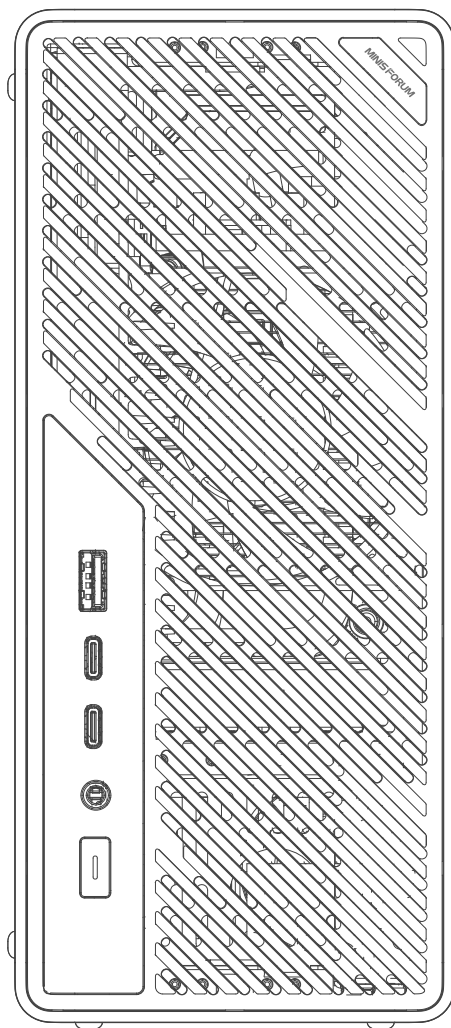




MINISFORUM

New Gen AI Workstation Series

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Disclaimer and Safety Instructions

• Disclaimer

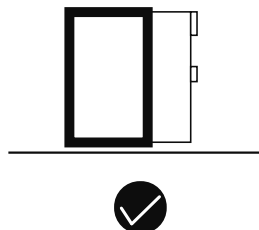
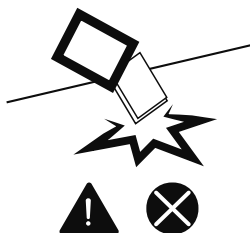
1. Thank you for purchasing MS-02-Ultra product.
2. The contents mentioned in this disclaimer are related to your safety, legal rights and responsibilities. Please pay attention to any warnings, cautions and attention signs on the instructions and product labels, and install according to the instructions in the instructions.
3. The product is relatively complex, and users need to have basic hands-on installation skills and safety knowledge. You should be careful during installation.
4. Before using this product, please read the instructions carefully to ensure that the product can be set up correctly. Failure to follow the instructions, warnings, cautions, and attention signs may damage the product or data, and may result in personal or property injury or loss.
5. Once you use this product, you are deemed to have carefully read the content requirements of the disclaimer, warning, caution, and attention signs, understood and accepted all the contents. You promise to take full responsibility for the consequences of using this product. You promise to use this product only for legitimate purposes and agree to this statement and any policies and guidelines formulated by MINISFORUM.
6. In addition to the warranty terms, MINISFORUM is not legally responsible for damage or injury caused directly or indirectly by using this product, especially those caused by failure to operate in accordance with safety guidelines. Users should follow the instructions mentioned in this statement and all safety guidelines.
7. The final interpretation right of this statement belongs to MINISFORUM.

