# **/SRock**



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Foltion November 2024

### Introduction

Updating your motherboard's BIOS to the latest Intel Microcode is essential for Intel 13th and 14th Gen CPUs to avoid voltage spikes that can lead to long-term hardware level degradation and system instability. This guide will walk you through the steps of updating your BIOS while preserving your system's configuration settings, including fan profiles, RAM overclocking profiles, and configuring new voltage settings. Ensuring these settings are correctly restored post-update is critical for maintaining long term system stability and reliability.

Note: If your system uses a RAID storage configuration, avoid performing the BIOS update unless you are familiar with RAID reconfiguration after the update. However, you can still follow the steps for adjusting the voltage and Load-Line Calibration (LLC) settings without updating the BIOS.

# **Step 1: Accessing Your BIOS**

To begin the process, you'll need to access your system's BIOS:

- 1. Turn on your system by pressing the power button.
- 2. Immediately start pressing the Delete key repeatedly until the BIOS menu appears.

	) 🕞 🖹 💽 Polychro	ome RGB (ON)	English	Advanced Mode (F6)
Z790 Pro RS WiFi 13.01	CPU Temperature			07.46
13th Gen Intel(R) Core(TM) i7-13700KF		M/B Temperatur	°e 34.0 °C	07.40
Processor Speed: 3400MHz	20 0 %0	CPU Voltage	0.912 V	Sat
Total Memory: 32GB	<u>38.0 °C</u>			11/02/2024
DRAM Information	Power setting		Boot Priority	7 / 2
DDR5_A1: None				
DDR5_A2: Team Group 16GB (4800)	Power Delive	ery profile		
DDR5_B1: None	BIOS De	efault		
DDR5_B2: Team Group 16GB (4800)	Fan Status	I SEL		
	CPU_FAN1	CPU_FAN2		
XMP Profile Auto	1243	N/A		1
Storage Configuration	CHA_FAN1	CHA_FAN2		1. 1.33
SATA3_0: N/A SATA3_6: N/A	N/A	IV A		// 7/ 338
SATA3_1: N/A SATA3_7: N/A	CHA_FAN3 N/A	CHA_FAN4 N/A		
SATA3_2: N/A M2_1: N/A				
SATA3_3: N/A M2_2: N/A	CHA_FAN5 N/A		Tools	
SATA3_4: N/A M2_3: N/A			Insta	nt Elach
SATA3_5: N/A M2_4: N/A	CPU Cool	er Type	Insta	
VMD Support Disabled	Aut	0	FAN-Tas	tic Tuning

# **Step 2: Saving Fan and Pump Settings**

Fan settings are crucial, particularly for systems with liquid coolers, as the pump requires specific RPM and power settings to function correctly. Some systems may have the pump plugged into a chassis (CHA) fan header.

- 1. In the BIOS homepage (Easy Mode), click on Fan-Tastic Tuning.
- 2. Take a photo of the settings for each fan curve, including all Chassis Fans and both the CPU Fan 1 and CPU Fan 2.
- 3. Make sure the photo captures the fan control curve as this will need to be restored after the BIOS update).

This step ensures that cooling is correctly configured post-update, helping to prevent overheating or fan/pump malfunction.

	to	EAN-Tactic Tu	ning
CPIL Coo	ler Type	Instant Fla	ish
	Tc	pols	
	CHA_FAN2 N/A		
CPU_FAN1 1243	CPU_FAN2 N/A		
an Status	1.22.		



# Step 3: Recording RAM Settings

Before performing the BIOS update, it's important to record your current RAM configuration, because your system should have an XMP profile or custom RAM overclock settings already applied.

These settings will have been applied when your system was originally built and configured and will be UNIQUE to each computer, the images below are EXAMPLE IMAGES ONLY!

1. Press F6 (or click the advanced mode button at top right of the screen) to enter the BIOS Advanced Mode.



- 2. Navigate to the OC Tweaker menu.
- 3. Now select the DRAM Configuration Tab



- 4. For the "Load XMP Setting" note whether XMP Profile is enabled.
  - Take note of which XMP profile is selected (e.g., XMP Profile 1 or XMP Profile 2).
  - Take note if the DRAM Frequency is set to AUTO or manually set to a specific value.

A best practice is to take a photo of the entire page for quick reference.

This image is simply an example to show you where to find your DRAM setting and what to capture in the photo.

