Hi-Fi P61S2 UEFI BIOS Manual

UEFI 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.
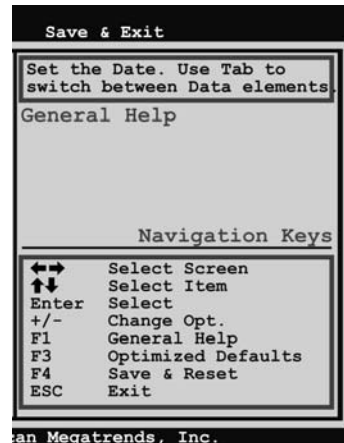
Supported CPUs

This AMI UEFI BIOS supports the Intel 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.

```
 Save & Exit
┌──────────────────────────────────┐
│ Set the Date. Use Tab to         │
│ switch between Data elements.     │
│ General Help                      │
│                                  │
│                                  │
│                Navigation Keys   │
├──────────────────────────────────┤
│ ←→      Select Screen            │
│ ↑↓      Select Item              │
│ Enter   Select                   │
│ +/-     Change Opt.              │
│ F1      General Help             │
│ F3      Optimized Defaults       │
│ F4      Save & Reset             │
│ ESC     Exit                     │
└──────────────────────────────────┘
 an Megatrends, Inc.
```

Notice

■   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.

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.

```
              Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
    Main  Advanced  Chipset  Boot  Security  Performance  Save & Exit

    BIOS Information                                    Set the Date. Use Tab to
                                                        switch between Data elements.
    Compliency
    Project Code
    Model Name
    BIOS Version
    Build Date

    Total Memory

    System Language            [English]

    System Date                [Sun 01/01/2012]         →←: Select Screen
    System Time                [00:00:00]               ↑↓: Select Item
                                                        Enter: Select
    Access Level               Administrator            +/-: Change Opt.
                                                        F1: General Help
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit




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```

BIOS Information

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

Total Memory

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

System Date

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

System Time

Set the system internal clock.
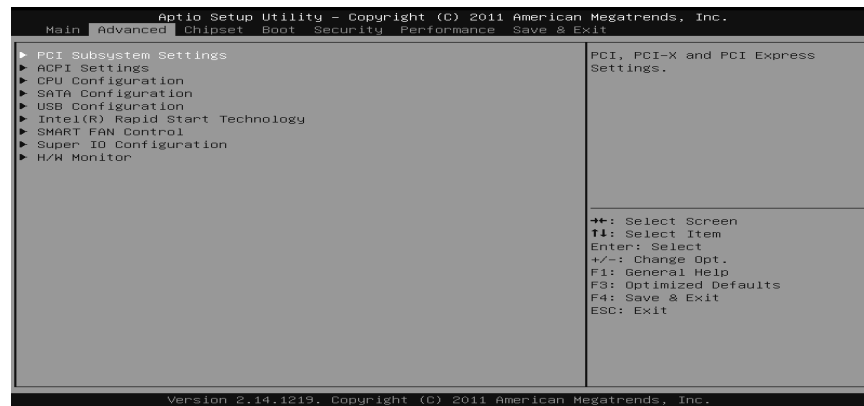
Access Level

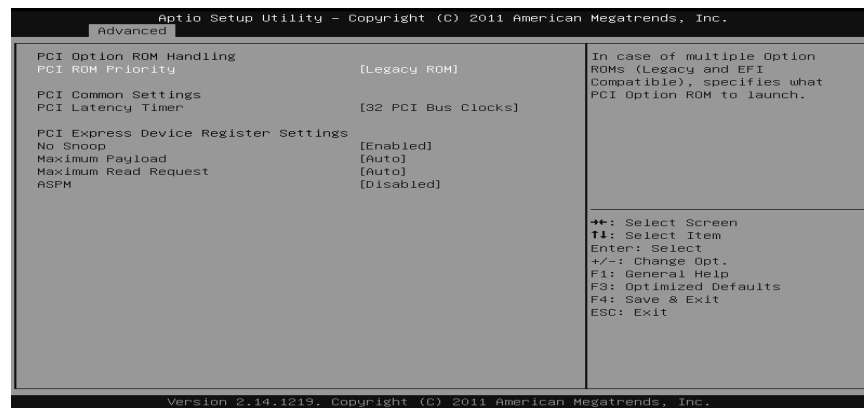Shows the access level of current user.

2 Advanced Menu

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

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

```
                 Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
         Main  Advanced  Chipset  Boot  Security  Performance  Save & Exit

  ▶ PCI Subsystem Settings                                  PCI, PCI-X and PCI Express
  ▶ ACPI Settings                                           Settings.
  ▶ CPU Configuration
  ▶ SATA Configuration
  ▶ USB Configuration
  ▶ Intel(R) Rapid Start Technology
  ▶ SMART FAN Control
  ▶ Super IO Configuration
  ▶ H/W Monitor

