JY-8641 PCIe-PXIe Remote Control Expansion Kit Specs and Manual

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1. JY-8641 Specifications

1.1 Overview

The PCIe-PXIe-8641 expansion kit offers high-speed control of PXI Express modules in a chassis, with up to 4GB/s bandwidth via PCIe Gen 2 x8. It includes a PCIe-8641 host adapter, an x8 cable, and a 3U remote controller, all providing transparent hardware and software integration for quick detection of PXI cards without needing extra drivers or software

The PXIe-68638P as an optional module, enables PXIe-to-PXIe multi-chassis expansion with configurations for both daisy-chain and star-chain.

Please download JYTEK <JYPEDIA>, you can quickly inquire the product prices, the key features and available accessories.

1.2 Main Features

- PXI-5 PXI Express hardware specification rev.2.0 compliant
- PCI Express® Base specifications rev.2.0 compliant
- PCIe Gen 2 x8 each support up to 4GB/s
- PXI Express link capability:
  - Four link configuration: x4 x4 x4 x4
  - Two link configuration: x8 x8
- Comprehensive hardware and software transparency
- Flexible option for multi-chassis expansion as a daisy-chain configured by using optional module PXIe-68638P.

1.3 Specifications

	PCIe-8641	PXIe-8641	PXIe-68638P(Optional)
Format	Low Profile	Standard Profile	
Compliance	PCI Express Base Specifications Rev. 2.0	PXI-5 PXI Express Hardware Specification Rev. 2.0	
Dimensions	Low-profile PCI Express module 142(W) x 69(H) mm	PXI Express system module: 175 mm (W) x 107 mm (H)	PXIe Peripheral Module 175 mm (W) x 107 mm (H)
Up-Link Port	To Host PC PCIe: PCIe Gen2 x8	External Port: PCIe Gen2 x8	To PXIe chassis backplane: PCIe Gen2 x8
Down-Link Port	External Port: PCIe Gen2 x8	To PXIe chassis backplane: PCIe Gen2 Four-link configuration: x4 x4 x4 x4 Two-link configuration: x8 x8	External Port: PCIe Gen2 x8
PXI Express Link Capability	N/A	Four-link configuration: x4 x4 x4 x4 Two-link configuration: x8 x8	
Data Bandwidth (max)	4GB/s (PCIe Gen2×8)		
Power Consumption	4W (typical) 8W (max.)	Refer to Table 1.2	
Cable Length	Up to 5 meters for Gen2		
Operating Temperature	0°C to 55°C		
Storage Temperature	-20°C to 70°C		
Relative Humidity	10% to 90%, non-condensing		

Table 1 Model Specifications

2. Order Informations

- PCIe-PXIe-8641/2M (PN: JY2464239-01)
  PCIe-PXIe remote controller bundle with 2 meter cable
- PCIe-PXIe-8641/3M (PN: JY6003131-01)
  PCIe-PXIe remote controller bundle with 3 meter cable
- PCIe-PXIe-8641/5M (PN: JY2649563-01)
  PCIe-PXIe remote controller bundle with 5 meter cable
- PCIe-8641 (PN: JY4099532-01)
  PCIe controller for PXIe expansion, PCIe Gen2x8
- PXIe-8641 (PN: JY1618370-01)
  PXIe remote controller for PXIe expansion, PCIe Gen2x8
- Cable
  ACL-PCIEX8-2 (PN: JA3001544-01)
  2M Cable Kit for PCIe-PXIe system expansion
  ACL-PCIEX8-5 (PN: JA3001544-02)
  5M Cable Kit for PCIe-PXIe system expansion

