ROCKY-6160

SOCKET 478 PENTIUM® 4 SBC

With USB 2.0 & Gigabit LAN

User's Manual

Version 1.0

November 3, 2004

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Support
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Introduction

Welcome to the ROCKY-6160 Socket 478 Pentium® 4 Single Board Computers. ROCKY-6160 is an ISA/PCI form factor main-board, which supports high performance Processor and is equipped with advanced high performance multi-mode I/O. It is designed for the system manufacturers, integrators, or VARs that want to offer all the performance, reliability, and quality at a reasonable price.

For the application that needs high speed serial transmission, ROCKY-6160 provides USB2.0. The high speed USB2.0 host controller implements an ECHI interface that provides 480Mb/s bandwidth.

An advanced high performance super AT I/O Chip – Winbond W83627HF is used in the ROCKY-6160. Both on-chip UARTs are compatible with the NS16C550. The parallel port and IDE interface are compatible with IBM PC/AT architecture.

ROCKY-6160 has two (ICH5 & Intel 82541PI) 10/100/1000M Fast Ethernet LAN controllers. They are fully integrated 10BASE-T/100BASE-TX/1000BASE-T LAN solution with high performance networking functions and low power features.

1.1   Specifications

CPU (PGA 478)	Supports Intel Pentium® 4/Mobile Pentium® 4-M, 400/533 MHz FSB (set by BIOS)
Bus Interface	PCI/ISA bus, PICMG 1.0 compliant
Chipset	INTEL 852GME (GMCH)
RTC	INTEL 82801EB (ICH5)
Memory	Two 184-pin DIMM sockets support DDR200/266/333 SDRAM with ECC. The maximum memory is up to 2GB.
ATA/100 IDE interface	The Ultra DMA 100 IDE can handle data transfer up to 100MB/s. Compatible with existing ATA.
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.
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 2.0/1.1port	Supports 8 USB 2.0/1.1 ports
Watchdog Timer	Software Programmable. Reset will be generated when CPU does not periodically trigger the timer

Serial ATA	Supports two independent serial ATA channels with transfer rate of 150MB/s
VGA controller	Built-in AGP 2.0 4X 3D graphics engine. Share system DDR SDRAM 8M. Flat panel on-chip 852GME. Supports 18bit/24bit single pixel or 24bit dual pixel color LVDS TFT LCD.
Ethernet	INTEL 82541PI Gigabit Ethernet controller. It supports full 10,100 and 1000-bast-T Ethernet
Keyboard and PS/2 mouse connector	A 6-pin mini DIN connector is for easy connection to a keyboard or PS/2 mouse. For alternative application, a keyboard pin-header connector is also available on board.
Digital input/output	Supports 4-bits digital input and 4 -bits digital output (+5V level).
Audio	AC'97 Audio CODEC
CompactFlash	It can be used (IDE 2) with a passive adapter (True IDE Mode) in a Type I/II Socket.
Power Consumption	PENTIUM® 4: 3.06GHz, 512MB DDR333 DDR-SDRAM +5V @ 7.3A, +12V @8A,-12V @60mA Recommended : 350-watt power supply or higher
Operating temperature	0◦ ~ 60◦ C (*CPU needs Cooler & silicone heatsink paste*)

WARNING! 1. Never run the processor without the cooler properly and firmly attached.
2. Please use ATX-12V Power Connector (CN4) to provide power for the CPU.

1.2   What You Have

In addition to this user's manual, the ROCKY-6160 package includes the following items:

- One ROCKY-6160 Single Board Computer
- One FDD cable
- One ATA/100 IDE cable.
- Two Serial ATA IDE cable.
- One ATX-12V cables.
- One RS-232 and Audio Cable with bracket
- One RS-232 and Printer Cable with bracket
- One USB Connector x 2 Cable with bracket
- One Keyboard and mouse Y-Adapter Cable
- One Driver CD
- One User Manual

If any of these items are missing or damaged, 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.

2

Installation

This chapter describes how to install the ROCKY-6160. At first, the layout of ROCKY-6160 is shown, and the unpacking information that you should be careful is described. The jumpers and switches setting for the ROCKY-6160 configuration, such as CPU clock setting, and watchdog timer, are also included.

2.1   ROCKY−6160 Layout
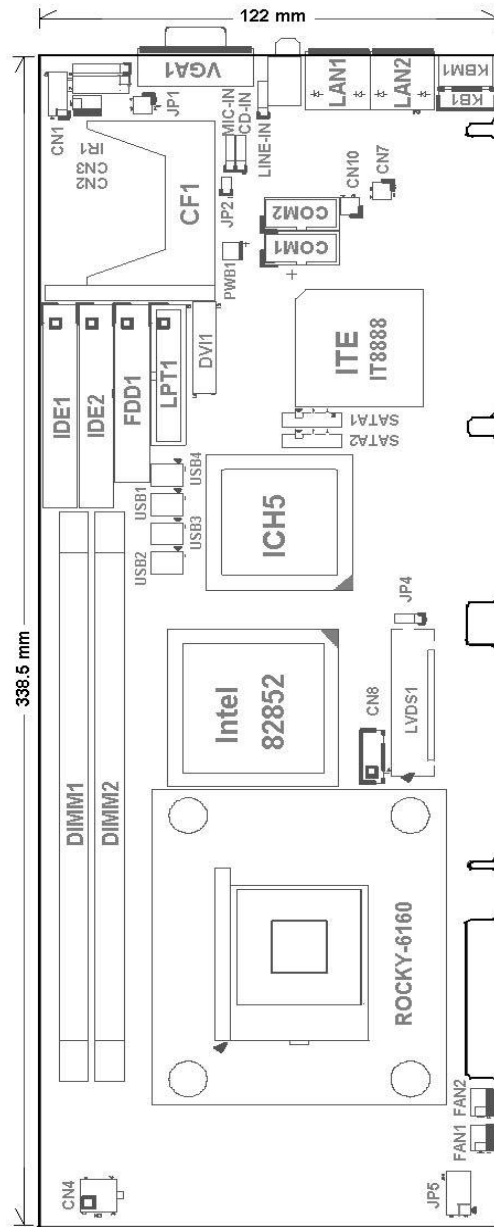
2.2 Unpacking Precautions

Some components on ROCKY-6160 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-6160 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 ROCKY-6160 SBC 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.

Table of Jumpers

LABEL	FUNCTION
JP1	GMCH Frequency Strapping
JP2	Compact Flash Master (short)/Slave (open) Setting.
JP3	CMOS state setting
JP4	LCD Power Select .
JP5	Pentium® 4/Mobile P4/Mobile P4-M Select

Note: All shaded rows in tables of this manual are the default settings for the ROCKY-6160.

