

# Fusion E-450

# **Motherboard**

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## User's Manual



This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

"To comply with FCC RF exposure compliance requirements. The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter."

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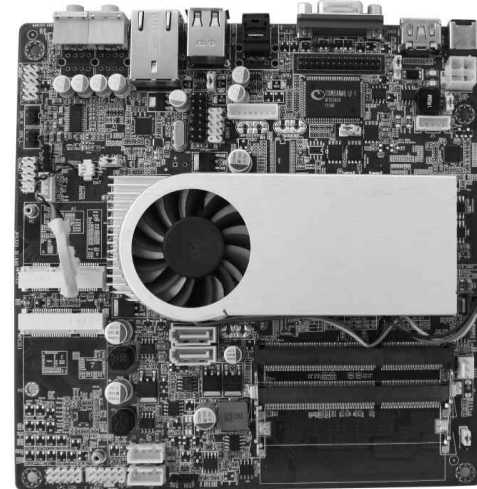
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# Gratitude

E-450 based on AMD® Dual-Core Processor E-450 with AMD Radeon™ HD 6320 Discrete-Class Graphics and “Hudson” M1 FCH. Through the latest VISION(Tier) Technology and HD Internet Technology from AMD®, MI-E450T support full 1080P video play and DirectX® 11 games. It supports DDR3 1333 MHz memory, on-board HD-AUDIO sound card and gigabit LAN. Support HDMI display output.

## I. About the product

### 1. Picture of the motherboard



**NOTE:**This is Giada real product photo show for your reference only, Product appearance depends on goods.

## II. Hardware installation

### 2. Features

#### 2.1 Processor

- On-board AMD® E-Series “Zacate” APU E-450.
- APU integrated AMD Radeon™ HD 6320 Discrete-Class Graphics.

#### 2.2 Memory

- Supports 204-Pin DDR3 1333 MHZ memory;
- 4GB at maximum.

#### 2.3 BIOS

- Supports PNP, APM and ATAPI;
- Supports ACPI and DMI;
- Automatic detection and supporting hard disk whose LBA mode is over 160G;
- End-users can easily upgrade the motherboard with BIOS.

#### 2.4 Interfaces for peripherals

- Two SATA2 HDD port;
- One HDMI digital interface;
- One VGA interface;
- Six high-speed transmission ports (max. 480Mb/s) which support USB2.0 and are compatible with USB1.1;
- One RJ45 network interface (PCIe Gigabit Ethernet);
- On-board HD-AUDIO audio adapter;
- Interfaces on panels can be compatible with HDD LED, Speaker, etc;
- One CMOS contact pin;
- One system FAN socket.

#### 2.5 Power management

- Support APM and ACPI.
- Compatible with energy star “Green PC”.

#### 2.6 Expansion slot

- Two MINI-PCIe slots

### Warning

The motherboard consists of a great number of ICs and other components.

These ICs might be damaged by the static charge. Therefore, the user must make the following preparations before installation:

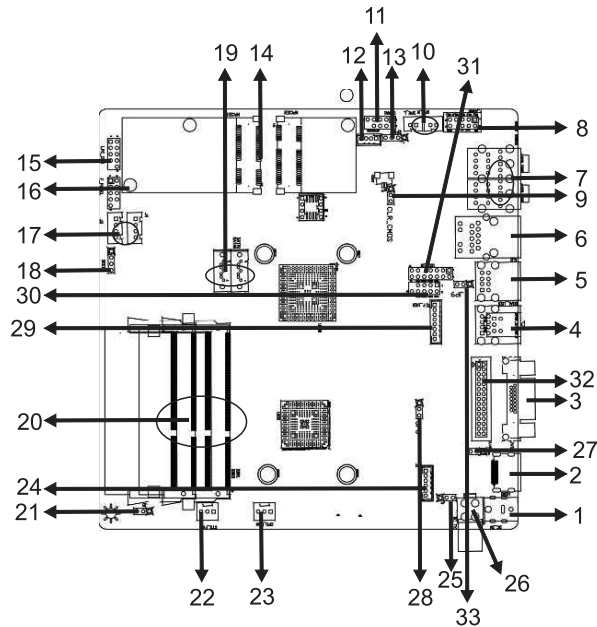
- Turn off the power of the computer. It is preferable the power cord be unplugged.
- Take care not to contact the metal wires and theirs joints on the motherboard when handling it.
- It is preferable that the operator wear the anti-static wrist strap when handling the IC components.
- Before the ICs are installed, the components of the motherboard should be placed on the anti-static mat or bag.
- When you remove the plug on the ATX power supply of the motherboard, make sure the switch of the power supply is in OFF state.

Installing the motherboard onto the computer case:

For most of the computer cases, the multiple fixing holes left on their bottoms can be used for securing the motherboard and preventing short circuit. During your operation, take care not to allow the screws to contact any circuit or part on PCB.

When circuits on the surface of the motherboard get close to the fixing holes, you can use the plastic sheet to separate the screws from the board surface so as to avoid damage or failure of the motherboard.

