

# Data Sheet

## 15" All-in-One POS Terminal

Performance . Easy maintenance . Stability

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LONGSHINE's new RDT-150 was designed for heavy-duty tasks in environments such as restaurants, hotels and shops.

15" TFT LCD display with touch panel in wide tilting angle offers the user maximal flexibility and convenience.

Your total cost of ownership will also be significantly reduced through competitive hardware costs, improved efficiencies and minimal administration efforts. Finally, high product quality ensures a long life cycle.



### Performance

Platforms from Intel Celeron for performance.

- Fits into any POS software environment with relative ease
- RDT-150 provides performance to cover POS software needs

### Maximize the usage, minimize the cost

Removable base for panel mount application

- Flexibility of usage

### Cost effective

Excellent cost-performance ratio

- Developed for the highest CP value

### Compact design

Tidy desk with more space left

- Small footprint for limited counter space

### Water proof

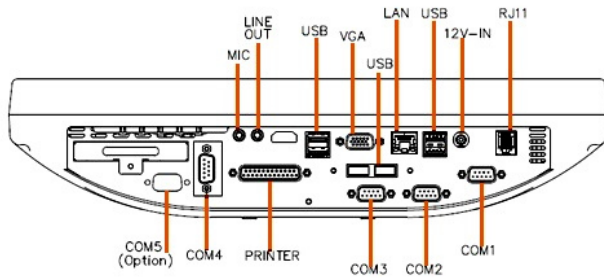
- Water spill resist around the bezel

### System compatibility

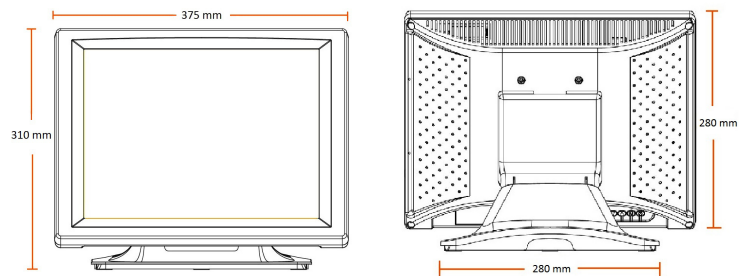
- Runs on Windows OS or Linux



## I/O Interface



## Dimensions



## Technical Specifications

Model	RDT150FB-AV	
Processor	INTEL® Celeron Processor J1900 (Clock speed: 2.0 GHz; Turbo Speed: 2.4 GHz; Quad Core)	
Graphics	Intel® Gen7 Graphics DX 11, OGL 3.2	
Storage Device	204-pin DDR3L SO-DIMM Socket x 2 Support up to 8GB of system memory	
Touch LCD Display		
Display	<ul style="list-style-type: none"><li>15” TFT LCD with native resolution 1024 x 768</li><li>5-wired Resistive Touch</li></ul>	
External IO Ports		
Serial Port	4 x DB-9 with 5V/12V power selectable, COM1 (RS232/RS422/RS485)	
USB Port	USB 2.0 x 6	
Cash Drawer Port	1 x RJ-11 (12V/24V) 12/24V power output by jumper adjustable	
VGA	1	
LAN Port	1 x 10/100/1000 Mbps	
Printer Port	1	
Audio	2; MIC and Line-out	
Expansion Slot		
PCI-E Slot	1	
Mini PCIe socket	2, (1 shared with mSATA)	
Optional Peripherals		
Magnetic Stripe Reader	3-Track, JIS-I or II	
Customer Display	2 x 20 VFD	
2 <sup>nd</sup> Display	7” / 10” external USB I/F	
2-in-1 Reader	MSR + i-Button	

<b>OS Support</b>	
<b>Windows</b>	POSReady 7, Win 7, Win 8, Embedded 8.1 Industry
<b>Linux</b>	Per Request
<b>Environment</b>	
<b>Green Product</b>	RoHs, REACH
<b>EMI/Safety</b>	CE, FCC Class A
<b>Operating Temperature</b>	0° to 40° (32° F ~ 104° F )
<b>Storage Temperature</b>	-10° to 55° (14° F ~ 131° F )
<b>Relative Humidity</b>	10% ~ 90% (Non-Condensing)

<b>Dimension</b>	
<b>Dimension</b>	380(W) x 217(D) x 306(H) mm
<b>Weight</b>	5. kg
<b>Others</b>	
<b>Indicator</b>	Power, HDD on LED
<b>Button</b>	Power on/off, Reset, UP/Down
<b>Buzzer</b>	Yes

Features and specifications are subject to change without prior notice.

## More information

### Longshine Services

In addition to models from Longshine RDT-150, Longshine provides a wide range of platform solutions. Combine reliable Longshine products with the best services, know-how and worldwide partnerships.

### Longshine Hardware Portfolio

Longshine offers a full portfolio of IT hardware ranging from networking, POS, digital signage and e-books. This allows customers to single source from one vendor to ensure installation compatibility and reduce response times for technical enquiries, and changing business requirements.

### POS Products

<http://pos.longshine.de>  
[info@longshine.de](mailto:info@longshine.de)

### Networking Products

<http://network.longshine.de>  
[info@longshine.de](mailto:info@longshine.de)

### E-Book

[tolino@longshine.de](mailto:tolino@longshine.de)

### Digital Signage Products

[info@longshine.de](mailto:info@longshine.de)

### ODM/OEM of specialized IT products

[info@longshine.de](mailto:info@longshine.de)

### More information

To learn more about Longshine RDT-150, please contact your Longshine sales representative or Longshine Business partners, or visit our website.  
[www.longshine.de](http://www.longshine.de)

### LONGSHINE VISION

It's our policy to be open minded and mechanical flexible to support our Business partners, and to also secure projects from different technical enquiries/opportunities. By listening and understanding to market needs, we also aim to contribute technical knowledge to continuously improve and create standard models with high CP values. To become a Longshine Business partner, please contact via  
[info@longshine.de](mailto:info@longshine.de)



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## Contact

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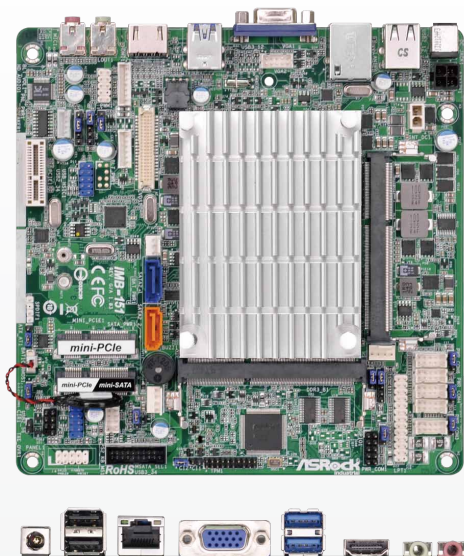
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[www.longshine.de](http://www.longshine.de)  
[info@longshine.de](mailto:info@longshine.de)

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# IMB-151

## Mini-ITX Motherboard

### Spotlight Features

- Intel® Atom™ Baytrail-M/D Processor
- Integrated Intel® Gen7 Intel Graphics DX 11, OGL3.2
- Supports Dual Channel DDR3 1333MHz, 2 x SO-DIMM, up to 8GB system memory
- 1 x COM (RS-232/422/485), 4 x COM (RS-232)
- 1 x HDMI, 1 x D-Sub, 1 x Dual Channel 24-bit LVDS
- 4 x USB 3.0, 6 x USB 2.0, 2 x SATA2
- 1 x mini-PCIe, 1x mSATA (shared)
- Gigabit LAN : 1 x Realtek Lan
- 9~19 V DC-in

