

# **Flexible x1 PCI Express to 3 MiniPCI Express Splitter**

## **Hardware Manual**

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**May 20, 2012**

**Revision 1.1**

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# 1 About this Document

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## 1.1 Purpose

This document describes Hardware installation, features, specification and operation for AMFELTEC Flexible x1 PCI Express to 3 MiniPCI Express Splitter.

## 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](mailto:support@amfeltec.com)

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

## 1.3 Revision History

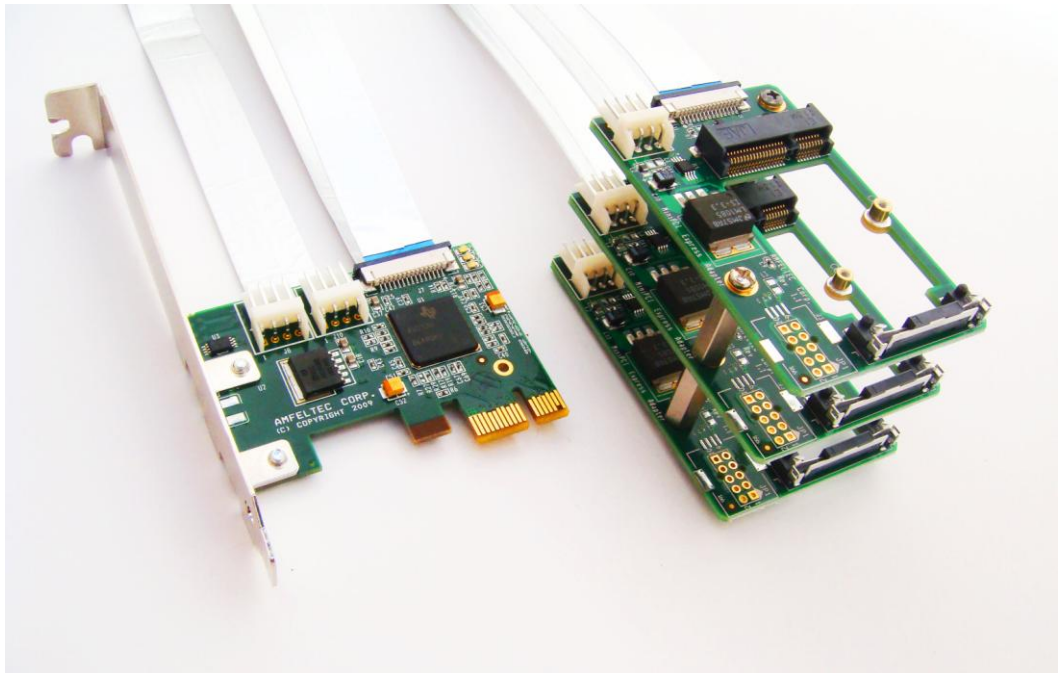
Rev. No.	Description	Rev. Date
1.0	Initial Release.	September 10, 2011
1.1	Added Gen2 support	May 20, 2012

## 2 General Description

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### 2.1 Introduction

Flexible x1 PCI Express to 3 MiniPCI Splitter (Splitter) is designed to extend motherboard PCI Express bus. Splitter allows connecting three standard MiniPCI Express add-in boards to the motherboard PCI Express connector.



It includes x1 PCI Express Host board (Figure 1,2) and three MiniPCI Express Adapter boards (Figure 3). The x1 PCI Express Host board has to be plugged into the motherboard PCI Express connector. Each of three MiniPCI Express Adapter boards connecting to the PCI Express Host board via three 10" Flat PCI Express cables. The expansion MiniPCI Express add-in boards have to be plugged into the standard MiniPCI Express connectors placed on each MiniPCI Express Adapter board.

Because of the flexible nature of the connection, expansion MiniPCI Express add-in boards can be positioned away from the PCI Express Host board, including around any obstacles inside a computer chassis. MiniPCI Express Adapter board has two mounting holes allowing them to be securely fixed inside a computer chassis.

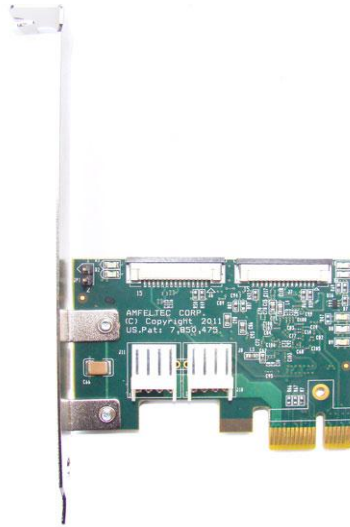


Figure 1: x1 PCI Express Host board (top side)



Figure 2: x1 PCI Express Host board (back side)

The Splitter functions right out of the box, no additional software needs to be installed. The x1 PCI Express Host board has LEDs for displaying Link status between PCI Express Host card and MiniPCI Express Adapter boards as well as MiniPCI Express Adapter boards “PRESENT” status.



