PRM-13I

High Performance

Socket370 Mainboard

User's Guide
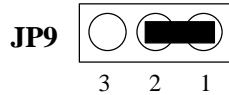
Edition 1.00

P/N: 155100-8819

EPA POLLUTION PREVENTER

WARNING

For the system to operate normally, please make sure JP9 of the mainboard is set as below. Refer to Fig. 2 in this manual for the location JP9.

JP9 ⬜ ⬛⬛

3   2   1

If JP9 is shorted to 2-3, no CMOS data can be retained.

CAUTION

The motherboard is an electrostatic sensitive device. Don't open or handle except at a static-free workstation.

Be sure to unplug the power code of the system when installation or upgrade with any devices for the system.

POWER OFF

It needs to hold the power switch 4 seconds to turn off the power, if "Delay 4 sec" selected in Power Management Setup of BIOS and ATX type power supply installed.

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CHAPTER 1 INTRODUCTION

Preface

The motherboard is a 4 layers, FlexATX form factor high performance PCI mainboard. It includes Intel 810 system chipset, Winbond W83627HF LPC I/O controller and Realtech RTL8139A Ethernet Controller.

Features

- Intel® Accelerated Hub Architecture Increased I/O performance allows better concurrency for richer multimedia applications.
- Integrated graphics/AC97 controller BOM cost savings, more flexibility and better audio quality.
- Intel® 3D graphics with Direct AGP Vivid 2D and 3D graphics, BOM cost savings, efficient use of system memory for graphics, O/S and applications
- Optional 4MB of dedicated display cache video memory enables SKU differentiation with increased 3D graphics performance improvement over Direct AGP.
- Low-power sleep modes Energy Savings, Suspend to DRAM (3 Watts), and On Now in 10 seconds approx..
- One software driver code base more stable platform, higher quality graphics, reduced OEM support costs.
- Intel® Random Number Generator (RNG) enables ISV's to strengthen security products.
- Soft DVD MPEG 2 playback with Hardware Motion Compensation Life-like video and audio.
- 100MHz System Bus capable Flexibility for performance headroom.
- 2 USB ports Plug and Play.
- 10/100M BPS Ethernet Controller on board supported (optional).

Processor
- Intel PPGA S370 series.
- The mainboard can run with following speeds:
    300A, 333, 366, 400, 433, 466, 500 or 533MHz
- Jumperless CPU HOST frequency

Chipset
- Intel 810 chipsets
- Winbond W83627HF LPC I/O Controller
- Realtech RTL8139A Ethernet Controller

Main Memory
- Memory configurations up to 512MB SDRAM
- DIMM socket for SDRAM (3.3V unbuffered).
- Support both Synchronous DRAM and Extended Data Output (EDO) Mode DRAM Modules.
- ECC Function ensures data correction and integrity.

Multi I/O
- On board Multi-I/O supports two serial, one parallel ports and floppy drive controller.
- Serial ports are 16550 Fast UART compatible.
- Parallel port has EPP and ECP capabilities.
- PS/2 keyboard and PS/2 mouse connector is provided.
- Keyboard /mouse wake-up by programmable buttons.
- Programmable AC Power Failure Recovery.
- IrDA/FIR supported.
- USB supported.

PCI IDE
- On board supports PCI Master IDE Controller, two connectors support up to four IDE devices such as HDD, CD ROM drive and Tape Back-up drives, etc.
- PCI Master IDE controller supports PIO Mode 3 and 4 devices, I/O data transfer rate can be up to 16.6MB/s.
- Ultra DMA Mode supported. Transfer rate can be up to 66MB/s.

Ethernet Controller
- 10/100MHz PCI Ethernet controller on board.

System BIOS
- Award BIOS (4M FWH).

Slots
- One PCI slot
- One AMR slot

Form Factor
- Flex ATX Form Factor Size (229mm x 191mm) 4 Layers

PS/2 MOUSE
(UPPER) &
KEYBOARD (LOWER)

