

MIC-3376

***6U-sized Pentium® III / II processor-
based CPU module for CompactPCI®***

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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:

- 1 MIC-3376 all-in-one single board computer
- 1 utility CD-ROM disc including Ethernet utility programs, IDE utility programs, SCSI utility programs, and SVGA utility programs and drivers for Windows 3.1/95/98/NT and OS/2
- 1 heat sink, 1 bag of heat sink clips, 1 Y-type keyboard/mouse cable, and 1 PS/2-DIN cable.
- 1 warranty certificate
- This user's manual

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CHAPTER

1

Hardware Configuration

1.1 Introduction

The MIC-3376 is a 6U-sized CompactPCI® all-in-one single board Pentium®III/II CPU card which complies with PICMG 2.0 R2.1 CompactPCI specifications. The MIC-3376 offers powerful functions on a single board for performance-demanding applications like computer telephony and communications.

The MIC-3376 offers a slot 1 socket and accepts an Intel Pentium®III/II CPU to provide optimum computing power. Two PCI-to-PCI bridges allow MIC-3376 to drive two independent CompactPCI bus segments through J1/J2 and J4/J5 connectors.

On-board features include dual 100/10 Mbps fast Ethernet interfaces, one 80 MB/s Ultra2 SCSI interface and one AGP VGA interface. The built-in high speed PCI IDE controller supports both PIO and bus master modes. Through the J3 connector on MIC-3376, two IDE channels and one floppy drive interface are available on the transition board or backplane. The on-board CompactFlash® socket accepts one solid state memory card for diskless operation. The MIC-3376 also supports standard serial and parallel ports, such as two USB ports, two RS-232 ports, and one multi-mode parallel (ECP/EPP/SPP) port.

A backup of the CMOS data is stored in the flash memory, which protects the BIOS configuration even after a battery failure. Also included is a 63-level watchdog timer, which resets the CPU or generates an interrupt if a program cannot be executed normally. This enables reliable operation in unattended environments.

The MIC-3376 is available in four versions:

- MIC-3376: 6U CompactPCI Pentium III/II CPU board with single PCI-to-PCI bridge
- MIC-3376S: 6U CompactPCI Pentium III/II CPU board with single PCI-to-PCI bridge and Ultra2 SCSI interface
- MIC-3376D: 6U CompactPCI Pentium III/II CPU board with dual PCI-to-PCI bridges
- MIC-3376F: 6U CompactPCI Pentium III/II CPU board with dual PCI-to-PCI bridges and Ultra2 SCSI interface

Please check which version of the MIC-3376 you have on hand. Some of the functions in this manual may not be applicable to some versions.

1.2 Specifications

1.2.1 Standard SBC functions

- **CPU:** Intel Pentium®III/II CPU up to 500 MHz
- **BIOS:** Award flash BIOS
- **Chipset:** Intel 440BX AGPset
- **System bus frequency:** 66/100 MHz
- **L2 cache:** CPU built-in 512 KB
- **RAM:** Two 168-pin DIMM sockets. Supports PC-100 SDRAMs with memory capacity up to 512 MB, supports ECC
- **EIDE interface:** Two channels handle up to 4 IDE HDDs or other IDE devices via the J3 connector. Supports PIO mode 4 and Ultra DMA/33 mode
- **CompactFlash interface:** Accepts one CompactFlash card on primary IDE channel, master or slave selectable by a jumper
- **FDD interface:** Supports up to two floppy disk drives through the J3 connector
- **Parallel port:** Configured to LPT1, LPT2, LPT3 or disabled. Supports multi-mode parallel port (SPP/ECP/EPP)
- **Serial ports:** Two RS-232 ports with 16C550 UARTs
- **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
- **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

1.2.2 PCI-to-PCI Bridge

- **Controller chip:** One (MIC-3376/MIC-3376S) or two (MIC-3376D/MIC-3376F) Intel DEC 21150 controller chips
- Drives up to two bus segments, one through J1 and J2 connectors, the other one through J4 and J5 connectors.
- Supports up to seven bus masters on each bus segment.
- Provide seven pairs of GNT# and REQ# signals on each bus segment

1.2.3 AGP VGA interface

- **Controller:** Intel C&T 69000
- AGP 1.0 compliant, 66 MHz
- **Display memory:** On-chip 2MB SDRAM
- **Display Resolution:**
 - 640 x 480 with 256/64K/16M color display, 60/75/85 Hz
 - 800 x 600 with 256/64K/16M color display, 60/75/85 Hz
 - 1024 x 768 with 256/64K color display, 60/75/85 Hz
 - 1280 x 1024 with 256 color display, 60 Hz

1.2.4 10/100Base-TX Ethernet Interface

- **Controller:** Two Intel 82559 Fast Ethernet controller chips
- Dual LAN ports
- 10 Mbps or 100 Mbps auto-switching

1.2.5 Ultra2 Wide SCSI Interface

- **Controller:** Symbios SYM53C895
- Supports 16-bit Low Voltage Differential (LVD) and Single Ended (SE) signaling

- Performs wide Ultra2 SCSI LVD synchronous transfers as fast as 80 MB/s

1.2.6 Mechanical and environmental specifications

- **Board size:** 233.35 x 160 mm (6U size), 2-slot (8TE) wide
- **Max. power requirements:** +5 V (4.75 ~ 5.25 V) @ 6.22 A (for Pentium II 450 MHz)
- **Operating temperature:** 0 ~ 50° C (32 ~ 122° F), depending on CPU installed
- **Storage temperature:** -20° C ~ 70° C (-4 ~ 158° 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

