ROCKY-3742EVFG/EVF/EV

Dual Socket-370 Base CPU Board with

10/100Mb LAN, VGA, Audio, IEEE1394 & Gigabit LAN,

Ver1.0

Contents

<div style="border:1px solid; display:inline-block; padding:10px 20px;">

1

</div>

Introduction

The ROCKY-3742EVFG ATX/AT main board is a high-performance computer mainboard based on VIA® VT82C694X chipset. The ROCKY-3742EVFG is designed for Intel ® Pentium ® III (FC-PGA) processor for cost-effective server markets.

The Apollo Pro133A (VT82C694X) is a Socket-370 system logic north bridge with the addition of 133 MHz capability for both the CPU and SDRAM interfaces. Apollo Pro133A may be used to implement both desktop and notebook personal computer systems from 66MHz to 133MHz based on Socket-370 (Pentium® III processor). The primary features of the Apollo Pro133A-North Bridge are: Slot-1 or Socket-370 CPU (Front Side Bus) Interface (66 / 100 / 133MHz), DRAM Memory Interface (66 / 100 / 133MHz), AGP Bus Interface (66MHz), PCI Bus Interface (33MHz), Mobile Power Management.

The VT82C686B PSIPC (PCI Super-I/O Integrated Peripheral Controller) is a high integration, high performance, power-efficient, and high compatibility device that supports Intel and non-Intel based processor to PCI bus bridge functionality to make a complete Microsoft PC99-compliant PCI/ISA system.

1.1 Specifications :

- **CPU**: Dual Pentium® III(FC-PGA), Celeron(PPGA) , Unique Celeron™ ,VIA Cyrix®Ⅲ

- **FSB**: Support 66/100/133 MHz(Auto Detect)

- **Bus**: PICMG Bus(Support PCI Master x 4)

- **DMA channels**: 7

- **Interrupt levels**: 15

- **Chipset**: VIA VT82C694X+VT82C686B

- **RAM memory**: Four 168-pin DIMM sockets support SDRAM/VCM module. The max memory is up to 1.5GB(PC133) or 2GB(PC100). Support ECC(1-bit Error Code Correct) function

- **Ultra ATA/33/66/100 IDE Interface** : Two PCI Enhance IDE hard drives. The south bridge VT82c686B supports Ultra ATA/33/66/100 IDE interface.

- **Floppy disk drive interface** : Single 2.88 MB, 1.44MB, 1.2MB, 720KB, or 360KB floppy disk drive.

- **Two high speed Series ports** : NS16C550 compatible UARTs

- **Bi-directional Parallel Port** : IEEE1284 compatible

- **Built-in VT82C686B to monitor power supply voltage and fan speed status.**

- **IrDA port : Support Serial Infrared(SIR) and Amplitude Shift Keyed IR(ASKIR) interface.**

- **USB port : Support two USB ports for future expansion.**

- **AC'97 Codec :** Support two channel Left/Right Line IN/OUT, MIC IN, CD IN, and PC beep sound for buzzer.

- **VGA Controller :** SIS 6326 VGA controller, 4MB main memory . Screen Resolution : up to 1600x1200 in 8-bit Color at 85Hz refresh.

- **Intel 82559 Fast Ethernet Multifunction PCI Controller :** IEEE 802.3u Auto-Negotiation support for 10BASE-T/100BASE-TX standard. Fast back-to-back transmission support with minimum interframe spacing. Connected to your LAN through RJ45 connector.

- **NS83820 Gigabit LAN PCI Controller (ROCKY-3742EVFG Only):** DP83820 is an up to gigabit of Ethernet Controller for the PCI bus. Can support full duplex 10/100/1000Mb/s transmission and reception. Connected to your LAN through RJ45 connector.

- **TI TSB43AA22 IEEE1394 Controller (ROCKY-3742EVF/EVFG Only):** The TSB43AA22 provides the digital and analog transceiver functions to implement a two-port node in a cable-based IEEE 1394. Provides two P1394a fully compliant cable ports at 100/200/400 megabits per second (Mbits/s).

- **Keyboard connector**

- **Mouse** : PS/2 Mouse Port on-board.

- **Operating Temperature** : 0° ~ 55° C (CPU needs Cooler)

1.2 What You Have

In addition to this *User's Manual*, the ROCKY-3742EVFG/EVF/EV package includes the following items:

- ROCKY-3742EVFG/EVF/EV Single Board Computer x1

- RS-232/Print Cable x 1

- FDD Cable x 1

- Audio (MIC,LINE IN)/RS-232 x 1

- IDE HDD DMA66 Cable x 1

- IEEE1394 Cable x 1 (ROCKY-3742EVF/EVFG only)

- CD-ROM Driver x 1

- Y Cable x 1

If any of these items is missing or damaged, contact the dealer from whom you purchased the 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-3742EVFG/EVF/EV. At first, the layout of ROCKY-3742EVFG/EVF/EV is shown, and the unpacking information that you should be careful is described. The jumpers and switches setting for the ROCKY-3742EVFG/EVF/EV 's configuration, such as CPU type selection, system clock setting, and watchdog timer, are also included.

2.1 ROCKY-3742EVFG/EVF/EV 's Layout

The motherboard diagram labels: CN12, CN27, U2, PGA370, CN7, JP2, CN8, JP1, U3, DIMM4, DIMM3, DIMM2, DIMM1, PGA370, U1, CN23, CN1, U7, JP3, U4, CN2, CN10, CN6, CN5, CN9, CN3, CN28, U27, U53, CN11, CN19, CN20, CN21, U55, CN22, CN13, CN14, CN15, CN16, CN30, CN29, CN26 CN17
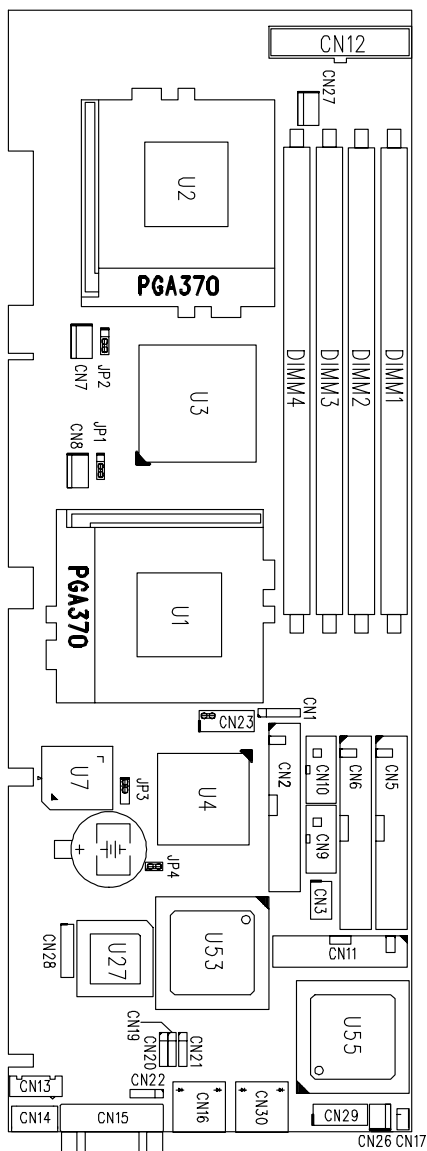
2.2 Clear CMOS Setup

