NOVA-7170

User Manual

Version 1.0

SOCKET 479 (Mobile) Pentium M with Ethernet LAN /LCD /VGA

January 01, 2005

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Table of Contents

CHAPTER 1. INTRODUCTION 5

1.1 SPECIFICATIONS 6
1.2 PACKAGE CONTENTS 7

CHAPTER 2. INSTALLATION 8

2.1 NOVA-7170 LAYOUT 8
2.2 UNPACKING PRECAUTIONS 9
2.3 CLEAR CMOS 9
2.4 LCD POWER SETTING 9
2.5 COM4 RS232/422/485 SELECT 10
2.6 COMPACTFLASH MASTER/SLAVE SELECTING 10

CHAPTER 3. CONNECTION 11

3.1 PCI E-IDE DISK DRIVE CONNECTOR 11
3.2 COM1/2/3/4 PORT CONNECTORS 13
3.3 EXTERNAL SWITCHES AND INDICATORS 13
3.4 USB PORT CONNECTORS 13
3.5 IRDA INFRARED INTERFACE PORT 14
3.6 FAN CONNECTORS 14
3.7 LAN CONNECTORS 14
3.8 VGA CONNECTOR 15
3.9 AUDIO CONNECTOR 15
3.10 POWER SUPPLY CONNECTOR 15
3.11 DIGITAL INPUT/OUTPUT CONNECTOR 16
3.12 FLOPPY DISK DRIVE CONNECTOR 16
3.13 LVDS LCD & INVERTER CONNECTOR 16
3.14 PARALLEL PORT CONNECTOR 17
3.15 KEYBOARD/MOUSE CONNECTOR 17
3.16 DVI CONNECTOR 17

CHAPTER 4. AMI BIOS SETUP 18

4.1 INTRODUCTION 18
4.2 STARTING SETUP 18
4.3 USING SETUP 18
4.4 GETTING HELP 19
4.5 BIOS MENU BAR 19
4.6 MAIN 20
4.7 ADVANCED 20

4.8 PCI PNP 28
4.9 BOOT 29
4.10 SECURITY 31
4.11 CHIPSET 32
4.12 POWER 34
4.13 EXIT 35

APPENDIX A: WATCHDOG TIMER 37

APPENDIX B: DIGITAL I/O 38

APPENDIX C: I/O ADDRESS MAP 39

Chapter 1. Introduction

Thank you for choosing NOVA-7170 SOCKET 479 (Mobile) Pentium M Single Board Computer. NOVA-7170 board is a 5.25" embedded form factor board equipped with high performance processor and multi-mode I/O designed for the system manufacturers, integrators, or VARs with reliable and quality performance at a reasonable price.

In addition, the VGA controller of NOVA-7170 Built-in AGP4X VGA (Intel 855GME) has 3D graphics capability, which provides up to 2048x1536x32-color resolution. The onboard VGA shares 32MB(max) system DDR-SDRAM.

An advanced high performance super AT I/O chip–Winbond W83627HF & Fintek F81216D are used in the NOVA-7170 board. On-chip UARTs are compatible with NS16C550. The parallel port and IDE interface are compatible with IBM PC/AT architecture.

NOVA-7170 has 82551/541 LAN controller. They are fully integrated 10BASE-T/ 100BASE-TX LAN/ 1000BASE-TX solution with high performance networking functions with low power consumption.

NOVA-7170 uses Intel 855GME chipsets, which are 100% software compatible and are of PCI 2.2 standard.

1.1 Specifications

- **CPU (PGA 479):** Intel (Mobile) Pentium M Processor, supports 400 MHz FSB
- **Bus speed:** PCI: 33 MHz
- **DMA channels:** 7
- **Interrupt levels:** 15
- **Chipset:** INTEL 855GME (GMCH)
- **Real-time clock:** INTEL 82801DB (ICH4)
- **System memory:** Two 184-pin DIMM socket to support DDR 200/266 SDRAM. The maximum memory is up to 2 GB.
- **ATA/100 IDE interface:** Support up to two PCI Enhanced IDE hard drives. The ATA/100 IDE can handle data transfer up to 100 MB/s.
- **Serial ports:** COM1, COM2, COM3, COM4 with 16C550 UART (or compatible) with 16-byte FIFO buffer. Supports up to 115.2Kbps.
- **Bi-directional parallel port:** Configurable to LPT1, or disabled. Supports EPP/ECP/SPP
- **Hardware monitor:** Built in to monitor power supply voltage and fan speed status
- **IrDA port:** Supports Serial Infrared (SIR) and Amplitude Shift Keyed IR (ASKIR) interface
- **USB port:** Supports 6 USB 2.0 ports for future expansion
- **Watchdog timer:** Software Programmable Reset generated when CPU does not periodically trigger the timer. You can use INT15 to control the watchdog and generate a system reset.
- **VGA controller:** Built-in AGP2.0 4X 3D graphics engine. Share system DDR SDRAM 32MB(max). Flat panel on-chip 855GME supports 18bit/24bit single pixel or 36bit/48bit dual pixel color LVDS TFT LCD.
- **Ethernet:** Intel 82551/541 Fast Ethernet controllers, IEEE 802.3u Auto-Negotiation support for 10BASE-T/ 100BASE-TX/ 1000BASE-TX standard.
- **Keyboard and PS/2 mouse:** A 6-pin PS/2 connector is located on board for easy connection to keyboard and mouse.
- **Digital input/output:** It provide with 4-bit digital input/output (TTL level).
- **Audio:** AC'97 Audio CODEC.
- **Compact flash:** It can be used (IDE2) with a passive adapter (True IDE Mode) in a Type II Socket.
- **Power consumption:** (Pentium M (mobile CPU): +5V@3.1A, 12V@2.3A, 5VSB@0.8A(1.7GHz/L2-2M, 512MB DDR266-SDRAM, Windows XP, 3Dmark2001). (Celeron M (mobile CPU): +5V@2.3A, 12V@0.3A, 5VSB@0.8A (600MHz/L2-512K, 512MB DDR266-SDRAM, Windows XP, 3Dmark2001)
- **Operating temperature:** 0 ℃ ~ 60 ℃ (*CPU needs Cooler & Thermal Compound *)

WARNING:

1. Run the processor only when the heat sink (cooler) is properly and firmly attached.

1.2 Package Contents

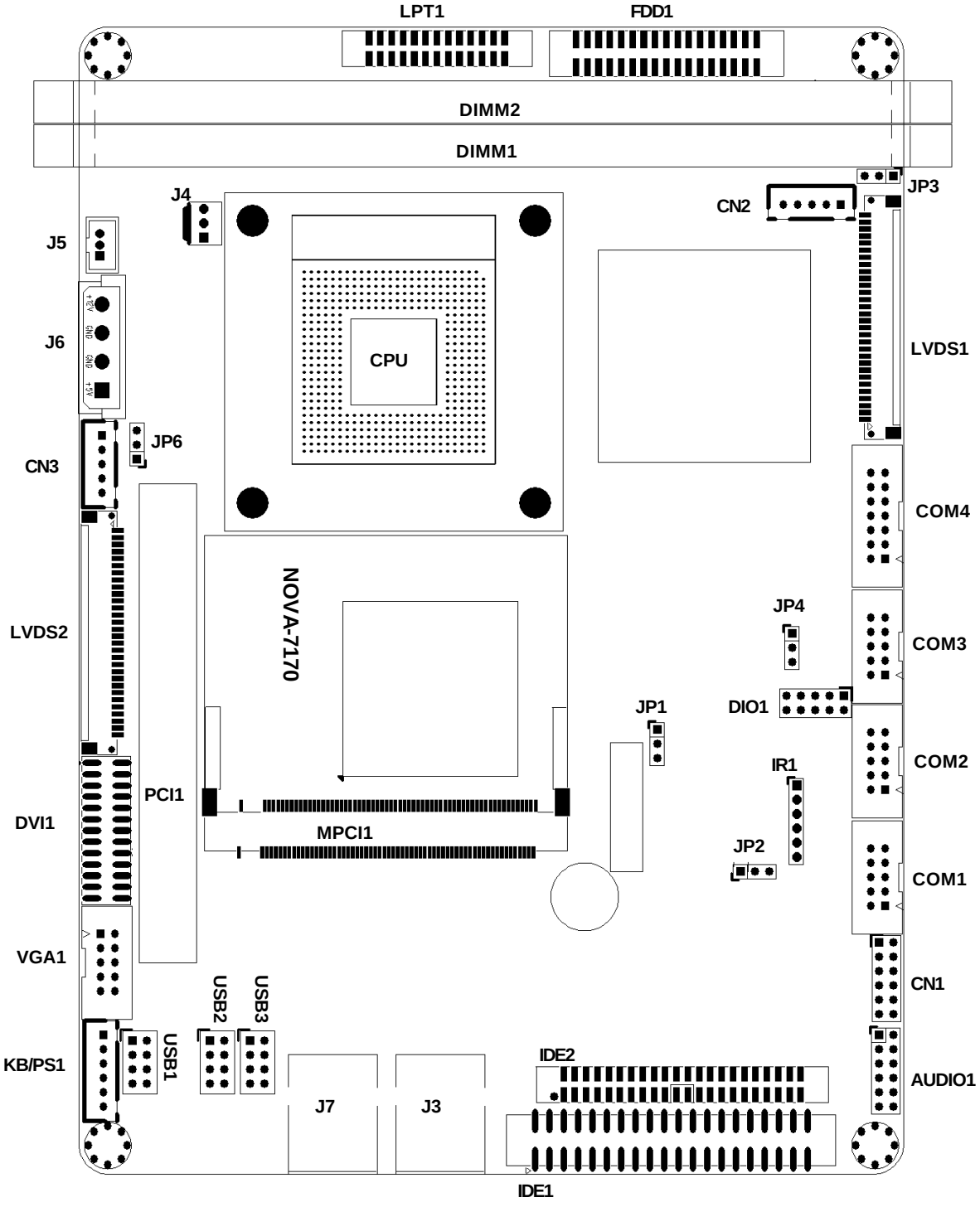
In addition to this *User's Manual*, the NOVA-7170 package includes the following items:

- NOVA-7170 single board computer
- CD Drivers
- One IDE Cable (Pitch: 2.54mm ATA-100)
- One IDE Cable (Pitch: 2.0mm)
- One VGA Cable
- One FDD Cable
- One Audio Cable
- One USB Cable
- Three COM PORT Cable
- One RS232/422/485 Cable
- One PRINTER Cable
- One ATX POWER Cable
- One 6-pin cable converts to two 6-pin mini-Din cable for keyboard and mouse connection

If any of these items are missing or damaged, please contact the dealer from whom you purchased this product. Save the shipping materials and carton in case you want to ship or store the product in the future.

Chapter 2. Installation

2.1 NOVA-7170 Layout



2.2 Unpacking Precautions

Some components on NOVA-7170 SBC are very sensitive to static electric charges and can be damaged by a sudden rush of power. To protect it from unintended damage, please be sure to follow these precautions:

- Ground yourself to remove any static charge before touching your NOVA-7170 SBC. You can do it by using a grounded wrist strap at all times or by frequently touching any conducting materials that is connected to the ground.
- Handle your NOVA-7170 SBC by its edges. If not necessary, please do not touch IC chips, leads or circuitry.
- Do not plug any connector or jumper while the power is on.

Table of Jumpers

LABEL	FUNCTION
JP1	CMOS state setting
JP2	Compact Flash Master/Slave Setting
JP3	LCD Power setting
JP4	COM4 RS232/422/485 select
JP6	LCD Power setting

2.3 Clear CMOS

To clear the CMOS data, short the JP1 (2-3) for about 3 seconds, then open it again.

- **JP1: Clear CMOS (Reserved Function)**

JP1	DESCRIPTION
1-2 (Default)*	**Keep CMOS Setup (Normal Operation)**
Short 2-3	**Clear CMOS Setup**

WARNING:
When you change the power supply between ATX and AT, clear CMOS (Power On) first. Otherwise, the CPU Board may fail to boot up.

