Intel Columbus III Chassis Technical Product Specification

Revision 1
Order Number: 245153-001
March, 1999

The Columbus III chassis may contain design defects or errors known as errata. Characterized errata that may cause the Columbus III chassis's behavior to deviate from published specifications are documented in the Specification Update.

Revision History

Revision	Revision History	Date
Rev 0.91	Initial release of the Intel® Columbus III Server Chassis Technical Product Specification	12/98
Rev 1.0	Published released version	03/99

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1 INTRODUCTION

This specification details the feature set of the Intel® Columbus III server chassis, an ATX compatible server chassis designed for the Intel® L440GX+ and T440BX Server boards.
The dimensions of the Columbus III server chassis are approximately 19" high, 18" deep, and 8" wide. Columbus III features include:

- Two 5.25” external drive bays
- 1 floppy drive
- Internal hard drive bay capable of supporting either six 1” or three 1.6” hard disk drives.
- 4 system fans. Fans of various sizes (60, 80 or 92mm) may be used as required by specific configurations.
- 300-Watt Non-PFC power supply.
  The chassis is designed to use PS/2* form factor power supplies rated up to 300 watts.
- Chassis intrusion switch

1.1 Chassis Color

The primary exterior chassis color will match Intel Color Standard 513505.

1.2 Front Bezel Features

The standard front bezel is molded plastic with two removable 5.25" peripheral bay covers. Behind each peripheral bay cover a removable EMI (Electromagnetic Interference) shield is installed.

Opening an exterior plastic door reveals a bezel intended to cover the upper system fan intake.

1.3 Security

At the chassis level a variety of security options are provided.

- A Padlock loop on the rear of the chassis side cover can be used to prevent access to the microprocessors, memory, and add-in cards. A variety of lock sizes can be accommodated by the .300 diameter loop.
- An alarm switch is provided for the chassis side cover that may be connected directly to the server board, where server management software, such as Intel Server Control can process alarm switch activity as desired.
- The front bezel assembly is designed so as not be removable with the side access cover in place, preventing extraction of the 5.25" peripherals.

1.4 I/O panel

All input/output connectors are accessible on the rear of the chassis and an ATX 2.02 compatible cutout is provided for I/O shield installation. A metal I/O shield with appropriate EMI gasket must be installed in the cutout in order to maintain Electromagnetic Interference (EMI) compliance levels. The appropriate I/O shield for either the L440GX+ or T440BX server board is provided with the boxed server board. The I/O cutout dimensions are shown in Figure-1 below.

