MIC-3318

3U-sized CompactPCI®

Intel® Pentium® 4-M

Single Board Computer with

VGA / Dual Giga LAN

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CE Notification

The MIC-3318, 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.

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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 one year from the date of purchase.

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

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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.

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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.

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5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

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Packing List

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

- One MIC-3318 all-in-one single board computer
- One utility CD-ROM
- Two serial port cables
- 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.

Technical Support and Sales Assistance

If you have any technical questions about the MIC-3318 or any other Advantech products, please visit our support website at:

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

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

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

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1.1 Introduction

The MIC-3318 is a 3U-sized CompactPCI all-in-one single board computer with Intel Pentium 4 Processor-M and compliance with the PICMG 2.0 R2.1 CompactPCI specifications. The MIC-3318 features a powerful onboard Intel Pentium 4 Processor–M 1.7 GHz CPU with low power dissipation. This CPU is designed for fanless operation and has a wide operating temperature range. The MIC-3318 offers very powerful functions on a 3U-sized board for performance-demanding applications like real-time machine control and industrial automation.

The MIC-3318 has been optimized for the Intel Pentium 4 Processor-M and Intel 845GV Chipset. It unveils a high performance cPCI platform that delivers compelling system bus speed performance across the 400 MHz Intel NetBurst Micro-Architecture. Innovative, wide data paths and flexible memory refresh technology, optimize the DDR SDRAM performance in MIC-3318.

High Performance Intel Pentium 4 Processor-M

The MIC-3318 supports the Intel Pentium 4 processor-M 1.7 GHz , with the μ-FCPGA package. The Intel Pentium 4 processor-M has on-chip 512KB L2 cache providing high performance. With the support of a 400 MHz front side bus, the MIC-3318 can fulfill customer's expectations of price-performance and computing capability.

Compact Mechanical Design

The MIC-3318 has many functions for only 2-slots. Advantech provides a CPU heat sink specially designed for the Intel Pentium 4 processor-M, enabling the MIC-3318 to operate without a cooling fan on the heat sink. It only needs external cooling air from the chassis fans for ventilation. This enables the MIC-3318 to use the powerful Intel Pentium 4 processor-M within a mere 2-slot wide space.

1.2 Specifications

1.2.1 Standard SBC functions

- **CPU:** Intel® Pentium® 4 processor-M μ-FCPGA socket

- **BIOS:** Award 4 Mb flash memory

- **Chipset:** Intel ® 82845GV Graphics and Memory Controller Hub (GMCH)

- **Intel 82801DB I/O Controller Hub (ICH4)**

- **Front Side Bus:** 400 MHz (Intel Pentium 4 processor-M)

- **2nd level cache:** Built-in 512 KB on Intel Pentium 4 processor-M die

- **RAM:** 200-pin SO-DIMM. Support up to 512 MB non-ECC DDR200/ 266.

- **Enhanced IDE interface:** In DAU Board, One IDE channel has two connector (One IDE connector with space reserved for embedded 2.5" HDD and one external 44-pin (2mm) 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 rate). BIOS enabled/disabled.

- **CompactFlash socket:** one IDE CompactFlash socket onboard.

- **Enhanced Parallel Port:** Configurable to LPT1, LPT2, LPT3, or disabled. Standard DB-25 female connector provided. Supports EPP/ SPP/ECP

- **Serial ports:** Two RS-232/422/485(jumper selectable) ports with 16C550 UARTs (or compatible) with 16-byte FIFO buffer. Supports speeds up to 115.2 Kbps. Ports can be individually configured to COM1, COM2 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 key-board or PS/2 mouse. An onboard keyboard pin header connector is also available

- **USB port:** Two USB ports with fuse protection comply with USB specification 2.0/1.1

- **PCI-to-PCI Bridge:** One PERICOM PI7C8150 controller chip, drives up to seven bus master peripherals.

- **Watchdog Timer:** It provides system reset, software control. Time interval is programmable from 1 to 255 seconds/minutes.

- **Ethernet LAN:** 10/100/1000Base-TX Ethernet Interface

- **Controller Chips:** Two Intel® 82540EM Gigabit Ethernet controller chips provides Dual Gigabit ports, two front RJ-45 Gigabit LAN port 10 Mbps, 100 Mbps and 1000Mbps auto-switching

- **PICMG 2.1 CompactPCI Hot Swap Specification R1.0 Compliant**

1.2.2 Display

•**Interface:** Intel® Extreme Graphics Architecture

- **Controller:** Intel 845GV chipset integrated

•**Display memory:** shared from system memory up to 8-64MB SDRAM

- **Bus Interface:** PCI 2.2 compliant, 32bit/33 MHz

1.2.3 Mechanical and Environmental Specifications

- **Board Size:** 160 x 100 mm (3U size), 2-slot (8TE) wide.

- **Max. power Requirements:** CPU 1.7 GHz

   +5 V (4.75 ~ 5.25 V) @   5.6A

   +3.3 V (4.75 ~ 5.25 V) @   1.8A

   +12 V (4.75 ~ 5.25 V) @   16mA

- **Operating Temperature:**
   -10 ~ 50° C (14 ~122° F) CPU Run at 1.7 GHz

   -10 ~ 60° C (14 ~140° F) CPU Run at 1.2 GHz

- **Storage Temperature:** -40° C ~ 80° C (-40 ~ 176° F)

- **Humidity (operating and storage):** 5 ~ 95% (60° C , non-condensing)

- **Board weight:** 0.8 kg (1.8lb)

- **Shock:** 20 G (operating); 50 G (storage/transit)