                                                            →←: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit



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```

PCI Subsystem Settings

```
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  PCI Option ROM Handling                                   In case of multiple Option
  PCI ROM Priority                    [Legacy ROM]          ROMs (Legacy and EFI
                                                            Compatible), specifies what
  PCI Common Settings                                       PCI Option ROM to launch.
  PCI Latency Timer                   [32 PCI Bus Clocks]

  PCI Express Device Register Settings
  No Snoop                            [Enabled]
  Maximum Payload                     [Auto]
  Maximum Read Request                [Auto]
  ASPM                                [Disabled]

                                                            →←: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit



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```

PCI ROM Priority

In case of multiple option ROMs (Legacy and EFI Compatible), this item specifies what PCI Option ROM to launch
Options: Legacy ROM (Default) / EFI Compatible ROM

PCI Latency Timer

This item sets the 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

No Snoop

This item enables or disables PCI Express Device No Snoop option.
Options: Enabled (Default) / Disabled

Maximum Payload

This item sets Maximum Payload of PCI Express Device or allows System BIOS to select the value.
Options: Auto (Default) / 128 Bytes / 256 Bytes / 512 Bytes / 1024 Bytes / 2048 Bytes / 4096 Bytes
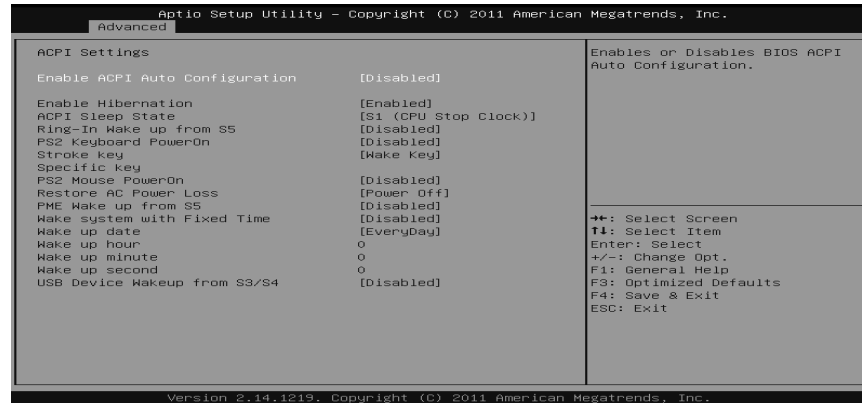
Maximum Read Request

This item sets Maximum Read Request Size of PCI Express Device or allows System BIOS to select the value.
Options: Auto (Default) / 128 Bytes / 256 Bytes / 512 Bytes / 1024 Bytes / 2048 Bytes / 4096 Bytes

ASPM Support

This item sets the ASPM Level: Force LO – Force all links to LO State; Auto – BIOS auto configures; Disabled – Disables ASPM.
Options: Disabled (Default) / Auto / Force LO

Hi-Fi P61S2 UEFI BIOS Manual

ACPI Settings

```
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    Advanced

 ACPI Settings                                          Enables or Disables BIOS ACPI
                                                        Auto Configuration.
 Enable ACPI Auto Configuration        [Disabled]

 Enable Hibernation                    [Enabled]
 ACPI Sleep State                      [S1 (CPU Stop Clock)]
 Ring-In Wake up from S5               [Disabled]
 PS2 Keyboard PowerOn                  [Disabled]
 Stroke key                            [Wake Key]
 Specific key
 PS2 Mouse PowerOn                     [Disabled]
 Restore AC Power Loss                 [Power Off]
 PME Wake up from S5                   [Disabled]
 Wake system with Fixed Time           [Disabled]       →←: Select Screen
 Wake up date                          [EveryDay]        ↑↓: Select Item
 Wake up hour                          0                 Enter: Select
 Wake up minute                        0                 +/-: Change Opt.
 Wake up second                        0                 F1: General Help
 USB Device Wakeup from S3/S4          [Disabled]        F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit



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```

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 OSes.
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: S1 (CPU Stop Clock) (Default) / Suspend Disabled / S3 (Suspend
          to RAM)

Ring-In Wake up from S5

This item enables the system to wake from S5 using Ring-In event.
Options: Disabled (Default) / Enabled

PS2 Keyboard PowerOn

This item allows you to control the keyboard power on function.
Options: Disabled (Default) / Any Key / Stroke Key / Specific Key

Stroke Keys Selected

This item will show only when Keyboard PowerOn is set "Stroke Key."
Options: Wake Key (Default) / Power Key / Ctrl+F1 / Ctrl+F2 / Ctrl+F3 /
          Ctrl +F4 / Ctrl+F5 / Ctrl+F6

Specific Key Enter

This item will show only when Keyboard PowerOn is set "Specific Key."
Press Enter to set Specific key.

PS2 Mouse PowerOn

This item allows you to control the mouse power on function.
Options: Disabled (Default) / Enabled

Restore AC Power Loss

This setting specifies how your system should behave after a power fail or
interrupts occurs. Power Off: Leaving the system in power-off status after
power recovers. Power ON: Powering on the system immediately when
power returns. Last State: 1. Leaving the system in power-off if the system
shuts down at DC off status; 2. Powering on the system immediately if the
system shuts down at DC on status.
Options: Power Off (Default) / Power On / Last State

PME Wake up from S5

The item enables the system to wake from S5 using PME event.
Options: Disabled (Default) / Enabled

Wake system with Fixed Time

This item enables or disables the system to wake on by 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.
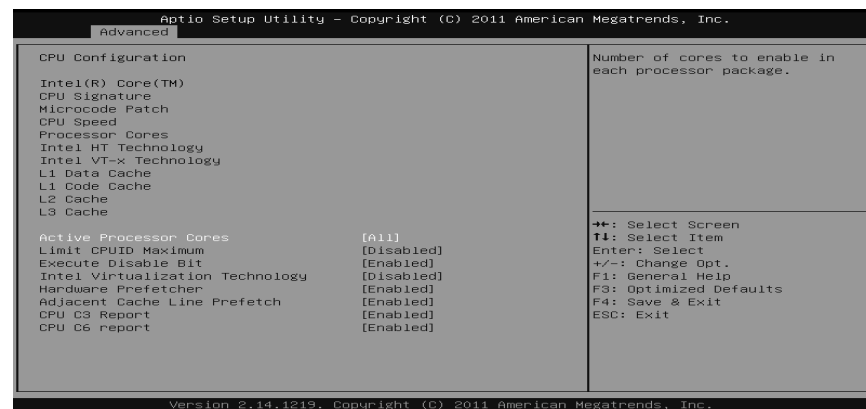
Wake up hour / Wake up minute / Wake up second

