Flags	**Submenu**	
SEMA Features	**Info-only**	If this item is shown below, it means SEMA supports it.

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3.4.1 SEMA Flags



BIOS Item	Options	Description
Flags	**Info-only**	
SEMA Flags	**Read only**	Show current SEMA settings.
BMC Select	**Read only**	Display current boot BIOS ROM chip.
ATX/AT-Mode	**Read only**	Display current power mode setting, AT or ATX mode.

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3.5 Thermal Management

Aptio Setup – AMI

Advanced

Thermal Management > CPU Thermal Configuration > Platform Thermal Configuration > Temperatures	
	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
CPU Thermal Configuration	**Submenu**	
Platform Thermal Configuration	**Submenu**	
Temperatures	**Submenu**	

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3.5.1 CPU Thermal Configuration

Aptio Setup – AMI

Advanced

Cpu Thermal Configuration		
DTS SMM	[Enabled]	
Tcc Activation Offset	0	
Tcc Offset Time Window	[Disabled]	
Tcc Offset Clamp Enable	[Disabled]	
Tcc Offset Lock Enable	[Enabled]	
Bi-directional PROCHOT#	[Enabled]	
Disable PROCHOT# Output	[Enabled]	
Disable VR Thermal Alert	[Disabled]	
PROCHOT Response	[Disabled]	
PROCHOT Lock	[Disabled]	
ACPI T-States	[Disabled]	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
DTS SMM	**Enabled** Disabled	Disabled: ACPI thermal management uses EC reported temperature values.
Tcc Activation Offset	**0**	Offset from factory set Tcc activation temprature at which the Thermal Control Circuit must be activated. Tcc will be activated at: Tcc Activation Temp - Tcc Activation Offset. Tcc Activation Offset range is 0 to 63.
Tcc Offset Time Window	**Disabled**, 5 ms, 10 ms, 55 ms, 156 ms, 375 ms, 500 ms, 750 ms, 1 sec, 2 sec, 3 sec, 4 sec, 5 sec, 6 sec, 7 sec, 8 sec, 10 sec, 12 sec, 14 sec, 16 sec, 20 sec, 24 sec, 28 sec, 32 sec, 40 sec, 48 sec, 56 sec, 64 sec, 80 sec, 96 sec, 112 sec, 128 sec, 160 sec, 192 sec, 224 sec, 256 sec, 320 sec, 384 sec, 448 sec	Tcc Offset Time Window for Running Average Temperature Limit(RATL) feature. The Tcc offset time window can range from 5ms to 448s.

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Tcc Offset Clamp Enable	Enabled **Disabled**	Tcc Offset Clamp bit Enable for Running Average Temperature Limit(RATL) feature to allow CPU to throttle below P1.
Tcc Offset Lock Enable	**Enabled** Disabled	Lock Enable for Running Average Temperature Limit(RATL) feature to lock Temperature Target MSR.
Bi-directional PROCHOT#	**Enabled** Disabled	When a processor thermal sensor trips (either core), the PROCHOT# will be driven.
Disable PROCHOT# Output	**Enabled** Disabled	Enable/Disable PROCHOT# Output
Disable VR Thermal Alert	Enabled **Disabled**	Enable/Disable VR Thermal Alert
PROCHOT Response	Enabled **Disabled**	Enable/Disable PROCHOT Response
PROCHOT Lock	Enabled **Disabled**	Enable/Disable PROCHOT Lock
ACPI T-States	Enabled **Disabled**	Enable/Disable ACPI T-States.

3.5.2 Platform Thermal Configuration

Aptio Setup – AMI

Advanced

Platform Thermal Configuration		
Critical Trip Point	[Disabled]	
Passive Trip Point	[95 C]	
Passive TC1 Value	1	
Passive TC2 Value	5	
Passive TSP Value	10	
Passive Trip Points	[Enabled]	
Critical Trip Points	[Disabled]	
PCH Temp Read	[Enabled]	><: Select Screen
CPU Energy Read	[Enabled]	^v: Select Item
CPU Temp Read	[Enabled]	Enter: Select
Alert Enable Lock	[Disabled]	+/-: Change Opt.
CPU Temp	72	F1: General Help
Boot DTS Read	[Disabled]	F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

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BIOS Item	Options	Description
Critical Trip Point	**Disabled**, 80 C, 90 C, 95 C, 100 C	This value controls the temperature of the ACPI Critical Trip Point - the point in which the OS will shut the system off.

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Passive Trip Point	Disabled, 15 C, 23 C, 31 C, 39 C, 47 C, 55 C, 63 C, 71 C, 79 C, 87 C, **95 C**, 103 C, 111 C, 119 C (POR)	This value controls the temperature of the ACPI Passive Trip Point - the point in which the OS will begin throttling the processor.
Passive TC1 Value	**1**	This value sets the TC1 value for the ACPI Passive Cooling Formula. Range 1 - 16
Passive TC2 Value	**5**	This value sets the TC2 value for the ACPI Passive Cooling Formula. Range 1 - 16
Passive TSP Value	**10**	This item sets the TSP value for the ACPI Passive Cooling Formula. It represents in tenths of a second how often the OS will read the temperature when passive cooling is enabled. Range 2 - 32
Passive Trip Points	**Enabled** Disabled	Disable Passive Trip Points
Critical Trip Points	Enabled **Disabled**	Disable Critical Trip Points
PCH Temp Read	**Enabled** Disabled	PCH Temperature Read Enable
CPU Energy Read	**Enabled** Disabled	CPU Energy Read Enable
CPU Temp Read	**Enabled** Disabled	CPU Temperature Read Enable
Alert Enable Lock	Enabled **Disabled**	Lock all Alert Enable settings
CPU Temp	**72**	Fail Safe temp that EC will use if OS is hung
Boot DTS Read	Enabled **Disabled**	Read PCH, CPU DTS Temperature and publish via SMBIOS table

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3.5.3 Temperatures

Aptio Setup – AMI

Advanced

Temperatures and Fan Speed		
CPU Temperature		
Current	xx C	
Startup	xx C	
Min	xx C	
Max	xx C	
At the Front Edge Temperatures		
Current	xx C	
Startup	xx C	
Min	xx C	
Max	xx C	
Close to 10G Temperatures		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit
Current	xx C	
Startup	xx C	
Under M.2 Temperatures		
Current	xx C	
Startup	xx C	

BIOS Item	Options	Description
CPU Temperature Current/Startup/Min/Max	**Info-only**	
At the Front Edge Temperatures Current/Startup/Min/Max	**Info-only**	.
Close to 10G Temperatures Current/Startup	**Info-only**	
Under M.2 Temperatures Current/Startup	**Info-only**	

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3.6 Watchdog Timer

Aptio Setup – AMI

Advanced

Watchdog Timer Power-Up Watchdog [Disabled] ATTENTION: Pressing F12 during start up disables the Power Up Watchdog. RunTime Watchdog [Disabled]	
	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
Power-Up Watchdog	Enabled **Disabled**	The Power Up Watchdog resets the system after a certain amount of time after power up.
RunTime Watchdog	Enabled **Disabled**	The RunTime Watchdog resets the system after a certain amount of time after power up.

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3.7 Super IO Configuration

Aptio Setup – AMI

Advanced

Super IO Configuration > NCT5104DSEC Super IO Configuration	
	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
NCT5104DSEC Super IO Configuration	**Submenu**	

3.7.1 NCT5104DSEC Super IO Configuration

Aptio Setup – AMI

Advanced

NCT5104DSEC Super IO Configuration Super IO Chip NCT5104DSEC > Serial Port 1 Configuration > Serial Port 2 Configuration > Serial Port 3 Configuration	
	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
Super IO Chip	**Info-only**	
Serial Port x Configuration	**Submenu**	

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NCT5104DSEC Super IO Configuration → Serial Port x Configuration

Aptio Setup – AMI.

Advanced

Serial Port x Configuration		
Serial Port	[Enabled]	
Device Settings	IO=240; IRQ=4;	
Change Settings	[Auto]	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
Serial Port	Disabled **Enabled**	Enable or disable serial port (COMx).
Device Setting	**Info-only**	
Change Settings	**Auto** IO=248h;IRQ=7; IO=240h;IRQ=3,4,5,6,7,10,11,12 IO=248h;IRQ=3,4,5,6,7,10,11,12 IO=250h;IRQ=3,4,5,6,7,10,11,12 IO=258h;IRQ=3,4,5,6,7,10,11,12	Select an optimal setting for Super IO device.

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3.8 VPX Configuration

Aptio Setup – AMI

Advanced

VPX Configuration		
Watchdog ACPI Event Shutdown	[Disabled]	
COM1 port mode	[RS232]	
COM2 port mode	[RS232]	
CPU TDP Power Limit 1 Config	[25W]	
PCIe Scan Delay	0	
EC GPIO Options		
GPIO Pin Direction	[Input Mode]	
GPIO Interrupt Setting	[No interrupt]	
EC_GPI0	[Interrupt trigger]	
EC_GPI1	[Interrupt trigger]	
EC_GPI2	[Interrupt trigger]	><: Select Screen
EC_GPI3	[Interrupt trigger]	^v: Select Item
EC_GPI4	[Interrupt trigger]	Enter: Select
EC_GPI5	[Interrupt trigger]	+/-: Change Opt.
EC_GPI6	[Interrupt trigger]	F1: General Help
EC_GPI7	[Interrupt trigger]	F8: Previous Values
EC_GPO0	[Low]	F9: Optimized Default
EC_GPO1	[Low]	F10: Save & Exit
EC_GPO2	[Low]	ESC: Exit
EC_GPO3	[Low]	
EC_GPO4	[Low]	
EC_GPO5	[Low]	
EC_GPO6	[Low]	
EC_GPO7	[Low]	
COM2 port mode	[RS232]	
Maintenance port mode	[UART]	
DP++ manual mode	[Displayport]	
PCIe Scan Delay	0	

BIOS Item	Options	Description
Watchdog ACPI Event Shutdown	**Disabled** Enabled	Watchdog ACPI Event Shutdown Enabled/Disabled
COM1 port mode	**RS232** RS422	COM1 port mode
COM2 port mode	**RS232** RS422	COM2 port mode
CPU TDP Power Limit 1 Config	**25W**, 35W, 45W	To config CPU TDP
PCIe Scan Delay	**0-60**	System delay before PCIe scan. Unit is second and maximum value is 60 seconds
EC GPIO Options		