### Specifications

#### Processor System

Dimension	Mini-ITX (6.7-in x 6.7-in)
CPU	Intel® Atom™ Baytrail-M/D Processor Supports Hyper-Threading Technology
Core Number	4
Max Speed	(By CPU)
L3 Cache	2MB
Chipset	N/A
BIOS	UEFI

#### Expansion Slot

PCI	0
Mini-PCIe	1 (half size) + 1 (full size) shared
mSATA	1
PCIe	1
CFast Card Socket	0

#### Memory

Technology	Dual Channel DDR3 1333 MHz SDRAM
Max.	8GB
Socket	2 x SO-DIMM

#### Graphics

Controller	Intel® Gen7 Intel Graphics DX 11*, OGL3.2
VRAM	share Memory
VGA	Supports max. resolution 1920 x 1200
LVDS	Dual channel 24-bit, max resolution 1920 x 1200@60Hz
HDMI	Supports HDMI 1.3a, max resolution 1920x1200
DVI	no
Display Port	no
Multi Display	Yes (Dual Display)

#### Ethernet

Interface	10/100/1000 Mbps
Controller	GbE LAN Realtek
Connector	1 x RJ 45

#### SATA

Max Data Transfer Rate	SATA2 (3.0Gb/s)
------------------------	-----------------

#### Rear I/O

VGA	1
HDMI	1
DVI-I/D	0
Display Port	0
Ethernet	1
USB	4 (2 x USB 3.0 compliant, 2 x USB 2.0 compliant)
Audio	2 (Mic-in, Line-out)
Serial	0
PS/2	0

#### Internal Connector

USB	6 (2 x USB 3.0 compliant, 4 x USB 2.0 compliant)
LVDS/Inverter	1/1
VGA	1 (shared with rear I/O VGA COM)
Serial	5 ( 1 RS-232/422/485, 4 RS-232)
SATA	2 x SATA2 ( 3.0Gb/s)
m-SATA	1 (shared)
Mini-PCIe	1
Parallel	1
IrDA	0
GPIO	4in / 4 out
SATA PWR Output Con	1
Speaker Header	1

#### Watchdog Timer

Output	From Super I/O to drag RESETCON#
Interval	256 segments, 0,1,2...255sec/min

#### Power Requirements

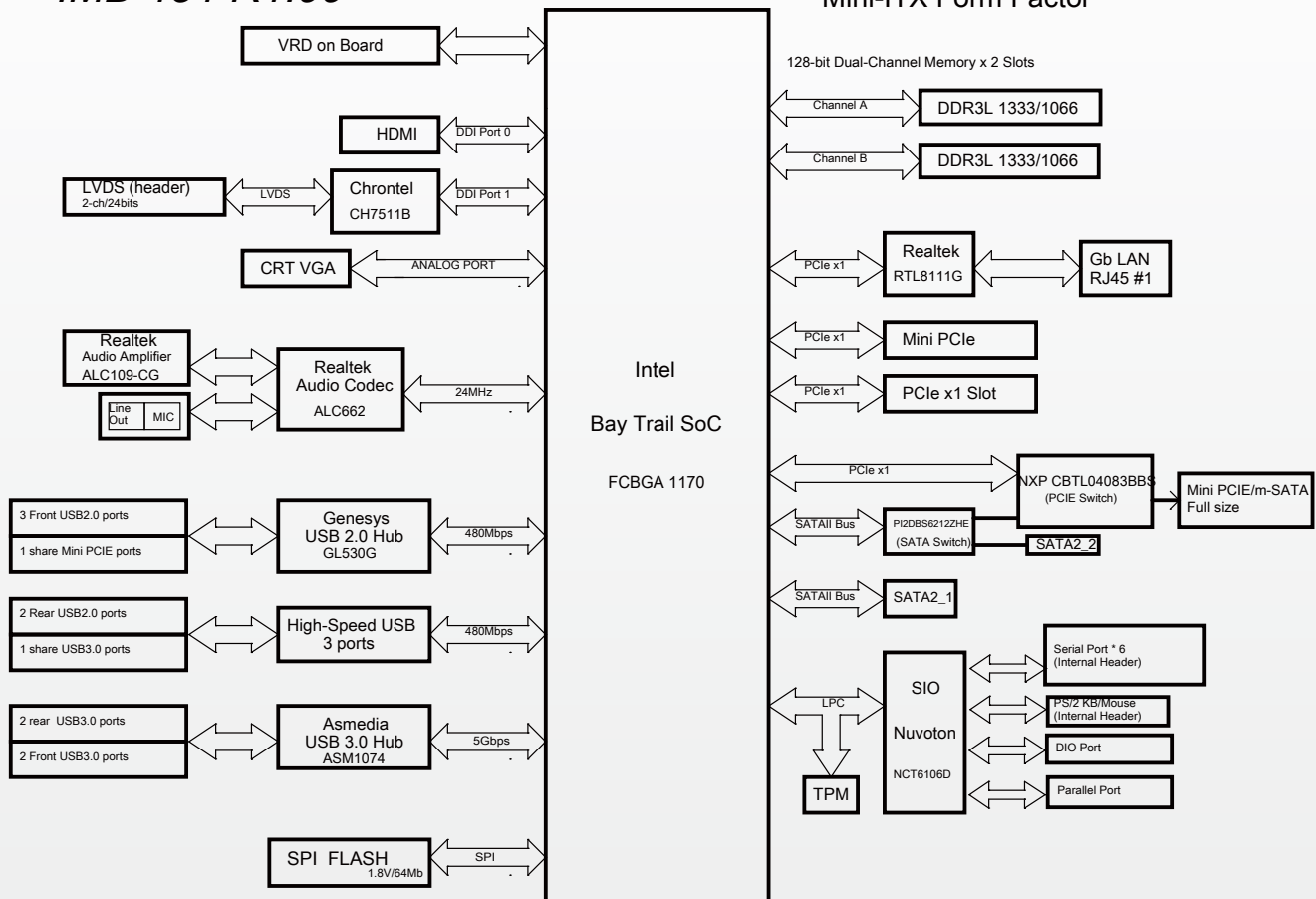
Input PWR	9~19V DC-In (2-pin PWR Con)
Power On	AT/ATX Supported AT : Directly PWR on as Power input ready ATX: Press Button to PWR on after Power input ready

#### Environment

Operating Temperature	0°C – 60°C
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## Board Diagram

### IMB-151 R1.00



## IPC Motherboards Focused Markets

ASRock IMB solutions can be widely used for industrial applications, such as process control, data acquisition, and so on. IMB-PCs are typically panel mounted and often incorporate touch screens for user interaction.





# IMB-151

## User Manual

Version 1.1

Published September 2014

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Published September 2014

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

### CALIFORNIA, USA ONLY

The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.

