



*Z77TM-ITX*

*H77TM-ITX*

*B75TM-ITX*

*H61TM-ITX*

# User Manual

Version 1.1

Published November 2013

Copyright©2013 ASRock INC. All rights reserved.

---

## Copyright Notice:

No part of this manual may be reproduced, transcribed, transmitted, or translated in any language, in any form or by any means, except duplication of documentation by the purchaser for backup purpose, without written consent of ASRock Inc.

Products and corporate names appearing in this manual may or may not be registered trademarks or copyrights of their respective companies, and are used only for identification or explanation and to the owners' benefit, without intent to infringe.

## Disclaimer:

Specifications and information contained in this manual are furnished for informational use only and subject to change without notice, and should not be constructed as a commitment by ASRock. ASRock assumes no responsibility for any errors or omissions that may appear in this manual.

With respect to the contents of this manual, ASRock does not provide warranty of any kind, either expressed or implied, including but not limited to the implied warranties or conditions of merchantability or fitness for a particular purpose.

In no event shall ASRock, its directors, officers, employees, or agents be liable for any indirect, special, incidental, or consequential damages (including damages for loss of profits, loss of business, loss of data, interruption of business and the like), even if ASRock has been advised of the possibility of such damages arising from any defect or error in the manual or product.



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)"

The terms HDMI™ and HDMI High-Definition Multimedia Interface, and the HDMI logo are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.



---

# Contents

|                                                     |           |
|-----------------------------------------------------|-----------|
| <b>1. Introduction .....</b>                        | <b>5</b>  |
| 1.1 Package Contents .....                          | 5         |
| 1.2 Specifications .....                            | 6         |
| 1.3 Unique Features.....                            | 10        |
| 1.4 Motherboard Layout (Z77M-ITX) .....             | 13        |
| 1.5 Motherboard Layout (H77M-ITX) .....             | 15        |
| 1.6 Motherboard Layout (B75M-ITX) .....             | 17        |
| 1.7 Motherboard Layout (H61M-ITX) .....             | 19        |
| 1.8 I/O Panel (Z77M-ITX) .....                      | 21        |
| 1.9 I/O Panel (H77M-ITX) .....                      | 22        |
| 1.10 I/O Panel (B75M-ITX) .....                     | 23        |
| 1.11 I/O Panel (H61M-ITX) .....                     | 24        |
| <b>2. Installation .....</b>                        | <b>25</b> |
| 2.1 Installing the CPU .....                        | 26        |
| 2.2 Installing the CPU Fan and Heatsink .....       | 28        |
| 2.3 Installing Memory Modules (DIMM) .....          | 29        |
| 2.4 Expansion Slots (PCI Express Slots).....        | 30        |
| 2.5 Installing Serial SATA2 / SATA3 Hard Disks..... | 31        |
| 2.6 Power Connectors.....                           | 32        |
| 2.7 Installing the System Panel.....                | 33        |
| 2.8 Onboard Headers and Connectors .....            | 34        |
| 2.9 Jumpers Setup .....                             | 39        |
| 2.10 Operating System Setup .....                   | 40        |
| 2.11 Installing Drivers.....                        | 41        |

---

|                                                  |           |
|--------------------------------------------------|-----------|
| <b>3. UEFI SETUP UTILITY.....</b>                | <b>42</b> |
| 3.1 Introduction .....                           | 42        |
| 3.1.1 UEFI Menu Bar .....                        | 42        |
| 3.1.2 Navigation Keys .....                      | 43        |
| 3.2 Main Screen .....                            | 44        |
| 3.3 OC Tweaker Screen .....                      | 45        |
| 3.4 Advanced Screen .....                        | 49        |
| 3.4.1 CPU Configuration .....                    | 50        |
| 3.4.2 North Bridge Configuration.....            | 52        |
| 3.4.3 South Bridge Configuration .....           | 54        |
| 3.4.4 Storage Configuration .....                | 56        |
| 3.4.5 Intel(R) Rapid Start Technology .....      | 57        |
| 3.4.6 Intel(R) Smart Connect Technology .....    | 58        |
| 3.4.7 Super IO Configuration .....               | 59        |
| 3.4.8 ACPI Configuration.....                    | 60        |
| 3.4.9 USB Configuration .....                    | 62        |
| 3.4.10 Trusted Computing.....                    | 63        |
| 3.5 Tool .....                                   | 64        |
| 3.6 Hardware Health Event Monitoring Screen..... | 66        |
| 3.7 Boot Screen .....                            | 67        |
| 3.8 Security Screen.....                         | 69        |
| 3.9 Exit Screen.....                             | 70        |

---

# 1. Introduction

Thank you for purchasing ASRock **Z77TM-ITX / H77TM-ITX / B75TM-ITX / H61TM-ITX** 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 contains the introduction of the motherboard. Chapter 2 provides step by step installation instructions. Chapter 3 includes information about the UEFI.



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's website. You may find the latest VGA cards and CPU support list on ASRock's website as well. <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 **Z77TM-ITX / H77TM-ITX / B75TM-ITX / H61TM-ITX** Motherboard  
(Thin Mini-ITX Form Factor: 6.7-in x 6.7-in, 17.0 cm x 17.0 cm)

ASRock **Z77TM-ITX / H77TM-ITX / B75TM-ITX / H61TM-ITX** Quick Installation Guide

ASRock **Z77TM-ITX / H77TM-ITX / B75TM-ITX / H61TM-ITX** Support CD  
1 x I/O Panel Shield

## 1.2 Specifications

|                 |                                                                                           |
|-----------------|-------------------------------------------------------------------------------------------|
| Platform        | Thin Mini-ITX Form Factor: 6.7-in x 6.7-in, 17.0 cm x 17.0 cm (Compatible with Mini-ITX)  |
|                 | Solid Capacitors for CPU power                                                            |
| CPU             | Supports 3rd and 2nd Generation Intel® Core™ i7 / i5 / i3 in LGA1155 Package              |
|                 | Supports Intel® Turbo Boost 2.0 Technology                                                |
|                 | Supports Hyper-Threading Technology                                                       |
| Chipset         | Intel® Z77/H77/B75/H61                                                                    |
|                 | Supports Intel® Small Business Advantage (B75TM-ITX)                                      |
|                 | Supports Intel® Rapid Start Technology and Smart Connect Technology                       |
|                 |                                                                                           |
| Memory          | Dual Channel DDR3 Memory Technology                                                       |
|                 | 2 x DDR3 SO-DIMM slots                                                                    |
|                 | Supports DDR3 1600/1333/1066 non-ECC, un-buffered memory                                  |
|                 | Max. capacity of system memory: 16GB (see <b>CAUTION 1</b> )                              |
| Expansion Slots | 1 x PCI Express 3.0 x4 slot (PCIE1: x4 mode) (see <b>CAUTION 2</b> )                      |
|                 | 1 x mini-PCI Express slot                                                                 |
| Graphics        | Supports Intel® HD Graphics Built-in Visuals (see <b>CAUTION 3</b> )                      |
|                 | Pixel Shader 5.0, DirectX 11 with Intel® Ivy Bridge CPU.                                  |
|                 | Pixel Shader 4.1, DirectX 10.1 with Intel® Sandy Bridge CPU                               |
|                 | Max. shared memory 1760MB with Intel® Ivy Bridge CPU.                                     |
|                 | Max. shared memory 1759MB with Intel® Sandy Bridge CPU                                    |
|                 | Three VGA Output options: HDMI, DVI-I and LVDS                                            |
|                 | Supports HDMI 1.4a Technology with max. resolution up to 1920x1200 @ 60Hz                 |
|                 | Supports DVI-I with max. resolution up to 1920x1200 @ 75Hz                                |
|                 | Supports LVDS with max. resolution up to 1920x1200 @ 60Hz                                 |
|                 | Supports Auto Lip Sync, Deep Color (12bpc), xvYCC and HBR (High Bit Rate Audio) with HDMI |
|                 | Supports HDCP with HDMI                                                                   |
|                 | Supports Full HD 1080p Blu-ray (BD) / HD-DVD playback with HDMI                           |

