

MERGING TECHNOLOGIES

ASUS PRIME Z790M PLUS Install guide

First assemble the computer parts.

For ease of use during Windows installation, Merging recommends that you install security dongles, additional cards, Pyramix-Ovation keyboard, after the Windows Installation and activation..

[MassCore users : Pyramix 14.1 / Ovation 10.1 \(RTX64 4.4\) or higher required. Previous versions are not compatible with Intel 12th/13th Gen CPU.](#)

[14th Gen CPU - MassCore users : Pyramix 15.0 or higher required.](#)

Important note for MassCore Users

Due to Windows 10 & 11 Cores enumeration limitation, it is not possible to configure MassCore to only run on the Performance P-Cores only.

Therefore, the Efficiency E-Cores should be disabled in BIOS, before installing MassCore Runtime - RTX64.

Merging highly recommends you "defer feature updates" in Windows.

- 1.BIOS
 - 1.1. AI Tweaker.
 - 1.2. Advanced
 - 1.3. Monitor
 - 1.4. Boot
 - 1.5 Tool
 - 1.6 Saving your BIOS/UEFI settings
- 2.WINDOWS INSTALLATION
- 3.WINDOWS CONFIGURATION
- 4.SOFTWARE INSTALLATION
 - 4.1 INSTALL PYRAMIX / OVATION / MERGING AUDIO DEVICE
 - 4.2 THIRD PARY SOFTWARE

1.BIOS

Validated BIOS version : **1663** (previously 0812)

First update BIOS if required.

Download BIOS from https://www.asus.com/motherboards-components/motherboards/prime/prime-z790m-plus/helpdesk_download/?model2Name=PRIME-Z790M-PLUS , unzip on a USB Flash Drive and use the EZ-Flash utility.



When updating the BIOS, all settings are lost or not set correctly, you have to enter all the parameters again manually.

Merging recommends you unplug all drives before updating BIOS.

Merging Technologies will not be hold responsible for any trouble or error during a BIOS update.

MERGING TECHNOLOGIES

!Merging Technologies does not guarantee any issue or instability if any overclocking is enabled!

BIOS first opens in the Easy mode page, a summary of the system information.

You may adjust date and time.

Please switch to Advance Mode (F7).

Note: Depending on the CPU installed, some options might not be displayed.

1.1. AI Tweaker.

Performance Preferences: Intel Default Settings

Intel Default Settings: Performance

AI Overclock Tuner: Auto - **Do not change this setting**

ASUS Multicore Enhancement: Disabled - Enfore All limits

SVID Behavior: Intel's Fail Safe

BCLK Frequency : DRAM Frequency Ratio: Auto

Memory Controller : DRAM Frequency Ratio: Auto

DRAM Frequency : Auto.

OC Tuner: Keep Current Settings

Performance Core Ratio : Sync All Cores

All Core ratio Limit : Auto

Specific Performance Core

Performance CoreX Specific Ratio Limit: Auto (all)

