ZT 5520

CPU BOARD WITH SINGLE/DUAL PENTIUM® PRO PROCESSORS

CompactPCI®

Supports one or two Pentium Pro processors and several operating systems

The ZT 5520 brings leading edge performance to CompactPCI® with one or two Pentium® Pro processors, the latest memory and I/O technology, and two CompactPCI buses. When two processors are used, the board operates in symmetric multiprocessing (SMP) mode, and is compliant with the Intel multiprocessor specification.

A dual CompactPCI bus configuration gives the ZT 5520 the ability to drive many CompactPCI peripheral boards without an expensive external bridge board. The ZT 5520 shares this common rear connector arrangement with other Ziatech CompactPCI CPU boards, allowing for easy board upgrades.

- **Single/Dual Pentium Pro processors**
- **Intel multiprocessing specification compliant**
- **Intel 440FX PCIset**
- **Up to 512 Mbyte EDO DRAM with ECC capability**
- **Up to 8 Mbyte on-board flash memory**
- **Expansion option for 20 to 85 Mbyte flash disks**
- **Universal Serial Bus (USB)**
- **Two serial ports (16550)**
- **Floppy and IDE controllers**
- **Drives two CompactPCI buses (up to 14 slots)**
- **Rear panel connections for I/O (J3)**
- **Mezzanine connector for local primary PCI bus expansion**
- **Jumperless setup**
- **Five-year warranty**
- **Supports Windows NT®, QNX®, VxWorks®, and other OSs**

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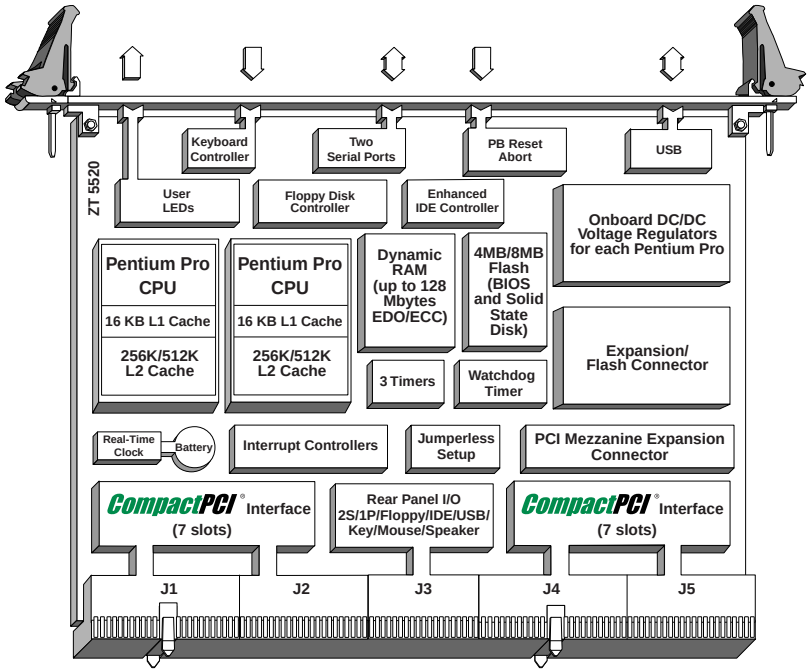


Functional Considerations

CompactPCI Bus Interface

Designed to the CompactPCI interface standard, the ZT 5520 is a 6U card that implements two independent CompactPCI bus segments (J1/J2) and (J4/J5). Each connector can drive a full CompactPCI bus of seven adapter cards. The external buses are driven by PCI to PCI bridge chips. The primary PCI bus is confined to the ZT 5520 but is available for local connection via an on-board mezzanine connector.

Intel Pentium Pro Processors

The ZT 5520 fully supports Intel Pentium Pro processor technology to provide the latest computing power for the OEM. On-board voltage regulation is provided for each Pentium Pro processor and allows for variation in Pentium Pro processor voltage requirements in 0.1V increments. Cache configurations of 256K/512K/1MB are supported by the design.

