FCC Information and Copyright

This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. There is no guarantee that interference will not occur in a particular installation.

The vendor makes no representations or warranties with respect to the contents here and specially disclaims any implied warranties of merchantability or fitness for any purpose. Further the vendor reserves the right to revise this publication and to make changes to the contents here without obligation to notify any party beforehand.

Duplication of this publication, in part or in whole, is not allowed without first obtaining the vendor's approval in writing.

The content of this user's manual is subject to be changed without notice and we will not be responsible for any mistakes found in this user's manual. All the brand and product names are trademarks of their respective companies.

CE

Dichiarazione di conformità sintetica

Ai sensi dell'art. 2 comma 3 del D.M. 275 del 30/10/2002

Si dichiara che questo prodotto è conforme alle normative vigenti e soddisfa i requisiti essenziali richiesti dalle direttive

2004/108/CE, 2006/95/CE e 1999/05/CE

quando ad esso applicabili

Short Declaration of conformity

We declare this product is complying with the laws in force and meeting all the essential requirements as specified by the directives

2004/108/CE, 2006/95/CE and 1999/05/CE

whenever these laws may be applied

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

1.2 Package Checklist

- ☑ Mini-ITX Mainboard x 1
- ☑ Fully Setup Driver DVD x 1
- ☑ SATA Cable x 1

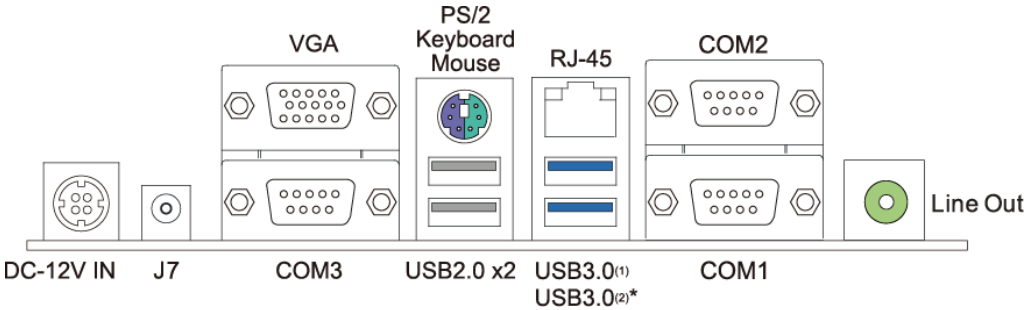
Note: The package contents may be different due to the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

1.3 Motherboard Specifications

CPU	Intel® Celeron® Processor J1900 (2M Cache, up to 2.42 GHz)
Graphic	Integrated Intel® HD Graphics engine Graphics Frequency: Intel Graphics HD 688MHz-854MHz Dual independent displays as below (1) Support D-Sub 15 pin VGA output (Max resolution is 1920 x 1200) (2) By using the eDP to LVDS transmitter(RTL2136) and supports the dual channel 18-24Bits LCD panel (Max resolution is 1920 x 1200)
Super I/O	FINTEK F81866AD Provides the most commonly used legacy Super I/O functionality. 128pin type Environment Control initiatives, H/W Monitor, Fan Speed Controller
Main Memory	Single Channel DDR3L 1066/1333MHz SO-DIMM x1, Max. 8GB *Real operation frequency depends on processor **Registered DIMM or ECC DIMM is not supported
SATA	Built-in 1x7 pin SATAII connector and support 2.5” SATA HDD/SSD (Data transfer rates up to 3.0Gb/s)
LAN	Realtek RTL 8111G 10 / 100 / 1000 Mb/s auto negotiation, Half / Full duplex capability
USB 3.0	2x Port (by using the PCIex1 to USB 3.0 controller-ASM1042A) - 2x Port on the Rear I/O * The lower layer port is power USB3.0 port.
USB 2.0	7x USB port (J1900+GL852 USB hub, the current for each USB port is 500mA) - 2x USB 2.0 Port on Rear I/O - 1x USB 2.0 port reserved for Penmount 6005 5-wires resistive touchscreen controller - 4x USB 2.0 port on the 2x4 pin box headers
Sound Codec	Realtek Codec ALC662, supports Line-out
Back Panel I/O	1x DC-12V 4-pin Power Input Connector 1x DC-12V 2-pin Power Output Jack 1x VGA Port 1x PS/2 Keyboard/ Mouse Connector 1x RJ-45 Port 2x USB 2.0 Port 2x USB 3.0 Port 1x Serial Port (RS-232/422/485) 2x Serial Port (RS-232) 2x Audio Jack (Line-out)
On Board Connectors & Headers	**Storage** 1x SATA II up to 3Gb/s HDD connector 1x 1*4 pins for HDD power **Display**

	1x 2*20 pins, LVDS connector support 18/24Bits dual channel 1x 1*3 pins, LCD Backlight power select header (3.3V/5V) 1x 1*3 pins, LED/ CCFL backlight select 1x 1*3 pins, backlight PWM signal select 1x 1*5 pins, LCD Backlight Inverter power connector **I/O** 2x 2*5 pins, header for COM4/COM6 RS232 1x 1*3 pins, COM4 power select (RING/5V/12V) 2x 2*4 pins, header for USB2.0 2x 1*3 pins, power source jumpers for USB ports 1x 2*5 pins, Digital IO support 2 in/ 2 out and 2-ch audio output 1x 2*6 pins, front panel header as Power/Reset/HDD 1x buzzer
Board Size	170 mm (W) x 170 mm (L), Mini-ITX
Operation Temperature	0°C ~ 60°C
Storage Temperature	-20°C ~ 80°C
Relative Humidity	10% ~ 90% (non-condensing)
OS Support	Windows 7, POS Ready 7 32/64 bits,POS Ready 8 Industry Biostar reserves the right to add or remove support for any OS with or without notice.

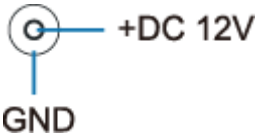
1.4 Rear Panel Connectors



Note1: *USB3.0(2) lower layer port is power USB 3.0 port.
Maxium power consumption: Power-On is 1.5A, Power-Off is 0.5A.
Note2: COM1/2/3 voltage selection is controlled by BIOS setup. Please see page-19 for detail setting.
Note3: COM1 RS-232/422/485 selection is controlled by JSEL1/JSEL2. Please see page-8 for detail setting.

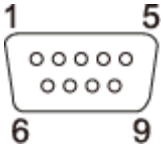
JP2: DC-12V Input Connector

J7: DC-12V Output Jack (Max. 2A)



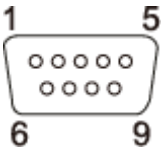
COM1 Serial Port Connector

(RS232/422/485)



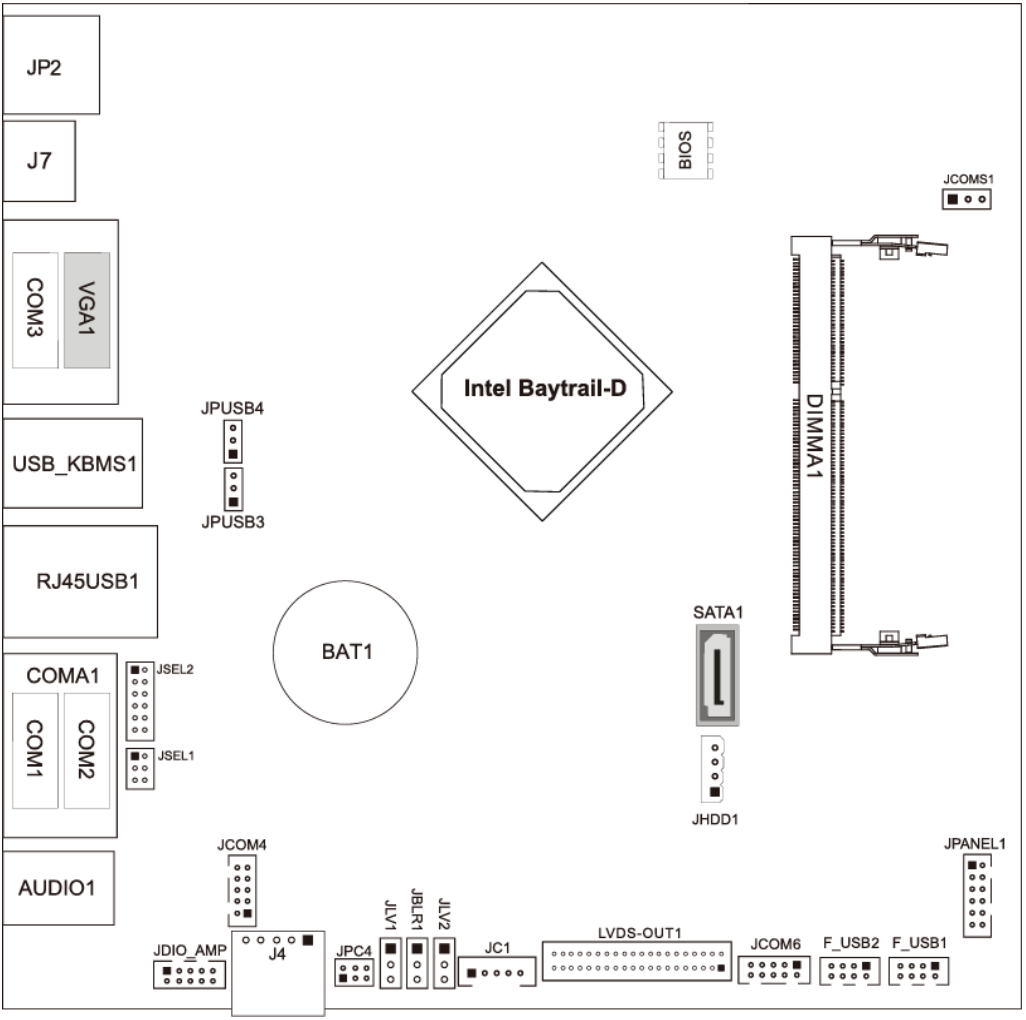
	RS-232 (Default)	RS-422*	RS-485*
Pin	Assignment		
1	Carrier detect (DCD)	422 TXD-	485 DATA-
2	Received data (RXD)	422 TXD+	485 DATA+
3	Transmitted data (TXD)	422 RXD+	NC
4	Data terminal ready (DTR)	422 RXD-	NC
5	Signal ground (GND)	GND	GND
6	Data set ready (DSR)	NC	NC
7	Request to send (RTS)	NC	NC
8	Clear to send (CTS)	NC	NC
9	*RI/5V/12V selected by BIOS setting	NC	NC

COM2/3 Serial Port Connectors (RS232)



Pin	Assignment	Pin	Assignment
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	*RI/5V/12V selected by BIOS setting		

1.5 Motherboard Layout



Note: ■ represents the 1st pin.