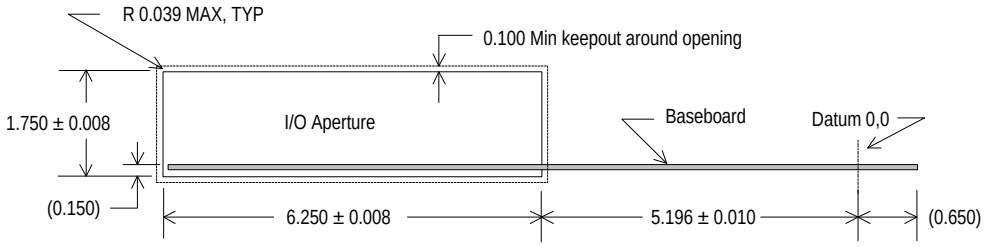


Figure 1: ATX 2.02 I/O Aperture

1.5 Chassis Views

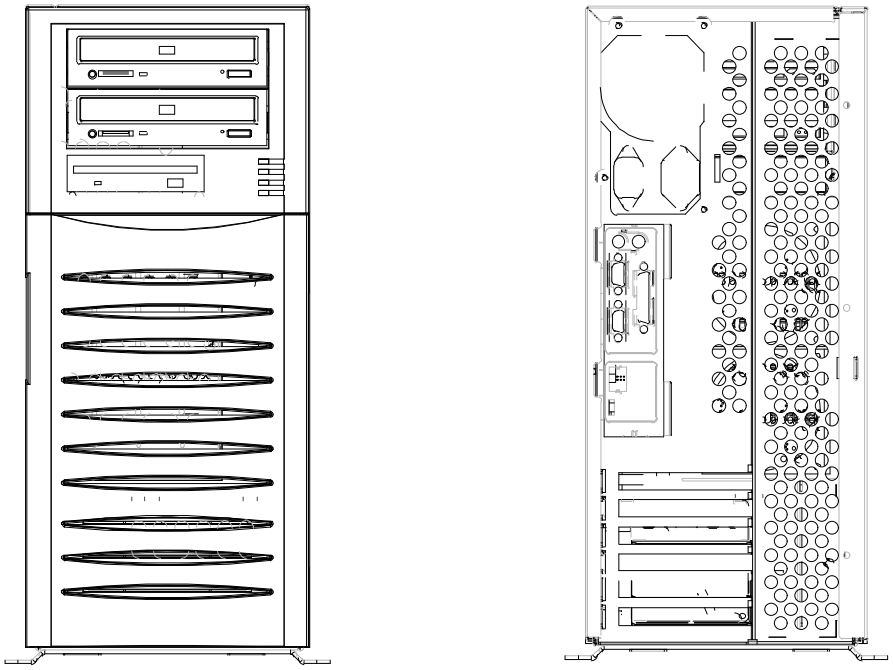


Figure 2: Front and Rear Chassis Views

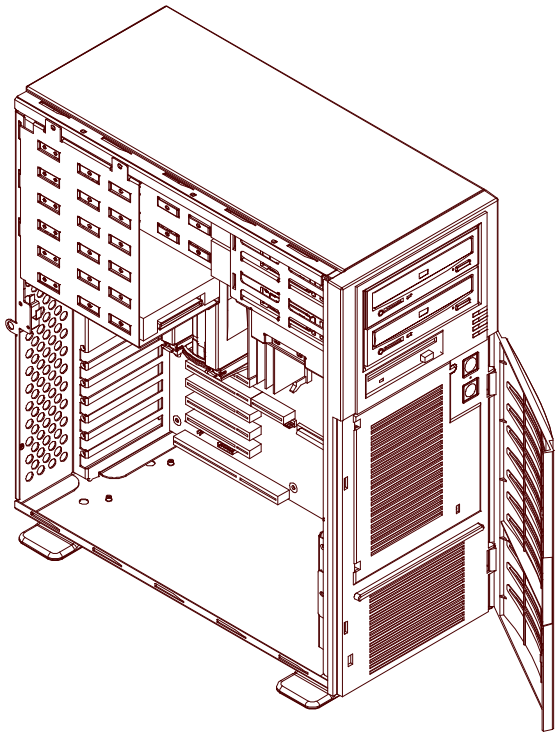


Figure 3: Front Isometric View, open Drive Access Door

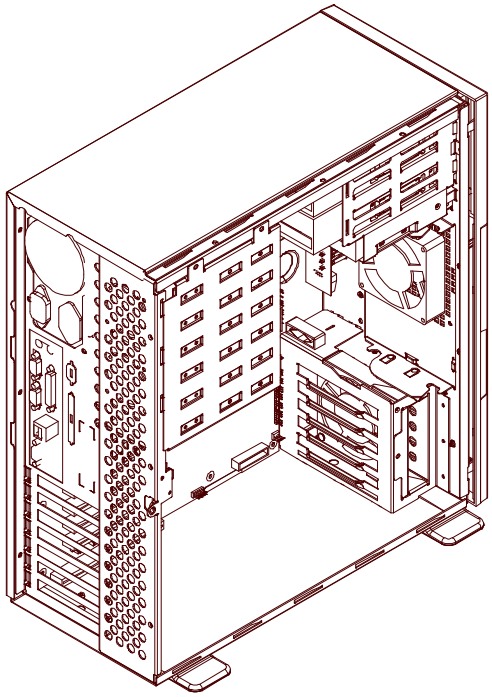


Figure 4: Rear Isometric View, open Access Cover

1.6 Chassis Dimensions

Height	19.3 inches
Width	8.3 inches (chassis), 10 inches (feet)
Depth	17.7 inches
Clearance Front	8.5 inches
Clearance Rear	5 inches
Clearance Side	3 inches (additional side clearance required for service)

Table 1: Chassis Dimensions

2 Chassis Power Sub-system

This chassis uses a standard PS/2 form factor power supply. Variations may be chosen for future board sets to satisfy the chassis power, power distribution, thermal performance, acoustic noise and cost requirements.
The form factor was chosen to optimize the overall chassis dimensions. The typical PS/2 form factor power supply with a remote enable feature can be used. The remote enable feature permits the chassis power to be activated from a variety of sources, allowing the implementation of "Wake On LAN*" (WOL) or other remote management features. The 300-watt Non-PFC (Power Factor Correction) power supply features a 20-pin ATX compliant power connector and a 6 pin Auxiliary ATX power connector. The following table is a brief overview:

ATX 300W Non-PFC 725874-XXX**	P/S rating, Maximum Continuous Current	Maximum Certified System Load	Watts
+5 VDC Output	32 Amp Max	26 Amp Max	130.0 W
+12 VDC Output	12 Amp Max	12 Amp Max	120.0 W
-12 VDC Output	0.5 Amp Max	0.5 Amp Max	6.0 W
-5 VDC Output	0.25 Amp Max	0.25 Amp Max	1.25 W
+3.3 VDC Output	28 Amp Max	28 Amp Max	52.8 W
+5 VDC Standby	1.0 Amp Max	1.0 Amp Max	5.0 W
Output balancing	Total combined output power of +3.3v and +5v shall not exceed 220 W.		
AC Line Voltage	AC range selected by external switch		
AC Line Frequency	50/60 Hz		
AC Input Current	9.5 Amp at 115 VAC 5.5 Amp at 220 VAC		

Table 2: Power Supply Output Summary

Caution

The Non PFC power supply's output ratings are higher than the system's safety certification level. The maximum certified system loading is 285W. Although customer configurations for this class of server will rarely exceed this level, heavily configured systems must be carefully checked to ensure compliance.