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

USB Device Wakeup from S3/S4

This item allows you to enable or disabled the USB resume from S3/S4 function.
Options: Disabled (Default) / Enabled

CPU Configuration

Active Processor Cores

This item sets number of cores to enable in each processor package.
Options: All (Default) / 1 / 2 / 3

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

Execute-Disable Bit

XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3.).
Options: Enabled (Default) / Disabled

Intel Virtualization Technology

Virtualization Technology can virtually separate your system resource into several parts, thus enhance the performance when running virtual machines or multi interface systems.
Options: Disabled (Default) / Enabled

Hardware Prefetcher

The processor has a hardware prefetcher that automatically analyzes its requirements and prefetches data and instructions from the memory into the Level 2 cache that are likely to be required in the near future. This reduces the latency associated with memory reads.
Options: Enabled (Default) / Disabled

Adjacent Cache Line Prefetch

The processor has a hardware adjacent cache line prefetch mechanism that automatically fetches an extra 64-byte cache line whenever the processor requests for a 64-byte cache line. This reduces cache latency by making the next cache line immediately available if the processor requires it as well.
Options: Enabled (Default) / Disabled

CPU C3 Report

This item enables or disables CPU C3 (ACPI C2) repost to OS.
Options: Enabled (Default) / Disabled

CPU C6 Report

This item enables or disables CPU C6 (ACPI C3) repost to OS.
Options: Enabled (Default) / Disabled

SATA Configuration

SATA Controller(s)

This item enables/disables Serial ATA Device.
Options: Enabled (Default) / Disabled

SATA Mode Selection

This item determines how SATA controller(s) operate.
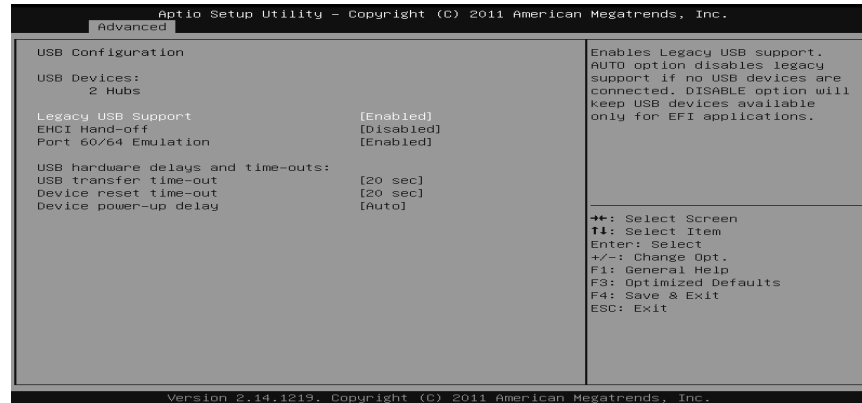Options: IDE (Default) / AHCI

SMART Self Test

This item runs SMART Self Test on all HDDs during POST.
Options: Disabled (Default) / Enabled

