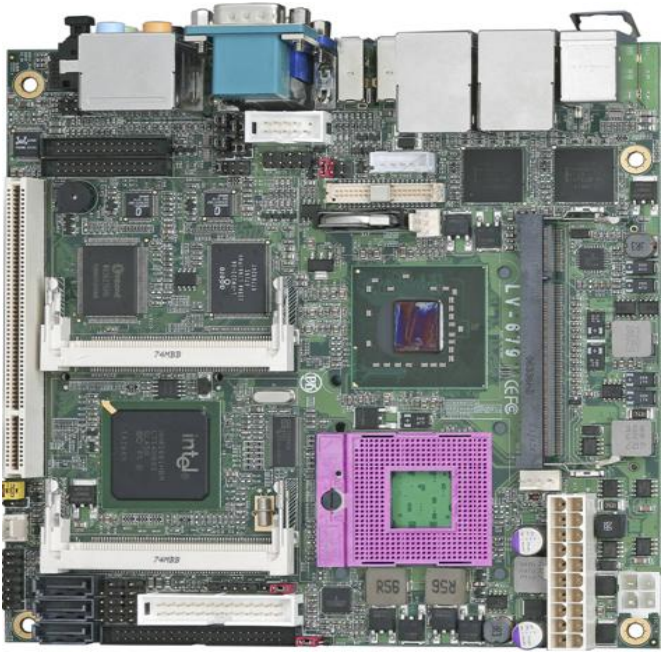
# LV-679

## Mini-ITX Motherboard

**User's Manual**

Edition 1.2
2012/10/19



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# Packing List:

Please check the package content before you start using the board.

## Hardware:

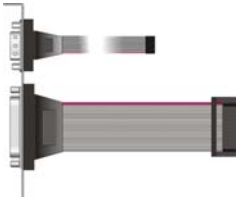
LV-679D or LV-679D2C Mini-ITX Motherboard x 1

## Cable Kit:

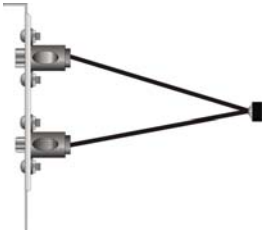
ATA33 IDE Cable x1

Floppy Cable x 1

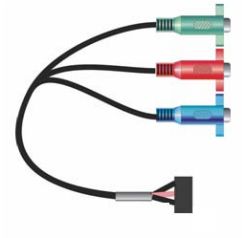
SATA Cable x 2



COM & Printer Port Cable x 1

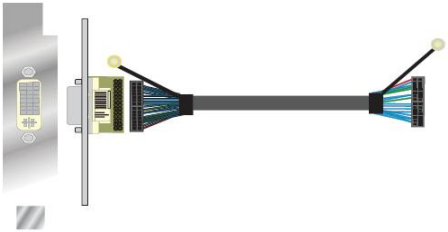


SDTV Cable x 1

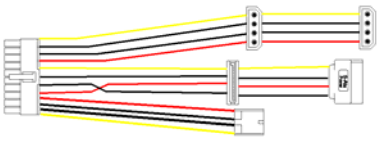


YPbPr Cable x 1

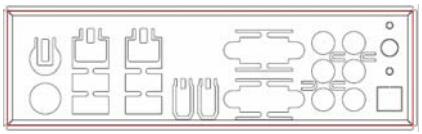
DVI module with bracket x 1 (LV - 679D2C)



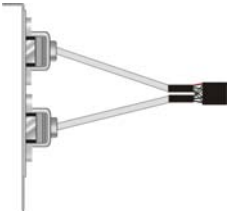
DVI module with bracket x 1 (LV - 679D)



Power Cable



I/O Shield x 1



**USB Cable x 1**

**DC Power Cable x 1**


**CPU Cooler x 1**

## Printed Matters:

**Driver CD x 1 (Including User's Manual)**

# Index

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# Chapter 1 <Introduction>

## 1.1 <Product Overview>

**LV-679,** the new generation of the Mini-ITX motherboard, supports Intel Merom Processors for 533/667/800MHz front side bus and features Intel GM(E)965 and ICH8M chipset, integrated GMA X3100 graphics, DDR2 memory, REALTEK High Definition Audio, three Serial ATA and two Intel Gigabit LAN.

### Intel Merom Processor

The board supports Intel Core 2 Duo / Celeron M ***socket-P*** processors with 533/667/800MHz front side bus, 4MB L2 cache, to provide more powerful performance than before.

### New features for Intel GM(E)965 chipset

The board integrates Intel GM(E)965 and ICH8-M chipset, to provide new generation of the mobile solution, supports Intel GMA X3100 graphics, DDR2 SO-DIMM 533/667Mhz memory, built-in high speed mass storage interface of serial ATA, High Definition Audio with 7.1 channels surrounding sound.

### All in One multimedia solution

Based on Intel GM(E)965 and ICH8M chipset, the board provides high performance onboard graphics, 24-bit dual channel LVDS interface, HDTV and 7.1 channels High Definition Audio, to meet the very requirement of the multimedia application.

### Flexible Extension Interface

The board provides Compact Flash Type II socket, two mini-PCI socket and one PCI slot.

# 1.2 <Product Specification>

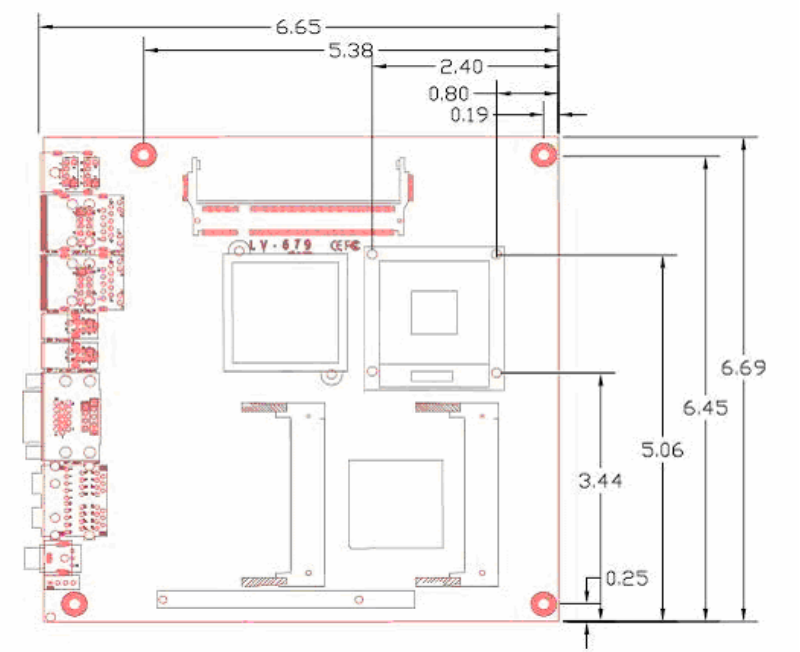
## General Specification

| | |
|---|---|
| Form Factor | Mini-ITX motherboard |
| CPU | Support Intel Core 2 Duo / Celeron M Mobile Processor<br>Package type: **Micro-FCPGA478** ***(Socket-P)***<br>Front side bus: 533/667/800 MHz |
| Memory | Two DDRII 533/667MHz DIMM up to 3GB with dual channel Interleaved mode |
| Chipset | Intel GM(E)965 & ICH8M (82801HBM) |
| Real Time Clock | Chipset integrated RTC with onboard lithium battery |
| Watchdog Timer | Generates a system reset with internal timer for 1min/s ~ 255min/s |
| Power Management | ACPI 1.0 compliant, supports power saving mode |
| PCI Enhanced IDE | One 44-pin UltraATA33 IDE interface supports up to 2 ATAPI devices |
| Serial ATA Interface | 3 x serial ATAII interface with 300MB/s transfer rate |
| VGA Interface | Intel integrated extreme GMA X3100 (Graphic Media Accelerator) Technology |
| Video Memory | Up to 384MB shared with system memory |
| LVDS interface | Onboard 24-bit dual channel LVDS connector with +3.3V/+5V/+12V supply |
| DVI Interface | 1 x Chrontel CH7307C DVI transmitter with onboard 26-pin DVI interface<br>One optional Chrontel CH7307C DVI transmitter with onboard 26-pin DVI interface |
| Audio Interface | Intel integrated ICH8M with Realtek ALC888 HD Audio |
| LAN Interface | 2 x Intel 82573L Gigabit LAN |
| Solid State Disk | IDE supports 44-pin DiskOnModule with +5V/+3.3V power supply,<br>One Compact Flash Type II |
| GPIO interface | Onboard programmable 8-bit Digital I/O interface |
| Extended Interface | 1 x PCI slot, 2 x Mini-PCI socket to support Mini PCI Type IIIA |
| Internal I/O Port | 1x RS232/422/485, 1x slim FDD port, 1x GPIO port, 1 x Parallel Port, 4 x USB ports, 1x IrDA, 1x IDE, 1x LVDS, 1x LCD inverter connector, 1 x DVI, 1x HDTV, 1x Front panel Audio connector and 1 x CDIN connector |
| External I/O Port | 1x PS/2 Keyboard/Mouse Port, 2 x RJ45 LAN ports, 1x DB15 VGA port, 4x USB2.0 ports, 2x IEEE 1394 port, 1x RS232 port, 7.1 Channel Audio Output and 1x SPDIF connector |
| Power Requirement | Standard 20-Pin ATX power supply or 8~24V full range DC Input |
| Dimension | 170mm x 170mm |
| Temperature | Operating within 0~60 centigrade<br>Storage within –20~85 centigrade |

| Ordering Code | |
|---|---|
| LV-679D | Onboard CRT, LVDS, HDTV, Intel Gigabit LAN, USB2.0, PCI, Mini-PCI, GPIO Port, 1394, IrDA, Slim FDD, Parallel Port, RS232/422/485, SATA,HD Audio and **1 x DVI** |
| LV-679D2C | Onboard CRT, LVDS, HDTV, Intel Gigabit LAN, USB2.0, PCI, Mini-PCI, GPIO Port, 1394, IrDA, Slim FDD, Parallel Port, RS232/422/485, SATA, HD Audio, **2 x DVI and CF** |

