



NEX732L Series

User Manual

Copyright

This publication, including all photographs, illustrations and software, is protected under international copyright laws, with all rights reserved. No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written consent from NEXCOM International Co., Ltd.

Version 1.0

Copyright 2004

Disclaimer

The information in this document is subject to change without prior notice and does not represent commitment from NEXCOM International Co., LTD. However, users may update their knowledge of any product in use by constantly checking its manual posted on our website: <http://www.nexcom.com>. NEXCOM shall not be liable for direct, indirect, special, incidental, or consequential damages arising out of the use of any product, nor for any infringements upon the rights of third parties, which may result from such use. Any implied warranties of merchantability of fitness for any particular purpose is also disclaimed.

Acknowledgements

NEX732L2G is a trademark of NEXCOM international CO., LTD. All other product names mentioned herein are registered trademarks of their respective owners.

Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

FEDERAL COMMUNICATIONS COMMISSION (FCC) FOR CLASS A DEVICES

This equipment has been tested and verified to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

CE CERTIFICATION

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

WARNINGS

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

CAUTION

Electrostatic discharge (ESD) can damage NEX components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

Safety Information

Before installing and using the NEX732L series, note the following precautions:

- ◆ Read all instructions carefully.
- ◆ Do not place the unit on an unstable surface, cart, or stand.
- ◆ Follow all warnings and cautions in this manual.
- ◆ When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- ◆ Avoid using the system near water, in direct sunlight, or near a hearing device.

Table of Contents

| | |
|---|----|
| Preface | 1 |
| Copyright | 1 |
| Disclaimer | 1 |
| Acknowledgements | 1 |
| Regulatory Compliance Statements | 1 |
| FEDERAL COMMUNICATIONS COMMISSION (FCC) FOR CLASS A DEVICES | 1 |
| CE CERTIFICATION | 1 |
| WARNINGS | 2 |
| CAUTION | 2 |
| Safety Information | 2 |
| Table of Contents | 3 |
| Chapter 1 General Information | 5 |
| 1.1 Feature | 6 |
| 1.2 Specifications..... | 6 |
| 1.3 Board Layout | 10 |
| 1.4 Board Dimensions | 11 |
| Chapter 2 Jumper Setting | 12 |
| 2.1 Before You Begin | 13 |
| 2.2 Precautions..... | 13 |
| 2.3 Setting Jumpers | 14 |
| 2.4 Location of Jumpers | 16 |
| 2.5 Function of Jumpers | 16 |
| 2.6 Pin Definitions of Connectors..... | 18 |
| Chapter 3 Expansion Capabilities | 25 |
| 3.1 System Memory | 26 |
| 3.2 Installing DIMM | 27 |
| Chapter 4 Award BIOS Setup | 29 |
| 4.1 About the BIOS | 30 |
| 4.2 When to Run BIOS | 30 |
| 4.3 Entering Setup | 31 |
| 4.4 The Main Menu | 31 |
| 4.5 Getting Help | 32 |
| 4.6 Control Keys | 33 |
| 4.7 Standard CMOS Features | 34 |
| 4.8 Advanced BIOS Features | 37 |
| 4.9 Advanced Chipset Features | 40 |

| | |
|---|-----------|
| 4.10 Integrated Peripherals | 42 |
| 4.11 Power Management Setup | 48 |
| 4.12 PnP/PCI Configurations | 50 |
| 4.13 PC Health Status | 51 |
| 4.14 Load Fail-Safe Defaults | 52 |
| 4.15 Load Optimized Defaults | 53 |
| 4.16 Set Supervisor/User Password | 53 |
| 4.17 Save & Exit Setup | 54 |
| 4.18 Exit Without Saving | 54 |
| Chapter 5 Driver Installation | 55 |
| 5.1 Installation CD | 56 |
| 5.2 Installing Drivers for NEX732L series | 56 |
| 5.3 Installing Intel Chipset | 57 |
| 5.4 Installing Audio Driver | 58 |
| 5.5 Installing the On-Board LAN Driver | 60 |
| Appendix A Watchdog Timer | 61 |
| A.1 Watchdog Timer Working Procedure | 62 |
| A.2 Watchdog Timer Control Register | 63 |
| A.3 Watchdog Timer Programming Procedure | 63 |
| Appendix B GPI/O Programming..... | 65 |
| Appendix C Reflash BIOS Procedure..... | 68 |

Chapter 1

General Information

1.1 Features

The NEX732L2G is a member of NEXCOM's Pentium 4 based Embedded CPU Board computer family. The features of this series are as follows:

- ◆ **Intel® Pentium® 4 Processor** with 400/533/800MHz FSB, CPU speed up to 3.06GHz or above
- ◆ Max. 4GB dual channel DDR 266/333/400 SDRAM memory support, DIMM ×4
- ◆ **Intel® 875P/6300ESB** Chipsets
- ◆ On board AGP slot x1, PCI-X slot x3, PCI slot x3
- ◆ Standard ATX form factor

1.2 Specifications

System Architecture

- ◆ Standard ATX form factor with single Intel® Pentium® 4 processor support

CPU Support

- ◆ Single mPGA478 ZIF socket
- ◆ **Intel® Pentium® 4 Processor with Hyper-Threading Technology support**
 - * 800MHz system bus: up to 3E GHz, 1M L2 Cache
 - * 533MHz system bus: up to 3.06GHz, 512KB L2 Cache
- ◆ **Intel® Pentium® 4 Processor:**
 - * 533MHz system bus: up to 2.80GHz, 512KB L2 Cache
 - * 400MHz system bus: up to 2.60GHz, 512KB L2 Cache

Main Memory

- ◆ 184-pin DDR DIMM x4, support max. memory up to 4GB (DDR266/333/400)
- ◆ Available bandwidth up to 3.2Gbytes/s (DDR400) for single-channel mode and 6.4 Gbytes/s (DDR400) in dual-channel mode.
- ◆ Supports unbuffered/ECC DIMMs only

BIOS

- ◆ Award System BIOS
- ◆ Plug & Play support
- ◆ Advanced Power Management support
- ◆ Advanced Configuration & Power Interface support
- ◆ Jumperless for CPU FSB
- ◆ 4M bits flash ROM

Chipset

- ◆ **Intel® 875P/6300 ESB Chipsets**
- ◆ Firmware Hub (FWH) 4M bits flash ROM x1
- ◆ PCI V2.2 compliant

Onboard LAN

- ◆ Intel® 82551QM 10/100 Ethernet controller x 1 (co-layout with Intel® 82541GI Gigabit Ethernet controller)
- ◆ Optional Intel® 82547GI Gigabit Ethernet controller x1 (dedicated by CSA port directly from the **Intel® 875P**)
- ◆ Compliant with PCI V2.1/2.2. IEEE 802.3, IEEE 802.3u, IEEE 802.3x, IEEE 802.3ab
- ◆ Drivers support: Windows® XP/2000/ME, Linux
- ◆ RJ45 with LED connector x 2
- ◆ 4 x pin header for extended LAN (With LED)

Onboard I/O

- ◆ Winbond W83627HF super I/O on board on board
- ◆ SIO x 4, DB9 x 2, 10-pin header x 2,
- ◆ PIO x 1, Bi-directional, EPP/ECP support, DB25 x 1
- ◆ Floppy Disk controller: 3.5" 1.44MB/2.88MB support, 34 pin connector x 1
- ◆ On chip enhanced IDE x 2, PIO up to mode 4, Ultra ATA33/66/100 support, total 4 E.IDE Devices support, 40 pin connector x 2
- ◆ PS/2 keyboard/mouse Mini-Din connector x 2
- ◆ GPIO (4 in 4 out) Pin Header
- ◆ On board USB 2.0 port x 4
- ◆ On board buzzer x 1
- ◆ 2-pin power on button switch
- ◆ On board 4 pin header for SM bus (I²C)
- ◆ On board 2 pin header for reset SW, 4 pin for speaker, 5 pin for keylock and power LED, 2-pin for IDE HDD LED
- ◆ SATA connector x 2; data transfer bandwidth up to 150MB/s, RAID 0&1 supported for 2HDD.
- ◆ Optional NS87431 IPMI Controller (optional feature by request and min. order q'ty required)

Onboard Audio

- ◆ Support 5.1 channel audio codec with ALC655 (AC'97 codec)
- ◆ Phone Jack: Line in x 1, Lin out x 1, Mic in x 1
- ◆ Pin Header: Video-in x 1, CD-in x 1, Aux-in x 1

Onboard Slot

- ◆ Total 7 slots, include AGP slot x 1, 64bit/66MHz PCI-X slot x 3, 32bit/33MHz PCI x 3

On Board RTC

- ◆ On-chip real time clock with battery back up

IDE interface Disk On Module support

- ◆ On board reserved power pin for DOM (DiskOnModule)

System Monitor

- ◆ System monitor controller derived from Winbond W83627HF super I/O
- ◆ 7 voltage (For +3.3V, +5V, +12V, -12V, Vcore, +2.5V, +5VSTBY)
- ◆ 3 Fan speed (For CPU)
- ◆ 2 temperature (For CPU)

Power Input

- ◆ ATX power connector x 1

Back Panel

- ◆ PS2 connector x 2 (for Keyboard/Mouse)
- ◆ USB 2.0 port x 4
- ◆ RJ45 with LED connector x 2 (for LAN)
- ◆ 9 pin D-type connector x 2 (for SIO)
- ◆ 25 pin D-type connector x 1 (for PIO)
- ◆ Standard Audio connector (Line out, Line in, Mic in)

Watchdog Timer

- ◆ 1~128 seconds time-out intervals

Dimensions

- ◆ ATX form factor: 305mm(L) x 244mm(W) (12" x 9.6")

Power Requirements

- ◆ +3.3V: 3A
- ◆ +5V: 12A
- ◆ +12V: 14A for Pentium® 4 processor with HT support and 11A for Pentium® 4 processor or 11A for Northwood P4
- ◆ 5VSTBY: 1.3A

Environments

- ◆ Operating temperatures: 0°C to 60°C
- ◆ Storage temperatures: -20°C to 80°C
- ◆ Relative humidity: 10% to 90% (Non-condensing)

Certification

- ◆ CE
- ◆ FCC

Ordering Information:

- ◆ NEX 732L2G:
ATX Socket 478 Intel® Pentium® 4 Processor Server Board with 10/100 LAN x 1 (Intel® 82551QM) + Gigabit LAN x 1 (by CSA)
- ◆ NEX 732L2G2: (min. order requirement: 50 pcs)
ATX Socket 478 Intel® Pentium® 4 Processor Server Board with Gigabit LAN x 1 (Intel® 82541GI) + Gigabit LAN x 1 (by CSA)

