cPCI-3615 Series

3U CompactPCI® Dual-Core Intel® Atom™ Processor Blade

User's Manual



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Revision History

Revision	Release Date	Description of Change(s)
2.00	2011/04/29	Initial release

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Preface

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Using this Manual

Audience and Scope

The cPCI-3615 User's Manual is intended for hardware technicians and systems operators with knowledge of installing, configuring and operating CompactPCI systems.

Manual Organization

This manual is organized as follows:

Chapter 1, Introduction: Introduces the cPCI-3615, 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-3615 main functions.

Chapter 4, Board Interfaces: Describes the cPCI-3615 board interfaces.

Chapter 5, Getting Started: Describes the installation of components to the cPCI-3615 and rear transition modules.

Chapter 6, Driver Installation: Provides information on how to install the cPCI-3615 device drivers.

Chapter 7, Utilities: Describes the utilities of the cPCI-3615 Series.

Chapter 8, BIOS Setup: Describes basic navigation for the AMIBIOS®8 BIOS setup utility.

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 cPCI-3615 Series is a 3U CompactPCI single board computer in single-slot (4HP), dual-slot (8HP) or triple-slot (12HP) width form factor featuring the Intel® Atom™ N455 or D525 processor with ICH8M I/O Controller Hub. The cPCI-3615 provides single channel DDR3-800 soldered onboard memory up to 4GB, integrated graphics on the CPU, IDE CompactFlash slot, and 2.5” SATA HDD (cPCI-3615D/P) and one PMC/XMC site (cPCI-3615P). Front panel I/O includes 2x USB, 2x GbE, VGA, and additional 2x USB, COM, KB/MS, and line-in/out for the 8(12)HP cPCI-3615D(P) models.

The optional Rear Transition Module (RTM) provides 2x SATA, 2x GbE, 1x USB, 2x COM, and VGA ports. One PCI-Express x1 port, GPIO and SMBus signals are routed to the J2 connector. The cPCI-3615 Series is ideally suited for transportation, factory automation, and other industrial applications.

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1.2 Features

- 3U CompactPCI blade in 4HP, 8HP or 12HP width form factor
- Supports Dual-Core or Single-Core Intel® Atom™ processor, up to 1.8 GHz
- Graphics and memory controllers integrated in processor
- ICH8M I/O Hub
- Single channel DDR3-800 SDRAM soldered onboard, up to 4GB
- 32bit/33MHz CompactPCI Interface based on PCI specifications
- Optional 32bit/66MHz PMC or PCI-Express x1 XMC site
- VGA port on front or switchable to RTM
- Two PCI-Express® Gigabit Ethernet egress ports, configurable to RTM by software
- One IDE CompactFlash socket
- Line-in and Line-out ports on front panel
- 2.5” SATA HDD onboard on 8HP/12HP blade and two 7-pin SATA ports on RTM

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1.3 Block Diagram

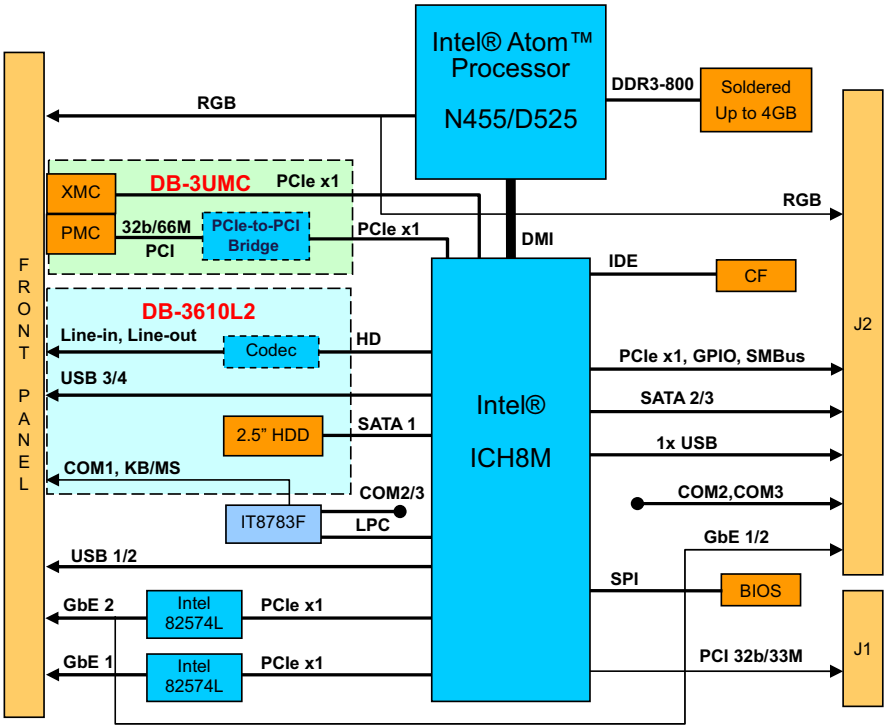


Figure 1-1: cPCI-3615 Series Functional Block Diagram

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1.4 Product List

Products in the cPCI-3615 Series include:

Processor Blade

- **cPCI-3615:** 4HP width (single-slot) 3U CompactPCI featuring Atom™ N455 or D525 processor; 1GB, 2GB or 4GB memory soldered onboard; CompactFlash slot; 2x USB; 2x GbE; VGA.
- **cPCI-3615D:** 8HP width (dual-slot) 3U CompactPCI featuring Atom™ N455 or D525 processor; 1GB, 2GB or 4GB memory soldered onboard; CompactFlash slot; 2x USB; 2x GbE; VGA. The DB-3610L2 riser card onboard provides 2x USB, COM, PS/2 KB/MS, Line-in, Line-out ports.
- **cPCI-3615P:** 12HP width (triple-slot) 3U CompactPCI featuring Atom™ N455 or D525 processor; 1GB, 2GB or 4GB memory soldered onboard; CompactFlash slot; 2x USB; 2x GbE; VGA. The DB-3610L2 riser card onboard on the 2nd layer provides 2x USB, COM, PS/2 KB/MS, Line-in, Line-out ports. The DB-3UMC riser card on the 3rd layer provides one PMC/XMC site.
- **Extended Temperature:** -20°C to 70°C operating temperature range is supported by the **cPCI-ET3615**, **cPCI-ET3615D** and **cPCI-ET3615P**
- **Extreme Temperature:** -40°C to 85°C operating temperature range is supported by the **cPCI-EX3615**, **cPCI-EX3615D** and **cPCI-EX3615P**

Rear Transition Module

- **cPCI-R3610:** 8HP width, 50mm depth Rear Transition Module with 2x COM, USB, 2x GbE, 2x SATA, VGA
- **cPCI-R3610T:** 8HP width, 80mm depth Rear Transition Module with 2x COM, USB, 2x GbE, 2x SATA, VGA

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1.5 Package Contents

The cPCI-3615 is packaged with the following components. If any of the items on the contents list 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 the cPCI-3615 Series are non-standard configurations and may vary depending on customer requests.

Processor Blade

- The cPCI-3615 Series Processor Blade
  - CPU, RAM specifications will differ depending on options selected
  - Thermal module is assembled on the board
- Y-cable for PS/2 combo port (8HP/12HP version only)
- 2.5” HDD accessory pack (8HP/12HP version only)
- ADLINK All-in-One CD
- User’s manual

Rear Transition Module

- cPCI-R3610: 8HP width, 50mm depth Rear Transition Module with 2x COM, USB, 2x GbE, 2x SATA, VGA
- cPCI-R3610T: 8HP width, 80mm depth Rear Transition Module with 2x COM, USB, 2x GbE, 2x SATA, VGA


NOTE:

The contents of non-standard cPCI-3615 configurations may vary depending on the customer’s requirements.


CAUTION:

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-3615 Specifications

CompactPCI® Standards	• PICMG® 2.0 CompactPCI® Rev. 3.0 • PICMG® 2.1 Hot Swap Specification Rev.2.0
Mechanical	• Standard 3U CompactPCI® • Board size: 100mm x 160mm • Single-slot (4HP, 20.32mm); Dual-slot (8HP, 40.64mm), Triple-slot (12HP, 60.96mm) width • CompactPCI® connectors with J1, J2
Processor	• µFC-BGA Intel® Atom™ Processor N455 1.66 GHz, 512KB L2 cache, TDP 6.5W • µFC-BGA dual-core Intel® Atom™ Processor D525 1.8 GHz, 1MB L2 cache, TDP 13W • Passive heatsink
Chipset	• Intel® ICH8M I/O Controller Hub (ICH)
Memory	• Single channel unbuffered DDR3-800 SDRAM soldered onboard • Up to 2GB for N455 processor, 4GB for D525 processor
BIOS	• AMIBIOS8® 16Mbit SPI flash memory
CompactPCI Bus	• PCI 32bit/ 33MHz; 3.3V, 5V universal V(I/O) • Supports operation in system slot only
Gigabit Ethernet	• Two PCI-Express x1 Intel® 82574L GbE controllers • Two egress 10/100/1000BASE-T ports, configurable to J2 (RTM) by software setting
Graphics	• Integrated in Intel® Atom™ Processor • DB-15 VGA port on front panel, switchable to J2 (RTM) • Analog monitor support up to QXGA 2048x1536 @60Hz 32-bit
Serial Ports	• Up to three 16C550 compatible RS-232/422/485/485+ serial ports from Super I/O IT8783 • One DB-9 port on front panel, two DB-9 ports on rear panel
Storage Interface[1]	• CompactFlash Type II socket onboard • 2.5” SATA HDD connector onboard (8HP/12HP version only) • Two 7-pin SATA signal connectors on RTM
PMC/XMC	• One 32bit/66MHz PMC or PCI-Express x1 XMC site (12HP version only)
Audio	• Line-in and Line-out ports on front panel (8HP/12HP only) • Realtek ALC262 High Definition Audio Codec
BIOS	• AMIBIOS8® 16Mbit SPI flash memory

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Faceplate I/O	**4HP (cPCI-3615):** • 2x USB 2.0 ports • 2x 10/100/1000BASE-T Ethernet ports • Analog DB-15 VGA port **8HP (cPCI-3615D):** • 4x USB 2.0 ports • 2x 10/100/1000BASE-T Ethernet ports • Analog DB-15 VGA port • DB-9 RS-232/422/485/485+ port • PS/2 Keyboard/ Mouse combo port • Line-in and Line-out ports **cPCI-R3610(T):** • 2x USB 2.0 ports • 10/100/1000BASE-T Ethernet port • 2x DB-9 RS-232 serial ports
OS Compatibility	• Microsoft Windows XP Professional, x64 Edition • Microsoft Windows Vista x64 Edition • Microsoft Windows 7 x86 Edition • Red Hat Enterprise Linux 5.3 • Fedora 12 • Other OS support upon request
Environmental	• Operating Temperature (with forced air flow)[2]: - Standard: 0°C to 60°C - Extended: -20°C to 70°C - Extreme Extended temperature: -40°C to 85°C • Storage Temperature: -40°C to 85°C • Humidity: 90% @ 60°C non-condensing • Shock: 15G peak-to-peak, 11ms duration, non-operating • Vibration[1]: Operating 1.88Grms, 5-500Hz, each axis w/o HDD
EMI	• CE EN55022 • FCC Class A

Specifications are subject to change without prior notice.

1. Hard drive limits operational vibration. When application requires higher vibration specification, it is recommended to use a flash disk.
2. ADLINK-certified thermal design. The thermal performance is dependent on the chassis cooling design. Forced airflow with 3.2 m/s is required. Temperature limit of optional mass storage devices may affect the thermal specification.

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2.2 I/O Connectivity Table

Function	cPCI-3615 (4HP)		cPCI-3615D (8HP)		cPCI-3615P (12HP)		cPCI-R3610(T)	
	Front I/O	Onboard	Front I/O	Onboard	Front I/O	Onboard	Front I/O	Onboard
Gigabit Ethernet	Y x2	–	Y x2	–	Y x2	–	Y x2[1]	–
COM		–	Y	–	Y	–	Y x2	–
USB 2.0	Y x2	–	Y x4	–	Y x4	–	Y	–
VGA	Y	–	Y	–	Y	–	Y[1]	–
Serial ATA	–	–	–	Y (2.5” HD)	–	Y (2.5” HD)	–	Y x2 (7-pin)
CF	–	Y	–	Y	–	Y	–	–
PS/2 KB/MS	–	–	Y	–	Y	–	–	–
Line-in	–	–	Y	–	Y	–	–	–
Line-out	–	–	Y	–	Y	–	–	–
PMC/ XMC	–	–	–	–	–	Y	–	–
GP LED	Y x2	–	Y x2	–	Y x2	–	–	–
Reset Btn.	Y	–	Y	–	Y	–	–	–

1. Software switchable from front port(s).

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2.3 Power Requirements

In order to guarantee stable operation of the system, it is recommended that significantly more power be provided than required. **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-3615 Series when using Intel® Atom™ processors with 1GB soldered DDR2 memory and onboard 80GB SATA hard drive. The cPCI-3615 is powered by 5V only. Power consumption at 100% CPU usage was measured using PassMark BurnInTest 6.0.

Intel® Atom™ Processor N455		
OS/Mode	**Current 5V**	**Total Power**
DOS/Idle mode	2.94A	14.7W
Linux/Idle mode	2.54A	12.7W
Windows XP/ Idle mode	2.95A	14.7W
Windows® XP, 100% CPU Usage	3.02A	15.1W

Intel® Atom™ Processor D525		
OS/Mode	**Current 5V**	**Total Power**
DOS/Idle mode	2.99A	14.9W
Linux/Idle mode	2.79A	13.9W
Windows XP/ Idle mode	3.04A	15.2W
Windows® XP, 100% CPU Usage	3.48A	17.4W

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3 Functional Description

The following sections describe the cPCI-3615 Series features and functions.

3.1 Processor

The cPCI-3615 Series supports the Intel® Atom™ Processor N400, D400 and D500 Series processors built on 45-nm Hi-K process technology. The processor is designed for a two-chip platform as opposed to the traditional three-chip platforms (processor, GMCH, and ICH). The two-chip platform consists of a processor and the chipset and enables higher performance, lower cost, easier validation, and improved x-y footprint.

Features	Atom™N455	Atom™D525
Clock	1.66 GHz	1.8 GHz
L2 cache	512KB	1MB
No. of Core(s)	1	2
Max. Power (TDP[1])	6.5W	13W
$T_{junction, MAX}$[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.

Intel® Atom™ Processor N455

Included in this family of processors is an integrated memory controller, integrated graphics processing unit and integrated I/O (such as DMI) on a single silicon die.