Table of Contents

1.JY-8641 Specifications 1
1.1 Overview 1
1.2 Main Features 1
1.3 Specifications 2
2.Order Informations 3
3.Introduction 6
3.1 Abbreviations 6
4.Hardware Information 7
4.1 PCIe-8641 Layout, Connectors 7
4.2 PXIe-8641 Layout, Connectors 8
4.3 PXIe-68638P Layout, Connectors (Optional module) 8
5.Software 9
5.1 System Requirements 9
5.2 JY-8641 Hardware Driver 9
6.Operating JY-8641 10
6.1 PCIe-PXIe-8641 Kit Package Contents 10
6.2 Installation Environment 10
6.3 Installing the PCIe-8641 on a Host Computer 10
6.4 PXIe-8641 Series to PXIe Chassis Installation 11
6.4.1 PXIe-8641 to PXIe Chassis Installation 11
6.4.2 PXIe-68638P to PXIe Chassis Installation (optional module) 12
6.5 Cabling the Host Computer to a PXI Chassis 13
6.6 Configuration Block Diagrams 14
6.6.1 PC to PXIe Chassis 14
6.6.2 PXIe to PXIe Chassis Connection 14
6.7 Power On/Off Sequence 15
7.Appendix 16
7.1 Product Specifications and Connectivity 16
7.2 Software and Drivers 16
7.3 Compatibility Issues 16
7.4 Operating System Support 17
7.5 Important Safety Instructions 17
8.About JYTEK 19
8.1 JYTEK China 19
8.2 JYTEK Hardware Products 19
8.3 JYTEK Software Platform 19
8.4 JYTEK Warranty and Support Services 20
9.Statement 20

Table 1 Model Specifications **2**
Table 2 PCIe-8641 Mechanical Layout Legend **7**
Table 3 PCIe-8641 Connectors, and LEDs **7**
Table 4 PXIe-68638P Connectors and LEDs **9**
Table 5 PCIe-8641 to Host PC Installation Legend **11**
Table 6 PCI Bus Number Requirements **16**

Figure 1 PCIe-8641 Mechanical Layout **7**
Figure 2 PXIe-8641 Mechanical Layout **8**
Figure 3 PXIe-68638P Mechanical Layout **8**
Figure 4 PCIe-8641 to Host PC Installation **11**
Figure 5 PXIe-8641 to PXI™ Chassis Installation Diagram **12**
Figure 6 PXIe-68638P to PXI Chassis Installation Diagram **13**
Figure 7 PCIe x8 Cable Assembly **14**
Figure 8 PC to PXIe Chassis **14**
Figure 9 PC to PXIe Chassis (Star Topology) **14**
Figure 10 PXIe to PXIe Chassis Connection **15**

3. Introduction

The PCIe-PXIe-8641 PCI Express to PXI Express extension kit provides control of PXI Express modules installed in a PXIe chassis using high bandwidth PCI Express technology. The extension kit provides up to 4GB/s bandwidth using PCIe Gen2x8 signaling. With comprehensive hardware and software transparency, the extension kit enables fast and convenient detection of any PXI modules installed in the system, requiring no additional drivers or software.

The host PC may be separated from the PXI Express chassis by up to five meters using high-quality shielded twisted copper cables. The robust and reliable PCIe to PXIe Extension Kit is suited for test and measurement applications with high-density I/O requirements and can be used in hazardous industrial control and automation environments.

The PXIe-68638P as an optional module supports multi-chassis expansion in a daisy or star chain configuration. A PXIe-68638P in a peripheral slot can connect to another chassis with a PXIe-8641 establish multi-chassis control.

3.1 Abbreviations

- PCI: Peripheral Component Interconnect
- PXI: PCI extensions for Instrumentation

4. Hardware Information

4.1 PCIe-8641 Layout, Connectors

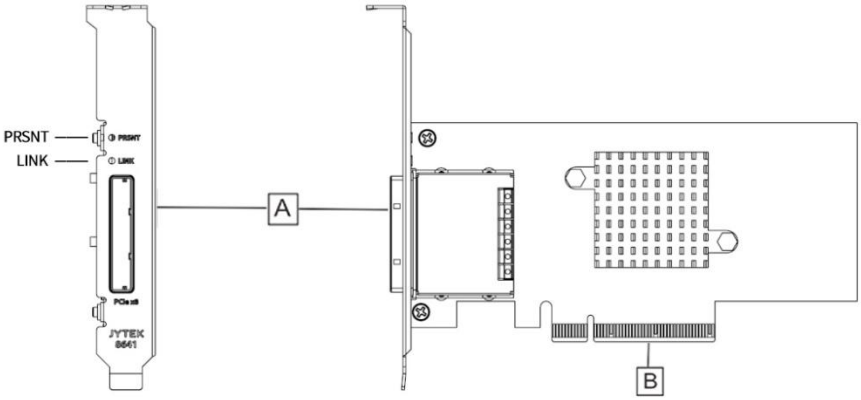


Figure 1 PCIe-8641 Mechanical Layout

A	PCIe x8 external downlink port
B	PCIe x8 edge finger

Table 2 PCIe-8641 Mechanical Layout Legend

LED	Description
PRSNT LED	Off: No power
	Green: Power Ok and device connected to downlink port is present
LINK LED	Off: No link
	0.5Hz Blinking: Link in PCIe Gen1 signaling
	1Hz Blinking: Link in PCIe Gen2 signaling