- **Random vibration:** 1.5 Grms

1.3 Function Block Diagram
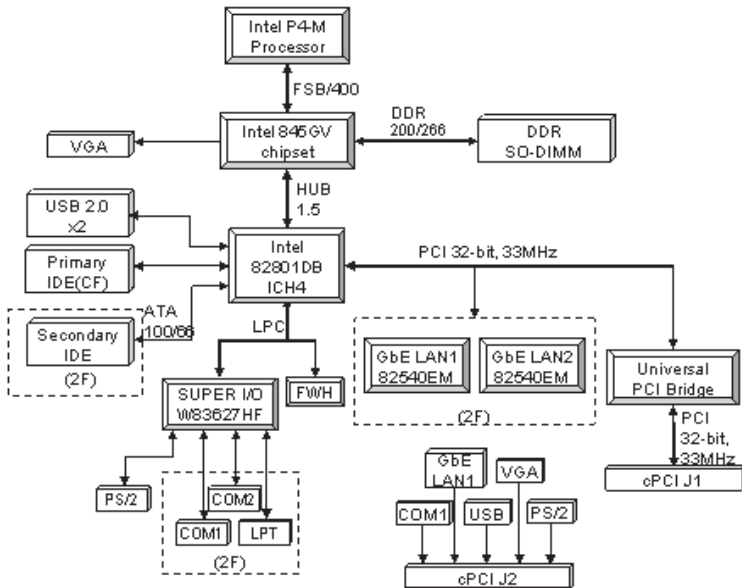
Figure 1-1: MIC-3318 function block diagram

1.4 Board Dimensions
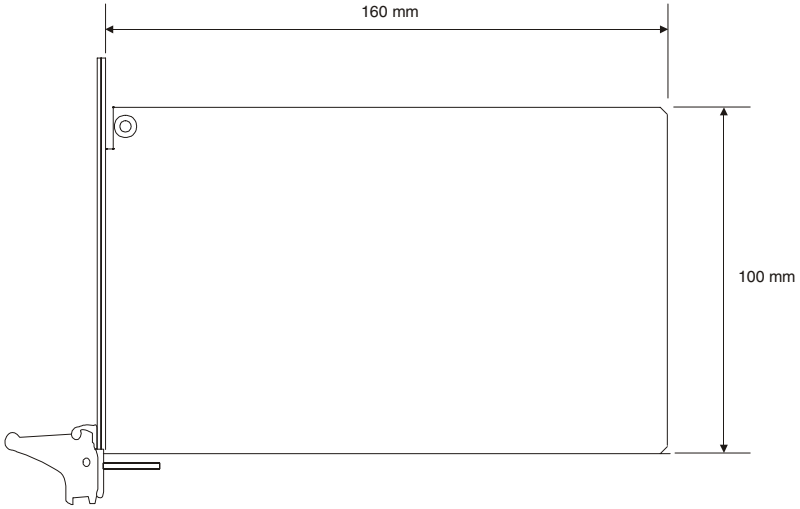
Figure 1-2: MIC-3318 board dimensions

1.5 Jumper Settings

1.5.1 Assembling / Disassembling MIC-3318

Since MIC-3318 is composed of one main board and one daughter board, for ease of understanding and a convenient naming, we will use 1F (means 1st floor) to represent the main board, and 2F (means 2nd floor) to represent the daughter board hereafter in this manual. Before setting the jumpers, you need to disassemble the MIC-3318 to access the component side of 1F. Figure 1-3 shows how MIC-3318 is disassembled/assembled.
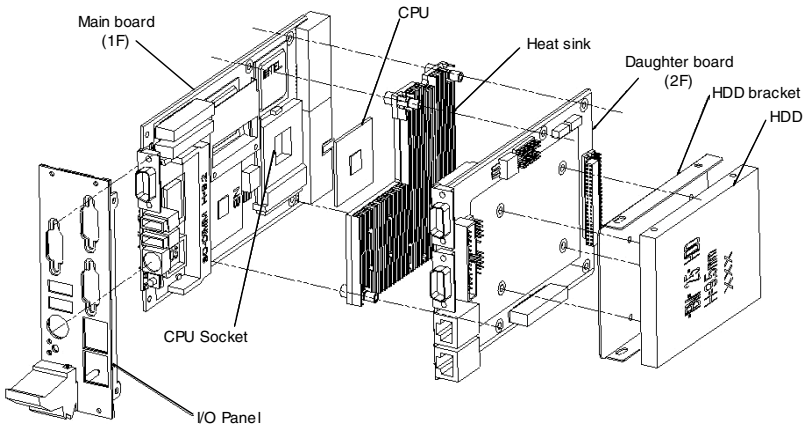
Figure 1-3: How to disassemble/assemble MIC-3318

1.5.2 Jumper Locations

The MIC-3318 provides jumpers for configuring your board for specific applications other than the default settings.

Table 1-1 lists the jumper functions of MIC-3318. Figure 1-4 and Figure 1-5 show the locations of the jumpers.

Table 1-1: MIC-3318 jumper descriptions

Number	Function
1F-JP5(1,2)	CompactFlash master/slave selection
1F-JP6(1,2,3)	Clear CMOS
2F-JP1(1-18)	COM1 Jumper setting (RS-232/422/485)
2F-JP2(1-18)	COM2 Jumper setting (RS-232/422/485)
2F-JP3(1,2,3)	LAN1 SEL(Rear I/O OR :Front Panel)
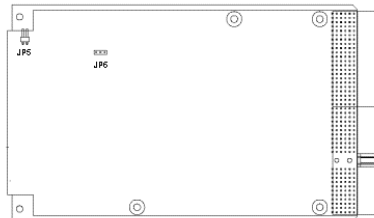
Figure 1-4: MIC-3318 jumper locations (1F)
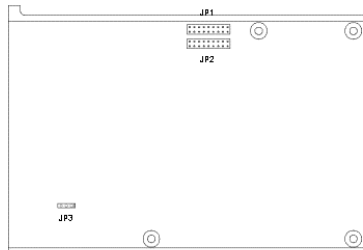
Figure 1-5: MIC-3318 jumper locations (2F)

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

Open   **Closed**   **Closed 2-3**
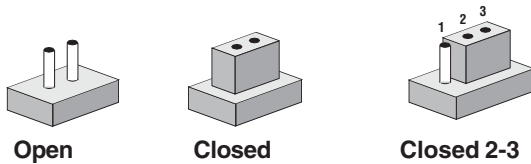
The jmper settings are schematically depicted in this manual as follows:

Open   **Closed**   **Closed 2-3**
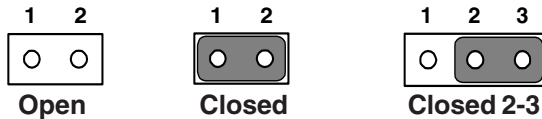
You may find a pair of needle-nose pliers useful for setting the jumpers.

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

1.5.4 CompactFlash master/slave selection(1F-JP5, 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-3318 may not be able to detect the CompactFlash correctly.

Table 1-2: CompactFlash master/slave selection

Mode	JP5
Master	1 2 ⊙ ⊙
Slave	1 2 ○ ○

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

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

1. Turn off the system.

2. Close jumper JP6 (2-3).

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

4. Turn off the system. Close jumper JP6 (1-2).

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

Table 1-3: Clear CMOS

CMOS	JP6
Clear	(1 2 3, pins 2-3 closed)
Normal	(1 2 3, pins 1-2 closed)

1.5.6 Serial Ports (COM1 and 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 JP1(Pin 1 to 18) and JP2(Pin 1 to 18) respectively.

