DREAMSPEED1220 User's Guide

Versatile 1U Platform for New Network Architects

Document Revision 1.0



kontron
... always a Jump ahead!

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Kontron reserves the right to make changes without notice in product or component design as warranted by evolution in user needs or progress in engineering or manufacturing technology. Changes that affect the operation of the unit will be documented in the next revision of this user's guide.

DreamSpeed is a trade mark name. Some specifications, technical information, and certifications described in the present manual may be referred to and under the T9206 model number.

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Safety Instructions

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Before You Begin

Before handling the board, read the instructions and safety guidelines on the following pages to prevent damage to the product and to ensure your own personal safety. Refer to the "Advisories" section in the Preface for advisory conventions used in this user's guide, including the distinction between Warnings, Cautions, Important Notes, and Notes.

- Always use caution when handling/operating the computer. Only qualified, experienced, authorized electronics service personnel should access the interior of the computer. The power supplies produce high voltages and energy hazards, which can cause bodily harm.

- Use extreme caution when installing or removing components. Refer to the installation instructions in this user's guide for precautions and procedures. If you have any questions, please contact Kontron Post-Sales Technical Support.

WARNING



High voltages are present inside the chassis when the unit's power cord is plugged into an electrical outlet. Turn off system power, turn off the power supply, and then disconnect the power cord from its source before removing the chassis cover. Turning off the system power switch does not remove power to components.



WARNING



This product may contain CLASS 1 LASER PRODUCT



Safety Instructions

Please read carefully and observe the instructions for your own safety and correct use of the device.
In order to maintain this condition and ensure safe operation, the instructions and warnings contained in this manual and on the device must be observed.

The unit is built and tested in accordance with EN60950/UL1950/CSA22.2 No.950 and left the works in a safe condition.

We shall be exempted from our guarantee obligations if the user fails to observe the safety instructions.
We can only guarantee the safety, reliability, and performance of the system if all of the following safety instructions are observed:

1. Maximum recommended ambient temperature (Tmra) = 50°C
2. **Elevated Operating Ambient Temperature** - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the Tmra = 50°C.
3. **Reduced Air Flow** - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
4. **Mechanical Loading** - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
5. **Circuit Overloading** - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
6. **Reliable earthling** - Reliable earthling of rackmounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).
7. The system must be used in accordance with the instructions for use.
8. The electrical installations in the room must correspond to the requirements of the respective regulations.
9. Make sure that there are no cables, particularly main cables, in areas where people can trip over them.
10. Keep the main power inlet connector of the system or the main socket, from which the system is powered, easily accessible, so at least one can be used as disconnect device.
11. Only use the main cable supplied with the system.
12. Make sure that the DC/AC operation voltage cited in the manual corresponds to the DC/AC voltage supplied and that the maximum value is not exceeded even briefly.
13. When setting up the unit and accessories, observe the local or national regulations for workstation ergonomics.

14. Do not set up the system where it is exposed in the proximity of heat sources, or in a damp location. Make sure the system has adequate ventilation and that the ambient temperature is in the range specified for the system (see specification sheet).
15. Properly secure cables and connectors.
16. It must be assumed that safe operation is no longer possible if the system:
    - has visible damage or
    - no longer operates.

    In these cases the system must be shut down and secured against unintentional operation.
17. If extensions are made to the system, legal stipulations and system specifications must be observed.
18. Assembly, extensions, new settings, alterations, or repairs may only be carried out by qualified people.
19. Adjustment, maintenance, or repair on the open system may only be carried out by qualified personnel familiar with the associated dangers.
20. The system must be switched off before removing and/or installing any components.
21. Only original accessories approved by the company may be used.
22. The safety of the system must be re-evaluated by competent authorities when adding components that were not part of the delivered configuration.

When Working Inside a Computer

Before taking covers off a computer, perform the following steps:

- Turn off the computer and any peripherals.
- Disconnect the computer and peripherals from power sources or subsystems to prevent electric shock or system board damage. This does not apply to when hot-swapping parts.
- Follow the guidelines provided in "Preventing Electrostatic Discharge" on the following page.
- Disconnect telephone or telecommunications lines from the computer.

In addition, take note of these safety guidelines when appropriate:

- To help avoid possible damage to system boards, wait five seconds after turning off the computer before removing a component, removing a system board, or disconnecting a peripheral device from the computer.
- When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs. If you are disconnecting this type of cable, press in on the locking tabs before disconnecting the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before connecting a cable, make sue both connectors are correctly oriented and aligned.

CAUTION



Do not attempt to service the system yourself, except as explained in this user's guide. Follow installation and troubleshooting instructions closely.



Preventing Electrostatic Discharge

Static electricity can harm system boards. Perform service at an ESD workstation and follow proper ESD procedure to reduce the risk of damage to components. Kontron strongly encourages you to follow proper ESD procedure, which can include wrist straps and smocks, when servicing equipment.

Take the following steps to prevent damage from electrostatic discharge (ESD):

- When unpacking a static-sensitive component from its shipping carton, do not remove the component's antistatic packing material until you are ready to install the component in a computer. Just before unwrapping the antistatic packaging, be sure you are at an ESD workstation or grounded. This will discharge any static electricity that may have built up in your body.

- When transporting a sensitive component, first place it in an antistatic container or packaging.

- Handle all sensitive components at an ESD workstation. If possible, use antistatic floor pads and workbench pads.

- Handle components and boards with care. Don't touch the components or contacts on a board. Hold a board by its edges or by its metal mounting bracket.

- Do not handle or store system boards near strong electrostatic, electromagnetic, magnetic, or radioactive fields.

Working with Batteries

Care and Handling Precautions for Lithium Batteries

Your computer board has a standard, non-rechargeable lithium battery. To preserve the battery's lifetime, the battery enable jumper has been removed for shipping.

- Do not short circuit
- Do not heat or incinerate
- Do not charge
- Do not deform or disassemble
- Do not apply solder directly
- Do not mix different types or partially used batteries together
- Always observe proper polarities

Replacing Lithium Batteries

Exercise caution while replacing lithium batteries!

WARNING



Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries, following manufacturer's instructions.



ATTENTION



Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabriquant.



ACHTUNG



Explosionsgefahr bei falschem Batteriewechsel. Verwenden Sie nur die empfohlenen Batterietypen des Herstellers. Entsorgen Sie die verbrauchten Batterien laut Gebrauchsanweisung des Herstellers.



ATENCION



Puede explotar si la pila no este bien reemplazada. Solo reemplazca la pila con tipas equivalentes segun las instrucciones del manifacturo. Vote las pilas usads segun las instrucciones del manifacturo.



Preface

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How to Use This Guide

This user's guide provides step-by-step instructions for installation and serves as a reference for operation, troubleshooting, and upgrades.

You can find the latest release of this User's Guide at:

ftp://ftp.kontron.ca/support/

For the circuits, descriptions and tables indicated, Kontron assumes no responsibility as far as patents or other rights of third parties are concerned.

The following is a summary of chapter contents:

- Chapter 1, Product Overview
- Chapter 2, Description of the System
- Chapter 3, Features of the System
- Chapter 4, Installation and Removal
- Chapter 5, Maintenance
- Chapter 6, Getting Help

Customer Comments

If you have any difficulties using this user's guide, discover an error, or just want to provide some feedback, please send us a message at Tech.Writer@ca.kontron.com. Detail any errors you find. We will correct the errors or problems as soon as possible and post the revised user's guide in our online Support Library. Thank 12you.

Advisory Conventions

Seven types of advisories are used throughout the user guides to provide helpful information or to alert you to the potential for hardware damage or personal injury. They are Note, Signal Paths, Related Jumpers, BIOS Settings, Software Usage, Cautions, and Warnings. The following is an example of each type of advisory. Use caution when servicing electrical components.



Note:
Indicates information that is important for you to know.



Signal Paths:
Indicates the places where you can find the signal on the board.



Related Jumpers:
Indicates the jumpers that are related to this sections.



BIOS Settings:
Indicates where you can set this option in the BIOS.



Software Usage:
Indicates how you can access this feature through software.



CAUTION

Indicates potential damage to hardware and tells you how to avoid the problem.





WARNING

Indicates the potential for bodily harm and tells you how to avoid the problem.



Disclaimer: We have tried to identify all situations that may pose a warning or a caution condition in this user's guide. However, Kontron does not claim to have covered all situations that might require the use of a Caution or a Warning.