2.4 LCD Power setting

This jumper is for the setting of LCD panel voltage.

- **JP3: LDVS1 LCD Power Select**

JP3	DESCRIPTION
1-2 Short (Default)*	**+3.3V**
2-3 short	**+5V**

- **JP6: LVDS2 LCD Power Select**

JP6	DESCRIPTION
1-2 Short (Default)*	**+3.3V**
2-3 short	**+5V**

2.5 COM4 RS232/422/485 select

· **JP4: COM4-RS232 or RS422/485 Selection**

JP4	Description
1-2 Short (Default)*	RS232
2-3 Short	RS422

2.6 CompactFlash master/Slave Selecting

• **JP2: Compact Flash Master/Slave Setting**

JP2	DESCRIPTION
1-2 Short (Default)*	Master
2-3 Short	Slave

Chapter 3. Connection

This chapter describes how to connect peripherals, switches and indicators to the NOVA-7170 board.

- **Table of Connectors**

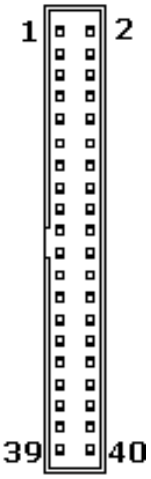
LABEL	FUNCTION
AUDIO1	AUDIO MIC-IN, LINE-IN, LINE-OUT Connector
BZ1	Speaker Connector
CN1	External switches and indicators
COM1	Serial Port 1 Connector (RS232)
COM2	Serial Port 2 Connector (RS232)
COM3	Serial Port 3 Connector (RS232)
COM4	Serial Port 4 Connector (RS232/422/485)
DIO1	Digital INPUT/OUTPUT Connector
DVI1	DVI Connector (optional)
FDD1	Floppy Disk Connector
IDE1	Primary IDE Connector
IDE2	Secondary IDE Connector
IR1	IRDA Connector
J2	Compact Flash Connector
J3	LAN Connector
J4	Fan Connector
J5	Power supply (ATX) to Main board Connector
J6	Power supply (AT) to Main board Connector
J7	LAN Connector
KB/PS1	6-pin Header Keyboard and PS2 Mouse Connector
LVDS1 & CN2	LVDS1 panel & Inverter Connector
LVDS2 & CN3	LVDS2 panel & Inverter Connector (optional)
LPT1	Parallel Port Connector
USB1	USB Connector
USB2	USB Connector
USB3	USB Connector
VGA1	VGA 15-pin Connector

3.1 PCI E-IDE Disk Drive Connector

You can attach up to two IDE (Integrated Device Electronics) hard disk drives on the one channel provided. These connectors support Ultra-DMA100 IDE devices.

- **IDE1: Primary IDE Connector (Pitch 2.54 mm)**
- **IDE2: Secondary IDE Connector (Pitch 2.0 mm)**
- **J2: Secondary IDE Connector (Compact Flash Storage Card Socket)**

- **IDE1/IED2 Interface Connector**



PIN	DESCRIPTION	PIN	DESCRIPTION
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	N/C
21	DMARQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	IORDY	28	BALE
29	DMACK#	30	GROUND
31	INTERRUPT	32	N/C
33	SA1	34	PDIAG
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND
41	+5V	42	+5V
43	GROUND	44	N/C

Note: Pins 41~44 are applicable for IDE2 only

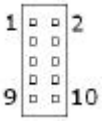
The NOVA-7170 includes a slot for a Compact Flash Storage Card in IDE Mode (using IDE2).

- **J2: Compact Flash Storage Card Socket**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GROUND	26	GROUND
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS1#	32	CS3#
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	VCC
12	N/C	37	IRQ15
13	VCC	38	VCC
14	N/C	39	MASTER/SLAVE
15	N/C	40	N/C
16	N/C	41	RESET#
17	N/C	42	IORDY
18	A2	43	DMARQ
19	A1	44	DMACK#
20	A0	45	ACTIVE#
21	D0	46	PDIAG#
22	D1	47	D8
23	D2	48	D9
24	N/C	49	D10
25	GROUND	50	GROUND

3.2 COM1/2/3/4 Port Connectors

- **COM1~4: COM1~3 10-pin box header, COM4 14-pin box header**



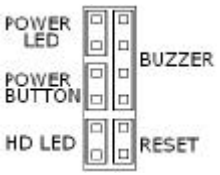
PIN	DESCRIPTION	PIN	DESCRIPTION
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	GND
11	(RS422/485) TX+	12	(RS422/485) TX-
13	(RS422) RX+	14	(RS422) RX-

Note: Pins 11~14 are applicable for COM4 only. If you want to use the RS485, just connect to TX2+, TX2-. If you want to use the RS422, please connect to TX2+, TX2-, RX2+, and RX2-.

3.3 External Switches and Indicators

There are several external switches and indicators for monitoring and controlling the CPU board. All functions are in CN1 connector.

- **CN1: Pin assignment and function**



FUNCTION	PIN	DESCRIPTION	FUNCTION	PIN	DESCRIPTION
POWER LED	1	LED+	BUZZER	2	BUZZER-
	3	LED-		4	NC
POWER BUTTON	5	BUTTON1		6	NC
	7	BUTTON2		8	VCC
HDD LED	9	HDD LED+	RESET	10	RESET
	11	HDD LED-		12	GND

3.4 USB Port Connectors

NOVA-7170 provides 6 built-in USB2.0 ports for new I/O bus expansion.

- **USB1~3: USB1~3 8-pin header**

USB1~3			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC	2	GROUND
3	DATA0-	4	DATA0+
5	DATA0+	6	DATA0-
7	GROUND	8	VCC

3.5 IrDA Infrared Interface Port

NOVA-7170 has a built-in IrDA port which supports Serial Infrared (SIR) or Amplitude Shift Keyed IR (ASKIR) interface. To use the IrDA port, configure SIR or ASKIR model in the BIOS under Peripheral Setup COM2. The normal RS-232 COM 2 will be disabled.

- **IR1: IRDA Connector**

PIN	DESCRIPTION
1	VCC
2	N/C
3	IRRX
4	GND
5	IRTX
6	CIRRX

3.6 Fan Connectors

NOVA-7170 provides one CPU cooling fan connectors, which can supply 12V/500mA to the cooling fan. All connectors have the same pin assignments and provide a "rotation" pin to get rotation signals from fans and notice the system. So the system BIOS can recognize the fan speed. Please note that only specified fan can issue the rotation signals.

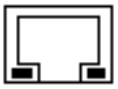
- **J4: Fan Connector**

PIN	DESCRIPTION
1	Rotation Signal
2	+12V
3	GND

3.7 LAN Connectors

NOVA-7170 is equipped with LAN1 10/100/1000-TX Ethernet controllers. The pin assignments are listed below:

- **J3 / J7: LAN Connector**

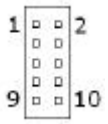


PIN	DESCRIPTION	PIN	DESCRIPTION
1	TX0+	5	TX2-
2	TX0-	6	TX1-
3	TX1+	7	TX3+
4	TX2+	8	TX3-

3.8 VGA Connector

NOVA-7170 has a built-in 10-pin box header VGA connector directly connected to your CRT monitor.

- **VGA1: 10-pin Connector**

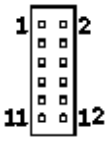


PIN	DESCRIPTION	PIN	DESCRIPTION
1	RED	2	DDC CLK
3	GREEN	4	DDC DAT
5	BLUE	6	GROUND
7	HSYNC	8	GROUND
9	VSYNC	10	GROUND

3.9 Audio Connector

NOVA-7170 has a built-in AC'97 AUDIO CODEC connector directly connected to your MIC-IN & LINE-IN & LINK-OUT.

- **AUDIO1: Audio Connector**

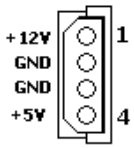


PIN	DESCRIPTION	PIN	DESCRIPTION
1	LEFT SPEAKER OUT	2	RIGHT SPEAKER OUT
3	GROUND	4	GROUND
5	LINE OUT - LEFT	6	LINE OUT - RIGHT
7	LINE IN - LEFT	8	LINE IN - RIGHT
9	GROUND	10	GROUND
11	LINE IN - RIGHT	12	GROUND

3.10 Power supply Connector

This connector supports the AT/ATX power and provides functions such as modem ring on; wake-up LAN and soft power off are supported by mainboard. (Power source from Main board)

- **J6: Power Connector (AT)**



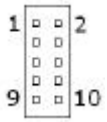
PIN	DESCRIPTION
1	+12V
2	GROUND
3	GROUND
4	+5V

- **J5: Power Connector (ATX)**

PIN	DESCRIPTION
1	+5V SB
2	GROUND
3	PS ON

3.11 Digital INPUT/OUTPUT Connector

These I/O pins are TTL level with 8mA source-sink capability.

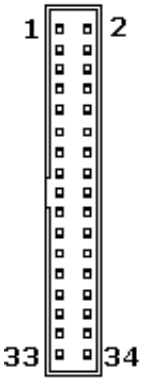


DIO1			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	GROUND	2	VCC5
3	OUT0	4	OUT1
5	OUT2	6	OUT3
7	IN0	8	IN1
9	IN2	10	IN3

3.12 Floppy Disk Drive Connector

The NOVA-7170 board is equipped with a 34-pin daisy-chain drive connector cable.

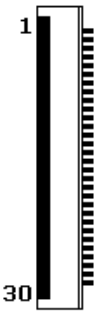
- **FDD1: Floppy Disk Drive Connector**



PIN	DESCRIPTION	PIN	DESCRIPTION
1	GROUND	2	RWC0-
3	GROUND	4	NC
5	GROUND	6	RWC1-
7	GROUND	8	INDEX-
9	GROUND	10	MO-A
11	GROUND	12	DS-B
13	GROUND	14	DS-A
15	GROUND	16	MO-B
17	GROUND	18	DIR-
19	GROUND	20	STEP-
21	GROUND	22	WD-
23	GROUND	24	WGATE-
25	GROUND	26	TRK0-
27	GROUND	28	WP-
29	GROUND	30	RDATA-
31	GROUND	32	HEAD-
33	GROUND	34	DSKCHG-

3.13 LVDS LCD & Inverter Connector

- **LVDS1: LVDS Connector**

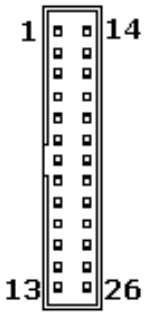


PIN	DESCRIPTION	PIN	DESCRIPTION
1	GROUND	16	CH2 DATA3-
2	GROUND	17	CH2 CLK+
3	CH1 DATA3+	18	CH2 CLK-
4	CH1 DATA3-	19	CH2 DATA2+
5	CH1 CLK+	20	CH2 DATA2-
6	CH1 CLK-	21	CH2 DATA1+
7	CH1 DATA2+	22	CH2 DATA1-
8	CH1 DATA2-	23	CH2 DATA0+
9	CH1 DATA1+	24	CH2 DATA0-
10	CH1 DATA1-	25	GROUND
11	CH1 DATA0+	26	GROUND
12	CH1 DATA0-	27	LCD power
13	GROUND	28	LCD power
14	GROUND	29	LCD power
15	CH2 DATA3+	30	LCD power

3.14 Parallel Port Connector

Usually, a printer is connected to the parallel port. The NOVA-7170 includes an on-board parallel port.