Table 3 PCIe-8641 Connectors, and LEDs

4.2 PXIe-8641 Layout, Connectors

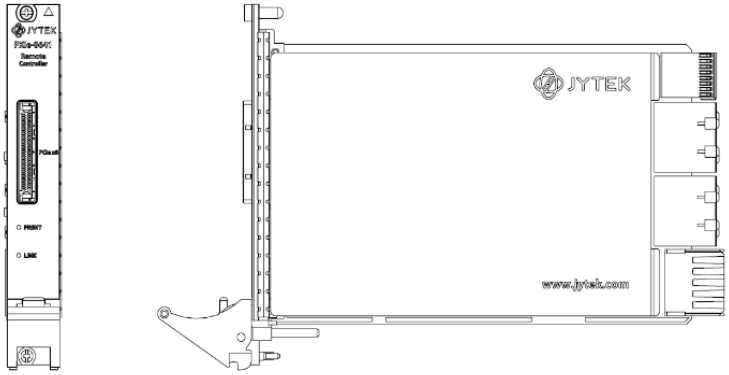


Figure 2 PXIe-8641 Mechanical Layout

4.3 PXIe-68638P Layout, Connectors (Optional module)

The PXIe-68638P module as an Optional module facilitates the expansion connection of PXIe chassis

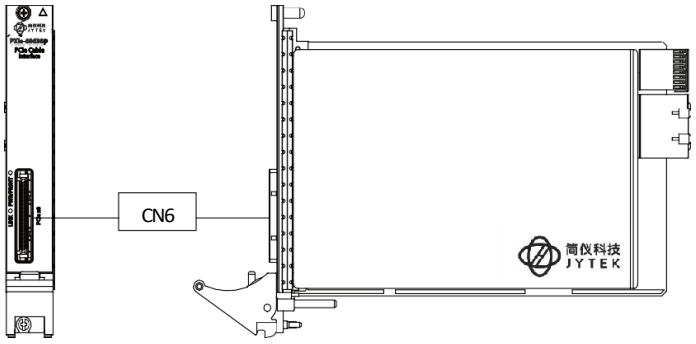


Figure 3 PXIe-68638P Mechanical Layout

Connector/Jumper/LED	Description
CN6	PXIe x8 external downlink port
PRSNT LED	Off: No power
	Green: Power OK and device connected to uplink port is present
LINK LED (Link status between PXIe-8641)	Off: No link
	0.5Hz Blinking: Link in PCIe Gen1 signaling
	1Hz Blinking: Link in PCIe Gen2 signaling

Table 4 PXIe-68638P Connectors and LEDs

5. Software

5.1 System Requirements

JY-8641 boards can be used in a Windows system.

Microsoft Windows: Windows 7 32/64 bit, Windows 10 32/64 bit.

5.2 JY-8641 Hardware Driver

To use and recognize the JY-8641, simply install the JYDM (JYTEK Device Manager) software provided by JYTEK on your Windows environment.

JYTEK Device Manager (JYDM): JYDM is essential management software for all JYTEK instrument hardware products. It needs to be installed only once and is necessary before using any JYTEK hardware. Once JYDM is installed, your system will automatically recognize the JY-8641 remote PXI controller.

You can download JYDM from JYPEDIA. Please download JYTEK <JYPEDIA>

6. Operating JY-8641

This chapter provides the operation guides for JY-8641, including introduction of PCIe-PXIe-8641 Kit Package Contents, Installation progress and precautions.

6.1 PCIe-PXIe-8641 Kit Package Contents

- ► PCIe-8641 (PCI Express x8 host adapter for extension kit)
- ► PXIe-8641 Series (PXI Express remote controller)
- ► PCI Express x8 cable assembly (2 or 5m)
- ► Quick Start Guide

6.2 Installation Environment

Whenever unpacking and preparing to install any equipment described in this manual, refer to the ***8.5 Important Safety Instructions***.

