DYNAMIC ENGINEERING
150 Dubois St. Suite C, Santa Cruz, CA 95060 831-457-8891
https://www.dyneng.com
sales@dyneng.com
Est. 1988

User Manual

cPCI3U32B1LPCIeX4

cPCI Adapter for PCIe

Revision 01p1 Revised 10/20/2021
Corresponding Hardware: Revision 01
Fab number: 10-2021-0901

cPCI3U32B1LPCIeX4
cPCI and PCIe Compatible Carrier

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Dynamic Engineering has made every effort to ensure that this manual is accurate and complete. Still, the company reserves the right to make improvements or changes in the product described in this document at any time and without notice. Furthermore, Dynamic Engineering assumes no liability arising out of the application or use of the device described herein.

The electronic equipment described herein generates, uses, and can radiate radio frequency energy. Operation of this equipment in a residential area is likely to cause radio interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

Dynamic Engineering's products are not authorized for use as critical components in life support devices or systems without the express written approval of the president of Dynamic Engineering.

Connection of incompatible hardware is likely to cause serious damage.

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Product Description

cPCI3U32B1LPCIeX4 is part of the Dynamic Engineering cPCI and PCIe Compatible family of modular I/O components. cPCI3U32B1LPCIeX4 adapts a PCIe device to one cPCI slot.

The conversion PCI ⇔ PCIe happens in the transparent bridge. The PCI side of the bridge is 5V tolerant allowing use in all cPCI positions. The PCI interface is 32 bits wide and can operate up to 66 MHz. The PCIe side is single lane. The bridge is PCI rev 3.0 compliant. PCIe is gen 1 compliant.

Special features:

- High accuracy crystal based 100 MHz reference to Bridge and PCIe with shunt option for Spread Spectrum or fixed operation.
- Voltage monitors with LED for bridge power supply [1.0 V]
- LC filters on the 3.3V and 5V power rails.
- PCIe X4 connector access through cPCI bracket
- EEPROM with write protection and programming header
- Header with 4 GPIO bits accessed from bridge

cPCI3U32B1LPCIeX4 is ready to use with the default settings. Just install the PCIe module onto cPCI3U32B1LPCIeX4. (Make sure system is turned off when doing so.)

Headers, Test Points, Connectors

J9 is an optional header for EEPROM write protection. When installed the EEPROM is protected.

J11 is used to select SSC or NSSC operation. Installed is SSC and out is NSSC. [Spread Spectrum or not SS]

TP4 is an optional header for GPIO connection. Each of the GPIO has a 4.7K pull-up to 3.3V. GPIO 3..0 TP4.4..1 is the correspondence.

P1 Alternate Power Connector. 2 x 3 13A per pin. Mates with PC standard power cable. 1-3 = 12V, 4-6 = GND. Diode coupled to cPCI 12V.

Applications Guide

Interfacing

Some general interfacing guidelines are presented below. Do not hesitate to contact the factory if you need more assistance.

Installation
The PCIe device is mounted to cPCI3U32B1LPCIeX4 after installation of the cPCI module within the chassis.

Start-up
Make sure that the "system" can see your hardware before trying to access it. Many BIOS will display the PCIe devices found at boot up on a "splash screen" with the VendorID and CardId for the module installed and an interrupt level. If the information is not available from the BIOS then a third party PCI device cataloging tool will be helpful

Watch the system grounds. All electrically connected equipment should have a fail-safe common ground that is large enough to handle all current loads without affecting noise immunity. Power supplies and power consuming loads should all have their own ground wires back to a common point.

Power all system power supplies from one switch. Connecting external voltage to the cPCI3U32B1LPCIeX4 when it is not powered can damage it, as well as the rest of the host system. This problem may be avoided by turning all power supplies on and off at the same time. This applies more to the module installed onto cPCI3U32B1LPCIeX4 than the cPCI3U32B1LPCIeX4 itself, and it is smart system design when it can be achieved.

Construction and Reliability

cPCI3U32B1LPCIeX4 is constructed out of 0.062 inch thick high temp RoHS compliant FR4 material. The components on the cPCI3U32B1LPCIeX4 are tied into the internal power planes to spead the dissipated heat out over a larger area. This is an effective cooling technique in the situation where a large portion of the board has little or no power dissipation.

Surface mounted components are used. The connectors are through hole for the PCIe bus and [press fit] through hole for the cPCI.

The PCIe device can be directly installed into the top connector or mounted using a separate method. Look for the Dynamic Engineering mini extender. The extender will mount to to the holes adjacent to the PCIe connector and provide enough height above the cPCI bezel to not interfer with the cPCI handle.

A second method is to use a third party PCIe bus extender. Several are available. We used one which has a mini-PCIe card to convert to a USB connector. The PCIe signals are routed over the USB connector and broken out on a second PCIe connector mounted to a mini backplane. This method requires a second power cable to the secondary connector as the USB does not have power handling capabilities.

Thermal Considerations

The power dissipation of the components on cPCI3U32B1LPCIeX4 is small and the surface area relatively large. Minimal cooling will be required for the industrial temperature components.

Warranty and Repair

Please refer to the warranty page on our website for the current warranty offered and options.

http://www.dyneng.com/warranty.html

Service Policy

Before returning a product for repair, verify as well as possible that the suspected unit is at fault. Then call the Customer Service Department for a RETURN MATERIAL AUTHORIZATION (RMA) number. Carefully package the unit, in the original shipping carton if this is available, and ship prepaid and insured with the RMA number clearly written on the outside of the package. Include a return address and the telephone number of a technical contact. For out-of-warranty repairs, a purchase order for repair charges must accompany the return. Dynamic Engineering will not be responsible for damages due to improper packaging of returned items. For service on Dynamic Engineering Products not purchased directly from Dynamic Engineering contact your reseller. Products returned to Dynamic Engineering for repair by other than the original customer will be treated as out-of-warranty.

Out of Warranty Repairs

Out of warranty repairs will be billed on a material and labor basis. Customer approval will be obtained before repairing any item if the repair charges will exceed one half of the quantity one list price for that unit. Return transportation and insurance will be billed as part of the repair and is in addition to the minimum charge.

For Service Contact:

Customer Service Department
Dynamic Engineering
150 DuBois St. Suite C
Santa Cruz, CA 95060
831-457-8891 Internet Address support@dyneng.com

Specifications

Logic Interfaces:	PCI 32 bit universal voltage. PCIe single lane
Access types:	PCI standard transactions including DMA. PCIe TLP transactions. MSI interrupts.
CLK rates supported:	PCI – 33/66 PCIe Gen 1
Software Interface:	Passive, no SW required for adapter
Initialization:	Select NSSC or SSC operation
Interface:	PCIe connector at cPCI bezel x4 connector with 1 lane active
Dimensions:	3U 4HP
Construction:	High Temp FR4 Multi-Layer Printed Circuit, Through Hole and Surface Mount Components.

Order Information

standard temperature range -40⇔85ºC

cPCI3U32B1LPCIeX4	https://www.dyneng.com/cPCI3U32B1LPCIeX4.html 3U 4 HP cPCI card with PCIe 4 lane connector
-ROHS	[ROHS compliant parts and process]
-CC	Add conformal coating
-GPIO	Install GPIO header
-NEEP	Do not install EEPROM.
PCI2cPCI-32-IO	https://www.dyneng.com/PCI2cPCI.html adapter to mount cPCI 32 bit device into PCI slot. J2 IO brought out to header.