ROCKY-4786EVG

User Manual

Version 3.0

SOCKET 478 PENTIUM 4/4-M with Ethernet & USB 2.0

September 30, 2004

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Chapter 1 Introduction

Thank you for choosing ROCKY-4786EVG SOCKET 478 PENTIUM 4 Single Board Computer. The ROCKY-4786EVG board is an PICMG form factor board, which comes fully equipped with high performance Processor and advanced high performance multi-mode I/O, designed for the system manufacturers, integrators, or VARs that want to provide all the performance, reliability, and quality at a reasonable price.

In addition, ROCKY-4786EVG built in a 3D AGP 4X controller (Intel 865GV), which provides up to 2048x1536x16-color clear resolution that shares 1/8/16MB system DDR-SDRAM.

ROCKY-4786EVG supports one or two 64-bit wide DDR400 data channels. Available bandwidth up to 3.2GB/s in single-channel mode and 6.4GB/s in dual-channel mode.

The CSA interface connects the GMCH with a Gigabit Ethernet controller.

ROCKY-4786EVG's built-in ICH5 has 10/100 Fast Ethernet LAN capability. It is fully integrated 10BASE-T/100BASE-TX LAN solution with high performance networking functions and low power features.

For applications that needs high speed serial transmission, the ROCKY-4786EVG provides USB2.0 for your convenience. The high speed USB2.0 host controller implements an ECHI interface that provides bandwidth up to 480Mb/s.

1.1 Specifications

CPU(PGA 478)	Intel Pentium 4(NORTHWOOD,PRESCOTT) /4-M Processor, supports 400/533/800 MHz PSB (SET BY BIOS)
Bus interface	PICMG 1.0 compliant, PCI 2.1
Bus speed	PCI: 33MHz
DMA channels	7
Interrupt levels	15
Chipset	INTEL 865GV / ICH5
RAM memory	Two 184-pin DIMM sockets support Dual Channel DDR333/400 SDRAM .Support one or two 64-bit wide DDR data channels. The max. memory supported is up to 2GB.
Ultra DMA 100 IDE interface	Up to four PCI Enhanced IDE hard drives. The Ultra DMA 100 IDE can handle data transfer up to 100MB/s. Compatible with existing ATA IDE specifications its best advantage, so there is no need to do any changes for users' current accessories.
Floppy disk drive interface	Supports up to two floppy disk drives, 5.25"(360KB and 1.2MB) and/or 3.5" (720KB, 1.44MB, and 2.88MB)
Serial ports	Two RS-232 ports with 16C550 UART (or compatible) with 16-byte FIFO buffer. Support up to 115.2Kbps. Ports can be individually configured to COM1, COM2 or disabled.
Bi-directional parallel port	Configurable to LPT1, LPT2, LPT3 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 2.0/1.1 port	Supports 8 USB 2.0/1.1 ports for future expansion
Watchdog timer	Software Programmable Reset generated when CPU does not periodically trigger the timer.

Serial ATA	Supports Two independent serial ATA channels. Serial ATA generation 1 transfer rate of 150MB/s
Ethernet	The CSA interface connectors GMCH with a 82547EI Gigabit Ethernet controller. It's to Support full 100/1000-bast-T Ethernet ICH5 integrated fast Ethernet MAC features an IEEE802.3 and 802.3x compliant MAC supporting full duplex 10-base-T,100-bast-T Ethernet.
Keyboard and PS/2 mouse connector	A 6-pin mini DIN connector is located on the mounting bracket for easy connection to a keyboard or PS/2 mouse. For alternative application, a keyboard and a PS/2 mouse pin header connector are also available on board.
Audio	AC'97 Audio CODEC
VGA controller	Built-in AGP 4X 3D graphics engine. Shares system DDR SDRAM 16MB. Onboard DVO chip(SIL164) supports color DVI display(optional).
Compact flash	It can be used with a passive adapter (True IDE Mode) in a Type I/II Socket.
Power consumption	PENTIUM4 NORTHWOOD :3.0GHz, 512MB DDR400 DDR-SDRAM +12V@ 7.52A ,+5V@6.98A ,-12V@0.5A. PENTIUM4 PRESCOTT CPU :3.2GHz, 512MB DDR400 DDR-SDRAM. +12V@ 15A ,+5V@8A ,-12V@0.5A. Recommended : 350-watt power supply or higher
Operating temperature	0° ~ 55° C (*CPU needs Cooler & silicone heat sink paste*)

WARNING : 1. Never run the processor without the heat-sink and (Cooler).
2. Be sure to use ATX-12V power connector (CN2) for the CPU power.

1.2 Package Contents

The ROCKY-4786EVG package includes the following items:

- One ROCKY-4786EVG Single Board Computer
- One RS-232 & Printer Cables with bracket
- One FDD cable.
- One ATA IDE cable.
- Two SATA IDE cables.
- One SATA Power cord.
- One ATX-12V cable.
- One keyboard and mouse Y-Adapter cable.
- One Driver CD
- User manual

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

This chapter describes how to install the ROCKY-4786EVG. First a layout diagram of the ROCKY-4786EVG is shown, followed by unpacking information that should be carefully followed. The jumpers and switch settings for the ROCKY-4786EVG configuration, such as CPU type selection, system clock setting, and watchdog timer, are also listed.

