

# FS-A74

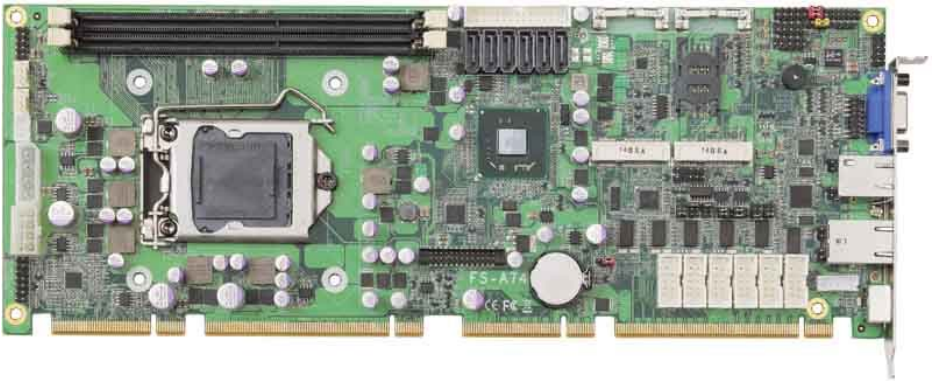
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## PICMG1.3 Full-size CPU Card

### User's Manual

Edition 1.54

2025/04/09





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## Packing List:

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

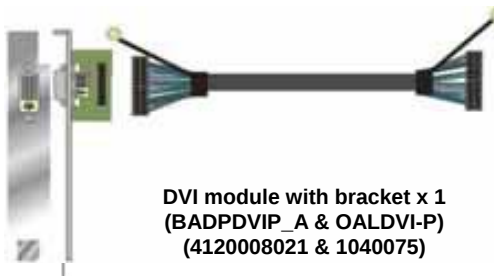
### Hardware:

FS-A74 PICMG1.3 Full-size CPU Card motherboard x 1

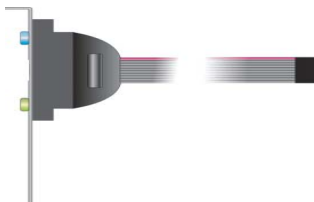
### Cable Kit:



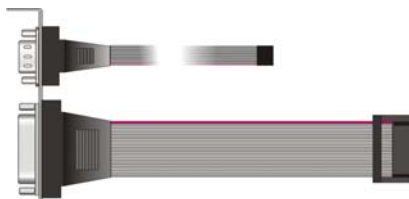
SATA Cable x 2  
(OALSATA3-L)/ (1040529)



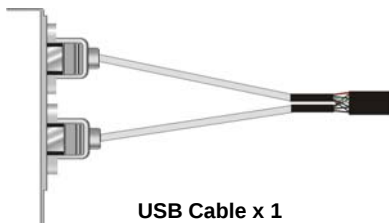
DVI module with bracket x 1  
(BADPDVIP\_A & OALDVI-P)  
(4120008021 & 1040075)



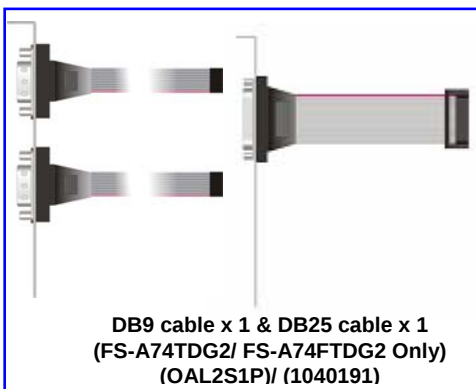
Audio Port Cable x 1  
(OALPJ-HD)/ (1040120)



DB25 & DB9 cable x 1  
(FS-A74TDG/ FS-A74FTDG Only)  
(OAL1S1P)/ (1040041)



USB Cable x 1  
(OALUSBA-1)/ (1040172)



DB9 cable x 1 & DB25 cable x 1  
(FS-A74TDG2/ FS-A74FTDG2 Only)  
(OAL2S1P)/ (1040191)

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## **Chapter 1 <Introduction>**

### **1.1 <Product Overview>**

**FS-A74** the 2<sup>nd</sup> Generation Intel of the PICMG1.3 Full-size CPU Card motherboard, supports 2<sup>nd</sup> Generation Intel® Core™ i7, Core™ i5, Core™ i3 and Pentium/Xeon® Desktop Processor and features Intel Q67 chipset, integrated HD Graphics, DDR3 memory, REALTEK High Definition Audio, Serial ATA and Intel Gigabit LAN.

#### **Intel® FCLGA1155 processor**

The Intel® I3/I5/I7/Pentium/Xeon® processor now comes with a new form factor with 1155-pin FCLGA package, for 1066/1333MHz front-side-bus, 12MB L2 cache, for 65nm and 45nm manufacturing technology, the PLGA processor without pin header on solder side can make user installing the processor on the socket easier.

#### **Intel® Q67 PCH chipset**

The Intel Q67 integrates DDR3 1066/1333MHz for memory, and HD Graphic technology for new graphic engine. The Q67 integrates with up to 8 USB2.0 interfaces, and serial ATA II interface with RAID function.

## 1.2 <Product Specification>

### General Specification

|                 |                                                                                                                                   |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Form Factor     | PICMG1.3 Full-size CPU Card                                                                                                       |
| CPU             | 2nd Generation Intel® Core™ I3/I5/I7/Pentium/Xeon® processor<br>With <b>LGA1155</b> socket<br>Package type: FCLGA 1155            |
| Memory          | 2 x 240-pin DDR3 1066/1333MHz SDRAM up to 16GB<br>Unbuffered, none-ECC memory supported only                                      |
| Chipset         | Intel® BD82Q67 PCH                                                                                                                |
| BIOS            | Phoenix 16Mb SPI flash BIOS                                                                                                       |
| Green Function  | Power saving mode includes doze, standby and suspend modes.<br>ACPI version 1.0 and APM version 1.2 compliant                     |
| Watchdog Timer  | System reset programmable watchdog timer with 1 ~ 255 sec./min.<br>of timeout value                                               |
| Real Time Clock | Chipset built-in RTC with lithium battery                                                                                         |
| Serial ATAII    | Intel® Q67 PCH integrates 4 Serial ATA II interface& 2 Serial ATA III<br>RAID 0, 1,5,10 Intel Matrix Storage Technology supported |

### Multi-I/O Port

|             |                                                                           |
|-------------|---------------------------------------------------------------------------|
| Chipset     | Intel® Q67 PCH with Winbond® W83627DHG-P Controller                       |
| Serial Port | Four RS-232 and one RS232/422/485 serial ports                            |
| USB Port    | Eight Hi-Speed USB 2.0 ports with 480Mbps of transfer rate                |
| 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<br>Interface |
| Smart Fan   | One CPU fan connectors for fan speed controllable                         |

### VGA Display Interface

|              |                                                                                  |
|--------------|----------------------------------------------------------------------------------|
| Chipset      | Intel® Clear Video integrated HD Graphics Technology                             |
| Frame Buffer | Up to 1.7GB shared with system memory                                            |
| Display Type | CRT, LCD monitor with analog display<br>Onboard DVI interface                    |
| Connector    | External DB15 female connector on rear I/O panel<br>Onboard 26-pin DVI Connector |

### Ethernet Interface

|            |                                                                                                                                         |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Controller | One Intel 82574L Gigabit Ethernet controller<br>One Intel 82579LM Gigabit Ethernet controller<br><b>(FS-A74TDG&amp;FS-A74FTDG Only)</b> |
| Type       | Triple speed 10/100/1000Base-T<br>Auto-switching Fast Ethernet<br>Full duplex, IEEE802.3U compliant                                     |
| Connector  | Two External RJ45 connectors with LED on rear I/O panel                                                                                 |

## Expansive Interface

|             |                                                 |
|-------------|-------------------------------------------------|
| PCI-Express | One X16 and one X4 or X1 on PICMG 1.3 Interface |
| PCI         | Four PCI bus master on PICMG 1.3 Interface      |

## Audio Interface

|           |                                                                                            |
|-----------|--------------------------------------------------------------------------------------------|
| Chipset   | Intel® integrated Q67with Realtek ALC888HD Audio<br>Intel High Definition Audio compliance |
| Interface | 2 channels sound output                                                                    |
| Connector | Internal 10-pin header for line-out, MIC-in, 4-pin header for CD-IN                        |

