HI10T-S101

Intel® Skylake LGA1151 SoC

USER'S GUIDE

HDMI®
HIGH-DEFINITION MULTIMEDIA INTERFACE

ISO-9001 ISO-14001 C E FC

Preface

Copyright

This publication, including all photographs, illustrations and software, is protected under international copyright laws, with all rights reserved. Neither this manual, nor any of the material contained herein, may be reproduced without written consent of the author.

Version 1.0

Disclaimer

The information in this document is subject to change without notice. The manufacturer makes no representations or warranties with respect to the contents hereof and specifically disclaims any implied warranties of merchantability or fitness for any particular purpose. The manufacturer reserves the right to revise this publication and to make changes from time to time in the content hereof without obligation of the manufacturer to notify any person of such revision or changes.

Trademark Recognition

Microsoft, MS-DOS and Windows are registered trademarks of Microsoft Corp.

MMX, Pentium, Pentium-II, Pentium-III, Celeron are registered trademarks of Intel Corporation.

Other product names used in this manual are the properties of their respective owners and are acknowledged.

Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

This device is in conformity with the following EC/EMC directives:

❑ **EN 55022**   Limits and methods of mesurement of radio disturbance characteristics of information technology equipment

❑ **EN 61000-3-2**   Disturbances in supply systems caused

❑ **EN 61000-3-3**   Disturbances in supply systems caused by household appliances and similar electrical equipment " Voltage fluctuations"

❑ **EN 55024**   Information technology equipment-Immunity characteristics-Limits and methods of measurement

❑ **EN 60950**   Safety for information technology equipment including electrical business equipment

❑ **CE marking** $C\epsilon$

Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Réglement sur le matériel brouilieur du Canada.

About the Manual

The manual consists of the following:

Chapter 1 **Introducing the Motherboard**	Describes features of the motherboard.	⇨ page 1
Chapter 2 **Installing the Motherboard**	Describes installation of motherboard components.	⇨ page 7
Chapter 3 **Using BIOS**	Provides information on using the BIOS Setup Utility.	⇨ page 27
Chapter 4 **Using the Motherboard Software**	Describes the motherboard software.	⇨ page 51
Chapter 5 **Trouble Shooting**	Provides basic trouble shooting tips.	⇨ page 55

TABLE OF CONTENTS

Chapter 1
Introducing the Motherboard

Introduction

Thank you for choosing the **H110T-SI01** motherboard. This motherboard is a high performance, enhanced function motherboard designed to support the LGA1151 socket for Intel® Skylake processor.

This motherboard is based on Intel® H110 Express Chipset for best desktop platform solution. It supports up to 32 GB of system memory with dual channel DDR4 2400 MHz SO-DIMM. Two M.2 slots are for extending usage.

It integrates USB 2.0 ports and USB 3.0 interface, supporting up to three USB 2.0 ports (one 5-pin USB 2.0 header supports additional one USB 2.0 port and two USB 2.0 ports at the rear panel) and four USB 3.0 ports (two USB 3.0 ports at the rear panel and one USB 3.0 header supports additonal two USB 3.0 ports).

This motherboard is equipped with advanced full set of I/O ports in the rear panel, including one 19V DC_IN port, one HDMI in port (For All-In-One Specification), one HDMI out port, two USB 2.0 ports, two USB 3.0 ports, one RJ45 LAN connector, and audio jacks for line-out and mircophone.

In addition, this motherboard supports two SATA 6Gb/s connectors for storage expansion.

Package Contents

Your motherboard package ships with the following items:

- ❑ H110T-SI01 Motherboard
- ❑ QIG
- ❑ DVD
- ❑ I/O Shield
- ❑ 1 SATA Cable and 1 SATA/Power Cable

*Accessories may vary, please refer to actual goods you purchase.*

Specifications

CPU	• LGA1151 socket for Intel® Skylake processor • Supports CPU up to 65W TDP
Chipset	• Intel® H110 Chipset
Memory	• Dual-channel DDR4 memory architecture • 2 x 260-pin DDR4 SO-DIMM sockets support up to 32 GB • Supports DDR4 2400 MHz DDR4 SDRAM
Expansion Slots	• 2 x M.2 slots - 1 x type 2230 for wifi/BT - 1 x type 2280 for SSD
Storage	• Supported by Intel® H110 Express Chipset - 2 x Serial ATA 6Gb/s devices
Audio	• Realtek ALC662-VD0-GR 48P - 6 Channel High Definition Audio Codec - Compliant with HD audio specification
LAN	• Realtek RTL8111H - 10/100/1000 Fast Ethernet Controller - Wake-on-LAN and remote wake-up support
Rear Panel I/O	• 1 x 19V DC_IN port • 1 x HDMI in port (For All-In-One Specification) • 1 x HDMI out port • 2 x USB 2.0 ports • 2 x USB 3.0 ports • 1 x RJ45 LAN connector • 2 x Audio port (1 x line-out, 1 x Microphone)
Internal I/O Connectors & Headers	• 1 x 4-pin CPU_FAN connector with smart fan function • 1 x 4-pin SYS_FAN connector with smart fan function • 1 x USB 3.0 header supports additional two USB 3.0 ports • 1 x 10-pin USB 2.0 header (black) supports card reader and camera • 1 x 5-pin USB 2.0 header (yellow) supports touch panel or other 2.0 device • 2 x Serial SATA 6Gb/s connectors • 1 x Front Panel switch/LED header • 1 x Front Panel audio header • 1 x Clear CMOS jumper • 1 x SATA power connector • 1 x Consumer infrared header (CIR) • 1 x Digital microphone header (For All-In-One Specification) • 1 x 2 channel audio speaker header (For All-In-One Specification) • 1 x LVDS connetor (For All-In-One Specification) • 1 x LVDS brightness switch header (For All-In-One Specification) • 1 x Debug Card header (LDC) • 1 x LCD panel select jumper (For All-In-One Specification)

| System BIOS	•	AMI BIOS with 64Mb SPI Flash ROM
		- Supports Plug and Play
		- Supports ACPI & DMI
		- Supports STR (S3) /STD (S4)
		- Supports Hardware monitor
		- Audio, LAN, can be disabled in BIOS
		- F7 hot key for boot up devices option
		- Supports PgUp clear CMOS Hotkey (Has PS2 KB Model only)
		- Add the function of copying BIOS parameters to USB flash drive
Form Factor	•	Thin Mini ITX Size, 170mm x 170mm

Motherboard Components
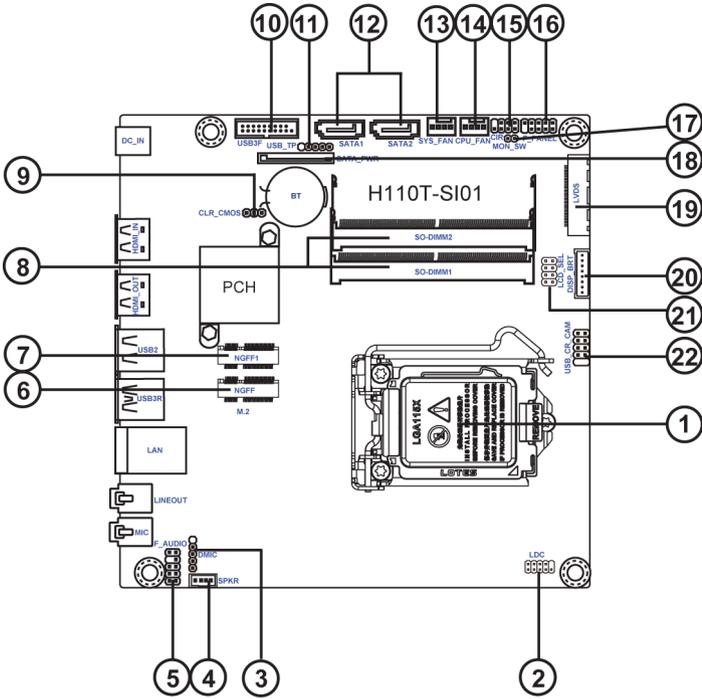
Table of Motherboard Components

LABEL	COMPONENTS
1. CPU Socket	LGA1151 socket for Intel® Skylake Processor
2. LDC	Debug Card header
3. DMIC	Digital microphone header (For All-In-One Specification)
4. SPKR	2 Channels audio speaker header (For All-In-One Specification)
5. F_AUDIO	Front panel audio header
6. NGFF	Type 2230 for wifi/BT
7. NGFF1	Type 2280 for SSD
8. SO-DIMM1~2	260-pin DDR4 SDRAM SO-DIMMs
9. CLR_CMOS	Clear CMOS jumper
10. USB3F	Front panel USB 3.0 header
11. USB_TP	USB 2.0 header for touch panel or other USB 2.0 device
12. SATA1~2	Serial ATA 6Gb/s connectors
13. SYS_FAN	4-pin system cooling fan connector with smart fan function
14. CPU_FAN	4-pin CPU cooling fan connector with smart fan function
15. CIR	Consumer infrared header
16. F_PANEL	Front panel switch/LED header
17. MON_SW	LVDS brightness switch header (For All-In-One Specification)
18. SATA_PWR	SATA power connector
19. LVDS	LVDS connector (For All-In-One Specification)
20. DISP_BRT	LVDS brightness control header (For All-In-One Specification)
21. LCD_SEL	LCD panel select jumper (For All-In-One Specification)
22. USB_CR_CAM	10-pin USB 2.0 header supports card reader and camera

I/O Ports
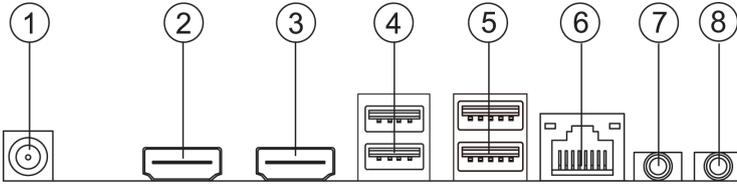
1. 19V DC_IN Port
Connect the DC_IN port to the power adapter.

