ROCKY – 058HV
Pentium® & VGA SBC
Ver 1.0

Manual first edition Nov.15, 1999

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Introduction

Welcome to the ROCKY-058HV Pentium® w/ VGA Single Board Computer. The ROCKY-058HV board is an ISA bus form factor board, which equipped with high performance Pentium® CPU 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.

This board built-in DiskOnChip™(DOC) Flash Disk Socket for embedded application. The DOC Flash Disk is 100% software compatible to hard disk. User can use any DOS command without any extra software utility.

An advanced high performance super AT I/O chip – Winbond W83877F is used in the ROCKY-058HV board. Both on-chip UART are compatible with the NS16C550.

In addition, the ROCKY-058HV provides one 168-pin DIMM socket for it's on-board DRAM. DIMM module is 3.3V SDRAM.and max. 128MB for one module.

ROCKY-058HV uses the advanced SIS Chipset,5598 which is 100% ISA compatible chipset.

1.1 Specifications :

The ROCKY-058HV Pentium w/ VGA Single Board Computer provides the following specification:

- **CPU** : Pentium® MMX up to 233Mhz, AMD K5/K6/K6-2 processor,

  Cyrix 6x86MX processor

- **Bus Interface** : ISA bus
- **Bus Speed** : ISA 8MHz
- **DMA channels** : 7
- **Interrupt levels** : 15
- **Chipset** : Sis 5598
- **VGA :** Built-in the SIS 5598 Chipset

  Resolution : 1280x1024,256 color,75Hz

  1024x768, 64K color,75Hz

  800x600,full color,90Hz

  More information : **www.sis.com.tw**

- **Real-time clock / calendar** : SGS M4T28 or equivalent device.
- **RAM memory** : up to 128MB SDRAM
- **Second Cache memory** : 512KB Pipelined Burst SRAM on board
- **Ultra DMA/33 IDE Interface** : up to two PCI Enhance 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 change for customer's current accessory.
- **Floppy disk drive interface** : Support up to two floppy disk drives, 5.25"(360KB and 1.2MB) and/or 3.5" (720KB, 1.44MB, and 2.88MB) .
- **Series 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 disable

- **Bi-directional Parallel Port :** Configurable to LPT1, LPT2, LPT3 or disabled. Supports EPP/ECP/SPP
- **IrDA port :** Support Serial Infrared(SIR) and Amplitude Shift Keyed IR(ASKIR) interface.
- **USB port :** Support USB port for future expansion.
- **Watch-dog timer** : can be set by 1~255 seconds period. Reset or NMI was generated when CPU did not periodically trigger the timer.
- **Flash Disk Socket:** the DiskOnChip™ compatible 32-pin dip socket provided for Flash Disk (DiskOnChip™) application which will let customer 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 pin header connector are also available on board, located on CN13.
- **Power Consumption** : +5V @ 6A

  (Pentium® MMX-200,32MB SDRAM)

  +12V @ 170mA , -12V@60mA
- **Operating Temperature** : 0◦ ~ 55◦ C (CPU needs Cooler)

1.2 What You Have

In addition to this *User's Manual*, the ROCKY-058HV package includes the following items:

- ROCKY-058HV Pentium® w/ VGA SBC
- One RS-232 and Printer Cable with bracket
- One FDD Cable
- One HDD Cable
- One 6-pin Mini-Din convert to two 6-pin Din cable for keyboard and mouse connection.

