How to control the PWM Fan on ODROID-H4
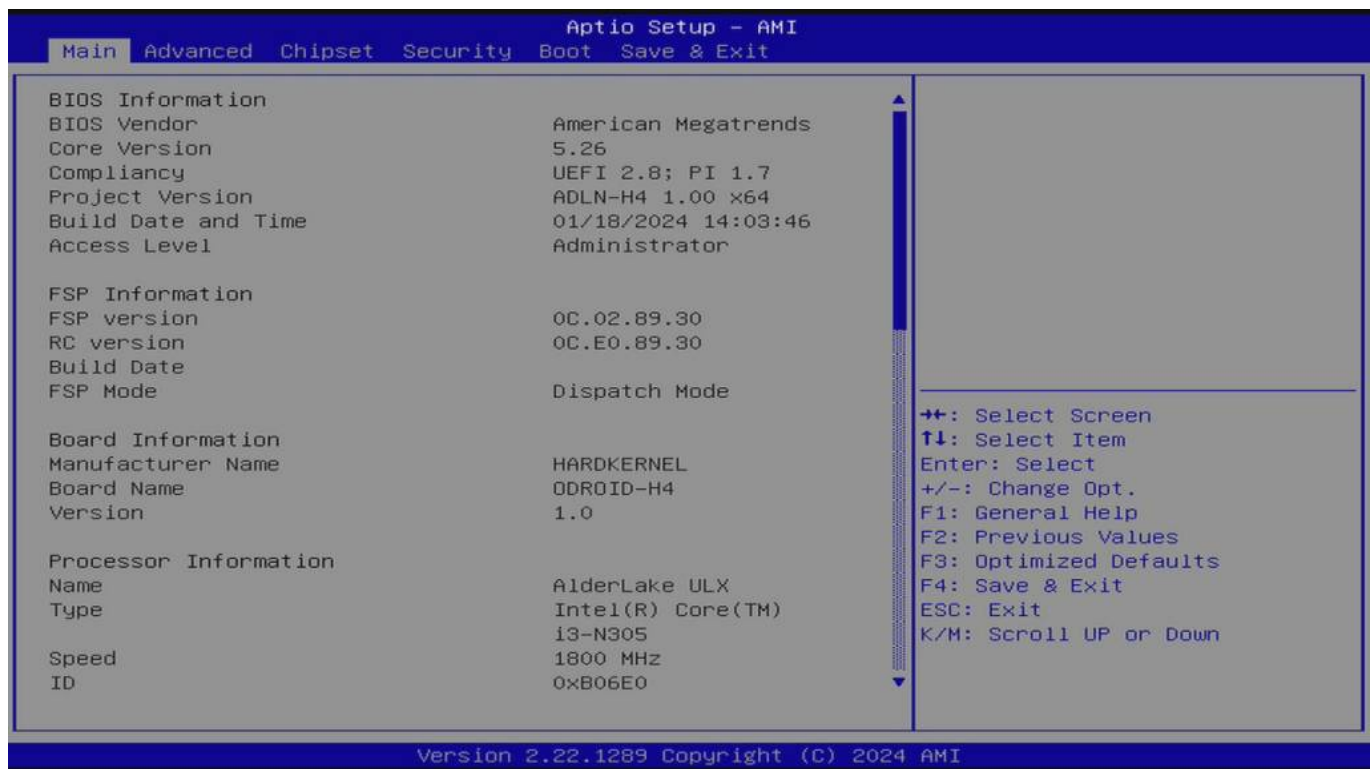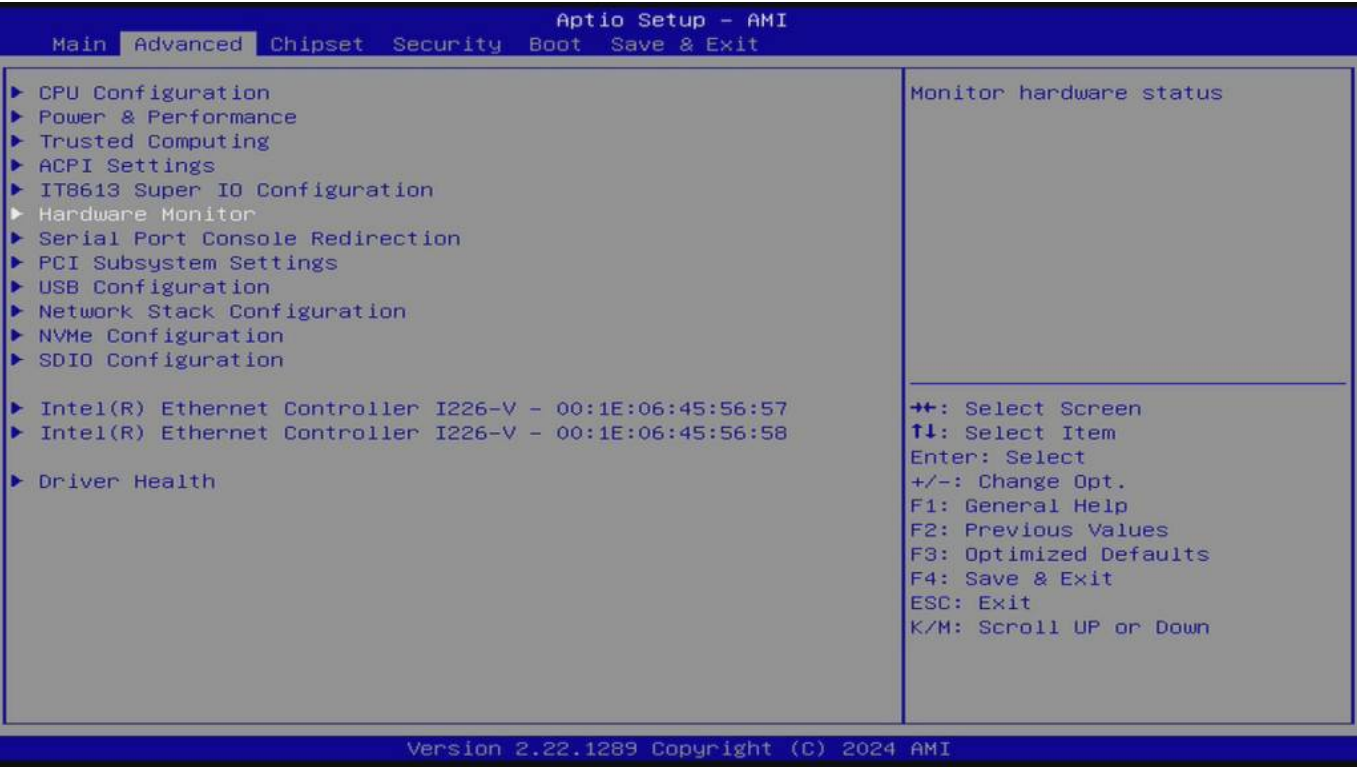
There's how-to wiki of the FAN control depending on CPU