



integration with integrity

User's Manual

Micro-ATX Motherboard 2807800

Version 1.0, October 2007

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Packing List:

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

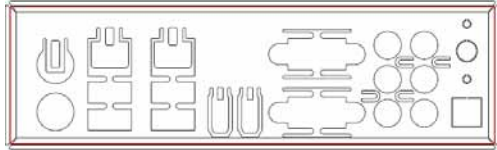
Hardware:

2807800 Micro ATX Motherboard x 1

Cable Kit:



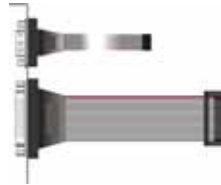
40-pin ATA100 IDE Cable x 1



I/O Shield x 1



Floppy Cable x 1



COM x 1 & printer x 1



SATA Cable x 2



CPU Cooler x 1

Printed Matters:

Driver CD x 1 (including User's Manual)

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Chapter 1 <Introduction>

1.1 <Product Overview>

2807800 is the new generation of the Micro ATX motherboard, with supporting Intel Core 2 Duo **socket-P** processors for 533/800MHz front side bus, Intel GM(E)965 and ICH8M chipset, integrated GMA X3100 graphics, DDR2 memory, REALTEK High Definition Audio, Serial ATA and two Intel Gigabit LAN.

Intel Merom dual core Processor

The board supports Intel Core 2 Duo **socket-P** processors with 533/800MHz 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 ICH8M chipset, to provide new generation of the mobile solution, supports Intel GMA X3100 graphics, DDR2 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, 18/24-bit Single/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 one PCI-Express x16 slots for graphics card, it also can support PCI-Express x1 for RAID card or other devices. The board also provides Compact Flash Type II slot and one mini-PCI socket.

1.2 <Product Specification>

General Specification

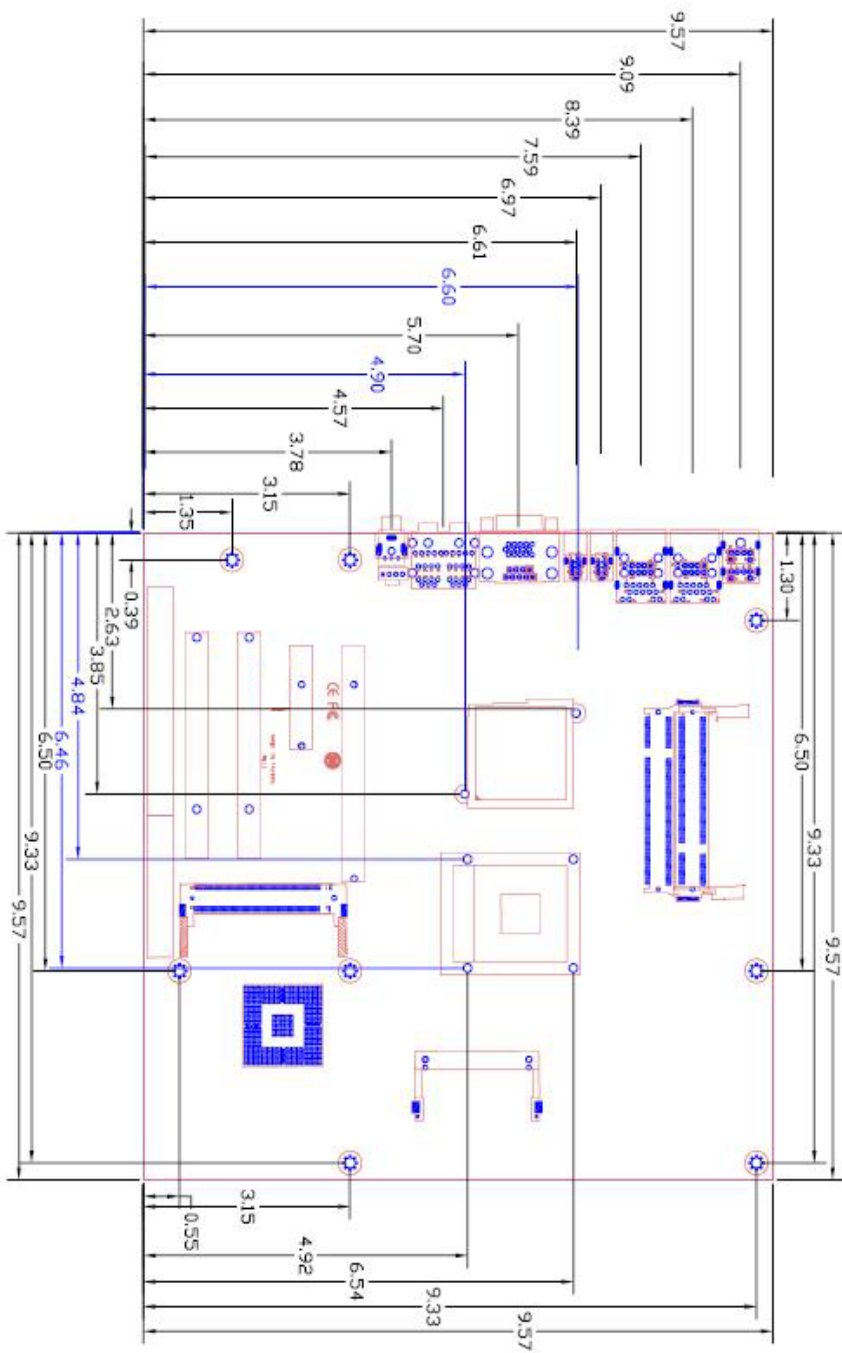
| | |
|----------------------|--|
| Form Factor | Micro ATX Industrial motherboard |
| CPU | Support Intel Core 2 Duo Mobile Processor Package type: Micro-FCPGA478 (Socket-P) Front side bus: 533/800 MHz |
| Memory | Two DDRII 533/667MHz DIMM up to 3GB with dual channel Interleaved mode |
| Chipset | 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 40-pin UltraATA100/33 IDE interface supports up to 2 ATAPI devices |
| Serial ATA Interface | 3 x serial ATAI 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 |
| Audio Interface | Intel integrated ICH8M with Realtek ALC888 HD Audio |
| LAN Interface | Two Intel 82573L Gigabit LAN |
| Solid State Disk | One Compact Flash Type II |
| GPIO interface | Onboard programmable 8-bit Digital I/O interface |
| Extended Interface | 1x PCIE x16 slot, 1 x PCIE x1 slot, 1 x Mini-PCI socket 2 x PCI and 1 x ISA slot |
| Internal I/O Port | 1 X RS232/422/485 x4 RS232, 1x FDD port, 1x GPIO port, 1 x Parallel Port , 6 x USB ports, 1x IrDA, 1x HDTV 1x IDE, 1x LVDS, 1x LCD inverter connector, 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, 1 x COM port, 7.1 Channel Audio Output and 1x SPDIF connector |
| Power Requirement | Standard 24-pin ATX power supply (20-pin is compatible) |
| Dimension | 244mm x 244mm |
| Temperature | Operating within 0~60 centigrade Storage within -20~85 centigrade |