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GPIO Pin Direction	**Input Mode** Output Mode	Indicates whether the GPIO Pin is interrupted. Write 0x00 to clear the interrupt and EC_GPIO_INT will be changed to high level
GPIO Interrupt Setting	**No interrupt,** Interrupt for both edge trigger, Low level trigger, High level trigger	When GPIO Pin is input mode, it supports edge trigger and level trigger
EC_GPIx	**No Interrupt** Interrupt trigger	Indicates whether the GPIO Pin is interrupted. Write 0x00 to clear the interrupt and EC_GPIO_INT will be changed to high level
EC_GPOx	**Low** High	Indicates whether the GPIO Pin is interrupted. Write 0x00 to clear the interrupt and EC_GPIO_INT will be changed to high level

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3.9 USB Configuration

Aptio Setup – AMI

Advanced

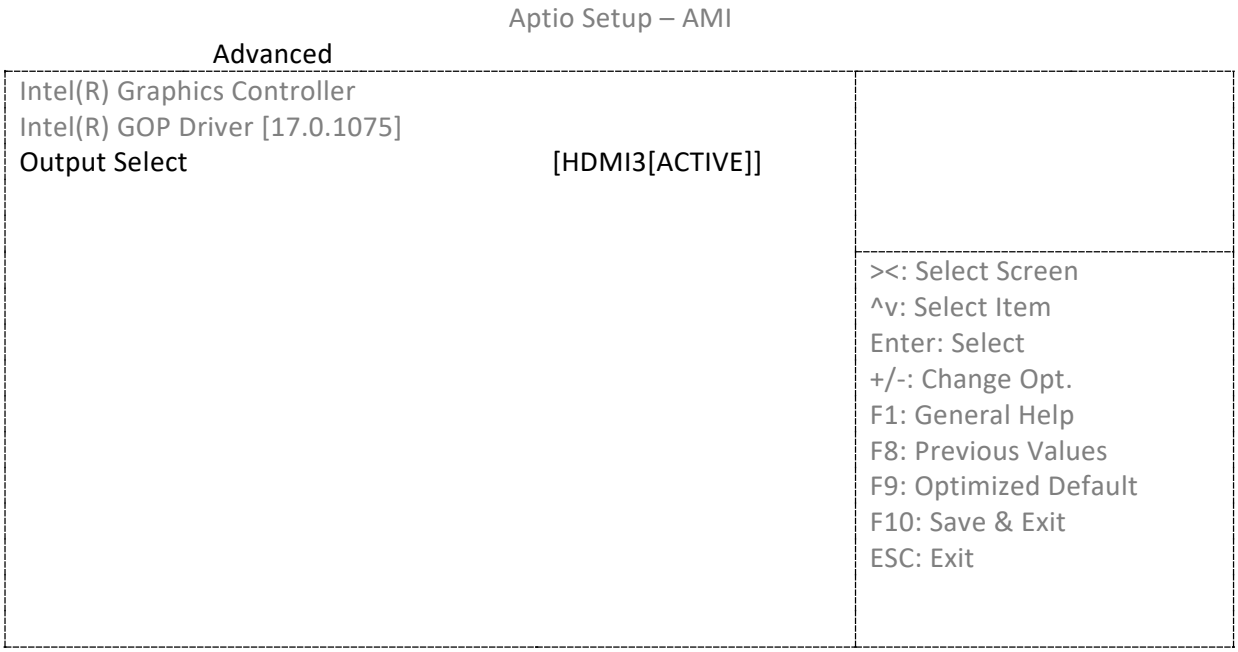
USB Configuration		
USB Module Version	26	
USB Controllers: 1 XHCI USB Devices: 1 Drive, 1 Keyboard, 1 Mouse, 1 Hub		
Legacy USB Support	[Enabled]	
XHCI Hand-off	[Enabled]	
USB Mass Storage Driver Support	[Enabled]	
USB hardware delays and time-outs:		><: Select Screen
USB transfer time-out	[20 sec]	^v: Select Item
Device reset time-out	[20 sec]	Enter: Select
Device power-up delay	[Auto]	+/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
USB Module Version	**Info-only**	
USB Controllers	**Info-only**	
USB Devices	**Info-only**	
Legacy USB Support	**Enabled** Disabled	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.
XHCI Hand-off	**Enabled** Disabled	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	**Enabled** Disabled	Enable/Disable USB Mass Storage Driver Support.
USB transfer time-out	1 sec, 5 sec, 10 sec, **20 sec**	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10 sec, **20 sec**, 30 sec, 40 sec	USB mass storage device Start Unit command time-out.

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BIOS Item	Options	Description
Device power-up delay	**Auto,** Manual	Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

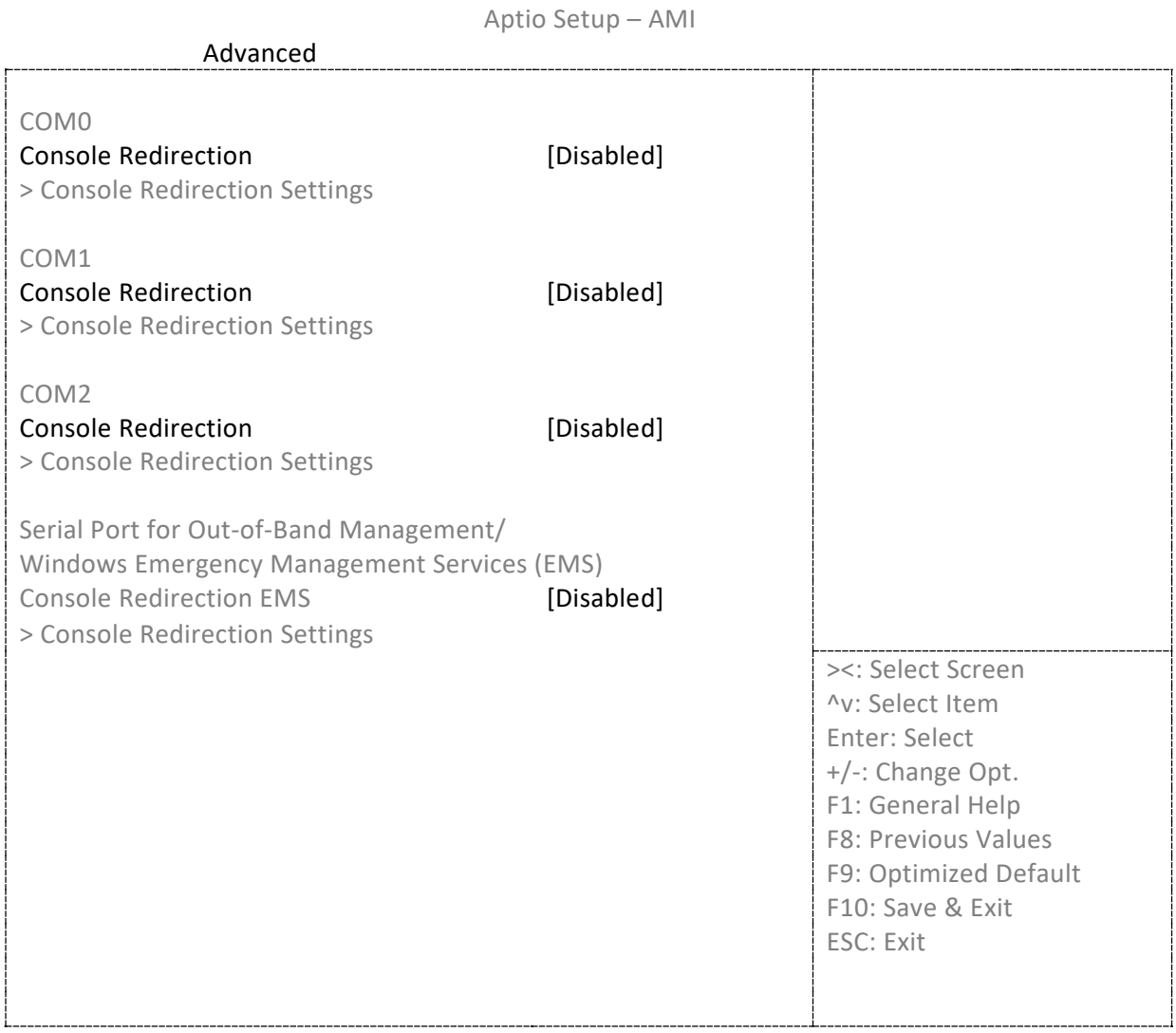
3.10 AMI Graphic Output Protocol Policy



BIOS Item	Options	Description
Intel(R) GOP Driver	**Info-only**	
Output Select	HDMI3[ACTIVE]	Output Interface

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3.11 Serial Port Console Redirection



BIOS Item	Options	Description
Console Redirection	**Disabled** Enabled	To enable or disable console redirection of COMx.
Console Redirection Settings	**Submenu**	The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

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3.12 Network Stack Configuration

Aptio Setup – AMI

Advanced

Network Stack	[Disabled]	
IPv4 PXE Support	[Disabled]	
IPv4 HTTP Support	[Disabled]	
IPv6 PXE Support	[Disabled]	
IPv6 HTTP Support	[Disabled]	
PXE boot wait time	0	
Media detect count	1	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
Network Stack	**Disabled** Enabled	Enable/Disable UEFI Network Stack
IPv4 PXE Support	**Disabled** Enabled	Enable/Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.
IPv4 HTTP Support	**Disabled** Enabled	Enable/Disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available.
IPv6 PXE Support	**Disabled** Enabled	Enable/Disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.
IPv6 HTTP Support	**Disabled** Enabled	Enable/Disable IPv6 HTTP boot support. If disabled, IPv6 HTTP boot support will not be available.
PXE boot wait time	0	Wait time in seconds to press ESC key to abort the PXE boot. Use either +/- or numeric keys to set the value.
Media detect count	1	Number of times the presence of media will be checked. Use either +/- or numeric keys to set the value.