2. HDMI_IN Port (For All-In-One Specification)
You can connect the HDMI output of other computer or other HDMI source to the HDMI_IN port.

PC	HDMI_IN port	LCD_MODE button pulse
Power ON	Un-plugged	PC → LCD off
Power OFF	Plugged	HDMI → LCD off
Power ON	Plugged	PC → HDMI → LCD off
Power OFF	Un-plugged	LCD off

1. Please press button to switch the mode manually, it will not be automatically switched when inserting the HDMI cable.

2. When HDMI_IN is in use, front panel audio header will be invalid.

3. HDMI_OUT Port
You can connect the display device to the HDMI_OUT port.

4. USB 2.0 Ports
Use the USB 2.0 ports to connect USB 2.0 devices.

5. USB 3.0 Ports
Use the USB 3.0 ports to connect USB 3.0 devices.

6. LAN Port
Connect an RJ-45 jack to the LAN port to connect your computer to the Network.

LAN LED	Status	Description
Activity LED	OFF	No data
	Orange blinking	Active
Link LED	OFF	No link
	Green	Link

Activity LED   Link LED

LAN Port
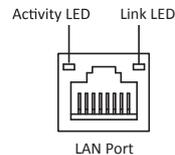
7. Line-out (lime)
It is used to connect to speakers or headphones.

8. Microphone (pink)
It is used to connect to a microphone.

Chapter 2
# *Installing the Motherboard*

2-1. Safety Precautions

Follow these safety precautions when installing the motherboard:

- Wear a grounding strap attached to a grounded device to avoid damage from static electricity.
- Discharge static electricity by touching the metal case of a safely grounded object before working on the motherboard.
- Leave components in the static-proof bags.
- Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.

2-2. Installing the motherboard in a Chassis

This motherboard carries a Thin Mini ITX form factor of 170 x 170 mm. Choose a chassis that accommodates this form factor. Make sure that the I/O template in the chassis matches the I/O ports installed on the rear edge of the motherboard. Most system chassis have mounting brackets installed in the chassis, which corresponds to the holes in the motherboard. Place the motherboard over the mounting brackets and secure the motherboard onto the mounting brackets with screws.
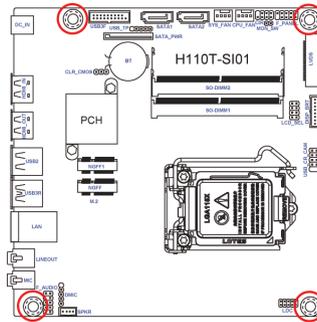

*Do not over-tighten the screws as this can stress the motherboard.*

2-3. Checking Jumper Settings

This section explains how to set jumpers for correct configuration of the motherboard.
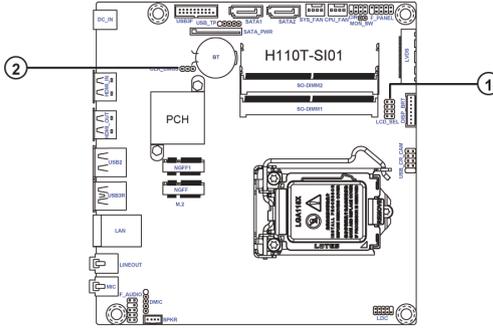
**1. LCD_SEL: LCD panel select jumper (For All-In-One Specification)**

LCD_SEL

Resolution 1024 x 768

Resolution 1680 x 1050

Resolution 1600 x 900

Resolution 1280 x 1024

Resolution 1366 x 768

Resolution 1920 x 1080 (Default)

1.When your panel connects to LVDS, please check LCD_SEL header setting first.

2.Due to the differences of the panel parameters, please follow the above illustration to place the jumper caps.

H110T-SI01 USER MANUAL

2. CLR_CMOS: Clear CMOS jumper

The following illustration shows the location of the motherboard jumpers. Pin 1 is labeled.
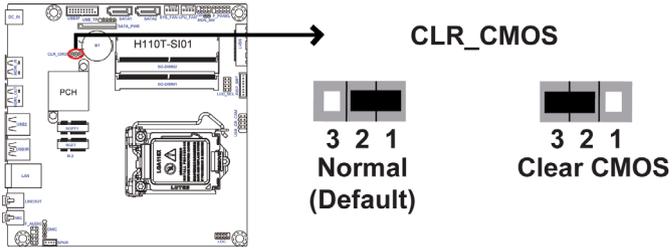
To avoid the system instability after clearing CMOS, we recommend users to enter the main BIOS setting page to "Load Default Settings" and then "Save and Exit Setup".

2-4. Installing Hardware

2-4-1. Installing the Processor

- This motherboard has an LGA1151 socket.
- When choosing a processor, consider the performance requirements of the system. Performance is based on the processor design, the clock speed and system bus frequency of the processor, and the quantity of internal cache memory and external cache memory.
- You may be able to change the settings in the system Setup Utility. We strongly recommend you do not over-clock processor or other components to run faster than their rated speed.
- The following illustration shows CPU installation components.

A.   Press the hook of lever down with your thumb and pull it to the right side to release it from retention tab.

B.   Lift the tail of the load lever and rotate the load plate to fully open position.
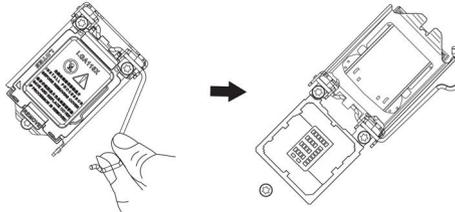
C.   Grasp the edge of the package substrate. Make sure pin 1 indicator is on your bottom-left side. Aim at the socket and place the package carefully into the socket by purely vertical motion.
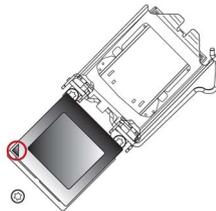
D. Rotate the load plate onto the package IHS (Intergraded Heat Spreader). Engage the load lever while pressing down lightly onto the load plate. Secure the load lever with the hook under retention tab. Then the cover will flick automatically.
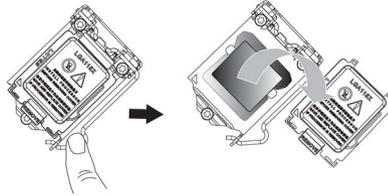
Please save and replace the cover onto the CPU socket if processor is removed.

2-4-2. Installing the CPU Cooler

- Install the cooling fan in a well-lit work area so that you can clearly see the motherboard and processor socket.
- Avoid using cooling fans with sharp edges in case the fan casing and the clips cause serious damage to the motherboard or its components.
- To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 3800 rpm at least. CPU fan and heat sink installation procedures may vary with the type of CPU fan/heatsink supplied. The form and size of fan/heatsink may also vary.
- DO NOT remove the CPU cap from the socket before installing a CPU.
- Return Material Authorization (RMA) requests will be accepted only if the motherboard comes with the cap on the LGA1151 socket.
- The following illustration shows how to install CPU fan.

A. Apply some thermal grease onto the contacted area between the heatsink and the CPU, and make it to be a thin layer.
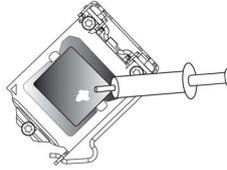
B. Fasten the cooling fan supporting base onto the CPU socket on the motherboard. And make sure the CPU fan is plugged to the CPU fan connector.
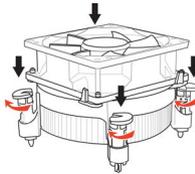
C. Connect the CPU cooler power connector to the CPU_FAN connector.
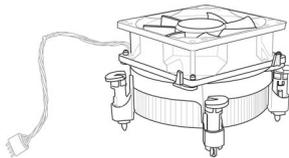
2-4-3. Installing Memory Modules

- This motherboard accommodates two memory modules. It can support two 204-pin DDR4 2400 MHz.
- Do not remove any memory module from its antistatic packaging until you are ready to install it on the motherboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.
- You must install at least one module in any of the two slots. Total memory capacity is 32 GB.
- Refer to the following to install the memory modules.

Install the DIMM module into the slot and press it firmly down until it fits in place. Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
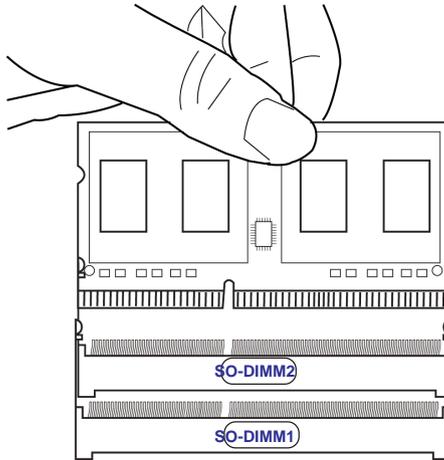
2-4-4. Installing Add-on Cards

The slots on this motherboard are designed to hold expansion cards and connect them to the system bus. Expansion slots are a means of adding or enhancing the motherboard's features and capabilities. With these efficient facilities, you can increase the motherboard's capabilities by adding hardware that performs tasks that are not part of the basic system.
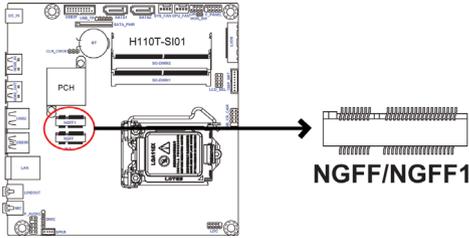
NGFF/NGFF1

NGFF/NGFF1 Slots   The NGFF slot is M.2 for 2230/2280 SATA or PCIE SSD installing. It will provide high transfer performance than original SATA interface.


Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.