• Tips for Use

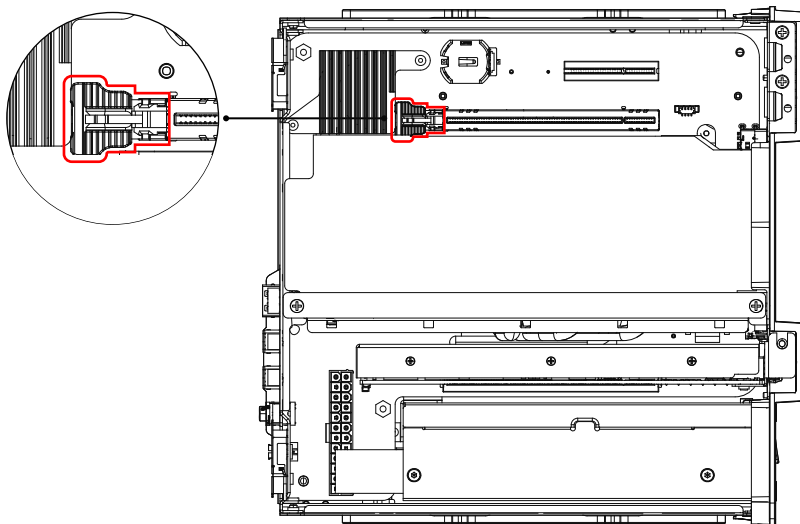
1. Dust, moisture and drastic temperature changes will affect the product life, so please try to avoid placing the product in these places.
2. The suitable temperature for the MINI PC and accessories is 0°C ~ 35°C.
3. Before you using this product, make sure you leave enough space around the device for ventilation. Please don't block or cover these openings. Never insert objects of any kind into the ventilation openings.
4. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.
5. When you use the power extension cords, the total current of all connected products should be within the rated current of cables, ensuring stable operation.

• Safety Precautions

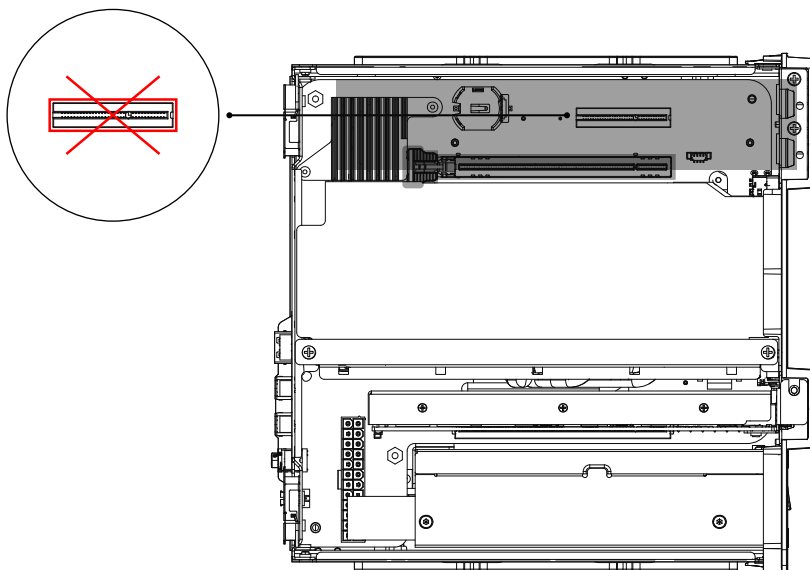
- ⚠ The mainboard core module supports tool-free quick removal. After placing the machine on the desktop, loosen the two hand-tightened screws of the back cover and pull out the mainboard core module. After loosening the hand-tightened screws, avoid placing the machine in mid-air, as it may cause the mainboard core to fall freely, which could result in personal injury or mechanical damage.



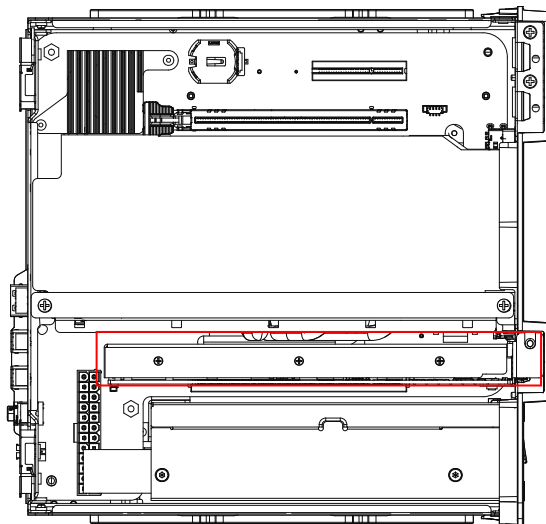
▲ To remove the PCIe x16 slot, unlock the PCIe slot first.



