# cPCI-6530 Series

Performance 6U CompactPCI®
Intel® Core™ i7/i5 Processor Blade

**User's Manual**




**Manual Rev.:** 1.00 preliminary

**Revision Date:** December 30, 2013

**Part No:** 50-15096-1000


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# Revision History

| Revision | Release Date | Description of Change(s) |
|---|---|---|
| 1.00 | 2013/12/30 | Preliminary release |

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# Preface

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## Using this Manual

### Audience and Scope

The cPCI-6530 User's Manual is intended for hardware technicians and systems operators with knowledge of installing, configuring and operating industrial grade single board computers.

### Manual Organization

This manual is organized as follows:

**Chapter 1, Introduction:** Introduces the cPCI-6530, its features, block diagrams, and package contents.

**Chapter 2, Specifications:** Presents detailed specification information, power consumption, and technical drawings.

**Chapter 3, Functional Description:** Describes the cPCI-6530 main functions.

**Chapter 4, Board Interfaces:** Describes the cPCI-6530 board interfaces.

**Important Safety Instructions:** Presents safety instructions all users must follow for the proper setup, installation and usage of equipment and/or software.

**Getting Service:** Contact information for ADLINK's worldwide offices.

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## Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.



NOTE:

Additional information, aids, and tips that help users perform tasks.



CAUTION:

Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.



WARNING:

Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

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# 1 Introduction

## 1.1 Overview

The ADLINK cPCI-6530 Series is a 6U CompactPCI® processor blade with soldered DDR3L-1600 ECC memory up to 8GB and DDR3L-1600 ECC socket type memory up to 8GB. The ADLINK cPCI-6530 features an Intel® Core™ i7/i5 processor with Mobile Intel® QM87 Express Chipset.

The cPCI-6530 Series is a 6U CompactPCI blade in single-slot (4HP) width form factor. Front panel I/O for the cPCI-6530V includes 1x DVI-I, 2x GbE and 2x USB 3.0 ports, 1x USB 2.0 port, 1x DB-9 COM port and 1x PCI/XMC slot. The cPCI-6530 front panel includes 2x GbE and 1x USB 3.0 port and 1x USB 2.0 port and 2x PMC/XMC slots.

Graphics support is integrated on the CPU and supports 3 independent displays when mated with selected rear transition modules (cPCI-R6700 and cPCI-R6500). Storage for both cPCI-6530V and cPCI-6530 versions includes an mSATA slot and a SATA 7-pin connector. The cPCI-6530V supports an additional SATA connector to support onboard 2.5" SATA drive or CFast adapter.

For expansion, both cPCI-6530 and cPCI-6530V are equipped with one 64-bit/33, 66,133MHz PMC site or one PCIe x8 Gen 2 XMC site with rear I/O. The cPCI-6530 is equipped with one additional PMC/XMC slot supporting PCI 64-bit/33,66,133MHz PMC site or one PCIe x8 Gen 2 XMC site.

Rear I/O signals to RTM include 2x GbE by Intel I210 LAN controllers, 1x DVI-I, 1x PCIe x4 (configurable to 4x PCIe x1), 3x SATA 3 Gb/s, and 6x USB 2.0., 5x GPIO, high definition audio, KB/MS, and 2x serial ports (one supports Tx/Rx only). The PMC/XMC signals on the cPCI-6530 can also be routed to RTM.

The cPCI-6530 Series offers outstanding performance provided by 4th generation Intel® Core™ processor family, and is an ideal solution for military, aerospace, transportation and other industrial applications that require best value per watt computing power. The ADLINK cPCI-6530 Series provides higher flexibility, supporting operation in peripheral slots with CompactPCI bus communication (Universal mode) and as a standalone computer if there is no CPU

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blade in the host slot. Internet remote manageability includes IPMI for system health monitoring over Internet and a GbE port on the faceplate supports Intel® AMT 9.0 for remote monitoring.

## 1.2 Features

- 6U CompactPCI blade in 4HP width form factor
- Intel® Core™ i7-4700EQ Processor (4 cores, 8 threads, 6M cache, 2.4 GHz) and Mobile Intel® QM87 Express Chipset
- Graphics and memory controllers integrated in processor
- One channel DDR3L-1600 soldered SDRAM with ECC up to 8GB and one channel DDR3L-1600 ECC socket memory up to 8GB
- 64bit/66MHz CompactPCI Interface based on PCI specifications, universal V(I/O)
- Supports Universal mode operation as a slave in peripheral slots and operation as a standalone computer if no CPU blade in host slot
- One 64-bit/33,66,133MHz PMC or PCIe x8 Gen2 XMC site on cPCI-6530V with rear I/O; one additional PMC/XMC site on cPCI-6530
- Supports IPMI over LAN for system health monitoring
- DVI-I port on front panel, additional DVI-I and eDP routed to rear
- Two PCIe Gigabit Ethernet egress ports supported by Intel LAN controller on front panel, one supports Intel® AMT 9.0 by Intel® Ethernet Controller I210 (PHY)
- Two additional PCIe Gigabit Ethernet by Intel® Ethernet Controller I210 routed to J2 (PICMG 2.16 compliant)
- Additional two Gigabit Ethernet ports with selected rear transition module (cPCI-R6100 Series)
- High definition audio routed to RTM
- Onboard mSATA for SATA interface storage
- Optional onboard 2.5" SATA SSD or CFast storage on cPCI-6530V
- Optional Atmel AT97SC3204 TPM support

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## 1.3 Package Contents

The cPCI-6530 is packaged with the following components. If any of the following items are missing or damaged, retain the shipping carton and packing material and contact the dealer for inspection. Please obtain authorization before returning any product to ADLINK. The packing contents of cPCI-6530 Series non-standard configurations will vary depending on customer requests.

### CPU module

- The cPCI-6530 Series Processor Blade
  - CPU and memory specifications will differ depending on options selected
  - Thermal module is assembled on the board
- RJ-45 to DB-9 COM adapter cable (cPCI-6530V)
- 2.5” HDD accessory pack (cPCI-6530V)
- mSATA accessory pack
- ADLINK All-in-One DVD
- User’s manual

### Rear Transition Module

- Dependent on the module selected

### Optional Accessories

- DB-CFAST adapter board for CFast card assembly (Part No. 91-37572-010E)




The contents of non-standard cPCI-6530 configurations may vary depending on the customer’s requirements.




This product must be protected from static discharge and physical shock. Never remove any of the components except at a static-free workstation. Use the anti-static bag shipped with the product when putting the board on a surface. Wear an anti-static wrist strap properly grounded on one of the system's ESD ground jacks when installing or servicing system components.



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# 2 Specifications

## 2.1 cPCI-6530 Processor Blade Specifications

| | |
|---|---|
| **CompactPCI® Standards** | • PICMG® 2.0 CompactPCI® Rev. 3.0<br>• PICMG® 2.1 Hot Swap Specification Rev. 2.0<br>• PICMG® 2.9 System Management Rev. 1.0<br>• PICMG® 2.16 Packet Switching Backplane Rev. 1.0 |
| **Mechanical** | • Standard 6U CompactPCI®<br>• Board size: 233mm x 160mm<br>• Single slot (4HP, 20.32mm)<br>• CompactPCI® connectors: J1, J2, J3, J4, J5 |
| **Processor** | • Intel® Core™ i7-4700EQ Processor, 2.4 GHz (3.4 GHz Turbo), 6MB LLC cache, TDP 45W<br>• Intel® Core™ i5-4402E Processor, 1.6 GHz (2.7 GHz Turbo), 3MB LLC cache, TDP 25W<br>• Passive heatsink |
| **Chipset** | • Mobile Intel® QM87 Express Chipset |
| **Memory** | • Dual channel DDR3L-1600 ECC memory, max. support 16GB<br>• One channel onboard soldered DDR3L-1600 ECC up to 8GB<br>• One channel socket DDR3L-1600 ECC up to 8GB |
| **CompactPCI Bus** | • PCI 64-bit/66MHz; 3.3V, 5V universal V I/O<br>• Supports operation in system slot as master or in peripheral slot with connectivity to CompactPCI bus (Universal mode)<br>• Supports operation in peripheral slot as standalone CPU board when no host blade in host slot |
| **Gigabit Ethernet** | • One PCIe x1 Intel® I217 GbE PHY and three PCIe x1 Intel® I210 Gigabit Ethernet controllers<br>• Two egress 10/100/1000BASE-T ports on front panel, one supporting Intel® AMT 9.0 by I217 controller<br>• Two egress 10/100/1000BASE-T ports routed to rear transition module |
| **Graphics** | • Integrated on Intel® Core™ processor, Intel® HD Graphics 4600<br>• One DVI-I port on front panel, one DVI, eDP routed to J3 & J5 (RTM)<br>• Up to three independent display with selected rear transition module (cPCI-R6700 & cPCI-R6500) |