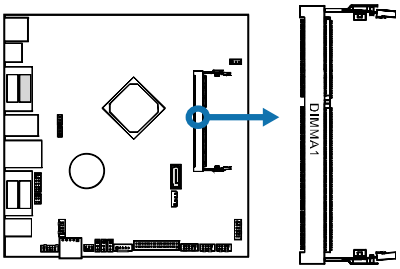
CHAPTER 2: HARDWARE INSTALLATION

2.1 Install Central Processing Unit (CPU)

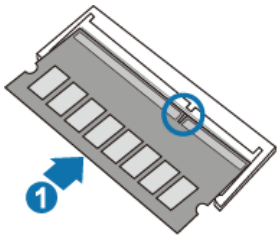
The mainboard includes an Intel® Celeron processor, and a cooler has been installed to provide sufficient cooling

2.2 Install System Memory

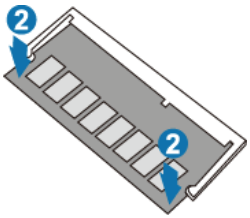
DIMMA1: Memory slot (204pin SO-DIMM, 1.35V)



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



Step 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	DDR3 Module	Total Memory Size
DIMMA1	512MB/1GB/2GB/8GB	Max is 8GB.

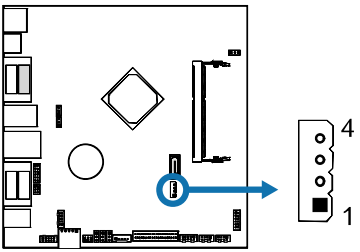
Note1: When installing more than one memory module, we recommend to use the same brand and capacity memory on this motherboard.

Note2: If the DIMM does not go in smoothly, do not force it. Pull it all the way out and try again.

2.3 Power Supply

JHDD1: HDD Power Connector

This connector provides power connection of SATA devices.

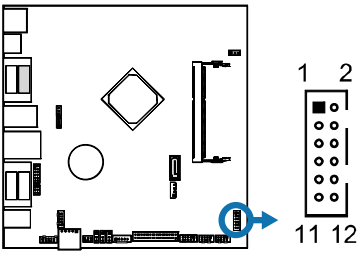


Pin	Assignment
1	+12V output
2	GND
3	GND
4	+5V output

2.4 Jumpers / Headers / Connectors

JPANEL1: Front Panel Header

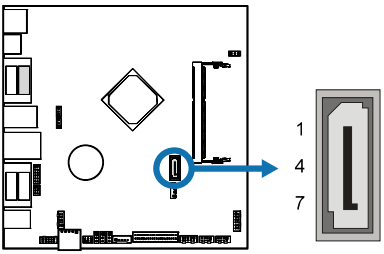
This 16-pin header includes Power-on, Reset, HDD LED, and Power LED connection. It allows user to connect the system case's front panel switch functions.



Pin	Assignment	Pin	Assignment
1	HDD Led(+)	2	PWR Led(+)
3	HDD Led(-)	4	PWR Led(-)
5	Reset (+)	6	PWR BTN(+)
7	Reset (-)	8	PWR BTN(-)
9	LED_LINK_A	10	V3P3A
11	LAN_LED_EX	12	GND

SATA1: Serial ATA 3.0 Gb/s Connectors

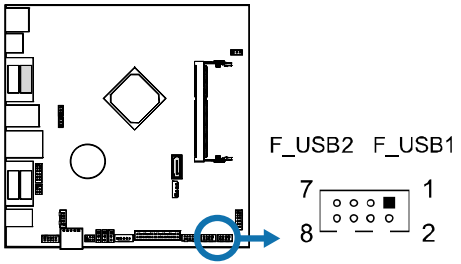
The connector supports the thin Serial ATA cable for primary internal storage devices.



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

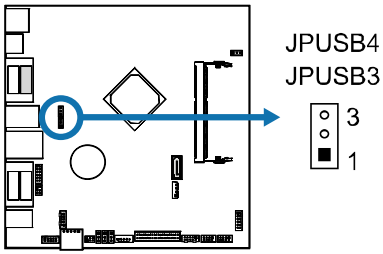
F_USB1/F_USB2: USB 2.0 Header

The mainboard provides USB 2.0 pin header. Each header allows you to connect 2 additional USB 2.0 ports.



Pin	Assignment	Pin	Assignment
1	+5V (fused)	2	+5V (fused)
3	USB -	4	USB -
5	USB +	6	USB +
7	Ground	8	Ground

JPUSB3/JPUSB4: Power Source Jumpers for USB Ports



Pin 1-2 Close: (Default)

JPUSB3: +5V for USB 3.0 ports on rear I/Os
JPUSB4: +5V for USB 2.0 ports on rear I/Os

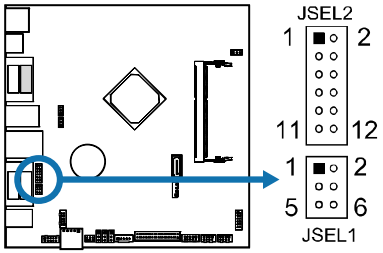
Pin 2-3 Close:

JPUSB3: +5V STB for USB 3.0 ports on rear I/Os
JPUSB4: +5V STB for USB 2.0 ports on rear I/Os

Serial Port Connectors & Headers

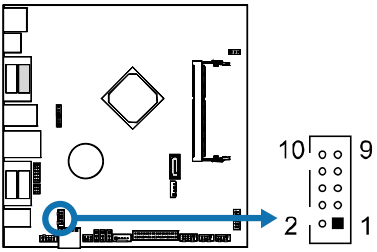
JSEL1/JSEL2: RS-232/422/485 Switch Headers for COM1

The headers determine that COM1 belongs to RS-232 (Default), 422, or 485.



JSEL1		
RS-232	RS-422	RS-485
1-2	3-4	5-6
JSEL2		
RS-232	RS-422	RS-485
1-3	3-5	3-5
2-4	4-6	4-6
7-9	9-11	9-11
8-10	10-12	10-12

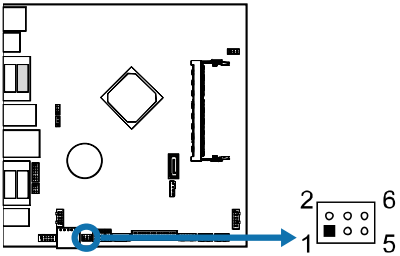
JCOM4: Serial Port Header



Pin	Assignment	Pin	Assignment
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	Ring/5V/12V *	10	NA

*JCOM4 voltage selection is controlled by JPC4.

JPC4: Serial Port Voltage Switch Jumper for JCOM4

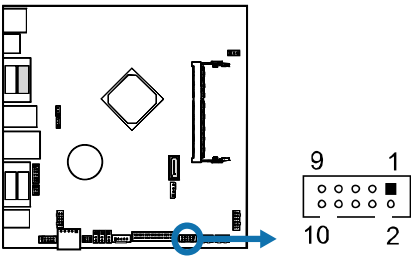


Pin 1-2 Close: Pin9=Ring (Default)

Pin 3-4 Close: Pin9= 5V

Pin 5-6 Close: Pin9=12V

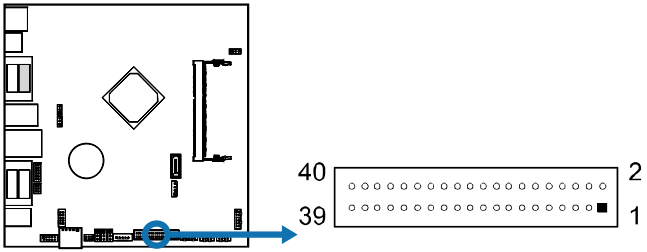
JCOM6: Serial Port Header



Pin	Assignment	Pin	Assignment
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	Ring	10	NA

LVDS-OUT1: LVDS Connector

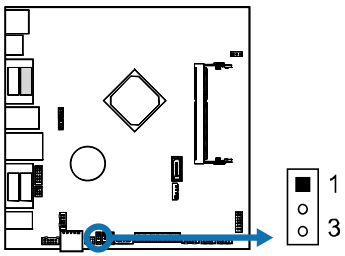
This connector supports 18/24 bit dual-channel panels.



Pin	Assignment	Pin	Assignment
2	+12V	1	+12V
4	+12V	3	+12V
6	GND	5	+12V
8	GND	7	VCC 3.3V
10	PVDD2, 3.3V/5V (selected by JLV2)	9	PVDD2, 3.3V/5V (selected by JLV2)
12	LVDS_EDID_SDA	11	LVDS_EDID_SCL
14	LVDS_EN_R	13	BL_CTRL
16	GND	15	ENABKL_
18	LVDSA_DATA0_P	17	LVDSA_DATA0_N
20	LVDSA_DATA1_P	19	LVDSA_DATA1_N
22	LVDSA_DATA2_P	21	LVDSA_DATA2_N
24	LVDSA_CLK_P	23	LVDSA_CLK_N
26	LVDSA_DATA3_P	25	LVDSA_DATA3_N
28	GND	27	GND
30	LVDSB_DATA0_P	29	LVDSB_DATA0_N
32	LVDSB_DATA1_P	31	LVDSB_DATA1_N
34	LVDSB_DATA2_P	33	LVDSB_DATA2_N
36	LVDSB_CLK_P	35	LVDSB_CLK_N
38	LVDSB_DATA3_P	37	LVDSB_DATA3_N
40	GND	39	GND

JLV1: Backlight Control Mode Jumper

This jumper is for selecting backlight control mode.

