PCES-8581-4S PCES-8581-13S

PCI Express-to-PCI Extension System

User's Manual

Manual Revision: 2.00

Revision Date: October 19, 2007

Part No: 50-1S001-2000

Recycled Paper

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Advance Technologies; Automate the World.

Revision History

Revision	Release Date	Description of Change(s)
2.00	2007/10/19	Initial Release

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Preface

Copyright 2007 ADLINK TECHNOLOGY INC.

This document contains proprietary information protected by copyright. All rights are reserved. No part of this manual may be reproduced by any mechanical, electronic, or other means in any form without prior written permission of the manufacturer.

Disclaimer

The information in this document is subject to change without prior notice in order to improve reliability, design, and function and does not represent a commitment on the part of the manufacturer.

In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or inability to use the product or documentation, even if advised of the possibility of such damages.

Trademarks

PCI Express® is a registered trademark of the Peripheral Component Interconnect Special Interest Group.

Product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective companies.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Using this Manual

Audience and Scope

The PCES-8581-4S PCES-8581-13S User's Manual is intended for hardware technicians and systems operators with knowledge of installing, configuring and using PCI Express®-to-PCI extension systems. This document is specifically intended to describe connecting ADLINK PCIS-8580-4S/PCIS-8505-13S PCI-to-PCI-Extension Systems to a host computer or I/O devices for extended functionality.

Manual Organization

This manual is organized as follows:

Preface: Presents important copyright notifications, disclaimers, trademarks, and associated information on the proper understanding and usage of this document and its associated product(s).

Chapter 1, Introduction: Introduces the PCES-8581-4S/13S PCI Express®-to-PCI Extension System overview, its features, applications, and package contents.

Chapter 2, Getting Started: Presents information on properly installing PCES-8581-4S/13S equipment and cabling a PCI Express® to PCI extension system.

Chapter 3, Hardware Information: Presents layout information, technical drawings, jumper settings and configuration.

Chapter 4, Troubleshooting: Provides basic information on quickly addressing configuration/setup/installation problems that may occur.

Important Safety Instructions: Presents safety instructions all users must follow for the proper setup, installation and usage of equipment and/or software.

Warranty Information: Presents important warranty information for users/manufacturers rights and responsibilities regarding ADLINK products and services.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.


NOTE:

Additional information, aids, and tips that help users perform tasks.


CAUTION:

Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.


WARNING:

Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Reference Documentation

The following list of documents may be used as reference materials to support installation, configuration and/or the operation of the PCES-8581-4S/PCES-8581-13S. This list is prepared in alphabetical order (by vendor name, then by document title) for clarity.

Vendor(s)	Title	Rev.
ADLINK Technology, Inc.	ADLINK PCIS-8580-4S/PCIS-8505-13S User's Manual	2.01
PCI-SIG	PCI Express® Base Specification	1.0a
PCI-SIG	PCI-to-PCI Bridge Architecture Specification	1.2
PCI-SIG	PCI Local Bus Specification	3.0

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Getting Service

Contact us should you require any service or assistance.

ADLINK TECHNOLOGY INC. (HEADQUARTERS)

Web Site:	http://www.adlinktech.com
Sales & Service:	service@adlinktech.com
Telephone No.:	+886-2-8226-5877
Fax No.:	+886-2-8226-5717
Mailing Address:	9F No. 166 Jian Yi Road, Chungho City, Taipei 235, Taiwan, ROC

ADLINK TECHNOLOGY AMERICA INC.

Sales & Service:	info@adlinktech.com
Toll-Free:	+1-866-423-5465
Fax No.:	+1-949-727-2099
Mailing Address:	8900 Research Drive, Irvine, CA 92618, USA

ADLINK TECHNOLOGY CO. LTD. (BEIJING)

Sales & Service:	market@adlinkchina.com.cn
Telephone No.:	+86-10-5885-8666
Fax No.:	+86-10-5885-8625
Mailing Address:	Rm. 801, Power Creative E, No. 1, B/D Shang Di East Rd. Beijing, 100085 China

ADLINK TECHNOLOGY CO. LTD. (SHANGHAI)

Sales & Service:	market@adlinkchina.com.cn
Telephone No.:	+86-21-6495-5210
Fax No.:	+86-21-5450-0414
Mailing Address:	4F, Bldg. 39, No.333 Qinjiang Road, Chao He Jing Hi Tech Park Shanghai, 200233 China

ADLINK TECHNOLOGY CO. LTD. (SHENZHEN)

Sales & Service:	market@adlinkchina.com.cn
Telephone No.:	+86-755-2643-4858
Fax No.:	+86-755-2664-6353
Mailing Address:	2F, C Block, Bld. A1, Cyber-Tech Zone, Gao Xin Ave. Sec 7, High-Tech Industrial Park S., Shenzhen, 518057 China

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

ADLINK TECHNOLOGY INC. (EUROPE)

Sales & Service:	emea@adlinktech.com
Toll-Free:	+49-211-495-5552
Fax No.:	+49-211-495-5557
Mailing Address:	Nord Carree 3, 40477 Düsseldorf, Germany

ADLINK TECHNOLOGY INC. (INDIA)

Sales & Service:	india@adlinktech.com
Telephone No.:	+91-80-6560-5817
Fax No.:	+91-80-2244-3548
Mailing Address:	No. 1357, Ground Floor, "Anupama", Aurobindo Marg JP Nagar (Ph-1) Bangalore, Karnataka 560078, India

ADLINK TECHNOLOGY JAPAN CORP.

Sales & Service	japan@adlinktech.com
Telephone No.	+81-3-4455-3722
Fax No.	+81-3-5333-6040
Mailing Address	Asahiseimei Hatagaya Bld. 1-1-2 Hatagaya Shibuya-ku, Tokyo, Japan

ADLINK TECHNOLOGY INC. (SOUTH KOREA)

Sales & Service:	korea@adlinkchina.com.cn
Telephone No.:	+82-2-2057-0565
Fax No.:	+82-2-2057-0563
Mailing Address:	4F, Kostech Building, 262-2, Yahgjae-Dong, Seocho-Gu, Seoul, 137-130, South Korea

ADLINK TECHNOLOGY SINGAPORE PTE. LTD.

Sales & Service:	singapore@adlinktech.com
Telephone No.:	+65-6844-2261
Fax No.:	+65-6844-2263
Mailing Address:	84 Genting Lane #07-02A, Cityneon Design Center, Singapore 349584

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Table of Contents

PCES-8581-4S PCES-8581-13S i
Revision History ii
Preface iii
Copyright 2007 ADLINK TECHNOLOGY INC. iii
Disclaimer iii
Trademarks iii
Using this Manual iv
Conventions v
Reference Documentation vi
Getting Service vii
Table of Contents ix
List of Figures xi
List of Tables xiii
1 Introduction 1
1.1 Overview 1
1.1.1 Controlling PCI with PCI Express® 1
1.2 Package Contents 3
1.3 Specifications 4
1.4 Features 5
1.5 Applications 5
2 Getting Started 7
2.1 Installation Environment 7
2.2 Installing PCIe-8560 on a Host Computer 8
2.3 Installing PCI Peripheral Cards to an Extension Chassis 10
2.4 Cabling Host Computer to Extension Chassis 12
2.5 Power-ON/OFF Sequence 14
2.6 Remote Power-ON/OFF Functionality 15
2.7 LED Status 18
3 Hardware Information 19
3.1 Functional Block Diagram 19

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3.2 PCIe-8560 Layout, Connectors and Jumpers 20
3.2.1 PCIe-8560 S1/S2 Signal Equalizer Adjustments 21
3.3 PCI-8565 Layout, Connectors and Jumpers 23
3.4 RK-8005 4-Slot Extension Chassis 25
3.4.1 RK-8005 Chassis Mechanical Drawing 25
3.5 RK-8014 13-Slot Extension Chassis 27
3.5.1 RK-8014 Chassis Mechanical Drawing 27
3.6 BP-8005 Layout, Connectors and Jumpers 29
3.7 BP-8014 Layout, Connectors and Jumpers 33
3.8 Extension Cable Options 36
4 Troubleshooting (FAQ) 37
Important Safety Instructions 41
Warranty Policy 43