1.3 Board Layout

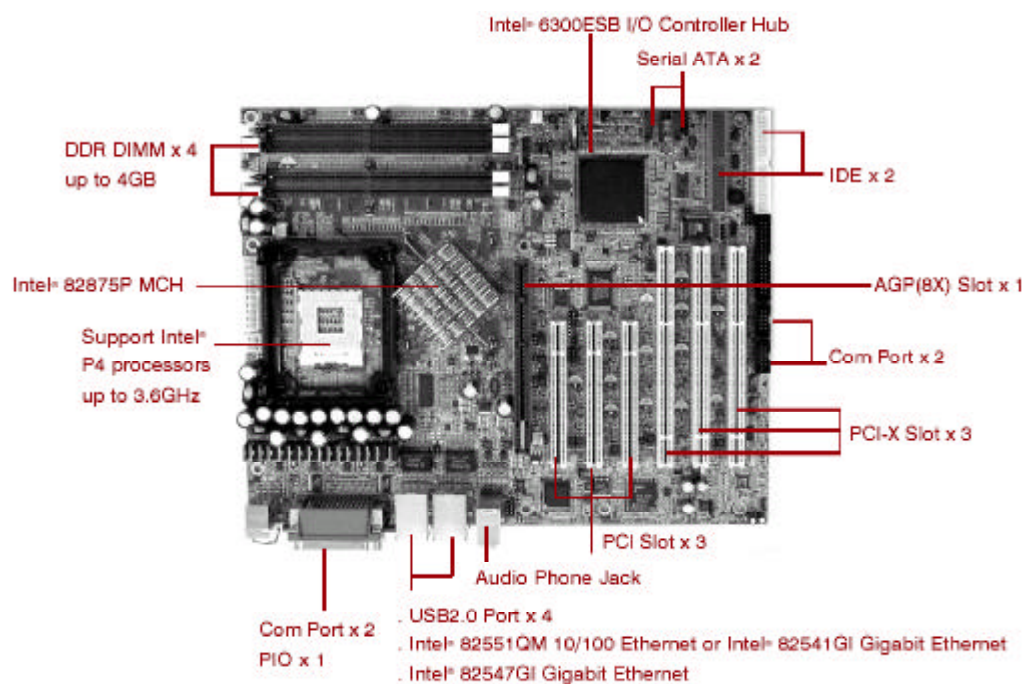


Figure 1.1 : Birdeye's View of NEX732L2G

1.4 Board Dimensions

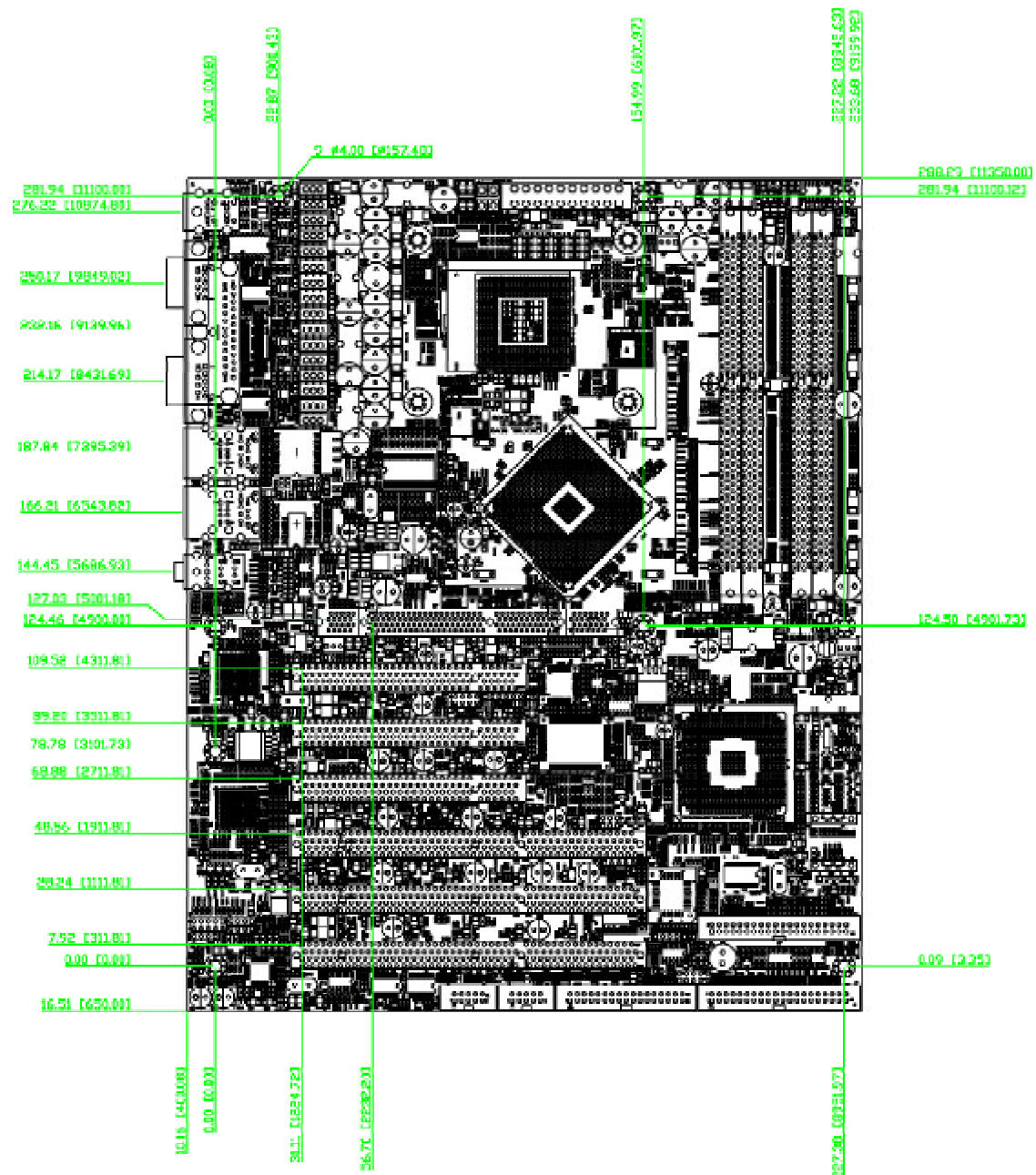


Figure 1.2 : Board Dimensions

Chapter 2

Jumper Setting

This chapter of the User's Manual describes how to set jumpers.

Note: The procedures that follow are generic for all of the NEX732L series.

2.1 Before You Begin

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- ◆ A Philips screwdriver
- ◆ A flat-tipped screwdriver
- ◆ A set of jewelers Screwdrivers
- ◆ A grounding strap
- ◆ An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environment tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

2.2 Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on the computers that are still connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to your computer or yourself:

- ◆ Always disconnect the unit from the power outlet whenever you are working inside the case.
- ◆ If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- ◆ Hold electronic circuit boards (such as the NEX732L board) by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- ◆ Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- ◆ Use correct screws and do not over tighten screws.

2.3 Setting Jumpers

A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is **SHORT**. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is **OPEN**. Please see the following illustrations

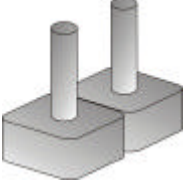
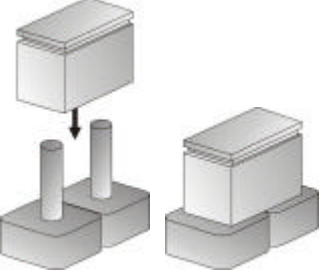
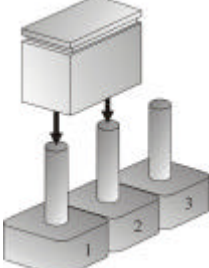
| | | |
|--|--|---|
| <p>The illustrations on the right show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.</p> |  |  |
| <p>These illustrations show a 3-pin jumper. Pins 1 and 2 are SHORT.</p> |  | |

Table 2-1 : Setting Jumpers

Switch setting table(*:default setup)

COM Port Type Select

| SW1 | 1-20 | 2-19 | 3-18 | 4-17 | 5-16 | 6-15 | 7-14 | 8-13 | 9-12 | 10-11 |
|---------------------|------|------|------|------|------|------|------|------|------|-------|
| *RS232 | OFF | OFF | OFF | ON | OFF | ON | OFF | OFF | OFF | OFF |
| RS422 (optional) | OFF | ON | ON | OFF | ON | OFF | ON | ON | ON | ON |
| RS485 (optional) | ON | ON | OFF | ON | ON | OFF | OFF | OFF | OFF | ON |

RTC Clear

| | NORMAL | Clear CMOS |
|------|--------|------------|
| JP11 | *1-2 | 2-3 |

PCI-X Clock Select

| | *PCI-X 66 | PCI 66 | PCI 33 |
|------|-----------|--------|--------|
| JP7 | *ON | OFF | ON |
| JP14 | *OFF | ON | ON |

Device Select

| | JP12 |
|----------------------------------|------|
| ON Board LAN 82551/82541 Enable | *ON |
| ON Board LAN 82551/82541 Disable | OFF |

2.4 Location of Jumpers

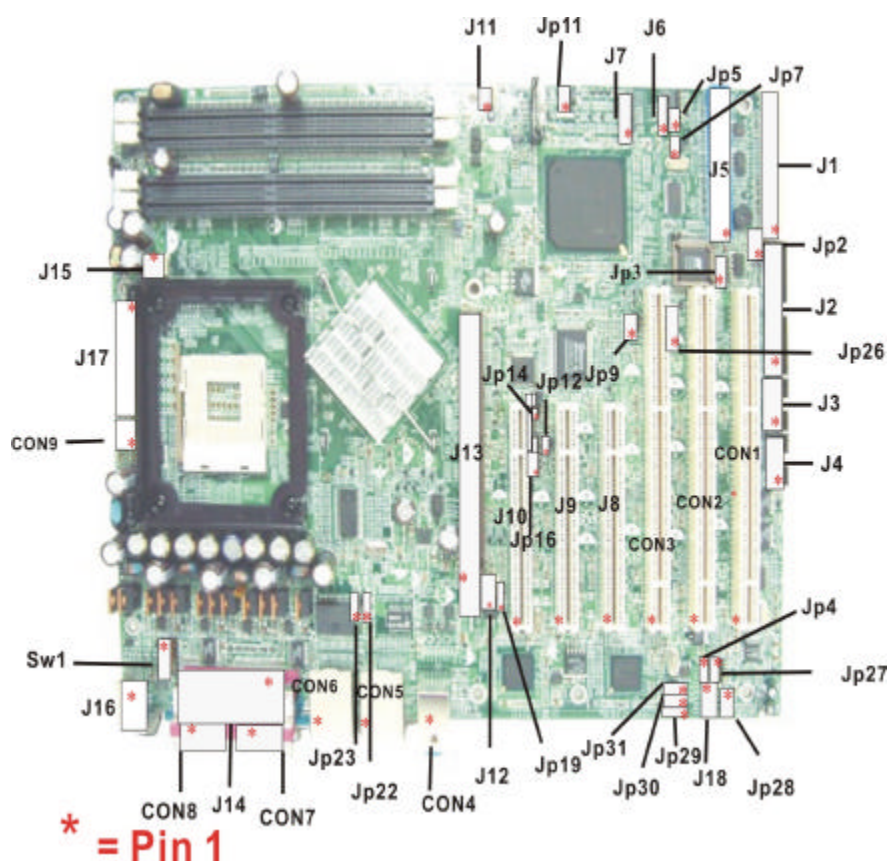


Figure 2-1 : Jumper Location

2.5 Function of Jumpers

User can use jumpers to set configuration options. The table below defines function of each jumper:

| Connector | Function |
|-----------|---------------|
| J1 | Secondary IDE |
| J2 | Floppy |
| J3 | COM4 |
| J4 | COM3 |
| J5 | Primary IDE |
| J6 | SATA 1 |
| J7 | SATA 0 |
| J8 | PCI 33 SLOT |
| J9 | PCI 33 SLOT |
| J10 | PCI 33 SLOT |

| | |
|-------------|--------------------------------------|
| J11 | SYSTEM FAN |
| J12 | SYSTEM FAN |
| J13 | AGP 8X SLOT |
| J14 | PIO |
| J15 | CPU FAN |
| J16 | Key board + mouse connector |
| J17 | ATX Connector |
| J18 | Front Audio Connector |
| JP2 | System Panel Connector |
| JP3 | Speaker |
| JP4 | CD In |
| JP5 | SMBUS |
| JP9 | IR |
| JP16 | GPIO |
| JP19 | 82547 LAN SPEED 100 LED |
| JP22 | 82547 LAN ACT/LINK LED |
| JP23 | 82547 LAN SPEED 1000 LED |
| JP26 | Keylock |
| JP27 | Video In |
| JP28 | AUX In |
| JP29 | 82551/82541 LAN SPEED 100 LED |
| JP30 | 82541 LAN SPEED 1000 LED |
| JP31 | 82551/82541 ACT/LINK LED |
| CON1 | PCI-X SLOT |
| CON2 | PCI-X SLOT |
| CON3 | PCI-X SLOT |
| CON4 | AC'97 Phone Jack |

| Connector | Function |
|-----------|-------------------------------------|
| CON5 | USB 2/3 & LAN 82551/82541 Connector |
| CON6 | USB 0/1 & LAN 82547 Connector |
| CON7 | COM1 |
| CON8 | COM2 |
| CON9 | AUX +12V Power Connector |

2.6 Pin definitions of connectors

J1/J5 : Secondary IDE/ Primary IDE Connector

| Pin | Definition | Pin | Definition |
|-----|-------------------------|-----|------------------------|
| 1 | Reset | 2 | Ground |
| 3 | Data 7 | 4 | Data 8 |
| 5 | Data 6 | 6 | Data 9 |
| 7 | Data 5 | 8 | Data 10 |
| 9 | Data 4 | 10 | Data 11 |
| 11 | Data 3 | 12 | Data 12 |
| 13 | Data 2 | 14 | Data 13 |
| 15 | Data 1 | 16 | Data 14 |
| 17 | Data 0 | 18 | Data 15 |
| 19 | Ground | 20 | NC |
| 21 | Device DMA Request | 22 | Ground |
| 23 | Disk I/O Write# | 24 | Ground |
| 25 | Disk I/O Read# | 26 | Ground |
| 27 | I/O Channel Ready | 28 | Ground |
| 29 | Device DMA Acknowledge# | 30 | Ground |
| 31 | Device Interrupt | 32 | NC |
| 33 | Device Address1 | 34 | DMA66 Detect |
| 35 | Device Address0 | 36 | Device Address2 |
| 37 | Device Chip Selects 1# | 38 | Device Chip Selects 3# |
| 39 | HDD Active LED | 40 | Ground |

J2 : Floppy Connector

| Pin | Definition | Pin | Definition |
|-----|------------|-----|----------------------------------|
| 1 | Ground | 2 | Drive Density Select 0 |
| 3 | Ground | 4 | NC |
| 5 | Ground | 6 | NC |
| 7 | Ground | 8 | INDEX# |
| 9 | Ground | 10 | Motor A On# |
| 11 | Ground | 12 | Drive Select B# |
| 13 | Ground | 14 | Drive Select A# |
| 15 | Ground | 16 | Motor B On# |
| 17 | Ground | 18 | Direction of the headstep motor# |
| 19 | Ground | 20 | Step output pulse# |
| 21 | Ground | 22 | Write Data # |
| 23 | Ground | 24 | Write enable# |
| 25 | Ground | 26 | Track 0 # |
| 27 | Ground | 28 | Write Protect # |
| 29 | Ground | 30 | Read Data # |
| 31 | Ground | 32 | Head Select # |
| 33 | Ground | 34 | Diskette change # |

J3/J4: COM3/COM4 Connector

| Pin | Definition | Pin | Definition |
|-----|---------------------------|-----|---------------------------|
| 1 | Data Carrier Detect (DCD) | 2 | Serial Input |
| 3 | Serial Output | 4 | Data Terminal Ready (DTR) |
| 5 | Chassis Ground | 6 | Data Set Ready (DSR) |
| 7 | Request to send (RTS) | 8 | Clear to Send (CTS) |
| 9 | Ring Indicator (RI) | 10 | Chassis Ground |

J6/J7 : SATA1/ SATA0 Connector

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | Ground | 2 | SATA TXP |
| 4 | Ground | 3 | SATA TXN |
| 7 | Ground | 5 | SATA RXN |
| | | 6 | SATA RXP |

J11/J12/J15 : SYSTEM FAN & CPU FAN Connector

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | Ground | 2 | +12V |
| 3 | SENSE | | |

J14 : PIO

| Pin | Definition | Pin | Definition |
|-----|-------------------|-----|--------------|
| 1 | Line Print Strobe | 14 | Auto Feed # |
| 2 | Parallel Data 0 | 15 | Error # |
| 3 | Parallel Data 1 | 16 | Initialize |
| 4 | Parallel Data 2 | 17 | Select input |
| 5 | Parallel Data 3 | 18 | Ground |
| 6 | Parallel Data 4 | 19 | Ground |
| 7 | Parallel Data 5 | 20 | Ground |
| 8 | Parallel Data 6 | 21 | Ground |
| 9 | Parallel Data 7 | 22 | Ground |
| 10 | Acknowledge | 23 | Ground |
| 11 | Busy | 24 | Ground |
| 12 | Paper Empty | 25 | Ground |
| 13 | Select | 26 | Ground |

J16 : Keyboard + mouse connector

| Pin | Definition | Pin | Definition |
|-----|---------------|-----|-------------|
| 1 | Keyboard Data | 11 | Mouse Clock |
| 2 | NC | 12 | NC |
| 3 | Ground | 13 | Ground |
| 4 | +5V Standby | 14 | Ground |
| 5 | Keyboard Data | 15 | Ground |
| 6 | NC | 16 | Ground |
| 7 | Mouse Clock | 17 | Ground |
| 8 | NC | | |
| 9 | Ground | | |
| 10 | +5V Standby | | |

J17 : ATX Connector

| Pin | Definition | Pin | Definition |
|-----|-------------|-----|------------|
| 1 | +3.3V | 11 | +3.3V |
| 2 | +3.3V | 12 | -12Vn |
| 3 | Ground | 13 | Ground |
| 4 | +5V | 14 | |
| 5 | Ground | 15 | Ground |
| 6 | +5V | 16 | Ground |
| 7 | Ground | 17 | Ground |
| 8 | | 18 | -5V |
| 9 | +5V Standby | 19 | +5V |
| 10 | +12V | 20 | +5V |

