ROCKY – 518HV Ver. 4.x

Pentium® w/ VGA Half-Sized

Single Board Computer

Manual fourth edition April 21,1998
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Introduction

Welcome to the ROCKY-518HV Pentium™ w/ VGA Single Board Computer. The ROCKY-518HV board is an ISA form factor board, which comes 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 for embedded application. The DOC Flash Disk is 100% compatible to hard disk. User can use any DOS command without any extra software utility. The DOC currently is available from 2MB to 72MB. There also have PROMDISK-Chip™ can be used in the same DOC socket as an alternative solution.

An advanced high performance super AT I/O chip – Winbond W83877F is used in the ROCKY-518HV board. Both on-chip UARTs are compatible with the NS16C550. The parallel port and IDE interface are compatible with IBM PC/AT and XT architecture's.

In addition, the ROCKY-518HV provides two 72-pin SIMM sockets for its on-board DRAM. The RAM module accepts 1MB, 2MB, 4MB, 8MB, 16MB, 32MB,and 64MB. So the total on-board memory can be configured from 2MB to 128MB.

ROCKY-518HV uses the advanced SIS Chipset,5598 which is 100% ISA/PCI compatible chipset with PCI 2.1 standard.

1.1 Specifications :

The ROCKY-518HV Pentium w/ VGA Single Board Computer provides the following specification:

- **CPU** : Pentium™ / MMX up to 233/266Mhz, AMD K5/K6 processor, Cyrix 6x86MX processor
- **Bus** : ISA bus and PCI 32-bit local bus, PCI 2.1 standard
- **DMA channels** : 7
- **Interrupt levels** : 15
- **Chipset** : Sis 5598
- **VGA** : Built-in the SIS 5598 Chipset

  Resolution : 1280 x 1024, 256 color, 75Hz
  1024 x 768, 64K color, 75Hz
  800 x 600, full color, 90Hz

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

- **Real-time clock / calendar** : Dallas 12887 or equivalent device. .
- **RAM memory** : 2MB to 128MB,EDO and FPM DRAM supported
- **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 best of all is that is new technology is compatible with existing ATA-2 IDE specifications. So there is no need to do any change for customer's c urrent accessory.
- **Floppy disk drive interface** : two 2.88 MB, 1.44MB, 1.2MB, 720KB, or 360KB floppy disk drives.
- **Two high speed Series ports** : NS16C550 compatible UARTs
- **Standard/EPP/ECP Parallel Port**
- **IrDA port : Support Serial Infrared(SIR) and Amplitude Shift Keyed IR(ASKIR) interface.**
- **USB port : Support USB ports for future expansion.**

- **Watch-dog timer** : can be set by 1,2,10,20,110 or 220 seconds period. Reset or NMI was generated when CPU did not periodically trigger the timer. Your program use hex 043 and 443 to control the watch-dog and generate a system reset.
- **Flash Disk - DiskOnChip™ or PROMDISKChip™** : The Flash Disk provide 100% compatible with hard disk. The built-in TrueFFS Transparent Flash Block Management and Space Reclamation will let customer to use the Flash Disk with DOS command, no need any extra software utility.
- **Keyboard connector**
- **Mouse** : PS/2 Mouse Port on-board.
- **Power Consumption** : +5V @ 4.6A
  (Pentium/MMX-200,16MB EDO RAM)
  +12V @ 70mA , -12V@20mA
- **Operating Temperature** : 0◦ ~ 55◦C (CPU needs Cooler)

1.2 What You Have

In addition to this *User's Manual*, the ROCKY-518HV package includes the following items:

- ROCKY-518HV Pentium w/ VGA Single Board Computer
- RS-232/Printer Cable
- FDD/HDD Cable
- 6-pin Mini-Din to 5-pin Din Keyboard Adapter Cable

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.

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Installation

This chapter describes how to install the ROCKY-518HV. At first, the layout of ROCKY-518HV is shown, and the unpacking information that you should be careful is described. The jumpers and switches setting for the ROCKY-518HV's configuration, such as CPU type selection, system clock setting, and watch dog timer, are also included.

2.1 ROCKY-518HV Ver. 4.x Layout

< reference next page >

2.2 Unpacking

Your ROCKY-518HV Single Board Computer contains sensitive electronic components that can be easily damaged by static electricity.

In this section, we describe the precautions you should take while unpacking, as well as during installation. It is very important that the instructions be followed correctly, to avoid static damage, and to successfully install the board.

