

# FS-975M

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**Full-size PICMG CPU Card  
User's Manual  
Edition 1.1**

**2004/08/05**

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Packing List

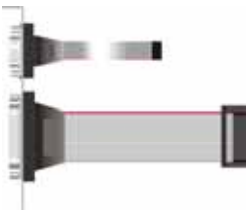
Hardware:

FS-975M CPU Card..... X 1

Cable Kit:



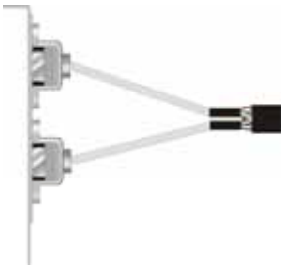
40-pin UltraATA/100 IDE Cable



1 x COM / 1 x LPT Port DB9 / DB25 Cable (VL only)



2 x COM Port DB9 Cable (VL2 only)



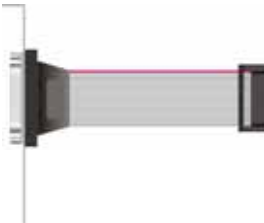
Dual-USB Port Cable with Bracket



PS/2 Keyboard and Mouse Cable



3-pin to 3-pin ATX cable



1 x LPT Port DB25 Cable (VL2 only)

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- User's Manuals

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## Chapter1 < Introduction >

### 1.1 < Product Overview >

**FS-975** SBC (Single Board Computer) is an all-in-one industrial full-size PICMG (PCI/ISA)-bus CPU card based on Intel mPGA478 Pentium 4 architecture. With Intel 845 chipset, **FS-975** offers the value solution with Intel NetBurst micro-architecture, 400 MHz of FSB, 3GB PC133 SDRAM, SiS315 built-in advanced 3D SVGA, and dual Intel PRO/100+ LAN and USB 1.1 I/O interfaces.

Based on Intel's long term supply chipset, **FS-975** should be the ideal solution for long life industrial applied computing platform with high computing capacity and cost effect. The onboard dual Intel PRO/100+ LAN, M-systems DiskOnChip SSD (Solid State Disk), and ISA 64mA high drive capacity also make **FS-975** be the value Pentium 4 platform for:

#### **Value Industrial Computing Platform:**

Intel mPGA478 Pentium 4 / Pentium 4-M / Celeron CPU with 400 MHz FSB and 3GB PC133 SDRAM of system memory, **FS-975** offers the high-end industrial computing platform with low cost Intel integrated solution. The long term support, onboard SSD, dual Intel LAN and ISA 64mA high drive capacity also make **FS-975** be the ideal solution for industrial server and workstation, CTI (Computer Telephony Integration), VoIP (Voice over IP), and other high-end applications.

#### **Low Cost Multi-media Solution:**

SiS315 Graphic Controller built-in advanced 3D VGA controller offers the value integration solution for low cost multi-media computing platform. Such as VoD (video on demand), DVR (Digital Video Recorder), digital video broadcasting (DVB), streaming, surveillance, compression (MPEG), interaction server, workstation and terminal appliances.

#### **Redundant Network Reliability:**

Dual Intel PRO/100+ 10/100 Mbps Fast Ethernet interfaces for high reliability of redundant LAN, or external / internal dual direction networking applications.

#### **Low Power Consumption:**

With Intel Pentium 4 –M processors, you can simply built a lower power consumption system, for lower heat issue and lower power supply cost.

## 1.2 < Product Specifications >

### General Specification

|                        |                                                                                                                                                                                       |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Form Factor</b>     | Full-size PICMG-bus CPU Card / Slot PC<br>PICMG version 1.0 (Rev. 2.0), PCI version 2.0 compliant                                                                                     |
| <b>CPU</b>             | Intel FCPGA2 Pentium 4 Processor at 400MHz FSB<br>Intel FCPGA2 Pentium 4 processor –M at 400MHz FSB<br>Intel FCPGA2 Celeron at 400 MHz FSB<br><b>533/800MHz FSB are not supported</b> |
| <b>Memory</b>          | 3GBytes PC133 SDRAM on 3 x 168-pin DIMM sockets.<br>Support ECC function                                                                                                              |
| <b>Chipset</b>         | Intel 82845 MCH and 82801BA ICH2                                                                                                                                                      |
| <b>BIOS</b>            | Phoenix-Award 2Mb PnP flash BIOS                                                                                                                                                      |
| <b>Green Function</b>  | Power saving mode supported in BIOS with DOZE, STANDBY and SUSPEND modes. ACPI version 1.0 and APM version 1.2 compliant                                                              |
| <b>Watchdog Timer</b>  | Generates NMI or system reset watchdog timer with 1 to 255 sec. / min. of time out value                                                                                              |
| <b>Real Time Clock</b> | Intel ICH2 built-in RTC with lithium battery                                                                                                                                          |
| <b>Enhanced IDE</b>    | PCI enhanced IDE interface supports dual ports up to 4 ATAPI devices with UltraATA/100 supported                                                                                      |
| <b>ISA High Drive</b>  | ISA 64mA high Drive capacity with TI 245 buffer on address and data bus                                                                                                               |

### Multi-I/O Port

|                        |                                                                                                                        |
|------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Chipset</b>         | Intel 82801BA ICH2 and Winbond W83627HF-AW LPC super-I/O controller                                                    |
| <b>Serial Port</b>     | One RS-232C COM1 and one jumper selectable RS-232C/422/485 COM2.<br>Both with 16C550 compatible UART and 16 bytes FIFO |
| <b>USB Port</b>        | Two USB 1.1 ports with 12Mbps of data transfer rate                                                                    |
| <b>Parallel Port</b>   | One bi-direction parallel port with SPP/ECP/EPP mode                                                                   |
| <b>Floppy</b>          | One floppy port supports up to two FDD                                                                                 |
| <b>IrDA Port</b>       | One IrDA compliant Infrared interface supports SIR                                                                     |
| <b>K/B &amp; Mouse</b> | PS/2 keyboard and mouse ports, AT keyboard port                                                                        |

**Solid State Disk Interface**

|                   |                                                                                                         |
|-------------------|---------------------------------------------------------------------------------------------------------|
| <b>Flash Type</b> | M-systems DiskOnChip 2000, DiskOnChip Millennium, IDE Pro and DiskOnModule (DOM) solid state flash disk |
| <b>Package</b>    | 32-pin DIP JEDEC (DiskOnChip)<br>40-pin IDE port (IDE Pro, DiskOnModule)                                |
| <b>Capacity</b>   | 576 MB of DiskOnChip and 512 MB of DiskOnModule                                                         |

**VGA Display Interface**

|                     |                                                          |
|---------------------|----------------------------------------------------------|
| <b>Chipset</b>      | SiS315 Graphic Controller built-in AGP 4X 256-bit 3D VGA |
| <b>Video Memory</b> | Onboard 32MB physical video memory                       |
| <b>Display Type</b> | CRT, LCD monitor and analog display                      |
| <b>Connector</b>    | External DB15 female connector on bracket for CRT        |

**Ethernet Interface**

|                  |                                                                                                                                       |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>Chipset</b>   | Dual Intel PRO/100+ LAN interface<br>Primary LAN (LAN1): Intel ICH2 and Intel 82562ET<br>Optional secondary LAN (LAN2): Intel 82559ER |
| <b>Type</b>      | 10Base-T / 100Base-TX, auto-switching Fast Ethernet<br>Full duplex, IEEE802.3U compliant                                              |
| <b>Connector</b> | External dual RJ45 with LED on bracket                                                                                                |