2.1 Mechanical Outline

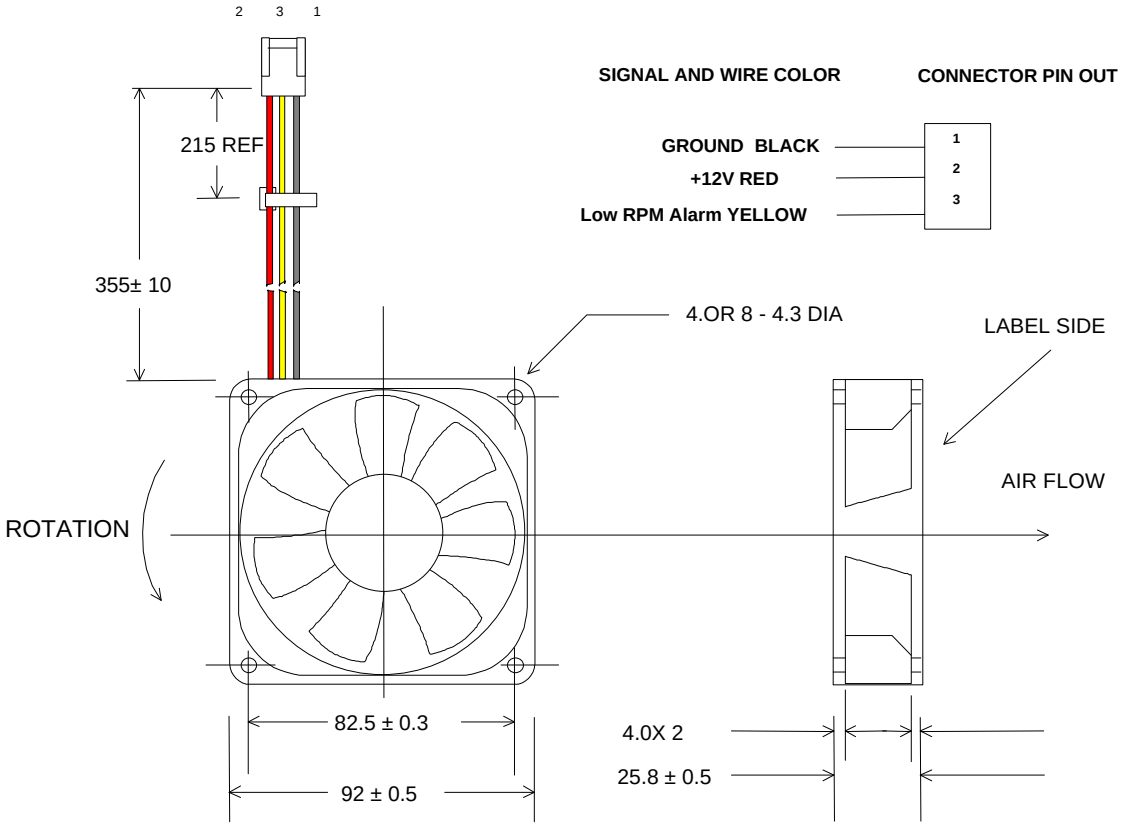
The mechanical outline and dimensions of the power supply adhere to the standard PS/2 Form factor. The approximate dimensions are: 140mm high X 86mm wide X 150mm deep.

2.2 Power Supply/Chassis Configuration

The Columbus III server chassis can only be configured with a single supply. For a more detailed specification on the power supply, see document 725874, the specification for the 300-Watt Non-PFC Power Supply.

3 CHASSIS COOLING

Four system fans and the power supply fan provide cooling for the processor(s), hard drives, and add-in cards. Two 92mm fans are mounted in the front of the chassis and two 60mm fans are mounted in the rear of the chassis. Each of the four system fans provides a digital signal for detection of normal fan operation for server management monitoring and alert functions.



All measurements are in millimeters

Figure 5: 92mm System Fan

The two 60mm rear system fans are mounted in the upper rear of the chassis to ensure proper cooling for up to six 10K RPM hard drives. The two rear fans are connected together so as to attach to one fan connector on the rear of the server board.

The Intel® L440GX+ and T440BX server boards monitor system fans in different ways. Therefore, it is necessary to run the FRU (Field Replaceable Unit)/SDR (Sensor Data Record) utility program after integration of the server board into the Columbus III chassis to ensure proper monitoring of the system fans. The FRU/SDR utility is available on the software CD-ROM that ships with each server board or from the appropriate Intel Customer Support web site:
http://support.intel.com/support/motherboards/server/L440GX or
http://support.intel.com/support/motherboards/server/T440BX

