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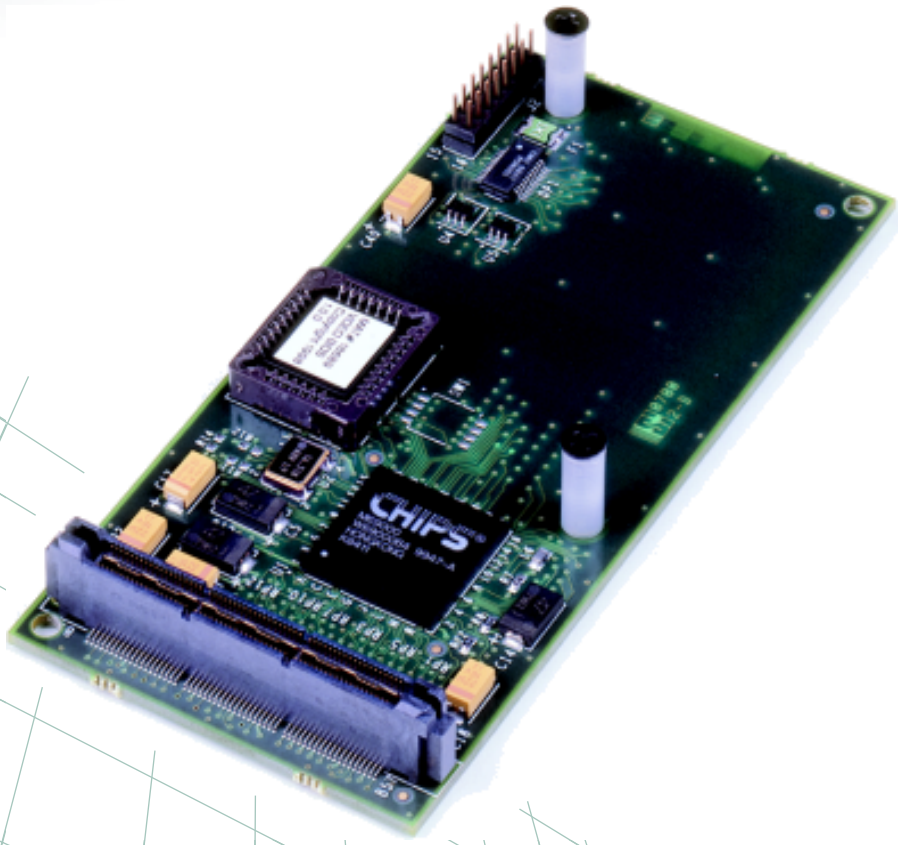
Find the *Ribbon / Performance Technologies / Ziatech ZT 96079A 00* at our website: *Click HERE*

CompactPCI®

ZT 96079

AGP Video Mezzanine Adaptor

Hardware User Manual



ZIATECH CORPORATION

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CONTENTS

MANUAL ORGANIZATION 3

1. INTRODUCTION 4

PRODUCT DEFINITION 4
FEATURES 4
FUNCTIONAL BLOCKS 5
AGP MEZZANINE CONNECTOR 6
VIDEO ACCELERATOR 6
VIDEO MEMORY 6
VIDEO BIOS 6
VIDEO OUTPUT CONNECTOR 6
OPERATING CONSIDERATIONS 7
ANALOG VIDEO INTERFACE 7
DISPLAY MODES SUPPORTED 7
I/O AND MEMORY CONFIGURATION 7

2. SPECIFICATIONS 9

ELECTRICAL SPECIFICATIONS 9
ENVIRONMENTAL SPECIFICATIONS 9
MECHANICAL SPECIFICATIONS 9
BOARD DIMENSIONS AND WEIGHT 9
CONNECTORS 10

3. DATA SHEET REFERENCE 13

AGP VIDEO 13

A. AGENCY APPROVALS 14

CE CERTIFICATION 14
FCC REGULATORY INFORMATION 15
NEBS COMPLIANCE 15

B. CUSTOMER SUPPORT 16

TECHNICAL/SALES ASSISTANCE 16
RELIABILITY 16
RETURNING FOR SERVICE 16
ZIATECH WARRANTY 17
TRADEMARKS 17

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MANUAL ORGANIZATION

This manual describes the operation and use of the ZT 96079 AGP Video Mezzanine Adapter. The following topics summarize the focus of each chapter in this manual.

