MIC-3316

3U CompactPCI Ultra Low Voltage Celeron 650 MHz Controller

User Manual

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This Manual Covers the Following Models

- MIC-3316
- MIC-3316P
- MIC-3316F

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Product Warranty

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years 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 onscreen 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.

CE Notification

The MIC-3316, 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.

Technical Support and Assistance

Step 1. Visit the Advantech web site at **www.advantech.com/support** where you can find the latest information about the product.

Step 2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
- Product name and serial number
- Description of your peripheral attachments
- Description of your software (operating system, version, application software, etc.)
- A complete description of the problem
- The exact wording of any error messages

Packing List

Before setting up the system, check that the items listed below are included and in good condition. If any item does not accord with the table, please contact your dealer immediately.

- One MIC-3316 all-in-one single board computer
- One utility CD-ROM
- One 6-pin mini-DIN to PS/2 keyboard and PS/2 mouse cable
- One hard disk drive (IDE) interface cable (44-pin)
- One warranty certificate
- This user's manual

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

Safety Precaution - Static Electricity

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.

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CHAPTER 1

Hardware Configuration

Chapter 1 Hardware Configuration

1.1 Introduction

MIC-3316 is a 3U, all-in-one, single board computer compliant with PICMG 2.0 R2.1 CompactPCI specifications. For optimum computing performance, MIC-3316 has been optimized for the Ultra-Low Voltage Intel Celeron 650 MHz CPU and Intel 815E chipset. This CPU provides high performance with its on-chip 256 KB L2 cache and is delivered in a Micro-FCBGA package.

MIC-3316 offers powerful functions on a 3U-sized board for performance-demanding applications like real-time machine control and industrial automation.

Compact Mechanical Design

MIC-3316 provides many functions in just 2 slots, and the 3-slot versions can offer even more. To make it possible to use the Ultra-Low Voltage Intel Celeron 400/650 MHz, or Low-Voltage Intel® Pentium ® III Processor 800/933 MHz, in only 2 slots, and still not use a cooling fan - Advantech provides a CPU heat sink specially designed for MIC-3316. It only needs external cooling air from the chassis fans for ventilation.

Three Choices

MIC-3316 can be delivered in 3 different combinations:

- MIC-3316: 3U CompactPCI Ultra Low Voltage Intel Celeron 650 MHz CPU board, 2-slot with MIC-3316 basic functions.
- MIC-3316P: 3U CompactPCI Ultra Low Voltage Intel Celeron 650 MHz CPU board, 3-slot with a parallel port.
- MIC-3316F: 3U CompactPCI Ultra Low Voltage Intel Celeron 650 MHz CPU board, 3-slot with AC97 Audio and CompactFlash card reader

Options: ULV Celeron-400 MHz / LV Pentium-933 MHz, pls contact Advantech

1.2 Specifications

1.2.1 Standard SBC Functions

- **CPU:** MIC-3316 supports Ultra Low Voltage Intel Celeron 650 MHz
- **Option:** ULV Celeron-400 MHz / LV Pentium-800/933 MHz
- **BIOS:** Award 4 Mb flash memory
- **Chipset:** Intel 82815E Graphics and Memory Controller Hub (GMCH)
  Intel ® 82801BA I/O Controller Hub (ICH2)
- **Front Side Bus:**
  100 MHz (Ultra Low Voltage Intel Celeron 400/650 MHz)
  133 MHz (Low Voltage Intel Pentium III Processor 800/933 MHz)
- **2nd Level Cache:**
  Built-in 256 KB on Ultra Low Voltage Intel Celeron 400/650 MHz
  Built-in 512 KB on Low Voltage Intel Pentium III Processor 800/933
- **RAM:** Up to 384 MB in one 144-pin DIMM socket and soldered SDRAM. 128MB soldered SDRAM (no ECC). And one 144-pin SODIMM socket supports up to 256 MB. It all supports PC100/ PC133-compliant SDRAMs ECC (parity) DRAM not supported
- **Enhanced IDE Interface:** In DAU Board, one IDE channel has two connectors (One IDE connector and space reserved for embedded 2.5" HDD and one external 44-pin (2 mm) connector for external IDE Device). Supports PIO mode 4 (16.67 MB/s data transfer rate) and Ultra ATA 100/66/33 (100/66/33 MB/s data transfer rates). BIOS enabled/disabled.
- **CompactFlash Socket:** One IDE CompactFlash socket on board. The 3-slot versions have a USB Hot-swappable CompactFlash Reader.
- **Enhanced Parallel Port:** In 3-slot versions, the parallel port is configurable to LPT1, LPT2, LPT3, or it can be disabled. A standard DB-25 female connector is provided. Supports EPP/SPP/ECP.
- **Serial Ports:** Four RS-232/422/485 (jumper selectable) ports with 16C550UARTs (or compatible) with 16-byte FIFO buffer.
  Two ports are autoflow supported in 2-slot,and Two port in rear I/O are not autoflow supported in Rear I/O. Supports the speed up to 115.2 Kbps. Ports can be individually configured to COM1, COM2 , COM3,COM4 or disabled

- **Keyboard and PS/2 Mouse Connector:** One 6-pin mini-DIN connector is located on the mounting bracket for easy connection to a keyboard or PS/2 mouse.
- **USB Port:** Four USB ports with fuse protection comply with USB specification 1.1. One is for the CF Reader on the 3-slot versions, and another is for the rear I/O USB connector. The other two are at the front panel.
- **PCI-to-PCI Bridge:** One PERICOM PI7C8150 controller chip drives up to seven bus master peripherals.
- **Watchdog Timer:** Provides system reset and software control. Time interval is programmable from 1 to 255 seconds/minutes.
- **Ethernet LAN:** 10/100Base-TX Ethernet interface
- **Controller Chips:** One Intel 82551QM Ethernet control chips provide one port. One front RJ45 LAN port with 10/100 Mbps auto-switching.
- **Audio:** AC '97 Compliant Audio on MIC-3316F
  Line IN, Line OUT, MIC IN
- **Battery-backup RAM:** 512 KB
- **Input /Output Bus Interface:** PCI 2.2 compliant, 32 bit/33 MHz
- **CompactPCI Compliance:** PICMG 2.1 CompactPCI Hot Swap Specification R1.0

1.2.2 Display

- **Interface:** Integrated Intel 815E chipset
- **Display Memory:** Shared from system memory up to 11 MB SDRAM
- **2D Graphics:** Up to 1600 x 1200 in 8-bit color at 85 Hz refresh rate
- **3D Graphics:** Up to 1024 x 768 in 16-bit color at 85 Hz refresh rate
- **Connectors:** VGA-RGB CRT, Digital Video Output-DVI, with SiI 164 chip.
- **Bandwidth:** Scaleable Bandwidth: 25 - 165 MHz
- **Flexible Graphics Controller Interface:** 12-bit

1.2.3 Mechanical and Environmental Specifications

- **Board Size:** 160 x 100 mm (3U size), 2-slot (8TE) wide.
- **Maximum Power Requirements:**
  CPU ULV C650 MHz
  +5 V (4.75 ~ 5.25 V) @ 2.3 A
  +3.3 V (4.75 ~ 5.25 V) @ 1.9 A
  +12 V (4.75 ~ 5.25 V) @ 44mA

  CPU LV P3 933 MHz
  +5 V (4.75 ~ 5.25 V) @ 2.5 A
  +3.3 V (3.1 ~ 3.5 V) @ 2.7 A
  +12 V (11.0 ~ 13.0 V) @ 44m A
- **Operating Temperature:** 0 ~ 60° C (32 ~ 140° F)
- **Storage Temperature:** -20 ~ 80° C (-4 ~ 176° F)
- **Humidity (operating and storage):** 5 ~ 95% (non-condensing)
- **Board Weight:** 0.75 kg (1.6 lb)

1.3 Function Block Diagram

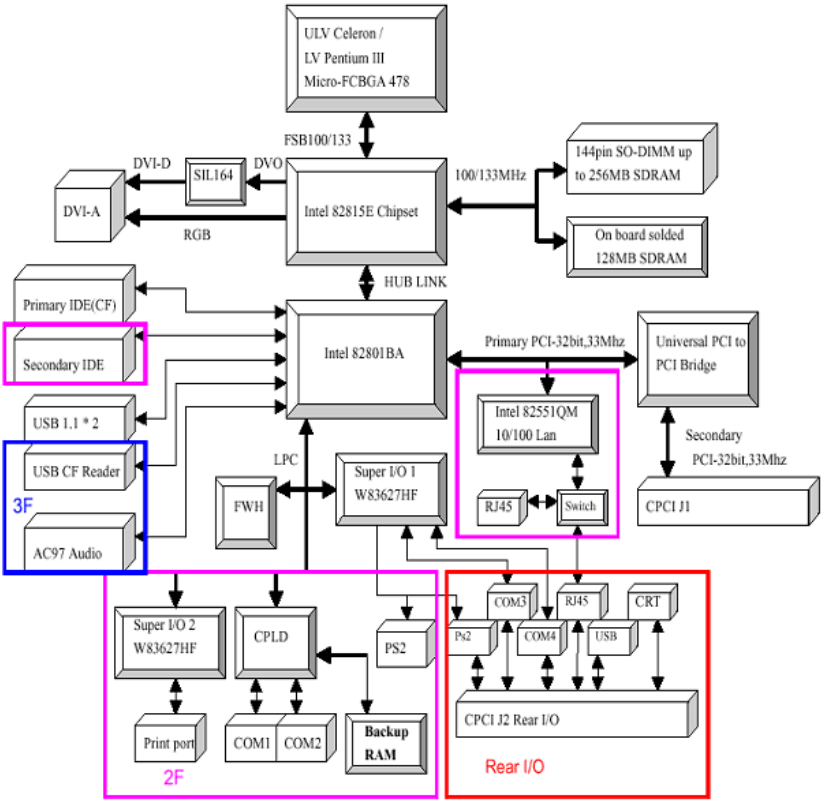


Figure 1.1: MIC-3316 Function Block Diagram

1.4 Board Dimensions

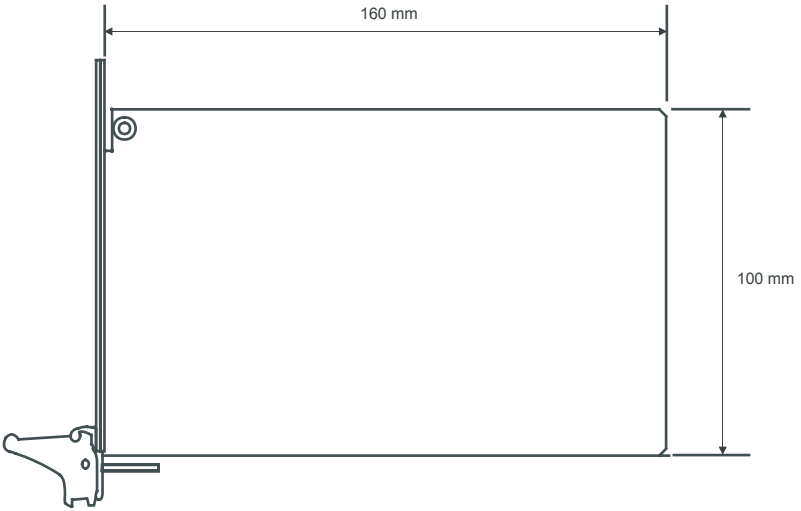


Figure 1.2: MIC-3316 Board Dimensions

1.5 Jumper Settings

1.5.1 Assembling / Disassembling MIC-3316

Since MIC-3316 is composed of one main board and one daughter board, for ease of understanding and a convenient naming, we will use 1F (1st level) to represent the main board, and 2F (2nd level) to represent the daughter board hereafter in this manual. Before setting the jumpers, you need to disassemble the MIC-3316 to access the component side of 1F.

1.5.2 Jumper Locations

MIC-3316 provides jumpers for configuring your board for specific applications other than the default settings.

Table 1.1 lists the jumper functions of MIC-3316. Figure 1.3 and Figure 1.4 show the locations of the jumpers.

Table 1.1: MIC-3316 Jumper Descriptions	
Number	**Function**
1F-JP1(1,2)	Clear CMOS
1F-JP2(1,2)	CompactFlash master/slave selection
2F-JP3(1-22)	COM-1 Jumper setting (RS-232/422/485)
2F-JP4(1-22)	COM-2 Jumper setting (RS-232/422/485)
2F-JP5(1-8)	COM-1 and COM-2 Termination Resistor

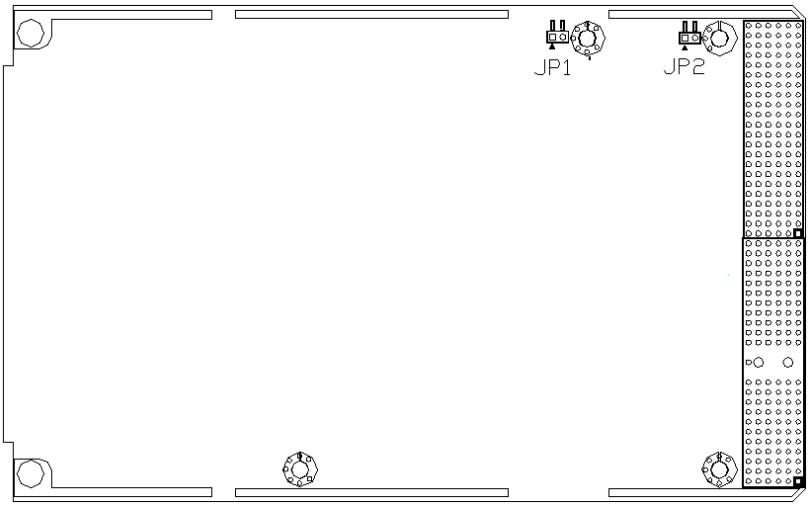


Figure 1.3: MIC-3316 Jumper Locations (1F)

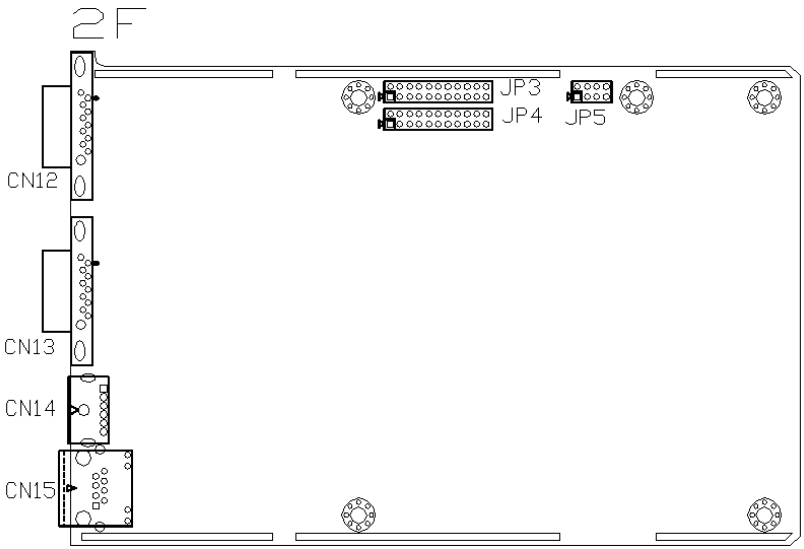


Figure 1.4: MIC-3316 Jumper Locations (2F)

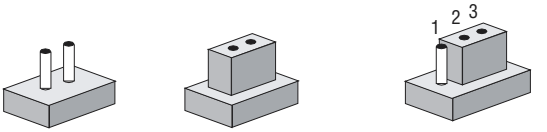
1.5.3 Jumper Settings

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.

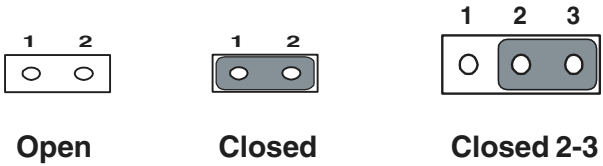
For the locations of each jumper, see the board layout diagram depicted earlier in this chapter.

You 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.



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



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.

1.5.4 CF Master/Slave Selection (1F-JP2, pin 1, 2)

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-3316 may not be able to detect the CompactFlash correctly.

Table 1.2: CompactFlash Master/Slave Selection

Mode	1F-JP2
Master	
Slave	

1.5.5 Clear CMOS (1F-JP1, pin 1,2)

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(1-2), and CMOS is cleared.
3. Open jumper JP1 to Normal status.
4. Turn on the system. The BIOS is reset to its default setting.