H110T-SI01 USER MANUAL

Follow these instructions to install the M.2 SSD card:

1   Demount the screw not used according to the length of your M.2 SSD card.

2   Insert the M.2 SSD card into NGFF slot in the fool-proof way.
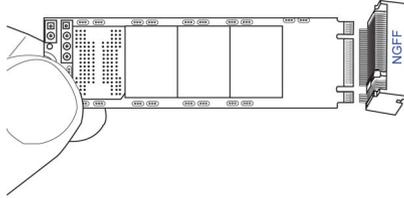
3   Lock the screw as the following picture shows to make sure the M.2 SSD card is installed in place.
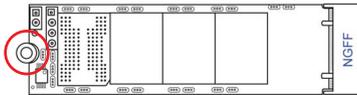
2-4-5. Connecting Optional Devices

Refer to the following for information on connecting the motherboard's optional devices:
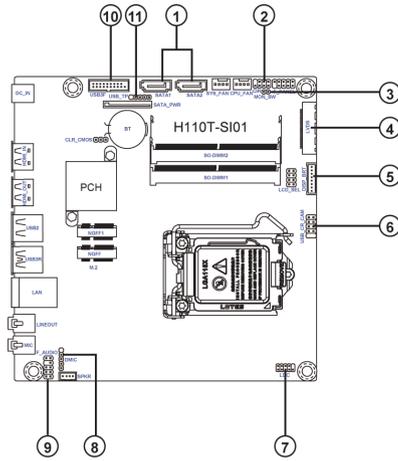
No.	Components	No.	Components
1	SATA1~2	7	LDC
2	CIR	8	DMIC
3	MON_SW	9	F_AUDIO
4	LVDS	10	USB3F
5	DISP_BRT	11	USB_TP
6	USB_CR_CAM		

1. SATA1~2: Serial ATA III connectors

SATA1~2 connectors are used to support the Serial ATA 6Gb/s device. Simpler disk drive cabling and easier PC assembly. It eliminates limitations of the current Parallel ATA interface. But maintains register compatibility and software compatibility with Parallel ATA.

2. CIR: Consumer infrared header

Power+5V
NC
Ground
PIN 1

NC
NC
Power +5V
CIR RX

CIR

3. MON_SW: LVDS brightness switch header (For All-In-One Specification)

PIN 1
LCD backlight
Ground

MON_SW

4. LVDS: LVDS connector (For All-In-One Specification)

Cable

NC — EDID Signal
LCD backlight power +19V — LCD backlight power +19V
Dual Channels LVDS clock — LCD backlight power +19V
LCD backlight adjustment — Dual Channels LVDS clock
EDID Signal — LCD backlight ON/OFF
Ground — Ground
Dual Channels LVDS clock — Ground
Ground — Dual Channels LVDS clock
Ground — Ground
NC — Power +3.3V
Power +5V — Power +5V
Ground — Power +5V
Dual Channels LVDS Signal — Dual Channels LVDS Signal
Dual Channels LVDS Signal — Dual Channels LVDS Signal
Dual Channels LVDS Signal — Dual Channels LVDS Signal
Dual Channels LVDS Signal — Dual Channels LVDS Signal
Dual Channels LVDS Signal — Dual Channels LVDS Signal
Dual Channels LVDS Signal — Dual Channels LVDS Signal
Dual Channels LVDS Signal — Dual Channels LVDS Signal
Dual Channels LVDS Signal — Dual Channels LVDS Signal

PIN 1

LVDS

1. You can connect the large end of the cable to the LED Panel, and connect the other small end to the slot on the motherboard.

2. Due to the chipset limitation, using dual displays LVDS(AIO) + VGA or LVDS(AIO) + HDMI will cause the problem that you may not enter BIOS setup or have the display problem.

5. DISP_BRT: LVDS brightness control header (For All-In-One Specification)

LCD backlight decrease
LCD backlight increase
Ground
Ground
LCD backlight power +19V
LCD backlight power +19V
LCD backlight adjustment
LCD backlight ON/OFF

PIN 1

DISP_BRT
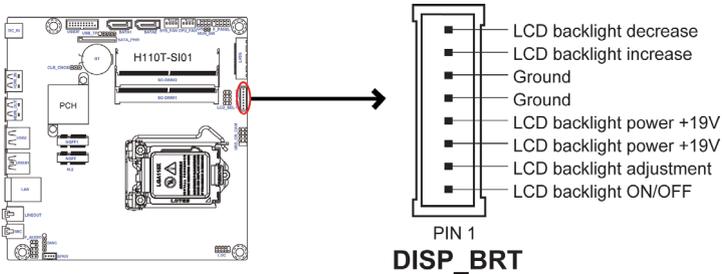
6 & 11. USB_CR_CAM (10-pin USB 2.0 header supports card reader and camera or other USB 2.0 devices) & USB_TP (5-pin USB 2.0 header supports one USB 2.0 device)

Ground
USB (+)
USB (-)
Power +5V
PIN 1

USB_TP

PIN 1

Power +5V — Power +5V
USB Port A (-) — USB Port B (-)
USB Port A (+) — USB Port B (+)
Ground — Ground

USB_CR_CAM
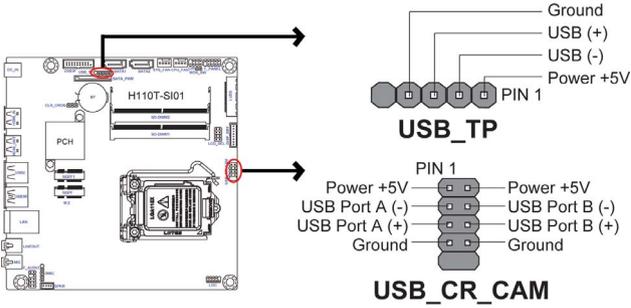
Users please note to install the card to the correct header.

8. DMIC: Digital microphone header (For All-In-One Specification)

Digital MIC Clock Output
Ground
Digital MIC Stereo Channel Input
Power +3.3V

PIN 1
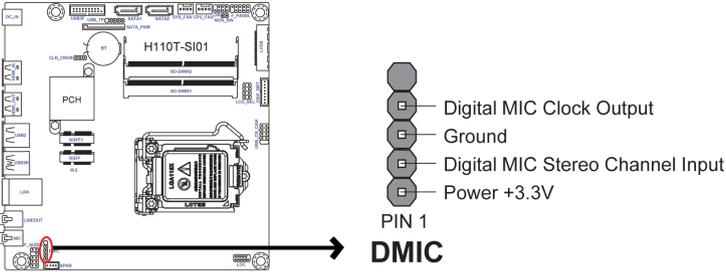
DMIC

9. F_AUDIO: Front panel audio header

The front panel audio header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access. This header supports HD audio by default. If you want connect an AC' 97 front panel audio to HD onboard headers, please set as below picture.


HD Audio

Sense2_Return — Left channel to front panel
— Sense_Send
Sense1_Return — Right channel to front panel
Presence# — Microphone power
Analog ground — Front panel microphone input signal

PIN 1

AC' 97 Audio

Left channel return from front panel — Left channel to front panel
— RSVD
Right channel return from front panel — Right channel to front panel
Analog power (+5V) — Microphone power
Analog ground — Front panel microphone input signal

PIN 1

***AC' 97 Audio Configuration: To enable the front panel audio connector to support AC97 Audio mode.***

If you use AC' 97 Front Panel, please tick off the option of "Disabled Front Panel Detect ". If you use HD Audio Front Panel, please don' t tick off "Disabled Front Panel Detect ".
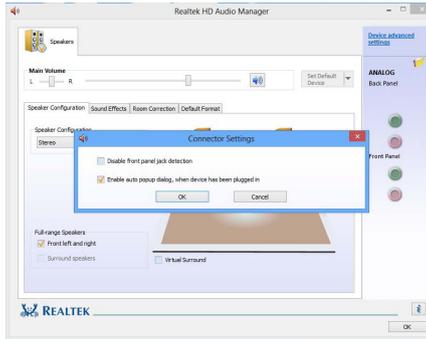
* For reference only

10. USB3F: Front USB 3.0 header

This motherboard implements one USB 3.0 header supporting two extra front USB 3.0 ports, which delivers 5Gb/s transfer rate.
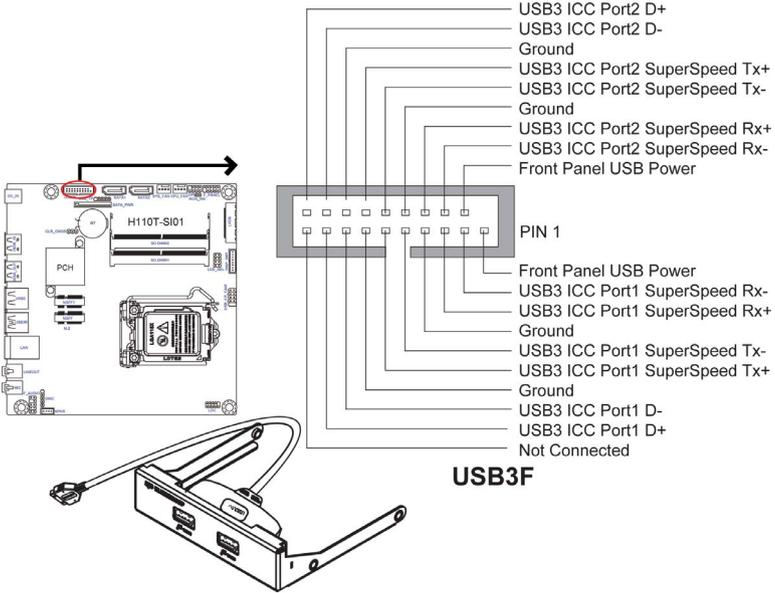
	USB3 ICC Port2 D+
	USB3 ICC Port2 D-
	Ground
	USB3 ICC Port2 SuperSpeed Tx+
	USB3 ICC Port2 SuperSpeed Tx-
	Ground
	USB3 ICC Port2 SuperSpeed Rx+
	USB3 ICC Port2 SuperSpeed Rx-
	Front Panel USB Power

PIN 1

	Front Panel USB Power
	USB3 ICC Port1 SuperSpeed Rx-
	USB3 ICC Port1 SuperSpeed Rx+
	Ground
	USB3 ICC Port1 SuperSpeed Tx-
	USB3 ICC Port1 SuperSpeed Tx+
	Ground
	USB3 ICC Port1 D-
	USB3 ICC Port1 D+
	Not Connected

USB3F

To avoid the system instability after clearing CMOS, we recommend users to enter the main BIOS setting page to "Load Default Settings" and then "Save and Exit Setup".

