ROCKY-3786EV/EVG(U2)
Serial

Socket 370 bases SBC With Gigabit,
10/100Mbps Ethernet, VGA,
Audio,USB2.0

User Manual

Version 1.1

August 4, 2003

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1. Introduction

Welcome to the ROCKY-3786EVG socket 370 base Single Board Computer. Based on Intel i815EB chipset, ROCKY-3786EVG board is a PICMG form factor board, which works with high performance Pentium® III, or economical Celeron, VIA C3 processor. This product is 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-3786EVG provides on-chip VGA, which supports up to 1600x1200 in resolution. The VGA shares the main memory.

An advanced high performance super AT I/O chip − ITE IT8712 is used in the ROCKY-3786EVG board with which provide two UARTs that are compatible with the NS16C550. The parallel port and IDE interface are compatible with IBM PC/AT architecture's.

ROCKY-3786EVG has two network controllers on board. One is a fully integrated 10/100BASE-TX controller -- Intel 82801BA integrated LAN, and another is Gigabit LAN -- Intel 82540. Both are featured with high performance networking functions and Alert-on-LAN.

ROCKY-3786EVG uses the advanced INTEL 815E Chipset, which supports up to 133MHz FSB CPU and 133MHz SDRAM memory modules.

1.1 Specifications:

CPU	Support socket 370 bases CPU, such as: ● Celeron® Processor, 700MHz –1.2GHz ● Pentium® III(FC-PGA) Processor, up to 1.4GHz ● VIA C3 Processor, 733MHz or above
DMA Channels	7
Interrupt Levels	15
Chipset	Intel 815E
DRAM Memory	Provides two 168-pin DIMM socket. The memory capability is up to 512MB/133MHz
Ultra ATA/33/66/100 IDE Interface	● Two PCI Enhance IDE channel ● The south bridge ICH2 supports Ultra ATA/33/66/100 IDE interface ● In order to support Ultra ATA66/100 Hard disk, a specified cable must be available.
Floppy Disk Drive Interface	Single 2.88 MB, 1.44MB, 1.2MB, 720KB, or 360KB floppy disk drive.
CompactFlash^{TM} Interface	Supports CompactFlash^{TM} Type II socket for Compact Flash Disk or IBM Micro Drive
Serial Ports	Two high-speed 16C550 compatible UARTs ports
Parallel Port	One IEEE1284 compatible Bi-directional ports
IrDA Port	Supports Serial Infrared (SIR) and Amplitude Shift Keyed IR (ASKIR) interface.
USB Port	● Supports two USB 1.1 compatible ports ● Supports four USB 2.0 ports(U2 version only) ● NEC D720100A. USB2.0 controller
Audio	Onboard AC'97Codec, supports two channel Left/Right Line IN/OUT, and Left/Right speaker out, MIC IN, CD IN.

Watchdog timer	• From 1 second to 255 second • Reset will be generated when CPU did not periodically trigger the timer
VGA Controller	Embedded VGA controller, Screen Resolution: up to 1600x1200 in 256 Colors at 85Hz refresh.
Intel 82801BA embedded LAN and Inter 82540 Giga Controller	• IEEE 802.3u Auto-Negotiation support for 10BASE-T/100BASE-TX and 1000BASE-TX standard • Fast back-to-back transmission support with minimum interframe spacing • Connected to the user's LAN through RJ45 connector
Keyboard Controller	8042 compatible for keyboard and PS/2 mouse
Power Consumption	5V/9A and 12V/0.1A, as running by PIII 933MHz and 256MB
Operating Temperature	0° ~ 55° C (CPU needs Cooler)

1.2 Package Contents

In addition to this User's Manual, the ROCKY-3786EVG(U2) package includes the following items:

- ROCKY-3786EV/EVG(U2) socket 370 bases Single Board Computer

- One FDD cable

  One IDE Cable

- Keyboard / Mouse Adapter Y Cable

- One Printer Cable with bracket

- Two RS-232 serial ports Cable with bracket

2. Installation

This chapter shows how to install the ROCKY-3786EV/EVG(U2). At first, the lathe layout of ROCKY-3786EVG is shown, then comes the unpacking information that the user should be careful is been illustrated. After that comes jumpers and switches setting for the ROCKY-3786EVG's configuration, such as CPU type selection, system clock setting, and watchdog timer and so on.

2.1 ROCKY-3786EVG's Lathe Layout

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ROCKY-3786EVG's Lathe Layout
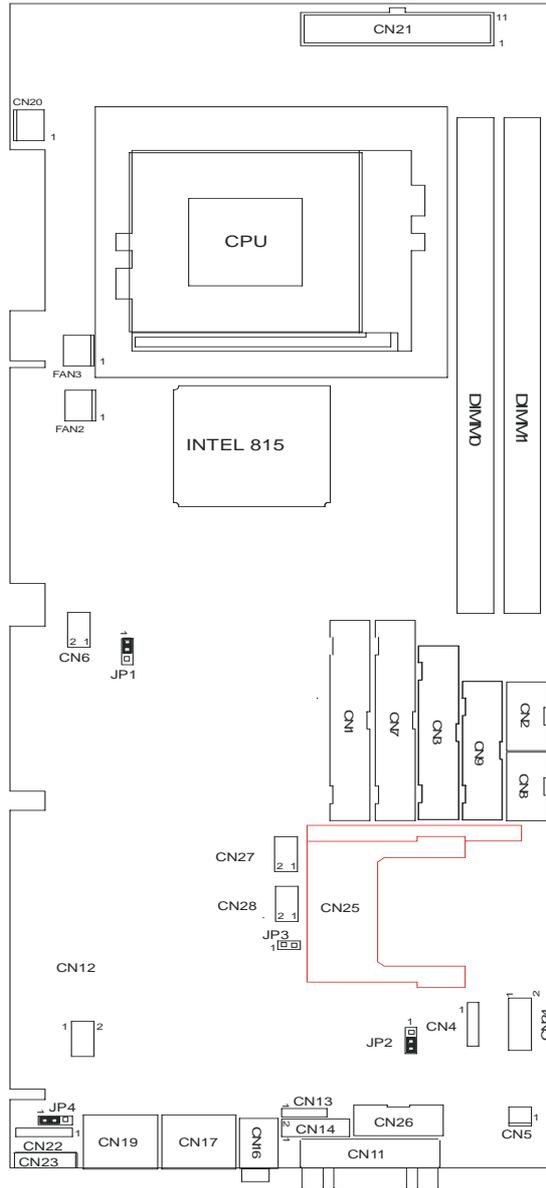
2.2 Clear CMOS Setup