temperature. Go link to the wiki.
In this wiki, Will guide you to control FAN by the setting PWM value in BIOS setup.
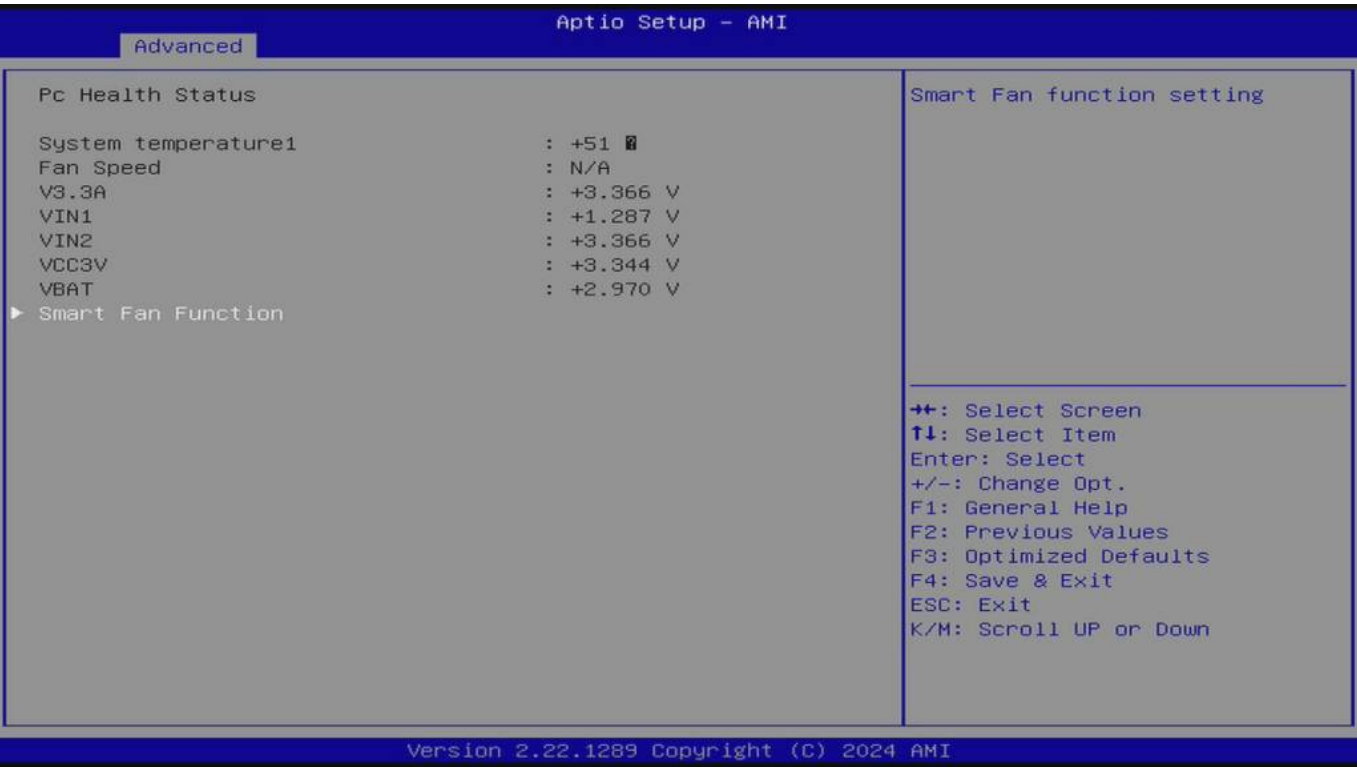
Enter the BIOS