Unpacking

Follow these recommendations while unpacking:

- Remove all items from the box. If any items listed on the purchase order are missing, notify Kontron customer service immediately.
- Inspect the product for damage. If there is damage, notify Kontron customer service immediately.
- Save the box and packing material for possible future shipment.

Powering Up the System

Before any installation or setup, ensure that the board is unplugged from power sources or subsystems.

If you encounter a problem, verify the following items:

- Make sure that all connectors are properly connected.
- Verify your boot devices.
- If the system does not start properly, try booting with only the video monitor connected to the board and without any other I/O peripherals attached, including Compact PCI or PMC adapters.

If you still cannot start your system, please refer to the Emergency Procedure in the Appendix Section of this User's Guide.

If you are still not able to get your board running, contact our Technical Support for assistance.

Make sure your system provides the minimum DC voltages required at the board's slot, especially if cables carry DC power.

Adapter Cables

Because adapter cables come from various manufacturers, pinouts can differ. The direct crimp design offered by Kontron allows the simplest cable assembly. All cables are available from Kontron.

Storing Boards

Electronic boards are sensitive devices. Do not handle or store device near strong electrostatic, electromagnetic, magnetic, or radioactive fields.

Regulatory Compliance Statements

This section provides the FCC compliance statement for Class B devices and describes how to keep the system CE compliant.

FCC Compliance Statement for Class B Devices

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 generated, 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 encourage 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 receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experience radio/TV technician for help.

WARNING



This is a Class B product. If not installed in a properly shielded enclosure and used in accordance with this User's Guide, this product may cause radio interference in which case users may need to take additional measures at their own expense. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this product.



UL Certification



This product bears the combined UL Recognized Component Mark for Canada and U.S. It indicates investigations to the UL Standard for Safety of Information Technology Equipment, Including Electrical Business Equipment. It is designated to be used in end-product equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

CE Certification



The product(s) described in this user's guide complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques. Although Kontron offers accessories, the customer must ensure that these products are installed with proper shielding to maintain CE compliance. Kontron does not offer engineering services for designing cabling systems. In addition, Kontron will not retest or recertify systems or components that have been reconfigured by customers.

Limited Warranty

Kontron Canada, Inc, ("The seller") warrants its boards to be free from defects in material and workmanship for a period of two (2) years commencing on the date of shipment. The liability of the seller shall be limited to replacing or repairing, at the seller's option, any defective units. Equipment or parts, which have been subject to abuse, misuse, accident, alteration, neglect, or unauthorized repair are not covered by this warranty. This warranty is in lieu of all other warranties expressed or implied.

1. Product Overview

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1.1 Introduction

The DreamSpeed, a 1U open platform is targeting the next-generation System Integrators and independent hardware/software vendors who supply dedicated Internet infrastructure solutions deployed in B2B e-commerce sites, portals, server farms, and ISP/ASP data centers. Providing a significantly faster time to market, the DreamSpeed can be configured into a customized turnkey solution that is dedicated to several Internet network applications including, among others, SSL acceleration, load balancing, Virtual Private Networks (VPNs), firewalls, caching, and Web and Application servers.

DreamSpeed features many innovations and design advantages that are simply more practical for network deployment. Size is the first consideration, as DreamSpeed is only 18" deep, which makes it an extremely easy fit in any 600 mm deep rack and, as for height, this 1U small form factor allows for up to 42 units to be stacked in one cabinet. The outcome is more power in a smaller work environment, which appropriately saves both valuable floor and rack space. Inside each unit are two convenient PCI expansion slots that offer the highest scalability in today's market. Each slot can be employed by any standard PCI hardware dedicated to nearly any imaginable Internet infrastructure application from firewalls and VPNs to load balancing and Web and Application servers.

At the heart of the DreamSpeed is an ultra high-performance SBC, the PCI-990. It is designed to accommodate the endless demands for a high performance engine in platforms used in the embedded datacom/telecom market. An ideal SBC for high performance Internet security and data center solutions, as well as mission-critical CTI and demanding embedded computing applications. Key Features for the PCI-990:

- Single/Dual Intel® Pentium® III processors at 1.26 GHz
- 133 MHz front-side bus
- 256/512K of L2 Cache
- Up to 4 GB of PC133 Registered SDRAM
- 64 bits backplane PCI bus
- Choice of dual Ethernet ports:
  10/100Base-TX or
  1000Base (T or S/LX) based on Intel® 82544 Ethernet controller with copper or optic type interface available (only with Kontron's custom-built mezzanine)
- Ultra160 SCSI LVDS/SE (optional)
- EIDE hard disk interface
- USB port
- Watchdog Timer
- Board and CPU temperature monitoring

The DS-1220 has an AC 300W power supply. The key to DreamSpeed's design is its front bezel access to one USB port, two 10/100 Base-TX Ethernet ports based on Intel 82559ER or 1000Base-T/ or S/LX based on Intel® 82544 Ethernet controller with copper or optic-type interface (available only with Kontron's custom-built mezzanine) and a 15-pin SVGA connector. That, for the end-user, translates into both fast and efficient cable maintenance. As an option, a front access serial port can be added on the second faceplate.

Six fans are used for the overall cooling system:

- 2 front fans provide positive pressure cooling, equipped with a removable and washable foam filter to protect the unit from dust and dirt particles.

- 2 are attached to an airflow channel provide an efficient cooling system dedicated to the SBC.

- 2 additionnal fans are located at the rear of the unit for exhaust.

Standard controls include reset switch, power ON LED, and one hard disk activity LED.

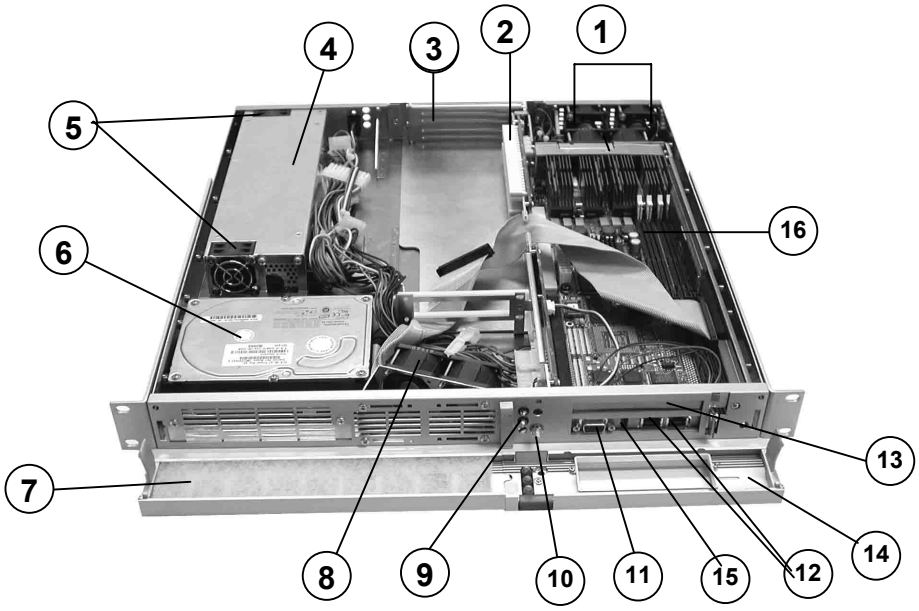
- With a focus on low cost of ownership, time-to-market and superior customer integration, the DreamSpeed is compatible with the following operating systems: MS-DOS 6.22, Microsoft Windows NT 4.0, Microsoft Windows 98 SE, Microsoft Windows XP Pro, Microsoft Windows 2000 Professional, Microsoft Windows 2000 Server, Linux Red Hat 8.0, QNX RTP 6.1.0, FreeBSD 4.4, Sun Solaris 8, OS/2 WARP 4.5 E-Buniness Server.

