Intel® NUC
Aptio V BIOS Glossary
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Introduction

The BIOS Setup program can be used to view and change the BIOS settings for the Intel® NUC. BIOS Setup is accessed by pressing **F2** after the Power-On Self-Test (POST) memory test begins and before the operating system boot begins.

The presence of menus and BIOS settings are dependent on your Intel NUC model, hardware components installed, and the BIOS version.

If any problems occur (poor performance, intermittent issues) after making BIOS settings changes, reset the BIOS to default values:

1. Press **F2** during boot to enter the BIOS Setup.
2. Press **F9** to set defaults.
3. Press **F10** to save and exit.

If the system locks or won't boot after making BIOS settings changes, perform a BIOS Recovery.

How to Read this Glossary

Type	Indicates the type of BIOS setting.
	• **Action:** BIOS takes a specific action when this is selected. There may be a confirmation prompt before the action is taken. • **Checkbox:** BIOS displays a checkbox that can be set or cleared. • **Information:** BIOS displays non-selectable text. • **Numeric:** BIOS displays a number that can be incremented, decremented, manually entered, or set with a slider bar. • **One-of:** BIOS displays a list of options and allows one to be selected. • **Ordered List:** BIOS displays a list of options that can be reordered. • **Password:** BIOS displays a window for the user to enter text. Each character entered is displayed as an asterisk character (*). If an invalid character is entered, the BIOS will beep and will not display an additional asterisk.
Range	Minimum and Maximum values that can be set (for Numeric questions).
Help	Help text that appears in the standard Help section of the Setup screen.
Advanced Help	Help text that appears in the Advanced Help pop-up window.
Requires	Lists requirements for this question to appear in BIOS Setup.
Aptio V BIOS Page	Indicates the BIOS page or menu where the setting is found.

Setup Hotkeys

F1	Opens the Advanced Help pop-up window for the selected question.
F7	Initiates a BIOS update process.
F9	Invokes a confirmation dialog to load default settings.
F10	Invokes a confirmation dialog to Exit and Save Changes.
Ctrl + Alt + Del	Restarts the system.
Arrow Left Arrow Right Arrow Up Arrow Down Tab Shift + Tab	Moves the cursor left/right/up/down one question. Will wrap if already at first or last question on the page. When selecting an option from a drop-down list, moves the cursor up/down one option.
Esc	**When selecting an option for a One-Of/Ordered List question:** Close option selection box and cancel changes. **When selecting a value for a Numeric question:** Cancel changes. **When viewing a Setup sub-screen page**: Return to parent Setup page. **When viewing a top-level Setup page:** Invoke confirmation dialog box to Exit Discarding Changes. **When viewing a confirmation dialog box:** Close confirmation dialog box without taking action. **When entering text into a Password/Text Entry window**: Close window and cancel changes.

Main

Processor Type:

Type	Information
Aptio V BIOS Page	Main

- Displays the processor brand.

Max Processor Turbo Frequency

Type	Information
Aptio V BIOS Page	Main

- Displays the max processor turbo frequency.

Max Processor Non Turbo Frequency

Type	Information
Aptio V BIOS Page	Main

- Displays the max processor non-turbo frequency.

Host Clock Frequency

Type	Information
Aptio V BIOS Page	Main

- Displays the default Host Clock Frequency.

L2 Cache RAM

Type	Information
Aptio V BIOS Page	Main

- Displays the total L2 cache memory of the installed processor in megabytes. If the installed processor is multi- core, it is displayed as number of cores x L2 cache per core.

L3 Cache RAM

Type	Information
Aptio V BIOS Page	Main

- Displays the total L3 cache memory of the installed processor in megabytes.

CPUID

Type	Information
Aptio V BIOS Page	Main

- Displays the processor CPUID in hexadecimal.

Microcode Update Revision

Type	Information
Aptio V BIOS Page	Main

- 32-bit processor microcode update revision in hexadecimal.

Total Memory Installed

Type	Information
Aptio V BIOS Page	Main

- Displays the total installed system memory size in gigabytes.

Memory Speed

Type	Information
Aptio V BIOS Page	Main

- Displays the current memory speed. Defined as Current Host Clock Frequency x Memory Reference Multiplier x Memory Multiplier.

SODIMM *n* (Memory Channel *x*)

Type	Information
Aptio V BIOS Page	Main

- Displays the installed system memory size in SODIMM *n* (Channel *x*) in gigabytes. One of these lines is displayed for each memory slot present on the motherboard.

Intel® ME FW Version

Type	Information
Requires	ME is present and running
Aptio V BIOS Page	Main

- Displays ME Firmware Version.

EC FW Version

Type	Information
Requires	EC is present on the system
Aptio V BIOS Page	Main

- Displays MAC Address of onboard LAN device(s) in hexadecimal.

Onboard LAN MAC Address / Secondary LAN MAC Address

Type	Information
Aptio V BIOS Page	Main

- MAC Address of onboard LAN device(s) in hexadecimal.

System Language

Type	Information
Aptio V BIOS Page	Main

- Displays the system BIOS default language. Currently, only English.

System Date and Time:

- Displays the current time and date in format: MM/DD/YYYY HH:MM:SS XM

System Information

Manufacturer	System Manufacturer string from SMBIOS Type 1 structure.
Product Name	System Product Name string from SMBIOS Type 1 structure.
Version	System Version string from SMBIOS Type 1 structure.
Serial Number	System Serial Number string from SMBIOS Type 1 structure.
UUID	System UUID/GUID from SMBIOS Type 1 structure.
SKU Number	System SKU Number string from SMBIOS Type 1 structure.
Family	System Family string from SMBIOS Type 1 structure.

Board Information

Manufacturer	System Manufacturer string from SMBIOS Type 2 structure.
Product Name	System Product Name string from SMBIOS Type 2 structure.
Version	System Version string from SMBIOS Type 2 structure.
Serial Number	System Serial Number string from SMBIOS Type 2 structure.
Asset Tag	Board Asset Tag string from SMBIOS Type 2 structure.

Chassis Information

Manufacturer	System Manufacturer string from SMBIOS Type 3 structure.
Product Name	System Product Name string from SMBIOS Type 3 structure.
Version	System Version string from SMBIOS Type 3 structure.
Serial Number	System Serial Number string from SMBIOS Type 3 structure.
Asset Tag	Board Asset Tag string from SMBIOS Type 3 structure.

Advanced > Storage

SATA Controller(s)

Type	One-of
Enabled	Enables the onboard SATA controller(s)
Disabled	Disables the onboard SATA controller(s)
Aptio V BIOS Page	Advanced > Storage

SATA Mode Selection

Type	One-of
AHCI	PCH SATA controller is configured in AHCI mode.
RAID	PCH SATA controller is configured in RAID mode.
Intel RST Premium With Intel Optane System	PCH SATA controller is configured in Optane mode.
Help	Configures the Chipset SATA controller mode. Warning: OS may not boot if this setting is changed after OS install.

Advanced Help	**AHCI:** Supports advanced SATA features such as Native Command Queuing. **RAID:** Allows multiple drives to be merged into larger volumes for increased performance and/or reliability. Always enables AHCI. **Intel RST Premium With Intel Optane System Acceleration:** Fast Boot will be Grayed-out and disabled under Optane mode. **Warning:** OS may not boot if this setting is changed after OS install.
Requires	Intel RST Premium With Intel Optane System Acceleration will be Grayed-out and not able to be selected when Fast Boot is enabled.
Aptio V BIOS Page	Advanced > Storage

- If a USB keyboard is attached to a USB port that has been disabled via one of these Setup questions, it will be enabled during POST and Setup, but will be disabled before OS boot.
- All non-keyboard devices will be disabled during POST, Setup, and OS. This means that drives attached to disabled USB ports will not appear in the BIOS boot order in Setup.
- If the Portable Device Charging Mode for a USB port is set to Charging Only, then a keyboard attached to that port will not be functional, even during POST.

eMMC Controller

Type	One-of
Enabled	
Disabled	
Help	Enables or Disables the eMMC controller device.
Aptio V BIOS Page	Advanced > Storage

eMMC

Type	Information
Aptio V BIOS Page	Advanced > Storage

- Displays eMMC device identification string

RST PCIe Storage Remapping

Type	Checkbox
Help	Configures the PCIe storage remapping. **Warning**: OS may not boot if this setting is changed after OS install.
Requires	The Chipset SATA controller supports the PCIe storage remapping. Chipset SATA Mode is set to RAID. Remapping is enabled and grey out if Optane mode in Chipset SATA mode is set.
Aptio V BIOS Page	Advanced > Storage