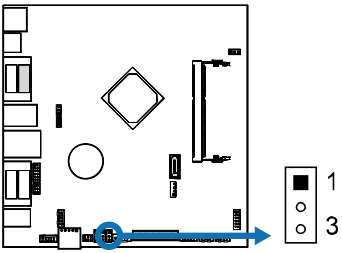


Pin 1-2 Closed: Voltage Mode

Pin 2-3 Closed: PWM Mode (Default)

JLV2: LCD Panel Power Jumper

This jumper is for selecting LCD Power (PVDD2).

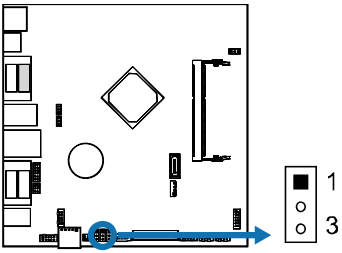


Pin 1-2 Close: Inverter Power=3.3V (Default)

Pin 2-3 Close: Inverter Power=5V

JBLR1: Backlight PWM Signal Jumper

This jumper is for selecting backlight PWM signal.

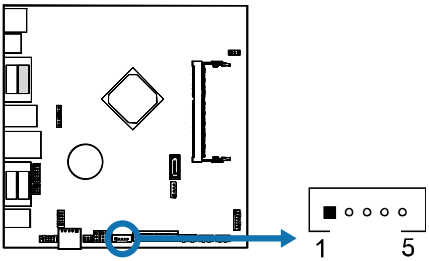


Pin 1-2 Close: Reverse

Pin 2-3 Close: Forward (Default)

JC1: LCD Backlight Inverter Connector

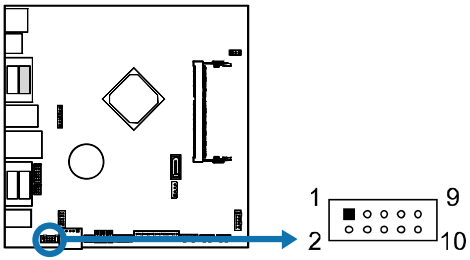
This connector is for connecting to LCD for providing backlight control function.



Pin	Assignment
1	VCC5S
2	BL_CTRL
3	ENABKL
4	GND
5	VCC12S

JDIO_AMP: Digital I/O Connector

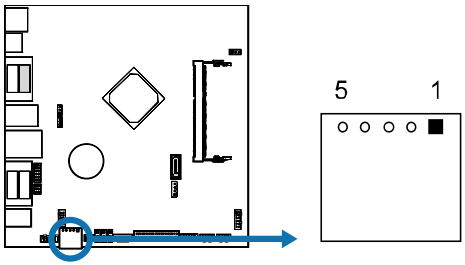
This connector offers 4-pair of digital I/O functions and 2-ch audio output.



Pin	Assignment	Address	GPIO
1	SPKRP	--	--
2	SPKLP		
3	SPKRN		
4	SPKLN		
5	DO-01	(Memory space) 0xFED0E348 BIT0	GPIO_S5_40
6	DI-01	(IO space) 0x528 BIT23	GPIO_S0_SC_55
7	DO-02	(Memory space) 0xFED0E218 BIT0	GPIO_S5_01
8	DI-02	(IO space) 0x528 BIT27	GPIO_S0_SC_59
9	12V	-	--
10	5V		

J4: Touch-Senor Connector

This connector is for connecting to touch sensor.



Pin	Assignment
1	RT
2	RL
3	SG
4	LT
5	LL

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”.

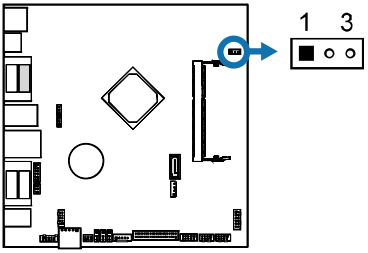
Pin opened

Pin closed

Pin1-2 closed

JCMOS1: Clear CMOS Jumper

Placing the jumper on pin2-3, it 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. Load Optimal Defaults and save settings in CMOS.

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.

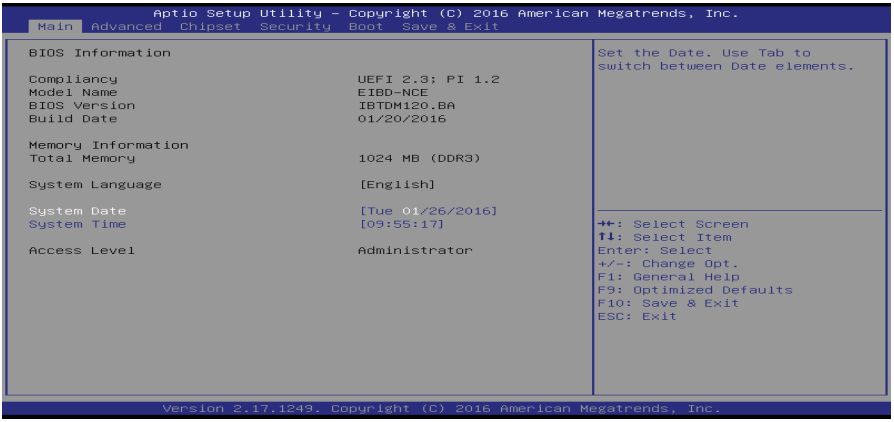
Note1: The default UEFI BIOS settings apply for most conditions to ensure optimum performance of the motherboard. If the system becomes unstable after changing any settings, please load the default settings to ensure system's compatibility and stability. Use Load Setup Default under the Exit Menu.

Note2: 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.

Note3: 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, marketing 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.

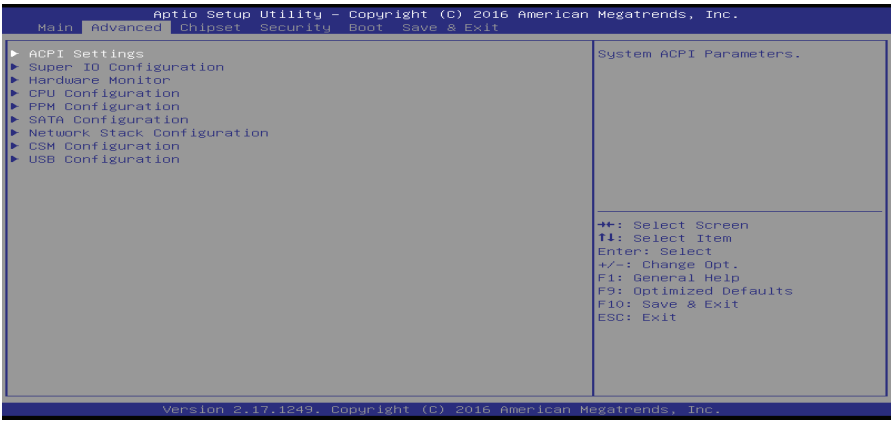
Access Level

Shows the access level of current user.

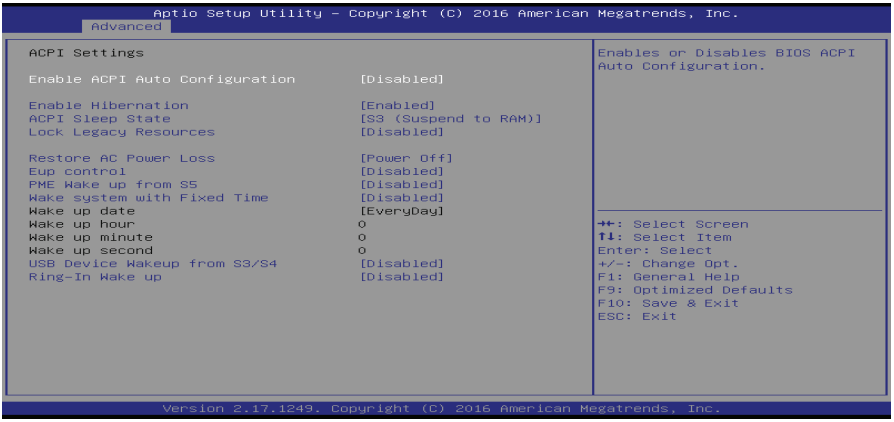
3.2 Advanced Menu

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

Note1: Beware of that setting inappropriate values in items of this menu may cause system to malfunction.
Note2: The options and default settings might be different by RAM or CPU models.



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

Restore AC Power Loss

This item enables the system to wake from S5 using Ring-In event.

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

EuP Control

When EuP Enabled, System meets EuP requirement.

Options: Disabled (Default) / Enabled

PME Wake Up from S5

Enable 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.

