FCC Warning

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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Chapter 1: Introduction

1.1 Before You Start

Thank you for choosing our product. Before you start installing the motherboard, please make sure you follow the instructions below:

- Prepare a dry and stable working environment with sufficient lighting.
- Always disconnect the computer from power outlet before operation.
- Before you take the motherboard out from anti-static bag, ground yourself properly by touching any safely grounded appliance, or use grounded wrist strap to remove the static charge.
- Avoid touching the components on motherboard or the rear side of the board unless necessary. Hold the board on the edge, do not try to bend or flex the board.
- Do not leave any unfastened small parts inside the case after installation. Loose parts will cause short circuits which may damage the equipment.
- Keep the computer from dangerous area, such as heat source, humid air and water.
- The operating temperatures of the computer should be 0 to 45 degrees Celsius.
- To avoid injury, be careful of:
  Sharp pins on headers and connectors
  Rough edges and sharp corners on the chassis
  Damage to wires that could cause a short circuit

Note

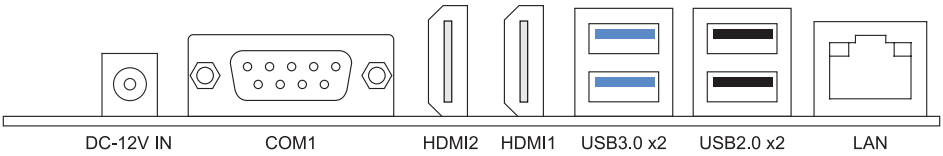
» *The package contents may be different due to the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.*

1.2 Specifications

CPU	Intel Celeron Processor N3160 CPU onboard Quad-Core/2.24Ghz Processor speed/14nm/6W TDP/4W SDP Package Size: 25mm X 27mm / FCBGA1170
Graphic	Integrated Intel® HD Graphics series graphic engine supports: Graphics Frequency: Intel Graphics HD 320MHz-640MHz -- By using the eDP to LVDS transmitter(RTD2136) and supports the dual channel 18-24 Bits LCD panel -- Integrated HDMI*2
Main Memory	DDR3L 1600 MHz SO-DIMM x 1 Max. 8GB *Registered DIMM or ECC DIMM is not supported
Storage	Chipset built-in serial ATA controller support 1 x SATA III, data transfer rates up to 6.0Gb/s EMMC 32GB on Board, eMMC V4.51
Expansion Slot	1x M.2 E KEY socket for 802.11b/g/n WIFI /BT Module
LAN	Realtek RTL 8111H 10 / 100 / 1000 Mb/s auto negotiation, Half / Full duplex capability
Sound Codec	Realtek Codec ALC662, supports Line-out / Mic-in
Back Panel I/O	1x DC-12V IN Power Jack 1x COM Port (DB9) 2x HDMI Port 2x USB 3.0 Port 4x USB 2.0 Port 1x RJ-45 Gigabit LAN Port 1x Audio Jack - MIC in 1x Audio Jack - Line out 1x Power Switch
On Board Connectors & Headers	1x 1*3 Smart Fan 1x 204 Pins, DDR3L SO-DIMM RAM (1.35V) Socket 1x M.2 E KEY Socket For 802.11b/g/n WIFI /BT Module 1x SATA III HDD Connector 1x 1*4 Pins, HDD Power Connector (5V/12V) 1x 2*20 Box Header, LCD LVDS Connector Support Dual Channel 18-24 Bits LCD Panel 1x 1*8 Pins, LCD Backlight Inverter Connector 1x 1*3 Pins, Backlight Control Mode Selection Jumper 1x 1*3 Pins, LCD Inverter Power Select Jumper (3.3V/5V) 1x 1*3 Pins, LCD Backlight Power Select Jumper (5V/12V) 1x 1*3 Pins, Backlight PWM Signal Select 1x 1*3 Pins, Clear CMOS Jumper Setting 2x 1*2 Pins, ALC105 Class D, 2Watt / Channel Amplifier Audio Output Connector 1x Buzzer 1x 1*2 Power Switch Wafer
Board Size	105 mm (W) x 146 mm (L), 3.5" Embedded Board
Operation Temperature	0°C ~ 60°C
Storage Temperature	-20°C ~ 70°C
Relative Humidity	10% ~ 90% (non-condensing)
Watchdog Timer	1~255 sec / min, Programmable (inside Super I/O,65536 segments)
EMC	Comply FCC Class B
Green /APM	ACPI 2.0S0/S1/S5, Support AC Power Auto Power on by BIOS Select
OS Driver Support	Win 7, Win10, Android 6.0, Ubuntu 16.04
Other Features	Wake on RPL / PXE LAN Boot ROM Wake on USB ACPI Power loss recovery
RoHS Compliant	Yes

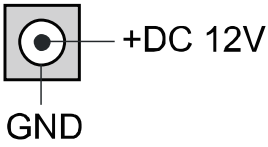
1.3 Rear / Front Panel Connectors

Front I/Os

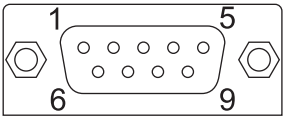


Real I/Os

J1: DC-12V IN Power Jack

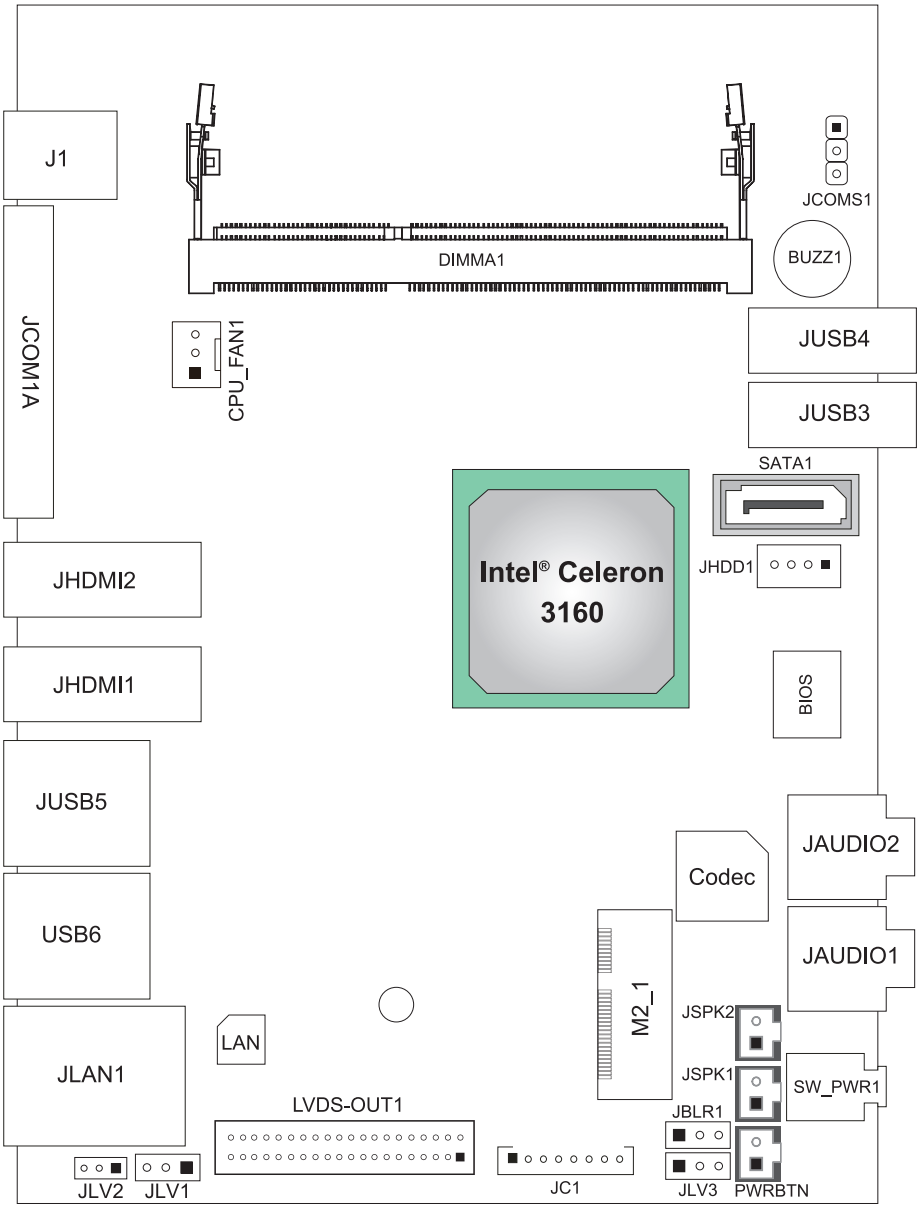


JCOM1A: COM1 Connector (DB9)



Mode	001	000	010
Pin Define	RS-232 (3T/5R)	RS-422 (1T/1R Full Duplex)	RS-485 (1T/1R TX Enable Low Active)
1	COM1C_DCD	TX(B)	(R(B) / T(B))
2	COM1C_RXD	TX(A)	(R(A) / T(A))
3	COM1C_TXD	RX(A)	NC
4	COM1C_DTR	RX(B)	NC
5	GND	GND	GND
6	COM1C_DSR	NC	NC
7	COM1C_RTS	NC	NC
8	COM1C_CTS	NC	NC
9	COM1C_RI	NC	NC
10	NC	NC	NC

1.4 Motherboard Layout



» ■ *represents the 1st pin.*

Chapter 2: Hardware installation

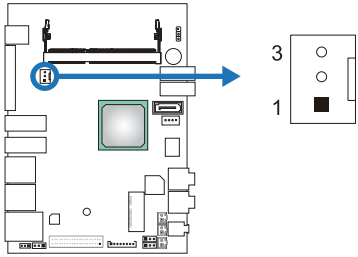
2.1 Central Processing Unit (CPU)

The mainboard includes an Intel® Celeron processor, and a cooler has been installed to provide sufficient cooling

2.2 Fan Headers

These fan headers support cooling-fans built in the computer. The fan cable and connector may be different according to the fan manufacturer. Connect the fan cable to the connector while matching the black wire to pin#1.