Table 1.3: Clear CMOS

CMOS	1F-JP1
Clear	
Normal	

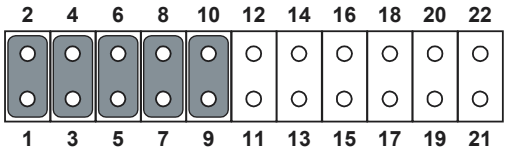
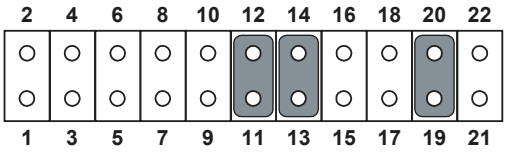
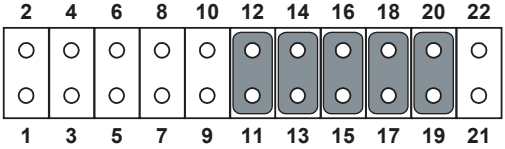
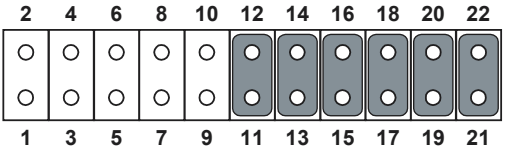
1.5.6 Serial Ports (COM1 & COM2) Mode(RS-232/422/485)

This jumper is used to set the Serial ports to act in RS-232,422 or 485 transmission mode. The transmission mode of COM1 and COM2 ports can be selected using the following settings of 2F-JP3 and 2F-JP4 respectively.

Automatic Data Flow Control Function for RS-485

In RS-485 mode, MIC-3316 automatically detects the direction of incoming data and switches its transmission direction accordingly. So no handshaking signal (e.g. RTS signal) is necessary. This lets you conveniently build an RS-485 network with just two wires. More importantly, application software previously written for half duplex RS-232 environments can be maintained without modification..

Table 1.4: COM1 Mode (RS-232/422/485 Selection)

CMOS	2F-JP3 and 2F-JP4
RS-232	
RS-485 Auto DIR of data flow	
RS-422 Slave	
RS-422 Master	

COM1 AND COM2 Termination Resistor Jumper Setting (RS422/485 2F-JP5)

The onboard termination resistor (120 ohm) for COM1/COM2 can be used for long distance transmission or device matching. (Default Open).

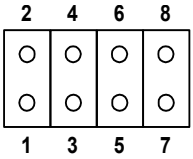
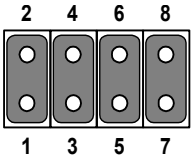
Table 1.5: Jumper Setting (422/485 Termination Resistor)	
OPEN	
CLOSE	

Table 1.6: Pin Assignment of 422/485 Termination Resistor			
Pin	**Signal**	**Pin**	**Signal**
1	DATA1+ / TX1+	2	DATA1- / TX1-
3	RX1+	4	RX1-
5	DATA2+ / TX2+	6	DATA2- / TX2-
7	RX2+	8	RX2-

1.6 Safety Precautions

Follow these simple precautions to protect yourself and the products.

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.

1.7 Installing SDRAM (SODIMMs)

The MIC-3316 provides one 144-pin SODIMM socket, which is on the component side of 1F. The socket accepts 128 or 256 MB DDR. The socket can be filled with DIMMs of any size, giving a total memory capacity between 128 and 256 MB.

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: 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.

CHAPTER 2

Connecting Peripherals

Chapter 2 Connecting Peripherals

2.1 Connectors

Onboard connectors link to external devices such as hard disk drives, or keyboards, etc. Figure 2.1, Figure 2.2 and Figure 2.3 illustrate the location of each connector.

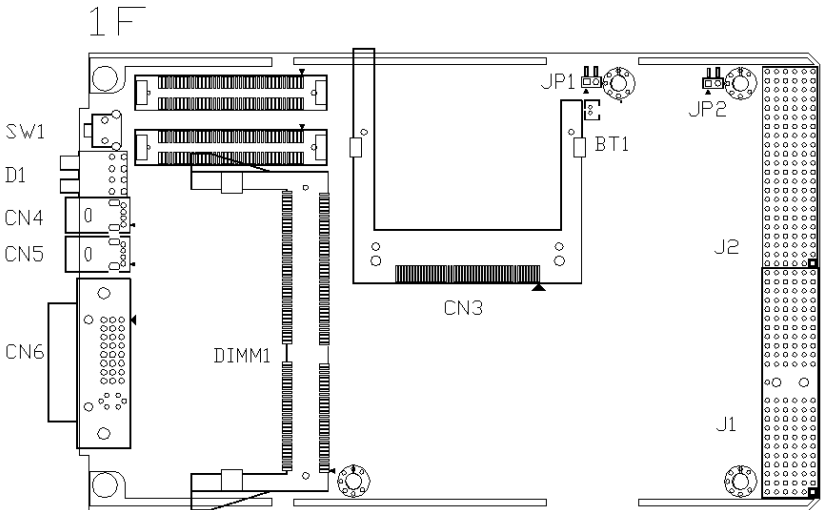


Figure 2.1: MIC-3316 Connector Locations (1F)

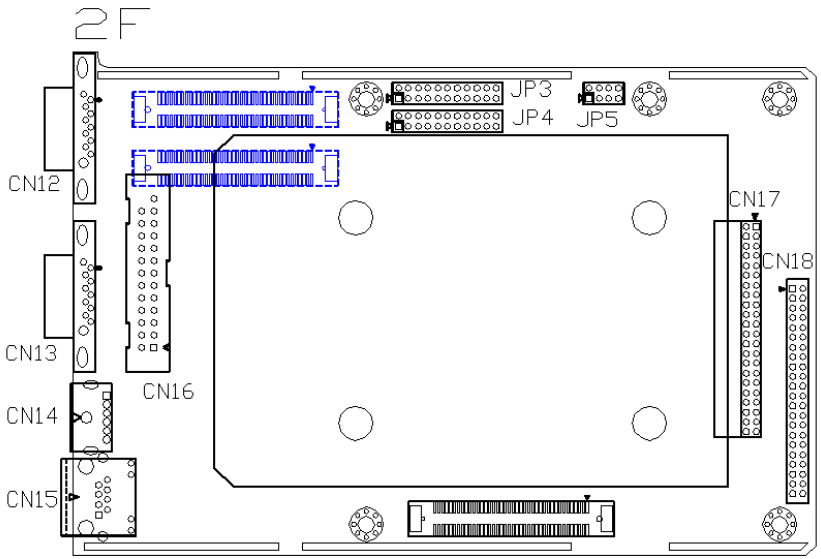


Figure 2.2: MIC-3316 Connector Locations (2F)

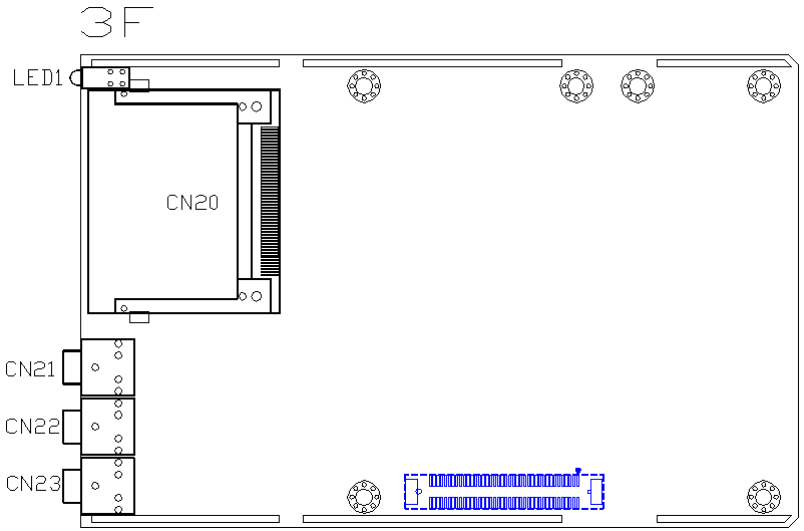


Figure 2.3: Connector Locations (3F)

2.2 Front Panel Connectors and Indicators

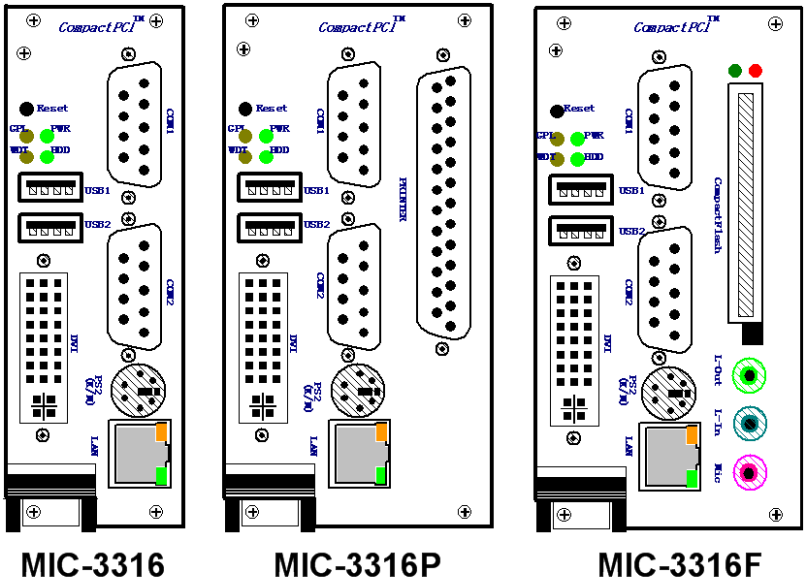


Figure 2.4: MIC-3316 Front Panel Connector and Indicator Locations

2.3 IDE Device (2F-CN17, CN18)

The MIC-3316 provides one IDE (Integrated Device Electronics) channel, but supports two secondary IDE devices via two connectors sepeartely, one is for one on-board 2.5" HDD and the other is for wiring out to the front panel to connect with external devices.

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 topside of a hard 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.

2.4 CompactFlash Interface (1F-CN3)

This socket accepts an IDE-compatible CompactFlash memory card.

2.5 PS/2 Keyboard and Mouse Conn. (2F-CN14)

The MIC-3316 provides a 6-pin mini-DIN connector on the front panel for connection of PS/2 keyboard and PS/2 mouse. The MIC-3316 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.

2.6 Serial Ports (2F-CN12, CN13)

The MIC-3316 offers two serial ports: both support RS-232/422/485 modes (jumper selectable) via two DB-9 connectors seperately. These ports allow users to connect to serial devices or a communication network.

You can select the address for each port to disable it, using the BIOS Advanced Setup program, covered in Chapter 4. Different devices implement the RS-232/422/485 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-3316 board's ports:

Table 2.1: MIC-3316 serial port default settings

Port	Address	Interrupt	Default
COM1	3F8	IRQ4	3F8/IRQ4
COM2	2F8	IRQ4/IRQ3 (Shared)	2F8/IRQ3

For more detailed information on shared IRQ settings, please refer to Appendix E.

2.7 Ethernet Configuration (2F-CN15)

MIC-3316 is equipped with a high performance 32-bit PCI-bus with a 100Mbps Ethernet interface that is fully compliant with IEEE 802.3u 10/100Base-TX specifications.

2.8 USB Connector (1F-CN4 & 1F-CN5)

MIC-3316 provides two USB (Universal Serial Bus) 1.1 channels via two ports on the front panel, which give complete plug & play, hot attach/detach ability for up to 127 external devices. The USB interfaces comply with USB specification rev. 1.1 and are polyswitch protected. The USB interfaces can be disabled in the system BIOS setup.

2.9 DVI-I Connector (1F-CN6)

MIC-3316 provides a DVI-I connector on the front panel. It is used for a DVI connection or to use DVI to CRT cables to connect to RGB CRT devices.

2.10 Parallel Port (2F-CN16)

The MIC-3316 series has reserved a parallel port on 2F. MIC-3316P provides a parallel port on the panel for easy external connection. Users can use the parallel port to connect a printer.

2.11 USB CF Socket (3F-CN21) MIC-3316F only

MIC-3316F provides an extra USB CompactFlash Reader on 3F for users to read a CompactFlash card. This socket accepts a 5 V tolerance pad for the CompactFlash card interface, and supports 8-bit and 16-bit standard PIO mode interfaces. The socket is a hot-swappable interface on the front panel.

2.12 Audio Line Out/In/MIC In (3F-CN21, 3F-CN22, 3F-CN23) for MIC-3316F only

Audio Line Out (3F-CN21):

The line out port (Green) is used to output audio signals to external audio devices like speakers or headphones.

Line in (3F-CN22):

Line In (Blue) is used to input audio signals from external audio devices like CD players or MP3 players.

Mic in (3F-CN23):

The Mic In (Red) is used to input audio signals via microphones.

2.13 Card Installation

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

The inject/eject handle of MIC-3316 helps you install and remove the card easily and safely. Follow the procedure below to install the MIC-3316 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 them 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.

To remove a card:

1. Unscrew the four screws on the front panel.
2. Press the lower handle down to release the card from the backplane.
3. Slide the card out.

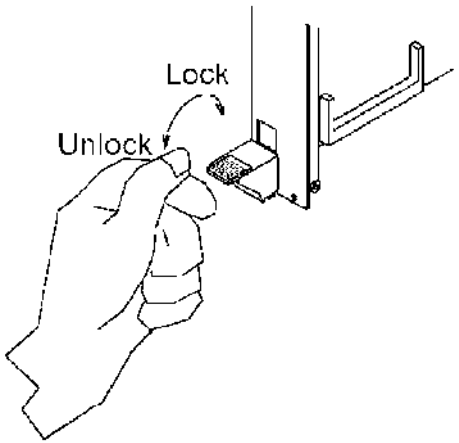


Figure 2.5: Installing/Removing the MIC-3316 into/from the Chassis

CHAPTER 3

Software Configuration

Chapter 3 Software Configuration

3.1 Overview

MIC-3316 has a CD-ROM with utilities and drivers. Please install the Chipset INF driver, VGA graphics driver, LAN driver, Intel Application Accelerator (IAA) driver, Watchdog Timer (WDT) driver ,SRamDISK Driver and the hardware monitoring utility (WinBond HWDoct). A sequential installation is recommended.

3.1.1 Introduction

The **Intel Chipset Software Installation (CSI) utility** installs the Windows INF files to the target system to outline to the operating system how the chipset components will be configured. This is needed for proper functioning of the following features:

- Core PCI and ISA PnP services
- AGP support
- IDE Ultra ATA 100/66/33 interface support
- USB support
- Identification of Intel ® chipset components in the Device Manager

AGP (Accelerated Graphics Port) is a graphics interface that provides a faster connection between the display card and memory than a PCI slot. Your MIC-3316 CPU card uses the Intel 815 chipset that supports AGP SVGA. The features include:

- Built-in 2D/3D AGP VGA controller.
- Integrated 24-bit 230MHz RAMDAC.
- Up to 1600 x 1200 resolution in 8-bit color at 85 Hz refresh.
- H/W motion compensation assistance for software MPEG 2 decoding.
- Software DVD at 30 fps.

The **Intel Application Accelerator** is a performance boosting software package for Intel chipsets. It reduces the storage sub-system bottle-neck, enabling faster delivery of data from the hard drive to the processor and other system level hardware. IAA supports 48-bit Logical Block Addressing (48-bit LBA) for 137 GB and larger hard drives. Furthermore, IAA enables Automatic Selection of the Highest DMA Transfer Mode by the ATA/ATAPI device/ Intel chipset.

This chapter will list the utilities and drivers for MIC-3316, and make a brief introduction for both of them: the Watchdog Timer utility and SRamDISK driver. And it also shows how to set multiple DVI and CRT devices.

3.2 Utilities and Drivers

The following utilities and drivers are provided with MIC-3316. You can also find updated description of the utilities and drivers in the ReadMe.txt file on the CD-ROM.

Windows 2000/XP are fully supported by the MIC-3316 series.