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3.13 Trusted Computing

Aptio Setup – AMI

Advanced

TPM 2.0 Device Found		
Firmware Version:	7.85	
Vendor:	IFX	
Security Device Support	[Enabled]	
Active PCR banks	SHA256	
Available PCR banks	SHA256	
SHA256 PCR Bank	[Enabled]	
Pending operation	[None]	
Platform Hierarchy	[Enabled]	
Storage Hierarchy	[Enabled]	
Endorsement Hierarchy	[Enabled]	><: Select Screen
Physical Presence Spec Version	[1.3]	^v: Select Item
TPM 2.0 InterfaceType	[TIS]	Enter: Select
Device Select	[Auto]	+/-: Change Opt.
Disable Block Sid	[Disabled]	F1: General Help
		F8: Previous Values
		F9: Optimized Default
		F10: Save & Exit
		ESC: Exit

BIOS Item	Options	Description
Firmware Version	**Info-only**	
Vendor	**Info-only**	
Security Device Support	Disable **Enable**	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.
Active PCR banks	**Info-only**	
Available PCR banks	**Info-only**	
SHA256 PCR Bank	Disable **Enable**	Enable or Disable SHA256 PCR Bank
Pending operation	**None** TPM Clear	Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.
Platform Hierarchy	Disable **Enable**	Enable or Disable Platform Hierarchy
Storage Hierarchy	Disable **Enable**	Enable or Disable Storage Hierarchy
Endorsement Hierarchy	Disable **Enable**	Enable or Disable Endorsement Hierarchy
Physical Presence Spec	1.2	Select to Tell O.S. to support PPI Spec

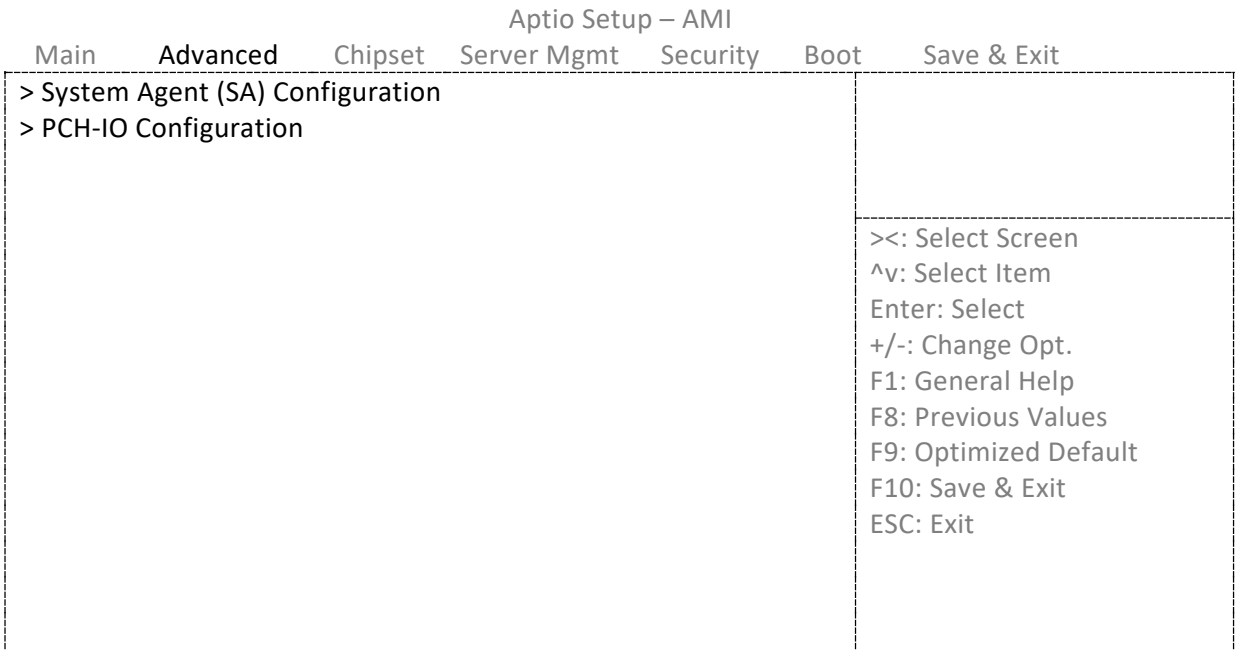
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BIOS Item	Options	Description
Version	**1.3**	Version 1.2 or 1.3. Note some HCK tests might not support 1.3.
TPM 2.0 InterfaceType	CRB **TIS**	Select the Communication Interface to TPM 20 Device.
Device Select	TPM 1.2 TPM 2.0 **Auto**	TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both with the default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated
Disable Block Sid	**Disable** Enable	Override to allow SID authentication in TCG Storage device.

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4 Chipset Menu

This menu contains the settings for most of the chipset I/O in the system.



BIOS Item	Options	Description
System Agent (SA) Configuration	**Submenu**	System Agent (SA) Parameters
PCH-IO Configuration	**Submenu**	PCH Parameters

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4.1 System Agent (SA) Configuration

Aptio Setup – AMI

Chipset

System Agent (SA) Configuration		
VT-d	Supported	
> Memory Configuration > Graphics Configuration > PEG Port Feature Configuration > VMD setup menu		
Stop Grant Configuration	[Auto]	
VT-d	[Enabled]	
X2APIC Opt Out	[Disabled]	
DMA Control Guarantee	[Enabled]	
Above 4GB MMIO BIOS assignment	[Enabled]	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
VT-d	**Info-only**	
> Memory Configuration	**Submenu**	
> PEG Port Feature Configuration	**Submenu**	
> VMD setup menu	**Submenu**	
> PCI Express Configuration	**Submenu**	
Stop Grant Configuration	**Auto** Manual	Automatic/Manual stop grant configuration
VT-d	Disabled **Enabled**	VT-d capability
X2APIC Opt Out	**Disabled** Enabled	Enable/Disable X2APIC_OPT_OUT bit
DMA Control Guarantee	Disabled **Enabled**	Enable/Disable DMA_CONTROL_GUARANTEE bit
Above 4GB MMIO BIOS assignment	Disabled **Enabled**	Enable/Disable above 4GB MemoryMappedIO BIOS assignment

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4.1.1 Memory Configuration

Aptio Setup – AMI

Chipset

Memory Configuration		
Memory RC Version	2.0.2.9	
Memory Speed	3200 MT/s	
Memory Timings (tCL-tRCD-tRP-tRAS)	22-22-22-52	
Controller 0 Channel 0 Slot 0	Populated & Enabled	
Size	16384 MB (DDR4)	
Number of Ranks	1	
Manufacturer	Micron	
Controller 1 Channel 0 Slot 0	Populated & Enabled	
Size	16384 MB (DDR4)	><: Select Screen
Number of Ranks	1	^v: Select Item
Manufacturer	Micron	Enter: Select
		+/-: Change Opt.
Memory Test on Warm Boot	[Enabled]	F1: General Help
Maximum Memory Frequency	[Auto]	F8: Previous Values
ECC Support	[Enabled]	F9: Optimized Default
Max TOLUD	[Dynamic]	F10: Save & Exit
In-Band ECC Support	[Disabled]	ESC: Exit

BIOS Item	Options	Description
Memory RC Version	**Info-only**	
Memory Speed	**Info-only**	
Memory Timings (tCL-tRCD-tRP-tRAS)	**Info-only**	
Controller X Channel X Slot X	**Info-only**	
Size	**Info-only**	
Number of Ranks	**Info-only**	
Manufacturer	**Info-only**	
Memory Test on Warm Boot	Disabled **Enabled**	Enable Or Disable Base Memory Test Run on Warm Boot
Maximum Memory Frequency	**Auto**	Maximum Memory Frequency Selections in Mhz.
ECC Support	Disabled **Enabled**	Enable/disable DDR Ecc Support
Max TOLUD	**Dynamic**, 1 GB, 1.25 GB, 1.5 GB, 1.75 GB, 2 GB, 2.25 GB, 2.5 GB, 2.75 GB, 3 GB, 3.25 GB, 3.5 GB	Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller
In-Band ECC Support	**Disabled**, Enabled	Enable/Disable In-Band ECC. Either the IBECC or the TME can be enabled.

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4.1.2 PEG Port Feature Configuration

Aptio Setup – AMI
Chipset

PEG Port Feature Configuration Detect Non-Compliance Device [Disabled]	
	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
Detect Non-Compliance Device	**Disabled** Enabled	Detect Non-Compliance PCI Express Device in PEG

4.1.3 VMD Setup Menu

Aptio Setup – AMI
Chipset

VMD Configuration Enable VMD controller [Disabled] Enabled VMD Global Mapping [Enabled] Map this Root Port under VMD [Enabled] Root Port BDF details SATA Controller RAID0 [Enabled] RAID1 [Enabled] RAID5 [Enabled] Intel(R) Optane™ Memory [Enabled]	
	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit

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	ESC: Exit

BIOS Item	Options	Description
Enable VMD controller	**Disabled** Enabled	Enable/Disable to VMD controller
Enabled VMD Global Mapping	**Disabled** Enabled	Enable/Disable to VMD Global Mapping
Map this Root Port under VMD	**Disabled** Enabled	Enable/Disable to Map this Root Port under VMD
Root Port BDF details	**Info-only**	
RAID0	**Disabled** Enabled	Enable/Disable to RAID0
RAID1	**Disabled** Enabled	Enable/Disable to RAID1
RAID5	**Disabled** Enabled	Enable/Disable to RAID5
Intel(R) Optane™ Memory	**Disabled** Enabled	Enable/Disable System Acceleration with Intel(R) Optane™ Memory feature.