2. Description

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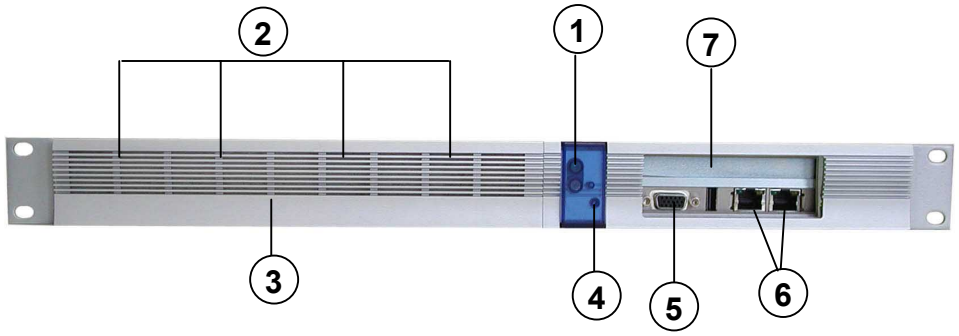
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2.1 DreamSpeed – 1U Open Platform



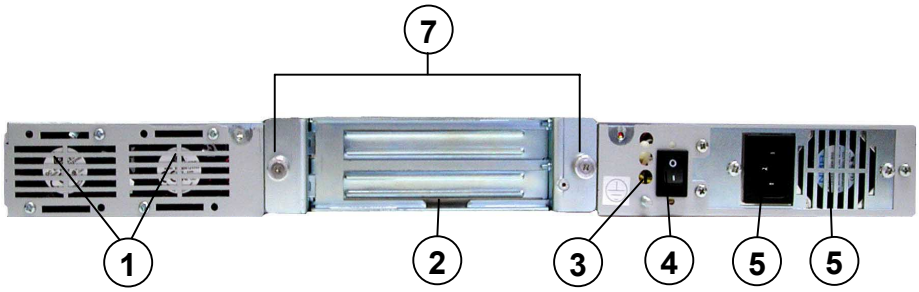
DreamSpeed			
1	Rear fans exhaust	9	Power On and HD activity LED
2	Butterfly backplane	10	Reset switch
3	Back panel docking slots	11	SVGA connector
4	Power supply	12	10/100 Base T/Tx Ethernet connectors or; Optionnal dual 1000 Mbits Ethernet ports.
5	Power supply fan, main AC power inlet, ground stud, Power On/Off switch	13	Optional faceplate for serial port.
6	Drive bay	14	Bezel
7	Filter	15	USB connector
8	Front positive pressure fans	16	SBC board

2.1.1 Front Panel



DreamSpeed			
1	Power On and HDD activity LED	**5**	SVGA connector
2	Fan / Filter assemblies / Air intake	**6**	10/100 Base T/Tx Ethernet connectors or; Optionnal dual 1000 Mbits Ethernet ports.
3	Bezel	**7**	Optional faceplate for serial port.
4	Reset switch		

2.1.2 Rear Panel



DreamSpeed			
1	Rear chassis fans	5	Main AC power inlet
2	Docking slots	6	Power supply fan
3	Ground stud	7	Captive-panel fasteners
4	Power On/Off switch		

2.2 Mechanical Specifications

DreamSpeed		
Dimensions	Height	1.75" (44 mm)
	Width	16.90" (430.2 mm)
	Depth	18" (457.2 mm)
Weight		19 lbs / 8.8 kg approx. (with power supply)
Enclosure		Cold roll steel (CRS) with zinc plating, Metallic / Sylver grey coating
PCI expansion slots		Two full-size (back panel)
Power On switch		Yes (back panel) - Remote On/Off (PS-ON)
Reset switch		Yes (front panel)
System power ON LED		Green (front panel)
Disk activity LED		Amber (front panel)
AC power inlet		Yes (rear panel)
Backplane		One PICMG CPU slot and two full-size rear PCI I/O slots
Conforms to PCI bus rev 2.1 & PICMG PCI/ISA rev 2.0 spec.		

2.3 Environmental Specifications

DreamSpeed		
Thermal Management		Six ball-bearing fans Power supply with exhaust fan, washable filter
Mounting Systems		Rackmount 19" Fixed mount (with ear-brackets) Benchtop (without ear-brackets and with 4 rubber feets)
Operating temperature / Humidity		0°C to +50°C / 5-90% @ 40°C (32° to 113°F / 5-90% @ 104°F)
Storage/Transit Temperature / Humidity		-40°C to +70°C / 0-95% @ 40°C (-40° to 158°F / 0-95% @ 104°F)
Operating altitude		10,000ft (3,048m)
Storage/Transit altitude		30,000ft (9,144m)
Shock	Operating	15G max. at 11ms duration, 3 axis both directions
	Storage	30G max. at 11 ms duration, 3 axis both directions
Vibration	Operating	10-58Hz (+/-0.075mm), 58-500Hz 1.0G , 3 axis
	Storage	10-58Hz (+/-0.15mm), 58-500HZ 2.0G, 3 axis
Acoustic Noise		< 55 dB at 1m in front of the system at full load

2.4 Electrical Specifications

DreamSpeed	
Power Supply	ATX 300 W-AC (with PFC): +5V/30A, +12V/15A, -12V/0.8A, +3.3V/30A, +5VSB/2A
Input Voltage	100-240VAC Nominal, 5A/2.5A Auto-switching, 50-60Hz
M.T.B.F. (Power Supply)	>110,000 hours

2.5 Regulation Specifications

DreamSpeed		
Safety	U.S.	UL 1950
	Canada	CSA C22.2 No. 950
	Europe	CE Mark EN60950
EMC		Designed to meet or exceed the following :
	U.S.	FCC 47 CFR Part 15, Class B
	Canada	ICES-003 Class B
	Europe	CISPR22; CE Mark to EN55022 Class B,EN61000-3-2, EN61000-3-3/ EN55024

3. Features

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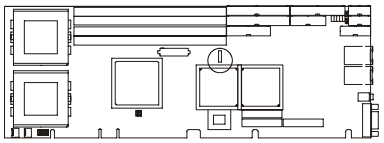
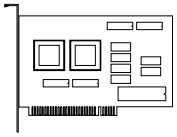
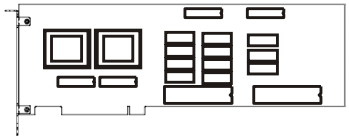
3.1 Backplane

The backplane's features are summarized below:



Butterfly Backplane	Specifications
Number of Slots	Three: One PICMG CPU slot and two full-size PCI slots.
Mounting Holes	Seven.
Power Connectors	One 20-pin ATX power connector: 5A max. per pin for +5V, -5V, +12V, and -12V power rails. Ground and Power Good signals.
Dimensions	404 mm (15.90 inches) x 36 mm (1.42 inches).

3.2 Peripheral Boards

Form Factor	Board Types
	**Full-size SBC** On the backplane, the SBC must be installed into the dedicated system slot (combination of PCI and ISA slots).
	**Half-size PCI Peripheral Board** 174.63 mm (6.875”) x 106.68 mm (4.20”) PCI peripheral boards are supported on PICMG backplanes only. PCI peripheral boards differ from the ISA boards in the fact that when facing the component side; the mounting bracket is located at the left side of the board. The mounting method remains the same.
	**Full-size PCI Peripheral Board** 312 mm (12.28”) x 106.68 mm (4.20”) Same as a half-size PCI board, it is supported on PICMG backplanes only.

WARNING



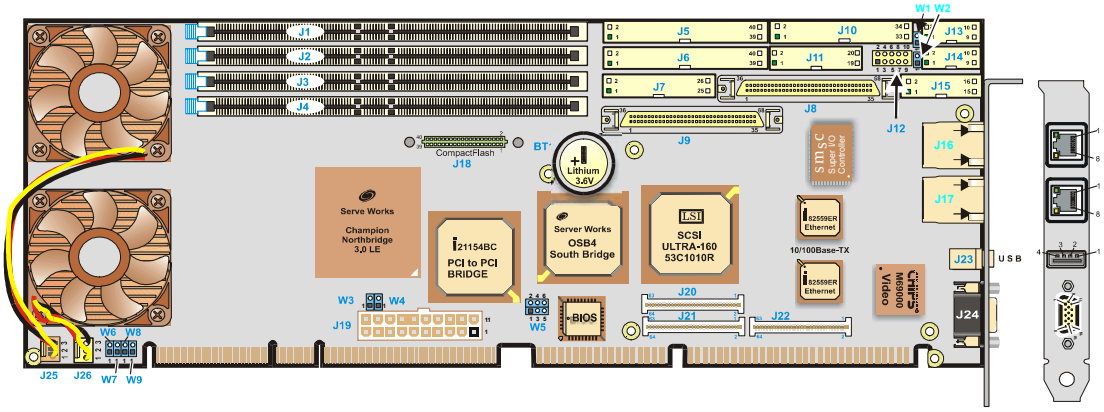
The safety of the system must be re-evaluated by qualified personnel when adding boards or other components that were not part of the delivered configuration.

