

**ASRock®**

# ***H310CM-HDVP/DASH***

User Manual

Version 1.0

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- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

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“Perchlorate Material-special handling may apply, see [www.dtsc.ca.gov/hazardouswaste/perchlorate](http://www.dtsc.ca.gov/hazardouswaste/perchlorate)”

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# Chapter 1 Introduction

Thank you for purchasing ASRock H310CM-HDVP/DASH motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

In this documentation, Chapter 1 and 2 contains the introduction of the motherboard and step-by-step installation guides. Chapter 3 contains the operation guide of the software and utilities. Chapter 4 contains the configuration guide of the BIOS setup.



*Because the motherboard specifications and the BIOS software might be updated, the content of this documentation will be subject to change without notice. In case any modifications of this documentation occur, the updated version will be available on ASRock's website without further notice. If you require technical support related to this motherboard, please visit our website for specific information about the model you are using. You may find the latest VGA cards and CPU support list on ASRock's website as well. ASRock website <http://www.asrock.com>.*

## 1.1 Package Contents

- ASRock H310CM-HDVP/DASH Motherboard (Micro ATX Form Factor)
- ASRock H310CM-HDVP/DASH Quick Installation Guide
- ASRock H310CM-HDVP/DASH Support CD
- 1 x I/O Panel Shield
- 2 x Serial ATA (SATA) Data Cables (Optional)
- 1 x Screw for M.2 Socket (Optional)

## 1.2 Specifications

- Platform**
- Micro ATX Form Factor
  - Solid Capacitor design

- CPU**
- Supports 9<sup>th</sup> and 8<sup>th</sup> Gen Intel® Core™ Processors (Socket 1151)
  - 4 Power Phase design
  - Supports Intel® Turbo Boost 2.0 Technology

- Chipset**
- Intel® H310

- Memory**
- Dual Channel DDR4 Memory Technology
  - 2 x DDR4 DIMM Slots
  - Supports DDR4 2666/2400/2133 non-ECC, un-buffered memory
  - Max. capacity of system memory: 32GB
  - Supports Intel® Extreme Memory Profile (XMP) 2.0
  - 15μ Gold Contact in DIMM Slots

- Expansion Slot**
- 1 x PCI Express 3.0 x16 Slot (PCIe1: x16 mode)\*
  - \* Supports NVMe SSD as boot disks
  - 2 x PCI Express 2.0 x1 Slots
  - 1 x PCI Slot

- Graphics**
- Intel® UHD Graphics Built-in Visuals and the VGA outputs can be supported only with processors which are GPU integrated.
  - Supports Intel® UHD Graphics Built-in Visuals : Intel® Quick Sync Video with AVC, MVC (S3D) and MPEG-2 Full HW Encode1, Intel® InTru™ 3D, Intel® Clear Video HD Technology, Intel® Insider™, Intel® UHD Graphics
  - DirectX 12
  - HWAEncode/Decode: AVC/H.264, HEVC/H.265 8-bit, HEVC/H.265 10-bit, VP8, VP9 8-bit, VP9 10-bit (Decode only), MPEG2, MJPEG, VC-1 (Decode only)

- Three graphics output options: D-Sub, DVI-D and HDMI
- \* Supports up to 2 displays simultaneously
- Supports HDMI with max. resolution up to 4K x 2K (4096x2160) @ 30Hz
- Supports DVI-D with max. resolution up to 1920x1200 @ 60Hz
- Supports D-Sub with max. resolution up to 1920x1200 @ 60Hz
- Supports Auto Lip Sync, Deep Color (12bpc), xvYCC and HBR (High Bit Rate Audio) with HDMI Port (Compliant HDMI monitor is required)
- Supports HDCP with DVI-D and HDMI Ports
- Supports 4K Ultra HD (UHD) playback with HDMI Port

### Audio

- 7.1 CH HD Audio (Realtek ALC887 Audio Codec)
- \* To configure 7.1 CH HD Audio, it is required to use an HD front panel audio module and enable the multi-channel audio feature through the audio driver.
- Supports Surge Protection
- ELNA Audio Caps

### LAN

- PCIE x1 Gigabit LAN 10/100/1000 Mb/s
- Realtek RTL8111EPV
- Supports Wake-On-LAN
- Supports Lightning/ESD Protection
- Supports LAN Cable Detection
- Supports Energy Efficient Ethernet 802.3az
- Supports PXE
- Supports DASH

### Rear Panel I/O

- 1 x PS/2 Mouse Port
- 1 x PS/2 Keyboard Port
- 1 x Serial Port: COM1
- 1 x D-Sub Port
- 1 x DVI-D Port
- 1 x HDMI Port
- 4 x USB 2.0 Ports (Supports ESD Protection)
- 2 x USB 3.1 Gen1 Ports (Supports ESD Protection)



- 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED)
- HD Audio Jacks: Line in / Front Speaker / Microphone

### Storage

- 4 x SATA3 6.0 Gb/s Connectors, support NCQ, AHCI and Hot Plug
- \* If M2\_1 is occupied by a SATA-type M.2 device, SATA3\_3 will be disabled.
- 1 x M.2 Socket (M2\_1), supports M Key type 2230/2242/2260/2280 M.2 SATA3 6.0 Gb/s module and M.2 PCI Express module up to Gen2 x2 (10 Gb/s)\*\*
- \*\* Supports NVMe SSD as boot disks
- \*\* Supports ASRock U.2 Kit

### Connector

- 1 x Print Port Header
- 1 x COM Port Header
- 1 x TPM Header
- 1 x Chassis Intrusion and Speaker Header
- 1 x CPU Fan Connector (4-pin)
- \* The CPU Fan Connector supports the CPU fan of maximum 1A (12W) fan power.
- 1 x Chassis Fan Connector (4-pin)
- 1 x Chassis/Water Pump Fan Connector (4-pin) (Smart Fan Speed Control)
- \* The Chassis/Water Pump Fan supports the water cooler fan of maximum 2A (24W) fan power.
- \* CHA\_FAN1/WP can auto detect if 3-pin or 4-pin fan is in use.
- 1 x 24 pin ATX Power Connector
- 1 x 8 pin 12V Power Connector
- 1 x Front Panel Audio Connector
- 1 x USB 2.0 Header (Supports 2 USB 2.0 ports) (Supports ESD Protection)
- 1 x USB 3.1 Gen1 Header (Supports 2 USB 3.1 Gen1 ports) (Supports ESD Protection)

### BIOS Feature

- AMI UEFI Legal BIOS with multilingual GUI support
- Supports Secure Backup UEFI Technology
- ACPI 6.0 Compliant wake up events
- SMBIOS 2.7 Support

- CPU, GT\_CPU, DRAM, PCH 1.05V Voltage Multi-adjustment

#### Hardware Monitor

- Temperature Sensing: CPU, Chassis, Chassis/Water Pump Fans
- Fan Tachometer: CPU, Chassis, Chassis/Water Pump Fans
- Quiet Fan (Auto adjust chassis fan speed by CPU temperature): CPU, Chassis, Chassis/Water Pump Fans
- Fan Multi-Speed Control: CPU, Chassis, Chassis/Water Pump Fans
- CASE OPEN detection
- Voltage monitoring: +12V, +5V, +3.3V, CPU Vcore, DRAM, PCH 1.05V

