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## MSI Z87-G45 GAMING

# MSI Z87-G45 GAMING Motherboard User Manual

Model: Z87-G45 GAMING

## 1. INTRODUCTION

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This manual provides detailed instructions for the installation, operation, and maintenance of your MSI Z87-G45 GAMING motherboard. Designed for high-performance computing, this ATX motherboard supports LGA 1150 processors and DDR3 memory, offering advanced features for gaming and demanding applications. Please read this manual thoroughly before proceeding with installation to ensure proper setup and optimal performance.

## 2. PRODUCT OVERVIEW

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The MSI Z87-G45 GAMING motherboard is built with a focus on stability, performance, and user experience. It integrates several key technologies to enhance your computing and gaming experience.

### 2.1 Key Features

- **Chipset:** Intel Z87 Express for robust performance.
- **Memory Support:** Four DDR3 DIMM slots supporting up to 32GB of dual-channel memory at speeds up to 3000(OC) MHz.
- **Expansion Slots:** Three PCI-Express 3.0 x16 slots and four PCI-Express 2.0 x1 slots for graphics cards and other expansion cards.
- **Storage:** Six SATA 6Gb/s ports with RAID 0, 1, 5, 10 support, and one mSATA port.
- **USB Connectivity:** Six USB 3.0 ports (four on back panel, two internal) and eight USB 2.0 ports (two on back panel, six internal).
- **Networking:** Killer E2205 PCI-Express Gigabit Ethernet Controller for optimized online gaming.
- **Audio:** Integrated Sound Blaster Cinema with Audio Boost technology for enhanced sound quality.
- **Overclocking:** Features like OC Genie 4 for easy performance tuning.
- **Video Outputs:** VGA, DVI, and HDMI ports for integrated graphics.

### 2.2 Motherboard Layout

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



Figure 2.2.1: Angled view of the MSI Z87-G45 GAMING motherboard, showcasing the heatsinks, expansion slots, and various connectors.