Intel 440FX PCI Interface Chip

The 440FX chip set from Intel is designed to maximize throughput on the PCI bus. It is a fourth generation PCI chip set, capable of burst mode transfers to 110 Mbytes per second.

Cooling Requirements

An integrated heatsink/fan is provided to cool each processor. With this arrangement, the ZT 5520 is rated for 0° to 52° C operation without external forced air cooling but with adequate ventilation. Detailed curves of temperature verses airflow for the different processor options are included in the manual.

Jumperless Setup

Interrupt routing as well as configuration options are all configurable through a BIOS setup screen. The BIOS automatically configures all PCI devices in the system, including PCI to PCI bridges.

Memory

ZT 5520 supports stackable DRAM modules for increased ruggedness and reduced space. All RAM is Error Correcting (ECC) RAM for data integrity. ECC memory is important for mission critical applications and provides protection from single- and multiple-bit errors. Single-bit errors are automatically corrected without software intervention. Total capacity is 128 Mbytes using 16 Mbit DRAMS. EDO technology DRAMs are supported for maximum performance. Future RAM modules will provide even greater capacity (up to 512 Mbytes).

PCI Mezzanine Expansion

A connector and mounting mechanism provides CompactPCI mezzanine expansion for additional on-board features. The mezzanine is logically connected to the primary PCI bus of the ZT 5520 CPU board. Standard options provides video or Ethernet.

Flash Memory

The ZT 5520 comes with 2 Mbytes of on-board flash memory and can be ordered with up to 8 Mbytes on the base board. The flash memory contains the system BIOS, which supports the remainder as a solid state disk or a bootable operating system image.

Flash Memory Expansion

Additional flash memory or IDE expansion is supported via a Compact Flash® form factor expansion mezzanine. The flash mezzanine is available with SanDisk™ Compact Flash-style flash expansion modules up to 85 Mbytes. These disks appear to the system as a hard drive and are automatically supported by most operating systems.

On-Board Peripherals

The ZT 5520 contains many standard on-board peripherals, making it a very powerful single board computer as well as a sophisticated main CompactPCI processor. In addition to the standard keyboard, counter/timer, and two serial (16550) ports, it also contains an Enhanced IDE (E-IDE) controller, a floppy controller and a Universal Serial Bus (USB) interface. A watchdog timer for critical applications is also included.

Serial I/O

Two asynchronous serial ports are supported by the ZT 5520. Compatible with the 16550 UART, each serial port can be connected via front or rear panel I/O. RS-232-compatible drivers are used to drive the serial interfaces, and the front panel connectors are configured for DTE.

Parallel Port

The ZT 5520 provides a parallel port that is IEEE-1284 compliant. The printer port can be interfaced via the rear panel I/O connector (J3). The parallel port can be used for printer interfacing (LPT1), electronic key interfacing, or general purpose I/O.

Universal Serial Bus

The emerging Universal Serial Bus (USB) will provide a common interface to slower speed peripherals in the future. Functions such as keyboard, serial ports, printer port and mouse ports will be consolidated into USB, greatly simplifying the cabling requirements of future computers. The ZT 5520 provides one USB port through the front panel and one USB port through the rear panel for this capability. USB will be supported by the BIOS and operating systems such as Windows 95 and Windows NT.

Enhanced IDE Interface

The Intel chipset provides an integrated PCI based Enhanced IDE (E-IDE) controller. Up to four disk drives may be supported by the two E-IDE channels. The E-IDE channels are available through the rear panel I/O connector (J3).

Floppy Interface

An on-board floppy disk controller provides for an off-board floppy disk. The floppy disk drive signals are routed to the rear panel I/O connector (J3) for off-board support.

Keyboard

The ZT 5520 supports a keyboard at the front panel or through the rear panel I/O connector (J3).

Mouse

The system BIOS supports standard PS/2 bus mouse devices through the rear panel I/O connector (J3) only. By using the PS/2 mouse, both serial ports are available for other communication.

