

**ROCKY – 772EV**  
**Duron™ & Athlon(XP)™ with Dual LAN**  
**Integrated S3 savage4 AGP4X VGA SBC**  
**Ver 1.1**

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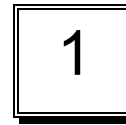
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## Introduction

Welcome to the ROCKY-772EV Duron™ & Athlon(XP)™ Single Board Computer. The ROCKY-772EV board is an ISA/PCI form factor board, which comes equipped with high performance Athlon(XP)™ Processor and advanced high performance multi-mode I/O, designed for the system manufacturers, integrators, or VARs that want to provide all the performance, reliability, and quality at a reasonable price.

In addition, the ROCKY-772EV provides S3 Savage4 AGP4X VGA on board. The VGA chip is 3D graphics chipset, which provides up to 1920x1440x16-color resolution. The VGA on board has 8 to 32MB frame buffer sharing with system memory.

This board has a built-in DiskOnChip™(DOC) Flash Disk Socket for embedded applications. The DOC Flash Disk is 100% software compatible with hard disks. Users can use any DOS command without any extra software utility. The DOC currently is available from 2MB to 144MB.

An advanced high performance super AT I/O chip – VIA VT82C686B is used in the ROCKY-772EV board. Both on-chip UARTs are compatible with the NS16C550. The parallel port and IDE interface are compatible with IBM PC/AT architecture.

The ROCKY-772EV uses dual Intel 82559 /Realtek RTL8100 Fast Ethernet Multifunction PCI Controller as LAN controllers. They are fully integrated 10BASE-T/100BASE-TX LAN solution with high performance networking functions and low power features.

The ROCKY-772EV uses the advanced VIA KM/KL133A Chipset which is 100% software compatible chipset with PCI 2.1 standard.

## 1.1 Specifications

|                                    |  |
|------------------------------------|--|
| <b>CPU(PGA462)</b>                 | AMD Duron™ and Athlon(XP)™ Processor, supports 200/266 MHz FSB   |
| <b>Bus interface</b>               | PCI/ISA bus, PICMG compliant   |
| <b>Bus speed</b>                   | ISA : 8MHz, PCI: 33MHz   |
| <b>DMA channels</b>                | 7  |
| <b>Interrupt levels</b>            | 15   |
| <b>Chipset</b>                     | VIA KM/KL133A  |
| <b>Real-time clock/calendar</b>    | VT82C686B  |
| <b>RAM memory</b>                  | Three 168-pin DIMM sockets support SDRAM and VCM RAM module. The max. Memory is up to 1.5GB.   |
| <b>ATA/100 IDE interface</b>       | Up to four PCI Enhanced IDE hard drives. The ATA/100 IDE can handle data transfer up to 100MB/s. Compatible with existing ATA-2 IDE specifications its best advantage, so there is no need to do any changes for users' current accessories. |
| <b>Floppy disk drive interface</b> | Supports up to two floppy disk drives, 5.25"(360KB and 1.2MB) and/or 3.5" (720KB, 1.44MB, and 2.88MB)  |
| <b>Serial ports</b>                | Two RS-232 ports with 16C550 UART (or compatible) with 16-byte FIFO buffer. Support up to 115.2Kbps. Ports can be individually configured to COM1, COM2 or disabled.   |
| <b>Bi-directional</b>              | Configurable to LPT1, LPT2, LPT3 or disabled.  |

|  |   |
|--|---|
| <b>parallel port</b>                     | Supports EPP/ECP/SPP  |
| <b>Hardware monitor</b>                  | Built-in to monitor power supply voltage and fan speed status   |
| <b>IrDA port</b>                         | Supports Serial Infrared(SIR) and Amplitude Shift Keyed IR(ASKIR) interface   |
| <b>USB port</b>                          | Supports 4 USB ports for future expansion   |
| <b>Watch-dog timer</b>                   | Software Programmable Reset or NMI is generated when CPU does not periodically trigger the timer. You can use I/O Port hex 043(843) & 443 to control the watchdog and generate a system reset.                            |
| <b>VGA controller</b>                    | Integrated S3 Savage4 AGP4X 3D graphics Core plus Advanced Memory Controller.<br>Screen Resolution: up to 1920x1440x16.   |
| <b>Ethernet</b>                          | Dual Intel 82559 /Realtek 8100 Fast Ethernet controllers, IEEE 802.3u Auto-Negotiation support for 10BASE-T/100BASE-TX standard. Two RJ45 connectors are located on the mounting bracket for easy connection.             |
| <b>Flash disk socket</b>                 | The DiskOnChip™ compatible 32-pin dip socket is provided for Flash Disk (DiskOnChip™) application which will let users to use the Flash Disk with DOS command, without any extra software utility.                        |
| <b>Keyboard and PS/2 mouse connector</b> | A 6-pin mini DIN connector is located on the mounting bracket for easy connection to a keyboard or PS/2 mouse. For alternative application, a keyboard and a PS/2 mouse pin header connector are also available on board. |
| <b>Compactflash</b>                      | It can be used with a passive adapter (True IDE Mode ) in a Type I/II Socket.   |
| <b>Power consumption</b>                 | ( Athlon™ (K7) 1.4GHz,512MB PC133 SDRAM)<br>+5V @ 12.5A ,+12V @ 168mA ,-12V @40mA.  |

|                              |  |
|------------------------------|--|
|                              | Recommended : 300-watt power supply or higher                |
| <b>Operating temperature</b> | 0° ~ 50° C<br>(*CPU needs Cooler & silicone heatsink paste*) |

