PCI to PCI Express Adapter

Hardware Manual

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Revision 1.3

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1 About this Document

1.1 Purpose

This document describes Hardware installation, features, specification and operation for AMFELTEC PCI to PCI Express Adapter.

1.2 Feedback

AMFELTEC makes every effort to ensure that the information contained in this document is accurate and complete at time of release. Please contact AMFELTEC if you find any errors, inconsistence or have trouble understanding any part of this document.

To provide your feedback, please send an email to support @amfeltec.com

Your comments or corrections are greatly valued in our effort for excellence and continued improvement.

1.3 Revision History

Rev. No.	Description	Rev. Date
1.0	Initial Release.	June 20, 2006
1.1	Software description is moved into separate document	July 23, 2008

2 General Description

2.1 Introduction

The “PCI to PCI Express Adapter” (Adapter) converts the standard 32-bit PCI universal bus to the 1x link PCI express bus. The purpose of this Adapter is to enable engineers to migrate to PCI Express without replacing their existing test equipment and computers previously used for PCI.

The adapter can be used on motherboards with 5V and 3.3V power. It has a JTAG Boundary Scan connector to enable access to the JTAG port of the PCI to PCI Express Bridge as well as the PCI Express JTAG port.

Figure 1: PCI to PCI Express Adapter

The adapter functions right out of the box, no additional software needs to be installed.

There are two support tabs surrounding the PCI express connector that help stabilize the UUT, Amfeltec Corporation has filed a patent Application that covers this feature.

3 Specifications/Features

3.1 Power and Signaling

- Adapter supplies +3.3Volts required by PCI Express from either +3.3 Volts or +5 Volts power of the PCI bus (defined by Jumpers block).
- Meets PCI express 1.1 specification and PCI bus 3.0 specifications.
- Supports 32-bit 66 MHz PCI bus operation.
- LED indication of PCI Express +3.3Volt and +12V supplies.
- LED indication of PCI Express link status.
- LED indication of PCI to PCI Express bridge status.

3.2 Debugging Support

- JTAG Boundary Scan connector for access to the PCI to PCI Express Bridge or PCI Express JTAG Boundary Scan port.

3.3 Software

- Utility for tuning PCI express bridge. This option can be very useful for optimizing performance of PCI to PCI Express Adapter.
- Supported operating systems: Windows, Linux, FreeBSD