4.1.4 PCI Express Configuration

Aptio Setup – AMI

Chipset

PCI Express Configuration PCI Express Clock Gating [Enabled] PCI Express Power Gating [Enabled] PCIe function swap [Enabled] > PCI Express Root Port 1 > PCI Express Root Port 2 > PCI Express Root Port 3 > PCI Express Root Port 4	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
PCI Express Clock Gating	Disabled	PCI Express Clock Gating Enable/Disable

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	Enabled	for each root port.
PCI Express Power Gating	Disabled **Enabled**	PCI Express Power Gating Enable/Disable for each root port.
PCIe function swap	Disabled **Enabled**	When Disabled, prevents PCIE rootport function swap. If any function other than 0th is enabled, 0th will become visible.
> PCI Express Root Port 1	**Submenu**	
> PCI Express Root Port 2	**Submenu**	
> PCI Express Root Port 3	**Submenu**	
> PCI Express Root Port 4	**Submenu**	

PCI Express Configuration → PCI Express Root Port X

Aptio Setup – AMI

Chipset

PCI Express Root Port 1	[Enabled]	
Connection Type	[Slot]	
ASPM	[Disabled]	
L1 Substates	[L1.1 & L1.2]	
Gen3 Eq Phase3 Method	[Hardware]	
Gen4 Eq Phase3 Method	[Hardware]	
ACS	[Enabled]	
PTM*	[Enabled]	
DPC	[Enabled]	
FOM Scoreboard Control Policy	[Auto]	
VC	[Enabled]	
Multi-VC	[Disabled]	
EDPC	[Enabled]	
URR	[Disabled]	
FER	[Disabled]	
NFER	[Disabled]	
CER	[Disabled]	
CTO	[Disabled]	
SEFE	[Disabled]	
SENFE	[Disabled]	
SECE	[Disabled]	
PME SCI	[Disabled]	
Hot Plug	[Disabled]	
Advanced Error Reporting	[Enabled]	
PCIe Speed	[Auto]	
IOTG Mode	[Enabled]	
Transmitter Half Swing	[Disabled]	
Detect Timeout	0	
P2P Support	[Disabled]	
SA PCIe LTR Configuration		
LTR	[Enabled]	
Snoop Latency Override	[Auto]	
Non Snoop Latency Override	[Auto]	
Force LTR Override	[Disabled]	
		><: Select Screen

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LTR Lock	[Disabled]	^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit
CPU PCIe Gen3 HWEQ Config		
UPTP	7	
DPTP	7	
CPU PCIe Gen4 HWEQ Config		
UPTP	8	
DPTP	9	

BIOS Item	Options	Description
PCI Express Root Port 1	Disabled, Enabled	Control the PCI Express Root Port.
Connection Type	Built-in, Slot	Built-In: a built-in device is connected to this root port. Slo tImplemented bit will be clear. Slot: this root port connects to user-accessible slot. Slot Implemented bit will be set.
ASPM	Disabled, L1	Set the ASPM Level:
L1 Substates	Disabled, L1.1, L1.1 & L1.2	PCI Express L1 Substates settings. L1SS cannot be enabled when CLKREQMSG is disabled
Gen3 Eq Phase3 Method	Hardware, Static Coeff.	PCIe Gen3 Equalization Phase 3 Method
Gen4 Eq Phase3 Method	Hardware, Static Coeff.	PCIe Gen3 Equalization Phase 3 Method
ACS	Disabled, Enabled	Enable/Disable Access Control Services Extended Capability
PTM*	Disabled, Enabled	Enable/Disable Precision Time Measurement
DPC	Disabled, Enabled	Enable/Disable Downstream Port Containment
FOM Scoreboard Control Policy	Auto, Gen3, Gen4, Gen3/Gen4	Select the FOM Scoreboard Control Policy, when set to Auto, speed is based on TLS
VC	Disabled, Enabled	Enable/Disable Virtual Channel
Multi-VC	Disabled, Enabled	Enable/Disable Multi Virtual Channel
EDPC	Disabled, Enabled	Enable/Disable Rootport extensions for Downstream Port Containment
URR	Disabled, Enabled	PCI Express Unsupported Request Reporting Enable/Disable.
FER	Disabled, Enabled	PCI Express Device Fatal Error Reporting Enable/Disable.
NFER	Disabled, Enabled	PCI Express Device Non-Fatal Error Reporting Enable/Disable.
CER	Disabled, Enabled	PCI Express Device Correctable Error Reporting Enable/Disable.
CTO	Disabled, Enabled	PCI Express Completion Timer TO Enable/Disable.
SEFE	Disabled, Enabled	Root PCI Express System Error on Fatal Error Enable/Disable.
SENFE	Disabled, Enabled	Root PCI Express System Error on Non-Fatal Error Enable/Disable.
SECE	Disabled, Enabled	Root PCI Express System Error on Correctable

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		Error Enable/Disable.
PME SCI	Disabled, Enabled	PCI Express PME SCI Enable/Disable.
Hot Plug	Disabled, Enabled	PCI Express Hot Plug Enable/Disable.
Advanced Error Reporting	Disabled, Enabled	Advanced Error Reporting Enable/Disable.
PCIe Speed	Auto, Gen1, Gen2, Gen3, Gen4	Configure PCIe Speed
IOTG Mode	Disabled, Enabled	IOTG Mode Enable/Disable
Transmitter Half Swing	Disabled, Enabled	Transmitter Half Swing Enable/Disable.
Detect Timeout	[Max-Value, Min-Value, Step-Value] = [0xFFFF, 0x0000, 0x0001]	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.
P2P Support	Disabled, Enabled	Program P2P Support Registers according to setup option
LTR	Disabled, Enabled	SA PCIE Latency Reporting Enable/Disable
Snoop Latency Override	Disabled, Manual, Auto	Snoop Latency Override for SA PCIE.
Non Snoop Latency Override	Disabled, Manual, Auto	Non Snoop Latency Override for SA PCIE.
Force LTR Override	Disabled, Enabled	Force LTR Override for SA PCIE.
LTR Lock	Disabled, Enabled	PCIE LTR Configuration Lock
UPTP	[Max-Value, Min-Value, Step-Value] = [0x0A, 0x00, 0x01]	Upstream Port Transmitter Preset
DPTP	[Max-Value, Min-Value, Step-Value] = [0x0A, 0x00, 0x01]	Downstream Port Transmitter Preset

4.2 PCH-IO Configuration

Aptio Setup – AMI

Chipset

PCH-IO Configuration		
> SATA And RST Configuration		
> USB Configuration		
> Security Configuration		
> HD Audio Configuration		
> SerialIo Configuration		
> Pch Thermal Throttling Control		
> TSN GBE Configuration		
		><: Select Screen
Port 80h Redirection	[LPC Bus]	^v: Select Item
Enhance Port 80h LPC Decoding	[Enabled]	Enter: Select
Enable TCO Timer	[Enabled]	+/-: Change Opt.
Enable Timed GPIO0	[Disabled]	F1: General Help
Enable Timed GPIO1	[Disabled]	F8: Previous Values
WOL From S5	[ON]	F9: Optimized Default
		F10: Save & Exit
		ESC: Exit

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BIOS Item	Options	Description
> SATA And RST Configuration	**Submenu**	
> USB Configuration	**Submenu**	
> Security Configuration	**Submenu**	
> HD Audio Configuration	**Submenu**	
> Seriallo Configuration	**Submenu**	
> Pch Thermal Throttling Control	**Submenu**	
> TSN GBE Configuration	**Submenu**	
Port 80h Redirection	**LPC Bus** PCIE Bus	Control where the Port 80h cycles are sent.
Enhance Port 80h LPC Decoding	Disabled **Enabled**	Support the word/dword decoding of port 80h behind LPC

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Enable TCO Timer	Disabled **Enabled**	Enable/Disable TCO timer. When disabled, it disables PCH ACPI timer, stops TCO timer, and ACPI WDAT table will not be published.
Enable Timed GPIO0	**Disabled** Enabled	Enable/Disable Timed GPIO0. When disabled, it disables cross time stamp time-synchronization as extension of Hammock Harbor time synchronization.
Enable Timed GPIO1	**Disabled** Enabled	Enable/Disable Timed GPIO1. When disabled, it disables cross time stamp time-synchronization as extension of Hammock Harbor time synchronization.
WOL From S5	OFF **ON**	This Config to control power on/off LAN in S5 State by SEMA(EC).

4.2.1 SATA and RST Configuration

Aptio Setup – AMI

Chipset

SATA And RST Configuration		
SATA Controller(s)	[Enabled]	
SATA Mode Selection	[AHCI]	
SATA Test Mode	[Disabled]	
> Software Feature Mask Configuration		
Aggressive LPM Support	[Enabled]	
SATA Controller Speed	[Gen3]	
Serial ATA Port X	XXXX	
Software Preserve	Unknown	
Port X	[Enabled]	
Hot Plug	[Disabled]	
Configured as eSATA	Hot Plug supported	><: Select Screen
External	[Disabled]	^v: Select Item
Spin Up Device	[Disabled]	Enter: Select
SATA Device Type	[Hard Disk Drive]	+/-: Change Opt.
Topology	[Unknow]	F1: General Help
SATA Port 0 DevSlp	[Enabled]	F8: Previous Values
DITO Configuration	[Disabled]	F9: Optimized Default
DITO Value	625	F10: Save & Exit
DM Value	15	ESC: Exit

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BIOS Item	Options	Description
SATA Controller(s)	Disabled **Enabled**	Enable/Disable SATA Device.
SATA Mode Selection	**AHCI** Intel RST Premium With Intel Optane System Acceleration	Determines how SATA controller(s) operate.
SATA Test Mode	Disabled **Enabled**	Test Mode Enable/Disable (Loop Back).
> Software Feature Mask Configuration	**Submenu**	
Aggressive LPM Support	Disabled **Enabled**	Enable PCH to aggressively enter link power state.
SATA Controller Speed	Default, Gen1, Gen2, **Gen3**	Indicates the maximum speed the SATA controller can support.
Serial ATA Port X	**Info-only**	
Software Preserve	**Info-only**	
Port X	Disabled **Enabled**	Enable or Disable SATA Port
Hot Plug	**Disabled** Enabled	Designates this port as Hot Pluggable.
Configured as eSATA	**Info-only**	
External	**Disabled** Enabled	Marks this port as external.
Spin Up Device	**Disabled** Enabled	If enabled for any of ports Staggerred Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.
SATA Device Type	**Hard Disk Drive** Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive
Topology	**Unknown** ISATA Direct Connect Flex M2	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2
SATA Port X DevSlp	Disabled **Enabled**	Enable/Disable SATA Port X DevSlp. For DevSlp to work, both hard drive and SATA port need to support DevSlp function, otherwise an unexpected behavior might happen. Please check board design before enabling it.
DITO Configuration	**Disabled** Enabled	Enable/Disable DITO Configuration
DITO Value	**625**	DITO Value
DM Value	**15**	DM Value

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4.2.2 Software Feature Mask Configuration

Aptio Setup – AMI

Chipset

Software Feature Mask Configuration		
HDD Unlock	[Enabled]	
LED Locate	[Enabled]	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
HDD Unlock	Disabled **Enabled**	If enabled, indicates that the HDD password unlock in the OS is enabled.
LED Locate	Disabled **Enabled**	If enabled, indicates that the LED/SGPIO hardware is attached and ping to locate feature is enabled on the OS.

