2x M.2 NGFF SSD RAID Controller Card Plus 2x SATA Ports

PEXM2SAT3422

*actual product may vary from photos

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For the latest information, technical specifications, and support for
this product, please visit www.startech.com/PEXM2SAT3422.

Manual Revision: 03/01/2016

FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by StarTech.com could void the user's authority to operate the equipment.

Industry Canada Statement

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe [B] est conforme à la norme NMB-003 du Canada.

CAN ICES-3 (B)/NMB-3(B)

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Table of Contents

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Introduction

You can use the PEXM2SAT3422 to install two M.2 NGFF drives into your desktop computer. The controller card is equipped with two SATA III (6Gbps) ports and supports hardware RAID. With its adjustable standoffs and multiple mounting holes, the card supports 110 mm, 80 mm, 60 mm, and 30 mm SSDs. The PEXM2SAT3422 comes with both a full-profile and low-profile bracket, and installs into x4, x8, or x16 PCIe slots.

The PEXM2SAT3422 features wide installation compatibility, with support for virtually all M.2 NGFF drives (22110, 2280, 2260, 2242, 2230), as well as hybrid drives.

Packaging contents

- 1 x M.2 SSD RAID controller card
- 1 x low-profile bracket
- 2 x M.2 mounting screws
- 1 x quick-start guide

System requirements

- Computer enabled with PCI Express® and an available PCI Express x4, x8, or x16 slot
- Screwdriver
- Any of the following operating systems:
    - Windows® 10 (32-bit or 64-bit)
    - Windows 8.1 (32-bit or 64-bit)
    - Windows 8 (32-bit or 64-bit)
    - Windows 7 (32-bit or 64-bit)
    - Windows Server® 2012
    - Windows Server 2008 R2
    - Mac OS 10.8 and later (tested up to 10.11)
    - Linux® 3.5

System requirements are subject to change. For the latest requirements, please visit www.startech.com/PEXM2SAT3422.

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Product diagram

Bracket (standard-profile pictured)

2x bracket screws

2x SATA ports

PCIe x4 connector

2x M.2 SSD slots

Drive installation holes

4-pin power connector (floppy small-drive power)

Drive-mount standoffs

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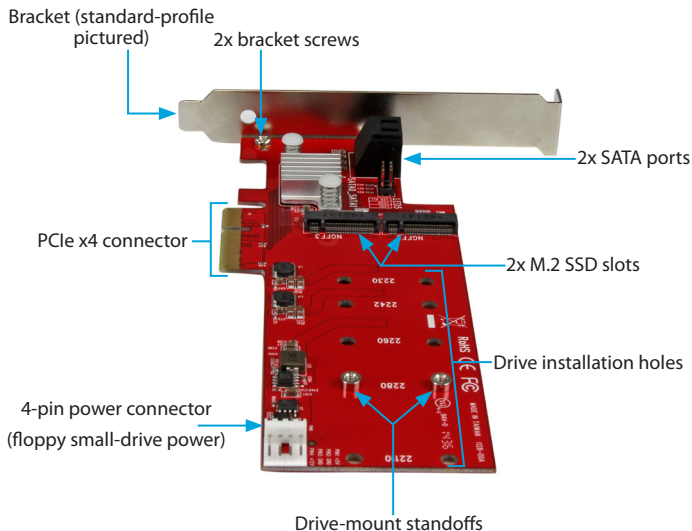
About LED indicators

LED/pin header	Behavior	Status
M.2 drive green LED (LED2 and LED3)	LED is illuminated	The drive is on and linked to the computer.
	LED is blinking	The drive is being accessed.
SATA pin header (LED0 and LED1)	LED is illuminated	The drive is on and linked to the computer.
	LED is blinking	The drive is being accessed.
LED all pin header	LED is illuminated	Any of the four drives is on and linked to the computer.
	LED is blinking	Any of the four drives is being accessed.

LED diagram

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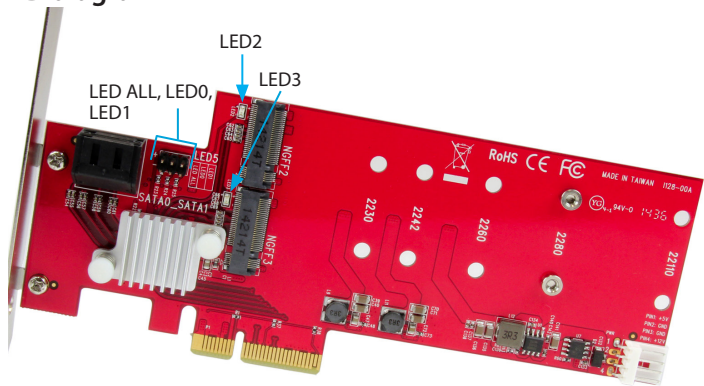
Hardware installation

Install a drive in the PCIe card

Warning! Drives and PCIe cards should be handled carefully, especially when they're transported. If you're not careful with your drives, you may lose data as a result. Make sure that you're properly grounded by wearing an anti-static strap when you install any computer component. If an anti-static strap isn't available, touch a large, grounded metal surface for several seconds to discharge any built-up static electricity.

