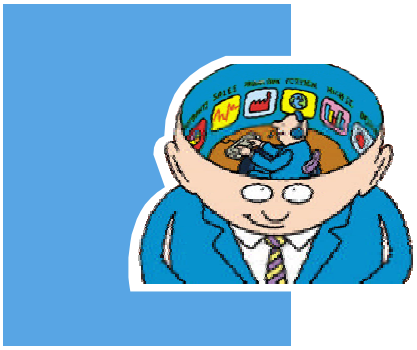
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The Digital Infrastructure



CPU Board

EBC 563 Series

User's Manual

This manual s erves all EBC563 series:
EBC563I/EBC563R/EBC563ILP6/EBC563RLP6

2004-04Edition

Preface

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Version 1.0

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Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

Federal Communications Commission (FCC) for Class A Devices

This equipment has been tested and verified to comply with the limits for a Class A digital device, pursuant to FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

CE Certification

The product described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

WARNINGS

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

CAUTION

Electrostatic discharge (ESD) can damage EBC components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

Safety Information

Before installing and using the EBC 563, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.

Avoid using the system near water, in direct sunlight, or near a heating device.

Table 1: About this manual

Chapter 1 Introducing the EBC 563	Provides an overview of the EBC, including features, models, the board layout, and board dimensions.
Chapter 2 Installing Components	Provides information on installing EBC components such as CPUs, HDDs, and memory modules, and setting jumpers.
Chapter 3 Using BIOS	Gives information on using the EBC BIOS.
Chapter 4 Installing Software	Provides instructions for installing the software for the onboard VGA and LAN components.
Appendix A Programming the Watchdog Timer	Provides instructions for using the watchdog timer feature.
Appendix B Programming the GPI/O	Provides instructions for configuring the GPI/O. GPI/O (General Purpose Input/Output) pins are provided for custom system design.
Appendix C Connector Pinouts	Supplies pinout diagrams for the EBC connectors.
Appendix D EBC 563 Specifications	Provides detailed specifications for the EBC.

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Chapter 1 Introducing the EBC 563

1.1 About the EBC 563

The EBC 563 is a 5.25-inch Pentium III class low power EBC (embedded controller) with a built-in VIA C3 CPU with a 100/133 MHz frontside bus (FSB) and onboard VGA, LAN, and AC' 97 interface.

The EBC has one SDRAM slot accommodating up to 512 MB of memory. A 32-bit PCI slot is available for connecting add-on cards, along with NEXCOM's proprietary PCI interface for connecting NEXCOM modules such as EBK-PCI, EBK-CF, EBK-VGA2, EBK-SCSI, and EBK-MEDIA 1.

The EBC 563 also features a standard 40-pin IDE interface for connecting IDE devices such as an HDD or CD/DVD-ROM drive, and a 44-pin IDE interface for connecting Compact Flash devices. A Disk on chip socket provides an interface for connecting high-performance, single-chip flash disks available in a wide range of capacities.

A DVI panel interface enables you to connect DVI (Digital Visual Interface) flat panel devices with EBK-MEDI.

For complete specifications for the EBC 563, refer to Appendix D.

1.1.1 EBC 563 Models

The EBC 563 embedded controller board comes in four models. The following table describes the main features of the models.

	EBC 563I	EBC 563R	EBC 563 ILP6	EBC 563 RLP6
CPU	VIA C3 EBGA 800 MHz+	VIA C3 EBGA 800 MHz+	VIA Eden 667 MHz	VIA Eden 667 MHz
LAN	Intel	Realtek	Intel	Realtek
Fanless	No	No	Yes	Yes

1.2 Checklist

Compare the main board's package contents with the following checklist:

- ❒ One EBC series single board computer
- ❒ One CPU cooling assembly (heatsink) 667MHz/one CPU cooling assembly (heatsink & fan) 800MHz
- ❒ One 44 pin to 44 pin IDE cable
- ❒ One 40 pin IDE cable
- ❒ One USB cable
- ❒ One FDD cable
- ❒ One EBC 563 quick guide
- ❒ One COM serial port cable
- ❒ One parallel port cable
- ❒ One PS/2 keyboard and mouse cable
- ❒ One ATX power cable
- ❒ One NEXCOM driver CD

1.3 EBC Features

Onboard CPU	The EBC 563 comes in an EBGA package that has the following features: • Supports 100/133 MHz frontside bus (FSB) • 128 KB L1 cache • 64 KB L2 cache
Chipset	The VIA chipset has an innovative and scalable architecture with proven reliability and performance: • VIA 8601 100/133 MHz Northbridge • VIA VT82C686B PCI Super I/O integrated peripheral controller.
Memory	The main board's memory slot supports SDRAM and accommodates up to 512 MB.
AC' 97 Interface	The AC 97 Audio codec is compliant with the AC 97 2.2 specification, and supports 18-bit ADC (Analog Digital Converter) and DAC (Digital Analog Converter) resolution as well as 18-bit stereo full-duplex codec with independent and variable sampling rates. Further features include support for four analog line-level stereo inputs.
Onchip VGA	The EBC 563 onboard VGA chipset provides superior graphics and includes the following features: • VIA Apollo PLE133 graphics controller • 64-bit single cycle 2D/3D graphics engine, supports 2 to 8 Mbytes frame buffer • Supports realtime DVD MPEG-2 and AC-3 playback • Integrated 24-bit 230 MHz true color DAC supports screen resolutions up to 1600 x 1200 • Supports external LVDS (Low Voltage Differential Signaling) or TMDS (Transmission Minimized Differential Signaling) which provides a method for sending digital information to a flat panel display via the DVI panel interface • Optional LVDS module • Supports Windows 2000/9X/NT and Linux
Onboard LAN	The EBC 563 onboard RealTek RTL8139C/C+ or Intel 82559 LAN controllers support these features: • Supports three RJ-45 ports • Complies with the IEEE802.3X specification • Supports boot from LAN • Driver CD includes LAN drivers for Windows 2000/9X/NT, DOS, Netware, SCO Open Server 5.0, Linux and FreeBSD
Onboard DOC Socket	The EBC 563 features an onboard socket reserved for M-system Disk On Chips (DOCs) that support from 2 ~ 144 MB (and above)
Expansion Options	The main board comes with the following expansion options: • One 32-bit PCI slot • TTL panel interface • USB serial bus header • NEXCOM proprietary PCI interface • Parallel port interface • Disk on chip (DOC) socket • One 40-pin IDE interface for standard IDE devices • One 44-pin IDE interface • Serial port header for second COM port • Floppy disk drive interface
Integrated I/O	The main board has the following I/O ports and connectors: • One PS/2 port for mouse or keyboard • One serial port • One VGA port • One parallel port • Three LAN ports
BIOS Firmware	This main board uses Award BIOS that enables users to configure many system features including the power management, wake-up alarms, and CPU parameters.

Power Requirements:

EBC563 power consumption (AT power) running HCT 9.5 in Windows 2000 server.

	667MHz	800MHz	1GHz
+12V	0.08A	0.26A	0.6A
+5V	3.26A	4.06A	4.8A

1.4 Board Layout

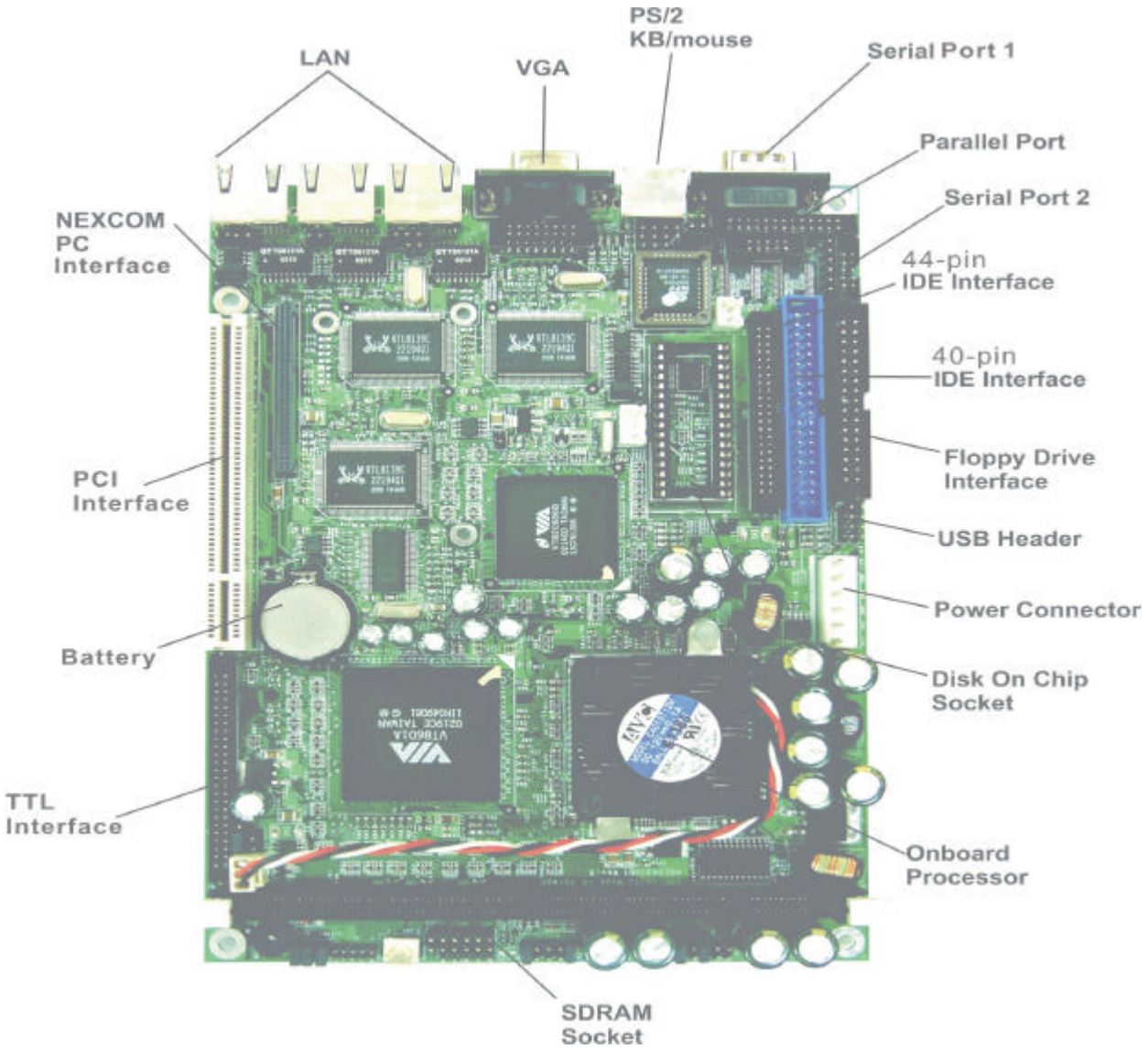
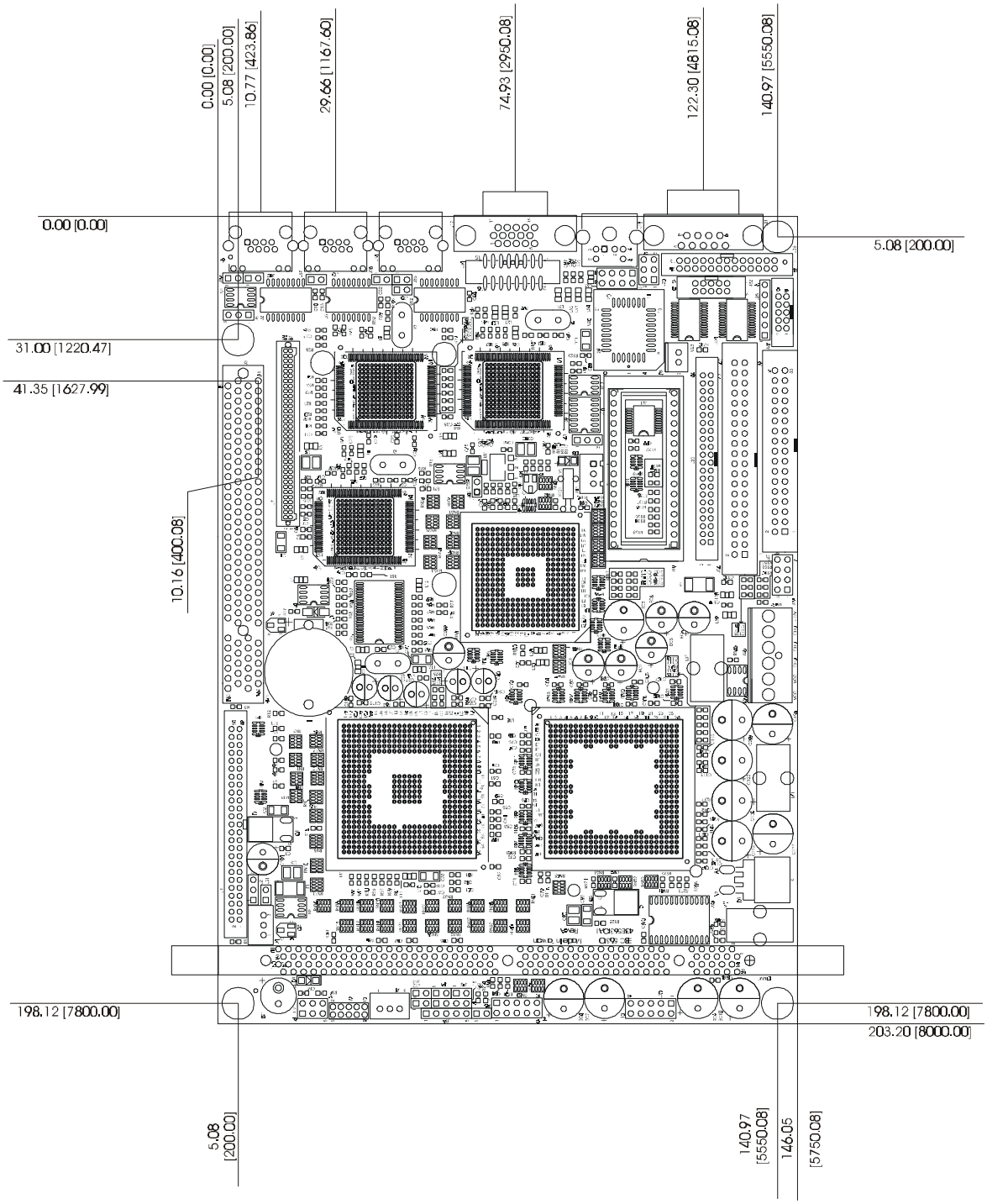


Figure 1 – EBC board layout

Table 2: Table of EBC components

Label	Description
Battery	Three volt realtime clock battery
Disk On Chip Socket	One Disk On Chip socket supporting DOC of 2 to 144 MB flash memory
DVI Panel Interface with EBK-MEDI	DVI (Digital Visual Interface) connector enables you to connect a flat panel monitor
Floppy Drive Interface	One 34-pin floppy disk controller interface
IDE Interface	One 40- or 44-pin UltraDMA 33/66/100 primary IDE channel for standard IDE devices
IDE Interface for Compact Flash	One 44-pin IDE connector supports optional Compact Flash Module
LAN	Three RJ-45 ports for connecting to the LAN
NEXCOM PCI Interface	One proprietary interface for NEXCOM devices
Onboard Processor	Onboard VIA C3 processor
Parallel Port	One 26-pin PIO bi-directional parallel port connector
PCI Interface	One 32-bit add-on card slot
Power Connector	EBC power connector
PS/2 KB/Mouse	One 6-pin Mini DIN for connecting a PS/2 keyboard or mouse
SDRAM Socket	One 168-pin DIMM socket, supports SDRAM up to 512 MB
Serial	One 9-pin serial port connector for serial devices
Serial Port 2	Onboard serial port header for second COM port
USB Header	Onboard USB header (supports two USB ports)
VGA	One 15-pin VGA connector for external monitor

1.5 Board Dimensions



Physical dimensions: 203 (L) x 146 (W) mm

This concludes Chapter 1. The next chapter covers setting up the EBC 563.

Chapter 2 Installing Components

This chapter of the User's Manual guides you in installing the memory and describes how to set jumpers.

> **Note:** The procedures that follow are generic for all of the EBC 563 models.

2.1 Before You Begin

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A set of jewelers screwdrivers
- A grounding strap
- An anti-static pad

Most of the connections can be disconnected by using your fingers. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environments tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

2.2 Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to your computer or yourself:

- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards (such as the EBC 563 board) by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they ship with until they are ready for installation.
- Use correct screws and do not over tighten screws.

2.3 Setting Jumpers

Use the main board jumpers to set system configuration options. Jumpers with more than one pin are numbered.

2.3.1 Checking Jumper Settings

The following illustration shows the location of the main board jumpers. The pins are labeled.

