

ICOP-6067VE

**Embedded ZFx86 PC/104 CPU Module with
2S/ USB / VGA/LCD/DOC&MDC /**

32M SD-RAM/ Ethernet

Quick Reference Manual

(Version 1.0)

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Chapter 0

Startup

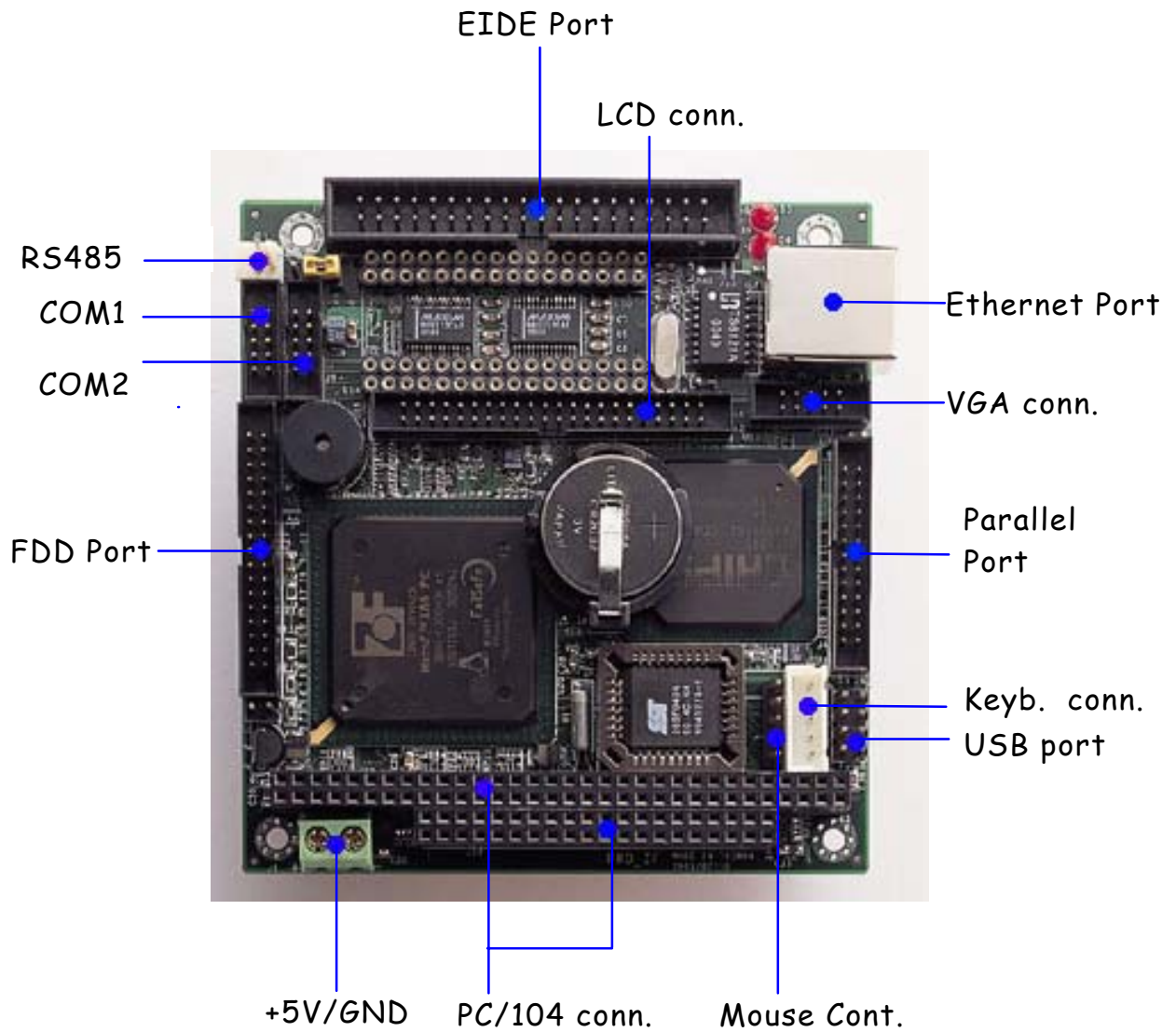
0.1 Packing List

Product Name	Function	Package
ICOP-6067VE	Embedded ZFX86 PC/104 CPU Module	<ul style="list-style-type: none">● ICOP-6067VE Embedded ZFX86 PC/104 CPU Module● Utility and Drivers Diskette x 1● FDD cable x 1● HDD cable x 1● RS232 cable x 2● Printer cable x 1● Dual socket USB cable with bracket x 1● AT KB/ PS2 Mouse x 1

0.2 Specifications

Features	ICOP-6067VE
Chipset	ZFX86 133MHz CPU 32-bit burst mode bus
Processor	X86 Processor with FPU unit and 8K byte write back L1 cache
BIOS	Phoenix BIOS (AMI BIOS)
Bus Interface	PC/104 standard compliant
SD-RAM	32MB onboard
Display	VGA/LCD
Enhanced IDE Port	2
Floppy Connector	2
Ethernet	10/100 Base-T X 1
USB Port	2
MicroDiskChip / DiskOnChip Socket	1
Serial Port	RS232 X 1, RS232/485 X 1
Parallel Port	1
Power Requirement	+5V @1.2A
Board Weight	150g
Board Size	90mm x 96mm

0.3 Component Location



Chapter 1

Introduction

1.1 Features

- PC/104 (96x90 mm) Embedded CPU Module
- PC/104 connector
- ZFX86 133MHz Embedded 32-bit CPU
- 32MB SD-RAM onboard
- Enhanced IDE devices and FDD interface
- One Bi-directional Parallel Port
- Onboard VGA/LCD connector
- Onboard 10/100 Base-T Ethernet port
- RS-232 interface
- Watchdog timer
- Socket for MicroDishChip or DiskOnChip
- Onboard Keyboard, Mouse header
- Onboard USB port
- Single voltage +5 V power connector