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

2

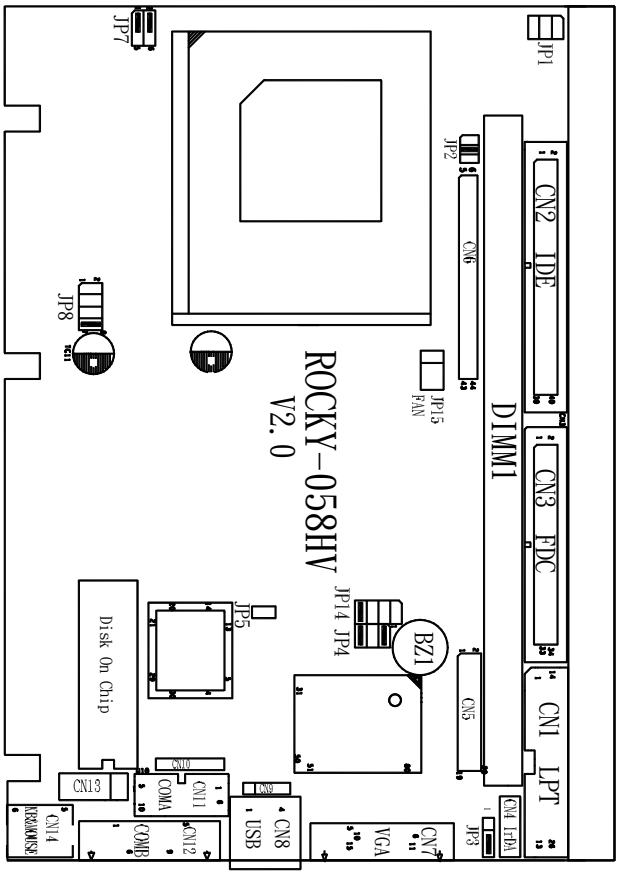
Installation

This chapter describes how to install the ROCKY-058HV. At first, the layout of ROCKY-058HV is shown, and the unpacking information that you should be careful is described. The jumpers and switches setting for the ROCKY-058HV's configuration, such as CPU type selection, system clock setting, and watch dog timer, are also included.

2.1 ROCKY-058HV's Layout

< Please refer to the next page >

2.1 ROCKY-058HV's Layout



2.2 Setting the CPU of ROCKY-058HV

Bold line is the factory setting jumper.

- **CPU Clock Setting :**

CPU Speed/Clock	JP1 1-2	JP1 3-4	JP1 5-6
55MHz	CLOSE	CLOSE	OPEN
60MHz	CLOSE	OPEN	OPEN
66MHz	**OPEN**	**OPEN**	**OPEN**
75MHz	OPEN	CLOSE	CLOSE

- **CPU frequency ratio :**

Multiplier	JP2 1-2	JP2 3-4	JP2 5-6
1.5 x	OPEN	OPEN	OPEN
2x	CLOSE	OPEN	OPEN
2.5x	CLOSE	CLOSE	OPEN
3 x	**OPEN**	**CLOSE**	**OPEN**
3.5 x	OPEN	OPEN	OPEN
4 x	CLOSE	OPEN	CLOSE
4.5 x	CLOSE	CLOSE	CLOSE
5 x	OPEN	CLOSE	CLOSE
5.5 x	OPEN	OPEN	CLOSE
6 x	CLOSE	OPEN	OPEN

CPU Frequency = CPU Clock x Multiplier for example Pentium® 200MHz = 66MHz CPU Clock x 3

- **CPU Core Voltage Selection :**
  Please check the CPU Core Voltage before you install the CPU. Right now new Intel MMX CPU is dual voltages for core and I/O, the I/O is 3.3V but the core is 2.8V. This kind of CPU design will enhance the low power consumption capability. As for the general Pentium® CPU is one voltage for I/O and Core – 3.3V,3.4V,or 3.5V.

- **JP8 CPU Core Voltage Setting :**

CPU Core Voltage	JP8 1-2	JP8 3-4	JP8 5-6	JP8 7-8
3.5V(P54C/CS) VRE	CLOSE	CLOSE	CLOSE	CLOSE
3.4V(P54C/CS) STD	OPEN	CLOSE	CLOSE	CLOSE
3.3V	CLOSE	OPEN	CLOSE	CLOSE
3.2V	OPEN	OPEN	CLOSE	CLOSE
3.1V	CLOSE	CLOSE	OPEN	CLOSE
3.0V	OPEN	CLOSE	OPEN	CLOSE
2.9V	CLOSE	OPEN	OPEN	CLOSE
2.8V (P55C)	**OPEN**	**OPEN**	**OPEN**	**CLOSE**
2.7V	CLOSE	CLOSE	CLOSE	OPEN
2.6V	OPEN	CLOSE	CLOSE	OPEN
2.5V	CLOSE	OPEN	CLOSE	OPEN
2.4V	OPEN	OPEN	CLOSE	OPEN
2.3V	CLOSE	CLOSE	OPEN	OPEN
2.2V	OPEN	CLOSE	OPEN	OPEN
2.1V	CLOSE	OPEN	OPEN	OPEN
2.0V	OPEN	OPEN	OPEN	OPEN

