1. Introduction

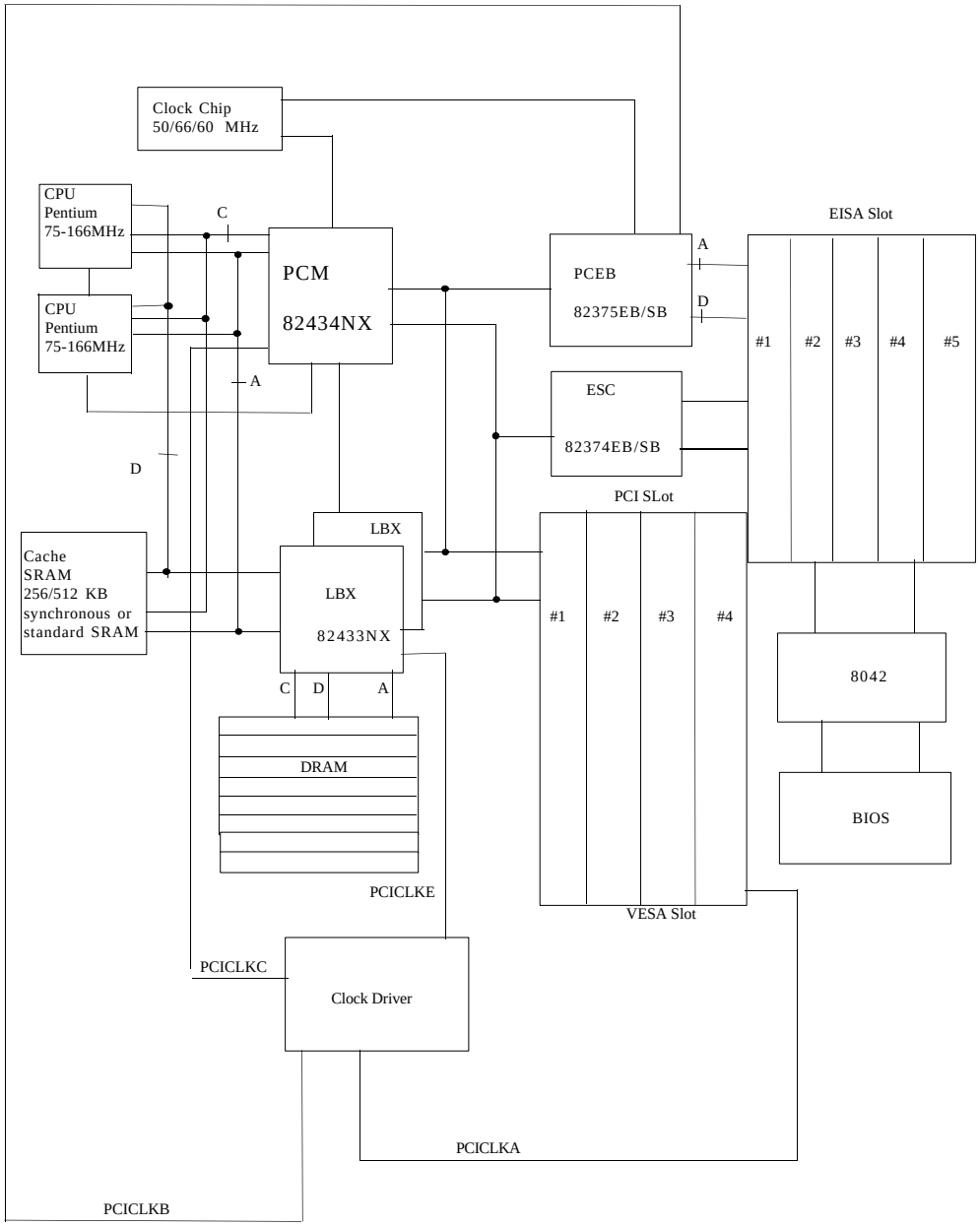
1.1 Preface

S1462 is a Dual Intel Pentium based PC/AT mainboard. With 75MHz thru 166MHz CPU, PCI local bus, EISA bus, it can be used with the fastest PC/AT systems.

1.2 Key Features

* Single or Dual Pentium based PC/AT compatible mainboard with Intel Neptune chipset
* 4 Master/Slave PCI Bus slots, 5 EISA Bus slots (4 master).
* Supports Single or Dual Pentium Processors (75MHz thru 166MHz).
* Supports true 64 bits CACHE and DRAM access mode.
* Supports WHITE ZIF Socket 5 socket.
* Supports 256/512 KB 2nd level cache memory, either synchronous or standard SRAM.
* CPU WRITE-BACK cache operation.
* Supports up to 512 MB DRAM memory on board.
* Supports shadow RAM for BIOS & VIDEO BIOS.
* Shadow RAM cachable function to improve performance.
* Licensed AWARD BIOS or AMI BIOS.
* Flash BIOS support
* On-board NCR SCSI (NC810) BIOS firmware
* RTC and 8KB EISA configuration memory
* BABY AT form factor, 6 layers PCB.

1.3. S1462 Block Diagram



C=Control
D=Data
A=Address

1.4 Hardware Specifications

* CPU	-Single or Dual 3.3V Pentium 75/90/100 MHz Processor. -Single Pentium 120 or 133 MHz Processor -Two 320 pin SPGA Pentium Overdrive Processor (Socket 5) White ZIF Sockets on board.
* Coprocessor	-Included in Pentium CPU.
* Speed	-50/60/66 MHz System Bus and 25/30/33 MHz PCI Bus speed. -7.5/8.33 MHz EISA/ISA Bus speed. -H/W and S/W speed switchable function (Cache or non Cache).
* DRAM Memory	-4 double banks of 72 pins SIMM Module DRAM. -2MB to 512 MB DRAM size. -Supports Fast Page DRAM access mode.
* Cache Memory	-16 KB cache memory included in Pentium. -256/512 KB on board 2nd level cache memory. -Support Pentium BURST read/write mode on 2nd level cache memory access. -Supports either synchronous or standard SRAM.
* Shadow RAM	-Main BIOS function. -Video BIOS shadow function programmable. -Shadow RAM cachable function programmable.
* I/O Bus Slots	-4 Master/Slave PCI-Bus. -5 EISA Bus (4 Masters).
* Dimension	-Baby AT size.

1.5. Software Specifications

* BIOS	-Licensed AWARD BIOS or AMI BIOS. -AT CMOS Setup, BIOS/CHIPSET Setup, and hard disk utility included.
* O.S.	-Operates with MS-DOS, Windows, Windows NT, OS/2, Novell, and SCO Unix.
* Utilities	-Licenced AMI EISA configuration utility -Flash EPROM utility

1.6 Environment

Ambient Temperature	0 to +50 C (operating)
Relative Humidity	0 to +85% (operating)
Altitude	0 to 10,000 feet (operating)
Vibration	0 to 1,000 Hz
Voltage	4.9 to 5.2 V

2. Board Installation.

2.1 Unpacking

The mainboard package should contain the following
* The S1462 Mainboard
* User's Manual
* ECU User's Manual
* EISA CFG. Utility Diskette

The mainboard contains sensitive electric components which can be easily damaged by static electricity, so the mainboard should be left in its original packing until it is installed.

Unpacking and installation should be done in a grounded anti-static mat. The operator should be wearing an anti-static wristband, grounded at the same point as the anti-static mat.

Inspect the main board carton for obvious damages. Shipping and handling may cause damages to your board. Be sure there are no shipping and handling damages on the board before proceeding.

After opening the mainboard carton, extract the system board and place it only on a grounded anti-static surface component side up. Again inspect the board for damages. Press down on all of the socket IC's to make sure that they are properly seated. Do this only with the board placed on an anti-static mat.

DO NOT APPLY POWER TO THE BOARD IF IT HAS BEEN DAMAGED!
MAKE SURE THAT THE POWER SUPPLY IS CONNECTED TO THE PROPER 5V CONNECTOR!

2.2 Installation

You are now ready to install your mainboard. The mounting hole pattern on the mainboard matches the IBM-AT system board. It is assumed that the chassis is designed for a standard IBM XT/AT mainboard mounting.

Place the chassis of the anti-static mat and remove the cover. Remove the plastic clips, Nylon stand-off and screws for mounting the system board, and keep them separately.

3. S1462 On Board Resource Setting and Upgrade Guide

3.1 Quick Reference For Jumpers & Connectors (refer Fig. 3.1)

* J21/22: 5V Power Connector

1	Power Good Signal
2,10,11,12	VCC (+5V)
3	+12V
4	-12V
5,6,7,8	GND
9	-5V

* J24/J25: 3.3V Power Connector

1,2,3,10,11,12	GND
4,5,6,7,8,9,	3.3V

(J29 needs to be "OFF", if using J24/J25)

* J20: Reset Connector

"Open" for normal operation
"Close" for hardware reset

* J7: Second Level Cache Size Selection (J6 always "on" 1-2)

"Close" pins 1-2 for 512KB cache size
"Close" pins 2-3 for 256KB cache size

* J13: Power LED and Keylock Connector

1	LED anode (+)
2	NC
3	LED cathode (-)
4	Keylock
5	GND

* J8: Standard or Synchronized SRAM

1-2	Synchronized SRAM
2-3	Standard

* J19: Speaker Connector

1	Data
2	NC
3	GND

* J16: Turbo Switch Connector

"Open" for high speed

"Close" for low speed (non-cache)

* J17: Turbo LED Connector

1	LED cathode (-)
2	LED anode (+)

* J9, J10,J2 and J43: System Speed Selection

J9	J10	J2	J43	CPU Speed
off	off	off	off	75MHz
off	on	off	off	90MHz
on	on	off	off	100MHz
off	on	on	off	120MHz
on	on	on	off	133MHz
off	on	on	on	150MHz
on	on	on	on	166MHz