SMART Self Test

Type	Checkbox
Help	Enables or Disables S.M.A.R.T - Self-Monitoring, Analysis, and Reporting Technology. If supported on any attached drives, BIOS will monitor drive health.
Aptio V BIOS Page	Advanced > Storage

SATA Port

Type	Checkbox
Help	Enables or Disables SATA Port.
Aptio V BIOS Page	Advanced > Storage

M.2 Port

Type	Checkbox
Help	Enables or Disables M.2 Port.
Aptio V BIOS Page	Advanced > Storage

M.2 SATA

Type	Information
Aptio V BIOS Page	Advanced > Storage

- Displays the make/model of the M.2 SATA device installed

M.2 Slot Vendor ID:Device ID:Port

Type	Information
Aptio V BIOS Page	Advanced > Storage

- Displays the vendor ID of the M.2 device installed

Hard Disk Pre-Delay

Type	Numeric
Help	Delay (in seconds) before hard drives are initialized. This can be used to increase the amount of time that the BIOS Splash Screen displays.
Aptio V BIOS Page	Advanced > Storage

HDD Activity LED

Type	Checkbox
Help	Enables or disables the Hard Drive Activity LED.
Aptio V BIOS Page	Advanced > Storage

Advanced > Onboard Devices

HD Audio

Type	One-of
Disabled	Disables HD audio.
Enabled	Enables HD audio.
Auto	
Aptio V BIOS Page	Advanced > Onboard Devices

LAN

Type	One-of
Disabled	Disables the onboard Ethernet LAN controller.
Enabled	Enables the onboard Ethernet LAN controller.

Aptio V BIOS Page	Advanced > Onboard Devices

Secondary LAN

Type	Checkbox
Help	Enables or Disables the secondary Ethernet LAN Controller, if one is present.
Aptio V BIOS Page	Advanced > Onboard Devices

Thunderbolt™ Controller Support

Type	One-of
Disabled	Disables the onboard Thunderbolt controller
Enabled	Enables the onboard Thunderbolt controller
Aptio V BIOS Page	Advanced > Onboard Devices

Control Iommu Pre-boot Behavior

Type	One-of
Disable IOMMU	
Enable IOMMU during boot without exception list	
Help	IOMMU (I/O Memory Management Unit) is a feature supported by motherboard chipsets that provides enhanced virtual-to-physical memory mapping capabilities, including the ability to map large portions of non-contiguous memory. IOMMU can be enabled in the motherboard's BIOS, in order to resolve issues with virtual machine device drivers.
Aptio V BIOS Page	Advanced > Onboard Devices

Trusted Platform Module 2.0 Presence

Type	Checkbox
Help	Controls exposure of the onboard TPM device to the operating system.
Aptio V BIOS Page	Advanced > Onboard Devices

WLAN

Type	Checkbox
Help	Enables or Disables the onboard Wireless LAN Controller.
Aptio V BIOS Page	Advanced > Onboard Devices

Bluetooth

Type	Checkbox
Help	Enables or Disables the onboard Bluetooth Controller.
Aptio V BIOS Page	Advanced > Onboard Devices

SDCard 3.0 Controller

Type	One-of
Disabled	Disables the SD Card.
Enabled	Enables the SD Card.

Aptio V BIOS Page	Advanced > Onboard Devices

Gaussian Mixture Models and Neural Networks Accelerator (GNA)

Type	Checkbox
Help	Enables or Disables the GNA functionality.
Aptio V BIOS Page	Advanced > Onboard Devices

Enhanced Consumer IR

Type	Checkbox
Help	Enables or Disables Enhanced Consumer Infrared (CIR)
Aptio V BIOS Page	Advanced > Onboard Devices

HDMI CEC Control

Type	Checkbox
Help	Enables or Disables the onboard HDMI CEC control. This must be set to Disable to allow external CEC adaptor for CEC header.
Aptio V BIOS Page	Advanced > Onboard Devices

TV HDMI Port

Type	One-of
HDMI 1	
Help	Configures the TV HDMI Port the system is connected to.
Aptio V BIOS Page	Advanced > Onboard Devices

Auto Turn On TV

Type	One-of
Disable	TV does not turn on when Intel NUC is turned on or resumes from sleep state.
From S3/S4/S5 Boot	TV turns on when Intel NUC is powered on or resumes from S3/S4/S5 state.
From S3 Resume	TV turns on when Intel NUC resumes from S3 state.
From S4/S5 Boot	TV turns on when Intel NUC is powered on or resumes from S4/S5 state.
Help	Determines what happens to the TV when the Intel NUC goes to sleep or is shut down.
Aptio V BIOS Page	Advanced > Onboard Devices

Auto Turn Off TV

Type	One-of
Disable	TV stays on when Intel NUC is shut down or enters a sleep state.
When S0 to S3/S4/S5	TV turns off when Intel NUC enters S3/S4/S5 state.
When S0 to S3	TV turns off when Intel NUC enters S3 state.
When S0 to S4/S5	TV turns off when Intel NUC enters S4/S5 state.
Help	Determines what happens to the TV when the Intel NUC goes to sleep or is shut down.
Aptio V BIOS Page	Advanced > Onboard Devices

Wake on TV

Type	One-of
Disable	Intel NUC stays off when TV is turned on.

From S3/S4/S5	Intel NUC wakes from S3/S4/S5 power state when TV is turned on.
From S3	Intel NUC wakes from S3 power state when TV is turned on.
From S4/S5	Intel NUC wakes from S4/S5 power state when TV is turned on.
Help	Determines what happens to the Intel NUC when the TV is turned on.
Aptio V BIOS Page	Advanced > Onboard Devices

Standby on TV

Type	One-of
Disable	Intel NUC remains in its current state when TV is turned off (nothing happens).
Power Button Toggle	When TV is turned off, the Intel NUC action defined for the power button in Windows is triggered.
Sleep Button Toggle	When TV is turned off, the Intel NUC action defined for the sleep button in Windows is triggered.
Help	Determines what happens to the Intel NUC when TV is turned off.
Aptio V BIOS Page	Advanced > Onboard Devices

High Precision Event Timers

Type	Checkbox
Help	High Precision Event Timers are integrated into chipset hardware and are available for use by operating systems. They can be disabled if incompatible with an OS or application.
Aptio V BIOS Page	Advanced > Onboard Devices

Bootup NumLock State

Type	Checkbox
Help	If Num Lock is enabled, the keypad defaults to numeric functionality.
Aptio V BIOS Page	Advanced > Onboard Devices

Failsafe Watchdog

Type	Checkbox
Help	After a boot failure, uses BIOS defaults to allow the system to boot back into BIOS Setup while retaining the last used BIOS Setup values set by the user.
Aptio V BIOS Page	Advanced > Onboard Devices

Advanced > Video

IGD Minimum Memory

Type	One-of
32 MB	
64 MB	
128 MB	Note: Kaby Lake platform does not support 128 MB option.
256 MB	Note: Kaby Lake platform does not support 256 MB option.
512 MB	Note: Kaby Lake platform does not support 512 MB option.
1 GB	Note: Broadwell and Kaby Lake platforms do not support 1GB option. Platform memory address space resource dependent. BIOS shall hide this option if memory address space is not enough.
1.5 GB	Note: Broadwell and Kaby Lake platforms do not support 1.5GB option. Platform memory address space resource dependent. BIOS shall hide this option if memory address space is not enough.
Help	Selects the minimum amount of system memory allocated to the Integrated Graphics Device (IGD). The maximum amount of memory allocated is determined by the operating system and video driver.
Aptio V BIOS Page	Advanced > Video

- The 64 and 128 MB options are not selectable if the system has less than 1 GB of memory installed.
- The 512 MB option is not selectable if the system has less than 1.5 GB of memory installed.
- The 1 GB option is not selectable if the system has less than 2 GB of memory installed.

