

ROCKY-3701 Ver2.1
Celeron™ & Pentium III Processor
With four RS-232C Ports
& Compact Flash Disk SBC

©Copyright 2001 by ICP Electronics Inc. All Rights Reserved. Manual first edition MAR.16, 2002.

The information in this document is subject to change without prior notice in order to improve reliability, design and function and does not represent a commitment on the part of the manufacturer.

In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or inability to use the product or documentation, even if advised of the possibility of such damages.

This document contains proprietary information protected by copyright. All rights are reserved. No part of this manual may be reproduced by any mechanical, electronic, or other means in any form without prior written permission of the manufacturer.

Trademarks

ROCKY-3701 is a registered trademark of ICP Electronics Inc. IBM PC is a registered trademark of International Business Machines Corporation. Intel is a registered trademark of Intel Corporation. AMI is a registered trademark of American Megatrends, Inc. Other product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective companies.

Contents

1. Introduction.....	3
1.1 Specifications.....	4
1.2 What You Have.....	6
2. Installation.....	7
2.1 ROCKY-3701's Layout.....	8
2.2 Unpacking Precautions.....	9
2.3 Setting the CPU of ROCKY-3701	10
2.4 Watch-Dog Timer.....	10
2.5 DiskOnChip™ Flash Disk	11
2.6 PS/2 Mouse	11
3. Connection.....	12
3.1 Floppy Disk Drive Connector	12
3.2 PCI E-IDE Disk Drive Connector.....	13
3.3 Parallel Port	14
3.4 Serial Ports	14
3.5 Keyboard/Mouse Connector	15
3.6 External Switches and Indicators	16
3.7 USB Port Connector	17
3.8 IrDA Infrared Interface Port	17
3.9 Fan Connector.....	19
3.10 CompactFlash disk Connector	19
4. AMI BIOS Setup.....	20

4.1	Getting start	20
4.2	Standard CMOS Setup	21
4.3	Advanced CMOS Setup.....	22
4.4	Advanced Chipset Help	24
4.5	Power Management Setup.....	26
4.6	PCI/PLUG AND PLAY Setup	27
4.7	Peripheral Setup	28
4.8	Hardware Monitor Setup	30
4.9	Change Supervisor/User Password	31
4.10	Auto-Detect Hard Disk	32
4.11	Auto Configuration with Optimal Settings.....	32
4.12	Auto Configuration with Fail Save Settings.....	33
4.13	Save Settings and Exit	33
4.14	Exit Without Saving	33

Appendix A. Watch-Dog Timer..... 34

Introduction

Welcome to the ROCKY-3701 Socket 370 Celeron® and Pentium III (FC-PGA) with four RS-232C ports & Type I/II CompactFlash disk Single Board Computer. The ROCKY-3701 is a PICMG bus form factor board. It is equipped with high performance Intel® Celeron up to 566MHz and Pentium III (FC-PGA) 933MHz (or above) Processor and advanced high performance multi-mode I/O, designed for the system manufacturers, integrators, or VARs that want to provide all the performance, reliability, and quality at a reasonable price.

This board has a 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 144MB.

Besides the DOC, this board also support Type I/II CompactFlash disk, We use IDE2 for CompactFlash disk, which is 100% compatible with IDE interface

An advanced high performance super AT I/O chip – Winbond W83977TF & W83877TF are used in the ROCKY-3701 board. The on-chip UARTs are compatible with the NS16C550. The parallel port and IDE interface are compatible with IBM PC/AT architecture.

ROCKY-3701 uses the advanced VIA Apollo Pro133 Chipset which is 100% ISA/PCI compatible chipset with PCI 2.1 standard. In addition, this board provides four 168-pin sockets for its on-board DRAM. The DIMM module is 3.3 V SDRAM and max. 256MB for each module.