- **JP7 Dual / Single CPU Voltage setting :**

Vcore & VIO	1-3	2-4	3-5	4-6
Pentium (P54C)	OPEN	OPEN	CLOSE	CLOSE
Pentium MMX AMD K6 Cyrix 6x86MX Dual Voltage	**CLOSE**	**CLOSE**	**OPEN**	**OPEN**

2.3 System Memory DRAM

There is one 168-pin DIMM socket to accept 3.3V non-buffered SDRAM. The max. memory size is 128MB.

2.4 Watch-Dog Timer

The Watch-Dog Timer is enabled by reading 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 port 843H.

- **JP3 : Watch-Dog Active Type Setting**

JP3	DESCRIPTION
2-3	**RESET WHEN WDT TIME-OUT**
1-2	ACTIVATE NMI TO CPU WHEN WDT TIME-OUT
OPEN	DISABLE WDT

2.5 DiskOnChip™ Flash Disk

The DiskOnChip™ Flash Disk Chip(DOC) is produced by M-Systems. Because the DOC is 100% compatible to hard disk and DOS.Customer don‘t need any extra software utility. It is just “plug and play”, easy and reliable. Right now the DOC is available from 2MB to 144MB.**The MD-2200-Xmb series DOC will share only 8KB memory address.**

- **JP4 & JP14 : DiskOnChip Memory Address Setting**

ADDRESS	JP14				JP4		
	1-2	3-4	5-6	7-8	1-2	3-4	5-6
CC000	OPEN	OPEN	CLOSE	OPEN	OPEN	CLOSE	CLOSE
CE000	OPEN	OPEN	OPEN	CLOSE	OPEN	CLOSE	CLOSE
D0000	CLOSE	OPEN	OPEN	OPEN	CLOSE	OPEN	CLOSE
D2000	OPEN	CLOSE	OPEN	OPEN	CLOSE	OPEN	CLOSE
D4000	OPEN	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE
D6000	OPEN	OPEN	OPEN	CLOSE	CLOSE	OPEN	CLOSE

D8000	CLOSE	OPEN	OPEN	OPEN	OPEN	OPEN	CLOSE
DA000	OPEN	CLOSE	OPEN	OPEN	OPEN	OPEN	CLOSE
DC000	OPEN	OPEN	CLOSE	OPEN	OPEN	OPEN	CLOSE
DE000	OPEN	OPEN	OPEN	CLOSE	OPEN	OPEN	CLOSE
E0000	CLOSE	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN

2.6 Clear CMOS Setup

If want to clear the CMOS Setup(for example forgot the password you should clear the setup and then set the password again.),you should close the JP5 about 3 seconds, then open again. Set back to normal operation mode, open JP5.

- **JP5: Clear CMOS Setup (Reserve Function)**

JP5	DESCRIPTION
OPEN	**Normal Operation**
CLOSE	Clear CMOS Setup

2.7 System Memory Address Information

This board's chipset SIS 5598 provides share memory VGA function to lower system cost, which will use the system memory address from **C0000 to CBFFF**(total 48KB memory address) for VGA BIOS. If customers use external VGA or LCD drive card in the system, the ROCKY-058HV will automatic disable the on board

VGA function and free the **C0000 to C7FFF** memory address.

3

Connection

This chapter describes how to connect peripherals, switches and indicators to the ROCKY-058HV board.

3.1 Floppy Disk Drive Connector (CN3)

ROCKY-058HV board is 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	GROUND	30	READ DATA#
31	GROUND	32	SIDE 1 SELECT#
33	GROUND	34	DISK CHANGE#

3.2 PCI E-IDE Disk Drive Connector (CN2, CN6)

You can attach four IDE(Integrated Device Electronics) hard disk drives to the ROCKY-058HV IDE controller.