LED Indicators

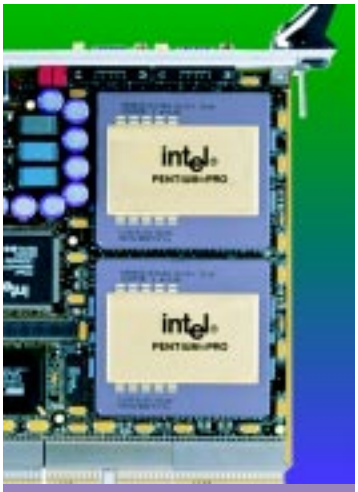
LEDs are provided on the front panel for the following features: hard disk activity, two user indicators, and power on.

Rear Panel Connections

The ZT 5510 brings most I/O signals out of the rear of the board on J3. This allows these signals to be connected via a rear panel transition board such as the ZT 4800 using backplane routing to a special utility slot. This is done in the ZT 5200 Enclosure where the rear panel signals are routed to a special "System Utility" slot that accommodates the ZT 5980 System Utility Board.

Software

The ZT 5520 comes standard with Ziatech's Industrial BIOS and MS-DOS boot files loaded in on-board flash. The BIOS is user configurable to boot an operating system residing in local flash memory, from a fixed or floppy drive or over a network. The flexibility of the BIOS allows the ZT 5520 to operate like a PC in many configurations. Popular operating systems with support for the PC architecture include Windows 95, Windows NT, QNX, and VxWorks. Symmetric multiprocessing operation of the processors is provided through the system BIOS. Ziatech provides extended support for these operating systems and offers Windows NT as an option.



KEY DETAIL: PENTIUM PRO PROCESSOR

The Pentium Pro processor family gives Ziatech's ZT 5520 CompactPCI computer the best available performance, and the ability to run dual CPUs in symmetric multiprocessing mode.

Advanced 3D visualization, interactive capabilities and other performance-demanding applications are made possible by the Pentium Pro processor's Dynamic Execution, the next step beyond Intel's superscaler architecture implemented in the Pentium processor.

With the Pentium Pro processor architecture and the advanced memory and peripheral features found on the ZT 5520 CPU board, this 6U CompactPCI computer is optimized to run 32-bit operating systems such as Windows NT.

CPU BOARD WITH SINGLE/DUAL PENTIUM PRO PROCESSORS

CompactPCI®

SPECIFICATIONS

The ZT 5520 is compliant with the following specifications:

- CompactPCI Specification, PICMG 2.0, ver. 2.1
- CompactPCI Dual System Slot Specification, PICMG 2.7, pending PICMG approval

Mechanical

- Measures 9.2" x 6.3" (233.35mm x 160mm)
- Connector: IEC-1076-4-101 for J1-J5
- Height: 1.3" (two slots - 8HP)

Reliability

MTBF: 5.5 years

MTTR: Five minutes (based on board replacement)

POWER REQ. *(1C1R2 OPTION)*	MIN.	TYP.	MAX.
Supply Voltage, V_{CC}	4.75V	5.00V	5.25V
Supply Current, V_{CC}=5.0V	—	6.2A	7.7A

ENVIRONMENTAL *(1C1R2 OPTION)*	
Operating Temperature	0° to 52° Celsius
Storage Temperature	-40° to +85° Celsius
Non-Condensing Relative Humidity	less than 95% at 40° Celsius

ORDERING INFORMATION

A 6U CompactPCI CPU board with a single Pentium Pro processor, 32 Mbytes ECC DRAM (1 module), 2 Mbytes flash, MS-DOS boot files and solid state disk in flash memory without a disk, video, or flash expansion option would be ordered as:

ZT 5520-1C1R2P1S1

ZT 5520	CPU Board with Single/Dual Pentium Pro Processors
ZT M5520	ZT 5520 manual
ZT ME5520	ZT 5520 electronic manual

Must choose one option from each category:

CPU OPTIONS:

1C1	One 200 MHz Pentium Pro CPU with 256K L2 cache
2C1	Two 200 MHz Pentium Pro CPUs, each with 256K L2 cache
1C2	One 200 MHz Pentium Pro CPU with 512K L2 cache
2C2	Two 200 MHz Pentium Pro CPUs, each with 512K L2 cache

MEMORY OPTIONS:

R2	32 Mbytes ECC DRAM (1 module)
R3	64 Mbytes ECC DRAM (2 modules)
R5	128 Mbytes ECC DRAM (1 module)
R6	256 ECC DRAM (2 modules)
R7	384 ECC DRAM (3 modules)
R8	512 ECC DRAM (4 modules)*

Note: Contact Ziatech for memory beyond 128 Mbytes.