Ordering Code

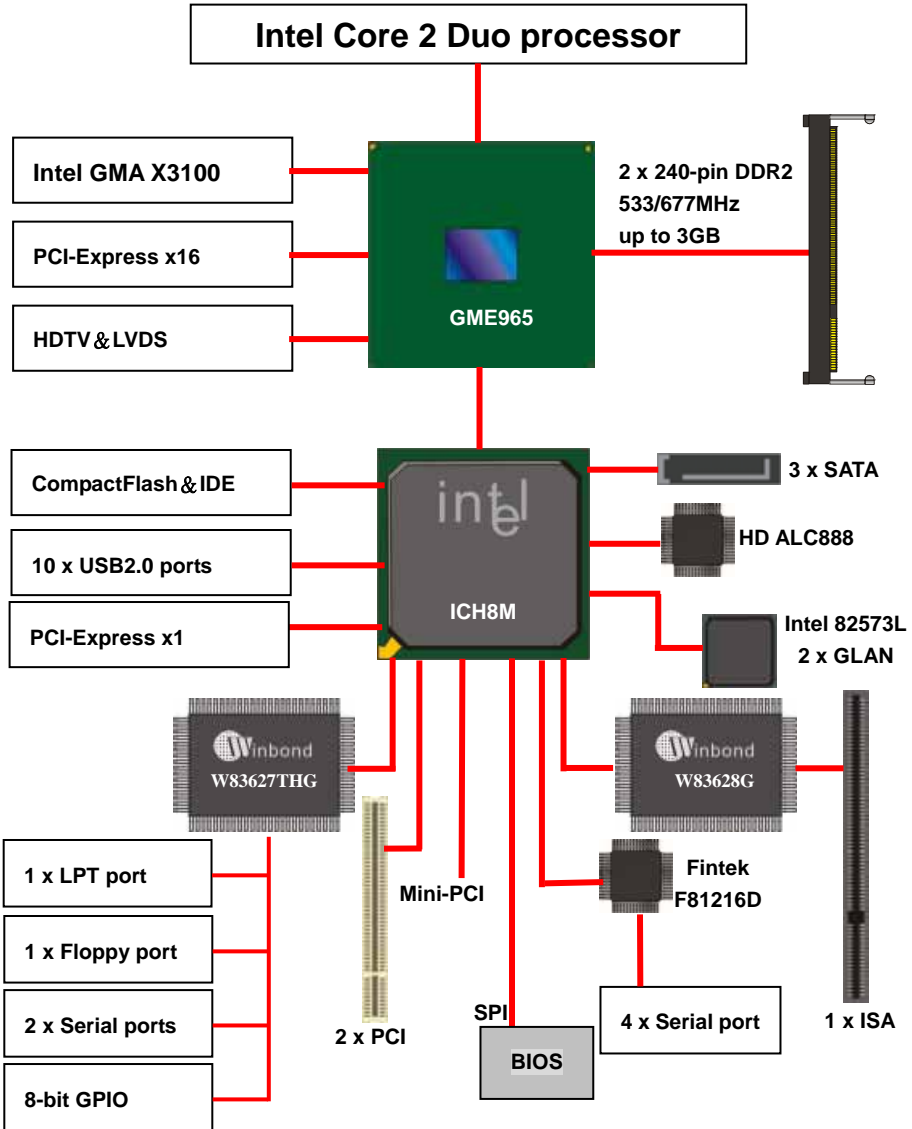
| | |
|---------|---|
| 2807800 | Onboard CRT, LVDS, HDTV, Intel Gigabit LAN, USB2.0, PCI, Mini-PCI, GPIO Port, 1394, IrDA, FDD, Parallel Port, COM Port, SATA, HD Audio and ISA slot |
|---------|---|

For further product information please visit the website at www.globalamericaninc.com

1.3 <Mechanical Drawing>



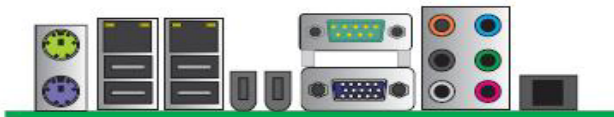
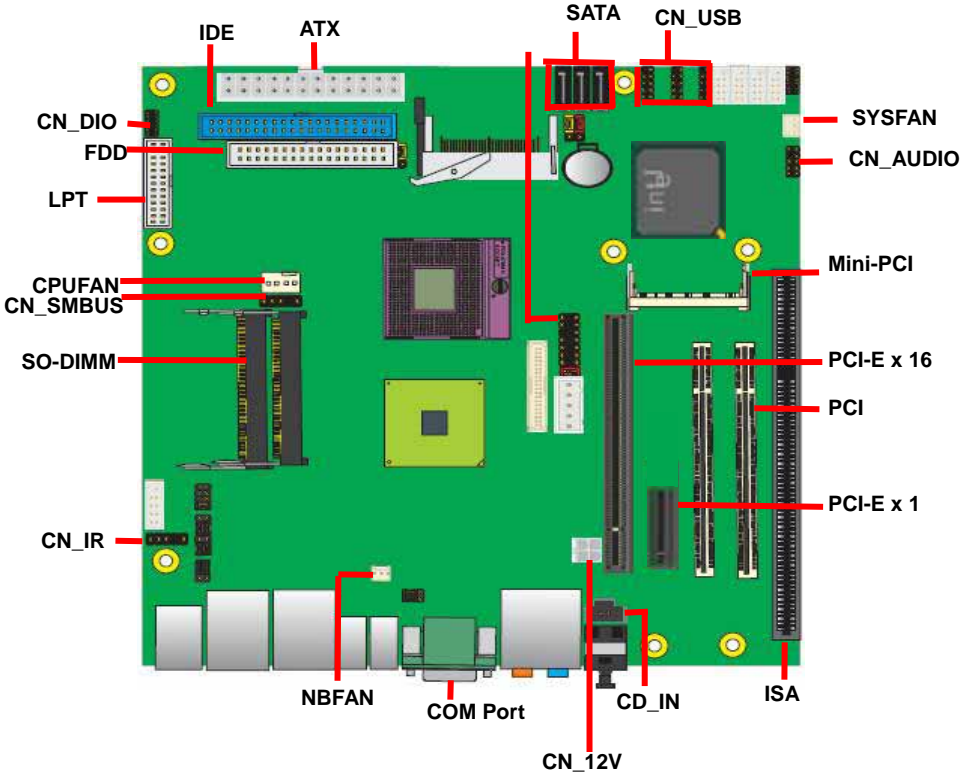
1.4 <Block Diagram>