When populating the backplane with peripheral boards, ensure that the power consumption, on each expansion slot, does not exceed 20 Watts. Exceeding this power level will require a thermal evaluation of the specific configuration and may require safety re-evaluation.



3.2.1 SBC Board

The unit can be equipped with the following SBC board.



PCI-990 Technical Specifications in regards to the DS1310	
Features	**Description**
CPU	▸ PCI-990 : Dual Pentium III processor (FC-PGA2) at 1.26GHz
Cache	▸ 16K/16K Instruction / Data CPU-internal Level 1 ▸ 256/512KB 64-bit wide on-die Level 2 Advanced Transfer Cache
Chipset	▸ Serverworks ServerSet III LE chipset (CNB30LE north bridge & OSB4 south bridge)
Bus Interfaces	▸ Front side bus at 133MHz ▸ PCI Bus (External 64 bit, Internal 64bit/66MHz for Gigabit, SCSI and PCI bridge, Internal 32 bit for Fast Ethernet South bridge and Video)
Memory	▸ Four 184-pin latching DIMM sockets, 64/72-bit ▸ Up to 4 GB of PC-133 Registered SDRAM, non-ECC/ECC mode (single bit error correction, multiple bit detection via Serverworks ServerSet III LE); all 4 GB cacheable (per CPU)
Data Path	▸ 64-bit on CPU; 32-bit and 64-bit on PCI busses.
Interrupts	▸ 11 edge/level sensitive and software configurable ▸ 4 PCI level sensitive, configurable to any interrupt vector for PnP compatibility (DOS mode)
Flash Memory	▸ 512KB field upgrade BIOS ▸ 32Kb user serial EEPROM

I/O	▸ SMSC LPC37B787 super I/O ▸ USB Ports : One, (USB 1.1 compliant) ▸ Serial Ports: One RS-232 COM1 or COM2 ▸ Hard Disk : PCI EIDE Ultra DMA/33, support for one IDE drive in a master/slave configuration, PIO Mode4, Bus Master IDE or synchronous DMA mode transfers up to 33MB/s ▸ SCSI Ultra160 SCSI LVDS/SE (optional) ▸ Ethernet: • Two Ethernet, PCI 10/100Base-TX ports Intel 82559ER controllers) or • Two Intel 82544GC Gigabit Ethernet (two RJ-45 for copper; two MT-RJ SX duplex transceiver for fiber), available on mezzanine only
Video	▸ PCI video controller (Intel 69000) with 2MB on chip video memory ▸ Supports CRT with resolution up to 1600 x 1200
Clock/Calendar	▸ Real-time clock with 256 bytes of battery backup CMOS RAM
Connectors	**I/O bracket** (mounted connectors) ▸ Video (female DB-15) ▸ Ethernet: • Fast Ethernet (two RJ-45 with embedded link/activity LED's) or • Gigabit Ethernet (two RJ-45 for copper; two MT-RJ SX duplex transceiver for fiber) with link activity indicators ▸ USB: Standard USB connector
BIOS Features	▸ Phoenix BIOS in Flash with recovery code. ▸ Save CMOS in Flash option and Boot from LAN capability. ▸ Setup console redirection to serial port (VT100 mode) with CMOS setup access ▸ All onboard peripherals can be enabled or disabled by software ▸ Diskless, keyboardless, and videoless operation extensions ▸ System, video and LAN BIOS shadowing ▸ Advanced security feature for HDD; DMI & HDD S.M.A.R.T. support ▸ Advanced Configuration and Power Interface (ACPI 1.0), Intelligent System Monitoring (Advanced thermal management such as resume, overheat alarm and auto slow down)
Supervisory	▸ **Software monitor** • One-stage software programmable watchdog timer, time out from 16 msec to 4.5 min • Silicon Serial ID TAG for unique board identification accessible via software ▸ **Hardware system monitor** • Power failure detector • Low battery voltage detector • CPU temperature sensor / thermal management • Board temperature sensor • 12V, 5V, 3.3Vand Vcore voltage supervisor

<table>
<tr><td>OS Compatibility</td><td>

MS-DOS 6.22
Microsoft Windows NT 4.0
Microsoft Windows 98 SE
Microsoft Windows XP Pro
Microsoft Windows 2000
Linux Red Hat 8.0
QNX RTP 6.1.0
FreeBSD 4.4

</td></tr>
<tr><td>PICMG compliance</td><td>

Mechanical
PICMG 1.0 Rev. 2.0

</td></tr>
<tr><td>Mechanical</td><td>

338 x 122 x 40 mm / 13.33 x 4.80 x 1.85 in. at CPU / fan
Conforms to IEEE P996 PC/AT bus, PCI Rev. 2.1, and PICMG 1.0 Rev. 2.0 specifications

</td></tr>
<tr><td>Power Requirements</td><td>

Supply Voltage Vcc : +3.3V ±5%, +5V ±5%, +12V ±5%
Current dissipation

ICC typ.* +5V: 11.4A / ICC max.* +5V: 12.2A
ICC typ.* +3.3V: 6.6A

Power Dissipation : 57W/5V + 22W/3.3V = 79W Typ.

* Measured with dual CPU, video, 2 x Gigabit Ethernet, 512MB RSDRAM, keyboard and hard disk
</td></tr>
<tr><td>Environmental</td><td>
<table>
<tr><th></th><th>Operating</th><th>Storage and Transit</th></tr>
<tr><td>Temperature</td><td>0-50°C/32-122°F
(w/100LFM airflow)</td><td>-40 to +70°C/-40° to 158°F</td></tr>
<tr><td>Humidity</td><td>5% to 90% @ 40°C/104°F
non-condensing</td><td>5% to 95% @ 40°C/104°F
non-condensing</td></tr>
<tr><td>Altitude</td><td>4,000m / 13,123 ft</td><td>15,000m / 49,212 ft</td></tr>
<tr><td>Shock</td><td>15G, each axis</td><td>30G</td></tr>
<tr><td>Vibration</td><td>1G, each axis 2G</td><td></td></tr>
</table>
</td></tr>
<tr><td>Identification</td><td>Unique silicon serial number accessible via software</td></tr>
<tr><td>Protection</td><td>USB voltage protected by self-resetting fuses</td></tr>
<tr><td>Warranty</td><td>2 year limited warranty</td></tr>
<tr><td>Safety</td><td>

Designed to meet or exceed UL 1950; CSA C22.2 No 950; EN 60950; IEC950

</td></tr>
<tr><td>EMI/EMC</td><td>

FCC 47 CFR Part 15/CISPR22, Class B; CE Mark to EN55022/EN55024

</td></tr>
</table>



Note:
Refer to the PCI-990 Technical Reference Manual for a complete description of the board.

4. Installation and Removal

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4.2 Cover removal 4-2
4.3 Disconnecting the cables 4-3
4.4 Cardcage removal 4-3
4.5 Power Supply 4-13
4.6 Drive Bay 4-14
4.7 Fan Filter Assembly 4-15
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4.9 Power Cord Connection 4-17

4.1 Accessing Internal Components

This section contains important information that you must read before accessing the internal components. You must follow these procedures properly when installing, removing or handling any boards.

4.1.1 Electronic Discharge (ESD)

A sudden discharge of electrostatic electricity can destroy static-sensitive systems or micro-circuitry. Proper packaging and grounding techniques are necessary precautions to prevent damage. Always take the following precautions:

1. Transport boards in static-safe containers such as boxes or bags.
2. Keep electrostatic sensitive parts in their containers until they arrive at static-free stations.
3. Always be properly grounded when touching a sensitive board, component, or assembly.
4. Store electrostatic-sensitive boards in protective packaging or on conductive foam.

4.1.2 Grounding Methods

Guard against electrostatic damage at workstations by following these steps:

1. Cover workstations with approved anti-static material. Provide a wrist strap connected to a work surface and properly grounded tools and equipment.
2. Use anti-static mats, heel straps, or air ionizers to give added protection.
3. Handle electrostatic-sensitive components, boards, and assemblies by the case or the PCB edge.
4. Avoid contact with pins, leads, or circuitry.
5. Turn off power and input signals before inserting and removing connectors or test equipment.
6. Keep work area free of non-conductive materials such as ordinary plastic assembly aids and styrofoam.
7. Use field service tools, such as cutters, screwdrivers, and vacuums that are conductive.
8. Always place drives and boards PCB-assembly-side down on the foam.