FLASH MEMORY OPTIONS
(on base CPU unit)

P1	2 Mbytes flash memory
P2	4 Mbytes flash memory
P3	8 Mbytes flash memory

SOFTWARE OPTIONS:

S1	MS-DOS boot files and solid state disk in flash memory
S2	Windows NT installed on IDE disk

Select the following options:

VIDEO OPTIONS:
(cannot be used with "M" options below)

V1	Super VGA controller with 2 Mbyte RAM installed on mezzanine location (zPM11-2)
V2	Super VGA controller with 4 Mbyte RAM installed on mezzanine location (zPM11-4)
V6	CompactPCI local bus Ethernet Adapter (zPM15)

FLASH MEMORY EXPANSION:
(cannot be used with "V" options above)

M0	Flash disk carrier
M1	M0 plus 20 Mbyte flash disk
M2	M0 plus 40 Mbyte flash disk
M3	M0 plus 85 Mbyte flash disk

DEVELOPMENT TOOLKITS
(for first purchase)

ZT 94062 CompactPCI DOS Toolkit; includes host development disk containing VSC, FLASH.EXE and other utilities; full MS-DOS, BIOS and hardware manuals, boot recovery module, ZT 90231 keyboard cable, and ZT 90246 printer cable.

ZT 94063 CompactPCI QNX Toolkit (QNX purchased separately); includes host development disk, QNX SSD driver, flash utilities, full MS-DOS, BIOS and hardware manuals, boot recovery module, ZT 90231 keyboard cable, and ZT 90246 printer cable.

ZT 94056 CompactPCI Windows NT Toolkit; includes host development disk, Windows NT 4.0 workstation, NT DDP, BIOS and hardware manuals, boot recovery module, ZT 90231 keyboard cable, and ZT 90246 printer cable.

ZT 94053 CompactPCI VxWorks BSP (VxWorks purchased separately); includes host development disk, VxWorks multiprocessor BSP for single and dual processors, full MS-DOS, BIOS and hardware manuals, boot recovery module, ZT 90231 keyboard cable, and ZT 90246 printer cable. (SCSI not currently supported under VxWorks.)

Contact Ziatech for information on other operating systems.