The following list outlines the key features of this processor:

- One die, primary 32-kB instructions cache and 24-kB write-back data cache
- Intel® Hyper-Threading Technology (2 threads)
- On die 512-kB, 8-way L2 cache
- Support IA 32-bit and Intel® 64 architecture
- Intel® SSE2 and SSE3 and SSSE3 support

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- Micro-FCBGA8 packaging technologies
- Thermal management support via Intel® Thermal Monitor 1 (TM1) and Intel® Thermal Monitor 2 (TM2)
- Enhanced Intel® SpeedStep Technology (EIST)
- Support L2 dynamic cache sizing

The following list outlines the key features of system memory support:

- One channel DDR3 memory
- Memory DDR3 data transfer rates of 800 MT/s
- Non-ECC, unbuffered DDR3
- 512Mb. 1-Gb,and 2-Gb DDR3 DRAM technologies supported
- Maximum of 2-GB memory capacity supported
- Maximum 2GB memory capacity on one SO-DIMM or Memory Down

The following list outlines the key graphics features:

- The integrated graphics controller contains a refresh of the 3rd generation graphics core
- Intel® Dynamic Video Memory Technology 4.0
- Directx* 9 compliant Pixel Shader v2.0
- 200-MHz render clock frequency
- Analog RGB display output up to resolution up to 1400x1050 @ 60Hz

Intel® Atom™ Processor D525

The following list provides some of the key features of this processor:

- One die, primary 32-kB instructions cache and 24-kB write-back data cache
- Intel® Hyper-Threading Technology (2 threads per core)
- On die 2x512-kB, 8-way L2 cache
- Support IA 32-bit and Intel® 64 architecture
- Intel® SSE2 and SSE3 and SSSE3 support
- Micro-FCBGA8 packaging technologies
- Thermal management support via Intel® Thermal Monitor 1 (TM1)

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The following list outlines the key features of system memory support:

- One channel DDR3 memory
- Memory DDR3 data transfer rates of 800 MT/s
- Non-ECC, unbuffered DDR3
- I/O Voltage of 1.8V for DDR3
- 512Mb. 1-Gb,and 2-Gb DDR3 DRAM technologies supported

The following list outlines the key graphics features:

- The integrated graphics controller contains a refresh of the 3rd generation graphics core
- Intel® Dynamic Video Memory Technology 4.0
- Directx* 9 compliant Pixel Shader v2.0
- 400-MHz render clock frequency
- Analog RGB display output up to resolution up to 2048x1536 @ 60Hz

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3.2 Chipset

Intel® ICH8 Mobile I/O Controller Hub

The ICH8M provides extensive I/O support. Functions and capabilities include:

- Provides 6 PCI Expressx1 ports, supporting the PCI Express Base Specification, Revision 1.1. Each Root Port supports 2.5GB/s bandwidth in each direction. The cPCI-3615 utilizes two PCI Express x1 ports for two Gigabit Ethernet controllers; routes two PCI Express x1 ports to the board-to-board connector and one PCI Express x1 port to the J2 connector for expansion capability.
- Enhanced DMA controller, interrupt controller, and timer functions
- Integrated Serial ATA host controller with independent DMA operation on three ports
- Integrated IDE controller supports Ultra ATA100/66/33
- System Management Bus (SMBus) Specification, Version 2.0 with additional support for I2C devices
- Supports Intel® Matrix Storage Technology
- PCI Local Bus Specification, Revision 2.3 support for 33MHz PCI operations

3.3 Super I/O

The ITE IT8783F Super I/O is on a Low Pin Count interface supporting PS/2 keyboard/mouse; three 16C550-compatible serial ports; hardware monitor function to monitor CPU voltage, CPU temperature, power supply voltages and system temperature; and Watchdog Timer with time resolution from minimum 1 second or minute to maximum 65635 seconds or minutes on the cPCI-3615.

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3.4 Battery

The cPCI-3615 is provided with a 3.0V “coin cell” lithium battery for the Real Time Clock (RTC). The battery socket is equipped on the DB-3610CF daughter board. The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer. The cPCI-3615 is equipped with a Rayovac BR2032 by default, and can be optionally equipped with a Gold Capacitor.

3.5 PMC/XMC

The cPCI-3615P Series supports one PMC or XMC site for front panel I/O expansion. The PMC site provides a maximum 32bit/ 66MHz PCI bus link using a Pericom PI7C9X110 PCI-Express-to-PCI bridge and PCI-Express x1 link. The PMC site supports +3.3V and +5V signaling. The XMC site provides a PCI Express x1 port.

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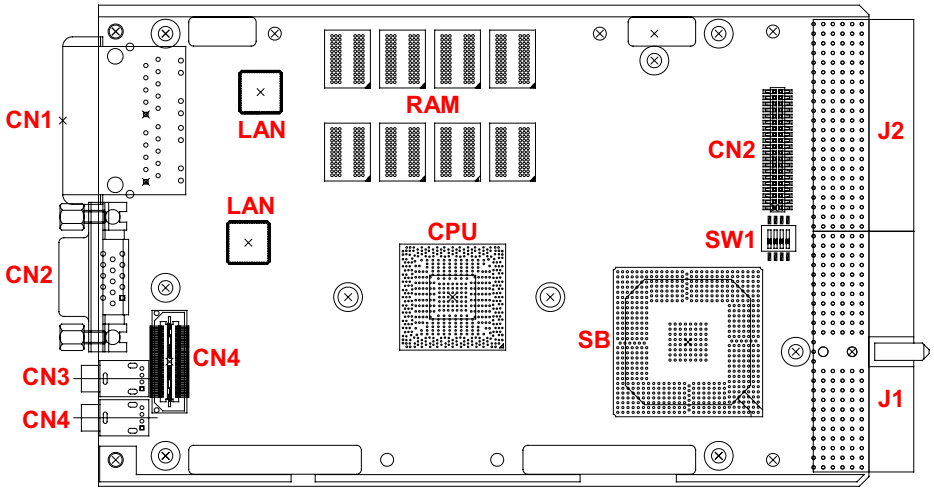
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4 Board Interfaces

This chapter illustrates the board layout, connector pin assignments, and jumper settings to familiarize users with the cPCI-3615 Series.

4.1 cPCI-3615 Blade Board Layout



CPU	Atom processor	**CN3/4**	CN3/4
SB	South Bridge Intel® ICH8M	**CN4**	DB-3610L2 connector
LAN	GbE Controller Intel® 82574L	**CN2**	DB-3610CF connector
RAM	DDR2 SDRAM	**SW1**	Switch 1
CN1	Dual RJ-45 GbE ports	**J1/J2**	CompactPCI connectors
CN2	VGA connector		

Figure 4-1: cPCI-3615 Blade Board Layout

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4.2 cPCI-3615 Blade Assembly Layout

This section describes the final assembly layout of the single slot cPCI-3615 (4HP).

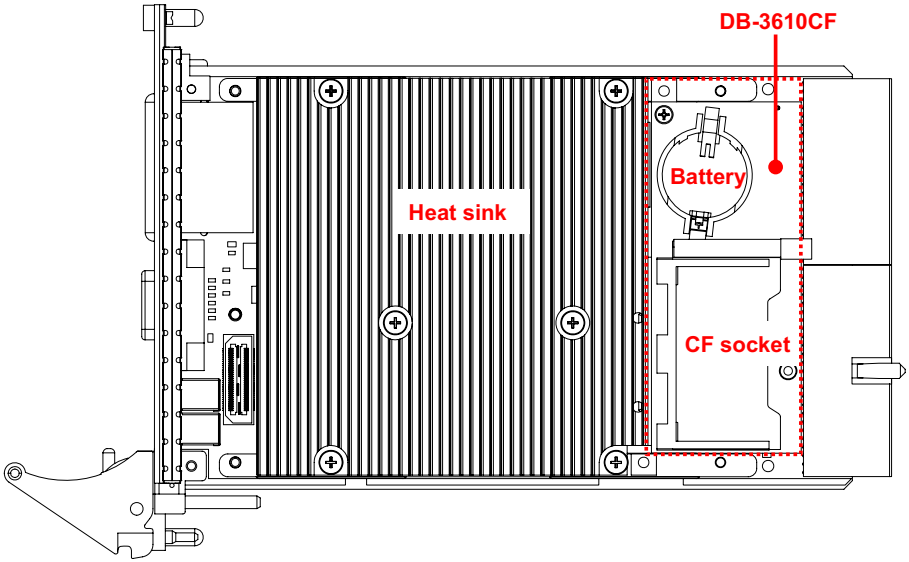
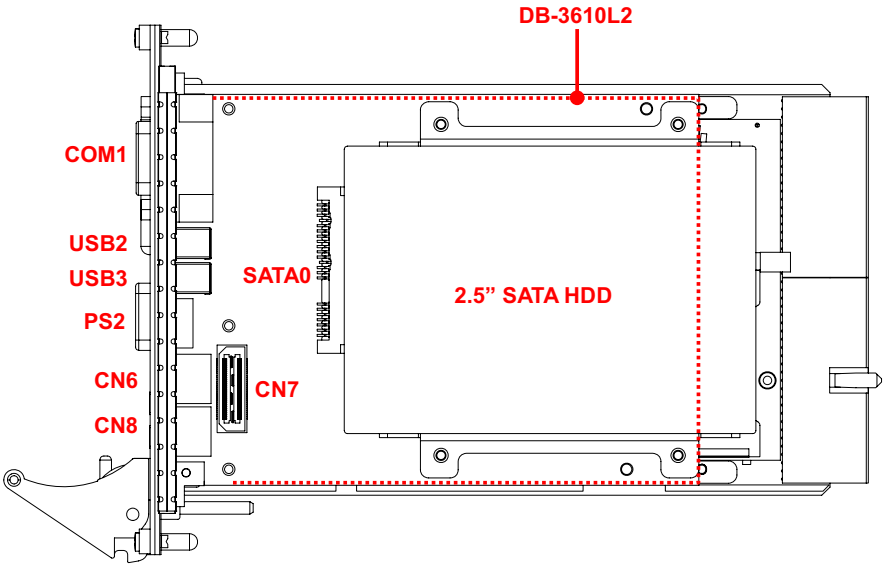


Figure 4-2: cPCI-3615 Assembly Layout

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4.3 cPCI-3615D Blade Assembly Layout

The dual-slot width cPCI-3615D (8HP) is comprised of the cPCI-3615 single-slot main board and the DB-3610L2 riser card to expand I/O connectivity with PS/2, COM, 2x USB, Line-in, and Line-out ports.



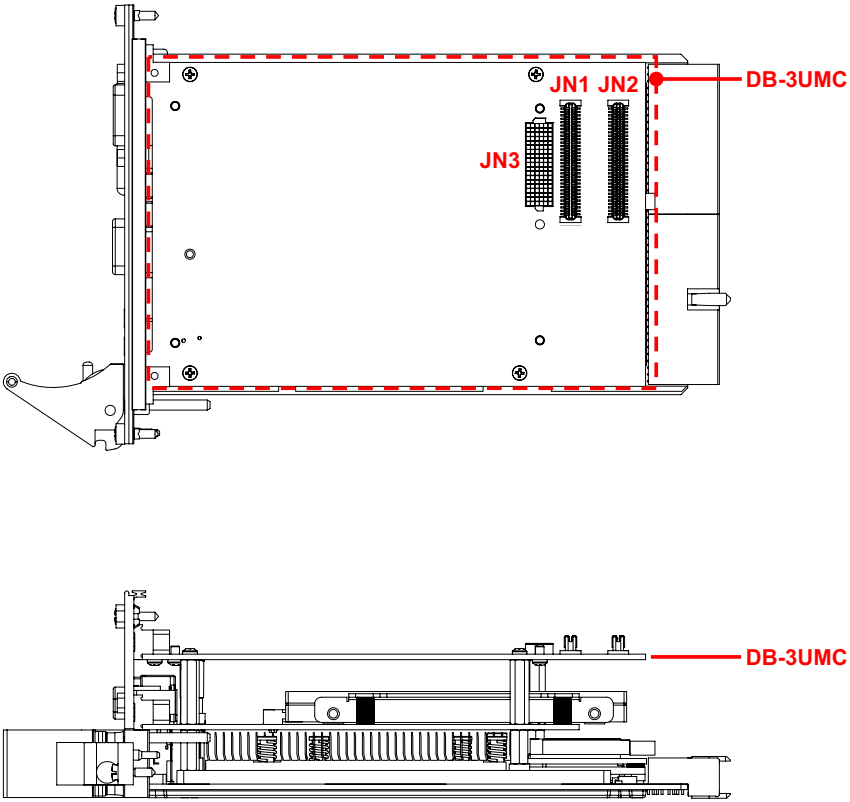
COM1	DB-9 COM port	**CN7**	DB-3UMC connector
USB2/3	USB connectors	**CN6**	Line-in port
PS2	PS/2 KB/MS combo port	**CN8**	Line-out port
SATA0	22-pin SATA connector		

Figure 4-3: cPCI-3615D Board Layout

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4.4 cPCI-3615P Blade Assembly Layout

The triple-slot width cPCI-3615P (12HP) is comprised of the cPCI-3615D dual-slot assembly and the DB-3UMC riser card to provide a PMC/XMC slot for front I/O expansion.



JN1/2	PMC connectors	JN3	XMC connector

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4.5 cPCI-3615 Series Front Panel Layout

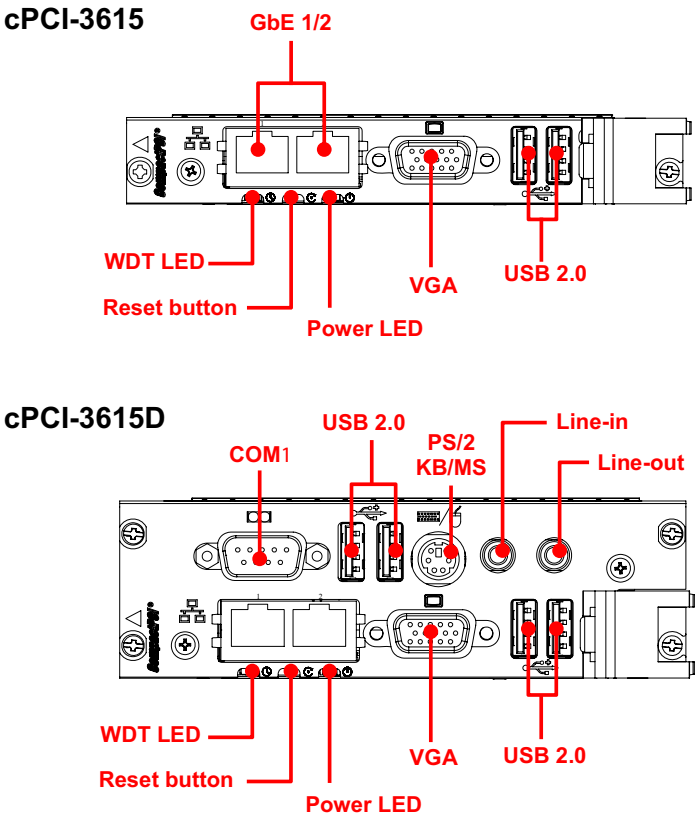


Figure 4-4: cPCI-3615, cPCI-3615D Front Panel Layout

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cPCI-3615P

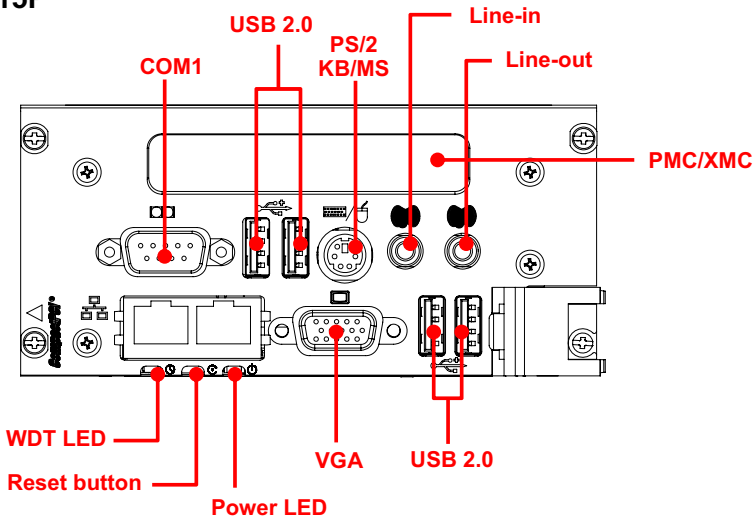
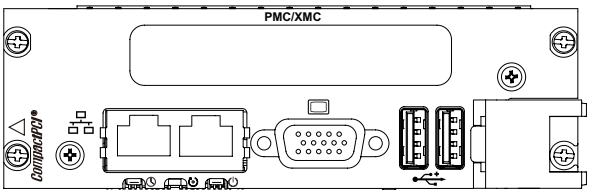


Figure 4-5: cPCI-3615P Front Panel Layout

Optional 2-slot version with PMC/XMC as shown below is available by request. Please contact your ADLINK sales representative.



