

# LV-651

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## Mini-ITX Motherboard

### User's Manual

Edition 1.11  
2008/08/24



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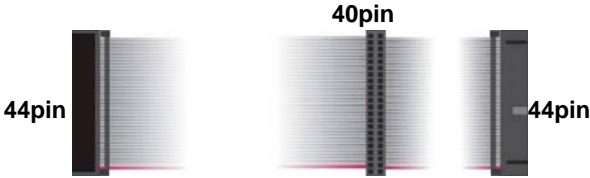
## Packing List

Please check the package before you starting setup the system

### Hardware:

LV-651 series motherboard x 1

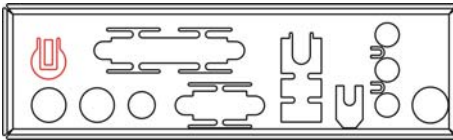
### Cable Kit:



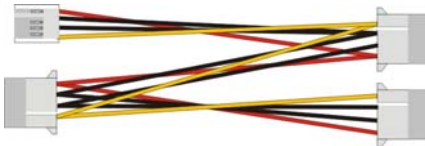
44-pin ATA33 IDE Cable x 1



COM port Cable x1



I/O Shield Cable x 1



Power Cable x 1



Floppy Cable x 1

### Printed Matters:

Driver CD x 1 (Including User's Manual)

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## Chapter 1 <Introduction>

### 1.1 <Product Overview>

**LV-651** is the Mini-ITX motherboard with AMD Geode LX800 platform, with onboard VGA, AC97 audio, Giga LAN interface. Based on the AMD Geode LX800 processor, the board provides many advanced features for reduced power consumption, fanless design and high cost/price rate of production.

#### **Low Power Consumption**

Based on the AMD Geode LX800@500MHz processor onboard, it only takes up to 3.8W at maximum powering, and is completely suitable for fanless design. Without any cooling fan onboard, it can avoid the heat problem when the cooler failed in accident.

#### **Onboard TTL interface**

Based on the AMD Geode LX800@500Mhz of integrated graphics, the board provides onboard graphics with up to 256 MB of frame buffer, 18-bit/24-bit LVDS and 24-bit TTL interfaces.

#### **Embedded Component**

Due to the low profile design, the board provides CF card socket for flash disk with porting embedded OS and up to DDR SDRAM.

#### **Single Voltage Input**

The board only requires DC 8~24V or standard 20-pin ATX power supply input; user's can easily connect the board with an adapter without the huge power supply.

## 1.2 <Product Specification>

### General Specification

|                 |  |
|-----------------|--|
| Form Factor     | Mini -ITX motherboard  |
| CPU             | Embedded AMD Geode LX800 500MHz<br><b>Fanless with heat sink only</b>  |
| Memory          | One 184-pin DDR DIMM socket support up to 1GB DDR SDRAM<br>Optional on board 256M DDR SDRAM<br>Unbuffered, none-ECC memory supported only  |
| Chipset         | AMD LX800 and CS5536   |
| BIOS            | Phoenix-Award v6.00PG 4Mb PnP flash BIOS   |
| Green Function  | Power saving mode includes doze, standby and suspend modes.<br>ACPI version 1.0 and APM version 1.2 compliant                              |
| Watchdog Timer  | System reset programmable watchdog timer with 1 ~ 255 sec./min. of timeout value   |
| Real Time Clock | AMD CS5536 built-in RTC with lithium battery   |
| Enhanced IDE    | Ultra DMA33 IDE interface supports up to 2 ATAPI devices<br>One 44-pin IDE port onboard<br>One Compact Flash Type II socket on solder side |

### Multi-I/O Port

|               |  |
|---------------|--|
| Chipset       | Winbond W83627HG-AW  |
| Serial Port   | One RS-232 and one RS232/422/485 serial ports                          |
| USB Port      | Four Hi-Speed USB 2.0 ports with 480Mbps of transfer rate              |
| Parallel Port | One D-sub 25pin LPT Port   |
| Floppy Port   | One slim type Floppy port  |
| IrDA Port     | One IrDA compliant Infrared interface supports SIR                     |
| K/B & Mouse   | External PS/2 keyboard and mouse ports on rear I/O panel               |
| GPIO          | One 12-pin Digital I/O connector with 8-bit programmable I/O interface |

### VGA Display Interface

|              |   |
|--------------|---|
| Chipset      | AMD Geode LX800 built-in VGA controller with 2D Graphic   |
| Frame Buffer | Up to 256MB shared with system memory   |
| Display Type | Supports CRT, 24-bit TTL & 18/24-bit single channel LVDS LCD  |
| Connector    | External DB15 female connector on rear I/O panel<br>Onboard 40-pin TTL connector<br>Onboard 40-pin LVDS connector |

### Ethernet Interface

|            |   |
|------------|---|
| Controller | 1 x Realtek RTL8110S-32 Gigabit Ethernet controller   |
| Type       | Triple speed 10/100/1000Base-T<br>Auto-switching Fast Ethernet<br>Full duplex, IEEE802.3U compliant |



|           |  |
|-----------|--|
| Connector | One External RJ45 connector with LED on rear I/O panel |
|-----------|--|

### Audio Interface

|         |  |
|---------|--|
| Chipset | Realtek ® ALC203 AC97 Audio compliance |
|---------|--|

|           |                         |
|-----------|-------------------------|
| Interface | 2 channels sound output |
|-----------|-------------------------|

|           |  |
|-----------|--|
| Connector | External Audio phone jack for Line-out, Line-in, MIC-in.<br>Onboard audio connector with pin header<br>Onboard CD-IN connector |
|-----------|--|

### Expansive Interface

|     |   |
|-----|---|
| PCI | One Mini-PCI socket for <b>TYPE III</b> .<br>Bus master. 2nd Bus master is shared with Mini-PCI.<br>One PCI slot with riser card to support 2 PCI<br>Power supply: +3.3V, +5V |
|-----|---|

### Power and Environment

|                   |  |
|-------------------|--|
| Power Requirement | 8~24V DC input or Standard 20-pin ATX power supply |
|-------------------|--|

|           |                      |
|-----------|----------------------|
| Dimension | 170 (L) x 170 (H) mm |
|-----------|----------------------|

|             |  |
|-------------|--|
| Temperature | Operating within 0 ~ 60°C (32 ~ 140°F)<br>Storage within -20 ~ 85°C (-4 ~ 185°F) |
|-------------|--|

### Ordering Code

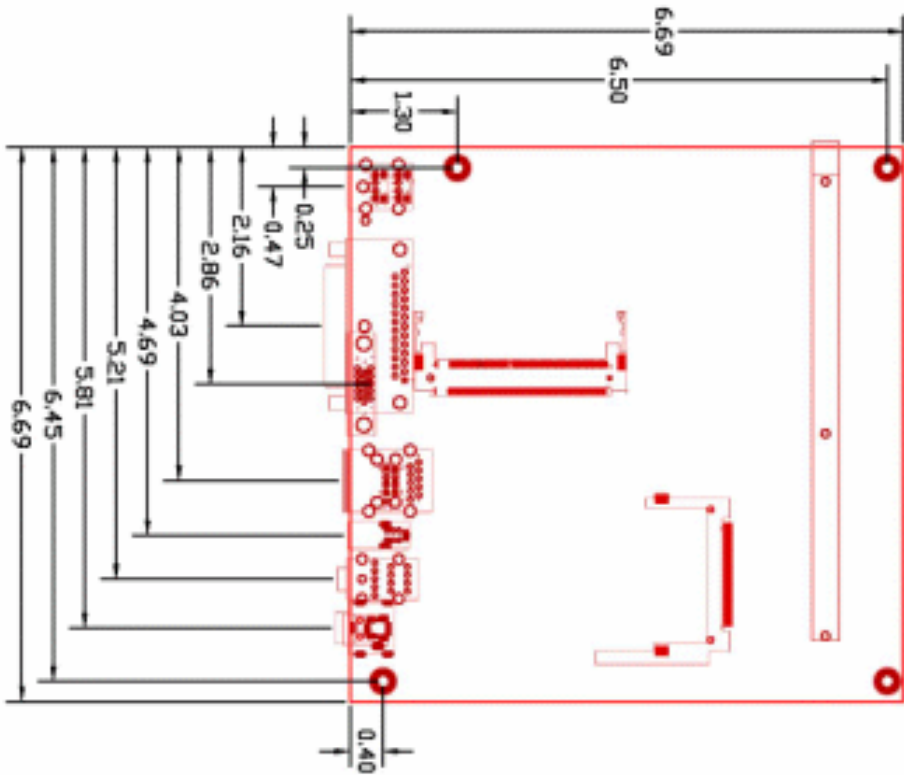
|                 |   |
|-----------------|---|
| <b>LV651X-P</b> | AMD LX800 processor Mini-ITX with onboard VGA, GigaLAN, LPT, RS232, USB2.0, Audio, IEEE1394, LCD and DDR DIMM |
|-----------------|---|

|                   |  |
|-------------------|--|
| <b>LV651X-256</b> | Same as above but with 256M DDR SDRAM on board |
|-------------------|--|

