Squid PCI Express Gen3 Carrier Board™ for 4 M.2 SSD modules

Hardware Manual

October 14, 2016

Revision 1.0

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1 About this Document

1.1 Purpose

This document describes hardware installation, features, specification and operation of the *Squid* PCI Express Gen 3 Carrier Board™ for 4 M.2 SSD modules from AMFELTEC Corporation.

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.

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.	October 14, 2016

2 General Description

2.1 Introduction

Squid PCI Express family is a series of PCI Express Carrier Boards designed for expansion of any desktop computer or embedded appliance. *Squid* family expands a motherboard's PCI Express or USB slot with multiple full/half size MiniPCI Express or M.2 modules.

PCI Express Carrier Board for M.2 SSD modules occupies the space equal to standard one-slot wide PCI Express board defined by PCI Express Specification. Carrier board is half height PCI Express board. It is located in the middle of the PCI Express slot and connects to the motherboard PCI Express connector via exchangeable x4 or x8 PCI Express adapters. This unique PCI Express structure (patent pending) allows allocating multiple M.2 modules on the top and bottom sides of the carrier board, and not violating PCI Express Specification.

M.2 (M key) circuits located on the Carrier board support any M.2 PCI Express M key modules with any standard length (2230/2242/2260/2280 and 22110).

2.2 Package Contents

PCI Express Gen 3 Carrier Board for 4 M.2 SSD modules package (depending on the SKU part number) includes the following parts:

1. PCI Express Gen 3 Carrier Board for 4 M.2 modules (Figure 1,2,3)
2. x16 or x8 PCI Express Adapters
3. Full or half size PCI Express bracket

