SBC-SLOTI

SINGLE BOARD COMPUTER - SLOT 1 PENTIUM III

Board Processor Guide

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Precautions

Some components on the SBC-SLOT1 are very sensitive to static electric charges and can be damaged by a sudden rush of power. To protect it from unintended damage, be sure to follow these precautions:

Ground yourself to remove any static charge before touching the SBC-SLOT1. You can do this by using a grounded wrist strap at all times or by frequently touching any conducting materials that are connected to the ground.

Handle your SBC-SLOT1 by its edges. Don't touch IC chips, leads, or circuitry if not necessary.

Do not plug any connector or jumper while the power is on.

Do not put your SBC-SLOT1 unprotected on a flat surface because it has components on both sides.

BATTERY REPLACEMENT CAUTION:

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

CPU REMOVAL AND REPLACEMENT CAUTION:

Use caution when removing the CPU from its board. After removing the DRAM, carefully slide the CPU from its position without bumping or bending components behind or around the CPU.

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1 Features

OVERVIEW

The Pentium® III with ultra wide SCSI, AGP VGA, and Ethernet single board computer (SBC-SLOT1) is an ISA/PCI form factor board. It is equipped with a high performance Pentium III processor and advanced high performance multi-mode I/O.

This board also has a built-in DiskOnChip™ (DOC) Flash Disk for embedded applications. The DOC Flash Disk is 100% compatible to hard disk. Users can use any DOS command without any extra software utility. The DOC currently is available from 8 MB to 288 MB.

An advanced high performance Adaptec AIC 7880 Ultra Wide SCSI controller is used on the SBC-SLOT1. This Ultra Wide SCSI connector supports 8-bit 20Mbps and 16-bit 40Mbps transfer rate with up to 15 SCSI devices connectivity.

In addition, SBC-SLOT1 provides S3 AGP VGA on board. The VGA chip is S3 LC2X AGP graphics chipset which provides up to 1600x1024 color resolution. The VGA onboard memory is 4 MB SDRAM, optional to 8 MB.

SBC-SLOT1 uses the advanced INTEL 440BX Chipset, which is a 100% ISA/PCI compatible chipset with PCI 2.1 standard.

FEATURE LIST

CPU

- Pentium® III up to 550 MHz Processor
- ISA bus and PCI 32-bit local bus, PCI 2.1 standard
- 7 DMA channels
- 15 Interrupt levels
- Intel 440BX Chipset
- Real-time clock/calendar in 440BX chipset, backup by industrial Li-battery, 3V/850mAH
- 512K Pipelined Burst SDRAM in CPU

SDRAM

- Two 168-pin DIMM sockets support up to 512 MB SDRAM.
- Each DIMM module accommodates a maximum of 256 MB of SDRAM.

AGP VGA Controller

- S3 Trio® 3D/2x AGP VGA controller
- 133 MHz AGP bus speed
- Screen resolutions supported up to 1280 x 1024 x 64K colors @ 60 Hz refresh
- Screen resolutions also supported up to:
    - 1600 x 1200 x 64K colors at 85 Hz refresh, non-interlaced mode
    - 1024 x 768 x 16M colors at 85 Hz refresh, non-interlaced mode

Floppy Disk Drive Interface

- Two 2.88 MB, 1.44 MB, 1.2 MB, 720K, or 360K floppy disk drives

Two High Speed Series ports

- NS16C550 compatible UARTs

Parallel Port

- Bidirectional

Built-in LM78

- Monitors power supply voltage and fan speed status

IrDA Port

- Supports Serial Infrared(SIR) and Amplitude Shift Keyed IR(ASKIR) interface

USB Port

- Supports two USB ports for future expansion

E^{2}Key

- 1Kbit EEPROM (nonvolatile memory)
- Accepts read/write data by customer's program
- Stores system ID, password, and critical data on the board

Watchdog Timer

- Can be set by 1, 2, 10, 20, 110, or 220 second periods
- Reset or NMI is generated when CPU does not periodically trigger the timer
- Your program uses hex 043 and 443 to control the watchdog and generate a system reset

Ultra Wide SCSI Controller

- Adaptec 7880 Chipset, supports 40/20Mbps SCSI interface and 15 devices connectivity

Flash Disk - DiskOnChip™

- The Flash Disk provides 100% compatibility with hard disk
- Built-in True FFS Transparent Flash Block Management and Space Reclamation allow the use of the Flash Disk with DOS command with no need for any extra software utility

Mouse and Keyboard Interface

- Supports PS/2 mouse and keyboard interfaces

Power Consumption

- +5V @ 8A (Pentium® II 400MHz, 32MB EDO RAM), +12V @ 240A (maximum) , -12V @40A maximum

Operating Temperature

- 0-55 C (CPU needs to be cooler)

WATCHDOG TIMER

The Watchdog Timer is provided to ensure that standalone systems can recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, hardware on the board will either perform a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

Two I/O ports control the Watchdog Timer:

443 (hex)	Read	Enable to refresh the Watchdog Timer
043 (hex)	Read	Disable the Watchdog Timer

To enable the Watchdog Timer, a read from I/O port 443H must be performed. This will enable and activate the countdown timer which will eventually timeout and either reset the CPU or cause an NMI, depending on the setting of JP14. To ensure that this reset condition does not occur, the Watchdog Timer must periodically be refreshed by reading the same I/O port 433H. This must be done within the timeout period that is selected by jumper group JP9.

A tolerance of at least 30% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time consuming. Therefore, if the time out period has been set to 10 seconds, the I/O port 443H must be read within 7 seconds.

Note: When exiting a program, disable the Watchdog Timer, otherwise the system will reset.

E²KEY™ FUNCTION

The SBC-SLOT1 provides an E²KEY™ function for system integrators. Based on the E²KEY function, you can freely store the ID Code, Password, or Critical Data in the 1Kbit EEPROM. Because the EEPROM is nonvolatile memory, you don't have to worry about losing important data.

The E²KEY is based on a 1Kbit EEPROM which is configured to 64 words(from 0 to 63). You can access (read or write) each word at any time.

The E²KEY utility is provided on a CD-ROM with your system. The software utility will include four files as follows:

- README.DOC
- E2KEY.OBJ
- EKEYDEMO.C
- EKEYDEMO.EXE.

The E2KEY.OBJ provides two library functions for you to integrate your application with the E²KEY function. The read_e2key and write_e2key libraries are written and compiled in C language. To implement it, refer to the functions below:

***/unsigned int read_e2key(unsigned int address):** This function will return the E²KEY's data at a certain address. The address range is from 0 to 63. Return data is one word,16 bits.

***/void write_e2key(unsigned int address,unsigned data):** This function will write the given data to E²KEY at a certain address. The address range is from 0 to 63. The data value is from 0 to 0xffff.

To begin using this function, refer to the included EKEYDEMO.C code.

The E²KEY function is based on the parallel port. Therefore, you should enable SBC-SLOT1's parallel port or it will not work.

CONNECTING TO AN ATX POWER SUPPLY

To Connect ATX Power Supply to the Backplanes and/or the SBC Card

1. Disconnect the AC cord of the power supply from the AC source to prevent sudden electric surge to the board.
2. Connect the ATX power supply switch to the pin 17 (power button) and pin 19 (+5VSB) of CN1 (multi panel) on the board.

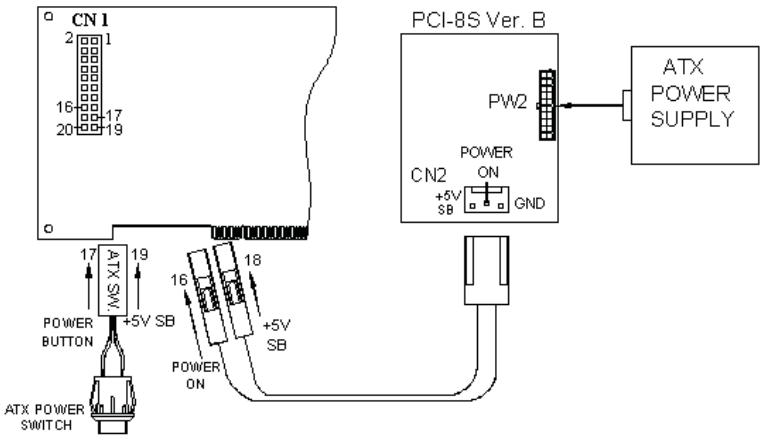


Figure 1. SBC-SLOT1 (through Power Button & +5VSB).

- To turn off the power supply, push the ATX power switch button for about four seconds.
- To turn the system on, push the button once.