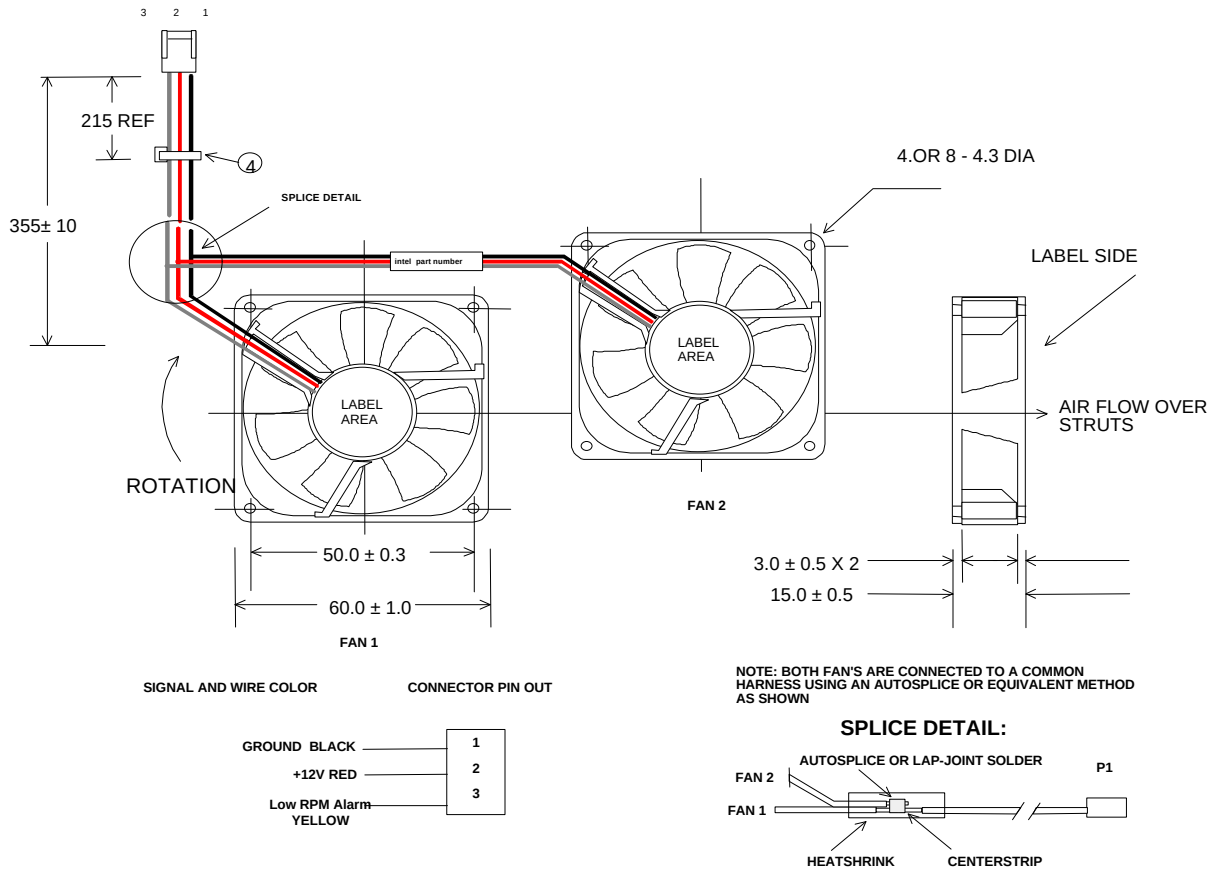


Figure 6: 60mm rear drive bay fans

Removal of the side cover gives access to the fans, which then can be easily changed with the system shut down.

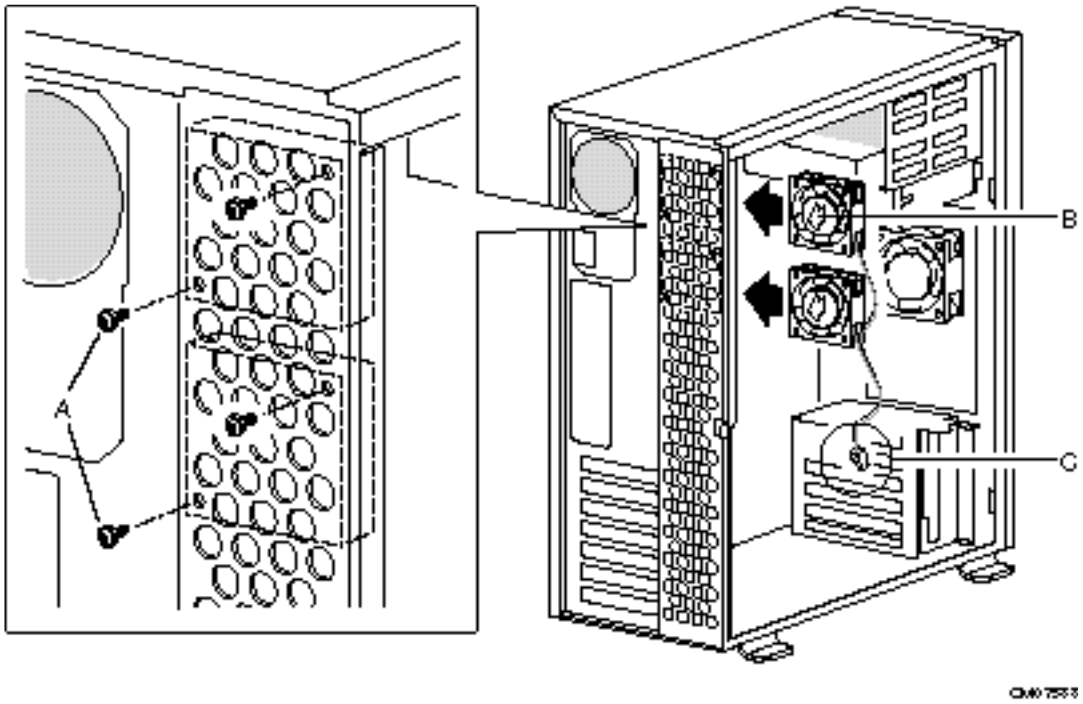


Figure 7. Rear drive bay fans installation

A. Screws
B. Direction of air flow
C. Power connector

4 CHASSIS PERIPHERAL BAYS

4.1 3.5" Floppy Drive Bay

The chassis provides for the installation of a 3.5“ floppy drive beneath the 5.25” peripheral bays. Removal of the side cover provides access for replacement of the floppy drive.

4.2 5.25" Drive Bays

The chassis supports two half height (1” high) or one full height 5.25" removable media peripheral devices (e.g. Magnetic/Optical disk, CD-ROM or tape drive), up to 9” deep. As a guideline based on cooling capabilities, the maximum recommended power per device is 17W. Thermal performance of specific devices must be verified to ensure compliance to the Drive manufacturer’s specifications. The 5.25" peripherals are removable directly from the front of the chassis after removal of the side cover and front bezel. Cosmetic cover panels and EMI shield panels are installed in unused 5.25" bays.

Caution:

The two 5.25” drive bays are not recommended for hard disk drives. Problems that may occur include: hard disk drive generated EMI, increased ESD susceptibility (i.e., less hardened to ESD), and inadequate airflow for cooling.

