

LE-366

AMD Geode™

LX800 3.5" Embedded Board

User's Manual



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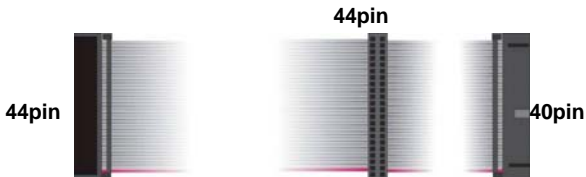
Packing List

Please check the package before you starting setup the system.

Hardware:

LE-366 series motherboard x 1

Cable Kit:



44-pin ATA33 IDE Cable x 1



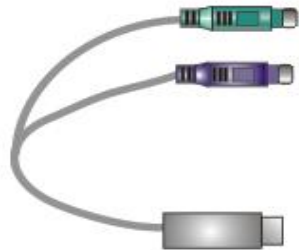
Floppy Cable x 1



DC_IN Power Cable x 1



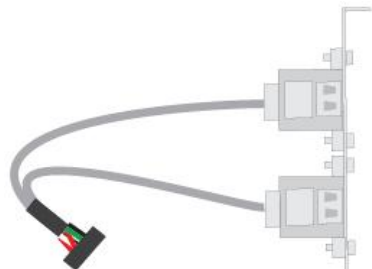
Power Cable x 1



PS2 keyboard & mouse cable



RS232 Cable x 1



USB Cable x 1

Printed Matters:

User's Manual x 1

Driver CD x 1

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Chapter 1 <Introduction>

1.1 <Product Overview>

LE-366 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, fan-less 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 fan-less design. Without any cooling fan onboard, it can avoid the heat problem when the cooler failed in accident.

Onboard TFT/LVDS LCD interface

Based on the AMD Geode LX800@500Mhz of integrated graphics and 18-bit LVDS 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 12V input. User's can easily connect the board with an adapter without the huge power supply.

1.2 <Product Specification>

General Specification

| | |
|-----------------|--|
| Form Factor | 145 mm x 102 mm (5.7" x 4") |
| CPU | Up to AMD Geode LX 800 Processor |
| Memory | One So-DIMM slot support DDR 266/333/400 MHz SDRAM up to 1GB |
| Chipset | AMD Geode CS5536 |
| BIOS | Phoenix-Award 4Mb PnP Flash |
| Green Function | ACPI 1.0 and APM 1.2 compliant |
| Watchdog Timer | PIT (Programmable Interval Timer) with 3 channels |
| Real Time Clock | AMD Geode CS5536 built in RTC with Lithium |
| Enhanced IDE | UDMA ATA 33 ATA IDE connection |

Multi-I/O Port

| | |
|-------------|--|
| Chipset | AMD Geode CS5536+Winbond W83627HG |
| Serial Port | 1 external RS-232 port (COM1) 1 internal RS-232/422/485 port (COM2) |
| USB Port | 2 external USB 2.0 ports 2 internal USB 2.0 ports |
| Floppy Port | One slim type Floppy port |
| K/B & Mouse | 1 PS 2 port |
| GPIO | One 12-pin Digital I/O connector with 8-bit programmable I/O interface |

VGA Display Interface

| | |
|--------------|---|
| Chipset | Built in Geode LX Processor High performance 2D graphics controller |
| Memory | Shared system memory up to 4MB |
| Frame Buffer | Up to 256MB shared with system memory |
| Display Type | Support 1920x1440 in CRT mode and 1600x1200 in TFT mode VESA 1.1 and 2.0 VIP/VDA support |
| Connector | External DB15 female connector on rear I/O panel Onboard 30-pin LVDS connector |

Ethernet Interface

| | |
|------------|---|
| Controller | 1 x Realtek RTL8110S-32 Gigabit Ethernet controller |
| Type | Triple speed 10/100/1000Base-T Auto-switching Fast Ethernet 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 |

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| | |
|-----------|---|
| Connector | External Audio phone jack for Line-out and MIC-in. Onboard audio connector with pin header |
|-----------|---|

Expansive Interface

| | |
|-----|--|
| PCI | 1 Mini-PCI slot V2.2 33/66 MHz 1 Compact Flash (optional) |
|-----|--|

Power and Environment

| | |
|-------------------|---|
| Power Requirement | 12V DC Jack power connector |
| Temperature | Operating temperature with 0°C ~60°C (32°F ~ 140°F) Storage temperature with 20°C ~ 80°C (-68°F ~ 176°F) |

