

Technical Reference

SB-5861
Pentium® & Pentium® MMX
Single Board Computer with
Triton I Chipset



1641 McGaw Avenue
Irvine, California 92614

Features

- Intel Pentium® processor, upgradeable through 180 MHz and 200 MHz; and Pentium® MMX 200 MHz and 233 MHz
- Intel Triton I chipset
- System memory upgradeable to 128 MB using ‘x 32’ SIMM
- ISA/PCI bus architecture allowing the SB-5861 to be configured in any CSS passive backplane
- PCI 2.1 compliant
- Available with either 256 KB or 512 KB Level 2 pipelined cache on the board
- On-board EIDE controller separate master/slave EIDE mode support for up to 4 IDE drives and up to 2 floppy drives
- On-board I/O supporting 2 serial ports and 1 parallel port

FCC Standards

The FCC (Federal Communications Commission) restricts the amount of radiation and radio frequency emissions coming from computing equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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 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.

CSS Labs is not responsible for any radio or television interference caused by unauthorized modifications to this equipment. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

To ensure compliance to FCC non-interference regulations, peripherals attached to this device require shielded I/O cables.

NOTICE: The use of a non-shielded I/O cable with this device is in violation of U.S. Federal law and will not allow the device to meet the maximum emission limits.

CAUTION: Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

Note: If you have purchased the miniature tower system, please note the following...

WARNING: The system is to be installed on desk or table tops only. The unit will become unstable if operated as a floor standing unit and unintentional force is applied to the top of the unit.

Turn the unit off and unplug the power cord before you open the cover to install any cards or peripheral devices.

WARNING

CAUTION: THERE IS A DANGER OF EXPLOSION IF THE BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

ATTENTION: IL Y A DANGER D'EXPLOSION S'IL Y A REMPLACEMENT INCORRECT DE LA BATTERIE. REMPLACER UNIQUEMENT AVEC UNE BATTERIE DU MEME TYPE OU D'UN TYPE RECOMMENDE PAR LE CONSTRUCTEUR. ETTERAU REBUT LES BATTERIES USAGEES CONFORMEMANT AUX INSTRUCTIONS DU FABRICATANT.

NOTICE

The information within this manual is subject to change without notice.

CSS Laboratories, Incorporated shall not be held liable for technical or editorial errors or omissions contained in herein; nor for incidental or consequential damages resulting from the furnishing, performance or use of this material.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, mechanical, photocopying, recording or otherwise, without the prior written permission of CSS Laboratories, Inc.

Product names mentioned herein are for identification purposes only, and may be trademarks and/or registered trademarks of their respective companies.

© 1997 CSS Laboratories, Inc. All rights reserved.
P/N SB-SBC-5861-DOC Revision 2 November, 1997

Table of Contents

Overview	1
The Microprocessor	2
The Board	3
Cache Memory	4
3.3 Volt, 5 Volt and 2.8 Volt Power Regulators	4
Connectors	5
Keyboard Connector	5
Primary EIDE J70	5
Secondary EIDE 71	5
Parallel Port J98	6
Serial Port 1 J96	6
Serial Port 2 J97	6
Floppy Drive Connector J4	6
CMOS Battery Connector J123	6
Jumpers	7
Flash/EPROM BIOS Selector JP17, JP18, JP19	7
Watch Dog Enable/Disable J133, J135, J134, J132	7
Processor Speed Selector JP1, JP2, JP15, JP28	8
Watch Dog Reset Output J124	9
Watch Dog IRQ15 Output J125	9
ISA Bus Speed JP130	10
Engineering Test Jumpers	10
System Memory	11
System Memory Configuration	11
Installing and Removing SIMM	12
System Memory Map	13
Timers	13

The I/O Address Map	15
System Interrupts	15
Direct Memory Access	16
Configuration Utilities	17
Overview	17
Standard Setup	18
Advanced Setup	20
Advanced Chipset Setup	21
Power Management Setup	22
PCI/PnP Setup	23
Peripheral Setup	24

Overview

This document describes the technical features of the single board computer (SBC). The topics include:

- **Microprocessor** - description of the features of the Pentium MMX microprocessor
- **Board** - illustration and brief description of the motherboard and the dual purpose expansion slot
- **Connectors** - description of connector locations and functions on the motherboard
- **Jumpers** - detailed description of the jumpers used to configure the motherboard
- **System Memory** - detailed description of system memory and how to add memory
- **System Memory Map** - listing of traditional address assignments for system memory
- **Configuration Utilities** - description and instructions for using the utility to configure the board's BIOS

The Microprocessor

The Pentium MMX microprocessor contains all the features of the 80486 processors, and is 100% compatible with 8086/88, 80286, and 80386 DX and SX microprocessors. In addition, the Pentium processor features:

- 64-bit Data Bus
- Superscalar Architecture
- Capability for executing two instructions in parallel
- Pipelined Floating-Point Unit
- Separate 8 KB Code and 8 KB Data Caches (total 16 KB L1 cache)
- Bus Cycle Pipelining
- Writeback MESI Protocol in the Data Cache Internal Parity Checking
- IEEE 1149.1 Boundary Scan

The Pentium processor is available in a variety of speeds, from 75 MHz through 200 MHz.

The Pentium processor with MMX™ technology is fully compatible with all software written for the Pentium processor. It enhances your system's performance with multimedia communications applications.

The Pentium processor with MMX technology is available in 200 MHz and 233 MHz speeds.

For additional information, contact your authorized CSS Laboratories representative.

The Board

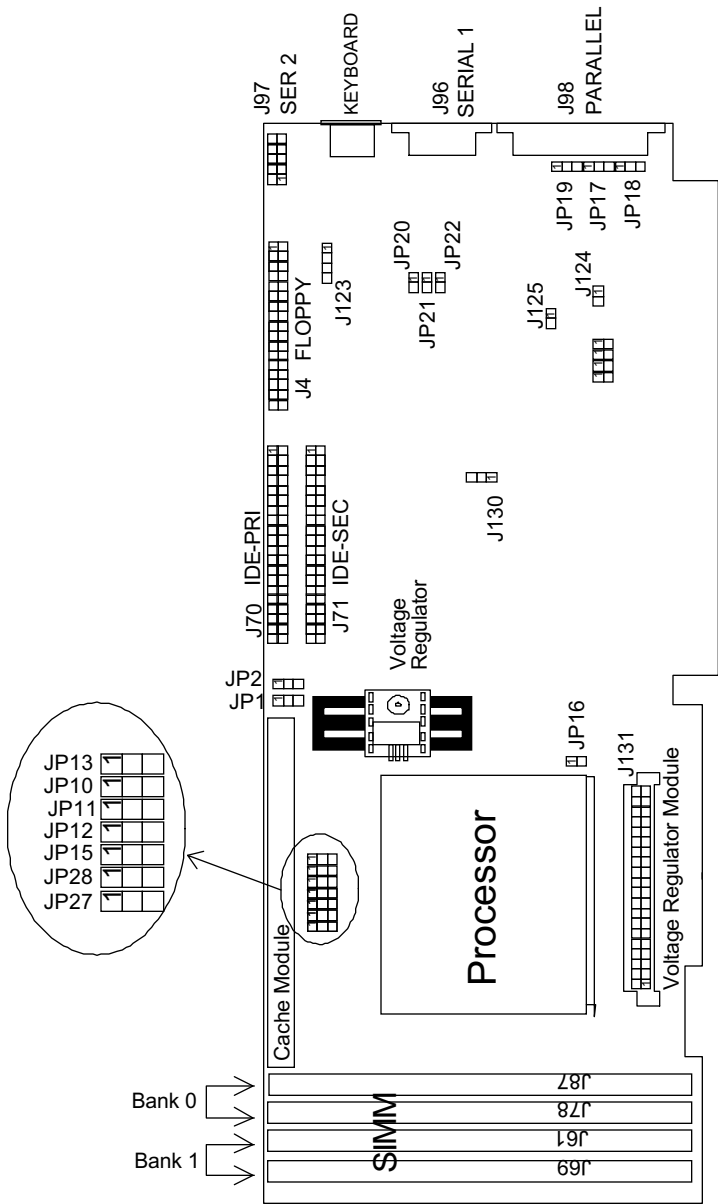


Figure 1: The Board

Cache Memory

The SBC can be configured with 256 or 512 KB of L2 cache.