## Power and Environment

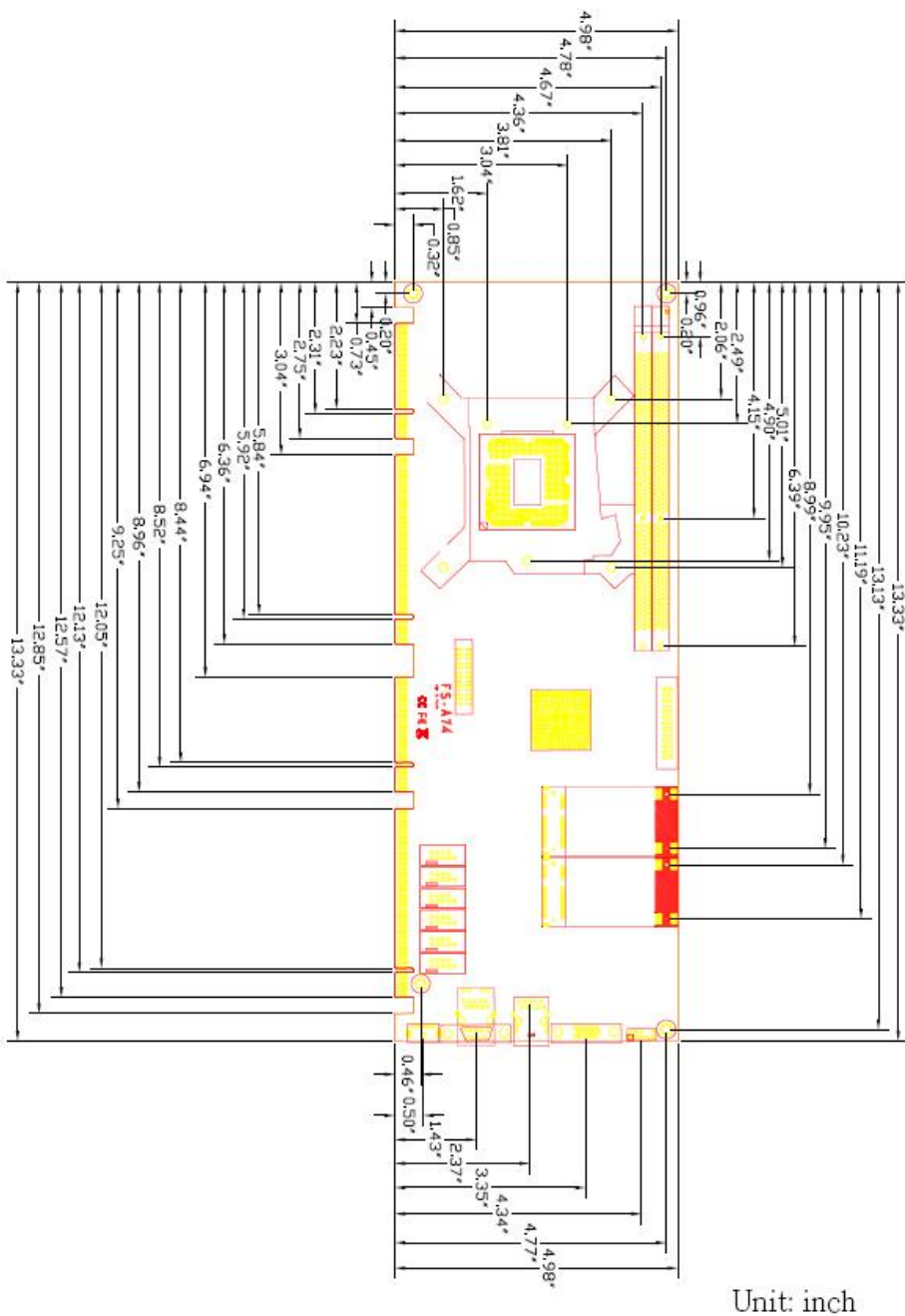
|                   |                                                                                  |
|-------------------|----------------------------------------------------------------------------------|
| Power Requirement | +5V, +12 DC input & 5VSB Requirement                                             |
| Dimension         | 338 (L) x 126 (W) mm                                                             |
| Temperature       | Operating within 0 ~ 60°C (32 ~ 140°F)<br>Storage within -20 ~ 85°C (-4 ~ 185°F) |

## Ordering Code

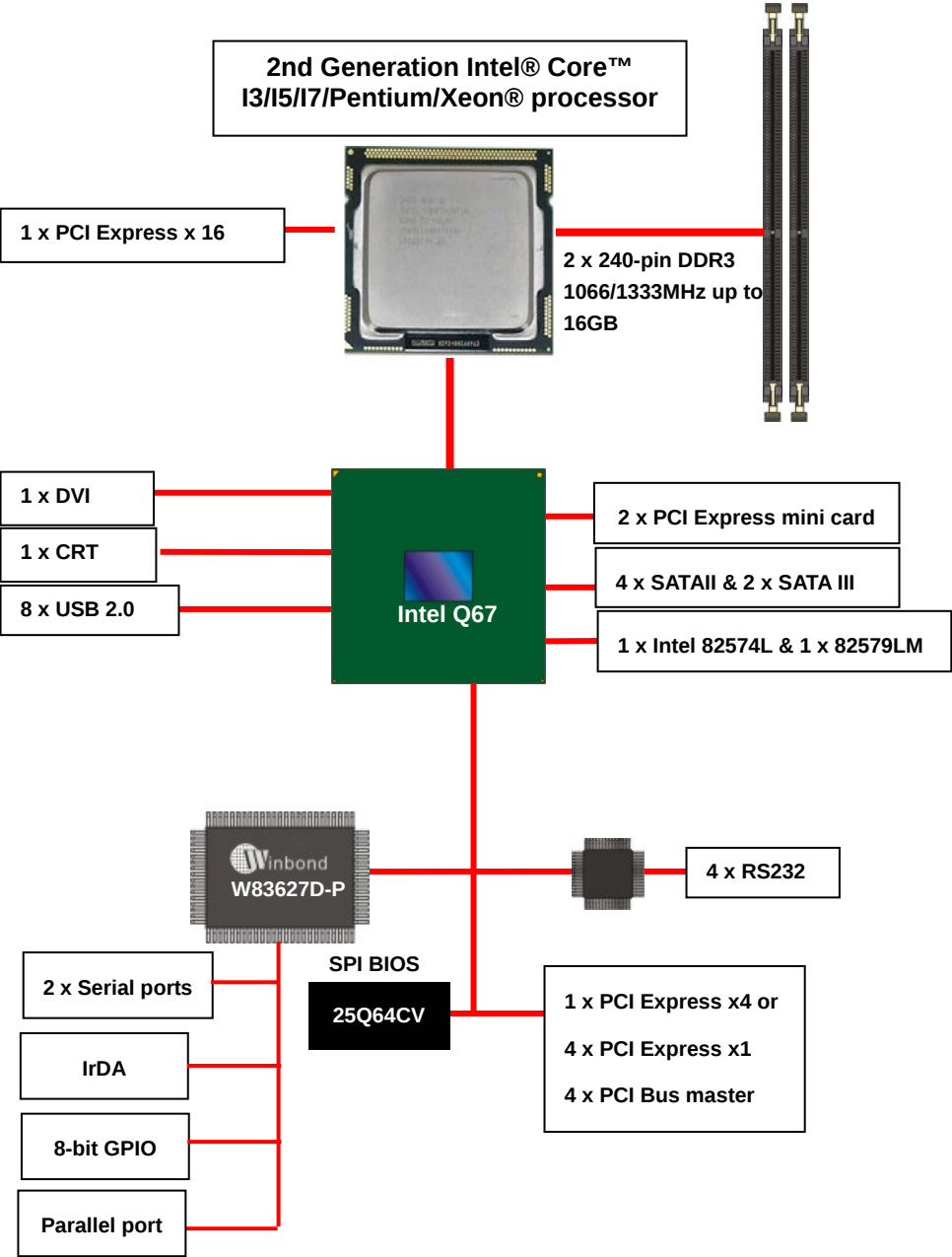
|             |                                                                                                                                                                                                                        |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FS-A74TDG   | Onboard VGA, DVI, 8 x USB2.0, 6 x serial Port, 6 x SATA, HD Audio, GPIO, 2 x PCI Express mini card, 4 x PCI Bus master,<br><b>1 x Giga LAN (82579LM)</b><br><b>Support Four X1 &amp; One X16 PCI Express interface</b> |
| FS-A74FTDG  | Onboard VGA, DVI, 8 x USB2.0, 6 x serial Port, 6 x SATA, HD Audio, GPIO, 2 x PCI Express mini card, 4 x PCI Bus master,<br><b>1 x Giga LAN (82579LM)</b><br><b>Support One X4 &amp; One X16 PCI Express interface</b>  |
| FS-A74TDG2  | Onboard VGA, DVI, 8 x USB2.0, 6 x serial Port, 6 x SATA, HD Audio, GPIO, 2 x PCI Express mini card, 4 x PCI Bus master, <b>2 x Giga LAN</b><br><b>Support Four X1 &amp; One X16 PCI Express interface</b>              |
| FS-A74FTDG2 | Onboard VGA, DVI, 8 x USB2.0, 6 x serial Port, 6 x SATA, HD Audio, GPIO, 2 x PCI Express mini card, 4 x PCI Bus master, <b>2 x Giga LAN</b><br><b>Support One X4 &amp; One X16 PCI Express interface</b>               |

The specifications may be different as the actual production.