4.3 3.5" Internal Hard Drive Bay

The Columbus III server chassis supports up to six 1” high or three 1.6” high 3.5" hard drives which are mounted internally, in the upper rear of the chassis, accessible by removing the side access cover. The internal drive bay is designed to support 10k RPM drives. Thermal performance of specific hard drives must be verified to ensure compliance to the drive manufacturer’s specifications. Peripherals must be specified to operate at a maximum ambient temperature of 50^{o}C.

5 FRONT PANEL

The front panel is located in the right hand side of the front bezel. Opening the exterior Front Bezel access door accesses the momentary Power On/Off button, Chassis Reset button, and tool activated NMI switch. The front panel includes a green power on LED, a green hard drive activity LED, a green network activity LED and an amber fan failure LED, which are visible with the exterior hard drive access door closed.

For the T440BX server board, the front panel connection is made via conventional ATX twisted pair cables to the ATX “stake pins” on the server board. Connect the cables so that the connector labels are facing away from the server board. Note: The network activity LED and the fan failure LED on the front panel are not supported through the ATX front panel connectors on the T440BX server board. These LEDS will remain inactive.

For the L440GX+ server board, front panel functionality is provided through a 16-pin flat ribbon cable. The front panel header on the L440GX+ server board is located at J5J1 perpendicular to the Primary and Secondary IDE connectors

A 10-pin IDC ribbon cable is attached to the Front Panel board but is only used and functional with the Hot-Swap Back Plane upgrade kit.

The three-pin chassis intrusion connector is not used in the Columbus III server chassis. The chassis intrusion switch/cable assembly mounted in the rear of the chassis is designed to attach directly to the chassis intrusion connector on the installed server board.

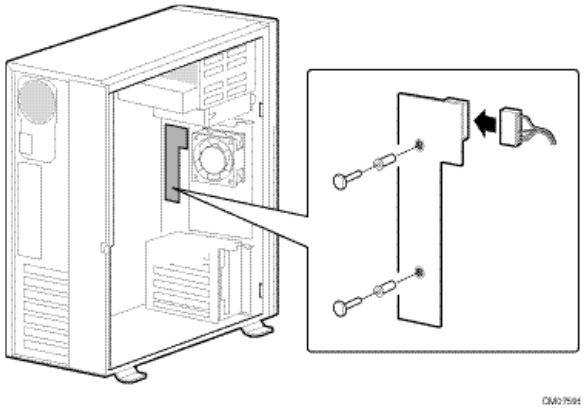


Figure 8. Front Panel Connection

A. Front panel board
B. ATX “Stake Pin” Cables

6 CHASSIS INTERCONNECTION

6.1 Chassis Internal Cables

Intrusion Alarm cable

The side access cover depresses an open momentary switch. A 22AWG twisted pair cable, terminated with a keyed latching connector cables it to the server board.

I^2C, Front Panel to Hot-swap Backplane

A 10-pin IDC ribbon cable is provided but is unused in standard configuration. (See Appendix C).

Fan Connectors

The system fans and their cable pinouts are shown in figures 5 and 6 in Section 3.

6.2 Connector Interfaces

Each pin is classified by type, as shown in the following table.

Type	Description
PWR	power connection (power or ground)
I/O	bi-directional signal
O	output signal
I	input signal
O/C	Open-collector output signal
O/D	Open-drain output signal

Table 3. Pin types

6.2.1 Peripheral Power Connectors

The peripheral power connectors are a standard four-pin shrouded plastic PC power connectors with mechanical keying. Connector pinout is shown below.

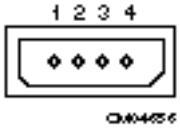


Figure 9: Peripheral power connector

Name	Pin	Description
+12V	1	+12 Volt power supply (yellow wire)
GND	2	0V Electrical ground (black wire)
GND	3	0V Electrical ground (black wire)
+5V	4	+5 Volt power supply (red wire)

Table 4: Peripheral power connectors

7 Supported Intel Server Boards

The following is a summary of the feature sets for Intel server boards supported by the Columbus III server chassis. Please refer to the appropriate server board Technical Product Specification for greater detail.

7.1 L440GX+ DP Server Board

- Support for Single or Dual Pentium® II processors or Pentium® III processors of identical speed and stepping, current revision
- Designed around the Intel® 440GX AGPset, PIIX4e, I/O APIC devices for full MPS 1.4 compliance.
- 100MHz System Bus (Front Side Bus)
- Support for up to 2 GB 100MHz "PC/100" compliant unbuffered or registered ECC or Non-ECC SDRAM DIMMs (4 sites)
- Dual Peer PCI buses providing 6 PCI slots.
  - 4 full length PCI-33MHz/32bit slots
  - 2 full length "Universal (5v)" PCI-66MHz/32bit slots, backwards compatible to PCI-33MHz. PCI-66 implemented via Intel® 211150 AGP to PCI-66 bridge chip.
- 1 ISA expansion slot.
- Adaptec* AIC-7896 Dual function PCI SCSI controller providing Ultra2 (LVDS) wide and Ultra wide SCSI channels. Support for Adaptec ARO-1130U2 RAID*Port** "zero channel" RAID controller.
- Intel® 82559 PCI 10/100Mbit Ethernet controller with integrated physical layer. Onboard RJ-45 Network connector.
- Cirrus Logic* GD5480 PCI SVGA graphics controller, 2MB of Synchronous Graphics memory (SGRAM)
- PCI IDE controller (in PIIX4E) providing dual independent Ultra DMA/33 IDE interfaces, each able to support 2 IDE drives.
- Compatibility I/O device integrating floppy, dual serial and parallel ports, all connectors provided.
- Universal Serial Bus (USB) support with two USB connectors.
- Integration of server management features, including thermal, voltage, fan, and chassis monitoring into one controller. Emergency Management Port (EMP) feature. Introducing Platform Event Paging (PEP) Feature enabling remote notification of significant server management events.
- Flash BIOS support for all of the above.