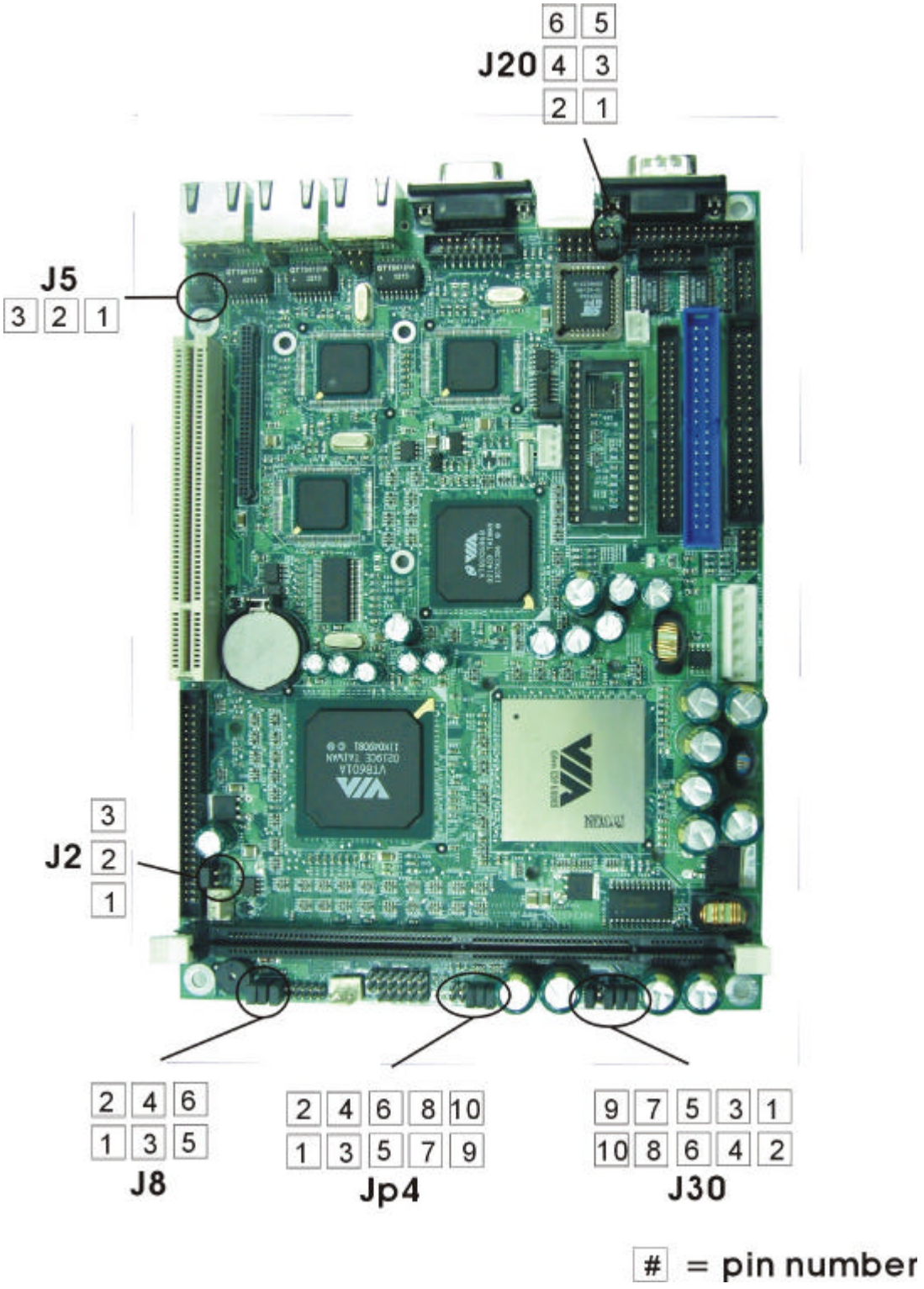


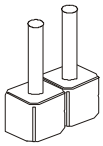
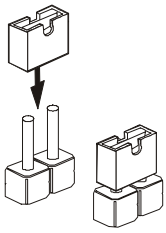
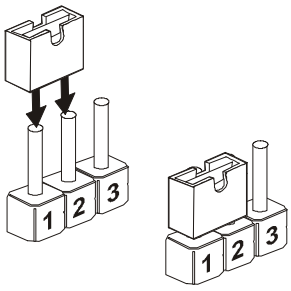
Figure 2 – Jumper locations

Table 4: EBC 563 jumpers

Jumper	Function
JP4	Vcore Voltage Jumper
J2	Panel Voltage Jumper
J5	CMOS-Clear
J8	Panel Type Select Jumper
J20	Disk On Chip active address Jumper
J30	CPU BUS Ratio

When setting the jumpers, ensure that the jumper caps are placed on the correct pins.

Table 5: Setting jumpers

<table>
<tr><td rowspan="2">The illustrations below show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.</td><td></td><td></td></tr>
<tr><td>Open (Off)</td><td>Short (On)</td></tr>
<tr><td>This illustration shows a 3-pin jumper. Pins 1 and 2 are SHORT.</td><td colspan="2">
</td></tr>
</table>

2.3.1.1 Jumper Settings

J2 – PANEL VOLTAGE

Set J2 to accommodate either a 5 or 3.3 volt flat panel monitor.

Mode	1–2	2–3
5V*	Short	Open
3.3V	Open	Short

** Default*

J5 – CMOS CLEAR

Enables you to erase BIOS settings. Follow these instructions:

1. Turn the system off.
2. Short pins 2 and 3 on J5.
3. Return the jumper to the normal setting (short pins 1 and 2).
4. Turn the system on. The BIOS is returned to the default settings.

CMOS CLR disable*	1-2pin Short
CMOS CLR enable	2-3pin Short

** Default*

J8 – SELECT PANEL TYPE

Enables you to select the type of panel connected to the TTL panel interface.

Mode	1—2	3—4	5—6
TFT 1024 x 768	Short	Short	Short
TFT 1280 x 1024	Short	Short	Open
TFT 800 x 600 *	Short	Open	Short
TFT 1024 x 600	Short	Open	Open

** Default*

JP4 – SET CPU CORE VOLTAGE

Enables you to set the CPU core voltage. We recommend you leave this jumper at the default setting.

Vcore Voltage	1–2	3–4	5–6	7–8	9–10
1.050 V	SHORT	SHORT	OPEN	SHORT	SHORT
1.075V	SHORT	SHORT	OPEN	SHORT	OPEN
1.100 V **(667 MHZ)	OPEN	OPEN	SHORT	SHORT	SHORT
1.125V	OPEN	OPEN	SHORT	SHORT	OPEN
1.150 V	SHORT	OPEN	SHORT	SHORT	SHORT
1.175V	SHORT	OPEN	SHORT	SHORT	OPEN
1.200 V	OPEN	SHORT	SHORT	SHORT	SHORT
1.225V	OPEN	SHORT	SHORT	SHORT	OPEN
1.250 V	SHORT	SHORT	SHORT	SHORT	SHORT
1.275V	SHORT	SHORT	SHORT	SHORT	OPEN
1.300 V	OPEN	OPEN	OPEN	OPEN	SHORT
1.325V	OPEN	OPEN	OPEN	OPEN	OPEN
1.350 V*(800MHZ)	**SHORT**	**OPEN**	**OPEN**	**OPEN**	**SHORT**
1.375V	SHORT	OPEN	OPEN	OPEN	OPEN
1.400 V	OPEN	SHORT	OPEN	OPEN	SHORT
1.425V	OPEN	SHORT	OPEN	OPEN	OPEN
1.450 V	SHORT	SHORT	OPEN	OPEN	SHORT
1.475V	SHORT	SHORT	OPEN	OPEN	OPEN
1.500 V	OPEN	OPEN	SHORT	OPEN	SHORT
1.525V	OPEN	OPEN	SHORT	OPEN	OPEN
1.550 V	SHORT	OPEN	SHORT	OPEN	SHORT
1.575V	SHORT	OPEN	SHORT	OPEN	OPEN
1.600 V	OPEN	SHORT	SHORT	OPEN	SHORT
1.625V	OPEN	SHORT	SHORT	OPEN	OPEN
1.650 V	SHORT	SHORT	SHORT	OPEN	SHORT
1.675V	SHORT	SHORT	SHORT	OPEN	OPEN
1.700 V	OPEN	OPEN	OPEN	SHORT	SHORT
1.725V	OPEN	OPEN	OPEN	SHORT	OPEN
1.750 V	SHORT	OPEN	OPEN	SHORT	SHORT
1.775V	SHORT	OPEN	OPEN	SHORT	OPEN
1.800 V	OPEN	SHORT	OPEN	SHORT	SHORT
1.825V	OPEN	SHORT	OPEN	SHORT	OPEN

**** Default***

*** Default for low power*

J20 – DISK ON CHIP ACTIVE ADDRESS

Sets the Disk on Chip (DOC) address.

DOC active address	1–2	3–4	5–6
Disable DOC	SHORT	OPEN	OPEN
D0000	OPEN	SHORT	OPEN
C0000	OPEN	OPEN	SHORT
D8000*	OPEN	SHORT	SHORT

** Default*

J30 – SET BUS RATIO

Enables you to set the bus ratio. The ratio times the frontside bus must equal the core speed of the installed processor.

Example: 3.5 (multiple)
x 133 MHz (frontside bus)
466 MHz (processor clock speed)

Bus Ratio	1–2	3–4	5–6	7–8	9–10
133 X 3 (400Mhz)	Off	On	On	On	On
133 X 3.5 (466Mhz)	Off	On	Off	On	On
133 X 4 (533Mhz)	On	Off	On	On	On
133X 4.5 (600Mhz)	On	Off	Off	On	On
133X 5 ** (667Mhz)	On	On	On	Off	On
133X 5.5 (733Mhz)	On	On	Off	On	On
133X 6* (800Mhz)	**Off**	**Off**	**On**	**Off**	**On**
133X 6.5 (866Mhz)	Off	Off	Off	Off	On
133X 7 (933Mhz)	Off	On	On	Off	On
133X 7.5 (1GMhz)	Off	On	Off	Off	On
133X 8 (1066Mhz)	On	Off	On	Off	On
133X 8.5(1133Mhz)	On	Off	Off	Off	On
133X 9 (1200Mhz)	On	On	On	On	On
133X 9.5(1266Mhz)	Off	Off	Off	On	On
133X 10 (1333Mhz)	Off	Off	On	On	On
133X 10.5(1400Mhz)	Off	Off	Off	On	Off
133X 11 (1466Mhz)	Off	On	On	On	Off
133X 11.5(1533Mhz)	Off	On	Off	On	Off
133X 12 (1600Mhz)	On	Off	On	On	Off
133X 12.5(1667Mhz)	On	Off	Off	On	Off
133X 13 (1733Mhz)	On	On	On	Off	Off
133X 13.5(1800Mhz)	On	On	Off	On	Off
133X 14 (1866Mhz)	Off	Off	On	Off	Off
133X 14.5(1933Mhz)	Off	Off	Off	Off	Off
133X 15 (2GMhz)	Off	On	On	Off	Off
133X 15.5(2066Mhz)	Off	On	Off	Off	Off
133X 16 (2133Mhz)	On	Off	On	Off	Off

**** Default (EBC 563I/EBC563R)***

*** Default for low power (EBC563RLP6/EBC563ILP6)*

2.3.2 Connector Pinouts

The following illustration shows the connector pinouts for the EBC 563.

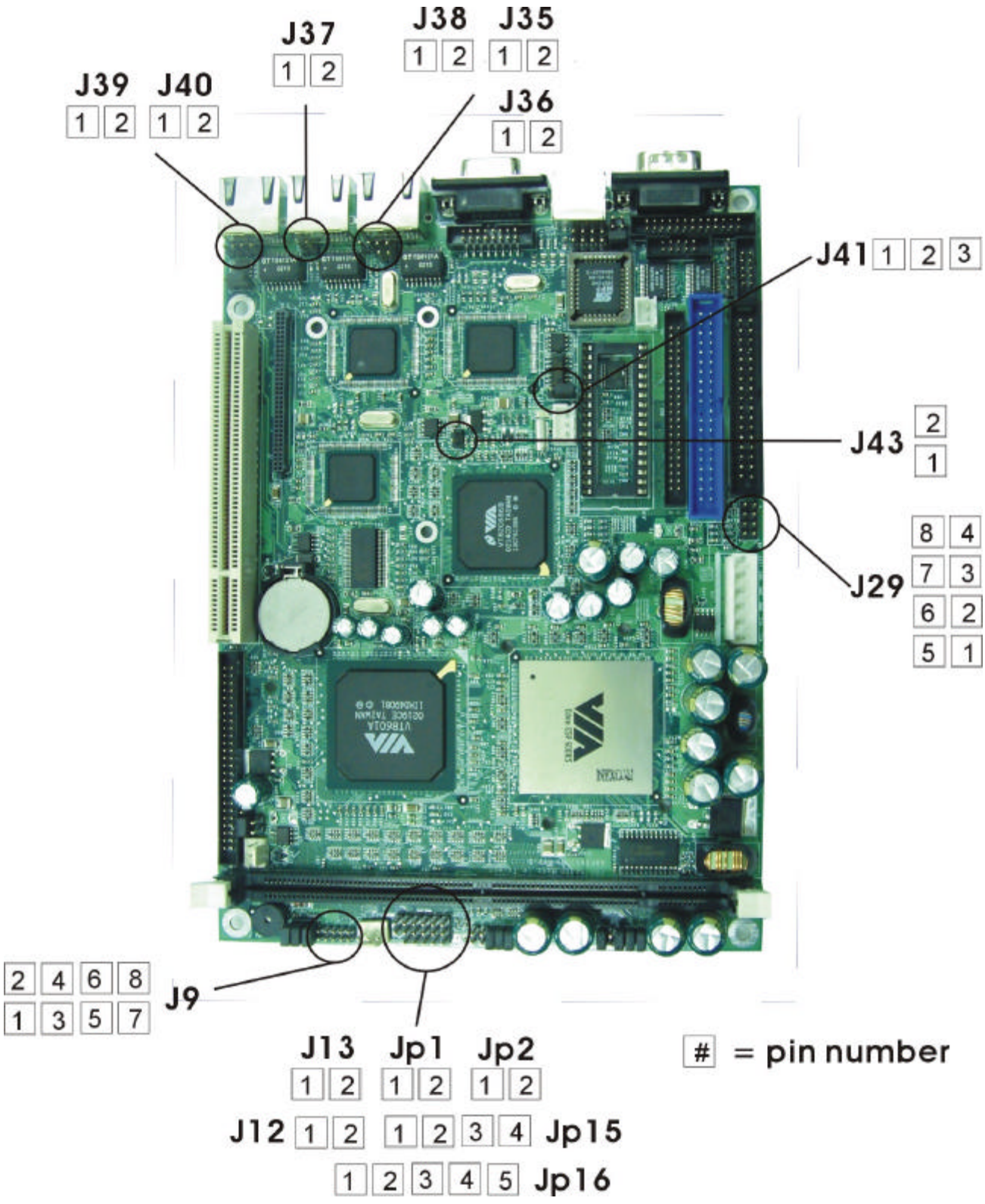


Figure 3 – Connector pinouts

Table 6: EBC 563 main connectors

Connector	Function
JP1	POWER LED Pin
JP2	Temperature sense Pin
J9	Audio Interface Connector
J12	IDE LED Pin
J13	Reset Button
J15	GPIO Connector
J29	USB Connector
J35/J36/J37/J38/J39/J40	LAN LED
J41	ATX/AT Jumper
J43	ATX Power Button

JP1: POWER LED CONNECTOR

PIN No.	Description	PIN No.	Description
1	VCC	2	GND

JP2: TEMPERATURE CONNECTOR

PIN No.	Description
1	GND
2	Sense

J9: AUDIO INTERFACE CONNECTOR

PIN No.	Description	PIN No.	Description
1	SDOUT	2	VCC
3	ACRST	4	GND
5	SYNC	6	+12V
7	SDIN	8	SDIN2
9	BITCLK	10	SPEAK

J12: IDE LED CONNECTOR

PIN No.	Description
1	+5V
2	HDD Active #

J13: RESET

PIN No.	Description
1	Reset
2	Ground

J15: GPI/O CONNECTOR

PIN No.	Description	PIN No.	Description
1	GPI/OA	2	GPI/OB
3	GPI/OC	4	GPI/OD

J29: USB CONNECTOR

PIN No.	Description
1	VCC
2	USBD0-
3	USBD0+
4	Ground
5	VCC
6	USBD1-
7	USBD1+
8	Ground

J35/J36/J37/J38/J39/J40: LAN LED

PIN No.	Description
1	LED+
2	LED-

J41: ATX\AT JUMPER

PIN No.	Description
1-2*	AT
2-3	ATX

** Default*

J43 POWER BUTTON CONNECTOR

PIN No.	Description
1	GND
2	Power Button

2.4 Installing Memory

This section describes installing or upgrading DRAM modules onto the EBC 563. The EBC 563 accommodates one SDRAM module up to 512-MB capacity.

