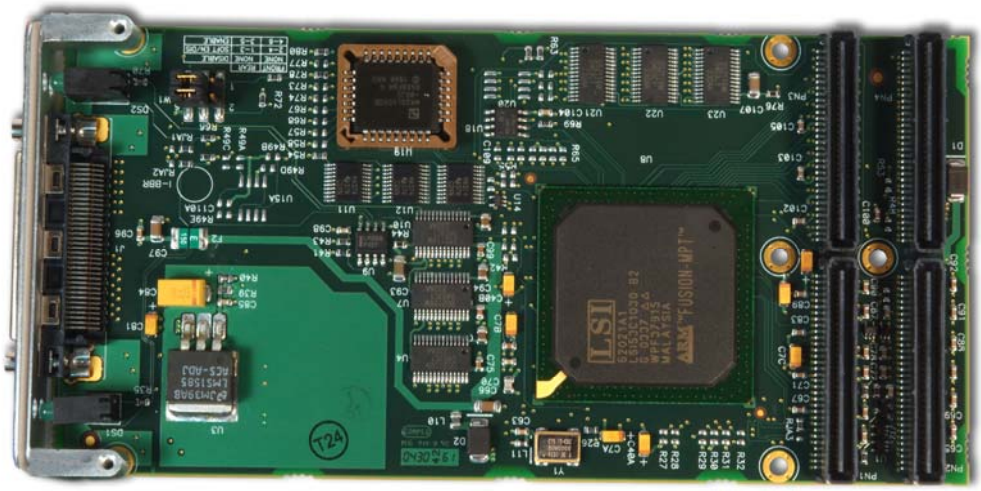
PMC261 User's Guide

Ultra SCSI 160/320 mezzanine

Document Revision 1.0.1



kontron
... always a Jump ahead!

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Safety Instructions

Contents

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 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.

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 systemboard 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, nonrechargeable lithium battery.

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

Contents

How to Use This Guide

This user's guide is designed to be used as step-by-step instructions for installation, and as a reference for operation, troubleshooting, and upgrades.

You can find the latest release of this User's Guide at:
http://www.kontron.com or 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 Description
- Chapter 2, Onboard Features
- Chapter 3, Installing the board
- Chapter 4, Software Setup
- Appendix A, Connector Pinout
- Appendix B, 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 a message to: 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 Web site. Thank you.

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 :
Indicate information that is important for you to know

Signal Paths:
Indicate the places where you can fin the signal on the board

Related Jumpers:
Indicate the jumpers that are related to this sections

BIOS Settings :
Indicate where you can set this option in the BIOS

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

CAUTION

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

WARNING

Indicates 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.
- Make sure the BIOS has at least 32K of continuous space to execute.
- If the system does not start properly, try booting without any other I/O peripherals attached, including Compact PCI or PMC adapters.

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

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

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 Sales Department.

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 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 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.

Safety Certification

All Kontron equipment meets or exceeds safety requirements based on the IEC/EN/UL/CSA 60950-1 family of standards entitled, “Safety of information technology equipment.” All components are chosen to reduce fire hazards and provide insulation and protection where necessary. Testing and reports when required are performed under the international IECEE CB Scheme. Please consult the "Kontron Safety Conformity Policy Guide" for more information.

CE Certification

CE The product(s) described in this user’s guide complies with all applicable European Union (CE) directives if it has a CE marking. The CE declaration of conformity is provided on the last page of this user’s guide. 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 Description

Contents

1.1 Product Overview

Flexibility

With three possible options for accessing SCSI signals (externally on the PMC or the RTM faceplates, or internally with a connector on the RTM), the choice of a storage subsystem architecture is limitless. Whether the drives are internal or external to the chassis, the PMC261 can accommodate the required configuration. Additionally, when used with Kontron's cPCI-DT64 CPU board (dual slot version), it can be stacked with another mezzanine to allow the use of another PMC.

Performance

Ultra160 SCSI used on a 64-bit/66MHz PCI or Ultra 320 SCSI used on a 64-bit/133MHz PCI-X bus allows for building high throughput, well balanced, storage solutions. The Low Voltage Differential signaling allows less system design constraints. An onboard BIOS comes with a built-in SCSI configuration utility as well.

Reliability

With an MTBF of 1,000,000hrs combined with Kontron's reputation of high quality, the PMC261 can be relied upon for critical applications in the communications, medical, military, aerospace and industrial automation fields.

1.2 What's Included

This board is shipped with the following items:

1. One Quick Reference Sheet.
2. One CD-ROM containing drivers.
3. One PMC261 board
4. Cables that have been ordered

If any item is missing or damaged, contact the supplier.

1.3 Board Specifications

FEATURES	DESCRIPTION
PCI Interface	- Ultra 160, up to PCI 64 bit/66MHz; Ultra 320, up to PCI-X64-bit/133MHz - 3.3V or 5V I/O compatible - Option to stack a mezzanine over the PMC to bring the PCI signals up to a second PMC (only on a dual slot cPCI-DT64 board)
SCSI Interface	- Ultra 160 LSI 53C1010R SCSI chip / Ultra 320 LSI 53C1030 SCSI chip - Dual channel: 1) 68 pins VHDCI SCSI connector on faceplate 2) Rear access (cPCI J4), Rear I/O module - Low Voltage Differential (LVD) or Single Ended (SE) signaling - LVD and Activity LED's for Rear and Front channels - 4MB Flash memory (BIOS)
OS Compatibility	Windows®2000, Windows®XP, Windows®2003, Linux
Compliancy	- PMC P1386.1 V2.4 with 64-bit/Up to 133MHz PCI-X bus.
Mechanical	- 5.86" x 2.91" (149 x 74 mm), Standard PMC board - Weight: 90g
Power Requirements	- Supply Voltage Vcc = +3.3V ±5%, +5V ±5% - ICC max: +3.3V 2.8A - ICC max: + 5V 0.2A * * Based on power consumption from onboard termination only
BIOS size	30 720 bytes