2-4-6. Installing a Hard Disk Drive/Optical Disk Drive

This section describes how to install a Hard Disk Drive/Optical Disk Drive.

About SATA Connectors

Your motherboard features two SATA connectors supporting a total of two drives. SATA refers to Serial ATA (Advanced Technology Attachment) is the standard interface for the IDE hard drives which are currently used in most PCs. These connectors are well designed and will only fit in one orientation. Locate the SATA connectors on the motherboard and follow the illustration below to install the Hard Disk Drive/Optical Disk Drive.

Installing Hard Disk Drive/Optical Disk Drive
To install the Hard Disk Drive (HDD)/Optical Disk Drive (ODD), use the HDD/ODD/SATA cables that support the Hard Disk Drive/Optical Disk Drive/Serial ATA protocol.

Refer to the illustration below for proper installation:

1. Attach either end of the single SATA cable to the SATA port on the motherboard.
2. Attach the other end of the single SATA cable to the hard disk drive.
3. Attach the linked end of the combo HDD/ODD cable to the Hard Disk Drive/ Optical Disk Drive. Please note that, connect the black cable to the hard disk Drive, then connect the orange cable to the optical disk drive.
4. Attach the other end of the combo HDD/ODD cable to the SATA port and SATA_PWR connector on the motherboard. Please note that, connect the black cable to the SATA_PWR connector, and connect the orange cable to the SATA port.
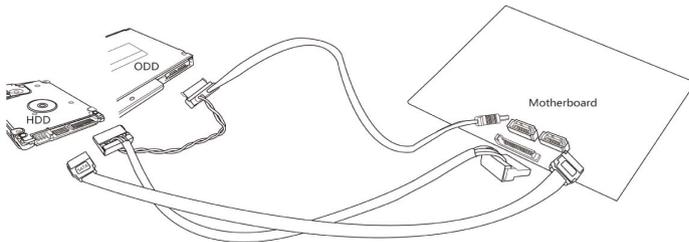
* For reference only

2-4-7. Connecting Case Components

After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:
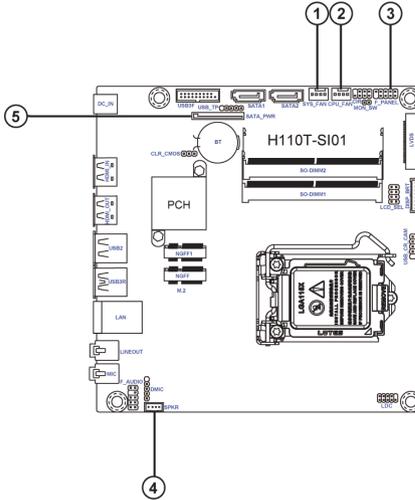
No.	Components	No.	Components
1	SYS_FAN	4	SPKR
2	CPU_FAN	5	SATA_PWR
3	F_PANEL		

1 & 2 . SYS_FAN (System cooling FAN connector) &CPU_FAN (CPU cooling FAN connector)

Connect the CPU cooling fan cable to **CPU_FAN**.
Connect the system cooling fan connector to **SYS_FAN**.

PWM
Sensor
Power +12V
System Ground

CPU_FAN/SYS_FAN
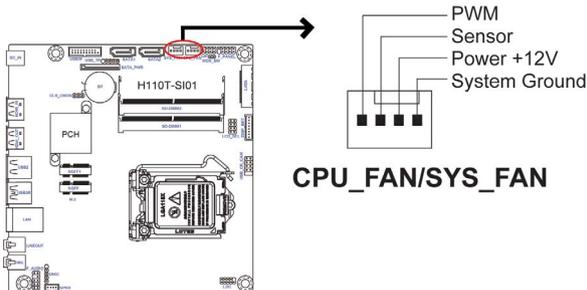
Users please note that the fan connector supports the CPU cooling fan of 1.1A ~ 2.2A (26.4W max) at +12V.

3. F_PANEL: Front panel header

The front panel header (F_PANEL) provides a standard set of switch and LED headers commonly found on ATX or Micro ATX cases.
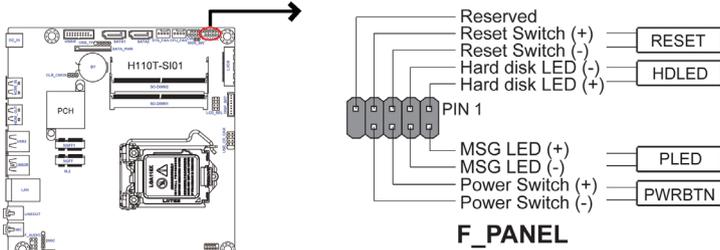
F_PANEL

Hard Drive Activity LED

Connecting pins 1 and 3 to a front panel mounted LED provides visual indication that data is being read from or written to the hard drive. For the LED to function properly, an IDE drive should be connected to the onboard IDE interface. The LED will also show activity for devices connected to the SCSI (hard drive activity LED) connector.

Power/Sleep/Message waiting LED

Connecting pins 2 and 4 to a single or dual-color, front panel mounted LED provides power on/off, sleep, and message waiting indication.

Reset Switch

Supporting the reset function requires connecting pin 5 and 7 to a momentary-contact switch that is normally open. When the switch is closed, the board resets and runs POST.

Power Switch

Supporting the power on/off function requires connecting pins 6 and 8 to a momentary-contact switch that is normally open. The switch should maintain contact for at least 50 ms to signal the power supply to switch on or off. The time requirement is due to internal de-bounce circuitry. After receiving a power on/off signal, at least two seconds elapses before the power supply recognizes another on/off signal.

4. SPKR: 2 Channel audio speaker header (For All-In-One Specification)

Connect the case speaker cable to **SPKR**.

PIN 1
Left Channel (-)
Left Channel (+)
Right Channel (+)
Right Channel (-)

SPKR

5. SATA_PWR: SATA power connector

Power +3.3V
Power +5V
Power +12V

Ground
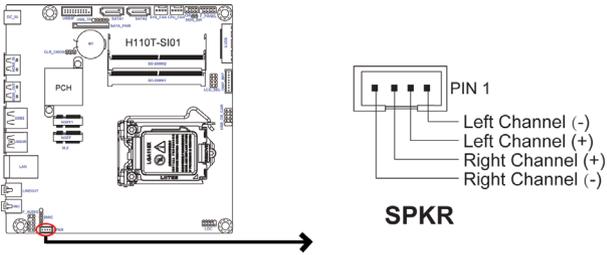
SATA_PWR
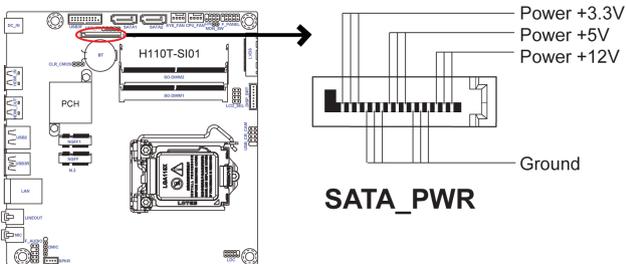
This concludes Chapter 2. The next chapter covers the BIOS.

Chapter 3
Using BIOS

About the Setup Utility

The computer uses the latest "American Megatrends Inc. " BIOS with support for Windows Plug and Play. The CMOS chip on the motherboard contains the ROM setup instructions for configuring the motherboard BIOS.

The BIOS (Basic Input and Output System) Setup Utility displays the system's configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS Setup Utility enables you to configure:

- Hard drives, diskette drives and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power Management features

The settings made in the Setup Utility affect how the computer performs. Before using the Setup Utility, ensure that you understand the Setup Utility options.

This chapter provides explanations for Setup Utility options.

The Standard Configuration

A standard configuration has already been set in the Setup Utility. However, we recommend that you read this chapter in case you need to make any changes in the future.

This Setup Utility should be used:

- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security Setup

Entering the Setup Utility

When you power on the system, BIOS enters the Power-On Self Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, the following message appears:

Press DEL to enter SETUP

Press the delete key to access BIOS Setup Utility.

Resetting the Default CMOS Values

When powering on for the first time, the POST screen may show a "CMOS Settings Wrong" message. This standard message will appear following a clear CMOS data at factory by the manufacturer. You simply need to Load Default Settings to reset the default CMOS values.

Note: Changes to system hardware such as different CPU, memories, etc. may also trigger this message.

Using BIOS

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with an icon 》》) lead to submenus that enable you to change the values for the option. Use the cursor arrow keys to scroll through the items in the submenu.

In this manual, default values are enclosed in parenthesis. Submenu items are denoted by an icon ≫.

> *The default BIOS setting for this motherboard apply for most conditions with optimum performance. We do not suggest users change the default values in the BIOS setup and take no responsibility to any damage caused by changing the BIOS settings.*

BIOS Navigation Keys

The BIOS navigation keys are listed below:

KEY	FUNCTION
ESC	Exits the current menu
↑↓→←	Scrolls through the items on a menu
+/-	Change Opt.
Enter	Select
F1	General Help
F2	Previous Value
F3	Optimized Defaults
F4	Save & Exit

> *1. For the purpose of better product maintenance, the manufacture reserves the right to change the BIOS items presented in this manual. The BIOS setup screens shown in this chapter are for reference only and may differ from the actual BIOS. Please visit the manufacture's website for updated manual.*
>
> *2. In this Gui BIOS, you can operate by mouse or keyboard. Click : select item; Double click: enter; Right click: exit.*

Language

Select the language icon and press <Enter> or double click the left key of the mouse to display the screen. Then you can choose the language: English, Traditional Chinese, Simple Chinese, Russian, Korean, German, Spanish, Italian, Portuguese, Japanese.

Default

Select the default icon and press <Enter> or double click the left key of the mouse to display the screen. Then you can load optimized defaults or not.