## 1.3 <Mechanical Drawing>

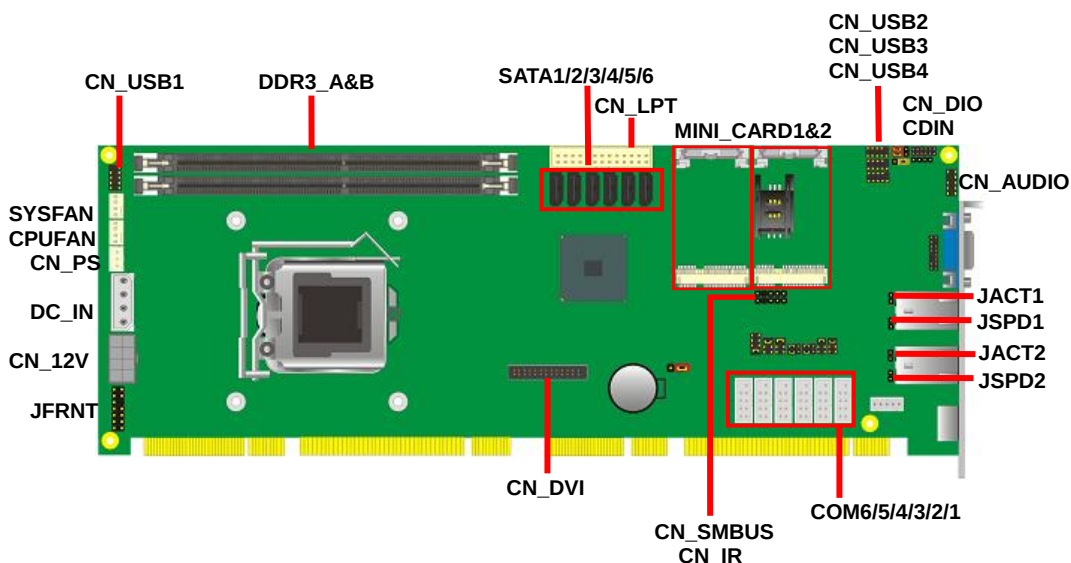


1.4 <Block Diagram>

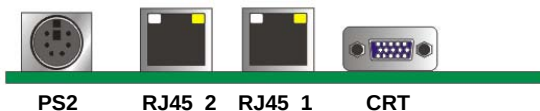


## Chapter 2 <Hardware Setup>

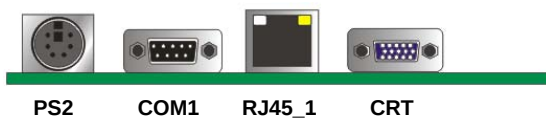
### 2.1 <Connector Location>



#### FS-A74TDG2 & FS-A74FTDG2

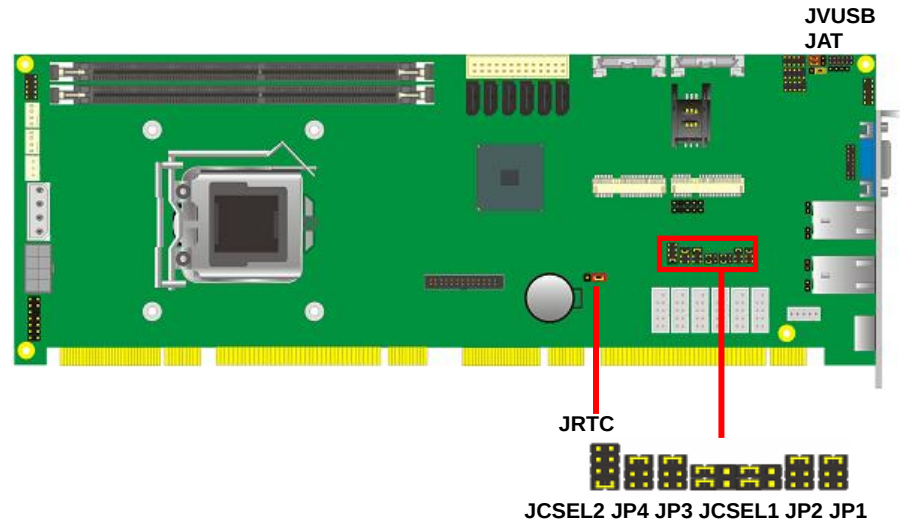


#### FS-A74TDG & FS-A74FTDG



2.2 <Jumper Location & Reference>

| Jumper | Function                           |
|--------|------------------------------------|
| JRTC   | CMOS Operating/Clear Setting       |
| JAT    | Power mode select                  |
| JP1    | Com1 Voltage Setting (For Pin 9)   |
| JP2    | Com2 Voltage Setting (For Pin 9)   |
| JP3    | Com3 Voltage Setting (For Pin 9)   |
| JP4    | Com4 Voltage Setting (For Pin 9)   |
| JCSEL1 | CN_COM2 RS-232 RS422 RS485 Setting |
| JCSEL2 |                                    |
| JVUSB  | USB Voltage Setting                |



Jumper: **JAT**

Type: Onboard 3-pin jumper

**JAT**

1 3

| JAT | Mode           |
|-----|----------------|
| 1-2 | AT Power mode  |
| 2-3 | ATX Power mode |

Default setting

## 2.3 <Connector Reference>

### 2.3.1 <Internal Connectors>

| Connector          | Function                                      | Remark |
|--------------------|-----------------------------------------------|--------|
| CPU                | LGA1155 CPU socket                            |        |
| DDR3A&B            | 240 –pin DDR3 SDRAM DIMM socket               |        |
| SATA 1/2           | 7-pin Serial ATAII connector                  |        |
| SATA 3/4/5/6       | 7-pin Serial ATAII 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 1/2/3/4/5/6 | 5 x 2-pin USB connector                       |        |
| CPUFAN             | 4-pin CPU cooler fan connector                |        |
| SYSFAN             | 4-pin system cooler fan connector             |        |
| CN_IR              | 5-pin IrDA connector                          |        |
| CN_COM1/2/3/4/5/6  | 9-pin com connector                           |        |
| JFRNT              | 14-pin front panel switch/indicator connector |        |
| Mini-Card1/2       | 2 x 52-pin Mini-PCIE socket                   |        |
| CN_LPT             | 13 x 2-pin printer connector                  |        |
| JSPD 1/2           | LAN Speed LED connector                       |        |
| JACT 1/2           | LAN Activity LED connector                    |        |
| CN_DVI             | 13 x 2-pin DVI connect                        |        |

### 2.3.2 <External Connectors>

| Connector | Function                          | Remark |
|-----------|-----------------------------------|--------|
| RJ45 1/2  | 1 x RJ45 LAN connector            |        |
| CRT       | DB15 and analog VGA connector     |        |
| PS/2      | PS/2 keyboard and mouse connector |        |

## 2.4 <CPU and Memory Setup>

### 2.4.1 <CPU Setup>

FS-A74 has a LGA1155 CPU socket onboard; please check following steps to install the processor properly.

**Attention** If FS-A74 need RMA please Keep CPU socket cover on the CPU Socket.

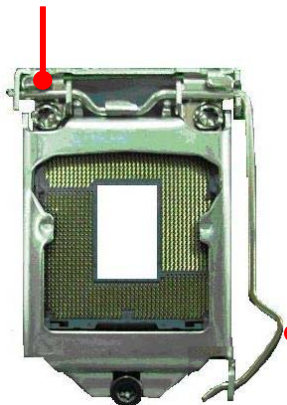
**Warning** If CPU Socket internal Pin damage We could not provide warranty.