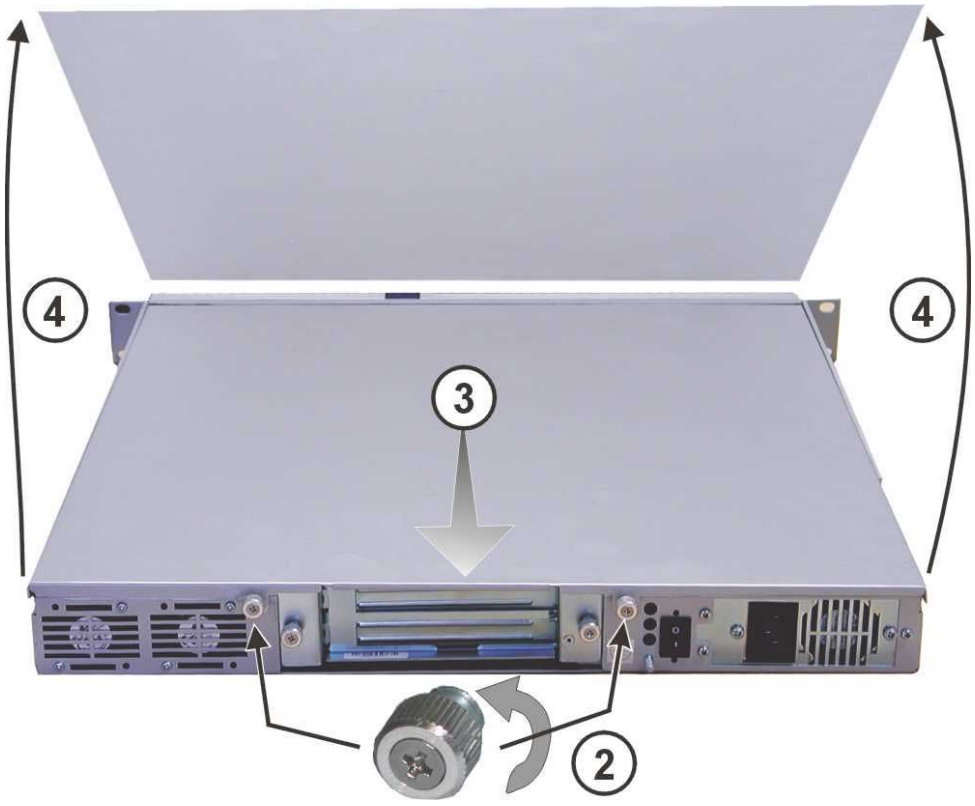
4.1.3 Tools Requirements

To properly complete the procedures of this section, you must have the following equipment:

1. Philips screwdriver (4 mm tip size or similar).

4.2 Cover removal

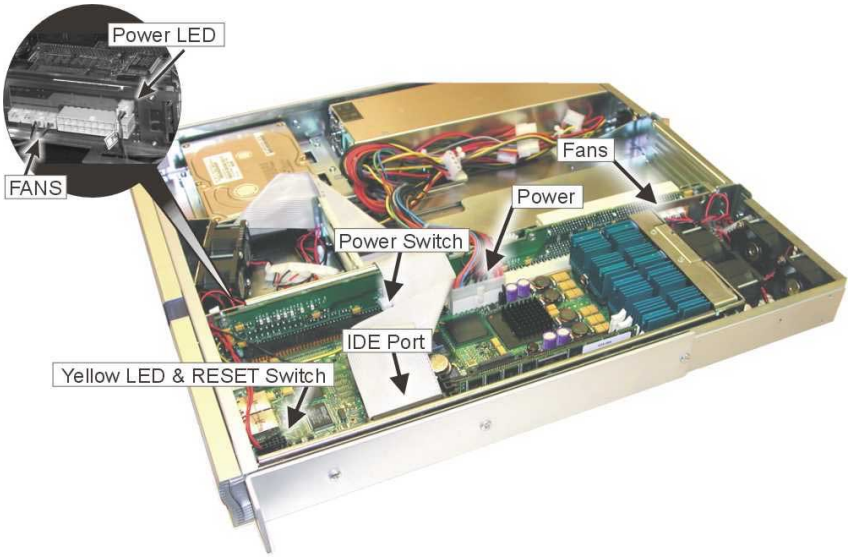
The backplane and all peripheral boards are secured to the system inside a cardcage. To access these boards, you need to remove the top cover as follows:



1. Power off the system and disconnect the power cable.
2. Unscrew the two captive-panel fasteners located at the back of the system.
3. Pull back the top cover.
4. Lift the back of the cover and pull it out.
5. Refer to the following sections for instructions on how to remove the backplane and peripheral boards.

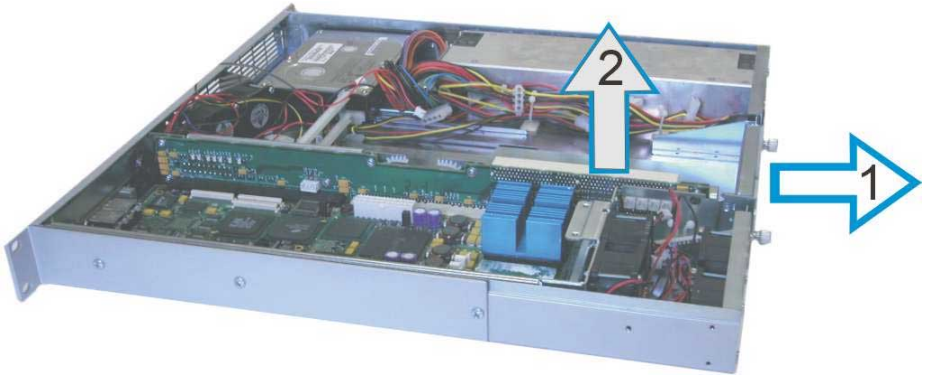
4.3 Disconnecting the cables

1. Disconnect all cables from the backplane.

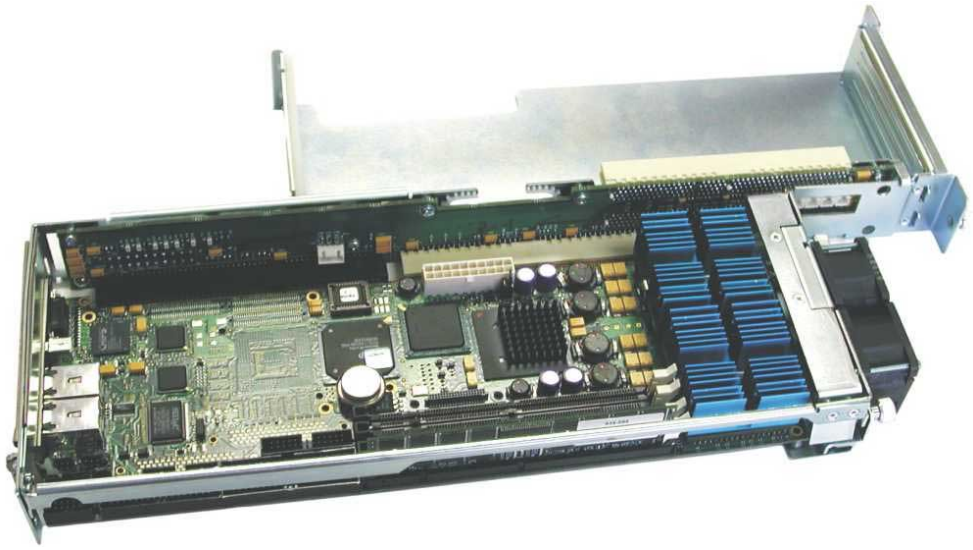


4.4 Cardcage removal

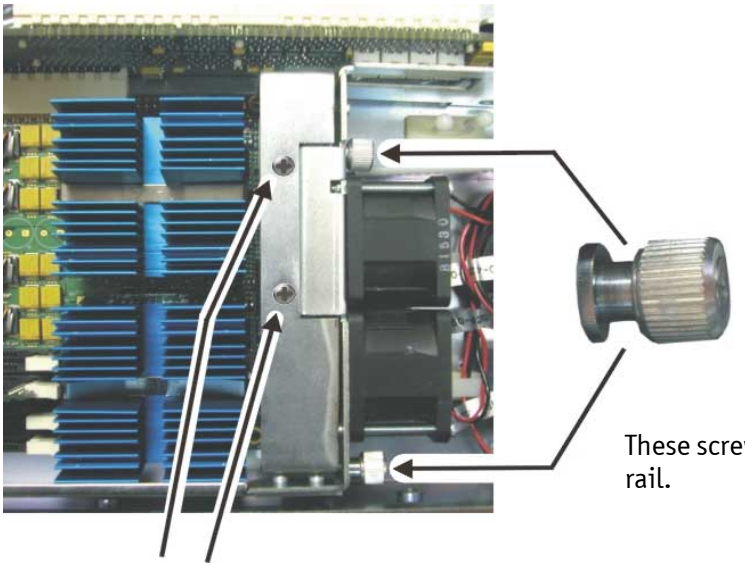
1. Slide the board cardcage in the direction of arrow #1 and;
2. Pull up the board cardcage in the direction of arrow #2.