2 Board Configuration

BOARD LAYOUT

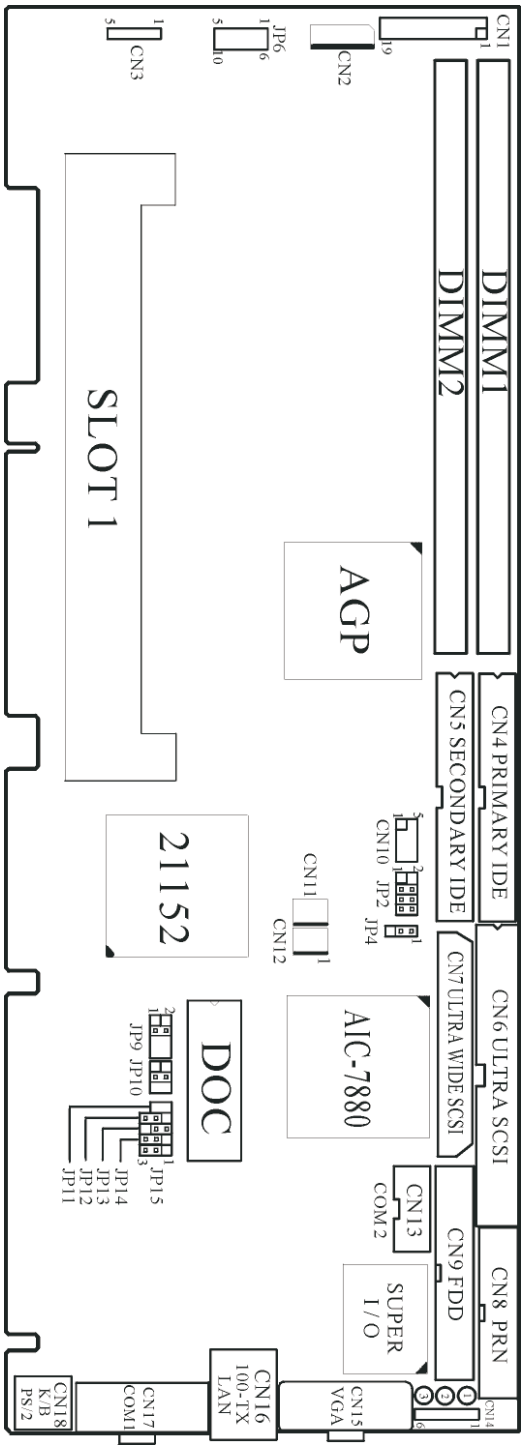


Figure 2. SBC-SLOT1 Configuration.
JP2, CPU to Bus Multiplier
JP4, SCSI Terminator Setting
JP14, Watchdog Timer Type Setting
JP9, Watchdog Timeout Period
JP10, DiskOnChip™ Memory Address Setting
JP11, Clear CMOS Setting
CN9, Floppy Disk Drive
CN4, Primary IDE
CN5, Secondary IDE
CN8, Parallel Port
CN17, Serial Port DB-9 (COM1)
CN13, Serial Port 10-pin Header (COM2)
CN18, Keyboard/Mouse
CN2, External Keyboard
CN3, External Mouse
CN1, Multi Panel
CN10, USB Port
CN14, IrDA Infrared Interface
CN11, Fan1
CN12, Fan2
CN15, VGA
CN7, 68-pin Ultra Wide SCSI
CN6, 50-pin Ultra SCSI-2
CN16, LAN RJ45
DIMM1/2, DIMM Sockets

JUMPERS

Default settings are highlighted in the tables that follow.

CPU to Bus Multiplier (JP2)

Refer to figure 2 for the location of JP2.

Ratio	1-2	3-4	5-6	7-8
3.0 x	ON	OFF	ON	ON
3.5 x	ON	OFF	OFF	ON
4.0 x	OFF	ON	ON	ON
4.5 x	OFF	ON	OFF	ON
5.0 x	OFF	OFF	ON	ON
5.5 x	OFF	OFF	OFF	ON
6.0 x	ON	ON	ON	OFF
6.5 x	ON	ON	OFF	OFF

SCSI Terminator Setting (JP4)

Refer to figure 2 for the location of JP4.

Pin Number	Description
1-2	ENABLE
2-3	DISABLE

Watchdog Timer Type Setting (JP14)

The Watchdog Timer is enabled by reading port 443H. It should be triggered before the timeout period ends, otherwise it will assume the program operation is abnormal and will issue a reset signal to start again or activate NMI to CPU. The Watchdog Timer is disabled by reading port 043H.

Pin Number	Description
1-2	NMI
2-3	RESET

Refer to figure 2 for the location of JP14.

Watchdog Timeout Period (JP9)

Period	1-2	3-4	5-6	7-8
1 sec.	OFF	OFF	ON	OFF
2 sec.	OFF	OFF	ON	ON
10 sec.	OFF	ON	OFF	OFF
20 sec.	OFF	ON	OFF	ON
110 sec.	ON	OFF	OFF	OFF
220 sec.	ON	OFF	OFF	ON

Refer to figure 2 for the location of JP9.

DiskOnChip™ Memory Address Setting (JP10)

The DiskOnChip™ (DOC) Flash Disk Chip is produced by M-Systems. No extra software utility is needed because the DOC is 100% compatible to hard disk and DOS. It is "plug and play", easy, and reliable.

Pin Number	Address
1-2	CE00-CFFF
3-4	D600-D7FF
5-6	DE00-DFFF

Refer to figure 2 for the location of JP10.

Clear CMOS Setup (JP11)

If you forget the CMOS password, you can clear or reset it by closing JP11 for about three seconds. After the password has been cleared from your CMOS, set it back to normal operation mode by opening it.

Pin Number	Description
OFF	Normal Operation
ON	Clear CMOS

Refer to figure 2 for the location of JP11.

CONNECTORS

This section describes how to connect peripherals, switches, and indicators to the SBC-SLOT1.

Floppy Disk Drive Connector (CN9)

The SBC-SLOT1 is equipped with a 34-pin daisy-chain driver connector cable. For the location of this connector, refer to CN9 in figure 2.

Pin Number	Description
1	GND
2	REDUCE WRITE
3	GND
4	NC
5	GND
6	NC
7	GND
8	INDEX#
9	GND
10	MOTOR ENABLE A#
11	GND
12	DRIVE SELECT B#
13	GND
14	DRIVE SELECT A#
15	GND
16	MOTOR ENABLE B#
17	GND

Pin Number	Description
18	DIRECTION#
19	GND
20	STEP#
21	GND
22	WRITE DATA#
23	GND
24	WRITE GATE#
25	GND
26	TRACK 0#
27	GND
28	WRITE PROTECT#
29	GND
30	READ DATA#
31	GND
32	SIDE 1 SELECT#
33	GND
34	DISK CHANGE#

PCI E-IDE Disk Drive Connector (CN4/CN5)

You can attach four IDE (Integrated Device Electronics) hard disk drives to the SBC-SLOT1 IDE controller.

- CN4 (IDE 1): Primary IDE Connector
- CN5 (IDE 2): Secondary IDE Connector

For the location of these connectors, refer to CN4 and CN5 in figure 2.

Pin Number	Description
1	RESET#
2	GND
3	DATA 7
4	DATA 8
5	DATA 6
6	DATA 9
7	DATA 5
8	DATA 10
9	DATA 4
10	DATA 11
11	DATA 3
12	DATA 12
13	DATA 2
14	DATA 13
15	DATA 1
16	DATA 14
17	DATA 0
18	DATA 15
19	GND
20	NC

Pin Number	Description
21	IDE DRQ
22	GND
23	IOW#
24	GND
25	IOR#
26	GND
27	IDE CHRDY
28	GND
29	IDE DACK
30	GND-DEFAULT
31	INTERRUPT
32	NC
33	SA1
34	NC
35	SA0
36	SA2
37	HDC CS0#
38	HDC CS1#
39	HDD ACTIVE#
40	GND

Parallel Port (CN8)

This port is usually connected to a printer. The SBC-SLOT1 includes an onboard parallel port accessed through a 26-pin flat-cable connector (CN8). For the location of this connector, refer to CN8 in figure 2.

Pin Number	Description
1	STROBE#
2	DATA 0
3	DATA 1
4	DATA 2
5	DATA 3
6	DATA 4
7	DATA 5
8	DATA 6
9	DATA 7
10	ACKNOWLEDGE
11	BUSY
12	PAPER EMPTY
13	PRINTER SELECT
14	AUTO FORM FEED #
15	ERROR#
16	INITIALIZE
17	PRINTER SELECT LN#
18	GND
19	GND
20	GND
21	GND
22	GND
23	GND
24	GND
25	GND
26	NC

Serial Ports (CN17/CN13)

The SBC-SLOT1 offers two high speed NS16C550 compatible UARTs with Read/Receive 16 byte FIFO serial ports.

- CN17: Serial Port DB-9 Connector (COM1)

Pin Number	Description
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

- CN13: Serial Port 10-pin Header (COM2)

Pin Number	Description
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI
10	GND

For the location of these connectors, refer to CN17 and CN13 in figure 2.

Keyboard/Mouse Connector (CN18/CN2/CN3)

The SBC-SLOT1 provides one keyboard/mouse, one keyboard, and one mouse connector.

- CN18: 6-pin Mini-DIN Keyboard/PS2 Mouse Connector

Pin Number	Description
1	KB DATA
2	MS DATA
3	GND
4	+5V
5	KB CLK
6	MS CLK

- CN2: 5-pin Header Ext. Keyboard Connector

Pin Number	Description
1	KB CLK
2	KB DATA
3	NC
4	GND
5	+5V

- CN3:5-pin Header Ext. PS/2 Mouse Connector

Pin Number	Description
1	MS DATA
2	NC
3	GND
4	+5V
5	MS CLK

For the location of these connectors, refer to figure 2.

External Switches and Indicators (CN1)

There are several external switches and indicators for monitoring and controlling the CPU board. All the functions are in the CN1 Multi Panel connector. For the location of this connector, refer to figure 2.