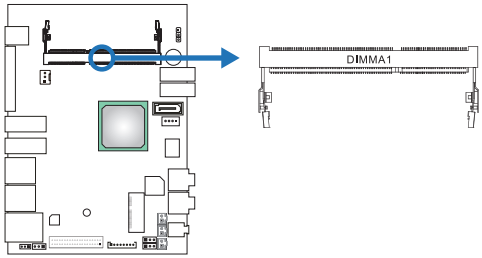
CPU_FAN1: CPU Fan Header



Pin	Assignment
1	Ground
2	Smart Fan Control (By Fan)
3	FAN RPM rate sense

2.3 Installing Memory Module (1.35V only)

DIMMA1: DDR3L Memory Module Slot(204pin SO-DIMM)

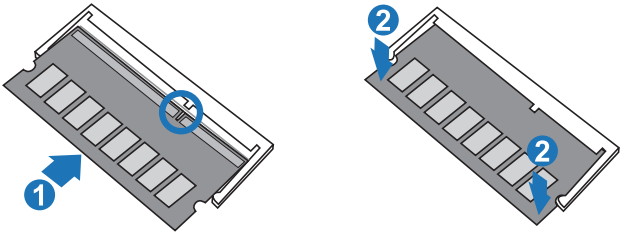


Note

» *If the DIMM does not go in smoothly, do not force it. Pull it all the way out and try again.*

Insert memory module into SO-DIMM socket at backside of motherboard.

1. Hold the SO-DIMM with its notch aligned with the memory socket of the board and insert it at a 30-degree angle into the socket.
2. Press down on the SO-DIMM so that the tabs of the socket lock on both sides of the module.



» *To avoid generating static electricity and damaging the SO-DIMM, ground yourself by touching a grounded metal surface or use a ground strap before you touch the SO-DIMM.*

1. Align a DIMM on the slot such that the notch on the DIMM matches the break on the Slot.

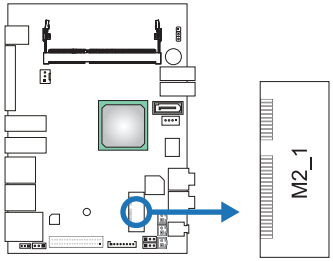
2. Insert the DIMM firmly into the slot until the retaining chip snap back in place and the DIMM is properly seated.

Memory Capacity

DIMM Socket Location	DDR3L Module	Total Memory Size
DIMMA1	512MB/1GB/2GB/4GB/8GB	Max is 8GB

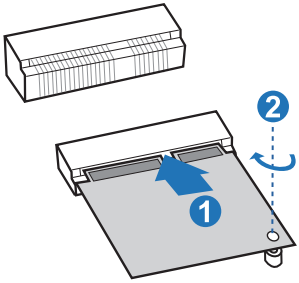
2.4 Expansion Slots

M2_1: Mini PCI-E Connector - Support WIFI / BT Module



Installing WiFi Module

1. Insert WiFi module into mini PCIe slot (M2_1)
2. Secure screw to the motherboard



» *Wi-Fi module & screw sold separately.*

2.5 Jumpers / Headers / Connectors

Jumper Setting

The illustration shows how to set up jumpers. When the jumper cap is placed on pins, the jumper is "close", if not, that means the jumper is "open".

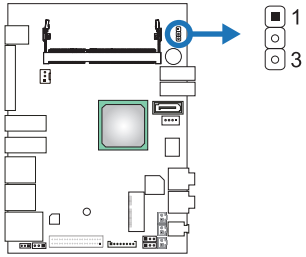
Pin opened

Pin closed

Pin 1-2 closed

JCMOS1: Clear CMOS Jumper

Placing the jumper on pin2-3 allows user to restore the BIOS safe setting and the CMOS data. Please carefully follow the procedures to avoid damaging the motherboard.



Pin 1-2 Close: Normal Operation (Default)

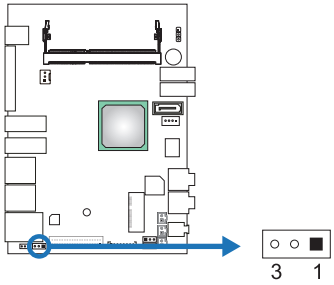
Pin 2-3 Close: Clear CMOS data

Clear CMOS Procedures:

1. Remove AC power line.
2. Set the jumper to "Pin 2-3 close".
3. Wait for five seconds.
4. Set the jumper to "Pin 1-2 close".
5. Power on the AC.
6. Reset your desired password or clear the CMOS data.

JLV1: LCD inverter power select jumper(3.3V/5V)

This jumper is for selecting LCD Backlight Inverter Power

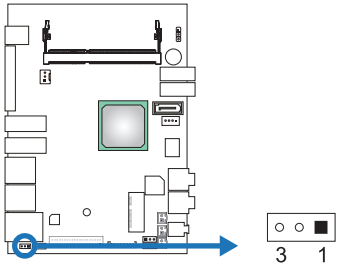


Pin 1-2 Close: Inverter Power=3.3V (Default)

Pin 2-3 Close: Inverter Power=5V

JLV2: LCD Backlight Power Select Jumper (5V/12V)

This jumper is for selecting LCD Power.

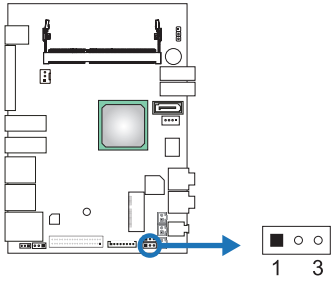


Pin 1-2 Close: Inverter Power=5V

Pin 2-3 Close: Inverter Power=12V (Default)

JLV3: Backlight Control Mode Selection Jumper

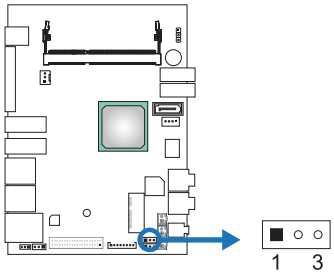
This jumper is for selecting backlight control mode.



Pin 1-2 Closed: Voltage Level Mode

Pin 2-3 Closed: PWM Mode (Default)

JBLR1: Backlight PWM Signal Select Jumper

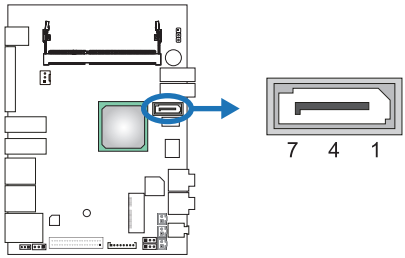


Pin 1-2 Close: Reverse

Pin 2-3 Close: Forward (Default)

SATA1: Serial ATA Connectors

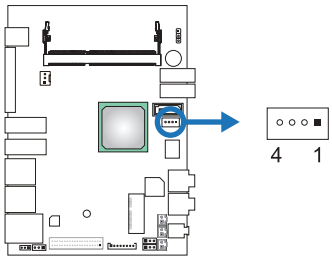
These connectors support the thin Serial ATA cable for primary internal storage devices.



Pin	Assignment
1	Ground
2	TX+
3	TX-
4	Ground
5	RX-
6	RX+
7	Ground

JHDD1: HDD Power Connector (5V/12V)

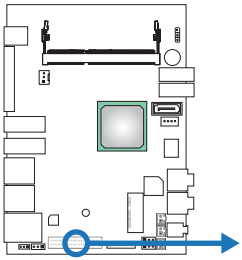
This connector provides power connection of SATA devices.

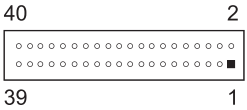


Pin	Assignment
1	+12V output
2	GND
3	GND
4	+5V output

LVDS-OUT1: LVDS Connector

This connector supports 18/24 bit single-channel panels.

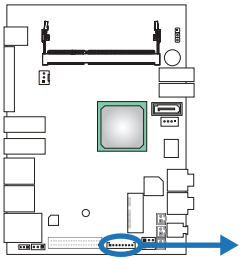




Pin	Assignment	Pin	Assignment
2	PVDD2, 3.3V*/5V (selected by JLV1)	1	LVDSB_DATA0_N
4	PVDD2, 3.3V*/5V (selected by JLV1)	3	LVDSB_DATA0_P
6	GND	5	GND
8	GND	7	LVDSB_DATA1_N
10	LVDSA_DATA0_N	9	LVDSB_DATA1_P
12	LVDSA_DATA0_P	11	GND
14	GND	13	LVDSB_DATA2_N
16	LVDSA_DATA1_N	15	LVDSB_DATA2_P
18	LVDSA_DATA1_P	17	GND
20	GND	19	LVDSB_CLK_N
22	LVDSA_DATA2_N	21	LVDSB_CLK_P
24	LVDSA_DATA2_P	23	GND
26	GND	25	LVDSB_DATA3_N
28	LVDSA_CLK_N	27	LVDSB_DATA3_P
30	LVDSA_CLK_P	29	VCC5
32	GND	31	LVDSA_DDC_CLK
34	LVDSA_DATA3_N	33	VCC3_3
36	LVDSA_DATA3_P	35	ENABKL
38	BL_CTRL	37	INVPWR
40	LVDS_DCC_DATA	39	INVPWR

** Note: PVDD2 is 3.3V by default.*

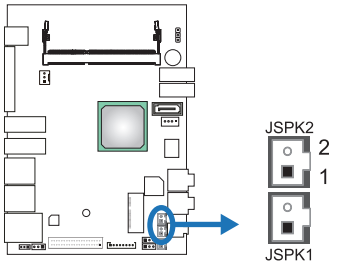
JC1: LCD Backlight Inverter Connector



Pin	Assignment
1	5V/12V*
2	5V/12V*
3	NC
4	NC
5	Backlight On(5V)/Off(0V)
6	Brightness Adjust (0-5V)
7	GND
8	GND

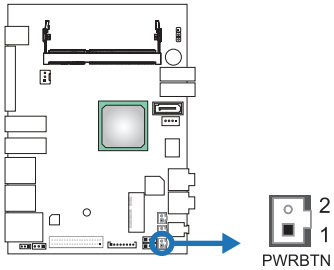
* selected by JLV2

JSPK1/2: Audio Connector



Right Speaker (JSPK1)	
Pin	Assignment
1	SPKRP
2	SPKRN
Left Speaker (JSPK2)	
Pin	Assignment
1	SPKLP
2	SPKLN

PWRBTN: Power Button



Pin	Assignment
1	PWRBTN
2	GND

Chapter 3: BIOS Setup

Introduction

The purpose of this manual is to describe the settings in the AMI UEFI BIOS Setup program on this motherboard. The Setup program allows users to modify the basic system configuration and save these settings to NVRAM.

UEFI BIOS determines what a computer can do without accessing programs from a disk. This system controls most of the input and output devices such as keyboard, mouse, serial ports and disk drives. BIOS activates at the first stage of the booting process, loading and executing the operating system. Some additional features, such as virus and password protection or chipset fine-tuning options are also included in UEFI BIOS.

The rest of this manual will to guide you through the options and settings in UEFI BIOS Setup.