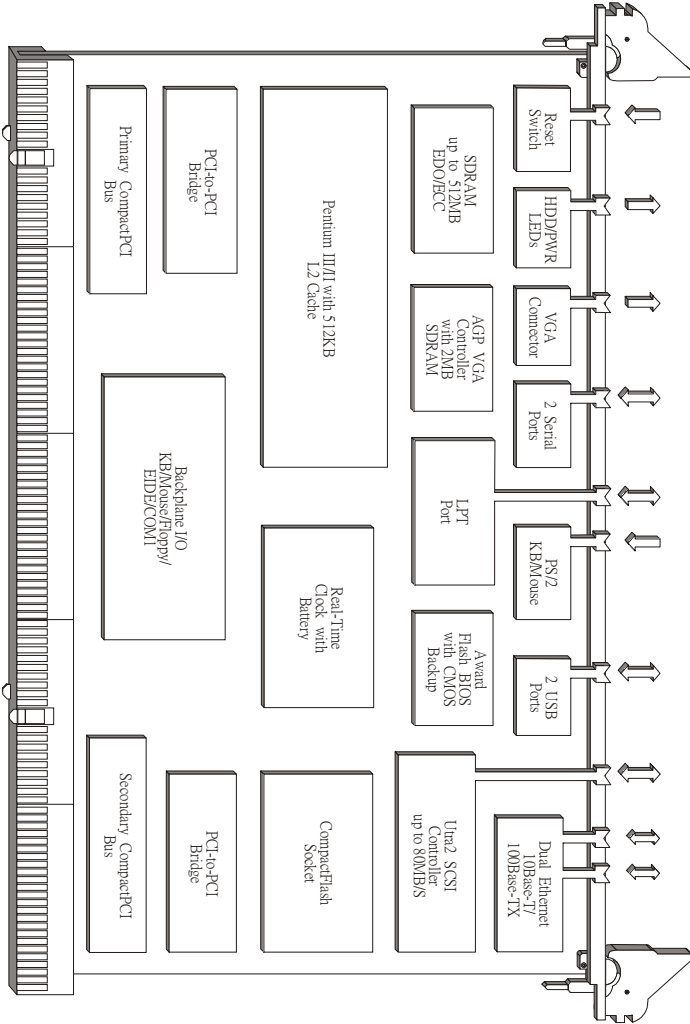


Figure 1-1: MIC-3376 function block diagram

1.4 Board Layout: Dimensions

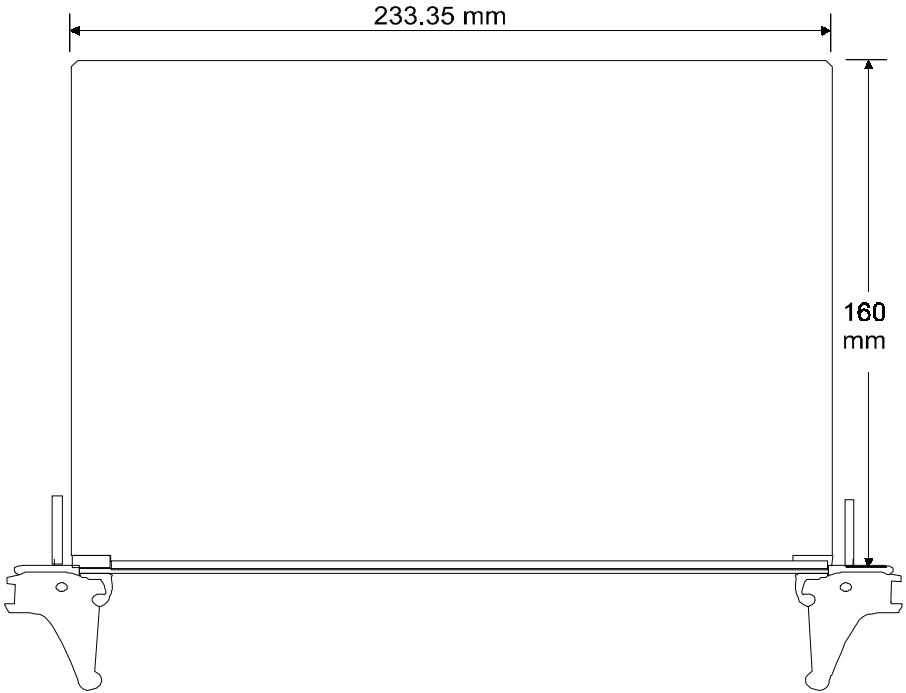


Figure 1-2: MIC-3376 board layout: Dimensions

1.5 Jumpers, Switches and Connectors

On-board connectors link to external devices such as hard disk drives, keyboards, or floppy drives, etc. In addition, the board has jumpers for configuring your board for specific applications.

The table below lists the function of each of the board's jumpers, switches, and connectors. Later sections in this chapter give detailed information on each jumper setting. Chapter 2 gives instructions for connecting external devices to your card.

Table 1-1: MIC-3376 jumpers and connectors

Number	Function
JP1	Clear CMOS
SW1	Reset switch
SW2	1-3: CPU clock ratio setting 4: master/slave selection of CompactFlash
CN1	Parallel port connector
CN2	COM 1
CN3	VGA connector
CN4	10/100 Mbps LAN connector 2
CN5	10/100 Mbps LAN connector 1
CN6	PS/2 keyboard and mouse connector
CN7	USB connector
CN8	COM 2
CN9	Internal PCI connector
CN10	Ultra2 SCSI connector
CN12	CompactFlash socket
CN13	CPU fan power connector
J1/J2	Primary CompactPCI bus
J3	IDE, floppy and rear panel I/O connector
J4/J5	Secondary CompactPCI bus

Please refer to Appendix B for pin assignments.