**WARNING !** :Never run the processor without the heatsink(Cooler) properly and firmly attached.

---

## 1.2 What You Have

In addition to this *User's Manual*, the ROCKY-772EV package includes the following items:

- One ROCKY-772EV Single Board Computer
- One RS-232 x2 and Printer Cable with bracket
- One FDD cable
- One AUDIO cable.
- One ATA/100 IDE cables
- One 6-pin Mini-Din converts to two 6-pin mini-Din cables for keyboard and mouse connection.

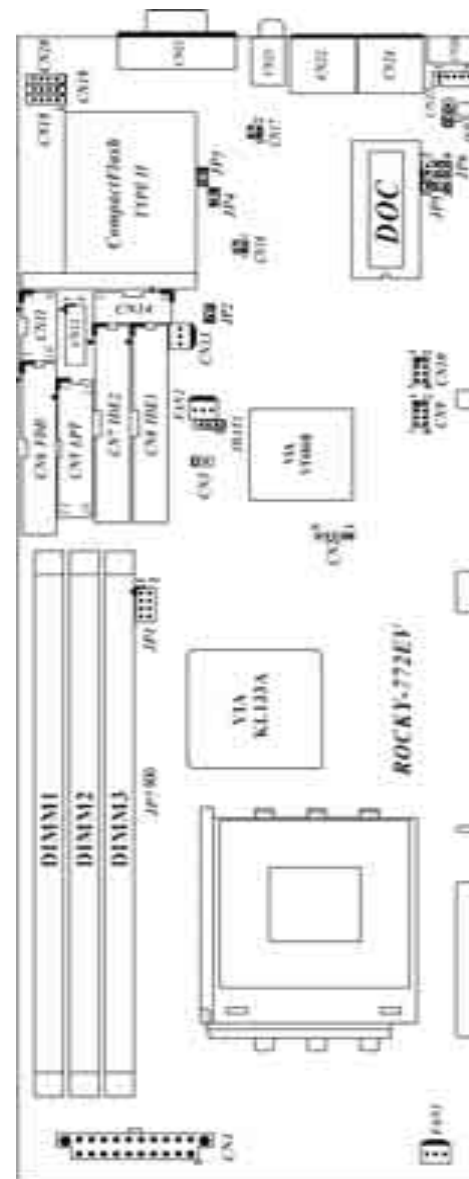
If any of these items are missing or damaged, contact the dealer from whom you purchased this product. Save the shipping materials and carton in case you want to ship or store the product in the future.

# 2

## Installation

This chapter describes how to install the ROCKY-772EV. At first, the layout of ROCKY-772EV is shown, and the unpacking information that you should be careful is described. The jumpers and switches setting for the ROCKY-772EV's configuration, such as CPU clock setting, and watchdog timer, are also included.

## 2.1 ROCKY – 772EV's Layout



## 2.2 Unpacking Precautions

Some components on ROCKY-772EV SBC are very sensitive to static electric charges and can be damaged by a sudden rush of power. To protect it from unintended damage, be sure to follow these precautions:

- ✓ Ground yourself to remove any static charge before touching your ROCKY-772EV SBC. You can do it by using a grounded wrist strap at all times or by frequently touching any conducting materials that is connected to the ground.
- ✓ Handle your ROCKY-772EV SBC by its edges. Don't touch IC chips, leads or circuitry if not necessary.
- ✓ Do not plug any connector or jumper while the power is on.

**Table of Jumpers**

| LABEL | FUNCTION  |
|-------|---|
| JP1 & | CPU FSB 200/266MHz Setting                      |
| JP2   | Onboard LAN2 enable/disable.                    |
| JP3   | CompactFlash Master(close)/Slave(open) Setting. |
| JP4   | Onboard LAN1 enable/disable.                    |
| JP5   | Watch-Dog Active Type Setting                   |
| JP6   | DiskOnChip Memory Address Setting               |
| JKB1  | Keyboard/Mouse power source Setting             |
| JBAT1 | CMOS state setting                              |

**Note:** All shaded rows in tables of this manual are the default settings for the ROCKY-772EV.

## 2.3 Setting the CPU of ROCKY-772EV

### • JP1 & JP7 : CPU FSB 200/266MHz Setting

| CPU FSB | JP1   |       |      |       | JP7   |
|---------|-------|-------|------|-------|-------|
|         | 1-2   | 3-4   | 5-6  | 7-8   | 1-2   |
| 200 MHz | CLOSE | CLOSE | OPEN | CLOSE | CLOSE |
| 266 MHz | OPEN  | OPEN  | OPEN | OPEN  | OPEN  |

When you change CPU with FSB 266MHz to that with 200MHz be sure to clear CMOS before first power ON.