7.2 T440BX UP Server Board

- Single Pentium® II processor or Pentium® III processor
- Designed around the Intel® 440BX PCIset
- 100 MHz Front Side Bus
- Support for up to 768MB with Dual Chip Select 100MHz “PC/100” compliant unbuffered or registered ECC or Non-ECC SDRAM DIMMs (3 sites)
- Three 32bit/33MHz Full length PCI slots
- One shared full length PCI/ISA slot
- One Full length ISA slot
- One Dedicated AGP slot
- 1x32 bit PCI bus
- Symbios* 53C875 PCI Single channel SCSI controller, Ultra Wide
- Intel® 82558 PCI 10/100Mb Ethernet controller with integrated physical layer. Onboard RJ-45 Network connector
- Cirrus Logic* GD5480 PCI SVGA graphics controller, 2MB of Synchronous Graphics memory (SGRAM)
- keyboard, mouse ports (stacked 6 pin)
- 1-parallel port
- 2-serial ports
- Dual USB connectors
- ATX front panel and power connectors

8 Regulatory Information

Caution

Integration of this subassembly is a regulated activity: you must adhere to the assembly instructions in this guide to ensure and maintain compliance with existing product regulations. Use only the described, regulated components specified in this guide. Use of other products / components will void the UL listing of the product, will most likely void other compliance markings provided, and may result in noncompliance with product regulations in the region(s) in which the product is sold.

8.1 Regulatory Compliance

This subassembly, when correctly integrated per this guide, complies with the following safety and electromagnetic compatibility (EMC) regulations.

8.1.1 Safety Standards

UL 1950 - CSA 950-95, 3rd Edition, July 28, 1995
The Standard for Safety of Information Technology Equipment including Electrical Business Equipment. (USA and Canada). This product has been evaluated and complies with UL1950 – CSA 950-95 3rd Edition. However, if a UL1950 2nd Edition modem telecommunications add-in card is used, the system will be deemed to comply with UL 1950 2nd Edition/CSA950-93.

EN 60 950, 2nd Edition, 1992 (with Amendments 1, 2, and 3)
The Standard for Safety of Information Technology Equipment including Electrical Business Equipment. (European Union)

IEC 950, 2nd edition, 1991 (with Amendments 1, 2, 3 and 4)
The Standard for Safety of Information Technology Equipment including Electrical Business Equipment. (International)

EMKO-TSE (74-SEC) 207/94
Summary of Nordic deviations to EN 60 950. (Norway, Sweden, Denmark, and Finland)

8.1.2 EMC Regulations

FCC Class B
Title 47 of the Code of Federal Regulations, Parts 2 and 15, Subpart B, pertaining to unintentional radiators. (USA)

CISPR 22, 2nd Edition, 1993, Amendment 1, 1995
Limits and methods of measurement of Radio Interference Characteristics of Information Technology Equipment. (International)

EN 55 022, 1995
Limits and methods of measurement of Radio Interference Characteristics of Information Technology Equipment. (Europe)

EN 50 082-1, 1992
Generic Immunity Standard. Currently, compliance is determined via testing to IEC 801-2, -3 and -4. (Europe)

VCCI Class B (ITE)
Implementation Regulations for Voluntary Control of Radio Interference by Data Processing Equipment and Electronic Office Machines. (Japan)

ICES-003, Issue 2
Interference Causing Equipment Standard, Digital Apparatus. (Canada)

Australian Communication Authority (ACA)
Australian C-tick mark, limits and methods of measurement radio interference characteristics of information technology equipment to ASNZS 3548 (Australian requirements based on CISPR 22 requirements).

New Zealand Ministry of Commerce
Australian C-tick mark, limits and methods of measurement radio interference characteristics of information technology equipment to ASNZS 3548 (New Zealand requirements based on CISPR 22 requirements). New Zealand authorities accept ACA C-Tick Compliance Mark.

8.1.3 Regulatory Compliance Markings.

This Columbus III chassis subassembly is provided with the following Product Certification Markings.

- UL and cUL Listing Marks
- CE Mark
- The CE marking on this product indicates that it is in compliance with the European community's EMC (89/336/EEC) and low voltage directives (73/23/EEC)
- NEMKO Mark
- FCC, Class B Markings (Declaration of Conformity)
- ICES-003 (Canada Compliance Marking)

8.2 Electromagnetic Compatibility Notice (USA)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on; the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment. The customer is responsible for ensuring compliance of the modified product.

Only peripherals (computer input/output devices, terminals, printers, etc.) that comply with FCC Class B limits may be attached to this computer product. Operation with noncompliant peripherals is likely to result in interference to radio and TV reception.

All cables used to connect to peripherals must be shielded and grounded. Operation with cables, connected to peripherals that are not shielded and grounded may result in interference to radio and TV reception.

NOTE

If a Class A device is installed within this system, then the system is to be considered a Class A system. In this configuration, operation of this equipment in a residential area is likely to cause harmful interference.

8.2.1 **FCC Declaration of Conformity**.

Product Type: ASTNIT, ASTLAN

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: 1) This device may not cause harmful interference, and 2) this device must accept any interference received, including interference that may cause undesired operation.