|                       |                                                                                                                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Audio</b>          | 7.1 CH HD Audio with Content Protection (Realtek ALC892 Audio Codec)                                                                                                                               |
|                       | Premium Blu-ray audio support                                                                                                                                                                      |
| <b>LAN</b>            | PCIE x1 Gigabit LAN 10/100/1000 Mb/s                                                                                                                                                               |
|                       | RTL8111E-VL                                                                                                                                                                                        |
|                       | Supports Wake On LAN                                                                                                                                                                               |
|                       | Supports LAN Cable Detection                                                                                                                                                                       |
|                       | Supports Energy Efficient Ethernet 802.3az                                                                                                                                                         |
|                       | Supports PXE                                                                                                                                                                                       |
| <b>Rear Panel I/O</b> | 1 x DC Jack                                                                                                                                                                                        |
|                       | 1 x DVI-I Port                                                                                                                                                                                     |
|                       | 1 x HDMI Port                                                                                                                                                                                      |
|                       | 1 x eSATA Connector                                                                                                                                                                                |
|                       | 2 x USB 3.0 Ports (H61TM-ITX by Etron EJ188)                                                                                                                                                       |
|                       | 2 x USB 2.0 Ports                                                                                                                                                                                  |
|                       | 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED)                                                                                                                                           |
|                       | HD Audio Jacks: Front Speaker / Microphone                                                                                                                                                         |
| <b>Connectors</b>     | 2 x SATA3 6.0 Gb/s connectors, support RAID (RAID 0, RAID 1, RAID 5, RAID 10, Intel Rapid Storage and Intel Smart Response Technology), NCQ, AHCI and “Hot Plug” functions (Z77TM-ITX / H77TM-ITX) |
|                       | 1 x SATA3 6.0 Gb/s connector and 1 x SATA2 3.0 Gb/s connector, support NCQ, AHCI and Hot Plug functions (B75TM-ITX)                                                                                |
|                       | 2 x SATA2 3.0 Gb/s connectors, support NCQ, AHCI and Hot Plug (H61TM-ITX)                                                                                                                          |
|                       | 1 x CIR header                                                                                                                                                                                     |
|                       | 1 x COM port header                                                                                                                                                                                |
|                       | 1 x HDMI_SPDIF header                                                                                                                                                                              |
|                       | 1 x LVDS connector                                                                                                                                                                                 |
|                       | 1 x LPC Debug header                                                                                                                                                                               |
|                       | 1 x Home Theater PC header                                                                                                                                                                         |
|                       | 1 x CPU Fan connector (4-pin)                                                                                                                                                                      |
|                       | 1 x Chassis Fan connector (4-pin)                                                                                                                                                                  |
|                       | 1 x Front Panel Audio connector                                                                                                                                                                    |
|                       | 1 x Analog Surround Audio header                                                                                                                                                                   |
|                       | 1 x Digital MIC header                                                                                                                                                                             |
|                       | 1 x 3W Audio AMP Output Wafer header                                                                                                                                                               |
|                       | 1 x SATA Power connector                                                                                                                                                                           |

|                         |                                                                                                                              |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------|
|                         | 3 x USB 2.0 headers (support 5 USB 2.0 ports)                                                                                |
|                         | 1 x USB 3.0 header (supports 2 USB 3.0 ports) (H61TM-ITX by Etron EJ188)                                                     |
| <b>BIOS</b>             | 32Mb AMI UEFI Legal BIOS with GUI support                                                                                    |
|                         | Supports "Plug and Play"                                                                                                     |
|                         | ACPI 1.1 Compliance Wake Up Events                                                                                           |
|                         | Supports jumperfree                                                                                                          |
|                         | SMBIOS 2.3.1 Support                                                                                                         |
|                         | CPU Core, IGPU, DRAM, 1.8V PLL, VTT, VCCSA Voltage Multi-adjustment                                                          |
| <b>Support CD</b>       | Drivers, Utilities, AntiVirus Software (Trial Version), CyberLink MediaEspresso 6.5 Trial, Google Chrome Browser and Toolbar |
| <b>Hardware Monitor</b> | CPU/Chassis Temperature Sensing                                                                                              |
|                         | CPU/Chassis Fan Tachometer                                                                                                   |
|                         | CPU/Chassis Quiet Fan                                                                                                        |
|                         | CPU/Chassis Fan Multi-Speed Control                                                                                          |
| <b>OS</b>               | Voltage Monitoring: +12V, +5V, +3.3V, CPU Vcore                                                                              |
|                         | Microsoft® Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit compliant                          |
| <b>Certifications</b>   | FCC, CE, WHQL                                                                                                                |
|                         | ErP/EuP Ready (ErP/EuP ready power supply is required)                                                                       |

\* For detailed product information, please visit our website:

<http://www.asrock.com>

## WARNING

Please realize that there is a certain risk involved with over-clocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using third-party overclocking tools. Overclocking may affect your system's stability, or even cause damage to the components and devices of your system. It should be done at your own risk and expense. We are not responsible for possible damage caused by overclocking.

---

### **CAUTION!**

1. Due to limitation, the actual memory size may be less than 4GB for the reservation for system usage under Windows® 32-bit operating systems. Windows® 64-bit operating systems do not have such limitations. You can use ASRock XFast RAM to utilize the memory that Windows® cannot use.
2. PCIe 3.0 is only supported with Intel® Ivy Bridge CPU. With Intel® Sandy Bridge CPU, it only supports PCIe 2.0.
3. Intel® HD Graphics Built-in Visuals and the VGA outputs can be supported only with processors which are GPU integrated. Intel® Quick Sync Video 2.0, Intel® InTru™ 3D, Intel® Clear Video HD Technology, Intel® Insider™, Intel® HD Graphics 2500/4000 are supported by Intel® Ivy Bridge CPU. Intel® Quick Sync Video, Intel® InTru™ 3D, Intel® Clear Video HD Technology, Intel® HD Graphics 2000/3000, Intel® Advanced Vector Extensions (AVX) are supported by Intel® Sandy Bridge CPU.

---

## 1.3 Unique Features

### **ASRock Instant Boot**

ASRock Instant Boot provides an efficient way to save energy, time, money, and improve the system's running speed. It leverages the S3 and S4 ACPI features which normally enable Sleep/Standby and Hibernation modes in Windows® to shorten the boot time. By calling S3 and S4 at a specific timing during the shutdown and startup process, Instant Boot allows you to enter your Windows® desktop in a few seconds.

### **ASRock Instant Flash**

ASRock Instant Flash is a BIOS flash utility embedded in Flash ROM. This convenient BIOS update tool allows you to update the system BIOS without entering operating systems first like MS-DOS or Windows®. With this utility you can press <F6> or <F2> during POST to enter the BIOS setup menu to access ASRock Instant Flash. Just launch this tool and save the new BIOS file to your USB flash drive, floppy disk or hard drive, then you can update your BIOS 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.

### **ASRock APP Charger**

If you desire a faster, less restricted way of charging your Apple devices, such as iPhone/iPad/iPod Touch, ASRock has prepared a wonderful solution for you - ASRock APP Charger. Simply install the APP Charger driver, it makes your iPhone charge much quickly from your computer and up to 40% faster than before. ASRock APP Charger allows you to quickly charge many Apple devices simultaneously and even supports continuous charging when your PC enters into Standby mode (S1), Suspend to RAM (S3), hibernation mode (S4) or power off (S5). With

---

APP Charger driver installed, you can easily enjoy the marvelous charging experience.

### **ASRock XFast USB**

ASRock XFast USB can boost the performance of your USB storage devices. The performance may depend on the properties of the device.

### **ASRock XFast LAN**

ASRock XFast LAN provides faster internet access, which includes the benefits listed below. LAN Application Prioritization: You can configure your application's priority ideally and/or add new programs. Lower Latency in Game: After setting online game's priority higher, it can lower the latency in games. Traffic Shaping: You can watch Youtube HD videos and download simultaneously. Real-Time Analysis of Your Data: With the status window, you can easily recognize which data streams you are transferring currently.

### **ASRock XFast RAM**

ASRock XFast RAM fully utilizes the memory space that cannot be used under Windows® 32-bit operating systems. ASRock XFast RAM shortens the loading time of previously visited websites, making web surfing faster than ever. And it also boosts the speed of Adobe Photoshop 5 times faster. Another advantage of ASRock XFast RAM is that it reduces the frequency of accessing your SSDs or HDDs in order to extend their lifespan.

### **ASRock Crashless BIOS**

ASRock Crashless BIOS allows users to update their BIOS without fear of failing. If power loss occurs during the BIOS updating process, ASRock Crashless BIOS will automatically finish the BIOS update procedure after regaining power. Please note that BIOS files need to be placed in the root directory of your USB disk. Only USB

---

2.0 ports support this feature.

### **ASRock OMG (Online Management Guard)**

Administrators are able to establish an internet curfew or restrict internet access at specified times via OMG. You may schedule the starting and ending hours of internet access granted to other users. In order to prevent users from bypassing OMG, guest accounts without permission to modify the system time are required.

### **ASRock Internet Flash**

ASRock Internet Flash searches for available UEFI firmware updates from our servers. In other words, the system can auto-detect the latest UEFI from our servers and flash them without entering Windows® OS.

### **ASRock Fast Boot**

With ASRock's exclusive Fast Boot technology, it takes less than 1.5 seconds to logon to Windows 8 from a cold boot. No more waiting! The speedy boot will completely change your user experience and behavior.

### **ASRock Restart to UEFI**

Windows® 8 brings the ultimate boot up experience. The lightning boot up speed makes it hard to access the UEFI setup. ASRock Restart to UEFI allows users to enter the UEFI automatically when turning on the PC. By enabling this function; the PC will enter the UEFI directly after you restart.