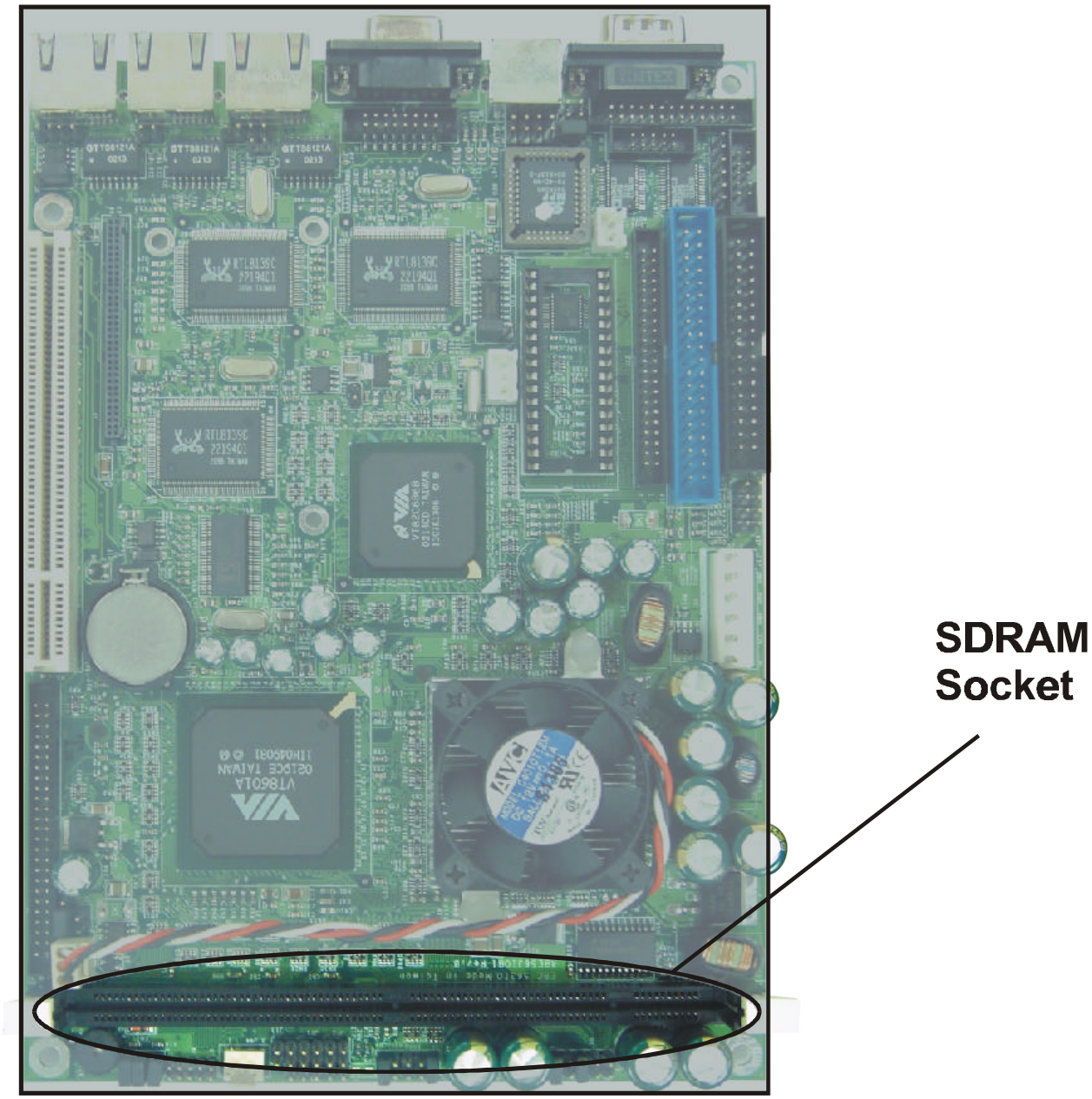
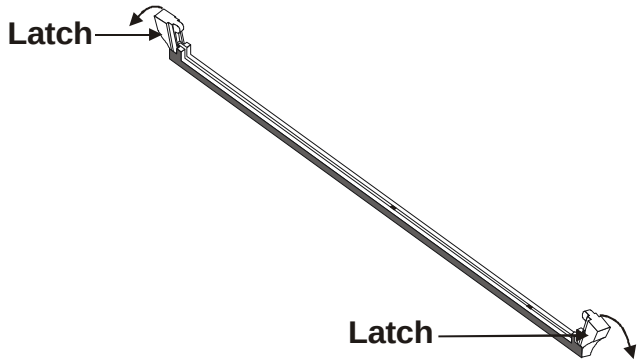
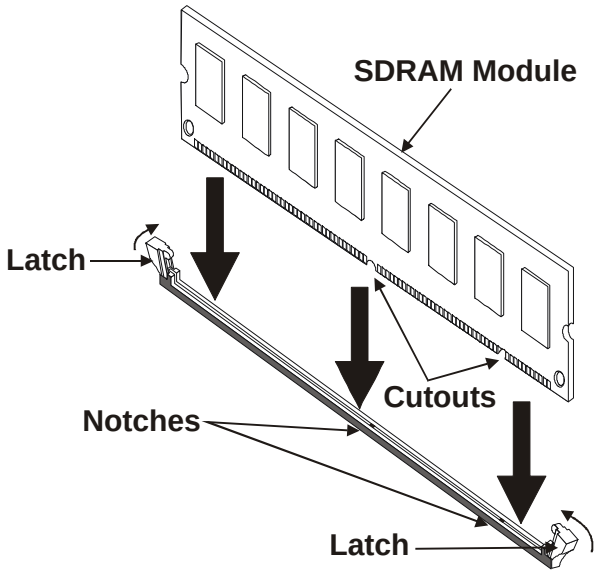


Figure 4 – Memory slot location

2.4.1.1 Installing Memory

Refer to the following to install the memory modules.

1. Push the latches on each side of the DIMM slot down.	
2. Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly. Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.	
3. Install the DIMM module into the slot and press it firmly in until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.	

This concludes Chapter 2. The next chapter covers the BIOS.

This chapter explains how to use the BIOS Setup program for the EBC 563.

3.1 About the BIOS

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters. These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the Setup program intimately affect how the computer performs. It is important, therefore, first to try to understand all the Setup options, and second, to make settings appropriate for the way you use the computer.

3.2 When to Run BIOS

This program should be executed under the following conditions:

- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the Setup program
- When resetting the system clock
- When setting the CPU clock speed so that it automatically runs either fast or slow
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

3.3 Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing **<Del>** allows you to enter Setup. Another way to enter Setup is to power on the computer and wait for the following message during the POST:

```
TO ENTER SETUP BEFORE BOOT
PRESS  <CTRL-ALT-ESC> OR <DEL> KEY
```

Press the **<Del>** key or press the **<Ctrl>**, **<Alt>**, and **<Esc>** keys to enter Setup:

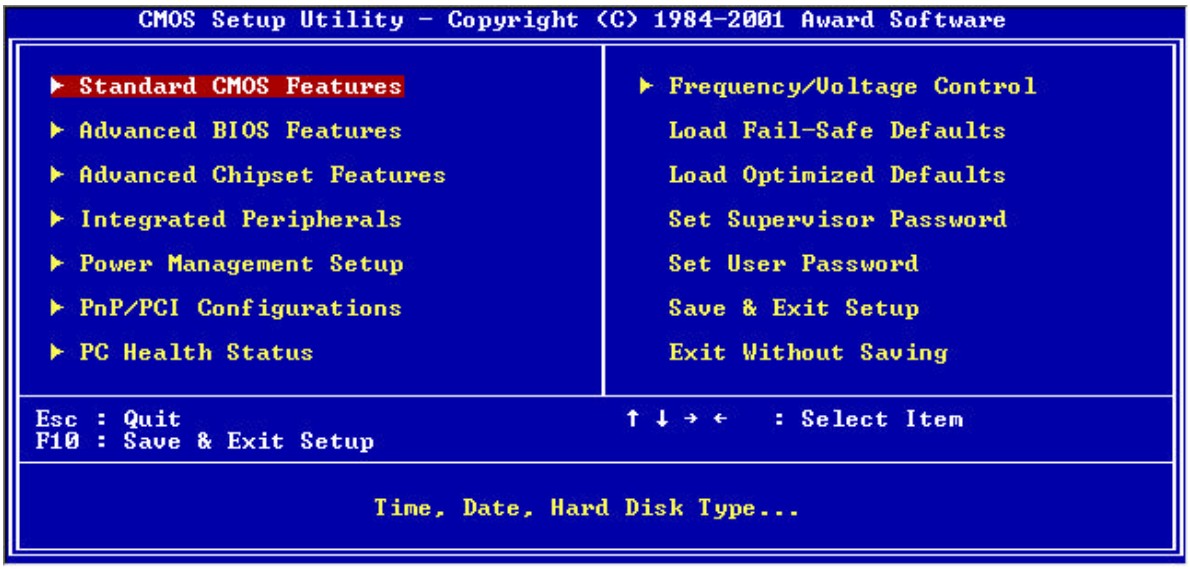


Figure 5 – Setup utility main screen

The following table describes the items in this menu.

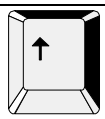
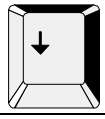
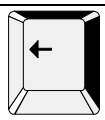
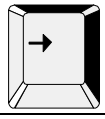
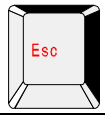
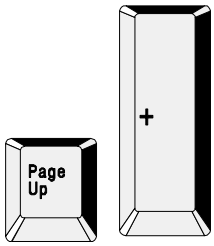
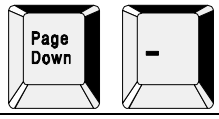
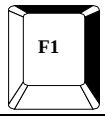
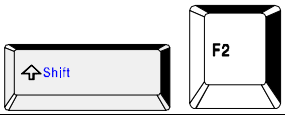
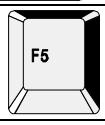
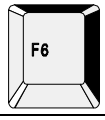
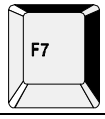
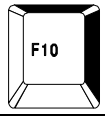
Table 7: BIOS menus

Standard CMOS Features	Use this menu for basic system configuration.
Advanced BIOS Features	Use this menu to set the Advanced Features available on the system.
Advanced Chipset Features	Use this menu to change the values in the chipset registers and optimize the system's performance.
Integrated Peripherals	Use this menu to specify your settings for integrated peripherals.
Power Management Setup	Use this menu to specify your settings for power management.
PnP/PCI Configurations	This entry appears if your system supports Plug and Play and PCI Configuration.
PC Health Status	Displays CPU, System Temperature, Fan Speed, and System Voltages Value.
Frequency/Voltage Control	Use this menu to specify CPU and memory frequency, and voltage control settings.
Load Fail-Safe Defaults	Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.
Load Optimized Defaults	Use this menu to load the BIOS default values, i.e., factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the option to change these defaults to meet their needs.
Set Supervisor/User Password	Enables you to change, set, or disable the supervisor or user password.
Save & Exit Setup	Saves CMOS value changes to CMOS and exits setup.
Exit Without Saving	Ignores all CMOS value changes and exits setup.

3.4 Control Keys

The table below lists the keys that help you navigate the Setup program.

Table 8: BIOS control keys

Up arrow		Move to previous item
Down arrow		Move to next item
Left arrow		Move to the item to the left
Right arrow		Move to the item to the right
Esc key		*Main Menu:* Quit without saving changes to CMOS *Status/Option Page Setup Menus*: Exit current page and return to Main Menu.
PgUp/plus key		Increase the numeric value or make changes
PgDn/minus key		Decrease the numeric value or make changes
F1 key		General help, only for Status Page Setup Menu and Option Page Setup Menu
F2/Shift + F2 key		Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F5 key		Restore the previous CMOS value from CMOS (only for Option Page Setup Menu)
F6 key		Load the default CMOS value from BIOS default table (only for Option Page Setup Menu)
F7 key		Load the Setup default value (only for Option Page Setup Menu)
F10 key		Save all the CMOS changes (only for Main Menu)

3.4.1 Getting Help

BIOS provides online help in the following formats:

Main Menu
The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu/Option Page Setup Menu
Press <F1> to open a Help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help window press <F1> or <Esc>.

3.5 Standard CMOS Features

Selecting Standard CMOS Features on the main program screen displays the following menu:

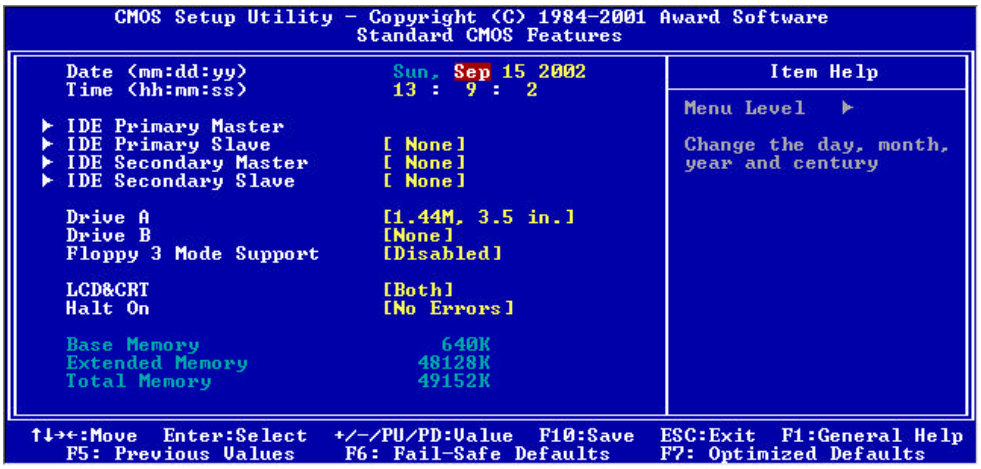


Figure 6 – Standard CMOS Features setup screen

The Standard CMOS Setup utility is used to configure the following features:

Date: Month, Day, Year

Time: Hour, minute, and second. Use 24-hour clock format (for P.M., add 12 to the hour; for example, you would enter 4:30 p.m. as 16:30).

IDE Devices: Your computer has two IDE channels (Primary and Secondary) and each channel can be installed with one or two devices (Master and Slave). Use these items to configure each device on the IDE channel. Press <Enter> to display the IDE submenu:

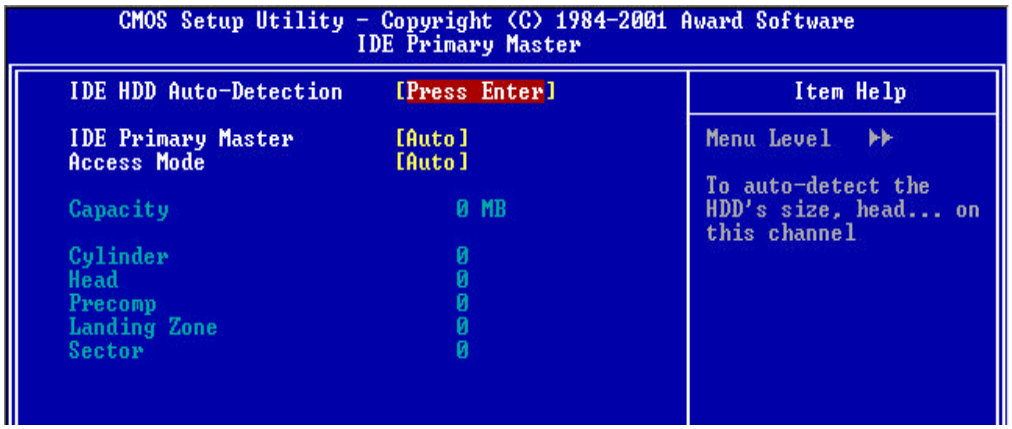


Figure 7 – IDE Master/Slave setup screen

IDD HDD Auto-Detection: Press <Enter> while this item is highlighted if you want the Setup Utility to automatically detect and configure a hard disk drive on the IDE channel.

If your system has an IDE hard drive, you can use this utility to detect its parameters and enter them into the Standard CMOS Setup automatically.

If the auto-detected parameters displayed do not match the ones that should be used for your hard drive, do not accept them. Press the <**N**> key to reject the values and enter the correct ones manually in the Standard CMOS Setup screen.

> **Note:** If you are setting up a new hard disk drive that supports LBA mode, more than one line will appear in the parameter box. Choose the line that lists *LBA* for an LBA drive.

Do not choose Large or Normal if the hard disk drive is already fully formatted when you installed it. Select the mode that was used to format it.

IDE Primary/Secondary Master/Slave: If you leave this item at Auto, the system will automatically detect and configure any IDE devices it finds. If it fails to find a hard disk, change the value to Manual and then manually configure the drive by entering the characteristics of the drive in the items below (Capacity, Cylinder, Head, Precomp, etc.). Refer to your drive's documentation or look on the drive if you need to obtain this information. If no device is installed, change the value to None.

Access Mode: This item defines some special ways that can be used to access IDE hard disks such as LBA (Logical Block Addressing). Leave this value at Auto and the system will automatically decide the fastest way to access the hard disk drive.

Press <**Esc**> to close the IDE device submenu and return to the Standard CMOS Features page.

Floppy Drive A and Floppy Drive B: Options for these fields are:

- None (not installed)
- 360K, 5.25 in.
- 1.2M, 5.25in.
- 720K, 3.5in.
- 1.44M, 3.5in.
- 2.88M, 3.5in.

The None option could be used for diskless workstations.

Floppy 3 Mode Support: Floppy 3 mode refers to a 3.5-inch diskette with a capacity of 1.2 MB. Floppy 3 mode is sometimes used in Japan.

Video: Set this field to the type of graphics card installed in your system. If you are using a VGA or higher resolution card, choose the EGA/VGA option. The options are:

- Both
- LCD
- CFT

Halt On: This setting determines which type of errors will cause the system to halt during boot. The options are:

- All Errors
- No Errors
- All, But Keyboard
- All, But Diskette
- All, But Disk/Key

Base/Extended/Total Memory: These items are automatically detected by the system at start up. These are display-only fields. You cannot make changes to these fields.

After you have made your selections in the Standard CMOS Setup screen, press <ESC> to go back to the main screen.

3.6 Advanced BIOS Features

Selecting Advanced BIOS Features on the main program screen displays this menu, which allows you to define advanced information about your system. You can make modifications to most of these items without introducing fatal errors to your system.