## 2.4 Watch-Dog Timer (JP5)

Reading I/O port 443H enables the Watch-Dog Timer. It should be triggered before the time-out period ends, otherwise it will assume the program operation is abnormal and will issue a reset signal to start again, or activate NMI to CPU. The Watch-Dog Timer is disable by reading I/O port 043H or 843H. Refer to Appendix A for detailed information on Watch-Dog Timer.

### • JP5 : Watch-Dog Active Type Setting

| JP5  | DESCRIPTION                           |
|------|---------------------------------------|
| 1-2  | ACTIVATE NMI TO CPU WHEN WDT TIME-OUT |
| 2-3  | <b>RESET WHEN WDT TIME-OUT</b>        |
| OPEN | DISABLE WDT                           |

## 2.5 DiskOnChip™ Flash Disk

The DiskOnChip™ Flash Disk Chip(DOC) is produced by M-Systems. Because the DOC is 100% software compatible to hard disk and DOS, users don't need any extra software utility. It is just "plug and play" easy and reliable. At present the DOC is available from 2MB to 144MB. The DiskOnChip only shares 8KB memory address.

• **JP6 : DiskOnChip Memory Address Setting**

| Address       | 1-2 | 3-4 | 5-6 |
|---------------|-----|-----|-----|
| CE000 – CFFFF | OFF | ON  | ON  |
| D6000 – D7FFF | ON  | OFF | ON  |
| DE000 – DFFFF | OFF | OFF | ON  |

## Connection

This chapter describes how to connect peripherals, switches and indicators to the ROCKY- 772EV board.

**Table of Connectors**

| LABEL     | FUNCTION                                 |
|-----------|--|
| FAN1,FAN2 | CPU /SYSTEM Fan Connectors               |
| CN1       | ATX 20-PIN Power Connector               |
| CN2       | IrDA connector                           |
| CN3       | ATX BUTTON (Power ON) Switch             |
| CN5       | Parallel Port Connector                  |
| CN6       | FDC Connector                            |
| CN7       | Secondary IDE Connector                  |
| CN8       | Primary IDE Connector                    |
| CN9,CN10  | USB Connectors                           |
| CN11,CN14 | Serial Port 10-pin Connectors            |
| CN12      | External Switches and Indicators         |
| CN13      | Backplane to Mainboard Connectors        |
| CN16,CN17 | LAN State LED Connectors                 |
| CN18      | AUDIO MIC-IN                             |
| CN19      | AUDIO LINE-IN                            |
| CN20      | AUDIO CD-IN                              |
| CN21      | VGA 15-pin Female Connector              |
| CN22,CN24 | LAN RJ45 Connectors                      |
| CN25      | External 5-pin Header Keyboard Connector |
| CN26      | PS/2 MOUSE & KEYBOARD Connector          |

### 2.6 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 JBAT1 (1-2) about 3 seconds, then open it again. Set back to normal operation mode, open

• **JBAT1 : Clear CMOS Setup (Reserve Function)**

| JBAT1 | DESCRIPTION      |
|-------|------------------|
| 1-2   | Normal Operation |
| 2-3   | Clear CMOS Setup |

### 2.7 Onboard LAN1(JP4) / LAN2(JP2) Setting

The onboard LAN controllers can be disabled if you don't want to use then. All the hardware resource will be released. After they are disabled.

| JP2/JP4 | DESCRIPTION |
|---------|-------------|
| CLOSE   | Enable      |
| OPEN    | Disable     |

### 2.8 Onboard Keyboard/Mouse source Setting

| JKB1 | DESCRIPTION |
|------|-------------|
| 1-2  | Vcc (+5V)   |
| 2-3  | 5VSB        |



### 3.1 Floppy Disk Drive Connector

The ROCKY-772EV board is equipped with a 34-pin daisy-chain drive connector cable.

#### • CN6 : 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      | GROUND      | 30      | READ DATA#      |
| 31      | GROUND      | 32      | SIDE 1 SELECT#  |
| 33      | GROUND      | 34      | DISK CHANGE#    |

### 3.2 PCI E-IDE Disk Drive Connector

You can attach four IDE( Integrated Device Electronics) hard disk drives on two channels. These connectors support Ultra-DMA100 IDE devices. Non-DMA100 devices are suggested to be connecting to the secondary IDE connector.