Chapter 1, "**Introduction**," describes the features and functional blocks of the ZT 96079.

Chapter 2, "**Specifications**," contains the electrical, environmental, and mechanical specifications for the ZT 96079. It also provides an illustration of connector locations and tables of the connector pin assignments.

Chapter 3, "**Data Sheet Reference**," provides links to data sheets, standards, and specifications for the technology designed into the ZT 96079.

Appendix A, "**Agency Approvals**," presents UL, CE, and FCC agency approval and certification information for the ZT 5502. This appendix also presents NEBS compliance information.

Appendix B, "**Customer Support**," offers technical assistance, warranty information, and the necessary information should you need to return your ZT 96079 for repair.

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1. INTRODUCTION

This chapter provides a brief introduction to the ZT 96079 AGP Video Mezzanine Adapter. It includes a product definition, a list of product features, a functional block diagram, and a brief description of each block. See Chapter 2, "Specifications," for complete power and temperature requirements, as well as connector locations, descriptions, and pinout tables.

PRODUCT DEFINITION

The ZT 96079 is a Super VGA AGP Video Mezzanine Adapter that piggybacks on to compatible Ziatech CPUs. The CPU/AGP adapter combination occupies a single CompactPCI® slot (in non-HA systems).

The ZT 96079 utilizes the Accelerated Graphics Port (AGP) Interface to give exceptional video performance targeted at 2D or other high bandwidth graphical display applications. The AGP bus supports 32 bits of data and runs at a speed of 66 MHz, giving it a theoretical bandwidth of 266 Mbytes/s in 1x AGP mode.

FEATURES

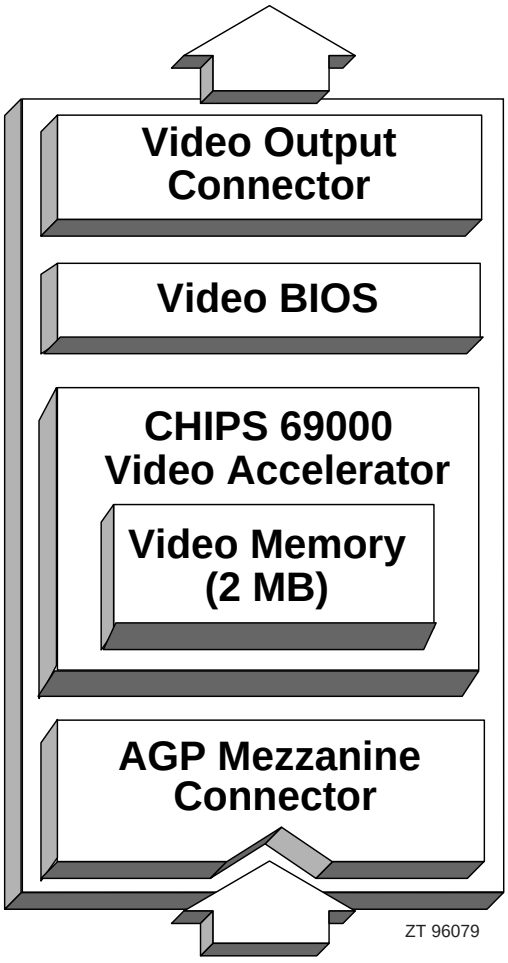
- CPU/Video mezzanine combination within one CompactPCI slot
- 64-bit graphics engine with integrated 2D acceleration
  - System to Screen
  - Screen to Screen BitBLT
  - Optimized for Windows BitBLT format
  - Acceleration in ALL color modes
- Video playback acceleration
  - Horizontal and vertical interpolation
  - Capture / Scaling
  - YUV-to-RGB conversion on the fly
- High Performance integrated on-chip SDRAM memory
  - 2MB integrated memory
  - 83 MHz SDRAM operation
  - Up to 664MBytes/second frame buffer bandwidth