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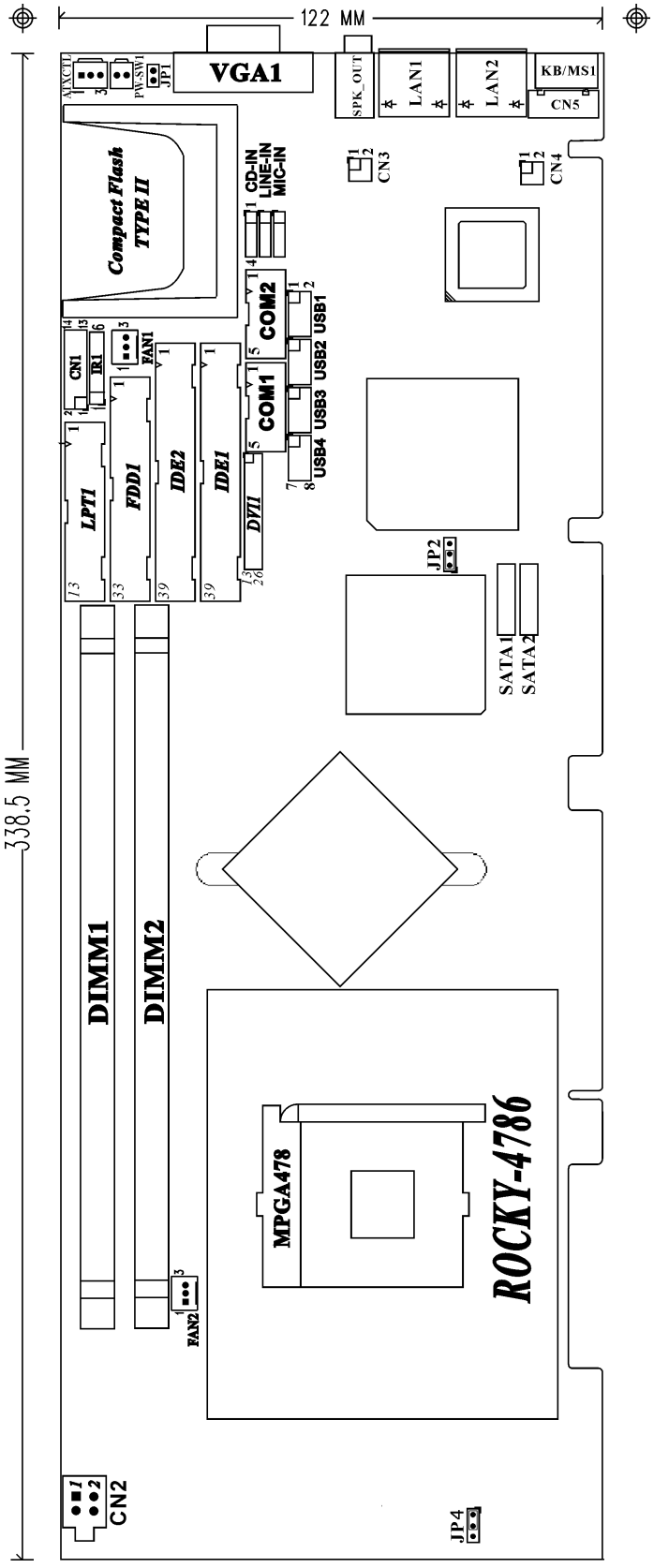
Please refer to the next page.)

2.1 Layout & Dimensions



2.2 Unpacking Precautions

Some components on ROCKY-4786EVG are very sensitive to static electric charges and can be damaged by a sudden rush of power. To protect it from unintended damage, be sure to follow these precautions:

- Ground yourself to remove any static charge before touching your ROCKY-4786EVG. 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 ROCKY-4786EVG by its edges. Don't touch IC chips, leads or circuitry if not necessary.
- Do not plug any connector or jumper while the power is on.

Note: All shaded rows in tables of this manual are the default settings for ROCKY-4786EVG.

2.3 Clear CMOS Setup

To clear the CMOS Setup (for example if you have forgotten the password, you should clear the CMOS and then re-set the password), you should close the JP2 (2-3) for about 3 seconds, then open it once more. This will set back to normal operation mode**.**

- **JP2 : Clear CMOS Setup**

JP2	DESCRIPTION
1-2 or open (default)*	Keep CMOS Setup (Normal Operation)
2-3	Clear CMOS Setup

2.4 Compact Flash Master/Slave Function Setting

- **JP1 : Compact Flash Master/Slave Function Setting Short 1 - 2 pin , Compact Flash is Master**

JP1	DESCRIPTION
Short	Master
Open	Slave

2.5 CPU type Setting

NOVA-8890 board can use two different types of CPU. One is Pentium4 CPU model and the other is Pentium4-M CPU.

- **2.5-1:** When using Pentium4 CPU, please short JP4 (1-2). CPU VID will now automatically configure the power of CPU. (Default)
- **2.5-2:** When using Pentium4-M CPU, please short JP4 (2-3). The power of CPU will be set to 1.3V at this time.

JP4	DESCRIPTION
Short (1-2)	Pentium4 CPU
Short (2-3)	Pentium4-M CPU

Chapter 3 CONNECTION

This chapter describes how to connect peripherals, switches and indicators to the ROCKY-4786EVG board.

Label	Function
IDE1 & IDE2	Ultra ATA100 Primary & Secondary IDE connectors
FDD1	Floppy connector
LPT1	Parallel port connector
COM1 & COM2	Serial port connectors
CF1	Compact Flash Storage Card Type II connector
IR1	IRDA infrared interface port
USB1	USB dual port connector
USB2	USB dual port connector
USB3	USB dual port connector
USB4	USB dual port connector
LAN1 & LAN2	LAN RJ45 connectors
KB/MS1	6-pin Mini-Din Keyboard & Mouse connector
CN5	External 5-pin Header Keyboard Connector
FAN1 & FAN2	FAN connectors
SATA1 & SATA2	Serial ATA connectors
CN1	External switches and indicators
CN2	ATX +12V Power connector
CN3 & CN4	LAN LED connectors
CD-IN	Audio CD in connector
LINE-IN	Audio LINE in connector
MIC-IN	Audio MIC in connector
PW-SW1	ATX Power Button connector
ATXCTL	Backplane to Main board ATX power control Connector

3.1 Audio Connector

The ROCKY-4786EVG has a built-in AC'97 AUDIO CODEC; connector directly connects to your MIC-IN & CD-IN & LINE-IN.

