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ASRock Z690 PRO RS

ASRock Z690 PRO RS Motherboard User Manual

Model: Z690 PRO RS

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of your ASRock Z690 PRO RS Motherboard. Please read this guide thoroughly before proceeding with any installation or configuration to ensure optimal performance and system stability.

2. Key Features

- **CPU Socket:** LGA 1700, supporting 14th/13th/12th Gen Intel Core Processors.
- **Chipset:** Intel Z690.
- **Memory:** 4x DDR4 DIMM slots, supporting Dual Channel DDR4 RAM.
- **Storage:** Multiple SATA3 (6Gb/s) ports and M.2 slots (Hyper M.2, Ultra M.2, M.2 Armor).
- **Expansion Slots:** PCIe 5.0 x16 slot for graphics cards.
- **Connectivity:** USB 3.2 Gen2, USB 3.2 Gen1, USB 2.0, 2.5G LAN, Wi-Fi 6E, Bluetooth 5.3.
- **Audio:** 8-Channel (7.1) HD Audio.

3. Setup and Installation

Follow these steps for proper installation of your motherboard and components.

3.1. Motherboard Overview



Figure 1: ASRock Z690 PRO RS Motherboard. This image displays the overall layout of the motherboard, highlighting key components such as the LGA1700 CPU socket, four DDR4 DIMM slots, multiple M.2 slots (including M.2 Armor), PCIe expansion slots, and various headers. The VRM heatsinks and chipset heatsink with integrated RGB lighting are also visible.

3.2. CPU Installation (LGA1700)

1. Open the CPU socket retention 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 retention lever to secure the CPU.

3.3. Memory (RAM) Installation

1. Open the clips on both ends of the DDR4 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.

3.4. Storage Device Installation

- **M.2 SSD:** Locate the M.2 slots (e.g., Hyper M.2, Ultra M.2, M.2 Armor). Remove the heatsink/cover if present. Insert the M.2 SSD into the slot at an angle and secure it with the provided screw or latch mechanism. Reattach the heatsink/cover.
- **SATA Drives:** Connect SATA data cables from your storage drives (HDD/SSD) to the SATA3 ports on the motherboard. Connect SATA power cables from your power supply to the drives.

3.5. Graphics Card Installation

1. Locate the PCIe 5.0 x16 slot.
2. Align your graphics card with the slot and press down firmly until it is seated correctly and the retention clip locks.
3. Secure the graphics card to the chassis with screws.
4. Connect any necessary PCIe power cables from your power supply to the graphics card.

3.6. Power Connections

- Connect the 24-pin ATX power cable from your power supply to the main power connector on the motherboard.
- Connect the 8-pin CPU power cable(s) to the CPU power connector(s) near the CPU socket.

3.7. Front Panel and Rear I/O Connections

- Connect front panel headers (USB, audio, power switch, reset switch, HDD LED, Power LED) to their respective pins on the motherboard. Refer to the motherboard diagram for exact pin locations.
- Connect external devices to the rear I/O panel ports: USB (3.2 Gen2, 3.2 Gen1, 2.0), 2.5G LAN, Audio jacks, HDMI, DisplayPort.
- Attach the Wi-Fi antennas to the connectors on the rear I/O panel for wireless connectivity.

4. Operating Instructions

4.1. BIOS/UEFI Configuration

The ASRock Z690 PRO RS features a user-friendly UEFI BIOS with both an Easy Mode and a Pro Mode. You can access the BIOS by pressing `Del` or `F2` during system startup.

- **XMP Profiles:** Enable XMP (Extreme Memory Profile) in the BIOS to utilize your RAM at its advertised speeds. Manual tuning may be required for optimal stability.
- **Fan Control:** Adjust fan curves in the H/W Monitor section to prevent aggressive fan ramping. If using an All-In-One (AIO) liquid cooler, ensure the pump is connected to the W_PUMP header and configured correctly in the BIOS to avoid CPU overheating.
- **RGB Lighting:** To prevent motherboard RGB lights from staying on after shutdown, navigate to Advanced Settings > Chipset Configuration > "Turn on onboard LED in S5" and disable this option.

4.2. Driver Installation

After installing your operating system, ensure all necessary drivers are installed for optimal performance. ASRock provides a utility that can automatically download and install specific drivers. Alternatively, drivers can be downloaded from the official ASRock website.

5. Maintenance

5.1. BIOS Updates

Regularly check the ASRock support website for BIOS updates. Updating the BIOS can improve system stability, add support for newer CPUs (e.g., 13th and 14th Gen Intel Core), and resolve compatibility issues. Follow the instructions provided by ASRock carefully when performing a BIOS update.

5.2. Cleaning

Periodically clean your motherboard and PC components to prevent dust buildup, which can lead to overheating and reduced performance. Use compressed air to remove dust from heatsinks, fans, and other components. Ensure the system is powered off and unplugged before cleaning.

6. Troubleshooting

- **System Instability/Crashes:** Ensure all components are properly seated. Check RAM XMP settings for stability. Monitor CPU and VRM temperatures.
- **SATA Drive Detection Issues:** If using multiple M.2 drives, some SATA ports may be disabled. Refer to the motherboard manual for specific port sharing configurations. Try different SATA ports or an add-in card if necessary.
- **RGB Lights Stay On:** Disable "Turn on onboard LED in S5" in the BIOS as described in Section 4.1.
- **Overheating CPU:** Verify AIO pump connection to the W_PUMP header and correct BIOS configuration. Ensure CPU cooler is properly mounted and thermal paste is applied correctly.
- **No Display:** Check all power connections, especially to the graphics card. Ensure monitor cables are securely connected. Try reseating RAM modules.

7. Specifications

Feature	Detail
Product Dimensions	3.39 x 13.07 x 14.8 inches
Item Weight	2.6 pounds
Manufacturer	ASROCK
Item Model Number	Z690 PRO RS
Brand	ASRock
CPU Socket	LGA 1700
Compatible Devices	Personal Computer
RAM Memory Technology	DDR4
Compatible Processors	14th/13th/12th Gen Intel Core
Chipset Type	Intel Z690
Memory Clock Speed	1 GHz
Platform	Windows 11
CPU Model	Core i5 (Compatible with i3, i7, i9 as well)

8. Warranty and Support

For detailed warranty information, product registration, and the latest drivers and utilities, please visit the official ASRock website. The manufacturer provides comprehensive support resources to ensure the longevity and performance of your ASRock Z690 PRO RS Motherboard.

ASRock Official Website: www.asrock.com

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