* J41 Single or Dual Processor

1-2 Single Processor

2-3 Dual Processor

In Dual Processor mode

Socket 5 "A" as master

Socket 5 "B" as slave

In Single Processor mode

Use either "A" or "B" Socket 5

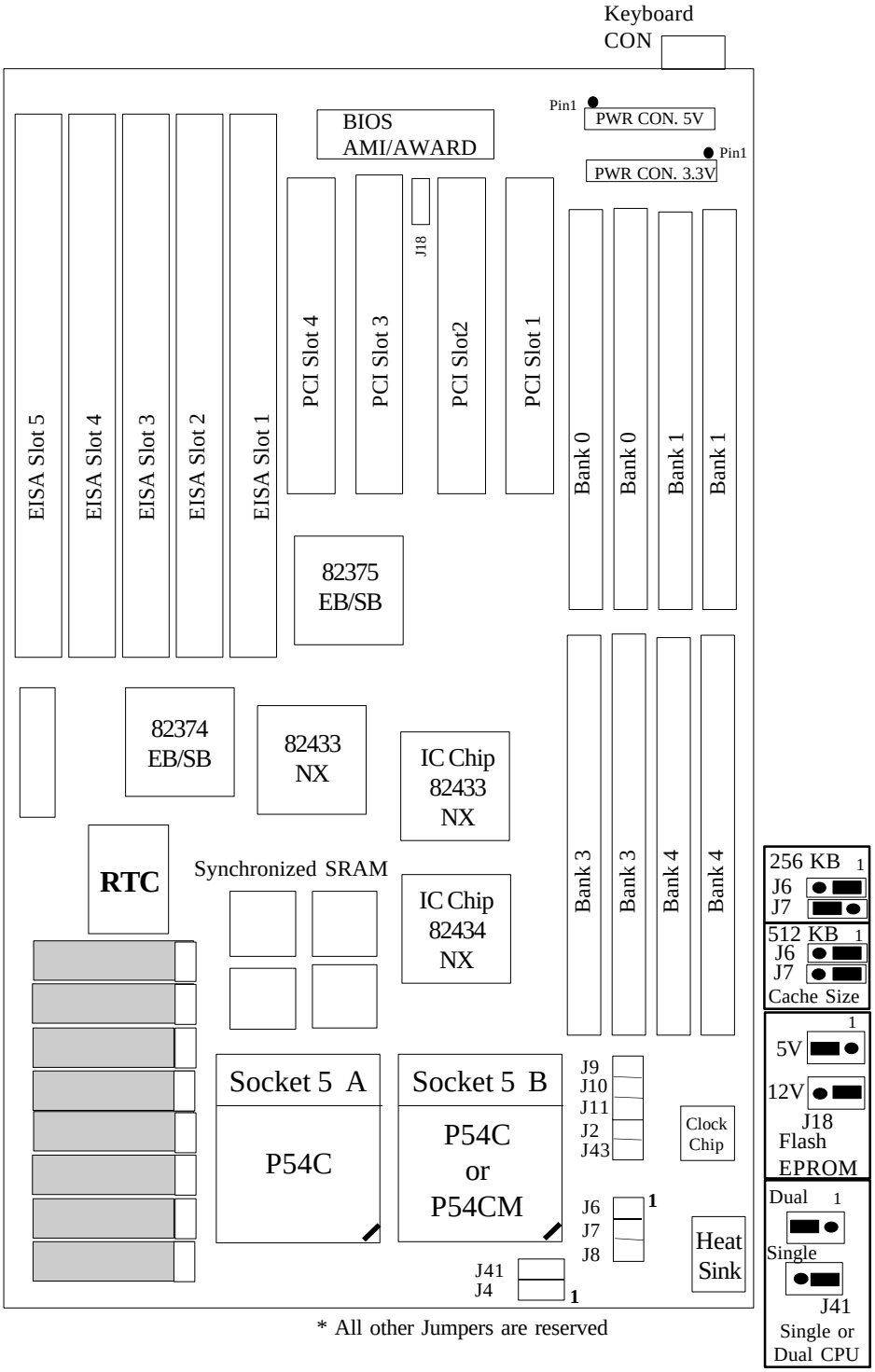
*J8 Synchronized or STD SRAM

1-2 Synchronized SRAM

2-3 STD SRAM

.

Figure 3.1



* All other Jumpers are reserved

3.2 DRAM Installation

The mainboard can be installed with 1/2/4/8/16/32/64 MB 72 pins/70 ns DRAM SIMM module. The DRAM memory system consists of 4 banks (0-3). Each bank requires 2 SIMM modules to achieve 64 bit bus transfer and proper operation. The total memory size can be from 2MB to 512MB. Various DRAM configurations are shown on the table following this page.

SIMM BNK0	SIMM BNK1	SIMM BNK2	SIMM BNK3	SIZE BK0 0	SIZE BNK 0,1	SIZE BNK 0-2	SIZE BNK 0-3
1MB*2	(1MB*2)	(1MB*2)	(1MB*2)	2MB	4MB	6MB	8MB
1MB*2	(2MB*2)	(2MB*2	(2MB*2)	2MB	6MB	10MB	14MB
1MB*2	(4MB*2)	(4MB*2)	4MB*2)	2MB	10MB	18MB	26MB
1MB*2	(8MB*2)	(8MB*2)	(8MB*2)	2MB	18MB	34MB	50MB
1MB*2	(16MB*2)	(16MB*2)	(16MB*2)	2MB	34MB	66MB	98MB
1MB*2	(32MB*2)	(32MB*2)	(32MB*2)	2MB	66MB	130MB	194MB
1MB*2	(64MB*2)	(64MB*2)	(64MB*2)	2MB	130MB	258MB	386MB
2MB*2	(1MB*2)	(1MB*2)	1MB*2)	4MB	6MB	8MB	10MB
2MB*2	(2MB*2)	(2MB*2)	(2MB*2)	4MB	8MB	12MB	16MB
2MB*2	(4MB*2)	(4MB*2)	(4MB*2)	4MB	12MB	20MB	28MB
2MB*2	(8MB*2)	(8MB*2)	(8MB*2)	4MB	20MB	36MB	52MB
2MB*2	(16MB*B)	(16MB*2)	(16MB*2)	4MB	36MB	68MB	100MB
2MB*2	(32MB*2)	(32MB*2)	(32MB*2)	4MB	68MB	132MB	196MB
2MB*2	(64MB*2)	(64MB*2)	(64MB*2)	4MB	132MB	260MB	388MB

SIMM BNK0	SIMM BNK1	SIMM BNK2	SIMM BNK3	SIZE BK00	SIZE BNK 0,1	SIZE BNK 0-2	SIZE BNK 0-3
4MB*2	(1MB*2)	(1MB*2)	(1MB*2)	8MB	10MB	12MB	14MB
4MB*2	(2MB*2)	(2MB*2)	(2MB*2)	8MB	12MB	16MB	20MB
4MB*2	(4MB*2)	(4MB*2)	(4MB*2)	8MB	16MB	24MB	32MB
4MB*2	(8MB*2)	(8MB*2)	(8MB*2)	8MB	24MB	40MB	56MB
4MB*2	(16MB*2)	(16MB*2)	(16MB*2)	8MB	40MB	72MB	104MB
4MB*2	(32MB*2)	(32MB*2)	(32MB*2)	8MB	72MB	136MB	200MB
4MB*2	(64MB*2)	(64MB*2)	(64MB*2)	8MB	136MB	264MB	392MB
8MB*2	(1MB*2)	(1MB*2)	(1MB*2)	16MB	18MB	20MB	22MB
8MB*2	(2MB*2)	(2MB*2)	(2MB*2)	16MB	20MB	24MB	28MB
8MB*2	(4MB*2)	(4MB*2)	(4MB*2)	16MB	24MB	32MB	40MB
8MB*2	(8MB*2)	(8MB*2)	(8MB*2)	16MB	32MB	48MB	64MB
8MB*2	(16MB*2)	(16MB*2)	(16MB*2)	16MB	48MB	80MB	112MB
8MB*2	(32MB*2)	(32MB*2)	(32MB*2)	16MB	80MB	144MB	208MB
8MB*2	(64MB*2)	(64MB*2)	(64MB*2)	16MB	144MB	272MB	400MB
16MB*2	(1MB*2)	(1MB*2)	(1MB*2)	32MB	34MB	36MB	38MB
16MB*2	(2MB*2)	(2MB*2)	(2MB*2)	32MB	36MB	40MB	44MB
16MB*2	(4MB*2)	(4MB*2)	(4MB*2)	32MB	40MB	48MB	56MB
16MB*2	(8MB*2)	(8MB*2)	(8MB*2)	32MB	48MB	64MB	80MB
16MB*2	(16MB*2)	(16MB*2)	(16MB*2)	32MB	64MB	96MB	128MB
16MB*2	(32MB*2)	(32MB*2)	(32MB*2)	32MB	96MB	160MB	224MB
16MB*2	(64MB*2)	(64MB*2)	(64MB*2)	32MB	160MB	288MB	416MB

SIMM BNK0	SIMM BNK1	SIMM BNK2	SIMM BNK3	SIZE BK0 0	SIZE BNK 0,1	SIZE BNK 0-2	SIZE BNK 0-3
32MB*2	(1MB*2)	(1MB*2)	(1MB*2)	64MB	66MB	68MB	70MB
32MB*2	(2MB*2)	(2MB*2)	(2MB*2)	64MB	68MB	72MB	76MB
32MB*2	(4MB*2)	(4MB*2)	(4MB*2)	64MB	72MB	80MB	88MB
32MB*2	(8MB*2)	(8MB*2)	(8MB*2)	64MB	80MB	96MB	112MB
32MB*2	(16MB*2)	(16MB*2)	(16MB*2)	64MB	96MB	128MB	160MB
32MB*2	(32MB*2)	(32MB*2)	(32MB*2)	64MB	128MB	192MB	256MB
32MB*2	(64MB*2)	(64MB*2)	(64MB*2)	64MB	192MB	320MB	448MB
64MB*2	(1MB*2)	(1MB*2)	(1MB*2)	128MB	130MB	132MB	134MB
64MB*2	(2MB*2)	(2MB*2)	(2MB*2)	128MB	132MB	136MB	140MB
64MB*2	(4MB*2)	(4MB*2)	(4MB*2)	128MB	136MB	144MB	152MB
64MB*2	(8MB*2)	(8MB*2)	(8MB*2)	128MB	144MB	160MB	176MB
64MB*2	(16MB*2)	(16MB*2)	(16MB*2)	128MB	160MB	192MB	224MB
64MB*2	(32MB*2)	(32MB*2)	(32MB*2)	128MB	192MB	256MB	320MB
64MB*2	(64MB*2)	(64MB*2)	(64MB*2)	128MB	256MB	384MB	512MB

Each bank may use either 1-sided or 2-sided SIMMs.
All SIMMs must be Fast Page Mode DRAM with speeds less than or equal to 70ns.
SIMM modules installed must be in pairs.
SIMM modules in parentheses ( ) are optional.

Refer to Fig. 3.1 for DRAM installation location. Pin-1 of the SIMM module must match the Pin-1 of SIMM socket.

Insert the DRAM SIMM module into the socket at a 45 degree angle. If the SIMM module is inserted on the wrong side, it can not be completly plugged into the socket. After insertion, press the SIMM module in a vertical direction until both left and right metal holders latch.

3.3. Single CPU Installation

Seven types of CPU (75-166 MHz) can be used on S1462. The J9, J10, J2 and J43 jumper will set up the system frequency generator for the CPU on board. The following table and procedures tell how to install the CPU.

J9	J10	J2	J43	CPU Speed
off	off	off	off	75MHz
off	on	off	off	90MHz
on	on	off	off	100MHz
off	on	on	off	120MHz
on	on	on	off	133MHz
off	on	on	on	150MHz
on	on	on	on	166MHz

* J11 is always open.
* The CPU is a sensitive electric component and it can be easily damaged by static electricity. Do not touch the CPU pins with your fin gers.
* When installing the CPU into the socket, match the CPU pins to the socket pins.
* Before the CPU is installed, the mainboard must be placed on a flat plane in order to avoid being broken by the pressure of CPU insertion.
* A cooling fan and a heat sink assembly are required to go with the CPU.

3.4 Installing a Second Pentium

The mainboard can operate with either one or two Pentium processors installed. In the Single Processor mode, with a Pentium P54C installed in the lower socket, the mainboard will operate like a normal single Pentium system. To use the Dual Processor mode you have to install a Pentium P54C or P54CM. The mainboard default setup is for the Single Processor operation. To install a second processor do the followings.

1.Set J41 to the Dual Processor setting
2.Make sure the second Pentium has the same an internal clock speed as the the first CPU which has a multiple external clock speed factor of 1.5.

