ASRock X870E TAICHI LITE

ASRock AMD X870E Taichi Lite Motherboard Instruction Manual

Model: X870E TAICHI LITE

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of your ASRock AMD X870E Taichi Lite Motherboard. Please read this manual thoroughly before attempting any installation or configuration to ensure proper functionality and to prevent damage to your system components.

Figure 1: ASRock X870E Taichi Lite Motherboard. This image displays the overall layout of the motherboard, highlighting its EATX form factor and key component placements such as the CPU socket, DIMM slots, and M.2 slots.

2. Key Features

- **Toolless Multi-Layer M.2 Heatsink:** Ensures optimal thermal performance for M.2 SSDs without requiring tools for installation.
- **4 x M.2 Sockets:** Provides extensive storage expansion options for high-speed NVMe SSDs.
- **Exclusive 20K Cap with 1000uF Capacitance:** Enhances power delivery stability and component longevity.
- **USB4 Onboard:** Offers high-speed data transfer and versatile connectivity for modern peripherals.
- **Ultimate VRM Power:** Delivers stable and efficient power to the CPU for optimal performance and overclocking potential.

3. Package Contents

Verify that all items listed below are present in your motherboard package. If any item is missing or damaged, please contact your retailer.

- ASRock X870E Taichi Lite Motherboard
- Quick Installation Guide
- Support CD/DVD
- SATA Data Cables
- Wi-Fi Antenna
- M.2 Screws/Standoffs
- Other accessories (e.g., cable ties, stickers)

Figure 2: Motherboard and included accessories. This image shows the ASRock X870E Taichi Lite Motherboard alongside its standard accessories, including documentation, cables, and the Wi-Fi antenna.

4. Physical Layout

Familiarize yourself with the various components and connectors on your motherboard.