### **ASRock Good Night LED**

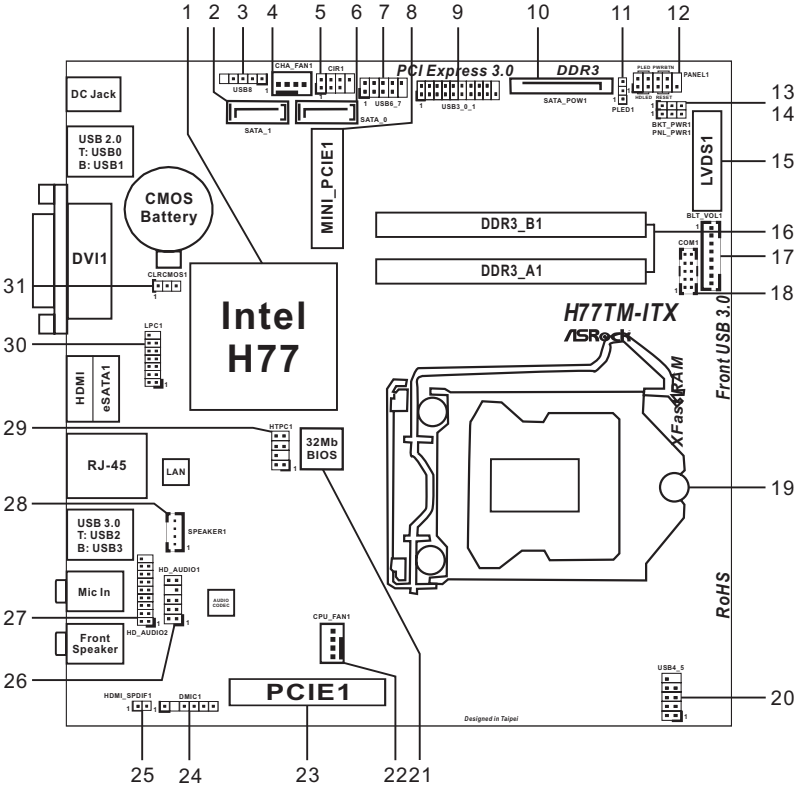
ASRock Good Night LED technology offers you a better sleeping environment by extinguishing the unessential LEDs. By enabling Good Night LED in the BIOS, the Power/HDD/LAN LEDs will be switched off when the system is powered on. Good night LED will also automatically switch off the Power and Keyboard LEDs when the system enters into Standby/Hibernation mode as well.



---

|    |                                                   |
|----|---------------------------------------------------|
| 1  | Intel Z77 Chipset                                 |
| 2  | SATA3 Connector (SATA_1)                          |
| 3  | USB 2.0 Header (USB8)                             |
| 4  | Chassis Fan Connector (CHA_FAN1)                  |
| 5  | Consumer Infrared Module Header (CIR1)            |
| 6  | SATA3 Connector (SATA_0)                          |
| 7  | USB 2.0 Header (USB6_7)                           |
| 8  | Mini PCI Express Slot (MINI_PCIE1)                |
| 9  | USB 3.0 Header (USB3_0_1)                         |
| 10 | SATA Power Connector (SATA_POW1)                  |
| 11 | Power LED Header (PLED1)                          |
| 12 | System Panel Header (PANEL1)                      |
| 13 | Backlight Power Jumper (BKT_PWR1)                 |
| 14 | Panel Power Jumper (PNL_PWR1)                     |
| 15 | LVDS Connector (LVDS1)                            |
| 16 | 2 x 204-pin DDR3 SO-DIMM Slots (DDR3_A1, DDR3_B1) |
| 17 | Backlight Control Header (BLT_VOL1)               |
| 18 | COM Port Header (COM1)                            |
| 19 | 1155-Pin CPU Socket                               |
| 20 | USB 2.0 Header (USB4_5)                           |
| 21 | SPI Flash Memory (32Mb)                           |
| 22 | CPU Fan Connector (CPU_FAN1)                      |
| 23 | PCI Express 3.0 x4 Slot (PCIE1)                   |
| 24 | Digital MIC Header (DMIC1)                        |
| 25 | HDMI_SPDIF Header (HDMI_SPDIF1)                   |
| 26 | Front Panel Audio Header (HD_AUDIO1)              |
| 27 | Analog Surround Audio Header (HD_AUDIO2)          |
| 28 | 3W Audio AMP Output Wafer Header (SPEAKER1)       |
| 29 | Home Theater PC Header (HTPC1)                    |
| 30 | LPC Debug Header (LPC1)                           |
| 31 | Clear CMOS Jumper (CLRCMOS1)                      |

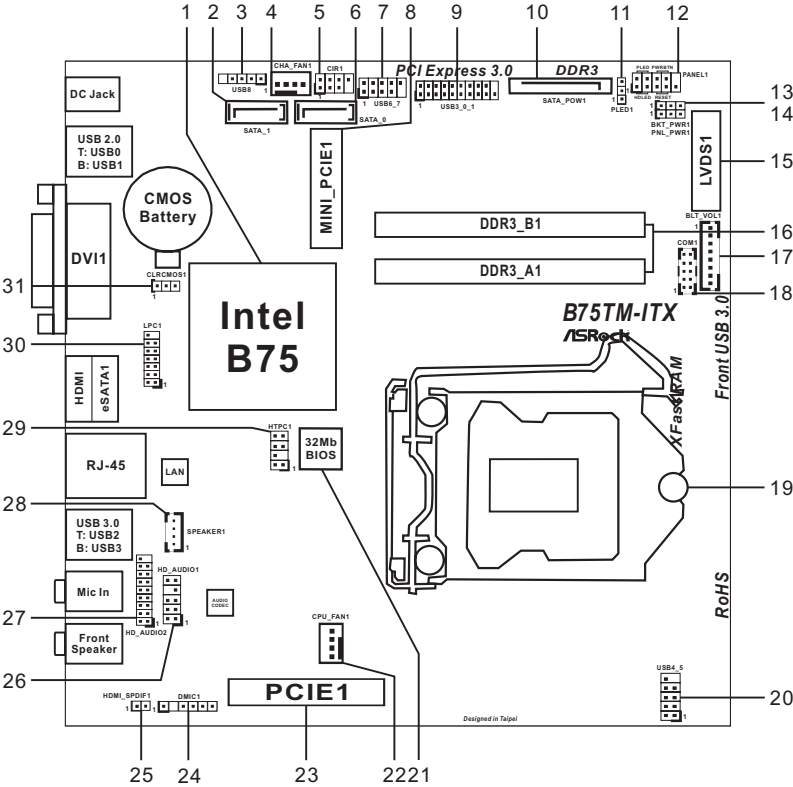
# 1.5 Motherboard Layout (H77TM-ITX)



---

|    |                                                   |
|----|---------------------------------------------------|
| 1  | Intel H77 Chipset                                 |
| 2  | SATA3 Connector (SATA_1)                          |
| 3  | USB 2.0 Header (USB8)                             |
| 4  | Chassis Fan Connector (CHA_FAN1)                  |
| 5  | Consumer Infrared Module Header (CIR1)            |
| 6  | SATA3 Connector (SATA_0)                          |
| 7  | USB 2.0 Header (USB6_7)                           |
| 8  | Mini PCI Express Slot (MINI_PCIE1)                |
| 9  | USB 3.0 Header (USB3_0_1)                         |
| 10 | SATA Power Connector (SATA_POW1)                  |
| 11 | Power LED Header (PLED1)                          |
| 12 | System Panel Header (PANEL1)                      |
| 13 | Backlight Power Jumper (BKT_PWR1)                 |
| 14 | Panel Power Jumper (PNL_PWR1)                     |
| 15 | LVDS Connector (LVDS1)                            |
| 16 | 2 x 204-pin DDR3 SO-DIMM Slots (DDR3_A1, DDR3_B1) |
| 17 | Backlight Control Header (BLT_VOL1)               |
| 18 | COM Port Header (COM1)                            |
| 19 | 1155-Pin CPU Socket                               |
| 20 | USB 2.0 Header (USB4_5)                           |
| 21 | SPI Flash Memory (32Mb)                           |
| 22 | CPU Fan Connector (CPU_FAN1)                      |
| 23 | PCI Express 3.0 x4 Slot (PCIE1)                   |
| 24 | Digital MIC Header (DMIC1)                        |
| 25 | HDMI_SPDIF Header (HDMI_SPDIF1)                   |
| 26 | Front Panel Audio Header (HD_AUDIO1)              |
| 27 | Analog Surround Audio Header (HD_AUDIO2)          |
| 28 | 3W Audio AMP Output Wafer Header (SPEAKER1)       |
| 29 | Home Theater PC Header (HTPC1)                    |
| 30 | LPC Debug Header (LPC1)                           |
| 31 | Clear CMOS Jumper (CLRCMOS1)                      |