2.3 GMCH Frequency Strapping

- **JP1: GMCH Frequency Strapping Setting**

JP1		DESCRIPTION		
3-4	**1-2**	**FSB**	**Mem**	**GFX**
Open	Open	400	267	133 - 200
Open	Short	400	200	100 - 200
Short	Open	400	200	100 - 133
Short	Short	400	267	133 - 267
Open	Open	533	267	133 - 200
Open	Short	533	267	133 - 267
Short	Open	533	333	167 - 267
Short	Short	400	333	133 - 250

Unit: MHz

2.4 Compact Flash Master/Slave Function Setting

- **JP2: Compact Flash Master/Slave Function Setting**

Pin 1 - 2	DESCRIPTION
Short	Master
Open	Slave

2.5 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 JP3 (2-3) for about 3 seconds, then open it. This will set to normal operation mode**.**

- **JP3: Clear CMOS Setup**

JP3	DESCRIPTION
1-2	Keep CMOS Setup

(default) *	(Normal Operation)
Short 2-3	Clear CMOS Setup

2.6   LCD Voltage Selection

- **JP4: LCD Voltage Selection**

JP4	DESCRIPTION
2-3	+3.3V
1-2	+5V

2.7   Pentium® 4/Mobile P4-M Selection

- **JP5: Pentium® 4/Mobile P4-M Selection**

JP5						DESCRIPTION
11-12	9-10	7-8	5-6	3-4	1-2	
S	O	S	O	O	S	Mobile P4-M High-Speed (1.3V)
S	O	O	S	O	S	Mobile P4-M Low-Speed (1.2V)
O	x	x	x	x	x	Pentium® 4 Auto

O: Open
S: Short

3

Connection

Table of Connectors

LABEL	FUNCTION
IDE1&IDE2	Primary& Secondary IDE Connectors
FDD1	FDC Connector
LPT1	Parallel Port Connector
COM1&COM2	Serial Port 10-pin Connectors
CF1	Compact Flash Storage Card Type II Connector
USB1~USB4	USB Port Connectors
IR1	IrDA Infrared Interface Connector
CN9	Giga LAN RJ45+LED Connector
CN11	10/100 LAN RJ45+LED Connector
CN7	LAN State LED Connector
KBM1	PS/2 MOUSE & KEYBOARD Connector
KB1	External 5-pin Header Keyboard Connector
FAN1&FAN2	Fan Connectors
SATA1&SATA2	Serial ATA Connectors
CN1	Digital I/O Connector
VGA1	VGA 15-pin Female Connector
DVI1	DVI Function Connector
LVDS1	LCD Panel LVDS Interface Connector
CN8	LCD Power Connector
CN3	External Switches and Indicators
PWB1	ATX BUTTON (Power ON) Switch
CN2	Backplane to Mainboard Connectors
CN6	Audio Headphone & Speaker Output Connector
LINE_IN1	Audio LINE-in Connector
CD_IN1	Audio CD-in Connector
MIC1	Audio MIC-in Connector
CN4	ATX-12V CPU Power Source

3.1   PCI E-IDE Disk Drive Connector

These connectors support Ultra-DMA100 IDE devices. Non-DMA100 devices are suggested to be connecting to the secondary IDE connector.

IDE 1: Primary IDE Connector
IDE 2: Secondary IDE Connector

● **IDE Interface Connector**

PIN NO.	DESCRIPTION	PIN NO.	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	IDE DRQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	IDE CHRDY	28	BALE – DEFAULT
29	IDE DACK	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

3.2   Floppy Disk Drive Connector

● **FDD1: FDC Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	2	REDUCE WRITE
3	GROUND	4	N/C
5	GROUND	6	IRQ IN1
7	GROUND	8	INDEX#
9	GROUND	10	MOTOR ENABLE A#
11	GROUND	12	DRIVE SELECT B#
13	GROUND	14	DRIVE SELECT A#
15	GROUND	16	MOTOR ENABLE B#
17	GROUND	18	DIRECTION#
19	GROUND	20	STEP#
21	GROUND	22	WRITE DATA#
23	GROUND	24	WRITE GATE#
25	GROUND	26	TRACK 0#
27	GROUND	28	WRITE PROTECT#
29	N/C	30	READ DATA#
31	GROUND	32	SIDE 1 SELECT#
33	N/C	34	DISK CHANGE#

3.3   Parallel Port

ROCKY-6160 includes an on-board parallel port, accessed through a 26-pin flat-cable connector.

● **LPT1: Parallel Port Connector**

PIN NO.	DESCRIPTION	PIN NO.	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	N/C

3.4   Serial Ports

COM1: 10-pin header
COM2: 10-pin header

Connector	Ports	Address	Interrupt
COM1	COM1	3F8	IRQ4
COM2	COM2	2F8	IRQ3

● **Serial Port 10-pin Connector**

PIN NO.	DESCRIPTION
1	DATA CARRIER DETECT (DCD)
2	DATA SET READY (DSR)
3	RECEIVE DATA (RXD)
4	REQUEST TO SEND (RTS)
5	TRANSMIT DATA (TXD)
6	CLEAR TO SEND (CTS)
7	DATA TERMINAL READY (DTR)
8	RING INDICATOR (RI)
9	GROUND (GND)
10	N/C

3.5   CompactFlash Type II Storage Card Socket

ROCKY-6160 configures CompactFlash Type II Storage Card in IDE Mode.

● **CF1: CompactFlash Type II Socket**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	26	CARD DETECT 1
2	DATA 3	27	DATA 11
3	DATA 4	28	DATA 12
4	DATA 5	29	DATA 13
5	DATA 6	30	DATA 14
6	DATA 7	31	DATA 15
7	HDC CS0#	32	HDC CS1#
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	TO PULL HIGH
12	N/C	37	IRQ 15
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	IDE CHRDY
18	SA2	43	IDE DRQ
19	SA1	44	IDE DACK
20	SA0	45	HDD ACTIVE#
21	DATA 0	46	PDIAG#
22	DATA 1	47	DATA 8
23	DATA 2	48	DATA 9
24	N/C	49	DATA 10
25	CARD DETECT 2	50	GROUND

3.6   USB Port Connectors

ROCKY-6160 provides 8 built-in USB ports.

USB1~USB4			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GROUND
3	DATA-	4	DATA+
5	DATA+	6	DATA-
7	GROUND	8	VCC

3.7   IrDA Infrared Interface Port

ROCKY-6160 has a built-in IrDA port which supports Serial Infrared (SIR) or Amplitude Shift Keyed IR (ASKIR) interface. If you want to use the IrDA port, you have to configure SIR or ASKIR model in the BIOS under Peripheral Setup COM2. Then the normal RS-232 COM 2 will be disabled.

