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› ASUS Prime Z490-P Motherboard User Manual

ASUS PRIME Z490-P

ASUS Prime Z490-P Motherboard User Manual

Model: PRIME Z490-P

1. INTRODUCTION

This manual provides comprehensive instructions for the installation, operation, and maintenance of your ASUS Prime Z490-P motherboard. The ASUS Prime Z490-P is designed to support 10th Gen Intel Core processors, offering a robust platform for various computing needs. Please read this manual thoroughly before proceeding with installation or operation to ensure proper functionality and safety.

2. SAFETY INFORMATION

- Always disconnect the power cord from the wall outlet before touching any components inside the computer case to prevent electric shock.
- Wear an anti-static wrist strap when handling the motherboard and other components to prevent electrostatic discharge (ESD) damage.
- Ensure proper ventilation within your computer case to prevent overheating.
- Do not expose the motherboard to moisture or extreme temperatures.
- Handle the motherboard by its edges to avoid touching sensitive components.

3. PACKAGE CONTENTS

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

What's in the Box

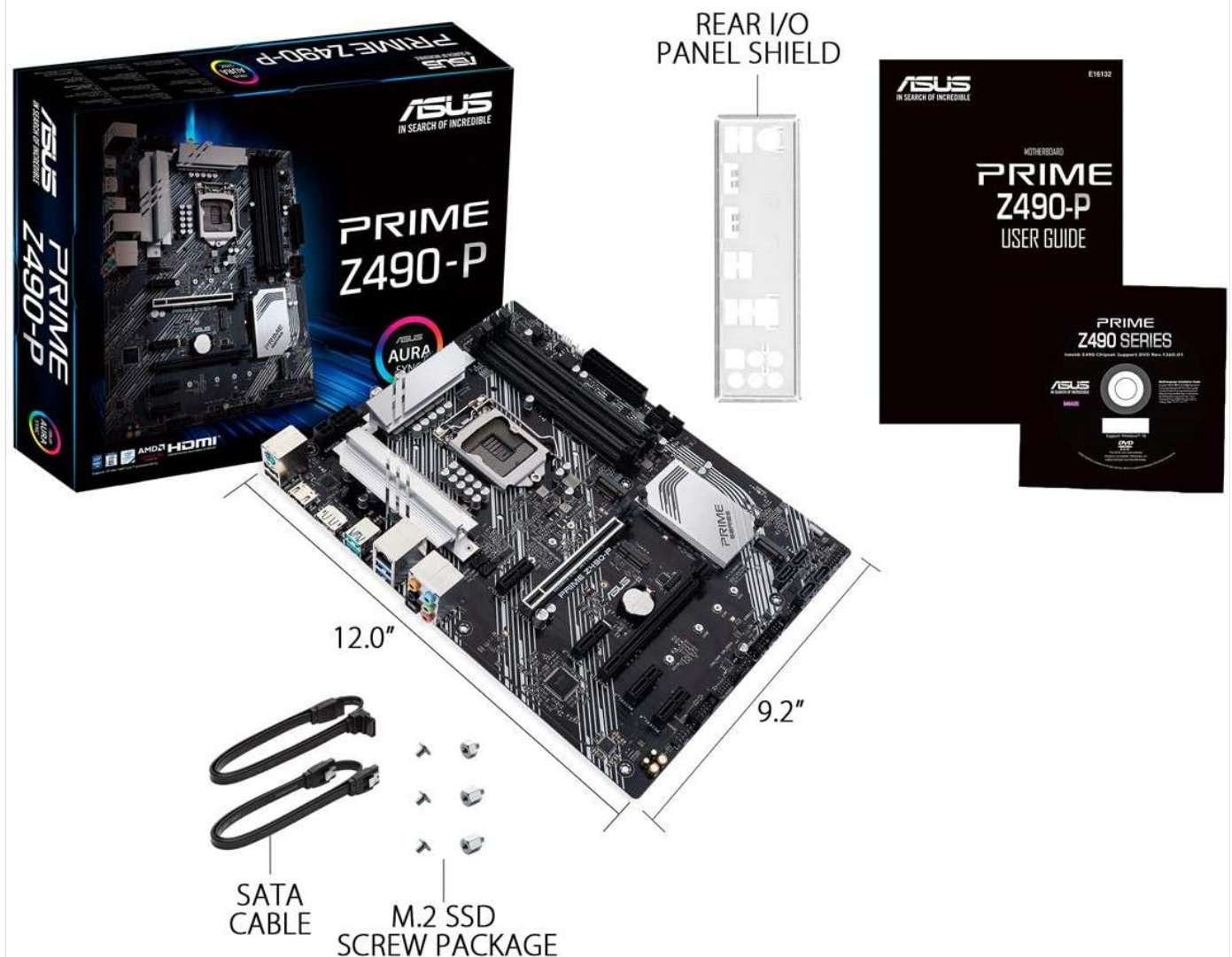


Image: Contents of the ASUS Prime Z490-P retail box, showing the motherboard, user guide, support DVD, SATA cables, M.2 SSD screw package, and rear I/O panel shield.

- ASUS Prime Z490-P Motherboard
- Rear I/O Panel Shield
- User Guide
- Support DVD
- SATA Cables (2x)
- M.2 SSD Screw Package

4. SETUP AND INSTALLATION

This section outlines the steps for installing the ASUS Prime Z490-P motherboard and its primary components into your computer chassis.

4.1 Motherboard Overview



Image: Top-down view of the ASUS Prime Z490-P motherboard, highlighting key component locations such as the CPU socket, DIMM slots, PCIe slots, and M.2 slots.