1. RS-232 mode: close jumper JP1(5-6, 7-9, 8-10, 13-15, 14-16) for COM1, JP2(5-6, 7-9, 8-10, 13-15, 14-16) for COM2.

2. RS-422 mode: close jumper JP1(3-4, 9-11, 10-12, 15-17, 16-18) for COM1, JP2(3-4, 9-11, 10-12, 15-17, 16-18) for COM2.

3. RS-485 mode: close jumper JP1(1-2, 9-11, 10-12, 15-17, 16-18) for COM1, JP2(1-2, 9-11, 10-12, 15-17, 16-18) for COM2.

Table 1-4: COM 1 Mode (RS-232/422/485 Selection)

CMOS	2F JP1 and JP2
RS-232	
RS-422	
RS-485	

1.6 Connectors

Onboard connectors link to external devices such as hard disk drives, or keyboards, etc. Table 1-5 lists the function of each connector, and Figure 1-6 and Figure 1-7 illustrate the location of each connector.

Table 1-5: MIC-3318 connector descriptions

Number	Function
1F-CN1	PS/2 keyboard and mouse connector
1F-CN2	Primary IDE CompactFlash Socket
1F-CN7	DB-15 VGA connector
1F-CN15	USB1 1.1/2.0 connector
1F-CN16	USB2 1.1/2.0 connector
1F-J1/J2	Primary CompactPCI bus (32-bit, 33MHz)
1F-SW1	RESET Switch
1F-D9	POWER LED
1F-D10	HDD LED
1F-DIMM1	SODIMM 200-pin socket for DDR
2F-CN3	Serial port: COM2
2F-CN4	Serial port: COM2 External Connector to 3F
2F-CN5	Serial port: COM1
2F-CN6	Serial port: COM1 External Connector to 3F
2F-CN7	Parallel port
2F-CN8	Parallel port External Connector to 3F
2F-CN9	Secondary IDE connector for 2.5" HDD
2F-CN17	Secondary IDE connector
2F-RJ1	10/100/1000Base-T Ethernet connector 1
2F-RJ2	10/100/1000Base-T Ethernet connector 2

Please refer to Appendix B for pin assignments.
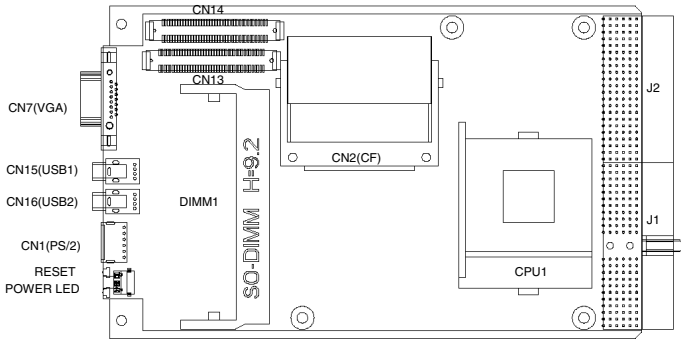
Figure 1-6: MIC-3318 connector locations (1F)
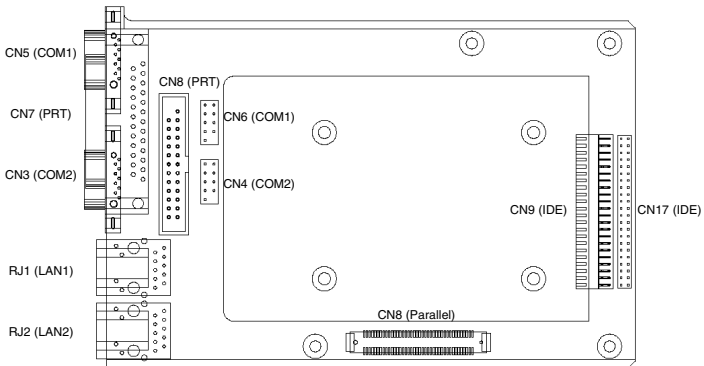
Figure 1-7: MIC-3318 connector locations (2F)

1.7 Front Panel Connectors and Indicators
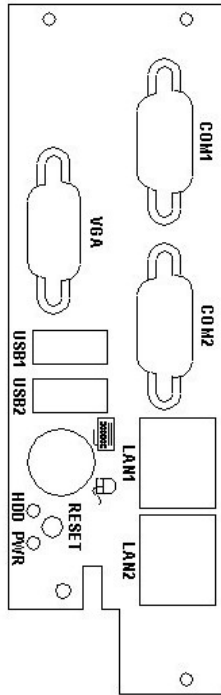
Figure 1-8: MIC-3318 front panel connector and indicator locations

1.8 Safety Precautions

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

1. To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.

2. Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

3. Always ground yourself to remove any static charge before you touch your CPU card. Be particularly careful not to touch the chip connectors. Modern integrated electronic devices, especially CPUs and memory chips, are extremely sensitive to static electrical discharges and fields. Keep the card in its antistatic packaging when it is not installed in the PC, and place it on a static dissipative mat when you are working with it. Wear a grounding wrist strap for continuous protection.

1.9 Installing SDRAM (SODIMMs)

The MIC-3318 provides one 200-pin SODIMM socket, which is on the component side of 1F. The socket accepts 128, 256 or 512 MB DDR. The socket can be filled with DIMMs of any size, giving a total memory capacity between 128 and 512 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.

Connecting Peripherals

2.1 IDE Device (2F-CN8, CN9)

The MIC-3318 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.

2.2 CompactFlash Interface (1F-CN2)

This socket accepts an IDE-compatible CompactFlash memory card.

2.3 VGA Display Connector (1F-CN7)

The MIC-3318 provides an VGA controller for a high performance VGA interface. The MIC-3318's CN7 on 1F is a DB-15 connector for VGA monitor input. Pin assignments for the VGA display are detailed in Appendix B.

2.4 PS/2 Keyboard and Mouse Conn. (1F-CN1)

The MIC-3318 provides a 6-pin mini-DIN connector on the front panel for connection of PS/2 keyboard and PS/2 mouse. The MIC-3318 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.

2.5 Serial Ports (2F-CN3, CN5, CN4, CN6)

The MIC-3318 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-3318 board's ports:

Table 2-1: MIC-3318 serial port default settings

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

2.6 Ethernet Configuration (2F-RJ1, RJ2)

The MIC-3318 is equipped with a high performance 32-bit PCI-bus Gigabit Ethernet interface which is fully compliant with IEEE 802.3u 10/100/1000Base-TX specifications.

2.7 USB Connector (1F-CN15, CN16)

The MIC-3318 provides two USB (Universal Serial Bus) 2.0 channels via two ports on the front panel, which give complete plug and play, hot attach/detach ability for up to 127 external devices. The USB interfaces comply with USB specification rev. 2.0 and are polyswitch protected.