● **IR1: IrDA connector**

PIN NO.	DESCRIPTION
1	VCC
2	NC
3	IR-RX
4	Ground
5	IR-TX
6	NC

3.8   LAN RJ45& State LED Connectors

ROCKY-6160 is equipped with built-in 10/100 & 10/100/1000Mbps 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 as following. (CN9:N-82541, CN11:N-82562)

● **CN9: Gigabit LAN RJ45 Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TX+	7	TD3+
2	TX-	8	TD3-
3.	RX+	9	VCC
4.	TD2+	10	LINK (green)
5	TD2-	11	VCC
6	RX-	12	Activity (yellow)

- **CN7: Gigabit LAN State LED Connector**

PIN NO.	DESCRIPTION
1	LINK
2	VCC
3	Activity
4	VCC

- **CN11: 10/100M LAN RJ45 Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TD+	7	N/C
2	TD-	8	N/C
3.	RO+	9	VCC
4.	N/C	10	SPLED
5	N/C	11	Act / LED
6	RO-	12	LINK LED

- **CN10: 10/100M LAN State LED Connector**

PIN NO.	DESCRIPTION
1	SPLED
2	VCC
3	LINK LED
4	Act / LED

3.9 Keyboard & PS/2 Mouse Connector

A 6-pin mini DIN connector (KBM1) is located on the mounting bracket for easy connection to a keyboard or a PS/2 mouse. The SBC comes with a cable to convert from the 6-pin mini-DIN connector to two 6-pin mini-DIN connectors for keyboard and mouse connection.

- **KBM1: 6-pin Mini-DIN Keyboard Connector**

PIN NO.	DESCRIPTION
1	KEYBOARD DATA
2	MOUSE DATA
3	GROUND
4	VCC

5	KEYBOARD CLOCK
6	MOUSE CLOCK

For alternative application, a keyboard pin-header connector is also available on board.

- **KB1: 5-pin Header Keyboard Connector**

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

3.10   Fan Connectors

ROCKY-6160 provides two CPU cooling fan connectors; these connectors 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.

- **FAN1, FAN2: Fan Connector**

PIN NO.	DESCRIPTION
1	Ground
2	+12V
3	Rotation Signal

3.11   Serial ATA Connectors

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

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	5	RX-
2	TX+	6	RX+
3	TX-	7	GROUND

4	GROUND	8	N/C

3.12 Digital Input / Output Connector

• CN1: Digital Input / Output Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Ground	2	VCC
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

3.13 VGA Connector

The ROCKY-6160 has a built-in 15-pin VGA connector directly connects to your CRT monitor.

• VGA1: 15-pin Female Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	Pull up to VCC
5	GROUND	6	GROUND
7	GROUND	8	GROUND
9	VCC	10	GROUND
11	Pull up to VCC	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDCCLK		

3.14 DVI Connector

• DVI1: 25-pin Female Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DATA2-	14	VCC
2	DATA2+	15	GROUND
3	GROUND	16	HP_DET

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		

3.15 LCD Panel LVDS Interface Connector

ROCKY-6160 provides an LVDS transmitter with a scaled resolution up to SXGA for single pixel input. It supports up to 48-bit color LVDS LCD.

• **LVDS1: LVDS Interface Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Ground	2	Ground
3	LVDSA Y3+	4	LVDSA Y3-
5	LVDSA CLK+	6	LVDSA CLK-
7	LVDSA Y2+	8	LVDSA Y2-
9	LVDSA Y1+	10	LVDSA Y1-
11	LVDSA Y0+	12	LVDSA Y0-
13	Ground	14	Ground
15	LVDSB Y3+	16	LVDSB Y3-
17	LVDSB CLK+	18	LVDSB CLK-
19	LVDSB Y2+	20	LVDSB Y2-
21	LVDSB Y1+	22	LVDSB Y1-
23	LVDSB Y0+	24	LVDSB Y0-
25	Ground	26	Ground
27	LCD VDD	28	LCD VDD
29	LCD VDD	30	LCD VDD

• **CN8: LCD Panel Power Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION

1	N/C	2	GROUND
3	BKL_POWER	4	GROUND
5	VCC	6	

3.16 External Switches and Indicators

There are several external switches and indicators for monitoring and controlling your CPU board. All the functions are in the CN3 connector.

● **CN3: External Switches and Indicators**

	PIN	DESCRIPTION	PIN	DESCRIPTION	
Power LED	1	+5V	2	Speaker	Speaker
	3	GROUND	4	N/C	
	5	GROUND	6	N/C	
KEY LOCK	7	KEYLOCK-	8	+5V	
	9	KEYLOCK+	10	Reset Switch	Reset button
HDD(-)	11	IDE LED-	12	GND	

● **PWB1: ATX BUTTON Connector**

PIN NO.	DESCRIPTION
1	ATX BUTTON PIN1
2	ATX BUTTON PIN2

● **CN2: Backplane to Mainboard Connector**

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

Power source is from Backplane with ATX Connector (Through Power Button & +5VSB).

3.17 AUDIO Headphone & Connector

● **CN6: Audio Headphone Jack (Output) & Speak Jack (Output)**

- **LINE_IN1: Audio LINE-IN Connector (Input)**
- **CD_IN1: Audio CD-IN Connector (Input)**
- **MIC1: Audio MIC-IN Connector (Input)**

PIN NO.	DESCRIPTION		
	LINE_IN1	**CD_IN1**	**MIC1**
1	LEFT	LEFT	MIC-IN
2	GND	GND	GND
3	GND	GND	GND
4	RIGHT	RIGHT	NC

3.18 ATX-12V Power Source Connector

This connector supports the ATX-12V power.

CN4(CPU)			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	2	GND
3	+12V	4	+12V

Notice: The power from CN4 should support at least 6.5A current for the use of P4 CPU. If the power is not enough, the operation of CPU could be abnormal. Be sure the power from power supply is enough, and don't share this power with other devices, such as hard disk and etc. You can use ICP's special cable for connection if your power supply doesn't have suitable cable.

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.

```
                        BIOS SETUP UTILITY
 Main     Advanced    PCIPnP    Boot    Security    Chipset    Power    Exit

┌─────────────────────────────────────────────────┬──────────────────────┐
│ System Overview                                  │ Use [ENTER], [TAB]   │
│                                                  │ or [SHIFT-TAB] to    │
│                                                  │ select a field.      │
│ AMIBIOS                                          │                      │
│ Version   : 08.00.10                             │                      │
│ Build Date: 10/06/04                             │ Use [+] or [-] to    │
│ ID        : 1AAAA000                             │ configure system Time.│
│                                                  │                      │
│ Processor                                        │                      │
│ Type      : Intel(R) Pentium(R) 4 CPU 2.40GHz    │                      │
│ Speed     : 2400MHz                              │                      │
│ Count     : 1                                    │                      │
│                                                  │                      │
│ System Memory                                    │ ↔      Select Screen │
│ Size      : 248MB                                │ ↑↓     Select Item   │
│                                                  │ +-     Change Field  │
│ System Time               [00:22:02]             │ Tab    Select Field  │
│ System Date               [Tue 01/01/2002]       │ F1     General Help  │
│                                                  │ F10    Save and Exit │
│                                                  │ ESC    Exit          │
│                                                  │                      │
└─────────────────────────────────────────────────┴──────────────────────┘
          v02.53 (C)Copyright 1985-2002, American Megatrends, Inc.
```

