

ROCKY-3732EVS
Dual Pentium® III with
Dual 10/100Mb Ethernet , VGA, Audio,
Dual Ultra-160 SCSI Port
Ver 2.x

@Copyright 2001

All Rights Reserved.

Manual first edition Jan 14, 2001

The information in this document is subject to change without prior notice in order to improve reliability, design and function and does not represent a commitment on the part of the manufacturer.

In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or inability to use the product or documentation, even if advised of the possibility of such damages.

This document contains proprietary information protected by copyright. All rights are reserved. No part of this manual may be reproduced by any mechanical, electronic, or other means in any form without prior written permission of the manufacturer.

Trademarks

ROCKY-3732EVS is registered trademarks of ICP Electronics Inc., IBM PC is a registered trademark of International Business Machines Corporation. Intel is a registered trademark of Intel Corporation. AWARD is registered trademarks of AWARD SOFTWARE INTERNATIONAL, Inc. Other product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective companies.

Contents

| | |
|---|-----------|
| 1. Introduction | 5 |
| 1.1 Specifications..... | 6 |
| 1.2 What You Have..... | 7 |
| | |
| 2. Installation | 8 |
| 2.1 ROCKY-3732EVS's Layout..... | 9 |
| 2.2 Clear CMOS Setup | 10 |
| 2.3 CompactFlash Card Master/Slave Mode Setting | 10 |
| 2.4 CPU Type Selection Setting | 10 |
| 2.5 SCSI A/B Terminator Selection Setting | 11 |
| | |
| 3. Connection | 12 |
| 3.1 Floppy Disk Drive Connector | 12 |
| 3.2 PCI E-IDE Disk Drive Connector | 13 |
| 3.3 Parallel Port | 14 |
| 3.4 USB Port Connector | 15 |
| 3.5 Power Button Switch..... | 15 |
| 3.6 Serial Ports | 16 |
| 3.7 Keyboard/Mouse Connector | 16 |
| 3.8 IrDA Infrared Interface Port | 17 |
| 3.9 Fan Connector | 18 |

| | | |
|------|--|----|
| 3.10 | VGA Connector..... | 18 |
| 3.11 | Audio Connectors | 19 |
| 3.12 | CompactFlash Storage Card Socket | 20 |
| 3.13 | ATX Connector | 21 |
| 3.14 | External Switches and Indicators | 22 |
| 3.15 | PS-ON Connector | 22 |
| 3.16 | LAN RJ45 Connectors | 23 |
| 3.17 | External LED Connector | 23 |
| 3.18 | Ultra-2/3 68pin SCSI Connectors | 24 |

4. BIOS Setup..... 25

| | | |
|------|--|----|
| 4.1 | Introduction..... | 25 |
| 4.2 | Starting Setup..... | 25 |
| 4.3 | Using Setup | 26 |
| 4.4 | Main Menu | 27 |
| 4.5 | Standard CMOS Setup | 30 |
| 4.6 | Advanced BIOS Setup..... | 34 |
| 4.7 | Advanced Chipset Setup | 38 |
| 4.8 | Integrated Peripherals | 41 |
| 4.9 | Power Management Setup | 45 |
| 4.10 | PnP/PCI Configuration Setup | 49 |
| 4.11 | PC Health Status | 51 |
| 4.12 | Frequency/Voltage Control | 52 |
| 4.13 | Defaults Menu..... | 53 |
| 4.14 | Supervisor/User Password Setting | 54 |

| | |
|--|----|
| 4.15 Exit Selecting | 55 |
| Appendix A. WatchDog Timer..... | 56 |
| Appendix B. E ² Key™ Function..... | 57 |
| Appendix C. Address Mapping..... | 59 |
| Appendix D. ATX Power Supply | 61 |
| Appendix E. How to used Wake Up Function | 63 |
| Appendix F. Dimensions | 64 |

Introduction

The ROCKY-3732EVS ATX/AT mainboard is a high-performance computer mainboard based on VIA® VT82C694X/T chipset. The ROCKY-3732EVS is designed for Intel® Pentium® III (FC-PGA) processor for cost-effective server markets.