J18 : Front Audio Connector

| Pin | Definition | Pin | Definition |
|-----|----------------------|-----|---------------------|
| 1 | Front Microphone | 6 | Front Line In Right |
| 2 | Analog Ground | 7 | NC |
| 3 | +5V | 8 | NC |
| 4 | +5V | 9 | Front Line Out Left |
| 5 | Front Line Out Right | 10 | Front Line In Left |

Power On

JP2 : System Panel Connector

| Pin | Definition |
|-----|------------|
| 1 | +5V |
| 2 | +5V |
| 3 | IDE_LED |
| 4 | Ground |
| 5 | Ground |
| 6 | Power On |
| 7 | RESET |
| 8 | Ground |
| 9 | NC |
| 10 | NC |

| Function | Location |
|-----------|----------|
| IED LED | 1-3 PIN |
| POWER LED | 2-4 PIN |
| Power On | 5-6 PIN |
| RESET | 7-8 PIN |

JP3 : Speaker

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | Speaker | 2 | Ground |
| 3 | Ground | 4 | +5V |

JP4 : CD In

| Pin | Definition | Pin | Definition |
|-----|------------|-----|---------------|
| 1 | CD In Left | 2 | Analog Ground |
| 3 | Ground | 4 | CD In Right |

JP5 : SMBUS

| Pin | Definition | Pin | Definition |
|-----|---------------|-----|-------------|
| 1 | +3.3V Standby | 2 | SM Bus Data |
| 3 | SM Bus Clock | 4 | Ground |

JP9 : IR

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | CIRRX | 2 | NC |
| 3 | +5V | 4 | Ground |
| 5 | IRTX | 6 | IRRX |

JP16 : GPIO

| Pin | Definition | Pin | Definition |
|-----|----------------------------|-----|-------------------------------|
| 1 | Data IN1(SI0-GP10→Pin128) | 2 | Data Out 1 (SI0-GP14→Pin124) |
| 3 | Data IN2(SI0-GP11→Pin127) | 4 | Data Out 2 (SI0-GP15→Pin123) |
| 5 | Data IN3(SI0-GP12→Pin126) | 6 | Data Out 3 (SI0-GP16→Pin122) |
| 7 | Data IN4(SI0-GP13→Pin125) | 8 | Data Out 4 (SI0-GP17→Pin121) |

JP19 : 82747 LAN SPEED 100 LED

| Pin | Definition | Pin | Definition |
|-----|---------------|-----|------------|
| 1 | +3.3V Standby | 2 | LINK100 |

JP22 : 82747 LAN ACT/LINK LED

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | LINK | 2 | ACTIVITY |

JP23 : 82747 LAN SPEED 1000 LED

| Pin | Definition | Pin | Definition |
|-----|---------------|-----|------------|
| 1 | +3.3V Standby | 2 | LINK1000 |

JP26 : Keylock

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | +5V | 2 | NC |
| 3 | Ground | 4 | KEYLOCK |
| 5 | Ground | | |

JP27 : Video In

| Pin | Definition | Pin | Definition |
|-----|---------------|-----|---------------|
| 1 | Video Left | 2 | Analog Ground |
| 3 | Analog Ground | 4 | Video Right |

JP28 : AUX In

| Pin | Definition | Pin | Definition |
|-----|---------------|-----|---------------|
| 1 | Aux Left | 2 | Analog Ground |
| 3 | Analog Ground | 4 | Aux Right |

JP29 : 82551/82541 LAN SPEED 100 LED

| Pin | Definition | Pin | Definition |
|-----|---------------|-----|------------|
| 1 | +3.3V Standby | 2 | LINK100 |

JP30 : 82541 LAN SPEED 1000 LED

| Pin | Definition | Pin | Definition |
|-----|---------------|-----|------------|
| 1 | +3.3V Standby | 2 | LINK1000 |

JP31 : 82551/82541 ACT/LINK LED

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | LINK | 2 | ACTIVITY |

CON9: AUX +12V Power Connector

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | Ground | 3 | +12V |
| 2 | Ground | 4 | +12V |

Chapter 3

Expansion Capabilities

3.1 System Memory

Your system memory is provided by DIMMs (Dual In-Line Memory Modules) on the CPU board. The board contains two memory banks: Bank 0 and 1 corresponding to connectors DIMM1, DIMM2.,DIMM3 and DIMM4. The table below shows possible DIMM Configurations for the memory banks. Please note that the NEX732L series supports Double Data Rate RAM (DDR266/333/400). Configurations using different brands of memory modules are not recommended.

| DIMM1 | DIMM2 | DIMM3 | DIMM4 |
|------------------------------|------------------------------|------------------------------|------------------------------|
| EMPTY | EMPTY | EMPTY | 128MB/256MB/ 512MB/1024MB |
| EMPTY | EMPTY | 128MB/256MB/ 512MB/1024MB | EMPTY |
| EMPTY | EMPTY | 128MB/256MB/ 512MB/1024MB | 128MB/256MB/ 512MB/1024MB |
| EMPTY | 128MB/256MB/ 512MB/1024MB | EMPTY | EMPTY |
| EMPTY | 128MB/256MB/ 512MB/1024MB | EMPTY | 128MB/256MB/ 512MB/1024MB |
| EMPTY | 128MB/256MB/ 512MB/1024MB | 128MB/256MB/ 512MB/1024MB | EMPTY |
| EMPTY | 128MB/256MB/ 512MB/1024MB | 128MB/256MB/ 512MB/1024MB | 128MB/256MB/ 512MB/1024MB |
| 128MB/256MB/ 512MB/1024MB | EMPTY | EMPTY | EMPTY |
| 128MB/256MB/ 512MB/1024MB | EMPTY | EMPTY | 128MB/256MB/ 512MB/1024MB |
| 128MB/256MB/ 512MB/1024MB | EMPTY | 128MB/256MB/ 512MB/1024MB | EMPTY |
| 128MB/256MB/ 512MB/1024MB | EMPTY | 128MB/256MB/ 512MB/1024MB | 128MB/256MB/ 512MB/1024MB |
| 128MB/256MB/ 512MB/1024MB | 128MB/256MB/ 512MB/1024MB | EMPTY | EMPTY |
| 128MB/256MB/ 512MB/1024MB | 128MB/256MB/ 512MB/1024MB | EMPTY | 128MB/256MB/ 512MB/1024MB |
| 128MB/256MB/ 512MB/1024MB | 128MB/256MB/ 512MB/1024MB | 128MB/256MB/ 512MB/1024MB | EMPTY |
| 128MB/256MB/ 512MB/1024MB | 128MB/256MB/ 512MB/1024MB | 128MB/256MB/ 512MB/1024MB | 128MB/256MB/ 512MB/1024MB |

Table 3-1: NEX732L Series' DIMM Configurations

3.2 Installing DIMM

To install DIMM

1. Make sure the two handles of the DIMM sockets are in the “open” position, i.e. the handles stay outward.

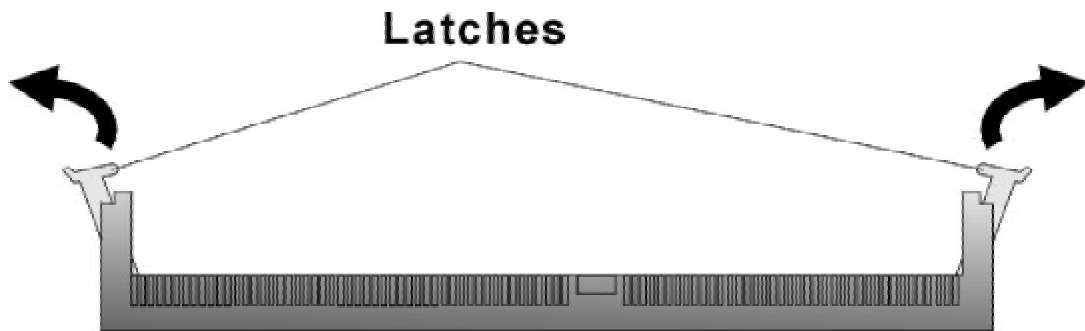


Figure3-1: How to Install DIMM (1)

2. Slowly slide the DIMM modules along the plastic guides in the both ends of the socket.

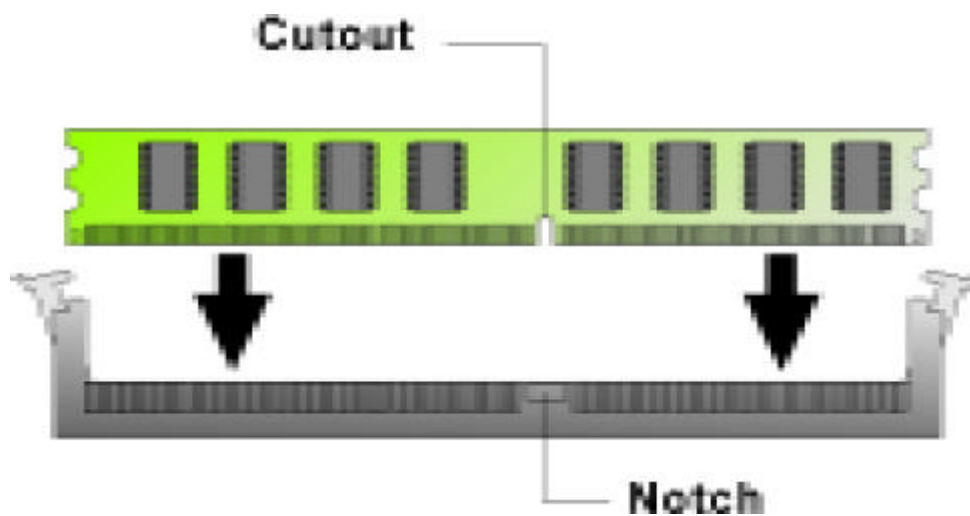


Figure 3-2: How to Install DIMM (2)

3. Then press the DIMM module down right into the socket, until a click is heard. That means the two handles automatically locked the memory modules into the right position of the DIMM socket.

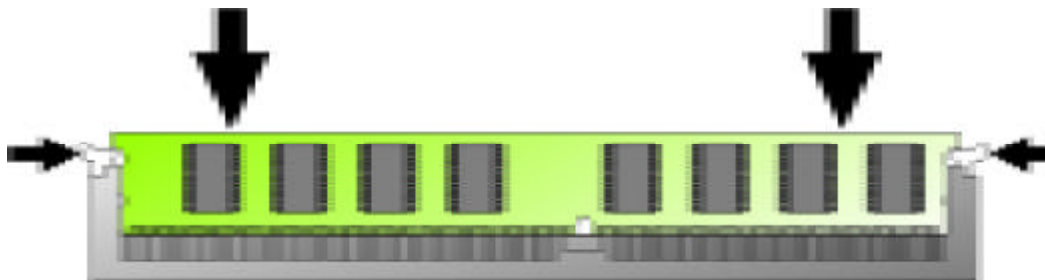


Figure 3-3: How to Install DIMM (3)

4. To take away the memory module, just push the both handles outward, the memory module will be ejected by the mechanism in the socket.

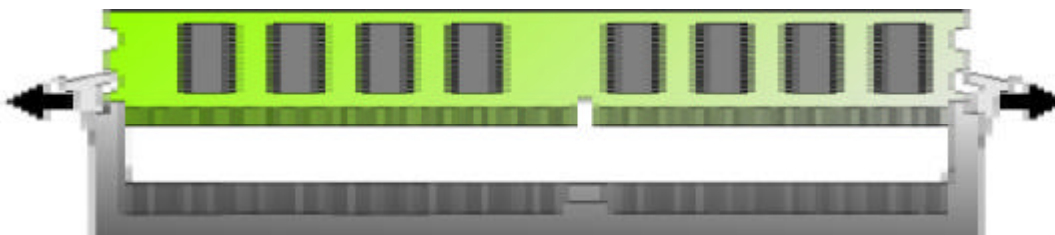


Figure 3-4: How to Install DIMM (4)

Chapter 4

Award BIOS Setup

This chapter explains how to use the BIOS Setup program for the NEX732L2G. The current BIOS setup pictures in the chapter is for reference only, which may change by the BIOS modification in the future. User can download any major updated items or reversion from NEXCOM web site <http://www.nexcom.com.tw>. If any unclear message occurs, please contact NEXCOM customer service representative for help or log onto <http://www.nexcom.com.tw/contact/contact.htm>.

4.1 About the BIOS

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters. These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- ◆ Hard drives, diskette drives, and peripherals
- ◆ Video display type and display options
- ◆ Password protection from unauthorized use
- ◆ Power management features

The settings made in the Setup program intimately affect how the computer performs. It is important, therefore, first to try to understand all the Setup options, and second, to make settings appropriate for the way you use the computer.

