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> MINISFORUM BD790I X3D Mini ITX Motherboard User Manual

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Model: BD790i X3D ITX

INTRODUCTION

The MINISFORUM BD790I X3D is a high-performance Mini ITX motherboard designed for demanding applications, including extreme gaming and content creation. It features an integrated AMD Ryzen 9 7945HX3D processor, offering 16 cores and 32 threads with a boost frequency of up to 5.4 GHz and a substantial 144MB of L2+L3 cache. This motherboard supports advanced connectivity and storage options, making it suitable for compact yet powerful system builds.

Key features include dual PCIe 5.0 M.2 slots for lightning-fast storage, a PCIe 5.0 x16 slot for high-performance graphics cards, and DDR5 memory support up to 96GB. It also provides comprehensive I/O with HDMI, DisplayPort, USB-C, WiFi 6E, and Bluetooth 5.3, ensuring versatile connectivity for various peripherals and displays.

SETUP

This section outlines the steps for setting up your MINISFORUM BD790I X3D motherboard. Ensure all components are compatible before beginning installation.

1. Component Installation

- **Memory (DDR5 SODIMM):** Locate the DDR5 SODIMM slots on the motherboard. Gently insert the memory modules into the slots, ensuring they are correctly oriented, until the clips on both sides snap into place. The motherboard supports up to 96GB of DDR5 memory.
- **M.2 SSDs:** The motherboard features dual PCIe 5.0 M.2 slots. Carefully insert your M.2 SSDs into the designated slots and secure them with the provided screws. An active SSD cooler is integrated to maintain optimal performance for PCIe 5.0 drives.
- **Graphics Card (Optional):** If using a dedicated graphics card, insert it into the PCIe 5.0 x16 slot. Ensure it is fully seated and secured with the case's retention mechanism.
- **Wireless Module:** Install your M.2 2230 Key E Wi-Fi module into its dedicated slot if not pre-installed.