**Table 2-1: cPCI-6530 Processor Blade Specifications**

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| | |
|---|---|
| **Serial Ports** | • Up to three serial ports<br>• One RS-232/422/485 serial port on front panel (cPCI-6530V)<br>• Up to two RS-232/422/485 COM port routed to RTM |
| **USB 2.0** | • One USB 2.0 port on front panel<br>• Up to six USB 2.0 ports routed to rear transition module |
| **USB 3.0** | • One USB 3.0 for cPCI-6530 version, additional one USB 3.0 for cPCI-6530V version |
| **PMC/XMC** | • One 64-bit/33,66,133 MHz PMC site or PCIe x8 Gen 2 XMC site for cPCI-6530V version with rear I/O<br>• Two 64-bit/33,66,133 MHz PMC sites or PCIe x8 Gen 2 XMC sites on cPCI-6530 version |
| **Audio** | • High definition audio routed to rear |
| **TPM** | Atmel AT97SC3204 TPM (upon request) supporting:<br>• Over/Under voltage detection<br>• Low/High frequency sensor/filter<br>• Reset filter<br>• Memory encryption/decryption |
| **Storage Interfaces**[1] | • One mSATA slot<br>• One onboard 2.5” SATA connector supporting SATA 6Gb/s drive on cPCI-6530V<br>• Optional CFast socket by adapter board on cPCI-6530 (space shared with 2.5” SATA drive)<br>• One SATA 7-pin 3Gb/s connector onboard<br>• Three SATA 3Gb/s channels routed to RTM |
| **BIOS** | • AMI® EFI BIOS, 64Mbit SPI flash memory, supports Configurable TDP (can be set as Nominal and Down) |
| **Faceplate I/O** | cPCI-6530V (4HP)<br>• 2x 10/100/1000BASE-T Ethernet ports<br>• 1x DVI-I port<br>• 2x USB 3.0 ports<br>• 1x USB 2.0 port<br>• 1x RJ-45 serial port<br>• 1x PMC/XMC slot<br>cPCI-6530 (4HP)<br>• 2x 10/100/1000BASE-T Ethernet ports<br>• 1x USB 3.0 ports<br>• 1x USB 2.0 port<br>• 2x PMC/XMC slots |

**Table 2-1: cPCI-6530 Processor Blade Specifications**

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| | |
|---|---|
| **OS Compatibility** | • Microsoft Windows 7 32/64-bit<br>• Microsoft Windows 8 32/64-bit<br>• Red Hat Enterprise Linux 6.4, 64-bit<br>• Fedora 14, 32-bit<br>• VxWorks 6.9<br>• Other OS support upon request |
| **Environmental** | • Operating Temperature (with forced air flow)[2]:<br>Standard: -20°C to +70°C<br>Extreme temperature: -40°C to +85°C (for Intel® Core™ i5 and Intel® Core™ i7-4700EQ processor with cTDP down to 37W and forced air flow)<br>• Storage Temperature: -50°C to 100°C<br>• Humidity: 95% @60°C non-condensing<br>• Shock: 20G peak-to-peak, 11ms duration, non-operating<br>• Vibration[3]: 2Grms, 5-500Hz, each axis, operating (w/o hard drive) |
| **EMI** | • CE EN55022<br>• FCC Class A |

**Table 2-1: cPCI-6530 Processor Blade Specifications**

1. The storage device limits the operational vibration tolerance. When the application requires higher specification for anti-vibration, it is recommended to use a flash storage device.
2. ADLINK-certified thermal design. The thermal performance is dependent on the chassis cooling design. Sufficient forced air-flow is required. Temperature limits of optional mass storage devices may also affect the thermal specification.

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## 2.2 Block Diagrams

### cPCI-6530 Blade

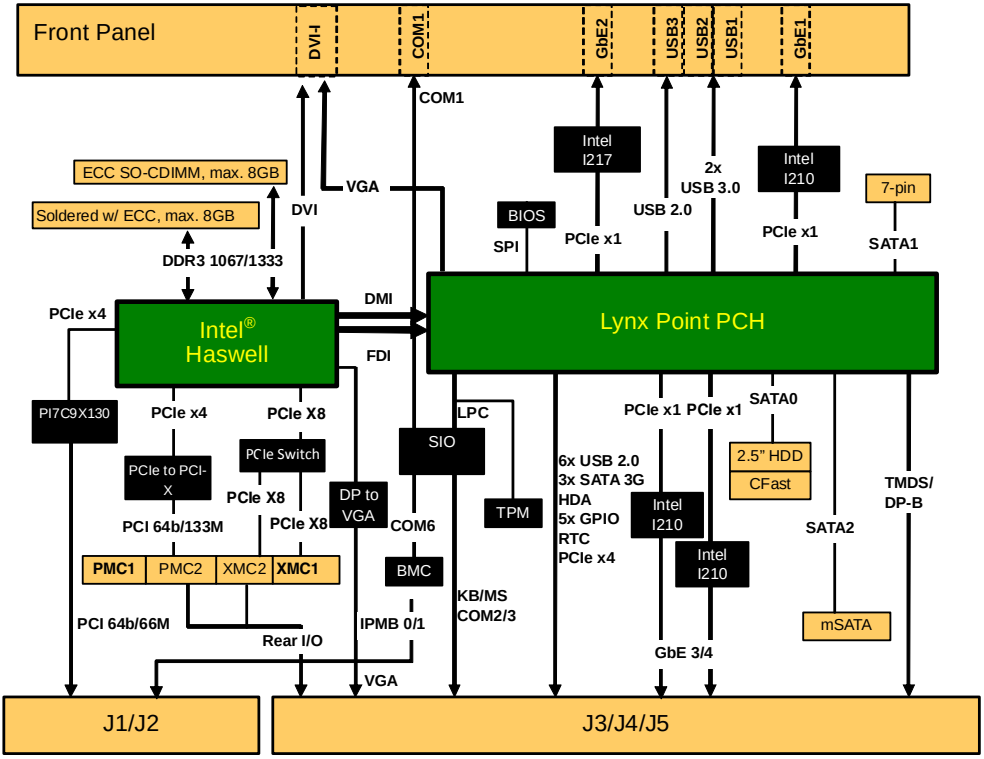



**Figure 2-1: cPCI-6530 Blade Functional Block Diagram**

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## 2.3 I/O Connectivity Table

| Function | cPCI-6530V (4HP) | | cPCI-6530 (4HP) | |
|---|---|---|---|---|
| | Faceplate | Onboard | Faceplate | Onboard |
| **Gigabit Ethernet** | Y x2 | – | Y x2 | – |
| **COM** | Y (RJ-45) | – | – | – |
| **USB 3.0** | Y x2 | – | Y x1 | – |
| **USB 2.0** | Y x1 | – | Y x1 | – |
| **DVI-I** | Y | – | – | – |
| **Serial ATA** | – | Y x2 (one for 2.5” drive & one 7-pin SATA connector) | – | Y x1 (7-pin SATA connector) |
| **CFast** | – | Y (space shared with 2.5” SATA drive) | – | – |
| **mSATA** | – | Y x1 | – | Y x1 |
| **PMC/XMC** | – | Y x1 | – | Y x2 |
| **LED** | Y x5 | – | Y x5 | – |
| **Reset Button** | Y | – | Y | – |

**Table 2-2: cPCI-6530 I/O Connectivity**

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## 2.4 Power Requirements

In order to guarantee a stable functionality of the system, it is recommended to provide more power than the system requires. **An industrial power supply unit should be able to provide at least twice as much power as the entire system requires of each voltage**. An ATX power supply unit should be able to provide at least three times as much power as the entire system requires of each voltage.