CN2 (IDE 1) :40-pin Primary IDE Connector (3.5"HDD)
CN6 (IDE 2) :44-pin Secondary Mini-pitched IDE Connector (2.5"HDD)

- **CN2 : Primary 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	IDE DRQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	IDE CHRDY	28	GROUND
29	IDE DACK	30	GROUND – DEFAULT
31	INTERRUPT	32	NC
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND

- **CN6 : Secondary 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	IDE DRQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	IDE CHRDY	28	GROUND
29	IDE DACK	30	GROUND – DEFAULT
31	INTERRUPT	32	N/C
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND
41	VCC	42	GROUND
43	GROUND	44	GROUND

3.3 Parallel Port (CN1)

This port is usually connected to a printer, The ROCKY-058HV includes an on-board parallel port, accessed through a 26-pin flat-cable connector CN1.

- **CN1 : 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	N/C

3.4 Series Ports (CN12, CN11)

The ROCKY-058HV offers two high speed NS16C550 compatible UARTs with 16 byte FIFO serial ports.

- **CN12 : Serial Port DB-9 Connector(COMB)**

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)

- **CN11 : Serial Port 10-pin Header(COMA)**

Pin No.	Description	Pin No.	Description
1	DCD	2.	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	NC

3.5 Keyboard & PS/2 Mouse Connector (CN14)

A 6-pin mini DIN connector(CN14) is located on the mounting bracket for easy connection to a keyboard or PS/2 mouse. The card comes with an cable to convert from the 6-pin mini-DIN connector to two 6-pin mini-DIN connector for keyboard and mouse connection

- **CN14 : 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

For alternative application , a keyboard pin header connector are also available on board , located on CN13.

- **CN13 : 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 (CN5)

There are several external switches and indicators for monitoring and controlling your CPU board. All the functions are in the CN5 connector.

- **CN5 : General Connectors**

1	5V	2.	Speaker Signal
3.	NC	4.	NC
5	GND	6	5V
7.	KEYLOCK	8.	GND
9.	GND	10.	GND
11.	GND	12.	RESET
13.	NC	14.	HDD LED
15.	PSON	16.	5V
17.	AUX5V	18.	To JP9 Pin 2
19.	AUX5V	20.	GND

3.7 USB Port Connector

The ROCKY-058HV provides two USB interfaces, which gives the completed plug and play, for up to 127 external devices. One standard USB connector located on the central of metal bracket, while the other was via pin head connector located on the board at CN9, next to the CN8.

- **CN8 : External USB Connector**

1	5V
2.	-DATA1
3.	+DATA1
4.	GND

- **CN9 : Internal USB pin head Connector**

1	5V
2.	-DATA0
3.	+DATA0
4.	GND

3.8 IrDA Infrared Interface Port (CN4)

The ROCKY-058HV built-in a IrDA port which support Serial Infrared(SIR) or Amplitude Shift Keyed IR(ASKIR) interface. When use the IrDA port have to set SIR or ASKIR model in the BIOS's Peripheral Setup's COM2. Then the normal RS-232 COM2 will be disabled.

- **CN4 : IrDA connector**

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

3.9 VGA Connector (CN7)

The ROCKY-058HV built-in 15-pin VGA connector directly to your CRT monitor.

- **CN7 : 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		

3.10 Fan Connector (JP15)

The ROCKY-058HV provides CPU cooling fan connector JP15 which can supply 12V/500Ma max. to the cooling fan. It is limited in fan using, thus, don't use it for other purpose.

- **JP15 : Fan Connector**

PIN NO.	DESCRIPTION
1	NC
2.	12V
3.	Ground

3.11 External Power Connector

The ROCKY-058HV has an on-board external power connector CN10. You can connect power directly to the CPU board without passive backplane application.

- **CN10 : External Power Connector**

PIN NO.	DESCRIPTION
1	VCC
2	VCC
3	GROUND
4	GROUND
5	+12V
6	-12V

4

AWARD BIOS Setup

The ROCKY-058HV uses the AWARD PCI/ISA BIOS for system configuration. The AWARD BIOS setup program is designed to provide maximum flexibility in configuring the system by offering various options which may be selected for end-user requirements. This chapter is written to assist you in the proper usage of these features.