If want to clear the CMOS Setup (for example, forgetting the password, the user should clear the setup and then set the password again.), the user should close the JP1 about 3 seconds, then open again. For normal operation mode, just open JP1.

● **JP1: Clear CMOS Setup**

JP1	DESCRIPTION
1-2	Keep CMOS Setup (Normal Operation)
2-3	Clear CMOS Setup

2.3 BIOS Protection Setting

To protect the bios from writing, place the cap on the location 2-3.

● **JP2: Flash Protection Setting**

JP2	DESCRIPTION
2-3	Locked
1-2	Unlocked

2.4 Keyboard Power Selection

● **JP4: Keyboard Power Selection**

JP4	DESCRIPTION
1-2	VCC
2-3	5VSB

2.5 Compact Flash Card Master/Slave Mode Setting

- **JP3: Master/Slave Mode Setting**

JP3	DESCRIPTION
OPEN	SLAVE
SHORT	MASTER

3. Connection

This chapter illustrates how to connect peripherals, switches and indicators to the ROCKY-3786EVG board.

3.1 Floppy Disk Drive Connector

ROCKY-3786EV/EVG(U2) board equipped with a 34-pin daisy-chain driver connector cable.

- **CN3: FDC CONNECTOR**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	2	REDUCE WRITE
3	GROUND	4	N/C
5	GROUND	6	N/C
7	GROUND	8	INDEX#
9	GROUND	10	MOTOR ENABLE A#
11	GROUND	12	DRIVE SELECT B#
13	GROUND	14	DRIVE SELECT A#
15	GROUND	16	MOTOR ENABLE B#
17	GROUND	18	DIRECTION#
19	GROUND	20	STEP#
21	GROUND	22	WRITE DATA#
23	GROUND	24	WRITE GATE#
25	GROUND	26	TRACK 0#
27	GROUND	28	WRITE PROTECT#
29	N/C	30	READ DATA#
31	GROUND	32	SIDE 1 SELECT#
33	N/C	34	DISK CHANGE#
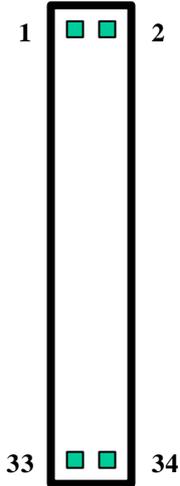
3.2 Ultra ATA33/66/100 IDE Disk Drive Connector

The user can attach two IDE(Integrated Device Electronics) hard disk drives to the ROCKY-3786EVG IDE controller.

CN1 (IDE 1): Primary IDE 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

1   **2**

39   **40**

CN7 (IDE 2): Primary IDE 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

1   2

39   40

3.3 Parallel Port

This port is usually connected to a printer, The ROCKY-3786EV/EVG(U2) includes an on-board parallel port accessed through a 26-pin flat-cable connector CN9 that supports three modes –SPP, EPP and ECP.

● **CN9: Parallel Port Connector**

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

23	GROUND	24	GROUND
25	GROUND	26	NC
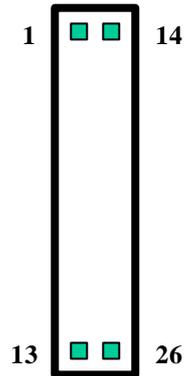
3.4 Serial Ports

The ROCKY-3786EVG offers two high speeds NS16C550 compatible UARTs with Read/Receive 16 byte FIFO serial ports.

CN2: COM1
CN8: COM2

● **CN2: COM1 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
6	DATA SET READY (DSR)
7	REQUEST TO SEND (RTS)
8	CLEAR TO SEND (CTS)
9	RING INDICATOR (RI)
10	NC
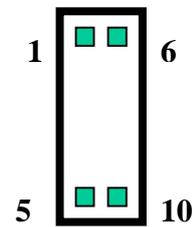
● **CN8: COM2 10-pin Connector**

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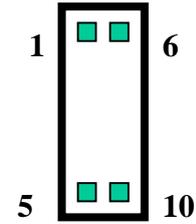
3.5 Keyboard Connector

The ROCKY-3786EVG provides 5-PIN Header and 6-PIN keyboard/mouse connector.

● **CN23: 6-pin Mini-DIN Keyboard/Mouse Connector**

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

● **CN22: 5-pin Keyboard Connector**

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

3.6 USB Port Connector

ROCKY-3786EVG provides two USB ports and U2 version provides six ports -- two USB 1.1 and four USB 2.0 ports.