3.3 Volt, 5 Volt and 2.8 Volt Power Regulators

The board comes with a 3.3 or 5 volt regulator, or a 2.8 volt regulator module, making the board compatible with the full line of processors. A voltage regulator installed on the board ensures that the correct voltage is delivered to the particular processor installed.

When upgrading processors, make sure to have the appropriate voltage regulator or voltage regulator module installed.

Connectors

Connector	Description
J123	CMOS battery
J70	Primary EIDE
J71	Secondary EIDE
J98	Parallel port connector
J4	Floppy drive connector
J96	Serial port 1 connector
J97	Serial port 2 connector
KEYBOARD	Keyboard connector

Keyboard Connector

Keyboard plugs are keyed for proper installation.

Pin	Assignment	Pin	Assignment
1	Clock	4	Ground
2	Data	5	+5 Vdc
3	Not used		

Primary EIDE J70

J70 connects the primary on-board PCI EIDE hard drive. Pin 1 is marked. When connecting your EIDE, orient pin 1 of the cable ribbon with pin 1 of J70.

Secondary EIDE 71

J71 connects the secondary on-board PCI EIDE controller. Pin 1 is marked. When connecting your EIDE, orient pin 1 of the cable ribbon with pin 1 of J71.

Parallel Port J98

J98 provides the connection for the board's parallel port.

Serial Port 1 J96

J96 provides the connection for the board's serial port 1 (COM 1).

Serial Port 2 J97

J97 provides the connection for the board's serial port 2 (COM 2).

Floppy Drive Connector J4

J4 connects the floppy drive to the controller provided on the board.

CMOS Battery Connector J123

J123 connects the board's CMOS battery. The CMOS battery provides constant power to the CMOS even when the system's power is switched off. CMOS contains your system's BIOS information and program.

Jumpers

The motherboard's jumpers are pre-configured at the factory. Read the following section carefully, before configuring your system. The motherboard has the following jumpers:

Jumper	Description
JP1, JP2 JP15, JP28	Processor speed selector
JP17, JP18, JP19	Flash/EPROM BIOS selector
J133, J135 J134, J132	Watch dog enable
J130	ISA bus speed selector

Flash/EPROM BIOS Selector JP17, JP18, JP19

Flash EPROM	JP17	JP18	JP19
EPROM	1-2	1-2	2-3
Flash	1-2	1-2	1-2

Watch Dog Enable/Disable J133, J135, J134, J132

The board provides a feature for some users that automatically resets (performs a warm boot) the system when it has locked up.

Watch Dog	J133	J135	J134	J132
Enable	IN	IN	OUT	OUT
Disable	OUT	OUT	IN	IN

This special feature is typically used only in industrial environments. The default setting is “disabled”.

Processor Speed Selector JP1, JP2, JP15, JP28

The board is upgradeable through the full line of Pentium and Pentium with MMX processors. When upgrading, make sure that the appropriate voltage regulator is installed.

Pentium Speed	JP1	JP2	JP15	JP28	JP27
75 MHz	2-3	2-3	OUT	OUT	OUT
90 MHz	1-2	2-3	OUT	OUT	OUT
100 MHz	2-3	1-2	OUT	OUT	OUT
120 MHz	1-2	2-3	2-3	OUT	OUT
133 MHz	2-3	1-2	2-3	OUT	OUT
150 MHz	1-2	2-3	2-3	2-3	OUT
166 MHz	2-3	1-2	2-3	2-3	OUT
MMX Speed					
200 MHz	2-3	1-2	1-2	2-3	OUT
233 MHz	2-3	1-2	1-2	1-2	OUT

Watch Dog Reset Output J124

J124 enables or disables the signal output that causes the system to reboot.

Disable this function when you are trouble shooting a problem which has caused your system to lock up. Also disable this function when you are not using the watch dog.

Watch Dog Reset Output	J124
Enable	IN
Disable (default)	OUT

Watch Dog IRQ15 Output J125

J125 enables or disables the watch dog IRQ output signal.