The system board should be done on a grounded anti-static mat. The operator should be wearing an anti-static wristband, grounded at the same point as the anti-static mat.

Inspect the cardboard carton for obvious damage. Shipping and handling may cause damage to your board. Be sure there are no shipping and handing damages on the board before processing.

After opening the cardboard carton, exact the system board and place it only on a grounded anti-static surface component side up.

Again inspect the board for damage. Press down on all the socketed IC's to make sure that they are properly seated.
Do this only with the board place on a firm flat surface.

Note : DO NOT APPLY POWER TO THE BOARD IF IT HAS BEEN DAMAGED.

You are now ready to install your ROCKY-518HV Single Board Computer.

2.3 Setting the CPU of ROCKY-518HV

- **CPU Clock Setting :**

CPU Speed/Clock	JP5	JP6	JP7
50MHz	OPEN	CLOSE	CLOSE
55MHz	OPEN	OPEN	OPEN
60MHz	OPEN	OPEN	CLOSE
66MHz	**OPEN**	**CLOSE**	**OPEN**
75MHz	CLOSE	OPEN	OPEN
83MHz	CLOSE	CLOSE	CLOSE

- **CPU to Bus Multiple :**

Multiplier	JP3 1-2	JP3 3-4	JP3 5-6
1.5 x or 3.5x	OPEN	OPEN	OPEN
2x	CLOSE	OPEN	OPEN
2.5x	CLOSE	CLOSE	OPEN
3 x	**OPEN**	**CLOSE**	**OPEN**
4 x	CLOSE	OPEN	CLOSE
4.5 x	CLOSE	CLOSE	CLOSE

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

- **CPU Internal Cache setting :**
  JP1 : Close Write Through
  OPEN Write Back (default)

- **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

- **JP1 CPU Core Voltage Setting :**
  (The JP1 is on the power module,
  Pin 7,8 at the left side of HIP6008 IC)

CPU Core Voltage	JP1 1-2	JP1 3-4	JP1 5-6	JP1 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

- **JP4 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**

· **Cyrix 6x86MX PR Rating Table**
(Vcore : 2.9V ,dual voltage)

PR Rating	Bus MHz	CPU Core MHz	Clock Multiplier
6x86MX-PR133*	55	110	2x
6x86MX-PR150	60	120	2x
6x86MX-PR166	66	133	2x
6x86MX-PR166	55	138	2.5x
6x86MX-PR166	60	150	2.5x
6x86MX-PR200	75	150	2x
6x86MX-PR200	66	166	2.5x
6x86MX-PR200	60	180	3x
6x86MX-PR233	75	188	2.5x
6x86MX-PR233	66	200	3x
6x86MX-PR266	66	233	3.5x
6x86MX-PR266	75	225	3x

· **AMD K6 MMX Rating Table (Dual Voltage)**

Product Name	Core Freq	Vcore	Bus MHz	Multiplier
K6-233 Model 6	233MHz	3.2V	66	3.5 x
K6-200 Model 6	200MHz	2.9V	66	3 x
K6-166 Model 6	166MHz	2.9V	66	2.5 x
K6-300 Model 7	300MHz	2.2V	66	4.5 x
K6-266 Model 7	266MHz	2.2V	66	4 x
K6-233 Model 7	233MHz	2.2V	66	3.5 x

2.4 Memory Address for VGA BIOS

The SIS 5598 chipset provides share memory VGA function which will use the memory address from **C0000H to CBFFFH**.
It is 16KB more than regular VGA BIOS(from C0000H to C7FFFH). **If customer uses the external LCD or VGA display card will automatic disable the on board VGA function** and free the C8000H to CBFFFH memory address.

2.5 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 043H.

- **JP8 : Watch-Dog Active Type Setting**

JP8	DESCRIPTION
2-3	**RESET WHEN WDT TIME-OUT**
1-2	ACTIVATE NMI TO CPU WHEN WDT TIME-OUT
OPEN	DISABLE WDT

- **JP12: WDT Time-Out Period**

PERIOD	1-2	3-4	5-6	7-8
1 sec.	OPEN	OPEN	CLOSE	OPEN
2 sec.	OPEN	OPEN	CLOSE	CLOSE
10 sec.	**OPEN**	**CLOSE**	**OPEN**	**OPEN**
20 sec.	OPEN	CLOSE	OPEN	CLOSE
110 sec.	CLOSE	OPEN	OPEN	OPEN
220 sec.	CLOSE	OPEN	OPEN	CLOSE

2.6 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 dont need any extra software utility. It is just "plug and play", easy and reliable. Right now the DOC is available from 2MB to 72MB. The MD-2200-xMB series DOC will share only 8KB memory address.