▲ Installing a dual-slot graphics card in the PCIe x16 slot will render the PCIe x4 slot unusable.



- ▲ The MS-02-Ultra with 285HX comes with a default PCIe to 25G+2xNVMe adapter card, which will occupy this slot.



• Maintenance Guideline

1. Do not step on the power cord or put anything on your Mini PC.
2. Do not spill water or any other liquid over this product.
3. There's still some current passing through even when the system is off. To avoid severe damage caused by possible electric shock, plug out all power cables from sockets temporarily before cleaning or moving this product.
4. If you encounter the technical problems with the product unplug the power cord and contact a qualified service technician or your retailer.

• FAQ

1. The start-up speed may be slow in the following situations: unexpected restart, BIOS reset, memory bank replacement, and SSD replacement. Generally speaking, the start-up speed will return to normal after one successful power-on and power-off process.
2. The core graphics card will occupy a part of the memory as GPU-specific memory.
3. Only the M.2 interface next to WiFi supports both NVMe and SATA protocols. Other M.2 SSD interfaces do not support SATA parsing and only support PCIe NVMe SSDs.
4. The PCIe slot near PSU uses MINISFORUM's proprietary protocol. The network port and two NVMe interfaces can only be expanded simultaneously when a PCIe card compatible with MS-02-Ultra is inserted. If a third-party PCIe card is inserted, it will only support one PCIe 4.0x4 device.
5. The PCIe x16 slot next to CPU supports splitting. You can set the split mode in the BIOS settings, with the maximum split mode being PCIe x8+PCIe x4+PCIe x4.

6. None of the Type-C ports will provide power when the machine is turned off or in standby or sleep mode.

7. The preferred memory slot shall be that on the CPU side. Using only the memory slots on the back side of CPU may result in failure to boot.

8. Some PCIe devices may have speed compatibility issues with PCIe 5.0/PCIe 4.0. To resolve PCIe speed compatibility issues, you can lower the PCIe speed in BIOS for better compatibility.

9. For enhanced system stability, the SSD on MS-02-Ultra's dedicated PCIe 25G network card runs in PCIe 3.0 x4 mode by default. For higher performance, you can manually set it to PCIe 4.0 mode in BIOS.

Warning! Enabling PCIe 4.0 may cause compatibility issues, and any risks or liabilities arising from this shall be borne by the user.

10. For optimal idle power consumption and user experience, the ASPM feature of SSD is enabled by default. If SSD compatibility issues arise, it can be disabled in BIOS to enhance SSD compatibility.

11. For better performance, inserting a dedicated graphics card will disable the integrated graphics card by default. This will prevent the onboard USB4, USB4V2, and HDMI ports from providing display output when a dedicated graphics card is inserted.

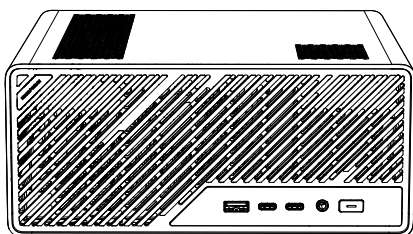
If you need to use the onboard display output function or the acceleration function of the integrated graphics card, you can still enable the integrated graphics card under Advanced->Onboard Setting in the BIOS menu.

Note: --- This message contains additional instructions for this item.

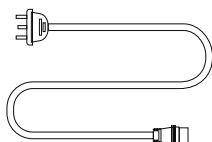
Important! --- This information contains instructions that must be followed.

Warning! --- This message contains information about user safety and product safety.