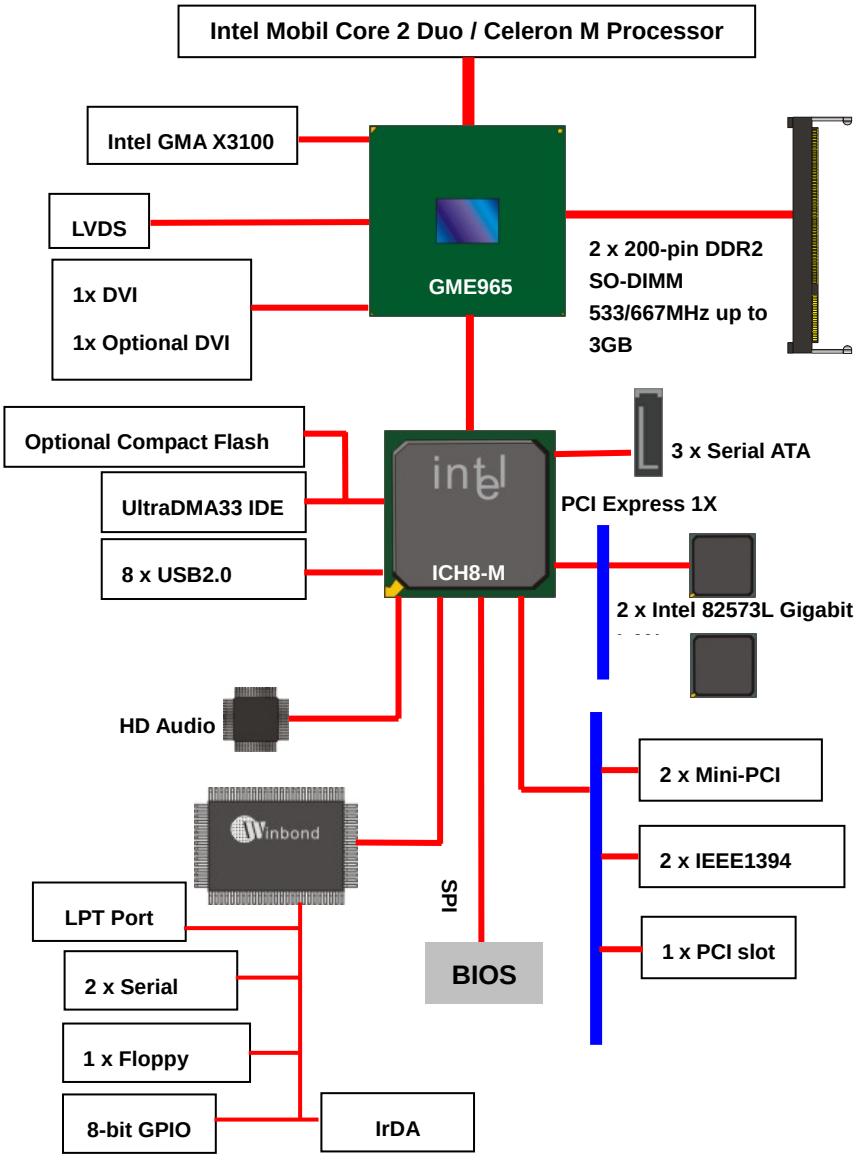
For further product information please visit the website at http://www.commell.com.tw

## 1.3 <Mechanical Drawing>



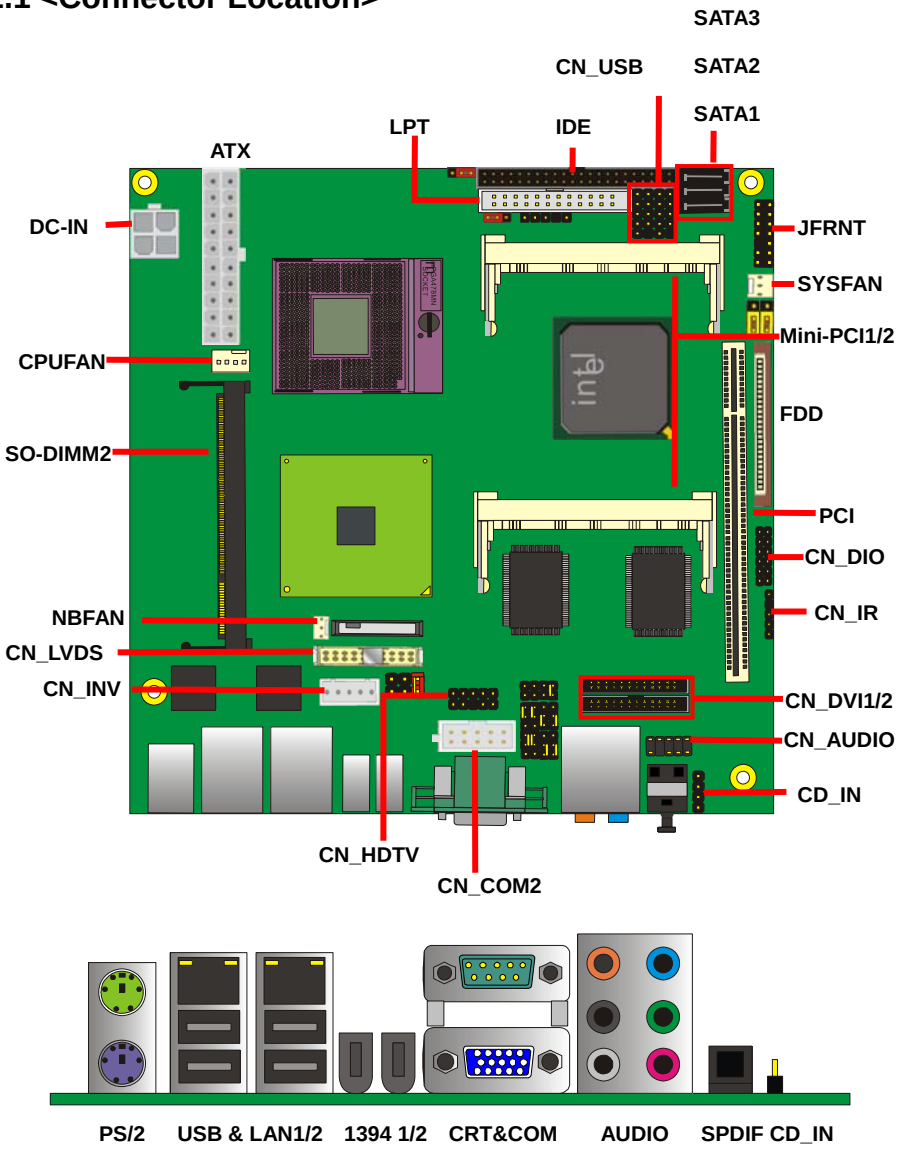

**Unit: inch**

## 1.4 <Block Diagram>



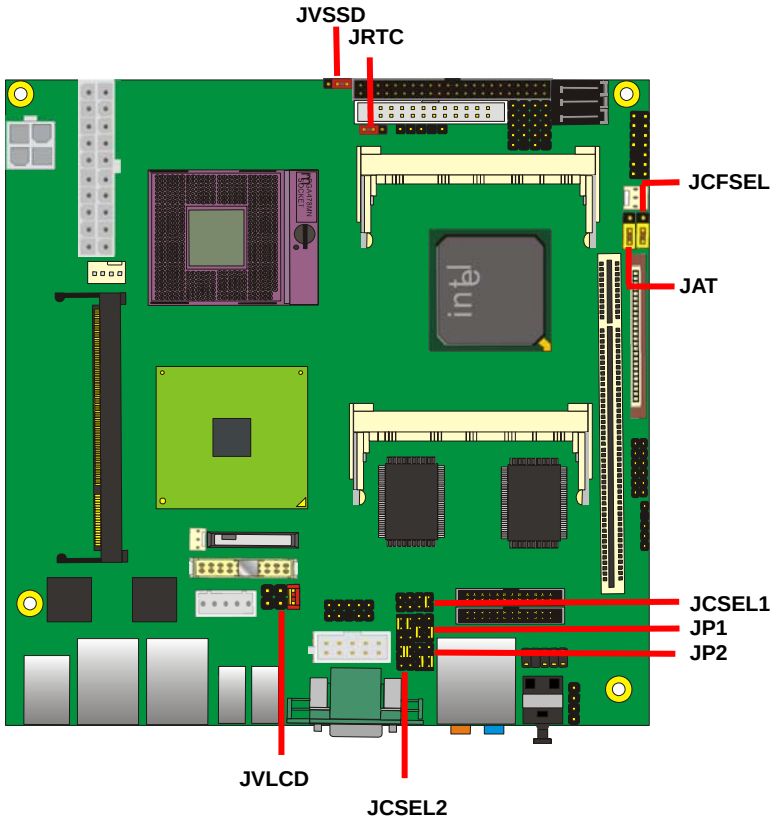
# Chapter 2 <Hardware Setup>

## 2.1 <Connector Location>



## 2.2 <Jumper Location & Reference>

| Jumper | Function |
|---|---|
| **JRTC** | CMOS Operating/Clear Setting |
| **JCFSEL** | CF with IDE mode selection |
| **JVLCD** | Panel Voltage Setting |
| **JVSSD** | DOM 3.3V / 5V Power selection |
| **JP1** | COM1 signal mode switch (For Pin-1 & Pin-9) |
| **JP2** | COM2 signal mode switch (For Pin-1 & Pin-9) |
| **JAT** | Power mode select |
| **JCSEL1**<br>**JCSEL2** | **CN_COM2** RS-232 RS422 RS485 Setting / **CN_IR IrDA** Setting |



Jumper: **JAT**
Type: onboard 3-pin header

| Power Mode | JAT |
|---|---|
| AT Mode | 1-2 |
| ATX Mode | 2-3 |
| Default setting: ATX Mode |   |

Jumper: **JP1 (COM 1)**
Type: onboard 6-pin header

| Power Mode | JP1 |
|---|---|
| Pin1 with 5V power | 1-3,4-6 |
| Pin9 with 12V power | 2-4,3-5 |
| Default setting: 3-5, 4-6 |   |

Jumper: **JP2 (COM 2)**
Type: onboard 6-pin header

| Power Mode | JP2 |
|---|---|
| Pin1 with 5V power | 1-3,4-6 |
| Pin9 with 12V power | 2-4,3-5 |
| Default setting: 3-5, 4-6 |   |

