IMB-M43

ATX Intel® Core™ i7/i5/i3
Industrial Motherboard

User's Manual

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Advance Technologies; Automate the World.

Revision History

Revision	Release Date	Description of Change(s)
2.00	July 22, 2016	Initial Release

Preface

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Product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective companies.

Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.

Additional information, aids, and tips that help users perform tasks.

Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.

Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

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1 Introduction

With specification and BIOS updates, the content of this manual is subject to change without notice. Updated versions, as well as the latest CPU support lists are available at http://www.adlinktech.com
For technical support, please visit http://askanexpert.adlinktech.com/AAE/Answers.aspx for model-specific information.

1.1 Features

- ATX form factor (305 mm x 244 mm)
- 6th Generation Intel® Core™ i7/i5/i3/Pentium/Celeron processors in LGA1151 package support
- Dual-channel DDR4 2133MHz, 4x 288-pin DIMM sockets, up to 64GB non-ECC unbuffered DIMM support
- 1x PCIe x8 Gen3, 4x PCIe x4 Gen3, 2x PCI 2.2 slots (configurable)
- Intel i219-LM Gigabit Ethernet PHY and Intel i211-AT Gigabit Ethernet controller
- 8x USB 3.0 ports/pin headers (6x rear, 2x pin headers), 6x USB 2.0 ports (2x vertical type A connector, 4x pin headers)
- 6x SATA 6 Gb/s ports
- 1x VGA, 2x DisplayPort, supporting up to 3 independent displays
- 6x COM ports/pin headers (2x rear, 4x onboard pin headers), COM1/2 supporting RS232/422/485/RS-485 w/ auto flow control
- Watchdog Timer, Hardware Monitor
- 1x 10-pin/2.54mm GPIO pin header: 4 in/4 out, one ground pin and one power pin (5V/12V/no power, jumper selected)
- 1x 25-pin/2.54mm printer port pin header
- 1x Mini-DIN for PS/2 keyboard/mouse
- RoHS compliance
- SEMA utility (optional, built to order)

1.2 Specifications

Processor& System	
CPU	▶ Intel® Core™ i7-6700, 3.4GHz, 8M Cache, 14nm, 65W TDP, LGA1151 (4C/8T) ▶ Intel® Core™ i7-6700TE, 2.4GHz 8M Cache, 14nm, 35W TDP, LGA1151 (4C/8T) ▶ Intel® Core™ i5-6500, 3.2GHz, 6M Cache, 14nm, 65W TDP, LGA1151 (4C/4T) ▶ Intel® Core™ i5-6500TE, 2.3GHz, 6M Cache, 14nm, 35W TDP, LGA1151 (4C/4T) ▶ Intel® Core™ i3-6100, 3.7GHz, 3M Cache, 14nm, 51W TDP, LGA1151 (2C/4T) ▶ Intel® Core™ i3-6100TE, 2.7GHz, 4M Cache, 14nm, 35W TDP, LGA1151 (2C/4T) ▶ Intel® Pentium® G4400, 3.3GHz, 3M Cache, 14nm, 54W TDP, LGA1151 (2C/2T) ▶ Intel® Pentium® G4400TE, 2.4GHz, 3M Cache, 14nm, 35W TDP, LGA1151 (2C/2T) ▶ Intel® Celeron® G3900, 2.8GHz, 2M Cache, 14nm, 65W TDP, LGA1151 (2C/2T) ▶ Intel® Celeron® G3900TE, 2.6GHz, 2M Cache, 14nm, 35W TDP, LGA1151 (2C/2T)
Chipset	Intel® Q170 Express
Memory	4x 288-pin DDR4 sockets (vertical)
	Dual channel DDR4 2133 MHz, up to 64GB
BIOS	AMI®UEFI BIOS, 128 Mbit SPI flash memory
Watchdog Timer	24 to 65536 sec.software programmable, can execute system reset
Hardware Monitor	▶ CPU voltage ▶ +3.3V voltage ▶ +5V voltage ▶ +12V voltage ▶ CPU temperature ▶ System temperature ▶ CPU fan speed ▶ System fan speed

OS	▶ Microsoft® Windows® 7 32/64-bit ▶ Microsoft® Windows® 8.1 64-bit ▶ Microsoft® Windows® 10 64-bit ▶ Ubuntu 15.10 32/64-bit
I/O	
Serial ATA	6x SATA 6.0 Gb/s connectors
	Software RAID support 0/1/5/10
USB	6x USB 3.0 connector (rear)
	2x USB 3.0 pin header
	4x USB2.0 pin headers
	2x USB2.0 vertical type A connector
Serial Ports	2x RS-232/422/485 with auto flow control connector (rear)
	4x RS-232 pin headers
Expansion Slots	<Signal>: ▶ If PEG3 is occupied, PEG1 is PCIex8 Gen3, PEG2 is PCIex4 Gen3, and PEG3 is PCIex4 Gen3 ▶ If PEG3 is not occupied and PEG2 is occupied, PEG1 is PCIex8 Gen3, PEG2 is PCIex8 Gen3, and PEG3 is no signal ▶ If PEG3 is not occupied and PEG2 is not occupied, PEG1 is PCIex16 Gen3,PEG2 and PEG3 is no signal ▶ PCIe1: PCIe x4 Gen3, PCIe2: PCIe x4 Gen3, PCI1: PCI 2.2, PCI2: PCI 2.2 <Physical Slot>: ▶ PEG1 PCIex16 slot ▶ PCI1 PCI slot ▶ PEG2 PCIex16 slot ▶ PEG3 PCIex4 slot ▶ PCIe1 PCIex4 slot ▶ PCIe2 PCIex4 slot ▶ PCI2 PCI slot
Parallel Port	1x LPT pin header
PS2 Combo Port	1x PS/2 keyboard & mouse connector (rear)

DI/O	1x 10-pin/2.54mm GPIO pin header: 4 in and 4 out, one ground pin and one power pin (5V/12V/no power, jumper selected)
Audio	
Audio Codec	Realtek® ALC262-VC2-GR
Interface	1x Mic-in, 1x Line-out and 1x Line-in connector (rear)
Graphics	
Graphics Engine	Integrated Intel® HD graphics series (based on CPU)
VGA	1 VGA connector (rear), resolution up to 1920 x 1200@60Hz
DisplayPort 1.2	2 DP connector (rear), resolution up to 4096x2304 @ 60Hz
Ethernet	
Controller	LAN1: Intel® I219-LM via RJ45 connector (rear)
	LAN2: Intel®I211-AT via RJ45 connector (rear)
Intel® AMT	LAN1 Support
Wake On LAN	LAN1 and LAN2 support
Mechanical and Environmental	
Form Factor	ATX
Dimensions	305 mm x 244 mm (WxL)
Operating Temperature	0°C to 60°C
Storage Temperature	-20°C to 80°C
Relative Humidity	10% to 90, non-condensing
Certification	CE & FCC Class B

1.3 Motherboard Topography

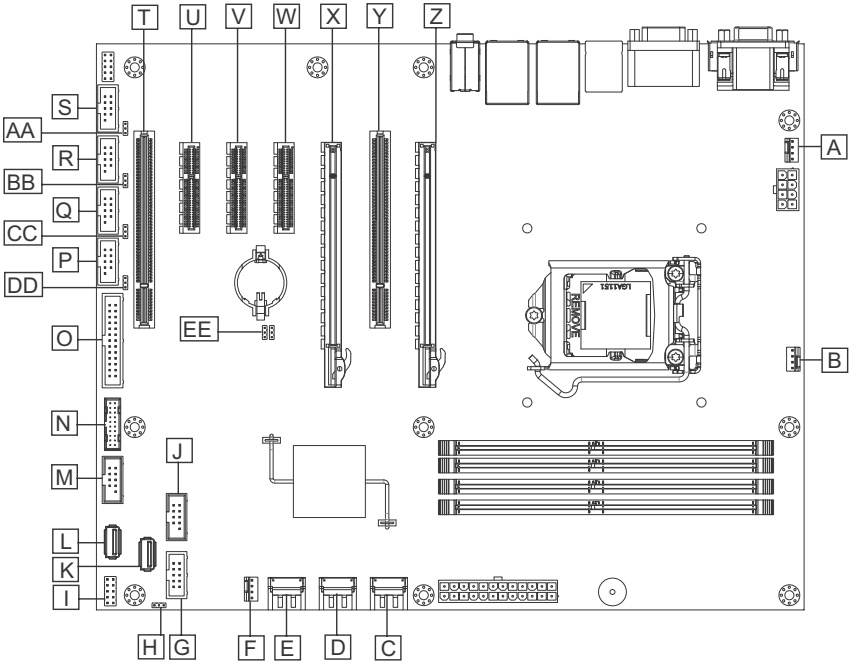


Figure 1-1: IMB-M43 Motherboard

A	FAN2	4-pin system FAN1 connector
B	FAN1	4-pin CPU FAN connector
C	SATA3/4	Upper: SATA3 Lower: SATA4
D	SATA1/2	Upper: SATA1 Lower: SATA2
E	SATA5/6	Upper: SATA5 Lower: SATA6
F	FAN3	4-pin system FAN2 connector
G	CN23	Digital I/O pin header
H	CN22	GPI/O port power select

I	CN44	System panel header
J	CN14	USB2.0 header (USB2.0 port 7/8)
K	CN50	USB2.0 connector(USB2.0 port 14)
L	CN49	USB2.0 connector(USB2.0 port 13)
M	CN15	USB2.0 header (USB2.0 port 9/10)
N	CN16	USB3.0 header (USB3.0 port 7/8, USB2.0 port 5/6)
O	CN37	Printer port header
P	COM6	Serial port 6
Q	COM5	Serial port 5
R	COM4	Serial port 4
S	COM3	Serial port 3
T	PCI2	PCI connector
U	PCIe2	PCIe x4 connector
V	PCIe1	PCIe x4 connector
W	PEG3	PCIe x4 connector
X	PEG2	PCIe x16 connector
Y	PCI1	PCI connector
Z	PEG1	PCIe x16 connector
AA	CN31	Serial port 3 power select
BB	CN32	Serial port 4 power select
CC	CN35	Serial port 5 power select
DD	CN36	Serial port 6 power select
EE	CN24	Clear CMOS header

Table 1-1: IMB-M43 Motherboard Legend

1.4 I/O Panel

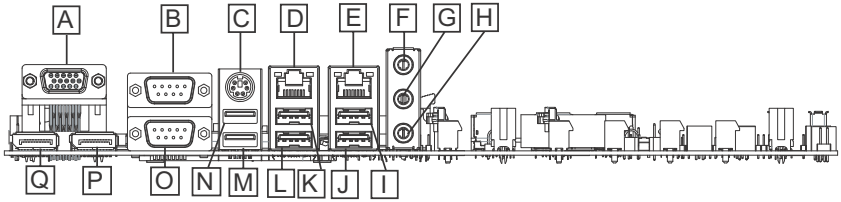


Figure 1-2: IMB-M43 I/O Panel

A	VGA	**J**	USB3.0 (#4) USB2.0(#4)
B	COM1	**K**	USB3.0 (#1) USB2.0(#1)
C	PS2 Combo	**L**	USB3.0 (#2) USB2.0(#2)
D	LAN1	**M**	USB3.0 (#5) USB2.0(#11)
E	LAN2	**N**	USB3.0 (#6) USB2.0(#12)
F	Line In	**O**	COM2
G	Line Out	**P**	DP2
H	Mic In	**Q**	DP1
I	USB3.0 (#3) USB2.0(#3)		

Table 1-2: IMB-M43 I/O Legend

The IMB-M43 supports RS232/422/485 on COM ports 1 and 2, with pin definitions as follows, with both COM ports configurable in BIOS setup.