The tolerance of the voltage lines described in the CompactPCI specification (PICMG 2.0 R3.0) is +5%/-3% for 5, 3.3 V and ±5% for ±12V. This specification is for power delivered to each slot and it includes both the power supply and the backplane tolerance.

| Voltage | Nominal Value | Tolerance | Max. Ripple (P - P) |
|---|---|---|---|
| 5V | +5.0 VDC | +5% / -3% | 50 mV |
| 3.3V | +3.3 VDC | +5% / -3% | 50 mV |
| +12V | +12 VDC | +5% / -5% | 240 mV |
| -12V | -12 VDC | +5% / -5% | 240 mV |
| V I/O (PCI I/O Buffer Voltage) | +3.3 VDC or +5 VDC | +5% / -3% | 50 mV |
| GND | | | |

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## Power Consumption

This section provides information on the power consumption of cPCI-6530 Series when using the Intel® Core™ i7 processors with 8GB DDR3L-1600 ECC soldered memory and 8GB DDR3L-1600 socket memory module. Storage device is used with ADLINK ASD26-MLC32G-CT 32GB SATA SSD. The cPCI-6530 is powered by 5V and 3.3V. Power consumption at 100% CPU stress was measured using the Intel Thermal Analysis Tool 4.3 (TAT).

| **Intel® Core™i7-4700EQ** (BIOS EIST Enabled, cTDP nominal) | | | |
|---|---|---|---|
| **OS/Mode** | **Current 5V** | **Current 3.3V** | **Total Power** |
| DOS/Idle mode | 7.64 A | 2.69 A | 47.08 W |
| Windows 7, Idle mode | 5.55 A | 1.85 A | 33.86 W |
| Windows 7, CPU 100% stress | 14.30 A | 1.33 A | 75.89 W |
| Windows 7, BurnIn Test system stress | 10.83 A | 1.43 A | 58.87 W |

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# 3 Functional Description

The following sections describe the cPCI-6530 Series features and functions.

## 3.1 Processors

The Mobile 4th Generation Intel® Core™ Processor Family are state of the art, 64-bit, multi-core mobile processor built on 22 nanometer process technology. Based on a new micro-architecture, the processor is designed for a two-chip platform. The two-chip platform consists of a processor and Platform Controller Hub (PCH). The platform enables higher performance, lower cost, easier validation, and improved x-y footprint. The processor includes an Integrated Display Engine, Processor Graphics and Integrated Memory Controller.

The cPCI-6530 Series supports Intel® Core™ i7/i5 processors. The table below lists the general specifications and power ratings of the CPUs supported by the cPCI-6530 Series.

| Features | Core™ i7-4700EQ | Core™ i5-4402E |
|---|---|---|
| Clock | 2.4GHz | 1.6 GHz |
| Max. Single Core Turbo Freq. | 3.4GHz | 2.7 GHz |
| Last Level Cache | 6MB | 3MB |
| No. of Core(s) | 4/8 | 2/4 |
| Max. Power (TDP[1]) | 47W/37W | 25W |
| DMI | 5 GT/s | 5 GT/s |
| $T_{junction, MAX}$[2] | 100°C | 100°C |

1. The highest expected sustainable power while running known power intensive applications. TDP is not the maximum power that the processor can dissipate.
2. The maximum supported operating temperature.

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## Supported Technologies

| Features | Core™ i7-4700EQ | Core™ i5-4402E |
|---|---|---|
| Intel® Virtualization Technology for Directed I/O (Intel® VT-d) | Yes | Yes |
| Intel® Virtualization Technology (Intel® VT-x) | Yes | Yes |
| Intel® VT-x with Extended Page Tables (EPT) | Yes | — |
| Intel® Hyper-Threading Technology | Yes | Yes |
| Intel® 64 Architecture | Yes | Yes |
| Execute Disable Bit | Yes | Yes |
| Intel® Turbo Boost Technology | 2.0 | Yes |
| Intel® vPro Technology | Yes | Yes |
| Enhanced Intel SpeedStep® Technology | Yes | Yes |
| Thermal Monitoring Technologies | Yes | Yes |
| Intel® Identity Protection Technology | Yes | — |

## Interfaces

- Two channels of DDR3L-1600 memory
- DDR3 memory data transfer rate of 1600 MT/s
- 64-bit wide channels
- DDR3L I/O voltage of 1.35V
- 2Gb and 4Gb DDR3 DRAM technologies are supported for x8 and x16 devices (using 4Gb device technologies, the largest memory capacity possible is 8 GB, assuming dual-channel mode with x8, dual-ranked ECC SDRAM)
- PCI Express ports are fully-compliant with the PCI Express Base Specification, Revision 2.0.
- 5 GT/s point-to-point DMI interface to PCH is supported

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### Graphics

The Intel® HD Graphics 4600 is integrated in the processor enabling substantial gains in performance and lower power consumption.

- DX11.1 support
- OpenGL 3.2, OpenCL 1.2 support
- Graphics Base Frequency: 400 MHz
- Graphics Max Dynamic Frequency: 1 GHz
- Supports Intel® InTru™ 3D Technology
- FDI carries display traffic from the Processor Graphics in the processor to the legacy display connectors in the PCH

## 3.2 Chipset

The Mobile Intel® QM87 Express Chipset provides extensive I/O support. Functions and capabilities include:

- The QM87 PCH provides extensive I/O support, functions and capabilities including:
- PCI Express Base Specification, Revision 2.0 support for up to eight ports with transfers up to 5 GT/s
- ACPI Power Management Logic Support, Revision 4.0a
- Enhanced DMA controller, interrupt controller, and timer functions
- Integrated Serial ATA host controllers with independent DMA operation on up to six ports
- USB host interface with two EHCI high-speed USB 2.0 Host controllers and two rate matching hubs provide support for up to fourteen USB 2.0 ports
- Integrated 10/100/1000 Gigabit Ethernet MAC with System Defense
- System Management Bus (SMBus) Specification, Version 2.0 with additional support for I2C devices
- Supports Intel® High Definition Audio
- Supports Intel® Rapid Storage Technology
- Supports Intel® Virtualization Technology for Directed I/O

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- Integrated Clock Controller
- Analog and Digital Display ports
- Low Pin Count (LPC) interface
- Firmware Hub (FWH) interface support
- Serial Peripheral Interface (SPI) support

## 3.3 PMC/XMC

The cPCI-6530(V) models support max two PMC or XMC sites for front panel I/O expansion. The PMC site provides a maximum 64-bit/33,66,133 MHz PCI bus link using a Pericom PI7C9X130 PCI-Express-to-PCI bridge and PCI-Express x4 link. The PMC sites support +3.3V signaling only. The XMC sites provide PCI-Express x8 lanes which are supported by a PCIe x8 Switch.

## 3.4 Intel® Turbo Boost Technology

Intel® Turbo Boost Technology is a feature that allows the processor to opportunistically and automatically run faster than its rated operating core and/or render clock frequency when there is sufficient power headroom, and the product is within specified temperature and current limits. The Intel Turbo Boost Technology feature is designed to increase performance of both multi-threaded and single-threaded workloads. The processor supports a Turbo mode where the processor can use the thermal capacity associated with package and **run at power levels higher than TDP power for short durations**. This improves the system responsiveness for short, bursty usage conditions.

Turbo Mode availability is independent of the number of active cores; however, the Turbo Mode frequency is dynamic and dependent on the instantaneous application power load, the number of active cores, user configurable settings, operating environment, and system design. If the power, current, or thermal limit is reached, the processor will automatically reduce the frequency to stay with its TDP limit.

## 3.5 Intel® Hyper-Threading Technology

Intel® Hyper-Threading Technology allows an execution core to function as two logical processors. While some execution resources (such as caches, execution units, and buses) are

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shared, each logical processor has its own architectural state with its own set of general-purpose registers and control registers. This feature must be enabled using the BIOS and requires operating system support. Intel recommends enabling Hyper-Threading Technology with Microsoft Windows 7, Vista, and XP, and disabling Hyper-Threading Technology using the BIOS for all previous versions of Windows operating systems.

## 3.6 Trusted Platform Module

The cPCI-6530 integrates an Atmel AT97SC3204 Trusted Platform Module (TPM). The TPM is a secure controller with added cryptographic functionality to provide users a secure environment in e-commerce transactions and Internet communications.

