

ASUS TUF-RTX5090-O32G-GAMING

ASUS TUF Gaming GeForce RTX 5090 OC Edition Graphics Card Instruction Manual

INTRODUCTION

The ASUS TUF Gaming GeForce RTX 5090 OC Edition Graphics Card is engineered for extreme performance and durability. Powered by the NVIDIA Blackwell architecture and DLSS 4, this card features enhanced cooling and robust power delivery, fortified with military-grade components and protective PCB coating. This manual will guide you through the setup, operation, and maintenance of your graphics card to ensure optimal performance and longevity.

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Video: Overview of the ASUS RTX 50 Series, highlighting key features and design.

WHAT'S IN THE BOX

Upon opening your ASUS TUF Gaming GeForce RTX 5090 OC Edition Graphics Card package, you should find the following items:

- TUF-RTX5090-O32G-GAMING Graphics card
- Speedsetup manual
- TUF Graphics card holder
- TUF Velcro Hook & Loop
- TUF Magnet

Military-Grade Components



TUF Chokes & MOSFETs

Certified military-grade TUF chokes and MOSFETs deliver rock-solid power to the GPU, which can help improve system stability.

TUF Capacitors

TUF 5K black metallic capacitors provide 52% wider temperature tolerance and a 2.5X longer lifespan than standard capacitors.



Vibration



High Temperature



Low Temperature



Temperature Shock



Humidity



Salt fog

Image: The retail packaging of the ASUS TUF Gaming GeForce RTX 5090 Graphics Card.

PRODUCT FEATURES

The ASUS TUF Gaming GeForce RTX 5090 OC Edition is packed with advanced features designed for superior gaming and creative performance:

- **Powered by NVIDIA Blackwell architecture and DLSS 4:** Experience cutting-edge graphics and AI-accelerated performance.
- **Military-grade components:** Ensures rock-solid power delivery and extended lifespan for ultimate durability.
- **Protective PCB coating:** Guards against short circuits caused by moisture, dust, or debris.
- **3.6-slot design with massive fin array:** Optimized for airflow from three Axial-tech fans for efficient cooling.
- **Phase-change GPU thermal pad:** Provides optimal thermal performance and longevity, outlasting traditional thermal paste.



Image: Close-up of military-grade components, including TUF Chokes, MOSFETs, and 5K black metallic capacitors, ensuring durability and stable power delivery.



Image: Details on the Phase-Change GPU Thermal Pad and Protective PCB Coating, enhancing durability and thermal performance.

SETUP

Follow these general steps to install your ASUS TUF Gaming GeForce RTX 5090 OC Edition Graphics Card:

1. **Prepare your system:** Ensure your computer is powered off and unplugged. Open your PC case.
2. **Locate PCIe slot:** Identify an available PCIe 5.0 x16 slot on your motherboard. Due to the card's 3.6-slot design, ensure sufficient clearance.
3. **Remove slot covers:** Remove the necessary expansion slot covers from your PC case.
4. **Insert graphics card:** Carefully align the graphics card with the PCIe slot and press down firmly until it is securely seated.
5. **Secure the card:** Use screws to fasten the graphics card bracket to your PC case. Consider using the included TUF Graphics card holder for additional support.
6. **Connect power:** Connect the 16-pin power connector from your power supply to the graphics card. Ensure your PSU meets the recommended wattage (1000W).
7. **Close case and connect display:** Close your PC case, connect your display cable(s) to the graphics card, and power on your system.
8. **Install drivers:** Once your system boots, install the latest NVIDIA GeForce drivers from the official ASUS support site or NVIDIA's website.

OPERATING

Your ASUS TUF Gaming GeForce RTX 5090 OC Edition Graphics Card offers various operating modes and software tools to enhance your experience:

- **Performance Mode (P Mode) / Quiet Mode (Q Mode):** The card features a BIOS switch to toggle between P Mode for maximum performance and Q Mode for quieter operation. Refer to your quick start guide for the exact location of this switch.
- **GPU Tweak III:** This ultimate GPU tuning tool allows for easy overclocking, cooling control, and monitoring of your graphics card. Download it from the ASUS support website.

- **MuseTree:** An AI-powered image-generation app designed to spark creativity. Effortlessly create and manage images and visual ideas.
- **NVIDIA DLSS 4:** A revolutionary suite of neural rendering technologies that uses AI to boost FPS, reduce latency, and improve image quality.
- **NVIDIA Reflex 2:** Optimizes the graphics pipeline for ultimate responsiveness, providing faster target acquisition, quicker reaction times, and improved aim precision in competitive games.