1. By default, the PEXM2SAT3422 comes with the drive-mount standoffs preinstalled in the **2280** position. Depending on the length of your drive, you may need to move the preinstalled drive-mount standoffs. Place your drive next to the card and note the drive installation holes that match the height of your drive. If the drive-mount standoffs are already installed in the correct position, proceed to step 4.

2. Use a screwdriver (not included) to remove the screws on the reverse side of the card that are holding the drive-mount standoffs in place.

3. Place the screws and drive-mount standoffs that you removed in step 2 in the drive installation holes that match the length of your drive and use a screwdriver to tighten the screws on the reverse side of the card.

4. Gently slide the M.2 connector on your drive into the corresponding connector on the PEXM2SAT3422.

Note: The connector on your drive is keyed so that it only fits one way.

5. Place one of the included M.2 mounting screws in the drive-mount standoff and use a screwdriver to tighten the screw and hold the drive in place.

6. If necessary, insert a second drive.

To remove a drive, use a screwdriver to remove the M.2 mounting screw that is holding the drive in place and pull the drive out of the PEXM2SAT3422.

Install the low-profile bracket

The PEXM2SAT3422 can be mounted in both low-profile and full-profile computer systems. The full-profile bracket comes preinstalled in the adapter but you can install the low-profile bracket instead.

1. Use a Phillips head screwdriver to remove the two bracket screws from the PEXM2SAT3422.

2. Remove the full-profile bracket from the adapter.

3. Line up the low-profile bracket with the bracket holes on the back of the adapter.

4. Insert the two bracket screws you removed in step 1 and tighten them in place.

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Install the PCIe card

Warning! PCIe cards can be severely damaged by static electricity. If an anti-static strap isn't available, discharge any built-up static electricity by touching a large grounded metal surface for several seconds.

1. Turn off your computer and any devices or peripherals that are connected to it (for example, printers, external storage, and so on).

2. Unplug the power cable from the back of your computer.

3. Disconnect any peripheral devices that are connected to your computer.

4. Remove the cover from your computer case. Consult the documentation that came with your computer for details about how to do this safely.

5. Locate an open PCIe slot and remove the corresponding metal cover plate from the back of your computer case. Consult the documentation that came with your computer for details about how to do this safely. This card works in PCIe slots of x4, x8, or x16 lanes.

6. Gently insert the card into the open PCIe slot and fasten the bracket to the back of the case.

Note: If you install the card into a small form factor or a low-profile desktop system, it may be necessary to replace the preinstalled standard-profile bracket with the included low-profile (half-height) installation bracket.

7. As necessary, connect SATA cables from the SATA ports on the card to the SATA drives inside of your computer.

8. Connect a 4-pin floppy power connector (small drive power) from the computer's power supply to the 4-pin power connector on the card.

9. Place the cover back onto your computer case.

10. Reconnect the power cable to the back of your computer.

11. Reconnect all of the peripheral devices that you disconnected in step 3.

12. Turn on your computer.

Software installation

Install a driver

1. To download the latest drivers, use a Web browser and navigate to www.startech.com/PEXM2SAT3422.

2. Click the **Support** tab.

3. Download the driver.

4. When the download is complete, extract the contents of the compressed file that you downloaded.

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5. Double-click the appropriate driver for the version of operating system that you're running and follow the on-screen instructions to complete the installation.

Note: You may be asked to restart your computer to complete the installation.

Verify driver installation on a computer running Windows

1. On your computer, navigate to **Device Manager**.

2. Under **Storage Controllers**, right-click **Marvel 92xx** and click **Properties**.

3. Confirm that the device is installed and working correctly. In some cases, an exclamation mark appears next to devices that aren't installed correctly.

Verify driver installation on a computer running Mac OS

1. On your computer, in the toolbar, click the **Apple** icon.

2. Click **About This Mac** > **System Report** > **PCI Cards**.

3. Confirm that **Yes** is listed next to **Driver Installed**.

Initialize a drive

Prepare a drive for use on a computer running Windows

If you install a drive that already has data on it, the drive appears under **My Computer** or **Computer** with a drive letter assigned to it. If you install a brand-new drive that doesn't contain any data, you must prepare the drive for use.

