

USER'S MANUAL

# MSC-251

ALL-IN-ONE 586 HALF-SIZE ISA-BUS  
SLOT BOARD COMPUTER







ALI  
M1521 A1  
0102 TS07  
AU110610J2 328

ALI  
M1523 A1  
0050 TS05  
XBP09811001I

AMIBIOS  
580011985-95  
AMERICAN  
MEGATRENDS  
HE79849

CPU BD:MSC-261AL-BS6,ISA  
TR09M0300415

Socket Z1

R1.068

MCO-1500A  
K31818M H  
TQC 07H

100nF

AT2816B  
C  
5045

POWER

SYSTEM SSD

PC104

SL2

EXT K/B

CN16 31MC

SL1

JP21

JP20

JP26

TCL

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JP28

PC104

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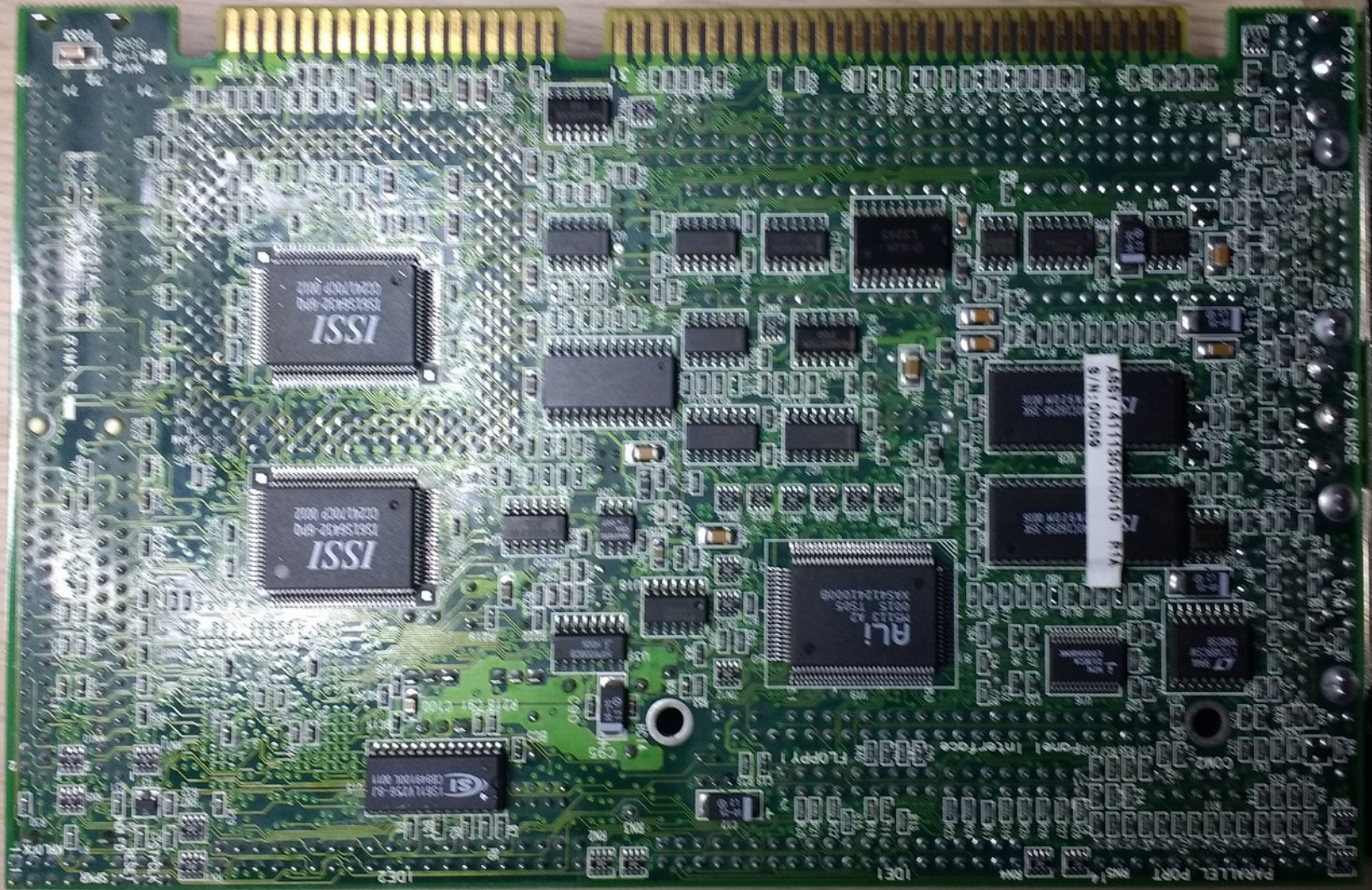
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IS61SV6432-90  
022470CP 0012

ISSI  
IS61SV6432-90  
022470CP 0012

ALI  
X86124L0005  
9015 7505

ASST 741136100010 P1A  
S/N: 000058

SiI  
S811V058-8J  
8889100L 0011

PS/2 K/B  
PS/2 MOUSE  
COM1  
COM2  
PARALLEL PORT  
FLOPPY 1  
IDE1  
IDE2



# MSC-251

ALL-IN-ONE 586 HALF-SIZE  
ISA-BUS SLOT BOARD COMPUTER

## USER'S MANUAL

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Web Site: <http://mitac.mic.com.tw>

Part Number: 561513010001 R1.8  
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## EC Declaration of Conformity

For the following equipment:

Industrial CPU Card

(Product Name)

MSC-251

( Model Name )

MITAC TECHNOLOGY CORP.  
(Trade Name)

is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility Directive ( 89/336/EEC).For the evaluation regarding the Electromagnetic Compatibility Directive, the following standards were applied :

EMC: EN 55022 ( 1987 ) Class A  
EN 50082-2 (1992 )  
EN 61000-3-2( 1995 )  
EN 61000-3-3( 1995 )  
IEC 1000-4-2 ( 1994 )  
IEC 1000-4-3 ( 1994 )  
IEC 1000-4-4 ( 1995 )

LVD: EN60950 : 1992+A1 +A2+A3

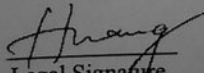
The following manufacturer is responsible for this declaration :

MITAC TECHNOLOGY CORP.  
(Company Name)

No. 19-1 Innovation Rd. 1, Hsinchu Science-Based  
Industrial Park, Hsinchu, Taiwan, R.O.C.  
(Company Address)

Taipei, R.O.C.  
Place

March 1, 1997  
Date

  
Legal Signature  
of Authorized Person

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## Chapter 1

# Introduction

### 1.1 Checklist

When you unpack, check if your MSC-251 package includes the following items :

- MSC-251 Slot Board Computer
- 6-pin mini-DIN to PC/AT keyboard conversion cable
- This User's manual
- IDE Driver diskette
- VGA Driver diskette
- Ribbon cable for COM and printer port connector
- Ribbon cables for floppy disk drive and hard disk drive
- Ribbon cable for panel interface connector

Save all packing materials in case you'll be shipping your MSC-251 package in the future.

## 1.2 Specifications and Features

The MSC-251 all-in-one industrial slot board computer is designed to fit a high performance Intel Pentium-based 75 MHz up to 233 MHz solution for high-end computer system with PC1 Local Bus architecture. It is made to meet today's demanding pace, and maintaining complete compatibility with software written for the IBM PC/AT. Functionality, portability, flexibility, versatility, and quality are the key design features of the MSC-251 industrial slot board computer.

CPU's supported :

Intel Pentium 75/90/100/120/133/150/166/180/200 MHz

Intel Pentium P55C

Cyrix 6 x 86 (MI)

AMD 5K86, K5 Series, K6 Series

Supports Pipelined Burst SRAM for L2 cache whose size is 512 KB.

Supports Fast Page Mode (FPM), Extended Data Out(EDO), and Burst Extended Data Out (BEDO)DRAM whose size, is from 1 MB to 128 MB, using 256K/1M/2M/4M/8M/16M x 32 bit or 36 bit 72-pin SIMMs.

On-board built-in PS/2 Keyboard and PS/2 Mouse

Two built-in high-speed serial ports (with optional RS -232/422)

One built-in parallel port for the printer

Two built-in PC1 IDE interface for hard disk drives

Built-in FDD interface for floppy disk drives

Supports BIOS and Video ROM shadowing capability

Built-in buzzer and external speaker connector

BQ3287A Real-Time Clock

10-year data retention

128 byte RAM locations

CMOS Memory can be cleared

Non-loss CMOS setup

On-board power-good signal generator

PC/104 Bus for expansion modules.

Watch-dog Timer

Connectors : Reset switch and Keylock switch,  
IDE hard disk LED,  
External speaker,  
Stop CPU clock

Supports single chip of M-system Flash memory 2MB up to 12MB.