1.1 Specifications :

- **CPU** : Support Intel 66/100/133MHz FSB CPU ,Celeron® up to 566 MHz , Pentium III (FC-PGA) 933 MHz (or Above) Processor.
- **Bus** : PICMG bus, meets PCI 2.1 standard
- **DMA channels** : 7
- **Interrupt levels** : 15
- **Chipset** : VIA Apollo Pro133 chipset 66/100/133MHz HOST Clock
- **RAM** : Four 168-pin DIMM sockets support SDRAM and VCM(NEC: Virtual Channel Module) RAM module, up to 1GB.
- **Ultra DMA/66 (Enhanced PCI IDE Interface)** : up to four PCI Enhance IDE hard drives. The Ultra DMA/66 IDE can handle data transfer up to 66MB/s. The best of all is that this new technology is compatible with existing ATA-2 IDE specifications. So, there is no need to do any change for customer's current accessory.
- **Multi-I/O Chip** : W83977TF & W83877TF, all I/O setup by BIOS
Four 16C550 RS-232C Ports
One EPP/ECP Parallel Port, Floppy Port
- **Floppy disk drive interface** : two 2.88 MB, 1.44MB, 1.2MB, 720KB, or 360KB floppy disk drives.
- **Four high speed Serial ports** : NS16C550 compatible UARTs
- **Bi-directional Parallel Port**
- **Built-in LM78 Hardware Monitoring System** to monitor power supply voltage and fan speed status.
- **IrDA port** : Support Serial Infrared(SIR) and Amplitude Shift Keyed IR(ASKIR) interface.
- **USB port** : Support two USB ports for future expansion.
- **ISAPLUS™** : designed to enhance the ISA bus drive capability
- **Watch-dog timer** : can be set by PROGRAM period. Reset or NMI is generated when CPU does not periodically trigger the timer. Your program uses hex 043/843 and 443 to control the watch-dog and generate a system reset.

- **Flash Disk - DiskOnChip™:** The Flash Disk provides 100% compatibility with hard disk, supports M-Systems. The built-in True FFS Transparent Flash Block Management and Space Reclamation will let customer to use the Flash Disk with DOS command, no need any extra software utility. The DOC currently is available from 2MB to 144MB.
- **ONLY AT POWER**
- **Mouse & Keyboard Connector :** PS/2 Mouse Port on-board + Ext. Keyboard.
- **Power Consumption :** +5V/6.8A (Celeron 333MHz, 512MB SDRAM)
+12V:170mA , -12V:60mA
- **Operating Humidity :** 5 ~ 95 % , non-condensing
- **CompactFlash disk :** The CompactFlash Storage Card also runs in True IDE Mode that is electrically compatible with an IDE disk drive. It can be used with a passive adapter in a Type I/II socket.

1.2 What You Have

In addition to this *User's Manual*, the ROCKY-3701 package includes the following items:

- ROCKY-3701 Socket 370 Celeron® & Pentium III SBC.
- Printer Cable/RS232 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.

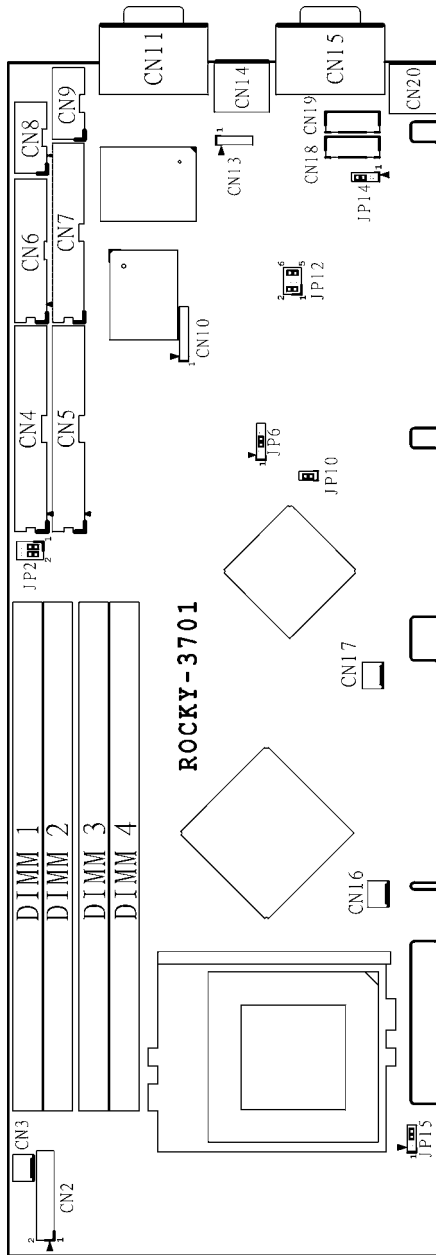
2

Installation

This chapter describes how to install the ROCKY-3701. The layout of ROCKY-3701 is shown on the next page and the Unpacking Precautions that you should be careful with are described on the following page. Also included is the jumpers and switches setting for this board's configuration, such as: CPU type selection, system clock setting and Watchdog timer.

2.1 ROCKY-3701 's Layout

< please, refer to the next page >



2.2 Unpacking Precautions

Some components on ROCKY-3701 SBC are very sensitive to static electric charges and can be damaged by a sudden rush of power. To protect it from unintended damage, be sure to follow these precautions:

- ✓ Ground yourself to remove any static charge before touching your ROCKY-3701 SBC. You can do it by using a grounded wrist strap at all times or by frequently touching any conducting materials that is connected to the ground.
- ✓ Handle your ROCKY-3701 SBC by its edges. Don't touch IC chips, leads or circuitry if not necessary.
- ✓ Do not plug any connector or jumper while the power is on.
- ✓ Do not put your ROCKY-3701 SBC unprotected on a flat surface because it has components on both sides.