If want to clear the CMOS Setup(for example forgot the password, you should clear the CMOS and then set the password again.), you should close the JP3 (2-3) for about 3 seconds, then open again. This will set back to normal operation mode.

● **JP3 : Clear CMOS Setup**
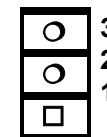
JP3	DESCRIPTION
1-2 (default)*	Keep CMOS Setup (Normal Operation)
2-3	Clear CMOS Setup

2.3 Compact Flash Card Master/Slave Mode Setting

The Compact Flash socket is type II, and used IDE 2.

● **JP4 : Master/Slave Mode Setting**
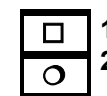
JP4	DESCRIPTION
SHORT *	MASTER
OPEN	SLAVE

2.4 CPU Type Selection Setting

● **JP1, JP2 : CPU Type Selection**

1 2 3
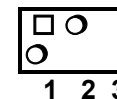
JP1, JP2	DESCRIPTION
2-3*	FC-PGA(Celeron/P III)
1-2	PPGA(Celeron)

3

Connection

This chapter describes how to connect peripherals, switches and indicators to the ROCKY-3742EVFG board.

3.1 Floppy Disk Drive Connector

ROCKY-3742EVFG board is equipped with a 34-pin daisy-chain driver connector cable.

● **CN2 : FDC CONNECTOR**
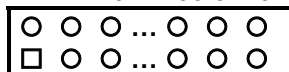
```
      2   4   6 …  30 32  34
    ┌─────────────────────────┐
    │ O   O   O ... O   O   O │
    │ □   O   O ... O   O   O │
    └─────────────────────────┘
      1   3   5 …  29 31  33
```

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	2	REDUCE WRITE
3	GROUND	4	N/C
5	GROUND	6	N/C
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#

3.2 PCI E-IDE Disk Drive Connector

You can attach four IDE(Integrated Device Electronics) device to the VT82C686B IDE controller.

IDE2 shares the same IDE channel with Compact Flash, so you must refer JP4 before setting the IDE2's device.
CN5 (IDE1) : Primary IDE Connector
CN6 (IDE2) : Secondary IDE Connector

● **CN5/CN6 : IDE Interface Connector**
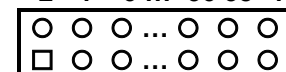
```
      2   4   6 …  36 38  40
    ┌─────────────────────────┐
    │ O   O   O ... O   O   O │
    │ □   O   O ... O   O   O │
    └─────────────────────────┘
      1   3   5 …  35 37  39
```

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	N/C	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	N/C	28	BALE - DEFAULT
29	N/C	30	GROUND - DEFAULT
31	INTERRUPT	32	IOCS16#-DEFAULT
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND

3.3 Parallel Port

This port is usually connected to a printer, The ROCKY-3742EVFG includes an on-board parallel port, accessed through a 26-pin flat-cable connector CN11.

● **CN11 : Parallel Port Connector**

```
    2   4   6 … 22 24  26
   ┌─────────────────────┐
   │ O   O   O … O   O   O │
   │ □   O   O … O   O   O │
   └─────────────────────┘
    1   3   5 … 21 23  25
```
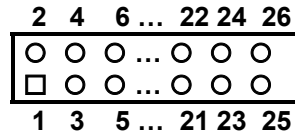
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	STROBE#	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6
9	DATA 7	10	ACKNOWLEDGE
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED #
15	ERROR#	16	INITIALIZE
17	PRINTER SELECT LN#	18	GROUND
19	GROUND	20	GROUND
21	GROUND	22	GROUND
23	GROUND	24	GROUND
25	GROUND	26	NC

3.4 USB Port Connector

The ROCKY-3742EVFG built in two USB(Spec. 1.1) ports for the future new I/O bus expansion.

CN3 : 2 ports USB Connector
       Pin 1-4 for USB 1
       Pin 5-8 for USB 0

```
    5   6   7   8
   ┌─────────────┐
   │ O   O   O   O │
   │ □   O   O   O │
   └─────────────┘
    1   2   3   4
```
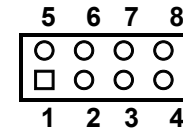
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1.	GROUND	5.	VCC
2.	DATA1+	6.	DATA0-
3.	DATA1-	7.	DATA0+
4.	VCC	8.	GROUND

3.5 Power Button Switch

CN26 : 2 Pin Power Button Switch

```
      1
   ┌─────┐
   │  □  │
   │  O  │
   └─────┘
      2
```
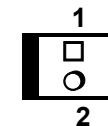
PIN NO.	DESCRIPTION
1	Power Button
2	Ground

3.6 Serial Ports

The ROCKY-3742EVFG offers two high speed NS16C550 compatible UARTs with 16 byte Read/Receive FIFO serial ports.

CN9 : COM1
CN10 : COM2

- **CN9/CN10 : Serial Port 10-pin Connector**

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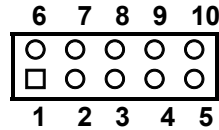
PIN NO.	DESCRIPTION	
1	DATA CARRIER DETECT	(DCD)
2	RECEIVE DATA	(RXD)
3	TRANSMIT DATA	(TXD)
4	DATA TERMINAL READY	(DTR)
5	GROUND	(GND)
6	DATA SET READY	(DSR)
7	REQUEST TO SEND	(RTS)
8	CLEAR TO SEND	(CTS)
9	RING INDICATOR	(RI)
10	N/C	

3.7 Keyboard/Mouse Connector

The ROCKY-3742EVFG provide 6-pin DIN keyboard/mouse connector and 5-pin keyboard connector..