- Operating temperature from -20~+60 °C

1.2 Specifications

- **Embedded CPU:** ZF86 133MHz CPU 32-bit burst mode bus,x86 processor with FPU unit and 8k byte write-back level 1 cache
- **BIOS:** Phoenix BIOS (AMI BIOS)
- **SDRAM Memory:** 32MB SD-DRAM onboard
- **Bus Interface:** PC/104
- **Data Bus:** 16-bit
- **Bus Speeds:** PC/104 – 8.3 MHz
ISA – 8.3 MHz
- **DMA Channels:** 7
- **Interrupt Levels:** 15
- **Enhanced IDE:** supports one port and up to two hard drives or Enhanced IDE devices of PIO mode 4. BIOS enabled/disabled
- **Ethernet:** 10 / 100 Base-T
- **VGA /LCD**
- **Keyboard and Mouse Connectors:**
Internal 5-pin header for AT-keyboard
Internal 5-pin header for PS/2-mouse

High Speed Multi I/O

- **Chipset:** ZFX86 System-on-a-Chip
- **Serial ports:** two high speed RS-232 port. Both with 16C550 UART and 16 byte FIFO. BIOS enabled/ disabled
- **Floppy Disk Drive Interface:** supports up to two floppy drives, 5¼" (360 KB or 1.2 MB) and 3½ " (720 KB, 1.44 MB). BIOS enabled / disabled
- **Bi-directional Parallel Port:** supports SPP, EPP and ECP mode. BIOS enabled/disabled
- **USB Port:** Support 2 USB port ver1.1

Environmental and Power

- **Power Requirements:** single voltage +5 V @ 1200mA

- **Board Dimensions:** 90 (L) x 96 (W) mm.
- **Board Weight:** 150 g
- **Extended Operating Temperature:** -20~+60 °C

1.3 DiskOnChip 2000 Flash Disk

Flash Disk DiskOnChip ® 2000

- **Package:** Single Chip FlashDisk in 32-pin DIP JEDEC
- **Capacity:** 8-144 MByte capacity
- **Data Reliability:** ECC/EDC error correction
- **Memory Window:** 8 Kbyte