#### OS

- Microsoft® Windows® 10 64-bit

#### Certifications

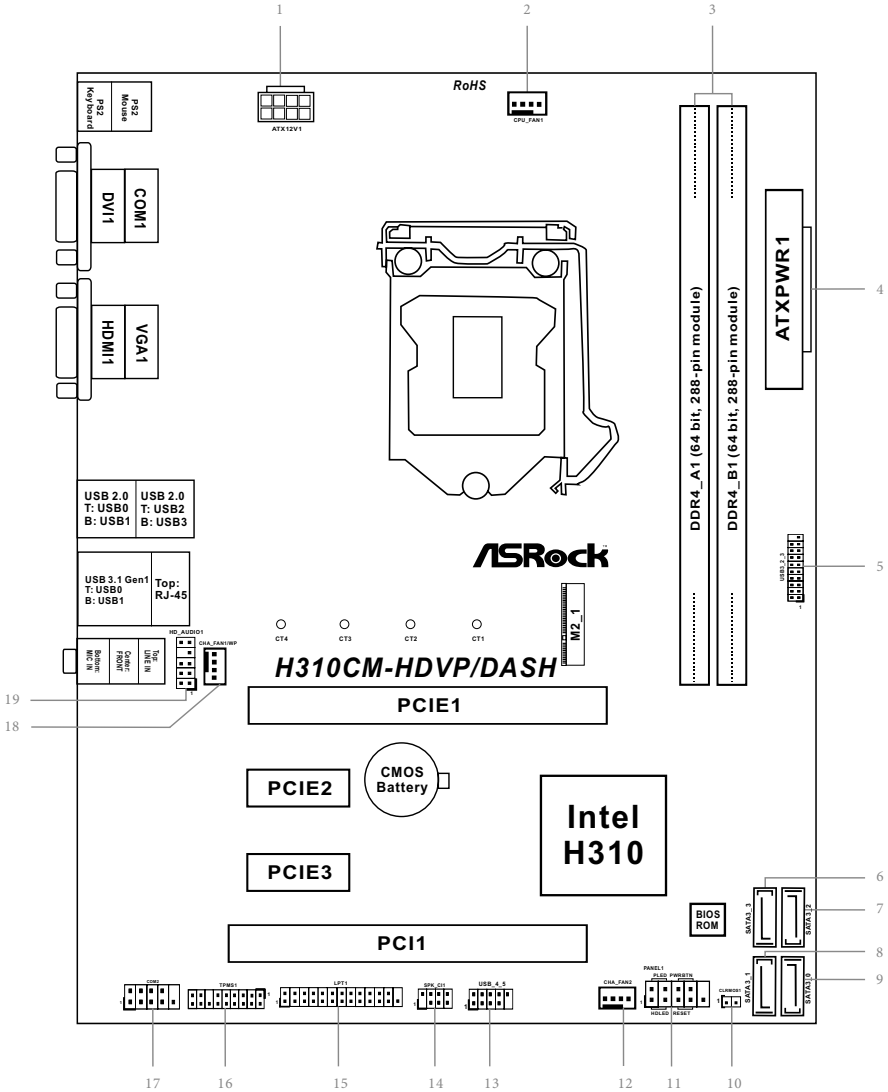
- FCC, CE
- ErP/EuP ready (ErP/EuP ready power supply is required)

\* For detailed product information, please visit our website: <http://www.asrock.com>



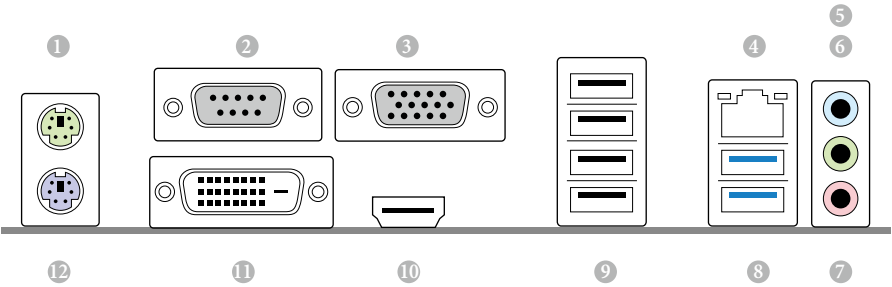
Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using third-party overclocking tools. Overclocking may affect your system's stability, or even cause damage to the components and devices of your system. It should be done at your own risk and expense. We are not responsible for possible damage caused by overclocking.

### 1.3 Motherboard Layout



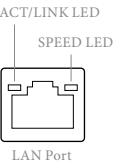
No.	Description
1	ATX 12V Power Connector (ATX12V1)
2	CPU Fan Connector (CPU_FAN1)
3	2 x 288-pin DDR4 DIMM Slots (DDR4_A1, DDR4_B1)
4	ATX Power Connector (ATXPWR1)
5	USB 2.0 Header (USB_8_9) (shared with USB3_2_3)
6	SATA3 Connector (SATA3_3)
7	SATA3 Connector (SATA3_2)
8	SATA3 Connector (SATA3_1)
9	SATA3 Connector (SATA3_0)
10	Clear CMOS Jumper (CLRMOS1)
11	System Panel Header (PANEL1)
12	Chassis Fan Connector (CHA_FAN2)
13	USB 2.0 Header (USB_4_5)
14	Chassis Intrusion and Speaker Header (SPK_C11)
15	Print Port Header (LPT1)
16	TPM Header (TPMS1)
17	COM Port Header (COM2)
18	Chassis/Water Pump Fan Connector (CHA_FAN1/WP)
19	Front Panel Audio Header (HD_AUDIO1)

1.4 I/O Panel



No.	Description	No.	Description
1	PS/2 Mouse Port	7	Microphone (Pink)**
2	COM Port	8	USB 3.1 Gen1 Ports (USB01)
3	D-Sub Port	9	USB 2.0 Ports (USB0123)
4	LAN RJ-45 Port*	10	HDMI Port
5	Line In (Light Blue)**	11	DVI-D Port
6	Front Speaker (Lime)**	12	PS/2 Keyboard Port

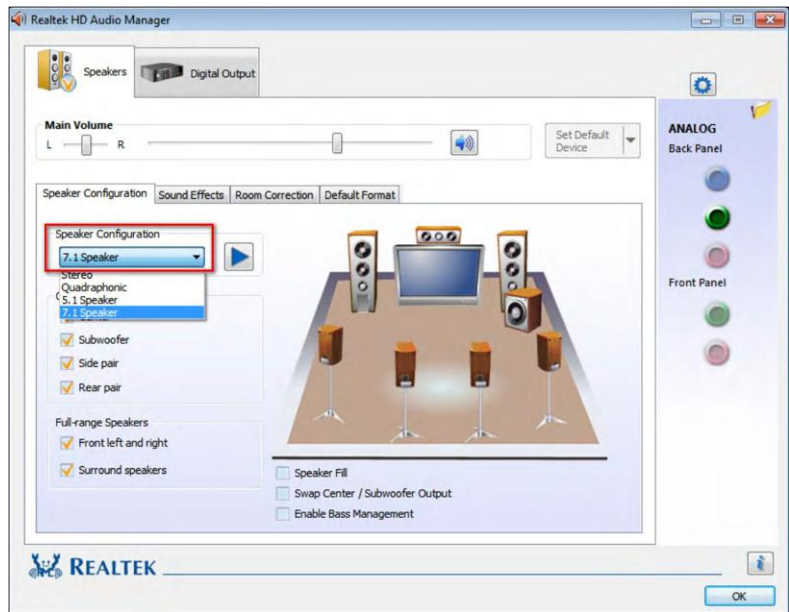
\* There are two LEDs on each LAN port. Please refer to the table below for the LAN port LED indications.



Activity / Link LED		Speed LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Orange	100Mbps connection
On	Link	Green	1Gbps connection

*\*\* To configure 7.1 CH HD Audio, it is required to use an HD front panel audio module and enable the multi-channel audio feature through the audio driver.*

*Please set Speaker Configuration to “7.1 Speaker” in the Realtek HD Audio Manager.*



Function of the Audio Ports in 7.1-channel Configuration:

Port	Function
Light Blue (Rear panel)	Rear Speaker Out
Lime (Rear panel)	Front Speaker Out
Pink (Rear panel)	Central /Subwoofer Speaker Out
Lime (Front panel)	Side Speaker Out

## Chapter 2 Installation

This is a Micro ATX form factor motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

### Pre-installation Precautions

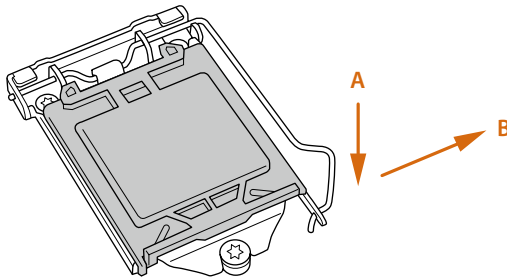
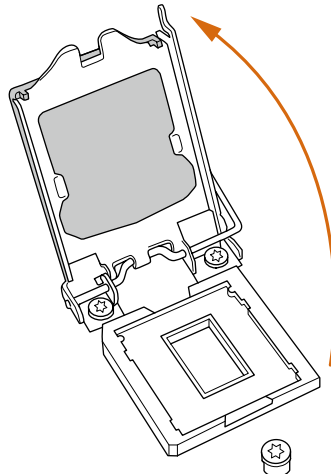
Take note of the following precautions before you install motherboard components or change any motherboard settings.