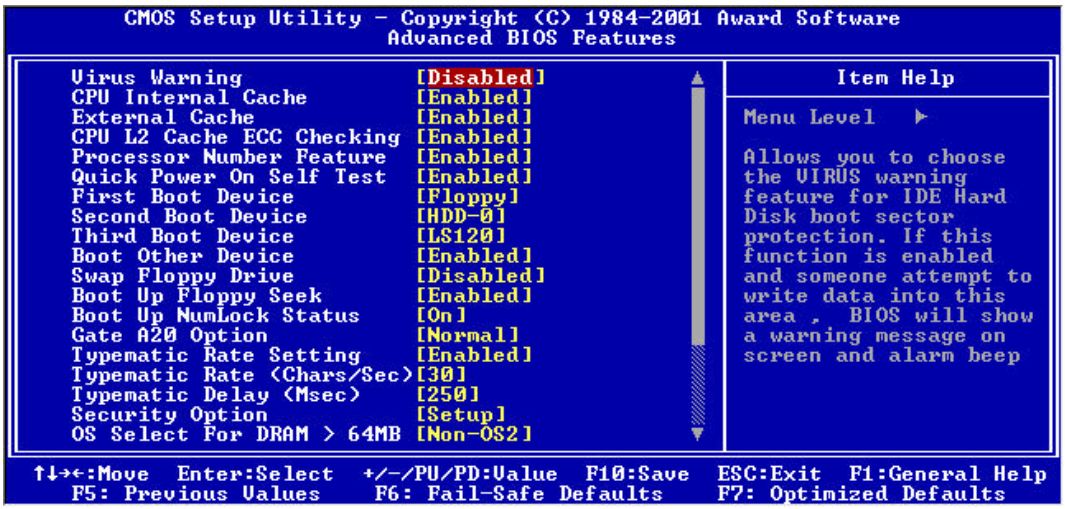


Figure 8 – Advanced BIOS Features screen

The following explains the options for each feature:

Virus Warning: Allows you to choose the Virus Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempts to write data into this area, BIOS will show a warning message on screen and an alarm will beep.

- **Enabled:** Activates automatically when the system boots up causing the following warning message to appear when anything attempts to access the boot sector or hard disk partition table:

  ! WARNING!
  Disk boot sector is to be modified
  Type "Y" to accept write or "N" to abort write
  Award Software, Inc.

- **Disabled:** No warning message will appear when an attempt is made to access the boot sector or hard disk partition table.

Note: This function is available only for DOS and other operating systems that do not trap INT13.
For complete protection against viruses, install virus software in your operating system and update the virus definitions regularly.

CPU Internal Cache/External Cache: These two items speed up memory access, depending on the CPU and chipset design. If your CPU does not have an internal cache, this item will not be displayed.

CPU L2 Cache ECC Checking: This item enables and disables the Error Correcting Code (ECC) for the Pentium III L2 Cache.

Processor Number Feature: Intel included a serial number in their Pentium III processors as a unique system identifier. For privacy reasons, you can disable this setting to prevent the release of this identifier.

Quick Power On Self Test: This item speeds up the Power On Self Test (POST) when you turn on the computer. If it is set to Enable, BIOS will shorten or skip some check items during the POST.

First/Second/Third Boot Device: BIOS attempts to load the operating system from the devices in the sequence selected in these items. The available choices are Floppy, LS/ZIP, HDD, SCSI, CDROM, and Disabled.

Boot Other Device: If the selected boot devices fail to boot, selecting Enabled for this item allows the BIOS to boot from other boot devices (in a predefined sequence) which are present but not selected as boot devices in the setup.

Swap Floppy drive: If the system has two floppy drives, use this item to swap the logical drive name assignments.

Boot Up Floppy Seek: Enable this to allow the system to search for floppy drives during the POST. Disable this item to boot faster.

Boot Up NumLock Status: Selects the power on state for NumLock. The available choices are Enabled and Disabled.

Gate A20 Option: Enables you to select whether the chipset or the keyboard controller should control Gate A20. The options are:

- **Normal:** A pin in the keyboard controller controls Gate A20.
- **Fast:** Lets chipset control Gate A20.

Typematic Rate Setting: If set to Enabled, enables you to set the Typematic Rate and Typematic Delay.

- **Typematic Rate (Chars/Sec):** This setting controls the speed at which the system registers held-down keystrokes. The choices range from 6 to 30 Chars/Sec.
- **Typematic Delay (Msec):** This setting controls the time between the display of the first character and successive characters. There are four delay choices: 250ms, 500ms, 750ms and 1000ms

Security Option: Enables you to select whether the password is required every time the system boots or only when you enter Setup.

- **System:** The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
- **Setup:** The system will boot, but access to Setup will be denied if the correct password is not entered at setup.

> **Note:** To disable security, select PASSWORD SETTING in the Main Menu; you will be prompted to enter a password. Do not type anything and press <*Enter*> to disable security. Once the security is disabled, the system will boot and you will be allowed to enter Setup.

OS Select for DRAM > 64MB: Set to OS2 if the system memory size is greater than 64 MB and the operating system is OS/2.

Video BIOS Shadow: This function, when enabled allows VGA BIOS to be copied to the system DRAM for enhanced performance.

C8000-CBFFF ~ DC000-DFFFF Shadow: Allows the 64K blocks of upper memory listed (which contain the system BIOS) to be shadowed for better performance.

After you have made your selections in the Advanced BIOS Features setup, press <ESC> to go back to the main screen.

3.7 Advanced Chipset Features

Since the features in this section are related to the chipset in the CPU board and all are optimized, you are not recommended to change the default settings in the setup table, unless you understand the chipset features.

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system has mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

Selecting Advanced Chipset Features on the main program screen displays this menu:

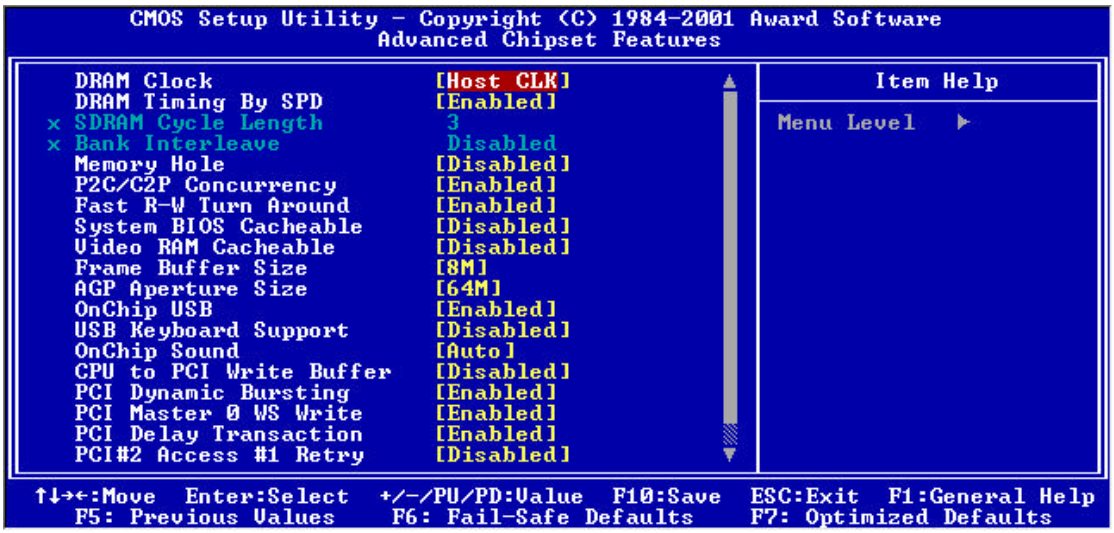


Figure 9 – Advanced Chipset Features screen

DRAM Clock: This item enables you to manually set the DRAM Clock, or to let the Host clock set the value.

DRAM Timing By SPD: Set this to enable the system to automatically set the SDRAM timing by SPD (Serial Presence Detect). SPD is an EEPROM chip on the DIMM module that stores information about the memory chips it contains, including size, speed, voltage, row and column addresses, and manufacturer. If you disable this item, you can use the following three items to manually set the timing parameters for the system memory.

SDRAM Cycle Length: When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. The available choices are 2, 3.

Bank Interleave: Enable this item to increase memory speed. When enabled, separate memory banks are set for odd and even addresses and the next byte of memory can be accessed while the current byte is being refreshed

Memory Hole: You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The available choices are Enabled, Disabled.

P2C/C2P Concurrency: Enabled means that more than one PCI device can be active at a time.

Fast R-W Turn Around: Enable this item to reduce the delay between the CPU's first read from the DRAM and a subsequent write. Enabling this item may increase performance; however, your system might become unstable.

System BIOS Cacheable: Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The available choices are Enabled, Disabled.

Video RAM Cacheable: Selecting Enabled allows caching of the video BIOS, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The available choices are Enabled, Disabled.

Frame Buffer Size: This feature optimizes the memory address table for VGA frame buffer accesses according to the DRAM page size in use. Enabling this item improves VGA performance especially in tiling address mode.

AGP Aperture Size: This item defines the size of the aperture if you use an AGP graphics adapter. The AGP aperture refers to a section of the PCI memory address range used for graphics memory.

OnChip USB: Enable this item if you plan to use the Universal Serial Bus ports on this main board.

USB Keyboard Support: Enable this item if you plan to use a keyboard connected through the USB port in a legacy operating system (such as DOS) that does not support Plug and Play.

OnChip Sound: Enables and disables the onboard audio chip. Disable this item if you are going to install a PCI audio add-in card.

CPU to PCI Write Buffer: When enabled, writes from the CPU to PCU bus are buffered, to compensate for the speed differences between the CPU and PCI bus. When disabled, the writes are not buffered and the CPU must wait until the write is complete before starting another write cycle.

PCI Dynamic Bursting: When enabled, write transactions are stored in a write buffer and sent when there are enough to justify a single burst.

PCI Master 0 WS Write: When enabled, writes to the PCI bus are executed with zero wait states.

PCI Delay Transaction: The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1. The available choices are Enabled, Disabled.

PCI#2 Access #1 Retry: When the CPU to PCI Write Buffer is enabled, any PCI bus writes are sent to it, freeing the CPU. The writes are sent from the CPU to PCI Write buffer during the next bus cycle.

If the write transmission fails, and PCI#2 Access #1 Retry is enabled, the CPU to PCI Write buffer will attempt to send the PCI bus writes until successful transmission. There will be a drain on system resources if the PCI device is slow.

AGP Master 1 WS Write: This implements a single delay when writing to the AGP Bus. Normally, two-wait states are used by the system, providing greater stability.

AGP Master 1 WS Read: This implements a single delay when reading to the AGP Bus. Normally, two-wait states are used by the system, allowing for greater stability.

After you have made your selections in the Advanced Chipset Features setup, press <ESC> to go back to the main screen.

3.8 Integrated Peripherals

These items define the operation of peripheral components on the system's input/output ports. Selecting Integrated Peripherals on the main program screen displays this menu:

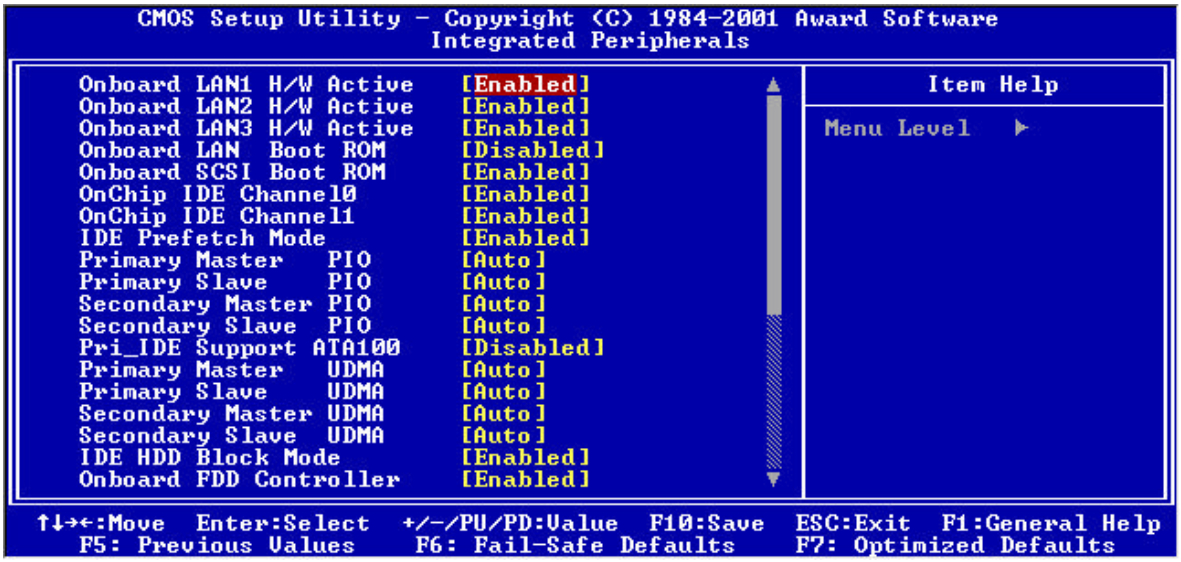


Figure 10 – Integrated Peripherals screen

Onboard LAN1/2/3 H/W Active: Enables and disables the three onboard LAN modules.

Onboard LAN Boot ROM: Decides whether to invoke the boot ROM of the onboard LAN chip. The available choices are LAN1, LAN2, and Disabled.

Onboard SCSI Boot ROM: Decides whether to invoke the boot ROM of the onboard SCSI. The available choices are Enabled, Disabled.

On-Chip IDE Channel 0/1: The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary/secondary IDE interface. Select Disabled to deactivate the primary/secondary IDE. The available choices are Enabled and Disabled.

Note: For the on-chip secondary PCI IDE:

Enabled: enables the secondary IDE port and BIOS assigns IRQ15 to this port.

Disabled: disables the secondary IDE port and IRQ15 is made available for other devices. The item is optional only for PCI BIOS.

Some of the sound cards have an onboard CD-ROM controller, which uses the IDE Secondary Port. In order to avoid a PCI IDE conflict, the IDE secondary channel control has to be set to Disabled in order for the CD-ROM to work.

IDE Prefetch Mode: The onboard IDE drive interfaces supports IDE prefetching, for faster drive access. If you install a primary and secondary add-in IDE interface, set this field to Disabled if the interface does not support prefetching.

Primary/Secondary Master/Slave PIO: The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the on-Board IDE interface supports. Modes 0 through 4 provide successive increased performance. In Auto mode, the system automatically determines the best mode for each device. The available choices are Auto, Mode 0, Mode 1, Mode 2, Mode 3 and Mode 4.

Pri_IDE Support ATA 100: This item provides support for ATA and ATAPI PIO mode 0~4, DMA mode 0~2, and Ultra DMA mode 0~4. The IDE drive transfer rate is capable of up to 100MB/sec per channel.

Primary/Secondary Master/Slave UDMA: Ultra DMA implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA, select Auto to enable BIOS support. The available choices are Auto, Disabled.

IDE HDD Block Mode: Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support. The available choices are Enabled, Disabled.

Onboard FDD Controller: Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install an add-on FDC Controller Card or the system has no floppy drive, select Disabled. The available choices are Enabled, Disabled.

Onboard Serial Port 1: This option is used to assign the I/O address and address and interrupt request (IRQ) for onboard serial port 1 (COM1).

Onboard Serial Port 2: This option is used to assign the I/O address and address and interrupt request (IRQ) for onboard serial port 2 (COM2).

UART Mode Select: This field is available if the Onboard Serial Port 2 field is set to any option but Disabled. UART Mode Select enables you to select the infrared communication protocol-Standard, IrDA, or ASKIR. IrDA is an infrared communication protocol with a maximum baud rate up to 115.2K bps. ASKIR is Sharp's infrared communication protocol with a maximum baud rate up to 57.6K bps.

- **IR Function Duplex:** This field is available when UART 2 Mode is set to either ASKIR or IrDA. This item enables you to determine the infrared (IR) function of the onboard infrared chip. The options are Full and Half.

  Full-duplex means that you can transmit and send information simultaneously. Half-duplex is the transmission of data in both directions, but only one direction at a time.

- **TX,RX inverting enable:** Defines the voltage level for Infrared module RxD (receive) mode and TxD (transmit) mode. This setting has to match the requirements of the infrared module used in the system.

Onboard Parallel Port: This option is used to assign the I/O address and interrupt request (IRQ) for the onboard parallel port.

Onboard Parallel Mode: Enables you to set the data transfer protocol for your parallel port. There are four options: Normal (Standard Parallel Port), EPP (Enhanced Parallel Port), ECP (Extended Capabilities Port) and ECP+EPP.

Normal allows data output only. Extended Capabilities Port (ECP) and Enhanced Parallel Port (EPP) are bi-directional modes, allowing both data input and output. ECP and EPP modes are only supported with EPP and ECP aware peripherals.

ECP Mode Use DMA: When the onboard parallel port is set to ECP mode, the parallel port can use DMA 3 or DMA 1.

Parallel Port EPP Type: Select which EPP version you want. Use EPP1.9 first; if the problems result, change it back to EPP1.7.

Onboard Legacy Audio: Enables and disables the Onboard Legacy audio function. When enabled, the following items become available:

- **Sound Blaster:** Enable or disable a Sound Blaster compatible legacy audio device.
- **SB I/O Base Address:** Set the Sound Blaster device I/O base address.
- **SB IRQ Select:** Set the Sound Blaster device IRQ.
- **SB DMA Select:** Set the Sound Blaster device DMA.
- **MPU-401:** Enable MPU-401 compatibility.
- **MPU-401 I/O Address:** Set the MPU-401 address.

After you have made your selections in the Integrated Peripherals setup, press the <ESC> key to go back to the main program screen.

3.9 Power Management Setup

This option lets you control system power management. The system has various power-saving modes including powering down the hard disk, turning off the video, suspending to RAM, and software power down that allows the system to be automatically resumed by certain events.

The power-saving modes can be controlled by timeouts. If the system is inactive for a time, the timeouts begin counting. If the inactivity continues so that the timeout period elapses, the system enters a power-saving mode. If any item in the list of Reload Global Timer Events is Enabled, then any activity on that item will reset the timeout counters to zero.