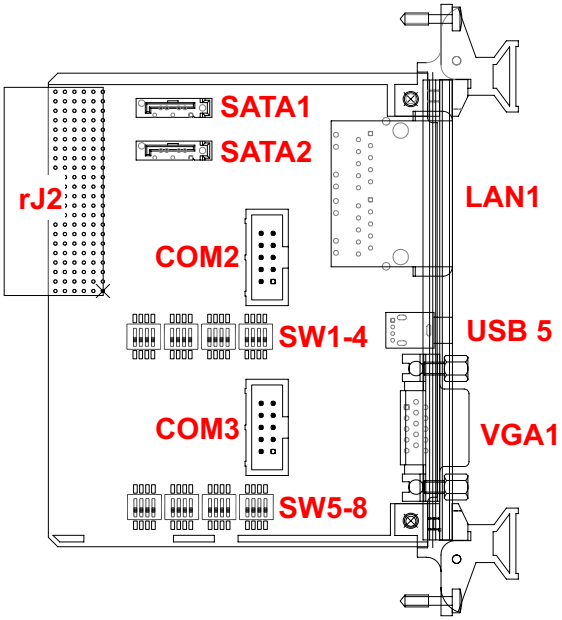
System LEDs

LED	Color	Condition	Indication
Power	Green	OFF	System is off
		ON	System is on
WDT	Red	OFF	No Watchdog event
		Blinking	Watchdog event alert

Table 4-1: cPCI-3615 Front Panel System LED Descriptions

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4.6 cPCI-R3610T RTM Board Layout



COM2/3	COM ports	**LAN1**	Ethernet port (single)
SATA1/2	SATA ports	**USB5**	USB port
rJ2	CompactPCI connector	**SW1-8**	Switches
VGA1	VGA connector		

Figure 4-6: cPCI-R3610T RTM Board Layout

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4.7 cPCI-R3610(T) RTM Front Panel

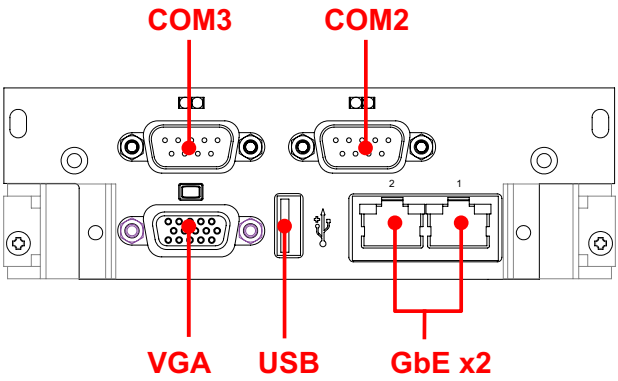


Figure 4-7: cPCI-R3610(T) RTM Front Panel

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4.8 Connector Pin Assignments

USB Connectors

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

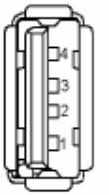


Table 4-2: USB Connector Pin Definition

VGA Connector (DB-15)

Signal Name	Pin #	Pin #	Signal Name
Red	1	2	Green
Blue	3	4	N.C.
GND	5	6	GND
GND	7	8	GND
+5V.	9	10	GND
N.C.	11	12	CRTDATA
HSYNC	13	14	VSYNC
CRTCLK	15		

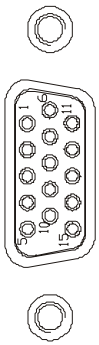


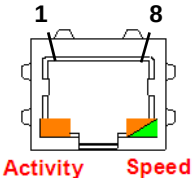
Table 4-3: VGA Connector Pin Definition

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Gigabit Ethernet Connectors (RJ-45)

Pin #	10BASE-T/ 100BASE-TX	1000BASE-T
1	TX+	BI_DA+
2	TX-	BI_DA-
3	RX+	BI_DB+
4	—	BI_DC+
5	—	BI_DC-
6	RX-	BI_DB-
7	—	BI_DD+
8	—	BI_DD-

Table 4-4: GbE Connector Pin Definitions



Status		Speed LED (Green/Amber)	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	Amber	ON
	Active	Amber	Blinking

Table 4-5: Ethernet Status LED Definitions

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PS/2 Keyboard/Mouse Connector

Pin #	Signal	Function
1	KBDATA	Keyboard Data
2	MSDATA	Mouse Data
3	GND	Ground
4	+5V	Power
5	KBCLK	Keyboard Clock
6	MSCLK	Mouse Clock

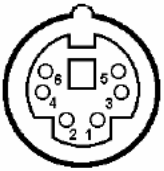


Table 4-6: PS/2 Keyboard/Mouse Connector Pin Definition

Serial Port DB-9 Connector (COM1-3)

Pin #	RS-232	RS-422	RS-485(+)
1	DCD-L	TXD-	TXD-
2	RXD	TXD+	TXD+
3	TXD	RXD+	—
4	DTR-L	RXD-	—
5	GND	GND	GND
6	DSR-L	—	—
7	RTS-L	—	—
8	CTS-L	—	—
9	RI-L	—	—

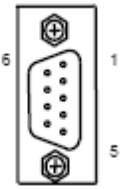


Table 4-7: DB-9 Serial Port Connector Pin Definition

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cPCI-R3610(T) Serial Port Pin Header (COM2/3)

Pin #	RS-232	RS-422	RS-485(+)
1	DCD-L	TXD-	TXD-
2	DSR-L	—	—
3	RXD	TXD+	TXD+
4	RTS-L	—	—
5	TXD	RXD+	—
6	CTS-L	—	—
7	DTR-L	RXD-	—
8	RI-L	—	—
9	GND	GND	GND
10	—	—	—

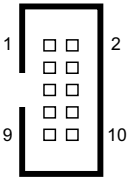


Table 4-8: cPCI-R3610(T) Serial Port Pin Header Definition

Serial ATA Connectors on RTM

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



Table 4-9: Serial ATA Connector on RTM Pin Definition

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Serial ATA Connector on DB-3610L2

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

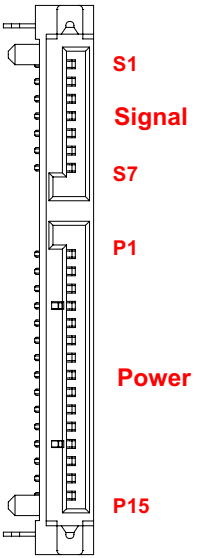


Table 4-10: Serial ATA Connector on DB-3610L2 Pin Definition

CompactFlash Connector on DB-3610CF

Signal Name	Pin#	Pin#	Signal Name
GND	1	26	GND
DD3	2	27	DD11
DD4	3	28	DD12
DD5	4	29	DD13
DD6	5	30	DD14
DD7	6	31	DD15
CS1J	7	32	CS3J
GND	8	33	GND
GND	9	34	SDIORJ
GND	10	35	SDIOWJ
GND	11	36	5V
GND	12	37	IRQ15
5V	13	38	5V
GND	14	39	PCSEL
GND	15	40	NC
GND	16	41	BRSTDRVJ
GND	17	42	SDIORDY
DA2	18	43	NC
DA1	19	44	SDACKJ
DA0	20	45	IDEACTJ
DD0	21	46	DIAG
DD1	22	47	DD8
DD2	23	48	DD9
IOIS16J	24	49	DD10
GND	25	50	GND

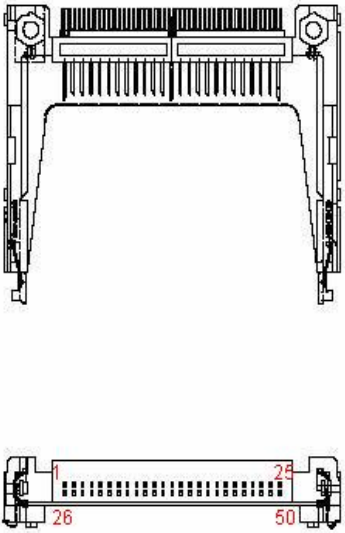


Table 4-11: CompactFlash Connector Pin Definition

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DB-3610CF Connector (CN2)

Signal Name	Pin #	Pin #	Signal Name
IDE_D7	1	2	IDE_D8
IDE_D6	3	4	IDE_D9
IDE_D5	5	6	IDE_D10
IDE_D4	7	8	IDE_D11
IDE_D3	9	10	IDE_D12
IDE_D2	11	12	IDE_D13
IDE_D1	13	14	IDE_D14
IDE_D0	15	16	IDE_D15
GND	17	18	GND
IDE_REQ-L	19	20	IDE_66DECT
IDE_IOW-L	21	22	IDE_RST-L
IDE_IOR-L	23	24	SPKR
IDE_IORDY	25	26	SIO_SPKR
IDE_ACK-L	27	28	GND
IDE_IRQ	29	30	VCC_RTC
IDE_A1	31	32	GND
IDE_A0	33	34	USB4-P
IDE_A2	35	36	USB4-N
IDE_CS1-L	37	38	P5V
IDE_CS3-L	39	40	P5V

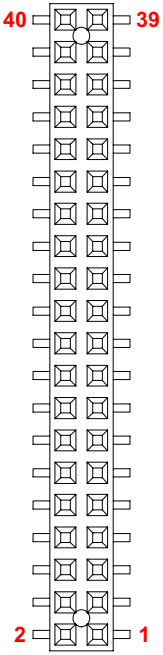


Table 4-12: DB-3610CF Connector Pin Definition

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DB-3610L2 Connector (CN4)

Signal Name	Pin #	Pin #	Signal Name
USB2-N	1	2	-12V
USB2-P	3	4	+12
GND	5	6	GND
USB3-N	7	8	HDA_SDIN0
USB3-P	9	10	HDA_R_SDOUT
GND	11	12	GND
SATA_ICH_RX-N0	13	14	HDA_R_SYNC
SATA_ICH_RX-P0	15	16	HDA_R_BIT_CLK
GND	17	18	GND
SATA_TX-P0	19	20	CK_L2_PCIE1-P
SATA_TX-N0	21	22	CK_L2_PCIE1-N
GND	23	24	GND
PCIE_TXN5	25	26	CK_L2_PCIE2-P
PCIE_TXP5	27	28	CK_L2_PCIE2-N
GND	29	30	GND
PCIE_RXN5	31	32	HDA_R_RST-L
PCIE_RXP5	33	34	SPKR
GND	35	36	L2_PCIE_RST-L
PCIE_RXN4	37	38	NC
PCIE_RXP4	39	40	USB_2_3_OC-L
GND	41	42	COM1_DCD-L
PCIE_TXN4	43	44	COM1_RI-L
PCIE_TXP4	45	46	COM1_CTS-L
GND	47	48	COM1_DTR-L
MSCLK	49	50	COM1_RTS-L
MSDATA	51	52	COM1_DSR-L
KBCLK	53	54	COM1_SOUT
KBCDATA	55	56	COM1_SIN
P5V	57	58	+3.3V
P5V	59	60	+3.3V

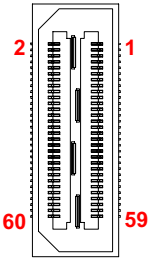


Table 4-13: DB-3610L2 Connector Pin Definition

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DB-3UMC Connector (CN7)

Signal Name	Pin #	Pin #	Signal Name
NC	1	2	-12V
NC	3	4	+12V
GND	5	6	GND
NC	7	8	NC
NC	9	10	NC
GND	11	12	GND
NC	13	14	NC
NC	15	16	NC
GND	17	18	GND
NC	19	20	CK_PCIE1_P
NC	21	22	CK_PCIE1_N
GND	23	24	GND
PCIE_TXN2	25	26	CK_PCIE2_P
PCIE_TXP2	27	28	CK_PCIE2_N
GND	29	30	GND
PCIE_R_RXN2	31	32	NC
PCIE_R_RXP2	33	34	NC
GND	35	36	PCIE_RST#
PCIE_R_RXN1	37	38	NC
PCIE_R_RXP1	39	40	NC
GND	41	42	NC
PCIE_TXN4	43	44	NC
PCIE_TXP4	45	46	NC
GND	47	48	NC
NC	49	50	NC
NC	51	52	NC
NC	53	54	NC
NC	55	56	NC
+5V	57	58	+3.3V
+5V	59	60	+3.3V

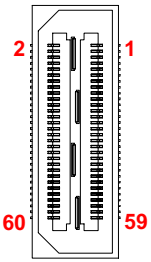


Table 4-14: DB-3UMC Connector Pin Definition

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PMC Connector (JN1/2)

Pin#	JN1 Signal	JN2 Signal
1	PMC_TCK	P12V
2	N12V	PMC_TRST-L
3	GND	PMC_TMS
4	PCIX_INTA-L	NC (PMC_TDO)
5	PCIX_INTB-L	PMC_TDI
6	PCIX_INTC-L	GND
7	PMC_MOD-L1	GND
8	P5V	NC
9	PCIX_INTD-L	NC
10	NC	NC
11	GND	PMC_MOD-L2
12	P3V3_PMCAUX	P3V3
13	CLK66_PCIX_PMC	PMC_RST-L
14	GND	PMC_MOD-L3
15	GND	P3V3
16	PCIX_GNT-L0	PMC_MOD-L4
17	PCIX_REQ-L0	PMC_PME-L
18	P5V	GND
19	PMC_VIO	PCIX_AD30
20	PCIX_AD31	PCIX_AD29
21	PCIX_AD28	GND
22	PCIX_AD27	PCIX_AD26
23	PCIX_AD25	PCIX_AD24
24	GND	PCIX_AD23
25	GND	PMC_IDSEL
26	PCIX_CBE-L3	PCIX_AD23
27	PCIX_AD22	P3V3
28	PCIX_AD21	PCIX_AD20
29	PCIX_AD19	PCIX_AD18
30	P5V	GND
31	PCIX_FRAME-L	PCIX_AD16
32	PCIX_AD17	PCIX_CBE-L2

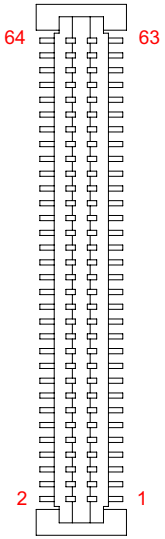


Table 4-15: PMC Connector Pin Definitions

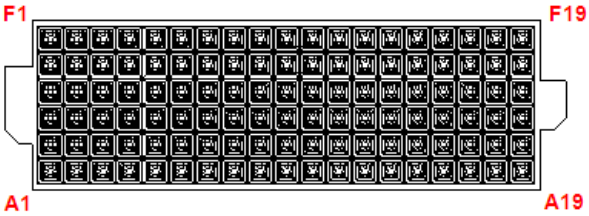
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Pin#	JN1 Signal	JN2 Signal
33	PCIX_FRAME-L	GND
34	GND	NC
35	GND	PCIX_TRDY-L
36	PCIX_IRDY-L	P3V3
37	PCIX_DEVSEL-L	GND
38	P5V	PCIX_STOP-L
39	PCIX_PCIXCAP	PCIX_PERR-L
40	PCIX_LOCK-L	GND
41	NC	P3V3
42	NC	PCIX_SERR-L
43	PCIX_PAR	PCIX_CBE-L1
44	GND	GND
45	PMC_VIO	PCIX_AD14
46	PCIX_AD15	PCIX_AD13
47	PCIX_AD12	PCIX_M66EN
48	PCIX_AD11	PCIX_AD10
49	PCIX_AD9	PCIX_AD8
50	P5V	P3V3
51	GND	PCIX_AD7
52	PCIX_CBE-L0	NC
53	PCIX_AD6	P3V3
54	PCIX_AD5	NC
55	PCIX_AD4	NC
56	GND	GND
57	PMC_VIO	NC
58	PCIX_AD3	NC
59	PCIX_AD2	GND
60	PCIX_AD1	NC
61	PCIX_AD0	PCIX_ACK64-L
62	P5V	P3V3
63	GND	GND
64	PCIX_REQ64-L	NC