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- MPEG-2/DVD acceleration
  - Capture engine supports mirroring and rotation
  - Double buffered
  - Non rectangular window with color keying
- Integrated 135 MHz palette DAC and clock synthesizer
  - Supports resolutions up to 1280 x 1024
  - True-color operation up to 32-bit color depth
  - Hardware cursors
- IBM® VGA compatible

FUNCTIONAL BLOCKS

Below is a functional block diagram of the ZT 96079. Overviews of the functional blocks appear after the diagram.



Functional Block Diagram

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AGP Mezzanine Connector

The ZT 96079 interfaces to AGP through a 114-pin AMP™ Mictor™ connector (J1) in which the CPU will enumerate as a logical PCI Bus. The interface consists of a 32-bit data/address bus with a clock speed of 66 MHz. For further information, see the topic "J1 (AGP Mezzanine Connector)" in Chapter 2, "Specifications."

Video Accelerator

The ZT 96079 is based on the CHIPS 69000 HiQVideo™ Accelerator, a highly integrated 64-bit GUI engine optimized to handle graphic intensive environments. The 69000 utilizes the Intel® AGP (Accelerated Graphics Port) interface.

AGP off-loads the PCI bus by allowing graphics data to move directly to system memory. This direct interface reduces memory overhead while enhancing both system bandwidth and graphics performance. See Chapter 3, "Data Sheet Reference," for further information.

Video Memory

The CHIPS 69000 incorporates 2Mbytes of proprietary integrated SDRAM for the graphics/video frame buffer. The integrated SDRAM memory supports up to 83MHz operation, increasing the available memory bandwidth for the graphics subsystem. It results in support for additional high color and high resolution graphics modes combined with real-time video acceleration.

This additional bandwidth also allows more flexibility in the other graphics functions intensely used in Graphical User Interfaces (GUIs) such as Microsoft® Windows®. See the topic "I/O and Memory Configuration" for more information.

Video BIOS

The video BIOS provides low-level control of the VGA controller. It is used to interpret higher-level commands and transform them into register-level instructions that the VGA controller can understand.

The ZT 96079's BIOS is fully IBM® VGA and VESA compatible. The BIOS is contained in an EEPROM located on the ZT 96079. It is automatically installed during system initialization and is mapped to the standard C0000h through C7FFFh VGA BIOS memory space.

Video Output Connector

The ZT 96079 interfaces to a monitor by passing the video signals down to the CPU board through this through a 2x8-pin 2mm header (J2). The CPU will then supply the connection to the monitor. See the topic "J2 (Video Output Connector)" in Chapter 2, "Specifications," for further information.

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OPERATING CONSIDERATIONS

Analog Video Interface

The ZT 96079 requires an analog monitor. If your monitor is capable of both digital and analog modes, set it to analog. The ZT 96079 supports monitors with Display Data Channel (DDC) capability.

The ZT 96079 can be used in a wide variety of video applications. To ensure the best quality display, take into account such factors as environment, noise from surrounding equipment, video mode, distance from video source, and cabling.

The analog video signals are comprised of two digital synchronization signals (horizontal and vertical sync) and three color signals (red, green, and blue). The color signals are driven by a RAMDAC, which is used to convert the digital video data to analog signals. The RAMDAC's analog outputs have an impedance of 75 Ω. Ideally, the connection to this output should use high quality 75 Ω shielded cable.

Display Modes Supported

The ZT 96079 supports the modes listed in the table below.