IGD Aperture Size

Type	One-of
128 MB	
256 MB	
512 MB	
1024 MB	Platform memory address space resource dependent. BIOS shall hide this option if memory address space is not enough.
2048 MB	UEFI mode only. Platform memory address space resource dependent. BIOS shall hide this option if memory address space is not enough.
4096 MB	Note: Kaby Lake platform does not support 4096MB option UEFI mode only. Platform memory address space resource dependent. BIOS shall hide this option if memory address space is not enough.
Help	Selects the aperture size for the Integrated Graphics Device (IGD). Requires motherboard supports at least one video port tied to IGD.
Aptio V BIOS Page	Advanced > Video

IGD Primary Video Port

Type	One-of
Auto	Video BIOS will auto-detect attached monitors and output video to a maximum of two external ports.
HDMI	
Thunderbolt	
Help	Selects preference for Integrated Graphics Device (IGD) display interface used for environments without a graphics driver, such as POST. Auto will attempt to detect connected monitors and will display video on a maximum of two ports.
Aptio V BIOS Page	Advanced > Video

IGD Secondary Video Port

Type	One-of
None	
HDMI	
Thunderbolt	
Help	Selects preference for mirrored Integrated Graphics Device (IGD) display interface used for environments without a graphics driver, such as POST.
Requires	IGD Primary Port is set to HDMI or Thunderbolt.
Aptio V BIOS Page	Advanced > Video

Rotation Policy

Type	One-of
Normal	Landscape (0 degree rotation)
Right	Portrait mode (90 degree rotation to the right)
Left	Portrait mode (90 degree rotation to the left)
Reversion	Landscape (180 degree rotation)
Help	Controls the screen display direction.
Aptio V BIOS Page	Advanced > Video

Display Emulation

Type	One-of
No emulation	
Virtual display	Allow emulation of display monitors for one or both HDMI ports when not attached to the system. (Headless)
Persistent display	Allow emulation of display monitors for one or both HDMI ports when temporarily disconnected from the system.
Aptio V BIOS Page	Advanced > Video

Inconsistent Display Warning

Type	One-of
Block Boot	If the display device EDID is inconsistent with EDID data record in the EC NVRAM, BIOS shows warning messages with options, and wait for the user selection indefinitely.
Countdown	If the display device EDID is inconsistent with EDID data record in the EC NVRAM, BIOS shows warning messages with options, and countdown 10 sec. The default action will be the first option in the warning message
Help	Preferred action at POST when Persistent Display Emulation is enabled and the detected displays do not match those attached when the feature was enabled
Requires	Visible only when Display Emulation mode is "Persistent Display Emulation"
Aptio V BIOS Page	Advanced > Video

Inconsistent Display Warning

Type	**One-of**
Auto	The BIOS use the Integrated Graphics Device (IGD) if there are no additional graphics card (PCI-E).If an additional graphics card is plugged on the motherboard, the IGD will be disabled by the BIOS.
Enabled	The Integrated Graphics Device (IGD) will always be enabled, even if a PCI-E graphics card is plugged on the motherboard
Help	Selects if Integrated Graphics Device (IGD) is enabled when a PCI-E graphics card is plugged into the motherboard.
Aptio V BIOS Page	Advanced > Video

Advanced > USB

USB Legacy (Legacy USB Support)

Type	One-of
Enabled	USB Legacy allows USB support under non-USB-aware OSes.
Disabled	Disabling USB Legacy will not disable USB keyboards during BIOS POST, including
Auto	Disables legacy support if no USB devices are connected.
Aptio V BIOS Page	Advanced > USB

Portable Device Charging Mode

Type	One-of
Off	Normal USB operation: USB Port will not provide extra power in S3/S4/S5
Charging in S3/S4/S5	USB Port will provide extra power during S3/S4/S5
Charging Only	USB Port will always provide extra power but cannot be used to transfer data
Help	USB ports that are colored yellow support a Portable Device Charging Mode with higher maximum current.
Advanced Help	**Off:** USB Port will not provide extra power during system sleep states. **Charging in S3/S4/S5:** USB Port will provide extra power during system sleep states. **Charging Only**: USB Port will always provide extra power but cannot be used to transfer data with USB 2.0 device.
Requires	At least one USB port supports Portable Device Charging Mode
Aptio V BIOS Page	Advanced > USB

Front Type C Port

Front USB Charging Port

Rear USB Lower Port

Rear USB Upper Port

Header USB Connector 2900

Header USB Connector 2901

Type	One-of
Enable	Enables USB port
Disable	Disables USB port
No Detect	Disables USB port during POST only
Help	*Help is specific to each supported motherboard header/back panel port layout.*
Advanced Help	**Enable**: All devices on this port will be available to BIOS and OS. **Disable:** USB keyboard/Mouse will be available to BIOS, and all devices on this port will be unavailable to OS. **No Detect:** No devices on this port will be detected by BIOS, but all will be available to OS. Use this option to speed up BIOS boot.
Requires	Grayed out and set to **Disable** if corresponding **Portable Device Charging** question is set to **Charging Only**
Aptio V BIOS Page	Advanced > USB

- One of these questions is displayed for each USB port present on the motherboard.
- If a USB keyboard is attached to a USB port that has been disabled via one of these Setup questions, it will be enabled during POST and Setup, but will be disabled before OS boot.
- All non-keyboard devices will be disabled during POST, Setup, and OS. This means that drives attached to disabled USB ports will not appear in the BIOS boot order in Setup.
- If the Portable Device Charging Mode for a USB port is set to Charging Only, then a keyboard attached to that port will not be functional, even during POST.

Retain USB power during System Reset

Type	One-of
Enable	Enables USB port
No Detect	Disables USB port during POST only
Help	Provides USB 5V power during a System reset or warm reboot to prevent attached USB devices going through a reset.
Aptio V BIOS Page	Advanced > USB

Advanced > Add-In Config

Configuration information and options for onboard or add-in devices are found in this section of BIOS.

Sub-menu	Examples of common settings
Network Stack Configuration	- Network Stack - Ipv4 PXE Support - Ipv4 HTTP Support - Ipv6 PXE Support - Ipv6 HTTP Support - IPSEC Certificate - PSE boot wait time - Media detect count
iSCSI Configuration	iSCSI Initiator Name
Intel Ethernet Connection	- Link Speed - Wake on LAN - Blink LEDs - Link Status
VLAN Configuration	Create a new VAN
MAC IPV4 Network Configuration MAC IPV6 Network Configuration	- Enable DHCP - Local IP Address - Local Network - Local Gateway - Local DNS Servers - Duplicate Address Detection (DAD) Transmit count and policy

Advanced > Event Log

SMBIOS Event Log

Type	One-of
Enabled	
Disabled	
Help	Enables or Disables Event Logging. If Enabled, BIOS will log POST Errors in NVRAM.
Aptio V BIOS Page	Advanced > Event Logs > Change SMBIOS Event Log Settings

Erase Event Log

Type	One-of
No	
Yes, Next reset	
Yes, Every reset	
Help	Choose option for erasing SMBIOS event logs. Erasing is done prior to any logging activation during reset.
Aptio V BIOS Page	Advanced > Event Logs > Change SMBIOS Event Log Settings

When Log is Full

Type	One-of
Do nothing	
Erase immediately	
Help	Choose option for reactions to a full event log.
Aptio V BIOS Page	Advanced > Event Logs > Change SMBIOS Event Log Settings

View SMBIOS Event Log

Type	Information
Aptio V BIOS Page	Advanced > Event Logs > View SMBIOS Event Log

- A line is displayed for each Event Type with a non-zero occurrence value.
- *Timestamp* is the time and date of the most recent occurrence of the event. It is displayed in the format MM/DD/ YYYY HH:MM:SS
- *Error code* is the name of the POST Error.
- *Count* is the number of times that event has occurred since the Event Log was last cleared.

Selfhealing BIOS Support

Type	Checkbox
Help	The Self Healing feature allows BIOS to automatically attempt to recover a corrupted BIOS without needing a recovery file on external media, such as a USB flash drive. When enabled, BIOS creates a flash update capsule recovery file based on the currently installed BIOS version. This recovery file is stored in the \EFI\Intel folder in the EFI system partition of the system disk. If BIOS detects a difference between the stored recovery file and the image in the SPI ROM, BIOS will automatically update the image in SPI ROM with the saved recovery file.
Aptio V BIOS Page	Advanced

PCIE Bifurcation Configuration

Type	One-of
Auto	
Force x16	
Force x8, x4, x4	
Help	Choose options for PCIe bifurcation, where you can "split" the x16 slot into one x8 and two x4 slots.
Aptio V BIOS Page	Advanced

SMBus connected to PCIe Slots

Type	Checkbox
Help	Enable to get SMBus connected to PCIe slots.
Aptio V BIOS Page	Advanced

Cooling

Fan Speed

Type	Information
Aptio V BIOS Page	Cooling

CPU Temperature

Type	Information
Aptio V BIOS Page	Cooling

CPU Voltage Regulator Temperature

Type	Information
Aptio V BIOS Page	Cooling

PCH Temperature

Type	Information
Aptio V BIOS Page	Cooling

Memory Temperature

Type	Information
Aptio V BIOS Page	Cooling

Motherboard Ambient Temperature

Type	Information
Aptio V BIOS Page	Cooling

Internal Ambient Temperature

Type	Information
Aptio V BIOS Page	Cooling

DC Voltage Input

Type	Information
Aptio V BIOS Page	Cooling

Memory Voltage

Type	Information
Aptio V BIOS Page	Cooling

Processor Input Voltage (CPU I/O Voltage)