1. Power off your **ODROID-H4**.
2. Press the Power button on your **ODROID-H4**, then Press "DEL" key while booting.
3. You can see the pic as follow.

Move to Advanced -> Hardware Monitor

```
                          Aptio Setup - AMI
   Main  Advanced  Chipset  Security  Boot  Save & Exit

  ▶ CPU Configuration                          Monitor hardware status
  ▶ Power & Performance
  ▶ Trusted Computing
  ▶ ACPI Settings
  ▶ IT8613 Super IO Configuration
  ▶ Hardware Monitor
  ▶ Serial Port Console Redirection
  ▶ PCI Subsystem Settings
  ▶ USB Configuration
  ▶ Network Stack Configuration
  ▶ NVMe Configuration
  ▶ SDIO Configuration

  ▶ Intel(R) Ethernet Controller I226-V - 00:1E:06:45:56:57   →←: Select Screen
  ▶ Intel(R) Ethernet Controller I226-V - 00:1E:06:45:56:58   ↑↓: Select Item
                                                              Enter: Select
  ▶ Driver Health                              +/-: Change Opt.
                                               F1: General Help
                                               F2: Previous Values
                                               F3: Optimized Defaults
                                               F4: Save & Exit
                                               ESC: Exit
                                               K/M: Scroll UP or Down


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Monitor Fan speed

```
                          Aptio Setup - AMI
     Advanced

  Pc Health Status                             Smart Fan function setting

  System temperature1          : +51 ▮
  Fan Speed                    : N/A
  V3.3A                        : +3.366 V
  VIN1                         : +1.287 V
  VIN2                         : +3.366 V
  VCC3V                        : +3.344 V
  VBAT                         : +2.970 V
  ▶ Smart Fan Function

                                               →←: Select Screen
                                               ↑↓: Select Item
                                               Enter: Select
                                               +/-: Change Opt.
                                               F1: General Help
                                               F2: Previous Values
                                               F3: Optimized Defaults
                                               F4: Save & Exit
                                               ESC: Exit
                                               K/M: Scroll UP or Down