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

List of Figures

Figure 2-1: PCIe-8560 to Host PC Installation Diagram 9
Figure 2-2: PCI to Extension Chassis Installation Diagram 11
Figure 2-3: Cabling 3 M Extension Cable to Host PC 12
Figure 2-4: Cabling 3 M Extension Cable to Extension Chassis 13
Figure 2-5: Host Computer connected to a PCI Extension System . 13
Figure 2-6: BP-8014 Remote Power-On/Off Diagram..... 17
Figure 3-1: PCI Express Extension System Functional Block Diagram.....19
Figure 3-2: PCIe-8560 Mechanical Layout..... 20
Figure 3-3: PCI-8565 Mechanical Layout..... 23
Figure 3-4: RK-8005 Chassis Front and Back View..... 25
Figure 3-5: RK-8005 Chassis Top View..... 26
Figure 3-6: RK-8005 Side View..... 26
Figure 3-7: RK-8014 Front View 27
Figure 3-8: RK-8014 Back View..... 27
Figure 3-9: RK-8014 Top View..... 28
Figure 3-10: RK-8014 Side View..... 28
Figure 3-11: BP-8005 Backplane Layout 29
Figure 3-12: BP-8014 Backplane Layout 33
Figure 3-13: Standard 3 M extension cable (ALC-PCEEXT-3)..... 36

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

This page intentionally left blank.

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

List of Tables

Table 2-1: PCIe-8560 to Host PC Chassis Installation Items 9
Table 2-2: PCI device to Host PC Chassis Installation Items 11
Table 2-3: Remote Power-ON/OFF Configuration 15
Table 2-4: Remote Power-On/Off Diagram Description 17
Table 3-1: PCIe-8560 Connectors, Jumpers and LED 20
Table 3-2: PCIe-8560 Pin 1 and Pin 2 Equalizer Selection 21
Table 3-3: PCIe-8560 Pin 3 Output Swing Control 22
Table 3-4: PCIe-8560 Pin 4 Output De-Emphasis Control 22
Table 3-5: PCI-8565 Connectors, Jumpers and LED 23
Table 3-6: PCI-8565 JP1 Remote Power-ON/Off Connector 24
Table 3-7: PCI-8565 JP2 Spread Spectrum Clock Control 24
Table 3-8: BP-8005 Connectors, Jumpers and LED 30
Table 3-9: BP-8005 CN1 LED Connector 30
Table 3-10: BP-8005 CN2 ATX Power Connector 31
Table 3-11: BP-8005 CN3 Fan Connector 31
Table 3-12: BP-8005 CN4 ATX Power OK Status Connector 31
Table 3-13: BP-8005 JP1 LED Connector 32
Table 3-14: BP-8005 JP2 ATX Power Enable Connector 32
Table 3-15: BP-8005 JP3 Fan Connector 32
Table 3-16: BP-8014 Backplane Connectors and Jumpers 34
Table 3-17: BP-8014 JP2 ATX Power Enable Connector 34
Table 3-18: BP-8014 JP2 ATX Power Enable Connector 34
Table 3-19: BP-8014 FAN4, FAN5, and FAN6 +12 V Connector 35
Table 3-20: BP-8014 CN2 ATX Power Connector 35
Table 3-21: Optional Extension Cables 36

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

This page intentionally left blank.

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1 Introduction

This chapter introduces the PCES-8581-4S/13S PCI Express®-to-PCI Extension System, presents a general overview and basic applications, its package contents, specifications, and features.

1.1 Overview

Harnessing the bandwidth potential of PCI Express®, the PCES-8581-4S and the PCES-8581-13S smart extension systems enable computers with a PCI Express® slot to remotely manage and control up to 13 PCI devices, using the high-speed PCI Express® interface. These extension systems operate in 32-bit/33 MHz configuration and come with complete end-to-end hardware and software transparency for the host system. Hardware devices installed in the extension system behave and work as if they are directly installed on the host system, requiring no additional drivers or software installation.

The host system may be separated from the extension system at up to seven meters using high-quality shielded twisted copper cables. The robust and reliable PCI Express®-to-PCI extension systems are suited for portable test and measurement applications with high-density I/O requirement and are ideal in hazardous industrial control and automation environments.

1.1.1 Controlling PCI with PCI Express®

Based on PCI Express® technology, PCES-8581-4S and PCES-8581-13S provide bus expansion capability through the high-speed differential signal interface. The PCES-8581-4S and PCES-8581-13S use a signal equalizer and a PCI Express®-to-PCI bridge to architecture a PCI Express® to PCI extension system. With our PCES-8581-4S and PCES-8581-13S, user can use an available PCI Express® slot to control an external PCI chassis. Because the PCI Express® Bridge is a transparent bridge, there is

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

no need to install any additional software when using PCI devices in the external chassis.

The PCES-8581-13S and PCES-8581-4S implement a PCI Express®-based control of PCI modules. The technology consists of a PCIe-8560 card installed in the host computer, a shielded cable, and the extension system. The PCIe-8560 comes in a PCI Express® x1 footprint and communicates with the extension system's low-profile PCI-8565 via a twisted and shielded cable. The PCI-8565 converts the PCI Express® interface into a PCI bridge for additional PCI slots in the extension system.

The link between host PC and the external chassis is a PCI Express® X1 link that represents a dual-simplex communications channel consisting of two, low-voltage differentially driven signal pairs. The signaling rate can reach up to 2.5 Gbps in each direction. Using the shielded and twisted cable, the maximum extension distance can be up to 7 M without decreasing the signal rate.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1.2 Package Contents

PCES-8581-4S

- PCIe-8560 (packaged separately)
- RK-8005 wall-mount chassis, pre-installed with:
  - PCI-8565 card
  - 5-slot backplane
  - 200 W AC power supply
- 3 m extension cable
- AC power cord
- Wall-mount kit for chassis
- User's manual

PCES-8581-13S

- PCIe-8560 (packaged separately)
- RK-8014 wall-mount chassis, pre-installed with:
  - PCI-8565
  - 14-slot backplane
  - 400 W AC power supply
- 3 m extension cable
- AC power cord
- Wall-mount kit for chassis
- Remote power-on cable
- User's manual


NOTE:

If any of the items on the contents list are missing or damaged, contact your ADLINK dealer.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1.3 Specifications

PCIe-8560 (on host computer)

- Compliant with PCI Express® Base Specifications (Rev. 1.0a)
- PCI Express® x1 link with 2.5 Gb/s data throughput
- Maximum extended distance of up to seven meters
- Low-profile footprint, 68.90 mm (H) x 86.65 mm (W)
- Power requirement: 3.3 V, 210 mA (max)

PCI-8565 (on extension system)

- Compliant with PCI-to-PCI Bridge Architecture Specifications (Rev. 1.2)
- Supports 5 V and 3.3 V PCI bus
- 32-bit/33 MHz full data throughput
- Maximum extended distance of seven meters
- Low-profile footprint, 64.41 mm (H) x 119.91 mm (W)
- Power requirement: +3.3 V, 720 mA

Operating and Storage Environments

- Operating temperature: 0°C to 50°C
- Storage temperature: -20°C to 80°C
- Relative humidity: 10% to 90%, non-condensing

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1.4 Features

- PCI Express® control of PCI cards
- High-speed PCI Express® X1 interface
- Compatible with 5 V and 3.3 V PCI bus
- Supports 32-bit/33 MHz PCI interface
- Provides four extended half-size PCI slots with built-in 200 W power supply in a shoebox size chassis (PCES-8581-4S)
- Provides 13 extended full-size PCI slots with built-in 400 W power supply in 19" rack-mount chassis (PCES-8581-13S)
- Extension lengths of 1 M, 3 M and 7 M
- Complete hardware and software transparency
- Compliant with PCI Express® Base Specification, Revision 1.0a
- Compliant with PCI-to-PCI Bridge Architecture Specification, Revision 1.2
- Compliant with PCI Local Bus Specification, Revision 3.0

1.5 Applications

These extension systems are suitable for:

- Electronics manufacturing testing
- High-density I/O systems
- Industrial automation and control
- Military and aerospace
- Testing systems for remote and/or harsh environments
- Video capture

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

This page intentionally left blank.