“Perchlorate Material-special handling may apply, see [www.dtsc.ca.gov/hazardouswaste/perchlorate](http://www.dtsc.ca.gov/hazardouswaste/perchlorate)”

**ASRock Website:** <http://www.asrock.com>

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# Contents

<b>1</b>	<b>Introduction .....</b>	<b>5</b>
1.1	Package Contents .....	5
1.2	Specifications.....	6
1.3	Motherboard Layout.....	8
1.4	I/O Panel.....	10
<b>2</b>	<b>Installation .....</b>	<b>11</b>
2.1	Screw Holes.....	11
2.2	Pre-installation Precautions .....	11
2.3	Installation of Memory Modules (SO-DIMM).....	12
2.4	Expansion Slot.....	13
2.5	Jumpers Setup.....	14
2.6	Onboard Headers and Connectors.....	16
<b>3</b>	<b>UEFI SETUP UTILITY .....</b>	<b>22</b>
3.1	Introduction .....	22
3.1.1	UEFI Menu Bar .....	22
3.1.2	Navigation Keys .....	23
3.2	Main Screen.....	23
3.3	Advanced Screen.....	24
3.3.1	CPU Configuration .....	25
3.3.2	Chipset Configuration.....	26
3.3.3	Storage Configuration .....	28
3.3.4	Intel(R) Smart Connect Technology .....	29
3.3.5	Super IO Configuration .....	30
3.3.6	ACPI Configuration.....	31
3.3.7	USB Configuration .....	32
3.4	Hardware Health Event Monitoring Screen .....	33
3.5	Security Screen .....	34
3.6	Boot Screen .....	35
3.7	Exit Screen .....	37

---

<b>4 Software Support .....</b>	<b>38</b>
4.1 Install Operating System.....	38
4.2 Support CD Information .....	38
4.2.1 Running Support CD .....	38
4.2.2 Drivers Menu.....	38
4.2.3 Utilities Menu.....	38
4.2.4 Contact Information.....	38

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# Chapter 1: Introduction

Thank you for purchasing ASRock **IMB-151** motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

In this manual, chapter 1 and 2 contain introduction of the motherboard and step-by-step guide to the hardware installation. Chapter 3 and 4 contain the configuration guide to BIOS setup and information of the Support CD.



Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock website without further notice. You may find the latest VGA cards and CPU support lists on ASRock website as well.

ASRock website <http://www.asrock.com>

If you require technical support related to this motherboard, please visit our website for specific information about the model you are using.

[www.asrock.com/support/index.asp](http://www.asrock.com/support/index.asp)

## 1.1 Package Contents

ASRock **IMB-151** Motherboard

(Mini-ITX Form Factor: 6.7-in x 6.7-in, 17.0 cm x 17.0 cm)

ASRock **IMB-151** Driver CD

ASRock **IMB-151** Jumper Setting Instruction

1 x I/O Panel Shield

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## 1.2 Specifications

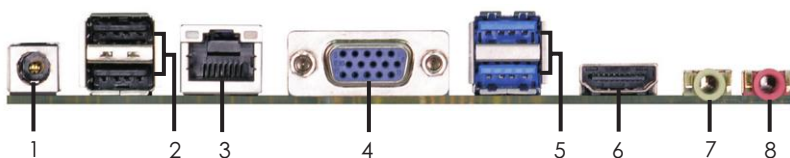
<b>Form Factor</b>	Dimensions	Mini-ITX (6.7-in x 6.7-in)
<b>Processor System</b>	CPU	Intel® Atom™ Baytrail-M/D Processor Supports Hyper-Threading Technology
	Core Number	4
	Max Speed	(By CPU)
	Cache	2MB
	Chipset	N/A
	BIOS	UEFI
<b>Expansion Slot</b>	PCI	0
	Mini-PCIe	1 (half size) + 1 (full size) shared with mSATA
	mSATA	1 (shared with SATA2_2)
	PCIe	1
	CFast Card Socket	0
<b>Memory</b>	Technology	Dual Channel DDR3L-1333 MHz SDRAM
	Max.	8GB
	Socket	2 x SO-DIMM
<b>Graphics</b>	Controller	Intel® Gen7 Intel® Graphics DX 11, OGL3.2
	VRAM	Shared Memory
	VGA	Supports max. resolution 1920x1200
	LVDS	Dual Channel 24-bit, max resolution 1920x1200@60Hz
	HDMI	Supports HDMI 1.4a, max resolution 1920x1200
	DVI	No
	DisplayPort	No
	Multi Display	Yes (Dual Display)
<b>Ethernet</b>	Ethernet	10/100/1000 Mbps
	Controller	GbE LAN Realtek
	Connector	1 x RJ-45
<b>SATA</b>	Max Data Transfer Rate	SATA2 (3.0Gb/s)
<b>Rear I/O</b>	VGA	1
	DVI	0
	HDMI	1
	DisplayPort	0
	Ethernet	1

	USB	4 (2 x USB 3.0, 2 x USB 2.0)
	Audio	2 (Mic-in, Line-out)
	Serial	0
	PS/2	0
<b>Internal Connector</b>	USB	6 (2 x USB 3.0, 4 x USB 2.0)
	LVDS/ Inverter	1/1
	VGA	1 (shared with rear I/O VGA COM)
	Serial	5 (1 x RS-232/422/485, 4 x RS-232)
	SATA	2 x SATA2 (3.0Gb/s)
	mPCIe	1
	Parallel	1
	mSATA	1 (shared)
	IrDA	0
	GPIO 8-bit	4 x GPI + 4 x GPO
	SATA PWR Output Con	1
	Speaker Header	1
<b>Watchdog Timer</b>	Output	Output from super I/O to drag RESETCON#
	Interval	256 Segments, 0,1,2...255 Sec/Min
<b>Power Requirements</b>	Input PWR	9-19V DC-In (4-pin ATX PWR Con)
	Power On	AT/ATX Supported -AT : Directly PWR on as power input ready -ATX : Press button to PWR on after power input ready
<b>Environment</b>	Temperature	0°C – 60°C



- 
- 1 : ATX Power Connector (Input 9V-19V)
  - 2 : 2-pin UPS Module Power Input Connector
  - 3 : 4-Pin CPU FAN Connector (+12V)
  - 4 : PWR\_COM6 Jumper
  - 5 : PWR\_COM4 Jumper
  - 6 : PWR\_COM3 Jumper
  - 7 : Internal COM Port Headers
    - COM1 (RS232/422/485)
    - COM2, 3, 4, 6 (RS232)
  - 8 : Printer Port Header
  - 9 : PWR\_COM1 Jumper
  - 10 : JGPIO\_SET1 Jumper
  - 11 : Digital Input / Output Pin Header
  - 12 : PWR\_COM2 Jumper
  - 13 : Digital Input / Output Power Select
  - 14 : TPM Header
  - 15 : Chassis Intrusion Headers (CI1, CI2)
  - 16 : SATA Power Output Connector
  - 17 : USB3.0 Connector
  - 18 : mSATA Selection Jumper
  - 19 : PS2\_KB\_MS1
  - 20 : System Panel Header
  - 21 : CIR Header
  - 22 : Clear CMOS Header
  - 23 : USB2.0 Connector (USB2\_56)
  - 24 : ATX/AT Mode Jumper
  - 25 : SPDIF Header
  - 26 : SATA2 Connectors (SATA2\_1, SATA2\_2)
  - 27 : 3-Pin Chassis FAN Connector (+12V)
  - 28 : Backlight Power Connector
  - 29 : USB2.0 Connector (USB2\_34)
  - 30 : 3W Audio AMP Output Wafer
  - 31 : Backlight Power Selection (BKT\_PWR1)
  - 32 : Panel Power Selection (PNL\_PWR1)
  - 33 : Backlight Control Level (BLT\_PWM1)
  - 34 : Front Panel Audio Header
  - 35 : Backlight Volume Control (BLT\_VOL1)
  - 36 : LVDS Panel Connector
  - 37 : VGA2
-

## 1.4 I/O Panel



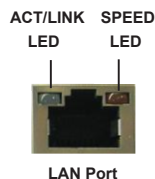
- |   |                         |   |                         |
|---|-------------------------|---|-------------------------|
| 1 | DC Jack                 | 5 | USB 3.0 Ports (USB3_12) |
| 2 | USB 2.0 Ports (USB2_12) | 6 | HDMI Port (HDMI1)       |
| 3 | LAN RJ-45 Port*         | 7 | Line out (Green)        |
| 4 | VGA Port (VGA1)         | 8 | Microphone (Pink)       |

\*\* There are two LED next to the LAN port. Please refer to the table below for the LAN port LED indications.