4.2 When to Run BIOS

This program should be executed under the following conditions:

- ◆ When changing the system configuration
- ◆ When a configuration error is detected by the system and you are prompted to make changes to the Setup program
- ◆ When resetting the system clock
- ◆ When setting the CPU clock speed so that it automatically runs either fast or slow
- ◆ When redefining the communication ports to prevent any conflicts
- ◆ When making changes to the Power Management configuration
- ◆ When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

4.3 Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- ♦ If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- ♦ If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing allows you to enter Setup. Another way to enter Setup is to power on the computer and wait for the following message during the POST:

**TO ENTER SETUP BEFORE BOOT
PRESS <CTRL-ALT-ESC> OR KEY**

Press the key or press the <Ctrl>, <Alt>, and <Esc> keys to enter Setup:

4.4 The Main Menu

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The main menu allows you to select from ten setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

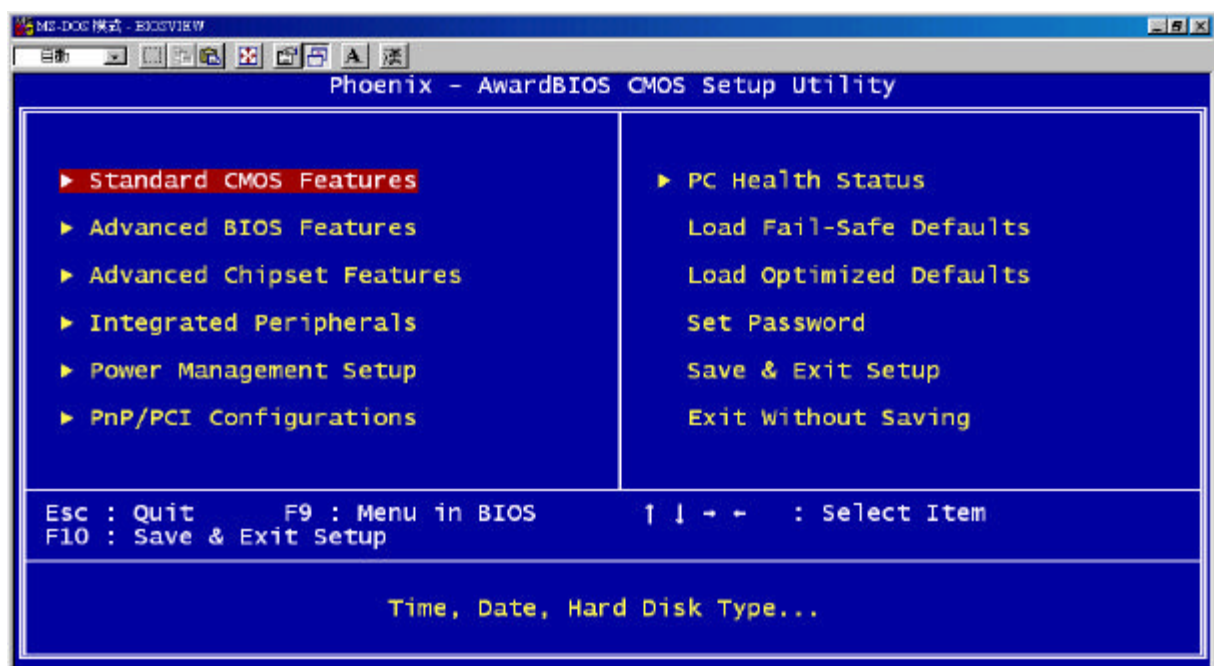


Figure 4-1: BIOS Setup Utility Main Menu

Standard CMOS Features

Use this menu for basic system configuration

Advanced BIOS Features

Use this menu to set the Advanced Features available on the system

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize the system's performance

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals

Power Management Setup

Use this menu to specify your settings for power management.

PnP/PCI Configurations

This entry appears if your system supports Plug and Play and PCI Configuration

PC Health Status

Displays CPU, System Temperature, Fan Speed, and System Voltages Value

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate

Load Optimized Defaults

Use this menu to load the BIOS default values, i.e., factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the option to change these defaults to meet their needs.

Set Supervisor/User Password

Enables you to change, set, or disable the supervisor or user password.

Save & Exit Setup

Saves CMOS value changes to CMOS and exits setup

Exit Without Saving

Ignores all CMOS value changes and exits setup.

4.5 Getting Help






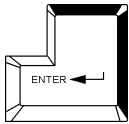
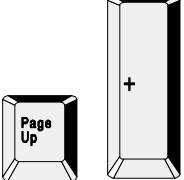
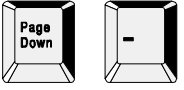

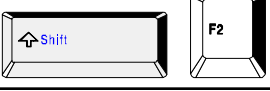





Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu / Option Page Setup Menu

4.6 Control Keys

The table below lists the keys that help you navigate the setup program.

| | | |
|--------------------------|---|--|
| Up arrow |  | Move to previous item |
| Down arrow |  | Move to next item |
| Left arrow |  | Move to the item to the left |
| Right arrow |  | Move to the item to the right |
| Esc key |  | <i>Main Menu:</i> Quit without saving changes to CMOS <i>Status/Option Page Setup Menus:</i> Exit current page and return to Main Menu. |
| Enter Key |  | Select or Accept an Item |
| PgUp/plus key |  | Increase the numeric value or make changes |
| PgDn/minus key |  | Decrease the numeric value or make changes |
| F1 key |  | General help, only for Status Page Setup Menu and Option Page Setup Menu |
| F2/Shift + F2 key |  | Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward |
| F5 key |  | Restore the previous CMOS value from CMOS (only for Option Page Setup Menu) |
| F6 key |  | Load the default CMOS value from BIOS default table (only for Option Page Setup Menu) |
| F7 key |  | Load the Setup default value (only for Option Page Setup Menu) |
| F9 Key |  | Menu in BIOS |
| F10 key |  | Save all the CMOS changes (only for Main Menu) |

4.7 Standard CMOS Features

Selecting Standard CMOS Features on the main program screen displays the following menu:

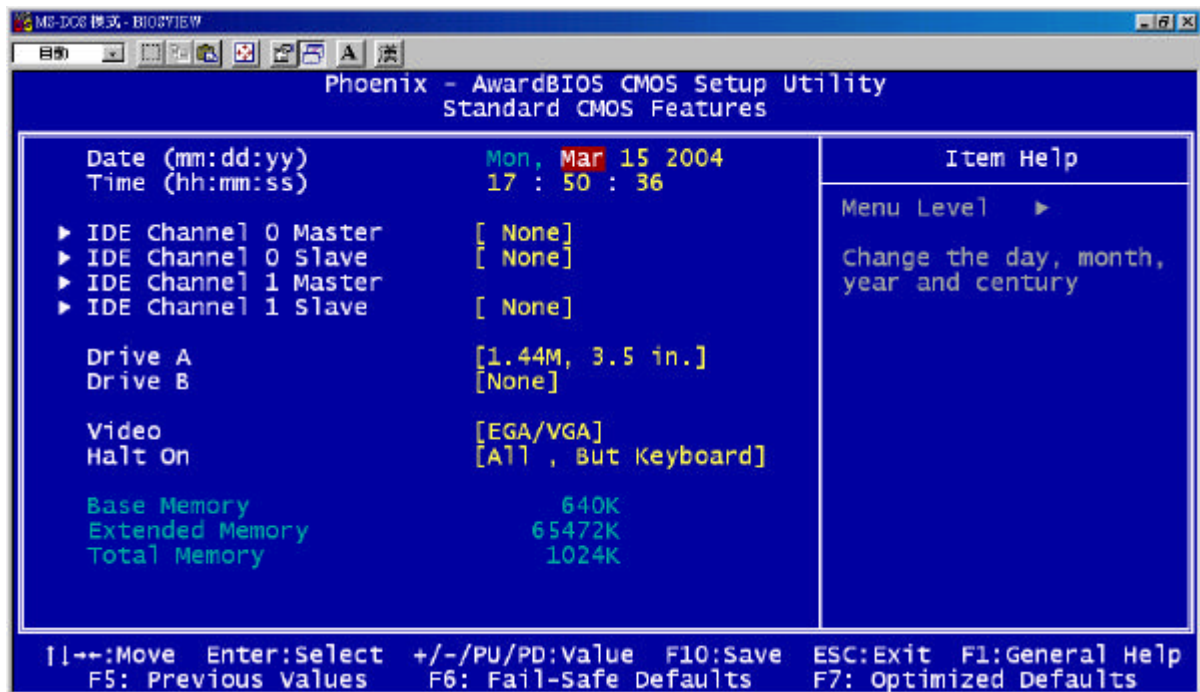


Figure 4-2: BIOS – Standard CMOS Features

The Standard CMOS Setup utility is used to configure the following features:

Date (mm:dd:yy)

The BIOS determines the day of the week from the other data information. This field is for information only. Press the left or right arrow key to move to the desired field (date, month, year). Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

Time (hh:mm:ss)

The time format is based on the 24-hour military time clock. For example, 1 p.m. is 13:00:00. Press the left

IDE Devices:

Your computer has two IDE channels (Primary and Secondary) and each channel can be installed with one or two devices (Master and Slave). Use these items to configure each device on the IDE channel. Press <Enter> to display the IDE submenu:

IDD HDD Auto Detection

Press <Enter> while this item is highlighted if you want the Setup Utility to automatically detect and configure a hard disk drive on the IDE channel.

If your system has an IDE hard drive, you can use this utility to detect its parameters and enter them into the Standard CMOS Setup automatically.

If the auto-detected parameters displayed do not match the one that should be used for your hard drive, do not accept them. Press <N> key to reject the values and enter the correct one manually in the Standard CMOS Setup screen.

Note: If you are setting up a new hard disk drive that supports LBA mode, more than one line will appear in the parameter box. Choose the line that lists LBA for an LBA drive.

Do not choose Large or Normal if the hard disk drive is already fully formatted when you installed it. Select the mode that was used to format it.

IDE Primary/Secondary Master/Slave

If you leave this item at Auto, the system will automatically detect and configure any IDE devices it finds. If it fails to find a hard disk, change the value to Manual and then manually configure the drive by entering the characteristics of the drive in the items below:

- ◆ Capacity Approximate hard disk drive capacity
- ◆ Cylinder Number of cylinders
- ◆ Head Number of heads
- ◆ Precomp Write pre-compensation cylinder
- ◆ Landing Zone Landing zone
- ◆ Sector Number of sector

Refer to your drive's documentation or look on the drive if you need to obtain this information. If no device is installed, change the value to None.

Access Mode

This item defines some special ways that can be used to access IDE hard disks such as LBA (Logical Block Addressing). Leave this value at Auto and the system will automatically decide the fastest way to access the hard disk drive.

Press <Esc> to close the IDE device submenu and return to the Standard CMOS Features page.

Drive A

Select this field to the type of floppy disk drive installed in your system. The choices are:

- ◆ None No floppy drive installed
- ◆ 360K, 5.25 in 5-1/4 inch PC type standard drive; 360 kilobyte capacity
- ◆ 1. 2M, 5.25 in 5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity

- ◆ 720K, 3.5 in 3-1/2 inch double-sided drive; 720 kilobyte capacity
- ◆ 1.44M, 3.5 in 3-1/2 inch double-sided drive; 1.44 megabyte capacity
- ◆ 2. 88M, 3.5 in 3-1/2 inch double-sided drive; 2.88 megabyte capacity

Note: The None option could be used for diskless workstations.

Video

Set this field to the type of graphics card installed in your system. If you are using a BGA or higher resolution card, choose the EGA/VGA option. The options are:

- ◆ EGA/VGA Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA or PGA monitor adapters
- ◆ CGA40 Color Graphics Adapter, power up in 40 column mode
- ◆ CGA80 Color Graphics Adapter, power up in 80 column mode
- ◆ MONO Monochrome adapter, includes high resolution monochrome adapters

Halt On

During the Power-On Self-Test (POST), the computer stops if the BIOS detect a hardware error. This setting determines which type of error will cause the system to halt during boot. The options are:

- ◆ All Error: Whenever the BIOS detects a non-fatal error, the system will be stopped and you will be prompted.
- ◆ No Errors: The system boot will not stop for any error that may be detected.
- ◆ All, But Keyboard: The system boot will not stop for a keyboard error, but it will stop for all others.
- ◆ All, But Diskette: The system boot will not stop for a disk error, but it will stop for all others.
- ◆ All, But Disk/Key: The system boot will not stop for a keyboard or disk error, but it will stop for all others.

Base/Extended/Total Memory

This category is display-only. The contents are determined by the POST (Power-On Self-Test) of the BIOS. You cannot make changes to these fields.

Base Memory: Also called conventional memory. The DOS operating system and conventional applications use this area.

Extended Memory: The POST of the BIOS will determine the amount of extended memory installed in the system.

Total Memory: This option shows system memory capacity.

After you have made your selections in the Standard CMOS Setup screen, press <ESC> to go back to the main screen.

4.8 Advanced BIOS Features

Selecting Advanced BIOS Feature on the main program screen displays this menu, which allows you to define advanced information about your system. You can make modifications to most of these items to improve your system performance or set up system features according to your preference, without causing fatal errors to your system.

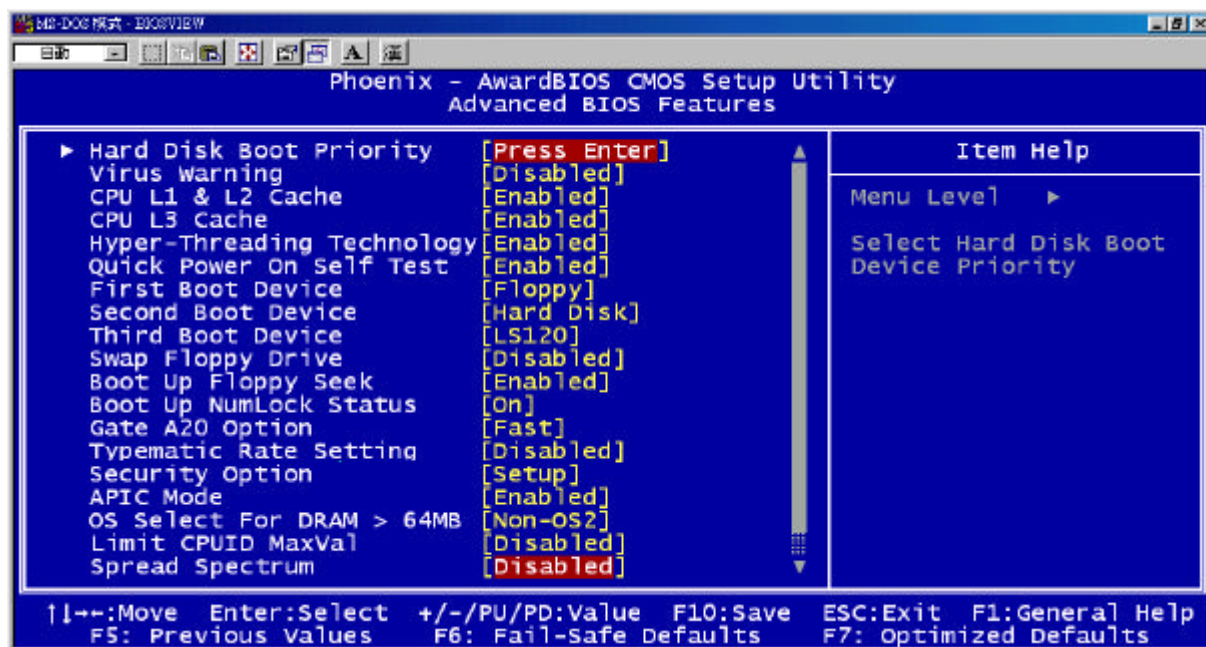


Figure 4-3: BIOS – Advanced BIOS Features

The following explains the options for each feature:

Hard Disk Boot Priority:

Press < Enter > to enter a sub menu which shoes every current hard drive installed. Use < PageUp > or < PageDown > key to select the first boot hard disk.

Virus Warning

Allow you to choose the Virus Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempts to write data into this area, BIOS will show a warning message on screen and an alarm will beep.

- ◆ Enabled: Activates automatically when the system boots up causing the following warning message to appear when anything attempts to access the boot sector or hard disk partition table:
- ◆ Disabled: No warning message will appear when an attempt is made to access the boot sector or hard disk partition table.