Video modes supported

Resolution	Color (bpp)	Refresh Rates (Hz)
640x480	8, 16, 24	60, 75, 85
800x600	8, 16, 24	60, 75, 85
1024x768	8, 16	60, 75, 85
1280x1024	8	60

I/O and Memory Configuration

The I/O and memory map for the ZT 96079 vary according to the video mode. The "Display Memory Address Map" table summarizes the address space for various video modes. For the safest operation, allowing all modes to be used, reserve the following:

I/O ports:

100h —104h

46E8h

3B0h — 3DFh

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Memory addresses:

A0000h — BFFFFh

C0000h — C7FFFh (for the video BIOS)

If linear addressing is used, the PCI BIOS allocates a 16 Mbyte block of memory.

Display Memory Address Map

	MEMORY MAP			
Video Mode	A0000-AFFFFh	B0000-B7FFFh	B8000-BFFFFh	Upper Memory 16 Mbyte
Color Text Modes	—	—	**X**	—
Mono Text Modes	—	**X**	—	—
VGA Graphics	**X**	—	—	—
Extended VGA Graphics	**X**	**X**	**X**	**X**

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2. SPECIFICATIONS

This chapter describes the electrical, environmental, and mechanical specifications of the ZT 96079 AGP Video Mezzanine Adapter. It includes illustrations of the board dimensions, connector locations, and connector pinout tables.

ELECTRICAL SPECIFICATIONS

Power Requirements	Minimum	Typical	Maximum
Supply Voltage, VCC3	3.00 V	3.30 V	3.60 V
Supply Current, VCC3 = 3.3 V	—	152 mA	—
Supply Voltage, VCC	4.75 V	5.00 V	5.25 V
Supply Current, VCC = 5.0 V	—	6 mA	—

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature: 0º to +70º Celsius

Storage Temperature: -40º to +85º Celsius

Relative Humidity: <95% at 40º Celsius, non-condensing

MECHANICAL SPECIFICATIONS

The topics listed below provide the following mechanical specifications:

- Board dimensions and weight
- Connectors (including connector locations, descriptions, and pin assignments)

Board Dimensions and Weight

Mechanical dimensions for the ZT 96079 are shown in the "Board Dimensions" illustration on the following page and outlined below.

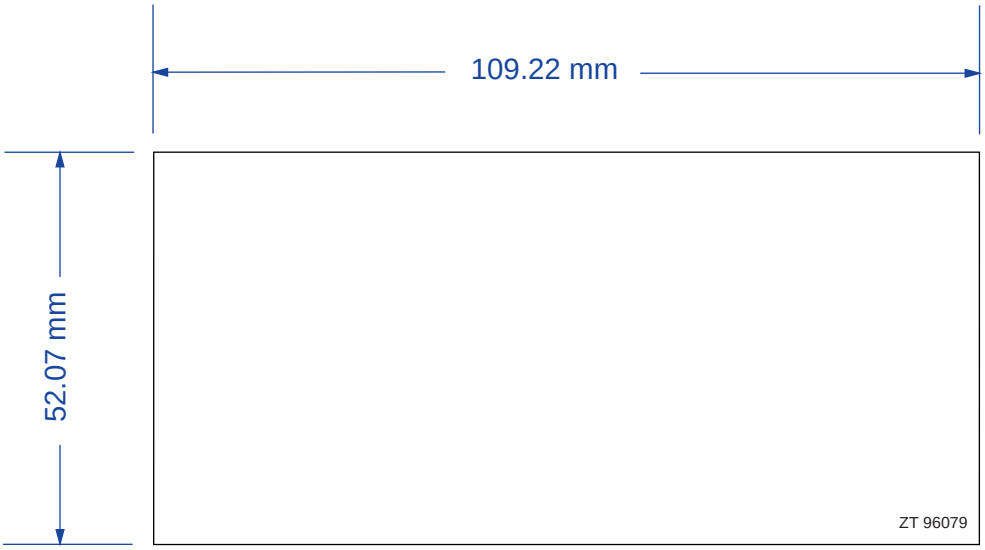
Board Length: 52 mm (2.05 inches)