Internal Clock	External Clock
75MHz	50MHz(PCI Bus 25MHz)
90MHz	60MHz(PCI Bus 30MHz)
100MHz	66MHz(PCI Bus 33MHz)
120MHz	60MHz(PCI Bus 30MHz)
133MHz	66MHz(PCI Bus 33MHz)
150MHz	60MHz(PCI Bus 30MHz)
166MHz	66MHz(PCI Bus 33MHz)

In the table above, the 50, 60 and 66 MHz figures are oscillator speeds that establish the external clock speed. The PCI Bus clock speed is fixed at one half of the external clock speed.

J41: Single/Dual CPU Selector

1

Single Processor mode
P54C in "A" or "B" socket

1

Dual Processor mode
P54C in "A" socket
P54C or P54CM in "B" socket

3. Make sure the ZIF socket lever is up. To raise the lever, pull it out to the side a little and raise it as far as it will go. The top plate will slide back
4. Align the CPU and socket Pin 1 corners. The pins on the bottom should align with the rows of holes in the socket.
5. Insert the CPU in the socket. It should insert easily. If it does not, adjust the position of the lever a little.
6. Press the lever down. The top plate will slide foward. You will feel some resistance as the presure starts to secure the CPU in the socket. This is normal and will not damage the CPU. When the CPU is installed, the lever should snap into place at the side of the socket.

3.5 Operating Systems

With one processor installed you can use this mainboard with any one processor Operating system that supports Intel CPUs. This includes MS-DOS and Windows in all versions as well as network operating systems like Netware etc.

To use the Dual Processor option, you must use an Operating System that supports the Intel MP Specification for multi-processing. Current available options are:

Windows NT

Version 3.5 supports dual processing. For Version 3.1, you can get the MP Specification V1.1 HAL installation kit from Intel.

OS/2

OS/2 MP will be available shortly or may already be available by the time you read this.

Upcoming releases

New releases of Novell Netware, SCO MPX and SunSoft Solaries will also support multiprocessing.

3.6 Upgrading Cache Memory (Standard SRAM Only)

Standard on S1462 is a 256KB 2nd level cache. It uses 8 32K*8 SRAM's You can upgrade the cache to 512KB to improve system performance. It uses 64K*8 SRAM's.

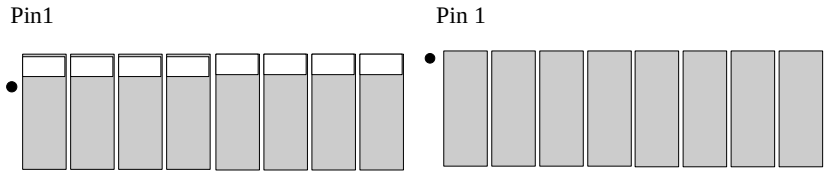
NOTICE: The 64K*8 SRAM chip is longer in length than the 32K*8 chip. Do not insert the 32 K*8 SRAM chip into the top four pin holes of the socket, it could cause serious damage to your SRAM chips. Refer to the diagram below.

All SRAM chips must be 20ns (nanoseconds) or faster. The chart below shows the chips you need for each configuration.

SRAM CACHE SIZE	Number and Size	Pin Configuration	J7
256KB	Eight 32K*8	28 pins/chip	2-3
512KB	Eight 64K*8	32 pins/chip	1-2

* J6 always on 1-2
* J8 always on 2-3
* All the standard SRAM must be 3.3V output. Please contact the *MANUFACTUR* if upgrades for the SRAMs are needed.

Installation of 2nd Level Cache Memory



256 KB Cache
Use 32K*8 SRAM's

512 KB Cache
Use 64K*8 SRAM's

3.7 Synchronouse SRAM Cache Memory

The synchronous SRAM can not be upgraded. Standard SRAM and Synchronous SRAM can not be installed at the same time. Once installed with the Synchronous SRAM, the standard SRAM must be removed.

The table below is the configuration sizes of the SRAM:

SRAM Cache Size	Number and Size	J7
256 KB	Four 32K*18	2-3
512KB	Four 64K*18	1-2

* J8 needs to be on 1-2

3.8 CMOS RTC & EISA CFG SRAM

CMOS RTC includes an internal battery and Real Time Clock circuit. It provides the date and the time to the system. CFG SRAM is used to keep information of EISA device configuration for automatic system bootup. Normally the life time of a RTC internal battery is 10 years. when replacing, you should use the same model.

3.9 Speaker Connector Installation

S1462 provides a 4-Pin header J19 to connect the speaker. The polarity can go either way.

3.10 Turbo Switch J16

Most case's panel has a turbo switch to control system speed. Slower execution speed is required for the programs developed for the old XT.

Because Pentium cannot slow its clock speed on the fly, S1462 uses simulation method to implement TURBO switching function. The J12 on the mainboard should be connected to the TURBO switch on case panel.

3.11 Turbo LED Connector Installation

The TURBO LED on panel can indicate the current speed states of system. The TURBO LED connector should be installed to J17 in the correct direcion.

3.12 Hardware Reset Switch Connetor Installation

The RESET switch on panel provides users with the HARDWARRE RESET functinon which is almost the same as power on/off. The system will do a cold start after the RESET switch is pushed by the user. The RESET switch is a 2 PIN connector and should be installed to J20 on mainboard.

3.13 Flash EPROM-Jumper J18

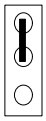
S1462 uses flash memory to store BIOS program. It can be updated as new BIOS versions become available. The flash utility will guide you through the process step by step. In some special cases, a non-programmable EPROM is used on board.

J18 determines which type of EPROM is used. Short 2-3 for 5V flash chip or EPROM. Short 1-2 for 12V flash chip. J18 is factory set to match the on board BIOS chip. **Please do not alter this Jumper.**

J18: BIOS CHIP SETTING

Pins
1
2
3

5Volt Flash Chip or non programmable EPROM



12Volt flash Chip

3.14 Peripheral Device Installation

After controller jumpers setup, the mainboard can be mounted onto the case. Then install the peripheral controller, display interface, and the disk controller.

If the PCI-Bus device is to be installed in the system, any one of the four PCI-Bus slots can be used no matter Slave or Master PCI-Bus device being installed.

If the EISA-Bus drivers is to be installed in the system, only four Bus-Master devices can be installed. EISA slot 1 or slot 5, slot 2, slot 3 and slot 4.

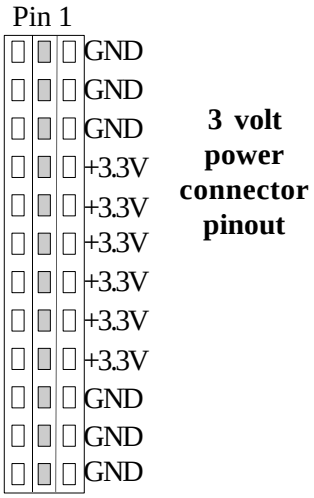
After installing the peripheral controller, the user should check everything again, and prepare to power-on the system.

3.15 Turbo / Deturbo by keyboard

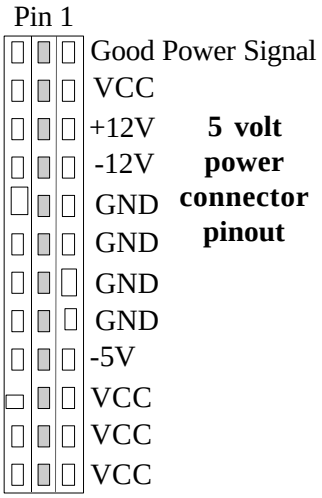
press <Ctrl> + <Alt> + [-] : turn off turbo function.
press <Ctrl> + <Alt> + [+] : turn on turbo function.

3.16 Connecting the Power Supply

There are two system power supply connectors on the mainboard. One is for a 5 volt power supply, and the other is used for the 3.3 volt power supply. If the power suply in a 3.3 volt mode, you can connect the leads to the 3.3 volt connector. If the supply provides 5 volts only, you must connect the leads to the 5 volt connector. Set the J29 on the "on" position.



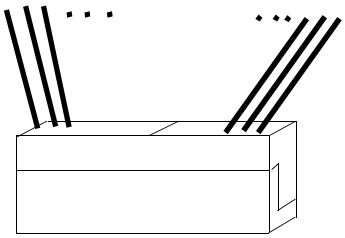
3 volt power connector pinout



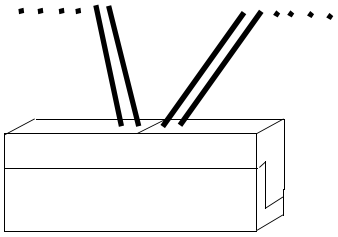
5 volt power connector pinout

To connect the leads from either voltage power supply, you should first make sure the power supply is unplugged. Most power supplies have two leads. Each lead has six wires, two of which are black. Orient the connectors so the black wires are in the middle of the 5V power supply and for the 3.3V the black wires are on the outside.

Align the plastic guide pins on the lead to their receptacles on the connector. You may need to hold the lead at an angle to line it up.Once you have the guide pins aligned, press the lead connector so that the plastic clips on the lead snap into place and secure the lead to the connector.



Connecting power supply for 3.3V



Connecting power supply for 5V

4. BIOS Configuration

Award's BIOS ROM has a built in setup program that allows the user to modify the basic system's configuration. This type of information is stored in the battery-backed CMOS SRAM so that it retains the Setup information

4.1. Entering Setup

Power ON the computer and press <Del> immediately will allow you to enter Setup. The other way to enter setup is to power on the computer, when the below message appears briefly at the bottom of the screen during the post (Power On Self Test), press <Del> key or simultaneously press <Ctrl>, <Alt>, and <Esc> keys.

* TO ENTER SETUP BEFORE BOOT PRESS CTRL-ALT-ESC OR DEL KEY

If the message disappears before you respond and you wish to enter Setup, restart the system by turning it OFF then ON or by pressing "Reset" on the bottom of the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Del> keys. If you do not press the keys at the correct time and the system will not boot and an error message will appear on the screen,
You will be asked to,

* PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP.

Figure 4.1 will appear on the sceen. The main Menu allows you to select from the 7 setup functions and 2 exit choices. Use the arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

* If not necessary, please don't use De-turbo Mode. (Always keep system in turbo mode)

4.2. Control Keys

PgUp key	Increses the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Change color form total of 16 colors
F3 key	Calendar, only for Status Page Setup Menu
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load default
F8 key	Reserved
F9 key	Reserved
F10 key	Save all COMS changes, only for Main Menu

4.3. Getting Help

4.3.1. Main Menu

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

4.3.2. Setup Page menu/Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc>.

4.4. The Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The Main Menu allows you to select from the seven setup functions and 2 exit choices. Use the arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

Figure 4.1: Main Menu

ROM EISA BIOS (2B597G00)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	PASSWORD SETTING
BIOS FEATURED SETUP	IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP	SAVE & EXIT SETUP
PCI SLOT CONFIGURATION	EXIT WITH OUT SAVING
LOAD BIOS DEFAULTS	
LOAD SETUP DEFAULTS	
ESC : Save & Exit Setup F10 : Quit	↑ ↓ → ← :Select Item (Shift)F2 :Change Color
Time, Date, Hard Disk Type,.....	

*** Standard CMOS setup**
This setup page includes all the items in a standard compatible BIOS.

*** BIOS features setup**
This setup page includes all the items of Award's special enhanced features.

*** Chipset features setup**
This setup page includes all the items of chipset special features.

*** PCI slot configuration**
This setup page includes the configurations of PCI slot parameters.

*** Load setup defaults**
BIOS defaults indicate the most appropriate values of the system parameter for your system.

*** Password setting**
Change, set, or disable password. It allows you to limit access to the system and Setup, or just the setup.