Type	Information
Aptio V BIOS Page	Cooling

GPU Core Voltage

Type	Information
Aptio V BIOS Page	Cooling

Fan Control Mode

Type	One-of
Quiet	Quiet automatic fan control profile.
Balanced	Balanced automatic fan control profile.
Cool	Cool automatic fan control profile.
Custom	Custom automatic fan control profile.
Fixed	Fixed duty cycle.
Fanless	Skip fan related warning during POST. Hide all fan control related setup items.
Help	Select how the system fan is to be controlled. **Quiet, Balanced and Cool:** used to select a preconfigured automatic fan control profile. **Custom:** selects the user-customizable automatic fan control profile. **Fixed:** selects a static duty cycle for the fan.
Aptio V BIOS Page	Cooling

Fan Off Capability

Type	Checkbox
Help	Enables or Disables Fan Off Capability. If Enabled, fan control will turn off the fan if temperature falls below fan off temperature.
Aptio V BIOS Page	Cooling

Primary Temperature Sensor

Type	One-of
Processor	Processor Temperature.
PCH	PCH Temperature.
Memory	Memory Temperature (diode near memory connectors).
Motherboard	Motherboard temperature near mPCIe connectors.
Help	Select the Primary Temperature Input for automatic fan control
Requires	Hidden if **Fan Control Mode** is set to **Fixed** or **Fanless**.
Aptio V BIOS Page	Cooling

Minimum Temperature (°C)

Type	Numeric
Range	0-127
Help	Defines temperature that the fan control subsystem attempts to maintain for this device.
Requires	Hidden if **Fan Control Mode** is set to **Fixed** or **Fanless**.
Aptio V BIOS Page	Cooling

Minimum Duty Cycle (%)

Type	Numeric
Range	0-100
Help	Selects the minimum duty cycle that the fan will never go below if Fan Off Capability is disabled.
Requires	Hidden if **Fan Control Mode** is set to **Fixed** or **Fanless**.
Aptio V BIOS Page	Cooling

Duty Cycle Increment (%/°C)

Type	Numeric
Range	1-20
Help	Fan control will increase fan duty cycle by this % for each degree Primary Temperature Sensor is over Minimum Temperature.
Advanced Help	If Primary Temperature Sensor's temperature exceeds the Minimum Temperature, then the fan duty cycle is set to: Minimum Duty Cycle + (Duty Cycle Increment x (Current Temperature – Minimum Temperature))
Requires	Hidden if **Fan Control Mode** is set to **Fixed** or **Fanless.**
Aptio V BIOS Page	Cooling

Secondary Temperature Sensor

Type	One-of
Processor	Processor Temperature
PCH	PCH Temperature
Memory	Memory Temperature (diode near memory connectors).
Motherboard	Motherboard temperature near mPCIe connectors
None	No Secondary Temperature Sensor.
Help	Select the Primary Temperature Input for automatic fan control
Requires	Hidden if **Fan Control Mode** is set to **Fixed** or **Fanless**.
Aptio V BIOS Page	Cooling

Fan Off Temperature (°C)

Type	Numeric
Help	Defines temperature that the fan control subsystem will turn off the fan if temperature falls below it.
Requires	Hidden if **Fan Off Capability** is set to **Disabled.**
Aptio V BIOS Page	Cooling

Minimum Temperature (°C)

Type	Numeric
Range	0-127
Help	Defines temperature that the fan control subsystem attempts to maintain for this device.
Requires	Hidden if **Fan Control Mode** is set to **Fixed** or **Fanless**. Greyed out if Secondary Temperature Sensor is set to None.
Aptio V BIOS Page	Cooling

Minimum Duty Cycle (%)

Type	Numeric
Range	0-100
Help	Selects the minimum duty cycle that the fan will never go below.
Requires	Hidden if **Fan Control Mode** is set to **Fixed** or **Fanless**.
Aptio V BIOS Page	Cooling

Duty Cycle Increment (%/°C)

Type	Numeric
Range	1-7
Help	Fan control will increase fan duty cycle by this % for each degree Primary Temperature Sensor is over Minimum Temperature.
Advanced Help	If processor temperature exceeds Minimum Temperature, then the fan duty cycle is set to: Minimum Duty Cycle + (Duty Cycle Increment x (Current Temperature – Minimum Temperature))
Requires	Hidden if **Fan Control Mode** is set to **Fixed** or **Fanless. Greyed out if Secondary Temperature Sensor is set to None.**
Aptio V BIOS Page	Cooling

Performance

Host Clock Frequency

Type	Information
Aptio V BIOS Page	Performance

- Displays the default Host Clock Frequency.

Max Processor Turbo Frequency

Type	Information
Aptio V BIOS Page	Performance

- Displays the max processor turbo frequency.

Max Processor Non Turbo Frequency

Type	Information
Aptio V BIOS Page	Performance

- Displays the max processor non-turbo frequency.

Processor Ring Frequency

Type	Information
Aptio V BIOS Page	Performance

- This information line is constructed from the calculation of the Processor Ring Frequency (Host Clock Frequency x Processor Ring Max Multiplier).

Total Memory

Type	Information
Visual BIOS Page	Advanced > Performance > Memory
Aptio V BIOS Page	Performance

- Displays the total installed system memory size in gigabytes.

Memory Speed

Type	Information
Requires	Host Clock Frequency, Memory Reference Multiplier, and Memory Multiplier have not been overridden.
Visual BIOS Page	Advanced > Performance > Memory
Aptio V BIOS Page	Performance

- Displays the current memory speed. Defined as Current Host Clock Frequency x Memory Reference Multiplier x Memory Multiplier.

Memory Clock

Type	Information
Aptio V BIOS Page	Performance

SODIMM *n* (Memory Channel x)

Type	Information
Visual BIOS Page	Advanced > Performance > Memory
Aptio V BIOS Page	Performance

- Displays the installed system memory size in SODIMM *n* (Channel *x*) in gigabytes.
- One of these lines is displayed for each memory slot present on the motherboard.
- DIMM numbering is based on the suggested order of memory loading and should match the label on the board silkscreen.

Memory Voltage

Type	Information
Visual BIOS Page	Performance

- Display the current memory voltage.

Hyper-Threading

Type	One-of
Enabled	
Disabled	
Help	When disabled, only one thread per active core will be available.
Requires	Enabled and grayed-out if **Intel® Trusted Execution Technology** is set to **Enable**
Aptio V BIOS Page	Performance > Processor

Intel® Turbo Boost Technology

Type	Checkbox
Help	Enable to automatically allow processor cores to run faster than the base operating frequency when running below power, current, and temperature limits.
Advanced Help	Enable to automatically allow processor cores to run faster than the base operating frequency when running below power, current, and temperature limits. Disable to limit processor speed based on Maximum Non-Turbo Ratio. Enabling Intel® Turbo Boost Technology will also Enable Enhanced Intel SpeedStep® Technology.
Requires	Hidden if processor does not support Intel® Turbo Boost Technology
Aptio V BIOS Page	Performance > Processor

Active Processor Cores

Type	One-of
ALL	Enables all available Cores in the Processor.
1	Enables only 1 Core in the Processor.
2	Enables 2 Cores in a multi-core Processor.
3	Enables 3 Cores in a multi-core Processor.
4	Enables 4 Cores in a multi-core Processor.
5	Enables 5 Cores in a multi-core Processor.
6	Enables 6 Cores in a multi-core Processor.
7	Enables 7 Cores in a multi-core Processor.
Help	Number of cores to enable in each processor package
Requires	Set to **ALL** and grayed-out if **Intel® Trusted Execution Technology** is set to **Enable**
Aptio V BIOS Page	Performance > Processor

Real-Time Performance Tuning

Type	Checkbox
Help	When enabled, OS-present software can update most performance tuning features without requiring a reset to take effect. When disabled, only BIOS can update most performance tuning features. This is the more secure configuration.
Aptio V BIOS Page	Performance > Processor

Debug Interface

Type	One-of
Enabled	
Disabled	
Help	Enables or Disables IA32 silicon debug features.
Aptio V BIOS Page	Performance > Processor

Memory Profiles

Type	One-of
Automatic	BIOS configures all memory parameters automatically
Manual – User Defined	Allows user to have full control over the memory parameters
Profile *x*: XMP- *Frequency*	BIOS configures memory parameters according to selected XMP profile
Help	Use default memory settings from DIMM SPD, manually override memory settings, or select an XMP profile (if provided by DIMM SPD).
Aptio V BIOS Page	Performance > Memory