Note: This function is available only for DOS and other operating systems that do not trap INT13. For complete protection against viruses, install virus software in your operating system and update the virus definitions regularly.

Many disk diagnostic programs that access the boot sector table can trigger the virus warning

message. If you plan to run such a program, we recommend that you disable the virus warning.

!WARNING!

Disk boot sector is to be modified

Type “Y” to accept write or “N” to abort write

Award Software, Inc.

CPU L1 & L2 Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). This BIOS feature is used to enable or disable the processor's Level 1 and Level 2 cache. Naturally, the default and recommended setting is Enabled.

Hyper Threading Technology

The Intel Hyper Threading Technology allows a single processor to execute two or more separate threads concurrently. When hyper threading is enabled, multi-threaded software applications can execute their threads in parallel, thereby improving the processor's performance.

Quick Power-On Self-Test

Select Enabled to reduce the amount of time required to run the Power-On Self-Test (POST). A quick POST skips certain steps. We recommend that you normally enable quick POST.

First/Second/Third Boot Device

BIOS attempts to load the operating system from the devices in the sequence selected. The available choices are: Floppy, LS120, Hard Disk, CDROM, ZIP100, USB-FDD, USB-ZIP, USB-CDROM, LAN, and Disabled.

Swap Floppy Drive

If the system has two floppy drives, use this item to swap the logical drive name assignments.

Boot Up Floppy Seek

Enable this to allow the system to search for floppy drives during the POST. Disable this item to boot faster.

Boot Up NumLock Status

Toggle between On or Off to control the state of the NumLock key when the system boot. If On, the numeric keypad is in numeric mode. If Off, the numeric keypad is in cursor control mode.

Gate A20 Option

Enables you to select whether the chipset or the keyboard controller should control Gate A20.

The options are:

- * Normal: A pin in the keyboard controller controls Gate A20.
- * Fast: Lets chipset control Gate A20.

Typematic Rate Setting

If set to Enabled, enables you to set the Typematic Rate and Typematic Delay. When Disabled, the following two items (Typematic Rate and Typematic Delay) are irrelevant. Keystroke repeats at a rate determined by the keyboard controller in your system.

Typematic Rate (Chars/Sec): When the typematic rate setting is Enabled, you can select a typematic rate (the rate at which character repeats when you hold down a key) of 6, 8, 10, 12, 15, 20, 24, or 30 characters per second.

Typematic Delay (Msec): This setting controls the time between the display of the first character and successive characters. There are four delay choices: 250ms, 500ms, 750ms and 1000ms.

Security Option

Enables you to select whether the password is required every time the system boots or only when you enter Setup.

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

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

APIC Mode

The APIC Mode BIOS feature is used to enable or disable the motherboard's APIC (Advanced Programmable Interrupt Controller). If your single-processor motherboard supports APIC and you are using a Win32 operating system (Windows NT, 2000 and XP), it's recommended that you enable this feature to allow faster and better IRQ handling. If you are using a multiprocessor motherboard, you must enable this feature because it's required for IRQ handling in multiprocessor systems.

OS Select for DRAM>64MB

Set to OS2 if the system memory size is greater than 64 MB and the operating system is OS/2.

Limit CUID MaxVal

This item belongs to the Prescott CPU family. Enable it when the Prescott CPU family is installed on Window NT4.0 but disable it for WinXP.

Spread Spectrum

This item allows you to enable/disable the spread spectrum modulator to reduce EMI. the choices are Enabled and Disabled.

After you have made your selections in the Advanced BIOS Features setup, press <ESC> to go back to the main screen.

4.9 Advanced Chipset Features

Since the features in this section are related to the chipset in the CPU board and all are optimized, you are not recommended to change the default settings in the setup table, unless you understand the chipset features.

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manage bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system has mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

Selecting Advanced Chipset Features on the main program screen displays this menu:

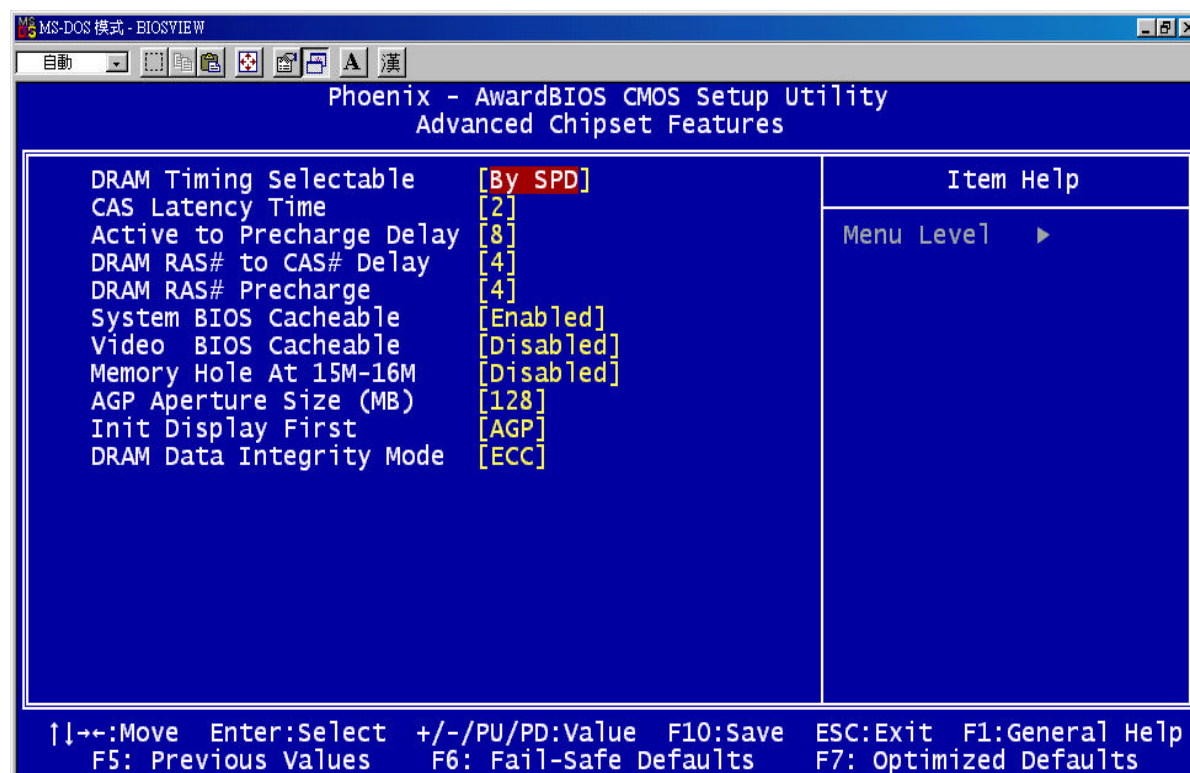


Figure 4-4: BIOS – Advanced Chipset Features

DRAM Timing Selectable

The choices are: Manual, and By SPD. The option "By SPD" enables the system to automatically set the SDRAM timing by Serial Presence Detect (SPD). SPD is an EEPROM chip on the DIMM module that stores information about the memory chips it contains, including size, speed, voltage, row and column addresses, and manufacturer. Select "Manual" allows users manually set the following four timing parameters for the system memory.

CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer. The choices are: 1. 5, 2, 2.5, 3.

Active to Precharge Delay

This item controls the number of DRAM clocks for TRAS. The choices: 5, 6, 7.

DRAM RAS# to CAS# Delay

This field let you 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 is installed in the system. The choices are: 2, 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 choices are 2 and 3.

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 available choices are Enabled, Disabled.

Video BIOS Cacheable

Selecting Enabled allows caching of the video BIOS ROM at C0000h, resulting in better video performance. However, if any program writes to this memory area, a system error may result. The choices: Enabled, Disabled.

Memory Hole At 15M – 16M

In order to improve performance, certain space in memory is reserved for ISA cards; This memory must be mapped into the memory.

The choices: Enabled, Disabled.

AGP Aperture Size (MB)

This item defines the size of the aperture if you use an AGP graphics adapter. The AGP aperture refers to a section of the PCI memory address range used for graphics memory. The available choices are: 4M, 8M, 16M, 32M, 64M, 128 M and 256M.

Init Display First

This item allows you to activate PCI slot or AGP display first. The choices are: PCI slot, Onboard/AGP.

DRAM Data Integrity Mode

It can support the ECC (Error-Correcting Code) function while utilizing parity modules. To enable this function, users must set RAM Data Integrity Mode to [ECC] through chipset Features Setup from the BIOS setup screen. All in all, ECC function is to detect and correct the errors of transfer data.

4.10 Integrated Peripherals

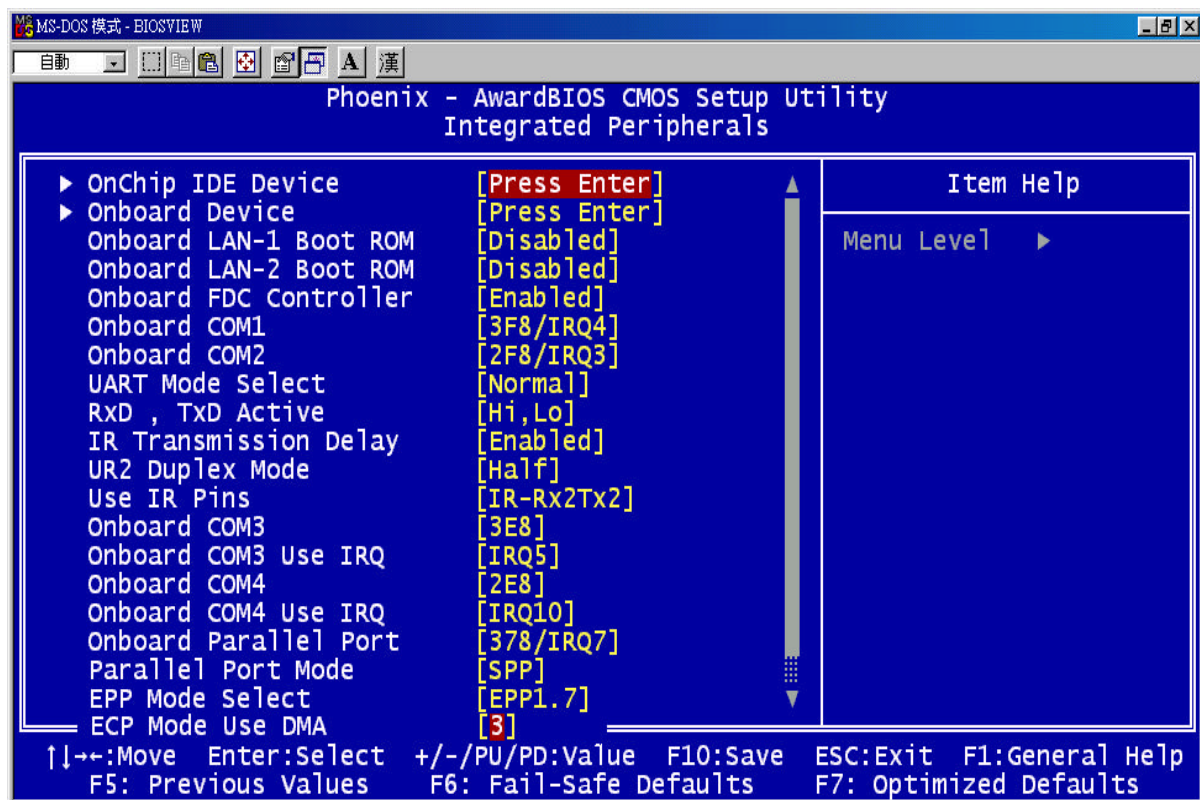


Figure 4-5: BIOS – Integrated Peripherals

OnChip IDE Device

Select this item to setup the IDE device features. When you select this item, the following menu shows:

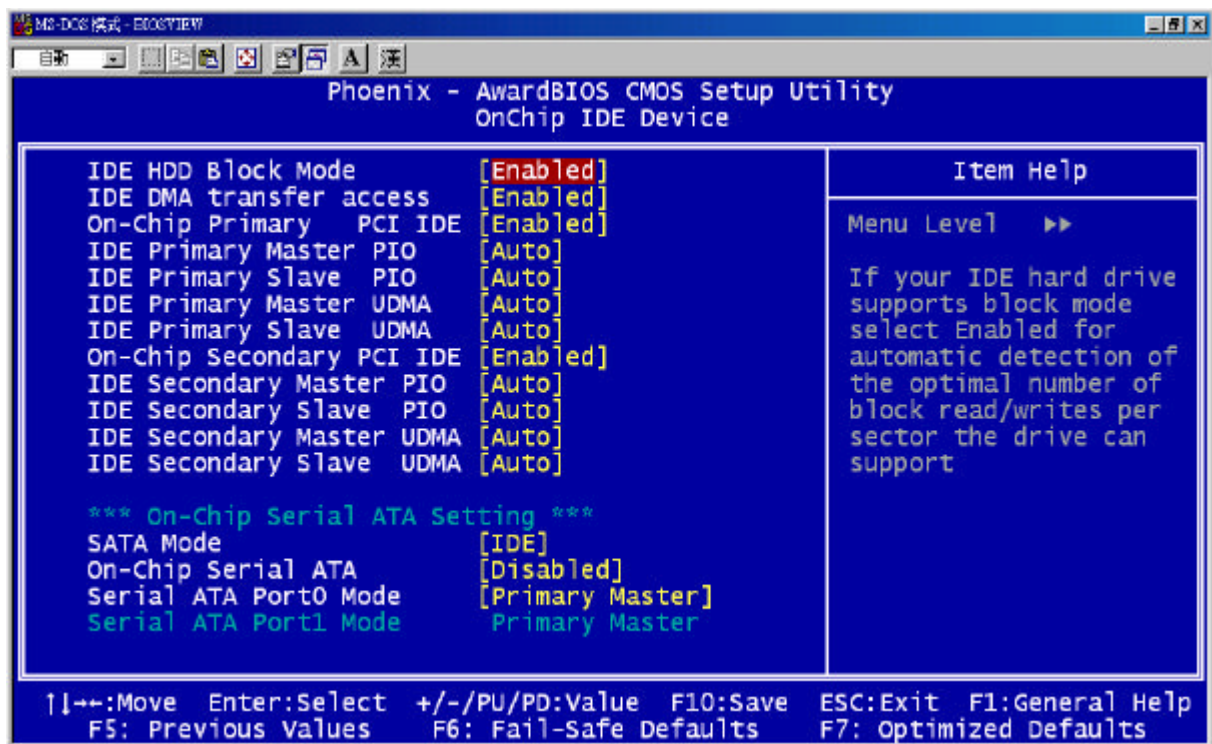


Figure 4-6: BIOS – OnChip IDE Device

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 optional number of block read/write per sector the drive can support. The available choices are Enabled, Disabled.