●**CN6: USB 1.1**

1.	VCC
2.	GROUND
3.	DATA1-
4.	DATA2+
5.	DATA1+
6.	DATA2-
7.	GROUND
8.	VCC

```
7          1
  ▢      ▢
  ▢      ▢
8          2
```
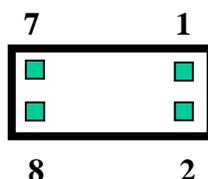
●**CN27, CN28: USB 2.0, U2 version only**

1.	VCC
2.	GROUND
3.	DATA1-
4.	DATA2+
5.	DATA1+
6.	DATA2-
7.	GROUND
8.	VCC

```
7          1
  ▢      ▢
  ▢      ▢
8          2
```
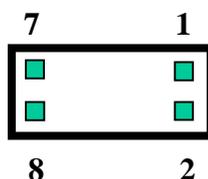
3.7 IrDA Infrared Interface Port

The ROCKY-3786EVG built-in a IrDA port which supports Serial Infrared(SIR) or Amplitude Shift Keyed IR(ASKIR) interface. While using the IrDA port, the user have to set SIR or ASKIR model in the BIOS's Peripheral Setup's COM 2. Then the normal RS-232 COM 2 will be disabled.

● **CN4: IrDA connector**

PIN NO.	DESCRIPTION
1	VCC5V
2	N/C
3	IR-RX
4	Ground
5	IR-TX
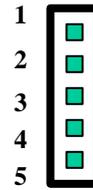
3.8 Fan Connector

The ROCKY-3785EV/ EVG provides CPU cooling fan connector. CPU connectors can supply 12V/500mA of power. The Fan rotates in full speed mode.

● **FAN2/FAN3: CPU Fan Connector**

PIN NO.	DESCRIPTION
3	Sensor
2	12V
1	Ground
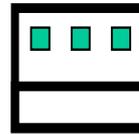
3.9 LAN RJ45 Connector

ROCKY-3786EVG is equipped with built-in Giga and 10/100Mbps Ethernet Controller. The user can connect it to LAN through RJ45 LAN connector. The pin assignments are shown in the following table:

● **CN17: 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

- **CN19: GIGA LAN RJ45 Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TXA+ (TX+)	5.	TXC-(N/C)
2	TXA-(TX-)	6.	TXB-(RX-)
3.	TXB+(RX+)	7.	TXD+(N/C)
4.	TXC+(N/C)	8.	TXD-(N/C)

- **CN12: LAN LED Connector**

1	100ACT+	2.	100ACT-
3	100LINK+	4.	100LINK-
5.	1G_ACT+	6.	1G_ACT-
7.	1G_ACT+	8.	1G_LINK-

3.10 VGA Connector

ROCKY-3786EVG built-in two VGA connectors for the user's monitor. Only one connector can be used at a time.

- **CN11: 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		

1	RED	2	DDCCLK
3	GREEN	4	DDC DAT
5	BLUE	6	GROUND
7	HSYNC	8	GROUND
9	VSYNC	10	GROUND

3.11 Audio Connectors

The AC'97 compliant CODEC supports 18bit AD/DA resolution and high S/N ratio. It provides 2 outputs – SPEAKER-OUT (with 250mW amplifier) and LINE-OUT (without amplifier), 3 inputs – LINE-IN, MIC-IN and CD-IN. The SPEAKER-OUT is mainly used for plug-in of headphone jacks.

CN14: AUDIO CONNECTOR

1.	LEFT SPEAKER OUT SIGNAL (*WITH OP AMPLIFIER*)
2.	RIGHT SPEAKER OUT SIGNAL (*WITH OP AMPLIFIER*)
3.	GROUND (*FOR SPK CONNECTOR*)
4.	GROUND (*FOR LINE OUT CONNECTOR*)
5.	LEFT LINE OUT SIGNAL
6.	RIGHT LINE OUT SIGNAL
7.	LEFT LINE IN SIGNAL
8.	RIGHT LINE IN SIGNAL
9.	GROUND (*FOR LINE IN CONNECTOR*)
10.	GROUND *(NO USE)*
11.	MIC IN
12.	GROUND (*FOR MIC IN CONNECTOR*)

CN13: CD-IN

1.	CD LEFT SIGNAL
2.	GROUND
3.	GROUND
4.	CD RIGHT SIGNAL

1 2 3 4
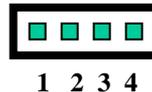
- **CN16: Left/Right Audio LINE-OUT Phone-Jack Connector, same output as LINE-OUT in CN14**

1.	GROUND
2.	LEFT SIGNAL
3.	NC
4.	RIGHT SIGNAL
5.	NC

3.12 Compact Flash Storage Card Socket (Optional)

The ROCKY-3786EV/EVG(U2) configures Compact Flash Storage Card in IDE Mode. This type II Socket is compatible with IBM Micro Drive.

- **CN25: Compact Flash Storage Card Socket pin assignment**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	26	CARD DETECT1
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS1#	32	CS3#
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	OBLIGATORY TO PULL HIGH
12	N/C	37	IRQ15
13	VCC	38	VCC
14	N/C	39	MASTER/SLAVE
15	N/C	40	N/C

16	N/C	41	RESET#
17	N/C	42	IORDY
18	A2	43	N/C
19	A1	44	OBLIGATORY TO PULL HIGH
20	A0	45	ACTIVE#
21	D0	46	PDIAG#
22	D1	47	D8
23	D2	48	D9
24	N/C	49	D10
25	CARD DETECT2	50	GROUND

3.13 External Switches and Indicators

There are several external switches and indicators for monitoring and controlling the user's CPU board. All the functions are in the CN24 connector.

● **CN24: Multi Panel**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1.	POWER-LED +	2	SPEAKER -
3.	N/C	4	N/C
5.	POWER-LED -	6	N/C
7.	N/C	8	SPEAKER +5V
9.	N/C	10	RESET SW
11.	GND	12	RESET SW GND
13.	HDD LED +	14	HDD LED -

● **CN5: ATX Power Switch Connector**

PIN NO.	DESCRIPTION
1	PWR_BUTTON+
2	PWR_BUTTON-

● **CN20: ATX Power +5VSB and PSON# Connector**

PIN NO.	DESCRIPTION
3	Ground
2	PSON#
1	+5VSB
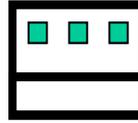
3 2 1

3.14 ATX Power Connector

The ROCKY-3705EV/EVG can work without backplane, while external power is attached to this ATX connector.