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Chapter 2 <Hardware Setup>

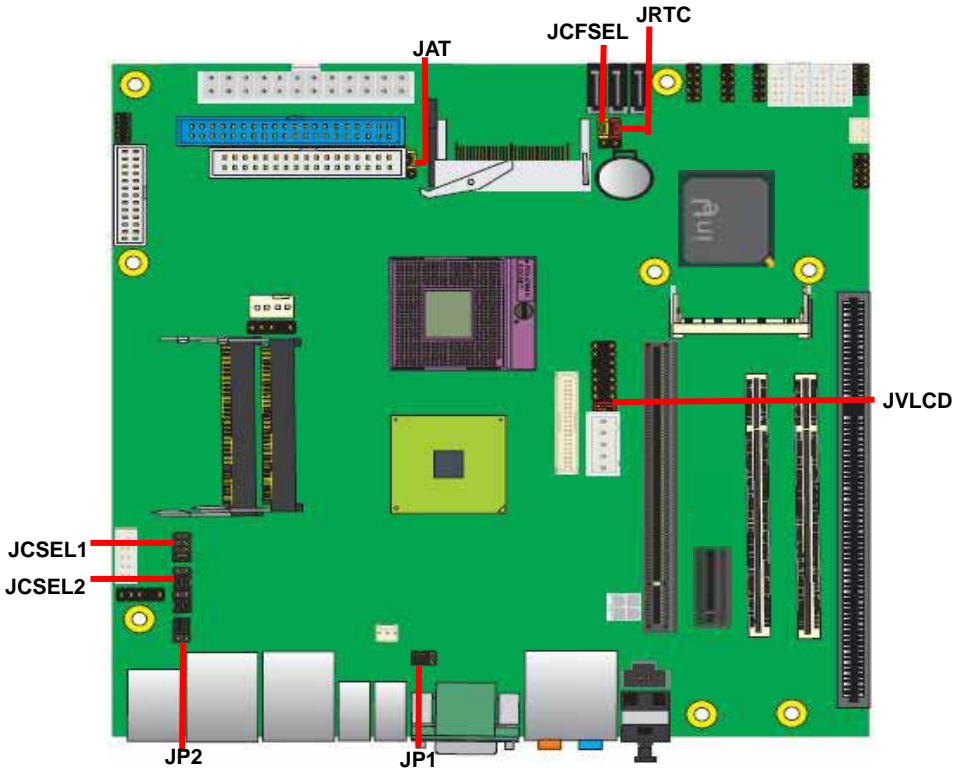
2.1 <Connector Location>



PS/2 USB&LAN 1394 CRT&COM1 Audio SPDIF




2.2 <Jumper Location & Reference>

| Jumper | Function |
|--------|---|
| JRTC | CMOS Operating/Clear Setting |
| JCFSEL | CF mode selection |
| JVLCD | Panel Voltage Setting |
| JP1 | COM1 signal mode switch (For Pin-1 & Pin-9) |
| JP2 | COM2 signal mode switch (For Pin-1 & Pin-9) |
| JAT | Power mode select |






Jumper: **JAT**

Type: onboard 3-pin header

| Power Mode | JAT |
|----------------------------------|---|
| AT Mode |  |
| ATX Mode |  |
| Default setting: ATX Mode | |
| |  |




Jumper: **JP1 (COM 1)**

Type: onboard 3 x 2-pin header

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

Jumper: **JP2 (COM 2)**

Type: onboard 3 x 2-pin header

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

2.3 <Connector Reference>

2.3.1 <Internal Connectors>

| Connector | Function | Remark |
|--------------|---|--------|
| CPU | Socket478 for socket-P CPU | |
| SO-DIMM 1/2 | 2 x 200 -pin DDR2 SO-DIMM slot | |
| IDE | 40-pin IDE connector | |
| FDD | 34-pin floppy connector | |
| LPT | 26-pin LPT port connector | |
| S_ATA1/2/3 | 7-pin Serial ATA connector | |
| ATX | 24-pin power input connector | |
| CN_12V | 4-pin +12V additional power supply connector | |
| CN_AUDIO | 5 x 2-pin audio connector | |
| CDIN | 4-pin CD-ROM audio input connector | |
| CN_DIO | 6 x 2-pin digital I/O connector | |
| CN_USB | 3 x 5 x 2-pin USB connector | |
| CPUFAN | 4-pin CPU cooler fan connector | |
| SYSFAN | 3-pin system cooler fan connector | |
| NBFAN | 3-pin system cooler fan connector | |
| 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-PCI | 1 x Mini-PCI socket Type IIIA | |
| PCI | 2 x 32bit PCI slot | |
| CF | Compact Flash Type II socket | |
| COM2/3/4/5/6 | Serial port connector | |
| PCIE_x16 | PCI-Express x16 slot | |
| PCIE_x1 | PCI-Express x1 slot | |
| ISA | 16-bit/8-bit ISA slot | |

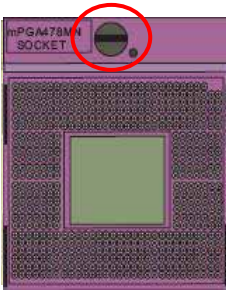
2.3.2 <External Connectors>

| Connector | Function | Remark |
|------------|--|--------|
| USB_RJ45 | Dual USB and one RJ45 LAN connector | |
| CRT + COM1 | DB15 analog VGA connector and COM1 Connect | |
| KB | PS/2 keyboard connector | |
| MS | PS/2 mouse connector | |
| AUDIO | Audio connectors | |
| 1394 | 2 x IEEE1394 port | |
| SPDIF | SPDIF digital audio output connector | |

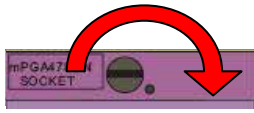
2.4 <CPU and Memory Setup>

2.4.1 <CPU Setup>

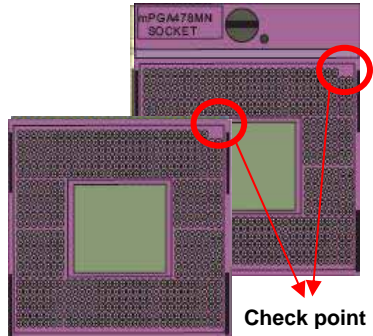
The board comes with the socket478 for Intel Core 2 Duo **socket-P** processor only it supports new generation of Intel Core 2 Duo **socket-P** processor with 533/800MHz of front side bus and 4MB L2 cache. Please follow the instruction to install the CPU properly.