IDE DMA Transfer Access

This item is used to enable or disable the DMA transfer function of the IDE Hard Drive.

On-Chip Primary/Secondary PCI IDE

The system chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary and/or secondary IDE interface. Select Disabled to deactivate this interface, if you install a primary and/or secondary add-in IDE interface.

IDE Primary/Secondary Master/Slave PIO

The four IDE PIC (Programmable Input/Output) fields let you set a PIC mode (0-1) 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 choices are: Auto, Mode 0, Mode 1, Mode 2, Mode 3, and Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA 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, select Auto to enable BIOS support. The choices are Auto, and Disabled.

SATA Mode

Use this item to select the mode of the serial ATA.

On-Chip Serial ATA

This setting is used to specify the SATA controller. Settings: Disable, Auto Combined Mode, Enhanced Mode, SATA only. If <Combined Mode> is selected, PATA and SATA will both be enabled. If <Auto> is selected, PATA and SATA will be arranged by BIOS, and you will be able to see the IDE device status listed in Standard CMOS Features.

Serial ATA Port 0/1 Mode

Select a compatible mode for Port 1 and Port 2 from Award Setting to the chipset settings:

Primary Master: Compatible Mode with Serial ATA Port 0/1 set to Primary Master

Primary Slave: Compatible Mode with Serial ATA Port 0/1 set to Primary Slave

Secondary Master: Compatible Mode with Serial ATA Port 0/1 set to Secondary Master

Secondary Slave: SATA only with Serial ATA Port 0/1 set to Secondary Slave

Primary Master: SATA only with only Serial ATA Enabled and Port 0/1 set to Primary Master

Secondary Master: Compatible Mode with only Serial ATA Enabled and Port 0/1 set to Secondary Master

SATA 0 Master: Enhance Mode with Port 0/1 set to Native Mode Master

SATA 1 Master: Enhance Mode with Port 0/2 set to Native Mode Master

Onboard Device

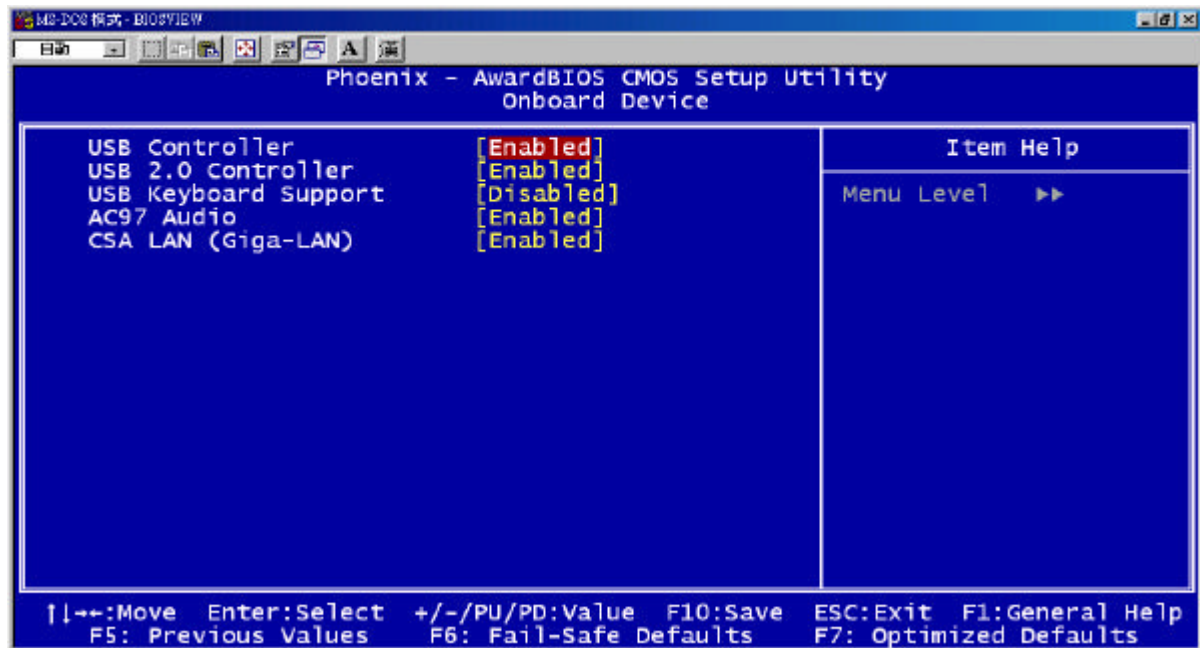


Figure 4-7: BIOS – Onboard Device

USB Controller

Select Enabled if your system contains a Universal Serial Bus controller and you have USB peripherals.

USB 2.0 Controller

Select Enable if your system contain a Universal Serial Bus 2.0 controller and you have USB 2.0 peripherals.

USB Keyboard Support

Select Enabled if your USB controller is enabled and it needs USB keyboard support in legacy (old) OS operating systems such as DOS.

AC97 Audio

Selecting Auto will enable the AC'97 audio if it is detected onboard.

CSA LAN (Giga-LAN)

Select Enabled for CSA LAN Function.

After you have made your selections in the Integrated Peripherals setup, press the <ESC> key to go back to the main program screen.

Onboard LAN (1 & 2) Boot ROM

Decide whether to invoke the boot ROM of the onboard LAN chip. The available choices are LAN1, LAN2, and Disabled.

Onboard FDC Controller

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

Onboard Serial Ports (1, 2)

Select an address and corresponding interrupt for the first and second serial ports.

The choices: Auto, 3F8/IRQ4, 3E8/IRQ4, 2F8/IRQ3, 2E8/IRQ3, Disabled.

UART Mode Select

This item allows you to select UART mode. The choices: Normal, IrDA, ASKIR.

RXD, TXD Active

Choices for RXD, TXD Active include Hi, Hi; Hi, Lo; Lo, Hi; and Lo, Lo.

IR Transmission Delay

Select Enabled for IR transmission delay.

UR2 Duplex Mode

In an infrared port mode, this field appears. Full-duplex mode permits simultaneous two-direction transmission. Half-duplex mode permits transmission in one direction only at a time. Select the value required by the IR device connected to the IR port.

Use IR Pins

There are two choices -- RXD2, TXD2 and IR-RX2TX2 -- available for use of the IR Pins.

Onboard Serial Ports (3, 4)

This feature allows you to manually select the I/O address and IRQ for the first and second serial ports. It is recommended that you leave it as Auto so that the BIOS can select the best settings for it. But if you need a particular I/O port or IRQ that's been taken up by this serial port, you can manually select an alternative I/O port or IRQ for it. You can also disable this serial port if you do not need to use it. Doing so frees up the I/O port and IRQ used by this serial port. Those resources can then be reallocated for other devices to use.

Onboard Parallel Port

This feature allows you to manually select the I/O address and IRQ for the onboard parallel port. The default I/O address of 378h and IRQ of 7 should work well in most cases. Unless you have a problem with the parallel port, you should leave it at the default settings. The choices: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, and Disabled.

Parallel Port Mode

Select an operating mode for the onboard parallel (printer) port. There are five options: SPP (Standard Parallel Port), EPP (Enhanced Parallel Port), ECP (Extended Capabilities Port), ECP+EPP and Normal.

ECP Mode Use DMA

When the on-board parallel port is set to ECP mode, the parallel port can use DMAS or DMA 1. After you have made your selections in the Integrated Peripherals setup, press the **<ESC>** key to go back to the main program screen.

4.11 Power Management Setup

This option lets you control system power management. The system has various power-saving modes including powering down the hard disk, turning off the video, suspending to RAM, and software power down that allows the system to be automatically resumed by certain events.

The power-saving modes can be controlled by timeouts. If the system is inactive for a time, the timeouts begin counting. If the inactivity continues so that the timeout period elapses, the system enters a power-saving mode. If any item in the list of Reload Global Timer Events is enabled, then any activity on that item will reset the timeout counters to zero.

If the system is suspended or has been powered down by software, it can be resumed by a wake up call that is generated by incoming traffic to a modem, a LAN card, a PCI card, or a fixed alarm on the system real-time clock.

Selecting Power Management Setup on the main program screen displays this menu:

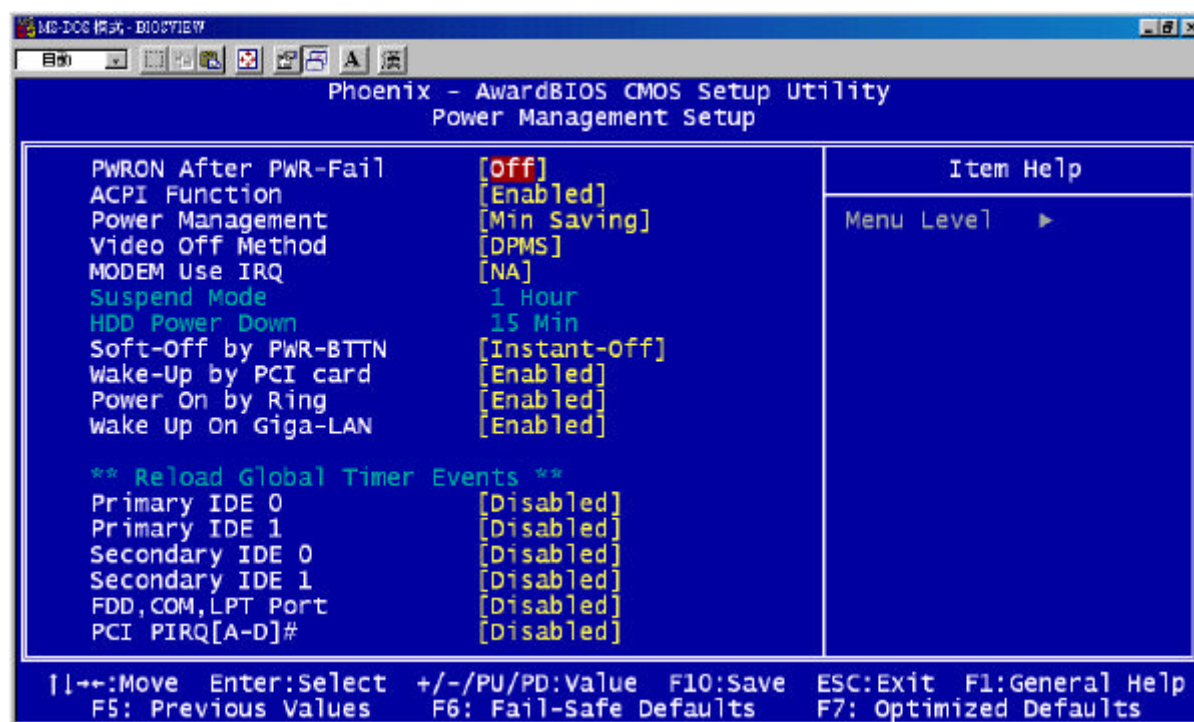


Figure 4-8: BIOS – Power Management Setup

PWRON After PWR-Fail

This setting specifies whether your system reboots after a power failure.

There are three selections:

Off: The system will remain off when power comes back after a power failure.

On: The system will switch on when power comes back after a power failure.

ACPI Function

The ACPI standard (Advanced Configuration and Interface power) allows the operating system directly to check the functions of energy saving and the PnP (Plug and Play) functionality. The ACPI functions are normally activated by the BIOS. The choices are: Enabled and Disabled.

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes: HDD Power Down, Doze Mode and Suspend Mode

- ♦ Min. Saving: Minimum power management
- ♦ Max Saving: Maximum power management
- ♦ User Define: Allows you to set each mode individually

Video Off Method

This determines the manner in which the monitor is blanked. There are three choices:

1. V/H SYNC+Blank: This selection will cause the system to turn off the vertical and horizontal synchronization port and write blanks to the video buffer.
2. Blank Screen: This option only writes blanks to the video buffer.
3. DPMS Support: Select this option if your monitor supports the Display Power Management signaling (DPMS) standard of the Video Electronics Standard to select video power management values.

MODEM Use IRQ

This determines the IRQ in which the MODEM can use. The choices are 3, 4, 5, 7, 9, 10, 11, and NA

Soft-Off by PWR-BTTN

This function can turn the system off with the on/off button places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or Resume by Ring activity. The choices are Delay 4 seconds, and Instant-Off.

Wake Up by PCI Card

When the system enters a Soft-off mode (Standby power exist but system is not working), it will wake up system when specific signals occurred. The BIOS monitors the system for “activity” to determine when to enable power management.

If you enable this feature, the computer specifies that any signal noticed on the PCI (Peripheral Component Interconnect) bus channel must make go out from the hibernation state. The choices: Enabled, Disabled

Power On by Ring

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state. The choices: Enabled, Disabled.

Wake Up on Giga LAN

When the system enters a Soft-off mode (Standby power exists but system is not working), it will wake up system when specific signals occur. the BIOS monitors the system for “activity” to determine when to enable power management.

If you enable this feature, the computer specifies that any signal noticed on the LAN must make go out from the hibernation state. The choices: Enabled, Disabled.

Reload Global Timer Events

Primary/Secondary IDE 0/1

FDD, COM, LPT Port

PCI PIRQ [A-D]#

The events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything, which occurs to a device, which is configured as Enabled, even when the system is in a power down mode. The choices are Enabled, and Disabled.

After you have made your selections in the Power Management setup, press the <ESC> key to go back to the main program screen.