2.3 *Setting the CPU of ROCKY-3701*

• JP2 : CPU FREQUENCY SETTING

FREQUENCY	JP2	
	1-3	2-4
AUTO DETECT	ON	ON

• JP15 : CPU TYPE SETTING

CPU TYPE.	JP15
CYRIX	1-2
INTEL	2-3

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 reboot or activate NMI to CPU. The Watch-Dog Timer is disable by reading port 043H.

• JP14 : Watch-Dog Timer Type Setting

PIN NO.	DESCRIPTION
1-2	NMI
2-3	RESET

2.5 *DiskOnChip™ Flash Disk*

The DiskOnChip™ (DOC) Flash Disk Chip is produced by M-Systems. Customers don't need any extra software utility because the DOC is 100% compatible to hard disk. It is just "plug and play", easy and reliable. Right now, the DOC is available from 2MB to 144MB.

- **JP12 : DiskOnChip™ Memory Address Setting**

PIN NO.			ADDRESS
1-2	3-4	5-6	
OFF	ON	ON	CE00 – CFFF
ON	OFF	ON	D600 – D7FF
OFF	OFF	ON	DE00 – DFFF

2.6 *PS/2 Mouse*

- **JP10 : PS/2 Mouse Setting**

The PS/2 mouse uses IRQ12 while in operation.

JP10	DESCRIPTION
ON	Enable the PS/2 Mouse, IRQ12
OFF	Disable the PS/2 Mouse

3

Connection

This chapter describes how to connect peripherals, switches and indicators to the ROCKY-3701 board.

3.1 Floppy Disk Drive Connector

ROCKY-3701 board equipped with a 34-pin daisy-chain driver connector cable.

• CN7 : FDD 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	D4IRECTION#
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-3701 IDE controller.

CN4 (IDE 1) : Primary IDE Connector

CN5 (IDE 2) : Secondary IDE Connector

• CN4/CN5 : IDE Interface Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RESET#	2	GND
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	GND	20	N/C
21	IDE DRQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	IDE CHRDY	28	GND
29	IDE DACK	30	GND
31	INTERRUPT	32	N/C
33	SA 1	34	N/C
35	SA 0	36	SA 2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GND

3.3 Parallel Port

This port is usually connected to a printer, The ROCKY-3701 includes an on-board parallel port, accessed through a 26-pin flat-cable connector CN6.

• CN6 : 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	GND
19	GND	20	GND
21	GND	22	GND
23	GND	24	GND
25	GND	26	N/C

3.4 Serial Ports

The ROCKY-3701 offers two high speed NS16C550 compatible UARTs with Read/Receive 16 byte FIFO serial ports

• CN15 : Serial Port 9-pin D-sub Connector (COMA)

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

• **CN11 : Serial Port 9-pin D-sub Connector (COMB)**

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

• **CN9 : Serial Port 2x5 pin header Connector (COMC)**

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

• **CN8 : Serial Port 2x5 pin header Connector (COMD)**

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

3.5 Keyboard/Mouse Connector

The ROCKY-3701 provides one external keyboard ,one external mouse and one PS/2 keyboard & mouse connectors.

• **CN18 : 5-pin Header External Keyboard Connector**

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

• **CN20 : 6-pin Mini-DIN PS/2 Keyboard & Mouse Connector**

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

• **CN19 : PS/2 Mouse 5-pin Header Connector**

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

3.6 *External Switches and Indicators*

There are several external switches and indicators for monitoring and controlling your CPU board. All the functions are in the CN2 connector.

• **CN2 : Multi Panel**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
2	SPEAKER	1	VCC
4	N/C	3	N/C
6	N/C	5	GND
8	+5V	7	KEYLOCK
10	RESET SW	9	GND
12	GND	11	GND
14	IDE LED	13	N/C
16	+5V	15	ATX POWER CONTROL
18	ATX POWER BUTTON	17	ATX 5VSB
20	ATX 5VSB	19	ATX 5VSB

3.7 *USB Port Connector*

The ROCKY-3701 has two built-in USB ports for the future new I/O bus expansion.

- **CN14: USB0 Connectors**

- CN13: Pin 1-4 for USB1**

PIN NO.	Description
1	GND
2	SBD1+
3	SBD1-
4	VCC

3.8 *IrDA Infrared Interface Port*

ROCKY-3701 built-in IrDA port supports Serial Infrared (SIR) or Amplitude Shift Keyed IR (ASKIR) interface. If you want to use the IrDA port, you have to configure the SIR or ASKIR model in the BIOS's Peripheral Setup's COM2. Then the normal RS-232 COM2 will be disabled.