### LAN Port LED Indications

Activity/Link LED	
Status	Description
Off	No Link
Blinking	Data Activity
On	Link

SPEED LED	
Status	Description
Off	10Mbps connection
Off	100Mbps connection
Green	1Gbps connection





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## Chapter 2: Installation

This is a Mini-ITX form factor (6.7" x 6.7", 17.0 x 17.0 cm) motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.



Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.

### 2.1 Screw Holes

Place screws into the holes to secure the motherboard to the chassis.



Do not over-tighten the screws! Doing so may damage the motherboard.

### 2.2 Pre-installation Precautions

Take note of the following precautions before you install motherboard components or change any motherboard settings.

1. Unplug the power cord from the wall socket before touching any component.
2. To avoid damaging the motherboard components due to static electricity, NEVER place your motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that comes with the component.



Before you install or remove any component, ensure that the power is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

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## 2.3 Installation of Memory Modules (SO-DIMM)

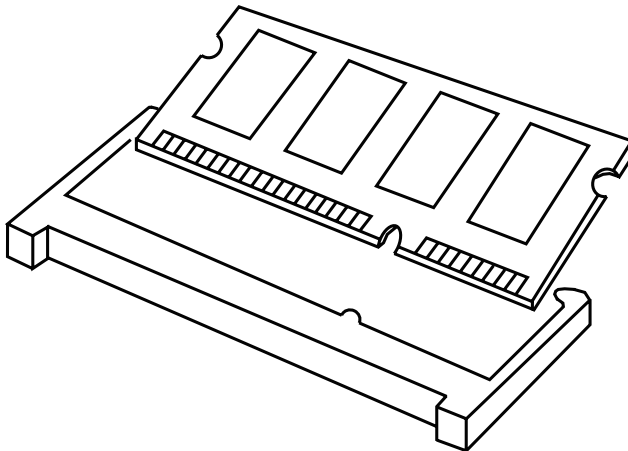
**IMB-151** motherboard provides two 204-pin DDR3 (Double Data Rate 3) SO-DIMM slots, which support Dual Channel DDR3L (low voltage).



1. If you install one memory module only, please install it on DDR3\_A1.
2. It is not allowed to install a DDR or DDR2 memory module into a DDR3 slot; otherwise, this motherboard and SO-DIMM may be damaged.
3. Please make sure to disconnect the power supply before adding or removing SO-DIMMs or the system components.
4. The SO-DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the SO-DIMM if you force the SO-DIMM into the slot at incorrect orientation.

### Installing a SO-DIMM

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



Step 2. Firmly insert the SO-DIMM into the slot until the retaining clips at both ends fully snap back in place and the SO-DIMM is properly seated.

---

## 2.4 Expansion Slots (mini-PCle, mini-PCle/mini-SATA and PCI Express Slots)

There is 1 mini-PCle slot, 1 mini-PCle/mini-SATA slot and 1 PCI Express slot on this motherboard.

### **mini-PCle slot:**

MINI\_PCIE1 (mini-PCle slot; half size) is used for PCI Express mini cards.

### **mini-PCle/mini-SATA slot:**

MINI\_SATA1 (mini-PCle slot/mini-SATA slot; full size) is used for PCI Express mini cards or mSATA cards. This SATA signal is shared with SATA2\_2 connector.

**PCIE slot:** PCIE1 (PCIE x1 slot) is used for PCI Express x1 lane width cards.

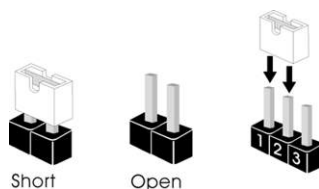
## **Installing an expansion card**

- Step 1. Before installing the expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.
- Step 2. Remove the system unit cover (if your motherboard is already installed in a chassis).
- Step 3. Remove the bracket facing the slot that you intend to use. Keep the screws for later use.
- Step 4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
- Step 5. Fasten the card to the chassis with screws.
- Step 6. Replace the system cover.

---

## 2.5 Jumpers Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on pins, the jumper is "Short". If no jumper cap is placed on pins, the jumper is "Open". The illustration shows a 3-pin jumper whose pin1 and pin2 are "Short" when jumper cap is placed on these 2 pins.

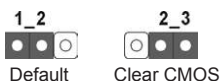


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### Clear CMOS Jumper

(CLRCMOS1)

(see p.8, No. 22)



Note: CLRCMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin2 and pin3 on CLRCMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action. Please be noted that the password, date, time, user default profile and MAC address will be cleared only if the CMOS battery is removed.

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### Digital Input / Output Power Select

(3-pin JGPIO\_PWR1)

(see p.8 No. 13)



1-2: +12V

2-3: +5V

---

### ATX/AT Mode Selection

(3-pin PWR\_JP1)

(see p.8 No. 24)



1-2: AT Mode

2-3: ATX Mode

---

### Panel Power Selection (LCD\_VCC)

(5-pin PNL\_PWR1)

(see p.8 No. 32)



Use this to set up the VDD power of the LVDS connector.

1-2: LVDD: +3V

2-3: LVDD: +5V

4-5: LVDD: +12V

---

### Backlight Power Selection

(LCD\_BLT\_VCC)

(5-pin BKT\_PWR1)

(see p.8 No. 31)



Use this to set up the backlight power of the LVDS connector and the panel backlight power of BLT\_PWM1.

1-2: LCD\_BLT\_VCC: +5V

2-3: LCD\_BLT\_VCC: +12V

4-5: LCD\_BLT\_VCC: DC\_IN

---

### Backlight Control Level (CON\_LBKLT\_CTL)

(3-pin BLT\_PWM1)

(see p.8, No. 33)



1-2: +3V

2-3: +5V

---

### COM Port PWR Setting Jumpers

(3-pin PWR\_COM1, for COM Port1)

(see p.8, No. 9)



1-2: +5V

2-3: +12V

(3-pin PWR\_COM3, for COM Port3)

(see p.8, No. 6)



1-2: +5V

2-3: +12V

(3-pin PWR\_COM4, for COM Port4)

(see p.8, No. 5)



1-2: +5V

2-3: +12V

(3-pin PWR\_COM6, for COM Port6)

(see p.8, No. 4)



1-2: +5V

2-3: +12V

(5-pin PWR\_COM2, for COM Port2)

(see p.8, No. 12)



1-2: +5V

2-3: +12V

3-4: +12V

4-5: +5VSB

---

### mSATA Select

(3-pin MSATA\_SEL1)

(see p.8 No. 18)



1-2: SATA2\_2 + mini-PCIe

2-3: mSATA,

SATA2\_2 no function

---

### JGPIO\_SET Jumper

(3-pin JGPIO\_SET1)

(see p.8 No. 10)



1-2: High

2-3: Low

## 2.6 Onboard Headers and Connectors



Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage of the motherboard!

### SATA2 Connectors

(SATA2\_1, SATA2\_2: see p.8, No. 26)



These two Serial ATA2 (SATA2) connectors support SATA data cables for internal storage devices. The current SATA2 interface allows up to 3.0 Gb/s data transfer rate.

