ASUS PRIME Z590-P

ASUS Prime Z590-P Motherboard User Manual

Model: **PRIME Z590-P** | Brand: **ASUS**

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of your ASUS Prime Z590-P motherboard. The ASUS Prime Z590-P is engineered to support 11th and 10th Gen Intel Core processors, offering robust power delivery, comprehensive cooling, and advanced connectivity options for a stable and high-performance computing experience.

2. PACKAGE CONTENTS

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

Figure 2.1: Included accessories and documentation with the ASUS Prime Z590-P motherboard.

- ASUS Prime Z590-P Motherboard
- Rear I/O Panel Shield
- User Guide
- Support DVD (Drivers and Utilities)
- SATA Cables (Quantity may vary)
- M.2 Screw Package
- M.2 Rubber Spacers

3. SETUP AND INSTALLATION

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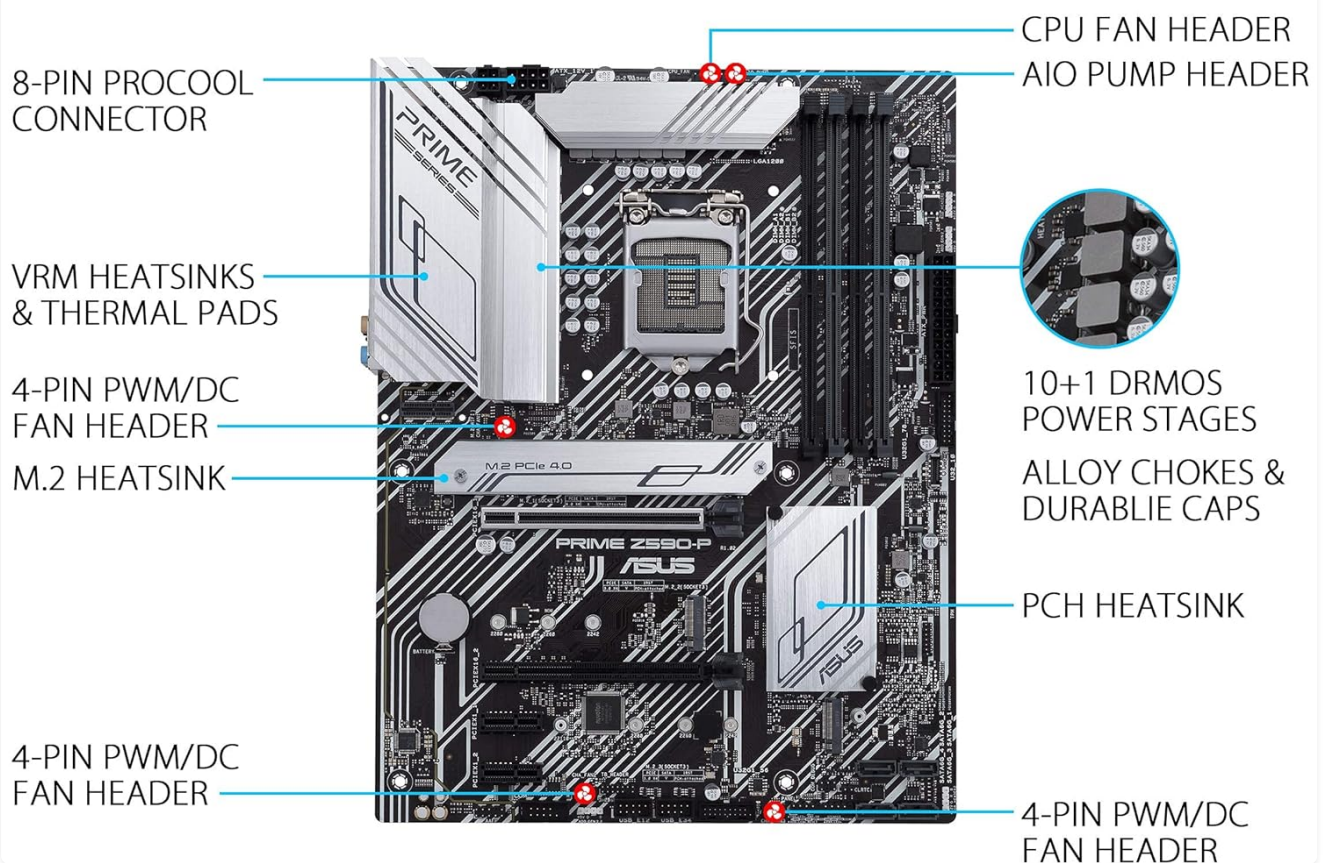
3.1 Component Overview

Figure 3.1: Key power delivery and cooling features on the motherboard.