- **CN10 : IrDA Connector**

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

6	NC
---	----

3.9 Fan Connector

The ROCKY-3701 provides one CPU cooling fan connector and two CHASSIS fan connectors. These connectors can supply 12V/500mA to the cooling fan. The connector has a “rotation” pin which supplies the fan’s rotation signal to the system, so the system BIOS knows the fan speed. Please note that only specified fan offers the rotation signal .

- **CN16 : CPU Fan Connector**
- **CN3 : CHASSIS1 Fan Connector**
- **CN17 : CHASSIS2 Fan Connector**

PIN NO.	DESCRIPTION
1	Fan Sensor
2	+12V
3	GND

3.10 CompactFlash Connector

CN21 : CompactFlash Connector (Secondary IDE)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	DATA 3
3	DATA 4	4	DATA 5
5	DATA 6	6	DATA 7
7	HDC CS0#	8	N/C
9	GND	10	N/C
11	N/C	12	N/C
13	VCC_COM	14	N/C
15	N/C	16	N/C
17	N/C	18	SA2
19	SA1	20	SA0
21	DATA 0	22	DATA 1
23	DATA 2	24	N/C
25	VCC-IN CHECK2	26	VCC-IN CHECK1
27	DATA 11	28	DATA 12
29	DATA 13	30	DATA 14
31	DATA 15	32	HDC CS1#
33	N/C	34	IOR#
35	IOW#	36	N/C
37	INTERRUPT	38	VCC
39	CSEL	40	N/C
41	RESET#	42	IORDY
43	N/C	44	VCC_COM
45	HDD ACTIVE#	46	N/C
47	DATA 8	48	DATA 9
49	DATA 10	50	GND

4

AMI BIOS Setup

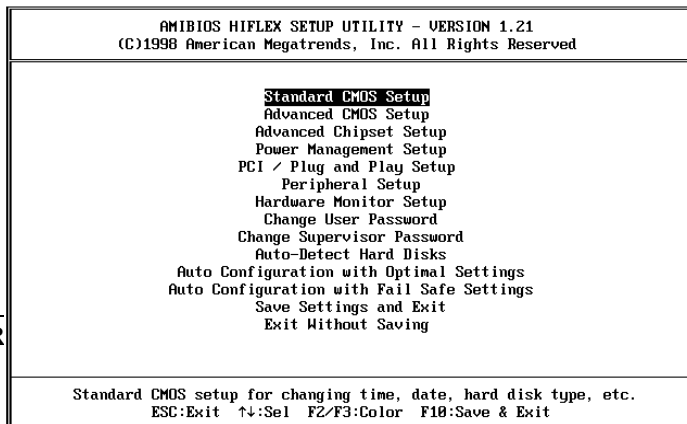
The ROCKY-3701 uses the AMI PCI/ISA BIOS for system configuration. The AMI BIOS setup program is designed to provide maximum flexibility in configuring the system by offering various options which may be selected for end-user requirements. This chapter is written to assist you in the proper usage of these features.

4.1 Getting Start

When you turn on the power button, the BIOS will enter the Power-On-Self-Test routines. These routines will be executed for system test and initialization and system configuration verification.

" Hit DEL if you want to run SETUP"

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



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 setting. Please refer to the following screen for this setup

AMIBIOS SETUP - STANDARD CMOS SETUP										
(C)1998 American Megatrends, Inc. All Rights Reserved										
Date (mm/dd/yyyy): Thu Apr 15, 1999					Base Memory: 0 KB					
Time (hh/mm/ss) : 14:50:39					Extd Memory: 0 MB					
Floppy Drive A:		1.44 MB 3½								
Floppy Drive B:		Not Installed								
	Type	Size	Cyln	Head	WPcom	Sec	LBA Mode	Btk Mode	P10 Mode	32Bit Mode
Pri Master :	Auto									0n
Pri Slave :	Auto									0n
Sec Master :	Auto									0n
Sec Slave :	Auto									0n
Boot Sector Virus Protection					Disabled					
Month:	Jan - Dec				ESC:Exit F1:Sel					
Day:	01 - 31				PgUp/PgDn:Modify					
Year:	1901 - 9999				F1:Help F2/F3:Color					

To set the Date, for example, press either the arrow or <Enter> button on your keyboard to select one of the fields (Months, Date or Year) then press either <PgUp> or <PgDn> to set it to the current Months, Date and Year. Do the same steps for Time setting.

