ROCKY – 3722EVS

Dual Celeron™ & Pentium® III with Dual LAN & Dual ULTRA160 SCSI & SiS 6326 VGA SBC Ver 1.0

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Support
Any questions regarding the content of this manual or related issues can be e-mailed to us directly at : support@voxtechnologies.com

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Introduction

Welcome to the ROCKY-3722EVS Dual Celeron & Pentium® III Single Board Computer. The ROCKY-3722EVS board is an ISA/PCI form factor board, which comes equipped with high performance Pentium® III 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-3722EVS provides SiS 6326 VGA on board. The VGA chip is SiS 3D graphics chipset which provides up to 1600x1200 colors resolution. The VGA memory on board is 4MB SDRAM RAM.

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 – Winbond W83977TF is used in the ROCKY-3722EVS 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-3722EVS uses dual Intel 82559 Fast Ethernet Multifunction PCI Controller as a LAN controller. The 82559 is a fully integrated 10BASE-T/100BASE-TX LAN solution with high performance networking functions and low power features.

The ROCKY-3722EVS uses the advanced INTEL Chipset, 440BX which is 100% ISA/PCI software compatible chipset with PCI 2.1 standard.

1.1 Specifications

CPU(PGA370)	Intel Celeron® and Pentium® III (FC-PGA) Processor, supports 66 MHz and 100 MHz FSB
Bus interface	PCI/ISA bus, PICMG compliant
Bus speed	ISA : 8MHz, PCI: 33MHz
DMA channels	7
Interrupt levels	15
Chipset	Intel 440BX
Real-time clock/calendar	SGS M4T28 or equivalent device
RAM memory	Four 168-pin DIMM sockets support SDRAM and EDO RAM module. The max. memory is up to 1GB.
Ultra DMA/33 IDE interface	Up to four PCI Enhanced IDE hard drives. The Ultra DMA/33 IDE can handle data transfer up to 33MB/s. The compatible with existing ATA-2 IDE specifications is its best advantage, so there is no need to do any changes for users' current accessories.
Floppy disk drive interface	Supports up to two floppy disk drives, 5.25"(360KB and 1.2MB) and/or 3.5" (720KB, 1.44MB, and 2.88MB)
Serial ports	Two RS-232 ports with 16C550 UART (or compatible) with 16-byte FIFO buffer. Support up to 115.2Kbps. Ports can be individually configured to COM1, COM2 or disabled.
Bi-directional parallel port	Configurable to LPT1, LPT2, LPT3 or disabled. Supports EPP/ECP/SPP
Hardware monitor	Built-in LM78 to monitor power supply voltage and fan speed status
IrDA port	Supports Serial Infrared(SIR) and Amplitude Shift Keyed IR(ASKIR) interface

USB port	Supports two USB ports for future expansion
Watch-dog timer	Can be set by PROGRAM period. Reset or NMI is generated when CPU does not periodically trigger the timer. Your program use hex 043 and 443 to control the watch-dog and generate a system reset.
VGA controller	SiS6326 3D graphics chipset w/ 4MB SDRAM RAM. Screen Resolution : up to 1600x1200x16/256.
Ethernet	Dual Intel 82559 Fast Ethernet controller , IEEE 802.3u Auto-Negotiation support for 10BASE-T/100BASE-TX standard. An RJ45 connector is located on the mounting bracket for easy connection.
SCSI	Dual Port ULTRA 160 SCSI.Complies with the PCI 2.1 specification .performs wide,SCSI synchronous transfers as fast as 160 Mbytes/s on each SCSI channl for a total of 320Mbytes/s.
Flash disk socket	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.
Keyboard and PS/2 mouse connector	A 6-pin mini DIN connector is located on the mounting bracket for easy connection to a keyboard or PS/2 mouse. For alternative application, a keyboard and a PS/2 mouse pin header connector are also available on board, located on CN9 and CN10 respectively.
Power consumption	+5V @ 7,8A (Dual Pentium® III 600MHz,128MB SDRAM) +12V @ 380mA ,-12V @40mA
Operating temperature	0° ~ 55° C (CPU needs Cooler)

1.2 What You Have

In addition to this *User's Manual*, the ROCKY-3722EVS package includes the following items:

- ROCKY-3722EVS Single Board Computer
- One RS-232 x2 and Printer Cable with bracket
- One FDD cable
- One HDD cable
- One SCSI cable
- One 6-pin Mini-Din convert to two 6-pin mini-Din cable for keyboard and mouse connection.

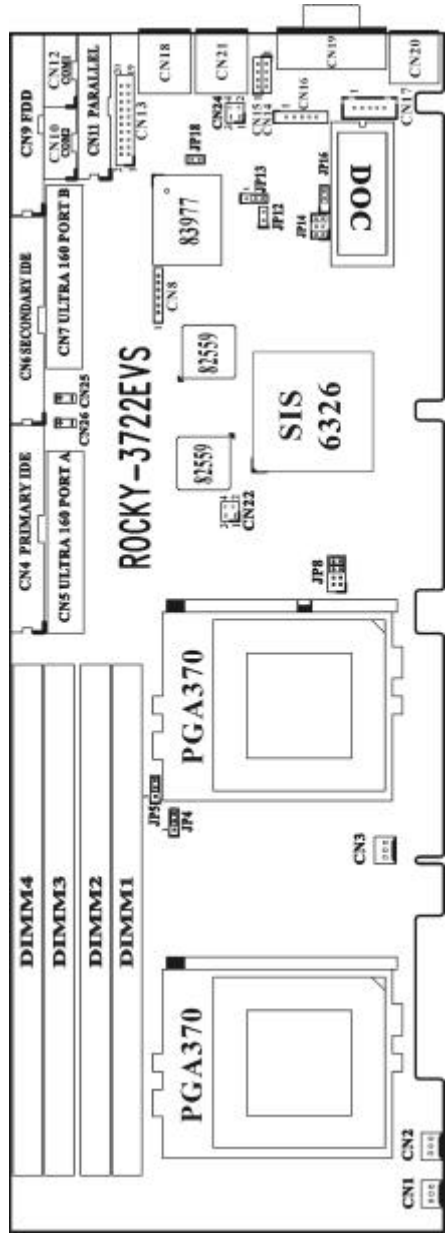
If any of these items are missing or damaged, contact the dealer from whom you purchased this product. Save the shipping materials and carton in case you want to ship or store the product in the future.