USB&
LAN

COM1

PARALLEL

VGA

ATX POWER

DIMM1

DIMM2

SOCKET 370

FDC

MIC | LINE IN | LINE OUT | GAME

INTEL
GMCH

IDE1

IDE0

CODEC

PCI

BATTERY

AMR SLOT

W8627HF

FWH

RTL 8139

INTEL
ICH
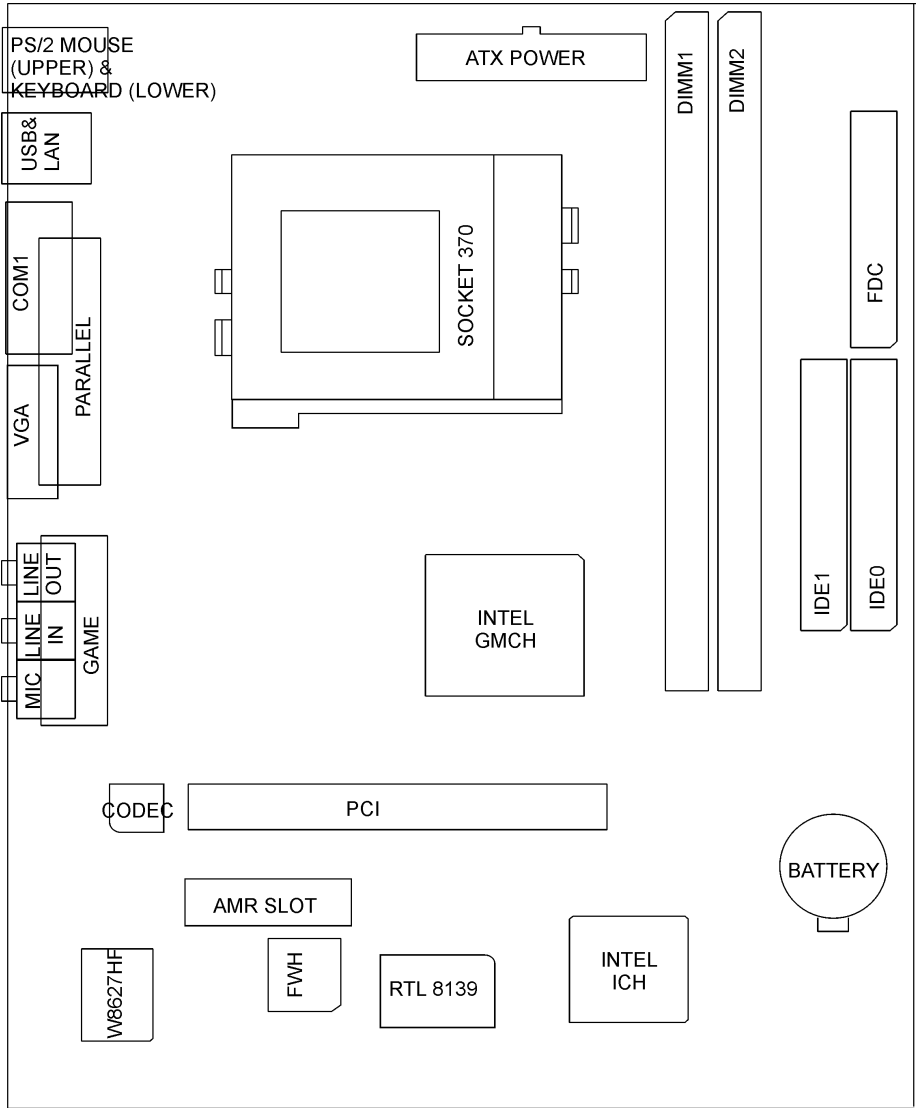
Fig. 1 Key Components of the Mainboard

CHAPTER 2   JUMPER SETTINGS

2.1   JUMPERS PRESENTATION

Pins 1 and 2 are shorted with a jumper cap.

Pins 2 and 3 are shorted with a jumper cap.

The jumper is shorted when the jumper cap is placed over the two pins of the jumper.

