ASUS THUNDERBOLTEX 4

ASUS ThunderboltEX 4 PCIe Expansion Card User Manual

Model: THUNDERBOLTEX 4

Brand: ASUS

1. Product Overview

The ASUS ThunderboltEX 4 is an advanced expansion card designed to bring cutting-edge Thunderbolt 4 and USB 4 technology to compatible motherboards. Equipped with the Intel Thunderbolt 4 JHL 8540 controller, this card provides ultrafast connectivity and versatile display options.

- **Intel Thunderbolt 4 JHL 8540 Controller:** Ensures high performance and compatibility.
- **Ultrafast Connectivity:** Features two Type-C ports with USB 4 support, offering up to 40Gb/s bi-directional bandwidth per port. This allows for daisy-chaining up to five Thunderbolt-enabled devices.
- **DisplayPort 1.4 Support:** Includes two mini DisplayPort IN ports, enabling support for up to 8K resolution monitors by redirecting VGA input signals through the card for video output.
- **Quick Charge Solution:** Provides up to 100W quick charge capability for compatible devices.

2. Package Contents

Verify that all items are present in your package before proceeding with installation.

- ASUS ThunderboltEX 4 Card
- USB 2.0 Cable
- Thunderbolt Cable
- Mini DP to DP Cables (2x)
- User Guide
- Support DVD



Image: The ASUS ThunderboltEX 4 card shown with its retail box, user guide, support DVD, USB 2.0 cable, Thunderbolt cable, and two Mini DisplayPort to DisplayPort cables.

3. Setup and Installation

Proper installation is crucial for the optimal performance of your ThunderboltEX 4 card. Always ensure your PC is powered off and unplugged from the wall outlet before beginning. Ground yourself to prevent electrostatic discharge.

3.1 Pre-installation Checklist

- An available PCIe x4 slot (or larger, x8, x16) on your motherboard.
- A dedicated Thunderbolt header on your motherboard.
- An available USB 2.0 header on your motherboard.
- A six-pin PCIe power connector from your power supply (for quick charge functionality).
- Compatible ASUS motherboard (refer to your motherboard manual for specific compatibility).

3.2 Installation Steps

1. **Prepare your PC:** Power off your computer and unplug the power cable. Open your PC case.
2. **Locate a PCIe Slot:** Identify an available PCIe x4, x8, or x16 slot on your motherboard. Remove the corresponding slot cover from the rear of your PC case.
3. **Insert the Card:** Carefully align the ThunderboltEX 4 card with the chosen PCIe slot and firmly press it down until it is securely seated.
4. **Secure the Card:** Use a screw to fasten the card's bracket to the PC case.
5. **Connect Internal Cables:**

- Connect the included Thunderbolt cable from the ThunderboltEX 4 card to the Thunderbolt header on your motherboard.
- Connect the included USB 2.0 cable from the ThunderboltEX 4 card to an available USB 2.0 header on your motherboard. This connection is essential for USB device functionality through the card.
- If 100W quick charge is desired, connect a 6-pin PCIe power connector from your power supply to the card.

6. **Close PC Case:** Replace the PC case cover and reconnect the power cable.
7. **BIOS Configuration:** Power on your PC and enter the BIOS/UEFI settings. Navigate to the advanced settings and enable Thunderbolt support. This setting may vary by motherboard model. Save changes and exit the BIOS.
8. **Driver Installation:** After booting into your operating system, Windows should recognize the new hardware. Install the necessary drivers from the provided support DVD or download the latest drivers from the ASUS support website.



Image: The ASUS ThunderboltEX 4 card shown installed in a PCIe slot on a motherboard, with cables connected.

4. Operating Instructions

Once installed and configured, the ASUS ThunderboltEX 4 card provides enhanced connectivity for your system.