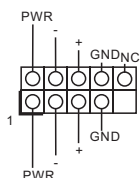
### USB 2.0 Connectors

(9-pin USB2\_34)

(see p.8 No. 29)

(9-pin USB2\_56)

(see p.8 No. 23)

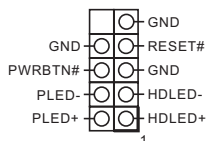


Besides two default USB 2.0 ports on the I/O panel, there are two USB 2.0 connectors on this motherboard. Each USB 2.0 connector can support two USB ports.

### System Panel Header

(9-pin PANEL1)

(see p.8 No. 20)



This header accommodates several system front panel functions.



Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

#### **PWRBTN (Power Switch):**

Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.

#### **RESET (Reset Switch):**

Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

**PLED (System Power LED):**

Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S1/S3 sleep state. The LED is off when the system is in S4 sleep state or powered off (S5).

**HDLED (Hard Drive Activity LED):**

Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

**3W Audio AMP Output Wafer**

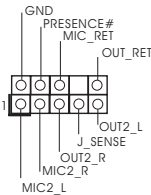
(4-pin SPEAKER1)  
(see p.8 No. 30)



PIN	Signal Name
1	SPK R-
2	SPK R+
3	SPK L+
4	SPK L-

**Front Panel Audio Header**

(9-pin HD\_AUDIO1)  
(see p.8 No. 34)



This is an interface for front panel audio cable that allows convenient connection and control of audio devices.

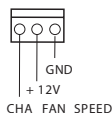


1. High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instruction in our manual and chassis manual to install your system.
2. If you use AC'97 audio panel, please install it to the front panel audio header as below:
  - A. Connect Mic\_IN (MIC) to MIC2\_L.
  - B. Connect Audio\_R (RIN) to OUT2\_R and Audio\_L (LIN) to OUT2\_L.
  - C. Connect Ground (GND) to Ground (GND).
  - D. MIC\_RET and OUT\_RET are for HD audio panel only. You don't need to connect them for AC'97 audio panel.
  - E. To activate the front mic.  
Go to the "FrontMic" Tab in the Realtek Control panel. Adjust "Recording Volume".

## Chassis Fan Connector

(3-pin CHA\_FAN1)

(see p.8 No. 27)

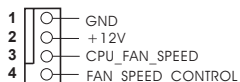


Please connect the fan cable to the fan connector and match the black wire to the ground pin.

## CPU Fan Connector

(4-pin CPU\_FAN1)

(see p.8 No. 3)

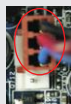


Please connect the CPU fan cable to the connector and match the black wire to the ground pin.



Though this motherboard provides 4-Pin CPU fan (Quiet Fan) support, the 3-Pin CPU fan still can work successfully even without the fan speed control function. If you plan to connect the 3-Pin CPU fan to the CPU fan connector on this motherboard, please connect it to Pin 1-3.

**Pin 1-3 Connected** ←  
3-Pin Fan Installation



## ATX Power Connector

(Input 9V-19V)

(4-pin ATX12V1)

(see p.8 No. 1)

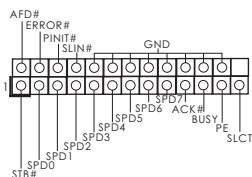


Please connect a DC 9V-19V power supply to this connector.  
1-2: GND  
3-4: DC Input

## Printer Port Header

(25-pin LPT1)

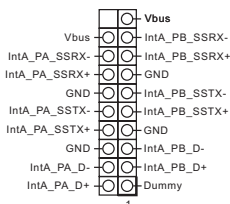
(see p.8 No. 8)



## USB 3.0 Connector

(19-pin USB3\_34)

(see p.8 No. 17)



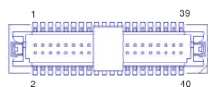
Besides two default USB 3.0 ports on the I/O panel, there is one USB 3.0 connector on this motherboard. This USB 3.0 connector can support two USB ports.



## LVDS Connector

(40-pin LVDS1)

(see p.8 No. 36)

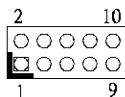


PIN	Signal Name	PIN	Signal Name
1	LVDD	2	LVDD
3	+3V	4	N/A
5	N/A	6	LVDS_A_DATA0#
7	LVDS_A_DATA0	8	GND1
9	LVDS_A_DATA1#	10	LVDS_A_DATA1
11	GND6	12	LVDS_A_DATA2#
13	LVDS_A_DATA2	14	GND2
15	LVDS_A_DATA3#	16	LVDS_A_DATA3
17	GND7	18	LVDS_A_CLK#
19	LVDS_A_CLK	20	GND3
21	LVDS_B_DATA0#	22	LVDS_B_DATA0
23	GND8	24	LVDS_B_DATA1#
25	LVDS_B_DATA1	26	GND4
27	LVDS_B_DATA2#	28	LVDS_B_DATA2
29	DPLVDD_EN	30	LVDS_B_DATA3#
31	LVDS_B_DATA3	32	GND5
33	LVDS_B_CLK#	34	LVDS_B_CLK
35	GND9	36	CON_LBKLT_EN_R
37	CON_LBKLT_CTR_R	38	LCD_BLT_VCC
39	LCD_BLT_VCC	40	LCD_BLT_VCC

## Digital Input / Output Pin Header

(10-pin JGPIO1)

(see p.8 No. 11)



PIN	Signal Name	PIN	Signal Name
1	SIO_GP24	2	SIO_GP20
3	SIO_GP25	4	SIO_GP21
5	SIO_GP26	6	SIO_GP22
7	SIO_GP27	8	SIO_GP23
9	JGPIO_PWR	10	GND

## Backlight Volume Control

(7-pin BLT\_VOL1)

(see p.8 No. 35)



PIN	Signal Name
1	GPIO_VOL_UP
2	GPIO_VOL_DW
3	PWRDN
4	LVDS1 BLUP
5	LVDS1 BLDW
6	GND
7	GND

## Backlight Power Connector

(6-pin BLT\_PWR1)

(see p.8 No. 28)

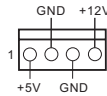


PIN	Signal Name
1	GND
2	GND
3	BL CTL
4	BL EN
5	LCD_BLT_VCC
6	LCD_BLT_VCC

### SATA Power Output Connector

(4-pin SATA\_PWR1)

(see p.8 No. 16)



### Chassis Intrusion Headers

(2-pin CI1, CI2: see p.8, No. 15)



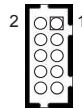
This motherboard supports CASE OPEN detection feature that detects if the chassis cover has been removed. This feature requires a chassis with chassis intrusion detection design.

### Internal COM Port Headers

COM1 (RS232/422/485)\*

COM2, 3, 4, 6 (RS232)

(9-pin COM1~6: see p.8, No. 7)



PIN	Signal Name	PIN	Signal Name
2	RRXD	1	DDCD#
4	DDTR#	3	TTXD
6	DDSR#	5	GND
8	CCTS#	7	RRTS#
10	NC	9	COM1/3/4/6: +5V/+12V COM2: +5V/+12V/+5VSB

\* This motherboard supports RS232/422/485 on COM1 port. Please refer to below table for the pin definition. In addition, COM1 port (RS232/422/485) can be adjusted in BIOS setup utility > Advanced Screen > Super IO Configuration. You may refer to page 30 for details.