The jumper is open when the jumper cap is removed from jumper.
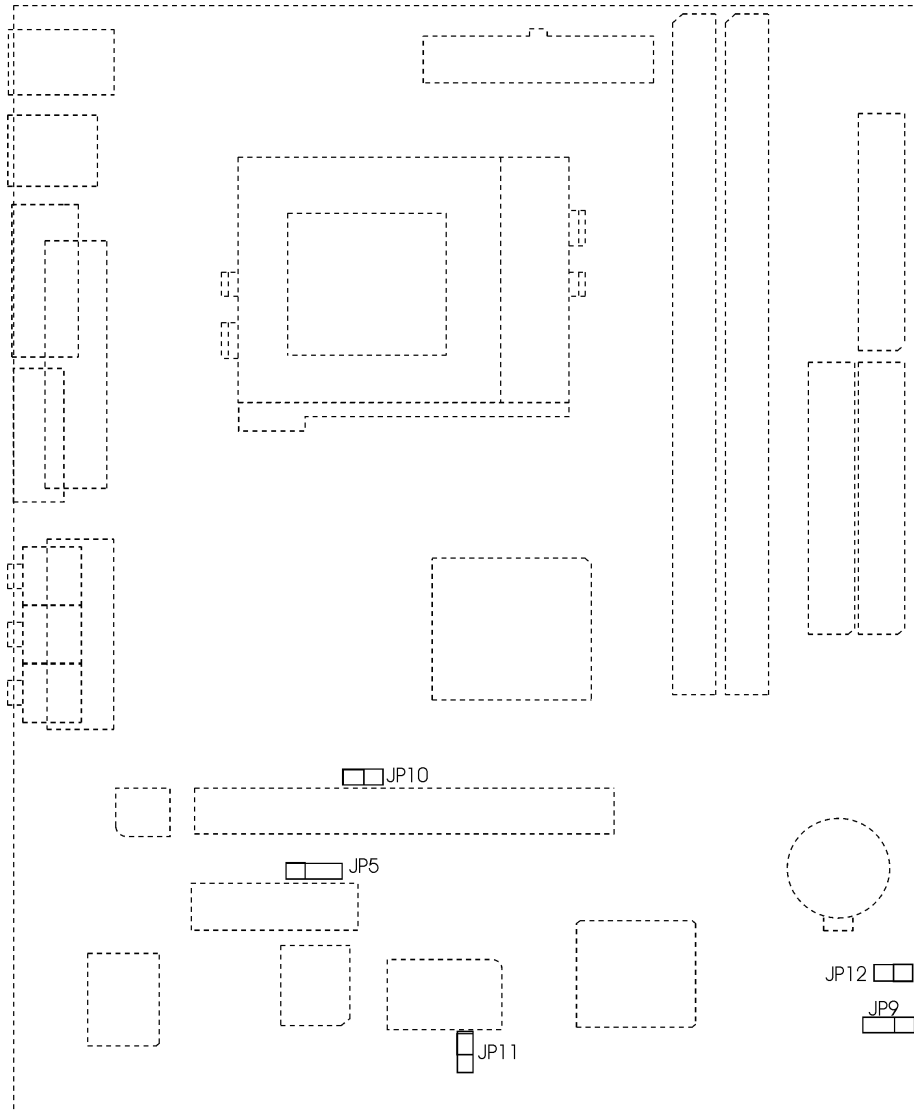
2.2 GRAPHICAL DESCRIPTION OF JUMPER SETTINGS

JP10

JP5

JP12

JP9

JP11

Fig. 2 Jumper Location of the mainboard

2.3   CPU SPEED

The table below summaries the CPU frequency and settings of each jumper of the motherboard.

CPU Type	Freq.	Bus Freq.	Bus Ratio
PPGA S370 Celeron	300MHz	66MHz	4.5x
	333MHz		5.0x
	366MHz		5.5x
	400MHz		6.0x
	433MHz		6.5x
	466MHz		7.0x
	500MHz		7.5x
	533MHz		8.0x

Table 1

2.4   JP9 - CLEAR CMOS DATA

JP9 is used to clear the content of the CMOS Data in the RTC (build in PIIX4 chip).
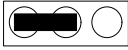
JP9	Description
1 ○ ▭▬	Normal
1 ▬▭ ○	Clear CMOS Data

Table 2 Clear CMOS Data

2.5 JP12 – BIOS LOCK/UNLOCK SELECT

JP12	Description
	Unlock(Default)
	Lock

Table 3

2.6 JP5 – ONBOARD CODEC SETTING

JP5	Description
1	Enabled
1	Disabled

Table 4

2.7 JP10, JP11 – ONBOARD ETHERNET SETTING
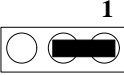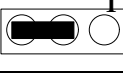
JP10,JP11	Description
	Enabled
	Disabled

Table 5

2.8   MEMORY CONFIGUARTION

The mainboard lets user upgrade system memory via DIMM sockets on the mainboard. On board memory is located in four banks: Bank 0 - 3. Two DIMM sockets are provided for EDO DRAM or Synchronous DRAM. Table 6 provides the typical memory configurations supported by the mainboard.

Bank 0/1 (DIMM1)	Bank 2/3 (DIMM2)
Installed	None
None	Installed
Installed	Installed

Table 6

The maximum memory size is up to 512MB (SDRAM). The size of each DIMM can be 32MB, 64MB, 128MB, 256MB and 512MB.