3.2.1 Intel Chipset Software Installation Utility

Path: Driver\INF\I815E

Available for the operating systems listed below,

- Microsoft Windows 98 SE
- Microsoft Windows ME
- Microsoft Windows 2000
- Microsoft Windows XP
- Microsoft Windows Server 2003

3.2.2 VGA Drivers (Intel(R) Graphics Driver)

Path: Driver\VGA\815E

Available for the operating systems listed below

- Microsoft Windows 98 SE
- Microsoft Windows ME
- Microsoft Windows NT 4.0
- Microsoft Windows 2000
- Microsoft Windows XP

3.2.3 IDE Drivers (Intel Application Accelerator)

Path: \Driver\IDE\ICH2

Available for the operating systems listed below,

- Microsoft Windows 98 SE
- Microsoft Windows ME
- Microsoft Windows NT 4.0
- Microsoft Windows 2000
- Microsoft Windows XP

3.2.4 Intel PRO Network Drivers/software

Path: \Driver\Lan\82551

Available for the OS's below,

- Microsoft Windows 98 SE
- Microsoft Windows ME
- Microsoft Windows NT 4.0
- Microsoft Windows 2000
- Microsoft Windows XP
- Windows NT Embedded 4.0
- Windows XP Embedded
- Linux
- NetWare_ Novell ODI
- and more, on the driver CD-ROM.

3.2.5 Hardware Monitor Utility

Path: \Driver \OBS\MIC3316

Available for the operating systems listed below,

- Microsoft Windows 2000
- Microsoft Windows XP

3.2.6 WatchDog Timer Driver

Path: \Driver\WDT\W8362x

Available for the operating systems listed below,

- Microsoft Windows 2000
- Microsoft Windows XP

3.2.7 SRamDISK Driver

Path: \Driver\SRAM

Available for the operating systems listed below,

- Microsoft Windows 2000
- Microsoft Windows XP

3.2.8 USB CF reader Drivers

Path:\Driver\CF Reader\Gl813

- Microsoft Windows 98 SE

3.2.9 Timer IRQ

Path:\MIC-3316\Timer_IRQ

- Microsoft Windows 2000
- Microsoft Windows XP

3.2.10 HotSwap

Path:\Driver\HotSwap

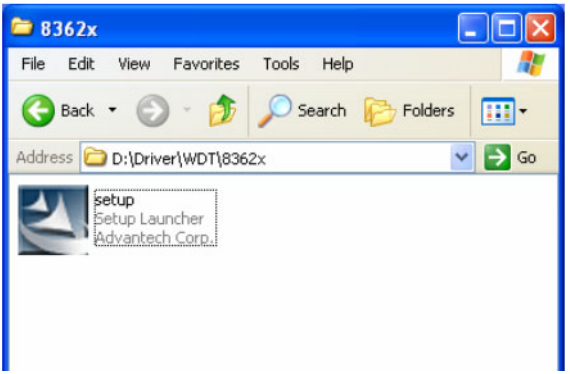
- Microsoft Windows 2000
- Microsoft Windows XP

3.3 Watchdog Timer (WDT) Driver Install

In order to ensure reliable and fail-safe performance, MIC-3316 has a built-in Watchdog Timer to take care of unexpected system failures. Advantech provides the drivers and a utility to activate and configure the timer for Windows 2000/XP operating systems. The following is a brief introduction, using Windows XP as an example for the installation and configuration procedures.

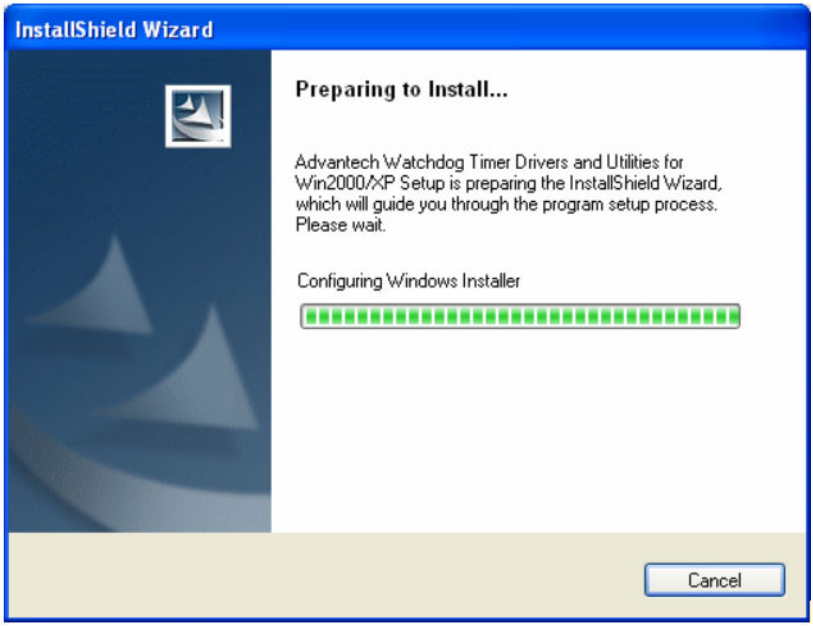
3.3.1 Installing Driver for MIC-3316 Watchdog Timer

Step 1: Insert the companion CD-ROM into your CD-ROM drive. Open the directory: \Driver\WDT\W8362x

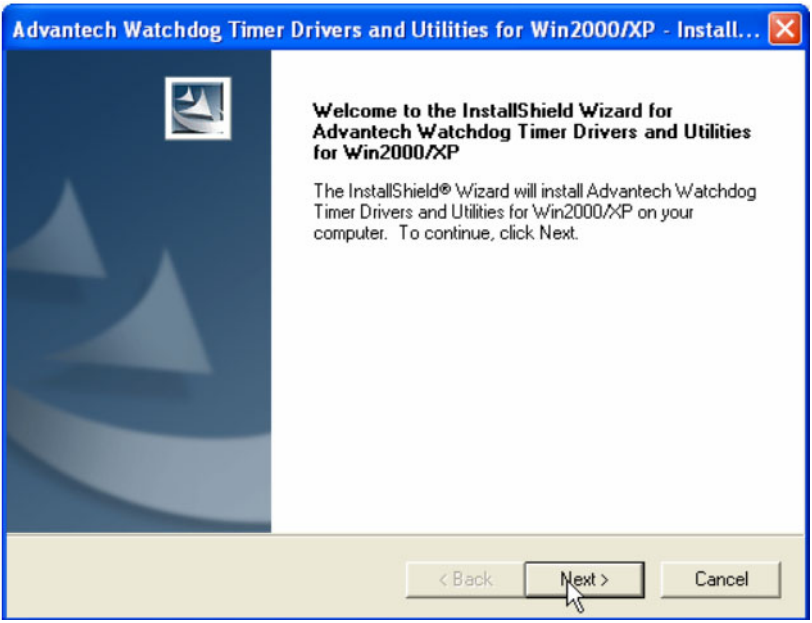


Step 2: Use Windows Explorer (or Windows Run command) to execute

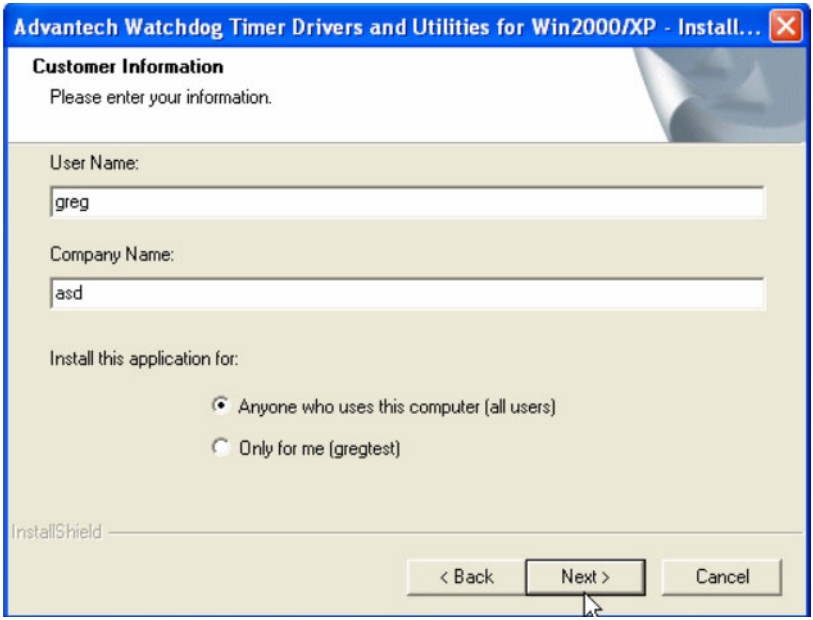
SETUP.EXE from the companion CD-ROM.



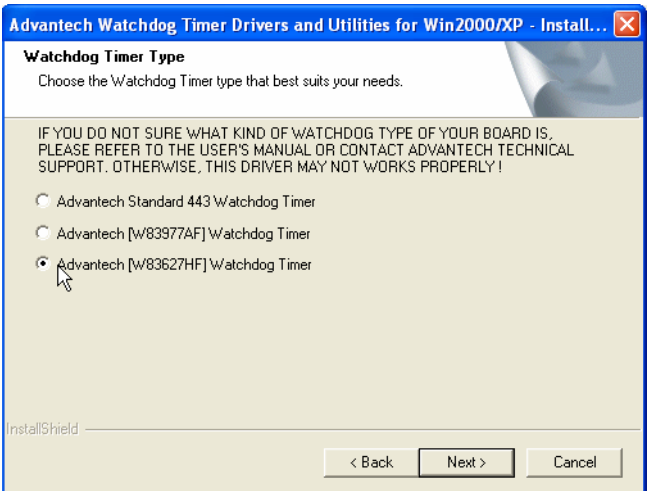
Step 3: Click Next to proceed.



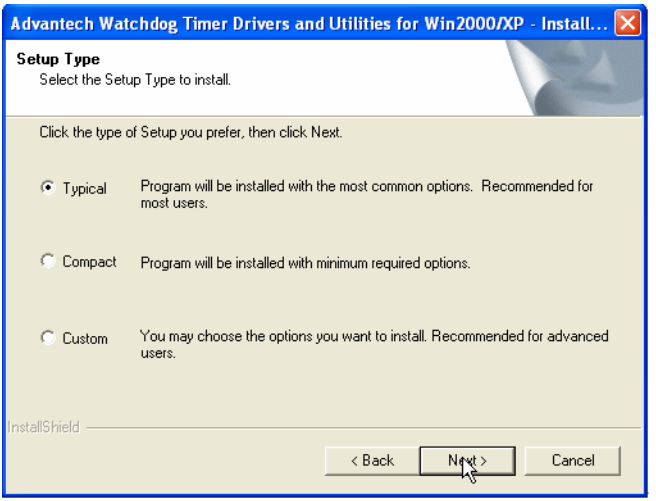
Step 4: Click Next to confirm the information.



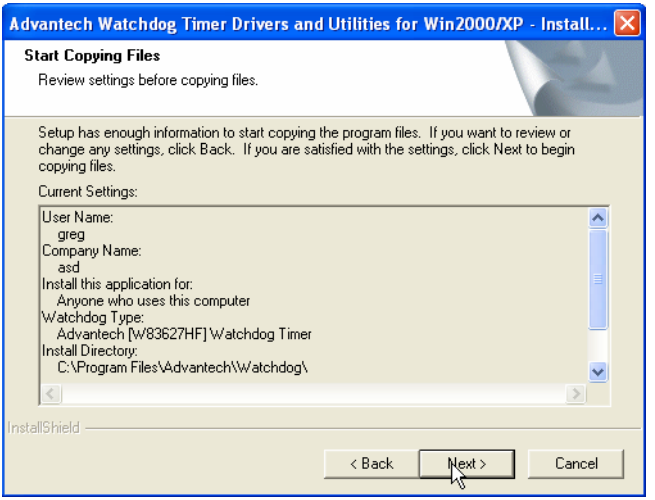
Step 5: Select Advantech [W83627HF] Watchdog Timer and click Next to proceed.



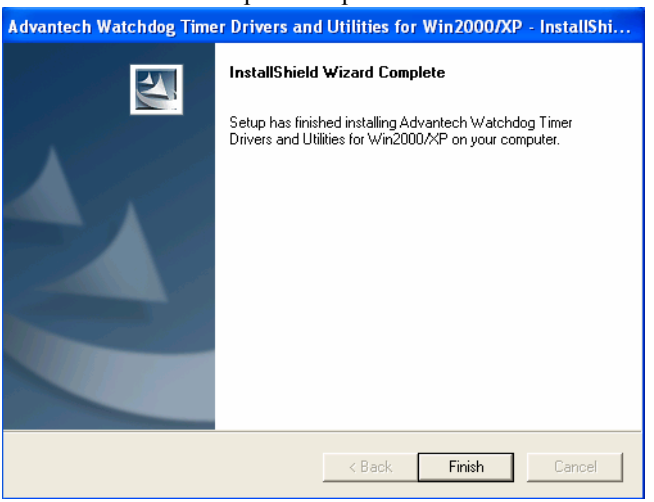
Step 6: Click Next to confirm selecting the Typical setup type.



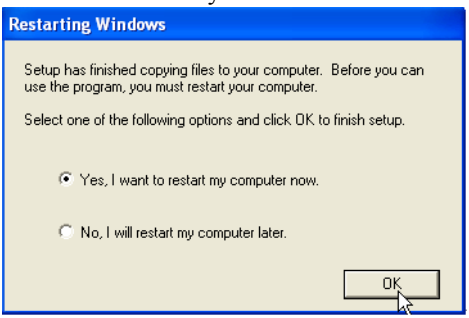
Step 7: Click Next to proceed.



Step 8: Click Finish to complete the procedure.



Step 9: Click OK to restart the system and activate the Watchdog Timer.



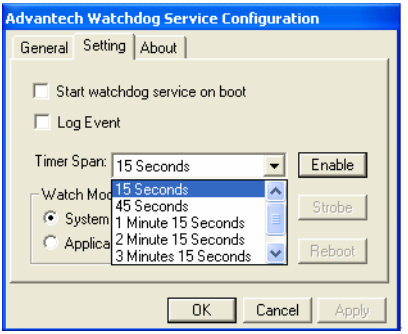
3.3.2 How to Use the MIC-3316 Watchdog Timer

Step 1: Open the Control Panel of the Windows and click Watchdog Service Configuration.

Step 2: Click the Start Service button.

Step 3: Click Setting to select the setting page.

Step 4: Select the Timer Span that meets your application requirement.



Step 5: Click Enable to enable the setting.

Step 6: Check the Start watchdog service on boot to enable the Watchdog timer to start automatically after the system boots every time.

Step 7: Click OK, and then the configuration procedure is finished.

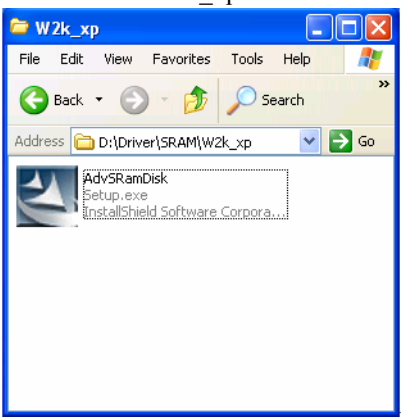
Note *Once Driver.WDT is enabled, the WDT LED will blink at 1 Hz*

3.4 Battery Backup SRAM Driver Install

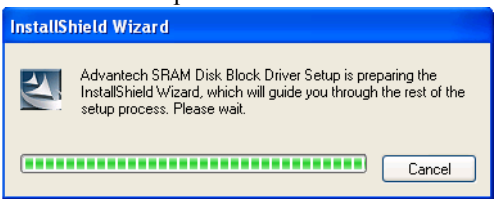
MIC-3316 provides 512 KB of battery backed SRAM. This ensures that you have a safe place to store critical data. You can now write software applications without being concerned that system crashes will erase critical data from the memory.