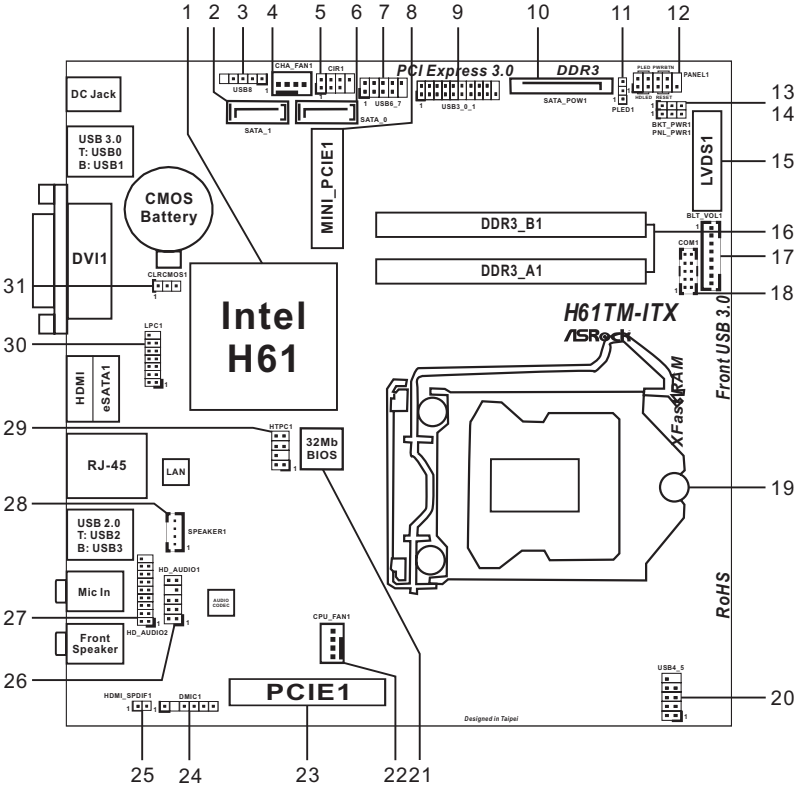
1.6 Motherboard Layout (B75TM-ITX)



---

|    |                                                   |
|----|---------------------------------------------------|
| 1  | Intel B75 Chipset                                 |
| 2  | SATA2 Connector (SATA_1)                          |
| 3  | USB 2.0 Header (USB8)                             |
| 4  | Chassis Fan Connector (CHA_FAN1)                  |
| 5  | Consumer Infrared Module Header (CIR1)            |
| 6  | SATA3 Connector (SATA_0)                          |
| 7  | USB 2.0 Header (USB6_7)                           |
| 8  | Mini PCI Express Slot (MINI_PCIE1)                |
| 9  | USB 3.0 Header (USB3_0_1)                         |
| 10 | SATA Power Connector (SATA_POW1)                  |
| 11 | Power LED Header (PLED1)                          |
| 12 | System Panel Header (PANEL1)                      |
| 13 | Backlight Power Jumper (BKT_PWR1)                 |
| 14 | Panel Power Jumper (PNL_PWR1)                     |
| 15 | LVDS Connector (LVDS1)                            |
| 16 | 2 x 204-pin DDR3 SO-DIMM Slots (DDR3_A1, DDR3_B1) |
| 17 | Backlight Control Header (BLT_VOL1)               |
| 18 | COM Port Header (COM1)                            |
| 19 | 1155-Pin CPU Socket                               |
| 20 | USB 2.0 Header (USB4_5)                           |
| 21 | SPI Flash Memory (32Mb)                           |
| 22 | CPU Fan Connector (CPU_FAN1)                      |
| 23 | PCI Express 3.0 x4 Slot (PCIE1)                   |
| 24 | Digital MIC Header (DMIC1)                        |
| 25 | HDMI_SPDIF Header (HDMI_SPDIF1)                   |
| 26 | Front Panel Audio Header (HD_AUDIO1)              |
| 27 | Analog Surround Audio Header (HD_AUDIO2)          |
| 28 | 3W Audio AMP Output Wafer Header (SPEAKER1)       |
| 29 | Home Theater PC Header (HTPC1)                    |
| 30 | LPC Debug Header (LPC1)                           |
| 31 | Clear CMOS Jumper (CLRCMOS1)                      |

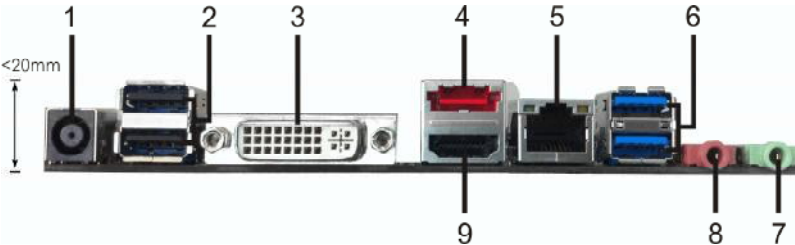
# 1.7 Motherboard Layout (H61TM-ITX)



---

|    |                                                   |
|----|---------------------------------------------------|
| 1  | Intel H61 Chipset                                 |
| 2  | SATA2 Connector (SATA_1)                          |
| 3  | USB 2.0 Header (USB8)                             |
| 4  | Chassis Fan Connector (CHA_FAN1)                  |
| 5  | Consumer Infrared Module Header (CIR1)            |
| 6  | SATA2 Connector (SATA_0)                          |
| 7  | USB 2.0 Header (USB6_7)                           |
| 8  | Mini PCI Express Slot (MINI_PCIE1)                |
| 9  | USB 3.0 Header (USB3_0_1)                         |
| 10 | SATA Power Connector (SATA_POW1)                  |
| 11 | Power LED Header (PLED1)                          |
| 12 | System Panel Header (PANEL1)                      |
| 13 | Backlight Power Jumper (BKT_PWR1)                 |
| 14 | Panel Power Jumper (PNL_PWR1)                     |
| 15 | LVDS Connector (LVDS1)                            |
| 16 | 2 x 204-pin DDR3 SO-DIMM Slots (DDR3_A1, DDR3_B1) |
| 17 | Backlight Control Header (BLT_VOL1)               |
| 18 | COM Port Header (COM1)                            |
| 19 | 1155-Pin CPU Socket                               |
| 20 | USB 2.0 Header (USB4_5)                           |
| 21 | SPI Flash Memory (32Mb)                           |
| 22 | CPU Fan Connector (CPU_FAN1)                      |
| 23 | PCI Express 3.0 x4 Slot (PCIE1)                   |
| 24 | Digital MIC Header (DMIC1)                        |
| 25 | HDMI_SPDIF Header (HDMI_SPDIF1)                   |
| 26 | Front Panel Audio Header (HD_AUDIO1)              |
| 27 | Analog Surround Audio Header (HD_AUDIO2)          |
| 28 | 3W Audio AMP Output Wafer Header (SPEAKER1)       |
| 29 | Home Theater PC Header (HTPC1)                    |
| 30 | LPC Debug Header (LPC1)                           |
| 31 | Clear CMOS Jumper (CLRCMOS1)                      |

### 1.8 I/O Panel (Z77TM-ITX)



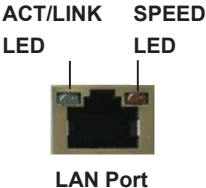
|     |                          |
|-----|--------------------------|
| 1*  | DC Jack                  |
| 2   | USB 2.0 Ports (USB01)    |
| 3   | DVI-I (DVI1)             |
| 4   | eSATA Connector (eSATA1) |
| 5** | LAN RJ-45 Port           |
| 6   | USB 3.0 Ports (USB23)    |
| 7   | Front Speaker (Lime)     |
| 8   | Microphone (Pink)        |
| 9   | HDMI Port (HDMI1)        |

\* Please use a 19V power adapter for the DC jack. This jack accepts dual barrel plugs with an inner diameter of 5.1 mm and an outer diameter of 7.4 mm, where the inner contact is +19 ( $\pm 10\%$ ) VDC and the shell is GND. The maximum current rating depends on the power adapter. The following are examples of power adapters that may be used:

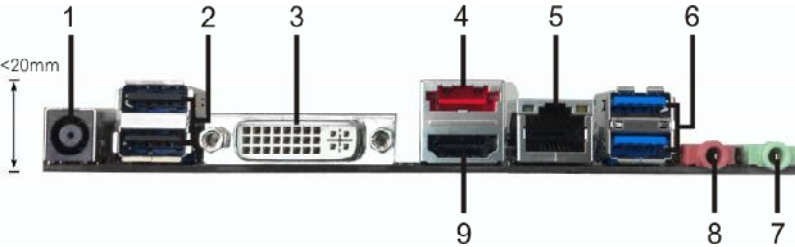
|       |                           |
|-------|---------------------------|
| DELTA | DELTA-ADP-150TB-150W/19V  |
| HP    | HP-TBC-BA52-150W/19V      |
| FSP   | FSP-FSP150-ABAN1-150W/19V |