AVX Related Controls

AVX2: Auto

DRAM Timing Control

All Auto

DIGI+ VRM

CPU Load-line Calibration: Auto

Synch ACDC Loadline with VRM Loadline: Disabled

CPU Current Capability: Auto

CPU VRM Switching frequency: Auto

CPU Power Duty Control: T.Probe

CPU Power Phase Control: Auto

CPU VRM Thermal Control: Auto

Internal CPU Power Management

Tcc Activation Offset: Auto

IVR Transmitter VDDQ ICCMAX: Auto

CPU Core/Cache Current Limit Max: Auto

Long Duration Package Power Limit: Auto

Package Power Time Window: Auto

MERGING TECHNOLOGIES

Short Duration Package Power Limit: Auto

Dual Tau Boost: Disabled

IA AC Load Line: Auto

IA DC Load Line: Auto

IA CEP Enable: Auto

SA CEP Enable: Auto

IA SoC Iccmax reactive Protector: Auto

Inverse Temperature Dependency Throttle: Auto

IA VR Voltage Limit: Auto

IA TDC Current Limit: Motherboard's capability

Thermal Velocity Boost

TVB Voltage Optimizations: Disabled

Enhanced TVB: Disabled

Overclocking TVB: Disabled

Overclocking TVB Global Temperature Offset Sign: +

Overclocking TVB Global Temperature Offset Value: Auto

Tweaker's Paradise

Realtime Memory Timing: Disabled

SPD Write Disable : TRUE

PVD Ratio Threshold: Auto

SA PLL Frequency Override: Auto

BCLK TSC HW Fixup: Enabled

Core Ratio Extension Mode: Disabled

FLL OC Mode: Auto

UnderVolt Protection: Disabled

Switch Microcode: Current Microcode

All Voltage Settings : Auto

1.2. Advanced

Platform Misc Configuration

PCI Express Native Power Management : Disabled

DMI Link ASPM Control: Disabled

ASPM: Disabled

L1 Substates: Disabled

DMI ASPM: Disabled

DMI Gen3 ASPM: Disabled

PEG - ASPM: Disabled

PCI Express Clock Gating: Disabled

CPU Configuration

MERGING TECHNOLOGIES

Performance Core Information : Info Only

Hardware Prefetcher: Enabled

Adjacent Cache Line Prefetch: Enabled

Intel (VMX) Virtualization Technology: Disabled

Active Performance Cores: All

Active Efficient Cores : Native Users : Auto. MassCore Users : 0. This setting must be disabled before installing MassCore RTX64.

Hyper-Threading: Enabled

CPU Power Management Control

Boot Performance Mode: Max Non-Turbo Performance

Intel(R) Speedstep(tm): Disabled

Intel(R) Speedshift Technology: Disabled

Turbo Mode: Disabled

CPU C-States: Disabled

Thermal Monitor: Disabled

Dual Tau Boost: Disabled

Acoustic Noise Settings

Acoustic Noise Mitigation: *Disabled*- this setting is only used when the CPU goes in deep sleep mode, which cannot happen with the other BIOS Settings.

System Agent (SA) Configuration

VT-D: Disabled

Control Iommu Pre-boot Behavior: Disable IOMMU

Memory Configuration

Memory Remap: Disabled

VMD Setup Menu

Enable VMD Controller : RAID / VMD Configuration not yet validated.

PCI Express Configuration

M.2_1 Link Speed: Auto

PCIEX 16(G5) Link Speed: Auto

PCH Configuration

PCI Express Configuration

PCIEX1 (G4)_1 Link Speed: Auto

PCIEX1 (G4)_2 Link Speed: Auto

M.2_3 Link Speed: Auto

PCIEX16 (G4) Link Speed: Auto

M.2_2 Link Speed: Auto

MERGING TECHNOLOGIES

PCH Storage Configuration

SATA Controller(s) : Enabled
Aggressive LPM Support : Disabled
SMART Self Test: Enabled
M.2_3: Enabled
SATA6G_X: Enabled
SATA6G_X Hot Plug: Disabled

PCH-FW Configuration

TPM Device Selection: Enable Firmware TPM

Thermal Configuration

Intel Dynamic Tuning Technology Configuration

Intel Dynamic Tuning Technology: Disabled

ASUS ThunderboltEX series card Configuration

PCIE Tunneling over USB4: Disabled
Discrete Thunderbolt(TM) Support: Disabled

Trusted Computing

Security Device Support: Enable (required for Windows 11)
SHA256 PCR Bank: Enabled
Pending Operation: None
Platform Hierarchy: Enabled
Storage Hierarchy: Enabled
Endorsement Hierarchy: Enabled
Physical Presence Spec Version: 1.3
Disable Block Sid: Disabled

ASUS USB4 add-on card Configuration

USH Host Controller Support: Disabled

UEFI Variables Protection

Password protection of Runtime Variables: Enable (do not modify this setting)

PCI Subsystem Settings

Above 4G Decoding: Enable
Re-Size BAR Support: Disabled
SR-IOV Support: Disabled

USB Configuration

Legacy USB Support : Enabled
XHCI Hand-off : Disabled
USB Single Port Control: Allow to enable or disable individual USB ports. All ports can be enabled

MERGING TECHNOLOGIES

Network Stack Configuration

Network Stack: Disabled

NVMe Configuration

Merging recommends you leave the default settings for NVMe devices

HDD/SSD SMART Information

Information only

APM Configuration

Restore AC Power Loss: Allows to set the computer behavior after a power shortage.

