

LE-363

3.5 inch Embedded Motherboard

User's Manual

Edition 1.0

2005/9/16



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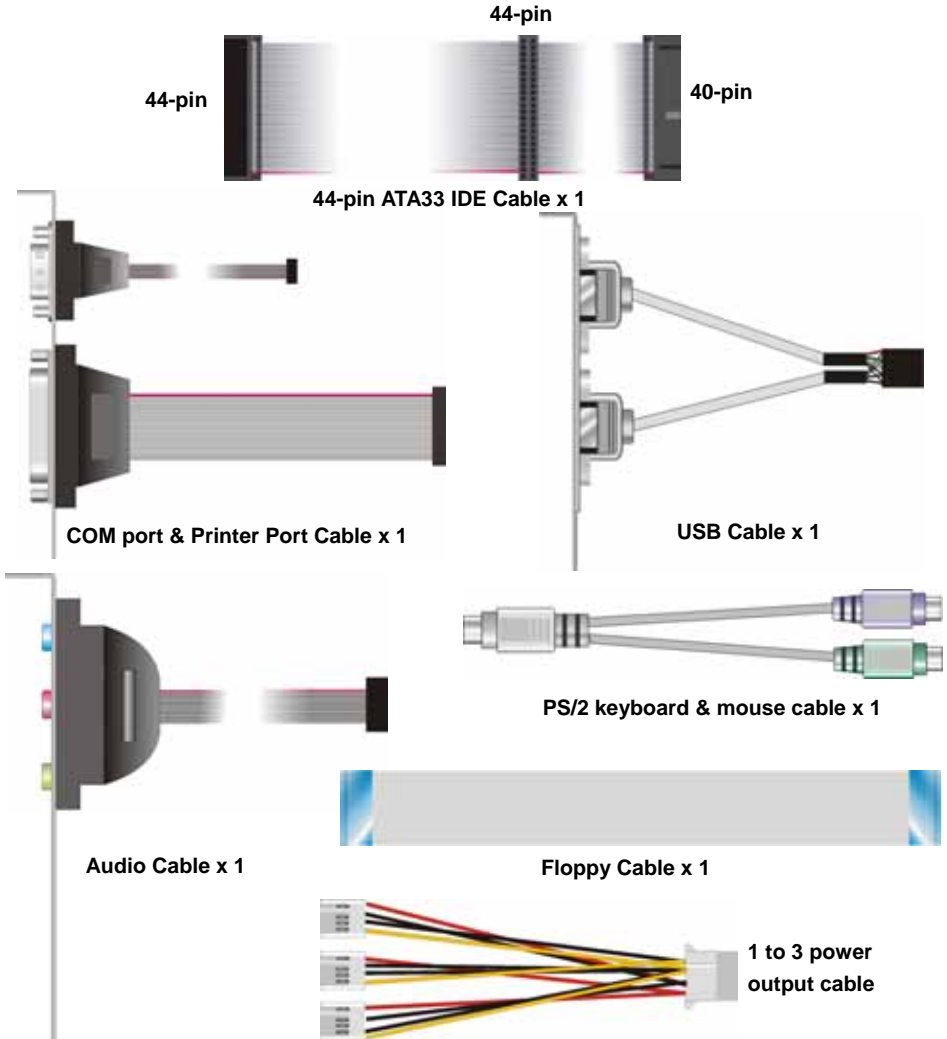
Packing List

Please check the package before you starting setup the system

Hardware:

LE-363 little board x 1

Cable Kit:



Other Accessories:

Divers CD (including User's Manual) x 1

Printed User's Manual x 1

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Chapter 1 <Introduction>

1.1 <Product Overview>

LE-363 is the 3.5 inches embedded motherboard with AMD Geode GX533 platform, with onboard VGA, AC97 audio, dual LAN and DC 12V input interface. Based on the AMD Geode GX533 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 GX533@400MHz processor onboard, it only takes up to 8.4W 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/LVDS LCD interface

Based on the AMD Geode GX533@400Mhz of integrated graphics, the board provides onboard graphics with up to 4/8/12/16 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 PCMCIA card Bus, CF card socket for flash disk with porting embedded OS and up to 512MB of DDR SO-DIMM.

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 | 3.5 inches embedded motherboard |
| CPU | Embedded AMD Geode GX533 400MHz Fanless with heatsink only |
| Memory | 1 x 200-pin DDRSO-DIMM up to 512MB Unbuffered, none-ECC memory supported only |
| Chipset | AMD Geode CS5535 |
| USB Port | Two internal USB1.1 ports |
| BIOS | Phoenix-Award PnP flash BIOS |
| Green Function | Power saving mode includes doze, standby and suspend modes. ACPI version 1.0 and APM version 1.2 compliant |
| Watchdog Timer | System reset programmable watchdog timer |
| Real Time Clock | Chipset built-in RTC with lithium battery |
| Enhanced IDE | One Ultra DMA33 IDE interface supports up to 2 ATAPI devices One 44-pin IDE port onboard |

Multi-I/O Port

| | |
|------------------|--|
| Chipset | WINBOND W83627HF |
| Serial Port | One external RS232 and one internal RS232 |
| Parallel Port | One 26-pin internal parallel 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 |
| Hardware Monitor | Fan speed, CPU temperature and voltage monitoring |

VGA Display Interface

| | |
|--------------|---|
| Chipset | AMD Geode GX533 built-in VGA controller with 2D engine |
| Memory | BIOS selectable up to 4/8/12/16 MB shard with system memory |
| Display Type | CRT, LCD monitor with analog display 18-bit/24-bit LVDS/24-bit TTL with LCD interface |
| Connector | External DB15 female connector on rear I/O panel Onboard 40-pin TTL connector Onboard 40-pin LVDS connector Onboard 5-pin backlight inverter connector |

Solid State Disk Interface

| | |
|---------------|---|
| Compact Flash | 1 x Compact Flash Card Type I socket on solder side |
| DOM | Onboard 44-pin IDE support DOM (Disk On Module) |
| PCMCIA Card | PCMICA Type I/II slot |

Ethernet Interface

| | |
|------------|--|
| Controller | Dual PCI based REALTEK 8100B controller |
| Type | 10Base-T / 100Base-TX, auto-switching Fast Ethernet Full duplex, IEEE802.3U compliant |
| Connector | Two external RJ45 jack on I/O panel |

Audio Interface

| | |
|------------------|----------------------------------|
| Controller | REALTEK ALC201A AC97 codec |
| Output Interface | Line-in, Line-out, CD-in, MIC-in |
| Connector | Onboard 10-pin header |

Expansion Interface

| | |
|----------|--|
| Mini PCI | Onboard Mini PCI socket for Type III (32bit,33Mhz) |
|----------|--|

Power and Environment

| | |
|-------------------|--|
| Power requirement | DC 12V input 1 x DC jack on I/O panel 1 x Onboard 4-pin 12V DC connector |
| Input Voltage | 10.5V ~ 13V |
| Input Current | 12V/0.7A 8.4W (board only) |
| Dimension | 146mm x 101mm (L x W) |
| Temperature | Operating within 0 ~ 60°C (32 ~ 140°F) Storage within -20 ~ 85°C (-4 ~ 185°F) |