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

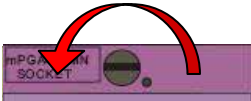


Unlock way



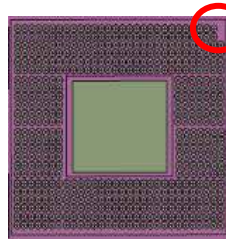
Check point

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.

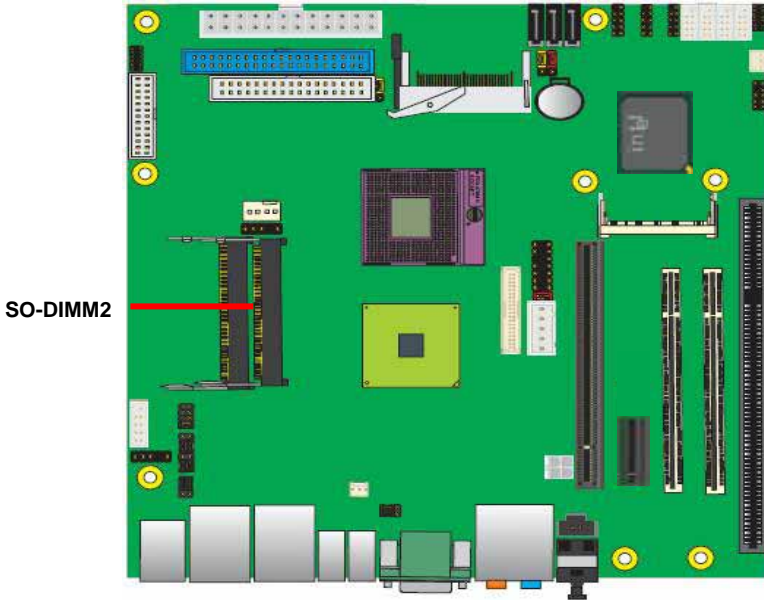


Socket-M CPU

Check point

2.4.2 <Memory Setup>

The board provides two 200-pin DDR2 SO-DIMMs to support 533/667MHz DDR2 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>

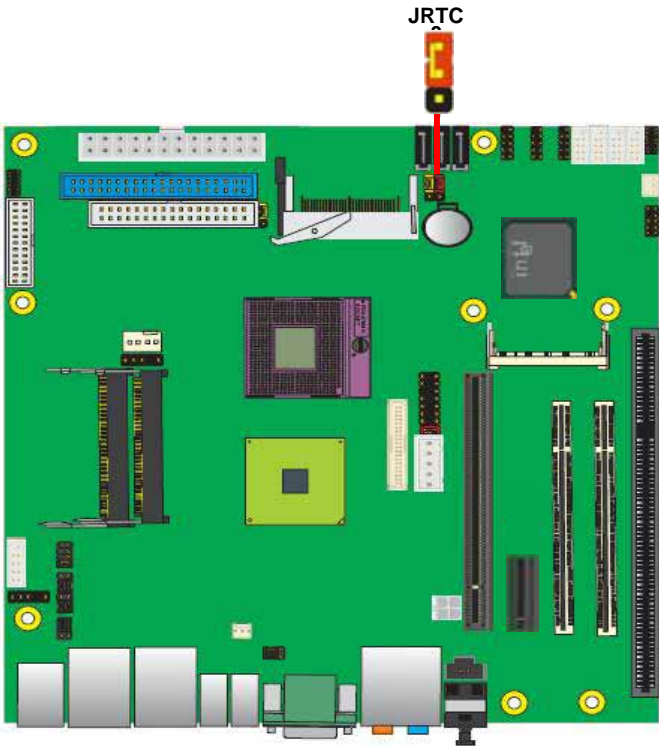
The board's data of CMOS can be setting in BIOS. If the board refuses to boot due to inappropriate CMOS settings, here is how to proceed to clear (reset) the CMOS to its default values.

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>

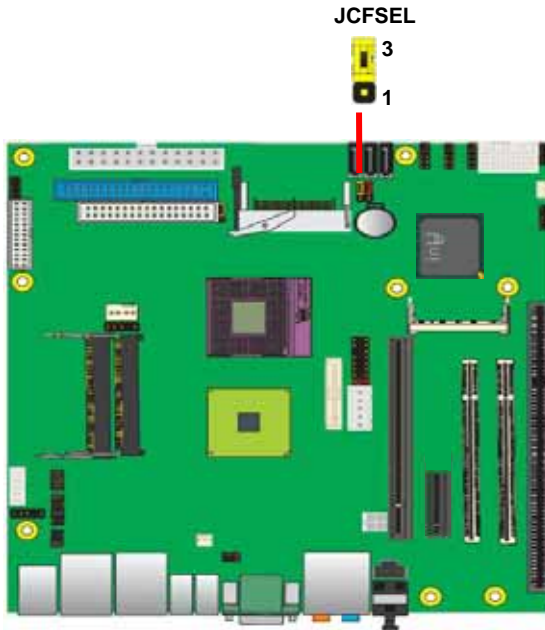
The board has one UltraDMA100/33 IDE interface to support up to 2 ATAPI devices, or one ATAPI device and Compact Flash Type II socket on the solder side, with jumper **JCFSEL** for IDE master/slave mode selection.