Intel Corporation
5200 N.E. Elam Young Parkway
Hillsboro, OR 97124-6497
Phone: 1-800-628-8686

Cet appareil numérique respecte les limites bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques", NMB-003 édictée par le Ministre Canadian des Communications.

(English translation of the notice above) This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the interference causing equipment standard entitled "Digital Apparatus," ICES-003 of the Canadian Department of Communications.

8.3 Electromagnetic Compatibility Notices (International)

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

(English translation of the notice above) This is a Class B product based on the standard of the Voluntary Control Council For Interference (VCCI) from Information Technology Equipment. If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.
When used near a radio or TV receiver, it may become the cause of radio interference.
Read the instructions for correct handling.
This equipment has been tested for radio frequency emissions and has been verified to meet CISPR 22 Class B.

9 Environmental Limits

9.1 System Office Environment

Parameter	Limits
Operating Temperature	+5^{o}C to +35^{o}C with the maximum rate of change not to exceed 10^{o}C per hour.
Non-Operating Temperature	-40^{o}C to +70^{o}C
Non-Operating Humidity	95%, non-condensing @ 30^{o}C
Acoustic noise	< 45 dBA in an idle state at typical office ambient temperature (65-75F)
Operating Shock	No errors with a half sine wave shock of 2G (with 11 millisecond duration).
Package Shock	Operational after a 24 inch free fall, although cosmetic damage may be present
ESD	20kV per Intel Environmental test specification

Table 5: System Office Environment Summary

9.2 System Environmental Testing

The system will be tested per the Environmental Standards Handbook, Intel Doc.#662394-03. These tests shall include:

Temperature Operating and Non-Operating

Humidity Non-Operating

Packaged and Unpackaged Shock

Packaged and Unpackaged Vibration

AC Voltage, Freq. & Source Interrupt

AC Surge

Acoustics

ESD

EMC Radiated Investigation

10 Reliability, Serviceability, and Availability

10.1 Mean-Time-Between-Failure (MTBF)

MTBF data was being collected at the time of the generation of this specification. It will be provided in a future revision of this specification or a Specification Update.

10.2 Serviceability

The system is designed to be serviced by qualified technical personnel only.

The desired Mean Time To Repair (MTTR) of the system is 30 minutes including diagnosis of the system problem. To meet this goal, the system enclosure and hardware have been designed to minimize the MTTR.

Following are the maximum times that a trained field service technician should take to perform the listed system maintenance procedures, after diagnosis of the system.

Remove cover	1 minute
Remove and replace hard disk drive	1 minute
Remove and replace 5 ¼ peripheral device	5 minutes
Remove and replace power supply	5 minutes
Remove and replace rear drive bay fans	3 minutes
Remove and replace front system fan	5 minutes
Remove and replace expansion board	5 minutes
Remove and replace front panel board	5 minutes
Remove and replace baseboard (with no expansion boards)	10 minutes
Overall MTTR	20 minutes

Appendix A – Product Codes

Item	Product Code
ColumbusIII Chassis	KALBASE

Table 6: Product Codes

Appendix B – Spares list

Component	TA	Rev.	Product Code/FRU
Chassis	650567	-002	
Front Panel board	686687	-303	
Power Supply	682139	-003	
Front Bezel	685837	-002	
L440GX+ Cable Kit	702433	-001	
T440BX Cable Kit	721475	-001	
Hot Swap SCSI kit	724233	-001	AXXCL3UPGRD

Table 7: Spares list

Appendix C – Hot-Swap SCSI Back Plane Upgrade Kit

The Columbus III server chassis is upgradeable to include a Hot Swap SCSI back plane. The kit includes the following:

- One LVD Hot Swap SCSI backplane and drive cage capable of supporting up to five 1” SCA SCSI hard drives
- One internal drive bay with support for two 1" IDE drives.
- Two System Fans
- One SCSI Cable

The Intel part number is: AXXCL3UPGRD

Note: This upgrade kit can only be used in conjunction with the L440GX+ server board.

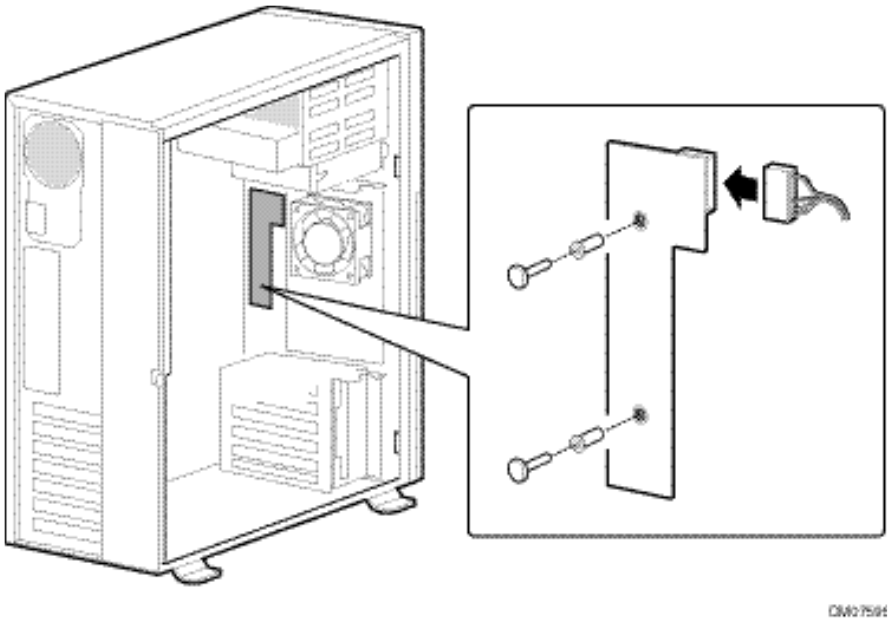
Appendix D – Special Integration Instructions for T440BX

Caution: When integrating components refer to the safety instructions discussed in the Columbus III Product Guide.