Plug and Play Support

This AMI UEFI BIOS supports the Plug and Play Version 1.0A specification.

EPA Green PC Support

This AMI UEFI BIOS supports Version 1.03 of the EPA Green PC specification.

ACPI Support

AMI ACPI UEFI BIOS support Version 1.0/2.0 of Advanced Configuration and Power interface specification (ACPI). It provides ASL code for power management and device configuration capabilities as defined in the ACPI specification, developed by Microsoft, Intel and Toshiba.

PCI Bus Support

This AMI UEFI BIOS also supports Version 2.3 of the Intel PCI (Peripheral Component Interconnect) local bus specification.

DRAM Support

DDR3 SDRAM (Double Data Rate III Synchronous DRAM) is supported.

Supported CPUs

This AMI UEFI BIOS supports the latest CPU.

Using Setup

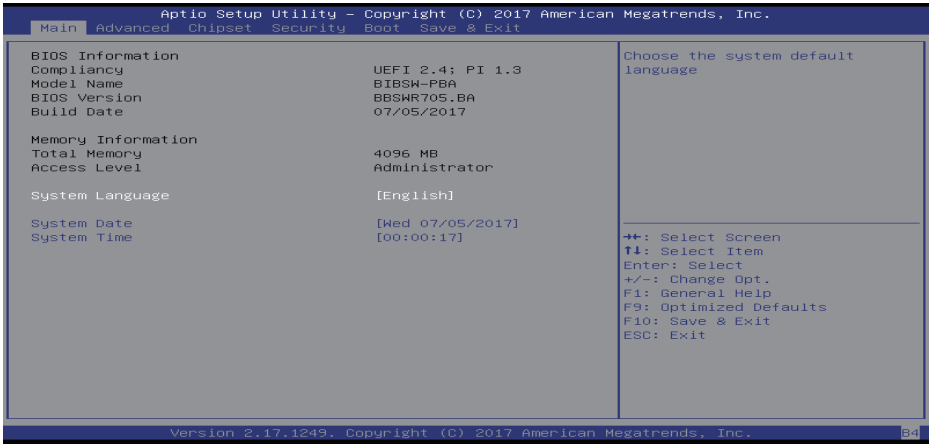
When starting up the computer, press <Del> during the Power-On Self-Test (POST) to enter the UEFI BIOS setup utility. In the UEFI BIOS setup utility, you will see General Help description at the top right corner, and this is providing a brief description of the selected item. Navigation Keys for that particular menu are at the bottom right corner, and you can use these keys to select item and change the settings.

Note

- *The default UEFI BIOS settings apply for most conditions to ensure optimum performance of the motherboard. If the system becomes unstable after changing any settings, please load the default settings to ensure system's compatibility and stability. Use Load Setup Default under the Exit Menu.*
- *For better system performance, the UEFI BIOS firmware is being continuously updated. The UEFI BIOS information described in this manual is for your reference only. The actual UEFI BIOS information and settings on board may be slightly different from this manual.*
- *The content of this manual is subject to be changed without notice. We will not be responsible for any mistakes found in this user's manual and any system damage that may be caused by wrong-settings.*

3.1 Main Menu

Once you enter AMI UEFI BIOS Setup Utility, the Main Menu will appear on the screen providing an overview of the basic system information.



BIOS Information

Shows system information including UEFI BIOS version, model name, built date, etc.

Memory Frequency

Shows the system memory frequency.

Total Memory

Shows system memory size, VGA shard memory will be excluded.

Access Level

Shows the access level of current user.

System Language

Choose the system default language.

System Date

Set the system date. Note that the 'Day' automatically changes when you set the date.

System Time

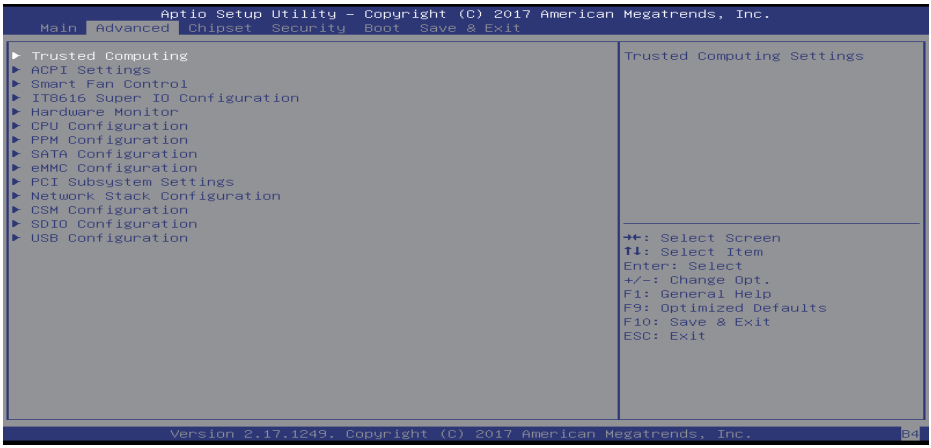
Set the system internal clock.

3.2 Advanced Menu

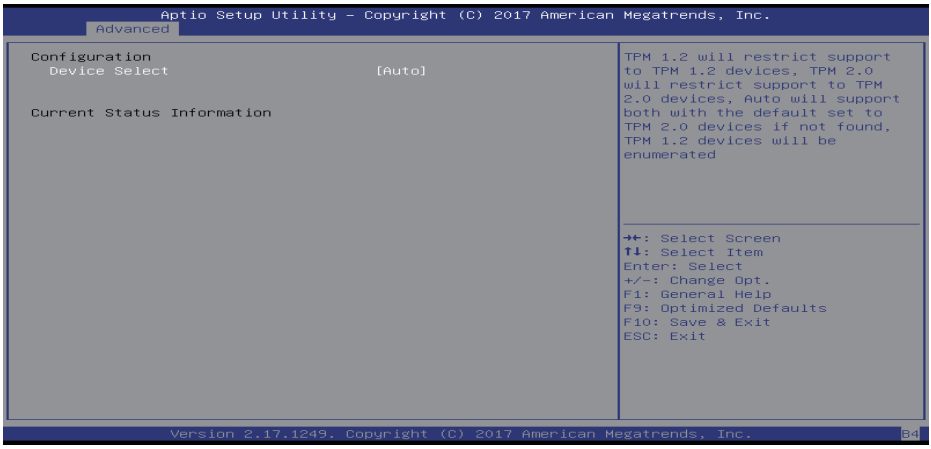
The Advanced Menu allows you to configure the settings of CPU, Super I/O, Power Management, and other system devices.

Note

» *Beware of that setting inappropriate values in items of this menu may cause system to malfunction.*
» *The options and default settings might be different by RAM or CPU models.*



Trusted Computing

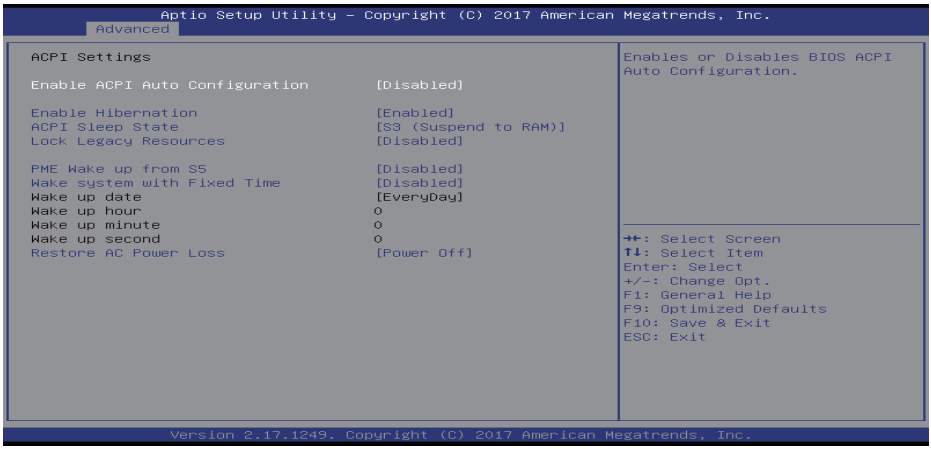


Device Select

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.

Options: Disabled (Default) / Enabled

ACPI Settings



Enable ACPI Auto Configuration

This item enables or disables BIOS ACPI Auto Configuration.

Options: Disabled (Default) / Enabled

Enable Hibernation

This item enables or disables system ability to hibernate (OS/S4 sleep state). This option may be not effective with some OS.

Options: Enabled (Default) / Disabled

ACPI Sleep State

This item selects the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

Options: S3 (Suspend to RAM)(Default) / Suspend Disabled

Lock Legacy Resources

This item enables or disables Lock of Legacy Resources.

Options: Disabled (Default) / Enabled

PME Wake up from S5

This item enables the system to wake from S5 using PEM event.

Options: Disabled (Default) / Enabled

Wake system with Fixed Time

This item enables or disables the system to wake on alarm event. When this item is enabled, the system will wake on the hr::min::sec specified.

Options: Disabled (Default) / Enabled

Wake up date

You can choose which date the system will boot up.

Wake up hour / Wake up minute / Wake up second

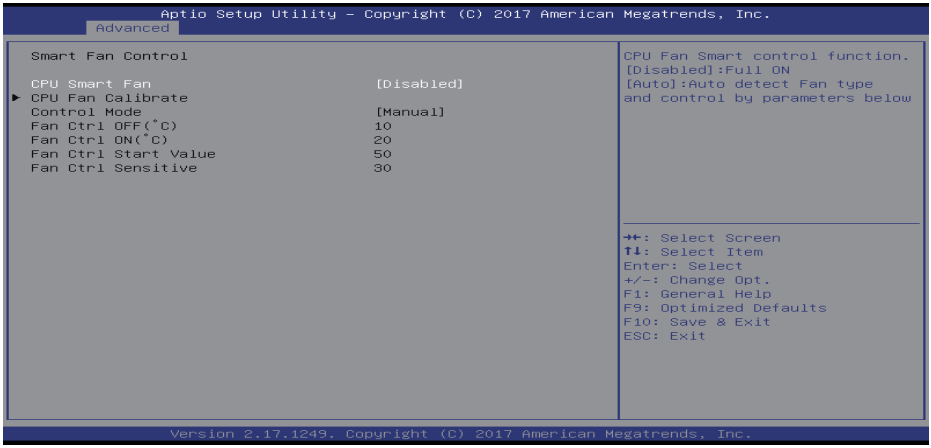
You can choose the system boot up time, input hour, minute and second to specify.

Restore AC Power Loss

This item specify what state to go to when power is re-applied after a power failure.