● **CN21: ATX Power Supply Connector**
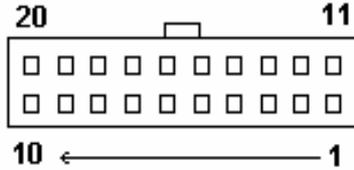
CN21 is a 20-pin ATX Power Supply Connector. Please refer to the following table for the pin assignments.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
11	3.3V	1	3.3V
12	-12V	2	3.3V
13	GND	3	GND
14	PSON#	4	+5V
15	GND	5	GND
16	GND	6	+5V
17	GND	7	GND
18	-5V	8	Power good
19	+5V	9	+5VSB
20	+5V	10	+12V

4. Award BIOS Setup

4.1 Introduction

This chapter discusses the Setup program written in the BIOS. It will give the user a step-by-step guidance to configure the system.   The user-defined configuration is then stored in battery-backed CMOS RAM, which retains the customized information when power is turned off.

4.2 Starting Setup

The BIOS is immediately active when the user turn on the computer. While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Del> immediately after switching the system on, or
2. By pressing the <Del> key when the following message appears at the bottom of the screen during POST (Power On Self-Test):

   Press DEL to enter SETUP

If the message passed before the user can respond to it and the user still wish to enter Setup, please turn off the power to restart the system; or simply press the "RESET" button on the system case to reboot.   The user may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.   If the user do not press the keys at the right timing and the system does not boot, an error message will be displayed and the user will prompted to…

   PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

4.3 Using Setup

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

Key	Function
Up Arrow	Move to the previous item
Down Arrow	Move to the next item
Left Arrow	Move to the item on the left (menu bar)
Right Arrow	Move to the item on the right (menu bar)
Esc	Main Menu: Quit without saving changes Submenus: Exit Current page to the next higher level menu
Move Enter	Move to the item the user desired
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
Esc key	Main Menu -- Quit and save no changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1 key	General help on Setup navigation keys
F5 key	Load previous values from CMOS
F6 key	Load the fail-safe defaults from BIOS default table
F7 key	Load the optimized defaults
F10 key	Save all the CMOS changes and exit

4.4 Main Menu

Once the user enter the AwardBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows the user to select from several setup functions and two exit choices. Use the arrow keys to go through the items and press <Enter> to accept and enter the sub-menu.

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

Standard CMOS Features	Frequency/Voltage Control
Advanced BIOS Features	Load Fail-Safe Defaults
Advanced Chipset Features	Load Optimized Defaults
Integrated Peripherals	Set Supervisor Password
Power Management Setup	Set User Password
PnP/PCI Configurations	Save & Exit Setup
PC Health Status	Exit Without Saving
Esc : Quit	↑ ↓ ← → : Select Item
F10 : Save & Exit Setup	
Time, Date, Hard Disk Type….	

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

4.4.1 Setup Items

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

Standard CMOS Features

Use this menu for basic system configuration. See Section 4.5 for the details.

Advanced BIOS Features

Use this menu to set the Advanced Features available on the user's system. See Section 4.6 for the details.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize the user's system's performance. See section 4.7 for the details.

Integrated Peripherals

Use this menu to configure the user's settings for integrated peripherals. See section 4.8 for the details.

Power Management Setup

Use this menu to configure the user's settings for power management. See section 4.9 for the details.

PnP / PCI Configuration

This entry appears if the user's system supports PnP / PCI. See section 4.10 for the details.

PC Health Status

Use this menu to monitor the user's System's Power voltage , Fan speed , CPU / System temperature . See section 4.11 for the details.

Frequency/Voltage Control

Use this menu to configure the user's settings for frequency/voltage control. See section 4.12 for the details.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for the user's system to operate. See section 4.13 for the details.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs. See section 4.13 for the details.

Supervisor / User Password

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

Save & Exit Setup

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

Exit Without Save

Abandon all CMOS value changes and exit setup. See section 4.15 for the details.

4.5 Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value the user want in each item.

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

```
┌─────────────────────────────────────────┬──────────────────────┐
│   Date:            Tue, Seq 17 2002      │     Item Help        │
│   Time:            16:19:20              │                      │
│                                          │  Menu Level     ➢    │
│ ➢  IDE Primary Master   HD Model Name    │                      │
│ ➢  IDE Primary Slave     <Press Enter>   │  Change  the  day,   │
│    None                                  │  month,  year  and   │
│ ➢  IDE Secondary Master <Press Enter>    │  century             │
│    None                                  │                      │
│ ➢  IDE Secondary Slave   <Press Enter>   │                      │
│    None                                  │                      │
│                                          │                      │
│   Drive A               1.44M, 3.5 in.   │                      │
│   Drive B               None             │                      │
│                                          │                      │
│   Video                 EGA/VGA          │                      │
│   Halt On               All,But Keyboard │                      │
│                                          │                      │
│   Based Memory                 640K      │                      │
│   Extended Memory           65535K       │                      │
│   Total Memory               1024K       │                      │
│                                          │                      │
├──────────────────────────────────────────┴─────────────────────┤
│  ↑↓←→Move  Enter: Select  +/-/PU/PD: Value  F10:Save  ESC:      │
│ Exit  F1:General Help                                           │
│ F5:Previous Values    F6:Fail-safe defaults     F7:Optimized    │
│ Defaults                                                        │
└─────────────────────────────────────────────────────────────────┘
```