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

| LAN Port LED Indications |                    |           |                    |
|--------------------------|--------------------|-----------|--------------------|
| Activity/Link LED        |                    | SPEED LED |                    |
| Status                   | Description        | Status    | Description        |
| Off                      | No Link            | Off       | 10Mbps connection  |
| Blinking                 | Data Activity      | Off       | 100Mbps connection |
| On                       | 100Mbps connection | Yellow    | 1Gbps connection   |



### 1.9 I/O Panel (H77TM-ITX)



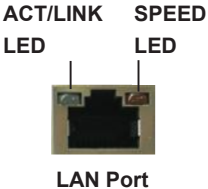
|     |                          |
|-----|--------------------------|
| 1*  | DC Jack                  |
| 2   | USB 2.0 Ports (USB01)    |
| 3   | DVI-I (DVI1)             |
| 4   | eSATA Connector (eSATA1) |
| 5** | LAN RJ-45 Port           |
| 6   | USB 3.0 Ports (USB23)    |
| 7   | Front Speaker (Lime)     |
| 8   | Microphone (Pink)        |
| 9   | HDMI Port (HDMI1)        |

\* Please use a 19V power adapter for the DC jack. This jack accepts dual barrel plugs with an inner diameter of 5.1 mm and an outer diameter of 7.4 mm, where the inner contact is +19 ( $\pm 10\%$ ) VDC and the shell is GND. The maximum current rating depends on the power adapter. The following are examples of power adapters that may be used:

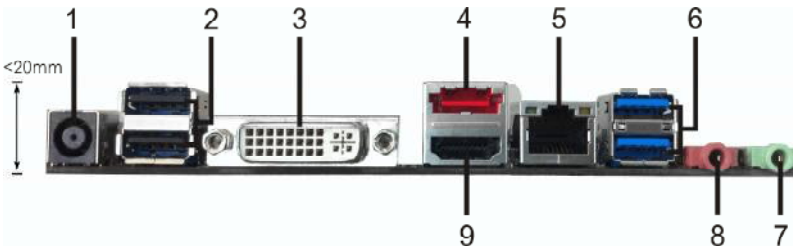
|       |                           |
|-------|---------------------------|
| DELTA | DELTA-ADP-150TB-150W/19V  |
| HP    | HP-TBC-BA52-150W/19V      |
| FSP   | FSP-FSP150-ABAN1-150W/19V |

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

| LAN Port LED Indications |                    |           |                    |
|--------------------------|--------------------|-----------|--------------------|
| Activity/Link LED        |                    | SPEED LED |                    |
| Status                   | Description        | Status    | Description        |
| Off                      | No Link            | Off       | 10Mbps connection  |
| Blinking                 | Data Activity      | Off       | 100Mbps connection |
| On                       | 100Mbps connection | Yellow    | 1Gbps connection   |



### 1.10 I/O Panel (B75TM-ITX)



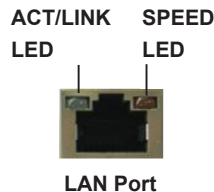
|     |                          |
|-----|--------------------------|
| 1*  | DC Jack                  |
| 2   | USB 2.0 Ports (USB01)    |
| 3   | DVI-I (DVI1)             |
| 4   | eSATA Connector (eSATA1) |
| 5** | LAN RJ-45 Port           |
| 6   | USB 3.0 Ports (USB23)    |
| 7   | Front Speaker (Lime)     |
| 8   | Microphone (Pink)        |
| 9   | HDMI Port (HDMI1)        |

\* Please use a 19V power adapter for the DC jack. This jack accepts dual barrel plugs with an inner diameter of 5.1 mm and an outer diameter of 7.4 mm, where the inner contact is +19 ( $\pm 10\%$ ) VDC and the shell is GND. The maximum current rating depends on the power adapter. The following are examples of power adapters that may be used:

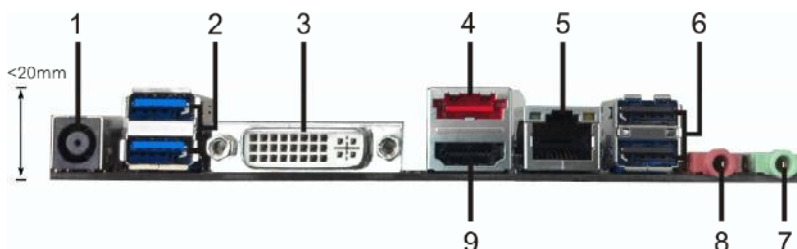
DELTA    DELTA-ADP-150TB-150W/19V  
HP        HP-TBC-BA52-150W/19V  
FSP       FSP-FSP150-ABAN1-150W/19V

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

| LAN Port LED Indications |                    |           |                    |
|--------------------------|--------------------|-----------|--------------------|
| Activity/Link LED        |                    | SPEED LED |                    |
| Status                   | Description        | Status    | Description        |
| Off                      | No Link            | Off       | 10Mbps connection  |
| Blinking                 | Data Activity      | Off       | 100Mbps connection |
| On                       | 100Mbps connection | Yellow    | 1Gbps connection   |



## 1.11 I/O Panel (H61TM-ITX)



|     |                          |
|-----|--------------------------|
| 1*  | DC Jack                  |
| 2   | USB 3.0 Ports (USB01)    |
| 3   | DVI-I (DVI1)             |
| 4   | eSATA Connector (eSATA1) |
| 5** | LAN RJ-45 Port           |
| 6   | USB 2.0 Ports (USB23)    |
| 7   | Front Speaker (Lime)     |
| 8   | Microphone (Pink)        |
| 9   | HDMI Port (HDMI1)        |

\* Please use a 19V power adapter for the DC jack. This jack accepts dual barrel plugs with an inner diameter of 5.1 mm and an outer diameter of 7.4 mm, where the inner contact is +19 ( $\pm 10\%$ ) VDC and the shell is GND. The maximum current rating depends on the power adapter. The following are examples of power adapters that may be used:

DELTA DELTA-ADP-150TB-150W/19V

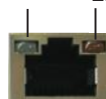
HP HP-TBC-BA52-150W/19V

FSP FSP-FSP150-ABAN1-150W/19V

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

| LAN Port LED Indications |                    |           |                    |
|--------------------------|--------------------|-----------|--------------------|
| Activity/Link LED        |                    | SPEED LED |                    |
| Status                   | Description        | Status    | Description        |
| Off                      | No Link            | Off       | 10Mbps connection  |
| Blinking                 | Data Activity      | Off       | 100Mbps connection |
| On                       | 100Mbps connection | Yellow    | 1Gbps connection   |

ACT/LINK LED      SPEED LED



LAN Port

---

## ***Chapter 2: Installation***

This is a Thin Mini-ITX form factor motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

### **Pre-installation Precautions**

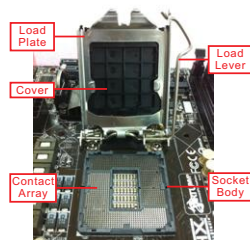
Take note of the following precautions before you install motherboard components or change any motherboard settings.

1. 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. In order to avoid damage from static electricity to the motherboard's components, NEVER place your motherboard directly on a carpet. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle the components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any components, place them on a grounded anti-static pad or in the bag that comes with the components.
5. When placing screws to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.

---

## 2.1 Installing the CPU

In order to provide the LGA 1155 CPU sockets more protection and make the installation process easier, ASRock has added a new protection cover on top of the load plate to replace the former PnP caps that were under the load plate. For the installation of Intel® 1155-Pin CPUs with the new protection cover, please follow the steps below.



1155-Pin Socket Overview



Before you insert the 1155-Pin CPU into the socket, please check if the CPU surface is unclean or if there are any bent pins in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.

### Step 1. Open the socket:

Step 1-1. Disengage the lever by pressing it down and sliding it out of the hook. You do not have to remove the protection cover.



Step 1-2. Keep the lever positioned at about 135 degrees in order to flip up the load plate.



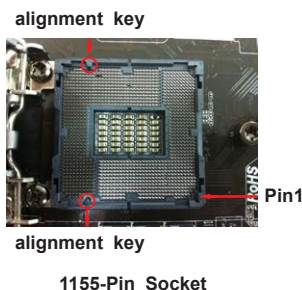
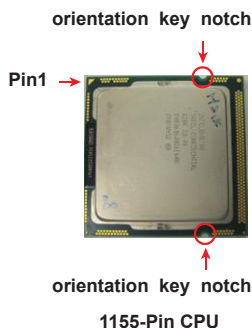
### Step 2. Insert the 1155-Pin CPU:

Step 2-1. Hold the CPU by the edge which is marked with a black line.

Step 2-2. Orient the CPU with the Integrated Heat Sink up. Locate Pin1 and the two orientation key notches.



black line



For proper installation, please ensure to match the two orientation key notches of the CPU with the two alignment keys of the socket.

Step 2-3. Carefully place the CPU into the socket.