**CN8 (IDE 1) : Primary IDE Connector**

**CN7 (IDE 2) : Secondary IDE Connector**

#### • CN8/CN7 : IDE Interface Connector

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION      |
|---------|-------------|---------|------------------|
| 1       | RESET#      | 2       | GROUND           |
| 3       | DATA 7      | 4       | DATA 8           |
| 5       | DATA 6      | 6       | DATA 9           |
| 7       | DATA 5      | 8       | DATA 10          |
| 9       | DATA 4      | 10      | DATA 11          |
| 11      | DATA 3      | 12      | DATA 12          |
| 13      | DATA 2      | 14      | DATA 13          |
| 15      | DATA 1      | 16      | DATA 14          |
| 17      | DATA 0      | 18      | DATA 15          |
| 19      | GROUND      | 20      | N/C              |
| 21      | 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-772EV includes an on-board parallel port, accessed through a 26-pin flat-cable connector.

#### • CN5 : Parallel Port Connector

| PIN NO. | DESCRIPTION        | PIN NO. | DESCRIPTION      |
|---------|--------------------|---------|------------------|
| 1       | STROBE#            | 2       | DATA 0           |
| 3       | DATA 1             | 4       | DATA 2           |
| 5       | DATA 3             | 6       | DATA 4           |
| 7       | DATA 5             | 8       | DATA 6           |
| 9       | DATA 7             | 10      | ACKNOWLEDGE      |
| 11      | BUSY               | 12      | PAPER EMPTY      |
| 13      | PRINTER SELECT     | 14      | AUTO FORM FEED # |
| 15      | ERROR#             | 16      | INITIALIZE       |
| 17      | PRINTER SELECT LN# | 18      | GROUND           |
| 19      | GROUND             | 20      | GROUND           |
| 21      | GROUND             | 22      | GROUND           |
| 23      | GROUND             | 24      | GROUND           |
| 25      | GROUND             |         |                  |

### 3.4 Serial Ports

The ROCKY-772EV offers two high speeds NS16C550 compatible UART.

**CN14 (COM1) : 10-pin header on board**

**CN11 (COM2) : 10-pin header on board**

#### Serial port connections

| Connector | Ports | Address | Interrupt |
|-----------|-------|---------|-----------|
| CN14      | COM1  | 3F8     | IRQ4      |
| CN11      | COM2  | 2F8     | IRQ3      |

#### • 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      | GROUND (GND)              |

### 3.5 Keyboard & PS/2 Mouse Connector

A 6-pin mini DIN connector (CN26) is located on the mounting bracket for easy connection to a keyboard or a PS/2 mouse. The card comes with a cable to convert from the 6-pin mini-DIN connector to two 6-pin mini-DIN connectors for keyboard and mouse connection.

#### • CN26 : 6-pin Mini-DIN Keyboard Connector

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

For alternative application, a keyboard and a PS/2 mouse pin header connector are also available on board, located on CN25 respectively.

#### • CN25 : 5-pin Header Keyboard Connector

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

### 3.6 External Switches and Indicators

There are several external switches and indicators for monitoring and controlling your CPU board. All the functions are in the CN12 connector.

#### CN12 : External Switches and Indicators

|           | PIN | DESCRIPTION | PIN | DESCRIPTION  |              |
|-----------|-----|-------------|-----|--------------|--------------|
| Power LED | 1   | +5V         | 2   | Speaker      | Speaker      |
|           | 3   | N/C         | 4   | N/C          |              |
|           | 5   | GND         | 6   | N/C          |              |
|           | 7   | N/C         | 8   | +5V          |              |
|           | 9   | GND         | 10  | Reset Switch | Reset button |
|           | 11  | GND         | 12  | GND          |              |
|           | 13  | IDE LED+    | 14  | IDE LED-     |              |

#### • CN3 : 2-pin Header ATX BUTTON Connector

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1       | ATX BUTTON  |
| 2       | GND         |

#### • CN13 : Backplane to Mainboard Connector

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

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

### 3.7 USB Port Connector

The ROCKY- 772EV provide 4 built-in USB ports for the future new I/O bus expansion.

|            |
|------------|
| CN9 / CN10 |
|------------|

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

### 3.8 IrDA Infrared Interface Port

The ROCKY-772EV has a built-in IrDA port which supports Serial Infrared (SIR) or Amplitude Shift Keyed IR (ASKIR) interface. If you want to use the IrDA port, you have to configure SIR or ASKIR model in the BIOS under Peripheral Setup COM2. Then the normal RS-232 COM 2 will be disabled.

#### • CN2: IrDA connector

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

### 3.9 CPU & SYSTEM Fan Connectors (FAN1,FAN2)

The ROCKY-772EV provides two CPU cooling fan connectors, FAN2 as well as a SYSTEM Fan connector. These connectors can supply 12V/500mA to the cooling fan. All connectors have the same pin assignments and provide a "rotation" pin to get rotation signals from fans and notice the system. So the system BIOS can recognize the fan speed. Please note that only specified fan can issue the rotation signals.