2

Installation

This chapter describes how to install the ROCKY-3722EVS. At first, the layout of ROCKY-3722EVS is shown, and the unpacking information that you should be careful is described. The jumpers and switches setting for the ROCKY-3722EVS's configuration, such as CPU type selection, system clock setting, and watch dog timer, are also included.

2.1 ROCKY – 3722EVS's Layout



2.2 Unpacking Precautions

Some components on ROCKY-3722EVS 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-3722EVS 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-3722EVS 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
JP4,JP5	CPU Type Setting
JP8	CPU Multiplier Setting,Normal by AUTO detect.
JP12	CMOS state settng
JP13	SMI Type Setting
JP14	DiskOnChip Memory Address Setting
JP16	Watch-Dog Active Type Setting
JP18	IRQ12 Enable/Disable Setting

Note: All shaded rows in tables of this manual are the default settings for the ROCKY-3722EVS.

2.3 Setting the CPU of ROCKY-3722EVS (JP4, JP5)

· JP4 & JP5 : Celeron or Pentium III Dual Processor

Function	JP4	JP5
Celeron	1-2	1-2
Pentium III	**2-3**	**2-3**

• **JP8 : CPU Multiplier Setting**

Speed	1-2	3-4	5-6	7-8
3.0 x	CLOSE	OPEN	CLOSE	CLOSE
3.5 x	CLOSE	OPEN	OPEN	CLOSE
4.0 x	OPEN	CLOSE	CLOSE	CLOSE
4.5 x	OPEN	CLOSE	OPEN	CLOSE
5.0 x	OPEN	OPEN	CLOSE	CLOSE
5.5 x	OPEN	OPEN	OPEN	CLOSE
6.0 x	CLOSE	CLOSE	CLOSE	OPEN
6.5 x	CLOSE	CLOSE	OPEN	OPEN
7.0 x	CLOSE	OPEN	CLOSE	OPEN
7.5 x	CLOSE	OPEN	OPEN	OPEN
8.0 x	OPEN	CLOSE	CLOSE	OPEN

PS: If CPU RATIO is fixed by Intel ,the JP8 is no purpose.

2.4 Watch-Dog Timer (JP16)

The Watch-Dog Timer is enabled by reading I/O port 443H. 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.

• **JP16 : Watch-Dog Active Type Setting**

JP16	DESCRIPTION
1-2	ACTIVATE NMI TO CPU WHEN WDT TIME-OUT
2-3	**RESET WHEN WDT TIME-OUT**
OPEN	DISABLE WDT

2.5 DiskOnChip™ Flash Disk (JP14)

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.

- **JP14 : 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

2.6 Clear CMOS Setup (JP12)

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 JP1 about 3 seconds, then open it again. Set back to normal operation mode, open JP1.

- **JP12 : Clear CMOS Setup (Reserve Function)**

JP12	DESCRIPTION
OPEN	**Normal Operation**
CLOSE	Clear CMOS Setup

2.7 PS/2 Mouse IRQ12 Setting (JP18)

While operating, the on board PS/2 mouse will use IRQ12.

- **JP18 : IRQ12 Enable/Disable Setting**

JP18	DESCRIPTION
CLOSE	**Enable IRQ12 for PS/2 Mouse Operating**
OPEN	Disable PS/2 Mouse. Release IRQ12 to bus

2.8 SMI Type Setting (JP13)

JP13	DESCRIPTION
1-2	**Single processor**
2-3	Dual processors

3

Connection

This chapter describes how to connect peripherals, switches and indicators to the ROCKY- 3722EVS board.

Table of Connectors

LABEL	FUNCTION
CN1	System Board Fan Connector
CN2	CPU Fan Connector
CN3	CPU Fan Connector
CN4	Primary IDE Connector
CN5,CN7	ULTRA 160 SCSI Connector
CN6	Secondary IDE Connector
CN8	IrDA connector
CN9	FDC Connector
CN10,CN12	Serial Port 10-pin Connector
CN11	Parallel Port Connector
CN13	External Switches and Indicators
CN14,CN15	USB Connector
CN16	External 5-pin Header PS/2 MOUSE Connector
CN17	External 5-pin Header Keyboard Connector
CN18,CN21	LAN RJ45 Connector
CN19	15-pin Female Connector
CN20	PS/2 Mouse & Keyboad Connector
CN22,CN24	LAN State LED Connector
CN25,CN26	ULTRA 160 SCSI Active LED Connector

3.1 Floppy Disk Drive Connector (CN9)

The ROCKY-3722EVS board is equipped with a 34-pin daisy-chain drive connector cable.

- **CN9 : 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 (CN4, CN6)

You can attach four IDE(Integrated Device Electronics) hard disk drives on two channels. These connectors support Ultra-DMA33 IDE devices. Non-DMA33 devices are suggested to be conneted to the secondary IDE connector.

CN4 (IDE 1) : Primary IDE Connector
CN6 (IDE 2) : Secondary IDE Connector

- **CN4/CN6 : 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 (CN11)

This port is usually connected to a printer. The ROCKY-3722EVS includes an on-board parallel port, accessed through a 26-pin flat-cable connector CN11.

- **CN11 : 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 (CN10, CN12)

The ROCKY-3722EVS offers two high speed NS16C550 compatible UART.