The Apollo Pro133A (VT82C694X/T) 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 / FC-PGA2 (694T only)) & Celeron™ (PPGA)
- **FBS** : Support 66/100/133 MHz(Auto Detect)
- **Bus** : PICMG Bus(Support PCI Master x 4)
- **DMA channels** : 7
- **Interrupt levels** : 15
- **Chipset** : VIA VT82C694X/T / VT82C686B
- **RAM memory** : Four 168-pin DIMM sockets support DRAM/VCM module. Support 8 banks up to 2GB at 100MHz (PC133 specifications, however, recommend a limit of 3 DIMMs or 6 banks at 133MHz for 1.5GB max memory). 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**
- **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.

- **Dual 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.
- **SYM53C1010R PCI-Dual Channel Ultra-160 SCSI Controller(ROCKY-3732EVS Only)**
- **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-3732EVS package includes the following items:

- ROCKY-3732EVS Celeron®, Pentium® III Single Board Computer
- RS-232/LPT Cable x 1
- FDD Cable x 1
- Audio(MIC,LINE IN)/RS-232 x 1
- IDE HDD DMA66 Cable x 1
- Ultra160 SCSI Cable x 1(ROCKY-3732EVS Only)
- CD-ROM Driver x 1
- 6-pin Mini-Din to 5-pin Din Keyboard & PS2 Mouse Adapter Cable x 1

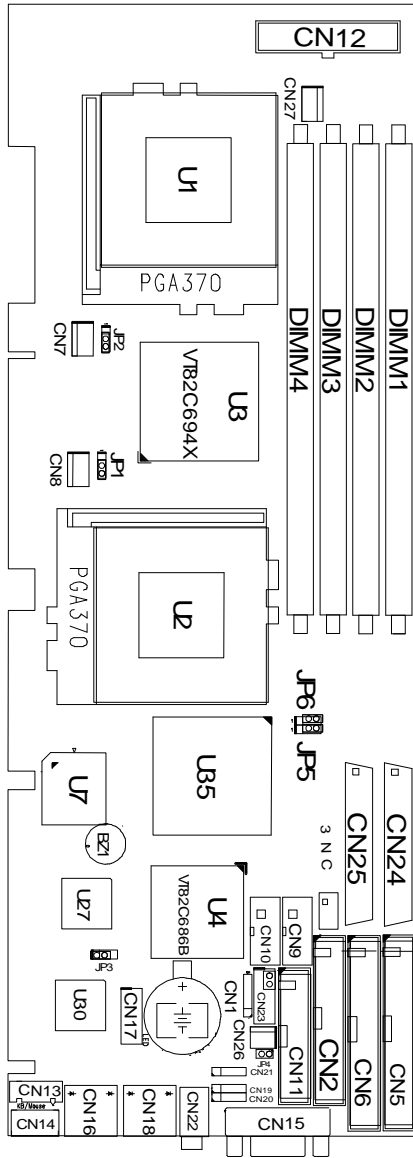
If any of these items is missing or damaged, contact the dealer from whom you purchased the product. Save the shipping materials and carton in case you want to ship or store the product in the future.

2

Installation

This chapter describes how to install the ROCKY-3732EVS. At first, the layout of ROCKY-3732EVS is shown, and the unpacking information that you should be careful is described. The jumpers and switches setting for the ROCKY-3732EVS's configuration, such as CPU type selection, system clock setting, and watch dog timer, are also included.