- Make sure to unplug the power cord before installing or removing the motherboard components. Failure to do so may cause physical injuries and damages to motherboard components.
- In order to avoid damage from static electricity to the motherboard's components, NEVER place your motherboard directly on a carpet. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle the components.
- Hold components by the edges and do not touch the ICs.
- Whenever you uninstall any components, place them on a grounded anti-static pad or in the bag that comes with the components.
- When placing screws to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.

## 2.1 Installing the CPU

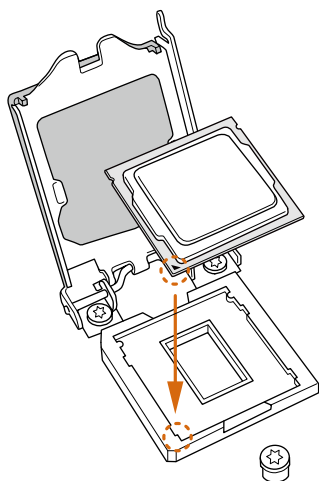


1. Before you insert the 1151-Pin CPU into the socket, please check if the **PnP cap** is on the socket, if the CPU surface is unclean, or if there are any **bent pins** in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.
2. Unplug all power cables before installing the CPU.

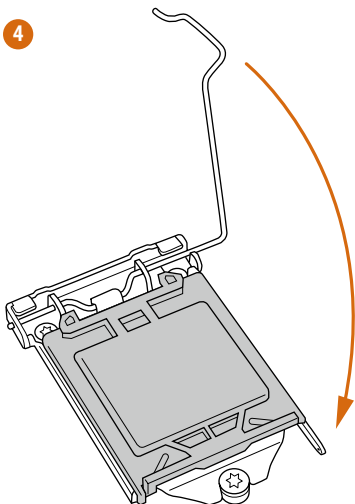
**1****2**



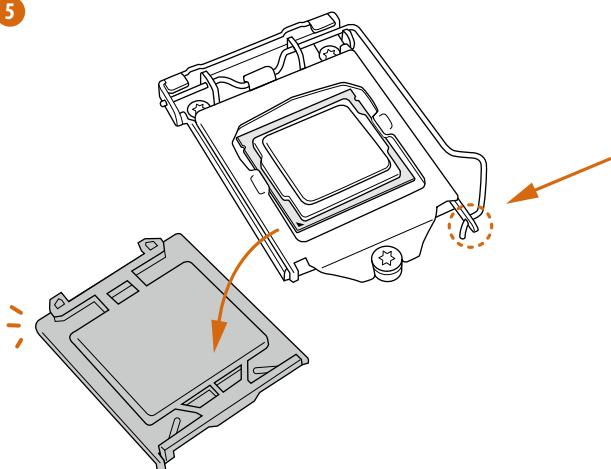
3



4



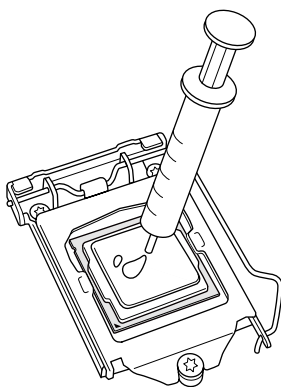
5



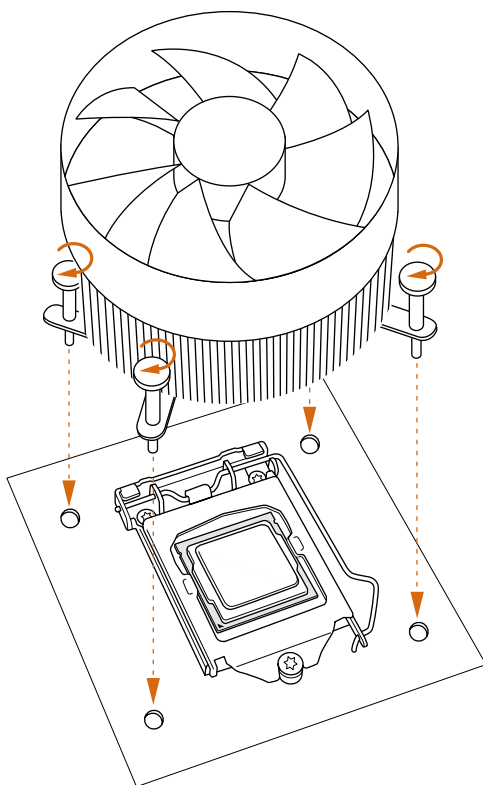


*Please save and replace the cover if the processor is removed. The cover must be placed if you wish to return the motherboard for after service.*

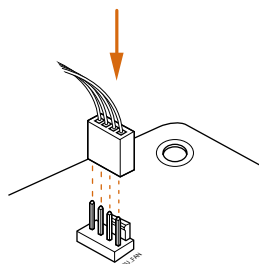
## 2.2 Installing the CPU Fan and Heatsink



1



2



## 2.3 Installing Memory Modules (DIMM)

This motherboard provides two 288-pin DDR4 (Double Data Rate 4) DIMM slots, and supports Dual Channel Memory Technology.

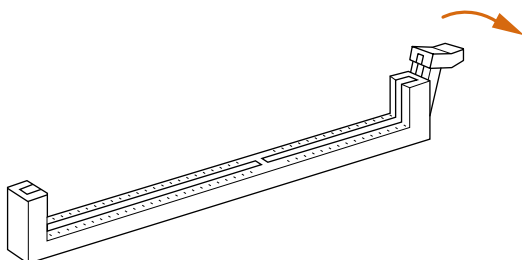


1. For dual channel configuration, you always need to install identical (the same brand, speed, size and chip-type) DDR4 DIMM pairs.
2. It is unable to activate Dual Channel Memory Technology with only one memory module installed.
3. It is not allowed to install a DDR, DDR2 or DDR3 memory module into a DDR4 slot; otherwise, this motherboard and DIMM may be damaged.

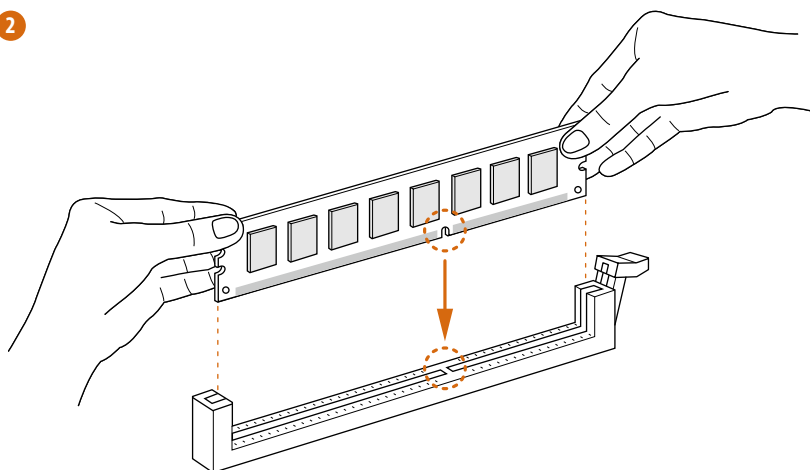


*The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.*

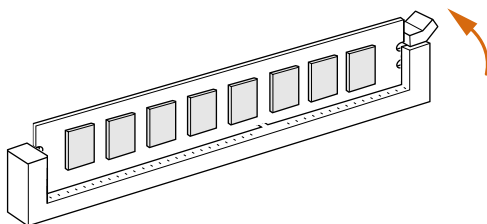
1



2



3



## 2.4 Expansion Slots (PCI and PCI Express Slots)

There are 1 PCI slot and 3 PCI Express slots on the motherboard.



