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PCI Expansion Chassis
User's Guide



2 Slot PCI Expansion

Model: CB264

Model: CB264-3.3

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Table of Contents

PREFACE V

What's in this Guide v
Advisories vi
Safety Instructions vi
When Working Inside a Computer vii
Protecting Against Electrostatic Discharge viii

CHAPTER 1 INTRODUCTION 1

General Specifications 1
Pre-Installation Information 1
Parts List 2
Tools Required for Installation 2

CHAPTER 2 HARDWARE INSTALLATION 3

Before you Begin 4
Attach PCI Expansion and Power Cable 5
Recheck the Installation 6
Applying Power Correctly 7
Starting Up: 7
Shutting Down: 7

CHAPTER 3 VERIFY INSTALLATION 8

Windows 8
Mac OS X 9

CHAPTER 4 INSTALL 3RD PARTY PCI CARDS 11

Remove PCI Expansion Chassis Cover 11
Install PCI Cards in PCI Expansion Chassis 12
Install Hard Drive(s) 13
System Should Be Up and Running 14
Finishing Touches 15

CHAPTER 5 TROUBLESHOOTING 16

Locate the Problem 16
My Computer Can't Find the PCI Expansion System 17
When Nothing Works 18
My Computer Hangs During Power Up 19
My PCI Card Doesn't Work 20
Support for 3rd Party PCI Cards 21
Windows Error Codes 22

CHAPTER 6 HOW TO GET MORE HELP 24

Frequently Asked Questions (FAQ) 24
Contacting Technical Support 24
Magma Debug Utility 25

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PCIScope Software Utility 26
Returning Merchandise to Magma 28

APPENDIX A BUS HIERARCHY 29

Bus Hierarchy 29

APPENDIX B DC POWER INFORMATION 31

SUB100WDC 31
Battery Sizing/Selection: 32

APPENDIX C COMPLIANCE 34

FCC 34
Industry Canada 34
CE 34

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Preface

What's in this Guide

This PCI Expansion Chassis User Guide is designed to accompany a Magma Host Card Installation Guide. This guide provides easy instructions to install your expansion system, verify the installation was completed correctly, and troubleshoot the installation, if necessary. The corresponding Host Card Installation Guide provides similar information for your Magma host card.

This manual is divided into the following parts:

Chapter 1: Provides General Specifications and Parts List.

Chapter 2: Briefly explains Expansion Chassis installation.

Chapter 3: Explains how to verify a successful installation.

Chapter 4: Provides information on installing 3rd Party PCI cards.

Chapter 5: Provides troubleshooting assistance.

Chapter 6: Explains where to get technical support.

Appendix A: Explains the Bus Hierarchy.

Appendix B: Provides information about DC power options.

Appendix C: .Provides information on FCC Regulatory Compliance.

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Advisories

Four types of advisories are used throughout this manual to provide helpful information, or to alert you to the potential for hardware damage or personal injury. They are Notes, Cautions, Warnings, and Dangers. The following is an example of each type of advisory.



NOTE

Used to amplify or explain a comment related to procedural steps or text.



IMPORTANT

Used to indicate an important piece of information or special “tip” to help you



CAUTION

Used to indicate and prevent the following procedure or step from causing damage to the equipment.



WARNING

Used to indicate and prevent the following step from causing injury.



DANGER or STOP

Used to indicate and prevent the following step from causing serious injury or significant data loss.

Disclaimer: We have tried to identify all situations that may pose a danger, warning, or caution condition in this manual. However, Mobility Electronics, Inc. does not claim to have covered all situations that might require the use of a Caution, Warning, or Danger indicator.

Safety Instructions

Always use caution when servicing any electrical component. Before handling the Magma PCI Expansion chassis, read the following instructions and safety guidelines to prevent damage to the product and to ensure your own personal safety. Refer to the “Advisories” section for advisory conventions used in this manual, including the distinction between Dangers, Warnings, Cautions, and Notes.

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- Always use caution when handling/operating the computer. Only qualified, experienced, authorized electronics 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 manual for precautions and procedures. If you have any questions, please contact Mobility Technical Support.



WARNING

High voltages are present inside the expansion chassis when the unit's power cord is plugged into an electrical outlet. Disconnect the power cord from its source before removing the system cover.

Never modify or remove the radio frequency interference shielding from your workstation or expansion unit. To do so may cause your installation to produce emissions that could interfere with other electronic equipment in the area of your system.

When Working Inside a Computer

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

1. Turn off the computer and any peripherals

2. Disconnect the computer and peripherals from their power sources to prevent electric shock or system board damage.

3. Disconnect any telephone or telecommunications lines from the computer.

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

- To help avoid possible damage to systems 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

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to avoid bending any connector pins. Also, before connecting a cable, make sure both connectors are correctly oriented and aligned.



CAUTION

Do not attempt to service the system yourself except as explained in this manual. Follow installation instructions closely.

Protecting Against Electrostatic Discharge

Electrostatic Discharge (ESD) Warning



Electrostatic Discharge (ESD) is the enemy of semiconductor devices. You should always take precautions to eliminate any electrostatic charge from your body and clothing before touching any semiconductor device or card by using an electrostatic wrist strap and/or rubber mat.

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. Mobility strongly encourages you to follow proper ESD procedure, which can include wrist straps and smocks, when servicing equipment.

You can also 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 anti-static packaging material until you are ready to install the component in a computer. Just before unwrapping the anti-static packaging, be sure you are at an ESD workstation or grounded.

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

- Handle all sensitive components at an ESD workstation. If possible, use anti-static 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.

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Chapter 1 Introduction

General Specifications

The Magma 2 Slot PCI Expansion System is a general-purpose bus expansion chassis for the Peripheral Component Interconnect (PCI) local bus. The expansion chassis is fully compliant with the PCI Local Bus Specification. This Magma expansion system consists of a host card, a PCI expansion bus cable (a shielded, high-speed cable), an expansion chassis containing a 2 slot PCI backplane, drive bay brackets, a power supply and cooling fans.

Item	Description
Backplane:	(2) standard PCI slots, (1) non-standard PCI slot (bracket opening is smaller than standard.
Enclosure:	Small table top
Dimensions:	10" W x 2.570" H x 15.144" D
Weight:	5.3lbs or 2.40 kg
Construction	Aluminum and Steel
Cooling	(2) 13.2 CFM fans
Power Supply:	90 Watt AC (non-auto switching)
Standard Cable:	1 meter
MTBF:	25,000 hours
PCI Local Bus Specification:	Revision 2.2
PCI Bridge Architecture Spec:	Revision 1.1
Interconnect Bandwidth:	132 MB/sec (Theoretical Max. of PCI 33/32)
Disk Drive Bay(s):	For (2) 1” disk drives or (1) 1.6” disk drive
MTBF:	25,000 hours
Operating Environment:	0º to 50º C Operating Temperature -20º to 60º C Storage Temperature 5% to 85% Relative Humidity, Non-condensing
Operating Systems:	Windows Vista/XP/2000/Server 2003 Mac OS X Version 10.4.x + Linux Kernel 2.6.x +
Warranty:	1 Year Return to Factory
Available Options:	1.5-meter cable (PN: SUBCBL1.5HF) PCI Host Card: for desktops (PN: PCIHIF68) PCI Express Host Card for desktops (PN: PEHIFX1) CardBus Host Card for laptops (PN CBH1F) ExpressCard/54 or 34 for laptops (EC54 or EC34)

Pre-Installation Information

Before using the Magma expansion chassis you should perform the following steps:

- Inventory the shipping carton contents for all of the required parts

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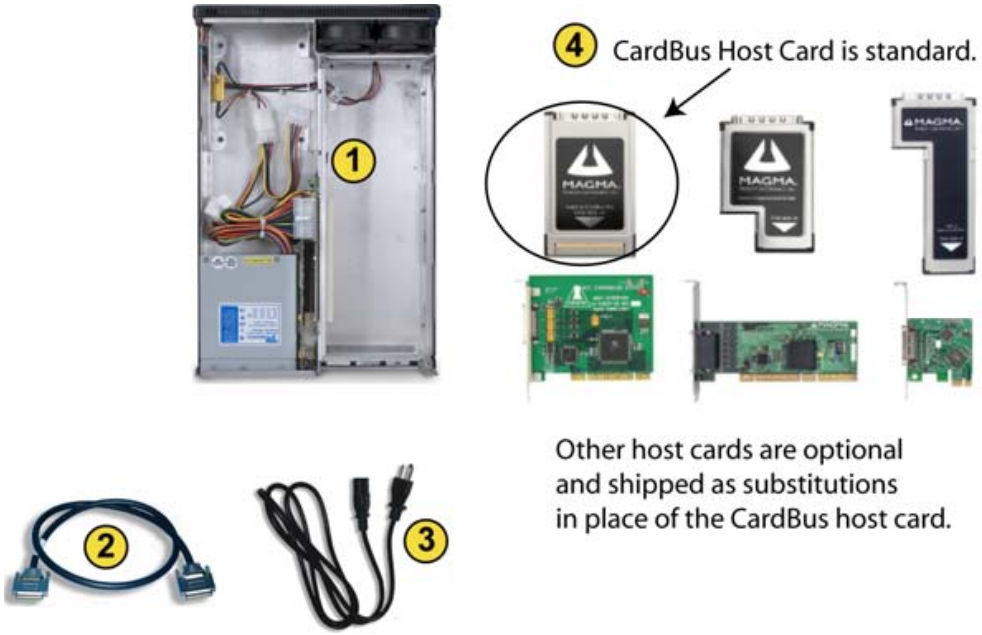
- Gather all of the necessary tools required for installation
- Read this manual

Parts List

The following parts are provided:

	Qty	Item
1	1	2 slot PCI expansion enclosure with AC power supply
2	1	PCI expansion cable (1-meter or 1.5-meter)[1]
3	1	U.S. Standard 115V power cord
4	1	Host Card (CardBus is standard)
	4	Rubber feet (to be installed by user)
	1	Software CDROM
	1	User's Manual

[1]The Magma PCI expansion cable uses a 68-pin connector; however, it is NOT an "off-the-shelf" SCSI cable. The Magma PCI expansion cable is a custom cable designed specifically for PCI Expansion.



Tools Required for Installation

In order to complete the installation of the Magma expansion system you will need a Phillips-head screwdriver.



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Chapter 2 Hardware Installation

The following steps will guide you in completing the hardware installation of your Magma PCI Expansion System.

Electrostatic Discharge (ESD) Warning



All PCI cards are susceptible to electrostatic discharge. When moving PCI cards, it is best to carry the cards in anti-static packaging. If you need to set a PCI card down, be sure to place it inside or on top of an anti-static surface. For more information, see "Protecting Against Electrostatic Discharge" in the Preface.

WARNING



High voltages are present inside the expansion chassis when the unit's power cord is plugged into an electrical outlet. Disconnect the power cord from its source before removing the enclosure cover. Turning the system power off at the power on/off switch does not remove power to components. High voltage is still present.

CAUTION



Before touching anything inside the enclosure, move to an ESD station and follow proper ESD procedure. Failure to do so may result in electrostatic discharge damaging the computer or its components. For more information, see "Protecting Against Electrostatic Discharge" in the Preface.

STOP



If your Magma expansion chassis was not purchased directly from Magma, you must check to ensure that it doesn't contain any pre-installed PCI cards.

Check the rear side of the chassis to see if any PCI cards are visible in the slots. If you see a PCI card, you should continue installation using instructions provided by your dealer. If no separate instructions are available, remove the cover by using instructions in Step 1. Then remove the card as normal. If no PCI card is visible, then continue with the cable installation.

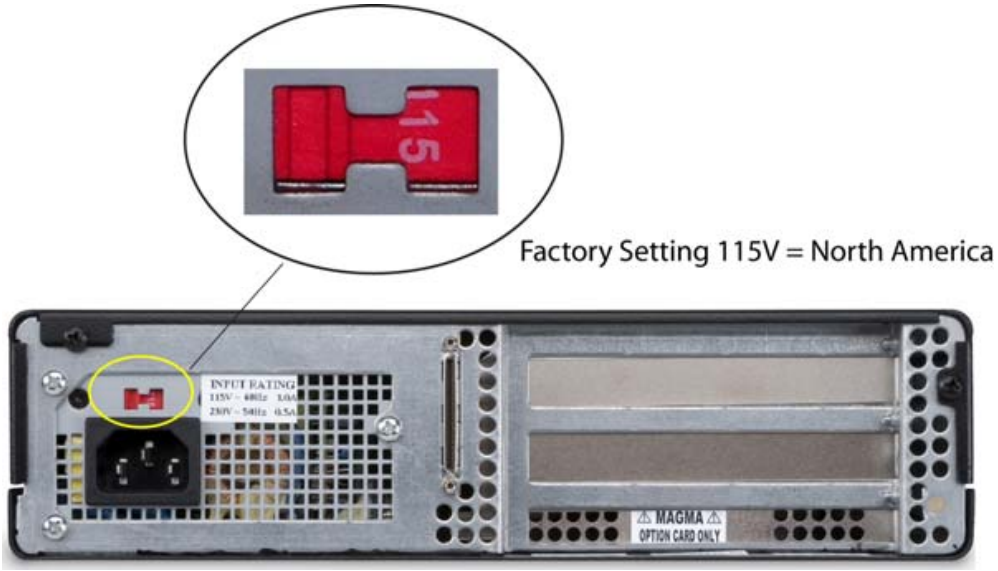
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Before you Begin

The 90 Watt AC power supply is NOT auto-switching. These means that you MUST be sure the red Voltage Selector Switch on the back of the chassis shows the correct voltage for your location.



Before you connect any cables to the expansion chassis, you need to know the voltage of your power source and slide the Voltage Selector Switch from 115V to 220V if required. The factory default setting is for the North American 115V standard. However, most non-US locations use a 220V standard.



Remove the orange warning label that is covering the plug receptacle.



STOP

Using an incorrect power source (wrong voltage for your system) can result in serious damage to your system. Electronics components, damaged by incorrect power, may prevent your system from working properly and can be expensive to replace.

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CAUTION

Remember, if you are using a 220V power source, you will need a power converter (leave your Voltage Selector Switch at 115V), or a 250V power cord adapter (change your Voltage Selector Switch to 230V), to connect to the power source. Double-check that you have the correct combination of Voltage Selector Switch setting and Power Converter or Power Cable Adapter to allow your expansion chassis to operate safely.

Remember, when traveling, to flip the red Voltage Selector switch, if necessary.

FEATURE

To allow them to be as portable as your laptop, the 2 slot expansion chassis is available with a DC power supply option (Part Number SUB100WDC). This version ships with an internal DC-DC power supply and an AC power brick. The DC-DC power supply includes a male 4-pin XLR connector to provide easy connection to user supplied DC power source. The AC power brick is provided for times when AC power is available. In addition, the DC version is auto-switching. Refer to *Appendix B* for more information.

1 Attach PCI Expansion and Power Cable

Carefully position the Magma expansion chassis so that the supplied PCI expansion cable will conveniently reach from the connector of the Host Card to the connector on the back of the chassis. See your Host Card Installation Guide for information on installing your Host Card.