- **SPK_OUT : AUDIO Headphone Jack (Output)**
- **LINE-IN : AUDIO LINE-IN Connector (Input)**
- **CD-IN : AUDIO CD-IN Connector (Input)**
- **MIC-IN : AUDIO MIC-IN Connector (Input)**

PIN NO.	DESCRIPTION		
	LINE-IN	CD-IN	MIC-IN
1	LEFT	LEFT	MIC-IN
2	GND	GND	GND
3	GND	GND	GND
4	RIGHT	RIGHT	NC

3.2 VGA Connector

- **VGA1: 15-pin Female Connector**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	NC
5	GROUND	6	GROUND
7	GROUND	8	GROUND
9	VCC / NC	10	GROUND
11	NC	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDCCLK		

3.3 PCI E-IDE Disk Drive Connector

You can attach up to four IDE(Integrated Device Electronics) devices.

- **IDE1 : Primary IDE Connector**
- **IDE2 : Secondary IDE Connector**
- **IDE1 & IDE2 : IDE 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	DRQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	CHRDY	28	REV. PULL LOW
29	DACK	30	GROUND-DEFAULT
31	INTERRUPT	32	N/C
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND

3.4 Parallel Port Connector

Usually, a printer is connected to the parallel port. The ROCKY-4786EVG includes an on-board parallel port, accessed via a 26-pin flat-cable connector LPT1.

- **LPT1 : Parallel Port Connector**

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

3.5 ATX Power Button Connector

· **PW-SW1: ATX Power Button Connector**

PIN	DESCRIPTION
1	PWRBTN
2	GROUND

3.6 USB Port Connector

The ROCKY-4786EVG is equipped with Four USB(Version. 2.0) ports for the future new I/O bus expansion.

· **USB1,USB2, USB3,UBS4 : 2 ports USB Connector**

PIN	DESCRIPTION	PIN	DESCRIPTION
1.	VCC	2.	GROUND
3.	DATA0-	4.	DATA1+
5.	DATA0+	6.	DATA1-
7.	GROUND	8.	VCC

3.7 Serial Port

The ROCKY-4786EVG offers Two high speed NS16C550 compatible UART's with 16-byte Read/Receive FIFO serial ports.

• **COM1,COM2: 10Pin Serial Port Connector**

PIN	DESCRIPTION
1	DATA CARRIER DETECT (DCD)
2	RECEIVE DATA (RXD)
3	TRANSMIT DATA (TXD)
4	DATA TERMINAL READY (DTR)
5	GROUND (GND)
6	DATA SET READY (DSR)
7	REQUEST TO SEND (RTS)
8	CLEAR TO SEND (CTS)
9	RING INDICATOR (RI)
10	GROUND (GND)

3.8 Keyboard / Mouse Connector

The ROCKY-4786EVG has a 6-pin DIN keyboard/mouse connector & a external

- **KB / MS1 : Mini DIN Keyboard / Mouse Connector**

PIN	DESCRIPTION
1	KEYBOARD DATA
2	MOUSE DATA
3	GROUND
4	+5V
5	KEYBOARD CLOCK
6	MOUSE CLOCK

For alternative application, a keyboard pin header connector are also available on board, located on CN5 respectively.

- **CN5 : 5-pin Header Keyboard Connector**

PIN NO.	DESCRIPTION
1	KEYBOARD CLOCK
2	KEYBOARD DATA
3	N/C
4	GROUND
5	+5V

3.9 IrDA Infrared Interface Port

The ROCKY-4786EVG comes with an integrated IrDA port which supports either a Serial Infrared(SIR) or an Amplitude Shift Keyed IR(ASKIR) interface.

- **IR1: IrDA connector**

PIN	DESCRIPTION
1	VCC
2	NC
3	IR-RX
4	Ground
5	IR-TX
6	CIRRX

3.10 Fan Connector

The ROCKY-4786EVG also has a CPU with cooling fan connector and chassis fan connector, which can supply 12V/500mA to the cooling fan. There is a “rotation” pin in the fan connector, which transfers the fan’s rotation signal to the system BIOS in order to recognize the fan speed. Please note that only some specific types of fans offer a rotation signal.

- **FAN1,FAN2 : Fan Connector**

PIN	DESCRIPTION
1	Ground
2	+12V
3	Rotation Signal

3.11 External Switches and Indicators

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

- **CN1 : External Switches and Indicators**

	PIN	DESCRIPTION	PIN	DESCRIPTION	
Power LED	1	+5V	2	Speaker +	Speaker
	3	N/C	4	N/C	
	5	GND	6	N/C	
	7	NC	8	Speaker -	
	9	NC	10	Reset PIN1	Reset Button
	11	GND	12	Reset PIN2	
HDD LED	13	HDD LED+	14	HDD LED-	HDD LED

3.12 LAN Connector

The ROCKY-4786 is equipped with one built-in 10/100Mbps
& one built-in 100/1000Mbps Ethernet controllers. You can connect it to your LAN through RJ45 LAN connectors. There are two LED on the connector indicating the status of LAN. The pin assignments are listed in the following table:

- **LAN1 (10/100-TX)RJ45 Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TX+	5.	N/C
2	TX-	6.	RX-
3.	RX+	7.	N/C
4.	N/C	8.	N/C

- **LAN2(100/1000-TX) RJ45 Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TXA+ (TX+)	5.	TXC-(N/C)
2	TXA-(TX-)	6.	TXB-(RX-)
3.	TXB+(RX+)	7.	TXD+(N/C)
4.	TXC+(N/C)	8.	TXD-(N/C)

· **CN3: LAN1 /CN4 LAN2 State LED Connector.**

PIN NO.	DESCRIPTION
1-2	ACT LED(PIN2:+)
3-4	LINK LED(PIN4:+)

3.13 Serial ATA Connector

The ROCKY-4786EVG provide 2 Serial ATA ports to connect with Serial ATA devices.