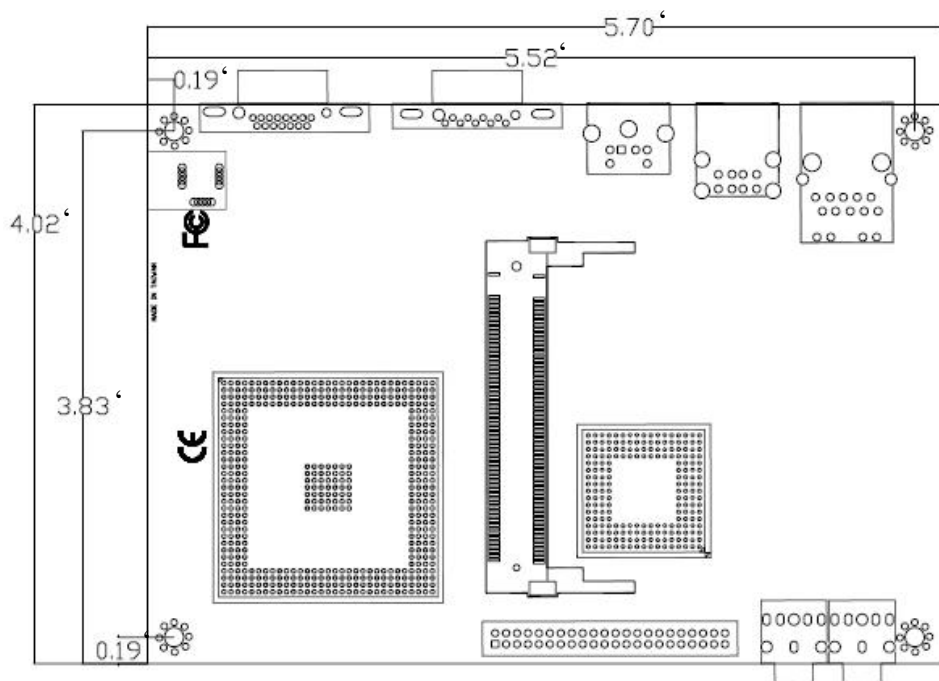
Ordering Code

| | |
|---------------|--|
| LE-366 | AMD LX800 processor Mini-ITX with onboard VGA, GigaLAN, RS232, USB2.0, Audio, LCD and DDR DIMM |
|---------------|--|

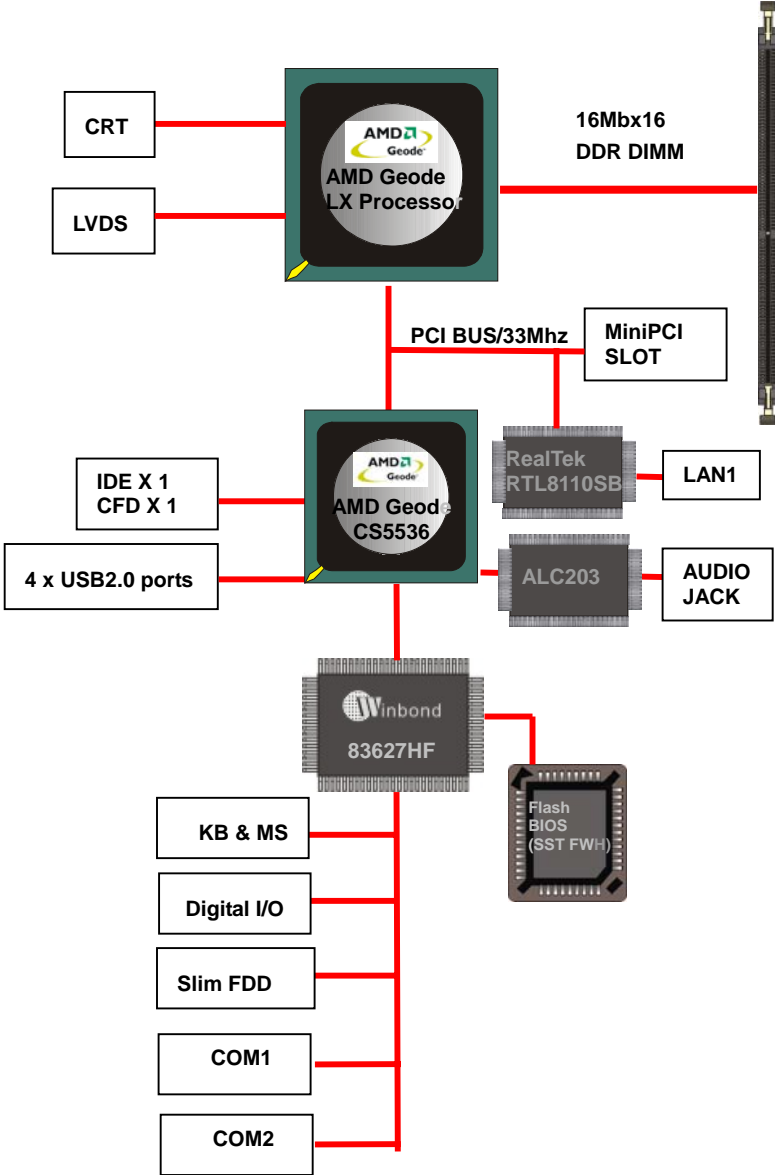
The specifications may be different as the actual production.