- **LPT1: Parallel Port Connector**



PIN	DESCRIPTION	PIN	DESCRIPTION
1	STROBE#	14	AUTO FORM FEED #
2	DATA 0	15	ERROR#
3	DATA 1	16	INITIALIZE
4	DATA 2	17	PRINTER SELECT IN#
5	DATA 3	18	GROUND
6	DATA 4	19	GROUND
7	DATA 5	20	GROUND
8	DATA 6	21	GROUND
9	DATA 7	22	GROUND
10	ACKNOWLEDGE	23	GROUND
11	BUSY	24	GROUND
12	PAPER EMPTY	25	GROUND
13	PRINTER SELECT	26	NC

3.15 Keyboard / Mouse Connector

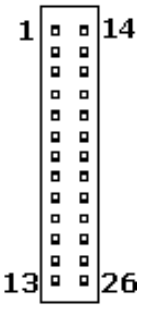
The NOVA-7170 has a keyboard/mouse connector.

- **KB/PS1: Keyboard / Mouse Connector**

PIN	DESCRIPTION
1	+5V KB DATA
2	MS DATA
3	MS CLK
4	KB DATA
5	KB CLK
6	GROUND

3.16 DVI Connector

- **DVI1: DVI Connector**



PIN	DESCRIPTION	PIN	DESCRIPTION
1	DATA2-	14	+5V
2	DATA2+	15	GND
3	GROUND	16	HPDET
4	NC	17	DATA0-
5	NC	18	DATA0+
6	DDCCLK	19	GROUND
7	DDCDATA	20	NC
8	NC	21	NC
9	DATA1-	22	GROUND
10	DATA1+	23	CLK+
11	GROUND	24	CLK-
12	NC	25	GROUND
13	NC	26	NC

Note: The DVI function IS optional.

Chapter 4. AMI BIOS Setup

4.1 Introduction

This manual discusses AMI's Setup program built into the ROM BIOS. The Setup program allows users to modify the basic system configuration. This special information is then stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

4.2 Starting Setup

The AMI BIOS is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Del> immediately after switching the system on, or
2. by pressing the <Del>key when the following message appears briefly at the bottom of the screen during the POST.

   Press DEL to enter SETUP.

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to...

4.3 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item in the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
Page Up key	Increase the numeric value or make changes
Page Dn key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 /F3 key	Change color from total 16 colors. F2 to select color forward.
F10 key	Save all the CMOS changes, only for Main Menu

4.4 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the **F1** key again.

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AMI BIOS supports an override to the CMOS settings, which resets your system to its defaults.

The best advice is to only alter settings, which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both AMI and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

4.5 BIOS menu bar

The **menu bar** on top of the screen has the following main items:

Main For changing the basic system configuration.

Advanced For changing the advanced system settings.

PCI PnP This entry appears if your system supports PnP / PCI.

Boot For changing the system boot configuration.

Security Use this menu to set User and Supervisor Passwords.

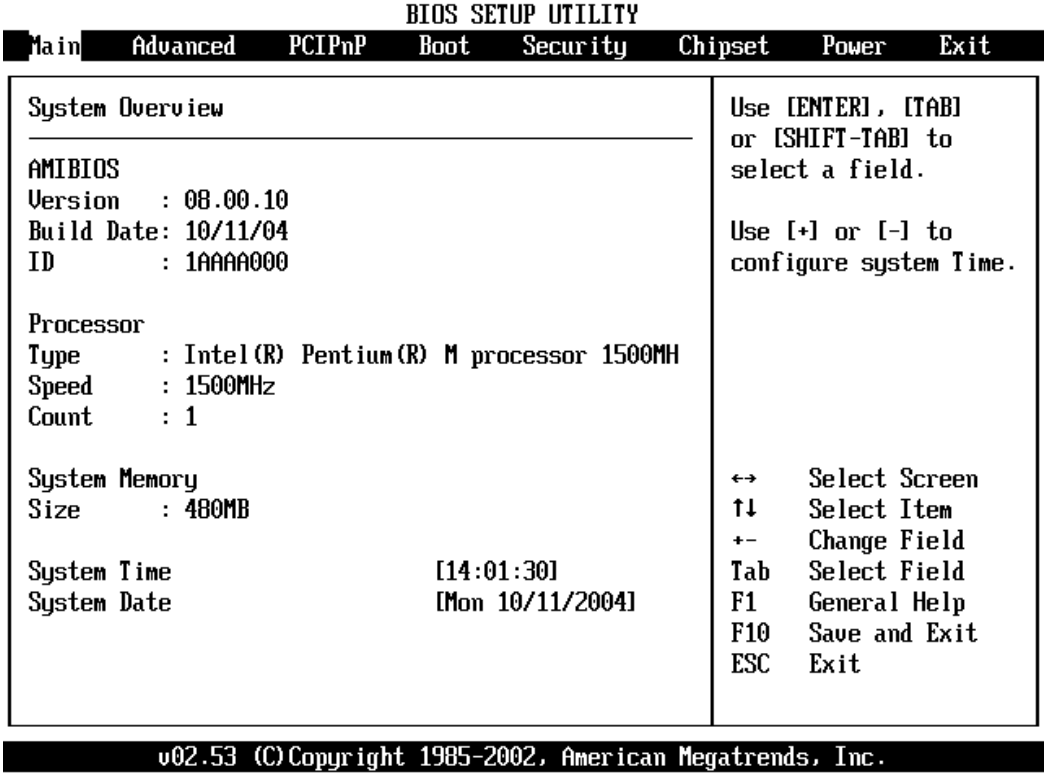
Chipset For changing the chipset setting.

Power For changing the advanced power management configuration.

Exit For selecting the exit options and loading default settings.

4.6 Main

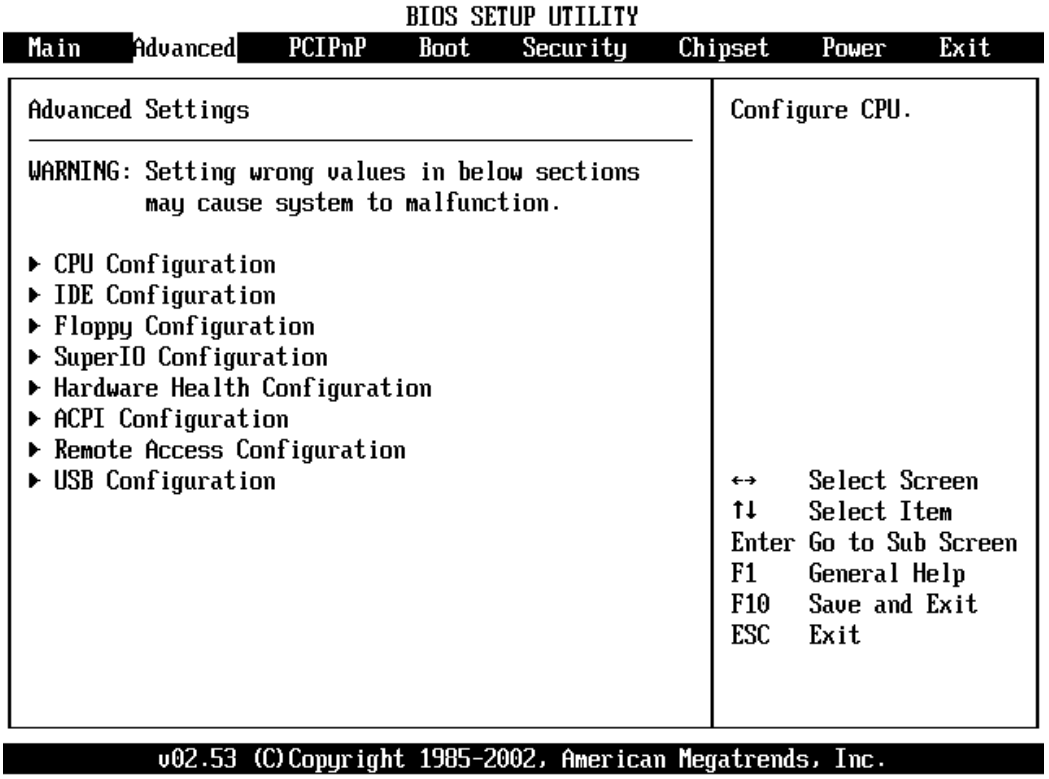
When you enter the BIOS Setup program, the Main menu screen appears giving you an overview of the basic system information.



AMI BIOS This item displays the auto-detected BIOS information.
Processor This item displays the auto-detected CPU specification.
System Memory This item displays the auto-detected system memory.
System Time [xx:xx:xx] This item allows you to set the system time.
System Date [Day xx/xx/xxxx] This item allows you to set the system date.

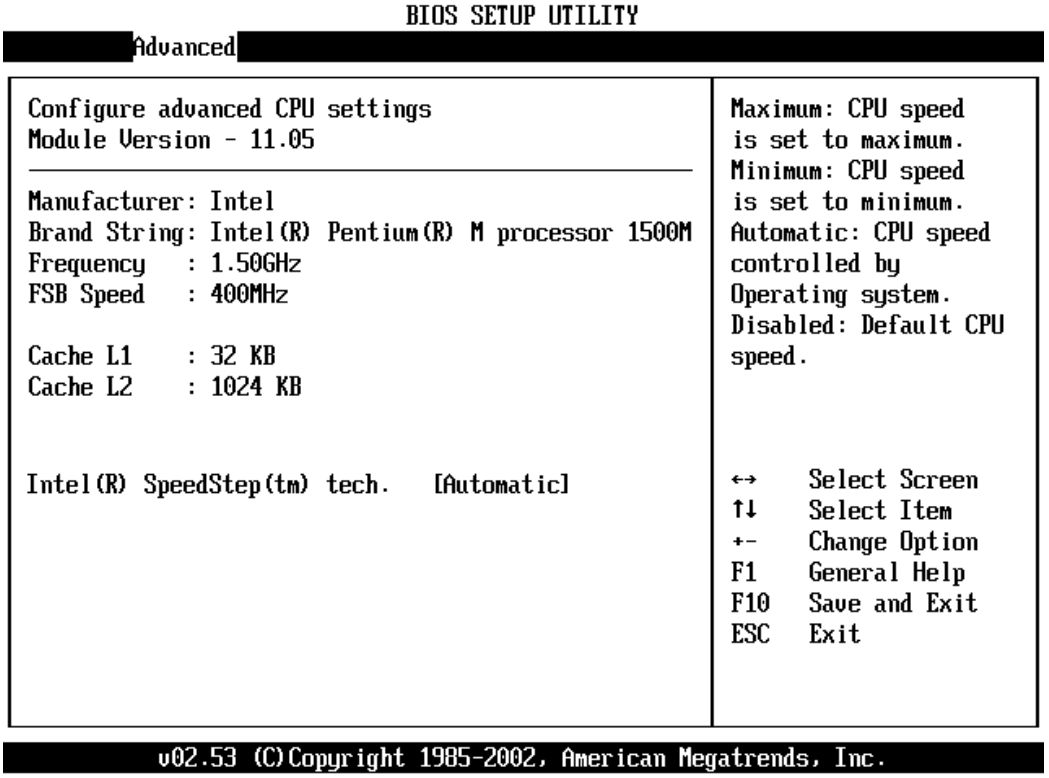
4.7 Advanced

The Advanced menu items allow you to change the settings for the CPU and other system devices.



4.7.1 CPU Configuration

The items in this menu show the CPU-related information auto-detected by BIOS.