Pin	RS232	RS422	RS485
1	DCD, Data Carrier Detect	TX-	Data-
2	RXD, Receive Data	TX+	Data+
3	TXD, Transmit Data	RX+	N/A

Pin	RS232	RS422	RS485
4	DTR, Data Terminal Ready	RX-	N/A
5	GND	GND	GND
6	DSR, Data Set Ready	N/A	N/A
7	RTS, Request To Send	N/A	N/A
8	CTS, Clear To Send	N/A	N/A
9	RI, Ring Pin	N/A	N/A

Table 1-3: COM Port Pin Definitions

Two LEDs on either side of the RJ-45 LAN port indicate activity and speed as follows.

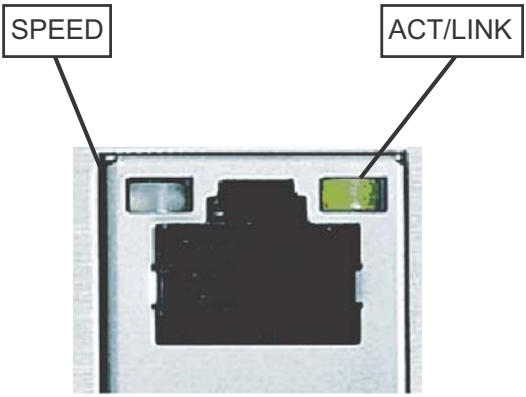


Figure 1-3: LAN Port LED Indicators

ACT/LINK	
Off	No Link
Blinking	Transmission Underway
Lit	Link

SPEED	
Off	10 Mb/s
Green	100 Mb/s
Orange	1 Gb/s

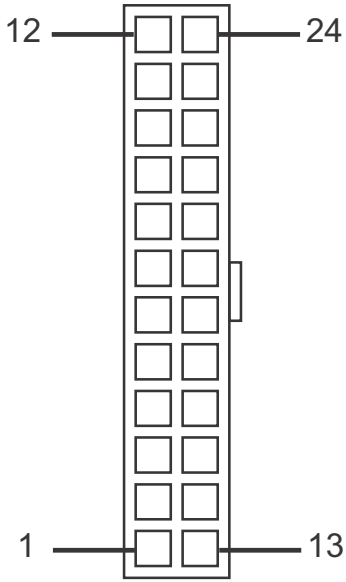
Table 1-4: LAN Port LED Legend

1.5 Onboard Headers and Connectors

CAUTION:

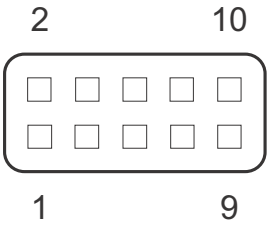
Placing jumper covers over headers and connectors may cause permanent damage.

1.5.1 CN46 24-pin ATX Power Input Connector



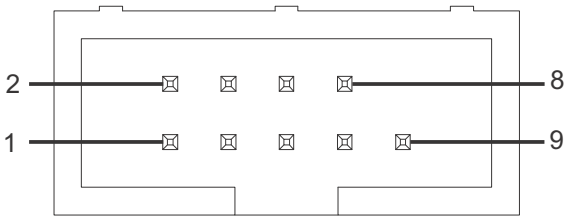
Pin	Name
1	P_+3V3_PSU
2	P_+3V3_PSU
3	GND
4	P_+5V_PSU
5	GND
6	P_+5V_PSU
7	GND
8	PSU_PWROK
9	P_+5VSB_PSU
10	P_+12V_PSU_CN
11	P_+12V_PSU_CN
12	P_+3V3_PSU
13	P_+3V3_PSU
14	P_N12V_PSU
15	GND
16	PS_ON-L
17	GND
18	GND
19	GND
20	PS_TP1 (Test pad)
21	P_+5V_PSU
22	P_+5V_PSU
23	P_+5V_PSU
24	GND

1.5.2 CN44 System Panel Header



Pin	Name
1	CN_HDLED+
2	CN_PLED+
3	CN_HDLED-
4	CN_PLED-
5	GND
6	CN_PWRBTN-L
7	CN_RESETBTN-L
8	GND
9	NC
10	NC

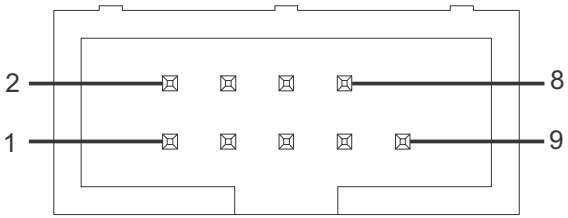
1.5.3 COM3 Serial Port Header



Pin	Name
1	CN_COM-C_DCD-L

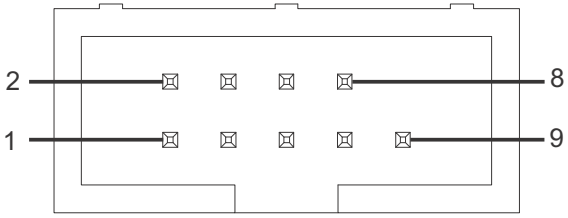
Pin	Name
2	CN_COM-C_DSR-L
3	CN_COM-C_RX
4	CN_COM-C_RTS-L
5	CN_COM-C_TX
6	CN_COM-C_CTS-L
7	CN_COM-C_DTR-L
8	CN_COM-C_POWER
9	GND
10	NC

1.5.4 COM4 Serial Port Header



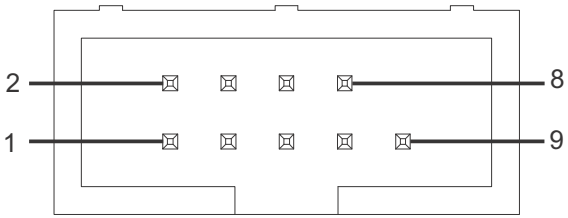
Pin	Name
1	CN_COM-D_DCD-L
2	CN_COM-D_DSR-L
3	CN_COM-D_RX
4	CN_COM-D_RTS-L
5	CN_COM-D_TX
6	CN_COM-D_CTS-L
7	CN_COM-D_DTR-L
8	CN_COM-D_POWER
9	GND
10	NC

1.5.5 COM5 Serial Port Header



Pin	Name
1	CN_COM-E_DCD-L
2	CN_COM-E_DSR-L
3	CN_COM-E_RX
4	CN_COM-E_RTS-L
5	CN_COM-E_TX
6	CN_COM-E_CTS-L
7	CN_COM-E_DTR-L
8	CN_COM-E_POWER
9	GND
10	NC

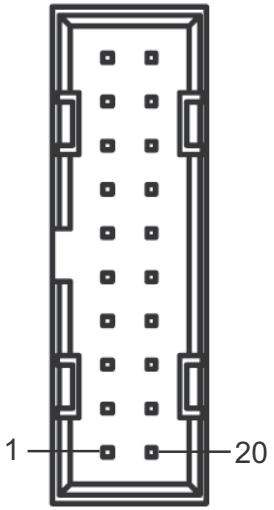
1.5.6 COM6 Serial Port Header



Pin	Name
1	CN_COM-F_DCD-L

Pin	Name
2	CN_COM-F_DSR-L
3	CN_COM-F_RX
4	CN_COM-F_RTS-L
5	CN_COM-F_TX
6	CN_COM-F_CTS-L
7	CN_COM-F_DTR-L
8	CN_COM-F_POWER
9	GND
10	NC

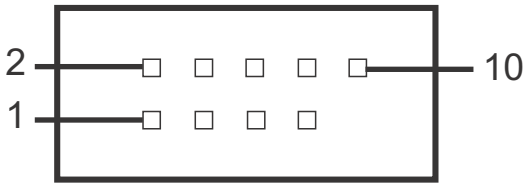
1.5.7 CN16 USB3.0 Header



Pin	Name
1	P_+5V_USB_VBUS_P9
2	CN_U3_USB3_RXN_7
3	CN_U3_USB3_RXP_7
4	GND

Pin	Name
5	CN_U3_USB3_TXN_7
6	CN_U3_USB3_TXP_7
7	GND
8	CN_U2_USB2N_5
9	CN_U2_USB2P_5
10	NC
11	CN_U2_USB2P_6
12	CN_U2_USB2N_6
13	GND
14	CN_U3_USB3_TXP_8
15	CN_U3_USB3_TXN_8
16	GND
17	CN_U3_USB3_RXP_8
18	CN_U3_USB3_RXN_8
19	P_+5V_USB_VBUS_P10
20	NC

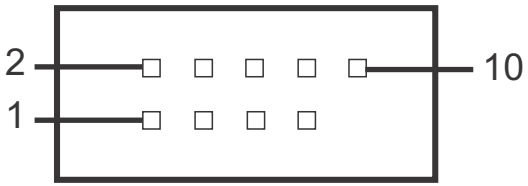
1.5.8 CN14 USB2.0 Header



Pin	Name
1	P_+5V_USB_VBUS_P6
2	P_+5V_USB_VBUS_P5
3	CN_U2_USB2N_7
4	CN_U2_USB2N_8
5	CN_U2_USB2P_7

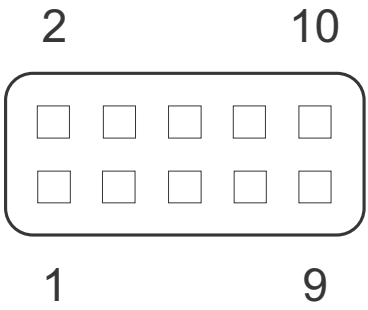
Pin	Name
6	CN_U2_USB2P_8
7	GND
8	GND
9	X
10	NC

1.5.9 CN15 USB2.0 Header



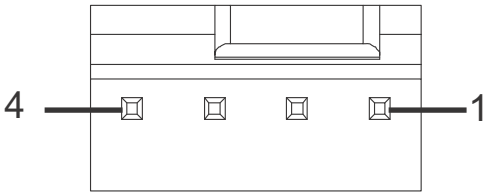
Pin	Name
1	P_+5V_USB_VBUS_P7
2	P_+5V_USB_VBUS_P8
3	CN_U2_USB2N_9
4	CN_U2_USB2N_10
5	CN_U2_USB2P_9
6	CN_U2_USB2P_10
7	GND
8	GND
9	X
10	NC

1.5.10 CN38 Front Audio Header



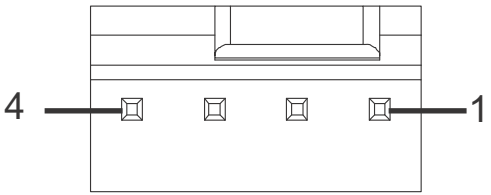
Pin	Name
1	A_MIC2_IN_L
2	GND_AUD
3	A_MIC2_IN_R
4	CN_FP_PRES-L
5	A_L_OUT2_R
6	CN_SRTN1
7	A_HP2_JD
8	NC
9	A_L_OUT2_L
10	CN_SRTN2

1.5.11 FAN1 4-Pin CPU FAN Connector



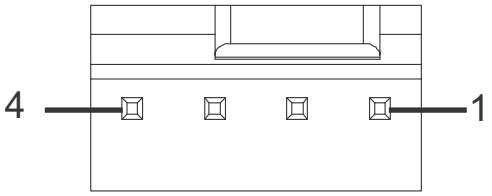
Pin	Name	Note
1	GND	GND
2	P_+12V_PSU	FAN-Power
3	O_CPUFAN_IN/ BMC_FAN_IN_CPU	FAN-TACHO
4	O_CPUFAN_OUT/ BMC_FAN_OUT_CPU	FAN-PWM IN