- **CN14 : 6-pin DIN Keyboard/Mouse Connector**

PIN NO.	DESCRIPTION
1	KEYBOARD DATA
2	MOUSE DATA
3	GROUND
4	+5V
5	KEYBOARD CLOCK
6	MOUSE CLOCK

- **CN13 : 5-pin External Keyboard Connector**

```
   ┌──────┐
   │  □   │ 5
   │  ○   │ 4
   │  ○   │ 3
   │  ○   │ 2
   │  ○   │ 1
   │  ○   │
   └──────┘
```
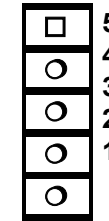
PIN NO.	DESCRIPTION
1	KEYBOARD CLOCK
2	KEYBOARD DATA
3	NC
4	GROUND
5	+5V

3.8 IrDA Infrared Interface Port

The ROCKY-3742EVFG built in an IrDA port which supports Serial Infrared(SIR) or Amplitude Shift Keyed IR(ASKIR) interface. When you use the IrDA port, you have to set COM2 as SIR or ASKIR mode in the BIOS's Peripheral Setup. Then the RS-232 mode of COM2 will be disabled.

- **CN1 : IrDA connector**

```
   ┌─────────────┐
   │ ○ ○ ○ ○ □ │
   └─────────────┘
     5  4  3  2  1
```
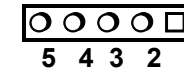
PIN NO.	DESCRIPTION
1	VCC
2	N/C
3	IR-RX
4	Ground
5	IR-TX

3.9 Fan Connector

The ROCKY-3742EVFG provides CPU with cooling fan connector and chassis fan connector. These connectors can supply 12V/500mA to the cooling fan. There is a "rotation" pin in fan connector. This rotation pin is to get the fan's rotation signal to system. So the system BIOS could recognize the fan speed. Please be noted that only specific fan offers the rotation signal.

● **CN7/CN8 : CPU Fan Connector**

```
□  ○  ○
1  2  3
```
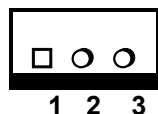
PIN NO.	CPU FAN
1	Ground
2	12V
3	Rotation Signal

3.10   VGA Connector

● **CN15 : 15-pin Female Connector**

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

3.11   Audio Connectors

The onboard AC'97 CODEC supports several audio functions. The audio connectors are described as below.
CN19/CN20/CN21/CN22 Connector

```
○  4
○  3
○  2
○  1
□
```
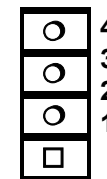
CN19 : LINE IN

PIN NO.	DESCRIPTION
1.	LEFT SIGNAL
2.	GROUND
3.	GROUND
4.	RIGHT SIGNAL

CN20 : MIC IN

PIN NO.	DESCRIPTION
1.	SIGNAL
2.	GROUND
3.	GROUND
4.	NC

CN21 : CD IN

PIN NO.	DESCRIPTION
1.	CD LEFT SIGNAL
2.	GROUND
3.	GROUND
4.	CD RIGHT SIGNAL

CN22 : LINE OUT

PIN NO.	DESCRIPTION
1.	GROUND
2.	LEFT SIGNAL
3.	NC
4.	RIGHT SIGNAL
5.	NC

3.12 Compact Flash Storage Card Socket

The ROCKY-3742EVFG/EVF/EV configures Compact Flash Storage Card in IDE Mode(Used IDE 2).

● **CN4 : Compact Flash Storage Card Socket pin assignment**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	26	CARD DETECT1
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	OBLIGATORY TO PULL HIGH
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	OBLIGATORY TO PULL HIGH
20	A0	45	ACTIVE#
21	D0	46	PDIAG#
22	D1	47	D8
23	D2	48	D9
24	N/C	49	D10
25	CARD DETECT2	50	GROUND

3.13 ATX Connector

The ROCKY-3742EVFG/EVF/EV offers one standard ATX power connector

● **CN12: 20-pin Connector**
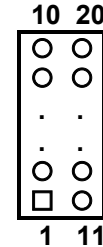
PIN NO.	DESCRIPTION
1	NC
2	NC
3	GND
4	+5V
5	GND
6	+5V
7	GND
8	Power Good
9	+5V SB
10	+12V
11	NC
12	-12V
13	GND
14	PSON#
15	GND
16	GND
17	GND
18	-5V
19	+5V
20	5V

3.14 External Switches and Indicators

There are several external switches and indicators for monitoring and controlling your CPU board. All the functions are in the CN23 connector.

CN23 Pin Assignment and Functions :

```
      2  4  6  8  10 12
    ┌─────────────────┐
    │ O  O  O  O  O  O │
    │ □  O  O  O  O  O │
    └─────────────────┘
      1  3  5  7  9  11
```
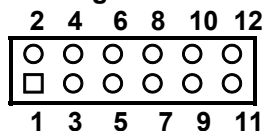
FUNCTION	PIN NO.	DESCRIPTION	
SPEAKER	2	SPK SIGNAL	Jump for Buzzer
	4	N/C	
	6	N/C	
	8	VCC	
RESET	10	POWER GOOD	
	12	GROUND	
HDD LED	9	LED+	
	11	LED-	
POWER LED	1	LED+	
	3	LED-(GROUND)	
Reserved	5	Reserved	
	7	GROUND	

3.15 PS-ON Connector

This connector is used to control the ATX power supply.
● **CN27 : PS-ON Connector (refer to Appendix D for detail)**

```
    ┌─────────────┐
    │ □  O  O │
    └─────────────┘
      1  2  3
```

PIN NO.	DESCRIPTION
1	Ground
2	PS-ON
3	+5V Standby

3.16   LAN RJ45 Connector

ROCKY-3742EVFG/EVF/EV is equipped with dual Ethernet Controllers (Intel 82559 10/100Mbps and NS DP83820 Gigabit). You can connect it to your LAN through RJ45 LAN connector. The pin assignments are as follows:

● **CN16 LAN1 RJ45 Connector (10/100)**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TX+	7	N/C
2	TX-	8	N/C
3	RX+	9	Speed +
4	N/C	10	Speed -
5	N/C	11	Active +
6	RX-	12	Active -

● **CN30 LAN2 RJ45 Connector (Giga LAN)**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TA+	7	TD+
2	TA-	8	TD-
3	TB+	9	Speed 1000M+
4	TC+	10	Speed 1000M-
5	TC-	11	Active +
6	TB-	12	Active -

● **CN17: Gigabit LAN chip (U55) FAN Connector**

PIN NO.	DESCRIPTION
1	Ground
2	+5V

3.17 External LED Connector

The LED connector includes Ethernet Link/Active LED, Ethernet speed LED.