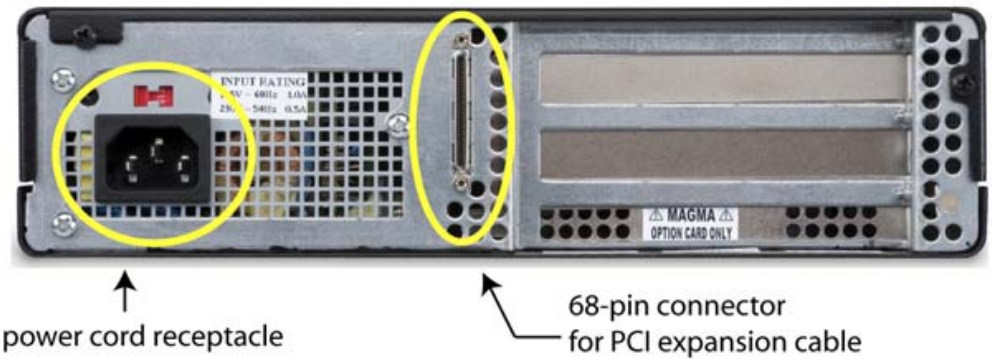
Attach one end of the PCI expansion cable to the Host Card and secure it using the captive thumbscrews on the cable. ***See the Host Card Installation Guide for more information on connecting the cable to the card.***



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Carefully route the cable to the rear side of the expansion chassis and attach it to the 68-pin connector, as shown below:

Secure the cable with the captive thumbscrews. It is important that the cable be attached securely to the connectors at both ends.



Secure the cable with the captive thumbscrews. It is important that the cable be attached securely to the connectors at both ends.

Before connecting the power cord, check that the expansion chassis On/Off switch is set to the OFF position. This switch is located on the right side of the front of the chassis.



NOTE

If at all possible, plug all power cords from the Magma expansion chassis and your host computer into a shared power strip, preferably one that has surge and noise suppression circuitry built into it.



Recheck the Installation

Check your installation before powering up the Magma expansion chassis for the first time. Although the power supply has an over voltage protection device built into it, it may not "trip" in time to fully protect a device that has been improperly connected, or whose power cable has been damaged.

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4 Applying Power Correctly

Starting Up:

You must apply power to the Magma expansion chassis BEFORE you power up your computer. This will allow the higher numbered PCI buses in the PCI bus hierarchy to be at a stable state when the host system issues its master power-on bus reset. In systems that perform automatic PCI bus configuration, this will allow the configuration code to recognize the PCI bus hierarchy and any attached devices.



There is an On/Off switch on the front panel, as well as an LED indicator to indicate power status. Verify that the green power indicator is ON.

Shutting Down:

When shutting your system down, it is recommended that you first shut down the computer correctly, and then power down the Magma expansion chassis to avoid 'computer lock-up' and potential data loss.



STOP

DO NOT TURN ON THE MAGMA EXPANSION CHASSIS UNTIL YOU HAVE SHUT DOWN YOUR LAPTOP COMPLETELY! It can cause a system lockup and loss of any unsaved data.

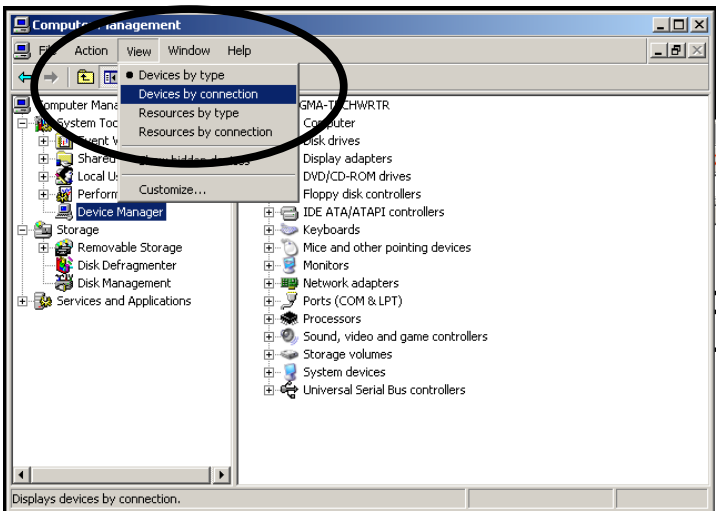
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CHAPTER 3 Verify Installation

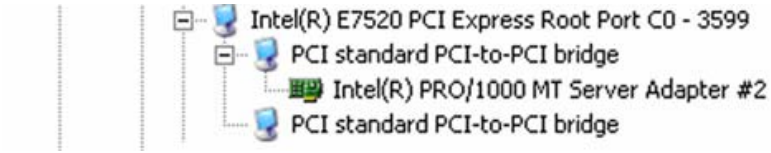
The Magma Host Card is not visible to the Windows' Device Manager or the Apple System Profiler *until the Expansion System has been successfully connected and properly powered on*. Therefore, you will need to connect your Expansion System to the host computer and turn them both on before you can verify the Magma Expansion Chassis installation. See your Host Card Installation Guide for information on how to connect your Host Card. Always power-up your Expansion System by turning on the power to the Expansion Chassis first, followed by your host computer.

Windows

To verify a successful installation on Windows, find the '**My Computer**' icon and "right-click" on it. Then select '*Manage*' from the pop-up menu. Next, click on '*Device Manager*' in the leftmost Computer Management window. Finally, click on the *View Menu* and select *View Devices by Connection.*



Open ACPI (BIOS) → Open PCI Bus→ Click the '+' sign several times until your reach a PCI or PCI Express Root Port with a PCI Standard PCI-to-PCI Bridge beneath it.

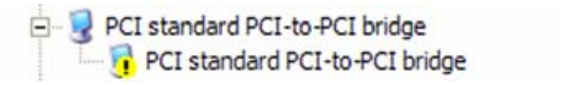


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When installed correctly, you will see three “PCI to PCI Bridges” below your system’s PCIe Controller. Any 3rd Party PCI cards installed in the chassis will appear below one of the PCI-to-PCI bridges.

If everything is OK, then the Magma Expansion System installation is complete. You can now proceed to Chapter 4 for help with the installation of 3rd Party PCI Cards.

If, however, the installation was unsuccessful, you may not see the PCI to PCI Bridge, or it will have a small yellow in front of it.

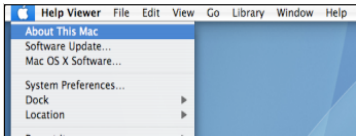


If any of these devices are not displayed as shown above, you should shut down your system (host computer first, then the expansion chassis) and reconnect the cables and reseat the PCI Host Card to ensure that you have a solid connection. Then restart the Magma expansion chassis, followed by the host computer. Next, try to verify the installation again, as shown above. If you are still having problems, review *Chapter 5, Troubleshooting* before contacting Magma Technical Support at (858) 530-2511. Additional troubleshooting help is available in your Host Card Installation Guide and on the web at www.Magma.com.

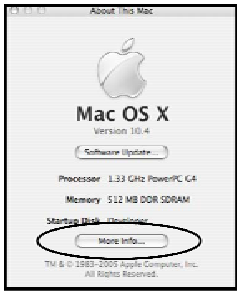
Mac OS X

When using Mac OS X no additional software or drivers are needed. As long as you are using Mac OS X Version 10.2.2 or newer, the operating system should automatically recognize the Magma expansion chassis.