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

The PCIe to PXIe Extension Kit contains several electrostatic sensitive components that can be easily damaged by static electricity. For this reason, the modules 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.

Inspect the components for any damage. Improper shipping and handling may cause damage to the components. Be sure there is no damage to the components before continuing with the installation.

6.3 Installing the PCIe-8641 on a Host Computer

1. Power-off the host computer.

2. Unscrew the housing of the host computer using a (cross-head or flat-head) screwdriver. Open the housing.

3. Locate the PCI Express® extension module

(PCIe-8641) and remove it from its packaging. (Wear anti-static gloves and use an anti-static surface when handling the module).

4. Install the PCIe-8641 in an available x8 or x16 PCI Express slot in the host computer. Be sure to firmly attach the PCIe-8641's bracket to the backplane of the host PC.

5. Close the chassis and re-install the housing screws.

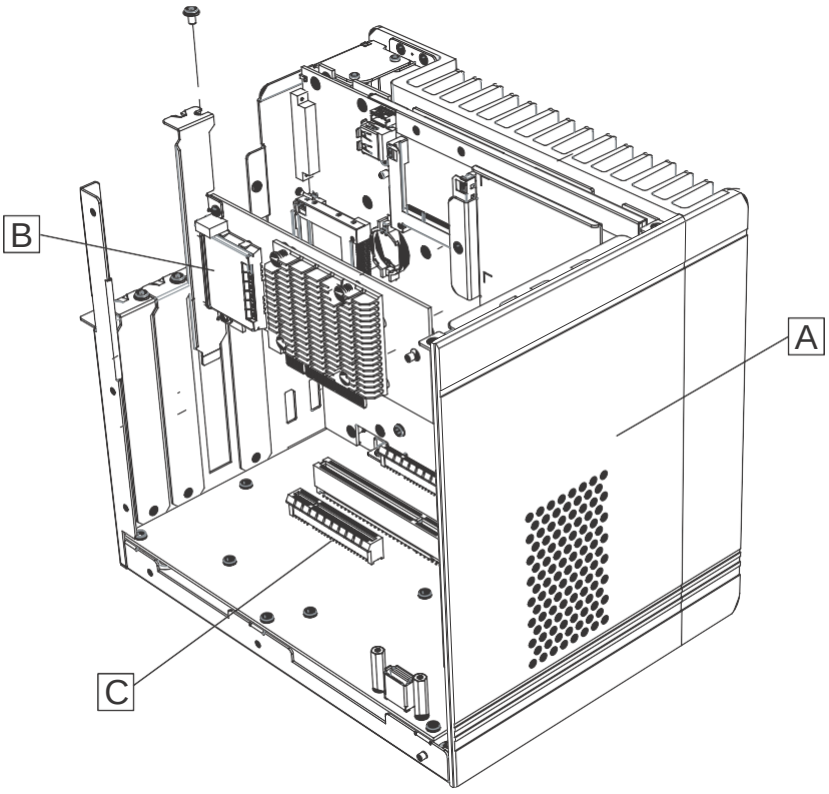


Figure 4 PCIe-8641 to Host PC Installation

Item	Description
A	Industrial or desktop PC with PCI Express x8 slot
B	PCIe-8641 (PCI Express host module)
C	PCI Express x8 slot

Table 5 PCIe-8641 to Host PC Installation Legend

6.4 PXIe-8641 Series to PXIe Chassis Installation

6.4.1 PXIe-8641 to PXIe Chassis Installation

1.Remove the cover panel of the system slot.

2.Locate the PXIe-8641 and remove it from its packaging. (Wear anti-static gloves and use an anti-static surface when handling the module).

3.Insert the PXIe-8641 into the system slot and tighten the bracket-retaining screws on the top and bottom of the panel to fasten the PXIe-8641 to the chassis.

Warning: The PXIe-8641 must be installed into the PXI™ system slot. Peripheral slots must not be used.