Disable this function when you are trouble shooting a problem which has caused your system to lock. Also disable this function when you are not using the watch dog.

IRQ 15 Output	J124
Enable	IN
Disable (default)	OUT

ISA Bus Speed JP130

The normal ISA bus speed is 8 MHz. This is provided by the PCI bus clock. The PCI bus clock speed is 33 MHz. In order for the PCI bus clock to provide the 8 MHz frequency, its 33 MHz frequency is divided by three.

Occasionally, you may need to reduce the bus speed to 6 MHz. J130 allows you to provide either an 8 MHz or 6 MHz speed to the ISA bus.

ISA Bus Speed Clock Divide	J130
Divide by 3, 11 MHz	1-2
Divide by 4, 8.125 MHz (def)	2-3

Engineering Test Jumpers

J16, JP20, JP21, JP22, J117, J116, JP10, JP11, JP12 and JP13 are engineering test jumpers. Do not alter these pins.

System Memory

There are a total of two SIMM banks available for memory upgrades on the board. Two SIMMs of the same kind form one bank

1M x 32 + 1M x 32 = 8 MB/bank
2M x 32 + 2M x 32 = 16 MB/bank
4M x 32 + 4M x 32 = 32 MB/bank
8M x 32 + 8M x 32 = 64 MB/bank

System Memory Configuration

RAM	Bank 0	Bank 1
8 MB	1M x 32 (2)	
16 MB	1M x 32 (2)	1M x 32 (2)
16 MB	2M x 32 (2)	
24 MB	2M x 32 (2)	1M x 32 (2)
32 MB	4M x 32 (2)	
32 MB	2M x 32 (2)	2M x 32 (2)
40 MB	4M x 32 (2)	1M x 32 (2)
48 MB	4M x 32 (2)	2M x 32 (2)
64 MB	8M x 32 (2)	
64 MB	4M x 32 (2)	4M x 32 (2)
80 MB	8M x 32 (2)	2M x 32 (2)
96 MB	8M x 32 (2)	4M x 32 (2)
128 MB	8M x 32 (2)	8M x 32 (2)

Installing and Removing SIMM

Read these instructions completely before installing or removing SIMMs. The SIMM is held by plastic press-clips on both sides of the slot.

Installing SIMM

- 1) Hold the SIMM so that the gold tab is pointing toward the slot. The SIMM is keyed so that it will only snap into the slot when positioned correctly.
- 2) Press the SIMM into the slot.
- 3) Rotate the SIMM until it clicks into place.

Removing SIMM

- 1) While squeezing the press clips, rotate the SIMM.
- 2) Pull the SIMM from the slot.

System Memory Map

Address (hex)	Name	Function
000000 to 9FFFFFFF	640 KB motherboard	system memory
0A0000 to 0BFFFF	128 KB video display ROM	reserved for graphics
0C0000 to 0DFFFF	128 KB I/O expansion ROM	reserved for ROM on I/O
0E0000 to 0EFFFF	64 KB reserved on motherboard	duplicate code assignment at FE0000
0F0000 to 0FFFFFFF	64 KB ROM on motherboard	duplicate code assignment at FF0000
100000 to FFFFFFFF	maximum memory is 15 MB	I/O channel memory
FE0000 to FEFFFF	64 KB reserved on motherboard	duplicate code assignment at 0E0000
FF0000 to FFFFFFFF	64 KB reserved on motherboard	duplicate code assignment at 0F0000

Timers

The system's three programmable timers/counters controlled by timer/counter chips are defined as channels 0 through 2 as indicated below:

- Channel 0: System Timer
- Channel 1: Refresh Request Generator
- Channel 2: Tone Generation for Speaker

The I/O Address Map

Address (hex)	Function
000-01F	DMA #1
020-03F	INTR #1
040-05F	Timer
060-06F	Keyboard
070-07F	NMI mask register
080-09F	DMA page register
0A0-0BF	INTR #2
0C0-0DF	DMA #2
0F0-0F1	Clr/rst math coprocessor
0F8-0FF	Math coprocessor
1F0-1F8	Fixed disk
200-207	Joystick
278-27F	Secondary parallel port
2F8-2FF	Secondary serial port
300-31F	Prototype card
378-37F	Primary parallel port
380-38F	SDLC (secondary bisynchronous)
3A0-3AF	Primary bisynchronous
3B0-3BF	Monochrome display/printer adapter
3D0-3DF	Color/graphics monitor adapter
3F0-3F7	Diskette controller
3F8-3FF	Primary serial port

System Interrupts

The processor has two controllers, supplying 16 IRQs. Below are assignments in decreasing priority.