If the system is suspended or has been powered down by software, it can be resumed by a wake up call that is generated by incoming traffic to a modem, a LAN card, a PCI card, or a fixed alarm on the system realtime clock.

Selecting Power Management Setup on the main program screen displays this menu:

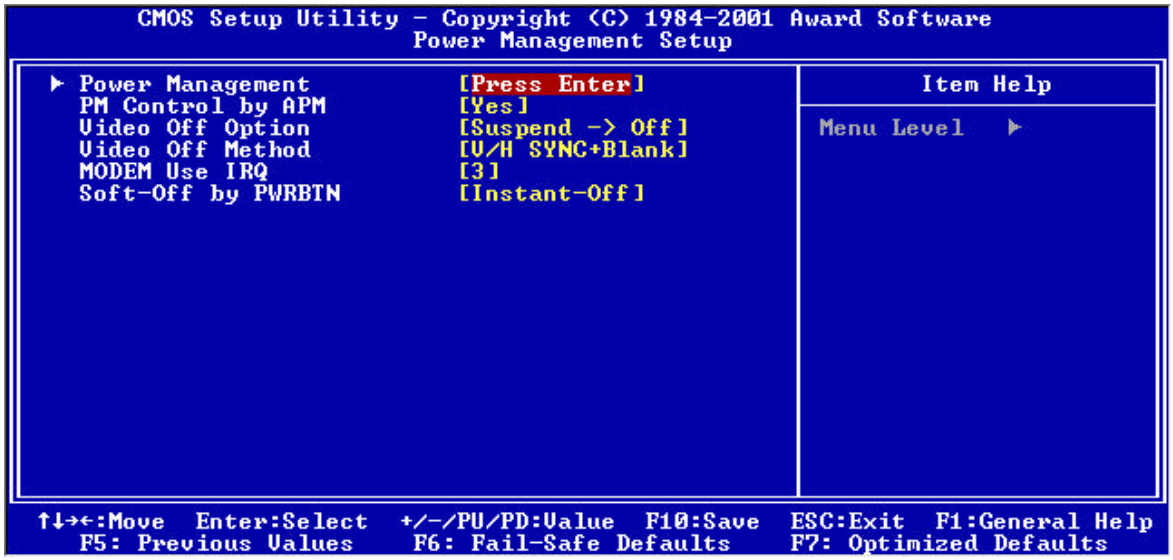


Figure 11 – Power Management setup screen

3.9.1 Power Management

Scroll to Power Management and press <Enter> to open the Power Management screen:

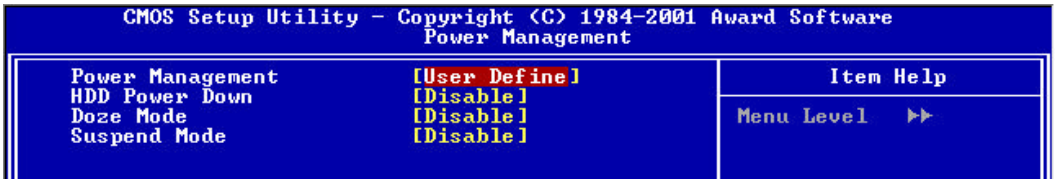


Figure 12 – Power Management screen

Power Management: This category allows you to select the type (or degree) of power saving and is directly related to the following modes: HDD Power Down, Doze Mode, and Suspend Mode.

There are four selections for Power Management, three of which have fixed mode settings:

- **Min. Power Saving:** Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
- **Max. Power Saving:** Maximum power management -- ONLY AVAILABLE FOR SL CPU' s. Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
- **User Define:** Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and Disabled.

HDD Power Down: When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active. The available choices are Enabled, Disabled.

Doze Mode: After the selected period of system inactivity, CPU activity slows down but other components such as the HDD run at full speed.

Suspend Mode: When enabled and after the set time of system inactivity, all devices except the CPU will be shut off. The available choices are Disabled, and 1 minute to 1 hour.

PM Control by APM: Power Management Control by Advanced Power Management. Enables and disables APM. When enabled, an APM device activate enhanced maximum Power Saving mode and stop the CPU internal clock.

Video Off Option: This option defines if the video is powered down when the system is put into suspend mode.

Video Off Method: This determines the manner in which the monitor is blanked.

- **V/H SYNC+Blank:** This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
- **Blank Screen:** This option only writes blanks to the video buffer.
- **DPMS Support:** Initial display power management signaling.

MODEM Use IRQ: This assigns an IRQ to the MODEM. The available choices are 3, 4, 5, 7, 9, 10, 11, and NA.

Soft-Off by PWR-BTTN: Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system "hangs." The available choices are Delay 4 Sec, Instant-Off.

ACPI Function: This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The available choices are Enabled, Disabled.

After you have made your selections in the Power Management setup, press the <ESC> key to go back to the main program screen.

3.10 PnP/PCI Configurations

This section describes configuring the PCI bus system. **P**eripheral **C**omponent **I**nterface, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

Selecting PnP/PCI Configurations on the main program screen displays this menu:

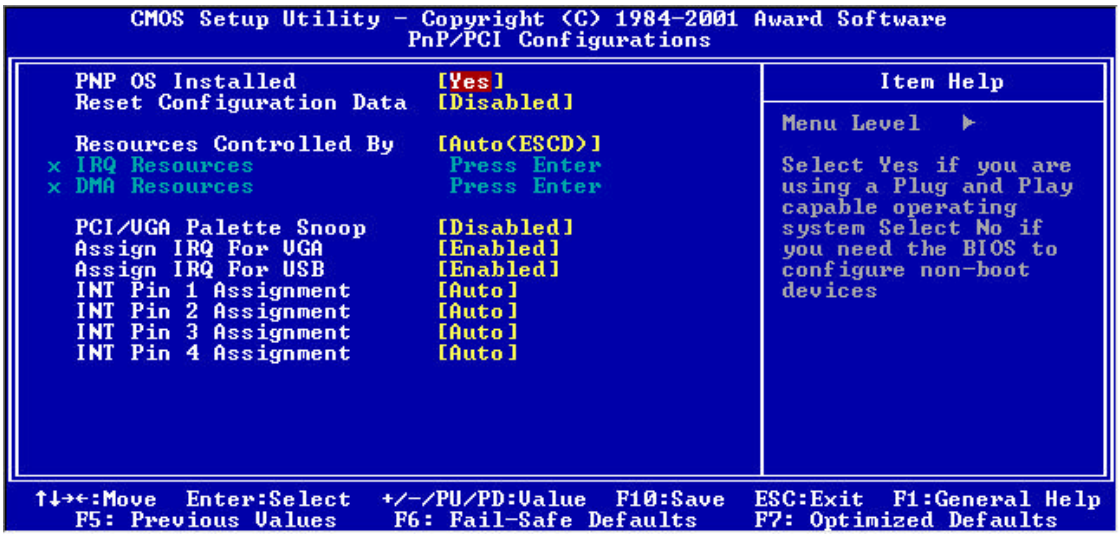


Figure 13 – PNP/PCI Configuration screen

PNP OS Installed: Select Yes if the system operating environment is Plug-and-Play aware (e.g. Windows 95). The available choices are Yes, No.

Reset Configuration Data: Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on Card and the system reconfiguration has caused such a serious conflict that the operating system cannot boot. The available choices are Enabled, Disabled.

Resources Controlled by: The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability doesn' t work unless you are using a Plug and Play operating system such as Windows 95. If you set this field to Manual, then choose specific resources by going into each of the submenus that follows this field. The available choices are Auto (ESCD), Manual.

- **IRQ/DMA Resources Assigned To:** This item allows you to determine the IRQ/DMA assigned to the ISA bus and is not available to any PCI slot. The available choices are *Legacy ISA* and *PCI/ISA PnP*.

PCI/VGA Palette Snoop: Leave this field at Disabled. The available choices are Enabled, Disabled.

Assign IRQ For VGA/USB: Enable this item to assign an IRQ for VGA/USB. The available choices are Enabled, Disabled.

INT Pin 1 ~ 4 Assignment: Names the interrupt request (IRQ) line assigned to PCI 1 through PCI 4 on your system. Activity of the selected PCI slot awakens the system.

After you have made your selections in the PNP/PCI Configuration setup, press the <ESC> key to go back to the main program screen.

3.11 PC Health Status Option

On main board that support hardware monitoring, this item lets you monitor the parameters for critical voltages, critical temperatures, and fan speeds.

Selecting PC Health Status on the main program screen displays this menu:

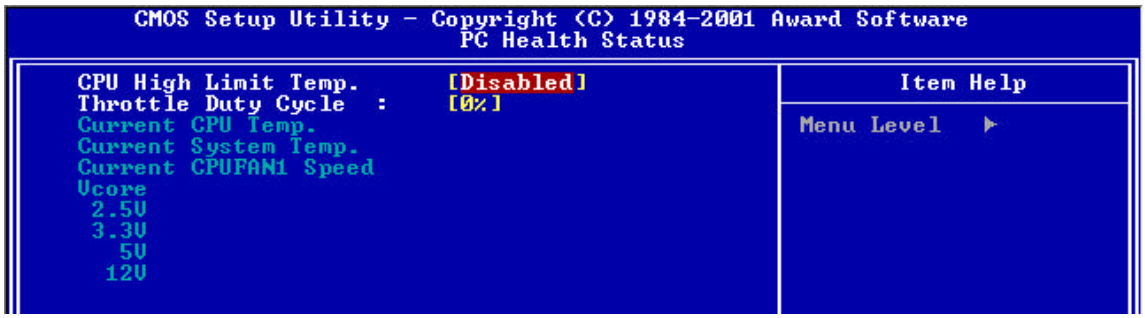


Figure 14 – PC Health Status screen

CPU High Limit Temp: This item is used to specify a thermal standard for the CPU. If the CPU temperature reaches the specified standard, the system issues a warning and allows you to prevent the CPU from overheating.

Throttle Duty Cycle: Enables you to set the percentage by which CPU speed is cut back when it becomes hot, or for power saving.

Current CPU Temp., Current CPUFAN1 Speed, CPU Vcore, 2.5/5/12V: These items display the current status of all monitored hardware devices/components such as CPU voltages, temperatures and fan's speed.

After you have made your selections in the PC Health Status setup, press the <ESC> key to go back to the main program screen.

3.12 Frequency/Voltage Control

This item enables you to set the clock speed and system bus for your system. The clock speed and system bus are determined by the kind of processor you have installed in your system.



Figure 15 – Frequency/Voltage Control screen

CPU Clock Ratio: This item allows you to set the CPU clock ratio, but this function depends on the CPU performance. It is only effective for CPU clock ratios that have not been locked. The available choices are X3~X8.

Auto Detect DIMM/PCI Clk: When enabled, this item auto detects devices in the DIMM and PCI slots and sends clock signals to the DIMM and PCI devices. When disabled, it sends clock signals to *all* DIMM and PCI slots. The available choices are Enabled, Disabled.

Spread Spectrum: This item allows you to enable/disable the spread spectrum modulation. The available choices are Enabled, Disabled.

After you have made your selections in the Frequency/Voltage Control setup, press the <ESC> key to go

back to the main program screen.

3.13 Load Fail-Safe Defaults

This option opens a dialog box that lets you install fail-safe defaults for all appropriate items in the whole setup utility.

Use this option if you have changed your system and it does not operate correctly or does not power up.

3.14 Load Optimized Defaults Option

This option opens a dialog box that lets you install optimized defaults for all appropriate items in the whole Setup Utility. Press the <Y> key and then <Enter> to install the defaults. Press the <N> key and then <Enter> to not install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory. You can cause fatal errors or instability if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press the <F7> key.

3.15 Set Supervisor/User Password

The Supervisor/User Password utility sets the password. The main board is shipped with the password disabled. If you want to change the password, you must first enter the current password, then at the prompt enter your new password. The password is case sensitive. You can use up to eight alphanumeric characters. Press <Enter> after entering the password. At the next prompt, confirm the new password by retyping it and pressing <Enter> again.

To disable the password, press <Enter> instead of entering a new password when the Enter Password dialog box appears. A message appears confirming that the password has been disabled.

If you have set supervisor and user passwords, only the supervisor password allows you to enter the BIOS Setup Program.

> **Note:** If you forget your password, the only way to solve this problem is to discharge the CMOS memory by turning power off and placing a shunt on jumper J5 to short pin 2 and pin 3 for five seconds, then putting the shunt back to pin 1 and pin 2 of J5.

3.16 Save & Exit Setup

Selecting this option and pressing <Enter> will save the new setting information in the CMOS memory and continue with the booting process.

3.17 Exit Without Saving

Selecting this option and pressing <Enter> will exit the Setup Utility without recording any new values or changing old ones.

This concludes Chapter 3.

This section describes how to install the software for the onboard VGA, SCSI, audio, and LAN software as well as a patch for your model' s chipset.

4.1 Auto Installation CD

The EBC 563 comes bundled with a driver and software autoinstallation CD that provides information about the bundled drivers, instructions for installing drivers, and links to driver folder for installing drivers and chipset updates. Follow these instructions to use the CD.

1. Insert the auto installation CD into your CD-ROM drive. The following screen appears:



2. Click the links to view information about the drivers and software on the CD and to install drivers for the EBC 563.

Table 8: EBC 563 software CD hyperlinks

Link	Description
NEXCOM Driver CD Revision List	Click this link to see a table of driver revisions that displays the release date, and changed and added items.
Driver & User Manual CD Revision Control Table	Click this link to see a table of driver CD revisions for each model.
Model for VGA Support Matrix Table	Click this link to see a table that displays VGA drivers for all models.
Model for LAN Support Matrix Table	Click this link to see a table that displays LAN drivers for all models.
Model for SCSI Support Matrix Table	Click this link to see a table that displays SCSI drivers for all models.
User Manual Quick Link	Click this link to see a table that displays folders containing online manuals for all models.
Contact Information	Displays Web site URL and contact emails for your reference.

4.2 Installing Drivers for the EBC 563

The following sections cover the installation the drivers for the EBC 563. Refer the following for the section numbers of each driver:

Chipset Patch	⇒	4.2.1
VGA	⇒	4.2.2
LAN	⇒	4.2.3
SCSI	⇒	4.2.3.2
Audio Drivers	⇒	4.2.4

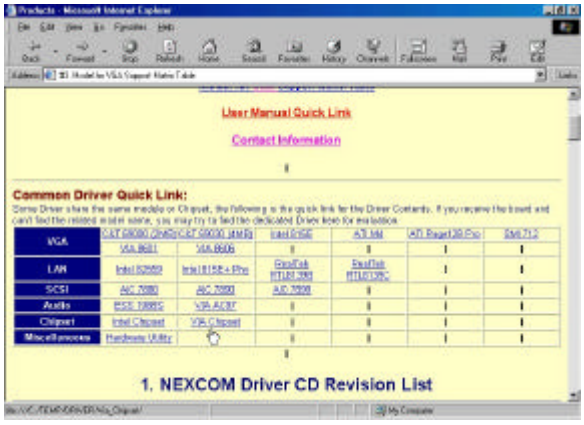
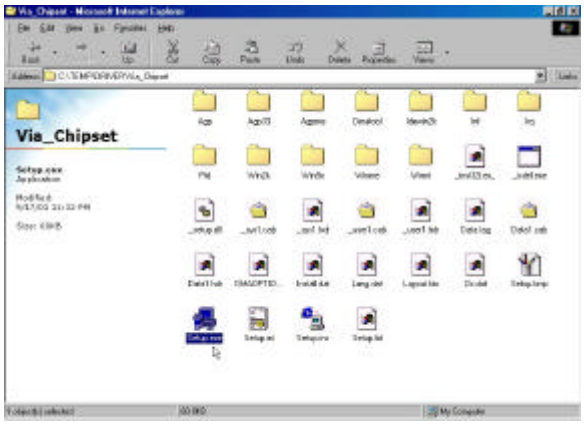
Notes: You should install the VIA chipset patch before installing the other drivers.

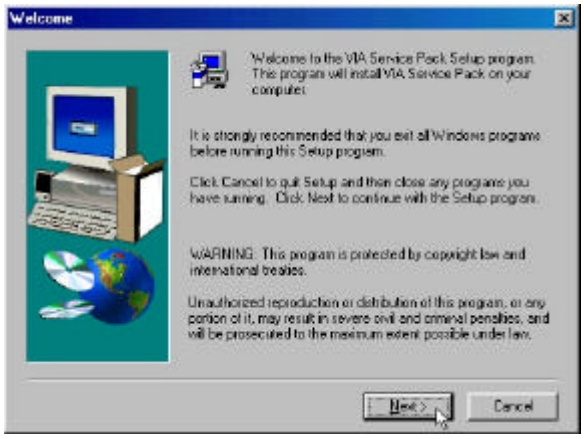
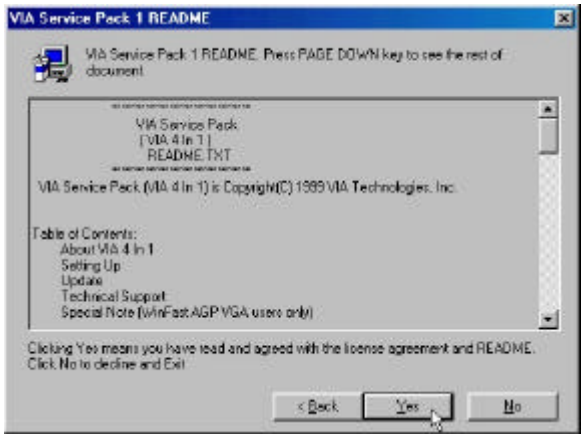
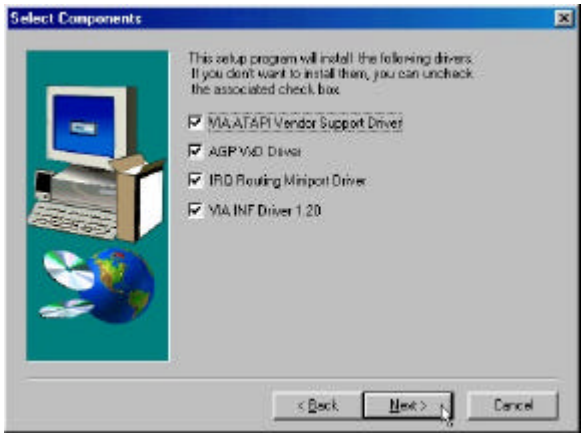
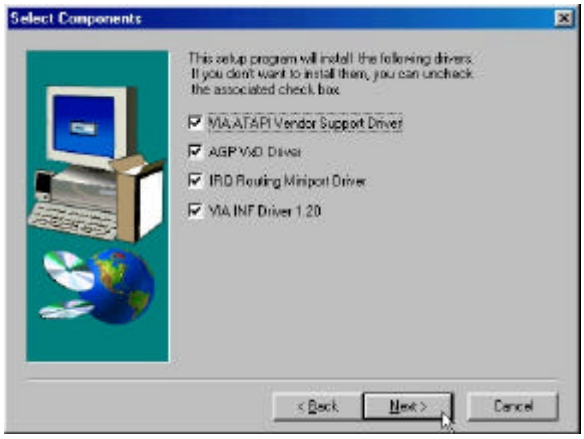
You may be prompted for your Windows Installation CD during setup.