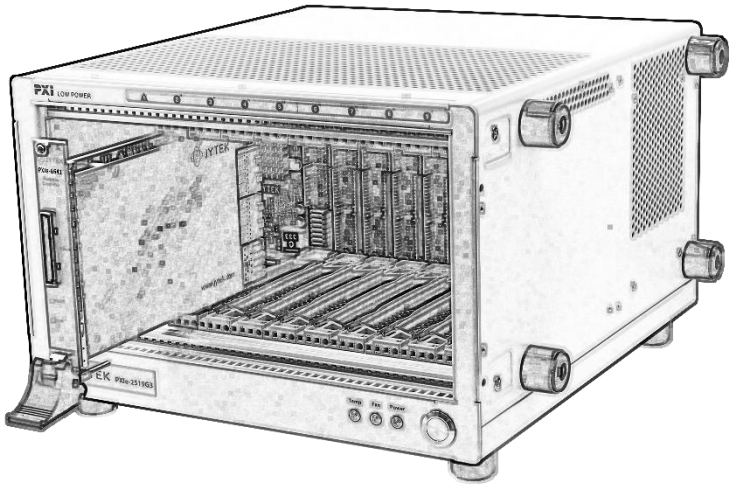


Figure 5 PXIe-8641 to PXI™ Chassis Installation Diagram

6.4.2 PXIe-68638P to PXIe Chassis Installation (optional module)

If there is a requirement to expand with two or more PXI chassis, the PXIe-68638P as an optional module can be used to expand the chassis in a daisy-chain configuration

1. Remove the cover panel of the peripheral slot assigned for connecting to an extension chassis based on application requirements.

2. Locate the PXIe-68638P and remove it from its packaging. (Wear anti-static gloves and use an anti- static sur-face when handling the module).

3. Insert the PXIe-68638P into the peripheral slot and tighten the bracket-retaining screws on the top and bottom of the panel to fasten the PXIe-68638P to the chassis.

Warning： The PXIe-68638P must be installed into the PXI peripheral slot, System slots may not be used.

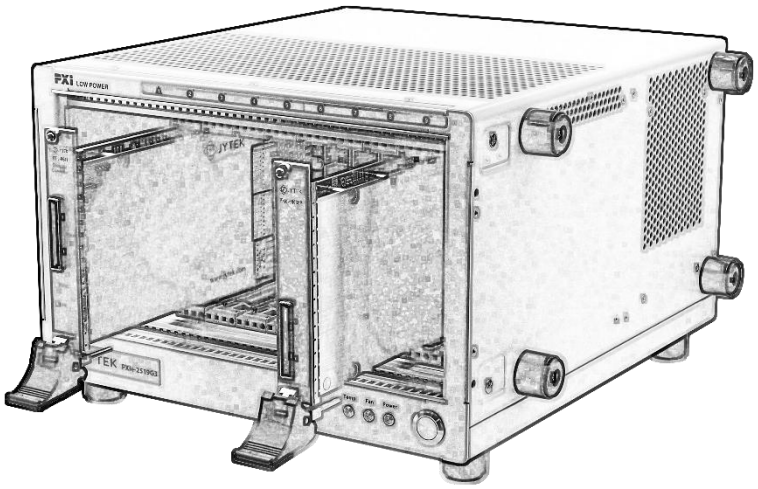


Figure 6 PXIe-68638P to PXI Chassis Installation Diagram

6.5 Cabling the Host Computer to a PXI Chassis

Connect the PCIe cable assembly between thePCIe-8641, PXIe-8641, and/or PXIe-68638P(Optional).

CAUTION: Removing the PCIe cable assembly after the system is powered on may cause system errors or data loss. If the cable is unplugged improperly, reconnect it and reboot the host PC and PXI chassis.

1. Connect the cable assembly to the external port on the bracket of the PCIe-8641 located in the host PC.

2. Connect the other end of the cable assembly to the external port of the PXIe-8641 installed into the system slot of the PXI Express chassis.

3. In a multiple PXI Express chassis configuration, connect another cable assembly to the PXIe-68638P installed into the first PXI Express chassis. Then, connect the other end of cable assembly to the external port of the PXIe-8641 installed into the system slot of the next PXI Express chassis.