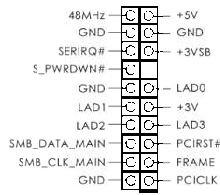
### COM1 Port Pin Definition

PIN	RS232	RS422	RS485
1	DCD	TX-	RTX-
2	RXD	RX+	N/A
3	TXD	TX+	RTX+
4	DTR	RX-	N/A
5	GND	GND	GND
6	DSR	N/A	N/A
7	RTS	N/A	N/A
8	CTS	N/A	N/A
9	+5V/+12V	+5V/+12V	+5V/+12V
10	NC	NC	NC

### TPM Header

(19-pin TPM1)

(see p.8, No. 14)



This connector supports a Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

UPS Module Power Input Connector

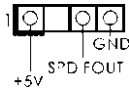
(2-pin INT\_DC1)

(see p.8, No. 2)



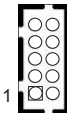
SPDIF Header

(3-pin SPDIF1: see p.8, No. 25)



VGA Connector

(10-pin VGA2: see p.8, No. 37)



PIN	Signal Name	PIN	Signal Name
9	DDC_CLK	10	DDC_DATA
7	HSYNC	8	VSYNC
5	BLUE	6	GND
3	GREEN	4	GND
1	RED	2	GND

PS2\_KB\_MS1

(8-pin PS2\_KB\_MS1)

(see p.8 No. 19)

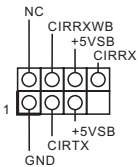


PIN	Signal Name
1	KBCLK
2	+5V
3	KBDATA
4	+5V
5	MSDATA
6	GND
7	MSCLK
8	GND

CIR Header

(7-pin CIR1)

(see p.8 No. 21)



---

## Chapter 3: UEFI SETUP UTILITY

### 3.1 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. You may run the UEFI SETUP UTILITY when you start up the computer. Please press <F2> or <Del> during the Power-On-Self-Test (POST) to enter the UEFI SETUP UTILITY, otherwise, POST will continue with its test routines.

If you wish 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. You may also restart by turning the system off and then back on.



Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

#### 3.1.1 UEFI Menu Bar

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

<b>Main</b>	To set up the system time/date information
<b>Advanced</b>	To set up the advanced UEFI features
<b>H/W Monitor</b>	To display current hardware status
<b>Security</b>	To set up the security features
<b>Boot</b>	To set up the default system device to locate and load the Operating System
<b>Exit</b>	To exit the current screen or the UEFI SETUP UTILITY

Use <←> key or <→> key to choose among the selections on the menu bar, and then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

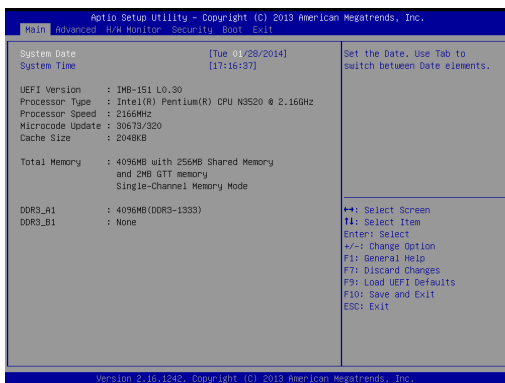
### 3.1.2 Navigation Keys

Please check the following table for the function description of each navigation key.

Navigation Key(s)	Function Description
← / →	Moves cursor left or right to select Screens
↑ / ↓	Moves cursor up or down to select items
+ / -	To change option for the selected items
<Enter>	To bring up the selected screen
<F1>	To display the General Help Screen
<F7>	Discard changes
<F9>	To load optimal default values for all the settings
<F10>	To save changes and exit the UEFI SETUP UTILITY
<F12>	Print screen
<ESC>	To jump to the Exit Screen or exit the current screen

### 3.2 Main Screen

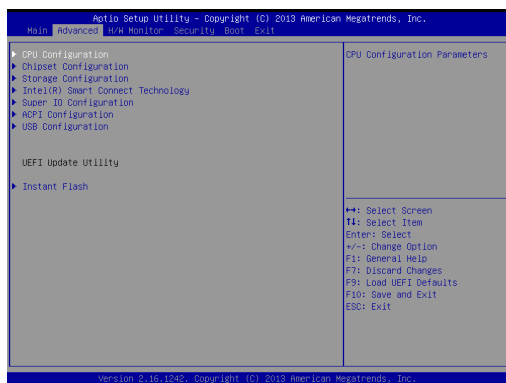
When you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview.



---

### 3.3 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Chipset Configuration, Storage Configuration, Intel(R) Smart Connect Technology, Super IO Configuration, ACPI Configuration and USB Configuration.



Setting wrong values in this section may cause the system to malfunction.

#### Instant Flash

Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update system UEFI without entering operating systems first like MS-DOS or Windows®. Just launch this tool and save the new UEFI file to your USB flash drive, floppy disk or hard drive, then you can update your UEFI only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system. If you execute Instant Flash utility, the utility will show the UEFI files and their respective information. Select the proper UEFI file to update your UEFI, and reboot your system after UEFI update process completes.

### 3.3.1 CPU Configuration



#### Intel SpeedStep Technology

Intel SpeedStep technology is Intel's new power saving technology. Processors can switch between multiple frequencies and voltage points to enable power saving. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled]. If you install Windows® 8 / 8.1 and want to enable this function, please set this item to [Enabled]. This item will be hidden if the current CPU does not support Intel SpeedStep technology.



Please note that enabling this function may reduce CPU voltage and lead to system stability or compatibility issues with some power supplies. Please set this item to [Disabled] if above issues occur.

#### CPU C States Support

Enable CPU C States Support for power saving. It is recommended to keep C3, C6 and C7 all enabled for better power saving.

#### Enhanced Halt State (C1E)

Enable Enhanced Halt State (C1E) for lower power consumption.

#### No-Execute Memory Protection

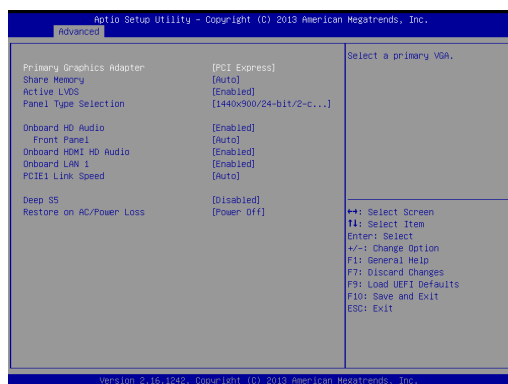
No-Execution (NX) Memory Protection Technology is an enhancement to the IA-32 Intel Architecture. An IA-32 processor with "No Execute (NX) Memory Protection" can prevent data pages from being used by malicious software to execute codes. This option will be hidden if the current CPU does not support No-Execute Memory Protection.

#### Intel Virtualization Technology

When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by Vanderpool Technology. This option will be hidden if the installed CPU does not support Intel Virtualization Technology.

---

## 3.3.2 Chipset Configuration



### Primary Graphics Adapter

This allows you to select [Onboard] or [PCI Express] as the boot graphic adapter priority. The default value is [PCI Express].

### Share Memory

Configure the size of memory that is allocated to the integrated graphics processor when the system boots up.

### Active LVDS

Use this to enable or disable the LVDS. The default value is [Enabled].

### Panel Type Selection

Use this to select panel type.

### Onboard HD Audio

Select [Auto], [Enabled] or [Disabled] for the onboard HD Audio feature.

#### Front Panel

Select [Auto] or [Disabled] for the onboard HD Audio Front Panel.

### Onboard HDMI HD Audio

This allows you to enable or disable the Onboard HDMI HD Audio feature.

### Onboard LAN 1

This allows you to enable or disable the Onboard LAN 1 feature.