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2 Getting Started

This chapter describes the installation environment, installation procedures, cabling the equipment, and instructions on powering-on/off the PCES-851-4S and PCES-851-13S PCI Express® to PCI Extension Systems.


NOTE:

Diagrams and images of equipment mentioned are used for reference only. Actual system appearance may vary.

2.1 Installation Environment

Whenever unpacking and preparing to install any equipment described in this manual, please refer to the ***Important Safety Instructions*** chapter of this manual.

Only install equipment in well lit areas on flat, sturdy surfaces with access to basic tools such as flat and cross head screwdrivers.

The PCES-8581-4S and PCES-8581-13S contain several electro-static sensitive components that can be easily damaged by static electricity. For this reason, the card and chassis should be handled on a grounded anti-static mat and the operator should wear an anti-static wristband during the unpacking and installation procedure.

Please also inspect the components for apparent damage. Improper shipping and handling may cause damage to the components. Be sure there is no shipping and handling damage on the components before continuing.


CAUTION:

Do not apply power to any equipment if it has been damaged.

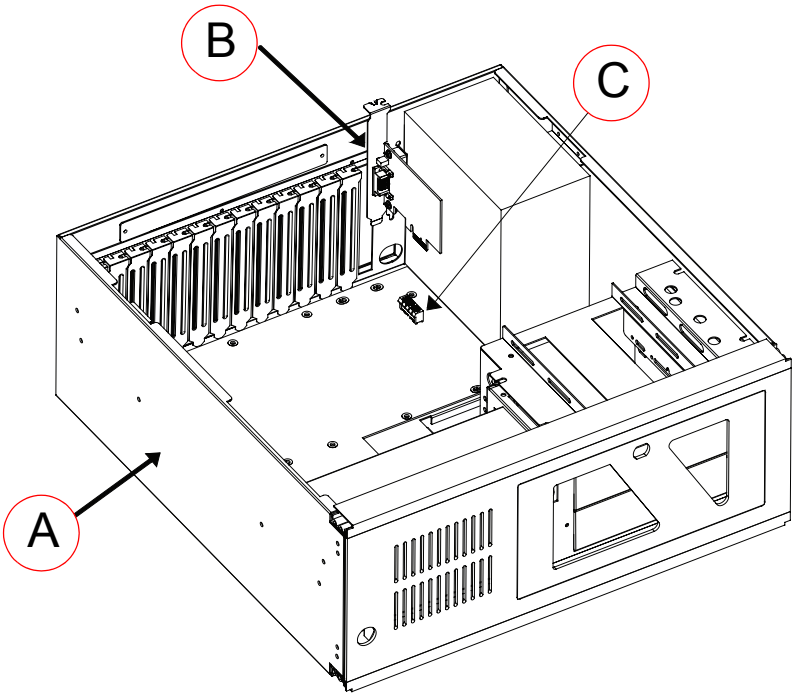
LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2.2 Installing PCIe-8560 on a Host Computer

1. Power-off your host computer.
2. Unscrew the housing of your host computer using a (cross-head or flat-head) screwdriver. Open the housing.
3. Locate your PCI Express® extension card (PCIe-8560) and remove it from its packaging. (Please wear anti-static gloves and use an anti-static surface when handling the card).
4. Install the PCIe-8560 in an available PCI Express® slot in your host computer. Be sure to firmly attach the PCIe-8560's bracket to the backplane of the host PC.
5. Close the chassis and re-install its housing screws.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Figure 2-1: PCIe-8560 to Host PC Installation Diagram



Item	Description
A	Industrial PC or Desktop PC with X1 PCI Express® Slot
B	PCIe-8560 (PCI Express®-to-PCI extension host card)
C	PCI Express® Slot

Table 2-1: PCIe-8560 to Host PC Chassis Installation Items

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2.3 Installing PCI Peripheral Cards to an Extension Chassis

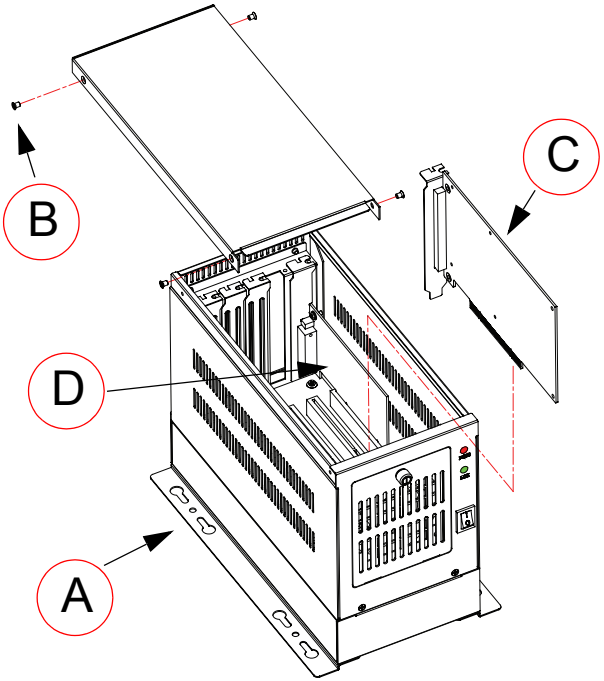


The following instructions are for illustration purposes when attempting to install additional PCI devices to your extension chassis. Both RK-8005 and RK8014 extension chassis are pre-installed with one PCI-8565 extension card.

1. Locate your extension chassis (RK-8005 or RK-8014) and plug-in the AC power cord but **DO NOT** power-on the equipment.
2. Unscrew the four housing screws of the extension chassis using a (cross-head or flat-head) screwdriver. Open the top cover of the chassis. You should see a row of PCI slots (four slots for RK-8005 or 13 slots for RK-8014) along the backplane.
3. Locate your PCI device and remove it from its packaging. (Please wear anti-static gloves and use an anti-static surface when handling the card).
4. Install your PCI device in an available PCI slot and be sure to firmly attach it's bracket to the backplane of the extension chassis.
5. Close the extension chassis and re-install its housing screws.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Figure 2-2: PCI to Extension Chassis Installation Diagram



Item	Description
A	Extension chassis (RK-8005)
B	Extension chassis housing screws
C	Additional PCI card/device
D	Pre-installed PCI-8565

Table 2-2: PCI device to Host PC Chassis Installation Items

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2.4 Cabling Host Computer to Extension Chassis

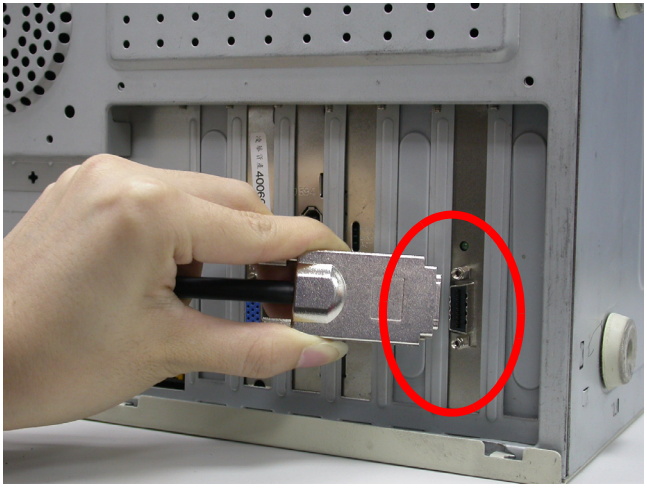
Now that you have successfully installed the PCIe-8560 into the Host computer (or installed an additional PCI device in the extension chassis), you may connect the Host Computer and Extension Chassis with an extension cable.