Pin Number	Description
1	SPEAKER
2	+5V
3	NC
4	NC
5	NC
6	GND
7	+5V
8	NC
9	RESET SW
10	GND
11	GND
12	GND
13	IDE LED
14	NC
15	+5V
16	ATX PWR CTR
17	ATX PWR BTN
18	ATX 5VSB
19	ATX 5VSB
20	ATX 5VSB

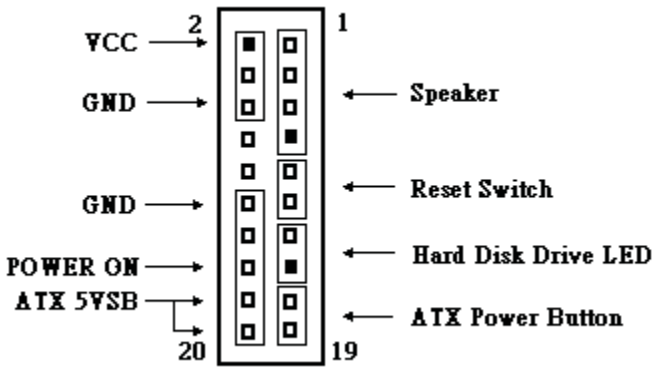


Figure 3. Multi Panel Connector

USB Port Connector (CN10)

The SBC-SLOT1 has two built-in USB ports for the future I/O bus expansion. Pin 1-4 for USB 0. Pin 5-8 for USB 1. For the location of this connector, refer to figure 2.

Pin Number	Description
1	+5V
2	SBD0-
3	SBD0+
4	GND
5	GND
6	SBD1+
7	SBD1-
8	+5V

IrDA Infrared Interface Port (CN14)

The SBC-SLOT1 has one built-in IrDA port that supports Serial Infrared (SIR) or Amplitude Shift Keyed IR (ASKIR) interface. If the IrDA port is used, BIOS Peripheral Setup's COM2 has to be set to SIR or ASKIR model. The normal RS-232 COM2 will be disabled. For the location of this connector, refer to figure 2.

Pin Number	Description
1	VCC
2	NC
3	IR-RX
4	GND
5	IR-TX
6	NC

Fan Connector (CN11/CN12)

The SBC-SLOT1 provides two CPU cooling fan connectors. These connectors can supply 12V/500A (maximum) to the cooling fan. The connector has a rotation pin, which supplies the fan's rotation signal to the system so that the system BIOS can read the fan speed. For the location of each connector, refer to figure 2.

- CN11: Fan1 Connector
- CN12: Fan2 Connector

Pin Number	Description
1	Fan Sensor
2	+12V
3	GND

Note: The pin configuration looks like figure 4 from above. If it is connected in reverse direction, it will cause the fan's rpm to lower and your CPU will be in overheated condition. Normal CPU rpm is >5000 rpm.

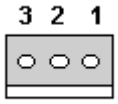


Figure 4. Fan Connector.

VGA Connector (CN15)

The SBC-SLOT1 has one built-in 15-pin female VGA connector that can be connected directly to your monochrome CRT monitor as well as high resolution color CRT monitor. For the location of this connector, refer to figure 2.

Pin Number	Description
1	RED
2	GREEN
3	BLUE
4	NC
5	GND
6	GND
7	GND
8	GND

Pin Number	Description
9	NC
10	GND
11	NC
12	DDC DATA
13	HSYNC
14	VSYNC
15	DDC CLK

SCSI Connector (CN7/CN6)

The SBC-SLOT1 provides two SCSI connectors for 40Mbps and 20Mbps SCSI devices.

- CN7: Ultra Wide SCSI Connector, 68-pin supports 40Mbps SCSI devices

Pin Number	Description
1	GND
2	GND
3	GND
4	GND
5	GND
6	GND
7	GND
8	GND
9	GND
10	GND
11	GND
12	GND
13	GND
14	GND
15	GND
16	GND
17	NC
18	NC
19	NC
20	NC
21	GND
22	GND
23	GND
24	GND
25	GND
26	GND
27	GND
28	GND
29	GND
30	GND
31	GND
32	GND
33	GND
34	GND

Pin Number	Description
35	CHA_SCD12
36	CHA_SCD13
37	CHA_SCD14
38	CHA_SCD15
39	CHA_SCDPH
40	CHA_SCD0
41	CHA_SCD1
42	CHA_SCD2
43	CHA_SCD3
44	CHA_SCD4
45	CHA_SCD5
46	CHA_SCD6
47	CHA_SCD7
48	CHA_SCDPL
49	GND
50	GND
51	RTPWR
52	RTPWR
53	NC
54	GND
55	CHA_ATN
56	GND
57	CHA_BSY
58	CHA_ACK
59	CHA_RST
60	CHA_MSG
61	CHA_SEL
62	CHA_CD
63	CHA_REQ
64	CHA_IO
65	CHA_SCD8
66	CHA_SCD9
67	CHA_SCD10
68	CHA_SCD11

• CN6: Ultra SCSI-2 Connector, 50-pin supports 20Mbps SCSI devices

Pin Number	Description
1	GND
2	CHA_SCD0
3	GND
4	CHA_SCD1
5	GND
6	CHA_SCD2
7	GND
8	CHA_SCD3
9	GND
10	CHA_SCD4
11	GND
12	CHA_SCD5
13	GND
14	CHA_SCD6
15	GND
16	CHA_SCD7
17	GND
18	CHA_SCDPL
19	GND
20	GND
21	GND
22	GND
23	GND
24	NC
25	GND

Pin Number	Description
26	RTPWR
27	GND
28	NC
29	GND
30	GND
31	GND
32	CHA_ATN
33	GND
34	GND
35	GND
36	CHA_BSY
37	GND
38	CHA_ACK
39	GND
40	CHA_RST
41	GND
42	CHA_MSG
43	GND
44	CHA_SEL
45	GND
46	CHA_CD
47	GND
48	CHA_REQ
49	GND
50	CHA_IO

For the location of CN7 and CN6, refer to figure 2.

LAN RJ45 Connector (CN16)

The SBC-SLOT1 is equipped with a built-in 10/100Mbps Ethernet Controller. You can connect it to your LAN through the RJ45 LAN connector. For the location of this connector, refer to figure 2.

Pin Number	Description
1	TX+
2	TX-
3	RX+
4	75 Ω termination
5	75 Ω termination
6	RX-
7	75 Ω termination
8	75 Ω termination

SYSTEM INTERRUPTS (IRQS)

IRQ0	System Timer
IRQ1	Keyboard
IRQ2	Cascade to IRQ Controller
IRQ3	COM2/COM4
IRQ4	COM1/COM3
IRQ5	Unused
IRQ6	FDC
IRQ7	Printer
IRQ8	RTC Clock
IRQ9	Unused
IRQ10	7880 SCSI
IRQ11	82559LAN
IRQ12	PS/2 mouse
IRQ13	FPU
IRQ14	Primary IDE
IRQ15	Secondary IDE

DMA CHANNEL ASSIGNMENTS

DMA Channel	Function
0	Available
1	Available
2	Floppy Disk (8-bit transfer)
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

I/O MAP

I/O Address Range	Description
000-01F	DMA Controller #1
020-021	Interrupt Controller #1, Master
040-05F	8254 Timer
060-06F	8042 (Keyboard Controller)
070-07F	Real time Clock, NMI (non-maskable interrupt) Mask
080-09F	DMA Page Register
0A0-0BF	Interrupt Controller #2
0C0-0DF	DMA Controller #2
0F0	Clear Math Coprocessor Busy
0F1	Reset Math Coprocessor
0F8-0FF	Math Coprocessor
1F0-1F8	Fixed Disk
200-207	Game I/O
278-27F	Parallel Printer Port 2 (LPT3)
2E8-2EF	Serial Port 4
2F8-2FF	Serial Port 2
300-31F	Prototype Card
360-36F	Reserved
378-37F	Parallel Printer Port 1 (LPT2)

I/O Address Range	Description
380-38F	SDLC, Bisynchronous 2
3A0-3AF	Bisynchronous 1
3B0-3BF	Monochrome Display and Printer Adapter (LPT1)
3C0-3CF	Reserved
3D0-3DF	Color/Graphics Monitor Adapter
3E8-3EF	Serial Port 3
3F0-3F7	Diskette Controller
3F8-3FF	Serial Port 1
443	Watchdog timer enable
43	Watchdog timer disable

1ST MB MEMORY ADDRESS MAP

Memory Address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
C0000-C7FFF	VGA BIOS
C8000-CFFFF	SCSI BIOS
D6000-D7FFF	DOC 2000
E0000-FFFFF	System BIOS
1000000-	Extend BIOS