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

2.8 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 handle of MIC-3318 helps you install and remove the card easily and safely. Follow the procedure below to install the MIC-3318 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.
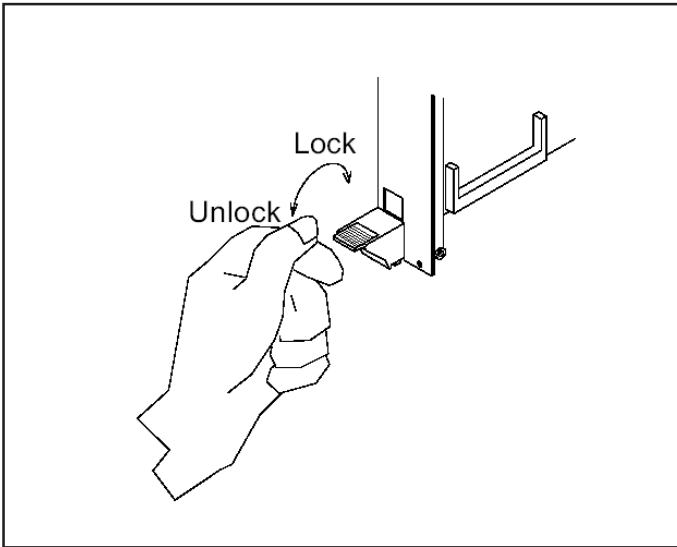
Figure 2-1: Installing/removing the MIC-3318 into/from the chassis

Software Configuration

3.1 Overview

Advantech provides a CD-ROM with utilities and drivers included. Please install the Chipset INF driver, VGA graphics driver, LAN driver, Intel Application Accelerator (IAA) driver, Watchdog Timer (WDT) driver and the hardware monitoring utility (WinBond HWDoct) sequentially.

The Intel Application Accelerator is a performance boosting software package for Intel chipsets. It reduces the storage sub-system bottleneck, enabling faster delivery of data from the hard drive to the processor and other system level hardware. Meanwhile, it enables a performance-enhancing data pre-fetcher for Intel Pentium 4 and Pentium M processor-based systems. In addition, it delivers faster overall system boot times by significantly accelerating the load time of the OS, which enables you to build Pentium 4 and Pentium M processor-based systems with a better overall end-user experience. IAA supports 48-bit Logical Block Addressing (48-bit LBA) for 137 GB and larger hard drives. Furthermore, IAA enables Automatic Selection of Highest DMA Transfer Mode by the ATA/ATAPI device/ Intel chipset.

This chapter will list the utilities and drivers for MIC-3318, and make a brief introduction for two of them: the USB driver and the Watchdog Timer utility.

3.2 Utilities and Drivers

The following utilities and drivers are provided with MIC-3318. You can also find out the updated description of the utilities and drivers in the ReadMe.txt file on the CD-ROM.

Intel Chipset Software Installation Utility

Path: \Driver\Chipset\845G

Available for the OS's below,

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

VGA Drivers (Intel Extreme Graphics 2 Driver)

Path: \Driver\VGA\845GV

Available for the OS's below,

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

IDE Drivers (Intel Application Accelerator)

Path: \Driver\Ide\ICH4

Available for the OS's below,

- Microsoft Windows 98 SE

- Microsoft Windows ME

- Microsoft Windows NT 4.0

- Microsoft Windows 2000

- Microsoft Windows XP

Intel Gigabit LAN 82540EM Drivers /Utility

Path: \Driver\Lan\82540EM

Available for the OS's below,

- Microsoft Windows 98 SE

- Microsoft Windows ME

- Microsoft Windows NT 4.0

- Microsoft Windows 2000

- Microsoft Windows XP

- Win dows NT Embedded 4.0

- Windows XP Embedded

- Linux

- NetWare_ Novell ODI

and more, on the driver CD-ROM.

USB Drivers /Utility

Path: \Driver\Usb\ICH4

Available for the OS's below,

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

Hardware Monitor Utility

Path: \Driver \OBS\MIC3318

Available for the OS's below,

- Microsoft Windows 2000
- Microsoft Windows XP

WatchDog Timer Driver

Path: \Driver\WDT\W8362x

Available for the OS's below,

- Microsoft Windows 2000
- Microsoft Windows XP

3.3 USB driver

If the manufacturer/vendor of a USB device recommends downloading an Intel USB driver update as part of troubleshooting your USB device, please contact Microsoft for USB driver support. Intel manufactures the host controller but the driver is from Microsoft. While you install the Intel INF driver, it will not install the USB driver. Please go to "device manager" to update the USB driver via the Advantech CD utility or via Microsoft's website.

Note: There are no separate USB (version 1.1 and earlier) drivers available to download for Intel chipsets.

3.4 Watchdog Timer (WDT) Driver

In order to ensure reliable and fail-safe performance, MIC-3318 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 Windows2000/XP operating systems. The following is a brief introduction, using Windows2000 as an example, for the installation and configuration procedures.

3.4.1 Installing the Driver for the MIC-3318 Watchdog Timer

Step 1. Insert the companion CD-ROM into your CD-ROM drive. Open the directory:\Driver\WDT\8362x\W2K_XP.

Step 2. Use Windows Explorer (or Windows Run command) to execute
SETUP.EXE from the companion CD-ROM.
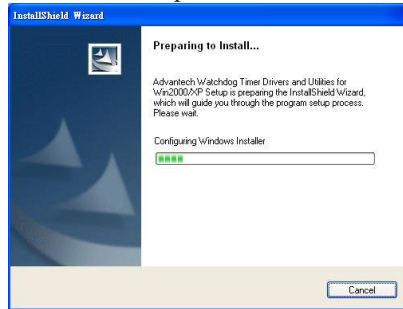
Step 3. Click Next to proceed.
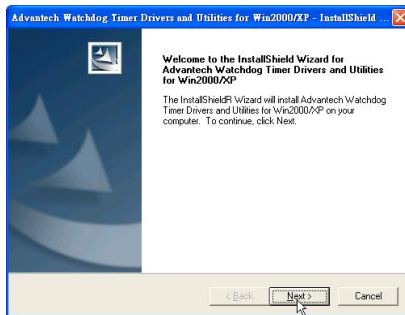
Step 4. Click Next to confirm the customer information.
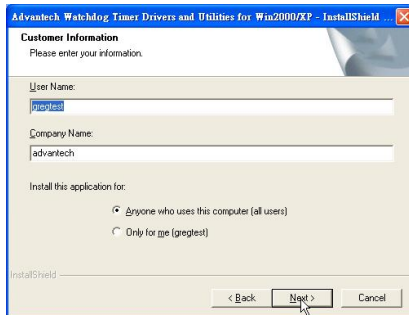
Step 5. Select Advantech [W83627HF] Watchdog Timer and click Next to proceed.
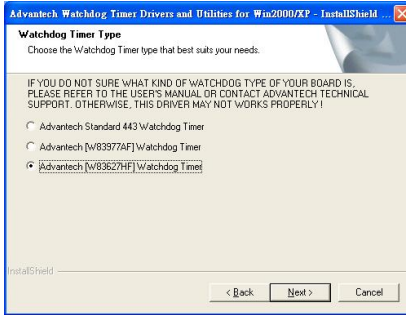
Step 6. Click Next to confirm selecting the Typical setup type.
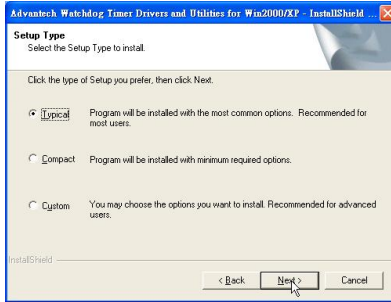
Step 7. Click Next to proceed.
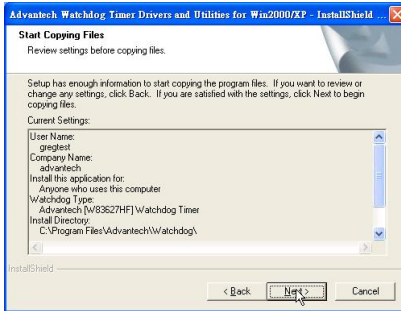
Step 8. Click Finish to complete the procedure.
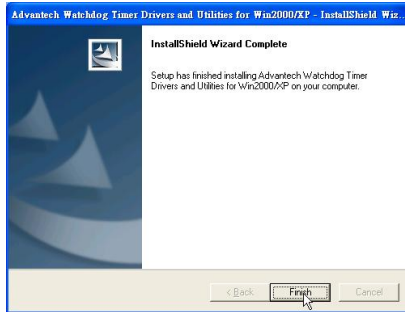
Step 9. Click OK to restart the system and activate the Watchdog Timer.