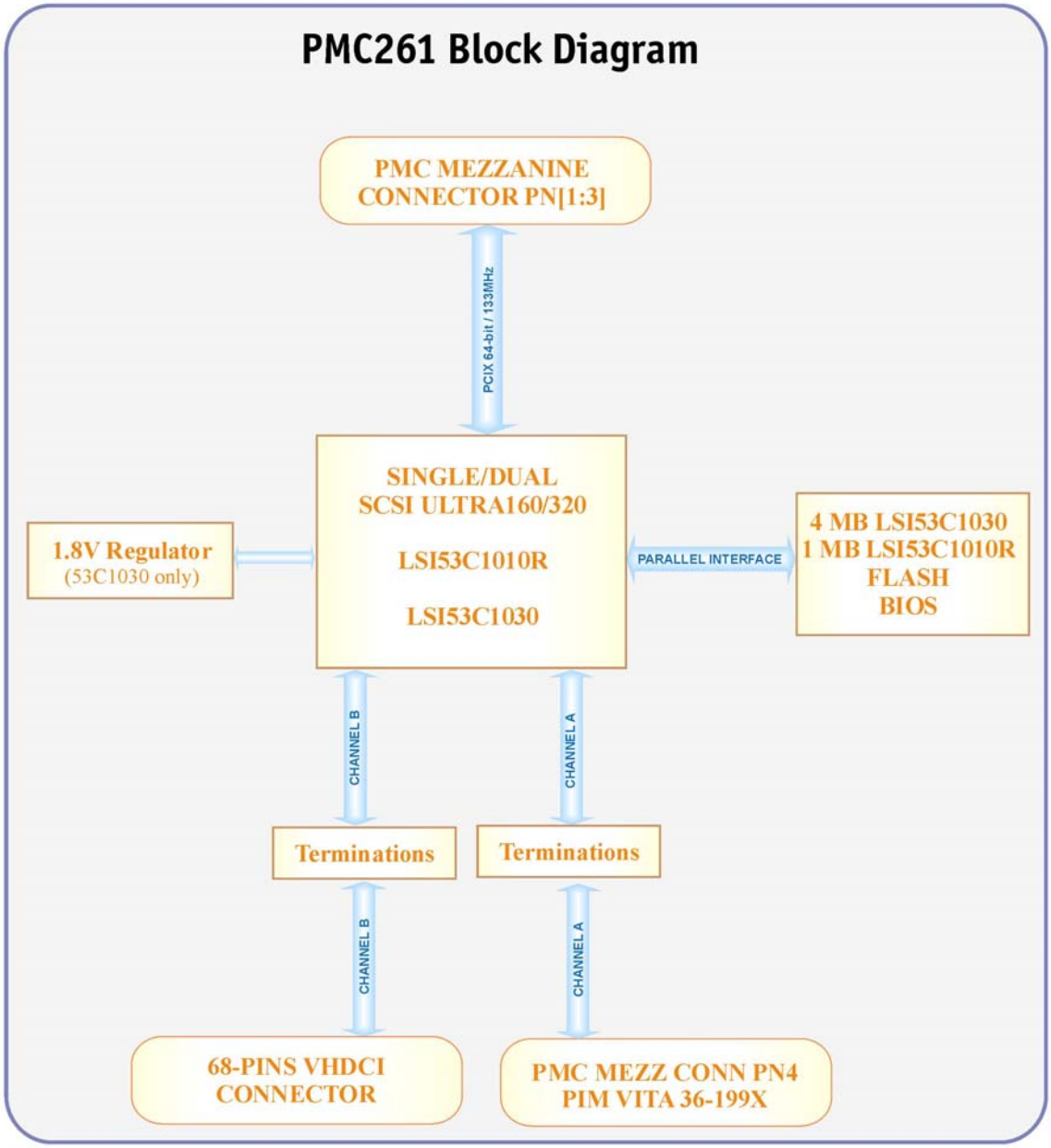
Environmental		Operating	Storage and Transit
	Temperature	0-60°C/32-131°F	-40 to +70°C/-40 to 158°F
	Humidity*	5% to 90% @40°C/104°F non-condensing	5% to 95% @ 40°C/104°F non-condensing
	Altitude*	4,000 m / 13,123 ft	15,000 m / 49,212 ft
	Shock*	5G each axis	Bellcore GR-63-CORE Section 4.3
	Vibration*	1.0G, 5-500Hz each axis	2.0G, 5-50Hz; 3.0G,50-500Hz each axis
Reliability	MTBF: > 1 000 000 hours @ 30°C / 86°F (Telcordia SR-332, Issue 1)		
Safety/EMC	Designed to meet or exceed: - Safety: UL 60950 3rd Ed.; CSA C22.2 No 60950-00; EN 60950:2000; IEC60950-1 - EMI/EMC: FCC 47 CFR Part 15, Class B; CE Mark to EN55022/EN55024		
Warranty	Two year limited warranty		

* Designed to meet or exceed

2. Onboard Features

Contents

2.1 Block Diagram



2.2 System Core

2.2.1 SCSI Controller

The LSI53C10XX is an extremely high performance, intelligent dual-channel controller. Its Fusion-MPT™ (Message Passing Technology) based architecture provides the highest-possible performance from the Ultra160/320 SCSI channels. The LSI53C10XX offers unparalleled flexibility and reliability, and binary compatibility of host software for emerging I/O interfaces.

2.2.1.1 Ultra 160 SCSI Features

Double transition clocking enables throughput of up to 160 MBps on each channel for a total of 320 MBps, without increasing the interface clock rate. Cyclic Redundancy Check (CRC) improves the reliability of SCSI data transmission through enhanced detection of communication errors. CRC provides extra data protection for marginal cable plants and external devices. CRC is the best way to ensure data protection during hot plugging. It uses the same proven CRC algorithm used by FDDI, Ethernet, and Fibre Channel, and detects all single bit errors, all double bit errors, all odd number of errors, and all burst errors up to 32 bits long. To provide complete end-to-end protection of the SCSI I/O, AIP protects all non-data phases, augmenting the CRC feature of Ultra160.

SureLINK domain validation technology detects the configuration of the SCSI bus and automatically tests and adjusts the SCSI transfer rate to optimize interoperability. The LSI53C1010 exceeds Ultra160 by providing not only Basic (Level 1) and Enhanced (Level 2) domain validation, but adds Margined (Level 3) domain validation. This enhancement margins LVD drive strength and clock signal timing characteristics to identify marginal Ultra160 systems.

2.2.1.2 New Ultra 320 SCSI Features

Paced transfers and double transition clocking enable throughput of up to 320 MBps on each channel for a total of 640 MBps. Both the data and clock frequencies are doubled from Ultra160 SCSI. Because of the faster data and clock speeds, Ultra320 SCSI introduces skew compensation and InterSymbol Interference (ISI) compensation. These new features simplify system design by resolving timing issues at the chip level. Skew compensation adjusts for timing differences between data and clock signals caused by cabling, board traces, etc. ISI compensation enhances the first pulse after a change in state to ensure data integrity.