Table 4-15: PMC Connector Pin Definitions (cont'd)

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XMC Connector (JN3)



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 4-16: 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 4-17: 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	LAN1_TXDP0	LAN1_TXDN0	CK_ PCIE-N	GND
20	GND	CLK5	GND	LAN1_TXDP2	GND	CK_ PCIE-P	GND
19	GND	GND	GND	LAN1_TXDN2	LAN1_TXDP1	LAN1_TXDN1	GND
18	GND	PCIE_TXP2	LAN1_TXDP3	LAN1_TXDN3	GND	P3V3	GND
17	GND	PCIE_TXN2	GND	PRSTJ	REQ6#	GNT6#	GND
16	GND	GPIO0	PCIE_ RXP2	USB6-P	GND	PCIE_RST#	GND
15	GND	RGB_BLUE	PCIE_ RXN2	USB6-N	REQ5#	GNT5#	GND
14	GND	GPIO1	USB_6_OC#	USB_5_OC#	SATA_TX-N1	COM2_RI#	GND
13	GND	LAN2_TXDP0	GND	SATA_TX-P1	COM2_DTR#	COM2_CTS#	GND
12	GND	GPIO2	LAN2_TXDN0	USB5-P	SATA_RX-N1	COM2_SOUT	GND
11	GND	LAN2_TXDP1	GND	SATA_RX-P1	COM2_RTS#	COM2_SIN	GND
10	GND	GPIO3	LAN2_TXDN1	USB5-N	GND	COM2_DSR#	GND
9	GND	VSY/ GPIO4	GND	RGB_GREEN	COM2_DCD#	COM3_RI#	GND
8	GND	HSY/ GPIO5	LAN2_TXDP2	LAN2_TXDN2	GND	COM3_DTR#	GND
7	GND	RGB_RED	GND	+5V	COM3_CTS#	COM3_SOUT	GND
6	GND	DDC_CLK/ GPIO6	LAN2_TXDP3	LAN2_TXDN3	GND	CON3_RTS#	GND
5	GND	DDC_DAT/ GPIO7	GND	SATA_TX_N2	COM3_SIN	COM3_DSR#	GND
4	GND	V(I/O)	SATA_RX-P2	SATA_RX-N2	SATA_TX_P2	COM3_DCD#	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 4-18: CompactPCI J2 Connector Pin Definition

COM port
VGA (shared w/ GPIO pin 4-7 by switch selection)
Serial ATA
USB port
PCI-Express x1
Ethernet port

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4.9 Switch and Jumper Settings

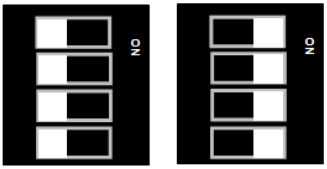
Clear CMOS Switch (SW4)

The cPCI-3615 comes with a Clear CMOS switch to reset the CMOS values to default. The switch is located on solder side of the board, under the "CE" logo. Press the switch to clear the CMOS and reset the values to default.



VGA/GPIO Mode Switches (SW1, SW3)

The VGA and GPIO 4~7 signals to J2 share the same pins and are selected by switch settings. SW1 is located on the cPCI-3615 component side (see “cPCI-3615 Blade Board Lay-out” on page 19) and SW3 is located on the solder side behind SW1. When the switches are set to VGA mode, the VGA signals are available to J2, and there are only four GPIO signals connected to J2 (GPIO 0~3). When the switches are set to GPIO mode, there are eight GPIO signals connected to J2 and VGA output to the RTM is not available. The switches are set to VGA mode by default.



SW1 **SW3**

Mode	SW1	SW3
VGA (default)	All OFF	All ON
GPIO 4~7	All ON	All OFF

Table 4-19: VGA/GPIO Mode Switch Settings

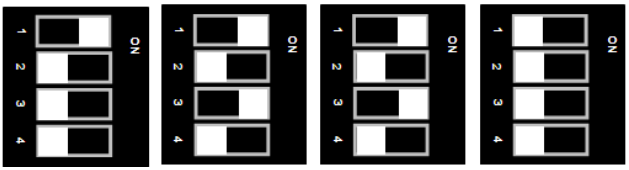
NOTE:

To enable VGA output on the RTM, *Onboard VGA Output Select* must be set to *Rear* in the BIOS *Advanced Chipset Settings*.

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COM1 Mode Selection Switches (SW1~SW4)

These switches select COM1 (cPCI-3615D/P front panel) to be RS-232 full modem, RS-422, RS-485, or RS-485+ half-duplex mode. Switches SW1~SW4 are located on the top edge of the DB-3610L2 board. RS-232 full modem is set by default.



SW1 **SW2** **SW3** **SW4**

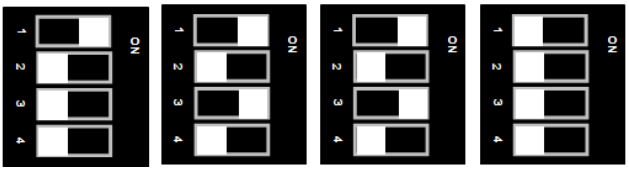
Mode	Pin	SW1	SW2	SW3	SW4
RS-232	1	ON	ON	ON	OFF
	2	OFF	OFF	OFF	OFF
	3	OFF	ON	ON	OFF
	4	OFF	OFF	OFF	OFF
RS-422	1	OFF	OFF	OFF	ON
	2	ON	ON	ON	OFF
	3	OFF	OFF	OFF	ON
	4	OFF	ON	ON	OFF
RS-485	1	OFF	OFF	OFF	ON
	2	OFF	ON	ON	OFF
	3	ON	OFF	OFF	ON
	4	OFF	ON	ON	OFF
RS-485+	1	OFF	OFF	OFF	OFF
	2	OFF	ON	ON	ON
	3	ON	OFF	OFF	OFF
	4	OFF	ON	ON	ON

Table 4-20: COM1 Mode Selection Switch Settings

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COM2 Mode Selection Switches on RTM (SW1~SW4)

These switches on the RTM select COM2 to be RS-232 full modem, RS-422, RS-485, or RS-485+ half-duplex mode. RS-232 full modem is set by default. See “cPCI-R3610T RTM Board Layout” on page 25 for switch locations.



SW1 SW2 SW3 SW4

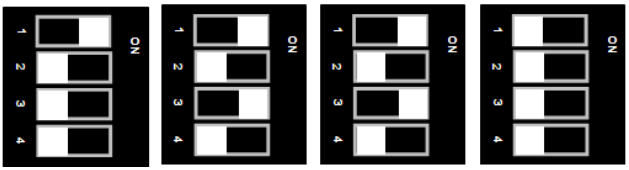
Mode	Pin	SW1	SW2	SW3	SW4
RS-232	1	OFF	ON	ON	ON
	2	OFF	OFF	OFF	OFF
	3	OFF	ON	ON	OFF
	4	OFF	OFF	OFF	OFF
RS-422	1	ON	OFF	OFF	OFF
	2	OFF	ON	ON	ON
	3	ON	OFF	OFF	OFF
	4	OFF	ON	ON	OFF
RS-485	1	ON	OFF	OFF	OFF
	2	OFF	ON	ON	OFF
	3	ON	OFF	OFF	ON
	4	OFF	ON	ON	OFF
RS-485+	1	OFF	OFF	OFF	OFF
	2	ON	ON	ON	OFF
	3	OFF	OFF	OFF	ON
	4	ON	ON	ON	OFF

Table 4-21: COM2 Mode Selection Switch Settings

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COM3 Mode Selection Switches on RTM (SW5~SW8)

These switches on the RTM select COM3 to be RS-232 full modem, RS-422, RS-485, or RS-485+ half-duplex mode. RS-232 full modem is set by default. See “cPCI-R3610T RTM Board Layout” on page 25 for switch locations.



SW5 **SW6** **SW7** **SW8**

Mode	Pin	SW5	SW6	SW7	SW8
RS-232	1	OFF	ON	ON	ON
	2	OFF	OFF	OFF	OFF
	3	OFF	ON	ON	OFF
	4	OFF	OFF	OFF	OFF
RS-422	1	ON	OFF	OFF	OFF
	2	OFF	ON	ON	ON
	3	ON	OFF	OFF	OFF
	4	OFF	ON	ON	OFF
RS-485	1	ON	OFF	OFF	OFF
	2	OFF	ON	ON	OFF
	3	ON	OFF	OFF	ON
	4	OFF	ON	ON	OFF
RS-485+	1	OFF	OFF	OFF	OFF
	2	ON	ON	ON	OFF
	3	OFF	OFF	OFF	ON
	4	ON	ON	ON	OFF

Table 4-22: COM3 Mode Selection Switch Settings

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XMC VPWR Select Jumper on DB-3UMC (JPX1)

This jumper is located on the DB-3UMC board near JN1/2 and selects the XMC VPWR setting. 5V is set by default.

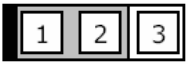
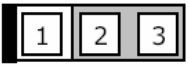
Mode	Connection	JPX1
+5V (Default)	1 – 2	
+12V	2 – 3	

Table 4-23: XMC VPWR Select Jumper Settings

PMC V(I/O) Select Jumper on DB-3UMC (JPX2)

This jumper is located on the DB-3UMC board near JN1/2 and selects the PMC V(I/O) setting. 3.3V is set by default.

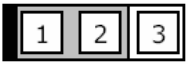
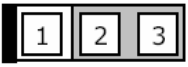
Mode	Connection	JPX2
+5V	1 – 2	
+3.3V (Default)	2 – 3	

Table 4-24: PMC V(I/O) Select Jumper Settings

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5 Getting Started

This chapter describes the installation procedures for the cPCI-3615 and rear transition module:

- 2.5” SATA Hard Drive Disk installation
- PCI Mezzanine Card installation
- cPCI-3615 installation to chassis
- RTM installation to chassis

5.1 CPU and Heatsink

The cPCI-3615 Series come with a BGA CPU soldered onboard and heatsink pre-installed. Removal of heatsink/CPU by users is not recommended. Please contact your ADLINK service representative for assistance.

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5.2 Hard Drive Installation

The cPCI-3615D/P 2/3 slot versions provide space to install a slim type 2.5” Serial-ATA hard drive.

Installing a Hard Drive - cPCI-3615D

1. Attach the mounting brackets to the hard drive with four M3 screws provided.



2. Align the hard drive assemby with the mounting points on the cPCI-3615D and insert it into the onboard Serial ATA connector until it is properly seated.



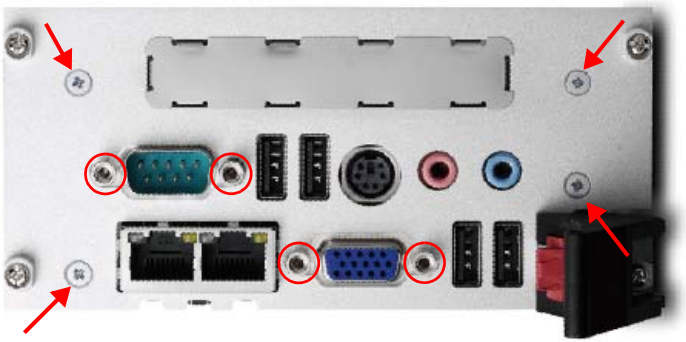
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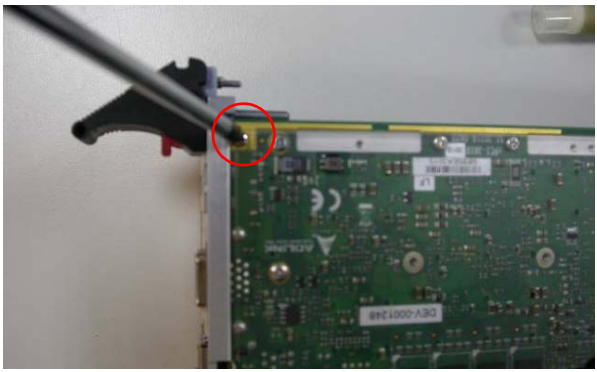
3. Secure the hard drive assemby to the cPCI-3615D using four M2.5 screws provided.



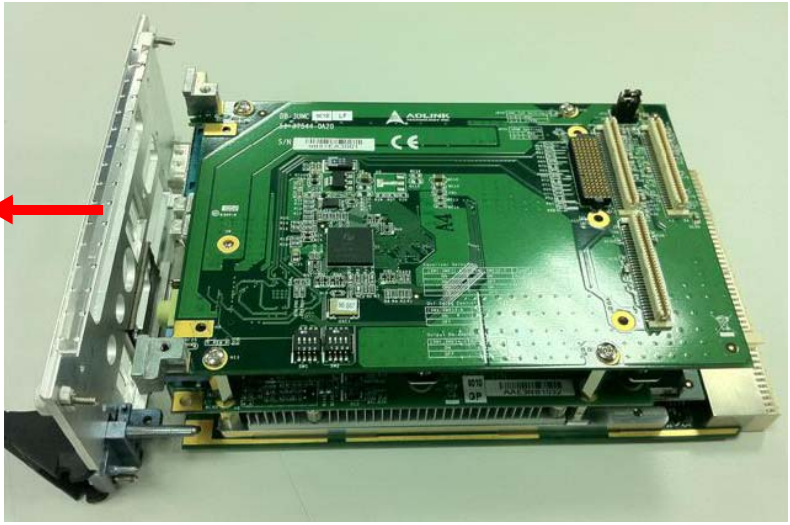
Installing a Hard Drive - cPCI-3615P

1. To install a hard drive on the cPCI-3615P, the front panel and DB-3UMC daughter board must first be disassembled. Remove the front panel by unscrewing the four screws securing it to the PCB assembly (arrows), the four stand-offs securing the VGA and COM connectors (circles), and one screw under the ejector handle.

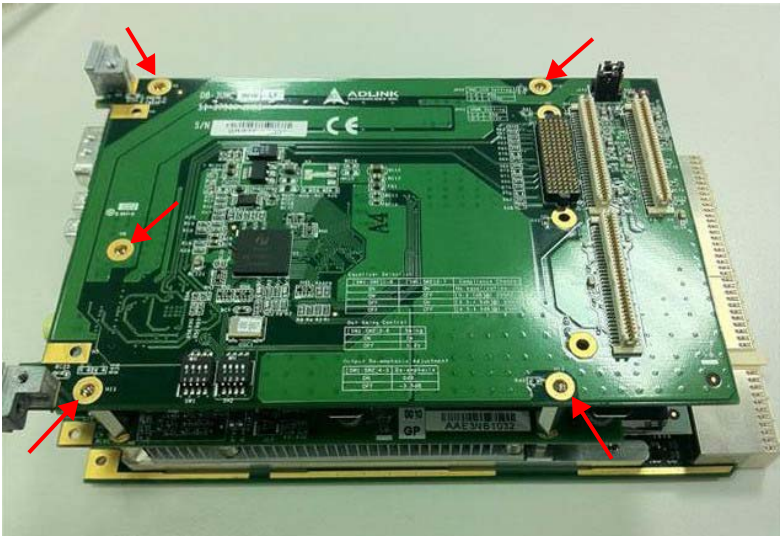




2. Detach the faceplate from the PCB assembly.



3. Loosen the five screws securing DB-3UMC riser card to the PCB assembly.



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4. Remove the DB-3UMC riser card, taking care to lift it from the board-to-board connector indicated below.