- **SATA1, SATA2 : Serial ATA Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	S_TXP	3	S_RXN
2	S_TXN	4	S_RXP

3.14 Floppy Connector

The ROCKY-4786EVG board is equipped with a 34-pin daisy-chain drive connector cable.

- **FDD1 : Floppy 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-

3.15 Compact Flash Storage Card Socket

The ROCKY-4786EVG configures Compact Flash Storage Card in IDE Mode. This type II Socket is compatible with IBM Micro Drive.

- **CF1 : Compact Flash Storage Card Socket pin assignment**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	26	PULL DOWN
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	N/C
19	A1	44	VCC
20	A0	45	ACTIVE#
21	D0	46	PDIAG#
22	D1	47	D8
23	D2	48	D9
24	N/C	49	D10
25	PULL DOWN	50	GROUND

3.16 DVI (Optional)

The ROCKY-4786EVG provides DVI interface for your DVI display.

- **DVI1 : DVI Connector**

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

3.17 ATXCTL Connector

- **ATXCTL : Backplane to Mainboard Connector**

PIN NO.	DESCRIPTION
1	5VSB
2	ATX-ON
3	GND

v **Power source from Backplane with ATX Connector (Through Power Button & +5VSB)**

Chapter 4 Award BIOS Setup

4.1 Introduction

This chapter discusses the Setup program written in the BIOS. It will give you a step-by-step guidance to configure your system. The user-defined configuration is then stored in battery-backed CMOS RAM, which retains the customized information while the power is off.

4.2 Starting Setup

The BIOS is immediately active when you turn on the computer. 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 at the bottom of the screen during POST (Power On Self-Test):

   Press DEL to enter SETUP

If the message disappears before you can respond to it 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 timing and the system does not boot, an error message will be displayed and you will again be prompted to...

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

4.3 Using Setup

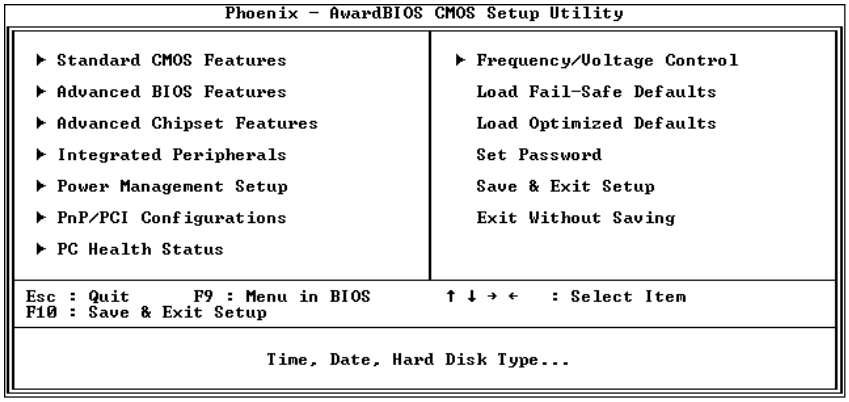
In general, you can use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more details about how to navigate in the Setup program using the keyboard.

Key	Function
Up Arrow	Move to the previous item
Down Arrow	Move to the next item
Left Arrow	Move to the item on the left (menu bar)
Right Arrow	Move to the item on the right (menu bar)
Esc	Main Menu: Quit without saving changes Submenus: Exit Current page to the next higher level menu
Move Enter	Move to the item you desired
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes

Esc key	Main Menu -- Quit and save no changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1 key	General help on Setup navigation keys
F5 key	Load previous values from CMOS
F6 key	Load the fail-safe defaults from BIOS default table
F7 key	Load the optimized defaults
F10 key	Save all the CMOS changes and exit

4.4 Main Menu

Once you enter the AwardBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to go through the items and press <Enter> to accept and enter the sub-menu.



Note that a brief description of each highlighted selection appears at the bottom of the screen.

Setup Items

The main menu includes the following main setup categories. Please note that some systems may not include all of the following entries.

Standard CMOS Features

Use this menu for basic system configuration. See Section 4.5 for the details.

Advanced BIOS Features

Use this menu to set the Advanced Features available on your system. See Section 4.6 for the details.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system's performance. See section 4.7 for the details.

Integrated Peripherals

Use this menu to configure your settings for integrated peripherals. See section 4.8 for the details.

Power Management Setup

Use this menu to configure your settings for power management. See section 4.9 for the details.

PnP / PCI Configuration

This entry appears if your system supports PnP / PCI. See section 4.10 for the details.

PC Health Status

Use this menu to monitor your hardware. See section 4.11 for details.

Frequency/Voltage Control

Use this menu to configure your settings for frequency/voltage control. See section 4.12 for the details.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate. See section 4.13 for the details.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs. See section 4.14 for the details.

Set Password

Use this menu to set Passwords. See section 4.15 for the details.

Save & Exit Setup

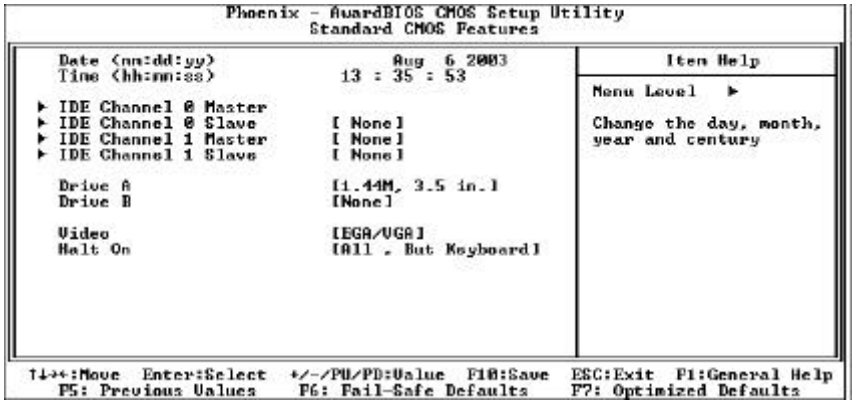
Save CMOS value changes to CMOS and exit setup. See section 4.16 for the details.