CN29 External LED Connector

```
   2   4   6   8  10  12
  ┌─────────────────────┐
  │ ○   ○   ○   ○   ○   ○ │
  │ □   ○   ○   ○   ○   ○ │
  └─────────────────────┘
   1   3   5   7   9  11
```
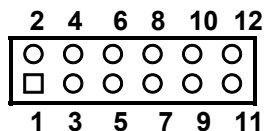
LED +	LED -	LED Function
2	1	LAN 2 Speed LED (10M)
4	3	LAN 2 Speed LED (100M)
6	5	LAN 2 Speed LED (1000M)
8	7	LAN 2 Link/Active LED
10	9	LAN 1 Link/Active LED
12	11	LAN 1 Speed LED

LAN LED Description			
Description	LED ON	LED OFF	LED Flashing
Speed LED	100Mbps	10Mbps	NA
Link/Active LED	Link Ok	Link Fail	Sending or Receiving

3.18 IEEE1394 Connector (ROCKY-3742EVGF only)

ROCKY-3742EVGF is equipped witch IEEE1394 controller (TI TSB43AA22). You can connect it to your 1394 device through CN28 connector. The pin assignments are as follows:

CN28: Connector

PIN NO	DESCRIPTION	PIN NO	DESCRIPTION
1	+12V	9	+12V
2	GND	10	GND
3	TPB1-	11	TPB0-
4	TPB1+	12	TPB0+
5	TPA1-	13	TPA0-
6	TPA1+	14	TPA0+
7	NC/FG	15	NC/FG
8	NC/FG	16	NC/FG

<div style="text-align: center;">**4**</div>

BIOS Setup

4.1 Introduction

This chapter discusses the Setup program built into the BIOS. The Setup program allows users to configure the system. This configuration is then stored in battery-backed CMOS RAM so that it retains the Setup 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 briefly at the bottom of the screen during the POST (Power On Self-Test).

   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...

   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 not save 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 select among the items and press <Enter> to accept and enter the sub-menu.

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software

Standard CMOS Features	Frequency/Voltage Control
Advanced BIOS Features	Load Fail-Safe Defaults
Advanced Chipset Features	Load Optimized Defaults
Integrated Peripherals	Set Supervisor Password
Power Management Setup	Set User Password
PnP/PCI Configurations	Save & Exit Setup
PC Health Status	Exit Without Saving

Esc ： Quit $\uparrow\downarrow\leftarrow\rightarrow$: Select Item

F10 ： Save & Exit Setup

Time, Date, Hard Disk Type….

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

4.4.1 Setup Items

The main menu includes the following main setup categories. Recall that some systems may not include all 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 specify your settings for integrated peripherals. See section 4.8 for the details.

Power Management Setup

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

PnP / PCI Configurations

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.

Frequency/Voltage Control

Use this menu to specify 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 4.13 for the details.

Supervisor / User Password

Use this menu to set User and Supervisor Passwords. See section 4.14 for the detail.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup. See section 4.15 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.

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
Standard CMOS Features

Date: Mon, Feb 8 2000 Time: 16:19:20 ➢ IDE Primary Master Press Enter 2557 MB ➢ IDE Primary Slave Press Enter None ➢ IDE Secondary Master Press Enter None ➢ IDE Secondary Slave Press Enter None Drive A 1.44M, 3.5 in. Drive B None Video EGA/VGA Halt On All,But Keyboard Based Memory 640K Extended Memory 64512K Total Memory 65536K	Item Help Menu Level ➢ Change the day, month, year and century
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults	

Figure 1: The Main Menu

Main Menu Selections

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

Table 2 Main Menu Selections

IDE Adapters

The IDE adapters control the hard disk drive. Use a separate sub menu to configure each hard disk drive.

Figure 2 shows the IDE primary master sub menu.

CMOS Setup Utility – Copyright © 1984-2000 Award Software
IDE Primary Master

```
I DE HDD Auto-Detection        Press Enter
                                                   Item Help

                                                   Menu Level    ➢➢
IDE Primary Master            Auto
Access Mode                   Auto

                                                   To auto-detect the HDD's size,
Capacity                      2557 MB              head... on this channel

Cylinder                      4956
Head                          16
Precomp                       0
Landing Zone                  4955
Sector                        63
↑↓←→Move  Enter: Select   +/-/PU/PD: Value  F10:Save  ESC: Exit   F1:General Help
 F5:Previous Values    F6:Fail-safe defaults         F7:Optimized Defaults
```

Figure 2 IDE Primary Master sub menu

Use the legend keys to navigate through this menu and exit to the main menu. Use Table 3 to configure the hard disk.

Item	Option	Description
	s	
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
The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'		
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this hard disk.
Head	Min = 0 Max = 255	Set the number of read/write heads
Precomp	Min = 0 Max = 65535	**** **Warning**: Setting a value of 65535 means no hard disk
Landing zone	Min = 0 Max = 65535	****
Sector	Min = 0 Max = 255	Number of sectors per track

Table 3 Hard disk selections

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.