LEVEL		FUNCTION
Microprocessor NMI		Parity or I/O Channel Check
Interrupt Controllers		
Ctrlr 1	Ctrlr 2	
IRQ0		
IRQ1		
IRQ2		
Interrupts IRQ8 - IRQ15 redirected to IRQ2		
	IRQ8	Real-Time clock interrupt
	IRQ9	Software redirected to INT + AH (IRQ2)
	IRQ10	Reserved
	IRQ11	Reserved
	IRQ12	Reserved
	IRQ13	Coprocessor
	IRQ14	Fixed disk controller
	IRQ15	Reserved
IRQ3		Serial port 2
IRQ4		Serial port 1
IRQ5		Parallel port2
IRQ6		Diskette controller
IRQ7		Parallel port 1

Note: IRQ9, IRQ10, IRQ11, IRQ12, IRQ15, IRQ3, IRQ4, IRQ5 and IRQ7 can be redirected to PCI add-in boards.

The PCI standard has a 4-IRQ limitation. Some PCI add-in boards do not require IRQs. Some can share an IRQ with another board of the same model and manufacture. Check the add-in board's documentation for IRQ information.

Direct Memory Access

The system supports seven DMA channels:

Controller 1	Controller 2
Channel 0 - Spare	Channel 4 - Cascade for Controller 1
Channel 1 - SDLC	Channel 5 - Spare
Channel 2 - Diskette	Channel 6 - Spare
Channel 3 - Spare	Channel 7 - Spare

The first DMA controller holds channels 0 through 3. These channels support 8-bit data transfers between 8-bit I/O adapters and 8- or 16-bit system memory. Each channel can transfer data in 4 KB blocks.

The second DMA controller holds channels 4 through 7. Channel 4 cascades channels 0 through 3 to the microprocessor. Channel 5, 6 and 7 support 16-bit data transfers between 16-bit I/O adapters and 16-bit system memory. These DMA channels can transfer data throughout the 16 MB system-address space in 128 KB blocks.

Channel 5, 6 and 7 cannot transfer data on odd byte boundaries.

Configuration Utilities

Overview

BIOS Setup is a utility that stores your computer's configuration. When your system "boots", it's configuration is read into main memory. Hard drives, floppy drives, video adapter, memory and keyboard are described to the system.

The BIOS is pre-configured for you at the factory. This document provides an overview of the BIOS, which you can use when reconfiguring your system.

The BIOS Setup Utilities program is built into the CMOS on your system board. To start the program, press the <Delete> key while the system is booting. The Utilities menu screen will display:

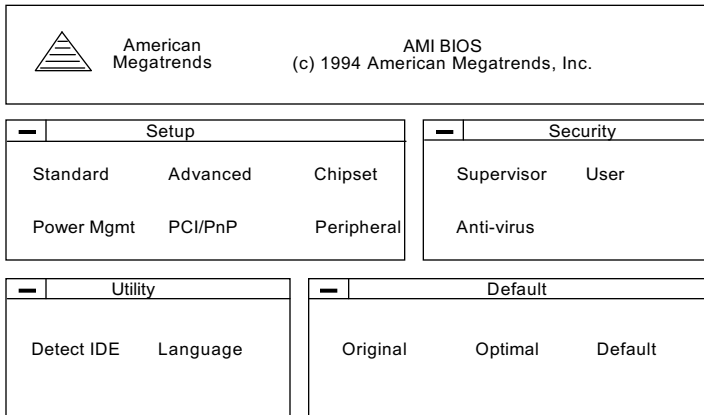


Figure 2: The Main Menu

The **Utility** options allow you to the color of the Setup screen. It also allows you to choose another language, if available.