CHAPTER 3   CONNECTOR CONFIGURATION

Once the mainboard has been fastened into system case, the next step is to connect the internal cables. The internal cables are wire leads with plastic female connectors that attach to the connectors. The mainboard connectors have varying numbers of pins and are the points of contact between the mainboard and other parts of the computer.
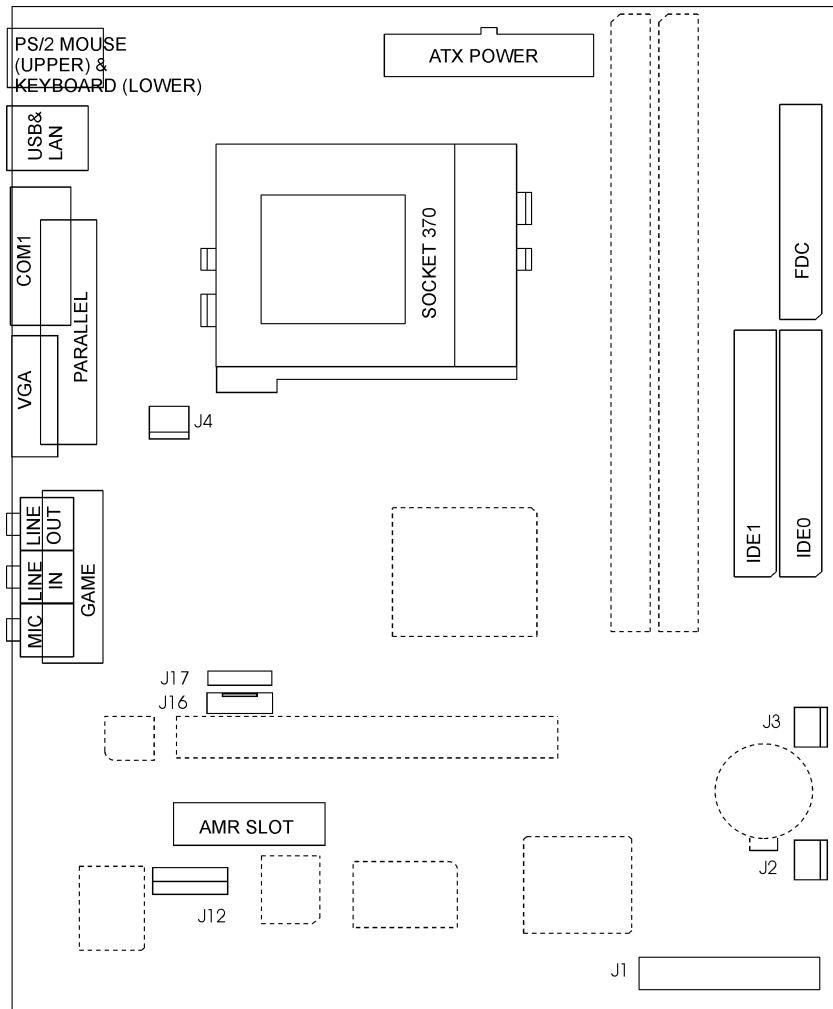
Fig 3 Connector Location

3.1   U1 – SOCKET370 FOR CELERON CPU

U1 is the Socket370 for Celeron CPU.
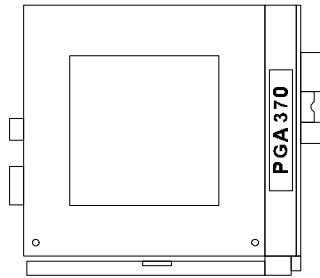
Fig. 4 Socket370 for Celeron CPU

3.2   J1 – MULTIPLE FUNCTION JUMPER

J1 is a front panel multi-function jumper includes speaker, reset, keylock, harddisk, LED, GREEN LED and power button (suspend switch). The pin definition is following figure.
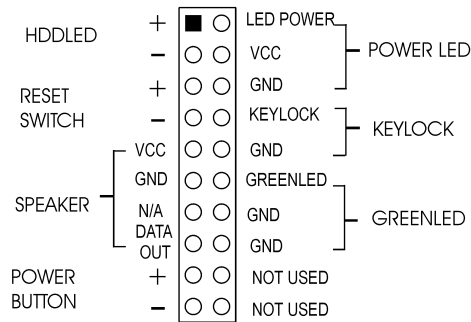
Fig. 5 Multiple Function Jumper

3.3   J2, J3 J4– CPU FAN CONNECTOR

J2, J3, J4 are three-pin connectors, which are used to connect with the CPU Fan or the Case Fan which will be monitored by the on board hardware doctor, and controlled the Fan speed.

3.4 J5 - ATX POWER SUPPLY CONNECTOR

J5 is a 2x10 pin male connector. Plug the power connector of the ATX power supply into the connector.

+3.3VDC			+3.3VDC
+3.3VDC			-12VDC
GND			GND
+5VDC			Power Switch
GND			GND
+5VDC			GND
GND			GND
Power Good			-5VDC
+5V Standby			+5VDC
+12VDC			+5VDC
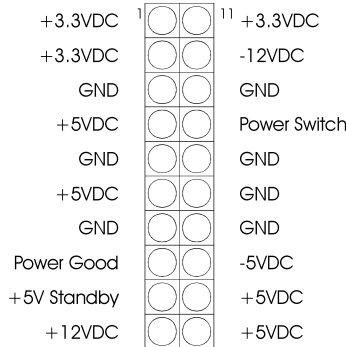
Fig. 6 ATX Power Supply Connector

3.5 J6 - FLOPPY DRIVE CONTROLLER

This connector supports the floppy drive ribbon cable. After connecting the single end to the board, connect the two plugs on the other end to the floppy drive.

3.6 J7, J8 –PRIMARY /SECONDARY IDE CONNECTORS

These connectors support the provided IDE hard disk ribbon cable. After connecting the single end to the board, connect the two plugs on the other end to your hard disk or other device.