Jumper: **JCFSEL**

Type: onboard 3-pin header

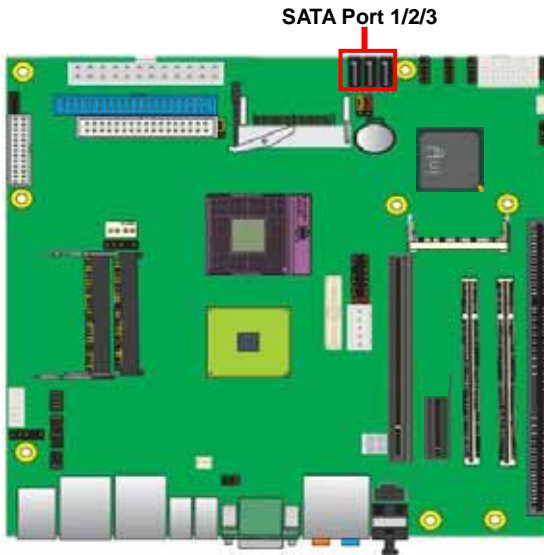
| JCFSEL | Mode |
|--------|--------|
| 1-2 | Master |
| 2-3 | Slave |

Default setting: 2-3



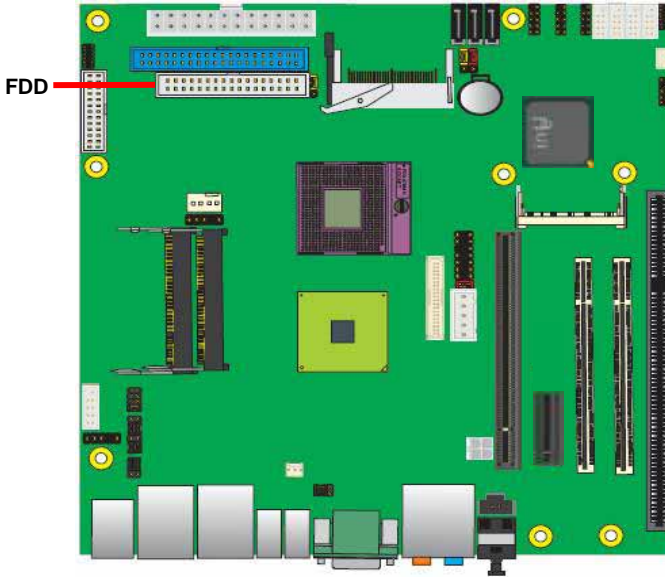
2.7 <Serial ATA Interface>

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



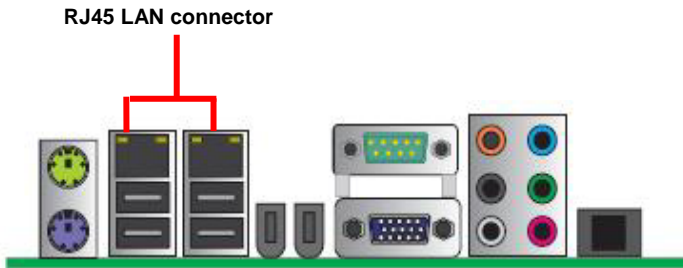
2.8 <Floppy Port>

The board provides one floppy port.



2.9 <Ethernet Interface>

The board integrates with two 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 rear 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 CRT, LCD, and TV-out.

2.10.1 <Analog Display>

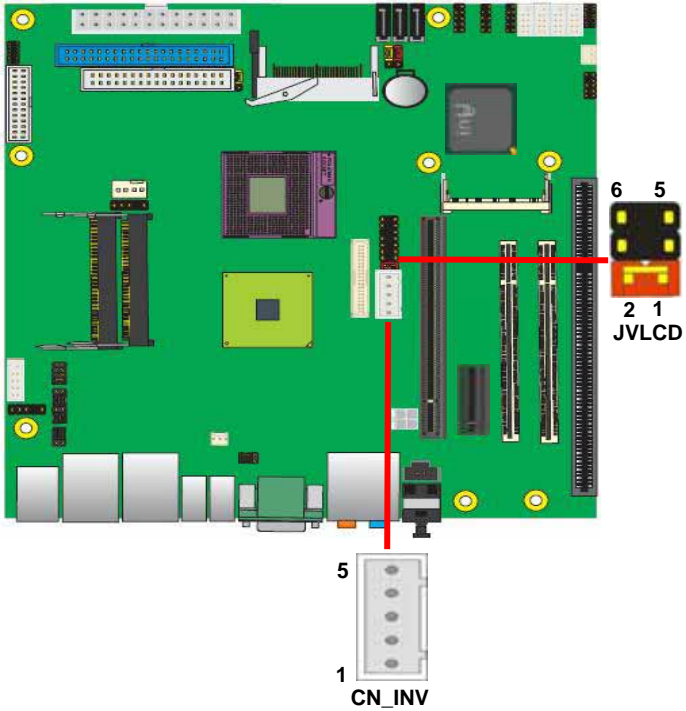
Please connect your CRT or LCD monitor with DB15 male connector to the onboard DB15 female connector on rear I/O port.



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.



Attention: Don't short JVLCD odd to odd pin. It could be cause serious damage.

Connector: **CN_INV**

Type: 5-pin LVDS Power Header

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

Connector: **JVLCD**

Type: 6-pin Power select Header

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

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 |

2807800 User's Manual

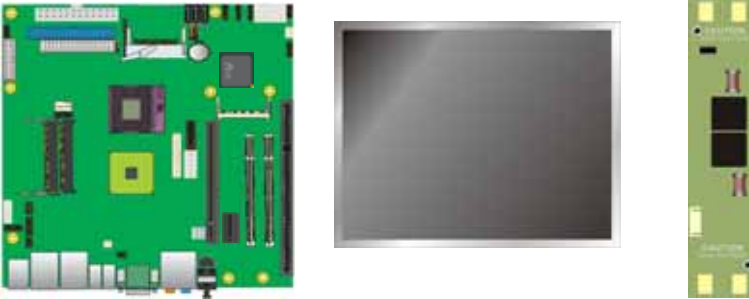
To setup the LCD, you need the component below:

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:

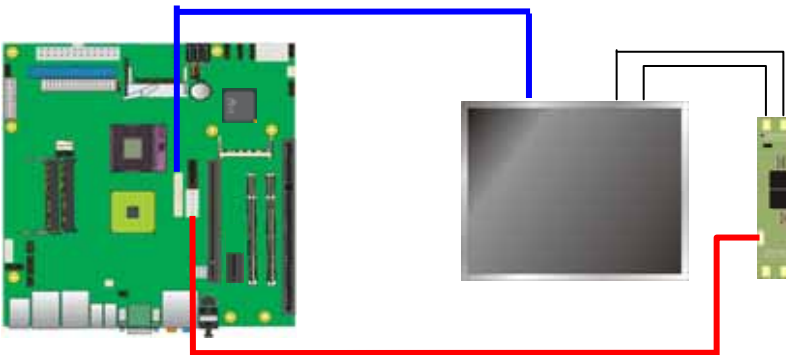
1. Preparing the **2807800**, LCD panel and the **backlight inverter**.