Figure 1: The Main Menu

Main Menu Selections

Item	Options	Description
Date	MM DD YYYY	Set the system date.
Time	HH : MM : SS	Set the system time
IDE Primary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary	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 Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the type of floppy disk drive installed in the user's system
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which the user want the BIOS to stop the POST process and notify the user
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
		Menu Level ➢➢
IDE Primary Master	Auto	
Access Mode	Auto	
		To auto-detect the HDD's size, head… on this channel
Capacity	15362 MB	
Cylinder	29765	
Head	16	
Precomp	0	
Landing Zone	29764	
Sector	63	

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

Figure 2 IDE Primary Master sub menu

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

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Selecting 'manual' lets the user set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let the user select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Capacity	Auto Display the user's disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
Access Mode	CHS LBA Large Auto	Choose the access mode for this hard disk

Table 3 Hard disk selections

4.6 Advanced BIOS Features

This section allows users to configure the system for basic operation. The options for 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 ➢
Process Number feature	Enabled	
Quick Power On Self Test	Enabled	Allows the user to choose the
LAN (CN17/UP) BootROM	Disable	VIRUS warning feature for IDE
First Boot device	Floppy	Hard Disk boot sector
Second Boot device	HDD-0	protection. If this function is
Third Boot device	LS120	enabled and someone attempt
Boot other device	Enabled	to write data into this area,
Swap Floppy Drive	Disabled	BIOS will show a warning
Boot Up Floppy Seek	Enabled	message on screen and alarm
Boot Up NumLock Status	On	beep
Gate A20 Option	Fast	
Typematic Rate Setting	Disabled	
Typematic Rate (Chars/Sec)	6	
Typematic Delay (Msec)	250	
Security Option	Setup	
Time Out(Sec.)For IDE Auto	2	
OS Select For DRAM > 64MB	Non-OS2	
Report NO FDD For Win 95	No	
Small Logo(EPA) Show	Disabled	

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

Virus Warning

Allows users to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempts to write data into this area, BIOS will show a warning message on screen and alarm beep will be heard.

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 the user to enable/disable CPU L2 Cache ECC checking.

The Choice: Enabled, Disabled.

Processor Number Feature

This item allows the user to enable/disable support KLAMATH.

The Choice: Enabled, Disabled.

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after the user 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

LAN（CN17/UP) BootROM

Enabled/Disabled LAN BootROM

First/Second/Third/Other Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

The Choice: Floppy, LS120, HDD0-3, SCSI, CDROM, ZIP 100 , LAN, Disabled.

Swap Floppy Drive

If the system has two floppy drives, the user can swap the logical drive name assignments.

The Choice: Enabled/Disabled.

Boot Up Floppy Seek

Seeks disk drives during boot up. Disabling speeds boot up.

The Choice: Enabled/Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

The Choice: On/Off.

Gate A20 Option

Select if chipset or keyboard controller should control GateA20.

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

Typematic Rate Setting

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 the user 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 the user 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 the user 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 the user 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.

Report No FDD For Win 95

Whether report no FDD for Win 95 or not.

The Choice: Yes, No.

Small Logo(EPA) Show

Enabled/Disabled Small LOGO(EPA) Show

4.7 Advanced Chipset Features

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Advanced Chipset Features

SDRAM CAS Latency Time	3	Item Help
SDRAM Cycle Time Tras/Trc	Auto	_____
SDRAM RAS-to-CAS Delay	Auto	Menu Level ➢
SDRAM RAS Precharge Time	Auto	
System BIOS Cacheable	Disabled	
Video BIOS Cacheable	Disabled	
Memory Hole At 15M-16M	Disabled	
CPU Latency Timer	Enabled	
Delayed Transaction	Enabled	
AGP Graphics Aperture Size	64MB	
System Memory Frequency	Auto	
Power – Supply Type	ATX	
Special NT4.0 DRAM Report	Disabled	
On-Chip VGA	Enabled	

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

This section allows the user 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 the user's system.

DRAM Settings

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if the user's system had mixed speed DRAM chips installed so that greater delays may

be required to preserve the integrity of the data held in the slower memory chips.

SDRAM CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing.

The Choice: 2, 3

SDRAM Cycle Time Tras/Trc

Select the number of SCLKs for an access cycle.

The Choice: 5/7, 6/8.

SDRAM RAS-to-CAS Delay

This field lets the user insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. *Fast* gives faster performance; and *Slow* gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

The Choice: 2, 3.

SDRAM RAS Precharge Time

If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. *Fast* gives faster performance; and *Slow* gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

The Choice: 2, 3.

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.

Video BIOS Cacheable

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

The Choice: Enabled, Disabled.

Memory Hole At 15M-16M

The user 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.

CPU Latency Timer

Enabled : CPU cycle will only be Deferred after in has been in a "Snoop Stall" for 31 clocks and another ADS# has arrived.

Disabled: CPU cycle will only be Deferred immediately after the GMCH receives another ADS#.

The Choice: Enabled, Disabled.

Delay Transaction

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

The Choice: Enabled, Disabled.

AGP Graphics Aperture Size

Select the on-chip video window size for VGA drive use.

The Choice: 32MB, 64MB,

System Memory Frequency

When AUTO , system can automatic set memory frequency .
AUTO / 100 / 133 Memory frequency

Power Supply

When ATX , the user's system use ATX power supply .
ATX/AT power supply.

On – chip VGA

When Enable , the user's can enable on chip VGA controller .
Enable/Disable On – Chip VGA.