3. Installing the board

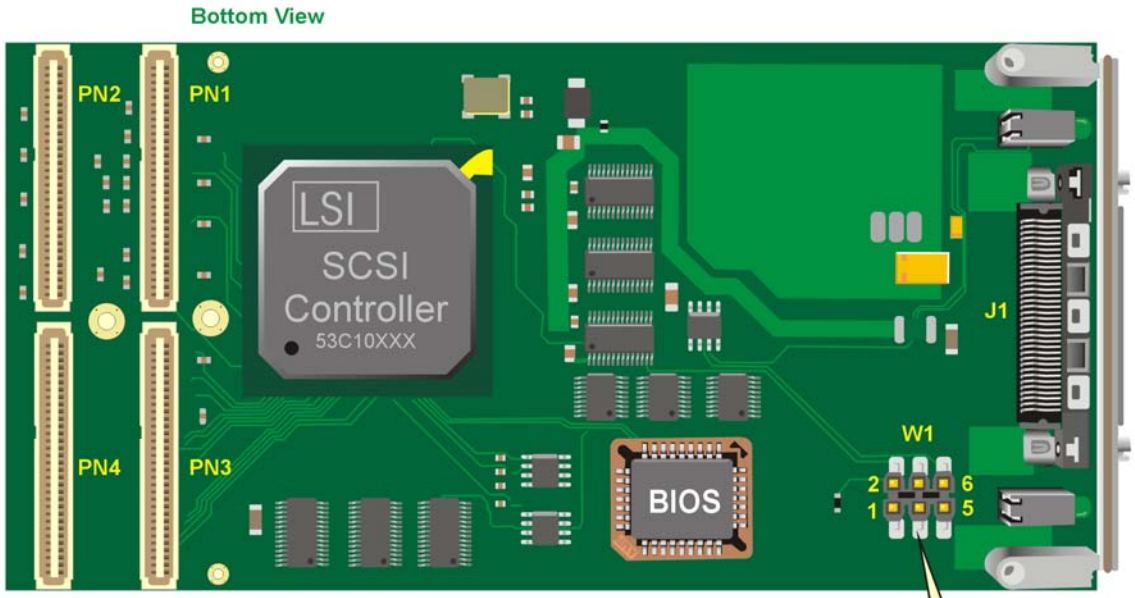
Contents

3.1 Setting Jumpers

3.1.1 Jumper Description

Description		
SCSI Termination	To enable the onboard SCSI termination	**W1**

3.1.2 Setting Jumper & locations



JUMPER SETTINGS

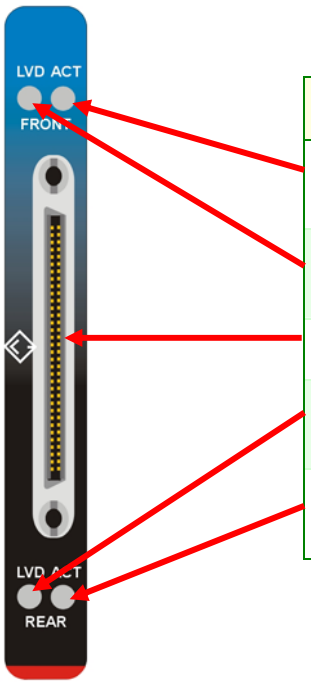
W1 - SCSI TERMINATION		* Default setting
FRONT	REAR	
NONE	NONE	Disable
2-4	1-3	Software Enable / Disable
* 4-6	*3-5	Enable

3.2 Onboard Interconnectivity

3.2.1 Onboard Connectors and Headers

Description	Connector	Comments
SCSI	J1	VHDCI-68 SCSI connector (This connector is located on faceplate).
PCI Mezzanine	PN1-PN4	64-Bit PCIX Mezzanine & PIM
PCI Mezzanine	JN1-JN3	64-Bit PCIX Mezzanine

3.2.2 Front Plate Connectors and Indicators



Name	Description	Comments
ACT LED Front	Activity LED	Flash when there is activity on the drive.
LVD LED Front	LVD LED	Always on when an LVD drive is connected.
J1	SCSI Connector	VHDCI-68 connector
LVD LED Rear	LVD LED	Always on when an LVD drive is connected.
ACT LED Rear	Activity LED	Flash when there is activity on the drive

3.2.3 Installing a PMC Card

To install a PMC card:

1. Turn OFF the computer.
2. Remove the front bezel.
3. Carefully push the PMC to mate the four connectors.
4. Screw the four screws at the bottom of the PMC to fix it to the board.

4. Software Setup

Contents

4.1 SCSI BIOS

A SCSI BIOS is the bootable ROM code that manages SCSI hardware resources. The Fusion-MPT SCSI BIOS integrates with a standard system BIOS to extend the standard disk service routine that is provided through INT13h. During the boot time initialization, the SCSI BIOS determines if the system BIOS has already installed other hard disks, such as an IDE drive. If so, the SCSI BIOS maps any SCSI drives it finds behind the already-installed drive(s). Otherwise, the SCSI BIOS installs drives starting with the system boot drive and the system boots from a drive controlled by the SCSI BIOS. The Fusion-MPT BIOS supports the BIOS Boot Specification (BBS). Please ensure that the BIOS has at least 32K of continuous space to execute.

4.2 Initialization

This section describes the BBS initialization and CD-ROM initialization procedures.

4.2.1 Boot Initialization with BBS

The Fusion-MPT SCSI BIOS provides support for the BBS, which enables selection of the boot device. If the system supports the BBS, use the system BIOS setup menu to select the boot and drive order.

4.2.2 CD-ROM Boot Initialization

The Fusion-MPT SCSI BIOS supports boot initialization from a CD-ROM drive. The five types of emulation are:

- No emulation disk
- Floppy 1.2 Mbyte emulation disk
- Floppy 1.44 Mbyte emulation disk
- Floppy 2.88 Mbyte emulation disk
- Hard disk emulation

The type of emulation assigns the drive letter for the CD-ROM. For example, if a 1.44 Mbyte floppy emulation CD is loaded, the CD-ROM drive becomes the A: drive and the existing floppy becomes drive B:.