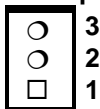
2.1 ROCKY-3732EVS's Layout



2.2 Clear CMOS Setup

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

- **JP3 : Clear CMOS Setup**

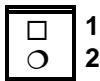


| JP3 | DESCRIPTION |
|-----|---------------------------------------|
| 1-2 | Keep CMOS Setup (Normal Operation) |
| 2-3 | Clear CMOS Setup |

2.3 CompactFlash Card Master/Slave Mode Setting

The CompactFlash socket is type II, and used IDE 2.

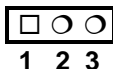
- **JP4 : Master/Slave Mode Setting**



| JP4 | DESCRIPTION |
|-------|-------------|
| SHORT | MASTER |
| OPEN | SLAVE |

2.4 CPU Type Selection Setting

- **JP1, JP2 : CPU Type Selection**

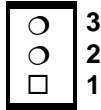


| JP1, JP2 | DESCRIPTION |
|----------|-----------------------|
| 2-3 | FC-PGA(Celeron/P III) |
| 1-2 | PPGA(Celeron) |

2.5 SCSI Port A/B Terminator Selection Setting

Two SCSI terminators Port A and Port B are supported, JP5 is for Terminator Port A and JP6 is for Terminator Port B

- **JP5, JP6 : Terminator Enable/Disable Setting**



| JP5, JP6 | DESCRIPTION |
|----------|-------------|
| 2-3 | Enable |
| 1-2 | Disable |

3

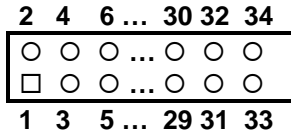
Connection

This chapter describes how to connect peripherals, switches and indicators to the ROCKY-3732EVS board.

3.1 Floppy Disk Drive Connector

ROCKY-3732EVS board is equipped with a 34-pin daisy-chain driver connector cable.

• **CN2 : FDC CONNECTOR**



| 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.

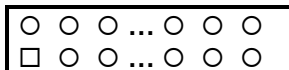
IDE2 shares the same IDE channel with CompactFlash, so you must refer JP4 before setting the IDE2's device.

CN5 (IDE1) : Primary IDE Connector

CN6 (IDE2) : Secondary IDE Connector

- **CN5/CN6 : IDE Interface Connector**

2 4 6 ... 36 38 40



1 3 5 ... 35 37 39

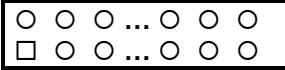
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|------------------|
| 1 | RESET# | 2 | GROUND |
| 3 | DATA 7 | 4 | DATA 8 |
| 5 | DATA 6 | 6 | DATA 9 |
| 7 | DATA 5 | 8 | DATA 10 |
| 9 | DATA 4 | 10 | DATA 11 |
| 11 | DATA 3 | 12 | DATA 12 |
| 13 | DATA 2 | 14 | DATA 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-3732EVS 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



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

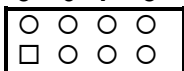
The ROCKY-3732EVS built in two USB(Spec. 1.1) ports for the future new I/O bus expansion.

CN3 : 2 ports USB Connector

Pin 1-4 for USB 1

Pin 5-8 for USB 0

5 6 7 8

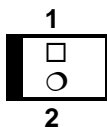


1 2 3 4

| 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



| PIN NO. | DESCRIPTION |
|---------|--------------|
| 1 | Power Button |
| 2 | Ground |

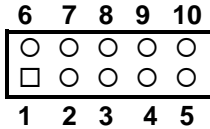
3.6 Serial Ports

The ROCKY-3732EVS 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**



| 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 |

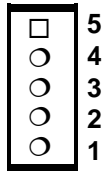
3.7 Keyboard/Mouse Connector

The ROCKY-3732EVS 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**

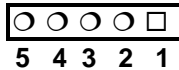


| PIN NO. | DESCRIPTION |
|---------|----------------|
| 1 | KEYBOARD CLOCK |
| 2 | KEYBOARD DATA |
| 3 | NC |
| 4 | GROUND |
| 5 | +5V |

3.8 IrDA Infrared Interface Port

The ROCKY-3732EVS built in a 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**