*** IDE HDD auto detection**
Automatically configure hard disk parameters.

*** Save and exit setup**
Save CMOS value changes to CMOS and exit setup

*** Exit without saving**
Abandon all CMOS value changes and exit setup.

4.5. Standard CMOS Setup Menu

The items in Standard CMOS Setup Menu (Figure 4.2) are divided into 9 categories. Each category includes no, one or more than one setup items. Use the arrows to highlight the item and use the <PgUp>or <PgDn> keys to select the value you want in each item.

Figure 4.2: Standard CMOS Setup Menu

```
                    ROM EISA BIOS (2B597G00)
                    STANDARD CMOS SETUP
                    AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Tue, Dec 7 1993
Time (hh:mm:ss) : 18 : 1 : 38

                    CYLS. HEADS. PRECOMP. LANDZONE SECTORS
Drive C : 1 (10 Mb)  306    4      128      305      17
Drive D : None (0 Mb)  0    0       0        0       0

Drive A : 1.44 M, 3.5 in.
Drive B : 1.2 M, 5.25 in.

Video   : EGA/VGA

Halt On : All errors

                                  Base Memory:      640 K
                                  Extended Memory:  7168 K
                                  Expanded Memory:  0 K
                                  Other Memory:     384 K

                                  Total Memory:     8192 K

ESC:  Quit          ↑→↓←  : Select Item     PU/PD/+/-:  Modify
F1:   Help          (Shift)F2: Change Color  F3: Toggle Calendar
```

* Date

The date format is <day>, <date>, <year>. Press <F3> to show the calendar.

* Time

The time format is <hours>, <minutes>, <seconds>. The time is calcu lated based on the 24-hour military-time clock. For example 1 p.m. is 13:00:00.

Day	The day, from Sun to Sat, Determined by the BIOS and is in display mode only.
Date	The date, from 1 to 31 (or maximum allowed in a month
Month	The month, Jan to Dec.
Year	The year, from 1900 to 2099

*** Drive C type/Drive D type**

The category identifies the types of hard disks, C or D drive that have been installed in the computer. There are 46 predefined types and a user definable type. Type 1 through 46 are predefined. Type User is user-defin able.

Press PgUp or PgDn to select a numbered hard disk type or type a number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter the improper information for this category. If your hard disk type is not listed, you can Type User to define your own drive manually.

If you select Type User, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. The hard disk information should be provided in the documentation from your hard disk vendor or the system manufacturer.

CYLS	number of cylinders
HEADS	number of heads
PRECOMP	writen precom
LANDZONE	landing zone
SECTORS	number of sectors

If a hard disk has not been installed, select NONE and press <Enter>.

*** Drive A type/Drive B type**

This category identifies the types of floppy disk drives A or drive B, that have been installed in the computer.

None	No floppy drive installed
360K, 5.25 in.	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M,5.25 in.	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5 in.	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5 in.	3-1/2 inch double-sided drive; 1.44 megabyte capacity
2.88M, 3.5 in.	3-1/2 inch double-sided drive; 2.88 megabyte capacity

*** Video**

This category detects the type of adapter used for the primary system monitor that must match your video display card monitor. Although secondary monitors are supported, you do no have to select the type in setup.

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SVGA, or PGA monitor adapters.
CGA 40	Clolr Graphics Adapter, power up in 40 column mode.
CGA 80	Color graphics Adapter, power up in 80 column mode.
MONO	Monochrome adapter, includes high resolution monochrome

*** Halt On**

The category determines whether the computer will stop if an error is detected during power up.

No errors	Whenever the BIOS has detected a non-fatal error, the system will be stoped and you will be prompted.
All errors	The system boot will not be stopped for any errors that may be detected.
All, but keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, but Diskette	The system boot will not stop for disk errors; it will stop for all other errors.
All, but Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors

*** Memory**

The category is for display-only and it is determined by POST Power On Self Test of the BIOS.

Base Memory

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard, or 640K for systems with 640K or more memory installed on the motherboard.

Extended Memory

The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1MB in the CPU's memory address map.

Expanded Memory

Expanded Memory is the memory defined by Lotus/Intel/ Microsoft (LIM) standard as EMS. Many standard DOS applications can not utilize memory above 640K, the Expanded Memory Specification (EMS) swaps memory not used by DOS with a section, or frame, so these applications can access all of the system memory. Memory can be swapped by EMS is usually 64K within 1MB or memory above 1MB, depends on the chipset design.

Expanded Memory device driver is required to use memory as expanded memory.

Other Memory

This refers to memory located in the 640K to 1024K ad dress space. This memory can be used for different applications. DOS uses this area to load device drivers to keep as muny convention memory free for application pro grams as posible. Most use for this area is Shadow RAM.

4.6. BIOS FEATURES SETUP

ROM EISA BIOS
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

Virus Warning	:Enabled
CPU Internal Cache	:Enabled
External Cache	:Enabled
Boot Sequence	:A,C
Swap Floppy Drive	:Disabled
Boot Up Floppy Seek	:Enabled
Boot Up NumLock Status	:On
IDE HDD Block Mode	:Enabled
Gate A20 Option	:Fast
Typematic Rate Setting	:Disabled
Typematic Rate (Chars/sec)	:6
Typematic Delay (msec)	:250
Security Option	:Setup

SYSTEM BIOS Shadow	:Enabled
Video BIOS Shadow	:Enabled
C8000-CBFFF Shadow	:Disabled
CC000-CFFFF Shadow	:Disabled
D0000-D3FFF Shadow	:Disabled
D4000-D7FFF Shadow	:Disabled
D8000-DBFFF Shadow	:Disabled
DC000-DFFFF Shadow	:Disabled

ESC :Quit ↑↓→← :Select Item

F1 :Help PU/PD/+/- :Modify
F5 :Old Values (Shift)F2 :Color
F6 :Load BIOS Defaults
F7 :Load Setup Defaults

*** Virus warning**

This category flashes on screen. During and after the system boot up, any attempt to write to the boot sector or the partition table of the hard disk drive will halt the system and the following error message will appear. In the mean time, you can run an anti-virus program to locate the problem. Default value is Enabled.

Enabled	Activate automatically when the system boots up causing a warning message to appear when anything attemps to access the boot sector or hard disk partition table.
Disable	No warning message to appear when anything attemps to access the boot sector or hard disk partition table.

*** CPU Internal Cache/External Cache**

These two categories speed up the memory access. However, it de pends on the CPU/Chipset design. The default value is Enabled.

Enabled	Enables the cache
Disabled	Disables the cache

*** Boot Sequence**

This category determines which drive the computer searches first for the disk operating system (i.e. DOS). Default value is A,C.

A,C	System will first search for floppy disk drive then hard disk drive.
C,A	System will first search for hard disk drive then floppy disk drive

*** Swap Floppy Drive**

The default value is disabled

Enabled	Floppy A & B will be swapped under DOS
Disable	Floppy A & B will be normal definition.

*** Boot Up Floppy Seek**

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 720K, 1.2M and 1.44M are all 80 tracks. The default is Enabled

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks, note that the BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks
Disabled	BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning messages if the drive installed is 360K

*** Boot Up NumLock Status**

The default Value is On

On	Keypad is number keys
Off	Keypad is arrow keys

*** IDE HDD Block Mode**

The default value is enabled

Enabled	Enable IDE HDD Block Mode
Disabled	Disable IDE HDD Block Mode

*** Gate A20 Option**

Gate A20 controls the ability to access memory addresses above 1 MB by enabling (Fast) or disabling (Normal) access to the processor.

*** Typematic Rate Setting, Typematic Rate (char/sec), and Typematic Delay.**

Typematic Rate Setting enables or disables the following two options. Typematic Rate (6, 8, 10, 12, 15, 20, 24, or 30 characters per second) and Typematic Rate Delay (250, 500, 750, or 1000 milliseconds) control the speed at which the keystroke is repeated. The selected character is displayed when a key is held down after a delay set by the TypematicRate Delay. It then repeats at a rate set by the Typematic Rate Value.

*** Security Option**

This category allows you to limit access to the system setup, or just setup. The default value is 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 password is not entered at the prompt

*** System BIOS Shadow, and Video BIOS Shadow**

It determines whether System or Video BIOS will be copied to RAM, however, it is an optional chipset design. The default is enabled.

4.7 Chipset Features Setup

This screen controls the settings for the board's chip set. The controls for this screen are the same as the previous screen.

The Chipset Features Screen

```
                    ROM EISA BIOS
                CHIPSET SETUP UTILITY
               AWARD SOFTWARE, INC.

CPU To DRAM Write Buffer     :Enabled     Memory Hole Start Address  :15 MB
CPU To PCI Write Buffer      :Enabled     Memory Hole Size           :Disabled
System BIOS Cachable         :Enabled     NCR SCSI Controller        :Disabled
Video BIOS Cachable          :Enabled
Cache Write Policy           :Wr-Back
PCI-To-PCI Byte Merge        :Disabled
VGA 128K Range Attribute     :Disabled

                                          ESC :Quit      ↑↓→← :Select Item

                                          F1   :Help     PU/PD/+/- :Modify
                                          F5   :Old Values  (Shift)F2 :Color
                                          F6   :Load BIOS Defaults
                                          F7   :Load Setup Defaults
```

* **CPU To DRAM Write Buffer**
  This is the Optimum setting for this mainboard.
* **CPU To PCI Write Buffer**
  this is a performance enchancement feature. The "Disabled" setting will significantly reduce performance.
* **System BIOS Cacheable, and Video BIOS Cacheable**
  These settings make the system and video BIOSes cached.
* **Cache Write Policy**
  Write back is the optimum setting for this mainboard.
* **PCI-To-PCI Byte Merge, and VGA 128K Range Attribute**
  The default set is "Disabled".
* **Memory Hole Start Address**
  The Address range is 1-15MB. This is the optimum setting for this board's performance. Do not change it.
* **Memory Hole Size**
  There are two options "Disabled", and "1MB".
* **NRC SCSI Controller**
  If you are using NCR 810 SCSI devices, set the onboard NCR SCSI Controller to "Enabled". If you are using a separate SCSI controller card, make this function to "Disabled"

4.8 PCI Slot Configuration

ROM EISA BIOS
PCI SLOT CONFIGURATION
AWARD SOFTWARE, INC.

Slot1 Using INT# : INTA Slot2 Using INT#: INTB Slot3 Using INT#: INTC Slot4 Using INT#: INTD 1st Available IRQ#: 10 2rd Available IRQ#: 11 3rd Available IRQ# 12 4th Available IRQ# 9 PCI IRQ Actived By: Level PCI IDE IRQ Map To: Primary IDE INT#: Secondary IDE INT#:	ESC: Quit ↑ ↓ → ← :Select Item F1 : Help PU/PD/+/- :Modify F5 : Old Values (Shift)F2 :Color F6 : Load BIOS Defaults F7 : Load Setup Defaults

* PCI Slot 1/Slot 2/Slot 3/slot 4 INT#

* For Default Setting.