4.8 Integrated Peripherals

```
         CMOS Setup Utility – Copyright © 1984 – 2000  Award Software
               Integrated Peripherals
   ┌──────────────────────────────────────────┬─────────────────────┐
   │ On-Chip Primary   PCI IDE    Enabled      │      Item Help      │
   │ On-Chip Secondary PCI IDE    Enabled      │ ─────────────────── │
   │ IDE Primary Master PIO       Auto         │ Menu Level     ➢    │
   │ IDE Primary Slave  PIO       Auto         │ If the user's IDE   │
   │ IDE Secondary Master  PIO    Auto         │ hard drive supports │
   │ IDE Secondary Slave   PIO    Auto         │ block mode select   │
   │ IDE Primary Master UDMA      Auto         │ Enabled for         │
   │ IDE Primary Slave   UDMA     Auto         │ automatic detection │
   │ IDE Secondary Master  UDMA   Auto         │ of the optimal      │
   │ IDE Secondary Slave   UDMA   Auto         │ number of block     │
   │ Init Display First           PCI Slot     │ read/write per sector│
   │ USB (CN6) Controller         Enabled      │ the drive can       │
   │ USB (CN6) Keyboard Support   Enabled      │ support             │
   │ AC97 Audio                   Enabled      │                     │
   │ IDE HDD Block Mode           Enabled      │                     │
   │ Power ON Function            BUTTON ONLY  │                     │
   │ KB Power On Password         Enter        │                     │
   │ Hot Key Power ON             Ctrl-F1      │                     │
   │ Onboard FDC Controller       Enabled      │                     │
   │ Onboard Serial Port 1        3F8/IRQ4     │                     │
   │ Onboard Serial Port 2        2F8/IRQ3     │                     │
   │ UART Mode Select             Normal       │                     │
   │ UR2 Duplex Mode              Half         │                     │
   │ Onboard Parallel Port        378/IRQ7     │                     │
   │ Parallel Port Mode           SPP          │                     │
   │ ECP Mode Use DMA             3            │                     │
   │ PWRON After PER-Fail         Off          │                     │
   ├──────────────────────────────────────────┴─────────────────────┤
   │ ↑↓←→ Move   Enter: Select  +/-/PU/PD: Value   F10:Save   ESC: Exit│
   │ F1:General Help                                                  │
   │ F5:Previous Values   F6:Fail-safe defaults     F7:Optimized Defaults│
   └──────────────────────────────────────────────────────────────────┘
```

There are some item in bottom of scroll.

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.

The Choice: Enabled, Disabled.

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let the user 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.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA-33/66 implementation is possible only if the user's 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 the user's hard drive and the user's system software both support Ultra DMA-33/66, select Auto to enable BIOS support.

The Choice: Auto, Disabled.

USB Controller

Select *Enabled* if the user's system contains a Universal Serial Bus (USB) controller and the user have USB peripherals.

The Choice: Enabled, Disabled.

USB Keyboard Support

Select *Enabled* if the user's system contains a Universal Serial Bus (USB) controller and the user have a USB keyboard.

The Choice: Enabled, Disabled.

Onboard Audio Device

This item allows the user to decide to enable/disable the CMIDER CMI8738LX chipset family to support 6CH DAC for AC-3 5.1 channel purpose.

The Choice: Enabled, Disabled.

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If the user's 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 the user's system has a floppy disk controller (FDC) installed on the system board and the user wish to use it. If the user install and-in FDC or the system has no floppy drive, select Disabled in this field.

The Choice: Enabled, Disabled

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports.

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

UART Mode Select

Select a serial port 2 operation mode.

The Choice: Normal, IrDA, ASKIR, SCR

Onboard Parallel Port

Select an address and corresponding interrupt for the parallel ports.

The Choice: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, Disabled

Parallel Port Mode

Select a parallel operation mode.

The Choice: SPP, EPP, ECP,ECP+EPP

4.9 Power Management Setup

The Power Management Setup allows the user to configure the system to the most effective energy save while operating in a user defined environment.

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Power Management Setup

		Item Help
ACPI Function	Enabled	_____
ACPI Suspend Type	S1<POS>	
Power Management	User Define	Menu Level ➤
Video Off Method	DPMS	
Video Off In Suspend	Yes	
Suspend Type	Stop Grant	
MODEM Use IRQ	NA	
Suspend Mode	Disabled	
HDD Power Down	Disabled	
Soft-Off by PWR-BTTN	Instant-Off	
Power On by Ring	Enabled	
Resume by Alarm	Disabled	
X Date(of Month) Alarm	0	
X Time(hh:mm:ss) Alarm	0 : 0 : 0	
** Reload Global Timer	Events **	
Primary IDE 0	Disabled	
Primary IDE 1	Disabled	
Secondary IDE 0	Disabled	
Secondary IDE 1	Disabled	
FDD,COM,LPT Port	Disabled	
PCI, PIRQ[A-D]#	Disabled	

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

Power Management

This category allows the user to select the type (or degree) of power saving and is directly related to the following modes:
1. HDD Power Down
2. Doze Mode
3. Suspend Mode

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 the user 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.

Video Off Method

This determines the manner how the monitor becomes 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 In Suspend

This determines the manner in which the monitor is blanked.

The Choice: Yes, No.

SuspendType

Select the Suspend Type.

The Choice: PWRON Suspend, Stop Grant.

Suspend Mode

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

The Choice: 1Min, 2Min, 4Min, 8Min, 12Min, 20Min, 30Min, 40Min, 1Hour, Disabled.

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.

The Choice: 1Min, 2Min, 3Min, 4Min, 5Min, 6Min, 7Min, 8Min, 9Min, 10Min, 11Min, 12Min, 13Min, 14Min, 15Min, Disabled.

PM EVENTS

PM 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 *Enabled* , even when the system is in a power down mode.

> **Primary IDE 0**
> **Primary IDE 1**
> **Secondary IDE 0**
> **Secondary IDE 1**
> **FDD, COM, LPT Port**
> **PCI PIRQ[A-D] #**

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.