3.7 J12 – CUSTOMER IR CONNECTOR

J12 is a ten-pin connector for the IrDA/ASKIR/Customer Infrared device. The pin definition is listed as following:

VCC ◯ ◯ +5VSB
NC ◯ ◯ NC
IRRX ◯ ◯ Customer IR
GND ◯ ◯ GND
IRTX ◯ ◯ NC
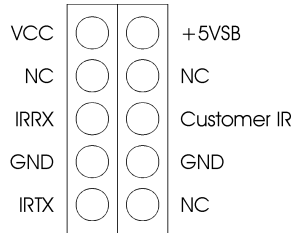
Fig. 7 Customer IR Connector

3.8 J16 – CD-ROM AUDIO CONNECTOR (MISUMI/ PANASONIC)

J16 is a four-pin connector, which is used to connect with the Panasonic or Misumi CD-ROM audio output. The pin definition is as following:

L G R G
▢ ◯ ◯ ◯
1
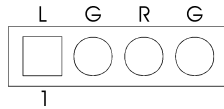
Fig. 8 CD-ROM Audio Connector

3.9 J17 – CD-ROM AUDIO CONNECTOR (SONY)

J17 is a four-pin connector, which is used to connect with the Sony CD-ROM audio output. This pin definition is as following:

L G G R
▢ ◯ ◯ ◯
1
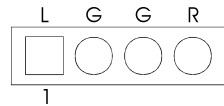
Fig. 9 CD-ROM Audio Connector
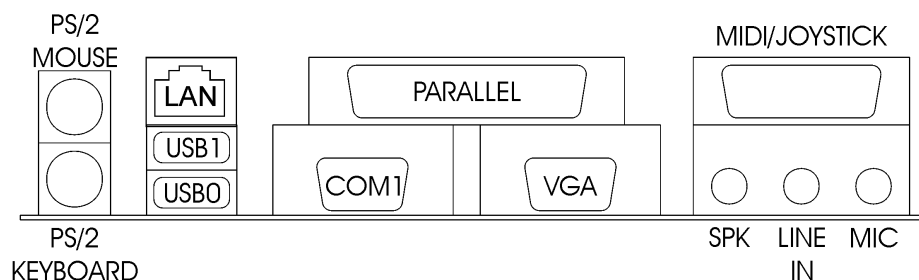
Fig. 10 Feature Connector

3.10   J13 – USB PORTS & LAN PORT

The USB 0&1 connectors are two four pin female sockets which are available for connecting USB device. The LAN port is the output of the onboard 10/100MHz Ethernet, plug the cable jack into this connector.

3.11   J21 – VGA CONNECTOR

This is a D-Type 15-pin male connector for monitor.

3.12   J22 – PARALLEL PORT CONNECTOR

This is a D-Type 25-pin female connector for parallel line printer.

3.13   J23 – SERIAL PORT COM1

This is a D-Type 9-pin male connector for pointing devices or other serial devices.

3.14   J25 – PS/2 MOUSE CONNECTOR

This connector is a six-pin female mini DIN connector using a PS/2 plug. Plug the jack on the PS/2 mouse cable into this connector.

3.15   J26 – PS/2 KEYBOARD CONNECTOR

This connector is a six-pin female mini DIN connector using a PS/2 plug.

3.16   AUDIO PORT CONNECTOR

Three 1/8" female connectors used as speaker, line in and microphones. **SPK** can be connected to headphones or preferably powered speakers. **Line In** allows tape players or other audio sources to be recorded by your computer or played through the SPK. **MIC** allows microphones to be connected for inputting voice.

CHAPTER 4   AWARD BIOS

If the first time installation of this system board, please press the "DEL" key to get into the BIOS Setup while Power-on memory testing, and select "Load Optimized Defaults", and then select the Frequency/Voltage Control to choose the proper "CPU Clock Ratio" for the CPU installed. For example, X6 should be selected for Celeron 400MHz CPU, and the default "CPU Host/PCI Clock" is 66/33MHz, don't over specification selected. Actually, the currently Celeron 66MHz based CPU, always locked the CPU Clock Ratio inside. So the Ratio selected is not take in effect, the Optimized defaults loaded is enough for this jumperless mainboard. Don't change any setting in the "Advance Chipset Features" which are important factors for the stability of this system. If an incorrect setting caused the system can not boot, just turn off the power, and then press "ESC" key until the power turned on again and the BIOS Title displayed. It's a safe mode to recover the system.

The detail BIOS description for this I810 system, Please reference to the \awardbios\i810bios.rtf on Mainboard User's Guide & Software CD-ROM.