Step 2-4. Verify that the CPU is within the socket and properly mated to the orient keys.

Step 3. Close the socket:

Step 3-1. Flip the load plate onto the IHS.



Step 3-2. Press down the load lever, and secure it with the load plate tab under the retention tab. The protection cover will automatically come off by itself.



Please save and replace the cover if the processor is removed. The cover must be placed if you wish to return the motherboard for after service.

---

## 2.2 Installing the CPU Fan and Heatsink

This motherboard is equipped with 1155-Pin socket that supports Intel 1155-Pin CPUs. Please adopt the type of heatsink and cooling fan compliant with Intel 1155-Pin CPU to dissipate heat. Before you install the heatsink, you need to spray thermal interface material between the CPU and the heatsink to improve heat dissipation. Ensure that the CPU and the heatsink are securely fastened and in good contact with each other. Then connect the CPU fan to the CPU\_FAN connector (CPU\_FAN1, see p.13/15/17/19, No. 22).

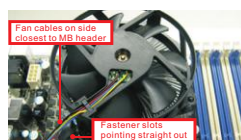
**For proper installation, please kindly refer to the instruction manuals of your CPU fan and heatsink.**

Below is an example to illustrate the installation of a heatsink and fan for 1155-Pin CPUs.

Step 1. Apply thermal interface material onto the center of the IHS on the socket's surface.



Step 2. Place the heatsink onto the socket. Ensure that the fan cables are faced on the side closest to the CPU fan connector on the motherboard (CPU\_FAN1, see p.13/15/17/19, No. 22).



Step 3. Align the fasteners with the holes on the motherboard.

Step 4. Rotate the fastener clockwise, then press the fastener caps down with your thumb to install and lock. Repeat with the remaining fasteners.



If you press down the fasteners without rotating them clockwise, the heatsink cannot be secured on the motherboard.

Step 5. Connect the CPU fan connector with the fan header on the motherboard.

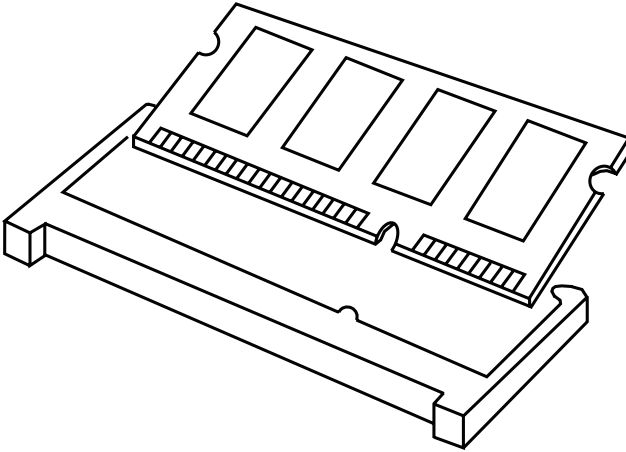
Step 6. Secure redundant cable with tie-wrap to ensure that the cable does not interfere with the fan's operation or contact other components.

---

## 2.3 Installing Memory Modules (DIMM)

This motherboard provides two 204-pin DDR3 (Double Data Rate 3) SO-DIMM slots.

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



The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

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

---

## 2.4 Expansion Slots (PCI Express Slots)

There is 1 PCI Express slot and 1 mini PCI Express slot on this motherboard.

**Mini-PCIE Slot:** MINI\_PCIE1 is used for mini PCIE cards.

**PCIE slots:** The x4 lane width PCIE1 (PCIE 3.0 x4 slot) is used for PCI Express expansion cards.

### Installing an Expansion Card

- Step 1. Before installing an 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 bracket facing the slot that you intend to use. Keep the screws for later use.
- Step 3. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
- Step 4. Fasten the card to the chassis with screws.



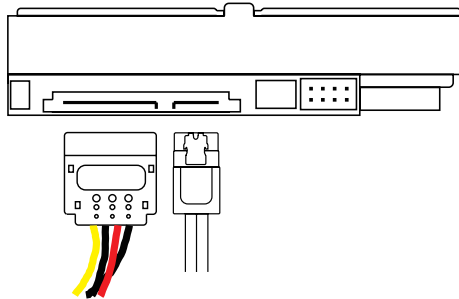
PCIE1 slot supports Gen 3 speed. To run PCI Express in Gen 3 speed, please install an Ivy Bridge CPU. If you install a Sandy Bridge CPU, the PCI Express will run only at PCI Express Gen 2 speed.

---

## 2.5 Installing Serial SATA2 / SATA3 Hard Disks

STEP 1: Connect the SATA power cable to the hard disk.

STEP 2: Connect one end of the SATA data cable to the hard disk.



STEP 3: Connect the other end of the SATA data cable to the motherboard's SATA2 connectors.

---

### SATA2 / SATA3 Connectors

(SATA\_0:

see p.13/15/17/19, No. 6)

SATA\_1

SATA\_0

(SATA\_1:

see p.13/15/17/19, No. 2)



These two SATA2 / SATA3 connectors support SATA data cables for internal storage devices.

---

## 2.6 Power Connectors

---

SATA Power Connector  
(SATA\_POWER1)  
(see p.13/15/17/19, No. 10)



Please connect a SATA  
power cable.

---

## 2.7 Installing the System Panel

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):**

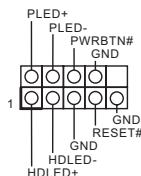
Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

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.



The white wires are negative (Connect to - or GND pins), while the colored ones are positive.

**System Panel Header**  
(9-pin PANEL1)  
(see p.13/15/17/19, No. 12)



## 2.8 Onboard Headers and Connectors

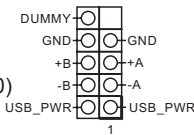


Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage to the motherboard!

### USB 2.0 Headers

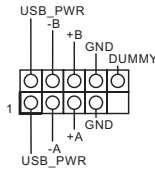
(9-pin USB4\_5)

(see p.13/15/17/19, No. 20)



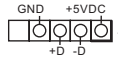
(9-pin USB6\_7)

(see p.13/15/17/19, No. 7)



(4-pin USB8)

(see p.13/15/17/19, No. 3)



Besides two default USB 2.0 ports on the I/O panel, there are three USB 2.0 headers and one USB port on this motherboard. Each USB 2.0 header can support two USB 2.0 ports.

### USB 3.0 Header

(19-pin USB3\_0\_1)

(see p.13/15/17/19, No. 9)



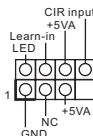
Besides two default USB 3.0 ports on the I/O panel, there is one USB 3.0 header on this motherboard. The USB 3.0 header can support two USB 2.0 ports.

### Consumer Infrared

#### Module Header

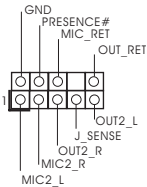
(7-pin CIR1)

(see p.13/15/17/19, No. 5)



This header can be used to connect the remote controller receiver.

Front Panel Audio Header  
(9-pin HD\_AUDIO1)  
(see p.13/15/17/19, No. 26)



This is an interface for the 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 instructions in our manual and chassis manual to install your system.
2. If you use an AC'97 audio panel, please install it to the front panel audio header by the steps 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.

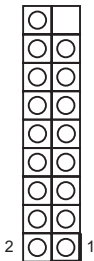
**For Windows® XP / XP 64-bit OS:**

Select "Mixer". Select "Recorder". Then click "FrontMic".

**For Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS:**

Go to the "FrontMic" Tab in the Realtek Control panel. Adjust "Recording Volume".

Analog Surround  
Audio Header  
(17-pin HD\_AUDIO2)  
(see p.13/15/17/19, No. 27)



| PIN | Signal Name | PIN | Signal Name |
|-----|-------------|-----|-------------|
| 18  | SENSE       | 17  | KEY         |
| 16  | LFE         | 15  | A_GND       |
| 14  | A_GND       | 13  | Center      |
| 12  | Surr_Rear_R | 11  | A_GND       |
| 10  | A_GND       | 9   | Surr_Rear_L |
| 8   | Surr_Side_R | 7   | A_GND       |
| 6   | A_GND       | 5   | Surr_Side_L |
| 4   | Front_R     | 3   | A_GND       |
| 2   | A_GND       | 1   | Front_L     |

---

3W Audio AMP Output  
Wafer Header  
(4-pin SPEAKER1)  
(see p.13/15/17/19, No. 28)



Please connect the chassis speaker to this header.

---

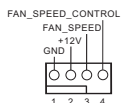
Power LED Header  
(3-pin PLED1)  
(see p.13/15/17/19, No. 11)



Please connect the chassis power LED to this header to indicate system power status. The LED is on when the system is operating. The LED keeps blinking in S1/S3 state. The LED is off in S4 state or S5 state (power off).