Options: Power Off (Default) / Power On / Last State

SMART FAN Control



CPU Smart FAN

This item allows you to control the CPU Smart Fan function.

Options: Disabled (Default) / Auto

CPU FAN Calibrate

Press [ENTER] to calibrate CPU FAN.

Control Mode

This item provides several operation modes of the fan.

Options: Manual (Default) / Quiet / Aggressive

Fan Ctrl OFF(°C)

When CPU temperature is lower than this value, the CPU fan will keep lowest RPM.

Options: 10 (°C) (default)

Fan Ctrl On(°C)

When CPU temperature is higher than this value, the CPU fan controller will turn on.

Options: 20 (°C) (Default)

Fan Ctrl Start Value

This item sets CPU FAN Start Speed Value.

Options: 50 (Default)

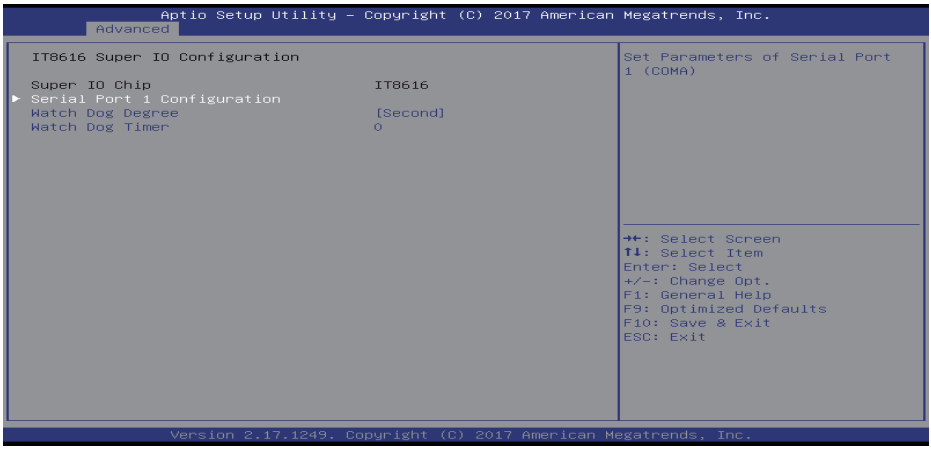
Fan Ctrl Sensitive

The bigger the numeral is, the higher the FAN speed is.

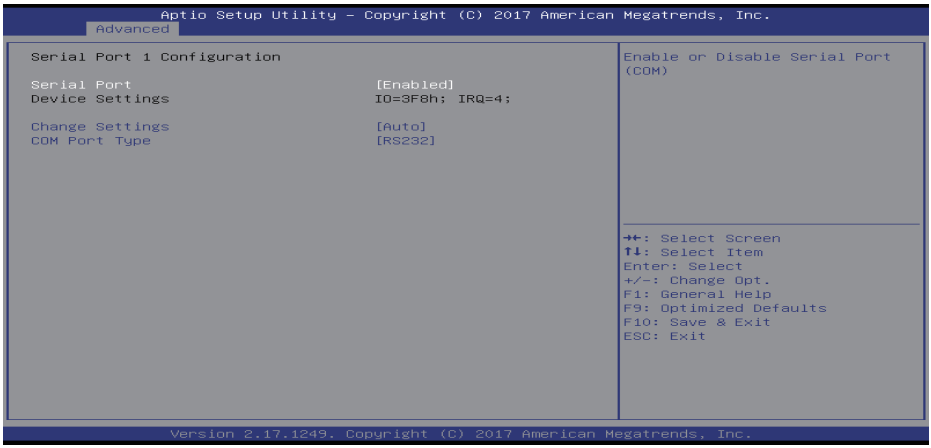
Options: 30 (Default)

Options: PCI IRQ Sharing (Default) / ISA IRQ

Super IO Configuration



Serial Port 1 Configuration



Serial Port

This item enables or disables Serial Port (COM).

Options: Enabled (Default) / Disabled

Change Settings

This item selects an optimal setting for Super IO device.

Options: Auto (Default) / IO=3F8h; IRQ=4 / IO=3F8h; IRQ= 3,4,5,6,7,9,10,11,12 / IO=2F8h; IRQ= 3,4,5,6,7,9,10,11,12 / IO=3E8h; IRQ= 3,4,5,6,7,9,10,11,12 / IO=2E8h; IRQ= 3,4,5,6,7,9,10,11,12

COM Port Type

This item selects COM Port Type selection.

Options: RS232 (Default) / RS485 / RS422

Watch Dog Degree

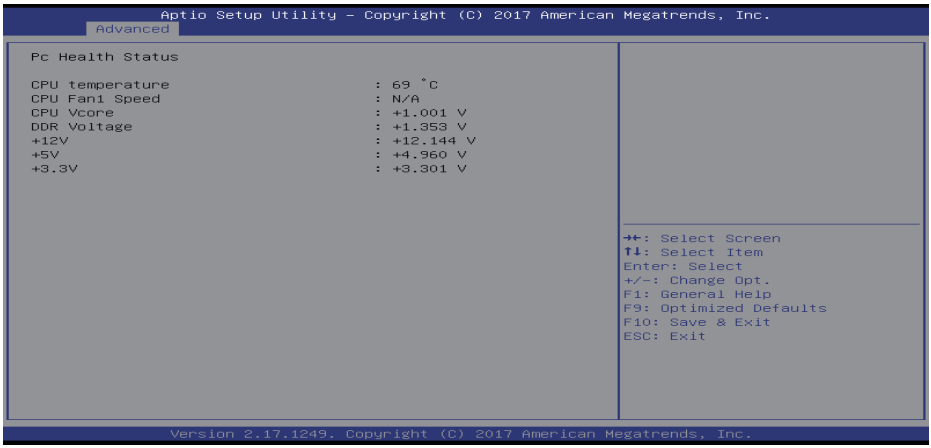
This item allows you to determine the functional degree of Watch Dog.

Options: Second (Default) / Minute

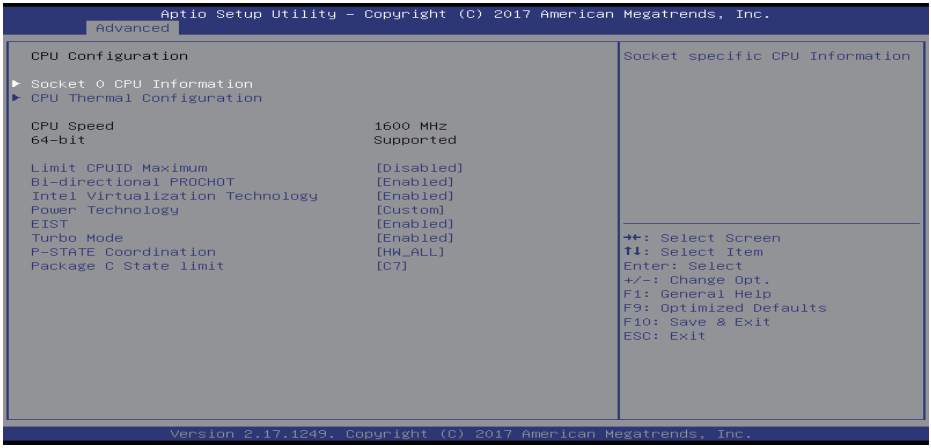
Watch Dog Timer

Options: 0 for disabled (Default) / Min=1, Max=65535

H/W Monitor



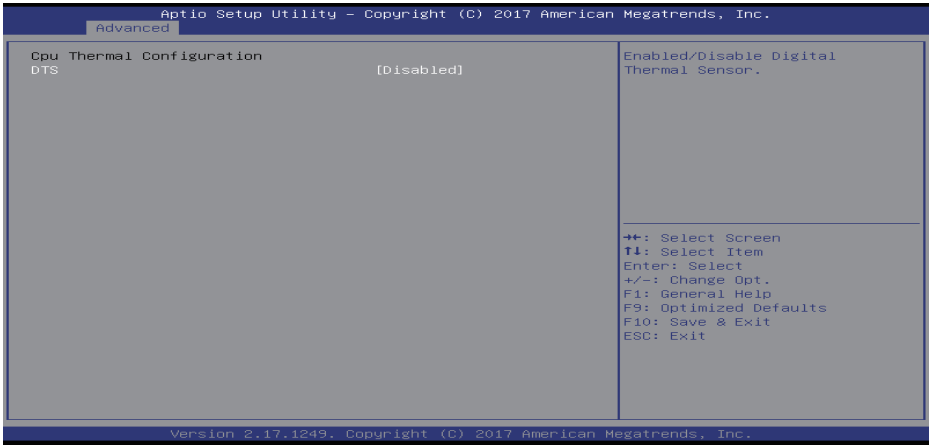
CPU Configuration



Socket 0 CPU Information

This item show Socket specific CPU information.

CPU Thermal Configuration



DTS

This item enables or disables Digital Thermal Sensor.

Options: Disabled (Default) / Enabled

Limit CPUID Maximum

When the computer is booted up, the operating system executes the CPUID instruction to identify the processor and its capabilities. Before it can do so, it must first query the processor to find out the highest input value CPUID recognizes. This determines the kind of basic information CPUID can provide the operating system.

Options: Disabled (Default) / Enabled

Bi-directional PROCHOT

When a processor thermal sensor trips (either core), the PROCHOT# will be driven. If bi-direction is enabled, external agents can drive PROCHOT# to throttle the processor.

Options: Enabled (Default) / Disabled

Intel Virtualization Technology

This item enables or disables Intel Virtualization Technology. When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Options: Enabled (Default) / Disabled

Power Technology

This item enables or disables the power management features.

EIST

This item enables or disables Intel SpeedSteps.

Options: Enabled (Default) / Disabled

Turbo Mode

This item enables or disables Turbo Mode.

Options: Enabled (Default) / Disabled

P-STATE Coordination

This item changes P-STATE Coordination.