The key features Trusted Platform Module (TPM) offers are:

- Fully compliant to the Trusted Computing Group (TCG) Trusted Platform Module (TPM) version 1.2 specification
- Hardware hash accelerator for SHA-1 algorithm
- Advanced Crypto Engine (ACE) for asymmetric key operations(up to 2048-bit key length) to make hardware protection.
- Tick counter to extend the time required to decipher the key
- In addition to encryption key created by user. it also provide some security features to protect the integrated circuit itself:
- Over/Under-voltage detection to monitor the system stability. If the voltage fluctuates dramatically, this function can block the data transfer and lock the chip.
- Low/High frequency sensor to detect the IC clock frequency. If the frequency fluctuates dramatically, this function can block the data transfer and lock the chip.
- Reset filter to filter reset signal in order to break the time set by tick counter is received
- Memory encryption to protect memory
- Physical shield in the IC to protect the die from intruding or hacking by matching the data transferred on the 2 layer metal shield on the IC. If the data is not matched, the IC may be blocked.

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## 3.7 Battery

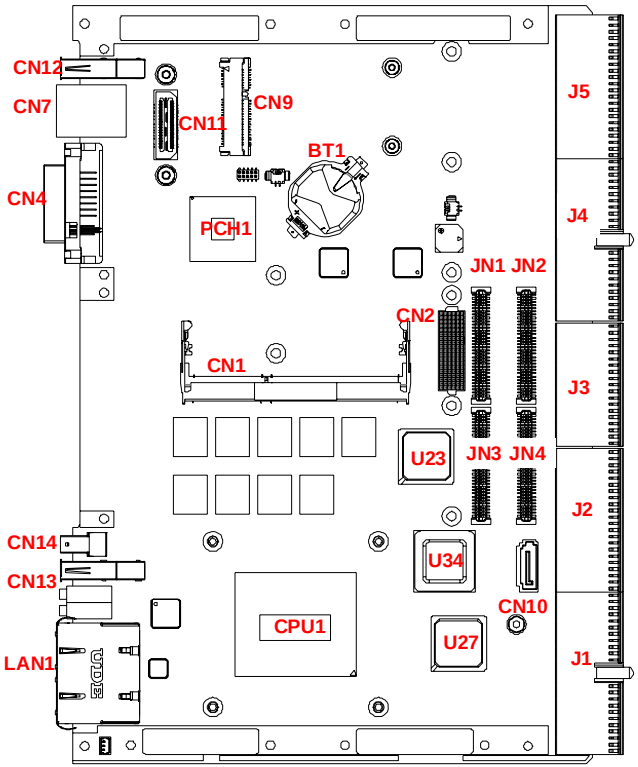
The cPCI-6530 is equipped with a 3.0V "coin cell" lithium battery for the Real Time Clock (RTC). The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer. A Rayovac BR2032 is equipped on board by default.

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# 4 Board Interfaces

This chapter illustrates the board layout, connector pin assignments, and jumper settings to familiarize users with the cPCI-6530 Series.

## 4.1 cPCI-6530V Board Layout



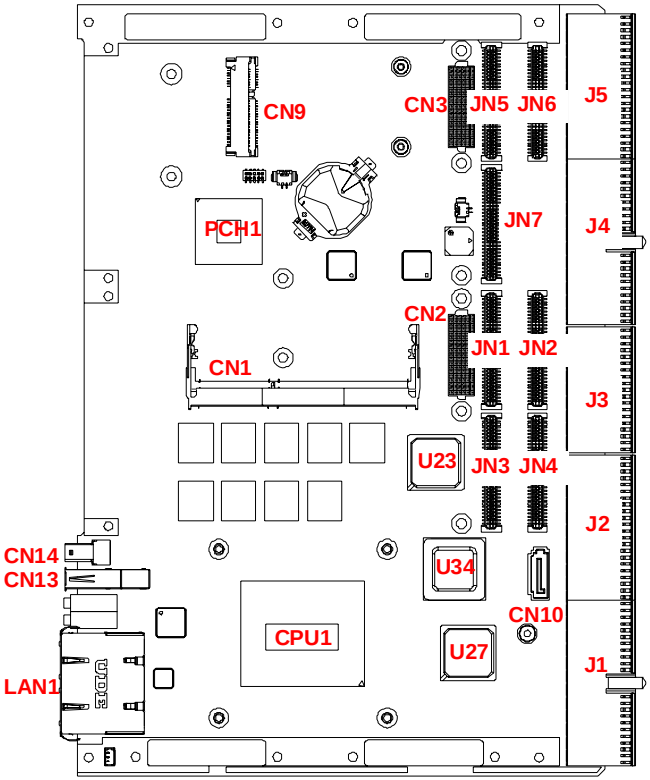

| | | | |
|---|---|---|---|
| **CPU** | Intel® Core™ Processor | **J1~2** | CompactPCIconnectors |
| **PCH1** | Intel® QM87 PCH | **LAN1** | Dual Ethernet connectors |
| **CN1** | Memory socket | **CN9** | mSATA connector |
| **CN2** | XMC connector | **CN10** | SATA 7-pin connector |
| **CN4** | DVI-I connector | **CN11** | SATA board-to-board conn. |
| **CN7** | COM port in RJ-45 conn. | **CN12/13** | USB 3.0 connector |
| **BT1** | Battery socket | **CN14** | USB 2.0 connector |
| **U34** | PCe Switch PEX8624-BB50BI | **JN1/2/3/4** | PMC connectors |
| **U23/27** | Pericom PI7C9X130 | **U23/27** | Pericom PI7C9X130 |

**Figure 4-1: cPCI-6530V Series Board Layout**



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## 4.2 cPCI-6530 Board Layout




| | | | |
|---|---|---|---|
| **CPU** | Intel® Core™ Processor | **J1~5** | CompactPCI connectors |
| **PCH1** | Intel® QM87 PCH | **LAN1** | Dual Ethernet connectors |
| **CN1** | Memory socket | **CN9** | mSATA connector |
| **CN2/3** | XMC connectors | **CN10** | SATA 7-pin connector |
| **CN13** | USB 3.0 connector | **U34** | PCe Switch PEX8624-BB50BI |
| **CN14** | USB 2.0 connector | **U23/27** | Pericom PI7C9X130 |
| **BT1** | Battery socket | **JN1~7** | PMC connectors |

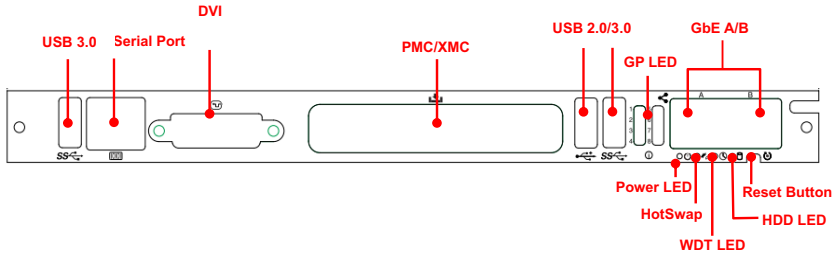
**Figure 4-2: cPCI-6530 Series Board Layout**

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## 4.3 cPCI-6530 Series Front Panel

### Front Panel Layout

**cPCI-6530V**




**cPCI-6530**

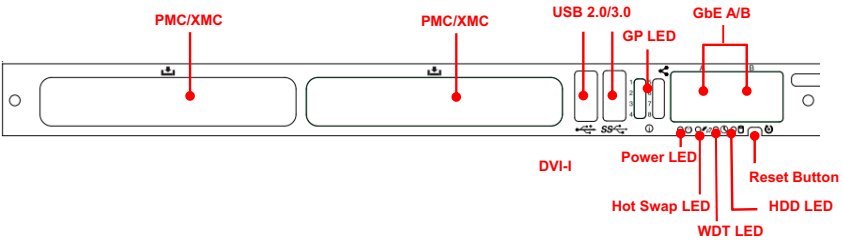



**Figure 4-3: cPCI-6530 Series Front Panel Layout**

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## System LEDs

| LED | Color | Condition | Indication |
|---|---|---|---|
| Power  | Green/ Red | OFF | System is off |
| | | Red | System Power ready (PWGD) |
| | | Green | Post OK |
| WDT  | Orange | OFF | No Watchdog event |
| | | Blinking | Watchdog event alert |
| HDD  | Blue | OFF | No CF/CFast/SATA HDD activity |
| | | Blinking | Data read/write in process for CF/CFast/ SATA HDD |
| Hot Swap  | Blue | Off | Handles closed, system is on |
| | | Fast Blink | Preparing to shut down system (LED: 0.1s on, 0.9s off.) |
| | | On | Handles open and blade ready to be removed |
| | | Slow Blink | Voltages out of tolerance: 3.3V, 5V, 12V, 1.5V over ±5% (LED: 2s on, 1s off) |