CAUTION:

Do not remove the extension cable after the system is powered on. It may cause system errors or data loss. If the cable is unplugged improperly, reconnect it and reboot the host PC and extension chassis.

1. Locate your 3 M extension cable.
2. Connect the 3 M extension cable to the PCI Express® serial link connector (PCIe-8560) of your host PC.
3. Firmly attach the 3 M extension cable by tightening its retention screws.

Figure 2-3: Cabling 3 M Extension Cable to Host PC



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

4. Connect the other end of the 3 M extension cable to the PCI-8565 serial link connector of the extension chassis (RK-8005 or RK-8014).

Figure 2-4: Cabling 3 M Extension Cable to Extension Chassis



Figure 2-5: Host Computer connected to a PCI Extension System



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2.5 Power-ON/OFF Sequence

To power-on the PCI express® extension system, follow these steps:

1. Check that the 3 M extension cable is properly connected to the host PC and extension chassis.
2. Power-on the extension chassis first.
3. Power-on the host PC.



DO NOT remove the cable after the system and extension chassis are powered on. Disconnecting the cable while the system is running may cause unpredictable system errors and/or system crash.

As the PCI Express®-to-PCI extension system is a standard PCIe-to-PCI bridge interface, the BIOS will identify each device behind the PCI bridge and assign resource to each one during start up. Thus users have to power-on the remote chassis first in order to get appropriate resources from the BIOS.

To power-off the PCI Express® extension system, follow these steps:

1. Power-off the host PC.
2. Power-off the extension chassis.



DO NOT power-off the extension chassis until the host PC is powered off. If the extension chassis is powered off while the host PC is on, the host PC may hang or crash.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2.6 Remote Power-ON/OFF Functionality

Optional functionality of the PCI express® extension system includes remote power-on/off via the ADLINK BP-8014 backplane.

Once the BP-8014 is properly connected, configured, and enabled, users may remotely power-on/off the extension chassis via a host PC.

The following table lists the connectors that enable remote power-on/off functionality.

Part Number	Connector/ Jumper	Function
PCI-8565	JP1	A signal is sent from JP1 on PCI-8565 which enables the RK-8014 to power-on when the host PC is powered on.
BP-8014	JP2	ATX power enabling connector for BP-8014

Table 2-3: Remote Power-ON/OFF Configuration

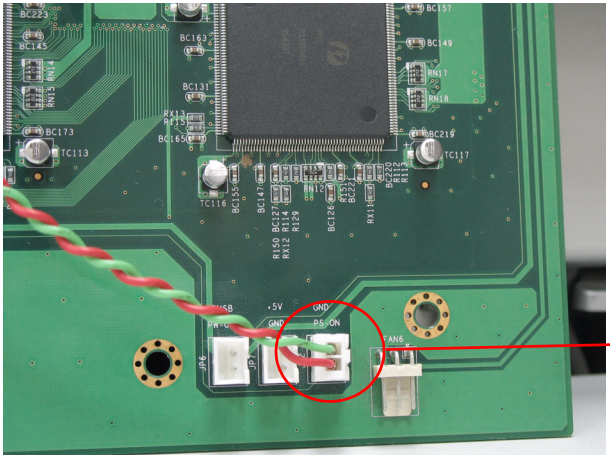

NOTE:

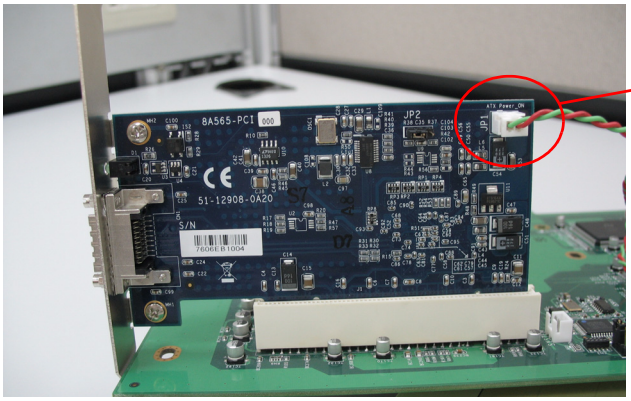
Please refer to sections 3.3, 3.4, 3.5, 3.6 and 3.7 for detailed layout, connectors and jumpers.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

To enable remote power-on/off functionality, follow these steps:

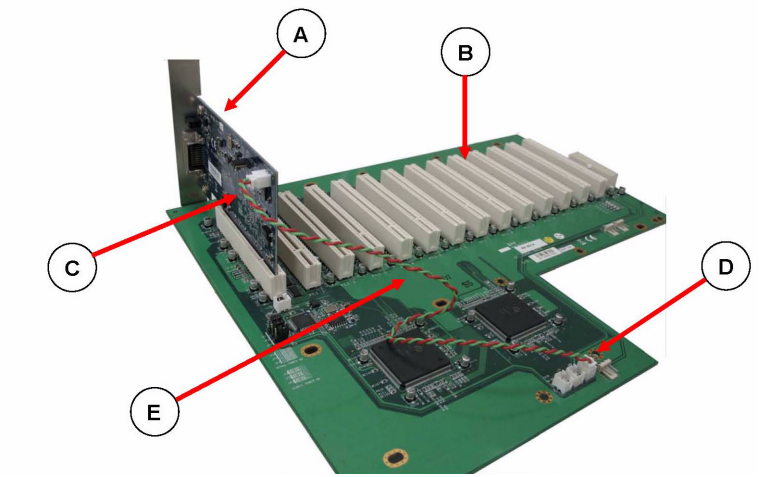
1. Unscrew the four housing screws of the extension chassis (RK-8014) using a (cross-head or flat-head) screwdriver. Open the top cover of the chassis.
2. Disconnect the power-on button of the RK-8014 chassis panel.
3. Locate the JP2 connector on the BP-8014 as well as the JP1 of the PCI-8565.





4. Using a controller cable, connect the JP1 of the PCI-8565 and JP2 of the BP-8014.

Figure 2-6: BP-8014 Remote Power-On/Off Diagram



Item	Description
A	PCI-8565
B	BP-8014
C	JP1 on PCI-8565. JP2 is used for controlling remote chassis power.
D	JP2 on BP-8014 is used to control the ATX power of RK-8014.
E	Remote power-on/off control cable.

Table 2-4: Remote Power-On/Off Diagram Description

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2.7 LED Status

The LEDs on the front panel of the PCIe-8560 and PCI-8565 give power status information. The LEDs light up only when the following conditions are met:

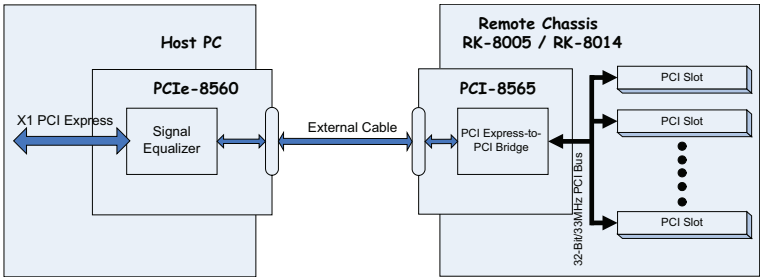
- The extension cable between the PCIe-8560 (Host PC) and PCI-8565 (Extension Chassis) is properly connected.
- The extension chassis is powered on.
- The host PC is entering its Power-On Self Test (POST).