USB Configuration

```
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       Advanced

  USB Configuration                                          Enables Legacy USB support.
                                                             AUTO option disables legacy
  USB Devices:                                               support if no USB devices are
       2 Hubs                                                connected. DISABLE option will
                                                             keep USB devices available
  Legacy USB Support                 [Enabled]               only for EFI applications.
  EHCI Hand-off                      [Disabled]
  Port 60/64 Emulation               [Enabled]

  USB hardware delays and time-outs:
  USB transfer time-out              [20 sec]
  Device reset time-out              [20 sec]
  Device power-up delay              [Auto]
                                                             →←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit



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```

Legacy USB Support

This item determines if the BIOS should provide legacy support for USB devices like the keyboard, mouse, and USB drive. This is a useful feature when using such USB devices with operating systems that do not natively support USB (e.g. Microsoft DOS or Windows NT).
Options: Enabled (Default) / Disabled / Auto

EHCI Hand-Off

This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.
Options: Disabled (Default) / Enabled

Port 60/64 Emulation

This items enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.
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.
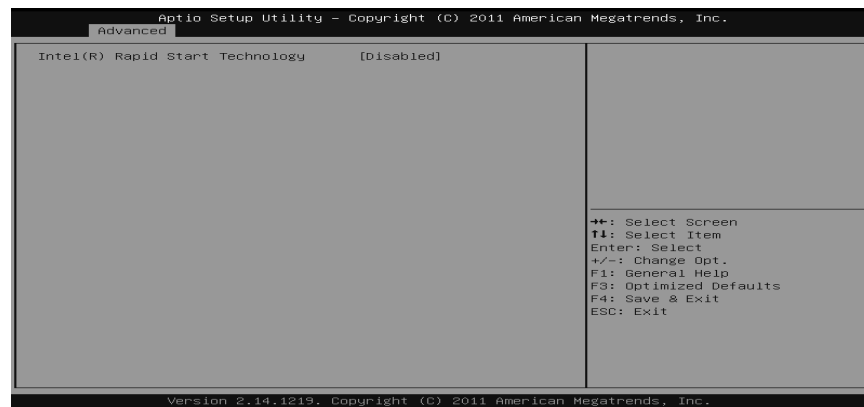Options: 20 sec (Default) / 10 sec / 30 sec / 40 sec

Device power-up delay

"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)

Intel(R) Rapid Start Technology

Intel(R) Rapid Start Technology

This item enables/disables Intel(R) Rapid Start Technology.
Options: Disabled (Default) / Enabled

Entry on S3 RTC Wake

This item sets iFFS invocation upon S3 RTC wake .
Options: Enabled (Default) / Disabled

Entry After

This item enables RTC wake timer at S3 entry.
Options: 10 minutes (Default) / Immediately / 1 minute / 2 minutes / 5
minutes / 15 minutes / 30 minutes / 1 hour / 2 hours

Active Page Threshold Support

This item allows system to support RST with small partition.
Options: Disabled (Default) / Enabled

Active Memory Threshold

This item allows system to try to support RST when partition size > Active
Page Threshold size in MB. When set to zero, the item will be in AUTO mode
and check if partition size is enough at S3 entry.
Options: 0 (Default)

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: Quiet / Aggressive / Manual

Fan Ctrl OFF(℃)

When CPU temperature is lower than this value, the CPU fan will keep lowest RPM.
Options: 10 (℃) (default)

Fan Ctrl On(℃)

When CPU temperature is higher than this value, the CPU fan controller will turn on.
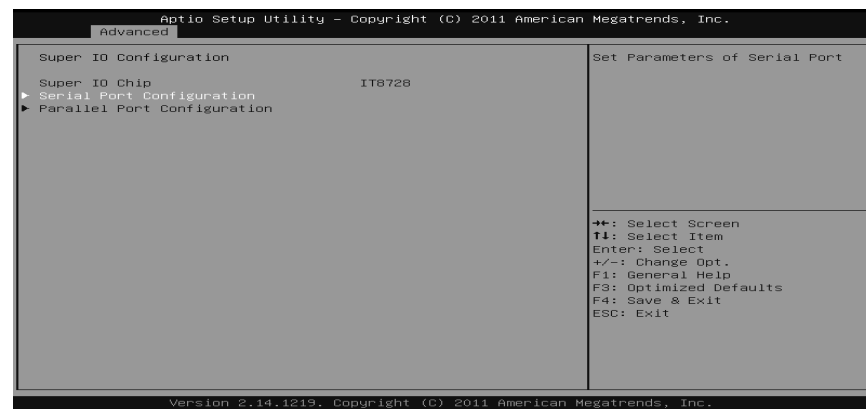Options: 20 (℃) (Default)

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)

Super IO Configuration

Serial Port Configuration

```
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      Advanced

   Serial Port 1 Configuration                              Enable or Disable Serial Port
                                                            (COM)
   Serial Port                         [Enabled]
   Device Settings                     IO=3F8h; IRQ=4;

   Change Settings                     [Auto]




                                                            →←: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit



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```

Serial Port
This item enables or disables Serial Port (COM).
Options: Enabled (Default) / Disabled

Change Settings
This item allows you to select 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

Parallel Port Configuration

```
            Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
      Advanced

   Parallel Port Configuration                              Enable or Disable Parallel
                                                            Port (LPT/LPTE)
   Parallel Port                       [Enabled]
   Device Settings                     IO=378h; IRQ=5;

   Change Settings                     [Auto]
   Device Mode                         [STD Printer Mode]




                                                            →←: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit



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```

Parallel Port
This item enables or disables Parallel Port (LPT/LPTE).
Options: Enabled (Default) / Disabled

Change Settings
This item allows you to select an optimal setting for Super IO device.
Options: Auto (Default) / IO=378h; IRQ=5 / IO=378h; IRQ=5, 6, 7, 9, 10, 11,
           12 / IO=278h; IRQ=5, 6, 7, 9, 10, 11, 12 / IO=3BCh; IRQ=5, 6, 7, 9,
           10, 11, 12

Device Mode
This item allows you to determine the Printer Port mode.
Options: STD Printer Mode (Default) / SPP Mode / EPP-1.9 and SPP Mode
           / EPP-1.7 and SPP Mode

H/W Monitor

Shutdown Temperature

This item allows you to set up the CPU shutdown Temperature.
Options: Disabled (Default) / 70℃/158℉ / 75℃/167℉ / 80℃/176℉ /
           85℃/185℉ / 90℃/194℉

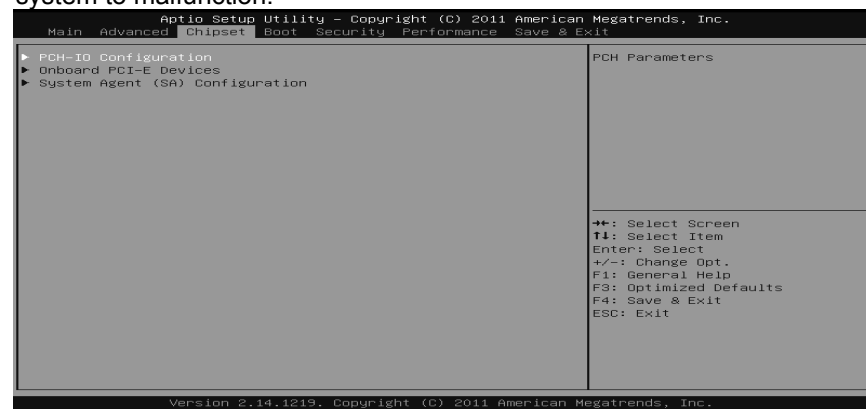# 3 Chipset Menu

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.

Notice

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

PCH-IO Configuration

PCI Express Configuration