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.

```
                         BIOS SETUP UTILITY
  Main    Advanced    PCIPnP    Boot    Security    Chipset    Power    Exit
 ┌────────────────────────────────────────────────┬──────────────────────────┐
 │  Advanced Settings                              │  Configure CPU.          │
 │  ─────────────────                              │                          │
 │  WARNING: Setting wrong values in below sections│                          │
 │           may cause system to malfunction.      │                          │
 │                                                 │                          │
 │  ▶ CPU Configuration                            │                          │
 │  ▶ IDE Configuration                            │                          │
 │  ▶ Floppy Configuration                         │                          │
 │  ▶ SuperIO Configuration                        │                          │
 │  ▶ Hardware Health Configuration                │                          │
 │  ▶ ACPI Configuration                           │                          │
 │  ▶ MPS Configuration                            │                          │
 │  ▶ Remote Access Configuration                  │  ↔     Select Screen     │
 │  ▶ USB Configuration                            │  ↑↓    Select Item       │
 │                                                 │  Enter Go to Sub Screen  │
 │                                                 │  F1    General Help      │
 │                                                 │  F10   Save and Exit     │
 │                                                 │  ESC   Exit              │
 │                                                 │                          │
 │                                                 │                          │
 └────────────────────────────────────────────────┴──────────────────────────┘
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```

4.7.1   CPU Configuration

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

```
                        BIOS SETUP UTILITY
          Advanced

 Configure advanced CPU settings                  Sets the ratio
 ─────────────────────────────────────            between CPU Core
 Manufacturer: Intel                              Clock and the FSB
 Brand String: Intel(R) Pentium(R) 4 CPU 2.40GHz  Frequency. NOTE:
 Frequency   : 2.40GHz                            If an invalid ratio
 FSB Speed   : 533MHz                             is set in CMOS
                                                  then actual and
 Cache L1    : 8 KB                               setpoint values may
 Cache L2    : 512 KB                             differ. Ratio of
                                                  zero allows external
 Ratio Status     : Locked                        ratio control.
 Ratio Actual Value: 18
   Ratio CMOS Setting:          [ 8]              ↔     Select Screen
   VID CMOS Setting  :          [ 62]             ↑↓    Select Item
                                                  Enter Update
 Max CPUID Value Limit:         [Disabled]        F1    General Help
                                                  F10   Save and Exit
 Hyper Threading Technology     [Disabled]        ESC   Exit
 P4-M Support                   [By Hardware]


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```

Hyper-Threading Technology [Disable]

This item allows you to enable or disable the processor Hyper-Threading Technology.

Configuration options: [Disabled] [Enabled]

P4M SUPPORT [By Hardware]

This item allows you to by hardware or enable / disable the P4-M CPU support.

Configuration options: [Disabled] [Enabled] [By Hardware]

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.

```
                        BIOS SETUP UTILITY
         Advanced

 ┌──────────────────────────────────────────┬──────────────────────┐
 │ IDE Configuration                        │ Select IDE Mode.     │
 │ ──────────────────────────────────────   │                      │
 │  IDE Configuration        [P-ATA Only]   │                      │
 │   S-ATA Running Enhanced Mode [Yes]      │                      │
 │    P-ATA Channel Selection  [Both]       │                      │
 │    S-ATA Ports Definition   [P0-3rd./P1-4th.] │                 │
 │    Configure S-ATA as RAID  [No]         │                      │
 │                                          │                      │
 │ ▶ Primary IDE Master       : [Not Detected] │                   │
 │ ▶ Primary IDE Slave        : [Not Detected] │                   │
 │ ▶ Secondary IDE Master     : [Not Detected] │                   │
 │ ▶ Secondary IDE Slave      : [Not Detected] │                   │
 │ ▶ Third IDE Master         : [Not Detected] │ ↔    Select Screen │
 │ ▶ Fourth IDE Master        : [Not Detected] │ ↑↓   Select Item   │
 │                                          │ +-   Change Option   │
 │ Hard Disk Write Protect    [Disabled]    │ F1   General Help    │
 │ IDE Detect Time Out (Sec)  [35]          │ F10  Save and Exit   │
 │ ATA(PI) 80Pin Cable Detection [Host & Device] │ ESC  Exit        │
 │                                          │                      │
 └──────────────────────────────────────────┴──────────────────────┘
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```

IDE Configuration [P-ATA Only]
This item allows you to select the IDE mode
    Configuration options: [Disabled] [P-ATA Only]
        [S-ATA Only] [P-ATA & S-ATA]
Primary and Secondary IDE Master/Slave
Third and Fourth IDE Master
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]

Hard Disk Write protect [Disabled]
This item allows you to enable or disable the hard disk write protect.
    Configuration options: [Disabled] [Enabled]

IDE Detect Time Out (Sec) [35]
Selects the time out value for detecting ATA/ATAPI devices.
    Configuration options: [0] [5] [10] [15] [20] [25] [30] [35]

ATA(PI) 80Pin Cable Detection [Host & Device]
    Configuration options: [Host & Device] [Host] [Device]

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.]

```
                      BIOS SETUP UTILITY
        Advanced

┌─────────────────────────────────────────┬──────────────────────┐
│ Floppy Configuration                     │ Select the type of   │
│ ─────────────────────                    │ floppy drive         │
│ Floppy A                 [1.44 MB 3½"]   │ connected to the     │
│ Floppy B                 [Disabled]      │ system.              │
│                                          │                      │
│                                          │                      │
│                                          │                      │
│                                          │                      │
│                                          │ ↔    Select Screen   │
│                                          │ ↑↓   Select Item     │
│                                          │ +-   Change Option   │
│                                          │ F1   General Help    │
│                                          │ F10  Save and Exit   │
│                                          │ ESC  Exit            │
│                                          │                      │
└─────────────────────────────────────────┴──────────────────────┘
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```

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 [Disabled]
Allows you to enable or disable the Digital I/O controller.
   Configuration options: [Disabled] [Enabled]

```
                          BIOS SETUP UTILITY
       Advanced

 Configure Win627THF Super IO Chipset          Allows BIOS to Enable
 _____           or Disable Floppy
 OnBoard Floppy Controller    [Enabled]        Controller.
 Serial Port1 Address         [3F8/IRQ4]
 Serial Port2 Address         [2F8/IRQ3]
   Serial Port2 Mode          [Normal]
 Parallel Port Address        [378]
   Parallel Port Mode         [Normal]
   Parallel Port IRQ          [IRQ7]
 Digital I/O Function         [Disabled]


                                               ↔      Select Screen
                                               ↑↓     Select Item
                                               +-     Change Option
                                               F1     General Help
                                               F10    Save and Exit
                                               ESC    Exit



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```

4.7.5 Hardware Health Configuration

```
                        BIOS SETUP UTILITY
        Advanced

Hardware Health Configuration                    Enables Hardware
                                                 Health Monitoring
H/W Health Function           [Enabled]          Device.