*Before installing an expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.*

### **PCI slot:**

The PCI slot is used to install expansion cards that have 32-bit PCI interface.

### **PCIe slots:**

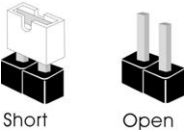
PCIE1 (PCIe 3.0 x16 slot) is used for PCI Express x16 lane width graphics cards.

PCIE2 (PCIe 2.0 x1 slot) is used for PCI Express x1 lane width cards.


PCIE3 (PCIe 2.0 x1 slot) is used for PCI Express x1 lane width cards.

## 2.5 Jumpers Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on the pins, the jumper is “Short”. If no jumper cap is placed on the pins, the jumper is “Open”.



---

Clear CMOS Jumper (CLRCMOS1) (see p.6, No. 10)	 2-pin Jumper	Short: Clear CMOS Open: Default
--	---	------------------------------------

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CLRCMOS1 allows you to clear the data in CMOS. The data in CMOS includes system setup information such as system password, date, time, and system setup parameters. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord, then use a jumper cap to short the pins on CLRCMOS1 for 3 seconds. Please remember to remove the jumper cap after clearing the CMOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action.



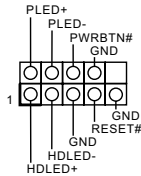
*If you clear the CMOS, the case open may be detected. Please adjust the BIOS option "Clear Status" to clear the record of previous chassis intrusion status.*

## 2.6 Onboard Headers and Connectors



Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage to the motherboard.

System Panel Header  
(9-pin PANEL1)  
(see p.6, No. 11)



Connect the power button, reset button and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.



**PWRBTN (Power Button):**

Connect to the power button on the chassis front panel. You may configure the way to turn off your system using the power button.

**RESET (Reset Button):**

Connect to the reset button on the chassis front panel. Press the reset button to restart the computer if the computer freezes and fails to perform a normal restart.

**PLED (System Power LED):**

Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S1/S3 sleep state. The LED is off when the system is in S4 sleep state or powered off (S5).

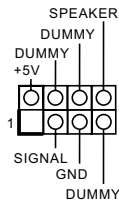
**HDLED (Hard Drive Activity LED):**

Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power button, reset button, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

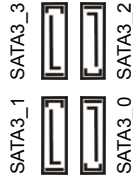


Chassis Intrusion and  
Speaker Header  
(7-pin SPK\_CII)  
(see p.6, No. 14)



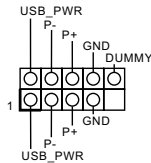
Please connect the  
chassis power LED and  
the chassis speaker to this  
header.

Serial ATA3 Connectors  
(SATA3\_0:  
see p.6, No. 9)  
(SATA3\_1:  
see p.6, No. 8)  
(SATA3\_2:  
see p.6, No. 7)  
(SATA3\_3:  
see p.6, No. 6)



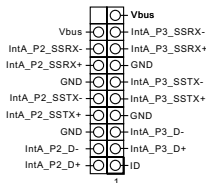
These four SATA3  
connectors support SATA  
data cables for internal  
storage devices with up to  
6.0 Gb/s data transfer rate.  
\* If M2\_1 is occupied by  
a SATA-type M.2 device,  
SATA3\_3 will be disabled.

USB 2.0 Header  
(9-pin USB\_4\_5)  
(see p.6, No. 13)



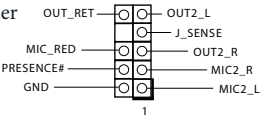
There is one USB  
2.0 header on this  
motherboard. This USB  
2.0 header can support  
two ports.

USB 3.1 Gen1 Header  
(19-pin USB\_2\_3)  
(see p.6, No. 5)



There is one header on  
this motherboard. This  
USB 3.1 Gen1 header can  
support two ports.

Front Panel Audio Header  
(9-pin HD\_AUDIO1)  
(see p.6, No. 19)

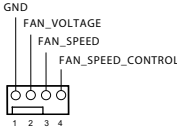


This header is for connecting audio devices to the front audio panel.



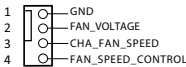
1. High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instructions in our manual and chassis manual to install your system.
2. If you use an AC'97 audio panel, please install it to the front panel audio header by the steps below:
  - A. Connect Mic\_IN (MIC) to MIC2\_L.
  - B. Connect Audio\_R (RIN) to OUT2\_R and Audio\_L (LIN) to OUT2\_L.
  - C. Connect Ground (GND) to Ground (GND).
  - D. MIC\_RET and OUT\_RET are for the HD audio panel only. You don't need to connect them for the AC'97 audio panel.
  - E. To activate the front mic, go to the "FrontMic" Tab in the Realtek Control panel and adjust "Recording Volume".

Chassis Fan Connector  
(4-pin CHA\_FAN2)  
(see p.6, No. 12)



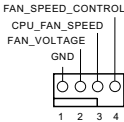
Please connect fan cables to the fan connectors and match the black wire to the ground pin.

Chassis/Water Pump Fan Connector  
(4-pin CHA\_FAN1/WP)  
(see p.6, No. 18)



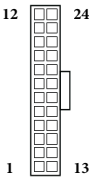
This motherboard provides a 4-Pin water cooling chassis fan connectors. If you plan to connect a 3-Pin chassis water cooler fan, please connect it to Pin 1-3.

CPU Fan Connector  
(4-pin CPU\_FAN1)  
(see p.6, No. 2)



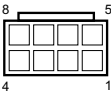
This motherboard provides a 4-Pin CPU fan (Quiet Fan) connector. If you plan to connect a 3-Pin CPU fan, please connect it to Pin 1-3.

ATX Power Connector  
(24-pin ATXPWR1)  
(see p.6, No. 4)



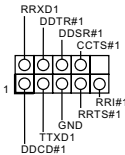
This motherboard provides a 24-pin ATX power connector. To use a 20-pin ATX power supply, please plug it along Pin 1 and Pin 13.

ATX 12V Power Connector  
(8-pin ATX12V1)  
(see p.6, No. 1)



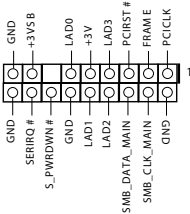
This motherboard provides an 8-pin ATX 12V power connector. To use a 4-pin ATX power supply, please plug it along Pin 1 and Pin 5.

Serial Port Header  
(9-pin COM2)  
(see p.6, No. 17)



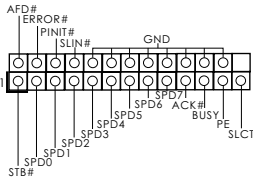
This COM2 header supports a serial port module.

TPM Header  
(17-pin TPMS1)  
(see p.6, No. 16)



This connector supports Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

Print Port Header  
(25-pin LPT1)  
(see p.6, No. 15)



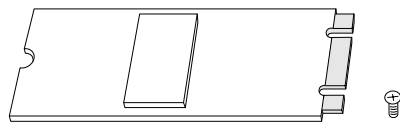
This is an interface for print port cable that allows convenient connection of printer devices.

## 2.7 M.2\_SSD (NGFF) Module Installation Guide

The M.2, also known as the Next Generation Form Factor (NGFF), is a small size and versatile card edge connector that aims to replace mPCIe and mSATA. The M.2 Socket (M2\_1) supports SATA3 6.0 Gb/s module and M.2 PCI Express module up to Gen2 x2 (10 Gb/s).