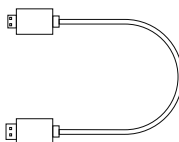
Package Contents



MINI PC



Power Cord */



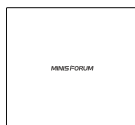
HDMI® Cable */



SSD Heatsink */



Mylar
(PCIe expansion card area) */

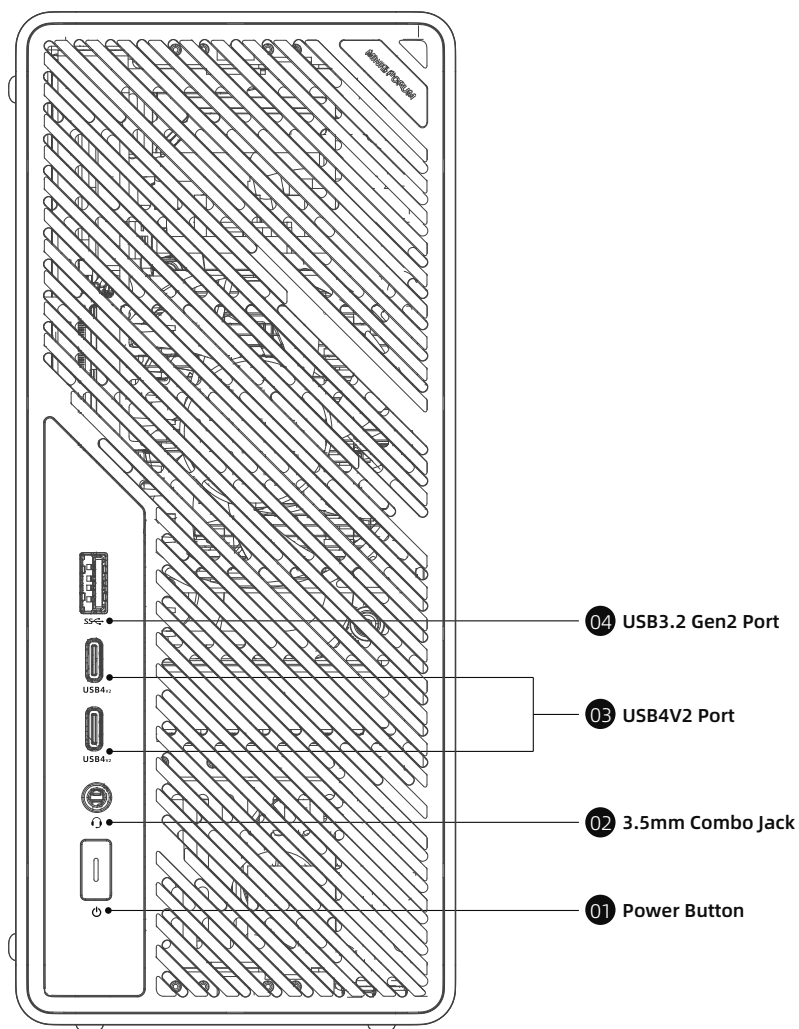


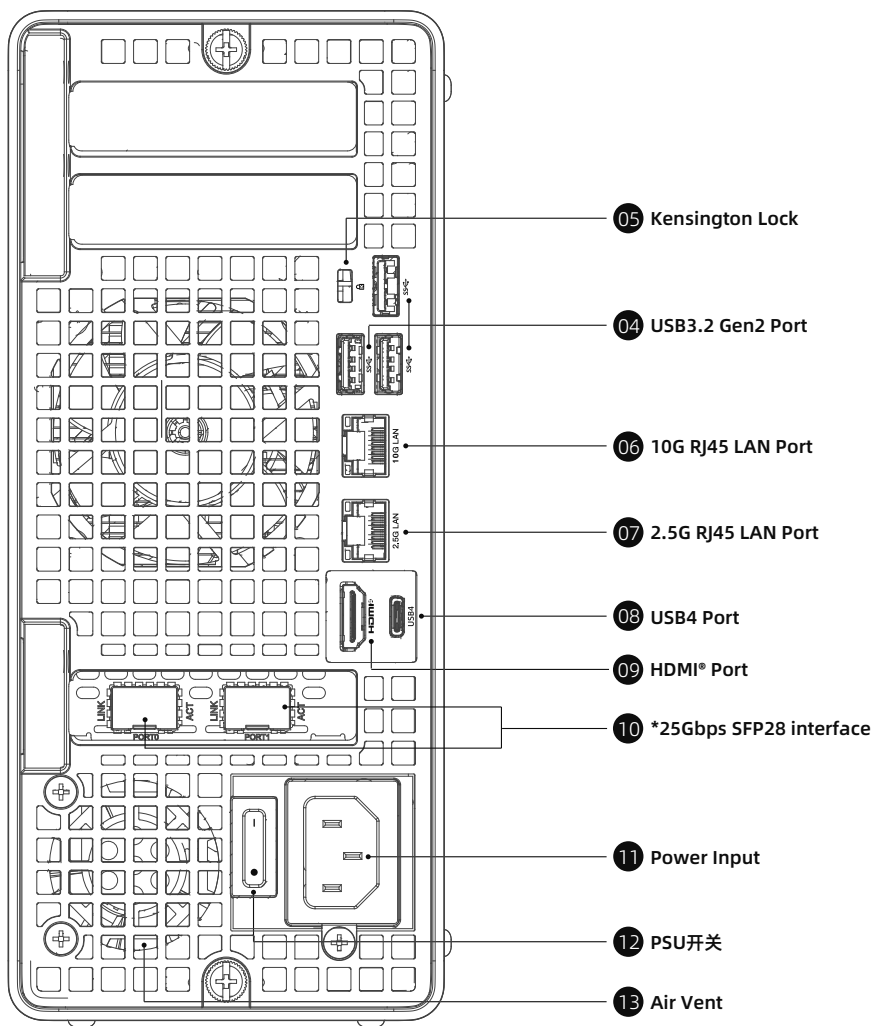
User Manual */

NOTE:

* The power adapter and other accessories included in the box will vary depending on the model parameter or area purchased.

3 Know Your Mini PC





Interface

01 Power Button

The Power button allows you to turn the Mini PC on /off. You can press the Power button to put your Mini PC to Sleep Mode or press it for 10 seconds to force shutdown your Mini PC.

02 USB3.2 Gen2 Port

USB3.2 Gen2 (Universal Serial Bus) port provides a transfer rate of up to 10 Gbps. It can be connected to keyboards, pointing devices, cameras, hard disks, printers and scanners.

03 3.5mm Combo Jack

This connector is used to connect audio output signals to a power amplifier or headphones. You can also use it to connect an external microphone or output signals from audio equipment.

04 USB4V2 Port

This interface supports USB4V2 (TBT5) transmission protocol, with a maximum data transfer rate of 80Gbps. It supports ALT DP audio and video output, only supports 5V external power supply, supports PCIe data transmission, and supports Thunderbolt Ethernet.

11 Kensington Lock