1.6 Board Layout: Jumper/Switch Locations

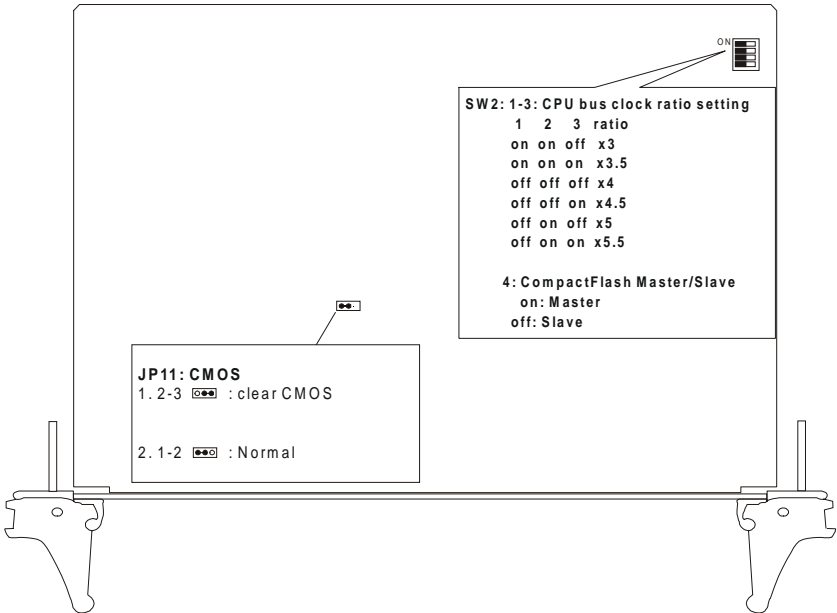


Figure 1-3: MIC-3376 board layout: Jumper locations

1.7 Board Layout: Connector Locations

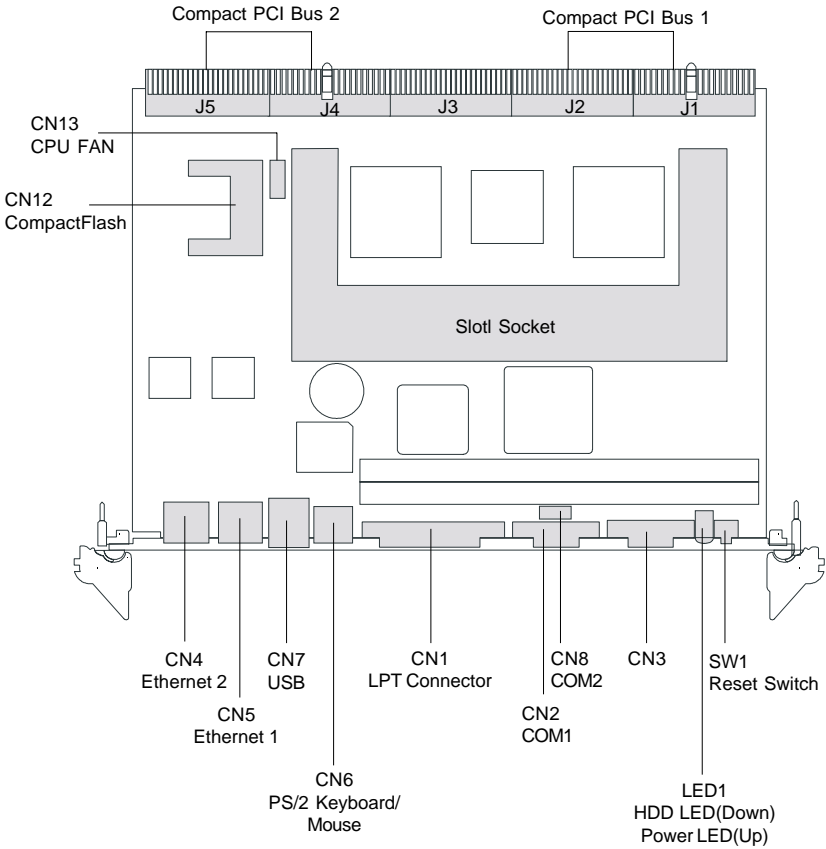


Figure 1-4: MIC-3376 board layout: Connector locations

1.8 Front Panel Connectors and Indicators

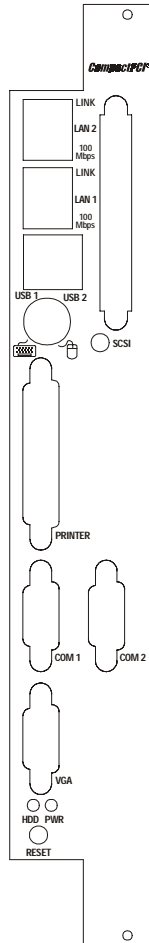


Figure 1-5: MIC-3376 Front panel connector and indicator locations

1.9 Safety Precautions

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

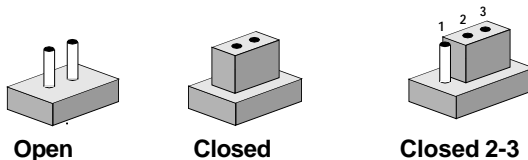
1. To avoid electric shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
2. Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a 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 electric 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.

1.10 Jumper and Switch Settings

This section tells how to set the jumpers and switches 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 4) 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 and switch, see the board layout diagram depicted earlier in this chapter.

You can 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.














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.

1.10.1 CPU clock ratio setting (1-3 of SW2)

This switch sets the frequency ratio between the internal frequency and the external frequency of CPU. Because some types of CPU set the clock ratio internally, this switch has no effect on those CPUs, and the MIC-3376 will detect the CPU type and decide the external clock automatically. For other CPUs, set the clock ratio according to the speed of the CPU.

Table 1-2: CPU clock ratio setting

CPU model	CPU clock	Bus clock	Clock Ratio	SW2 1-3
Pentium III 500 MHz	500	100	5	
Pentium III 450 MHz	450	100	4.5	
Pentium II 450 MHz	450	100	4.5	
Pentium II 400 MHz	400	100	4	
Pentium II 350 MHz	350	100	3.5	
Pentium II 300 MHz	350	100	3	
Pentium II 333 MHz	333	66	5	
Pentium II 300 MHz	300	66	4.5	
Pentium II 266 MHz	266	66	4	
Pentium II 233 MHz	233	66	3.5	
Pentium II 200 MHz	200	66	3	

1.10.2 JP1 Clear CMOS

This jumper is used to erase CMOS data and reset system BIOS information.



The procedure for clearing CMOS appears below.

1. Turn off the system.
2. Close pin 2 and pin 3 of JP1
3. Turn on the system. The CMOS is now cleared.
4. Turn off the system. Close pin 1 and pin 2 of JP1.
5. Turn on the system. The BIOS is reset to its default setting.

1.10.3 Master/slave selection of CompactFlash (4 of SW2)

This switch is used to set the CompactFlash card to be IDE master or slave. The CompactFlash socket is connected to the primary IDE channel. Each IDE channel can connect to one or two devices. Set one of the connected devices to be master and the other one to slave.

Table 1-3: Master/slave selection of CompactFlash

Function	4 of SW2
Master	On 
Slave	Off 

1.11 Installing SDRAM (DIMMs)

The MIC-3376 provides two 168-pin DIMM sockets. Each socket accepts either 16, 32, 64, 128 or 256 MB SDRAM. The sockets can be filled in any combination with DIMMs of any size, giving a total memory capacity between 16 and 512 MB.

Since the MIC-3376 can operate at 66 or 100 MHz, we recommend using PC100-compliant DIMMs.

To enable the chipset's Error Checking and Correction (ECC) function, please use DIMMs which support the ECC function.