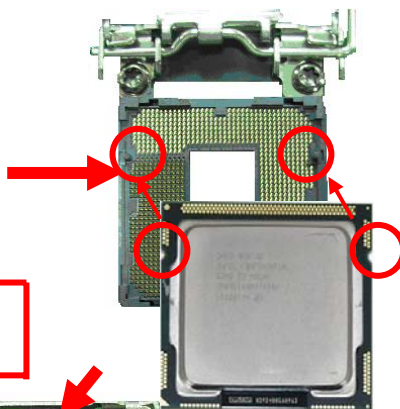
2nd Generation Intel® Core™  
I3/I5/I7/Pentium/Xeon® processor  
Package type: 1155 pin FCLGA  
FSB: 1066/1333MHz

1. Lift this bar

Checked point



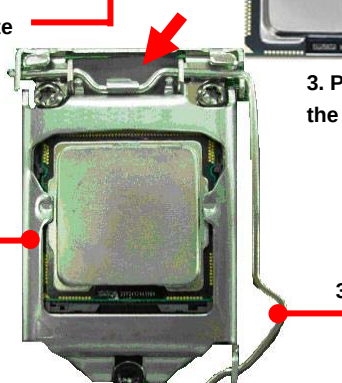
2. Uncover this plate



3. Place the CPU on the top of the pins

4. Lock this bar

3. Cover this plate

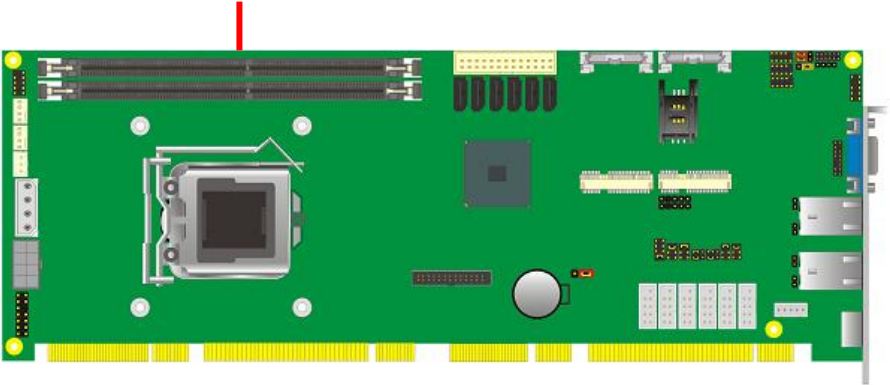


**Notice:** Please place the CPU on the pins tenderly to avoid bending the pins

## 2.4.2 <Memory installation>

FS-A74 has two 240-pin DDR3 DIMM support up to 16GB of memory capacity. The memory frequency supports 1066/1333 MHz. Only Non-ECC memory is supported.

DDR3IIA&B



## 2.5 <CMOS Setup>

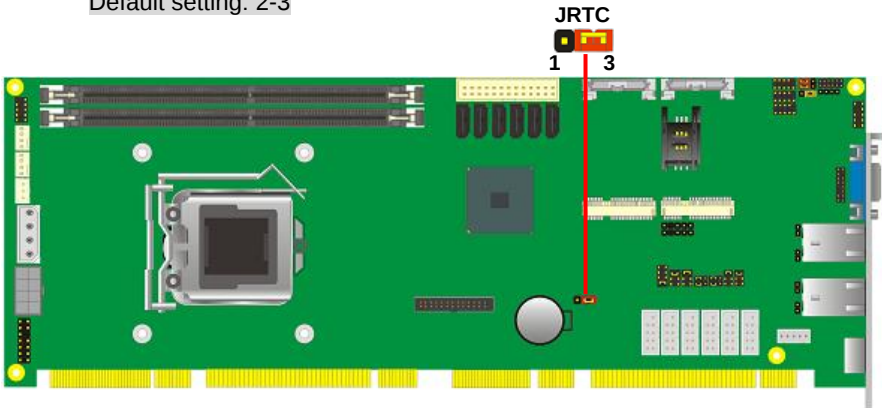
The board's data of CMOS can be setting in BIOS. If the board refuses to boot due to inappropriate CMOS settings, here is how to proceed to clear (reset) the CMOS to its default values.

**Jumper: JRTC**

**Type: Onboard 3-pin jumper**

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

Default setting: 2-3



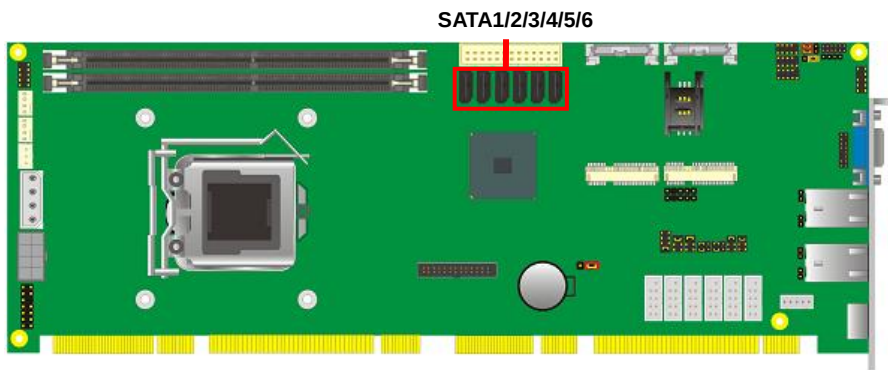
## 2.6 <Serial ATA Interface>

**FS-A74** has Four Serial ATA II & Two Serial ATA III interfaces with RAID function, the transfer rate of the Serial ATA II can be up to 300MB/s & Serial ATA III can be up to 600MB/s. Please go to <http://www.serialata.org/> for more about Serial ATA technology information. Based on Intel® PCH, it supports **Intel® Matrix Storage Technology** with combination of RAID 0,1,5 and 10. The main features of RAID on Intel® Q67 PCH are listed below:

1. Supports for up to RAID volumes on a single, two-hard drive RAID array.
2. Supports for two, two-hard drive RAID arrays on any of six Serial ATA ports.
3. Supports for Serial ATA ATAPI devices.
4. Supports for RAID spares and automatic rebuild.
5. Supports on RAID arrays, including NCQ and native hot plug.

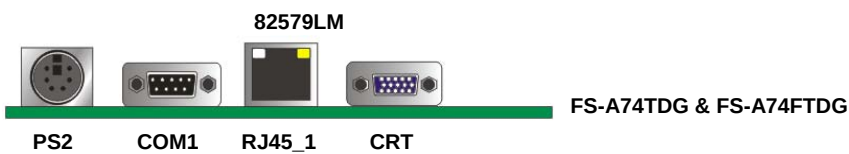
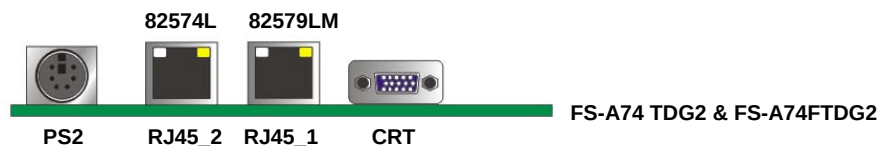
*For more information please visit Intel's official website.*

For more about the system setup for Serial ATA, please check the chapter of SATA configuration.



## 2.7 <Ethernet Interface>

The board integrates with one Intel 82574L Gigabit Ethernet & one Intel 82579LM controllers, as the PCI Express bus. The Intel 82574L supports triple speed of 10/100/1000Base-T, with IEEE802.3 compliance and Wake-On-LAN supported.



## 2.8 <Onboard Display Interface>

Based on Intel Q67 chipset with built-in graphics, the board provides one DB15 Connector on rear external I/O port and the board also provides 26-pin DVI interface

*Notice: When you install any PCI Graphic card, the onboard graphics would be disabled automatically.*

### 2.8.1 <Analog Display>

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

#### FS-A74TDG2 & FS-A74FTDG2



#### FS-A74TDG & FS-A74FTDG



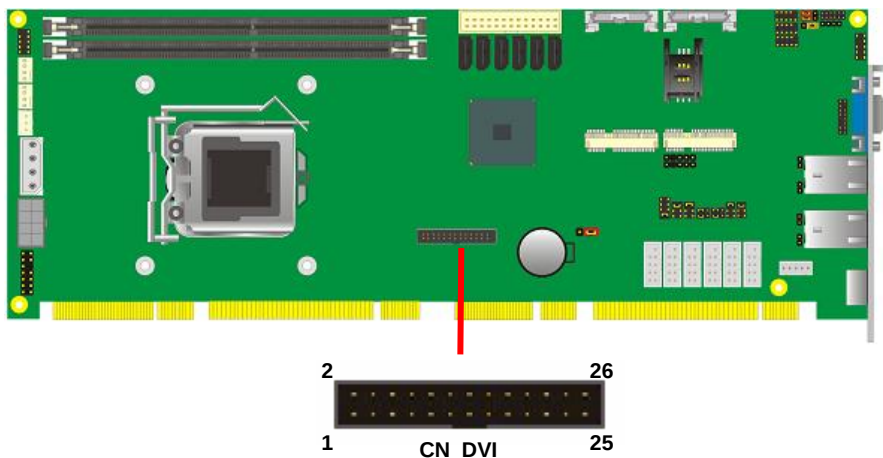
## 2.8.2 <DVI Display >

The board also comes with a DVI interface with Chronitel for digital video interface.