3.4.1 Installing the Driver for the MIC-3316 Battery Backup SRAM

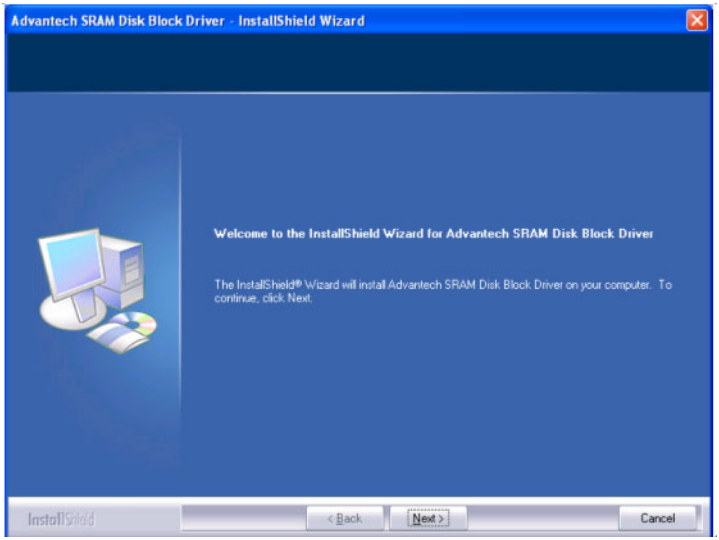
Step 1: Insert the companion CD-ROM into your CD-ROM drive. Open the directory:\Driver\SRAM\W2k_xp



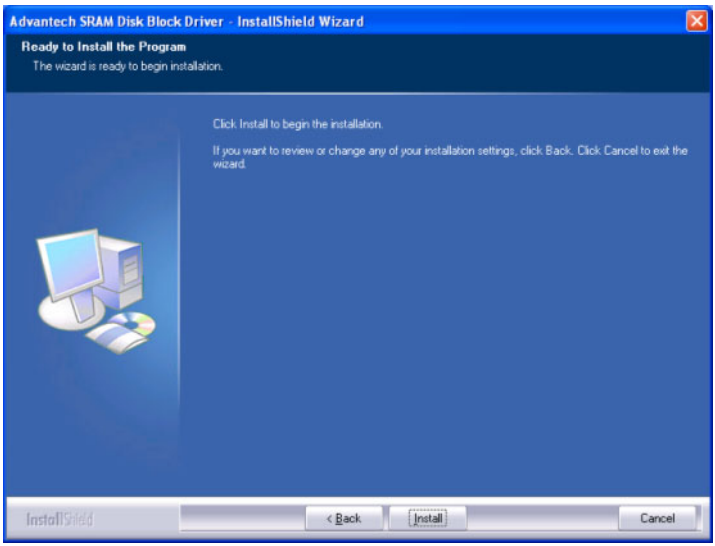
Step 2: Use Windows Explorer (or Windows Run command) to execute SETUP.EXE from the companion CD-ROM.



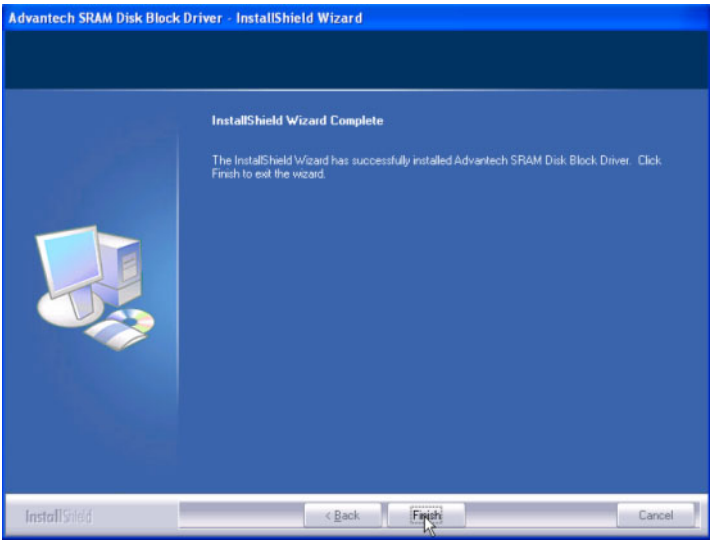
Step 3: Click Next to proceed.



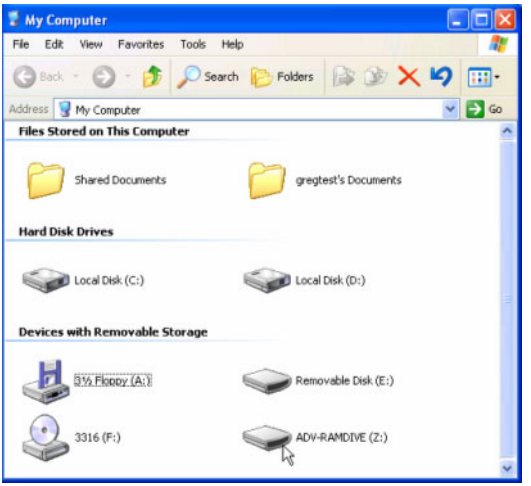
Step 4: Click Install to proceed.



Step 5: Click Finish to complete the procedure.



Step 6: Re-boot system, and you can see Drive (Z:)



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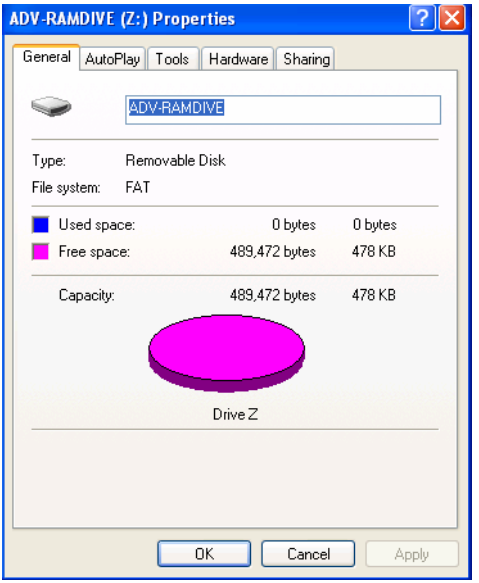
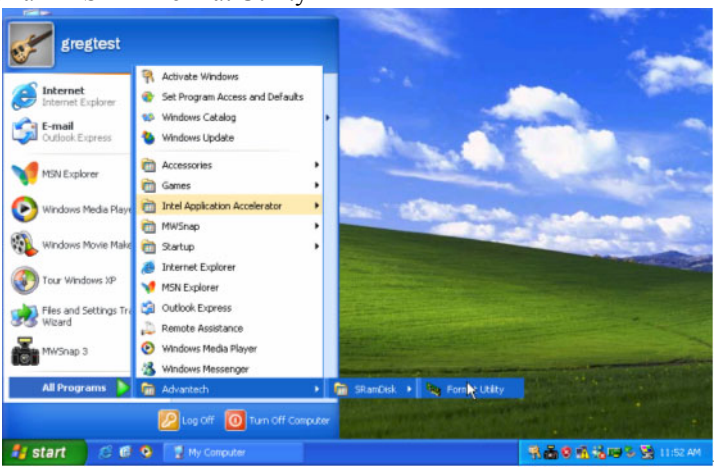


Setup 7: Format DISK,OPEN Start -> All Programs -> Advantech -> SRamDISK -> Format Utility

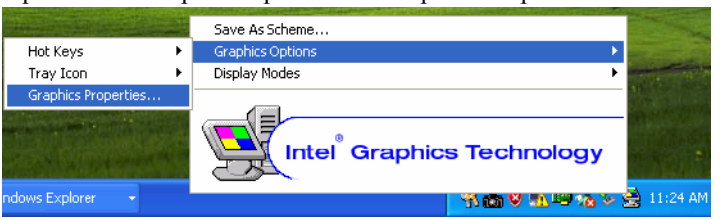


3.5 Display DVI and CRT Setting

If you use DVI monitor, you must Connections to DVI port during system booting on. When the system boots up, you can set the parameters of the multiple devices.

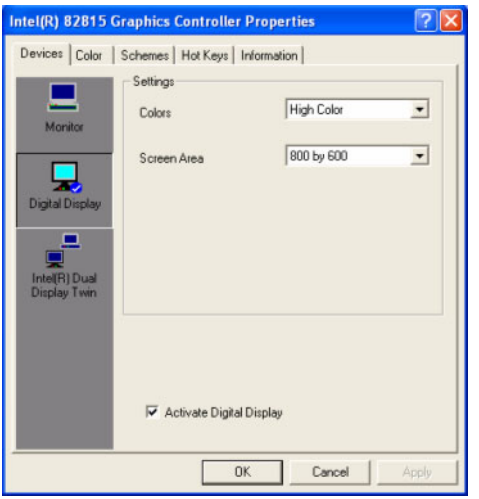
Step 1: Click the Intel graphic icon in the toolbar

Step 2: Select Graphics Options and Graphics Properties



Step 3. Monitor is CRT monitor; Digital Display is DVI monitor; and Intel® Dual Display Twin is CRT and DVI monitor.

This control allows selection of a device page. The current active is indicated by a checkmark on the icon. If you have multiple devices, activation of an alternate device is accomplished by selecting that device icon, selecting the activate checkbox, and then by selecting either the Apply or OK button.



CHAPTER 4

Award BIOS Setup

Chapter 4 Award BIOS Setup

4.1 Introduction

Once you enter the AwardBIOS CMOS Setup Utility, the main menu (Figure 4-1) will appear on your screen. The main menu allows you to select between nine setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept or enter the submenu.

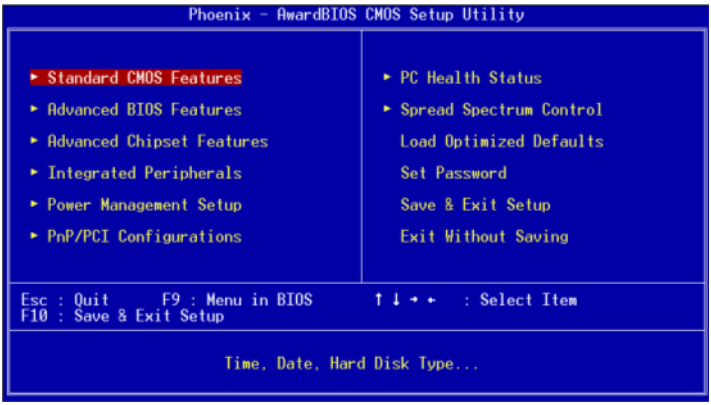


Figure 4.1: Initial Screen of the Setup Program

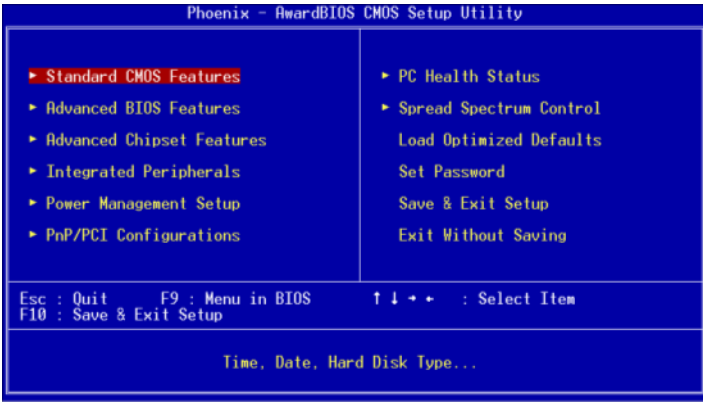
Award's BIOS ROM has a built-in setup program that allows you to modify the basic system configuration. This type of information is stored in a battery-backed CMOS so that it retains the setup information when the power is turned off.

The BIOS file is located in the following path:

:\MIC-3316\BIOS

4.2 Entering Setup

Turn on the computer and press <Del> to enter the BIOS setup.



4.2.1 Standard CMOS Setup

Choose the “Standard CMOS Features” option from the “Initial Setup Screen” menu, and the screen below will be displayed. This menu is used to configure system components such as date, time, hard disk drive, floppy drive, display, and memory.

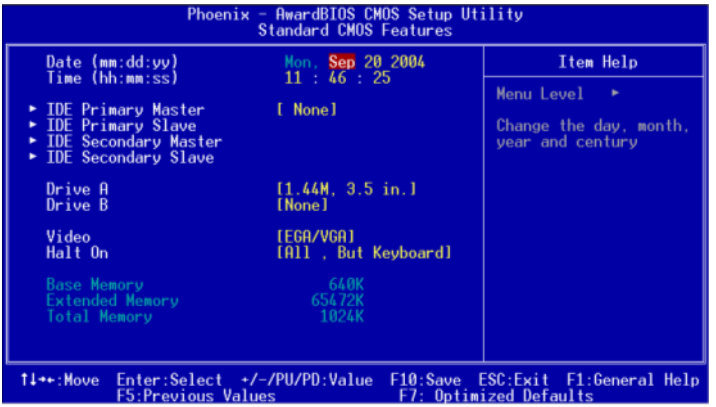


Figure 4.2: Standard CMOS Setup Screen.

Primary Master/Primary Slave/Secondary Master/Secondary Slave

Press PgUp/<+> or PgDn/<-> to select Manual, None or Auto type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Manual to define your own drive type manually. If you select Manual, related information is entered to the following items. Enter the information directly from the keyboard. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

4.2.2 Advanced BIOS Features Setup

The "Advanced BIOS Features" screen appears when choosing the "Advanced BIOS Features" item from the "Initial Setup Screen" menu. It allows the user to configure MIC-3316 according to his particular requirements. Below are some major items that are provided in the Advanced BIOS Features screen. A quick booting function is provided for your convenience. Simply enable the Quick Booting item to save yourself valuable time.

Figure 4.3: Advanced 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 the Virus Warning is disabled, no warning message will appear if anything attempts to access the boot sector or hard disk partition.

CPU L1 Cache

Enabling this feature speeds up CPU access to data. The commands are "Enabled" or "Disabled."

CPU L2 Cache

Enabling this feature speeds up CPU access to data. The commands are "Enabled" or "Disabled."

CPU L2 Cache ECC Checking

Enabling allows CPU L2 cache checking. The commands are "Enabled" or "Disabled."

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, BIOS shortens or skips some of the items during the test. When disabled, the computer conducts normal POST procedures. The commands are "Enabled" or "Disabled".

4.2.3 First/Second/Third/Other Boot Device

The BIOS tries to load the OS with the devices in the sequence selected. If the system fails to boot from the first, second or third device, the system will seek other bootable devices.

Swap Floppy Drive

Logical name assignments of floppy drives can be swapped if there is more than one floppy drive. The commands are "Enabled" or "Disabled."

Boot UP Floppy Seek

Selecting “Disabled” will speed up the boot and not check the floppy. Selecting “Enabled” will search and check the floppy during boot up.

Boot Up NumLock Status

This feature selects the “power on” state for NumLock. The commands are “On” or “Off”.

Gate A20 Option

Normal: The A20 signal is controlled by the keyboard controller. Fast (Default): The A20 signal is controlled by the chipset.

Typematic Rate Setting

The typematic rate is the rate key strokes repeat as determined by the keyboard controller. The commands are “Enabled” or “Disabled.” Enabling allows the typematic rate and delay to be selected.

Typematic Rate (Chars/Sec)

BIOS accepts the following input values (characters/second) for typematic rate: 6, 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (msec)

Typematic delay is the time interval between the appearance of two consecutive characters, when holding down a key. The input values for this category are: 250, 500, 750, 1000 (msec).

Security Option

This setting determines whether the system will boot up if the password is denied. Access to Setup is always limited. The system will not boot, and access to Setup will be denied if the correct password is not entered at the prompt.

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 press <Enter> to disable security. When security is disabled, the system will boot, and you can enter Setup freely.*

OS Select for DRAM > 64MB

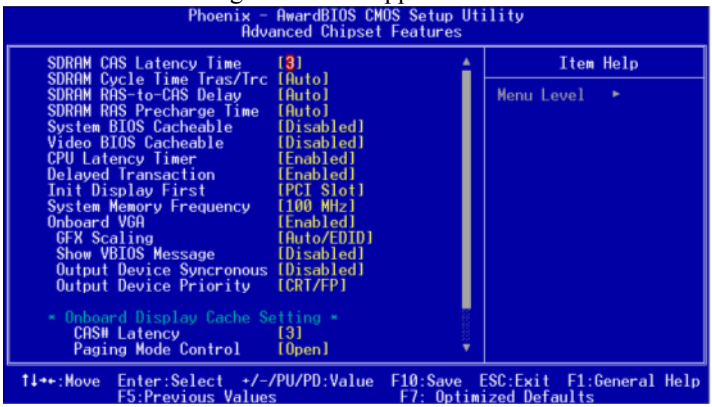
This setting allows selection of an OS with greater than 64 MB of RAM. Commands are "Non-OS2" or "OS2."

Onboard LAN Boot Rom

The LAN boot ROM for boot on LAN function can be enabled or disabled.

4.2.4 Advanced Chipset Features Setup

The Advanced Chipset Features Setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer. Choose the "Advanced Chipset Features" from the main menu and the following screen will appear.