5. Attach the mounting brackets to the hard drive with four M3 screws provided.



6. Align the hard drive assemby with the mounting points on the cPCI-3615P and insert it into the onboard Serial ATA connector until it is properly seated.

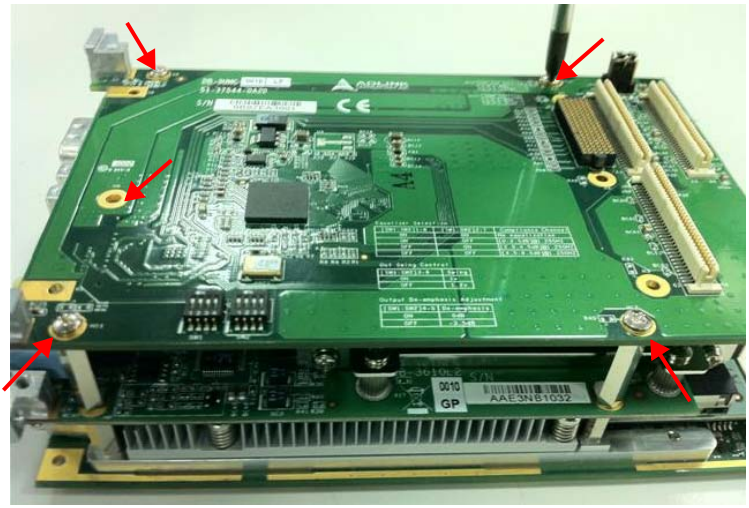


7. Secure the hard drive assemby to the cPCI-3615P using four M2.5 screws provided.



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8. Re-attach the DB-3UMC riser card to the PCB assembly, taking care to press down firmly on the board-to-board connector.



9. Re-attach the faceplate to the cPCI-3615P by fastening the four screws and four standoffs removed in Step 1 above.

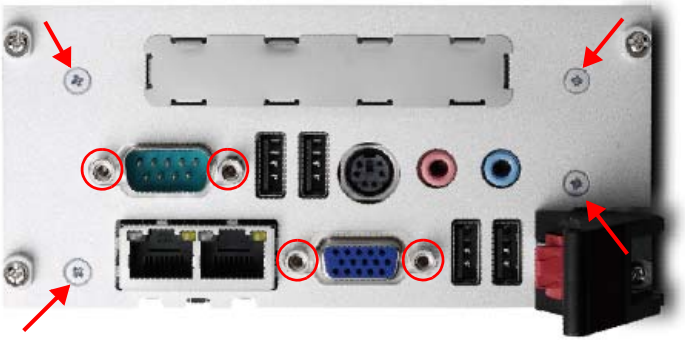


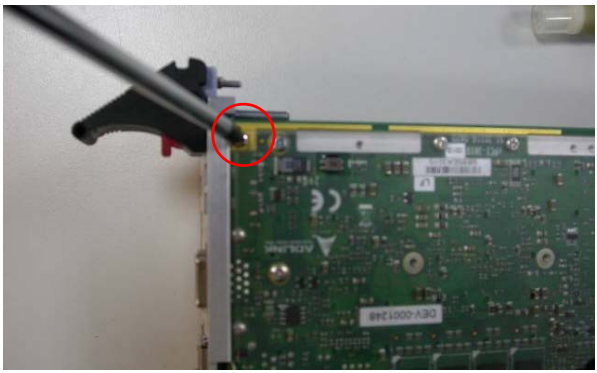
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5.3 PMC/XMC Card Installation

The cPCI-3615P provides one PMC/XMC slot designed to support 3.3V or 5V V(I/O) (default 3.3V) and 5V or 12V VPWR (default 5V). Before you install the PMC/XMC card on the cPCI-3615P, please make sure that the PMC V(I/O) jumper JPX2 and XMC VPWR jumper JPX1 have been correctly set (see page 45).

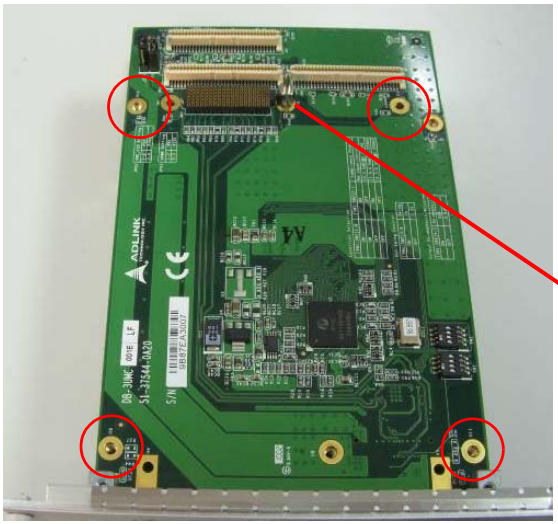
1. To install a PMC/XMC card on the cPCI-3615P, the front panel and DB-3UMC daughter board must first be disassembled. Remove the front panel by unscrewing the four screws securing it to the PCB assembly (arrows), the four standoffs securing the VGA and COM connectors (circles), and one screw under the ejector handle.





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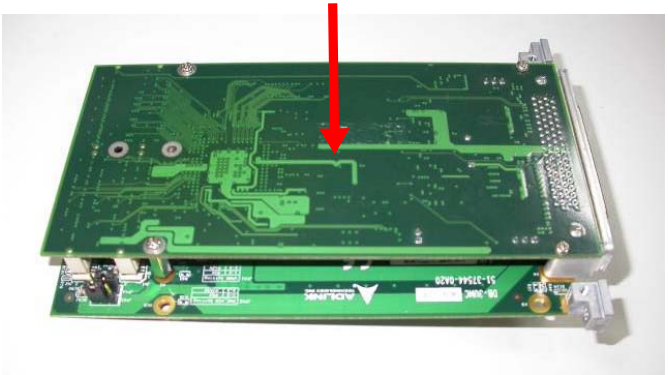
2. Remove the DB-3UMC daughter board by unscrewing the four screws as shown below.



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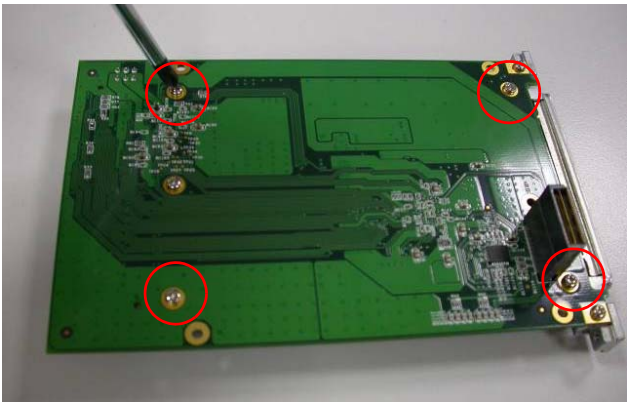
3. There is a 3.3V key on board by default, if the PMC/XMC card you wish to install is 5V signaling, please remove the key and set the PMC V(I/O) jumper JPX2 to the 5V setting.

4. Align the male connectors of the PMC/XMC card (component-side down) to the female connectors of the DB-3UMC and press down.

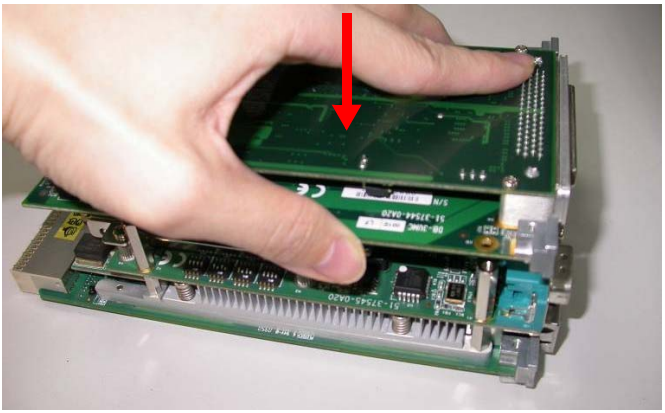


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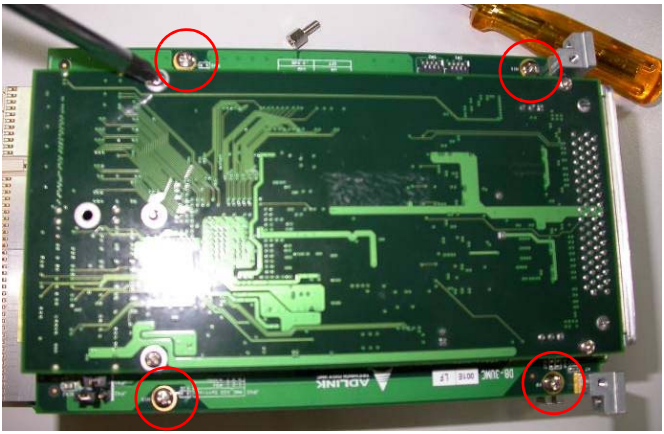
5. Secure the PMC/XMC card to the DB-3UMC by attaching four screws (provided with the card) from the underside of the daughter board.



6. Align the male board-to-board connector (CN1) of the PMC/XMC assembly to the female board to board connector (CN7) of the DB-3610L2 riser card and press down.



7. Secure the PMC/XMC assembly to the DB-3610L2 riser card using the four screws removed in Step 2 above.



8. Remove the PMC filler faceplate from the front panel.
9. Assemble the front panel to the cPCI-3615P by reversing Step 1.

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5.4 Installing the cPCI-3615 to the Chassis

The cPCI-3615 may be installed in a system or peripheral slot of a 3U CompactPCI chassis. These instructions are for reference only. Refer to the user guide that comes with the chassis for more information.

1. Be sure to select the correct slot depending on the operational purpose of the module. The system power may now be powered on or off.
2. Remove the blank face cover from the selected slot, if necessary.
3. Press down on the release catches of the cPCI-3615 ejector handles.
4. **Remove the black plastic caps securing the mounting screws to the front panel.**
5. Align the blade¡¦s top and bottom edges to the chassis card guides, and then carefully slide the blade into the chassis. A slight resistance may be felt when inserting the blade. If the resistance it too strong, check if there are bent pins on the backplane or if the board's connector pins are not properly aligned with connectors on the backplane. Then push the board until it is completely flush with the chassis.
6. Push the ejector handle outwards to secure the blade in place, and then fasten the screws on the front panel.
7. Connect the cables and peripherals to the board, and then turn the chassis on if necessary.

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5.5 RTM Installation - cPCI-R3610(T)

The installation and removal procedures for a RTM are the same as those for CompactPCI boards. Because they are shorter than front boards, pay careful attention when inserting or removing RTMs.

Refer to previous sections for peripheral connectivity of all I/O ports on the RTM. When installing the cPCI-3615 Series and related RTMs, make sure the RTM is the correct matching model.



NOTE:

You must install the correct RTM to enable functions (I/O interfaces) on the rear panel. Installation of non-compatible RTMs may damage the system board and/or other RTMs.

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6 Driver Installation

The cPCI-3615 drivers are available from the ADLINK All-In-One CD at **X:\cPCI\cPCI-3615**, or from the ADLINK website (**http://www.adlinktech.com**). This section describes the driver installation procedures for Windows® 7.

1. Install the Windows operating system before installing any driver. Most standard I/O device drivers are installed during Windows installation.
2. Install the chipset driver by running the program **...\Chipset\Intel_INF_Update_Utility_All_WinOS v9.1.1.1023.zip.**
3. Install the VGA driver and utilities by running the program **...\Graphics\ Intel_Graphics_Adapter_Win7_64_v8.14.10.2230.zip**.
4. Install the LAN driver by running the program **…\LAN\Intel_Network_Adapter_Win7_64_v11.4.7.0.zip**.
5. Install the Audio driver by running the program **…\Audio\Win2KXP2003_32_64_ bits.exe**

We recommend using the drivers provided on the ADLINK All-in-One CD or downloaded from the ADLINK website to ensure compatibility. Please download the VxWorks BSP from the ADLINK website.

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7 Utilities

7.1 Watchdog Timer

This section describes the operation of the cPCI-3615's watchdog timer (WDT). The primary function of the WDT is to monitor the cPCI-3615's operation and to reset the system if a software application fails to function as programmed. The following WDT functions may be controlled using a software application:

- enabling and disabling
- reloading timeout value

The cPCI-3615 custom WDT circuit is implemented using the internal I/O of the ITE SuperIO IT8783 which is at 2Eh of LPC. The basic functions of the WDT include:

- Starting the timer countdown
- Enabling or disabling WDT
- Enabling or disabling WDT countdown LED ON
- Reloading the timeout value to keep the watchdog from timing out
- Setting the range of the timeout period from 1 second or minute to maximum 65635 seconds or minutes
- Sending a RESET signal to the system when the watchdog times out

Using the Watchdog in an Application

The following section describes using the WDT functions in an application. The WDT reset function is explained in the previous section. This can be controlled through the registers in the cPCI-3615's SuperIO.

An application using the reset feature enables the watchdog function, sets the count-down period, and reloads the timeout value periodically to keep it from resetting the system. If the timer countdown value is not reloaded, the watchdog resets the system hardware after its counter reaches zero.

For a detailed programming sample, refer to the sample code provided in the ADLINK All-In-One CD. You can find it in the following directory: **X:\cPCI\cPCI-3615\WDT**.

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Sample Code

The sample program written in C shown below offers an interactive way to test the Watchdog Timer under DOS.

```
#include<stdio.h>
#include<dos.h>

#define IT8783_ID1 0x87
#define IT8783_ID2 0x83

static unsigned int IT8783_ioPort = 0x2e;

//Check index port
void Enter_IT8783_Config(unsigned int flag)
{
   if(flag) IT8783_ioPort = 0x4e;

   switch(IT8783_ioPort)
   {
      case 0x2E:  //Address port = 0x2E, enter keys =
      0x87, 0x01, 0x55, 0x55
         outportb(0x2E, 0x87);
         outportb(0x2E, 0x01);
         outportb(0x2E, 0x55);
         outportb(0x2E, 0x55);
         break;
      case 0x4E:  //Address port = 0x4E, enter keys =
      0x87, 0x01, 0x55, 0xAA
         outportb(0x4E, 0x87);
         outportb(0x4E, 0x01);
         outportb(0x4E, 0x55);
         outportb(0x4E, 0xAA);
         break;
      default:
         break;
       }
}

//Exit index port
void Exit_IT8783_Config(unsigned int flag)
{
   if(flag) IT8783_ioPort = 0x4e;
```

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```
   outportb(IT8783_ioPort, 0x02);
   outportb(IT8783_ioPort+1, 0x02);
}

//Check chip
void Get_IT8783_ID(unsigned int &ID1, unsigned int &ID2)
{
   outportb(IT8783_ioPort, 0x20);
   ID1 = inportb(IT8783_ioPort+1);
   outportb(IT8783_ioPort, 0x21);
   ID2 = inportb(IT8783_ioPort+1);
}

