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> Syba 16-Port Non-RAID SATA III PCIe 3.0 x4 Expansion Card User Manual (Model SD-PEX40164)

Syba SD-PEX40164

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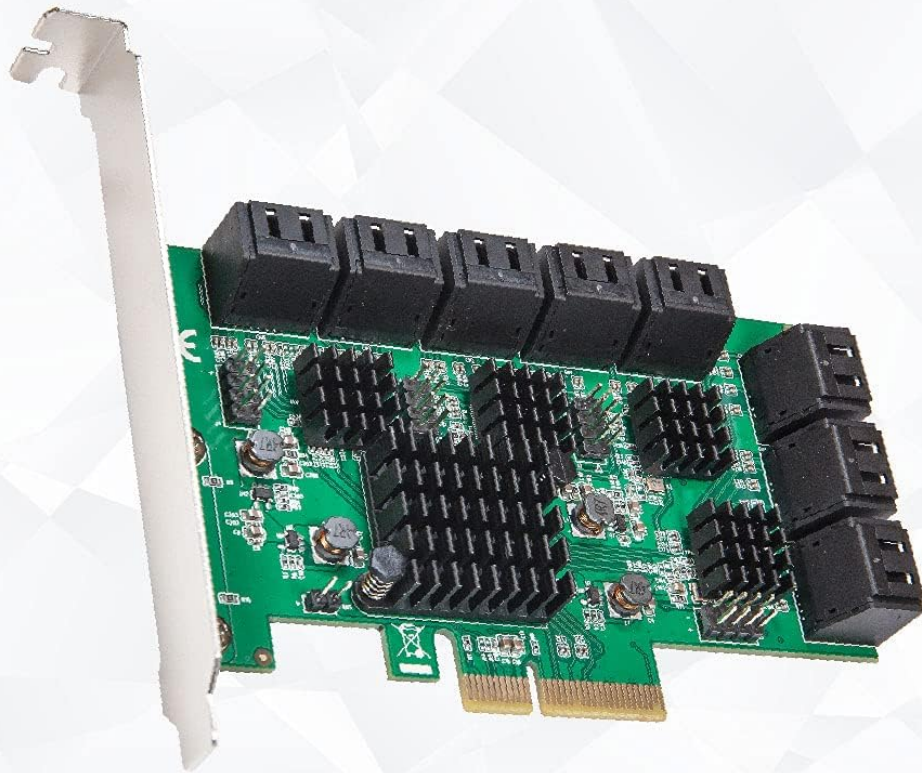
Model: SD-PEX40164

1. INTRODUCTION

The Syba 16-Port Non-RAID SATA III PCIe 3.0 x4 Expansion Card, model SD-PEX40164, is designed to expand the storage capabilities of your desktop PC, server, or NAS system by adding sixteen SATA III 6Gbps ports. This card supports storage expansion and AHCI boot functionality, providing a reliable solution for connecting multiple SATA devices. It integrates ASMedia ASM1064 and ASM2806 chipsets for stable and efficient performance.

16 Port Non-RAID SATA III Controller

Compatible with Windows / Linux / FreeNAS



Using 4 ASM1064 chipset, the SD-PEX40164 can provide a maximum sequential Read / Write Speed of 850 MB/s to 16 SATA 6Gb/s ports. For the storage solution based on data transfer of multiple hard drives, the newly added FIS-based switching design can overcome the bottlenecks created by operating multiple SATA storage devices simultaneously.

Image 1.1: Syba 16-Port Non-RAID SATA III Controller card compatible with Windows, Linux, and FreeNAS. This image shows the overall view of the expansion card with its 16 SATA ports and PCIe connector.

2. FEATURES

- PCIe x4 interface (x2 bandwidth) for 16-port non-RAID SATA III 6Gbps connectivity.
- Utilizes ASMedia ASM1064 chipsets for stable and reliable performance.
- Each SATA 3.0 port supports AHCI boot and data transfer speeds up to 6Gbps.
- Incorporates ASMedia ASM2806 PCIe switch for low latency, low cost, and low power operation, featuring 6 lanes and up to 4 downstream port packet switching with upstream PCIe Gen3x2 bandwidth.
- Supports hot-plug and hot-swap functionality for connected devices.
- Native Command Queuing (NCQ) support for enhanced performance.
- Compliant with Serial ATA AHCI Specification Revision 1.3 and Serial ATA Revision 3.0.
- Supports communication speeds of 6.0Gbps, 3.0Gbps, and 1.5Gbps.
- Port Multiplier compatible.