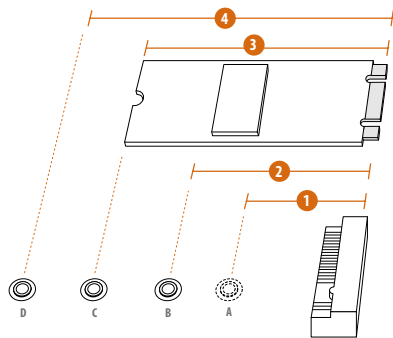
\* If M2\_1 is occupied by a SATA-type M.2 device, SATA3\_3 will be disabled.

### Installing the M.2\_SSD (NGFF) Module



#### Step 1

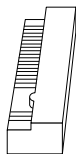
Prepare a M.2\_SSD (NGFF) module and the screw.



#### Step 2

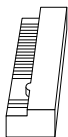
Depending on the PCB type and length of your M.2\_SSD (NGFF) module, find the corresponding nut location to be used.

No.	1	2	3	4
Nut Location	A	B	C	D
PCB Length	3cm	4.2cm	6cm	8cm
Module Type	Type2230	Type 2242	Type2260	Type 2280



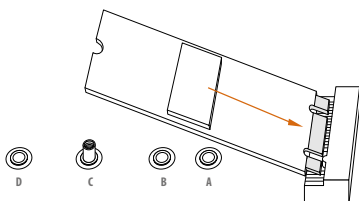
### Step 3

Move the standoff based on the module type and length. The standoff is placed at the nut location D by default. Skip Step 3 and 4 and go straight to Step 5 if you are going to use the default nut. Otherwise, release the standoff by hand.



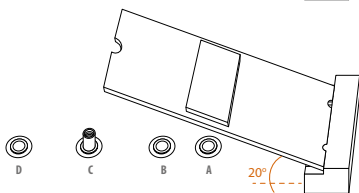
### Step 4

Peel off the yellow protective film on the nut to be used. Hand tighten the standoff into the desired nut location on the motherboard.



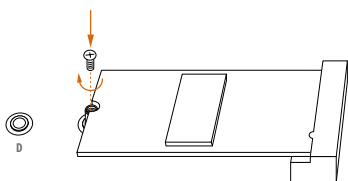
### Step 5

Gently insert the M.2 (NGFF) SSD module into the M.2 slot. Please be aware that the M.2 (NGFF) SSD module only fits in one orientation.



### Step 6

Tighten the screw with a screwdriver to secure the module into place. Please do not overtighten the screw as this might damage the module.



## M.2\_SSD (NGFF) Module Support List

Vendor	Interface	P/N
ADATA	SATA3	AXNS381E-128GM-B
ADATA	SATA3	AXNS381E-256GM-B
ADATA	SATA3	ASU800NS38-256GT-C
ADATA	SATA3	ASU800NS38-512GT-C
ADATA	PCIe3 x4	ASX7000NP-128GT-C
ADATA	PCIe3 x4	ASX8000NP-256GM-C
ADATA	PCIe3 x4	ASX7000NP-256GT-C
ADATA	PCIe3 x4	ASX8000NP-512GM-C
ADATA	PCIe3 x4	ASX7000NP-512GT-C
Apacer	PCIe3 x4	AP240GZ280
Corsair	PCIe3 x4	CSSD-F240GBMP500
Crucial	SATA3	CT120M500SSD4
Crucial	SATA3	CT240M500SSD4
Intel	SATA3	Intel SSDSCKGW080A401/80G
Intel	PCIe3 x4	SSDPEKKF256G7
Intel	PCIe3 x4	SSDPEKKF512G7
Kingston	SATA3	SM2280S3
Kingston	PCIe3 x4	SKC1000/480G
Kingston	PCIe2 x4	SH2280S3/480G
OCZ	PCIe3 x4	RVD400 -M2280-512G (NVME)
PATRIOT	PCIe3 x4	PH240GPM280SSDR NVME
Plextor	PCIe3 x4	PX-128M8PeG
Plextor	PCIe3 x4	PX-1TM8PeG
Plextor	PCIe3 x4	PX-256M8PeG
Plextor	PCIe3 x4	PX-512M8PeG
Plextor	PCIe	PX-G256M6e
Plextor	PCIe	PX-G512M6e
Samsung	PCIe3 x4	SM961 MZVPW128HEGM (NVM)
Samsung	PCIe3 x4	PM961 MZVLW128HEGR (NVME)
Samsung	PCIe3 x4	960 EVO (MZ-V6E250) (NVME)
Samsung	PCIe3 x4	960 EVO (MZ-V6E250BW) (NVME)
Samsung	PCIe3 x4	SM951 (NVME)
Samsung	PCIe3 x4	SM951 (MZHPV256HDGL)
Samsung	PCIe3 x4	SM951 (MZHPV512HDGL)
Samsung	PCIe3 x4	SM951 (NVME)
Samsung	PCIe x4	XP941-512G (MZHPU512HCGL)
SanDisk	PCIe	SD6PP4M-128G
SanDisk	PCIe	SD6PP4M-256G
Team	SATA3	TM4PS4128GMC105
Team	SATA3	TM4PS4256GMC105
Team	SATA3	TM8PS4128GMC105
Team	SATA3	TM8PS4256GMC105
TEAM	PCIe3 x4	TM8FP2240G0C101

TEAM	PCIe3 x4	TM8FP2480GC110
Transcend	SATA3	TS256GMTS400
Transcend	SATA3	TS512GMTS600
Transcend	SATA3	TS512GMTS800
V-Color	SATA3	VLM100-120G-2280B-RD
V-Color	SATA3	VLM100-240G-2280RGB
V-Color	SATA3	VSM100-240G-2280
V-Color	SATA3	VLM100-240G-2280B-RD
WD	SATA3	WDS100T1B0B-00AS40
WD	SATA3	WDS240G1G0B-00RC30
WD	PCIe3 x4	WDS256G1X0C-00ENX0 (NVME)
WD	PCIe3 x4	WDS512G1X0C-00ENX0 (NVME)

For the latest updates of M.2\_SSD (NFGG) module support list, please visit our website for details: <http://www.asrock.com>

## Chapter 3 Software and Utilities Operation

### 3.1 Installing Drivers

The Support CD that comes with the motherboard contains necessary drivers and useful utilities that enhance the motherboard's features.

#### Running The Support CD

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if "AUTORUN" is enabled in your computer. If the Main Menu does not appear automatically, locate and double click on the file "ASRSETUP.EXE" in the Support CD to display the menu.

#### Drivers Menu

The drivers compatible to your system will be auto-detected and listed on the support CD driver page. Please click **Install All** or follow the order from top to bottom to install those required drivers. Therefore, the drivers you install can work properly.

#### Utilities Menu


The Utilities Menu shows the application software that the motherboard supports. Click on a specific item then follow the installation wizard to install it.



## 3.2 A-Tuning

A-Tuning is ASRock's multi purpose software suite with a new interface, more new features and improved utilities.

### 3.2.1 Installing A-Tuning

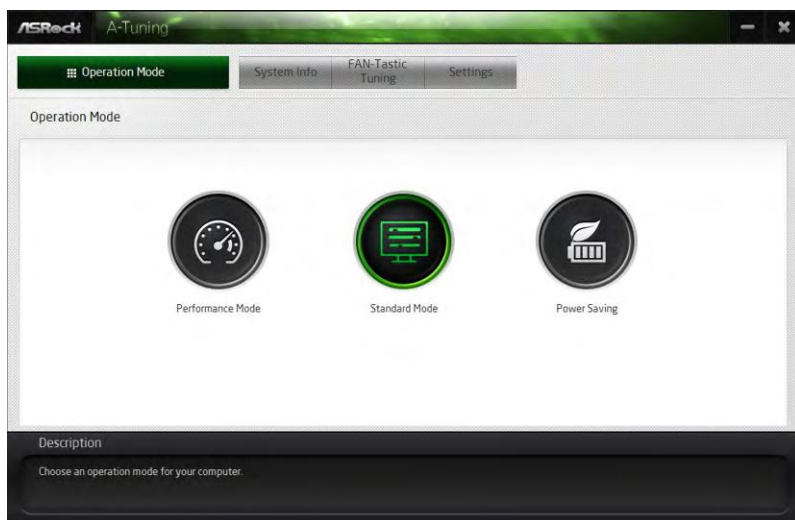
A-Tuning can be downloaded from ASRock Live Update & APP Shop. After the installation, you will find the icon "A-Tuning" on your desktop. Double-click the "A-Tuning"  icon, A-Tuning main menu will pop up.