1.5.12 FAN2 4-Pin System FAN1 Connector



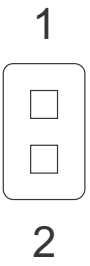
Pin	Name	Note
1	GND	GND
2	P_+12V_PSU	FAN-Power
3	O_SYSFAN_IN0/ BMC_FAN_IN	FAN-TACHO
4	O_SYSFAN_OUT0/ BMC_FAN_OUT	FAN-PWM IN

1.5.13 FAN3 4-Pin System FAN2 Connector



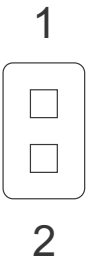
Pin	Name	Note
1	GND	GND
2	P_+12V_PSU	FAN-Power
3	O_SYSFAN_IN1/ BMC_FAN_IN1	FAN-TACHO
4	O_SYSFAN_OUT1/ BMC_FAN_OUT1	FAN-PWM IN

1.5.14 CN54 LAN1 LED Indicator



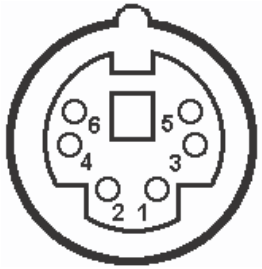
LAN1 Link with Activity LED Header	
1	P_+3V3_LAN_A
2	L_i219_LED0_LINK/ACT-L

1.5.15 CN53 LAN2 LED Indicator



LAN1 Link with Activity LED Header	
1	P_+3V3_LAN_A
2	L_i210_LED1_LINK/ACT-L

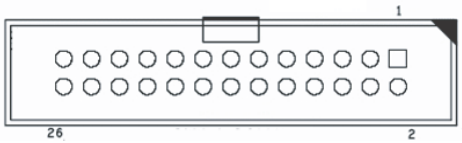
1.5.16 PS2 Combo Connector



Pin	Name	Note
1	O_KBDATA	
2	O_MSDATA	
3	GND	

Pin	Name	Note
4	P_+PS2	Power source from P_+5V_DUAL
5	O_KBCLK	
6	O_MSCLK	

1.5.17 CN37 LPT Connector



Pin	Name
1	O_STB-L_CON
2	O_AFD-L_CON
3	O_PD0_CON
4	O_ERR-L_CON
5	O_PD1_CON
6	O_INIT-L_CON
7	O_PD2_CON
8	O_SLIN-L_CON
9	O_PD3_CON
10	GND
11	O_PD4_CON
12	GND
13	O_PD5_CON
14	GND
15	O_PD6_CON
16	GND
17	O_PD7_CON
18	GND
19	O_ACK-L_CON
20	GND

Pin	Name
21	O_BUSY_CON
22	GND
23	O_PE_CON
24	GND
25	O_SLCT_CON
26	NC

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2 Getting Started

2.1 Package Contents

Before unpacking, check the shipping carton for any damage. If the shipping carton and/or contents are damaged, inform your dealer immediately. Retain the shipping carton and packing materials for inspection. Obtain authorization from the dealer before returning any product to ADLINK.

- IMB-M43 ATX industrial motherboard
- I/O shield

- The IMB-M43 must be protected from static discharge and physical shock. Never remove any of the socketed parts except at a static-free workstation.
- Ensure the power supply is disconnected before installing or removing the motherboard to avoid physical injury and device damage
- To avoid damage from static electricity, never place the motherboard directly on carpet or similar surfaces
- Wear a grounded wrist strap when handling components
- Hold components by the edges and do not touch ICs
- Place uninstalled components on a grounded antistatic pad or the antistatic bag shipped with the component

2.2 Mounting the motherboard

Mount the motherboard to the chassis with screws through the provided screw holes.

Avoid over-tightening screws to prevent PCB damage.

2.3 Installing Memory Modules (DIMM)

The IMB-M43 provides four 288-pin DDR4 DIMM slots supporting Dual Channel Memory technology.

- Dual channel configuration requires installation of DDR4 DIMM pairs of identical brand, speed, size, and chip type.
- Dual Channel Memory technology is disabled when only one memory module is installed.

- DDR, DDR2 or DDR3 memory modules cannot be installed in a DDR4 slot; motherboard and DIMM damage may result.
- Permanent damage to the motherboard and DIMM will result if the DIMM is forced into the slot in an incorrect orientation.

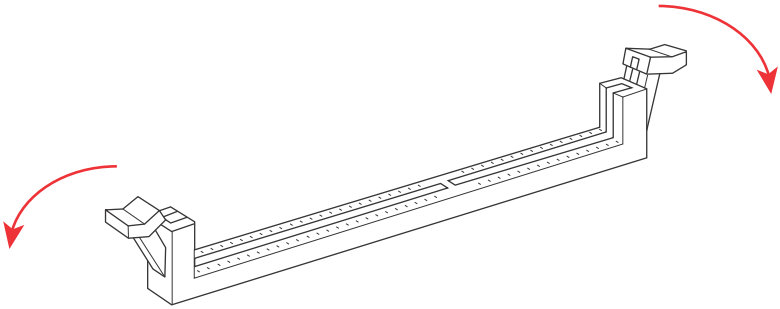
Install DRAM before installing add-on cards.

Remove add-on cards before removing any DRAM.

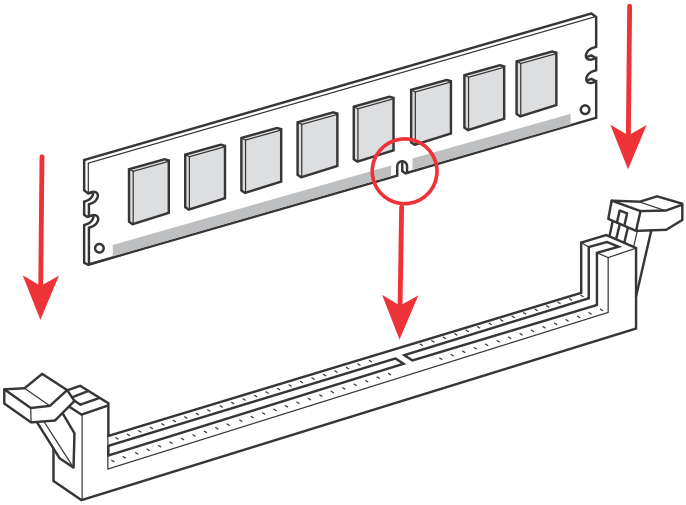
To install a memory module:

1. Locate the DIMM slots on the motherboard.

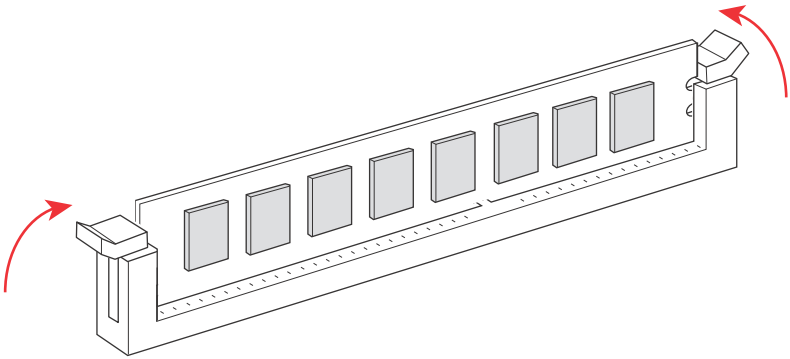
2. Press the slot's retaining clips outward to unlock.



3. Align the memory module on the socket, making sure that the module notch matches the slot rail.



4. Insert the module firmly into the slot until the retaining clips snap back inwards and the module is securely seated.



2.4 Installing Expansion Cards (PCI and PCI Express)

The IMB-M43 provides:

- 2x PCI slots receiving expansion cards with 32-bit PCI interface.
- If PEG3 is occupied, PEG1 is PCIex8 Gen3, PEG2 is PCIex4 Gen3, and PEG3 is PCIex4 Gen3.
- If PEG3 is not occupied and PEG2 is occupied, PEG1 is PCIex8 Gen3, PEG2 is PCIex8 Gen3, and PEG3 is no signal.
- If PEG3 is not occupied and PEG2 is not occupied, PEG1 is PCIex16 Gen3,PEG2 and PEG3 is no signal.
- PCIe1: PCIe x4 Gen3
- PCIe2: PCIe x4 Gen3

Before installing expansion cards, ensure the power supply is switched off or disconnected. Check the card's documentation and perform requisite system configurations before installation.

1. Remove the system unit cover (if the motherboard is installed in a chassis).
2. Remove the bracket facing the destination slot.
3. Align the card connector with the slot and press firmly until the card is securely seated.
4. Fix the card to the chassis with screws.
5. Replace the system cover.

2.5 Jumper Settings

NOTE:

* denotes default setting

1-2	
2-3	

CN24

Clear CMOS	
*1-2	Normal
2-3	Clear CMOS

CN25

Clear ME	
*1-2	Normal
2-3	Clear ME

CN22

GPIO Port Power Select	
*N/A	No Power
1-2	P_+5V_PSU
2-3	P_+12V_PSU

CN31

Serial Port 3 Power Select	
*N/A	No Power
1-2	P_+5V_PSU
2-3	P_+12V_PSU

CN32

Serial Port 4 Power Select	
*N/A	No Power
1-2	P_+5V_PSU
2-3	P_+12V_PSU

CN35

Serial Port 5 Power Select	
*N/A	No Power
1-2	P_+5V_PSU
2-3	P_+12V_PSU

CN36

Serial Port 6 Power Select	
*N/A	No Power
1-2	P_+5V_PSU
2-3	P_+12V_PSU

2.6 Driver Installation

Download the requisite drivers for your system from http://www.adlinktech.com and install.

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Appendix A - UEFI Setup Utility

A.1 Introduction

This section explains how to use the UEFI Setup Utility to configure your system. The UEFI chip on the motherboard stores the UEFI Setup Utility. Select <Del> during the Power-On-Self-Test (POST) to enter the UEFI Setup Utility, otherwise, POST will continue with its test routines.

To enter the UEFI Setup Utility after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis.

Because the UEFI software is frequently updated, the setup screens and descriptions provided are for reference only, and may not conform exactly with those displayed.