CMOS Setup Utility – Copyright © 1984 – 2000 Award Software
Advanced BIOS Features

		Item Help
Virus Warning	[Disabled]	
CPU Internal Cache	[Enabled]	Menu Level ➢
External Cache	[Enabled]	
CPU L2 Cache ECC Checking	[Enabled]	
Processor Nunber Feature	[Enabled]	Allows you to choose the VIRUS
Quick Power On Self Test	[Enabled]	warning feature for IDE Hard Disk
First Boot device	[Floppy]	boot sector protection. If this
Second Boot device	[HDD-0]	function is enabled and someone
Third Boot device	[SCSI]	attempt to write data into this area,
Boot other device	[Enabled]	BIOS will show a warning message
Swap Floppy Drive	[Disabled]	on screen and alarm beep
Boot Up Floppy Seek	[Disabled]	
Boot Up NumLock Status	[On]	
Gate A20 Option	[Fast]	
Typematic Rate Setting	[Disabled]	
Typematic Rate (Chars/Sec)	[6]	
Typematic Delay (Msec)	[250]	
Security Option	[Setup]	
MPS Version Control For OS	[1.4]	
OS Select For DRAM > 64MB	[Non-OS2]	
Video BIOS For Shadow	[Enabled]	
C8000-CBFFF Shadow	[Disabled]	
CC000-CFFFF Shadow	[Disabled]	
D0000-D3FFF Shadow	[Disabled]	
D4000-D7FFF Shadow	[Disabled]	
D8000-DBFFF Shadow	[Disabled]	
DC000-DFFFF Shadow	[Disabled]	

↑↓←→Move   Enter: Select   +/-/PU/PD: Value   F10:Save ESC: Exit F1:General Help
F5:Previous Values   F6:Fail-safe defaults   F7:Optimized Defaults

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 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 Internal Cache/External Cache
These two categories speed up memory access. However, it depends on CPU/chipset design.
The choice: Enabled, Disabled.

CPU L2 Cache ECC Checking
This item allow you to enabled/disabled CPU L2 Cache ECC checking.
The choice: Enabled, Disabled.

Processor Number Feature
This item allows you to enable/disable support KLAMATH.
The choice: Enabled, Disabled.

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.
The choice: Enabled, Disabled.

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, ZIP100, 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

Keystrokes 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.

MPS Version Control For OS

Select the operating system that is running with Multi-Processor control version.
The choice: 1.1, 1.4.

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.

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.

4.7 Advanced Chipset Features

CMOS Setup Utility – Copyright © 1984 – 2000 Award Software

```
                    Advanced Chipset Features
┌─────────────────────────────────────────┬───────────────────────┐
│ DRAM Timing By SPD      [Disabled]  DRAM │      Item Help        │
│ Clock              [Host CLK]            │ _____│
│ SDRAM Cycle Length      [3]              │ Menu Level    ➤       │
│ Bank Interleave         [Disabled]       │                       │
│ Memory Hole             [Disabled]       │                       │
│ P2C/C2P Concurrency     [Enabled]        │                       │
│ System BIOS Cacheable   [Disabled]       │                       │
│ OnChip USB              [Disabled]       │                       │
│ USB Keyboard Support    [Disabled]       │                       │
│ USB Mouse Support       [Disabled]       │                       │
│ OnChip Sound            [Auto]           │                       │
│ CPU to PCI Write Buffer [Enabled]        │                       │
│ PCI Dynamic Bursting    [Enabled]        │                       │
│ PCI Master 0 WS Write   [Enabled]        │                       │
│ PCI Delay transaction   [Enabled]        │                       │
│ PCI#2 Access #1 Retry   [Enabled]        │                       │
│ Memory Parity/ECC Check [Disabled]       │                       │
├─────────────────────────────────────────┴───────────────────────┤
│ ↑↓←→Move  Enter: Select  +/-/PU/PD: Value  F10:Save  ESC: Exit  F1:General Help │
│ F5:Previous Values   F6:Fail-safe defaults      F7:Optimized Defaults │
└──────────────────────────────────────────────────────────────────┘
```

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. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

DRAM Settings

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.

DRAM Timing By SPD

This item allows you to select the value in this field, depending on whether the board has paged DRAMs or EDO (extended data output) DRAMs.

The Choice: Enabled, Disabled.

DRAM Clock

This item allows you to control the DRAM speed.
The Choice: Host Clock, HCLK-33M, HCLK+33M.

SDRAM Cycle Length

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

Memory Hole

In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB.

The Choice: 15M-16M, Disabled.

P2c/C2P Concurrency

This item allows you to enable/disable the PCI to CPU, CPU to PCI concurrency.
The choice: Enabled, Disabled.

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.

OnChip USB

This should be enabled if your system has a USB installed on the system board and you want to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature.
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.

OnChip Sound

This item allows you to control the onboard AC 97 audio.
The Choice: Auto, Disabled.

CPU to PCI Write Buffer

When this field is *Enabled,* writes from the CPU to the PCI bus are buffered, to compensate for the speed differences between the CPU and the PCI bus. When *Disabled*, the writes are not buffered and the CPU must wait until the write is complete before starting another write cycle.
The Choice: Enabled,Disabled.

PCI Dynamic Bursting

When *Enabled,* every write transaction goes to the write buffer. Burstable transactions then burst on the PCI bus and nonburstable transactions don't.
The Choice: Enabled,Disabled.

PCI Master 0 WS Write

When *Enabled,* writes to the PCI bus are executed with zero wait states.
The Choice: Enabled,Disabled.

PCI Delay Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select *Enabled* to support compliance with PCI specification version 2.1.
The Choice: Enabled,Disabled.

PCI#2 Access #1 Retry

When disabled, PCI#2 will not be disconnected until access finishes (difault). When enabled, PCI#2 will be disconnected if max retries are attempted without success.
The Choice: Enabled,Disabled.

Memory Parity/ECC Check

This item *enabled* to detect the memory parity and Error Checking & Correcting.
The Choice: Enabled,Disabled.