## 2.3 <Connector Reference>

### 2.3.1 <Internal Connectors>

| Connector | Function | Remark |
|---|---|---|
| CPU | Socket 478 for **socket-P** CPU | |
| SO-DIMM1/2 | 200-pin DDR2 SO-DIMM slot | |
| IDE | 44-pin IDE connector | Slim |
| FDD | 26-pin slim type floppy connector | Slim |
| LPT | 26-pin LPT port connector | |
| SATA1/2/3 | 7-pin Serial ATA connector | |
| DC_IN | DC 8~24V input connector | |
| ATX | 20-pin power input connector<br>20-pin power output connector | ATX P/S Mode<br>DC-Input Mode |
| CN_AUDIO | 5 x 2-pin audio connector | |
| CD_IN | 4-pin CD-ROM audio input connector | |
| CN_DIO | 6 x 2-pin digital I/O connector | |
| CN_USB1/2 | 5 x 2-pin USB connector | |
| CPUFAN | 4-pin CPU cooler fan connector | |
| SYSFAN | 3-pin system cooler fan connector | |
| CN_DVI1/2 | 13 x 2-pin DVI interface | |
| CN_HDTV | 5 x 2-pin HDTV interface | |
| CN_LVDS | 20 x 2-pin LVDS connector | |
| CN_INV | 5-pin LCD inverter connector | |
| CN_IR | 5-pin IrDA connector | |
| JFRNT | 14-pin front panel switch/indicator connector | |
| Mini-PCI1/2 | 2 x Mini-PCI socket Type IIIA | |
| PCI | 32bit PCI slot | |
| CF | **Optional** Compact Flash Type II socket | |
| CN_COM2 | Serial port connector | |
| JAT | Power mode select | |

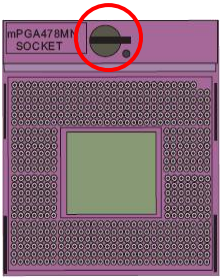
### 2.3.2 <External Connectors>

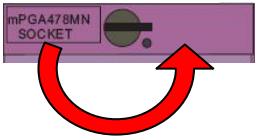
| Connector | Function | Remark |
|---|---|---|
| USB_RJ45_1/2 | Dual USB and one LAN connector | |
| CRT + COM1 | DB15 VGA connector and DB9 COM1 connector | |
| PS2 | keyboard and mouse connector | |
| AUDIO | Audio connector | |
| 1394_1/2 | IEEE1394 port | |
| SPDIF | SPDIF digital audio output connector | |

## 2.4 <CPU and Memory Setup>

### 2.4.1 <CPU Setup>

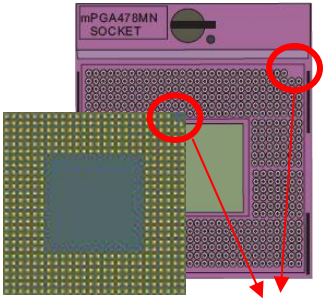
The board comes with the socket478 for Intel Core 2 Duo / Celeron M **socket-P** processor 533/667/800MHz of front side bus and 4MB L2 cache. Please follow the instruction to install the CPU properly.



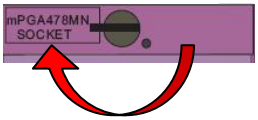

Unlock way

**1. Use the flat-type screw drive to unlock the CPU socket**



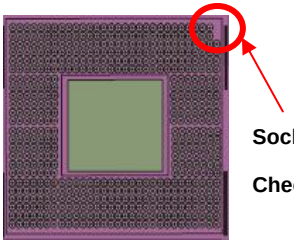

Check point

**2. Follow the pin direction to install the processor on the socket**




**3. Lock the socket**

**4. Socket P has 478 pins, but is not pin-compatible with Socket M CPU.**

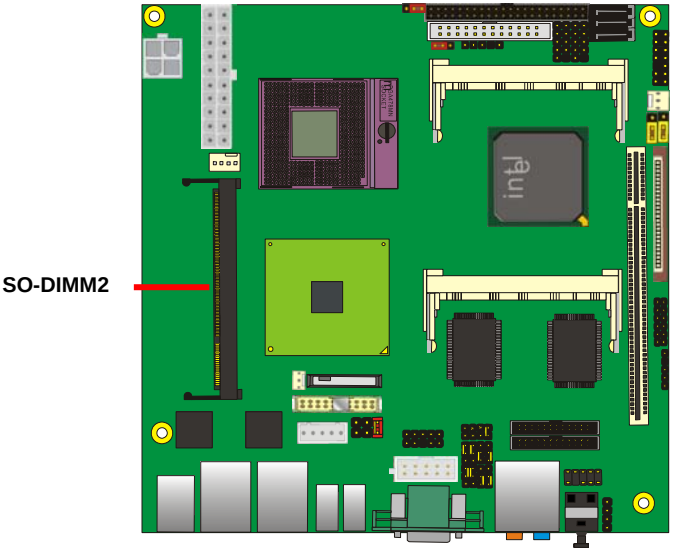


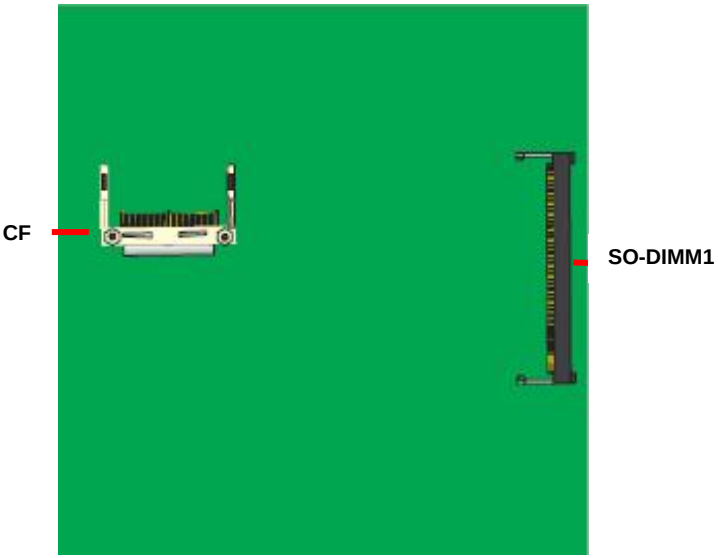
**Socket-M CPU**

**Check point**

### 2.4.2 <Memory Setup>

The board provides two 200-pin DDR2 SO-DIMM to support 533/667MHz memory modules up to 3GB of capacity. Non-ECC, unbuffered memory is supported only. While applying two same modules, dual channel technology is enabled automatically for higher performance.



## 2.5 <CMOS Setup>

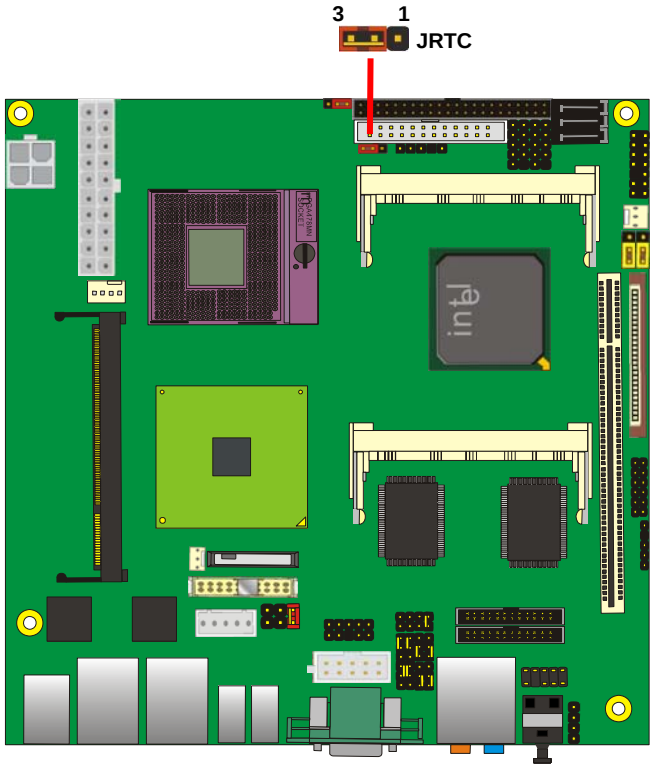
The board's data of CMOS can be setting in BIOS. If the board refuses to boot due to inappropriate CMOS settings, here is how to proceed to clear (reset) the CMOS to it's default values.

**Jumper: JRTC**

**Type: Onboard 3-pin jumper**

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

Default setting: 2-3



## 2.6 <Enhanced IDE Interface>

The board has one UltraDMA33 IDE interface to support up to 2 ATAPI devices, or one ATAPI device and Compact Flash Type II socket on the solder side, with jumper **JCFSEL** for IDE master/slave mode selection. And provide **JVSSD** jumper to support +3.3V or +5V DOM selection.