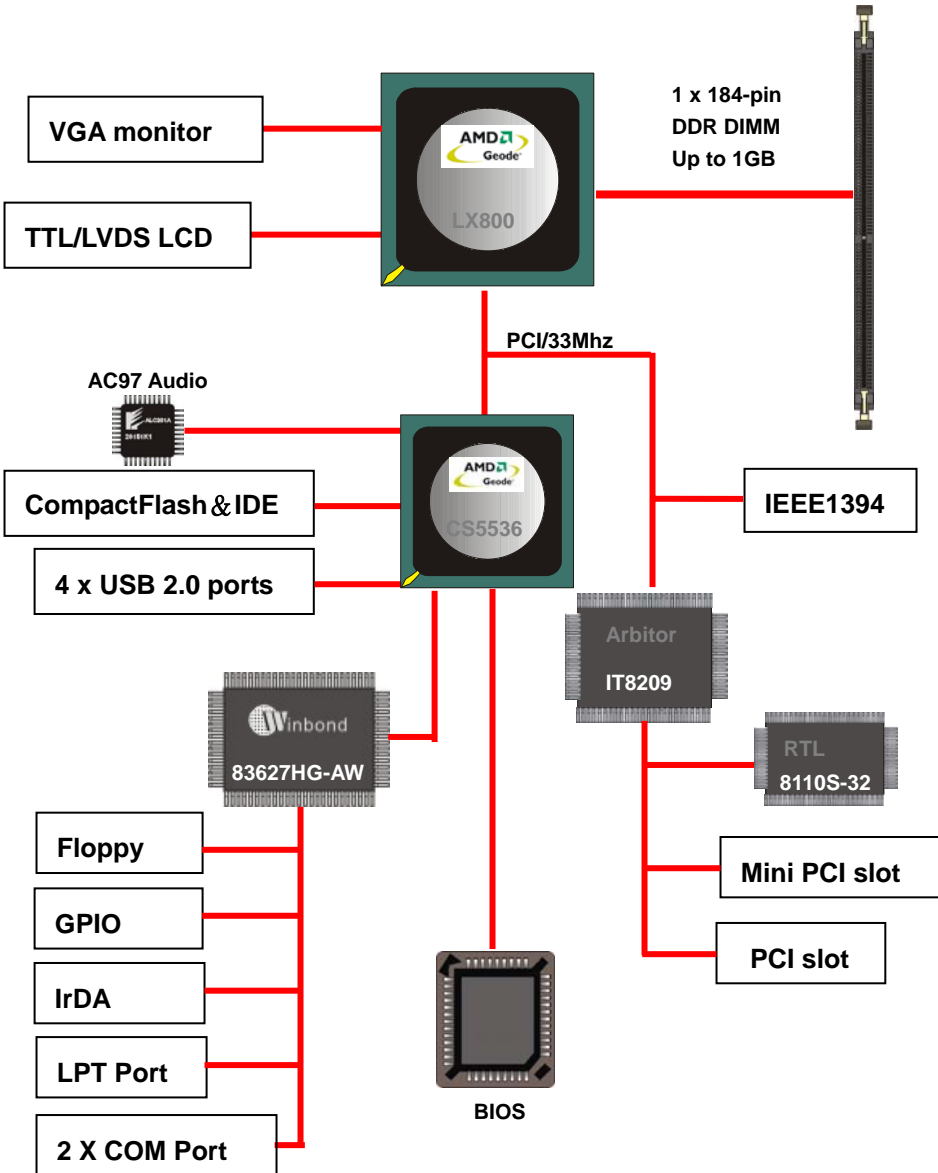
The specifications may be different as the actual production.

For further product information please visit the website at <http://www.commell.com.tw>

### 1.3 <Mechanical Drawing>

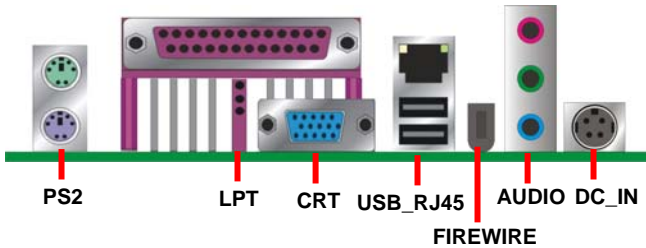
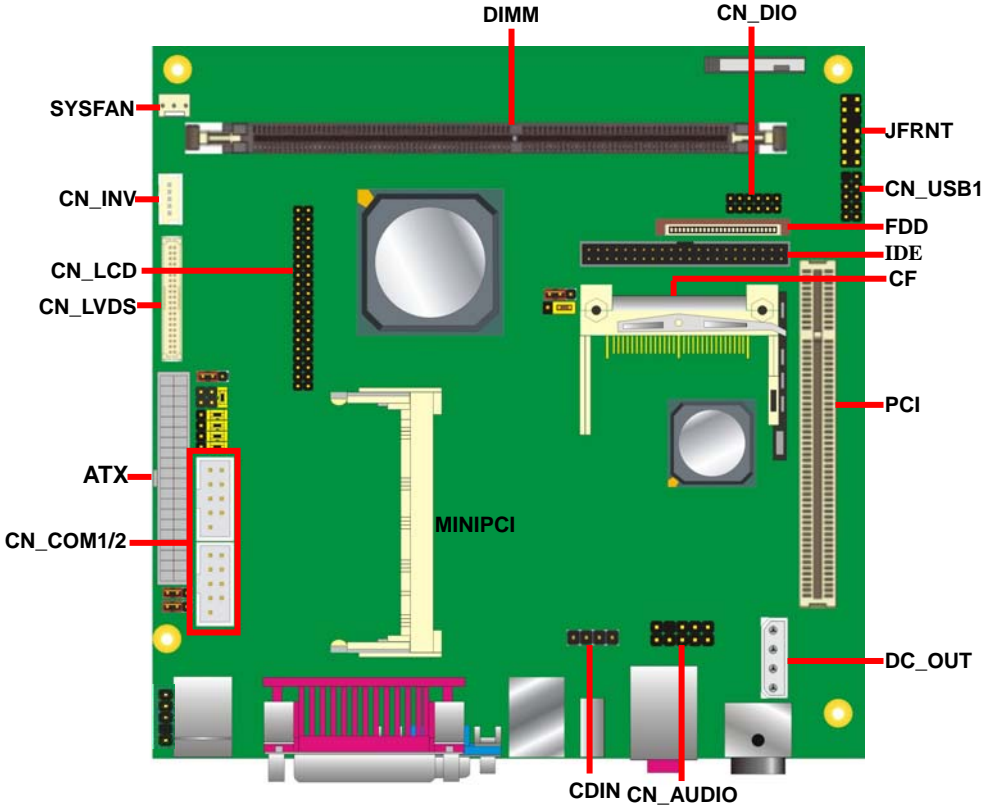


### 1.4 <Block Diagram>



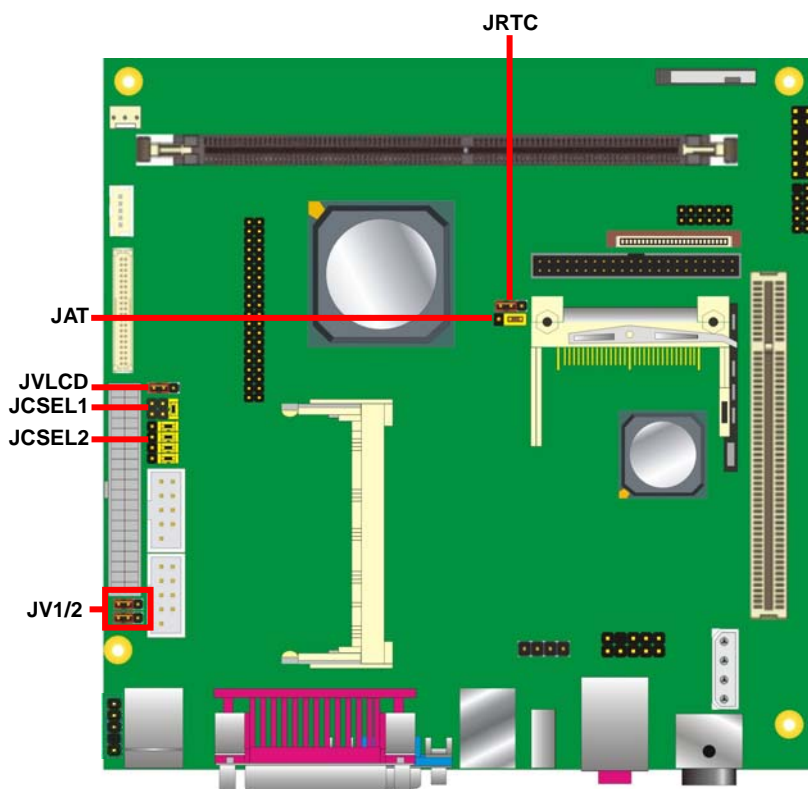
# Chapter 2 <Hardware Setup>

## 2.1 <Connector Location>



## 2.2 <Jumper Reference>

| Jumper   | Function                           |
|----------|------------------------------------|
| JRTC     | CMOS Operating/Clear Setting       |
| JV1/2    | Setting COM Port Voltage           |
| JVLCD    | LCD Panel Voltage Setting          |
| JCSEL1/2 | COM2 RS-232/422/485 Mode Selection |
| JAT      | Select ATX or AT power on function |



## 2.3 <Connector Reference>

### 2.3.1 <Internal Connector>

| Connector | Function                           | Remark   |
|-----------|------------------------------------|----------|
| DIMM      | 184 -pin DDR SDRAM DIMM slot       | Standard |
| IDE       | 44-pin primary IDE connector       | Slim     |
| FDD       | 26-pin slim type floppy connector  | Slim     |
| ATX       | 20-pin power supply connector      | Standard |
| CF        | Compact Flash Type II socket       | Standard |
| DC_OUT    | 4-pin power output connector       | Standard |
| CDIN      | 4-pin CD-ROM audio input connector | Standard |
| CN_DIO    | 6 x 2-pin digital I/O connector    | Standard |
| CN_USB1   | 5 x 2-pin USB connector            | Standard |
| SYSFAN    | 3-pin system cooler fan connector  | Standard |
| CN_COM1/2 | 5 x 2-pin com connector            | Standard |
| CN_AUDIO  | 5 x 2-pin audio connector          | Standard |
| CN_LVDS   | 20 x 2-pin LVDS connector          | Standard |
| CN_INV    | 5-pin LCD inverter connector       | Standard |
| CN_LCD    | 20 x 2-pin LCD connector           | Standard |
| PCI       | Slim 32bit PCI slot                | Slim     |
| MINIPCI   | Mini-PCI socket                    | Standard |
| JFRNT     | 14-pin switch/indicator connector  | Standard |
| JAT       | 3-pin power connector              | Standard |

### 2.3.2 <External Connector>

| Connector | Function                            | Remark   |
|-----------|-------------------------------------|----------|
| PS2       | PS/2 Keyboard/Mouse connector       | Standard |
| LPT       | 25-pin D-sub LPT port               | Standard |
| USB_RJ45  | Dual USB and one RJ45 LAN connector | Standard |
| CRT       | DB15 VGA connector                  | Standard |
| FIREWIRE  | One IEEE1394 connector              | Standard |
| AUDIO     | Audio connector                     | Standard |
| DC_IN     | DC 12V input connector              | Standard |