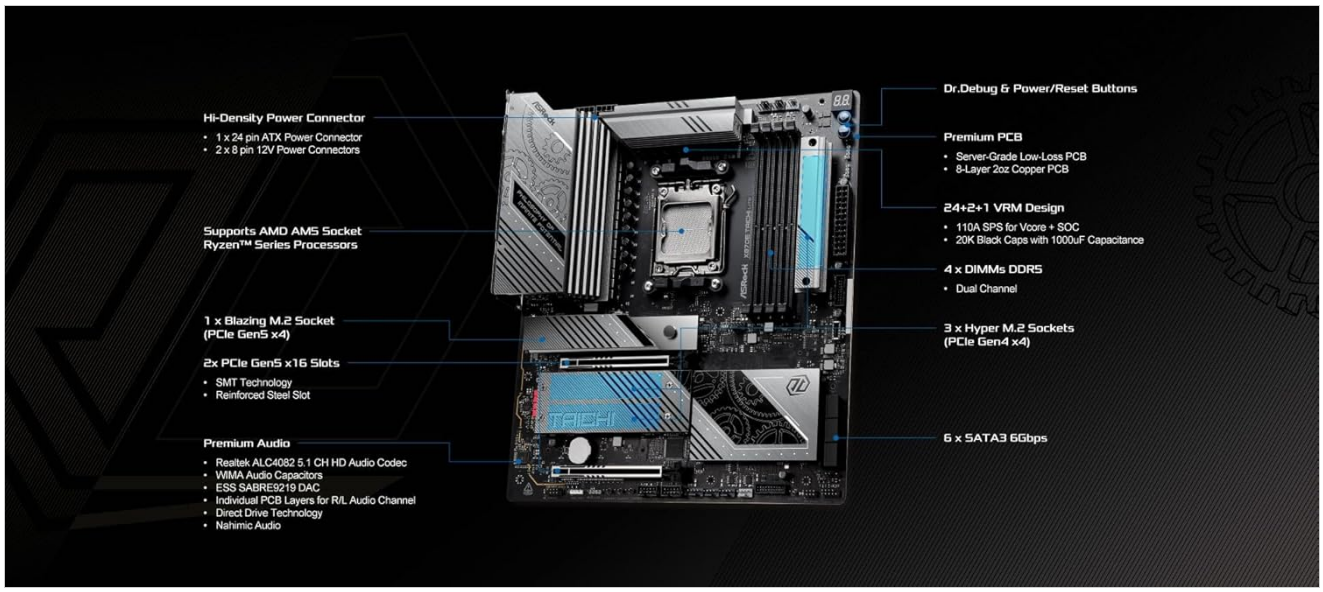

Figure 3: Motherboard Component Layout. This diagram illustrates the main components of the ASRock X870E Taichi Lite, including the CPU socket, DDR5 DIMM slots, PCIe slots, M.2 sockets, and power connectors.

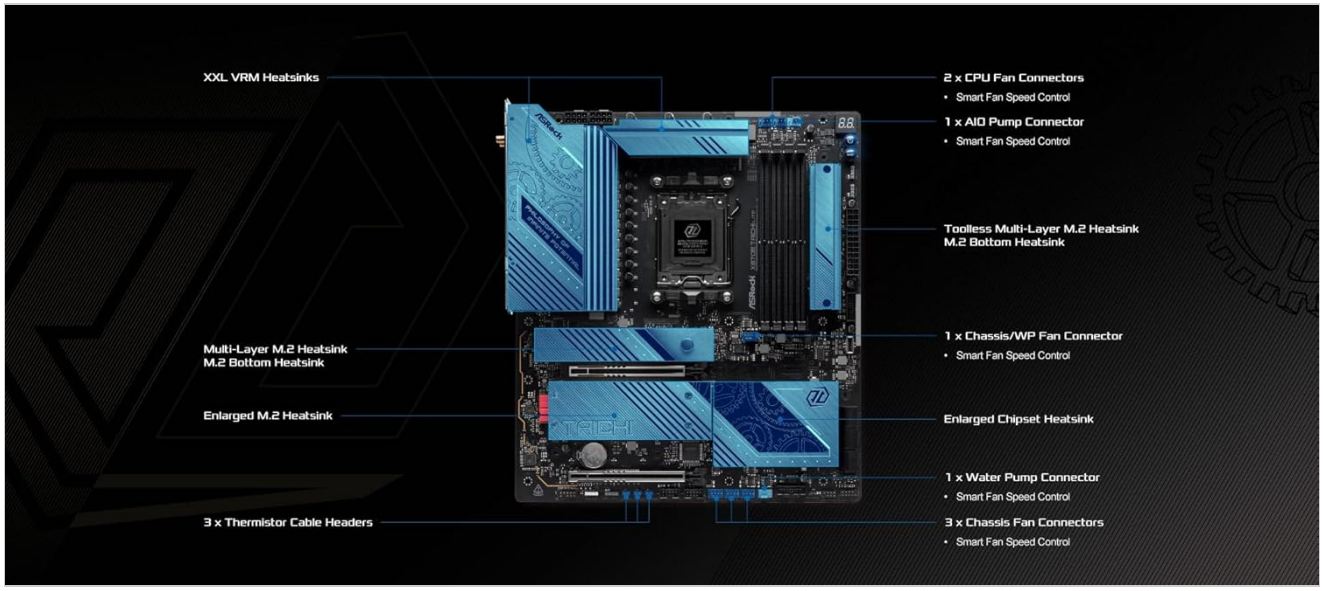

Figure 4: Cooling Features. This image highlights the extensive cooling solutions on the motherboard, including XXL VRM heatsinks, multi-layer M.2 heatsinks, and an enlarged chipset heatsink, ensuring stable operation under load.

