MIC-3351

3U-sized Pentium® MMX CPU board for
CompactPCI™

Copyright Notice

Acknowledgements

Award is a trademark of Award Software International, Inc.
Fast EtherChannel (FEC) is a trademark of Cisco Systems, Inc.
IBM, PS/2, OS/2, and VGA are trademarks of International Business Machines Corporation.
Intel, Pentium, and PRO/100+ are trademarks of Intel Corporation.
Windows is a registered trademark of Microsoft Corporation.
NetWare is a trademark of Novell, Inc.
Symbios is a trademark of Symbios Logic Corporation.
PICMG™, CompactPCI™ and the PICMG™, and CompactPCI™ logos are trademarks of the PCI Industrial Computers Manufacturers Group.

All other product names or trademarks are properties of their respective owners.

CE Notification

The MIC-3351, developed by Advantech CO., LTD., has passed the CE test for environment specification when shielded cables are used for external wiring and sleeve core clamps are added to the USB cables. We recommend the use of shielded cables and sleeve core clamps.

Part No. 2003335100 1st Edition
Printed in Taiwan September 1999

Product warranty

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for one year from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Packing List

Before installing your board, ensure that the following materials have been received:

- One MIC-3351 all-in-one single board computer
- One utility CD-ROM disc
- Two serial port cables
- One 6-pin mini-DIN to PS/2 keyboard and PS/2 mouse cable
- One bracket for mounting floppy drive
- One hard disk drive (IDE) interface cable (44-pin)
- One 26-pin FPC for floppy drive
- One warranty certificate
- This user's manual

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Technical Support and Sales Assistance

If you have any technical questions about the MIC-3351 or any other Advantech products, please visit our support website at:

- **http://support.advantech.com.tw**

For more information about Advantech's products and sales information, please visit:

- **http://www.advantech.com**

Contents

Figures

Tables

CHAPTER 1

Hardware Configuration

1.1 Introduction

The MIC-3351 is a 3U-sized CompactPCI™ all-in-one single board computer with Pentium® MMX 266 CPU and complies with PICMG 2.0 R2.1 CompactPCI specifications. The MIC-3351 features a powerful on-board Intel Pentium MMX 266 MHz CPU with low power dissipation. This CPU is designed for fan-less operation and has a wider operating temperature range. The MIC-3351 offers very powerful functions on a 3U-sized board for performance-demanding applications like real-time machine control and indstrial automation.

The MIC-3351 is available in two versions:

- MIC-3351: 3U CompactPCI Pentium MMX CPU board with a parallel port.
- MIC-3351S: 3U CompactPCI Pentium MMX CPU board with an Ultra2 Wide SCSI interface

Please check which version of the MIC-3351 you have on hand. Some of the functions in this manual may not be applicable to some version.

1.2 Specifications

1.2.1 Standard SBC functions

- **CPU:** On-board Intel Pentium® MMX 266 MHz CPU
- **BIOS:** Award 2 Mb flash BIOS
- **Chipset:** Intel 430TX
- **System bus frequency:** 66 MHz
- **L2 cache:** 512 KB on board
- **RAM:** Two 144-pin SODIMM sockets. Supports up to 256 MB SDRAM
- **EIDE interface:** Handles up to 2 IDE HDDs or other IDE devices. Supports PIO mode 4 and Ultra DMA/33 mode
- **CompactFlash interface:** Provides one CompactFlash socket on IDE channel, master/slave selectable by a jumper

- **FDD interface:** Supports up to two floppy disk drives
- **Parallel port:** Configured to LPT1, LPT2, LPT3 or disabled. Supports multi-mode parallel port (SPP/ECP/EPP), MIC-3351 only
- **Serial ports:** Two RS-232 ports with 16C550 UARTs
- **Ethernet:** Intel 82559 Fast Ethernet Controller Chip 10/100 Base-TX with RJ-45 connector
- **Keyboard/mouse connector:** One 6-pin mini-DIN connector on the front panel
- **USB interface:** Two USB connectors with fuse protection. Complies with USB specification 1.0
- **PCI-to-PCI bridge:** One Intel DEC 21150 controller chip, drives up to seven bus master peripherals
- **Watchdog timer:** Can generate a system reset or IRQ 15. Software enabled/disabled. Time interval is from 1 to 63 seconds, jumperless with run-time setup

1.2.2 PCI SVGA interface

- **Controller:** Intel C&T 69000
- **Display memory:** On-chip 2 MB SDRAM
- **Display Resolution**:
  - 640 x 480 with 256/64 K/16 M color display, 60/75/85 Hz
  - 800 x 600 with 256/64 K/16 M color display, 60/75/85 Hz
  - 1024 x 768 with 256/64 K color display, 60/75/85 Hz
  - 1280 x 1024 with 256 color display, 60 Hz

1.2.3 Ultra2 Wide SCSI Interface (MIC-3351S only)

- **Controller:** Symbios SYM53C895
- Supports 16-bit Low Voltage Differential (LVD) and Single Ended (SE) signaling
- Performs Ultra2 Wide SCSI LVD synchronous. Transfers as fast as 80 MB/s

1.2.4 Mechanical and environmental specifications

- **Board size:** 160 x 100 mm (3U size), 2-slot (8TE) wide. Optional 1-slot wide on-board FDD mounting bracket
- **Max. power requirements**: +5 V (4.75 ~ 5.25 V) @ 2.30 A (under typical conditions)
- **Operating temperature**: 0 ~ 70° C (32 ~ 158° F)
- **Storage temperature**: -20° C ~ 80° C(-4 ~ 176° F)
- **Humidity (operating and storage)**: 5 ~ 95% (non-condensing)
- **Board weight**: 0.8 kg (1.8 lb)
- **Shock**: 20 G (operating); 50 G (storage/transit)
- **Random vibration**: 1.5 Grms

1.3 Function Block Diagram

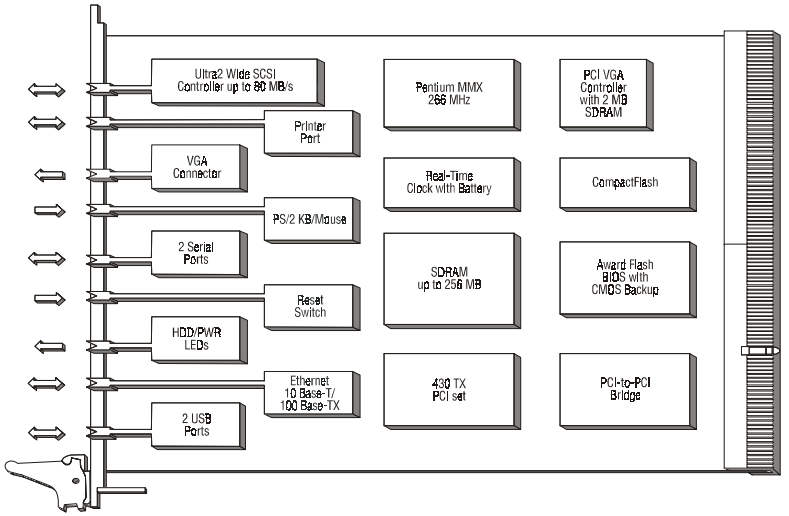


Figure 1-1: MIC-3351 function block diagram

1.4 Board Dimensions

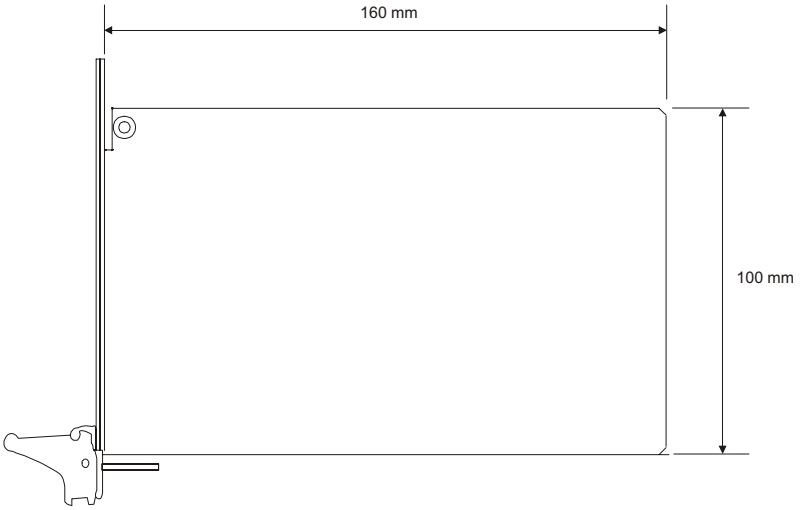


Figure 1-2: MIC-3351 board dimensions

1.5 Jumpers

1.5.1 Jumper Locations

The MIC-3351 provides jumpers for configuring your board for specific applications other than the default settings.

Table 1-1 list the jumper functions. Figure 1-3 illustrates the jumper locations.