Figure 3: MiniPCI Express Adapter board



## **3 Requirements/Features**

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### **3.1 Power Source**

The power for MiniPCI Express add-in board (3.3V and 1.5V) is supplied via MiniPCI Express connector. MiniPCI Express Adapter board has standard 4-pin “Floppy drive” power connector for getting 5V power from standard ATX power supply or 3.3V power from PCI express Host card.

### **3.2 Software**

There is no additional software needs for the x1 PCI Express to 3 MiniPCI Express Splitter.

## 4 Hardware Description

### 4.1 Board Layout

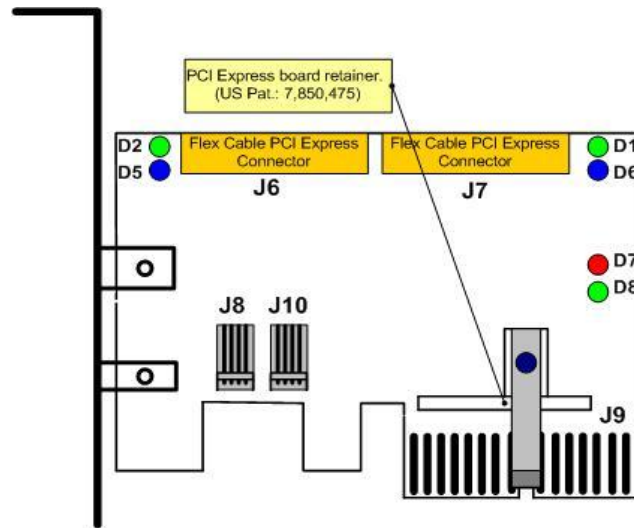


Figure 4: x1 PCI Express Host board layout (top side)

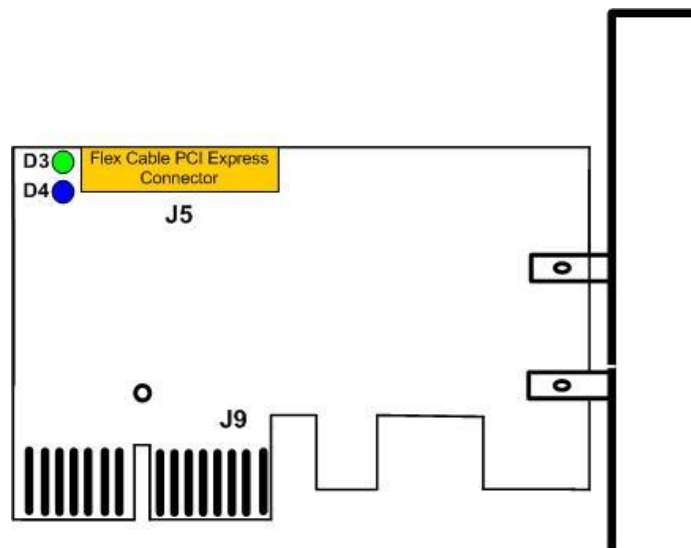


Figure 5: x1 PCI Express Host board layout (bottom side)