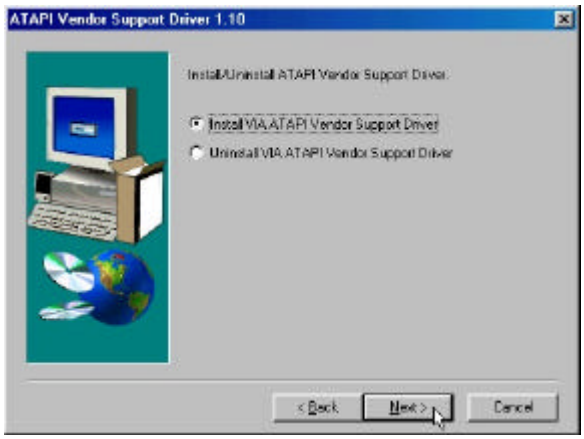
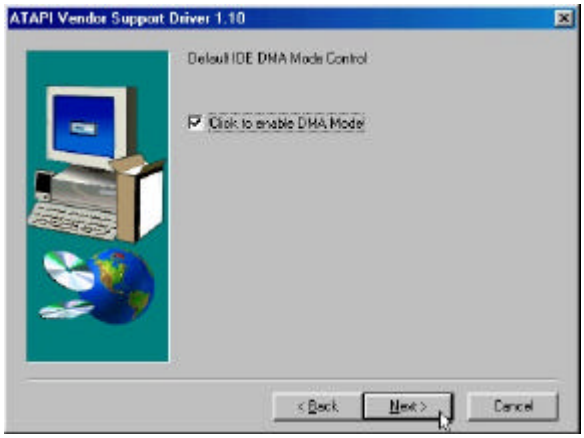
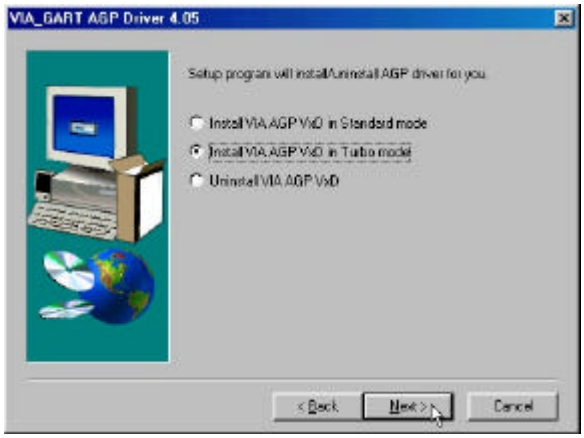
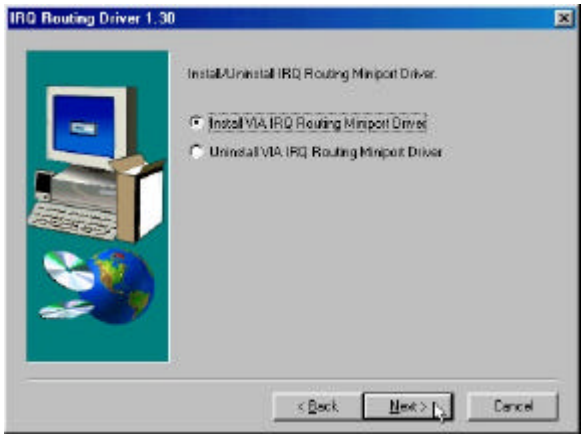
4.2.1 Installing the Chipset Patch

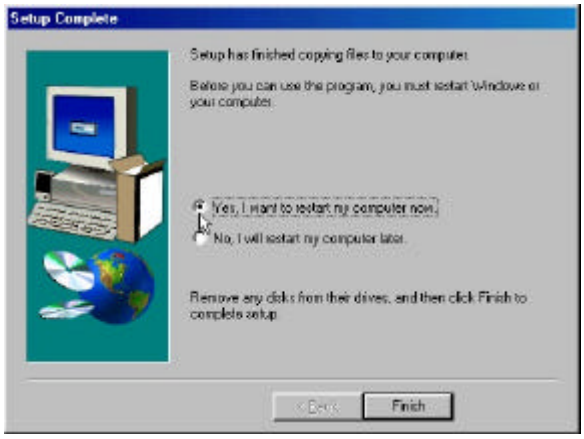
The chipset patch updates the chipset and enables advanced chipset components such as the VIA Tech CPU to AGP Controller, the VIA Tech Power Management Controller, and the VIA Tech Standard CPU to PCI and PCI to ISA bridges.

After you have installed the chipset, the Add New Hardware Wizard opens when you reboot and installs the drivers for the new components.

1. Click **VIA Chipset** on the Common Driver Quick Link table:	
The VIA_Chipset folder opens:	

2. Double-click **Setup.exe** to run the installation program. The Welcome screen appears.	
3. Click **Next**. The VIA chipset patch readme appears.	
4. Read the readme file for important information about chipset patch. The readme describes the components that are installed with the patch. 5. After you have read the readme file, click **Yes** to go to the next screen. 6. Check the drivers that you want to install and click **Next**.	
7. Check the drivers that you want to install and click **Next**.	

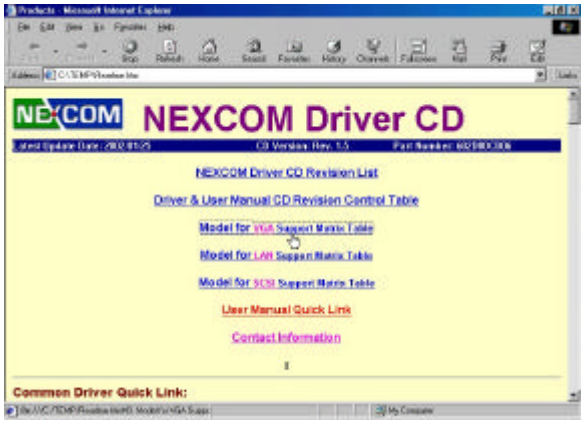
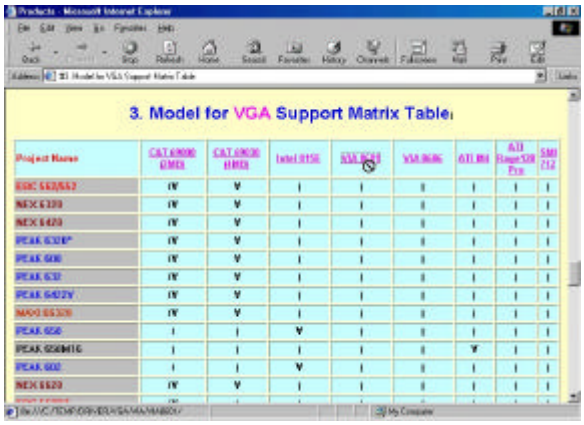
8. Check the radio button next to *Install VIA ATAPI Vendor Support Driver* and click **Next**.	
9. Check the box to *Click to enable DMA Mode*. DMA mode enhances performance. Ensure that your HDD supports DMA mode before enabling this feature. Click **Next**.	
10. Click *Install VIA AGP VxD inTurbo Mode* for maximum performance and click **Next**.	
11. Click *Install VIA IRQ Routing Miniport Driver* and click **Next**.	

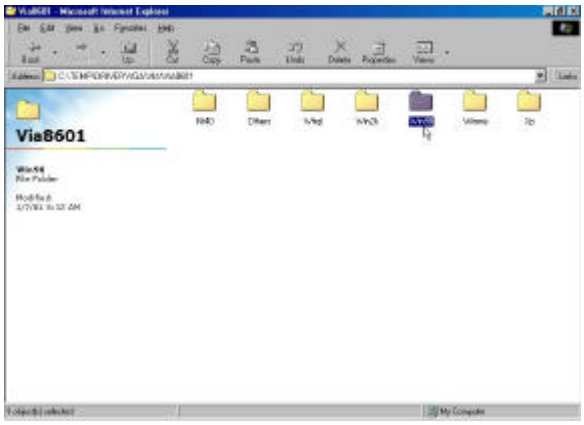
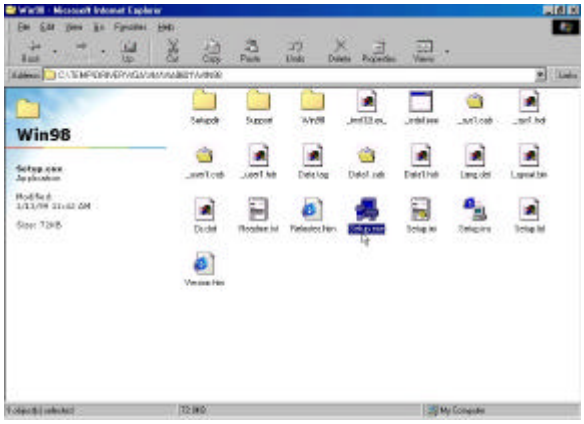
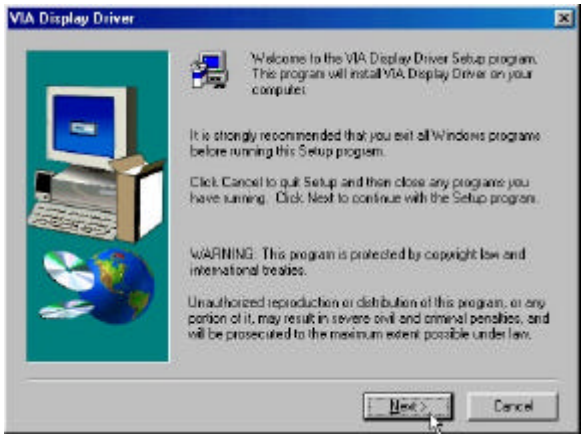
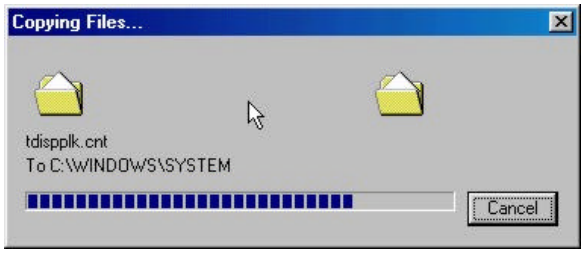
12. The program updates your Windows INF folder with chipset driver INF files, and you are prompted to restart your computer. Click *Yes, I want to restart my computer now* and then click **Finish** to reboot.	

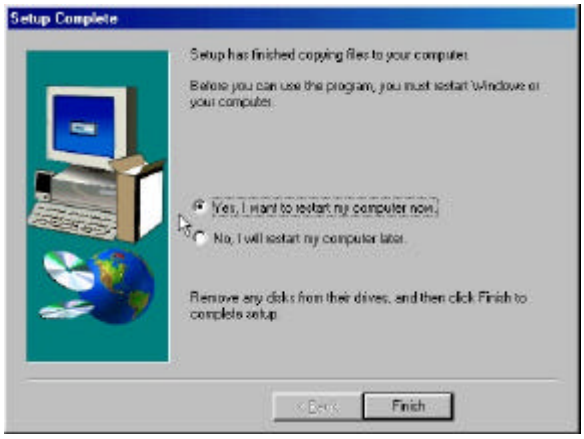
During reboot, the Add New Hardware Wizard appears prompting you to search for new drivers for the components that the chipset update has made available.

Follow the instructions on the screen to install the drivers. When the Add New Hardware Wizard prompts you to select the location of your driver, uncheck all the boxes and click **Next**. The Add New Hardware Wizard finds the driver information in the Windows INF subdirectory. Click **Next** to install the driver; when the wizard prompts you to finish the installation, click **Finish** to complete the installation. The Add New Hardware Wizard installs several components and prompts you to reboot to finish installing the chipset drivers.

4.2.2 Installing the Onboard VGA

1. Click **Model for VGA Support Matrix Table**.	
The VGA driver matrix table opens.	

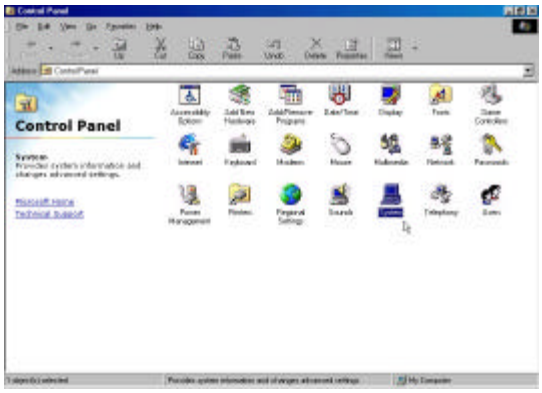
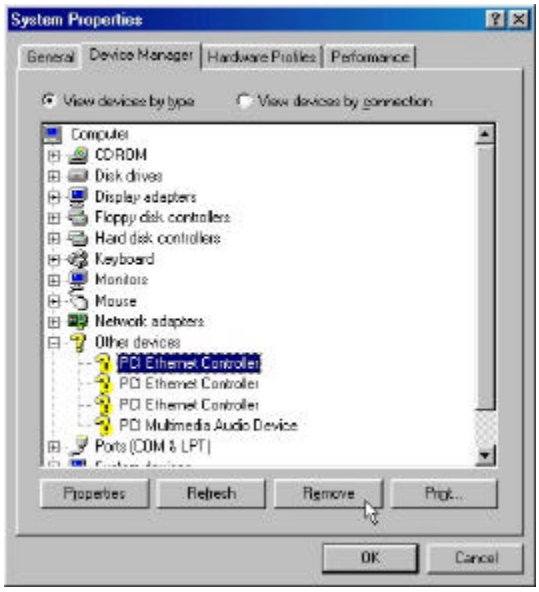
2. Click **VIA 8601**. The VIA 8601 driver folder opens, displaying the operating system subfolders. Double-click your operating system folder to open it.	
3. Double-click **Setup.exe** to run the installation program.	
The VIA Display Driver screen appears.	
4. Click **Next**. The setup program copies files to the system.	

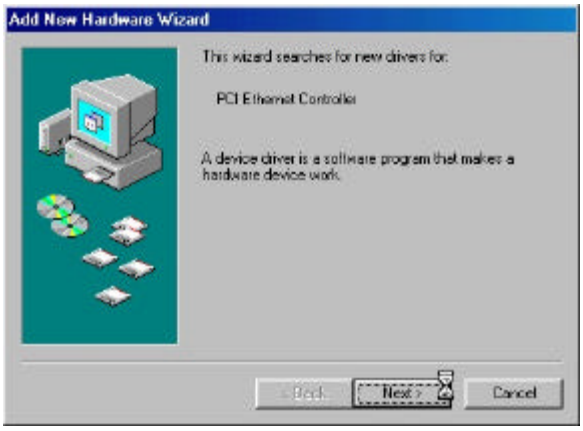
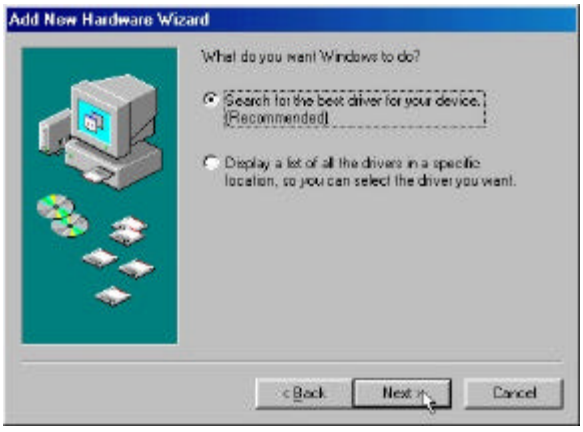
After the program has finished installing files, you are prompted to restart your computer. 5. Click *Yes, I want to restart my computer now*, and click **Finish** to complete the VGA driver installation.	