Familiarize yourself with the layout of the motherboard before beginning installation. Key areas include the LGA 1200 CPU socket, four DDR4 DIMM slots, multiple PCIe slots for expansion cards, and dual M.2 slots for high-speed storage.

4.2 Component Installation

1. **CPU Installation:** Carefully align your 10th Gen Intel Core processor with the LGA 1200 socket. Ensure the triangular mark on the CPU matches the mark on the socket. Lower the CPU into the socket and secure it with the load plate and lever.
2. **CPU Cooler Installation:** Install your compatible CPU cooler according to its manufacturer's instructions. Ensure proper thermal paste application and secure mounting.
3. **Memory (RAM) Installation:** Insert DDR4 memory modules into the DIMM slots. Press down firmly on both ends of the module until the retention clips snap into place. Refer to the motherboard manual for recommended dual-channel configurations.
4. **M.2 SSD Installation:** Locate the M.2 slots on the motherboard. Insert your M.2 SSD at an angle and then gently push it down, securing it with the provided M.2 screw.
5. **Graphics Card (GPU) Installation:** Insert your graphics card into the primary PCIe x16 slot. Ensure it is fully seated and secured with the retention clip and a screw to the chassis.
6. **Power Supply Connections:** Connect the 24-pin ATX power connector and the 8-pin (or 4+4-pin) CPU power connector from your power supply to the motherboard. Connect SATA power cables to your storage drives.
7. **Front Panel Connections:** Connect the front panel headers (power button, reset button, HDD LED, power LED, USB ports, audio jacks) to the corresponding pins on the motherboard. Refer to the motherboard's user guide for the exact pin layout.
8. **Rear I/O Panel:** Install the rear I/O panel shield into your chassis before mounting the motherboard.

5. OPERATING AND FEATURES

The ASUS Prime Z490-P motherboard is equipped with several features designed to enhance performance and connectivity.