Board Width: 109.22 mm (4.30 inches)

Board Thickness: 1.60 mm (0.063 inches)

Board Weight 31.30 grams (1.10 ounces)

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Board Dimensions

Connectors

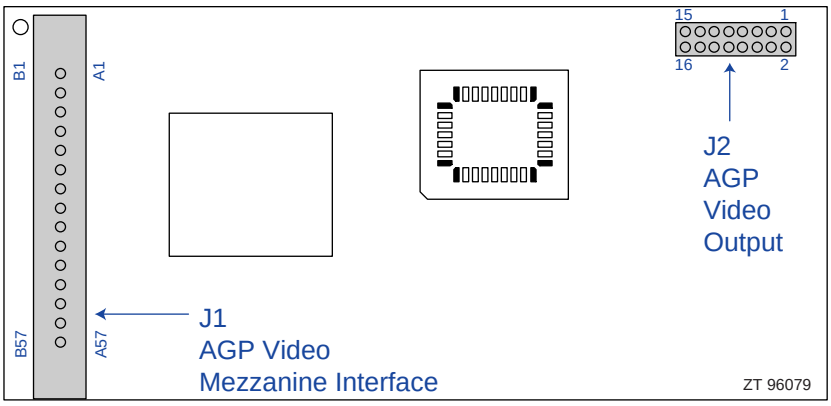
As shown in the "Connector Locations" figure, the ZT 96079 includes two connectors to interface to application-specific devices.

A brief description of each connector is given in the "Connector Pin Assignments" table below. A detailed description and pinout for each connector is given in the following topics.

Connector Pin Assignments

J1 AGP Mezzanine Interface Connector (114-pin, plug)

J2 Video Output Connector (2x8-pin, 2 mm header)



Connector Locations

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J1 (AGP Mezzanine Connector)

J1 is a 114-pin plug (AMP 1-767003-1 or equivalent). See the "J1 AGP Mezzanine Connector Pin Assignment" table on the following page for pin definitions.

J2 (Video Output Connector)

J2 is a 2-row x 8 pin 2 mm header (COMM CON 2 mm Center .020" diameter round pin or equivalent) used to pass video signals to the CPU for routing to a D-shell connector on the CPU's faceplate. See the "J2 Video Output Connector Pin Assignment" table below for pin definitions.

J2 Video Output Connector Pin Assignment

Pin#	Signal	Pin#	Signal
1	RED	2	GRN
3	BLUE	4	NC
5	DGND	6	RGND
7	GGND	8	BGND
9	VCC	10	SGND
11	NC	12	SDA
13	HSYNC	14	VSYNC
15	SCL	16	NC

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J1 AGP Mezzanine Connector Pin Assignment