Jumper: **JCFSEL**
Type: onboard 3-pin header

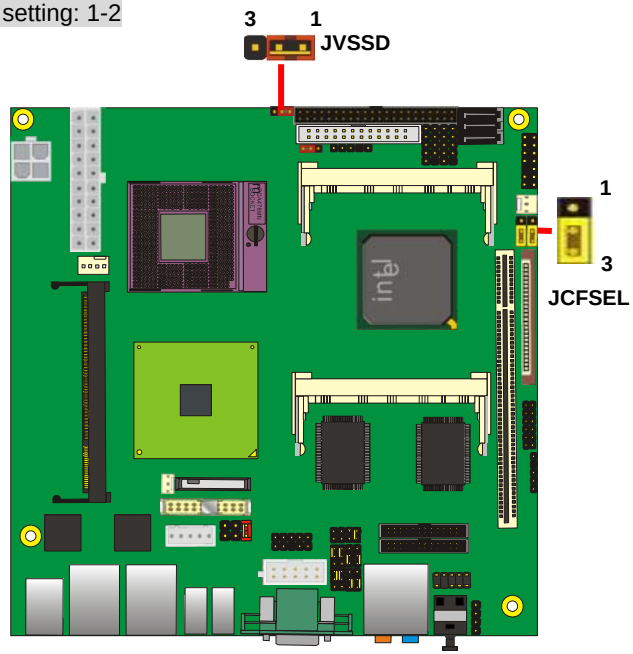
| JCFSEL | Mode |
|---|---|
| 1-2 | Master |
| 2-3 | Slave |

Default setting: 2-3

Jumper: **JVSSD**
Type: onboard 3-pin header

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

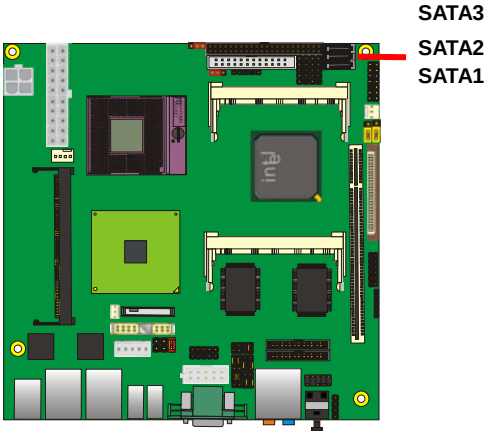
Default setting: 1-2



## 2.7 <Serial ATA Interface>

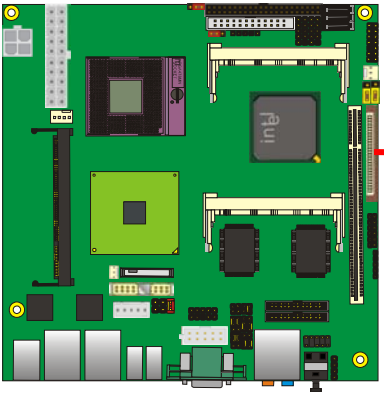
Based on Intel ICH8M, the board provides three Serial ATAII interfaces with up to 300MB/s of transfer rate

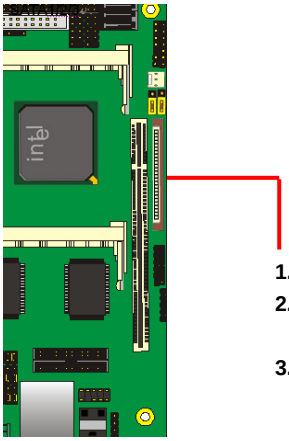
.



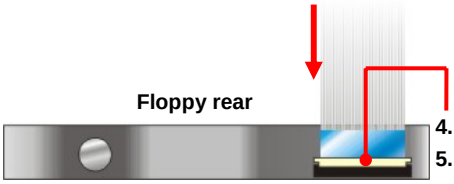
## 2.8 <Floppy Port>

The board provides one slim type floppy port.



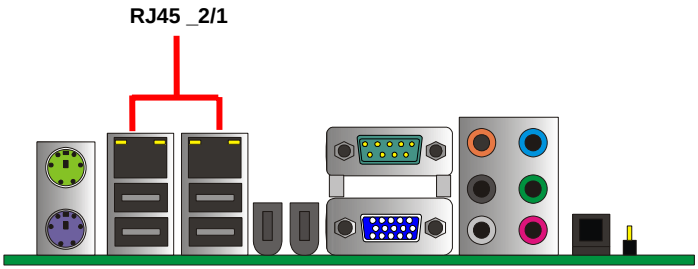
1. Lift up the brown plastic bar
2. Slot the cable in (Blue paste for brown bar side)
3. Press back the plastic bar




4. Lift up this plastic bar
5. Slot the cable in (Blue paste for outside)

## 2.9 <Ethernet Interface>

The board integrates with one Intel PCI Express Gigabit Ethernet controllers, as the PCI Express 1x can speed up to 250MB/s of transfer rate instead of late PCI bus with 133MB/s of transfer rate. The Intel Gigabit Ethernet supports triple speed of 10/100/1000Base-T, with IEEE802.3 compliance and Wake-On-LAN supported.

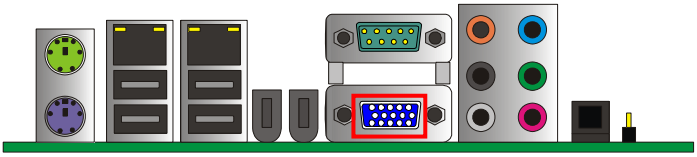


## 2.10 <Onboard Display Interface>

Based on Intel GM(E)965 chipset with built-in GMA (Graphic Media Accelerator) X3100 graphics, the board provides one DB15 connector on real external I/O port, and one 40-pin LVDS interface with 5-pin LCD backlight inverter connector. The board provides dual display function with clone mode and extended desktop mode for VGA, LCD, HDTV, one DVI and optional up to two DVI.

### 2.10.1 <Analog Display>

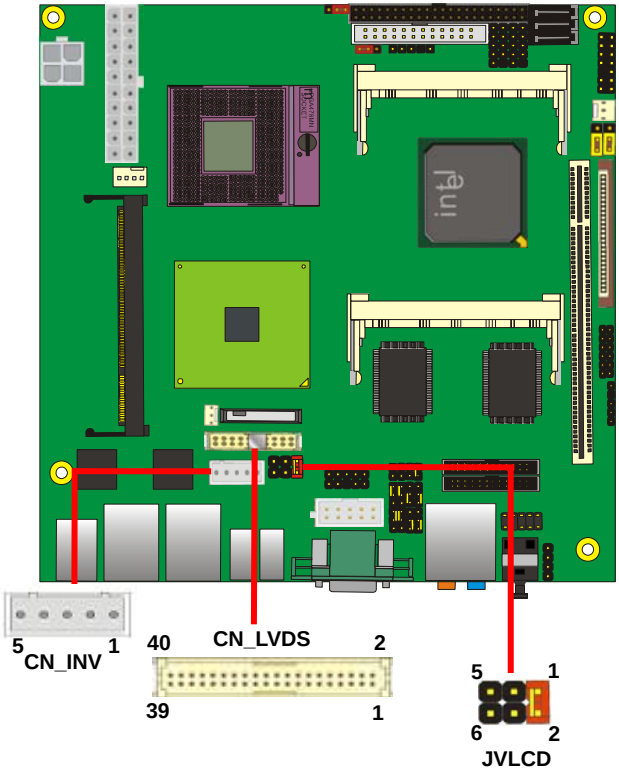
Please connect your CRT or LCD monitor with DB15 male connector to the onboard DB15 female connector on rear I/O port.



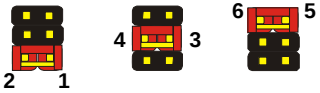
**CRT**

## 2.10.2 <Digital Display>

The board provides one 40-pin LVDS connector for 18/24-bit single/dual channel panels, supports up to 1600 x 1200 (UXGA) resolution, with one LCD backlight inverter connector and one jumper for panel voltage setting.




***Effective patterns of connection: 1-2 / 3-4 / 5-6***




***Warning: others cause damages***

Connector: **CN_INV**
Type: 5-pin LVDS Power Header

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

Connector: **JVLCD**
Type: 6-pin Power select Header

| Pin | Description |
|---|---|
| 1-2 | LCDVCC **(3.3V)** |
| 3-4 | LCDVCC **(5V)** |
| 5-6 | LCDVCC **(12V)** |

Default setting: 1-2

Connector: **CN_LVDS**
Type: onboard 40-pin connector for LVDS connector
Connector model: **HIROSE DF13-40DP-1.25V**

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 2 | LCDVCC | 1 | LCDVCC |
| 4 | GND | 3 | GND |
| 6 | ATX0- | 5 | BTX0- |
| 8 | ATX0+ | 7 | BTX0+ |
| 10 | GND | 9 | GND |
| 12 | ATX1- | 11 | BTX1- |
| 14 | ATX1+ | 13 | BTX1+ |
| 16 | GND | 15 | GND |
| 18 | ATX2- | 17 | BTX2- |
| 20 | ATX2+ | 19 | BTX2+ |
| 22 | GND | 21 | GND |
| 24 | ACLK- | 23 | BTX3- |
| 26 | ACLK+ | 25 | BTX3+ |
| 28 | GND | 27 | GND |
| 30 | ATX3- | 29 | BCLK- |
| 32 | ATX3+ | 31 | BCLK+ |
| 34 | GND | 33 | GND |
| 36 | DDCPCLK | 35 | N/C |
| 38 | DDCPDATA | 37 | N/C |
| 40 | N/C | 39 | N/C |

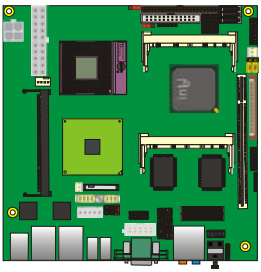
To setup the LCD, you need the component below:

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.**

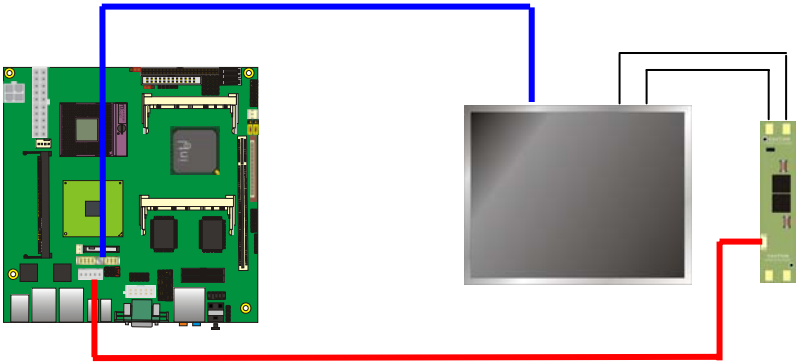
## LCD Installation Guide:

1. Preparing the **LV-679**, **LCD panel** and the **backlight inverter**.

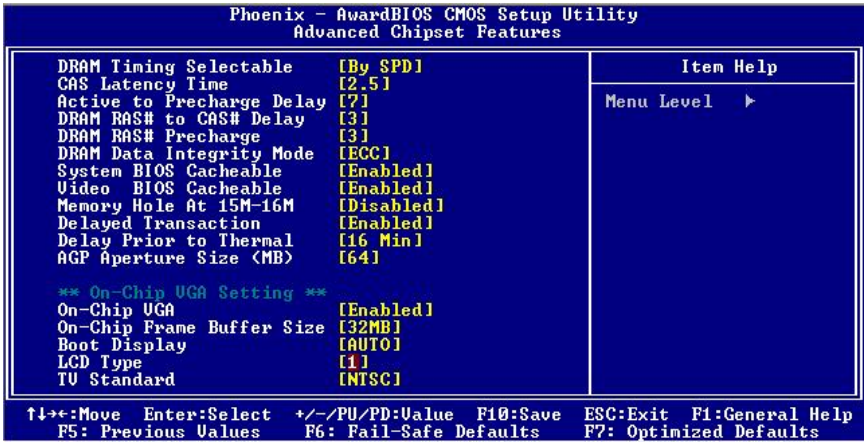


2. Please check the datasheet of the panel to see the voltage of the panel, and set the jumper **JVLCD** to +12V or +5V or +3.3V.
3. You would need a LVDS type cable.