```
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                  Chipset

                                                              PCI Express Active State Power
   PEX1_1 Slot                                                Management settings.
    ASPM                             [Disabled]
    PCIe Speed                       [Auto]
   PEX1_2 Slot
    ASPM                             [Disabled]
    PCIe Speed                       [Auto]
   PEX1_3 Slot
    ASPM                             [Disabled]
    PCIe Speed                       [Auto]
   PEX1_4 Slot
    ASPM                             [Disabled]
    PCIe Speed                       [Auto]
   PEX1_5 Slot                                                →←: Select Screen
    ASPM                             [Disabled]               ↑↓: Select Item
    PCIe Speed                       [Auto]                   Enter: Select
                                                              +/−: Change Opt.
                                                              F1: General Help
                                                              F3: Optimized Defaults
                                                              F4: Save & Exit
                                                              ESC: Exit



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```

ASPM
This item sets PCI Express Active State Power Management settings.
Options: Disabled (Default) / L0s / L1 / L0sL1 / Auto

PCIe Speed
This item selects PCI Express port speed.
Options: Auto (Default) / Gen1 / Gen2

USB Configuration

```
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                  Chipset

   USB Configuration                                          Control the USB EHCI (USB 2.0)
                                                              functions.
   EHCI1                            [Enabled]                 One EHCI controller must
   EHCI2                            [Enabled]                 always be enabled.




                                                              →←: Select Screen
                                                              ↑↓: Select Item
                                                              Enter: Select
                                                              +/−: Change Opt.
                                                              F1: General Help
                                                              F3: Optimized Defaults
                                                              F4: Save & Exit
                                                              ESC: Exit



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```

EHCI1/2
This item controls the USB EHCI (USB2.0) functions. One EHCI controller
must always be enabled.
Options: Enabled (Default) / Disabled

PCH Azalia Configuration

```
              Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
    Chipset

    PCH Azalia Configuration                              Control Detection of the
                                                          Azalia device.
    Azalia                          [Auto]                Disabled = Azalia will be
                                                          unconditionally disabled
                                                          Enabled = Azalia will be
                                                          unconditionally Enabled
                                                          Auto = Azalia will be enabled
                                                          if present, disabled otherwise.


                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/−: Change Opt.
                                                          F1: General Help
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit



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```

Azalia

This item controls detection of the Azalia device. Disabled = Azalia will be unconditionally disabled. Enabled = Azalia will be unconditionally Enabled. Auto = Azalia will be enabled if present, disabled otherwise.
Options: Auto (Default) / Disabled / Enabled

EuP Control

When EuP is enabled, the system will meet EuP requirement.
Options: Disabled (Default) / Enabled in S5 / Enabled in S4-S5

SLP_S1 Assertion Width

This item selects a minimum assertion width of the SLP_S4# signal.
Options: 4-5 Seconds (Default) / Disabled / 1-2 Seconds / 2-3 Seconds / 3-4 Seconds

Onboard PCI-E Devices

```
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            Chipset

    LAN0 MAC ID = B8-97-5A-2A-CA-32                    Control the PCI Express Root
                                                       Port.
    Onboard PCIE Giga LAN              [Enabled]
    Onboard LAN Option ROM            [Disabled]




                                                       →←: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F3: Optimized Defaults
                                                       F4: Save & Exit
                                                       ESC: Exit



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```

Onboard PCIE Giga LAN

This item enables/disables Onboard PCIE Giga LAN.
Options: Enabled (Default) / Disabled

Onboard LAN Option ROM

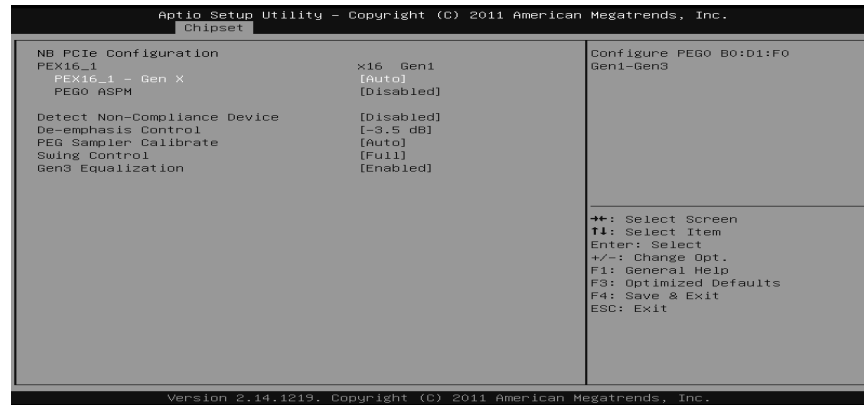This item enables/disables Onboard LAN Option ROM.
Options: Disabled (Default) / Enabled

North Bridge

```
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            Chipset

  ► NB PCIe Configuration                             Config NB PCI Express Settings.
  ► Memory Configuration




                                                       →←: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F3: Optimized Defaults
                                                       F4: Save & Exit
                                                       ESC: Exit