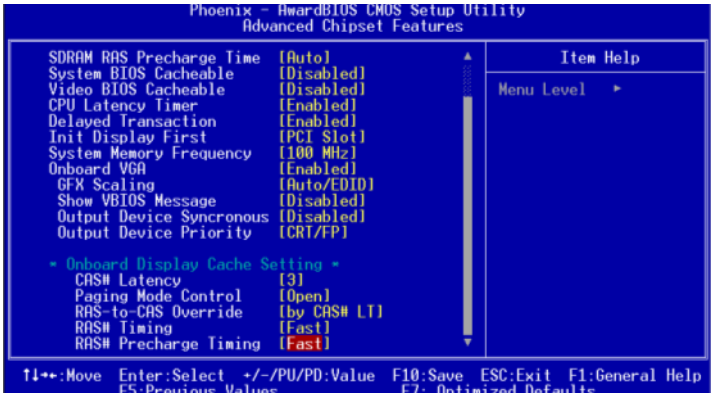


Figure 4.4: Advanced Chipset Features Setup Screen

SDRAM CAS Latency Time

This controls the latency between SDRAM read command and the time that the data actually becomes available. Leave this on the default setting.

SDRAM Cycle Time Tras/Trc

This selects the number of SCLKs for an access cycle.

SDRAM RAS-to-CAS Delay

This controls the latency between SDRAM active command and the read/ write command. Leave this on the default setting.

SDRAM RAS Precharge Time

This controls the idle clocks after issuing a precharge command to SDRAM. Leave this on the default setting.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may occur. The choices: Enabled, Disabled.

Video Bios Cacheable

Selecting Enabled allows caching of the video BIOS, resulting in better system performance. However, if any program writes to this memory area, a system error may occur. The choices: Enabled, Disabled.

CPU Latency Timer

When enabled, the CPU cycle will only be deferred after it has been held in a "Snoop Stall" for 31 clocks and another ADS# has arrived. When disabled, the CPU cycle will be deferred immediately after the GMCH receives another ADS#. The choices: Enabled, Disabled.

Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1. The choices: Enabled, Disabled.

Init Display First

This item allows you to choose which one to activate first, PCI Slot or onchip VGA. The choices: PCI Slot, Onboard.

System Memory Frequency

If FSB is 133MHz of CPU,you can choose:100MHz or 133MHz for System Frequency.

Note *If you plug in a certain 144DIMM SDRAM setting 133MHz and the system does not boot up, you can clear CMOS and set it at 100MHz.*

On Board VGA

The on-board VGA (GMCH) function can be enabled or disabled.

4.2.5 Integrated Peripherals

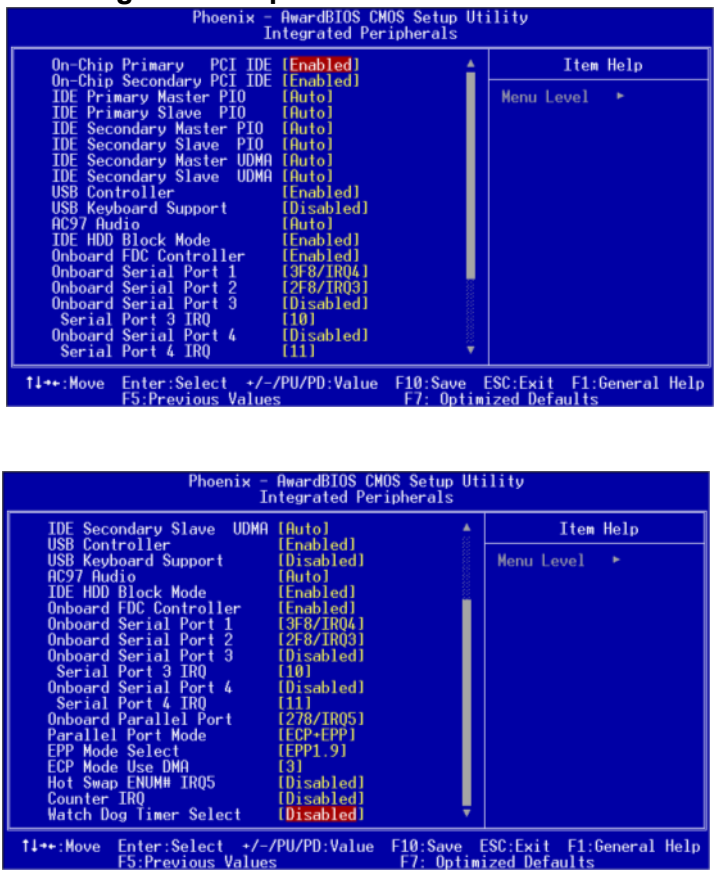


Figure 4.5: Integrated Peripherals Setup Screens

On-Chip Primary/Secondary PCI IDE

If you enable IDE HDD Block Mode, the enhanced IDE driver will be enabled. Leave IDE HDD Block Mode on the default setting.

IDE Primary Master/Slave PIO/UDMA Mode

IDE Secondary Master/Slave PIO/UDMA Mode (Auto) Each channel (Primary and Secondary) has both a master and a slave, making four IDE devices possible. Because each IDE device may have a different Mode timing (0, 1, 2, 3, 4), it is necessary for these to be independent. The default setting “Auto” will allow auto detection to ensure optimal performance.

USB Controller

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals. The choices: Enabled, Disabled.

USB Keyboard Support

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard. The choices: Enabled, Disabled.

AC97 Audio

This item allows you to enable the AC97 function. The choices are "Auto" and "Disabled".

IDE HDD Block Mode

You can enable the Primary IDE channel and/or the Secondary IDE channel. Any channel not enabled is disabled.

Onboard FDC Controller

When enabled, this field allows you to connect your floppy disk drives to the onboard floppy disk drive connector instead of a separate controller card. If you want to use a different controller card to connect the floppy disk drives, set this field to disabled.

Onboard Serial Port 1 (3F8/IRQ4)

The settings are 3F8/IRQ4 and Disabled for the on-board serial connector.

Onboard Serial Port 2 (2F8/IRQ3)

The settings are 2F8/IRQ3, 2F8/IRQ4 and Disabled for the on-board serial connector.

Onboard Serial Port 3/Serial Port IRQ

The setting are 2F8,3F8,2E8,3E8 and Disabled ,and IRQ 3,4,5,6,7,9,11 to compose.

Onboard Serial Port 4/Serial Port IRQ

The setting are 2F8,3F8,2E8,3E8 and Disabled ,and IRQ 3,4,5,6,7,9,11 to compose.

Onboard Parallel Port (378/IRQ7)

This field sets the address of the on-board parallel port connector. You can either select 3BC/IRQ7, 378/IRQ7, 278/IRQ5 or Disabled. If you install an I/O card with a parallel port, make sure there is no conflict in the address assignments. The CPU card can support up to three parallel ports, as long as there are no conflicts for each port.

Parallel Port Mode (ECP + EPP)

This field allows you to set the operation mode of the parallel port. The setting "SPP" allows standard speed operation. “EPP” allows bidirectional parallel port operation at maximum speed. “ECP” allows the parallel port to operate in bidirectional mode and at a speed faster than the maximum data transfer rate. “ECP + EPP” allows normal speed operation in a two-way mode.

EPP Mode Select

This field allows you to select EPP port type 1.7 or 1.9. The choices: EPP1.7, 1.9.

ECP Mode Use DMA

This selection is available only if you select “ECP” or “ECP + EPP” in the Parallel Port Mode field. In ECP Mode Use DMA, you can select DMA channel 1, DMA channel 3, or Disable. Leave this field on the default setting.

Hot Swap ENUM# IRQ5

If you need to use Hot Swap in IRQ mode, setting enable .ENUM# will link to IRQ5.

Timer IRQ

This counter can be set to IRQ5, IRQ9, IRQ10 or disabled

4.2.6 Power Management Setup

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

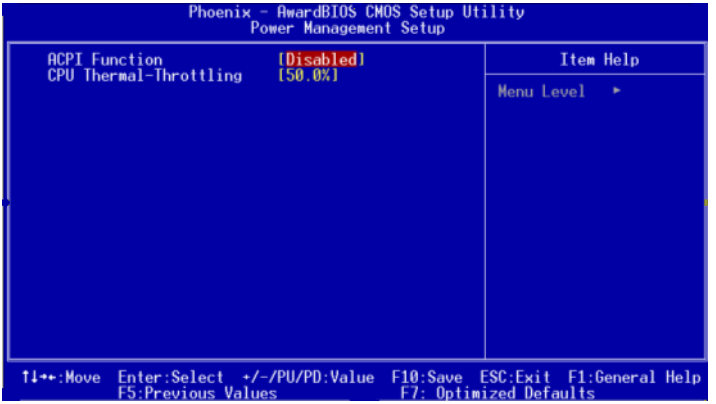


Figure 4.6: Power Management Setup Screen

ACPI Function

This category allows you to select if ACPI power management are enabled or not. The options: Enabled and Disabled (Default).

CPU Thermal-Throttling

This field allows you to select the CPU THRM-Throttling rate. The choices: 12.5%, 25.0%, 37.5%, 50.0%, 62.5%, 75.0%, 87.5%.

4.2.7 PNP/PCI Configuration Setup

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

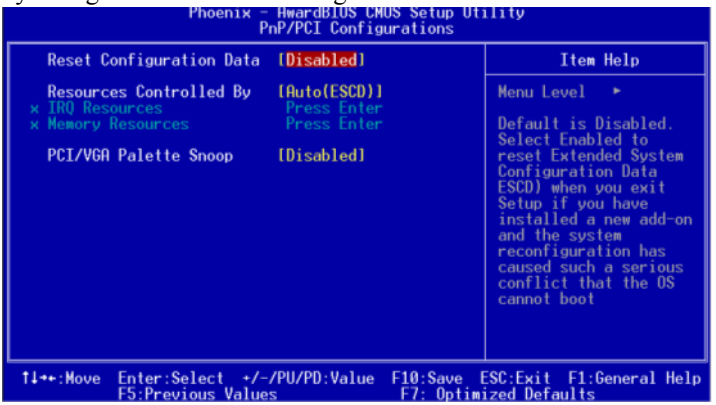


Figure 4.7: PNP/PCI Configuration Screen

Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup. This helps if you have installed a new add-on device and the system reconfiguration has caused such a serious conflict that the operating system cannot boot. The settings are: Enabled and Disabled (Default).

Resource Controlled By

The Award Plug & Play BIOS has the capacity to automatically configure the entire boot and Plug & Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug & Play compatible operating system such as Windows 95/98. If you set this field to "manual", choose specific resources by going into each of the sub menus that follow this field (a sub menu is preceded by a "y"). The settings are: Auto (ESCD) (Default), Manual.

IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

Memory Resources

When resources are controlled manually, assign each memory address a type, depending on the type of device using the memory.

PCI/VGA Palette Snoop

This is left at “Disabled.”

4.2.8 PC Health Status

This section shows the Status of you CPU, Fan, and Warning for overall system status. This is only available if there is Hardware Monitor onboard.

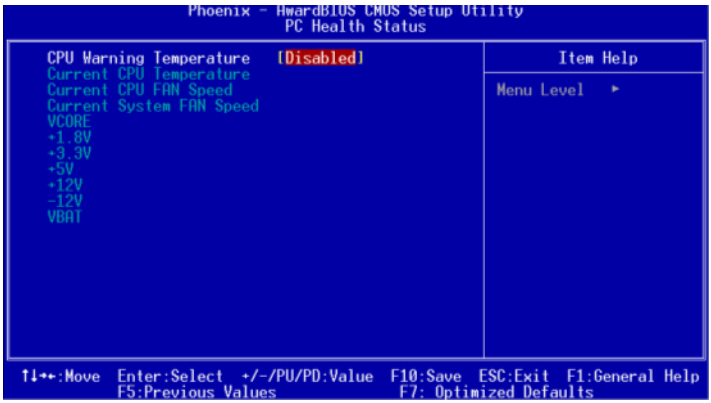


Figure 4.8: PC Health Status Setup Screen

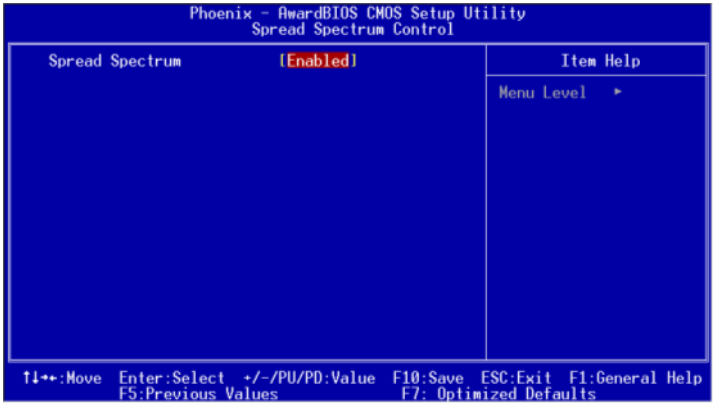
CPU Warning Temperature

This item will prevent the CPU from overheating. The choices are: 50~158

Current CPU Temperature/Current CPU FAN Speed/Current System FAN Speed/VCORE/+1.8/+3.3V/+5V/+12V/-12V/VBAT

These shows system health status.

4.2.9 Spread Spectrum Control



Spread Spectrum

This item allows you to enable a spread spectrum function. Default is "Enabled"

4.2.10 Load Optimized Defaults

When you press <Enter> on this item, you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N)? N

Pressing 'Y' loads the default values that are factory settings for optimal performance system operations.

4.2.11 Set Password

To change, confirm, or disable the password, choose the "PASS-WORD SETTING" option form 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 Advance BIOS Features Setup to be either "Setup" or "System." Pressing [Enter] again without typing any characters can disable the password setting function.

4.2.12 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.

4.2.13 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

Appendix A Programming the Watchdog Timer

A.1 Overview

The MIC-3316's watchdog timer can be used to monitor system software operation and take corrective action if the software fails to function after the programmed period. This section describes the operation of the watchdog timer and how to program it.

The watchdog timer is built-in the super I/O controller W83627HF. It provides the following functions for user programming:

- Can be enabled and disabled by user's program.
- Timer can be set from 1 to 255 seconds or 1 to 255 minutes.
- Generates an interrupt or resets signal if the software fails to reset the timer after time-out.

A.2 Programming the Watchdog Timer

The I/O port address of the watchdog timer is 2E(hex) and 2F(hex), 2E (hex) is the address port. 2F(hex) is the data port. You must first assign the address of register by writing address value into address port 2E(hex), then write/read data to/from the assigned register through data port 2F (hex).

