Flexible 32-bit PCI to PCI Express Adapter

Hardware Manual

June 01, 2011
Revision 1.0

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1 About this Document

1.1 Purpose

This document describes Hardware installation, features, specification and operation for AMFELTEC Flexible 32-bit PCI to x1 PCI Express Bus Adapter (SKU-049).

1.2 Feedback

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

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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.	March 10, 2011

2 General Description

2.1 Introduction

Flexible 32-bit PCI to x1 PCI Express Bus Adapter (Adapter) (Figure 1) is designed to support expansion of modern motherboards that has no or limited numbers of x1 PCI Express connectors. Adapter converts the standard 32-bit PCI motherboard slot into x1 PCI Express slot.

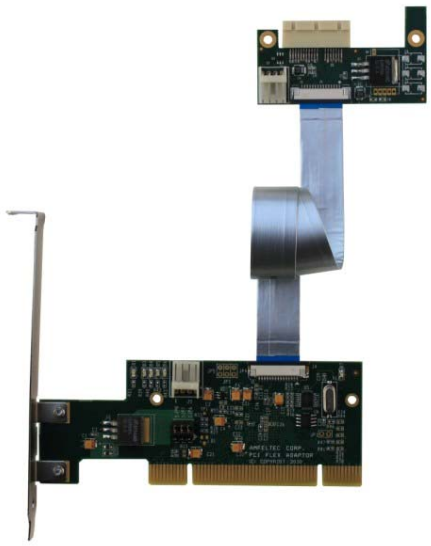

Figure 1: Flexible 32-bit PCI to PCIe Adapter

It includes one 32-bit PCI Host Card (Figure 2) and x1 PCI Express Adapter board (Figure 3/Figure 4/Figure 5). The 32-bit PCI Host Card has to be plugged into standard 32-bit PCI motherboard connector. PCI Express Adapter board connects to the PCI Host Card via 12” Flex PCI Express cable. The expansion add-in x1 PCI Express card has to be plugged into the standard x1 PCI express connector on the x1 PCI Express Adapter board.

Because of the flexible nature of the connection (unlike traditional rigid risers), expansion x1 PCI Express add-in board can be positioned away from the 32-bit PCI connector on the motherboard inside a computer chassis.

x1 PCI Express Adapter board has two mounting holes allowing them to be securely fixed inside a computer chassis.

The Adapter functions right out of the box, no additional software needs to be installed. The 32-bit PCI Host Card has LEDs for displaying downstream PCI express Link status as well as expansion x1 PCI Express add-in board “PRESENT” status.

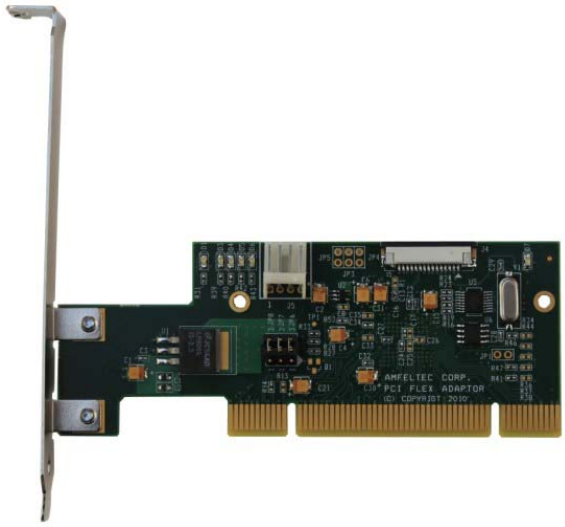

Figure 2: 32-bit PCI Host Card

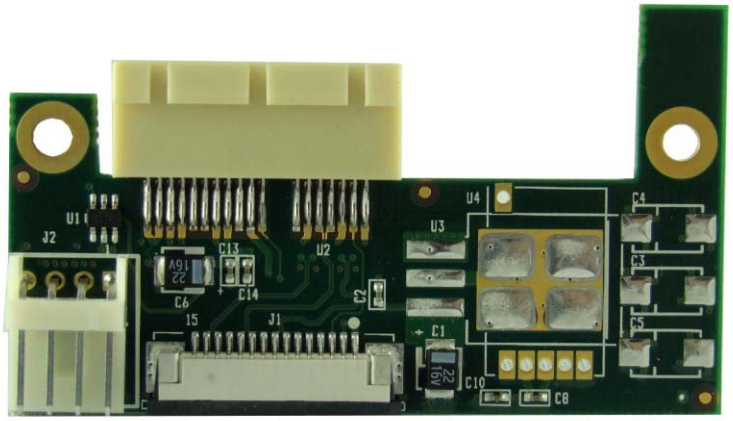

Figure 3: x1 PCI Express Adapter board (powered from host card (3.3V only))