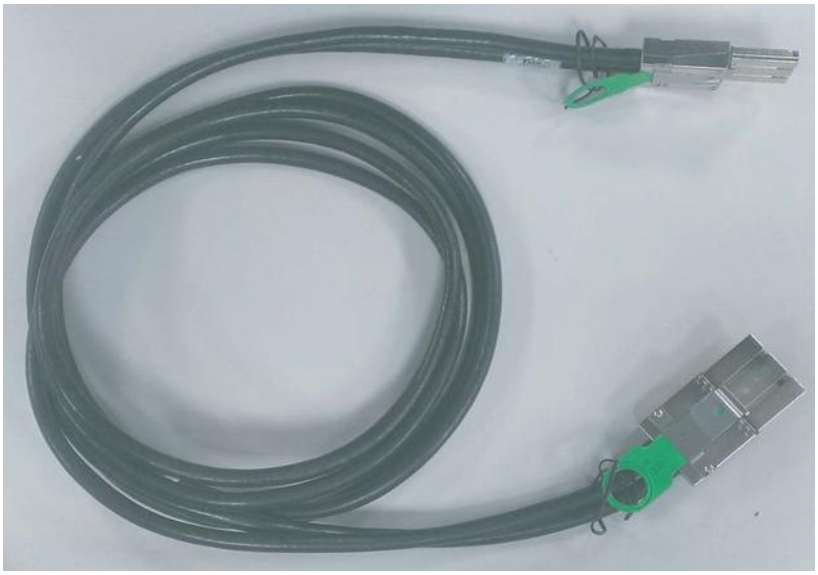


Figure 7 PCIe x8 Cable Assembly

6.6 Configuration Block Diagrams

6.6.1 PC to PXIe Chassis

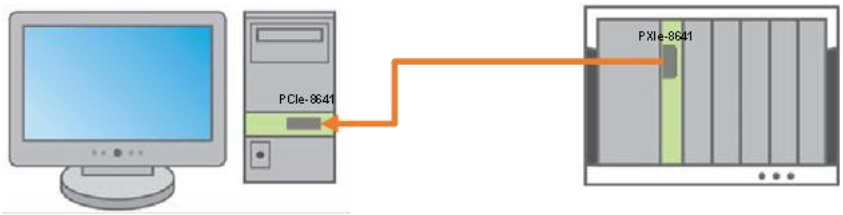


Figure 8 PC to PXIe Chassis

6.6.2 PC to PXIe Chassis (Star Topology)

Star topology for PXI chassis can be implemented by adding the optional module PXIe-68638P.

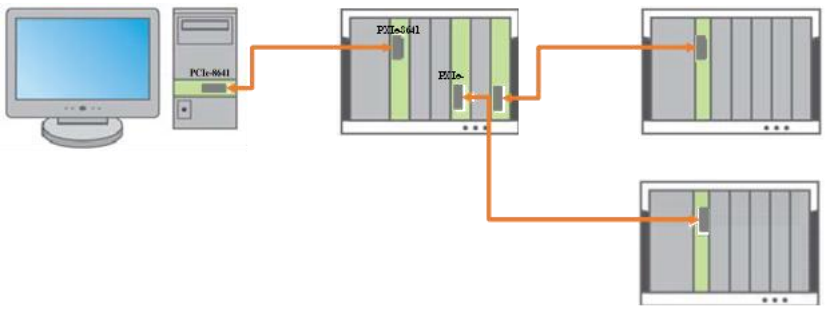


Figure 9 PC to PXIe Chassis (Star Topology)

6.6.3 PXIe to PXIe Chassis Connection

The direct expansion connection of PXI chassis can be realized by adding the optional module PXIe-68638P

Figure 10 PXIe to PXIe Chassis Connection

6.7 Power On/Off Sequence

To power-on the PCIe to PXIe Extension Kit:

1. Ensure that the extension cable is properly connected to the host PC and PXIe chassis.

2. In a single chassis configuration, power on the PXIe chassis. In a multiple chassis' configuration, power on the most subordinate chassis in the configuration first, then power on the uplink chassis. Continue until all chassis are powered on.

3. When the status LEDs of the PXI Express chassis and all installed modules indicate ready, power on the host PC.

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

As the PCIe to PXIe Extension Kit is equipped with a standard PCIe switch, the BIOS will identify each device behind the switch and assign resources to each during startup. Thus the PXI Express chassis must be powered up in order to acquire appropriate resources from the BIOS.