### 3.2.2 Using A-Tuning

There are four sections in A-Tuning main menu: Operation Mode, System Info, FAN-Tastic Tuning and Settings.

#### Operation Mode

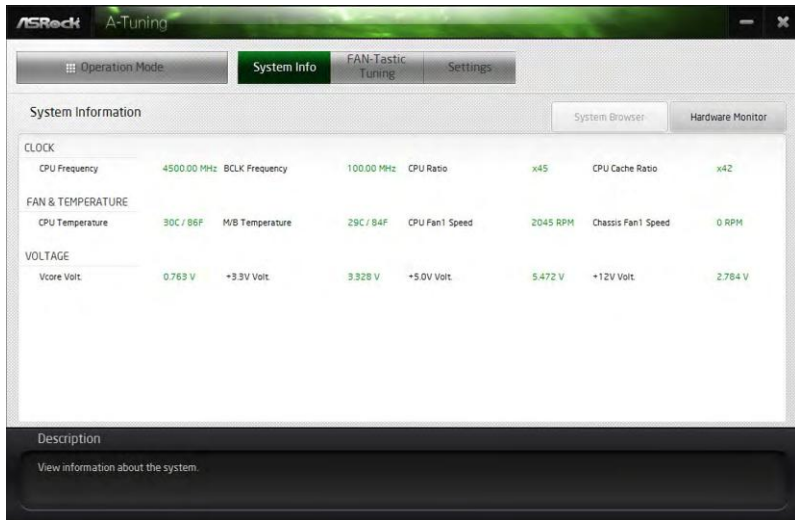
Choose an operation mode for your computer.



## System Info

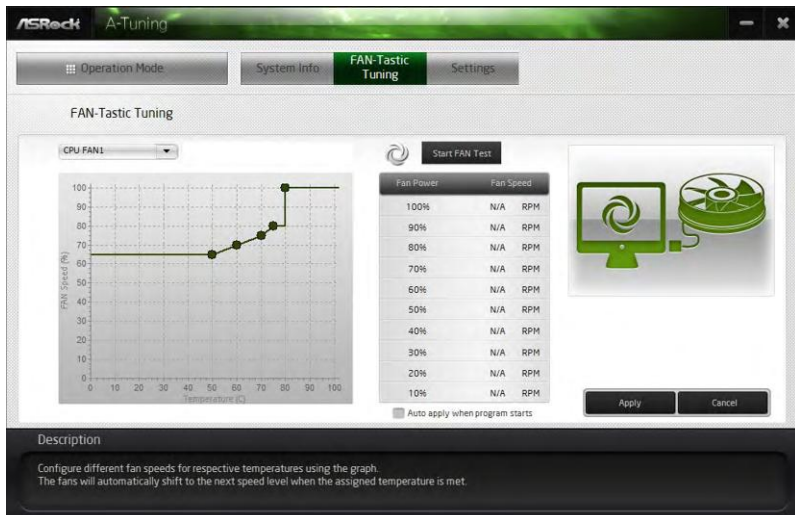
View information about the system.

\*The System Browser tab may not appear for certain models.



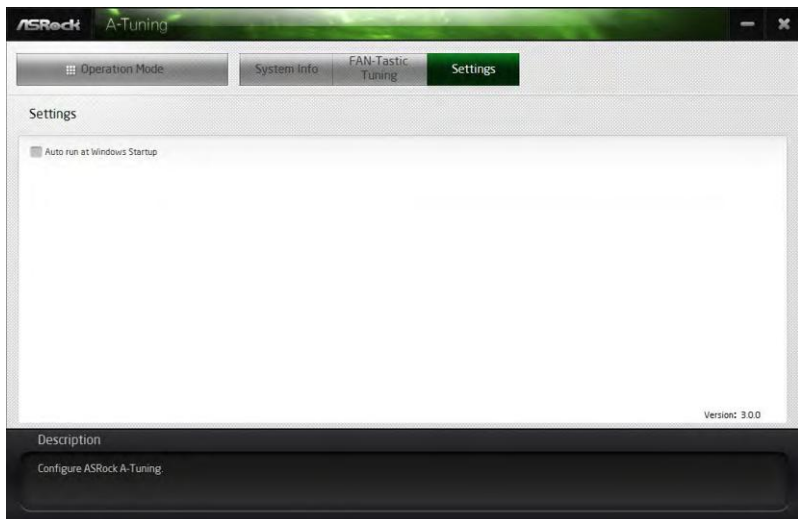
## FAN-Tastic Tuning

Configure up to five different fan speeds using the graph. The fans will automatically shift to the next speed level when the assigned temperature is met.




## Settings

Configure ASRock A-Tuning. Click to select "Auto run at Windows Startup" if you want A-Tuning to be launched when you start up the Windows operating system.



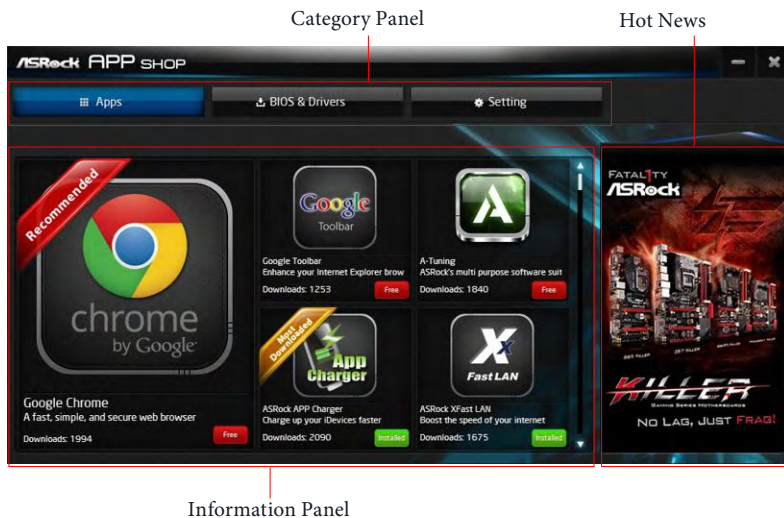
### 3.3 ASRock Live Update & APP Shop

The ASRock Live Update & APP Shop is an online store for purchasing and downloading software applications for your ASRock computer. You can quickly and easily install various apps and support utilities. With ASRock Live Update & APP Shop, you can optimize your system and keep your motherboard up to date simply with a few clicks.

Double-click  on your desktop to access ASRock Live Update & APP Shop utility.

*\*You need to be connected to the Internet to download apps from the ASRock Live Update & APP Shop.*

#### 3.3.1 UI Overview



**Category Panel:** The category panel contains several category tabs or buttons that when selected the information panel below displays the relative information.

**Information Panel:** The information panel in the center displays data about the currently selected category and allows users to perform job-related tasks.

**Hot News:** The hot news section displays the various latest news. Click on the image to visit the website of the selected news and know more.

## 3.3.2 Apps

When the "Apps" tab is selected, you will see all the available apps on screen for you to download.

### Installing an App

#### Step 1

Find the app you want to install.



The most recommended app appears on the left side of the screen. The other various apps are shown on the right. Please scroll up and down to see more apps listed.

You can check the price of the app and whether you have already installed it or not.



- The red icon displays the price or "Free" if the app is free of charge.




- The green "Installed" icon means the app is installed on your computer.

#### Step 2

Click on the app icon to see more details about the selected app.

**Step 3**

If you want to install the app, click on the red icon  to start downloading.

**Step 4**


When installation completes, you can find the green "Installed" icon appears on the upper right corner.



To uninstall it, simply click on the trash can icon .

\*The trash icon may not appear for certain apps.