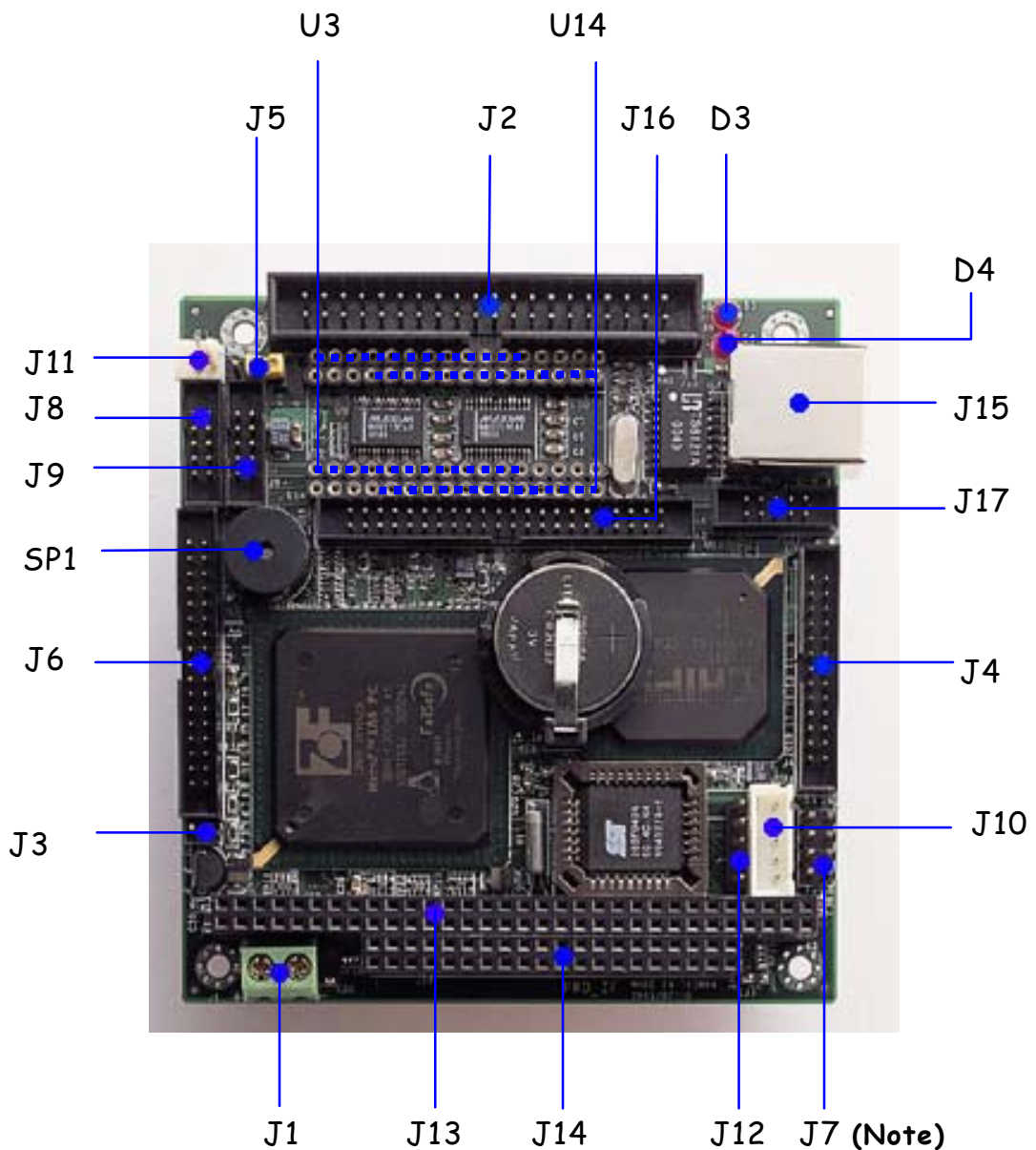
1.4 MicroDisk Chip

- **Capacity:** 4, 8, 16, 32, 48, 64, 96, 128 MB (unformatted)
- **IDE interface through 32 pin dip package.**
- **Host data transfer rate:** PIO4 data transfer (max. 16.6 MBps).