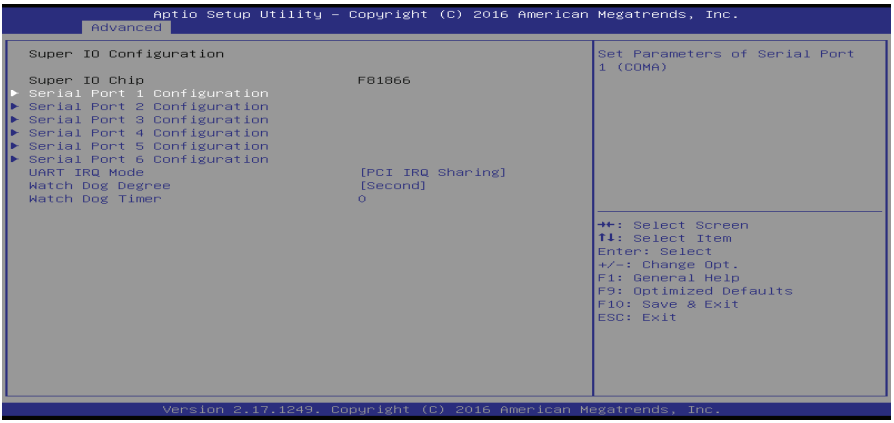
Options: Disabled (Default) / Enabled

Ring-In Wake up

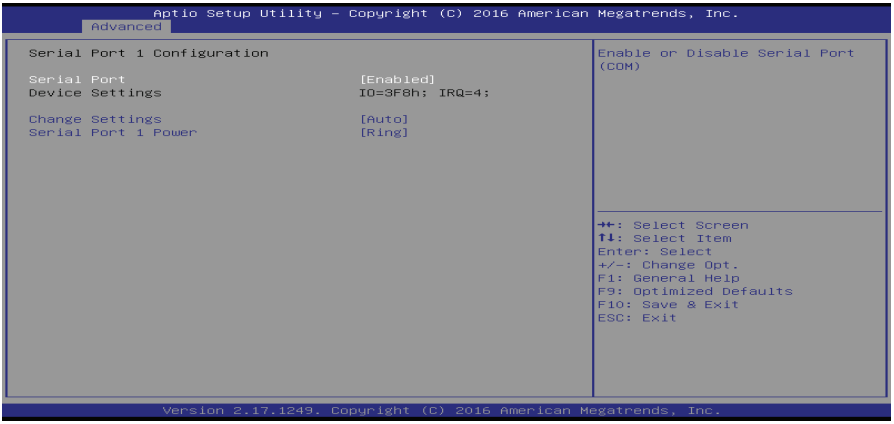
This item enables the system to wake from using Ring-In event.

Options: Disabled (Default) / Enabled

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.

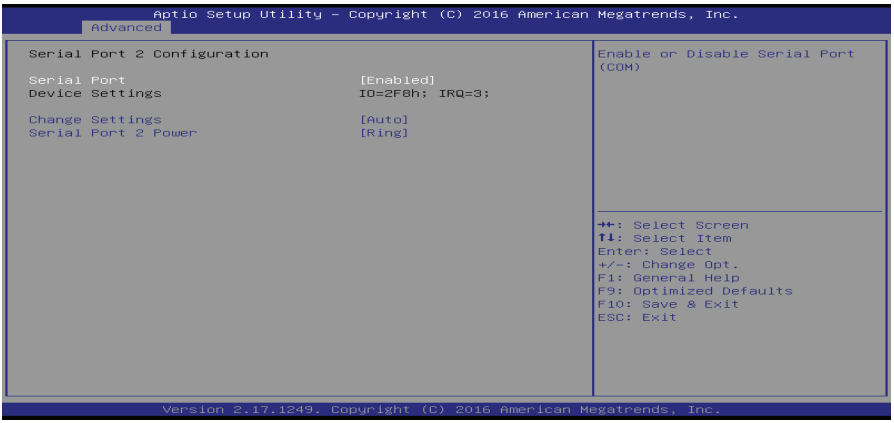
Options: Auto (Default) / IO=3F8h; IRQ=4 / IO=3F8h; IRQ= 3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=2F8h; IRQ= 3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=3E8h; IRQ= 3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=2E8h; IRQ= 3, 4, 5, 6, 7, 9, 10, 11, 12

Serial Port 1 Power

Select serial port power is Ring or 5V or 12V.

Options: Ring (Default) / 5V / 12V

Serial Port 2 Configuration



Serial Port

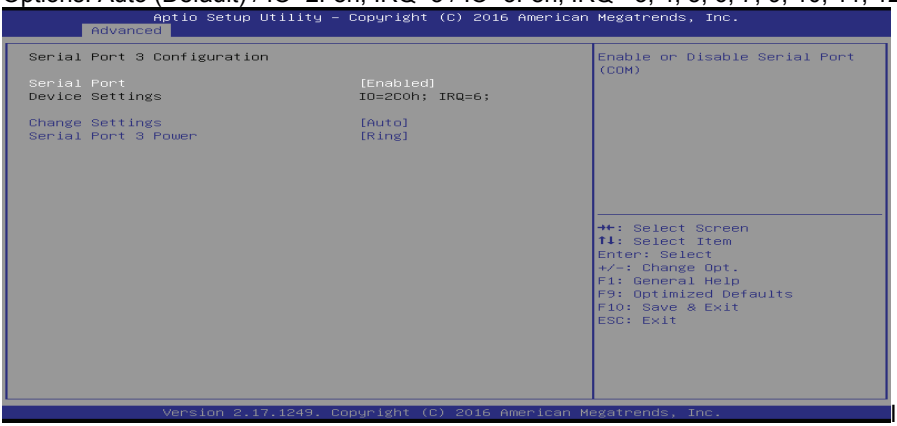
This item enables or disables Serial Port (COM).

Options: Enabled (Default) / Disabled

Change Settings

This item selects an optimal setting for Super IO device.

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



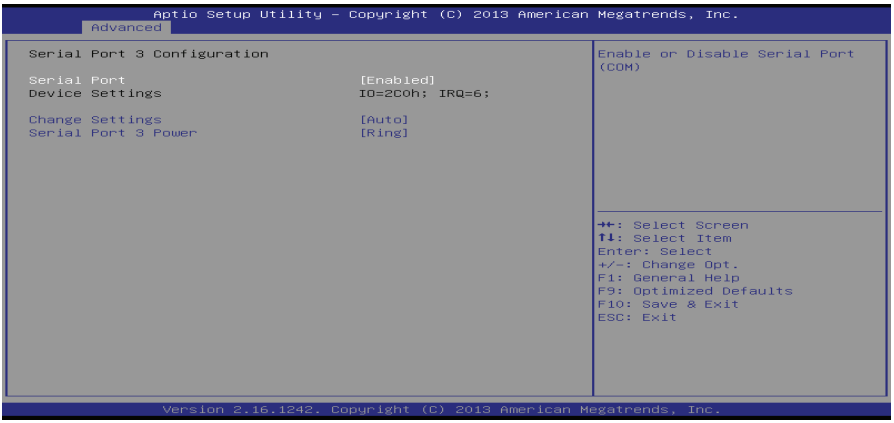
IO=2F8h; IRQ= 3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=3E8h; IRQ= 3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=2E8h; IRQ= 3, 4, 5, 6, 7, 9 , 10, 11, 12

Serial Port 2 Power

Select serial port power is Ring or 5V or 12V.

Options: Ring (Default) / 5V / 12V

Serial Port 3 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.

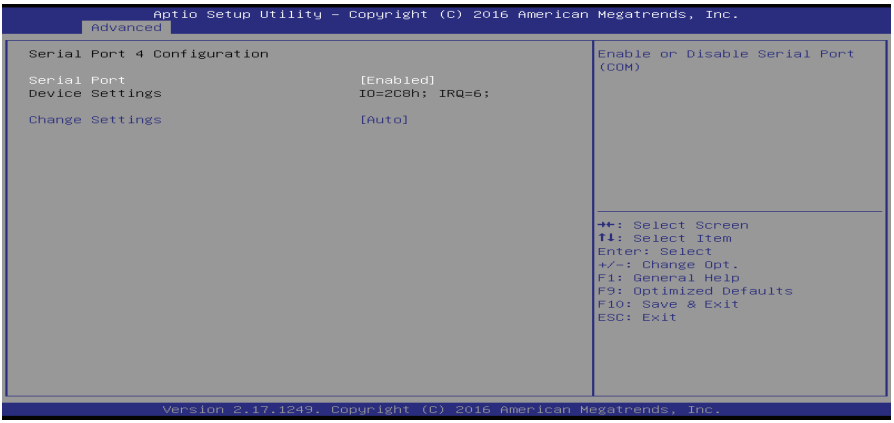
Options: Auto (Default) / IO=2C0h; IRQ=6 / IO=2C0h; IRQ= 3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=2C8h; IRQ= 3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=2D0h; IRQ= 3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=2D8h; IRQ= 3, 4, 5, 6, 7, 9 , 10, 11, 12

Serial Port 3 Power

Select serial port power is Ring or 5V or 12V.

Options: Ring (Default) / 5V / 12V

Serial Port 4 Configuration



Serial Port

This item enables or disables Serial Port (COM).

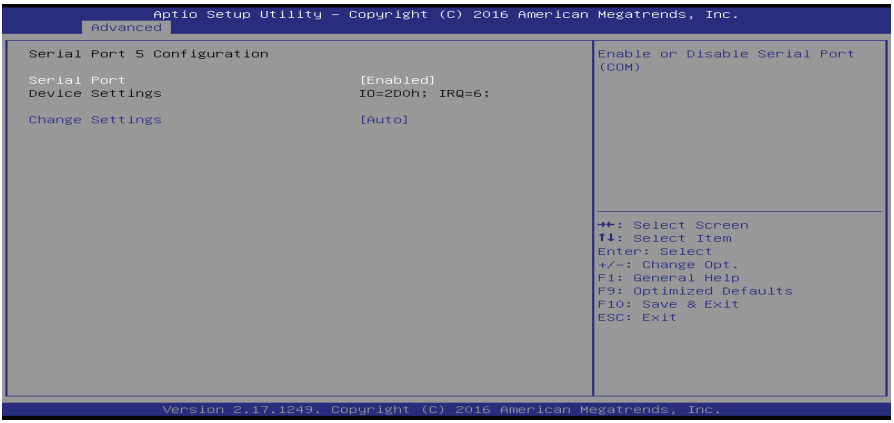
Options: Enabled (Default) / Disabled

Change Settings

This item selects an optimal setting for Super IO device.

Options: Auto (Default) / IO=2C8h; IRQ=6 / IO=2C0h; IRQ= 3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=2C8h; IRQ= 3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=2D0h; IRQ= 3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=2D8h; IRQ= 3, 4, 5, 6, 7, 9 , 10, 11, 12

Serial Port 5 Configuration



Serial Port

This item enables or disables Serial Port (COM).