Select “**About This Mac**” under the Apple Icon



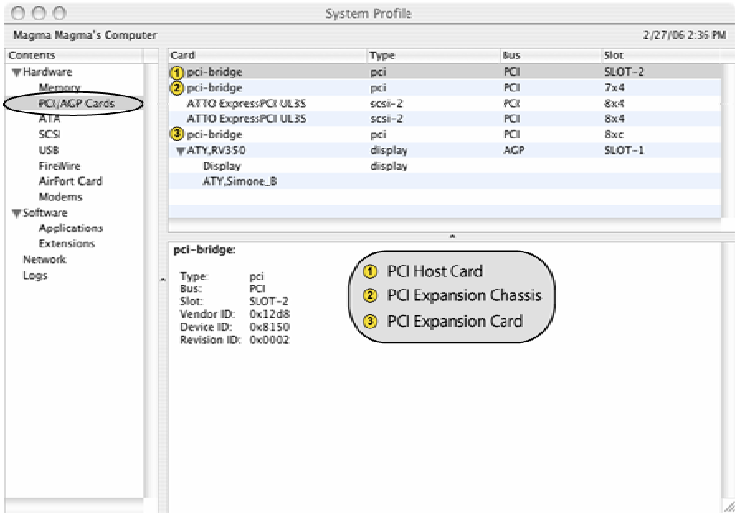
Then click the “**More Info**” button.



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MAC OS 10.3.x & 10.4.x

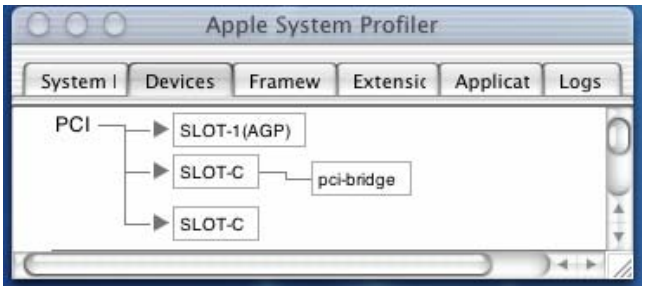
Next, click on the **PCI Card** item. You should see a **pci-bridge** device listed under PCI as shown below:



Any PCI Cards you install in the expansion chassis will appear behind the **pci-bridge** device.

MAC OS 10.2.x

Next, click on the **Devices** tab. You should see a **pci-bridge** device listed under PCI as shown below:



Any PCI Cards you install in the expansion chassis will appear behind the **pci-bridge** device.

If any of these devices are not displayed as shown above, you should shut down your system (computer first, then the expansion chassis) and reconnect the cables and the PCI expansion host card to ensure that you have a solid connection. Then restart the Magma expansion chassis followed by the computer. Next, try to verify the installation again, as shown above. If you are still having problems, contact Magma Technical Support at (858) 530-2511.

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Chapter 4 Install 3rd Party PCI Cards

This chapter provides information on how to install 3rd Party PCI cards into your Magma expansion chassis. More details on the installation of individual cards are provided by the card's manufacturer. This chapter is provided as a simple guide to help you install your PCI cards in the chassis.

For the purpose of installation, the Magma expansion chassis functions exactly as a standard desktop computer chassis. Always follow the manufacturer's instructions for installing their card on a desktop computer.



IMPORTANT

We will provide reasonable technical support with 3rd Party PCI cards. However, if you have verified a successful installation of the Magma expansion system (as defined in *Chapter 4*), but experience difficulty installing your 3rd Party PCI cards, the PCI card manufacturer should be able to provide the best support.

Be aware that all PCI drivers MUST BE Windows Driver Model (WDM) compatible to work properly in a laptop+expansion system environment. If you have a problem with the PCI card driver, contact the card's manufacturer for a WDM compatible driver.



Remove PCI Expansion Chassis Cover

Two screws retain the cover on the expansion chassis. They are located on the rear of the unit, on the top left and top right of the cover's back edge. Remove these screws to open the enclosure.



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Slide the enclosure cover backwards, disengaging it from the guides at the front of the enclosure, by firmly grasping the rear cover lip over the card IO area and pulling the cover backward about ¼" and then lifting the cover off.



CAUTION

When replacing the enclosure cover, be sure that the front edge guides on the cover engage the inner lip of the enclosure.

2 Install PCI Cards in PCI Expansion Chassis

CAUTION

When installing PCI cards or hard drives, please ensure that the input current rating specified on the AC input label is not exceeded.

Slot ordering in the 2 Slot PCI Expansion chassis should begin with the top slot – labeled **SLOT 4.**



Generally, when installing 3rd Party PCI cards in the Magma expansion chassis, it should make no difference which PCI slot you place your cards in, unless specified by the card manufacturer.

Install PCI cards following PCI card manufacturer's recommendations. Some PCI card manufacturers recommend that you install their software driver(s) prior to installing the hardware. If this is the case, you should install their driver before you connect and power up the expansion chassis.

Make sure that all PCI cards are fully seated in their connectors. When correctly seated in its connector, you will notice a firm resistance when you pull up gently on the card. To keep the cards in place, secure them in the enclosure with their retaining screws (supplied with the Magma expansion chassis).

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IMPORTANT



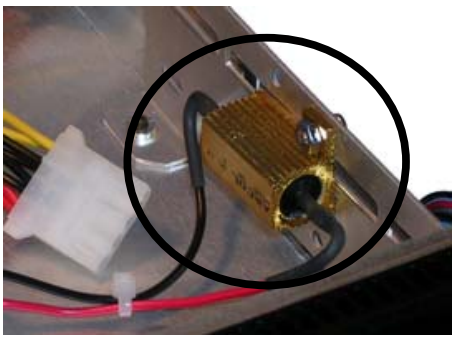
The sheer number of PCI cards and device drivers available makes it impossible for Mobility to fully test and certify all available PCI cards for use in the Magma expansion chassis. Our best advice to you in this regard is to insist on full PCI Specification compliance from your card and system vendors. Cards and systems should be at least PCI Specification Revision 2.0 compliant or better. Compliance in your system motherboard, PCI cards, and console firmware (or BIOS) is your best assurance that everything will install and operate smoothly.

Not all PCI cards are as "well-behaved" as they should be. Sometimes simply moving a PCI card that is having a problem to a different slot, or reordering your cards in their slots, will alleviate "behavior" problems.



Install Hard Drive(s)

Your Magma 2 slot expansion chassis provides drive brackets for one or two hard drives. If you want to install a hard drive to your system, a PCI hard drive controller card can be installed into one of the available PCI slots or you may connect directly to your host computer's hard drive controller ports.



To install a hard drive, you must remove the 5V Load Resistor that has been mounted in the hard drive bay. The Load Resistor is installed to allow you to use of 3.3V PCI cards without causing power problems.

If you place a hard drive in your Magma expansion chassis, the hard drive will automatically provide the 5V resistance required and the Load Resistor is not required. It can be removed by removing the screw and disconnecting the power cable.

DANGER



The Load Resistor is 

and must NOT BE TOUCHED unless the system has been shut off for a long period of time. Use caution when touching the Load Resistor.

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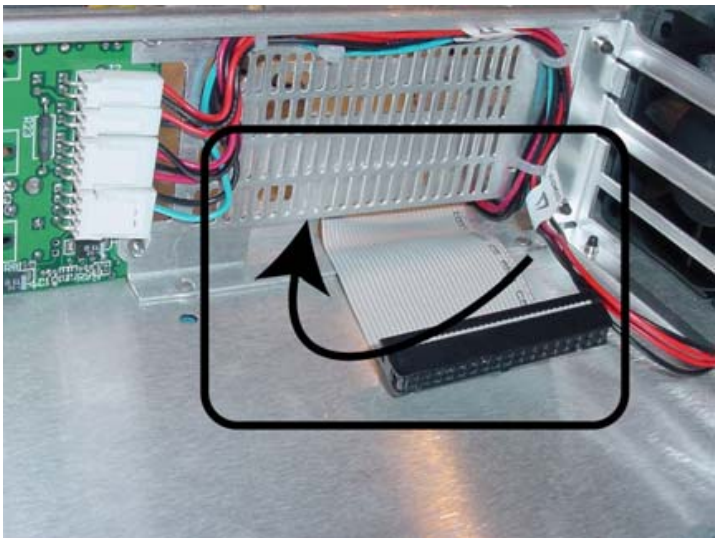
NOTE

After you remove the 5V Load Resistor, it is a good idea to place it in an ESD envelope and save it. If you ever decide to remove the hard drive, you will need to reinstall the 5V Load Resistor to ensure your Expansion chassis continues to work properly.