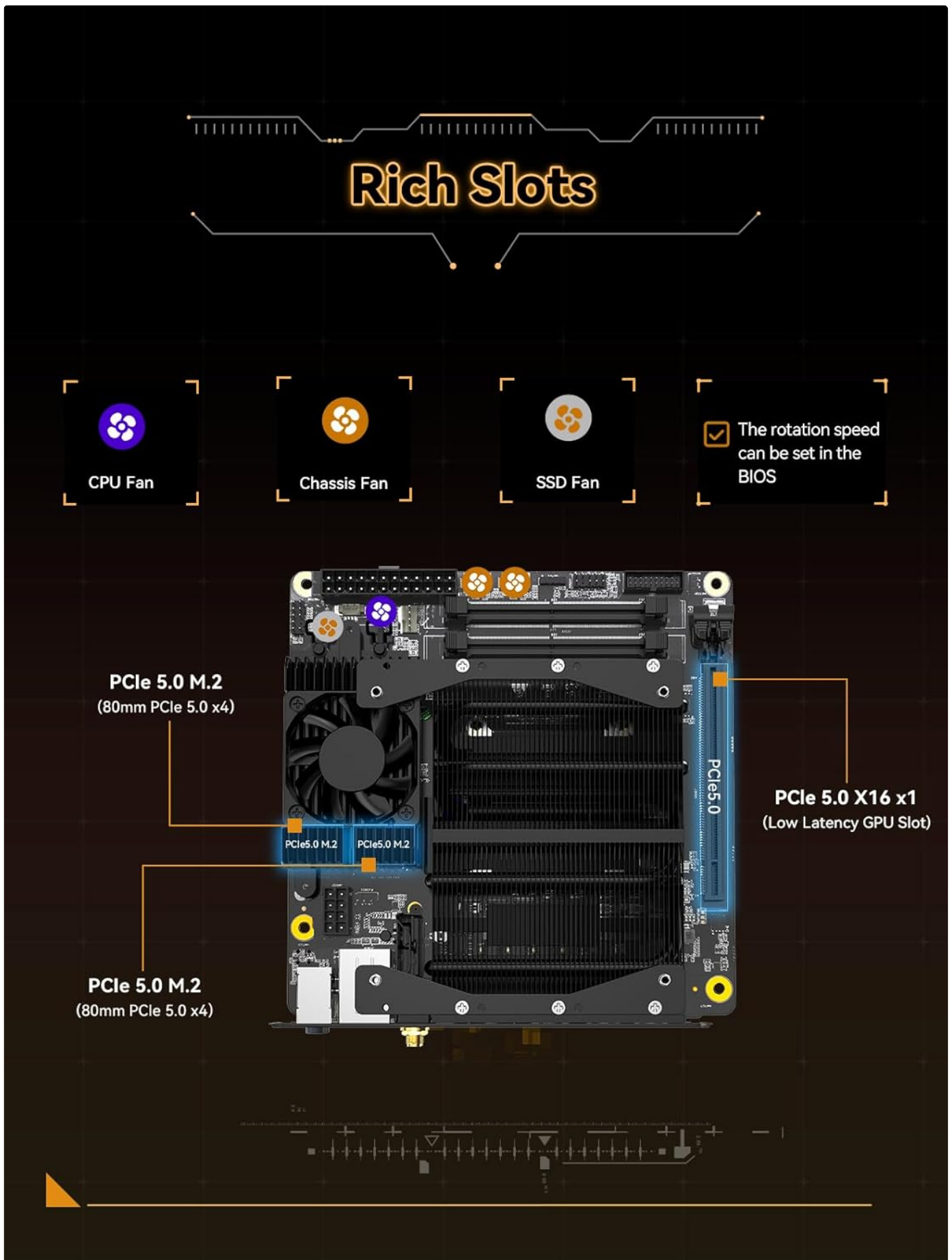


Image: Overview of the motherboard's rich slots, including PCIe 5.0 x16 and dual PCIe 5.0 M.2 slots, along with fan headers for CPU, chassis, and SSD fans.

2. Power and Peripheral Connections

- **Power Supply:** Connect the appropriate power cables from your power supply unit (PSU) to the motherboard's

power connectors.

- **Display Connections:** Connect your monitor(s) to the available video output ports: HDMI 2.1, DisplayPort 1.4, or USB-C. The motherboard supports triple display output.
- **USB Devices:** Connect your keyboard, mouse, and other USB peripherals to the USB 3.2 Gen2 Type-A, USB 3.2 Gen1 Type-A, or USB 2.0 Type-A ports.
- **Network:** For wired network access, connect an Ethernet cable to the RJ45 2.5G LAN port. For wireless, ensure your Wi-Fi antenna is connected.
- **Audio:** Connect speakers or headphones to the audio output jacks.

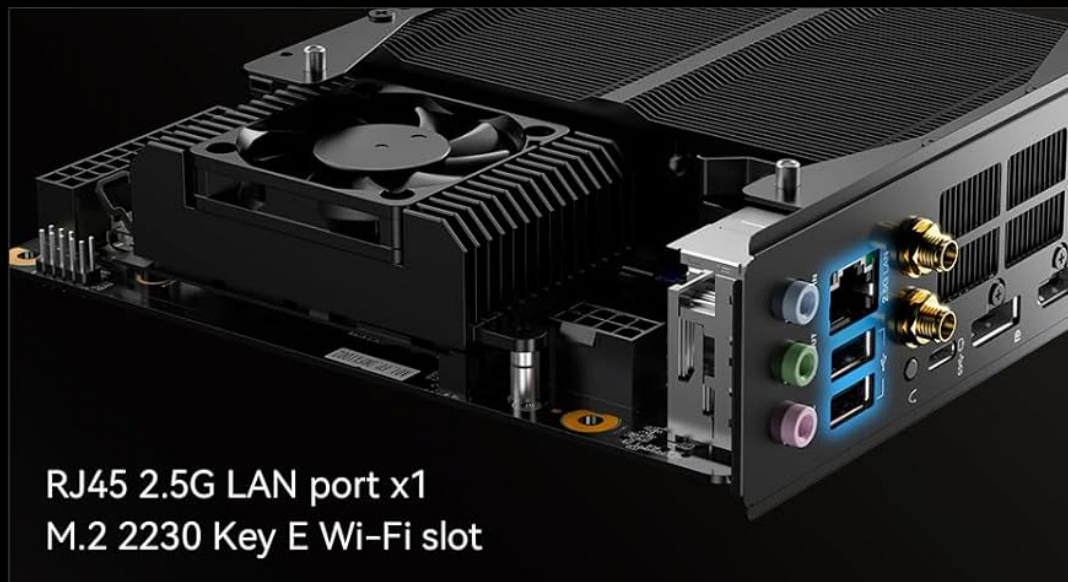
Abundant I/O Interfaces



HDMI2.0 x1 DP1.4 x1
USB3.2 Gen2 Type-C x1
(Triple display support)