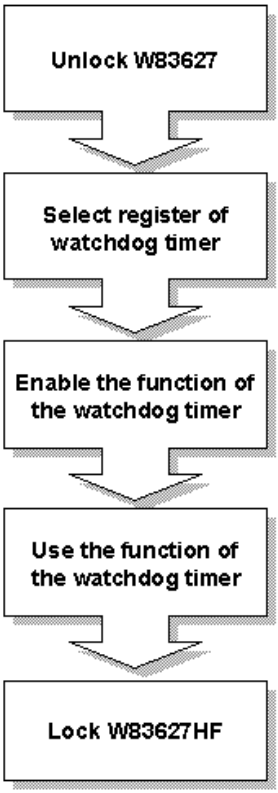


Figure A.1: Procedure of Programming the Watchdog Timer

Table A.1: Watchdog Timer Registers		
Address of register (2E)	**Attribute**	**Description**
Read/Write	Value (2F) and description	
87 (hex)	-----	Write this address to I/O address port 2E (hex) twice to unlock the W83627HF
07 (hex)	write	Write 08 (hex) to select register of watchdog timer.
30 (hex)	write	Write 01 (hex) to enable the function of the watchdog timer. Disabled is set as default.
F5 (hex)	write	Set seconds or minutes as units for the timer.
Write 0 to bit 3: set second as counting unit. [default]		
Write 1 to bit 3: set minute as counting unit		
F6 (hex)	write	0: stop timer [default]01~FF (hex): The amount of the count, in seconds or minutes, depends on the value set in register F5 (hex). This number decides how long the watchdog timer waits for strobe before generating an interrupt or reset signal. Writing a new value to this register can reset the timer to count with the new value.
F7 (hex)	rd/wr	Bit 6: Write 1 to enable keyboard to reset the timer, 0 to disable.[default] Bit 5: Write 1 to generate a timeout signal immediately and automatically return to 0. [default=0] Bit 4: Read status of watchdog timer, 1 means timer is "time out".
AA (hex)	-----	Write this address to I/O port 2E (hex) to lock the watchdog timer.2

A.3 Example Programs

1. Enable watchdog timer and set 10 sec. as timeout interval

```
;---------------------------------------------------------------
Mov dx,2eh ; Unlock W83627HF
Mov al,87h
Out dx,al
Out dx,al
;---------------------------------------------------------------
Mov al,07h ; Select registers of watchdog timer
Out dx,al
Inc dx
Mov al,08h
Out dx,al
;---------------------------------------------------------------
Dec dx ; Enable the function of watchdog timer
Mov al,30h
Out dx,al
Inc dx
Mov al,01h
Out dx,al
;---------------------------------------------------------------
Dec dx ; Set second as counting unit
Mov al,0f5h
Out dx,al
Inc dx
In al,dx
And al,not 08h
Out dx,al
;---------------------------------------------------------------
Dec dx ; Set timeout interval as 10 seconds and start counting
Mov al,0f6h
Out dx,al
Inc dx
Mov al,10
Out dx,al
;---------------------------------------------------------------
Dec dx ; lock W83627HF
Mov al,0aah
Out dx,al
```

2. Enable watchdog timer and set 5 minutes as timeout interval

```
;--------------------------------------------------------------
Mov dx,2eh ; unlock W83627H
Mov al,87h
Out dx,al
Out dx,al
;--------------------------------------------------------------
Mov al,07h ; Select registers of watchdog timer
Out dx,al
Inc dx
Mov al,08h
Out dx,al
;--------------------------------------------------------------
Dec dx ; Enable the function of watchdog timer
Mov al,30h
Out dx,al
Inc dx
Mov al,01h
Out dx,al
;--------------------------------------------------------------
Dec dx ; Set minute as counting unit
Mov al,0f5h
Out dx,al
Inc dx
In al,dx
Or al,08h
Out dx,al
;--------------------------------------------------------------
Dec dx ; Set timeout interval as 5 minutes and start counting
Mov al,0f6h
Out dx,al
Inc dx
Mov al,5
Out dx,al
;--------------------------------------------------------------
Dec dx ; lock W83627HF
Mov al,0aah
Out dx,al
```

3. Enable watchdog timer to be reset by mouse

```
;--------------------------------------------------------
Mov dx,2eh ; unlock W83627H
Mov al,87h
Out dx,al
Out dx,al
;--------------------------------------------------------
Mov al,07h ; Select registers of watchdog timer
Out dx,al
Inc dx
Mov al,08h
Out dx,al
;--------------------------------------------------------

Dec dx ; Enable the function of watchdog timer
Mov al,30h
Out dx,al
Inc dx
Mov al,01h
Out dx,al
;--------------------------------------------------------
Dec dx ; Enable watchdog timer to be reset by mouse
Mov al,0f7h
Out dx,al
Inc dx
In al,dx
Or al,80h
Out dx,al
;--------------------------------------------------------
Dec dx ; lock W83627HF
Mov al,0aah
Out dx,al
```

4. Enable watchdog timer to be reset by keyboard

```
;--------------------------------------------------------
Mov dx,2eh ; unlock W83627H
Mov al,87h
Out dx,al
Out dx,al
;--------------------------------------------------------
Mov al,07h ; Select registers of watchdog timer
Out dx,al
Inc dx
Mov al,08h
Out dx,al
;--------------------------------------------------------
Dec dx ; Enable the function of watchdog timer
Mov al,30h
Out dx,al
Inc dx
Mov al,01h
Out dx,al
;--------------------------------------------------------
Dec dx ; Enable watchdog timer to be strobed reset by keyboard
Mov al,0f7h
Out dx,al
Inc dx
In al,dx
Or al,40h
Out dx,al
;--------------------------------------------------------
Dec dx ; lock W83627HF
Mov al,0aah
Out dx,al
```

5. Generate a time-out signal without timer counting

```
;--------------------------------------------------------
Mov dx,2eh ; unlock W83627H
Mov al,87h
Out dx,al
Out dx,al
;--------------------------------------------------------
Mov al,07h ; Select registers of watchdog timer
Out dx,al
Inc dx
Mov al,08h
Out dx,al
;--------------------------------------------------------
Dec dx ; Enable the function of watchdog timer
Mov al,30h
Out dx,al
Inc dx
Mov al,01h
Out dx,al
;--------------------------------------------------------
Dec dx ; Generate a time-out signal
Mov al,0f7h
Out dx,al ;Write 1 to bit 5 of F7 register
Inc dx
In al,dx
Or al,20h
Out dx,al
;--------------------------------------------------------
Dec dx ; lock W83627HF
Mov al,0aah
Out dx,al
```

APPENDIX B

Programming the LEDs

Appendix B Programming the LEDs

B.1 Overview

MIC-3316 LED (GPL and WDT LED) are included in SuperIO W83627HF. There are SuperIO SUSLED and PLED. In here we can program it and use it anywhere. There are four modes: On, Off, 1Hz and 1/4Hz.

B.2 Programming the LED

The I/O port address of the watchdog timer is 2E (hex) and 2F (hex).

2E (hex) is the address port, while 2F (hex) is the data port.

You must first assign the address of the register by writing the address value into the address port 2E (hex), then write/read data to/from the assigned register through data port 2F (hex).

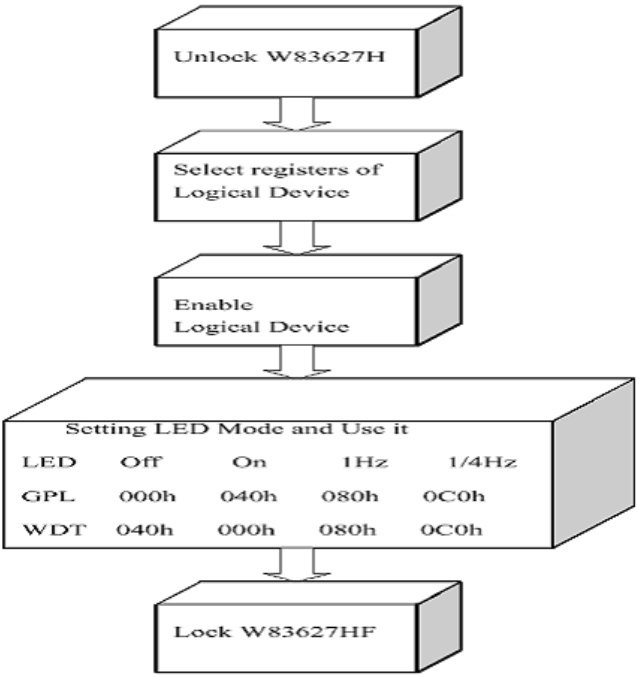


Figure B.1: Flow Chart for LED Programming

Table B.1: GPL LED		
Address of register (2E)	Attribute	
Read/Write	Value (2F) and description	
87 (hex)	-----	Write this address to I/O address port 2E (hex) twice to unlock theW83627HF
07 (hex)	write	Write 09 (hex) to select reg-ister of GPL LED(Logical Device 9)
30 (hex)	write	Write 01 (hex) to enable GPL LED(Logical Device 9)
F3 (hex)	write	Set LED MODE
Write 00 to bit 7-6: set LED off		
Write 01 to bit 7-6: set LED on		
Write 10 to bit 7-6: set LED 1Hz		
Write 11 to bit 7-6: set LED 1/4Hz		
AA (hex)	-----	Write this address to I/O port 2E (hex) to lock the W83627HF

Table B.2: WDT LED		
Address of register (2E)	Attribute	
Read/Write	Value (2F) and description	
87 (hex)	-----	Write this address to I/O address port 2E (hex) twice to unlock theW83627HF
07 (hex)	write	Write 08 (hex) to select register of WDT LED((Logical Device 8
30 (hex)	write	Write 01 (hex) to enable WDT LED(Logical Device 9)
F5 (hex)	write	Set LED MODE
Write 00 to bit 7-6: set LED on		
Write 01 to bit 7-6: set LED off		
Write 10 to bit 7-6: set LED 1Hz		
Write 11 to bit 7-6: set LED 1/4Hz		
AA (hex)	-----	Write this address to I/O port 2E (hex) to lock the W83627HF

Example Program

1, GPL LED set 1Hz

```
;--------------------------------------------------------
Mov dx,2eh              ; Unlock W83627HF
Mov al,87h
Out dx,al
Out dx,al
```

```
;--------------------------------------------------------------
Mov al,07h              ; Select registers of Logical Device 9
Out dx,al
Inc dx
Mov al,09h
Out dx,al
;--------------------------------------------------------------
Dec dx                  ; Enable the Logical Device 9
Mov al,30h
Out dx,al
Inc dx
Mov al,01h
Out dx,al
;--------------------------------------------------------------
Dec dx                  ; Set GPL LED mode register
Mov al,0f3h
Out dx,al
Inc dx
In al,dx
Mov al,080h             ;000h GPL LED alwy off ,040h GPL LED alwy on ,
;080h GPL LED 1Hz ,0c0h GPL LED 1/4 Hz
Out dx,al
;--------------------------------------------------------------
Dec dx          ; lock W83627HF
Mov al,0aah
Out dx,al
```

1, WDT LED set 1/4Hz

```
;--------------------------------------------------------------
Mov dx,2eh              ; Unlock W83627HF
```

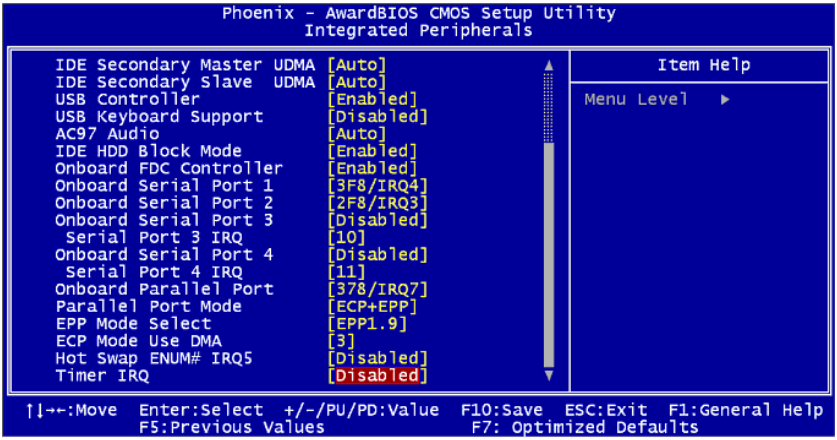
```
Mov al,87h
Out dx,al
Out dx,al
;-------------------------------------------------------------
Mov al,07h          ; Select registers of Logical Device 8
Out dx,al
Inc dx
Mov al,08h
Out dx,al
;-------------------------------------------------------------
Dec dx              ; Enable the GPIO2 (Logical Device 8)
Mov al,30h
Out dx,al
Inc dx
Mov al,01h
Out dx,al
;-------------------------------------------------------------
Dec dx              ; Set PLED mode register
Mov al,0f5h
Out dx,al
Inc dx
In al,dx
Mov al,0c0h         ;000h WDT LED alwy on ,040h WDT LED alwy off ,
;080h WDT LED 1Hz ,0c0h WDT LED 1/4 Hz
Out dx,al
;-------------------------------------------------------------
Dec dx ; lock W83627HF
Mov al,0aah
Out dx,al
```

APPENDIX C

Timer Setting

Appendix C Timer Setting

C.1 Open BIOS set Timer IRQ



C.1.1 Timer IRQ

The timer can be set to IRQ5, IRQ9, IRQ10 and disabled

C.2 Timer Register

Count data (High byte, Low byte 0002~FFFF) is count divisor

Timer IRQ frequency (F=1/T) = Timer base frequency (Fb) ÷ Counter data (Cd)

IRQ timing (T)=1/F=Cd/Fb

BASE Address	R/W	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
280H	W	Counter data							
		DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
281H	W	Counter Interrupt clear							
									Counter IFCLR
282H	W	Counter control Register							
		COUNTER ENABLE	COUNTER INTERRUPT ENABLE	RELOAD ENABLE	COUNTER TIMER BASE			LD_DATA ENABLE	LD DATA BYTE SELECT
1D0H	R	COM PORT SHARE IRQ VECTOR							
								COM2	COM1

C.2.1 Counter Interrupt Clear

Counter IFCLR : 1----Clear Interrupt

C.2.2 Counter Control Register

LD DATA BYTE SELECT:

0------ LOAD LOW BYTE

1------- LOAD HIGH BYTE

LD DATA ENABLE:

0-------DISABLE LOAD DATA

1--------ENABLE LOAD DATA

COUNTER TIMER BASE:

0-------1 MHz

1--------10 kHz

RELOAD ENABLE:

0--------DISABLE

1--------ENABLE

COUNTER INTERRUPT ENABLE:

0--------DISABLE

1--------ENABLE

COUNTER ENABLE:

0--------DISABLE

1--------ENABLE

C.2.3 Setting Counter for Timer.

Setp1, Config counter data

Setp2, Counter enable, Counter Interrupt enable, select reload mode, select Counter Timer Base

Setp3, Clear Interrupt.

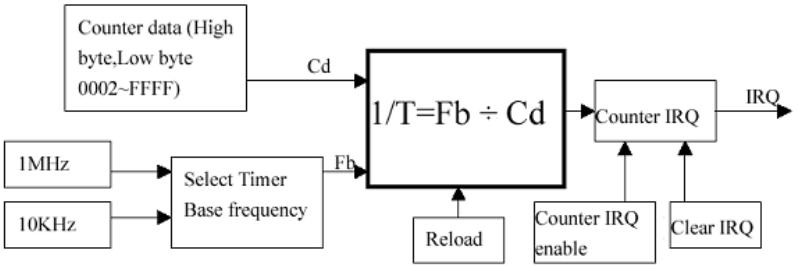
C.2.4 Example Program

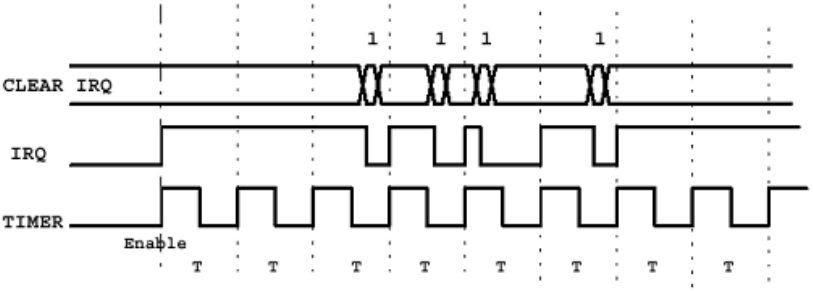
```
Mov dx,282h      ; config load counter data low byte
Mov al,02h
Out dx,al

Mov dx,280h      ; input load counter data low byte
Mov al,10h
Out dx,al

Mov dx,282h      ; config load counter data high byte
Mov al,03h
Out dx,al

Mov dx,280h      ; input load counter data high byte
Mov al,27h
Out dx,al

Mov dx,282h      ; enable timer , setting timer base frequency ,reload mode,enable IRQ
Mov al,0f0h      ; setting 0e0h timer base frequency 1MHz, and 0f0h timer base frequency 10KHz
Out dx,al

Mov dx,281h      ; Clear IRQ
Mov al,01h
Out dx,al
```

In this example ,counter data is 2710h = 10000b,and timer base frequency is 10 kHz,

Timer frequency (F=1/T) =10 kHz (Fb) ÷ 10000(Cd)=1Hz

IRQ timing (T)=1/F=1 Sec


Counter data (High byte,Low byte 0002~FFFF)
Cd
1/T=Fb ÷ Cd
Counter IRQ
IRQ
1MHz
10KHz
Select Timer Base frequency
Fb
Reload
Counter IRQ enable
Clear IRQ


1
1
1
1
CLEAR IRQ
IRQ
TIMER
Enable
T
T
T
T
T
T
T
T

APPENDIX D

Pin Assignment

Appendix D Pin Assignment

This chapter shows the pin assignments of MIC-3316 series CPU cards.

Table D.1: MIC-3316 Connectors Overview	
Number	**Function**
1F-CN3	Primary IDE CompactFlash Socket
1F-CN4	USB1 1.1 port
1F-CN5	USB2 1.1 port
1F-CN6	DVI Connector
1F-J1/J2	Primary CompactPCI bus 32bit 33MHz and Rear I/O
1F-SW1	RESET Switch
1F-D1	POWER LED,HDD LED,WDT LED ,GPL LED
2F-CN12	Serial port: COM1
2F-CN13	Serial port: COM2
2F-CN14	PS/2 keyboard and mouse connector
2F-CN15	10/100Base-T Ethernet connector 1
2F-CN16	Parallel port to 3F External Connector
2F-CN17	Secondary IDE connector 2.5" IDE Connector
2F-CN18	Secondary IDE connector
3F-CN20	USB CompactFlash Socket (MIC-3316F only)
3F-CN21	Audio Line OUT (MIC-3316F only)
3F-CN22	Audio Line IN (MIC-3316F only)
3F-CN23	Audio MIC IN (MIC-3316F only)

D.1 CompactFlash Interface (1F-CN3)

The socket accepts an IDE-compatible CompactFlash memory card.