## 1. Layout of motherboard

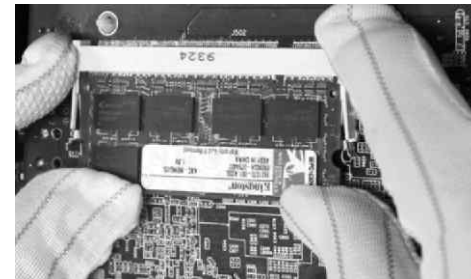


- |                     |                       |                           |
|---------------------|-----------------------|---------------------------|
| 1. DC-in            | 12. GPIOCON           | 23. 3PIN CPU_FAN          |
| 2. HDMI port        | 13. SPDIF socket      | 24. J5                    |
| 3. VGA port         | 14. Mini Pcie, 1,2    | 25. Jp7                   |
| 4. S/PDIF-out       | 15. LPC_CON           | 26. 4PIN ATX power socket |
| 5. USB2.0 port      | 16. Front Panel       | 27. Jp5                   |
| 6. RJ45 port        | 17. SATA Power socket | 28. Jp8                   |
| 7. Audio-out/MIC-in | 18. BEET              | 29. J18                   |
| 8. Front Audio      | 19. SATA 0,1          | 30. Front USB             |
| 9. CLR_CMOS         | 20. DDR3 DIMM Socket  | 31. USB+IR                |
| 10. SPK,R/L         | 21. Jp10              | 32. LVDS_Socket           |
| 11. CMO port        | 22. 3PIN SYS_FAN      | 33. Jp9                   |

## 2. Installing memory

Please install the memory in accordance with the following procedures:

- Align the golden finger of the memory to the groove of the interface slot and pay attention the concave hole of golden finger should be aligned to the convex point of the slot.



- Finally, insert the memory into the interface slot gently. If no error occurs at the moment, insert the card forward in the slot till the white buckle is automatically engaged in the concave hole at the two sides of the memory.

**NOTE:**In order to avoid damages to the motherboard or the components, the user must make sure the power supply to the computer is turned off before the memory or other component is installed or removed. As the groove is set at the golden finger of the DDR DIMM, the memory can only be inserted into the slot with one direction. During installation, the user only needs to align the golden finger and the dual-channel groove of the interface slot and insert it gently. To avoid damage, never apply excessive force in that process.

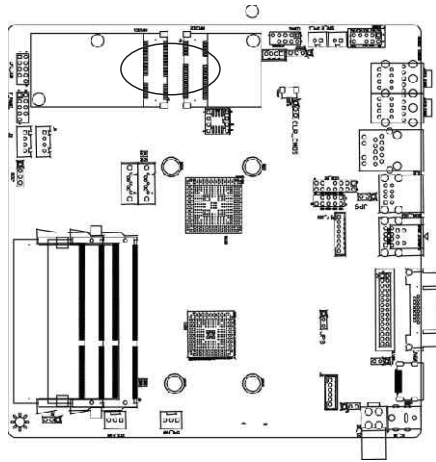
### 3. Install expansion slot card

#### Installing extended devices

At the top side of motherboard are two Mini-PCIE extended slots.

3.1. Mini-PCIE 1 supports SATA2, for example, can use SATA SSD etc

3.2. Mini-PCIE 2 supports PCIe 1X signal, can use mini PCIe WiFi module etc.



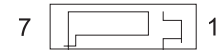
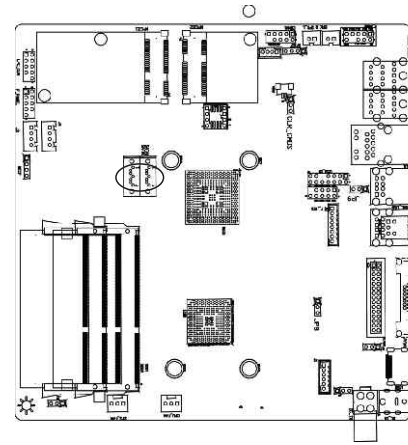
### 4. Motherboard jumper setting

#### Note:

The user should notice that all sockets are marked with PIN1. The mark “#” indicates the ex-factory default values.

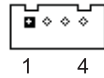
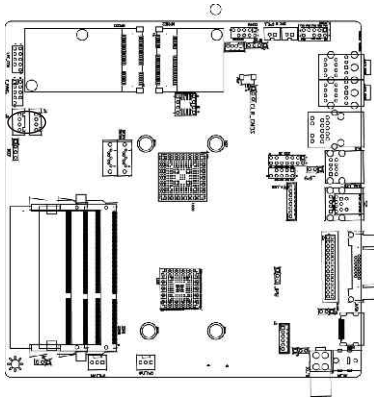
#### 4.1. SATA0/SATA1 (Serial ATA flat-cable sockets)

Serial ATA sockets can reach a transmission speed of 300MB/s, and you can connect your Serial ATA device to this socket.



Pin#	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

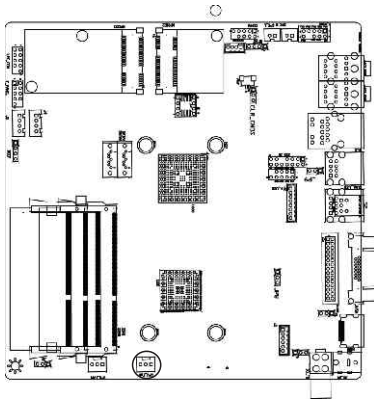
### SATA power socket (J2,J3)



Pin#	Definition
1	+5V
2	GND
3	GND
4	+12V

### 4.2. CPU\_FAN (CPU FAN socket)

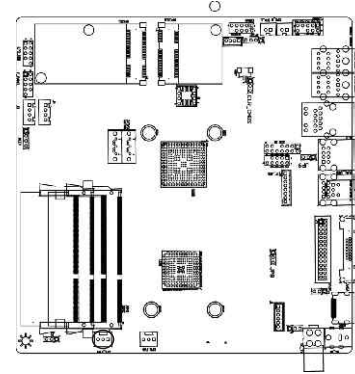
This receptacle can be used for connecting CPU fan. Its pins are defined below. The user shall make sure the fan is conforming.