The motherboard features 10+1 DrMOS power stages, VRM heatsinks, PCH heatsink, and multiple fan headers for comprehensive cooling and stable power delivery.

3.2 CPU Installation

The ASUS Prime Z590-P supports Intel LGA 1200 socket processors (11th/10th Gen Intel Core). Carefully align the CPU with the socket and gently lower it into place. Secure the retention arm.

3.3 Memory (RAM) Installation

Build For Every Productivity
4 X DIMM 128GB DDR4, 3 X M.2 slots and 1 X PCIe 4.0 X 16 Slot

4 X DIMM SLOTS
UP TO 128GB
DDR4 5133 (OC) MHz
OPTIMEM II

PCIE 4.0 X 16
SAFESLOTS CORE+

3 X M.2 SLOTS
1 X M.2 22110 PCIE 4.0 X 4
1 X M.2 22110 PCIE 3.0 X 4 & SATA
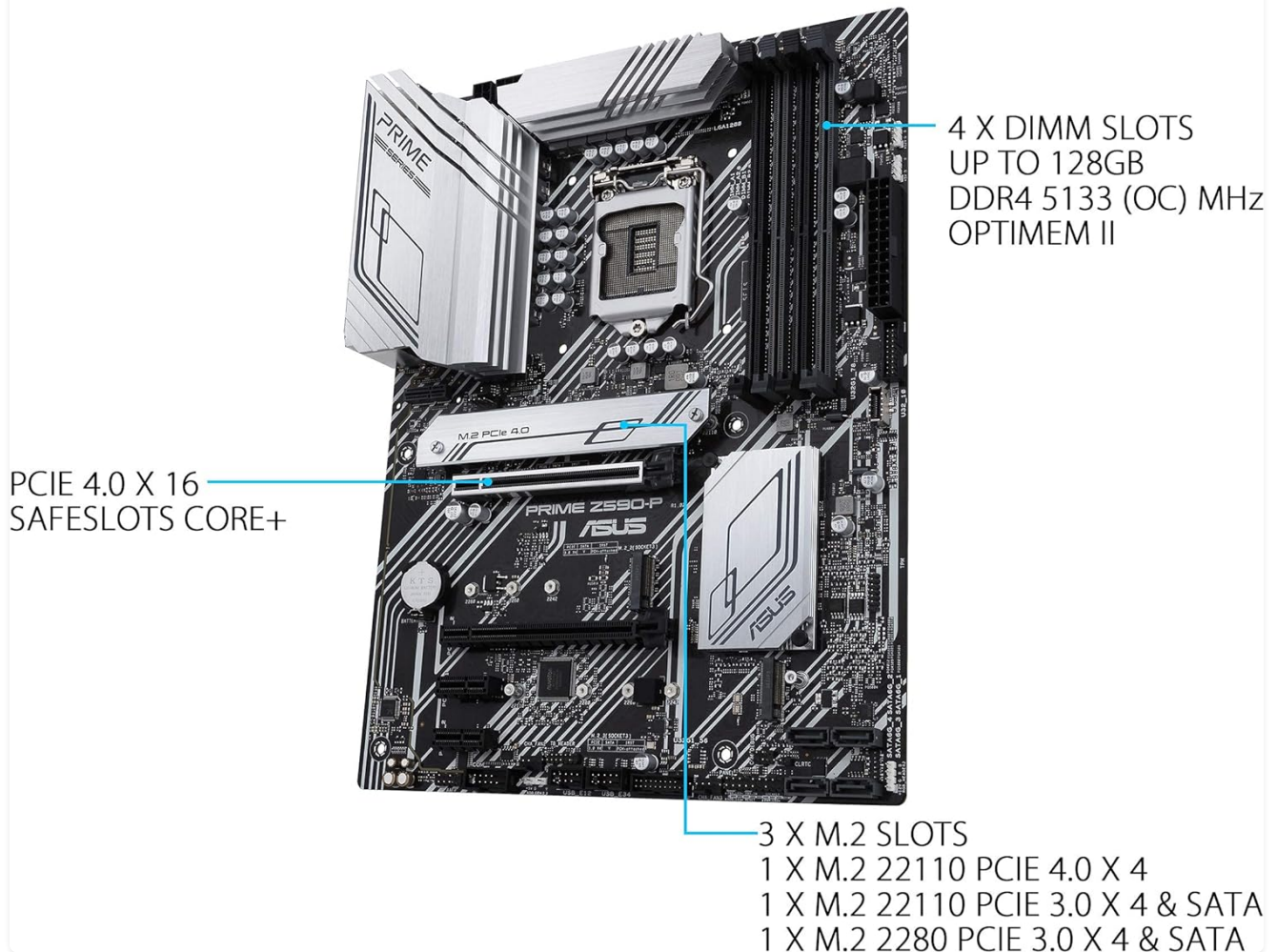1 X M.2 2280 PCIE 3.0 X 4 & SATA