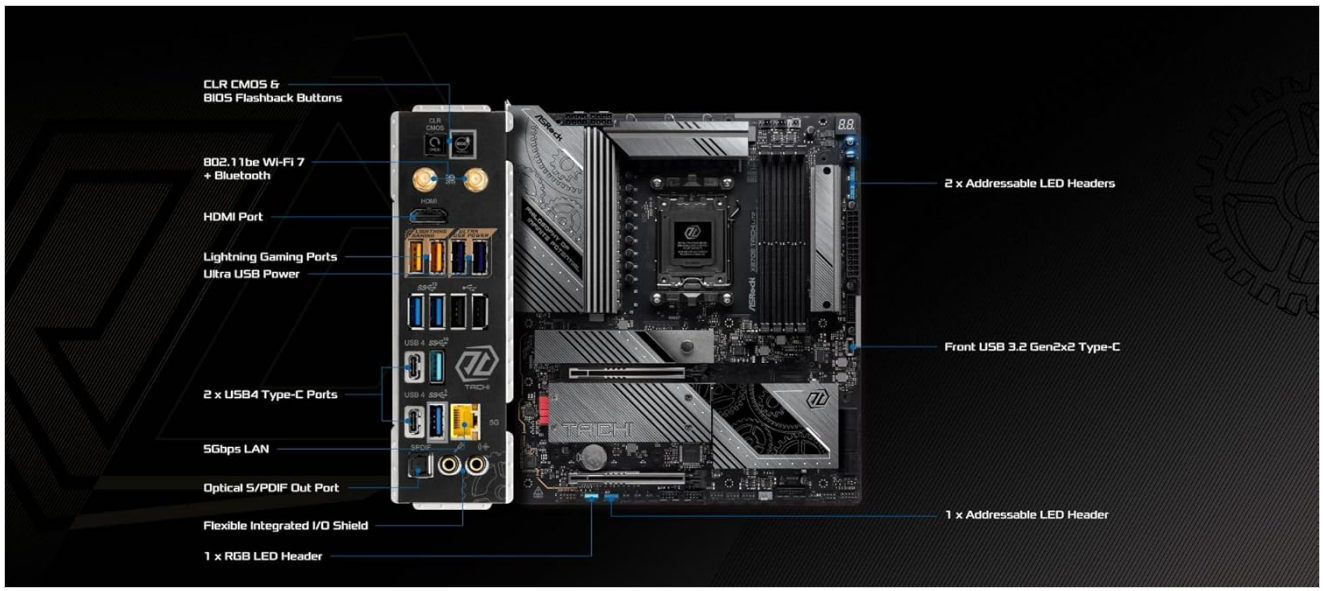

Figure 5: Rear I/O Panel. This diagram details the rear input/output ports, including USB4, USB 3.2 Gen2x2 Type-C, 5G LAN, HDMI,

Wi-Fi 7 antenna connectors, and BIOS Flashback buttons.

5. System Setup

5.1 CPU Installation

1. Open the CPU socket lever.
2. Carefully align the CPU with the socket, ensuring the triangular mark on the CPU matches the mark on the socket.
3. Gently place the CPU into the socket without applying force.
4. Close the socket lever to secure the CPU.

5.2 Memory (RAM) Installation

1. Open the clips on both ends of the DDR5 DIMM slots.
2. Align the memory module with the slot, ensuring the notch on the module matches the key in the slot.
3. Press down firmly on both ends of the memory module until the clips snap into place.

5.3 Storage (M.2) Installation

1. Locate an available M.2 socket and remove the heatsink.
2. Insert the M.2 SSD into the slot at a 30-degree angle.
3. Gently push down the SSD and secure it with the toolless M.2 heatsink.

5.4 Graphics Card (PCIe) Installation

1. Open the retention clip on the PCIe slot.
2. Align your graphics card with the PCIe slot and press down firmly until it clicks into place.
3. Secure the graphics card to your chassis with screws.

5.5 Power Connections

- Connect the 24-pin ATX power connector from your power supply to the motherboard.
- Connect the 8-pin and/or 4-pin CPU power connectors to the motherboard.

5.6 Front Panel Connections

Connect the front panel cables (power button, reset button, USB ports, audio jacks, etc.) to their respective headers on the motherboard. Refer to the motherboard diagram for exact locations.

6. BIOS Update Procedures

Keeping your BIOS updated ensures optimal performance, compatibility, and security. There are two primary methods for updating the BIOS on your ASRock X870E Taichi Lite Motherboard:

6.1 USB BIOS Flashback

This method allows you to update the BIOS without a CPU, RAM, or graphics card installed.