Hardware Health Event Monitoring

CPU Temperature               :34°C/93°F
System Temperature            :25°C/77°F

Fan1 Speed                    :5037 RPM

CPU Vcore                     :1.516 V
+1.5 Vin                      :1.516 V          ↔      Select Screen
+3.3 Vin                      :3.354 V          ↑↓     Select Item
+5   Vin                      :5.229 V          +-     Change Option
+12  Vin                      :11.951 V         F1     General Help
-12  Vin                      :-12.380 V        F10    Save and Exit
                                                 ESC    Exit



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```

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.

```
                        BIOS SETUP UTILITY
         Advanced

 ┌──────────────────────────────────────┬─────────────────────────┐
 │ ACPI Settings                        │ Enable / Disable        │
 │ ──────────────────────────────────── │ ACPI support for        │
 │                                      │ Operating System.       │
 │ ACPI Aware O/S            [Yes]      │                         │
 │ ▶ General ACPI Configuration         │                         │
 │ ▶ Advanced ACPI Configuration        │ ENABLE: If OS           │
 │                                      │ supports ACPI.          │
 │                                      │                         │
 │                                      │ DISABLE: If OS          │
 │                                      │ does not support        │
 │                                      │ ACPI.                   │
 │                                      │                         │
 │                                      │                         │
 │                                      │ ↔    Select Screen      │
 │                                      │ ↑↓   Select Item        │
 │                                      │ +-   Change Option      │
 │                                      │ F1   General Help       │
 │                                      │ F10  Save and Exit      │
 │                                      │ ESC  Exit               │
 │                                      │                         │
 │                                      │                         │
 └──────────────────────────────────────┴─────────────────────────┘
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```

General ACPI Configuration
Allows you to select the ACPI state to be used for system
suspend.
    Configuration options: [S1 (POS)] [S3 (STR)] [Auto]
Advanced ACPI Configuration
Use this section to configure additional ACPI options.
ACPI 2.0 Support [No]
Allows you to add more tables for ACPI 2.0 Support.
    Configuration options: [No] [Yes]
ACPI APIC support [Enabled]
Allows you to enable or disable the ACPI support in the ASIC.
When set to "Enabled", the ACPI APIC table pointer is included
in the RSDT pointer list.
    Configuration options: [Disabled] [Enabled]
BIOS → AML ACPI table [Enabled]
Allows you to enable or disable the inclusion of the BIOS ->AML
exchange pointer to (X)RSDT pointer list.
    Configuration options: [Disabled] [Enabled]
Headless mode [Disabled]
Enable/Disable headless operation mode through ACPI.

4.7.7 MPS Configuration

Configure the Multi-Processor table
MPS Revision [1.4]
   Configuration options: [1.1] [1.4]

4.7.8 Remote Access Configuration

Configure Remote Access.
Remote Access [Disabled]
   Configuration options: [Disabled] [Enabled]

4.7.9 USB Configuration

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

```
                       BIOS SETUP UTILITY
          Advanced

  USB Configuration                          Enables USB host
  ──────────────────────────                 controllers.
  Module Version - 2.23.2-7.4

  USB Devices Enabled :
             None

  USB Function              [8 USB Ports]
  Legacy USB Support        [Enabled]
  USB 2.0 Controller        [Enabled]
  USB 2.0 Controller Mode   [HiSpeed]

                                             ↔      Select Screen
                                             ↑↓     Select Item
                                             +-     Change Option
                                             F1     General Help
                                             F10    Save and Exit
                                             ESC    Exit


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```

USB Function [8 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] [8 USB Ports]
Legacy USB Support [Enable]

Enable support for legacy USB.
  Configuration options: [Disabled] [Enabled] [Auto]
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 Hi Speed (480 Mbps) or Full Speed (12 Mbps).
  Configuration options: [Full Speed] [Hi 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.

```
                         BIOS SETUP UTILITY
   Main     Advanced    PCIPnP    Boot    Security    Chipset    Power    Exit
 ┌──────────────────────────────────────────────┬────────────────────────────┐
 │  Advanced PCI/PnP Settings                  ▲ │  NO: lets the BIOS         │
 │                                               │  configure all the         │
 │  WARNING: Setting wrong values in below sections │ devices in the system.  │
 │           may cause system to malfunction.    │  YES: lets the             │
 │                                               │  operating system          │
 │  Plug & Play O/S              [No]            │  configure Plug and        │
 │  PCI Latency Timer           [32]            │  Play (PnP) devices not    │
 │  Allocate IRQ to PCI VGA     [Yes]           │  required for boot if      │
 │  Palette Snooping            [Disabled]      │  your system has a Plug    │
 │  PCI IDE BusMaster           [Disabled]      │  and Play operating        │
 │  OffBoard PCI/ISA IDE Card   [Auto]          │  system.                   │
 │                                               │                            │
 │  IRQ3                        [Available]      │  ↔      Select Screen      │
 │  IRQ4                        [Available]      │  ↑↓     Select Item        │
 │  IRQ5                        [Available]      │  +-     Change Option      │
 │  IRQ7                        [Available]      │  F1     General Help       │
 │  IRQ9                        [Available]      │  F10    Save and Exit      │
 │  IRQ10                       [Available]      │  ESC    Exit               │
 │  IRQ11                       [Available]      │                            │
 │  IRQ14                       [Available]    ▼ │                            │
 └──────────────────────────────────────────────┴────────────────────────────┘
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```

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]

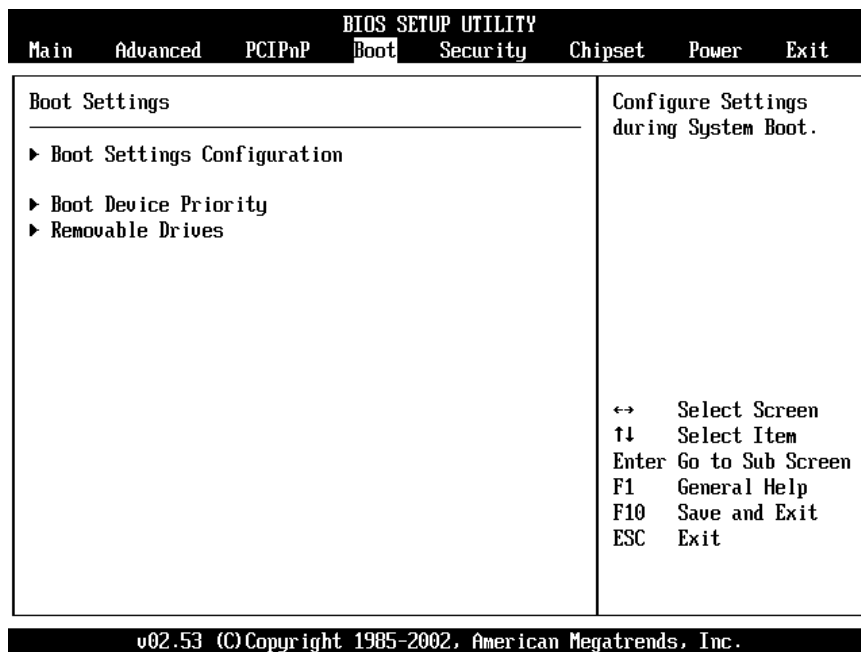Some PCI IDE cards may require this to be set to the PCI slot number that is holding the card.

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.