4.3 Starting the SCSI BIOS Configuration Utility

The Fusion-MPT SCSI BIOS and CU allow you to change the default configuration of the SCSI host adapters. You can change the default values to resolve conflicts between device settings or to optimize system performance. During boot, the system displays the version number of the SCSI BIOS. If the CU is installed, the system displays the message:

Press Ctrl-C to start LSI Logic Configuration Utility...

This message remains on the screen for about 5 seconds. After pressing Ctrl-C, the message changes to:

Please wait, invoking LSI Logic Configuration Utility...

The system displays the Main Menu of the Fusion-MPT SCSI BIOS CU.

The system might display the following messages during the boot process:

- "Adapter removed from boot order, parameters will be updated accordingly" appears if an adapter is removed from the system or relocated behind a PCI bridge.
- "Configuration data invalid, saving default configuration!" appears if the nonvolatile (NVRAM) information is invalid.
- "Adapter Configuration may have changed, reconfiguration is suggested!" appears if less than four adapters are in the boot order and more adapters exist than are shown.

Pressing Ctrl-E or Ctrl-A after memory initialization during reboot allows you to re-enable and reconfigure devices.

Note :
The Fusion-MPT BIOS cannot control all the devices the CU detects. Devices such as tape drives and scanners require a device driver that is specific to the peripheral. The SCSI BIOS CU allows parameter modification to support these devices.

4.4 Using the SCSI CU

This section describes the SCSI BIOS CU. The options in the SCSI CU depend upon which BIOS and firmware you have installed. You could have installed either the standard SCSI BIOS and its associated firmware, or the IM-enabled SCSI BIOS and its associated firmware.
All of the SCSI BIOS CU screens follow fixed field areas. The header area provides static information text, which is typically the product title and version. The menu area provides the current menu and uses a cursor for menu item selection. The footer area provides general help information.

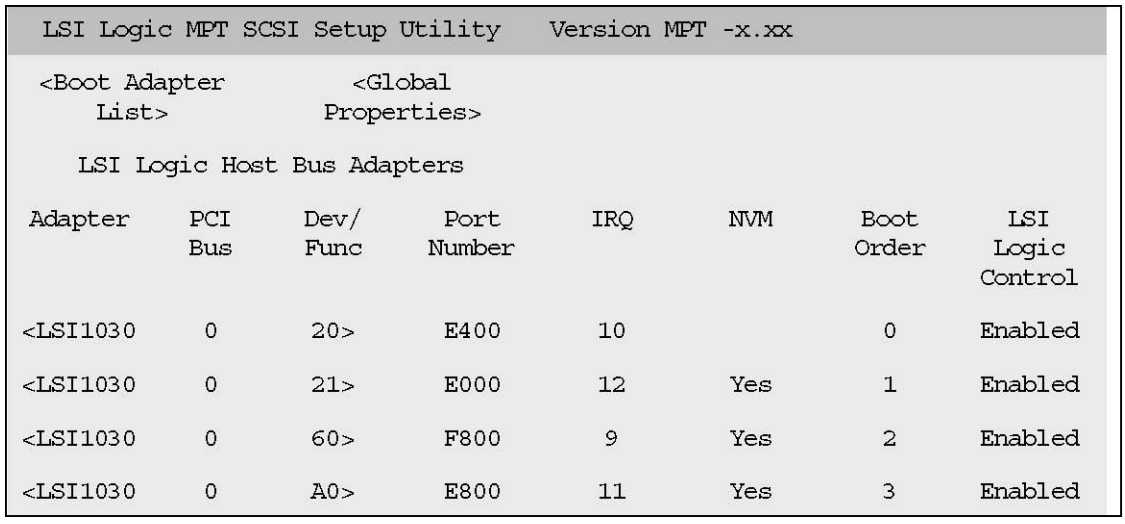
4.4.1 User Input

User Input Key	Definition	Description
F1	Help	Context sensitive help for the cursor-resident field.
F2	Menu	Sets cursor context to the menu selection area. Select a menu item and press Enter.
Arrow Keys	Select Item	Use these keys to position the cursor.
+/-	Change Item	The items with values in '[ ]' brackets are modifiable. Use the numeric keypad '+' and '-' to change a modifiable field to its next relative value.
Esc	Abort/Exit	Escape stops the current context operation and exits the current screen.
Enter	Execute Item	Items with values in '< >' brackets are executable. Press Enter to execute the function of the selected field.

4.4.2 Main Menu

When invoked, the CU first displays the Main Menu, which contains a scrolling list of up to 256 LSI Logic PCI to SCSI host adapters and information about each of them. Use the arrow keys to select an adapter. Press Enter to view and modify the properties of the selected adapter, and to gain access to the attached devices. The CU can only access adapters with LSI Logic Control enabled. After selecting an adapter and pressing Enter, the CU scans the adapter's SCSI bus and then displays the Adapter Properties screen.

Main Menu



Field	Description
Adapter	Indicates the specific family of LSI Logic Host Adapters.
PCI Bus	Indicates the PCI Bus number assigned by the system BIOS to an adapter. The PCI Bus number can be between 0x00 and 0xFF.
Dev/Func	Indicates the PCI Device and PCI Function assigned by the system BIOS to an adapter. Bits [2:0] of this 8-bit value designate the PCI Function. Bits [7:3] designate the PCI Device.
Port Number	Indicates the I/O Port Number that communicates with an adapter. The system BIOS assigns this number.
IRQ	Indicates the Interrupt Request Line for the adapter. The system BIOS assigns this value.
NVM	Indicates whether an adapter has nonvolatile memory. The possible values are Yes or No.
Boot Order	Indicates the relative boot order of an adapter. The BIOS traverses up to four adapters in the specified order in search of bootable media. The possible values are 0, 1, 2, or 3. The Boot Adapter List Menu modifies this item.
LSI Logic Control	Indicates whether an adapter is eligible for LSI Logic software control or is reserved for control by non-LSI Logic software.

4.4.3 Boot Adapter List Menu

The Boot Adapter List Menu specifies the adapter boot order when more than one OS adapter is present. The CU can designate up to four adapters as bootable. To access the Boot Adapter Menu, select <Boot Adapter List> on the Main Menu and press enter. The CU then displays the Boot Adapter List Menu.