3 BIOS Setup Menus

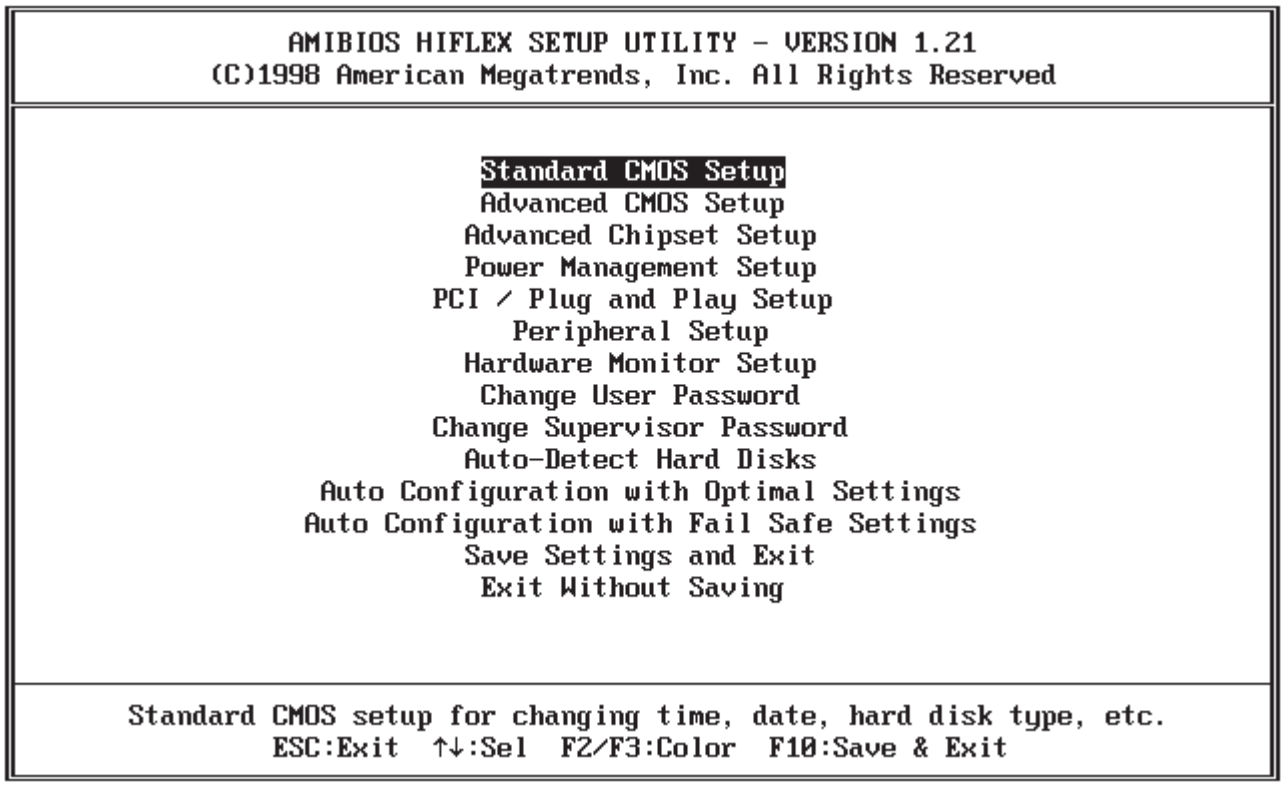
The SBC-SLOT1 uses the AMI PCI/ISA BIOS for system configuration. The AMI BIOS setup program is designed to provide maximum flexibility in configuring the system by offering various options that can be selected for end user requirements. This section is provided to assist you in the proper usage of these features.

GETTING STARTED

When you turn the system on, the BIOS will enter the Power-On-Self-Test routines. These routines will be executed for system test and initialization and system configuration verification.

Hit DEL if you want to run SETUP

To access AMI PCI/ISA BIOS Setup program, press the **Del** key. The following screen will be displayed at this time.



STANDARD CMOS SETUP

The standard CMOS Setup is used for basic hardware system configuration. The main function is for Date/Time setting and Floppy/Hard Disk setting. Refer to the following screen.

```
                    AMIBIOS SETUP - STANDARD CMOS SETUP
          (C)1998 American Megatrends, Inc. All Rights Reserved

Date (mm/dd/yyyy): Thu Apr 15,1999                      Base Memory: 0 KB
Time (hh/mm/ss)  : 14:50:39                             Extd Memory: 0 MB

Floppy Drive A:    1.44 MB 3½
Floppy Drive B:    Not Installed
                                                    LBA  Blk  PIO  32Bit
             Type          Size  Cyln  Head WPcom Sec Mode Mode Mode Mode
Pri Master : Auto                                                   On
Pri Slave  : Auto                                                   On
Sec Master : Auto                                                   On
Sec Slave  : Auto                                                   On

Boot Sector Virus Protection    Disabled

Month:  Jan - Dec                                       ESC:Exit  ↑↓:Sel
  Day:   01 - 31                                        PgUp/PgDn:Modify
 Year: 1901 - 9999                                      F1:Help F2/F3:Color
```

Date/Time: Use the left arrow, right arrow, and **Enter** keys to move from one field to the next. The numeric keys, 0-9, are used to change the field values. To set the date (MM:DD:YYYY), select one of the fields (Month, Day, or Year) and then press either **PgUp** or **PgDn** to set it to the current Month, Day, and Year. Follow the same procedure for setting the Time (HH/MM/SS). The hour is calculated according to a 24-hour military clock, i.e., 00:00:00 through 23:59:59.

> ***Note:*** It is not necessary to enter the seconds or type zeros in front of numbers.

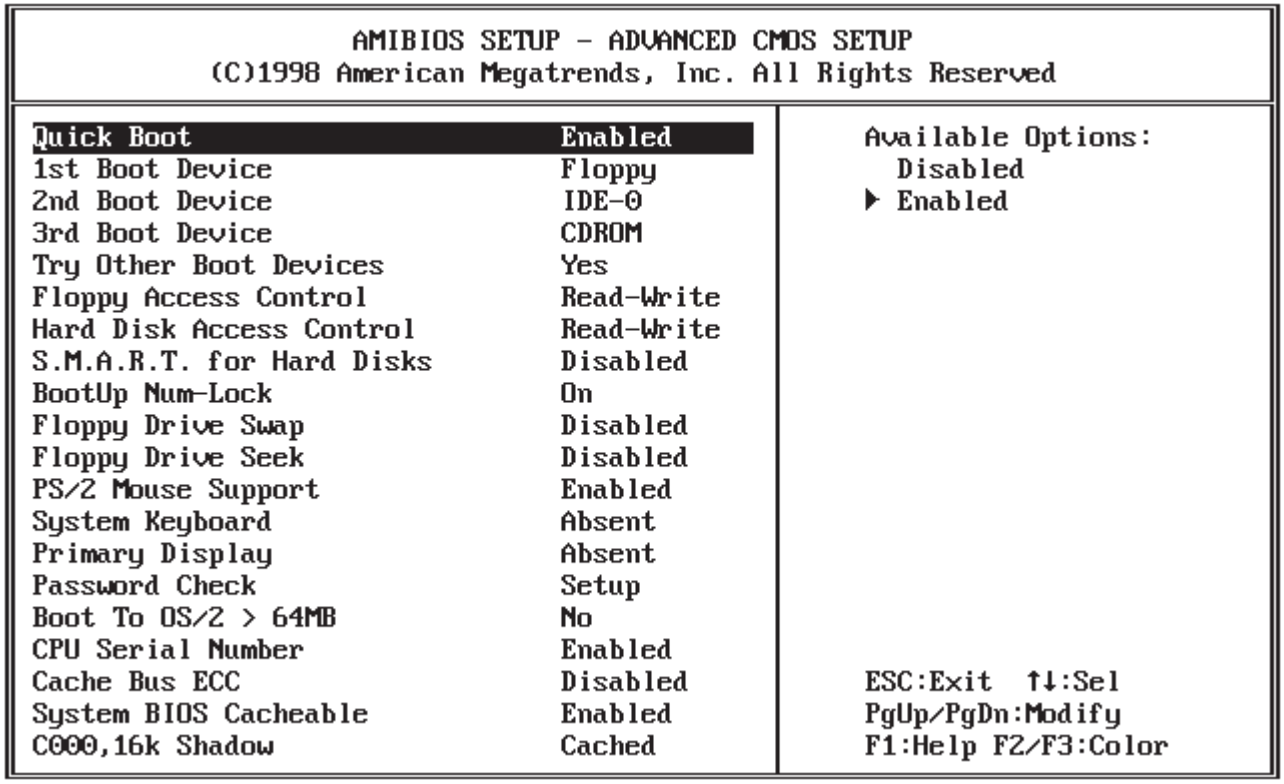
IDE hard disk drive setup: Use one of the following setup procedures:

- Use the Auto setting for detection during boot-up.
- Use the Auto-Detect Hard Disk option in the main menu; the computer will automatically detect the HDD specifications.
- Manually enter the specifications from the **User** option.

ADVANCED CMOS SETUP

The Advanced CMOS Setup is designed for optimizing the performance of the SBC-SLOT1. Under normal operation, you do not have to change any default settings. The default settings are preset for the most reliable operation.

The following screen will be displayed if you select Advanced CMOS Setup:



You can change the value of each option by using the **PgUp** and **PgDn** key. The available options are shown on the right side of the screen.

Quick Boot > : With the Quick Boot set to **Enabled**, the BIOS will only check the first 1 MB of the system memory, providing a quick boot when you turn on your computer. With the Quick Boot **Disabled**, the BIOS will test all system memory when it boots up. It will spend about 40 seconds until it receives a Ready signal from the HDD. It will also wait for you to press the **Del** key.

1st, 2nd, 3rd Boot Device >: This is used to define the sequence of boot drives after the routine check up completes. If the 1st Boot Device fails, the BIOS will attempt to boot from the 2nd or 3rd device. The Optimal and Fail-Safe default settings are C:, A:, CDROM.

Try Other Boot Devices >: The BIOS will try to boot from any other available device in the system if the 1st, 2nd, and 3rd device fails to boot.