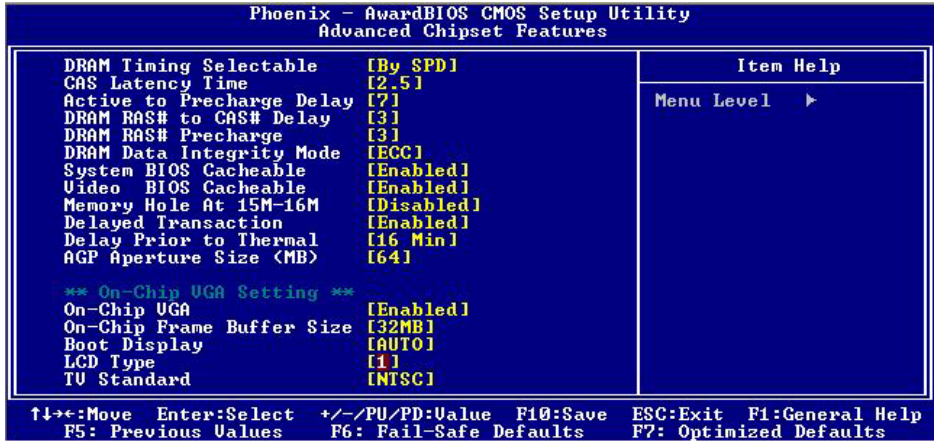
2. Please check the datasheet of the panel to see the voltage of the panel, and set the jumper **JVLCD** to +12V or +5V or +3.3V.
3. You would need a LVDS type cable.



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:1.0) | | | |
|---|---------------|---------------------|----------------------|
| 18-bit Single channel | | 24-bit Dual channel | |
| NO. | Output format | NO. | Output format |
| 1 | 800 x480 | 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 @ 108Mhz |
| 5 | 1280 x 768 | 15 | 1600 x 1200 |
| 6 | 1280 x 800 | | |
| 7 | 1280 x 1024 | | |
| 8 | 1366 x 768 | | |
| 9 | 1600 x 1200 | | |

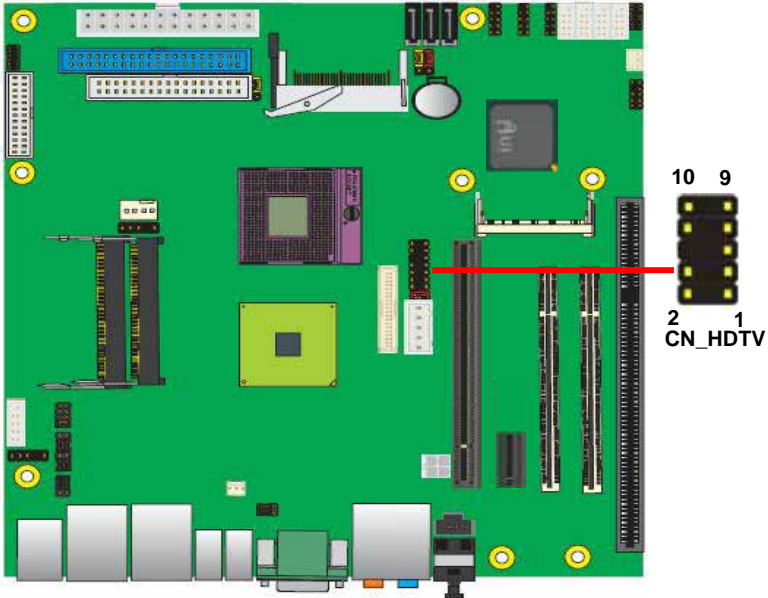
2.10.3 <HDTV Interface>

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 | DACB1 |
| 3 | DACB2 | 4 | GND |
| 5 | GND | 6 | N/C |
| 7 | DACB3 | 8 | GND |
| 9 | N/C | 10 | N/C |



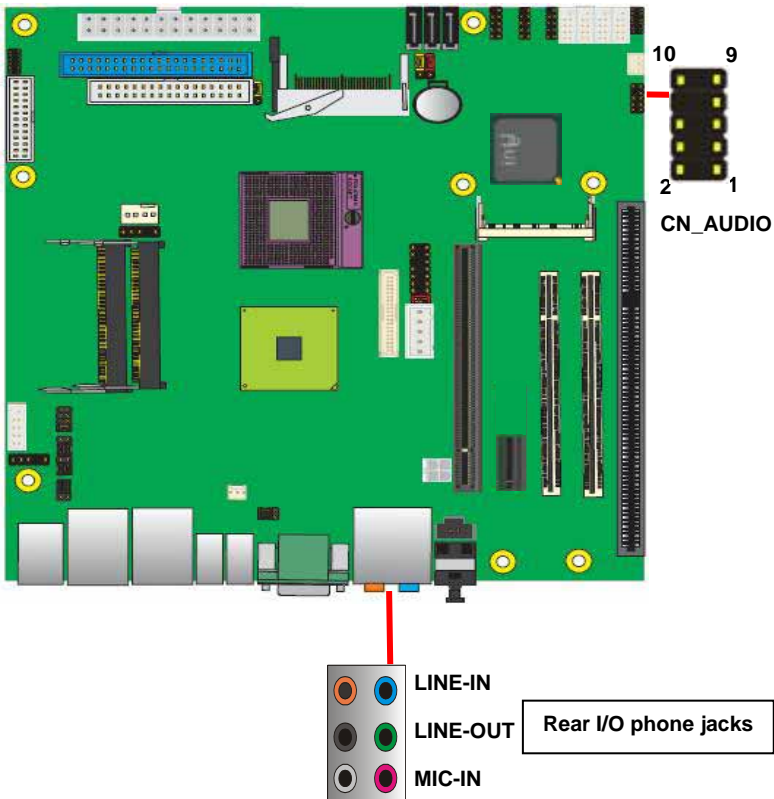
2.11 <Integrated Audio Interface>

The board integrates onboard audio interface with REALTEK ALC888 codec, with Intel next generation of audio standard as High Definition Audio.