After you have removed the 5V Load Resistor, you need to remove the hard drive bay brackets to allow for an easy hard drive installation. Simply turn the chassis over, and remove the four screws on the bottom of the enclosure that retain the drive brackets.

Once the hard drive brackets have been removed, mount your hard drive(s) as specified by the manufacturer.

Next, thread the hard drive ribbon cable under the metal bracket that the backplane is mounted to as shown below.



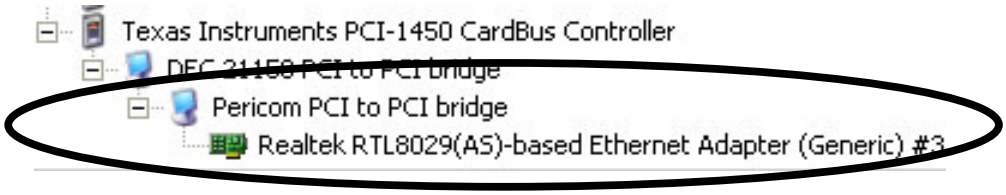
Finally, reattach the hard drive brackets to the chassis by replacing the screws. Hard drives require power. Make sure to connect one of the white power supply tabs to the hard drive.

4 System Should Be Up and Running

Apply power to the Magma expansion chassis first, then power up the computer.

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Use the procedures detailed in *Chapter 4* to confirm the card installation(s) in the Windows Device Manager or Apple System Profiler.



5 Finishing Touches

After your system is working properly, replace any empty slots with slot covers, and replace the host computer cover and the expansion chassis cover.

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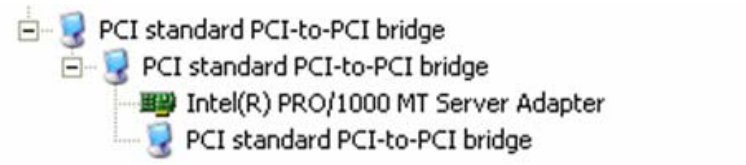
Chapter 5 Troubleshooting

Locate the Problem

If you are having trouble with the Magma expansion system, verify that all cards are seated properly and all cables are connected properly. Be sure you followed the instructions in earlier sections of this User Guide. Always remember to power **On** and **Off** correctly when rechecking and testing your installation. If you are still having problems, try these simple troubleshooting steps.

- My Computer Can't Find the PCI Expansion System
- When Nothing Works
- My PCI Card Doesn't Work

The PCI to PCI Expansion System is correctly displayed as a **"PCI standard PCI-to-PCI bridge"** (Windows Device Manager) and as a **"pci-bridge"** (MAC Apple System Profiler). When connected and functioning correctly, this Expansion System will be displayed as follows:



Windows

Card	Type	Bus	Slot
pci-bridge	pci	PCI	SLOT-2
pci-bridge	pci	PCI	7x4
ATTO ExpressPCI UL3S	scsi-2	PCI	8x4
ATTO ExpressPCI UL3S	scsi-2	PCI	8x4
pci-bridge	pci	PCI	8xc

MAC

If this is not what you see when you verify your installation, the following troubleshooting steps may help you to locate and resolve your installation issues, without having to call Technical Support.

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My Computer Can't Find the PCI Expansion System

If the expansion system is not visible in your Windows Device Manager or your Apple System Profiler at all, you will need to turn off your computer (first) and then the Magma expansion chassis (second) and test all cords and cables to ensure you have everything connected correctly. If everything seems to be connected correctly, and you are sure you have applied power correctly (power up expansion chassis first and then the computer), then try these additional troubleshooting steps:

- Double-check the PCI host card to ensure it is inserted correctly in a PCI slot.
- Try moving the PCI host card to a different PCI slot.
- Check for a bad cable or connection. Try another expansion cable, if you have one.
- If the expansion system is still not visible after trying all of the above steps, go to *Chapter 6* to see about getting additional help.

Windows

If the PCI to PCI Bridge is now visible, but contains a  in front of it, it has a problem that must be fixed.

To identify this problem, right-click on the line with the  and select "Properties" from the pop-up menu.



Resolve the identified problem or go to *Chapter 6* to see about getting additional help.

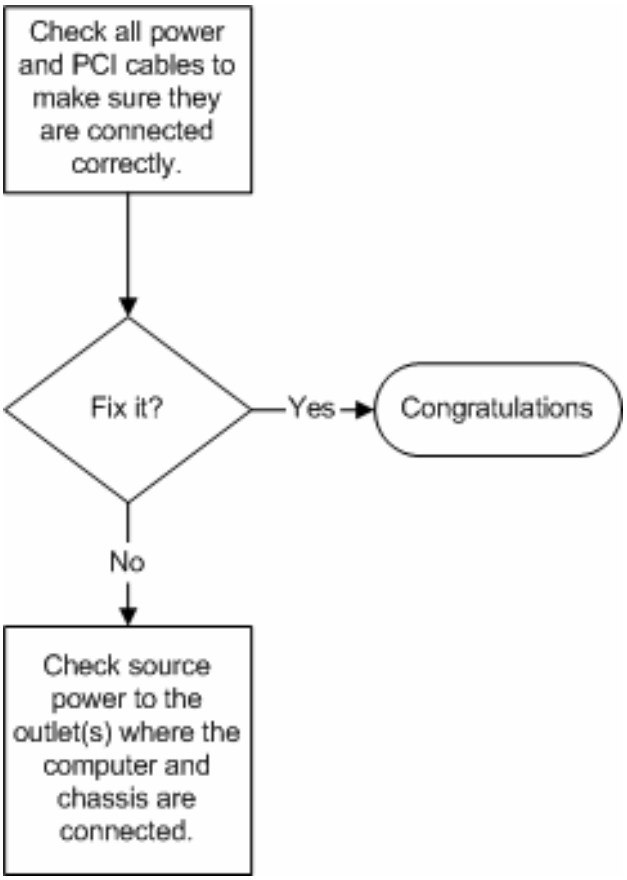
MAC

Go to *Chapter 6* to see about getting additional help.

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When Nothing Works

The following troubleshooting steps will help you when the computer or chassis won't turn on or "nothing seems to work" correctly:





Review Chapters *3 (Verify Installation)* and *4 (Install 3rd Party PCI Cards)* as necessary to verify that you have a valid installation of the Magma expansion system and that you have correctly installed your 3rd Party PCI card(s) and their associated drivers (as required).

If it powers up OK, but nothing works, check the computer's Device Manager or System Profiler to see if the expansion system has been found. If not found, try the troubleshooting steps for *My Computer Can't Find the PCI Expansion System*. If the expansion system is visible, but has a problem, try to resolve the problem (See Note above). If that fails, go to *Chapter 6* to see about getting additional help.

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My Computer Hangs During Power Up

If your computer "hangs" while being turned on and you can't even start, follow these simple steps to try to fix this problem:

1. Shut off the computer (first) and then the Magma expansion system and verify that all cards and cables are installed correctly. Reapply power first to the expansion system and then to the computer.

2. If it still hangs, remove all 3rd Party PCI cards and try booting up without any cards installed.

    a. If it still hangs, remove the Magma PCI expansion host card from the computer and try booting up without the Magma expansion system attached.

        i. If it boots up OK without the Magma expansion system attached, call Magma Technical Support.

        ii. If it still hangs, the problem is in the computer and not with the Magma expansion system or the 3rd Party PCI cards.

    b. If it boots up OK without any 3rd Party PCI cards installed, try adding only one card and see if it boots up.