4.12 PnP/PCI Configurations

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

Selecting PnP/PCI Configurations on the main program screen displays this menu:

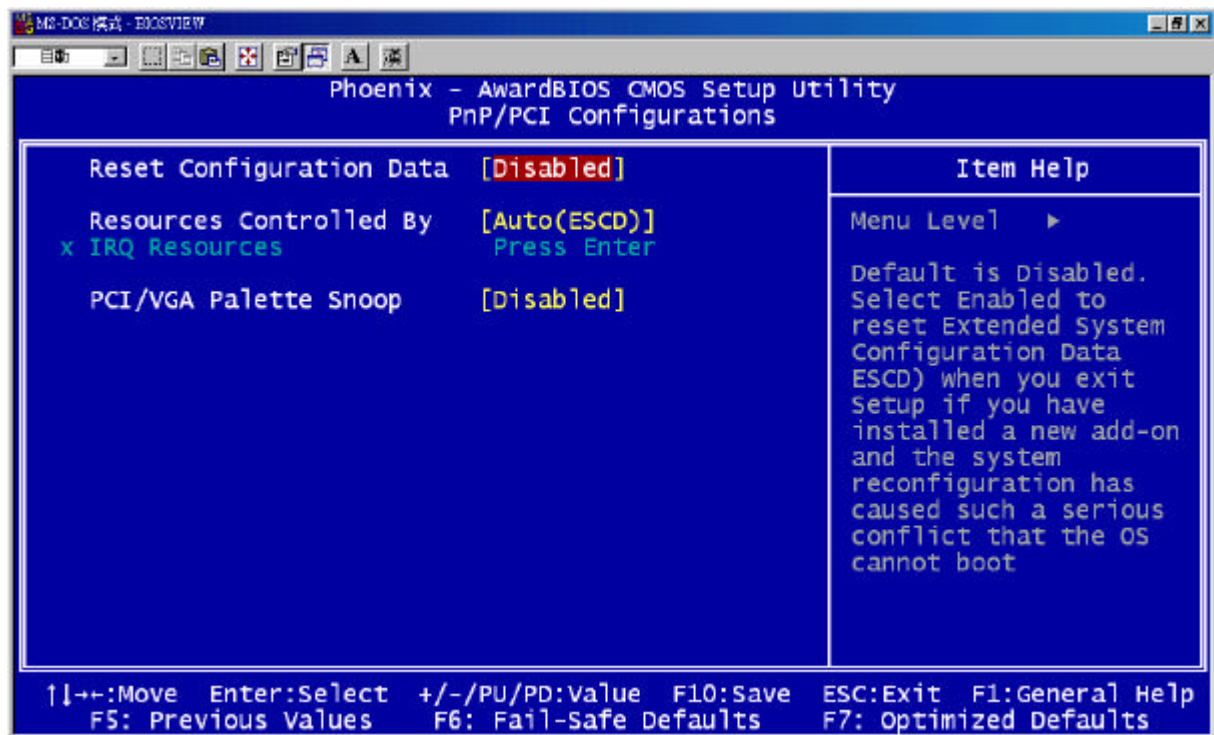


Figure 4-9: BIOS – PnP/PCI Configurations

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 Card and the system reconfiguration has caused such a serious conflict that the operating system can not boot. The choices are Enabled and Disabled.

Resources 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 going into each of the submenus that follows this field. The choices are Auto (ESCD), Manual.

PCI/VGA Palette Snoop

This setting is used only to solve the visualization problems with dedicated MPEG decompression cards. In such specific case, setup the voice on Enabled to allow the BIOS to monitor the visualization passages between the principal card and the card of decodes. The default setting is Disabled.

4.13 PC Health Status

When main boards support hardware monitoring, this item lets you monitor the parameters for critical voltages, critical temperatures, and fan speeds. These are the read only items.

Selecting PC Health Status on the main program screen displays this menu:

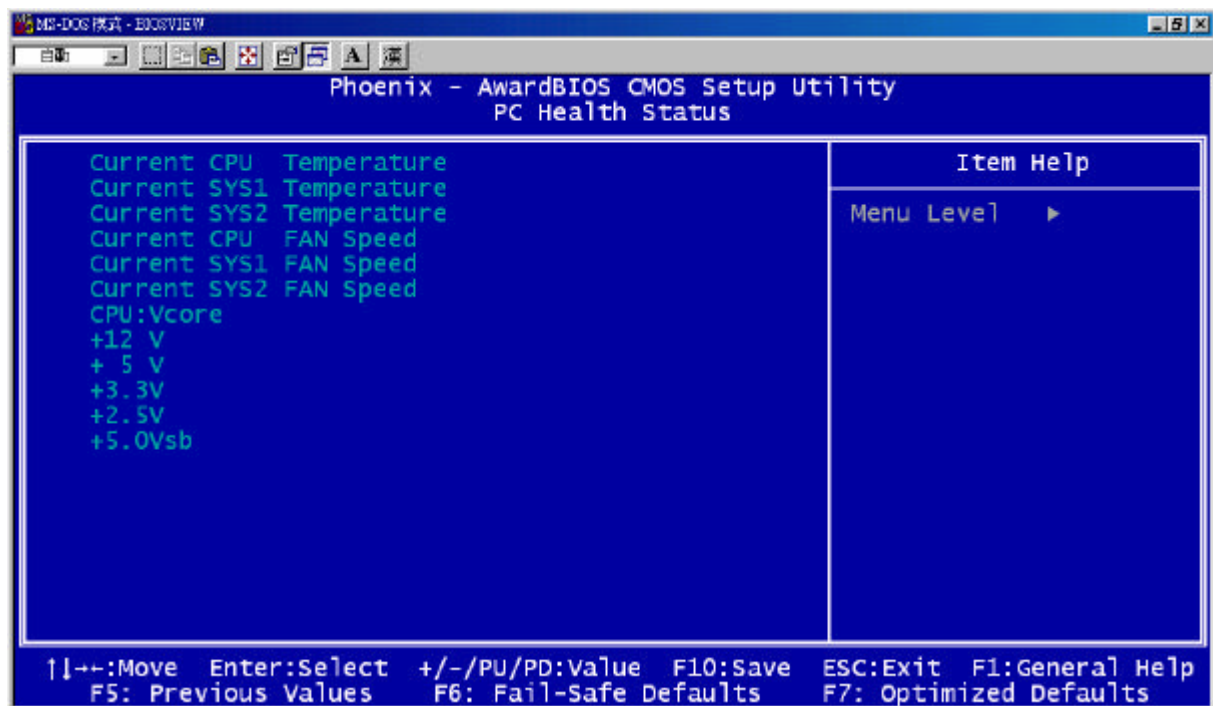


Figure 4-10: BIOS – PC Health Status

After you have read the PC Health Status, press the <ESC> key to go back to the main program screen.

4.14 Load Fail-Safe Defaults

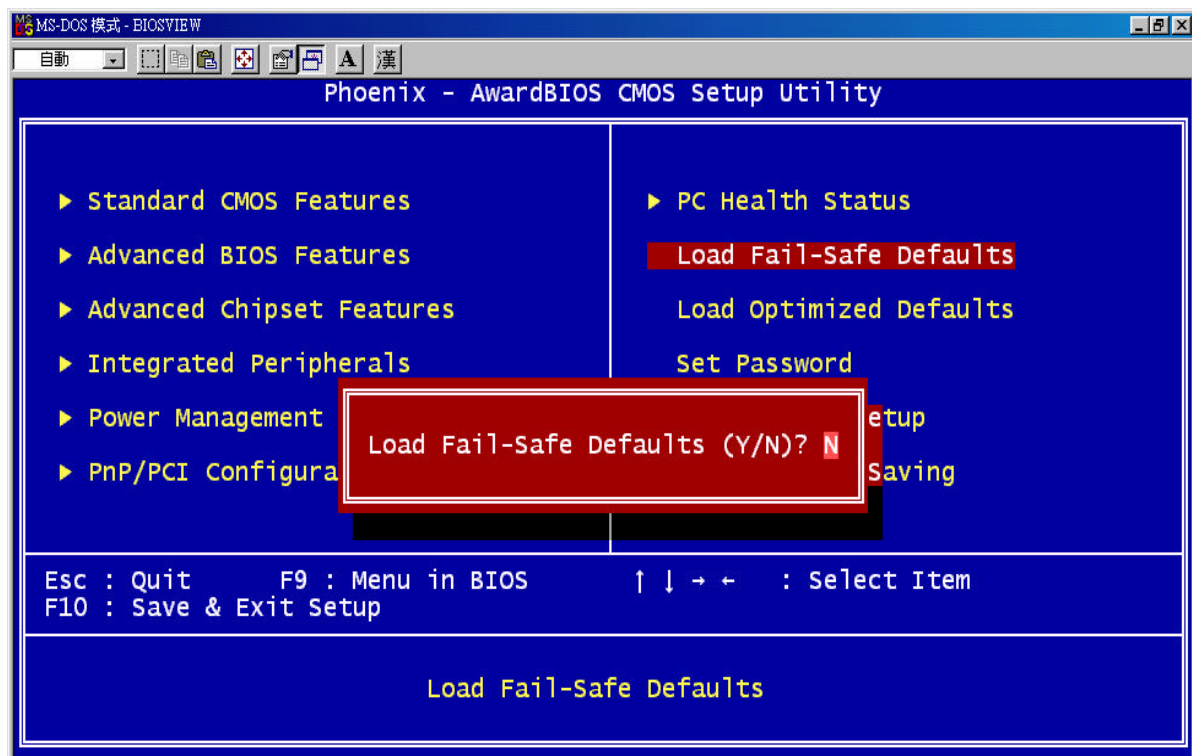


Figure 4-11: BIOS – Load Fail-Safe Defaults

4.15 Load Optimized Defaults

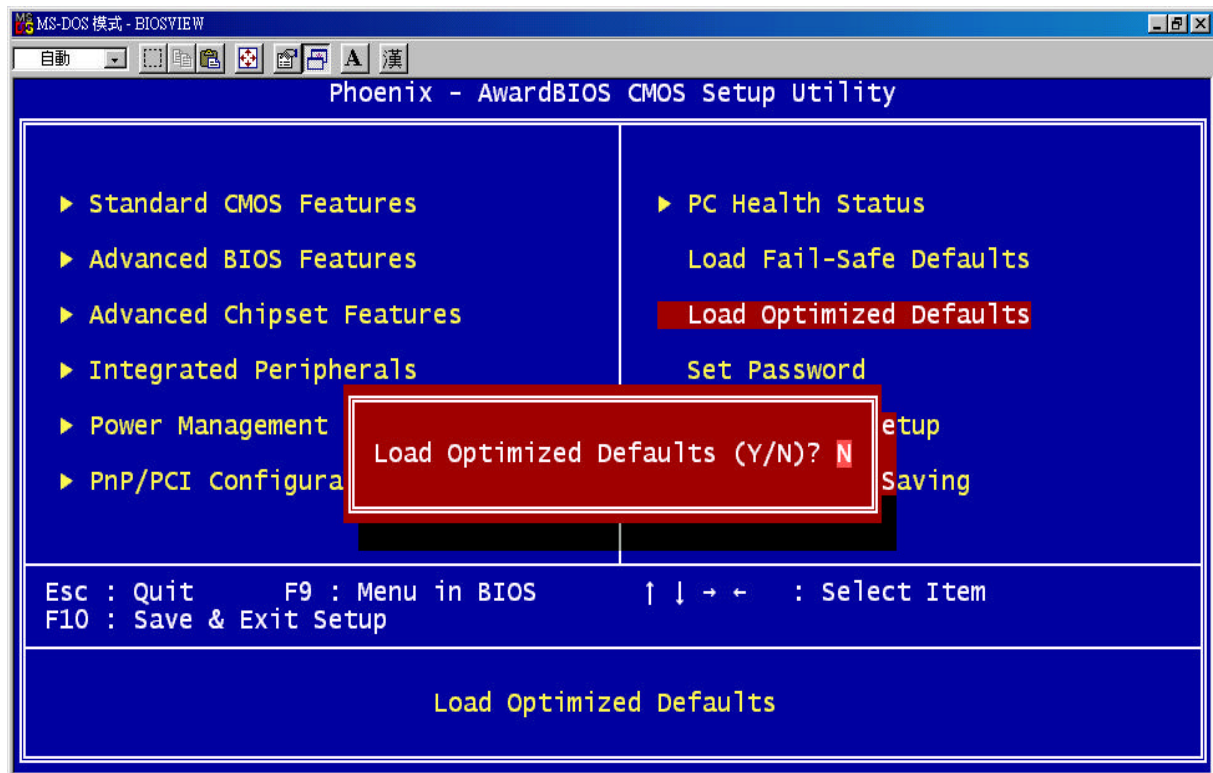


Figure 4-12: BIOS – Load Optimized Defaults

This option opens a dialog box that lets you install optimized defaults for all appropriate items in the whole setup utility. Press the <Y> key and then <Enter> to install the defaults. Press the <N> key and then <Enter> to not install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory. You can cause fatal errors or instability if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press the <F7> key.

4.16 Set Supervisor/User Password

The Supervisor/User Password utility sets the password. The main board is shipped with the password disabled. If you want to change the password, you must first enter the current password, then at the prompt enter your new password. The password is case sensitive. You can use up to eight alphanumeric characters. Press <Enter> after entering the password. At the next prompt, confirm the new password by retyping it and pressing <Enter> again.

To disable the password dialog box appears. A message appears confirming that the password has been disabled. If you have set supervisor and user Password, only the supervisor password allows you to enter the BIOS setup program.

Note: If you forget your password, the only way to solve this problem is to discharge the CMOS memory by turning power off and placing a shunt (jumper cap) on jumper JP11 to short pin 2 and pin 3 for five seconds, then putting the shunt back to pin 1 and pin 2 of JP11.

4.17 Save & Exit Setup

Selecting this option and pressing <Enter> will save the new setting information in the CMOS memory and continue with the booting process.

4.18 Exit Without Saving

Selecting this option and pressing <Enter> will exit the Setup utility without recording any new values or changing old ones.

This concludes Chapter 4. The next chapter covers drivers installing.

Chapter 5

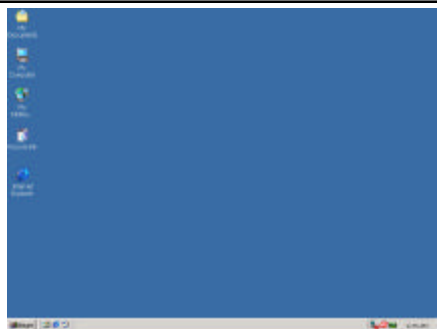
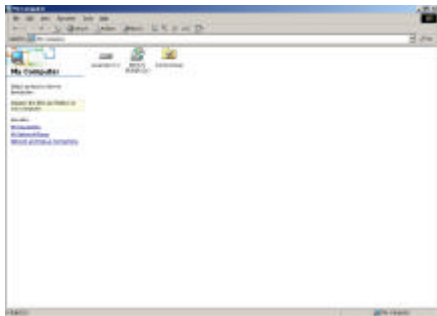
Driver Installation

The NEX732L series comes with a CD that enables you to install Intel Chipset, LAN and Audio Drivers. These drivers may be updated or re-versioned without any further notice. Please visit NEXCOM web site <http://www.nexcom.com.tw> frequently for new information.

Note: The installation instructions in this manual are based on Windows 2000 operation system.