Memory Ratio

Type	One-of
Automatic	BIOS configures all memory parameters automatically
Manual – User Defined	Allows user to have full control over the memory parameters
Profile *x*: XMP- *Frequency*	BIOS configures memory parameters according to selected XMP profile
Help	Use default memory settings from DIMM SPD, manually override memory settings, or select an XMP profile (if provided by DIMM SPD).
Aptio V BIOS Page	Performance > Memory

tCL

Type	Numeric
Range	0-31
Help	CAS Latency – Number of cycles between request for data and data read.
Requires	Grayed-out if **Performance Memory Profiles** is not set to **Manual – User Defined**
Aptio V BIOS Page	Performance > Memory

tRCD

Type	Numeric
Range	0-63
Help	RAS-to-CAS Delay – Number of cycles between activating and read/write.
Range	0-63
Requires	Grayed-out if **Performance Memory Profiles** is not set to **Manual – User Defined**
Aptio V BIOS Page	Performance > Memory

tRP

Type	Numeric
Range	Apr-31
Help	RAS Precharge – Number of cycles between closing one row and opening next.
Requires	Grayed-out if **Performance Memory Profiles** is not set to **Manual – User Defined**
Aptio V BIOS Page	Performance > Memory

tRFC

Type	Numeric
Range	15-520 (DDR3) 1-1023 (DDR4)
Help	RAS Refresh – Number of cycles from refresh to activation of a row.
Requires	Grayed-out if **Performance Memory Profiles** is not set to **Manual – User Defined**
Aptio V BIOS Page	Performance > Memory

tRRD

Type	Numeric
Range	0-63
Help	RAS to RAS Delay – Number of cycles to activate next bank in same rank.
Requires	Grayed-out if **Performance Memory Profiles** is not set to **Manual – User Defined.** DDR3 SKUs only.
Aptio V BIOS Page	Performance > Memory

tWR

Type	Numeric
Range	0-28
Help	Write Recovery – Number of cycles between write and precharge.
Requires	Grayed-out if **Performance Memory Profiles** is not set to **Manual – User Defined**
Aptio V BIOS Page	Performance > Memory

tWTR

Type	Numeric
Range	2-20
Help	Write to Read – Number of cycles between write and next read commands. Related to tCL.
Requires	Grayed-out if **Performance Memory Profiles** is not set to **Manual – User Defined**
Aptio V BIOS Page	Performance > Memory

tRTP

Type	Numeric
Range	0-15
Help	Read to Precharge Delay – Number of cycles between read and precharge command to same rank.
Requires	Grayed-out if **Performance Memory Profiles** is not set to **Manual – User Defined.** DDR3 SKUs only.
Aptio V BIOS Page	Performance > Memory

tFAW

Type	Numeric
Range	0-63
Help	Four Activate Window – Period of time before the fifth successive Active command to a new bank can be issued.
Requires	Grayed-out if **Performance Memory Profiles** is not set to **Manual – User Defined**
Aptio V BIOS Page	Performance > Memory

tCWL

Type	Numeric
Range	0-20
Help	CAS Write Latency
Requires	Grayed-out if **Performance Memory Profiles** is not set to **Manual – User Defined**
Aptio V BIOS Page	Performance > Memory

tREFI

Type	Numeric
Range	0-65535
Help	Average Periodic Refresh Interval
Requires	Grayed-out if **Performance Memory Profiles** is not set to **Manual – User Defined**
Aptio V BIOS Page	Performance > Memory

Round Trip Latency Optimization

Type	Checkbox
Help	Enable: Minimize round trip latency to improve performance.
Aptio V BIOS Page	Performance > Memory

TCR

Type	One-of
Auto	Auto, follow MRC rule to configure the TCR.
Disabled	Default to disable temperature controlled refresh to improve memory compatibility.
Help	Configure temperature controlled refresh setting for memory.
Aptio V BIOS Page	Performance > Memory

Security

- Valid length for passwords is 2 to 20 characters.
- Valid characters for passwords are case-sensitive alpha-numeric: 0-9, A-Z, a-z.

Supervisor Password

Type	Information
Aptio V BIOS Page	Security

- Displays whether or not a supervisor password has been set.

User Password

Type	Information
Aptio V BIOS Page	Security

- Displays whether or not a user password has been set.

Set Supervisor Password

Type	Password
Text Entry Prompt	Please type in your password
Text Entry Prompt	Please type in your new password
Text Entry Prompt	Please confirm your new password
Help	Passwords must be between 2 and 20 characters and are case sensitive.
Advanced Help	Fast Boot will be disabled if a User Password is installed.
Aptio V BIOS Page	Security

- The first Text Entry Prompt is only used when attempting to change a password that is already installed.
- To delete an existing Supervisor password, enter a blank password after entering
  the existing Supervisor password.

Set User Password

Type	Password
Text Entry Prompt	Please type in your password
Text Entry Prompt	Please type in your new password
Text Entry Prompt	Please confirm your new password
Help	Passwords must be between 2 and 20 characters and are case sensitive. If a User Password is created, it must be entered each boot before OS access.
Advanced Help	Fast Boot will be disabled if a User Password is installed.
Aptio V BIOS Page	Security

- The first Text Entry Prompt is only used when attempting to change a password that is already installed.
- To delete an existing User password, enter a blank password after entering the existing User password.

Security Supported

Security Enabled

Security Locked

Security Frozen

HDD User Pwd Status

HDD Master Pwd Status

Type	Information
Aptio V BIOS Page	Security > HDD Password Configuration

- Displays the current status of these security features.

Set User Password

Type	Password
Text Entry Prompt	Please type in your password
Text Entry Prompt	Please type in your new password
Text Entry Prompt	Please confirm your new password
Confirmation Prompt	Hard Drive Passwords are not recoverable and cannot be removed without an original password. The drive will remain inaccessible unless the User or Master Hard Drive
Help	Passwords must be between 2 and 19 case-sensitive alpha-numeric characters. If a User Hard Drive Password is created, it must be entered each boot before OS access.
Advanced Help	The drive must be attached to Chipset SATA Port 0 and in either IDE or ACHI Mode.
Requires	Hidden if there is not a Hard Drive attached to Chipset SATA Port 0 or Chipset SATA Mode is not IDE or AHCI.
Aptio V BIOS Page	Security > HDD Password Configuration

- The first Text Entry Prompt is only used when attempting to change a password that is already installed.
- To delete an existing Hard Drive password, enter a blank password after entering
  the existing Hard Drive password.

Set Master Password

Type	Password
Text Entry Prompt	Please type in your password
Text Entry Prompt	Please type in your new password
Text Entry Prompt	Please confirm your new password
Confirmation Prompt	Hard Drive Passwords are not recoverable and cannot be removed without an original password. The drive will remain inaccessible unless the User or Master Hard Drive
Help	Passwords must be between 2 and 19 case-sensitive alpha-numeric characters. The Master Hard Drive password is only used to unlock a drive if the User Hard Drive password is forgotten.
Advanced Help	The Master Hard Drive password does not lock a drive by itself. The drive must be attached to Chipset SATA Port 0 and in either IDE or ACHI Mode.
Requires	Hidden if there is not a Hard Drive attached to Chipset SATA Port 0 or Chipset SATA Mode is not IDE or AHCI.
Aptio V BIOS Page	Security > HDD Password Configuration

- The first Text Entry Prompt is only used when attempting to change a password that is already installed.
- To delete an existing Master Hard Drive password, enter a blank password after entering the existing Master Hard Drive password.