	Connect to PCI System INT#
PCI Slot1 INTA	INTA
PCI Slot1 INTB	INTB
PCI Slot1 INTC	INTC
PCI Slot1 INTD	INTD
PCI Slot2 INTA	INTB
PCI Slot2 INTB	INTC
PCI Slot2 INTC	INTD
PCI Slot2 INTD	INTA
PCI Slot3 INTA	INTC
PCI Slot3 INTB	INTD
PCI Slot3 INTC	INTA
PCI Slot3 INTD	INTB
PCI Slot4 INTA	INTD
PCI Slot4 INTB	INTA
PCI Slot4 INTC	INTB
PCI Slot4 INTD	INTC

***1st Available IRQ#**
***2nd Available IRQ#**
***3rd Available IRQ#**
***4th Available IRQ#**
Select four Available IRQs assigned to PCI slots INT

***PCI IRQ Actived By:**
Select the PCI IRQ Active scheme either LEVEL or EDAGE. Default is LEVEL.

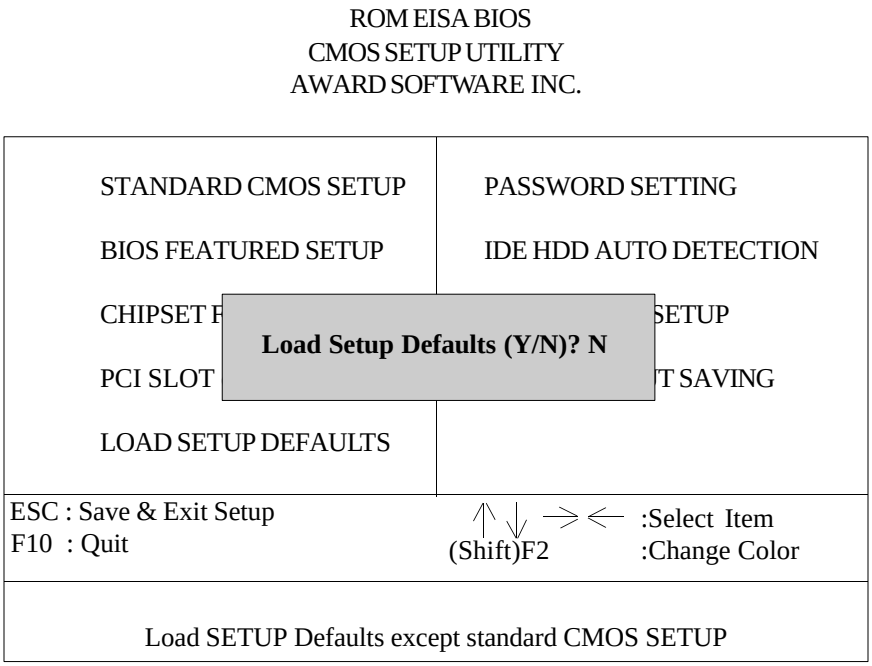
***PCI IDE IRQ Map To:**
Select the IDE IRQ Map to ISA IRQ#

***Primary IDE INT#**
Select the Primary IDE disk controller uses the PCI INT#.

***Secondary IDE INT#**
Select the Secondary IDE Disk Controller uses the PCI INT#

* If you use FOUR NCR 810/825 SCSI-PCI cards in the system, you need to assign IRQ 10 for the card that is in slot 1. In the same way, assign IRQ 11 for the card in slot 2, assign IRQ12 for the card in slot 3, and assign IRQ 9 for the card in slot 4. However, no matter which slot the SCSI-PCI card was inserted, you should set INT A to enabled SCSI-PCI card itself. The system will automatically assign those IRQs to INTA, INTB, INTC and INTD.

4.9. LOAD SETUP DEFAULTS



*** Load SETUP defaults**
To load SETUP default values to CMOS SRAM, enter "Y". If not, enter "N"

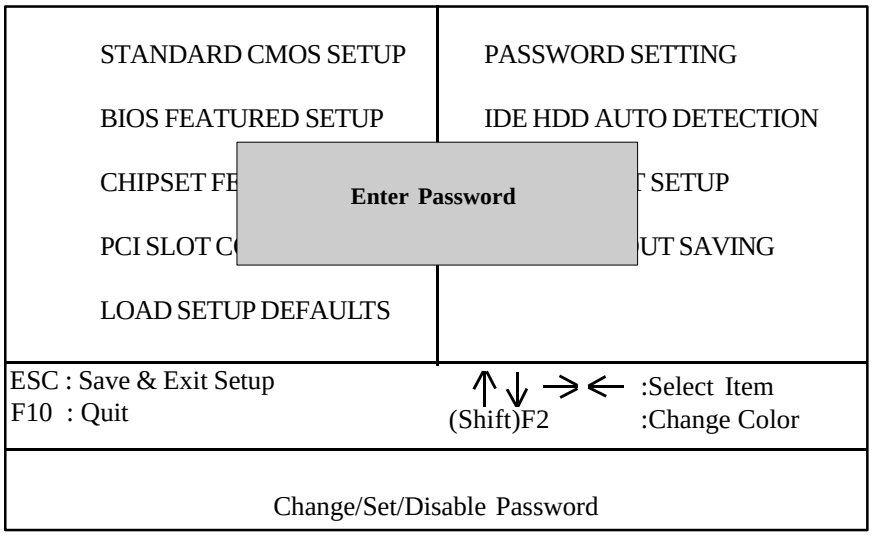
* If any problem has occurred, loading SETUP DEFAULTS step is recommended.

4.10. PASSWORD SETTING

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

RAM EISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.



Type the password, up to eight characters, and press <Enter>. The password typed now will clear the previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also just press <Esc> to abort the selection and not enter a password.

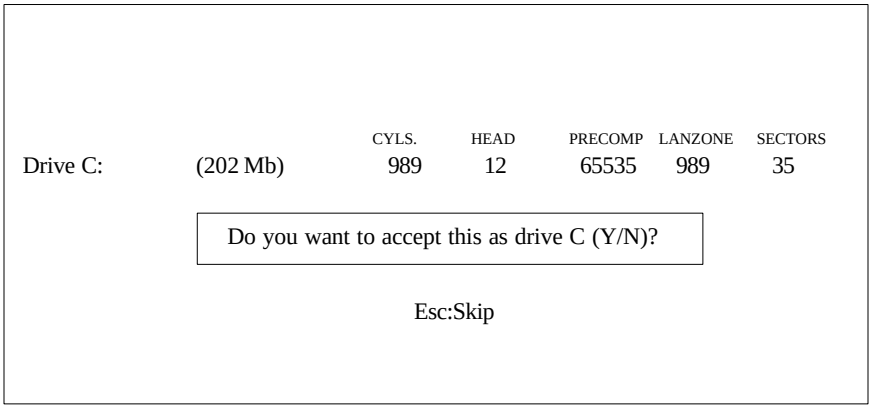
To disable the password, just press <Enter> when you are prompted to enter a password. A message will confirm that the password has been disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED

If you select System at Security Option of BIOS Features Setup Menu, you will be prompted for the password every time the system is rebooted or any time you try to enter setup. If you select Setup at Security Option of BIOS Features Setup Menu, you will be prompted only when you try to enter setup.

4.11. IDE HDD AUTO DETECTION

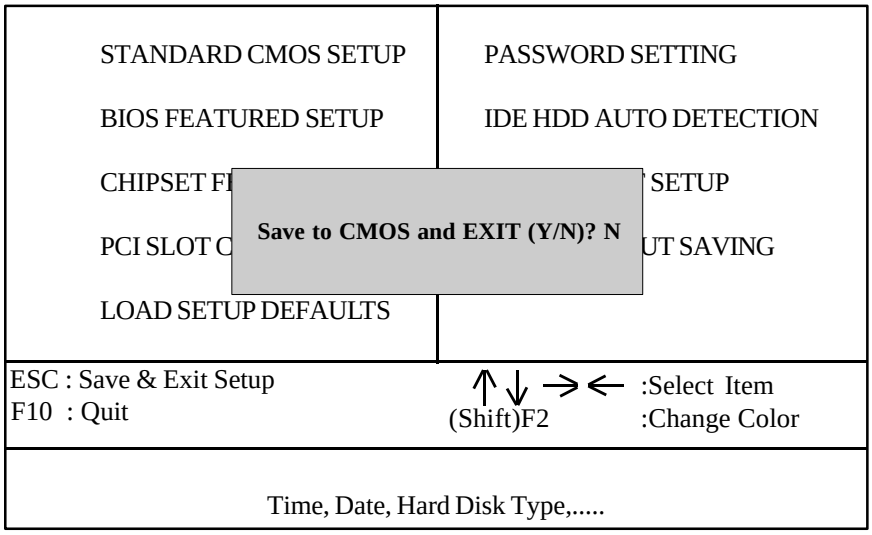
ROM EISA BIOS (2B597G00)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.



Type "Y" to accept the H.D.D parameter reported by BIOS. Type "N" to keep the old H.D.D parameter setup.

4.12. SAVE & EXIT SETUP

ROM EISA BIOS (2B597G00)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.



Type "Y" will quit the Setup Utility and save the user setup value to RTC CMOS SRAM. Type "N" will return to Setup Utility.

4.14. KEYBOARD SETTING FUNCTION

After booting the O.S., there are some special functions used by the keyboard as follows:

"CTRL_ALT_DEL" -Pressing these keys simultaneously will cause the system to WARM START (Soft Reset)

"CTRL_ALT_[+]" -Pressing these key simultaneously will change the system speed to high speed (Turbo, all cache memory enable)

5.0 AMIBIOS and WINBIOS

WINBIOS Setup has a graphical user interface that permits mouse access , and is so compact that it can reside on the same ROM as the system BIOS. The system configuration parameters are set via WINBIOS Setup. Since WINBIOS Setup resides in the ROM BIOS, it is available each time the computer is turned on.

The WINBIOS Setup consists of the following option groups:

1. Set-up

.Standard Set-up
.Advanced Set-up
.Chipset Set-up

2.Utility

. Detected Master
. Detected Slave
. Color Set

3. Security

. Password
. Anti-Virus

4. Default

. Original
. Optimal
. Fail Safe

5.1 Standard Setup Options

Date, Day and Time Configuration

Select the Standard Option, Select the Date and Time Icon. The current values for each category are displayed. Enter new value through the keyboard.

Primary Master
Primary Slave
Select one of these hard disk drive Icons to configure the drive named in the option. WINBIOS supports up to four IDE hard disk drives: the primary master, primary slave, secondary master and secondary slave. If the hard disk drive is an IDE drive, select DETECT PRIMARY or DETECT SLAVE from the Utility Setup Option Section of the WINBIOS Setup Main Menu to have WINBIOS automatically detect the IDE drive parameters and report them to this screen.
The SCSI must be selected if SCSI Disk Drive was connected.

You can also enter the hard disk drive parameters. Hard disk type 47 is the user-definable drive type. The drive parameters are: Type, Cylinders, Heads, Write precompensation, Landing Zone, Sectors and Capacity.

Floppy Drive A:
Floppy Drive B:
Move the cursor to these fields via up and down arrow key and select the floppy type. The setting are 360 KB 5 1/4 inch, 1.2MB 5 1/4 inch, 720MB 3 1/2 inch,and 1.44MB 3 1/2 inch.

5.2 Advanced Setup

The WINBIOS Setup options decribed in this section are selected by choosing the Advanced Setup Icon from the WINBIOS Setup Main Manu.

Typematic Rate (Chars/Sec)
Set the rate at which characters on the screen repeat when a key is pressed and held down. The Optimal setting is 30 characters per second. The Fail-Safe default setting is disabled.