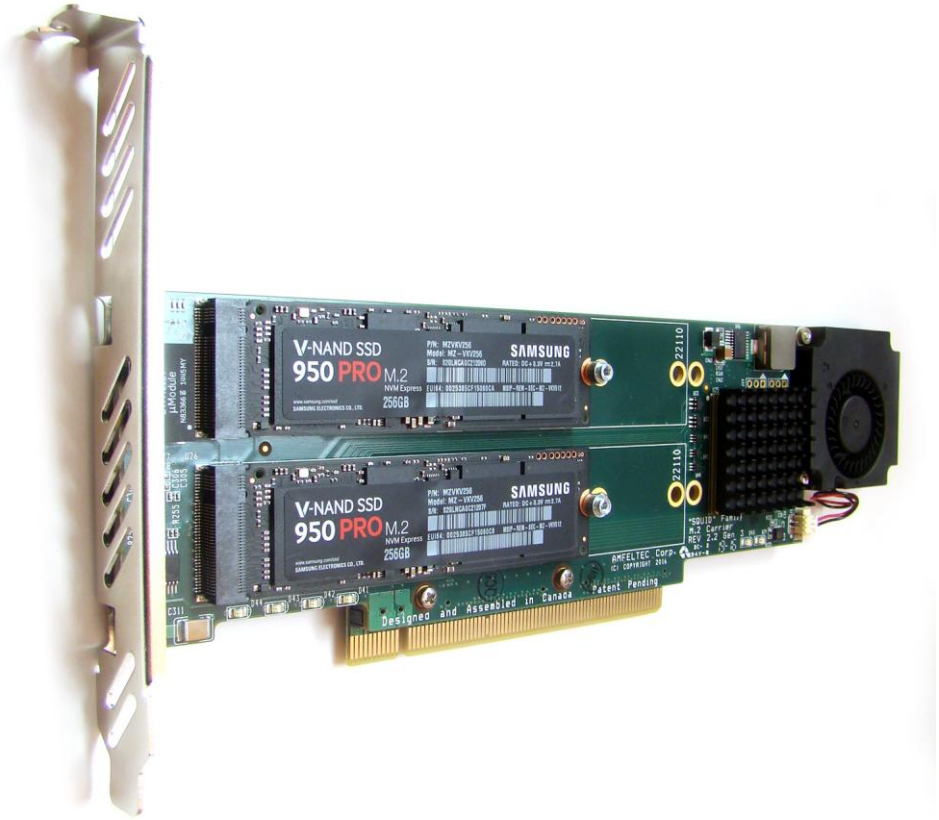

Figure 1: PCI Express Gen 3 Carrier Board for 4 M.2 SSD modules

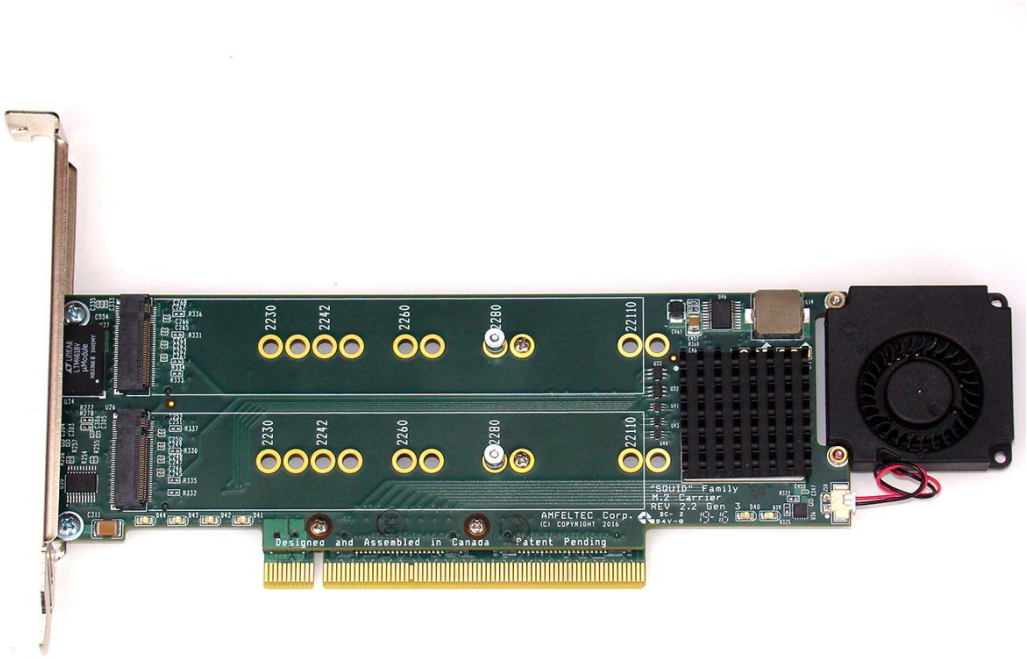

Figure 2: PCI Express Gen 3 Carrier Board for 4 M.2 SSD modules (top).

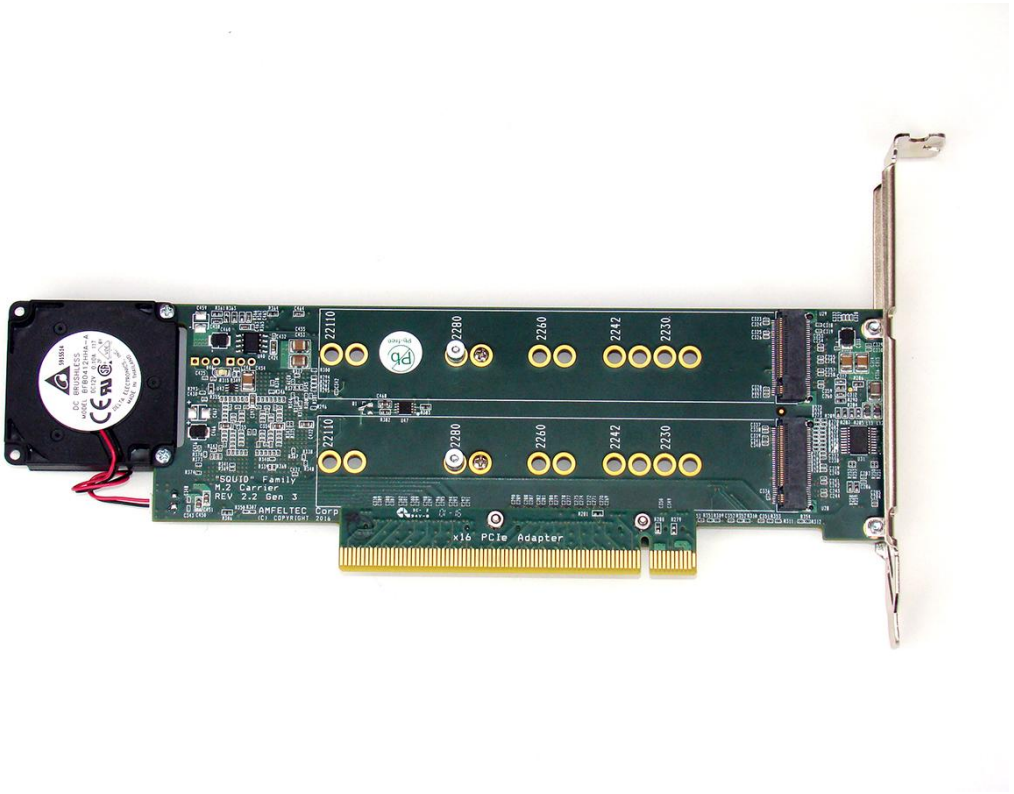

Figure 3: PCI Express Gen 3 Carrier Board for 4 M.2 SSD modules (bottom).