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

1.3 <Mechanical Drawing>

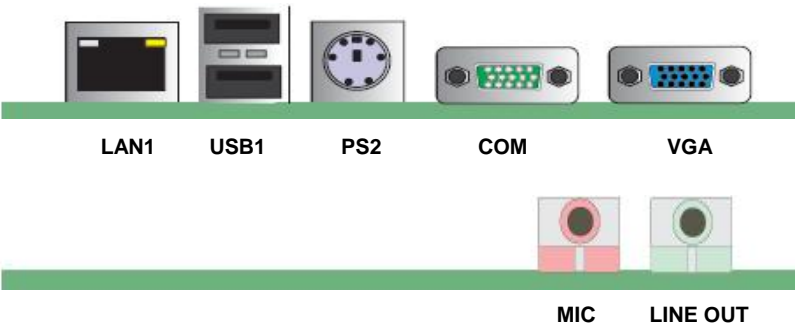
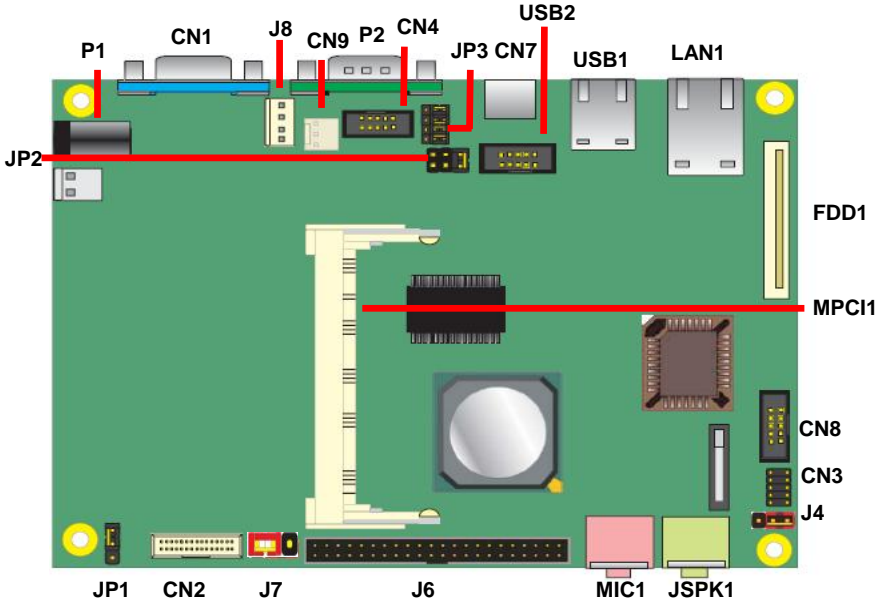


1.4 <Block Diagram>



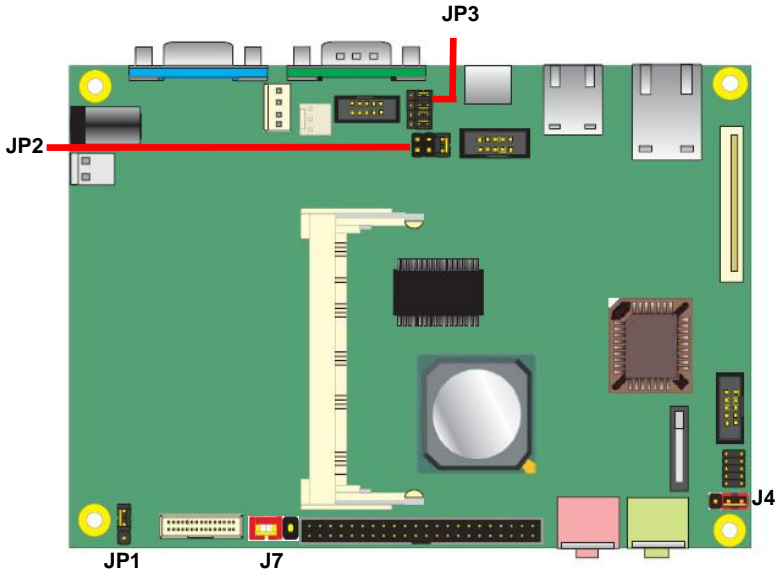
Chapter 2 <Hardware Setup>

2.1<Connector Location>



<Jumper Reference>

| Jumper | Function |
|--------|---|
| JP1 | LVDS Panel Voltage Selection (+5V / + 3.3V) |
| JP2 | COM2 RS232/422/485 Select |
| JP3 | COM2 RS232/422/485 Select |
| J4 | Clear CMOS Selection |
| J7 | CFD Master/Slave Selection |