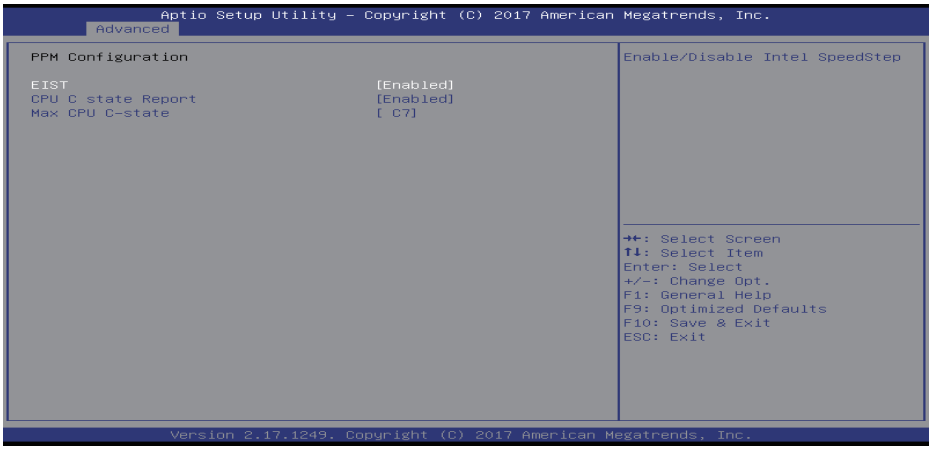
Options: HW_ALL (Default) / SW_ALL / SW_ANY

Package C state limit

This item enables or disables package C state limit.

Options: C7 (Default) / C1 / C3 / C6

PPM Configuration



EIST

This item enables or disables Intel SpeedSteps.

Options: Enabled (Default) / Disabled

CPU C state Report

This item enables or disables CPU C state report to OS.

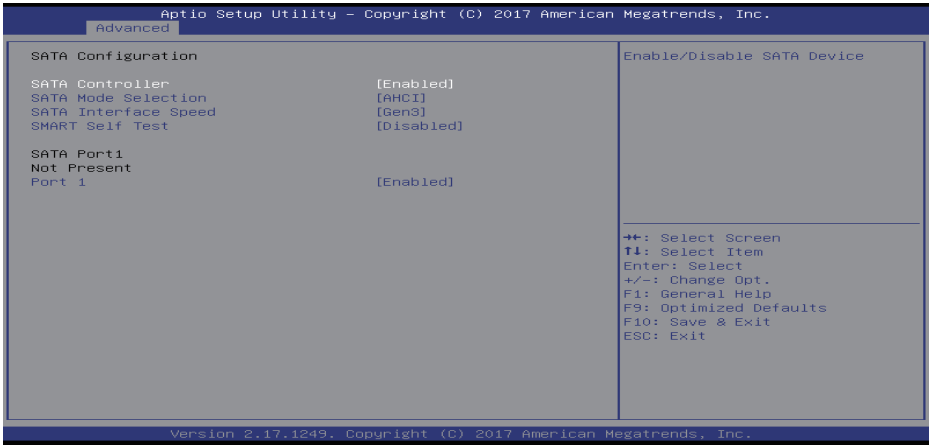
Options: Enabled (Default) / Disabled

Max CPU C-state

This option controlls Max C state that the processor will support.

Options: C7 (Default) / C6 / C1

SATA Configuration



SATA Controller

This item enables/disables SATA Device.

Options: Enabled (Default) / Disabled

SATA Mode Selection

This item determines how SATA controller operate.

Options: AHCI (Default)

SATA Interface Speed

This item select SATA interface speed, CHV A1 always with Gen1 speed.

Options: Gen3 (Default) / Gen1 / Gen2

SMART Self Test

Run SMART Self Test on all HDDs during POST.

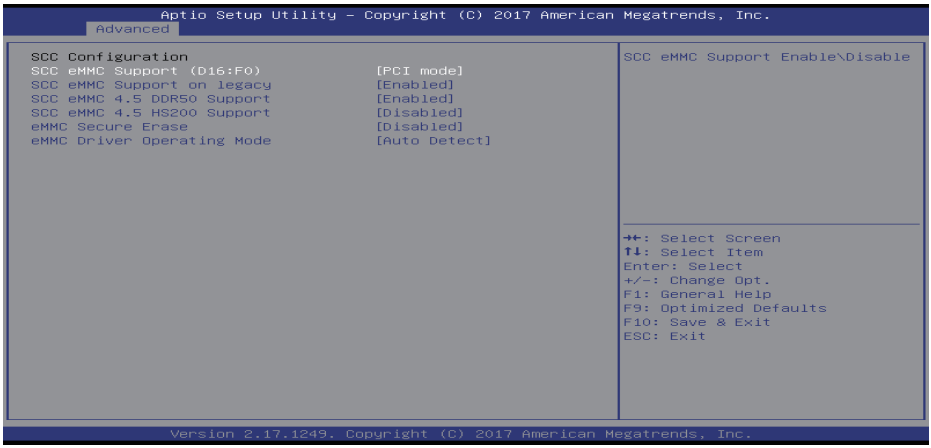
Options: Disabled (Default) / Enabled

SATA Port1

This item enables or disables SATA Port.

Options: Enabled (Default) / Disabled

eMMC Configuration



SCC eMMC Support (D16:F0)

This item enables or disables SCC eMMC Support.

Options: PCI mode (Default) / ACPI mode / Disabled

SCC eMMC Support on legacy

This item enables or disables SCC eMMC Support on legacy.

Options: Enabled (Default) / Disabled

SCC eMMC 4.5 DDR50 Support

This item enables or disables SCC eMMC 4.5 DDR50 Support.

Options: Enabled (Default) / Disabled

SCC eMMC 4.5 HS200 Support

This item enables or disables SCC eMMC 4.5 HS200 Support.

Options: Disabled (Default) / Enabled

eMMC Secure Erase

This item enables or disables eMMC Secure Erase. When enabled, all the data on eMMC will be erased.

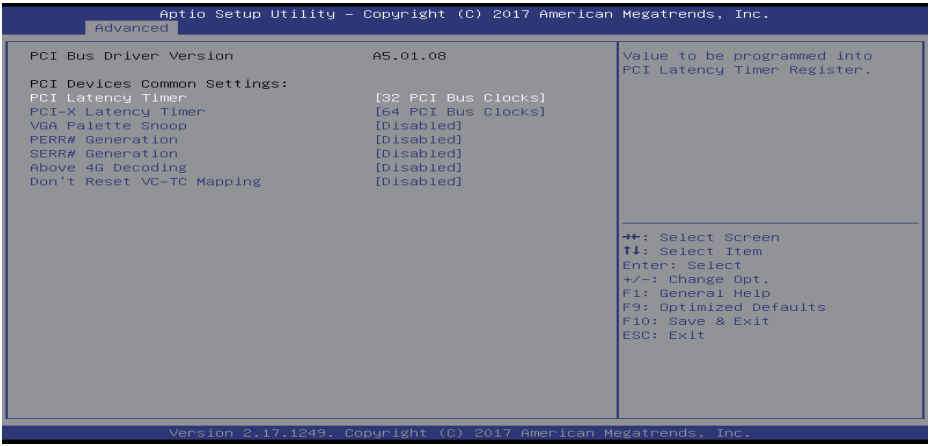
Options: Disabled (Default) / Enabled

eMMC Driver Operating Mode

This item allows you to select the operating frequency in eMMC driver.

Options: Auto Detect (Default) / Basic Frequency / Up to 26MHz / Up to 52MHz

PCI Subsystem Settings

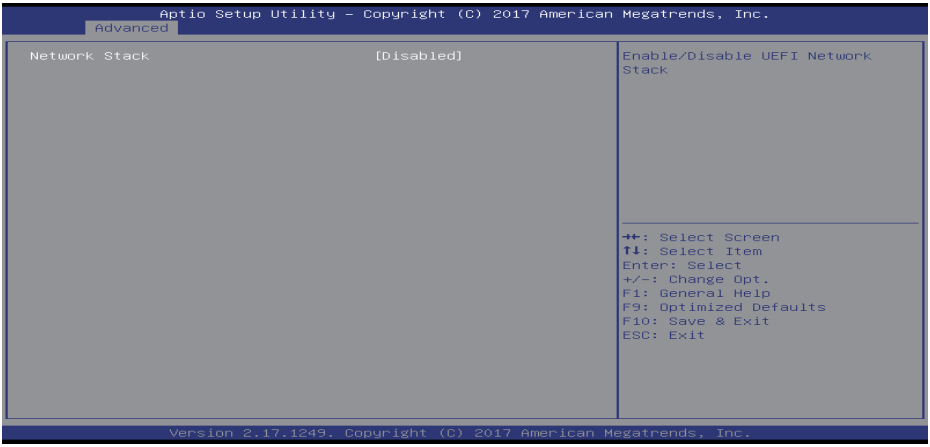


PCI Latency Timer

This item allows you to adjust value to be programmed into PCI Latency Timer Register.

Options: 32 PCI Bus Clocks (Default) / 64 PCI Bus Clocks / 96 PCI Bus Clocks / 128 PCI Bus Clocks / 160 PCI Bus Clocks / 192 PCI Bus Clocks / 224 PCI Bus Clocks / 248 PCI Bus Clocks

Network Stack Configuration



Network Stack

This item enables or disables UEFI network stack.

Options: Disabled (Default) / Enabled

» *Note: The following items appear only when you set the Network Stack function to [Enabled]*

IPv4 PXE Support

This item enables or disables IPv4 PXE Boot Support. If disabled IPv4 booth option will not be created.

Options: Enabled (Default) / Disabled

IPv6 PXE Support

This item enables or disables IPv6 PXE Boot Support. If disabled IPv6 booth option will not be created.

Options: Enabled (Default) / Disabled

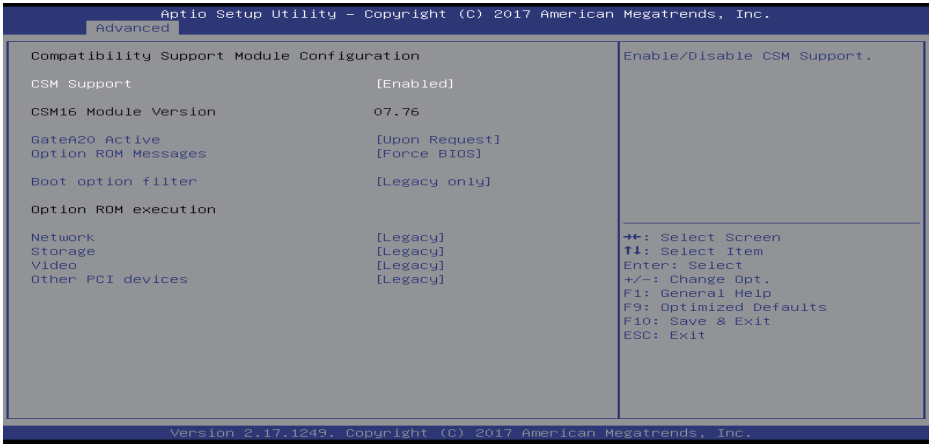
PXE boot wait time

Wait time to press ESC key to abort the PXE boot.

Media detect count

Number of times presence of media will be checked.