#### • FAN1/FAN2 : Fan Connector

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

### 3.10 LAN RJ45 & State LED Connectors

The ROCKY-772EV is equipped with two built-in 10/100Mbps Ethernet controllers. You can connect it to your LAN through

RJ45 LAN connectors. There are two LED on the connector indicating the status of LAN. The pin assignments are as following:

• **CN22(LAN1)/CN24(LAN2): LAN RJ45 Connector**

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

• **CN17(LAN1)/CN16(LAN2): LAN State LED Connector**

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1-2     | ACT/LINK    |
| 3-4     | 100TX       |

### 3.11 VGA Connector

The ROCKY-772EV has a built-in 15-pin VGA connector directly connects to your CRT monitor.

• **CN21 : 15-pin Female Connector**

|    |        |    |         |
|----|--------|----|---------|
| 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 |    |         |

### 3.12 AUDIO Headphone & Connector

The ROCKY-772EV has a built-in AC'97 AUDIO CODEC; connector directly connects to your MIC-IN & CD-IN & LINE-IN.

• **CN23: AUDIO Headphone Jack (Output)**

• **CN19: AUDIO LINE-IN Connector (Input)**

• **CN20: AUDIO CD-IN Connector (Input)**

• **CN18: AUDIO MIC-IN Connector (Input)**

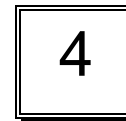
| PIN NO. | DESCRIPTION |
|---------|-------------|
|---------|-------------|

|   |       |       |        |
|---|-------|-------|--------|
|   | CN20  | CN19  | CN18   |
| 1 | LEFT  | LEFT  | MIC-IN |
| 2 | GND   | GND   | GND    |
| 3 | GND   | GND   | GND    |
| 4 | RIGHT | RIGHT | NC     |

### 3.13 ATX 20-PIN Power Connector (CN1)

This connector supports the ATX power, functions such as modem Ring on, wake-up LAN and soft power off are supported by mainboard. (Power source from Mainboard)

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1       | 3.3V        | 2       | 3.3V        |
| 3       | GND         | 4       | 5V          |
| 5       | GND         | 6       | 5V          |
| 7       | GND         | 8       | PW_OK       |
| 9       | 5VSB        | 10      | 12V         |
| 11      | 3.3V        | 12      | -12V        |
| 13      | GND         | 14      | ATX-ON      |
| 15      | GND         | 16      | GND         |
| 17      | GND         | 18      | -5V         |
| 19      | 5V          | 20      | 5V          |



# AWARD BIOS SETUP

---

## 4.1 Introduction

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

---

## 4.2 Starting Setup

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

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

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

**Press DEL to enter SETUP.**

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

**PRESS F1 TO CONTINUE, DEL TO ENTER SETUP**

---

## 4.3 Using Setup

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

|               |  |
|---------------|--|
| Up arrow      | Move to previous item  |
| Down arrow    | Move to next item  |
| Left arrow    | Move to the item in the left hand  |
| Right arrow   | Move to the item in the right hand   |
| Esc key       | Main Menu -- Quit and not save changes into CMOS<br>Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu |
| 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   |
| F1 key        | General help, only for Status Page Setup Menu and Option Page Setup Menu   |
| (Shift)F2 key | Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward   |
| F3 key        | Calendar, only for Status Page Setup Menu  |
| F4 key        | Reserved   |
| F5 key        | Restore the previous CMOS value from CMOS, only for Option Page Setup Menu   |
| F6 key        | Load the default CMOS value from BIOS default table, only for Option Page Setup Menu   |
| F7 key        | Load the default   |
| F8 key        | Reserved   |
| F9 key        | Reserved   |
| F10 key       | Save all the CMOS changes, only for Main Menu  |

---

## 4.4 Getting Help

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

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

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

## 4.5 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.

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|                                |                           |
|--------------------------------|---------------------------|
| Standard CMOS Feature          | Frequency/Voltage Control |
| Advanced BIOS Feature          | Load Fail-Safe Defaults   |
| Advanced Chipset Feature       | 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.

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 4.6 for the details.

---

## **Advanced BIOS Features**

Use this menu to set the Advanced Features available on your system. See Section 4.7 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 4.8 for the details.

---

## **Integrated Peripherals**

Use this menu to specify your settings for integrated peripherals. See section 4.9 for the details.

---

## **Power Management Setup**

Use this menu to specify your settings for power management. See section 4.10 for the details.

---

## **PnP / PCI Configuration**

This entry appears if your system supports PnP / PCI. See section 4.11 for the details.

---

## **PC Health Status**

Use this menu to monitor your hardware. See section 4.12 for the details.

---

## **Frequency/Voltage Control**

Use this menu to specify your settings for frequency/voltage control. See section 4.13 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 4.14 for the details.

---

## **Load Optimized Defaults**

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

---

## **Supervisor / User Password**

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

---

## **Save & Exit Setup**

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

---

## **Exit Without Save**

Abandon all CMOS value changes and exit setup. See section 4.16 for the details.