Fully supports 16-bit I/O decoding

On-board VGA/Panel display interface :

Up to 1024 x 768 resolution

Internal panel interface with 50 pin shrouded header

Supports simultaneous display flat Panel/CRT modes.

Power requirements :

+ 12V @ 25mA typ.

+ 5V @3.27A typ.

Dimension (LxH) : ISA card form factor

7.283" x 4.783"

(184.99mm X 121.49mm)

Environmental specifications :

Operating temperature : 32 to 140 F(0 ~ 60 C)

Storage temperature : -20 - 85 C

Relative humidity : 5% - 95% (non-condensing)

EMI : FCC CLASS A & CE

MTBF : 50 Khrs

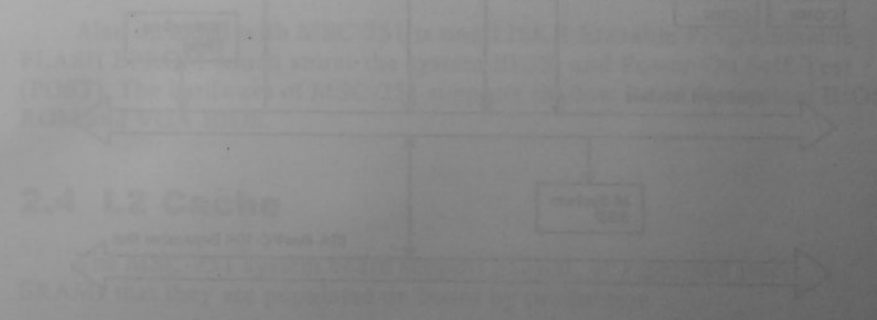
## Chapter 2

# System Architecture

### 2.1 System Block Diagram

The MSC-251 slot board computer is based on a typical PCI Local Bus system architecture (see Figure 2-1) and using advanced, highly integrated, 3-chips VLSI to implement PCI/ISA bus operation. M1521 integrates the logic for CPU to PCI bridge, Cache memory, DRAM, and Buffer control. M1523 is a bridge between PCI bus and ISA bus and provides PCI IDE Controller, PS2 mouse and Keyboard Controller, Counter/Timers, DMA, and Interrupt control.

M5113 is an Enhanced Super I/O Controller, provides the serial port (using 16C550 FIFO UART), multi-mode parallel port, and FDC interface.





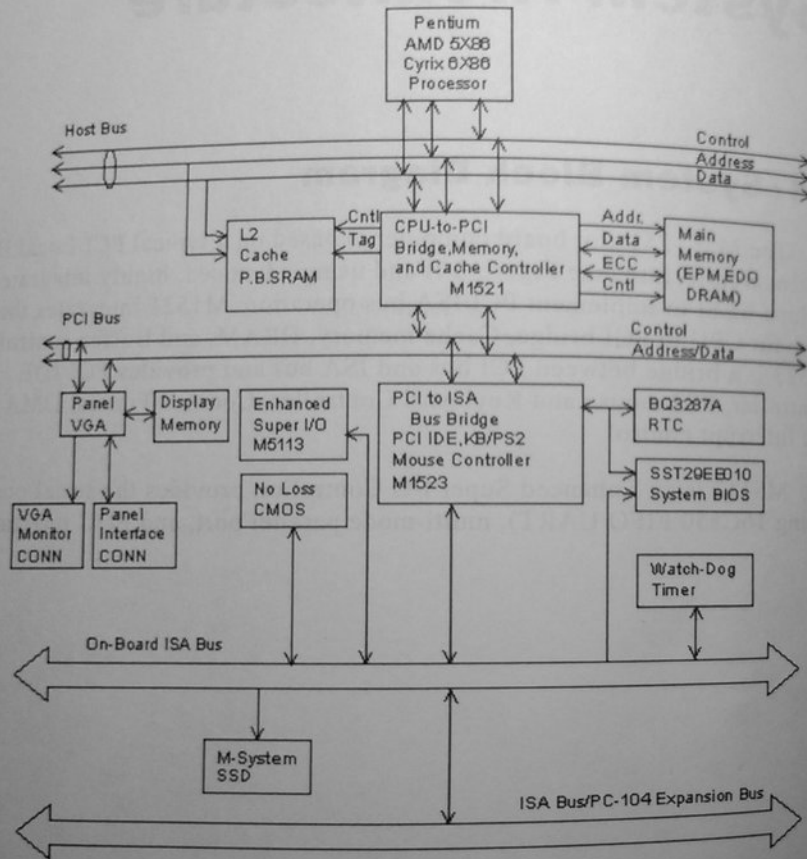


Figure 2-1 MSC-251 System Block Diagram

## 2.2 Microprocessor

The microprocessor used on MSC-251 can be Intel Pentium P54C 75/90/100/120/133/150/166/180/200 MHz, future P55C 166/180/200/233 MHz, Cyrix 6x86(MI) series, or AMD 5K86 (K5) series and K6 series.

## 2.3 Memory

The MSC-251 slot board computer supports single- or double-side DRAM from 1MB up to 128MB using 256K/1M/2M/4M/8M/16M x 36 bit or 32 bit SIMMs in two 72-pin SIMM sockets.

The two SIMM sockets are configured as a 64-bit memory bank. A 32-bit memory path, i.e. one 72-pin SIMM populated only, is also allowed for MSC-251 to work.

MSC-251 provides an ECC (Error Checking and Correction) DRAM data integrity feature that supports single-bit-error correction, double-bit-error detection, and detection of all errors confined to a single nibble. Besides, you can clear CMOS RAM to recover the "ECC" setup failure.

Also included with MSC-251 is one 128KB Erasable Programmable FLASH EPROM which stores the system BIOS, and Power-On Self-Test (POST). The hardware of MSC-251 supports shadow RAM for system BIOS ROM and VGA BIOS.

## 2.4 L2 Cache

The MSC-251 system board support 512KB, of Pipelined Burst SRAMs that they are populated on board by production.

## 2.5 On-board VGA / Panel Display

The MSC-251 on-board CHIPS 65550-PC1 VGA Flat Panel/CRT controller offers a large set of extended functions and provides higher resolutions and higher performance.

Bus Interface : PCI bus

Memory : 1MB

Panel interface with 50 pin shrouded header

Supports simultaneous display flat panel/CRT modes

Supports panel resolutions including 800 x 600 and 640 x 480

Supports non-interlaced CRT monitors with resolutions up to 1024 x 768/16 bit colors

True-color and Hi-color display capability with flat panels and CRT monitors up to 640 x 480 resolution

DDC for CRT Plug-and-Play

Supports a wide range of flat panels and CRT monitor.

## 2.6 Watch-dog Timer

If this feature is enabled by jumper setting and Software, a system reset is generated unless the CPU periodically triggers the timer within time-out period. This allows the system to restart in an orderly way in case of a power glitch or any abnormal condition is found.

This Watch-Dog Timer comes with 3 ranges of time interval is 1s, 10s and 30 sec which can be adjusted by setting jumper. It could be enabled and programmed by reading I/O port 433H to continuously issue trigger, and disabled by reading port 033H. There is a tolerance of 20% timer limit must be noted. For example, if the time-out period has been set to 1 second then the WDT trigger command must be issued within 800 msec at least.

## 2.7 M-System SSD

MSC-251 is equipped with an internal M-system DOC (Disk On Chip). Embedded TrueFFS in DOC provides.

- (a) Full hard disk read/write compatibility.
- (b) Automatic bad block management.
- (c) Uniformly wear leveling.

DOC can be formatted as 1st HDD or 2nd HDD. The default configuration for DOC is 2nd HDD, in other words, DOC appears after physical HDD.

Now broad OS support in DOC, such as DOS, WIN31, WIN95, QNX....., and easily integrated into your system.

## 2.8 Non-loss CMOS Setup Function

This is an easy Fail-Safe CMOS design. The CPU board will automatically make a CMOS backup and save to EEPROM through I/O port 410 & 411 while user save & exit CMOS setup every time. The latest CMOS data will be restored from EEPROM to CMOS RAM whenever the CMOS failure happens.