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4.2.3 USB Configuration

Aptio Setup – AMI

Chipset

USB Configuration		
xDCI Support	[Disabled]	
USB2 PHY Sus Well Power Gating	[Enabled]	
USB3 Link Speed Selection	[GEN1]	
USB PDO Programming	[Enabled]	
XHCI LTR Mode	[Enabled]	
USB Overcurrent	[Enabled]	
USB Overcurrent Lock	[Enabled]	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
xDCI Support	**Disabled** Enabled	Enable/Disable xDCI (USB OTG Device).
USB2 PHY Sus Well Power Gating	Disabled **Enabled**	Select 'Enabled' to enable SUS Well PG for USB2 PHY. This option has no effect on PCH-H
USB3 Link Speed Selection	**GEN1** GEN2	This option is to select USB3 Link Speed GEN1 or GEN2
USB PDO Programming	Disabled **Enabled**	Select 'Enabled' if Port Disable Override functionality is used.
XHCI LTR Mode	Disabled **Enabled**	Enable/Disable XHCI LTR Mode
USB Overcurrent	Disabled **Enabled**	Select 'Disabled' for pin-based debug. If pin-based debug is enabled but USB overcurrent is not disabled, USB DbC does not work.
USB Overcurrent Lock	Disabled **Enabled**	Select 'Enabled' if Overcurrent functionality is used. Enabling this will make xHCI controller consume the Overcurrent mapping data

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4.2.4 Security Configuration

Aptio Setup – AMI

Chipset

Security Configuration		
RTC Memory Lock	[Enabled]	
BIOS Lock	[Disabled]	
Force unlock on all GPIO pads	[Disabled]	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
RTC Memory Lock	Disabled **Enabled**	Enable will lock bytes 38h-3Fh in the lower/upper 128-byte bank of RTC RAM
BIOS Lock	**Disabled** Enabled	Enable/Disable the PCH BIOS Lock Enable feature. Required to be enabled to ensure SMM protection of flash.
Force unlock on all GPIO pads	**Disabled** Enabled	If Enabled BIOS will force all GPIO pads to be in unlocked state

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4.2.5 HD Audio Configuration

Aptio Setup – AMI

Chipset

HD Audio Subsystem Configuration Settings HD Audio [Enabled]	
	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
HD Audio	Disabled **Enabled**	Control Detection of the HD-Audio device.

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4.2.6 Serial IO Configuration

Aptio Setup – AMI

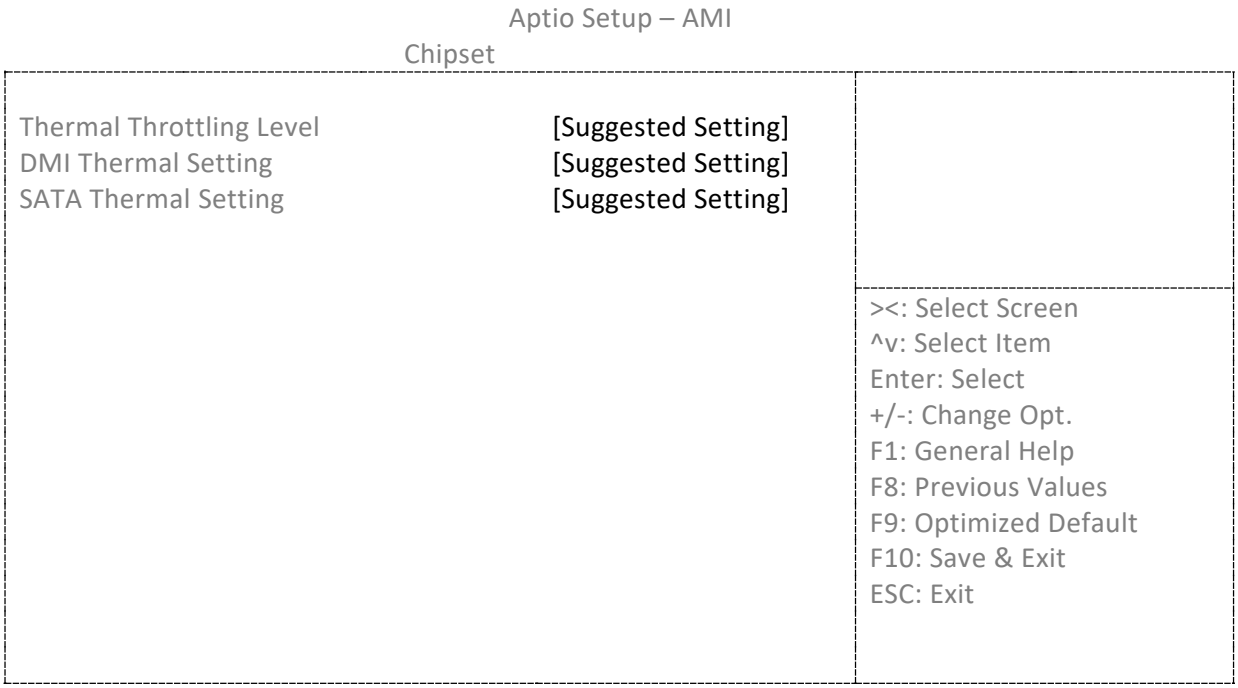
Chipset

SerialIo Configuration UART0 Controller [Disabled]	
	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
UART0 Controller	**Disabled** Enabled Communication port (COM)	Enables/Disables SerialIo Controller

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4.2.7 PCH Thermal Throttling Control

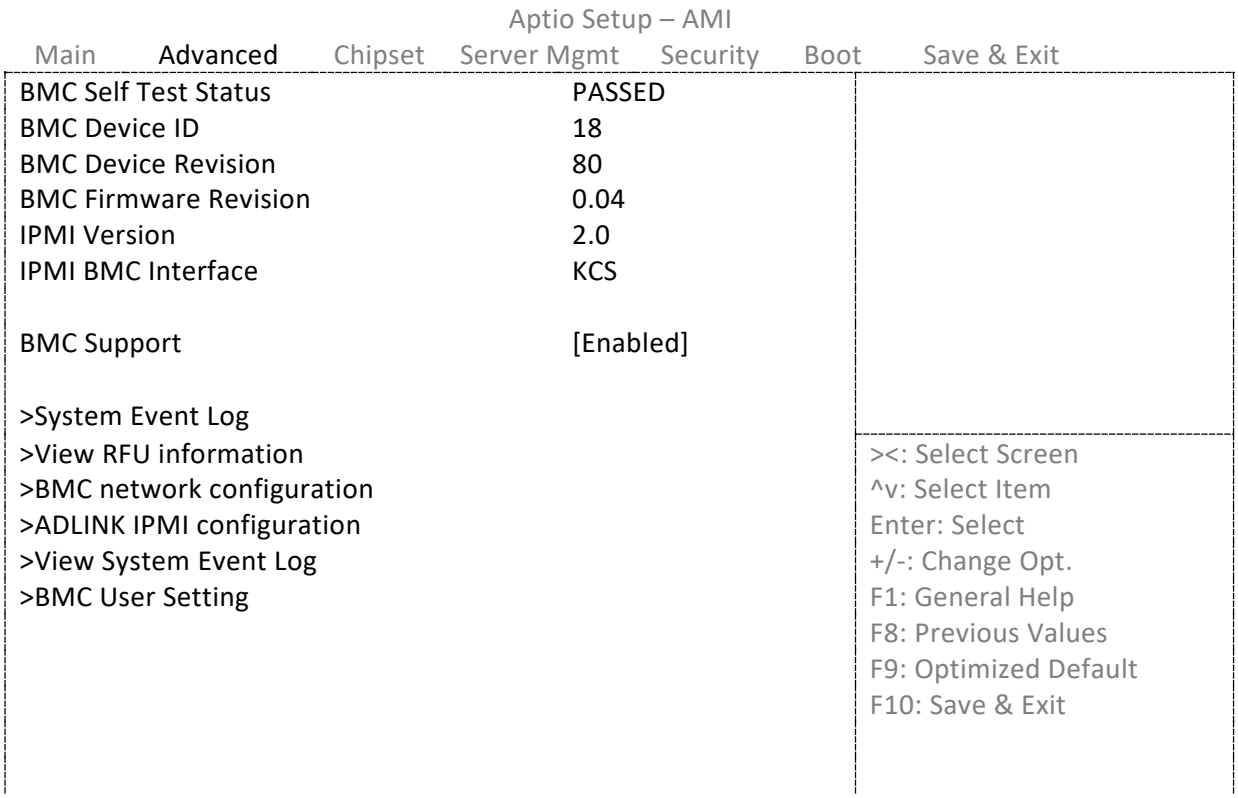


BIOS Item	Options	Description
Thermal Throttling Level	**Suggested Setting** Manual	Determine if use Intel suggested setting
DMI Thermal Setting	**Suggested Setting** Manual	Determine if use Intel suggested setting
SATA Thermal Setting	**Suggested Setting** Manual	Determine if use Intel suggested setting

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5 Server Mgmt Menu

This menu contains the settings for IPMI BMC in the system.



BIOS Item	Options	Description
BMC Self Test Status	**Info-only**	
BMC Device ID	**Info-only**	
BMC Device Revision	**Info-only**	
BMC Firmware Revision	**Info-only**	
IPMI Version	**Info-only**	
IPMI BMC Interface	**Info-only**	
BMC Support	Disabled **Enabled**	Enable/Disable interfaces to communicate with BMC
>System Event Log	**Submenu**	
>View RFU information	**Submenu**	
>BMC network configuration	**Submenu**	
>ADLINK IPMI configuration	**Submenu**	
>View System Event Log	**Submenu**	Enter to check SEL.
>BMC User Setting	**Submenu**	Enter to modify BMC user setting.