//WDT and LED program
void IT8783_3_WDTRun(unsigned int count_value, unsigned
     int PLEDflag)   //for cPCI-3615
{
   unsigned long tempCount;
   unsigned int registerValue;

   outportb(IT8783_ioPort, 0x07);
   outportb(IT8783_ioPort+1, 0x07);// Device 7

   outportb(IT8783_ioPort, 0xf8);
   outportb(IT8783_ioPort+1, 0x00);// PLED mapping to
      nothing, disable PLED function

   if(PLEDflag == 1)
   {
      outportb(IT8783_ioPort, 0x2D);
      registerValue = inportb(IT8783_ioPort + 1);
      registerValue |= 0x01;       // set Pin109 is GPIO
      function GP60
      outportb(IT8783_ioPort+1, registerValue);

      outportb(IT8783_ioPort, 0xC5);
      registerValue = inportb(IT8783_ioPort + 1);
      registerValue &= 0xfe;      // set GP60 is alternate
      function
```

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```
   outportb(IT8783_ioPort+1, registerValue);

   outportb(IT8783_ioPort, 0xCD);
   registerValue = inportb(IT8783_ioPort + 1);
   registerValue |= 0x01;  // set GP60 is output
   outportb(IT8783_ioPort+1, registerValue);

   outportb(IT8783_ioPort, 0xf8);
   outportb(IT8783_ioPort+1, 0x30);// PLED mapping to
   GP60

   outportb(IT8783_ioPort, 0xf9);
   registerValue = inportb(IT8783_ioPort + 1);
   registerValue |= 0x02;
   registerValue &= 0xfb;
   outportb(IT8783_ioPort+1, registerValue);
}
outportb(IT8783_ioPort, 0x71);
registerValue = inportb(IT8783_ioPort + 1);
registerValue |= 0xD0;  // set Mouse & Keyboard
   interrupt Enable
outportb(IT8783_ioPort+1, registerValue);

outportb(IT8783_ioPort, 0x73);
outportb(IT8783_ioPort+1, count_value); // set WDT
   count LSB
tempCount = tempCount >> 8;
outportb(IT8783_ioPort, 0x74);
outportb(IT8783_ioPort+1, count_value); // set WDT
   count MSB

if(count_value >= 60)
{
   outportb(IT8783_ioPort, 0x72);
   registerValue = inportb(IT8783_ioPort+1);
   registerValue &= 0x8f;
   registerValue |= 0x10; //enable WDT output through
   PowerOK!
   outportb(IT8783_ioPort+1, registerValue); // set
   WDT count is minute

   tempCount = count_value / 60;
   if((count_value%60) > 30)
```

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```
            tempCount++;
         if(tempCount > 65535)
            tempCount = 65535;
         printf("WDT timeout in %d minutes.\n", tempCount);
      }
      else
      {
         outportb(IT8783_ioPort, 0x72);
         registerValue = inportb(IT8783_ioPort+1);
         registerValue |= 0x80;

         tempCount = count_value;
         if(tempCount != 0)
         {
            printf("WDT timeout in %d seconds.\n",
         tempCount);
            registerValue |= 0x40; //Enable WDT output
         through KBRST
         }
         else
         {
            printf("WDT is Disabled.\n");
            registerValue &= 0xbf; //Disable WDT output
         through KBRST
         }

         outportb(IT8783_ioPort+1, registerValue); // set
         WDT count is second
      }