4.1 Getting Start

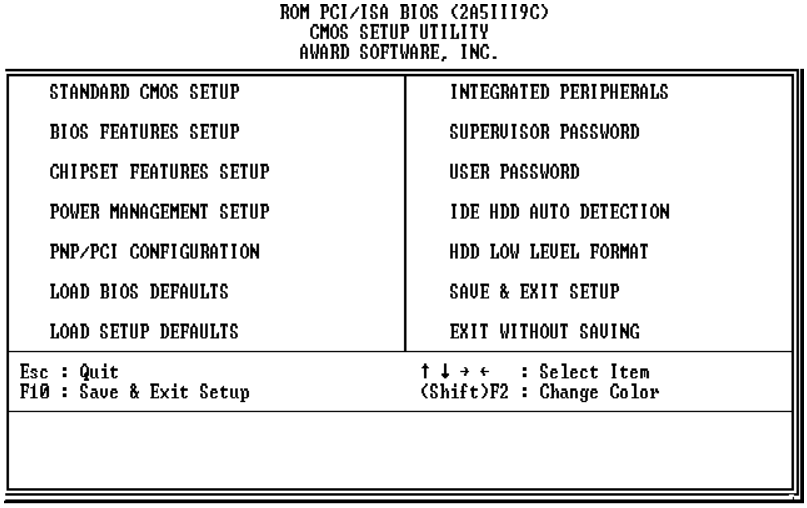
When power on the system, the BIOS will enter the Power-On-Self-Test routines. These routines will be executed for system test and initialization and system configuration verification. After the POST routines are completed, the following message appears :

" Hit DEL if you want to run SETUP"

To access AWARD PCI/ISA BIOS Setup program, press <Del> key. The following screen will be displayed at this time.

When choose **Load BIOS Defaults** will load the minimized settings for Troubleshooting. The performance should be very poor when use this setting.

When choose **Load Setup Defaults** will load optimized defaults for regular use. Choosing this setting, will modify all applicable settings.



4.2 Standard CMOS Setup

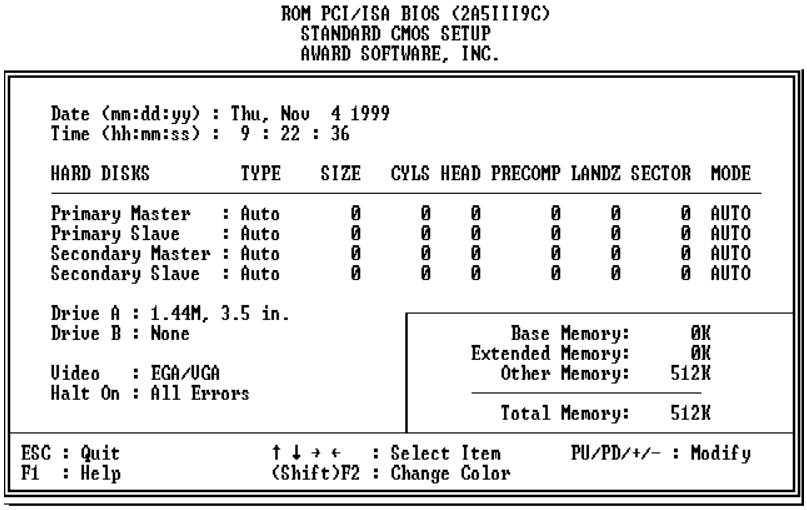
The Standard CMOS Setup is used for basic hardware system configuration. The main function is for Date/Time setting and Floppy/Hard Disk Drive setting. Please refer the following screen for this setup.

For IDE hard disk drive setup,please check the following possible setup procedure,

1. Use the Auto setting for detection during bootup.
2. Use the IDE HDD AUTO DETECTION in the main menu to automatically enter the drive specifications.
3. Manually enter the specifications by yourself from the ”User“ option.