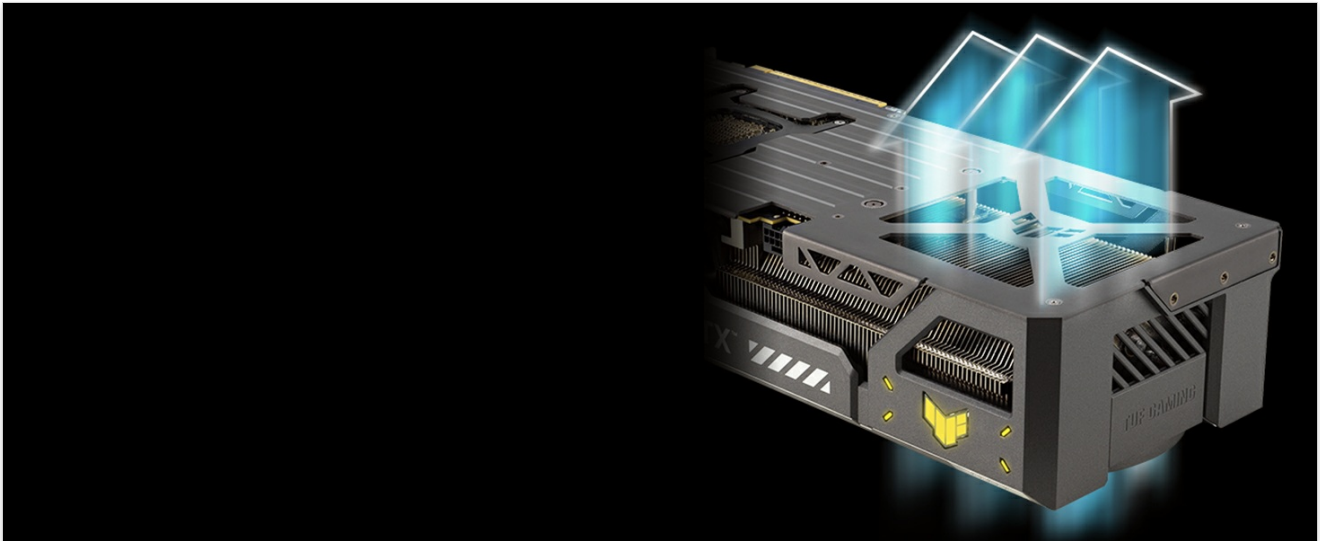


Image: Overview of software features including GPU Tweak III and MuseTree, designed to optimize and enhance your graphics card experience.

COOLING AND DURABILITY

The ASUS TUF Gaming GeForce RTX 5090 is built with advanced cooling solutions and military-grade durability features:

- **Axial-tech Fans:** Three upgraded Axial-tech fans spin on dual-ball bearings and propel up to 23% more air than standard fans, ensuring efficient heat dissipation.
- **MaxContact Design:** A special ASUS manufacturing process that effectively expands the surface area of the heat spreader that sits atop the GPU by 5%, improving thermal transfer.
- **Vented Exoskeleton:** A high-quality diecast shroud and aluminum backplate feature large vents to further increase heat dissipation.
- **Military-Grade Components:** Certified TUF chokes and MOSFETs deliver rock-solid power, while TUF 5K black metallic capacitors provide 52% wider temperature tolerance and 2.5X longer lifespan.
- **Protective PCB Coating:** A conformal coating helps protect against short circuits caused by moisture, dust, or debris.



Image: Illustration of the MaxContact Design and Axial-tech fan upgrades for superior cooling performance.

POWER REQUIREMENTS

To ensure stable operation and optimal performance, your ASUS TUF Gaming GeForce RTX 5090 OC Edition Graphics Card requires a robust power supply unit (PSU).

- **Recommended PSU:** A minimum of a 1000W power supply is recommended.
- **Power Connectors:** The card utilizes a single 16-pin power connector. An adapter cable (1 to 4 8-pin to 16-

pin) may be included or required depending on your PSU.



Image: The ASUS TUF Gaming GeForce RTX 5090 alongside a recommended TUF Gaming Gold 1200W/1000W PSU, emphasizing reliable power delivery.

SPECIFICATIONS

Feature	Specification
Graphics Processor	NVIDIA GeForce RTX 5090
Video Memory	32 GB GDDR7
Memory Speed	2580 MHz
Max Screen Resolution	7680x4320 Pixels
Video Output Interface	Native DisplayPort 2.1a x3, Native HDMI 2.1b x2
Bus Interface	PCIe® 5.0
Dimensions (LxWxH)	13.7 x 5.7 x 2.8 inches
Item Weight	5 pounds
Model Number	TUF-RTX5090-O32G-GAMING

MAINTENANCE

Proper maintenance ensures the longevity and optimal performance of your graphics card:

- **Dust Removal:** Regularly clean dust from the fans and heatsink using compressed air. Ensure the system is powered off before cleaning.
- **Driver Updates:** Keep your graphics drivers updated to the latest version from the ASUS support site or NVIDIA's official website for performance improvements and bug fixes.
- **Temperature Monitoring:** Use software like GPU Tweak III to monitor GPU temperatures during heavy loads. Ensure adequate airflow within your PC case.
- **Physical Inspection:** Periodically inspect the card for any loose connections, physical damage, or unusual wear.

TROUBLESHOOTING

If you encounter issues with your graphics card, consider the following troubleshooting steps:

- **No Display:** Ensure all power cables are securely connected to the GPU and PSU. Verify the display cable is correctly plugged into the graphics card and monitor. Try a different display output or cable.
- **System Instability/Crashes:** Update your graphics drivers. Check GPU temperatures to ensure it's not overheating. Verify your PSU meets the recommended wattage.
- **Performance Issues:** Ensure your system is running in Performance Mode (P Mode) if applicable. Close unnecessary background applications. Check for driver conflicts or outdated drivers.
- **Fan Noise:** If fans are excessively loud, switch to Quiet Mode (Q Mode) using the BIOS switch. Ensure fans are free from obstructions and dust.

For further assistance, please refer to the comprehensive troubleshooting guides available on the ASUS support website.

WARRANTY AND SUPPORT

Your ASUS TUF Gaming GeForce RTX 5090 OC Edition Graphics Card comes with a manufacturer's warranty. For detailed information regarding warranty terms, registration, and support services, please visit the official ASUS support website. You can typically find support resources, driver downloads, and contact information for technical assistance there.

ASUS Support Website: <https://www.asus.com/support/>