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:

| BIOS panel type selection form (BIOS Version:2.1) | | | |
|---|---|---|---|
| **18-bit Single channel** | | **24-bit Dual channel** | |
| **NO.** | **Output format** | **NO.** | **Output format** |
| 1 | 800 x 480 | 10 | 1024 x 768 |
| 2 | 800 x 600 | 11 | 1280 x 768 |
| 3 | 1024 x 768 | 12 | 1280 x 1024 |
| **24-bit Single channel** | | 13 | 1366 x 768 |
| 4 | 1024 x 768 | 14 | 1400 x 1050 |
| 5 | 1280 x 768 | 15 | 1600 x 1200 |
| 6 | 1280 x 800 | 16 | 1920 x 1080 |
| 7 | 1280 x 1024 | | |
| 8 | 1366 x 768 | | |
| 9 | 1600 x 1200 | | |

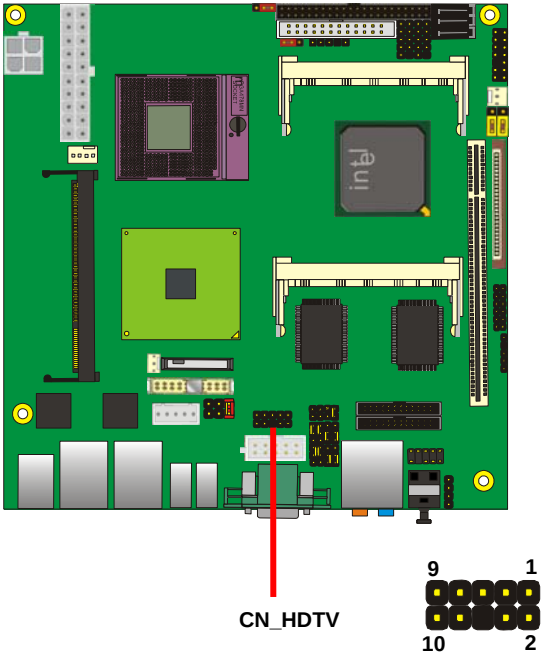
### 2.10.3 <HDTV Interface>

The board provides an HDTV interface with Intel GM(E) 965, supports Composite, S-Video and Component with PAL and NTSC of TV system, and display (clone or extended desktop) function with CRT,LVDS,DVI.

Connector: **CN_HDTV**

Connector type: 10-pin header HDTV connector (pitch = 2.54mm)

| Pin Number | Assignment | Pin Number | Assignment |
|---|---|---|---|
| 1 | GND | 2 | DACB_L |
| 3 | DACC_L | 4 | GND |
| 5 | GND | 6 | N/C |
| 7 | DACA_L | 8 | GND |
| 9 | N/C | 10 | N/C |



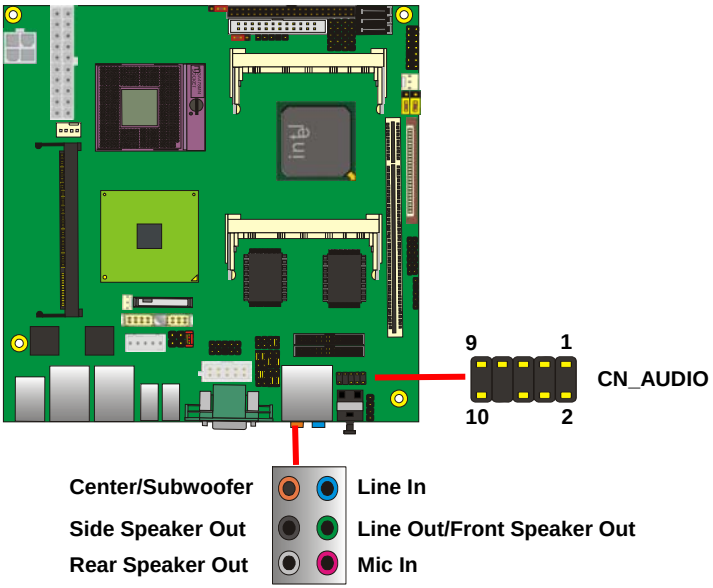
## 2.11 <Integrated Audio Interface>

The board integrates onboard audio interface with REALTEK ALC888 codec, with Intel next generation of audio standard as High Definition Audio, it offers more sound and other advantages than former HD audio compliance.

The main specifications of ALC888 are:

- **High-performance DACs with 97dB SNR (A-Weighting),**
- **Ten DAC channels support 16/20/24-bit PCM format for 7.1 sound playback, plus 2 channels of independent stereo sound output (multiple streaming) through the front panel output**
- **16/20/24-bit S/PDIF-OUT supports 44.1k/48k/96k/192kHz sample rate**
- **High-quality analog differential CD input**
- **Meets performance requirements for Microsoft WLP 3.0 Premium desktop and mobile PCs**

The board provides 7.1 channels audio phone jacks on rear I/O port and Line-out/MIC-in ports for front I/O panel through optional cable.



**Connector: CN_AUDIO**

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

| Pin | Assignment | Pin | Assignment |
|---|---|---|---|
| 1 | MIC_L | 2 | Ground |
| 3 | MIC_R | 4 | Reserve |
| 5 | Speaker_R | 6 | MIC Detect |
| 7 | SENSE | 8 | N/C |
| 9 | Speaker_L | 10 | Speaker Detect |

**Connector: CDIN**

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

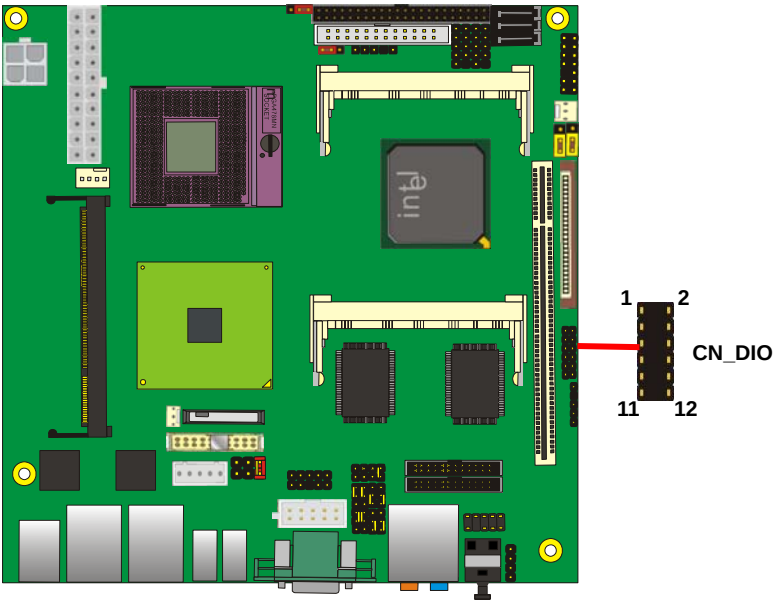
| Pin | Assignment |
|---|---|
| 1 | CD – Left |
| 2 | Ground |
| 3 | Ground |
| 4 | CD – Right |

## 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: 12-pin (6 x 2) 2.00mm-pitch header

| Pin | Assignment | Pin | Assignment |
|---|---|---|---|
| 1 | Ground | 2 | Ground |
| 3 | GP10 | 4 | GP14 |
| 5 | GP11 | 6 | GP15 |
| 7 | GP12 | 8 | GP16 |
| 9 | GP13 | 10 | GP17 |
| 11 | VCC | 12 | +12V |



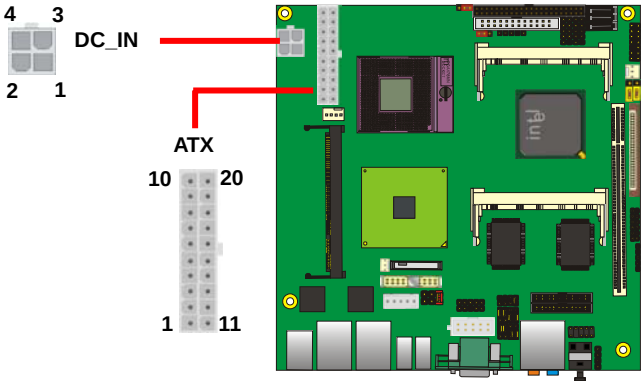
## 2.13 <Power Supply>

### 2.13.1 <Power Input>

The board requires onboard 4-pin DC-input connector voltage range is from 8V to 24V, or onboard 20-pin ATX2.0, for the input current, please take a reference of the power consumption report on appendix.

Connector: **DC_IN**
Type: 4-pin DC power connector

| Pin | Assignment | Pin | Assignment |
|---|---|---|---|
| 1 | Ground | 2 | Ground |
| 3 | +8~24V | 4 | +8~24V |




Connector: **ATX** *(It also can become Output when DC-IN be used)*
Type: 20-pin ATX power connector

| Pin | Assignment | Pin | Assignment |
|---|---|---|---|
| 1 | 3.3V | 11 | 3.3V |
| 2 | 3.3V | 12 | -12V |
| 3 | GND | 13 | GND |
| 4 | 5V | 14 | -PSON |
| 5 | GND | 15 | GND |
| 6 | 5V | 16 | GND |
| 7 | GND | 17 | GND |
| 8 | PW_OK | 18 | N/C |
| 9 | 5V_SB | 19 | 5V |
| 10 | 12V | 20 | 5V |

### 2.13.2 <Power Output>

The board provides one 20-pin ATX connector for +5V/+12V output for powering your HDD, CDROM or other devices.