## 2.9 MSC-251AR and MSC-251AL



PC/104 Connect for MSC-251AR

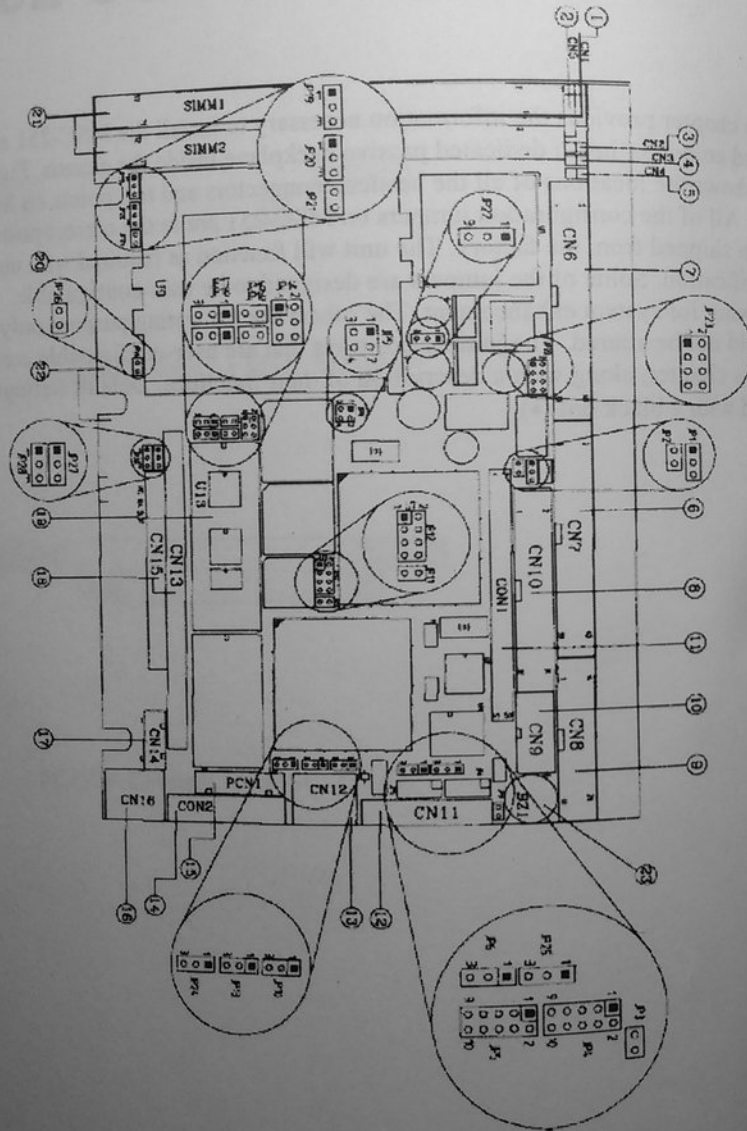


PC/104 Connect for MSC-251AL

## Chapter 3

# Configuring the MSC-251

This chapter provides the information necessary to install the MSC-251 slot board computer into a dedicated passive backplane inside the chassis. Figure 3-1 shows the locations of all the headers, connectors and test points on MSC-251. All of the configuration jumpers on MSC-251 are in the correct positions when shipped from the factory. The unit will function as required with no modification. Some of the jumpers are designed to be user-configurable, allowing for system enhancement. The others are for testing purpose only and should not be altered. The jumper positions that are user-configurable are listed in this chapter, along with a description of their functions. Default settings are listed with a black dot (•).



1. CN1 : EXTERNAL SPEAKER INTERFACE
2. CN5 : KEYBOARD LOCK CONNECTOR
3. CN2 : HOD LED CONNECTOR
4. CN3 : RESET SWITCH CONNECTOR
5. CN4 : CPU STOP CLOCK INPUT CONTROL
6. CN7 : ON-BOARD PCI IDE PRIMARY CONNECTOR
7. CN6 : ON-BOARD PCI IDE SECONDARY CONNECTOR
8. CN10 : FLOPPY DISK INTERFACE CONNECTOR
9. CN8 : PARALLEL PORT CONNECTOR
10. CN9 : SERIAL PORT 2
11. CON1 : LCD PANEL INTERFACE CONNECTOR
12. CN11 : SERIAL PORT 1
13. CN12 : MINI-DIN 6 PIN (PS/2) MOUSE CONNECTOR
14. CON2 : VGA PORT
15. PCN1 : PC/104 POWER SUPPLY INPUT CONNECTOR
16. CN16 : MINI-DIN 6 PIN KEYBOARD CONNECTOR
17. CN14 : EXTENDED KEYBOARD CONNECTOR
18. CN13,CN15 : PC/104 EXPANSION BUS CONNECTOR
19. U13 : M-SYSTEM SSD SOCKET
20. U9 : CPU PGA ZIF SOCKET (SOCKET 7)
21. SIMM1-SIMM2 : 72 PIN SIMM
22. SL1,SL2 : ISA BUS
23. BZ1 : ON-BOARD BUZZER

Figure 3-1 MSC-251 Intensive All-in-One Pentium-based PCI Slot Board Computer



### 3.1 MSC-251 Shunt Settings

#### 3.1.1 CPU Type

**CPU Frequency Jumper Setting:**

| JP19 | JP20 | JP9     | JP21 | P54C | P55C (MMX) | M1  | K5      | PCICLK |
|------|------|---------|------|------|------------|-----|---------|--------|
| 2-3  | NC   | 1-2     | OUT  | 200  |            |     |         | 33 MHz |
| 2-3  | NC   | 3-4     | OUT  | 180  |            |     |         | 30 MHz |
| 2-3  | 2-3  | 1-2     | OUT  | 166  | 166        |     | 166     | 33 MHz |
| 2-3  | 2-3  | 3-4     | OUT  | 150  |            |     |         | 30 MHz |
| NC   | 2-3  | 1-2     | OUT  | 133  |            |     |         | 33 MHz |
| NC   | 2-3  | 3-4     | OUT  | 120  |            |     |         | 30 MHz |
| NC   | NC   | 1-2     | OUT  | 100  |            |     | 100/133 | 33 MHz |
| NC   | NC   | 3-4     | OUT  | 90   |            |     | 90      | 30 MHz |
| NC   | NC   | 1-2,3-4 | OUT  | 75   |            |     | 75      | 25 MHz |
| NC   | NC   | 1-2,3-4 | IN   |      |            | 120 |         | 25 MHz |
| NC   | NC   | 1-2     | IN   |      |            | 166 |         | 33 MHz |
| NC   | NC   | 3-4     | IN   |      |            | 150 |         | 30 MHz |
| 2-3  | 1-2  | 1-2     | OUT  |      | 200        |     |         | 33 MHz |
| 2-3  | 1-2  | 3-4     | OUT  |      | 180        |     |         | 30 MHz |
| 1-2  | 1-2  | 1-2     | OUT  |      | 233 •      |     |         | 33 MHz |

**CPU Voltage:**

| CPU TYPE | P55C, K6 | P54C, K5, M1 |
|----------|----------|--------------|
| JP22     | 1-2 •    | 2-3          |

#### 3.1.2 CPU Voltage

| JP23 |     |     |     |        |
|------|-----|-----|-----|--------|
| 1-2  | 3-4 | 5-6 | 7-8 | VCORE  |
| OUT  | OUT | OUT | OUT | 2.0V   |
| IN   | OUT | OUT | OUT | 2.1V   |
| OUT  | IN  | OUT | OUT | 2.2V   |
| IN   | IN  | OUT | OUT | 2.3V   |
| OUT  | OUT | IN  | OUT | 2.4V   |
| IN   | OUT | IN  | OUT | 2.5V   |
| OUT  | IN  | IN  | OUT | 2.6V   |
| IN   | IN  | IN  | OUT | 2.7V   |
| OUT  | OUT | OUT | IN  | 2.8V • |
| IN   | OUT | OUT | IN  | 2.9V   |
| OUT  | IN  | OUT | IN  | 3.0V   |
| IN   | IN  | OUT | IN  | 3.1V   |
| OUT  | OUT | IN  | IN  | 3.2V   |
| IN   | OUT | IN  | IN  | 3.3V   |
| OUT  | IN  | IN  | IN  | 3.4V   |
| IN   | IN  | IN  | IN  | 3.5V   |

#### 3.1.3 L2 Cache Memory

| JP1   | CACHE MEMORY SIZE |
|-------|-------------------|
| 1-2   | 256KB             |
| 2-3 • | 512KB             |

NOTE : The synchronized cache size is set by factory, not user selectable.

\* Mode select of Pipelined Burst SRAM

JP2 OUT : Interleaved burst •

IN : Linear burst

### 3.1.4 RS-232/422 Setting

|          | SERIAL 1 JP5         | SERIAL 2 JP4         |
|----------|----------------------|----------------------|
| RS-232 • | OUT                  | OUT                  |
| RS-422   | 1-2,3-4,5-6,7-8,9-10 | 1-2,3-4,5-6,7-8,9-10 |

### 3.1.4 Solid State Disk Memory Address Space

JP12 3-4 : C8000-CFFFF  
 5-6 : D0000-D7FFF •  
 7-8 : D8000-DFFFF

### 3.1.5 POWER (+SVDC) FAILURE THRESHOLD

JP17 : 1-2 : 10% ( 4.37V typical ) •  
 2-3 : 5% ( 4.62V typical )

### 3.1.6 WATCH-DOG TIMER (WDT)

JP16 : IN : WDT DISABLED •  
 OUT : WDT ENABLED  
 WDT TIME OUT PERIOD  
 JP14 1-2 : 1 SEC. •  
 3-4 : 10 SEC.  
 5-6 : 30 SEC.