The **Security** option allow you to define a password. Enable the password option through **Advanced Setup**.

The **Default** option allows you to change all of your Setup values to **Optimal** or **Fail-Safe** settings. Or you can return the system to its original settings.

The most commonly used option is **Standard Setup**.

Standard Setup

This utility allows you to record your system setup.

-	Standard Setup			
Pri Master	Pri Slave	Sec Master	Sec Slavd	
Date/Time	Floppy A	Floppy B		

To start SETUP, double-click on the **Standard Setup** icon on the Main Menu. Alter only the items that need to be changed or reset. If a selected option is correct, skip the corresponding step.

Pri Master Primary master IDE/PCI hard drive. Define the parameters of your hard disk and modes. The default setting is **Auto**, to auto-detect drive type.

Pri Slave Primary slave IDE/PCI hard drive. Define the parameters of your hard disk and modes. The default setting is **Auto**, to auto-detect drive type.

Sec Master Secondary master IDE/PCI hard drive, if installed. Define the parameters of your hard disk and modes. The default setting is **Not Installed**.

Sec Slave Secondary slave IDE/PCI hard drive, if installed. Define the parameters of your hard disk and modes. The default setting is **Not Installed**.

Note: You may also manually enter the hard disk parameters. Two helpful tables appear at the end of this section. One describes drive parameters, and the other is lists various hard drive parameters.

Floppy Drive A:/Floppy Drive B: Double-click the floppy drive icon and select the type installed. Scroll through the fields using the up/down arrows. Select from the following:

5.25"	- 360 KB	3.5"	- 720 KB
	- 1.2 MB		- 1.44 MB
			- 2.44 MB

Date/Time Double-click the Date/Time icon and enter new values through the keyboard.

Advanced Setup

Advanced Setup allows you to fine tune some of the special features. These features are pre-set for you at the factory. To use this feature, double-click on the **Advanced Setup** icon on the Main Menu.

Use the arrow keys to toggle between items. Press <Enter> to access the drop down selection menu.

Use the arrow keys to toggle between options. Press <Enter> to make a selection.

Chipset Setup

This option lets you configure some of the advanced features of your system through the chipset. It is preconfigured at the factory and need not be altered.

To use this feature, double-click on the Chipset Setup icon on the Main Menu.

- Chipset Setup	
82439 HX Global Features	: Enable
Memory Hole	: Disable
8 bit I/O Recovery Time (Sysclk)	: 1
16 bit I/O Recovery Time (Sysclk)	: 1
DRAM Timings	: 70ns
DRAM Refresh Rates	: 66 MHz
ISA Clock Divisor	: PCICLK/4
Turbo Read Lead Off	: Disable
DRAM Read Burst Timing	: x333
DRAM Write Burst Timing	: x333
Fast RAS to CAS Delay (Clocks)	: 3
DRAM Lead Off Timing (DLT)	: 7/6/3/4
Turbo Read Pipelining	: Disable
Speculative Lead Off	: Disable
Turnaround Insertion	: Disable
Memory Address Drive Strength	: Auto
NA Disable (NAD) for External Cache	: Disable
Extended Cacheability	: 64 MB
Peer Concurrency	: Enable
DRAM Error Checking	: Disable
Serr # Output Type	: Normal
Serr # Duration	: Pulse Mode
Serr # Enable	: Disable
Single Bit Correction Error	: Disable
Multiple Bit Uncorrectable Error	: Disable
Bad Parity On Uncorrectable Error	: Disable
PCI 2.1 Passive Release Enable	: Enable
Delayed Transaction Enable	: Disable
USB Function Enable	: Disable
USB Passive Release Enable	: Enable
USB Clock	: 24 MHz

8439HX Global Features: Enables or disables the chipset features. This option should be set to enable.

DRAM Timing: Specifies the DRAM chip speed.

DRAM Refresh Rate: Specifies the processor's internal clock, used to refresh the DRAM.

ISA Clock Divisor: Is the factor used to divide the clock signal used for the PCI bus to provide the ISA bus signal. For a 75 MHz processor, select PCICLK/3. For all other speeds, select PCICLK/4.