1. **Prepare USB Drive:** Format a USB drive (at least 32GB) to FAT32.
2. **Download BIOS:** Download the latest BIOS file from the official ASRock website for your specific motherboard model.
3. **Rename BIOS File:** Extract the downloaded zip file and rename the BIOS ROM file toCREATIVE.ROM. Copy

this renamed file to the root directory of your FAT32 formatted USB drive.

4. **Connect Power:** Ensure the motherboard is connected to the power supply, but do not power on the system.
5. **Insert USB:** Insert the USB drive into the designated USB BIOS Flashback port on the rear I/O panel (refer to Figure 5 for location).
6. **Initiate Flashback:** Press and hold the USB BIOS Flashback button on the rear I/O panel for approximately 3 seconds until the LED light starts to blink.
7. **Monitor Progress:** The LED will blink during the update process. Wait until the LED stops blinking, indicating the BIOS update is complete.
8. **Verify Update:** Power on the system and enter the BIOS setup (usually by pressing F2 or Delete during POST) to verify the updated BIOS version.

6.2 Instant Flash

This method requires a functional system with a CPU, RAM, and graphics card installed.

1. **Prepare USB Drive:** Format a USB drive (at least 32GB) to FAT32.
2. **Download BIOS:** Download the latest BIOS file from the official ASRock website for your specific motherboard model.
3. **Copy BIOS File:** Extract the downloaded zip file and copy the BIOS ROM file (no renaming needed for Instant Flash) to the root directory of your FAT32 formatted USB drive.
4. **Insert USB:** Insert the USB drive into any available USB port on the motherboard.
5. **Enter BIOS Setup:** Power on your system and press F2 or Delete during POST to enter the BIOS setup menu.
6. **Access Instant Flash:** Navigate to the 'Tool' menu and select 'Instant Flash'.
7. **Confirm Update:** The utility will detect the BIOS file on your USB drive. Select the correct BIOS version and confirm to proceed with the update.
8. **Reboot System:** After the update is complete, the system will prompt you to reboot.
9. **Load Defaults:** After rebooting, enter the BIOS setup again. Go to the 'Exit' menu, select 'Load UEFI Defaults', and press 'Yes' to continue. Then select 'Save Changes and Exit' and press 'Yes' to exit the BIOS setup menu.