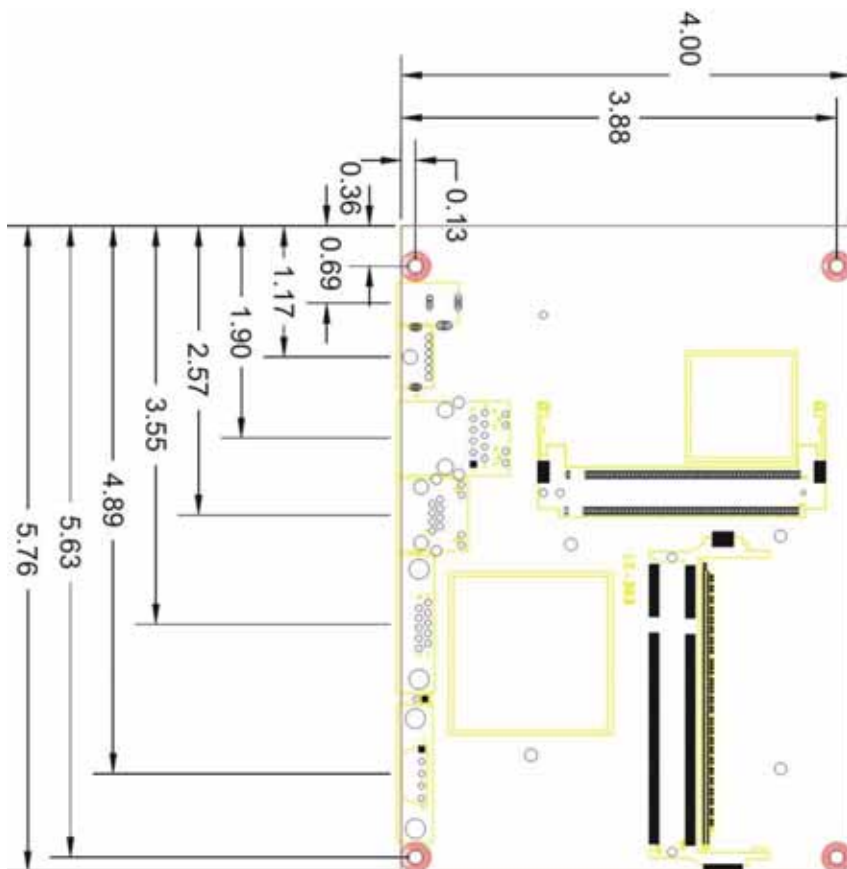
Driver support

| | |
|---------|-----------------------------------|
| Windows | Windows XP/XPe, Win2000 and WinCE |
| Linux | Kernel version 2.4 or later |

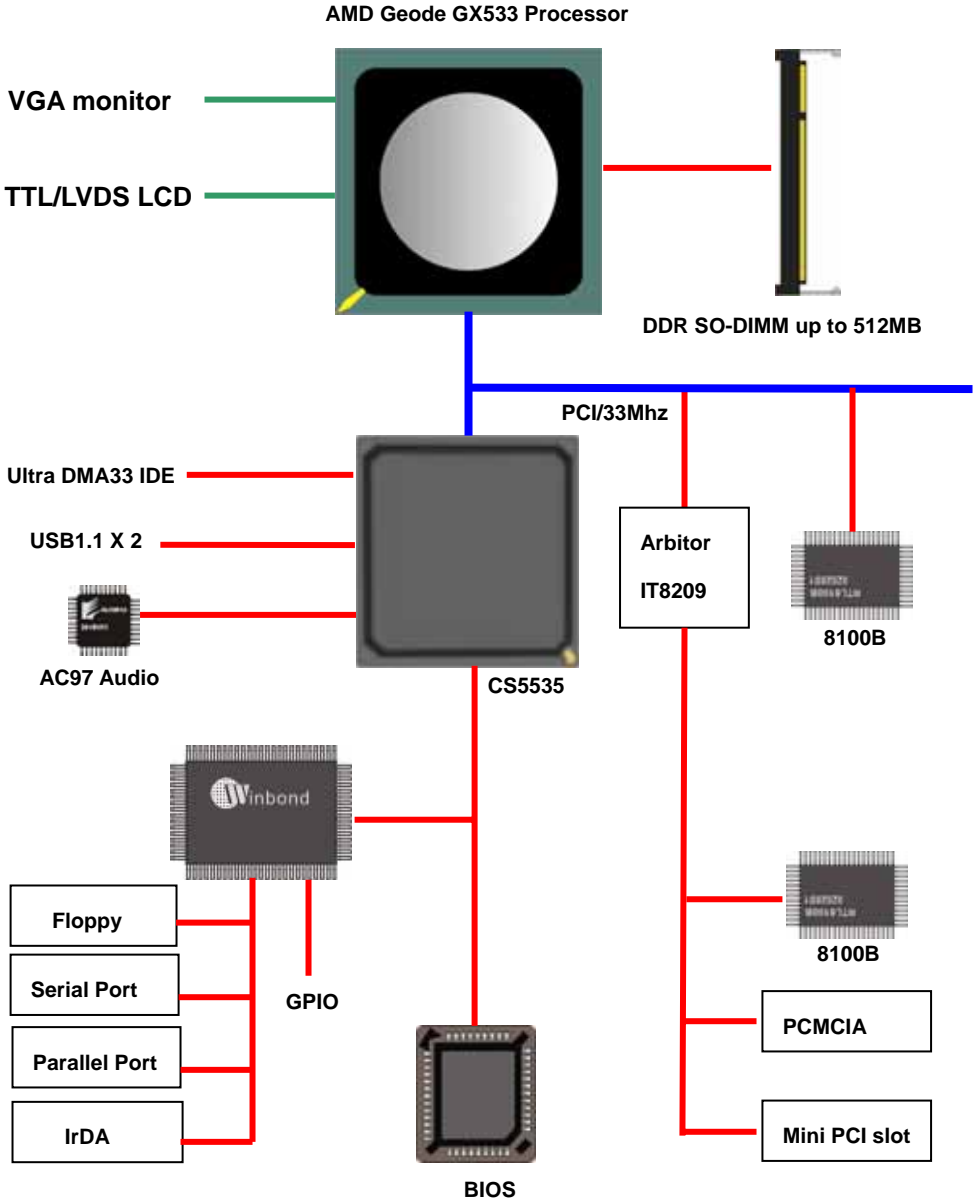
Ordering Code

| | |
|------------|--|
| LE-363P | 3.5 inches embedded motherboard with onboard AMD GX533 400MHz processor, VGA, audio, dual LAN, USB, CF, TTL/LVDS PCMAIC ,Mini PCI , GPIO |
| LE-363-128 | Same as LE-363P and with onboard DDR 128M |