Table 1-1: MIC-3351 jumper descriptions

Number	Function
JP1 (1, 3, 5)	CompactFlash master/slave selection
(2, 4, 6)	Clear CMOS

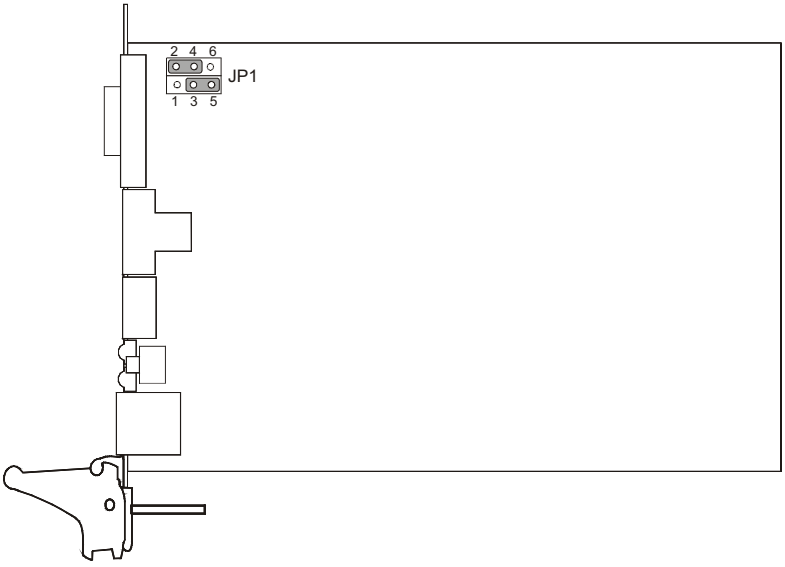


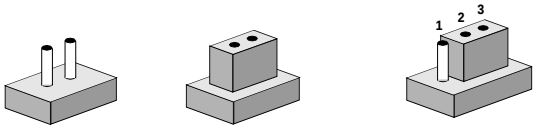
Figure 1-3: MIC-3351 jumper locations

1.5..2 Jumper Settings

This section tells how to set the jumpers to configure your card. It gives the card default configuration and your options for each jumper. After you set the jumpers and install the card, you will also need to run the BIOS Setup program (discussed in Chapter 6) to configure the serial port addresses, floppy/hard disk drive types and system operating parameters. Connections, such as hard disk cables, appear in Chapter 2.

For the locations of each jumper, see the board layout diagram depicted earlier in this chapter.

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal cap (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper you connect the pins with the cap. To "open" a jumper you remove the cap. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you connect either pins 1 and 2 or 2 and 3.



Open **Closed** **Closed 2-3**

The jmper settings are schematically depicted in this manual as follows:

Open **Closed** **Closed 2-3**

You may find a pair of needle-nose pliers useful for setting the jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

1.5.3 Clear CMOS (JP1, pin 2,4,6)

This jumper is used to erase CMOS data and reset system BIOS information. Follow the procedures below to clear the CMOS.

1. Turn off the system.

2. Close jumper JP1 (4-6).

3. Turn on the system. The CMOS is now cleared.

4. Turn off the system. Close jumper JP1 (2-4).

5. Turn on the system. The BIOS is reset to its default setting.

Table 1-2: Clear CMOS

CMOS	JP1
Clear	
Normal	

1.5.4 CompactFlash master/slave selection (JP1, pin 1,3,5)

This jumper is used to set the CompactFlash card to be IDE master or slave. The CompactFlash socket is connected to the primary IDE channel. If a CompactFlash card and an IDE drive are connected to the primary IDE channel at the same time, we recommend to set the CompactFlash card as master and the other IDE drive as slave. Otherwise, the MIC-3351 may not be able to detect the CompactFlash correctly.

Table 1-3: CompactFlash master/slave selection

CMOS	JP1
Master	
Slave	

1.6 Connectors

On board connectors link to external devices such as hard disk drives, keyboards, or floppy drives, etc. Table 1-4 lists the function of each connector and Figure 1-4 and Figure 1-5 illustrate each connector location. Chapter 2 gives instructions for connecting external devices to your card.

Table 1-4: MIC-3351 connector descriptions

Number	Function
SW1	Reset switch
CN1	VGA connector
CN2	COM1 and COM2 connector
CN3	PS/2 Keyboard and mouse connector
CN4	USB connector
CN5	CompactFlash socket
CN6	Floppy disk drive connector
CN7	IDE connector
CN8	Parallel port
CN9	Ethernet connector
CN10	Ultra2 Wide SCSI interface connector
DIMM1	SODIMM socket 1
DIMM2	SODIMM socket 2
LED1	HDD LED
LED2	Power LED
J1/J2	Primary CompactPCI bus

Please refer to Appendix B for pin assignments.

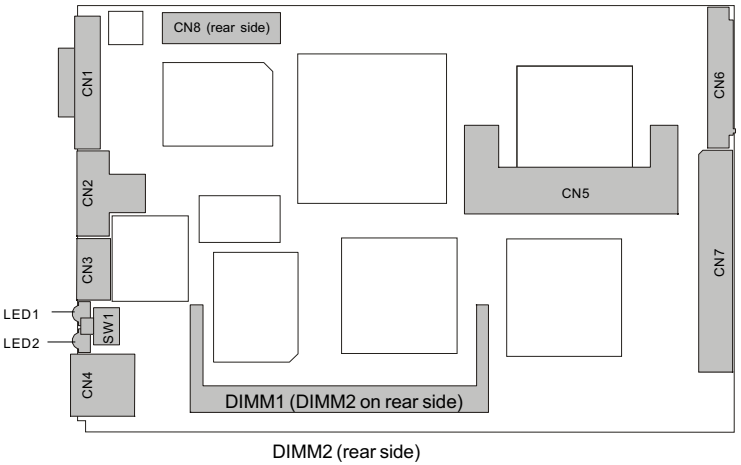


Figure 1-4: MIC-3351 upper layer connector locations

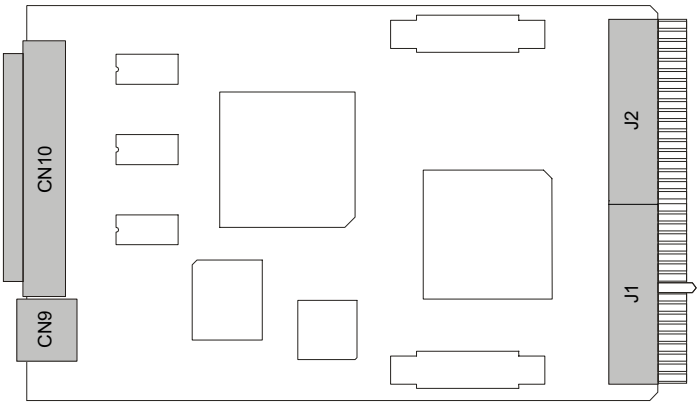
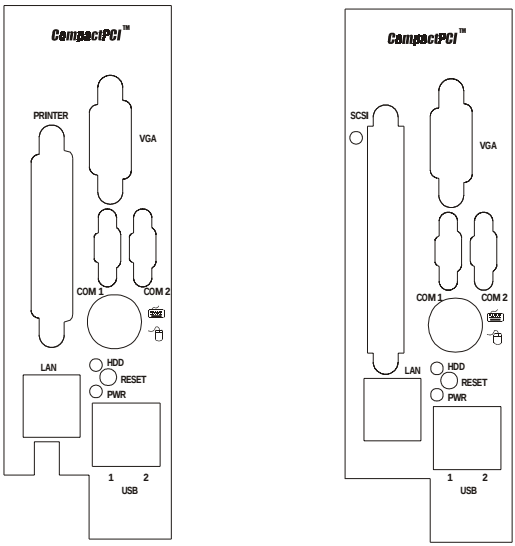


Figure 1-5: MIC-3351 lower layer connector locations

1.7 Front Panel Connectors and Indicators



MIC-3351 MIC-3351S

Figure 1-6: MIC-3351 front panel connector and indicator locations

1.8 Safety Precautions

Follow these simple precautions to protect yourself from harm and the products from damage.

1. To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
2. Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.
3. Always ground yourself to remove any static charge before you touch your CPU card. Be particularly careful not to touch the chip connectors. Modern integrated electronic devices, especially CPUs and memory chips, are extremely sensitive to static electrical discharges and fields. Keep the card in its antistatic packaging when it is not installed in the PC, and place it on a static dissipative mat when you are working with it. Wear a grounding wrist strap for continuous protection.

1.9 Installing SDRAM (SODIMMs)

The MIC-3351 provides two 144-pin SODIMM sockets, one on the component side of the upper board and the other one on the solder side of the upper board. Each socket accepts 16, 32, 64, or 128 MB SDRAM. The sockets can be filled in any combination with DIMMs of any size, giving a total memory capacity between 16 and 256 MB. If only one SODIMM module is required, it can be installed in either SODIMM socket.

The procedure for installing SODIMMs appears below. Please follow these steps carefully.

1. Ensure that all power supplies to the system are switched Off.
2. Install the SODIMM module. Install the SODIMM so that its gold pins point down into the SODIMM socket.
3. Slip the SODIMM into the socket at a 45 degree angle and carefully fit the bottom of the module against the connectors.
4. Gently push the SODIMM toward the board until the SODIMM is parallel to the CPU card, and the clips on the ends of the SODIMM sockets snap into place.
5. Check to ensure that the SODIMM is correctly seated and all connector contacts touch. The SODIMM should not move around in its socket.

NOTE: 1. The SODIMM modules can only fit into sockets one way, in accordance with the keyed notches along the bottom edge of the modules. Their gold pins must point down into the SODIMM socket.

2. To install the SDRAM module in the socket on the solder side, users need to disassemble the MIC-3351. Please refer to Figure 2-1 for details.

CHAPTER 2

Connecting Peripherals

2.1 IDE Device (CN7)

The MIC-3351 provides one IDE (Integrated Device Electronics) connector on board. Two IDE drives can be connected to the MIC-3351 through the on-board conector. However, due to the limited space, the on-board bracket accepts only one 2.5" hard disk drive.