Pin#	Definition
1	VSS
2	VDD
3	TAC

### 4.3. SYS\_FAN (system FAN socket)

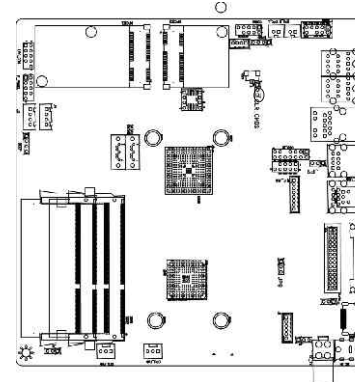
This receptacle can be used for connecting chassis fan. Its pins are defined below. The user shall make sure the fan is conforming.



Pin#	Definition
1	VSS
2	VDD
3	TAC

### 4.4. CLR\_CMOS(CMOS pin)

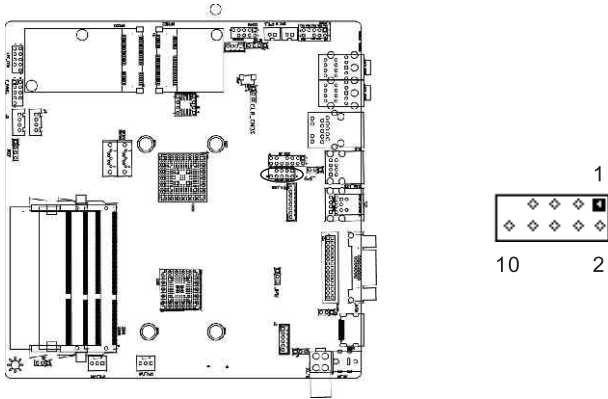
The correct time, system hardware and other information are saved in the CMOS memory of the motherboard. The interruption the computer's power won't cause the loss of this information, for the CMOS is powered by the battery on the motherboard. The port is defined as follows:



Pin#	Definition
1-2#	Normal
2-3	CLR_CMOS

#### 4.5. F\_USB2 (frond-end USB pin)

In case the USB ports on the rear panel of the machine case are not enough, the user can use the two sets of extension USB pins provided by this motherboard. These ports support USB 2.0 devices. The definitions of the ports are described below:

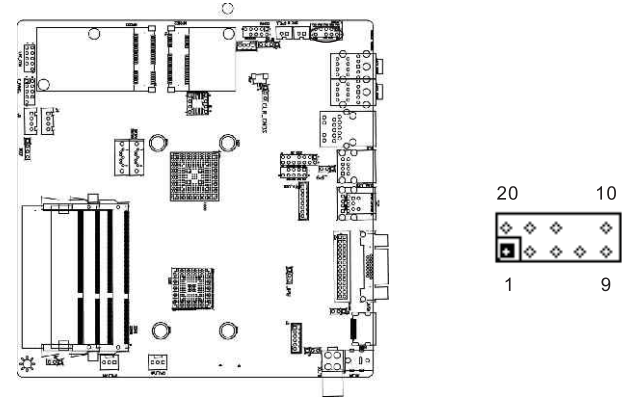


Pin#	Definition	Pine#	Definition
1	VCC	2	VCC
3	USB D0-	4	USB D1-
5	USB D0+	6	USB D1+
7	GND	8	GND
9	NULL	10	NULL

#### 4.6. F\_AUDIO(Pins for front-end audio adapter)

These audio adapter ports allow you to connect to the wire harness of the audio adapter. After connection, you can easily control the audio output/microphone through the front panel of the host (Note: Don't connect the wire to Pin 4).

The definitions of the ports are described below:

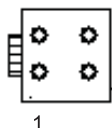
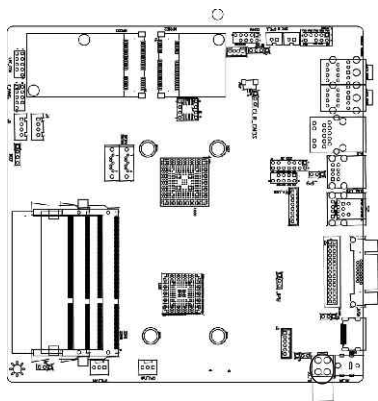


Pin#	Definition	Pin#	Definition
1	MIC_L	2	GND
3	MIC_R	4	PRESENCE# (Dongle present)
5	OUT_R	6	MIC_SENSE_RETURN
7	SENSE_SEND (Jack detection)	8	NULL
9	OUT_L	10	OUT_SENSE_RETURN



#### 4.7. ATX 12V (12V Power receptacle)

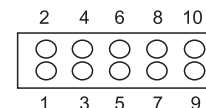
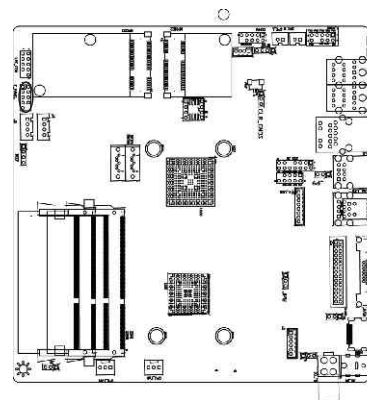
This board has special 12V power receptacle for CPU. For better and more stable processor power supply, we suggest keeping the connection on this socket. The definitions of the pins are described below (when power supply with 20-pin outlet is used, please make sure the numbers are matched correctly):



Pin#	Definition
1	GND
2	GND
3	12V
4	12V

#### 4.8. F\_PANEL (Front-end control panel)

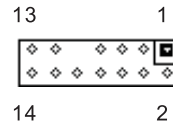
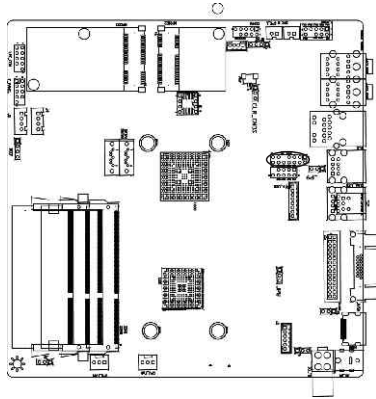
This socket is used to connect the flat cables on the front-end panel.