A.2 UEFI Menu Bar

The top of the screen has a menu bar with the following selections:

Main	Configures system time/date information
Advanced	Sets up advanced UEFI features
H/W Monitor	Displays current hardware status
Boot	Sets default system device to locate and load OS
Security	Sets up security features
Exit	Exits the current screen or UEFI Setup Utility

Use arrow keys to choose among the selections on the menu bar, and select Enter to access the sub screen. The mouse can also be used to select items

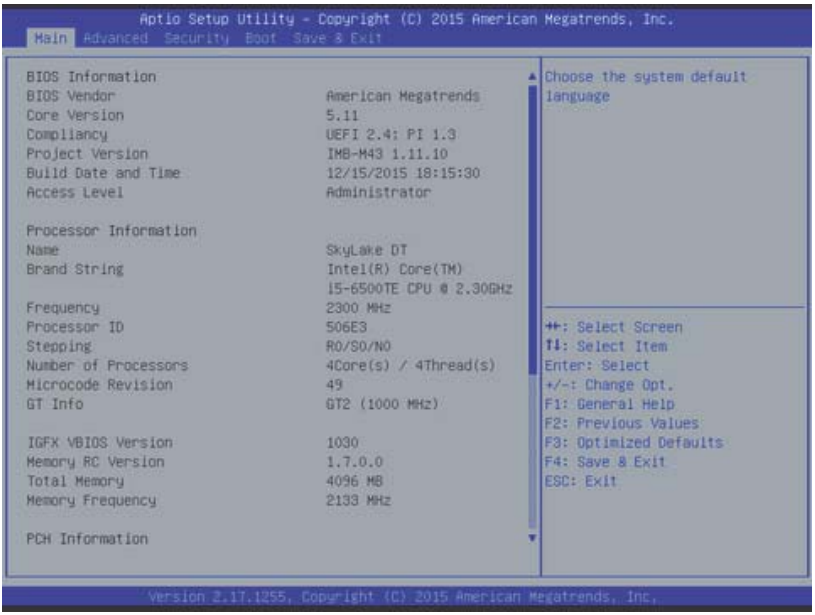
A.3 Navigation Keys

Key(s)	Function
R/L Arrow	Moves cursor left or right to select Menus
U/D Arrow	Moves cursor up or down to select items
+/-	Changes option for the selected item
Enter	Opens the selected Menu
F1	Displays General Help
F2	Previous values
F3	Optimized default values for all settings
F4	Saves changes and exits Setup
ESC	Opens the Exit Menu or exits the current screen

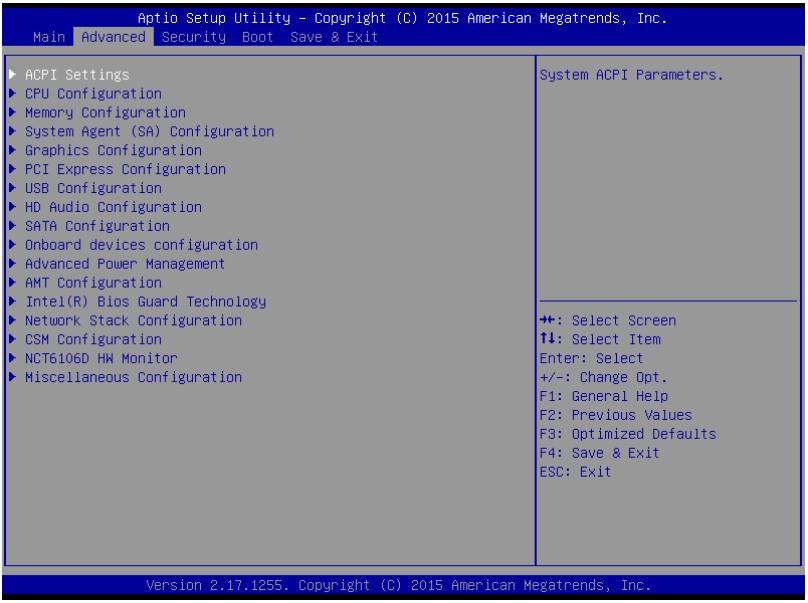
Table A-1: Navigation Key Functions

A.4 Main Menu

When UEFI Setup is started, the Main menu appears, displaying system overview.



A.5 Advanced Menu



A.5.1 ACPI Settings

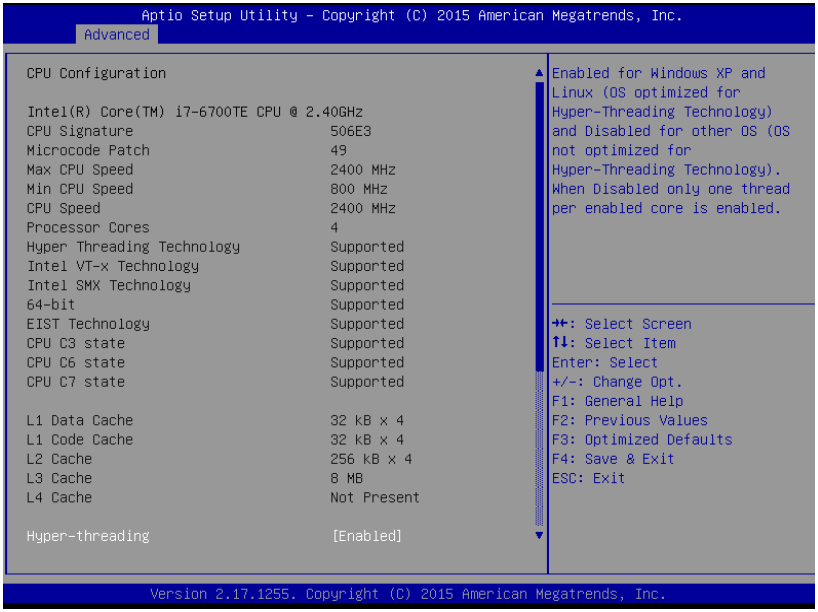
Enable Hibernation

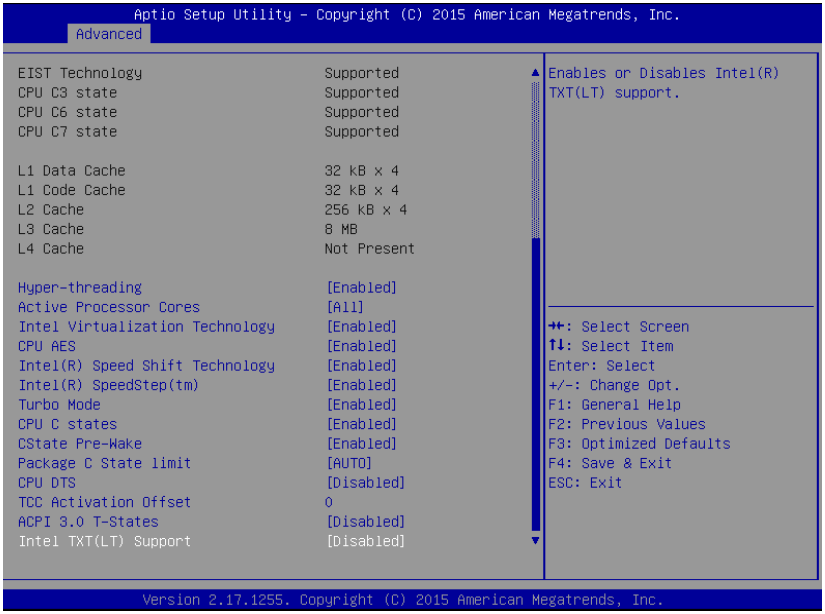
Enables or Disables System ability to hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

ACPI Sleep State

Selects the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

A.5.2 CPU Configuration





Hyper-threading

Enabled for Windows XP and Linux optimized for HT-technology and Disabled for other OS not optimized for HT Technology. When Disabled only one thread per enabled core is enabled.

Active Processor Cores

Number of cores to enable in each processor package.

Intel Virtualization Technology

When enabled, utilizes the additional hardware capabilities provided by Vanderpool Technology

CPU AES

Enables/disables CPU Advanced Encryption Standard instructions

Intel Speed Shift Technology

Enables/disables Intel® Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states.

Intel® SpeedStep(tm)

Allows more than two frequency ranges to be supported.

Turbo Mode

Turbo Mode.

CPU C states

Enables/disables CPU C states

CState Pre-Wake

Disable - Sets bit 30 of POWER_CTL MSR (0x1FC) to 1 to disable the Cstate Pre-Wake

Package C State limit

Options: C0/C1, C2, C3, C6, C7, C7s, C8, AUTO

CPU DTS

Disabled: ACPI thermal management uses EC reported temperature values.

Enabled: ACPI thermal management uses DTS SMM mechanism to obtain CPU temperature values.

Out of Spec: ACPI Thermal Management uses EC reported temperature values and DTS SMM is used to handle Out of Spec condition.

TCC Activation Offset

Offset from the factory TCC activation temperature

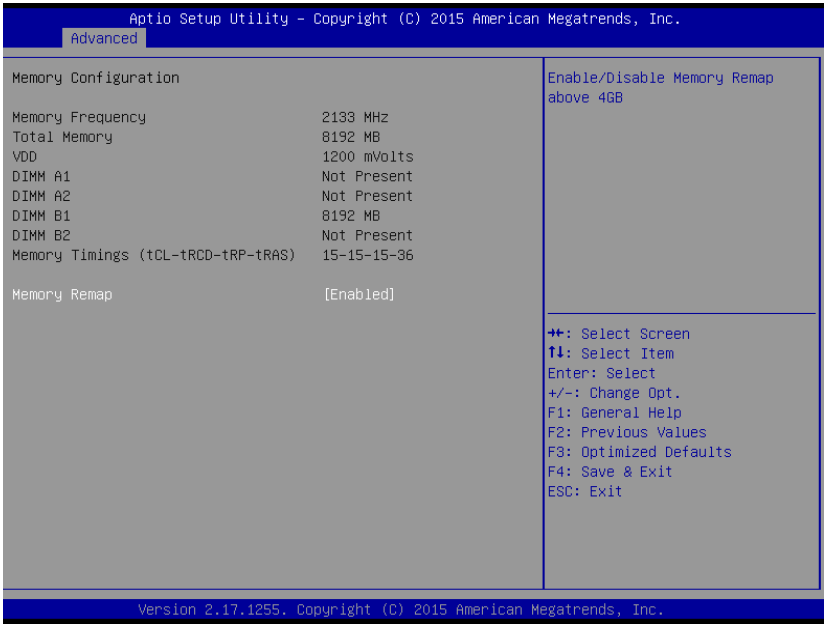
ACPI 3.0 T-States

Enables/disables ACPI 3.0 T-States.

Intel TXT(LT) Support

Disables Intel® TXT(LT) support.

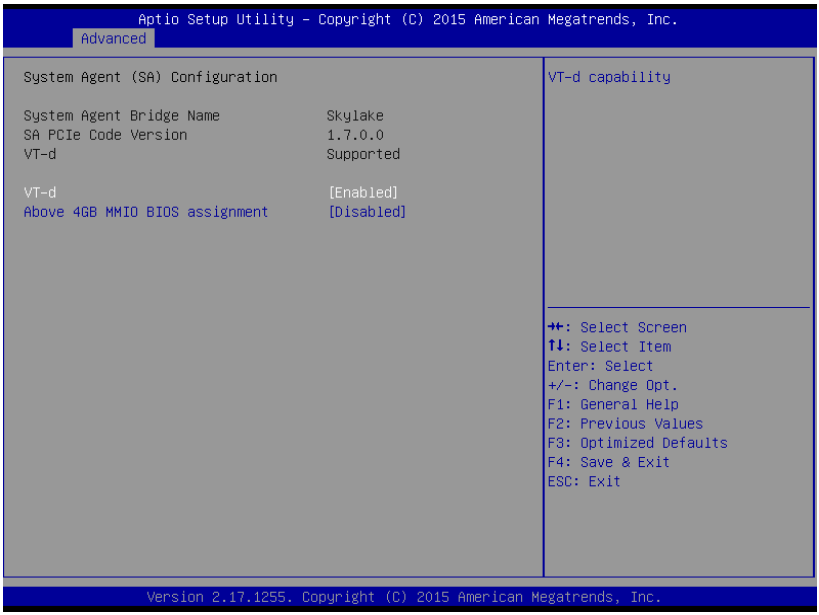
A.5.3 Chipset Configuration



Memory Remap

Enables/disables Memory Remap above 4GB.

A.5.4 System Agent (SA) Configuration



VT-d

VT-d capability

Above 4GB MMIO BIOS assignment

Enables/disables above 4GB MemoryMapped IO BIOS assignment. This is disabled automatically when Aperture Size is set to 2048MB.