Column A Pins	Signal	GND Pins	Signal	Column B Pins
1	PME#	GND	12 V	1
2	5.0 V	—	BDSEL#	2
3	5.0 V	—	Reserved*	3
4	GND	—	GND	4
5	USB+	GND	USB-	5
6	GND	—	GND	6
7	INTB#	—	INTA#	7
8	CLK	—	RST#	8
9	GND	GND	GND	9
10	REQ#	—	GNT#	10
11	VCC3.3	—	VCC3.3	11
12	ST0	—	ST1	12
13	ST2	GND	Reserved	13
14	RBF#	—	PIPE#	14
15	spare	—	spare	15
16	SBA0	—	SBA1	16
17	VCC3.3	GND	VCC3.3	17
18	SBA2	—	SBA3	18
19	SB_STB	—	Reserved	19
20	SBA4	—	SBA5	20
21	SBA6	GND	SBA7	21
22	GND	—	GND	22
23	AD31	—	AD30	23
24	AD29	—	AD28	24
25	VCC3.3	GND	VCC3.3	25
26	AD27	—	AD26	26
27	AD25	—	AD24	27
28	AD_STB1	—	Reserved	28
29	AD23	GND	C/BE3#	29
30	Vddq3.3	—	Vddq3.3	30
31	AD21	—	AD22	31
32	AD19	—	AD20	32
33	AD17	GND	AD18	33
34	C/BE2#	—	AD16	34
35	Vddq3.3	—	Vddq3.3	35
36	IRDY#	—	FRAME#	36
37	VCC3.3	GND	VCC3.3	37
38	DEVSEL#	—	TRDY#	38
39	Vddq3.3	—	STOP#	39
40	PERR#	—	Spare	40
41	GND	GND	GND	41
42	SERR#	—	PAR	42
43	Vddq3.3	—	GND	43
44	C/BE1#	—	AD15	44
45	Vddq3.3	GND	Vddq3.3	45
46	AD14	—	AD13	46
47	AD12	—	AD11	47
48	AD10	—	AD9	48
49	AD8	GND	C/BE0#	49
50	Vddq3.3	—	Vddq3.3	50
51	AD_STB0	—	Reserved	51
52	AD7	—	AD6	52
53	AD5	GND	AD4	53
54	AD3	—	AD2	54
55	Vddq3.3	—	Vddq3.3	55
56	AD1	—	AD0	56
57	SMB0	GND	SMB1	57

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3. DATA SHEET REFERENCE

This chapter provides links to data sheets, standards, and specifications for the ZT 96079 technology designs.

AGP VIDEO

For more information on Intel's Accelerated Graphics Port (AGP) technology, visit their website at:

http://developer.intel.com/technology/agp/.

For more information on the CHIPS 69000 HiQVideo Accelerator with Integrated Memory, refer to the *CHIPS 69000 Data Book* in PDF format, available at:

http://developer.intel.com/design/graphics/mobilegraphics/datashts/010181003.htm.

For video drivers for the CHIPS 69000 HiQVideo Accelerator, refer to:

http://developer.intel.com/support/graphics/mobile/hiq.htm.

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A. AGENCY APPROVALS

This appendix presents agency approval and certification information for the ZT 96079 AGP Video Mezzanine Adapter. The ZT 96079 was designed to the specifications listed in this appendix.

UL 1950 CERTIFICATION

Underwriters Laboratories, Inc.®

Safety: UL Safety of Information Technology Equipment, including Electrical Business Equipment IEC 950 and UL 1950 (UL file # E179737)

CE CERTIFICATION

The ZT 96079 is designed to meet the intent of Directive 89/336/EEC for Electromagnetic Compatibility and Low-Voltage Directive 73/23/EEC for Product Safety. The ZT 96079 was built to comply with the following specifications as listed in the Official Journal of the European Communities:

EN 50081-1 Emissions:

EN 55011	Class A Radiated CISPR Pub 22
EN 605555-2	AC Power Line Harmonic Emissions CISPR Pub 22

EN 50082-1 Immunity:

EN 61000 4-2	Electro-static Discharge (ESD)
EN 61000 4-3	Radiated Susceptibility 30 to 100 MHz
ENV 50204	900 MHz Carrier
EN 61000 4-4	Electrical Fast Transient Burst (EFTB)
EN 61000 4-5	Surge, per Power Cord
EN 61000 4-6	Conducted Immunity 150 KHz to 30 MHz
EN 61000 4-8	Power Frequency Magnetic Fields
EN 61000 4-11	Voltage dips, Variations, & Short Interruptions

Low Voltage Directive 73/23/EEC:

UL 1950/EN 60950	Safety of Information Technology Equipment, Including Electrical Business Equipment

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FCC REGULATORY INFORMATION

The ZT 96079 was designed to complay with the Regulatory specifications by Federal Communications Commission (FCC) (USA only).