3. Cardcage assembly

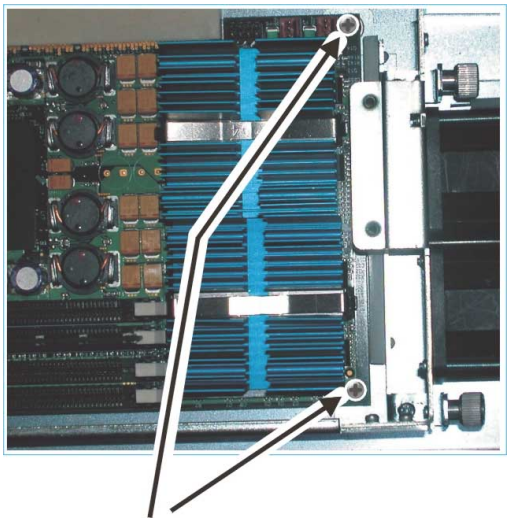


4. Unscrew the two captive fasteners located on each side of the fans.
5. Remove the two screws located on top of the airflow plate.



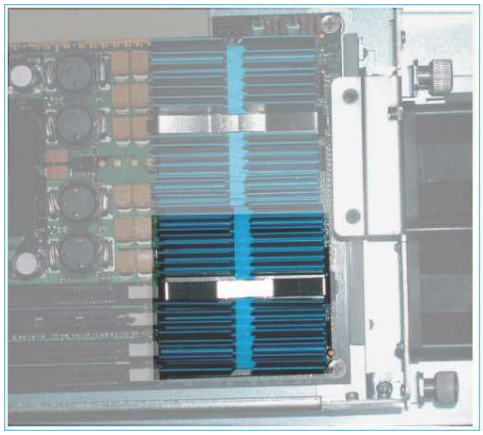
These screws retain the SBC guide rail.

6. Remove the two screws located at the right end of the SBC.



These screws retain the SBC board

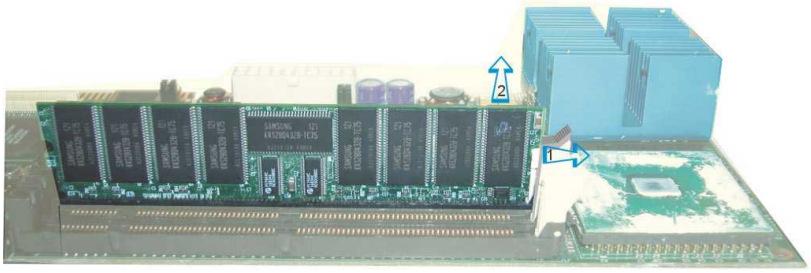
7. Remove the CPU heatsink located nearest the RDRAM (lower right corner).



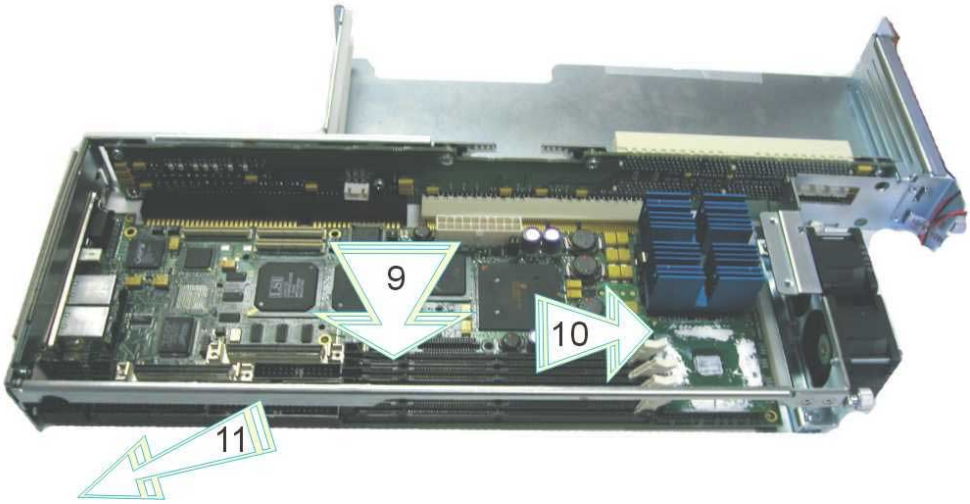


Note:
Take note of the airflow direction. The heatsink must be replaced in the same direction as illustrated above in order to allow the airflow to circulate easily.

8. Remove the RDRAM module(s).



9. Push the board toward the fans. This will free the faceplate from the front panel.
10. Remove the board from the cardcage by pulling it down and out.



11. Gently slide the board out of the edge connectors.

WARNING

The safety of the system must be re-evaluated by qualified personnel when adding components that were not part of the delivered configuration.

4.4.1 System's Connectors and Pinouts



J5	Power On connector	J12 – J15	Fan connectors
J6, J7	PICMG slots	J11	ATX power connector
J1 – J4	Fan connectors	J9	Power LED connector
J8, J10	64 bits PCI slots		

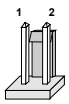
4.4.1.1 ATX Power Connector (J5)

Signal	Pin		Pin	Signal
VCC3	11	11 1	1	VCC3
-12V	12		2	VCC3
GND	13		3	GND
PS_ON#	14		4	VCC
GND	15		5	GND
GND	16		6	VCC
GND	17		7	GND
N.C.	18		8	PWROK
VCC	19	20 10	9	5VSB
VCC	20		10	+12V

 # Active Low Signal

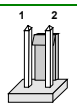
4.4.1.2 Fan connectors (J1-J4, J12-J15)

Pin #	Signal name
1	Ground
2	+12V



4.4.1.3 Power On Led (J9)

Pin #	Signal name
1	+5V
2	Ground



4.4.1.4 Power On/Off connector (J5)

Pin #	Signal name
1	PWR-OK
2	+5VSB



Pin #	Signal name
3	PS-ON
4	Ground



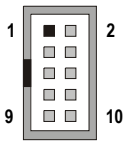
Related Jumpers:
For AT mode support, install a jumper between pin 3 & 4.

4.4.2 SBC description

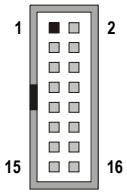
The following connectors and pinouts refer to a unit equipped with the SBC **PCI-990**.

Connector	System Specific I-O's Description
J1-4	DIMM Memory
J5	EIDE Primary
J6	Refer to PCI990 manual.
J7	Refer to PCI990 manual.
J8	Refer to PCI990 manual.
J9	SCSI LVD Channel A
J10	Refer to PCI990 manual.
J11	Hardware Monitor
J12	Refer to PCI990 manual.
J13	Communication Ports COM 1
J14	Refer to PCI990 manual.
J15	Multi-fonction.
J16	Ethernet 10Base-T/100Base-TX – LAN1
J17	Ethernet 10Base-T/100Base-TX – LAN0
J18	CompactFlash disk
J19	Refer to PCI990 manual.
J20-22	Refer to PCI990 manual.
J23	USB Port (faceplate)
J24	CRT VGA Interface
J25	CPU Fan 1
J26	CPU Fan 0

4.4.2.1 Communication Ports COM 1 (J13)

Signal	Pin		Pin	Signal
DCD	1		2	DSR
RXD	3		4	RTS
TXD	5		6	CTS
DTR	7		8	RI
GND	9		10	N.C.