A.5.5 Graphics Configuration

Primary Display

Selects which IGFX/PEG/PCI Graphics device should be Primary Display Or selects SG for Switchable Gfx.

Internal Graphics

Keep IGFX enabled based on the setup options.

GTT Size

Selects the GTT Size

Aperture Size

Selects the Aperture Size

NOTE: Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.

DVMT Pre-Allocated

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

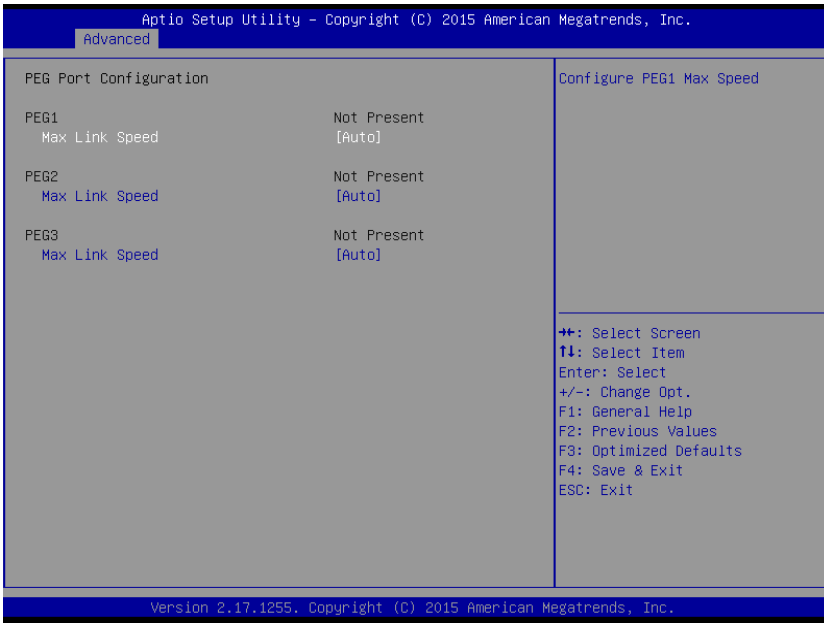
DVMT Total Gfx Mem

Selects DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.

A.5.6 PCI Express Configuration

PEG Port Configuration

PEG Port Options



Max Link Speed

Configure PEG1 Max Speed

Option: Auto, Gen1, Gen2, Gen3

Max Link Speed

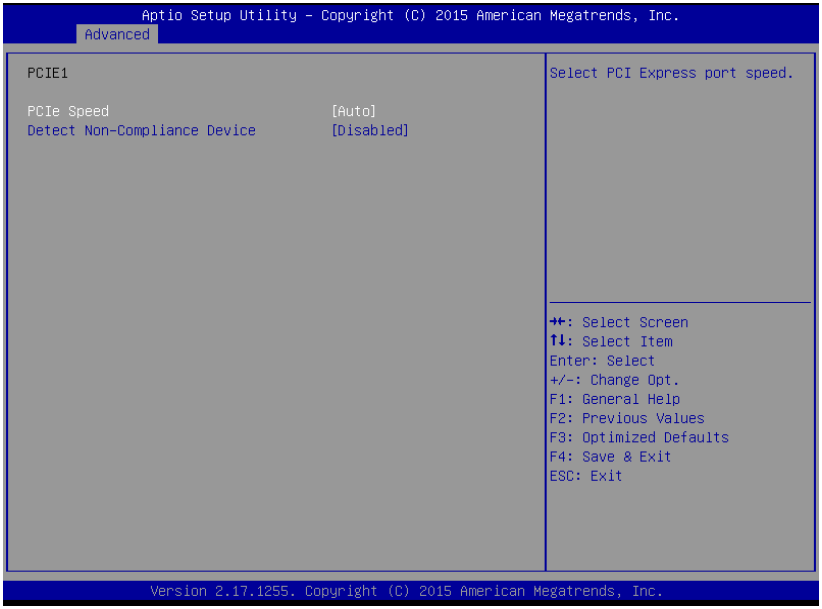
Configure PEG2 Max Speed

Option: Auto, Gen1, Gen2, Gen3

Max Link Speed

Configure PEG3 Max Speed

Option: Auto, Gen1, Gen2, Gen3



PCIE1

PCIe Speed

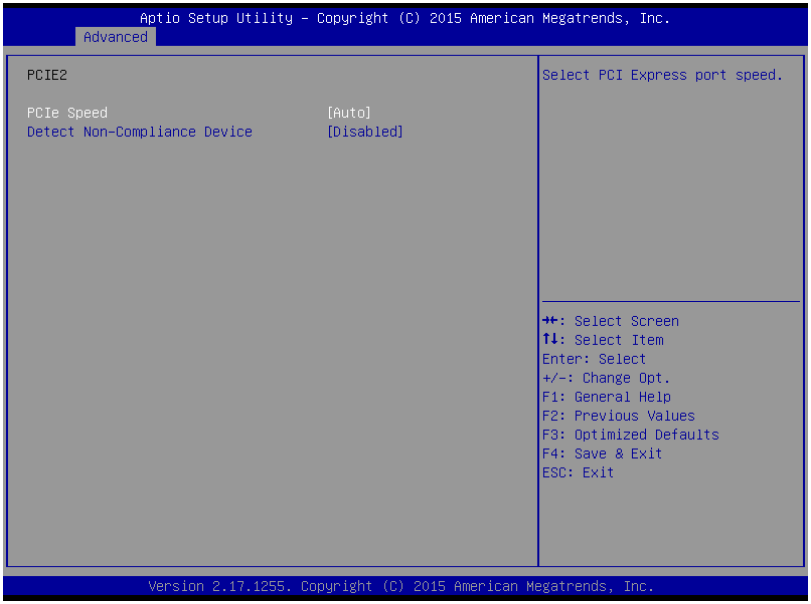
Selects PCI Express port speed.

Options: Auto, Gen1, Gen2, Gen3

Detect Non-Compliance Device

Options: Disabled/Enabled

Detects Non-Compliance PCI Express Device. If enabled, increases POST time.



PCIE2

PCIe Speed

Selects PCI Express port speed.

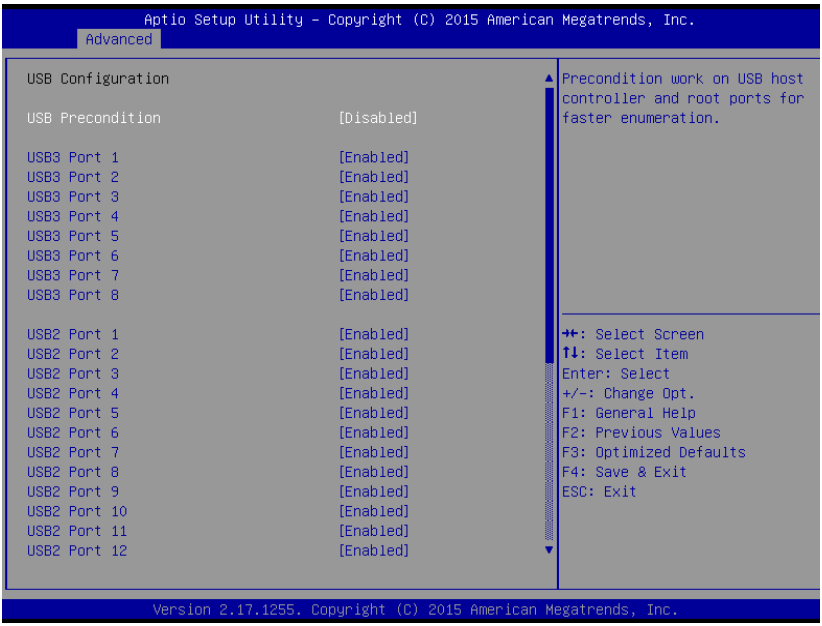
Options: Auto, Gen1, Gen2, Gen3

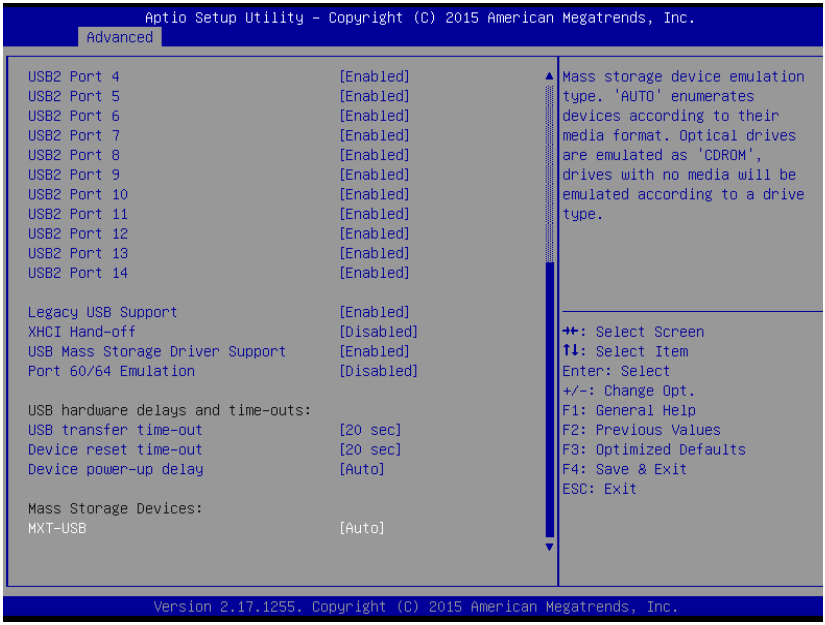
Detect Non-Compliance Device

Options: Disabled/Enabled

Detects Non-Compliance PCI Express Device. If enabled, increases POST time.

A.5.7 USB Configuration





USB Precondition

Precondition work on USB host controller and root ports for faster enumeration.

USB3 Port 1 – USB3 Port 8

Enables/disables USB port.

USB2 Port 1 – USB2 Port 14

Enables/disables USB port.

Legacy USB Support

Enables Legacy USB support.

AUTO option disables legacy support if no USB devices are connected.

DISABLE option will keep USB devices available only for EFI applications.

XHCI Hand-off

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

USB Mass Storage Driver Support

Enables/disables USB Mass Storage Driver Support.

Port 60/64 Emulation

Enables I/O port 60h/64h emulation support. This should be enabled for complete USB keyboard legacy support for non-USB aware OSes.

USB transfer time-out

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

Options: 1 sec, 5 sec, 10 sec, 20 sec

Device reset time-out

USB mass storage device Start Unit command time-out.

Options: 10 sec, 20 sec, 30 sec, 40 sec

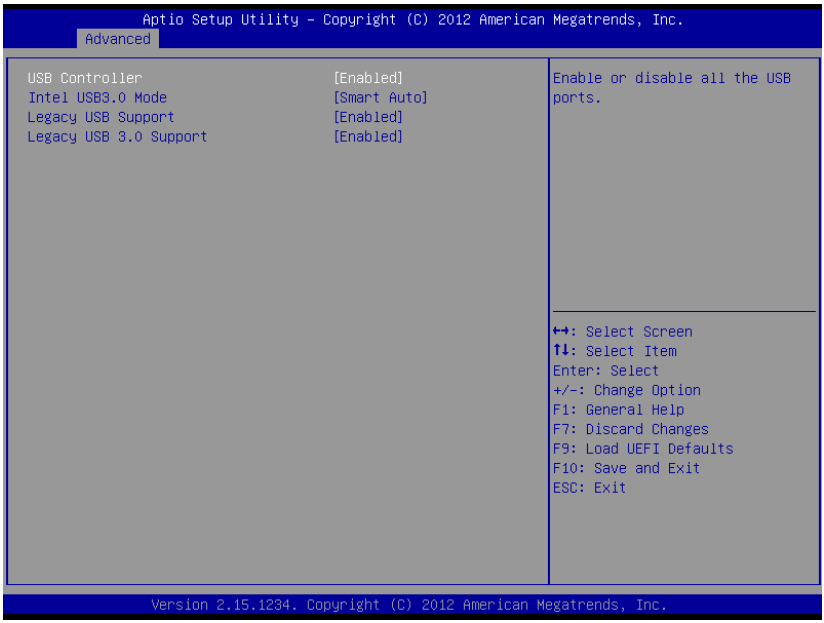
Device power-up delay

Maximum time the device will take before it properly reports itself to the Host Controller.