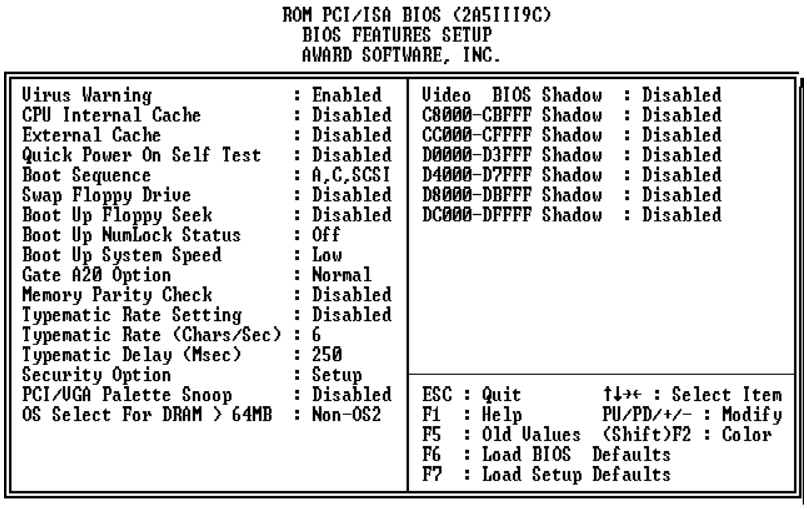
Halt On (All Errors) : You could choose **All Errors**, **No Errors** **All,but Keyboard** , **All.but Diskette**, and **All,but Disk/Key**

As for some embedded system which don't need keyboard and monitor in application,then you could choose No Errors.



4.3 BIOS Features Setup

This BIOS Features Setup is designed for customer‘s tuning best performance of the ROCKY-058HV board. As for normal operation customers don‘t have to change any default setting. The default setting is pre-set for most reliable operation.



BootUp Sequence :

You could set the sequence of A:,C:,and CDROM.

Video BIOS Shadow C000,32K:

Enable - Will increase the video speed.

Shadow C8000-CFFFF,D0000-D7FFF,& D8000-DFFFF :

When the installed add-on card‘s ROM address is as above address,you could enable the shadow to get higher operation performance.When you enable the shadow function,it will also reduce the memory available by between 640KB and 1024KB.

4.4 Chipset Features Setup

This setup functions are almost working for ChipSet(SIS 5598). These options are used to change the ChipSet's registers. Please carefully change any default setting ,otherwise the system could be running unstable.

Auto Configuration : Enable or Disable

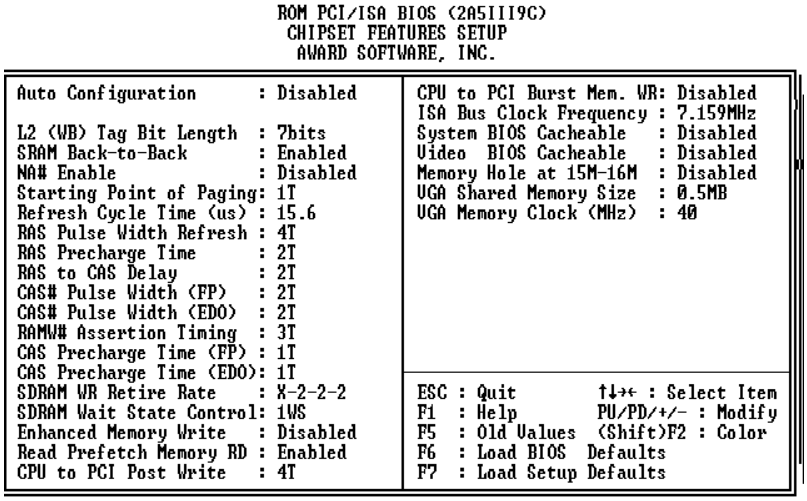
When use the 60nS general type DRAM,please enable the setting to get the optimal timings.

VGA Shared Memory : 0.5MB to 4MB

The SIS5598 provides UMA architect which can share the on board memory from 0.5MB to 4MB. The default setting is 2MB.