### 3.1.7 SUPER I/O CHIP ENABLE/DISABLE

JP18 : 1-2 : ENABLED •  
 2-3 : DISABLED

### 3.1.8 ISA BUS IOR/IOW SETTING

JP27 : 1-2 : IOW, DIRECTLY •

2-3 : IOW, through BUFFER

JP28 : 1-2 : IOR, DIRECTLY •  
 2-3 : IOR, through BUFFER

### 3.1.9 ON-BOARD VGA/PANEL INTERFACE

\* PANEL VOLTAGE SELECT

JP6 1-2 : 5V •  
 2-3 : 3V

\* BACKLIGHT + 12V CONTROL Select

JP13 1-2 : + 12VSAFE voltage is controlled by the  
 ENABKL signal •  
 2-3 : + 12VSAFE voltage is controlled by the  
 ENAVEE signal

\* PANEL VDDSAFE Voltage Select

JP25 1-2 : 5V VDDSAFE voltage •  
 2-3 : 3V VDDSAFE voltage

\* 5V VDDSAFE Control Sleet

JP10 1-2 : 5V VDDSAFE voltage is controlled by the  
 ENAVDD signal •  
 2-3 : 5V VDDSAFE voltage is controlled by + 5V

\* 3V VDDSAFE Control Sleet

JP24 1-2 : 3V VDDSAFE voltage is controlled by the  
 ENAVDD signal •  
 2-3 : 3V VDDSAFE voltage is controlled by +3V

### 3.1.10 MISCELLANEOUS

JP3 : IN : FOR BQ3287A CLEAR CMOS MEMORY  
 OUT : NORMAL



### 3.2 Connector Description

#### 3.2.1 RESERVED CONNECTOR (CN4)

PIN 1 : CPU Stop Clock Input Control  
 PIN 2 : GND

#### 3.2.2 External Speaker

| External Speaker | PIN 1    | PIN 2         | PIN 3  | PIN 4 |
|------------------|----------|---------------|--------|-------|
|                  | SPK OUT2 | Not connected | Ground | +5V   |

#### 3.2.3 EXTENDED KEYBOARD CONNECTOR

This is a 5-pin housing connector (or pin header) that can provide an interface for an AT standard keyboard by using a cable.

| PIN | Function |
|-----|----------|
| 1   | KBD CLK  |
| 2   | KBD DATA |
| 3   | NC       |
| 4   | GROUND   |
| 5   | +5V      |

#### 3.2.4 KEYBOARD LOCK CONNECTOR

This connector provides the interface for connecting an interlock for the keyboard.

| PIN | Function         |
|-----|------------------|
| 1   | +5V              |
| 2   | NC               |
| 3   | GROUND           |
| 4   | Keyboard inhibit |
| 5   | GROUND           |

#### 3.2.5 EXTERNAL RESET

Touching these two pins will reset the system :

PIN 1 : HARDWARE RESET

PIN 2 : GROUND

#### 3.2.6 PC104 POWER INPUT CONNECTOR (PCNI)

| PIN      | 1   | 2    | 3    | 4   | 5   | 6   | 7    | 8   |
|----------|-----|------|------|-----|-----|-----|------|-----|
| Function | +5V | +12V | -12V | GND | GND | -5V | +12V | +5V |

### 3.2.7 PCI IDE OPERATION LED CONNECTOR

This two-pin pin header is for the hard disk operation LED indicator. It allows you to connect an LED indicator that lights up when there is IDE activity.

- PIN 1 : HD-LED CATHODE
- PIN 2 : HD-LED ANODE

### 3.2.8 CON2:VGA MONITOR CONNECTOR

| PIN No. | Function | PIN No. | Function   | PIN No. | Function   |
|---------|----------|---------|------------|---------|------------|
| 1       | Red      | 6       | Analog GND | 11      | NC         |
| 2       | Green    | 7       | Analog GND | 12      | DDC DAT/NC |
| 3       | Blue     | 8       | Analog GND | 13      | HSYNC      |
| 4       | NC       | 9       | VCC/NC     | 14      | VSYNC      |
| 5       | GND      | 10      | GND        | 15      | DDC CLK/NC |

### 3.2.9 CON 1 : PANEL INTERFACE CONNECTOR

| PIN No. | Function     | PIN No. | Function |
|---------|--------------|---------|----------|
| 1       | VDDSAFE      | 2       | VDDSAFE  |
| 3       | +12V         | 4       | +12VSAFE |
| 5       | VCC          | 6       | KBCLK    |
| 7       | NC(KEY)      | 8       | KBDATA   |
| 9       | FLM(VSYNC)   | 10      | ENAVEE   |
| 11      | LP(HSYNC)    | 12      | ENABKL   |
| 13      | SHFCLK(DCLK) | 14      | DE       |
| 15      | GND          | 16      | GND      |
| 17      | P0           | 18      | P1       |
| 19      | P2           | 20      | P3       |
| 21      | GND          | 22      | GND      |
| 23      | P4           | 24      | P5       |
| 25      | P6           | 26      | P7       |
| 27      | GND          | 28      | GND      |
| 29      | P8           | 30      | P9       |
| 31      | P10          | 32      | P11      |
| 33      | GND          | 34      | GND      |
| 35      | P12          | 36      | P13      |
| 37      | P14          | 38      | P15      |
| 39      | GND          | 40      | GND      |
| 41      | P16(CA0)     | 42      | P17(CA1) |
| 43      | P18(CA2)     | 44      | P19(CA3) |
| 45      | GND          | 46      | GND      |
| 47      | P20(CA4)     | 48      | P21(CA5) |
| 49      | P22(CA6)     | 50      | P23(CA7) |

NOTE : If users want to use this panel interface, they have to make a private interface application or order special connection kit



### 3.2.10 PC/104 Connector

| Pin Number | CN13/P1 Row A | CN13/P1 Row B | CN15/P2 Row C | CN15/P2 Row D |
|------------|---------------|---------------|---------------|---------------|
| 1          | IOCHCHK#      | 0V            | 0V            | MEMCS16#      |
| 2          | SD7           | RESETDRV      | SBHE#         | IOCS16#       |
| 3          | SD6           | +5V           | LA23          | IRQ10         |
| 4          | SD5           | IRQ9          | LA22          | IRQ11         |
| 5          | SD4           | -5V           | LA21          | IRQ12         |
| 6          | SD3           | DRQ2          | LA20          | IRQ13         |
| 7          | SD2           | -12V          | LA19          | IRQ14         |
| 8          | SD1           | ENDXFR#       | LA18          | IRQ14         |
| 9          | SD0           | +12V          | LA17          | DACK0#        |
| 10         | IOCHRDY       | (KEY)         | MEMR#         | DRQ0          |
| 11         | AEN           | SMEMW#        | MEMW#         | DACK5#        |
| 12         | SA19          | SMEMR#        | SD8           | DRQ5          |
| 13         | SA18          | IOW#          | SD9           | DACK6#        |
| 14         | SA17          | IOR#          | SD10          | DRQ6          |
| 15         | SA16          | DACK3#        | SD11          | DACK7#        |
| 16         | SA15          | DRQ3          | SD12          | DRQ7          |
| 17         | SA14          | DACK1#        | SD13          | +5V           |
| 18         | SA13          | DRQ1          | SD14          | MASTER#       |
| 19         | SA12          | REFRESH#      | SD15          | 0V            |
| 20         | SA11          | SYSCLK        | (KEY)         | 0V            |
| 21         | SA10          | IRQ7          | -             | -             |
| 22         | SA9           | IRQ6          | -             | -             |
| 23         | SA8           | IRQ5          | -             | -             |
| 24         | SA7           | IRQ4          | -             | -             |
| 25         | SA6           | IRQ3          | -             | -             |
| 26         | SA5           | DACK2#        | -             | -             |
| 27         | SA4           | TC            | -             | -             |
| 28         | SA3           | BALE          | -             | -             |
| 29         | SA2           | +5V           | -             | -             |
| 30         | SA1           | OSC           | -             | -             |
| 31         | SA0           | 0V            | -             | -             |
| 32         | 0V            | 0V            | -             | -             |

**NOTES :**

1. Rows C and D are not used on 8-bit modules.
2. P2 has two connector options with different physical pinout orientation.
3. BIO and CI9 are key locations.
4. Signal timing and function are as specified in P996.
5. Signal source/sink current differ from P996 values.

## Chapter 4

# Installing the Slot Board Computer

### 4.1 Building a System

The following equipments must be added to the system. The installation instructions should be accompanied with the equipments when purchasing.

- A dedicated backplane with IBM PC/AT compatible expansion slots and PCI expansion slots. All these expansion slots are used for installing the video adaptor or other optional adaptors.
- A chassis to hold all the system components.
- A multi-voltage power supply that can provide +5V, -5V, + 12V and - 12V.
- Standard AT keyboard
- Monitor (Monochrome/Color graphics, EGA, VGA monitor ) to display the information you type into the computer, and the responses from the computer
- Printer and printer cable.
- Optional floppy disk drive
- Optional hard disk drive if needed

## 4.2 VGA DRIVER INSTALLATION

Before you begin the driver software installation, you should make backup copies of the Display Driver Diskette. Store the original diskette in a safe place. For your driver to operate properly, just follow the installation guide described below.