If two IDE drives are installed on one connector, remember to set one as the master and the other one as the slave. You may do this by setting the jumpers on the drives. Refer to the documentation that came with your drive for more information. A jumper diagram usually appears on the top side of a hard disk drive.

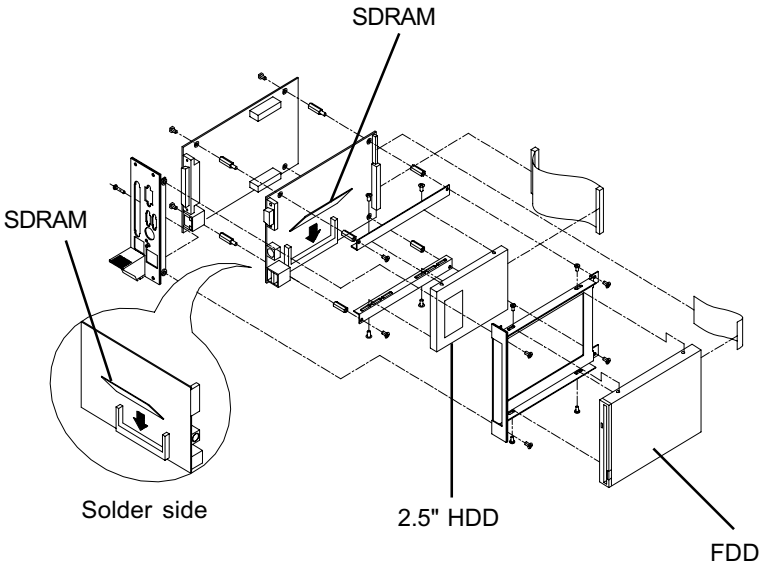


Figure 2-1: Installing hard disk drive and floppy disk drive

Warning: *Plug the other end of the cable into the drive with pin 1 on the cable corresponding to pin 1 on the drive. Improper connection will damage the drive.*

Note: *We don't recommend connection to the following Seagate brand IDE HDD models: ST 31276A, ST 31720A, ST 32531A, ST 33240A or ST 34340A*

2.2 Floppy Drive (CN6)

One floppy disk drive can be connected to the MIC-3351 through the on-board connector. The 1-slot wide mounting bracket shipped with the MIC-3351 can accommodate one floppy disk drive. Please refer to Figure 2-1 for the assembling procedures.

2.3 CompactFlash Interface (CN5)

This socket accepts an IDE-compatible CompactFlash memory card. If a CompactFlash card is inserted in the CompactFlash socket and an IDE drive (i.e. on-board HDD, CD-ROM) is being used at the same time, remember to set the CompactFlash card as master and the IDE drive as slave. (refer to section 1.5.4)

2.4 VGA Display Connector (CN1)

The MIC-3351 provides an VGA controller for a high performance VGA interface. The MIC-3351's CN1 is a DB-15 connector for VGA monitor input. Pin assignments for the VGA display are detailed in Appendix B.

2.5 Parallel Port Connector (CN8)

The parallel port is normally used to connect the CPU card to a printer and it is only supported by the MIC-3351 (MIC-3351S doesn't support

the parallel port). The MIC-3351 includes an on-board parallel port, accessed through a DB 25-pin connector, CN8, on the front panel.

The parallel port is designated as LPT1 and can be disabled or changed to LPT2 or LPT3 from the system BIOS setup.

2.6 PS/2 Keyboard and Mouse Connector (CN3)

The MIC-3351 provides a 6-pin mini-DIN connector (CN3) on the front panel for connection of PS/2 keyboard and PS/2 mouse. The MIC-3351 comes with an cable to convert from the single 6-pin mini-DIN connector to a double PS/2 keyboard connector and PS/2 mouse connector. Since these two connectors are identical, please follow the icons on the cable to plug the keyboard and the mouse into their correct connectors.

2.7 Serial Ports (CN2)

The MIC-3351 offers two serial ports in micro-formats: COM1 and COM2, both in RS-232. These ports allow users to connect to serial devices (a mouse, printers, etc.) or a communication network. Advantech provides two serial-port cables shipped with the MIC-3351. These cables are designed to convert micro-format serial ports to standard-format serial ports which are normally be seen on desktop PCs.

You can select the address for each port (For example, 3F8H [COM1], 2F8H [COM2]) or disable it, using the BIOS Advanced Setup program, covered in Chapter 6.

Different devices implement the RS-232 standard in different ways. If you are having problems with a serial device, be sure to check the pin assignments for the connector.

The IRQ and address range for both ports are fixed. However, if you wish to disable the port or change these parameters later, you can do this in the system BIOS setup. The table on the next page shows the settings for the MIC-3351 board's ports:

Table 2-1: MIC-3351 serial port default settings

Port	Address	Default
COM1	3F8, 2F8, 3E8, 2E8	3F8/IRQ4
COM2	3F8, 2F8, 3E8, 2E8	2F8/IRQ3

2.8 Ethernet Configuration (CN9)

The MIC-3351 is equipped with a high performance 32-bit PCI-bus Fast Ethernet interface which is fully compliant with IEEE 802.3u 10/100Base-TX specifications. It is supported by all major network operating systems and is 100% Novell NE-2000 compatible. One on-board RJ-45 jack provides convenient connection to the network.

The medium type can be configured via the software program included on the utility CD-ROM disc. (See Chapter 3 for detailed information.)

2.9 USB Connector (CN4)

The MIC-3351 provides two USB (Universal Serial Bus) interfaces, which give complete plug and play, hot attach/detach for up to 127 external devices. The USB interfaces comply with USB specification rev. 1.0 and are fuse protected.

The USB interfaces can be disabled in the system BIOS setup.

2.10 Ultra2 Wide SCSI Interface (CN10)

The MIC-3351S has a 68-pin, dual in-line connector for Ultra2 Wide SCSI devices. Connection of SCSI devices requires special attention, especially when determining the last drive on the SCSI chain. Refer to Chapter 5 and your device's operating manual for detailed installation advice.

2.11 Card Installation

The CompactPCI connectors are firm and rigid, and require careful handling while plugging and unplugging. Improper installation of a card can easily damage the backplane of the chassis.

The inject/eject handles of MIC-3351 help you install and remove the card easily and safely. Follow the procedure below to install the MIC-3351 into a chassis:

To install a card:

1. Hold the card vertically. Be sure that the card is pointing in the correct direction. The components of the card should be pointing to the right-hand side.
2. Holding the lower handle, pull out the red portion in the middle of the handle to unlock it.

Caution: Keep your fingers away from the hinge to prevent your fingers from getting pinched.

3. Insert the card into the chassis by sliding the upper and lower edges of the card into the card guide.
4. Push the card into the slot gently by sliding the card along the card guide until the handles meet the rectangular holes of the cross rails.

Note: If the card is correctly positioned and has been slid all the way into the chassis, the handle should match the rectangular holes. If not, remove the card from the card guide and repeat step 3 again. Do not try to install a card by forcing it into the chassis.

5. Lift the lower handle up to push the card into place.
6. Secure the card by pushing in the red handle to lock it into place.

To remove a card:

1. Unscrew the four screws on the front panel. Pull out the red portion in the middle of the handle to unlock the handle.
2. Press the lower handle down to release the card from the backplane.
3. Slide the card out.

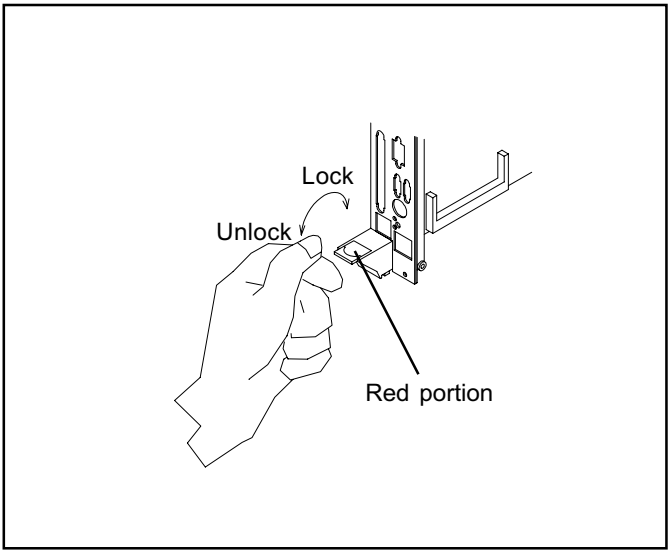


Figure 2-2: Installing the card into the chassis

CHAPTER 3

Ethernet Software Configuration

3.1 Introduction

The MIC-3351 has one on-board high-performance fast Ethernet interface which complies with IEEE 802.3/802.3u for 10Base-T and 100 Base-TX data rates.

The module uses Intel 82559 fast Ethernet controller with integrated PHY and is compatible with the Intel PRO/100+ Server and Client Adapter.

The MIC-3351 comes with drivers for a wide variety of networks and operating systems. The MIC-3351 is an excellent choice for operation in standalone and harsh industrial environments.