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3 Hardware Information

3.1 Functional Block Diagram

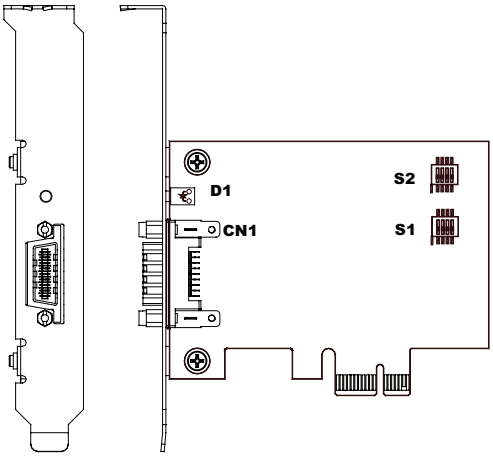
Figure 3-1: PCI Express Extension System Functional Block Diagram



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3.2 PCIe-8560 Layout, Connectors and Jumpers

Figure 3-2: PCIe-8560 Mechanical Layout



Connector/Jumper/LED	Description
S1	Adjusts Signal Equalizer
S2	Adjusts Signal Equalizer
CN1	PCI Express® Serial Link Connector
D1	Serial Link Status LED

Table 3-1: PCIe-8560 Connectors, Jumpers and LED

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3.2.1 PCIe-8560 S1/S2 Signal Equalizer Adjustments

PCIe-8560 provides equalization, amplification and de-emphasis circuits to optimize signal integrity performance. With this design, PCIe-8560 allows signal transmission over long distances and reduces signal distortion.

NOTE: The following adjustment should be applied to both S1 and S2 simultaneously. The S1 transmits signals and S2 is receives signals.

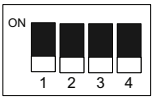
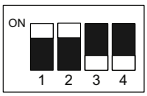
Configuration	Description
	Strongest equalizer levels (default)
	Moderate equalizer level
	Weakest equalizer level
	No equalizer

Table 3-2: PCIe-8560 Pin 1 and Pin 2 Equalizer Selection

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

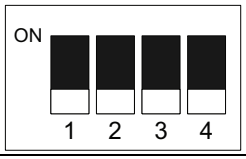
Configuration	Description
	High level output signal swing (Default)
	Normal level output signal swing

Table 3-3: PCIe-8560 Pin 3 Output Swing Control

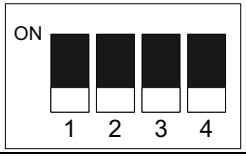
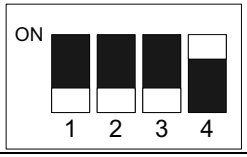
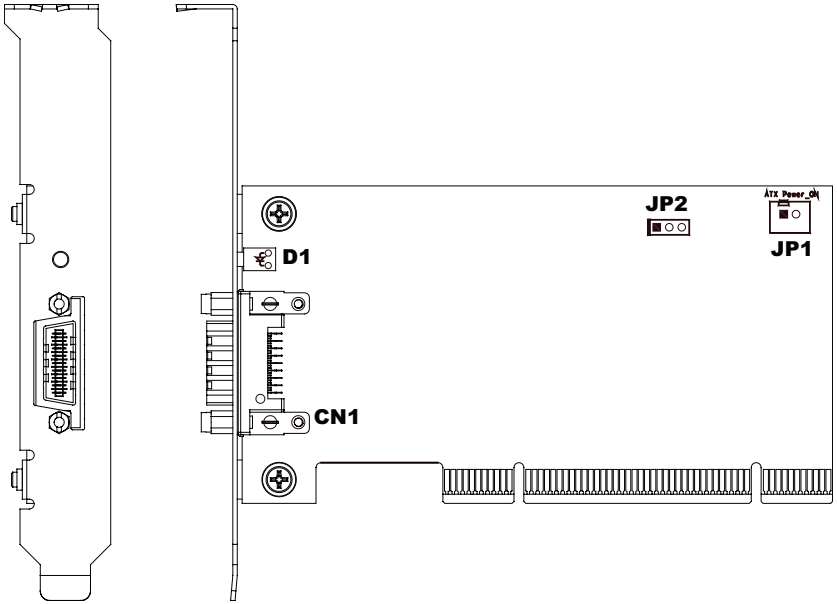
Configuration	Description
	High level output signal swing (Default)
	Normal level output signal swing

Table 3-4: PCIe-8560 Pin 4 Output De-Emphasis Control

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3.3 PCI-8565 Layout, Connectors and Jumpers

Figure 3-3: PCI-8565 Mechanical Layout



Connector/Jumper/LED	Description
JP1	ATX power enabling connector. This connector is used for remote power-on control.
JP2	Spread spectrum clock control
CN1	PCI Express® serial link connector
D1	Serial Link Status LED

Table 3-5: PCI-8565 Connectors, Jumpers and LED

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

	Pin #	Assignment
 JP1	1	PWR-ON. This pin is used for remote power-on/off functionality. Connect this to JP2 on the BP-8014 to enable it.
	2	N/C

Table 3-6: PCI-8565 JP1 Remote Power-ON/Off Connector

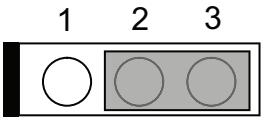
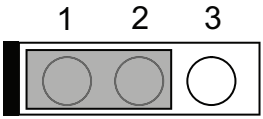
Setting	Description
	Enables spread spectrum control. When enabling spread spectrum control, the PCI clock will be modulated with a low frequency carrier, the peak EMI can be greatly reduced in the system.
	Disables spread spectrum control.

Table 3-7: PCI-8565 JP2 Spread Spectrum Clock Control

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

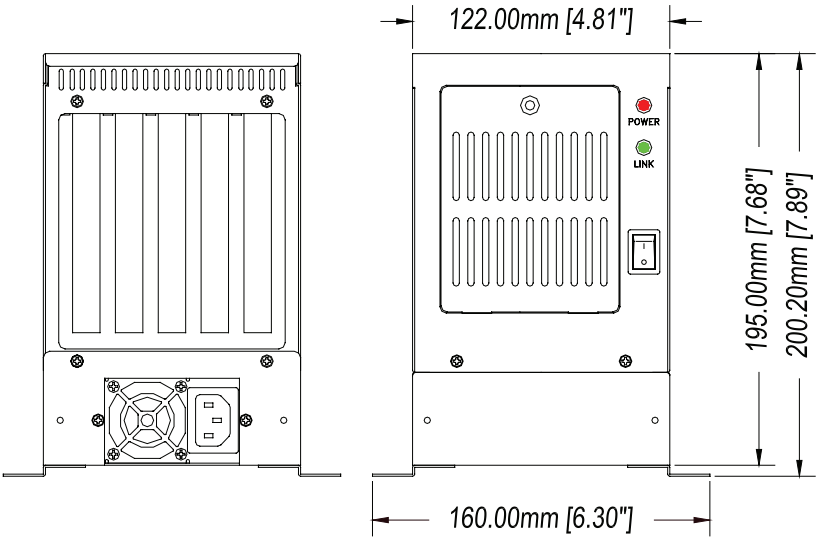
3.4 RK-8005 4-Slot Extension Chassis

RK-8005 is a robust industrial chassis for accommodating the BP-8005 backplane. The RK-8005 is a small, compact chassis (122mm X 195mm X 260mm) with a built-in 200W universal AC power supply. The RK-8005 is provided with a wall-mount kit so you can place it in many different environments.

NOTE: Only half-size PCI cards are suitable for the RK-8005.