### 4.2.1 Windows 3.1

These drivers are designed to work with Microsoft Windows Version 3.1.

### 4.2.2 Driver installation - DOS Setup

**Step 1 :** Install Windows as you normally would for a VGA display. Run Windows to make sure that it is working correctly. Then exit from Windows.

**Step 2 :** Place the Display Driver Diskette in drive A. Type A: <ENTER> to make this the default drive. Type SETUP <ENTER> to run the driver SETUP program. Press any key to get to the applications list. Using the arrow keys, select *Windows Version 3.1* and press the <ENTER> key. Press the <ENTER> key to select *All Resolutions*, then press <END> to begin the installation. At this point you will be asked for the path to your Windows System directory (default C:\WINDOWS). When the installation is complete, press any key to continue. Press <ESC> followed by Y to exit to DOS.

**Step 3 :** Change to the directory where you installed Windows (usually C:\WINDOWS).

**Step 4 :** Type SETUP <ENTER> to run the windows Setup program. It will show the current Windows configuration. Use the up arrow key to move to the Display line and press <ENTER>. A list of display drivers will be shown. Use the arrow keys to select one of the drivers starting with an asterisk(\*) and press <ENTER>.

**Step 5 :** Follow the directions on the screen to complete the setup. In most cases, you may press <ENTER> to accept the suggested option. When Setup is done, it will return to DOS. Type WIN <ENTER> to start Windows with the new display driver.

### 4.2.3 Changing Display Drivers from Windows

To change display drivers from Windows, select the *Windows Setup* icon from the *Main* Group. You will be shown the current setup configuration. Select *Change System Settings* from the *Option* menu. Click on the arrow at the end of the *Display* line. You will be shown a list of display drivers. Click on the driver you want to select then click on the OK button. Follow the directions to complete the setup.

### 4.2.4 Changing Color Schemes

After you change display drivers, you may notice that the color scheme used by Windows looks strange. This is because different drivers have different default colors. You can correct this by choosing the same color scheme or a new color scheme. First select the *Control Panel* from the *Main* Group. Select the *chips* icon. You will be shown the current color scheme. Choose a new color scheme and click the *OK* button.

### 4.2.5 Windows 95

These drivers are designed to work with Microsoft Windows 95.

#### *How to install Windows 95 display driver:*

- Step 1 : Boot system with VGA or Super VGA driver.
- Step 2 : Select Properties from a menu after right button press.
- Step 3 : Select Display.
- Step 4 : Select Change Display.
- Step 5 : Select Change Monitor.
- Step 6 : Select Change Adapter.
- Step 7 : Select Have Disk.

### 4.2.6 Windows NT 3.XX

These drivers are designed to work with Microsoft Windows NT 3.XX

#### **Windows NT setup procedure:**

- Step 1 : Run Windows NT Setup from Main Group
- Step 2 : Choose option from the menu (Alt-0)
- Step 3 : Select change system setting (Alt-C)
- Step 4 : Choose "Other" under display section.
- Step 5 : Insert display driver disk in appropriate floppy drive.

### 4.2.7 OS/2

These driver is for OS/2 Version 2.11, 3.0 and 4.0 operating system. Please follow the installation guide described in README.TXT file of the OS/2 driver diskette.

### 4.2.8 Windows NT 4.0 Driver Installation Procedure

- Step 1 : Install Windows NT as you normally would for a VGA display. First click the Start button, go to Settings and click on Control Panel. Choose the Display icon and click on the icon. In the Display Properties window, click on the Settings tab. Then click on Change Display Type. In the Change Display Type window, click on the Change button under Adapter Type. This will bring up the Select Device window.
- Step 2 : In the Select Device window, click on the Other button. Enter source directory where the Windows NT driver files are located. Press < ENTER > and the name of the Chips and Technologies Video Accelerator driver will appear at the end of Modules list box. Scroll to the end of the list box and double click on the driver. Once the installation is complete, the system must be shut down and restarted.

- Step 3 : Upon restart, select the desired display settings from the Display property dialog box. Click on Test to test the newly selected graphics mode. A color test screen should appear, - followed by the Testing Mode window. Click on Yes to continue. The Display Settings Change window will appear. Click on Restart Now for the new settings to take effect.

## 4.3 INSTALLING THE MSC-251 SLOT BOARD COMPUTER

1. Remove all screws that secure the cover to the cabinet.
2. Prepare the power cord and the other device(s) necessary to build the system.
3. Remove the MSC-251 from its anti-static bag.
4. Check that all jumpers are set properly.
5. Place the MSC-251 into the dedicated slot in the passive backplane.
6. Push down on the card evenly, until it firmly seats into the cartridge connectors.
7. Place the other adaptor(s) into the empty slots.
8. Secure the metal retaining bracket with one screw at the top.
9. Attach a keyboard connector to the 5-pin shrouded header (optional).
10. Attach a 26-line ribbon cable with 25-pin D-type connector.
11. Check the wires and cables in the system unit to prevent them from being pinched by the cover.
12. Install the cover on the cabinet and secure it.
13. Plug the -keyboard cable into the miniature DIN socket on the rear panel.
14. Plug the keyboard mouse cable into the miniature DIN socket on the rear panel (optional).
15. Connect the monitor's cable to display adaptor connector.
16. Turn on the computer by pressing the ON/OFF switch to ON.



## 4.4 HANDLING BOARDS AND CHIPS

- Make sure that the computer is turned off.
- Leave the MSC-251 board in its anti-static bag, until you are ready to install it.
- Use an anti-static wrist strap and a grounding mat
- If you don't have a grounding kit, make sure that when you remove the board from its anti-static bag, you handle the card by its top edge only, or by the metal support bracket.

## Chapter 5

# System Setup

This chapter will tell you how to setup BIOS settings and how to upgrade to the latest BIOS version. The following topics are included in this chapter:

- ⊙ BIOS Introduction
- ⊙ BIOS Setup

### 5.1 BIOS Introduction

The *MSC-251* is equipped with AMI BIOS. The BIOS (Basic Input Output System) provides critical low-level support for the system central processing, memory, and I/O subsystems. You can modify the system configuration by entering the BIOS setup program. The settings are stored in CMOS RAM. Since a battery backs it up, it will retain the information when the power is turned off.

#### 5.1.1 Starting Setup

The AMI BIOS is immediately activated when you first turn on the computer. The BIOS reads system configuration information from CMOS RAM and begins the process of checking out the system and configuring it through the power-on self test (POST).

When these preliminaries are finished, the BIOS seeks an operating system on one of the data storage devices (hard drive, floppy drive, etc.). The BIOS launches the operating system and transfers the control of system operations to it.

During POST, you can start the Setup program by pressing <Del> immediately after switching the system on.

### 5.1.2 Setup Keys

The following table shows how to navigate in Setup using the keyboard.

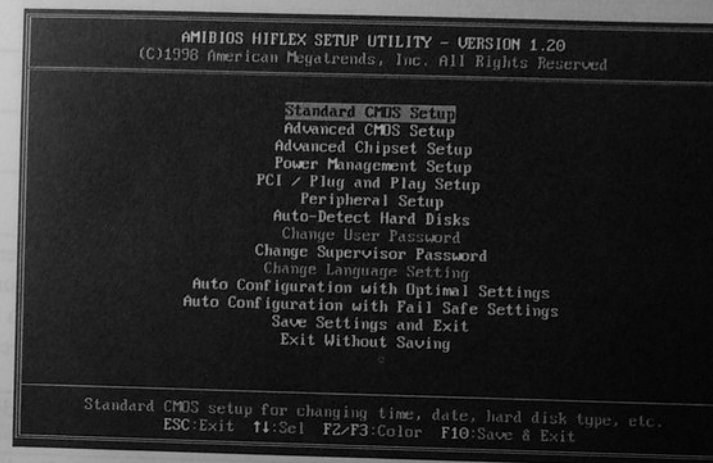
| Keys            | Functions   |
|-----------------|---|
| Up arrow        | Move to previous item   |
| Down arrow      | Move to next item   |
| Left arrow      | Move to the item at the left side   |
| Right arrow     | Move to the item at the right side  |
| Esc key         | Main Menu: Quit and do not save changes into CMOS RAM.<br>Status Page Setup Menu and Option Page Setup Menu:<br>Exit current page and return to Main Menu |
| PgUp key        | Increase the numeric value or make changes  |
| PgDn key        | Decrease the numeric value or make changes  |
| F1 key          | General help (only in the Status Page Setup Menu and Option Page Setup Menu)  |
| F2 key & F3 key | Choose from 8 available colors. Press F2 to select the next upper color. Press F3 to select the next lower color.   |
| F10 key         | Save all the CMOS changes (only in the Main Menu)   |

### 5.1.3 Help & Available Options

Function keys and available options are displayed at the bottom of the screen or at the right side of the screen.