Allow UEFI 3rd Party Driver Loaded

Type	Checkbox
Help	**Enable**: Allow UEFI 3rd party driver to be loaded during Boot Device Selection (BDS) stage. **Disable**: Prohibit UEFI 3rd party driver to be loaded during BDS stage.
Aptio V BIOS Page	Security > Security Features

Intel® Virtualization Technology

Type	Checkbox
Help	Enables or Disables features that provide hardware support for virtualization. Requires power cycling and specific hardware/software installed to take effect.
Requires	Processor supports VT. Enabled and grayed-out if Intel® Trusted Execution Technology is set to Enable.
Aptio V BIOS Page	Security > Security Features

Intel® Trusted Execution Technology

Type	Checkbox
Help	Intel® TXT provides hardware-based mechanisms that may help to protect against software-based attached and protect the confidentiality and integrity of data. If Intel TXT is enabled, then Intel® VT, Intel® VT-d, Intel® HT Technology, all processor cores, and the onboard TPM will also be enabled. Once Intel TXT is enabled, it must be disabled before disabling any of these required features.
Aptio V BIOS Page	Security > Security Features

Intel® VT for Directed I/O (VT-d)

Type	Checkbox
Help	Enables or Disables Intel® VT for Directed I/O (VT-d) which provides additional hardware support for managing I/O virtualization. If Enabled, BIOS will publish a DMA Remapping ACPI table.
Requires	Processor and chipset combination support VT-d. Enabled and grayed-out if Intel® Trusted Execution Technology is set to Enable
Aptio V BIOS Page	Security > Security Features

Fixed Disk Boot Sector

Type	One-of
Normal	BIOS will allow writes to the MBR on fixed disks.
Write Protect	BIOS will block writes to the MBR on fixed disks.
Help	Write Protect provides some Master Boot Record protection. Set to Normal while installing an operating system.
Advanced Help	Only applicable to Legacy BIOS interfaces.
Aptio V BIOS Page	Security > Security Features

Intel® Platform Trust Technology

Type	Checkbox
Help	Enables or Disables Intel® Platform Trust Technology.
Help for NUC5ixMY	Enables or Disables Intel® Platform Trust Technology. Enabling Intel Platform Trust Technology will clear and disable the discrete Trusted Platform Module.
Requires	Boards does not stuff discrete TPM 2.0. Cleared and grayed-out if Intel® Trusted Execution Technology is set to Enable
Aptio V BIOS Page	Security > Security Features

Intel® Software Guard Extensions (SGX)

Type	One-of
Disabled	Hides all SGX related items: **SGX Owner EPOCH, Reset SGX Owner EPOCHs to Factory Default, and SGX Reserved Memory Size.**
Enabled	Enable SGX.
Software Controlled	Grayed-out and set **SGX Reserved Memory Size** to **<Auto>.**
Help	Enables or Disables Intel® Software Guard Extensions (SGX). Software Controlled: SGX is disabled initially. When SGX application and ME FW driver are installed, SGX will be enabled via a UEFI OS-BIOS runtime interface.
Aptio V BIOS Page	Security > Security Features

SGX Owner EPOCHs

Type	One-of
Factory Default	Use factory default Owner EPOCHs. .
New Random Owner EPOCHs	Generate a new random Owner EPOCHs on next boot. Display Reset SGX Owner EPOCHs to Factory Default setup item from next boot. Display New Radom SGX Owner EPOCHs is activated if new random EPOCH is used. Hide SGX Owner EPOCHs item from next boot.
User Defined Owner EPOCHs	Extract the customer defined EPOCHs value from EPOCH variable on next boot. Display Please install 128 bit EPOCH to "EPOCH" UEFI variable. Display Reset SGX Owner EPOCHs to Factory Default item on next boot. Display User Defined SGX Owner EPOCHs is activated if user defined EPOCHs value is used. Hide SGX Owner EPOCHs item from next boot.
Help	Keep or change the SGX Owner EPOCHs value. SGX sealing key is derived from Owner EPOCHs. Warning: after change the Owner EPOCH value, previously Intel SGX sealed data cannot be accessed.
Advanced Help	Factory Default to use default Owner EPOCH value. New Random Owner EPOCHs to generate and use a new random Owner EPOCHs. User Defined Owner EPOCHs will extract customer defined EPOCHs value from EPOCH variable.
Requires	Hide if **Intel® Software Guard Extensions (SGX)** set to **<Disabled>.** Hide if new random owner EPOCHs or user defined owner EPOCHs is activated.
Aptio V BIOS Page	Security > Security Features

SCE Password Check (iSetupCfg Password Check)

Type	One-of
Enabled	
Bypass	
Temporarily Bypass	
Help	Configuring the BIOS Setup via Intel SCE tool requires BIOS Admin/Supervisor password for access. **Enable**: Actual BIOS Admin/Supervisor password is required. **Bypass or Temporarily Bypass**: a 'dummy' Admin password is accepted.
Aptio V BIOS Page	Security > Security Features

Thunderbolt Security Level

Type	One-of
Legacy Mode	No security - allows legacy Thunderbolt devices to auto connect
Unique ID	User Authorization - the connection manager requests connection approval from the host software; auto approval may be given based on the unique ID of the connecting
One time saved key	Secure Connect - the connection manager requests connection approval from the host software; auto approval is only given if the host challenge to the device acceptable.
DP++ only	Display Port Only - allows only DP sinks to be connected.
Help	Configures the Thunderbolt security level
Aptio V BIOS Page	Security > Security Features

USB Provisioning of AMT

Type	Checkbox
Help	Enables or disables Intel® AMT USB auto provisioning.
Aptio V BIOS Page	Security > Security Features

Power

Balanced Enabled

Type	Checkbox
Requires	Grayed-out if **Low Power Enabled** or **Max Performance Enabled** is set to **Enable**.
Aptio V BIOS Page	Power

Low Power Enabled

Type	Checkbox
Requires	Grayed-out if **Balanced Enabled** or **Max Performance Enabled** is set to **Enable**.
Aptio V BIOS Page	Power

Max Performance Enabled

Type	Checkbox
Requires	Grayed-out if **Balanced Enabled** or **Low Power Enabled** is set to **Enable**.
Aptio V BIOS Page	Power

Package Power Limit 1 (Sustained)

Type	Numeric
Help	Intel® Turbo Boost Technology will control processor power usage to the Sustained Mode Power Limit over a moving average time window: Sustained Mode Time (specified in seconds).
Requires	Hidden if processor does not support Intel® Turbo Boost Technology. Grayed-out if processor does not support overriding Sustained Mode Power Limit. Hidden if Intel® Turbo Boost Technology is set to Disable.
Aptio V BIOS Page	Power

Package Power Limit 2 (Burst Mode)

Type	Numeric
Help	Intel® Turbo Boost Technology will use this power limit for a very short duration. After that, the Sustained Mode Power Limit will be used.
Advanced Help	The recommended value is 1.3 x the Sustained Mode Power Limit.
Requires	Hidden if processor does not support Intel® Turbo Boost Technology. Grayed-out if processor does not support overriding Burst Mode Power Limit. Hidden if Intel® Turbo Boost Technology is set to Disable.
Aptio V BIOS Page	Power

Package Power Time Window (Tau)

Type	One-of
224	
192	
160	
128	
112	
96	
80	
64	
56	
48	
40	
32	
28	
24	
20	
16	
14	
12	
10	
8	
7	
6	
5	
4	
3.5	
3	
2.5	
2	
1.75	
1.5	
1.25	
1	
Help	Intel® Turbo Boost Technology will control processor power usage to the Sustained Mode Power Limit over a moving average time window: Sustained Mode Time (specified in seconds).

Requires	Hidden if processor does not support Intel® Turbo Boost Technology Grayed-out if processor does not support overriding Sustained Mode Time Hidden if **Intel® Turbo Boost Technology** is set to **Disable**
Aptio V BIOS Page	Power

Button LED Type

Type	One-of
Single Color LED	Single color LED is bound to POWER_LED pins on the front panel header
Dual Color LED	Dual color LED is bound to POWER_LED pins on the front panel header
Help	Configures Button LED type.
Aptio V BIOS Page	Power > Secondary Power Settings

Button LED

Type	One-of
Power State Indicator	Button LED will be used as power state indicator.
HDD Activity LED	Button LED will be used as HDD Activity LED.
SW Control	Button LED will be controlled by software through WMI interface. BIOS will turn off the LED during POST.
Help	Configures Button LED functionality.
Aptio V BIOS Page	Power > Secondary Power Settings

S0 Indicator Brightness (%)

Type	Numeric
Range	0-100
Help	Determines Button LED brightness during S0 system power state.
Aptio V BIOS Page	Power > Secondary Power Settings

S0 Indicator Blinking Behavior

Type	One-of
Solid	
Breathing	
Pulsing	
Strobing	
Help	Determines Button LED blinking behavior during S0 system power state.
Requires	**Button LED** is set to **Power State Indicator**. Grayed out if 0% is selected in S0 Indicator Brightness.
Aptio V BIOS Page	Power > Secondary Power Settings

S0 Indicator Blinking Frequency (Hz)

Type	Numeric
Range	0.1-1.0
Help	Determines Button LED blinking frequency during S0 system power state.
Requires	Button LED is set to Power State Indicator. Grayed out if 0% is selected in S0 Indicator Brightness. Grayed out if Solid is selected in S0 Indicator Blinking Behavior.
Aptio V BIOS Page	Power > Secondary Power Settings