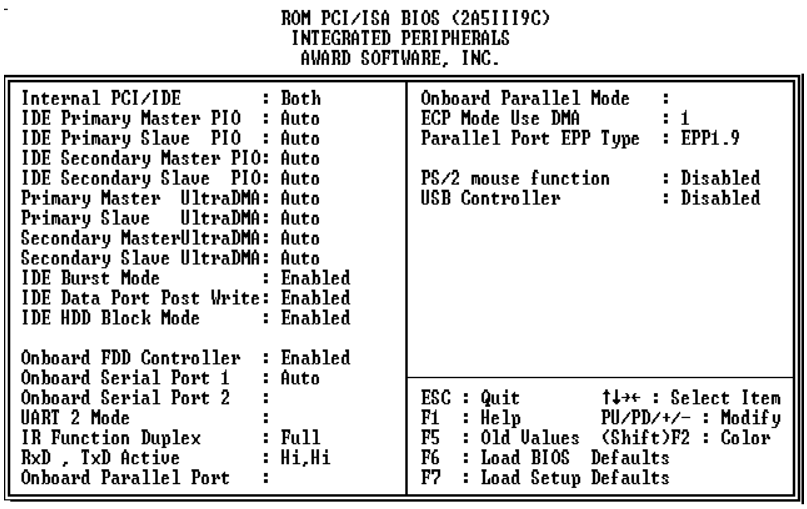
Memory Hole at 15M-16M : Enable or Disable

This setting reserve 15MB to 16MB memory address space for ISA expansion cards that specifically require this setting. Memory from 15MB and up will be unavailable to the system because expansion cards can only access memory up to 16MB.



4.5 Integrated Peripherals

This setup is almost working for Multi-I/O Chip(W83877F). These options are used to change the ChipSet‘s registers. Please carefully change any default setting to meet your application need perfectly. The only special concern is Onboard
Serial Port2. If you are using the IrDA port,you have to set this port accordingly.



4.6 Power Management Setup

Power Management Setup help user handles the ROCKY-058HV board‘s “green” function. The features could shut down the video display and hard disk to save energy for example. The power management setup screen is as following,

Power Management : Disable, Max Saving, Min Saving, or User Defined

Max Saving puts the system into power saving mode after a brief inactivity period. Min Saving is almost the same as Max Saving except that the inactivity period is longer. User Defined allows you to set power saving options according to your requirement.

Note : Advanced Power Management(APM) have to be installed to keep the system time updated when the computer enters suspend mode activated by the Power Management.
Under DOS environment, you need to add DEVICE=C:\DOS\POWER.EXE in your CONFIG.SYS
Under Windows 3.x and Windows 95,you have to install Windows with APM feature. A battery and power cord icon labeled "Power" Will appear in the "Control Panel"

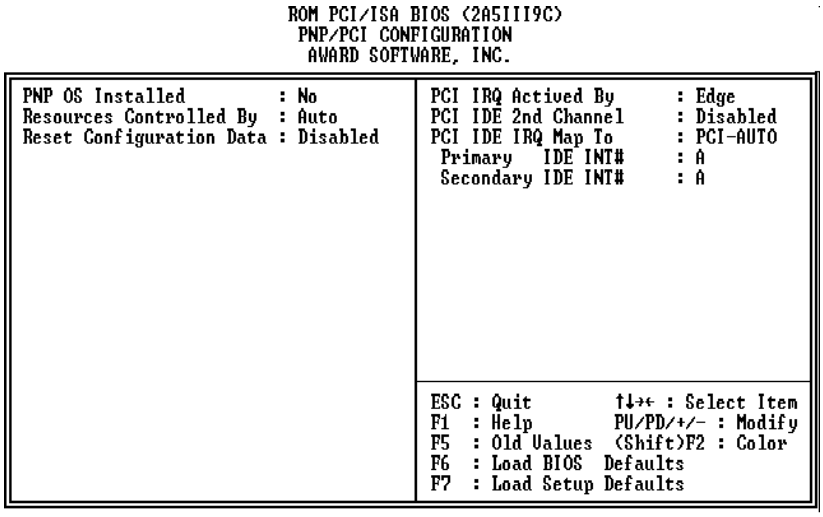
ROM PCI/ISA BIOS (2A5III9C)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management : User Define	VGA Activity : Disabled
PM Control by APM : No	IRQ3 (COM 2) : Enabled
Video Off Option : Always On	IRQ4 (COM 1) : Enabled
Video Off Method : Blank Screen	IRQ5 (LPT 2) : Enabled
Switch Function : Disabled	IRQ6 (Floppy Disk): Enabled
Doze Speed (div by): 1	IRQ7 (LPT 1) : Enabled
Stdby Speed(div by): 1	IRQ8 (RTC Alarm) : Enabled
MODEM Use IRQ : NA	IRQ9 (IRQ2 Redir) : Enabled
	IRQ10 (Reserved) : Enabled
	IRQ11 (Reserved) : Enabled
** PM Timers **	IRQ12 (PS/2 Mouse) : Enabled
HDD Off After : Disable	IRQ13 (Coprocessor): Enabled
Doze Mode : Disable	IRQ14 (Hard Disk) : Enabled
Standby Mode : Disable	IRQ15 (Reserved) : Enabled
Suspend Mode : Disable	
** PM Events **	ESC : Quit ↑↓→← : Select Item
COM Ports Activity : Disabled	F1 : Help PU/PD/+/- : Modify
LPT Ports Activity : Disabled	F5 : Old Values (Shift)F2 : Color
HDD Ports Activity : Disabled	F6 : Load BIOS Defaults
	F7 : Load Setup Defaults