Advanced

Select the advanced icon and press <Enter> or double click the left key of the mouse to display the screen.

Main Menu

This menu shows the information of BIOS and enables you to set the system language, date and time.
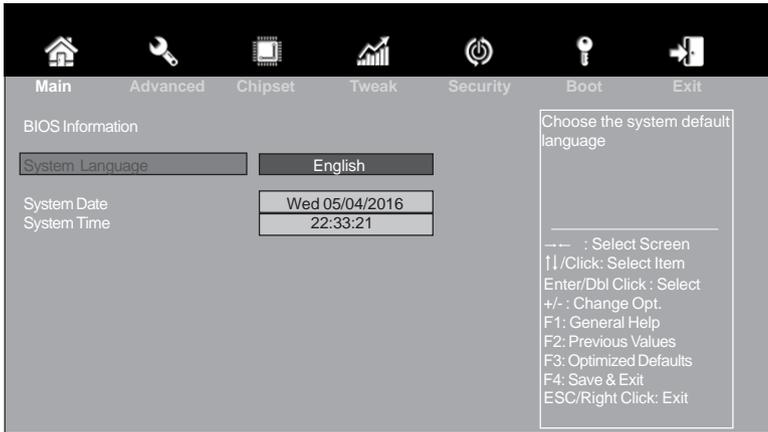
System Language (English)

This item is used to set system language.

System Date & Time

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

Advanced Menu

The Advanced menu items allow you to change the settings for the CPU and other system.
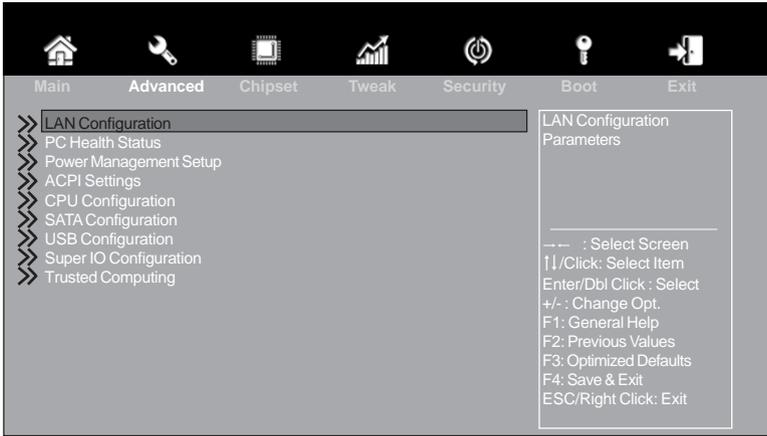
» LAN Configuration

The item in the menu shows the LAN-related information that the BIOS automatically detects.
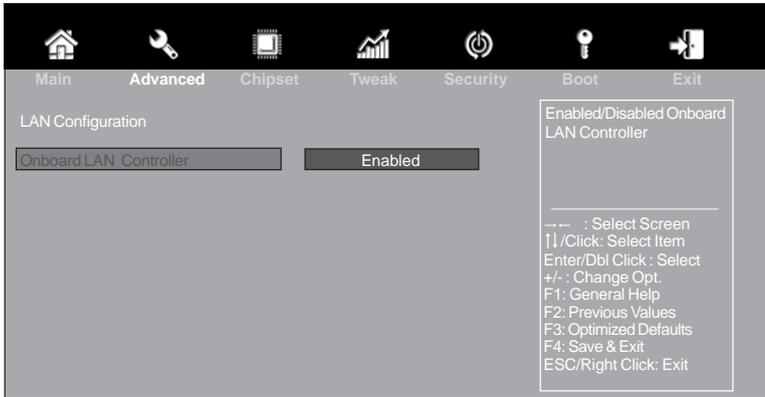
Onboard LAN Controller (Enabled)
Use this item to enable or disable the Onboard LAN.

Press <Esc> to return to the Advanced Menu page.

≫ PC Health Status

On motherboards support hardware monitoring, this item lets you monitor the parameters for critical voltages, temperatures and fan speeds.

🏠	🔧	▣	📈	⏻	🔑	⇥
Main	**Advanced**	Chipset	Tweak	Security	Boot	Exit

PC Health Status

CPU Temperature (DTS)	41
System Temperature	34°C
CPU Fan Speed	726 RPM
System Fan Speed	0 RPM
Core Voltage	0.935V
DIMM Voltage	1.199V
+12V	12.210V
+5V	5.159V
+VCC	5.137V
TCC Activation Temperature (DTS)	100

→ ← : Select Screen
↑↓ /Click: Select Item
Enter/Dbl Click : Select
+/- : Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC/Right Click: Exit

System Component Characteristics

These items display the monitoring of the overall inboard hardware health events, such as System temperature, CPU & DIMM voltage, CPU & System fan speed... etc.

- CPU Temperature (DTS)
- System Temperature
- CPU Fan Speed
- System Fan Speed
- Core Voltage
- DIMM Voltage
- +12V
- +5V
- +VCC

Press <Esc> to return to the Advanced Menu page.

» Power Management Setup

This page sets up some parameters for system power management operation.
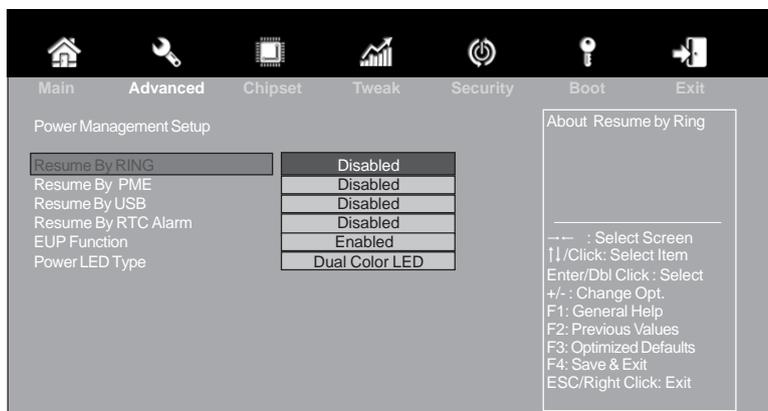
Resume By RING (Disabled)

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.

Resume By PME (Disabled)

This item specify whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or components is detected.

Resume By USB (Disabled)

This item allows you to enable or disable the USB device wakeup function from S3 mode.

Resume By RTC Alarm (Disabled)

The system can be turned off with a software command. If you enable this item, the system can automatically resume at a fixed time based on the system's RTC (realtimeclock). Use the items below this one to set the date and time of the wake-up alarm. You must use an ATX power supply in order to use this feature.

EUP Function (Enabled)

This item allows user to enable or disable EUP support.

Power LED Type (Dual Color LED)

This item shows the type of the power LED.

Press <Esc> to return to the Advanced Menu page.

» ACPI Settings

The item in the menu shows the highest ACPI sleep state when the system enters suspend.
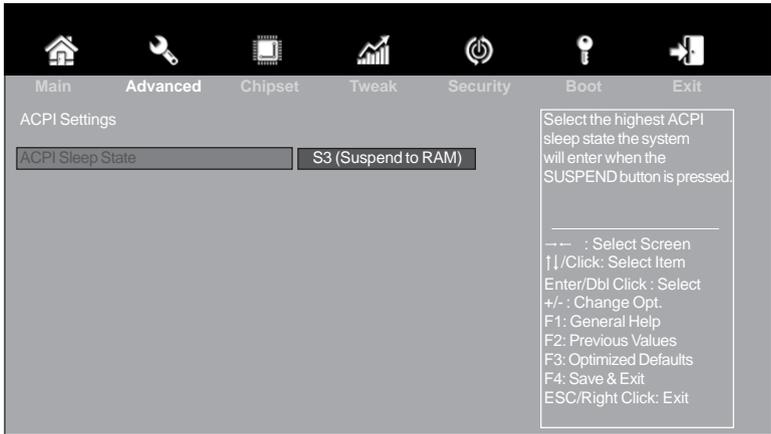
ACPI Sleep State [S3(Suspend to RAM)]

This item allows user to enter the ACPI S3 (Suspend to RAM) Sleep State (default).

Press <Esc> to return to the Advanced Menu page.

≫ CPU Configuration

The item in the menu shows the CPU configuration.
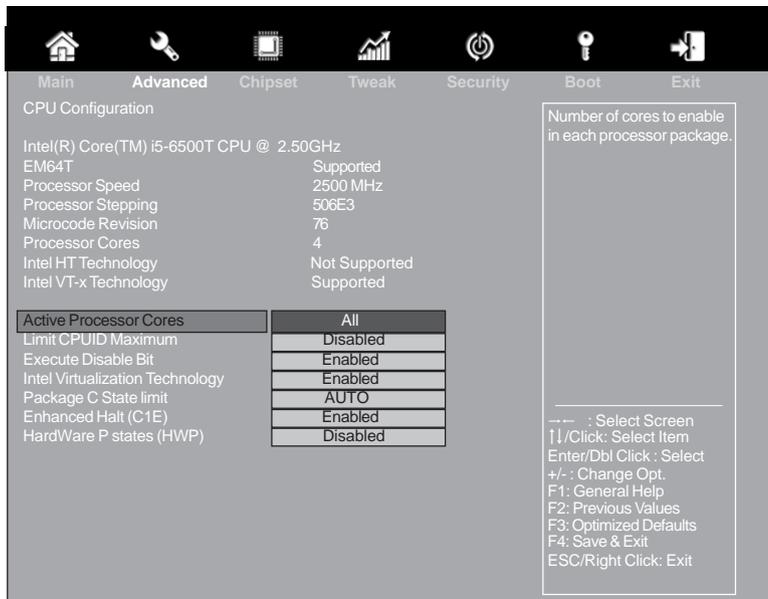
Intel(R) Core(TM) i5-6500T CPU @ 2.50GHz

This is display-only field and displays the information of the CPU installed in your computer.

EM64T (Supported)

This item shows the computer supports EM64T.

Processor Speed (2500MHz)

This item shows the current processor speed.

Processor Stepping (506E3)

This item shows the processor stepping version.

