

Flexible MiniPCI Express to 2x PCI Express Splitter

Hardware Manual

June 01, 2011
Revision 1.1

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1 About this Document

1.1 Purpose

This document describes Hardware installation, features, specification and operation for AMFELTEC Flexible MiniPCI Express to 2x PCI Express Splitter (SKU-033).

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, inconsistency 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.	December 10, 2009
1.1	Update hardware installation instructions	June 01, 2011

2 General Description

2.1 Introduction

Flexible MiniPCI Express to 2x PCI Express Splitter (Splitter) is designed to support expansion of modern motherboards with limited numbers of PCI Express Connectors. Splitter converts the standard MiniPCI Express motherboard slot into 2 independent x1 PCI Express slots.



Figure 1: Flexible MiniPCIe to 2x PCIe Splitter

It includes one MiniPCI Express Host card (Figure 2) and two x1 PCI Express adapter boards (Figure 2 or Figure 3). The MiniPCI Express Host card has to be plugged into an upstream MiniPCI Express motherboard connector. Each PCI Express adapter board connects to the main MiniPCI Express Host card via 12" Flex PCI Express cable. The expansion PCI Express add-in board 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 PCI Express add-in boards can be positioned away from the Splitter, including around any obstacles inside a computer chassis. Each x1 PCI Express Adapter has two mounting holes allowing them to be securely fixed inside a computer chassis. In addition, each x1 PCI Express Adapter has two support tabs for mechanical stabilization expansion add-in boards (US Patent 7,255,570).



Figure 2: MiniPCI Express Host Card

The Splitter functions right out of the box, no additional software needs to be installed. The Mini PCI Express Host card has LEDs for displaying upstream and downstream PCI Express ports activities as well as expansion PCI Express add-in boards “PRESENT” status.



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

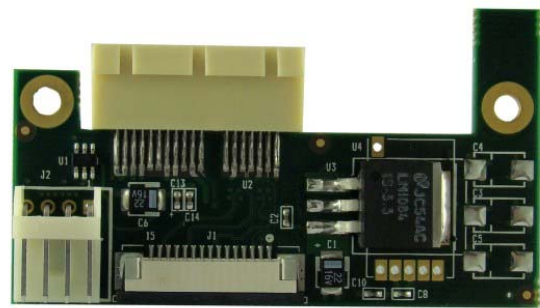


Figure 4: x1 PCI Express adapter board (powered from ATX power supply) (12V, 5V)



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 two different sources:

- From standard ATX power supply (“floppy disk” connector) (12 and 5 volts) via x1 PCI Express Adapter board
- From external power supply 12V and 3.3V via x1 PCI Express Adapter board
- From external 12 volt power supply via x1 PCI Express Adapter board

3.2 Software

There is no software required for normal operation.