Connector: **CN\_DVI**

Connector type: 26-pin header connector (pitch = 2.00mm)

| Pin Number | Assignment | Pin Number | Assignment |
|------------|------------|------------|------------|
| 1          | TX1+       | 2          | TX1-       |
| 3          | Ground     | 4          | Ground     |
| 5          | TXC+       | 6          | TXC-       |
| 7          | Ground     | 8          | PVDD       |
| 9          | N/C        | 10         | N/C        |
| 11         | TX2+       | 12         | TX2-       |
| 13         | Ground     | 14         | Ground     |
| 15         | TX0+       | 16         | TX0-       |
| 17         | N/C        | 18         | HPDET      |
| 19         | DDCDATA    | 20         | DDCCLK     |
| 21         | GND        | 22         | N/C        |
| 23         | N/C        | 24         | N/C        |
| 25         | N/C        | 26         | N/C        |



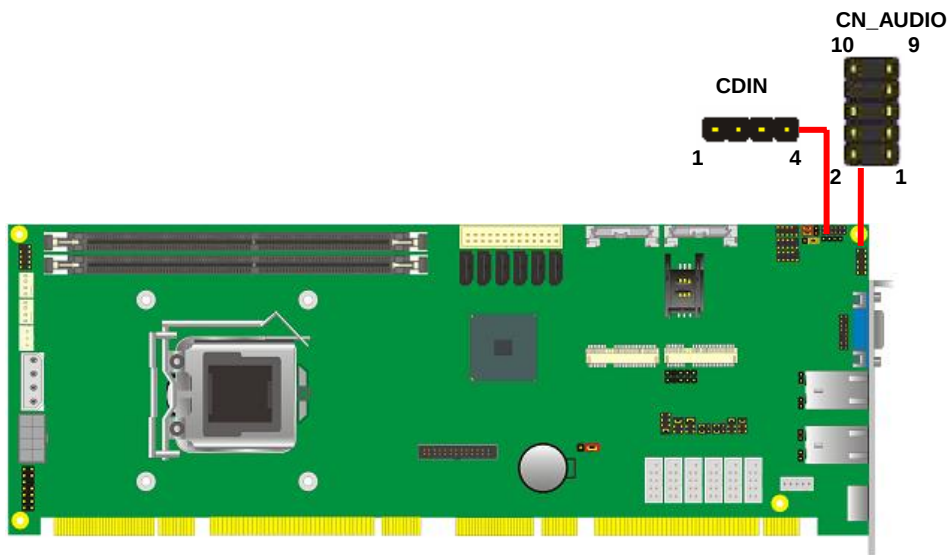
## 2.9 <Integrated Audio Interface>

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

The main specifications of ALC888 are:

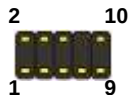
- **High-performance DACs with 100dB S/N ratio**
- **2 DAC channels support 16/20/24-bit PCM format for 2 audio solution**
- **16/20/24-bit S/PDIF-OUT supports 44.1K/48K/96kHz sample rate**
- **Compatible with HD**
- **Meets Microsoft WHQL/WLP 2.0 audio requirements**

The board provides 2 channels audio phone jacks on rear I/O port, Line-in/MIC-in ports for front I/O panel through optional cable.



**Connector: CN\_AUDIO**

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



| Pin | Description | Pin | Description    |
|-----|-------------|-----|----------------|
| 1   | MIC_L       | 2   | Ground         |
| 3   | MIC_R       | 4   | N/C            |
| 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)

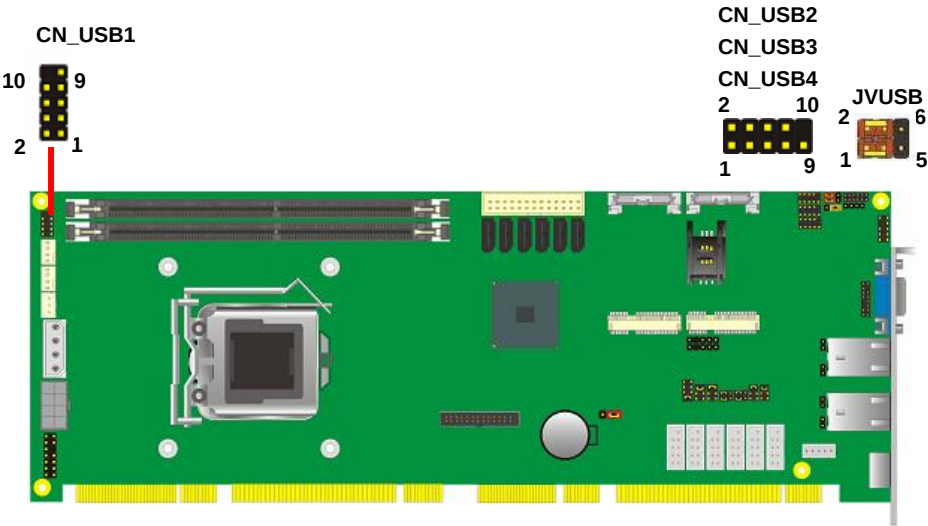


| Pin | Description |
|-----|-------------|
| 1   | CD – Left   |
| 2   | Ground      |
| 3   | Ground      |
| 4   | CD – Right  |

2.10 <USB Interface>

FS-A74 integrates eight USB2.0 ports. The specifications of USB2.0 are listed below:

| Interface     | USB2.0        |
|---------------|---------------|
| Controller    | Intel® Q67    |
| Transfer Rate | Up to 480Mb/s |
| Voltage       | 5V            |



Connector: **CN\_USB1/2/3/4**

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

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

Jumper: **JVUSB**

Type: Onboard 6-pin jumper

| JAT       | Mode   |
|-----------|--------|
| 4-6 & 3-5 | +5V_SB |
| 2-4 & 1-3 | +5V    |

Default setting

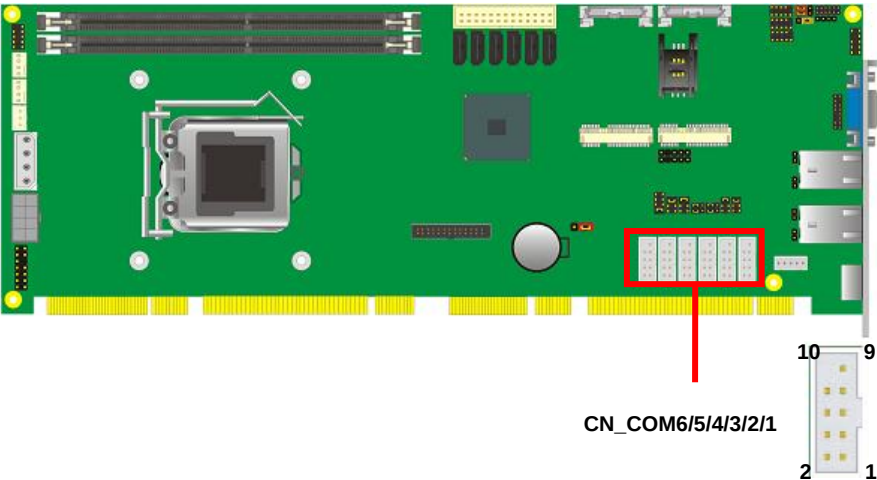
**Effective patterns of connection: 1-3 & 2-4 or 3-5 & 4-6**



**Warning: others cause damages**

2.11 <Serial Port>

The board supports five RS232 serial port and one jumper selectable RS232/422/485 serial ports. The jumper JCSEL1 & JCSEL2 can let you configure the communicating modes for COM2.