3.2 Utility and Drivers

The MIC-3351's on-board Ethernet interface supports all major network operating systems. The installation instructions and drivers for different operating systems are located in the following directories of the utility CD-ROM disc:

General Information:

- **\MIC3000\82559\README.TXT:** General information about the drivers

For Microsoft Windows:

- **\MIC3000\INFO\MS\MS.TXT:** Installation instructions for Microsoft Windows
- **\MIC3000\82559\E100BNT.SYS (NDIS 4.0), \MIC3000\82559\ OEMSETUP.INF:** Drivers for Windows NT 4.0
- **\MIC3000\82559\E100B.SYS (NDIS 3), \MIC3000\82559\ OEMSETUP.INF:** Drivers for Windows NT 3.51
- **\MIC3000\82559\NET82557.INF:** Drivers for Windows 98
- **\MIC3000\82559\E100BNT.SYS (NDIS 4.0), \MIC3000\82559\ NET82557.INF:** Drivers for Windows 95

- **MIC3000\82559\WFW\E100B.38_,** \MIC3000\82559\WFW\ OEMSETUP.INF**:** Drivers for Windows 3.1

For Novell NetWare

- **\MIC3000\82559\INFO\NETWARE\NETWARE.TXT:** Installation instructions for Novell NetWare
- **\MIC3000\82559\NWSERVER\3X4X.OLD\E100B.LAN:** Drivers for NetWare 3.12 and 4.10
- **\MIC3000\82559\NWSERVER\311LAN\E100B.LAN:** Drivers for NetWare 3.11
- **\MIC3000\82559\OS2\E100BODI.SYS:** Drivers for NetWare OS/2 ODI Client
- **\MIC3000\82559\DOS\E100BODI.COM:** Drivers for DOS ODI Client

For UNIX

- **\MIC3000\82559\INFO\UNIX\UNIX.TXT:** Installation instructions for UNIX

For Other Operating Systems

- **\MIC3000\82559\INFO\OTHER\OTHER.TXT:** Installation instructions for other operating systems
- **\MIC3000\82559\DOS\E100B.DOS:** Drivers for IBM LAN support for AS/400 and NetWare (for LANSUP)
- **\MIC3000\82559\DOS\E100BODI.COM:** Drivers for IBM LAN support for AS/400 and NetWare (for ODINSUP)
- **\MIC3000\82559\OS2\E100B.OS2:** Drivers for LAN server (OS/2 driver)
- **\MIC3000\82559\DOS\E100B.DOS:** Drivers for LAN server (DOS driver)

- **\MIC3000\82559\DOS\E100B.DOS:** Drivers for BANYAN NDIS workstation
- **\MIC3000\82559\DOS\E100B.DOS:** Drivers for LANTASTIC 6.0
- **\MIC3000\82559\DOS\E100B.DOS:** Drivers for general NDIS 2.X (DOS driver)
- **\MIC3000\82559\OS2\E100B.OS2:** Drivers for general NDIS 2.X (OS/2 driver)

Before installing drivers, please refer to the installation instructions of each operating system.

Note: ***Do not use the driver recommended by the Windows 95/ NT Add New Hardware wizard. Choose the driver from the utility CD-ROM disc.***

Note: ***Operating system vendors may post driver updates on their web sites. Please visit the web sites of OS vendors to download updated drivers.***

CHAPTER 4

SVGA Setup

4.1 Introduction

The MIC-3351 uses an Intel C&T 69000 chipset as its VGA controller. The VGA controller has an integrated 2 MB SDRAM operating at 83 MHz, and can drive CRT displays with resolutions up to 1024 x 768 at 64 K colors. It supports interlaced and non-interlaced analog monitors (color and monochrome VGA) in high-resolution modes while maintaining complete IBM VGA compatibility. Digital monitors (i.e. MDA, CGA, and EGA) are NOT supported. Multiple frequency (multisync) monitors are handled as if they were analog monitors.

4.2 Installation of SVGA Driver

The MIC-3351 is supplied with a utility CD-ROM disc that holds the necessary file for setting up the VGA display under the directory \MIC-3000\69000. The contents and pathnames of this directory are listed below:

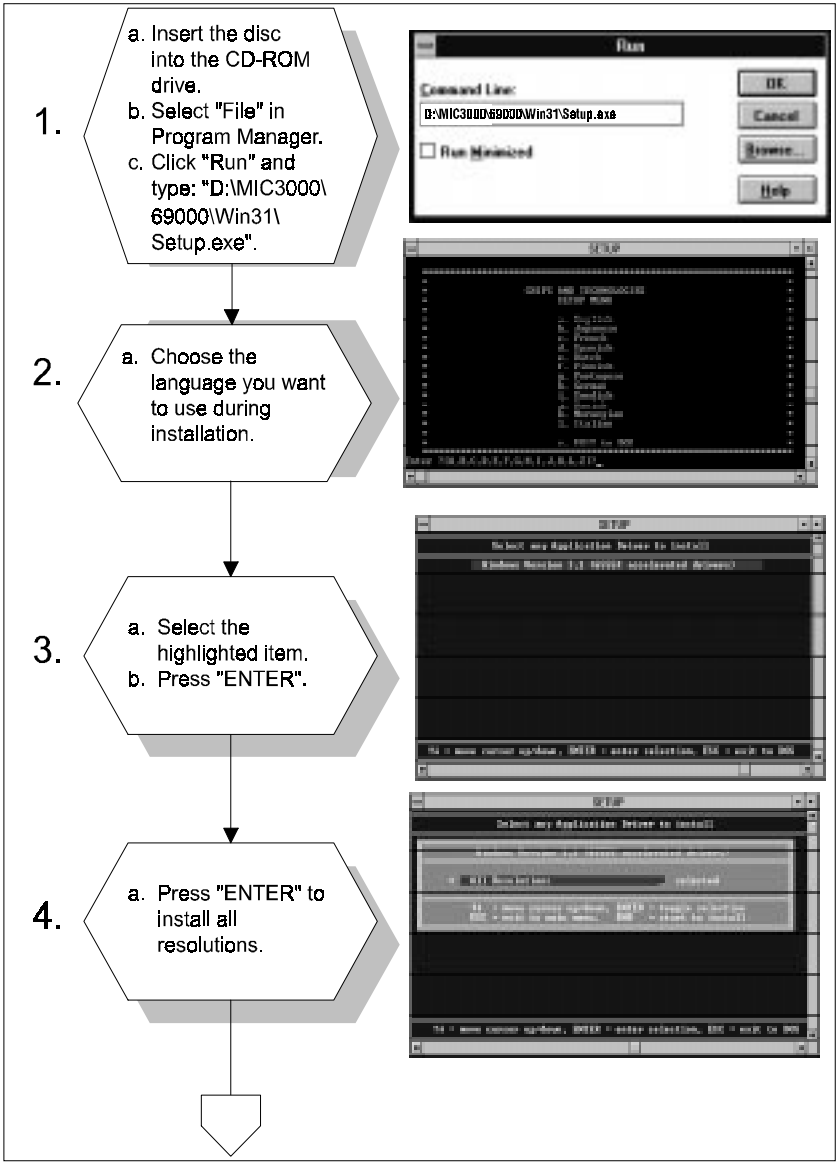
- **MIC3000\69000\Win31:** VGA utility for Windows 3.1
- **MIC3000\69000\Win95\w95500:** VGA utility for Windows 95
- **MIC3000\69000\Win98\w98600:** VGA utility for Windows 98
- **MIC3000\69000\WinNT40:** Utility for Windows NT 4.0

Complete the following steps to install the SVGA driver. Follow the procedures in the flow chart that apply to the operating system you are using with your MIC-3351. The instructions below assume your CD-ROM drive name is D.

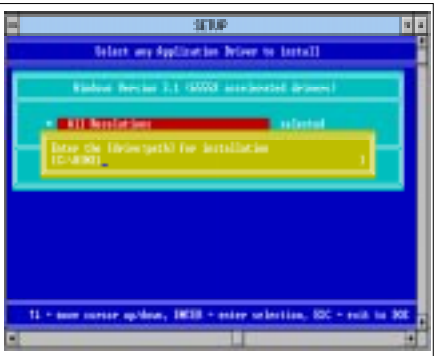
Important: The following windows illustrations are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

Note: <Enter> means pressing the "Enter" key on the keyboard.

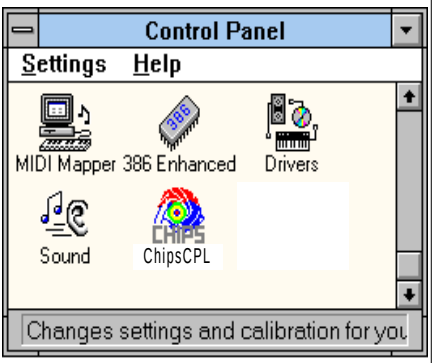
4.2.1 Installation for Windows 3.1



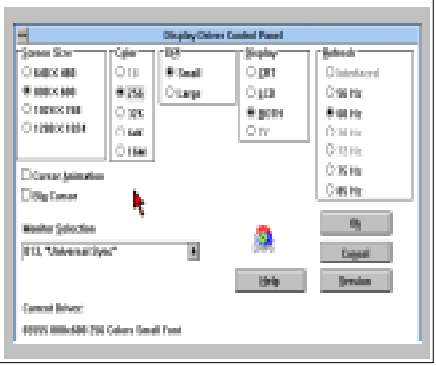
5. a. Type the path of the operating system.



6. a. When installation is completed, reboot the system.
b. You will see the "ChipsCPL" icon in the control panel.



7. a. Double click "ChipsCPL".
b. Adjust screen size, color and refresh rate to your preferences.



END

4.2.2 Installation for Windows 95

To install the VGA driver for Windows 95, run the program "D:\MIC3000\69000\Win95\w95500.exe" from Windows Start menu's Run command or by double-clicking the w95500.exe icon in Windows Explorer.

The installation program will search MIC-3351's VGA display controller then finish the installation automatically.

4.2.3 Installation for Windows 98

To install the VGA driver for Windows 98, run the program "D:\MIC3000\69000\Win98\w98600.exe" from Windows Start menu's Run command or by double-clicking the w98600.exe icon in Windows Explorer.