Pin#	Definition	Pin#	Definition
1	HDLED+	2	PLED+(VCC)
3	GND	4	GND
5	RST+	6	NULL
7	GND	8	PWBT
9	NULL	10	GND

#### 4.9 USB\_IR (Extend IR module)

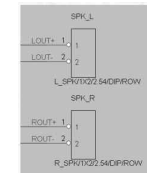
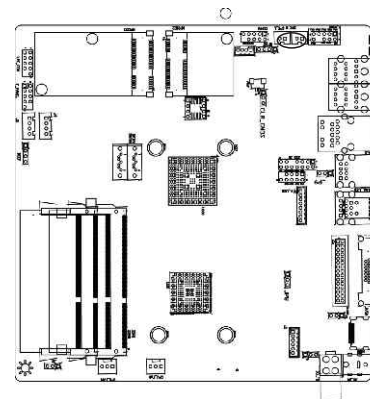
Use a cable to connect an outlay IR receive module.



Pin#	Definition	Pin#	Definition
1	VCC	2	VCC
3	D2-	4	D3-
5	D2+	6	D3+
7	GND	8	GND
9	NC	10	POWER LED
11	PWBT	12	HDD LED
13	5VSB	14	5VSB

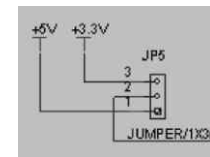
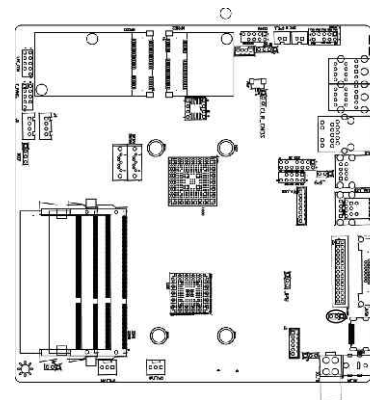
#### 4.10 SPK\_L / SPK\_R (JP6&JP4)

To connect two channel speakers.



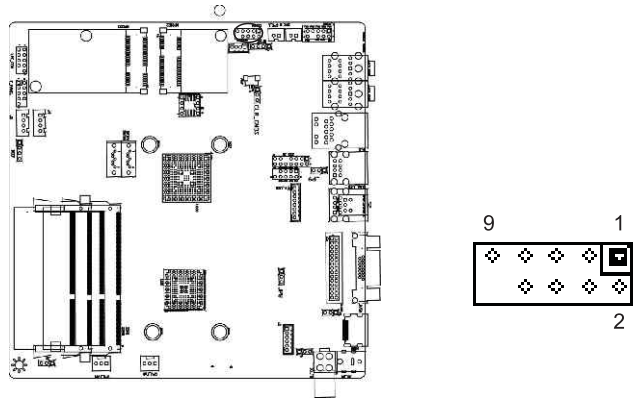
Pin#	Definition
Spk_L 1	LOUT+
Spk_L 2	LOUT-
Spk_R 1	ROUT+
Spk_R 2	ROUT-

#### 4.11 JP5 (LVDS power supply pin)



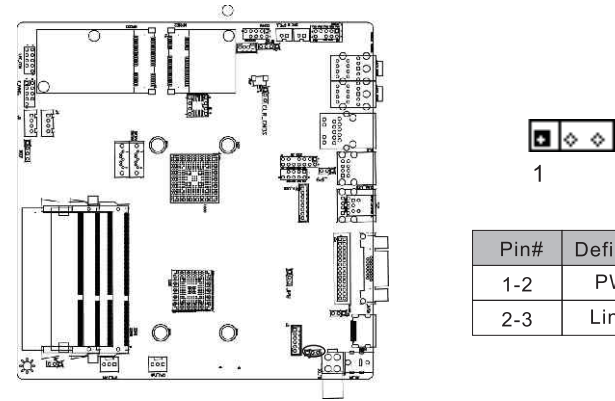
Pin#	Definition
1-2	5V
2-3	3.3V

#### 4.12 COMA1(Front end COM port)



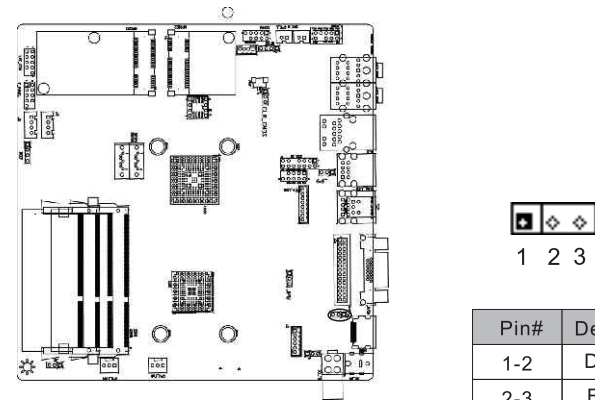
Pin#	Signal	Pin#	Signal
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	Ri1	10	NC