Options: Enabled (Default) / Disabled

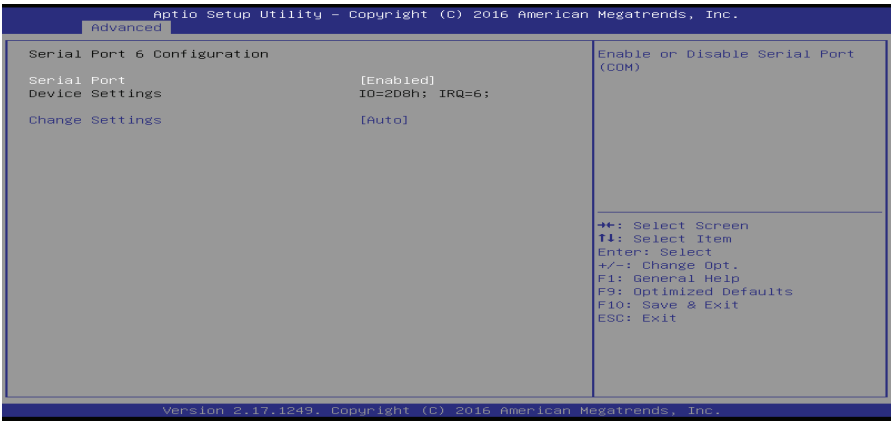
Change Settings

This item selects an optimal setting for Super IO device.

Options: Auto (Default) / IO=2D0h; IRQ=6 / IO=2C0h; IRQ= 3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=2C8h; IRQ= 3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=2D0h; IRQ= 3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=2D8h; IRQ= 3, 4, 5, 6, 7, 9 , 10, 11, 12

Options: Enabled (Default) / Disabled

Serial Port 6 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=2D8h; IRQ=6 / IO=2C0h; IRQ= 3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=2C8h; IRQ= 3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=2D0h; IRQ= 3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=2D8h; IRQ= 3, 4, 5, 6, 7, 9 , 10, 11, 12

Options: Enabled (Default) / Disabled

UART IRQ Mode

This item allows you to determine PCI IRQ sharing for OS (EX. Windows) ISA IRQ for DOS.

Options: PCI IRQ Sharing (Default) / ISA IRQ

Watch Dog Degree

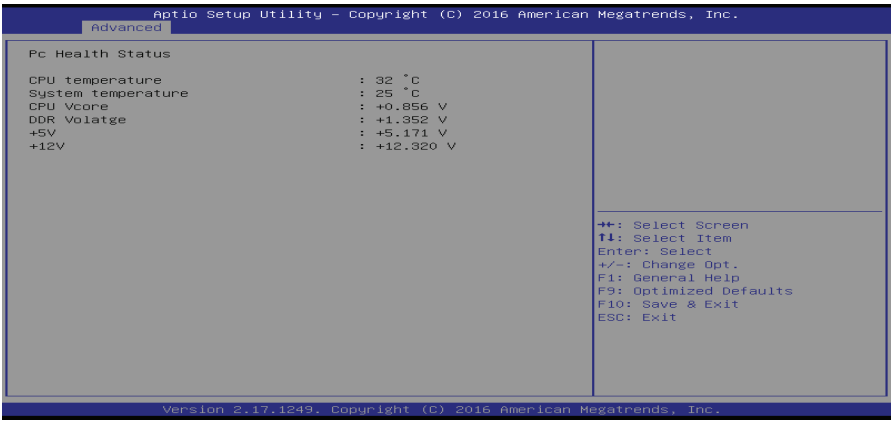
This item allows you to determine the functional degree of Watch Dog.

Options: Second (Default) / Minute

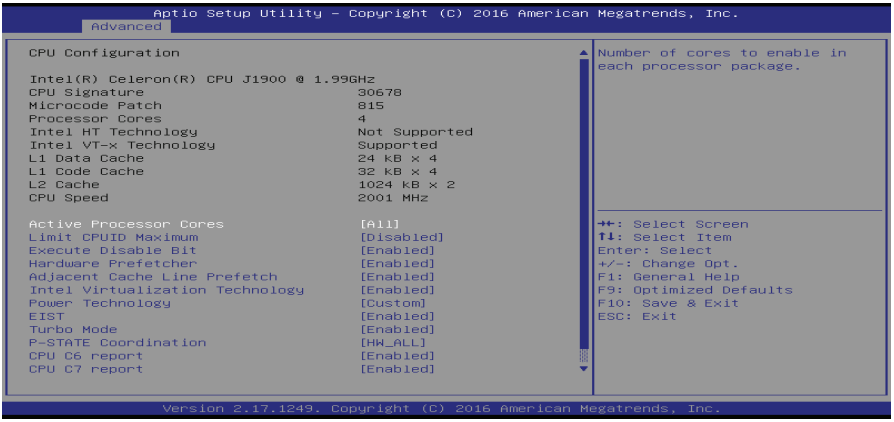
Watch Dog Timer

Options: 0 for disabled (Default) / Min=1, Max=255

H/W Monitor



CPU Configuration



Active Processor Cores

This item sets number of cores to enable in each processor package.

Options: All (Default) / 1

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

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

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: Enabled (Default) / Disabled

Power Technology

This item enables or disables the power management features.

Options: Custom (Default) / Disable / Energy Efficient

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

CPU C6 Report

This item enables or disables CPU C6 (ACPI C3) report to OS.

Options: Enabled (Default) / Disabled

CPU C7 Report

This item enables or disables CPU C7 (ACPI C3) report to OS.

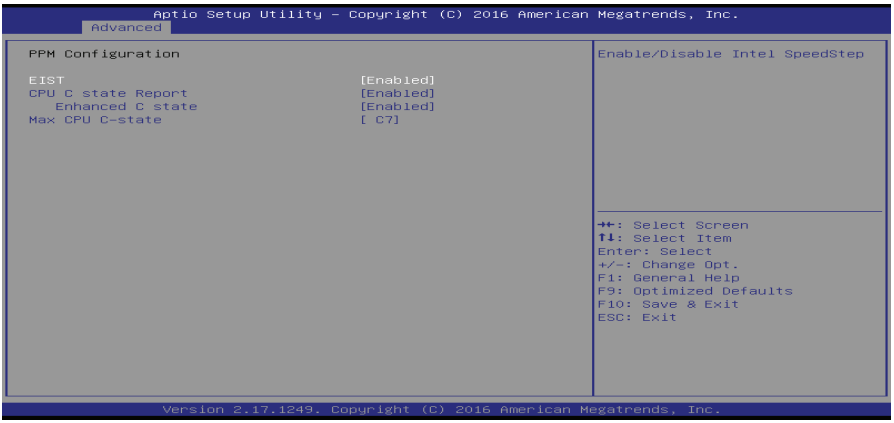
Options: Enabled (Default) / Disabled

Package C state limit

This item enables or disables package C state limit.

Options: No Limit (Default) / CO / C1 / C3 / C6 / C7

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

Enhanced C state

This item enables or disables Enhanced CPU C state.

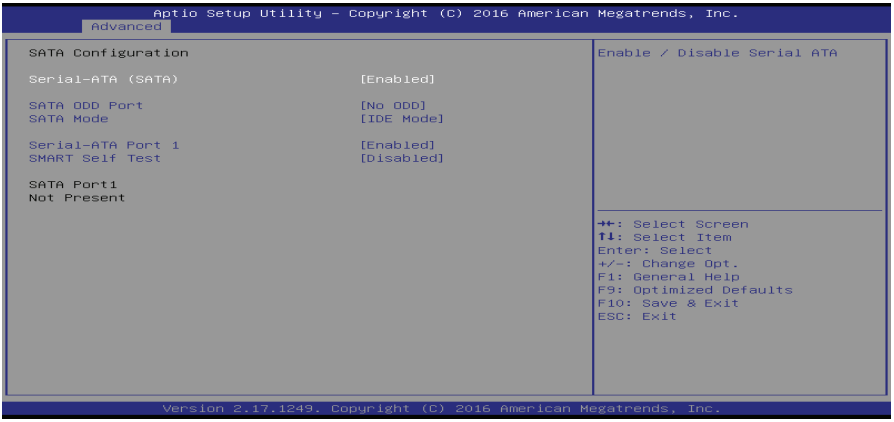
Options: Enabled (Default) / Disabled

Max CPU C-state

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

Options: C7 (Default) / C6 / C1

SATA Configuration



Serial-ATA (SATA)

This item enables/disables Serial ATA Device.

Options: Enabled (Default) / Disabled

SATA ODD Port

This item selects SATA ODD Port

Options: No ODD (Default) / Port1 ODD / Port2 ODD

SATA Mode

This item determines how SATA controller(s) operate.

Options: IDE Mode (Default) / AHCI Mode

Serial-ATA Port 1

This item enables/disables Serial ATA Port 1

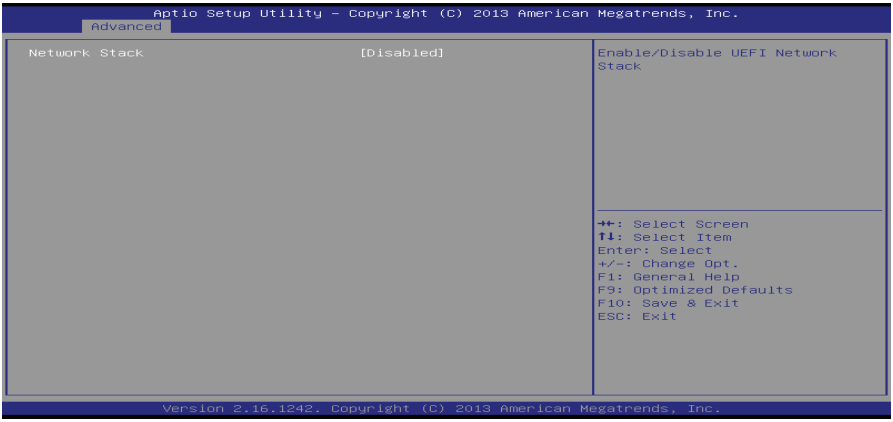
Options: Enabled (Default) / Disabled

SMART Self Test

Run SMART Self Test on all HDDs during POST.