CN12 (COM1) : 10-pin header on board
CN10 (COM2) : 10-pin header on board

Serial port connections (CN12, CN10)

Connector	Ports	Address	Interrupt
CN12	COM1	3F8	IRQ4
CN10	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 (CN20)

A 6-pin mini DIN connector(CN20) is located on the mounting bracket for easy connection to a keyboard or a PS/2 mouse. The card comes with an cable to convert from the 6-pin mini-DIN connector to two 6-pin mini-DIN connectors for keyboard and mouse connection.

- **CN20 : 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 CN17 and CN16 respectively.

- **CN16 : PS/2 Mouse Connector**

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

- **CN17 : 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 (CN13)

There are several external switches and indicators for monitoring and controlling your CPU board. All the functions are in the CN13 connector.

- **CN13 : 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	
KeyLock	7	KeyLock	8	+5V	
	9	GND	10	Reset Switch	Reset button
	11	GND	12	GND	
	13	N/C	14	IDE LED	IDE LED
H ATX Signal	15	ATX Power Control Pin	16	+5V	
	17	ATX 5Vsb	18	ATX Power Button	ATX Power Button
	19	ATX 5Vsb	20	ATX 5Vsb	

✶ **For backplanes with ATX Connector (through Power Button & +5VSB)**

3.7 USB Port Connector (CN14,CN15)

The ROCKY- 3722EVS has two built-in USB ports for the future new I/O bus expansion.

CN14 USB0		CN15 USB1	
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	VCC	1	VCC
2	DATA-	2	DATA-
3	DATA+	3	DATA+
4	GROUND	4	GROUND

3.8 IrDA Infrared Interface Port (CN8)

The ROCKY-3722EVS 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.

- **CN8 : IrDA connector**

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

3.9 CPU & SYSTEM Fan Connector (CN1, CN2, CN3)

The ROCKY-3722EVS provides two CPU cooling fan connectors, CN2 and CN3 as well as a chassis fan connector, CN1. 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.

- **CN1/CN2/CN3 : Fan Connector**

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

3.10 LAN RJ45 & State LED Connector (CN18,CN21)

The ROCKY-3722EVS is equipped with two built-in 10/100Mbps Ethernet controllers. You can connect it to your LAN through RJ45 LAN connectors. There are two LEDs on the connector indicating the status of LAN. The pin assignments are as following:

• CN18/CN21: 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

• CN22/CN24: LAN State LED Connector

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

3.11 VGA Connector (CN19)

The ROCKY-3722EVS has a built-in 15-pin VGA connector directly connects to your CRT monitor.

• CN19 : 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 ULTRA 160 SCSI & Active LED Connector

The ROCKY-3722EVS provides two SCSI connectors -- Port A and Port B. Each port supports 16 SCSI devices at 160Mbps speed. There are also two connectors indicating the status of the SCSI channels.

• **CN5(Port A)/CN7(Port B) : Ultra 160 SCSI Connector, 68-pin**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	CHA_SCDP12	35	CHA_SCDM12
2	CHA_SCDP13	36	CHA_SCDM13
3	CHA_SCDP14	37	CHA_SCDM14
4	CHA_SCDP15	38	CHA_SCDM15
5	CHA_SCDPHP	39	CHA_SCDPHM
6	CHA_SCDP0	40	CHA_SCDM0
7	CHA_SCDP1	41	CHA_SCDM1
8	CHA_SCDP2	42	CHA_SCDM2
9	CHA_SCDP3	43	CHA_SCDM3
10	CHA_SCDP4	44	CHA_SCDM4
11	CHA_SCDP5	45	CHA_SCDM5
12	CHA_SCDP6	46	CHA_SCDM6
13	CHA_SCDP7	47	CHA_SCDM7
14	CHA_SCDPLP	48	CHA_SCDPLM
15	GND	49	GND
16	CHA_DIFFSENSE	50	N/C
17	TRMPWRS	51	TRMPWRS
18	TRMPWRS	52	TRMPWRS
19	N/C	53	N/C
20	GND	54	GND
21	CHA_ATNP	55	CHA_ATNM
22	GND	56	GND
23	CHA_BSYP	57	CHA_BSYM
24	CHA_ACKP	58	CHA_ACKM
25	CHA_RSTP	59	CHA_RSTM
26	CHA_MSGP	60	CHA_MSGM
27	CHA_SELP	61	CHA_SELM
28	CHA_CDP	62	CHA_CDM
29	CHA_REQP	63	CHA_REQM
30	CHA_IOP	64	CHA_IOM
31	CHA_SCD8P	65	CHA_SCDM8
32	CHA_SCD9P	66	CHA_SCDM9
33	CHA_SCD10P	67	CHA_SCDM10
34	CHA_SCD11P	68	CHA_SCDM11

• **CN26: Ultra160 SCSI port A active LED connector.**
• **CN25: Ultra160 SCSI port B active LED connector.**

4

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.

The Award BIOS installed in your computer system's ROM (Read Only Memory) is a custom version of an industry standard BIOS. This means that it supports Intel PGA370 processors in a standard IBM-AT compatible input/output system. The BIOS provides critical low-level support for standard devices such as disk drives and serial and parallel ports.

The Award BIOS has been customized by adding important, but non-standard, features such as virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

The rest of this manual is intended to guide you through the process of configuring your system using Setup.

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

Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item in the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
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.

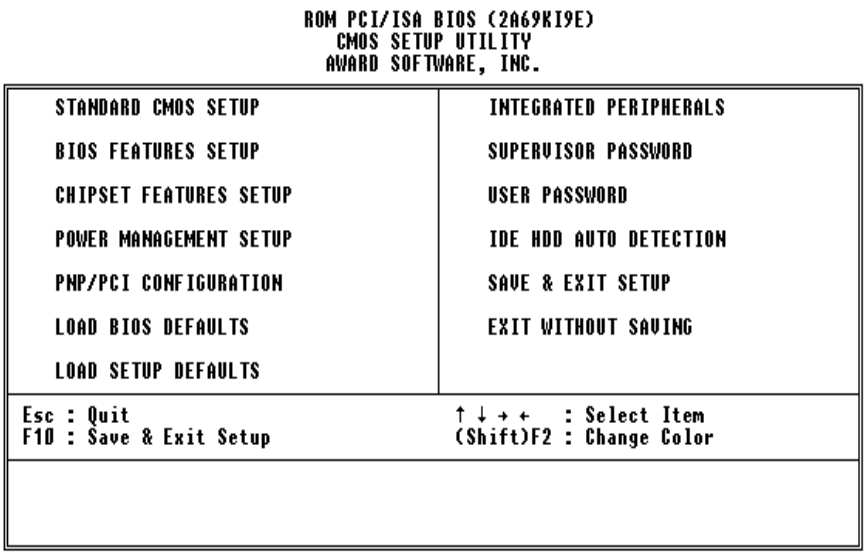
If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the Award BIOS supports an override to the CMOS settings which resets your system to its defaults.