**Attention: When DC-IN had power supplied, the ATX become output !**

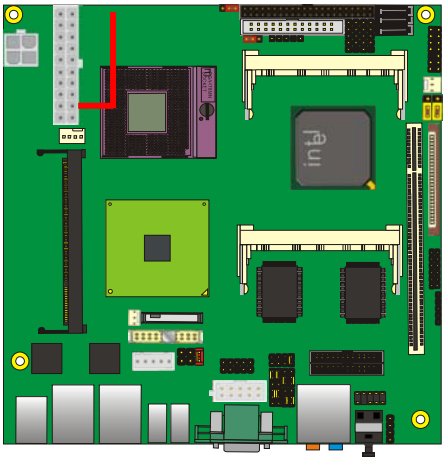
**Avoid DC-IN and ATX power supply input at the same time !**

Connector: **ATX** *(When DC-IN be used)*
Type: 20-pin ATX connector for +3.3V/+5V/+12V **Output**

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

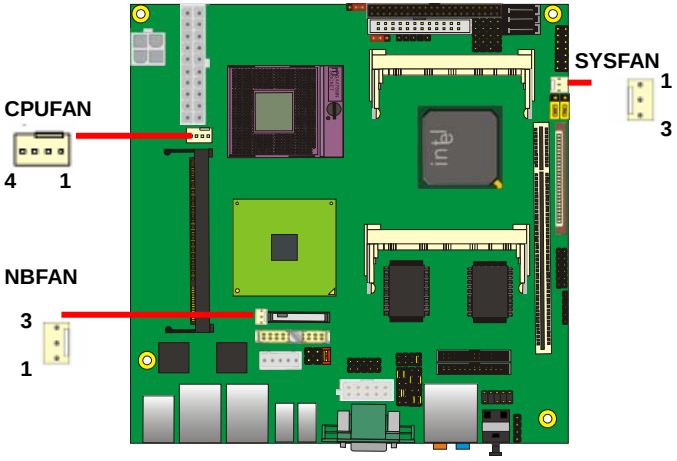
*Note: Maximum output voltage:* ***12V/2A & 5V/3A &3.3V/2A***

**ATX**



## 2.14 < Fan Installation >

The board provides one 4-pin fan connectors supporting smart fan for CPU cooler and two 3-pin cooler fan connectors for system and Northbridge chip.




Connector: **CPUFAN**
Type: 4-pin fan wafer connector

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | Ground | 2 | +12V |
| 3 | Fan Speed Detection | 4 | Fan Control |

Connector: **SYSFAN**
Type: 3-pin fan wafer connector

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

Connector:**NBFAN**
Type: 3-pin fan wafer connector

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

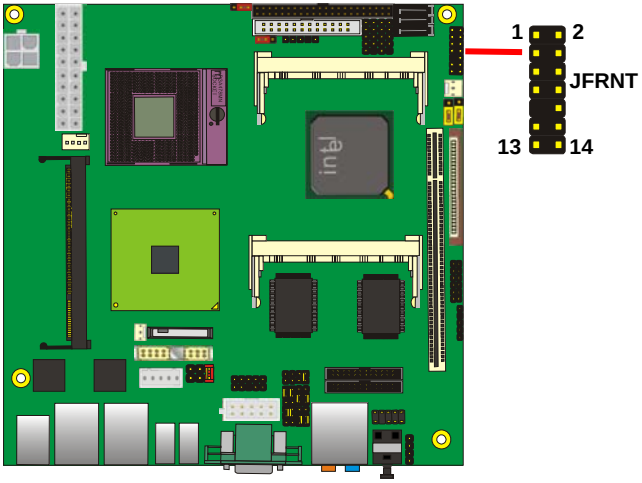
## 2.15 <Switch and Indicator>

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 | PWRLED+ | **Power LED** |
| | HDLED- | 3 | 4 | N/C | |
| **Reset** | Reset+ | 5 | 6 | PWRLED- | |
| | Reset- | 7 | 8 | SPK+ | **Speaker** |
| | N/C | 9 | 10 | N/C | |
| **Power Button** | PWRBT- | 11 | 12 | N/C | |
| | PWRBT+ | 13 | 14 | SPK- | |



# Chapter 3 <System Setup>

## 3.1 <Audio Configuration>

The board integrates Intel® ICH8DO with REALTEK® ALC888 codec. It can support 2-channel or 7.1 channel sound under system configuration. Please follow the steps below to setup your sound system.

1. Install REALTEK HD Audio driver.
2. Lunch the control panel and Sound Effect Manager.


3. Select Speaker Configuration

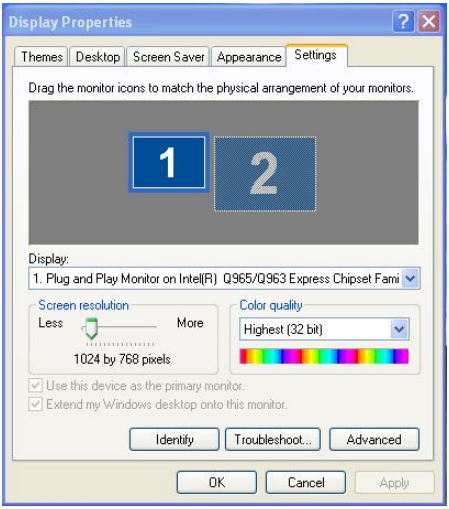

4. Select the sound mode to meet your speaker system.

## 3.2 <Display Properties Setting>

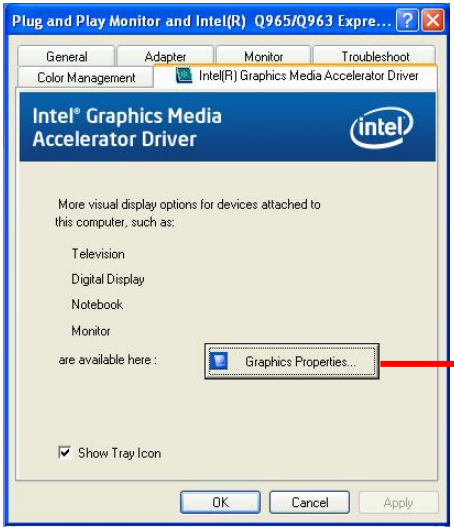
Based on Intel GM(E)965 GMCH with GMA X3100 (Graphic Media Accelerator), the board supports two DACs for display device as different resolution and color bit.

Please install the Intel Graphic Driver before you starting setup display devices.

1. Click right button on the desktop to lunch **display properties.**




2. Click **Advanced** button for more specificity setup.

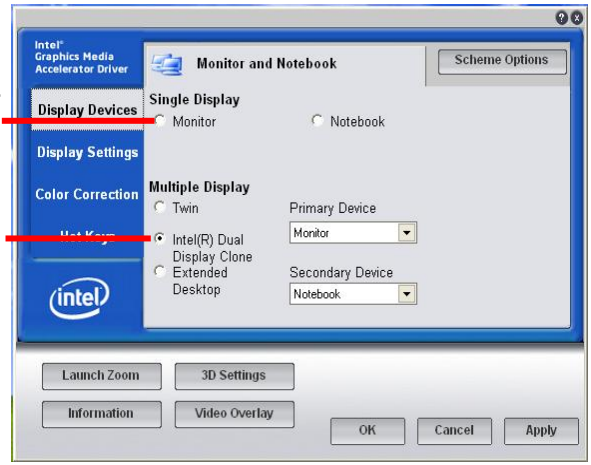



**Click Graphics Properties... for advanced setup**

3. This setup options can let you define each device settings.

**Click Monitor to setup the CRT monitor for Colors, Resolution and Refresh Rate**

**Click Intel(R) Dual Display Clone to setup the dual display mode as same screen**



# Chapter 4 <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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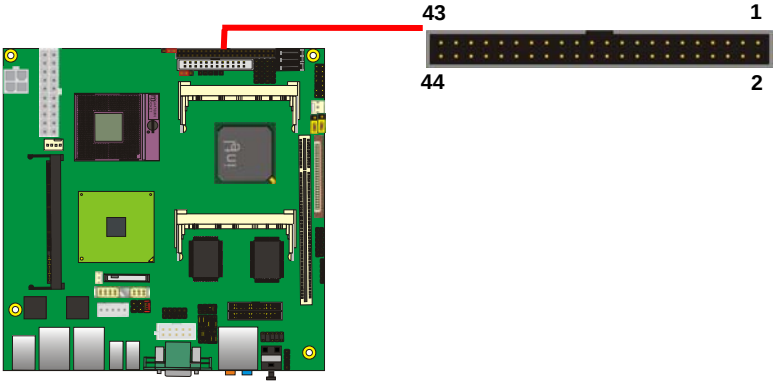
# Appendix A <I/O Port Pin Assignment>

## A.1 <IDE Port>

Connector: **IDE1**

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

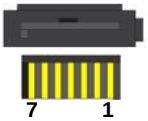
| Pin | Assignment | Pin | Assignment |
|---|---|---|---|
| 1 | Reset | 2 | Ground |
| 3 | D7 | 4 | D8 |
| 5 | D6 | 6 | D9 |
| 7 | D5 | 8 | D10 |
| 9 | D4 | 10 | D11 |
| 11 | D3 | 12 | D12 |
| 13 | D2 | 14 | D13 |
| 15 | D1 | 16 | D14 |
| 17 | D0 | 18 | D15 |
| 19 | Ground | 20 | N/C |
| 21 | REQ | 22 | Ground |
| 23 | -IOW | 24 | Ground |
| 25 | -IOR | 26 | Ground |
| 27 | IORDY | 28 | Ground |
| 29 | DACK | 30 | Ground |
| 31 | IDEIRQ | 32 | N/C |
| 33 | A1 | 34 | 66DET |
| 35 | A0 | 36 | A2 |
| 37 | -CS1 | 38 | -CS3 |
| 39 | -HD LED1 | 40 | Ground |
| 41 | **By JVSSD Jumper** | 42 | **By JVSSD Jumper** |
| 43 | Ground | 44 | Ground |



## A.2 <Serial ATA Port>

Connector: **SATA1/2/3**

Type: 7-pin wafer connector




| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| GND | RSATA_TXP1 | RSATA_TXN1 | GND | RSATA_RXN1 | RSATA_RXP1 | GND |

## A.3 <Floppy Port>

Connector: **FDD**

Type: 26-pin connector


| Pin | Assignment | Pin | Assignment |
|---|---|---|---|
| 1 | VCC | 2 | INDEX |
| 3 | VCC | 4 | DR0 |
| 5 | VCC | 6 | DSKCHG |
| 7 | N/C | 8 | N/C |
| 9 | N/C | 10 | MTR0 |
| 11 | DRVDE0 | 12 | DIR |
| 13 | N/C | 14 | STEP |
| 15 | Ground | 16 | WRITE DATA |
| 17 | Ground | 18 | WRITE GATE |
| 19 | Ground | 20 | TRAK 0 |
| 21 | N/C | 22 | WRPTO |
| 23 | Ground | 24 | RDATA- |
| 25 | Ground | 26 | HDSEL |