```
                        BIOS SETUP UTILITY
  Main    Advanced    PCIPnP   Boot    Security    Chipset    Power    Exit

  Boot Settings                             Configure Settings
  _____               during System Boot.

  ▶ Boot Settings Configuration

  ▶ Boot Device Priority
  ▶ Removable Drives



                                            ↔      Select Screen
                                            ↑↓     Select Item
                                            Enter  Go to Sub Screen
                                            F1     General Help
                                            F10    Save and Exit
                                            ESC    Exit


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```

4.9.1 Boot Settings Configuration

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]

Boot From LAN Support [Disabled]

This allows you to enable or disable the system boot from LAN.

　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.
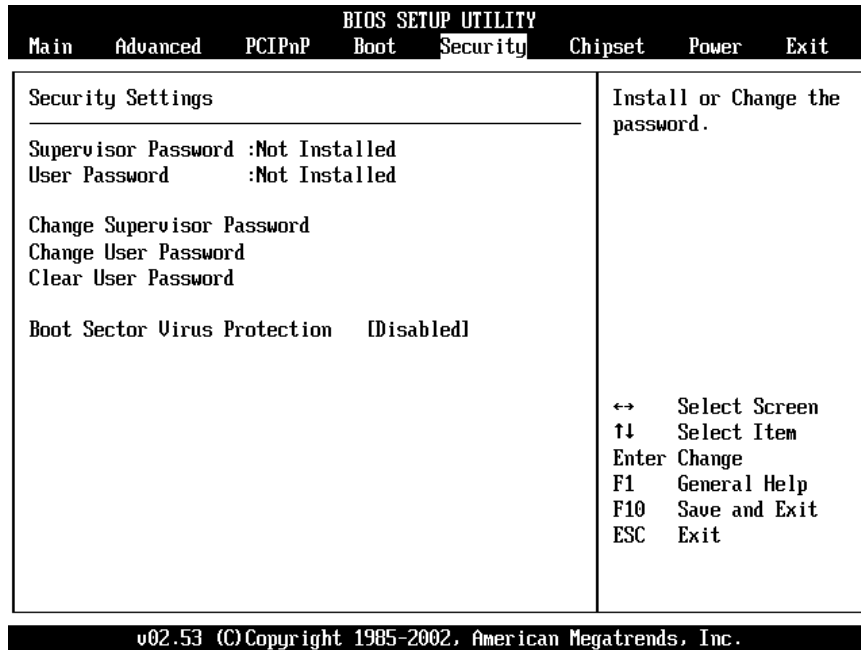
Configuration options: [xxxxx Drive] [Disabled]

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.

```
                        BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security    Chipset    Power    Exit

   Security Settings                          Install or Change the
   ─────────────────────                      password.
   Supervisor Password :Not Installed
   User Password       :Not Installed

   Change Supervisor Password
   Change User Password
   Clear User Password

   Boot Sector Virus Protection    [Disabled]

                                              ↔      Select Screen
                                              ↑↓     Select Item
                                              Enter  Change
                                              F1     General Help
                                              F10    Save and Exit
                                              ESC    Exit


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```

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".

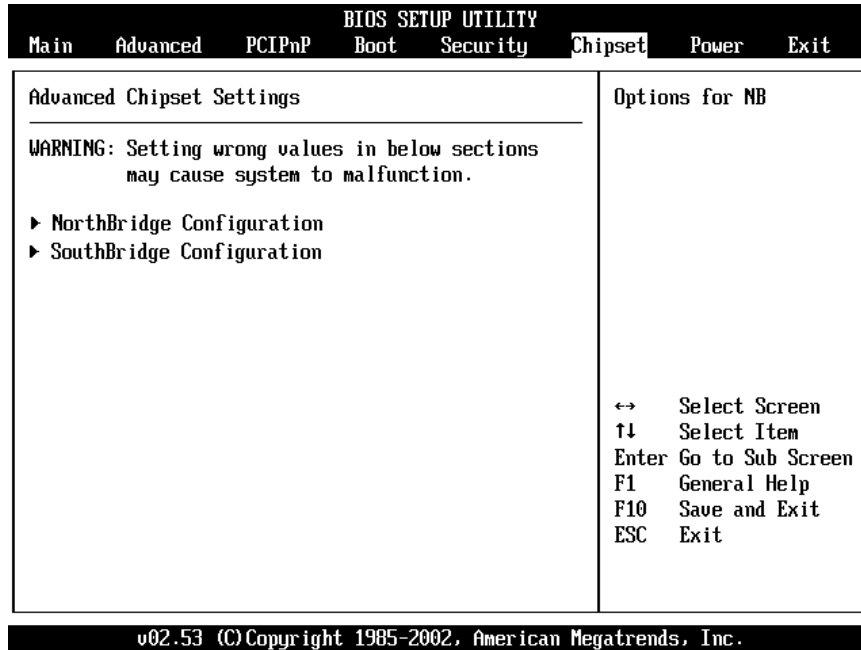**Clear User Password**
Allows you to clear the user password.

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.

```
                         BIOS SETUP UTILITY
 Main    Advanced    PCIPnP   Boot    Security   Chipset   Power    Exit
 ┌─────────────────────────────────────────────┬────────────────────────────┐
 │ Advanced Chipset Settings                    │ Options for NB             │
 │ ─────────────────────────────────────        │                            │
 │ WARNING: Setting wrong values in below sections│                          │
 │          may cause system to malfunction.    │                            │
 │                                              │                            │
 │ ▶ NorthBridge Configuration                  │                            │
 │ ▶ SouthBridge Configuration                  │                            │
 │                                              │                            │
 │                                              │                            │
 │                                              │                            │
 │                                              │  ↔     Select Screen       │
 │                                              │  ↑↓    Select Item         │
 │                                              │  Enter Go to Sub Screen    │
 │                                              │  F1    General Help        │
 │                                              │  F10   Save and Exit       │
 │                                              │  ESC   Exit                │
 │                                              │                            │
 └─────────────────────────────────────────────┴────────────────────────────┘
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```

4.11.1 North Bridge Configuration

DRAM Frequency [Auto]

Allows you to select the frequency of DRAM memory to activate.