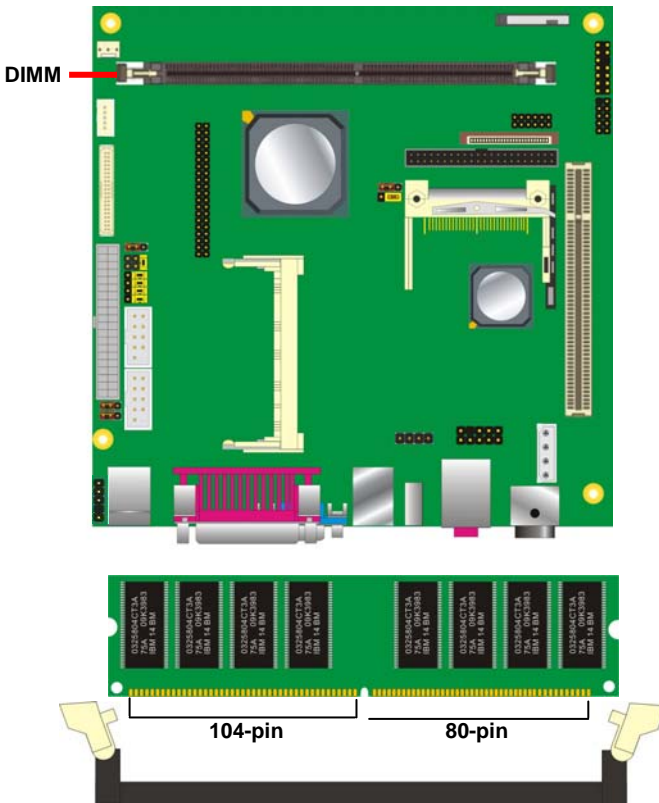
## 2.4 <CPU and Memory Setup>

### 2.4.1 <CPU Setup>

The board integrates AMD Geode LX800 500MHz processor with special design for power appliance. It requires only 3.8W power consumption at most, and is totally designed for fanless system.

### 2.4.2 <Memory Setup>

The board supports one 184-pin DDR266/333 SDRAM up to 1GB of capacity, and supports non ECC unbuffered memory modules.



Please check the pin number to match the socket side well before installing memory module.

## 2.5 <CMOS Setup>

The board's data of CMOS can be setting in BIOS. If the board refuses to boot due to inappropriate CMOS settings, here is how to proceed to clear (reset) the CMOS to its default values.

**Jumper: JRTC**

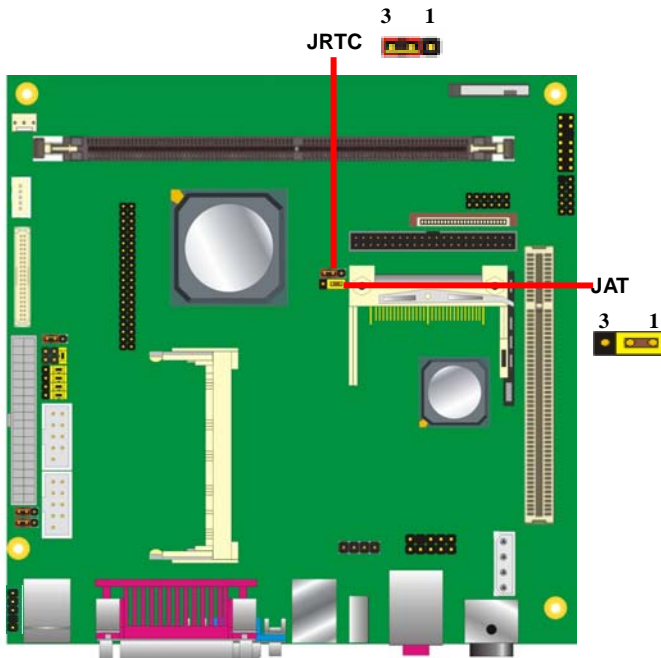
**Type: Onboard 3-pin jumper**

| JRTC            | Mode             |
|-----------------|------------------|
| 1-2             | Clear CMOS       |
| 2-3             | Normal Operation |
| Default setting |                  |

**Jumper: JAT**

**Type: Onboard 3-pin jumper**

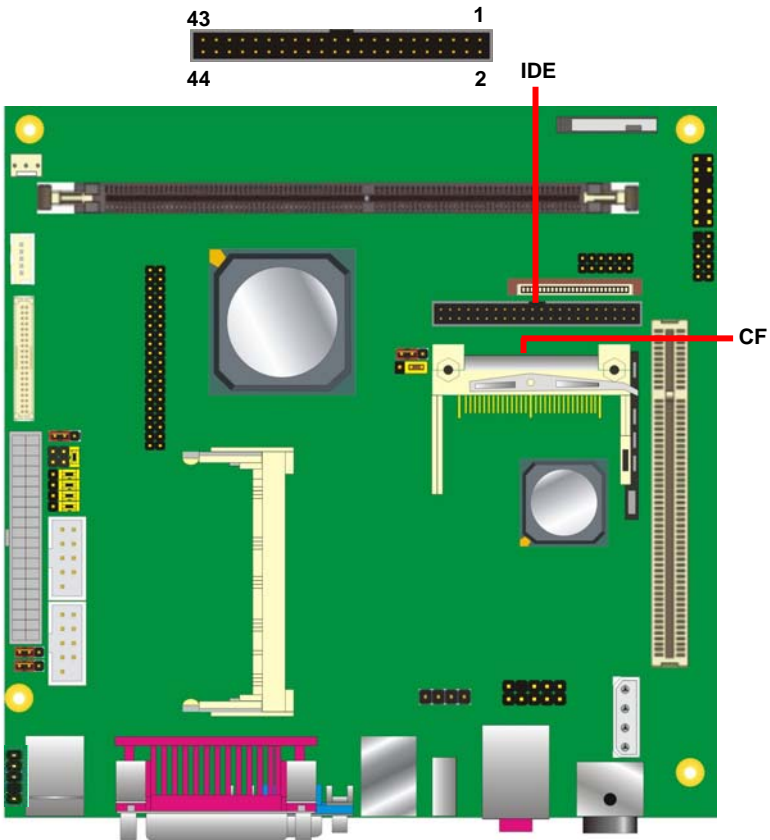
| JAT             | Mode              |
|-----------------|-------------------|
| 1-2             | ATX mode -default |
| 2-3             | AT mode           |
| Default setting |                   |





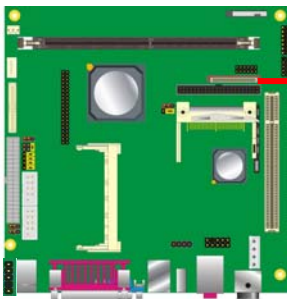
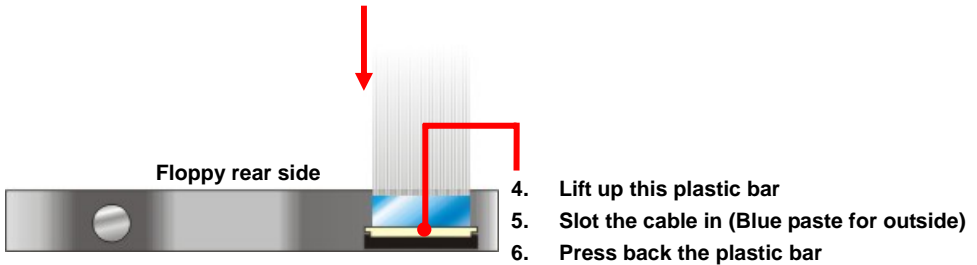
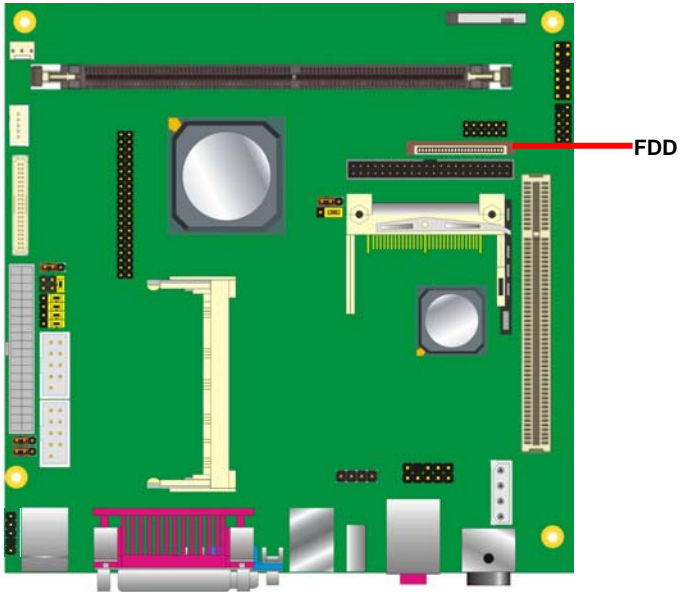
## 2.6 <Enhanced IDE & CF Interface>

The board has one Ultra DMA33 IDE interface to support up to 2 ATAPI devices, and one Compact Flash Type II socket on the solder side.



## 2.7 <Floppy Port>

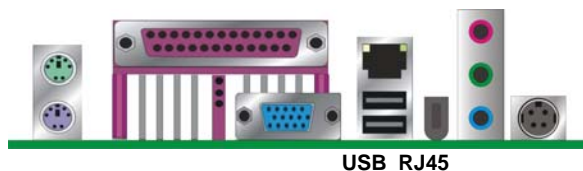
The board provides a slim type floppy port; please use the 26-pin FPC cable in the package to connect the floppy device.



1. Lift up the brown plastic bar
2. Slot the cable in (Blue paste for brown bar side)
3. Press back the plastic bar

## 2.8 <LAN Interface>

The board integrates with one Realtek RTL8110S-32 Gigabit Ethernet controller. The Realtek RTL8110S-32 supports triple speed of 10/100/1000Base-T, with IEEE802.3 compliance and Wake-On-LAN supported.