CHAPTER 5   DRIVER INSTALLATION

The Mainboard User's Guide & Software CD-ROM will auto execute with a menu displayed when put into CD-ROM Drive. Then the correct product needs to be selected, and the Drivers list will be showed on the right side of the screen: *The Intel 810 and AC97 Audio Drivers, Utility files, Manual & Catalog*. Click the **Intel 810 and AC97 Audio Drivers** for the drivers of system must be installed. For example, in Windows 98 or 95 system, the "**Intel 82810 Win9x VGA Drivers", "Intel 82810 Win9x IDE Driver", and the "AD1881 AC97 Audio Drivers for Win9x"** are minimum drivers must be installed for proper system operation. If the CD-ROM can not auto execute with Menu prompt, the "Explore this CD" can be selected to browse the CD-ROM, and click "Autotrun.exe" in root directory, or follow the descriptions as below to install the drivers step by step.

5.1   VGA ON BOARD DRIVERS INSTALLATION

I.   **Win9x VGA drivers installation:**

Browse the Mainboard User's Guide & Software CD-ROM to the directory **\Intel\82810\vga\win9x\graphics** and click *setup.exe*.

II.   **WinNT VGA drivers installation:**

Browse the Mainboard User's Guide & Software CD-ROM to the directory **\Intel\82810\vga\winNT\graphics** and click *setup.exe*.

III.   **Win2000 VGA drivers installation:**

Browse the Mainboard User's Guide & Software CD-ROM to the directory **\Intel\82810\vga\win2000\graphics** and click *setup.exe*.

5.2 IDE DRIVERS INSTALLATION

INF files enable the Intel® 810 and Intel® 820 Chipsets to be recognized by listed operating systems. This installer will unpack updated .INF files into a specified folder.

Supported operating system: Microsoft Windows* 95 OSR2.1+ and Windows* 98 operating system

Chipset: Intel® 810 and Intel® 820 Chipsets

Browse the Mainboard User's Guide & Software CD-ROM to the directory **\Intel\82810\IDEinf** and click *setup.exe*.

5.3 AUDIO/AC97 ON BOARD DRIVERS INSTALLATION

I. AD1881 AC97 Audio Drivers for Win98

1. Run **\AD\1881\WDM\SETUP.EXE**, then restart to take effect
2. The system will search for new drivers for **PCI Multimedia Audio Device**. Click *Next*, then *finish* to have an **unknown?** device
3. Then get into **Control Panel -> System -> Device Manager -> Other Device -> PCI Multimedia Audio Device -> Driver -> Update Drivers -> Next**
4. Select **Display a list of all drivers -> Sound, Video and Game controller -> Analog Device Inc. -> Next -> Yes**
5. Select **Next** again, then browse the Win98 installation CD-ROM to **\Win98** directory, then click *OK* to finish the drivers installation

II. AD1881 AC97 Audio Drivers for WinNT

Run **\AD1881\WINNT\SETUP.EXE** and follow the instructions to complete the drivers' installation.

5.4 LAN DRIVERS INSTALLATION

Please refer to the directory Realtech on Mainboard User's Guide & Software CD-ROM drivers and execute the HELP8139 to get a help menu of the drivers' installation.

CHAPTER 6 FLASH AND DMI UTILITY

6.1 AWARD FLASH UTILITY

This section will provide instructions to guide you through updating your old BIOS. The file name we use to program here is *test.bin*, and the file name to save old BIOS is *2A69JD1J.OLD*. Please note that those file names are not absolute. They are only examples to let you have a more clear understanding of the updating process.

<u>How to Begin</u>

1. Please type **"a***wdflash"* and press the **ENTER** key to begin the updating process.
2. Once you enter, you will see a main menu displaying:

```
┌────────────────────────────────────────────────────────────┐
│              FLASH MEMORY WRITER V6.XX                      │
│        (C) Award Software 1998 All Rights Reserved         │
├────────────────────────────────────────────────────────────┤
│  For i440LX-W977EF-2A69JD1JC-0      DATE:  12/03/98        │
│              Flash Type                                     │
│                                                             │
│         File Name to Program:                               │
│                                                             │
│                                                             │
│                                                             │
├────────────────────────────────────────────────────────────┤
│  Error Message:                                             │
└────────────────────────────────────────────────────────────┘
```

Fig. 11

3. Type the program name *"test.bin"*, and then press the **ENTER** key.
4. At the bottom of the menu, you will be requested to answer:

"Do You Want to Save BIOS (Y/N)?"

If you do not wish to save the old BIOS:

5.   Please type *"N"*, and then press the ENTER key.
6.   Then you will be request to answer:

   "Are You Sure to Program?"

7.   Answer "N" if you do not want to program, and then it will exit.

To save the old BIOS:

8.   Please respond *"Y"*, and then press the ENTER key.
9.   Move the cursor to "File Name to Save:"
10.   Type file name *"2A69JD1J.OLD"*, and then press the **ENTER**.
      (Your old BIOS will be saved in the file name you create. In this case, the old
      BIOS is saved in the file name, 2A69JD1J.OLD).
11.   Then you will be requested to answer:

   "Are You Sure to Program (Y/N)?"