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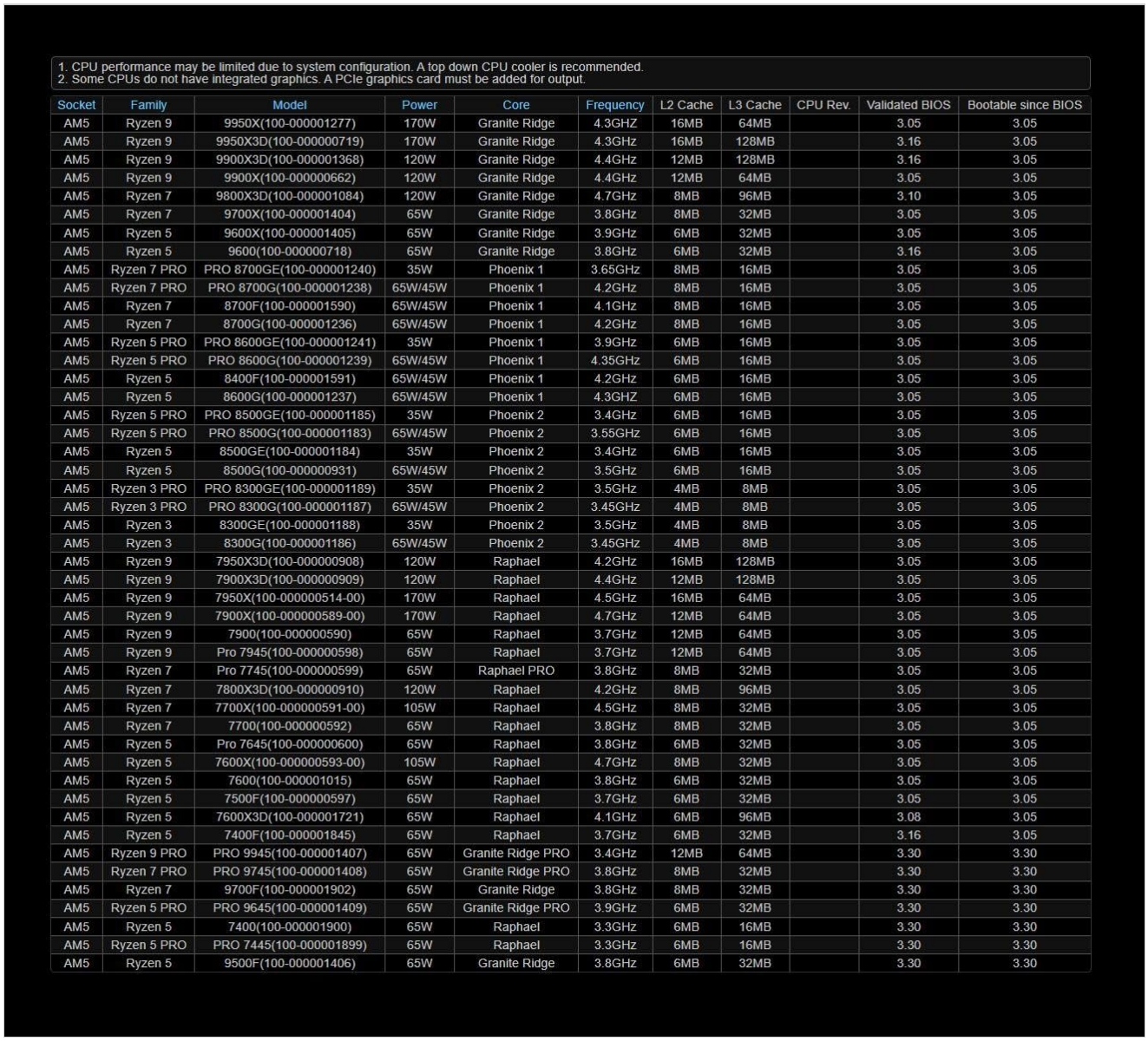
Video 1: Motherboard BIOS Update Tutorial. This official ASRock tutorial demonstrates two methods for updating the BIOS: USB BIOS Flashback and Instant Flash, ensuring your motherboard has the latest firmware for enhanced compatibility and features.

7. Specifications

Feature	Description
Brand	ASRock
Model Name	X870E TAICHI LITE
CPU Socket	Socket AM5
Compatible Processors	AMD Ryzen 7000 Series Processors, AMD Ryzen 8000 Series Processors, AMD Ryzen 9000 Series Processors
Chipset Type	AMD X870

RAM Memory Technology	DDR5
Memory Clock Speed	8200 MHz
Memory Storage Capacity	256 GB (Max)
Platform	Windows 10, Windows 11
Product Dimensions	9.84 x 3.15 x 11.81 inches
Item Weight	4.4 pounds



1. CPU performance may be limited due to system configuration. A top down CPU cooler is recommended.
2. Some CPUs do not have integrated graphics. A PCIe graphics card must be added for output.