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NB PCIe Configuration

```
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       Chipset

  NB PCIe Configuration                                        Configure PEG0 B0:D1:F0
  PEX16_1                              ×16  Gen1               Gen1-Gen3
     PEX16_1 — Gen X                   [Auto]
     PEG0 ASPM                         [Disabled]

  Detect Non-Compliance Device        [Disabled]
  De-emphasis Control                  [-3.5 dB]
  PEG Sampler Calibrate                [Auto]
  Swing Control                        [Full]
  Gen3 Equalization                    [Enabled]

                                                             →←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/—: Change Opt.
                                                             F1: General Help
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit



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```

PEX16_1 – Gen X
This item configures PEG0 B0:D1:F0 Gen1-Gen3.
Options: Auto (Default) / Gen1 / Gen2 / Gen3

PEG0 ASPM
This item controls ASPM support for the PEG: Device 1 Funtion0. This has no effect if PEG is not the currently active device.
Options: Disabled (Default) / Auto / ASPM L0s / ASPM L1 / ASPM L0sL1

Detect Non-Compliance Device
This item detects Non-Compliance PCI Express Device in PEG.
Options: Disabled (Default) / Enabled

De-emphasis Control
This item configures the De-emphasis control on PEG.
Options: -3.5 dB (Default) / -6 dB

PEG Sampler Calibrate
This item enables or disables PEG Sampler Calibrate. Auto means Disabled for SNB MB/DT, Enabled for IVB A0 B0.
Options: Auto (Default) / Enabled / Disabled

Swing Control
This item performs PEG Swing Control, on IVB C0 and Later.
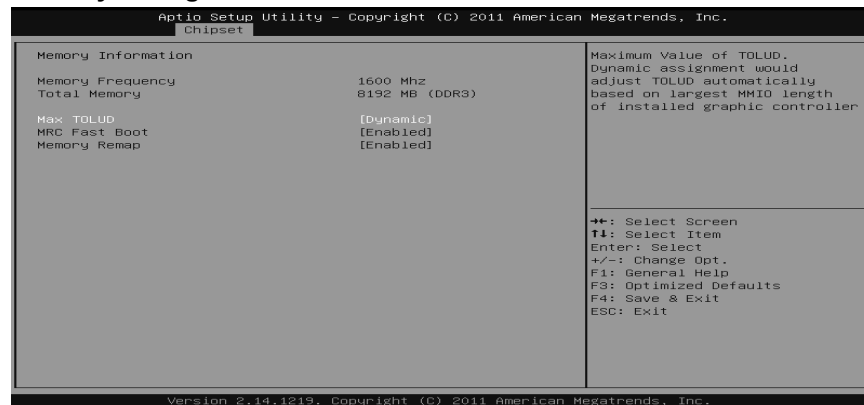Options: Full (Default) / Reduced / Half

Gen3 Equalization
This item performs PEG Gen3 Equalization steps.
Options: Enabled (Default) / Disabled

Memory Configuration

```
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                  Chipset

   Memory Information                                    Maximum Value of TOLUD.
                                                         Dynamic assignment would
   Memory Frequency              1600 Mhz                adjust TOLUD automatically
   Total Memory                  8192 MB (DDR3)          based on largest MMIO length
                                                         of installed graphic controller
   Max TOLUD                     [Dynamic]
   MRC Fast Boot                 [Enabled]
   Memory Remap                  [Enabled]


                                                         →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit



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```

Max TOLUD
This item sets maximum value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller.
Options: Dynamic (Default) / 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

MRC Fast Boot
This item enables or disables MRC Fast Boot.
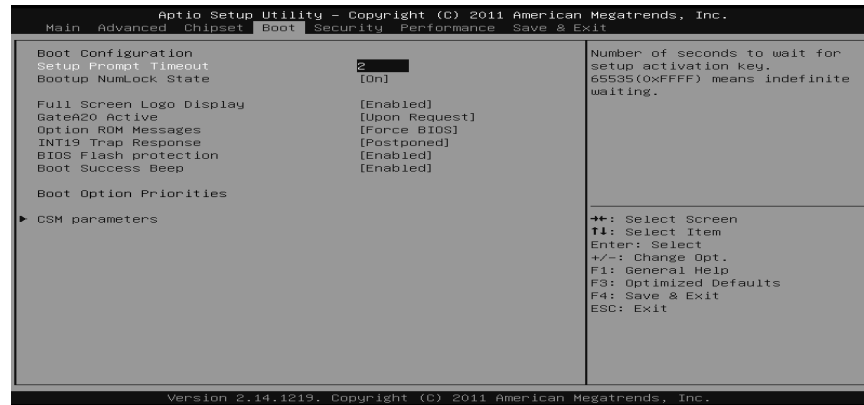Options: Enabled (Default) / Disabled

Memory Remap
This item enables or disables memory remap above 4G.
Options: Enabled (Default) / Disabled

4 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.
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/disable Full Screen LOGO Show function.
Options: Enabled (Default) / Disabled

GateA20 Active

Upon Request – FA20 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: Postponed (Default) / Immediate

BIOS Flash protection

While enabled, it can't flash write and flash erase by SMI.
Options: Enabled (Default) / Disabled

Boot Success Beep

When this item is set to Enabled, BIOS will let user know boot success with beep.
Options: Enabled (Default) / Disabled

UEFI Boot

This option enables/disables boot from the UEFI Devices.
Options: Disabled (Default) / Enabled