The Kensington Lock can be connected to a locker to prevent others from stealing your Mini PC.

09 10G RJ45 Port

This RJ45 network port supports standard Ethernet cables and can be connected to a local area network. (Transmission speed 10Gbps)

07 2.5G RJ45 Port

This RJ45 network port supports standard Ethernet cables and can be connected to a local area network. (Transmission speed 2.5Gbps)

03 USB4 Port

This interface supports USB4 transmission protocol, with a maximum data transmission rate of 40Gbps. Support Alt DP audio and video output, only support 5V output, support PCIe data transmission, and support Thunderbolt Ethernet.

06 HDMI® Port

The HDMI® port (High-Definition Multimedia interface) is uncompressed, fully digital audio/video interface that provides a common data connection channel for compatible devices, It can be used to connect external display devices and televisions.

10 *25Gbps SFP28 interface

Notes: This interface is only available on models equipped with 285HX.

Ultra-high-speed network interface. This interface supports a maximum network connection speed of 25Gbps. When using SFP28 cables and modules, it can reach a transmission rate of 25Gbps, while using SFP+ cables and modules allows for a transmission speed of 10Gbps.

12 Power Input

Connect the power cord to the power source. The built-in high conversion rate power supply can convert AC power to DC power, providing power to your Mini PC.