## 4.6 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.

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### Standard CMOS Features

|   |   |
|---|---|
| Date: Mon, Jan 1 2001<br>Time: 16:19:20   | Item Help                               |
| <ul style="list-style-type: none"> <li>➤ IDE Primary Master 2557 MB</li> <li>➤ IDE Primary Slave None</li> <li>➤ IDE Secondary Master None</li> <li>➤ IDE Secondary Slave None</li> </ul> | Menu Level ➤                            |
| Drive A 1.44M, 3.5 in.<br>Drive B None  | Change the day, month, year and century |
| LCD&CRT Both<br>Panel : Hardware Setting<br>Halt On All Errors  |   |
| Based Memory 640K<br>Extended Memory 64512K<br>Total Memory 65536K  |   |
| ↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help<br><br>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  | Options are in its sub | Press <Enter> to enter |

|                    |  |   |
|--------------------|--|---|
| Primary Master     | menu (described in Table 3)  | 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      | Options are in its sub menu (described in Table 3)                                       | Press <Enter> to enter the sub menu of detailed options                                 |
| IDE Secondary      | Options are in its sub menu (described in Table 3)                                       | Press <Enter> to enter the sub menu of detailed options                                 |
| Drive A<br>Drive B | None<br>360K, 5.25 in<br>1.2M, 5.25 in<br>720K, 3.5 in<br>1.44M, 3.5 in<br>2.88M, 3.5 in | Select the type of floppy disk drive installed in your system                           |
| Halt On            | All Errors<br>No Errors<br>All, but Keyboard<br>All, but Diskette<br>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.

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IDE Primary Master

|  |              |  |
|--|--------------|--|
| IDE HDD Auto-Detection   | Press Enter  | Item Help  |
| IDE Primary Master   | Auto 2557 MB | Menu Level >>  |
| Access Mode  | Auto         | 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<br>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<br>Auto<br>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           | Disk drive capacity   |

|   |                                |   |
|---|--------------------------------|---|
|   | your disk drive size           | (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program. |
| Access Mode   | Normal<br>LBA<br>Large<br>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<br>Max = 65535         | Set the number of cylinders for this hard disk.   |
| Head  | Min = 0<br>Max = 255           | Set the number of read/write heads  |
| Precomp   | Min = 0<br>Max = 65535         | **** <b>Warning:</b> Setting a value of 65535 means no hard disk  |
| Landing zone  | Min = 0<br>Max = 65535         | ****  |
| Sector  | Min = 0<br>Max = 255           | Number of sectors per track   |

Table 3 Hard disk selections

## 4.7 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.

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Advanced BIOS Features

|   |          |  |
|---|----------|--|
| Virus Warning   | Disabled | Item Help  |
| CPU Internal Cache  | Enabled  |  |
| External Cache  | Enabled  |  |
| CPU L2 Cache ECC Checking   | Enabled  | Menu Level >   |
| Quick Power On Self Test  | 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 |
| First Boot device   | Floppy   |  |
| Second Boot device  | HDD-0    |  |
| Third Boot device   | LS120    |  |
| Boot other device   | Disabled |  |
| Swap Floppy Drive   | Disabled |  |
| Boot Up Floppy Seek   | Enabled  |  |
| 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    |  |
| OS Select For DRAM > 64MB   | Non-OS2  |  |
| ↑↓←→Move Enter: Select +/-PU/PD: Value F10:Save ESC: Exit F1:General Help<br>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.

|          |               |
|----------|---------------|
| Enabled  | Enable cache  |
| Disabled | Disable cache |

**CPU L2 Cache ECC Checking**

This item allows you to enable/disable CPU L2 Cache ECC checking. 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.

|          |                   |
|----------|-------------------|
| Enabled  | Enable quick POST |
| Disabled | Normal POST       |

**First/Second/Third/Other Boot Device**

The BIOS attempts to load the operating system from the devices in the sequence selected in these items. The Choice: Floppy, LS/ZIP, HDD, SCSI, CDROM, 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: Enabled/Disabled.

---

## Gate A20 Option

Select if chipset or keyboard controller should control GateA20.

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

---

## Typematic Rate Setting

Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected. The choice: Enabled/Disabled.

---

## Typematic Rate (Chars/Sec)

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

The choice: 6, 8, 10, 12, 15, 20, 24, 30.

---

## Typematic Delay (Msec)

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

The choice: 250, 500, 750, 1000.

---

## Security Option

Select whether the password is required every time the system boots or only when you enter setup.

|        |   |
|--------|---|
| System | The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt. |
| Setup  | The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.    |

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

---

## OS Select For DRAM > 64MB

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

The choice: Non-OS2, OS2.

---

## Video BIOS Shadow

This item allows the video BIOS to be copied to system memory for faster performance.

The Choice : Enable , Disable.