4.8   Integrated Peripherals

CMOS Setup Utility – Copyright © 1984 – 2000 Award Software
Integrated Peripherals

		Item Help
OnChip IDE Channel0	[Enabled]	
OnChip IDE Channel1	[Enabled]	
IDE Prefetch Mode	[Enabled]	Menu Level ➢
Primary Master PIO	[Auto]	If your IDE hard drive
Primary Slave PIO	[Auto]	supports block mode select
Secondary Master PIO	[Auto]	Enabled for automatic
Secondary Slave PIO	[Auto]	detection of the optimal
Primary Master UDMA	[Auto]	number of block read/write
Primary Slave UDMA	[Auto]	per sector the drive can
Secondary Master UDMA	[Auto]	support
Secondary Slave UDMA	[Auto]	
Init Display First	[PCI Slot]	
Onboard 1394 Device	[Enabled]	
Onboard Lan Device	[Enabled]	
IDE HDD Block Mode	[Enabled]	
Onboard FDC Controller	[Enabled]	
Onboard Serial Port 1	[Auto]	
Onboard Serial Port 2	[Auto]	
UART 2 Mode	[Standard]	
IR Function Duplex	[Half]	
TX,RX inverting enable	[No, Yes]	
Onboard Parallel Port	[378/IRQ7]	
Onboard Parallel Mode	[Normal]	
ECP Mode Use DMA	[3]	
Parallel Port EPP Type	[EPP1.9]	
Onboard Legacy Audio	[Enabled]	
Sound Blaster	[Enabled]	
SB I/O Base Address	[220H]	
SB IRQ Select	[IRQ 5]	
SB DMA Select	[DMA 1]	

↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help
F5:Previous Values   F6:Fail-safe defaults   F7:Optimized Defaults

On-Chip IDE Channel0/1

The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface
The choice: Enabled, Disabled.

IDE Prefetch Mode

The onboard IDE drive interfaces supports IDE prefetching for faster drive accesses. If you install a primary and/or secondary add-in IDE interface, set this field to *Disabled* if the interface does not support prefetching.
The choice: Enabled, Disabled.

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.

Primary/Secondary Master/Slave UDMA

Ultra DMA-33/66/100 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-33/66/100, select Auto to enable BIOS support.

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

Init Display First

This item allows you to decide to active whether PCI Slot of VGA card first.
The choice: PCI Slot, Onboard, AGP .

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.
The 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 2 Mode

This item allows you to select which mode for the Onboard Serial Port 2.
The choice: Standard, HPSIR, ASKIR.

IR Function Duplex

This item allows you to select the IR half/full duplex funcion.
The choice: Half, Full.

TX ,RX inverting enable

This item allow you to enable the TX, RX inverting which depends on different H/W requirement. This field is not recommended to change its default setting for avoiding any error in your system
The choice: No, No/ No,Yes(Default)/ Yes, No/ Yes, Yes.

Onboard Parallel Port

This item allows you to determine onboard parallel port controller I/O address setting.
The choice: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, Disabled,

Parallel Port Mode

Select an operating mode for the onboard parallel (printer) port. Select *Normal, Compatible,* or *SPP* unless you are certain your hardware and software both support one of the other available modes.
The choice: Normal, EPP, ECP,ECP/EPP

ECP Mode Use DMA

Select a DMA channel for the parallel port for use during ECP mode.
The choice: 3, 1.

Parallel Port EPP Type

elect EPP port type 1.7 or 1.9.

The choice: EPP1.7, EPP1.9

Onboard Legacy Audio

This field controls the onboard legacy audio.
The choice: Enabled, Disabled.

Sound Blaster

Sound Blaster support.
The choice: Enabled, Disabled

SB I/O Base Address

This item allows you to determine Sound Blaster I/O address setting.

The choice: 220H, 240H, 260H, 280H

SB IRQ Select

This item allows you to determine Sound Blaster IRQ setting.

The choice: IRQ 5, IRQ 7, IRQ 9, IRQ 10

SB DMA Select

This item allows you to determine Sound Blaster DMA setting.

The choice: DMA 0, DMA 1, DMA 2, DMA 3

4.9 Power Management Setup

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

CMOS Setup Utility – Copyright © 1984 – 2000 Award Software
Power Management Setup

ACPI function	[Disabled]	Item Help
➢ Power Management	[Press Enter]	
PM Control by APM	[Yes]	Menu Level ➢
Video Off Option	[Suspend -> Off]	
Video Off Method	[V/H SYNC+Blank]	
MODEM Use IRQ	[3]	
Soft-Off by PWRBTN	[Instant-Off]	
State After Power Failure	[Auto]	
➢ Wake Up Events	[Press Enter]	

↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help
F5:Previous Values   F6:Fail-safe defaults   F7:Optimized Defaults

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).
The choice: Enabled, Disabled.

Power Management

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

1. **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.
2. **Doze Mode:** When enabled and after the set time of system inactivity, the CPU clock will run at slower speed while all other devices still operate at full speed.

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

There are four selections for Power Management, three of which have fixed mode settings.

Disable (default)	No power management. Disables all four 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 is from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

PM Control by APM

When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If Advance Power Management (APM) is installed on your system, selecting Yes gives better power savings.

If the Max. Power Saving is not enabled, this will be preset to *No*.

The choice: Yes, No.

Video Off Option

When enabled, this feature allows the VGA adapter to operate in a power saving mode.

Always On	Monitor will remain on during power saving modes.
Suspend --> Off	Monitor blanked when the systems enters the Suspend mode.
All Modes --> Off	Monitor blanked when the system enters any power saving mode.

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 Support	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards to select video power management values.

MODEM Use IRQ

This determines the IRQ in which the MODEM can use.

The choice: 3, 4, 5, 7, 9, 10, 11, NA.

Soft-Off by PWRBTN

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has "hung."

The choice: Delay 4 Sec, Instant-Off.

State After Power Failure

State after power is re-applied

The choice: Auto, On, Off.

Wake Up Event

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

VGA

When *On,* you can set the VGA awakens the system.

LPT & COM

When *On of* LPT & COM, any activity from one of the listed system peripheral devices or IRQs wakes up the system.

HDD & FDD

When *On of HDD* & FDD, any activity from one of the listed system peripheral devices wakes up the system.

PCI Master
When *On of PCI Master*, any activity from one of the listed system peripheral devices wakes up the system.

Wake Up On LAN/Ring
An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) and LAN WOL awakens the system from a soft off state.

RTC Alarm Resume
When *Enabled,* your can set the date and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode.
The following is a list of IRQ's, **I**nterrupt **ReQ**uests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

When set *On*, activity will neither prevent the system from going into a power management mode nor awaken it.

- **Primary INTR**
- **IRQ3 (COM 2)**
- **IRQ4 (COM 1)**
- **IRQ5 (LPT 2)**
- **IRQ6 (Floppy Disk)**
- **IRQ7 (LPT 1)**
- **IRQ8 (RTC Alarm)**
- **IRQ9 (IRQ2 Redir)**
- **IRQ10 (Reserved)**
- **IRQ11 (Reserved)**
- **IRQ12 (PS / 2 Mouse)**
- **IRQ13 (Coprocessor)**
- **IRQ14 (Hard Disk)**
- **IRQ15 (Reserved)**

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.