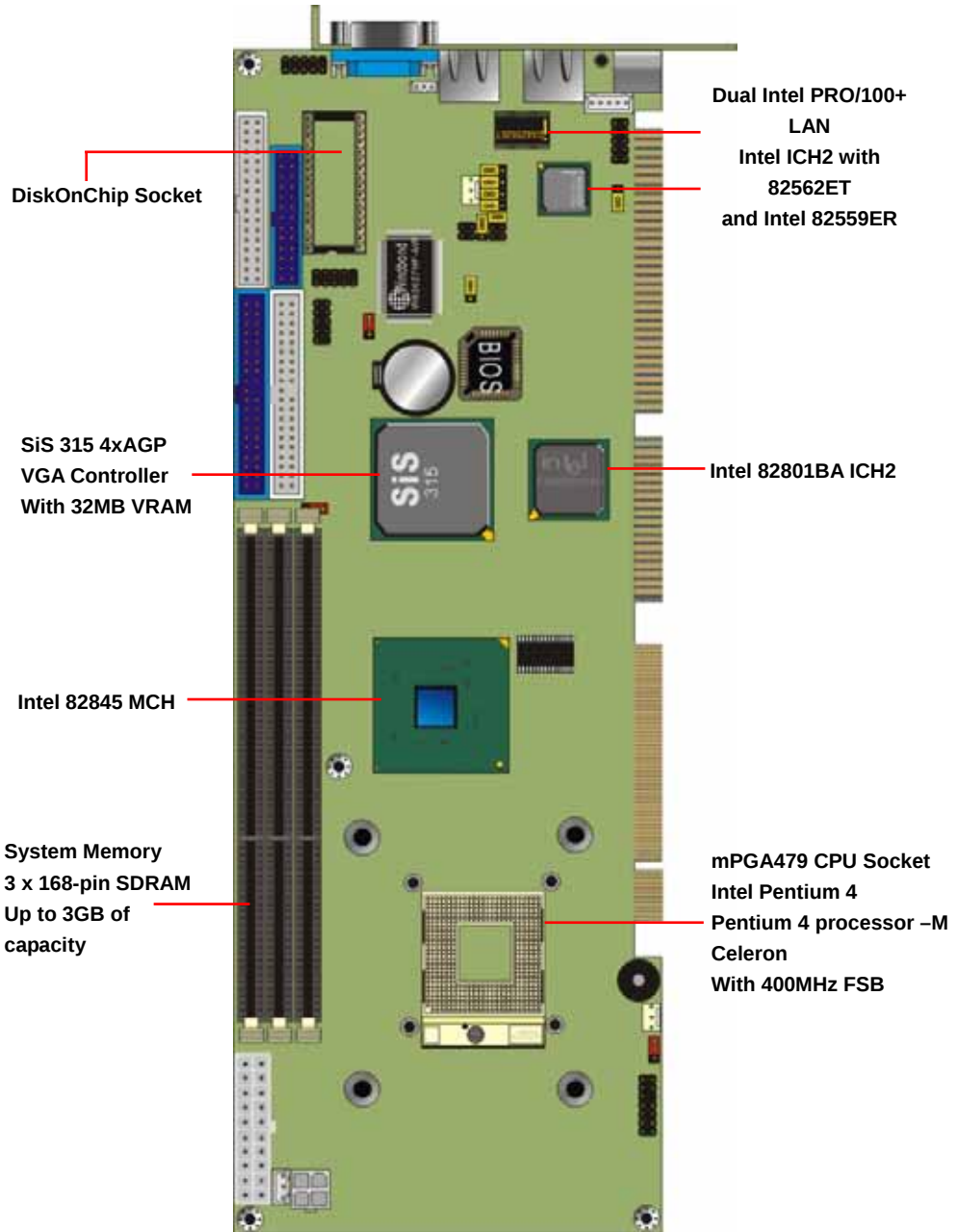
Power and Environment

|              |                                                                                                                                                 |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Req.   | +5V, +12V, -12V DC input from PICMG backplane<br><br>Onboard 20-pin ATX power connector<br>Additional +12V on 4-pin connector for Pentium 4 PSU |
| ATX Function | 3-pin ATX interface with 5V standby and power-on                                                                                                |
| Dimension    | 338 (L) x 122 (H) mm, standard PICMG form factor                                                                                                |
| Temperature  | Operating within 0 ~ 60°C (32 ~ 140°F)<br>Storage within -20 ~ 85°C (-4 ~ 185°F)                                                                |

Ordering Code

|            |                                                                                                                                                                                    |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FS-975MVL  | Full-size PICMG-bus Socket 478 Pentium-4 / Pentium 4 –M CPU<br><br>Card with 4xAGP SVGA / 32 MB, Intel PRO/100+ LAN ,DiskOnChip<br><br>Interfaces and ISA 64mA High Drive Capacity |
| FS-975MVL2 | Same as <b>FS-975VL</b> but with Dual LAN                                                                                                                                          |

1.3 < Component Placement >



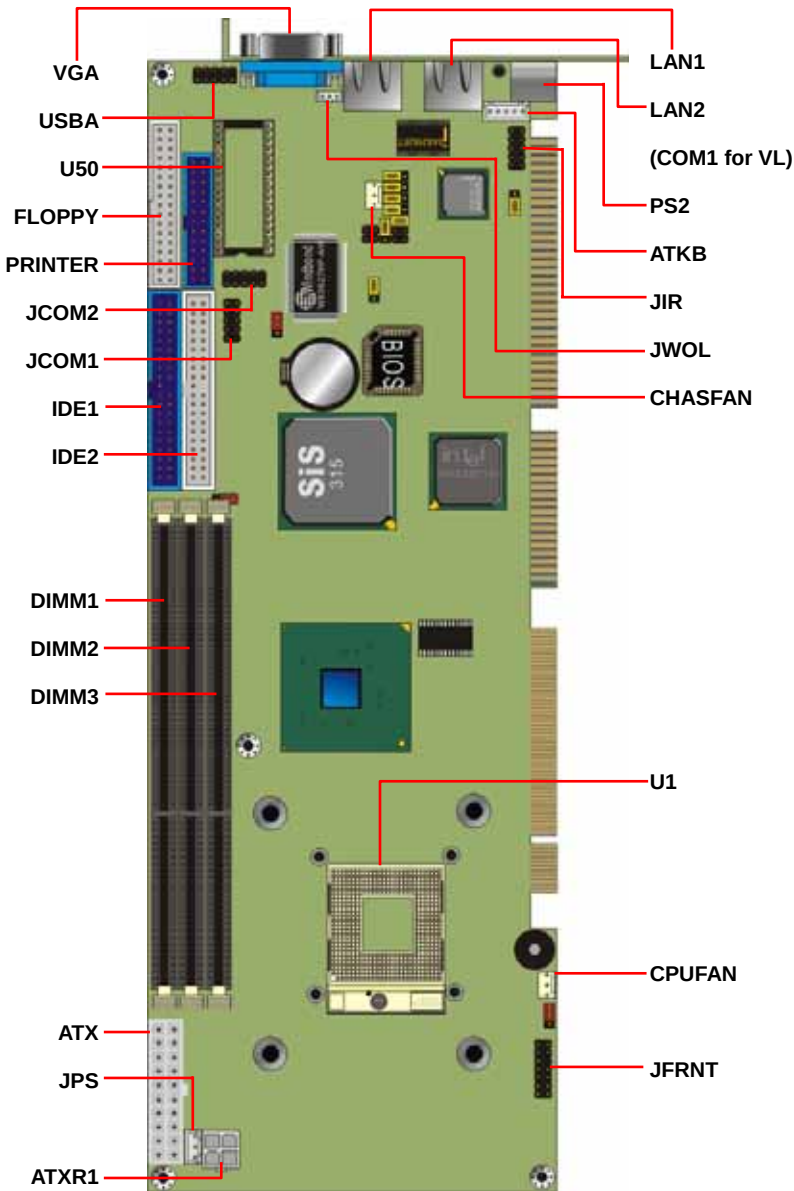
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## Chapter 2 < Hardware Setup >