The main specifications of ALC888 are:

- High-performance DACs with 100dB S/N ratio
- 8 DAC channels support 16/20/24-bit PCM format for 5.1 audio solution
- 16/20/24-bit S/PDIF-OUT supports 44.1K/48K/96kHz sample rate
- Meets Microsoft WHQL/WLP 2.0 audio requirements

The board provides 5.1 channels audio phone jacks on rear I/O port, and amplified speaker out and Line-in/MIC-in ports for front I/O panel through optional cable.



Connector: CN_AUDIO

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

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

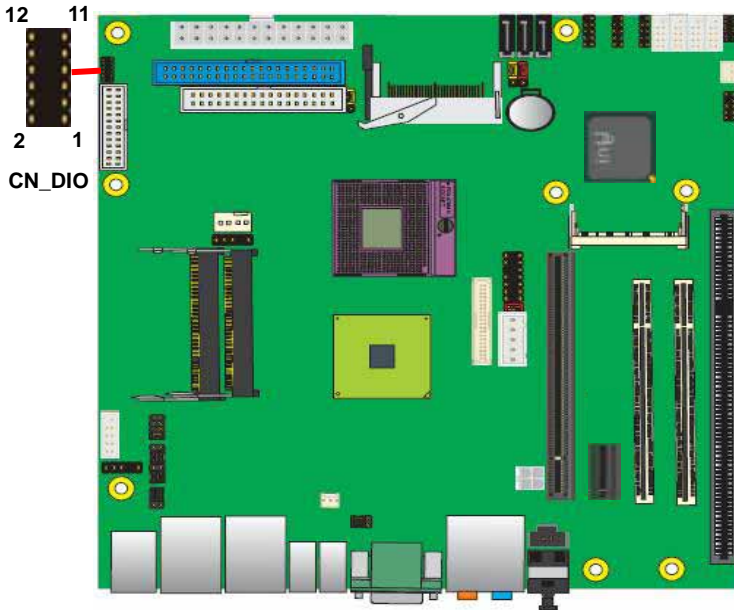
2.12 <GPIO Interface>

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) 1.27mm x 2.54mm-pitch header

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 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>

The **2807800** provides a standard ATX power supply with 24-pin ATX connector , and the board provides one 4-pin fan connector supporting smart fan for CPU cooler and one 3-pin cooler fan connector for system .

2.13.1 <Power Connector>

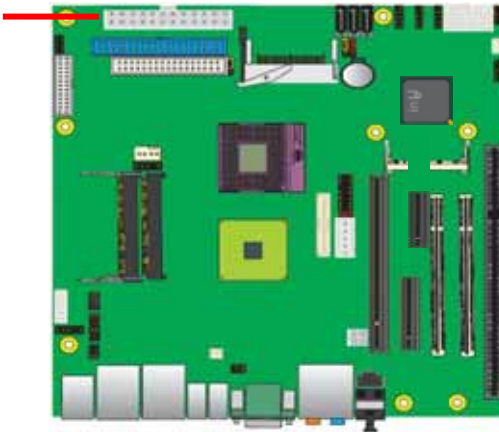
Connector: **ATX**

Type: 24-pin ATX power connector

Connector: CN_12V Used for PCIE x16 additional power supply support.

| PN assignment | | | |
|---------------|-------|----|-------|
| 1 | 3.3V | 13 | 3.3V |
| 2 | 3.3V | 14 | -12V |
| 3 | GND | 15 | GND |
| 4 | 5V | 16 | PS_ON |
| 5 | GND | 17 | GND |
| 6 | 5V | 18 | GND |
| 7 | GND | 19 | GND |
| 8 | PW_OK | 20 | -5V |
| 9 | 5V_SB | 21 | 5V |
| 10 | 12V | 22 | 5V |
| 11 | 12V | 23 | 5V |
| 12 | 3.3V | 24 | GND |

ATX



2.13.2 <Fan Connector>

Connector: **SYSFAN**

Type: 3-pin fan wafer connector

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

Connector: **CPUFAN**

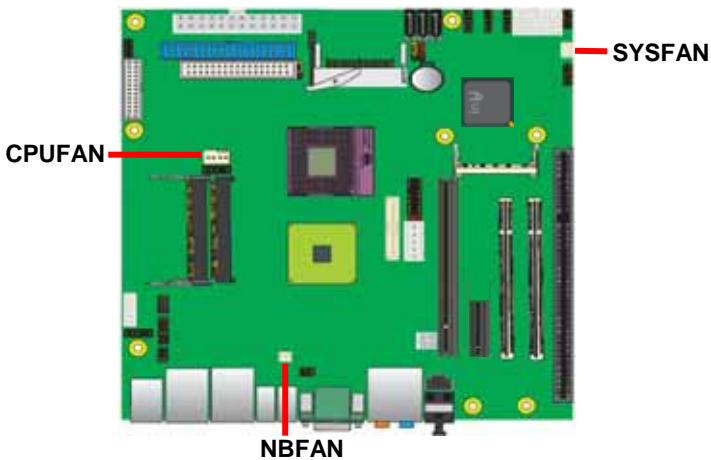
Type: 4-pin fan wafer connector

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

Connector: **NBFAN**

Type: 3-pin fan wafer connector

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



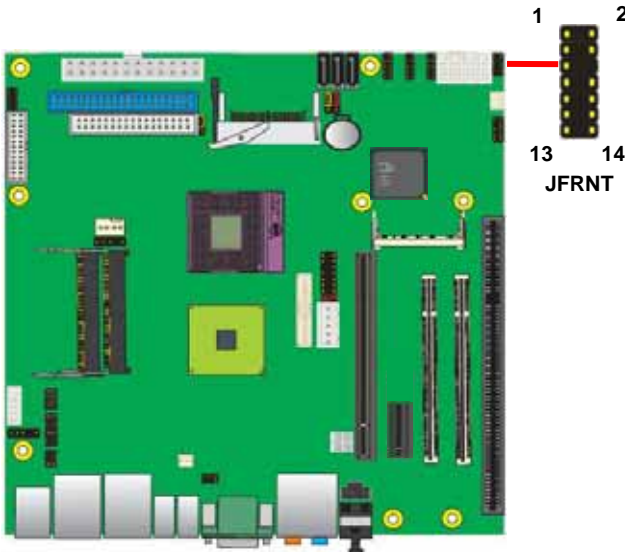
2.14 <Switch and Indicator>

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



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. Launch the control panel and Sound Effect Manager.