---

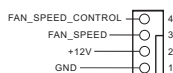
Chassis Fan Connector  
(4-pin CHA\_FAN1)  
(see p.13/15/17/19, No. 4)



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

---

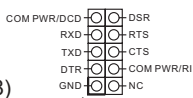
CPU Fan Connectors  
(4-pin CPU\_FAN1)  
(see p.13/15/17/19, No. 22)



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

---

Serial Port Header  
(10-pin COM1)  
(see p.13/15/17/19, No. 18)



This COM1 header supports a serial port module.

HDMI\_SPDIF Header  
(2-pin HDMI\_SPDIF1)  
(see p.13/15/17/19, No. 25)



This header provides SPDIF audio output to HDMI VGA cards, allowing the system to connect HDMI Digital TV/projector/LCD devices. Please connect the HDMI\_SPDIF connector of a HDMI VGA card to this header.

Backlight Control Header  
(8-pin BLT\_VOL1)  
(see p.13/15/17/19, No. 17)



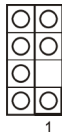
- 1: BKLT\_EN
- 2: BKLT\_PWM
- 3: BKLT\_PWR
- 4: BKLT\_PWR
- 5: GND
- 6: GND
- 7: Brightness\_Up
- 8: Brightness\_Down

Digital MIC Header  
(5-pin DMIC1)  
(see p.13/15/17/19, No. 24)



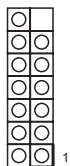
- 1: +5V
- 2: No pin
- 2: SPDIF\_OUT/DMIC\_CLK
- 3: GND
- 4: DMIC\_DATA
- 5: +3.3V

Home Theater PC Header  
(7-pin HTPC1)  
(see p.13/15/17/19, No. 29)



| PIN | Signal Name | PIN | Signal Name   |
|-----|-------------|-----|---------------|
| 8   | HDMI CEC    | 7   | #Power_Button |
| 6   | SMB_DATA    | 5   | 3.3V Standby  |
| 4   | SMB_CLK     | 3   | No pin        |
| 2   | GND         | 1   | Recording LED |

LPC Debug Header  
 (13-pin LPC1)  
 (see p.13/15/17/19, No. 30)

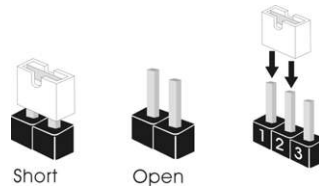


| PIN | Signal Name | PIN | Signal Name |
|-----|-------------|-----|-------------|
| 14  | +3V         | 13  | No pin      |
| 12  | +3V         | 11  | +3V         |
| 10  | GND         | 9   | GND         |
| 8   | LAD3        | 7   | LAD2        |
| 6   | LAD1        | 5   | LAD0        |
| 4   | LFRAME#     | 3   | RESET#      |
| 2   | GND         | 1   | CLK         |

---

## 2.9 Jumpers Setup

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



---

**Clear CMOS Jumper**  
(CLRCMOS1)  
(see p.13/15/17/19, No. 31)



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, 1394 GUID and MAC address will be cleared only if the CMOS battery is removed.

---

**Backlight Power Jumper**  
(3-pin BKT\_PWR1)  
(see p.13/15/17/19, No. 13)



1-2 : +12V  
2-3 : +19V

---

**Panel Power Jumper**  
(3-pin PNL\_PWR1)  
(see p.13/15/17/19, No. 14)



1-2 : +3V  
2-3 : +5V

---

## 2.10 Operating System Setup

This motherboard supports various Microsoft® Windows® operating systems: 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer your OS documentation for more information.

---

## 2.11 Installing Drivers

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

### 2.11.1 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 does not appear automatically, locate and double click on the file "ASRSETUP.EXE" in the Support CD to display the menu.

### 2.11.2 Drivers Menu

The drivers compatible to your system will be auto-detected and listed on the support CD driver page. Please follow the order from top to bottom to install those required drivers. Therefore, the drivers you install can work properly.

### 2.11.3 Utilities Menu

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

### 2.11.4 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.

---

## 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.



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>        | For setting system time/date information          |
| <b>OC Tweaker</b>  | For overclocking configurations                   |
| <b>Advanced</b>    | For advanced system configurations                |
| <b>Tool</b>        | Useful tools                                      |
| <b>H/W Monitor</b> | Displays current hardware status                  |
| <b>Boot</b>        | For configuring boot settings and boot priority   |
| <b>Security</b>    | For security settings                             |
| <b>Exit</b>        | Exit the current screen or the UEFI Setup Utility |

---

### 3.1.2 Navigation Keys

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

Please check the following table for the descriptions of each navigation key.

| Navigation Key(s) | Description                                        |
|-------------------|----------------------------------------------------|
| + / -             | To change option for the selected items            |
| <Tab>             | Switch to next function                            |
| <PGUP>            | Go to the previous page                            |
| <PGDN>            | Go to the next page                                |
| <HOME>            | Go to the top of the screen                        |
| <END>             | Go to the bottom of the screen                     |
| <F1>              | To display the General Help Screen                 |
| <F7>              | Discard changes and exit the SETUP UTILITY         |
| <F9>              | Load default values for all the settings           |
| <F10>             | Save changes and exit the SETUP UTILITY            |
| <F12>             | Print screen                                       |
| <ESC>             | 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.



### Active Page on Entry

This allows you to select the default page when entering the UEFI setup utility.

---

### 3.3 OC Tweaker Screen

In the OC Tweaker screen, you can set up overclocking features.



#### CPU Configuration

##### CPU Ratio

Use this to change the ratio value of this motherboard.

##### Intel SpeedStep Technology

Intel SpeedStep technology is Intel's 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® and want to enable this function, please set 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.

##### Long Duration Power Limit

Use this to configure long duration power limit in watts. The default value is [Auto].

##### Long Duration Maintained

Use this to configure time window which the long duration power is maintained. The default value is [Auto].

##### Short Duration Power Limit

---

Use this to configure short duration power limit in watts. The default value is [Auto].

### Primary Plane Current Limit

Use this to configure the maximum instantaneous current allowed for the primary plane. The default value is [Auto].

### Secondary Plane Current Limit

Use this to configure the maximum instantaneous current allowed for the secondary plane. The default value is [Auto].

### GT OverClocking Support

Use this to enable or disable GT OverClocking Support. The default value is [Disabled].

## DRAM Timing Configuration

### Load XMP Setting

Use this to load XMP settings. Configuration options: [Auto], [Default], [Profile 1] and [Profile 2]. The default value is [Auto].

### DRAM Frequency

If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assign the appropriate frequency automatically.

## DRAM Configuration



### DRAM tCL

Use this to change CAS# Latency (tCL) Auto/Manual settings. The default is [Auto].

---

**DRAM tRCD**

Use this to change RAS# to CAS# Delay (tRCD) Auto/Manual settings. The default is [Auto].

**DRAM tRP**

Use this to change Row Precharge Time (tRP) Auto/Manual settings. The default is [Auto].

**DRAM tRAS**

Use this to change RAS# Active Time (tRAS) Auto/Manual settings. The default is [Auto].

**Command Rate (CR)**

Use this to change Command Rate (CR) Auto/Manual settings. The default is [Auto].

**DRAM tWR**

Use this to change Write Recovery Time (tWR) Auto/Manual settings. The default is [Auto].

**DRAM tRFC**

Use this to change Refresh Cycle Time (tRFC) Auto/Manual settings. The default is [Auto].

**DRAM tRRD**

Use this to change RAS to RAS Delay (tRRD) Auto/Manual settings. The default is [Auto].

**DRAM tWTR**

Use this to change Write to Read Delay (tWTR) Auto/Manual settings. The default is [Auto].

**DRAM tRTP**

Use this to change Read to Precharge (tRTP) Auto/Manual settings. The default is [Auto].

**DRAM tFAW**

Use this to change Four Activate Window (tFAW) Auto/Manual settings. The default is [Auto].

**DRAM tCWL**

Use this to change CAS# Write Latency (tCWL) Auto/Manual settings. The default is [Auto].

**ODT WR (CHA)**

Use this to change ODT (CHA) Auto/Manual settings. The default is

---

[Auto].

#### **ODT WR (CHB)**

Use this to change ODT (CHB) Auto/Manual settings. The default is [Auto].

#### **ODT NOM (CHA)**

Use this to change ODT (CHA) Auto/Manual settings. The default is [Auto].

#### **ODT NOM (CHB)**

Use this to change ODT (CHB) Auto/Manual settings. The default is [Auto].

#### **MRC Fast Boot**

Use this to enable or disable MRC Fast Boot. The default is [Enabled].

### **Voltage Configuration**

#### **DRAM Voltage**

Use this to configure DRAM Voltage. The default value is [Auto].

#### **VTT Voltage**

Use this to configure VTT Voltage. The default value is [Auto].

#### **VCCSA Voltage**

Use this to configure VCCSA Voltage. The default value is [Auto].

---

### 3.4 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, North Bridge Configuration, South Bridge Configuration, Storage Configuration, Intel(R) Rapid Start Technology, Intel(R) Smart Connect Technology, Super IO Configuration, ACPI Configuration, USB Configuration and Trusted Computing.