**Table 4-1: cPCI-6530 Front Panel System LED Descriptions**

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## 4.4 Connector Pin Assignments

### USB 2.0 Connectors

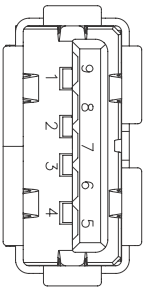
| Pin # | Signal Name |
|---|---|
| 1 | Vcc |
| 2 | UV0- |
| 3 | UV0+ |
| 4 | GND |




**Table 4-2: USB 2.0 Pin Definition**

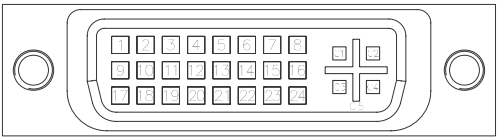
### USB 3.0 Connectors

| Pin # | Signal Name |
|---|---|
| 1 | USB3.0_P5VA |
| 2 | USB2_CMAN |
| 3 | USB2_CMAP |
| 4 | GND |
| 5 | USB3A_CMRXN |
| 6 | USB3A_CMRXP |
| 7 | GND |
| 8 | USB3A_CMTXN |
| 9 | USB3A_CMTXP |




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## DVI-I Connector



| Pin # | Signal | Pin # | Signal |
|---|---|---|---|
| 1 | TMDS Data2- | 16 | Hot Plug Detect |
| 2 | TMDS Data2+ | 17 | TMDS Data0- |
| 3 | GND | 18 | TMDSData0+ |
| 4 | NC | 19 | GND |
| 5 | NC | 20 | NC |
| 6 | DDC Clock [SCL] | 21 | NC |
| 7 | DDC Data [SDA] | 22 | GND |
| 8 | Analog vertical sync | 23 | TMDS Clock + |
| 9 | TMDS Data1- | 24 | TMDS Clock - |
| 10 | TMDS Data1+ | C1 | Analog Red |
| 11 | GND | C2 | Analog Green |
| 12 | NC | C3 | Analog Blue |
| 13 | NC | C4 | Analog Horizontal Sync |
| 14 | +5 V Power | C5 | Analog GND Return |
| 15 | GND | | |

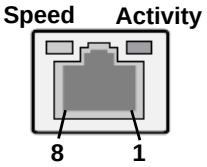
**Table 4-3: DVI-I Connector Pin Definition**

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## RJ-45 Gigabit Ethernet Connectors

| Pin # | 10BASE-T/ 100BASE-TX | 1000BASE-T |
|---|---|---|
| 1 | TX+ | LAN_TX0+ |
| 2 | TX- | LAN_TX0- |
| 3 | RX+ | LAN_TX1+ |
| 4 | — | LAN_TX2+ |
| 5 | — | LAN_TX2- |
| 6 | RX- | LAN_TX1- |
| 7 | — | LAN_TX3+ |
| 8 | — | LAN_TX3- |

**Table 4-4: RJ-45 GbE Pin Definitions**




| Status | | Speed LED (Green/Orange) | Activity LED (Yellow) |
|---|---|---|---|
| Network link is not established or system powered off | | OFF | OFF |
| 10 Mbps | Link | OFF | ON |
| | Active | OFF | Blinking |
| 100 Mbps | Link | Green | ON |
| | Active | Green | Blinking |
| 1000 Mbps | Link | Orange | ON |
| | Active | Orange | Blinking |

**Table 4-5: LAN LED Status Definitions**

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## COM (RJ-45)

| Pin # | RS-232 | RS-422 | RS-485 |
|---|---|---|---|
| 1 | DCD# | TX- | Data- |
| 2 | RTS# | — | — |
| 3 | DSR# | — | — |
| 4 | TXD | RX+ | — |
| 5 | RXD | TX+ | Data+ |
| 6 | GND | — | — |
| 7 | CTS# | — | — |
| 8 | DTR#L | RX- | — |

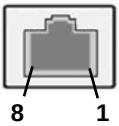



**Table 4-6: Front Panel COM Pin Definitions**

## COM RJ-45 to DB-9 Cable

| Pin # | RS-232 | RS-422 | RS-485 |
|---|---|---|---|
| 1 | DCD# | TX- | Data- |
| 2 | RXD | TX+ | Data+ |
| 3 | TXD | RX+ | — |
| 4 | DTR#L | RX- | — |
| 5 | GND | — | — |
| 6 | DSR# | — | — |
| 7 | RTS# | — | — |
| 8 | CTS# | — | — |
| 9 | — | — | — |

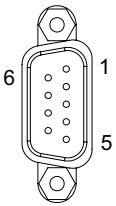



**Table 4-7: COM RJ-45 to DB-9 Cable Pin Definitions**

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## Serial ATA 7-pin Connector (CN10)

| Pin # | Signal |
|---|---|
| 1 | GND |
| 2 | TX+ |
| 3 | TX- |
| 4 | GND |
| 5 | RX- |
| 6 | RX+ |
| 7 | GND |




**Table 4-8: Serial ATA 7-pin Connector Pin Definition**

## Serial ATA Connector with Power

| Pin # | Signal |
|---|---|
| S1 | GND |
| S2 | TX+ |
| S3 | TX- |
| S4 | GND |
| S5 | RX- |
| S6 | RX+ |
| S7 | GND |
| P1 | NC |
| P2 | NC |
| P3 | NC |
| P4 | GND |
| P5 | GND |
| P6 | GND |
| P7 | 5V |
| P8 | 5V |
| P9 | 5V |
| P10 | GND |
| P11 | NC |
| P12 | GND |
| P13~P15 | NC |

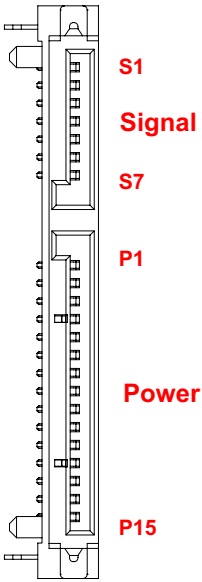



**Table 4-9: Serial ATA Connector with power Pin Definition**

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## SATA Board-to-Board Connector (CN11)

| Signal Name | Pin # | Pin # | Signal Name |
|---|---|---|---|
| GND | 1 | 2 | GND |
| GND | 3 | 4 | GND |
| GND | 5 | 6 | GND |
| GND | 7 | 8 | GND |
| GND | 9 | 10 | GND |
| GND | 11 | 12 | GND |
| GND | 13 | 14 | GND |
| GND | 15 | 16 | GND |
| GND | 17 | 18 | GND |
| GND | 19 | 20 | GND |
| GND | 21 | 22 | GND |
| GND | 23 | 24 | GND |
| GND | 25 | 26 | GND |
| GND | 27 | 28 | GND |
| GND | 29 | 30 | GND |
| P3V3 | 31 | 32 | P5V |
| P3V3 | 33 | 34 | P5V |
| P3V3 | 35 | 36 | P5V |
| P3V3 | 37 | 38 | P5V |
| NC | 39 | 40 | P12V |
| CFAST_CDI | 41 | 42 | P12V |
| CFAST_CDO | 43 | 44 | P12V |
| GND | 45 | 46 | GND |
| GND | 47 | 48 | SATA_TXN0 |
| GND | 49 | 50 | SATA_TXP0 |
| SATA_RXN0 | 51 | 52 | GND |
| SATA_RXP0 | 53 | 54 | GND |
| GND | 55 | 56 | NC |
| GND | 57 | 58 | GND |
| GND | 59 | 60 | GND |