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Move to Smart Fan Function -> Fan Setting

```
                           Aptio Setup - AMI
   Advanced

 ▶ Fan Setting                                    Smart Fan function setting




                                                  →←: Select Screen
                                                  ↑↓: Select Item
                                                  Enter: Select
                                                  +/-: Change Opt.
                                                  F1: General Help
                                                  F2: Previous Values
                                                  F3: Optimized Defaults
                                                  F4: Save & Exit
                                                  ESC: Exit
                                                  K/M: Scroll UP or Down


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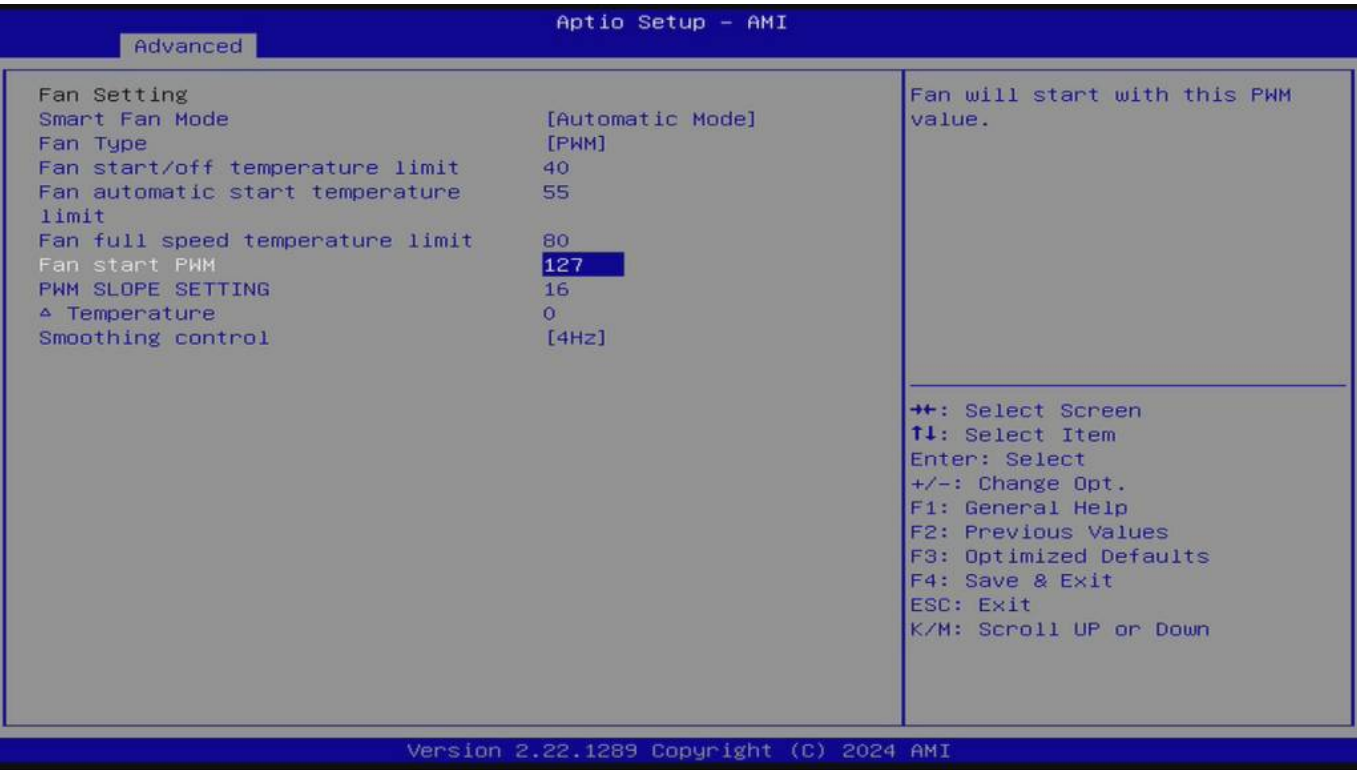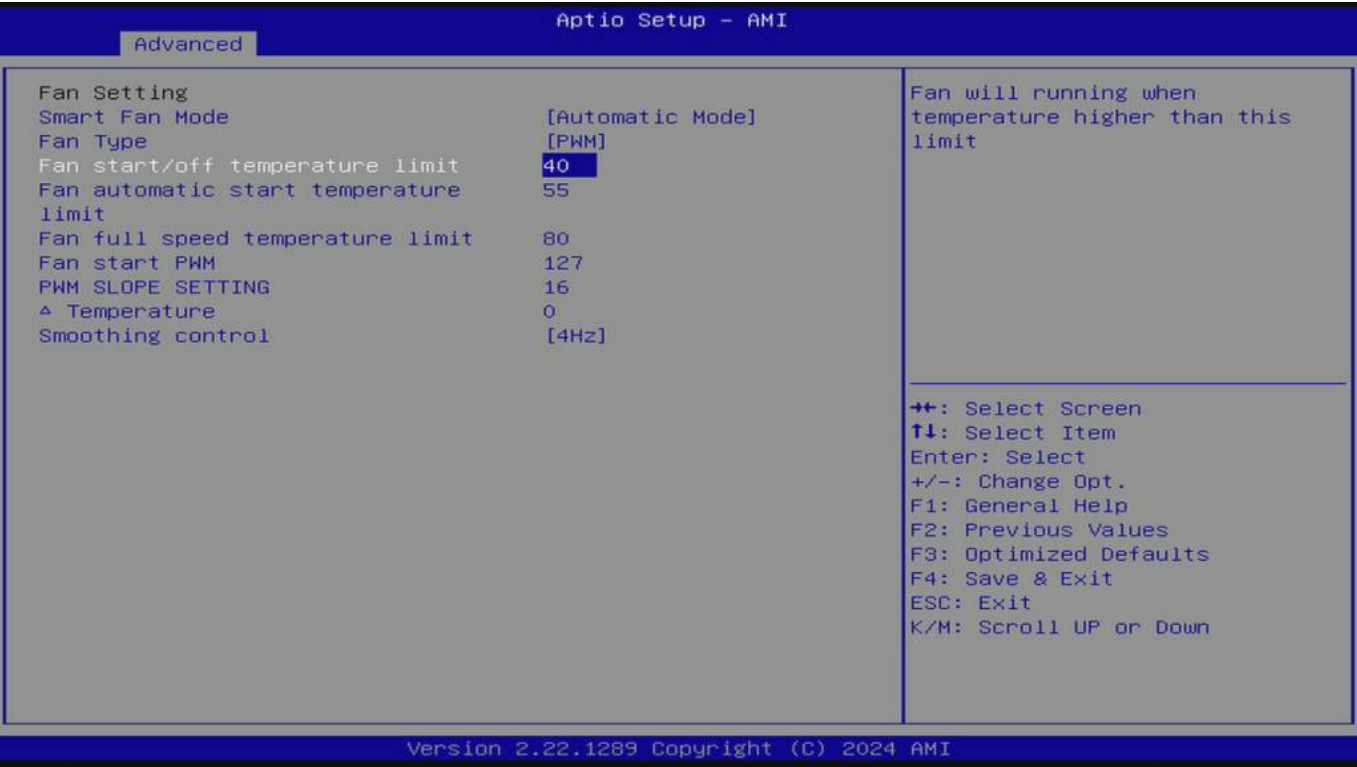## Modify the temperatures and PWM(RPM) to you want

You can adjust the CPU temperature level to turn on / off the system FAN automatically. And you can also adjust the Fan's speed with PWM.
The maximum PWM value that you can set is 255 in BIOS but the maximum RPM of the Hardkernel official PWM Fan is 2000.
The middle PWM value 127 is about 1000 RPM when converted to Fan's speed.
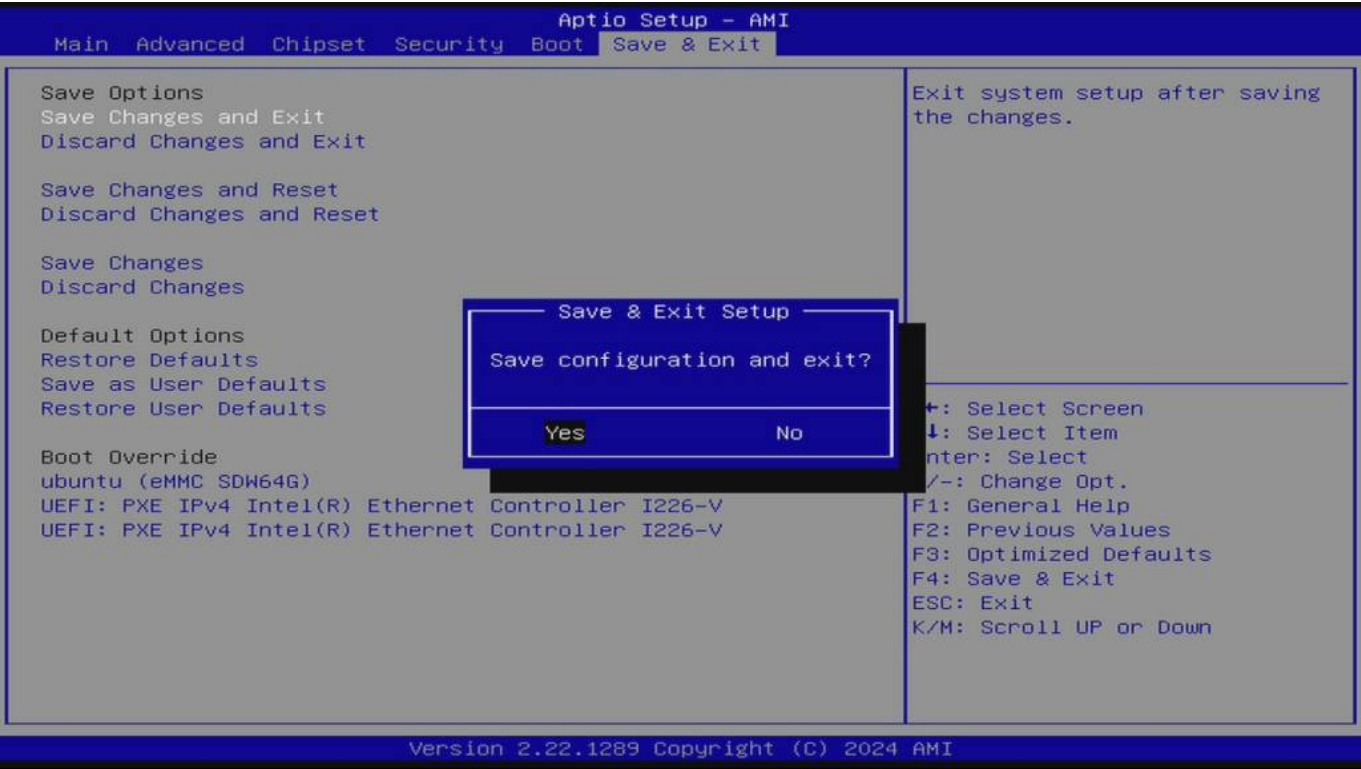
https://www.hardkernel.com/shop/92x92x25mm-dc-cooling-fan-w-pwm-speed-sensor-tacho/

Note that the temperature values are the CPU package temperature.