Floppy Access Control >: This defines the read/write access which is set when booting from a floppy drive.

Hard Disk Access Control >: This defines the read/write access which is set when booting from a HDD.

S.M.A.R.T. for Hard Disks >: Allows the BIOS to use the System Management and Reporting Technologies protocol for reporting server system information on a network.

BootUp Num-Lock >: Turns on/off the Num-Lock option on an enhanced keyboard when you boot. If you turn it off, the arrow keys on the numeric keypad can be used just as the other set of arrow keys on the keyboard and vice versa.

Floppy Drive Swap >: This function enables you to swap the floppy disk drives through software without moving the hardware.

Floppy Drive Seek >: When this option is **Enabled**, the BIOS will perform a Seek command on floppy drive A: before boot-up.

PS/2 Mouse Support >: This is used to determine whether or not a PS/2 mouse is supported.

System Keyboard >: Configures the keyboard. If you set it to **Absent**, the BIOS will not report keyboard errors.

Primary Display >: Used to define the type of display monitor for the system. The **Absent** option is for network file servers.

Password Check >: Used to define whether or not a password is necessary for access to the BIOS setup.

Boot to OS/2 >: If you run the OS/2 operating system, this option must be set to **Yes**, permitting the BIOS to run properly if OS/2 or any other OS that does not support Plug and Play is found in your computer.

CPU Serial Number> : This option is available only if you use a Pentium® III processor.

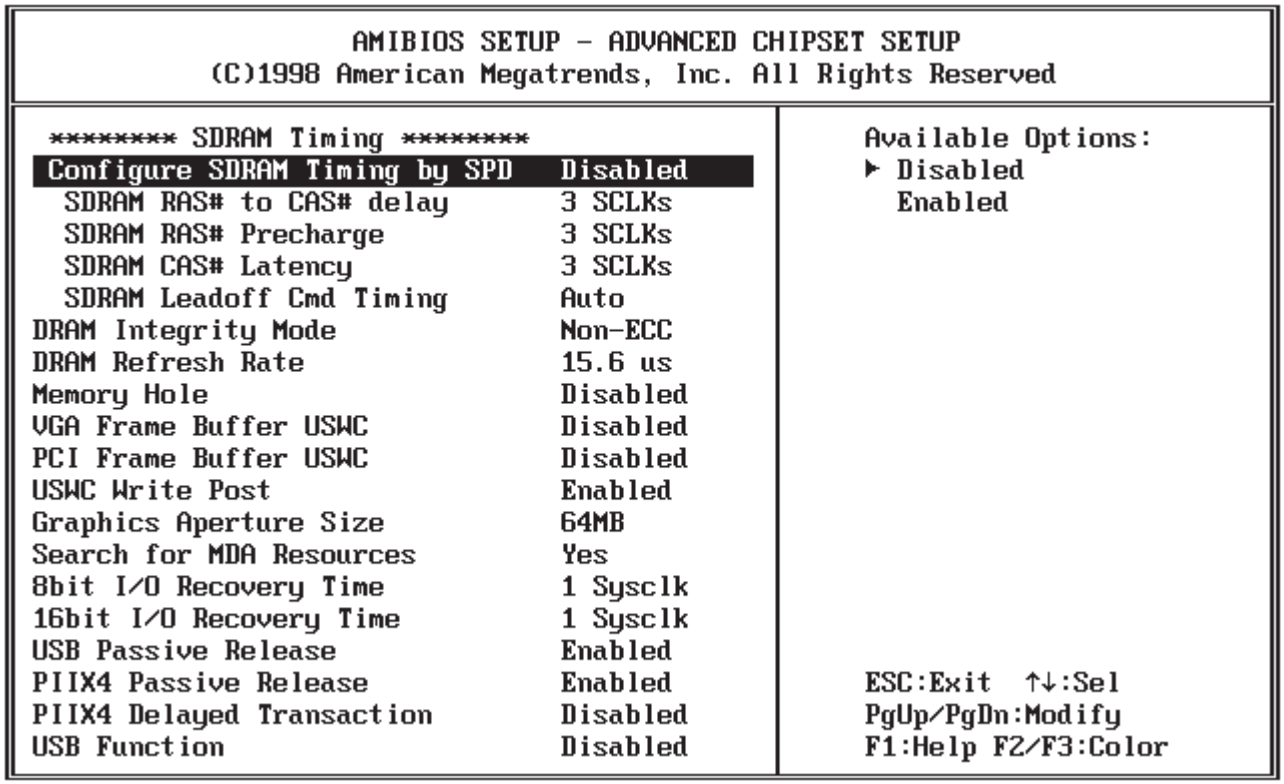
Cache Bus ECC >: This option is available only if you use a Pentium® III processor.

System BIOS Cacheable >: Used to define whether or not the memory segment FOOOH can be read from or written to cache memory. Setting it to **Enabled** will provide faster execution in your system.

XXXX, 16k Shadow >: ROM Shadow is a technique in which BIOS code is copied from slower ROM to faster RAM. If you enable it, the BIOS will be executed from the RAM. Each option allows 16 K segment to be shadowed to the RAM.

ADVANCED CHIPSET SETUP

These setup functions are working mostly for Chipset (Intel 440BX). These options are used to change the Chipset's registers. Carefully change any default setting, otherwise the system will run unstably.



Configure SDRAM Timing by SPD >: Enabled will select predetermined optimal values of chipset parameters. When **Disabled**, chipset parameters return to setup information stored in CMOS.

SDRAM RAS# to CAS Delay >: Used to specify the relative delay between row and column address strobe from SDRAM.

SDRAM RAS# Precharge >: This option specifies the length of time for Row Address Strobe from SDRAM to precharge.

SDRAM CAS# Latency >: Used to specify the CAS latency timing from SDRAM DRAM.

DRAM Integrity Mode >: Used to choose DRAM Integrity Mode; ECC/EC will enable the Error Checking and Correction DRAM integrity mode.

DRAM Refresh Rate >: Used to specify the timing for DRAM Refresh.

Memory Hole >: Used to specify the location of a memory hole in the CMOS RAM. This setting reserves 15 to 16 MB memory address space for ISA expansion cards that specifically require this setting. Memory from 15 MB and up will be unavailable to the system because expansion cards can only access memory up to 16 MB.

VGA Frame Buffer USWC >: Used to specify whether or not a caching of the video A000-BFFF RAM is allowed. **Enabled** will provide better system performance.

PCI Frame Buffer USWC >: Used to specify whether or not a caching of the PCI VGA frame buffer is allowed.

USWC Write Post >: Enable or disable the use of Uncacheable, Speculatable, Write-Combined memory.

Graphics Aperture Size >: Define the size of Graphics Aperture.

Search for MDA Resources >: Allows the BIOS to search for MDA resources when **Yes** is specified.

8bit I/O Recovery Time >: Define the length of time for 8 bit I/O recovery.

16bit I/O Recovery Time >: Define the length of time for 16 bit I/O recovery.

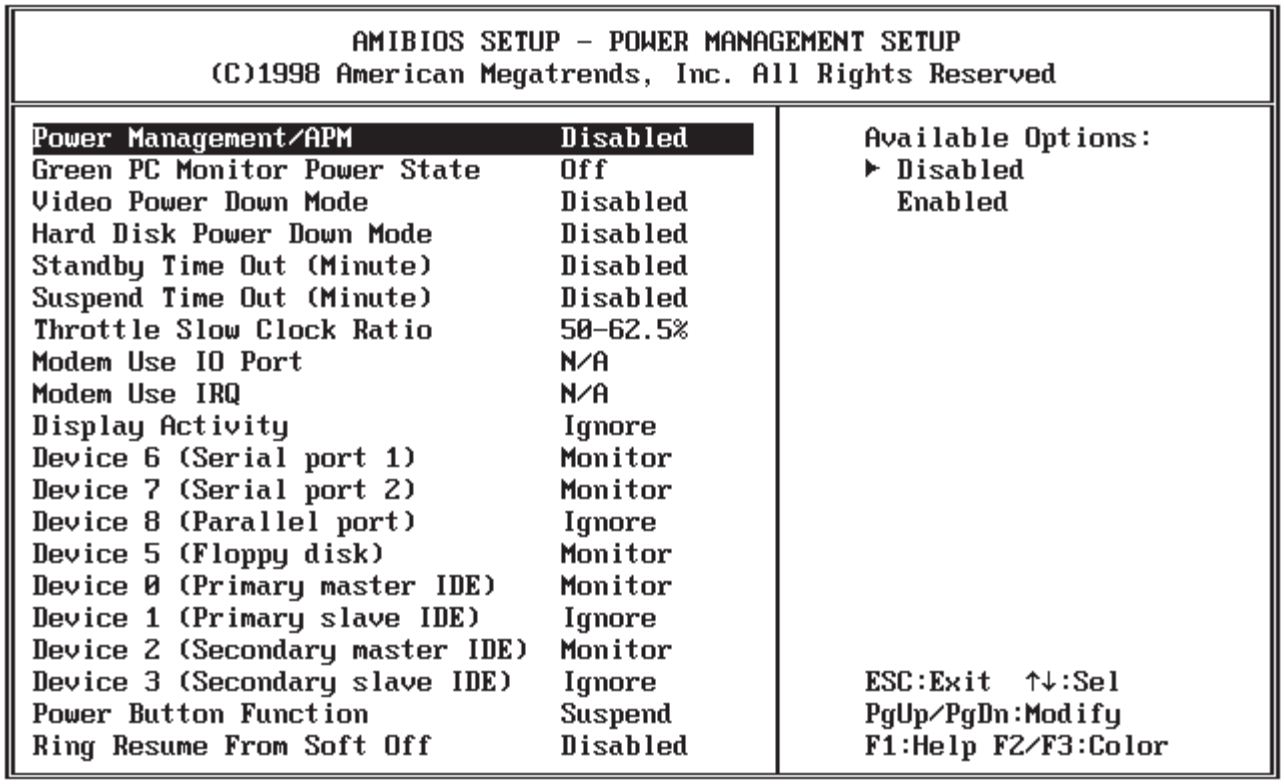
USB Passive Release >: Specify whether or not PIIX4 is allowed to use Passive Release while transferring control data for USB transactions.