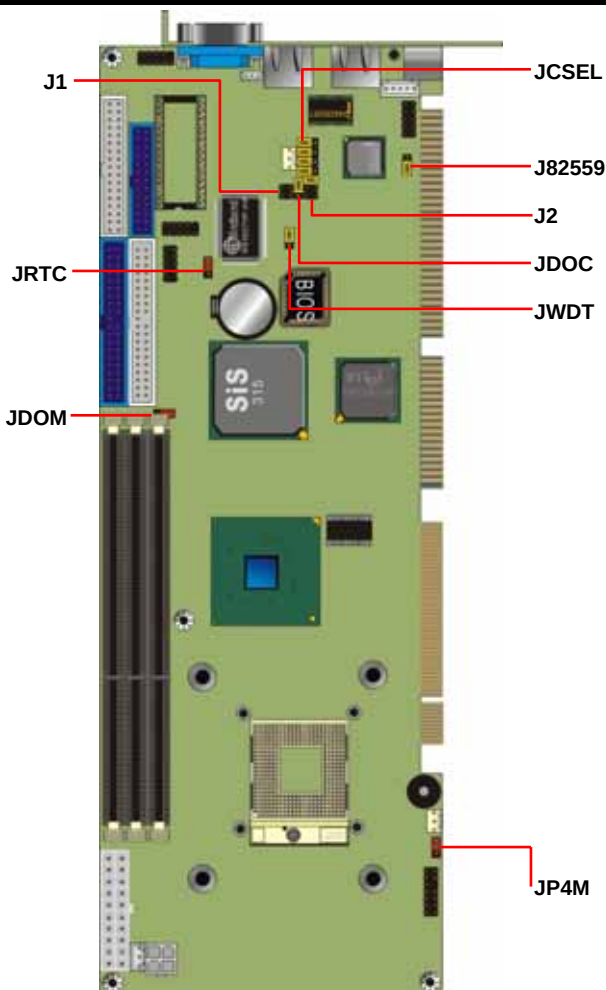
This chapter contains the information for installation of hardware. The install procedure includes jumper settings, CPU and memory installation, fan, I/O and panel connections.

### 2.1 < Connector location >



## 2.2 < Jumper Reference >

| Jumper | Function                                   | Section              |
|--------|--------------------------------------------|----------------------|
| JRTC   | COMS Operate / Clear Setting               | <a href="#">2.3</a>  |
| JWDT   | Watchdog Timer NMI / Reset Setting         | <a href="#">2.4</a>  |
| JDOC   | DiskOnChip SSD Address Setting             | <a href="#">2.5</a>  |
| JDOM   | DiskOnModule SSD Power Setting             | <a href="#">2.5</a>  |
| J82559 | Secondary LAN Enable/Disable Setting       | <a href="#">2.8</a>  |
| JCSEL  | COM2 RS232/422/485 Mode Setting            | <a href="#">2.10</a> |
| J1     | COM2 RS232/422/485 Mode Setting            | <a href="#">2.10</a> |
| J2     | COM2 RS232/422/485 Mode Setting            | <a href="#">2.10</a> |
| JP4M   | Pentium 4 / Pentium 4 –M processor setting |                      |



## 2.3 < Connector Reference >

### Internal Onboard Connectors

| Connector | Function                              | Remark   |
|-----------|---------------------------------------|----------|
| CPU       | MicroPGA478 478 CPU Socket            | Standard |
| DIMM1/2/3 | 168-pin DIMM Socket                   | Standard |
| IDE1/2    | 40-pin Primary / Secondary IDE Port   | Standard |
| Floppy    | 34-pin FDD Port                       | Standard |
| Printer   | 26-pin Parallel Port                  | Standard |
| JCOM1     | 10-pin RS232 Serial Port              | Standard |
| JCOM2     | 10-pin COM2 RS232/422/485 Serial Port | Standard |
| USBA      | 10-pin 1st / 2nd USB Port             | Standard |
| JIR       | 10-pin SIR IrDA Port                  | Standard |
| U50       | 32-pin DIP DiskOnChip Socket          | Standard |
| JATKB     | 5-pin AT Keyboard Connector           | Standard |
| ATXR1     | 4-pin Additional +12V Power Connector | Standard |
| JPS       | 3-pin ATX Signal Connector            | Standard |
| JFRNT     | 14-pin Switch and Indicator Connector | Standard |
| CPUFAN    | 3-pin +12V CPU Fan Connector          | Standard |
| SYSFAN    | 3-pin +12V System Fan Connector       | Standard |
| WOL       | 3-pin Wake-On-LAN Interface           | Standard |

### External Connectors

| Connector | Function                            | Remark          |
|-----------|-------------------------------------|-----------------|
| VGA       | DB15 Female VGA Connector           | Standard        |
| LAN1      | RJ45 LAN1 Connector                 | Standard        |
| LAN2      | RJ45 LAN2 Connector                 | <b>VL2</b> only |
| PS2       | 6-pin MiniDIN PS/2 Keyboard & Mouse | Standard        |
| COM1      | DB9 Male serial port connector      | <b>VL</b> only  |

2.4 < CPU and DRAM setting >

The board is based on Intel Socket 478 architecture, supports Intel mPGA478 Pentium 4 / Pentium 4 processor –M / Celeron CPU at 400 MHz FSB. The **FS-975** is based on Intel 845 MCH, supports 400 MHz FSB. System memory of this board supports up to 3GB PC133 SDRAM on 3 168-pin DIMM sockets, support ECC function.

CPU installation guide:

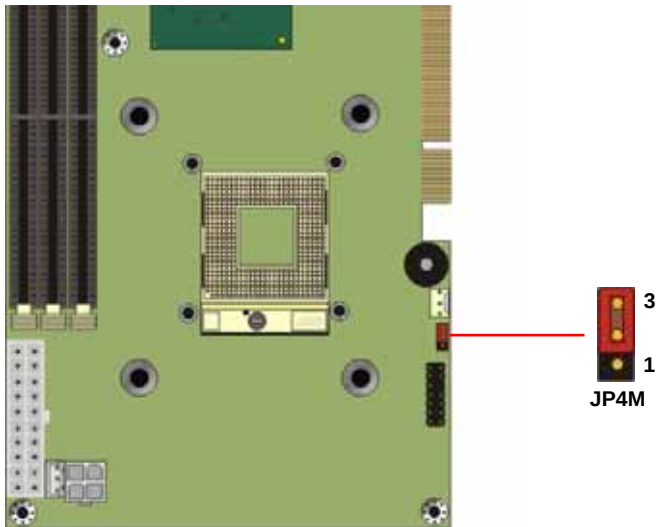
To install the Intel Processor properly,  
Please follow the steps below.

- 1. Select the jumper **JP4M** for the processor type.
- 2. Unlock the processor socket.
- 3. Install the processor onto the socket well.
- 4. Lock the processor socket.