3.4.1 RK-8005 Chassis Mechanical Drawing

Figure 3-4: RK-8005 Chassis Front and Back View



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Figure 3-5: RK-8005 Chassis Top View

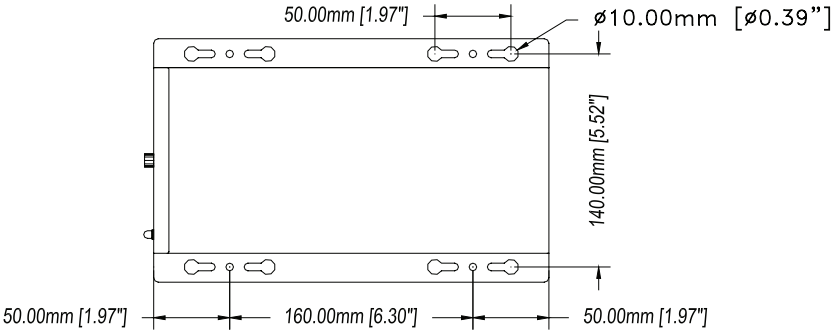
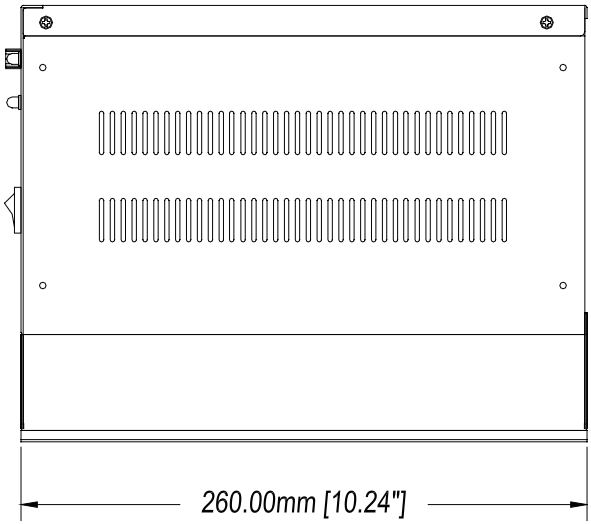


Figure 3-6: RK-8005 Side View



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3.5 RK-8014 13-Slot Extension Chassis

RK-8014 is a robust industrial chassis for accommodating the BP-8014 backplane. The RK-8014 is a 177 mm X 481.1 mm X 438.5 mm chassis with a built-in 200W universal AC power supply.

3.5.1 RK-8014 Chassis Mechanical Drawing

Figure 3-7: RK-8014 Front View

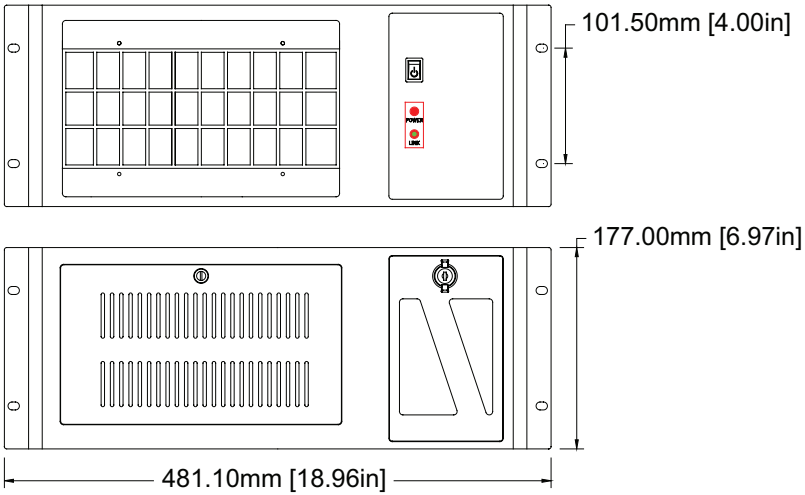
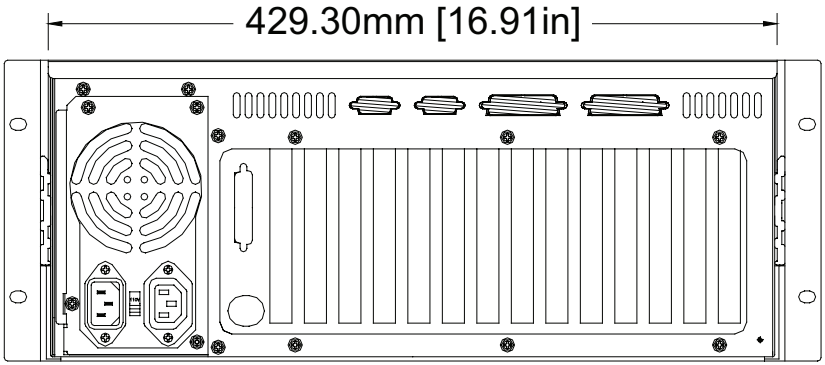


Figure 3-8: RK-8014 Back View



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Figure 3-9: RK-8014 Top View

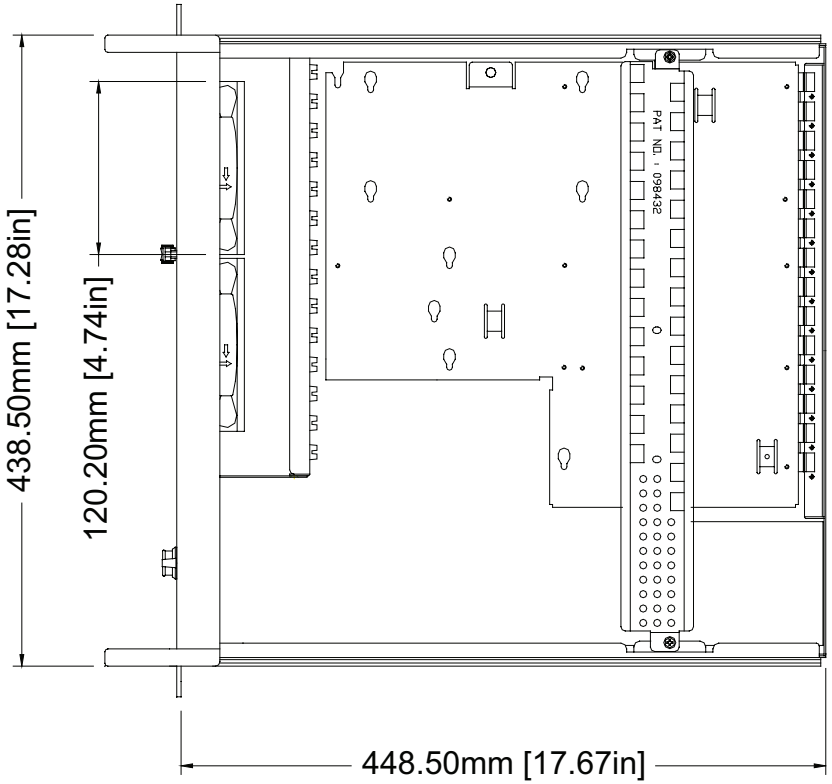
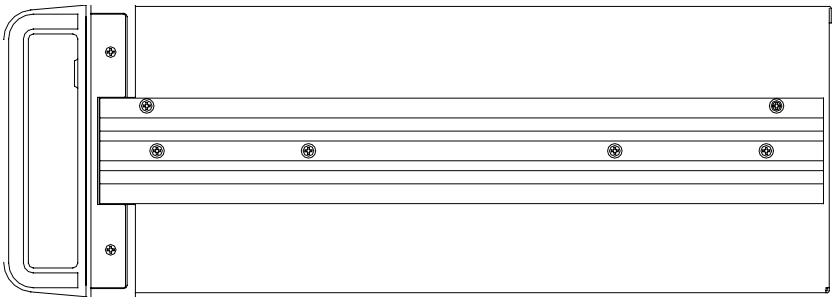