To add an adapter to the boot list, press Insert while on the Boot Adapter List. This locates the cursor on the adapter select list. Use the arrow keys to select an adapter and press Enter to add it to the end of Boot Adapter List. To remove an adapter from the boot list, select the adapter and press Delete. Select the adapter and press the '-' key to decrease the adapter's relative order in the boot list, or press the '+' key to increase the adapter's relative order in the boot list.

Boot Adapter List Menu

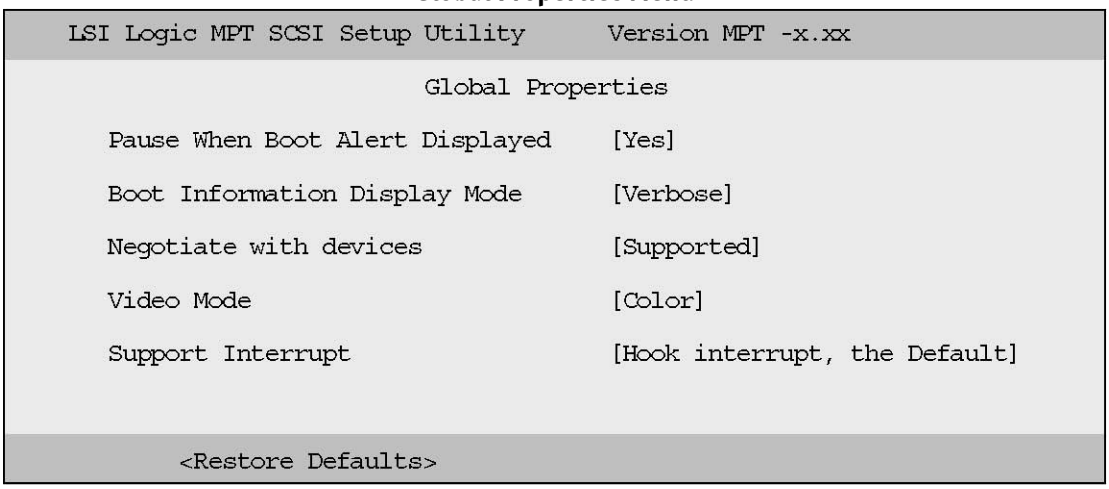
```
LSI Logic MPT SCSI Setup Utility                    Version MPT -x.xx

Boot Adapter List

Insert=Add an adapter                    Delete=Remove an adapter

          Adapter      PCI        Dev/       Boot      Current      Next
                       Bus        Fun        Order     Status       Boot

          <LSI1030      0          60>        [0]         On         [On]

          <LSI1030      0          61>        [1]         On         [On]

          <LSI1030      0          98>        [2]         On         [On]

          <LSI1030      0          A0>        [3]         On         [On]

             Press Insert to select an adapter from this list:

          <LSI1030      0          60>

          <LSI1030      0          61>

          <LSI1030      0          98>

          <LSI1030      0          A0>
```

Field	Description
Adapter	Indicates the specific family of LSI Logic Host Adapters.
PCI Bus	Indicates the PCI Bus number assigned by the system BIOS to an adapter. The PCI Bus number can be between 0x00 and 0xFF.
Dev/Func	Indicates the PCI Device and PCI Function assigned by the system BIOS to an adapter. Bits [2:0] of this 8-bit value designate the PCI Function. Bits [7:3] designate the PCI Device.
Boot Order	Specifies the relative boot order of an adapter. The value of this field can be 0, 1, 2, or 3. Press '-' to decrease an adapter's relative boot order. Press '+' to increase an adapter's relative boot order.
Current Status	Indicates if an adapter in the boot list was enabled during the most recent boot. The Fusion-MPT SCSI BIOS ignores disabled adapters and their attached devices, but these adapters and devices are visible to the CU.
Next Boot	Specifies whether to enable an adapter upon the next boot.

4.4.4 Global Properties

The Global Properties Menu allows configuration of the Display and Video modes, as well as a pause if the CU displays an alert message. To access the Global Properties Menu, select "<Global Properties>" on the Main Menu and press Enter. The system then displays the Global Properties Menu.

Global Properties Menu



Field	Description
Pause When Boot Alert Displayed	This option specifies whether or not the CU pauses for user acknowledgement after displaying an alert message during boot. To continue after displaying a message, specify 'No.' To wait for the user to press any key after displaying a message, specify 'Yes.'
Boot Information Display Mode	This option specifies the information display mode of the BIOS. It controls how much adapter and device information the system displays during boot. You can set the Display Mode to either 'Terse' or 'Verbose.' Specify the Terse mode to display the minimum amount of information. Specify the Verbose mode to display detailed information.
Negotiate with Devices	This option sets the default value for synchronous and wide negotiations with specified devices. Options are: All, None, or Supported.
Video Mode	This option specifies the default video mode for the CU. You can set the Video Mode to either 'Color' or 'Monochrome.' The monochrome setting enhances readability on a monochrome monitor.
Support Interrupt	This option allows the ability to stop the system from hanging on INT40.
<Restore Defaults>	Pressing Enter obtains default settings.

4.4.5 Adapter Properties Menu

The Adapter Properties Menu allows you to view and modify adapter settings. It also provides access to an adapter's device settings. To access the Adapter Properties Menu, select the adapter on the Main Menu and press enter. The CU then displays the Adapter Properties Menu for the selected adapter.

Host Adapter Properties Menu Example

```
LSI Logic MPT SCSI Setup Utility          Version MPT -x.xx

Adapter Properties

Adapter                 PCI         Dev/
                        Bus         Func

LSI1030                  0           60


        <Device Properties>

        <Mirroring Properties              <Synchronize Whole Mirror>

        Host SCSI ID                       [ 7]

        SCSI Bus Scan Order                [Low to High (0..Max)]

        Removable Media Support            [None]

        CHS Mapping                        [SCSI Plug and Play Mapping]

        Spinup Delay (Secs)                [ 2]

        Secondary Cluster Server           [No]

        Termination Control                [Auto]


        <Restore Defaults>
```