12.   Type *"Y"* to begin programming, and press the **ENTER** key.
13.   When the programming is finished, the showing message will appear:

   "Programming Flash Memory - 3FF00 0K

   Message: Please Power off or Reset System"

14.   Once you see the showing message *"Power Off or Reset System"*, please re-
      start your system.
15.   When you power on the computer again, you will find your old BIOS has
      already been successfully updated.

Warning

Please note that Award Flash Utility cannot run under EMM386 or QEMM. Thus,
when executing the command *"awdflash"*, and error message will appear:

   "Error Message: Fail - Due to EMM386 or QEMM!"

6.2   DESKTOP MANAGEMENT INTERFACE (DMI) OVERVIEW

This motherboard can support DMI within the BIOS level. DMI is able to auto-detect and record information pertinent to a computer's system such as the CPU type, CPU speed, and internal/external frequencies, and memory size. The onboard BIOS will detect as many system information as possible and store those collected information in a 4KB block in the motherboard's flash EPROM and allow the DMI to retrieve data from this database.

The DMI Configuration Utility (DMICFG.EXE) must be used in real mode in order for the program to run the base memory must be at least 180K. Memory managers like HIMEM.SYS (required by windows) must not be installed. You can boot up from a system diskette without AUTOEXEC.BAT and CONFIG.SYS files, "REM" HIMEM.SYS in the CONFIG.SYS, or press <F5> during bootup to bypass your AUTOEXEC.BAT and CONFIG.SYS files.

Using the DMI Configuration Utility

Edit DMI

```
Award DMI Configuration Utility V1.04u, Copyright Award Software Inc. 1996
[Edit DMI] [Add DMI] [Load DMI FILE] [Save DMI FILE]

     BIOS                    ===   Display Component   ===
    System
   Base Board        Type : BIOS Information
Enclosure/Chassis    Handle : 0000
   Processor            Vendor Name : Award Software International, Inc.
Memory Controller      BIOS Version : 4.51 PG
  Memory Module        BIOS starting Address Segment : E000
  Memory Module        BIOS Build Date : 05/12/97
  Memory Module        BIOS Characteristics : Press [ENTER] for detail
  Memory Module        Size of BIOS ROM : 0128K
      Cache
      Cache
  Port Connector
  Port Connector
  Port Connector
  Port Connector
  Port Connector
  Port Connector
  Port Connector
   System Slots

↑↓←→-Move cursor ENTER-Accept DEL-Delete ESC-Abort&Exit
```

Use the ←→ (left-right) cursors to move the top menu items and the ↑↓ (up-down) cursor to move between the left hand menu items. The bottom of the screen will show the available keys for each screen. Press enter at the menu item to enter the right hand screen for editing. "Edit component" appears on top. The reversed color field is the current cursor position and the blue text are available for editing. The orange text shows auto-detected information and are not available for editing. The blue text "Press [ENTER] for detail" contains a second pop-up menu is available, use the + - (plus-minus) keys to change the settings. Enter to exit and save, ESC to exit and not save.

If the user has made changes, ESC will prompt you to answer Y or N. Enter Y to go back to the left-hand screen and save, enter N to go back to left-hand screen and not save. If editing has not been made, ESC will send you back to the left hand menu without any messages.