Connector: **CN\_COM1/3/4/5/6**

Type: 9-Pin box header

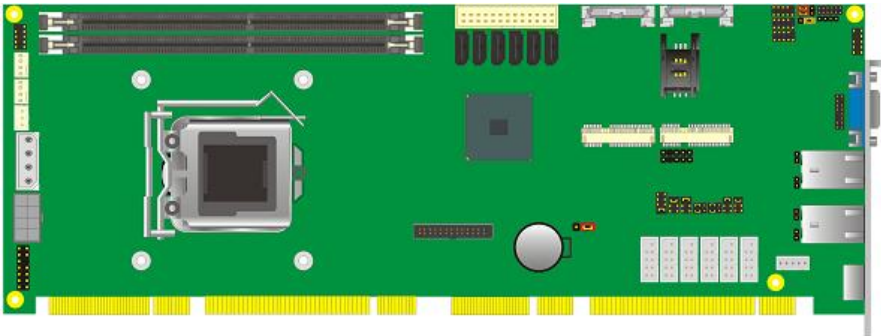
| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | DCD         | 2   | RXD         |
| 3   | TXD         | 4   | DTR         |
| 5   | GND         | 6   | DSR         |
| 7   | RTS         | 8   | CTS         |
| 9   | RI          | 10  | N/C         |

Connector: **CN\_COM2**

Type: 9-Pin box header

| Pin | Description     | Pin | Description     |
|-----|-----------------|-----|-----------------|
| 1   | DCD/422TX-/485- | 2   | RXD/422TX+/485+ |
| 3   | TXD/422RX+      | 4   | DTR/422RX-      |
| 5   | GND             | 6   | DSR             |
| 7   | RTS             | 8   | CTS             |
| 9   | RI              | 10  | N/C             |

Setting RS-232 & RS-422 & RS-485 for COM2



JCSEL2 JP4 JP3 JCSEL1 JP2 JP1

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

Default setting:

JCSEL1: (1-3, 2-4, 7-9, 8-10) JCSEL2: (1-2)

Jumper: JP1/JP2/JP3/JP4 (COM1/2/3/4)

Type: onboard 6-pin header

| Power Mode            | JP1/2/3/4 |
|-----------------------|-----------|
| Pin 9 with 5V Power   | 1-2       |
| Pin 9 with 12V Power  | 3-4       |
| Standard COM port     | 5-6       |
| Default setting (5-6) |           |

## 2.12 <GPIO and SMBUS 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) header (pitch = 2.0mm)

| 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  | 5V          | 12  | 12V         |

Connector: **CN\_SMBUS**

Type: 5-pin header for SMBUS Ports

| Pin | Description |
|-----|-------------|
| 1   | VCC         |
| 2   | N/C         |
| 3   | SMBDATA     |
| 4   | SMBCLK      |
| 5   | Ground      |

CN\_SMBUS



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CN\_DIO



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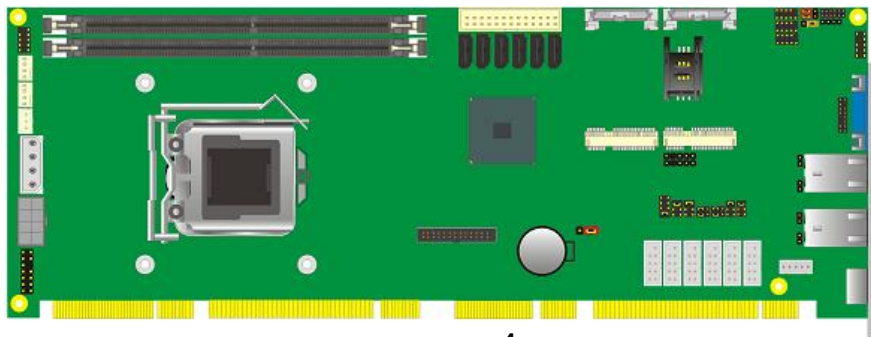
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## 2.13 <Power Supply and Fan Interface >

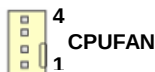
The **FS-A74** provides a standard ATX power supply with **4-pin** ATX connector and the board provides one **4-pin** fan connector supporting smart fan for CPU cooler and one 4-pin cooler fan connectors for system and Northbridge chip. please connect this well before you finishing the system setup.



Connector: **DC\_IN**

Type: 4-pin DC power connector

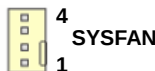
| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | +12V        | 2   | Ground      |
| 3   | Ground      | 4   | +5V         |



Connector: **CPUFAN**

Type: 4-pin fan wafer connector

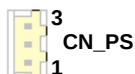
| Pin | Description         | Pin | Description |
|-----|---------------------|-----|-------------|
| 1   | Ground              | 2   | +12V        |
| 3   | Fan Speed Detection | 4   | Fan Control |



Connector: **SYSFAN**

Type: 3-pin fan wafer connector

| Pin | Description         | Pin | Description     |
|-----|---------------------|-----|-----------------|
| 1   | Ground              | 2   | +12V            |
| 3   | Fan Speed Detection | 4   | Will be defined |



Connector: **CN\_PS**

Type: 3-pin connector

| Pin | Description | Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|-----|-------------|
| 1   | 5VSTBY      | 2   | Ground      | 3   | PSON        |

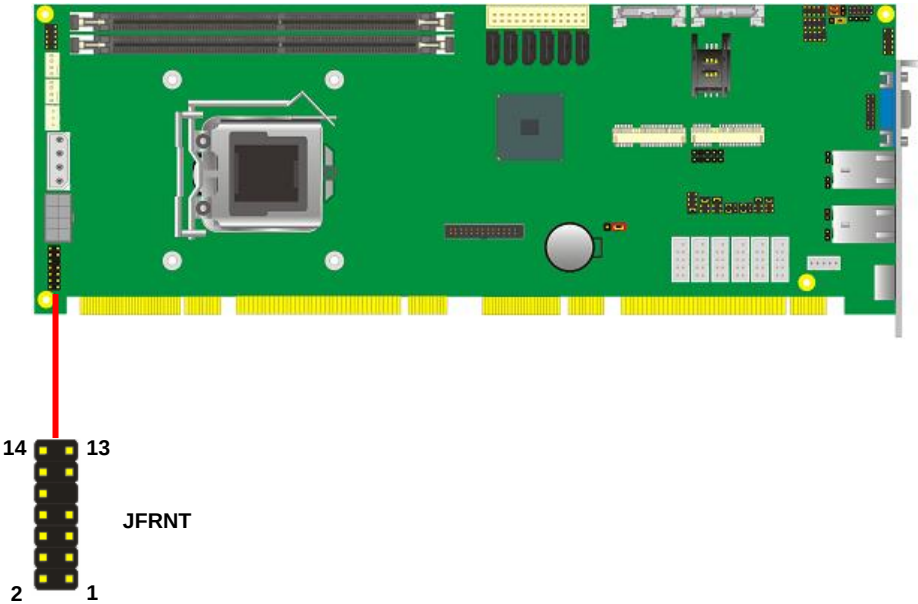
2.14 <Switch and Indicator>

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-    |           |

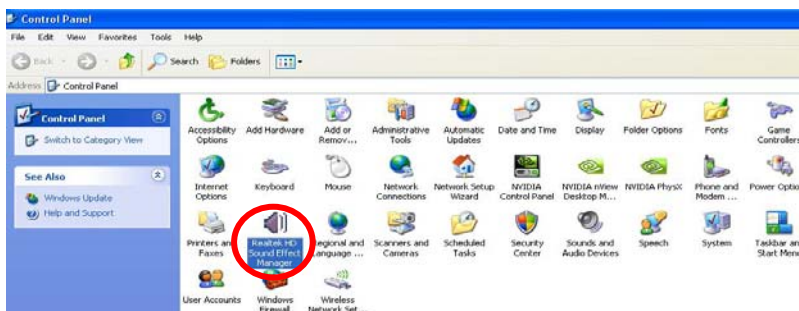


## Chapter 3 <System Setup>

### 3.1 <Audio Configuration>

The board integrates Intel® Q67 with REALTEK® ALC888 code. It can support 2-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

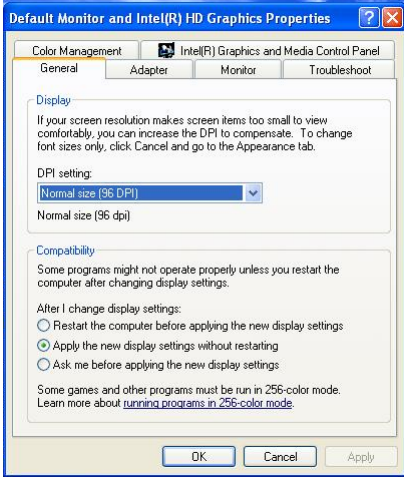


## 3.2 <Display Properties Setting>

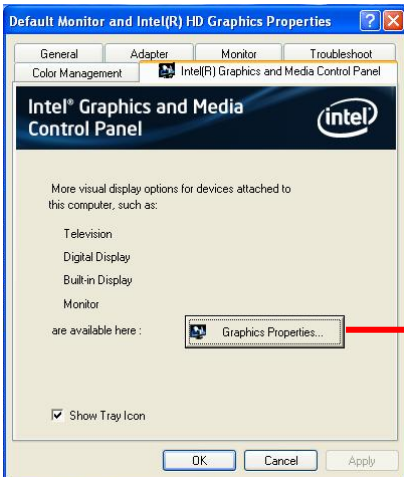
Based on Intel Q67 with HD Graphic, the board supports two DACs for display device as different resolution and color bit.