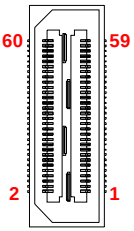



**Table 4-10: SATA Board-to-Board Connector Pin Definition**

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## CFast Socket (on optional DB-CFAST)

| Pin # | Signal Name |
|---|---|
| Ground | S1 |
| SATA_TX-P | S2 |
| SATA_TX-N | S3 |
| Ground | S4 |
| SATA_RX-N | S5 |
| SATA_RX-P | S6 |
| Ground | S7 |
| CFast_CDI | P1 |
| Ground | P2 |
| NC | P3 |
| NC | P4 |
| NC | P5 |
| NC | P6 |
| Ground | P7 |
| CFast_LED1 | P8 |
| CFast_LED2 | P9 |
| NC | P10 |
| NC | P11 |
| NC | P12 |
| P3V3 | P13 |
| P3V3 | P14 |
| Ground | P15 |
| Ground | P16 |
| CFast_CDO | P17 |

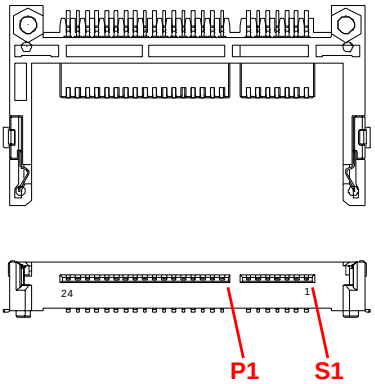
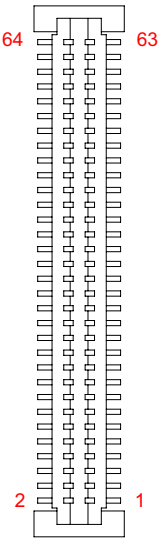



**Table 4-11: CFast Socket Pin Definition**

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## PMC Connector (JN1/5, JN2/6, JN3/7, JN4)

| Pin# | JN1/5 Signal | JN2/6 Signal | JN3/7 Signal | JN4 Signal |
|---|---|---|---|---|
| 1 | PMC_TCK | P12V | NC | PIO1 |
| 2 | N12V | PMC_TRST-L | GND | PIO2 |
| 3 | GND | PMC_TMS | GND | PIO3 |
| 4 | PCIX_INTA-L | NC (PMC_TDO) | PCIX_CBE-L7 | PIO4 |
| 5 | PCIX_INTB-L | PMC_TDI | PCIX_CBE-L6 | PIO5 |
| 6 | PCIX_INTC-L | GND | PCIX_CBE-L5 | PIO6 |
| 7 | PMC_MOD-L1 | GND | PCIX_CBE-L4 | PIO7 |
| 8 | P5V | NC | GND | PIO8 |
| 9 | PCIX_INTD-L | NC | PMC_VIO | PIO9 |
| 10 | NC | NC | PCIX_PAR64 | PIO10 |
| 11 | GND | PMC_MOD-L2 | PCIX_AD63 | PIO11 |
| 12 | P3V3_PMCAUX | P3V3 | PCIX_AD62 | PIO12 |
| 13 | CLK66_PCIX_PMC | PMC_RST-L | PCIX_AD61 | PIO13 |
| 14 | GND | PMC_MOD-L3 | GND | PIO14 |
| 15 | GND | P3V3 | GND | PIO15 |
| 16 | PCIX_GNT-L0 | PMC_MOD-L4 | PCIX_AD60 | PIO16 |
| 17 | PCIX_REQ-L0 | PMC_PME-L | PCIX_AD59 | PIO17 |
| 18 | P5V | GND | PCIX_AD58 | PIO18 |
| 19 | PMC_VIO | PCIX_AD30 | PCIX_AD57 | PIO19 |
| 20 | PCIX_AD31 | PCIX_AD29 | GND | PIO20 |
| 21 | PCIX_AD28 | GND | GND | PIO21 |
| 22 | PCIX_AD27 | PCIX_AD26 | PCIX_AD56 | PIO22 |
| 23 | PCIX_AD25 | PCIX_AD24 | PCIX_AD55 | PIO23 |
| 24 | GND | PCIX_AD23 | PCIX_AD54 | PIO24 |
| 25 | GND | PMC_IDSEL | PCIX_AD53 | PIO25 |
| 26 | PCIX_CBE-L3 | PCIX_AD23 | GND | PIO26 |
| 27 | PCIX_AD22 | P3V3 | GND | PIO27 |
| 28 | PCIX_AD21 | PCIX_AD20 | PCIX_AD52 | PIO28 |
| 29 | PCIX_AD19 | PCIX_AD18 | PCIX_AD51 | PIO29 |
| 30 | P5V | GND | PCIX_AD50 | PIO30 |
| 31 | PCIX_FRAME-L | PCIX_AD16 | PCIX_AD49 | PIO31 |
| 32 | PCIX_AD17 | PCIX_CBE-L2 | GND | PIO32 |
| 33 | PCIX_FRAME-L | GND | GND | PIO33 |



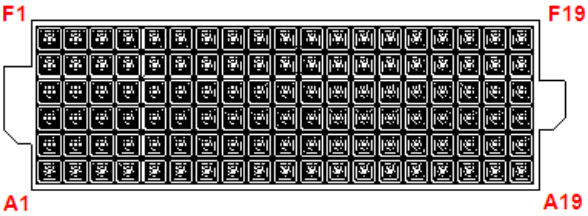

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| Pin# | JN1/5 Signal | JN2/6 Signal | JN3/7 Signal | JN4 Signal |
|---|---|---|---|---|
| 34 | GND | NC | PCIX_AD48 | PIO34 |
| 35 | GND | PCIX_TRDY-L | PCIX_AD47 | PIO35 |
| 36 | PCIX_IRDY-L | P3V3 | PCIX_AD46 | PIO36 |
| 37 | PCIX_DEVSEL-L | GND | PCIX_AD45 | PIO37 |
| 38 | P5V | PCIX_STOP-L | GND | PIO38 |
| 39 | PCIX_PCIXCAP | PCIX_PERR-L | GND | PIO39 |
| 40 | PCIX_LOCK-L | GND | PCIX_AD44 | PIO40 |
| 41 | NC | P3V3 | PCIX_AD43 | PIO41 |
| 42 | NC | PCIX_SERR-L | PCIX_AD42 | PIO42 |
| 43 | PCIX_PAR | PCIX_CBE-L1 | PCIX_AD41 | PIO43 |
| 44 | GND | GND | GND | PIO44 |
| 45 | PMC_VIO | PCIX_AD14 | GND | PIO45 |
| 46 | PCIX_AD15 | PCIX_AD13 | PCIX_AD40 | PIO46 |
| 47 | PCIX_AD12 | PCIX_M66EN | PCIX_AD39 | PIO47 |
| 48 | PCIX_AD11 | PCIX_AD10 | PCIX_AD38 | PIO48 |
| 49 | PCIX_AD9 | PCIX_AD8 | PCIX_AD37 | PIO49 |
| 50 | P5V | P3V3 | GND | PIO50 |
| 51 | GND | PCIX_AD7 | GND | PIO51 |
| 52 | PCIX_CBE-L0 | NC | PCIX_AD36 | PIO52 |
| 53 | PCIX_AD6 | P3V3 | PCIX_AD35 | PIO53 |
| 54 | PCIX_AD5 | NC | PCIX_AD34 | PIO54 |
| 55 | PCIX_AD4 | NC | PCIX_AD33 | PIO55 |
| 56 | GND | GND | GND | PIO56 |
| 57 | PMC_VIO | NC | GND | PIO57 |
| 58 | PCIX_AD3 | NC | PCIX_AD32 | PIO58 |
| 59 | PCIX_AD2 | GND | NC | PIO59 |
| 60 | PCIX_AD1 | NC | NC | PIO60 |
| 61 | PCIX_AD0 | PCIX_ACK64-L | NC | PIO61 |
| 62 | P5V | P3V3 | GND | PIO62 |
| 63 | GND | GND | GND | PIO63 |
| 64 | PCIX_REQ64-L | NC | NC | PIO64 |