- **JP11 : DiskOnChip Memory Address Setting**

Address	JP11
CE000	**1-2**
D6000	3-4
DE000	5-6

2.7 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 JP17 pin 2-3 about 3 seconds, then open again. Set back to normal operation mode, close pin 1-2.

- **JP10 : Clear CMOS Setup (Reserve Function)**

JP10	DESCRIPTION
OPEN	**Normal Operation**
CLOSE	Clear CMOS Setup

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Connection

This chapter describes how to connect peripherals, switches and indicators to the ROCKY-518HV board.

3.1 Floppy Disk Drive Connector

ROCKY-51HV 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	GROUND	30	READ DATA#
31	GROUND	32	SIDE 1 SELECT#
33	GROUND	34	DISK CHANGE#

3.2 PCI E-IDE Disk Drive Connector

You can attach four IDE(Integrated Device Electronics) hard disk drives to the ROCKY-518HV IDE controller.

Please note the IDE support DMA/33 high performance interface.

- **CN1 : 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	GND
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

3.3 Parallel Port

This port is usually connected to a printer, The ROCKY-518HV includes an on-board parallel port, accessed through a 26-pin flat-cable connector CN9.

- **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		

3.4 Serial Ports

The ROCKY-518HV offers two high speed NS16C550 compatible UARTs with Read/Receive 16 byte FIFO serial ports.

- **CN16 : Serial Port DB-9 Connector(ACE0)**

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)

- **CN15 : Serial Port 10-pin Header (ACE1)**

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

3.5 Keyboard Connector

The ROCKY-518HV provides two keyboard connectors.

- **CN17 : 5-pin Header Keyboard Connector**

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

- **CN18 : 6-pin Mini-DIN Keyboard Connector**

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

3.6 External Switches and Indicators

There are many external switches and indicators for monitoring and controlling your CPU board.

- **CN4 : KeyLock and Power LED**

PIN NO.	DESCRIPTION
1	**+5V**
2	**N/C**
3	**Ground**
4	**KeyLock Signal**
5	**Ground**

- **CN19 : RESET BUTTON**

PIN NO.	DESCRIPTION
1	EXTERNAL RESET
2	GROUND

3.7 External Speaker

The ROCKY-518HV has its own buzzer, you also can connect to the external speaker through the connector JP9.

- **JP9 : Speaker Connector**

PIN NO.	DESCRIPTION
1	+5V
2	Speaker Signal

3.8 PS/2 Mouse 6-pin Mini-DIN Connector

- **CN14 : PS/2 Mouse Connector**

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

3.9 USB Port Connector

The ROCKY-518HV built-in USB ports for the future new I/O bus expansion.

- **CN7 : USB Connector**

1	VCC
2	DATA-
3	DATA+
4	GROUND

3.10 IrDA Infrared Interface Port

The ROCKY-518HV 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 COM 2. Then the normal RS -232 COM 2 will be disabled.

- **CN10 : IrDA connector**

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

3.11 VGA Connector

The ROCKY-518HV built-in 15-pin VGA connector directly to your CRT monitor. And additional 10-pin header will help you do the internal connection to CRT screen in you embedded application.

- **CN13 : 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		

- **CN12 : 10-pin Header Connector**

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

3.12 External Power Connector

The ROCKY-518HV built-in PC/104 connector. So when use with the external power connector will create a powerful embedded system.

- **CN11 : External Power Connector**

1	+5V	2	+12V
3	-12V	4	GROUND
5	GROUND	6	-5V
7	+12V	8	+5V

3.13 HDD LED Connector

- **CN8 : HDD LED connector**

PIN NO.	DESCRIPTION
1	5V
2	Ground

3.14 Fan Connector

- **CN20 : CPU Fan Connector**

PIN NO.	DESCRIPTION
1	N/C
2	+12V
3	Ground

4

AWARD BIOS Setup

The ROCKY-518HV 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.

ROM PCI/ISA BIOS (2A5III99)
CMOS SETUP UTILITY
AWARD SOFTWRE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURATION	HDD LOW LEVEL FORMAT
LOAD BIOS DEFAULTS	SAVE & EXIT SETUP
LAD SETUP DEFAULTS	EXIT WITHOUT SAVING
Esc : Quit	↑ ↓ ← → : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color

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 dont need keyboard and monitor in application, then you could choose No Errors.