DRAM Timing Configuration		
XMP 3.0 Profile 1: DDR5-6000 38-38-38-78 1.25V 1DPC XMP 3.0 Profile 2: DDR5-5600 40-40-40-84 1.20V 1DPC		Description
EXPO Profile 1: DDR5-5000 38-38-38-78 1.25V IDPC EXPO Profile 2: DDR5-5600 40-40-84 1.20V IDPC		If [Auto] is selected, the motherboard will detect the memory modulo(s) includes and assign the
Load XMP Setting	XMP 3.0 Profile 1	appropriate frequency automatically.
XMP Timing Mode	Apply All Timing	
Dynamic Memory Boost	Disabled	
Realtime Memory Frequency	Disabled	8 1 M P.D
Load EXPO Setting	Auto	1 - # S. 1 1 - 1 - 8 -
DRAM Reference Clock	Auto	0///2002////200
DRAM Frequency DDR5-4800 (100:24:2)	Auto	
DRAM Gear Mode	Auto	Get details via OR code
BCLK Frequency	Auto	
Primary Timing		

#### Step 4: Updating the BIOS

This step assumes you have already downloaded and prepared a USB drive with the correct BIOS file for your motherboard as per the instructions at the bottom of the blog post article.

- 1. In the BIOS, click the "Tool" menu from the top navigation.
- 2. Select "Instant Flash" and press yes.



- **3.** The BIOS will automatically search your USB drive and find the BIOS update file. Now confirm the update and allow the computer to do the BIOS update.
  - The computer will reboot several times during the update process. Do not power off the computer or interrupt the process.

# **Step 5: Reconfiguring Fan Settings**

After the BIOS update completes, your system will reboot into the default BIOS settings. To avoid any cooling issues, it's essential to reconfigure the fan settings you recorded earlier.

- 1. Re-enter the BIOS by pressing Delete on startup (refer to Step 1).
- 2. Return to Fan Tastic TUNING



 Now restore the settings for each individual fan according to the photo you took for each chassis fan along with the CPU fan 1 and 2. (refer to Step 2)

						Speed [	Customize
All Fans Setting			Monitor C	U Monitor			
	100			1 1 2	•	Fan Tastic Ti	uning . use keyboard move drag-point and
						adjust fan t	emperature and power.
Chassis Fan 1				_			
Channel a Fam. 0	50			r -			
					•		
	•	25	50	75	100 <sup>°C</sup>		
			~	10	100		

Ensure that you re-apply custom fan curves for every fan because some systems will have the Liquid Cooler Pump hooked up to a Chassis Fan Header.

#### Step 6: Restoring RAM Overclock Profiles

Once the fans are reconfigured, the next step is to restore your RAM settings.

- 1. In Advanced Mode, navigate to the OC Tweaker menu (refer to Step 3).
- 2. Re-enable the XMP Profile (if any) that was active before the BIOS update via the Ai Overclock Tuner.
- 3. If the DRAM frequency was originally set to a manual value such as 5200, please change it to the manual value it was previously set at before the update.

XMP 3.0 Profile 1: DDR5-6000 38-38-3	38-78 1.25V 1DPC		
XMP 3.0 Profile 2: DDR5-5600 40-40-4	40-84 1.20V 1DPC		
EXP0 Profile 1: DDR5-6000 38-38-3	38-78 1.25V 1DPC		
EXPO Profile 2: DDR5-5600 40-40-4	40-84 1.20V 1DPC		
Load XMP Setting		XMP 3.0 Pr	ofile 1
XMP Timing Mode		Apply All	Timing
Dynamic Memory Boost		Disab	led
Realtime Memory Frequency		Disab	led
Load EXPO Setting		Auto	D
DRAM Reference Clock		Auto	0
DRAM Frequency	DDR5-4800 (100:24:2)	Auto	0
DRAM Gear Mode		Auto	0
BCLK Frequency		Auto	0

#### Step 7: Setting Power Limits & VR Voltage Limit

- 1. Press esc and go back to the main page for OC Tweaker settings
- 2. For "CPU Cooler Type", select 240-280MM Liquid Cooler

Main 🎄 OC Tweaker	🛧 Advanced	🗙 Too1	🕒 H/W Monitor	te te
Target P-Core / E-Core / Cache Speed Target AVX2 / BCLK Speed Target Memory Speed	5400 5400 4400	MHz / 4200 MHz / MHz / 100.00 MH; MHz	/ 4800 MHz z	
<ul> <li>Power Delivery Profile</li> <li>CPU Vcore Compensation</li> <li>CPU Cooler Type</li> <li>Base Frequency Boost</li> </ul>		CPU Coo Auto Air Cooling	BIOS Default ler Type 🗙	
<ul> <li>CPU Indicator</li> <li>CPU Configuration</li> <li>CPU Configuration</li> <li>CONFIGURATION</li> <li>Voltage Configuration</li> <li>FIVR Configuration</li> </ul>		240-280mm Liqu	id Cooler nu cooler	