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5.1 System Event Log

Aptio Setup – AMI
Server Mgmt

Enabling/Disabling Options SEL Components [Enabled] Erasing Settings Erase SEL [No] When SEL is Full [Do Nothing] Custom EFI Logging Options Log EFI Status Codes [Error code] NOTE: All values changed here do not take effect until computer is restarted.	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
SEL Components	Disabled **Enabled**	Change this to enable or disable event logging for error/progress codes during boot.
Erase SEL	**No** Yes, On next reset Yes, On every reset	Choose options for erasing SEL.
When SEL is Full	Do Nothing Erase Immediately	Choose options for reactions to a full SEL.
Log EFI Status Codes	Disabled Both Error code Progress code	Disable the logging of EFI Status Codes or log only error code or only progress code or both.

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5.2 View FRU Information

Aptio Setup – AMI
Server Mgmt

FRU information		
Board Manufacturer	ADLINK	
Board Product	VPX6200	
Board Serial Number	PPS0000001	
Board Part Number	55-31129	
Product Manufacturer	ADLINK	
Product Name	VPX6200	
Product Part Number	91-31129	
Product Version	Rev A2	
Product Serial Number	0000001	
NOTE: No FRU information for fields indicate information needs to be filled by O.E.M		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
Board Manufacturer	**Info-only**	
Board Product	**Info-only**	
Board Serial Number	**Info-only**	
Board Part Number	**Info-only**	
Product Manufacturer	**Info-only**	
Product Name	**Info-only**	
Product Part Number	**Info-only**	
Product Version	**Info-only**	
Product Serial Number	**Info-only**	

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5.3 BMC Network Configuration

Aptio Setup – AMI
Server Mgmt

--BMC network configuration--		
**********		
Configure IPv4 support		
**********		
LAN channel 1		
Configuration Address source	[Unspecified]	
Current Configuration Address source	StaticAddress	
Station IP address	xxx.xxx.xxx.xxx	
Subnet mask	xxx.xxx.xxx.xxx	
Station MAC address	xx-xx-xx-xx-xx-xx	
Router IP address	xxx.xxx.xxx.xxx	
LAN channel 2		><: Select Screen
Configuration Address source	[Unspecified]	^v: Select Item
Current Configuration Address source	StaticAddress	Enter: Select
Station IP address	xxx.xxx.xxx.xxx	+/-: Change Opt.
Subnet mask	xxx.xxx.xxx.xxx	F1: General Help
Station MAC address	xx-xx-xx-xx-xx-xx	F8: Previous Values
Router IP address	xxx.xxx.xxx.xxx	F9: Optimized Default
		F10: Save & Exit
		ESC: Exit

BIOS Item	Options	Description
Configuration Address source	**Unspecified** Static	Select to configure LAN channel parameters statically or dynamically (by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase
Current Configuration Address source	**Info-only**	
Station IP address	**Info-only**	
Subnet mask	**Info-only**	
Station MAC address	**Info-only**	
Router IP address	**Info-only**	

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5.4 ADLINK IPMI Configuration

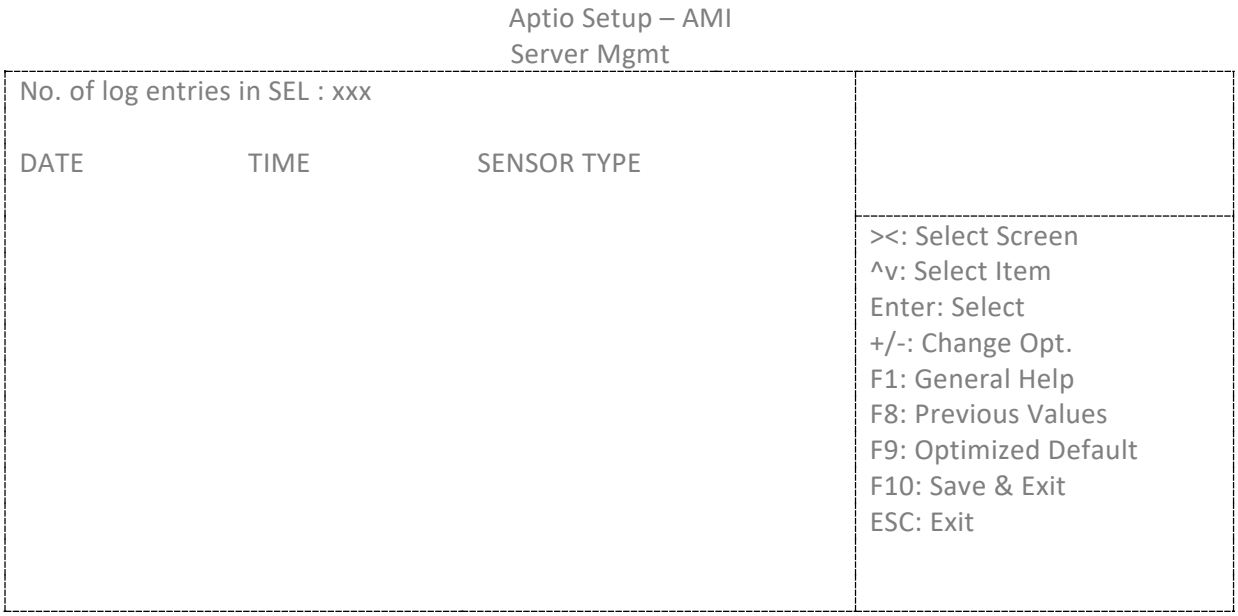
Aptio Setup – AMI
Server Mgmt

PCB Version	A1	
Geographical Address	0x1E	
System Controller	Host	
NVMRO Signal	Non Protect	
NVMRO item Control	[Non-Protect]	
SYS_RESET Support	[Enabled]	
GA Status	It's GA 17	
SBC Control Status	3x SBC (GA17/18/19)	
SBC Control	[3x SBC (GA17/18/19)]	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
PCB Version	**Info-only**	
Geographical Address	**Info-only**	
System Controller	**Info-only**	
NVMRO Signal	**Info-only**	
NVMRO item Control	Protect Non-Protect	Enable or disable NVMRO Control support.
SYS_RESET Support	Disabled Enabled	Enable or disable SYS_RESET support.
SBC Control Status	**Info-only**	Show the SBC control Status from IPMC
SBC Control	1x SBC (GA17) 2x SBC (GA17/18) 3x SBC (GA17/18/19)	Send SBC control Status to IPMC

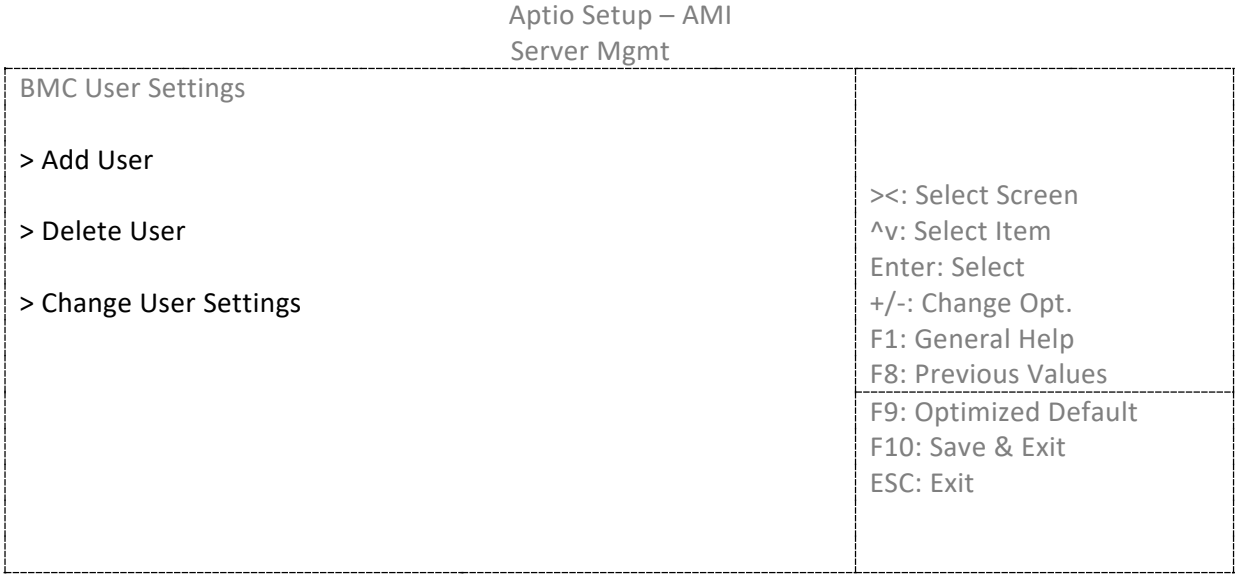
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5.5 View System Event Log



BIOS Item	Options	Description
System Event Log	**Info-only**	To display System Event Logs (SEL).