5.1 Installing CD

Please follow the instructions below to find Intel Chipset, LAN and Audio Drivers on the given CD to implement installation.

| | |
|---|--|
| <p>Step 5.1.1</p> <p>Place the Driver CD into your CD-ROM drive. Open My computer on your desktop.</p> |  |
| <p>Step 5.1.2</p> <p>My computer menu appears. Double click your CD-ROM drive to open.</p> |  |

5.2 Installing Drivers for the NEX732L Series




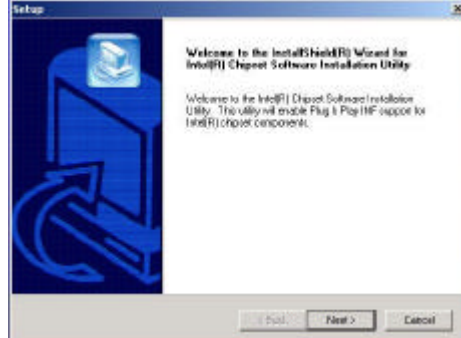
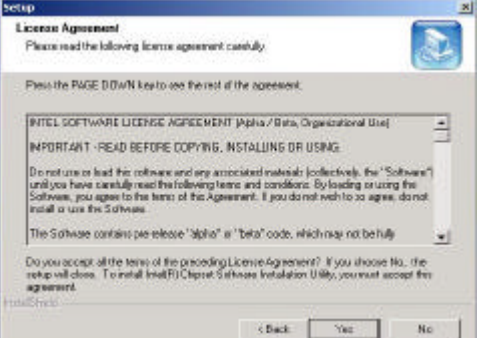
The following sections cover the installation of each driver for the NEX732L Series:

- ♦ **Intel Chipset** --- **5.3**
- ♦ **Audio** --- **5.4**
- ♦ **LAN** --- **5.5**

*Note: You should install the Intel chipset patch before installing other drivers.
 You may be prompted for your Windows Installation CD during setup.*

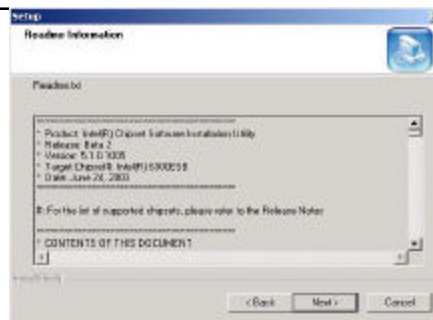
5.3 Installing Intel Chipset

The chipset patch updates the chipset and enables user to adjust the advanced chipset components.

| | |
|--|--|
| <p>Step 5.3.1</p> <p>Point to the n732_rev_b driver folder and double click to open it.</p> |  |
| <p>Step 5.3.2</p> <p>Double click to open the inf beta folder.</p> |  |
| <p>Step 5.3.3</p> <p>Double click to open the Setup icon; it will start to run the installation program.</p> |  |
| <p>Step 5.3.4</p> <p>When the Welcome Screen appears, click Next.</p> |  |
| <p>Step 5.3.5</p> <p>Read the License Agreement. If you accept it, click Yes to continue.</p> |  |

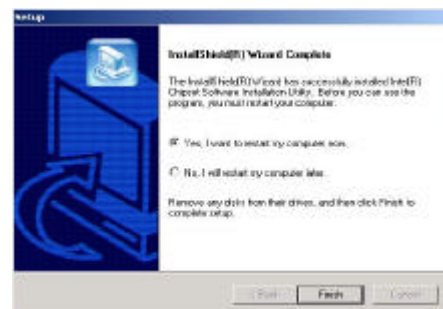
Step 5.3.6

Read the ReadMe file and click **Next** to continue the installation process.



Step 5.3.7

The program updates your computer driver files, and you are prompted to restart your computer. Click **Yes, I want to restart my computer now** and then click **Finish** to reboot.



5.4 Installing Audio Driver

After installing Intel Chipset driver, repeat steps 5.1.1 and 5.1.2 to open Audio folder.

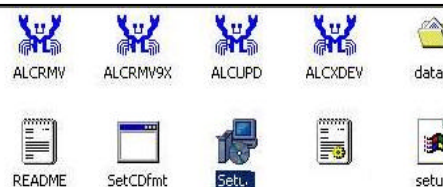
5.4.1

Double click to open the **Audio** folder and then the **wdm** folder



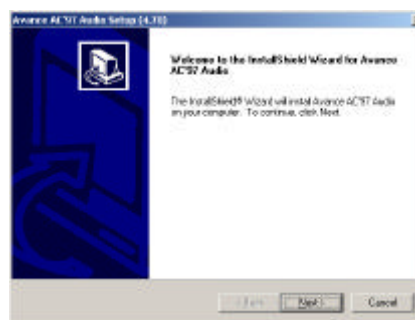
5.4.2

Double click on the **Setup** icon to start the installation process.



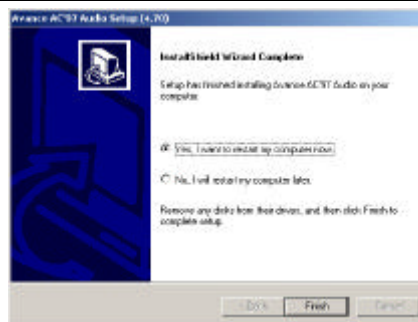
5.4.3

The welcome screen appears, click **Next** button to continue.




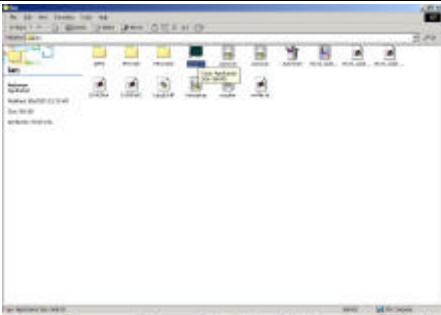

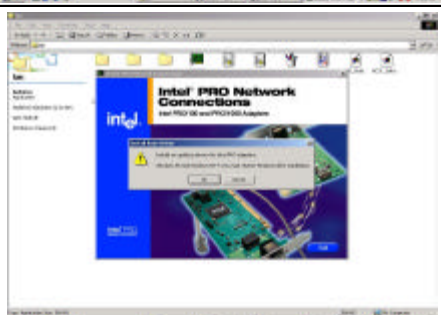

5.4.4

The program updates your computer driver files, and you are prompted to restart your computer. Click **Yes, I want to restart my computer now** and then click **Finish** button to reboot.



5.5 Installing the On-Board LAN Driver

After installing USB driver, repeat steps 5.1.1 and 5.1.2 to open LAN folder.

| | |
|--|--|
| <p>5.5.1</p> <p>Double click to open the LAN folder.</p> |  |
| <p>5.5.2</p> <p>Click on Autorun to install LAN driver automatically.</p> |  |
| <p>5.5.3</p> <p>Install or update the minimum drivers for Intel PRO adapters.</p> |  |
| <p>5.5.4</p> <p>You must restart Windows after installing on Windows 98 or NT4.</p> |  |
| <p>5.5.5</p> <p>Click on Exit after the installation is done.</p> |  |

Appendix A

Watchdog Timer

The NEX732L series features a watchdog timer that reset the CPU or generates an interrupt if the processor stops operating for any reason. This feature ensures system reliability in industrial standalone or unmanned environments.

A.1 Watchdog Timer Working Procedure

The Watchdog Timer (WDT) is a special hardware device that monitors the computer system during normal operation. The WDT has a clock circuit that times down from a set number to zero. If a monitored item occurs before the timer reaches zero, the WDT resets and counts down again. If for some reason the monitored item doesn't occur before the timer reaches zero, the WDT performs an action, such as a diagnostic operation (rebooting the computer) or generate an NMI.

You must enter timer values into the WDT Configuration Register (Write the control value to the Configuration Port), and clear (read the Configuration Port).

| WDT Configuration port | F2 | Default at F2 |
|------------------------|----------|-----------------------------------|
| Watchdog Timer | Disabled | 1. Default at disabled |
| | Enabled | 2. Enabled for user's programming |
| WDT Active Time | 1 sec | Default at 64 sec |
| | 2 sec | |
| | 4 sec | |
| | 8 sec | |
| | 16 sec | |
| | 32 sec | |
| | 64 sec | |
| | 128 sec | |

Table A-1: Watchdog Timer Character and Function

A.2 Watchdog Timer Control Register

The Watchdog Timer Control Register controls the EDT working mode. Write the value to the WDT Configuration Port. The following table describes the Control Register bit definition.

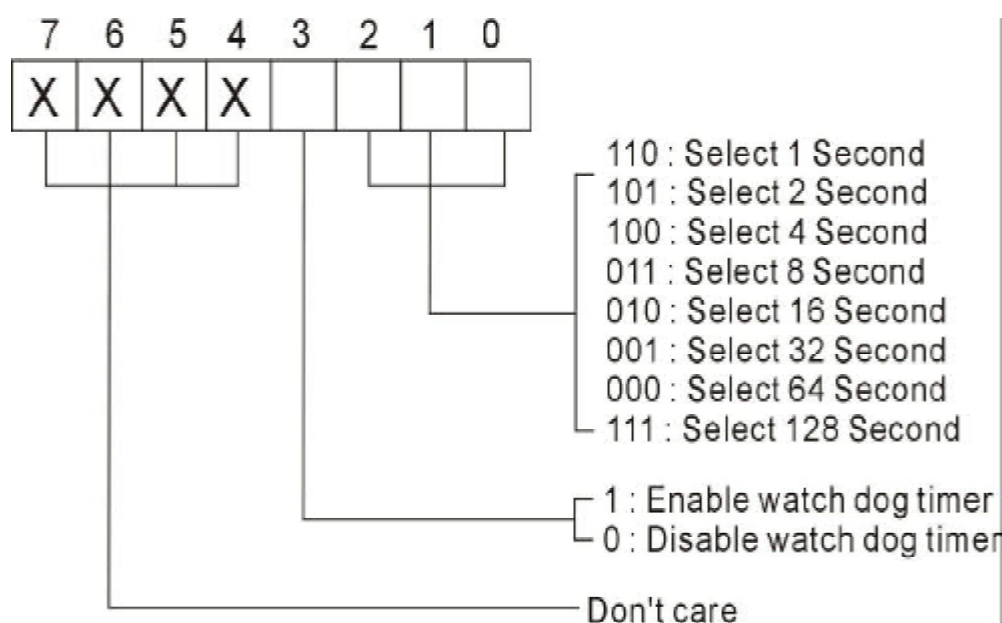


Table A-2: Control Register Bit Definition

A.3 Watchdog Timer Programming Procedure

A.3.1 Power On or Reset the System

The initial value of WDT Control Register (D3~D0) is zero (0), when power is on or the system has been reset. The following table indicates the initial value of WDT (00000000b) :

| Bit | Value | Mean |
|---------|-------|------------------------|
| 3 | 0 | Disable Watchdog Timer |
| 2, 1, 0 | 0 0 0 | Select 64 second |

Table A-3: WDT Control Register Initial Value

Clear the WDT

The WDT counter internal cannot be longer than the preset time, otherwise, the WDT generates a NMI (Non Maskable Interrupt) or sends a reset signal to the system.

Note: Before running WDT, clear the WDT to make sure the initial value is zero before enabling the WDT.

WDT Control Register (Write to WDT configuration port)

Note: This register writes to the WDT configuration port.

You can set the WDT Control Register to control the WDT working mode.

Follow below instructions to set the initial value of the WDT working mode.

1. Select the WDT time out occurs time
Time-out intervals decide by values of bit 2, bit 1, bit 0 in I/O port 2E0h
minute or second decide by values of bit 3 in I/O port 2E0h
2. Enable or Disable WDT Notice Output decide by bit 4 value in I/O port 2E0h
3. Enable or Disable NMI Output decide by bit 5 value in I/O port 2E0h
4. Enable or Disable Reset Output decide by bit 6 value in I/O port 2E0h
5. Enable or Disable the WDT decide by bit 7 value in I/O port 2E0h

After finishing the above settings, you must output the Control Register's value to the WDT Configuration Port. Then WDT will start according to the above settings.

Note: Build a mechanism in the program to continue to read the WDT Configuration Port for clearing WDT before time out.

Appendix B

GPI/O Programming

Logical Device 7

CRF0 (GPIO-GP17 I/O selection register)

When set to a '1', the respective GPIO port is programmed as an input port.

When set to a '0', the respective GPIO port is programmed as an output port.

CRF1 (GP10-GP17 data register)

If a port is programmed to be an output port, its respective bit can be read/written.

If a port is programmed to be an input port, its respective bit can only be read.

CRF2 (GP10-GP17 inversion register)

When set to a '1', the incoming/outgoing port value is inverted.

When set to a '0', the incoming/outgoing port value is the same as in the data register.

GP10-GP17

| Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|--------|------|------|------|-------|------|------|------|
| 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| Output | | | | Input | | | |

Ex

| | | |
|-----------|-----|------|
| SIO_PORT | EQU | 02EH |
| SIO_ENTRY | EQU | 087H |
| SIO_EXIT | EQU | 0AAH |

SIO Entry Configuration Procedure

| | |
|-----|---------------|
| mov | dx, SIO_PORT |
| mov | al, SIO_ENTRY |
| out | dx,al |
| nop | |
| nop | |
| out | dx,al |

Logical Device 7

| | |
|-----|--|
| mov | dx, SIO_PORT |
| mov | al, 07h |
| out | dx,al ;point to logical device number register |
| ; | |
| mov | al,07h |
| inc | dl |
| out | dx,al ;select logical device 7 |

Reading Digit I/O data for register CRF1

```
mov    dx, SIO_PORT
mov    al,0F1h
out    dx,al
inc    dl
in     al,dx    ;You need data in AL register
```

SIO exit configuration procedure

```
mov    dx, SIO_PORT
mov    al, SIO_EXIT
out    dx,al
```

Appendix C

Reflash BIOS Procedure

C.1 Reflash BIOS Procedure (N732T00B.bin)

Instructions for the flash BIOS are as follows:

1. Prepare a flash floppy disk

Using DOS O/S format, a boot disk with file command.com only, no himem.sys or other memory manager devices loaded during flash procedure, copy the attached flash utility and the “.bin” BIOS file to the boot disk.

2. Flash BIOS Procedure

Boot from the flash disk and type the following command line under A prompt

A:>af826 N732T00B.bin/sn/py/cd/cp/cc/F

Hit “**Enter**” to flash the BIOS

3. After Flash BIOS

Hit “**Delete**” to get into the BIOS and load the optimized default setting. Change any setting you want, and then “**Save**” and “**Exit**”.

Please check out a separate file called “Adaptecraid” for details on Adaptec Embedded SerialATA RAID