Boot Option #1/#2

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.
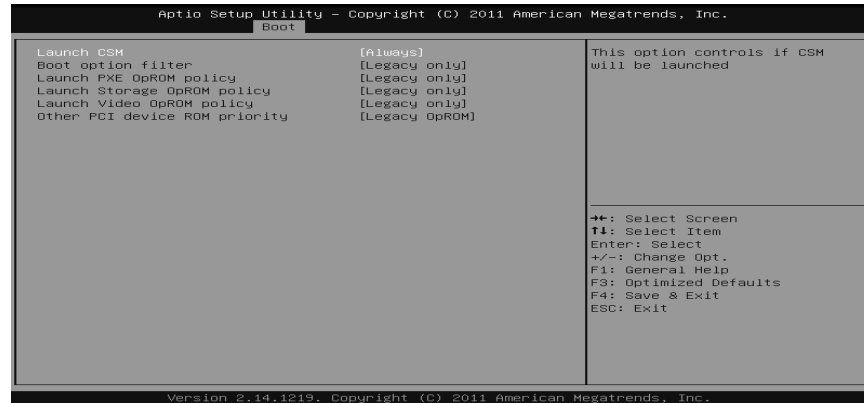
CD/DVD ROM Drive BBS Priorities

This item sets the order of the legacy devices in this group.

Hard Drive BBS Priorities

This item sets the order of the legacy devices in this group.

CSM parameters

Launch CSM

This option controls if CSM will be launched.
Options: Always (Default) / Never

Boot option filter

This option controls what devices system can boot to.
Options: Legacy only (Default) / UEFI and Legacy / UEFI only

Launch PXE OpROM policy

This item controls the execution of UEFI and Legacy PXE OpROM
Options: Legacy only (Default) / UEFI only / Do not launch

Launch Storage OpROM policy

This item controls the execution of UEFI and Legacy Storage OpROM
Options: Legacy only (Default) / UEFI only / Do not launch

Launch Video OpROM policy

This item controls the execution of UEFI and Legacy Video OpROM
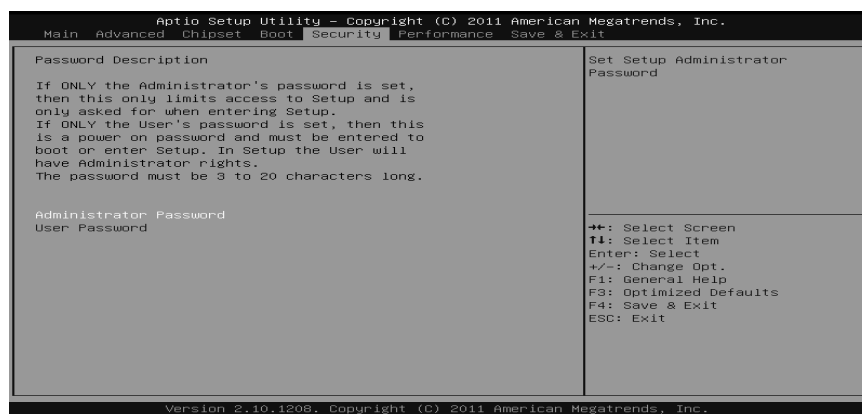Options: Legacy only (Default) / UEFI only / Do not launch

Other PCI device ROM priority

For PCI devices other than Network, Mass storage or Video defines which
OpROM to launch
Options: Legacy OpROM (Default) / UEFI OpROM

5 Security Menu

Administrator Password

This item sets Administrator Password.

User Password

This item sets User Password.

6 Performance Menu

This submenu allows you to change voltage and clock of various devices. (However, we suggest you use the default setting. Changing the voltage and clock improperly may damage the device.)