S0 Indicator Color

Type	One-of
Blue	
Amber	
Help	Determines Button LED color during S0 system power state.
Requires	**Button LED** is set to **Power State Indicator**. Grayed out if 0% is selected in S0 Indicator Brightness.
Aptio V BIOS Page	Power > Secondary Power Settings

S3 Indicator Brightness (%)

Type	Numeric
Range	0-100
Help	Determines Button LED brightness during S3 system power state.
Requires	**Button LED** is set to **Power State Indicator**.
Aptio V BIOS Page	Power > Secondary Power Settings

S3 Indicator Blinking Behavior

Type	One-of
Solid	
Breathing	
Pulsing	
Strobing	
Help	Determines Button LED blinking behavior during S3 system power state.
Requires	**Button LED** is set to **Power State Indicator**. Grayed out if 0% is selected in S3 Indicator Brightness.
Aptio V BIOS Page	Power > Secondary Power Settings

S3 Indicator Blinking Frequency (Hz)

Type	Numeric
Range	0.1-1.0
Help	Determines Button LED blinking frequency during S3 system power state Determines.
Requires	**Button LED** is set to **Power State Indicator**. Grayed out if 0% is selected in S3 Indicator Brightness. Grayed out if Solid is selected in S3 Indicator Blinking Behavior.
Aptio V BIOS Page	Power > Secondary Power Settings

S3 Indicator Color

Type	One-of
Blue	
Amber	
Help	Determines Button LED color during S3 system power state.
Aptio V BIOS Page	Power > Secondary Power Settings

HDD LED

Type	One-of
Power State Indicator	HDD LED will be used as power state indicator.
HDD Activity LED	HDD LED will be used as HDD Activity LED.
SW Control	HDD LED will be controlled by software through WMI interface. BIOS will turn off the LED during POST.
Help	Configures HDD LED functionality.
Aptio V BIOS Page	Power > Secondary Power Settings

Brightness (%)

Type	Numeric
Range	0-100
Help	Determines HDD LED brightness for HDD activity.
Requires	**HDD LED** is set to HDD Activity LED.
Aptio V BIOS Page	Power > Secondary Power Settings

Color

Type	One-of
Red	
Orange	
Yellow	
Green	
Blue	
Indigo	
Violet	
White	
Help	Determines HDD LED color for HDD activity.
Requires	**HDD LED** is set to HDD Activity LED.
Aptio V BIOS Page	Power > Secondary Power Settings

Behavior

Type	One-of
Normally off, ON when	
Normally on, OFF when active	
Help	Determines HDD LED Behavior for HDD activity.
Requires	**HDD LED** is set to **HDD Activity LED**. Grayed out if 0% is selected in Brightness.
Aptio V BIOS Page	Power > Secondary Power Settings

Power Sense (Power Supply Regulatory)

Type	Checkbox
Help	When enabled, the power sense will monitor the input power from the power supply and will assert PROCHOT# to the CPU if the power is high enough that it risks causing the power adaptor to shut down.
Aptio V BIOS Page	Power > Secondary Power Settings

After Power Failure

Type	One-of
Stay Off	System will stay in power-off state after AC power restore.
Last State	System will return to last power state before AC power lost.
Power On	System will automatically power-on after AC power is restored.
Help	Configures system behavior after AC power is lost.
Advanced Help	If set to Stay Off, the System will stay in a power-off state after AC power is restored. If set to Last State, the System will return to the last power state before AC power was lost. If set to Power On, the System will automatically power-on after AC power is restored.
Aptio V BIOS Page	Power > Secondary Power Settings

Wake on LAN from S4/S5

Type	One-of
Stay Off	System will not wake from S4/S5 power state if Wake on LAN packet is received.
Power On – Normal Boot	System will wake from S4/S5 power state if Wake on LAN packet is received. BIOS will follow normal boot order.
Power On – PXE Boot	System will wake from S4/S5 power state if Wake on LAN packet is received. BIOS will attempt to boot to PXE. If PXE boot fails, BIOS will attempt to boot to other devices according to normal boot order.
Help	Configures behavior when Wake on LAN packet is received during S4/S5. Wake on LAN must also be enabled in OS LAN driver.
Advanced Help	**Stay Off -** System will not wake. **Power On - Normal Boot:** System will wake and use normal boot order. **Power On - PXE Boot**: System will wake and attempt boot to PXE.
Aptio V BIOS Page	**Power > Secondary Power Settings**

Wake System from S5

Type	Checkbox
Help	Enables or Disables Wake System from S5. If Enabled, system will wake at the selected date/time via RTC alarm.
Requires	Grayed-out and disabled if **Intel® Rapid Start Technology** is enabled.
Aptio V BIOS Page	Power > Secondary Power Settings

USB S4/S5 Power

Type	Checkbox
Help	Enables or Disables the USB Port power in S4/S5 state. This does not affect USB charging ports.
Requires	Board hardware support USB power in S4/S5 state. Hidden and Disabled if **Deep S4/S5** is set to **Enabled**
Aptio V BIOS Page	Power > Secondary Power Settings

Wake from Thunderbolt Device

Type	Checkbox
Help	Enable or Disable system wake from Thunderbolt devices.
Aptio V BIOS Page	Power > Secondary Power Settings

PCIe ASPM Support

Type	Checkbox
Help	Configures PCI Express (PCIe) Active State Power Management (ASPM). Tradeoffs involve power usage, performance, and device/driver compatibility.
Advanced Help	If set to Disable, ASPM support is disabled for all PCIe devices. If set to Enable, ASPM support is enabled for all PCIe devices.
Aptio V BIOS Page	Power > Secondary Power Settings

Native ACPI OS PCIe Support

Type	Checkbox
Help	Enable for power savings and performance improvements. Note: Not all PCIe devices are compatible with this feature.
Aptio V BIOS Page	Power > Secondary Power Settings

Boot

Secure Boot

UEFI Boot

Legacy Boot

Type	Information
Aptio V BIOS Page	Boot

- Displays if these boot modes are enabled or disabled.

System Mode

Type	Information
Aptio V BIOS Page	Boot > Secure Boot

- Displays the current secure boot mode.

Secure Boot

Type	One-of
Enabled	
Disabled	
Help	If Enabled, BIOS will only boot to trusted operating system images. Secure Boot is supported only via UEFI Boot.
Advanced Help	Enabling Secure Boot will allow boot only to trusted operating system installations. Enabling Secure Boot will also enable UEFI Boot and disable Legacy Boot.
Requires	Disabled if **UEFI Boot** is Disabled. Disabled if Legacy Boot is Enabled.
Aptio V BIOS Page	Boot > Secure Boot

Secure Boot Mode

Type	One-of
Standard	
Custom	
Help	In Custom mode, Secure Boot policy variables can be configured by a physically present user without full authentication.
Aptio V BIOS Page	Boot > Secure Boot

Restore Factory Keys

Type	Action
Help	Installs factory defaults.
Requires	Secure Boot Mode is set to **Custom**.
Aptio V BIOS Page	Boot > Secure Boot

Reset To Setup Mode

Type	Action
Help	Deletes all variables and resets the system to Setup Mode.
Requires	Secure Boot Mode is set to **Custom**.
Aptio V BIOS Page	Boot > Secure Boot

UEFI Boot

Type	Checkbox
Help	If Enabled, BIOS will attempt to boot via UEFI before using the legacy boot sequence. UEFI Boot must be enabled in order to boot to a drive larger than 2 TB (terabytes).
Advanced Help	If both UEFI Boot and Legacy Boot are enabled, BIOS will attempt to boot via UEFI before using the legacy boot sequence. Enabling Secure Boot will also enable UEFI Boot and disable Legacy Boot.
Requires	Enabled if **Legacy Boot** is Disabled. Enabled if Secure Boot is Enabled.
Aptio V BIOS Page	Boot > Boot Priority

Legacy Boot

Type	Checkbox
Help	If Enabled, BIOS can attempt to boot via the legacy (non-UEFI) boot sequence.
Advanced Help	If both UEFI Boot and Legacy Boot are enabled, BIOS will attempt to boot via UEFI before using the legacy boot sequence. Enabling Secure Boot will also enable UEFI Boot and disable Legacy Boot.
Requires	Enabled if UEFI Boot is Disabled. Disabled if Secure Boot is Enabled. Disabled and gray out if Optane mode in Chipset SATA mode and RST PCIe Storage Remapping are set for Optane support.
Aptio V BIOS Page	Boot > Boot Priority

Boot Option

Type	Ordered List
Help	Select the boot order for all detected bootable devices.
Requires	Hidden if **UEFI Boot** is Disabled
Aptio V BIOS Page	Boot > Boot Priority

- All detected UEFI boot options will be included in the list.
- The user can change the order of boot options within the list.
- The BIOS will attempt to boot to each option in the order of this list.