Socket	Family	Model	Power	Core	Frequency	L2 Cache	L3 Cache	CPU Rev.	Validated BIOS	Bootable since BIOS
AM5	Ryzen 9	9950X(100-000001277)	170W	Granite Ridge	4.3GHZ	16MB	64MB		3.05	3.05
AM5	Ryzen 9	9950X3D(100-000000719)	170W	Granite Ridge	4.3GHz	16MB	128MB		3.16	3.05
AM5	Ryzen 9	9900X3D(100-000001368)	120W	Granite Ridge	4.4GHz	12MB	128MB		3.16	3.05
AM5	Ryzen 9	9900X(100-000000662)	120W	Granite Ridge	4.4GHz	12MB	64MB		3.05	3.05
AM5	Ryzen 7	9800X3D(100-000001084)	120W	Granite Ridge	4.7GHz	8MB	96MB		3.10	3.05
AM5	Ryzen 7	9700X(100-000001404)	65W	Granite Ridge	3.8GHz	8MB	32MB		3.05	3.05
AM5	Ryzen 5	9600X(100-000001405)	65W	Granite Ridge	3.9GHz	6MB	32MB		3.05	3.05
AM5	Ryzen 5	9600(100-000000718)	65W	Granite Ridge	3.8GHz	6MB	32MB		3.16	3.05
AM5	Ryzen 7 PRO	PRO 8700GE(100-000001240)	35W	Phoenix 1	3.65GHz	8MB	16MB		3.05	3.05
AM5	Ryzen 7 PRO	PRO 8700G(100-000001238)	65W/45W	Phoenix 1	4.2GHz	8MB	16MB		3.05	3.05
AM5	Ryzen 7	8700F(100-000001590)	65W/45W	Phoenix 1	4.1GHz	8MB	16MB		3.05	3.05
AM5	Ryzen 7	8700G(100-000001236)	65W/45W	Phoenix 1	4.2GHz	8MB	16MB		3.05	3.05
AM5	Ryzen 5 PRO	PRO 8600GE(100-000001241)	35W	Phoenix 1	3.9GHz	6MB	16MB		3.05	3.05
AM5	Ryzen 5 PRO	PRO 8600G(100-000001239)	65W/45W	Phoenix 1	4.35GHz	6MB	16MB		3.05	3.05
AM5	Ryzen 5	8400F(100-000001591)	65W/45W	Phoenix 1	4.2GHz	6MB	16MB		3.05	3.05
AM5	Ryzen 5	8600G(100-000001237)	65W/45W	Phoenix 1	4.3GHZ	6MB	16MB		3.05	3.05
AM5	Ryzen 5 PRO	PRO 8500GE(100-000001185)	35W	Phoenix 2	3.4GHz	6MB	16MB		3.05	3.05
AM5	Ryzen 5 PRO	PRO 8500G(100-000001183)	65W/45W	Phoenix 2	3.55GHz	6MB	16MB		3.05	3.05
AM5	Ryzen 5	8500GE(100-000001184)	35W	Phoenix 2	3.4GHz	6MB	16MB		3.05	3.05
AM5	Ryzen 5	8500G(100-000000931)	65W/45W	Phoenix 2	3.5GHz	6MB	16MB		3.05	3.05
AM5	Ryzen 3 PRO	PRO 8300GE(100-000001189)	35W	Phoenix 2	3.5GHz	4MB	8MB		3.05	3.05
AM5	Ryzen 3 PRO	PRO 8300G(100-000001187)	65W/45W	Phoenix 2	3.45GHz	4MB	8MB		3.05	3.05
AM5	Ryzen 3	8300GE(100-000001188)	35W	Phoenix 2	3.5GHz	4MB	8MB		3.05	3.05
AM5	Ryzen 3	8300G(100-000001186)	65W/45W	Phoenix 2	3.45GHz	4MB	8MB		3.05	3.05
AM5	Ryzen 9	7950X3D(100-000000908)	120W	Raphael	4.2GHz	16MB	128MB		3.05	3.05
AM5	Ryzen 9	7900X3D(100-000000909)	120W	Raphael	4.4GHz	12MB	128MB		3.05	3.05
AM5	Ryzen 9	7950X(100-000000514-00)	170W	Raphael	4.5GHz	16MB	64MB		3.05	3.05
AM5	Ryzen 9	7900X(100-000000589-00)	170W	Raphael	4.7GHz	12MB	64MB		3.05	3.05
AM5	Ryzen 9	7900(100-000000590)	65W	Raphael	3.7GHz	12MB	64MB		3.05	3.05
AM5	Ryzen 9	Pro 7945(100-000000598)	65W	Raphael	3.7GHz	12MB	64MB		3.05	3.05
AM5	Ryzen 7	Pro 7745(100-000000599)	65W	Raphael PRO	3.8GHz	8MB	32MB		3.05	3.05
AM5	Ryzen 7	7800X3D(100-000000910)	120W	Raphael	4.2GHz	8MB	96MB		3.05	3.05
AM5	Ryzen 7	7700X(100-000000591-00)	105W	Raphael	4.5GHz	8MB	32MB		3.05	3.05
AM5	Ryzen 7	7700(100-000000592)	65W	Raphael	3.8GHz	8MB	32MB		3.05	3.05
AM5	Ryzen 5	Pro 7645(100-000000600)	65W	Raphael	3.8GHz	6MB	32MB		3.05	3.05
AM5	Ryzen 5	7600X(100-000000593-00)	105W	Raphael	4.7GHz	8MB	32MB		3.05	3.05
AM5	Ryzen 5	7600(100-000001015)	65W	Raphael	3.8GHz	6MB	32MB		3.05	3.05
AM5	Ryzen 5	7500F(100-000000597)	65W	Raphael	3.7GHz	6MB	32MB		3.05	3.05
AM5	Ryzen 5	7600X3D(100-000001721)	65W	Raphael	4.1GHz	6MB	96MB		3.08	3.05
AM5	Ryzen 5	7400F(100-000001845)	65W	Raphael	3.7GHz	6MB	32MB		3.16	3.05
AM5	Ryzen 9 PRO	PRO 9945(100-000001407)	65W	Granite Ridge PRO	3.4GHz	12MB	64MB		3.30	3.30
AM5	Ryzen 7 PRO	PRO 9745(100-000001408)	65W	Granite Ridge PRO	3.8GHz	8MB	32MB		3.30	3.30
AM5	Ryzen 7	9700F(100-000001902)	65W	Granite Ridge	3.8GHz	8MB	32MB		3.30	3.30
AM5	Ryzen 5 PRO	PRO 9645(100-000001409)	65W	Granite Ridge PRO	3.9GHz	6MB	32MB		3.30	3.30
AM5	Ryzen 5	7400(100-000001900)	65W	Raphael	3.3GHz	6MB	16MB		3.30	3.30
AM5	Ryzen 5 PRO	PRO 7445(100-000001899)	65W	Raphael	3.3GHz	6MB	16MB		3.30	3.30
AM5	Ryzen 5	9500F(100-000001406)	65W	Granite Ridge	3.8GHz	6MB	32MB		3.30	3.30