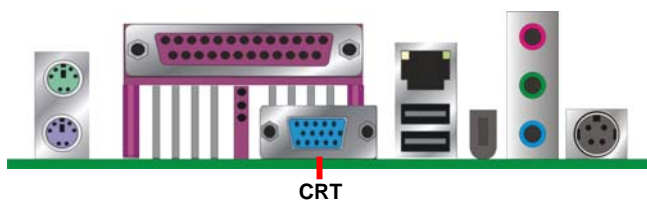
## 2.9 <Onboard Display Interface>

The board integrates AMD Geode LX800 processor with built-in 2D video engine, to provide onboard DB15 VGA connector, 24-bit TTL and 18-bit/24-bit LVDS interface. The built-in 2D video engine supports following specified functions:

- High-performance 2D graphics controller
- Alpha BLT
- Integrated dot clock PLL

### 2.9.1 <Analog VGA Interface>

Please connect your CRT or LCD monitor with DB15 male connector to the onboard DB15 female connector on rear I/O port.



### 2.9.2 <Digital Display>

The board provides one 40-pin LVDS connector for 18-bit single channel panel, supports up to 1024 x 768 of resolution, with one LCD backlight inverter connector and one jumper for panel voltage setting

Connector: **CN\_INV**

Connector model: **JST B5B-XH-A**

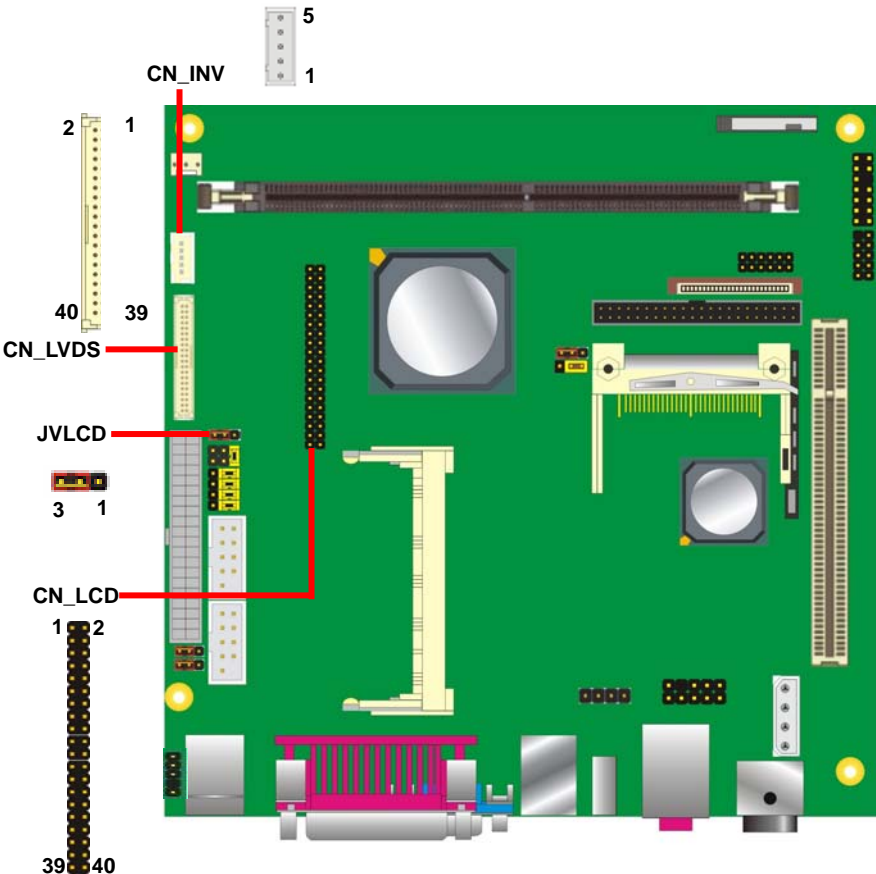
Type: 5-pin LVDS Power Header

| Pin | Description |
|-----|-------------|
| 1   | +12V        |
| 2   | GND         |
| 3   | GND         |
| 4   | GND         |
| 5   | ENABKL      |

Connector: **JVLCD**

Type: 3-pin Power select Header

| Pin | Description |
|-----|-------------|
| 1   | VCC(5V)     |
| 2   | LCDVCC      |
| 3   | VCC3(3.3V)  |

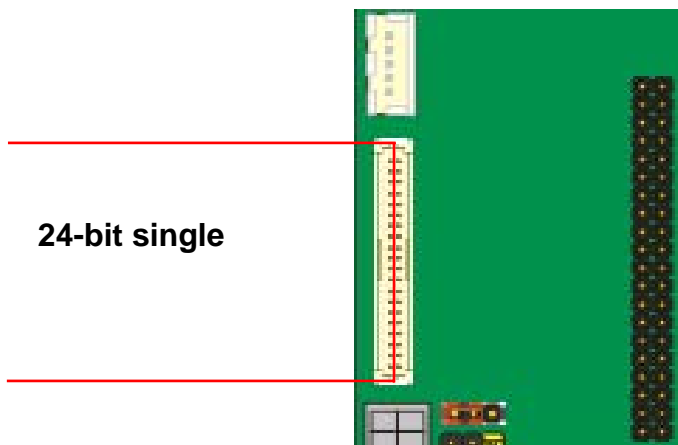


Connector: **CN\_LVDS ( for 24bit Single channel LVDS panel )**

Type: 40-pin header (40 x 2 pitch 2.0 mm)

Connector model: **Hirose DF13- 40DP-1.25V**

| Pin | Signal (18-bit) | Pin | Signal (24-bit) |
|-----|-----------------|-----|-----------------|
| 2   | <b>LCDVCC</b>   | 1   | <b>LCDVCC</b>   |
| 4   | GND             | 3   | GND             |
| 6   | NC              | 5   | <b>TA2-</b>     |
| 8   | NC              | 7   | <b>TA2+</b>     |
| 10  | GND             | 9   | GND             |
| 12  | NC              | 11  | <b>TB2-</b>     |
| 14  | NC              | 13  | <b>TB2+</b>     |
| 16  | GND             | 15  | GND             |
| 18  | NC              | 17  | <b>TC2-</b>     |
| 20  | NC              | 19  | <b>TC2+</b>     |
| 22  | GND             | 21  | GND             |
| 24  | NC              | 23  | <b>TD2-</b>     |
| 26  | NC              | 25  | <b>TD2+</b>     |
| 28  | GND             | 27  | GND             |
| 30  | NC              | 29  | <b>TCLK2-</b>   |
| 32  | NC              | 31  | <b>TCLK2+</b>   |
| 34  | GND             | 33  | GND             |
| 36  | N/C             | 35  | N/C             |
| 38  | N/C             | 37  | N/C             |
| 40  | N/C             | 39  | N/C             |

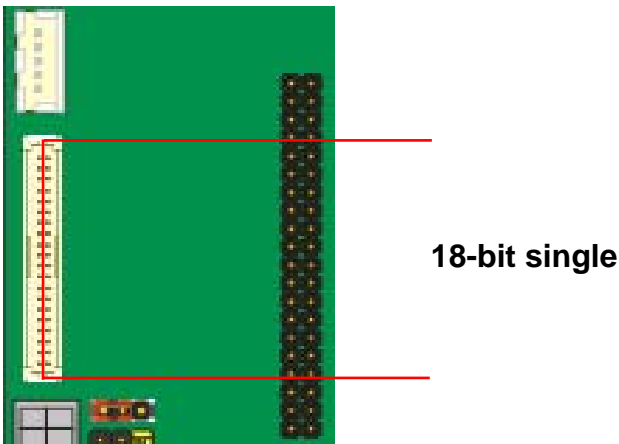


Connector: **CN\_LVDS ( for 18bit Single channel LVDS panel )**

Type: 40-pin header (40 x 2 pitch 2.0 mm)

Connector model: **Hirose DF13-40DP-1.25V**

| Pin | Signal (18-bit) | Pin | Signal (24-bit) |
|-----|-----------------|-----|-----------------|
| 2   | <b>LCDVCC</b>   | 1   | LCDVCC          |
| 4   | GND             | 3   | GND             |
| 6   | <b>TA1-</b>     | 5   | N/C             |
| 8   | <b>TA1+</b>     | 7   | N/C             |
| 10  | GND             | 9   | GND             |
| 12  | <b>TB1-</b>     | 11  | N/C             |
| 14  | <b>TB1+</b>     | 13  | N/C             |
| 16  | GND             | 15  | GND             |
| 18  | <b>TC1-</b>     | 17  | N/C             |
| 20  | <b>TC1+</b>     | 19  | N/C             |
| 22  | GND             | 21  | GND             |
| 24  | <b>TCLK1-</b>   | 23  | N/C             |
| 26  | <b>TCLK1+</b>   | 25  | N/C             |
| 28  | GND             | 27  | GND             |
| 30  | N/C             | 29  | N/C             |
| 32  | N/C             | 31  | N/C             |
| 34  | GND             | 33  | GND             |
| 36  | N/C             | 35  | N/C             |
| 38  | N/C             | 37  | N/C             |
| 40  | N/C             | 39  | N/C             |



Connector: **CN\_LCD**

Type: onboard 2 x 20-pin header with housing, pitch=2.0mm

| Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|
| 1   | ENAVDD | 2   | ENAVEE |
| 3   | GND    | 4   | GND    |
| 5   | VLCD   | 6   | VLCD   |
| 7   | GND    | 8   | GND    |
| 9   | GFP0   | 10  | GFP1   |
| 11  | GFP2   | 12  | GFP3   |
| 13  | GFP4   | 14  | GFP5   |
| 15  | GFP6   | 16  | GFP7   |
| 17  | GFP8   | 18  | GFP9   |
| 19  | GFP10  | 20  | GFP11  |
| 21  | GFP12  | 22  | GFP13  |
| 23  | GFP14  | 24  | GFP15  |
| 25  | GFP16  | 26  | GFP17  |
| 27  | GFP18  | 28  | GFP19  |
| 29  | GFP20  | 30  | GFP21  |
| 31  | GFP22  | 32  | GFP23  |
| 33  | N/C    | 34  | N/C    |
| 35  | FPCLK  | 36  | VSYNC  |
| 37  | RM     | 38  | HSYNC  |
| 39  | GND    | 40  | GND    |

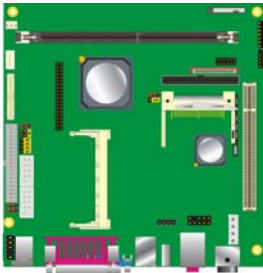
To setup the LCD, you need the component below:

1. A panel with LVDS interfaces.
2. An inverter for panel's backlight power.
3. A LCD cable and an inverter cable.

For the cables, please follow the pin assignment of the connector to make a cable, because every panel has its own pin assignment, so we do not provide a standard cable; please find a local cable manufacture to make cables.