| | JP2 | JP3 |
|--------|-----|-----|
| RS-232 | | |
| RS-485 | | |
| RS-422 | | |

2.1.1 <Connector Reference>

| Connector | Function | Remark |
|-----------|---|----------|
| CN1 | VGA Display / Audio Connector | Standard |
| CN2 | Front Audio Connector LVDS Connector | Slim |
| CN3 | Front Panel Connector | Slim |
| CN4 | COM2 RS-232 / RS-422 / RS-485 Connector | Standard |
| CN7 | PS2 Keyboard / Mouse Connector | Standard |
| CN8 | GPIO Connector | Standard |
| CN9 | SYSTEM Fan Connector | Standard |
| J6 | EIDE Connector | Standard |
| J8 | Little 4-Pin Power connector | Standard |
| USB2 | USB2 Connector | Standard |
| FDD1 | Slim Floppy Connector | Standard |
| P2 | COM1 RS-232 Connector | Standard |
| LAN1 | Gigabit LAN / USB Connector | Standard |
| MPCI1 | Mini-PCI Slot | Standard |
| CFD1 | Compact Flash Slot | Standard |
| J1 | SO-DIMM Slot | Slim |
| P1 | 12V DC Connector | Standard |
| MIC1 | Microphone Jack | Standard |
| JSPK1 | Speaker out Jack | Standard |

2.1.2 <External Connector>

| Connector | Function | Remark |
|-----------|--|----------|
| LAN1 | 1 external RJ – 45 ports with LED | Standard |
| USB1 | 2 external USB 2.0 ports 2 internal USB 2.0 ports | Standard |
| PS2 | 1 PS / 2 ports | Standard |
| COM | 1 external RS – 232 port (COM1) 1 internal RS – 232 / 422 / 485 port (COM2) | Standard |
| VGA | 1 VGA port | Standard |
| AUDIO | 2 external jack for MIC – In / Line – Out | Standard |

2.2 <CPU and Memory Setup>

2.2.1 <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 fan-less system.

2.2.2 <Memory Setup>

The board supports one 200-pin DDR266/333/400 SDRAM up to 1GB of capacity, and supports non-ECC unbuffered memory modules.

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: J4

Type: Onboard 3-pin jumper

| J4 | Mode |
|-----|------------------|
| 1-2 | Normal Operation |
| 2-3 | Clear CMOS |

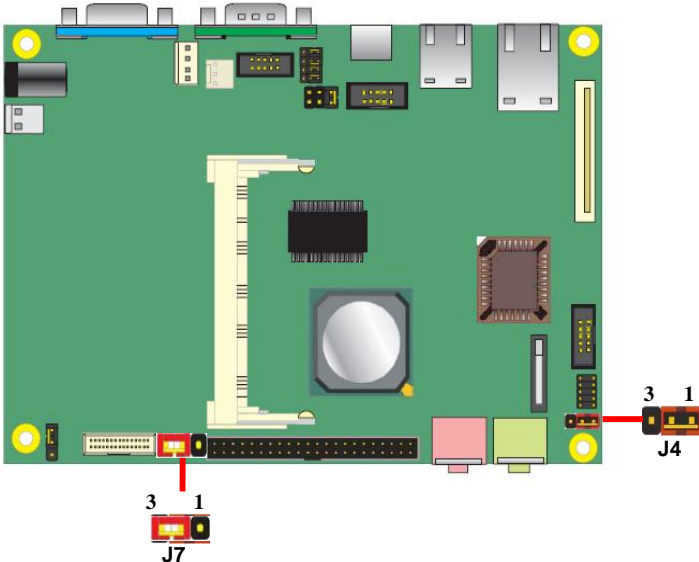
Default setting

Jumper: J7

Type: Onboard 3-pin jumper

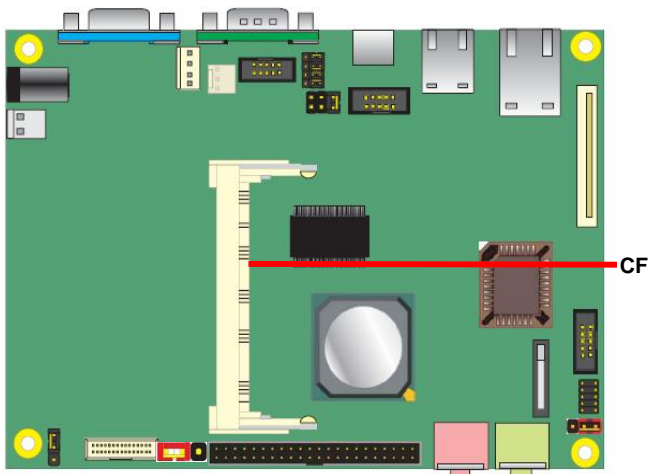
| J7 | Mode |
|-----|--------|
| 1-2 | Master |
| 2-3 | Slave |