1.3 <Mechanical Drawing>

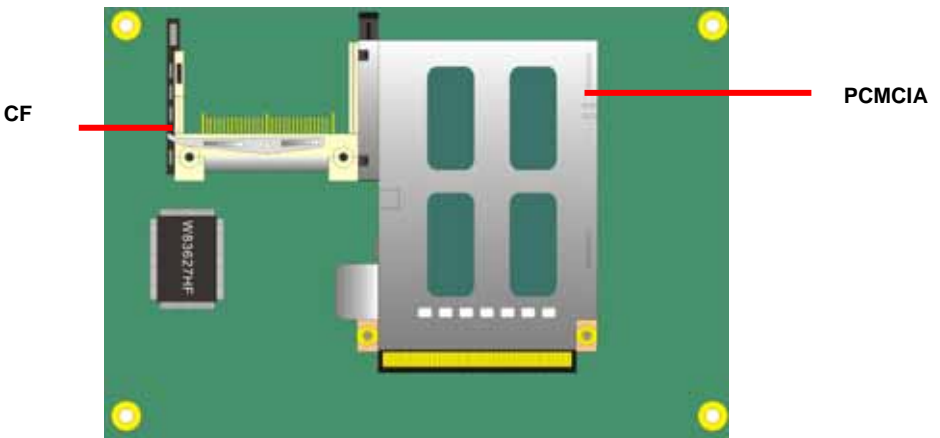
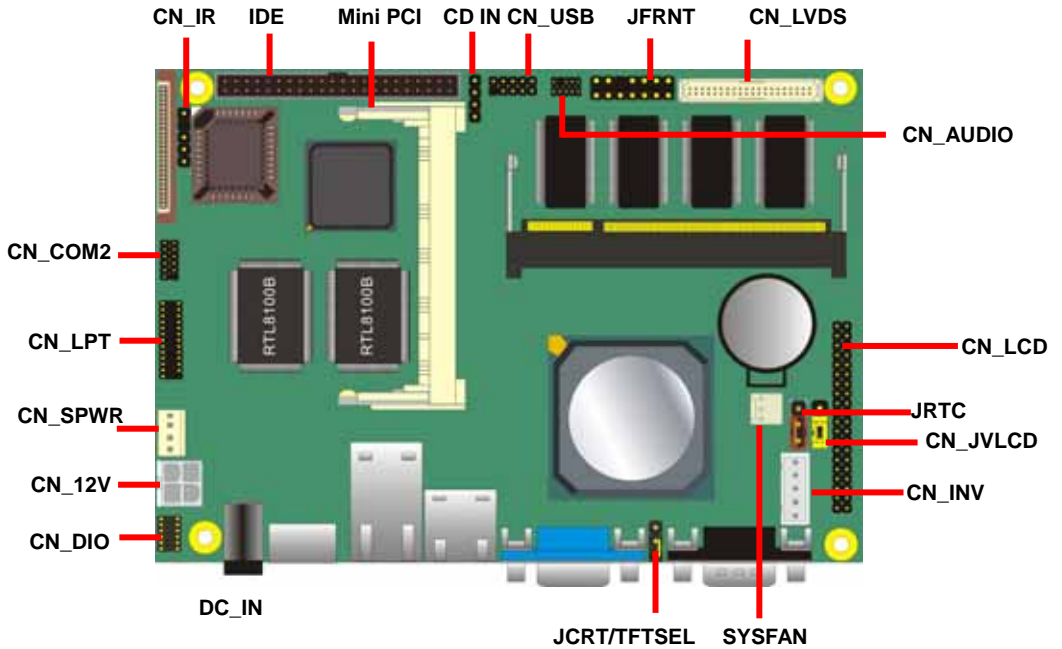


1.4 <Block Diagram>



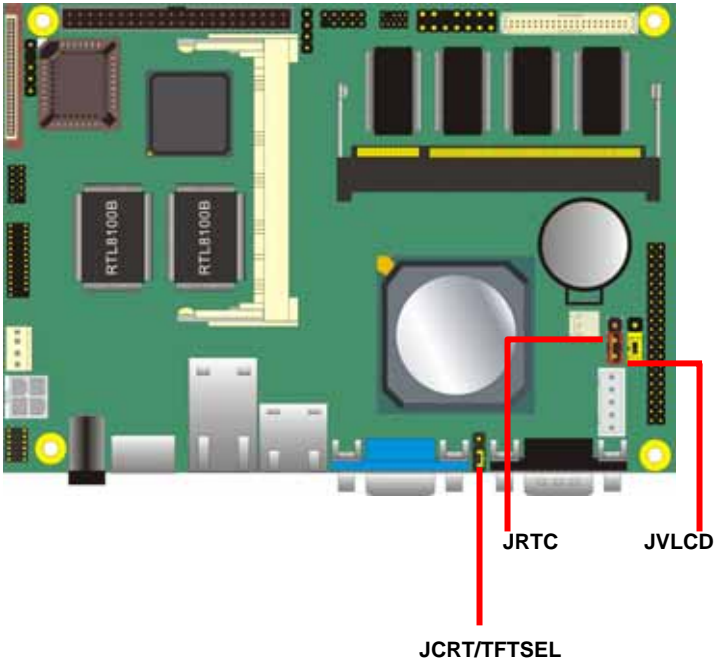
Chapter 2 <Hardware Setup>

2.1 <Connector Location>



2.2 <Jumper Location & Reference>

| Jumper | Function |
|-------------|-----------------------------|
| JRTC | RTC/CMOS Setting |
| JVLCD | LCD Driving Voltage Setting |
| JCRT/TFTSEL | Select CRT/TFT Setting |



2.3 <Connector Reference>

2.3.1 <Internal Connector>

| Connector | Function | Remark |
|-----------|---|----------|
| DIMM | Onboard 200-pin DDR SO-DIMM socket | Standard |
| IDE | 44-pin primary IDE connector | Slim |
| FDD | 26-pin slim type floppy connector | Slim |
| CN_12V | 4-pin power supply connector | Standard |
| CN_AUDIO | 5 x 2-pin audio connector | Standard |
| CDIN | 4-pin CD-ROM audio input connector | Standard |
| CN_DIO | 6 x 2-pin digital I/O connector | Standard |
| CN_USB | 5 x 2-pin USB connector | Standard |
| SYSFAN | 3-pin system cooler fan connector | Standard |
| CN_COM2 | 5 x 2-pin RS232 serial port | Standard |
| CN_IR | 5-pin IrDA connector | Standard |
| CF | Compact Flash Type I socket (Solder Side) | Standard |
| PCMICA | PCMICA Card bus Type I/II slot(Solder Side) | Standard |
| LPT | 26-pin parallel port connector | Standard |
| CN_TTL | 40-pin TTL LCD interface | Standard |
| CN_LVDS | 20-pin LVDS LCD interface | Standard |
| CN_INV | 5-pin LCD backlight inverter connector | Standard |
| CN_SPWR | 4-pin 5V/12V power output connector | Standard |
| JFRNT | 14-pin front panel switch/indicator connector | Standard |

2.3.2 <External Connector>

| Connector | Function | Remark |
|-----------|-------------------------------|----------|
| VGA | DB15 VGA connector | Standard |
| RJ45_1/2 | RJ45 LAN connector | Standard |
| COM1 | Serial port connector | Standard |
| PS2 | PS/2 Keyboard/Mouse connector | Standard |
| DC_IN | DC 12V input jack | Standard |

2.4 <CPU & Memory Setup>

2.4.1 <CPU>

The board integrates AMD Geode GX533 400MHz processor with special design for power appliance. It requires only 8.4W power consumption at most, and is totally designed for fanless system.

2.4.2 <Memory>

Based on AMD GX533 processor with built-in memory controller, the board provides one 200-pin DDR SO-DIMM socket support up to 512MB of capacity. To install the DDR SO-DIMM module, please insert the module into the socket at 45 degree, then press down the module with a click sound.



(1. Insert the DDR SO-DIMM module into the socket at 45 degree)



(2. Press down the module with a click sound)

2.5 <CMOS Setup>

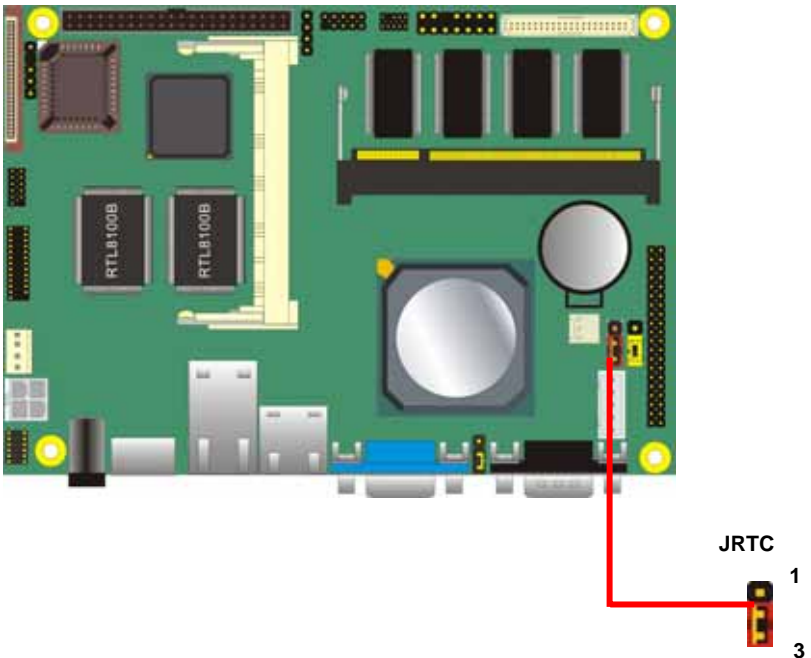
The board's data of CMOS can be setting in BIOS. If the board refuses to boot due to inappropriate CMOS settings, here is how to proceed to clear (reset) the CMOS to its default values.