3.4.2 How to Use the MIC-3318 Watchdog Timer

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

Step 2. Click the Start Service button.
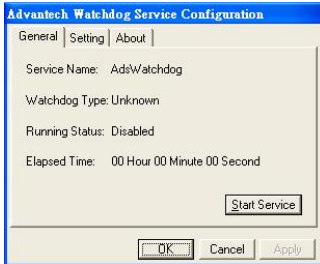
Step 3. Click Setting to select the setting page.
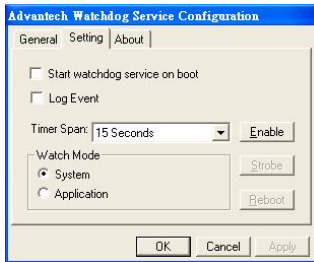
Step 4. Select the Timer Span that meets your application requirement.

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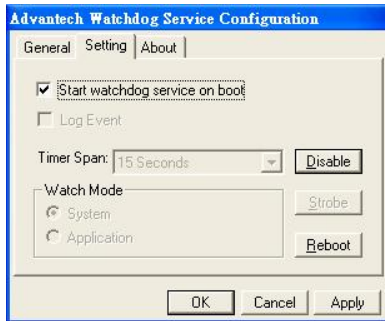
Step 7. Click OK, then the configuration procedure is finished.

Award BIOS Setup

4.1 Introduction

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu
(Figure 4-1) will appear on the 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.

```
              Phoenix - AwardBIOS CMOS Setup Utility

  ▶ Standard CMOS Features          ▶ PC Health Status

  ▶ Advanced BIOS Features             Load Optimized Defaults

  ▶ Advanced Chipset Features          Set Password

  ▶ Integrated Peripherals             Save & Exit Setup

  ▶ Power Management Setup             Exit Without Saving

  ▶ PnP/PCI Configurations


  Esc : Quit       F9 : Menu in BIOS      ↑ ↓ → ←   : Select Item
  F10 : Save & Exit Setup

                  Time, Date, Hard Disk Type...
```
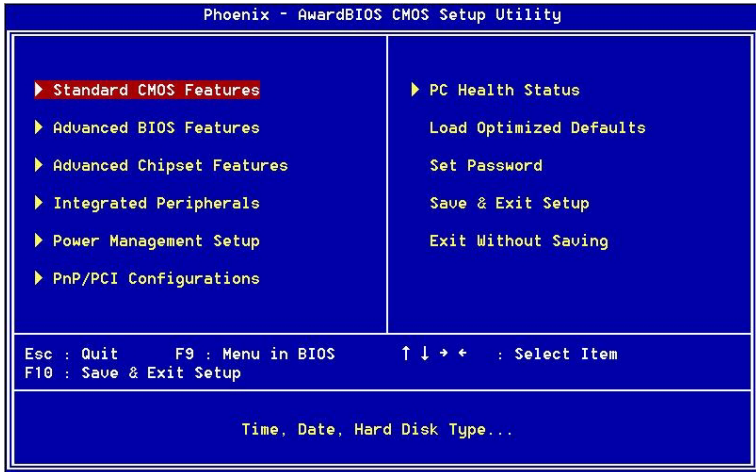
Figure 4-1: Initial screen of the setup program

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.

4.2 Entering Setup

Turn on the computer and check for the "patch code". If there is a number assigned to the patch code, it means that the BIOS supports your CPU. If there is no number assigned to the patch code, please contact Advantech's application engineer to obtain an up-to-date patch code file. This will ensure that your CPU's system status is valid. After ensuring that you have a number assigned to the patch code, press <DEL> and you will immediately be allowed to enter setup.

4.2.1 Standard CMOS Setup

The items in the Standard CMOS Setup Menu are divided into 11 categories. Each category includes none, one, or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

```
              Phoenix - AwardBIOS CMOS Setup Utility
                       Standard CMOS Features

    Date (mm:dd:yy)          Fri, Feb 20 2004        Item Help
    Time (hh:mm:ss)          14 :  0 : 14
                                                Menu Level    ▶
 ▶  IDE Primary Master      [ None]
 ▶  IDE Primary Slave                           Change the day, month,
 ▶  IDE Secondary Master                        year and century
 ▶  IDE Secondary Slave

    Video                   [EGA/VGA]
    Halt On                 [All , But Keyboard]

    Base Memory                  640K
    Extended Memory            65472K
    Total Memory                1024K


 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
            F5:Previous Values              F7: Optimized Defaults
```

Figure 4-2: Standard CMOS setup screen.