PIIX4 Passive Release >: PIIX4 points to the Intel 82371AB PCI/ISA/IDE Xcelerator chip. Setting this option to **Enabled** will prioritize PCI at the top, then IDE and ISA.

PIIX4 Delayed Transaction >: Used to enable or disable the embedded 32-bit posted write buffer, which supports delay transaction.

USB Function >: Enable or disable the USB (Universal Serial Bus) functions.

POWER MANAGEMENT SETUP



Power Management/APM >: Enables or disables the Advanced Power Management feature.

Green PC Monitor Power State >: Specify the power state of the monitor after the specified period of display-idle has ended.

Video Power Down Mode >: Specify the power state of the VESA VGA video subsystem after the specified period of display-idle has ended.

Hard Disk Power Down Mode >: Specify the power state of the hard disk after the specified period of hard drive-idle has ended.

Standby Time Out (Minute) >: Specify the length of the system-idle period while the system is in full power-on state. After this period of time has ended, the system will go into Standby state.

Suspend Time Out (Minute) >: Specify the length of the system-idle period while the system is in Standby state. After this period of time has ended, the system will go into Suspend state.

Throttle Slow Clock Ratio >: Specify the speed of the system clock under power saving state. The figure is a ratio between power conserving and normal state CPU clock.

Modem Use IO Port >: Assign a port for modem.

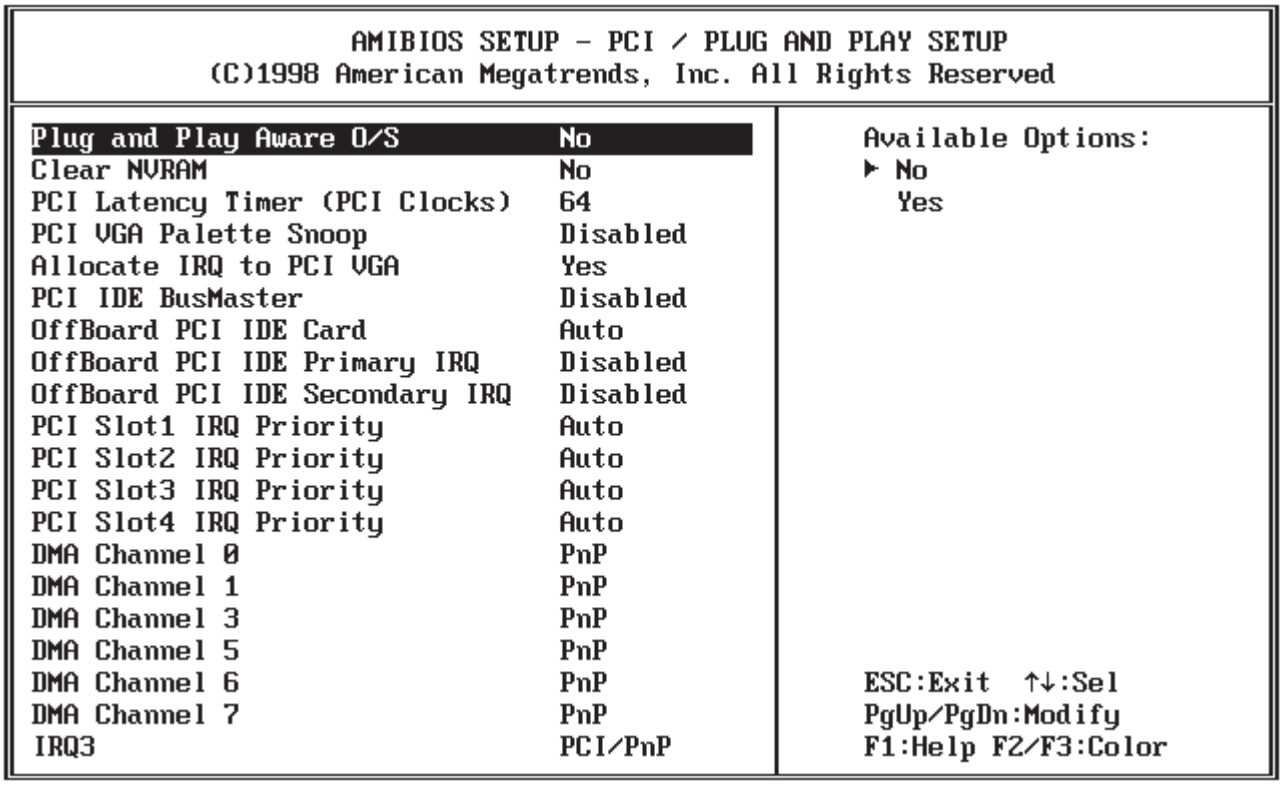
Modem Use IRQ >: Assign an IRQ for modem.

Display Activity >: Specify if the BIOS should monitor display activity or not.

Device X >: Used to monitor or ignore specified device IRQs.

PCI/PLUG AND PLAY SETUP

This setup handles the SBC-SLOT1 PCI function. All PCI bus slots on the system use INTA#, thus all installed PCI slots must be set.



Plug and Play Aware O/S >: When PNP OS is installed, interrupts will be reassigned by the OS when the setting is **Yes**. When a non-PNP OS is installed or to prevent reassigning of interrupt settings, set the setting to **No**.

Clear NVRAM >: Specify whether or not the BIOS will clear NVRAM on every boot.

PCI Latency Timer (PCI Clocks) >: Define the latency timing (PCI clock) for all PCI devices on the PCI bus.

PCI VGA Palette Snoop >: This option is useful only for a system with more than one VGA device connected to it through different bus (one PCI and one ISA). To enable those various VGA devices to handle signals from the CPU on each set of palette registers of every video device, it must be set to **Enabled**.

> ***Note:*** If another PCI or ISA video card is needed other than the onboard VGA, set **PCI VGA Palette Snoop** to **Enabled**. The system will automatically recognize and use the additional video card when **Enabled**.

Allocate IRQ to PCI VGA >: To allocate IRQ to PCI VGA, select **Yes**.

PCI IDE BusMaster >: Used to include the BusMastering capability into the IDE Controller on the PCI.

Offboard PCI IDE Card >: This function is used to specify whether or not an offboard PCI IDE card is installed in your computer. You must specify the slot number on the board which will be used for the card.

Offboard PCI IDE Primary (/Secondary) IRQ >: Specify the PCI interrupt that is assigned to the Primary (/Secondary) IDE channel on the offboard PCI IDE controller.

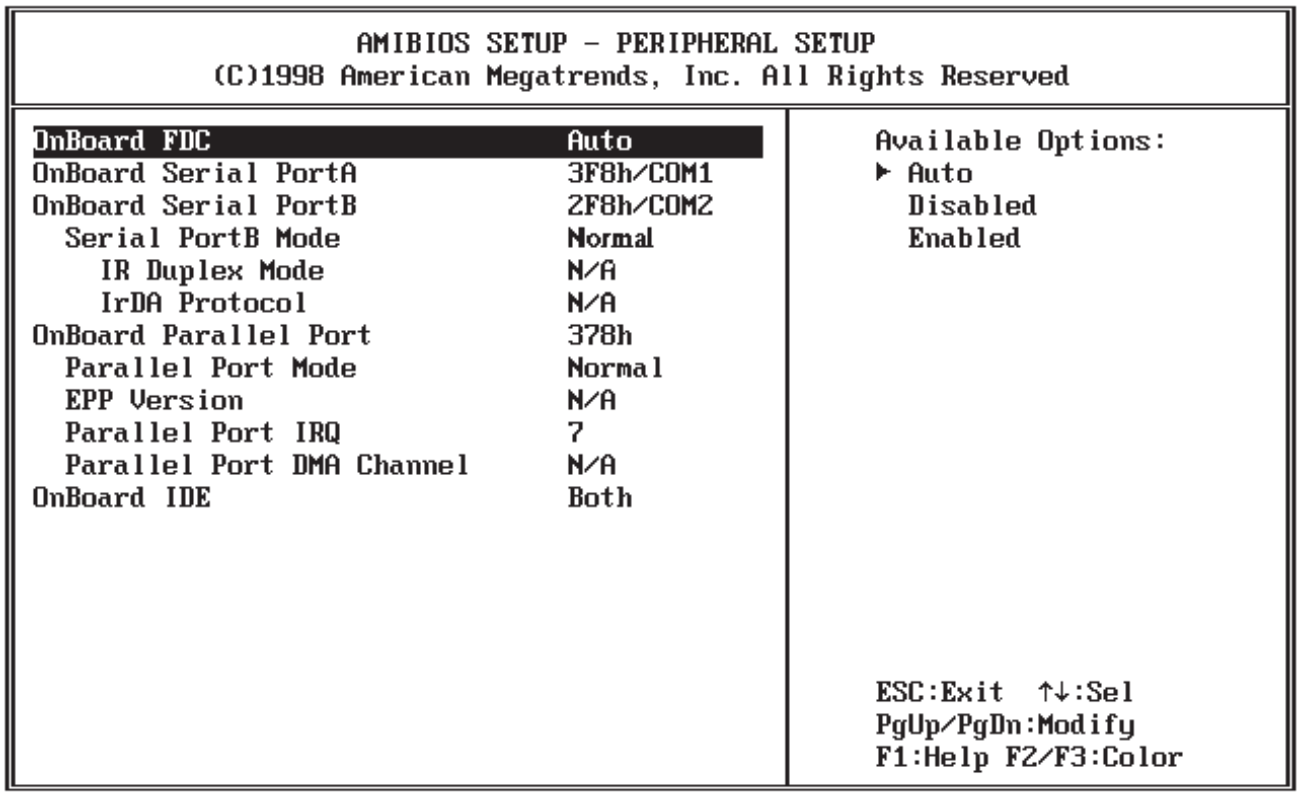
PCI Slot (1,2,3,4) IRQ Priority >: Specify the IRQ priority to be used by the PCI devices on slots 1 to 4.