### PCIe1 Link Speed

Select the link speed for PCIe1.



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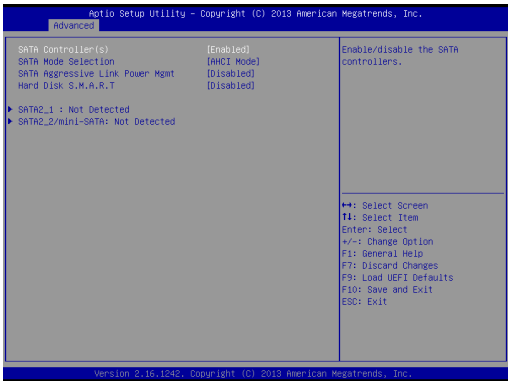
### **Deep S5**

Mobile platforms support Deep S5 in DC only and desktop platforms support Deep S5 in AC only. The default value is [Disabled].

### **Restore on AC/Power Loss**

This allows you to set the power state after an unexpected AC/power loss. If [Power Off] is selected, the AC/power remains off when the power recovers. If [Power On] is selected, the AC/power resumes and the system starts to boot up when the power recovers. If [LAST STATE] is selected, the AC/power restores to the last power state when the power recovers.

### 3.3.3 Storage Configuration



#### **SATA Controller(s)**

Use this item to enable or disable the SATA Controller feature.

#### **SATA Mode Selection**

Use this to select SATA mode. Configuration options: [IDE Mode], [AHCI Mode] and [Disabled]. The default value is [AHCI Mode].



AHCI (Advanced Host Controller Interface) supports NCQ and other new features that will improve SATA disk performance but IDE mode does not have these advantages.

#### **SATA Aggressive Link Power Mgmt**

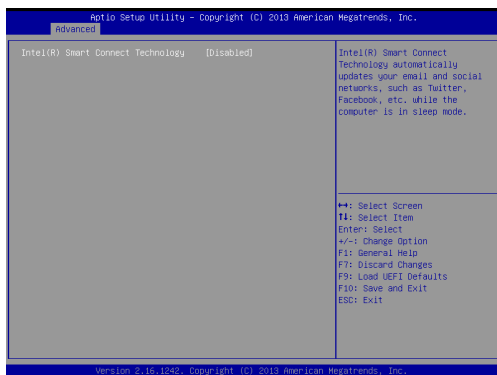
Use this item to configure SATA Aggressive Link Power Management.

#### **Hard Disk S.M.A.R.T.**

Use this item to enable or disable the S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) feature. Configuration options: [Disabled] and [Enabled].

---

### 3.3.4 Intel(R) Smart Connect Technology

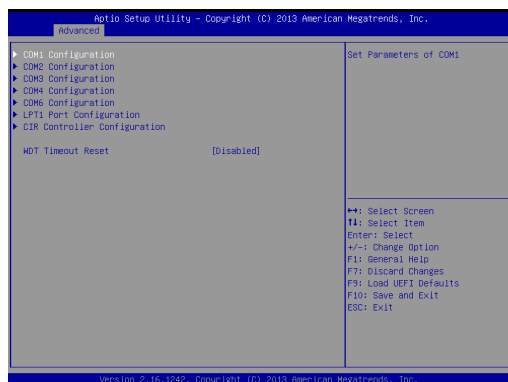


#### Intel(R) Smart Connect Technology

Use this item to enable or disable Intel(R) Smart Connect Technology. Intel(R) Smart Connect Technology keeps your e-mail and social networks, such as Twitter, Facebook, etc. updated automatically while the computer is in sleep mode. The default is [Enabled].

---

### 3.3.5 Super IO Configuration



#### COM1 Configuration

Use this to set parameters of COM1. Select COM1 port type: [RS232], [RS422] or [RS485].

#### COM2 Configuration

Use this to set parameters of COM2.

#### COM3 Configuration

Use this to set parameters of COM3.

#### COM4 Configuration

Use this to set parameters of COM4.

#### COM6 Configuration

Use this to set parameters of COM6.

#### LPT1 Port Configuration

Use this set parameters of the onboard parallel port.

#### CIR Controller Configuration

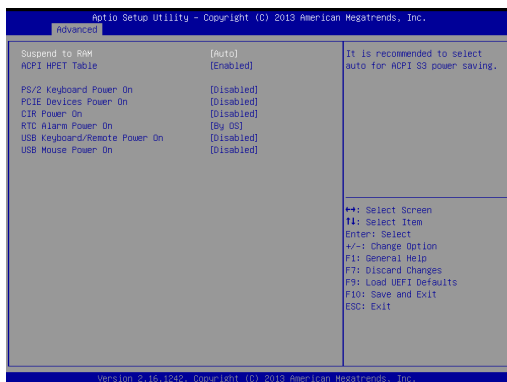
Use this set CIR controller.

#### WDT Timeout Reset

This allows users to enable/disable the Watch Dog Timer timeout to reset system. The default value is [Disabled].

---

### 3.3.6 ACPI Configuration



#### **Suspend to RAM**

Use this item to select whether to auto-detect or disable the Suspend-to-RAM feature. Select [Auto] will enable this feature if the OS supports it.

#### **ACPI HPET Table**

Use this item to enable or disable ACPI HPET Table. The default value is [Enabled]. Please set this option to [Enabled] if you plan to use this motherboard to submit Windows® certification.

#### **PS/2 Keyboard Power On**

Use this item to enable or disable PS/2 keyboard to turn on the system from the power-soft-off mode.

#### **PCIE Devices Power On**

Use this item to enable or disable PCIE devices to turn on the system from the power-soft-off mode.

#### **CIR Power On**

Use this item to enable or disable CIR to power on the system.

#### **RTC Alarm Power On**

Use this item to enable or disable RTC (Real Time Clock) to power on the system.

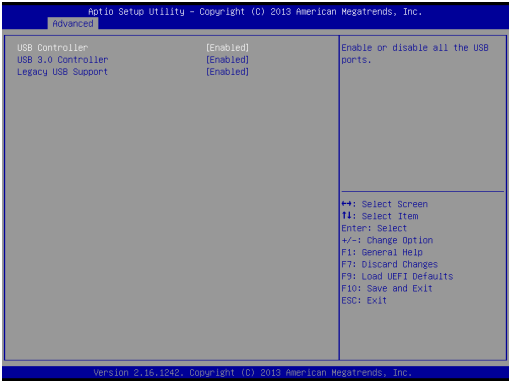
#### **USB Keyboard/Remote Power On**

Use this item to enable or disable USB Keyboard/Remote to power on the system.

#### **USB Mouse Power On**

Use this item to enable or disable USB Mouse to power on the system.

### 3.3.7 USB Configuration



#### USB Controller

Use this item to enable or disable the use of USB controller.

#### USB 3.0 Controller

Use this item to enable or disable the use of USB 3.0 controller. Configuration options: [Auto], [Enabled] and [Disabled]. If you enable "CSM", USB 3.0 controller will be disabled when you select [Auto]. If you disable "CSM", USB 3.0 controller will be enabled when you select [Auto].