   }
```

7.2 Preboot Execution Environment (PXE)

The cPCI-3615 Series supports the Intel® Preboot Execution Environment (PXE) that is capable of booting up or executing an OS installation through an Ethernet ports. To use PXE, there must be a DHCP server on the network with one or more servers running PXE and MTFTP services. It could be a Windows® 2003 server running DHCP, PXE, and MTFTP services or a dedicated DHCP server with one or more additional servers running PXE and MTFTP services.

To build a network environment with PXE support:

1. Setup a DHCP server with PXE tag configuration
2. Install the PXE and MTFTP services
3. Make a boot image file on the PXE server (i.e. the boot server)
4. Enable the PXE boot function on the client computer

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8 BIOS Setup

The following chapter describes basic navigation for the AMIBIOS®8 BIOS setup utility.

8.1 Starting the BIOS

To enter the setup screen, follow these steps:

1. Power on the motherboard
2. Press the < Delete > key on your keyboard when you see the following text prompt:
   < Press DEL to run Setup >
3. After you press the < Delete > key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as Chipset and Power menus.



Note: In most cases, the < Delete > key is used to invoke the setup screen. There are several cases that use other keys, such as < F1 >, < F2 >, and so on.

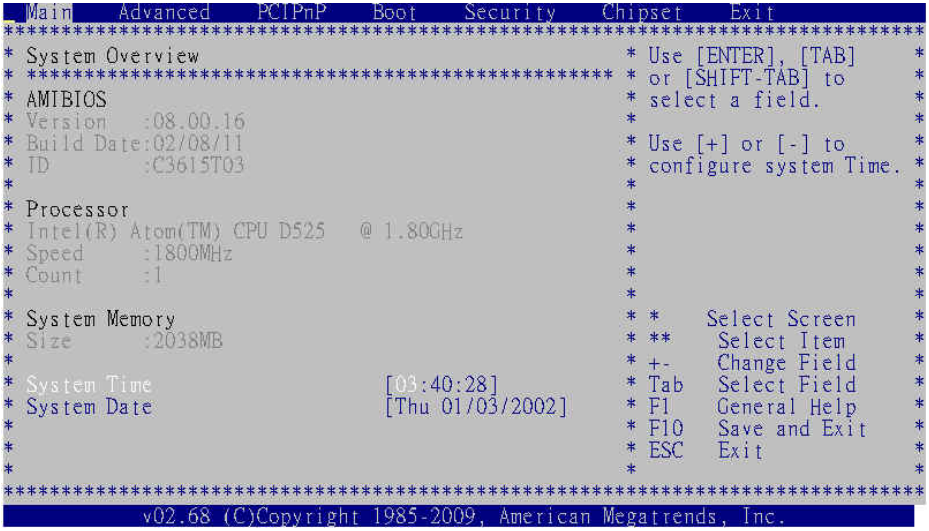
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Setup Menu

The main BIOS setup menu is the first screen that you can navigate. Each main BIOS setup menu option is described in this user's guide.

The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. "Grayed" options cannot be configured, "Blue" options can be.

The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

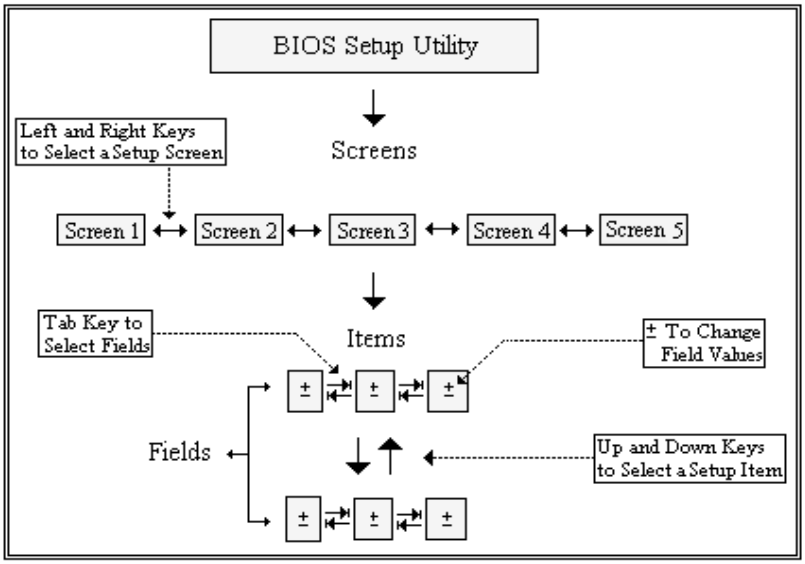


Navigation

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.

These keys include < F1 >, < F10 >, < Enter >, < ESC >, < Arrow > keys, and so on. .

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Note: There is a hot key legend located in the right frame on most setup screens.

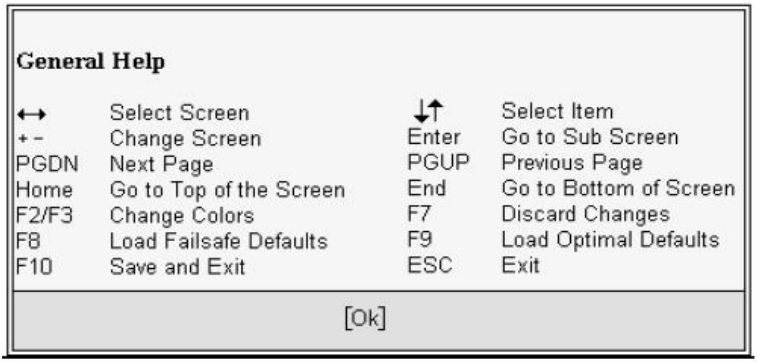
The < F8 > key on your keyboard is the Fail-Safe key. It is not displayed on the key legend by default. To set the Fail-Safe settings of the BIOS, press the < F8 > key on your keyboard. It is located on the upper row of a standard 101 keyboard. The Fail-Safe settings allow the motherboard to boot up with the least amount of options set. This can lessen the probability of conflicting settings.

Hotkey Descriptions

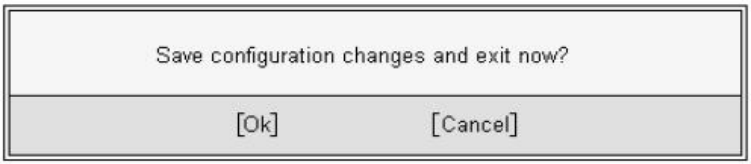
F1 The < F1 > key allows you to display the General Help screen.

Press the < F1 > key to open the General Help screen.

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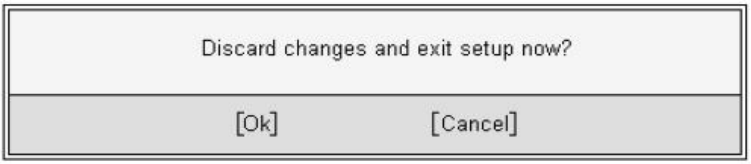


F10 The < F10 > key allows you to save any changes you have made and exit Setup. Press the < F10 > key to save your changes. The following screen will appear:



Press the < Enter > key to save the configuration and exit. You can also use the < Arrow > key to select Cancel and then press the < Enter > key to abort this function and return to the previous screen.

ESC The < Esc > key allows you to discard any changes you have made and exit the Setup. Press the < Esc > key to exit the setup without saving your changes. The following screen will appear:



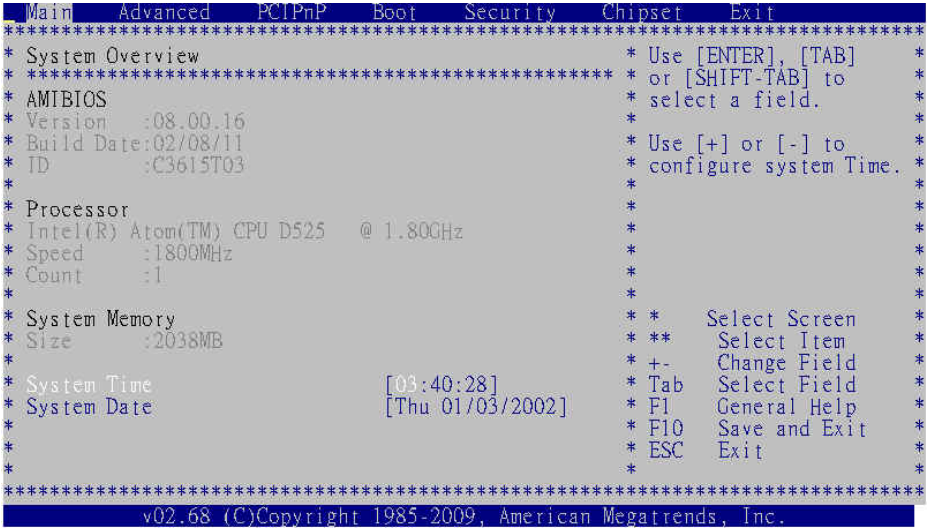
Press the < Enter > key to discard changes and exit. You can also use the < Arrow > key to select Cancel and then press the < Enter > key to abort this function and return to the previous screen.

Enter The < Enter > key allows you to display or change the setup option listed for a particular setup item. The < Enter > key can also allow you to display the setup sub-screens.

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8.2 Main Setup

When you first enter the Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.



System Time/System Date

Use this option to change the system time and date. Highlight System Time or System Date using the < Arrow > keys. Enter new values using the keyboard. Press the < Tab > key or the < Arrow > keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

Note: The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30 P.M. as 17:30:00.

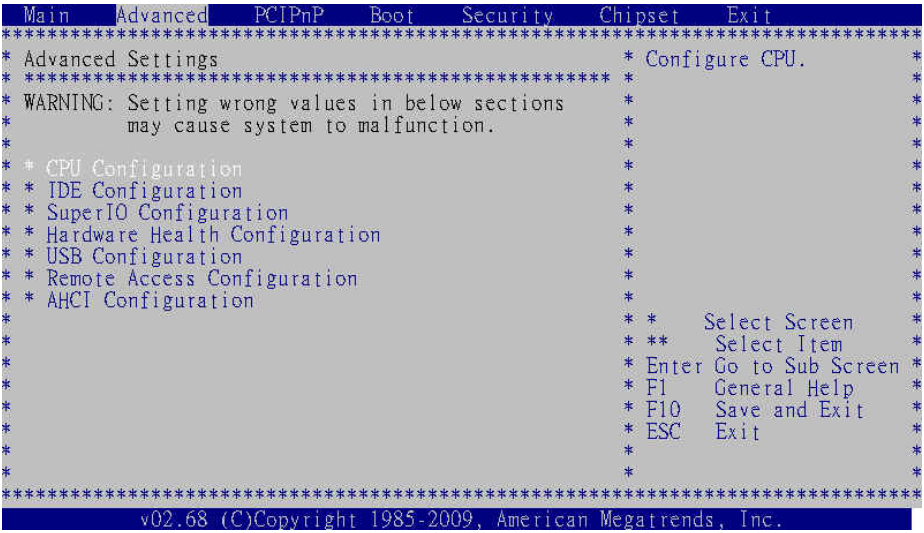
8.3 Advanced BIOS Setup

Select the Advanced tab from the setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in

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the left frame of the screen to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the < Arrow > keys. The Advanced BIOS Setup screen is shown below.

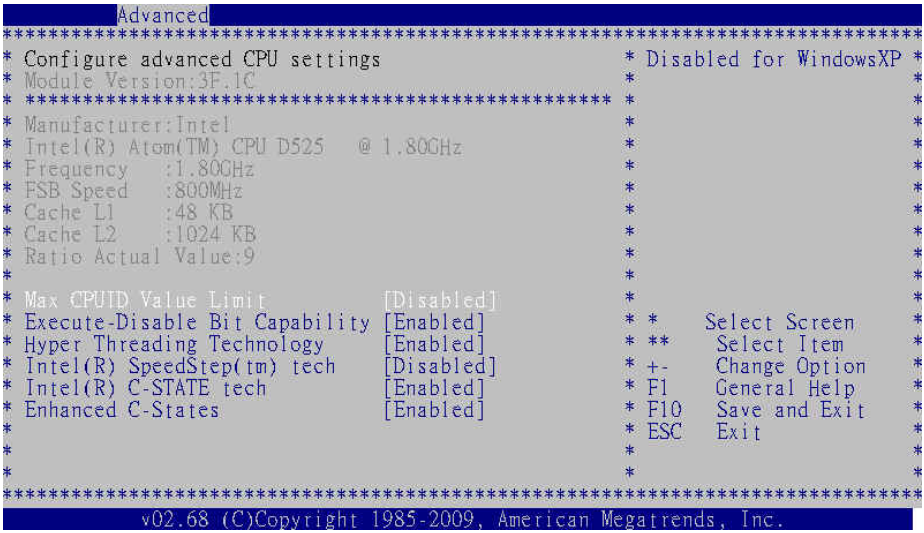
The sub menus are described on the following pages.



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8.3.1 CPU Configuration

You can use this screen to select options for the CPU Configuration Settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. An example of the CPU Configuration screen is shown below.



Max CPUID Value Limit

When the computer is booted up, the operating system executes the CPUID instruction to identify the processor and its capabilities. Before it can do so, it must first query the processor to find out the highest input value CPUID recognized. This determines the kind of basic information CPUID can provide the operating system. This option allows you to circumvent problems with older operating systems.

When Enabled, the processor will limit the maximum CPUID input value to 03h when queried, even if the processor supports a higher CPUID input value. When Disabled, the processor will return the actual maximum CPUID input value of the processor when queried.

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Execute-Disable Bit Capability

Intel's Execute Disable Bit functionality can help prevent certain classes of malicious buffer overflow attacks when combined with a supporting operating system. Execute Disable Bit allows the processor to classify areas in memory where application code can execute and where it cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage and worm propagation.

Hyper-Threading Technology

This item allow you to enable or disable Hyper-Threading Technology.

Intel® Speedstep™ Tech

Intel® SpeedStep Technology allows the system to dynamically adjust processor voltage and core frequency, which can result in decreased average power consumption and decreased average heat production.

Intel® C-State Tech

This option allows you to enable or disable Intel® C-State function.

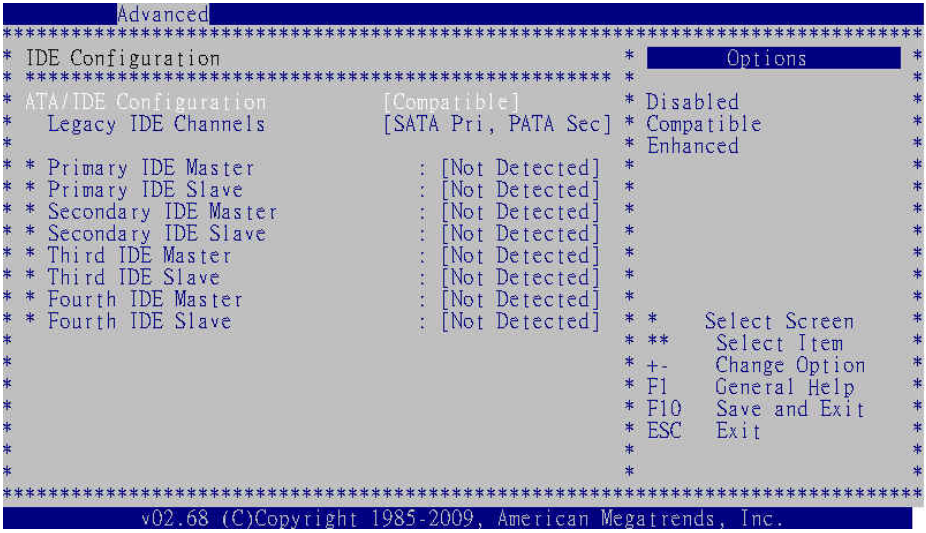
Enhanced C-State Tech

This option allows you to enable or disable the Enhanced C-State function.

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8.3.2 IDE Configuration

You can use this screen to select options for the IDE Configuration Settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option.



ATA/IDE Configuration

This item specifies which mode the ATA/IDE channels should be initialized in. The settings are **Disabled**, **Compatible** and **Enhanced**.

Configure SATA as

When running in Compatible mode, SATA channels can be configured as a legacy IDE channel.

NOTE: SATA1 does not support Compatible mode due to chipset limitation.

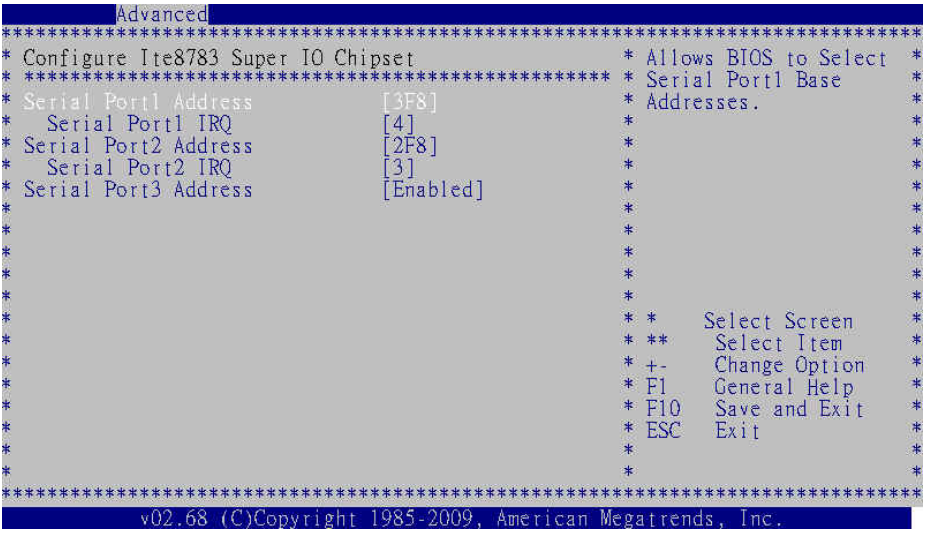
IDE Master/Slave

Select one of the hard disk drives to configure it. Press < Enter > to access its sub menu.

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8.3.3 Super IO Configuration

You can use this screen to select options for the Super IO settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.



Serial Port1/2 Address

Select an address for Serial Port1/2.
Port1 Options: 3F8, 3E8, 2E8, Disabled.
Port2 Options: 2F8, 3E8, 2E8, Disabled.

Serial Port1/2 IRQ

Select an IRQ for Serial Port1/2.
Options: 3, 4, 10, 11.

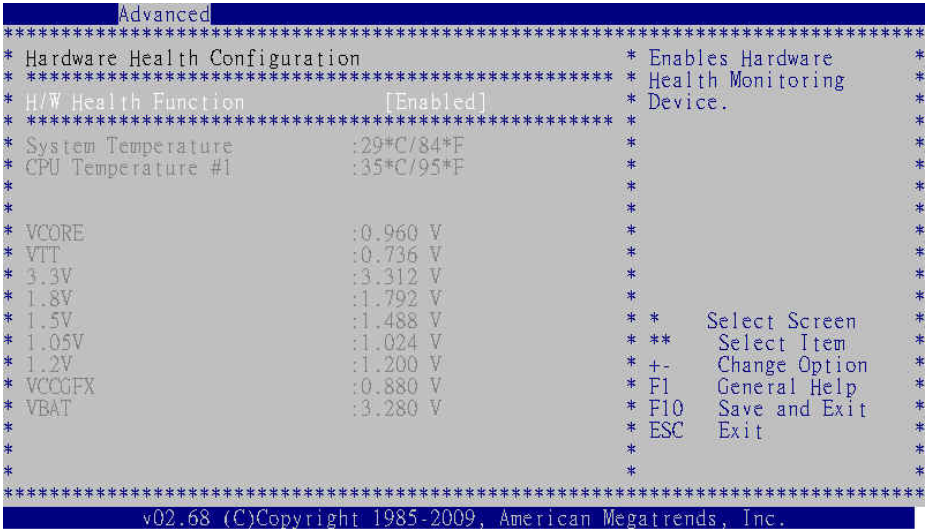
Serial Port3

Enable or disable Serial Port3 (address/IRQ: 3E8/10).

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8.3.4 Hardware Health Configuration

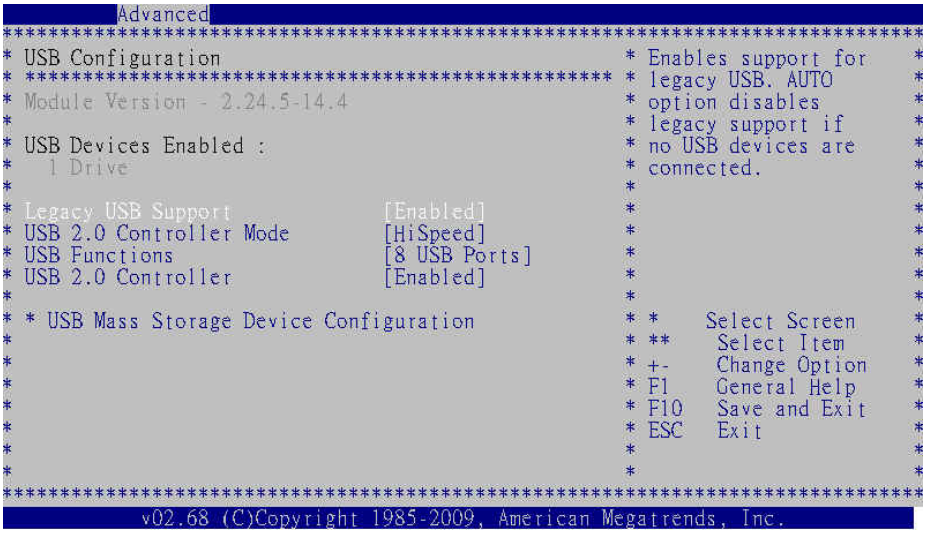
This option displays the current status of all of the monitored hardware devices/components such as voltages and temperatures. The options are Enabled and Disabled.



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8.3.5 USB Configuration

You can use this screen to select options for the USB Configuration. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.



Legacy USB Support

Legacy USB Support refers to USB mouse and keyboard support. Normally if this option is not enabled, any attached USB mouse or USB keyboard will not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there are no USB drivers loaded on the system. Set this value to enable or disable the Legacy USB Support.

- **Disabled:** Set this value to prevent the use of any USB device in DOS or during system boot.
- **Enabled:** Set this value to allow the use of USB devices during boot and while using DOS.

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- **Auto:** This option auto detects USB Keyboards or Mice and if found, allows them to be utilized during boot and while using DOS.

USB 2.0 Controller Mode

The USB 2.0 Controller Mode configures the data rate of the USB port. The options are FullSpeed (12 Mbps) and HiSpeed (480 Mbps).

USB Functions

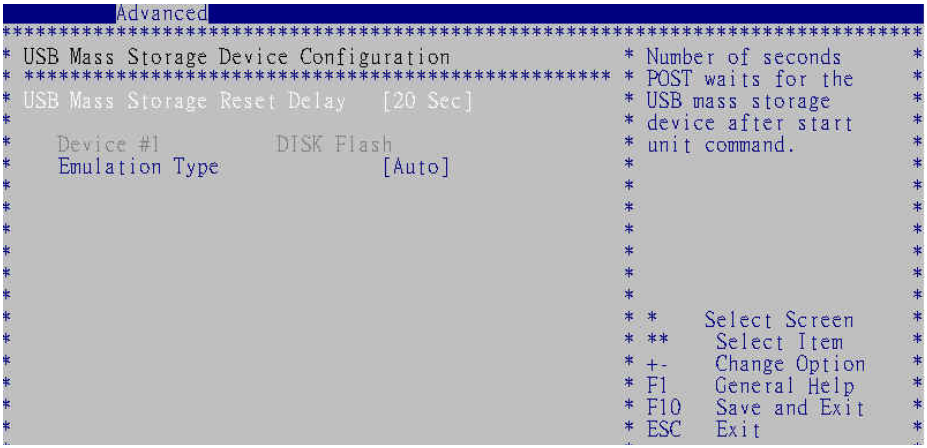
Set the value to allow the system to disable, enabled and select a set number of onboard USB ports.

USB 2.0 Controller

Enable or disable USB 2.0 functionality to all USB ports.

USB Mass Storage Device Configuration