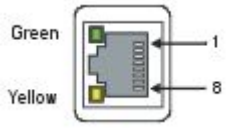
4.4.2.2 Multi-Function Connector (J15)

Signal	Pin		Pin	Signal
KB:CLK	1		2	GND
KB:DATA	3		4	GND
VCC	5		6	VCC
SPEAKER	7		8	VCC
MOUSE:CLK	9		10	GND
MOUSE:DATA	11		12	GND
PBRES#	13		14	GND
IDE:ACT#	15		16	VCC

Active Low Signal

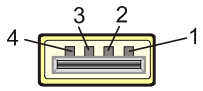
4.4.2.3 Ethernet lan1, lan0(J16, J17)

Signal	Pin		Signal	Pin
TX+	1		N.C.	5
TX-	2		RX-	6
RX+	3		N.C.	7
N.C.	4		N.C.	8



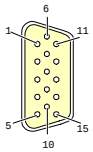
4.4.2.4 USB Connector (J23)

Signal	Pin
VCC	1
DATA-	2
DATA+	3
GND	4

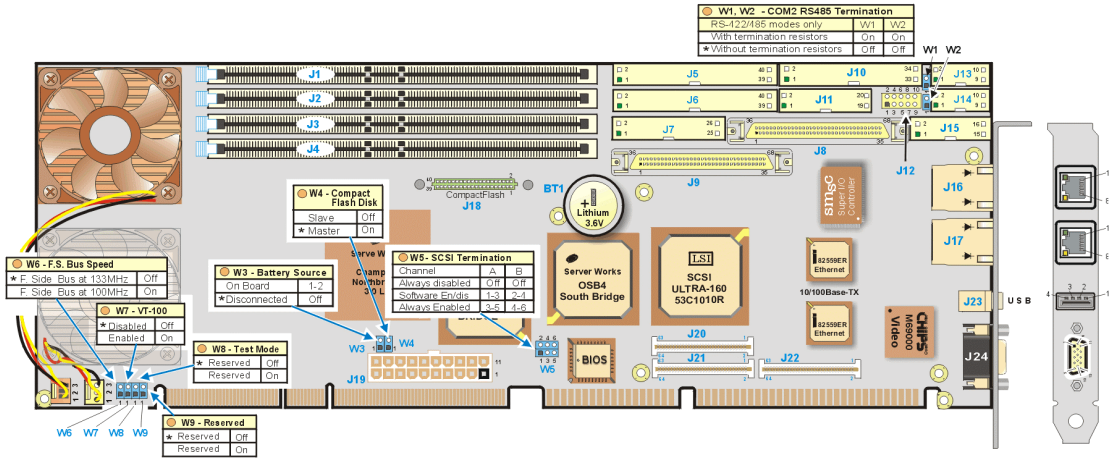


4.4.2.5 CRT VGA Interface Connector (J24)

Signal		Signal		Signal	
RED	1	Analog GND	6	N.C.	11
GREEN	2	Analog GND	7	SDATA	12
BLUE	3	Analog GND	8	HSYNC	13
N.C.	4	N.C.	9	VSYNC	14
GND	5	GND	10	SCLK	15



4.4.3 SBC Board Jumpers



4.4.4 System Software Upgrade Procedure

4.4.4.1 Single System Software Update

Primarily, for single system update, it is recommended to temporary add an additional hard drive in the unit that will contain the software to update, first:

1. Power off the system and disconnect the power cable.
2. Remove the cover of the system by unscrewing the two captive-panel fasteners located at the back of the system. Lift the back of the cover and pull it out.
3. Connect the source hard rive to the IDE and POWER connectors.
4. Set the hard drive source as Primary Master. If you are using a bootable CD-ROM, then ensure that CMOS settings reflect this option under "BIOS Settings / Boot Sequence", where the boot sequence may be set as "CDROM,A,C".
5. You can boot from the source device (HD or CD-ROM) and then proceed with a new installation on the destination drive, either on the local CompactFlash or on the local hard drive.
6. If you have a binary image of the installation, you can also upgrade the local drive using Ghost (DOS based application) or DD (Unix based application).

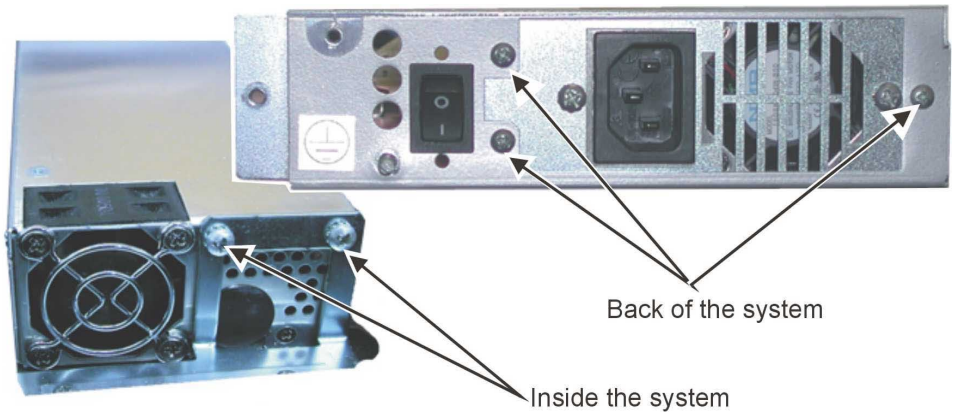
4.4.4.2 Boot from LAN Support Using Linux TFTP Server for Remote Image Update

Consult the “Linux Remote-Boot mini HOW TO” located on your installation CD-ROM or from your local drive.

4.5 Power Supply

The system is equipped with an AC 300W ATX power supply (with PFC).

To remove the power supply, follow these steps:



1. Power off the system and disconnect the power cable.
2. Remove the cover of the system by unscrewing the two captive-panel fasteners located at the back of the system. Lift the back of the cover and pull it out.
3. Disconnect all power supply cables.
4. Remove the three screws (6-32x1/4) located at the back of the system and the two screws located at the other end of the power supply (inside the system).
5. Slide out the power supply from its location and pull it out.

Note:
For approved replacement parts (i.e., Memory, CompactFlash, Hard Disk Drives, Power Supplies, Cables) please contact our Technical Support Dept. for more assistance.

4.6 Drive Bay

The hard drive unit is mounted onto a drive bay to simplify installation and maintenance operations.

To remove the panel:

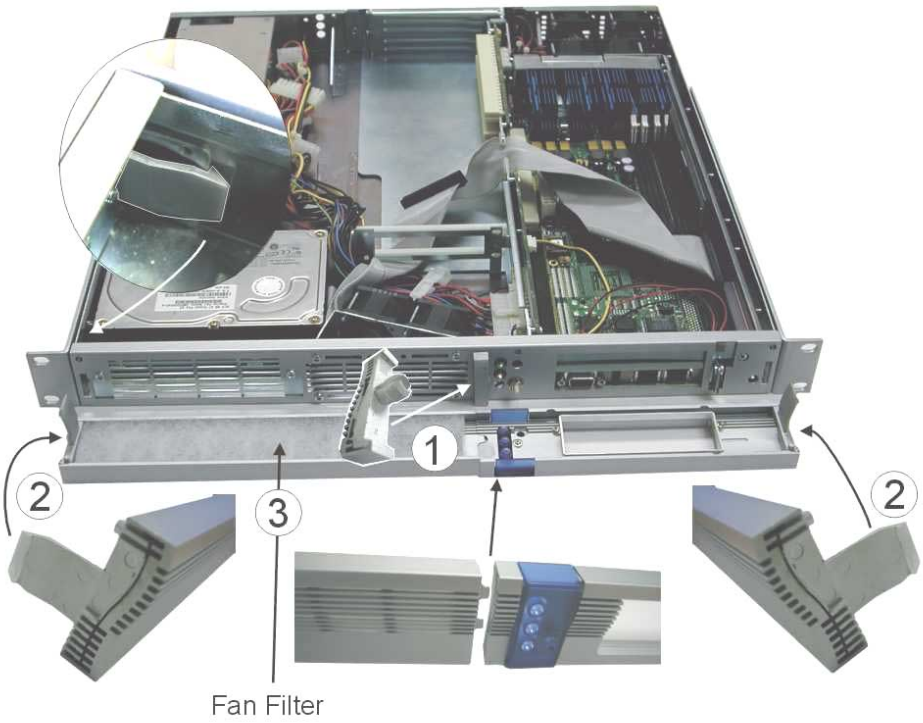
1. Power off the system and disconnect the power cable.
2. Remove the cover of the system by unscrewing the two captive-panel fasteners located at the back of the system. Lift the back of the cover and pull it out.



3. Unscrew the four screws retaining the drive carrier (see above illustration).

4.7 Fan Filter Assembly

The unit contains six fan assemblies for optimum cooling.