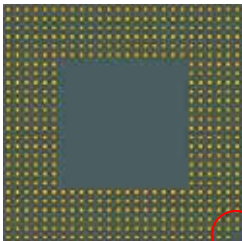
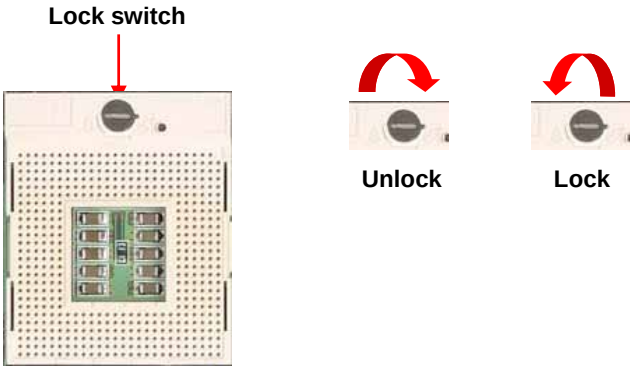
Jumper: **JP4M**

Type: onboard 3-pin header

| JP4M            | Processor Type                    |
|-----------------|-----------------------------------|
| 1-2             | For Pentium 4 / Celeron processor |
| 2-3             | For Pentium 4 processor -M        |
| Default setting |                                   |



Unless you set the jumper and lock the processor well, the board will not work properly.



**Notice!**  
Before you install the processor on the socket,  
please check the pin director well

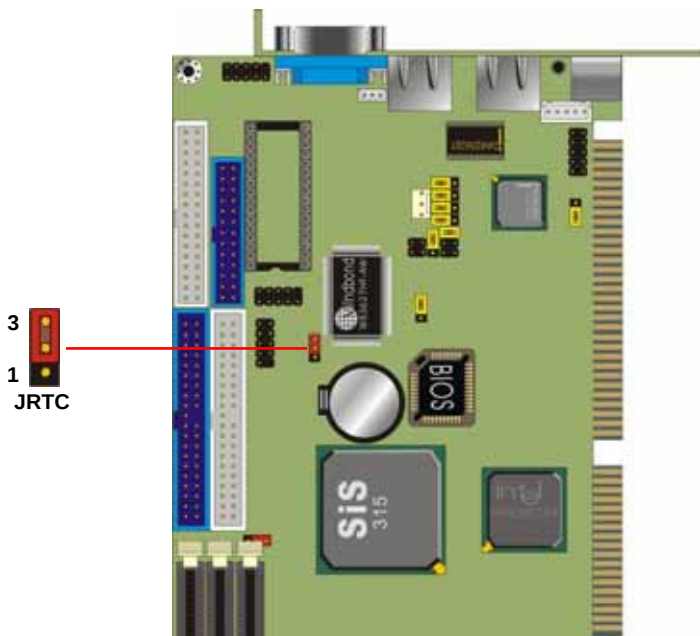
2.5 < CMOS Setting >

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 header

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



## 2.6 < Watchdog Timer Setting >

The watchdog timer makes the systems auto-reset while it stops to work for a period. The onboard watchdog timer can be setup as system reset or active NMI mode by jumper JWDT.

Jumper: **JWDT**

Type: onboard 3-pin header

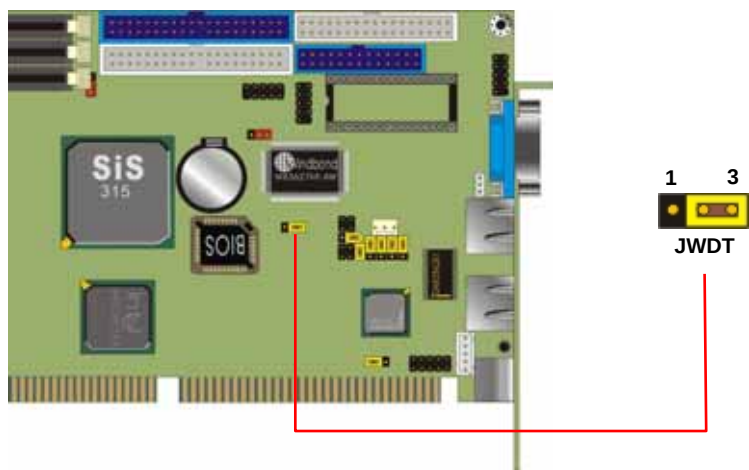
| JWDT            | Watchdog Timer |
|-----------------|----------------|
| 1-2             | Active NMI     |
| 2-3             | Reset          |
| Default setting |                |

### 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



2.7 < Embedded Solid State Disk >

The board supports both 32-pin M-systems DiskOnChip 2000 and IDE-based DiskOnChip IDE Pro and DiskOnModule (DOM) embedded flash disk. The onboard 32-pin socket, DOC, supports DiskOnChip 2000 single chip flash disk in 32-pin DIP JEDEC with jumper selectable address on jumper JDOC; onboard 40-pin IDE2 box header supports normal DOM (DiskOnModule) or M-systems DiskOnChip IDE Pro flash disk with jumper selectable +5V VCC power for cable free applications on jumper JDOM.

Jumper: **JDOC**

Type: onboard 3-pin header

| JDOC | DiskOnChip Address |
|------|--------------------|
| 1-2  | D000h              |
| 2-3  | D800h              |