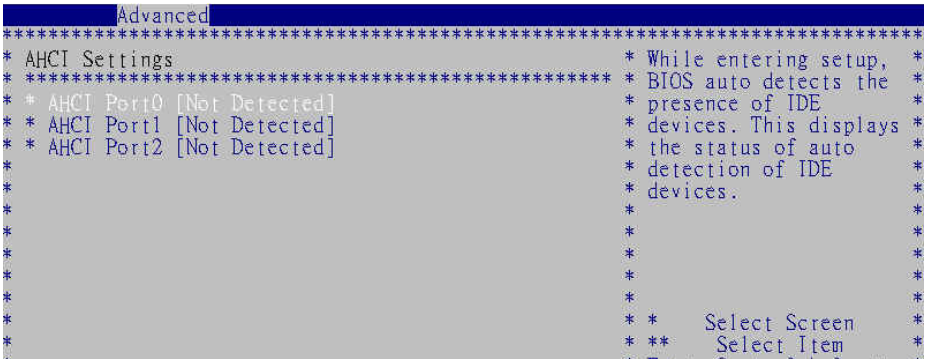
This is a submenu for configuring the USB Mass Storage Class Devices when BIOS finds they are in use on USB ports. Emulation Type can be set according to the type of attached USB mass storage device(s). If set to Auto, USB devices less than 530MB will be emulated as Floppy and those greater than 530MB will remain as hard drive. The Forced FDD option can be used to force a hard disk type drive (such as a Zip drive) to boot as FDD.

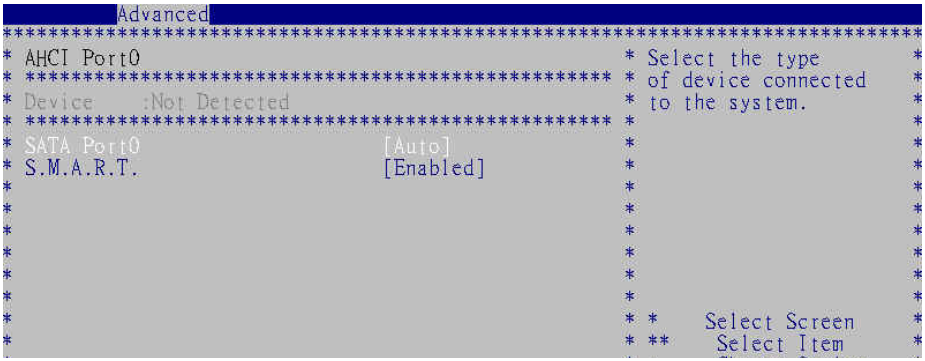


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8.3.6 AHCI Configuration

You can use this screen to select options for the AHCI Settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option.





SATA Port0/1/2

Select the type of device connected to the system.

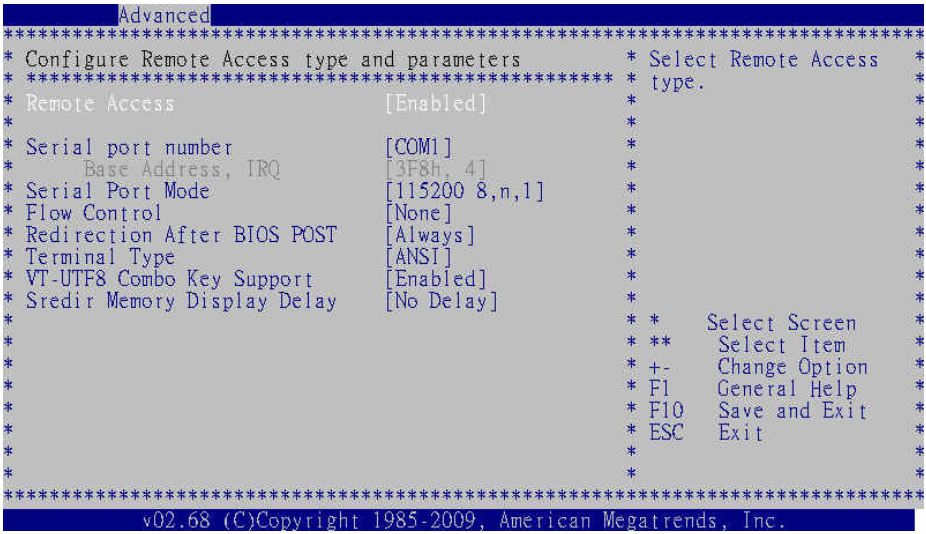
S.M.A.R.T

S.M.A.R.T. (Self-Monitoring Analysis and Reporting Technology) is a utility that monitors your disk status to predict hard disk failure.

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8.3.7 Remote Access Configuration

Remote access configuration provides the settings to allow remote access by another computer to get POST messages and send commands through serial port access.



Remote Access

Select this option to Enable or Disable the BIOS remote access feature.

NOTE: Enabling Remote Access requires a dedicated serial port connection. When the assigned serial port is disabled, Remote Access should also be disabled to prevent the system from booting abnormally.

Serial Port Number

Select the serial port you want to use for the remote access interface. Options: COM1, COM2, COM3.

NOTE: If you have changed the resource assignment of the serial ports in Advanced> SuperIO Configuration, you must Save Changes and Exit, reboot the system, and enter the setup menu again in order to see those changes reflected in the available Remote Access options.

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Serial Port Mode

Select the baud rate you want the serial port to use for console redirection. The options are 115200 8,n,1; 57600 8,n,1; 19200 8,n,1; and 09600 8,n,1.

Flow Control

Set this option to select Flow Control for console redirection. The settings for this value are None, Hardware, or Software.

Redirection After BIOS POST

This option allows you to set Redirection configuration after BIOS POST. The settings for this value are Disabled, Boot Loader, or Always.

- **Disabled:** Set this value to turn off the redirection after POST
- **Boot Loader:** Set this value to allow the redirection to be active during POST and Boot Loader.
- **Always:** Set this value to allow the redirection to be always active.

Terminal Type

This option is used to select either VT100/VT-UTF8 or ANSI terminal type. The settings for this value are ANSI, VT100, or VT-UTF8.

VT-UTF8 Combo Key Support

This option enables VT-UTF8 Combination Key Support for ANSI/VT100 terminals. The settings for this value are Enabled or Disabled.

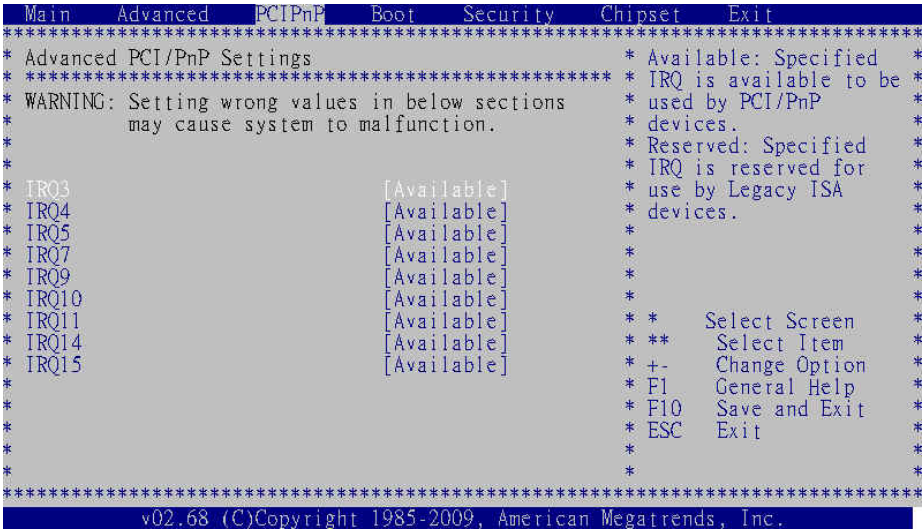
Sredir Memory Display Delay

This option gives the delay in seconds to display memory information. The options for this value are No Delay, Delay 1 Sec, Delay 2 Sec, or Delay 4 Sec.

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8.4 Advanced PCI/PnP Settings

Select the PCI/PnP tab from the setup screen to enter the Plug and Play BIOS Setup screen. You can display a Plug and Play BIOS Setup option by highlighting it using the < Arrow > keys. The Plug and Play BIOS Setup screen is shown below.



IRQ Channel

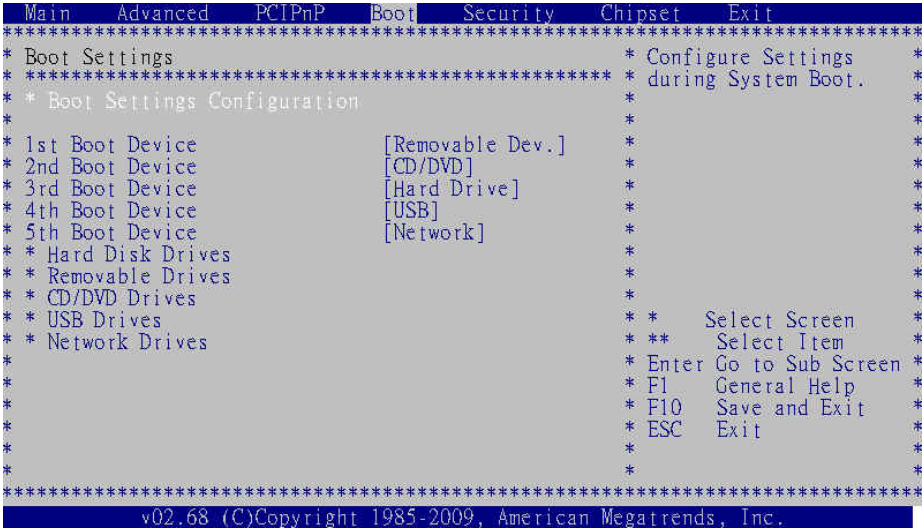
Set this value to allow the IRQ channel settings to be modified.

- **Available:** This setting allows the specified IRQ/DMA channel to be used by a PCI/PnP device.
- **Reserved:** This setting allows the specified IRQ/DMA channel to be used by a legacy ISA device.

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8.5 Boot Settings

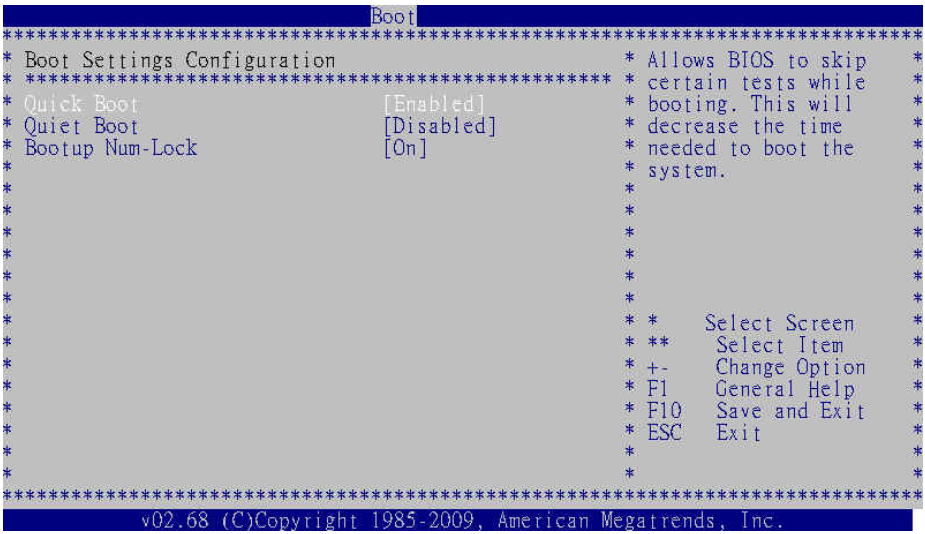
Select the Boot tab from the setup screen to enter the Boot BIOS Setup screen. You can select any of the items in the left frame of the screen, such as Boot Device Priority, to go to the sub menu for that item. You can display a Boot BIOS Setup option by highlighting it using the < Arrow > keys. The Boot Settings screen is shown below:



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8.5.1 Boot Settings Configuration

Use this screen to select options for the Boot Settings Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option.



Quick Boot

Enabling this setting will cause the BIOS power-on self test routine to skip some of its tests during bootup for faster system boot.

Quiet Boot

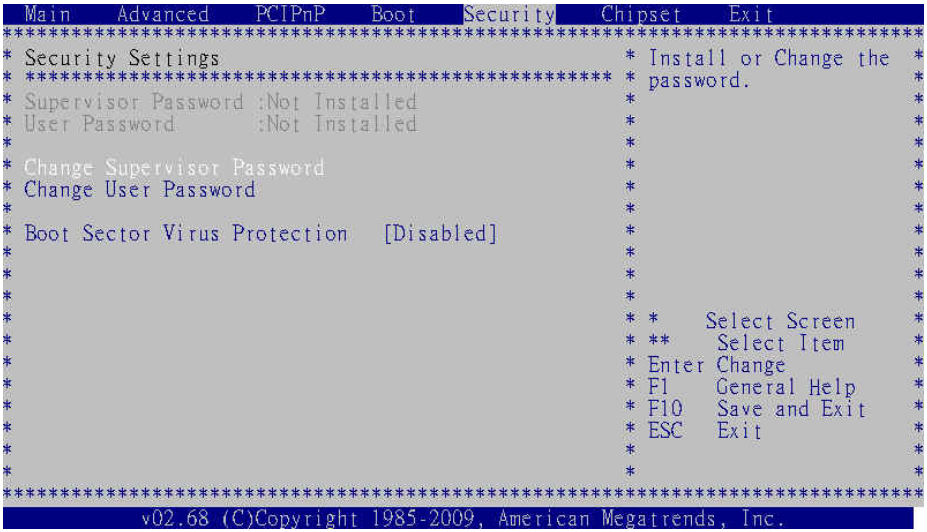
When this feature is **enabled**, the BIOS will display the OEM logo during the boot-up sequence, hiding normal POST messages. When it is **disabled**, the BIOS will display the normal POST messages, instead of the OEM logo.

Bootup Num-Lock

Allows you to select the power-on state for Num-Lock.

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8.6 Security Setup



Password Support

Two Levels of Password Protection

Provides both a Supervisor and a User password. If you use both passwords, the Supervisor password must be set first.

The system can be configured so that all users must enter a password every time the system boots or when Setup is executed, using either or either the Supervisor password or User password.

The Supervisor and User passwords activate two different levels of password security. If you select password support, you are prompted for a one to six character password. Type the password on the keyboard. The password does not appear on the screen when typed. Make sure you write it down. If you forget it, you must drain NVRAM and re-configure.

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Remember the Password

Keep a record of the new password when the password is changed. If you forget the password, you must erase the system configuration information in NVRAM.

To access the sub menu for the following items, select the item and press < Enter >:

- Change Supervisor Password
- Change User Password
- Clear User Password

Supervisor Password

Indicates whether a supervisor password has been set.

User Password

Indicates whether a user password has been set.

Change Supervisor Password

Select this option and press < Enter > to access the sub menu. You can use the sub menu to change the supervisor password.

Change User Password

Select this option and press < Enter > to access the sub menu. You can use the sub menu to change the user password.

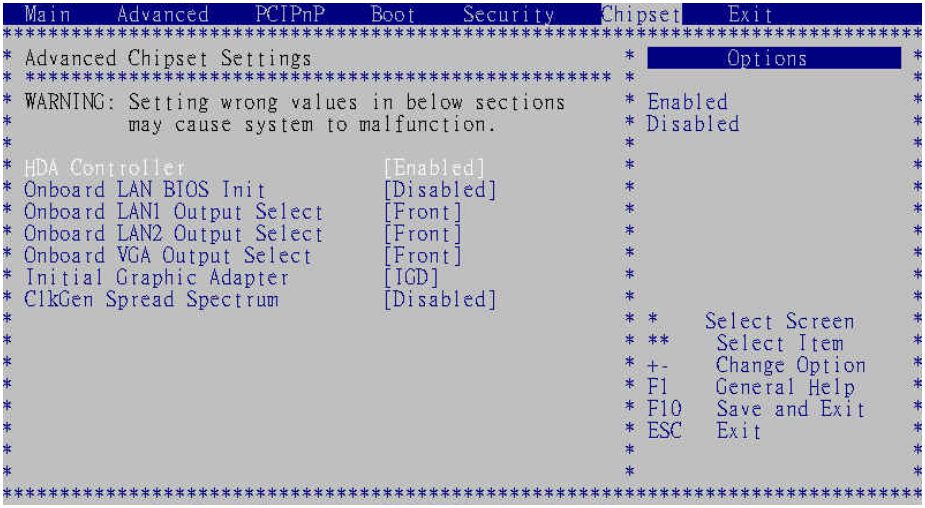
Boot Sector Virus Protection

Enable or disable the boot sector virus protection function.

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8.7 Chipset Setup

Select the Chipset tab from the setup screen to enter the Chipset BIOS Setup screen. You can select any of the items in the left frame of the screen to go to the sub menu for that item. The Chipset BIOS Setup screen is shown below.



HDA Controller

Set this value to Enable/Disable the HD Audio Controller.

Onboard LAN BIOS Init

Set this value to enable/disable the invoking of onboard LAN's PXE ROM. Disabling can shorten the POST time by not initializing LAN PXE ROM. Enable it if boot from LAN is needed.

Onboard LAN1/2 and VGA Output Select

Set the Onboard LAN1/2 and VGA output to Front or Rear.

Initial Graphics Adapter

Select which graphics controller to use as the primary boot device.

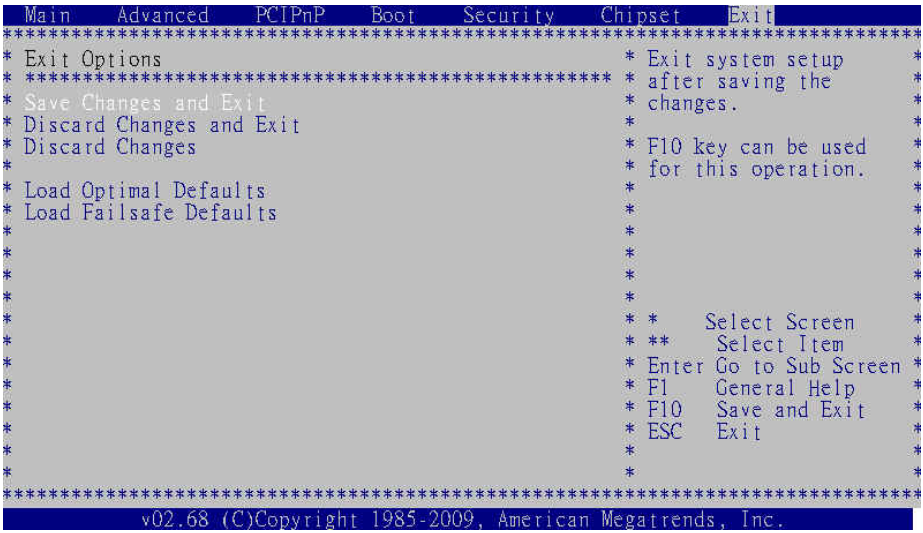
ClkGen Spread Spectrum

Set this value to Enable/Disable the ClkGen spread spectrum function.

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8.8 Exit Menu

Select the Exit tab from the setup screen to enter the Exit BIOS Setup screen. You can display an Exit BIOS Setup option by high-lighting it using the < Arrow > keys. The Exit BIOS Setup screen is shown below.



Save Changes and Exit

When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect.

Save Configuration Changes and Exit Now?

[Ok] [Cancel]

appears in the window. Select Ok to save changes and exit.

Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration.

Discard Changes and Exit Setup Now?

[Ok] [Cancel]

appears in the window. Select Ok to discard changes and exit.

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Discard Changes

Select Discard Changes from the Exit menu and press < Enter >.

Select Ok to discard changes.

Load Optimal Defaults

Automatically sets all Setup options to a complete set of default settings when you select this option. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Setup options if your computer is experiencing system configuration problems.

Select Load Optimal Defaults from the Exit menu and press < Enter >.

Select Ok to load optimal defaults.

Load Failsafe Defaults

Automatically sets all Setup options to a complete set of default settings when you select this option. The Failsafe settings are designed for maximum system stability, but not maximum performance. Select the FailSafe Setup options if your computer is experiencing system configuration problems.

Select Load Fail-Safe Defaults from the Exit menu and press < Enter >.

Load FailSafe Defaults?

[Ok] [Cancel]

appears in the window. Select Ok to load FailSafe defaults.

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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.



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

- 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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