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

1. Use the Auto setting for detection during boot-up.
2. Use the Auto-Detect Hard Disk option in the main menu; the computer will automatically detect the HDD specifications.

3. Manually enter the specifications by yourself from the "User" option.

4.3 Advanced CMOS Setup

This Advanced CMOS Setup is designed for tuning the best performance of the ROCKY-3701 board. As for normal operation customers don't have to change any default setting. The default setting is pre-set for most reliable operation.

The following screen will be displayed if you select Advanced CMOS Setup:

AMIBIOS SETUP - ADVANCED CMOS SETUP (C)1998 American Megatrends, Inc. All Rights Reserved		
Quick Boot	Enabled	Available Options: Disabled ▶ Enabled
1st Boot Device	Floppy	
2nd Boot Device	IDE-0	
3rd Boot Device	CDROM	
Try Other Boot Devices	Yes	
Floppy Access Control	Read-Write	
Hard Disk Access Control	Read-Write	
S.M.A.R.T. for Hard Disks	Disabled	
BootUp Num-Lock	On	
Floppy Drive Swap	Disabled	
Floppy Drive Seek	Disabled	
PS/2 Mouse Support	Enabled	
Primary Display	Absent	
Password Check	Setup	
Boot To OS/2 > 64MB	No	
CPU Serial Number	Enabled	
Cache Bus ECC	Disabled	
System BIOS Cacheable	Enabled	
C000,16k Shadow	Cached	
		ESC:Exit F1:Set PgUp/PgDn:Modify F1:Help F2/F3:Color

You can change the value of each options by using <PgUp> and <PgDn> key. The available values are shown on the right screen.
Quick Boot > Enabled: this will enable the BIOS to boot quickly when you turn on your computer. The BIOS will only check the first 1MB of the system memory.
Quick Boot > Disabled: the BIOS will test all system memory when it boots up. It will spend about 40 seconds until it receives

a Ready signal from the HDD. It will also wait for you to press the key or not.

1st, 2nd, 3rd Boot Device > to define the sequence of boot drives after the routines check up completes. If the 1st Boot Device fails, the BIOS will attempt to boot from the 2nd or the 3rd device. The Optimal and Fail-Safe default settings are C:,A:,CDROM.

Try Other Boot Devices > the BIOS will try to boot from any other available device in the system if the 1st, 2nd and 3rd device fails to boot.

Floppy Access Control > to define the read/write access which is set when booting from a floppy drive.

Hard Disk Access Control > to define the read/write access which is set when booting from a HDD.

S.M.A.R.T. for Hard Disks > to allow BIOS to use the **S**ystem **M**anagement and **R**eporting **T**echnologies protocol for reporting server system information on a network

BootUp Num-Lock > to turn on/off the Num-Lock option on a enhanced keyboard when you boot. If you turn it off, the arrow keys on the numeric keypad can be used just as the other set of arrow keys on the keyboard and vice versa.

Floppy Drive Swap > this function enables you to swap the floppy disk drives via software or without moving the hardware.

Floppy Drive Seek > when this option is turned Enabled, BIOS will perform a Seek command on floppy drive A: before boot-up.

PS/2 Mouse Support > to testify whether or not a PS/2 mouse is supported.

Primary Display > to define the type of display monitor of the system. The Absent option is for network file servers.

Password Check > to define if a password is necessary or not for access to the BIOS setup.

Boot to OS/2 > if you run the OS/2 operating system, this option must be set to yes. It means you permit BIOS to run properly if OS/2 or any other OS that does not support Plug and Play is found in your computer.

CPU Serial Number > this option is available only if you use Pentium[®] III processor.

System BIOS Cacheable > to define whether or not the memory segment F000H can be read from or written to cache memory. Setting it Enabled will give faster execution in your system.

XXXX, 16k Shadow > ROM Shadow is a technique in which BIOS code is copied from slower ROM to faster RAM. If you enable it then the BIOS will be executed from the RAM. Each option allows 16KB segment to be shadowed to the RAM.

4.4 Advanced Chipset Setup

This setup functions are working mostly for Chipset . These options are used to change the Chipset's registers. Please carefully change any default setting ,otherwise the system will run unstably.

AMIBIOS SETUP - ADVANCED CHIPSET SETUP (C)1998 American Megatrends, Inc. All Rights Reserved	
***** SDRAM Timing *****	
Configure SDRAM Timing by SPD	Disabled
DRAM Frequency	133Mhz
SDRAM CAS# Latency	3
DRAM Integrity Mode	Non-ECC
DRAM Refresh Rate	15.6 us
Memory Hole	Disabled
AGP Aperture Size	64MB
PCI Delayed Transaction	Disabled
USB Function	Disabled
Available Options: ▶ Disabled Enabled	
ESC:Exit ↑:Sel PgUp/PgDn:Modify F1:Help F2/F3:Color	

Configure SDRAM Timing by SPD > *Enabled* will select predetermined optimal values of chipset parameters. When Disabled, chipset parameters return to setup information stored in CMOS.