Turbo Read Lead Off: When enabled, results in a 1 host clock pull-in of all read lead off timings.

Serr # Output Type: System error output signal type for the system.

Serr # Enable Enables system to report memory errors.

Memory Address Drive Strength: Select 8 mA or 12 mA output for memory address signal strength.

NA Disable (NAD) for External Cache: Next address disable affects system performance.

Extended Cacheability: Selects memory cacheable space.

Use the arrow keys to toggle between items. Press <Enter> to access the drop down selection menu.

Use the arrow keys to toggle between options. Press <Enter> to make a selection.

Power Management Setup

This utility allows you to set the parameters for the “green” functionality of your system.

To use this feature, double-click on the Power Management Setup icon on the Main Menu. You may select to make changes to the following features:

- Power Management Setup	
Power Management APM	: Disable
Instant-On Timer (Minute)	: Disable
Green PC Monitor Power State	: Standby
Video Power Down Mode	: Standby
Hard Disk Power Down Mode	: Suspend
Hard Disk Time Out (Minute)	: 8
Standby Time Out (Minute)	: 1
Standby Time Out (Minute)	: 1
Slow Clock Ratio	: 1:8
IRQ3	: Ignore
IRQ4	: Monitor
IRQ5	: Ignore
IRQ7	: Ignore
IRQ8	: Monitor
IRQ9	: Ignore

Instant On Timer is a type of green mode timer lets you wake up the system at the same time that you trigger it.

IRQ3, 4, 5, 7, 8, 9 can either be ignored or monitored. When monitored, activity on the IRQ is used to wake the system up.

Use the arrow keys to toggle between items. Press <Enter> to access the drop down selection menu.

Use the arrow keys to toggle between options. Press <Enter> to make a selection.

PCI/PnP Setup

This menu allows you to define attributes of the PCI bus portion of the motherboard.

- PCI/PNP Setup	
Plug and Play Aware O/S	: No
PCI Latency Timer (PCI Clocks)	: 32
PCI VGA Palette Snoop	: Disable
PCI IDE Bus Master	: Disable
Offboard PCI IDE card	: Auto
Offboard PCI IDE Primary IRQ	: Disable
Offboard PCI IDE Secondary IRQ	: Disable
PCI Slot 1 IRQ Priority	: Auto
PCI Slot 2 IRQ Priority	: Auto
PCI Slot 3 IRQ Priority	: Auto
PCI Slot 4 IRQ Priority	: Auto
DMA Channel 0	: PnP
DMA Channel 1	: PnP
DMA Channel 3	: PnP
DMA Channel 5	: PnP
DMA Channel 6	: PnP
DMA Channel 7	: PnP
IRQ3	: ISA/EISA
IRQ4	: ISA/EISA
IRQ5	: ISA/EISA
IRQ7	: ISA/EISA
IRQ9	: PCI/PnP
IRQ10	: PCI/PnP
IRQ11	: PCI/PnP
IRQ14	: PCI/PnP
IRQ15	: PCI/PnP
Reserved Memory Size	: Disable
Reserved Memory Address	: C8000
PCI Peer-to-Peer Traffic	: Disable

Use the arrow keys to toggle between items. Press <Enter> to access the drop down selection menu.

Use the arrow keys to toggle between options. Press <Enter> to make a selection.

Peripheral Setup

This menu allows you to specify the peripherals installed on your motherboard.

- Peripheral Setup	
On-Board FDC	: Auto
On-Board Serial Port 1	: Auto
On-Board Serial Port 2	: Auto
On-Board Parallel Port	: Auto
Parallel Port Mode	: Normal
Parallel Port IRQ	: Auto
Parallel Port DMA Channel	: None
On-Board IDE	: Both
Slow IDE drive delay (seconds)	: Disable

On-board IDE enables the on-board chipset EIDE function.

Slow IDE Drive Delay when enabled, lengthens the boot time, so that all EIDE drives installed have ample time to spin up. Different drive brands may have slightly different boot up times.

Use the arrow keys to toggle between items. Press <Enter> to access the drop down selection menu.

Use the arrow keys to toggle between options. Press <Enter> to make a selection.