Figure 3.2: Memory (DIMM) and storage (M.2) slot locations.

This motherboard features 4 DIMM slots supporting up to 128GB of DDR4 memory at speeds up to 5133 MHz (OC). Ensure memory modules are installed in the correct slots for dual-channel operation as per the user manual. ASUS OptiMem II technology enhances memory stability and performance.

3.4 Storage Device Installation

The board includes 3 M.2 slots for NVMe SSDs (1x PCIe 4.0 x4, 2x PCIe 3.0 x4 & SATA) and multiple SATA ports for 2.5-inch/3.5-inch drives. Install M.2 drives into the designated slots and secure them with the provided screws and rubber spacers.

3.5 Expansion Card Installation

Install your graphics card or other PCIe expansion cards into the PCIe 4.0 x16 slot or other available PCIe slots. Ensure the card is fully seated and secured with the case screw.

3.6 Connectivity and I/O Panel

Future Proof Connectivity

2.5 G ETHERNET, Thunderbolt 4 Header, USB 3.2 Gen 2X2 Type-C®, Front panel USB 3.2 Gen 1 Type-C®

2 x USB 2.0

1 x HDMI
1 x DISPLYPORT

1 x USB 3.2
GEN 2x2 Type-C®
1 x USB 3.2 GEN 2

2 x USB 3.2 GEN 1
2.5 G ETHERNET

1 x OPTICAL S/PDIF OUT

5 X AUDIO JACKS

THUNDERBOLT 4 HEADER
USB 3.2 GEN 1 Type-C®
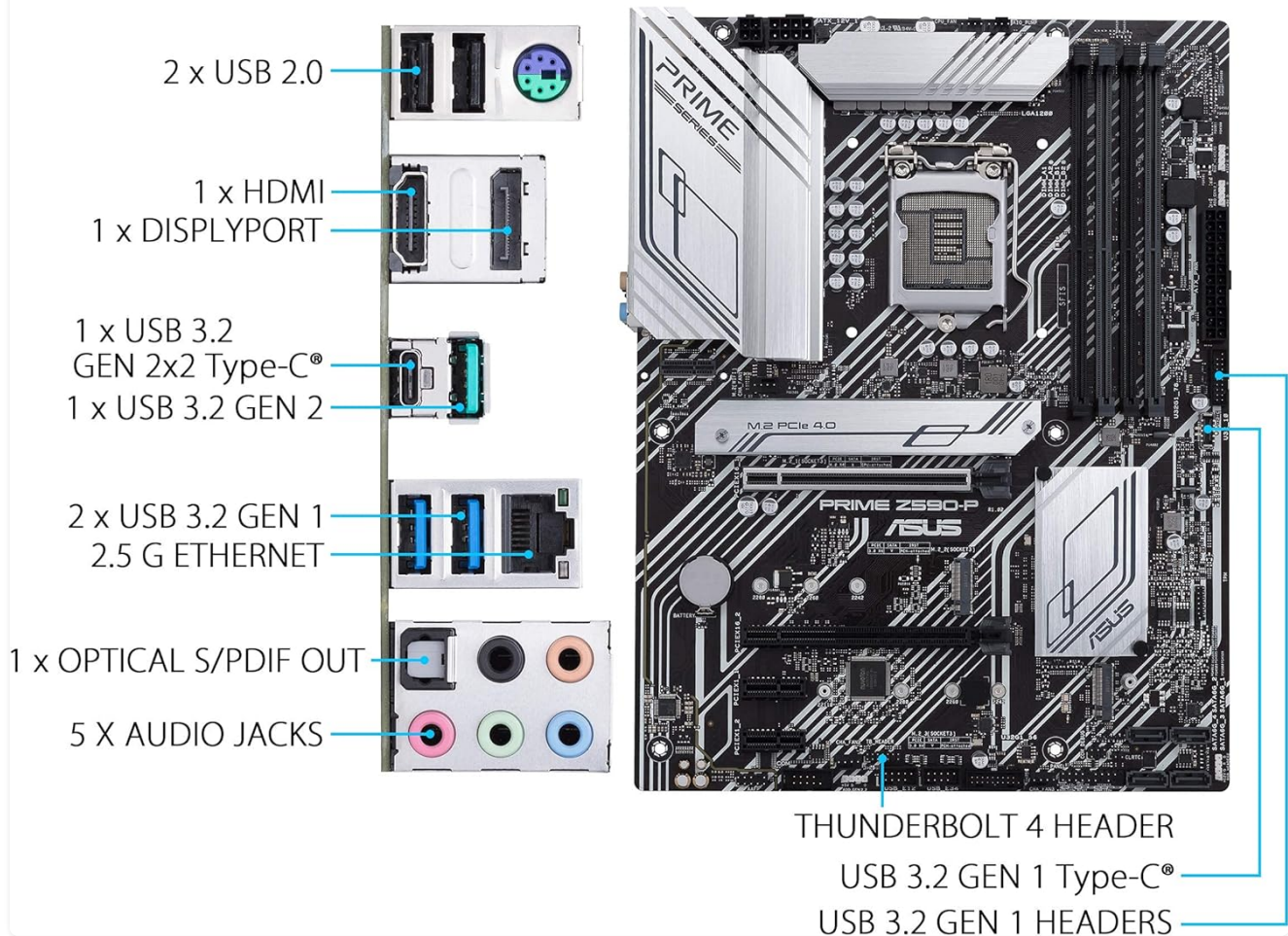USB 3.2 GEN 1 HEADERS

Figure 3.3: Rear I/O panel and internal connectivity headers.

Connect peripherals to the rear I/O panel, which includes USB 2.0, USB 3.2 Gen 1, USB 3.2 Gen 2x2 Type-C, HDMI, DisplayPort, 2.5Gb LAN, and audio jacks. Ensure all necessary power cables (24-pin ATX, 8-pin CPU) are securely connected to the motherboard.