DRAM Frequency > this option is select DIMM clock Frequency.

SDRAM CAS# Latency > to specify the CAS latency timing form SDRAM DRAM.

DRAM Integrity Mode > to choose DRAM Integrity Mode; *ECC/EC* will enable the **Error Checking and Correction** DRAM integrity mode.

Memory Hole : to specify the location of a memory hole in the CMOS RAM. 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.

AGP Aperture Size > to define the size of Graphics Aperture.

PCI Delayed Transaction > to enable or disable the embedded 32-bit posted write buffer which supports delay transaction.

USB Function > to enable or disable the USB (Universal Serial Bus) functions.

4.5 Power Management Setup

POWER MANAGEMENT SETUP		Available Options:
(C)1998 American Megatrends, Inc. All Rights Reserved		▶ Disabled Enabled
Power Management/ACPI	Disabled	
Video Power Down Mode	Disabled	
Hard Disk Power Down Mode	Disabled	
Standby Time Out (Minute)	Disabled	
Suspend Time Out (Minute)	Disabled	
Throttle Slow Clock Ratio	50-62.5%	
Modem Use IO Port	N/A	
Modem Use IRQ	N/A	
Display Activity	Ignore	
Device 6 (Serial port 1)	Monitor	
Device 7 (Serial port 2)	Monitor	
Device 8 (Parallel port)	Ignore	
Device 5 (Floppy disk)	Monitor	
Device 0 (Primary master IDE)	Monitor	
Device 1 (Primary slave IDE)	Ignore	
Device 2 (Secondary master IDE)	Monitor	
Device 3 (Secondary slave IDE)	Ignore	
Power Button Function	Suspend	ESC:Exit ↑:Sel PgUp/PgDn:Modify F1:Help F2/F3:Color
Ring Resume From Soft Off	Disabled	

Green PC Monitor Power State > to specify the power state of the monitor after the specified period of display-idle has ended.

Video Power Down Mode > to specify the power state of the VESA VGA video subsystem after the specified period of display-idle has ended.

Hard Disk Power Down Mode > to specify the power state of the hard disk after the specified period of hard drive-idle has ended.

Standby Time Out (Minute) > to specify the length of the system-idle period while the system is in full power on state. After this period of time has ended, the system will go into Standby state.

Suspend Time Out (Minute) > to specify the length of the system-idle period while the system is in Standby state. After this period of time has ended, the system will go into Suspend state.

Throttle Slow Clock Ratio > to specify the speed of system clock under power saving state. The figure is a ratio between power conserving and normal state CPU clock.

Modem Use IO Port > to assign a port for modem.

Modem Use IRQ > to assign an IRQ for modem

Display Activity > to specify if BIOS has to monitor display activity or not.

Device X > to monitor specified device IRQ or Ignore.

4.6 PCI / PLUG AND PLAY Setup

The setup help user handles the ROCKY-3701 board's PCI function. All PCI bus slots on the system use INTA#, thus all installed PCI slots must be set.

AMIBIOS SETUP - PCI / PLUG AND PLAY SETUP (C)1998 American Megatrends, Inc. All Rights Reserved		
Plug and Play Aware O/S	No	Available Options: ▶ No Yes
Clear NVRAM	No	
PCI Latency Timer (PCI Clocks)	64	
PCI VGA Palette Snoop	Disabled	
Allocate IRQ to PCI VGA	Yes	
OffBoard PCI IDE Card	Auto	
OffBoard PCI IDE Primary IRQ	Disabled	
OffBoard PCI IDE Secondary IRQ	Disabled	
PCI Slot1 IRQ Priority	Auto	
PCI Slot2 IRQ Priority	Auto	
PCI Slot3 IRQ Priority	Auto	
PCI Slot4 IRQ Priority	Auto	
DMA Channel 0	PnP	
DMA Channel 1	PnP	
DMA Channel 3	PnP	
DMA Channel 5	PnP	
DMA Channel 6	PnP	ESC:Exit ↑:Sel
DMA Channel 7	PnP	PgUp/PgDn:Modify
IRQ3	PCI/PnP	F1:Help F2/F3:Color

Plug and Play Aware O/S > Yes or No

When PNP OS is installed, interrupts will 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.

Clear NVRAM > to specify whether BIOS has to clear NVRAM on every boot or not.

PCI Latency Timer (PCI Clocks) > to define the latency timing (PCI clock) for all PCI devices on the PCI bus.