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

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

NOTE: *The DIMM 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 DIMM socket.*

1.12 Installing CPU and heat sink

The MIC-3376 provides a slot 1 socket and accepts the Intel Pentium III/II CPU. The slot 1 socket is mounted parallel to the CPU card in order to keep the board within a 2-slot wide space. The configuration of the heat sink is specially designed for the MIC-3376 in a very thin format and can only accept S.E.C.C.2 package processors. The special designed heat sink will be packaged with the MIC-3376. Figure 1-6 illustrates the assembly of a heat sink on a processor. Figure 1-7 illustrates the installation of a CPU into the slot 1 socket.

NOTE: *The external cooling air, whether from the chassis or from the rack, is a must during operation to protect the CPU from overheating.*

NOTE: *Before fasten the heat sink on the processor, remember to tear apart the blue covers from the cooling adhesives on the heat sink.*

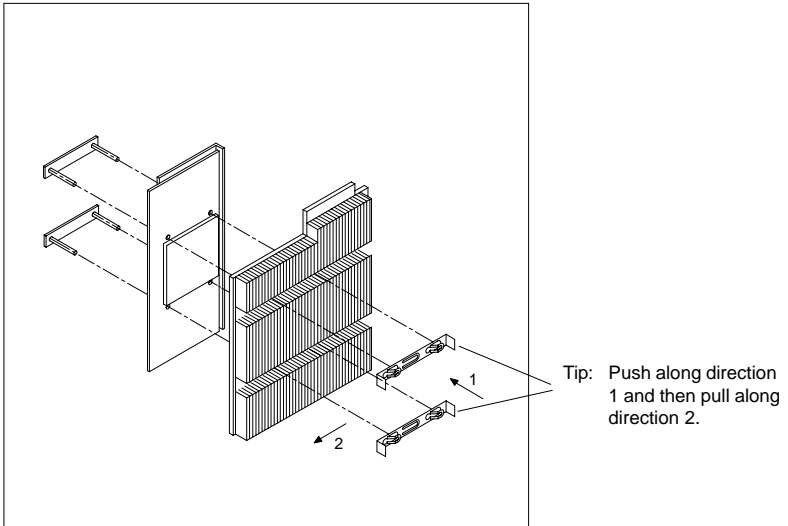


Figure 1-6: Installing a CPU with a heat sink

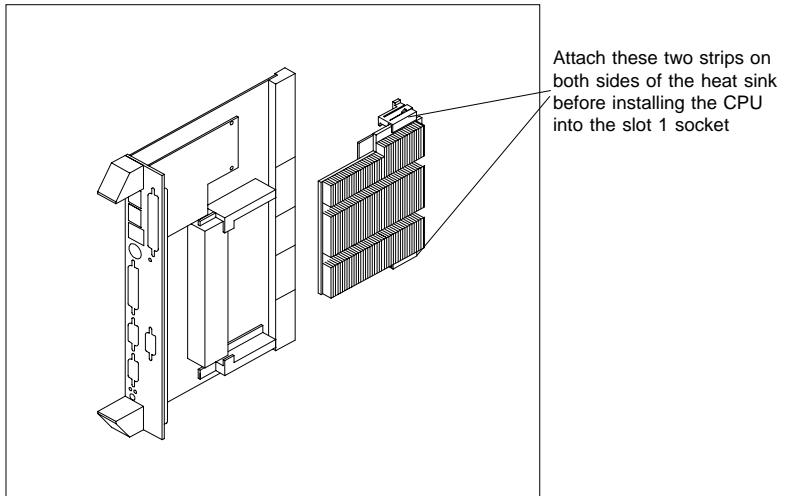


Figure 1-7: Installing a CPU into the slot 1 socket

1.13 Software support

The MIC-3376 comes with a utility CD-ROM disc, which includes drivers and utility programs of Ethernet, SCSI, and SVGA interfaces.

The 440BX chipset may not be recognized by some old-versioned Windows 95. Please visit Intel's website to download the required files:

http://developer.intel.com/design/chipsets/drivers/inf_update.htm

CHAPTER
2

**Connecting
Peripherals**

2.1 IDE Device and Floppy Drive

The MIC-3376 provides two IDE (Integrated Device Electronics) channels and one floppy drive interface through the CompactPCI J3 connector. These connect to two IDE and one floppy drive connectors on the rear transition board or on Advantech's 6U-sized backplane.

Users can attach two IDE devices to each IDE channel, either at the backplane or at the rear transition board. If two drives are installed on one channel, 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.

Users can attach up to two floppy disk drives to the floppy connector on the backplane. The MIC-3376 supports any combination of 5.25" (360 KB/1.2 MB) and/or 3.5" (720 KB/1.44/2.88 MB) drives.



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 CompactFlash Interface (CN12)

This socket accepts an IDE-compatible CompactFlash memory card. The CompactFlash interface uses a primary IDE channel. Users can set it to be master or slave by setting SW2.

2.3 VGA Display Connector (CN3)

The MIC-3376 provides an AGP VGA controller for a high performance VGA interface. The MIC-3376's CN3 is a DB-15 connector for VGA monitor input. Pin assignments for the VGA display are detailed in Appendix B. If a VGA card is used with the MIC-3376, the VGA display rate may be decreased.

2.4 Parallel Port Connector (CN1)

The parallel port is normally used to connect the CPU card to a printer. The MIC-3376 includes an on-board parallel port, accessed through a DB 25-pin connector, CN1, 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.

2.5 PS/2 Keyboard and Mouse Connector (CN6)

The MIC-3376 provides a 6-pin mini-DIN connector (CN6) on the front panel for connection of PS/2 keyboard and PS/2 mouse. The MIC-3376 comes with an adapter 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 be careful to plug in the keyboard and the mouse into their correct connectors.

2.6 Serial Ports (CN2 and CN8)

The MIC-3376 offers two serial ports: COM1 and COM2, both in RS-232. These ports let you connect to serial devices (a mouse, printers, etc.) or a communication network.

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 below shows the settings for the MIC-3376 board's ports:

Table 2-1: MIC-3376 serial port default settings

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

2.7 CPU fan power supply connector (CN13)

This connector provides power to the optional CPU cooling fan. This connector is only available when +5 V and +12 V power is supplied to the board. However, the CPU cooling fan is not required if enough external cooling air exists.