DMA Channel (0,1,3,5,6,7) >: Used to indicate whether or not the DMA channel is assigned for a PnP or ISA card.

IRQ (3,4,5,7,9,10,11,14,15) >: Assign the displayed IRQ to be used by a legacy ISA adapter card. The settings are **ISA/EISA** or **PCI/PnP**.

PERIPHERAL SETUP

This setup works mostly on Multi-I/O Chip (W83977F). The options are used to change the Chipset's registers. Carefully change any default setting to meet your application needs. The only concern is Onboard Serial Port 2. If you want to use the IrDA port, you have to configure the SIR or ASKIR model in the BIOS's Peripheral Setup's COM2; the RS-232 COM2 will be disabled.



Onboard FDC >: Used to enable the FDC on your board. If you set it to **Auto**, the BIOS will automatically decide if the FDC should be enabled.

Onboard Serial Port A (/B) >: Specify the I/O port address of the serial port 1(/2). If you set it to **Auto**, the BIOS will decide the correct I/O port address automatically.

Serial Port B Mode >: Specify the mode of serial port 2.

IR Duplex Mode >: Specify the mode of IR device that is connected to the IR port.

IrDA Protocol >: Specify the function mode if an IrDA mode is selected.

Onboard Parallel Port >: Specify the I/O port address of the parallel port.

Parallel Port Mode >: Used to specify the mode of parallel port. The options are:

- **Normal** (normal parallel port mode)
- **Bi-Dir** (supports bidirectional transfer)
- **EPP** (supports devices that comply with the Enhanced Parallel Port specification)
- **ECP** (supports devices that comply with the Extended Capabilities Port)

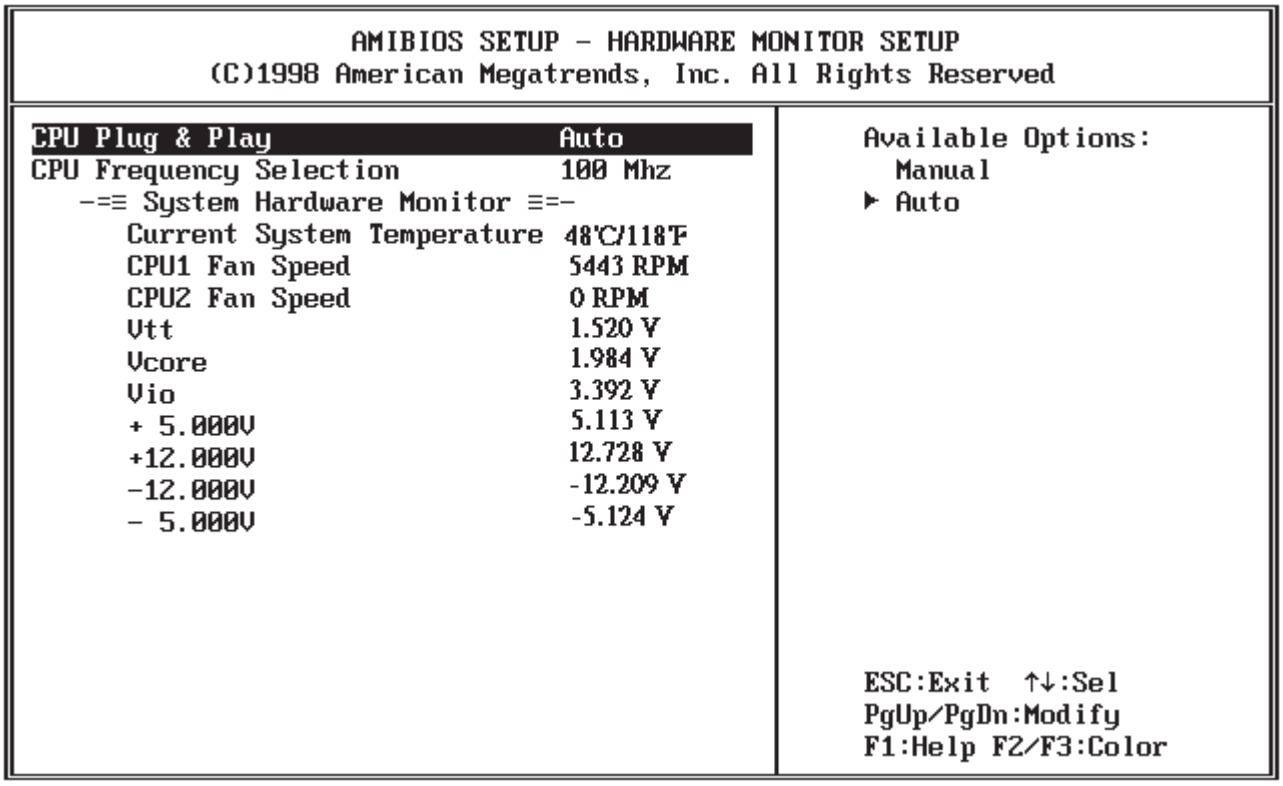
Parallel Port IRQ >: This option is used to assign certain IRQ to the parallel port. The optimal and fail-safe setting is 7.

Parallel Port DMA Channel >: This function is available only if the parallel port mode is ECP. The optimal and fail-safe setting is 3.

Onboard IDE >: Define which onboard IDE controller channel(s) should be used. Available options are: **Primary**, **Secondary**, **Both**, and **Disabled**.

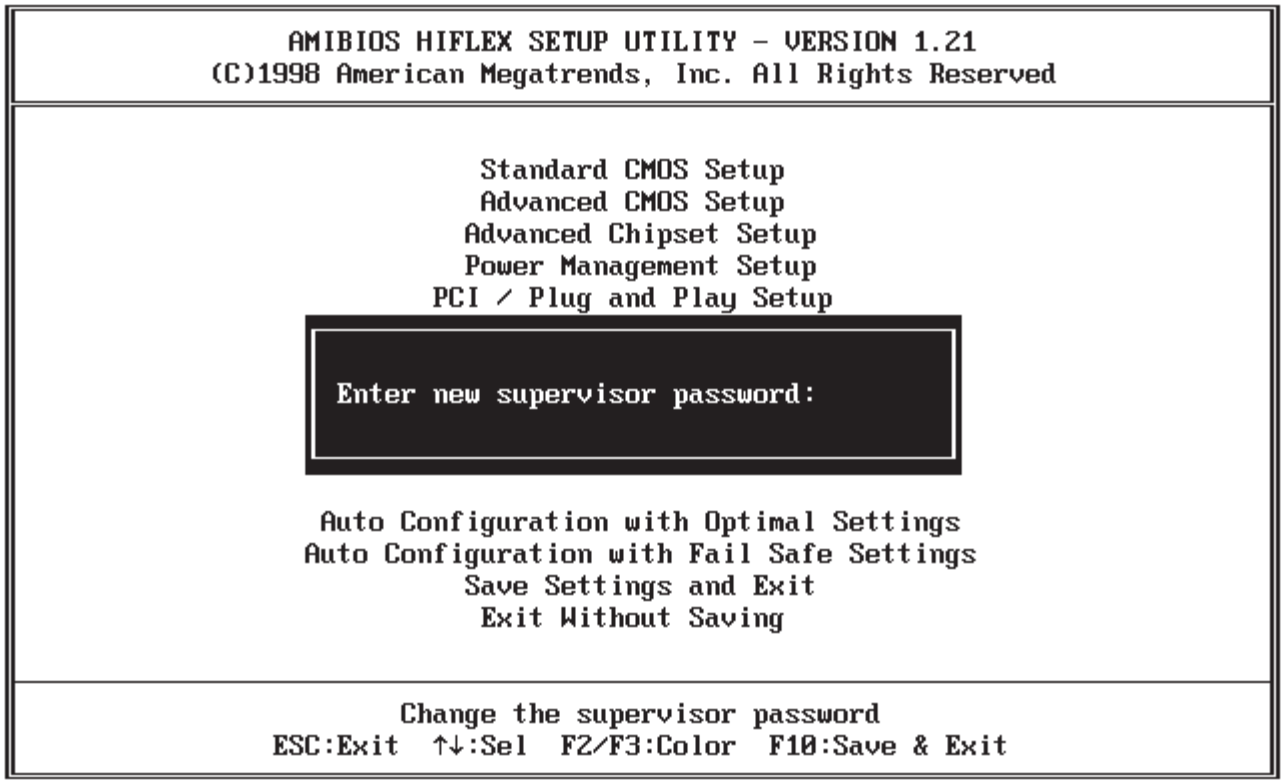
HARDWARE MONITOR SETUP

There is a LM78 chip that can monitor onboard system voltage and fan speed. The voltage monitoring will cover +5V, +12V, -12V, and -5V.