System Keyboard
Specify if error messages are displayed if a keyboard is not attacted. This option permits you to configure workstations with no keyboards. The Optimal and Fail-Safe defalt settings are Present.

Primary Display

Configure the type of monitor attached to the computer. The Optimal and Fail-Safe default settings are VGA/EGA

Above 1 MB Memory Test

When Enabled, the BIOS memory test is performed on all system memory. When this option is set to Disable, the memory test is done only on the first 1 MB of system memory. The Optimal and Fail-Safe default settings are Enable.

Memory Test Tick Sound

Enable (turn on) or Disable (turn off) the ticking sound during the memory test. The Optimal and Fail-Safe default settings are Enable.

Hit "DEL" Message Display

Enable (turn on) or Disable (turn off) the display message during the system boot-up. Optimal and Fail-Safe default settings are Enable.

Extended BIOS RAM Area

Specify this option if the top 1 KB of the system programming area begins at 639KB or 0:300 in the system BIOS area if the low memory will be used to store hard disk information. The Optimal and fail-Safe default settings are 0:300.

Wait For "F1" If Any Error

Enable or Disable, if any system error occur, "F1" key needs to be pressed for futher process. Optimal and Fail-Safe default settings are Enable.

System Boot Up Num Lock

When turn ON, this option turns off NUM LOCK when the system is powered on so the end user can use the arrow keys on both the numeric keypad and the keyboard. The Optimal and Fail-Safe default settings are ON.

Floppy Driver Seek At Boot
When Enabled, WINBIOS performs a Seek command on the floppy drive A: before booting the system. The Optimal and Fail-Safe default settings are Enable.

Floppy Driver Swapping
The settings are Enable or Disable. The Optimal and Fail-Safe default settings are Disable.

System Boot up Sequence
Set the sequence of boot drives (either floppy drive A: or hard disk drive C: Primary Master) in which the WINBIOS attempts to boot from after POST completes. The Optimal and Fail-Safe dault settings are A: C:

Cache Memory
Enable or Disable the internal and/or L2 cache. The Optimal default setting is Both. The Fail-Safe default setting is Disable.

Adapter Shadow Cacheable
Enable or Disable the cacheability of the shadowed adapter ROM area. The Optimal and Fail-Safe default settings are Disable.

System BIOS Shadow Cacheable
Enable or Disable the cacheability of the syetm, ROM BIOS in the F0000h memory segment. This segment is always shadowed to RAM. The Optimal default setting is Enable. The Fail-Safe default setting is Diasable.

Password Checking
Enables the passwaord check option every time the system boots or the end user run setup. If Always is chosen, a user password prompt appears every time the computer is turned on. If Setup is chosen, the password prompt appears if WINBIOS is executed. The Optimal and Fail-Safe default settingsare Disable.

Video Shadow C000, 32K

When Enabled, the video ROM areas from C0000h-C7FFFh are copied (Shadowed) to RAM for faster execution. The Optimal and Fail-Safe default settings are Disable.

Shadow C8000, 16K
Shadow CC000, 16K
Shadow D0000, 16K
Shadow D4000, 16K
Shadow D8000, 16K
Shadow DC000, 16K

Enables shadowing of the contents of the ROM area named in the option title. Those options are for the adaptor ROM on ISA or EISA adapter cards only which should not be shadowed unless so indicated by the card manufacturer. Adaptor ROMs all PCI adapter cards are automatically shadowed to RAM by WINBIOS. The setting is Shadow or Disabled.

IDE Block Mode

Specify the IDE Drives attached to the system that support the BLOCK Mode. Select Auto, 2, 4, 8, 16, 32,or 64S/B. Optimal and Fail-Safe default settings are AUTO.

Primary Master LBA Mode

Specify the IDE drive attechd to primary IDE controller that support the LBA mode. The Optimal and fail-Safe default settings are Enable.

Secondary Master LBA Mode

Specify the IDE drives attechd to Secondary IDE controller that support the LBA mode. The Optimal and fail-Safe default settings are Disabled.

.

5.3 Chipset Setup

The WINBIOS Setup Options described in this section are selected by choosing the Chipset Setup Icon from the WINBIOS Setup main menu.

Base Memory Size
This option specifies the size of the base memory. The Optimal and Fail-Safe default settings are 640KB.

VGA Palette Snooping
Set to Enable if the computer has an ISA adapter card that requires palette snooping. The Optimal and fail-Safe default settings are Disabled.

PCI IDE Card Present IN
Specify the PCI expansion slot where the external IDE controller is installed. The setting are Absent, Slot1, Slot2, Slot3 and Slot4. The Optimal and Fail-Safe Default settings are Absent.

PCI IDE IRQ Connected To
Specify the PCI IDE IRQ is connected to. The Optimal and Fail-Safe defaults are INTA.

INTA IRQw
INTB IRQx
INTC IRQy
INTD IRQz
Specify the PCI interrupt, INTA, INTB, INTC and INTD, connected to which IRQ number.

5.4 Utility Setup

The WINBIOS Setup Options described in this section are selected by choosing the Utility Setup Icon

Dectect Master

When select this ICON, the WINBIOS will do the automatically dectect of the Master IDE disk drive parameters and report to Standard Setup Primary Master Manu.

Dectect Slave

When select this ICON, the WINBIOS will do the automatically dectect of the Slave IDE disk drive parameters and report to Standard Setup Primary Slave Manu.

Color Set

Use this Icon to select WINBIOS Screen Color setting.

5.5 Security Manu Option

The WINBIOS Setup Options described in this section are selected by choosing the Security Setup Icon

Password

Use this Icon to Setup the Password for the system

Anti-Virus

Enable or Disable the Anti-Virus option for the BIOS

5.6 Default Manu Option

There are three Default settings for the Setup Option: Original, Optimal and Fail-Safe .

Original Setting

Use the Original Setting for the BIOS.

Optimal Setting

The Optimal default setting is the best-case values that should optimize system performance. If CMOS RAM is corrupted, the Optimal setting is loaded automatically.

Fail-Safe Setting

The Fail-Safe settings provide far from optimal system performance, but are the most stable settings. Use this option as a diagnostic aid if the system is behaving erratically

6.0 EISA CONFIGURATION UTILITY

The Extended Industry Standard Architecture (EISA) Configuration Utility (ECU) is a software utility for doing system configuration. The advantage of using this ECU is that it helps the EISA system to generate it's configuration settings automatically without conflict and provides information to the user for the current settings and switches.

To run ECU utility, insert the ECU diskette into the floppy drive and then type

CFG [Enter]

A ECU Setup Program will show on screen, following each step to complete the ECU Setup.

7.0 Flash Writer Utility (Award)

Your mainboard comes with a utility to upgrade the BIOS. The BIOS is stored on a 'flash' EPROM BIOS ROM chip on the mainboard that can be erased and reprogrammed. This is what the Flash Memory Writer (FMW) utility does. The utility is in the "Flash" directory on the support floppy disk that comes with the mainboard. You will find three files in the directory.

FLASH12.EXE	-The Flash Memory Writer utility for 12V
FLASH5.EXE	-The Flash Writer utility for 5V
README	-A text file of instructions
S62AWXX.BIN	-XX-A 2-digit version number.

Flash memory writer records (or 'programs') a new BIOS onto the flash memory chip.

The BIOS file on the support disk may be newer than the BIOS on the mainboard, so you may want to update your BIOS right away.

To reprogram the System BIOS, you must first do the following:

1. Check the jumper J18 setting.

   For “5V Flash EPROM”, short pins 2 & 3 on J18.

   For 12V Flash EPROM, short pins 1 & 2 on J18

   The standard version of this mainboard uses a 12 volt flash chip.

2. Make sure the CPU is running on the ‘real mode’.

   FMW will not run if the CPU is operating in a protected or virtual mode. This means that you can not run it with Windows running or with any memory manager software. You must disable any memory manager software first. The easiest way to do this is to:

   a. Boot your system from a bootable floppy disk with no CONFIG.SYS or AUTOEXEC.BAT files, and then run Flash Memory Writer from a backup copy of your support disk. You can make your back-up floppy bootable when you format it, and use one disk for both purposes.

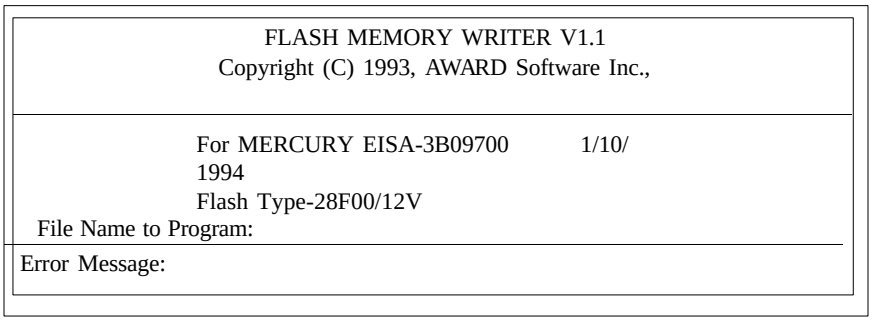
   b. If you are using MS-DOS 6.x, you can use the feature that allows you to confirm or abort each line of the CONFIG.SYS file. You do this while pressing <F8> while the “Starting MS-DOS...” line is on the screen.

   There are other ways to accomplish the same result. The main point is to make sure no memory managers are running. If you are not sure, try running FMW. If it runs, then you have suc ceeded. If it displays a warning message about the CPU mode, you will have to try again.

Once you have satisfied the two requirements mentioned above, you can run FMW. You can copy the contents of the “Flash” directory to your hard drive, or you can the utility from a backup of the support floppy disk. Make sure the new BIOS file is in the same directory as the FMW utility.

To run FMW, change to the “Flash” directory if you are not already in it. Type “Flash12” at the DOS command line and press the <Enter> key. The following screen will appear.

7.2 The Flash Memory Writer Utility Screen (Award)



When you type in the whole file name, e.g. A52AW10.BIN and confirm that you want to program the BIOS. The utility will then ‘Blank’, ‘Erase’, and then ‘Program’ the flash memory on the mainboard with the new BIOS file. So you better choose “yes” to save the original system BIOS to a floppy diskette before you program the new BIOS. This leaves you with a backup of your original BIOS in case you need to re-install it. This option is highly recommended. If you can not sucessfully program the BIOS file for whatever reason, re-install you original BIOS from the backup file.

Warning: If you do not successfully install a complete BIOS file in the flash memory on the Mainboard, your system may not be able to boot. If this happens, it will require service by your system vendor. Follow the requirements and instruction in this section precisely to aviod inconvienience.