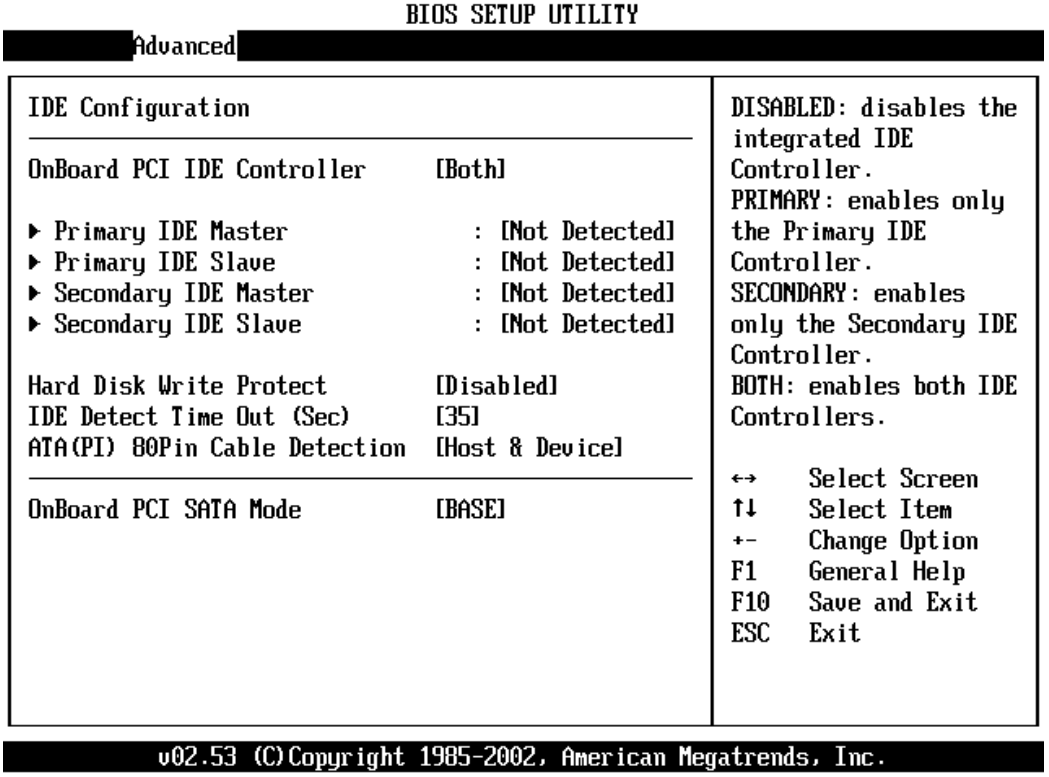
Intel® SpeedStep™ tech [Automatic]

This item allows you to set the PM CPU SpeedStep Mode.

Configuration options: [Maximum Speed] [Minimum Speed] [Automatic] [Disable]

4.7.2 IDE Configuration

The items in this menu allow you to set or change the configurations for the IDE devices installed in the system. Select an item then press Enter if you wish to configure the item.



OnBoard PCI IDE Controller

This item allows you to select the IDE mode

Configuration options: [Disabled] [Primary] [Secondary] [Both]

Primary and Secondary IDE Master/Slave

The values opposite the dimmed items (Device, Vendor, Size, LBA Mode, Block Mode, PIO Mode, Async DMA, Ultra DMA, and SMART monitoring) are auto-detected by BIOS and are not user-configurable. These items show N/A if no IDE device is installed in the system.

Type [Auto]

Selects the type of IDE drive. Setting to Auto allows automatic selection of the appropriate IDE device type. Select CDROM if you are specifically configuring a CD-ROM drive. Select ARMD (ATAPI Removable Media Device) if your device is either a ZIP, LS-120, or MO drive.

Configuration options: [Not Installed] [Auto] [CDROM] [ARMD].

LBA/Large Mode [Auto]

Enables or disables the LBA mode. Setting to Auto enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled.

Configuration options: [Disabled] [Auto]

Block (Multi-sector Transfer) [Auto]

Enables or disables data multi-sectors transfers. When set to Auto, the data transfer from and to the device occurs multiple sectors at a time if the device supports multi-sector transfer feature. When set to Disabled, the data transfer from and to the device occurs one sector at a time.

Configuration options: [Disabled] [Auto]

PIO Mode [Auto]

Selects the PIO mode.

Configuration options: [Auto] [0] [1] [2] [3] [4]

SMART Monitoring [Auto]

Sets the Smart Monitoring, Analysis, and Reporting Technology.

Configuration options: [Auto] [Disabled] [Enabled]

32Bit Data Transfer [Disabled]

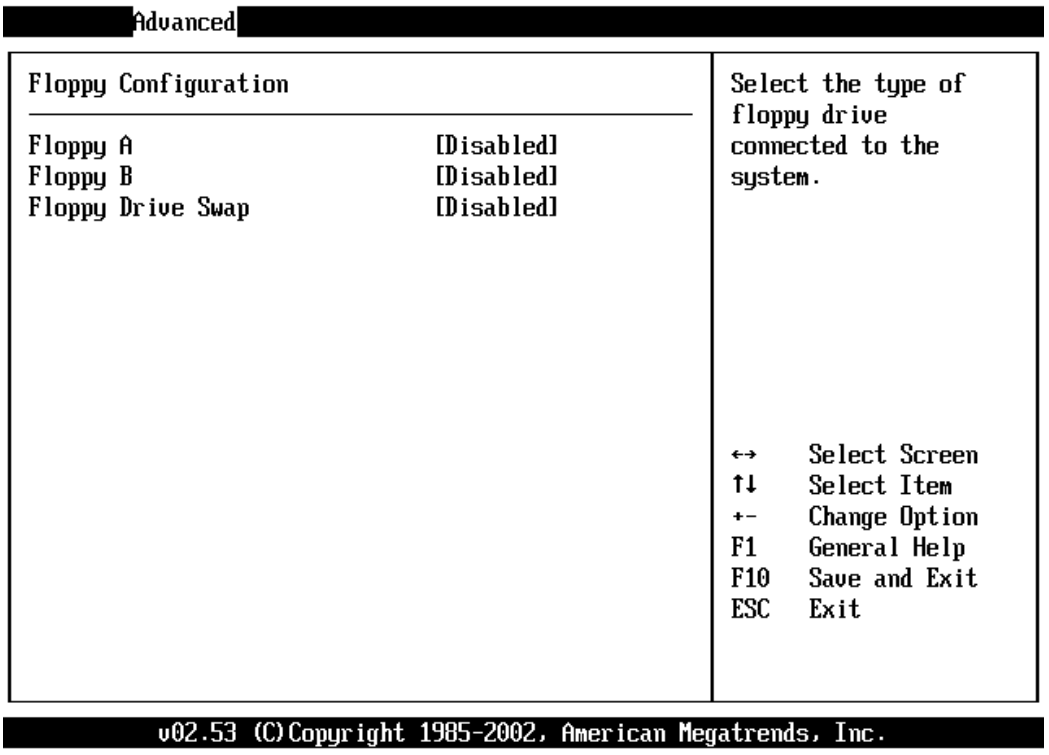
Enables or disables 32-bit data transfer.

Configuration options: [Disabled] [Enabled]

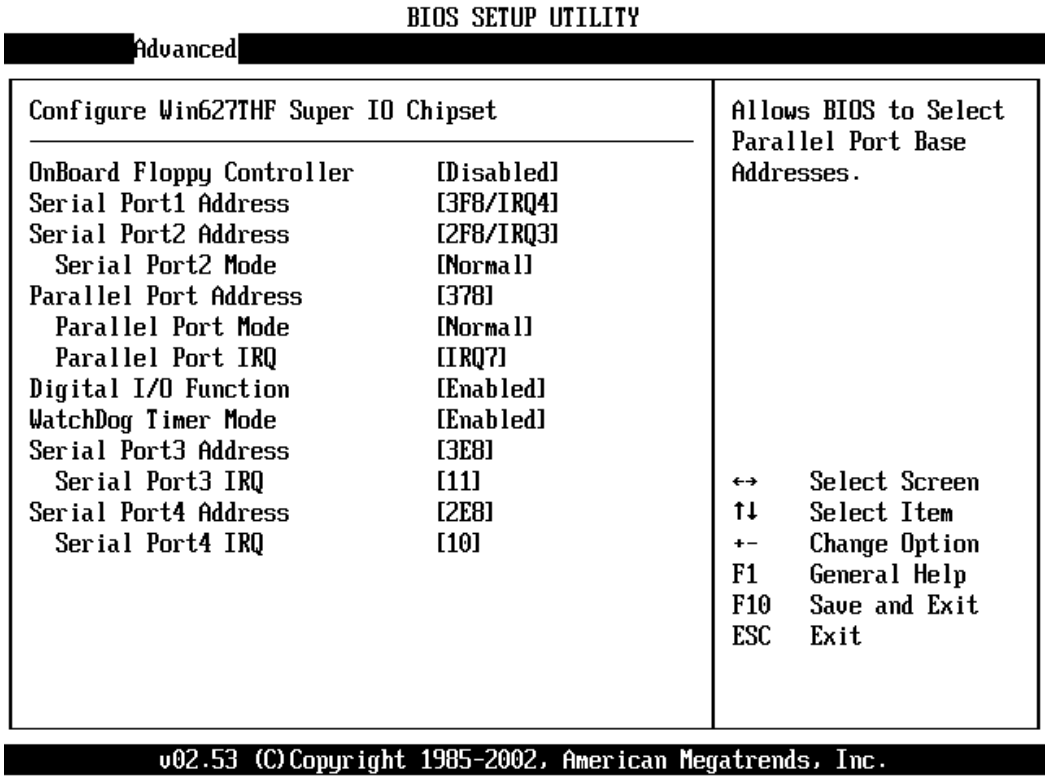
4.7.3 Floppy Configuration

Sets the type of floppy drive installed.

Configuration options: [Disabled][360K, 5.25 in.][1.2M, 5.25 in.][720K, 3.5 in.] [1.44M, 3.5 in.] [2.88M, 3.5in.]



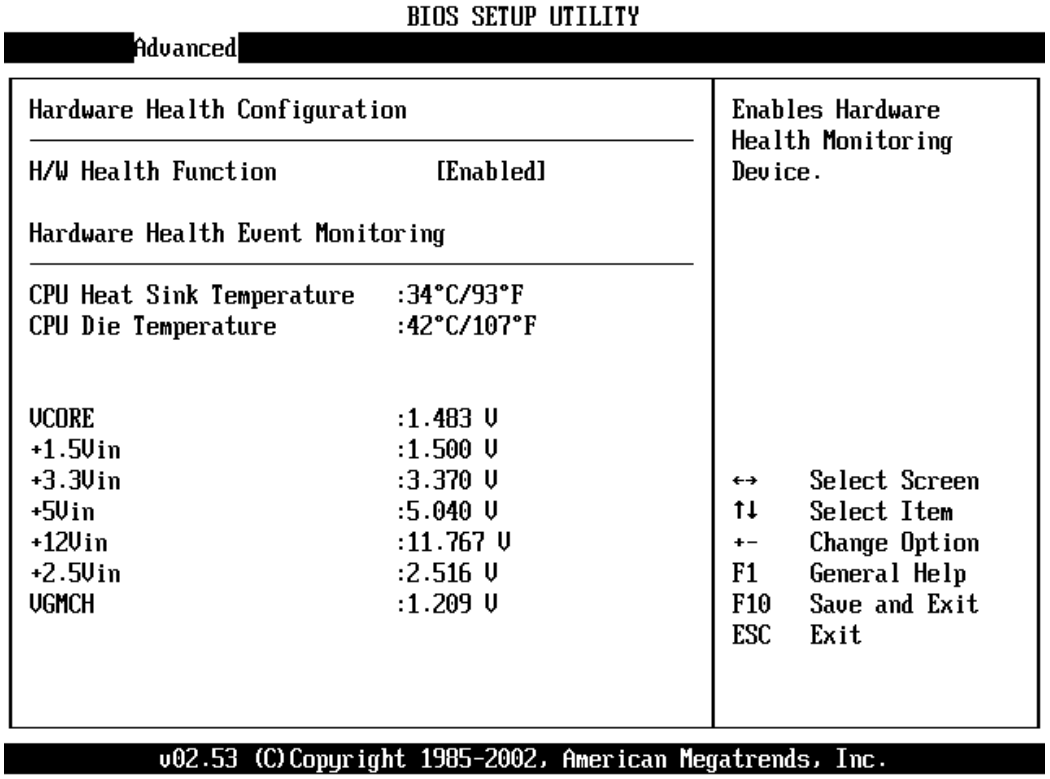
4.7.4 Super IO Configuration



On Board Floppy Controller [Enabled]
Allows you to enable or disable the floppy disk controller.
Configuration options: [Disabled] [Enabled]
Serial Port1 Address [3F8/IRQ4]
Allows you to select the Serial Port1 base address.
Configuration options: [Disabled] [3F8/IRQ4] [3E8/IRQ4] [2E8/IRQ3]
Serial Port2 Address [2F8/IRQ3]
Allows you to select the Serial Port2 base address.
Configuration options: [Disabled] [2F8/IRQ3] [3E8/IRQ4] [2E8/IRQ3]
Parallel Port Address [378]
Allows you to select the Parallel Port base addresses.
Configuration options: [Disabled] [378] [278] [3BC]
Parallel Port Mode [Normal]
Allows you to select the Parallel Port mode.
Configuration options: [Normal] [Bi-directional] [EPP] [ECP]
Parallel Port IRQ [IRQ7]
Configuration options: [IRQ5] [IRQ7]
Digital I/O Function [Enabled]
Allows you to enable or disable the Digital I/O Function.
Configuration options: [Disabled] [Enabled]
WatchDog Timer Mode [Enabled]
Allows you to enable or disable the WatchDog Time Mode.
Configuration options: [Disabled] [Enabled]
Serial Port3 Address [3E8/IRQ11]
Allows you to select the Serial Port3 base address.
Configuration options: [Disabled] [3E8] [2E8] [2F0] [2E0]
Serial Port3 IRQ: [3] [4] [10] [11]
Serial Port4 Address [2E8/IRQ10]
Allows you to select the Serial Port4 base address.
Configuration options: [Disabled] [3E8] [2E8] [2F0] [2E0]