Options: Disabled (Default) / Enabled

Network Stack



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

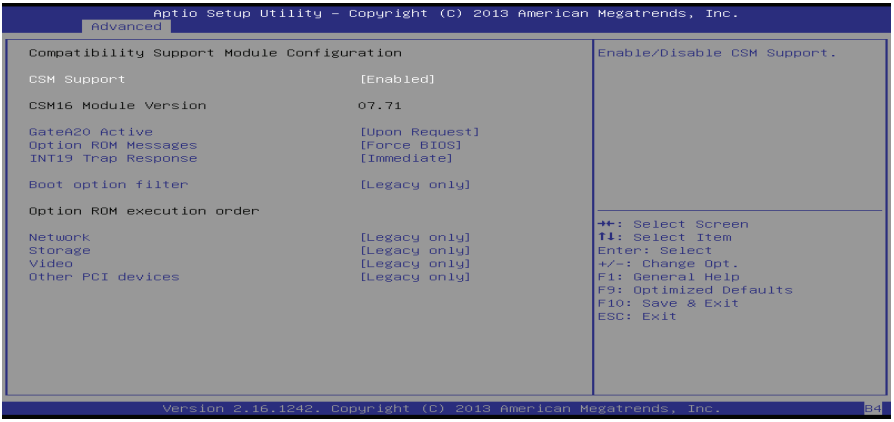
This item enables or disables IPv6 PXE Boot Support. If disabled IPv6 booth option will not be created.

Options: Enabled (Default) / Disabled

PXE boot wait time

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

CSM Configuration



CSM Support

This item enables or disables CSM Support

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: Immediate (Default) / Postponed

Boot option filter

This option controls what devices system can boot to.

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

Network

This option controls the execution of UEFI and Legacy PXE OpROM

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

Storage

This option controls the execution of UEFI and Legacy Storage OpROM

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

Video

This option controls the execution of UEFI and Legacy Video OpROM

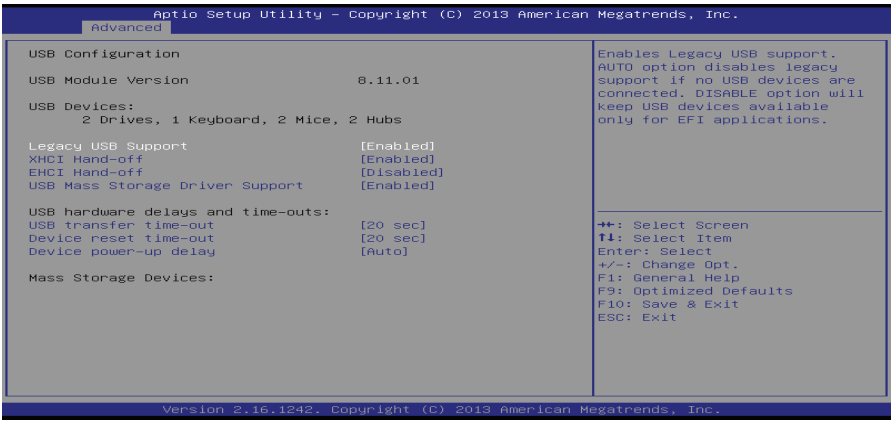
Options: Legacy only (Default) / Do not launch / UEFI only / Legacy first / UEFI first

Other PCI devices

For PCI devices other than Network, Mass storage or video defines which OpROM to launch.

Options: Legacy only (Default) / UEFI first

USB Configuration



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

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

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

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

“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.

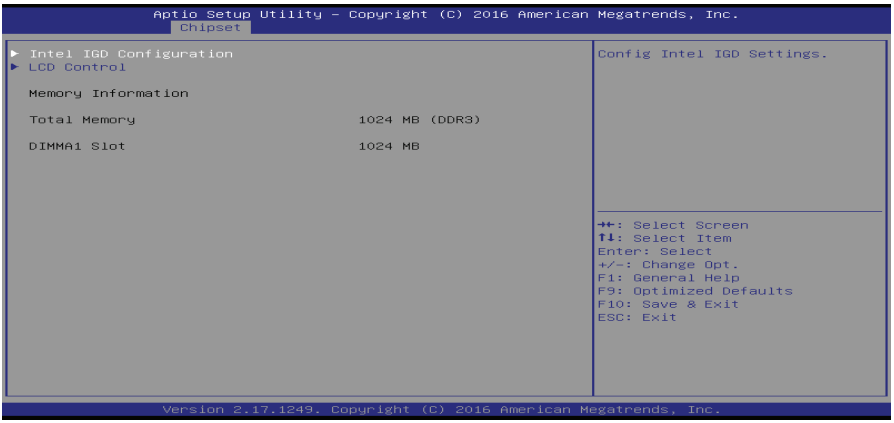
Options: 5 (Default)

3.3 Chipset Menu

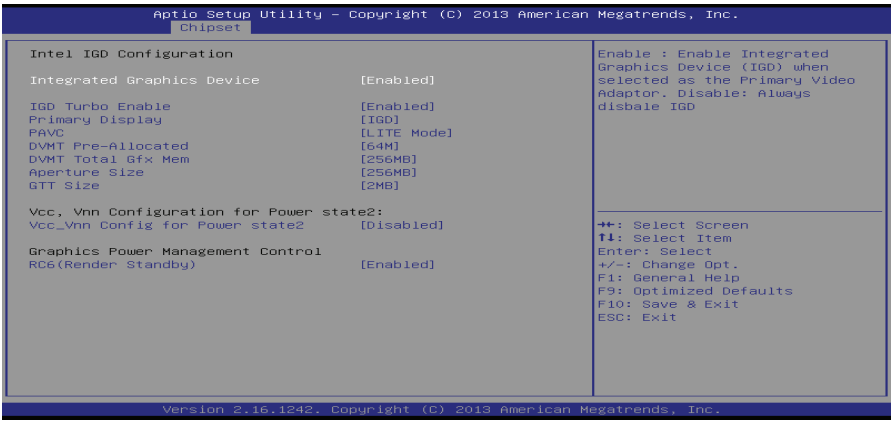
This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed of the CPU itself uses when communicating with its own special components.

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

North Bridge



Intel IGD Configuration



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 Enable

Enable: Enable IGD Turbo Enable. Disable: Enable IGD Turbo Disable.

Options: Enabled (Default) / Disabled

Primary Display

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

Options: IGD (Default) / Auto / PCI / SG

PAVC

This item enables or disables Protected Audio Video Control

Options: LITE Mode (Default) / Disabled / SERPENT Mode

DVMT Pre-Allocated

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

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

DVMT Total Gfx Mem

This item selects DVMT5.0 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: 2MB (Default) / 1MB

VCC_Vnn Config for Power state2

This item enables or disables Vcc Vnn Config for power state2

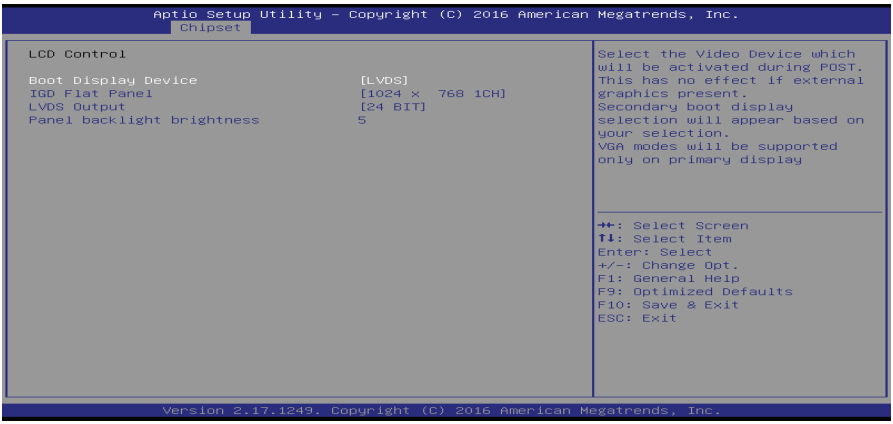
Options: Disabled (Default) / Enabled

RC6 (Render Standby)

This item enables or disables render standby support.

Options: Enabled (Default) / Disabled

LCD Control



Boot Display Device

This item allows you to select the display device.

Options: LVDS (Default) / D-SUB / Auto

LCD Panel Type

This item selects the LCD panel type.

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.

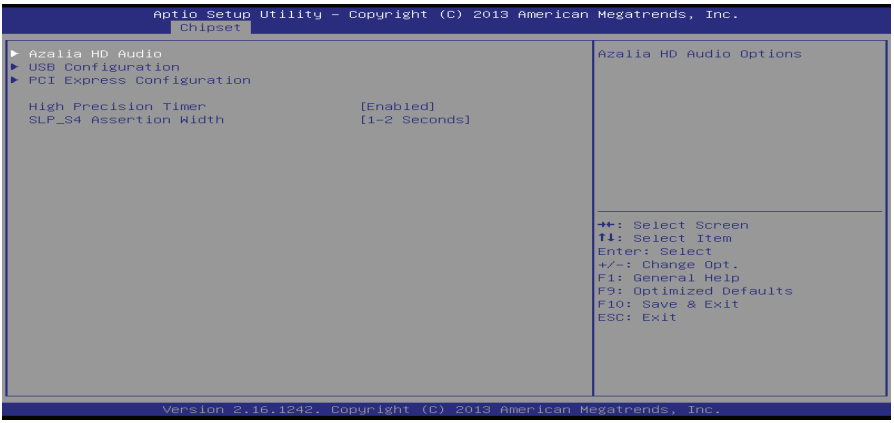
Options: 24 BIT (Default) / 18 BIT

Panel backlinght brightness

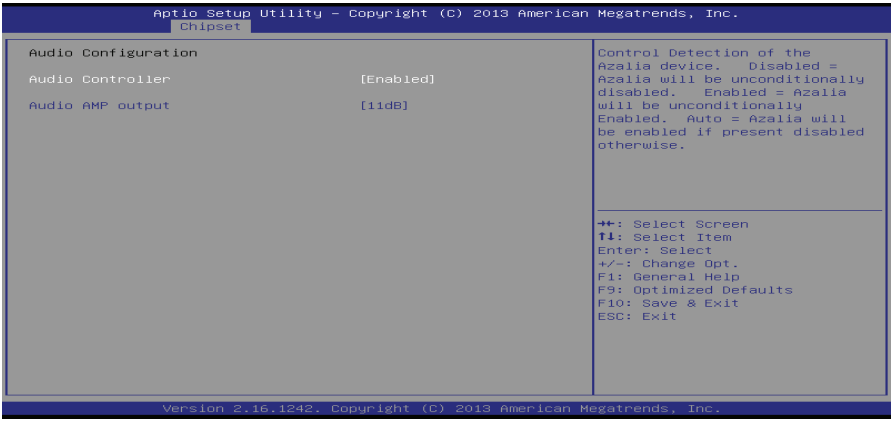
This item selects the LVDS panel brightness.