```
                           Aptio Setup - AMI
  Advanced

Fan Setting                                          Fan will running when
Smart Fan Mode              [Automatic Mode]         temperature higher than this
Fan Type                    [PWM]                     limit
Fan start/off temperature limit    40
Fan automatic start temperature    55
limit
Fan full speed temperature limit   80
Fan start PWM               127
PWM SLOPE SETTING           16
 ⌃ Temperature              0
Smoothing control           [4Hz]
                                                     ─────────────────────────────
                                                     →←: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Opt.
                                                     F1: General Help
                                                     F2: Previous Values
                                                     F3: Optimized Defaults
                                                     F4: Save & Exit
                                                     ESC: Exit
                                                     K/M: Scroll UP or Down


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```
                           Aptio Setup - AMI
  Advanced

Fan Setting                                          Fan will start with this PWM
Smart Fan Mode              [Automatic Mode]         value.
Fan Type                    [PWM]
Fan start/off temperature limit    40
Fan automatic start temperature    55
limit
Fan full speed temperature limit   80
Fan start PWM               127
PWM SLOPE SETTING           16
 ⌃ Temperature              0
Smoothing control           [4Hz]
                                                     ─────────────────────────────
                                                     →←: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Opt.
                                                     F1: General Help
                                                     F2: Previous Values
                                                     F3: Optimized Defaults
                                                     F4: Save & Exit
                                                     ESC: Exit
                                                     K/M: Scroll UP or Down


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Save & exit the BIOS

Move to the Save & Exit tab. And then, select the "Save Changes and Exit" menu.