Figure 3-10: RK-8014 Side View



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

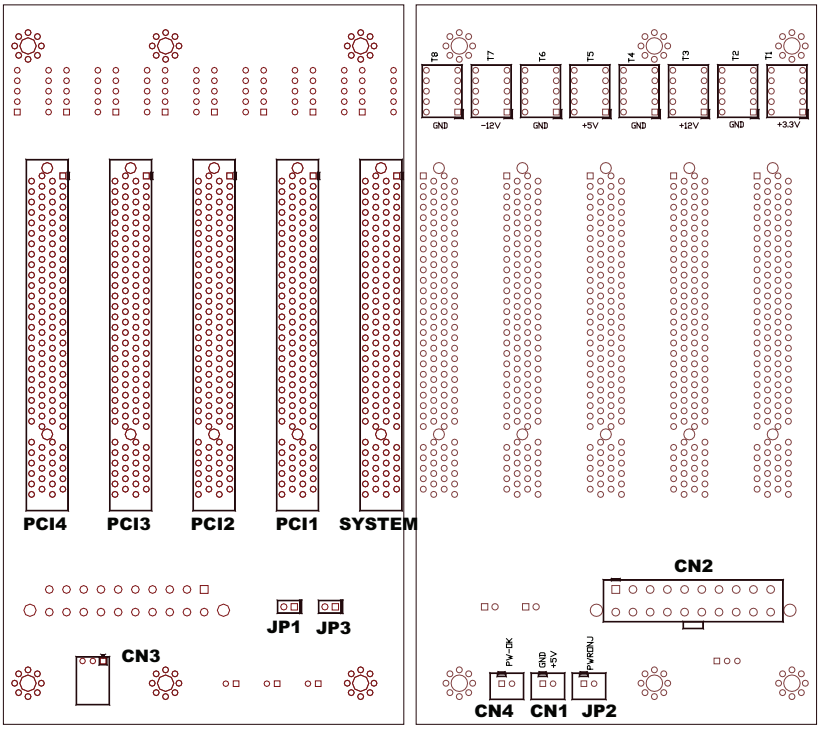
3.6 BP-8005 Layout, Connectors and Jumpers

The BP-8005 backplane provides 1 system slot and 4 available PCI peripheral slots. These PCI slots are for 32-bit and 33MHz PCI devices.

CAUTION:

The system slot is occupied by a pre-installed PCI-8565, please **DO NOT** install a CPU controller in this slot.

Figure 3-11: BP-8005 Backplane Layout



Top View **Soldered Side**

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Connector/Jumper/LED	Description
CN1	LED connector
CN2	ATX power connector
CN3	Fan connector
CN4	ATX power OK status connector
JP1	LED connector
JP2	ATX power enabler
JP3	Fan connector
System	System slot for extension card. This slot is modified for bus extension purposes and does not support general signal board controllers.
PCI1 to PCI4	Peripheral PCI Slot

Table 3-8: BP-8005 Connectors, Jumpers and LED

CAUTION:

DO NOT plug CPU cards in the system slot.

	Pin #	Assignment
 **CN1**	1	Ground
	2	+5 V Output

Table 3-9: BP-8005 CN1 LED Connector

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

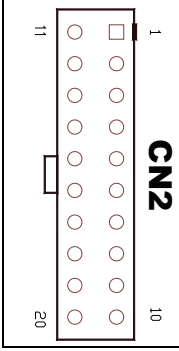
	Pin #	Assignment	Pin #	Assignment
	1	+3.3 V	11	+3.3 V
	2	+3.3 V	12	-12 V
	3	Ground	13	Ground
	4	+5 V	14	PS-ON
	5	Ground	15	Ground
	6	+5 V	16	Ground
	7	Ground	17	Ground
	8	PW-OK	18	-5 V
	9	5 VSB	19	+5 V
	10	+12 V	20	+5 V

Table 3-10: BP-8005 CN2 ATX Power Connector

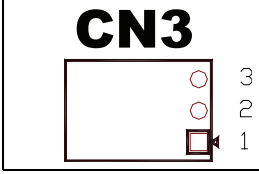
	Pin #	Assignment
	1	N/C
	2	+12 V
	3	Ground

Table 3-11: BP-8005 CN3 Fan Connector

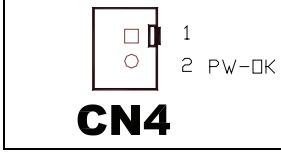
	Pin #	Assignment
	1	Ground
	2	PW-OK. ATX Power Status

Table 3-12: BP-8005 CN4 ATX Power OK Status Connector

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

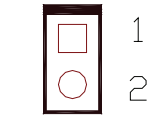
	Pin #	Assignment
 JP1	1	Ground
	2	LED Power, +5 V

Table 3-13: BP-8005 JP1 LED Connector

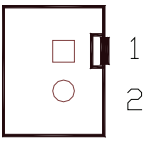
	Pin #	Assignment
 JP2	1	Ground
	2	PWR-ON, ATX Power Enable

Table 3-14: BP-8005 JP2 ATX Power Enable Connector

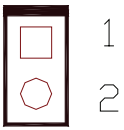
	Pin #	Assignment
 JP3	1	Ground
	2	+12 V

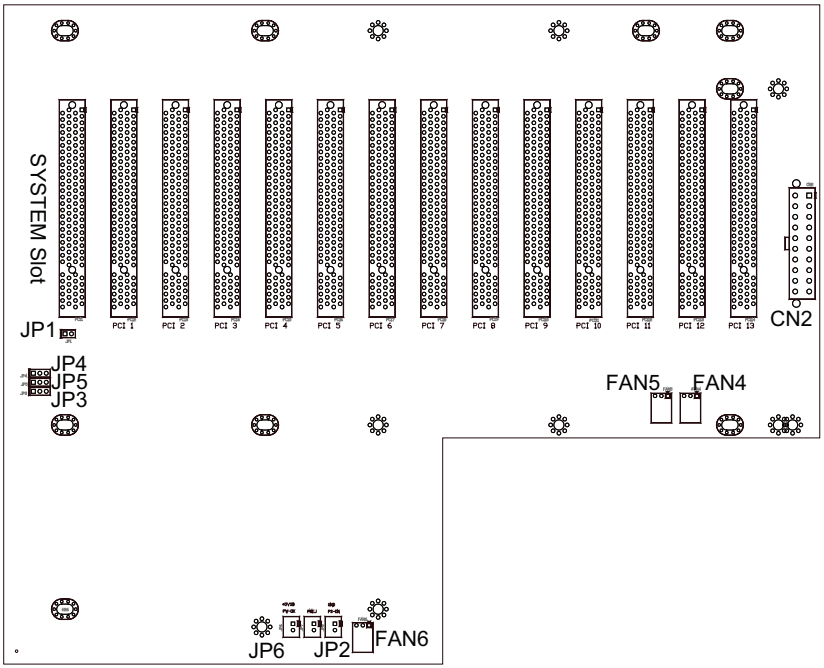
Table 3-15: BP-8005 JP3 Fan Connector

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3.7 BP-8014 Layout, Connectors and Jumpers

The BP-8014 backplane provides 1 system slot and 13 available PCI peripheral slots. The system is occupied by a pre-installed PCI-8565 PCI extension card. The remaining PCI slots are available for 5 V or universal PCI peripheral cards.

Figure 3-12: BP-8014 Backplane Layout



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Connector/Jumper	Description
JP2	ATX power enabling connector
JP6	ATX power OK status connector
JP7	LED connector
FAN4	Fan connector for +12 V fan
FAN5	Fan connector for +12 V fan
FAN6	Fan connector for +12 V fan
CN2	ATX power connector

Table 3-16: BP-8014 Backplane Connectors and Jumpers

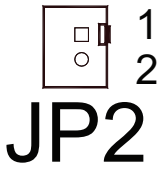
	Pin #	Assignment
	1	PWR-ON
	2	If JP3 2-3 connected, this pin is Ground (Default). For PCES-8580-13S extension system, user should not change the setting of JP3.