#### Legacy USB Support

Use this option to select legacy support for USB devices. There are four configuration options: [Enabled], [Auto] and [UEFI Setup Only]. The default value is [Auto]. Please refer to below descriptions for the details of these four options:

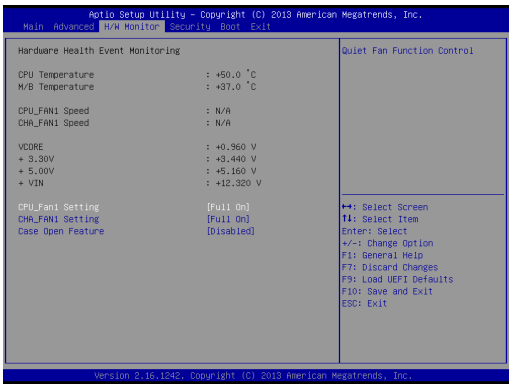
[Enabled] - Enables support for legacy USB.

[Auto] - Enables legacy support if USB devices are connected.

[UEFI Setup Only] - USB devices are allowed to use only under UEFI setup and Windows / Linux OS.

### 3.4 Hardware Health Event Monitoring Screen

In this section, it allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, CPU fan speed, chassis fan speed, and the critical voltage.



#### CPU\_FAN1 Setting

This allows you to set CPU\_FAN1's speed. Configuration options: [Full On] and [Automatic Mode]. The default value is [Full On].

#### CHA\_FAN1 Setting

This allows you to set CHA\_FAN1's speed. Configuration options: [Full On] and [Automatic Mode]. The default value is [Full On].

#### Case Open Feature

This allows you to enable or disable case open detection feature. The default is value [Disabled].

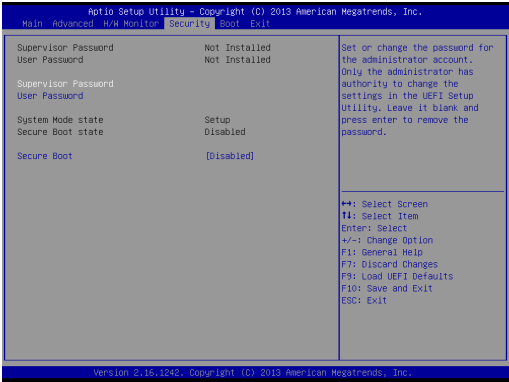
#### Clear Status

This option appears only when the case open has been detected. Use this option to keep or clear the record of previous chassis intrusion status.

---

### 3.5 Security Screen

In this section, you may set, change or clear the supervisor/user password for the system.



#### Supervisor Password

Set or change the password for the administrator account. Only the administrator has authority to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

#### User Password

Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

#### Secure Boot

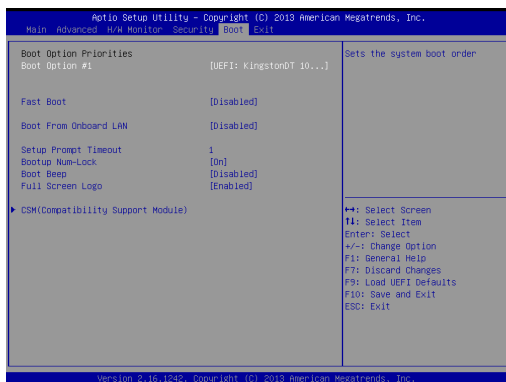
Enable to support Windows 8 64-bit Secure Boot.



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## 3.6 Boot Screen

In this section, it will display the available devices on your system for you to configure the boot settings and the boot priority.



### Fast Boot

Fast Boot minimizes your computer's boot time. There are three configuration options: [Disabled], [Fast] and [Ultra Fast]. The default value is [Disabled]. Please refer to below descriptions for the details of these three options:

[Disabled] - Disable Fast Boot.

[Fast] - The only restriction is you may not boot by using an USB flash drive.

[Ultra Fast] - There are a few restrictions.

1. Only supports Windows® 8 64-bit UEFI operating system.
2. You will not be able to enter BIOS Setup (Clear CMOS or run utility in Widows® to enter BIOS Setup).
3. If you are using an external graphics card, the VBIOS must support UEFI GOP in order to boot.

### Boot From Onboard LAN

Use this item to enable or disable the Boot From Onboard LAN feature.

### Setup Prompt Timeout

This shows the number of seconds to wait for setup activation key.

### Bootup Num-Lock

If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

### Boot Beep

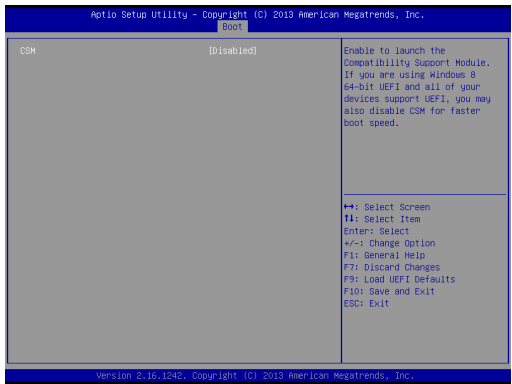
Select whether the Boot Beep should be turned on or off when the system boots up. Please note that a buzzer is needed.

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## Full Screen Logo

Use this item to enable or disable OEM Logo. The default value is [Enabled].

## CSM (Compatibility Support Module)

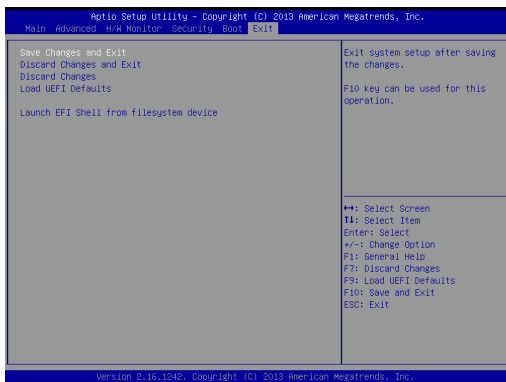


## CSM

Enable to launch the Compatibility Support Module. Please do not disable unless you're running a WHCK test. If you are using Windows® 8 64-bit and all of your devices support UEFI, you may also disable CSM for faster boot speed.

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## 3.7 Exit Screen



### Save Changes and Exit

When you select this option, it will pop-out the following message, “Save configuration changes and exit setup?” Select [OK] to save the changes and exit the UEFI SETUP UTILITY.

### Discard Changes and Exit

When you select this option, it will pop-out the following message, “Discard changes and exit setup?” Select [OK] to exit the UEFI SETUP UTILITY without saving any changes.

### Discard Changes

When you select this option, it will pop-out the following message, “Discard changes?” Select [OK] to discard all changes.

### Load UEFI Defaults

Load UEFI default values for all the setup questions. F9 key can be used for this operation.

### Launch EFI Shell from filesystem device

Attempts to Launch EFI Shell application (Shell64.efi) from one of the available filesystem devices.

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## ***Chapter 4: Software Support***

### **4.1 Install Operating System**

This motherboard supports Microsoft® Windows® operating systems: 8.1 64-bit / 8 64-bit. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer to your OS documentation for more information.

### **4.2 Support CD Information**

The Support CD that came with the motherboard contains necessary drivers and useful utilities that enhance the motherboard's features.

#### **4.2.1 Running The Support CD**

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if "AUTORUN" is enabled in your computer. If the Main Menu did not appear automatically, locate and double click on the file "ASRSETUP.EXE" from the root folder in the Support CD to display the menus.

#### **4.2.2 Drivers Menu**

The Drivers Menu shows the available device's drivers if the system detects installed devices. Please install the necessary drivers to activate the devices.

#### **4.2.3 Utilities Menu**

The Utilities Menu shows the application software that the motherboard supports. Click on a specific item then follow the installation wizard to install it.

#### **4.2.4 Contact Information**

If you need to contact ASRock or want to know more about ASRock, you're welcome to visit ASRock's website at <http://www.asrock.com>; or you may contact your dealer for further information.