CSM Configuration



CSM Support

This item enables or disables CSM Support

Options: Enabled (Default) / Disabled

» *Note: The following items appear only when you set the CSM Support function to [Enabled]*

GateA20 Active

Upon Request – GA20 can be disabled using BIOS services. Always – do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.

Options: Upon Request (Default) / Always

Option ROM Messages

This item sets the display mode for option ROM.

Options: Force BIOS (Default) / Keep Current

INT19 Trap Response

BIOS reaction on INT19 trapping by Option ROM: IMMEDIATE – execute the trap right away; POSTPONED – execute the trap during legacy boot.

Options: Immediate (Default) / Postponed

Boot option filter

This option controls Legacy/UEFI ROMs priority.

Options: Legacy only (Default) / UEFI and Legacy / UEFI only

Network

This option controls the execution of UEFI and Legacy PXE OpROM

Options: Legacy (Default) / Do not launch / UEFI

Storage

This option controls the execution of UEFI and Legacy Storage OpROM.

Options: Legacy (Default) / Do not launch / UEFI

Video

This option controls the execution of UEFI and Legacy Video OpROM.

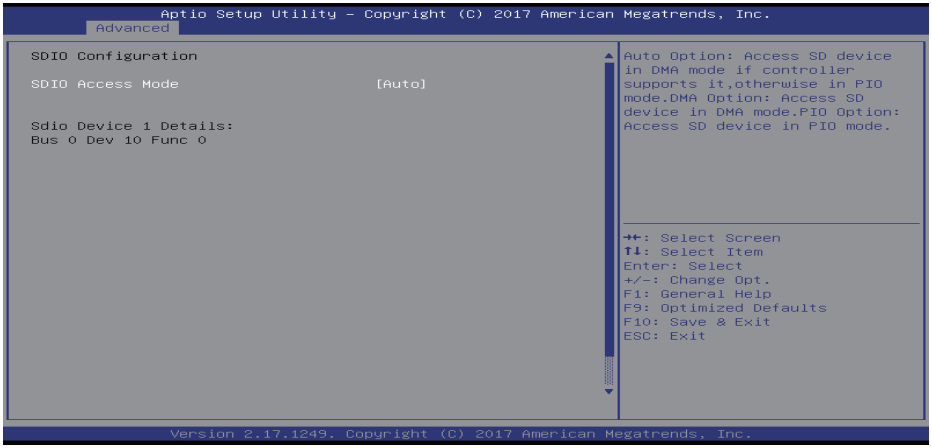
Options: Legacy (Default) / Do not launch / UEFI

Other PCI devices

This item determines OpROM execution policy for PCI devices other than Network, Mass storage or video defines which OpROM to launch.

Options: Legacy (Default) / Do not launch / UEFI

SDIO Configuration

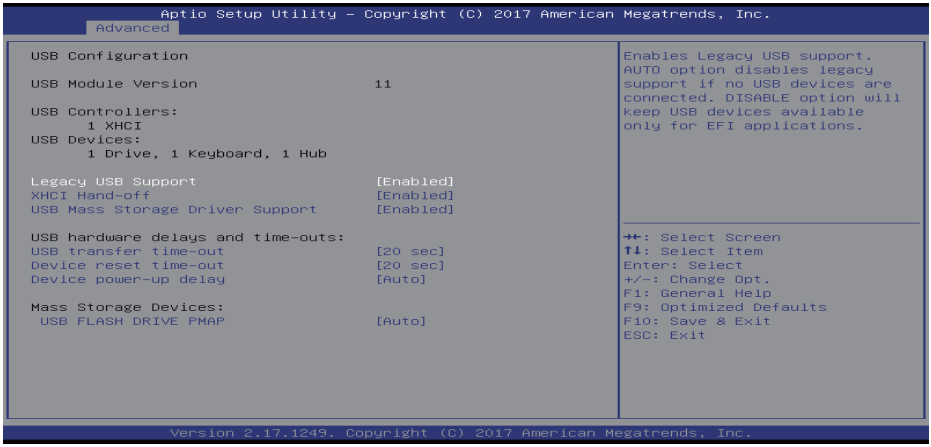


SDIO Access Mode

This item allows you to adjust SDIO Access Mode. Auto Option: Access SD device in DMA mode if controller supports it, otherwise in PIO mode. DMA Option: Access SD device in DMA mode. PIO Option: Access SD device in PIO mode.

Options: Auto (Default) / ADMA / SDMA / PIO

USB Configuration



Legacy USB Support

This item allows you to adjust Legacy USB Supoort function. AUTO option disables legacy support if no USB devices are connected. Disable option will keep USB devices available only for EFI applications

Options: Enabled (Default) / Disabled / Auto

XHCI Hand-Off

This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

Options: Enabled (Default) / Disabled

USB Mass Storage Driver Support

The item allows you to enable or disable USB Mass Storage Driver Support.

Options: Enabled (Default) / Disabled

USB transfer time-out

The time-out value for Control, Bulk, and Interrupt transfers.

Options: 20 sec (Default) / 1 sec / 5 sec / 10 sec

Device reset time-out

The item sets USB mass storage device Start Unit command time-out.

Options: 20 sec (Default) / 10 sec / 30 sec / 40 sec

Device power-up delay

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 100ms, for a Hub port the delay is taken from Hub descriptor.

Options: Auto (Default) / Manual

Device power-up delay in seconds

Delay range is 1 ~ 40 seconds, in one second increments.

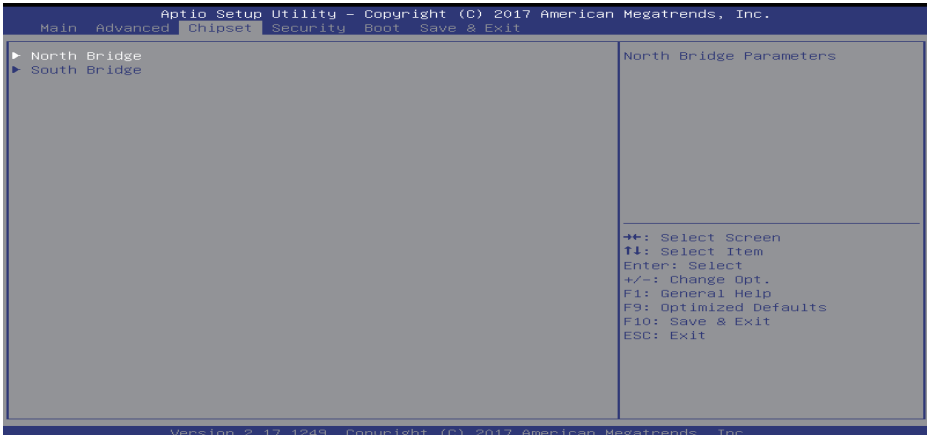
Options: 5 (Default)

3.3 Chipset Menu

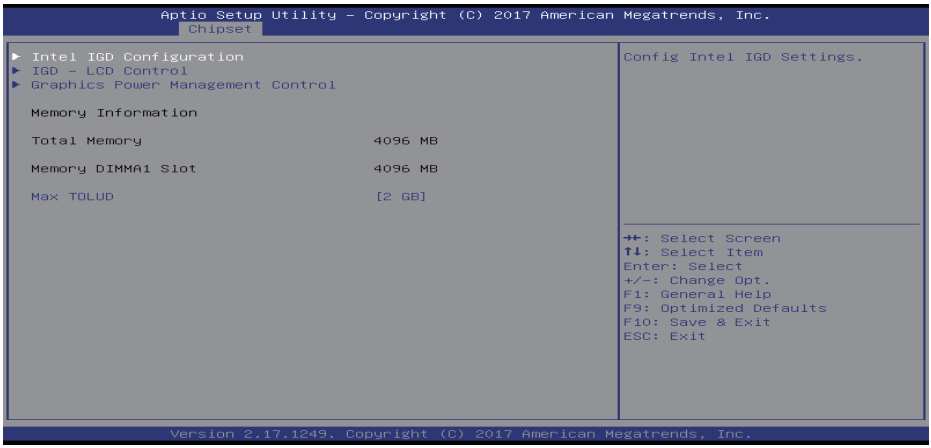
This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed of the CPU itself uses when communicating with its own special components.

Note

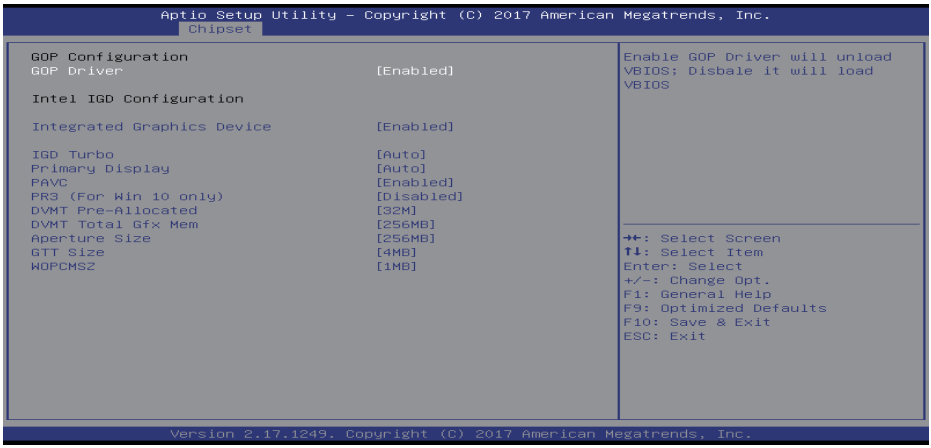
» *Beware of that setting inappropriate values in items of this menu may cause system to malfunction.*



North Bridge



Intel IGD Configuration



GOP Driver

This item enables or disables GDP Driver. Enable GOP Driver will unload VBIOS; Disable GOP Driver will load VBIOS.

Options: Enabled (Default) / Disabled

Integrated Graphics Device

Enable: Enable Integrated Graphics Device (IGD) when selected as the Primary Video Apaptor. Disable: Always disable IGD.

Options: Enabled (Default) / Disabled

IGD Turbo

This item select the IGD Turbo feature, if Auto selected, IGD Turbo will only be enabled when SOC steeping is B0 or above.

Options: Auto (Default) / Enabled / Disabled

Primary Display

This item selects which of IGD/PCI Graphics device should be Primary Display.

Options: Auto (Default) / IGD / PCIe

PAVC

This item enables or disables Protected Audio Video Control.

Options: Enabled (Default) / Disabled

PR3 (For Win 10 only)

This item enables or disables PR3 (For Win 10 only).