## Upgrading an App

You can only upgrade the apps you have already installed. When there is an available new version for your app, you will find the mark of "New Version"  appears below the installed app icon.



### Step 1

Click on the app icon to see more details.

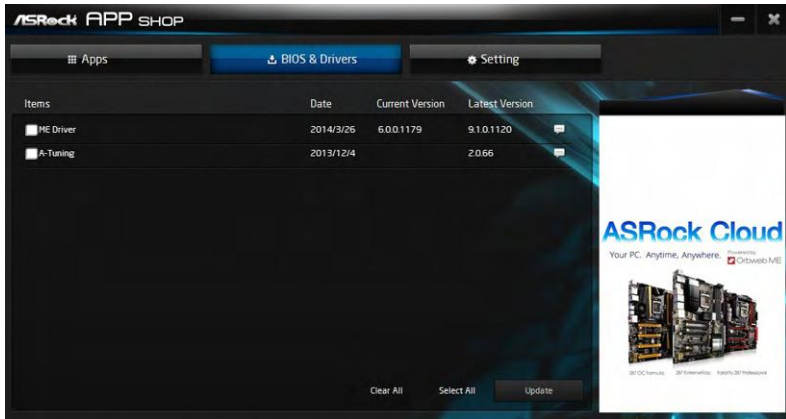
### Step 2

Click on the yellow icon  to start upgrading.


### 3.3.3 BIOS & Drivers

#### Installing BIOS or Drivers

When the "BIOS & Drivers" tab is selected, you will see a list of recommended or critical updates for the BIOS or drivers. Please update them all soon.



#### Step 1

Please check the item information before update. Click on  to see more details.

#### Step 2

Click to select one or more items you want to update.

#### Step 3

Click Update to start the update process.



### 3.3.4 Setting

In the "Setting" page, you can change the language, select the server location, and determine if you want to automatically run the ASRock Live Update & APP Shop on Windows startup.



# Chapter 4 UEFI SETUP UTILITY

## 4.1 Introduction

This section explains how to use the UEFI SETUP UTILITY to configure your system. You may run the UEFI SETUP UTILITY by pressing <F2> or <Del> right after you power on the computer, otherwise, the Power-On-Self-Test (POST) will continue with its test routines. If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.



*Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.*

### 4.1.1 UEFI Menu Bar

The top of the screen has a menu bar with the following selections:

<b>Main</b>	For setting system time/date information
<b>Advanced</b>	For advanced system configurations
<b>Tool</b>	Useful tools
<b>H/W Monitor</b>	Displays current hardware status
<b>Security</b>	For security settings
<b>Boot</b>	For configuring boot settings and boot priority
<b>Exit</b>	Exit the current screen or the UEFI Setup Utility

## 4.1.2 Navigation Keys

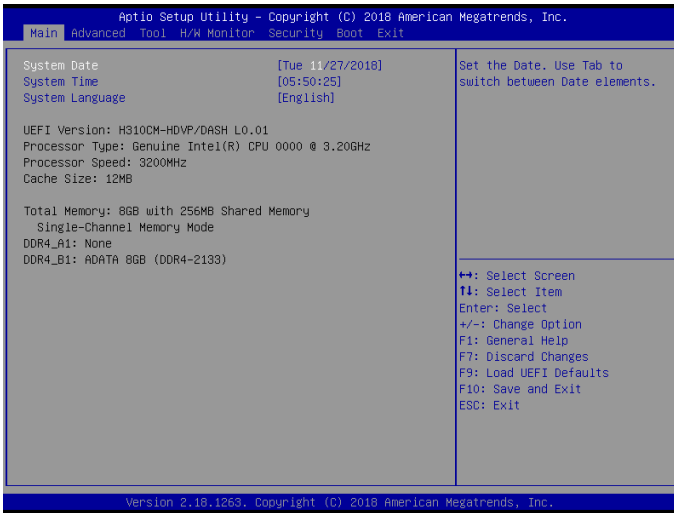
Use <←→> key or <→> key to choose among the selections on the menu bar, and use <↑> key or <↓> key to move the cursor up or down to select items, then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

Please check the following table for the descriptions of each navigation key.

Navigation Key(s)	Description
+ / -	To change option for the selected items
<Tab>	Switch to next function
<PGUP>	Go to the previous page
<PGDN>	Go to the next page
<HOME>	Go to the top of the screen
<END>	Go to the bottom of the screen
<F1>	To display the General Help Screen
<F7>	Discard changes and exit the SETUP UTILITY
<F9>	Load optimal default values for all the settings
<F10>	Save changes and exit the SETUP UTILITY
<F12>	Print screen
<ESC>	Jump to the Exit Screen or exit the current screen

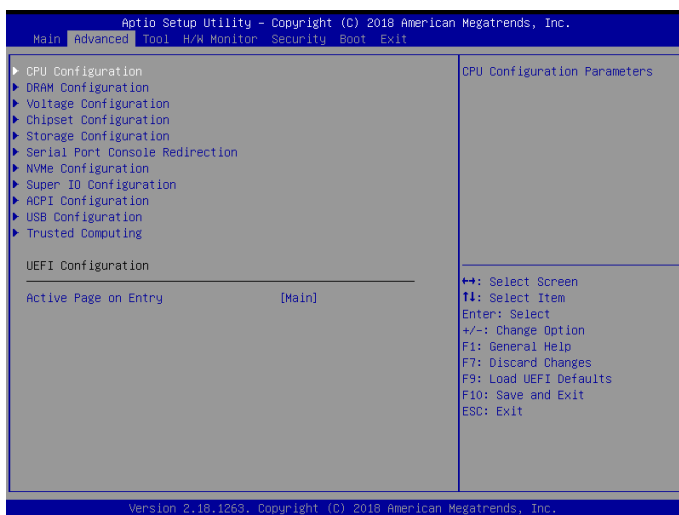
## 4.2 Main Screen

When you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview.



## 4.3 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, DRAM Configuration, Voltage Configuration, Chipset Configuration, Storage Configuration, Serial Port Console Redirection, NVMe Configuration, Super IO Configuration, ACPI Configuration, USB Configuration and Trusted Computing.



*Setting wrong values in this section may cause the system to malfunction.*

### UEFI Configuration

#### Active Page on Entry

Select the default page when entering the UEFI setup utility.

### 4.3.1 CPU Configuration



#### Intel Hyper Threading Technology

Intel Hyper Threading Technology allows multiple threads to run on each core, so that the overall performance on threaded software is improved.

#### Active Processor Cores

Select the number of cores to enable in each processor package.

#### CPU C States Support

Enable CPU C States Support for power saving. It is recommended to keep C3, C6 and C7 all enabled for better power saving.

#### Enhanced Halt State (C1E)

Enable Enhanced Halt State (C1E) for lower power consumption.

#### CPU C3 State Support

Enable C3 sleep state for lower power consumption.

#### CPU C6 State Support

Enable C6 deep sleep state for lower power consumption.

#### CPU C7 State Support

Enable C7 deep sleep state for lower power consumption.

## Package C State Support

Enable CPU, PCIe, Memory, Graphics C State Support for power saving.

## CFG Lock

This item allows you to disable or enable the CFG Lock.

## CPU Thermal Throttling

Enable CPU internal thermal control mechanisms to keep the CPU from overheating.

## Intel Virtualization Technology

Intel Virtualization Technology allows a platform to run multiple operating systems and applications in independent partitions, so that one computer system can function as multiple virtual systems.

## Hardware Prefetcher

Automatically prefetch data and code for the processor. Enable for better performance.

## Adjacent Cache Line Prefetch

Automatically prefetch the subsequent cache line while retrieving the currently requested cache line. Enable for better performance.

## Software Guard Extensions (SGX)

Intel SGX is a set of new CPU instructions that can be used by applications to set aside private regions of code and data.

## Boot Performance Mode

Default is Max Non-Turbo performance mode. It will keep cpu Flex-ratio till OS handoff. Max Battery mode will set CPU ratio as x8 till OS handoff. This option is suggested for BCLK overclocking.