5.1 Key Features

Build For Every Productivity

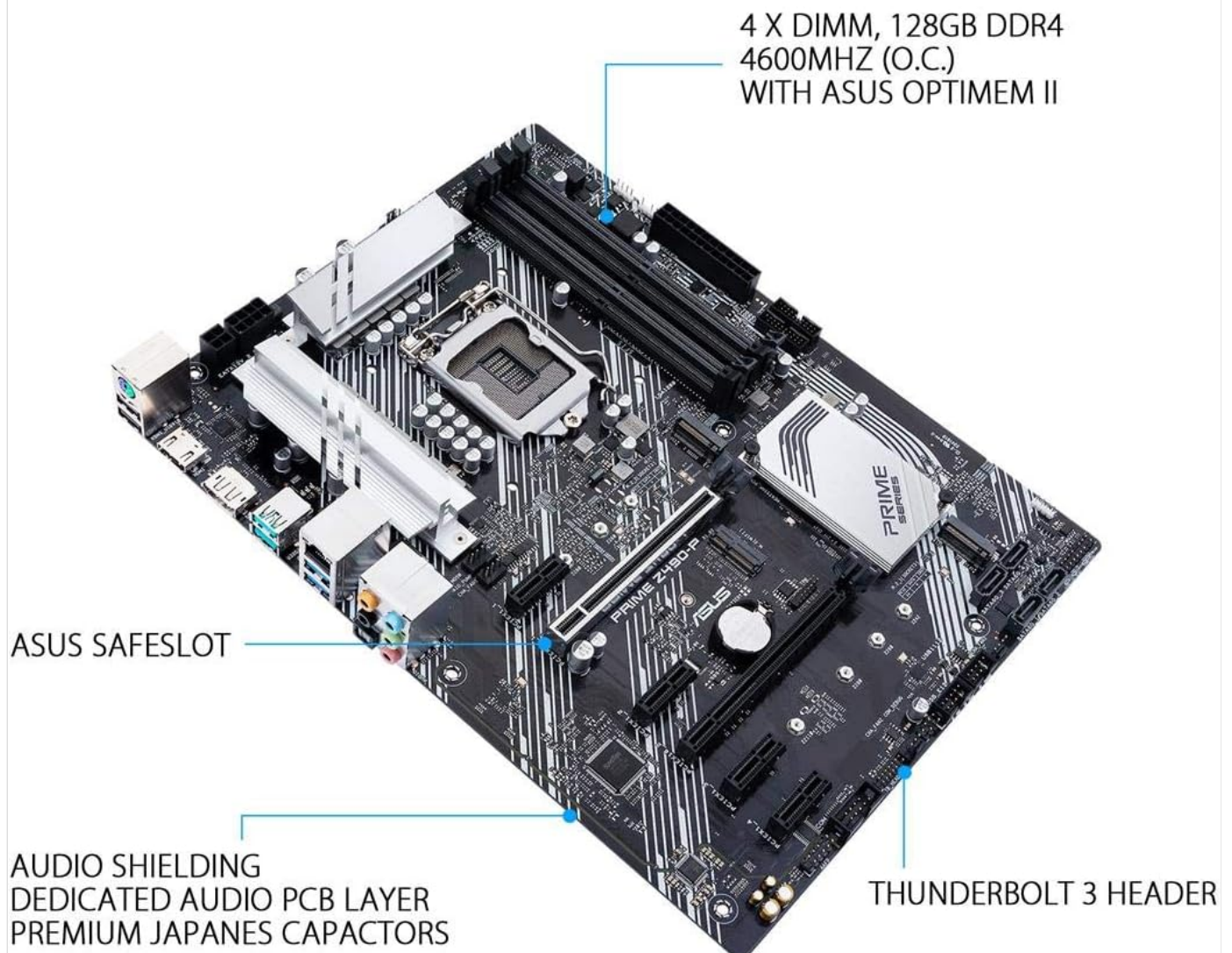


Image: Diagram highlighting key features of the ASUS Prime Z490-P motherboard, including 4 DIMM slots supporting up to 128GB DDR4 4600MHz (O.C.) with ASUS OptiMem II, ASUS SafeSlot, Audio Shielding with dedicated PCB layer and premium Japanese capacitors, and a Thunderbolt 3 Header.