## 4.8 Advanced Chipset Features

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### Advanced Chipset Features

|  |          | Item Help    |
|--|----------|--------------|
| DRAM Timing By SPD   | Enabled  |              |
| DRAM Clock   | 133M     |              |
| SDRAM Cycle Length   | 3        | Menu Level ➤ |
| Bank Interleave  | Disabled |              |
| Memory Hole  | Disabled |              |
|  |          |              |
| PCI Master Pipeline Req  | Enabled  |              |
| P2C/C2P Concurrency  | Disabled |              |
| Fast R-W Turn Around   | Disabled |              |
| System BIOS Cacheable  | Disabled |              |
| Video BIOS Cacheable   | Disabled |              |
| Frame Buffer Size  | 8M       |              |
| AGP Aperture Size  | 64MB     |              |
| Power-supply Type  | AT       |              |
| OnChip USB   | Disabled |              |
|  |          |              |
| USB Keyboard Support   | Disabled |              |
| OnChip Sound   | AUTO     |              |
| CPU to PCI Write Buffer  | Enabled  |              |
| PCI Dynamic Bursting   | Enabled  |              |
| PCI Master 0 WS Write  | Enabled  |              |
| ↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help<br>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.

#### 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: CPU FSB 200MHz(133/100MHz) ;  
CPU FSB 266MHz(133MHz)

#### 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.

#### Vedio RAM Cacheable

Select Enabled allows caching of the video RAM , 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.

### Memory Hole

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

The Choice: Enabled, Disabled.

### AGP Aperture Size

Select the size of Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. 8M-32M

### 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.

### Power-Supply Type

This item controls the power-supply type to AT or ATX.

## 4.9 Integrated Peripherals

### Integrated Peripherals

|  |            | Item Help |
|--|------------|-----------|
| OnChip IDE Channel0  | [Enabled]  |           |
| OnChip IDE Channel1  | [Enabled]  |           |
| IDE Prefetch Mode  | [Enabled]  |           |
| Primary Master PIO   | [Auto]     |           |
| Primary Slave PIO  | [Auto]     |           |
| Secondary Master PIO   | [Auto]     |           |
| Secondary Slave PIO  | [Auto]     |           |
| Primary Master UDMA  | [Auto]     |           |
| Primary Slave UDMA   | [Auto]     |           |
| Secondary Master UDMA  | [Auto]     |           |
| 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]    |           |
| Menu Level ><br>If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/write per sector the drive can support |            |           |
| ↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help<br>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,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.

---

### 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

## 4.10 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.

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| Power Management Setup    |                  | Item Help    |
|---------------------------|------------------|--------------|
| ACPI function             | [Disabled]       |              |
| ➤ 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 -- <b>ONLY AVAILABLE FOR SL CPU's</b> . 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: 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*, 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 (Coprocesor)**
- **IRQ14 (Hard Disk)**
- **IRQ15 (Reserved).**

---

## 4.11 PnP/PCI Configurations

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.

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PnP/PCI Configurations

|  |               |  |
|--|---------------|--|
| PnP OS Installed   | [No]          | Item Help<br>-----<br>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 USB   | [Enabled]     |  |
| ↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help<br>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.

---

## 4.12 PC Health Status

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### PC Health Status

|                          |         |              |
|--------------------------|---------|--------------|
| Current CPU Temp.        | 40°C    | Item Help    |
| Current System Temp.     | 32°C    | -----        |
| Current CPU FAN Speed    | 5336RPM | Menu Level > |
| Current System FAN Speed | 5353RPM |              |
| Vcore                    | 1.78V   |              |
| 2.5V                     | 2.57V   |              |
| 3.3V                     | 3.32V   |              |
| 5V                       | 5.01V   |              |
| 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

## 4.13 Frequency/Voltage Control

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### Frequency/Voltage Control

|                                  |          |              |
|----------------------------------|----------|--------------|
| Auto Detect DIMM/PCI Clk         | Disabled | Item Help    |
| Spread Spectrum                  | Disabled | -----        |
| CPU HOST/SDRAM/PCI Clock 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.

---

### Spread Spectrum

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

The choice: Enabled, Disabled.

---

### CPU Host/DRAM/PCI Clock

This item allows you to select CPU/PCI frequency.

The choice: Default, 133/33MHz, 136/34MHz.....

---

## 4.14 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.

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.

## 4.15 Supervisor/User Password Setting

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

## 4.16 Exit Selecting

### Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

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

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

### Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

**Quit without saving (Y/N)? Y**

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

# 5

## 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. The I/O ports control the operation of WatchDog Timer.

|               |       |                             |
|---------------|-------|-----------------------------|
| 443 (hex)     | Write | Set WatchDog Time period    |
| 443 (hex)     | Read  | Enable 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