Warning! To prevent damage to your Mini PC, please do not block the power's cooling vents.

12 PSU switch

It is the switch for the built-in PSU power supply, with "O" for off and "I" for on.

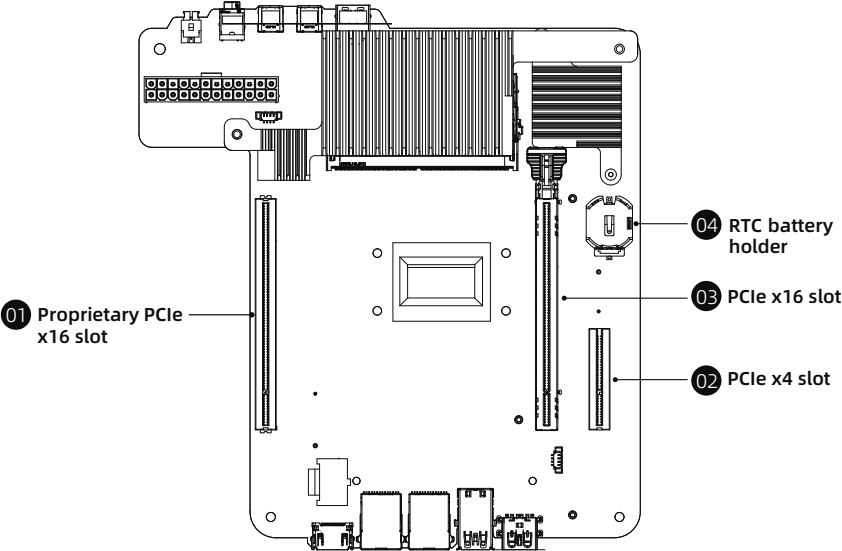
13 Air Vent

The air vents allow your Mini PC chassis to expel hot air out.

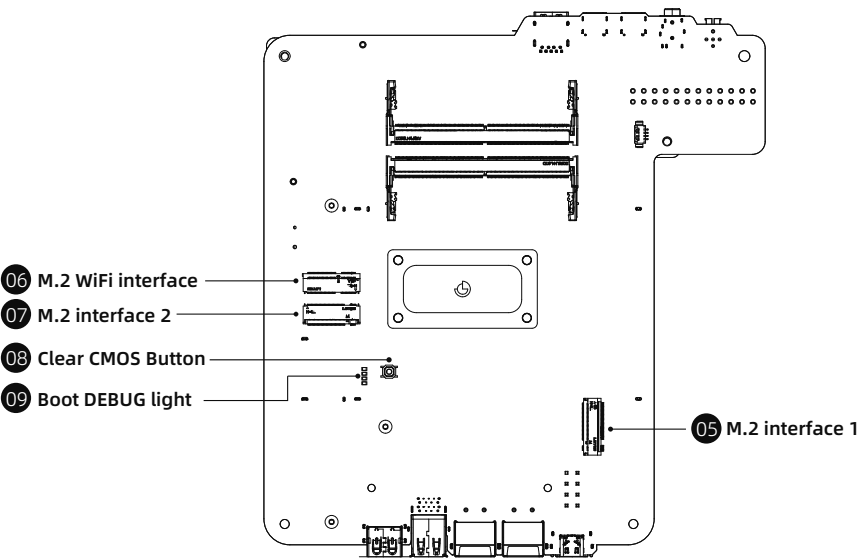
Important! For optimum heat dissipation and air ventilation, ensure that the air vents are free from obstructions (such as Paper, books, clothes, transmission lines).

Motherboard Layout

Front



Back



Motherboard Port

01 Proprietary PCIe x16 slot

1. This PCIe slot uses MINISFORUM's proprietary protocol. The network port and two NVMe interfaces can only be expanded simultaneously when a PCIe card compatible with MS-02-Ultra is inserted. If a third-party PCIe card is inserted, it will only support one PCIe 4.0x4 device. The first PCIe x4 of this interface is directly connected to CPU, and NVMe's PCIe x4 connects to PCH.