CMOS Setup Utility – Copyright © 1984-2000 Award Software
PnP/PCI Configurations

PnP OS Installed	[No]	Item Help
Reset Configuration Data	[Disabled]	------------------------
		Menu Level ➢
Resources Controlled By	[Auto(ESCD)]	
x IRQ Resources	[Press Enter]	Default is Disabled. Select
x DMA Resources	[Press Enter]	Enabled to reset Extended
		System Configuration
		Data(ESCD) when you exit
		Setup if you have installed a new
PCI/VGA Palette Snoop	[Disabled]	add-on and the system
Assign IRQ For USB	[Enabled]	reconfiguration has caused such
		a serious conflict that the OS
		cannot boot

↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help
F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults

Pnp OS Installed
This item allows you to determine install PnP OS or not.
The choice: Yes, No.

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.

IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

IRQ3/4/5/7/9/10/11/12/14/15 assigned to

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1). PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.
The Choice: PCI/ISA PnP, Legacy ISA.

DMA Resource

When resources are controlled manually, assign each system DMA channel a type, depending on the type of device using the DMA channel.

DMA 0/1/3/5/6/7 assigned to

Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.
The Choice: Legacy ISA and PCI/ISA PnP.

PCI/VGA Palette Snoop

Leave this field at *Disabled*.
The Choice: Enabled, Disabled.

Assign IRQ For USB

Enable/Disable to assign IRQ for USB
The Choice: Enabled, Disabled.

4.11   PC Health Status

CMOS Setup Utility – Copyright © 1984-2000 Award Software
PC Health Status

Current CPU1 Temp.	46℃	Item Help
Current CPU2 Temp.	48℃	-----------------------
Current CPUFAN1 Speed	5336RPM	Menu Level ➢
Current CPUFAN2 Speed	5353RPM	
CPU1 V-Core	1.75V	
CPU2 V-Core	1.73V	
System 3.3V	3.32V	
System 5V	5.01V	
System 12V	12.35V	

↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help
F5:Previous Values   F6:Fail-safe defaults   F7:Optimized Defaults

4.12   Frequency/Voltage Control

CMOS Setup Utility – Copyright © 1984-2000 Award Software
Frequency/Voltage Control

```
   Auto Detect DIMM/PCI Clk      [Enabled]              Item Help
   CPU Clock/Spread Spectrum     [Default]       ------------------------
                                                 Menu Level    ➢




┌──────────────────────────────────────────────────────────────────────┐
│ ↑↓←→ Move  Enter: Select  +/-/PU/PD: Value  F10:Save  ESC: Exit  F1:General Help │
│ F5:Previous Values    F6:Fail-safe defaults       F7:Optimized Defaults │
└──────────────────────────────────────────────────────────────────────┘
```

Auto Detect DIMM/PCI Clk
This item allows you to enable/disable auto detect DIMM/PCI Clock.
The choice: Enabled, Disabled.

CPU Clock/Spread Spectrum
This item allows you to select the CPU Clk/spread spectrum modulate.
The choice: 124MHz/On, 133MHz/Off, 133MHz/On, 138MHz/Off,
140MHz/On, 150MHz/On.

4.13 Defaults Menu

Selecting "Defaults" from the main menu shows you two
options which are described below

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.

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.

4.14 Supervisor/User Password Setting
You can set either supervisor or user password, or both of then. The
differences between are:

supervisor password :
can enter and change the options of the setup menus.

user password   :
just can only enter but do not have the right to change   the options of the setup menus. When you select this function,   the   following message will appear at the   center of the screen to assist you in creating a   password.

      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.

4.15 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. Watch-Dog Timer

The WatchDog Timer is a device to ensure that standalone systems can always recover from abnormal conditions that cause the system to crash. These conditions may result from an external EMI or a software bug. When the system stops working, hardware on the board

will perform hardware reset (cold boot) to bring the system back to a known state.

Three I/O ports control the operation of WatchDog Timer.

443 (hex)	Write	Set WatchDog Time period
443 (hex)	Read	Enable the refresh the Watchdog Timer.
043/843 (hex)	Read	Disable the Watchdog Timer.

Prior to enable the Watchdog Timer, user has to set the time-out period. The resolution of the timer is 1 second and the range of the timer is from 1 sec to 255 sec. You need to send the time-out value to the I/O port – 443H, and then enable it by reading data from the same I/O port – 443H. This will activate the timer that will eventually time out and reset the CPU board. To ensure that this reset condition won't occur, the Watchdog Timer must be periodically refreshed by reading the same I/O port 443H. This must be done within the time-out period that is set by the software, please refer to the example program. Finally, we have to disable the Watchdog timer by reading the I/O port -- 843H or 043H. Otherwise the system could reset unconditionally.

A tolerance of at least 5% must be maintained to avoid unknown routines in the operating system (DOS), such as disk I/O that can be very time-consuming. Therefore if the time-out period has been set to 10 seconds, the I/O port 443H must be read within 7 seconds.

Example assembly program:
```
TIMER_PORT  = 443H
TIMER_START = 443H
TIMER_STOP  = 843H
;;Initial Timer Counter
MOV DX, TIMER_PORT
MOV AL, 8    ;;8 seconds
OUT DX, AL
MOV DX, TIMER_START
IN AL, DX.   ;;Start counter
```

```
W_LOOP:
MOV DX, TIMER_STOP
IN AL, DX
MOV DX, TIMER_START
IN AL, DX        ;;Restart counter
;;Add Your Appliaction Here
CMP EXIT_AP, 0
JNE W_LOOP
MOV DX, TIMER_STOP
IN AL, DX
;;Exit AP
```

Appendix B. E^2 Key™ Function

The ROCKY-3742EVFG provides an outstanding E^{2}KEY™ function for system integrator. Based on the E^{2}KEY™, you can free to store the ID Code, Password or Critical Data in the 1Kbit EEPROM. Because the EEPROM is nonvolatile memory, you don't have to worry for losing very important data.

Basically the E^{2}KEY™ is based on a 1Kbit EEPROM which is configured to 64 words(from 0 to 63). You could access (read or write) each word at any time.