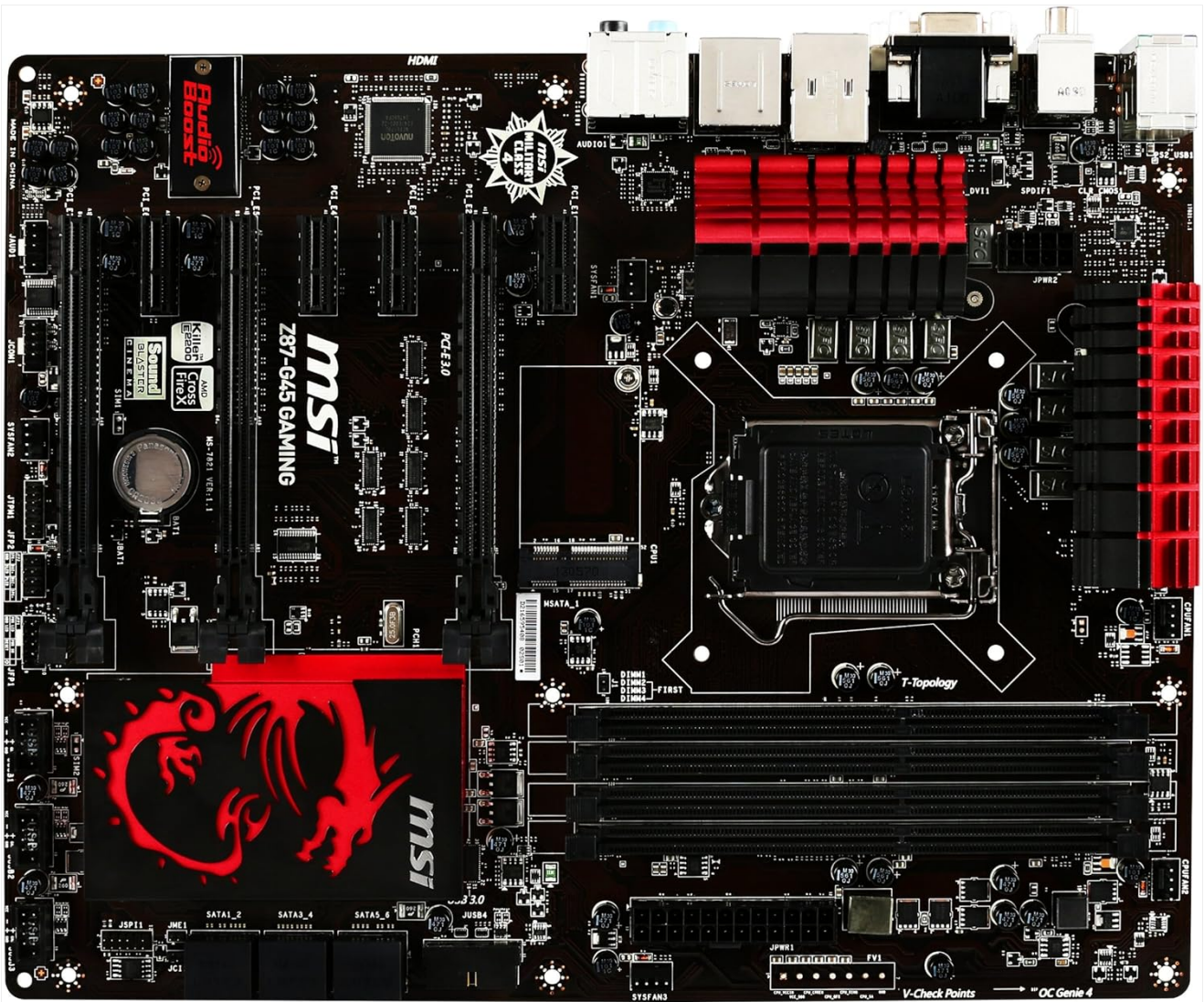


Figure 2.2.2: Top-down view of the MSI Z87-G45 GAMING motherboard, highlighting the CPU socket, DIMM slots, and PCI-E slots.

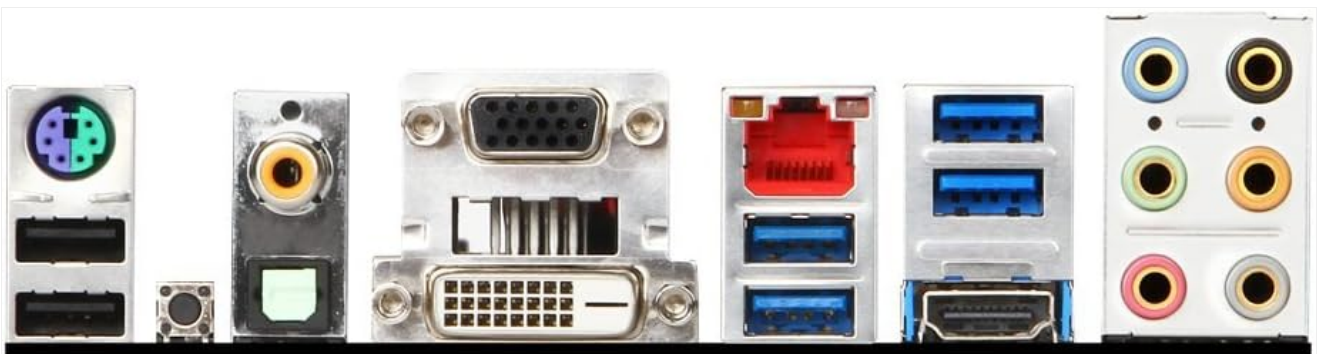


Figure 2.2.3: Rear I/O panel of the MSI Z87-G45 GAMING motherboard, showing ports for USB, audio, video (VGA, DVI, HDMI), and Ethernet.

### 3. SETUP AND INSTALLATION

Proper installation is crucial for the stability and performance of your system. Always handle the motherboard with care and ensure you are working in an anti-static environment.

#### 3.1 Pre-Installation Checklist

- Ensure your computer case is compatible with ATX motherboards.
- Gather all necessary components: CPU, CPU cooler, RAM, power supply, storage devices, and graphics card (if not using integrated graphics).
- Prepare a clean, well-lit workspace.

- Wear an anti-static wrist strap or frequently touch a grounded metal object to discharge static electricity.

## 3.2 Motherboard Installation

1. **Install the CPU:** Carefully open the CPU socket lever, align the CPU with the socket (matching the golden triangle on the CPU to the mark on the socket), gently place the CPU into the socket, and close the lever.
2. **Install the CPU Cooler:** Follow the cooler manufacturer's instructions to install the CPU cooler onto the motherboard. Ensure proper thermal paste application.
3. **Install RAM:** Open the clips on the DIMM slots, align the RAM modules with the slots (noting the notch), and press firmly until the clips snap into place. For dual-channel operation, refer to the motherboard manual for recommended slot configurations (e.g., slots 2 and 4).
4. **Mount Motherboard in Case:** Install the I/O shield into the case's rear opening. Align the motherboard with the standoffs in your case and secure it with screws.
5. **Connect Power Supply:** Connect the 24-pin ATX main power connector and the 8-pin (or 4-pin) CPU power connector from your power supply to the motherboard.
6. **Install Graphics Card (Optional):** If using a dedicated graphics card, insert it into the primary PCI-Express 3.0 x16 slot and secure it. Connect any required PCIe power cables from the power supply.
7. **Connect Storage Devices:** Connect SATA data cables from your hard drives/SSDs to the SATA 6Gb/s ports on the motherboard. Connect SATA power cables from the power supply to the drives.
8. **Connect Front Panel Cables:** Connect the power button, reset button, HDD LED, power LED, and front panel USB/audio headers to their respective pins on the motherboard. Refer to the motherboard diagram for correct pin assignments.