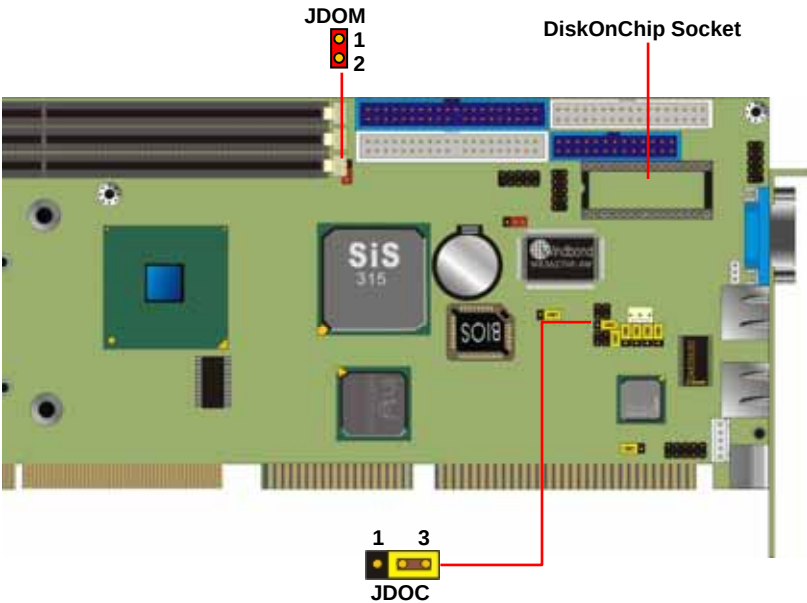
Default setting

Jumper: **JDOM**

Type: onboard 2-pin header

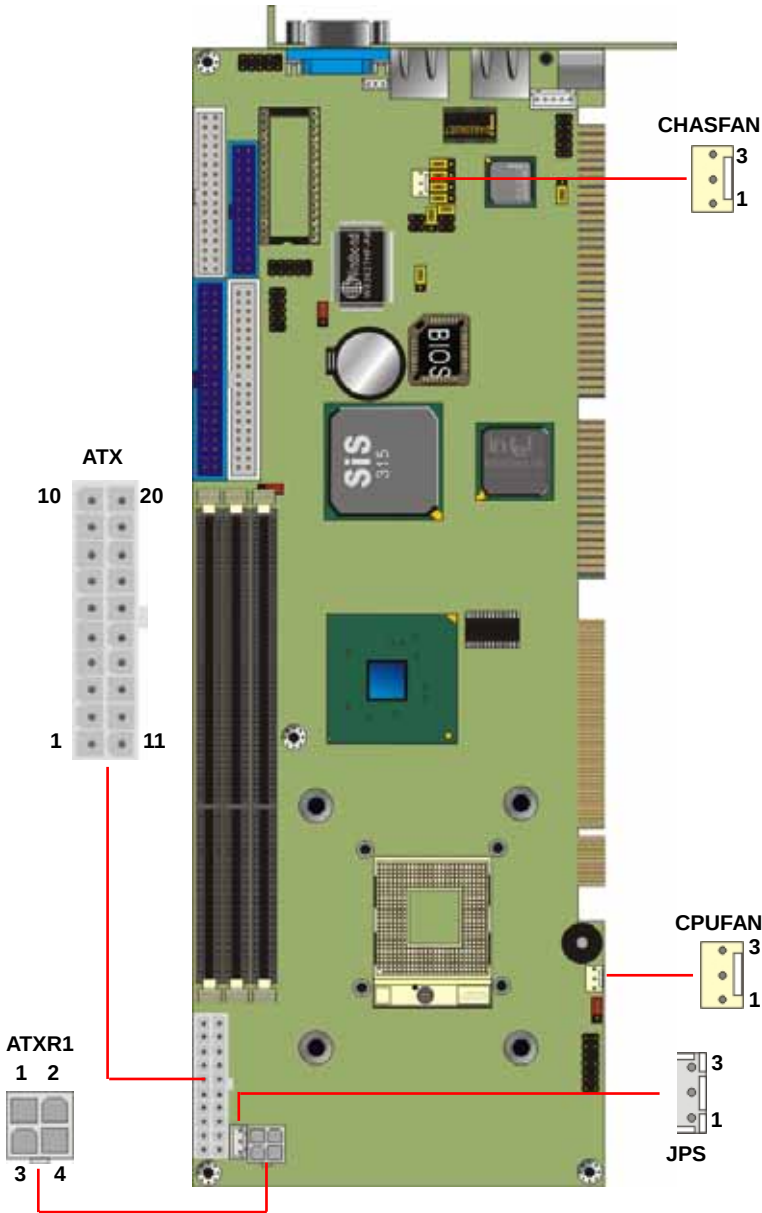
| JDOM | +5V on Pin-20 of IDE2 |
|------|-----------------------|
| OFF  | Disable               |
| ON   | Enable                |

Default setting



2.8 < Power and Fan Connectors >

The board provides one standard 20-pin ATX power connector and one 4-pin P4 use +12V power connector and one 3-pin ATX power-on connector. You can use this board with a backplane or simply connect it with a standard ATX power supply.



Connector: **ATXR1**

Type: 4-pin Standard Pentium 4 Additional +12V Power Connector

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

Connector: **JPS**

Type: 3-pin ATX Function Connector

| Pin | Description | Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|-----|-------------|
| 1   | 5V Standby  | 2   | Ground      | 3   | Power On    |

Connector: **CPUFAN, SYSFAN**

Type: 3-pin Fan Power Wafer Connector

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

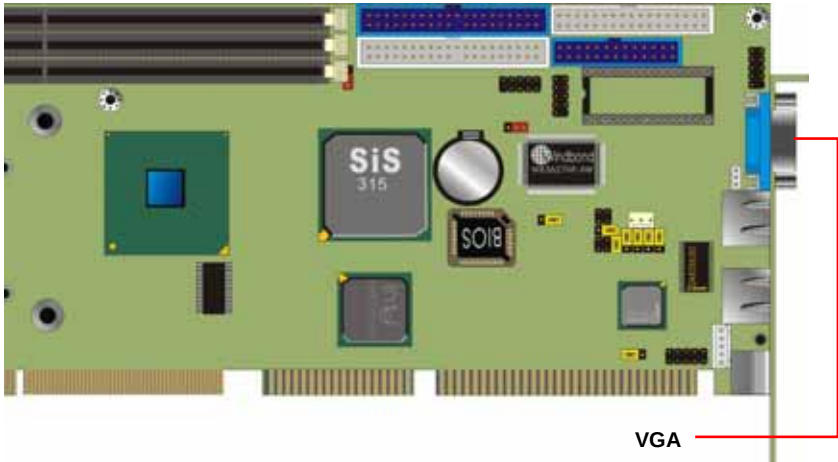
Connector: **ATX**

Type: 20-pin Standard ATX Power Connector

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | N/C         | 11  | Vcc         |
| 2   | N/C         | 12  | Vcc         |
| 3   | Ground      | 13  | -5V         |
| 4   | Vcc         | 14  | Ground      |
| 5   | Ground      | 15  | Ground      |
| 6   | Vcc         | 16  | Ground      |
| 7   | Ground      | 17  | Power On    |
| 8   | Power Good  | 18  | Ground      |
| 9   | 5V Standby  | 19  | -12V        |
| 10  | +12V        | 20  | N/C         |

## 2.9 < Display Interface >

The board is integrated with SiS315 Graphic Controller with 256-/128-bit 3D/2D engine and 32MB physical video memory. The CRT / analog VGA interface includes one external DB15 female connector on bracket.



2.10 < Ethernet Interface >

The board is integrated with dual Intel PRO/100+ Fast Ethernet interfaces at the type of 10Base-T/100Base-TX auto-switching Fast Ethernet with full duplex and IEEE 802.3U compliant. Both of them connect via RJ45 connectors on bracket. The LAN2 can enable or disable by jumper J82559.

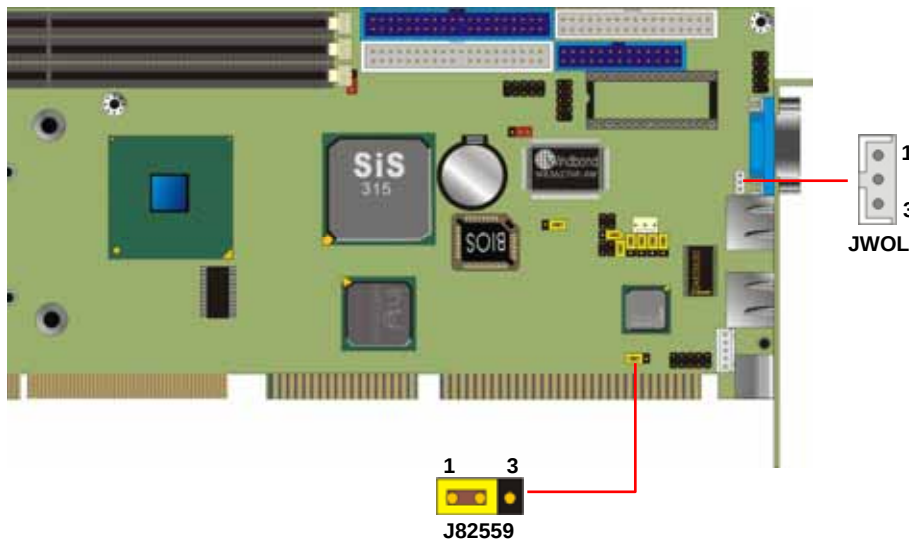
The primary LAN interface is controlled by Intel ICH2 with Intel 82562ET PHY and setting as LAN1. It provides the same performance as Intel 82559 LAN with the same driver. The secondary LAN interface is controlled by Intel 82559ER chipset and setting as LAN2.