MOVAL, 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 APPLICATION HERE**

CMP EXIT\_AP, 0

JNE W\_LOOP

MOV DX, TIMER\_STOP

IN AL, DX

**;;EXIT AP**

## Appendix B. I/O Address Map

### • I/O Address Map

| I/O Address Map | Description                          |
|-----------------|--------------------------------------|
| 000-01F         | DMA Controller #1                    |
| 020-021         | Interrupt Controller # 1, Master     |
| 040-05F         | System Timer                         |
| 060-06F         | Standard 101/102 keyboard Controller |
| 070-07F         | Real time Clock, NMI Controller      |
| 080-0BF         | DMA Page Register                    |
| 0A0-0BF         | Interrupt Controller # 2             |
| 0C0-0DF         | DMA Controller # 2                   |
| 0F0-0F0         | Clear Math Coprocessor Busy          |
| 0F1-0F1         | Reset Math Coprocessor               |
| 0F8-0FF         | Math Coprocessor                     |
| 170-1F7         | BUS Master PCI IDE Controller        |
| 278-27F         | Parallel Printer Port 2              |
| 2F8-2FF         | Serial Port 2                        |
| 376-376         | BUS Master PCI IDE Controller        |
| 378-37F         | Parallel Printer Port 1              |
| 3B0-3DF         | Standard AGP Graphic Adapter         |
| 3F0-3F7         | Floppy Disk Controller               |
| 3F8-3FF         | Serial Port 1                        |
| 443             | Watch dog timer enable               |
| 480-48F         | PCI BUS                              |
| 843/043         | Watch dog timer disable              |

# Appendix C. ATX Power Supply

## 1 st MB Memory Address Map

| Memory address | Description             |
|----------------|-------------------------|
| 00000-9FFFF    | SYSTEM MEMORY           |
| A0000-BFFFF    | VGA BUFFER              |
| C0000-C7FFF    | VGA BIOS                |
| C8000-CDFFF    | NO USE                  |
| CE000-CFFFF    | DEFAULT DOC2000 ADDRESS |
| E0000-FFFFFF   | SYSTEM BIOS             |
| 100000         | EXTEND MEMORY           |

## IRQ Mapping Chart

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

## DMA Channel Assignment

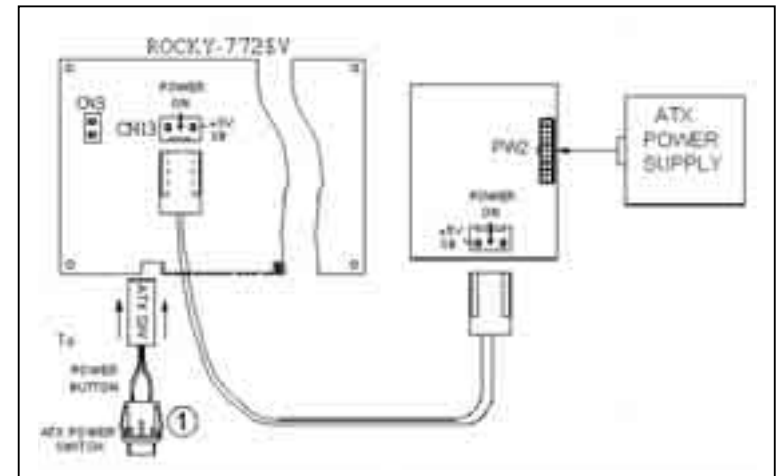
| Channel | Function                     |
|---------|------------------------------|
| 0       | Available                    |
| 1       | Available                    |
| 2       | Floppy disk                  |
| 3       | Available                    |
| 4       | Cascade for DMA controller 1 |
| 5       | Available                    |
| 6       | Available                    |
| 7       | Available                    |

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

### A. For backplanes with ATX Connector

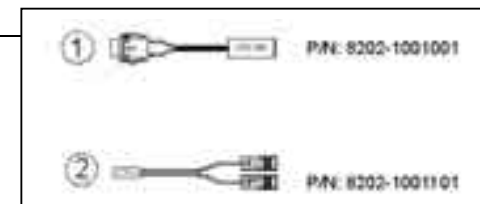
1. Please, disconnect the AC cord of the Power Supply from the AC source to prevent sudden electric surge to the board.
2. Please, check the type of your CPU board. All CPU board listed on the next page support ATX power supply but has two types of power switch connection:

#### 2.1. ROCKY-772EV (through Power Button & GND):



Connect the ATX power button switch to the CN3 (power button). And connect the power cable from Backplane to CN13 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.



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 On Modem(Ring) :**

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:**

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.

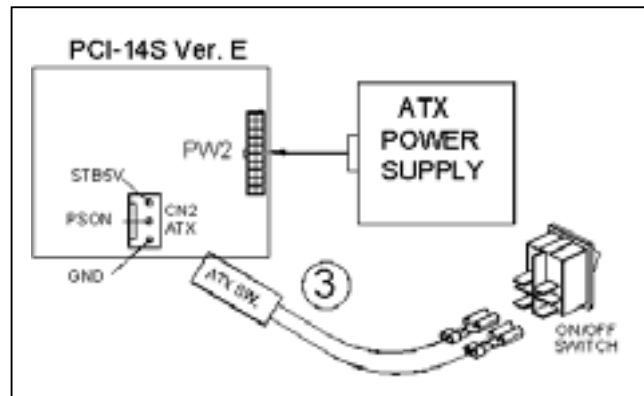
ID's format is xxxxxxxxxxxx

**Example ID:** 009027388320

**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 D. How to use Wake-Up Function**

The ROCKY-772EV provides two kind of Wake up Function.