Primary Master/Primary Slave/Secondary Master/Secondary Slave
Press PgUp/<+> or PgDn/<-> to select Manual, None, 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 will appear after the BIOS
FEATURES SETUP item from the CMOS SETUP UTILITY menu was
chosen. This screen allows the user to configure the board according
to his particular requirements. Below are some major items that are
provided in the BIOS FEATURES SETUP screen:
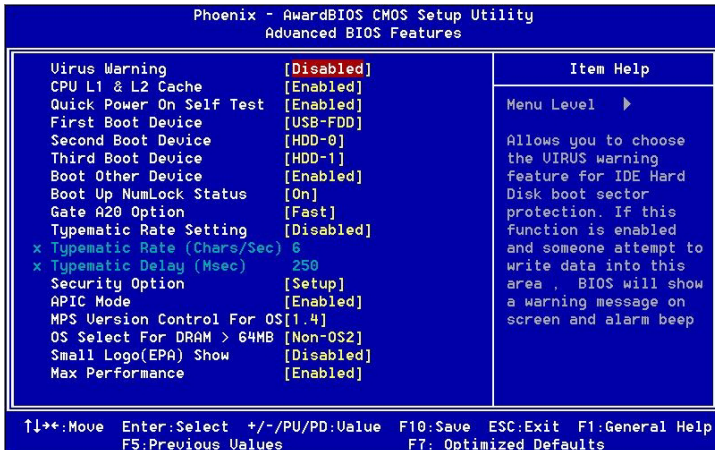
Figure 4-.3: Advanced BIOS features setup screen

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 & L2 Cache

Enabled (default)	Enable cache
Disabled	Disable cache

Note: The internal cache is built into the processor.

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power on the computer. If this is set to Enabled, BIOS will shorten or skip some check items during POST.

Enabled (default)	Enable quick POST
Disabled	Normal POST

First/Second/Third Boot Device and Boot Other Device
The BIOS attempts to load the operating system from the devices in
the sequence selected in these items. The settings are Floppy, LS120,
HDD-0, SCSI, CDROM, HDD-1, HDD-2, HDD-3, ZIP100, USB-FDD,
USB-ZIP, USB-CDROM, USB-HDD, LAN and Disabled.

Order	Default
First boot device	USB-FDD
Second boot device	HDD-0
Third boot device	HDD-1

PS: When you boot by USB CD-ROM, please install Win XP with SP1
or Win 2000 with SP3.

Boot Up NumLock Status
The default value is On.

On (default)	Keypad is numeric keys.
Off	Keypad is arrow keys.

Gate A20 Options

Normal	The A20 signal is controlled by keyboard controller or chipset hardware.
Fast (default) chipset	The A20 signal is controlled by port 92 or specific method.

Typematic Rate Setting
Key strokes repeat at a rate determined by the keyboard controller.
When enabled, the typematic rate and typematic delay can be selected.
The settings are: Enabled/Disabled. The default is Disabled.

Typematic Rate (Chars/Sec)
Set the number of times a second to repeat a keystroke when you hold
the key down. The settings are: 6, 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (Msec)
Sets the delay time after the key is held down before it begins to repeat
the keystroke. The settings are: 250, 500, 750, 1000.

Security Options
This category allows you to limit access to the system and Setup, or
just 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(default)	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

APIC Mode (Advanced Programmable Interrupt Controller)
Default is Enabled.

MPS Version Control for OS
The options include 1.1 and 1.4. Default is 1.4

OS Select For DRAM > 64MB
Allows OS2 to be used with > 64 MB of DRAM. Settings are Non-OS/2
(default) and OS2. Set to OS/2 if using more than 64MB and running
OS/2.

Small logo (EPA) show
Default is Disabled.

Max Performance
It is Pentium 4 M processor setting operation in 1.7 GHz or 1.2 GHz

Enabled (default)	CPU operation in 1.7 GHz
Disabled	CPU operation in 1.2 GHz

4.2.3 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.

```
         Phoenix - AwardBIOS CMOS Setup Utility
                 Advanced Chipset Features
┌─────────────────────────────────────┬──────────────────────┐
│ DRAM Timing Selectable    [By SPD]   │      Item Help       │
│ CAS Latency Time          [1.5]      │                      │
│ Active to Precharge Delay [7]        │  Menu Level   ▶      │
│ DRAM RAS# to CAS# Delay   [3]        │                      │
│ DRAM RAS# Precharge       [3]        │                      │
│ Turbo Mode                [Disabled] │                      │
│ Memory Frequency For      [Auto]     │                      │
│ System BIOS Cacheable     [Enabled]  │                      │
│ Video  BIOS Cacheable     [Disabled] │                      │
│ Memory Hole At 15M-16M    [Disabled] │                      │
│ Delayed Transaction       [Enabled]  │                      │
│ AGP Aperture Size (MB)    [64]       │                      │
│                                      │                      │
│ ** On-Chip UGA Setting **            │                      │
│ On-Chip Frame Buffer Size [8MB]      │                      │
│                                      │                      │
│                                      │                      │
├──────────────────────────────────────┴─────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│        F5:Previous Values          F7: Optimized Defaults    │
└─────────────────────────────────────────────────────────────┘
```

Figure 4-4: Advanced Chipset Features setup screen

DRAM Timing Configuration

This field lets you select system memory timing data. Manual and BY SPD are two options. Default is "BY SPD"

CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. The settings are: 1.5, 2 and 2.5.

Active to Precharge Delay

This field let you select the active to precharge delay. The settings are: 7, 6 and 5

DRAM RAS# to CAS# Delay

This field is used to insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. Fast gives faster performance; and Slow gives more stable performance. This field applies only when synchronous DRAM have been installed in the system. The settings are: 2 and 3.

DRAM RAS# Precharge

If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. Fast gives faster performance; and Slow gives more stable performance. This field applies only when synchronous DRAM is installed in the system. The settings are: 2 and 3.

Memory Frequency For

User can select 3 options: DDR200, DDR266, Auto (Default)

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 result. The settings are: Enabled (Default) and Disabled.

Video BIOS Cacheable

Select 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 result. The settings are: Enabled and Disabled (Default).

Memory Hole At 15M-16M

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements. The settings are: Enabled and Disabled (Default).

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 settings are: Enabled (Default) and Disabled.

AGP Aperture Size (MB)

Select the size of Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

On-Chip Frame Buffer Size
User can select the frame buffer size. Options are 8 MB and 1 MB.