Table D.2: CompactFlash Interface Pin Definitions

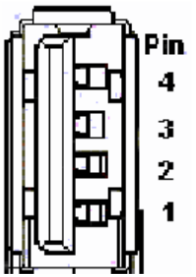
Pin	Signal	Pin	Signal
1	GND	26	N/C
2	PDD3	27	PDD11
3	PDD4	28	PDD 12
4	PDD5	29	PDD 13
5	PDD6	30	PDD 14
6	PDD7	31	PDD 15
7	PDCS*	32	PDCS*
8	GND	33	N/C
9	GND	34	PDIOR*
10	GND	35	PDIOW*
11	GND	36	CF-36
12	GND	37	IRQ14
13	+5V	38	+5V
14	GND	39	SANMODE
15	GND	40	N/C
16	GND	41	IDERST*
17	GND	42	PDIORDY
18	PDA2	43	N/C
19	PDA1	44	CF-44
20	PDA0	45	CFLED
21	PDD0	46	P66DET
22	PDD1	47	PDD8
23	PDD2	48	PDD9
24	N/C	49	PDD10
25	N/C	50	GND

*LOW ACTIVE

D.2 USB 1.1 Ports (1F-CN4 AND 1F-CN5)

Table D.3: USB 1.1 Ports Pin Definitions

Pin	Signal
1	VCC
2	USB_P-
3	USB_P+
4	GND

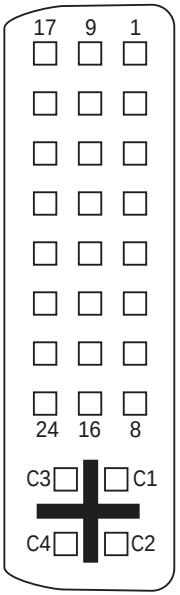


D.3 DVI-I Connector (1F-CN6)

The DVI-I Connector is used to connect an analog or digital monitor to the MIC-3316 CPU board.

Table D.4: DVI-I Port Pin Definitions

Pin	Signal	Pin	Signal
1	TMDS DATA 2-	16	EDGE
2	TMDS DATA 2+	17	TMDS DATA 0-
3	GND	18	TMDS DATA 0+
4	CRT_SCLK	19	GND
5	CRT_SDAT	20	N/C
6	FP_SCLK	21	N/C
7	FP_SDAT	22	GND
8	VSYNC	23	TMDS CLOCK+
9	TMDS DATA 1-	24	TMDS CLOCK-
10	TMDS DATA 1+	C1	CRT_RED
11	GND	C2	CRT_GREEN
12	N/C	C3	CRT_BLUE
13	N/C	C4	HSYNC
14	VCC	C5	GND
15	GND	C6	GND



D.4 LED State (1F-D1)

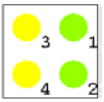


Table D.5: LED State Definitions		
NUMBER	**Name**	**Description**
1 GREEN	PWR LED	SYSTEM POWER ON
2 GREEN	HDD LED	IDE HDD (when the HDD is active.)
3 YELLOW	*GPL LED	General LED (Programming the LED to ON ,1Hz ,1/4Hz)
4 YELLOW	*WDT LED	General LED (Programming the LED to ON ,1Hz ,1/4Hz)

*WDT LED and GPL LED use Super I/O W83627 SLED and PLED.

You can follow Appendix A to program your application program.

D.5 COM port (2F-CN12 ,2F-CN13)

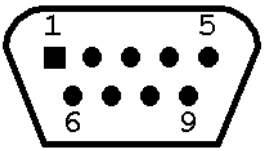


Table D.6: COM Port Pin Definitions			
PIN	**RS-232**	**RS-422**	**RS-485**
1	NDCD	TX-	D-
2	NRX	TX+	D+
3	NTX	RX+	
4	NDTR	RX-	
5	GND		
6	NDSR		
7	NRTS		
8	NCTS		
9	NRI		

D.6 PS/2 Keyboard and Mouse Connector (2F-CN14)

PS/2 keyboard and mouse port pin definitions

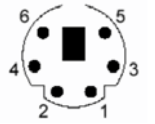


Table D.7: PS/2 Keyboard and Mouse Port Pin Definitions	
Pin	**Signal**
1	KB DATA
2	MS DATA
3	GND
4	VCC
5	KB CLOCK
6	MS CLOCK

D.7 Ethernet 10/100Base-T RJ-45 Connector (2F-CN15)

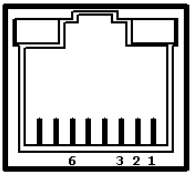


Table D.8: Ethernet Connector Definitions	
Pin	**Signal**
1	TD+
2	TD-
3	RD+
4	N/C
5	N/C
6	RD-
7	N/C
8	N/C

The LED indicator means

	Left (yellow)	Right(Green)
10Mbps	Off	Active Green
100Mbps	Orange	

D.8 Parallel Port Conn. (2F-CN16 to 3F front panel)

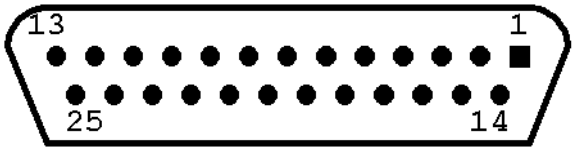
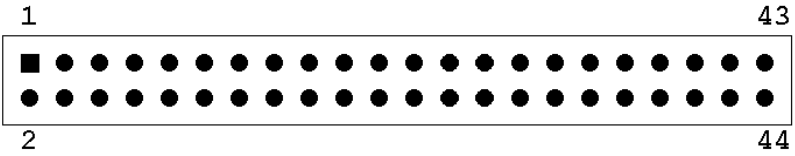


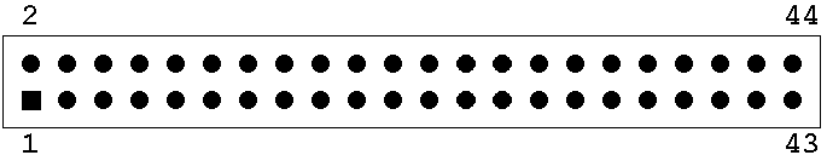
Table D.9: Parallel Port Pin Definitions			
Pin	Signal	Pin	Signal
1	STROBE*	14	AUTOFD*
2	D0	15	ERR
3	D1	16	INIT*
4	D2	17	SLCTINI*
5	D3	18	GND
6	D4	19	GND
7	D5	20	GND
8	D6	21	GND
9	D7	22	GND
10	ACK*	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT		

*LOW ACTIVE

D.9 Secondary IDE 44-pin 2mm Conn. (2F-CN17 & 2F-CN18)



For direct installation of 2.5" IDE HDD (2F-CN17)



For wiring out (2F-CN18)

Table D.10: Secondary IDE Connector for 2.5" HDD Pin Definitions

Pin	Signal	Pin	Signal
1	IDERST*	2	GND
3	SDD7	4	SDD8
5	SDD6	6	SDD9
7	SDD5	8	SDD10
9	SDD4	10	SDD11
11	SDD3	12	SDD12
13	SDD2	14	SDD13
15	SDD1	16	SDD14
17	SDD0	18	SDD15
19	GND	20	N/C
21	SDDREQ	22	GND
23	SDIOW*	24	GND
25	SDIOR*	26	GND
27	SDIORDY	28	GND
29	SDDACK*	30	GND
31	IRQ15	32	N/C
33	SDA1	34	S66DET
35	SDA0	36	SDA2
37	SDCS*1	38	SDCS*3
39	HDD_LED	40	GND
41	+5V	42	+5V
43	GND	44	N/C

*LOW ACTIVE

D.10 USB CompactFlash Reader Interface (3F-CN20).

Table D.11: CompactFlash Interface Pin Definitions			
Pin	**Signal**	**Pin**	**Signal**
1	-	26	CFDET
2	IODD3 (IDE data bus)	27	IODD11 (IDE data bus)
3	IODD4 (IDE data bus)	28	IODD12 (IDE data bus)
4	IODD5 (IDE data bus)	29	IODD13 (IDE data bus)
5	IODD6 (IDE data bus)	30	IODD14 (IDE data bus)
6	IODD7 (IDE data bus)	31	IODD15 (IDE data bus)
7	CS0 * (IDE Chip select 0)	32	CS1* (IDE chip select 1)
8	GND	33	GND
9	GND	34	CFIOR (IDE read signal)
10	GND	35	CFIOW
11	GND	36	VIO (CF POWER)
12	GND	37	N/C
13	VIO (CF POWER)	38	VIO (CF POWER)
14	GND	39	GND
15	GND	40	N/C
16	GND	41	CFRST (Compact Flash Card HW reset)
17	GND	42	N/C
18	DA2 (IDE address)	43	N/C
19	DA1 (IDE address)	44	VIO (CF POWER)
20	DA0 (IDE address)	45	N/C
21	IODD0 (IDE data bus)	46	GND
22	IODD1 (IDE data bus)	47	IODD8 (IDE data bus)
23	IODD2 (IDE data bus)	48	IODD9 (IDE data bus)
24	N/C	49	IODD10 (IDE data bus)
25	CFDET (Compact flash card detect)	50	GND

*LOW ACTIVE

The CF LED indicator means

	CF card Status	LED status
Red LED	CF card detected	ON
Green LED	CF card access	Fast flashes

D.11 Audio Line Out, Line in, Mic In connector (3F-CN21, 3F-CN21, 3F-CN21)

Audio Line Out (3F-CN21):

The line out port (Green) is used to output audio signals to external audio devices like speakers or headphones.

Line in (3F-CN22):

Line In (Blue) is used to input audio signals from external audio devices like CD players or MP3 players.

Mic in (3F-CN23):

The Mic In (Red) is used to input audio signals via microphones.

D.12 J1 Connector

Table D.12: J1 Connector

Pin	Z	A	B	C	D	E	F
25	GND	+5V	REQ64#	ENUM#	+3.3V	+5V	GND
24	GND	AD[1]	+5V	V(I/O)	AD[0]	ACK64#	GND
23	GND	+3.3V	AD[4]	AD[3]	+5V	AD[2]	GND
22	GND	AD[7]	GND	+3.3V	AD[6]	AD[5]	GND
21	GND	+3.3V	AD[9]	AD[8]	GND	C/BE[0]#	GND
20	GND	AD[12]	GND	V(I/O)	AD[11]	AD[10]	GND
19	GND	+3.3V	AD[15]	AD[14]	GND	AD[13]	GND
18	GND	SERR#	GND	+3.3V	PAR	C/BE[1]#	GND
17	GND	+3.3V	SM_SCL	SM_SDA	GND	PERR#	GND
16	GND	DEVSEL#	GND	V(I/O)	STOP#	LOCK#	GND
15	GND	+3.3V	FRAME#	IRDY#	GND	TRDY#	GND
12~14	Key Area						
11	GND	AD[18]	AD[17]	AD[16]	GND	C/BE[2]#	GND
10	GND	AD[21]	GND	+3.3V	AD[20]	AD[19]	GND
9	GND	C/BE[3]#	N/C	AD[23]	GND	AD[22]	GND
8	GND	AD[26]	GND	V(I/O)	AD[25]	AD[24]	GND
7	GND	AD[30]	AD[29]	AD[28]	GND	AD[27]	GND
6	GND	REQ0#	N/C	+3.3V	CLK0	AD[31]	GND
5	GND	N/C	N/C	RST#	GND	GNT0#	GND
4	GND	N/C	GND	V(I/O)	N/C	N/C	GND
3	GND	INTA#	INTB#	INTC#	+5V	INTD#	GND
2	GND	TCK	+5V	TMS	N/C	TDI	GND
1	GND	+5V	-12V	TRST#	+12V	+5V	GND

V(I/O):PCI buffer voltage form backplane

#: Low active

D.13 J2 Connector

Table D.13: 64-Bit J2 Connector

Pin	Z	A	B	C	D	E	F
22	GND	GA5	GA4	GA3	GA1]	GA0	GND
21	GND	CLK6	GND	RSV	RSV	RSV	GND
20	GND	CLK5	GND	RSV	GND	RSV	GND
19	GND	RSV	GND	RSV	RSV	RSV	GND
18	GND	RSV	RSV	RSV	GND	RSV	GND
17	GND	RSV	GND	PRST#	REQ6#	GNT6#	GND
16	GND	RSV	RSV	DEG#	GND	RSV	GND
15	GND	RSV	GND	FAL#	REQ5#	GNT5#	GND
14	GND	N/C	N/C	N/C	GND	N/C	GND
13	GND	N/C	GND	N/C	N/C	N/C	GND
12	GND	N/C	N/C	N/C	GND	N/C	GND
11	GND	N/C	GND	N/C	N/C	N/C	GND
10	GND	N/C	N/C	N/C	GND	N/C	GND
9	GND	N/C	GND	N/C	N/C	N/C	GND
8	GND	N/C	N/C	N/C	GND	N/C	GND
7	GND	N/C	GND	N/C	N/C	N/C	GND
6	GND	N/C	N/C	N/C	GND	N/C	GND
5	GND	N/C	N/C	RSV	N/C	N/C	GND
4	GND	N/C	RSV	N/C	GND	N/C	GND
3	GND	CLK4	GND	GNT3#	REQ4#	GNT4#	GND
2	GND	CLK2	CLK3	N/C	GNT2#	REQ3#	GND
1	GND	CLK1	GND	REQ1#	GNT1#	REQ2#	GND

#: Low active

D.14 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
278-27F	Parallel printer port 2 (LPT3)
290-297	On-board hardware monitor
2F8-2FF	Serial port 2
2E8-2EF	Searal port4
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT2)
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
3E8-3EF	Serial port 4

D.15 DMA Channel Assignments

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

D.16 Interrupt Assignments

Priority	**Interrupt#**	**Interrupt source**
1	NMI	Parity error detected
2	IRQ0	Interval timer
3	IRQ1	Keyboard
	IRQ2	Interrupt from controller 2 (cascade)
4	IRQ8	Real-time clock
5	IRQ9	Cascaded to INT 0A (IRQ 2)
6	IRQ10	Available
7	IRQ11	Available
8	IRQ12	PS/2 mouse
9	IRQ13	INT from co-processor
10	IRQ14	Primary IDE Channel
11	IRQ15	Secondary IDE Channel
12	IRQ3	Serial communication port 2
13	IRQ4	Serial communication port 1
14	IRQ5	Parallel port 2
15	IRQ6	Diskette controller (FDC)
16	IRQ7	Parallel port 1 (print port)

D.17 1st MB Memory Map

D.17.1 Addr. range (Hex) Device

F0000h - FFFFFh System ROM

D.17.2 CC000h - EFFFFh Unused

C0000h - CBFFFh VGA BIOS

D.17.3 A0000h - BFFFFh Memory

00000h - 9FFFFh Base memory

D.18 PCI Bus Map

Function	**Signals**		
	Device ID	INT# pin	GNT# pin
Onboard LAN	AD23	INT H	GNT B
PCI to PCI Bridge	AD20		GNT A
CPCI slot 1	AD25	INT B, C, D, A	
CPCI slot 2	AD26	INT C, D, A, B	
CPCI slot 3	AD27	INT D, A, B, C	
CPCI slot 4	AD28	INT A, B, C, D	
CPCI slot 2	AD29	INT C, D, A, B	
CPCI slot 3	AD30	INT D, A, B, C	
CPCI slot 4	AD31	INT A, B, C, D	

APPENDIX E

Sharing IRQ4

If you find that you need more IRQs for your system you can go through the procedure shown in this appendix to share IRQs.

This Appendix illustrates how to share IRQ when the IRQ resources are not enough for the operating system.