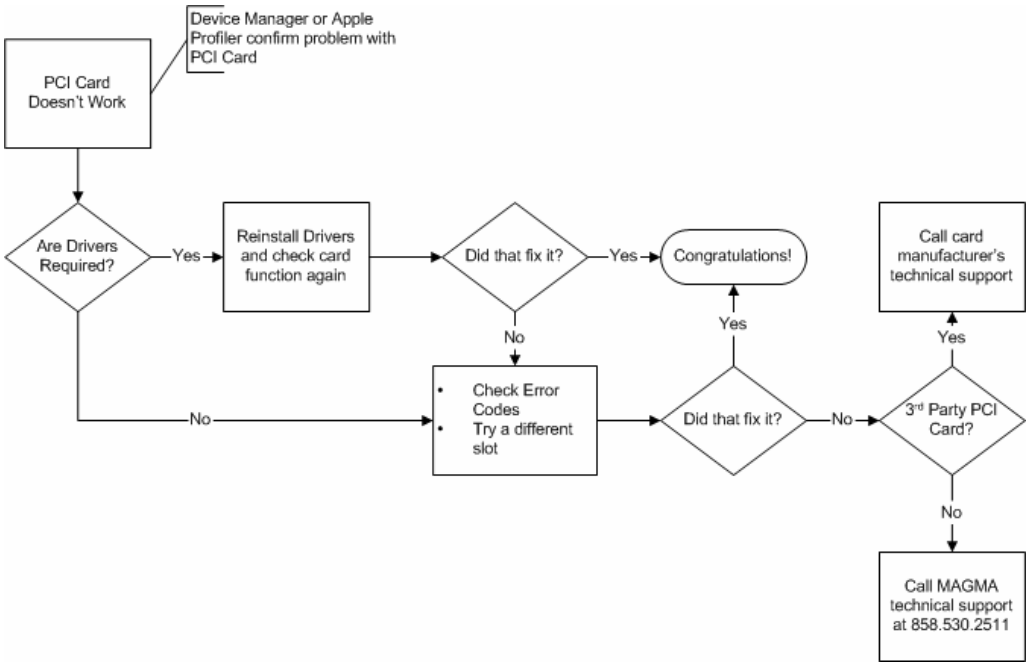
        i. If it boots up OK with one card in it, shut it down (in the proper order, of course) and swap cards. Repeat this until all cards have been tested. If they all test OK, then add them back one at a time until you find the combination that doesn't work, or you are running fine. If you find a bad card, call Technical Support. If you don't – congratulations, you fixed it!

        ii. If it still hangs up, try a different card – this one is probably bad (or has driver problems). If the second cards works, troubleshoot the first card. If the second card also fails, call Technical Support.

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My PCI Card Doesn't Work

Follow these simple troubleshooting steps to resolve typical 3rd Party PCI card problems:



The following additional steps might also help when the above troubleshooting steps for fail to resolve your problem:

1. Shut down the computer followed by the Magma expansion chassis

2. Remove the PCI card displaying a problem

3. Replace the "problem card" with a *simple* PCI card, such as an Ethernet card that has drivers built into the operating system. *(Using this "type of card" will avoid any future questions about drivers possibly being installed incorrectly.)*

4. Turn on the Magma expansion chassis, and then turn on the computer.

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Windows

5. Next, open the Device Manager (View by Connection selection).

   If the  is gone, the problem is with the 3rd Party PCI card or the card drivers. You should go to the *Windows Error Codes* section of this chapter to learn how to troubleshoot using error codes.

   If the  is still visible, the problem may be with the Magma expansion system. Please contact Magma Technical Support for further guidance and/or a replacement product.

   If an error shows on any of the PCIe to PCI Bridge Connections, call Magma Technical Support immediately.

MAC

5. Next, open the Apple System Profiler and if the PCIe to PCI Bridge Connections and the 3rd Party PCI card(s) are now correctly visible.

Support for 3rd Party PCI Cards

Magma will provide reasonable technical support to with 3rd Party PCI cards. However, if you have verified a successful installation of the Magma PCI Expansion System (as defined in *Chapter 4*), but experience difficulty installing your 3rd Party PCI cards, the PCI card manufacturer may be able to provide the best support.

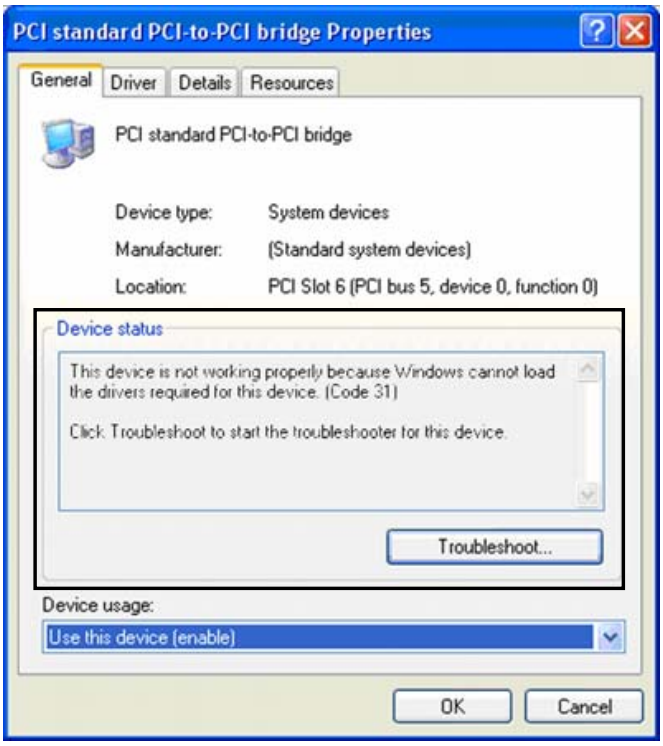


The Magma PCI Expansion System is designed to function exactly like your desktop computer. This means that you should follow the PCI card maker's instructions for installation on a Windows or Mac computer as if the expansion chassis WAS the desktop computer. When correctly installed, there is no difference to the operating system, removable cards, or most software.

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Windows Error Codes

If you are having a problem with one of your devices, and the Device status box shows a Windows Error Code, refer to the following list of error codes for guidance:



Error Code	Description/Action
10	**This code indicates that there is a problem with the 3rd Party PCI Card driver.** If necessary, contact the PCI Card's manufacturer for updated PNP compatible drivers. If all else fails, contact Magma Technical Support for further assistance.
12	**On the Bridge:** If you receive error code 12 on the first PCI to PCI Bridge, call Magma Technical Support. **On the PCI Card**: This usually means the memory, I/O, or prefetch is more than has been allocated. Call Magma Technical Support.

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Error Code	Description/Action
28 (PCI Card)	The driver for the PCI Card is not installed on your system. Reinstall the PCI Card driver following the manufacturer's instructions. If that fails to fix the problem, call the card manufacturer for new drivers.
1	The PCI host card or expansion chassis are not working correctly. Reinstall the PCI host card into the computer's PCI slot and recheck all cable connections. If the error code remains, try another PCI slot. If you still have the error, call Magma Technical Support.
Other Codes	For all other error codes, call: **On the PCI to PCI Bridge:** Magma Technical Support **On the PCI Card:** Card Manufacturer's Technical Support, after first verifying that the Magma expansion system is installed properly.

If you are still having problems, contact Magma Technical Support for more help.