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 Resolution and Refresh Rate



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

# Chapter 4 <BIOS Setup>

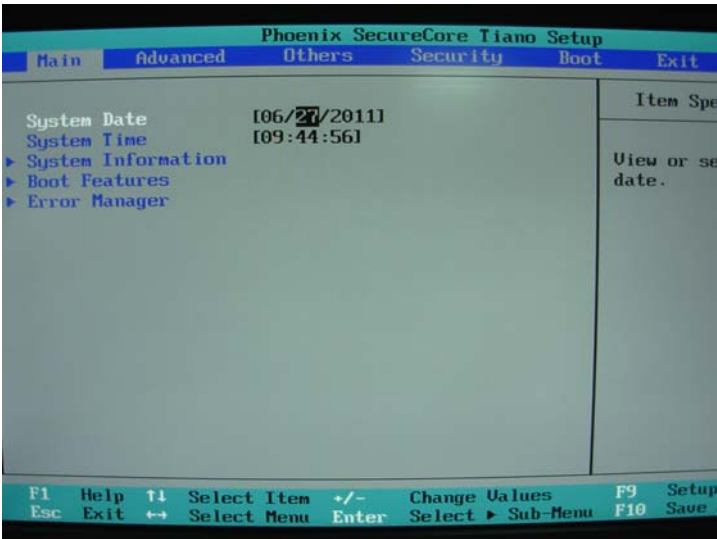
The motherboard uses the Phoenix BIOS for the system configuration. The Phoenix BIOS in the single board computer is a customized version of the industrial standard BIOS for IBM PC AT-compatible computers. It supports Intel x86 and compatible CPU architecture based processors and computers. The BIOS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



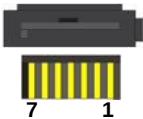
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# Appendix A <I/O Port Pin Assignment>

## A.1 <Serial ATA Port>

Connector: **SATA1/2/3/4/5/6**

Type: 7-pin wafer connector



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

## A.2 <IrDA Port>

Connector: **CN\_IR**

Type: 5-pin header for SIR Ports

*JCSEL1 must jump to “SIR”*

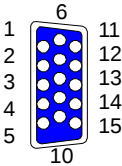
| Pin | Description |
|-----|-------------|
| 1   | VCC         |
| 2   | N/C         |
| 3   | IRRX        |
| 4   | Ground      |
| 5   | IRTX        |



## A.3 <VGA Port>

Connector: **CRT**

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

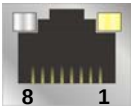


| Pin | Description | Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|-----|-------------|
| 1   | RED         | 6   | Ground      | 11  | N/C         |
| 2   | GREEN       | 7   | Ground      | 12  | DDCDA       |
| 3   | BLUE        | 8   | Ground      | 13  | HSYNC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

## A.4 <LAN Port>

Connector: **RJ45**

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- |

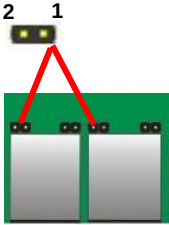
A.5 <LAN LED Port>

Connector: **JSPD1/2**

Type: 5-pin header for LAN Speed LED connector

When Lan speed 10/100Mbps

| Pin | Description |
|-----|-------------|
| 1   | LED-        |
| 2   | LED+        |



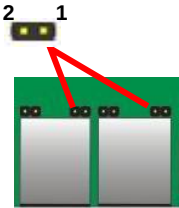
When Lan speed 1Gbps

| Pin | Description |
|-----|-------------|
| 1   | LED+        |
| 2   | LED-        |

Connector: **JATC1/2**

Type: 5-pin header for LAN Activity LED connector

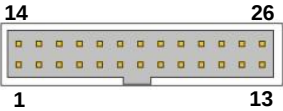
| Pin | Description |
|-----|-------------|
| 1   | LED-        |
| 2   | LED+        |



A.6 <Parallel Port>

Connector: **LPT**

Type: 26-Pin box header



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

## Appendix B <Flash BIOS>

### B.1 <Flash Tool>

The board is based on Phoenix 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.comnell.com.tw/Support/Support\\_SBC.htm](http://www.comnell.com.tw/Support/Support_SBC.htm)

File name of the tool is "Pflash.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 Pflash.exe to the disk.
4. Power on the system and flash the BIOS.  
(Example: C:/Pflash/bbl/cvar/sa XXX.bin)
5. Restart the system.

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

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

## Appendix C <System Resources>

### C.1 <I/O Port Address Map>

#### Input/output (I/O)

|                                                                                     |                       |                                                         |
|-------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------|
|    | [00000000 - 0000001F] | Direct memory access controller                         |
|    | [00000000 - 00000CF7] | PCI bus                                                 |
|    | [00000020 - 00000021] | Programmable interrupt controller                       |
|    | [00000024 - 00000025] | Programmable interrupt controller                       |
|    | [00000028 - 00000029] | Programmable interrupt controller                       |
|    | [0000002C - 0000002D] | Programmable interrupt controller                       |
|    | [0000002E - 0000002F] | Motherboard resources                                   |
|    | [00000030 - 00000031] | Programmable interrupt controller                       |
|    | [00000034 - 00000035] | Programmable interrupt controller                       |
|    | [00000038 - 00000039] | Programmable interrupt controller                       |
|    | [0000003C - 0000003D] | Programmable interrupt controller                       |
|    | [00000040 - 00000043] | System timer                                            |
|    | [0000004E - 0000004F] | Motherboard resources                                   |
|    | [00000050 - 00000053] | System timer                                            |
|    | [00000060 - 00000060] | Standard 101/102-Key or Microsoft Natural PS/2 Keyboard |
|    | [00000061 - 00000061] | Motherboard resources                                   |
|    | [00000063 - 00000063] | Motherboard resources                                   |
|    | [00000064 - 00000064] | Standard 101/102-Key or Microsoft Natural PS/2 Keyboard |
|    | [00000065 - 00000065] | Motherboard resources                                   |
|    | [00000067 - 00000067] | Motherboard resources                                   |
|    | [00000070 - 00000070] | Motherboard resources                                   |
|    | [00000070 - 00000077] | System CMOS/real time clock                             |
|    | [00000080 - 00000080] | Motherboard resources                                   |
|    | [00000081 - 00000091] | Direct memory access controller                         |
|    | [00000092 - 00000092] | Motherboard resources                                   |
|  | [00000093 - 0000009F] | Direct memory access controller                         |
|  | [000000A0 - 000000A1] | Programmable interrupt controller                       |
|  | [000000A4 - 000000A5] | Programmable interrupt controller                       |
|  | [000000A8 - 000000A9] | Programmable interrupt controller                       |
|  | [000000AC - 000000AD] | Programmable interrupt controller                       |
|  | [000000B0 - 000000B1] | Programmable interrupt controller                       |
|  | [000000B2 - 000000B3] | Motherboard resources                                   |
|  | [000000B4 - 000000B5] | Programmable interrupt controller                       |
|  | [000000B8 - 000000B9] | Programmable interrupt controller                       |
|  | [000000BC - 000000BD] | Programmable interrupt controller                       |
|  | [000000C0 - 000000DF] | Direct memory access controller                         |
|  | [000000F0 - 000000F0] | Numeric data processor                                  |
|  | [00000274 - 00000277] | ISAPNP Read Data Port                                   |