Warning: This equipment has been tested and found to comply with the limits for a Class A or B digital device, pursuant to FCC 47 CFR Part 15, Subpart B, Class A or B of the FCC Rules. This equipment generates and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

Ziatech Corporation conducts system RFI and Radiated Immunity tests with Ziatech Corporation-supported peripheral devices and Ziatech Corporation-shielded cables. Changes or modifications not expressly approved by Ziatech Corporation could result in EMI interference. FCC compliance is achieved under the following conditions:

- Shielded signal cables and a shielded power cord.
- Shielded cables on all I/O ports.
- Cable shields connected to earth ground via metal shell connectors.
- Conductive chassis rails connected to earth ground. This provides the path for connecting shields to earth ground.
- Front panel screws properly tightened.

For minimum RF emissions, it is essential that the conditions above are implemented; failure to do so could compromise the FCC compliance of the equipment containing the system.

NEBS COMPLIANCE

The ZT 5502 is designed to comply with the following specifications:

Physical Protection: GR-63-CORE Network Equipment-Building Systems (NEBS) Requirements, sections 4.1.1.1, 4.1.1.2, 4.1.1.3, 4.1.3, 4.3.1.1, 4.3.2, and 4.4.

Industrial Environmental Shock and Vibration Testing:

- Operational Random Vibration
- Non-Operational Random Vibration
- Operational Mechanical Shock
- Non-Operational Mechanical Shock

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B. CUSTOMER SUPPORT

This appendix offers technical and sales assistance information for this product, warranty information, and necessary information for the return of a Ziatech product.

TECHNICAL/SALES ASSISTANCE

If you have a technical question, please call Ziatech's Customer Support Service at the number below, or e-mail our technical support team at tech_support@ziatech.com. Ziatech also maintains an FTP site located at ftp://ziatech.com/Tech_support.

If you have a sales question, please contact your local Ziatech Sales Representative or the Regional Sales Office for your area. Address, telephone and FAX numbers, and additional information are available at Ziatech's website, located at http://www.ziatech.com.

Corporate Headquarters

1050 Southwood Drive

San Luis Obispo, CA 93401 USA

Tel (805) 541-0488

FAX (805) 541-5088

RELIABILITY

Ziatech takes extra care in the design of the product in order to ensure reliability. The product was designed in top-down fashion, using the latest in hardware and software design techniques, so that unwanted side effects and unclean interactions between parts of the system are eliminated. Each product has an identification number. Ziatech maintains a lifetime data base on each board and the components used. Any negative trends in reliability are spotted and Ziatech's suppliers are informed and/or changed.

RETURNING FOR SERVICE

Before returning any of Ziatech's products, you must phone Ziatech at (805) 541-0488 and obtain a Return Material Authorization (RMA) number. Please supply the following information to Ziatech in order to receive an RMA number:

- Your company name and address for invoice
- Your shipping address and phone number
- The product I.D. number
- The name of a technically qualified individual at your company familiar with the mode of failure

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Once you have an RMA number, follow these steps to return your product to Ziatech:

1. Contact Ziatech for pricing if the warranty expired.

2. Supply a purchase order number for invoicing the repair if the warranty expired.

3. Pack the board in **anti-static** material and ship in a sturdy cardboard box with enough packing material to adequately cushion it.

Note: Any product returned to Ziatech improperly packed will immediately void the warranty for that particular product.

4. Mark the RMA number clearly on the outside of the box.

ZIATECH WARRANTY

Warranty information for Ziatech products is available at Ziatech's website, located at http://www.ziatech.com.

TRADEMARKS

AMP is a trademark of AMP Incorporated.

CHIPS Logo is a registered trademark of Chips and Technologies, Inc., a subsidiary of Intel Corporation.

CompactPCI is a registered trademark of the PCI Industrial Computers Manufacturers Group.

HiQVideo is a trademark of Chips and Technologies, Inc., a subsidiary of Intel Corporation.

IBM is a registered trademark of International Business Machines, Inc.

Intel is a registered trademarks of Intel, Inc.

Microsoft is a registered trademark of Microsoft Corporation.

Mictor is a trademark of AMP Incorporated.

Windows is a registered trademark of Microsoft Corporation.

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