**LCD Installation Guide:**

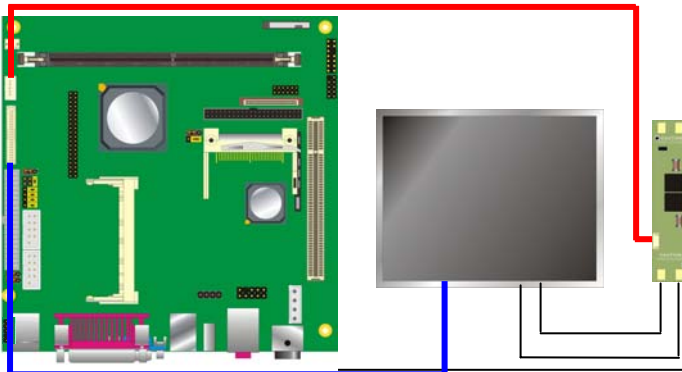
1. Preparing the LV-651, LCD panel and the backlight inverter.



2. Please check the datasheet of the panel to see the voltage of the panel, and set the jumper **JVLCD** to +5V or +3.3V.
3. You would need a LVDS type cable.

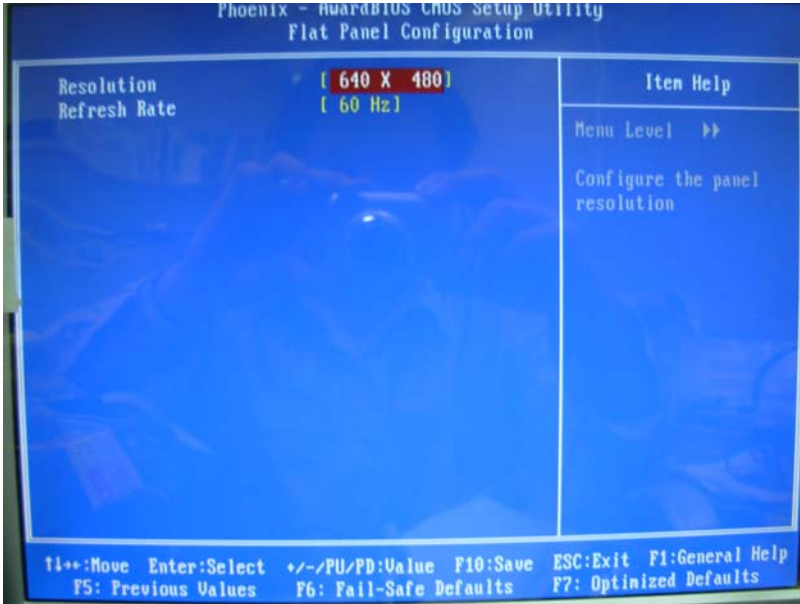


4. To connect all of the devices well.





After setup the devices well, you need to select the LCD panel type in the BIOS.



The panel type mapping is list below:

|   | Panel Number | Resolution |
|---|--------------|------------|
| 1 | 640 x 480    |            |
| 2 | 800 x 600    |            |
| 3 | 1024x 768    |            |

## 2.10 <Onboard Audio Interface>

The board provides the onboard AC97 2 channel audio interface with Realtek ALC203.

### Connector: CN\_AUDIO

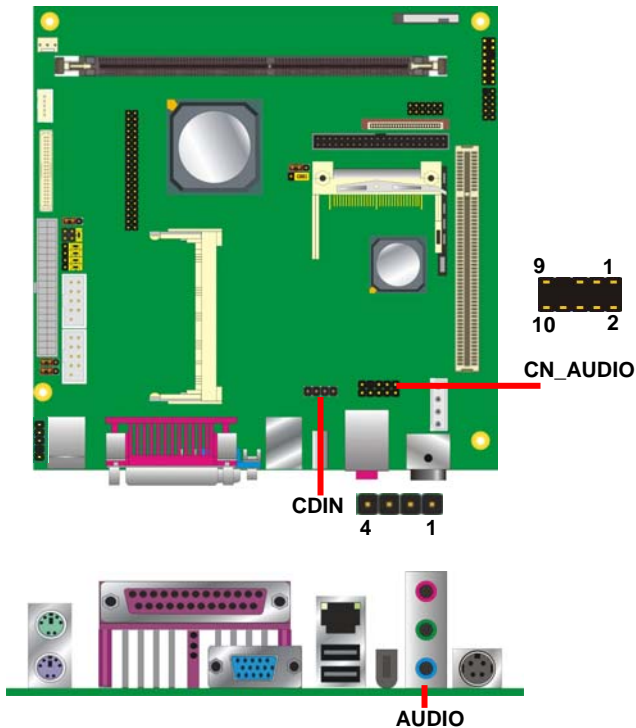
Type: 10-pin (2 x 5) 2.54mm x 2.54mm-pitch header

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | LIN_L       | 2   | Ground      |
| 3   | LIN_R       | 4   | MIC 2       |
| 5   | MIC 2       | 6   | Ground      |
| 7   | N/C         | 8   | FRONTL      |
| 9   | FRONTR      | 10  | Ground      |

### Connector: CDIN

Type: 4-pin header (pitch = 2.54mm)

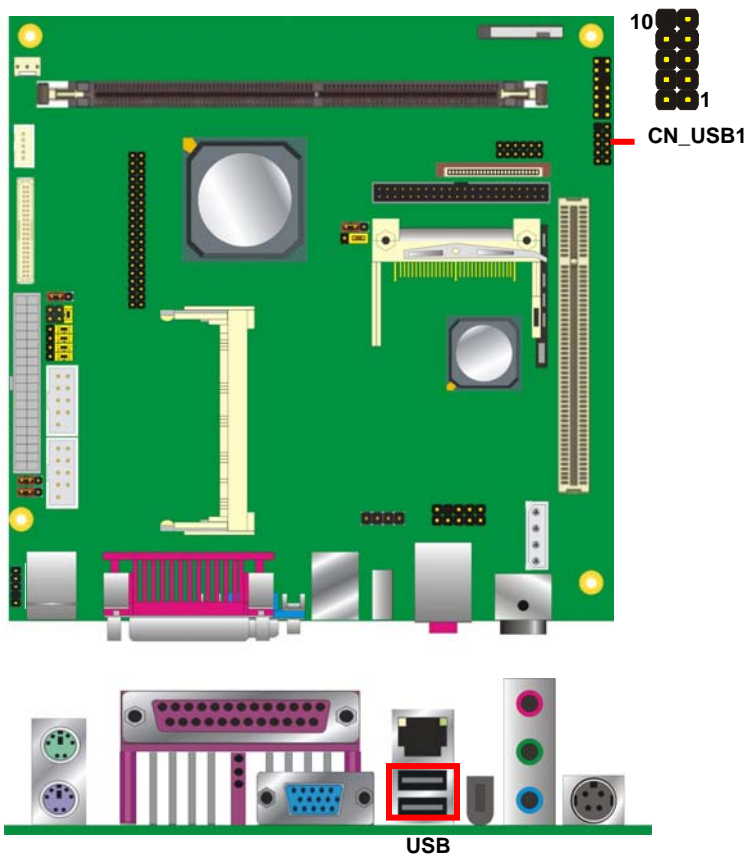
| Pin | Description |
|-----|-------------|
| 1   | CD – Left   |
| 2   | Ground      |
| 3   | Ground      |
| 4   | CD – Right  |



## 2.11 <USB 2.0 Interface>

Based on AMD CS5536, the board provides 2 x USB 2.0 ports. The USB 2.0 interface provides up to 480Mbps of transferring rate.

| Interface      | USB2.0        |
|----------------|---------------|
| Controller     | CS5536        |
| Transfer Rate  | Up to 480Mb/s |
| Output Voltage | 500mA         |



Connector: **CN\_USB**

Type: 10-pin (5 x 2) header for USB1/2 Ports

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | VCC         | 2   | VCC         |
| 3   | Data0-      | 4   | Data1-      |
| 5   | Data0+      | 6   | Data1+      |
| 7   | Ground      | 8   | Ground      |
| 9   | Ground      | 10  | N/C         |

P.S : The USB2.0 will be only active when you connecting with the USB2.0 devices, if you insert an USB1.1 device, the port will be changed to USB1.1 protocol automatically. The transferring rate of USB2.0 as 480Mbps is depending on device capacity, exact transferring rate may not be up to 480Mbps.

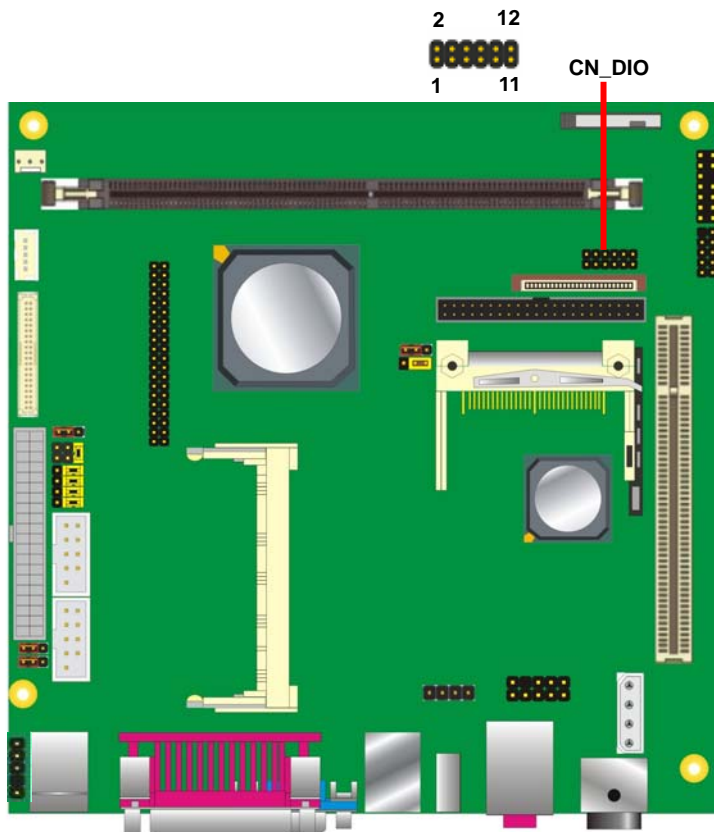
## 2.12 <GPIO Interface>

The board provides a programmable 8-bit digital I/O interface; you can use this general purpose I/O port for system control like POS or KIOSK.