- **Enhanced Power Solution:** Features 10+1 DrMOS power stages, a 6-layer PCB, ProCool sockets, alloy chokes, and durable capacitors for stable power delivery to the CPU.
- **Comprehensive Cooling:** Includes VRM heatsink, PCH heatsink, hybrid fan headers, and Fan Xpert 4 utility for efficient thermal management.
- **Boosted Memory Performance:** ASUS OptiMem II proprietary trace layout allows DDR4 memory kits to operate at higher frequencies (up to 4600MHz O.C.) with lower voltages, maximizing system performance.
- **ASUS SafeSlot:** A reinforced PCIe slot that provides superior retention and shearing resistance for heavy graphics cards.
- **Aura Sync RGB:** Integrated RGB lighting headers allow for synchronization with compatible Aura Sync devices for personalized lighting effects.

5.2 Ultrafast Connectivity

Ultrafast Connectivity

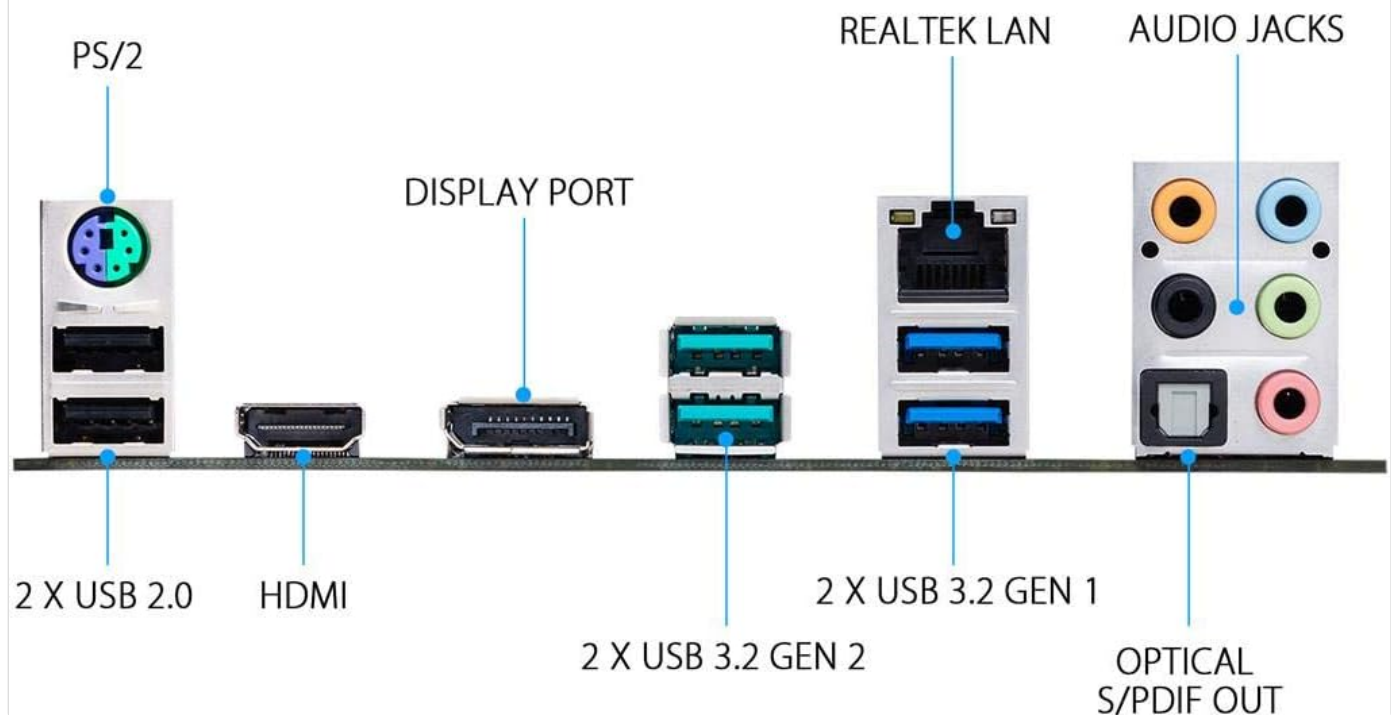


Image: Diagram showing the rear I/O ports of the ASUS Prime Z490-P motherboard, including PS/2 ports, 2x USB 2.0, HDMI, DisplayPort, 2x USB 3.2 Gen 2, 2x USB 3.2 Gen 1, Realtek LAN, and Audio Jacks with Optical S/PDIF Out.