The installation program will search MIC-3351's VGA display controller then finish the installation automatically.

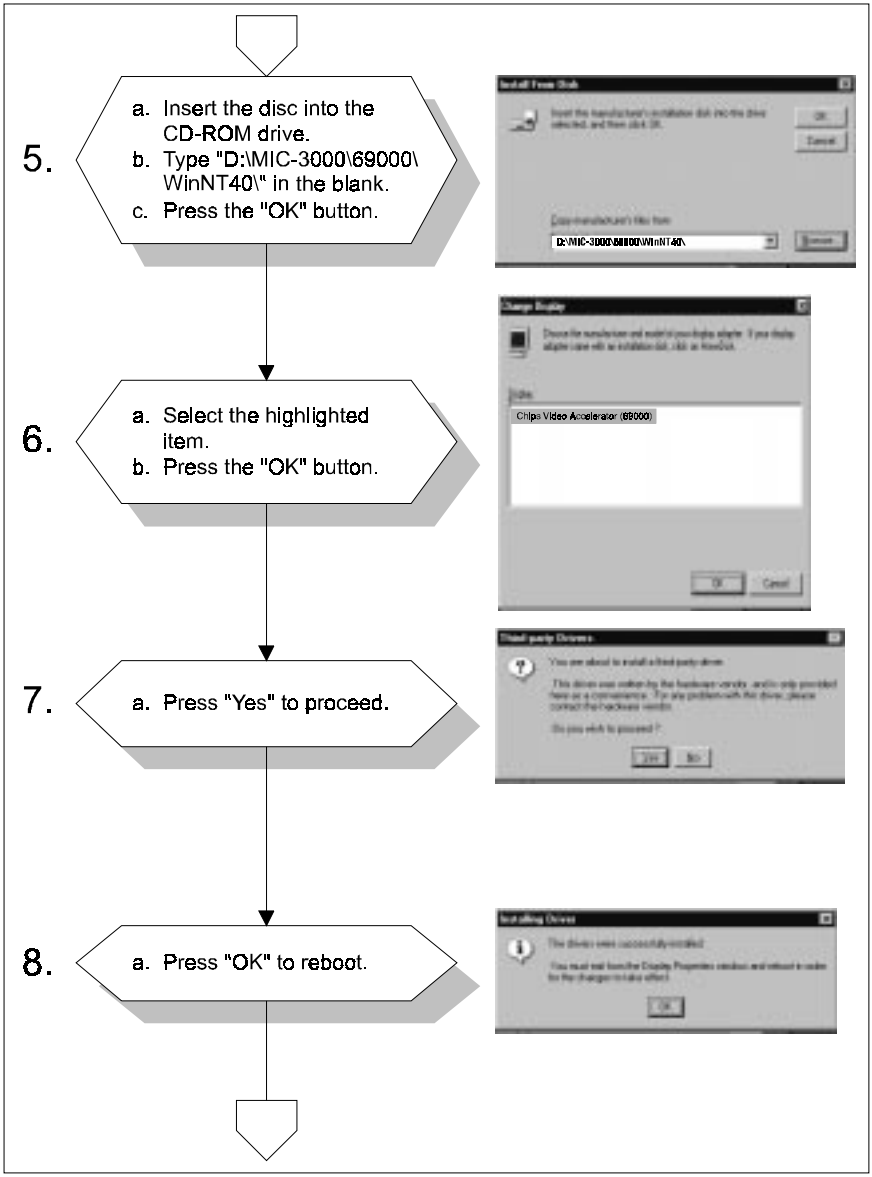
4.2.4Installation for Windows NT

1. a. Select "Start", "Settings", "Control Panel".
   b. Double click the "Display" icon.

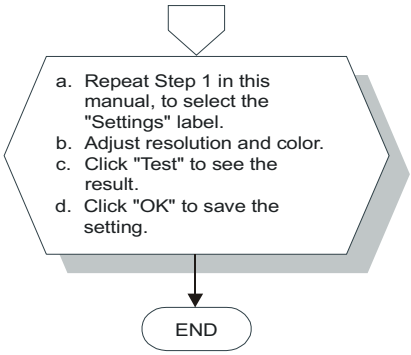
2. a. Choose the "Settings" label.
   b. Press the "Display Type" button.

3. a. Press the "Change..." button.

4. a. Click the "Have Disk..." button.


5.
a. Insert the disc into the CD-ROM drive.
b. Type "D:\MIC-3000\69000\WinNT40\" in the blank.
c. Press the "OK" button.
6.
a. Select the highlighted item.
b. Press the "OK" button.
7.
a. Press "Yes" to proceed.
8.
a. Press "OK" to reboot.

9.


a. Repeat Step 1 in this manual, to select the "Settings" label.
b. Adjust resolution and color.
c. Click "Test" to see the result.
d. Click "OK" to save the setting.
END

CHAPTER 5

SCSI Software Configuration

5.1 Introduction

The MIC-3351S uses the Symbios SYM53C895 SCSI processor to provide an Ultra2 Wide SCSI interface with data transfer rate up to 80 MB/s. The device can support cables up to 12-meter long and up to 16 LVD devices on a wide LVD (Low Voltage Differential) SCSI bus. Device drivers and utilities for DOS, Windows 3.1, Windows 98/95/NT, OS/2, SCO UNIX, UnixWare and NetWare are included in the utility CD-ROM.

5.2 Utility User's Guide and Installation Instructions

The utility user's guide and installation instructions are provided in .htm format in the utility CD-ROM disc. Users can browse the instructions using a java-aware browser such as Microsoft Internet Explorer v3.0 or later, or Netscape 2.0 or later. To utilize the full functionality of the CD, Microsoft Internet Explorer is recommended. Netscape will work, but links that launch applications are disabled in Netscape.

The instructions are located in the directory \SYM895\HTML and include:

For DOS:

- **ASPI8XX.HTM**: Installation guide for ASPI manager
- **DOS.HTM**: Device drivers for DOS/Windows 3.x
- **DOSCONF.HTM**: SDMS DOS configuration utility
- **SYMCD.HTM**: CDROM support using the ASPI manager.
- **SYMDISK.HTM**: Device driver that provides support for non-INT13h SCSI disk drives and removable media devices using the ASPI manager.

- **VERIFY.HTM**: SDMS DOS verify utility user's guide

For Windows 95/98:

- **DEVMGR95.HTM**: Installing the SYMC8XX.MPD/SYM_HI.MPD driver in Windows 95
- **SCSITOOL.HTM**: Installation guide for Symbios SCSI tools for Windows 95/98 and Windows NT
- **WIN95.HTM**: Installation guide for device drivers for Windows 95 and Windows 98

For Windows NT:

- **WINNT.HTM**: Installation guide for device drivers for Windows NT
- **NEWASNT.HTM**: Windows NT 4.0 guided installation for installing SYMC8XX or SYM_HI drivers
- **NTCONFG.HTM**: Windows NT configuration utility (NTCONFIG)
- **NTDMI.HTM**: Installation guide for NT DMI 1.0 component instrumentation
- **NTDMI2.HTM**: Installation guide for NT DMI 2.0 component instrumentation
- **SCSITOOL.HTM**: Installation guide for Symbios SCSI tools for Windows 95/98 and Windows NT

For SCO Unix:

- **BLDBTLD.HTM**: Building the SCO UnixWare BTLD diskette
- **BUILDSCO.HTM**: Building the SCO OpenServer BTLD diskette
- **SCOUNIX.HTM**: Installation guide for the Symbios SDMS SCO UNIX driver
- **UNIXWARE.HTM**: Installallation guide for the Symbios SDMS UnixWare driver

For NetWare:

- **NETWDMI.HTM**: NetWare DMI 1.0 SDMS component instrumentation
- **NWPA.HTM**: Installation guide for Symbios NetWare NWPA drivers SYM8XXNW.HAM and SYMHINW.HAM

For OS/2:

- **OS2.HTM**: Driver installation for OS/2

For Solaris:

- **SOLARIS.HTM**: Installation guide for the Solaris device driver

Other tools and utilities

- **BIOS.HTM**: User's guide for SCSI BIOS configuration utility
- **FLASH.HTM**: SDMS host adapter flash utility
- **FORMAT.HTM**: SDMS SCSI low-level format utility
- **RAWRITE.HTM**: Description of RaWrite 1.3
- **UTILMAIN.HTM**: SDMS utilities user's guides

5.3 Building Driver Diskettes

You may need to build driver diskettes for installation when the CD-ROM drive is not available or when the operating system does not support installation from a CD-ROM.

Insert a 1.44 MB diskette in the floppy drive and run the programs listed below to make driver diskettes:

- **\SYM895\DISKIMAG\DOS_BIOS.EXE:** DOS and SDMS SCSI BIOS
- **\SYM895\DISKIMAG\SCSITOOL.EXE:** SCSI tools for Windows 95 and NT

- **\SYM895\DISKIMAG\8XXNT95.EXE:** Drivers for Windows 95/NT
- **\SYM895\DISKIMAG\NW_OS2.EXE:** Drivers for NetWare and OS/2
- **\SYM895\DISKIMAG\NTCONFIG.EXE:** Configuration utility for Windows NT
- **\SYM895\DISKIMAG\DOSUTILS.EXE:** DOS configuration and format utility

5.4 Driver and Utility Installation

The device drivers and utilities for the SCSI interface are provided in the directories \SYM895\DRIVERS, \SYM895\UTILITY and \SYM895\WINNT on the utility CD-ROM disc. The path and file names of the drivers and utilities are listed below.