Fast Boot

Type	Checkbox
Help	If Enabled, Boot from Network/Optical/Removable Devices and RAID configuration will be disabled. In addition, Video and USB devices (keyboards and drives) will not be available until after OS boot.
Advanced Help	This feature cannot be enabled while a User Password or Hard Disk Drive Password is installed, and when Chipset SATA Mode set to Intel RST Premium With Intel Optane System Acceleration. This feature does not affect USB and video capabilities after OS boot. In order to disable Fast Boot without entering BIOS Setup: Power down the system, then hold down the power button until the system beeps.
Requires	Fast Boot will be Grayed-out and Disabled if Chipset SATA Mode set to Intel RST Premium With Intel Optane System Acceleration.
Aptio V BIOS Page	Boot > Boot Priority

Boot USB Devices First

Type	Checkbox
Help	If Enabled, the BIOS will attempt to boot to supported USB devices before any other devices. If Disabled, the normal boot order will be used.
Requires	Grayed-out and set to **Disable** if **Fast Boot** is set to **Enable**
Aptio V BIOS Page	Boot > Boot Priority

Boot Network Devices Last

Type	Checkbox
Help	If Enabled, Network devices will always be placed after non-Network devices in the boot priority. If Disabled, Network devices can be placed at any position in the boot priority but will default to last.
Aptio V BIOS Page	Boot > Boot Priority

Unlimited Boot to Network Attempts

Type	Checkbox
Help	If Enabled, network devices will receive unlimited boot attempts after the normal boot order has been exhausted. If Disabled, each boot device will only receive a single boot attempt.
Aptio V BIOS Page	Boot > Boot Priority

BIOS Setup Auto-Entry

Type	Checkbox
Help	If set to Enable, BIOS will halt and prompt to boot normally or enter Setup. This must be set to Disable to allow OS boot without user intervention.
Advanced Help	This feature is not available while Fast Boot USB Optimization is set to Enable.
Requires	Grayed-out and set to **Disable** if **Fast Boot** is set to **Enable**.
Aptio V BIOS Page	Boot > Boot Priority

Internal UEFI Shell

Type	Checkbox
Help	Enables or Disables the Internal UEFI Shell.
Requires	Grayed-out and Disabled if **Secure Boot** is **Enabled**
Aptio V BIOS Page	Boot > Boot Priority

USB

Type	Checkbox
Help	Enables or Disables the ability to boot from supported USB devices.
Requires	Grayed-out and Disabled if **Fast Boot** is **Enabled**
Aptio V BIOS Page	Boot > Boot Priority

Thunderbolt Boot

Type	Checkbox
Help	Enables or Disables the ability to boot from Thunderbolt devices.
Requires	Grayed-out and Disabled if **Fast Boot** is **Enabled**
Aptio V BIOS Page	Boot > Boot Priority

Ignore Thunderbolt Option ROM

Type	Checkbox
Help	Determines if BIOS runs the Option ROM on the device behind the Thunderbolt.
Requires	Grayed-out and Disabled if **Fast Boot** is **Enabled**
Aptio V BIOS Page	Boot > Boot Priority

Optical

Type	Checkbox
Help	Enables or Disables the ability to boot to Optical devices.
Requires	Grayed-out and Disabled if **Fast Boo**t is **Enabled**
Aptio V BIOS Page	Boot > Boot Priority

Network Boot

Type	One-of
Disable	Disable network boot.
Legacy PXE	Enable PXE boot in legacy boot.
Legacy iSCSI	Enable iSCSI boot in legacy boot.
UEFI PXE & iSCSI	Enable iSCSI and PXE boot in UEFI boot for platform supports both UEFI PXE and iSCSI boot.
UEFI PXE	Enable PXE boot in UEFI boot for platform does not support UEFI iSCSI boot.
Help	Enables or Disables the ability to boot from the network. Note: UEFI network boot option is automatically disabled if Legacy Boot setting is enabled.
Requires	Hide Legacy PXE option if Legacy Boot is set to Disabled. Hide Legacy iSCSI option if Legacy Boot is set to Disabled. Hide UEFI PXE & iSCSI option if Legacy Boot is set to Enabled or UEFI Boot is set to Disabled. Legacy PXE and Legacy iSCSI options in current value must switch to UEFI PXE & iSCSI option automatically if switching from Legacy Boot to UEFI Boot. UEFI PXE & iSCSI option in current value must switch to Legacy PXE option if Legacy Boot is enabled.
Aptio V BIOS Page	Boot > Boot Priority

Ethernet1 Boot / Ethernet2 Boot

Type	Checkbox
Help	Enables or Disables the ability to boot to from the Ethernet ports.
Aptio V BIOS Page	Boot > Boot Priority

BIOS Self Recovery

Type	Checkbox
Help	BIOS Self recovery happens once Failsafe Watchdog is triggered. BIO file is required.
Requires	Grayed-out and disabled if **Failsafe Watchdog** is disabled.
Aptio V BIOS Page	Boot > Boot Display Configuration

Suppress Alert Messages At Boot

Type	Checkbox
Help	If enabled, BIOS will display POST error messages for five seconds without requiring user action (keyboard input) before continuing to boot. Subsequent error messages of the same type will be suppressed from the display but recorded in the Event Log.
Aptio V BIOS Page	Boot > Boot Display Configuration

Expansion Card Text

Type	One-of
Enable	All PCI option ROM text is displayed during POST
Disable	Text from non-mass-storage PCI option ROMs is suppressed during POST
Hide All	Text from all PCI option ROMs is suppressed during POST
Help	Configures display of text from PCI option ROMs during POST.
Advanced Help	If set to Enable, BIOS will display text from any PCI option ROMs during POST. If set to Disable, BIOS will display text only from mass-storage PCI option ROMs during POST. If set to Hide All, BIOS will display no text from PCI option ROMs during POST.
Aptio V BIOS Page	Boot > Boot Display Configuration

POST Function Hotkeys Displayed

Type	Checkbox
Help	If set to Enable, BIOS will display Function key prompts during POST. Function key input will still be accepted even if prompts are disabled.
Aptio V BIOS Page	Boot > Boot Display Configuration

Display F2 to Enter Setup

Type	Checkbox
Help	If set to Enable, BIOS will display "F2 to Enter Setup" prompt. F2 key input will still be accepted if this prompt is disabled.
Requires	POST Function Hotkeys Displayed is set to Enable
Aptio V BIOS Page	Boot > Boot Display Configuration

Display F7 to Update BIOS

Type	Checkbox
Help	If set to Enable, BIOS will display "F7 to Update BIOS" prompt. F7 key input will still be accepted if this prompt is disabled.
Requires	POST Function Hotkeys Displayed is set to Enable
Aptio V BIOS Page	Boot > Boot Display Configuration

Display F8 to Activate Windows Recovery Mode

Type	Checkbox
Help	If set to Enable, BIOS will display "F8 to Activate Windows Recovery Mode" prompt. F8 key input will still be accepted if this prompt is disabled.
Requires	POST Function Hotkeys Displayed is set to Enable
Aptio V BIOS Page	Boot > Boot Display Configuration

Display F9 for Remote Assistance

Type	Checkbox
Help	If set to Enable, BIOS will display "F9 for Remote Assistance" prompt. F9 key input will still be accepted if this prompt is disabled.
Requires	**POST Function Hotkeys Displayed** is set to **Enable**
Aptio V BIOS Page	Boot > Boot Display Configuration

Display F10 to Enter Boot Menu

Type	Checkbox
Help	If set to Enable, BIOS will display "F10 to Enter Boot Menu" prompt. F10 key input will still be accepted if this prompt is disabled.
Requires	**POST Function Hotkeys Displayed** is set to **Enable**
Aptio V BIOS Page	Boot > Boot Display Configuration

Display F12 for Network Boot

Type	Checkbox
Help	If set to Enable, BIOS will display "F12 for Network Boot" prompt. F12 key input will still be accepted if this prompt is disabled.
Requires	**POST Function Hotkeys Displayed** is set to **Enable**
Aptio V BIOS Page	Boot > Boot Display Configuration

Display CTRL-P for Intel® MEBX

Type	Checkbox
Help	If set to Enable, BIOS will display "CTRL-P for Intel® MEBX" prompt. CTRL-P input will still be accepted if this prompt is disabled.
Requires	**POST Function Hotkeys Displayed** is set to **Enable**
Aptio V BIOS Page	Boot > Boot Display Configuration