## 5.2 BIOS Setup

When you enter the AMI BIOS CMOS Setup Utility, a Main Menu, similar to the one shown below, will appear on the screen. The Main Menu allows you to select from several Setup functions and two exit choices. Use the arrow keys to select among the fields, and then press <Enter> to enter the sub-menu.

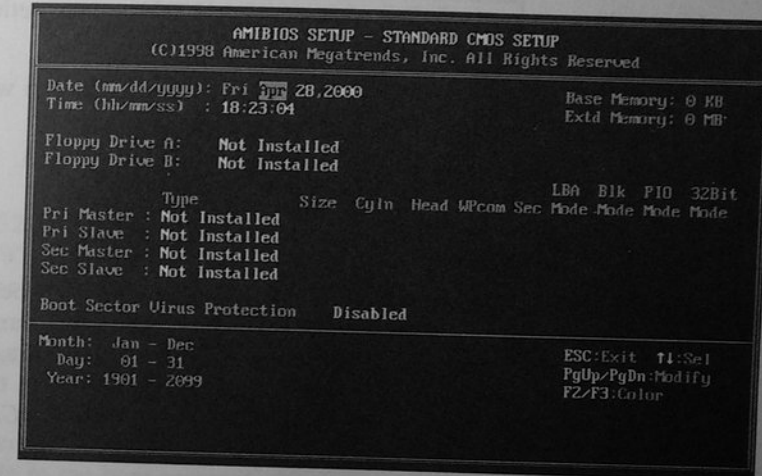


This section will show you the various menus in the setup program. These menus include the following:

| Menu                                       | Description  |
|--|--|
| Standard CMOS Setup                        | Options in the original PC AT-compatible BIOS.   |
| Advanced CMOS Setup                        | AMI enhanced BIOS options.   |
| Advanced Chipset Setup                     | Options specific to your system chipset.   |
| Power Management Setup                     | Advanced Power Management (APM) options.   |
| PCI/Plug and Play Setup                    | Plug and Play standard and PCI Local Bus configuration options.  |
| Peripheral Setup                           | I/O subsystems that depend on the integrated peripherals controller in your system.  |
| Change User Password                       | Change, set, or disable a password. In BIOS versions that allow separate user and supervisor passwords, only the supervisor password permits access to Setup. The user password generally allows only power-on access. |
| Change Supervisor Password                 |  |
| Auto-Detect Hard Disks                     | Automatically detect and configure IDE hard disk parameters.   |
| Change Language Setting                    | Select the language used. Currently, only English is available.  |
| Auto Configuration with Optimal Settings   | Optimal settings are factory default settings for best performance system operations.  |
| Auto Configuration with Fail Safe Settings | Fail-safe settings are factory settings for the most stable system operations.   |
| Save Settings and Exit                     | Save settings in non-volatile CMOS RAM and exit Setup.   |
| Exit Without Saving                        | Abandon all changes and exit Setup.  |

### 5.2.1 Standard CMOS Setup

In the Standard CMOS Menu, you can set the system clock and calendar, record disk drive parameters and the video subsystem type, and select the type of errors that stop the BIOS POST.



#### Date, Time

Sets system date and time to current date and time.

#### Base Memory / Extd Memory

You cannot change any values in the Memory fields; they are only for your information.

#### Floppy Drive A / Floppy Drive B

Select the correct specifications for the diskette drive(s) installed in the computer.

| Options       | Description  |
|---------------|--|
| Not Installed | No diskette drive installed                            |
| 360KB, 5¼     | 5-1/4 inch PC-type standard drive; 360 KB capacity     |
| 1.2MB, 5¼     | 5-1/4 inch AT-type high-density drive; 1.2 MB capacity |
| 720KB, 3½     | 3-1/2 inch double-sided drive; 720 KB capacity         |
| 1.44MB, 3½    | 3-1/2 inch double-sided drive; 1.44 MB capacity        |



### Hard Disk

The BIOS can automatically detect the specifications and optimal operating mode of almost all IDE hard drives. When you select type AUTO for a hard drive, the BIOS detects its specifications during POST, every time the system boots.

If you do not want to select drive type 'AUTO', other methods of selecting the drive type are available:

- a) Match the specifications of your installed IDE hard drive(s) with the pre-programmed values for drive types 1 through 45.
- b) Select user and enter values into each drive parameter field.
- c) Use the Auto-Detect Hard Disks menu in Setup.

Here is a brief explanation of drive specifications:

- Type: The BIOS contains a table of 46 pre-defined drive types. Each defined drive type has a specified number of cylinders, number of heads, write pre-compensation factor, and number of sectors. Drives whose specifications do not accommodate any pre-defined type are classified as 'USER'. Other available drive types include 'CDROM' for ATAPI CD-ROM drives and 'FLOPTICAL' for ATAPI removable devices.
- Size: Disk drive capacity (approximate). Note that this size is usually slightly greater than the size of a formatted disk given by a disk-checking program.
- Cyln: Number of cylinders
- Head: Number of heads
- WPcom: Write precompensation cylinder
- Sec: Number of sectors
- LBA Mode: Sets the LBA (Logical Block Addressing) mode to 'Off' or 'On'. LBA is a new IDE HDD accessing method to overcome the 528 megabyte capacity bottleneck. If your IDE hard disk is over 528MB, AMIBIOS can enable this feature.
- Blk Mode: Sets the multisector or block transfer to 'Off' or 'On'. Setting this to 'On' enables faster IDE hard disk transfer rate.

- PIO Mode: Sets the PIO mode of the IDE to proper cycle timings. Cycle timing relation between IDE PIO mode value and IDE cycle timing is as shown. You can set this field to 'Auto' to let BIOS automatically set the PIO mode of the IDE device.

| PIO Mode | Cycle Timing |
|----------|--------------|
| 0        | 600ns        |
| 1        | 383ns        |
| 2        | 240ns        |
| 3        | 180ns        |
| 4        | 120ns        |
| 5        | 60ns         |

- 32Bit Mode: When set to 'On', 32-bit data transfer mode is enabled. When set to 'Off', 16-bit data transfer mode is used. This should be set to 'On' only if supported by the IDE controller.

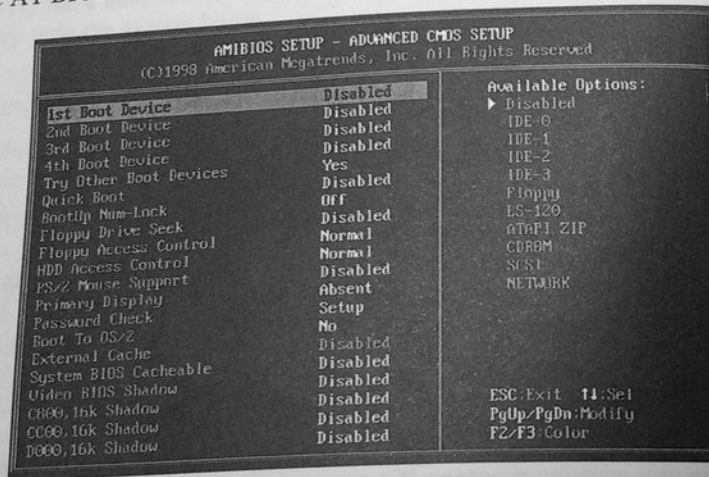
### Boot Sector Virus Protection

Enables or disables virus protection feature. When enabled, you will receive a warning message if a program (specifically, a virus) attempts to write to the boot sector or the partition table of the hard disk drive. You should then run an anti-virus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

*Many disk diagnostic programs that access the boot sector table can trigger the virus-warning message. If you plan to run such a program, we recommend that you first disable the virus warning.*

## 5.2.2 Advanced CMOS Setup

This setup contains industry-standard options additional to the core PC AT BIOS.



### 1st Boot Device / 2nd Boot Device / 3rd Boot Device / 4th Boot Device

These fields set the type of device for the first boot drive that the AMIBIOS attempts to boot from after AMIBIOS POST is completed. If it fails to boot from the first boot drive, it will attempt to boot from the second, then third, then fourth boot drive as specified in the corresponding field. Options are: *Disabled, IDE-0, IDE-1, IDE-2, IDE-3, Floppy, LS-120, ATAPI ZIP, CDROM, SCSI* and *Network*.

### Try Other Boot Devices

Set this field to 'Yes' to instruct AMIBIOS to attempt to boot from any other drives in the system if it cannot find a boot drive among the drives specified in the 1st Boot Device, 2nd Boot Device, 3rd Boot Device, and 4th Boot Device.

### Quick Boot

When set to 'Enabled', DRAM testing function will be disabled.

therefore, amount of time required to run the power-on self-test (POST) is reduced. A quick boot skips certain steps. We recommend that you normally disable quick boot. Better to find a problem during POST than lose data during your work.