USB3.2 Gen2 Type-A x2
USB2.0 Type-A x2



RJ45 2.5G LAN port x1
M.2 2230 Key E Wi-Fi slot

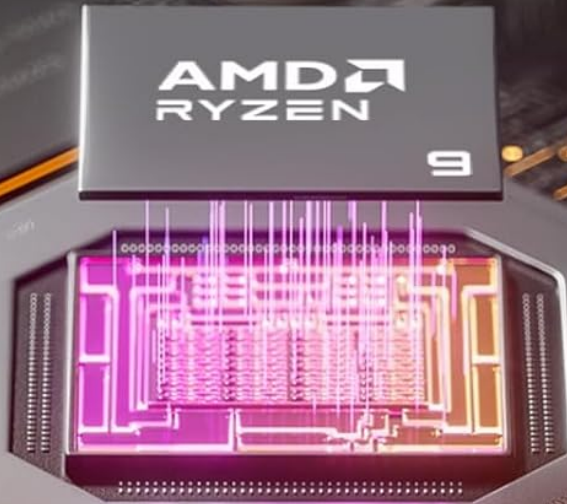
Image: Detailed view of the motherboard's abundant I/O interfaces, including HDMI, DisplayPort, USB-C, USB-A ports, RJ45 LAN, and audio jacks.

Once all components are installed and connected, you can power on your system. The integrated AMD Ryzen 9 7945HX3D processor provides robust performance for various tasks.

Initial Boot and BIOS Access

Upon first power-on, the system will initiate the boot process. You may need to access the BIOS/UEFI settings to configure boot order, memory profiles (XMP/EXPO), or fan curves. Typically, you can enter the BIOS by pressing the **Del** or **F2** key repeatedly during startup.

AMD Ryzen 9 7945HX3D



16/32
Cores/Threads

128M
L3 cache

5.4Ghz
Up to

▶ **Performance improved by up to 30% vs. last-gen CPU**

R9 7945HX3D

Previous Generation

30% ↗

Image: Visual representation of the AMD Ryzen 9 7945HX3D processor, highlighting its 16 cores/32 threads, 128MB L3 cache, and up to 5.4GHz clock speed, indicating a 30% performance improvement over previous generations.

Operating System Installation

Install your preferred operating system (e.g., Windows, Linux) from a bootable USB drive or other media. Ensure you

download and install the latest drivers for the motherboard's components, including chipset, graphics, audio, and network, from the MINISFORUM official website or component manufacturers (e.g., Realtek for audio/Ethernet).

Connectivity

- **Wireless:** Utilize the integrated WiFi 6E for high-speed wireless internet access and Bluetooth 5.3 for connecting wireless peripherals.
- **Multi-Display:** Leverage the HDMI 2.1, DisplayPort 1.4, and USB-C outputs for a triple-display setup, supporting resolutions up to 8K@60Hz or 4K@120Hz.

MAINTENANCE

Proper maintenance ensures the longevity and optimal performance of your motherboard.

Cooling System

The BD790I X3D features an efficient cooling system with a pre-installed fanless heatsink covering 80% of the motherboard and an active SSD cooler. To maintain effective cooling:

- **Dust Removal:** Regularly clean dust from the heatsink fins and any installed fans using compressed air. Ensure the system is powered off and unplugged before cleaning.
- **Airflow:** Ensure adequate airflow within your PC case. Avoid obstructing ventilation openings.
- **Fan Control:** The rotation speed of CPU, chassis, and SSD fans can be adjusted in the BIOS to optimize cooling and noise levels.