To power down the PCIe to PXIe Extension Kit:

1. Power down the host PC.

2. Power down the PXIe chassis.

7. Appendix

7.1 Product Specifications and Connectivity

JYTEK provides cable accessories for the PCIe-PXIe-8641 in lengths of 2 meters and 5 meters, with a maximum system interconnect cable length of 5 meters.

The PCIe-PXIe-8641 functions as a universal PXI Express system controller, supporting both 4-link and 2-link PXI Express system slots, and automatically detects the backplane for configuration without manual settings.

7.2 Software and Drivers

When using the PCIe-PXIe-8641, it is necessary to install JYTEK PXI Platform Services, which includes SMBus controller drivers and the PXI software framework. This can be downloaded from the PCIe-PXIe-8641 product page on the JYTEK website

7.3 Compatibility Issues

Compatibility concerns primarily relate to the availability of PCI bus numbers. The number of PCI bus numbers assigned by the system BIOS may exceed the requirements of the PCIe-PXIe-8641 and the PXI Express chassis.

In theory, PCI Express systems can support up to 256 bus numbers, but many systems' maximum PCI bus numbers are often limited by the system BIOS settings based on design or architecture.

The PXI Express chassis and peripheral modules consume multiple PCI bus numbers. The PCI bus number requirements for JYTEK PXI Express chassis are detailed in the table below:

Model	PCI Bus Number Requirement
PCIe-PXIe-8641 + PXIe-2519G2/G3	27
PCIe-PXIe-8641 + PXIe-2722G2/G3	44

Table 6 PCI Bus Number Requirements

Compatibility issues may manifest as missing devices in the Windows Device Manager or system boot failures. Suggestions for resolving these issues include checking the installation of the PCIe-PXIe-8641 and cables, inspecting LED status, ensuring cables are intact, confirming sufficient PCI bus numbers are available, updating the BIOS

system, trying different module installation sequences, changing the PCI Express slot or host PC, and removing some modules to free up resources.

7.4 Operating System Support

The PCIe-PXIe-8641 is designed as a standard PCIe-to-PCIe bridge and should support most modern Linux kernels without additional driver requirements. However, the PXI software framework and SMBus controller of the PCIe-PXIe-8641 are not operable under Linux, as the PXI Express software specification is based on a Windows environment.

7.5 Important Safety Instructions

For user safety, please read and follow all instructions, Warnings, Cautions, and Notes marked in this manual and on the associated device before handling/operating the device, to avoid injury or damage.

CAUTION: Risk of explosion if battery is replaced with one of an incorrect type; please dispose of used batteries appropriately.

► Read these safety instructions carefully.

► Keep the User's Manual for future reference.

► Read the Specifications section of this manual for detailed information on the recommended operating environment.

► The device can be operated at an ambient temperature of 55ºC.

► When installing/mounting or uninstalling/removing device, or when removal of a chassis cover is required for user ser- vicing (See 6.2 Installation Environment.):

1) Turn off power and unplug any power cords/cables.
2) Reinstall all chassis covers before restoring power.

► To avoid electrical shock and/or damage to device:

1) Keep device away from water or liquid sources.
2) Keep device away from high heat or humidity.
3) Keep device properly ventilated (do not block or cover ventilation openings).
4) Always use recommended voltage and power source settings.
5) Always install and operate device near an easily accessible electrical outlet.
6) Secure the power cord (do not place any object on/over the power cord).

7) Only install/attach and operate device on stable surfaces and/or recommended mountings.

► If the device will not be used for long periods of time, turn off and unplug it from its power source.

► Never attempt to repair the device, which should only be serviced by qualified technical personnel using suitable tools.

► A Lithium-type battery may be provided for uninterrupted backup or emergency power.