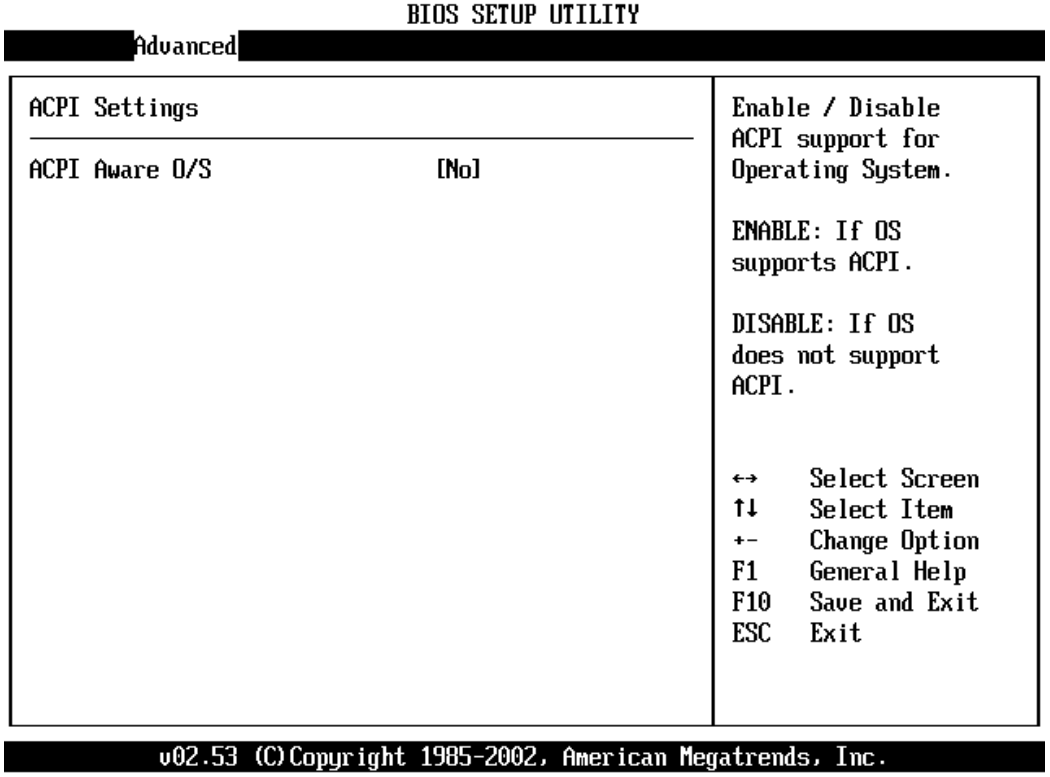
Serial Port3 IRQ: [3] [4] [10] [11]

4.7.5 Hardware Health Configuration

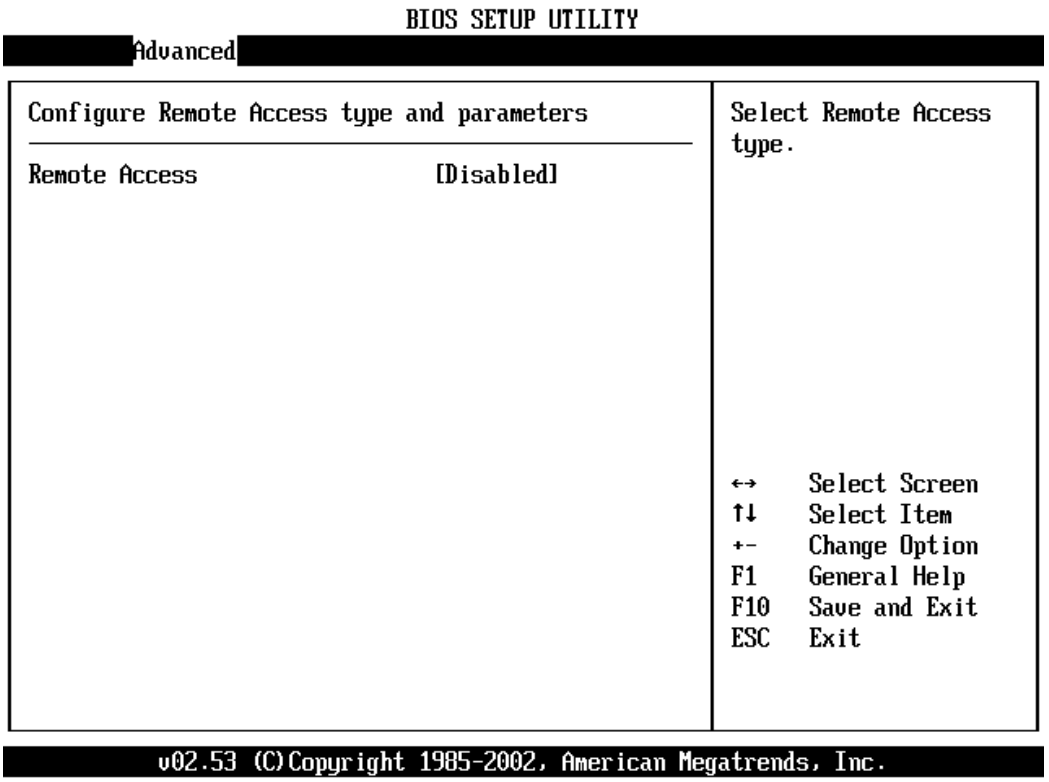


4.7.6 ACPI Configuration

Allows you to change the settings for the Advanced Power Management (APM). Select an item then press Enter to display the configuration options.



4.7.7 Remote Access Configuration



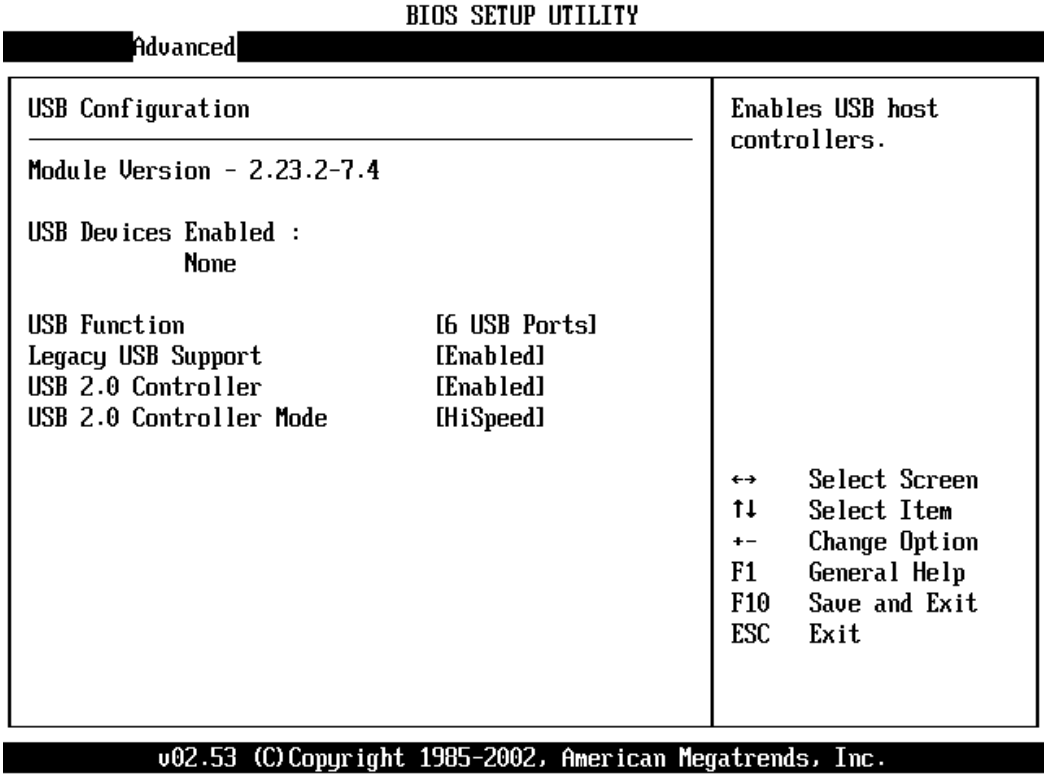
Configure Remote Access.

Remote Access [Disabled]

Configuration options: [Disabled] [Enabled]

4.7.8 USB Configuration

The items in this menu allow you to change the USB-related features.
Select an item then press Enter to display the configuration options.



USB Function [6 USB Ports]
Allows you to set the number of USB ports to activate.
Configuration options: [Disabled] [2 USB Ports] [4 USB Ports] [6 USB Ports]

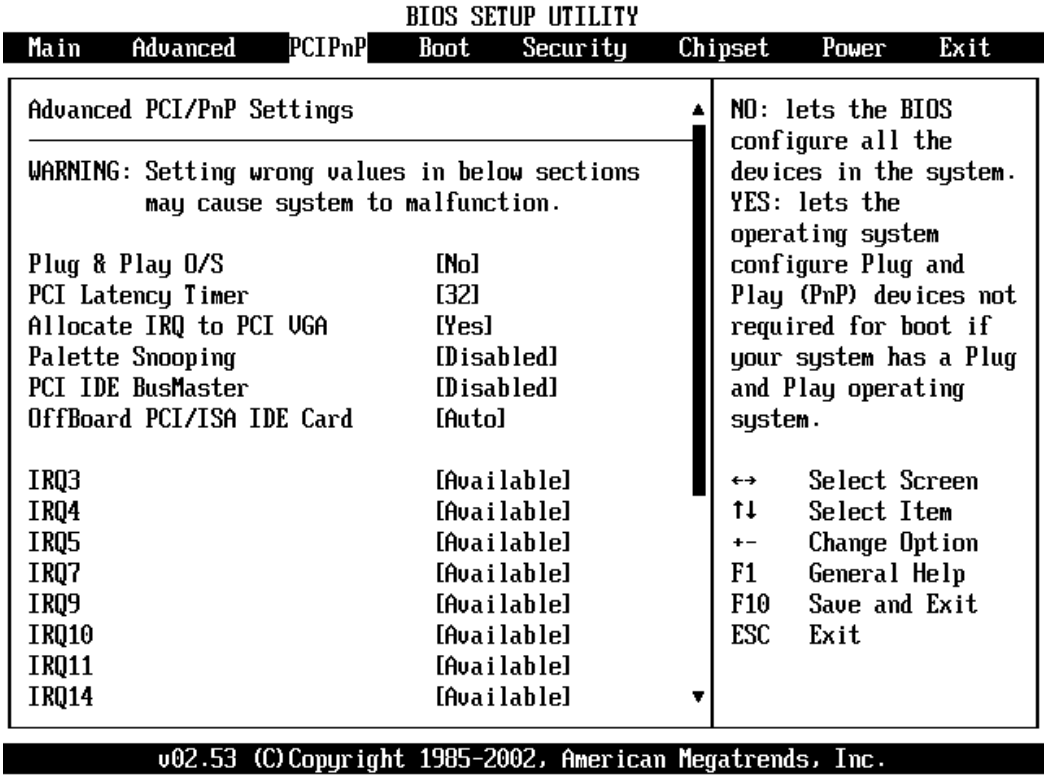
Legacy USB Support [Enable]
Enable support for legacy USB.
Configuration options: [Disabled] [Enabled]

USB 2.0 Controller [Enabled]
Allows you to enable or disable the USB 2.0 controller.
Configuration options: [Disabled] [Enabled]

USB 2.0 Controller Mode [HiSpeed]
Allows you to configure the USB 2.0 controller in HiSpeed (480 Mbps) or Full Speed (12 Mbps).
Configuration options: [HiSpeed] [Full Speed]

4.8 PCI PnP

The PCI PnP menu items allow you to change the advanced settings for PCI/PnP devices. The menu includes setting IRQ and DMA channel memory size block for legacy ISA devices.