Personalize Your Build
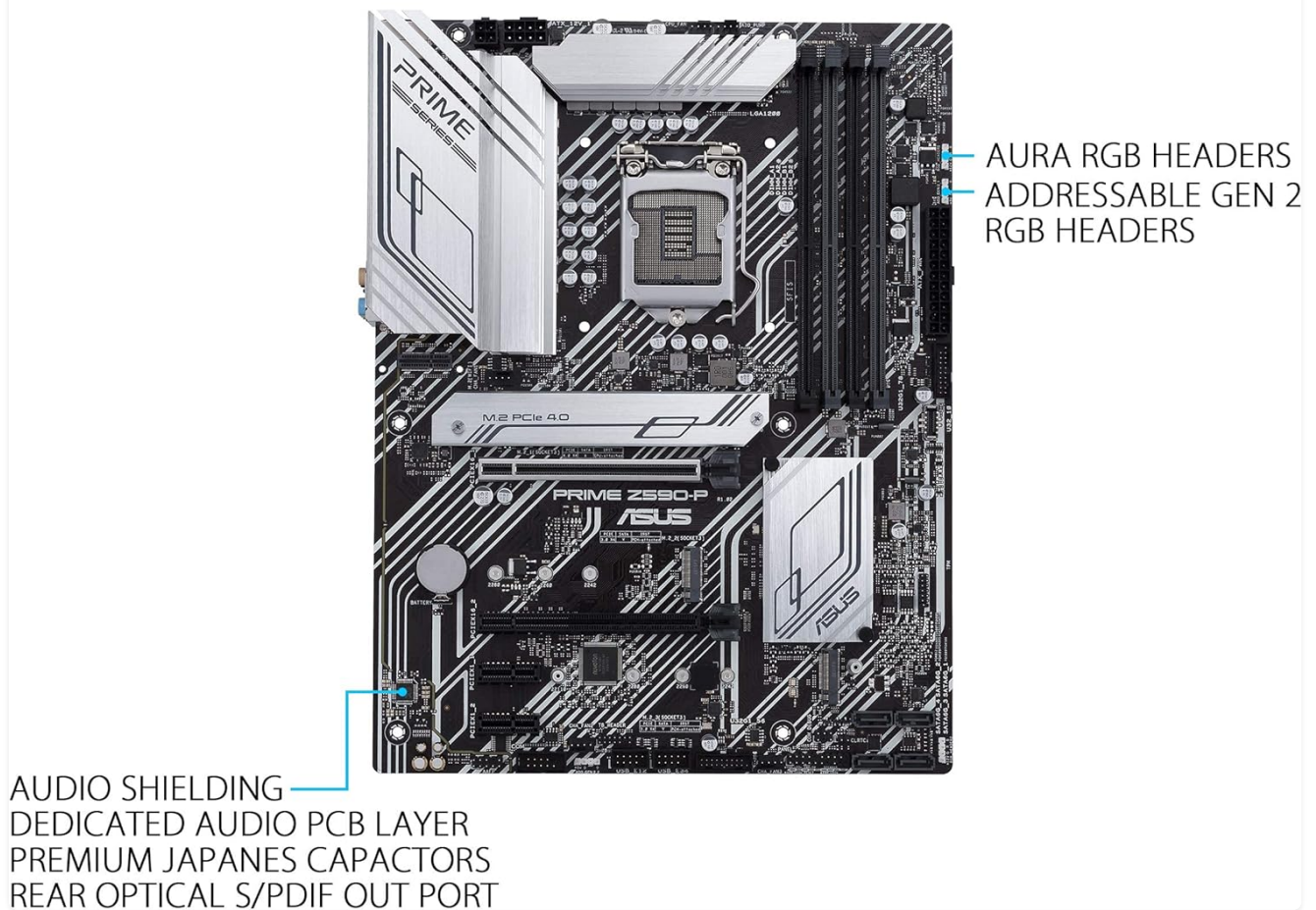## Addressable Gen 2 RGB Headers

Figure 3.4: RGB and Audio features.

The motherboard also features Addressable Gen 2 RGB Headers for customizable lighting and dedicated audio shielding for enhanced sound quality.

3.7 Initial Power On and BIOS Setup

After assembling all components, connect your display and power on the system. Access the UEFI BIOS by pressing the designated key (usually DEL or F2) during startup. Configure boot order, enable XMP for memory, and adjust other settings as needed.

4. OPERATING YOUR MOTHERBOARD

Once the operating system is installed, you can utilize ASUS's proprietary software for system optimization.

4.1 Driver Installation

It is crucial to install the latest drivers from the ASUS support website or the provided support DVD. Prioritize chipset, LAN, audio, and graphics drivers. Installing drivers before Windows Update can prevent potential conflicts and ensure optimal performance.

4.2 Software Utilities

ASUS provides various utilities for system management, including fan tuning/control, power management, and temperature monitoring. These tools allow for fine-tuning your system's performance and acoustics.

5. MAINTENANCE

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

5.1 Cleaning

Periodically clean dust from the motherboard and components using compressed air. Ensure the system is powered off and unplugged before cleaning. Pay attention to heatsinks and fan blades to maintain effective cooling.

5.2 BIOS Updates

Check the ASUS support website regularly for BIOS updates. BIOS updates can improve system stability, compatibility, and performance. Follow the instructions provided by ASUS carefully when performing a BIOS update.

6. TROUBLESHOOTING

This section addresses common issues you might encounter.