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 Award BIOS 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.



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

Setup Items

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

Standard CMOS Setup

This setup page includes all the items in a standard, AT-compatible BIOS.

BIOS Features Setup

This setup page includes all the items of Award special enhanced features.

Super / User Password Setting

Change, set, or disable password. It allows you to limit access to the system and Setup, or just to Setup.

Chipset Features Setup

This setup page includes all the items of chipset special features.

Power Management Setup

This entry only appears if your system supports Power Management, “Green PC”, standards.

PNP / PCI Configuration Setup

This entry appears if your system supports PNP / PCI.

Load BIOS Defaults

The BIOS defaults have been set by the manufacturer and represent settings which provide the minimum requirements for your system to operate.

Load Setup Defaults

The chipset defaults are settings which provide for maximum system performance. While Award has designed the custom BIOS to maximize performance, the manufacturer has the right to change these defaults to meet their needs.

Integrated Peripherals

This section page includes all the items of IDE hard drive and Programmed Input / Output features. See also Section 5, “Chipset Features Setup”.

IDE HDD Auto Detection

Automatically detect and configure hard disk parameters. The Award BIOS includes this ability in the event you are uncertain of your hard disk's parameters. See also "Standard CMOS Setup".

Save & Exit Setup

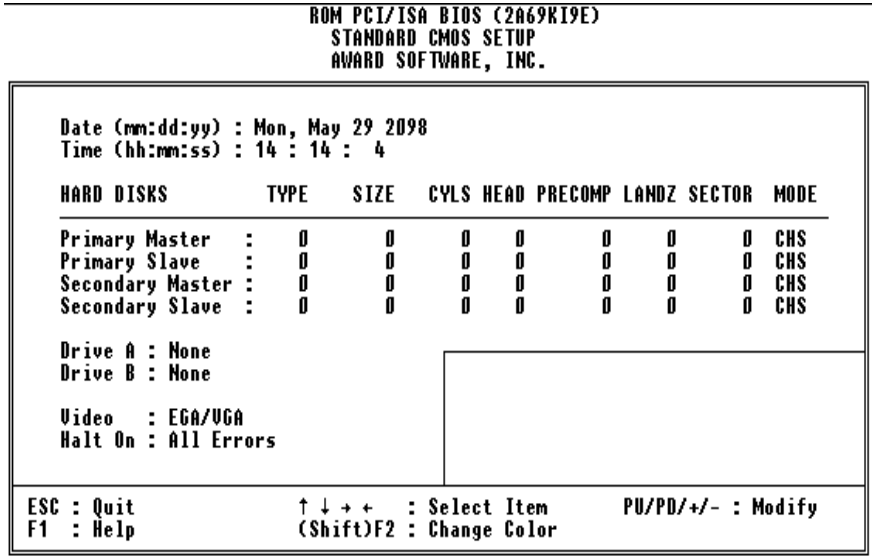
Save CMOS value changes to CMOS and exit setup.

Exit Without Save

Abandon all CMOS value changes and exit setup.

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.



Date

The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

Day	The day, from Sun to Sat, determined by the BIOS and is display-only
Date	The date, from 1 to 31 (or the maximum allowed in the month)
month	The month, Jan through Dec.
Year	The year, from 1900 through 2099

Time

The time format is <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

Daylight saving

The category adds one hour to the clock when daylight-saving time begins. It also subtracts one hour when standard time returns.

Enabled	Enable daylight-saving
Disabled	Disable daylight-saving

Primary Master/Primary Slave/Secondary Master/Secondary Slave

The categories identify the types of 2 channels that have been installed in the computer. There are 45 predefined types and 4 user definable types are for Enhanced IDE BIOS. Type 1 to Type 45 are predefined. Type user is user-definable.

Press PgUp or PgDn to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper

information for this category. If your hard disk drive type is not matched or listed, you can use Type “User” to define your own drive type manually.

If you select Type “User”, you will need to know the information listed below. Enter the information directly from the keyboard and press <Enter>. This information should be included in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is ESDI, the selection shall be “Type 1”.

If the controller of HDD interface is SCSI, the selection shall be “None”.

If you select Type ”Auto”, BIOS will Auto-Detect the HDD & CD-ROM Drive at the POST stage and showing the IDE for HDD & CD-ROM Drive.

TYPE	drive type
CYLS.	Number of cylinders
HEADS	number of heads
PRECOMP	write precom
LANDZONE	landing zone
SECTORS	number of sectors
MODE	mode type

If a hard disk has not been installed select NONE and press <Enter>.

Drive A Type / Drive B Type

The category identifies the types of floppy disk drive A or drive B that have been installed in the computer.