► The device must be serviced by authorized technicians when:

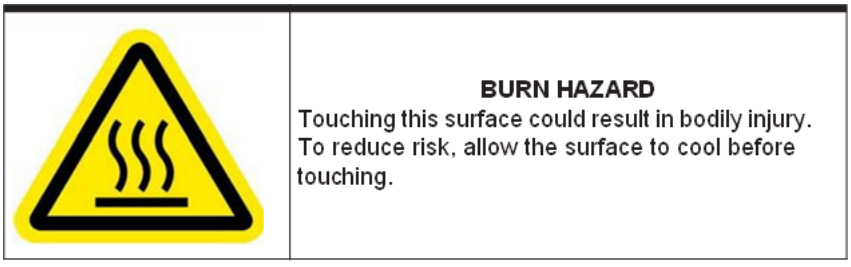
Only install/attach and operate device on stable surfaces and/or recommended mountings

1) The power cord or plug is damaged.
2) Liquid has entered the device interior.
3) The device has been exposed to high humidity and/or moisture.
4) The device is not functioning or does not function according to the User's Manual.
5) The device has been dropped and/or damaged and/or shows obvious signs of breakage.

► Disconnect the power supply cord before loosening the thumbscrews and always fasten the thumbscrews with a screwdriver before starting the system up.

► It is recommended that the device be installed only in a server room or computer room where access is:

1) Restricted to qualified service personnel or users familiar with restrictions applied to the location, reasons therefor, and any precautions required.
2) Only afforded by the use of a tool or lock and key, or other means of security, and controlled by the authority responsible for the location.



8. About JYTEK

8.1 JYTEK China

Founded in June, 2016, JYTEK China is a leading Chinese test & measurement company, providing complete software and hardware products for the test and measurement industry. The company is a joint venture between Adlink Technologies and a group of experienced professionals form the industry. JYTEK independently develop the software and hardware products and is entirely focused on the Chinese market. Our Shanghai headquarters and production service center have regular stocks to ensure timely supply; we have R&D centers in Xi'an and Chongqing to develop new products; we also have highly trained direct technical sales representatives in Shanghai, Beijing, Tianjin, Xi'an, Chengdu, Nanjing, Wuhan, Haerbin, and Changchun. We also have many partners who provide system level support in various cities.

8.2 JYTEK Hardware Products

According to JYTEK's agreement with our equity partner Adlink Technologies, JYTEK's hardware is manufactured by the state-of-art manufacturing facility located in Shanghai Zhangjiang Hi-Tech Park. Adlink has over 20 years of the world-class low-volume and high-mix manufacturing expertise with ISO9001-2008, China 3C, UL, ROHS, TL9000, ISO-14001, ISO-13485 certifications. Its 30,000 square meters facilities and three high-speed Panasonic SMT production lines can produce 60,000 pieces boards/month; it also has full supply chain management - planning, sweeping, purchasing, warehousing and distribution. Adlink's manufacturing excellence ensures JYTEK's hardware has word-class manufacturing quality.

One core technical advantage is JYTEK's pursue for the basic and fundamental technology excellence. JYTEK China has developed a unique PCIe, PXIe, USB hardware driver architecture, FirmDrive, upon which many our future hardware will be based.

In addition to our own developed hardware, JYTEK also rebrands Adlink's PXI product lines. In addition, JYTEK has other rebranding agreements to increase our hardware coverage. It is our goal to provide the complete product coverage in PXI and PCI modular instrumentation and data acquisition.

8.3 JYTEK Software Platform

JYTEK has developed a complete software platform, SeeSharp Platform, for the test and measurement applications. We leverage the open sources communities to provide the software tools. Our platform software is also open sourced and is free,

thus lowering the cost of tests for our customers. We are the only domestic vendor to offer complete commercial software and hardware tools.

8.4 JYTEK Warranty and Support Services

With our complete software and hardware products, JYTEK is able to provide technical and sales services to wide range of applications and customers. In most cases, our products are backed by a 1-year warranty. For technical consultation, pre-sale and after-sales support, please contact JYTEK of your country.

9. Statement

The hardware and software products described in this manual are provided by JYTEK China, or JYTEK in short.

This manual provides the product review, quick start, some driver interface explanation for JYTEK JY-8641 Series family of multi-function data acquisition boards. The manual is copyrighted by JYTEK.

No warranty is given as to any implied warranties, express or implied, including any purpose or non-infringement of intellectual property rights, unless such disclaimer is legally invalid. JYTEK is not responsible for any incidental or consequential damages related to performance or use of this manual. The information contained in this manual is subject to change without notice.

While we try to keep this manual up to date, there are factors beyond our control that may affect the accuracy of the manual. Please check the latest manual and product information from our website.

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