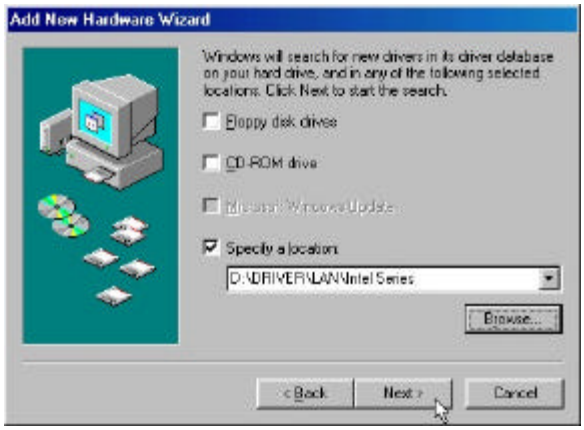
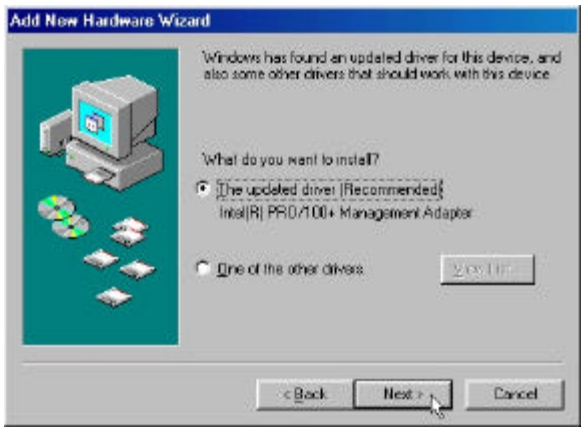
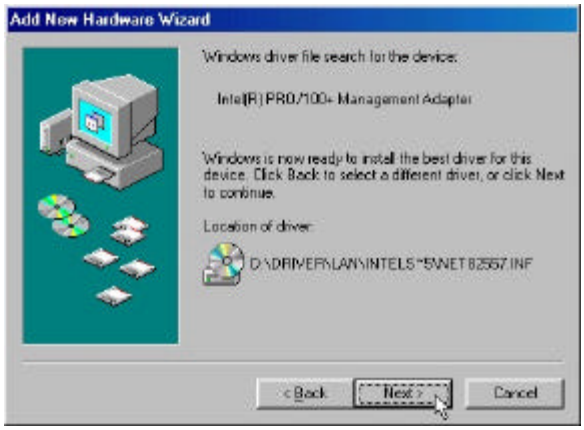
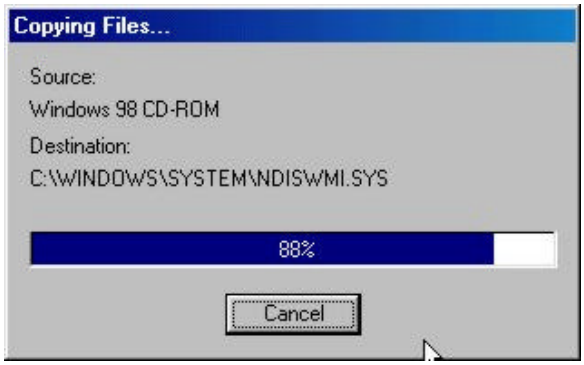
4.2.3 Installing the Onboard LAN

4.2.3.1 Intel Pro/100 LAN Driver

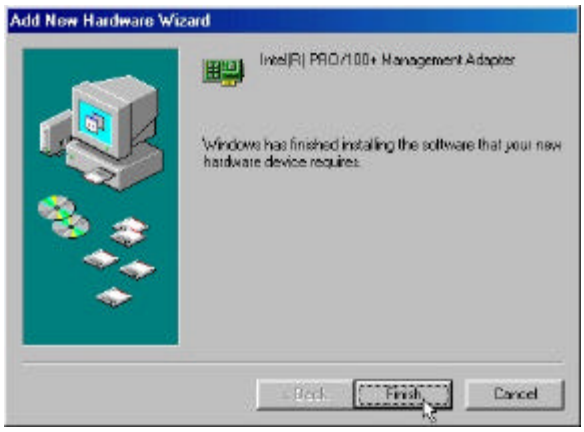
If you have installed an operating system such as Windows 98, the Intel LAN drivers will not be installed. You must first remove the drivers from the system.

1. Open the Control Panel and double-click the **System** icon.	
2. In the System Properties dialog, click **Device Manager**. Click the plus (+) sign next to Other Devices to view the list shown.	
3. Select the first PCI Ethernet Controller entry and click **Remove**. You are prompted to confirm deletion. Click OK to confirm. 4. Select each PCI Ethernet Controller entry and remove them.	

5. After you have removed all the PCI Ethernet Controller entries, click **Refresh** to prompt Device Manager search for new drivers.	
The Add New Hardware Wizard begins.	
6. Click **Next**. You are prompted to let the Add New Hardware Wizard search for the drivers.	

7. Click the radio button next to Search for the best driver for your device (Recommended) and click **Next**. You are prompted to provide the wizard with the installation path. Check the box next to Specify a location and type "D:\DRIVER\LAN\Intel Series," where D: is your CD-ROM driver letter.	
8. Click **Next**. The next screen provides you with driver installation options.	
9. Click the radio button next to *The updated driver (Recommended) Intel(R) PRO/100+ Management Adapter* and click Next. The wizard locates the device driver.	
10. Click **Next**. The setup program copies files to the system.	

When the files have been copied, you see the screen shown here.



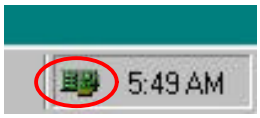
11. Click **Finish**. You are prompted to reboot the system. Click **Yes** to reboot the computer and complete the installation of the LAN drivers.



As the system reboots, Windows detects the new LAN drivers, and installs the drivers for them. You are prompted to reboot again.

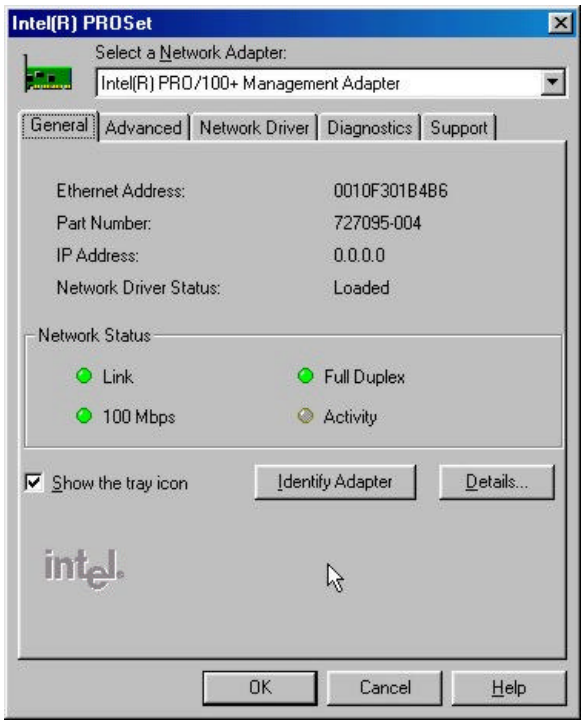
Note: If you are prompted for the location of the drivers, browse to the D:\DRIVER\LAN\Intel Series directory (where D: is your CD-ROM driver letter).

When the system has finished rebooting for the second time, the Intel(R) PROSet icon appears in the status bar:



Double-click the icon to open the Intel PROSet dialog.

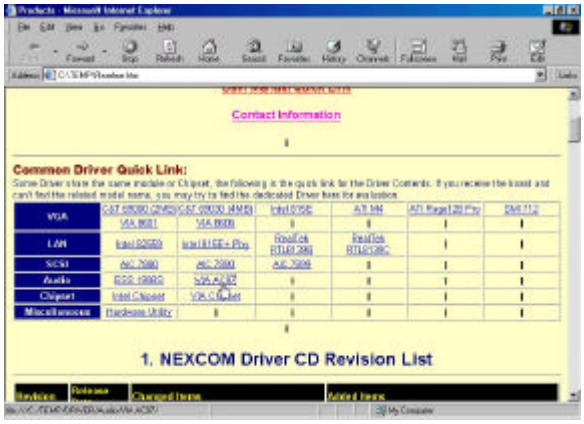
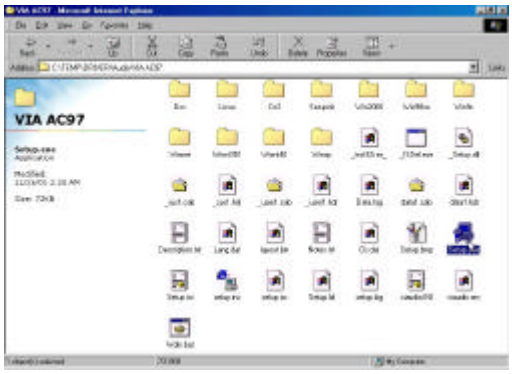
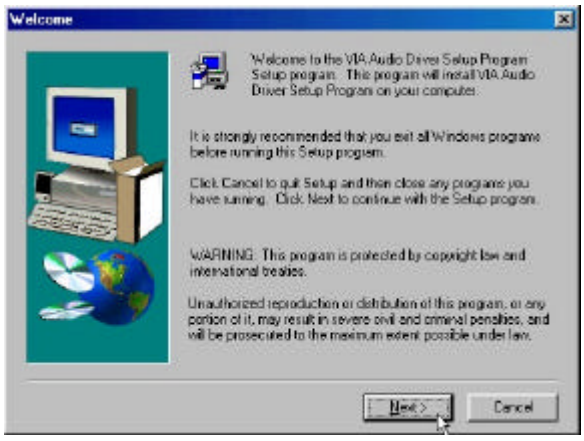
The Intel PROSet dialog enables you to configure the Intel LAN adapter. Click **Help** in the dialog for more information.

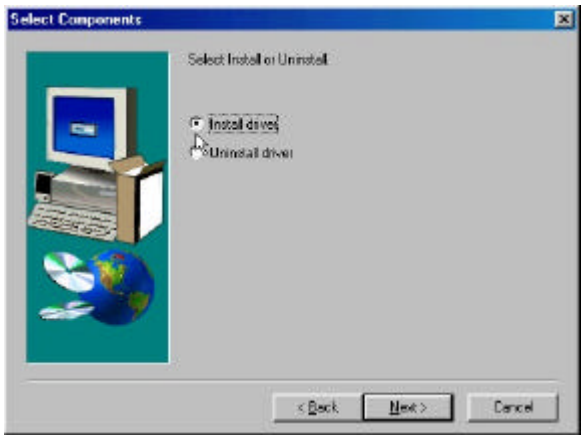
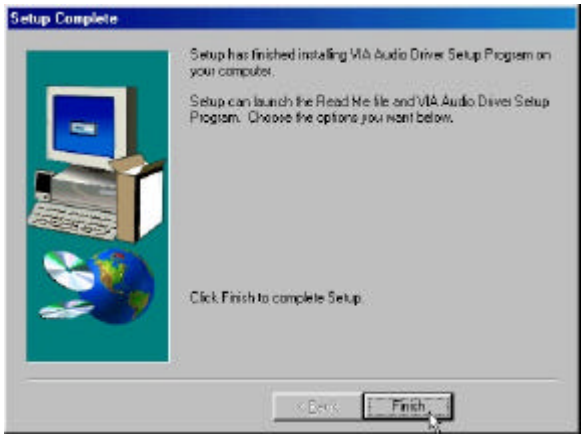


4.2.3.2 RealTek RTL8139C LAN Driver

For instructions on installing the RealTek LAN driver, refer to the file Setup.txt in the directory: D:\DRIVER\LAN\RTL_8139C\SETUP.TXT where D: is the letter of your CD-ROM drive.

4.2.4 Installing the Audio Drivers

1. Click **AC97** on the Common Driver Quick Link table.	
2. The VIA AC97 driver setup folder opens.	
3. Double-click **Setup.exe**. The VIA Audio Driver Setup Program begins.	

4. Click **Next**. Click the radio button next to *Install Driver*. The setup program installs the driver.	
5. Click Finish to complete installation of the audio driver.	

Appendix A Programming the Watchdog Timer

The EBC 563 features a watchdog timer that resets the CPU or generates an interrupt if the processor stops operating for any reason. This feature ensures system reliability in industrial standalone or unmanned environments.

A.1 Watchdog Timer Working Procedure

The Watchdog Timer (WDT) is a special hardware device that monitors the computer system during normal operation. The WDT has a clock circuit that times down from a set number to zero. If a monitored item occurs before the timer reaches zero, the WDT resets and counts down again. If for some reason the monitored item doesn't occur before the timer reaches zero, the WDT performs an action, such as a diagnostic operation (rebooting the computer) or generate an NMI.

You must enter timer values into the WDT Configuration Register (Write the control value to the Configuration Port), and clear WDT counter (read the Configuration Port).

Table 9: Watchdog Timer character and function

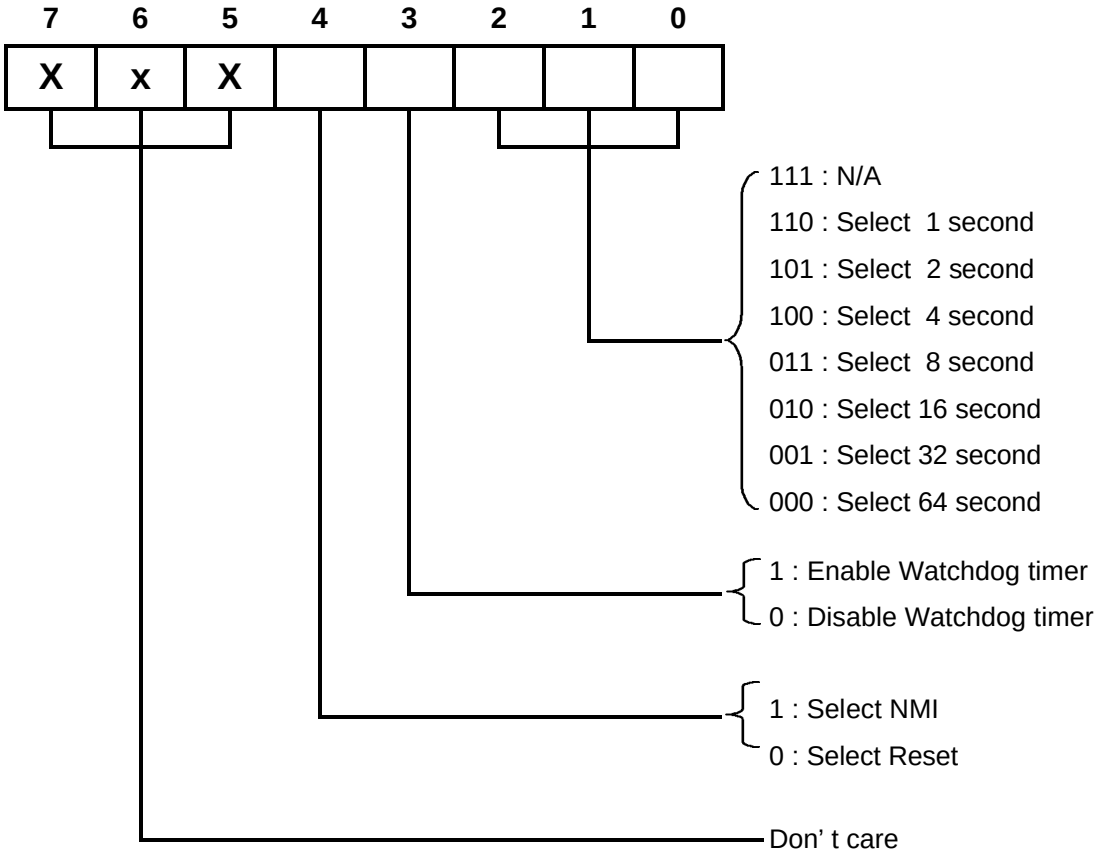
WDT Configuration port	F2	
Watchdog Timer	Disabled	1. Default at disabled
	Enabled	2. Enabled for user's programming
WDT Time out active for	Reset	
	NMI	
WDT Active Time	1 sec 2 sec 4 sec 8 sec 16 sec 32 sec 64 sec	

A.2 Watchdog Timer Control Register

The Watchdog Timer Control Register controls the WDT working mode. Write the value to the WDT Configuration Port.

The following table describes the Control Register bit definition.

Table 11: Control Register bit definition



A.3 Watchdog Timer Programming Procedure

A.3.1 Power On or Reset the System

The initial value of the WDT controller is disabled when power is on or the system has been reset.

A.3.2 Clear the WDT

The WDT counter interval cannot be longer than the preset time, otherwise, the WDT generates a NMI (NonMaskable Interrupt) or sends a reset signal to the system.

The following is an example of clearing the WDT program using the Intel 8086 assembly language.

```
; ( Clear the WDT)
   Mov  dx, F2h  ;Setting the WDT configuration port
   In    al, dx
```

Note: Before running the WDT, you must *clear* the WDT to ensure that the initial value is zero.

A.3.3 WDT Control Register

Note: This register writes to the WDT configuration port.

Set the WDT Control Register to control the WDT working mode.

The initial value of the WDT Control Register shown as follows.

```
; (Setting the WDT Control Register as AL)
Mov al, 0h  ; Setting initial value = 0 for the WDT Control Register
```

Follow these instructions to set the register.