None	No floppy drive installed
360K, 5.25 in	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M, 5.25 in	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5 in	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5 in	3-1/2 inch double-sided drive; 1.44 megabyte capacity
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 megabyte capacity

Video

The category selects the type of video adapter used for the primary system monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, SVGA or PGA monitor adapters.
CGA 40	Color Graphics Adapter, power up in 40 column mode
CGA 80	Color Graphics Adapter, power up in 80 column mode
MONO	Monochrome adapter, includes high resolution monochrome adapters

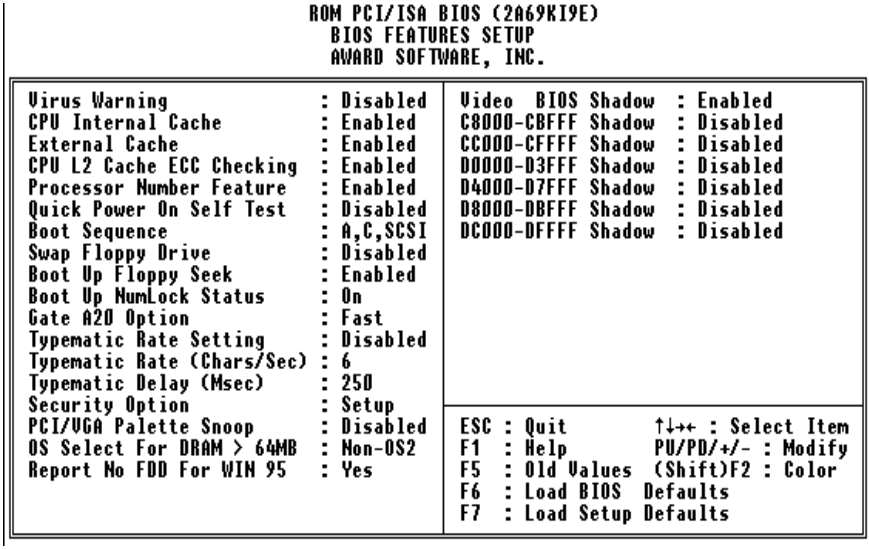
Halt On

The category determines whether the computer will stop if an error is detected during power up.

No errors	The system boot will not be stopped for any error that may be detected.
All errors	Whenever the BIOS detects a non-fatal error the system will be stopped and you will be prompted.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

4.7 BIOS Features Setup

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



Virus Warning

When this item is enabled, the Award BIOS will monitor the boot sector and partition table of the hard disk drive for any attempt at modification. If an attempt is made, the BIOS will halt the system and the following error message will appear. Afterwards, if necessary, you will be able to run an anti-virus program to locate and remove the problem before any damage is done.

! WARNING !

Disk boot sector is to be modified

Type "Y" to accept write or "N" to abort write

Award Software, Inc.

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.

NOTE: Many disk diagnostic programs which attempt to access the boot sector table can cause the above warning message. If you will be running such a program, we recommend that you first disable Virus Protection beforehand.

CPU Internal Cache/External Cache

These two categories speed up memory access. However, it depends on CPU/chipset design. The default value is en able.

Enabled	Enable cache
Disabled	Disable cache

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

Boot Sequence

This category determines which drive to search first for the disk operating system (i.e., DOS). Default value is A,C.

C,A	System will first search for hard disk drive then floppy disk drive.
A,C	System will first search for floppy disk drive then hard disk drive.
CDROM, C, A	System will first search for CDROM drive, then hard disk drive and the next is floppy disk drive.
C, CDROM, A	System will first search for hard disk drive , then CDROM drive, and the next is floppy disk drive.

Swap Floppy Drive

This item allows you to determine whether enable the swap floppy drive or not.

The choice: Enabled/Disabled.

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K, 1.2M and 1.44M are all 80 tracks.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360K.

Boot Up NumLock Status

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on.

On	Keypad is number keys
Off	Keypad is arrow keys

Boot Up System Speed

Selects the default system speed -- the normal operating speed at power up.

High	Set the speed to high
Low	Set the speed to low

Gate A20 Option

This entry allows you to select how the gate A20 is handled. The gate A20 is a device used to address memory above 1 Mbytes. Initially, the gate A20 was handled via a pin on the keyboard. Today, while keyboards still provide this support, it is more common, and much faster, for the system chipset to provide support for gate A20.

Normal	keyboard
Fast	chipset

Typematic Rate Setting

This determines if the typematic rate is to be used. When disabled, continually holding down a key on your keyboard will generate only one instance. In other words, the BIOS will only report that the key is down. When the typematic rate is enabled, the BIOS will report as before, but it will then wait a moment, and, if the key is still down, it will begin the report that the key has been depressed repeatedly. For example, you would use such a feature to accelerate cursor movements with the arrow keys.

Enabled	Enable typematic rate
Disabled	Disable typematic rate

Typematic Rate (Chars/Sec)

When the typematic rate is enabled, this selection allows you select the rate at which the keys are accelerated.

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

Typematic Delay (Msec)

When the typematic rate is enabled, this selection allows you to select the delay between when the key was first depressed and when the acceleration begins.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

Security Option

This category allows you to limit access to the system and Setup, or just to 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 > 64

This item allows you to access the memory that over 64MB in OS/2.

The choice: Non-OS2, OS2.

PCI / VGA Palette Snoop

It determines whether the MPEG ISA/VESA VGA Cards can work with PCI/VGA or not.

Enabled	When PCI/VGA working with MPEG ISA/VESA VGA Card.
Disabled	When PCI/VGA not working with MPEG ISA/VESA VGA Card.

Video BIOS Shadow

Determines whether video BIOS will be copied to RAM. However, it is optional depending on chipset design. Video Shadow will increase the video speed.