Default setting



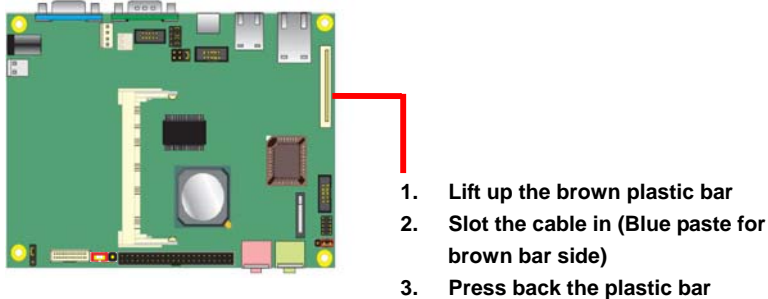
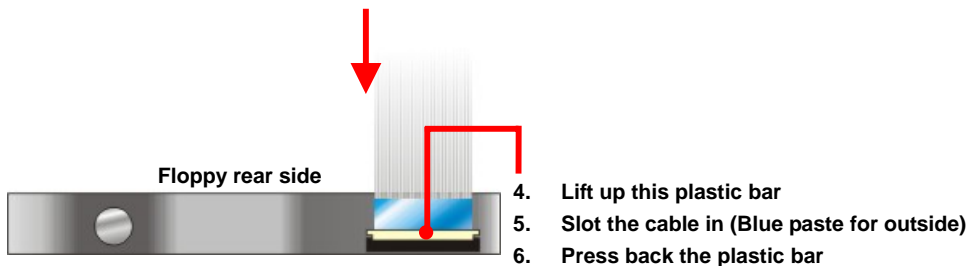
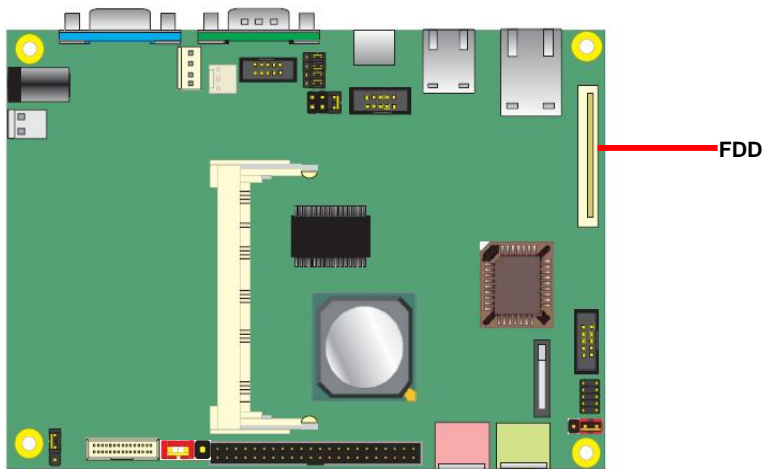
2.3 <Enhanced IDE & CF Interface>

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.



2.4 <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.



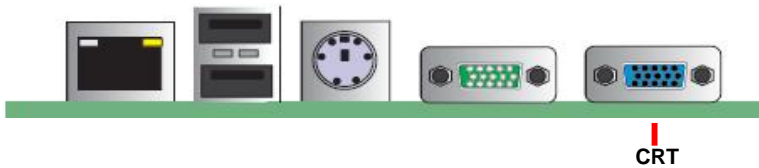
2.8 <Onboard Display Interface>

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

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

2.4.1 <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.



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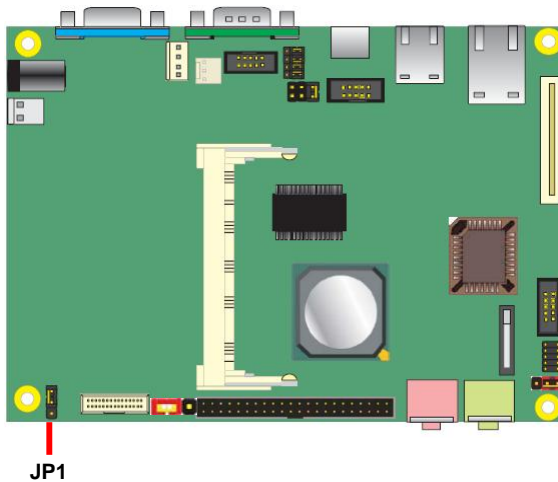
2.4.2 <Digital Display>

The board provides one 30-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: **JP1**

Type: 3-pin Power select Header

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



Connector: **CN_LVDS (CN2) (for 18 bit Single channel LVDS panel)**

Type: 30-pin header (15 x 2 pitch 2.0 mm)

Connector model: Hirose DF13-40DP-1.25V

| Pin | Assignment | Pin | Assignment |
|-----|-----------------|-----|-----------------|
| 1 | BKL_EN | 2 | BKL_CTL |
| 3 | LVDS_VCC | 4 | GND |
| 5 | LVDS_CH1_CLK- | 6 | LVDS_CH1_CLK+ |
| 7 | LVDS_VCC | 8 | GND |
| 9 | LVDS_CH1_DATA0- | 10 | LVDS_CH1_DATA0+ |
| 11 | LVDS_CH1_DATA1- | 12 | LVDS_CH1_DATA1+ |
| 13 | LVDS_CH1_DATA2- | 14 | LVDS_CH1_DATA2+ |
| 15 | N/C | 16 | N/C |
| 17 | N/C | 18 | N/C |
| 19 | N/C | 20 | N/C |
| 21 | N/C | 22 | N/C |
| 23 | N/C | 24 | N/C |
| 25 | LVDS_DDCPDATA | 26 | LVDS_DDCPCLK |
| 27 | LVDS_VCC | 28 | GND |
| 29 | N/C | 30 | N/C |

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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 **LE-366, LCD panel** and the **backlight inverter**.