Jumper: JRTC

Type: Onboard 3-pin jumper

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

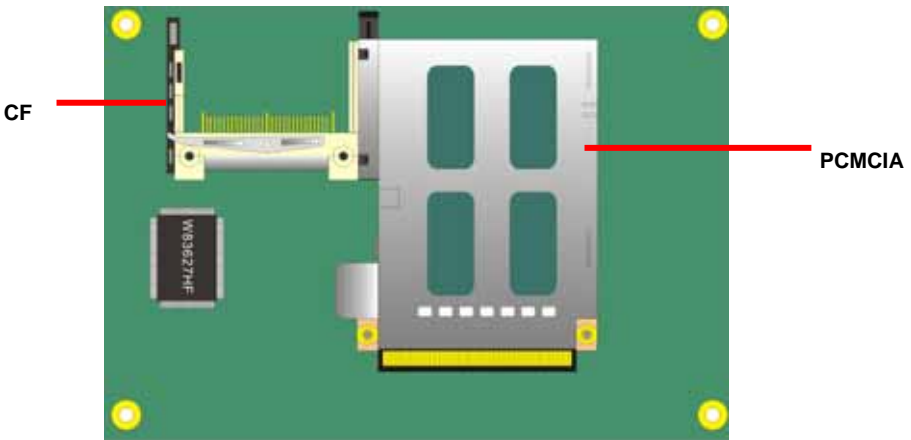
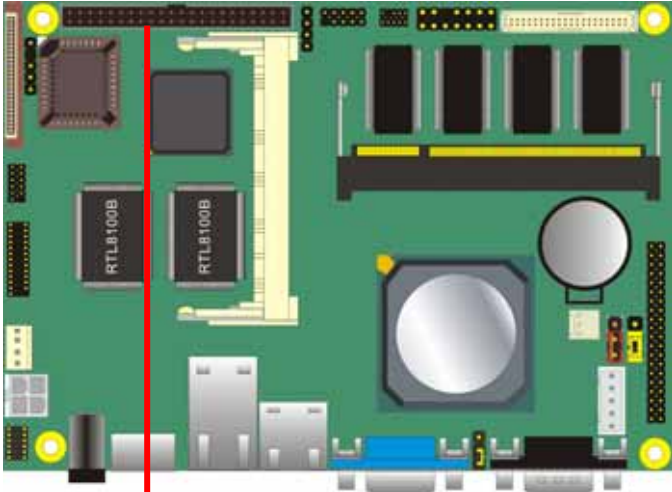
Default setting



2.6 <Enhanced IDE & CF Interface>

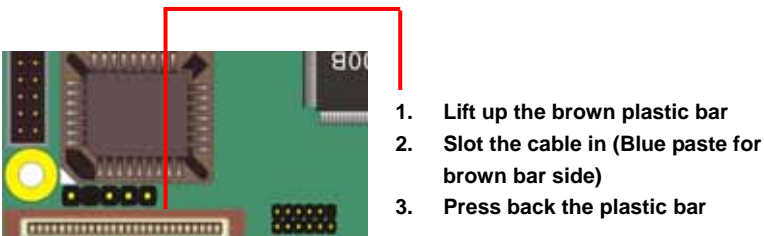
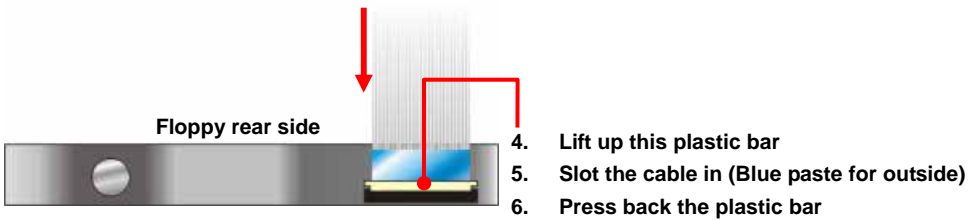
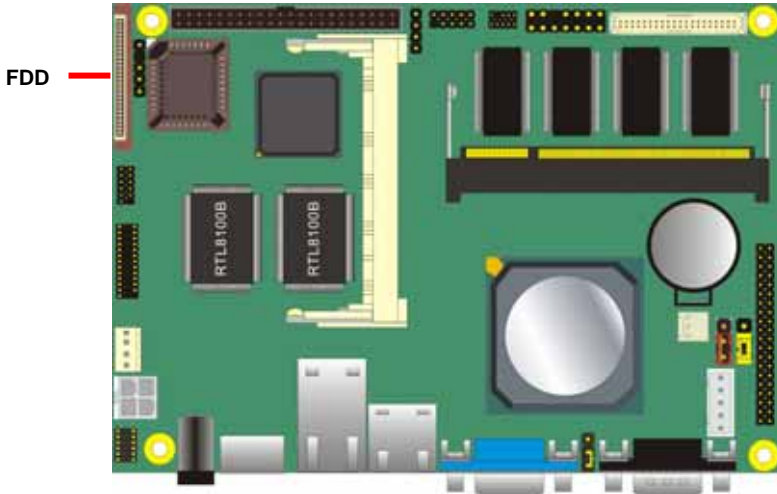
The board supports one **Ultra DMA33 IDE** interface, dual channel for 2 ATAPI devices.

The board also provides a **Compact Flash Type I** socket on secondary IDE channel and one onboard **type I/II PCMCIA** Card Bus on the solder side.



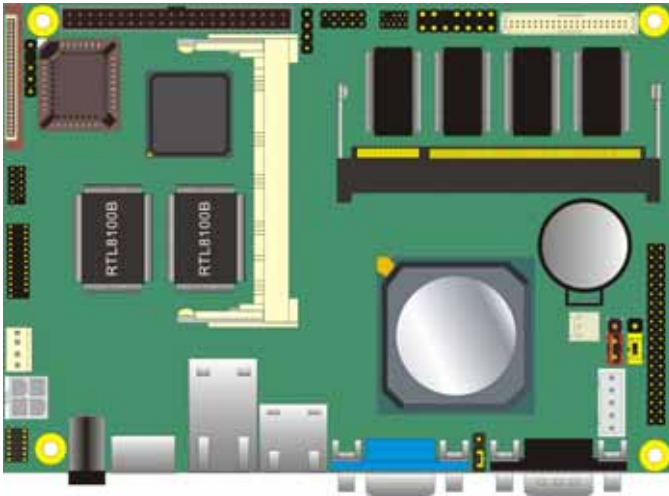
2.7 <Floppy Port>

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



2.8 <Ethernet Interface>

The board integrates two PCI based Ethernet controller with REALTEK 8100B, full compliance with IEEE 802.3u 100Base-T specifications and IEEE 802.3x Full Duplex Flow Control.