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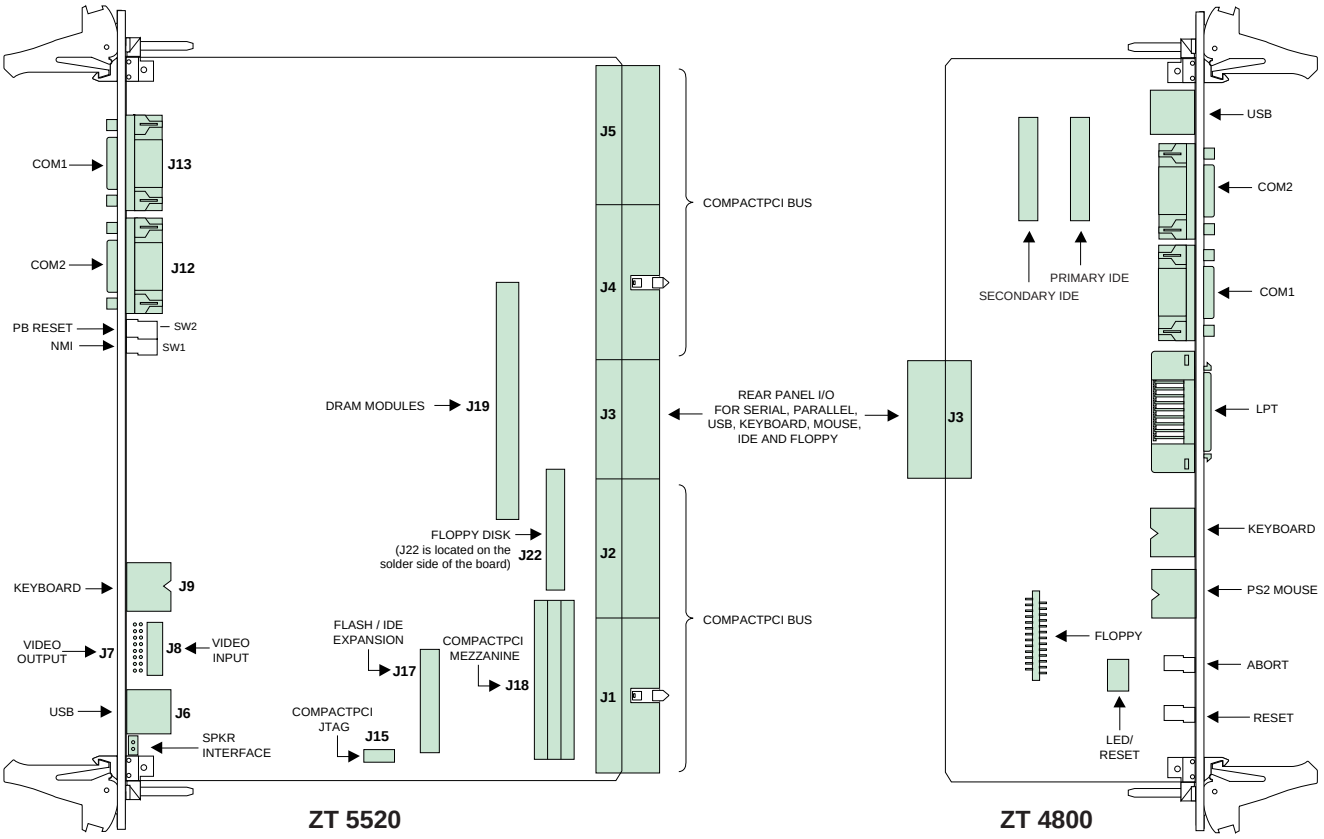
ZT 5520 J3 Pins

Pin#	A	B	C	D	E	F
19	PWRGD	ISAIO16-	IORDY	MIRQ0	IRQ14	GND (Shield)
18	CS3S-	CSIS-	CS3P-	CS1P-	DDAK1-	GND (Shield)
17	DD15	DD14	DD13	DD12	DDRQ1	GND (Shield)
16	DD11	DD10	DD9	DD8	DDAK0-	GND (Shield)
15	DA0	DA1	VCC	DA2	DDRQ0	GND (Shield)
14	DD7	DD6	DD5	DD4	DIOW-	GND (Shield)
13	DD3	DD2	DD1	DD0	DIOR-	GND (Shield)
12	DRO-	MSEN0	MTR0-	INDEX-	WDATA-	GND (Shield)
11	DR1-	DSKCHG-	MTR1-	DENSL	RDATA-	GND (Shield)
10	WP-	HDSEL-	DIR-	TRK0-	STEP-	GND (Shield)
9	WGATE-	ERR-	AFD-	BUSY	USB+	GND (Shield)
8	PE	SLIN-	VCC	STB-	USB-	GND (Shield)
7	PPD7	PPD6	PPD5	PPD4	INIT-	GND (Shield)
6	PPD3	PPD2	PPD1	PPD0	ACK-	GND (Shield)
5	ABORT-	MSDAT	SPKR	KBDAT	SLCT	GND (Shield)
4	PRST	MSCLK	VCC	KBCLK	S1RXD	GND (Shield)
3	S1CTS	S1RTS	S1DSR	S1DCD	S1TXD	GND (Shield)
2	S2RIN	S2DTR	S1RIN	S1DTR	S2RXD	GND (Shield)
1	S2CTS	S2RTS	S2DSR	S2DCD	S2TXD	GND (Shield)
Pin#	A	B	C	D	E	F



ZT 5520 to ZT 4800 Rear Panel I/O Connections

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ZT 5520

052798

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