PCI VGA Palette Snoop > this option is useful only for system with more than one VGA devices connected to it through different bus (one PCI and one ISA). To enable those various

VGA devices to handle signal from the CPU on each set of palette registers of every video devices, it must be set *Enabled*.

Allocate IRQ to PCI VGA > to allocate IRQ to PCI VGA, answer Yes and vice versa.

Offboard PCI IDE Card > to specify if an offboard PCI IDE card is installed in your computer or not. You must specify the slot number on the board which will be used for the card.

Offboard PCI IDE Primary (/Secondary) IRQ > to specify the PCI interrupt that is assigned to the Primary (/Secondary) IDE channel on the offboard PCI IDE controller.

PCI Slot (1,2,3,4) IRQ Priority > to specify the IRQ priority to be used by the PCI devices on slot 1 to 4.

DMA Channel (0,1,3,5,6,7) > to indicate whether or not the DMA channel is assigned for a PnP or ISA card.

IRQ (3,4,5,7,9,10,11,14,15) > to assign the displayed IRQ to be used by a legacy ISA adapter card. The settings are ISA/EISA or PCI/PnP.

4.7 Peripheral Setup

This setup is working mostly on Multi-I/O Chip (W83977F/877TF). The 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 Port 2. If you want to use the IrDA port, you have to configure the SIR or ASKIR model in the BIOS's Peripheral Setup's COM2; the RS-232 COM2 will be disabled.

AMIBIOS SETUP - PERIPHERAL SETUP		
(C)1998 American Megatrends, Inc. All Rights Reserved		
OnBoard Serial Port 3	3E8h/COM3	Available Options: ▶ Auto Disabled Enabled
Serial Port3 IRQ	11	
OnBoard Serial Port 4	2E8h/COM4	
Serial Port4 IRQ	10	
OnBoard FDC	Auto	
OnBoard Serial PortA	3F8h/COM1	
OnBoard Serial PortB	2F8h/COM2	
Serial PortB Mode	Normal	
IR Duplex Mode	N/A	
IrDA Protocol	N/A	
OnBoard Parallel Port	378h	
Parallel Port Mode	Normal	
EPP Version	N/A	
Parallel Port IRQ	7	
Parallel Port DMA Channel	N/A	
OnBoard IDE	Both	
		ESC:Exit ↑:Sel PgUp/PgDn:Modify F1:Help F2/F3:Color

Onboard FDC > to enable the FDC on your board. If you set it Auto, the BIOS will decide if the FDC should be enabled, automatically).

Onboard Serial Port A (/B) > to specify the I/O port address of the serial port 1(/2). If you set it Auto, the BIOS will decide the correct I/O port address, automatically.

Serial Port B Mode > to specify the mode of serial port 2.

IR Duplex Mode > to specify the mode of IR device that is connected to the IR port.

IrDA Protocol > to specify the function mode if an IrDA mode is selected.

Onboard Parallel Port > to specify the I/O port address of the parallel port.

Parallel Port Mode > to specify the mode of parallel port. The options are:

Normal (normal parallel port mode),

Bi-Dir (supports bidirectional transfer),

EPP (supports devices that comply with the Enhanced Parallel Port specification),

ECP (supports devices that comply with the Extended Capabilities Port).

Parallel Port IRQ > to assign certain IRQ to the parallel port. The optimal and fail-safe settings are 7.

Parallel Port DMA Channel > available only if the parallel port mode is ECP. The optimal and fail-safe settings are 3.

Onboard IDE > to define which on-board IDE controller channel(s) to be used. Available options are: Primary, Secondary, Both and Disabled.

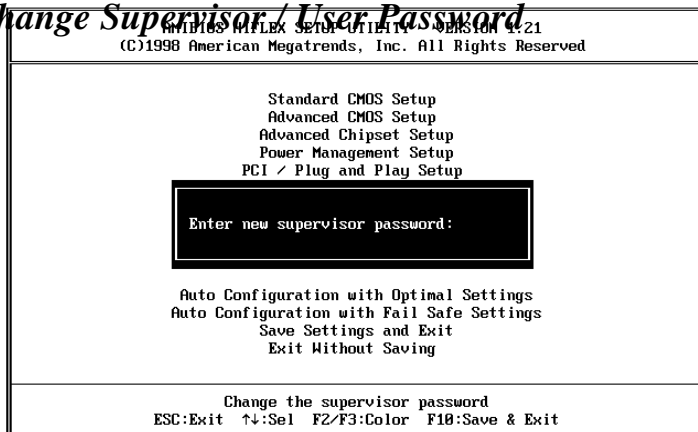
4.8 Hardware Monitor Setup

There is a LM78 chip on your board which can monitor on board system voltage and fan speed. The voltage monitoring will cover +5V,+12V,-12V,and -5V.