## A.4 <IrDA Port>

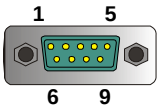
Connector: **CN_IR**

Type: 5-pin header for SIR Ports

| Pin | Assignment |
|---|---|
| 1 | VCC |
| 2 | N/C |
| 3 | IRRX |
| 4 | Ground |
| 5 | IRTX |


***JCSEL1 must jump to "SIR"***

## A.5 <Serial Port 1>




Connector: **COM1**

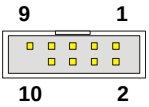
Type: 9-pin D-sub male connector on bracket

| Pin | Assignment | Pin | Assignment |
|---|---|---|---|
| 1 | DCD | 6 | DSR |
| 2 | RX | 7 | RTS |
| 3 | TX | 8 | CTS |
| 4 | DTR | 9 | RI |
| 5 | Ground | | |

## A.6 <Serial Port 2>

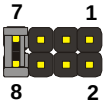
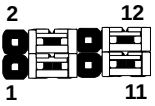
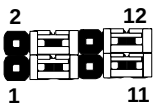
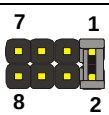
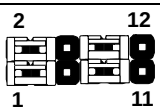
Connector: **CN_COM2**

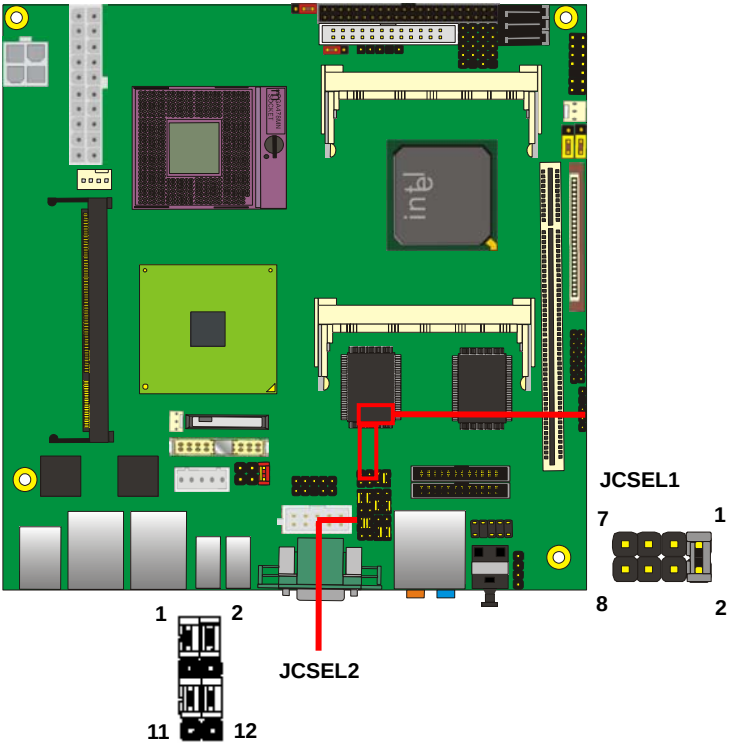
Type: 9-pin box header connector on bracket




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

### Setting RS-232 & RS-422 & RS-485 for CN_COM2:

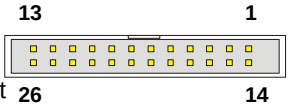
| Function | JCSEL1 | JCSEL2 |
|---|---|---|
| SIR |   |   |
| RS-422 |   |   |
| RS-485 |   |   |
| RS-232 |   |   |


JCSEL1
7
1
8
2
1
2
JCSEL2
11
12

## A.7 <Parallel Port>

Connector: **LPT**

Type: 26-Pin box header Connector on bracket

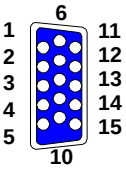



| Pin | Assignment | Pin | Assignment |
|---|---|---|---|
| 1 | -PSTB | 14 | AFD- |
| 2 | PRO0 | 15 | ERR- |
| 3 | PRO1 | 16 | INT- |
| 4 | PRO2 | 17 | SLIN- |
| 5 | PRO3 | 18 | Ground |
| 6 | PRO4 | 19 | Ground |
| 7 | PRO5 | 20 | I/O Ground |
| 8 | PRO6 | 21 | Ground |
| 9 | PRO7 | 22 | Ground |
|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

## A.8 <VGA Port>

Connector: **CRT**

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

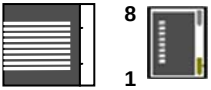



| Pin | Assignment | Pin | Assignment | Pin | Assignment |
|---|---|---|---|---|---|
| 1 | RED | 6 | Ground | 11 | N/C |
| 2 | GREEN | 7 | Ground | 12 | DDCDA |
| 3 | BLUE | 8 | Ground | 13 | HSYNC |
| 4 | N/C | 9 | N/C | 14 | VSYNC |
| 5 | Ground | 10 | Ground | 15 | DDCCLK |

## A.9 <LAN Port>

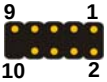
Connector: **RJ45_1/2**

Type: RJ45 connector with LED on bracket




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

## A.10 <USB Interface>




Connector: **CN_USB 1/2**
Type: 10-pin (5 x 2) header for dual USB Ports

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

## A.11 <DVI Port>


Connector: **CN_DVI1/2**
Type: onboard 26-pin connector for DVI connector

| Pin | Assignment | Pin | Assignment |
|---|---|---|---|
| 1 | TDC1+ | 2 | TDC1- |
| 3 | GND | 4 | GND |
| 5 | TLC+ | 6 | TLC- |
| 7 | GND | 8 | V5S |
| 9 | N/C | 10 | N/C |
| 11 | TDC2+ | 12 | TDC2- |
| 13 | GND | 14 | GND |
| 15 | TDC0+ | 16 | TDC0- |
| 17 | N/C | 18 | HPD1 |
| 19 | DVI_DA | 20 | DVI_SL |
| 21 | GND | 22 | N/C |
| 23 | N/C | 24 | N/C |
| 25 | N/C | 26 | N/C |

# Appendix B <Flash BIOS>

## B.1 <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.phoenix.com/en/home/**
**http://www.commell.com.tw/Support/Support_SBC.htm**

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

## B.2 <Flash BIOS Procedure>

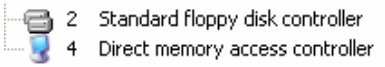
1. Please make a bootable floppy disk.
2. Get the last .bin files you want to update and copy it into the disk.
3. Copy awdflash.exe to the disk.
4. Power on the system and flash the BIOS. (Example: C:/ awdflash XXX.bin)
5. Restart the system.

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

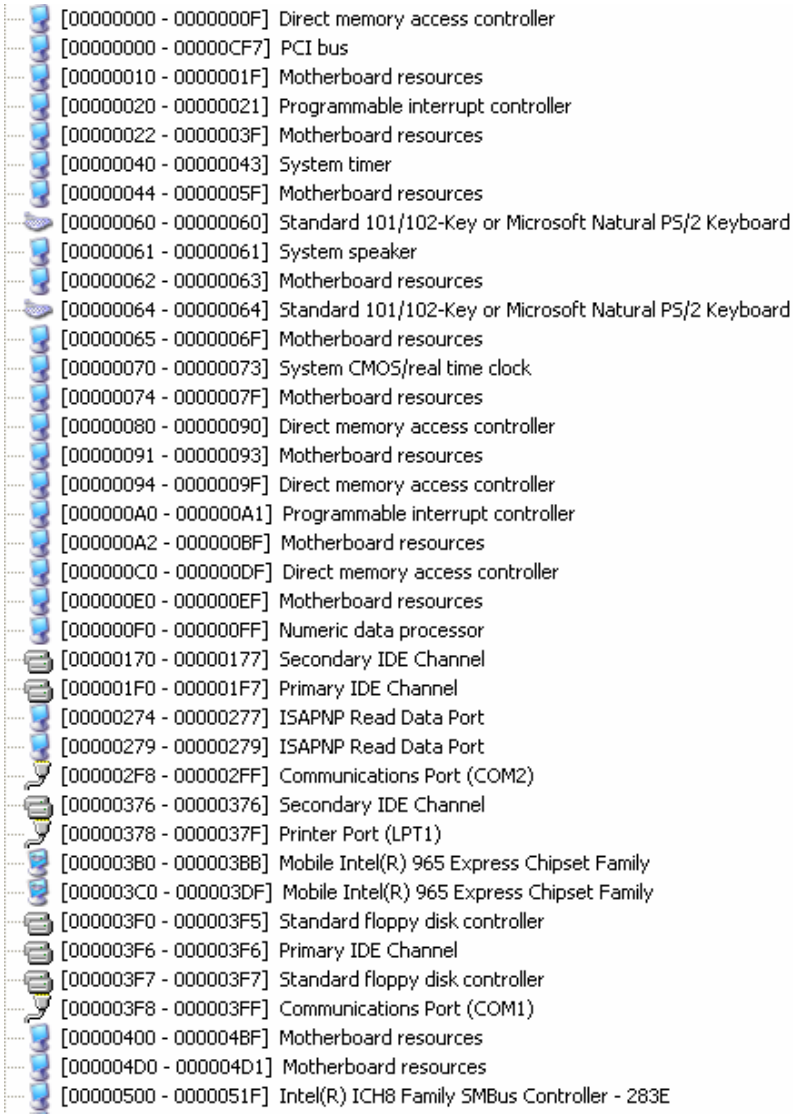
ftp://ftp.commell.com.tw/COMMELL/support/AWDFLASH.rar