Jumper: **J82559**  
Type: onboard 3-pin header

| J82559          | LAN2 Enable / Disable Setting |
|-----------------|-------------------------------|
| 1-2             | Enable                        |
| 2-3             | Disable                       |
| Default setting |                               |

Connector: **JWOL**  
Type: onboard 3-pin header Wake-On-LAN connector

| Pin         | 1        | 2      | 3           |
|-------------|----------|--------|-------------|
| Description | WOL-Ctrl | Ground | +5V Standby |



2.11 < Serial Ports >

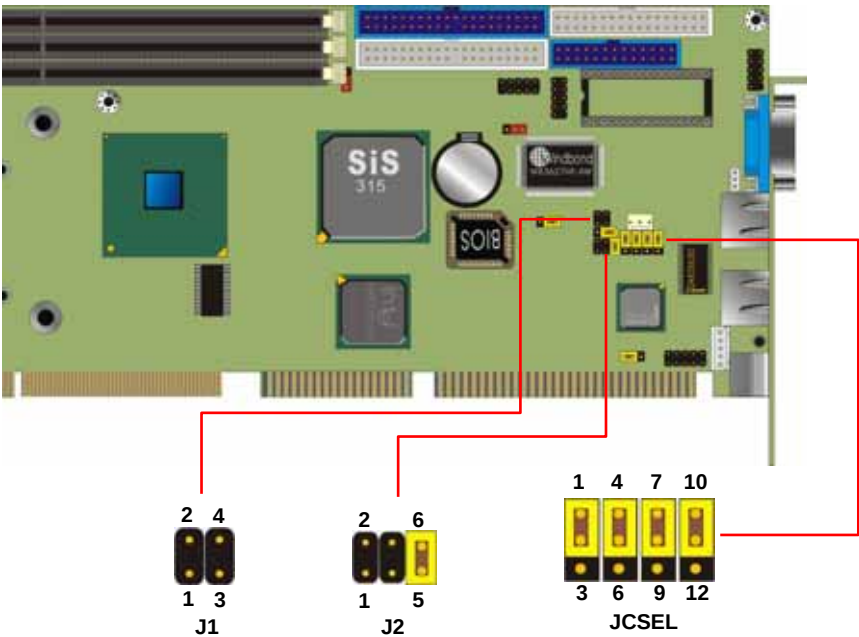
The board offers two serial ports including one RS232 COM1 and one jumper selectable RS232/422/485 COM2. The configuration of COM2 can be setting with jumper J1, J2 and JCSEL.

Jumper: **J1, J2, JCSEL**

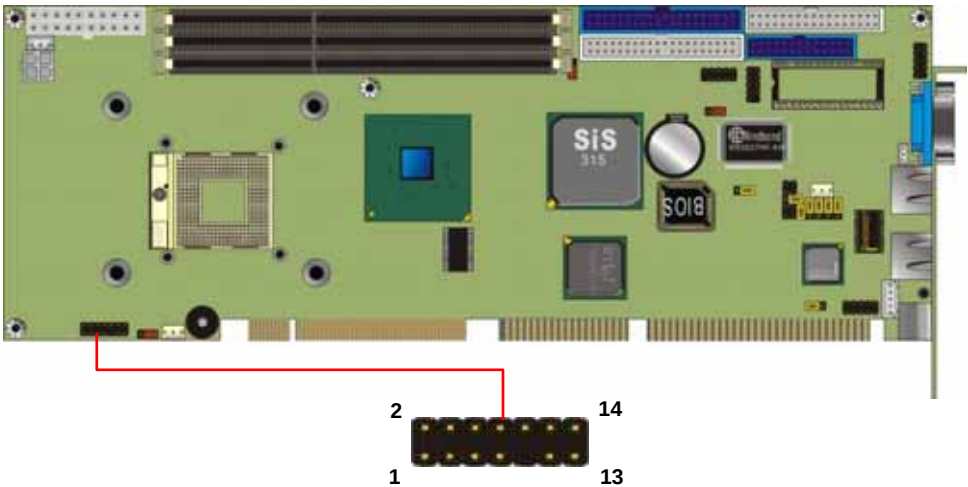
Type: onboard 4-, 6-, 12-pin header

| COM2 Mode | J1  | J2  | JCSEL             |
|-----------|-----|-----|-------------------|
| RS-232C   | OFF | 5-6 | 1-2/4-5/7-8/10-11 |
| RS-422    | 3-4 | 3-4 | 2-3/5-6/8-9/11-12 |
| RS-485    | 1-2 | 1-2 | 2-3/5-6/8-9/11-12 |

Default setting



2.12 < Switch and Indicator >



Connector: **JFRNT**

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

| Function | Signal  | PIN |    | Signal  | Function  |
|----------|---------|-----|----|---------|-----------|
| IDE LED  | Vcc (+) | 1   | 2  | (+) Vcc | Power LED |
|          | Active  | 3   | 4  | N/C     |           |
| Reset    | Reset   | 5   | 6  | GND     | Speaker   |
|          | GND     | 7   | 8  | Vcc     |           |
| N/C      |         | 9   | 10 | N/C     |           |
| Power    | PWRBT   | 11  | 12 | N/C     |           |
| Button   | GND     | 13  | 14 | SPKIN   |           |

# Chapter 3 < BIOS Setup >

The single board computer uses the Award BIOS for the system configuration. The Award BIOS in the single board computer is a customized version of the industrial standard BIOS for IBM PC AT-compatible computers. It supports Intel x86 and compatible CPU architecture based processors and computers. The BIOS provides critical low-level support for the system central processing, memory and I/O sub-systems.

The BIOS setup program of the single board computer let the customers modify the basic configuration setting. The settings are stored in a dedicated battery-backed memory, NVRAM, retains the information when the power is turned off. If the battery runs out of the power, then the settings of BIOS will come back to the default setting. The BIOS section of the manual is subject to change without notice and is provided here for reference purpose only. The settings and configurations of the BIOS are current at the time of print, and therefore they may not be exactly the same as that displayed on your screen.

To activate CMOS Setup program, press <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 3-1**. You can use arrow keys to select your function, press <Enter> key to accept the selection and enter the sub-menu.

Figure 3-1 CMOS Setup Utility Main Screen

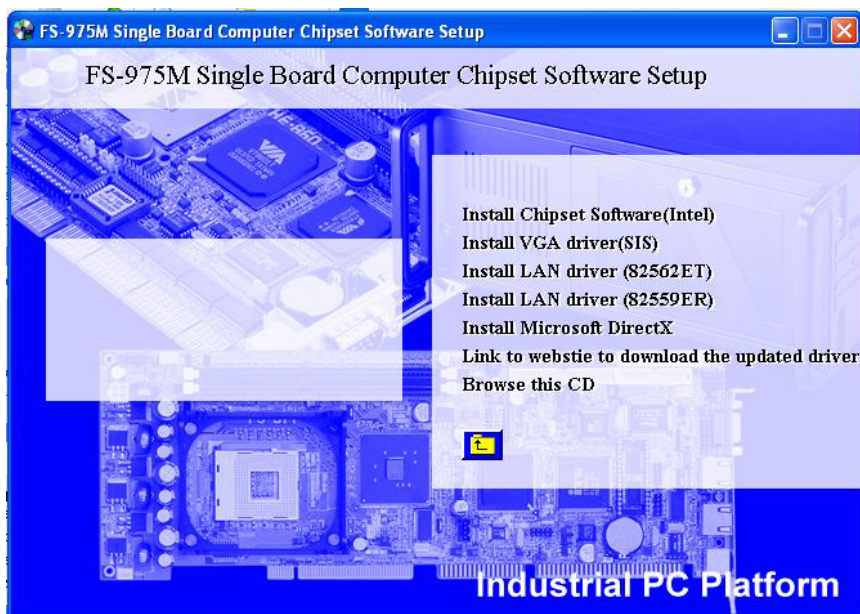


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## Chapter 4 < Driver Installation >



### **Install Chipset Software (Intel)**

This item will install the chipset drivers.

### **Install VGA driver (SIS)**

This item will install the VGA driver to get the display properly.

### **Install LAN driver (82562ET)**

This item will install the Intel 82562ET Ethernet controller driver.

### **Install LAN driver (82559ER)**

This item will install the Intel 82559ER Ethernet controller driver.

### **Install Microsoft DirectX**

This Item will update the last Microsoft® DirectX® utility.