Plug & Play O/S [NO]

When set to [No], BIOS configures all the devices in the system. When set to [Yes] and if you installed a Plug & Play operating system, the operating system configures the Plug & Play devices not required for boot.

Configuration options: [No] [Yes]

PCI Latency Timer [32]

Allows you to select the value in units of PCI clocks for the PCI device latency timer register.

Configuration options: [32] [64] [96] [128] [160] [192] [224] [248].

Allocate IRQ to PCI VGA [Yes]

When set to [Yes], BIOS assigns an IRQ to PCI VGA card if the card requests for an IRQ. When set to [No], BIOS does not assign an IRQ to the PCI VGA card even if requested.

Configuration options: [No] [Yes]

Palette Snooping [Disabled]

When set to [Enabled], the palette snooping feature informs the PCI devices that an ISA graphics device is installed in the system so that the latter can function correctly. Setting to [Disabled] deactivates this feature.

Configuration options: [Disabled] [Enabled]

PCI IDE Bus Master [Disabled]

Allows BIOS to use PCI bus mastering when reading/writing to IDE devices.

Configuration options: [Disabled] [Enabled]

Off Board PCI / ISA IDE Card [Auto]

Some PCI IDE cards may require this to be set to the PCI slot number that is holding the card.

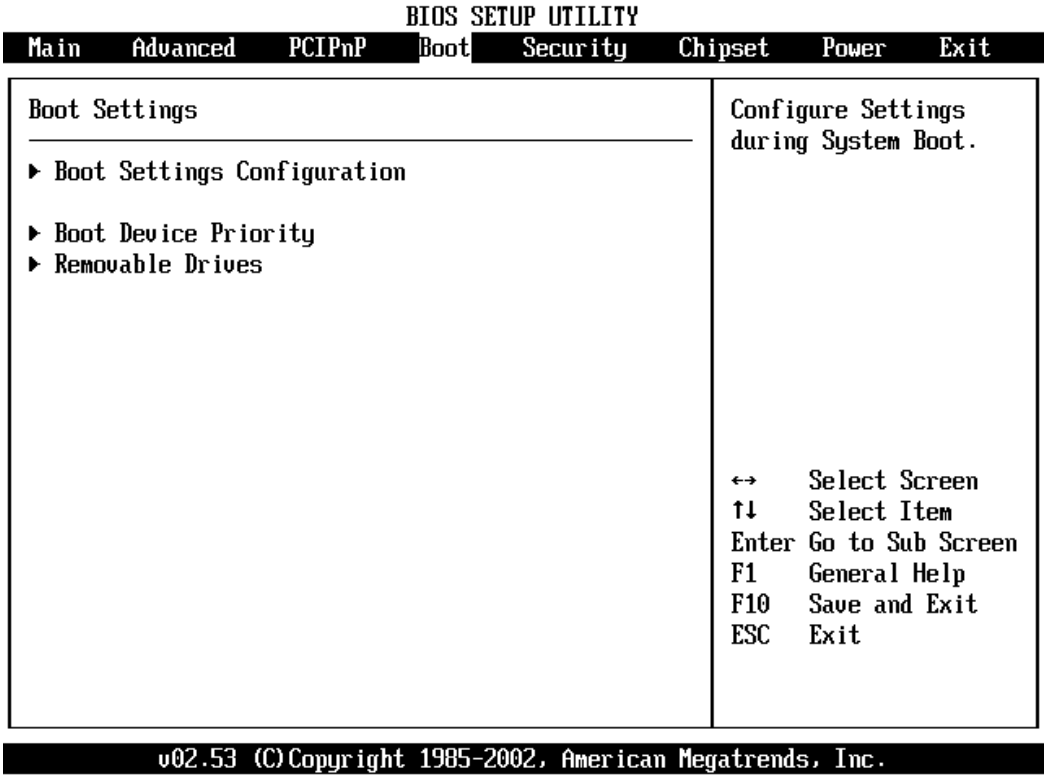
IRQ xx [Available]

When set to [Available], the specific IRQ is free for use of PCI/PnP devices. When set to [Reserved], the IRQ is reserved for legacy ISA devices.

Configuration options: [Available] [Reserved]

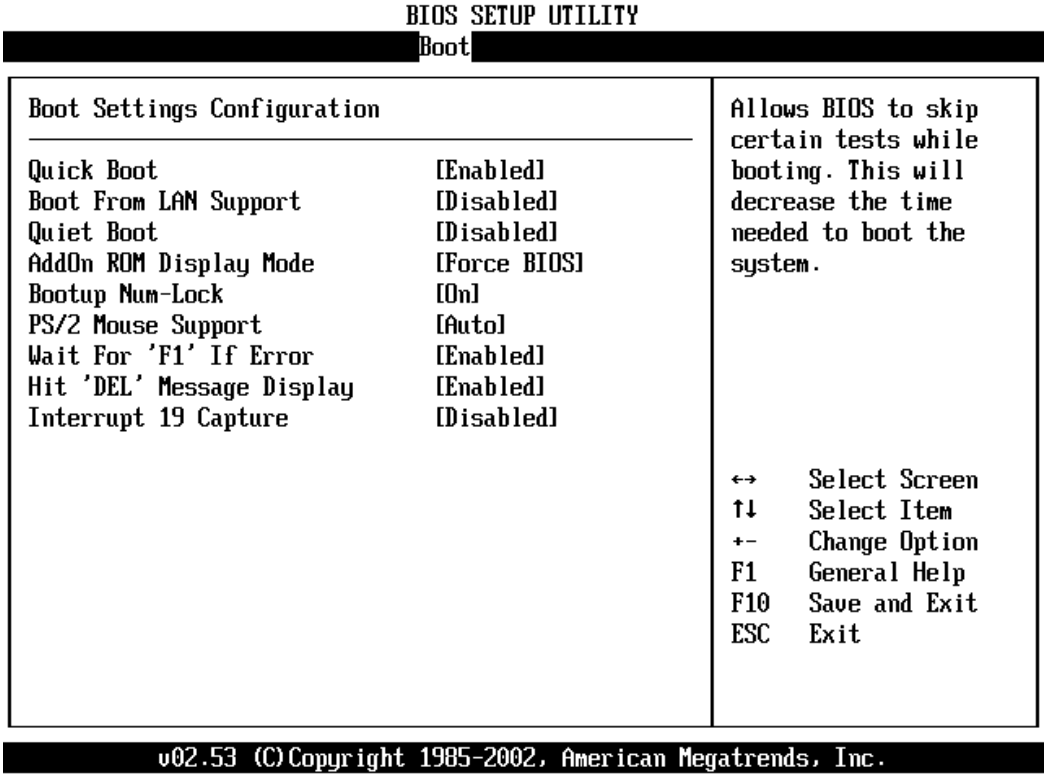
4.9 Boot

The Boot menu items allow you to change the system boot options. Select an item then press Enter to display the sub-menu.



4.9.1 Boot Settings Configuration

Configure settings during system boot.



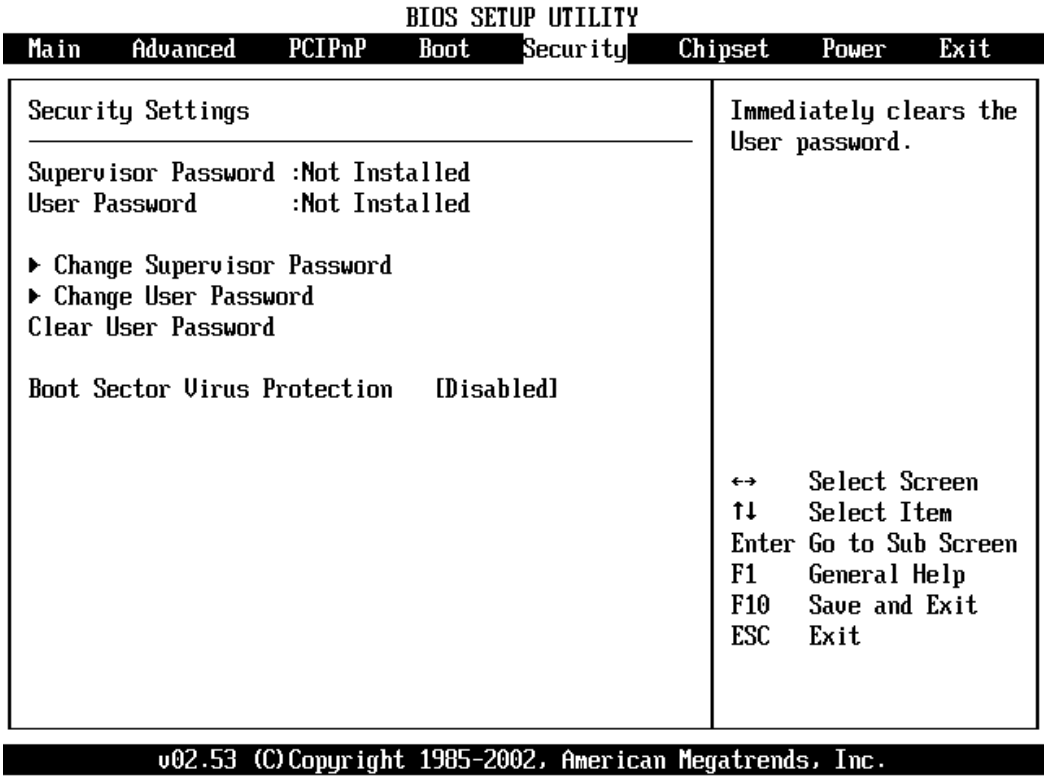
Quick Boot [Enabled]
Enabling this item allows BIOS to skip some power on self-tests (POST) while booting to decrease the time needed to boot the system. When set to [Disabled], BIOS performs all the POST items.
Configuration options: [Disabled] [Enabled]
Quiet Boot [Disabled]
This allows you to enable or disable the full screen logo display feature.
Configuration options: [Disabled] [Enabled]
Add On ROM Display Mode [Force BIOS]
Sets the display mode for option ROM.
Configuration options: [Force BIOS] [Keep Current]
Bootup Num-Lock [On]
Allows you to select the power-on state for the NumLock.
Configuration options: [Off] [On]
PS/2 Mouse Support [Auto]
Allows you to enable or disable support for PS/2 mouse.
Configuration options: [Disabled] [Enabled] [Auto]
Wait for 'F1' If Error [Enabled]
When set to Enabled, the system waits for F1 key to be pressed when error occurs.
Configuration options: [Disabled] [Enabled]
Hit 'DEL' Message Display [Enabled]
When set to Enabled, the system displays the message 'Press DEL to run Setup' during POST.
Configuration options: [Disabled] [Enabled]
Interrupt 19 Capture [Disabled]
When set to [Enabled], this function allows the option ROMs to trap Interrupt 19.
Configuration options: [Disabled] [Enabled]

4.9.2 Boot Device Priority

Specifies the boot device priority sequence.
1st ~ xxth Boot Device
These items specify the boot device priority sequence from the available hard disk drives. The number of items that appear on the screen depends on the number of hard disk drives installed in the system.
Configuration options: [xxxxx Drive] [Disabled]
Removable Drives
Specifies the boot device priority sequence from available removable drives.