Microcode Revision (76)

This item shows the Microcode version.

Processor Cores (4)

This item shows the core number of the processor.

Intel HT Technology (Not Supported)

This item shows the computer not support Intel HT Technology or not.

Intel VT-x Technology (Supported)

This item shows the computer support Intel VT-x Technology or not.

Active Processor Cores (All)

Use this item to control the number of active processor cores.

Limit CPUID Maximum (Disabled)

Use this item to enable or disable the maximum CPUID value limit. You can enable this to prevent the system from "rebooting" when trying to install Windows NT 4.0.

Excute Disable Bit (Enabled)

This item allows the processor to classify areas in memory by where application code can execute and where it cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage or worm propagation. Replacing older computers with Execute Disable Bit enabled systems can halt worm attacks, reducing the need for virus related repair.

Intel Virtualization Technology (Enabled)

When disabled, a VMM cannot utilize the additional hardware capabilities provided by Vandor Pool Technology.

Package C State limit (AUTO)

Use this item to set the package C state limit.

Enhanced Halt (C1E) (Enabled)

Use this item to enable the CPU energy-saving function when the system is not running.

HardWare P states (HWP) (Disabled)

Use this item to enable or disable the hardware P states.

Press <Esc> to return to the Advanced Menu page.

≫ SATA Configuration

Use this item to show the mode of serial SATA configuration options.
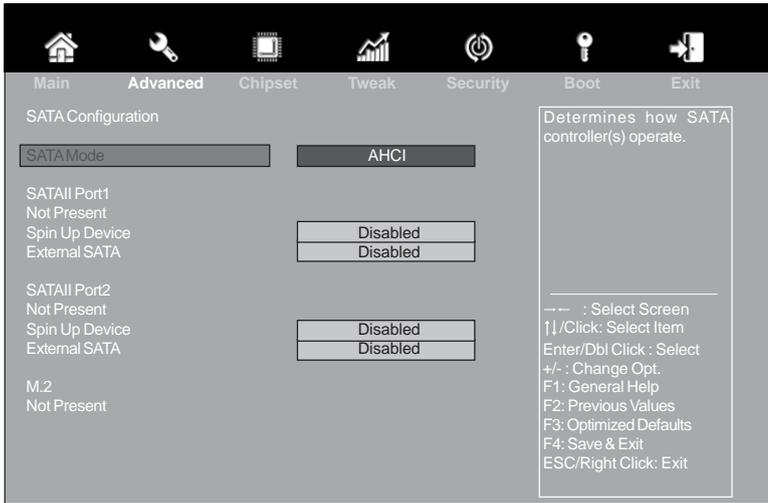
SATA Mode (AHCI)

Use this item to select SATA mode.

SATA Port 1~2/M.2 (Not Present)

This motherboard supports two SATA channels and one M.2 channel, each channel allows one SATA/M.2 device to be installed. Use these items to configure each device on the SATA/M.2 channel.

Spin Up Device (Disabled)

Use this item to enable or disable the spin up device.

External SATA (Disabled)

Use this item to enable or disable the external SATA.

Press <Esc> to return to the Advanced Menu page.

≫ **USB Configuration**

Use this item to show the information of USB configuration.
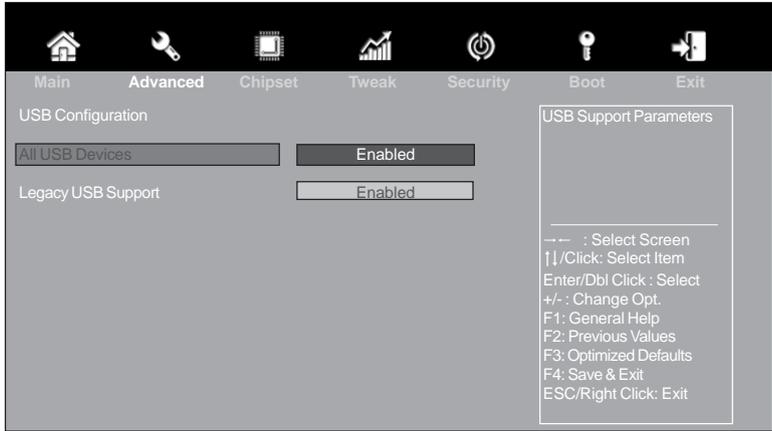

All USB Devices (Enabled)

Use this item to enable or disable all USB devices.

Legacy USB Support (Enabled)

Use this item to enable or disable support for legacy USB devices.

Press <Esc> to return to the Advanced Menu page.

>> Super IO Configuration

Use this item to show the information of Super IO configuration.
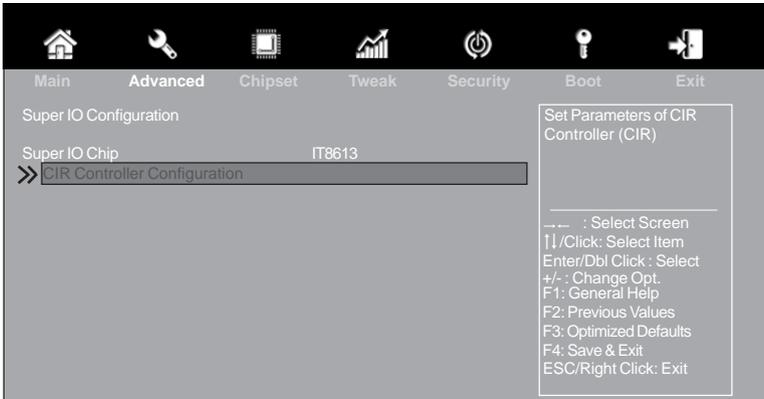
Super IO Chip (IT8613)

This item shows the information of the super IO chip.

>> CIR Controller Configuration

Scroll to this item and press <Enter> and view the following screen:
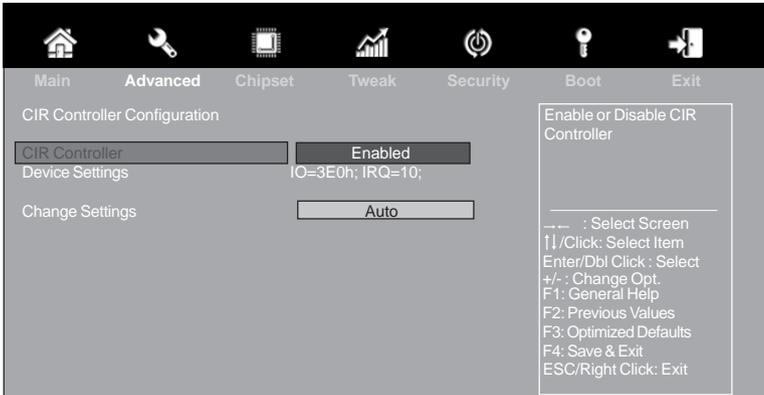
CIR Controller (Enabled)

This item allows you to enable or disable CIR controller.

Device Settings (IO=3E0h; IRQ=10;)

This item shows the information of the device settings.

Change Settings (Auto)

Use this item to change device settings.

Press <Esc> to return to the Super IO Configuration page.

Press <Esc> to return to the Advanced Menu page.

Chapter 3

» Trusted Computing

Use this item to show the information of trusted computing configuration.
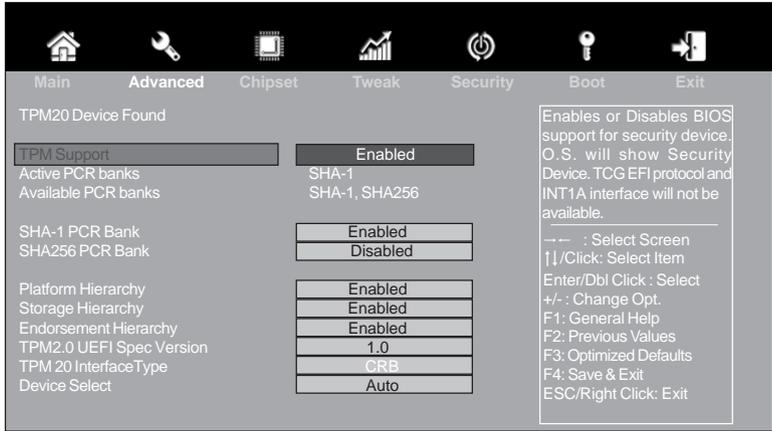
TPM Support (Enabled)

Use this item to enable or disable the TPM port. O.S. will not show TPM. Reset of platform is required.

Active PCR banks (SHA-1)

Use this item to show the Active PCR banks.

Available PCR banks (SHA-1, SHA-256)

Use this item to show the Available PCR banks.

SHA-1 PCR Bank (Enabled)

Use this item to enable or disable the SHA-1 PCR Bank.

SHA256 PCR Bank (Disabled)

Use this item to enable or disable the SHA256 PCR Bank.

Platform Hierarchy (Enabled)

Use this item to enable or disable the Platform Hierarchy.

Storage Hierarchy (Enabled)

Use this item to enable or disable the Storage Hierarchy.

Endorsement Hierarchy (Enabled)

Use this item to enable or disable the Endorsement Hierarchy.

TPM2.0 UEFI Spec Version (1.0)

Use this item to show the TPM2.0 UEFI Spec Version.

TPM 20 InterfaceType (CRB)

Use this item to show the TPM 20 InterfaceType.

Device Select (Auto)

TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both with default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated.

Press <Esc> to return to the Advanced Menu page.

Chipset Menu

The chipset menu items allow you to change the settings for the North Bridge chipset, South Bridge chipset and other system.