Options: 5 (Default)

South Bridge



Azalia HD Audio



Azalia Controller

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.

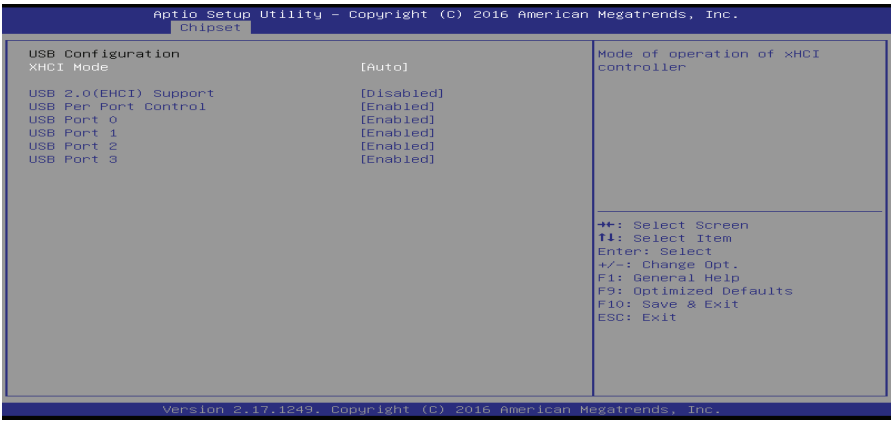
Options: Enabled (Default) / Disabled

Audio AMP output

This item selects Audio AMP output dB value.

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

USB Configuration



XHCI Mode

The item selects Mode of operation of xHCI controller.

Options: Auto (Default) / Smart Auto / Enabled / Disabled

USB 2.0(EHCI) Support

This item controls the USB EHCI (USB 2.0) functions. One EHCI controller must always be enabled.

Options: Disabled (Default) / Enabled

Note: The following items appear only when you set the USB 2.0(EHCI) Support to [Enabled]

USB RMH Mode

This item enables or disables PCH USB Rate Matching Hubs mode.

Options: Enabled (Default) / Disabled

USB Per Port Control

Control each of the USB ports (0-3). Enable: Enable USB per port; Disable: Use USB port X settings.

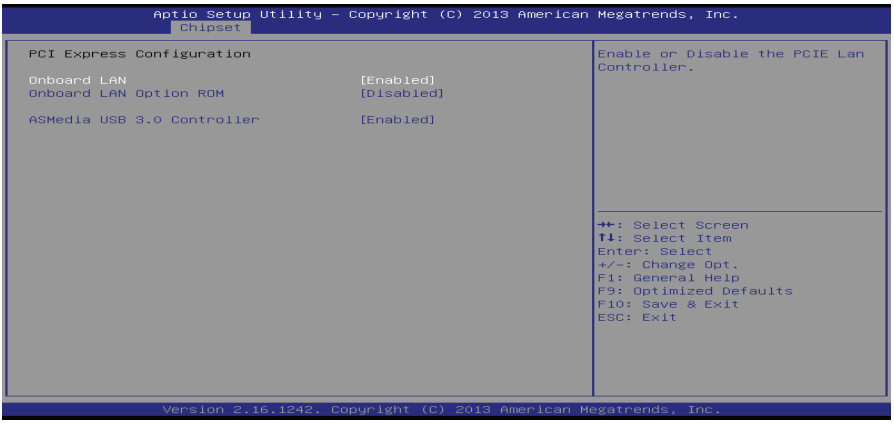
Options: Enabled (Default) / Disabled

USB Port 0/1/2/3

This item enables or disables USB Port 0.

Options: Enabled (Default) / 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 the Boot Option for Legacy Network Devices.

Options: Disabled (Default) / Enabled

ASMEDIA USB 3.0 Controller

This item enables or disables the ASMedia USB 3.0 controller.

Options: Enabled (Default) / Disabled

High Precision Timer

This item enables or disables the High Precision Event Timer.

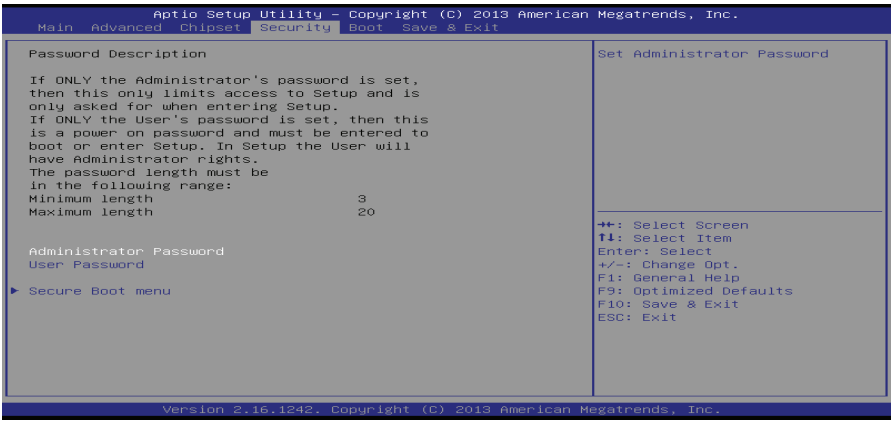
Options: Enabled (Default) / Disabled

SLP_S4 Assertion Width

Select a minimum assertion width of the SLP-S4# signal.

Options: 4-5 Seconds (Default) / 1-2 Seconds / 2-3 Seconds / 3-4 Seconds /

3.4 Security Menu

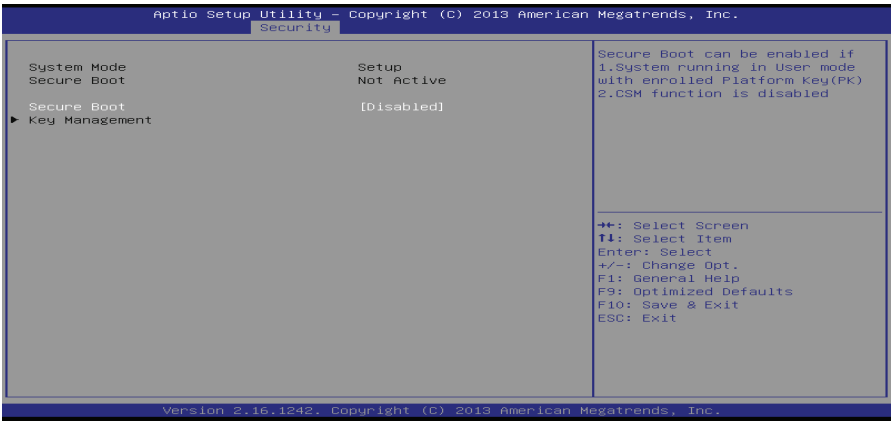


Administrator Password

This item sets Administrator Password.

User Password

This item sets User Password.



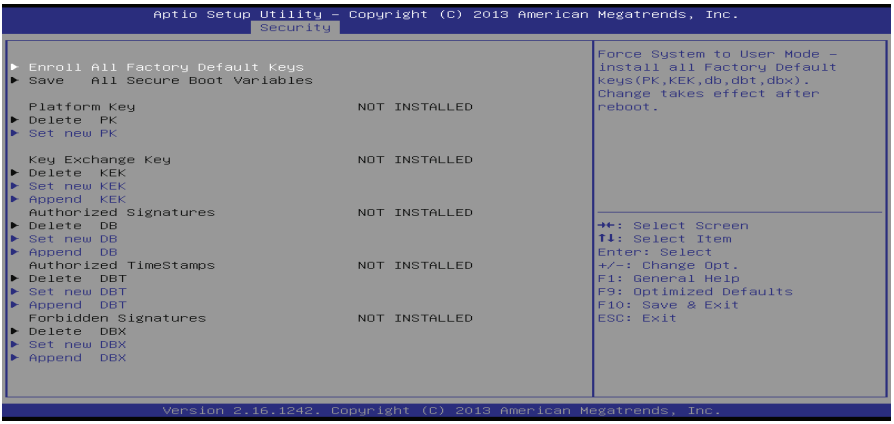
Secure Boot

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



Enroll All Factory Default Keys

It allows you to immediately load/clear the default Security Boot keys, Platform key (PK), Key-exchange Key (KEK), Signature database (db), and Revoked Signatures (dbx). The Platform Key (PK) state will change from Unloaded mode to Loaded mode. The settings are applied after reboot or at the next reboot.

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.

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.

Forbidden Signature Database (DBX)

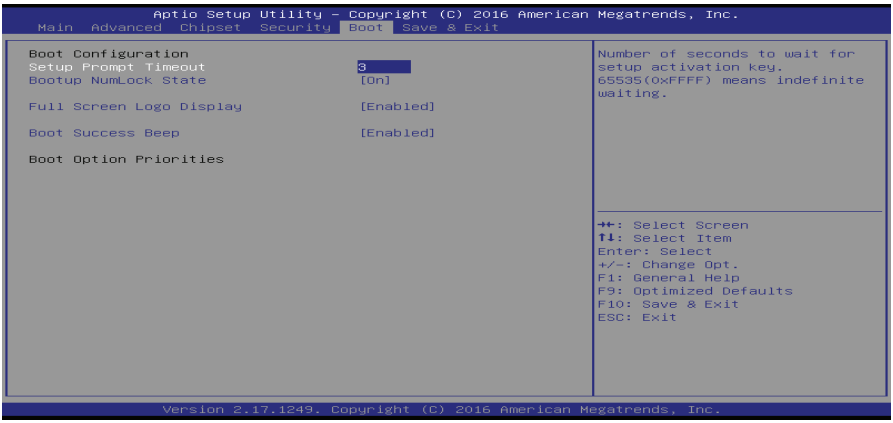
Delete DBX – Allows you to delete the DBX file from your system.