ROM PCI/ISA BIOS (2A5III99)
STANDARD CMOS SETUP
AWARD SOFTWRE, INC.

Data (mm : dd : yy) : Sat, Sep 27 1997
Time (hh : mm : ss) : 12 : 42 : 49

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	: Auto	0	0	0	0	0	0	NORMAL
Primary Slave	: Auto	0	0	0	0	0	0	NORMAL

Drive A : 1.44M, 3.5 in.
Drive B : None

Video : EGA/VGA
Halt on : All Errors

Base Memory :	0K
Extended Memory :	0K
Other Memory :	512K
Total Memory :	512K

Esc : Quit ↑↓←→ : Select Item PU / PD / + / - : Modify
F1 : Help (Shift) F2 : Change Color

4.3 BIOS Features Setup

This BIOS Features Setup is designed for customer's tuning best performance of the ROCKY-518HV board. As for normal operation customers don't have to cha nge any default setting. The default setting is pre-setted for most reliable operation.

ROM PCI/ISA BIOS (2A5III99)
BIOS FEATURES SETUP
AWARD SOFTWRE, INC.

Virus Warning	: Enabled	Video Bios Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000 - CBFFF Shadow	: Disabled
External Cache	: Enabled	CC000 - CFFFF Shadow	: Disabled
Quick Power On Self Test	: Disabled	D0000 - D3FFF Shadow	: Disabled
Boot Sequence	: A,C,SCSI	D4000 - D7FFF Shadow	: Disabled
Swap Floppy Seek	: Disabled	D8000 - DBFFF Shadow	: Disabled
Boot Up Floppy Seek	: Disabled	DC000 - DFFFF Shadow	: Disabled
Boot Up NumLock Status	: On		
Boot Up System Speed	: High		
Gate A20 Option	: Fash		
Memory Parity Check	: Disabled		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Rate (Msec)	: 250		
Security Option	: Setup		
PCI / VGA Palette Snoop	: Disabled		
OS Select For DRAM > 64MB	: Non-OS2		

ESC : Quit	↑ ↓ ← → : Select Item
F1 : Help	PU / PD / + / - : Modify
F5 : Old Values	(Shift)
F2 : Color	
F6 : Load BIOS Defaults	
F7 : Load Setup Defaults	

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 un-stable.

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.

ROM PCI/ISA BIOS (2A5III99)
CHIPSET FEATURES SETUP
AWARD SOFTWRE, INC.

Auto Configuration : Enabled	CPU to PCI Burst Mem. WR: Disabled
L2 (WB) Tag Bit Length : 7bits	ISA Bus Clock Frequency : PCICLK/4
SRAM Back–to–Back : Enabled	System BIOS Cacheable : Enabled
NA# Enable : Disabled	Video BIOS Cacheable : Enabled
Starting Point of Paging : 1T	Memory Hole at 15M-16M : Disabled
Refresh Cycle Time (us) : 15.6	VGA Shared Memory Size: 2 MB
RAS Pulse Width Refresh : 4T	VGA Memory Clock (MHz): 40
RAS Precharge Time : 2T	Linear Mode SRAM Support : Disabled
RAS to CAS Delay : 2T	
CAS# Pulse Width (FP) : 2T	
CAS# Pulse Width (EDO) : 2T	
RAMW# Assertion Timing : 3T	
CAS# Precharge Time (FP) : 1T	
CAS# Precharge Time (EDO) : 1T	
SDRAM WR Retire Rate : X-2-2-2	ESC : Quit ↑ ↓ ← → : Select Item
SDRAM Wait State Control : 1WS	F1 : Help PU / PD / + / - : Modify
Enhanced Memory Write : Disabled	F5 : Old Values (Shift) F2 : Color
Read Prefetch Memory RD : Enabled	F6 : Load BIOS Defaults
CUP to PCI Post Write : 4T	F7 : Load Setup Defaults

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.

ROM PCI/ISA BIOS (2A5III99)
INTEGRATED PERIPHERALS
AWARD SOFTWRE, INC.