|                                                                                    |                                                                                                                |
|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
|     | [00000279 - 00000279] ISAPNP Read Data Port                                                                    |
|    | [000002E8 - 000002EF] Communications Port (COM4)                                                               |
|    | [000002F8 - 000002FF] Communications Port (COM2)                                                               |
|    | [00000378 - 0000037F] Printer Port (LPT1)                                                                      |
|    | [000003B0 - 000003BB] Intel(R) HD Graphics Family                                                              |
|    | [000003C0 - 000003DF] Intel(R) HD Graphics Family                                                              |
|    | [000003E8 - 000003EF] Communications Port (COM3)                                                               |
|    | [000003F8 - 000003FF] Communications Port (COM1)                                                               |
|    | [00000400 - 00000453] Motherboard resources                                                                    |
|    | [00000454 - 00000457] Motherboard resources                                                                    |
|    | [00000458 - 0000047F] Motherboard resources                                                                    |
|    | [000004D0 - 000004D1] Programmable interrupt controller                                                        |
|    | [000004E8 - 000004EF] Communications Port (COM6)                                                               |
|    | [000004F8 - 000004FF] Communications Port (COM5)                                                               |
|    | [00000500 - 0000057F] Motherboard resources                                                                    |
|    | [00000680 - 0000069F] Motherboard resources                                                                    |
|    | [00000A79 - 00000A79] ISAPNP Read Data Port                                                                    |
|    | [00000D00 - 0000FFFF] PCI bus                                                                                  |
|    | [00001000 - 0000100F] Motherboard resources                                                                    |
|    | [0000164E - 0000164F] Motherboard resources                                                                    |
|    | [00002000 - 0000201F] Intel(R) 82574L Gigabit Network Connection                                               |
|    | [00002000 - 00002FFF] Intel(R) 6 Series/C200 Series Chipset Family PCI Express Root Port 6 - 1C1A              |
|    | [00003000 - 0000303F] Intel(R) HD Graphics Family                                                              |
|    | [00003060 - 0000307F] Intel(R) 82579LM Gigabit Network Connection                                              |
|    | [00003080 - 0000308F] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08 |
|    | [00003090 - 0000309F] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08 |
|    | [000030A0 - 000030AF] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00 |
|   | [000030B0 - 000030BF] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00 |
|  | [000030C0 - 000030CF] Standard Dual Channel PCI IDE Controller                                                 |
|  | [000030D0 - 000030D7] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08 |
|  | [000030D8 - 000030DF] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08 |
|  | [000030E0 - 000030E7] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00 |
|  | [000030E8 - 000030EF] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00 |
|  | [000030F8 - 000030FF] Standard Dual Channel PCI IDE Controller                                                 |
|  | [00003100 - 00003107] Standard Dual Channel PCI IDE Controller                                                 |
|  | [00003108 - 0000310B] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08 |
|  | [0000310C - 0000310F] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08 |
|  | [00003110 - 00003113] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00 |
|  | [00003114 - 00003117] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00 |
|  | [00003118 - 0000311B] Standard Dual Channel PCI IDE Controller                                                 |
|  | [0000311C - 0000311F] Standard Dual Channel PCI IDE Controller                                                 |
|  | [0000EFA0 - 0000EFBF] Intel(R) 6 Series/C200 Series Chipset Family SMBus Controller - 1C22                     |
|  | [0000FFFF - 0000FFFF] Motherboard resources                                                                    |
|  | [0000FFFF - 0000FFFF] Motherboard resources                                                                    |

## C.2 <Memory Address Map>

### Memory:

| Memory                                                                              |                                                                                                        |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
|    | [000A0000 - 000BFFFF] Intel(R) HD Graphics Family                                                      |
|    | [000A0000 - 000BFFFF] PCI bus                                                                          |
|    | [20000000 - 201FFFFF] System board                                                                     |
|    | [3FA00000 - FEFFFFFF] PCI bus                                                                          |
|    | [40000000 - 401FFFFF] System board                                                                     |
|    | [40000000 - 4FFFFFFF] Intel(R) HD Graphics Family                                                      |
|    | [50000000 - 503FFFFF] Intel(R) HD Graphics Family                                                      |
|    | [50400000 - 5041FFFF] Intel(R) 82574L Gigabit Network Connection                                       |
|    | [50400000 - 504FFFFF] Intel(R) 6 Series/C200 Series Chipset Family PCI Express Root Port 6 - 1C1A      |
|    | [50420000 - 50423FFF] Intel(R) 82574L Gigabit Network Connection                                       |
|    | [50500000 - 5051FFFF] Intel(R) 82579LM Gigabit Network Connection                                      |
|    | [50520000 - 50523FFF] Microsoft UAA Bus Driver for High Definition Audio                               |
|    | [50524000 - 505240FF] Intel(R) 6 Series/C200 Series Chipset Family SMBus Controller - 1C22             |
|    | [50525000 - 505250FF] Intel(R) 6 Series/C200 Series Management Engine Interface - 1C3A                 |
|    | [50528000 - 505283FF] Intel(R) 6 Series/C200 Series Chipset Family USB Enhanced Host Controller - 1C26 |
|    | [50529000 - 505293FF] Intel(R) 6 Series/C200 Series Chipset Family USB Enhanced Host Controller - 1C2D |
|    | [5052A000 - 5052AFFF] Intel(R) 82579LM Gigabit Network Connection                                      |
|    | [F8000000 - FBFFFFFF] Motherboard resources                                                            |
|    | [FED00000 - FED003FF] High precision event timer                                                       |
|    | [FED10000 - FED17FFF] Motherboard resources                                                            |
|    | [FED18000 - FED18FFF] Motherboard resources                                                            |
|    | [FED19000 - FED19FFF] Motherboard resources                                                            |
|    | [FED1C000 - FED1FFFF] Motherboard resources                                                            |
|    | [FED20000 - FED3FFFF] Motherboard resources                                                            |
|   | [FED40000 - FED44FFF] PCI bus                                                                          |
|  | [FED45000 - FED8FFFF] Motherboard resources                                                            |
|  | [FED90000 - FED93FFF] Motherboard resources                                                            |
|  | [FEE00000 - FEEFFFFFFF] Motherboard resources                                                          |
|  | [FF000000 - FFFFFFFF] Intel(R) 82802 Firmware Hub Device                                               |
|  | [FF000000 - FFFFFFFF] Motherboard resources                                                            |

## C.3 <System IRQ Resources>

### IRQ:

|                                                                                                          |                                                                                                   |
|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
|  Interrupt request (IRQ) |                                                                                                   |
|                         | (ISA) 0 System timer                                                                              |
|                         | (ISA) 1 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard                                   |
|                         | (ISA) 3 Communications Port (COM2)                                                                |
|                         | (ISA) 4 Communications Port (COM1)                                                                |
|                         | (ISA) 8 System CMOS/real time clock                                                               |
|                         | (ISA) 9 Microsoft ACPI-Compliant System                                                           |
|                         | (ISA) 11 Communications Port (COM3)                                                               |
|                         | (ISA) 11 Communications Port (COM4)                                                               |
|                         | (ISA) 11 Communications Port (COM5)                                                               |
|                         | (ISA) 11 Communications Port (COM6)                                                               |
|                         | (ISA) 12 PS/2 Compatible Mouse                                                                    |
|                         | (ISA) 13 Numeric data processor                                                                   |
|                         | (PCI) 10 Intel(R) 6 Series/C200 Series Chipset Family SMBus Controller - 1C22                     |
|                         | (PCI) 11 Intel(R) 6 Series/C200 Series Management Engine Interface - 1C3A                         |
|                         | (PCI) 16 Intel(R) 6 Series/C200 Series Chipset Family PCI Express Root Port 1 - 1C10              |
|                         | (PCI) 16 Intel(R) 6 Series/C200 Series Chipset Family USB Enhanced Host Controller - 1C2D         |
|                         | (PCI) 16 Intel(R) HD Graphics Family                                                              |
|                         | (PCI) 17 Intel(R) 6 Series/C200 Series Chipset Family PCI Express Root Port 6 - 1C1A              |
|                         | (PCI) 17 Intel(R) 82574L Gigabit Network Connection                                               |
|                         | (PCI) 18 Standard Dual Channel PCI IDE Controller                                                 |
|                         | (PCI) 19 Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08 |
|                         | (PCI) 19 Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00 |
|                         | (PCI) 20 Intel(R) 82579LM Gigabit Network Connection                                              |
|                         | (PCI) 22 Microsoft UAA Bus Driver for High Definition Audio                                       |
|                        | (PCI) 23 Intel(R) 6 Series/C200 Series Chipset Family USB Enhanced Host Controller - 1C26         |

GPIO0.....GPIO7    bit0.....bit7

-0 2E 87

-0 2E 07

-0 2E 30

-0 2E F0

-0 2E F1

-o 2F xx ;if set GPIO's as output,in this register its value can be set

Optional :

-0 2E F2

-o 2F xx ; Data inversion register ; '1' inverts the current value of the bits, '0' leaves them as they are

-0 2E 30

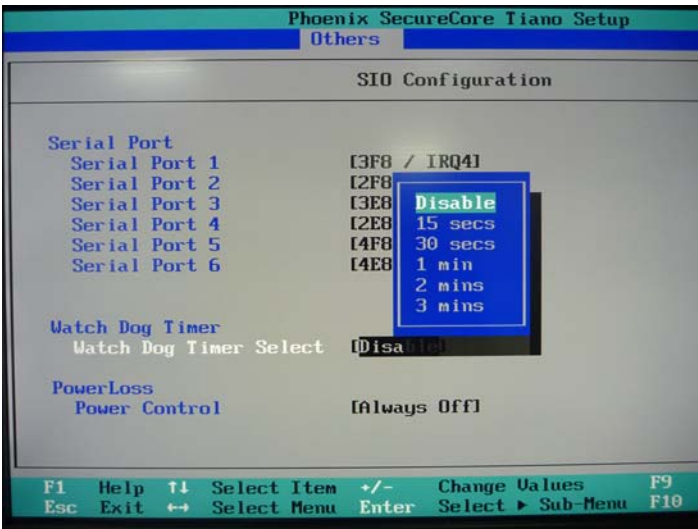
-o 2F 01 ; active GPIO's

For further information, please refer to Winbond W83627DHG-P 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

---

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

---

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

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

## Contact Information

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

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