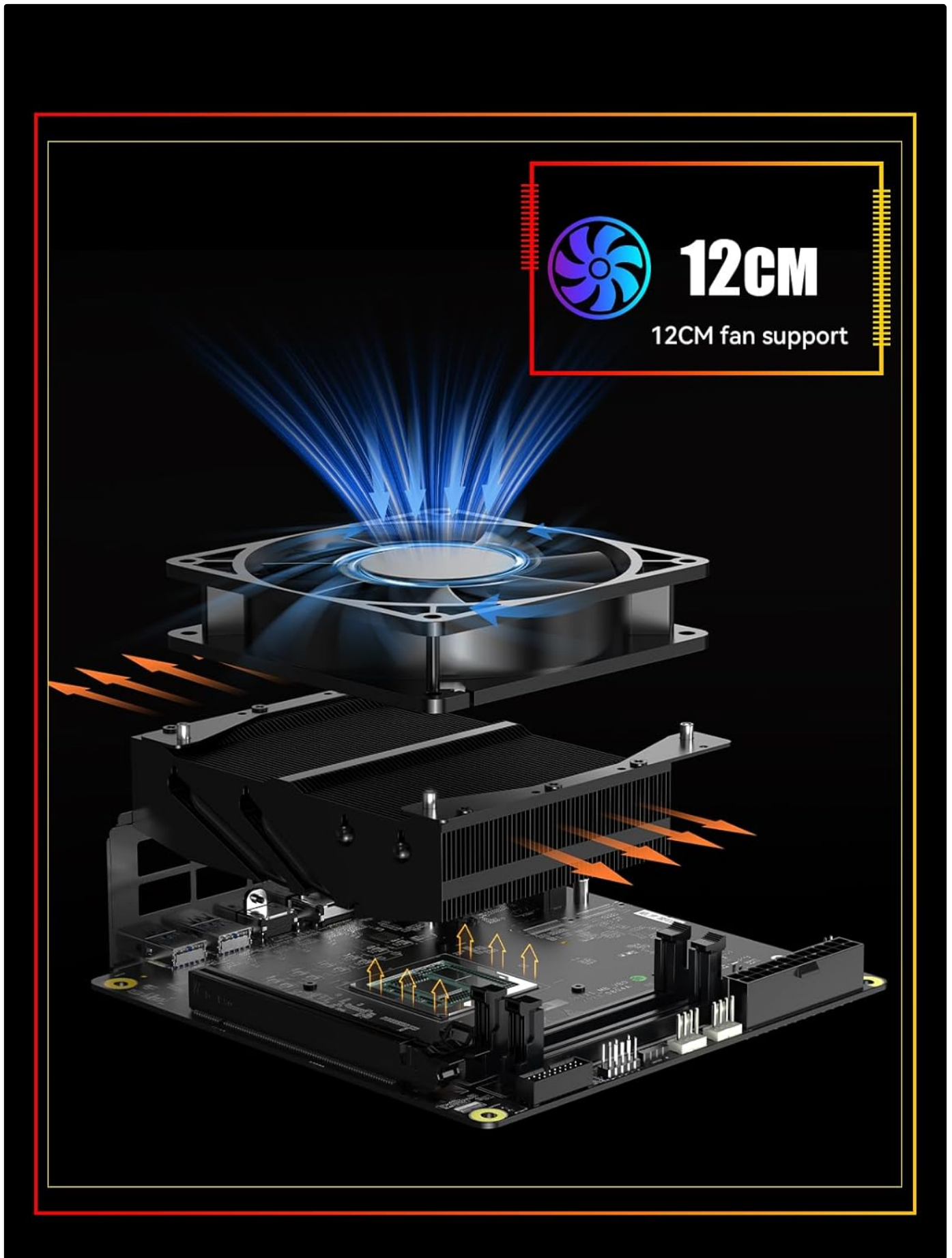


Image: Diagram illustrating the motherboard's cooling solution, showing support for a 12cm fan to enhance heat dissipation from the heatsink.

BIOS Updates

Check the MINISFORUM official website periodically for BIOS/UEFI updates. Updates can improve system stability,

performance, and compatibility, and may include optimized fan curves or thermal management improvements.

TROUBLESHOOTING

This section provides solutions to common issues you might encounter.