For DOS and Windows 3.1:

- \SYM895\DRIVERS\DOS

For Windows 95/98:

- \SYM895\DRIVERS\WIN95

For Windows NT:

- \SYM895\DRIVERS\WINNT
- \SYM895\WINNT

For SCO Unix:

- \SYM895\DRIVERS\UNIX

For NetWare:

- \SYM895\DRIVERS\NETWARE

For OS/2:

- \SYM895\DRIVERS\OS2

For Solaris:

- \SYM895\DRIVERS\UNIX\SOLARIS

Other tools and utilities

- \SYM895\DRIVERS\BIOS
- \SYM895\UTILITY

Please refer to related documents listed in section 5.2 for detailed installation guides.

CHAPTER 6

Award BIOS Setup

6.1 AWARD BIOS Setup

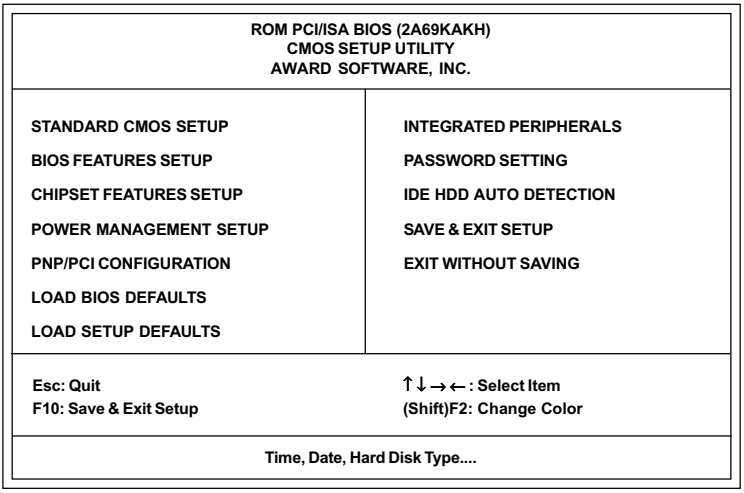


Figure 6-1: Setup program initial screen

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

6.1.1 Entering setup

Turn on the computer and check for the "patch code". If there is a number assigned to the patch code, it means that the BIOS supports your CPU.

If there is no number assigned to the patch code, please contact Advantech's application engineer to obtain an up-to-date patch code file. This will ensure that your CPU's system status is valid.

After ensuring that you have a number assigned to the patch code, press <DEL> and you will immediately be allowed to enter Setup.

6.1.2 Standard CMOS setup

Choose the "STANDARD CMOS SETUP" option from the INITIAL SETUP SCREEN Menu, and the screen below will be displayed. This standard setup menu allows users to configure system components such as date, time, hard disk drive, floppy drive, display, and memory.

ROM PCI/ISA BIOS (2A69KAKH)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

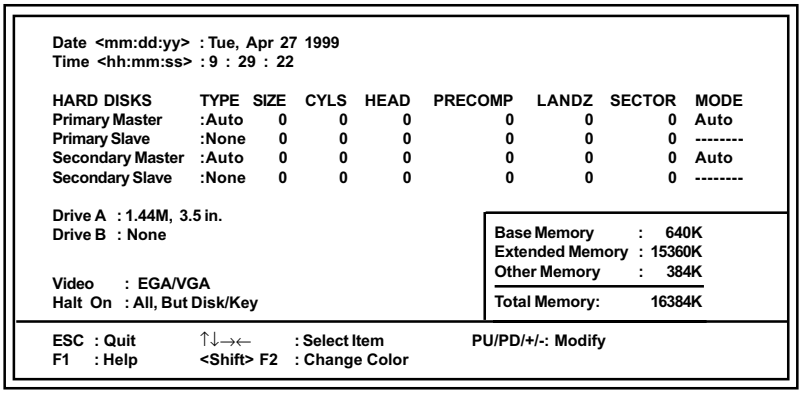


Figure 6-2: CMOS setup screen

6.1.3 BIOS features setup

The "BIOS FEATURES SETUP" screen will appear after the BIOS FEATURES SETUP item from the CMOS SETUP UTILITY Menu has been chosen. This screen allows the user to configure the MIC-3351 according to his particular requirements.

Below are some major items that are provided in the BIOS FEATURES SETUP screen:

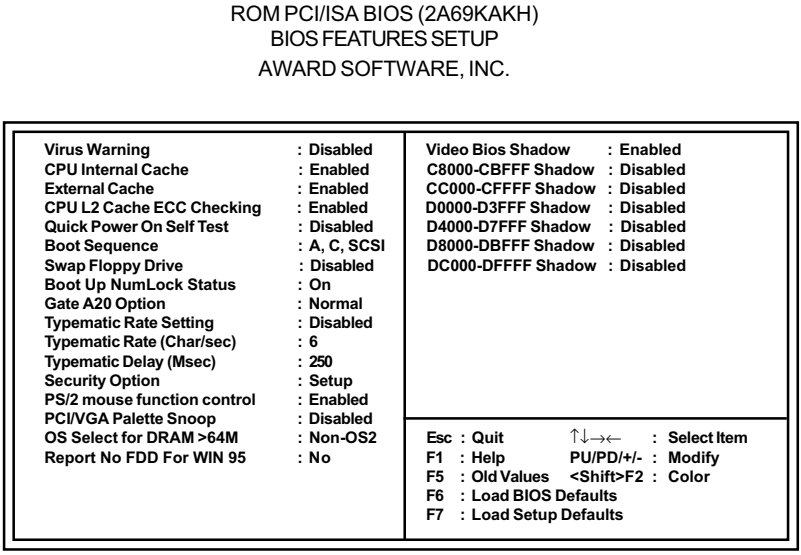


Figure 6-3: BIOS features setup screen

Virus Warning

During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system. If this happens, a warning message will be displayed. You can run the anti-virus program to locate the problem.

If Virus Warning is Disabled, no warning message will appear if anything attempts to access the boot sector or hard disk partition.

CPU Internal Cache/External Cache

Depending on the CPU/chipset design, these options can speed up memory access when enabled.

Quick Power On Self Test

This option speeds up the Power-On Self Test (POST) conducted as soon as the computer is turned on. When enabled, the BIOS shortens or skips some of the items during the test. When disabled, normal POST procedures resume.

Boot Sequence

This function determines the sequence in which the computer will search the drives for the disk operating system (i.e. DOS). The default value is "C, A, SCSI". The following options are available:

A:	Computer will boot from the A (floppy) disk drive
C:	Computer will boot from the C (hard) disk drive
CDROM:	Computer will boot from the CD-ROM disc drive
SCSI:	Computer will boot from the SCSI drive
D:	Computer will boot from the D drive
E:	Computer will boot from the E drive
F:	Computer will boot from the F drive
LS120:	Computer will boot from the LS-120 drive

Boot Up Floppy Seek

During POST, the BIOS will determine if the floppy disk drive installed has 40 or 80 tracks. The 360 KB type has 40 tracks while the 720 KB, 1.2 MB, and 1.44 MB all have 80 tracks.

Enabled	BIOS searches the floppy drive to determine if it has 40 or 80 tracks. Note that BIOS cannot differentiate 720 KB, 1.2 MB, and 1.44 MB type drives as they all have 80 tracks.
Disabled	BIOS will not search for the floppy drive type by track number. Note that there will not be any warning message if the drive installed is 360 KB.

Boot Up NumLock Status
The default is "On".

On	Keypad boots up to number keys.
Off	Keypad boots up to arrow keys.

Boot Up System Speed

High	Sets the speed to high
Low	Sets the speed to low

IDE HDD Block Mode

Enabled	Enable IDE HDD Block Mode. BIOS will detect the block size of the HDD and send a block command automatically.
Disabled	Disable IDE HDD Block Mode

Gate A20 option

Normal	The A20 signal is controlled by the keyboard controller or chipset hardware
Fast	Default: Fast. The A20 signal is controlled by Port 92 or by a specific chipset method.

Typematic Rate Setting
The typematic rate determines the characters per second accepted by the computer. Typematic Rate setting enables or disables the typematic rate.

Typematic Rate (Char/Sec)
BIOS accepts the following input values (character/second) for Typematic Rate: 6, 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (msec)

When holding down a key, the Typematic Delay is the time interval between the appearance of the first and second characters. The input values (msec) for this category are: 250, 500, 750, 1000.

Security Option

This setting determines whether the system will boot if the password is denied, while limiting access to Setup.

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

Note: To disable security, select PASSWORD SETTING in the main menu. At this point, you will be asked to enter a password. Simply hit the <ENTER> key to disable security. When security is disabled, the system will boot, and you can enter Setup freely.

OS Select for DRAM>64 MB

This setting is for use under the OS/2 operating system.

Video BIOS Shadow

This setting determines whether the video BIOS will be copied to RAM, which is optional according to the chipset design. When enabled, Video Shadow increases the video speed.

C8000 - CFFFF Shadow/DC000-DFFFF Shadow

These settings determine whether optional ROM will be copied to RAM in blocks of 16 KB.

Enabled	Optional shadow is enabled
Disabled	Optional shadow is disabled

6.1.4 CHIPSET features setup

Choosing the "CHIPSET FEATURES SETUP" option from the INITIAL SETUP SCREEN Menu causes the screen below to be displayed. This sample screen contains the manufacturer's default values for the MIC-3376.