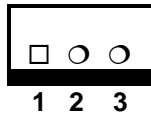


| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1 | VCC |
| 2 | N/C |
| 3 | IR-RX |
| 4 | Ground |
| 5 | IR-TX |

3.9 Fan Connector

The ROCKY-3732EVS 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**



| PIN NO. | CPU FAN |
|---------|-----------------|
| 1 | Ground |
| 2 | 12V |
| 3 | Rotation Signal |

3.10 VGA Connector

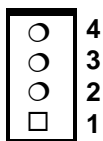
- **CN15 : 15-pin Female Connector**

| 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



CN19 : LINE IN

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

CN21 : CD IN

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

CN20 : MIC IN

| PIN NO. | DESCRIPTION |
|----------------|--------------------|
| 1. | SIGNAL |
| 2. | GROUND |
| 3. | GROUND |
| 4. | Vref |

CN22 : LINE OUT

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

3.12 CompactFlash Storage Card Socket

The ROCKY-3732EVS configures CompactFlash Storage Card in IDE Mode(Used IDE 2).

• **CN4 : CompactFlash Storage Card Socket pin assignment**

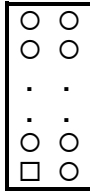
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-----------------|---------|----------------------------|
| 1 | GROUND | 26 | CARD DETECT1 |
| 2 | D3 | 27 | D11 |
| 3 | D4 | 28 | D12 |
| 4 | D5 | 29 | D13 |
| 5 | D6 | 30 | D14 |
| 6 | D7 | 31 | D15 |
| 7 | CS1# | 32 | CS3# |
| 8 | N/C | 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-3732EVS offers one standard ATX power connector

- **CN12: 20-pin Connector**

10 20



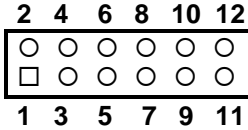
1 11

| 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 | PERSON# |
| 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 :

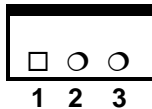


| FUNCTION | PIN NO. | DESCRIPTION |
|-----------|---------|--------------|
| SPEAKER | 2 | SPK SIGNAL |
| | 4 | N/C |
| | 6 | N/C |
| | 8 | VCC |
| RESET | 10 | POWER GOOD |
| | 12 | GROUND |
| HDD LED | 9 | LED+ |
| | 11 | LED- |
| POWER LED | 1 | LED+ |
| | 3 | LED-(GROUND) |
| Reserved | 5 | N/C |
| | 7 | GROUND |

3.15 PS-ON Connector

This connector is used to control the ATX power supply.

• CN27 : PS-ON Connector



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

3.16 LAN RJ45 Connector

ROCKY-3732EVS is equipped with dual Intel 82559 10/100Mbps Ethernet Controllers. You can connect it to your LAN through RJ45 LAN connector. The pin assignments are as follows:

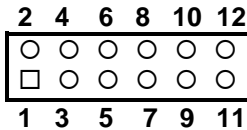
- **CN16/CN18 : LAN RJ45 Connector**

| 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 - |

3.17 External LED Connector

The LED connector includes SCSI active LED, Ethernet Link/Active LED and Ethernet speed LED.

CN17 Connector



| LED + | LED - | LED Function |
|-------|-------|-----------------------|
| 2 | 1 | SCSI Port A active |
| 4 | 3 | SCSI Port B active |
| 6 | 5 | LAN 2 Link/Active LED |
| 8 | 7 | LAN 2 Speed 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 Ultra-160 68pin SCSI Connector

Two 68pin SCSI connectors are described as below.