**Table 4-12: PMC Connector Pin Definitions**

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## XMC Connector (CN2)




| Pin# | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | RXP | RXN | 3.3V | NC | NC | VPWR |
| 2 | GND | GND | Not used | GND | GND | PCIE_RST-L |
| 3 | NC | NC | 3.3V | NC | NC | VPWR |
| 4 | GND | GND | Not used | GND | GND | Not used |
| 5 | NC | NC | 3.3V | NC | NC | VPWR |
| 6 | GND | GND | Not used | GND | GND | +12V |
| 7 | NC | NC | 3.3V | NC | NC | VPWR |
| 8 | GND | GND | Not used | GND | GND | -12V |
| 9 | NC | NC | Not used | NC | NC | VPWR |
| 10 | GND | GND | Not used | GND | GND | GA0 |
| 11 | TXP | TXN | Not used | NC | NC | VPWR |
| 12 | GND | GND | GA1 | GND | GND | Not used |
| 13 | NC | NC | 3.3V | NC | NC | VPWR |
| 14 | GND | GND | GA2 | GND | GND | Not used |
| 15 | NC | NC | Not used | NC | NC | VPWR |
| 16 | GND | GND | Not used | GND | GND | Not used |
| 17 | NC | NC | Not used | NC | NC | NC |
| 18 | GND | GND | Not used | GND | GND | Not used |
| 19 | CK-P | CK-N | Not used | Not used | Not used | Not used |

**Table 4-13: XMC Connector Pin Definition**

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## CompactPCI J1 Connector

| Pin | Z | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|
| 25 | GND | +5V | REQ64# | ENUM# | +3.3V | +5V | GND |
| 24 | GND | CPCI_AD1 | +5V | CPCI_VIO | CPCI_AD0 | ACK64# | GND |
| 23 | GND | P3V3 | CPCI_AD4 | CPCI_AD3 | P5V | CPCI_AD2 | GND |
| 22 | GND | CPCI_AD7 | GND | P3V3 | CPCI_AD6 | CPCI_AD5 | GND |
| 21 | GND | P3V3 | CPCI_AD9 | CPCI_AD8 | CPCI_M66EN | CPCI_CBE-L0 | GND |
| 20 | GND | CPCI_AD12 | GND | VIO | CPCI_AD11 | CPCI_AD10 | GND |
| 19 | GND | P3V3 | CPCI_AD15 | CPCI_AD14 | GND | CPCI_AD13 | GND |
| 18 | GND | CPCI_SERR-L | GND | P3V3 | CPCI_PAR | CPCI_CBE-L1 | GND |
| 17 | GND | P3V3 | NC | NC | GND | CPCI_PERR-L | GND |
| 16 | GND | CPCI_DEVSEL-L | CPCI_PCIXCAP | VIO | CPCI_STOP-L | CPCI_LOCK-L | GND |
| 15 | GND | P3V3 | CPCI_FRAME-L | CPCI_IRDY-L | NC | CPCI_TRDY-L | GND |
| 12-14 | Key | | | | | | |
| 11 | GND | CPCI_AD18 | CPCI_AD17 | CPCI_AD16 | GND | CPCI_CBE-L2 | GND |
| 10 | GND | CPCI_AD21 | GND | P3V3 | CPCI_AD20 | CPCI_AD19 | GND |
| 9 | GND | CPCI_CBE-L3 | NC | CPCI_AD23 | GND | CPCI_AD22 | GND |
| 8 | GND | CPCI_AD26 | GND | VIO | CPCI_AD25 | CPCI_AD24 | GND |
| 7 | GND | CPCI_AD30 | CPCI_AD29 | CPCI_AD28 | GND | CPCI_AD27 | GND |
| 6 | GND | CPCI_REQ-L0 | GND | P3V3 | CPCI_CLK0 | CPCI_AD31 | GND |
| 5 | GND | NC | NC | CPCI_RESET-L | GND | CPCI_GNT-L0 | GND |
| 4 | GND | NC | CPCI_HEALTHY-L | VIO | NC | NC | GND |
| 3 | GND | CPCI_IRQA-L | CPCI_IRQB-L | CPCI_IRQC-L | P5V | CPCI_IRQD-L | GND |
| 2 | GND | cPCI_TCK-L | P5V | cPCI_TMS-L | NC | cPCI_TDI-L | GND |
| 1 | GND | P5V | NC | cPCI_TRST-L | P12V | P5V | GND |

**Table 4-14: CompactPCI J1 Connector Pin Definition**

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## CompactPCI J2 Connector

| Pin | Z | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|
| 22 | GND | GA4 | GA3 | GA2 | GA1 | GA0 | GND |
| 21 | GND | CLK6 | GND | NC | NC | NC | GND |
| 20 | GND | CLK5 | GND | NC | GND | NC | GND |
| 19 | GND | GND | GND | IPMB_DAT | IPMB_CLK | NC | GND |
| 18 | GND | NC | NC | NC | GND | NC | GND |
| 17 | GND | NC | GND | J2_RSTBTN-L | REQ6# | GNT6# | GND |
| 16 | GND | NC | NC | DEG# | GND | NC | GND |
| 15 | GND | NC | GND | CPCI_FAL-L | REQ5# | GNT5# | GND |
| 14 | GND | CPCI_AD35 | CPCI_AD34 | CPCI_AD33 | GND | CPCI_AD32 | GND |
| 13 | GND | CPCI_AD38 | GND | GND | CPCI_AD37 | CPCI_AD36 | GND |
| 12 | GND | CPCI_AD42 | CPCI_AD41 | CPCI_AD40 | GND | CPCI_AD39 | GND |
| 11 | GND | CPCI_AD45 | GND | VIO | CPCI_AD44 | CPCI_AD43 | GND |
| 10 | GND | CPCI_AD49 | CPCI_AD48 | CPCI_AD47 | GND | CPCI_AD46 | GND |
| 9 | GND | CPCI_AD52 | GND | VIO | CPCI_AD51 | CPCI_AD50 | GND |
| 8 | GND | CPCI_AD56 | CPCI_AD55 | CPCI_AD54 | GND | CPCI_AD53 | GND |
| 7 | GND | CPCI_AD59 | GND | VIO | CPCI_AD58 | CPCI_AD57 | GND |
| 6 | GND | CPCI_AD63 | CPCI_AD62 | CPCI_AD61 | GND | CPCI_AD60 | GND |
| 5 | GND | CBE5# | DEV64# | VIO | CBE4# | PAR64# | GND |
| 4 | GND | VIO | NC | CBE7# | NC | CBE6# | GND |
| 3 | GND | CLK4 | GND | GNT3# | REQ4# | GNT4# | GND |
| 2 | GND | CLK2 | CLK3 | SYSEN# | GNT2# | REQ3# | GND |
| 1 | GND | CLK1 | GND | REQ1# | GNT1# | REQ2# | GND |

**Table 4-15: CompactPCI J2 Connector Pin Definition**

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## CompactPCI J3 Connector

| Pin | Z | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|
| 19 | GND | P5V | P5V | P12V | P5V | P5V | GND |
| 18 | GND | LAN3_TXDP0 | LAN3_TXDN0 | GND | LAN3_TXDP2 | LAN3_TXDN2 | GND |
| 17 | GND | LAN3_TXDP1 | LAN3_TXDN1 | GND | LAN3_TXDP3 | LAN3_TXDN3 | GND |
| 16 | GND | LAN4_TXDP0 | LAN4_TXDN0 | GND | LAN4_TXDP2 | LAN4_TXDN2 | GND |
| 15 | GND | LAN4_TXDP1 | LAN4_TXDN1 | GND | LAN4_TXDP3 | LAN4_TXDN3 | GND |
| 14 | GND | USB_OC45-L | USB_OC6 | USB_OC7 | USB_OC8 | USB_OC9 | GND |
| 13 | GND | USB8-P | USB8-N | GND | USB9-P | USB9-N | GND |
| 12 | GND | USB6-P | USB6-N | GND | USB7-P | USB7-N | GND |
| 11 | GND | USB4-P | USB4-N | GND | USB5-P | USB5-N | GND |
| 10 | GND | USB_OC45-L | CRT_DDC_CLK | CRT_DDC_DATA | CRT_HSYNC | CRT_VXYNC | GND |
| 9 | GND | COM2_CTS-L | COM2_RI-L | CRT_BLUE | CRT_RED | CRT_GREEN | GND |
| 8 | GND | COM2_RX | COM2_TX | COM2_DTR-L | COM2_DSR-L | COM2_RTS-L | GND |
| 7 | GND | COM3_TX | COM3_RX | COM2_DCD-L | IPMB_CLK | IPMB_DAT | GND |
| 6 | GND | SATA_RXP1 | SATA_RXN1 | GND | SATA_RXP0 | SATA_RXN0 | GND |
| 5 | GND | GND | GND | NC | GND | GND | GND |
| 4 | GND | SATA_TXP1 | SATA_TXN1 | GND | SATA_TXP0 | SATA_TXN0 | GND |
| 3 | GND | KBDATA | KBCLK | NC | MSDATA | MSCLK | GND |
| 2 | GND | AUD_SDIN1 | AUD_SDIN2 | NC | AUD_DOCK_EN-L | AUD_DOCK_RST-L | GND |
| 1 | GND | AUD_RST-L | AUD_SYNC | AUD_BIT_CLK | AUD_SDOUT | AUD_SDIN0 | GND |