Add DMI

This DMI Configuration Utility also allows the system integrator or end user to add additional information into the DMI database such as serial numbers, housing configurations, and vendor information. Those information not detected by the motherboard BIOS and has to be manually entered through the DMI Configuration Utility and updated into the DMI database.
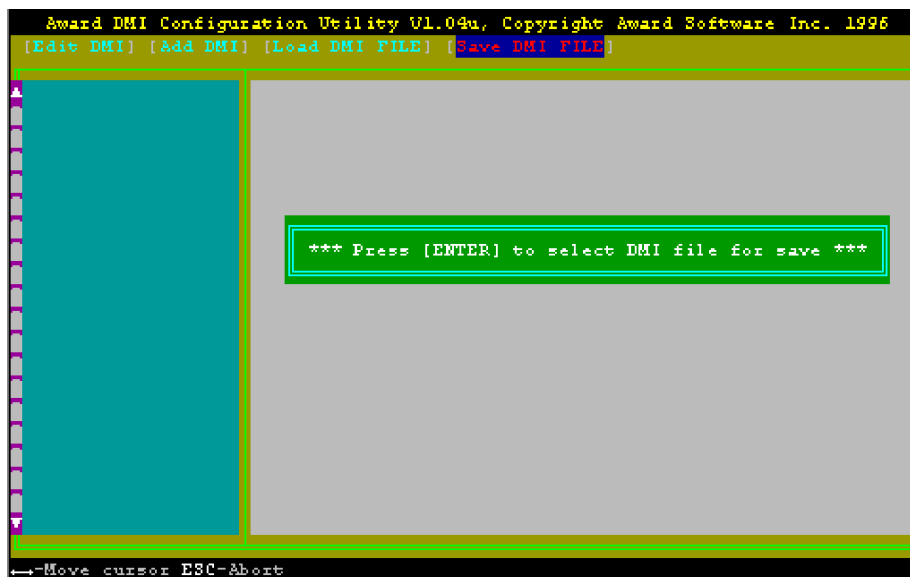
Load DMI File
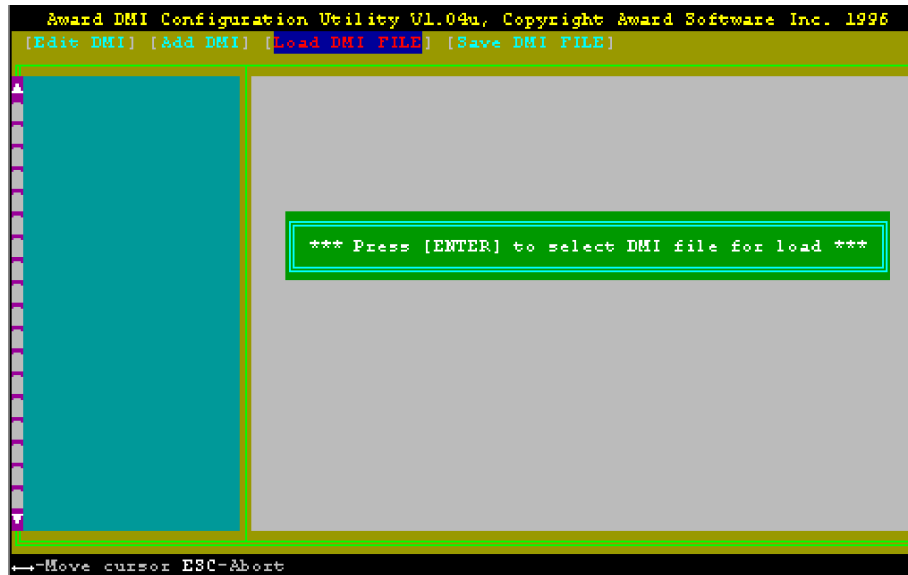
You can load the disk file to memory by entering a drive and path and file name here.

Save DMI File

You can save the DMI (normally only saved to flash ROM) to a file by entering the drive and path here. If you want to cancel save, you may press ESC and a message "Bad File Name" appears here to show it was not saved.

APPENDIX   QUICK GUIDE

I)   The table below summaries the functions and settings of each jumper of the motherboard.

Function		Jumper Settings	
Clear CMOS Data	Normal	JP9:	1-2 short
	Clear	JP9:	2-3 short
BIOS WR Select	Unlock (Default)	JP12	short
	Lock	JP12	open
On board Codec Setting	Enabled	JP5:	1-2 short
	Disabled	JP5:	2-3 short
Onboard Ethernet Setting	Enabled	JP10,JP11:	short
	Disabled	JP10,JP11:	open

II)   J1 – Multiple Function Jumper
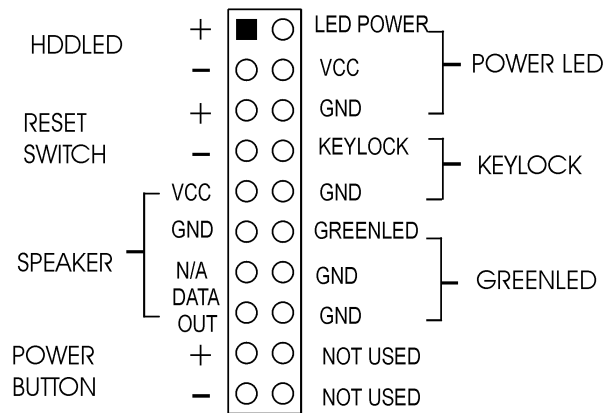
III)   BIOS Setup

If the first time installation of this system board, please press the "DEL" key to get into the BIOS Setup while Power-on memory testing, and select "Load Optimized Defaults", and then select the Frequency/Voltage Control to choose the proper "CPU Clock Ratio" for the CPU installed. For example, X6 should be selected for Celeron 400MHz CPU, and the default "CPU Host/PCI Clock" is 66/33MHz, don't over specification selected. Actually, the currently Celeron 66MHz based CPU, always locked the CPU Clock Ratio inside. So the Ratio selected is not take in effect, the Optimized defaults loaded is enough for this jumperless mainboard. Don't change any setting in the "Advance Chipset Features" which are important factors for the stability of this system. If an incorrect setting caused the system can not boot, just turn off the power, and then press "ESC" key until the power turned on again and the BIOS Title displayed. It's a safe mode to recover the system.