Field	Description
<Device Properties>	Press Enter to view and modify device properties.
Host SCSI ID	This field indicates the SCSI identifier of an adapter. LSI Logic recommends setting this field to the highest priority SCSI identifier, which is SCSI ID 7.
SCSI Bus Scan Order	This field indicates the order in which to scan SCSI identifiers on an adapter. Changing this item affects drive letter assignments if more than one device is attached to an adapter and might create a conflict with an operating system that automatically assigns drive order.
Removable Media Support	This field specifies the removable media support option for an adapter. There are three possible settings: None, Boot Drive Only, and With Media Installed. 'None' indicates there is no removable media support, whether the drive is selected as first (BBS), or is the first in the scan order (non-BBS). 'Boot Drive Only' provides removable media support for a removable hard drive if it is first in the scan order. 'With Media Installed' provides removable media regardless of the drive ordering.
CHS Mapping	This field defines the Cylinder Head Sector (CHS) values mapping method. CHS Mapping allows two settings: 'SCSI Plug and Play Mapping' (default value) and 'Alternate CHS Mapping.' SCSI Plug and Play Mapping automatically determines the most efficient and compatible mapping. Alternate CHS Mapping utilizes an alternate method that might be required if a device is moved between adapters from different vendors. These options have no effect after the FDISK command partitions the disk. To change the CHS Mapping on a partitioned disk, use the FDISK command to delete all partitions and reboot the system to clear the memory. Be certain that the correct disk is the target of an FDISK command.
Spinup Delay	This field indicates the number of seconds to wait between spin-ups of devices attached to an adapter. Staggered spin-ups balance the electrical current load on the system during boot. The default value is 2 seconds, with choices between 1 and 10 seconds.
Secondary Cluster Server	The options for this field are 'Yes' or 'No' (default). Setting this field to Yes indicates that the Fusion-MPT adapter shares devices with another adapter, and prevents the Fusion-MPT SCSI BIOS from issuing SCSI Bus resets. This is a requirement for the Microsoft Cluster Server.
Termination Control	This field indicates if an adapter has automatic termination control. The options for this field are 'Auto' or 'Off.' 'Auto' indicates that the adapter automatically determines to enable or disable its termination. 'Off' indicates that termination at the adapter is off and that other devices at the ends of the SCSI bus must terminate the bus. If Auto is grayed out, it means that termination is not programmable.
Restore Defaults	To obtain default settings, press Enter.

4.4.6 Device Properties

The Device Properties screen provides viewing and updating of device settings for an adapter. To access the Device Properties Menu, select '<Device Properties>' on the Host Adapter Properties List Menu and press Enter. Changing a setting for the host device changes the setting for all devices.

Device Properties Menu

LSI Logic MPT SCSI Setup Utility						Version MPT -x.xx	
SCSI ID	Device Identifier	MB/sec	MT/sec	Data Width	Scan ID	Scan LUNs > 0	Dis-connect
0	–	[160]	[80]	[16]	[Yes]	[Yes]	[On]
1	–	[160]	[80]	[16]	[Yes]	[Yes]	[On]
2	–	[160]	[80]	[16]	[Yes]	[Yes]	[On]
3	SEAGATE ST31055N	[160]	[80]	[16]	[Yes]	[Yes]	[On]
4	–	[160]	[80]	[16]	[Yes]	[Yes]	[On]
5	–	[160]	[80]	[16]	[Yes]	[Yes]	[On]
6	–	[160]	[80]	[16]	[Yes]	[Yes]	[On]
7	LSI1030	[160]	[80]	[16]	[Yes]	[Yes]	[On]
8	–	[160]	[80]	[16]	[Yes]	[Yes]	[On]
9	–	[160]	[80]	[16]	[Yes]	[Yes]	[On]
10	–	[160]	[80]	[16]	[Yes]	[Yes]	[On]
11	–	[160]	[80]	[16]	[Yes]	[Yes]	[On]
12	–	[160]	[80]	[16]	[Yes]	[Yes]	[On]
13	–	[160]	[80]	[16]	[Yes]	[Yes]	[On]
14	–	[160]	[80]	[16]	[Yes]	[Yes]	[On]
15	–	[160]	[80]	[16]	[Yes]	[Yes]	[On]
<< Scroll Indicator >>							

SCSI ID	Device Identifier	SCSI Timeout	Queue Tags	Boot Choice	Format
0	–	< 10>	[On]	[No]	<Format>
1	–	< 10>	[On]	[No]	<Format>
2	–	< 10>	[On]	[No]	<Format>
3	SEAGATE ST31055N	< 10>	[On]	[No]	<Format>
4	–	< 10>	[On]	[No]	<Format>
5	–	< 10>	[On]	[No]	<Format>
6	–	< 10>	[On]	[No]	<Format>
7	LSI1030	< 10>	[On]	[No]	<Format>
8	–	< 10>	[On]	[No]	<Format>
9	–	< 10>	[On]	[No]	<Format>
10	–	< 10>	[On]	[No]	<Format>
11	–	< 10>	[On]	[No]	<Format>
12	–	< 10>	[On]	[No]	<Format>
13	–	< 10>	[On]	[No]	<Format>
14	–	< 10>	[On]	[No]	<Format>
15	–	< 10>	[On]	[No]	<Format>
<< Scroll Indicator >>					

SCSI ID	Device Identifier		Verify	Restore Defaults
0	–		<Verify>	<Defaults>
1	–		<Verify>	<Defaults>
2	–		<Verify>	<Defaults>
3	SEAGATE ST31055N	0594	<Verify>	<Defaults>
4	–		<Verify>	<Defaults>
5	–		<Verify>	<Defaults>
6	–		<Verify>	<Defaults>
7	LSI1030		<Verify>	<Defaults>
8	–		<Verify>	<Defaults>
|9	–		<Verify>	<Defaults>
10	–		<Verify>	<Defaults>
11	–		<Verify>	<Defaults>
12	_		<Verify>	<Defaults>
13	_		<Verify>	<Defaults>
14	_		<Verify>	<Defaults>
15	_		<Verify>	<Defaults>
			<< Scroll Indicator >>	

Field	Description
SCSI ID	This field indicates the device's SCSI Identifier.
Device Identifier	This field indicates the ASCII device identifier string extracted from the device's Inquiry Data.
MB/sec	This field specifies the maximum synchronous data transfer rate in Mbytes/s. Users cannot directly edit this field because the Data Width or MT/s fields determine its setting. The default for this field is 320.
MT/sec	This field indicates the maximum synchronous data transfer rate, in Mega Transfers/s. The default value is 160 MT/Sec.
Data Width	This field indicates the maximum data width in bits.
Scan ID	This field indicates whether to scan for this SCSI identifier at boot time. Set this option to 'No' if there is a device that you do not want to be available to the system. To decrease the boot time, choose No for unused SCSI IDs.
Scan LUNs > 0	This field indicates whether to scan for non-zero LUNs. LUN 0 is always queried. Use this option if a multi-LUN device responds to unoccupied LUNs, or to reduce the visibility of a multi-LUN device to LUN 0. Set this option to 'No' if there is a problem with a device that responds to all LUNs.
Disconnect	This field allows a device to disconnect during SCSI operations. Some newer devices run faster with disconnect enabled, while some older devices run faster with disconnect disabled.
SCSI Timeout	This field indicates the maximum amount of time [0 to 9999] in seconds to wait for a SCSI operation to complete. Because time-outs provide a safeguard that allows the system to recover if an operation fails, LSI Logic recommends using a value greater than zero. A value of zero allows unlimited time for an operation to complete and could result in the system hanging. To specify a new timeout value, press Enter, type in a value, and press Enter again.