4.10 Security

The Security menu items allow you to change the system security settings. Select an item then press Enter to display the configuration options.



Change Supervisor Password

Select this item to set or change the supervisor password. The Supervisor Password item on top of the screen shows the default Not Installed. After you have set a password, this item shows Installed.

Change User Password

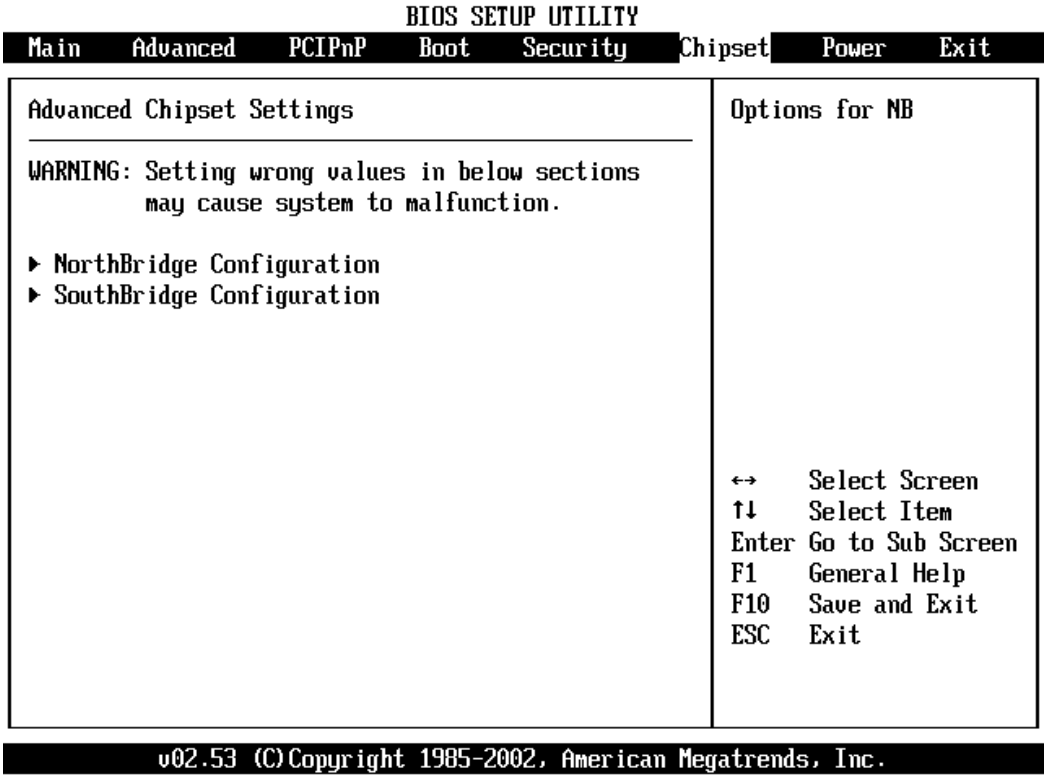
Select this item to set or change the user password. The User Password item on top of the screen shows the default Not Installed. After you have set a password, this item shows Installed.

Boot Sector Virus Protection [Disabled]

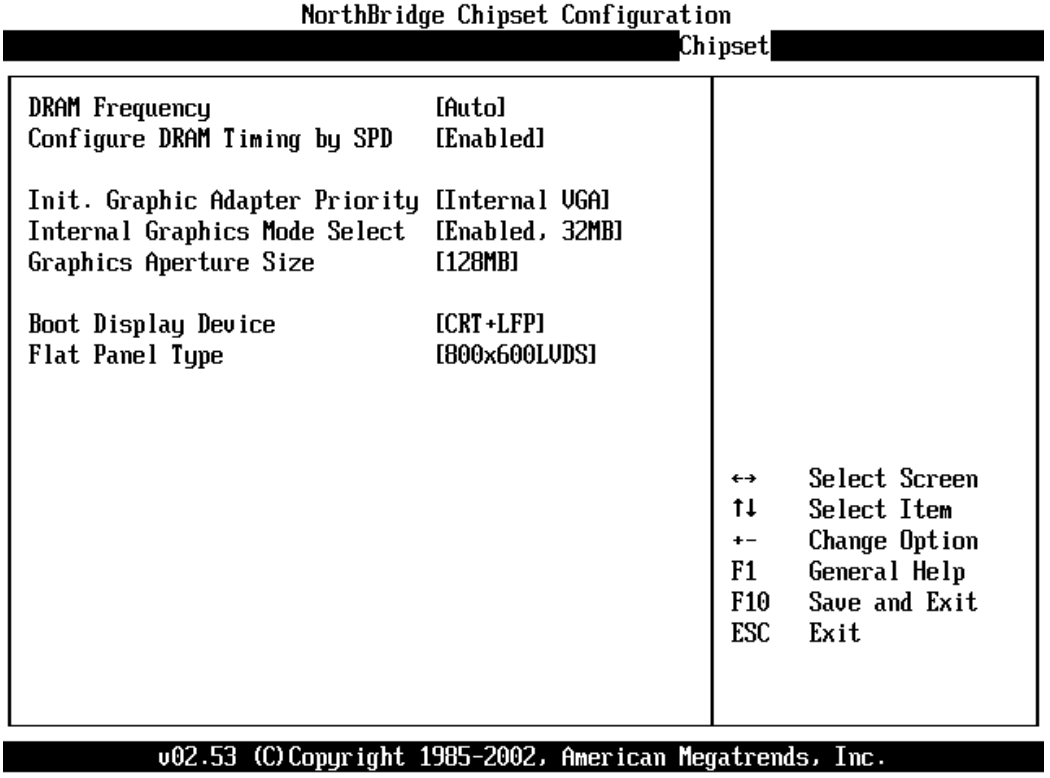
Allows you to enable or disable the boot sector virus protection.
Configuration options: [Disabled] [Enabled]

4.11 Chipset

The Chipset menu items allow you to change the advanced chipset settings. Select an item then press Enter to display the sub-menu.



4.11.1 North Bridge Configuration



Configure DRAM Timing by SPD [Enabled]

When this item is enabled, the DRAM timing parameters are set according to the DRAM SPD (Serial Presence Detect). When disabled, you can manually set the DRAM timing parameters through the DRAM sub-items.
Configuration options: [Disabled] [Enabled]

Init. Graphic Adapter Priority [Internal VGA]

Allows selection of the graphics controller to use as primary boot device.
Configuration options: [Internal VGA] [PCI/Int-VGA]

Internal Graphics Mode Select [Enable, 32MB]

Select the amount of system memory used by the internal graphics device.
Configuration options: [Enable, 1MB] [Enable, 4MB] [Enable, 8MB] [Enable, 16MB] [Enable, 32MB]

Graphics Aperture Size [128MB]

Allows you to select the size of mapped memory for AGP graphic data.
Configuration options: [64MB] [128MB] [256MB]

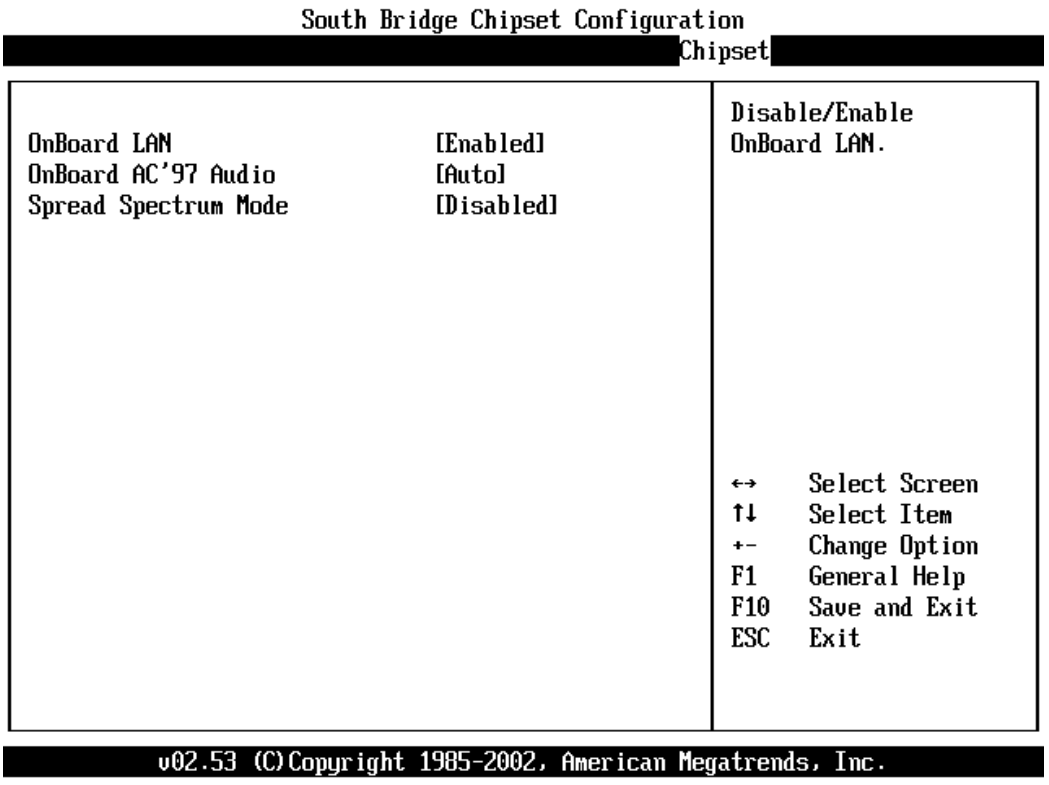
Boot Display Device [CRT+LFP]

Allows selection of the Boot Display Device.
Configuration options: [CRT]] [EFP] [LFP] [CRT+EFP] [CRT+LFP]

Flat Panel Type [800x600LVDS]

Allows selection of the Flat Panel Type.
Configuration options: [640x480LVDS] [800x600LVDS] [1024x768LVDS 24bits] [1280x1024LVDS] [1400x1050LVDS] [1024x768LVDS 18bits] [1600x1200 48bits] [1280x1024 48bits] [800x600 24bits] [800x600 18bits] [1024x768 36bits]

4.11.2 South Bridge Configuration



OnBoard LAN [Enabled]

Allows you to enable or disable the OnBoard LAN.

Configuration options: [Enabled] [Disabled].