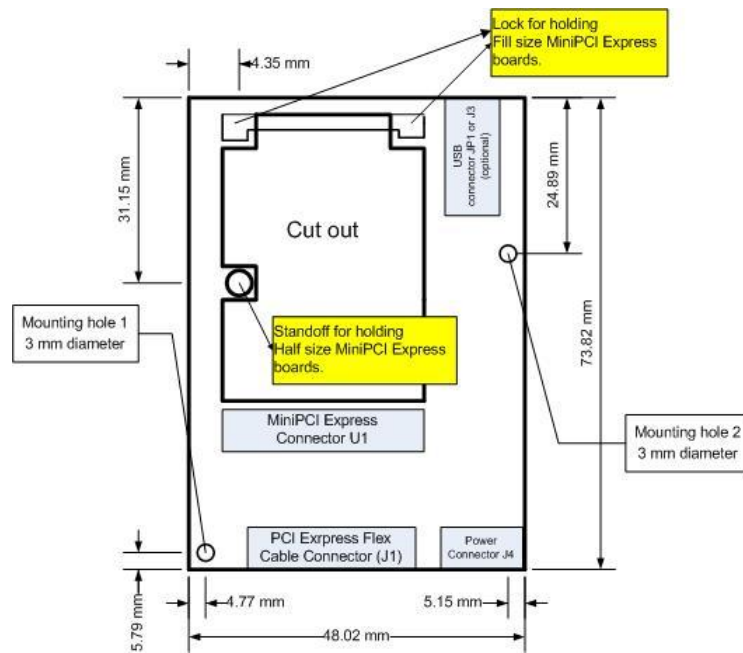


Figure 6: MiniPCI Express Adapter board layout.

## 4.2 LEDs

Name	RefDes	Color	Usage
RESET	D7	Red	Global PCI Express RESET signal from upstream connector J9.
LINK	D8	Green	Upstream port 1 link status. ( <b>Solid Off</b> - Lane is disabled, <b>Solid On</b> –Lane is enabled, 5GT/s, <b>0.5 seconds On, 0.5 seconds Off</b> – Lane is enabled, 2.5 GT/s)
PRSNT 1	D4	Blue	First downstream port “PRSNT” signal
PRSNT 2	D5	Blue	Second downstream port “PRSNT” signal
PRSNT 3	D6	Blue	Third downstream port “PRSNT” signal
LINK 1	D3	Green	Downstream port 1 link status. ( <b>Solid Off</b> - Lane is disabled, <b>0.5 seconds On, 0.5 seconds Off</b> – Lane is enabled, 2.5 GT/s)
LINK 2	D2	Green	Downstream port 2 link status. ( <b>Solid Off</b> - Lane is disabled, <b>0.5 seconds On, 0.5 seconds Off</b> – Lane is enabled, 2.5 GT/s)
LINK 3	D1	Green	Downstream port 3 link status. ( <b>Solid Off</b> - Lane is disabled, <b>0.5 seconds On, 0.5 seconds Off</b> – Lane is enabled, 2.5 GT/s)

Table 1: LEDs on the x1 PCI Express Host board

## 4.3 Connectors

RefDes	Type	Usage
J9	Upstream x1 PCI Express male connector	Connection to the upstream PCI Express bus on motherboard. (bandwidth up to 5 Gbit/sec)
J8,J10	“Floppy disk” male power connectors	Optional
J5,J6,J7	PCI Express Flex Cable connector	Connector via Flex PCI Express Cable to the MiniPCI Adapter board. (bandwidth 2.5 Gbit/sec)

Table 2: x1 PCI Express Host board connectors

RefDes	Type	Usage
J1	PCI Express Flex Cable connector	Connection via Flex PCI Express Cable to the MiniPCI Host Card.
J4	Standard ATX power connector (“floppy disk” type )	Incoming power for the expansion add-in MiniPCI Express board
JP1	10 pins 2 row 2.5mm Header	Connection to the USB interface of the MiniPCI Express add-in board (optional)
J3	USB type B standard connector	Connection to the USB interface of the MiniPCI Express add-in board (optional)
U1	Standard Mini PCI Express connector	Connection to the expansion add-in PCI boards (supports full and half size MiniPCI Express boards).

Table 3: MiniPCI Express Adapter board connectors

## **5 Installation**

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### **5.1 Hardware**

Following steps provide the exact sequence need to be followed in order to properly install the Flexible x1 PCI Express to 3 MiniPCI Express Splitter from AMFELTEC Corp.:

- Turn OFF host computer before installation.
- Remove the chassis cover from host computer.
- Insert Flat PCI Express Cables to the connectors on the PCI Express Host board and on the MiniPCI Express Adapter boards.
- Install the Host board into the motherboard PCI Express slot. Place and retain MiniPCI Express Adapter boards inside the chassis. Connect power for the MiniPCI Express adapter boards.
- Plug-in expansion add-in boards into MiniPCI Express Adapter boards.

Now, you can power-up the host computer.



**BE SURE THAT BLUE LED D4, D5 and D6 IS ON!**

### **5.2 Software**

Flexible x1 PCI to 3 MiniPCI Express Splitter doesn't require any software/device driver for normal operation.

## **6      Ordering Information**

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### **6.1      Standard package**

Standard package include the following components:

- x1 PCI Express Host Board
- Three MiniPCI Express Adapter boards with Flat PCI Express cables

## **7 Appendix A: Limited warranty**

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