4.2.4 Integrated Peripherals
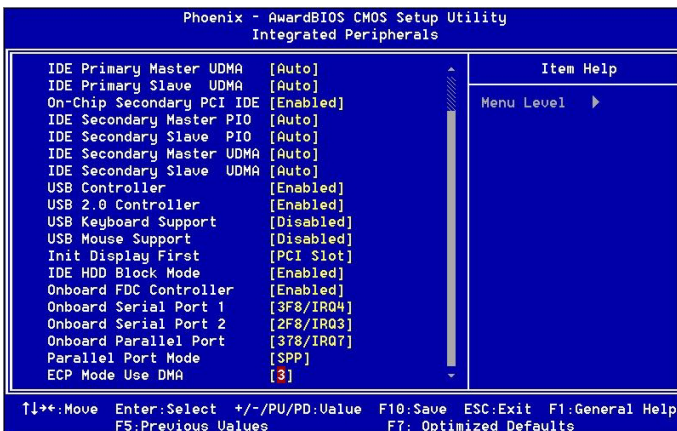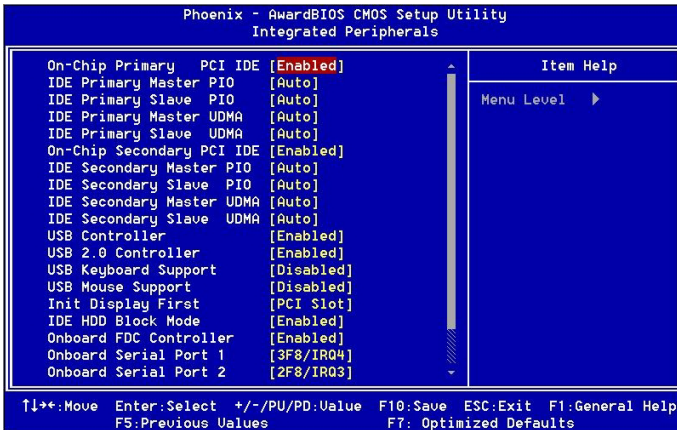
Figure 4-5: Integrated Peripherals setup screens

On-Chip Primary/Secondary PCI IDE
The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately. The settings are: Enabled (Default) and Disabled.

IDE Primary/Secondary Master/Slave PIO
The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device. The settings are: Auto (Default), Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary/Secondary Master/Slave UDMA
Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33 and Ultra DMA/66 and Ultra DMA/100, select Auto to enable BIOS support. The settings are: Auto (Default), Disabled.

USB Controller
Select Enabled if your system contains a Universal Serial Bus (USB) 1.1 controller. The settings are: Enabled (Default), Disabled.

USB 2.0 Controller
Select Enabled if your system contains a Universal Serial Bus (USB) 1.1/2.0 controller. The settings are: Enabled (Default), Disabled.

USB Keyboard/Mouse Support
Select Enabled if you use USB KB/Mouse in DOS mode. Disabled (Default)

Init Display First
User can choose display priority on either peripheral PCI slot or on board VGA chip. There are 2 options: PCI slot (Default) and On board.

IDE HDD Block Mode
Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support. The settings are: Enabled (Default), Disabled.

Onboard FDC Controller
Select Enabled if your system has a floppy disk controller (FDD) installed on the system board and you wish to use it. If you install add-on FDC or the system has no floppy drive, select Disabled in this field. The settings are: Enabled (Default) and Disabled.

Onboard Serial Port 1/Port 2
Select an address and corresponding interrupt for the first and second serial ports. The Serial Port 1 settings are: 3F8/IRQ4 (Default), 2E8/IRQ3, 3E8/IRQ4, 2F8/ IRQ3, Disabled, Auto.The Serial Port 2 settings are: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3 (Default), Disabled, Auto.

Onboard Parallel Port
There is a built-in parallel port on the onboard Super I/O chipset that provides Standard, ECP, and EPP features. It has the following options: Disabled, 3BCH/IRQ7 (Default), 278H/IRQ5 , 378H/IRQ7 and Disable

Parallel Port Mode

SPP (Default)	Standard Parallel Port
EPP1.9+SPP	Supports both the SPP and EPP1.9 modes
ECP	Extended Capability Port
EPP1.9+ECP	Supports both the ECP and EPP1.9 modes
Printer	Supports Printer modes
EPP1.7+SPP	Supports both the SPP and EPP1.7 modes
EPP1.7+ECP	Supports both the ECP and EPP1.7 modes

ECP Mode Use DMA
The options: 1 and 3 (Default)

4.2.5 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 own style of computer use.
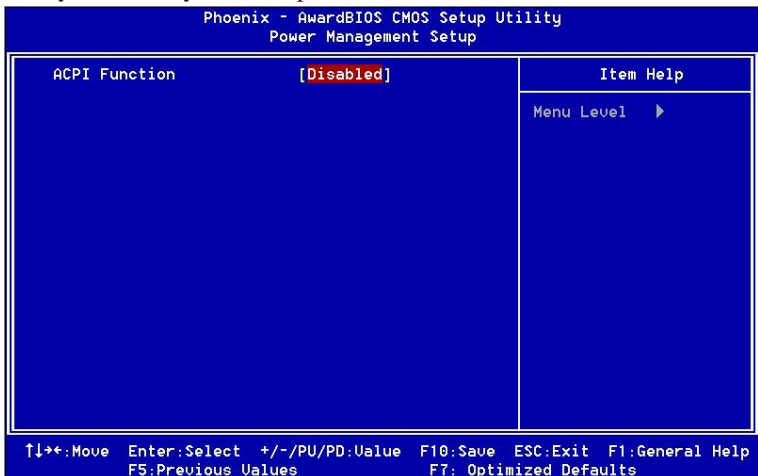
Figure 4-6: Power Management Setup screen

ACPI Function

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

4.2.6 PNP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or 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 make any changes to the default settings.

```
              Phoenix - AwardBIOS CMOS Setup Utility
                      PnP/PCI Configurations
┌────────────────────────────────────────┬─────────────────────────┐
│  Reset Configuration Data  [Disabled]   │        Item Help        │
│                                         ├─────────────────────────┤
│  Resources Controlled By   [Auto(ESCD)] │  Menu Level    ▶        │
│ x IRQ Resources              Press Enter │                        │
│ x DMA Resources              Press Enter │  Default is Disabled.   │
│                                         │  Select Enabled to      │
│  PCI/VGA Palette Snoop      [Disabled]  │  reset Extended System  │
│                                         │  Configuration Data     │
│                                         │  ESCD) when you exit    │
│                                         │  Setup if you have      │
│                                         │  installed a new add-on │
│                                         │  and the system         │
│                                         │  reconfiguration has    │
│                                         │  caused such a serious  │
│                                         │  conflict that the OS   │
│                                         │  cannot boot            │
│                                         │                         │
│                                         │                         │
├─────────────────────────────────────────┴─────────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│            F5:Previous Values              F7: Optimized Defaults   │
└───────────────────────────────────────────────────────────────────┘
```

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 if you have installed a new add-on 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 and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play 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.

PCI/VGA Palette Snoop

Leave this field at Disabled. The settings are Enabled, Disabled (Default).