To remove the filter located at the front of the system, proceed as follows:

1. Squeeze the plastic peg and push outward of its location.
2. Remove the bezel by pressing the two side latches inward.
3. Pull out the filter from its location.

4.8 Rackmount / Benchtop Options

The DreamSpeed is built with flexibility in mind; it is available in rackmount, sliding rails, and benchtop versions.

If the system is to be used within a rack, follow these steps to install the ear-brackets:



1. To install the ear-brackets, position the ear-brackets directly over the appropriate mounting holes.
2. Install the six screws (M4x6) on the ear-brackets and secure them to the system.

If the system is to be used as a benchtop unit, follow these steps to install the rubber feet:

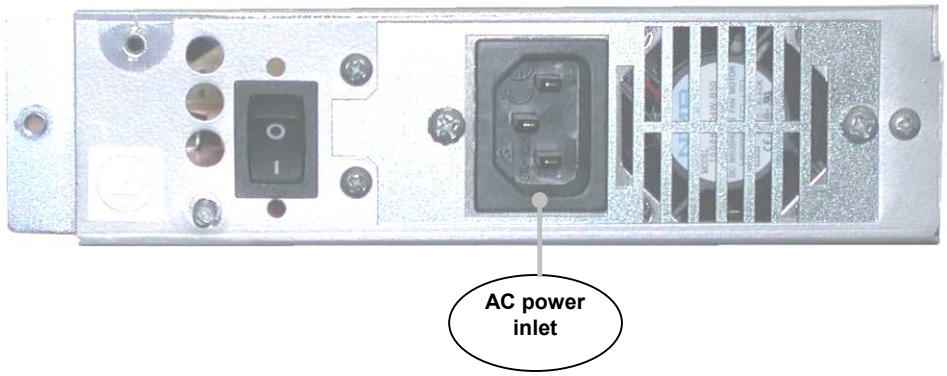


1. First, make sure that all boards are secured in the unit and that the cover of the system is installed and secured.
2. Turn the system upside down.
3. Make sure the surface is free from dust by cleaning each area where the rubber feet will be secured.
4. Position the four rubber feet onto the system.
5. Insert one screw (M3x6) inside each rubber foot and secure them to the system.

4.9 Power Cord Connection

To connect the power cord, follow these steps:

1. Connect the AC power cord into the system inlet.
2. Connect the AC power cord into a wall outlet.



WARNING

Do not remove or alter the grounding prong on the power cord. In situations where a two-slot receptacle is present at the wall power outlet, have it replaced with a properly grounded three-prong grounding type receptacle to ensure proper grounding continuity to the chassis inlet.

5. Maintenance

Contents

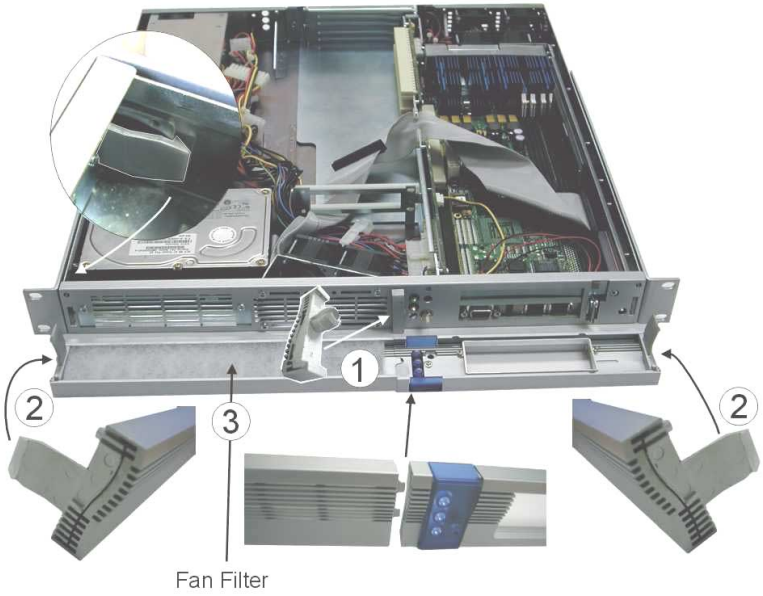
5.1 Maintenance And Prevention.....5-1
5.2 Fan Filter Cleaning.....5-1
5.3 Ground Stud.....5-2

5.1 Maintenance And Prevention

The DreamSpeed system requires minimal maintenance and care to keep it operating properly. After the installation is complete, proper system maintenance by the operator is important to keep it functioning normally. Regularly clean the filters and removable-media systems.

5.2 Fan Filter Cleaning

It is recommended that the filter be cleaned at least once every three months. If the system's operational environment is extremely dusty, clean the filter more often. The filter can be easily cleaned by vacuuming or washing with mild soap, detergent, or cleaning solvent.

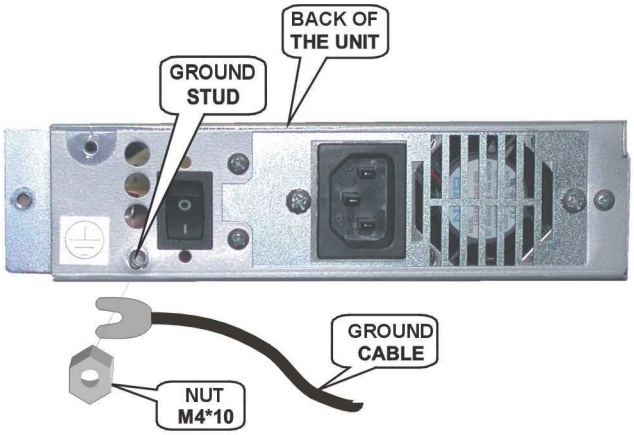


To remove the filter located at the front of the system, proceed as follows:

4. Squeeze the plastic peg and push outward of its location.
5. Remove the bezel by pressing the two side latches inward.
6. Pull out the filter from its location.

5.3 Ground Stud

In order to insure proper grounding, it is recommended to verify that the ground cable is appropriately secured to the ground stud. Therefore, tighten the nut, without overstressing it, every time you service the unit.



6. Getting Help

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6.1 Getting Help 6-1
6.2 Returning Defective Merchandise 6-2

6.1 Getting Help

We take pride in our customer's success. We strongly believe in providing full support at all stages of your product development.

If at any time you encounter difficulties with your application or with this product, we are ready to assist you. Should you need guidance on system setups and capabilities, please contact our Technical Support department at:

CANADIAN HEADQUARTERS

TEL: (450) 437 5682
FAX: (450) 437-8053

If you have any questions about our products and services, you may reach us at the aforementioned numbers above or by writing to:

Kontron Inc.
616 Curé Boivin
Boisbriand, Québec
J7G 2A7 Canada

6.2 Returning Defective Merchandise

Before returning any merchandise please do the following if your product malfunctions:

1. Call our **Technical Support** department in Canada at **(450) 437-5682**. Make sure you have the following on hand: **our Invoice #,** your **Purchase Order #,** and the **Serial Number** of the defective unit.

2. Provide the serial number found on the back of the unit and explain the nature of your problem to a service technician.

3. The technician will instruct you on the return procedure if the problem cannot be solved over the telephone.

4. Make sure that you receive an **RMA #** from **our Technical Support** before returning any merchandise. Clearly write or mark this number on the outside of the package you are returning. Please follow these instructions on how to request an RMA number:

   i) Make a copy of the request form on the following page

   ii) Fill it out and fax it to us.

5. Include the name and telephone number of a person whom we can contact for further explanations if necessary when returning goods. **Where applicable, always include all duty papers and invoice(s) associated with the item(s) in question.**

6. When returning a unit.

   i) Ensure that the unit is properly packed. Pack it in a rigid cardboard box.

   ii) Ship prepaid. We take care of insuring incoming units.

Kontron Inc.
616 Curé Boivin
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J7G 2A7 Canada



Return to Manufacturer Authorization Request

Contact Name:	_____		
Company Name:	_____		
Street Address:	_____		
City:	_____	Province/State:	_____
Country:	_____	Postal/Zip Code:	_____
Phone Number:	_____	Extension:	_____
Fax Number:	_____	E-Mail:	_____

Serial Number	Failure or Problem Description	P.O. # (if not under warranty)

Kontron Canada, Inc., 616 Curé Boivin, Boisbriand, Québec, Canada, J7G 2A7

Fax this form to Kontron's Technical Support department in Canada at (450) 437-8053