Note: Normal CPU fan RPM is more than 5000 RPM. If your CPU fan RPM is less than 5000 RPM, something is wrong and the CPU will be in overheat condition. Make sure that the connection at CN11/CN12 is correct.

CHANGE SUPERVISOR/USER PASSWORD



Set a password that is used to protect your system and Setup Utility. Supervisor Password has higher priority than User Password. Once you setup the password, the system will ask you to enter the password every time you enter the BIOS SETUP. If you enter the BIOS SETUP with the Supervisor Password, you can access every setup option on the main menu. With a User Password, you can only choose three setup options (**Change User Password, Save Setting and Exit**, and **Exit Without Saving**). To disable these passwords, enter the BIOS SETUP menu with the Supervisor Password and then press the **Enter** key instead of entering a new password when the **Enter Password** prompt appears.

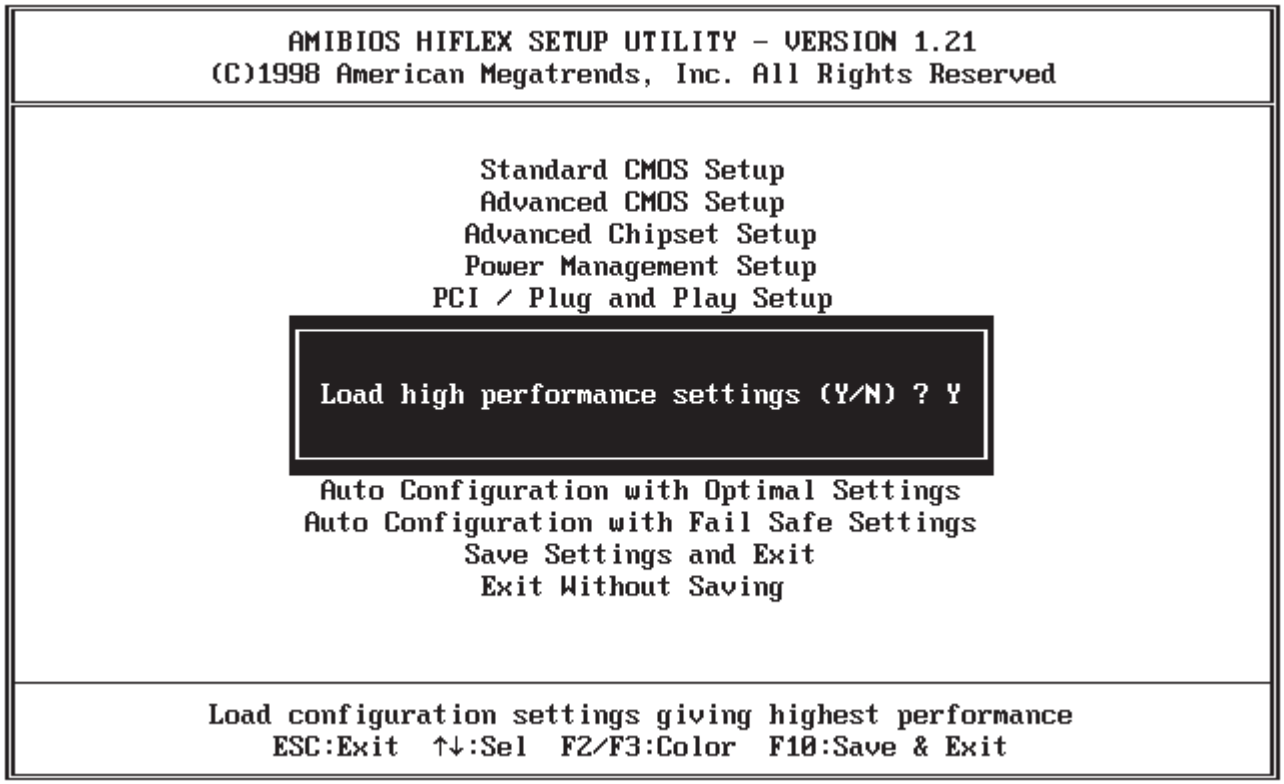
AUTO-DETECT HARD DISK

This option detects the parameters of an IDE hard disk drive (HDD sector, cylinder, head, etc.) automatically and will put the parameters into the Standard CMOS Setup screen. Up to 4 IDE drives can be detected and the parameters will be listed in the box. Press **Y** if you accept these parameters. Press **N** to skip to the next IDE drive.

Note: If your IDE HDD was formatted in a previous system, incorrect parameters may be detected. In this case, you need to enter the correct parameters manually or low-level format the disk.

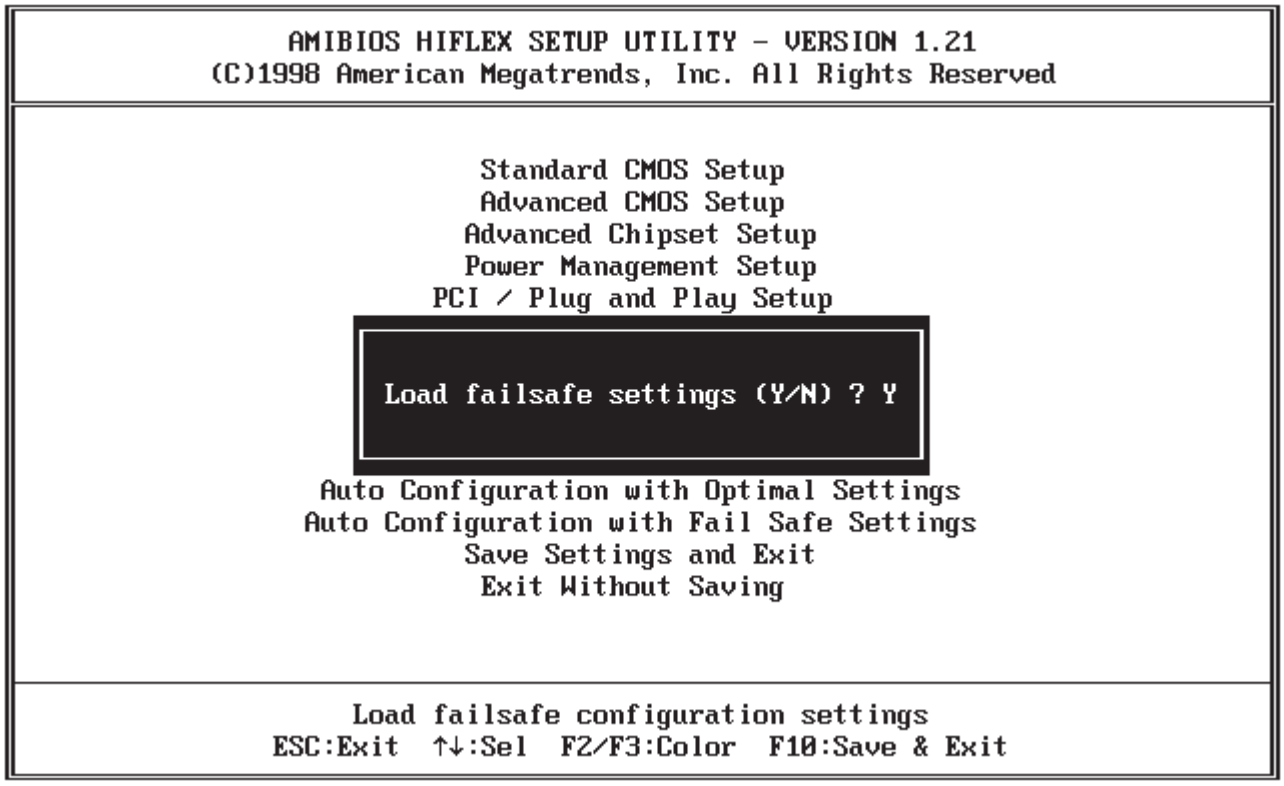
AUTO CONFIGURATION WITH OPTIMAL SETTINGS

This option lets you load the Optimal default settings. These settings are best-case values that will provide the best performance. Whenever your CMOS RAM is damaged, the Optimal settings will be loaded automatically.



AUTO CONFIGURATION WITH FAIL SAFE SETTINGS

This option allows you to load the Fail Safe default settings when your computer cannot boot normally. These settings are not optimal, but are the most stable.



SAVE SETTINGS AND EXIT

Select this option when you finish setting all the parameters and want to save them into the CMOS. Simply press the **Enter** key and all the configuration changes will be saved.

EXIT WITHOUT SAVING

Select this option if you want to exit the Setup without saving the changes that you made. Simply press the **Enter** key and you will exit the BIOS SETUP without saving the changes.

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