≫ System Agent Configuration

Scroll to this item and press <Enter> and view the following screen:
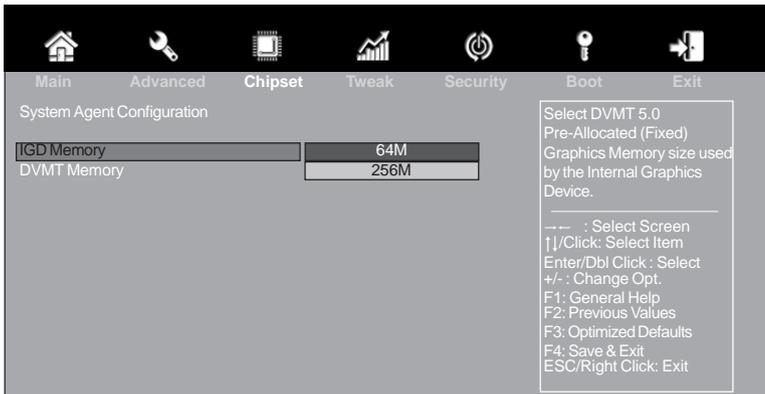
IGD Memory (64M)

This item shows the information of the IGD (Internal Graphics Device) memory.

DVMT Memory (256M)

When set to Fixed Mode, the graphics driver will reserve a fixed position of the system memory as graphics memory, according to system and graphics requirements.

Press <Esc> to return to the Chipset Menu page.

≫ **PCH Configuration**

Scroll to this item and press <Enter> to view the following screen:
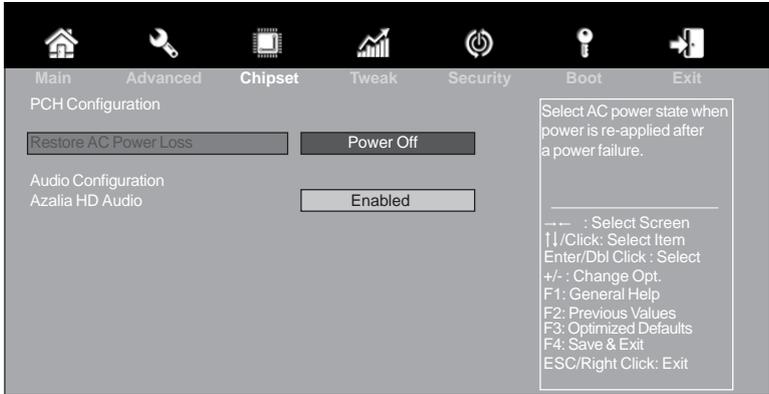
Restore AC Power Loss (Power Off)

This item enables your computer to automatically restart or return to its operating status.

Audio Configuration

This item shows the information of the audio configuration.

Azalia HD Audio (Enabled)

This item enables or disables Azalia HD audio.

Press <Esc> to return to the Chipset Menu page.

≫ ME Configuration

Scroll to this item and press <Enter> to view the following screen:
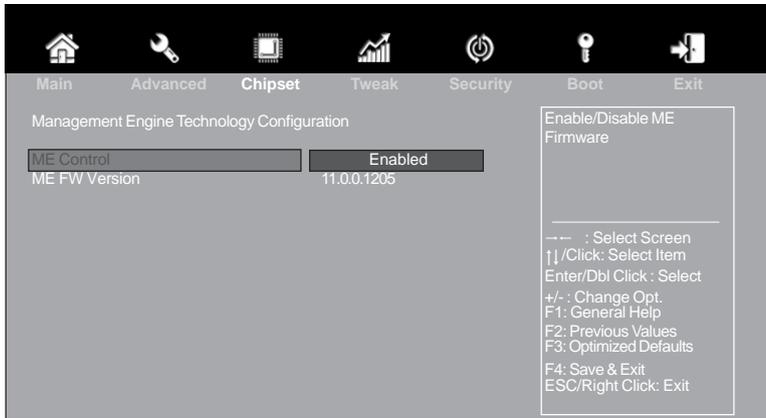
ME Control (Enabled)

Use this item to enable or disable the ME Firmware.

ME FW Version (11.0.0.1205)

This item shows the ME FW version.

Press <Esc> to return to the Chipset Menu page.

Tweak Menu

This page enables you to set the clock speed and system bus for your system. The clock speed and system bus are determined by the kind of processor you have installed in your system.
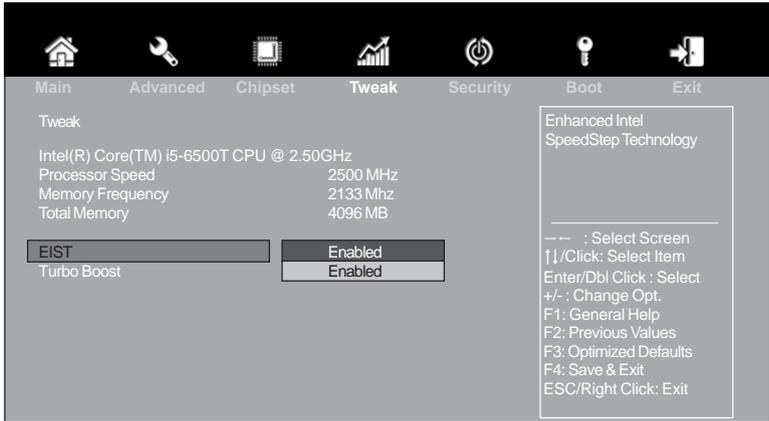
Tweak

Intel(R) Core(TM) i5-6500T CPU @ 2.50GHz
Processor Speed   2500 MHz
Memory Frequency   2133 Mhz
Total Memory   4096 MB

EIST   Enabled
Turbo Boost   Enabled

Enhanced Intel SpeedStep Technology

→← : Select Screen
↑↓/Click: Select Item
Enter/Dbl Click : Select
+/- : Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC/Right Click: Exit

Intel(R) Core(TM) i5-6500T CPU @ 2.50GHz
This is display-only field and displays the information of the CPU installed in your computer.

Processor Speed (2500 MHz)
This item shows the current processor speed.

Memory Frequency (2133 Mhz)
This item shows the memory frequency.

Total Memory (4096 MB)
This item shows the total memory.

EIST (Enabled)
This item allows you to enable or disable the EIST (Enhanced Intel SpeedStep Technology).

Turbo Boost (Enabled)
This item allows you to enable or disable the Turbo Boost.

Chapter 3

Security Menu

This page enables you to set setup administrator password and user password.
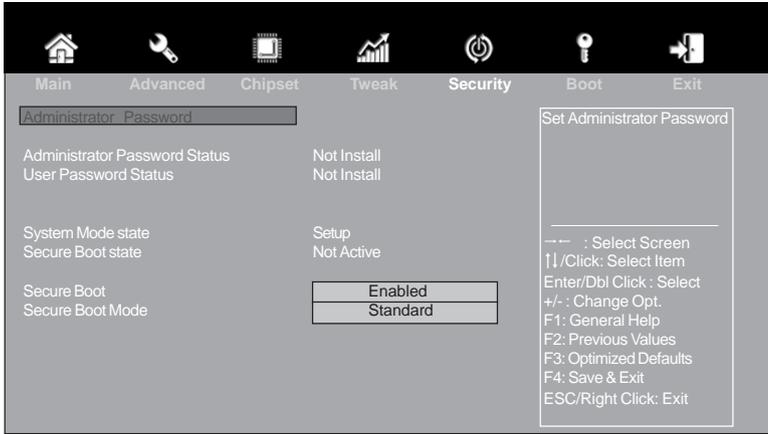
Administrator Password Status (Not Install)

This item shows administrator password installed or not.

User Password Status (Not Install)

This item shows user password installed or not.

System Mode state (Setup)

This item shows system mode setup or not.

Secure Boot state (Not Active)

This item allows you to enable or disable the secure boot state.

Secure Boot (Enabled)

This item is used to control the secure boot flow, it is possible only if system runs in User Mode.

Secure Boot Mode (Standard)

This item is used to select the secure boot mode.

Boot Menu

This page enables you to set the keyboard NumLock state.
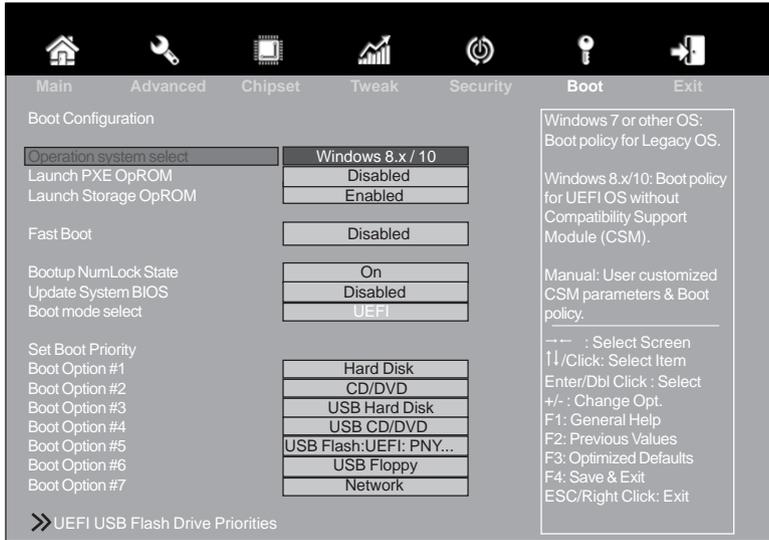
Boot Configuration

This item shows the information of the Boot Configuration.

Operation System Select (Windows 8.x / 10)

This item is used to select the operation system.

Launch PXE OpROM (Disabled)

The item enables or disables launch PXE Option ROM.

Launch Storage OpROM (Enabled)

Use this item to enable or disable the Storage OpROM.

Fast Boot (Disabled)

This item enables or disables boot with initialization of a minimal set of device required to launch active boot option. Has no effect for BBS boot options.

Bootup NumLock State (On)

This item enables you to select NumLock state.

Update System BIOS (Disabled)

Use this item to enable or disable update system BIOS.

Boot mode select (UEFI)

Use this item to select boot mode.

Boot Option #1 /2 /3 /4 /5 /6 /7

Use these items to set the system boot order.

UEFI USB Flash Drive Priorities

This item enables you to specify the sequence of loading the operating system. Press <Enter> to see the submenu.

Exit Menu

This page enables you to exit system setup after saving or without saving the changes.

Back to EZ Mode
This item enables you to back to EZ mode.