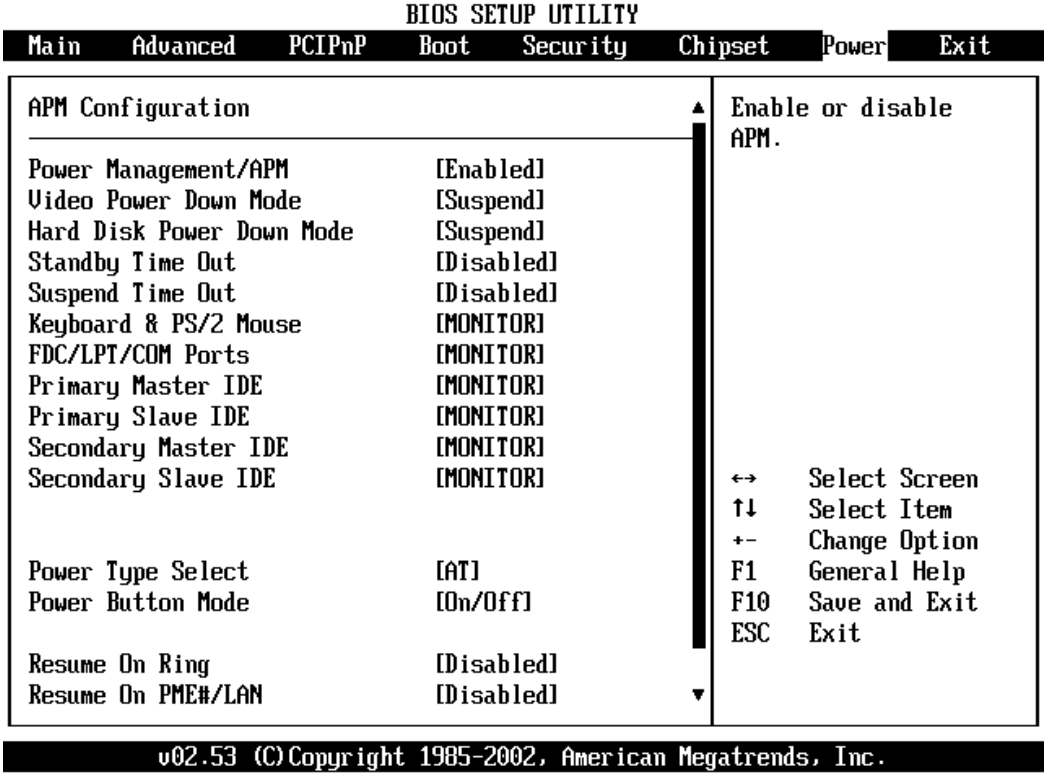
OnBoard AC'97 Audio [Auto]

Allows you to enable or disable the AC'97 Audio.
Configuration options: [Auto] [Disabled]

Spread Spectrum Mode [Disabled]

Allows you to enable or disable the Spread Spectrum Mode.
Configuration options: [Enabled] [Disabled]

4.12 Power



Power Management/APM [Enabled]

Allows you to enable or disable the Advanced Power Management (APM) feature. Configuration options: [Disabled] [Enabled]

Video Power Down Mode [Suspend]

Allows you to select the video power down mode.
Configuration options: [Disabled] [Standby] [Suspend]

Hard Disk Power Down Mode [Suspend]

Allows you to select the hard disk power down mode.
Configuration options: [Disabled] [Standby] [Suspend]

Standby Time Out [Disabled]

Allows you to select the specified time at which the system goes on standby.
Configuration options:[Disabled] [1 Min] [2 Min] [4 Min] [8 Min] [10 Min] [20 Min] [30 Min] [40 Min] [50 Min] [60 Min]

Suspend Time Out [Disabled]

Allows you to select the specified time at which the system goes on suspend.
Configuration options:[Disabled] [1 Min] [2 Min] [4 Min] [8 Min] [10 Min] [20 Min] [30 Min] [40 Min] [50 Min] [60 Min]

Power Type Select [AT]

Allows you to select the power type mode.
Configuration options: [ATX] [AT]

Power Button Mode [On/Off]

Allows the system to go into On/Off mode or suspend mode when the power button is pressed.

Configuration options: [On/Off] [Suspend]

Resume On Ring [Disabled]

Allows you to enable or disable RI to generate a wake event.
Configuration options: [Disabled] [Enabled]

Resume On PME# / LAN [Disabled]

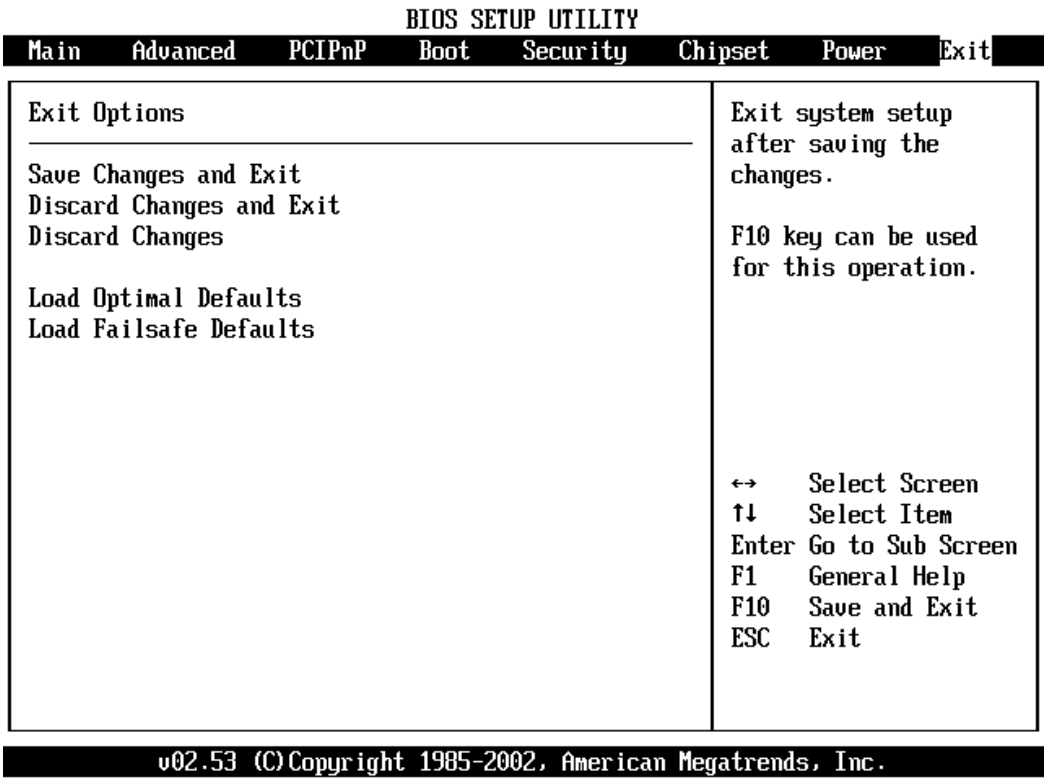
Allows you to enable or disable LAN GPI to generate a wake event.
Configuration options: [Disabled] [Enabled]

Resume On RTC Alarm [Disabled]

Allows you to enable or disable RTC to generate a wake event. When this item is set to Enabled, the items RTC Alarm Date, RTC Alarm Hour, RTC Alarm Minute, and RTC Alarm Second appear with set values.
Configuration options: [Disabled] [Enabled]

4.13 Exit

The Exit menu items allow you to load the optimal or failsafe default values for the BIOS items, and save or discard your changes to the BIOS items.



Save Changes and Exit

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. The CMOS RAM is sustained by an onboard backup battery and stays on even when the PC is turned off. When you select this option, a confirmation window appears.
Select [Yes] to save changes and exit.

Discard Changes and Exit

Select this option only if you do not want to save the changes that you made to the Setup program. If you made changes to fields other than system date, system time, and password, the BIOS asks for a confirmation before exiting.

Discard Changes

This option allows you to discard the selections you made and restore the previously saved values. After selecting this option, a confirmation appears.

Select [Yes] to discard any changes and load the previously saved values.

Load Optimal Defaults

This option allows you to load optimal default values for each of the parameters on the Setup menus. **F9 key can be used for this operation.**

Load Failsafe Defaults

This option allows you to load failsafe default values for each of the parameters on the Setup menus. **F8 key can be used for this operation.**

Appendix A: Watchdog Timer

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by software bug. When the CPU stops working correctly, hardware on the board will either perform a hardware reset (cold boot) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

- **INT 15H**:

AH – 6FH
Sub-function: **AL – 2** : Set the Watchdog Timer's period **BL** : Time-out value(Its unit--second or minute, is dependent on the item "Watchdog Timer unit select" in CMOS setup).

You have to call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer will start counting down. While the timer value reaches zero, the system will reset. To ensure that this reset condition does not occur, the Watchdog Timer must be periodically refreshed by calling sub-function 2. However the Watchdog timer will be disabled if you set the time-out value to be zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

Notes: This function is applied by Winbond W83627HF chipset, if partners have further questions about it, please refer to the original datasheets or contact with our customer service department.

Note: When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system will reset.

Example Program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

    MOV   AX, 6F02H        ;setting the time-out value
    MOV   BL, 30           ;time-out value is 48 seconds
    INT   15H
;
; ADD YOUR APPLICATION PROGRAM HERE
;
    CMP   EXIT_AP, 1       ;is your application over?
    JNE   W_LOOP           ;No, restart your application

    MOV   AX, 6F02H        ;disable Watchdog Timer
    MOV   BL, 0            ;
    INT   15H
```

;
; **EXIT**
;

Appendix B: Digital I/O

One characteristic of digital circuit is its fast response to high or low signal. This kind of response is highly needed for harsh and critical industrial operating environment. That's why we design 4-bit digital inputs and 4-bit digital outputs on the NOVA-7170.
Digital Input and Output, generally, are control signals. You can use these signals to control external devices that needs On/Off circuit or TTL devices. You can read or write data to the selected address to enable the function of digital IO.

Notes: This function is applied by Winbond W83627HF chipset, if partners have further questions about it, please refer to the original datasheets or contact with our customer service department.

W83627HF pin	DIO pin	W83627HF pin	DIO pin
GP10	IN0	GP14	OUT0
GP11	IN1	GP15	OUT1
GP12	IN2	GP16	OUT2
GP13	IN3	GP17	OUT3

A BIOS function call (INT 15H) is used to control Watchdog Timer:

INT 15H:

AH – 6FH
Sub-function: **AL – 8**: Set the Digital port is INPUT **AL** : Digital I/O input value

Example program:

```
MOV    AX, 6F08H          ;setting the Digital port is input
INT    15H                ;
```

AL low byte = value

AH – 6FH
Sub-function: **AL – 9**: Set the Digital port is OUTPUT **BL** : Digital I/O output value

Example program:

```
MOV    AX, 6F09H          ;setting the Digital port is output
MOV    BL, 09H            ;Digital value is 09H
INT    15H                ;
```

Digital Output is 1001b

Appendix C: I/O Address Map

- **I/O ADDRESS MAP**

I/O ADDRESS MAP	DESCRIPTION
000-01F	DMA Controller #1
020-021	Interrupt Controller # 1, Master
040-05F	System Timer
060-06F	Standard 101/102 keyboard Controller
070-07F	Real time Clock, NMI Controller
080-09F	DMA Page Register
0A0-0BF	Interrupt Controller # 2
0C0-0DF	DMA Controller # 2
0F0-0F0	Clear Math Coprocessor Busy
0F1-0F1	Reset Math Coprocessor
0F8-OFF	Math Coprocessor
1F0-1F7	BUS Master PCI IDE Controller
2E8-2EF	Serial Port 4
2F8-2FF	Serial Port 2
376-376	BUS Master PCI IDE Controller
378-37F	Parallel Printer Port 1
3B0-3DF	Intel 82855GM/GME Graphic Controller
3E8-3EF	Serial Port 3
3F0-3F7	Floppy Disk Controller
3F8-3FF	Serial Port 1
480-48F	PCI BUS

- **1st MB Memory Address Map**

MEMORY ADDRESS	DESCRIPTION
00000-9FFFF	SYSTEM MEMORY
A0000-BFFFF	VGA BUFFER
C0000-CFFFF	VGA BIOS
E0000-FFFFF	SYSTEM BIOS
100000	EXTEND MEMORY

- **IRQ Mapping Chart**

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	AC97 AUDIO
IRQ2	IRQ Controller	IRQ11	COM4
IRQ3	COM2	IRQ10	COM3
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	PCI DEVICES	IRQ13	FPU
IRQ6	Floppy Disk Controller	IRQ14	Primary IDE
IRQ7	Printer	IRQ15	Secondary IDE

- **DMA Channel Assignments**

CHANNEL	FUNCTION
0	Available
1	Available
2	Floppy disk controller
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available