5.6 BMC User Settings

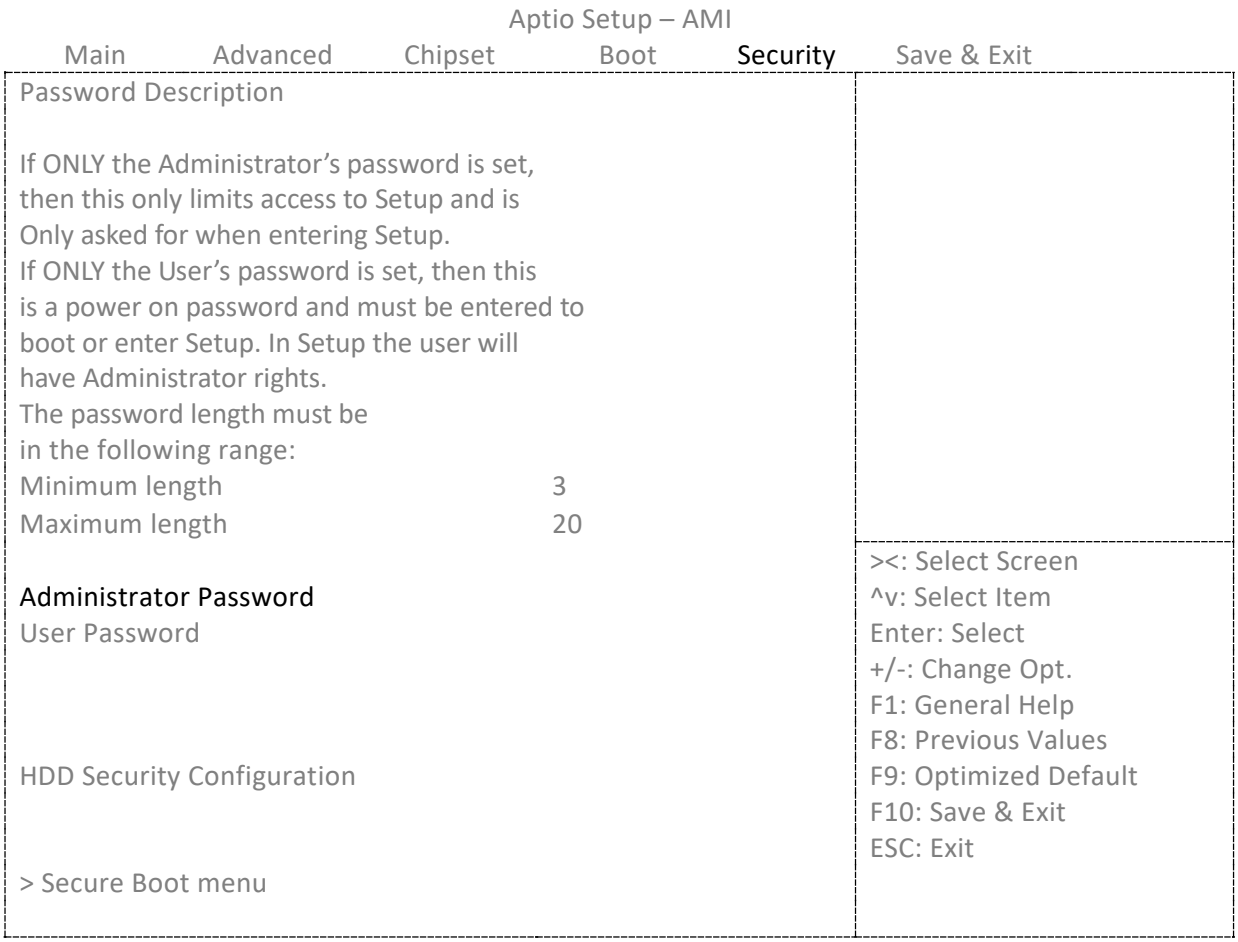


BIOS Item	Options	Description
BMC User Settings	**Info-only**	To config BMC user settings.

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6 Security Menu

This menu contains the settings for security in the system.



BIOS Item	Options	Description
Administrator Password	**Enter to set password**	Configure/Clear Administrator Password. When pressing enter, a menu will be popped up for creating new password. When password installed, press enter without inputting password, it will clear password.
User Password	**Enter to set password**	Configure/Clear User Password. When pressing enter, a menu will be popped up for creating new password. When password installed, press enter without inputting password, it will clear password.
HDD Security Configuration	**Submenu**	For HDD security, it will list all HDD detected on motherboard. Select the HDD and then press enter can figure/clear HDD password.

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BIOS Item	Options	Description
Secure Boot menu	**Submenu**	

When selecting a HDD to configure passwords, BIOS will enter another new BIOS setup page like below. The method of configuring HDD password is the same as BIOS passwords. Once password is set, it will reflect the status on the screen, like 'INSTALLED' change on 'HDD User Pwd Status'. When there is no HDD user password installed, you can always change master password without confirming the latest installed password. Once HDD user password is installed, HDD master password is not allowed changing.

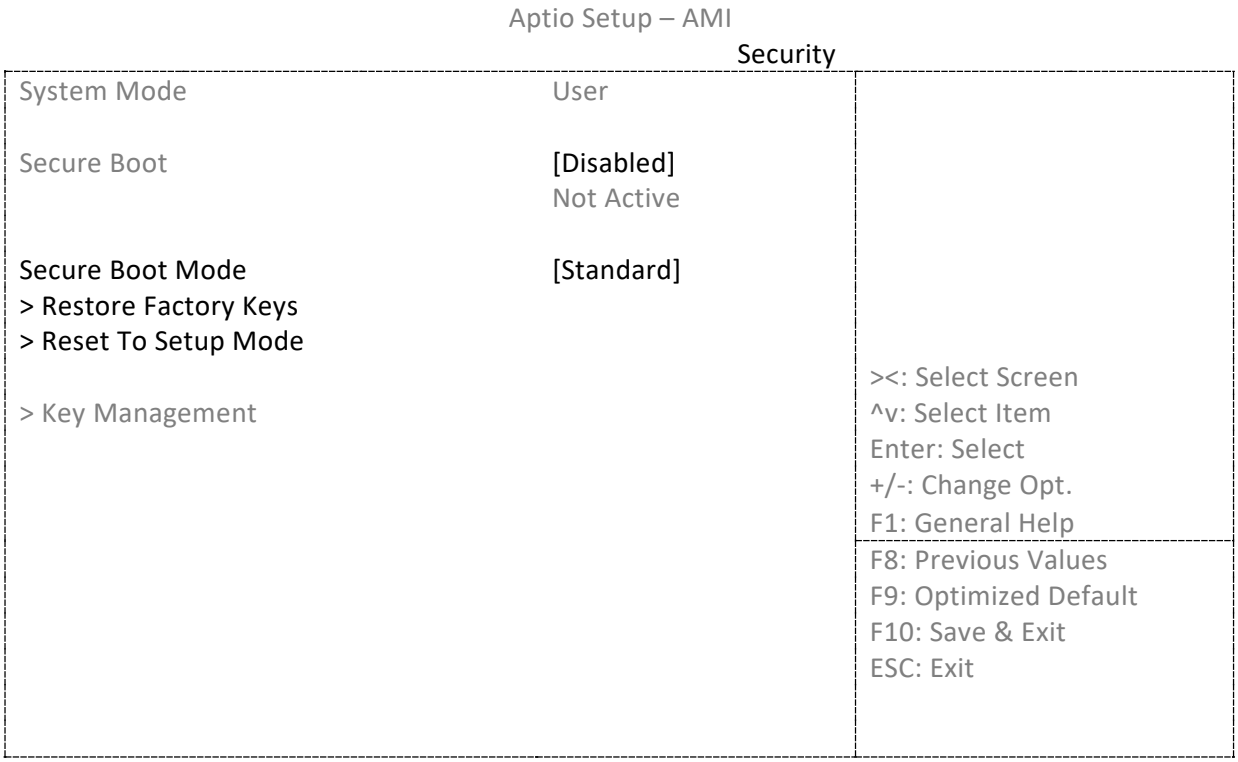
Aptio Setup – AMI

Security

HDD Password Description		
Allows Access to Set, Modify and Clear HardDisk User and Master Passwords. User Password need to be installed for Enabling Security. Master Password can be Modified only when successfully unlocked with Master Password in POST		
HDD PASSWORD CONFIGURATION		
Security Supported	Yes	
Security Enabled	Yes	
Security Locked	No	
Security Frozen	No	><: Select Screen
HDD User Pwd Status	INSTALLED	^v: Select Item
HDD Master Pwd Status	INSTALLED	Enter: Select
		+/-: Change Opt.
Set User Password		F1: General Help
Set Master Password		F8: Previous Values
		F9: Optimized Default
		F10: Save & Exit
		ESC: Exit