3. Now select the "CPU Configuration" settings.

ASROCK UEFI			
📰 Main	💩 OC Tweaker	Advanced 🖈	🔀 ΤοοΊ
∎ Base Frequency Boost ∎ 🗙 CPU Indicator	t		
r 📹 CPU Configuratio	n		
👔 📹 DRAM Configurati	on		
👔 📹 Voltage Configur	ation		
👔 📹 FIVR Configurati	on		

4. Scroll down to the power limit settings. "Long Duration Package Power Limit" and the "Long Duration Package Power Limit", set them both manually to 250, which provides a 250W power limit. (Image on next page)

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II Main 💧 OC	Tweaker	🚓 Advanced	🗶 Too 1	🕒 H/W Monitor	🛞 Secur
OC Tweaker\CPU Configure	uration				
Intel Speed Shift Technole	ogy			Enabled	
Intel Turbo Boost Max Tech	nnology 3.(	)		Enabled	
Intel Dynamic Tuning Tech	nology			Disabled	
Intel Thermal Velocity Bod	ost Ratio (	Clipping		Auto	
Intel Thermal Velocity Bod	ost Voltage	e Optimizations		Enabled	
					11 6
🚺 CPU Tj Max				Auto	
🛚 Load Intel Base Power Lim	it Settings	5		Disabled	
Long Duration Power Limit			253.000	<b>250</b> 241.000	
Long Duration Maintained			56	Auto	
Short Duration Power Limit	t		253.000	<b>250</b> Auto	
CPU Core Unlimited Current	t Limit			Auto	
I CPU Core Current Limit			307.00	Auto	
I IA CEP Enable				Auto	
I GT CEP Enable				Auto	- 7 A

5. Now go back to OC Tweaker and select the "Voltage Configuration" settings.



6. Within the voltage configuration, change the CPU Core/Cache Load-Line Calibration Settings to Level 3.

OC Tweaker\Voltage Configuration Voltage Configuration			★ My Favorite
Voltage Mode		Stable Mode	
CPU Core/Cache Voltage		Auto	Description
CPU Core/Cache Load-Line Calibration	Level 3	Level 3	Vcore
VDD_CPU Voltage	1.126V	Auto	Levelt
VDD_MRC Voltage		Auto	Level3 Level4
VDD_IMC Voltage	1.100V	Auto	Level5
+1.8V PROC Voltage	1.800V	Auto	Loading
1 OFV DDOC Voltage	1 0501		Load-Line is defined by Intel VRM Spore, and effects the CBL cover unitable CBL Load-Line California

- 7. scroll down further and find the IA VR VOLTAGE LIMIT setting,
  - Change it from AUTO to the value of 1.4 (which is 1.4 volts)

/ISRock UEF				0	
Main	n OC Tweaker	Advanced	X 1001	H/W Monitor	Securit 😻
◀ 0C Tweaker\\	Oltage Configuration	1			_
System Agent	PLL Voltage Offset			Auto	•
Memory Controlle	er PLL Voltage Offset			Auto	
🚺 GT	PLL Voltage Offset			Auto	100
AVX Configuratio	n				
AVX2 Voltage	Guardband Scale Fact	or	1.00	Auto	
Voltage Limit Co	nfiguration				
I IA VR Voltage Li	mit			Auto 1.4	
I GT VR Voltage Li	mit			Auto	
🚺 SA VR Voltage Li	mit			Auto	
VR Configuration					

#### **Step 8: Chipset Configuration**

1. Now navigate to the "Advanced Mode" section and select "Chipset Configuration"



Scroll down to "Turn on Onboard LED in S5" and change it to disabled.

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📰 Main	🏟 OC Tweaker	Advanced	🔀 Tool 🖈	↔ H/W Monitor	🛞 Securi
Advanced\Chi	pset Configuration				
I PCH DMI ASPM Sup	port			Disabled	
I Realtek 2.5G Eth	ernet Controller			Enabled	
🚺 Onboard HD Audio				Enabled	
Front Panel			Turn On Onko		
				aru LED III 55 🔼	
Onboard WAN Devi	ce		Disabled		
Deep Sleep			Enabled	U1sab led	
Restore on AC/Po	wer Loss	I		Power Off	
I Turn On Onboard	LED in S5			Enabled	
Restore Onboard	LED Default			Disabled	
I RGB LED				On	
I GNA Device (BO:D	8:F0)			Disabled	

#### Step 9: Saving and Exiting the BIOS

After all the settings have been restored, save your changes and exit the BIOS.

- 1. Press the exit tab or and select "Save Changes & Exit".
- 2. Confirm that all settings are saved, and allow the system to reboot.



## **GUIDE COMPLETE**