**Table 4-16: CompactPCI J3 Connector Pin Definition**

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## CompactPCI J4 Connector

| Pin | Z | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|
| 25 | GND | PMC IO:P1 | PMC IO:N1 | NC | PMC IO:P2 | PMC IO:N2 | GND |
| 24 | GND | PMC IO:P3 | PMC IO:N3 | NC | PMC IO:P4 | PMC IO:N4 | GND |
| 23 | GND | NC | NC | NC | NC | NC | GND |
| 22 | GND | PMC IO:P5 | PMC IO:N5 | NC | PMC IO:P6 | PMC IO:N6 | GND |
| 21 | GND | PMC IO:P7 | PMC IO:N7 | NC | PMC IO:P8 | PMC IO:N8 | GND |
| 20 | GND | NC | NC | NC | NC | NC | GND |
| 19 | GND | PMC IO:17 | PMC IO:19 | NC | PMC IO:18 | PMC IO:20 | GND |
| 18 | GND | PMC IO:21 | PMC IO:23 | NC | PMC IO:22 | PMC IO:24 | GND |
| 17 | GND | NC | NC | NC | NC | NC | GND |
| 16 | GND | PMC IO:25 | PMC IO:27 | NC | PMC IO:26 | PMC IO:28 | GND |
| 15 | GND | PMC IO:29 | PMC IO:31 | NC | PMC IO:30 | PMC IO:32 | GND |
| 12-14 | GND | Key Area | | | | | Key |
| 11 | GND | PMC IO:33 | PMC IO:35 | NC | PMC IO:34 | PMC IO:36 | GND |
| 10 | GND | PMC IO:37 | PMC IO:39 | NC | PMC IO:38 | PMC IO:40 | GND |
| 9 | GND | NC | NC | NC | NC | NC | GND |
| 8 | GND | PMC IO:41 | PMC IO:43 | NC | PMC IO:42 | PMC IO:44 | GND |
| 7 | GND | PMC IO:45 | PMC IO:47 | NC | PMC IO:46 | PMC IO:48 | GND |
| 6 | GND | NC | NC | NC | NC | NC | GND |
| 5 | GND | PMC IO:49 | PMC IO:51 | NC | PMC IO:50 | PMC IO:52 | GND |
| 4 | GND | PMC IO:53 | PMC IO:55 | NC | PMC IO:54 | PMC IO:56 | GND |
| 3 | GND | NC | NC | NC | NC | NC | GND |
| 2 | GND | PMC IO:57 | PMC IO:59 | NC | PMC IO:58 | PMC IO:60 | GND |
| 1 | GND | PMC IO:61 | PMC IO:63 | NC | PMC IO:62 | PMC IO:64 | GND |

**Table 4-17: CompactPCI J4 Connector Pin Definition**

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## CompactPCI J5 Connector

| Pin | Z | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|
| 22 | GND | PWELED-L | LAN4_LED_ACT-L | LAN4_CT | LAN3_LED_ACT-L | LAN3_CT | GND |
| 21 | GND | EDP_CN_TX_P1 | EDP_CB_TX_N1 | GND | EDP_CN_TX_P3 | EDP_CN_TX_N3 | GND |
| 20 | GND | EDP_CN_TX_P0 | EDP_CN_TX_N0 | GND | EDP_CN_TX_P2 | EDP_CN_TX_N2 | GND |
| 19 | GND | GND | GND | GND | EDP_AUX_P | EDP_AUX_N | GND |
| 18 | GND | NC | NC | GND | NC | NC | GND |
| 17 | GND | NC | NC | GND | NC | NC | GND |
| 16 | GND | GND | GND | EDP_HPD | GND | GND | GND |
| 15 | GND | NC | NC | GND | SATA_RXP2 | SATA_RXN2 | GND |
| 14 | GND | NC | NC | GND | SATA-TXP2 | SATA-TXN2 | GND |
| 13 | GND | LAN4_LED_100-L | LAN3_LED_100-L | NC | LAN3_LED_1000-L | LAN4_LED_1000-L | GND |
| 12 | GND | DVI_SDA_RTM | DVI_SCL_RTM | DVI_HPD_RTM | NC | NC | GND |
| 11 | GND | TMDSC_DATA2_P | TMDSC_DATA2_N | GND | TMDS_CLK_P | TMDS_CLK_N | GND |
| 10 | GND | TMDSC_DATA0_P | TMDSC_DATA0_N | GND | TMDS_DATA1_P | TMDS_DATA1_N | GND |
| 9 | GND | REAR_GPIO1 | REAR_GPIO2 | REAR_GPIO3 | REAR_GPIO4 | REAR_GPIO5 | GND |
| 8 | GND | USB3_TX_5P | USB3_TX_5N | GND | USB3_RX_5P | USB3_RX_5N | GND |
| 7 | GND | GND | GND | BAT_RTM | GND | GND | GND |
| 6 | GND | CLK_REAR-P | CLK_REAR | GND | PLTRST_REAR-L | SATALED-L | GND |
| 5 | GND | GND | GND | GND | GND | GND | GND |
| 4 | GND | PCIE_TX8-P | PCIE_TX8-N | GND | PCIE_RX8-P | PCIE_RX8-N | GND |
| 3 | GND | PCIE_TX7-P | PCIE_TX7-N | GND | PCIE_RX7-P | PCIE_RX7-N | GND |
| 2 | GND | PCIE_TX6-P | PCIE_TX6-N | GND | PCIE_RX6-P | PCIE_RX6-N | GND |
| 1 | GND | PCIE_TX5-P | PCIE_TX-N | GND | PCIE_RX5-P | PCIE_RX5-N | GND |

**Table 4-18: CompactPCI J5 Connector Pin Definition**

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# Important Safety Instructions

For user safety, please read and follow all **instructions**, **WARNINGS**, **CAUTIONS,** and **NOTES** marked in this manual and on the associated equipment before handling/operating the equipment.

- Read these safety instructions carefully.
- Keep this user's manual for future reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- When installing/mounting or uninstalling/removing equipment:
  - Turn off power and unplug any power cords/cables.
- To avoid electrical shock and/or damage to equipment:
  - Keep equipment away from water or liquid sources;
  - Keep equipment away from high heat or high humidity;
  - Keep equipment properly ventilated (do not block or cover ventilation openings);
  - Make sure to use recommended voltage and power source settings;
  - Always install and operate equipment near an easily accessible electrical socket-outlet;
  - Secure the power cord (do not place any object on/over the power cord);
  - Only install/attach and operate equipment on stable surfaces and/or recommended mountings; and,
  - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.

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- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.

A Lithium-type battery may be provided for uninterrupted, backup or emergency power.

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Risk of explosion if battery is replaced with one of an incorrect type. Dispose of used batteries appropriately.

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- Equipment must be serviced by authorized technicians when:
  - The power cord or plug is damaged;
  - Liquid has penetrated the equipment;
  - It has been exposed to high humidity/moisture;
  - It is not functioning or does not function according to the user's manual;
  - It has been dropped and/or damaged; and/or,
  - It has an obvious sign of breakage.

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# Getting Service

Contact us should you require any service or assistance.

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