Notice

- 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.

```
          Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
   Main  Advanced  Chipset  Boot  Security  Performance  Save & Exit

   Notice : BIOS setting causes system boot fail.           You can set the entrance Page
            Please load default or set again properly!      when you enter UEFI BIOS Setup
   Start Page                          [Page – Main]

   ====Manual CPU system====
   Fixed CPU Ratio                     [Disabled]
   CPU Ratio                           34
   Clock Spread Spectrum               [Enabled]
   CPU C1E                             [Enabled]
   Enhanced Intel SpeedStep Technolog  [Enabled]
   Internal PLL Override               [Disabled]

   ====Manual CPU Power system====
   CPU Core Current Max(Amp)           105              →←: Select Screen
   Power Limit 1 Value(Watt)           77               ↑↓: Select Item
   Power Limit 2 Value(Watt)           97               Enter: Select
                                                        +/-: Change Opt.
   ====Manual CPU Turbo system====                      F1: General Help
   CPU Turbo Mode                      [Enabled]        F3: Optimized Defaults
   1 Core Ratio Limit                  38               F4: Save & Exit
   2 Core Ratio Limit                  38               ESC: Exit
   3 Core Ratio Limit                  37
   4 Core Ratio Limit                  36

   ====Manual Memory system====

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```

Start Page

You can set the entrance page when you enter UEFI BIOS Setup.
Options: Page – Main (Default) / Page – Advanced / Page – Chipset /
           Page – Boot / Page – Security / Page – Performance / Page –
           Save & Exit

Fixed CPU Ratio

This item enables/disables Fixed CPU Ratio all the time.
Options: Disabled (Default) / Enabled

CPU Ratio

This item allows you to set the CPU ratio. This item is adjustable only when Fixed CPU Ratio is set to Enabled.
Options: 35 (Default) / 10 ~ 50

CPU Spread Spectrum

This item sets CPU Clock Spread Spectrum.
Options: Enabled (Default) / Disabled

CPU C1E

C1E is "Enhanced Halt State" function, this function helps to save power and decrease heat by lowering CPU frequency while the processor is not working.
Options: Enabled (Default) / Disabled

Enhanced Intel SpeedStep Technology

This item enables/disables Enhanced Intel SpeedStep Technology.
Options: Enabled (Default) / Disabled

Internal PLL Override

If you enable this function, it will cause the S3 resume failure.
Options: Disabled (Default) / Enabled

CPU Core Current Max (Amp)

This item sets the Max instantaneous current allowed at any given time.
Options: 105 (Default)

Power Limit 1 Value (Watt)

This item sets the power limit value which CPU must not exceed over a specific time.
Options: 77 (Default)

Power Limit 2 Value (Watt)

This item sets Power Limit Value which CPU must not exceed in a short duration time.
Options: 97 (Default)

CPU Turbo Mode

This item enables/disables CPU Turbo Mode.
Options: Enabled (Default) / Disabled

DDR3 DRAM Timing Control

This item allows you to choose to manually or automatically regulate the DRAM Timing.
Options: By SPD (Default) / Manual / XMP Profile 1 / XMP Profile 2

DDR3 DRAM Multiplier

This item allows you to set DDR3 DRAM Multiplier.

DRAM Command Rate

This item allows you to select command rate of DDR3.
Options: Auto (Default) / 1T / 2T

CAS# Latency (tCL)

This item allows you to select CAS Latency of DDR3.
Options: 11 (Default) / 3 ~ 15

RAS# to CAS# Delay (tRCD)

This item allows you to select Row Address to Column Address Delay of DDR3.
Options: 11 (Default) / 3 ~ 15

Row Precharge Time (tRP)

This item allows you to select Row Precharge Time of DDR3.
Options: 11 (Default) / 3 ~ 15

RAS# Active Time (tRAS)

This item allows you to select Row Active Time of DDR3.
Options: 28 (Default) / 9 ~ 63

Write Recovery Time (tWR)

This item allows you to select Internal Write to Read Command Delay of DDR3.
Options: 12 (Default) / 3 ~ 31

Row Refresh Cycle Time (tRFC)

This item allows you to select Minimum Refresh Recovery Time of DDR3.
Options: 128 (Default) / 15 ~ 255

Write to Read Delay (tWTR)

This item allows you to select Internal Write to Read Command Delay of DDR3.
Options: 6 (Default) / 3 ~ 31

Active to Active Delay (tRRD)

This item allows you to select Row Active to Row Active Delay of DDR3.
Options: 5 (Default) / 4 ~ 15

Read CAS# Precharge (tRTP)

This item allows you to select Read to Precharge Delay of DDR3.
Options: 6 (Default) / 4 ~ 15

Four Active Window Delay (tFAW)

This item allows you to select Four Active Window Delay of DDR3.
Options: 24 (Default) / 4 ~ 63

CAS Write Latency (CWL)

This item allows you to select CAS Write Latency of DDR3.
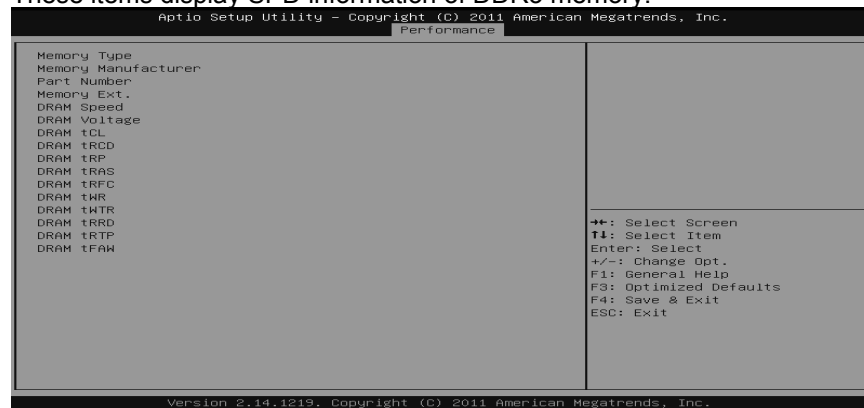Options: 8 (Default) / 5 ~ 15

DRAM Voltage

This item sets DRAM Voltage.

BIOSTAR Memory Insight

```
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                                    Performance

  ====DDR3 Memory Insight====                              DDR3_A1 Information
▶ DDR3_A1 Information
▶ DDR3_B1 Information




                                                         ─────────────────────────
                                                         →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/−: Change Opt.
                                                         F1: General Help
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit



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```

DDR3_A1/B1 Information
These items display SPD information of DDR3 memory.

```
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                                    Performance

  Memory Type
  Memory Manufacturer
  Part Number
  Memory Ext.
  DRAM Speed
  DRAM Voltage
  DRAM tCL
  DRAM tRCD
  DRAM tRP
  DRAM tRAS
  DRAM tRFC
  DRAM tWR
  DRAM tWTR                                              ─────────────────────────
  DRAM tRRD                                              →←: Select Screen
  DRAM tRTP                                              ↑↓: Select Item
  DRAM tFAW                                              Enter: Select
                                                         +/−: Change Opt.
                                                         F1: General Help
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit



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```

7 Exit Menu

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

Discard Changes and Exit

Abandon all changes made during the current session and exit setup.

Save Changes and Reset

Reset the system after saving the changes.

Restore Defaults

This selection allows you to reload the BIOS when problem occurs during system booting sequence. These configurations are factory settings optimized for this system.

Launch EFI Shell from filesystem device

Press enter to execute UEFI BIOS built-in EFI Shell.