Internal PCI/IDE	: Primary	PS/2 Mouse function	: Enabled
IDE Primary Master PIO	: Auto	USB Controller	: Enabled
IDE Primary Slave PIO	: Auto	USB Keyboard Support	: Disabled
IDE Burst Mode	: Disabled		
IDE Data Port Post Write	: Disabled		
IDE HDD Block Mode	: Disabled	Month Alarm	: NA
		Day of Month Alarm	: 0
Onboard FDD Controller	: Enabled	Week Alarm	
Onboard Serial Port 1	: 3F8/IRQ4	*** SUN MON TUE WED THU FRI SAT ***	
Onboard Serial Port 2	: 5F8/IRQ3	Off Off Off Off Off Off Off	
UART 2 Mode	: Standard	Time (hh : mm : ss) Alarm : 0: 0: 0	
Onboard Parallel Port	: 378/IRQ7	ESC : Quit	↑ ↓ ← → : Select Item
Onboard Parallel Mode	: EPP/SPP	F1 : Help	PU / PD / + / - : Modify
		F5 : Old Values	(Shift) F2 : Color
Parallel Port EPP Type	: EPP1.9	F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

4.6 Power Management Setup

Power Management Setup help user handles the ROCKY-518HV 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 (2A5III99)
CHIPSET FEATURES SETUP
AWARD SOFTWRE, INC.

Power Management	: Max Saving	VGA Activity	: Disabled
PM Control By APM	: Yes	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
Hot Key Power Off	: Enabled	IRQ10 (Reserved)	: Enabled
** PM Timers **		IRQ11 (Reserved)	: Enabled
HDD Off After	: Disable	IRQ12 (PS/2 Mouse)	: Enabled
Doze Mode	: 20 Sec	IRQ13 (Coprocessor)	: Enabled
Standby Mode	: 20 Sec	IRQ14 (Hard Disk)	: Enabled
Suspend Mode	: 20 Sec	IRQ15 (Reserved)	: Enabled
** PM Events **		ESC : Quit	↑↓←→ : Select Item
COM Ports Activity	: Disable	F1 : Help	PU / PD / + / - : Modify
LPT Ports Activity	: Disable	F5 : Old Values	(Shift) F2 : Color
HDD Ports Activity	: Disable	F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

4.7 PNP/PCI Configuration

The PNP/PCI Configuration help user handles the ROCKY-518HV boards "PCI" function. All PCI bus slots on the system use INTA#, thus all installed PCI slots must be set to this value. The ROCKY-518HV only have ISA interface but the on board IDE is PCI interface..

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.

ROM PCI/ISA BIOS (2A5III99)
PNP/PCI CONFIGURATION
AWARD SOFTWRE, INC.

PNP OS Installed : No Resources Controlled By : Auto Reset Configuration Data : Disabled	PCI IRQ Actived By : Edge PCI IDE 2nd Channel : Disabled PCI IDE IRQ Map To : PCI-AUTO Primary IDE INT# : A Secondary IDE INT# : A
	ESC : Quit ↑↓←→ : Select Item F1 : Help PU / PD / + / - : Modify F5 : Old Values (Shift) F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults

5

E^2 Key™ Function

The ROCKY-518HV provides an outstanding E^2KEY™ function for system integrator. Based on the E^2KEY™ you could free to store the ID Code, Pass Word, or Critical Data in the 1Kbit EEPROM. Because the EEPROM is nonvolatile memory, you don't have to worry the losing of the very important data.

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

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

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

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

unsigned int read_e2key (unsigned int address)
/* This function will return the E^2KEY™'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 address. The address range is from 0 to 63. The data value is from 0 to 0xffff. */

To easy start to use the function, please refer the include EKEYDEMO.C code at first.

Please note the E^{2}KEY™ function is based on the working of parallel port. So you should enable the ROCKY-518HV's parallel port, otherwise will be not working.

Appendix A. Watch-Dog Timer

The Watch-Dog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that caused 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 either perform a hardware reset (cold boot) or a non-maskable interrupt (NMI) to bring the system back to a known state.

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

443 (hex)	Read	Enable the refresh the Watch-Dog Timer.
043 (hex)	Read	Disable the Watch-Dog Timer.

To enable the Watch-Dog Timer, a read from I/O port 443H must be performed. This will enable and activate the countdown timer which will eventually time out and either reset the CPU or cause an NMI depending on the setting of JP8. To ensure that this reset condition does not occur, the Watch-Dog Timer must be periodically refreshed by reading the same I/O port 433H. This must be done within the time out period that is selected by jumper group JP12.

A tolerance of at least 30% 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.