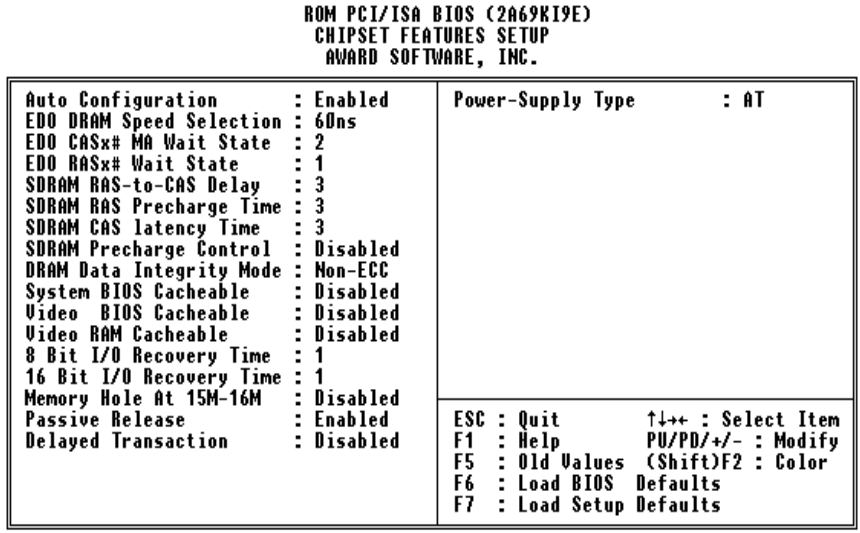
Enabled	Video shadow is enabled
Disabled	Video shadow is disabled

C8000 - CBFFF Shadow/DC000 - DFFFF Shadow

These categories determine whether option ROMs will be copied to RAM. An example of such option ROM would be support of on-board SCSI.

Enabled	Optional shadow is enabled
Disabled	Optional shadow is disabled

4.8 Chipset Features Setup



Auto Configuration

Auto Configuration selects predetermined optimal values of chipset parameters. When Disabled, chipset parameters revert to setup information stored in CMOS. Many fields in this screen are not available when Auto Configuration is Enabled.

The Choice: Enabled, Disabled.

EDO DRAM Speed Selection

The DRAM timing is controlled by the DRAM Timing Registers. The timings programmed into this register are dependent on the system design. Slower rates may be required in certain system designs to support loose layouts or slower memory.

50ns	DRAM Timing Type.
60ns	DRAM Timing Type.

EDO CASx# MA Wait State

You could select the timing control type of EDO DRAM CAS MA (memory address bus).The choice: 1, 2.

You could select the timing control type of EDO DRAM RAS MA (memory address bus).The choice: 1, 2.

SDRAM RAS-to-CAS Delay

You can select RAS to CAS Delay time in HCLKs of 2/2 or 3/3. The system board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU..

The Choice: 2, 3.

SDRAM RAS Precharge Time

Defines the length of time for Row Address Strobe is allowed to precharge.

The Choice: 2, 3.

SDRAM CAS latency Time

You can select CAS latency time in HCLKs of 2/2 or 3/3. The system board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU..

The Choice: 2, 3.

DRAM Data Integrity Mode

Select Parity or ECC (error-correcting code), according to the type of installed DRAM. The Choice: Non-ECC, ECC.

Cache Features

System BIOS Cacheable

Select Enabled allows caching of the system BIOS ROM at F000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Enabled	BIOS access cached
Disabled	BIOS access not cached

Video BIOS Cacheable

Select Enabled allows caching of the video BIOS ROM at C0000h-F7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.

Enabled	Video BIOS access cached
Disabled	Video BIOS access not cached

Video 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.

8 Bit I/O Recovery Time

The recovery time is the length of time, measured in CPU clocks, which the system will delay after the completion of an input/output request. This delay takes place because the CPU is operating so much faster than the input/output bus that the CPU must be delayed to allow for the completion of the I/O.

This item allows you to determine the recovery time allowed for 8 bit I/O. Choices are from NA, 1 to 8 CPU clocks.

16 Bit I/O Recovery Time

This item allows you to determine the recovery time allowed for 16 bit I/O. Choices are from NA, 1 to 4 CPU clocks.

Memory Hole At 15M-16M

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

Enabled	Memory hole supported.
Disabled	Memory hole not supported.

Passive Release

When Enabled, CPU to PCI bus accesses are allowed during passive release. Otherwise, the arbiter only accepts another PCI master access to local DRAM.

The Choice: Enabled, Disabled.

Delayed 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.

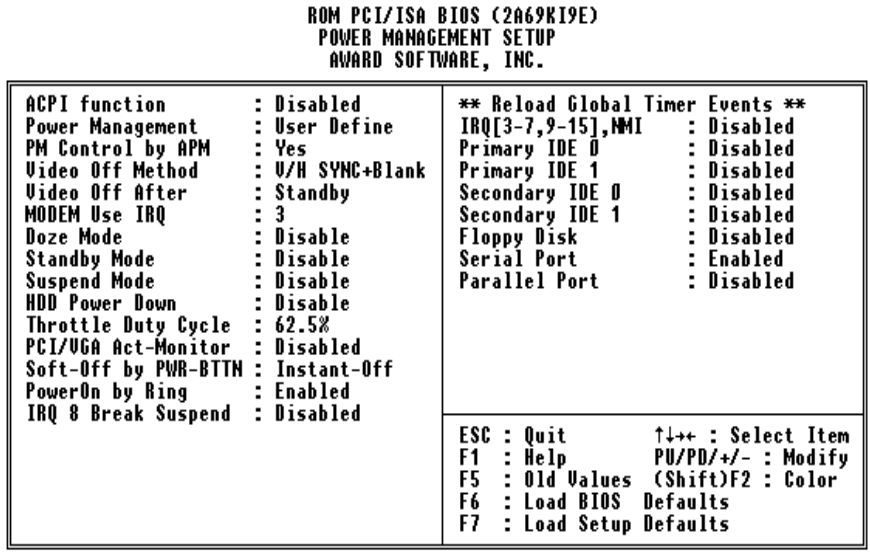
The Choice: Enabled, Disabled.

Power Supply Type

This field seletion the system power AT or ATX.

4.9 Power Management Setup

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



ACPI function

This item allows you to select power Management ACPI mode.

The Choice: Enable , Disable.

Power Management

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

1. Doze Mode
2. Standby Mode
3. Suspend Mode
4. HDD Power Down

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

Video Off Method

This determines the manner in which the monitor is blanked.