2. * A PCIe to 25G+2xNVMe adapter card dedicated to the MS-02-Ultra will only be included with devices equipped with the 285HX.

3. This slot uses a proprietary protocol, and supports up to three devices simultaneously. The slot doesn't use splitting technology. It is designed with all the necessary signals for three full PCIe devices.

Note: This slot does not support standard splitting protocols.

02 PCIe x4 slot

1. It connects to PCH and supports up to PCIe 4.0x4 PCIe slot.

2. This interface only supports a physical PCIe x8 length and does not accommodate PCIe x16 length cards.

03 PCIe x16 slot

1. It directly connects to CPU and supports up to PCIe 5.0x16 PCIe slot.

2. It supports splitting, and you can set the splitting mode in BIOS settings, with a maximum split mode of PCIe x8+PCIe x4+PCIe x4.

3. Some PCIe devices may have speed compatibility issues with PCIe 5.0/PCIe 4.0. To resolve PCIe speed compatibility issues, you can lower the PCIe speed in BIOS for better compatibility.

04 RTC battery holder

The RTC battery holder is a component designed to hold a coin cell battery for the real-time clock (RTC) module. It is used to secure the battery and provide continuous power to RTC, preventing the loss of clock data.

05 M.2 interface 1

It connects to SSD hard drive, and supports only PCIe protocol, with a maximum speed of PCIe 5.0x4.

06 M.2 WiFi interface

It is the M.2 E KEY WiFi interface, and supports up to PCIe 4.0x1 /CNVio3 protocols, as well as USB2 protocol.

07 M.2 interface 2

It connects to SSD hard drive, and supports both PCIe and SATA protocols, with a maximum speed of PCIe 4.0x4.

08 Clear CMOS Button

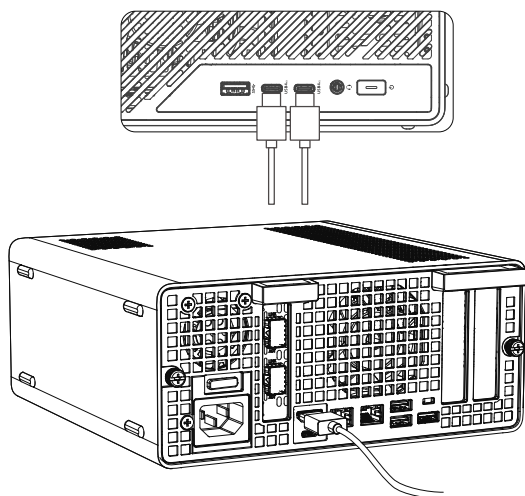
Please remove the power source and hold the reset hole for ten seconds to restore the BIOS to its factory default settings.

Important! If you encounter certain issues during use, you can first try to resolve them by holding the reset hole.

09 Boot DEBUG light

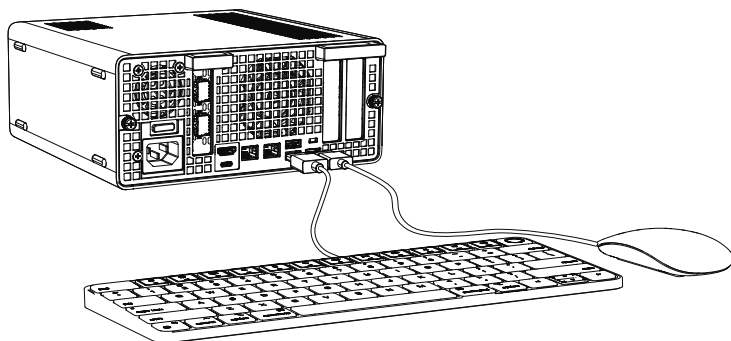
It can be used to debug boot failures. It includes CPU, RAM, VGA, and BOOT lights.

1



Connect the display to the Mini PC's HDMI port/USB4/USB4V2 port.

2



Connect the keyboard and mouse.