Connector: **CN\_DIO**

Type: onboard 2 x 6-pin header, pitch=2.0mm

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | Ground      | 2   | Ground      |
| 3   | GP0         | 4   | GP4         |
| 5   | GP1         | 6   | GP5         |
| 7   | GP2         | 8   | GP6         |
| 9   | GP3         | 10  | GP7         |
| 11  | VCC         | 12  | +12V        |



## 2.13 <Serial Port Jumper Setting >

The onboard CN\_COM1 RS232 serial port, with jumper selectable RS232/422/485 for CN\_COM2

Connector: **COM1/2**

Type: 9-pin Dip male connector on I/O Panel

| Pin | Description     | Pin | Description     |
|-----|-----------------|-----|-----------------|
| 1   | DCD/422TX-/485- | 2   | RXD/422TX+/485+ |
| 3   | TXD/422RX+      | 4   | DTR/422RX-      |
| 5   | GND             | 6   | DSR             |
| 7   | RTS             | 8   | CTS             |
| 9   | RI              |     |                 |

Jumper: **JV1**

Type: Onboard 3-pin jumper

| JV1 | Mode                      |
|-----|---------------------------|
| 1-2 | COM1 pin-1 for +5V output |
| 2-3 | MDCD1-                    |

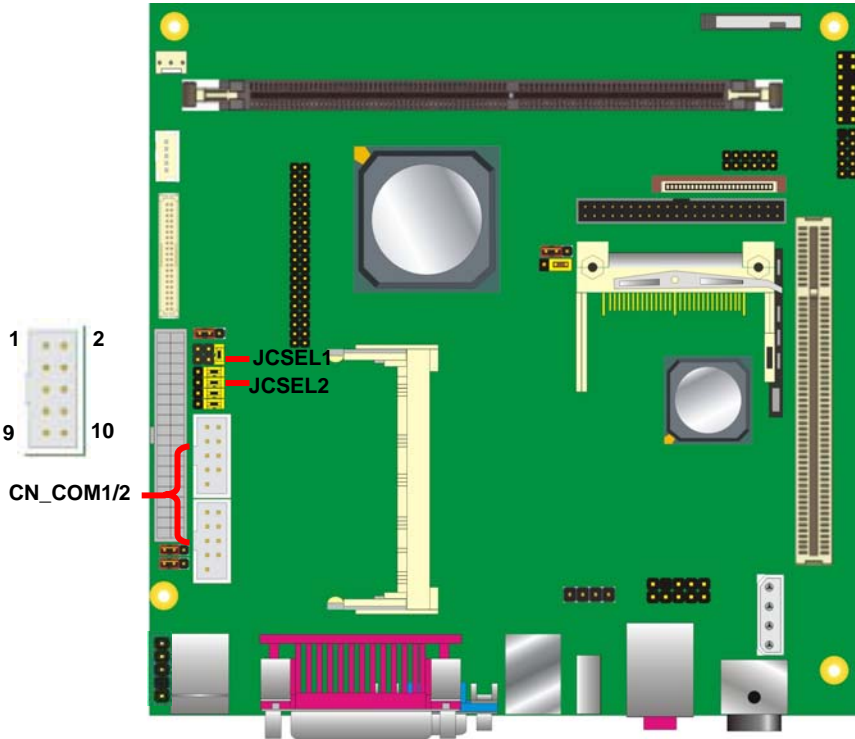
Default setting

Jumper: **JV2**

Type: Onboard 3-pin jumper

| JV2 | Mode                       |
|-----|----------------------------|
| 1-2 | COM1 pin-9 for +12V output |
| 2-3 | MRL1-                      |

Default setting



|               | JCSEL1 | JCSEL2 |
|---------------|--------|--------|
| <b>RS-232</b> |        |        |
| <b>RS-485</b> |        |        |
| <b>RS-422</b> |        |        |

## 2.14 <Power and Fan Connector>

The LV-651 provides a standard ATX power supply with 20-pin ATX connector, and the board provides one 4-pin P4 additional use power connector for internal power supply and one 3-pin cooler fan connector for system .

### 2.14.1 <Power Input>

Connector: **ATX**

Type: 20-pin ATX power connector

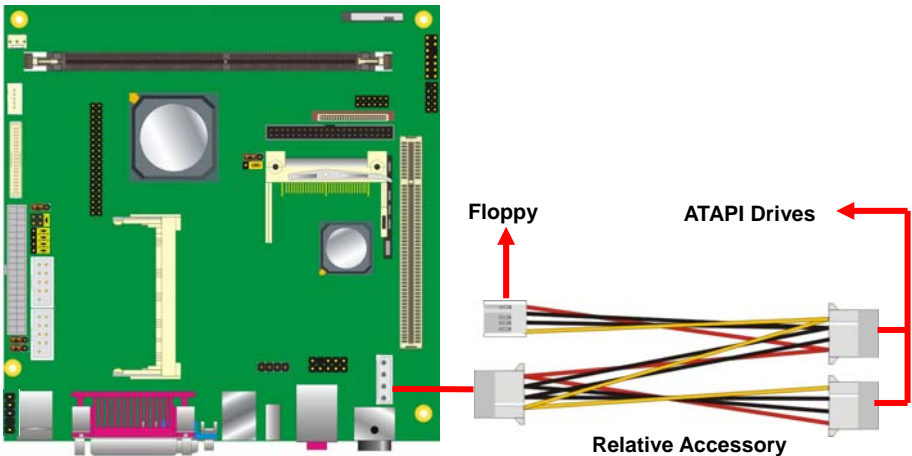
| PIN assignment |      |    |       |
|----------------|------|----|-------|
| 1              | 3.3V | 11 | 3.3V  |
| 2              | 3.3V | 12 | -12V  |
| 3              | GND  | 13 | GND   |
| 4              | 5V   | 14 | PS_ON |
| 5              | GND  | 15 | GND   |
| 6              | 5V   | 16 | GND   |
| 7              | GND  | 17 | GND   |
| 8              | 5V   | 18 | -5V   |
| 9              | 5V   | 19 | 5V    |
| 10             | 12V  | 20 | 5V    |

### 2.14.2 <Power Output>

Connector: **DC\_OUT**

Type: 4-pin P-type connector for +5V/+12V output

| Pin | Description | Pin | Description | Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|-----|-------------|-----|-------------|
| 1   | +5V         | 2   | Ground      | 3   | Ground      | 4   | +12V        |





### 2.14.3 <Fan Connector>

Connector: **SYSFAN**

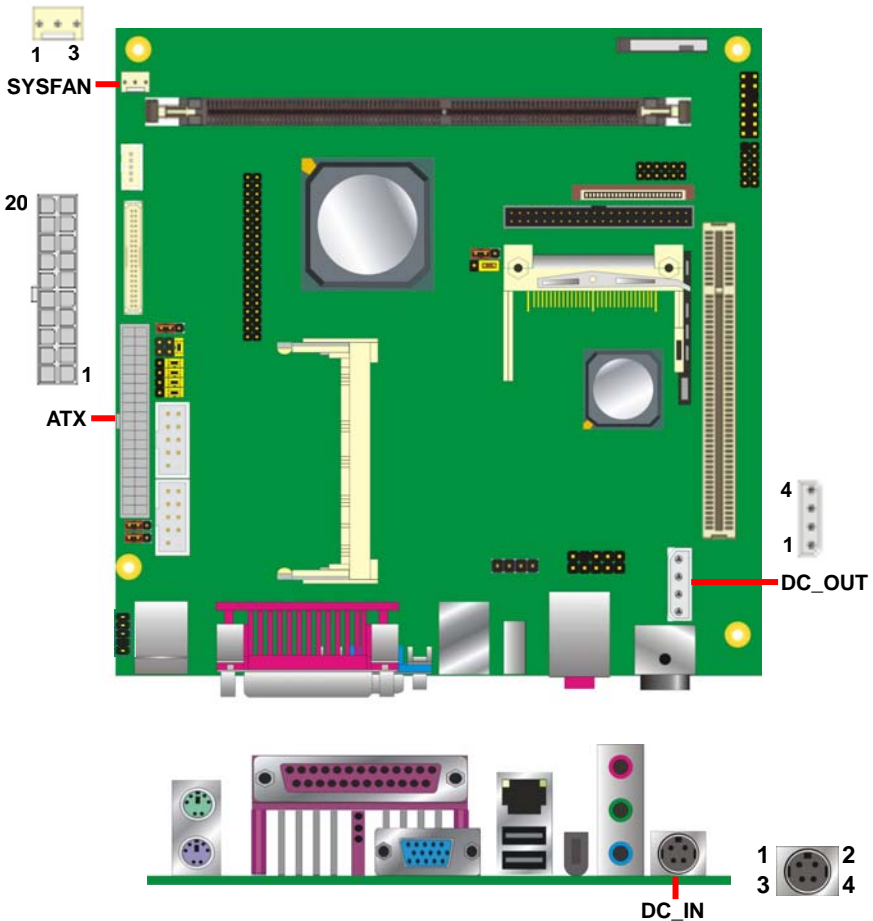
Type: 3-pin fan wafer connector

| Pin | Description | Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|-----|-------------|
| 1   | Ground      | 2   | +12V        | 3   | Fan Control |