4 Hardware Description

4.1 Board Layout

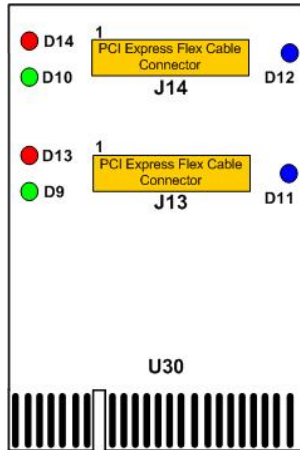


Figure 6: MiniPCI Express Host card layout

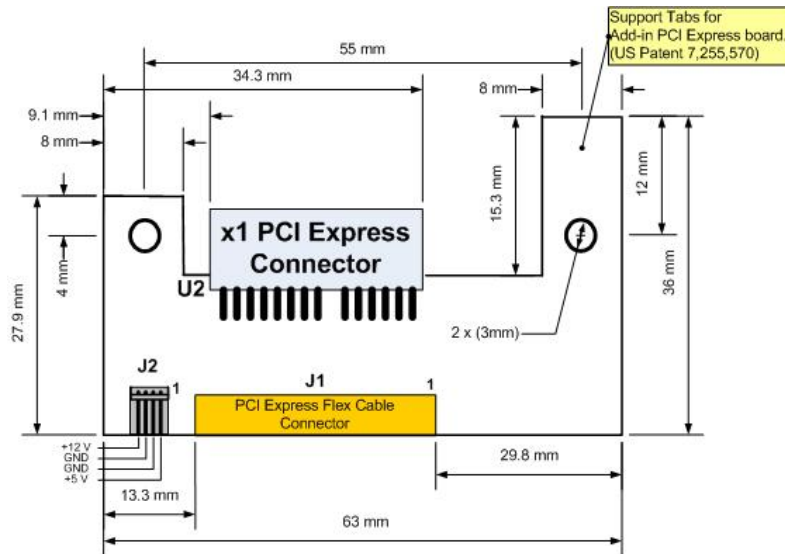


Figure 7: x1 PCI Express adapter board layout

4.2 LEDs

GPIO	D9	Green	General purpose
GPIO	D10	Green	General purpose
RESET 1	D13	Red	First link “PRSNT” signal
RESET 2	D14	Red	First link “PRSNT” signal
PRSNT 1	D11	Blue	First downstream link “PRSNT” signal
PRSNT 2	D12	Blue	Second downstream link “PRSNT” signal

Table 1: MiniPCI Express Host card LEDs

4.3 Connectors

RefDes	Type	Usage
U30	Upstream x1 PCI Express male connector	Connection to the upstream PCI Express bus on motherboard
J13,J14	PCI Express Flex Cable connector	Connection via Flex PCI Express Cable to the x1 PCI Express adapter boards.

Table 2: MiniPCI Express Host card connectors

RefDes	Type	Usage
J1	PCI Express Flex Cable connector	Connector via Flex PCI Express Cable to the x4 PCI Express Host card.
J2	“Floppy disk” male power connectors	Incoming power for the expansion PCI Express add-in boards
U2	Downstream 1x PCI Express female connector	Connection to the expansion PCI Express add-in board.

Table 3: x1 PCI Express adapter board connectors

5 Installation

5.1 PCI Express Flex Cable Connection

Locate PCI Express Flex Cable with blue label to the top.

5.2 Hardware Installation

Following steps provide the exact sequence need to be followed in order to properly install the Flexible MiniPCI Express to 2x PCI Express Splitter 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.
- Insert PCI Express Flex Cable into the connectors on the MiniPCI Express Host card and on the PCI Express Adapter.
- Install the host card the motherboard MiniPCI Express slot.
- Place and retain PCI Express Adapters inside the chassis.
- Connect power for the PCI Express Adapters.
- 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 BLUE LEDS ARE ON where there is expansion PCI Express add-in board! (Expansion PCI Express board is present)

6 Operation Modes

Multiple x1 PCI Express adapter boards can be attached together with spacers as shown in a photo below.

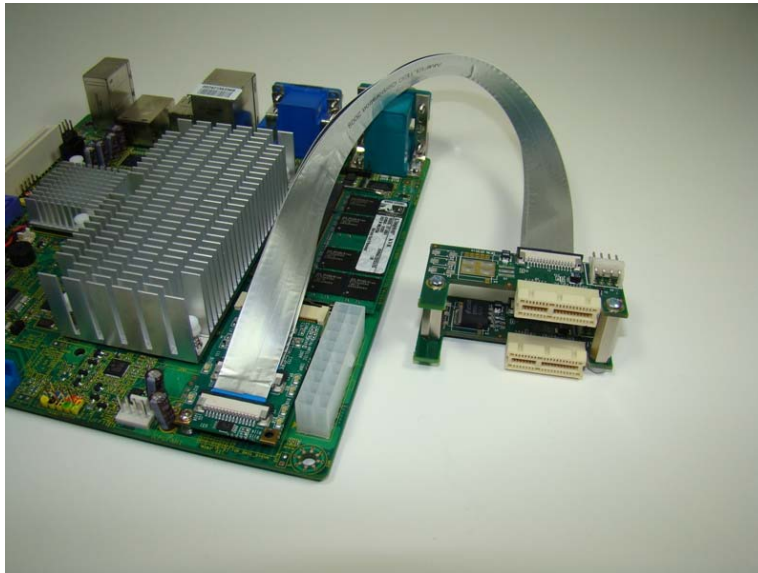


Figure 8: MiniPCI Express to 2x PCI Express Splitter

7 **Ordering Information**

7.1 **Standard package**

Standard package include the following components:

- MiniPCI Express Host card
- Two x1 PCI Express adapter board with Flex PCI Express cable
- User manual

8 Appendix A: Limited warranty

AMFELTEC Corporation does not warrant that the operation of the hardware, software or firmware products will be uninterrupted or error free. AMFELTEC products are not intended to be used as critical components in life support systems, aircraft, military systems or other systems whose failure to perform can reasonably be expected to cause significant injury to humans. AMFELTEC expressly disclaims liability for loss of profits and other consequential damages caused by the failure of any product which would cause interruption of work or loss of profits, such as shipboard or military attachment.

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