### BootUp Num-Lock

Toggles between 'On' or 'Off' to control the state of the Num Lock key when the system boots. When set to 'On', this option turns off Num Lock so that the end user can use arrows keys (cursor operations) on the numeric keypad.

### Floppy Drive Seek

Set this field to 'Enabled' to specify that floppy drive A: will perform a Seek operation at system boot. Seek operation determines whether floppy drives have 40 or 80 tracks. (Only 360KB floppy drives have 40 tracks.)

### Floppy Access Control / HDD Access Control

This field specifies the read/write access that is set when booting from a floppy drive / hard disk drive. Floppy Access Control will be effective only if floppy drive is accessed through BIOS INT 40H function. Options are: *Normal* and *Read-Only*.

### PS/2 Mouse Support

When this field is 'Enabled', BIOS support a PS/2- type mouse.

### Primary Display

Select this field to configure the type of monitor attached to the computer. Options are: *Absent, VGA/EGA, CGA40x25, CGA80x25, and Mono*.

### Password Check

This field enables the password check option every time the system boots or when the end user runs 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 BIOS is executed.

### Boot To OS/2

Set this field to 'Yes' if you are running OS/2 operating system and using more than 64MB of system memory on the motherboard.

### External Cache

These fields enable or disable External cache memory. Cache memory is additional memory that is much faster than conventional DRAM (system memory).

### System BIOS Cacheable

When this field is set to 'Enabled', the System ROM area from F0000-FFFFF is copied or shadowed to RAM for faster execution.

### Video BIOS Shadow

Determines whether the contents of the Video ROM area from C0000-CC7FFF are copied or shadowed from ROM to RAM for faster execution. When 'Enabled', these are shadowed; when 'Disabled', these are not shadowed; when set to 'Cached', these are shadowed and can be written to or read from cache memory.

**C800, 16k Shadow / CC00, 16k Shadow / D000, 16k Shadow / D400, 16k Shadow / D800, 16k Shadow / DC00, 16k Shadow**

These fields enable shadowing of the contents of the corresponding ROM area. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards. Options are: *Enabled, Disabled, and Cached.*

## 5.2.3 Advanced Chipset Setup

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these fields should never be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was lost while using your system.

| AMIBIOS SETUP - ADVANCED CHIPSET SETUP                |          |                    |
|---|----------|--------------------|
| (C)1998 American Megatrends, Inc. All Rights Reserved |          |                    |
| Async. SRAM Write WS                                  | X-3-3-3  | Available Options: |
| Async. SRAM Read WS                                   | X-3-3-3  | ▶ X-3-3-3          |
| Read Speculative                                      | Disabled | X-2-2-2            |
| EDO Read WS   | X-3-3-3  |                    |
| Page Mode Read WS                                     | X-4-4-4  |                    |
| DRAM Write WS   | X-3-3-3  |                    |
| SDRAM Access Timing                                   | Normal   |                    |
| SDRAM CAS Latency                                     | 3        |                    |
| Slow Refresh  | 15 us    |                    |
| Pipelined Function                                    | Disabled |                    |
| DRAM Data Integrity Mode                              | Parity   |                    |
| Primary Frame Buffer                                  | Disabled |                    |
| UGA Frame Buffer                                      | Disabled |                    |
| Data Merge  | Disabled |                    |
| Byte Merge  | Disabled |                    |
| Passive Release                                       | Disabled |                    |
| ISA Ling. Buffer                                      | Disabled |                    |
| Delay Transaction                                     | Disabled |                    |
| AT Bus Clock  | 7.19MHz  | ESC:Exit F4:Sel    |
| Memory Hole at 15-16MB                                | Disabled | PgUp/PgDn:Modify   |
|   |          | F2/F3:Color        |

### Async. SRAM Write WS

The settings are X-3-3-3 or X-2-2-2. This option is used to control SRAM write time.

### Async. SRAM Read WS

The settings are X-3-3-3 or X-2-2-2. This option is used to control SRAM read time.

### Read Speculative

The settings are Enabled or Disabled. When set to enable, the DRAM controller read



request is presented one CPU clock earlier than it normally is, before the final memory

target has been decoded.

### **EDO Read WS**

The settings are X-3-3-3 or X-2-2-2. This option is used to control EDO DRAM read time.

### **Page Mode Read WS**

The settings are X-4-4-4 or X-3-3-3. This option is used to control Page Mode DRAM read time.

### **DRAM Write WS**

The settings are X-3-3-3 or X-2-2-2. This option is used to control Page Mode DRAM

or EDO write time.

### **SDRAM CAS Latency**

This field is used to control read data valid wait states after read command has been issued. '3' means the CAS Latency is 3 HCLKs, '2' means the CAS Latency is 2 HCLKs. 'Auto' allows the system to automatically detect CAS Latency.

### **Slow Refresh**

The settings are 15us, 30us, 60us or 120us. This option is used to set DRAM refresh period.

### **Pipelined Function**

The settings are Enabled, Disabled and Turbo. Enable this option is only effective for Pipelined Burst SRAM application. Set "Turbo" mode will get better performance.

### **VGA Frame Buffer**

This field is used to enable or disable the VGA Frame Buffer.

### **Data Merge**

When this field is 'Enabled', only the consecutive linear addresses can be merged.

### **Passive Release**

When this field is 'Enabled', the M1521 will recognize passive release signal by M1523.

### **ISA Line Buffer**

This field enables or disables ISA Master Line buffer.

### **Delay Transaction**

When this field is set to 'Enabled', it supports delay transaction for PCI specification 2.1.

### **AT Bus Clock**

This field is used to select I/O bus clock settings. Possible settings are derived from, and vary according to, system clock. For example, at a system clock speed of 50MHz, selecting PCICLK/6 would result in a bus clock speed of 8.33MHz. Options are: 7.19MHz, PCICLK/2, PCICLK/3, PCICLK/4, PCICLK/5, PCICLK/6 and Auto.

### **Memory Holt at 15MB - 16MB**

In order to improve performance, certain space in memory can be reserved for ISA card. This field allows you to reserve 15MB to 16MB memory address space to ISA expansion cards. This makes memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB. By default, this field is set to Disabled.

### **LCD CRT Selection**

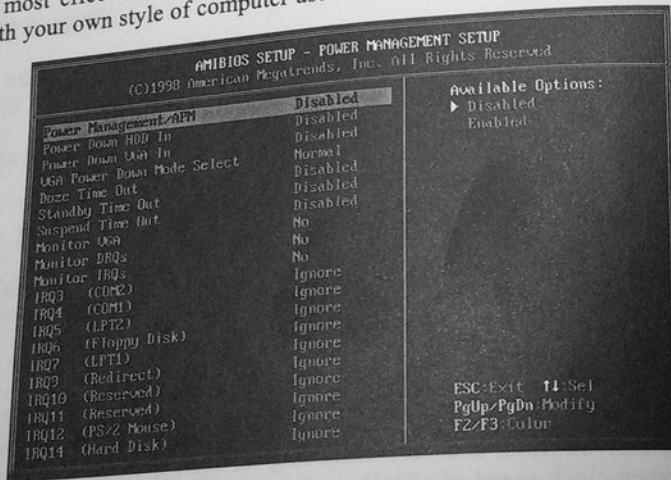
This field selects whether the display output is sent to CRT, LCD, Both (CRT and LCD), or Auto.

### **LCD Type**

This field selects from the list of 2 LCD types supported by BIOS

### 5.2.4 Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy while operating in a manner consistent with your own style of computer use.



#### Power Management/APM

Setting this field to 'Enabled' will enable APM (Advanced Power Management).

#### VGA Power Down Mode Select

These fields disable or enable the BIOS to power down the video adapter and monitor. Options are: *Disabled*, *Stand by*, and *Suspend*.

#### Doze Time Out

Sets the time interval after inactivity when the system enters Doze mode. This options as following, from 10 Sec to 1 Hours or Disabled

#### Standby Time Out / Suspend Time Out

These fields specify the length of a period of system inactivity while in Full Power On/Standby state. When this length of time expires, the computer enters Standby/Suspend power state. Options are: *Disabled*,

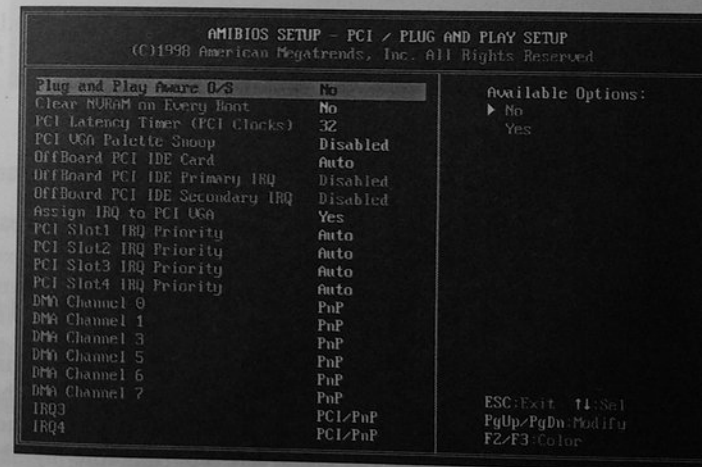
1min, 5min, 10min, 30min, 1hr, 2hr, and 4hr.