6.1 System Instability or Blue Screens

If your system experiences random blue screens or instability, ensure all drivers are correctly installed and up-to-date. Conflicting drivers, especially those automatically installed by Windows Update, can cause issues. It is recommended to install official ASUS drivers before connecting to the internet for the first time after an OS installation.

6.2 No Display Output

Verify that your monitor is correctly connected to the graphics card or integrated graphics port. Ensure all power cables to the motherboard and graphics card are securely seated. Reseat RAM modules and the graphics card.

6.3 Component Not Detected

If a component (e.g., M.2 SSD, RAM, PCIe card) is not detected, ensure it is properly seated in its slot. Check the BIOS settings to confirm the component is enabled and recognized. For M.2 drives, be aware of potential lane sharing with SATA ports, which might disable certain SATA ports when an M.2 drive is in use.

7. SPECIFICATIONS

Feature	Specification
Brand	ASUS
Model Name	PRIME Z590-P
CPU Socket	LGA 1200
Compatible Processors	10th and 11th Generation Intel Core
Chipset Type	Intel Z590
RAM Memory Technology	DDR4

Feature	Specification
Memory Clock Speed	Up to 5133 MHz (OC)
Memory Storage Capacity	128 GB (Max)
Product Dimensions	9.6 x 2 x 12 inches (ATX Form Factor)
Item Weight	2.6 pounds
PCIe Slots	PCIe 4.0 x16, other PCIe slots
M.2 Slots	3 (1x PCIe 4.0 x4, 2x PCIe 3.0 x4 & SATA)
LAN	2.5 Gb Ethernet
USB Ports	USB 2.0, USB 3.2 Gen 1, USB 3.2 Gen 2x2 Type-C
Video Output	HDMI, DisplayPort
Audio	5x Audio Jacks, Optical S/PDIF Out
Platform	Windows 10

8. OFFICIAL PRODUCT VIDEOS

There are no official product videos from the seller available for this product at this time. Please refer to the text and images for detailed information.

9. WARRANTY AND SUPPORT

9.1 Warranty Information

For detailed warranty information, please refer to the warranty card included with your product or visit the official ASUS support website. Warranty terms and conditions may vary by region.

9.2 Technical Support

If you encounter any issues that cannot be resolved using this manual or the troubleshooting section, please contact ASUS technical support. You can find contact information on the official ASUS website: www.asus.com/support/

Related Documents - PRIME Z590-P

Pro WS W480-ACE Motherboard	**ASUS Pro WS W480-ACE Motherboard User Manual** Detailed user manual for the ASUS Pro WS W480-ACE motherboard, covering installation, specifications, BIOS, RAID, and troubleshooting. Learn about CPU, memory, expansion slots, storage, I/O, and special features for professional workstation use.
PRIME H510M-R Motherboard	**ASUS PRIME H510M-R Motherboard Benutzerhandbuch: Installation, Spezifikationen und BIOS-Infos** Umfassendes Benutzerhandbuch für das ASUS PRIME H510M-R Motherboard, das Installation, Sicherheitshinweise, Hardware-Übersicht, BIOS-Informationen, detaillierte Spezifikationen und Umwelt-Compliance abdeckt.
PRIME Z490-P Motherboard	**ASUS PRIME Z490-P Motherboard User Manual: Installation, Specs & Guide** Comprehensive user manual for the ASUS PRIME Z490-P motherboard. Covers installation, BIOS setup, specifications, and safety guidelines for Intel Z490 chipset systems.
PRIME Z790-P WIFI Motherboard	**ASUS PRIME Z790-P WIFI Motherboard User Guide** Comprehensive user guide for the ASUS PRIME Z790-P WIFI motherboard, covering installation, specifications, safety information, and BIOS setup. Learn about its features for building a high-performance PC.
PRIME B365M-K Motherboard	**ASUS PRIME B365M-K Motherboard User Manual** This user manual provides comprehensive information for the ASUS PRIME B365M-K motherboard, covering installation, BIOS setup, and specifications. It details component connections, safety precautions, and system configuration options.
PRIME H410M-CS Motherboard	**ASUS PRIME H410M-CS Motherboard User Manual** User manual for the ASUS PRIME H410M-CS motherboard, detailing installation, specifications, BIOS setup, and features. Includes product overview, safety information, and technical support resources.