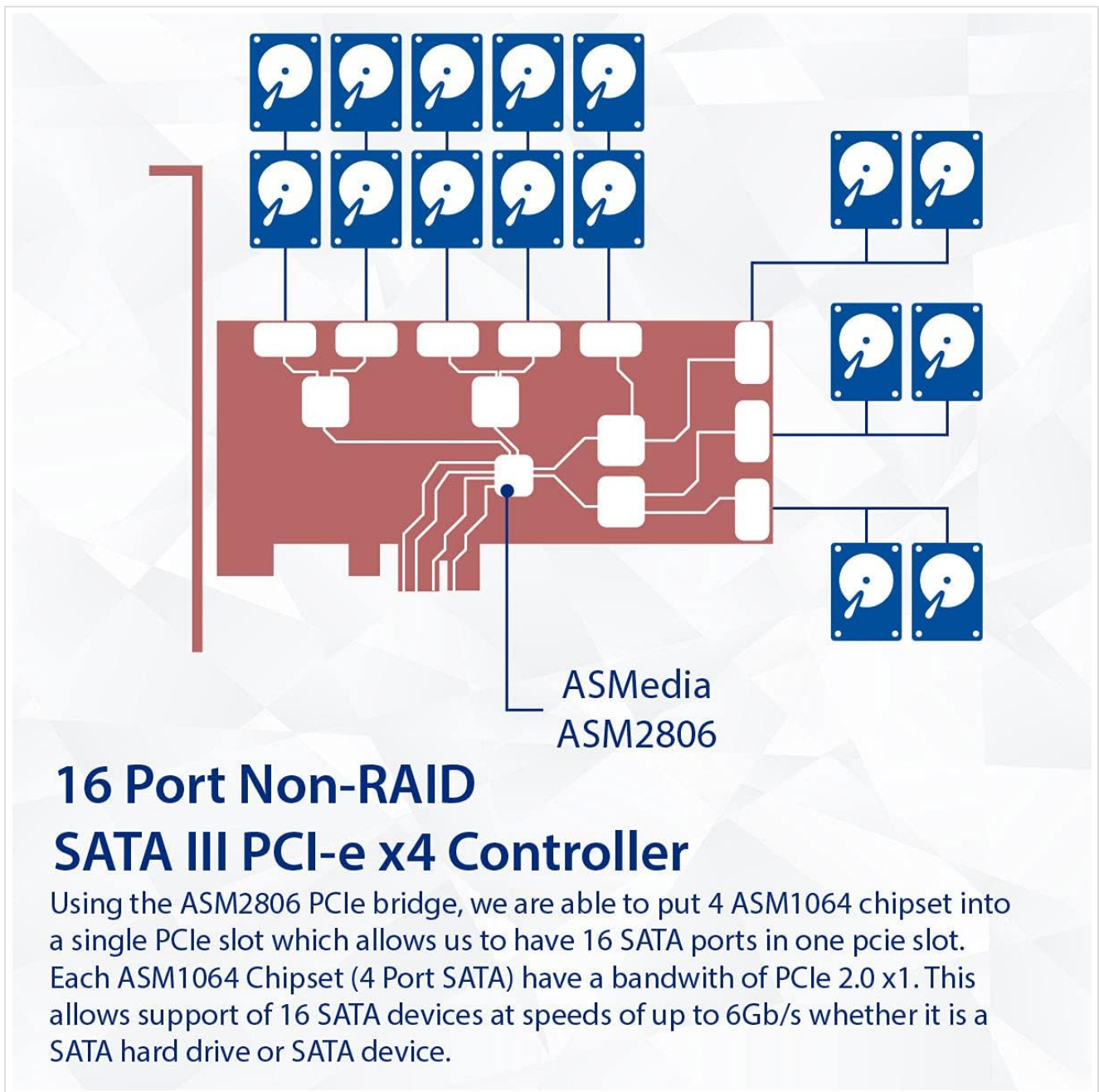


Image 2.1: Diagram of the 16-Port Non-RAID SATA III PCI-e x4 Controller showing the internal architecture with the ASMedia ASM2806 PCIe bridge connecting to multiple ASMedia ASM1064 chipsets, each managing four SATA ports.