Warning! *Before making the connection, make sure the voltage is absolutely correct and that you have selected the correct connector.*



2.8 Ethernet Configuration (CN4 & CN5)

The MIC-3376 is equipped with dual high performance 32-bit PCI-bus Fast Ethernet interfaces which are 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. Two on-board RJ-45 jacks provide 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 (CN7)

The MIC-3376 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-3376S/MIC-3376F 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 4 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-3376 help you install and remove the card easily and safely. Follow the procedure below to install the MIC-3376 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 both handles, 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. Pull the upper handle down and 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.

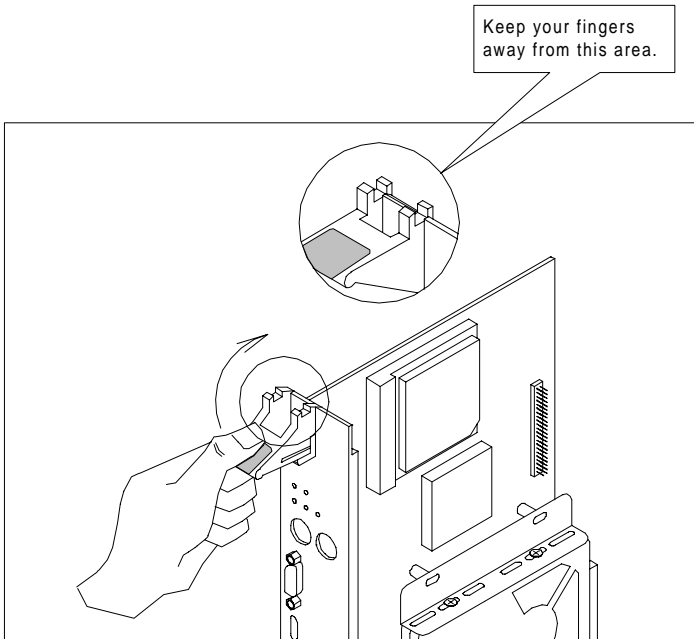


Figure 2-1: Installing the card into the chassis

To remove a card:

1. Unscrew the four screws on the front panel. Pull out the red position in the middle of the handle to unlock the handle.
2. Lift the upper handle up and press the lower handle down to release the card from the backplane.
3. Slide the card out.

CHAPTER

3

Ethernet Software Configuration

3.1 Introduction

The MIC-3376 has two on-board high-performance fast Ethernet interfaces which comply with IEEE 802.3/802.3u for 10Base-T and 100 Base-TX data rates.

The module uses two Intel 82559 fast Ethernet controllers with integrated PHY and is compatible with the Intel PRO/100+ Server and Client Adapter. The dual Ethernet channels design provides several options for increasing throughput and fault tolerance when running Windows NT 4.0 or NetWare 4.1x and newer, includes:

- Adapter Fault Tolerance (AFT) - provides automatic redundancy for your Ethernet channel. If the primary channel fails, the secondary takes over.
- Adaptive Load Balancing (ALB) - creates a team of 2 channels to increase transmission throughput. Also includes AFT and ALB. This function works with any 100BASE-TX switch.
- Fast EtherChannel (FEC) - creates a team of 2 to 4 channels to increase transmission and reception throughput. Also includes AFT. This function requires a Cisco switch with FEC capability.

The MIC-3376 comes with drivers for a wide variety of networks and operating systems. The MIC-3376 is an excellent choice for operation in standalone and harsh industrial environments.

3.2 Utility and Drivers

The MIC-3376'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 instruc-

tions 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**

AGP SVGA Setup

4.1 Introduction

The MIC-3376 uses an Intel C&T 69000 chipset as its AGP 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-3376 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:

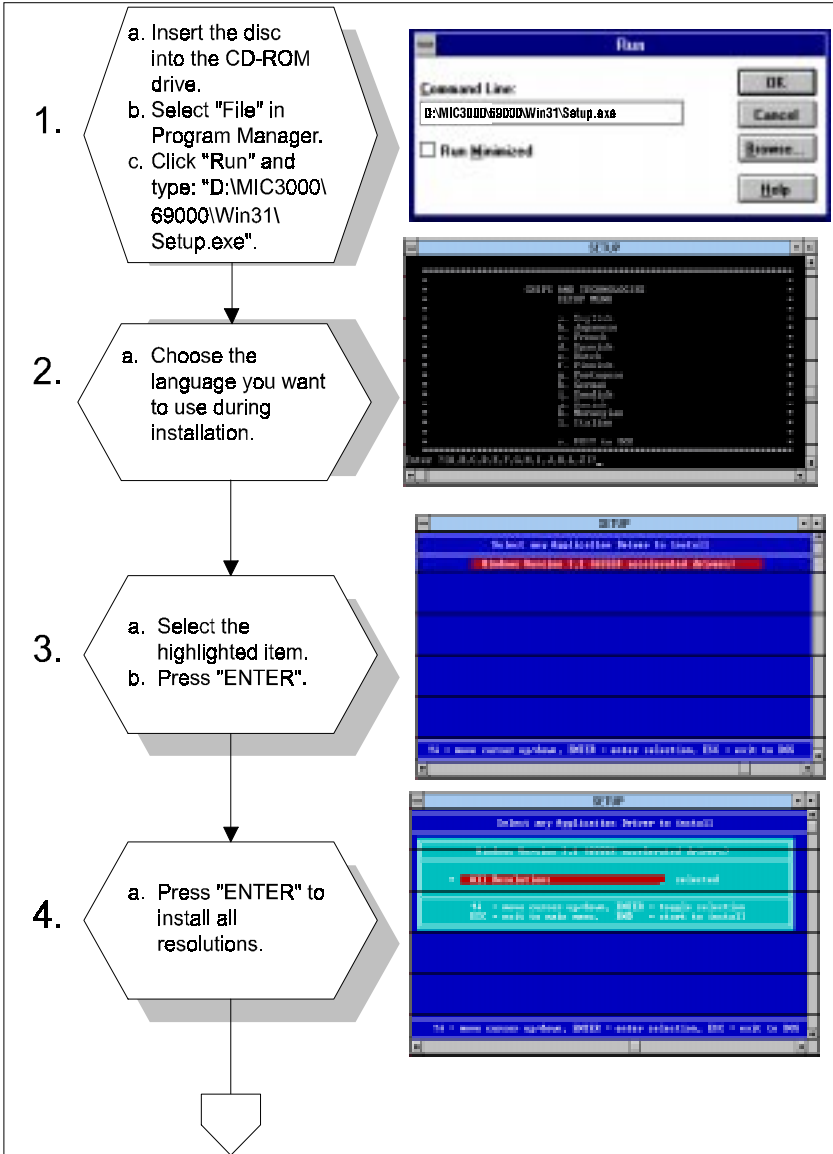
- **MIC3000\69000\Win31:** VGA utility for Windows 3.1
- **MIC3000\69000\Win95\w95500:** VGA utility for Windows 95
- **MIC3000\69000\Win98\w98600:** VGA utility for Windows 98
- **MIC3000\69000\WinNT40:** Utility for Windows NT 4.0