3 Features

3.1 Features

- Easy ‘Plug and Play” installation
- Supports up to 4 M.2 PCI Express add-in modules (M key)
- x4 PCI Express (Gen 3) connection to each M.2 circuit
- One slot wide, half-height PCI Express board; x16 or x8 upstream PCI Express (Gen 3) interface
- Supports PCI Express Gen 3 (8.0 Gbps) operation
- Easy removable Cooling Fan
- Meets PCI Express 2.1 and M.2 1.0 Specifications
- Dimension 210 mm. x 65 mm.
- RoHS compliant

3.2 PCI Express Carrier board for 4 M.2 SSD modules interfaces connection.

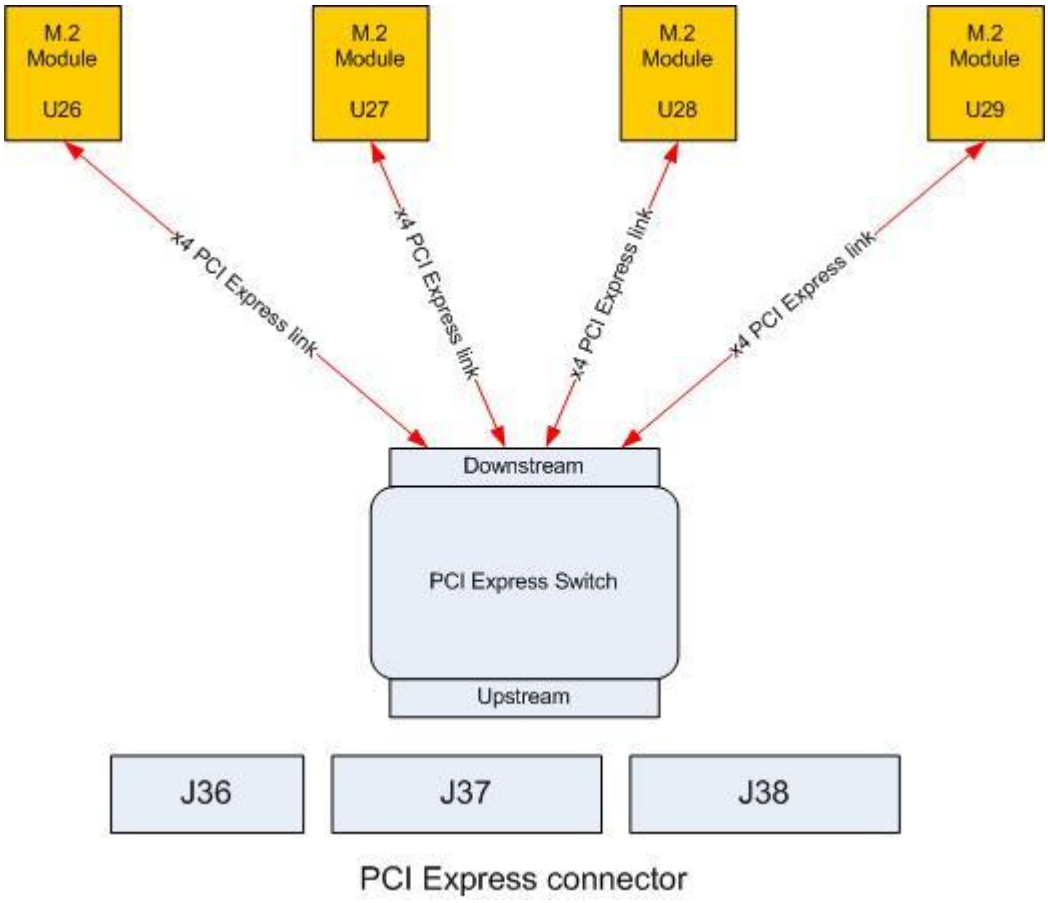

Figure 4: Carrier board PCI Express connection.

4 Installation

4.1 Carrier board installation

Following steps provide the exact sequence that needs to be followed in order to properly install the Amfeltec PCI Express Expansion Carrier Board:

- Turn OFF computer before installation
- Remove the chassis cover from the computer
- Locate an unused PCI express slot and remove the corresponding slot cover from computer chassis
- Plug-in Carrier Board to PCI express slot and attach its bracket to the computer chassis with a screw
- Put the chassis cover back on the computer
- Turn ON computer