Warning! When you complete the following steps, all of the data on your drive will be deleted. If your drive has data on it that you require, you should create a backup file or use a different drive.

1. Navigate to **Disk Management**.

2. A dialog window appears and asks you to initialize the drive. Depending on the version of Windows that you're running, you have the option to create either an **MBR** or a **GPT** disk.

Note: GPT (GUID partition) is required for drives larger than 2 TB but GPT isn't compatible with some earlier versions of operating systems. MBR is supported by both earlier and later versions of operating systems.

3. Locate the disk that is labeled **Unallocated**. To confirm that the drive is the correct one, check the drive capacity.

4. Right-click the section of the window that says **Unallocated** and click **New Partition** or **New Simple Volume**.

5. To initialize the drive in the format of your choice, complete the on-screen instructions.

When the drive is successfully installed, it appears under **My Computer** or **Computer** with a drive letter assigned to it.

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Prepare a drive for use on a computer running Mac OS

Warning! When you complete the following steps, all of the data on your drive will be deleted. If your drive has data on it that you require, you should create a backup file or use a different drive.

1. Do one of the following:

    - In **Spotlight**, enter **Disk Utility**.

    - Open **Finder**. Navigate to **Applications** and click **Utilities**. Open **Disk Utility**.

2. Select the new drive and click the **Partition** tab.

3. Enter a name for the partition.

4. Click **Apply**.

The drive should now appear on your desktop and be accessible in **Finder**.

About the Port Multiplier feature

If you use a port multiplier card with the PEXM2SAT3422, you can take advantage of the Port Multiplier feature and connect multiple SATA drives (up to four) to a single SATA host port. When you use the Port Multiplier feature, you can connect a multi-drive SATA or eSATA drive enclosure or backplane using only a single cable, creating easy and cost-effective storage scalability both inside and outside of the computer or server.

Note: Only the two SATA ports can use the Port Multiplier feature and only one of the SATA ports can use the Port Multiplier feature at a time. The PEXM2SAT3422 supports up to four drives connected using the Port Multiplier feature and supports seven drives in total (including two M.2 SSDs and five SATA drives).

The Mac OS doesn't support the Port Multiplier feature.

Configuring RAID

You can use either the integrated card BIOS utility or the Marvell® Storage utility to configure RAID on the PEXM2SAT3422.

Use BIOS to create a virtual disk

Warning! When you create a RAID virtual disk, you delete all of the data on the physical disks included in the virtual disk set. Before you continue with the steps below, you should back up the data contained on the disks.

1. Start up your computer and when the prompt appears, press **Ctrl**+**M** to enter the BIOS utility.

2. Use the arrow keys to select **HBA0: Marvell 0** and press **Enter**.

3. Press **Enter** to open the **Configuration** wizard.

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4. Use the arrow keys to navigate the list of free physical disks.

5. Press the **Spacebar** to select the drives that will be part of the RAID set. When you select a disk, an asterisk appears to the left of the disk label.

Note: To clear a disk selection, use the arrow keys to navigate to the disk that you don't want to include in the RAID set and press the **Spacebar**.

6. When you have selected all of the disks that you want to include in the RAID set, press **Enter**.

7. On the **Configure** screen, use the arrow keys and press the **Spacebar** to select any of the following RAID levels:

   • Select two HDDs for RAID 0 or RAID 1.

   • Select three HDDs for RAID 0.

   • Select four HDDs for RAID 0 or RAID 10.

8. After you select the RAID level, select **Next** and press **Enter**.

9. On the **Confirmation** screen, press **Y** to create the virtual disk.

When the virtual disk is created, it's listed on the **Topology** screen.

Use the Marvell Storage Utility to create a virtual disk

Warning! When you create a RAID virtual disk, you delete all of the data on the physical disks included in the virtual disk set. Before you continue with the steps below, you should back up the data contained on the disks.

1. Open the **Marvell Storage Utility**.

2. Under **Device**, click the adapter.

3. In the **Operation** drop-down menu, click **Create RAID**.

4. In the **Select RAID Level** drop-down menu, select a type of RAID (RAID 0, 1, or 10).

5. Select the check boxes next to the disks that you want to include in the RAID set.

6. When you have selected all of the disks that you want to include in the RAID set, click **Next**.

7. If necessary, change any configurations or setting options.

8. Click **Submit**.

When the virtual disk is created, it's listed in the left pane of the Marvell Storage Utility.

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