#### 4.13 JP7 (Back ADJ linear and PWM option)



Pin#	Definition
1-2	PWM
2-3	Linear

#### 4.14 JP8 (U3 software flash pin)

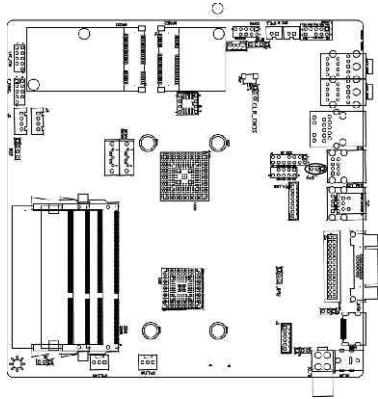


Pin#	Definition
1-2	Disable
2-3	Enable

**NOTE:** Please set the jumper to 1-2pin after programming

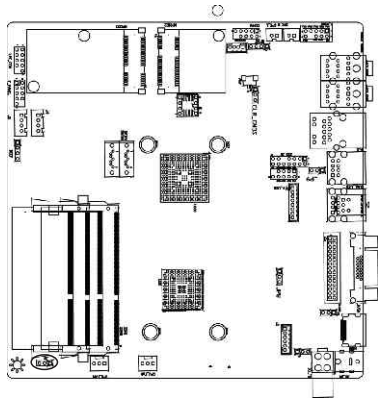
#### 4.15 JP9 (Back panel USB port power supply)

Voltage at 5V regular or 5V standby optional.



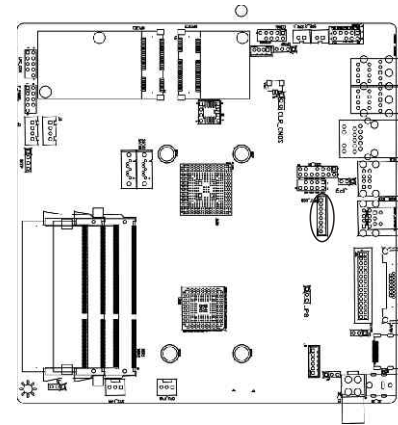
Pin#	Definition
1	5V
2	GND
3	5VSB

#### 4.16 JP10 (AC power loss restore)



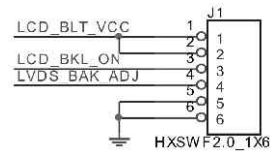
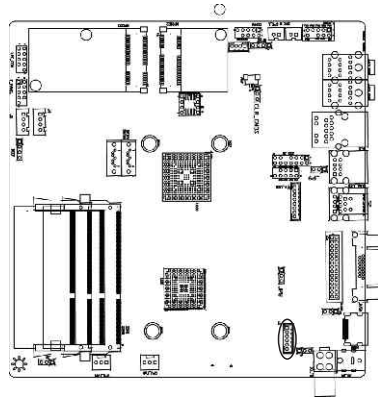
Pin#	Definition
1-2	Power on Disable
2-3	Power on Enable

#### 4.17 J18 (LCD button pin)

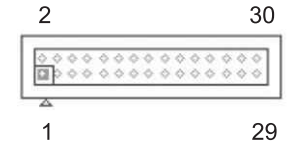
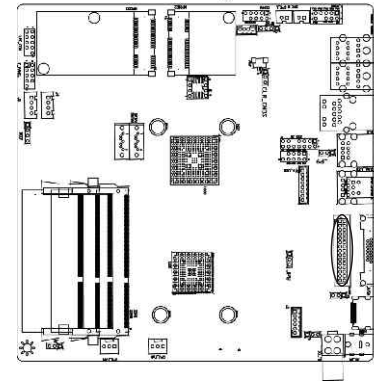


Pin#	Signal	Pin#	Signal
1	BLT_DOWN	2	BLT_UP
3	LCD_AUTO	4	LCD_MENU
5	DISPLAY_ON	6	LED_R
7	GND	8	LED_G

### J5(LVDS power and control signal interface)

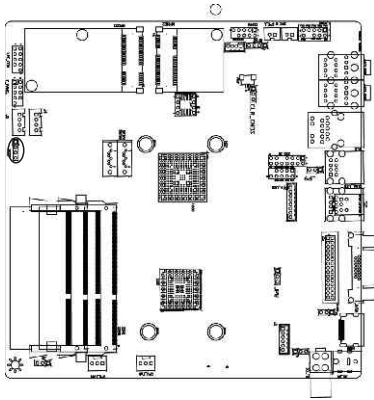


### 4.18 LVDS pin (JLVDS)



Pin#	Signal	Pin#	Signal
1	RXO0-	2	RXO0+
3	RXO1-	4	RXO1+
5	RXO2-	6	RXO2+
7	GND	8	GND
9	RXOC-	10	RXOC+
11	RXO3-	12	RXO3+
13	RXE0-	14	RXE0+
15	GND	16	GND
17	RXE1-	18	RXE1+
19	RXE2-	20	RXE2+
21	RXEC-	22	RXEC+
23	RXE3-	24	RXE3+
25	GND	26	GND
27	GND	28	LVDS_PWR
29	LVDS_PWR	30	LVDS_PWR

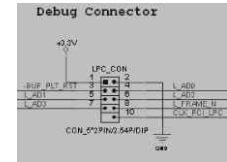
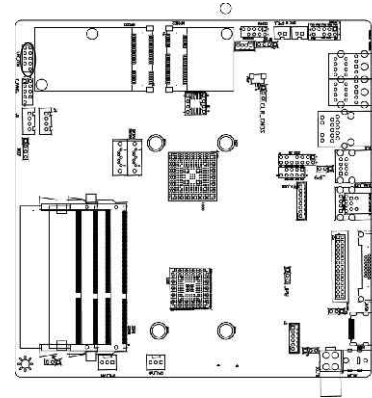
#### 4.19 BEEP