• **CN24: Port A, CN25: Port B**

CN24/CN25 : SCSI pin assignment

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|----------------|--------------------|----------------|--------------------|
| 1 | +SD12 | 35 | -SD12 |
| 2 | +SD13 | 36 | -SD13 |
| 3 | +SD14 | 37 | -SD14 |
| 4 | +SD15 | 38 | -SD15 |
| 5 | +SDP1 | 39 | -SDP1 |
| 6 | +SD0 | 40 | -SD0 |
| 7 | +SD1 | 41 | -SD1 |
| 8 | +SD2 | 42 | -SD2 |
| 9 | +SD3 | 43 | -SD3 |
| 10 | +SD4 | 44 | -SD4 |
| 11 | +SD5 | 45 | -SD5 |
| 12 | +SD6 | 46 | -SD6 |
| 13 | +SD7 | 47 | -SD7 |
| 14 | +SDP0 | 48 | -SDP0 |
| 15 | GND | 49 | GND |
| 16 | DIFF SENSE | 50 | NC |
| 17 | VCC | 51 | VCC |
| 18 | VCC | 52 | VCC |
| 19 | NC | 53 | NC |
| 20 | GND | 54 | GND |
| 21 | +SATN | 55 | -SATN |
| 22 | GND | 56 | GND |
| 23 | +SBSY | 57 | -SBSY |
| 24 | +SACK | 58 | -SACK |
| 25 | +SRST | 59 | -SRST |
| 26 | +SMMSG | 60 | -SMMSG |
| 27 | +SSEL | 61 | -SSEL |
| 28 | +SCD | 62 | -SCD |
| 29 | +SREQ | 63 | -SREQ |
| 30 | +SIO | 64 | -SIO |
| 31 | +SD8 | 65 | -SD8 |
| 32 | +SD9 | 66 | -SD9 |
| 33 | +SD10 | 67 | -SD10 |
| 34 | +SD11 | 68 | -SD11 |

4

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 immediately after switching the system on, or
2. by pressing the 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 ↑ ↓ ← → : 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 | | Item Help |
| Time: 16:19:20 | | |
| ➤ IDE Primary Master | Press Enter 2557 MB | Menu Level ➤ |
| ➤ IDE Primary Slave | Press Enter None | Change the day, month, year and century |
| ➤ 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 | |
| ↑↓←→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

| | | |
|--|-------------|--|
| IDE HDD Auto-Detection | Press Enter | Item Help |
| IDE Primary Master | Auto | Menu Level >> |
| Access Mode | Auto | |
| Capacity | 2557 MB | To auto-detect the HDD's size, 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 | Options | Description |
|---|---|--|
| 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

| | | |
|--|------------|--|
| Virus Warning | [Disabled] | Item Help |
| CPU Internal Cache | [Enabled] | |
| External Cache | [Enabled] | Menu Level > |
| CPU L2 Cache ECC Checking | [Enabled] | |
| Processor Number Feature | [Enabled] | 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 |
| Quick Power On Self Test | [Enabled] | |
| First Boot device | [Floppy] | |
| Second Boot device | [HDD-0] | |
| Third Boot device | [SCSI] | |
| Boot other device | [Enabled] | |
| Swap Floppy Drive | [Disabled] | |
| 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 | [Enabled] | Item Help |
| DRAM 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] | |
| PCI Latency Timer(Clock) | [64] | |
| 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.

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. When enabled, PCI#2 will be disconnected if max retries are attempted without success.

The Choice: Enabled, Disabled.

PCI Latency Timer(Clock)

PCI Latency Timer setting from 0 to 255.

The Choice: 0 - 255.

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] | |
| Primary Master PIO | [Auto] | Menu Level > |
| Primary Slave PIO | [Auto] | If your IDE hard drive 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 SCSI 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 function.