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Chapter 6 How to Get More Help

Frequently Asked Questions (FAQ)

You can visit the Magma Technical Support FAQ pages on the Internet at:

www.magma.com/support/

Contacting Technical Support

Our support department can be reached by fax at (858) 530-2733 or by phone at (858) 530-2511. Support is available Monday through Friday, 8:00 AM to 5:00 PM PT. When contacting Magma Technical Support, please be sure to include the following information:

1) Name
2) Company Name
3) Phone Number
4) Fax Number
5) Email Address
6) Model Number
7) Serial Number
8) Computer Make
9) Computer Model
10) Operating System and Version
11) Make/Model of PCI cards in expansion chassis
12) Detailed description of the problem

You can also visit our web site at:

www.magma.com/support/

For a quick response, use the Technical Support and RMA Request Form available in the Support Section of the website. Simply complete the form with all required information. Please make sure that your problem description is sufficiently detailed to help us understand your problem.

> *For example: Don't say "Won't boot up." Do say "Tried all the steps in the Troubleshooting Section and it still won't boot up."*

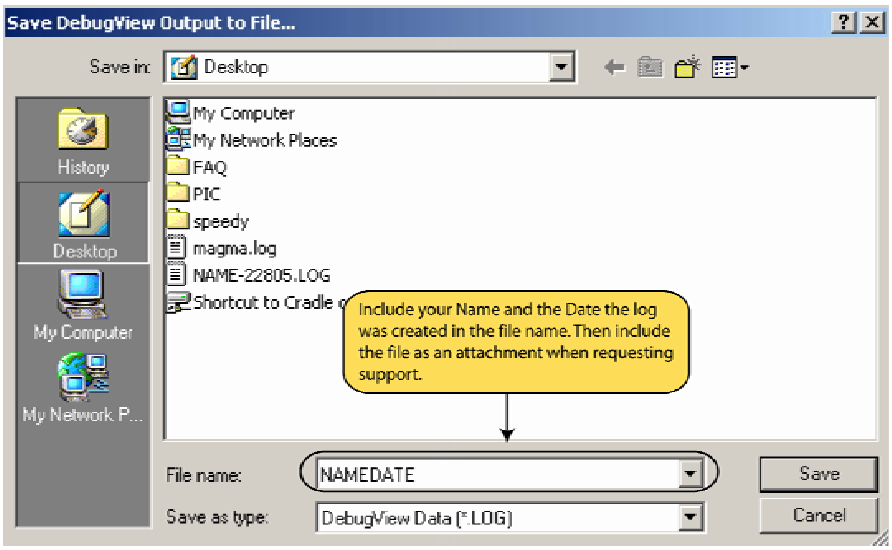
For faster diagnosis of your problem, please run the two utility programs described in the following sections and include the diagnostic files they generate with your email.

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Magma Debug Utility

Occasionally, Magma Technical Support may request Windows users to produce and email a Magma debug log file to help them resolve your problem. This file should be included as an attachment when submitting a request at www.magma.com/support.

1. Locate a file called **dbgview.exe** on the Magma CDROM.
2. Double-click on the file **dbgview.exe**
3. While the **dbgview** screen is open, locate and double-click on a file called **dump.exe** on the Magma CDROM.
4. Switch back to the **dbgview** screen, which is now filled with data.
5. Save this file and submit it as an attachment when submitting a Technical Support request.



Use the “Save As Type” drop-down arrow to select a file type of (*.LOG).

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PCIScope Software Utility

PCIScope is a powerful tool for Windows users. It was designed by a Germany company called APSoft. This software utility is a valuable resource to explore, examine and debug the PCI subsystem of your computer. It was made to fit the requirements of the most demanding users, especially engineers, programmers, and system administrators, and to integrate all advanced functions and tools into one product. Please visit www.tssc.de for more information about the capabilities of **PCIScope** and other utilities offered by APSoft.

An evaluation version of **PCIScope** is available for download at www.tssc.de. (You can purchase an inexpensive license from APSoft for use beyond the evaluation period.)

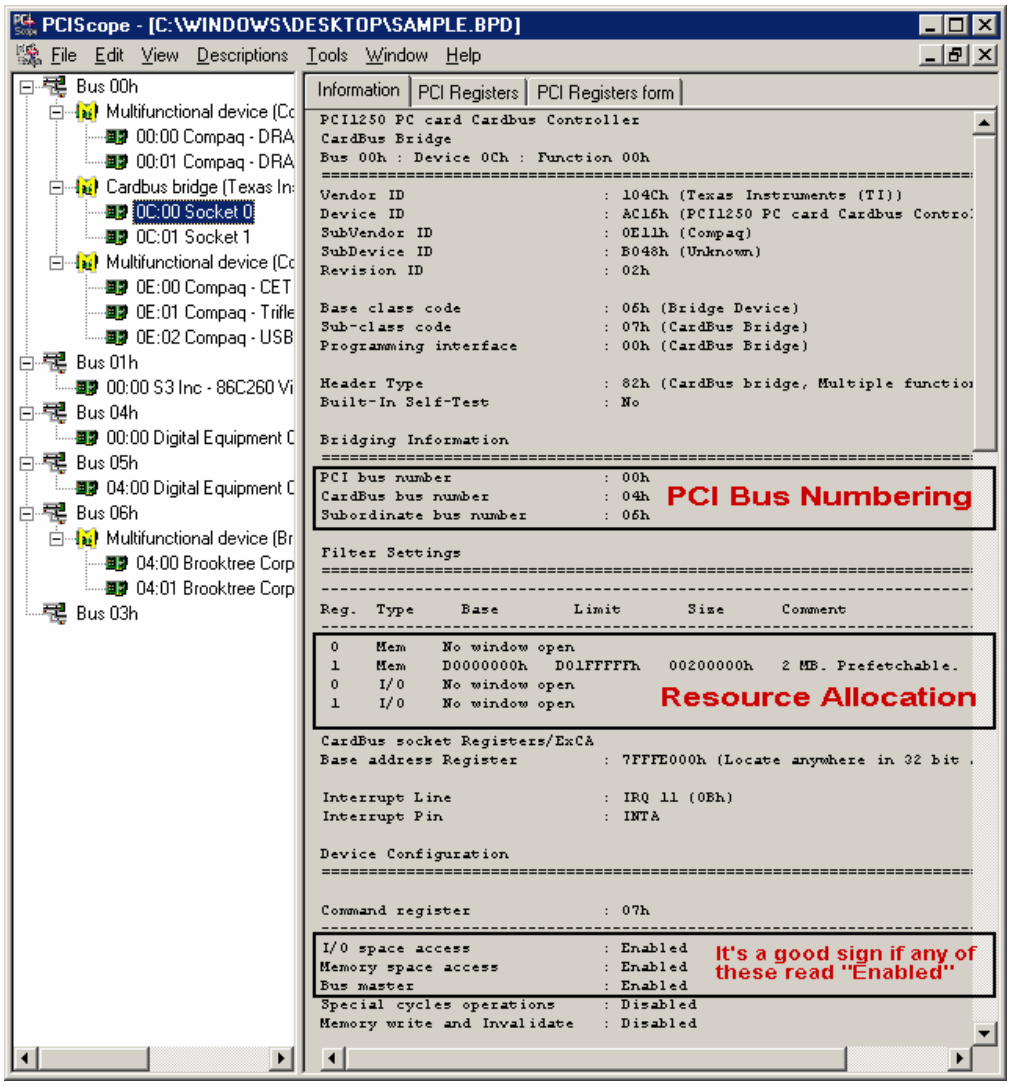
PCIScope has proven to be extremely useful when verifying and debugging configurations involving the Magma PCI Expansion Systems under any Windows platform.

PCIScope can provide information to you and our Technical Support Group such as PCI Bus Numbering, Resource Allocation, and other information that may prove useful when debugging expansion chassis or PCI card problems.

If you are experiencing problems setting up your system, you should run **PCIScope** before contacting the Magma Technical Support Group.