4.1 Connecting Devices

- **Thunderbolt/USB-C Devices:** Use the two USB Type-C ports for connecting Thunderbolt 4 or USB 4 compatible devices. These ports support up to 40Gb/s bi-directional bandwidth.
- **Daisy-Chaining:** You can connect up to five Thunderbolt-enabled devices in a daisy-chain configuration using Thunderbolt cables.
- **Display Connectivity:** Utilize the two mini DisplayPort IN ports to connect your graphics card's DisplayPort outputs. This allows the ThunderboltEX 4 card to pass through video signals for output via its Thunderbolt ports to compatible monitors, supporting resolutions up to 8K.
- **Quick Charging:** The card supports up to 100W quick charging through one of its Type-C ports (ensure the 6-pin PCIe power connector is attached). The other Type-C port supports up to 27W quick charge.

4.2 Port Usage Recommendations

- The Thunderbolt ports are designed for daisy-chaining. Port 1 (closest to the edge of the card) is typically intended as the "Thunderbolt In" port, while Port 2 is the "Thunderbolt Out" port. For optimal compatibility with Thunderbolt hubs, connecting to Port 2 is often recommended.

- Ensure that all necessary cables (Thunderbolt, USB 2.0 header, PCIe power) are correctly connected for full functionality, including data transfer, display output, and quick charging.

5. Maintenance

To ensure the longevity and optimal performance of your ASUS ThunderboltEX 4 card, follow these general maintenance guidelines:

- **Keep Clean:** Periodically clean the inside of your PC case to prevent dust buildup on the card and other components. Use compressed air to gently remove dust.
- **Ensure Proper Airflow:** Make sure your PC case has adequate ventilation to prevent overheating, which can affect component performance and lifespan.
- **Driver Updates:** Regularly check the ASUS support website for the latest drivers and firmware updates for your ThunderboltEX 4 card. Keeping drivers up-to-date can improve stability and performance.
- **Handle with Care:** When handling the card, avoid touching the gold contacts or any sensitive components. Always hold the card by its edges.

6. Troubleshooting

If you encounter issues with your ASUS ThunderboltEX 4 card, consider the following troubleshooting steps:

- **Card Not Detected:**
  - Ensure the card is fully seated in the PCIe slot.
  - Verify that the Thunderbolt header cable and USB 2.0 header cable are securely connected to both the card and the motherboard.
  - Check BIOS/UEFI settings to confirm Thunderbolt support is enabled.
  - Try installing the card in a different PCIe slot if available.
- **USB Devices Not Working/Slow:**
  - Confirm the USB 2.0 header cable is connected. Without it, USB devices may not function correctly.
  - Ensure you are using high-quality Thunderbolt or USB-C cables.
  - Update Thunderbolt drivers.
- **Display Output Issues:**
  - Verify that the mini DisplayPort IN cables are correctly connected from your graphics card to the ThunderboltEX 4 card.
  - Ensure your monitor and cables support the desired resolution (e.g., 8K).
  - Check your operating system's display settings.
- **Quick Charge Not Working:**
  - Confirm the 6-pin PCIe power connector is securely attached to the card.
  - Ensure the connected device supports USB Power Delivery (PD) and the required wattage.
- **BIOS Splash Screen Not Appearing via Thunderbolt:**
  - Some motherboards may require specific BIOS settings or may not fully support BIOS output through add-in Thunderbolt cards. Consult your motherboard manual.

7. Specifications

Feature	Specification
Controller	Intel Thunderbolt 4 JHL 8540
Connectivity	2 x USB Type-C (Thunderbolt 4 / USB 4)
Bandwidth	Up to 40Gb/s bi-directional per port
Display Output	2 x Mini DisplayPort IN (DisplayPort 1.4 support, up to 8K resolution)
Quick Charge	Up to 100W (one port), up to 27W (second port)
Interface	PCIe x4 (compatible with x8, x16 slots)
Operating System	Windows 10 - 64 bit (and newer)
Dimensions (LxWxH)	9.1 x 7.3 x 2.4 inches
Item Weight	1.21 pounds

8. Warranty and Support

For warranty information, technical support, or to download the latest drivers and utilities, please visit the official ASUS support website. Keep your proof of purchase for warranty claims.
Online Support: www.asus.com/support/

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