Options: Disabled (Default) / Enabled

DVMT Pre-Allocated

This item selects DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

Options: 32M (Default) / 64M / 96M / 128M / 160M / 192M / 224M / 256M / 288M / 320M / 352M / 384M / 416M / 448M / 480M / 512M

DVMT Total Gfx Mem

This item selects DVMT 5.0 Total Graphic Memory size used by the Internal Graphics Device.

Options: 256MB (Default) / 128MB / MAX

Aperture Size

This item selects the Aperature Size.

Options: 256MB (Default) / 128MB / 512MB

GTT Size

This item selects the GTT Size.

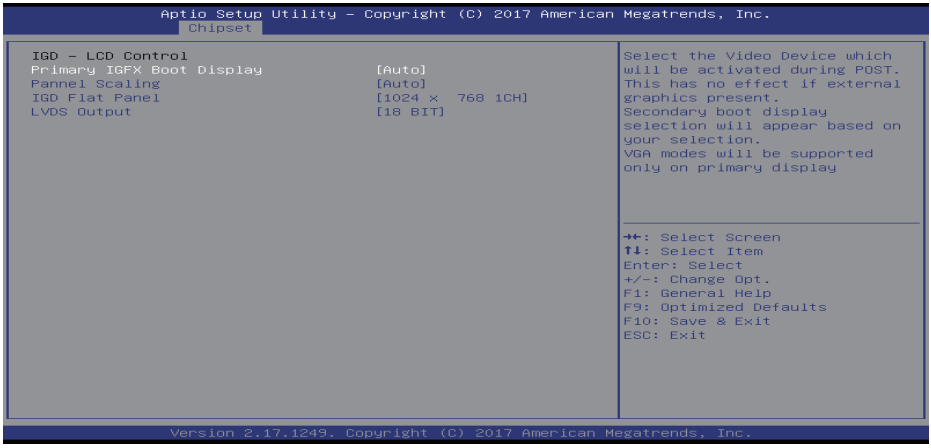
Options: 4MB (Default) / 2MB / 8MB

WOPCMSZ

This item selects a size for WOPCMSZ.

Options: 1MB (Default) / 2MB / 4MB / 8MB

IGD - LCD Control



Primary IGFX Boot Display

This item selects the Video device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display.

Options: Auto (Default) / LVDS / HDMI2 / HDMI1

Pannel Scaling

This item selects the LCD panel scaling option used by Internal Graphics Device.

Options: Auto (Default) / Centering / stretching

IGD Flat Panel

This item IGD Flat Panel options.

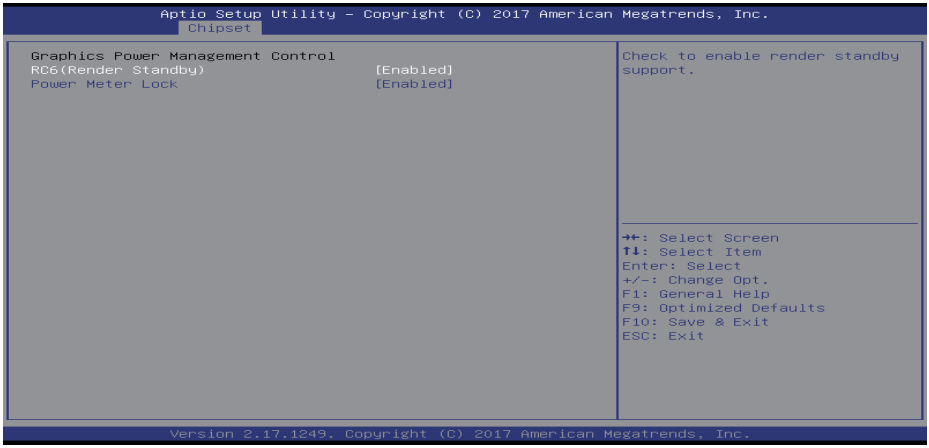
Options: 1024 x 768 1CH (Default) / 800 x 600 1CH / 1280 x 1024 2CH / 1366 x 768 1CH / 1440 x 900 2CH / 1600 x 900 2CH / 1600 x 1200 2CH / 1920 x 1080 2CH / 1920 x 1200 2CH

LVDS Output

This item selects the LVDS Output is 18 or 24 Bit.

Options: 18 BIT (Default) / 24 BIT

Graphics Power Management Control



RC6(Render Standby)

This item check to enable render standby support.

Options: Enabled (Default) / Disabled

Power Meter Lock

This item enable or disable Power Meter Lock.

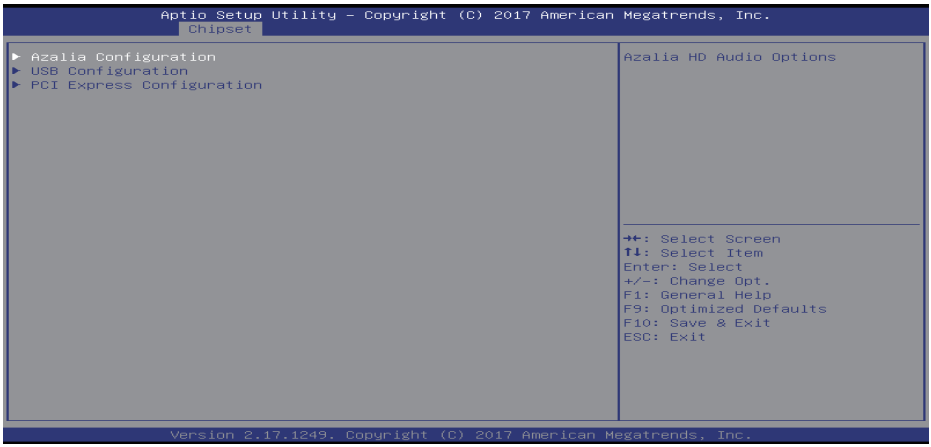
Options: Enabled (Default) / Disabled

Max TOLUD

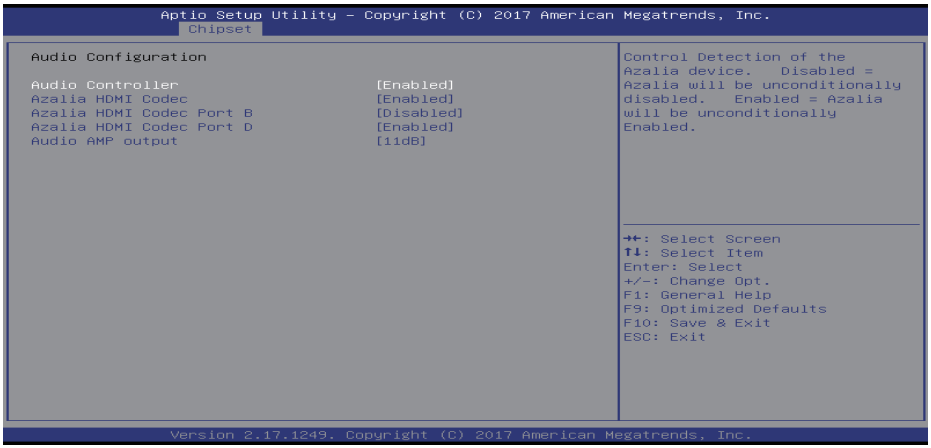
This item sets maxium value of TOLUD.

Options: 2GB (Default) / 3GB

South Bridge



Azalia Configuration



Azalia Controller

This item controls detection of the Azalia device. Disabled = Azalia will be unconditionally disabled. Enabled = Azalia will be unconditionally Enabled.

Options: Enabled (Default) / Disabled

Azalia HDMI Codec

This item enables or disables internal HDMI codec for Azalia.

Options: Enabled (Default) / Disabled

Azalia HDMI Codec Port B

This item enables or disables internal HDMI Port codec for Azalia.

Options: Disabled (Default) / Enabled

Azalia HDMI Codec Port D

This item enables or disables internal HDMI Port codec for Azalia.

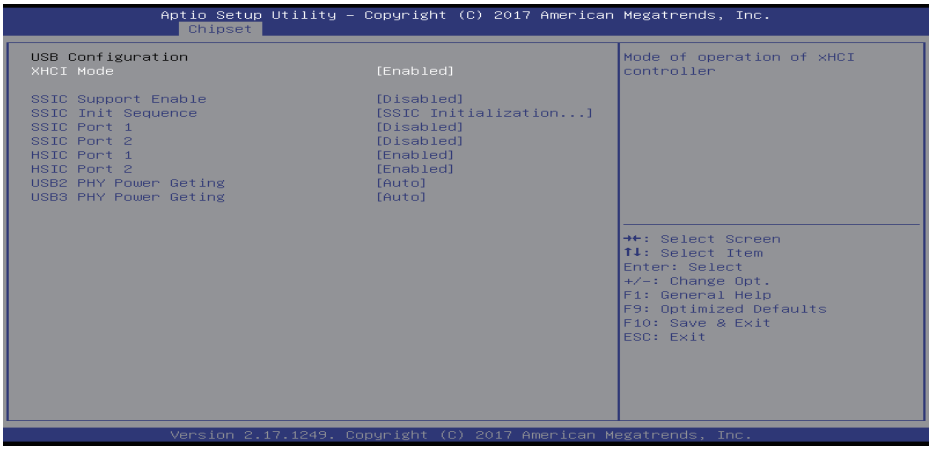
Options: Enabled (Default) / Disabled

Audio AMP output

This item selects Audio AMP output dB value.

Options: 11dB (Default) / 14dB / 19dB / 25dB

USB Configuration



XHCI Mode

The item selects Mode of operation of xHCI controller.

Options: Enabled (Default) / Disabled

SSIC Support Enable

The item enable or disable SSIC Support.

Options: Disabled (Default) / Enabled

SSIC Init Sequence

The item selects SSIC Initialization Sequence 1 - Windows, SSIC Initialization Sequence 2 - Android.

Options: SSIC Initialization Sequence 1 (Default) / SSIC Initialization Sequence 2

SSIC Port 1/2

The item enable or disable SSIC Port 1/2.

Options: Disabled (Default) / Enabled

HSIC Port 1/2

The item enable or disable HSIC Port 1/2.