1 4

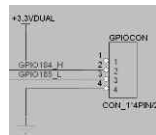
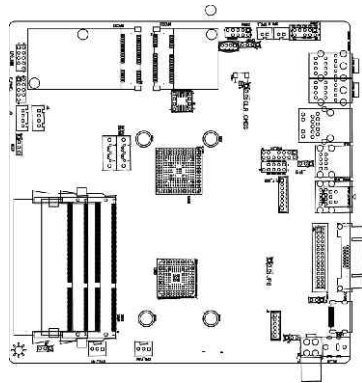
Pin#	Signal	Pin#	Signal
1	5V	2	NC
3	NC	4	SPK

#### 4.20 LPC\_CON



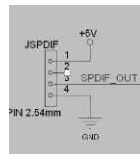
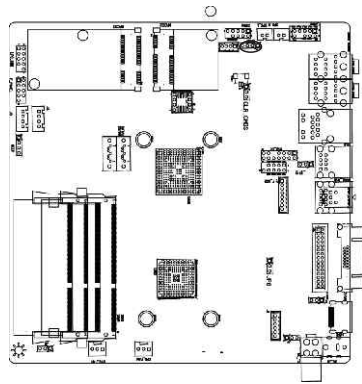
Pin#	Signal	Pin#	Signal
1	+3.3V	2	GND
3	-BUT_PLT-RST	4	L_ADO
5	L-AD1	6	L_AD2
7	L-AD3	8	L_FRAME_N
		10	CLK_PCI_LPC

#### 4.21 GPIOCON socket



Pin#	Signal	Pin#	Signal
1	+3.3V DUAC	2	GPIO 184_H
3	GPIO 185_H	4	GND

#### 4.22 SPDIF PIN



Pin#	Signal	Pin#	Signal
1	+5v	2	RGB NC
3	SPDIF_OUT	4	GND

#### 5. Rear panel interface



1 2 3 4 5 6 7 8

1. DC-IN.
2. HDMI port
3. VGA port
4. S/PDIF-out
5. USB2.0 port
6. RJ45 NIC
7. Audio-out
8. MIC-in

#### NOTE:

Please use the standard DC power adapter. We are not responsible for problems caused by use other DC power adapter.

# III. BIOS Setting

## Note

The descriptions relating to BIOS in this Manual can only be used for reference as the BIOS version of the motherboard is upgraded continuously. Giga-Byte provides no guarantee that the contents in this Manual be consistent with the information you acquire.

BIOS is a basic I/O control program saved in the Flash Memory. Bridging the motherboard and the operating system, BIOS is used for managing the setup of the related parameters between them. When the computer is activated, the system is first controlled by the BIOS program. First, a self-detection called POST is performed to check all hard devices and confirm the parameters of the synchronous hardware. Once all detections are completed, BIOS will hand over the controlling to the operating system (OS). As BIOS serves as the only channel that connects the hardware and software, whether your computer can run stably and work in optimized state will hinge on how to properly set the parameters in BIOS. Therefore, the correct setup of BIOS plays a key role in stably running the system and optimizing its performance.

The CMOS Setup will save these set parameters in the built-in CMOS SRAM on the motherboard. When the power is shut off, the lithium battery on the motherboard will provide continuously power for CMOS SRAM. The BIOS setup program will allow you to configure the following items:

1. HD drive, floppy drive and peripheral devices;
2. Video display type and display items;
3. Password protection;
4. Power management characteristics.

### A. State of BIOS Setup

When the computer is started up, BIOS will run the self-detection (Post) program. This program includes series of diagnosis fixed in BIOS. When this program is executed, the following information will appear if any error is found:

Press F1 to Run Setup

Press F2 to Load default values and continue

To enter BIOS, you can press F1; to load the default values and enter the system, you can press F2. After the self-detection process is completed, you can press DEL to enter the

BIOS interface if no error is found. If the indicative information disappears before you can act, you can shut off the computer and turn it on again, or you can press the key RESET on the machine case. To restart your computer, you can also simultaneously press <Ctrl>+<Alt>+<Delete>.

### B. Function Keys definitions

Key	Function
↑ (Up key)	Move to the previous item
↓ (Down key)	Move to the next item
← (Left key)	Move to the left item
→ (Right key)	Move to the right item
ESC	Exit the current interface
Page Up	Change the setup state, or add the values
Page Down	Change the setup state, or deduct the values
F1	Display the information of the current setup
F7	Load the set values of previous time
F8	Load the safest values
F9	Load the optimized values
F10	Save the settings and exit the CMOS SETUP

### C. Auxiliary information

#### Main interface

When the system enters the main interface of Setup, the major selected contents will be displayed at the lower part of the interface with the change of the options.

#### Set interface

When you set the value for each column, you can view the preset value of the column and the values that can be set if you press F1, for example, the BIOS default values or CMOS Setup values. To exit the interface for auxiliary information, press [ESC].



## 1. Main menu

When the system enters the CMOS Setup menu, you can see the main menu on the upper part of the screen, as shown in Figure 3.1. In this main menu, you can use the left and right direction keys to select the setup items. Once the item is selected, the lower part of the computer screen will show the details of setting.



Fig 3.1

(The options above and their contents may be different from your actual options, so they are used for reference only).

- **Main (standard CMOS setup)**

This item is used for setting the date, time, specifications of hard disk and floppy disk and type of monitor.

- **Advanced (advanced BIOS setup)**

This item is used for setting the advanced functions provided by BIOS, such as the virus alarm and priority order of disks for startup process.

- **Boot (startup configuration characteristics)**

- **Security (setting the administrator/user password)**

- **Save&Exit (option of exit)**

This item includes load optimal defaults/load failsafe defaults value/discard changes/ discard changes and exit.