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 your 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 | [Off] | |
| ➤ 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 your 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 are 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: 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*, you 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, Interrupt **Re**Quests, 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 Personal Computer Interconnect, 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 ----- Menu Level > |
| Reset Configuration Data | [Disabled] | |
| Resources Controlled By | [Auto(ESCD)] | Default is 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 OS cannot boot |
| x IRQ Resources | [Press Enter] | |
| x DMA Resources | [Press Enter] | |
| PCI/VGA Palette Snoop | [Disabled] | |
| Assign IRQ For VGA | [Enabled] | |
| Assign IRQ For USB | [Enabled] | |
| PCI Latency Timer(CLK) | [32] | |
| ↑↓←→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 them. 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. E² Key™ Function

The ROCKY-3732EVS provides an outstanding E²KEY™ function for system integrator. Based on the E²KEY™, 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 E²KEY™ 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 E²KEY™ 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 E²KEY™ 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 E²KEY™'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 E²KEY™ 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 |
| C8000-CBFFF | SCSI |
| 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 |

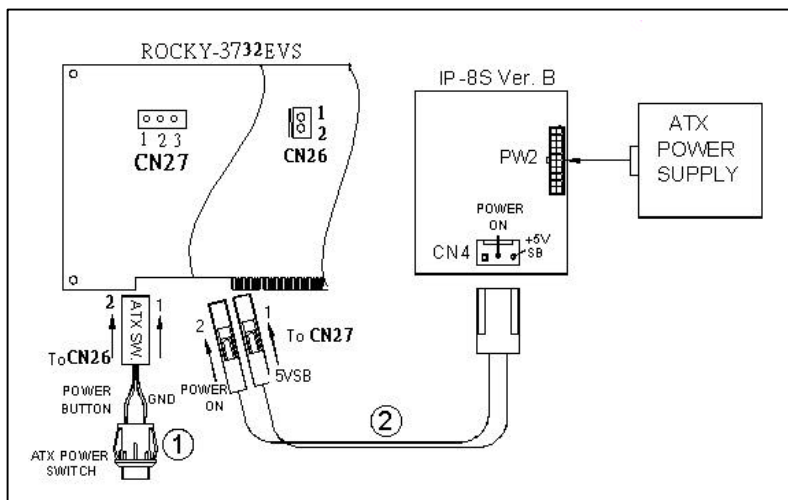
Appendix C. ATX Power Supply

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

A. For backplanes with ATX Connector

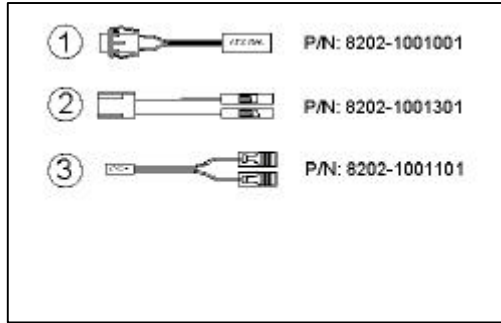
1. Please, disconnect the AC cord of the Power Supply from the AC source to prevent sudden electric surge to the board.
2. Please, check the type of your CPU board. All CPU board listed on the next page support ATX power supply but has two types of power switch connection:

2.1.ROCKY-3732EVS (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.

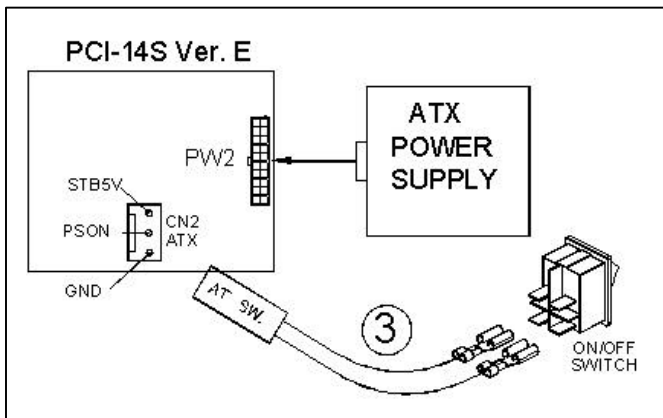
If you want to turn ON the system, just press the button once. And If you want to turn off the power supply, please press the ATX power switch button for about 4 seconds.



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-3732EVS 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:

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