Chapter 2

Installation

2.1 Jumper Settings



Note: J7 USB port, pin 1 & 2 are for the Vcc. Please be noticed, pin 1 should be connected to the red wire. Or will cause a damage of you USB peripheral

2.1.1 ICOP-6067VE

J3 **1-2:** RESET SWITCH

J5 **1-2:** COM2 RS-232

2-3: COM2 RS-485

2.2 Connectors

J1	Power connector
J2	IDE connector
J4	Parallel port
J6	Floppy Disk connector
J7	USB port (NOTE)
J8	COM1
J9	COM2
J10	Keyboard connector
J11	RS-485 connector
J12	Mouse connector
J13	PC/104 connector—64 pin
J14	PC/104 connector—40 pin
J15	RJ45 connector
J16	LCD connector-44pin
J17	VGA connector
SP1	Buzzer
U3	MicroDisk Chip socket
U14	DiskOnChip socket
D3	Ethernet Link LED
D4	Ethernet Active LED

Note: J7 USB port, pin 1 & 2 are for the Vcc. Please be noticed, pin 1 should be connected to the red wire. Or will cause a damage of you USB peripheral.

Chapter 3

SVGA

3.1 Introduction

The ICOP-6067VE has an on-board VGA/LCD interface. The specifications and features are described as follows:

3.1.1 Chipset

The ICOP-6067VE uses a C&T CHIPS 69000 for its VGA/LCD controller, which supports conventional analog CRT monitors and flat panel. In addition, it supports a wide variety of color and monochrome SS, DSTN, TFT, EL and Plasma panels.

3.1.2 Display memory

ICOP-6067VE uses 2 MB memory, the VGA/LCD controller can drive CRT displays or color flat panel displays with resolutions up to 1024 x 768 at high colors.

Chapter 4

Network Interface

4.1 Introduction

The Realtek RTL8139B(L) is a highly integrated and cost-effective single-chip Fast Ethernet controller that provides 32-bit performance, PCI bus master capability, and full compliance with IEEE 802.3u 100Base-T specifications and IEEE 802.3x Full Duplex Flow Control. It also supports Advanced Configuration Power management Interface (ACPI), PCI power management for modern operating systems that is capable of Operating System Directed Power Management (OSPM) to achieve the most efficient power management. The RTL8139BL is suitable for the applications of CardBus or mobile with built-in network controller. The CIS data can be stored in either 93C56 EEPROM or expansion ROM. The RTL8139B is suitable for 5V signaling environment only, such as modern Desktop environment.

Besides the ACPI feature, the RTL8139B(L) also supports remote wake-up (including Magic Packet, LinkChg, and Microsoft wake-up frame) in both ACPI and APM environments. Especially, the RTL8139B(L) is capable of performing internal reset whenever there is (auxiliary) power applied to. Once the auxiliary power is on whereas the main power still remains off, the RTL8139B(L) is ready and is waiting for the Magic packet or LinkChnage to wake the system up. Also, the LWAKE pin provides 4 different output signals including active high, active low, positive pulse, and negative pulse. The versatility of the RTL8139B(L) LWAKE pin satisfies all kinds of motherboards with Wake-On-LAN (WOL) function. The RTL8139B(L) also supports Analog Auto-Powerdown, that is, the analog part of the RTL8139B(L) can be shut down temporarily according to the user's requirement or when the RTL8139B(L) is in power down states with the wakeup function disabled. Besides, when the analog part is shut down and the IsolateB pin is low (i.e. the main power is off), then both the analog and digital parts stop functioning and the RTL8139B(L) will achieve the most power saving and consume extremely minor power.

The PCI Vital Product Data (VPD) is also supported to provide the information that uniquely identifies hardware (i.e., the RTL8139B(L) net card). The information may consist of part number, serial number, and other detailed information, and so on.