Queue Tags	This field allows the use of queue tags for a device. The Fusion-MPT SCSI BIOS does not use queue tags. This item specifies queue tag control to higher level device drivers.
Boot Choice	This field indicates if this device can be selected as the boot device. This option is only applicable to devices attached to adapter 0 in the boot list on non-BBS systems. It provides primitive BBS flexibility to non-BBS systems.
Format	Press Enter to low-level format the device. If enabled, this option allows low-level formatting on a disk drive. Low-level formatting completely erases all data on the drive. Formatting the drive creates a 512-byte sector size, even if the drive was formatted to another sector size.
Verify	Press Enter to verify all sectors on the device and to reassign defective Logical Block Addresses.
Restore Defaults	Press Enter to obtain default settings.

Information on data transfer rates.

Mega Transfers/s	Data Width = 8 (Mbytes/s)	Data Width = 16 (Mbytes/s)	Synchronous Period (nsec)
0 = Asynchronous	0 = Asynchronous	0 = Asynchronous	0 = Asynchronous
5	5	10	200
10	10	20	100
20	20	40	50
40	40	80	25
80	–	160	12.5
160	–	320	6.25

4.4.7 Exiting the SCSI BIOS Configuration Utility

Because some changes only take effect after the system reboots, it is important to exit this configuration utility properly. To exit, press Esc and respond to the verification prompts. Some changes might be lost if you reboot before properly exiting the CU.

4.5 Installing Drivers

4.5.1 Drivers

For drivers and installation instructions or for more information, visit our Web site at www.kontron.com or our FTP site at ftp.kontron.ca/support/ or you may also contact Kontron's Technical Support department.

Appendix

Contents

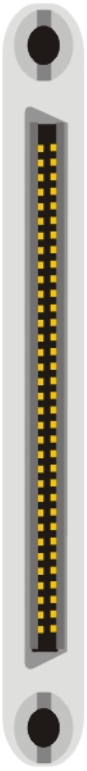
A. Connector Pinouts

A.1 CONNECTORS AND HEADERS SUMMARY

Connector	Description
J1	SCSI Connector
JN1-JN3	64-bit PCIX Mezzanine connectors
PN1-PN4	64-bit PCIX Mezzanine connectors

A.2 JN1 & PN1

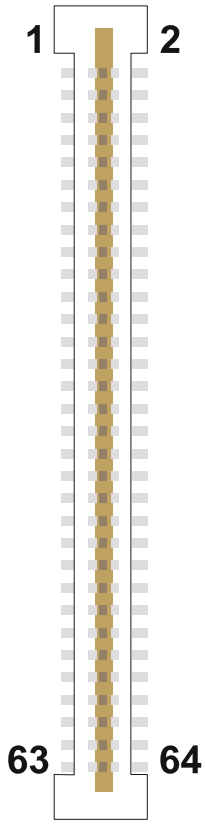
Signal	Pin		Pin	Signal
D12+	1		35	D12-
D13+	2		36	D13-
D14+	3		37	D14-
D15+	4		38	D15-
DPH+	5		39	DPH-
D0+	6		40	D0-
D1+	7		41	D1-
D2+	8		42	D2-
D3+	9		43	D3-
D4+	10		44	D4-
D5+	11		45	D5-
D6+	12		46	D6-
D7+	13		47	D7-
DPL+	14		48	DPL-
GND	15		49	GND
DIFFSENS	16		50	GND
TERMPWR	17		51	TERMPWR
TERMPWR	18		52	TERMPWR
N.C.	19		53	N.C.
GND	20		54	GND
ATN+	21		55	ATN-
GND	22		56	GND
BSY+	23		57	BSY-
ACK+	24		58	ACK-
RESET+	25		59	RESET-
MSG+	26		60	MSG-
SEL+	27		61	SEL-
CD+	28		62	CD-
REQ+	29		63	REQ-
IO+	30		64	IO-
D8+	31		65	D8-
D9+	32		66	D9-
D10+	33		67	D10-
D11+	34		68	D11-



Active Low

A.3 JN1 & PN1

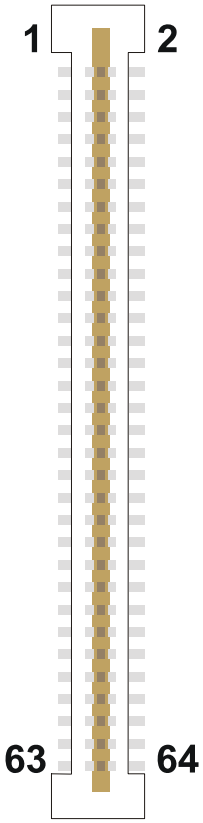
Signal	Pin		Pin	Signal
N.C.	1		2	-12V
GND	3		4	INTA_P64PMC#
INTB_P64PMC#	5		6	INTC_P64PMC#
BUSMODE1#	7		8	VCC
INTD_P64PMC#	9		10	N.C.
GND	11		12	VCC3E
CLK66_PMC	13		14	GND
GND	15		16	P64GNT#_PMC
P64REQ#_PMC	17		18	VCC
VIO	19		20	P64AD31
P64AD28	21		22	P64AD27
P64AD25	23		24	GND
GND	25		26	P64C/BE#3
P64AD22	27		28	P64AD21
P64AD19	29		30	VCC
VIO	31		32	P64AD17
P64FRAME#	33		34	GND
GND	35		36	P64IRDY#
P64DEVSEL#	37		38	VCC
PCIXCAP/GND	39		40	P64LOCK#
RSV	41		42	SB0#
P64PAR	43		44	GND
VIO	45		46	P64AD15
P64AD12	47		48	P64AD11
AD9	49		50	VCC
GND	51		52	P64C/CBE0#
P64AD6	53		54	P64AD5
P64AD4	55		56	GND
VIO	57		58	P64AD3
P64AD2	59		60	P64AD1
P64AD0	61		62	VCC
GND	63		64	P64REQ64#