'Auto' uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

‘Manual’ for delay range by 1 – 40 seconds in one second increments.

A.5.8 USB Configuration



USB Controller

Enables/disables the USB controller.

Intel USB 3.0 Mode

Enables/disables Intel USB 3.0 mode.

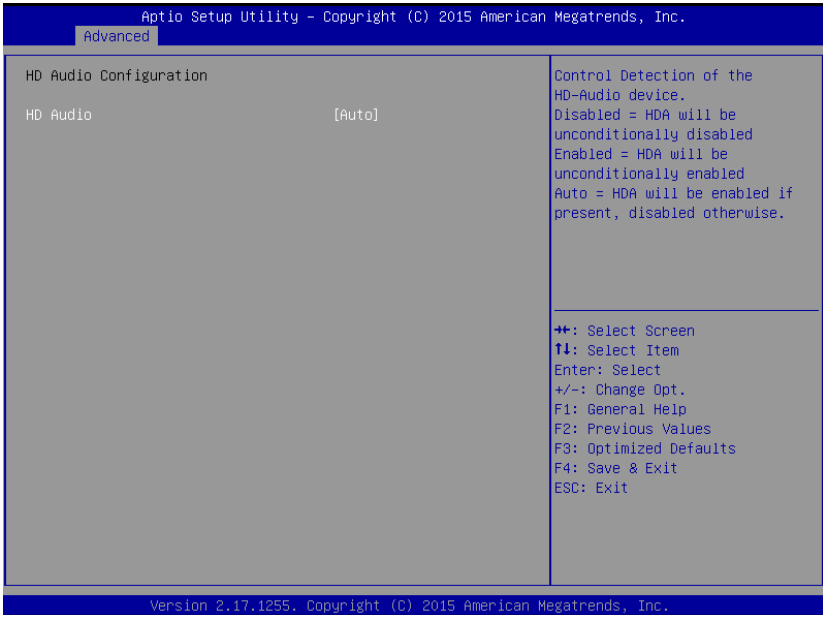
Legacy USB Support

Selects legacy support for USB devices, from default Enabled, supporting legacy USB, Auto, supporting legacy USB when devices are connected, and Disabled (if USB compatibility issues occur, it is recommended to select Disabled to enter OS), and UEFI Setup Only, in which USB devices are allowed only under UEFI setup and Windows/Linux OS.

Legacy USB 3.0 Support

Enables/disables legacy support for USB 3.0 devices, with default Enabled.

A.5.9 HD Audio Configuration



HD Audio

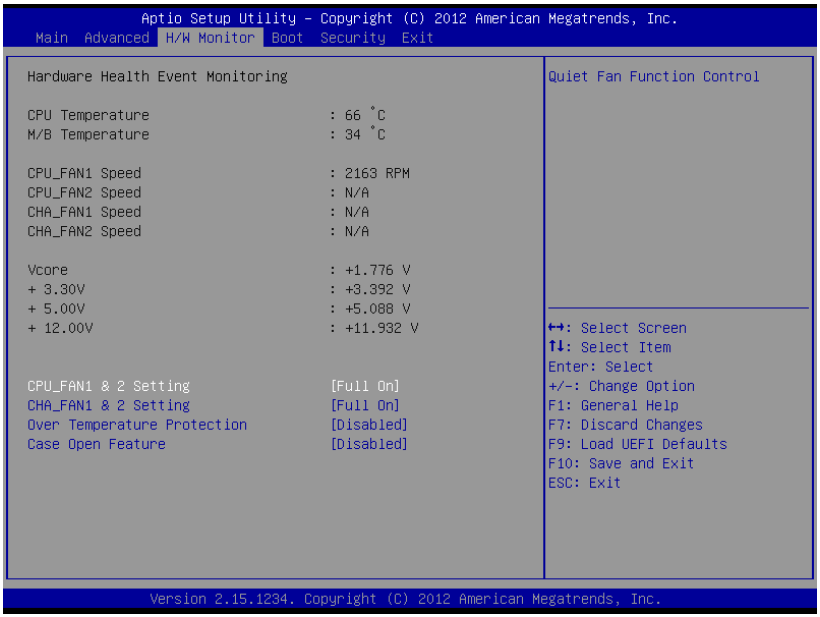
Control Detection of the HD-Audio device.

Disabled = HDA will be unconditionally disabled

Enabled = HDA will be unconditionally enabled

Auto = HDA will be enabled if present, disabled otherwise.

A.5.10 SATA Configuration



SATA Configuration

SATA Controller(s)

Enables/disables SATA Device.

SATA Mode Selection

Determines how SATA controller(s) operate.

Options: AHCI, RAID

Aggressive LPM Support

Enable PCH to aggressively enter link power state.

SATA Controller Speed

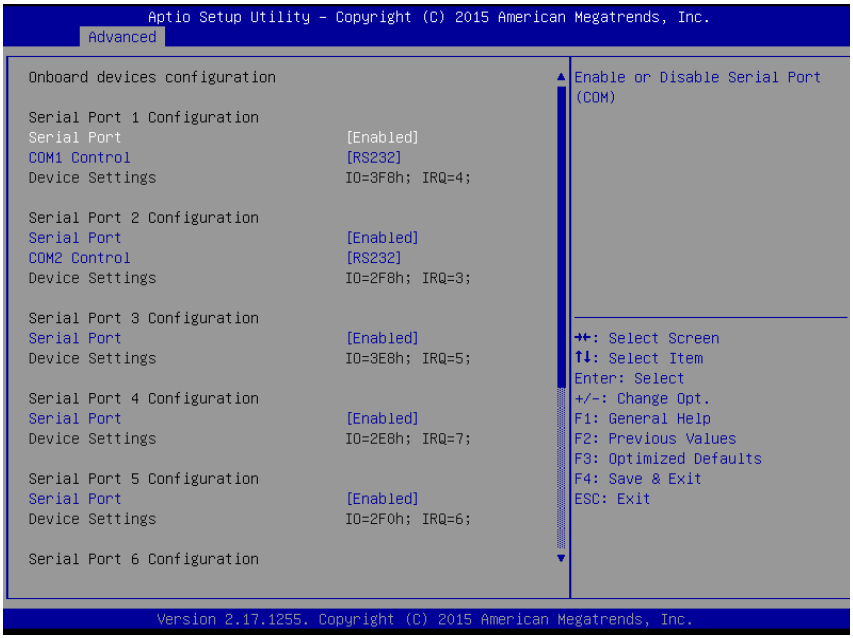
Indicates the maximum speed the SATA controller can support.

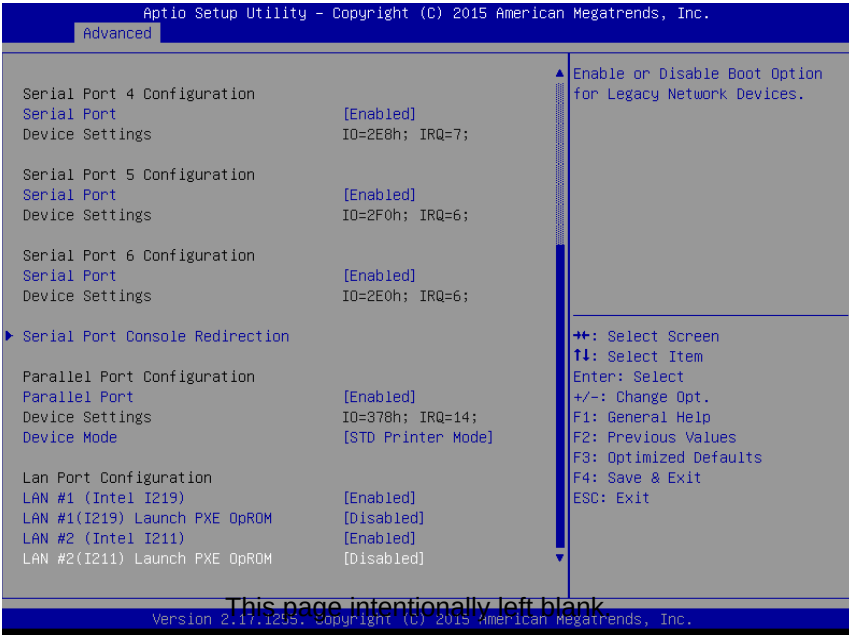
Options: Default, Gen1, Gen2, Gen3

Port 1 – Port 6

Enables or Disables SATA Port

A.5.11 Onboard Device Configuration





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Serial Port 1

Enables or Disables Serial Port (COM)

COM1 Control

Selects COM1 mode. RS232, RS422 or RS485

Serial Port 2

Enables or Disables Serial Port (COM)

COM2 Control

Selects COM2 mode. RS232, RS422 or RS485

Serial Port 3 - 6

Enables or Disables Serial Port (COM)

Serial Port Console Redirection

COM1 – COM6 and COM (PCI Bus0, Dev22, Func3) Console Redirection Enables or Disables

Legacy Console Redirection

Selects a COM Port to display redirection of Legacy OS and Legacy OPROM messages

Options: COM1 – COM6 and COM (PCI Bus0, Dev22, Func3)

Parallel Port

Enables or Disables Parallel Port (LPT/LPTE)

Device Mode

Change the Printer Port mode.

Option: STD Printer Mode, SPP Mode, EPP-1.9 and SPP Mode, EPP-1.7 and SPP Mode, ECP Mode, ECP and EPP 1.9 Mode, ECP and EPP 1.7 Mode

LAN #1 (Intel I219)

Enables/disables

LAN #1 (I219) Launch PXE OpROM

Enables/disables Boot Option for Legacy Network Devices.

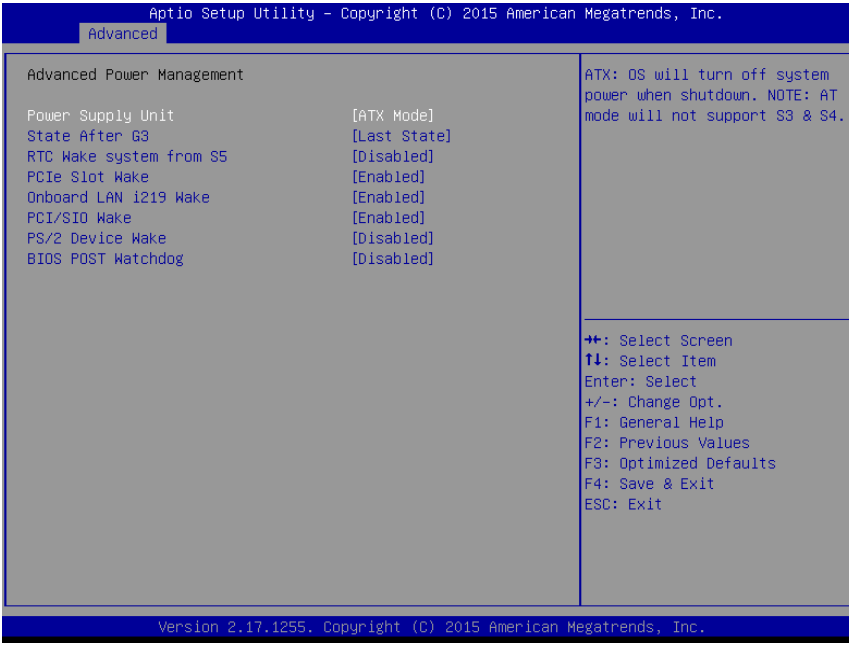
LAN #2 (Intel I211)

Enables/disables

LAN #1 (I211) Launch PXE OpROM

Enables/disables Boot Option for Legacy Network Devices.