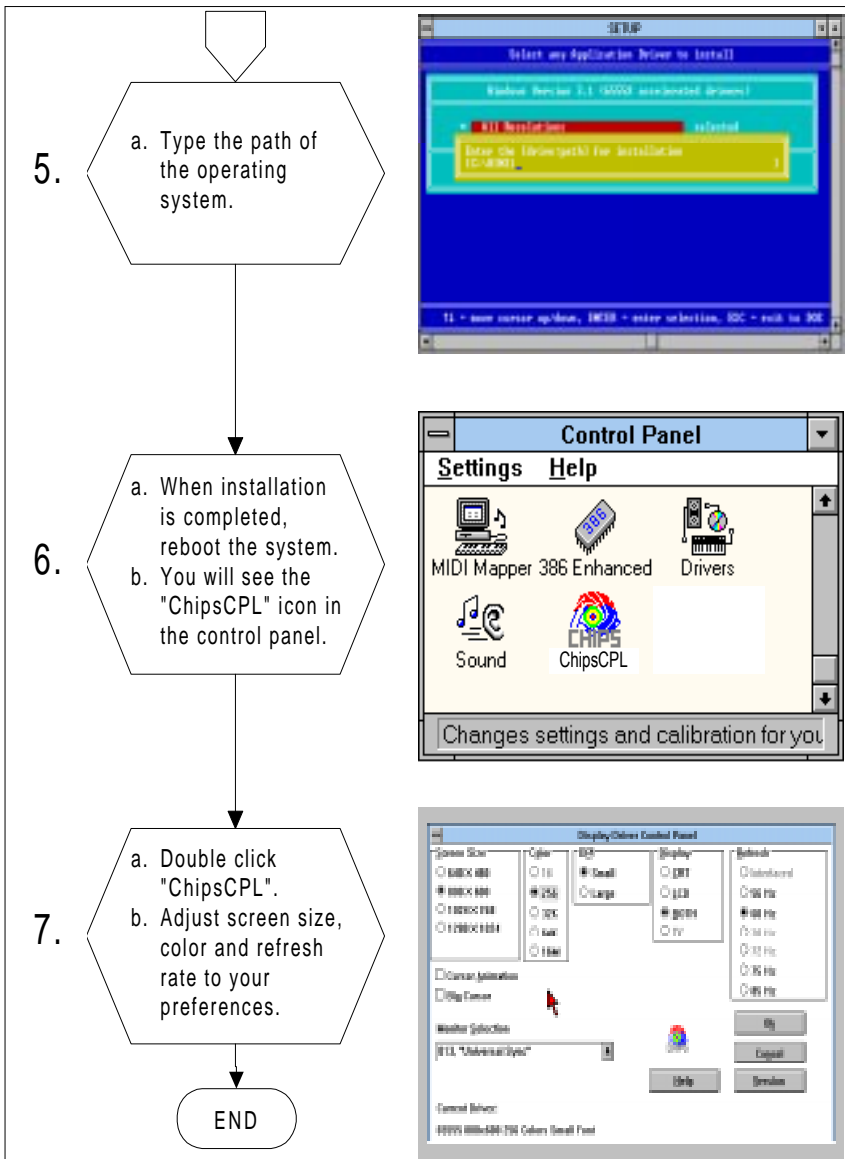
Complete the following steps to install the SVGA driver. Follow the procedures in the flow chart that apply to the operating system you are using with your MIC-3376. The instructions below assume your CD-ROM drive name is D.

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.

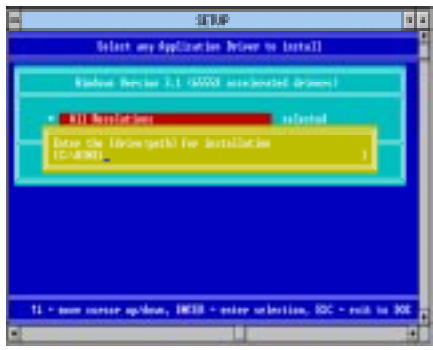
4.2.1 Installation for Windows 3.1





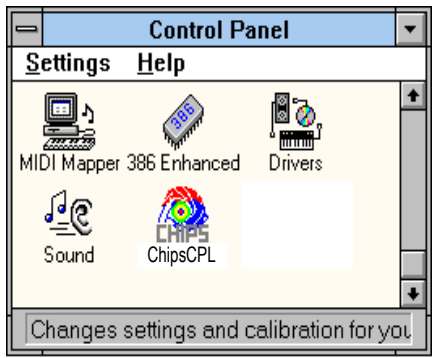
5.

a. Type the path of the operating system.



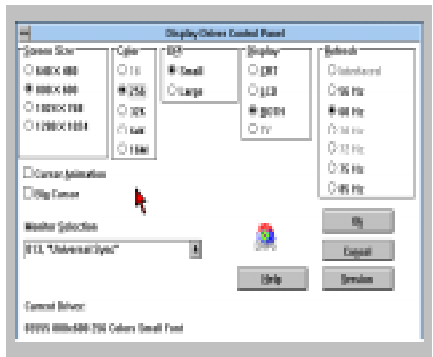
6.

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.



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.