- **Dual M.2 Slots:** Supports NVMe SSDs for rapid data transfer speeds.
- **1 Gb Ethernet:** Provides stable and fast wired network connectivity.
- **USB 3.2 Gen 2 Type-A:** Offers high-speed data transfer for compatible peripherals.
- **Thunderbolt 3 Support:** A dedicated header allows for connection to a Thunderbolt 3 add-on card for versatile high-speed connectivity.
- **Display Outputs:** Includes HDMI and DisplayPort for integrated graphics output (requires compatible CPU).

6. MAINTENANCE

Proper maintenance ensures the longevity and optimal performance of your motherboard.

- **Dust Removal:** Regularly 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/UEFI Updates:** Periodically check the ASUS support website for the latest BIOS/UEFI updates. Updates can improve stability, compatibility, and performance. Follow the instructions provided by ASUS carefully when updating the BIOS.

- **Driver Updates:** Keep your chipset, LAN, audio, and other drivers updated to ensure optimal performance and compatibility with your operating system and peripherals.
- **Physical Inspection:** Occasionally inspect the motherboard for any loose connections, damaged components, or signs of corrosion.

7. TROUBLESHOOTING

This section provides solutions to common issues you might encounter.

- **System Does Not Power On:**
 - Ensure all power cables (24-pin ATX, 8-pin CPU) are securely connected to the motherboard.
 - Verify that the power supply is functioning correctly and switched on.
 - Check front panel power button connections to the motherboard.
- **No Display Output:**
 - Ensure your monitor is connected to the correct display output (either integrated graphics or discrete graphics card).
 - Reseat the graphics card in its PCIe slot.
 - If using integrated graphics, ensure your CPU supports it.
- **System Freezes or Crashes:**
 - Check RAM modules: Ensure they are properly seated in their slots. Try reseating them or testing with one module at a time.
 - Monitor CPU and GPU temperatures to ensure they are not overheating.
 - Update BIOS/UEFI and drivers to the latest versions.
- **Peripherals Not Detected:**
 - Ensure USB devices are connected to functional USB ports.
 - Install the latest chipset and USB drivers from the ASUS support website.
- **BIOS/UEFI Issues:**
 - To reset CMOS, power off the system, unplug the power cord, remove the CMOS battery for a few minutes, then reinsert it. Alternatively, use the CLRTC jumper if available on the motherboard.

8. SPECIFICATIONS

Feature	Detail
Brand	ASUS
Model Name	PRIME Z490-P
CPU Socket	LGA 1200
Compatible Processors	10th Generation Intel Core

Chipset Type	Intel Z490
RAM Memory Technology	DDR4
Memory Clock Speed	4600 MHz (O.C.)
Product Dimensions (LxWxH)	12.91 x 10.41 x 2.09 inches
Item Weight	1.6 pounds
Platform	Windows 10

9. WARRANTY AND SUPPORT

For detailed warranty information, please refer to the warranty card included with your product or visit the official ASUS support website. ASUS provides various support resources to assist you with your product.

- **Online Support:** Visit the ASUS support website for drivers, utilities, BIOS updates, and FAQs.
- **User Manuals:** Digital copies of the user manual and installation guide are available for download.
 - [Installation Manual \(PDF\)](#)
 - [User Guide \(PDF\)](#)
 - [User Manual \(PDF\)](#)
- **Technical Support:** Contact ASUS technical support for assistance with product issues or inquiries.