For sake of cost-down, the RTL8139B(L) is capable of applying 20MHz crystal as its internal clock source. The 50MHz OSC is still supported, too.

The RTL8139B(L) keeps network maintenance cost low and eliminates usage barriers. It is the easiest way to upgrade a network from 10 to 100Mbps. It also supports full-duplex operation, making possible 200Mbps of bandwidth at no additional cost. The RTL8139B(L) is highly integrated and requires no “glue” logic or external memory. It includes an interface for a boot ROM and can be used in diskless workstations, providing maximum network security and ease of management.

4.2 Software Support

Setup/Diagnostic Program for DOS/Windows

NDIS2 (DOS, OS/2, Lantastic, WFW3.1.....)

NDIS3, NDIS4, NDIS5 for Win95, 98, NT 3.51, 4.0, 5.0, WFW3.11

Netware 16-bit ODI driver for DOS, OS/2 and 32-bit ODI driver for Netware 3.x, 4.x, 5.0 Server

Packet driver for UNIX Client

SCO Unix driver

Linux driver

FreeBSD

UnixWare 7.0

Help Utility for Easy Installation

Support DMI

RPL Boot ROM for Novell Netware, Microsoft NT

PXE Boot ROM

Test Program for Mass Production

Win CE

Appendix

Pin Assignments

IDE Interface Connector

Pin	Description	Pin	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 16
19	GND	20	N/C
21	N/C	22	GND
23	IOW #	24	GND
25	IOR #	26	GND
27	N/C	28	BALE-Default
29	N/C	30	GND-Default
31	Interrupt	32	IOCS16-Default
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0	38	HDC CSI #
39	HDD Active	40	GND

Flat Panel Connector

Pin	Description	Pin	Description
1	+12V	2	+12V
3	GND	4	GND
5	PVcc	6	PVcc
7	ENAVEE	8	ENAVEE
9	P0	10	P1
11	P2	12	P3
13	P4	14	P5
15	P6	16	P7
17	P8	18	P9
19	P10	20	P11
21	P12	22	P13
23	P14	24	P15
25	P16	26	P17
27	P18	28	P19
29	P20	30	P21
31	P22	32	P23
33	GND	34	GND
35	SHFCLK	36	FLM
37	M	38	LP
39	GND	40	ENABKL
41	GND	42	ASHFCLK
43	Vcc	44	Vcc

Description for Pin of Flat Panel Connector

Name	Description
P0~P23	Flat panel data output
ENABKL	Activity Indicator and Enable Backlight outputs
SHFCLK	Shift clock. Pixel clock for flat panel data
M	M signal for panel AC drive control
LP	Latch pulse. Flat panel equivalent of HSYNC
FLM	First line marker. Flat panel equivalent of VSYNC
+12V	+12V power from PC power supply
ENAVDD	Power sequencing controls for panel LCD bias volt
ENAVEE	Power sequencing controls for panel LCD bias volt
-SHFCLK	The inverter signal of SHFCLK
VDDM	3.3V or 5V selected by JP6

Floppy Disk Connector

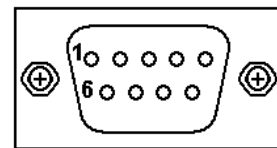
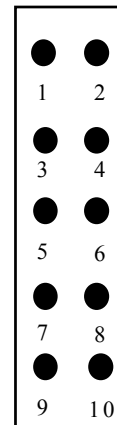
Pin	Description	Pin	Description
1	GND	2	Drive Enable Select
3	GND	4	N/C
5	GND	6	N/C
7	GND	8	Index #
9	GND	10	Drive select 0
11	GND	12	Drive select 1
13	GND	14	Drive select 2
15	GND	16	Motor enable
17	GND	18	Direction #
19	GND	20	STEP #
21	GND	22	Write data #
23	GND	24	Write gate #
25	GND	26	Track 0 #
27	GND	28	Write protect #
29	GND	30	Read data #
31	GND	32	Side 1 select #
33	GND	34	Disk change #