ROM PCI/ISA BIOS (2A69KAKH)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

SDRAM RAS-to-CAS Delay	: 3T	Auto Detect DIMM/PCI Clk	: Enabled
SDRAM RAS Precharge Time	: 3T	Spread Spectrum Modulated	: Disabled
SDRAM CAS latency Time	: Auto		
SDRAM Precharge Control	: Disabled		
DRAM Data Integrity Mode	: Non-ECC		
System BIOS Cacheable	: Disabled		
Video BIOS Cacheable	: Disabled		
Video RAM Cacheable	: Disabled		
8 Bit I/O Recovery Time	: 3 BUSCLK		
16 Bit I/O Recovery Time	: 2 BUSCLK		
Memory Hole At 15M-16M	: Disabled		
Passive Release	: Enabled		
Delayed Transaction	: Disabled		
AGP Aperture Size (MB)	: 64		

Esc : Quit	↑↓→←	: Select Item
F1 : Help	PU/PD/+/-	: Modify
F5 : Old Values	<Shift>F2	: Color
F6 : Load BIOS Defaults		
F7 : Load Setup Defaults		

Figure 6-4: CHIPSET features setup screen

VGA Shared Memory Size
Shared memory architecture can support 0.5 MB, 1MB, 1.5 MB, 2 MB, 3 MB, 3.5 MB and 4 MB of system memory.

6.1.5 Power management setup

The power management setup controls the CPU cards' "green" features. The following screen shows the manufacturer's default values.

ROM PCI/ISA BIOS (2A69KAKH)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management	: User Defined	** Reload Global Timer Events**	
PM Control by APM	: Yes	IRQ[3-7,9-15], NMI	: Disabled
Video Off Method	: V/H SYNC+Blank	Primary IDE 0	: Disabled
Video Off After	: Suspend	Primary IDE 1	: Disabled
Suspend Mode	: Disable	Secondary IDE 0	: Disabled
HDD Power Down	: Disable	Secondary IDE 1	: Disabled
PCI/VGA Act-Monitor	: Disabled	Floppy Disk	: Disabled
MODEM Use IRQ	: 3	Serial Port	: Enabled
		Parallel Port	: Disabled

Esc	: Quit	↑↓→←	: Select Item
F1	: Help	PU/PD/+/-	: Modify
F5	: Old Values	<Shift>F2	: Color
F6	: Load BIOS Defaults		
F7	: Load Setup Defaults		

Figure 6-5: Power management setup screen

Power Management
This option allows you to determine if the values in power management are disabled, user-defined, or predefined.

HDD Power Management
You can choose to turn the HDD off after one of the time intervals listed, or when the system is in Suspend mode. If in a power saving mode, any access to the HDD will wake it up.

Note: The HDD will not power down if the Power Management option is disabled.

IRQ Activity
IRQ can be set independently. Activity on any enabled IRQ will wake up the system.

6.1.6 PCI configuration setup

ROM PCI/ISA BIOS (2A69KAKH)
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

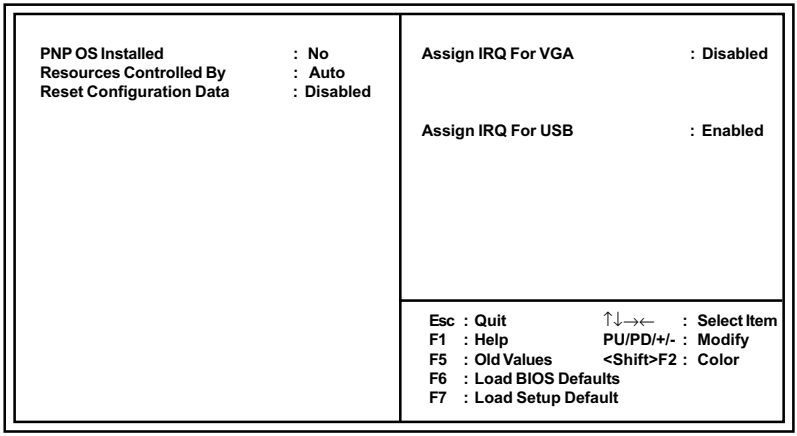


Figure 6-6: PCI configuration screen

6.1.7 Load BIOS defaults

"LOAD BIOS DEFAULTS" loads the most appropriate values of the system parameters for minimum performance. These default values are loaded automatically if the stored record created by the Setup program becomes corrupt (and therefore unusable).

6.1.8 Load setup defaults

"LOAD SETUP DEFAULTS" loads the values required by the system for maximum performance.

6.1.9 Integrated Peripherals

ROM PCI/ISA BIOS (2A69KAKH)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

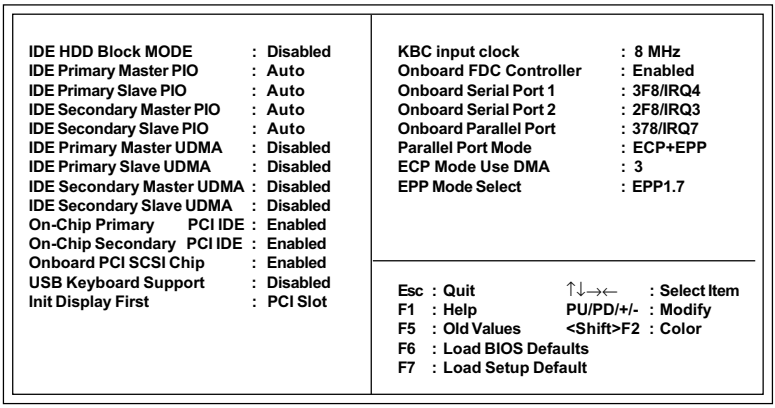


Figure 6-7: Integrated peripherals

Note: If you enable the IDE HDD block mode, the enhanced IDE driver will be enabled.

6.1.10 Password setting

To change, confirm, or disable the password, choose the "PASSWORD SETTING" option from the Setup main menu and press [Enter]. The password can be at most 8 characters long.

Remember to enable this feature. You must first select the Security Option in the BIOS FEATURES SETUP to be either "Setup" or "System." Pressing [Enter] again without typing any characters can disable the password setting function.

6.1.11 IDE HDD auto detection

"IDE HDD AUTO DETECTION" automatically self-detects the hard disk type.

6.1.12 Save & exit setup

If you select this and press the [Enter] key, the values entered in the setup utilities will be recorded in the CMOS memory of the chipset. The microprocessor will check this every time you turn your system on and compare this to what it finds as it checks the system. This record is required for the system to operate.

6.1.13 Exit without saving

Selecting this option and pressing the [Enter] key lets you exit the Setup program without recording any new values or changing old ones.

APPENDIX A

Programming the Watchdog Timer

A.1 Programming the Watchdog Timer

To program the watchdog timer, you must write a program which writes a value to I/O port address 443 (hex). This output value represents time interval. The value range is from 01 (hex) to 3F (hex), and the related time interval is from 1 sec. to 63 sec.

Data	Time Interval
01	1 sec.
02	2 sec.
03	3 sec.
04	4 sec.
•	•
•	•
•	•
3F	63 sec.

After data entry, your program must refresh the watchdog timer by rewriting the I/O port 443 (hex) while simultaneously setting it. When you want to disable the watchdog timer, your program should read the I/O port 443 (hex).

The following example shows how you might program the watchdog timer in BASIC:

```
10      REM  Watchdog timer example program
20      OUT &H443, data REM  Start and restart the watchdog
30      GOSUB 1000 REM  Your application task #1,
40      OUT &H443, data REM  Reset the timer
50      GOSUB 2000 REM  Your application task #2,
60      OUT &H443, data REM  Reset the timer
70      X=INP (&H443) REM, Disable the watchdog timer
80      END

1000    REM  Subroutine #1, your application task
•       •
•       •
•       •
1070    RETURN
2000    REM  Subroutine #2, your application task
•       •
•       •
•       •
2090    RETURN
```

APPENDIX B

Pin Assignments

B.1 VGA Display Connector (CN1)

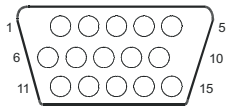


Table B-1: MIC-3351 CRT display connector

Pin	Signal	Pin	Signal
1	RED	9	VGAVCC
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	SDA
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	SCL
8	GND		

B.2 Keyboard and Mouse Connnector (CN3)

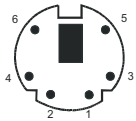


Table B-2: MIC-3351 keyboard connector

Pin	Signal
1	KDAT
2	MDAT
3	GND
4	VCC
5	KCLK
6	MCLK

B.3 COM1 and COM2 Serial Port (CN2)

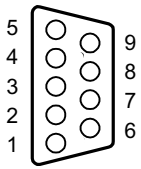


Table B-3: MIC-3351 COM1 and COM2 serial port

Pin	COM1 Signal	Pin	COM2 Signal
1	NRLSD1	1	NRLSD2
2	NRX1	2	NRX2
3	NTX1	3	NTX2
4	NDTR1	4	NDTR2
5	GND	5	GND
6	NDSR1	6	NDSR2
7	NRTS1	7	NRTS2
8	NCTS1	8	NCTS2
9	NRI1	9	NRI2

B.4 USB Connector (CN4)

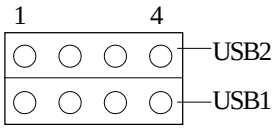


Table B-4: MIC-3351 USB1/USB2 connector

Pin	USB1 Signal	Pin	USB2 Signal
1	VCC	1	VCC
2	USBD0-	2	USBD1-
3	USBD0+	3	USBD1+
4	GND	4	GND

B.5 Ethernet RJ-45 Connector (CN9)