A.5.12 Advance Power Management



Power Supply Unit

ATX: OS turns off system power when shut down. NOTE: AT mode will not support S3 & S4.

State After G3

Specify what state to go to when power is re-applied after a power failure (G3 state).

Options: Power On, Power Off, Last State

RTC Wake system from S5

Enables/disables System wake on alarm event.

Selects FixedTime, system will wake on the hr::min::sec specified.

Selects DynamicTime , System will wake on the current time + Increase minute(s)

PCIe Slot Wake

Enables/disables PCI Express Slot wake capability

Onboard LAN i219 Wake

Enables/disables onboard LAN wake capability

PCI/SIO Wake

Enables/disables PCI/SIO wake capability

PS/2 Device Wake

Enables/disables PS/2 device wake from S5

BIOS POST Watchdog

Set watchdog timer for BIOS POST process.

Options: Disabled, Second Mode, Minute Mode

A.5.13 AMT Configuration

Intel AMT

Enables/disables Intel® Active Management Technology BIOS Extension.

Note: iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device

BIOS Hotkey Pressed

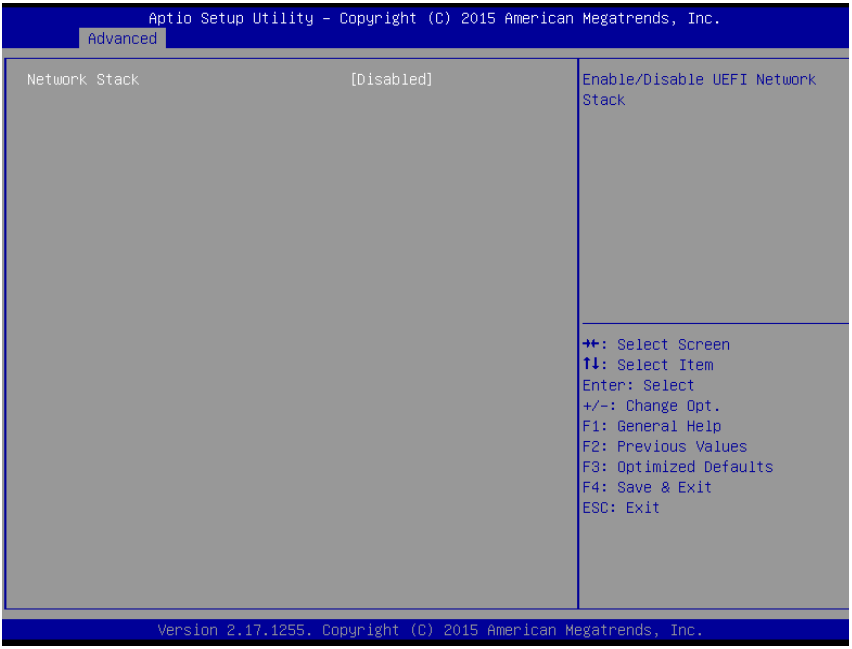
OEMFLag Bit 1: Enables/disables BIOS hotkey press.

A.5.14 Intel® BIOS Guard Technology

Intel Bios Guard Support

Enables/disables Intel BIOS Guard Support. Disable before flashing BIOS.

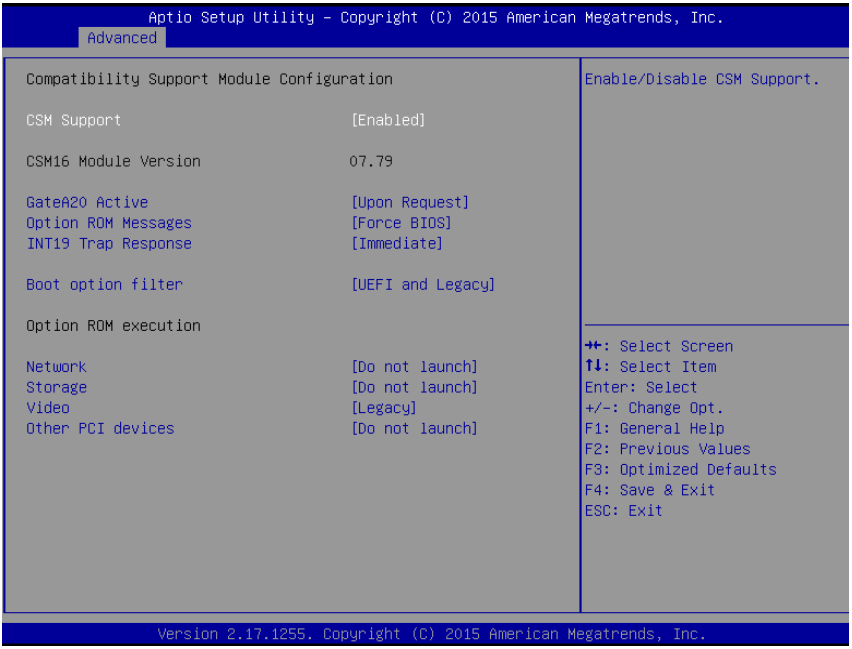
A.5.15 Network Stack Configuration



Network Stack

Enables/disables UEFI Network Stack

A.5.16 CSM Configuration



CSM Support

Enables/disables CSM Support.

GateA20 Active

UPON REQUEST - GA20 can be disabled using BIOS services.

ALWAYS - do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.

Option ROM Messages

Set display mode for Option ROM

Options: Force BIOS, 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.

Boot option filter

This option controls Legacy/UEFI ROMs priority

Network

Controls the execution of UEFI and Legacy PXE OpROM

Storage

Controls the execution of UEFI and Legacy Storage OpROM

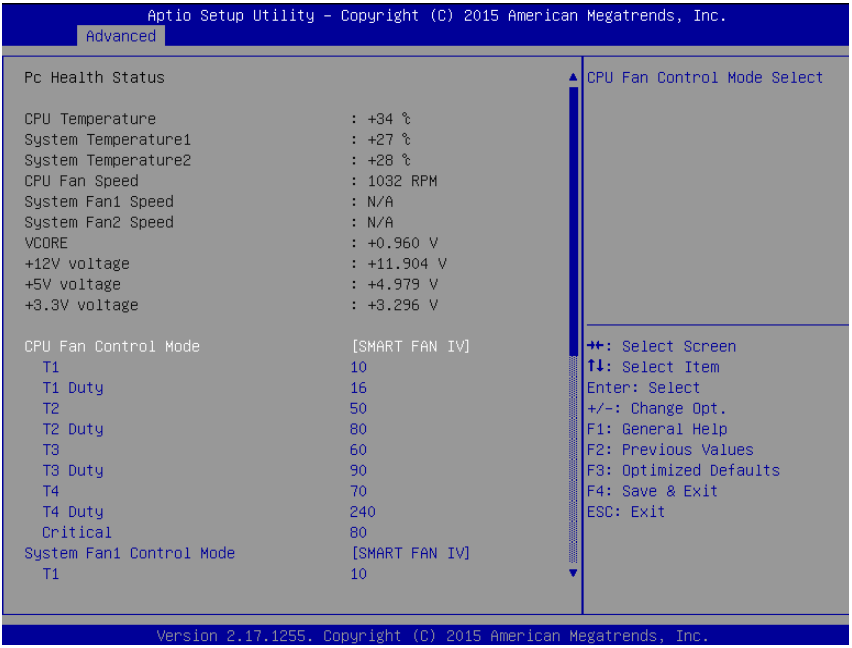
Video

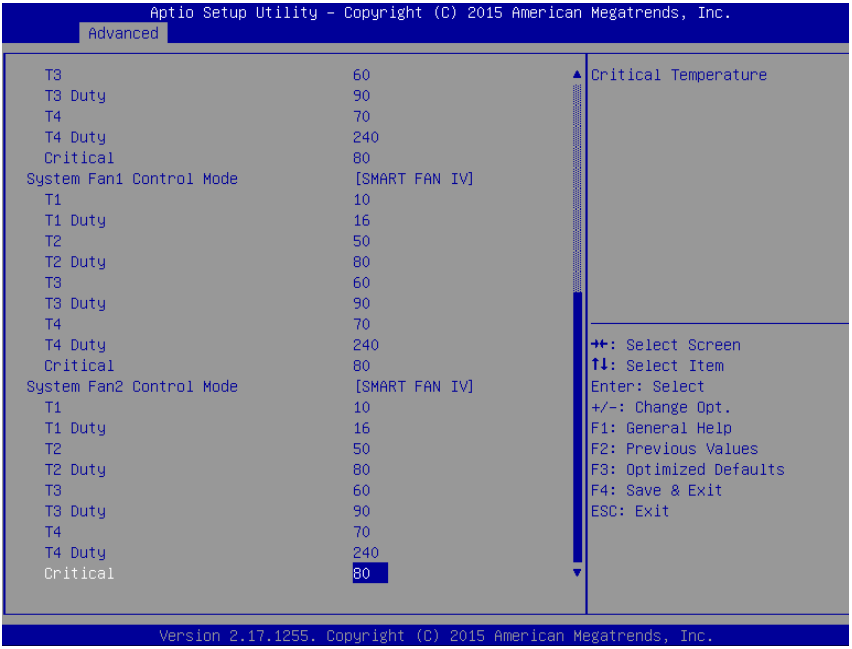
Controls the execution of UEFI and Legacy Video OpROM

Other PCI devices

Determines OpROM execution policy for devices other than Network, Storage, or Video