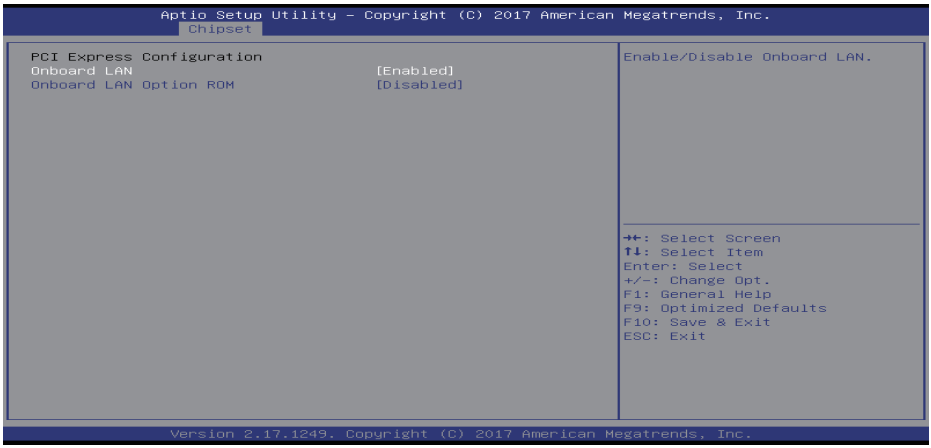
Options: Enabled (Default) / Disabled

USB2/3 PHY Power Geting

The item configure USB2/3 PHY Power Gating.

Options: Auto (Default) / Enabled / Disabled

PCI Express Configuration



Onboard LAN

This item enables or disables Onboard PCIE LAN.

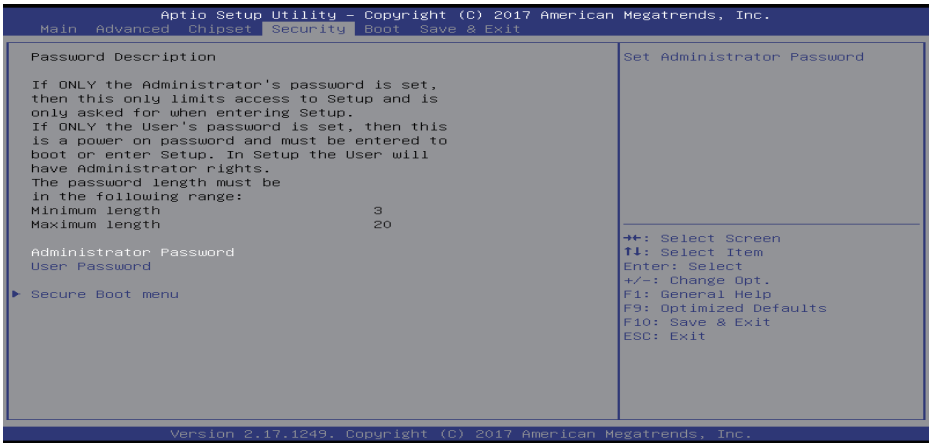
Options: Enabled (Default) / Disabled

Onboard LAN Ootion ROM

This item enables or disables onboard LAN Option ROM.

Options: Disabled (Default) / Enabled

3.4 Security Menu



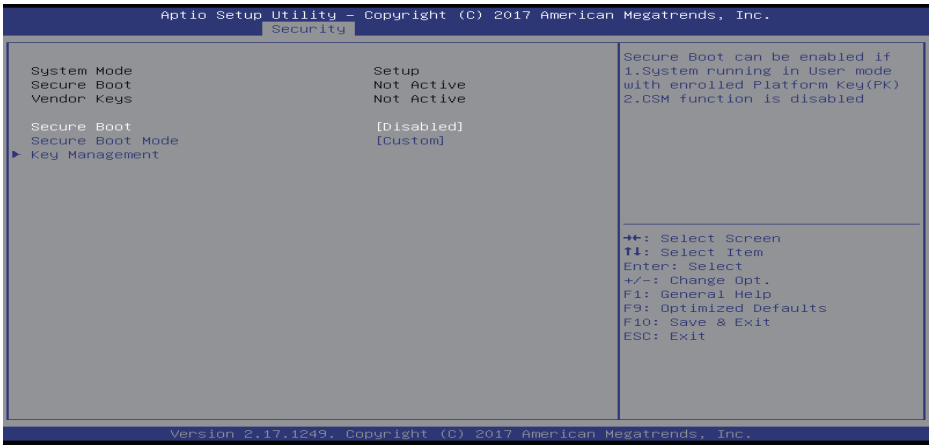
Administrator Password

This item sets Administrator Password.

User Password

This item sets User Password.

Secure Boot menu



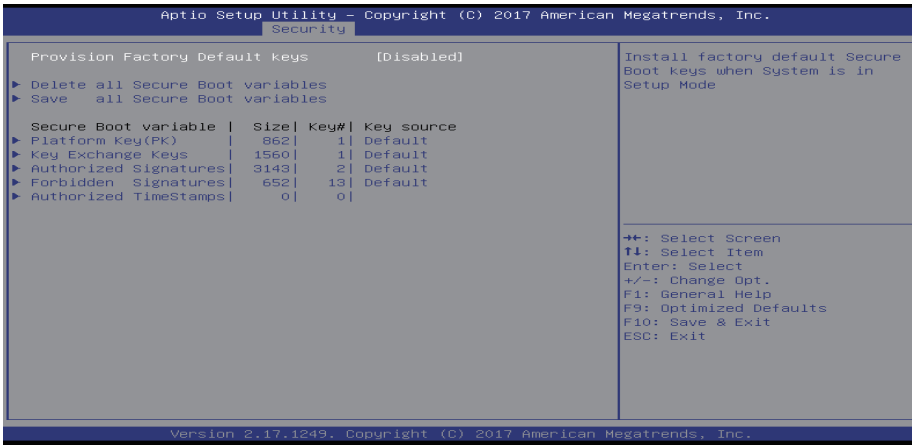
Secure Boot

Secure Boot can be enabled if 1. System running in user mode with enrolled Platform Key(PK)
2.CSM function is disabled.

Options: Disable (Default) / Enabled

» *Note: The following items appear only when you set the Secure Boot Mode function to [Custom]*

Key Management



Provision Factory Default Keys

It allows you to install factory default secure boot keys when system is in setup mode.

Options: Disabled (Default) / Enabled

Delete all Secure Boot variables

Force System to Setup Mode - clear all Secure Boot Variables (PK, KEK, db, dbt, dbx). Change takes effect after reboot.

Save all Secure Boot variables

Save NVRAM content of all Secure Boot policy variables to the files (EFI_SIGNATURE_LIST data format) in root folder on a target file system device.

Platform Key (PK)

Delete PK – Allows you to delete the PK file from your system.

Set new PK – Allows you set new PK file.

Key Exchange Key Database (KEK)

Delete KEK – Allows you to delete the KEK file from your system.

Set new KEK – Allows you set new KEK file.

Append Var to KEK – Allows you append Var to KEK.

Authorized Signature Database (DB)

Delete DB – Allows you to delete the DB file from your system.

Set new DB – Allows you set new DB file.

Append Var to DB – Allows you append Var to DB.

Forbidden Signature Database (DBX)

Delete DBX – Allows you to delete the DBX file from your system.

Set new DBX – Allows you set new DBK file.

Append Var to DBX – Allows you append Var to DBX.

Authorized Timestamps Database (DBT)

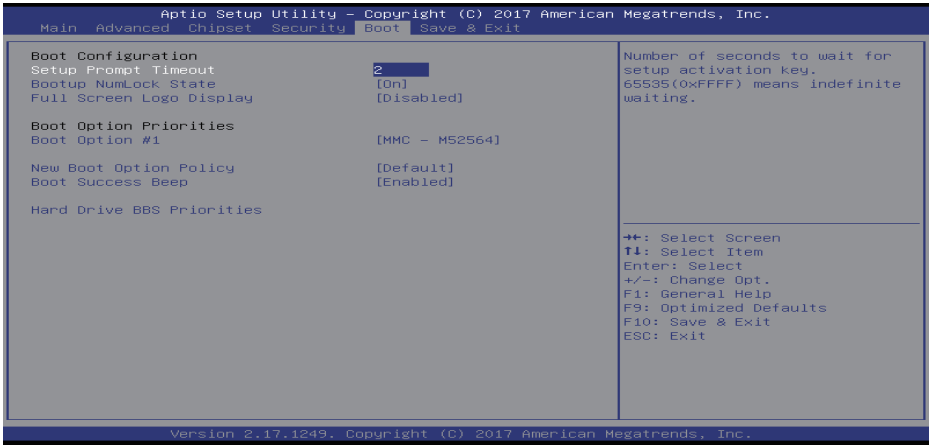
Delete DBT – Allows you to delete the DBT file from your system.

Set new DBT – Allows you set new DBT file.

Append Var to DBT – Allows you append Var to DBT.

3.5 Boot Menu

This menu allows you to setup the system boot options.



Setup Prompt Timeout

This item sets number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

Options: 2 (Default)

Bootup NumLock State

This item selects the keyboard NumLock state.

Options: On (Default) / Off

Full Screen Logo Display

This item allows you to enable or disable Full Screen Logo Show function.

Options: Disabled (Default) / Enabled

Boot Option

The items specify the boot device priority sequence from the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system.

New Boot Option Policy

This item controls the placement of newly detected UEFI boot options.

Options: Default (Default) / Place First / Place Last

Boot Success Beep

When this item is set to Enabled, BIOS will let user know boot success with beep.

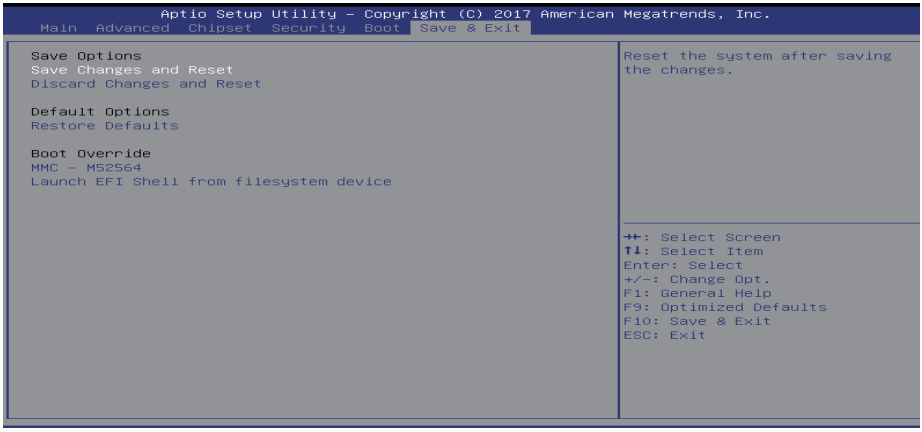
Options: Enabled (Default) / Disabled

Hard Drive BBS Priorities

The items allows you to set the order of the legacy devices in this group.

3.6 Exit Menu

This menu allows you to load the optimal default settings, and save or discard the changes to the BIOS items.



Save Changes and Reset

Reset the system after saving the changes.

Discard Changes and Reset

Reset system setup without saving any changes.

Restore Defaults

Restore / Load Default values for all the setup options.