AMIBIOS SETUP - HARDWARE MONITOR SETUP	
(C)1998 American Megatrends, Inc. All Rights Reserved	
CPU Plug & Play	Auto
CPU Frequency Selection	100 Mhz
-≡ System Hardware Monitor ≡-	
Current System Temperature	48°C/118°F
CPU Fan Speed	5443 RPM
Current chassis1 FAN speed	0 RPM
Current chassis2 FAN speed	0 RPM
Vtt	1.520 V
Vcore	1.984 V
Vio	3.392 V
+ 5.000V	5.113 V
+12.000V	12.728 V
-12.000V	-12.209 V
- 5.000V	-5.124 V
Available Options:	
Manual	
▶ Auto	
ESC:Exit ↑↓:Sel	
PgUp/PgDn:Modify	
F1:Help F2/F3:Color	

Note: normal CPU Fan RPM is over than 5000 RPM. If your CPU Fan RPM is less than that figure, something is wrong and the CPU will be in overheat condition. Make sure that the connection at CN3/CN16/CN17 is correct.

4.9 Change Supervisor / User Password



This option sets a password that is used to protect your system and Setup Utility. Supervisor Password has higher priority than User Password. Once you setup the password, the system will always ask you to key-in password every time you enter the BIOS SETUP. If you enter the BIOS SETUP with Supervisor Password, you can access every setup option on the main menu but with User Password you can only choose three setup options (USER PASSWORD, SAVE SETTING AND EXIT and EXIT WITHOUT SAVING). To disable these passwords, enter the BIOS SETUP menu with Supervisor Password and then just press the <Enter> key instead of entering a new password when the 'Enter Password' prompt pop-up.

4.10 Auto-Detect Hard Disk

This option detects the parameters of an IDE hard disk drive (HDD sector, cylinder, head, etc) automatically and will put the parameters into the Standard CMOS Setup screen. Up to 4 IDE drives can be detected and the parameters will be listed in the box. Press <Y> if you accept these parameters. Press <N> to skip the next IDE drives.

Note: If your IDE HDD was formatted in previous older system, incorrect parameters may be detected. In this case, you need to enter the correct parameters manually or low-level format the disk.

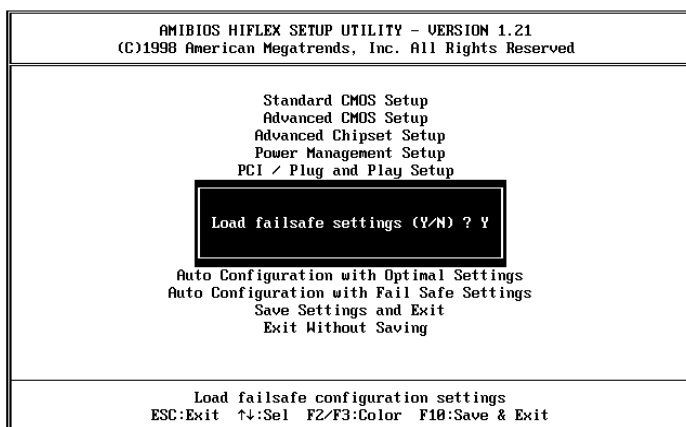
4.11 Auto Configuration with Optimal Settings

This option lets you load the *Optimal* default settings. These settings are *best-case values* which will provide the best performance. Whenever your CMOS RAM is damaged, this Optimal settings will be loaded automatically.



4.12 Auto Configuration with Fail Save Settings

This option lets you load the *Fail Safe* default settings when something happens to your computer so that it cannot boot normally. These settings are not the most optimal settings but are the most stable settings.



4.13 Save Settings and Exit

Select this option when you finish setting all the parameters and want to save them into the CMOS. Just simply press <Enter> key and all the configuration changes will be saved.

4.14 Exit Without Saving

Select this option if you want to exit the Setup without saving the changes that you made. Just simply press <Enter> key and you will exit the BIOS SETUP without saving the changes.

Appendix A. Watch-Dog Timer

The Watchdog Timer is a device to ensure that standalone systems can always recover from abnormal conditions that cause the system to crash. These conditions may result from an external EMI or a software bug. When the system stops working, hardware on the board will perform hardware reset (cold boot) to bring the system back to a known state.

Three I/O ports control the operation of 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. You need to send the time-out value to the I/O port – 443H, and then enable it by reading data from the same I/O port – 443H. This will activate the timer that will eventually time out and reset the CPU board. To ensure that this reset condition won't occur, the 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 YOUR APPLICATION HERE

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