RJ45_2 RJ45_1

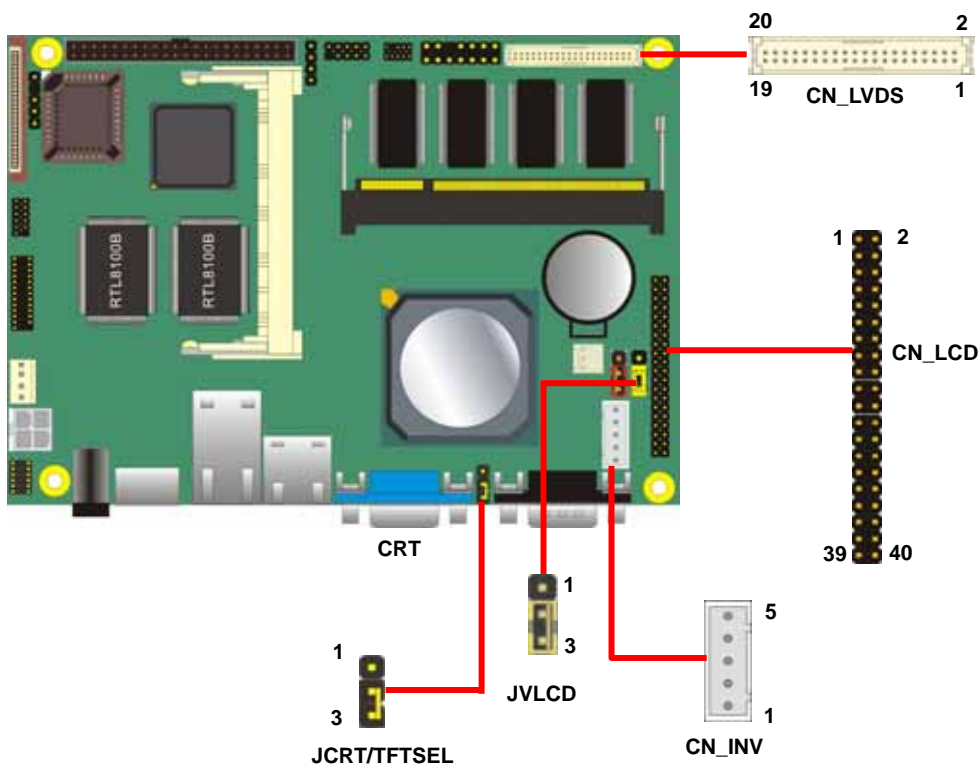
2.9 <Onboard Display Interface>

The board integrates AMD Geode GX533 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



| JCRT/TFTSEL | Mode |
|-----------------|------|
| 1-2 | TFT |
| 2-3 | CRT |
| Default setting | |

In order to setup the LCD display well, please check the jumper setting before you use.

Jumper: **JVLCD**

Type: onboard 3-pin header

| JVOLT | Mode |
|-------|-------|
| 1-2 | +5V |
| 2-3 | +3.3V |

Default setting

Connector: **CN_INV**

Type: onboard 5-pin header

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

Jumper: **JCRT/TFTSEL**

Type: onboard 3-pin header

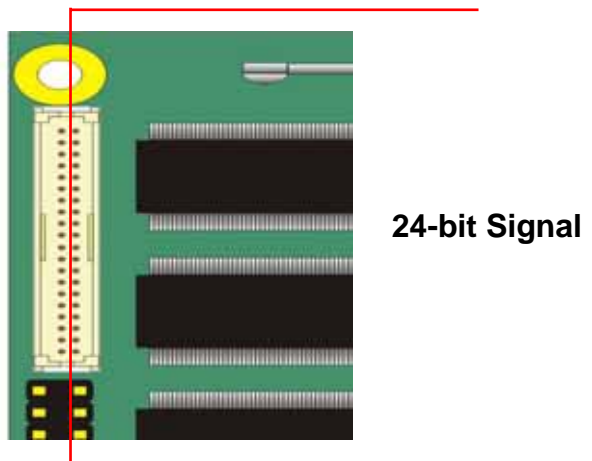
| JCRT/TFTSEL | Description |
|-------------|-------------|
| 1 | VCC |
| 2 | VGASEL |
| 3 | Ground |

Connector: **CN_LVDS (for 24bit Signal 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 | LCDVCC | 1 | LCDVCC |
| 4 | GND | 3 | GND |
| 6 | NC | 5 | BTX0- |
| 8 | NC | 7 | BTX0+ |
| 10 | GND | 9 | GND |
| 12 | NC | 11 | BTX1- |
| 14 | NC | 13 | BTX1+ |
| 16 | GND | 15 | GND |
| 18 | NC | 17 | BTX2- |
| 20 | NC | 19 | BTX2+ |
| 22 | GND | 21 | GND |
| 24 | NC | 23 | BTX3- |
| 26 | NC | 25 | BTX3+ |
| 28 | GND | 27 | GND |
| 30 | NC | 29 | BTXCK- |
| 32 | NC | 31 | BTXCK+ |
| 34 | GND | 33 | GND |
| 36 | N/C | 35 | N/C |
| 38 | N/C | 37 | N/C |
| 40 | N/C | 39 | N/C |



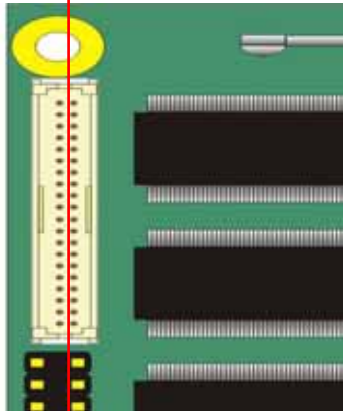
Connector: **CN_LVDS (for 18bit Signal channel LVDS panel)**

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 | LCDVCC | 1 | LCDVCC |
| 4 | GND | 3 | GND |
| 6 | ATX0- | 5 | NC |
| 8 | ATX0+ | 7 | NC |
| 10 | GND | 9 | GND |
| 12 | ATX1- | 11 | NC |
| 14 | ATX1+ | 13 | NC |
| 16 | GND | 15 | GND |
| 18 | ATX2- | 17 | NC |
| 20 | ATX2+ | 19 | NC |
| 22 | GND | 21 | GND |
| 24 | ATXCK0- | 23 | NC |
| 26 | ATXCK1+ | 25 | NC |
| 28 | GND | 27 | GND |
| 30 | N/C | 29 | NC |
| 32 | N/C | 31 | NC |
| 34 | GND | 33 | GND |
| 36 | N/C | 35 | N/C |
| 38 | N/C | 37 | N/C |
| 40 | N/C | 39 | N/C |

18-bit Signal



Connector: **CN_LCD**

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

| Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|
| 1 | ENAVDD | 2 | ENBKL |
| 3 | GND | 4 | GND |
| 5 | LCDVCC | 6 | LCDVCC |
| 7 | GND | 8 | GND |
| 9 | FPD0 | 10 | FPD1 |
| 11 | FPD2 | 12 | FPD3 |
| 13 | FPD4 | 14 | FPD5 |
| 15 | FPD6 | 16 | FPD7 |
| 17 | FPD8 | 18 | FPD9 |
| 19 | FPD10 | 20 | FPD11 |
| 21 | FPD12 | 22 | FPD13 |
| 23 | FPD14 | 24 | FPD15 |
| 25 | FPD16 | 26 | FPD17 |
| 27 | FPD18 | 28 | FPD19 |
| 29 | FPD20 | 30 | FPD21 |
| 31 | FPD22 | 32 | FPD23 |
| 33 | N/C | 34 | N/C |
| 35 | FPCLK | 36 | VSYNC |
| 37 | RM | 38 | HSYNC |
| 39 | GND | 40 | GND |

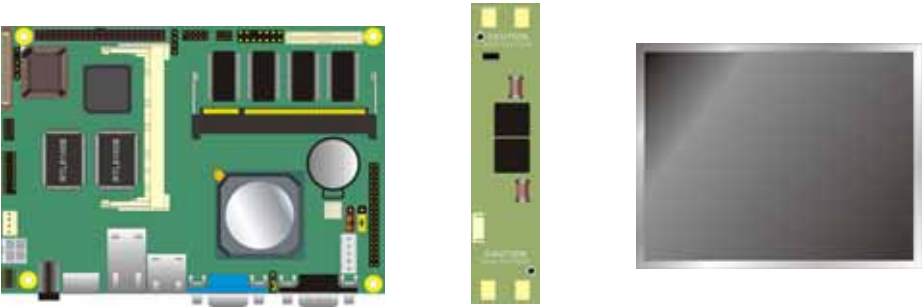
To setup the LCD, you need the component below:

1. A panel (support up to 18-bit/24-bit color) with TTL or 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-363**, **LCD panel** and the **backlight inverter**.