Connector: **DC\_IN**

Type: 4-pin DC power connector

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | +12V        | 2   | +12V        |
| 3   | Ground      | 4   | Ground      |



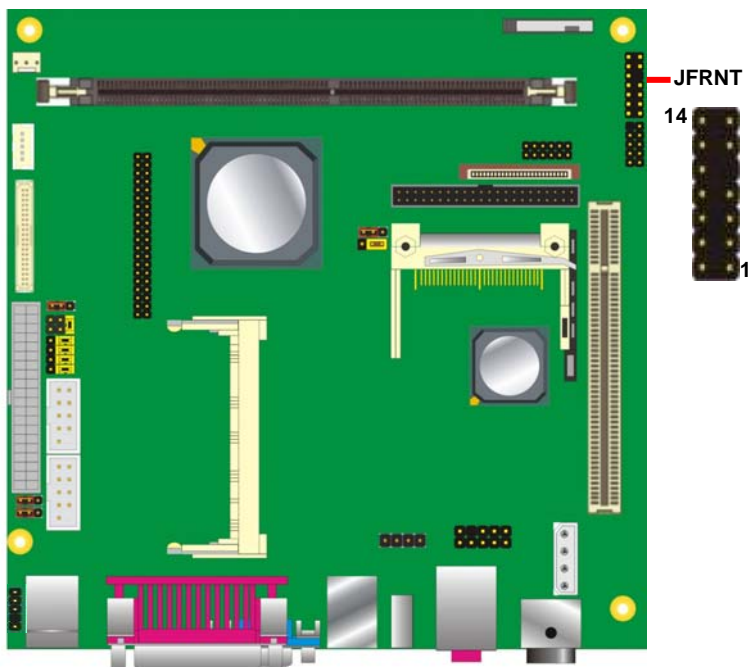
## 2.15 <Indicator and Switch>

The **JFRNT** provides front control panel of the board, such as power button, reset and beeper, etc. Please check well before you connecting the cables on the chassis.

Connector: **JFRNT**

Type: onboard 14-pin (2 x 7) 2.54-pitch header

| Function     | Signal | PIN |    | Signal  | Function  |
|--------------|--------|-----|----|---------|-----------|
| IDE LED      | HDLED+ | 1   | 2  | PWRLED+ | Power LED |
|              | HDLED- | 3   | 4  | N/C     |           |
| Reset        | Reset+ | 5   | 6  | PWRLED- | Speaker   |
|              | Reset- | 7   | 8  | SPK+    |           |
| N/C          |        | 9   | 10 | N/C     |           |
| Power Button | PWRBT- | 11  | 12 | N/C     |           |
|              | PWRBT+ | 13  | 14 | SPK-    |           |



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## Chapter 3 <BIOS Setup>

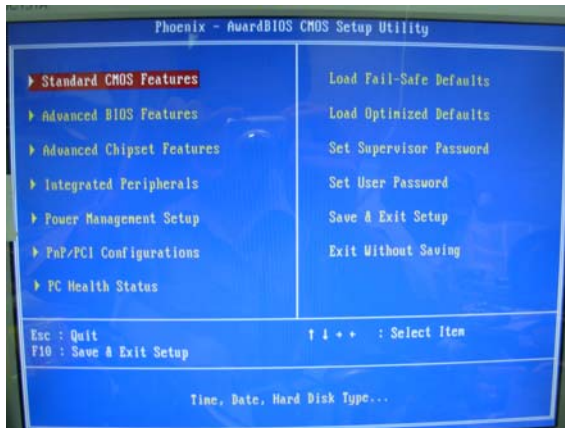
The motherboard uses the Award BIOS for the system configuration. The Award BIOS in the single board computer is a customized version of the industrial standard BIOS for IBM PC AT-compatible computers. It supports Intel x86 and compatible CPU architecture based processors and computers. The BIOS provides critical low-level support for the system central processing, memory and I/O sub-systems.

The BIOS setup program of the single board computer let the customers modify the basic configuration setting. The settings are stored in a dedicated battery-backed memory, NVRAM, retains the information when the power is turned off. If the battery runs out of the power, then the settings of BIOS will come back to the default setting.

The BIOS section of the manual is subject to change without notice and is provided here for reference purpose only. The settings and configurations of the BIOS are current at the time of print, and therefore they may not be exactly the same as that displayed on your screen.

To activate CMOS Setup program, press <DEL> key immediately after you turn on the system. The following message "Press DEL to enter SETUP" should appear in the lower left hand corner of your screen. When you enter the CMOS Setup Utility, the Main Menu will be displayed as **Figure 4-1**. You can use arrow keys to select your function, press <Enter> key to accept the selection and enter the sub-menu.

**Figure 4-1** CMOS Setup Utility Main Screen



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## Appendix A <I/O Port Pin Assignment>

### A.1 <IDE Port>

Connector: IDE1

Type: 44-pin (22 x 2) box header



| Pin | Description  | Pin | Description |
|-----|--------------|-----|-------------|
| 1   | Reset        | 2   | Ground      |
| 3   | D7           | 4   | D8          |
| 5   | D6           | 6   | D9          |
| 7   | D5           | 8   | D10         |
| 9   | D4           | 10  | D11         |
| 11  | D3           | 12  | D12         |
| 13  | D2           | 14  | D13         |
| 15  | D1           | 16  | D14         |
| 17  | D0           | 18  | D15         |
| 19  | Ground       | 20  | N/C         |
| 21  | REQ          | 22  | Ground      |
| 23  | IOW-/STOP    | 24  | Ground      |
| 25  | IOR-/HDMARDY | 26  | Ground      |
| 27  | IRDY/DDMARDY | 28  | Ground      |
| 29  | DACK-        | 30  | Ground      |
| 31  | IRQ          | 32  | N/C         |
| 33  | A1           | 34  | SD          |
| 35  | A0           | 36  | A2          |
| 37  | CS1-         | 38  | CS3-        |
| 39  | HD LED1-     | 40  | Ground      |
| 41  | Vcc          | 42  | Vcc         |
| 43  | Ground       | 44  | Ground      |

## A.2 <Floppy Port>

Connector: **FDD**

Type: 26-pin connector



| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | VCC         | 2   | INDEX       |
| 3   | VCC         | 4   | DRV0        |
| 5   | VCC         | 6   | DSKCHG      |
| 7   | DRV1        | 8   | N/C         |
| 9   | MTR1        | 10  | MTR0        |
| 11  | RPM         | 12  | DIR         |
| 13  | N/C         | 14  | STEP        |
| 15  | Ground      | 16  | WRITE DATA  |
| 17  | Ground      | 18  | WRITE GATE  |
| 19  | N/C         | 20  | TRACK 0     |
| 21  | N/C         | 22  | WRPTR       |
| 23  | Ground      | 24  | RDATA-      |
| 25  | Ground      | 26  | SEL         |

## A.3 <IrDA Port>

Connector: **CN\_IR**

Type: 5-pin header for SIR Port

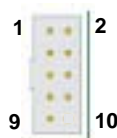


| Pin | Description |
|-----|-------------|
| 1   | Vcc         |
| 2   | N/C         |
| 3   | IRRX        |
| 4   | Ground      |
| 5   | IRTX        |

## A.4 <Serial Port>

Connector: **COM1/2**

Type: 9-pin D-sub male connector on bracket

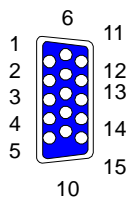


| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | DCD-        | 6   | DSR-        |
| 2   | SIN-        | 7   | RTS-        |
| 3   | SO-         | 8   | CTS-        |
| 4   | DTR-        | 9   | RI          |
| 5   | Ground      | 10  | N/C         |

## A.5 <CRT Port>

Connector: **CRT**

Type: 15-pin D-sub female connector on I/O Panel



| Pin | Description | Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|-----|-------------|
| 1   | RED         | 6   | Ground      | 11  | N/C         |
| 2   | GREEN       | 7   | Ground      | 12  | 5VCDA       |
| 3   | BLUE        | 8   | Ground      | 13  | HSYNC       |
| 4   | N/C         | 9   | LVGA5V      | 14  | VSYNC       |
| 5   | Ground      | 10  | Ground      | 15  | 5VCLK       |

## A.6 <LAN Port>

Connector: **RJ45**

Type: RJ45 connector with LED on I/O Panel



| Pin         | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    |
|-------------|------|------|------|------|------|------|------|------|
| Description | MI0+ | MI0- | MI1+ | MI2+ | MI2- | MI1- | MI3+ | MI3- |

## A.7 < USB Port >

Connector: **CN\_USB1**

Type: 10-pin (5 x 2) header for dual USB Ports



| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | VCC         | 2   | VCC         |
| 3   | Data0-      | 4   | Data1-      |
| 5   | Data0+      | 6   | Data1+      |
| 7   | Ground      | 8   | Ground      |
| 9   | Ground      | 10  | N/C         |



## A.8 <PS/2 Keyboard & Mouse Port>

Connector: **Keyboard**

Type: 6-pin Mini-DIN connector on bracket



| Pin         | 1   | 2     | 3    | 4     | 5   | 6     |
|-------------|-----|-------|------|-------|-----|-------|
| Description | N/C | KB_CK | BVCC | IOGND | N/C | KB_DT |

Connector: **Mouse**

Type: 6-pin Mini-DIN connector on bracket



| Pin         | 1   | 2     | 3    | 4     | 5   | 6     |
|-------------|-----|-------|------|-------|-----|-------|
| Description | N/C | MS_CK | BVCC | IOGND | N/C | MS_DT |

## A.9 < LPT Port >



Connector : **LPT**

Type :25-Pin D-sub female Connector on bracket

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | -PSTB       | 2   | PRO0        |
| 3   | PRO1        | 4   | PRO2        |
| 5   | PRO3        | 6   | PRO4        |
| 7   | PRO5        | 8   | PRO6        |
| 9   | PRO7        | 10  | ACK-        |
| 11  | BUSY        | 12  | PE          |
| 13  | SLCT        | 14  | AFD-        |
| 15  | ERR-        | 16  | INT-        |
| 17  | SLIN-       | 18  | Ground      |
| 19  | Ground      | 20  | I/O Ground  |
| 21  | Ground      | 22  | Ground      |
| 23  | Ground      | 24  | Ground      |
| 25  | Ground      | 26  | N/C         |

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## Appendix B <Flash BIOS>

### B.1 BIOS Auto Flash Tool

The board is based on Award BIOS and can be updated easily by the BIOS auto flash tool. You can download the tool online at the address below:

<http://www.award.com>

<http://www.commell.com.tw/support/support.htm>

File name of the tool is "awdf flash.exe", it's the utility that can write the data into the BIOS flash chip and update the BIOS.