Exit Without Save

Abandon all CMOS value changes and exit setup. See section 4.15 for the details.

4.5 Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.



Main Setup Menu

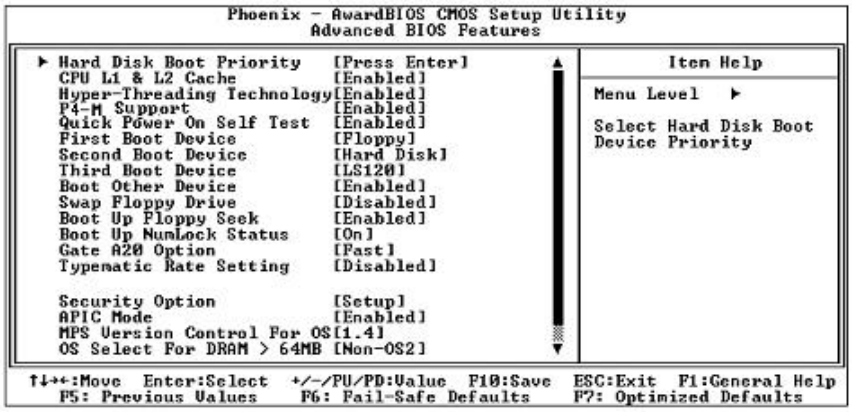
Item	Options	Description
Date	MM DD YYYY	Set the system date.
Time	HH : MM : SS	Set the system time
IDE Primary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the type of floppy disk drive installed in your system
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
Access Mode	CHS LBA Large Auto	Choose the access mode for this hard disk

4.6 Advanced BIOS Features

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

Virus Warning

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



Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

CPU L1 & L2 Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled	Enable cache
Disabled	Disable cache

Hyper-Threading Technology

This setting is to enable or disable hyper threading CPU support

P4-M Support

This setting is to enable or disable P4-M CPU support.

Quick Power On Self Test

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

Enabled	Enable quick POST
Disabled	Normal POST

First / Second / Third / Other Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

The Choice: Floppy, LS120, HDD0-3, SCSI, CDROM, ZIP 100 , LAN, Disabled

Swap Floppy Drive

If the system has two floppy drives, you can swap the logical drive name assignments.

The Choice: Enabled/Disabled

Boot Up Floppy Seek

Seeks disk drives during boot up. Disabling speeds boot up.

The Choice: Enabled/Disabled

Boot Up NumLock Status

Select power on state for NumLock.

The Choice: On/Off

Gate A20 Option

Select if chipset or keyboard controller should control GateA20.

Normal	A pin in the keyboard controller controls GateA20
Fast	Lets chipset control GateA20

Typematic Rate Setting

Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.

The Choice: Enabled/Disabled

Typematic Rate (Chars/Sec)

Sets the number of times a second to repeat a key stroke when you hold the key down.

The Choice: 6, 8, 10, 12, 15, 20, 24, 30

Typematic Delay (Msec)

Sets the delay time after the key is held down before it begins to repeat the keystroke.

The Choice: 250, 500, 750, 1000

Security Option

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 the prompt.

Note: To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

OS Select For DRAM > 64MB

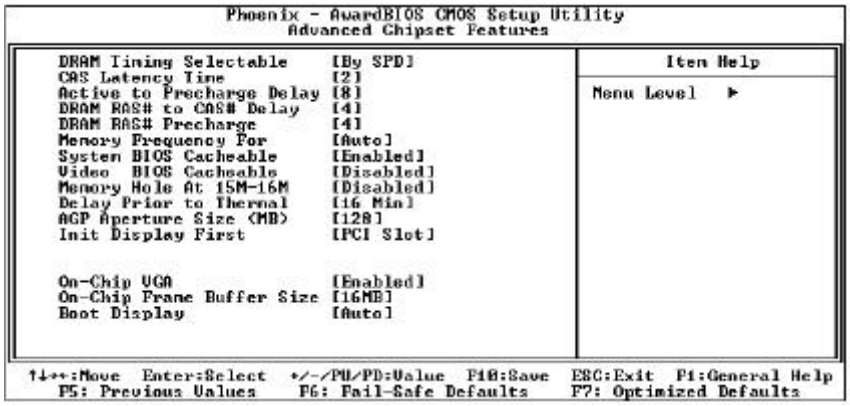
Select the operating system that is running with greater than 64MB of RAM on the system.

The Choice: Non-OS2, OS2

Small Logo(EPA) Show

Disabled/Enabled Small Logo(EPA) Show

4.7 Advanced Chipset Features



This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages 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. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system.

DRAM Timing Selectable

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 had 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.

CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing.

The Choice: 1.5 , 2, 2.5 , 3

DRAM RAS# to CAS# Delay

This section lets 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. However, this function applies only when synchronous DRAM is installed in the system.

The Choice: 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 Choice: 2, 3

DRAM Frequency For

This section displays the capability of the memory modules that you are using either H/W TRAP.