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PnP/PCI Configurations

		Item Help
PNP OS Installed	NO	
Reset Configuration Data	Disabled	----------------------
		Menu Level ➢
Resources Controlled By	Auto(ESCD)	
x IRQ Resources	Press Enter	Default is Disabled.
x DMA Resources	Press Enter	Select Enabled to reset Extended System Configuration Data(ESCD) when the
PCI/VGA Palette Snoop	Disabled	user exit Setup if the
PCI Latency Timer(CLK)	32	user have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot

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

Reset Configuration Data

Normally, the user leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when the user exit Setup if the user 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 the user are using a Plug and Play operating system such as Windows®95. If the user 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

This item allows the user to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. 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: PCI Device, Reserved.

PCI/VGA Palette Snoop

Leave this field at *Disabled*.

The Choice: Enabled, Disabled.

4.11 PC Health Status

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PC Health Status

		Item Help
CPU VCORE	1.40V	------------------------
VTT	1.23V	
+3.3V	3.29V	Menu Level ➢
+5V	4.99V	
+12V	12.03V	
-12V	(-)11.86V	
-5V	(-)5.10V	
+5VSB	5.02V	
Voltage Battery	3.07V	
CPU Temperature	38°C	
System Temperature	37°C	
Fan 2 Spend	6026	
Fan 3 Spend	0	
↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help		
F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

Note: Normally, the CPU Fan RPM is over than 5000 RPM. If the user's CPU Fan RPM is less than this figure, something is wrong and the CPU will be in overheat condition. Make sure that the connection at Fan1/Fan2 is correct.

4.12 Frequency/Voltage Control

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

Auto Detect DIMM/PCI Clk	Disabled	Item Help
Spread Spectrum	Disabled	----------------------
CPU Host/PCI Clock	Disabled	Menu Level ➢
CPU Clock Ratio	X 4	

↑↓←→ 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 the user to enable/disable auto detect DIMM/PCI Clock.

The Choice: Enabled, Disabled.

Spread Spectrum

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

The Choice: Enabled, Disabled.

CPU Host / PCI Clock

This item allows the user to select CPU Host and PCI clock.

The Choice:
Default,130/33,133/33,137/34,140/35,145/36,150/38(M)

CPU Clock Ratio

This item allows the user to select CPU clock ratio.

The Choice:
4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8,8.5,9,9.5,10,10.5,11,11.5,12.

4.13 Defaults Menu

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

Load Fail-Safe Defaults
When the user press <Enter> on this item the user 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 the user press <Enter> on this item the user get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ? N

Pressing 'Y' loads the default values that are factory settings for optimal performance system operations.

4.14 Supervisor/User Password Setting

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

Supervisor Password : for entering and changing the settings of the system.

User Password :   for just entering the system but does not have the privilege to change any settings of the system.

If this function is enabled, the following message will appear to guide the user to create 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. The user will be asked to confirm the password. Type the password again and press <Enter>. The user may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when the user 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 the user can enter Setup freely.

PASSWORD DISABLED:
When a password has been enabled, the user will be prompted to enter it every time the user try to enter Setup. This prevents an unauthorized person from changing any part of the user's system configuration.

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

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

4.15 Exit Selecting

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

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

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after the user turn the user's system off. The next time the user boot the user's computer, the BIOS configures the user's 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 the user to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts the user's computer.

Appendix A. Watchdog Timer

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. These conditions may result from an external EMI or a software bug. When the system stops working correctly, 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 Watch-Dog Timer.

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

Prior to enable the Watch-Dog 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. The user need to send the time-out value to the I/O port – 443H, and then enabling 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 Watch-Dog Timer must be periodically refreshed by reading the same I/O port 443H. This must be done within the time-out period, please refer to the example program. Finally, we have to disable the Watch-Dog 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 THE USER'S APPLICATION HERE

CMP EXIT_AP, 0
JNE W_LOOP
MOV DX, TIMER_STOP
IN AL, DX
;;EXIT AP

Appendix B. Address Mapping

IO Address Map

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

1st MB Memory Address Map

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

*Default Setting

IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	Available
IRQ2	Cascade to IRQ Controller	IRQ10	AC'97 CODEC
IRQ3	COM2	IRQ11	Intel 82562ET LAN
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	Available	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Printer	IRQ15	Secondary IDE

DMA Channel Assignments

Channel	Function
0	Available
1	Available
2	Floppy disk (8-bit transfer)
3	Available
4	Cascade for DMA Controller 1
5	Available
6	Available
7	Available

Appendix C.
How to Upgrade a New BIOS

The user can install an upgrade BIOS for the ROCKY-3786EV/EVG(U2) that can be downloaded from the manufacturer's web site (www.e-icp.com.tw). New BIOS may support new peripherals ,improvements in performance or amendments to system addressed known bugs.

BIOS Update Procedure:

1. Make a boot disk. Go to the DOS command prompt in MS-DOS or Windows 9x and, with an available floppy disk in "A", type "format A: /s" That will format the floppy and transfer the needed system files to it.

NOTES:
  A. This procedure will erase any prior data on that floppy, so please proceed accordingly.
  B. Typically four files will be transferred, only COMMAND.COM being visible when running a simple directory listing.
  C. Please leave the diskette UN-write protected for the balance of this procedure.

2. Download the BIOS upgrade file and awdflash.exe utility from a ICP web site to a temp directory on the user's hard drive, or directly to the floppy the user made in step 1..

3. Copy (BIOS file and awdflash.exe)two files to the boot floppy.

4. Reboot the system to the DOS command prompt using the boot diskette the user just made.

5. At the DOS command prompt type , "awdflash filename.xxx", where filename.xxx is the file name of the BIOS file. Hit enter.