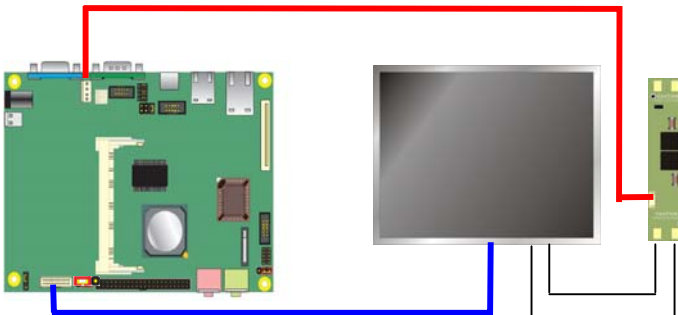


2. Please check the datasheet of the panel to see the voltage of the panel, and set the jumper JP1 to +5V or +3.3V.

3. You would need a LVDS type cable.

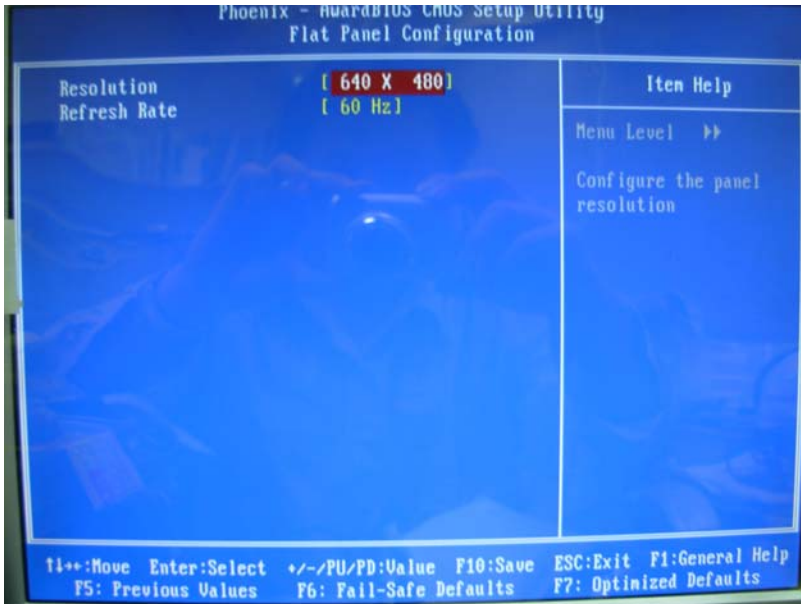


4. To connect all of the devices well.



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



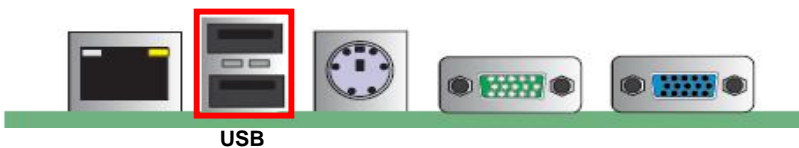
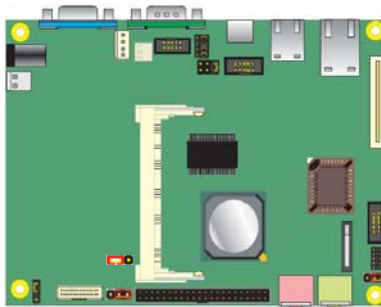
The panel type mapping is list below:

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

<USB2.0 Interface>

Based on AMD CS5536, the board provides 2 x USB2.0 ports. The USB2.0 interface provides up to 480Mbps of transferring rate.