Active Low

A.4 JN2 & PN2

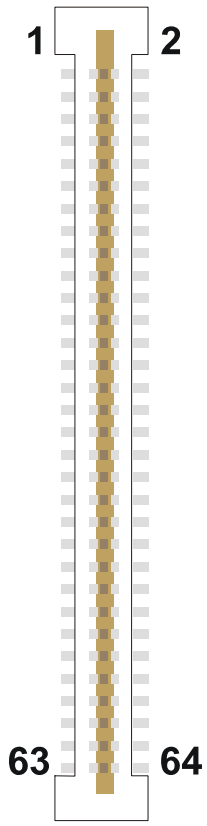
Signal	Pin		Pin	Signal
+12V	1		2	RSV
RSV	3		4	N.C.
RSV	5		6	GND
GND	7		8	N.C.
N.C.	9		10	N.C.
BMODE2#	11		12	VCC3
PCIRST#	13		14	BMODE3#
VCC3	15		16	BMODE4#
N.C.	17		18	GND
P64AD30	19		20	P64AD29
GND	21		22	P64AD26
P64AD24	23		24	VCC3
IDSEL_PMC	25		26	P64AD23
VCC3	27		28	P64AD20
P64AD18	29		30	GND
P64AD16	31		32	P64C/BE2#
GND	33		34	N.C.
P64TRDY#	35		36	VCC3
GND	37		38	P64STOP#
P64PERR#	39		40	GND
VCC3	41		42	P64SERR#
P64C/BE1#	43		44	GND
P64AD14	45		46	P64AD13
P64M66EN	47		48	P64AD10
P64AD8	49		50	VCC3
P64AD7	51		52	N.C.
VCC3	53		54	N.C.
N.C.	55		56	GND
N.C.	57		58	N.C.
GND	59		60	N.C.
P64ACK64#	61		62	VCC3
GND	63		64	N.C.



Active Low

A.5 JN3 & PN3

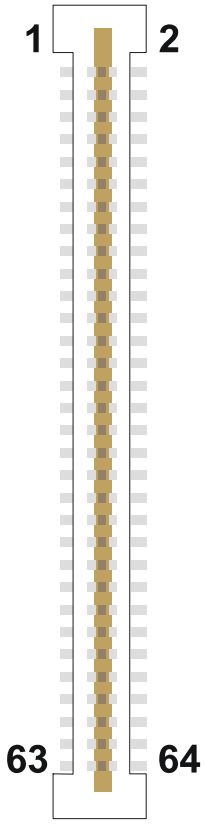
Signal	Pin		Pin	Signal
N.C.	1		2	GND
GND	3		4	P64C/BE7#
P64C/BE6#	5		6	P64C/BE5#
P64C/BE4#	7		8	GND
VIO	9		10	P64PAR64
P64AD63	11		12	P64AD62
P64AD61	13		14	GND
GND	15		16	P64AD60
P64AD59	17		18	P64AD58
P64AD57	19		20	GND
VIO	21		22	P64AD56
P64AD55	23		24	P64AD54
P64AD53	25		26	GND
GND	27		28	P64AD52
P64AD51	29		30	P64AD50
P64AD49	31		32	GND
GND	33		34	P64AD48
P64AD47	35		36	P64AD46
P64AD45	37		38	GND
VCC3	39		40	P64AD44
P64AD43	41		42	P64AD42
P64AD41	43		44	GND
GND	45		46	P64AD40
P64AD39	47		48	P64AD38
P64AD37	49		50	GND
GND	51		52	P64AD36
P64AD35	53		54	P64AD34
P64AD33	55		56	GND
VIO	57		58	P64AD32
N.C.	59		60	N.C.
N.C.	61		62	GND
GND	63		64	N.C.



Active Low

A.6 JN4

Signal	Pin		Pin	Signal
P1+	1		2	P2+
P1-	3		4	P2-
P3+	5		6	P4+
P3-	7		8	P4-
P5+	9		10	P6+
P5-	11		12	P6-
P7+	13		14	P8+
P7-	15		16	P8-
P9+	17		18	P10+
P9-	19		20	P10-
P11+	21		22	P12+
P11-	23		24	P12-
P13+	25		26	P14+
P13-	27		28	P14-
P15+	29		30	P16+
P15-	31		32	P16-
P17+	33		34	P18+
P17-	35		36	P18-
P19+	37		38	P20+
P19-	39		40	P20-
P21+	41		42	P22+
P21-	43		44	P22-
P23+	45		46	P24+
P23-	47		48	P24-
P25+	49		50	P26+
P25-	51		52	P26-
P27+	53		54	P28+
P27-	55		56	P28-
P29+	57		58	P30+
P29-	59		60	P30-
P31+	61		62	P32+
P31-	63		64	P32-



Active Low

B. Getting Help

At Kontron, we take great pride in our customers' successes. We believe in providing full support at all stages of your product development.

If at any time you encounter difficulties with your application or with any of our products, or if you simply need guidance on system setups and capabilities, contact our Technical Support at:

CANADIAN HEADQUARTERS
Tel. (450) 437-5682
Fax: (450) 437-8053

If you have any questions about Kontron, our products, or services, visit our Web site at: www.kontron.com

You also can contact us by E-mail at: support@ca.kontron.com

Or at the following address:

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

RETURNING DEFECTIVE MERCHANDISE

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

- Call

    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 you receive an **RMA #** from **our Technical Support** before returning any merchandise.

- Fax

    1. Make a copy of the request form on the following page.

    2. Fill it out.

    3. Fax it to us at: (450) 437-8053

- E-mail

    1. Send us an e-mail at: RMA@ca.kontron.com. In the e-mail, you must include your name, your company name, your address, your city, your postal/zip code, your phone number, and your e-mail. You must also include the **serial number** of the defective product and **a description of the problem.**

When returning a unit.

i) In the box, you have to 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.**

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

iii) Clearly write or mark the RMA number on the outside of the package you are returning.

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

Kontron Canada Inc.
616 Curé Boivin
Boisbriand, Québec
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