   Configuration options: [200 Mhz] [266 Mhz] [333 Mhz] [Auto]

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]

Memory Hole [Disabled]
   Configuration options: [Disabled] [15MB-16MB]

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

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

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

Boot Display Device [CRT+LFP]
Allows you to select the setting for display output .
    Configuration options: [CRT] [EFP] [LFP] [CRT+EFP] [CRT+LFP]

Flat Panel Type [800*600LVDS]
Allows you to select the setting for panel resolution.
    Configuration options: [640x480LVDS] [800x600LVDS] [1024x768LVDS 24bits] [1280x1024LVDS] [1400x1050LVDS] [1024x768LVDS 18bits] [1600x1200LVDS] [1280x1024 48bits]

4.11.2 South Bridge Configuration

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

Spread Spectrum Mode [Disabled]
This item allows you to enable or disable the spread spectrum modulate.
    Configuration options: [Disabled] [Enable]

4.12 Power

```
                          BIOS SETUP UTILITY
  Main    Advanced    PCIPnP    Boot    Security    Chipset    Power    Exit

 ┌─────────────────────────────────────────────────▲─┬──────────────────────┐
 │ APM Configuration                                │ │ Go into Suspend      │
 │ ─────────────────────────────                    │ │ in the specified     │
 │ Power Management/APM          [Enabled]          │ │ Time.                │
 │ Video Power Down Mode         [Suspend]          │ │                      │
 │ Hard Disk Power Down Mode     [Suspend]          │ │                      │
 │ Standby Time Out              [Disabled]         │ │                      │
 │ Suspend Time Out              [Disabled]         │ │                      │
 │ Throttle Slow Clock Ratio     [50%]              │ │                      │
 │ Keyboard & PS/2 Mouse         [MONITOR]          │ │                      │
 │ FDC/LPT/COM Ports             [MONITOR]          │ │                      │
 │ Primary Master IDE            [MONITOR]          │ │                      │
 │ Primary Slave IDE             [MONITOR]          │ │                      │
 │ Secondary Master IDE          [MONITOR]          │ │ ↔     Select Screen  │
 │ Secondary Slave IDE           [MONITOR]          │ │ ↑↓    Select Item    │
 │                                                  │ │ +-    Change Option  │
 │ System Thermal                [Disabled]         │ │ F1    General Help   │
 │                                                  │ │ F10   Save and Exit  │
 │ Power Button Mode             [On/Off]           │ │ ESC   Exit           │
 │ Restore on AC Power Loss      [Last State]       │ │                      │
 │                                                  ▼ │                      │
 └──────────────────────────────────────────────────┴──────────────────────┘
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```

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.

45

Configuration options:[Disabled] [1 Min] [2 Min] [4 Min]
[8 Min] [10 Min] [20 Min] [30 Min] [40 Min] [50 Min]
[60 Min]

Throttle Slow Clock Ratio [50%]
Allows you to select the duty cycle in throttle mode.
Configuration options: [87.5%] [75.0%] [62.5%] [50%]
[37.5%] [25%] [12.5%]

System Thermal [Disabled]
power management event.
Configuration options: [Disabled] [Enabled]

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]

Restore on AC Power Loss [Last State]
When set to Power Off, the system goes into off state after an
AC power loss. When set to Power On, the system goes on after
an AC power loss. When set to Last State, the system goes into
either off or on state whatever was the system state before the
AC power loss.
Configuration options: [Power Off] [Power On] [Last State]

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 PCIPME#/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.
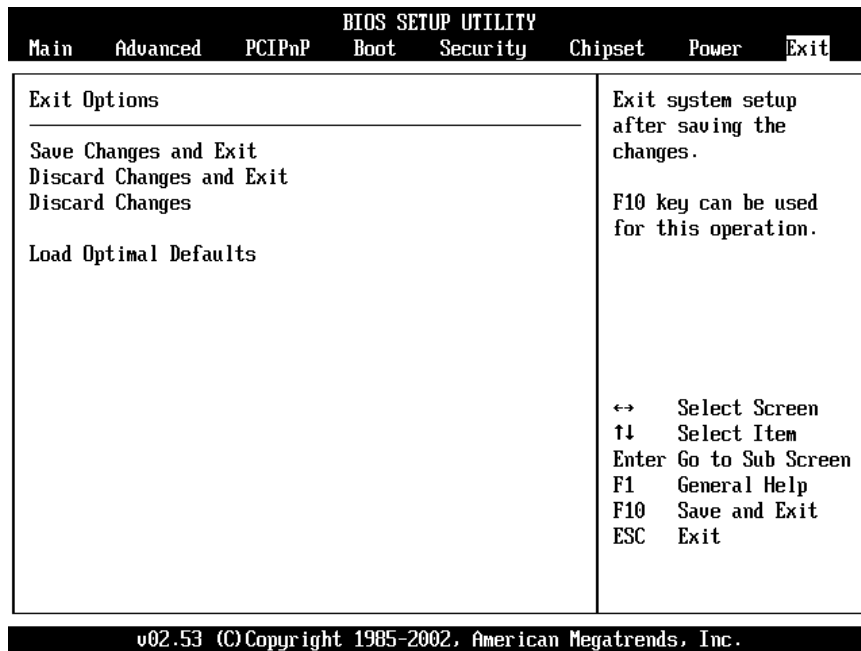
```
                          BIOS SETUP UTILITY
  Main    Advanced    PCIPnP    Boot    Security    Chipset    Power    Exit

  Exit Options                                      Exit system setup
  ──────────────────────────────────────           after saving the
  Save Changes and Exit                            changes.
  Discard Changes and Exit
  Discard Changes                                  F10 key can be used
                                                   for this operation.
  Load Optimal Defaults



                                                   ↔      Select Screen
                                                   ↑↓     Select Item
                                                   Enter Go to Sub Screen
                                                   F1     General Help
                                                   F10    Save and Exit
                                                   ESC    Exit