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



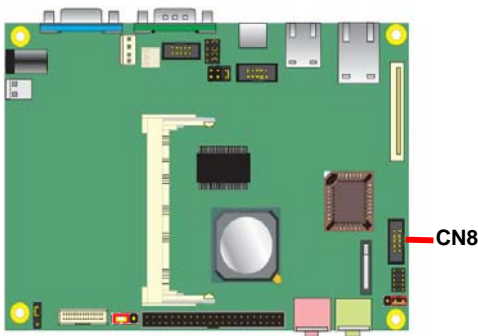
2.5 <GPIO Interface>

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: **CN8**

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

| Pin | Assignment |
|-----|------------|
| 1 | GPI |
| 2 | GPO |
| 3 | GPI |
| 4 | GPO |
| 5 | GPI |
| 6 | GPO |
| 7 | GPI |
| 8 | GPO |
| 9 | 5V |
| 10 | GND |



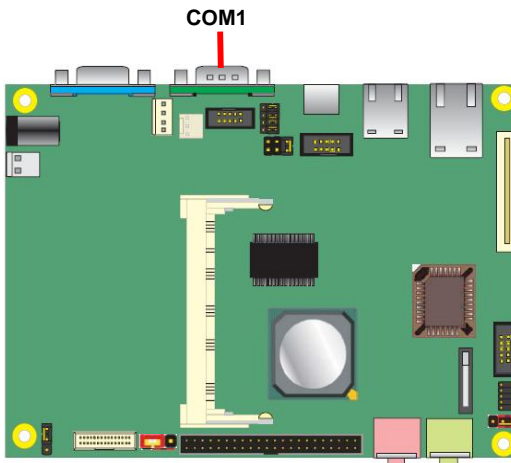
2.6 <Serial Port Jumper Setting >

The COM1 RS232 serial port, with jumper selectable RS232/422/485 for CN_COM2

Connector: **COM1**

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

| Pin | Assignment | Pin | Assignment |
|-----|------------|-----|------------|
| 1 | DCD1# | 2 | RXD1 |
| 3 | TXD1 | 4 | DTR1# |
| 5 | GND | 6 | DSR1# |
| 7 | RTS1# | 8 | CTS1# |
| 9 | RI1# | | |



2.7 <Power and Fan Connector>

The **LE-366** 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.

2.6.1 <Power Input>

Connector: **ATX**

Type: 20-pin ATX power connector

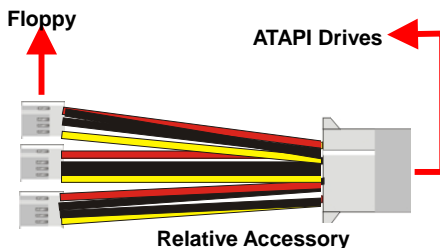
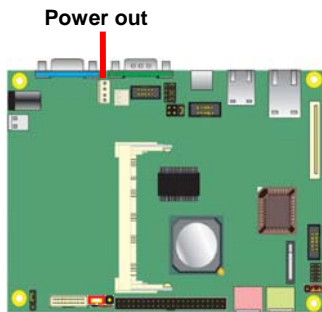
| PIN assignment | | | |
|----------------|------|----|-------|
| 1 | 3.3V | 11 | 3.3V |
| 2 | 3.3V | 12 | -12V |
| 3 | GND | 13 | GND |
| 4 | 5V | 14 | PS_ON |
| 5 | GND | 15 | GND |
| 6 | 5V | 16 | GND |
| 7 | GND | 17 | GND |
| 8 | 5V | 18 | -5V |
| 9 | 5V | 19 | 5V |
| 10 | 12V | 20 | 5V |

2.6.2 <Power Output>

Connector: **DC_OUT**

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

| Pin | Assignment |
|-----|------------|
| 1 | 12V |
| 2 | GND |
| 3 | GND |
| 4 | 5V |



2.7.3 <Fan Connector>

Connector: **SYSFAN**

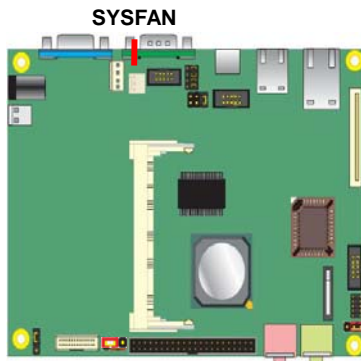
Type: 3-pin fan wafer connector

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

Connector: **DC_IN**

Type: 2-pin DC power connector

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



2.8 <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: **CN3**

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

| Pin | Assignment | Pin | Assignment |
|-----|------------|-----|--------------|
| 1 | GND | 2 | Power Switch |
| 3 | BUZZER- | 4 | BUZZER+ |
| 5 | HD_LED- | 6 | HD_LED+ |
| 7 | POWER LED- | 8 | Power LED+ |
| 9 | GND | 10 | Reset |

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Chapter 3 <BIOS Setup>

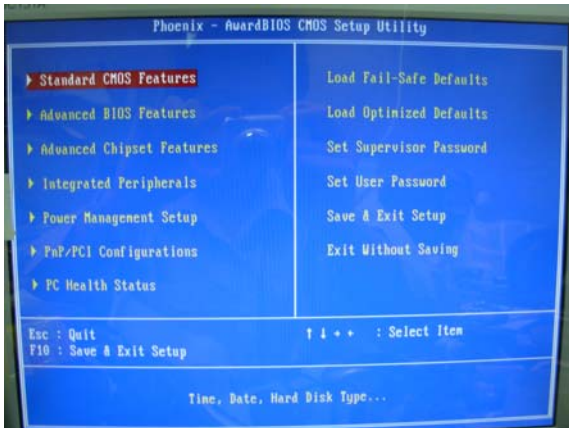
The motherboard uses the Award BIOS for the system configuration. The Award BIOS in the single board computer is a customized version of the industrial standard BIOS for IBM PC AT-compatible computers. It supports Intel x86 and compatible CPU architecture based processors and computers. The BIOS provides 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 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: **J6**