Figure 6: CPU Support List. This table provides a detailed list of compatible AMD Ryzen processors, their power requirements, clock speeds, cache sizes, and the minimum BIOS version required for support.

8. Troubleshooting

- **No Power:** Ensure all power cables (24-pin ATX, 8-pin CPU) are securely connected. Check power supply functionality.

- **No Display:** Verify that the graphics card is properly seated in the PCIe slot and connected to the monitor. If using integrated graphics, ensure the monitor is connected to the motherboard's video output.
- **System Instability:** Check RAM modules for proper seating. Ensure CPU cooler is correctly installed and making good contact. Update BIOS to the latest version.
- **Boot Issues:** Verify boot order in BIOS. Check M.2 SSD or SATA drive connections. Clear CMOS if necessary (refer to Figure 5 for CLR CMOS button).

9. Maintenance

- **Keep Clean:** Regularly clean dust from the motherboard and cooling components using compressed air. Ensure proper airflow within the PC case.
- **BIOS Updates:** Periodically check the ASRock website for new BIOS updates to improve system stability and compatibility.
- **Driver Updates:** Keep all system drivers (chipset, graphics, audio, LAN) updated to their latest versions for optimal performance.

10. Warranty and Support

For warranty information, technical support, or service inquiries, please refer to the warranty card included in your product package or visit the official ASRock website. You can also find additional resources, FAQs, and driver downloads on their support page.

ASRock Official Website: www.asrock.com