Set new DBX – Allows you set new DBK file.

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

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.

Options: 3 (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

Boot Success Beep

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

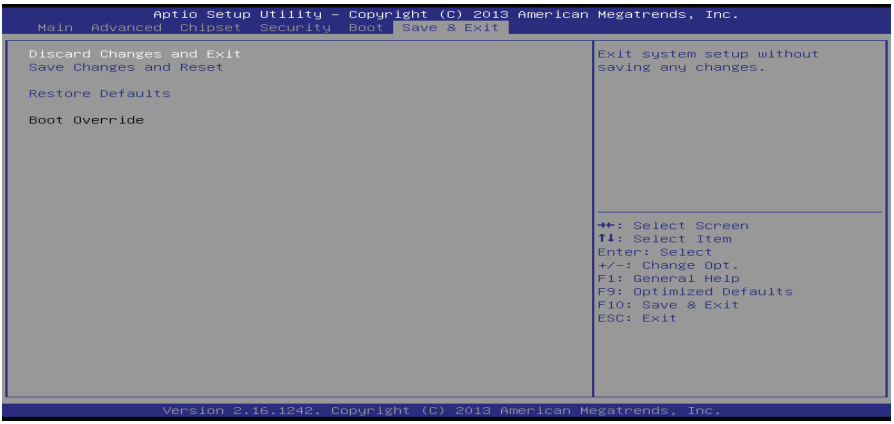
Options: Enabled (Default) / Disabled

Boot Option Priorities

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.

3.6 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.

CHAPTER 4: USEFUL HELP

4.1 Driver Installation

After you installed your operating system, please insert the Fully Setup Driver DVD into your optical drive and install the driver for better system performance.

You will see the following window after you insert the DVD

The setup guide will auto detect your motherboard and operating system.

Note: If this window didn't show up after you insert the Driver DVD, please use file browser to locate and execute the file SETUP.EXE under your optical drive.

A. Driver Installation

To install the driver, please click on the Driver icon. The setup guide will list the compatible driver for your motherboard and operating system. Click on each device driver to launch the installation program.

B. Software Installation

To install the software, please click on the Software icon. The setup guide will list the software available for your system, click on each software title to launch the installation program.

C. Manual

Aside from the paperback manual, we also provide manual in the Driver DVD. Click on the Manual icon to browse for available manual.

Note: You will need Acrobat Reader to open the manual file. Please download the latest version of Acrobat Reader software from http://www.adobe.com/products/acrobat/readstep2.html

4.2 AMI BIOS Beep Code

Boot Block Beep Codes

Number of Beeps	Description
Continuing	Memory sizing error or Memory module not found

POST BIOS Beep Codes

Number of Beeps	Description
1	Success booting.
8	Display memory error (system video adapter)

4.3 AMI BIOS post code

Checkpoint	Description
03	Disable NMI, Parity, video for EGA, and DMA controllers. Initialize BIOS, POST, Runtime data area. Also initialize BIOS modules on POST entry and GPNV area. Initialized CMOS as mentioned in the Kernel Variable “wCMOSFlags.”
04	Check CMOS diagnostic byte to determine if battery power is OK and CMOS checksum is OK. Verify CMOS checksum manually by reading storage area. If the CMOS checksum is bad, update CMOS with power-on default values and clear passwords. Initialize status register A. Initializes data variables that are based on CMOS setup questions. Initializes both the 8259 compatible PICs in the system
05	Initializes the interrupt controlling hardware (generally PIC) and interrupt vector table.
06	Do R/W test to CH-2 count reg. Initialize CH-0 as system timer. Install the POSTINT1Ch handler. Enable IRQ-0 in PIC for system timer interrupt. Traps INT1Ch vector to “POSTINT1ChHandlerBlock.”
07	Fixes CPU POST interface calling pointer.
08	Initializes the CPU. The BAT test is being done on KBC. Program the keyboard controller command byte is being done after Auto detection of KB/MS using AMI KB-5.
C0	Early CPU Init Start -- Disable Cache – Init Local APIC.
C1	Set up boot strap processor Information.
C2	Set up boot strap processor for POST.
C5	Enumerate and set up application processors.
C6	Re-enable cache for boot strap processor.
C7	Early CPU Init Exit.
0A	Initializes the 8042 compatible Key Board Controller.
0B	Detects the presence of PS/2 mouse.
0C	Detects the presence of Keyboard in KBC port.
0E	Testing and initialization of different Input Devices. Also, update the Kernel Variables. Traps the INT09h vector, so that the POST INT09h handler gets control for IRQ1. Uncompress all available language, BIOS logo, and Silent logo modules.
13	Early POST initialization of chipset registers.
20	Relocate System Management Interrupt vector for all CPU in the system.
24	Uncompress and initialize any platform specific BIOS modules. GPNV is initialized at this checkpoint.
2A	Initializes different devices through DIM. See DIM Code Checkpoints section of document for more information.
2C	Initializes different devices. Detects and initializes the video adapter installed in the system that have optional ROMs.
2E	Initializes all the output devices.

Checkpoint	Description
31	Allocate memory for ADM module and uncompress it. Give control to ADM module for initialization. Initialize language and font modules for ADM. Activate ADM module.
33	Initializes the silent boot module. Set the window for displaying text information.
37	Displaying sign-on message, CPU information, setup key message, and any OEM specific information.
38	Initializes different devices through DIM. See DIM Code Checkpoints section of document for more information. USB controllers are initialized at this point.
39	Initializes DMAC-1 & DMAC-2.
3A	Initialize RTC date/time.
3B	Test for total memory installed in the system. Also, Check for DEL or ESC keys to limit memory test. Display total memory in the system.
3C	Mid POST initialization of chipset registers.
40	Detect different devices (Parallel ports, serial ports, and coprocessor in CPU, etc.) successfully installed in the system and update the BDA, EBDA…etc.
52	Updates CMOS memory size from memory found in memory test. Allocates memory for Extended BIOS Data Area from base memory. Programming the memory hole or any kind of implementation that needs an adjustment in system RAM size if needed.
60	Initializes NUM-LOCK status and programs the KBD typematic rate.
75	Initialize Int-13 and prepare for IPL detection.
78	Initializes IPL devices controlled by BIOS and option ROMs.
7C	Generate and write contents of ESCD in NVRam.
84	Log errors encountered during POST.
85	Display errors to the user and gets the user response for error.
87	Execute BIOS setup if needed / requested. Check boot password if installed.
8C	Late POST initialization of chipset registers.
8D	Build ACPI tables (if ACPI is supported).
8E	Program the peripheral parameters. Enable/Disable NMI as selected.
90	Initialization of system management interrupt by invoking all handlers. Please note this checkpoint comes right after checkpoint 20h.
A1	Clean-up work needed before booting to OS.
A2	Takes care of runtime image preparation for different BIOS modules. Fill the free area in F000h segment with 0FFh. Initializes the Microsoft IRQ Routing Table. Prepares the runtime language module. Disables the system configuration display if needed.
A4	Initialize runtime language module. Display boot option popup menu.
A7	Displays the system configuration screen if enabled. Initialize the CPU's before boot, which includes the programming of the MTRR's.
A9	Wait for user input at config display if needed.
AA	Uninstall POST INT1Ch vector and INT09h vector.
AB	Prepare BBS for Int 19 boot. Init MP tables.
AC	End of POST initialization of chipset registers. De-initializes the ADM module.
B1	Save system context for ACPI. Prepare CPU for OS boot including final MTRR values.
00	Passes control to OS Loader (typically INT19h).

4.4 Troubleshooting

Probable	Solution
1. There is no power in the system. Power LED does not shine; the fan of the power supply does not work 2. Indicator light on keyboard does not shine.	1. Make sure power cable is securely plugged in. 2. Replace cable. 3. Contact technical support.
System is inoperative. Keyboard lights are on, power indicator lights are lit, and hard drives are running.	Using even pressure on both ends of the DIMM, press down firmly until the module snaps into place.
System does not boot from a hard disk drive, but can be booted from optical drive.	1. Check cable running from disk to disk controller board. Make sure both ends are securely plugged in; check the drive type in the standard CMOS setup. 2. Backing up the hard drive is extremely important. All hard disks are capable of breaking down at any time.
System only boots from an optical drive. Hard disks can be read, applications can be used, but system fails to boot from a hard disk.	1. Back up data and applications files. 2. Reformat the hard drive. Re-install applications and data using backup disks.
Screen message shows “Invalid Configuration” or “CMOS Failure.”	Review system’s equipment. Make sure correct information is in setup.
System cannot boot after user installs a second hard drive.	1. Set master/slave jumpers correctly. 2. Run SETUP program and select correct drive types. Call the drive manufacturers for compatibility with other drives.

CPU Overheated

If the system shutdown automatically after power on system for seconds, that means the CPU protection function has been activated.

When the CPU is over heated, the motherboard will shutdown automatically to avoid a damage of the CPU, and the system may not power on again.

In this case, please double check:

1. The CPU cooler surface is placed evenly with the CPU surface.
2. CPU fan is rotated normally.
3. CPU fan speed is fulfilling with the CPU speed.

After confirmed, please follow steps below to relief the CPU protection function.

1. Remove the power cord from power supply for seconds.
2. Wait for seconds.
3. Plug in the power cord and boot up the system.

Or you can:

1. Clear the CMOS data. (See “Close CMOS Header: JCMOS1” section)
2. Wait for seconds.
3. Power on the system again.

Release Date: 20160215