Parallel Port Interface

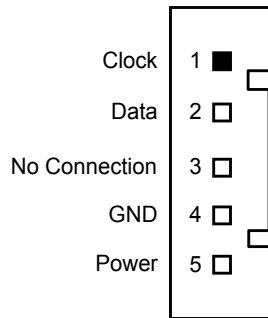
Pin	Description	Pin	Description
1	Strobe	2	Data 0
3	Data 1	4	Data 2
5	Data 3	6	Data 4
7	Data 5	8	Data 6
9	Data 7	10	Acknowledge #
11	Busy	12	Paper Empty #
13	Printer Select	14	Auto Form Feed #
15	Error #	16	Initialize #
17	Printer Select In #	18	GND
19	GND	20	GND
21	GND	22	GND
23	GND	24	GND
25	GND	26	NC

Serial Port Interface

10- Pin	D-Type	Description
1	1	Data Carrier Detect (DCD)/5V/12V
2	2	Receive Data (RXD)
3	3	Transmit Data (TXD)
4	4	Data Terminal Ready (DTR)
5	5	Ground (GND)
6	6	Data Set Ready (DSR)
7	7	Request to Send (RTS)
8	8	Clear to Send (CTS)
9	9	Ring Indicator (RI)/5V/12V
10	X	NC



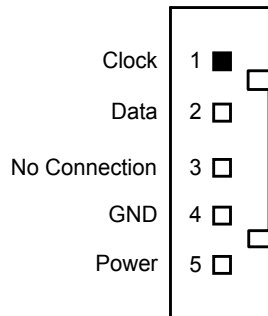
Keyboard and PS/2 Mouse Connector



Note for Keyboard:

Pin1: KBCLK

Pin2: KBDATA



Note for Mouse:

Pin1: MCLK

Pin2: MDATA

PC/104 Connectors

64-Pin Long Connector

PIN No.	PIN Name	PIN No.	PIN Name
1	IOCHCHK *	2	0V
3	SD7	4	RESETDRV
5	SD6	6	+5V
7	SD5	8	IRQ9
9	SD4	10	-5V
11	SD3	12	DRQ2
13	SD2	14	-12V
15	SD1	16	ENDXFR *
17	SD0	18	+12V
19	IOCHRDY	20	(KEY)
21	AEN	22	SMEMW *
23	SA19	24	SMEMR *
25	SA18	26	IOW *
27	SA17	28	IOR *
29	SA16	30	DACK3 *
31	SA15	32	DRQ3
33	SA14	34	DACK1 *
35	SA13	36	DRQ1
37	SA12	38	REFRESH *
39	SA11	40	SYSCLK
41	SA10	42	IRQ7
43	SA9	44	IRQ6
45	SA8	46	IRQ5
47	SA7	48	IRQ4
49	SA6	50	IRQ3
51	SA5	52	DACK2 *
53	SA4	54	TC
55	SA3	56	SALE
57	SA2	58	+5V
59	SA1	60	OSC
61	SA0	62	0V
63	0V	64	0V

40-Pin Short Connector

PIN No.	PIN Name	PIN No.	PIN Name
1	0V	2	0V
3	MEMCS16 *	4	SBHE *
5	IOCS16 *	6	LA23
7	IRQ10	8	LA22
9	IRQ11	10	LA21
11	IRQ12	12	LA20
13	IRQ15	14	LA19
15	IRQ14	16	LA18
17	DACK0 *	18	LA17
19	DRQ0	20	MEMR *
21	DACK5 *	22	MEMW *
23	DRQ5	24	SD8
25	DACK6 *	26	SD9
27	DRQ6	28	SD10
29	DACK7 *	30	SD11
31	DRQ7	32	SD12
33	+5V	34	SD13
35	MASTER *	36	SD14
37	0V	38	SD15
39	0V	40	(KEY)

Warranty

This product is warranted to be in good working order for a period of one year from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster. Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, or inability to use this product. Vendor will not be liable for any claim made by any other related party. Return authorization must be obtained from the vendor before returned merchandise will be accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description.