### B.2 Flash Method

1. Please make a bootable floppy disk.
2. Get the last .bin files you want to update and copy it into the disk.
3. Copy awardflash.exe to the disk.
4. Power on the system and flash the BIOS. (Example: C:/ awardflash XXX.bin)
5. Re-start the system.

Any question about the BIOS re-flash please contact your distributors or visit the web-site at below:

<http://www.commell.com.tw/support/support.htm>

## Appendix C <System Resources>

### C1.<I/O Port Address Map>

|                       |   |
|-----------------------|---|
| [00000000 - 0000000F] | Direct memory access controller                         |
| [00000000 - 00000CF7] | PCI bus   |
| [00000010 - 0000001F] | Motherboard resources                                   |
| [00000020 - 00000021] | Programmable interrupt controller                       |
| [00000022 - 0000002D] | Motherboard resources                                   |
| [00000030 - 0000003F] | Motherboard resources                                   |
| [00000040 - 00000043] | System timer  |
| [00000044 - 0000005F] | Motherboard resources                                   |
| [00000060 - 00000060] | Standard 101/102-Key or Microsoft Natural PS/2 Keyboard |
| [00000061 - 00000061] | System speaker  |
| [00000062 - 00000063] | Motherboard resources                                   |
| [00000064 - 00000064] | Standard 101/102-Key or Microsoft Natural PS/2 Keyboard |
| [00000065 - 0000006F] | Motherboard resources                                   |
| [00000070 - 00000073] | System CMOS/real time clock                             |
| [00000074 - 0000007F] | Motherboard resources                                   |
| [00000080 - 00000090] | Direct memory access controller                         |
| [00000091 - 00000093] | Motherboard resources                                   |
| [00000094 - 0000009F] | Direct memory access controller                         |
| [000000A0 - 000000A1] | Programmable interrupt controller                       |
| [000000A2 - 000000BF] | Motherboard resources                                   |
| [000000C0 - 000000DF] | Direct memory access controller                         |
| [000000E0 - 000000EF] | Motherboard resources                                   |
| [000000F0 - 000000FF] | Numeric data processor                                  |
| [00000170 - 00000177] | Secondary IDE Channel                                   |
| [000001F0 - 000001F7] | Primary IDE Channel                                     |
| [00000274 - 00000277] | ISAPNP Read Data Port                                   |
| [00000279 - 00000279] | ISAPNP Read Data Port                                   |
| [00000294 - 00000297] | Motherboard resources                                   |

|                       |  |
|-----------------------|--|
| [000002F8 - 000002FF] | Communications Port (COM2)                       |
| [00000376 - 00000376] | Secondary IDE Channel                            |
| [00000378 - 0000037F] | ECP Printer Port (LPT1)                          |
| [000003B0 - 000003BA] | Advanced Micro Devices Win XP Graphics Driver    |
| [000003C0 - 000003DF] | Advanced Micro Devices Win XP Graphics Driver    |
| [000003F0 - 000003F5] | Standard floppy disk controller                  |
| [000003F6 - 000003F6] | Primary IDE Channel                              |
| [000003F7 - 000003F7] | Standard floppy disk controller                  |
| [000003F8 - 000003FF] | Communications Port (COM1)                       |
| [000004D0 - 000004D1] | Motherboard resources                            |
| [00000778 - 0000077B] | ECP Printer Port (LPT1)                          |
| [00000A78 - 00000A7B] | Motherboard resources                            |
| [00000B78 - 00000B7B] | Motherboard resources                            |
| [00000BBC - 00000BBF] | Motherboard resources                            |
| [00000D00 - 0000AC17] | PCI bus  |
| [00000E78 - 00000E7B] | Motherboard resources                            |
| [00000F78 - 00000F7B] | Motherboard resources                            |
| [00000FBC - 00000FBF] | Motherboard resources                            |
| [0000AC20 - 0000FFFF] | PCI bus  |
| [0000FC00 - 0000FCFF] | Realtek RTL8169/8110 Family Gigabit Ethernet NIC |
| [0000FE00 - 0000FE7F] | GeodeLX Audio Driver (WDM)                       |
| [0000FF00 - 0000FF0F] | Standard Dual Channel PCI IDE Controller         |

## C2.<Memory Address Map>

|                       |  |
|-----------------------|--|
| [00000000 - 0009FFFF] | System board                                     |
| [000A0000 - 000BFFFF] | Advanced Micro Devices Win XP Graphics Driver    |
| [000A0000 - 000BFFFF] | PCI bus  |
| [000C8000 - 000DFFFF] | PCI bus  |
| [000F0000 - 000F3FFF] | System board                                     |
| [000F4000 - 000F7FFF] | System board                                     |
| [000F8000 - 000FBFFF] | System board                                     |
| [000FC000 - 000FFFFF] | System board                                     |
| [00100000 - 0F7AFFFF] | System board                                     |
| [0F7B0000 - 0F7BFFFF] | System board                                     |
| [0F7C0000 - FEBFFFFF] | PCI bus  |
| [EE000000 - EFFFFFFF] | Advanced Micro Devices Win XP Graphics Driver    |
| [EFFE8000 - EFFEFFFF] | Advanced Micro Devices Win XP Graphics Driver    |
| [EFFEC000 - EFFEFFFF] | Advanced Micro Devices Win XP Graphics Driver    |
| [EFFF0000 - EFFF3FFF] | Advanced Micro Devices Win XP Graphics Driver    |
| [EFFF4000 - EFFF7FFF] | Advanced Micro Devices Win XP Graphics Driver    |
| [EFFF8000 - EFFFBFFF] | Geode LX AES Crypto Driver                       |
| [EFFF0000 - EFFFCFFF] | OHCI Compliant IEEE 1394 Host Controller         |
| [EFFF0000 - EFFFDFDF] | Standard Enhanced PCI to USB Host Controller     |
| [EFFF0000 - EFFF0000] | Standard OpenHCD USB Host Controller             |
| [EFFF0000 - EFFF0000] | Realtek RTL8169/8110 Family Gigabit Ethernet NIC |
| [FEE00000 - FEE0FFFF] | System board                                     |
| [FFFF0000 - FFFFFFFF] | System board                                     |

### C3.<System IRQ Resources>

- (ISA) 0 System timer
- (ISA) 1 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
- (ISA) 3 Communications Port (COM2)
- (ISA) 4 Communications Port (COM1)
- (ISA) 6 Standard Floppy disk controller
- (ISA) 8 System CMOS/real time clock
- (ISA) 9 Microsoft ACPI-Compliant System
- (ISA) 13 Numeric data processor
- (ISA) 14 Primary IDE Channel
- (PCI) 5 GeodeLX Audio Driver (WDM)
- (PCI) 10 Advanced Micro Devices Win XP Graphics Driver
- (PCI) 10 Geode LX AES Crypto Driver
- (PCI) 11 OHCI Compliant IEEE 1394 Host Controller
- (PCI) 11 Realtek RTL8169/8110 Family Gigabit Ethernet NIC
- (PCI) 11 Standard Enhanced PCI to USB Host Controller
- (PCI) 11 Standard OpenHCD USB Host Controller

## Appendix D <Programming GPIO's>

The GPIO can be programmed with the MSDOS debug program using simple IN/OUT commands. The following lines show an example how to do this.

GPIO0...GPIO7 bit0.....bit7

```
-o 4E 87                ;enter configuration
-o 4E 87
-o 4E 2A
-o 4F FD                ;enable GPIO function
-o 4E 07
-o 4F 07                ;enable GPIO configuration
-o 4E F0
-o 4F xx                ;set GPIO as input/output; set '1' for input,'0' for output
-o 4E F1
-o 4F xx                ;if set GPIO's as output, in this register its value can be set
```

Optional :

```
-o 4E F2
-o 4F xx                ; Data inversion register ; '1' inverts the current value of the
                        bits ,'0' leaves them as they are
-o 4E 30
-o 4F 01                ; active GPIO's
```

For further information ,please refer to Winbond W83627HG datasheet.



## Appendix E <Watch Dog timer Setting >

The watchdog timer makes the system auto-reset while it stops to work for a period. The integrated watchdog timer can be setup as system reset mode by program.

### Timeout Value Range

- 1 to 255
- Second or Minute

### Program Sample

Watchdog timer setup as system reset with 10 second of timeout

---

|        |                  |
|--------|------------------|
| 2E, 87 |                  |
| 2E, 87 |                  |
| 2E, 07 |                  |
| 2F, 08 | Logical Device 8 |
| 2E, 30 | Activate         |
| 2F, 01 |                  |
| 2E, F5 | Set as Second*   |
| 2F, 00 |                  |
| 2E, F6 | Set as 5         |
| 2F, 05 |                  |

---

\* Minute: bit 3 = 0; Second: bit 3 = 1

You can select Timer setting in the BIOS, after setting the time options, the system will reset according to the period of your selection.



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## Contact Information

Any advice or comment about our products and service, or anything we can help you please don't hesitate to contact with us. We will do our best to support you for your products, projects and business.

### Taiwan Commate Computer Inc.

|          |  |
|----------|--|
| Address  | 19F., No.94, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City<br>22102, Taiwan   |
| TEL      | +886-2-26963909  |
| FAX      | +886-2-26963911  |
| Website  | <a href="http://www.commell.com.tw">http://www.commell.com.tw</a>  |
| E-Mail   | <a href="mailto:info@commell.com.tw">info@commell.com.tw</a> (General Information)<br><a href="mailto:tech@commell.com.tw">tech@commell.com.tw</a> (Technical Support) |
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