## 4. OPERATING INSTRUCTIONS

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Once your system is assembled, you can power it on and configure the BIOS/UEFI settings and install necessary drivers and software.

### 4.1 BIOS/UEFI Setup

Upon first boot, or by pressing the **DEL** key during startup, you can enter the BIOS/UEFI setup utility. Here you can configure system settings such as boot order, date/time, and advanced hardware parameters.

- **Boot Order:** Set your primary boot device (e.g., SSD or HDD with operating system).
- **OC Genie 4:** Utilize the OC Genie 4 feature for automated system overclocking, providing a performance boost with a single click.
- **Fan Control:** Adjust fan speeds for optimal cooling and noise levels.
- **Advanced Settings:** Explore options for SATA mode (AHCI recommended), USB configuration, and integrated peripherals.

### 4.2 Driver and Software Installation

After installing your operating system, install the latest drivers for the motherboard chipset, audio, LAN, and any other integrated components. These can typically be found on the MSI support website for your specific model.

- **Chipset Drivers:** Essential for proper communication between components.
- **Audio Drivers:** Install Sound Blaster Cinema drivers for enhanced audio features.
- **LAN Drivers:** Install Killer E2205 LAN drivers for optimized network performance, especially for gaming.
- **MSI Command Center:** This utility allows for system monitoring, fan control, and overclocking directly from your operating system.

## 5. MAINTENANCE

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Regular maintenance helps ensure the longevity and stable operation of your motherboard and overall system.

- **Dust Removal:** Periodically clean dust from inside your computer case, especially from heatsinks and fans, using compressed air. Ensure the system is powered off and unplugged before cleaning.
- **BIOS Updates:** Check the MSI website for the latest BIOS/UEFI updates. Updates can improve compatibility, stability, and add new features. Follow MSI's instructions carefully when updating the BIOS.
- **Driver Updates:** Keep your drivers updated to ensure optimal performance and compatibility with new software and hardware.
- **Cable Management:** Ensure internal cables are neatly routed to improve airflow and prevent interference.

## 6. TROUBLESHOOTING

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If you encounter issues with your motherboard, refer to the following common troubleshooting steps.

- **No Power/No Boot:**
  - Check all power connections (24-pin ATX, 8-pin CPU, graphics card PCIe).
  - Ensure the power supply is switched on.
  - Verify front panel power button connection.
  - Try booting with minimal components (CPU, one RAM stick, graphics card if no integrated graphics).
- **No Display:**
  - Ensure monitor is connected to the correct video output (motherboard or graphics card).
  - Check graphics card seating and power connections.
  - Try reseating RAM modules.
- **System Instability/Crashes:**
  - Check CPU and GPU temperatures.
  - Ensure RAM is properly seated and compatible.
  - Reset BIOS settings to default (using the external CMOS reset button or by removing the CMOS battery for a few minutes).
  - Update drivers and BIOS.
- **Peripheral Not Detected:**
  - Check cable connections.
  - Ensure device is enabled in BIOS.
  - Install appropriate drivers for the peripheral.

For more advanced troubleshooting, consult the MSI support website or contact technical support.

## 7. SPECIFICATIONS

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| Feature                    | Specification                               |
|----------------------------|---|
| Brand                      | MSI   |
| Model Name                 | Z87-G45 GAMING                              |
| CPU Socket                 | LGA 1150                                    |
| Compatible Processors      | Intel Core i5, Intel Core i7, Intel Pentium |
| Chipset Type               | Intel Z87 Express                           |
| RAM Memory Technology      | DDR3  |
| Max RAM Capacity           | 32 GB                                       |
| Memory Speed               | Up to 3000(OC) MHz                          |
| Storage Interface          | SATA 6Gb/s, mSATA                           |
| USB 3.0 Ports              | 6 (4 rear, 2 internal)                      |
| USB 2.0 Ports              | 8 (2 rear, 6 internal)                      |
| Video Outputs              | VGA, DVI, HDMI                              |
| LAN                        | Killer E2205 PCI-Express Gigabit Ethernet   |
| Audio                      | Sound Blaster Cinema                        |
| Form Factor                | ATX   |
| Product Dimensions (LxWxH) | 12 x 9.6 x 2.5 inches                       |
| Item Weight                | 3.6 pounds                                  |

## 8. WARRANTY AND SUPPORT

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For detailed warranty information, please refer to the warranty card included with your product or visit the official MSI website.

**Technical Support:** If you encounter issues that cannot be resolved using the troubleshooting steps in this manual, please visit the MSI support website for FAQs, driver downloads, and contact information for technical assistance.

- MSI Official Website: [www.msi.com](http://www.msi.com)
- Support Page: Refer to the product page for Z87-G45 GAMING on the MSI website.

*Note: The product's legal disclaimer states "No returns" through certain channels. Please verify return policies with your specific retailer at the time of purchase.*