## 2. Main (standard CMOS setup)

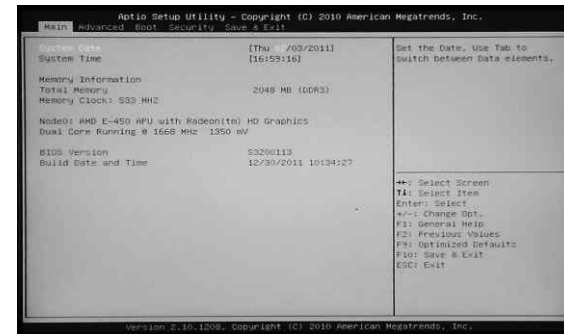


Fig 3.2

- **System date (mm:dd:yy)**

Use this item to set the date for the computer, with the format as “week, month/day/year”.

- **System time (hh:mm:ss)**

Use this item to set the time for the computer, with the format as “hour/minute/second”.

### 3. Advanced (Advanced BIOS setup)

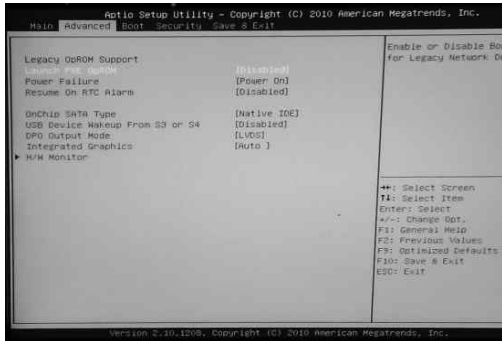


Fig 3.3

- **Launch PXE OpROM (Default Disabled)**  
Disabled: Use this setting to ignore all PXE option ROMs;  
Enabled: Use this setting to load PXE option ROMs, To limit the PXE support to particular devices, use the function use device for PXE.
- **Power Failure (Default Power Off)**  
Use this item to setting AC power on after power loss.
- **Resume on RTC alarm (Default Disabled)**  
Use this item to setting boot up at a fixed time.
- **DP0/DP1 output mode**  
Set display output priority.
- **OnChip SATA type**
- **USB DeviceWakeup From S3 and S4**

### 4. Boot Configuration



Fig 3.4

- **Bootup Num-Lock**  
(To set the state of Num Lock after start-up). Options are OFF and ON. In other words, this item can be used for setting the state of Num Lock for the time the system has been started. It can be set on the basis of the needs of the user and doesn't affect the performance of the computer.
- **Quiet Boot**  
To start the system quietly.
- **Fast Boot**  
If this item is set as Enabled, the system can be started within five seconds and some detection items will be ignored. The options are [Disabled] and [Enabled].
- **Boot Option Priorities**  
To set the booting priority.
- **Hard Drive BBS Priorities**  
To set the booting priority of hard disk devices.

## 5. Security Setup

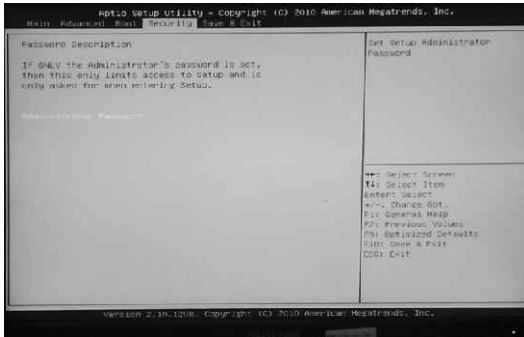


Fig 3.5

If this function is selected, the following information will appear:

Enter New Password hhhhhh

Then, enter the password with not more than eight characters and press <Enter>. BIOS will require to enter the password again. Once you enter it again, BIOS will save the set password.

Once the password item is enabled, you will be required to enter the password each time before the system goes to the set program of BIOS. The user can set this item through the Security Option in advanced BIOS properties. If the item Security Option is set as System, the password will be required to be entered before the system guides and goes to the set program of BIOS. If set as Setup, the password will be required to be entered only before the system goes to the set program of BIOS.

To delete the password, press <Enter> in the popped-up window that requires to enter the password. Then, information for confirmation will appear on the screen to allow you decide whether the password is disabled. Once the password is disabled, you won't have to enter the password and can enter the setup program directly when the system is restarted.

## 6. Save&Exit

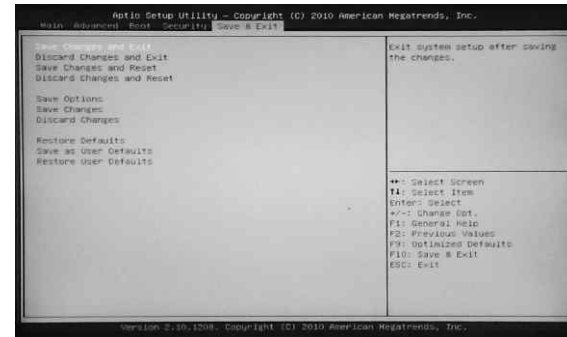


Fig 3.6

- **Save&Exit Options**

The exit options include load optimal defaults/load failsafe defaults value/discard changes/discard changes and exit.

- **Restore defaults**

This item can allow the user to restore all BIOS options to the failsafe defaults. The failsafe defaults are conservative values for the system.

If you enter OK and press Enter, all set values will be saved to CMOS SRAM and the system will exit from the BIOS setup program. If you don't want to save, you can press Cancel or Esc to return to the main menu.

# IV. Software installation

**NOTE:** Pictures below just showing the driver install steps, please see the real product for detailed information.

## 1. Install driver for motherboard

After you complete the installation of the operating system, you should then install the driver for the motherboard. To this end, put the disk into the CD-ROM. The interface as shown in Fig. 4.1 will appear.