3. Select Speaker Configuration



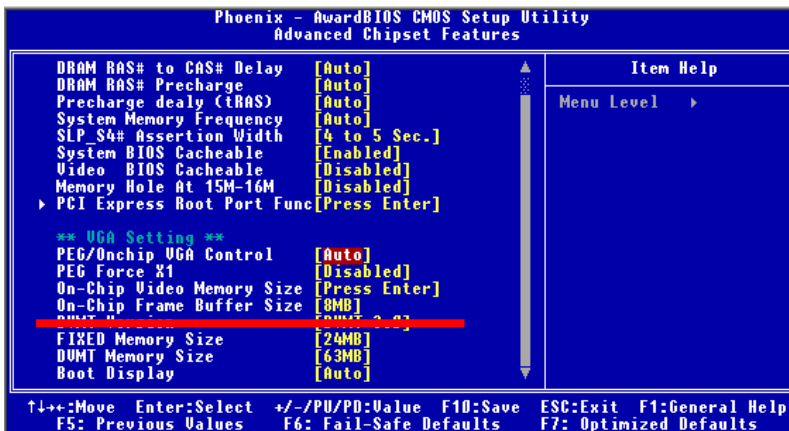
4. Select the sound mode to meet your speaker system.

3.2 <Video Memory Setup>

Based on Intel® GM(E)965 chipset with GMA (Graphic Media Accelerator) X3100, the board supports Intel® DVMT (Dynamic Video Memory Technology) 4.0, which would allow the video memory to be allocated up to 384MB.

To support DVMT, you need to install the Intel GMA X3100 Driver with supported OS.

BIOS Setup:



On-Chip Video Memory Size: This option combines three items below for setup.

On-Chip Frame Buffer Size:

This item can let you select video memory which been allocated for legacy VGA and SVGA graphics support and compatibility. The available option is **1MB** and **8MB**.

Fixed Memory Size:

This item can let you select a static amount of page-locked graphics memory which will be allocated during driver initialization. Once you select the memory amount, it will be no longer available for system memory.

DVMT Memory Size:

This item can let you select a maximum size of dynamic amount usage of video memory, the system would configure the video memory depends on your application, this item is strongly recommend to be selected as **MAX DVMT**.

Fixed + DVMT Memory Size:

You can select the fixed amount and the DVMT amount at the same time for a guaranteed video memory and additional dynamic video memory, please check the table below for available setting.

| System Memory | On-Chip Frame Buffer Size | Fixed Memory Size | DVMT Memory Size | Total Graphic Memory |
|---------------|---------------------------|-------------------|------------------|----------------------|
| 256MB ~ 511MB | 1MB | 128MB | 0MB | 128MB |
| | 1MB | 0MB | 128MB | 128MB |
| | 8MB | 128MB | 0MB | 128MB |
| | 8MB | 0 | 128MB | 128MB |
| 512MB~1023MB | 1MB | 128MB | 0 | 128MB |
| | 1MB | 256MB | 0 | 256MB |
| | 1MB | 0 | 128MB | 128MB |
| | 1MB | 0 | 256MB | 256MB |
| | 8MB | 128MB | 0 | 128MB |
| | 8MB | 256MB | 0 | 256MB |
| | 8MB | 0 | 128MB | 128MB |
| | 8MB | 0 | 256MB | 256MB |
| 1024MB upper | 1MB | 128MB | 0 | 128MB |
| | 1MB | 256MB | 0 | 256MB |
| | 1MB | 0 | 128MB | 128MB |
| | 1MB | 0 | 256MB | 256MB |
| | 1MB | 0 | MAX | 384MB |
| | 8MB | 128MB | 0 | 128MB |
| | 8MB | 256MB | 0 | 256MB |
| | 8MB | 0 | 128MB | 128MB |
| | 8MB | 0 | 256MB | 256MB |
| 8MB | 0 | MAX | 384MB | |

Notice:

1. The On-Chip Frame Buffer Size would be included in the Fixed Memory.

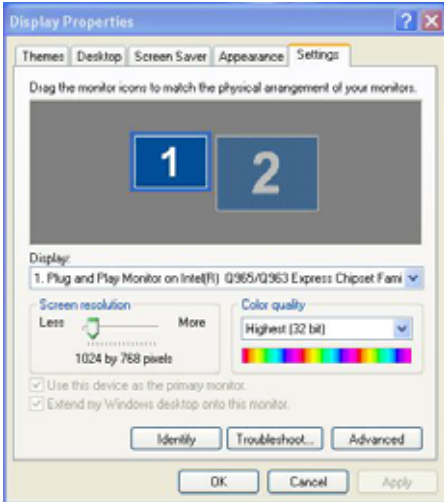
Please select the memory size according to this table.

3.3 <Display Properties Setting>

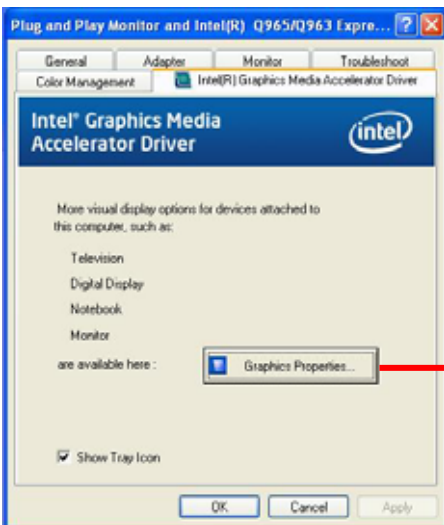
Based on Intel GM(E)965 GMCH with GMA X3100 (Graphic Media Accelerator), the board supports two DACs for display device as different resolution and color bit.

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.

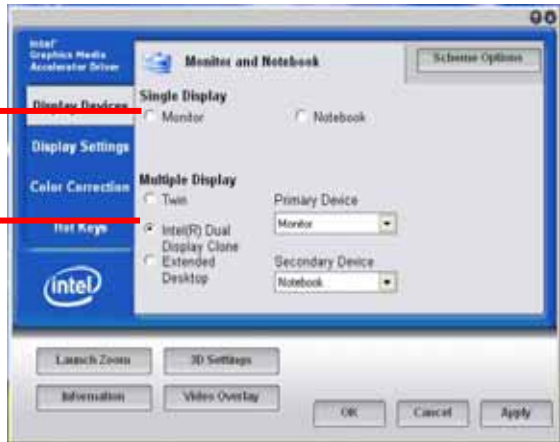


Click Graphics Properties... for advanced setup

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® Dual Display Clone** to setup the dual display mode as same screen



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



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