With the Magma expansion chassis powered up and connected to your computer, load and launch the **PCIScope** application. The **PCIScope** Program will be installed on your computer and a window similar to the one shown below will appear. (The example was taken from a Compaq Armada 7400)

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You should save this data as a file on your computer. Please include your name and date as part of the file name with an extension of ".bpd." Then email this file to support@magma.com if you are experiencing configuration problems.

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Returning Merchandise to Magma

If factory service is required, a Service Representative will give you a Return Merchandise Authorization (RMA) number. Put this number and your return address on the shipping label when you return the item(s) for service. **Magma will return any product that is not accompanied by an RMA number**. Please note that Magma WILL NOT accept COD packages, so be sure to return the product freight and duties-paid.

Ship the well-packaged product to the address below:

MAGMA RETURNS DEPT.
RMA # _____
9918 Via Pasar
San Diego, CA 92126
USA

It is not required, though highly recommended, that you keep the packaging from the original shipment of your Magma product. However, if you return a product to Magma for warranty repair/ replacement or take advantage of the 30-day money back guarantee, you will need to package the product in a manner similar to the manner in which it was received from our plant. Magma cannot be responsible for any physical damage to the product or component pieces of the product (such as the host or expansion interfaces for PCI expansion chassis) that are damaged due to inadequate packing. Physical damage sustained in such a situation will be repaired at the owner's expense in accordance with Out of Warranty Procedures. Please, protect your investment, a bit more padding in a good box will go a long way to insuring the device is returned to use in the same condition you shipped it in. Please call for an RMA number first.

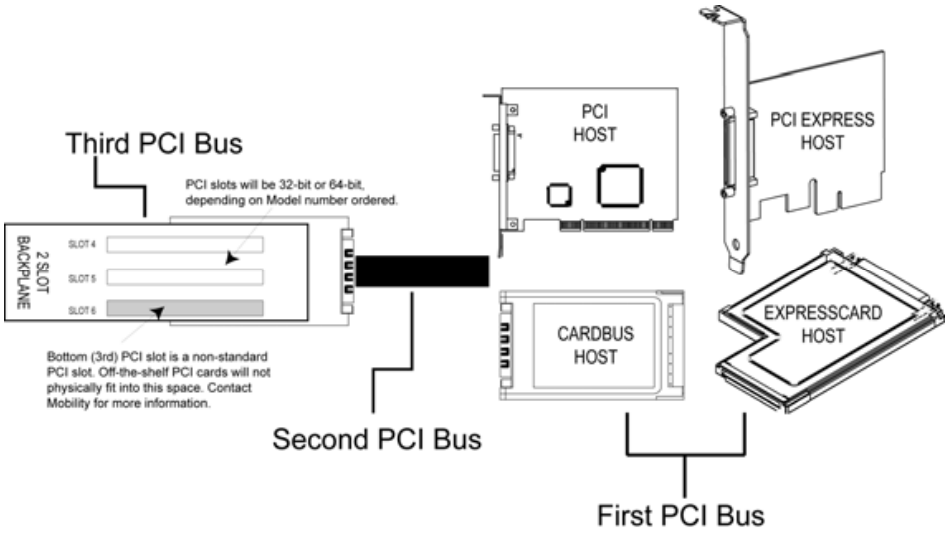
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Appendix A Bus Hierarchy

Bus Hierarchy

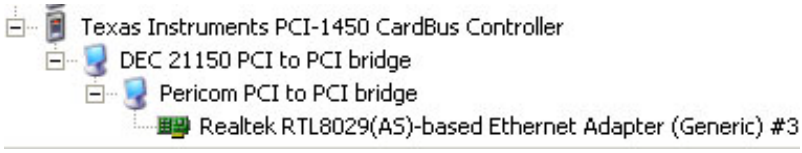
The following figure is representative of the PCI Bus hierarchies for the 2 Slot PCI Expansion System. This figure pictorially conveys the overall PCI bus topology of the system.

2 Slot Topology



In general, we do not know what the actual Bus numbers are. We only know how they increment starting from the host card.

The key point in the figure of the 2 slot topology is that the connecting cable between the host card and the 2 slot backplane is actually a PCI bus itself. This is represented in the Windows Device Manager as shown below:





NOTE

All PCI cards installed in the PCI Expansion chassis will appear on the Third PCI Bus behind the PCI Bus that the host card is installed on. *If you need to know the actual Bus number, right-click on the Bus and select Properties*.

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Appendix B DC Power Information

SUB100WDC

By purchasing the DC power upgrade (Part Number SUB100WDC), Magma 2 slot chassis users can power their expansion chassis off a **user supplied** 12-volt DC power source, such as a battery set, car-lighter adapter, etc., (provided they use the proper cabling).

The SUB100WDC provides a 100 Watt DC-DC power supply in place of the standard 90 Watt AC power supply.

The SUB100WDC includes the following parts:

1. 100 Watt DC-DC converter with male 4-pin XLR receptacle
2. 100 Watt AC-DC power brick
3. U.S. Standard 115V power cord



To use DC power, you must use a cable with a female XLR-4 connector to connect the Magma expansion chassis to your DC power source. These battery cables and adapter are available from video supply vendors, like B & H Photo (www.bhphotovideo.com)



NOTE

The SUB100WDC power supply is designed to accommodate DC input in the range of 9-16VDC and draw a maximum load of 100 Watts. Please use this information when consulting with your local audio/video supplier when reviewing battery options, and sizing.

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Battery Sizing/Selection:

For Batteries Rated in Amp Hours:

Use the following table for matching desired operating hours to battery capacity ratings.

SUB100WDC Max Rated Load (Watts): 100 Watts
Margin of Safety for Battery Selection: 10%

Column 1	Column 2-4		
Desired Continuous Operating Hours	**Amp Hours**		
	12VDC*	**13.2VDC***	**14.4VDC***
1	9.2	8.3	7.6
2	18.3	16.7	15.3
3	27.5	25.0	22.9
4	36.7	33.3	30.6
5	45.8	41.7	38.2
6	55.0	50.0	45.8
7	64.2	58.3	53.5
8	73.3	66.7	61.1

*Typical Battery Output Voltage

1. Calculations assume continuous operation at maximum designed load.
2. Margin of safety used is 10%.
3. Determine the number of Desired Continuous Operating Hours you would like to operate before recharging. (Column 1)
4. Determine the Battery Output Voltage of the battery you would like to use. (Column 2-4)
5. Read the cell value in the table for the Amp Hours required. Use this number when choosing a battery (or set of batteries).
6. If you required more than 8 hours- use multiples of a lesser number of hours.

Examples:

If you want 5 hours of continuous operation with a 14.4VDC battery set: Locate row 5 in Column 1 of the table above, read across the row to the 14.4VDC Column, you will find that you will need a battery (or set of batteries) with a total power rating of about 38 Amp Hours.

If you want 10 hours of continuous operation with this same battery set (at 14.4VDC), would need a total power rating of about 72 Amp Hours (2 x 38 from the above example).

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For Batteries Rated in Watt Hours:

If the batteries are rated by the vendor in **Watt Hours**, then simply multiply the number of desired hours of use by 100 Watts to get total **Watt Hours** rating requirement.

If you want to run a DC powered 2 slot chassis for up to 4 hours: 4 hours x 100 Watts = 400 Watt Hours is required for the selected battery *set*.

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APPENDIX C Compliance

FCC

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



NOTE

The assembler of a personal computer system may be required to test the system and/or make necessary modifications if a system is found to cause harmful interferences or to be noncompliant with the appropriate standards for its intended use.

Industry Canada

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numériqué de la classe A est conformé à la norme NMB-003 du Canada

CE

The product(s) described in this manual complies with all applicable European Union (CE) directives. Mobility will not retest or recertify systems or components that have been reconfigured by customers.

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