The Choice: Auto, DDR266, DDR333, DDR400

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 Choice: Enabled, Disabled

Video BIOS Cacheable

Select Enabled allows caching of the video BIOS , resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The Choice: Enabled, Disabled

Memory Hole At 15M-16M

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

The Choice: Enabled, Disabled

AGP Aperture Size (MB)

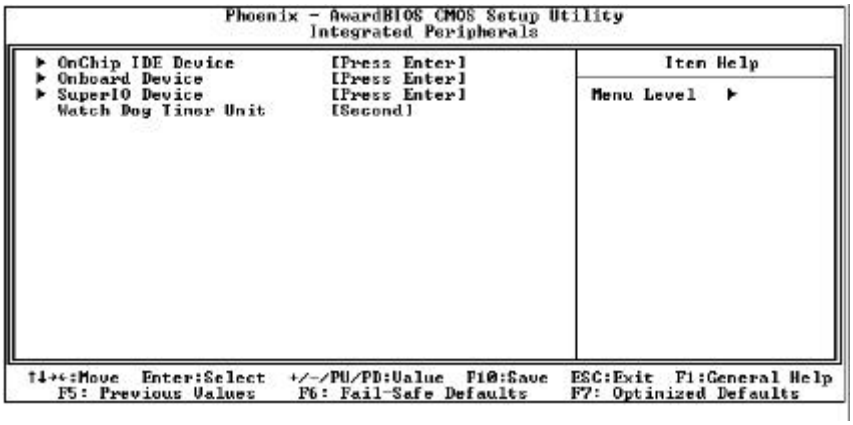
Select the on-chip video window size for VGA drive use.

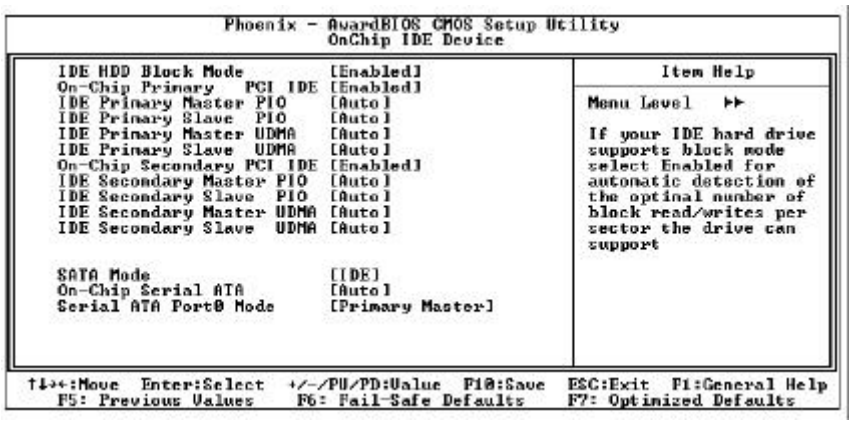
The Choice: 4MB, 8MB, 16MB, 32MB, 64MB, 128MB, 256MB

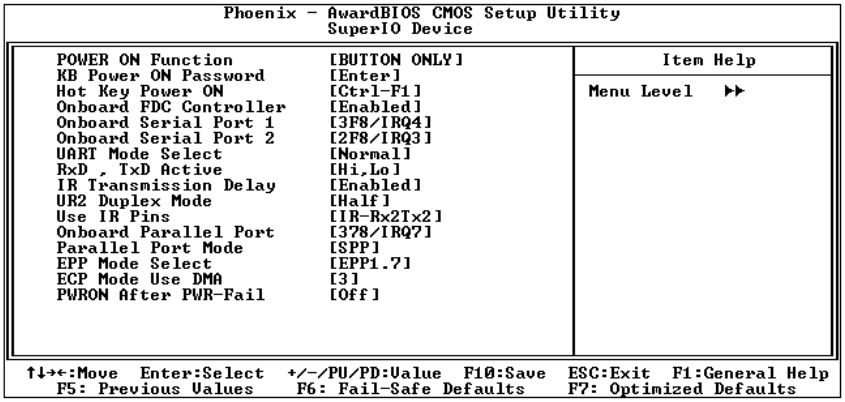
On-chip VGA

Enabled/Disabled On-chip VGA

4.8 Integrated Peripherals







On-Chip Primary/Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately.

The Choice: Enabled, Disabled

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

The Choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA-33/66 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA-33/66, select Auto to enable BIOS support.

The Choice: Auto, Disabled

On-Chip Serial ATA

[Disable] : Disable SATA controller.
[Combined] : SATA and PATS are combined. Max. of 2 IDE drivers in each channel.
[Enhanced] : Enhanced both SATA and PATA. Max. of 6 IDE drivers are support.
[SATA only] : SATA is operating in legacy mode.

USB Controller

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

The Choice: Enabled, Disabled

USB Keyboard Support

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

The Choice: Enabled, Disabled

AC97 Audio

This section allows you to decide to enable/disable the ALC202A chipset

The Choice: Auto, Disabled

I82562ET LAN (10/100M)

This section allows you to decide to enable/disable the I82562ET chipset

The Choice: Enabled, Disabled.

CSA LAN (Giga-LAN)

This section allows you to decide to enable/disable the 82547EI chipset

The Choice: Enabled, 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 and-in FDC or the system has no floppy drive, select Disabled in this field.

The Choice: Enabled, Disabled

Onboard Serial Port 1/Port 2

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

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

UART Mode Select

Select a serial port 2 operation mode.

The Choice: Normal, IrDA, ASKIR, SCR

Onboard Parallel Port

Select an address and corresponding interrupt for the parallel ports.

The Choice: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, Disabled

Parallel Port Mode

Select a parallel operation mode.

The Choice: SPP, EPP, ECP,ECP+EPP

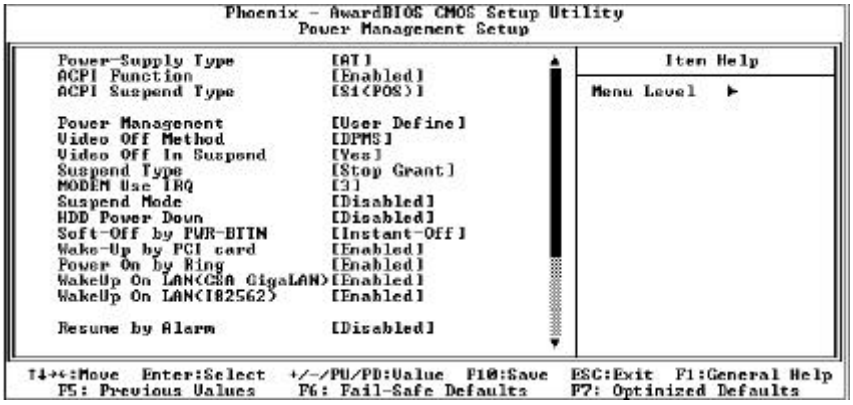
Watchdog Timer Unit Select

Select the WatchDog Timer unit.