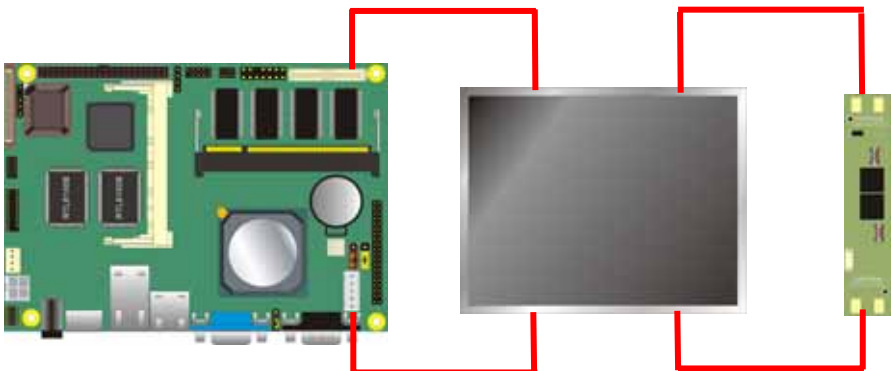
2. Please check the datasheet of the panel to see the voltage of the panel, and set the jumper **JVLCD** to +5V or +3.3V.
3. If your panel is for TTL interface, you would need a TTL type cable.



4. IF your panel is for LVDS interface, you would need a LVDS type cable.

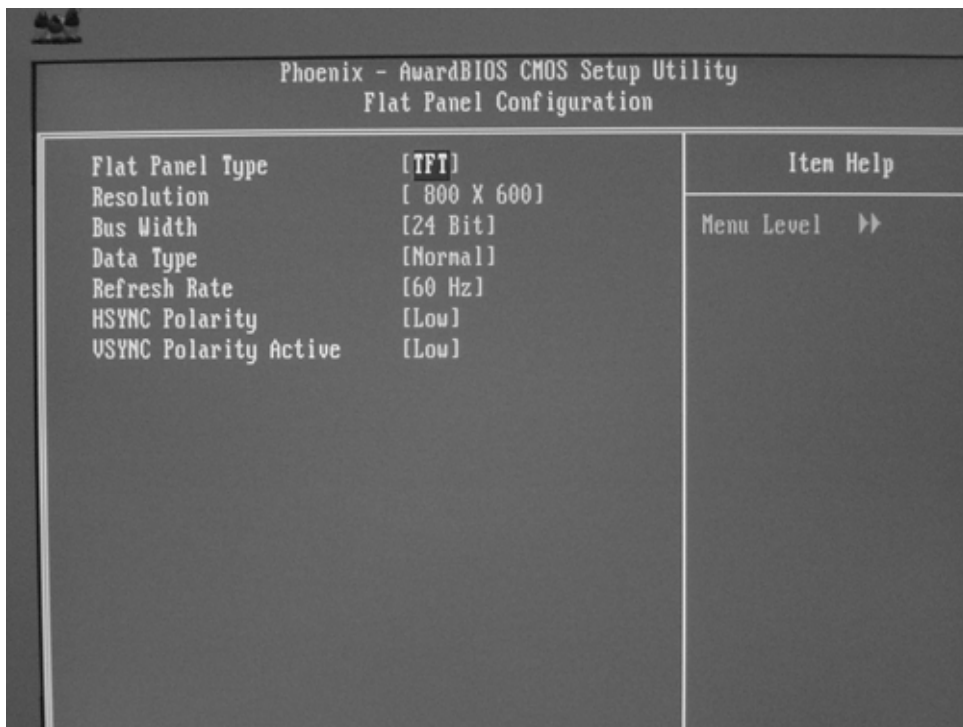


5. To connect all of the devices well.



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

Panel Type Support List:



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

2.10 <Onboard Audio Interface>

The board provides onboard AC97 audio interface with REALTEK ALC201A codec. Please use attached audio cable in the package to have Line-out, Line-in and MIC-in interfaces.

Connector: CN_AUDIO

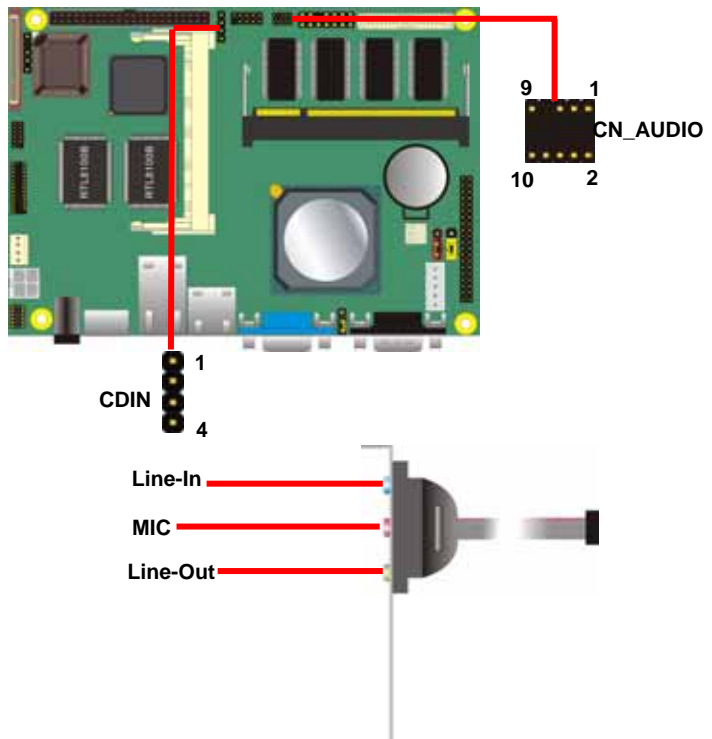
Type: 10-pin (2 x 5) 1.27mm x 2.54mm-pitch header

| Pin | Description | Pin | Description |
|-----|------------------|-----|-----------------|
| 1 | Line – Right | 2 | Ground |
| 3 | Line – Left | 4 | MIC |
| 5 | MIC | 6 | Ground |
| 7 | N/C | 8 | Line Out – Left |
| 9 | Line Out – Right | 10 | Ground |

Connector: CDIN

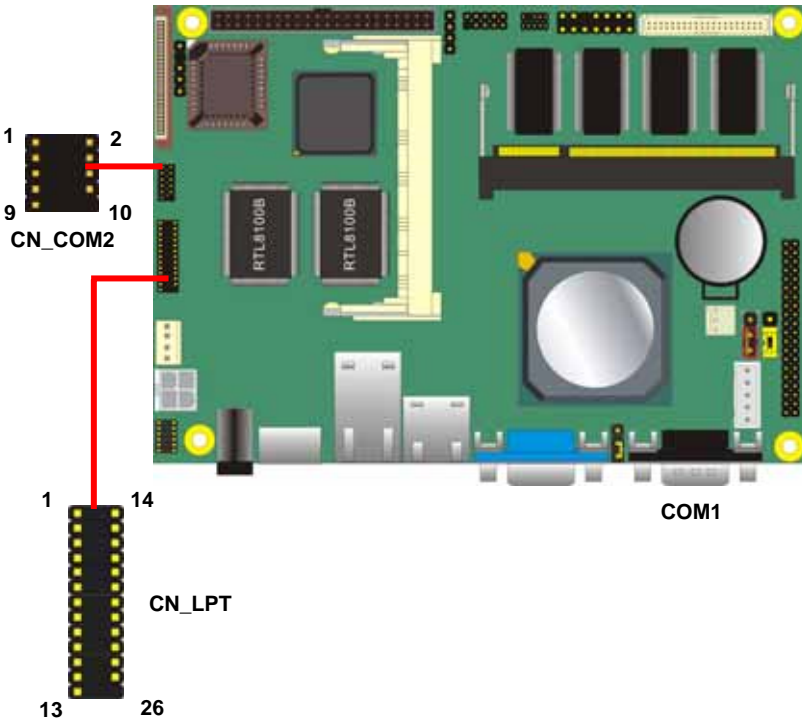
Type: 4-pin header 2.54mm pitch header

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



2.11 <Serial Port>

The board provides one RS232 COM port on real I/O panel with DB9 as COM1, onboard CN_COM2 RS232 serial port and one onboard parallel connector.