4.7 PNP/PCI Configuration

The PNP/PCI Configuration help users handle the ROCKY-058HV board's "PCI" function, but the PCI interface that the ROCKY-058HV provides only is the on board IDE. The PCI bus slot on the system uses INTA#, thus the installed PCI slot must be set to this value.

PNP OS Installed : Yes or No
When PNP OS is installed, interrupts may be reassigned by the OS when the setting is Yes. When a non-PNP OS is installed or to prevent reassigning of interrupt settings, select setting to No.



Appendix A. Watch-Dog Timer

The WatchDog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, hardware on the board will perform a hardware reset (cold boot) to bring the system back to a known state.

The Watch-Dog Timer is controlled by three I/O ports.

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

To enable the Watch-Dog Timer, user has to define Timer before enable the Watch-dog Timer function. The output data is a value of time interval and the range of the value is from 01(hex) to FF(hex) and time interval 1 sec to 255 sec.

Data	Time Interval
01	1 sec
02	2 sec
03	3 sec
04	4 sec
. . .	. . .
FF	255 sec

This will enable and activate the countdown timer which will eventually time out and reset the CPU to ensure that this reset condition does not occur, the Watch-Dog Timer must be periodically refreshed by reading the same I/O port 843H and

443H. This must be done within the time out period that is selected by software, please refer to the example program.
A tolerance of at least 5% must be maintained to avoid unknown routines within 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.

Note: when exiting a program it is necessary to disable the Watch-Dog Timer, otherwise the system will reset.

Example program:

```
TIMER_PORT   =  443H
TIMER_START  =  443H
TIMER_STOP   =  843H
;
; INITIAL TIME PERIOD COUNTER
;

      MOV   DX, TIME_PORT
      OUT    AL, 8 ; 8 SECONDS
;
; ADD YOUR APPLICATION HERE
;
      MOV   DX, TIMER_START
      IN       AL, DX.       ; START COUNTER
;
; ADD YOUR APPLICATION HERE
;
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	VIR BUS Master PCI IDE Controller
278-27F	Parallel Printer Port 2 (LTP3)
2E8-2EF	Serial Port 4
2F8-2FF	Serial Port 2
376-376	VIR BUS Master PCI IDE Controller
378-37F	Parallel Printer Port 1
3B0-3DF	Standard AGP Graphic Adapter
3E8-3EF	Serial Port 3
3F2-3F5	Floppy Disk Controller
3F8-3FF	Serial Port 1
443	Watch dog timer enable
843	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
D6000-D7FFF	DEFAULT DOC2000 ADDRESS
E0000-FFFFF	SYSTEM BIOS
100000	EXTEND MEMORY

IRQ Mapping Chart

IRQ0	SYSTEM TIMER	IRQ8	RTC CLOCK
IRQ1	KEYBOARD	IRQ9	USB
IRQ2	IRQ CONTROLLER	IRQ10	NO USED
IRQ3	COM2/COM4	IRQ11	USB
IRQ4	COM1/COM3	IRQ12	PS/2 MOUSE
IRQ5	VGA	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