A.5.17 NCT6106D HW Monitor





CPU Fan Control Mode

CPU Fan Control Mode Select

Options: Manual Mode, SMART FAN IV

T1

T1 (Temperature 1), Range: 1-100

T1 Duty

Set T1 related DC/PWM value, Range: 0-255

T2

T2 (Temperature 2), Range: 1-100

T2 Duty

Set T2 related DC/PWM value, Range: 0-255

T3

T3 (Temperature 3), Range: 1-100

T3 Duty

Set T3 related DC/PWM value, Range: 0-255

T4

T4 (Temperature 4), Range: 1-100

T4 Duty

Set T4 related DC/PWM value, Range: 0-255

Critical

Critical Temperature

System Fan1 Control Mode

System Fan1 Control Mode Select

Options: Manual Mode, SMART FAN IV

T1

T1 (Temperature 1), Range: 1-100

T1 Duty

Set T1 related DC/PWM value, Range: 0-255

T2

T2 (Temperature 2), Range: 1-100

T2 Duty

Set T2 related DC/PWM value, Range: 0-255

T3

T3 (Temperature 3), Range: 1-100

T3 Duty

Set T3 related DC/PWM value, Range: 0-255

T4

T4 (Temperature 4), Range: 1-100

T4 Duty

Set T4 related DC/PWM value, Range: 0-255

Critical

Critical Temperature

System Fan2 Control Mode

System Fan2 Control Mode Select

Options: Manual Mode, SMART FAN IV

T1

T1 (Temperature 1), Range: 1-100

T1 Duty

Set T1 related DC/PWM value, Range: 0-255

T2

T2 (Temperature 2), Range: 1-100

T2 Duty

Set T2 related DC/PWM value, Range: 0-255

T3

T3 (Temperature 3), Range: 1-100

T3 Duty

Set T3 related DC/PWM value, Range: 0-255

T4

T4 (Temperature 4), Range: 1-100

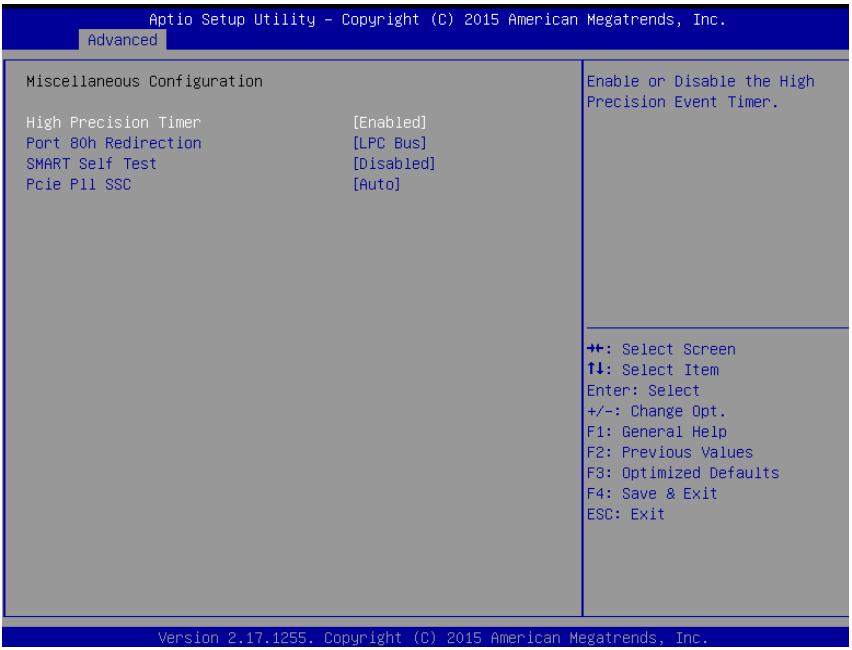
T4 Duty

Set T4 related DC/PWM value, Range: 0-255

Critical

Critical Temperature

A.5.18 Miscellaneous Configuration



High Precision Timer

Enables/disables the High Precision Event Timer.

Port 80h Redirection

Control where the Port 80h cycles are sent.

Options: LPC Bus, PCIE Bus

SMART Self Test

Run SMART Self Test on all HDDs during POST.

Pcie Pll SSC

Pcie Pll SSC percentage.

AUTO - Keep hw default, no BIOS override.

Range is 0.0% - 2.0%.

A.6 Security

A.6.1 Administrator Password

Administrator Password

Set Administrator Password

User Password

Set User Password

RTC Lock

Enable will lock bytes 38h-3Fh in the lower/upper 128-byte bank of RTC RAM.

BIOS Lock

Enables/disables the PCH BIOS Lock Enable (BLE bit) feature.

A.6.2 Secure Boot menu

Secure Boot

Secure Boot can be enabled if:

1. System running in User mode with enrolled Platform Key(PK)
2. CSM function is disabled

Secure Boot Mode

Secure Boot mode selector.

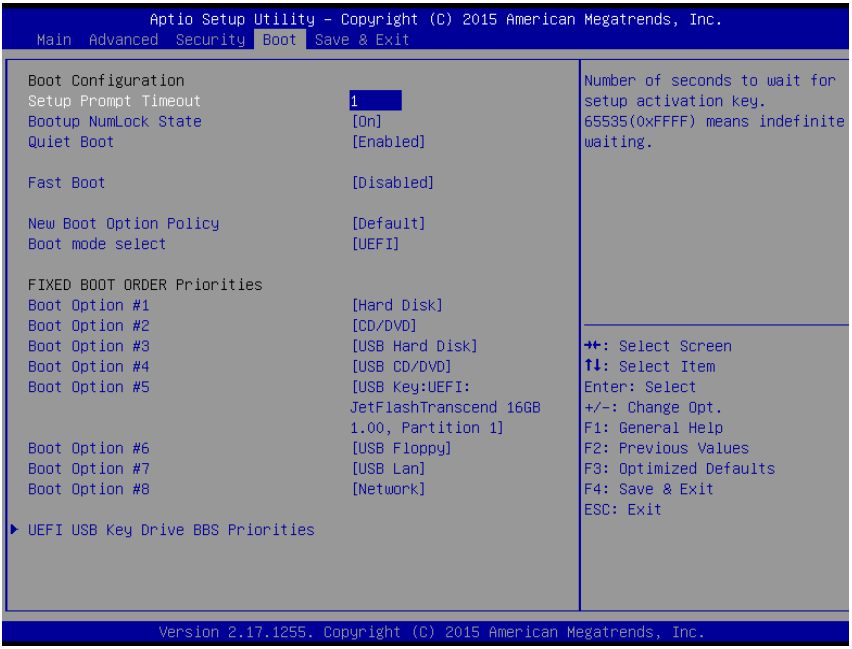
Options: Standard, Custom

'Custom' Mode enables users to change Image Execution policy and manage Secure Boot Keys

Key Management

Enables experienced users to modify Secure Boot variables

A.7 Boot



Setup Prompt Timeout

Number of seconds to wait for setup activation key.

65535(0xFFFF) means indefinite waiting.

Bootup NumLock State

Selects the keyboard NumLock state

Quiet Boot

Enables/disables Quiet Boot option

Fast Boot

Enables/disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

New Boot Option Policy

Controls the placement of newly detected UEFI boot options

Options: Default, Place First, Place Last

Boot mode select

Selects boot mode LEGACY/UEFI

Boot Option #1

Sets the system boot order

Boot Option #2

Sets the system boot order

Boot Option #3

Sets the system boot order

Boot Option #4

Sets the system boot order

Boot Option #5

Sets the system boot order

Boot Option #6

Sets the system boot order

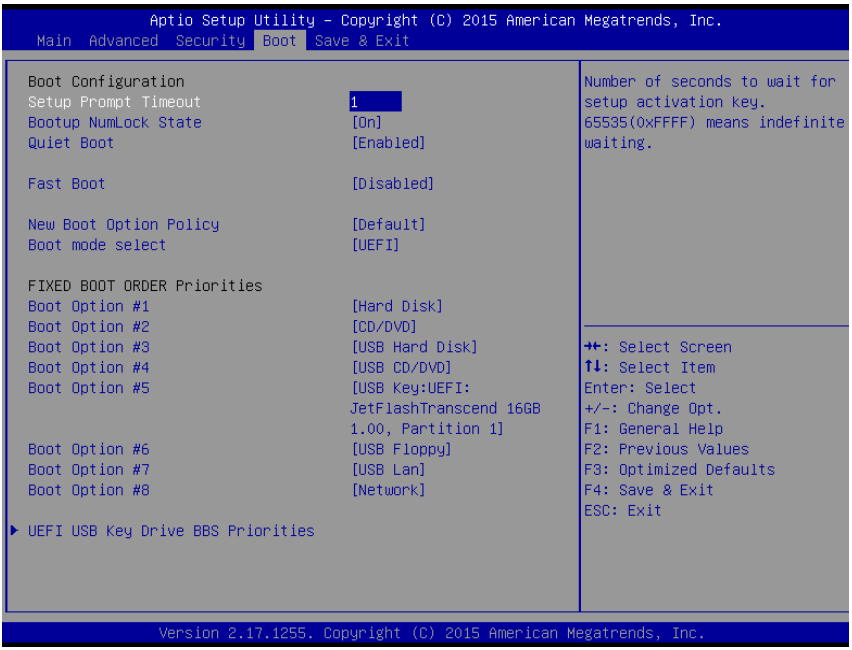
Boot Option #7

Sets the system boot order

Boot Option #8

Sets the system boot order

A.8 Save & Exit



Save Changes and Exit

Exit system setup after saving the changes.

Discard Changes and Exit

Exit system setup without saving any changes.

Save Changes and Reset

Reset the system after saving the changes.

Discard Changes and Reset

Reset system setup without saving any changes.

Save Changes

Save Changes done so far to any of the setup options.

Discard Changes

Discard Changes done so far to any of the setup options.

Restore Defaults

Restore/Load Default values for all the setup options.

Save as User Defaults

Save the changes done so far as User Defaults.

Restore User Defaults

Restore the User Defaults to all the setup options.

Launch EFI Shell from filesystem device

Attempts to Launch EFI Shell application (Shell.efi) from one of the available filesystem devices

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Important Safety Instructions

For user safety, please read and follow all instructions, Warnings, Cautions, and Notes marked in this manual and on the associated device before handling/operating the device, to avoid injury or damage.

S'il vous plaît prêter attention stricte à tous les avertissements et mises en garde figurant sur l'appareil , pour éviter des blessures ou des dommages.

- Read these safety instructions carefully
- Keep the User's Manual for future reference
- Read the Specifications section of this manual for detailed information on the recommended operating environment
- The device can be operated at an ambient temperature of 50ºC
- When installing/mounting or uninstalling/removing device; or when removal of a chassis cover is required for user servicing (See "Getting Started" on page 23.):
  - Turn off power and unplug any power cords/cables
  - Reinstall all chassis covers before restoring power
- To avoid electrical shock and/or damage to device:
  - Keep device away from water or liquid sources
  - Keep device away from high heat or humidity
  - Keep device properly ventilated (do not block or cover ventilation openings)
  - Always use recommended voltage and power source settings
  - Always install and operate device near an easily accessible electrical outlet
  - Secure the power cord (do not place any object on/over the power cord)
  - Only install/attach and operate device on stable surfaces and/or recommended mountings
- If the device will not be used for long periods of time, turn off and unplug from its power source

- Never attempt to repair the device, which should only be serviced by qualified technical personnel using suitable tools
- A Lithium-type battery may be provided for uninterrupted backup or emergency power.

Risk of explosion if battery is replaced with one of an incorrect type; please dispose of used batteries appropriately.
Risque d'explosion si la pile est remplacée par une autre de type incorrect. Veuillez jeter les piles usagées de façon appropriée.

- The device must be serviced by authorized technicians when:
  - The power cord or plug is damaged
  - Liquid has entered the device interior
  - The device has been exposed to high humidity and/or moisture
  - The device is not functioning or does not function according to the User's Manual
  - The device has been dropped and/or damaged and/or shows obvious signs of breakage
- Disconnect the power supply cord before loosening the thumbscrews and always fasten the thumbscrews with a screwdriver before starting the system up
- It is recommended that the device be installed only in a server room or computer room where access is:
  - Restricted to qualified service personnel or users familiar with restrictions applied to the location, reasons therefor, and any precautions required
  - Only afforded by the use of a tool or lock and key, or other means of security, and controlled by the authority responsible for the location

	**BURN HAZARD** Touching this surface could result in bodily injury. To reduce risk, allow the surface to cool before touching. ***RISQUE DE BRÛLURES*** *Ne touchez pas cette surface, cela pourrait entraîner des blessures.* *Pour éviter tout danger, laissez la surface refroidir avant de la toucher.*

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Getting Service

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