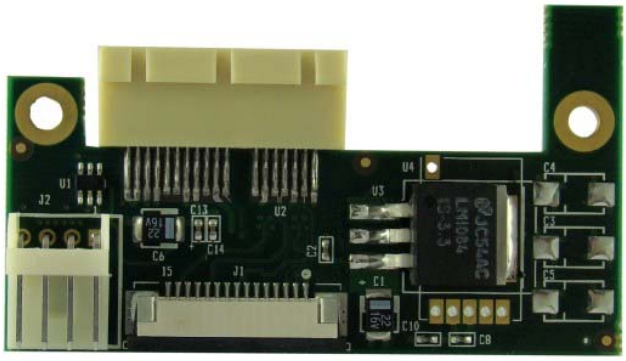

Figure 4: x1 PCI Express adapter board (powered from ATX power supply (12V, 5V))

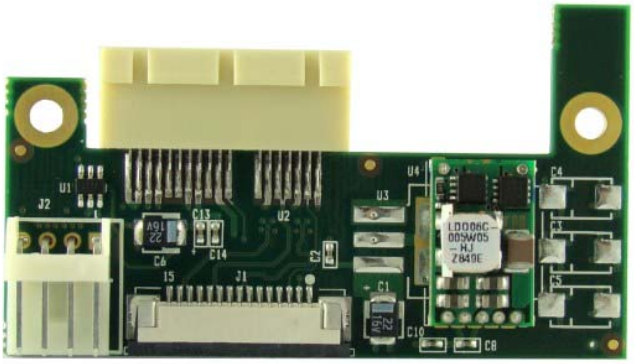

Figure 5: x1 PCI Express adapter board (powered from external 12V power supply)

3 Requirements/Features

3.1 Power Source

The power for the expansion PCI Express add-in board can be supplied from three different sources (WARNING: Please specify the power source when you are ordering the product! If you purchase product with one power source, you **cannot** use another power source):

- From 32-bit PCI Host card (3.3 volt only) via power cable and x1 PCI Express adapter board (maximum peak current – 2.75A, maximum normal current – 1.1A)
- From standard ATX power supply (“floppy disk” connector) (12 and 5 volts) via x1 PCI Express adapter board (see pinout on Figure 7)
- From any 12 volt power supply via x1 PCI Express Adapter board (see pinout on Figure 7)

3.2 Power and Signaling

- PCI host card is powered from 5V or 3.3V power from the PCI edge connector (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 +3.3V internal power.
- LED indication of PCI Express link status.
- LED indication of PCI to PCI Express bridge status.

3.3 Software

There is no software needed for normal operation.

4 Hardware Description

4.1 Board Layout

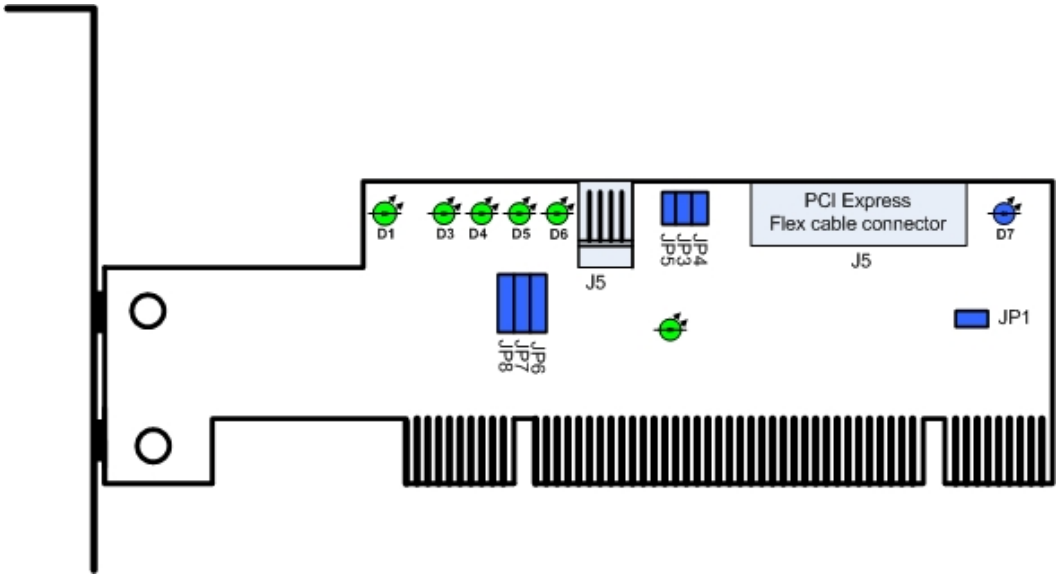

Figure 6: 32-bit PCI Host Card layout.