Front Panel

When integrating the T440BX server board with the Columbus III server chassis use the T440BX cable kit included with the chassis. This cable kit consists of the T440BX front panel cable and chassis intrusion cable.

Remove the front panel connector from the plastic bag and connect it to the front panel board in the chassis (Note: it may be necessary to remove the front panel board to connect the cable. Refer to the Columbus III product manual for details). Connect each of the front panel cables to the appropriate ATX stake pin header on the baseboard with the label facing away from the server board (See T440BX server board product manual for further instructions if needed).



Connecting the T440BX Front Panel Cable to the Columbus III Front Panel Board

The front panel header on the T440BX server board provides support for basic ATX front panel functions: Power Switch, Reset Switch, Power LED, and Drive Activity LED. It is important to note that the other two LEDs on the front of the Columbus III chassis (NIC Activity LED and Fan Failure LED) are not supported by the T440BX front panel header and will not function when the T440BX server board is installed. You can check for NIC activity by observing the LEDs on the RJ-45 connector at the rear of the system and can monitor fan failures by using the server management software that is included on the software CD that is included with the T440BX server board.

Chassis Intrusion Switch

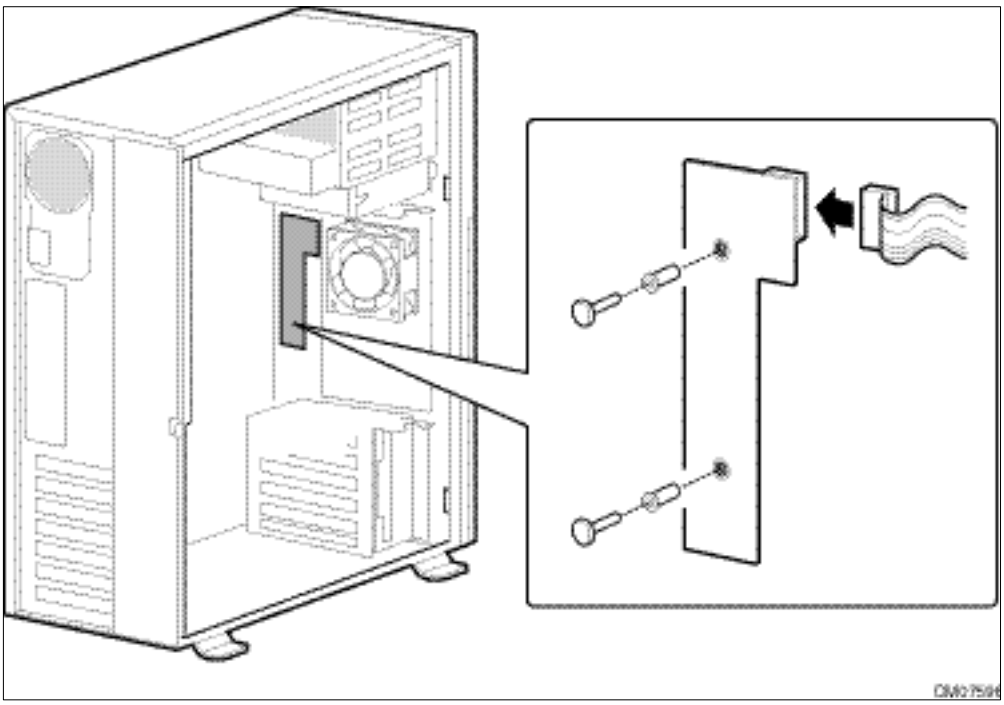
To monitor chassis intrusion events on the T440BX server board, a chassis intrusion switch has been included. The intrusion switch has an orange and white cable terminated with a two-pin connector. Refer to the Columbus III product manual for instructions on installing the switch into the chassis. Connect the two-pin connector to the chassis intrusion header at the rear of the T440BX server board (Refer to the T440BX server board product manual for further details if necessary).

Appendix E – Special Integration Instructions for L440GX+

Caution: When integrating components refer to the safety instructions discussed in the Columbus III Product Guide.

Front Panel
The Columbus III chassis also ships with a cable kit for integrating the L440GX+ server board. This kit includes a flat front panel ribbon cable and a chassis intrusion switch.

Remove the front panel ribbon cable from the plastic bag and connect one end to the front panel board in the chassis (Note: it may be necessary to remove the front panel board to connect the cable. Refer to the Columbus III Product Manual for details). Connect the other end of the cable to the front panel connector in the upper right area of the L440GX+ server board (see L440GX+ product manual for further information if needed).



Connecting the L440GX+ Front Panel Cable to the Columbus III Front Panel Board

The front panel connector on the L440GX+ server board provides support for basic ATX front panel functions: Power Switch, Reset Switch, Power LED, and Drive Activity LED. In addition, the NIC activity Fan Failure LEDs provided on the Columbus III are supported as well.

Chassis Intrusion Switch
To monitor chassis intrusion events a chassis intrusion switch has been included. The intrusion switch has a red and black cable terminated with a two-pin connector. Refer to the Columbus III product manual for instructions on installing the switch into the chassis. Connect the two pin connector to the chassis intrusion header at the rear of the L440GX+ server board, between PCI slot 1 and the ISA slot (Refer to the L440GX+ server board product manual for further details if necessary).