         v02.53 (C)Copyright 1985-2002, American Megatrends, Inc.
```

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.

Appendix A. Watchdog Timer

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause CPU crash, e.g. external EMI or a software bug. When the CPU stops working properly, a hardware reset (cold boot) or a NMI (Non-Maskable Interrupt) will be issued to resume the system 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 period   **BL:** Time-out value (the time unit - second or minute, is dependent on the Watchdog Timer unit selected in BIOS 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, Watchdog Timer will start counting down. When the timer value reaches zero, the system will reset. To ensure that this reset condition does not occur, Watchdog timer must be periodically refreshed by calling sub-function 2. However, 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. I/O Address Map

• I/O Address Map

I/O address	Description
000-00F	DMA Controller
020-021	Interrupt Controller
040-043	System time
060-060	Standard 101/102 Keyboard Controller
061-061	System Speaker
070-071	System CMOS/Real time Clock
081-083	DMA Controller
0A0-0A1	Interrupt Controller
0C0-0DF	DMA Controller
0F0-0FF	Numeric data processor
1F0-1F7	Primary IDE Channel
2F8-2FF	Communications Serial Port 2 (COM2)
378-37F	Parallel Printer Port 1 (LPT1)
3B0-3BB	Intel (R) 82852/82855GM/GME Graphics Controller
3C0-3DF	Intel (R) 82852/82855GM/GME Graphics Controller
3F6-3F6	Primary IDE Channel
3F7-3F7	Standard floppy disk controller
3F8-3FF	Communications Serial Port 1 (COM1)

1 st MB Memory Address Map

Memory address	Description
00000-9FFFF	SYSTEM MEMORY
A0000-BFFFF	VGA BUFFER
E0000-FFFFF	SYSTEM BIOS
100000	EXTEND MEMORY

*Default setting

IRQ Mapping Chart

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	IRQ FOR PCI STEERING
IRQ2	IRQ Controller	IRQ10	LAN
IRQ3	COM2	IRQ11	LAN
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	AUDIO	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Printer	IRQ15	Secondary IDE

DMA Channel Assignment

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. Digital I/O

One of the characteristics 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. ROCKY-6160 is designed with 4-bit digital inputs and 4-bit digital outputs.

Two kinds of signals (Input and output) are used by the Digital I/O function .These signals are used to control external devices that need On/Off circuit or TTL devices. When one of the signals has been selected, the user can read or write data to the system through the Digital I/O function.

A BIOS function call (INT 15H) is served for the control of the Digital I/O function.

1. To read data:

AH - 6FH
<u>Sub-function:</u> **AL - 8:** to read data from input port <u>Return:</u> **AL** : the data on the input port (lower 4 bit)

<u>Example program</u>:

    MOV AX, 6F08H   ; reading data form the digital input port

    INT 15H   ; after return, input value will be stored
                            in the lower 4-bit of **AL**

2. To write data:

AH - 6FH
Sub-function: **AL – 9:** to write data to the output port **BL** **:** the data to be output

Example program:

MOV AX, 6F09H   ; writing data to the digital output port

MOV BL, 09H   ; output value is 09H

INT 15H   ;

Appendix D. ATX Power Supply

The following notes show how to connect ATX Power Supply to the backplanes and / or the ISBC card.
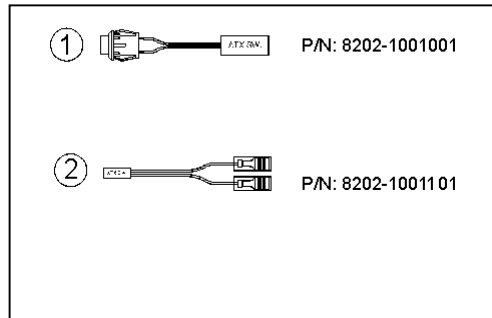
A. For backplanes with ATX Connector

1. Please, disconnect the AC cord of the Power Supply from the AC source to prevent sudden electric surge to the board.
2. Please, check the type of your CPU board. All CPU board listed on the next page support ATX power supply but has two types of power switch connection:

2.1. ROCKY-6160 (through Power Button & GND):
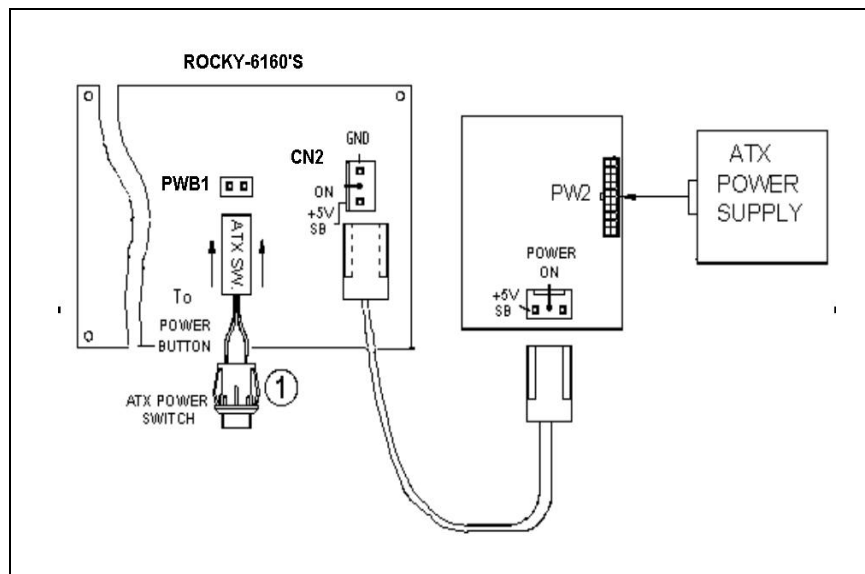
Connect the ATX power button switch to the PWB1 (power button). And connect the power cable from Backplane to CN2 of CPU card.

If you want to turn ON the system, just press the button once. And if you want to turn off the power supply, please press the ATX power switch button for about 4 seconds.

P/N: 8202-1001001

P/N: 8202-1001101

B. For the backplanes with ATX power supply connector

For some SBC without ATX power ON/OFF function, you can control the ATX power supply through backplane's PS-ON connector. Refer to the figure below for the backplanes with ATX connector, the connection can be made simply as following:
1. Connect the ON/OFF (ordinary one) switch to Pin 2 (PS ON) and Pin 3 (GND) of connector CN2
2. Turn the power ON/OFF by the power switch
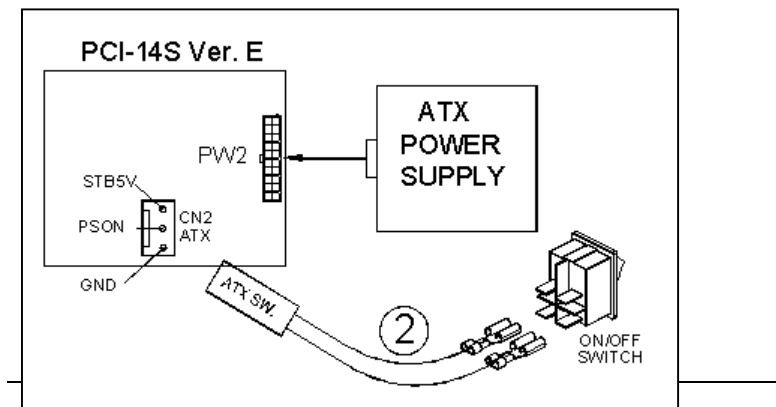
Appendix E. How to use Wake-Up Function

ROCKY-6160 supports two kind of Wake-up Function. This page describes how to use Modem Wake-Up and LAN Wake-Up function. Wake-Up function is only working when you use ATX power supply.

Wake–Up On Modem (Ring):
You must set the option "**Wake-Up On LAN/Ring**" in CMOS SETUP to be enabled. The ATX power supply will be switched on when there is a ring signal detected on pin "RI" of serial port.

Wake-Up On LAN:
When your computer is in power-down status, you can see LAN Link/Active LED is flashing. This indicates that the LAN chip has entered standby mode and waits for Wake-Up signal. You can use other computers to wake up your computer by sending an ID to it via LAN.

ID: ID is the address of your system LAN. Every LAN chip has a factory-set ID, which you can find it from network information in WINDOWS.

ID's format is xxxxxxxxxxxx
Example ID: 009027388320