4 Hardware Description

4.1 Board Layout

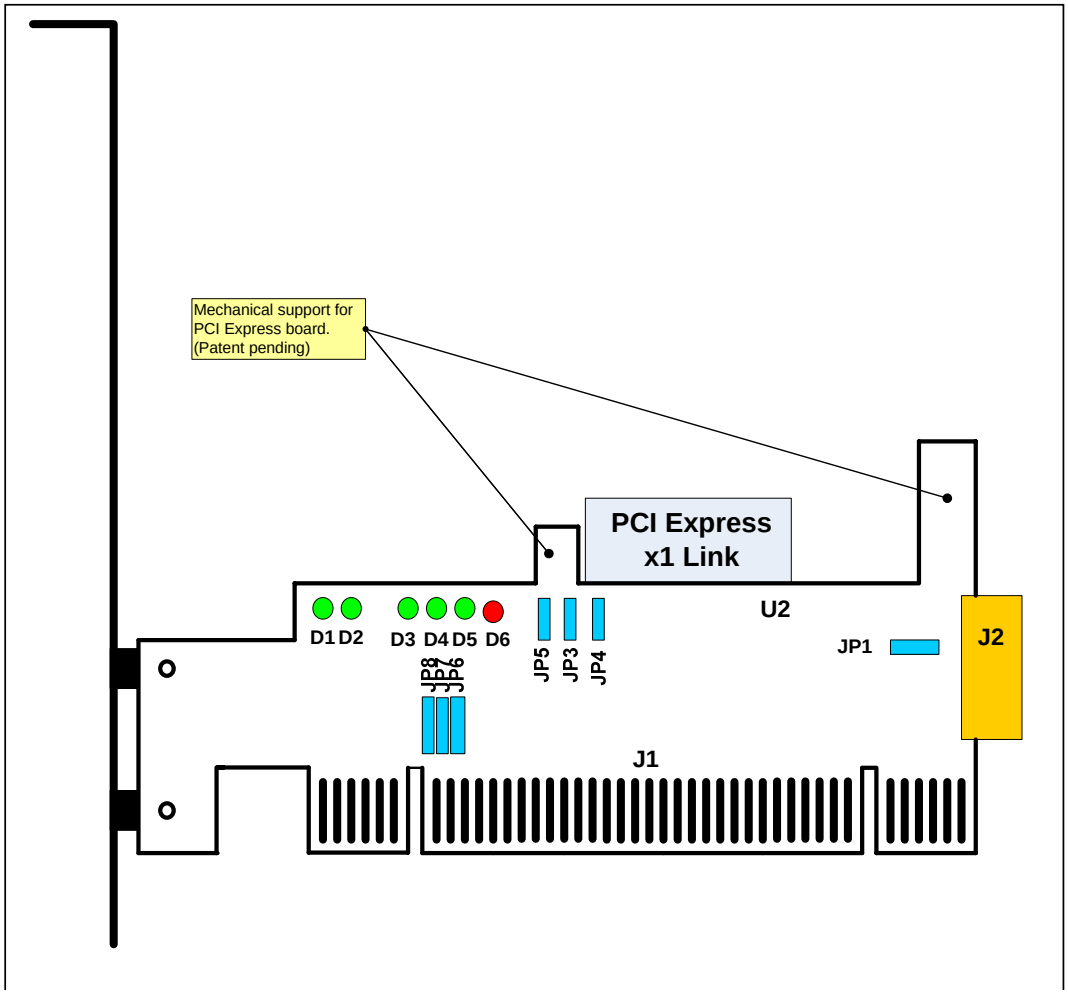

Figure 2: Board Layout

4.2 LEDs

Name	RefDes	Color	Usage
+3.3 Volt	D1	Green	3.3Volt power on the PCI Express board.
+ 12 Volt	D2	Green	+12Volt power on the PCI Express board.
GPIO3	D3	Red	PCI to PCI Express bridge status or general purpose IO.
GPIO2	D4	Red	PCI to PCI Express bridge status or general purpose IO.
GPIO1	D5	Red	PCI to PCI Express bridge status or general purpose IO.
GPIO0	D6	Green	PCI Express Link status or general purpose IO. (LED ON – link active)

Table 1: LEDs

4.3 Jumpers

RefDes	Type	Usage
JP1	2 pins jumper	Enable 66 MHz or 33 MHz PCI bus operation. (Jumper set – 33 MHz)
JP3	2 pins jumper	Delay PCI Express link training by 12 ms after reset, (Jumper closed = enable delay)
JP4	2 pins jumper	Flow control Credits (Jumper closed = normal operation, Jumper open = advertise infinite flow control credits for completions). Note: Jumper must always be set during reset.
JP5	2 pins jumper	Enable internal aperture for PCI to PCI Express bridge internal registers (Jumper closed - enabled).
JP6,JP7,JP8	Block of Jumpers (3x3)	Define power source for the PCI Express +3.3 Volt power. If 1-2 pins on the all jumpers are closed, then +3.3 Volt for PCI Express connector taken from PCI bus +3.3 Volt power pins. If 2-3 pins on all jumpers are closed, then +3.3 Volt for PCI Express connector generated from PCI bus +5Volt power pins through a voltage regulator.

Table 2: Jumpers

4.4 Connectors

RefDes	Type	Usage
J1	32 bit male Universal PCI bus connector	32-bit Universal PCI bus.
J2	5x2 (2.5 mm) header	JTAG Boundary Scan connector.
U4	1x PCI express female connector	PCI express connector for add-in card.

Table 3: Connectors

5 Installation

5.1 Hardware Installation

1. To install the PCI to PCI Express Adapter power off the host computer. The shipped package includes two spacers that can help to hold together more then one adapter. If you like to create block of adapters please screw them with those spacers.

2. Select +3.3 Volt power source for PCI Express connector. The adapter provides two options for selecting proper power source: +3.3 Volt or +5 Volt from PCI bus connector. In order to select the power source, refer to Table 2.

3. Install the adapter into a PCI bus slot. Adapter can be installed in any PCI bus connector (PCI or PCI-X connector). **Important Note: Secure the adapter using a screw in the metal bracket!**

4. Install test PCI Express board (UUT) into adapter.

Now, you can power-up the host computer.

BE SURE THAT TWO GREEN LEDS (D1 and D2) ARE ON!

(PCI express connector power status).

BE SURE THAT GREEN LED (D6) ARE ON!

(PCI express link status. If D6 is ON – link is active.)

5.2 Software Installation

For normal operation, you don't need to install additional software. But if you need to adjust configuration registers for eX10 32-bit PCI-to-PCI Express adapter, you need to install eX10 Software Package (refer to eX10 Software Manual for more details).

6 Operation Modes

6.1 Adapter Combination

Multiple adapters can be attached together with spacers and screws to add extra stability to the system. An example of this configuration is shown in the photo below.

Figure 3: Adapter combination

7 Appendix A: Limited Warranty

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