1. Select NMI or Reset: decide D4 value in F2.

   i.e. Setting D4 = 0, then it selects Reset

```
AND al, 11101111b  ; Select Reset
```

   i.e. Setting D4 = 1, then it selects NMI

```
OR  al, 00010000b  ; Select NMI
```

2. Select the time-out intervals of WDT (decide the values of D2, D1, D0 in F2)

Example: If D2~D0 = 0, the time-out interval is 64 seconds.

```
AND al, 11111000b  ; Setting the time-out interval as 64 sec.
```

3. Enable or disable the WDT (decide D3 value in F2)

   i.e. D3=0, Disables the WDT

```
AND al, 11110111b  ; Disable the WDT
```

   i.e. D3=1, Enables the WDT

```
OR  al, 00001000b  ; Enable the WDT
```

After finishing the above settings, you must output the Control Register's value to the WDT Configuration Port. Then the WDT starts according to the above settings.

```
MOV dx, F2h    ; Setting WDT Configuration Port
  OUT      dx, al        ; Output the Control Register Value
```

Appendix B Programming the GPI/O of EBC-563

This appendix provides definitions for the four GPI/O pins in the EBC-563 series. The pin definition is shown in the following table:

Table 11: J15 – GPI/O Connector

Pin	Assignment
1	GPI/OA
2	GPI/OB
3	GPI/OC
4	GPI/OD

GPI/O (General Purpose Input/Output) pins are provided for custom system design. The number of inputs and outputs varies depending on configuration.

B.1 Specify the GPI/O direction

You may specify the GPI/O direction by configuring the PCI register.

- Procedure of using GPI/OA (B/C/D) as input:
  Set PCI Bus 0 Device 7 Function 0 Offset 74H bit 2(3/4/5) = 0
- Procedure of using GPI/OA (C/D) as output:
  1. Set PCI Bus 0 Device 7 Function 0 Offset 76H bit 0(2/3) = 0
  2. Set PCI Bus 0 Device 7 Function 0 Offset 74H bit 2(4/5) = 1
- Procedure of using GPIOB as output:
  Set PCI Bus 0 Device 7 Function 0 Offset 74H bit 3 = 1

B.2 Read the GPI/OA~D status

Make sure that you have specified the GPI/O direction correctly.

- Read GPI/OA~D status defined as input:
  Read a byte form I/O port 4049H, Bit 0~3 mapped to GPI/OA~D status. Whenever GPI/O pin gets an input, it makes the mapping bit high.
  Caution!! This port is read only.
- Read GPI/OA~D status defined as output:
  Read a byte form I/O port 404DH, Bit 0~3 mapped to GPI/OA~D status. Whenever GPI/O pin output is high, it makes the mapping bit high.

B.3 Control GPI/OA~D output high/low

Make sure that you have specified the GPI/O direction correctly.

- Output high/low
  Read a byte form I/O port 404DH, Bit 0~3 mapped to GPI/OA~D status. Makes the mapping bit to 1/0 and write back.

Example code to let GPI/OA output high:

```
; start of specifying GPI/OA direction
   mov          dx, 0cf8h
        mov     eax, 80003874h  ;Bus 0 Device 7 Function 0 offset 74
   out dx, eax
        mov  dx, 0cfch
  in   eax, dx
  mov  ebx, 0fffeffffh
   and  eax, ebx       ;mask offset 76 bit0
   mov  ebx, 4
   or   ax, bx         ;make offset 74 bit2=1
   mov  dx, 0cfch
   out  dx, eax
; Start of GPI/OA output high
  mov dx, 404dh
  in  al, dx
  or  al, 1  ;Set output high
  out dx, al
```

Appendix C Connector Pinouts

C.1 Connectors

The following table lists the connectors on the board:

Table 12: EBC 563 connector list

Connector	Function
JP1	POWER LED Pin
JP2	Temperature sense Pin
JP4	Vcore Voltage Jumper
JP5	DOM Power Connector
J1	Panel Connector
J2	Panel Voltage Jumper
J3	PCI Slot
J4	Fan Connector
J5	CMOS-Clear
J7	NEXCOM PCI Connector
J8	Panel Type Select Jumper
J9	Audio Interface Connector
J10/J6/J14	LAN Connector
J12	IDE LED Pin
J13	Reset Button
J15	GPIO Connector
J16	IR Connector
J19	Disk On Chip Connector
J20	Disk On Chip active address Jumper
J22	IDE 1 Connector
J23	PLT Connector
J24	IDE 2 Connector
J26	Power Connector
J27	FDD Connector
J28	COM 2 Connector
J29	USB Connector
J30	CPU BUS Ratio
J31	SMBUS
J32/J21	COM 1 Connector
J33/J18	Keyboard/PS2 Mouse Connector
J34/J17	VGA Connector
J35/J36/J37/J38/J39/J40	LAN LED
J41	ATX/AT Jumper
J42	ATX POWER ON CONNECTOR
J43	ATX Power Button
J44	Fan Connector

C.2 PIN Assignments

The following tables show the pin assignments for the EBC connectors.

JP1: POWER LED CONNECTOR

PIN No.	Description	PIN No.	Description
1	VCC	2	GND

JP2: TEMPERATURE CONNECTOR

PIN No.	Description
1	GND
2	Sense

JP5: DISK ON MODULE POWER CONNECTOR

PIN No.	Description	PIN No.	Description
1	VCC	2	GND

J4/J44: FAN POWER CONNECTOR

PIN No.	Description
1	GND
2	+12V
3	Sense

J1: PANEL CONNECTOR

PIN No.	Description	PIN No.	Description
1	ENABKL	2	+12V SAFE
3	LP	4	DE
5	SHFCLK	6	FLM
7	P23	8	VDDSAFE
9	P17	10	P22
11	P11	12	P16
13	P9	14	P10
15	P21	16	P8
17	P15	18	P20
19	P7	20	VDDSAFE
21	P5	22	P14
23	GND	24	P6
25	P19	26	P4
27	P13	28	P18
29	P3	30	ENAVEE
31	P1	32	P12
33	GND	34	P2
35	NC	36	P0
37	NC	38	NC
39	NC	40	GND
41	NC	42	NC
43	NC	44	NC
45	NC	46	NC
47	NC	48	NC
49	GND	50	NC

J5: CMOS-CLEAR

PIN No.	Description
1	VCC
2	VBAT
3	GND

J7: NEXCOM PCI CONNECTOR

PIN No.	Description	PIN No.	Description
1	+5V	2	AD0
3	AD1	4	AD2
5	AD3	6	AD4
7	AD5	8	AD6
9	AD7	10	Ground
11	+5V	12	AD8
13	AD9	14	AD10
15	AD11	16	AD12
17	AD13	18	AD14
19	AD15	20	Ground
21	+5V	22	AD16
23	AD17	24	AD18
25	AD19	26	AD20
27	AD21	28	AD22
29	AD23	30	Ground
31	+5V	32	AD24
33	AD25	34	AD26
35	AD27	36	AD28
37	AD29	38	AD30
39	AD31	40	Ground
41	+5V	42	BE#0
43	BE#1	44	BE#2
45	BE#3	46	PAR
47	Frame#	48	TRDY#
49	IRDY#	50	Ground
51	+5V	52	STOP#
53	DEVSEL#	54	PERR#
55	SERR#	56	NEXREQ#1
57	NEXGNT	58	NC
59	NC	60	Ground
61	NEXCLk	62	NC
63	PCI_RST#	64	NC
65	INTR#A	66	INTR#B
67	INTR#C	68	INTR#D

J9: AUDIO INTERFACE CONNECTOR

PIN No.	Description	PIN No.	Description
1	SDOUT	2	VCC
3	ACRST	4	GND
5	SYNC	6	+12V
7	SDIN	8	SDIN2
9	BITCLK	10	SPEAK

J6/J10/J14: LAN CONNECTOR

PIN No.	Description
1	TX+
2	TX-
3	RX+
4	TERMPLANE
5	TERMPLANE
6	RX-
7	TERMPLANE
8	TERMPLANE
9	Speed
10	VCC3
11	Link
12	Active
13	GND
14	GND

J12: IDE LED CONNECTOR

PIN No.	Description
1	HDD Active #
2	+5V

J13: RESET

PIN No.	Description
1	Reset
2	Ground

J15: GPI/O CONNECTOR

PIN No.	Description	PIN No.	Description
1	GPI/OA	2	GPI/OB
3	GPI/OC	4	GPI/OD

J16: IR CONNECTOR

PIN No.	Description	PIN No.	Description
1	VCC	2	NC
3	IRRX	4	GND
5	IRTX		

J22: IDE PRIMARY INTERFACE CONNECTOR

PIN No.	Description	PIN No.	Description
1	Reset#	2	Ground
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	Ground	20	N/C
21	DMA REQ	22	Ground
23	IOW#	24	Ground
25	IOR#	26	Ground
27	IOCHRDY	28	Pull down
29	DMA ACK	30	Ground
31	Interrupt	32	IOCS16#
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD Active#	40	Ground
41	+5V	42	+5V
43	Ground	44	Pull down

J23: PARALLEL PORT CONNECTOR

PIN No.	Description	PIN No.	Description
1	Strobe#	2	Data 0
3	Data 1	4	Data 2
5	Data 3	6	Data 4
7	Data 5	8	Data 6
9	Data 7	10	Acknowledge
11	Busy	12	Paper Empty
13	Printer Select	14	Auto Form Feed#
15	Error#	16	INT
17	Printer Select IN#	18	Ground
19	Ground	20	Ground
21	Ground	22	Ground
23	Ground	24	Ground
25	Ground	26	N/C

J24: IDE SECONDARY INTERFACE CONNECTOR

PIN No.	Description	PIN No.	Description
1	Reset#	2	Ground
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	Ground	20	N/C
21	SDDREQ	22	Ground
23	SDIOW#	24	Ground
25	SDIOR#	26	Ground
27	SIORDY	28	PULL DOWN
29	SDDACK	30	Ground
31	IRQ15	32	N/C
33	SDA1	34	SDD_66
35	SDA0	36	SA2
37	SDSCI	38	SDCS3#
39	HDD Active#	40	Ground

J26: POWER CONNECTOR

PIN No.	Description	PIN No.	Description
1	+5V	2	+5V
3	GND	4	GND
5	GND	6	+12V

J27: FDC CONNECTOR

PIN No.	Description	PIN No.	Description
1	Ground	2	Density Select
3	Ground	4	N/C
5	Ground	6	N/C
7	Ground	8	Index#
9	Ground	10	MIR0
11	Ground	12	DS1
13	Ground	14	DS0
15	Ground	16	MTR1
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	WRTPR1
29	N/C	30	Read Data#
31	Ground	32	HPSEL
33	N/C	34	Disk Change#

J29: USB CONNECTOR

PIN No.	Description
1	VCC
2	USBD0-
3	USBD0+
4	Ground
5	VCC
6	USBD1-
7	USBD1+
8	Ground

J31: SMBUS

PIN No.	Description
1	CLK
2	DATA

J32/J21: COM1 PORT CONNECTOR

PIN No.	Description
1	Data Carrier Detect (DCD)
2	Receive Data (RXD)
3	Transmit Data (TXD)
4	Data Terminal Ready (DTR)
5	Ground (GND)
6	Data Set Ready (DSR)
7	Request to Send (RTS)
8	Clear to Send (CTS)
9	Ring Indicator (RI)
10	Ground (GND

J28: COM2 PORT CONNECTOR

PIN No.	Description
1	Data Carrier Detect (DCD)
2	Receive Data (RXD)
3	Transmit Data (TXD)
4	Data Terminal Ready (DTR)
5	Ground (GND)
6	Data Set Ready (DSR)
7	Request to Send (RTS)
8	Clear to Send (CTS)
9	Ring Indicator (RI)
10	Ground (GND

J33: PS/2 KEYBOARD/MOUSE CONNECTOR

PIN No.	Description
1	VCC
2	Keyboard DATA
3	Keyboard CLK
4	GND
5	VCC
6	Mouse DATA (for 630A,630VL, 630SL)
7	NC/Mouse CLK(for 630A, 630VL, 630SL)
8	GND

PIN Assignments

J18: PS/2 KEYBOARD/MOUSE CONNECTOR

PIN No.	Description
1	KB_DATA
2	MS_DATA
3	GND
4	VCC
5	KB_CLK
6	MS_CLK
7	GND
8	GND

J34/J17: VGA CONNECTOR

Pin No	Description
1	Red
2	Green
3	Blue
4	NC
5	GND
6	GND
7	GND
8	GND
9	NC
10	GND
11	NC
12	MID1
13	Horizontal Sync
14	Vertical Sync
15	MID3
16	NC

J35/J36/J37/J38/J39/J40: LAN LED

PIN No.	Description
1	LED+
2	LED-

J41 ATX\AT JUMPER

PIN No.	Description
1-2	AT
2-3 *	ATX

* Default

J42 ATX POWER ON CONNECTOR

PIN No.	Description
1	5 VSBY
2	GND
3	PS-ON

J43 ATX POWER BUTTON CONNECTOR

PIN No.	Description
1	GND
2	Power Button

Appendix D EBC 563 Specifications

D.1 Features Highlight

- 5.25-inch Pentium III class single board computer
- Embedded controller with onboard CPU, VGA, LAN, and audio
- VIA C3 EBGA CPU 400 – 667 MHz ~ 667 – 800 MHz +
- 100/133 MHz FSB
- Supports up to 512 MB SDRAM, non-ECC function
- VIA 8601/686B chipset
- 4xAGP onboard VGA supports 2/4/8 MB of memory
- Optional DVI panel interface support
- 10/100 Base T/TX LAN x 3 (Intel 82559 or Realtek 8139C)
- DOC (Disk On Chip) support
- Supports AT or ATX power supplies

D.2 Hardware Specifications

CPU

- Onboard VIA C3 processor in an EBGA package
- 128 KB L1 cache
- 64 KB L2 cache
- 100/133 frontside bus
- CPU onboard multispeed support:
  - CPU without fan support: 400 – 667 MHz
  - CPU with fan support: 667 – 800 MHz

MAIN MEMORY

- One 168-pin DIMM
- SDRAM supported up to 512 MB
- Non-ECC function

CHIPSET

- VIA 8601 100/133 MHz Northbridge
- VIA VT82C686B PSIPC PCI Super I/O integrated peripheral controller
- PCI version 2.2 compliant

VGA CONTROLLER

- VIA Apollo PLE133 graphics controller
- 64-bit single cycle 2D/3D graphics engine
- Supports 2 ~ 8 MB frame buffer
- Features realtime DVD MPEG-2 and AC-3 playback
- Integrated 24-bit 230 MHz true color DAC supports extended screen resolutions up to 1600 x 1200
- Driver support: Windows 2000/9X/NT and Linux

- Optional TMDS (DVI) module

LAN

- RealTek RTL8139C OR Intel 82559 (optional) Ethernet controller x 3
- 10/100 BaseT/TX support, full duplex
- IEEE802.3X compliant
- Supports boot from LAN
- Driver support: Windows 2000/9X/NT, DOS, Linux, Netware, SCO Open Server 5.0, FreeBSD
- RJ45 connector x 3 (with LEDs)
- LAN Port LED: The EBC LAN ports have status LEDs to indicate power, connection or system status.

  Refer to the following table for a quick reference to the LEDs.

Green LED	The link between the EBC 563 and the client is being negotiated.
Flashing Yellow LED	Indicates the LAN port is active.
Yellow LED	Indicates a 100 Base Ethernet connection. When the yellow LED is not illuminated, the Ethernet connection is 10 Base.

ONBOARD SOLID STATE DOC

- Onboard reserved socket for M-Systems DOC (Disk On Chip)
- Supports 2 ~ 144 MB (and above)

REALTIME CLOCK

- Onchip realtime clock (RTC) backed up by battery
- One onboard lithium (Li) battery

WATCHDOG TIMER

Software programmable watchdog timer

BIOS

- Award System BIOS
- Plug & Play support
- Advanced Power Management support
- Advanced Configuration & Power Interface support
- 4 Mbit flash ROM

ACPI FUNCTION

- Soft off
- RTC alarm wake up

ONBOARD BUS EXPANSION

- NEXCOM PCI connector

- Standard 32-bit PCI slot

POWER REQUIREMENTS

- One 6-pin power input connector:

PIN No.	Voltage	Power Requirement
PIN 1	+5V	3A
PIN 2	+5V	3A
PIN 3	GND	—
PIN 4	GND	—
PIN 5	GND	—
PIN 6	+12V	200 mA

- Accessory power converter cable:
  - Two 4P to 6P (for AT power supply)
  - ATX power connector to 6P + 2-pin power SW (for ATX power supply)
  - Optional power module supports notebook type adapters (16 VDC ~ 24 VDC input)
- Onboard power LED

I/O

- OnChip VT82C686B integrated Super I/O:
  - Integrated ISA Bus Controller with integrated DMA, timer, and interrupt controller
  - Integrated keyboard controller with PS/2 mouse support
  - Integrated DS12885-style realtime clock and ACPI day and month alarm
  - Integrated USB controller supports four USB ports and root hub
  - Integrated UltraDMA 33/66/100 master mode EIDE controller with enhanced PCI bus commands
  - Distributed DMA support for ISA legacy DMA across the PCI bus
- Two 16C550 UART serial port I/O: two 10-pin header, one D-sub connector
- Parallel port I/O: one bidirectional 26-pin interface, supports EPP/ECP
- Floppy disk I/O: one 34-pin floppy disk drive connector
- IDE I/O: one UltraDMA 33/66/100 40-pin IDE connector, one 44-pin IDE connector supports Compact Flash Module or Disk On Module
- PS/2 I/O: one 6-pin Mini DIN connector for PS/2 keyboard or mouse
- USB I/O: two onboard USB headers, supports up to four USB ports
- IrDA I/O: one 5-pin header for infrared module
- Audio I/O: one AC 97 interface supports optional audio module
- Onboard alarm buzzer

DIMENSIONS

- 203 mm x 146 mm

ENVIRONMENT

- Operating environment: 0 ~ 60° C
- Storage temperature: -20 ~ 80° C
- Relative humidity: 10 ~ 90 % (non-condensing)

CERTIFICATION

- CE approval

Hardware Specifications

- FCC Class A