### **Link to website to download the updated drivers**

This item will re-direct you to our support page on website to download the last drivers.

### **Browse this CD**

This item will open the folder of the CD content.

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Appendix A < I/O Port Pin Assignment >

A.1 < IDE Port >

Connector: IDE1, IDE2

Type: 40-pin (2 x 20) box header



| Pin | Description     | Pin | Description    |
|-----|-----------------|-----|----------------|
| 1   | Reset           | 2   | Ground         |
| 3   | D7              | 4   | D8             |
| 5   | D6              | 6   | D9             |
| 7   | D5              | 8   | D10            |
| 9   | D4              | 10  | D11            |
| 11  | D3              | 12  | D12            |
| 13  | D2              | 14  | D13            |
| 15  | D1              | 16  | D14            |
| 17  | D0              | 18  | D15            |
| 19  | Ground          | 20  | N/C (VCC)      |
| 21  | REQ             | 22  | Ground         |
| 23  | IOW-/STOP       | 24  | Ground         |
| 25  | IOR-/HDMARDY    | 26  | Ground         |
| 27  | IORDY/DDMARDY   | 28  | IDESEL         |
| 29  | DACK-           | 30  | Ground         |
| 31  | IRQ             | 32  | N/C            |
| 33  | A1              | 34  | CBLID          |
| 35  | A0              | 36  | A2             |
| 37  | CS0 (MASTER CS) | 38  | CS1 (SLAVE CS) |
| 39  | LED ACT-        | 40  | Ground         |

Note: The pin-20 of IDE2 is jumper selectable as +5V VCC for the DOM (DiskOnModule) or DiskOnChip IDE Pro flash disk without the additional power cable.

A.2 < Floppy Port >

Connector: **Floppy**

Type: 34-pin (2 x 17) header



| Pin | Description | Pin | Description            |
|-----|-------------|-----|------------------------|
| 1   | Ground      | 2   | DRIVE DENSITY SELECT 0 |
| 3   | Ground      | 4   | DRIVE DENSITY SELECT 1 |
| 5   | Ground      | 6   | N/C                    |
| 7   | Ground      | 8   | INDEX-                 |
| 9   | Ground      | 10  | MOTOR ENABLE A-        |
| 11  | Ground      | 12  | DRIVER SELECT B-       |
| 13  | Ground      | 14  | DRIVER SELECT A-       |
| 15  | Ground      | 16  | MOTOR ENABLE B-        |
| 17  | Ground      | 18  | DIRECTION-             |
| 19  | Ground      | 20  | STEP-                  |
| 21  | Ground      | 22  | WRITE DATA-            |
| 23  | Ground      | 24  | WRITE GATE-            |
| 25  | Ground      | 26  | TRACK 0-               |
| 27  | Ground      | 28  | WRITE PROTECT-         |
| 29  | Ground      | 30  | READ DATA-             |
| 31  | Ground      | 32  | HEAD SELECT-           |
| 33  | Ground      | 34  | DISK CHANGE-           |

A.3 < Parallel Port >

Connector: **Printer**

Type: 26-pin box header



| Pin | Description  | Pin | Description   |
|-----|--------------|-----|---------------|
| 1   | STROBE-      | 14  | AUTO FEED-    |
| 2   | D0           | 15  | ERROR-        |
| 3   | D1           | 16  | INITIALIZE-   |
| 4   | D2           | 17  | SELECT INPUT- |
| 5   | D3           | 18  | Ground        |
| 6   | D4           | 19  | Ground        |
| 7   | D5           | 20  | Ground        |
| 8   | D6           | 21  | Ground        |
| 9   | D7           | 22  | Ground        |
| 10  | ACKNOWLEDGE- | 23  | Ground        |
| 11  | BUSY         | 24  | Ground        |
| 12  | PAPER EMPTY  | 25  | Ground        |
| 13  | SELECT+      | 26  | N/C           |

A.4 < Serial Ports>

A.4.1 < Onboard RS232 Serial Ports >

Connector: **JCOM1, JCOM2**

Type: 10-pin header



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

A.4.2 < External RS232 Serial Port >

Connector: **COM1 (FS-975MVL only)**

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



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

4.5 < USB Ports >

Connector: **USBA**

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



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

A.6 < IrDA Port >

Connector: JIR

Type: 5-pin (1 x 5) header for SIR Port

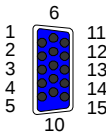


| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | VCC         | 6   | N/C         |
| 2   | N/C         | 7   | CIRRX       |
| 3   | IRRX        | 8   | 5V Standby  |
| 4   | Ground      | 9   | N/C         |
| 5   | IRTX        | 10  | N/C         |

A.7 < VGA Port >

Connector: VGA

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

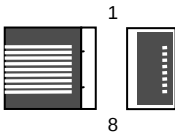


| Pin | Description | Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|-----|-------------|
| 1   | RED         | 6   | Ground      | 11  | N/C         |
| 2   | GREEN       | 7   | Ground      | 12  | VDDAT       |
| 3   | BLUE        | 8   | Ground      | 13  | HSYNC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

A.8 < LAN Port >

Connector: LAN1, LAN2 (FS-975VL2 only)

Type: RJ45 connector on bracket



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

A.9 < AT Keyboard Port >

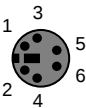
Connector: **JATKB**  
Type: 5-pin box header



| Pin         | 1   | 2    | 3   | 4      | 5   |
|-------------|-----|------|-----|--------|-----|
| Description | CLK | DATA | N/C | Ground | VCC |

A.10 < PS/2 Keyboard and Mouse Port >

Connector: **PS2**  
Type: 6-pin MiniDIN connector on bracket



| Pin         | 1   | 2   | 3      | 4   | 5   | 6   |
|-------------|-----|-----|--------|-----|-----|-----|
| Description | KBD | MSD | Ground | N/C | KBC | MSC |

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

## 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.award.com>

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 Steps

1. Get the ".bin" file including the image of new BIOS you want to update.
2. Power on the system and flash the BIOS.
3. Re-start the system.

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## Appendix C < System Resources >

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

| Address Range | Device                                               |
|---------------|------------------------------------------------------|
| x0000 - x000F | Direct Access Memory Controller                      |
| x0010 - x001F | Motherboard Resource                                 |
| x0020 - x0021 | Programmable Interrupt Controller                    |
| x0022 - x003F | Motherboard Resource                                 |
| x0040 - x0043 | System Clock                                         |
| x0044 - x005F | Motherboard Resource                                 |
| x0060 - x0060 | Standard 101/102-Key or Microsoft Natural Keyboard   |
| x0061 - x0061 | System Speaker                                       |
| x0062 - x0063 | Motherboard Resource                                 |
| x0064 - x0064 | Standard 101/102-Key or Microsoft Natural Keyboard   |
| x0065 - x006F | Motherboard Resource                                 |
| x0070 - x0073 | System CMOS/ Real Time Clock                         |
| x0074 - x007F | Motherboard Resource                                 |
| x0080 - x0090 | Direct Access Memory Controller                      |
| x0091 - x0093 | Motherboard Resource                                 |
| x0094 - x009F | Direct Access Memory Controller                      |
| x00A0 - x00A1 | Programmable Interrupt Controller                    |
| x00A2 - x00BF | Motherboard Resource                                 |
| x00C0 - x00DF | Direct Access Memory Controller                      |
| x00E0 - x00EF | Motherboard Resource                                 |
| x00F0 - x00FF | Numeric Data Processor                               |
| x0170 - x0177 | Intel(R) 82801BA Ultra ATA Storage Controller - 244B |
| x0170 - x0177 | Secondary IDE controller (dual fifo)                 |
| x01F0 - x01F7 | Intel(R) 82801BA Ultra ATA Storage Controller - 244B |
| x01F0 - x01F7 | Primary IDE controller (dual fifo)                   |
| x0294 - x0297 | Motherboard Resource                                 |
| x02F8 - x02FF | Communication Port (COM2)                            |
| x0376 - x0376 | Intel(R) 82801BA Ultra ATA Storage Controller - 244B |
| x0376 - x0376 | Secondary IDE controller (dual fifo)                 |
| x0378 - x037F | Printer Port (LPT1)                                  |
| x03B0 - x03BB | SiS315                                               |
| x03C0 - x03DF | SiS315                                               |
| x03F0 - x03F5 | Standard Floppy Controller                           |
| x03F6 - x03F6 | Intel(R) 82801BA Ultra ATA Storage Controller - 244B |
| x03F6 - x03F6 | Primary IDE controller (dual fifo)                   |
| x03F7 - x03F7 | Standard Floppy Controller                           |