No Display Output

- Ensure all display cables (HDMI, DisplayPort, USB-C) are securely connected to both the motherboard and the monitor.
- Verify the monitor is powered on and set to the correct input source.
- If using a dedicated graphics card, ensure it is properly seated and connected to power. Try connecting the display to the motherboard's integrated graphics ports to rule out a graphics card issue.

System Not Booting

- Check all power connections to the motherboard and components.
- Reseat memory modules and M.2 SSDs to ensure they are properly installed.
- Clear the CMOS (Complementary Metal-Oxide-Semiconductor) settings. Refer to the motherboard's detailed manual for instructions on how to do this (usually involves a jumper or removing the CMOS battery).

Overheating or Excessive Fan Noise

- Ensure proper airflow within your PC case and that case fans are functioning correctly.
- Clean any dust accumulation on the heatsink and fans.
- Update the BIOS to the latest version, as this may include improved fan curves and thermal management.
- Consider adjusting fan speed settings in the BIOS to find a balance between cooling performance and noise.

Driver Issues

- If experiencing issues with network, audio, or other peripherals, ensure you have installed the correct and latest drivers.
- Download drivers directly from the MINISFORUM support page or the respective component manufacturer's website (e.g., Realtek for audio/LAN).

SPECIFICATIONS

The following table details the technical specifications of the MINISFORUM BD790I X3D Mini ITX Motherboard.

MINISFORUM BD790i X3D

CPU	AMD Ryzen™ 9 7945HX3D (16C/32T up to 5.4GHz)
GPU	AMD Radeon 610M
Memory	DDR5 dual channel (2xSODIMM slots, up to 5200MT/s, up to 96GB)
Expansion Slots	1x PCIe 5.0 X16
Wireless connection	M.2 2230 Key E slot
Ethernet	RJ45 2.5G LAN port
Video output	1x HDMI 2.1 DP1.4 x1 USB-C
Audio output	1x HDMI 2.1 DP1.4 x1 USB-C 1 x Line Out
USB port	1x USB3.2 Gen2 Type-C port (Alt DP) 2 x USB 3.2 Gen1 Type A Ports 2 x USB 2.0 Type-A ports
I/O ports	1 x 4-pin CPU fan header 2 x 4-pin case fan headers 1 x 4-pin SSD fan header 1 x USB 3.2 Gen 1 header 1 x front panel audio header 1 x system panel header
Specifications	Mini-ITX (17x17x1.6cm)
TDP	100W

***Motherboard + SSD heatsink: 37 mm thick (without CPU fan)**



Image: A detailed table outlining the specifications of the MINISFORUM BD790i X3D, including CPU, GPU, Memory, Expansion Slots, Wireless, Ethernet, Video Output, Audio Output, USB Ports, I/O Ports, and TDP.

Feature	Specification
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Feature	Specification
Brand	MINISFORUM
Model Name	BD790i X3D ITX
CPU	Integrated AMD Ryzen 9 7945HX3D (16C/32T, up to 5.4 GHz, 144MB Cache)
GPU	AMD Radeon 610M (Integrated)
Memory	2x SODIMM slots, DDR5, up to 5200MT/s, up to 96GB
Expansion Slots	1x PCIe 5.0 X16, 1x M.2 2230 Key E slot (for Wi-Fi)
Storage	2x PCIe 5.0 M.2 slots (80mm PCIe 5.0 x4)
Ethernet	RJ45 2.5G LAN port x1
Wireless Connectivity	WiFi 6E, Bluetooth 5.3
Video Output	1x HDMI 2.1, 1x DP 1.4, 1x USB-C (Alt DP) - Triple display support
Audio Output	1x HDMI 2.1, 1x DP 1.4, 1x USB-C (Line Out)
USB Ports	1x USB 3.2 Gen2 Type-C (Alt DP), 2x USB 3.2 Gen1 Type-A, 2x USB 2.0 Type-A
Fan Headers	1x 4-pin CPU fan header, 2x 4-pin case fan headers, 1x 4-pin SSD fan header
Dimensions	Mini-ITX (17x17x1.6cm)
TDP	100W

WARRANTY AND SUPPORT

For detailed warranty information and technical support, please refer to the official MINISFORUM website or contact their customer service directly. Keep your proof of purchase for warranty claims.

MINISFORUM Official Website: www.minisforum.com