The Choice: Second

4.9 Power Management Setup

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a user defined system environment.



Power-Supply Type

Select the Power-Supply Type.

The Choice: ATX, AT Power Supply

ACPI Function

This feature is switch of ACPI function.

The Choice: Enable/Disable

ACPI Suspend Type

This feature is switch of POS (S1) or STR (S3) function.

The Choice: [S1<POS>] [S3<STR>] [S1&S3]

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management -- **ONLY AVAILABLE FOR SL CPU's**. Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

Video Off In Suspend

This determines the manner in which the monitor is blanked.

The Choice: Yes, No

SuspendType

Select the Suspend Type.

The Choice: PWRON Suspend, Stop Grant

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

The Choice: 1Min, 2Min, 4Min, 8Min, 12Min, 20Min, 30Min, 40Min, 1Hour, Disabled

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

The Choice: 1Min, 2Min, 3Min, 4Min, 5Min, 6Min, 7Min, 8Min, 9Min, 10Min, Disabled

Soft-off By PWR-BTTN

Instant-off allows the system to switch off immediately the power button is pressed. Otherwise, it will only so after you press the power switch for more 4 seconds.

Wakeup By PCI Card

When this option is set enabled, system will wakeup then wakeup event from PCI Card.

Wakeup On LAN (CSA GigaLAN)

When this option is set enabled, system will wakeup then power management event from on board LAN (INTEL82547).

Wakeup On LAN (I82562)

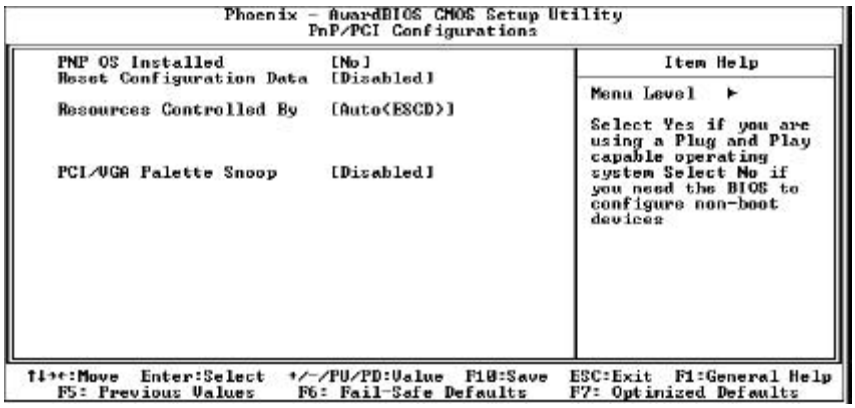
When this option is set enabled, system will wakeup then power management event from on board LAN (INTL82562ET).

Resume By Alarm

When this option is set enabled, system will according to you set time then wakeup from soft off mode.

4.10 PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, 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.



Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot.

The Choice: Enabled, Disabled

Resource controlled by

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95. If you set this field to “manual” choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a “➢”).

The Choice: Auto(ESCD), Manual

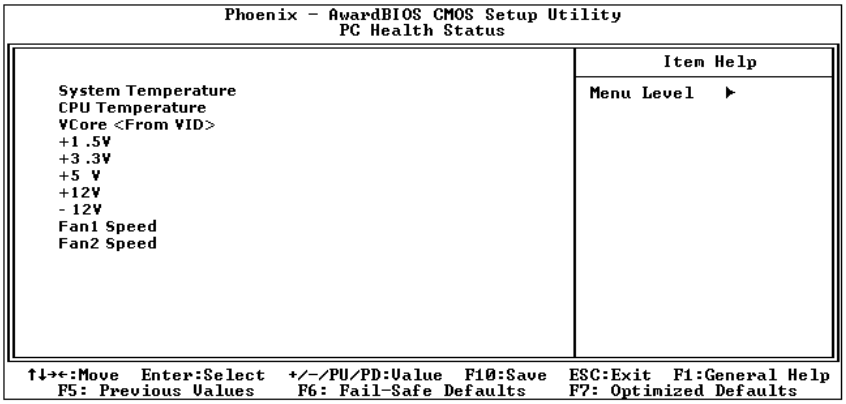
PCI / VGA Palette Snoop

Leave this field at *Disabled*.

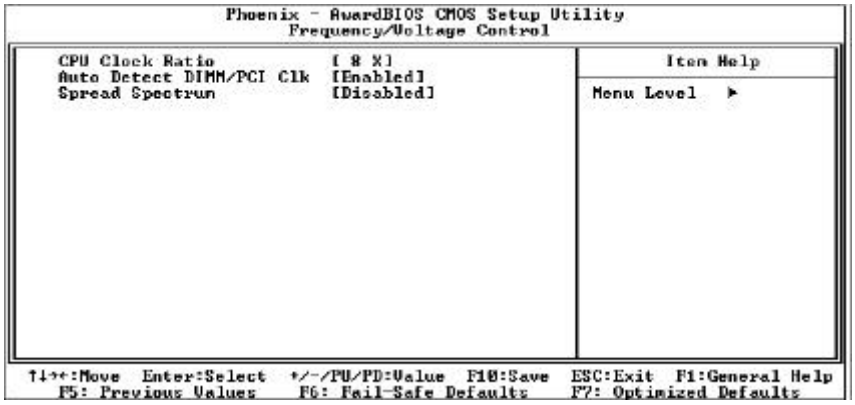
The Choices: Enabled, Disabled

4.11 PC Health Status

Note: normal CPU Fan RPM is over than 5000 RPM. If your CPU Fan RPM is less than that figure, something is wrong and the CPU will be in overheat condition. Make sure that the connection at Fan1/Fan2 is correct.