4.2.7 PC Health Status

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

```
        Phoenix - AwardBIOS CMOS Setup Utility
                   PC Health Status
┌─────────────────────────────────────┬───────────────────┐
│ Current CPU Temperature              │     Item Help     │
│ Ucore                                │                   │
│ Utt                                  │ Menu Level   ▶    │
│ + 3.3 U                              │                   │
│ + 5 U                                │                   │
│                                      │                   │
│                                      │                   │
│                                      │                   │
│                                      │                   │
│                                      │                   │
│                                      │                   │
│                                      │                   │
│                                      │                   │
└─────────────────────────────────────┴───────────────────┘
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Ualue  F10:Save  ESC:Exit  F1:General Help
            F5:Previous Ualues              F7: Optimized Defaults
```
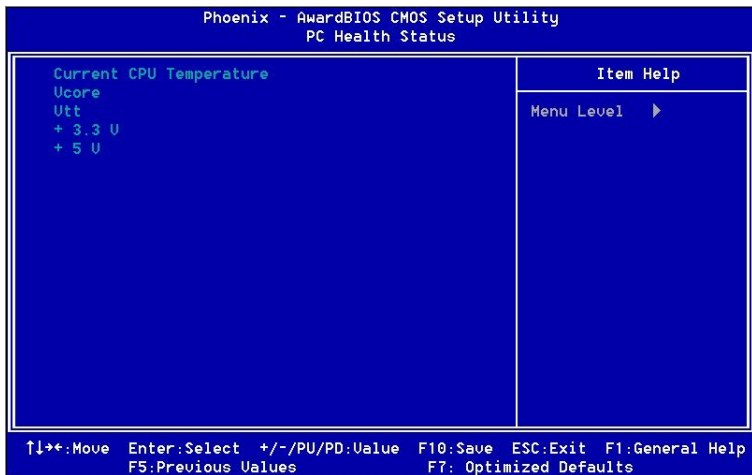
Figure 4-8: PC Health Status setup screen

Current CPU Temp./ Vcpu-core/Vtt/+3.3V/+5V (V)
This shows system health status.

4.2.8 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.

4.2.9 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 Advanced BIOS Features Setup to be either "Setup" or "System." Pressing [Enter] again without typing any characters can disable the password setting function.

4.2.10 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.

4.2.11 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 Overview

The MIC-3318'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).
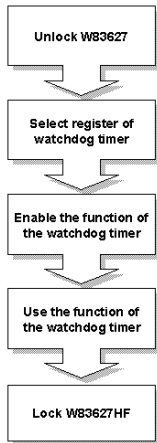
Figure A-1: Procedure of programming the watchdog timer

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 time-out 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

;--------------------------------------------------------
```

```asm
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
```

Pin Assignments

B.1 PS/2 Keyboard and Mouse Port (1F-CN1)
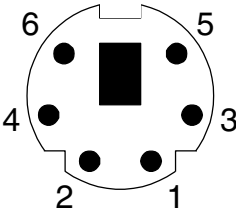
Table B-1: PS/2 keyboard and mouse port pin definitions

Pin	Signal
1	KB DATA
2	MS DATA
3	GND
4	VCC
5	KB CLOCK
6	MC CLOCK

B.2 CompactFlash Interface (1F-CN2)

Table B-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#1	32	PDCS#3
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#1
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

B.3 DB-15 VGA Port (1F-CN7)

```
     5    ○ ○ ○ ○ ○     1
    10   ○ ○ ○ ○ ○     6
    15    ○ ○ ○ ○ ○    11
```
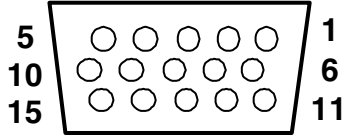
Table B-3: VGA port pin definitions

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

B.4 USB 1.1/2.0 Ports (1F-CN15 AND 1F-CN16)
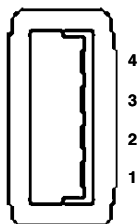
Table B-4: USB 1.1/2.0 ports pin definitions

Pin	Signal
1	+5V
2	USB_P-
3	USB_P+
4	GND

B.5 COMport (2F-CN3, 2F-CN5, 2F-CN4,2F-CN6)

```
  1  2  3  4  5
  ○  ○  ○  ○  ○
    ○  ○  ○  ○
    6  7  8  9
```
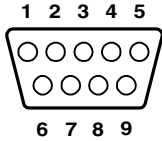
For front panel (2F-CN3 ,2F-CN5)

```
  6        9
  ○  ○  ○  ○
  ■  ○  ○  ○  ○
  1        5
```
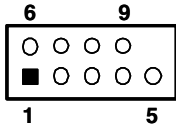
For external connection to 3F (2F-CN4, 2F-CN6)

Table B-5: 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		

B.6 Parallel Port (2F-CN7,2F-CN8)
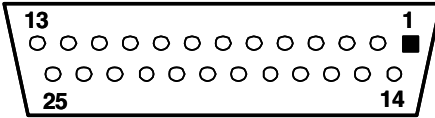
For front panel (2F-CN7)
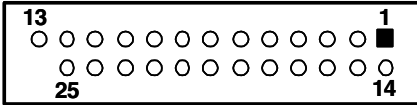
For external connection to 3F(2F-CN8)

Table B-6: Parallel port pin definitions

Pin	Signal	Pin	Signal
1	STROBE*	14	AUTOFD*
2	D0	15	ERR
3	D1	16	INIT*
4	D2	17	SLCTINIT*
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	26	N/C

* low active

B.7 Secondary IDE Connector for 2.5" HDD (2F-CN9, 2F-CN17)

```
1   3                                           41 43
┌─────────────────────────────────────────────┐
│ □ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ │
│ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ │
└─────────────────────────────────────────────┘
2   4                                           42 44
```
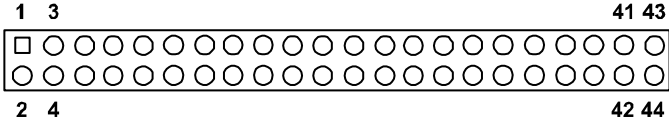
For direct installation (2F-CN9)

```
2   4                                           42 44
┌─────────────────────────────────────────────┐
│ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ │
│ □ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ │
└─────────────────────────────────────────────┘
1   3                                           41 43
```
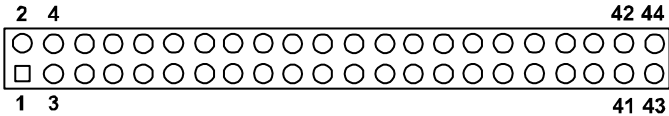
For wiring out (2F-CN17)

Table B-7: 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

B.8 Gigabit LAN Port (2F-RJ1,2F-RJ2)

Table B-8: Gigabit LAN port pin definitions

Pin	Signal
1	MDIAX1+
2	MDIAX1-
3	MDIAX2+
4	MDIAX3+
5	MDIAX3-
6	MDIAX2-
7	MDIAX4+
8	MDIAX4-
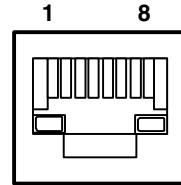
Table B-9: LED indicator status

Mode	Left	Right
10Mbps	Off	Flick active/link mode
100Mbps	Green	Flick active/link mode
1000Mbps	Orange	Flick active/link mode

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