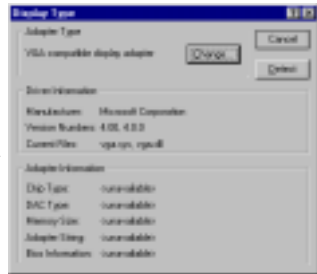
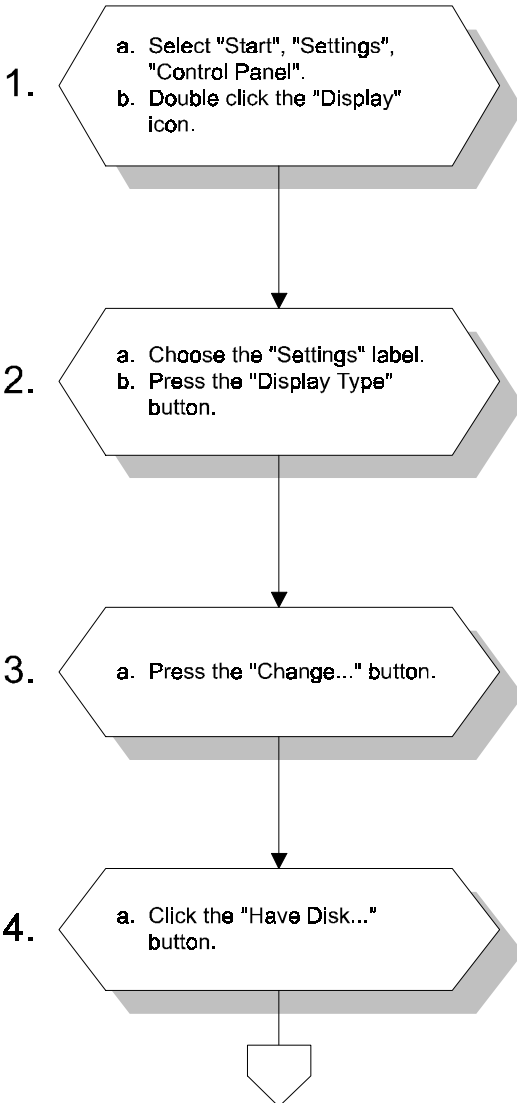
The installation program will search MIC-3376's VGA display controller then finish the installation automatically.

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-3376's VGA display controller then finish the installation automatically.

4.2.3 Installation for Windows NT



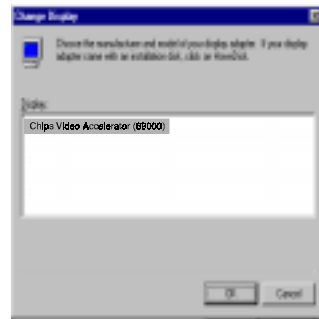
5.

- 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.



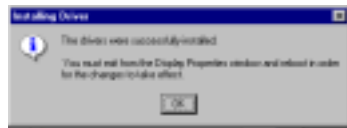
7.

- a. Press "Yes" to proceed.



8.

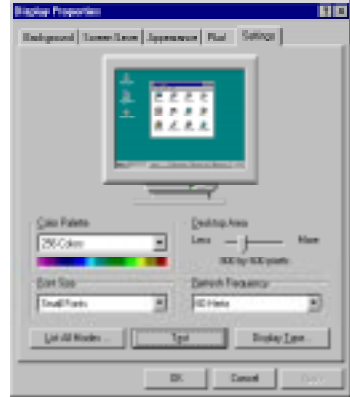
- a. Press "OK" to reboot.



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-3376S/MIC-3376F 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
- **NTCONFIG.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\SCSITOOOL.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

ROM PCI/ISA BIOS (2A69KAKH) CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT SETUP PNP/PCI CONFIGURATION LOAD BIOS DEFAULTS LOAD SETUP DEFAULTS	INTEGRATED PERIPHERALS PASSWORD SETTING IDE HDD AUTO DETECTION SAVE & EXIT SETUP EXIT WITHOUT SAVING
Esc: Quit F10: Save & Exit Setup	↑↓→← : Select Item (Shift)F2: Change Color
Time, Date, Hard Disk Type....	

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 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.

Date <mm:dd:yy> : Tue, Apr 27 1999								
Time <hh:mm:ss> : 9 : 29 : 22								
HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	:Auto	0	0	0	0	0	0	Auto
Primary Slave	:None	0	0	0	0	0	0	-----
Secondary Master	:Auto	0	0	0	0	0	0	Auto
Secondary Slave	:None	0	0	0	0	0	0	-----
Drive A : 1.44M, 3.5 in.						Base Memory : 640K		
Drive B : None						Extended Memory : 15360K		
Video : EGA/VGA						Other Memory : 384K		
Halt On : All, But Disk/Key						Total Memory: 16384K		
ESC : Quit	↑↓→←	: Select Item			PU/PD/+/-: Modify			
F1 : Help	<Shift>	F2 : Change Color						

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 was chosen. This screen allows the user to configure the MIC-3376 according to his particular requirements.

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

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

Virus Warning	: Disabled	Video Bios Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
External Cache	: Enabled	CC000-CFFFF Shadow	: Disabled
CPU L2 Cache ECC Checking	: Enabled	D0000-D3FFF Shadow	: Disabled
Quick Power On Self Test	: Disabled	D4000-D7FFF Shadow	: Disabled
Boot Sequence	: A, C, SCSI	D8000-DBFFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	DC000-DFFFF Shadow	: Disabled
Boot Up NumLock Status	: On		
Gate A20 Option	: Normal		
Typematic Rate Setting	: Disabled		
Typematic Rate (Char/sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
PS/2 mouse function control	: Enabled		
PCI/VGA Palette Snoop	: Disabled		
OS Select for DRAM >64M	: Non-OS2		
Report No FDD For WIN 95	: No		
		Esc : Quit	↑↓→← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	<Shift>F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Figure 6-3: 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 chipset specific 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	
PassiveRelease : 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
		F1	: Help
		F5	: Old Values
		F6	: Load BIOS Defaults
		F7	: Load Setup Defaults
		↑↓→←	: Select Item
		PU/PD/+/-	: Modify
		<Shift>F2	: Color

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.

PNP OS Installed : No	Assign IRQ For VGA : Disabled
Resources Controlled By : Auto	
Reset Configuration Data : Disabled	Assign IRQ For USB : Enabled
Esc : Quit ↑↓→← : Select Item	
F1 : Help PU/PD/+/- : Modify	
F5 : Old Values <Shift>F2 : Color	
F6 : Load BIOS Defaults	
F7 : Load Setup Default	

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 corrupted (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.