Fig. 4.1

In Fig 4.1, click "Driver", another UI appears as shown in Fig 4.2.



Fig. 4.2

### 1.1. Installing driver for Chipset

After you click “Install” behind the “Chipset driver” in the interface of Fig. 4.2, a dialog box as shown in Fig. 4.3 will pop up. Then you can click Next and wait till the driver is installed completely.



Fig. 4.3

### 1.2 Install Sound card driver

After you click “Install” behind the “Realtek HD audio driver” in the interface of Fig. 4.2, a dialog box as shown in Fig. 4.4 will pop up. Then you can click “Next” and wait till the driver is installed completely.



Fig. 4.4

### 1.3 Installing driver for on-board LAN chip

After you click “Install” behind the “Realtek 10/100/1000 LAN Driver” in the interface of Fig. 4.2, a dialog box as shown in Fig. 4.5 will pop up. Then you can click “Next” and wait till the driver is installed completely.

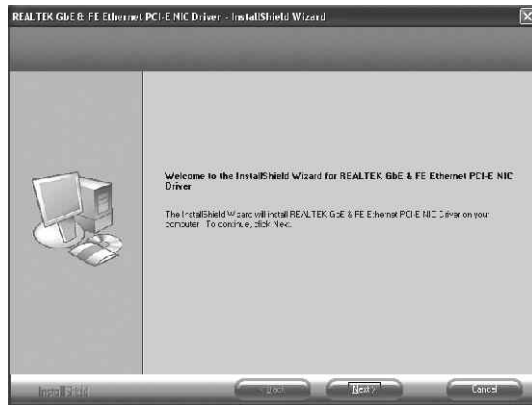


Fig. 4.5

### 1.4 Installing driver for graphic card

To install the driver for graphic card, you can click “Install” behind “XXX VGA Driver” in the interface of Fig. 4.2, complete the installation by following the indications in the popped-up dialog boxes, and then restart the computer.

## 2. HD-AUDIO sound card setup

- For Windows XP SP3:

The control panel of the audio adapter will appear after the driver is installed, as shown in Fig. 4.6.



Fig. 4.6

After the initial installation of the driver, the default state of microphone is mute. You need to turn it on manually, as shown in Fig. 4.7 and 4.8.



Fig. 4.7



Fig. 4.8

- **For Windows Vista:**

After the driver for the audio adapter is stalled, you can click the Audio Manager at the lower right corner. The initial interface will pop up, as shown in Fig. 4.9 and 4.10.



Fig. 4.9

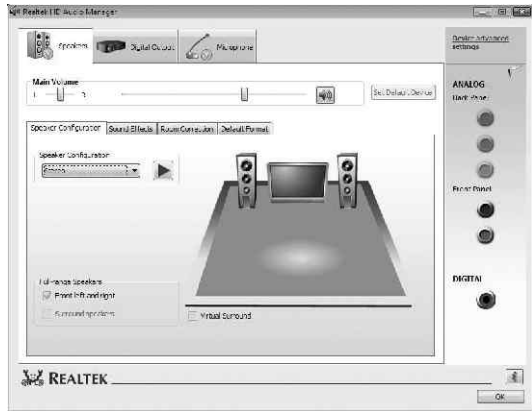


Fig. 4.10

Click OK, and the controlling interface will turn to one shown in Fig. 4.12.

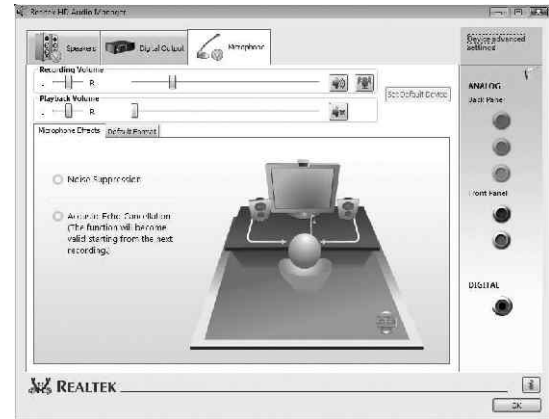


Fig. 4.12

Click the right upper part of the control interface—Advanced Setup for Device, the interface shown in Fig. 4.11 will pop up. Then select “separate all input jacks as independent input devices”.



Fig. 4.11

If a MIC is used, please select the corresponding front or rear mode and set the device as default. In the above interface, you can adjust the volume for recording and the playing volume for the MIC.



If you need to set the output of multi-channel, you should right click the mouse at the corresponding output interface. A dialog box will pop up, as shown in Fig. 4.13.



Fig. 4.13

Select Redistribution of Connectors. Then an interface will pop up, as shown in Fig. 4.14. After that, set the corresponding output.

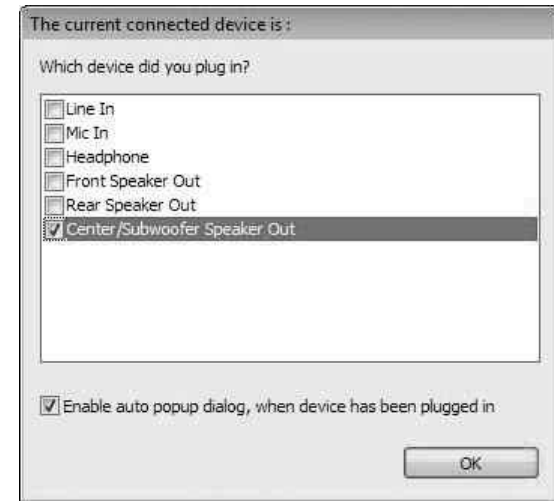


Fig. 4.14

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

NOTE: 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 receiver.
- Connect the equipment into 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.