3. SYSTEM REQUIREMENTS

- Available PCIe Gen3 x4 slot or larger (x8, x16).
- Compatible Operating System: Windows, Linux, FreeNAS, or other multiple operating systems supporting AHCI.
- Desktop PC, Server, or NAS system.

4. INSTALLATION

1. **Power Off System:** Ensure your computer system is completely powered off and disconnected from the power source before beginning installation.
2. **Open Computer Case:** Remove the side panel of your computer case to access the motherboard.
3. **Locate PCIe Slot:** Identify an available PCIe Gen3 x4 slot or a larger compatible slot (x8, x16) on your motherboard.

4. **Insert Expansion Card:** Carefully align the Syba SD-PEX40164 card with the chosen PCIe slot and press down firmly until it is securely seated. Ensure the metal bracket is aligned with the case opening.
5. **Secure Card:** Use a screw to secure the card's bracket to the computer case.
6. **Close Case:** Replace the computer case side panel and reconnect the power source.

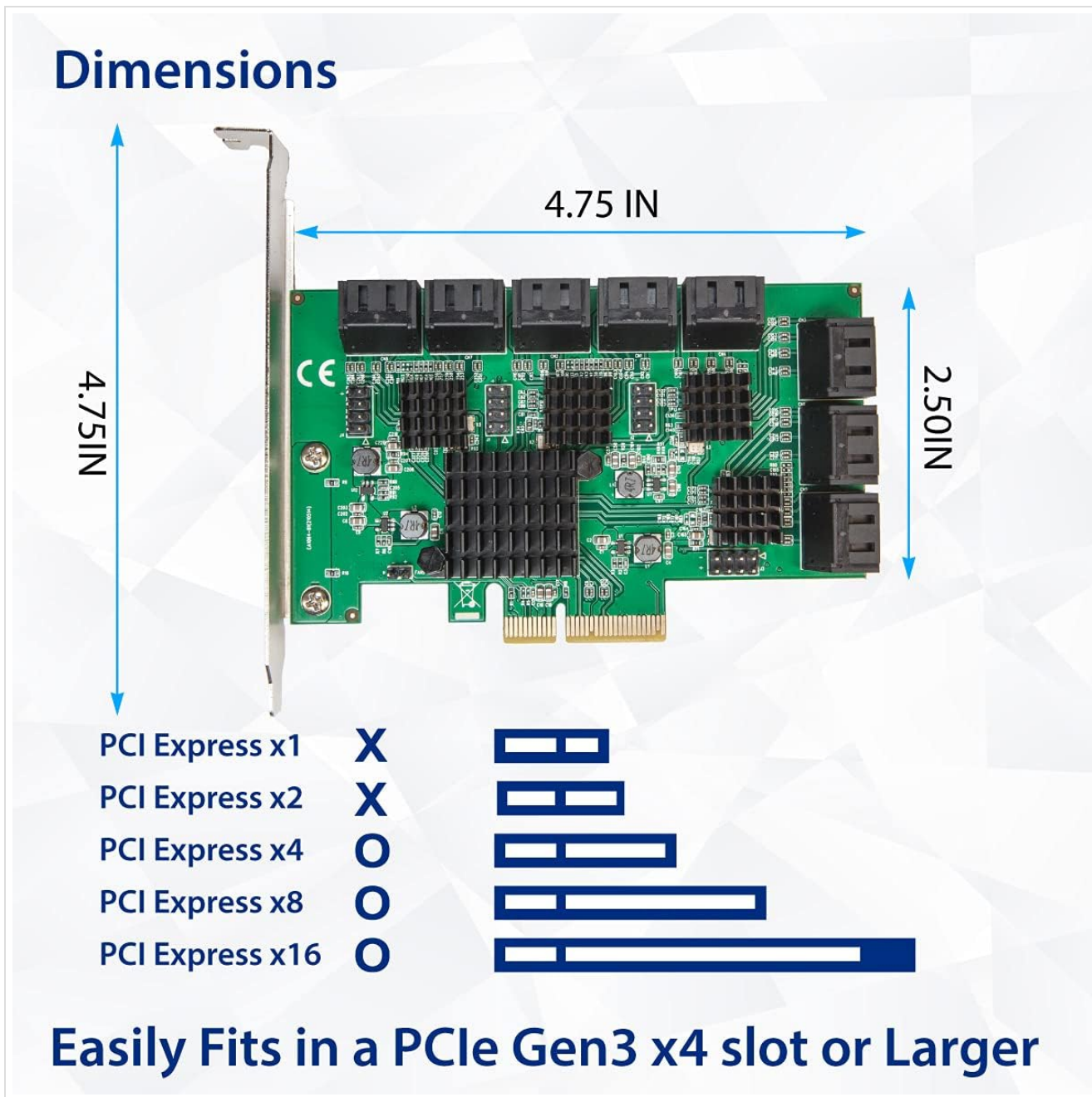


Image 4.1: This image illustrates the physical dimensions of the expansion card (4.75 inches by 4.75 inches) and indicates compatibility with PCIe x4, x8, and x16 slots. PCIe x1 and x2 slots are not compatible.