Max Power Saving: Disabled

ErP ready: Disabled

Power On by PCIE-E: Disabled

Power On by RTX: Disabled

Onboard Devices Configuration

PCIe Bandwidth Bifurcation Configuration: Auto

HD Audio: Enabled

Intel LAN Controller: Enabled

USB Power delivery in Soft Off State (S5): Enabled

Connectivity mode (Wi-Fi & Bluetooth): Disabled

LED Lighting - When system is in working state: All On

LED Lighting - Windows Dynamic Lightning: Disabled

LED Lighting - When system is in sleep,... : Onboard LED on

Q-LED Core: Enabled

GNA Device: Disabled

Serial Port Configuration : Enabled

Wi-Fi 6E for Japan: Disabled

1.3. Monitor

[See ASUS guide](#)

1.4. Boot

CSM (Compatibility Support Module)

Launch CSM: Disabled

Secure Boot

OS Type: Other OS

Secure Boot Mode: Standard

MassCore Users: other settings will prevent MassCore/RTX to properly install, and the MassCore boot option won't be available.

Boot Configuration

MERGING TECHNOLOGIES

Fast Boot : *Disable*

Boot Logo Display: Auto

POST Delay Time: 3 sec

Bootup NumLock State : On

Wait for F1 if Error: Enabled

Option ROM Messages: Force BIOS

Interrupt 19 Capture: Disabled

AMI Native NVMe Driver Support: Enabled

Setup Mode: Advanced Mode

Boot Sector (MBR/GPT) Recovery Policy: Local User Control

Next Boot Recovery Action: Skip

1.5 Tool

ASUS EZ Flash 3 Utility : BIOS Update - See [Asus Manual](#)

BIOS Image Rollback Support: Enabled

Publish HII Resources: Disabled

Asus Secure erase: See [Asus Manual](#)

Asus User Profile: Allows to load and save BIOS settings - See [Asus Manual](#)

Asus SPD Information : RAM Information

Asus Armoury Crate - Download and Install Armoury Crate app: Disabled - Some utilities may interfere with the system, do not install.

1.6 Saving your BIOS/UEFI settings

You can save your BIOS settings in the Tool > ASUS User profile page, into the motherboard ROM or on a USB drive.

After a BIOS update, those settings might be lost or incompatible with the updated BIOS version.

2.WINDOWS INSTALLATION

Windows 10 or 11 users may install from Windows 10 / 11 CD or USB bootable drive.

3.WINDOWS CONFIGURATION

Merging recommends to download the latest drivers from

https://www.asus.com/motherboards-components/motherboards/prime/prime-z790m-plus/helpdesk_download/?model2Name=PRIME-Z790M-PLUS

Merging recommends to install WHQL (Driver certified by Microsoft) .

Install the drivers ONLY, do not install the utilities it can cause much trouble.

Do not install the ASUS Armoury Crate App.

If you have installed a PCIe graphic card, you should now install its driver.

MERGING TECHNOLOGIES

See the [Graphic cards recommendations](#)

[Now you can follow our Windows configuration guide](#)

4.SOFTWARE INSTALLATION

4.1 INSTALL PYRAMIX / OVATION / MERGING AUDIO DEVICE

After the installation plug Security dongles, additional cards and other Merging hardware.

See dedicated install guide / user manual for further details.

4.2 THIRD PARY SOFTWARE

Install *Google Chrome*

<https://www.google.com/chrome>

If there are several users on the computer, you need to use the alternate Chrome installer for all users :

<http://www.google.com/chrome/eula.html?system=true&standalone=1>

You may also install additional VST Plugins now.

-