Table 3-17: BP-8014 JP2 ATX Power Enable Connector

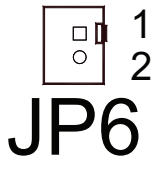
	Pin #	Assignment
	1	PWR-OK
	2	5 V_{sb}, +5 V standby power

Table 3-18: BP-8014 JP2 ATX Power Enable Connector

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

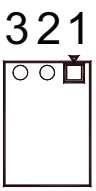
	Pin #	Assignment
	1	N/C
	2	+12 V
	3	Ground

Table 3-19: BP-8014 FAN4, FAN5, and FAN6 +12 V Connector

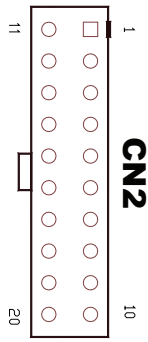
	Pin #	Assignment	Pin #	Assignment
	1	+3.3 V	11	+3.3 V
	2	+3.3 V	12	-12 V
	3	Ground	13	Ground
	4	+5 V	14	PS-ON
	5	Ground	15	Ground
	6	+5 V	16	Ground
	7	Ground	17	Ground
	8	PW-OK	18	-5 V
	9	5 VSB	19	+5 V
	10	+12 V	20	+5 V

Table 3-20: BP-8014 CN2 ATX Power Connector

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3.8 Extension Cable Options

The PCI Express®-to-PCI extension system (PCES-8581-13S and PCES-8581-4S) is available with three different cables in length. These cables are designed to transfer high speed signals and have high immunity from electromagnetic interference.



Figure 3-13: Standard 3 M extension cable (ALC-PCEEXT-3)

Part Number	Description
ACL-EXPRESS-1	1 M, PCI Express®-to-PCI extension cable
ACL-EXPRESS-3	3 M, PCI Express®-to-PCI extension cable
ACL-EXPRESS-7	7 M, PCI Express®-to-PCI extension cable

Table 3-21: Optional Extension Cables

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

4 Troubleshooting (FAQ)

This chapter describes frequently asked questions that may guide the user to solve minors problem they may encounter.

This Troubleshooting (FAQ) applies to:

- PCI Express®-to-PCI Extension System: including PCES-8581-13S and PCES-8581-4S.
- PCI Express-to-PXI Extension Kit: including PCIe-8560 and PXI-8565.

In the following description, the products will be renamed as "PCI Express® Bus Extension Products".

Question: What is the maximum extension length of PCI Express® Bus Extension Products?

Answer: The maximum extension length is 7m. ADLINK offers three different cables in length for customer's applications, 1 M, 3 M and 7 M.

Question: When using ADLINK PCI Express® Bus Extension Products, is there any additional driver or software required to install?

Answer: ADLINK PCI Express® Bus Extension Products are designed to be standard PCI Express®-to-PCI bridges. It is not necessary to install additional drivers or software for support.

Question: How many extension chassis can I connect to a host PC by using ADLINK PCI Express® Bus Extension Products?

Answer: Due to the point-to-point architecture of PCI Express®, only one ADLINK PCI Express® Bus Extension Product can

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

be supported by one chassis. However, users can select multiple extension chassis for different purposes. For example, a 4-slot extension chassis provides small and compact form factor while an 18-slot extension chassis provides more PCI slots. Theoretically, PCI specification allows up to 255 PCI bus segments. ADLINK PCI Express® Bus Extension Products do not limit the bus segment number. The maximum PCI bus segments may limited by your BIOS or operating system.

Question: Is there any compatibility problems with the ADLINK PCI Express®-to-PXI extension kit?

Answer: ADLINK PCI Express® Bus Extension Products are designed as standard PCI Express®-to-PCI Bridge. During PC boot up, your PC BIOS will search devices and assign resources such as, I/O, memory space and IRQ number, to each device according to its algorithm. Although PCI specification allows up to 255 bus segments in a PC system, the BIOS may not assign the correct and/or proper resource to each device in some complex PCI systems.

Because the PCI Express® specification was released in 2002, most hardware and circuit board designers as of yet do not offer multiple PCI-to-PCI bridges. Most BIOS work for simple applications but may not work for multiple PCI bus segments and a variety of resource requests. We suggest customers choose PC equipment with Intel 945, 965 or later chipsets to adjust for these issues.

Question: When I encounter compatibility problems, what should I do?

Answer: Because most compatibility problems come from PCI resource assignments, customers should consult their PC vendors or BIOS vendors for help. Updating to the most current BIOS version may also resolve PCI resources problems.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

The following list are some indications that may help customers to deal with compatibility issues:

1. Disable the onboard device functions of your host PC to release IO resources.
2. Remove PCI devices plugged/installed in your host PC.
3. Connect an extension chassis which is single bus segment to the host PC. Plug a PCI device to an extension chassis one by one and boot each in sequence to check if your host PC can accommodate the PCI device or not.
4. You may try to plug the PCI Express® extension host card to a different PCI Express® slot.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

This page intentionally left blank.

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Important Safety Instructions

For user safety, please read and follow all **instructions**, **WARNINGS**, **CAUTIONS,** and **NOTES** marked in this manual and on the associated equipment before handling/operating the equipment.

- Read these safety instructions carefully.
- Keep this user's manual for future reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- When installing/mounting or uninstalling/removing equipment:
  - Turn off power and unplug any power cords/cables.
- To avoid electrical shock and/or damage to equipment:
  - Keep equipment away from water or liquid sources;
  - Keep equipment away from high heat or high humidity;
  - Keep equipment properly ventilated (do not block or cover ventilation openings);
  - Make sure to use recommended voltage and power source settings;
  - Always install and operate equipment near an easily accessible electrical socket-outlet;
  - Secure the power cord (do not place any object on/over the power cord);
  - Only install/attach and operate equipment on stable surfaces and/or recommended mountings; and,
  - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.
- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.
- A Lithium-type battery may be provided for uninterrupted, backup or emergency power.



Risk of explosion if battery is replaced by an incorrect type.
Dispose of used batteries according to the instructions.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

- Equipment must be serviced by authorized technicians when:
  - The power cord or plug is damaged;
  - Liquid has penetrated the equipment;
  - It has been exposed to high humidity/moisture;
  - It is not functioning or does not function according to the user's manual;
  - It has been dropped and/or damaged; and/or,
  - It has an obvious sign of breakage.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Warranty Policy

Thank you for choosing ADLINK. To understand your rights and enjoy all the after-sales services we offer, please read the following carefully.

1. Before using ADLINK's products please read the user manual and follow the instructions exactly. When sending in damaged products for repair, please attach an RMA application form which can be downloaded from: http://rma.adlinktech.com/policy/

2. All ADLINK products come with a limited two-year warranty, one year for products bought in China:

- The warranty period starts on the day the product is shipped from ADLINK's factory.
- Peripherals and third-party products not manufactured by ADLINK will be covered by the original manufacturers' warranty.
- For products containing storage devices (hard drives, flash cards, etc.), please back up your data before sending them for repair. ADLINK is not responsible for any loss of data.
- Please ensure the use of properly licensed software with our systems. ADLINK does not condone the use of pirated software and will not service systems using such software. ADLINK will not be held legally responsible for products shipped with unlicensed software installed by the user.
- For general repairs, please do not include peripheral accessories. If peripherals need to be included, be certain to specify which items you sent on the RMA Request & Confirmation Form. ADLINK is not responsible for items not listed on the RMA Request & Confirmation Form.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3. Repair service is not covered by ADLINK's two-year guarantee in the following situations:

- ▶ Damage caused by not following instructions in the User's Manual.
- ▶ Damage caused by carelessness on the user's part during product transportation.
- ▶ Damage caused by fire, earthquakes, floods, lightening, pollution, other acts of God, and/or incorrect usage of voltage transformers.
- ▶ Damage caused by inappropriate storage environments such as high temperatures, high humidity, or volatile chemicals.
- ▶ Damage caused by leakage of battery fluid during or after change of batteries by customer/user.
- ▶ Damage from improper repair by unauthorized technicians.
- ▶ Products with altered and/or damaged serial numbers are not entitled to our service.
- ▶ This warranty is not transferable or extendable.
- ▶ Other categories not protected under our warranty.

4. Customers are responsible for all fees necessary to transport damaged products to ADLINK.

5. To ensure the speed and quality of product repair, please download an RMA application form from our company website: http://rma.adlinktech.com/policy/ Products with attached RMA forms receive priority.

For further questions, please e-mail our FAE staff: service@adlinktech.com.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000