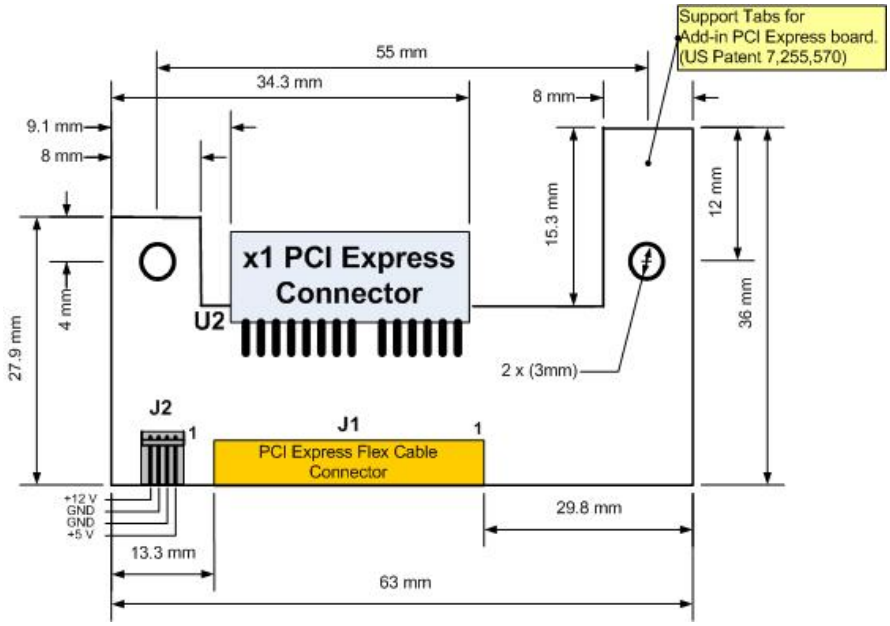

Figure 7: x1 PCI Express Adapter board layout

4.2 LEDs

Name	RefDes	Color	Usage
+3.3 Volt	D1	Green	Internal 3.3Volt power
PRSNT	D7	Blue	Present signal from x1 PCI Express Adapter
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: 32-bit PCI Host Card LEDs

4.3 Jumpers

RefDes	Type	Usage
JP1	2 pins jumper	Enable 66 MHz or 33 MHz PCI bus operation. (Jumper set – force to 33 MHz only operation)
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 Host board +3.3 Volt power. If 1-2 pins on 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: PCI Host Card jumpers

4.4 Connectors

RefDes	Type	Usage
J1	32 bit male Universal PCI bus connector	32-bit Universal PCI bus.
J5	“Floppy disk” power connector	3.3V and 12V for external Adapter
J4	Flat connector	PCI express connector for cable connection to Adapter card.

Table 3: PCI Host Card connectors

RefDes	Type	Usage
J1	PCI Express Flex Cable connector	Connector via Flex PCI Express Cable to the PCI host card.
J2	“Floppy disk” male power connectors	Incoming power for the expansion x1 PCI Express add-in boards
U2	Downstream 1x PCI Express female connector	Connection to the expansion x1 PCI Express add-in board.

Table 4: x1 PCI Express Adapter board connectors

5 Installation

5.1 Hardware Installation

Following steps provide the exact sequence need to be followed in order to properly install the 32-bit PCI to x1 PCI Express Bus Adapter from AMFELTEC Corp.:

> **Warning**: Before touching anything inside the computer or any components, be sure to discharge your body's static electricity by touching a grounded surface.

- Turn off host computer and unplug it from the wall outlet.
- Remove the chassis cover or side panel from host computer. Refer to the computer manual for instructions if you need them.
- If the unit is a tower unit, turn it over on its side to make access easier.
- Ground yourself to the PC case. Attach a grounding wrist strap (if available) to the computer's metal chassis and your wrist. **CAUTION**: If you choose not to use the grounding wrist strap, be sure to take adequate precautions to discharge static electricity from your body before touching any components.
- Select power source on PCI host card (JP6-JP7-JP8). Please refer to Table 2.
- Insert PCI Express Flex Cable into the connectors on the PCI Host card and on the PCI Express Adapter.
- Holding PCI host card by its edges and the mounting bracket, position the card with the contacts downward over the PCI slot and insert the card into the slot. Do not let it touch any of the components on the motherboard or PCI host card.
- Secure the adapter to the rear panel with the screw.
- Place and retain PCI Express Adapter inside the chassis.
- Connect power to PCI Express Adapter.
- Holding your add-in card by its edges and the mounting bracket, position the card with the contacts downward over the PCI Express slot and insert the card into the slot. Do not let it touch any of the components on the motherboard or PCI Express Adapter.
- Now, you can close computer cover and power-up the host computer.

BE SURE THAT TWO GREEN LEDS (D1 and D7) ARE ON!

BE SURE THAT GREEN LED (D6) IS ON!

6 Ordering Information

6.1 Standard package

Standard package include the following components:

- 32-bit PCI Host Card
- x1 PCI Express Adapter board with PCI Express Flex cable
- User manual

7 Appendix A: Limited warranty

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