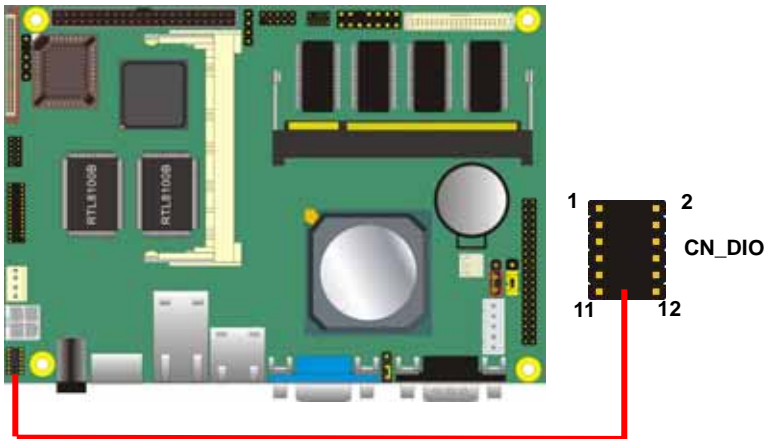
2.12 <GPIO Interface>

The board offers 8-bit digital I/O to customize its configuration to your control needs. For example, you may configure the digital I/O to control the opening and closing of the cash drawer or to sense the warning signal from a tripped UPS. The following is a detailed description of how the digital I/O is controlled via software programming.

Connector: **CN_DIO**

Type: 12-pin (6 x 2) 1.27mm x 2.54mm-pitch header

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1 | Ground | 2 | Ground |
| 3 | D0 | 4 | D4 |
| 5 | D1 | 6 | D5 |
| 7 | D2 | 8 | D6 |
| 9 | D3 | 10 | D7 |
| 11 | +5V | 12 | +12V |



2.13 <Power Supply>

2.13.1 <Power Input>

The board requires DC 12V input with onboard DC jack or 4-pin 12V DC connector.

Connector: **CN_12V**

Type: 4-pin standard ATX2.0 +12V power connector

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

2.13.2 <Power Output>

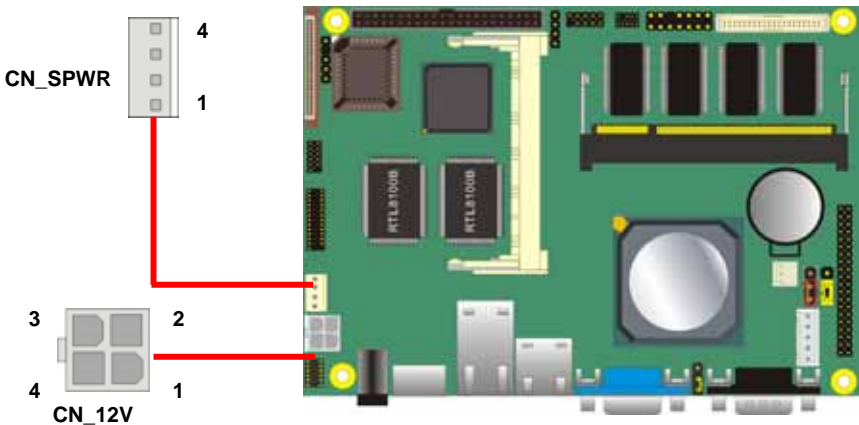
The board also provides one 4-pin connector with +5V/+12V output.

PS: Maximum output current for 5V/1A & 12V/1A

Connector: **CN_SPWR**

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

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



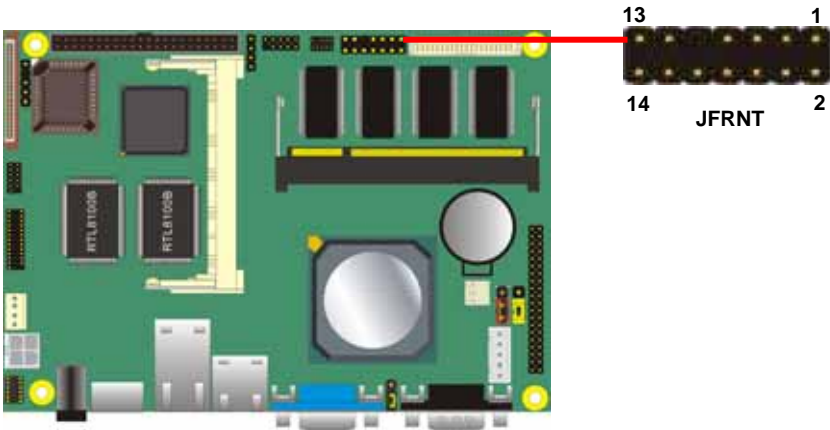
2.14 <Switch and Indicator>

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 | PWDLED | Power LED |
| | Active | 3 | 4 | N/C | |
| Reset | Reset | 5 | 6 | GND | Speaker |
| | GND | 7 | 8 | VCC | |
| N/C | | 9 | 10 | N/C | |
| Power Button | PWRBT | 11 | 12 | N/C | |
| | 5VSB | 13 | 14 | SPKIN | |



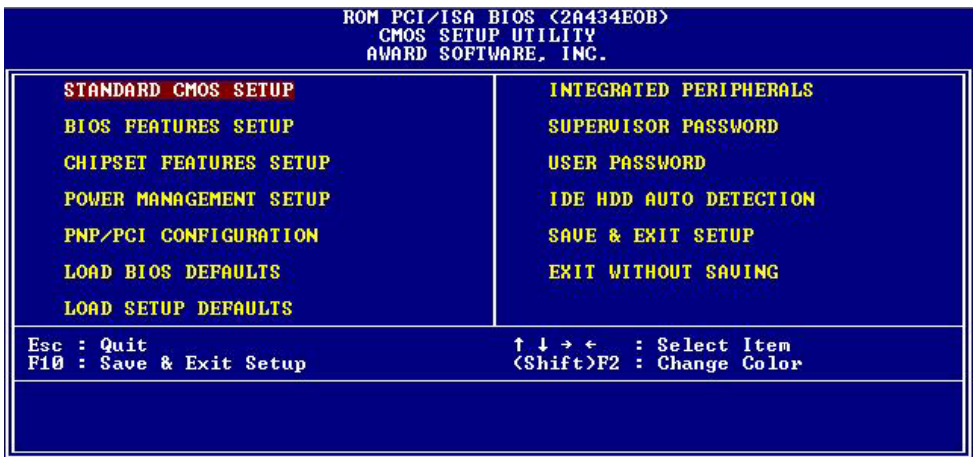
Chapter 3 <BIOS Setup>

The single board computer 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 3-1**. You can use arrow keys to select your function, press <Enter> key to accept the selection and enter the sub-menu.