4.12 Frequency/Voltage Control



Auto Detect DIMM/PCI Clk

This item allows you to enable/disable auto detect DIMM/PCI Clock.

The Choice: Enabled, Disabled

Spread Spectrum

This item allows you to enable/disable the spread spectrum modulate.

The Choice: Enabled, Disabled

4.13 Load Fail-Safe Defaults

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

Load Fail-Safe Defaults (Y/N) ? N

Pressing 'Y' loads the BIOS default values for the most stable, minimal-performance system operations.

4.14 Load Optimized Defaults

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

Load Optimized Defaults (Y/N) ? N

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

4.15 Set Password

The user can enter and change the options of the setup menus.

- **ENTER PASSWORD:**

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

- **PASSWORD DISABLED:**

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to password will be required both at boot and at entry to Setup. If set to “Setup”, prompting only occurs when trying to enter Setup.

4.16 Exit Selecting

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

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 external EMI or a software bug. When the CPU stops working correctly, hardware on the board will either perform a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) 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 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.

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 Address Mapping

IO Address Map

I/O address Range	Description
000-01F	DMA Controller
020-021	Interrupt Controller
040-05F	System time
060-06F	Keyboard Controller
070-07F	System CMOS/Real time Clock
080-09F	DMA Controller
0A0-0A1	Interrupt Controller
0C0-0DF	DMA Controller
0F0-0FF	Numeric data processor
1F0-1F7	Primary IDE Channel
2F8-2FF	Serial Port 2 (COM2)
378-37F	Parallel Printer Port 1 (LPT1)
3B0-3BB	Intel(R) 82865 Graphics Controller
3C0-3DF	Intel(R) 82865 Graphics Controller
3F6-3F6	Primary IDE Channel
3F7-3F7	Standard floppy disk controller
3F8-3FF	Serial Port 1 (COM1)

1st MB Memory Address Map

Memory address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
F0000-FFFFF	System BIOS
1000000-	Extend BIOS

*Default setting

IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	AUDIO/SMBus Cntrlr
IRQ2	Available	IRQ10	LAN
IRQ3	COM2	IRQ11	LAN/USB2.0/SATA
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	VGA/SMBus Cntrlr	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Available	IRQ15	Secondary IDE

DMA Channel Assignments

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

Appendix C How to Upgrade a New BIOS

<Note> Before flashing BIOS , please enable the item "FLASH BIOS" in BIOS setting.

You can install an upgrade BIOS for the ROCKY-4786EVG that you can download from the manufacturer's web site (http://www.ieiworld.com). New BIOS may provide support for new peripherals ,improvements in performance or fixes to addressed known bugs.

BIOS Update Procedure:

1. Make a boot disk. Go to the DOS command prompt in MS-DOS or Windows 9x and, with an available floppy disk in "A", type "format A: /s" That will format the floppy and transfer the needed system files to it.

   NOTES:
   A. This procedure will erase any prior data on that floppy, so please Proceed accordingly.
   B. Typically four files will be transferred, only COMMAND.COM being visible when running a simple directory listing.
   C. Please leave the diskette UN-write protected for the balance of this procedure.

2. Download the BIOS upgrade file and awdflash.exe utility from a ICP web site to a temp directory on your hard drive, or directly to the floppy you made in step 1..

3. Copy (BIOS file and awdflash.exe)two files to the boot floppy.

4. Reboot the system to the DOS command prompt using the boot diskette you just made.

5. At the DOS command prompt type , "awdflash filename.xxx", where filename.xxx is the file name of the BIOS file . Hit enter.

6. Your first option, in sequence, will be to save the old BIOS. We recommend that you do that in case, for whatever reason, you decide you don't wish to use the new version once it is installed.
   NOTES:
   A. If you decide to save the old BIOS, PLEASE make sure you do NOT save it to the same file name as the new BIOS - if you use the same BIOS name the old file will be written over the new file with NO warning prompt. A simple file name to save the old BIOS to is OLDBIOS.BIN.
   B. If you do NOT decide to save the old BIOS, PLEASE at least write down the version number of the old BIOS and store that information with your important computer documents. Enter N (for "no") and skip to step 9.

7. To save the old BIOS, hit Y (for "yes")

8. Enter a name for the OLD BIOS file and hit enter.
   NOTE:PLEASE be sure you do NOT save the old BIOS file to the same file name as the new BIOS - if you use the same BIOS name, the old file will write over the new BIOS file WITHOUT a warning prompt. A simple file name for saving the old BIOS to is OLDBIOS.BIN.

9. Your second option, in sequence, will be whether you want to flash your BIOS. Enter Y (for "yes").
   NOTE: This is the critical step. Once you kit the enter key, do NOT touch the keyboard, the reset button, or power switch while the flashing is in progress. There will be bar progressing across the screen while the flashing is progressing.

10. When the flashing process is complete, you will be asked to reset or power off the system. Remove the floppy diskette from the floppy drive and either hit the reset button or the power button.

11. Reboot the system and note that the BIOS version on the initial boot-up screen has changed to the new BIOS version. Your BIOS upgrade is now complete.

Recovering Your Old BIOS:

1. Assuming you have the floppy made during the upgrade procedure noted above, boot the system with that diskette in the floppy drive. If you do not have floppy made during the upgrade procedure noted above, you will need to repeat steps 1 though 3 (above) for the version of the BIOS you wish to recover to.

2. Complete steps 4, 5, 6B, 9, 10, and 11 (above) substituting the name of the BIOS you wish to recover for the upgrade BIOS at step 5.

Install screen :