5 Hardware Description

5.1 Board Layout

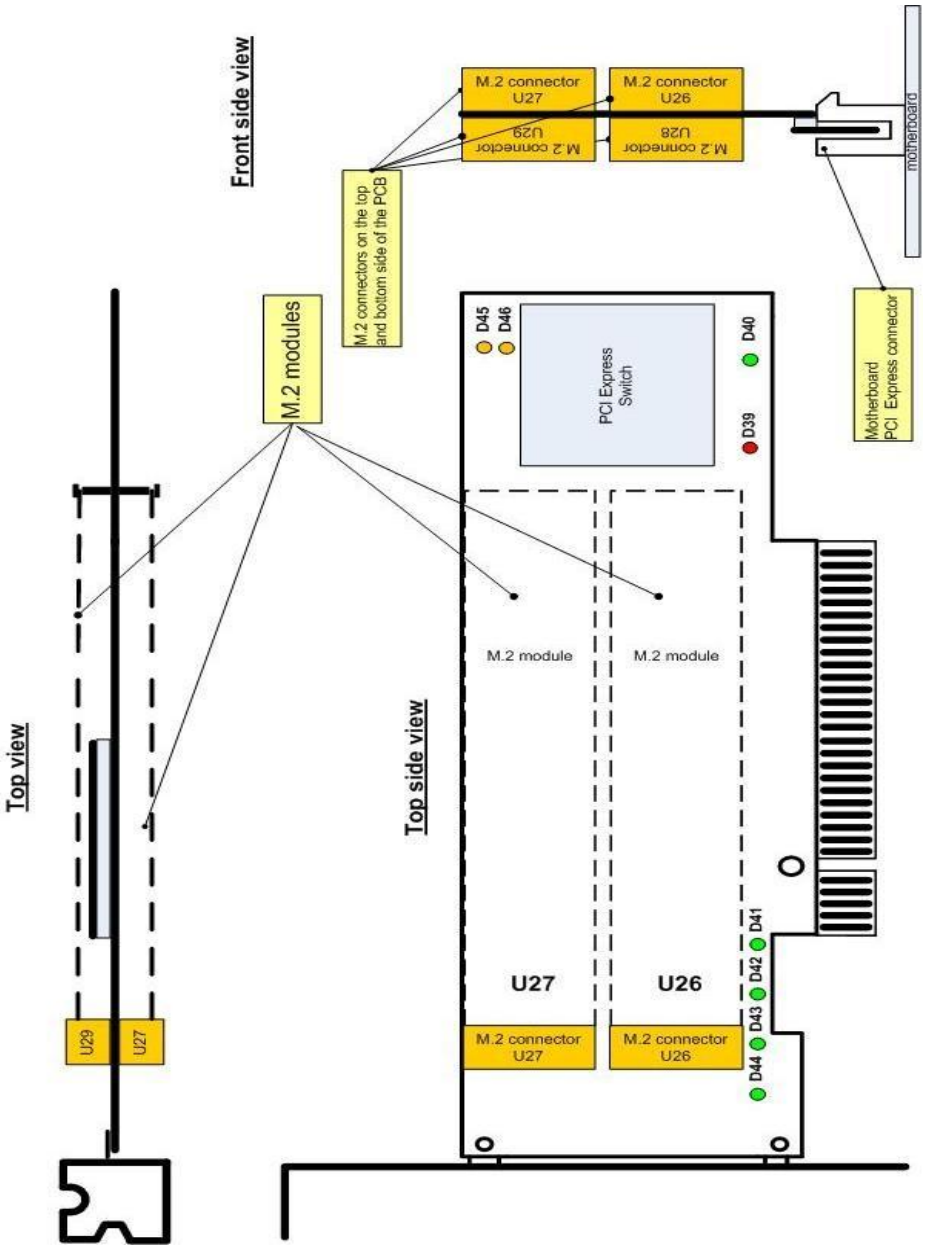

Figure 5: PCI Express Carrier Board for 4 M.2 modules layout

5.2 LEDs

Name	Ref. Des	Color	Usage
RESET	D39	RED	Global PCI Express RESET signal from
UPSTREAM	D40	GREEN	Upstream PCI Express Link status.
STATUS	D46	YELLOW	PCIe Switch status.
LINK1	D41	GREEN	Status of the downstream x4 PCIe Link to U26
LINK2	D42	GREEN	Status of the downstream x4 PCIe Link to U28
LINK3	D43	GREEN	Status of the downstream x4 PCIe Link to U27
LINK4	D44	GREEN	Status of the downstream x4 PCIe Link to U29

Table 1: PCI Express Carrier Board for 4 M.2 modules LEDs

5.3 Connectors

Ref. Des.	Type	Usage
J36, J37, J38	Connectors	Connection to the x16 or x8 PCI Express Adapter
J50	Connector	Removable Cooling Fan Connection
U26, U27	M.2 connectors (M key)	M.2 add-in modules connection (top side)
U28, U29	M.2 connectors (M key)	M.2 add-in modules connection (bottom side)

Table 2: PCI Express Carrier Board for 4 M.2 modules connectors

6 Appendix A:

7 Appendix B: Limited warranty

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