6. The user's first option, in sequence, will be to save the old BIOS. We recommend that the user do that in case, for whatever reason, the user decide the user don't wish to use the new version once it is installed.
NOTES:
   A. If the user decide to save the old BIOS, PLEASE make sure the user do NOT save it to the same file name as the new BIOS - if the user use the same BIOS name the old file will be written over the new file with NO warning prompt. A simple file name to save the old BIOS to is OLDBIOS.BIN.
   B. If the user do NOT decide to save the old BIOS, PLEASE at least write down the version number of the old BIOS and store that information with the user's important computer documents. Enter N (for "no") and skip to step 9.

7. To save the old BIOS, hit Y (for "yes")

8. Enter a name for the OLD BIOS file and hit enter.
NOTE: PLEASE be sure the user do NOT save the old BIOS file to the same file name as the new BIOS - if the user use the same BIOS name, the old file will write over the new BIOS file WITHOUT a warning prompt. A simple file name for saving the old BIOS to is OLDBIOS.BIN.

9. The user's second option, in sequence, will be whether the user want to flash the user's BIOS. Enter Y (for "yes").

NOTE: This is the critical step. Once the user kit the enter key, do NOT touch the keyboard, the reset button, or power switch while the flashing is in progress. There will be bar progressing across the screen while the flashing is progressing.

10. When the flashing process is complete, the user will be asked to reset or power off the system. Remove the floppy diskette from the floppy drive and either hit the reset button or the power button.

11. Reboot the system and note that the BIOS version on the initial boot-up screen has changed to the new BIOS version. The user's BIOS upgrade is now complete.

Recovering The user's Old BIOS:
1. Assuming the user have the floppy made during the upgrade procedure noted above, boot the system with that diskette in the floppy drive. If the user do not have floppy made during the upgrade procedure noted above, the user will need to repeat steps 1 though 3 (above) for the version of the BIOS the user wish to recover to.

2. Complete steps 4, 5, 6B, 9, 10, and 11 (above) substituting the name of the BIOS the user wish to recover for the upgrade BIOS at step 5.

Install screen :

```
        FLASH   MEMORY   WRITER V6.6
     (C)Award Software 1998 All Rights Reserved
                                          .

        Flash Type -

   File Name to Program : █

   Error Message:
```

Appendix D. ATX Power Supply

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

A. For backplanes with ATX Connector

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

ROCKY-3786EV/EVG(U2)
 (through Power Button & GND):
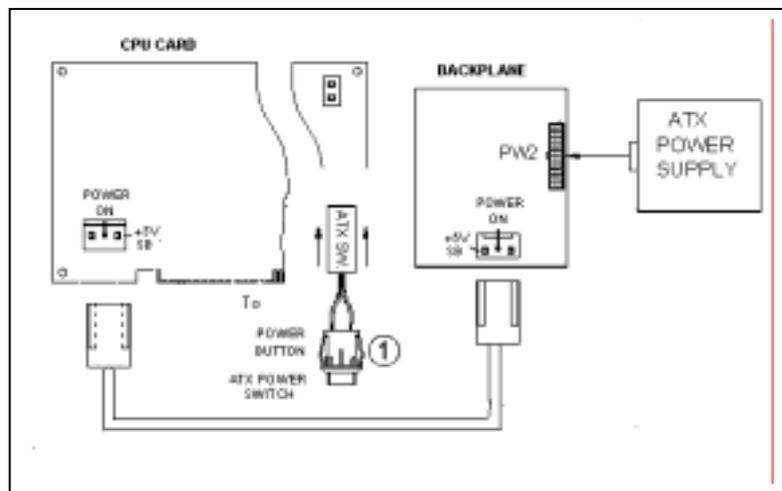
Connect the ATX power button switch to the CN5 (power button). And connect the power cable from backplane to CN20 of CPU card.

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

① P/N: 8202-1001001

② P/N: 8202-1001101
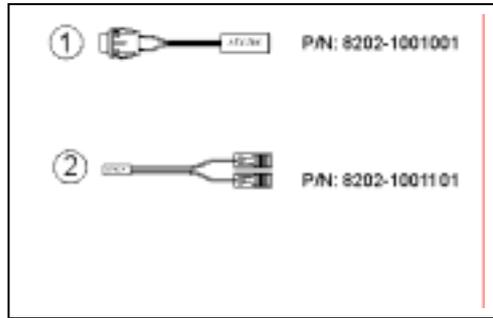
B. For the backplanes with ATX power supply connector

For some SBC without ATX power ON/OFF function, then the user 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. The user may now turn the power ON/OFF by the power switch
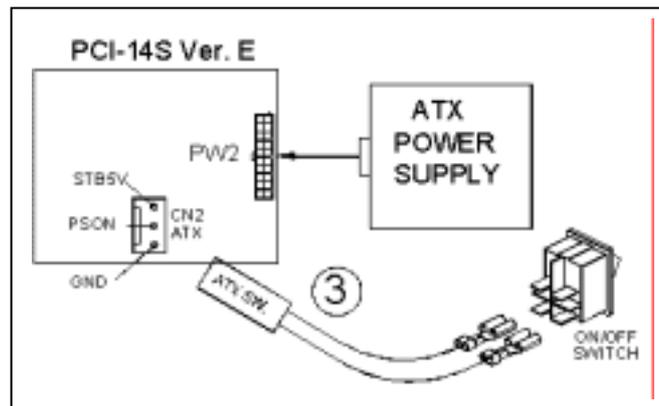
Appendix E. E^2 Key™ Function

The ROCKY-3786EVG provides an outstanding E^{2}KEY™ function for system integrator. Based on the E^{2}KEY™, the user can free to store the ID Code, Password or Critical Data in the 1Kbit EEPROM. Because the EEPROM is nonvolatile memory, the user don't have to worry for losing very important data.

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

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

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

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

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

*/**void write_e2key(unsigned int address,unsigned data)**

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

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

Please note that the E^{2}KEY™ function is based on the working of parallel port. So the user should enable the ROCKY-3702EV's parallel port, otherwise it will not work.