When you start to use the E^{2}KEY™ you should have the utility in the package. The software utility will include four files as follows,

README.DOC
E2KEY.OBJ
EKEYDEMO.C
EKEYDEMO.EXE.

The E2KEY.OBJ provides two library functions for user to integrate their application with E^{2}KEY™ function. These library **(read_e2key and write_e2key)** are written and compiled in C language. Please check the following statement, then you will know how to implement it easily.

unsigned int read_e2key(unsigned int address)
/* This function will return the E^{2}KEY™'s data at address. The address range is from 0 to 63. Return data is one word,16 bits

*/**void write_e2key(unsigned int address,unsigned data)**
/* This function will write the given data to E^{2}KEY™ at certain address. The address range is from 0 to 63. The data value is from 0 to 0xffff. */

To easily start to use the function, please refer to the included EKEYDEMO.C code at first.

Appendix C. Address Mapping

IO Address Map

I/O address Range	Description
000-01F	DMA Controller #1
020-021	Interrupt Controller #1, Master
040-05F	8254 timer
060-06F	8042 (Keyboard Controller)
070-07F	Real time Clock, NMI Mask
080-09F	DMA Page Register
0A0-0BF	Interrupt Controller #2
0C0-0DF	DMA Controller #2
0F0	Clear Math Coprocessor Busy
0F1	Reset Math Coprocessor
0F2	Core logic programming configuration
0F8-0FF	Math Coprocessor
1F0-1F8	Fixed Disk
200-207	Game I/O
278-27F	Parallel Printer Port 2 (LPT3)
2E8-2EF	Serial Port 4
2F8-2FF	Serial Port 2
300-31F	Prototype Card
360-36F	Reserved
378-37F	Parallel Printer Port 1 (LPT2)
3B0-3BF	Monochrome Display and Printer Adapter (LPT1)
3C0-3CF	Reserved
3D0-3DF	Color/Graphics Monitor Adapter
3E8-3EF	Serial Port 3
3F0-3F7	Diskette Controller
3F8-3FF	Serial Port 1

1st MB Memory Address Map

Memory address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
C0000-C7FFF	VGA BIOS
F0000-FFFFF	System BIOS
1000000-	Extend BIOS

*Default setting

IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	Available
IRQ2	Cascade to IRQ Controller	IRQ10	Available
IRQ3	COM2	IRQ11	Available
IRQ4	COM1	IRQ12	PS2 mouse
IRQ5	Available	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Printer	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 D. ATX Power Supply

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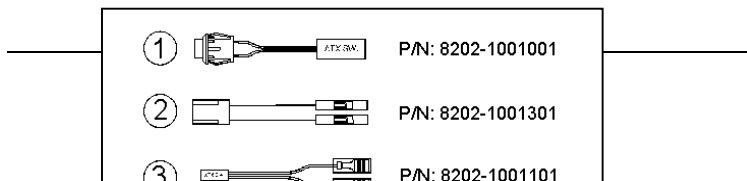
A. For backplanes with ATX Connector

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-3742EVFG (through Power Button & GND):
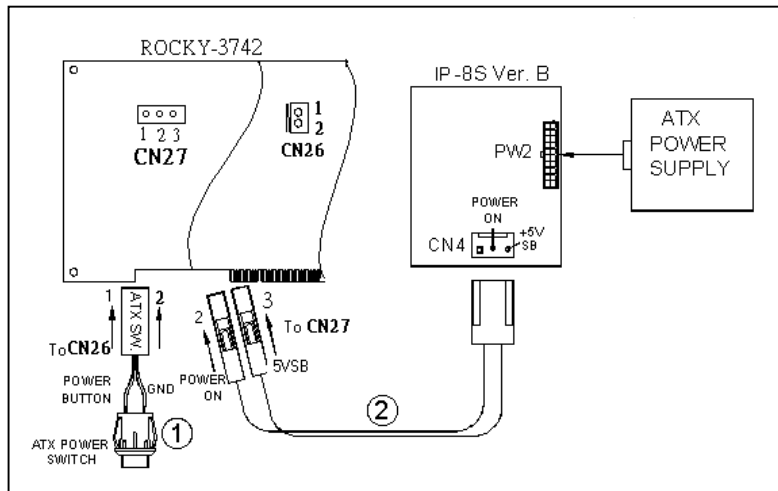
Connect the ATX power button switch to the pin 1 (power button) and pin 2 (+5VSB) of CN26 on the board. And connect the power cable from CN4 of backplane to CN27 of CPU card.

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.

B. For the backplanes with ATX power supply connector

For some SBC without ATX power ON/OFF function, then 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. You may now turn the power ON/OFF by the power switch
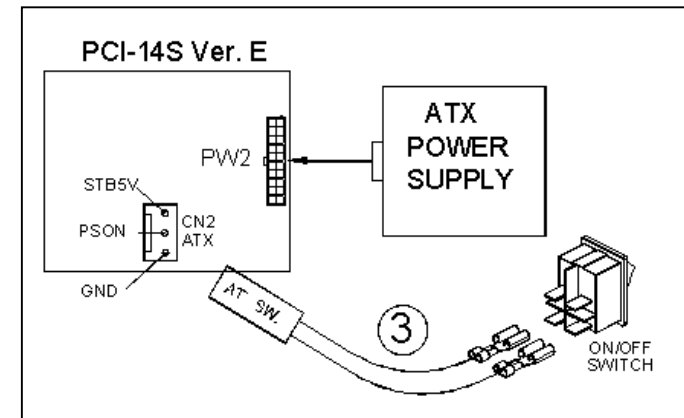
Appendix E. How to use Wake-Up Function

The ROCKY-3742EVFG provides two kind of Wake Up Function. This page describes how to use Modem Wake-Up and LAN Wake-Up function.

Wake-Up function is working while you use ATX power supply,

Wake-Up By Modem Ring On:

You must set the option *Wake Up On LAN/Ring* of 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 (for Intel 82559 LAN-chip):

You must set the option *Wake Up On LAN/Ring* of CMOS SETUP to be enabled. When your computer is in power-down status, you can see LAN Link/Active LED is flashing. This status 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 ID to it.

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 xx-xx-xx-xx-xx-xx
Example ID: 00905C21D4