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6.1 Secure Boot

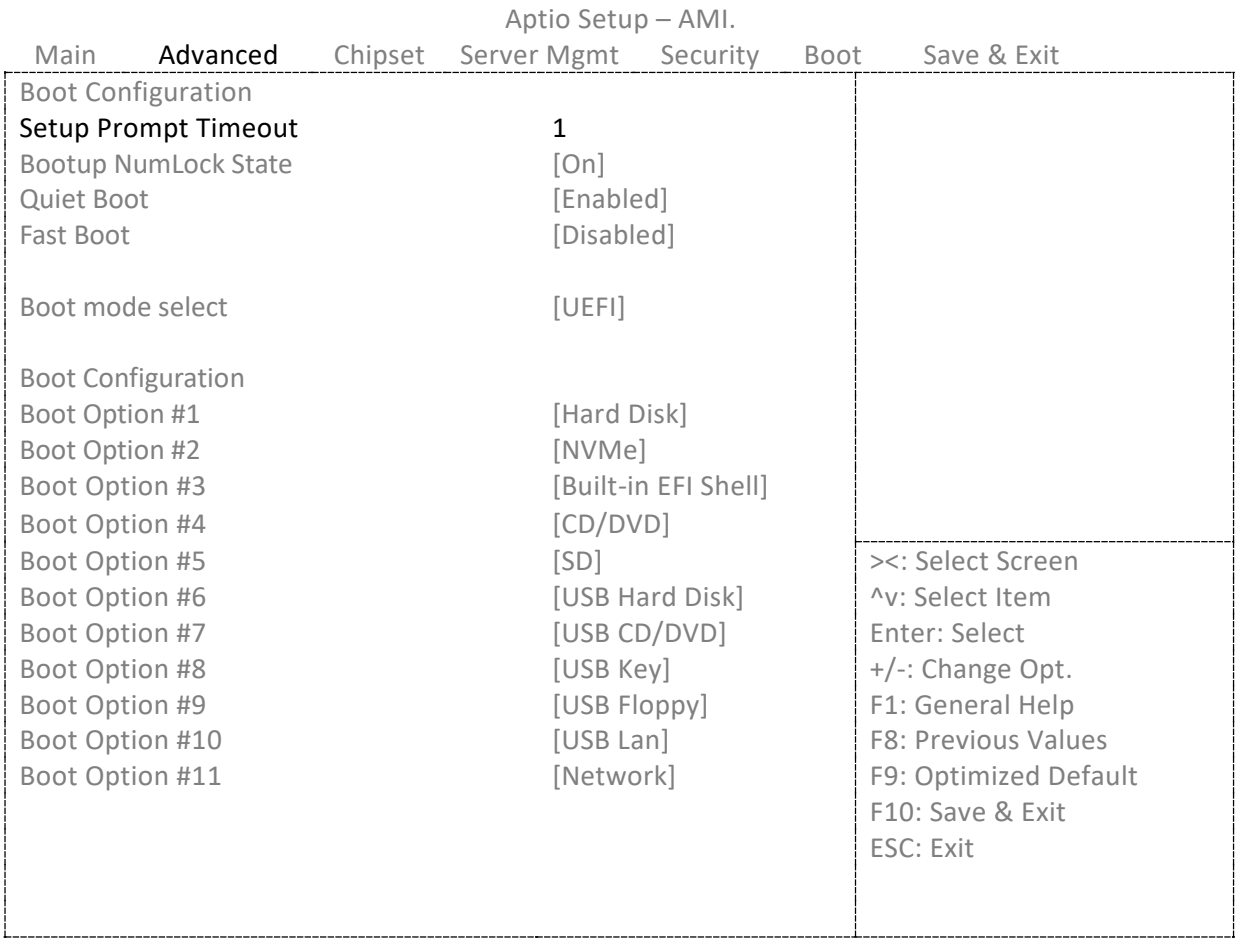


BIOS Item	Options	Description
System Mode	**Info-only**	
Secure Boot	**Disabled** Enabled	Secure Boot feature is Active if Secure Boot is Enabled,
Secure Boot Mode	**Standard** Custom	Secure Boot mode options

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7 Boot Menu

This menu contains the settings for bootable devices in the system.



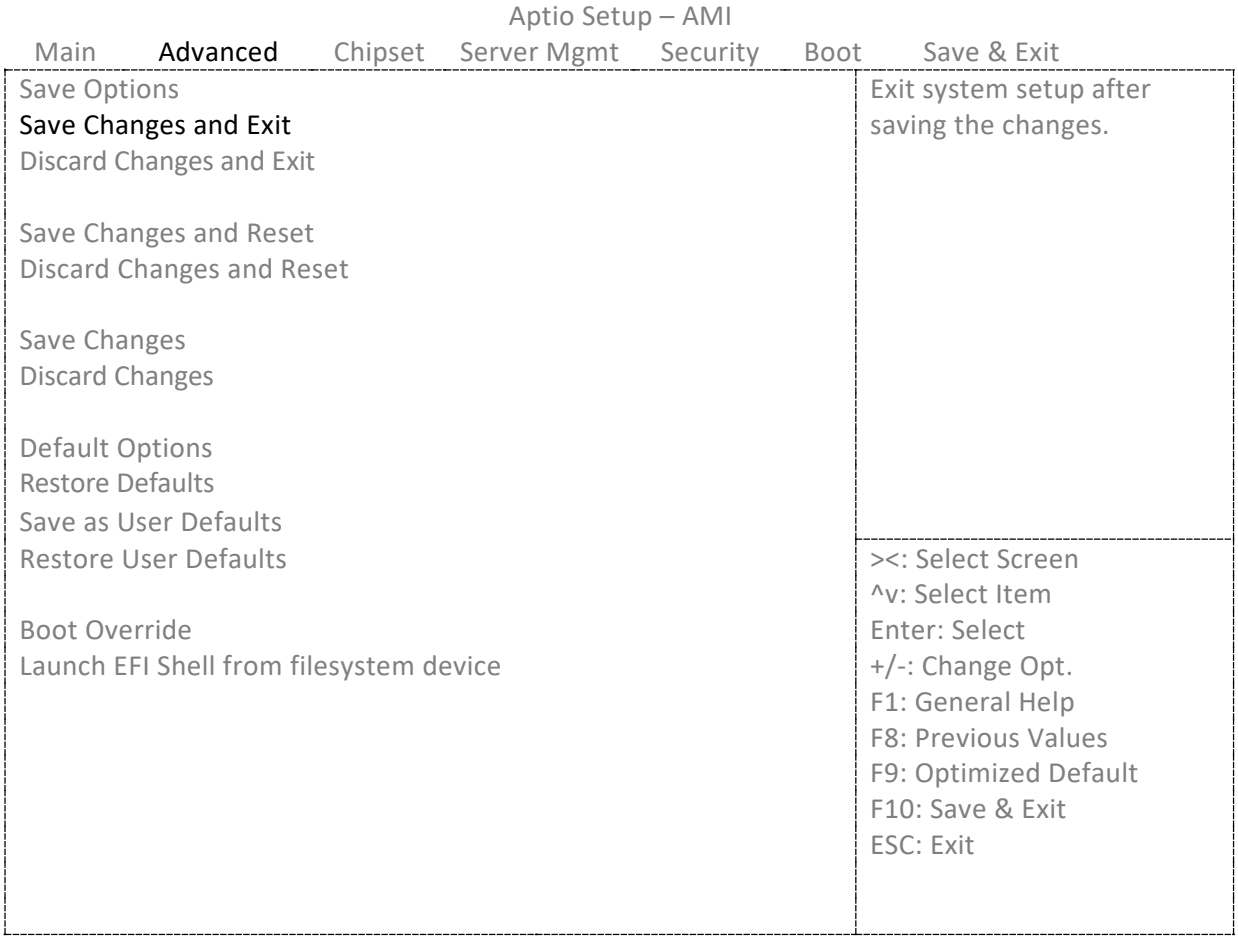
BIOS Item	Options	Description
Setup Prompt Timeout	**1**	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.
Bootup NumLock State	On **Off**	Select the keyboard NumLock state after system boot.
Quiet Boot	Disabled **Enabled**	**Enabled:** will show splash screen during POST. **Disabled:** will show boot message during POST.
Fast Boot	**Disabled** Enabled	Enable or disabled Fast boot feature. Most probes are skipped to reduce time cost during boot.
Boot mode select	LEGADY **UEFI**	Select boot mode, LEGACY/UEFI.

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Boot Option #1~#11	Hard Disk NVME CD/DVD SD USB Hard Disk USB CD/DVD USB Key USB Floppy USB Lan Network Disabled	Set system boot order.

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8 Save & Exit



BIOS Item	Options	Description
Save Changes and Exit	**Enter**	Save changed settings and exit BIOS setup utility.
Discard Changes and Exit	**Enter**	Skip changed setting and exit BIOS setup utility.
Save Changes and Reset	**Enter**	Save all changed settings and let system do reset to boot system.
Discard Changes and Reset	**Enter**	Discard all changed settings and let system do reset to boot system.
Save Changes	**Enter**	Save all changed settings.
Discard Changes	**Enter**	Discard changes done so far to any of the setup options.
Restore Default	**Enter**	Load the default made when BIOS was built.
Save as User Default	**Enter**	Save all changed done so far as User Defaults.
Restore User Default	**Enter**	Load the default that user save as user defaults.
Boot Override	**Info-only**	

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Important Safety Instructions

For user safety, please read and follow all **instructions**, **WARNINGS**, **CAUTIONS,** and **NOTES** marked in this manual and on the associated equipment before handling/operating the equipment.

1. Read these safety instructions carefully.
2. Keep this user's manual for future reference.
3. Read the specifications section of this manual for detailed information on the operating environment of this equipment.
4. The equipment can be operated at an ambient temperature of 40°C.
5. When installing/mounting or uninstalling/removing equipment; or when removal of the chassis lid required for user servicing (Section 3.1-3.5):
   - Turn off power and unplug any power cords/cables, and
6. To avoid electrical shock and/or damage to equipment:
   - Keep equipment away from water or liquid sources;
   - Keep equipment away from high heat or high humidity;
   - Keep equipment properly ventilated (do not block or cover ventilation openings);
   - Make sure to use recommended voltage and power source settings;
   - Always install and operate equipment near an easily accessible electrical socket-outlet;
   - Secure the power cord (do not place any object on/over the power cord);
   - Only install/attach and operate equipment on stable surfaces and/or recommended mountings;
   - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.
   - The power cord must be connected to a socket or outlet with a ground connection.
7. Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.

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8. This equipment is not suitable for use in locations where children are likely to be present.
9. Equipment must be serviced by authorized technicians when:
   - The power cord or plug is damaged;
   - Liquid has penetrated the equipment;
   - It has been exposed to high humidity/moisture;
   - It is not functioning or does not function according to the user's manual;
   - It has been dropped and/or damaged; and/or,
   - It has an obvious sign of breakage.
10. Please pay strict attention to all warnings and advisories appearing on the device, to avoid injury or damage.
11. It is recommended that equipment be installed only in a server room or computer room where access is:
    - Restricted to qualified service personnel or users familiar with restrictions applied to the location, reasons therefor, and any precautions required;
    - Only afforded by the use of a tool or lock and key, or other means of security, and is controlled by the authority responsible for the location.
12. Suitable for installation in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75.

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Getting Service

Ask an Expert: https://www.adlinktech.com/en/Askanexpert

ADLINK Technology, Inc.
Address: No. 66, Huaya 1st Rd., Guishan District
Taoyuan City 333411, Taiwan
333411 桃園市龜山區華亞一路 66 號
Tel: +886-3-216-5088
Fax: +886-3-328-5706
Email: service@adlinktech.com

Ampro ADLINK Technology, Inc.
6450 Via Del Oro, San Jose, CA 95119-1208, USA
Tel: +1-408-360-0200
Toll Free: +1-800-966-5200 (USA only)
Fax: +1-408-600-1189
Email: info@adlinktech.com

ADLINK Technology (China) Co., Ltd.
Address: 上海市浦东新区张江高科技园区芳春路 300 号 (201203)
300 Fang Chun Rd., Zhangjiang Hi-Tech Park, Pudong New Area
Shanghai, 201203 China
Tel: +86-21-5132-8988
Fax: +86-21-5132-3588
Email: market@adlinktech.com

ADLINK Technology GmbH
Address: Hans-Thoma-Strasse 11, D-68163, Mannheim, Germany
Tel: +49-621-43214-0
Fax: +49-621 43214-30
Email: emea@adlinktech.com

Please visit the Contact page at www.adlinktech.com for information on how to contact the ADLINK regional office nearest you.

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