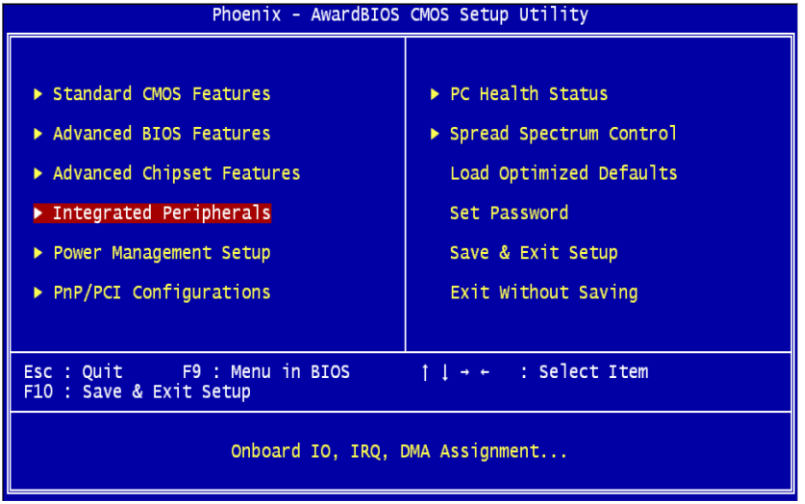
In most applications, the IRQ resources are enough and users do not need to configure the BIOS to share IRQ.

Appendix E Sharing IRQ4

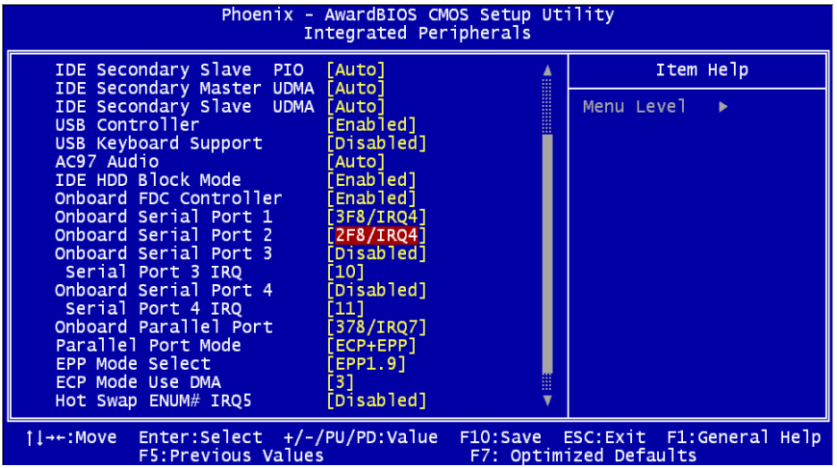
E.1 BIOS Configuration

MIC-3316 offers two serial ports COM1 and COM2. You can set them to "Share IRQ" or Independent IRQ" in the BIOS setup.

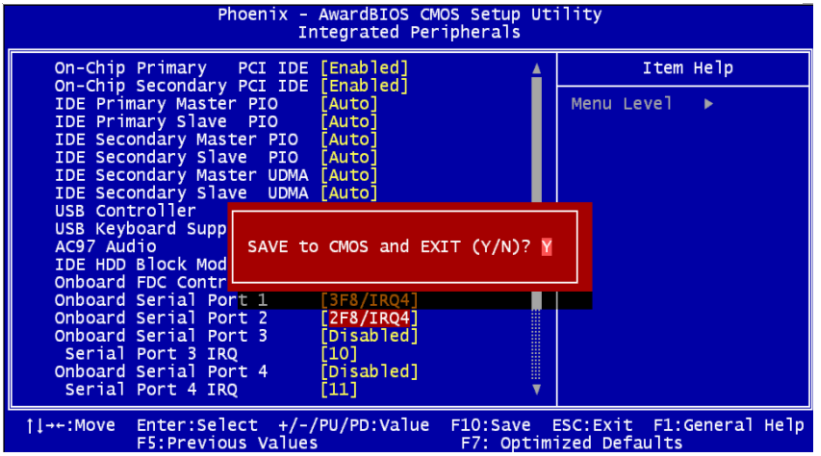
Step 1 Turn on the computer and hold the <Delete> key while booting up to enter the BIOS setup and select "Integrated Peripherals".



Step 2 Set COM2 to 2F8 / IRQ4



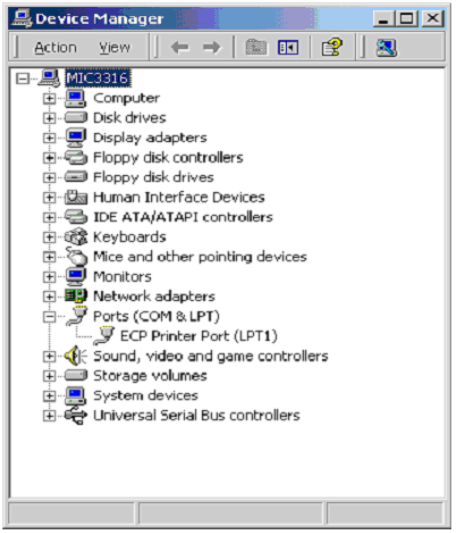
Step 3 Press <F10> to save BIOS and reboot



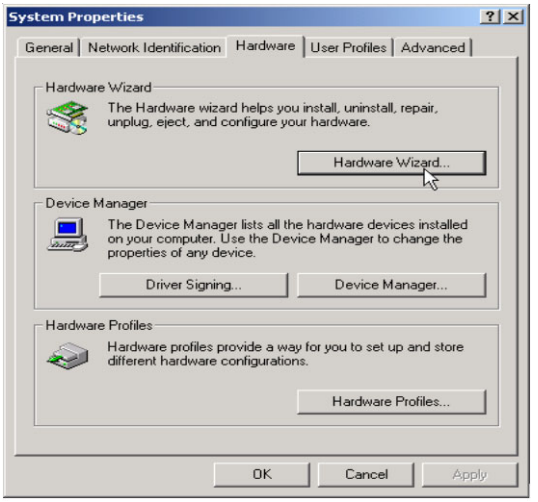
E.2 Windows 2000 / XP Driver Configuration

The settings in the driver have to match the BIOS settings.

Step 1 Right-click “My Computer”, and select “properties”. Press the “Device Manager” button to configure the devices of MIC-3316.

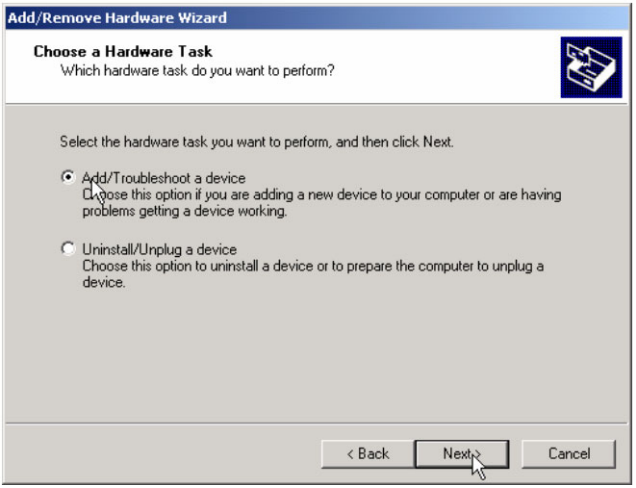


Step 2 Right-click “My Computer”, and select “properties”. Press the “Hardware Wizard” button to add a new device..



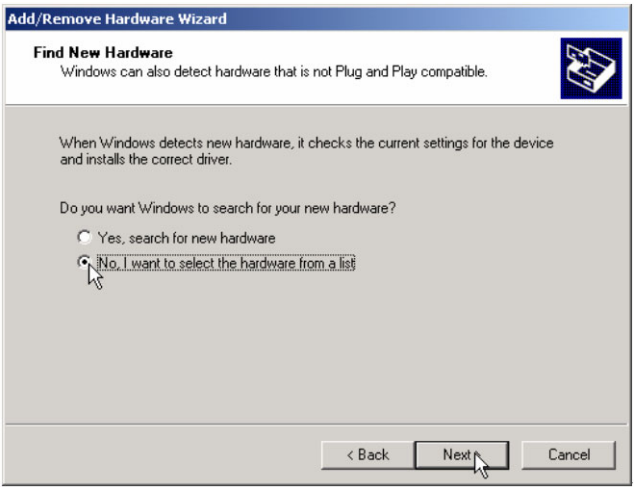
Step 3 Press “Next”.

Step 4 Choose “Add/Troubleshoot a device” and “next”

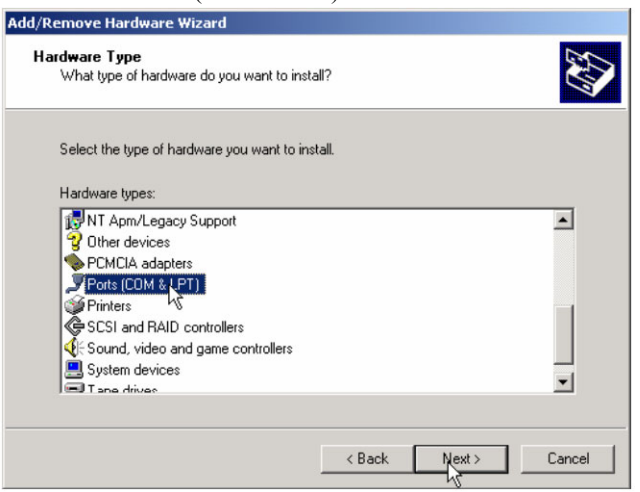


Step 5 Choose “Add a new device” and “next”

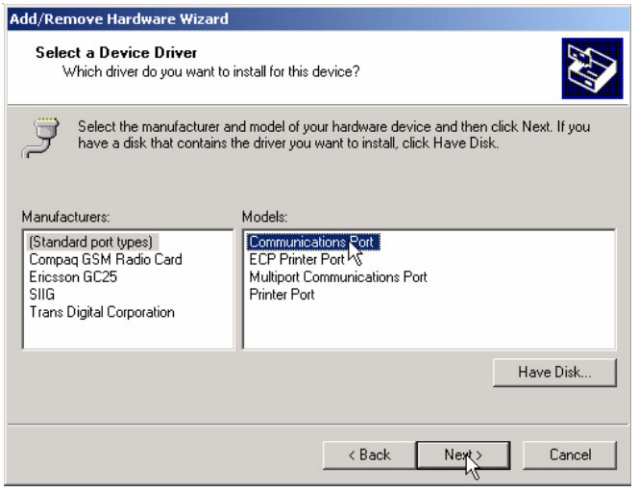
Step 6 Choose “No, I want to select the hardware from a list” and “next”



Step 7 Choose “Ports (COM&LPT)” and “next”

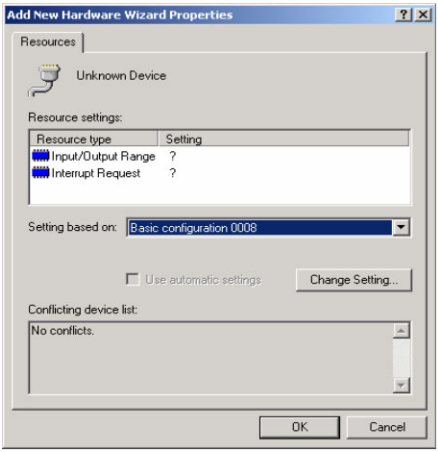


Step 8 Choose “(Standard port types) / Communcations Port” and “next”

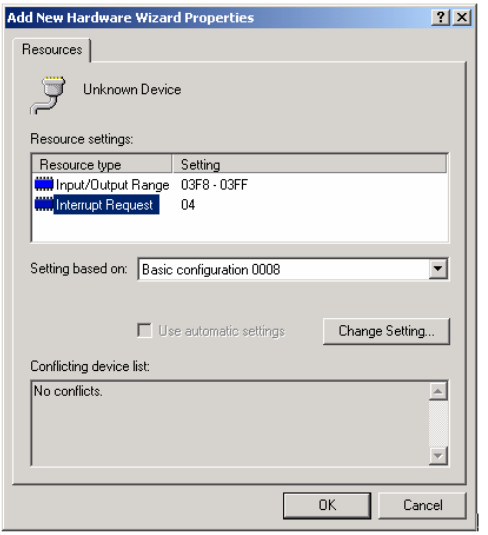


Step 9 Choose “OK”

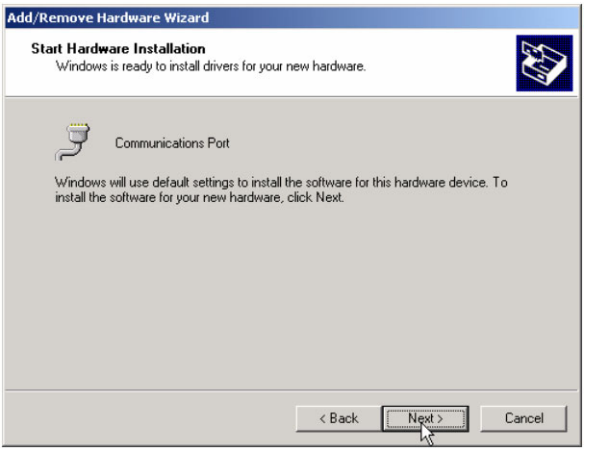
Step 10 Set Resources Basic configuration 0008



Step 11 Set Resources Input/Output Range 03F8-03FF / Interrupt Request 04 and "OK".



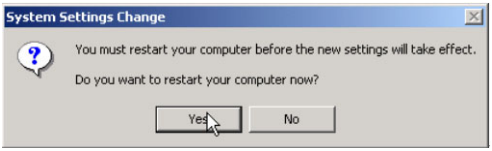
Step 12 Choose "Next".



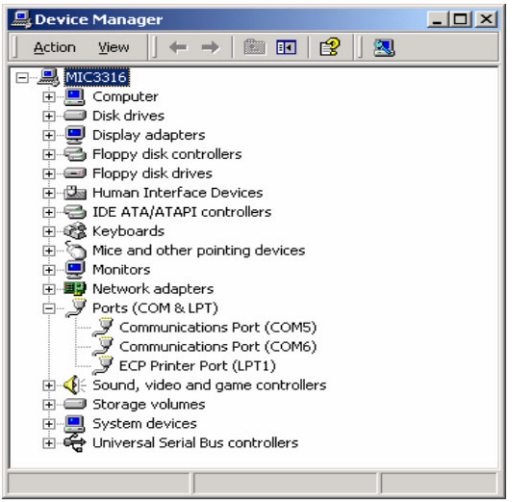
Step 13 Choose “Finish”

Step 14 Repeat <Step2>~<Step11> to add another COM In Step 10 to set Resources Input/Output Range 02F8-02FF / Interrupt Request 04

Step 15 Choose “OK” to Restart Computer

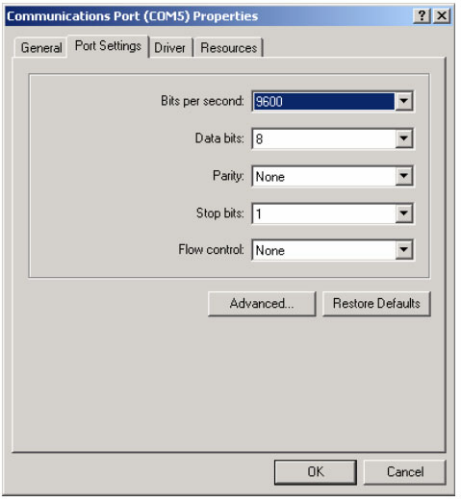


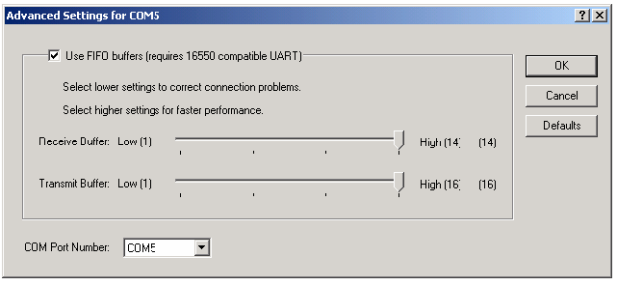
Step 16 Right-click “My Computer” and select “properties”. Press the “Device Manager” button to configure the devices of MIC-3316.



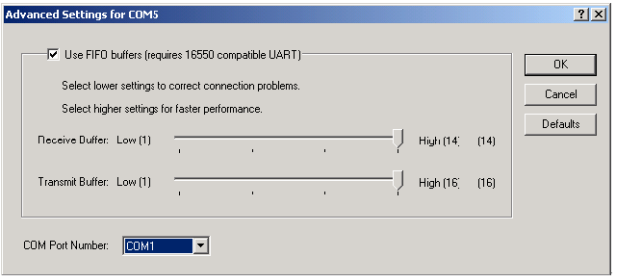
Now COM is COM5 and COM6.

If you want to set COM number to COM1 and COM2, right-click “COM5 or COM6” and select “Properties”. Press the “Port Settings Wizard” and click “Advanced…. ”





Set COM Port Number to COM1 or COM2



click “OK ”