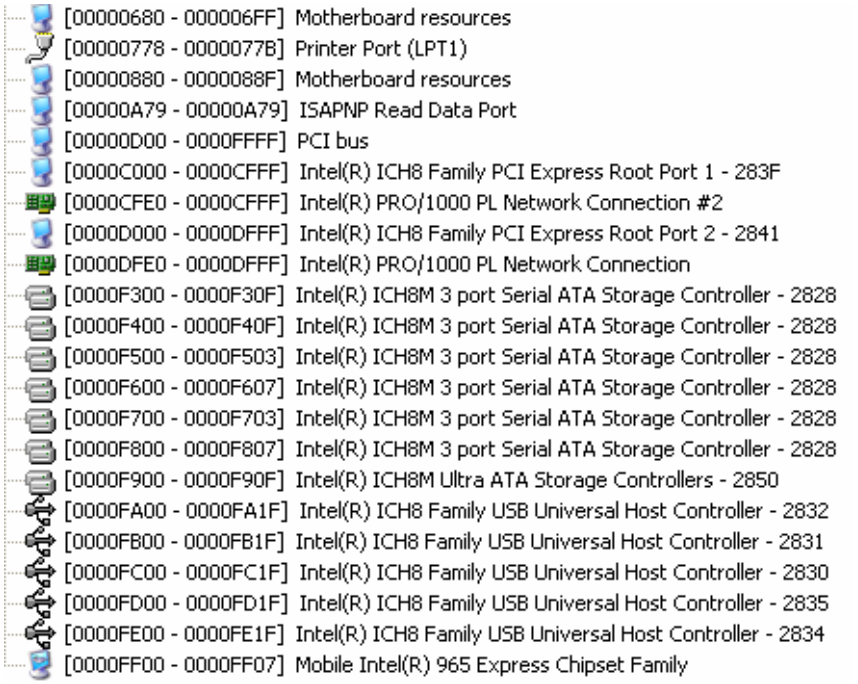
# Appendix C <System Resources>

## C.1 <Direct Memory Access (DMA)>

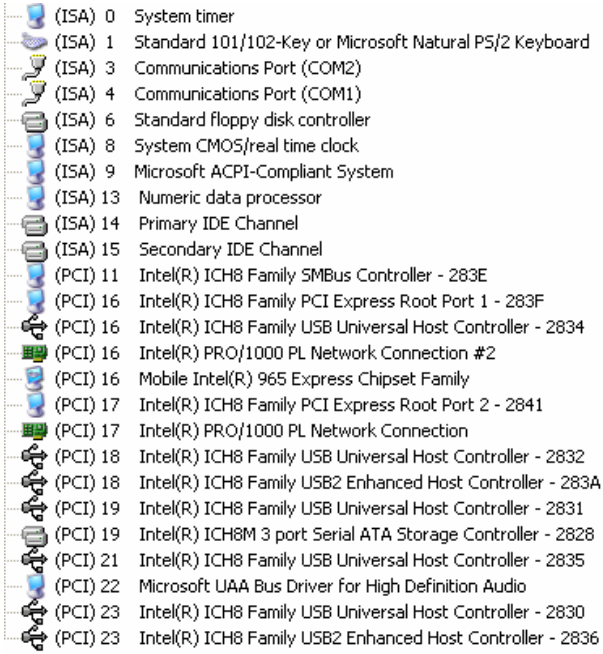



## C.2 <Input /Output (IO)>

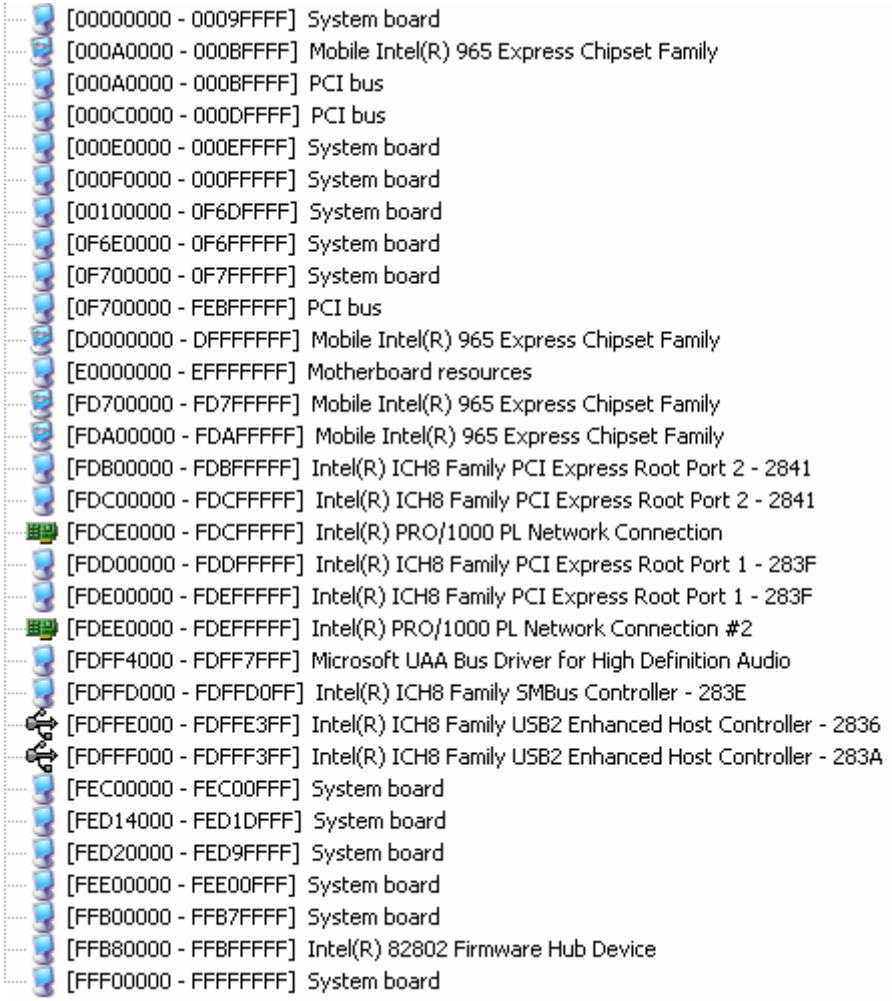





## C.3 <Memory Address Map>



## C.4 <Memory>


[00000000 - 0009FFFF] System board
[000A0000 - 000BFFFF] Mobile Intel(R) 965 Express Chipset Family
[000A0000 - 000BFFFF] PCI bus
[000C0000 - 000DFFFF] PCI bus
[000E0000 - 000EFFFF] System board
[000F0000 - 000FFFFF] System board
[00100000 - 0F6DFFFF] System board
[0F6E0000 - 0F6FFFFF] System board
[0F700000 - 0F7FFFFF] System board
[0F700000 - FEBFFFFF] PCI bus
[D0000000 - DFFFFFFF] Mobile Intel(R) 965 Express Chipset Family
[E0000000 - EFFFFFFF] Motherboard resources
[FD700000 - FD7FFFFF] Mobile Intel(R) 965 Express Chipset Family
[FDA00000 - FDAFFFFF] Mobile Intel(R) 965 Express Chipset Family
[FDB00000 - FDBFFFFF] Intel(R) ICH8 Family PCI Express Root Port 2 - 2841
[FDC00000 - FDCFFFFF] Intel(R) ICH8 Family PCI Express Root Port 2 - 2841
[FDCE0000 - FDCFFFFF] Intel(R) PRO/1000 PL Network Connection
[FDD00000 - FDDFFFFF] Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
[FDE00000 - FDEFFFFF] Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
[FDEE0000 - FDEFFFFF] Intel(R) PRO/1000 PL Network Connection #2
[FDFF4000 - FDFF7FFF] Microsoft UAA Bus Driver for High Definition Audio
[FDFFD000 - FDFFD0FF] Intel(R) ICH8 Family SMBus Controller - 283E
[FDFFE000 - FDFFE3FF] Intel(R) ICH8 Family USB2 Enhanced Host Controller - 2836
[FDFFF000 - FDFFF3FF] Intel(R) ICH8 Family USB2 Enhanced Host Controller - 283A
[FEC00000 - FEC00FFF] System board
[FED14000 - FED1DFFF] System board
[FED20000 - FED9FFFF] System board
[FEE00000 - FEE00FFF] System board
[FFB00000 - FFB7FFFF] System board
[FFB80000 - FFBFFFFF] Intel(R) 82802 Firmware Hub Device
[FFF00000 - FFFFFFFF] System board

# Appendix D <Programming GPIO's>

The GPIO's 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 2E 87 ; Enter configuration
-o 2E 87
-o 2E 07
-o 2F 09 ; Enable GPIO's function
-o 2E 30
-o 2F 02 ; Enable GPIO's configuration
-o 2E F0
-o 2F xx ; Set GPIO's as input/output; set '1' for input,'0'for output
-o 2E F1
-o 2F xx ; If set GPIO's as output, in this register its value can be set

Optional:
-o 2E F2
-o 2F xx ; Data inversion register; '1' inverts the current value of the bits,'0' leaves them as they are
-o 2E 30
-o 2F 01 ; Active GPIO's

For further information, please refer to Winbond W83627DHG 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.

**Time-out Value Range**

- 1 to 255
- Second or Minute

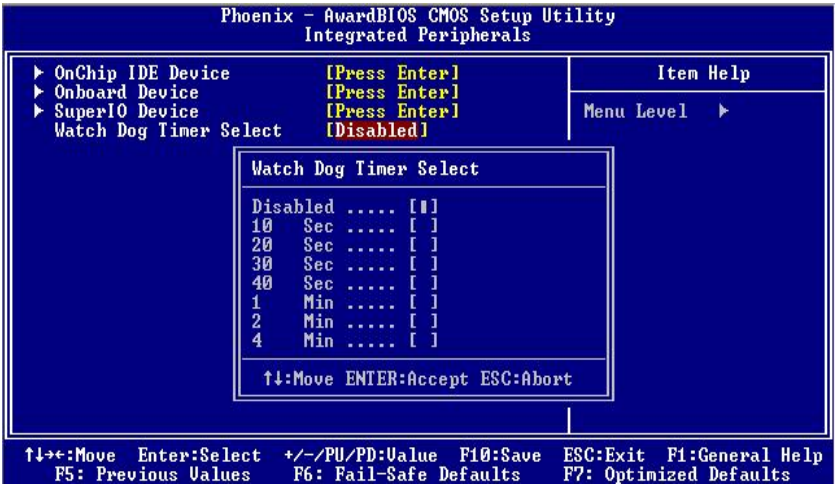
**Program Sample**

Watchdog timer setup as system reset with 5 second of timeout

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

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

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



# ntact 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, project a business.


## Taiwan Commate Computer Inc.

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