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

Video Off After

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

N/A	Monitor will remain on during power saving modes.
Suspend	Monitor blanked when the systems enters the Suspend mode.
Standby	Monitor blanked when the system enters Standby mode.
Doze	Monitor blanked when the system enters any power saving mode.

MODEM Use IRQ

Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.

The choices: NA, 3, 4, 5, 7, 9, 10, 11

PM Timers

The following four modes are Green PC power saving functions which are only user configurable when *User Defined* Power Management has been selected. See above for available selections.

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.

Standby Mode

When enabled and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.

Suspend Mode

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

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.

Throttle Duty Cycle

When the system enters Doze mode, the CPU clock runs only part of the time.

You may select the percent of time that the clock runs.

The Choice: 12.5%, 25.0%, 37.5%, 50.0%, 62.5%, 75.0%

VGA Active Monitor

When Enabled, any video activity restarts the global timer for Standby mode.

The Choice: Enabled, Disabled.

Soft-Off by PWR-BTTN

When Enabled, turning the system off with the on/off button places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or Resume by Ring activity.

The Choice: Instant-Off, Delay 4 Sec.

Resume by Ring

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

The Choice: Enabled, Disabled.

IRQ 8 Break Suspend

You can Enable or Disable monitoring of IRQ8 so it does not awaken the system from Suspend mode.

The Choice: Enabled, Disabled.

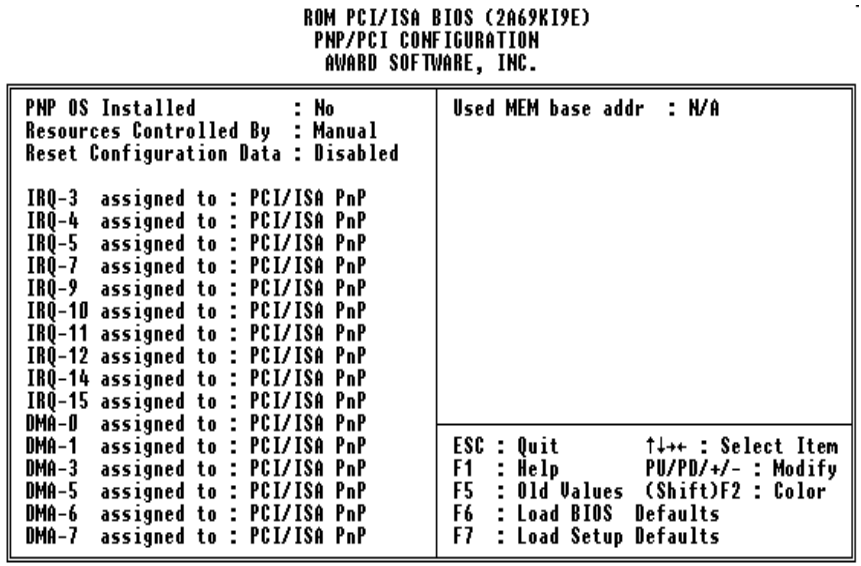
Reload Global Timer Events

When Enabled, an event occurring on each device listed below restarts the global time for Standby mode.

IRQ[3 -7, 9-15], NMI
Primary IDE 0
Primary IDE 1
Secondary IDE 0
Secondary IDE 1
Floppy Disk
Serial Port
Parallel Port

4.10 PnP / PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is



strongly recommended that only experienced users should make any changes to the default settings.

PNP OS Installed

Select Yes if the system operating environment is Plug-and-Play aware (e.g.,Windows 95).

The Choice: Yes and No.

Resource Controlled by

The Award Plug and Play BIOS can automatically configure all the boot and Plug and Play-compatible devices. If you select Auto, all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assigns them.

The choice: *Auto* and Manual.

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 cannot boot.

The choice: Enabled and Disabled.

IRQ n Assigned to

When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt:

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.

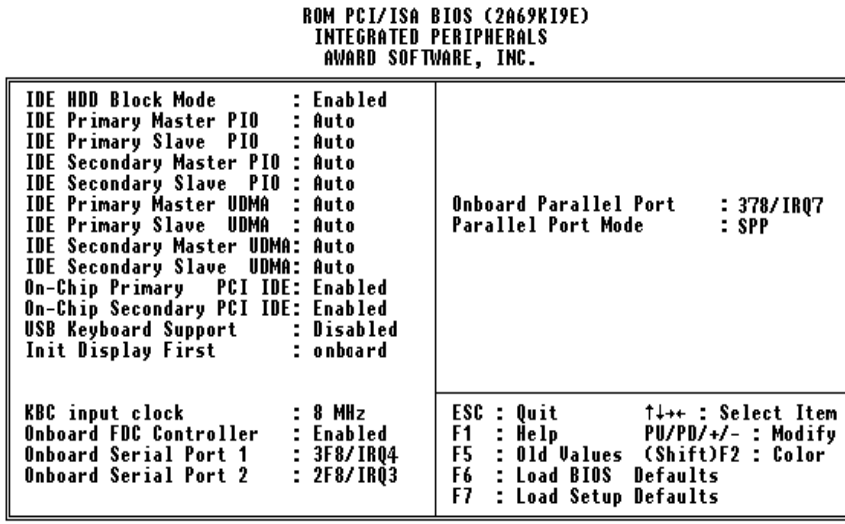
DMA n Assigned to

When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific DMA channel

PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

4.11 Integrated Peripherals



IDE HDD Block Mode

This allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD).

Enabled	IDE controller uses block mode.
Disabled	IDE controller uses standard mode.

IDE Primary/Secondary Master/Slave PIO

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

IDE Primary/Secondary Master/Slave UDMA

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

The Choice: Auto, Disabled

On-Chip Primary/Secondary PCI IDE

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

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.

Onboard FDD Controller

This should be enabled if your system has a floppy disk drive (FDD) installed on the system board and you wish 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.

Onboard Serial Port 1/Port 2

This item allows you to determine access onboard serial port 1/port 2 controller with which I/O address.

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

Onboard IR Controller

This item allows you to select onboard IR controller.