8.0 AT TECHNICAL INFORMATION

8.1 I/O BUS CONNECTOR PIN OUT

81.1 ISA SLOT PIN OUT

GND	B01	A01	-I/O CH CHK	-MEMC16	D01	C01	SBHE
RESET	B02	A02	SD07	-I/OCS16	D02	C02	LA23
+5V	B03	A03	SD06	IRQ10	D03	C03	LA22
IRQ9	B04	A04	SD05	IRQ11	D04	C04	LA21
-5V	B05	A05	SD04	IRQ12	D05	C05	LA20
DRQ2	B06	A06	SD03	IRQ15	D06	C06	LA19
-12V	B07	A07	SD02	IRQ14	D07	C07	LA18
0WS	B08	A08	SD01	-DACK0	D08	C08	LA17
+12V	B09	A09	SD00	DRQ0	D09	C09	-MEMR
GND	B10	A10	-I/O CH RDY	-DACK5	D10	C10	-MEMW
-SMEMW	B11	A11	AEN	DRQ5	D11	C11	SD08
-SMEMR	B12	A12	SA19	-DACK6	D12	C12	DS09
-IOW	B13	A13	SA18	DRQ6	D13	C13	DS10
-IOR	B14	A14	SA17	-DACK7	D14	C14	DS11
-DACK3	B15	A15	SA16	DRQ7	D15	C15	DS12
-DRQ3	B16	A16	SA15	+5V	D16	C16	DS13
DACK1	B17	A17	SA14	-MASTER	D17	C17	DS14
DRQ1	B18	A18	SA13	GND	D18	C18	DS15
-REFRESH	B19	A19	SA12				
BCLK	B20	A20	SA11				
IRQ7	B21	A21	SA10				
IRQ6	B22	A22	SA09				
IRQ5	B23	A23	SA08				
IRQ4	B24	A24	SA07				
IRQ3	B25	A25	SA06				
-DACK2	B26	A26	SA05				
T/C	B27	A27	SA04				
BALE	B28	A28	SA003				
+5V	B29	A29	SA02				
OSC	B30	A30	SA01				
GND	B31	A31	SA00				

8.1.2. EISA SLOT PIN OUT

GND	F01	E01	-CMD
+5V	F02	E02	-START
+5V	F03	E03	EXRDY
NC	F04	E04	-EXE32
NC	F05	E05	GND
NC	F07	E07	-EX16
NC	F08	E08	SLBURST
+12V	F09	E09	MSBURST
M-IO	F10	E10	W-R
-LOCK	F11	E11	GND
NC	F12	E12	NC
GND	F13	E13	NC
NC	F14	E14	NC
-EBE3	F15	E15	GND
-EBE2	F17	E17	-EBE1
EBE0	F18	E18	LA31
GND	F19	E19	GND
+5V	F20	E20	LA30
-LA29	F21	E21	LA28
GND	F22	E22	LA27
-LA26	F23	E23	LA25
-LA24	F24	E24	GND
LA16	F26	E26	LA15
LA14	F27	E27	LA13
+5V	F28	E28	LA12
+5V	F29	E29	LA11
GND	F30	E30	GND
LA10	F31	E31	LA9

LA8	H01	G01	LA7
LA6	H02	G02	GND
LA5	H03	G03	LA4
VCC	H04	G04	LA3
LA2	H05	G05	GND
SD16	H07	G07	SD17
SD18	H08	G08	SD19
GND	H09	G09	SD20
SD21	H10	G10	SD22W
SD23	H11	G11	GND
SD24	H12	G12	SD25
GND	H13	G13	SD26
SD27	H14	G14	SD28
SD29	H16	G16	GND
+5V	H17	G17	SD30
+5V	H18	G18	SD31
-HMACK	H18	G18	-HMERQX

8.1.3. PCI-BUS SLOT PIN OUT

-12V	A01	B01	NC
NC	A02	B02	+12V
GND	A03	B03	NC
NC	A04	B04	NC
VCC	A05	B05	VCC
VCC	A06	B06	INT#A
INTB#	A07	B07	INT#C
INTD#	A08	B08	VCC
PST#1	A09	B09	NC
NC	A10	B10	VCC
PST#2	A11	B11	NC
GND	A12	B12	GND
GND	A13	B13	GND
NC	A14	B14	NC
GND	A15	B15	RST#
CLK	A16	B16	VCC
GND	A17	B17	GNT#
REQ#	A18	B18	GND
VCC	A19	B19	NC
AD_31	A20	B20	AD_30
AD_29	A21	B21	NC
GND	A22	B22	AD_28
AD_27	A23	B23	AD_26
AD_25	A24	B24	GND
NC	A25	B25	AD_24
CBE#3	A26	B26	IDSEL
AD_23	A27	B27	NC
GND	A28	B28	AD_22
AD_21	A29	B29	AD_20
AD_19	A30	B30	GND
NC	A31	B31	AD_18
AD_17	A32	B32	AD_16
CEB#2	A33	B33	NC
GND	A34	B34	FRAME#
IRDY#	A35	B35	GND
NC	A36	B36	STOP#
DEVSEL#	A37	B37	NC
GND	A38	B38	SDONE
LOCK#	A39	B39	SBO#
PERR#	A40	B40	GND
NC	A41	B41	PAR
SERR#	A42	B42	AD_15
NC	A43	B43	NC
CBE#1	A44	B44	AD_13
AD_14	A45	B45	AD_11
GND	A46	B46	GND
AD_12	A47	B47	AD_09
AD_10	A48	B48	CBE#0
GND	A49	B49	NC
AD_08	A50	B50	AD_06
AS_07	A51	B51	AD_04
NC	A52	B52	GND
AD_05	A53	B53	AD_02
AD_03	A54	B54	AD_00
GND	A55	B55	VCC
AD_01	A56	B56	NC
VCC	A57	B57	VCC
NC	A58	B58	VCC
VCC	A59	B59	
VCC	A60	B60	
	A61	B61	
	A62	B62	

8.2. TIMER & DMA CHANNEL MAP

TIMER MAP:	TIMER Channel-0 system timer interrupt TIMER Channel-1 DRAM REFRESH request TIMER Channel-2 SPEAKER tone generator
DMA CHANNELS:	DMA Channel-0 Available DMA Channel-1 IBM SDLC DMA Channel-2 FLOPPY DISK adapter DMA Channel-3 Available DMA Channel-4 Cascade for DMA controller 1 DMA Channel-5 Available DMA Channel-6 Available DMA Channel-7 Available

8.3. INTERRUPT MAP

NMI:	Parity check error
IRQ (H/W)	0 System TIMER interrupt form TIMER-0 1 KEYBOARD output buffer full 2 Cascasde for IRQ 8-15 3 SERIAL port 2 4 SERIAL port 1 5 PARALLEL port 2 6 FLOPPY DISK adapter 7 PARALLEL port 1 8 RTC clock 9 Available 10 Available 11 Available 12 Available 13 MATH co-processor 14 HARD DISK adapter 15 Available

8.4 RTC & CMOS RAM MAP

RTC & CMOS:	00	Seconds
	01	Seconds alarm
	02	Minutes
	03	Minutes alarm
	04	Hours
	05	Hours alarm
	06	Days of the week
	07	Days of the month
	08	Month
	09	Year
	0A	Status register A
	0B	Status register B
	0C	Status register C
	0D	Status register D
	0E	Diagnostic status byte
	0F	Shutdown byte
	10	Floppy DISK drive type byte
	11	Reserved
	12	HARD DISK type byte
	13	Reserved
	14	Equipment byte
	15	Base memory low byte
	16	Base memory high byte
	17	Extension memory low byte
	18	Exteneion memory high byte
	19-2d	Reserved
	2E-2F	2-byte CMOS RAM checksum
	30	Reserved for extension memory low byte
	31	Reserved for extention memory high byte
	32	DATE CENTURY byte
	33	INFORMATION FLAG
	34-3f	Reserved
	40-7f	Reserved for CHIPSET SETTING DATA

Appendix A: Post Codes

EISA POST codes are typically output to port address 300h. ISA POST codes are typically output to port address 80h (Award BIOS)

POST	Name	OEM specific-Cache control
C0	Turen off Chipset Cache	Processor Status (1 FLAGS) Verification.
1	Processor Test 1	Test the following processoe statue flags carry, zero, sign, overflow. The BIOS will set each of these flags, verify they are set, then turn each flag off and verify it is off
2	Processor Test 2	Read/Write/Verify all CPU registers except SS, SP, and BP with data pattern FFand 00
3	Initialize Chips	Disable NMI, PIE, AIE, UEI, SQWV. Disable video, parity checking, DMA. Reset math co-processor. Clear all page registers. Initizlize timer 0,1 and 2, including set EISA timer to a known state. Initialize DMA controllers 0 and 1. Initialize interrupt controllers 0 and 1. Initialize EISA extended regesters.
4	Test Memory Refresh Toggle	RAM must be periodically refreshed in order to keep the memory form decaying. This functon assures that the memory refresh functoin is working properly.
5	Blank video, Initialize Keyboard	Keyboard initialization.
6	Reserved	
7	Test CMOS Interface and Battery Status	Verifies CMOS is working properly, detects a bad battery.
BE	Chipset Default	Programs chipset registers with power on BIOS defaults
C1	Memory presense test	OEM specific-Test to size on board memory.
C5	Early shadow	OEM Specific-Early shadow enable for fast boot
C6	Cache presence test	external cache size detection
8	setup low memory	early chipset initialization. Memory presence test. OEM chip set routines. Clear low 64K memory. Test first 64K memory.
9	Early cache Initialize	Cyrix CPU Initialization. Cache initialization
A	Setup Interrupt Vector Table	Initialization first 120 interrupt vectors with SPURIOUS_INT-HDLR and initialize INT 00h-1 Fh according to INT_TBL.
B	Test CMOS RAM Checksum	Test CMOS RAm Checksum, if bad, or insert key is pressed, load defaults.

C	Initialize Keyboard	Detect kind of keyboard controller (optional). Set NUM_LOCK status
D	Initialize video interface	Detect CPU clock. Read CMOS location 14h to find out type of video in use. Detect and initialize Video adapter.
E	test video memory	Test Video memory, write sign-on message to screen. Setup shadow RAm-Enable shadow according to setup
F	test DMA controller 0	BIOS checksum test. Keyboard detect and initialization
1 0	Test DMA memory Controller 1	
1 1	Test DMA Page registers	Test DMA Page Registers
1 2 _ 1 3	Reserverd	
1 4	Test Timer Counter 2	Test 8254 Timer 0 Counter 2
1 5	Test Timer Counter 2	Verify 8259 Channel 1 masked interrrupts by alternately turning off and on the interrupt lines.
1 6	Test 8259-2 Mask	Verify 8259 Channel 2 masked interrupts by alternating and turning off and on the interrupt lines
1 7	Test Stuck 859's Interrupt Bits	Turn off interrupt then verify no interrupt mask register is on.
1 8	Test 8259 Interrupt Functionality	Force and interrupt and verify interrupt occured.
1 9	Test Stuck NMI Bits (Parity I/O Check)	Verify NMI Can be cleared
1 A		Display CPU Clock
1 B - 1 E	Reserved	
1 F	Set EISA Mode	If EISA non-volatile memory checksum is good, exicute EISA initialization. If not, excecute ISA tests an cleat EISA MODE flag. Test EISA configuration Memory Integrity (checksum & communication interface)
2 0	Enable slot 0	Initialize slot 0 (saystem board)
2 1 - 2 F	Enablr slots 1-15	Initialize slot 1-15
3 0	Size base and memory Extended memory	Size base memory from 256K to 640K extended memory above 1 MB
3 1	Test base and extended memory	Test base memory form 256K to 640K and extended memory above 1 Mb using various patterns. This will be skipped in EISA mode and can be "skipped" with <Esc> in ISA mide
3 2	Test EISA Extended Memory	If EISA Mode Flag is set the test EISA memory found in slots initialization. This will be skipped is ISA mode and can be "skipped" with <Esc> key in EISA mode
3 3 - 3 B	Reserved	
3 C	Setup Enabled	
3 D	Initialized and install mouse	Detects if mouse is present, initiaize mouse, install interrupt vectors.
3 E	Setup cache Controller	Initialize chache controller
3 F	reserved	
B F	Chipset Initialization	Program Chipset registers withsetup values

41	Initialize floppy drive and controller	Initialize floppy disk drive and and drives
42	initialize hard drive and controller	Initialize hard drive and any drives
43	detect and initialize serial and parallel ports	Initialize any serial and parallel portss (also gameport)
44	reserved	
45	detect and initialize math co-processor	Initialize math co-processor
46	reserved	
47	reservved	
48-4D	reserved	
4E	Manufacturing POST Loop or display messages	Reboot if manufacturing POST Loop pin is set. Otherwise display any messages (i.e. any non fatal errors that were detected durning POST) and enter setup
4F	Security check	Ask password security (optional)
50	Write CMOS	Write all CMOS values back to RAM and clear screen
51	PRE-boot enable	Enable parity checker. Enable NMI, Enable cache before boot.
52	Initialize Option ROM's	Initialize any option ROM's present for C8000h to EFFFFh. When FSCAN option is enabped, will initialize from C8000h to F7FFFh.
53	Initialize Time Value	Initialzie time value in 40h: BIOS area.
60	Setup Virus Protect	Setup Virus protect according to setup
61	Set Boot Speed	set system speed for boot
62	Setup NunLock	setup NumLock status according to Setup
63	Boot Attempt	Set low stack. Boot via INT 19h
B0	Spurious	If interrupt occurs in protected mode.
B1	Unclaimed NMI	fi unmasked NMI occurs, display Press F1 to disable NMI , F2 Reboot
E1-EF	Setup Pages	E1-Page 1, E2-Page 2, ect.