Save Changes and Exit
This item enables you to exit system setup after saving the changes.

Discard Changes and Exit
This item enables you to exit system setup without saving any changes.

Save Changes and Reset
This item enables you to reset system setup after saving the changes.

Discard Changes and Reset
This item enables you to reset system setup without saving any changes.

Save Options
This item enables you to save the options that you have made.

Save Changes
This item enables you to save the changes that you have made.

Discard Changes
This item enables you to discard any changes that you have made.

Restore Defaults
This item enables you to restore the system defaults.

Save as User Defaults
This item enables you to save the changes that you have made as user defaults.

Restore User Defaults
This item enables you to restore user defaults to all the setup options.

Boot Override
Use this item to select the boot device.

Updating the BIOS

You can download and install updated BIOS for this motherboard from the manufacturer's Website. New BIOS provides support for new peripherals, improvements in performance, or fixes for known bugs. Install new BIOS as follows:

1   If your motherboard has a BIOS protection jumper, change the setting to allow BIOS flashing.

2   If your motherboard has an item called Firmware Write Protect in Advanced BIOS features, disable it. (Firmware Write Protect prevents BIOS from being overwritten.)

3   Prepare a bootable device or create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)

4   Download the Flash Utility and new BIOS file from the manufacturer's Web site. Copy these files to the bootable device.

5   Turn off your computer and insert the bootable device in your computer. (You might need to run the Setup Utility and change the boot priority items on the Advanced BIOS Features Setup page, to force your computer to boot from the bootable device first.)

6   At the C:\ or A:\ prompt, type the Flash Utility program name and the file name of the new BIOS and then press <Enter>. Example: AFUDOS.EXE 040706.ROM

7   When the installation is complete, remove the bootable device from the computer and restart your computer. If your motherboard has a Flash BIOS jumper, reset the jumper to protect the newly installed BIOS from being overwritten. The computer will restart automatically.

This concludes Chapter 3. Refer to the next chapter for information on the software supplied with the motherboard.

Memo

Chapter 4

Using the Motherboard Software

Auto-installing under Windows 7/10

The auto-install DVD-ROM makes it easy for you to install the drivers and software. The support software DVD-ROM disc loads automatically under Windows 7/10. When you insert the DVD-ROM disc in the DVD-ROM drive, the auto-run feature will automatically bring up the installation screen. The screen has four buttons on it: **Setup**, **Utilities**, **Browse CD** and **Exit**.

Information:
Displays the path for all software and drivers available on the disk.

Click "**Exit**" button to close the Auto-Setup window.

Browse CD:
Open Windows Explorer and show the contents of the support disk.

Click the "**Setup**" button to select and run the software installation program.

Click the "**Utilities"** button to select and install the Intelligent Utility.

Running Setup

Follow these instructions to install device drivers and software for the motherboard:

1. Click **Setup**. The installation program begins:
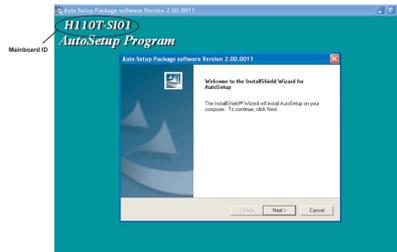
The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

The motherboard identification is located in the upper left-hand corner.

2. Click **Next.** The following screen appears:
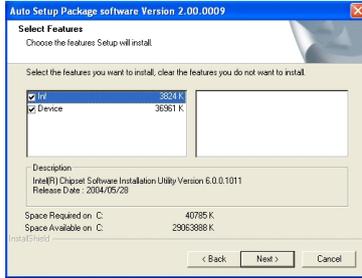
3. Check the box next to the items you want to install. The default options are recommended.

4. Click **Next** to run the Installation Wizard. An item installation screen appears:

5. Follow the instructions on the screen to install the items.

Drivers and software are automatically installed in sequence. Follow the onscreen instructions, confirm commands and allow the computer to restart a few times to complete the installation.

Windows 10 will show the following screen after system restart, you must select "Desktop" in the bottom left to install the next driver.

Windows 7/10 will appear below UAC (User Account Control) message after the system restart. You must select "Yes" to install the next driver. Continue this process to complete the drivers installation.
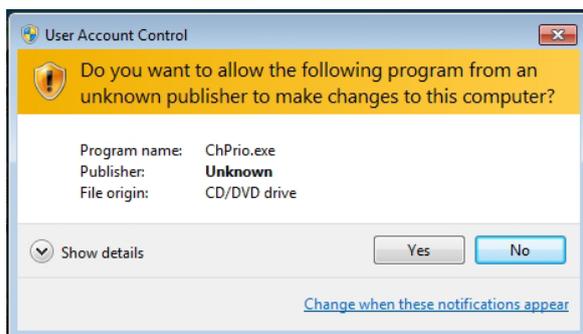
Manual Installation

If the auto-install DVD-ROM does not work on your system, you can still install drivers through the file manager for your OS (for example, Windows Explorer). Look for the chipset and motherboard model, and then browse to the directory and path to begin installing the drivers. Most drivers have a setup program (SETUP.EXE) that automatically detects your operating system before installation. Other drivers have the setup program located in the operating system subfolder.

If the driver you want to install does not have a setup program, browse to the operating system subfolder and locate the readme text file (README.TXT or README.DOC) for information on installing the driver or software for your operating system.

Chapter 4

Memo

H110T-SI01 USER MANUAL

Chapter 5

Trouble Shooting

Start up problems during assembly

After assembling the PC for the first time you may experience some start up problems. Before calling for technical support or returning for warranty, this chapter may help to address some of the common questions using some basic troubleshooting tips.

a) System does not power up and the fans are not running.

1. Disassemble the PC to remove the VGA adaptor card, DDR memory, LAN, USB and other peripherals including keyboard and mouse. Leave only the motherboard, CPU with CPU cooler and power supply connected. Make sure the power cord is plugged into the wall socket & the switch on the Power Supply Unit (PSU) is turned " on " as well. Turn on again to see if the CPU and power supply fans are running.

2. Make sure to remove any unused screws or other metal objects such as screwdrivers from the inside PC case. This is to prevent damage from short circuit.

3. Check the CPU FAN connector is connected to the motherboard.

4. For Intel platforms check the pins on the CPU socket for damage or bent. A bent pin may cause failure to boot and sometimes permanent damage from short circuit.

b) Power is on, fans are running but there is no display

1. Make sure the monitor is turned on and the monitor cable is properly connected to the PC.

2. Check the VGA adapter card (if applicable) is inserted properly.

3. Listen for beep sounds. If you are using internal PC speaker make sure it is connected.
   a. continuous 3 short beeps: memory not detected
   b. 1 long beep and 8 short beeps: VGA not detected

c) The PC suddenly shuts down while booting up.

1. The CPU may experience overheating so it will shutdown to protect itself. Apply the thermal grease onto the CPU heatsink & ensure the CPU fan is well-connected with the CPU heatsink. Check if the CPU fan is working properly while the system is running.

2. From the BIOS setting, try to disable the Smartfan function to let the fan run at default speed. Doing a Load Optimised Default will also disable the Smartfan.

Chapter 5

Start up problems after prolong use

After a prolong period of use your PC may experience start up problems again. This may be caused by breakdown of devices connected to the motherboard such as HDD, CPU fan, etc. The following tips may help to revive the PC or identify the cause of failure.

1. Clear the CMOS values using the CLR_CMOS jumper. Refer to CLR_CMOS jumper in Chapter 2 for Checking Jumper Settings in this user manual. When completed, follow up with a Load Optimised Default in the BIOS setup.

2. Check the CPU cooler fan for dust. Long term accumulation of dust will reduce its effectiveness to cool the processor. Clean the cooler or replace a new one if necessary.

3. Remove the hard drive, optical drive or DDR memory to determine which of these components may be at fault.

4. Check whether there is any bulked up electrolytic capacitor or abnormal component.

Maintenance and care tips

Your computer, like any electrical appliance, requires proper care and maintenance. Here are some basic PC care tips to help prolong the life of the motherboard and keep it running as best as it can.

1. Keep your computer in a well ventilated area. Leave some space between the PC and the wall for sufficient airflow.

2. Keep your computer in a cool dry place. Avoid dusty areas, direct sunlight and areas of high moisture content.

3. Routinely clean the CPU cooler fan to remove dust and hair.

4. In places of hot and humid weather you should turn on your computer once every other week to circulate the air and prevent damage from humidity.

5. Add more memory to your computer if possible. This not only speeds up the system but also reduces the loading of your hard drive to prolong its life span.

6. If possible, ensure the power cord has an earth ground pin directly from the wall outlet. This will reduce voltage fluctuation that may damage sensitive devices.

Basic Troubleshooting Flowchart

```
Power Button is pressed
but PC fails to start.
        │
        ▼
Check if Power Supply
Unit (PSU) is working ──No──► AC power cord is plugged ──No──► Turn on PSU switch
        │                     and PSU switch is turned on?        or connect to wall socket
       Yes                            │                          and restart.
        │                            Yes
        ▼                             │
Check if monitor has                  ▼
display ─────────────No──►    Problem with PSU or board?
        │                     If board problem -> contact RMA
       Yes
        │
        ▼
Halt at POST screen ? ──No──►  Any Beep sound ? ──No──►  CLR CMOS and check
        │                            │                   if CPU 12V power
       Yes                          Yes                  is connected
        │                            │                         │
        ▼                            ▼                         ▼
CLR CMOS and restart.        - If 3 short beeps:        Restart the PC
If fail, contact RMA           DIMM memory not properly         │
                               inserted or memory failure       ▼
                             - If 1 long beep and 8 short beeps:  Check if monitor
                               VGA not detected                   has display ──Yes──
                                                                       │
Peripheral device issue                                               No
-  HDD problem.                                                        │
-  CMOS setup error,                                                   ▼
   need to CLRCMOS.                                            Board problem
                                                               -> contact RMA

System fail to start or unstable ──► CLR CMOS and restart
after modify BIOS setting.
```

Memo

H110T-SI01 USER MANUAL