5. SETUP

1. **Power On System:** Power on your computer system.
2. **Operating System Detection:** Most modern operating systems (Windows 10/11, recent Linux distributions, FreeNAS) will automatically detect the card and install the necessary AHCI drivers. No manual driver installation is typically required.
3. **Verify Installation:** After the system boots, open your operating system's Device Manager (Windows) or equivalent utility (Linux/FreeNAS) to confirm that the "SATA AHCI Controller" is recognized and functioning correctly.
4. **Connect SATA Devices:** Connect your SATA hard drives or SSDs to the available SATA ports on the

expansion card using standard SATA data cables.

5. **Power SATA Devices:** Ensure all connected SATA devices receive adequate power from your system's power supply.



Image 5.1: This image highlights the LED Pin Out locations on the card for activity indicators and labels the PCIe x4 slot (x2 Bandwidth) for proper installation.

6. OPERATING

Once installed and recognized by the operating system, the Syba SD-PEX40164 card operates as a standard SATA controller. Connected drives will appear as individual storage devices within your operating system.

- **Hot-Plug/Hot-Swap:** The card supports hot-plugging and hot-swapping of SATA devices. This means you can connect or disconnect SATA drives while the system is running, provided your operating system and drive enclosures also support this feature. Always ensure data integrity by safely ejecting or unmounting drives before physical disconnection.
- **Drive Management:** Use your operating system's disk management tools to initialize, partition, and format new drives connected to the card.

- **AHCI Boot:** If your system BIOS/UEFI supports it, you may be able to boot from a drive connected to this expansion card. Consult your motherboard manual for specific boot device configuration options.

7. MAINTENANCE

The Syba SD-PEX40164 expansion card requires minimal maintenance. Follow these guidelines to ensure optimal performance and longevity:

- **Keep Clean:** Periodically inspect the card and surrounding area for dust accumulation. Use compressed air to gently clean dust from the heatsinks and components.
- **Ensure Airflow:** Maintain good airflow within your computer case to prevent overheating, especially when multiple drives are connected.
- **Cable Management:** Ensure SATA data and power cables are neatly routed and do not obstruct airflow or put undue stress on the card's connectors.

8. TROUBLESHOOTING

- **Card Not Detected:**
 - Ensure the card is fully seated in the PCIe slot.
 - Try the card in a different PCIe slot, if available.
 - Verify that the PCIe slot is functional with another known working card.
- **Drives Not Appearing:**
 - Check all SATA data and power cable connections to both the card and the drives.
 - Ensure the drives themselves are functional by testing them with another SATA controller or directly connected to the motherboard.
 - For new drives, ensure they are initialized, partitioned, and formatted using your operating system's disk management tools.
- **Slow Performance:**
 - Verify that your drives are connected to the card and not to slower motherboard SATA ports.
 - Ensure your PCIe slot is operating at its full speed (Gen3 x4). Check your motherboard BIOS/UEFI settings.
 - Confirm that AHCI mode is enabled in your system's BIOS/UEFI.

9. SPECIFICATIONS

Attribute	Specification
Brand	Syba
Model Number	SD-PEX40164
Hardware Interface	PCI Express x4 (Gen3 x2 Bandwidth)
SATA Ports	16 x SATA III 6Gbps
Chipset	ASMedia ASM1064 (x4), ASMedia ASM2806 (PCIe Switch)
Data Transfer Rates	6.0Gbps, 3.0Gbps, 1.5Gbps

Compatible Devices	Desktop PC, Server, NAS Systems
Supported Operating Systems	Multiple Operating Systems (Windows, Linux, FreeNAS)
Features	Hot-Plug, Hot-Swap, Native Command Queuing (NCQ), Port Multiplier Support, AHCI 1.3, SATA 3.0
Item Weight	0.14 kg
UPC	857426008802