Intel Intel Core Ultra 5 245K

Intel® Core™ Ultra 5 Desktop Processor 245K Instruction Manual

INTRODUCTION

The Intel® Core™ Ultra 5 Desktop Processor 245K is engineered to deliver high performance for gaming, productivity, and content creation. Featuring a Performance Hybrid Architecture with 14 cores (6 P-cores + 8 E-cores) and speeds up to 5.2 GHz, this processor is compatible with Intel 800 Series Chipset based motherboards and supports PCIe 5.0 & 4.0, and DDR5 memory. This manual provides essential information for setting up, operating, and maintaining your processor.

SETUP

1. Pre-Installation Checklist

- **Compatibility:** Ensure your motherboard is compatible with Intel 800 Series Chipsets and supports the LGA1851 socket.
- **Thermal Solution:** This processor does not include a thermal solution. A compatible CPU cooler (e.g., Intel Laminar RM1 or equivalent) is required for proper operation.
- **Tools:** You will need a Phillips head screwdriver and thermal paste (if not pre-applied to your cooler).
- **Static Protection:** Wear an anti-static wrist strap or frequently touch a grounded metal object to prevent electrostatic discharge (ESD).

2. Processor Installation

1. **Prepare the Motherboard:** Open the CPU socket retention lever on your motherboard.
2. **Align the Processor:** Carefully align the Intel Core Ultra 5 245K processor with the socket. Ensure the gold triangle on the processor aligns with the corresponding mark on the socket. Do not force the processor into the socket.
3. **Seat the Processor:** Gently lower the processor into the socket. It should sit without resistance.
4. **Secure the Processor:** Close the CPU socket retention lever to secure the processor in place.
5. **Apply Thermal Paste:** If your cooler does not have pre-applied thermal paste, apply a small pea-sized amount to the center of the processor's integrated heat spreader (IHS).
6. **Install CPU Cooler:** Mount your chosen CPU cooler according to its manufacturer's instructions. Ensure it makes firm contact with the processor's IHS.

Figure 1: Close-up view of the Intel Core Ultra 5 245K processor chip, showing its metallic surface and pin array.
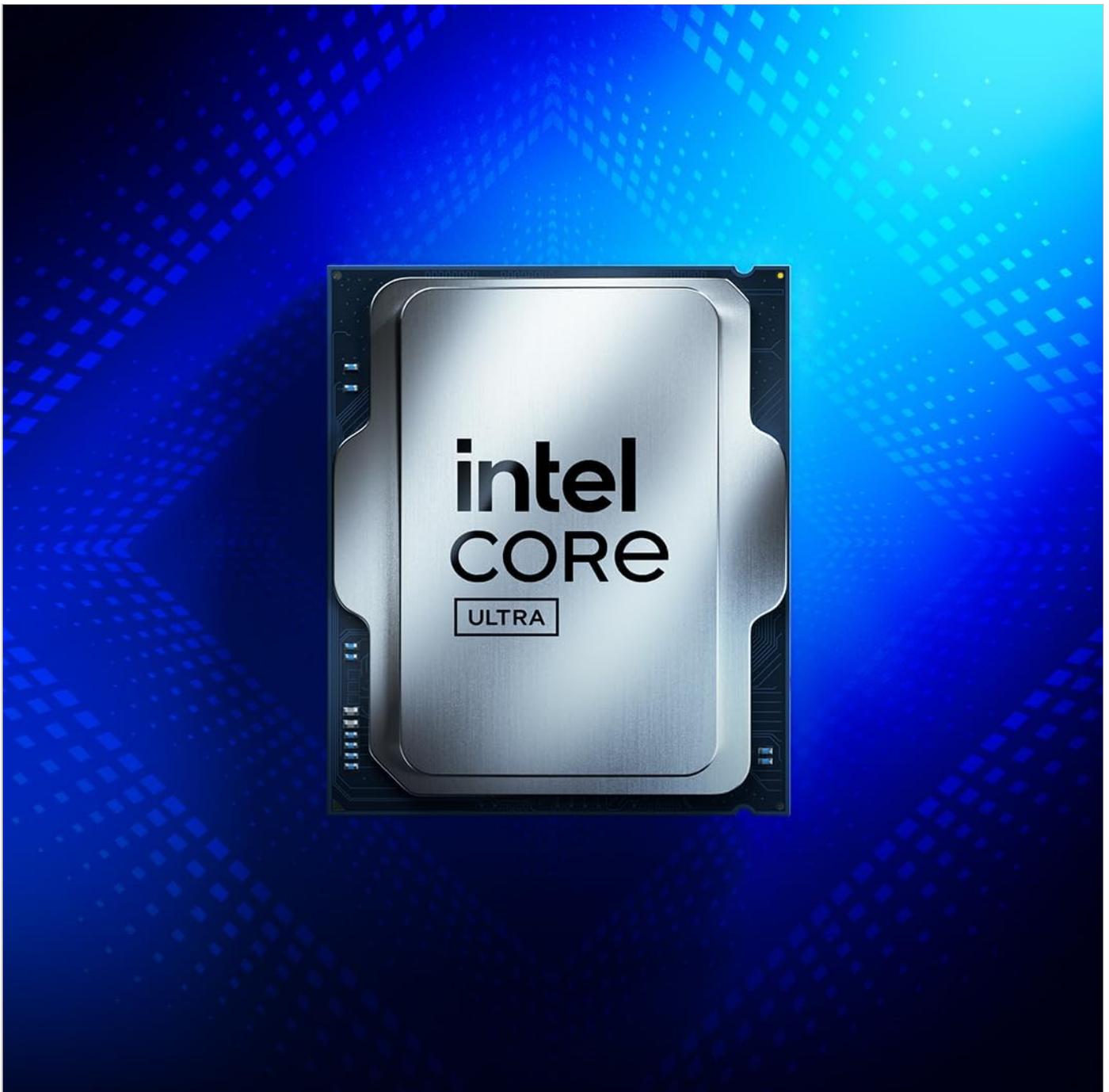
Figure 2: Another view of the Intel Core Ultra 5 245K processor, highlighting its design and form factor.