Appendix B: Post Codes (AMI)

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The Following is the checkpoint list in AMI runtime compressed WINBIOS in order of execution.

C2	NMI is disable. Power on delay starting.
C5	Power on delay complete
C6	Going to enable ROM, disable cache if any. Calculating ROM BIOS checksum.
C7	ROM BIOS checksum passed. CMOS shutdown register test to be done.
C8	CMOS shutdown register test done, CMOS checksum calculation to be done next.
CA	CMOS checksum calcalation is done, CMOS Diag byte written. CMOS Status register about to init. for DATE and TIME.
CB	CMOS status register init done. Any init. before keyboard BAT to be done next.
CD	BAT command to keyboard controller is to be issued.
CE	Keyboard controller BAT result verified. Any Init. after KB controller BAT to be done next.
CF	Init. after KB controller BAT done. KB command byte to be written.
D1	KB command byte is written. Going to check press of <INS> key during power on.
D2	Checking for pressing od <INS> key during power-on done. Going to disable DMA and interrupt controller.
D3	DMA controller #1, #2, interrupt controller #1,#2 disable Video display is disable and port-B is Init. Chipset Init, auto memory detection about to begin.
D4	Chipset Init., auto memory detection over. To uncompress the RUNTIME Code.
D5	Runtime Code is uncompressed
DD	Tranfercontrol to uncompressed code in shadow RAM at F000:FFF0.

01	Processor register test about to start.and NMI to be Init.
02	NMI is disable, power on delay starting.
03	Power on delay complete. To check soft reset/power on.
05	Soft reset/power on determined. Going to disable Cache.
06	Post code to be uncompressed.
08	Post code is uncompressed. CMOS checksum calculation to be done next.
09	CMOS checksum calculation is done, CMOS Diag byte written. CMOS init. to begin.
0A	CMOS Init. done. CMOS status register about to Init. for Date and Time.
0B	CMOS status register Init done. Any Init. before KB BAT to be done next.
0C	KB I/B free. Going to issue the BAT command to KB.
0D	BAT command to KB is issued. Going to verify the BAT command.
0E	KB BAT result verified. Any Init. after KB BAT to be done.
0F	Init. after KB BAT done. KB byte to be written next.
10	KB command byte is written. Going to issue P-23,24 blocking/unblocking command.
11	P-23,24 of KB is block/unblock. Going to check pressing <INS> key during power-on.
12	Checking for pressing <INS> key during power on done. Going to disable DMA and Interrupt controller.
13	DMA controller #1, #2, Interrupt controller #1,#2 disable. Vide display is disable and port-B is Init. Chipset Init about begin.
14	Chipset Init ower. 8254 timer test about to start.
19	8254 timer test over. About to start memory refresh test.
1A	Momory Refresh line is togging. Going to check 16 micro second ON/OFF time.
20	Memory Refresh period 30 micro second test complete. Base 64K test to start.

23	Base 64K test passed. Going to set BIOS stack and to do any setup before Interrup vector Init.
24	Setup required before Vector Init. complete. Interrupt vector Init. about to begin.
25	Interrupt Vector Init. done. Going to read input of 8042 for Turbo SW. and to clear password if POST diag SW ON.
26	Input port 8042 is read. Going to Init global data for Turbo SW.
27	Global data Init. for Turbo SW is over. Any Init. before setting video mode to be done next
28	Init. before setting video mode is complete. Going for Mono mode and color mode setting.
2A	Different BUSes init to start if present.
2B	About to give control for any setup required before optional Video ROM check.
2C	Processing before vide ROM control is done. About to look for option vide ROM and give control.
2D	Optional video ROM control is done. About to give control to do any processing after video ROM return control.
2E	Return from processing after the video ROM control. If EGA/VGA not found then do display memory R/W test.
2F	EGA/VGA not found. Display memory W/W test about to start..
30	Display memory R/W test passed. About to look for the retrace checking.
31	Display memory R/W test or retrace checking failed. About to do alternate Display memory R/W test.
32	Alternate Display memory R/W test passed. About to look for the alternate display retrace checking.
34	Video display check over. Display mode to be set next.
37	Display mode set. Going to display the power on message.
38	Different BUSes Init. to start if present.

39	Display different BUSes Init. error message.
3A	New cursor position read and saved. Going to display Hit <DEL> messsage.
3B	Hit <DEL> message display. Virtual mode memory test about to start.
40	Going to prepare the descriptor table.
42	Descriptor tables prepared.Going to enter in vitual mode for memory test.
43	Entered in the virtual mode. Going to enable interrupt for diadnostics mode.
44	Interrupts enable. Going to Init. data to check memory wrap around at 0:0.
45	Data Init.. Going to check for memory wrap arround at 0:0 and finding the total system memory size.
46	Memory wrap around test done. Memory size calculation over. About to go for write pattern to test memory.
47	Pattern to be tested written in extended memory.Going to write pattern in base 640K memory.
48	Patterns written in base memory. Going to findout amount of momeory below 1M memory.
49	Amount of memory below 1M found and verified. Going to findout amount of memory above 1M memory.
4B	Amount of memory above 1M found and verified. Check for soft reset and going to clear memory below 1M for soft reset.
4C	Memory below 1M cleared. Going to clear memory above 1M.
4D	Memory above 1M cleared. Going to save the memopry size.
4E	Memory test started. about to display the first 64K memory size.
4F	Memory size display started. This will be update during memory test. Going for sequential and random memory test.

50	Memory testing, init. below 1M complete. Going to adjest display memory size for relocation and shadow.
51	Memory size display adjusted due to relocation, shadow. Memory test above 1M to follow.
52	Memory testing/Init. above 1M complete. Going to save memory size information.
53	Memory size information is saved. CPU registers are saved. Going to enter is real mode.
54	Shutdown successful, CPU in real mode. Going to disable gate A20 line.
57	A20 address line disable successful. Going to adjust memory size depending on relocation, shadow.
58	Memory size adjusted for relocation, shadow. Going to clear Hit <DEL> message.
59	Hit <DEL> message cleared. <WAIT> message displayed. Above to start DMA and interrupt controller test.
60	DMA page register test is passed. About to go for DMA #1 base register test.
62	DMA #1 base register test passed. About to go for DMA #2 register test.
65	DMA #2 base register test passed. About to program DMA unit 1 and unit 2.
66	DMA unit 1 and 2 programming over. About to Init. 8259 interrupt controller.
67	8259 init. over. About to start KB test.
7F	Extended NMI source enable is in progress.
80	KB test is start. Clearing output buffer, checking for stuck key. About to issue KB reset command.
81	KB are error, stuck key found. About to issue KB controller interface test command..
82	KB controller interface test over. About to write command byte and init. circular buffer.

83	Command byte written, Global data init. done. About to check for lock key.
84	Lock key ckeck over. About to check for memory size mis match with CMOS.
85	Memory size check done. About to display soft error and check for password or bypass setup.
86	Password checked. About to do programming before setup.
87	Programming before setup complete. Going to uncompresse setup code and execute CMOS setup.
88	Return from CMOS setup program and screen is cleared. About to do programming after setup.
89	Programming after setup complete. Going to display power on screen message.
8B	First screen message display. <WAIT..> message displayed. About to do Main and Video BIOS ahado/yte and init. circular buffer.
8C	Main and Video BIOS shadow successful. Setup option programminig after CMOS setup about to start.
8D	Setup option are programming, mouse check and init. to be done next.
8E	Mouse check and init. complete. Going for HD contoller reset
8F	HD controller reset done. Floppy setup to be done next
91	Floppy setup complete. HD HD setup to be next
94	HD setup done. Going to set base and extended memory size
95	Memory size adjust due to mouse support, HD type 47 Init. of different BUSes optional C800 to start.
96	Going to do any Init before C800 optional ROM control.
97	Any Init before C800 optional ROM control is over. Optional ROM check and control will be done next.
98	Option ROM control is done. About to give control to do any required processing after optional ROM return control.
99	Any Init. required after optional ROM test over. Going to setup timer data area and printer base address.

9A	Return after seting timer and printer base address. Going to set the RS-232 badse address.
9B	Return after RS-232 Base address. Going to do any Inint. before CO-processor test.
9C	Required Init. before co-processor is over. Going to init. the co-processor next.
9D	Coprocessor init. going to do any init. after co-processor test.
9E	Init. after co-processor test is done. Going to check extd KB, KB ID and num-lock.
9F	Exts KB check is done, ID flag set, num-lock ON/OFF. KB ID command to be issued.
A1	KB ID flag reset. Cache memoey test next.
A2	Cache memory test over. Going to display any soft error.
A3	Soft error display message. Going to set the KB typematic rate.
A4	KB typematic rate set. Going to program memory wait state.
A5	Memory wait state programming over.Going toclear the screen and enable parity, NMI.
A7	NMI and parity enable. Going to do any Init. required before given control to optional ROM at E000.
A8	Init. before E000 ROM control over. E000 rROM to get control next
A9	Return from E000 ROM control. Going to do any init. required after E000 optional ROM control.
AA	Init. after E000 optional ROM control is over. Going to display the system configuration.
B0	System configuration is display. Going to uncompress SET UP code for hot-key setup.
B1	Uncompressing od SETUP code is done. Going to copy any code to specific area.
00	Copying of code to specific area done. Going to give control to INT 19 boot loader.

Appendix C: BeepCode (AMI)

The following beep code would be heard on power on.

Beep Code	Meaning
1	DRAM refresh failure
2	Parity failure
3	Base 64K RAM failure
4	System Timer Failure
5	Processor failure
6	KB Gate A20 error
7	Virtual Mode exeception error
8	Display Memory R/W test failure
9	ROM BIOS checksum failure
10	CMOS shutdown register R/W failure.
11	Cache memory bad, do not enable cache