IDE HDD Block MODE : Disabled	KBC input clock : 8 MHz
IDE Primary Master PIO : Auto	Onboard FDC Controller : Enabled
IDE Primary Slave PIO : Auto	Onboard Serial Port 1 : 3F8/IRQ4
IDE Secondary Master PIO : Auto	Onboard Serial Port 2 : 2F8/IRQ3
IDE Secondary Slave PIO : Auto	Onboard Parallel Port : 378/IRQ7
IDE Primary Master UDMA : Disabled	Parallel Port Mode : ECP+EPP
IDE Primary Slave UDMA : Disabled	ECP Mode Use DMA : 3
IDE Secondary Master UDMA : Disabled	EPP Mode Select : EPP1.7
IDE Secondary Slave UDMA : Disabled	
On-Chip Primary PCI IDE : Enabled	
On-Chip Secondary PCI IDE : Enabled	
Onboard PCI SCSI Chip : Enabled	
USB Keyboard Support : Disabled	
Init Display First : PCI Slot	
	Esc : Quit ↑↓→← : Select Item
	F1 : Help PU/PD/+/- : Modify
	F5 : Old Values <Shift>-F2 : Color
	F6 : Load BIOS Defaults
	F7 : Load Setup Default

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 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 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 (CN3)

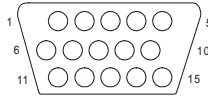


Table B-1: MIC-3376 CRT display connector

Pin	Signal	Pin	Signal
1	RED	9	VCC
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 COM1 RS-232 Serial Port (CN2)

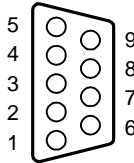


Table B-2: MIC-3376 COM1 RS-232 serial port

Pin	Signal
1	NRLSD1
2	NRX1
3	NTX1
4	NDTR1
5	GND
6	NDSR1
7	NRTS1
8	NCTS1
9	NR11

B.3 COM2 RS-232 Serial Port (CN8)

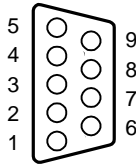


Table B-3: MIC-3376 COM2 RS-232 serial port

Pin	Signal
1	NRLSD2
2	NRX2
3	NTX2
4	NDTR2
5	GND
6	NDSR2
7	NRTS2
8	NCTS2
9	NR12

B.4 Keyboard and Mouse Connector (CN6)

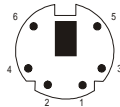


Table B-4: MIC-3376 keyboard connector

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

B.5 USB Connector (CN7)

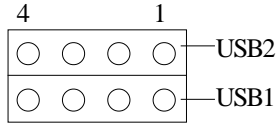


Table B-5: USB1/USB2 connector

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

B.6 CPU Fan Power Connector (CN13)

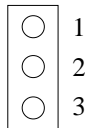


Table B-6: MIC-3376 CPU fan power connector

Pin	Signal
1	GND
2	+12V
3	N/C

B.7 Ethernet RJ-45 Connector 1 (CN5)

Table B-7: MIC-3376 Ethernet RJ-45 connector 1

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

B.8 Ethernet RJ-45 Connector 2 (CN4)

Table B-8: MIC-3376 Ethernet RJ-45 connector 2

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

B.9 Parallel Port Connector (CN1)

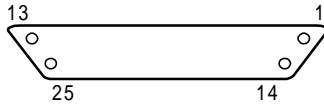


Table B-9: MIC-3376 parallel port connector

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.10 Internal PCI Connector (CN9)

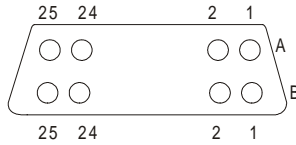


Table B-10: MIC-3376 internal PCI connector

Pin	Signal A	Signal B
1	VCC	GND
2	AD0	AD7
3	AD2	AD6
4	AD3	AD4
5	AD19	AD9
6	AD18	AD8
7	AD20	AD10
8	AD21	AD1
9	AD22	AD5
10	AD23	AD12
11	AD28	AD11
12	#C/BE3	AD15
13	AD25	#DEVSEL
14	AD27	#C/BE2
15	AD29	AD17
16	AD13	#SERR
17	AD14	AD24
18	AD16	AD26
19	AD30	AD31
20	#STOP	#C/BE1
21	#FRAME	#IRDY
22	#PCIRST	#C/BE0
23	#TRDY	PAR
24	#PGNTE	#PREQE
25	#PCICLK2	#PIRQA

B.11 Ultra2 SCSI Connector (CN10)

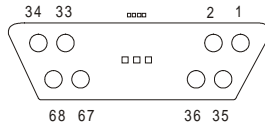


Table B-11: MIC-3376 Ultra2 SCSI connector

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.12 CompactFlash Socket (CN12)

Table B-12: MIC-3376 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.13 System I/O Ports

Table B-13: 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.14 Interrupt Assignments

Table B-14: 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	Parallel port 2
IRQ 6	Diskette controller (FDC)
IRQ 7	Parallel port 1 (print port)

* Ethernet function is auto-sensing

B.15 1st MB Memory Map

Table B-15: 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.16 J1/J4 connector pin assignments

Table B-16: J1/J4 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.17 J2/J5 connector pin assignments

Table B-17: J2/J5 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#

B.18 J3 connector pin assignments

Table B-18: J3 connector pin assignments

Pin	Row A	Row B	Row C	Row D	Row E
19	HDBD3	HDBD6	HDBD10	HDBD2	HD8D14
18	HDBD8	HDBD5	HDBD1	HDBD11	HDBD15
17	HDBD9	HDBD4	HDBD0	HDBD12	HDBD13
16	HDBDRQ	IDACKB-	IIOORB-	ICS1B-	HDRDYB
15	HDBDRQ	IDACKB-	HDBSA2	HDBIRQ	ILOWB-
14	NRTS1	NDSR1	HDBSA1	GND	HDBSA0
13	NR11	NCTS1	NTX1	NRX1	NRLSD1
12	ID0	ID2	ID4	ID7	NDTR1
11	ID1	ID3	ID8	ID6	ID12
10	ID5	ID9	ID10	ID11	ID13
9	ID15	ID14	HDRQ-	HCS3-	HIOR-
8	HIRQ	HACK-	VCC	HDA2	HIOW-
7	HLED	GND	-HRST1	HRDY	HCS1-
6	+12V	VCC	GND	HDA0	HDA1
5	VCC	GPIO5	#IOCHK	SMBCLK	SMBDATA
4	#KDAT	KCLK	MDTA	MCLK	GND
3	#DSKCHG	#MOA	#STEP	#HEAD	#TRAK0
2	#DSA	#MOB	#RWC	#RDATA	#WP
1	#INDEX	#DSB	#DIR	#WE	#WD