Table B-5: MIC-3351 Ethernet RJ-45 connector

Pin	Signal
1	TX+
2	TX-
3	RX+
4	N/C
5	N/C
6	RX-
7	N/C
8	N/C

B.6 Parallel Port Connector (CN8)

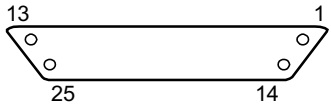


Table B-6: MIC-3351 parallel port connector

Pin	Signal
1	STB-
2	PTD0
3	PTD1
4	PTD2
5	PTD3
6	PTD4
7	PTD5
8	PTD6
9	PTD7
10	ACK-
11	BUSY
12	PE
13	SLCT
14	AFD-
15	ERR-
16	INIT-
17	SLIN-
18	GND
19	GND
20	GND
21	GND
22	GND
23	GND
24	GND
25	GND

B.7 IDE Connector (CN7)

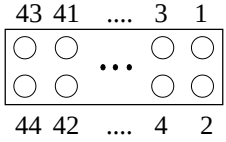


Table B-7: MIC-3351 IDE connector

Pin	Signal	Pin	Signal
1	IDE 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	SIGNAL GND	20	N/C
21	N/C	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO CHANNEL READY	28	N/C
29	HDACKO*	30	GND
31	IRQ14	32	IOCS16
33	ADDR 1	34	N/C
35	ADDR 0	36	ADDR 2
37	HARD DISK SELECT 0*	38	HARD DISK SELECT 1*
39	IDE ACTIVE*	40	GND
41	VCC	42	VCC
43	GND	44	N/C

B.8 Floppy Drive Connnector (CN6)

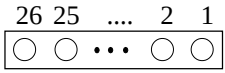


Table B-8: MIC-3351 floppy drive connector

Pin	Signal	Pin	Signal
1	VCC	2	INDEX*
3	VCC	4	DRVA*
5	VCC	6	DSKCG*
7	N/C	8	N/C
9	N/C	10	MOTEA*
11	N/C	12	FDIR*
13	DVSL*	14	STEP*
15	GND	16	WDATA*
17	GND	18	WGATE*
19	GND	20	TK00*
21	GND	22	WPT*
23	GND	24	RDATA*
25	GND	26	SIDE1*

B.9 Ultra2 Wide SCSI Connector (CN10)

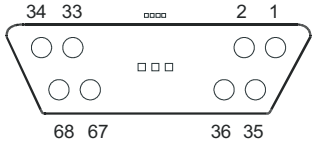


Table B-9: MIC-3351 Ultra2 Wide SCSI connector

Pin	Signal	Pin	Signal
1	SD+12	35	SD-12
2	SD+13	36	SD-13
3	SD+14	37	SD-14
4	SD+15	38	SD-15
5	SDP+1	39	SDP-1
6	SD+0	40	SD-0
7	SD+1	41	SD-1
8	SD+2	42	SD-2
9	SD+3	43	SD-3
10	SD+4	44	SD-4
11	SD+5	45	SD-5
12	SD+6	46	SD-6
13	SD+7	47	SD-7
14	SDP+0	48	SDP-0
15	GND	49	GND
16	DIFS	50	AUTO
17	TPWEX	51	TPWEX
18	TPWEX	52	TPWEX
19	N/C	53	N/C
20	GND	54	GND
21	SATN+	55	SATN-
22	GND	56	GND
23	SBSY+	57	SBSY-
24	SACK+	58	SACK-

25	SRST+	59	SRST-
26	SMSG+	60	SMSG-
27	SSEL+	61	SSEL-
28	SCD+	62	SCD-
29	SREQ+	63	SREQ-
30	SIO+	64	SIO-
31	SD+8	65	SD-8
32	SD+9	66	SD-9
33	SD+10	67	SD-10
34	SD+11	68	SD-11

B.10 CompactFlash Socket (CN5)

Table B-10: MIC-3351 CompactFlash socket

Pin	Signal	Pin	Signal
1	GND	26	N/C
2	ID3	27	ID11
3	ID4	28	ID12
4	ID5	29	ID13
5	ID6	30	ID14
6	ID7	31	ID15
7	HCS1-	32	HCS3-
8	GND	33	N/C
9	GND	34	HIOR-
10	GND	35	HIOW-
11	GND	36	N/C
12	GND	37	HIRQ
13	VCC	38	VCC
14	GND	39	SANDISK
15	GND	40	N/C
16	GND	41	-HRST1
17	GND	42	HRDY
18	GDA2	43	N/C
19	HDA1	44	N/C
20	HDA0	45	SANLED
21	ID0	46	N/C
22	ID1	47	ID8
23	ID2	48	ID9
24	N/C	49	ID10
25	N/C	50	GND

B.11 System I/O Ports

Table B-11: System I/O ports

Addr. range (Hex)	Device
000-01F	DMA controller
020-021	Interrupt controller 1, master
022-023	Chipset address
040-05F	8254 timer
060-06F	8042 (keyboard controller)
070-07F	Real-time clock, non-maskable interrupt (NMI) mask
080-09F	DMA page register
0A0-0BF	Interrupt controller 2
0C0-0DF	DMA controller
0F0	Clear math co-processor
0F1	Reset math co-processor
0F8-0FF	Math co-processor
1F0-1F8	Fixed disk
200-207	Game I/O
278-27F	Parallel printer port 2 (LPT 3)
2F8-2FF	Serial port 2
300-31F	Prototype card
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT 2)
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
3F0-3F7	Diskette controller
3F8-3FF	Serial port 1

B.12 DMA Channel Assignments

Table B-12: DMA channel assignments

Channel	Function
0	Available
1	Available
2	Floppy disk (8-bit transfer)
3	LPT1
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

* Audio DMA select 0, 1 or 3

B.13 Interrupt Assignments

Table B-13: Interrupt assignments

Interrupt#	Interrupt source
IRQ 0	Interval timer
IRQ 1	Keyboard
IRQ 2	Interrupt from controller 2 (cascade)
IRQ 8	Real-time clock
IRQ 9	Cascaded to INT 0A (IRQ 2)
IRQ 10	Available
IRQ 11	Available
IRQ 12	PS/2 mouse
IRQ 13	INT from co-processor
IRQ 14	Fixed disk controller
IRQ 15	Available
IRQ 3	Serial communication port 2
IRQ 4	Serial communication port 1
IRQ 5	Available
IRQ 6	Diskette controller (FDC)
IRQ 7	Parallel port 1 (print port)

* Ethernet function is auto-sensing

B.14 1st MB Memory Map

Table B-14: 1st MB memory map

Addr. range (Hex)	Device
F000h - FFFFh	System ROM
CC00h - EFFFh	Unused
CA00h - CBFFh	Used
C000h - C7FFh	Expansion ROM
B800h - BFFFh	CGA/EGA/VGA text
B000h - B7FFh	Unused
A000h - AFFFh	EGA/VGA graphics
0000h - 9FFFh	Base memory

B.15 J1 connector pin assignments

Table B-15: J1 connector pin assignments

Pin	Row A	Row B	Row C	Row D	Row E
25	+5V	REQ64#	N/C	N/C	+5V
24	AD1	+5V	N/C	AD0	ACK64#
23	N/C	AD4	AD3	+5V	AD2
22	AD7	GND	N/C	AD6	AD5
21	N/C	AD9	AD8	GND	C/BE0#
20	AD12	GND	N/C	AD11	AD10
19	N/C	AD15	AD14	GND	AD13
18	SERR#	GND	N/C	PAR	C/BE1#
17	N/C	SDONE	SBO#	GND	PERR#
16	DEVSEL#	GND	N/C	STOP#	LOCK#
15	N/C	FRAME#	IRDY#	GND	TRDY#
14					
13			KEY AREA		
12					
11	AD18	AD17	AD16	GND	C/BE2#
10	AD21	GND	N/C	AD20	AD19
9	C/BE3#	N/C	AD23	GND	AD22
8	AD26	GND	N/C	AD25	AD24
7	AD30	AD29	AD28	GND	AD27
6	REQ#	GND	N/C	CLK	AD31
5	N/C	N/C	RST#	GND	GNT#
4	N/C	GND	N/C	INTP	INTS
3	INTA#	INTB#	INTC#	+5V	INTD#
2	TCK	+5V	TMS	N/C	TDI
1	+5V	N/C	TRST#	+12V	+5V

B.16 J2 connector pin assignments

Table B-16: J2 connector pin assignments

Pin	Row A	Row B	Row C	Row D	Row E
47	N/C	N/C	N/C	N/C	N/C
46	N/C	GND	N/C	N/C	N/C
45	N/C	N/C	N/C	GND	N/C
44	N/C	GND	N/C	N/C	N/C
43	N/C	N/C	N/C	GND	N/C
42	N/C	GND	PRST#	REQ6#	GNT6
41	N/C	N/C	DEG#	GND	N/C
40	N/C	GND	FAL#	REQ5#	GNT5
39	N/C	N/C	N/C	GND	N/C
38	N/C	GND	N/C	N/C	N/C
37	N/C	N/C	N/C	GND	N/C
36	N/C	GND	N/C	N/C	N/C
35	N/C	N/C	N/C	GND	N/C
34	N/C	GND	N/C	N/C	N/C
33	N/C	N/C	N/C	GND	N/C
32	N/C	GND	N/C	N/C	N/C
31	N/C	N/C	N/C	GND	N/C
30	N/C	GND	N/C	N/C	N/C
29	N/C	N/C	N/C	GND	N/C
28	CLK4	GND	GNT3	REQ4#	GNT4
27	CKL2	CLK3	N/C	GNT2	REQ3#
26	CLK1	GND	REQ1#	GNT1	REQ2#