Figure 3-1. CMOS Setup Utility Main Screen



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Appendix A <I/O Pin Assignment>

A.1 <IDE Port>

Connector: IDE

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 | INT | 32 | N/C |
| 33 | A1 | 34 | N/C |
| 35 | A0 | 36 | A2 |
| 37 | CS0 | 38 | CS1 |
| 39 | LED2 | 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 | DRX |
| 5 | VCC | 6 | DSKCHG |
| 7 | N/C | 8 | N/C |
| 9 | N/C | 10 | MTR0 |
| 11 | RPM | 12 | DIR |
| 13 | N/C | 14 | STEP |
| 15 | Ground | 16 | WRITE DATA |
| 17 | Ground | 18 | WRITE GATE |
| 19 | Ground | 20 | TRACK 0 |
| 21 | N/C | 22 | WRX |
| 23 | Ground | 24 | RDATA- |
| 25 | Ground | 26 | SEL |

A.3 <IrDA Port>

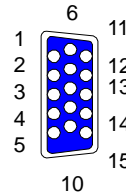
Connector: **CN_IR**



Type: 5-pin header for SIR Ports

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

A.4 < VGA Port >



Connector: **CRT**

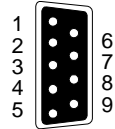
Type: 15-pin D-sub female connector on bracket

| Pin | Description | Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|-----|-------------|
| 1 | RED | 6 | Ground | 11 | N/C |
| 2 | GREEN | 7 | Ground | 12 | 5VSDA |
| 3 | BLUE | 8 | Ground | 13 | HSYNC |
| 4 | N/C | 9 | N/C | 14 | VSYSN |
| 5 | Ground | 10 | Ground | 15 | 5VSCL |

A.5 <Serial Port>

Connector: **COM1**

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

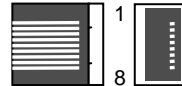


| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1 | DCD | 6 | DSR |
| 2 | RXD | 7 | RTS |
| 3 | TXD | 8 | CTS |
| 4 | DTR | 9 | -XR |
| 5 | Ground | | |

A.6 <LAN Port>

Connector: **RJ45_1/2**

Type: RJ45 connector with LED on bracket

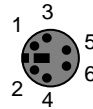


| Pin | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Description | TX+ | TX- | RX+ | RX- | N/C | N/C | N/C | N/C |

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

Connector: **PS2**

Type: 6-pin Mini-DIN connector on bracket



| Pin | 1 | 2 | 3 | 4 | 5 | 6 |
|-------------|-----|-----|--------|-----|-----|-----|
| Description | KBD | MSD | Ground | VCC | KBC | MSC |

Note: The PS/2 connector supports standard PS/2 keyboard directly or both PS/2 keyboard and mouse through the PS/2 Y-type cable.

A.8 < USB Interface >

Connector: **CN_USB**

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

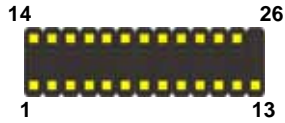


| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1 | VCC | 2 | VCC |
| 3 | Data0- | 4 | Data1- |
| 5 | Data0+ | 6 | Data1+ |
| 7 | Ground | 8 | Ground |
| 9 | Ground | 10 | NC |

A.9 < LPT Port >

Connector: **CN_LPT**

Type: 26-pin (13 x 2) header for LPT Ports



| 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 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>

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Appendix C <System Resources>

C.1 <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 |

| | |
|-----------------------|---|
| [00000274 - 00000277] | ISAPNP Read Data Port |
| [00000279 - 00000279] | ISAPNP Read Data Port |
| [00000294 - 00000297] | Motherboard resources |
| [00000295 - 00000296] | HSMPORT |
| [000002F8 - 000002FF] | Communications Port (COM2) |
| [00000376 - 00000376] | Secondary IDE Channel |
| [00000378 - 0000037F] | Printer Port (LPT1) |
| [00000380 - 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] | 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 |
| [0000F800 - 0000F8FF] | Realtek RTL8139 Family PCI Fast Ethernet NIC #2 |
| [0000FA00 - 0000FAFF] | Realtek RTL8139 Family PCI Fast Ethernet NIC |
| [0000FC00 - 0000FCFF] | Ricoh R/RL/RT/RC/5C475(II), R5C520 or Compatible CardBus Controller |
| [0000FD00 - 0000FDFF] | Ricoh R/RL/RT/RC/5C475(II), R5C520 or Compatible CardBus Controller |
| [0000FE00 - 0000FE7F] | GEODE - GX2 WDM Audio Driver |
| [0000FF00 - 0000FF0F] | Standard Dual Channel PCI IDE Controller |

C.2 <Memory Address Map>

| | |
|-------------------------|---|
| [00000000 - 0009FFFF] | System board |
| [000A0000 - 000BFFFF] | Advanced Micro Devices Win XP Graphics Driver |
| [000A0000 - 000BFFFF] | PCI bus |
| [000C8000 - 000DFFFF] | PCI bus |
| [000DF000 - 000DFFFF] | Ricoh R/RL/RT/RC/5C475(II), R5C520 or Compatible CardBus Controller |
| [000F0000 - 000F3FFF] | System board |
| [000F4000 - 000F7FFF] | System board |
| [000F8000 - 000FBFFF] | System board |
| [000FC000 - 000FFFFF] | System board |
| [00100000 - 077AFFFF] | System board |
| [077B0000 - 077BFFFF] | System board |
| [077C0000 - FEBFFFFF] | PCI bus |
| [EE000000 - EFFFFFFF] | Advanced Micro Devices Win XP Graphics Driver |
| [EFFEC000 - EFFFFFFF] | 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 |
| ! [EFFFA000 - EFFFA0FF] | Realtek RTL8139 Family PCI Fast Ethernet NIC #2 |
| ! [EFFF8000 - EFFF80FF] | Realtek RTL8139 Family PCI Fast Ethernet NIC |
| [EFFF0000 - EFFF0FFF] | Ricoh R/RL/RT/RC/5C475(II), R5C520 or Compatible CardBus Controller |
| • [EFFF0000 - EFFF0FFF] | Standard OpenHCD USB Host Controller |
| • [EFFFF000 - EFFFF0FF] | Standard OpenHCD USB Host Controller |
| [FABFF000 - FEBFEFFF] | Ricoh R/RL/RT/RC/5C475(II), R5C520 or Compatible CardBus Controller |
| [FEBFF000 - FEBFFFFF] | Ricoh R/RL/RT/RC/5C475(II), R5C520 or Compatible CardBus Controller |
| [FEE00000 - FEE00FFF] | System board |
| [FFFF0000 - FFFFFFFF] | System board |

C.3 <System IRQ & DMA Resources>

C.3.1 <IRQ>

| | |
|----------|---|
| (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 | Ricoh R/RL/RT/RC/5C475(II), R5C520 or Compatible CardBus Controller |
| (PCI) 5 | Standard OpenHCD USB Host Controller |
| (PCI) 10 | GEODE - GX2 WDM Audio Driver |
| (PCI) 10 | Realtek RTL8139 Family PCI Fast Ethernet NIC |
| (PCI) 11 | Realtek RTL8139 Family PCI Fast Ethernet NIC #2 |
| (PCI) 11 | Standard OpenHCD USB Host Controller |

•C.3.2 <DMA>

- 2 Standard floppy disk controller
- 4 Direct memory access 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 W83627HF datasheet.

Appendix E <Programming Watchdog Timer >

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 5 second of timeout

```
-o 4E 87          ;enter configuration
-o 4E 87
-o 4E 07
-o 4F 08          ;enter Logical Device 8
-o 4E F5
-o 4F 00          ;set as Second* Minute: bit 3 = 0; Second: bit 3 = 1
-o 4E F6
-o 4F 05          ;set as 5 Second
```

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 projects and business.

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