Your browser does not support the video tag.

Video 1: This video provides a visual overview of the Intel Core Ultra 5 245K processor, demonstrating its physical appearance and highlighting key features relevant to installation and initial setup.

OPERATING THE PROCESSOR

1. Performance Hybrid Architecture

The Intel Core Ultra 5 245K features a Performance Hybrid Architecture, integrating Performance-cores (P-cores) and Efficient-cores (E-cores). This design intelligently prioritizes and distributes workloads to optimize performance and efficiency. P-cores handle demanding tasks like gaming and heavy applications, while E-cores manage background processes and lighter workloads, ensuring a smooth and responsive user experience.

2. Clock Speed and Overclocking

This processor offers speeds up to 5.2 GHz. As an unlocked 'K' series processor, it allows for overclocking to achieve

even higher performance. Overclocking should only be attempted by experienced users and requires adequate cooling and a compatible motherboard. Refer to your motherboard's manual for specific overclocking procedures.

3. AI Features and NPU

The Intel Core Ultra 5 245K includes an integrated Neural Processing Unit (NPU) designed to accelerate AI tasks directly on your device. This enhances performance for AI-driven applications such as background removal in video calls, audio optimization, and auto-framing, improving efficiency and privacy by processing data locally.

4. Connectivity and Memory Support

The processor supports advanced connectivity standards including PCIe 5.0 and 4.0, offering high-speed data transfer for graphics cards and storage devices. It also supports DDR5 memory, providing faster memory speeds and increased bandwidth for improved overall system performance.

Your browser does not support the video tag.

Video 2: This video from Intel highlights the advanced features of the Intel Core Ultra desktop processors, including their capabilities in high-end gaming, content creation with AI, and seamless connectivity.

MAINTENANCE

1. Cooling System Management

Maintaining optimal operating temperatures is crucial for processor longevity and performance. Regularly clean your CPU cooler and case fans to prevent dust buildup, which can impede airflow and lead to overheating. Ensure proper thermal paste application and consider upgrading your cooler if you experience high temperatures, especially during sustained heavy workloads or overclocking.

2. Software and Driver Updates

Keep your operating system, motherboard BIOS, and Intel drivers updated. These updates often include performance enhancements, stability improvements, and security patches that can optimize your processor's operation.

TROUBLESHOOTING

Common Issues and Solutions:

- **System Not Booting:**

    - Verify processor is correctly seated in the socket.
    - Check motherboard compatibility and BIOS version.
    - Ensure all power cables (including CPU power) are securely connected.

- **Overheating:**

    - Confirm CPU cooler is properly installed and making good contact with the processor.
    - Check for adequate thermal paste application.
    - Ensure case airflow is sufficient and fans are clean.

- **Performance Issues:**

    - Update motherboard BIOS and Intel drivers.
    - Check system resource usage for background applications.
    - Monitor temperatures to rule out thermal throttling.

For further assistance, refer to the Intel Support website or your motherboard's documentation.

SPECIFICATIONS

Feature	Detail
Processor Model	Intel Core Ultra 5 245K
Cores	14 (6 P-cores + 8 E-cores)
Threads	14
Max Clock Speed	Up to 5.2 GHz
Cache	26M Intel Smart Cache
Processor Base Power	125W
Socket	LGA1851
Memory Support	DDR5
PCIe Support	PCIe 5.0 & 4.0
Integrated Graphics	Not specified (typically F-series or K-series without integrated graphics)
NPU	Integrated Neural Processing Unit

WARRANTY

The Intel® Core™ Ultra 5 Desktop Processor 245K comes with a 3-year limited warranty. This warranty covers defects in materials and workmanship under normal use. For full terms and conditions, please visit the official Intel warranty page or contact Intel customer support.

SUPPORT

For technical support, driver downloads, and additional product information, please visit the official Intel Support website:

- **Intel Support:** https://www.intel.com/content/www/us/en/support.html
- **Intel Community Forums:** Engage with other users and Intel experts for advice and solutions.