#### Monitor VGA

Setting these fields to 'Yes' allow the IRQ input of corresponding fields to be monitored. Any event occurring on a field set to 'Yes' will wake up the system, which has been powered down.

### 5.2.5 PCI/Plug and Play Setup

This section describes how to configure the PCI bus system. PCI (Personal Computer Interconnect) is a system, which allows I/O devices to operate at speeds nearing the speed the CPU itself, uses when communicating with its own special components. This section covers some very technical fields. It is strongly recommended that only experienced users should make any changes to the default settings.



#### Plug and Play Aware O/S

If this is set to 'Yes', BIOS will configure only PnP ISA boot devices (i.e. all PnP ISA cards which has boot flag set), while PnP Aware O/S will configure all other devices. If set to 'No', BIOS will configure all devices.

### Clear NVRAM on Every Boot

When this field is set to 'Yes', system can auto clear NVRAM.

### PCI Latency Timer (PCI Clocks)

This field specifies the latency timings (in PCI clocks) for PCI devices installed in the PCI expansion slots. Options are: 32, 64, 96, 128, 160, 192, 224, and 248.

### PCI VGA Palette Snoop

If 'Enabled', PCI will allow VGA palette signals to go to the ISA bus.

### PCI Slot1 IRQ Priority / PCI Slot2 IRQ Priority / PCI Slot3 IRQ Priority / PCI Slot4 IRQ Priority

These fields specify the IRQ priority for PCI device installed in the corresponding PCI expansion slots. Options are: *Auto*, 3, 4, 5, 7, 9, 10, 11, 12 and 15.

### DMA Channel 0 / DMA Channel 1 / DMA Channel 3 / DMA Channel 5 / DMA Channel 6 / DMA Channel 7

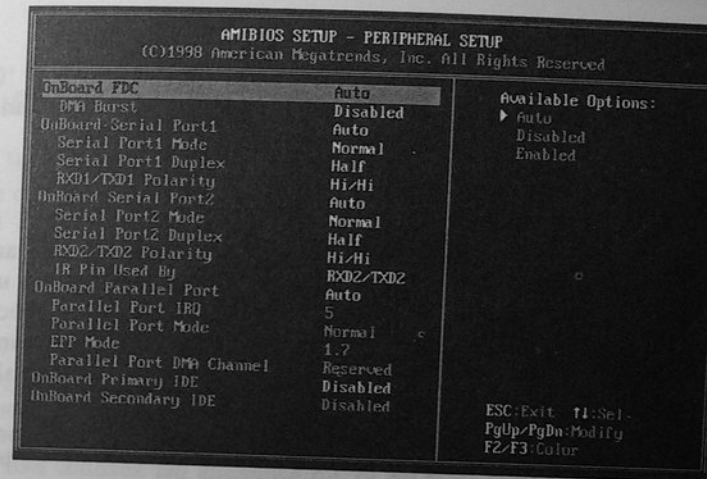
These fields allow you to specify the bus type used by each DMA channel. Options are: *PnP* and *ISA/EISA*.

### IRQ3 / IRQ4 / IRQ5 / IRQ7 / IRQ9 / IRQ10 / IRQ11 / IRQ12 / IRQ14 / IRQ15

These fields specify the bus that the specified IRQ line is used on and allow you to reserve IRQs for legacy ISA adapter cards. These fields also determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to devices that are configurable by the system BIOS. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the pool, these fields can be used to reserve the IRQ by assigning an ISA/EISA setting. Onboard I/O is configured by AMIBIOS. All IRQs used by onboard I/O are configured as PCI/PnP. Options are: *PCI/PnP* and *ISA/EISA*.

## 5.2.6 Peripheral Setup

This setup is related to the features of the peripheral devices.



### OnBoard FDC

When set to 'Enabled', the floppy drive controller on the motherboard is enabled. When set to 'Auto', AMIBIOS automatically determines if the floppy controller should be enabled or disabled. Setting this field to 'Disabled' disables the floppy drive controller on the motherboard.

### OnBoard Serial Port1 / OnBoard Serial Port2

This field specifies the base I/O port address of serial port 1/2. Options are *Auto*, *Disabled*, *3F8h*, *2F8h*, *3E8h*, *2E8h*.

### Serial Port1 / port2 Mode

This field specifies the operating mode for serial port1/port2.

Options are: *Normal*, *SIR*, and *ASKIR*.

### IR Pin Used By

This field selects the IR transceiver module type.



**OnBoard Parallel Port**

This field specifies the base I/O port address of parallel port on the motherboard. Options are: *Auto*, *Disabled*, *378h*, *278h*, and *3BCh*.

**Parallel Port IRQ**

This field specifies the IRQ used by the parallel port if 'OnBoard Parallel Port' is not set to 'Auto' or 'Disabled'. Options are: 5 and 7.

**Parallel Port Mode**

This field specifies the parallel port mode. 'Normal' refers to normal parallel port mode. 'Bi-Dir' supports bi-directional transfers on the parallel port. 'EPP' mode allows the parallel port to be used with devices that adhere to the Enhanced Parallel Port(EPP) specification. (EPP uses the existing parallel port signals to provide asymmetric bi-directional data transfer driven by the host device. 'ECP' allows the parallel port to be used with devices that adhere to the Extended Capabilities Port(ECP) specification. (ECP uses the DMA protocol to achieve data transfer rates up to 2.5 Megabits per second. ECP provides symmetric bi-directional communication.)

**EPP Version**

Specifies the Enhanced Parallel Port specification version number that is used in the system if 'Parallel Port Mode' is set to 'EPP'. Options are: 1.7 and 1.9.

**Parallel Port DMA Channel**

This field sets the DMA channel used by the parallel port if the setting for the 'Parallel Port Mode' is 'ECP'. Options are: 1 and 3.

**OnBoard Primary IDE**

This field enables or disables the IDE channel used by the onboard Primary IDE controller.

**OnBoard Secondary IDE**

This field enables or disables the IDE channel used by the onboard Secondary IDE controller.

**5.2.7 Auto-Detect Hard Disks**

This setup menu allows you to automatically configure your hard disks. This has the same screen and function as Standard CMOS Setup

**5.2.8 Change User/Supervisor Password**

When you select this field from the Main Menu, a message appears at the center of the screen:

Enter new supervisor password:

Type the password, up to eight characters, and press <Enter>. Typing a password clears any previously entered password from CMOS memory.

Now the message changes:

Retype new supervisor password:

Again, type the password and press <Enter>.

To abort the process at any time, press <Esc>.

In the 'Password Check' field of 'Advanced CMOS Setup', select 'Setup' to enter a password whenever you enter Setup, or 'Always' to enter a password each time the system boots and whenever you enter Setup.

**NOTE:** To clear the password, simply press <Enter> when asked to enter a password. Then the password function is disabled.

**5.2.9 Auto-Detect Hard Disks**

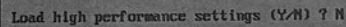
This setup menu allows you to automatically configure your hard disks. This has the same screen and function as *Standard CMOS Setup*.

### 5.2.10 Change Language Setting

This setup allows user to select the language preferred. Currently, only English Language is available.

### 5.2.11 Auto Configuration with Optimal Settings

Two sets of factory default settings are provided with the BIOS. If you would like to revert to factory settings for optimal or best performance system operations, choose this item. The following message appears at the center of the screen:

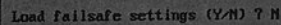


Load high performance settings (Y/N) ? N

Select 'Y' to load optimal settings.

### 5.2.12 Auto Configuration with Fail Safe Settings

Two sets of factory default settings are provided with the BIOS. If you would like to revert to factory settings for most stable performance system operations, choose this item. The following message appears at the center of the screen:

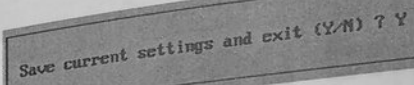


Load failsafe settings (Y/N) ? N

Select 'Y' to load fail safe settings.

### 5.2.13 Save Settings and Exit

If you have finished changing the settings and would like to save these before leaving BIOS, choose this item. The following message appears at the center of the screen:

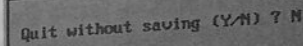


Save current settings and exit (Y/N) ? Y

Type 'Y' to save current settings and exit.

### 5.2.14 Exit Without Saving

If you decided to abandon all changes made and leave BIOS, choose this item. The following message appears at the center of the screen:



Quit without saving (Y/N) ? N

Type 'Y' to quit without saving changes.