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

---

## 3.4.1 CPU Configuration



### Intel Hyper Threading Technology

To enable this feature, a computer system with an Intel processor that supports Hyper-Threading technology and an operating system that includes optimization for this technology such as Microsoft® Windows® XP / Vista™ / 7 / 8 is required. Set to [Enabled] if using Microsoft® Windows® XP / Vista™ / 7 / 8 or Linux kernel version 2.4.18 or higher. This option will be hidden if the installed CPU does not support Hyper-Threading technology.

### Active Processor Cores

Use this to select the number of cores to enable in each processor package. The default value is [All].

### Enhanced Halt State (C1E)

All processors support the Halt State (C1). C1 state is supported through the native processor instructions HLT and MWAIT and requires no hardware support from the chipset. In C1 power state the processor maintains the context of the system caches.

### CPU C3 State Support

Use this to enable or disable CPU C3 report to OS.

### CPU C6 State Support

Use this to enable or disable CPU C6 report to OS.

### Package C State Support

Configure options that will be programmed into C State package limit register. The default value is [Auto].

---

### **CPU Thermal Throttling**

Use this to enable CPU internal thermal control mechanism to keep the CPU from overheated. The default value is [Enabled].

### **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.

### **Hardware Prefetcher**

Use this turn on/off the MLC streamer prefetcher.

### **Adjacent Cache Line Prefetch**

Use this to turn on/off prefetching of adjacent cache lines.

---

## 3.4.2 North Bridge Configuration



### Primary Graphics Adapter

This allows you to select [Onboard] or [PCI Express] as the primary graphics adapter. The default value is [PCI Express].

### PCIe Link Speed

This allows you to select PCIe1 Link Speed.

### Share Memory

This allows you to configure share memory. The default value is [Auto].

### IGPU Multi-Monitor

This allows you to enable or disable IGPU Multi-Monitor. The default value is [Disabled]. If you wish to install a PCI Express card under Windows® Vista™ OS, please disable this option.

### Render Standby

Use this to enable or disable Render Standby by the Internal Graphics Device. The default value is [Enabled].

### LVDS Configuration

This allows you to enable or disable the Onboard LVDS.

### Panel Type Selection

Use this to select a panel type.

### Primary IGFX Boot Display

Use this to select the video device which will be activated during POST.

---

## **Volume Control**

Use this to fine tune the desired volume.

---

### 3.4.3 South Bridge Configuration



#### Onboard HD Audio

Select [Auto], [Enabled] or [Disabled] for the onboard HD Audio. If you select [Auto], the onboard HD Audio will be disabled when a Sound Card is plugged.

#### Front Panel

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

#### External Panel

Select [Auto] or [Disabled] for the External Audio Panel.

#### Onboard HDMI HD Audio

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

#### Onboard LAN

This allows you to enable or disable the Onboard LAN.

#### Wireless

This allows you to enable or disable the Wireless function.

#### Radio Controller

This allows you to enable or disable the Radio Controller.

#### Deep Sleep

Mobile platforms support Deep S4/S5 in DC only and desktop platforms support Deep S4/S5 in AC only. Configuration options: [Disabled], [Enabled in S5] and [Enabled in S4 and S5].

#### 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.

### **Good Night LED**

Use this to enable or disable the Power LED and LAN LED.

### 3.4.4 Storage Configuration



## SATA Controller(s)

Use this to enable or disable the SATA Controllers.

## SATA Mode Selection

Use this to select the SATA mode. Configuration options: [IDE Mode], [AHCI Mode] and [RAID Mode]. The default value is [AHCI Mode]. (RAID Mode is for Z77M-ITX / H77M-ITX only.)



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 Management

Use this to configure Aggressive Link Power Management.

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

Use this to enable or disable S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology).

---

### 3.4.5 Intel(R) Rapid Start Technology



#### Intel(R) Rapid Start Technology

Use this to enable or disable Intel(R) Rapid Start Technology. Intel(R) Rapid Start Technology is a new zero power hibernation mode which allows users to resume in just 5-6 seconds. The default is [Enabled].

#### Entry After

Select a time to enable RTC wake timer at S3 entry. The default is [10 minutes].

#### Active Page Threshold Support

This allows you to enable or disable Active Page Threshold Support. The default is [Disabled].

### 3.4.6 Intel(R) Smart Connect Technology



**Intel(R) Smart Connect Technology**

Use this 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].

---

### 3.4.7 Super IO Configuration



#### Serial Port

Use this to enable or disable the onboard serial port.

#### Serial Port Address

Use this to set the address for the onboard serial port. Configuration options: [3F8h / IRQ4] and [3E8h / IRQ4].

---

## 3.4.8 ACPI Configuration



### **Suspend to RAM**

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

### **Check Ready Bit**

Use this to enable or disable Check Ready Bit.

### **ACPI HPET Table**

Use this to enable or disable the 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.

### **PCI Devices Power On**

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

### **Ring-In Power On**

Use this to enable or disable the Ring-In signals to turn on the system from power-soft-off mode.

### **RTC Alarm Power On**

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

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

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

### **USB Mouse Power On**

Use this to enable or disable the USB Mouse to power on the

---

system.

## **CSM**

Please disable CSM when Fast Boot is enabled. The default value is [Enabled].

---

### 3.4.9 USB Configuration



#### **USB 2.0 Controller**

Use this to enable or disable the USB 2.0 controller.

#### **USB 3.0 Controller**

Use this to enable or disable the USB 3.0 controller.

#### **Legacy USB Support**

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

[Enabled] - Enables support for legacy USB.

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

[Disabled] - USB devices are not allowed to be used under legacy OS and UEFI setup when [Disabled] is selected. If you have USB compatibility issues, it is recommended to select [Disabled] to enter the OS.

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

#### **Legacy USB 3.0 Support**

Use this to enable or disable legacy support for USB 3.0 devices. The default value is [Enabled].

#### **USB Compatibility Patch**

Please enable this if your USB devices encounter compatibility problems.

### 3.4.10 Trusted Computing



#### Security Device Support

Use this to enable or disable BIOS support for security devices.

---

## 3.5 Tool



### OMG (Online Management Guard)

Administrators are able to establish an internet curfew or restrict internet access at specified times via OMG. You may schedule the starting and ending hours of internet access granted to other users. In order to prevent users from bypassing OMG, guest accounts without permission to modify the system time are required.

### Instant Flash

Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update the system UEFI without entering operating systems like MS-DOS or Windows® first. Just save the new UEFI file to your USB flash drive, floppy disk or hard drive and launch this tool, 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 the UEFI update process is completed.

### Internet Flash

Internet Flash searches for available UEFI firmware updates from our servers. In other words, the system can auto-detect the latest UEFI from our servers and flash them without entering Windows

---

OS.

### **Network Configuration**

Use this to configure internet connection settings for Internet Flash.

### **User Defaults**

You are allowed to load and save three user defaults according to your own requirements.

---

### 3.6 Hardware Health Event Monitoring Screen

This section allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, fan speed and voltage.



#### CPU Fan 1 Setting

This allows you to set CPU fan 1's speed. Configuration options: [Full On] and [Automatic Mode]. The default value is [Full On].

#### Chassis Fan 1 Setting

This allows you to set chassis fan 1's speed. Configuration options: [Full On] and [Automatic Mode]. The default value is [Full On].

---

## 3.7 Boot Screen

This section displays 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. Configuration options:

[Disabled] - Disable Fast Boot.

[Fast]: When selecting "Fast", it is not allowed to boot from a USB storage device.

[Ultra Fast]: There are a few restrictions

1. Only supports Windows 8 UEFI operating system
2. You will not be able to enter BIOS Setup by using the keyboard. The only way to enter UEFI Setup is to clear CMOS or run the "Re-start to UEFI" utility in windows.
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 to enable or disable Boot From Onboard LAN.

### Setup Prompt Timeout

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

### Bootup Num-Lock

If this is set to [On], it will automatically activate the Numeric Lock

---

after boot-up.

### **Full Screen Logo**

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

### **AddOn ROM Display**

Use this option to adjust AddOn ROM Display. If you enable the option “Full Screen Logo” but you want to see the AddOn ROM information when the system boots, please select [Enabled]. Configuration options: [Enabled] and [Disabled]. The default value is [Enabled].

### **Boot Failure Guard**

Enable or disable Boot Failure Guard.

### **Boot Failure Guard Count**

Enable or disable Boot Failure Guard Count.

---

## 3.8 Security Screen

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



### Secure Boot

Use this to enable or disable Secure Boot Control. The default value is [Disabled].

---

### 3.9 Exit Screen



#### **Save Changes and Exit**

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

#### **Discard Changes and Exit**

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

#### **Discard Changes**

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

#### **Load UEFI Defaults**

Load UEFI default values for all options. The F9 key can be used for this operation.

#### **Launch EFI Shell from filesystem device**

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