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



| Pin | Assignment | Pin | Assignment |
|-----|------------|-----|------------|
| 1 | IDERST# | 2 | GND |
| 3 | PID7 | 4 | PID8 |
| 5 | PID6 | 6 | PID9 |
| 7 | PID5 | 8 | PID10 |
| 9 | PID4 | 10 | PID11 |
| 11 | PID3 | 12 | PID12 |
| 13 | PID2 | 14 | PID13 |
| 15 | PID1 | 16 | PID14 |
| 17 | PID0 | 18 | PID15 |
| 19 | GND | 20 | N/C |
| 21 | PDREQ | 22 | GND |
| 23 | PIOR# | 24 | GND |
| 25 | PIOR# | 26 | GND |
| 27 | PRDY | 28 | ICS16# |
| 29 | PACK# | 30 | GND |
| 31 | PIRQ14 | 32 | N/C |
| 33 | PPDA1 | 34 | ATA66_DET |
| 35 | PPDA0 | 36 | PPDA2 |
| 37 | PPCS1# | 38 | PPCS3# |
| 39 | N/C | 40 | GND |
| 41 | +5V | 42 | +5V |
| 43 | GND | 44 | N/C |

A.2 <Floppy Port>

Connector: **FDD1**

Type: 26-pin connector

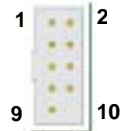


| Pin | Assignment | Pin | Assignment |
|-----|------------|-----|------------|
| 1 | VCC | 2 | INDEX# |
| 3 | VCC | 4 | DRV_SEL# |
| 5 | VCC | 6 | DSK_CH# |
| 7 | N/C | 8 | N/C |
| 9 | N/C | 10 | MOTOR# |
| 11 | N/C | 12 | DIR# |
| 13 | DENSEL# | 14 | STEP# |
| 15 | GND | 16 | WDATA# |
| 17 | GND | 18 | WGATE# |
| 19 | GND | 20 | TRACK# |
| 21 | GND | 22 | WOROT# |
| 23 | GND | 24 | RDATA# |
| 25 | GND | 26 | SIDE# |

A.3 <Serial Port>

Connector: **COM2 (CN4)**

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

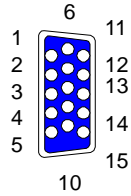


| Pin | Assignment | Pin | Assignment |
|-----|--------------------------|-----|-----------------|
| 1 | DCD2# (422TXD-/485DATA-) | 2 | RXD2 (422RXD+) |
| 3 | TXD2 (422TXD+/485DATA+) | 4 | DTR2# (422RXD-) |
| 5 | GND | 6 | DSR2# |
| 7 | RTS2# | 8 | CTS2# |
| 9 | RI2# | | |

A.4 <CRT Port>

Connector: **CRT**

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

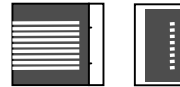


| Pin | Description | Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|-----|-------------|
| 1 | RED | 6 | Ground | 11 | N/C |
| 2 | GREEN | 7 | Ground | 12 | CRT_DDCDATA |
| 3 | BLUE | 8 | Ground | 13 | HSYNC |
| 4 | N/C | 9 | VGA_VCC | 14 | VSYNC |
| 5 | Ground | 10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

A.5 <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.6 < USB Port >

Connector: **CN_USB2**

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

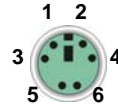


| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1 | USB_VCC | 2 | GND |
| 3 | Data0- | 4 | GND |
| 5 | Data0+ | 6 | Data1+ |
| 7 | Ground | 8 | Data1- |
| 9 | Ground | 10 | USB_VCC |

A.7 <PS/2 Keyboard & Mouse Port>

Connector: **Mouse / Keyboard**

Type: 6-pin Mini-DIN connector on bracket



| Pin | Assignment | Pin | Assignment |
|-----|------------|-----|------------|
| 1 | KB_DATA | 2 | MS_DATA |
| 3 | GND | 4 | KB_VCC |
| 5 | KB_CLK | 6 | MS_CLK |

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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 ship 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-star 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 |

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| | |
|-----------------------|--|
| [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 - EFFF0FFF] | OHCI Compliant IEEE 1394 Host Controller |
| [EFFF0000 - EFFF0FFF] | Standard Enhanced PCI to USB Host Controller |
| [EFFF0000 - EFFF0FFF] | Standard OpenHCD USB Host Controller |
| [EFFF0000 - EFFF0FFF] | 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.

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