| Address Range | Device                                                    |
|---------------|-----------------------------------------------------------|
| x03F8 - x03FF | Communication Port (COM1)                                 |
| x0400 - x04BF | Motherboard Resource                                      |
| x04D0 - x04D1 | Motherboard Resource                                      |
| x0500 - x050F | Intel(R) 82801BA/BAM SMBus Controller - 2443              |
| x0778 - x077B | Printer Port (LPT1)                                       |
| x0A78 - x0A7B | Motherboard Resource                                      |
| x0B78 - x0B7B | Motherboard Resource                                      |
| x0BBC - x0BBF | Motherboard Resource                                      |
| x0CF8 - x0CFF | PCI Bus                                                   |
| x0E78 - x0E7B | Motherboard Resource                                      |
| x0F78 - x0F7B | Motherboard Resource                                      |
| x0FBC - x0FBF | Motherboard Resource                                      |
| x9000 - x907F | SiS315                                                    |
| x9000 - x9FFF | Intel(R) 845 Chipset Processor to AGP Controller - 1A31   |
| xA000 - xA03F | Intel(R) PRO/100 VE Desktop Adapter                       |
| xA000 - xAFFF | Intel(R) 82801BA PCI Bridge - 244E                        |
| xA400 - xA43F | Intel(R) GD82559ER PCI Adapter                            |
| xB000 - xB01F | Intel(R) 82801BA/BAM USB Universal Host Controller - 2442 |
| xB800 - xB81F | Intel(R) 82801BA/BAM USB Universal Host Controller - 2444 |
| xF000 - xF007 | Primary IDE controller (dual fifo)                        |
| xF000 - xF00F | Intel(R) 82801BA Ultra ATA Storage Controller - 244B      |
| xF008 - xF00F | Secondary IDE controller (dual fifo)                      |

**C.2 < Memory Address Map >**

| <b>Device</b>          | <b>Physical Address Length</b>                        |
|------------------------|-------------------------------------------------------|
| 0xA0000-0xBFFFF        | PCI bus                                               |
| x00000000 - x0009FFFF  | System board extension for ACPI BIOS                  |
| x000A0000 - x000AFFFF  | SiS315                                                |
| x000B0000 - x000BFFFF  | SiS315                                                |
| x000C0000 - x000CFFFF  | SiS315                                                |
| x000E0000 - x000EFFFF  | System board extension for ACPI BIOS                  |
| x000F0000 - x000F3FFF  | System board extension for ACPI BIOS                  |
| x000F4000 - x000F7FFF  | System board extension for ACPI BIOS                  |
| x000F8000 - x000FBFFF  | System board extension for ACPI BIOS                  |
| x000FC000 - x000FFFFF  | System board extension for ACPI BIOS                  |
| x00100000 - x1FFFEFFFF | System board extension for ACPI BIOS                  |
| x1FFF0000 - x1FFFFFFF  | System board extension for ACPI BIOS                  |
| xD0000000 - xDFFFFFFF  | Intel(R) 845 Chipset Processor to AGP Controller-1A31 |
| xD0000000 - xDFFFFFFF  | SiS315                                                |
| xE0000000 - xE3FFFFFFF | Intel(R) 845 Chipset Processor to I/O Controller-1A30 |
| xE4000000 - xE400FFFF  | SiS315                                                |
| xE4000000 - xE5FFFFFFF | Intel(R) 845 Chipset Processor to AGP Controller-1A31 |
| xE5000000 - xE503FFFF  | SiS315                                                |
| xE6000000 - xE7FFFFFFF | Intel(R) 82801BA PCI Bridge - 244E                    |
| xE7000000 - xE701FFFF  | Intel(R) GD82559ER PCI Adapter                        |
| xE7020000 - xE7020FFF  | Intel(R) PRO/100 VE Desktop Adapter                   |
| xE7021000 - xE7021FFF  | Intel(R) GD82559ER PCI Adapter                        |
| xFEC00000 - xFEC00FFF  | System board extension for ACPI BIOS                  |
| xFEE00000 - xFEE00FFF  | System board extension for ACPI BIOS                  |
| xFFB00000 - xFFB00FFF  | System board extension for ACPI BIOS                  |
| xFFFF0000 - xFFFFFFF   | System board extension for ACPI BIOS                  |

## C.3 < System IRQ and DMA Resources >

### C.3.1 < IRQ >

| IRQ Number | Device                                                    |
|------------|-----------------------------------------------------------|
| 0          | System Clock                                              |
| 1          | Standard 101/102-Key or Microsoft Natural Keyboard        |
| 2          | Programmable Interrupt Controller                         |
| 3          | Communication Port (COM2)                                 |
| 4          | Communication Port (COM1)                                 |
| 5          | Intel(R) 82801BA/BAM USB Universal Host Controller - 2444 |
| 5          | ACPI IRQ Holder for PCI IRQ Steering                      |
| 6          | Standard Floppy Controller                                |
| 7          | Printer Port (LPT1)                                       |
| 8          | System CMOS/ Real Time Clock                              |
| 9          | Intel(R) 82801BA/BAM USB Universal Host Controller - 2442 |
| 9          | ACPI IRQ Holder for PCI IRQ Steering                      |
| 9          | SCI IRQ used by ACPI bus                                  |
| 10         | Intel(R) 82801BA/BAM SMBus Controller - 2443              |
| 10         | Intel(R) GD82559ER PCI Adapter                            |
| 10         | ACPI IRQ Holder for PCI IRQ Steering                      |
| 11         | Intel(R) PRO/100 VE Desktop Adapter                       |
| 11         | ACPI IRQ Holder for PCI IRQ Steering                      |
| 12         | PS/2 Compatible Port                                      |
| 13         | Numeric Data Processor                                    |
| 14         | Primary IDE controller (dual fifo)                        |
| 14         | Intel(R) 82801BA Ultra ATA Storage Controller - 244B      |
| 15         | Secondary IDE controller (dual fifo)                      |
| 15         | Intel(R) 82801BA Ultra ATA Storage Controller - 244B      |

### C.3.2 < DMA >

| Channel | Device                          |
|---------|---------------------------------|
| 0       | (free)                          |
| 1       | (free)                          |
| 2       | Standard Floppy Disk Controller |
| 3       | (free)                          |
| 4       | Direct Memory Access Controller |
| 5       | (free)                          |
| 6       | (free)                          |
| 7       | (free)                          |

# 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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| Website | <a href="http://www.commell.com.tw">http://www.commell.com.tw</a>                                                                                                      |
| E-mail  | <a href="mailto:info@commell.com.tw">info@commell.com.tw</a> (General Information)<br><a href="mailto:tech@commell.com.tw">tech@commell.com.tw</a> (Technical Support) |

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