Onboard Parallel Port

Select a logical LPT port name and matching address for the physical parallel

(printer) port.

The choice: 378H/IRQ7, 278H/IRQ5, 3BCH/IRQ7, Disabled.

Parallel Port Mode

Select an operating mode for the onboard parallel port. Select Compatible or Extended unless you are certain both your hardware and software support EPP or ECP mode.

The choice: SPP, ECP+EPP1.7, EPP1.7+SPP, EPP1.9+SPP, ECP, ECP+EPP1.9, and Normal.

ECP Mode Use DMA

Select a DMA channel for the port.

Choices are 3, 1.

4.12 Supervisor / User Password Setting

You can set either supervisor or user password, or both of then. The differences between are:

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

user password : just can only enter but do not have the right to change the options of the setup menus.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

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

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

PASSWORD DISABLED:

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

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

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

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. 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 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-OFF	Math Coprocessor
170-1F7	BUS Master PCI IDE Controller
278-27F	Parallel Printer Port 2
2F8-2FF	Serial Port 2
294-297	PCI bus
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
843/043	Watch dog timer disable

1 st MB Memory Address Map

Memory address	Description
00000-9FFFF	SYSTEM MEMORY
A0000-BFFFF	VGA BUFFER
C0000-C7FFF	VGA BIOS
C8000-CFFFF	NO USE
D6000-D7FFF	DEFAULT DOC2000 ADDRESS
E0000-FFFFF	SYSTEM BIOS
100000	EXTEND MEMORY

IRQ Mapping Chart

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	SCSI PORT A / LAN2
IRQ2	IRQ Controller	IRQ10	USB
IRQ3	COM2	IRQ11	SCSI PORT B
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	LAN1	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

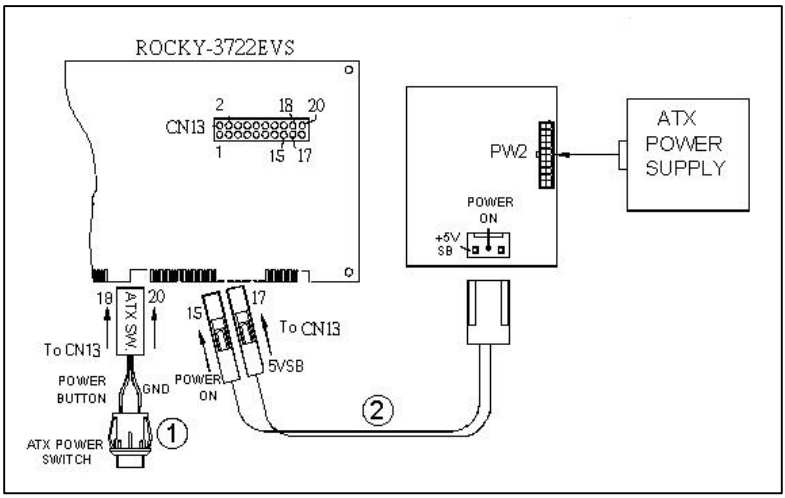
Appendix C. ATX Power Supply

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

A. For backplanes with ATX Connector

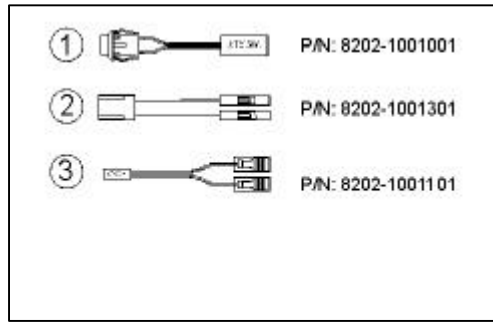
1. Please, disconnect the AC cord of the Power Supply from the AC source to prevent sudden electric surge to the board.
2. Please, check the type of your CPU board. All CPU board listed on the next page support ATX power supply but has two types of power switch connection:

2.1. ROCKY-3722EVS (through Power Button & GND):



Connect the ATX power button switch to the pin 18 (power button) and pin 20 (+5VSB) of CN13 on the board. And connect the power cable from backplane to CN13 of CPU card.

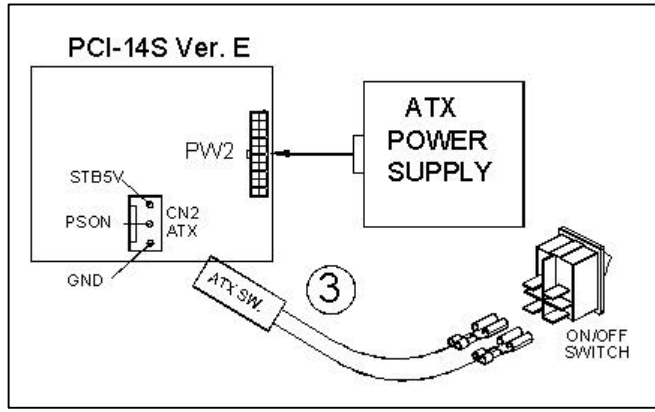
If you want to turn ON the system, just press the button once.
And If you want to turn off the power supply, please press the ATX power switch button for about 4 seconds.



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. Backplane Slots Description

The ROCKY-3722EVS's PCI2 to PCI3 are PCI-master. The slot 1&4 are PCI-slave (If it comes without onboard SCSI, this slot1 becomes PCI-master).

Example: PCI-14S3 V:E1
The backplane PCI-14S3 has four PCI slots - PCI1 to PCI4. When ROCKY-3722EVS is installed to PCI-14S3's ISA10 or ISA7

PCI-14S3 / SBC ITEM	PCI SLOT			
	PCI1	PCI2	PCI3	PCI4
ROCKY-3722EVS	slave	master	master	slave
ROCKY-3722EV	master	master	master	slave
ROCKY-3722V	master	master	master	master

PCI-14S3's Layout

Appendix E. How to use Wake-Up Function

The ROCKY-3722EVS 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 Ring:

You must set the option Power On By 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