## Reliability Stress Restrictor

Disable or Enable Reliability Stress Restrictor feature.

## FCLK Frequency

Configure the FCLK Frequency.

## AVX Ratio Offset

AVX Ratio Offset specifies a negative offset from the CPU Ratio for AVX workloads.

AVX is a more stressful workload that lowers the AVX ratio to ensure maximum possible ratio for SSE workloads.

### **BCLK Aware Adaptive Voltage**

BCLK Aware Adaptive Voltage enable/disable. When enabled, pcode will be aware of the BCLK frequency when calculating the CPU V/F curves. This is ideal for BCLK OC to avoid high voltage overrides.

### **Ring to Core Ratio Offset**

Disable Ring to Core Ratio Offset so the ring and core can run at the same frequency

### **Intel SpeedStep Technology**

Intel SpeedStep technology allows processors to switch between multiple frequencies and voltage points for better power saving and heat dissipation.

### **Intel Turbo Boost Technology**

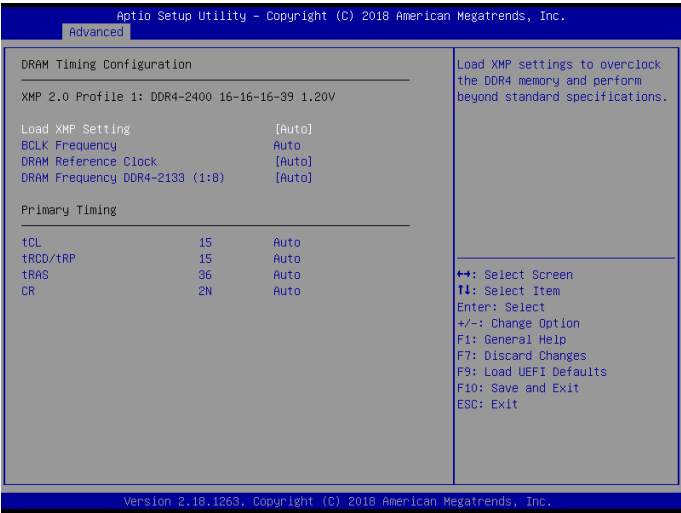
Intel Turbo Boost Technology enables the processor to run above its base operating frequency when the operating system requests the highest performance state.

### **Intel Speed Shift Technology**

Enable/Disable Intel Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states.



### 4.3.2 DRAM Configuration



#### DRAM Timing Configuration

##### Load XMP Setting

Load XMP settings to overclock the memory and perform beyond standard specifications.

##### BCLK Frequency

The CPU speed is determined by the CPU Ratio multiplied with the BCLK. Increasing the BCLK will increase the internal CPU clock speed but also affect the clock speed of other components.

##### DRAM Reference Clock

Select Auto for optimized settings.

##### DRAM Frequency

If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assign the appropriate frequency automatically.

##### Primary Timing

##### CAS# Latency (tCL)

The time between sending a column address to the memory and the beginning of the data in response.

**tRCD / tRP**

RAS# to CAS# Delay : The number of clock cycles required between the opening of a row of memory and accessing columns within it.

Row Precharge: The number of clock cycles required between the issuing of the precharge command and opening the next row.

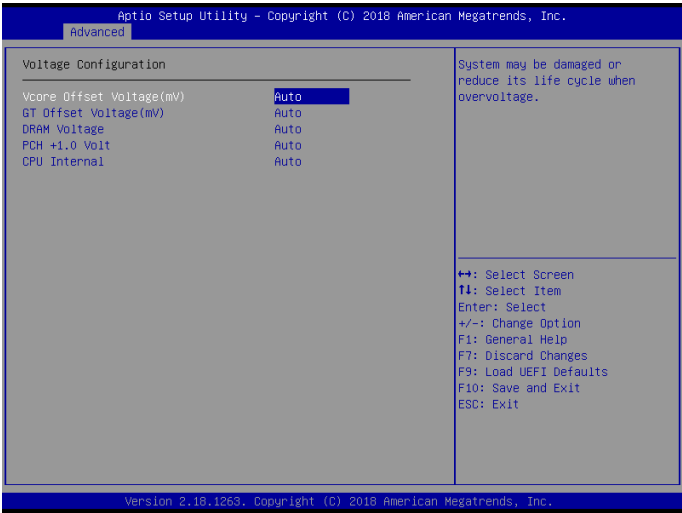
**tRAS**

The number of clock cycles required between a bank active command and issuing the precharge command.

**CR**

The delay between when a memory chip is selected and when the first active command can be issued.

### 4.3.3 Voltage Configuration



#### Vcore Offset Voltage (mV)

Use this to select Vcore Offset Voltage.

#### GT Offset Voltage (mV)

Use this to select GT Offset Voltage.

#### DRAM Voltage

Use this to configure DRAM Voltage. The default value is [Auto].

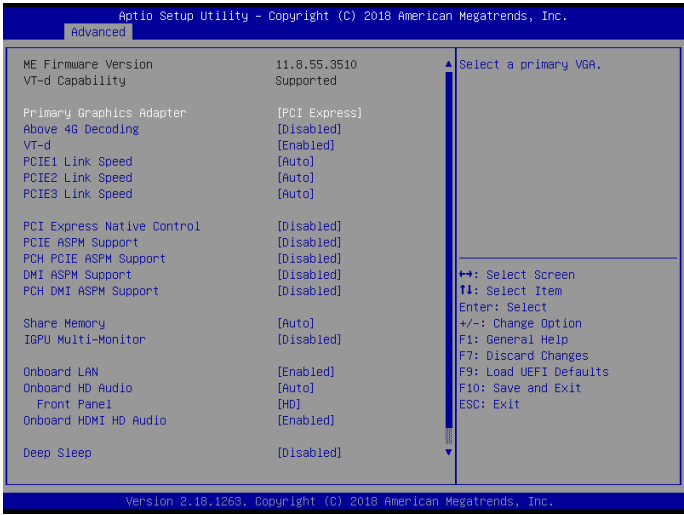
#### PCH +1.0 Volt

Use this to configure chipset 1.00V Voltage. The default value is [Auto].

#### CPU Internal

The default value is 0.900V, each step is 0.015V. Adding 9 to 15 steps will help CPU PLL to lock internal clock during high frequency under LN2 cooling.

### 4.3.4 Chipset Configuration



#### Primary Graphics Adapter

Select a primary VGA.

#### Above 4G Decoding

Enable or disable 64bit capable Devices to be decoded in Above 4G Address Space (only if the system supports 64 bit PCI decoding).

#### VT-d

Intel® Virtualization Technology for Directed I/O helps your virtual machine monitor better utilize hardware by improving application compatibility and reliability, and providing additional levels of manageability, security, isolation, and I/O performance.

#### PCIE1 Link Speed

Select the link speed for PCIE1.

#### PCIE2 Link Speed

Select the link speed for PCIE2.

#### PCIE3 Link Speed

Select the link speed for PCIE3.

## PCI Express Native Control

Select Enable for enhanced PCI Express power saving in OS.

## PCIE ASPM Support

This option enables/disables the ASPM support for all CPU downstream devices.

## PCH PCIE ASPM Support

This option enables/disables the ASPM support for all PCH PCIE devices.

## DMI ASPM Support

This option enables/disables the control of ASPM on CPU side of the DMI Link.

## PCH DMI ASPM Support

This option enables/disables the ASPM support for all PCH DMI devices.

## Share Memory

Configure the size of memory that is allocated to the integrated graphics processor when the system boots up.

## IGPU Multi-Monitor

Select disable to disable the integrated graphics when an external graphics card is installed.  
Select enable to keep the integrated graphics enabled at all times.

## Onboard LAN

Enable or disable the onboard network interface controller.

## Onboard HD Audio

Enable/disable onboard HD audio. Set to Auto to enable onboard HD audio and automatically disable it when a sound card is installed.

## Front Panel

Select Front Panel type.

## Onboard HDMI HD Audio

Enable audio for the onboard digital outputs.

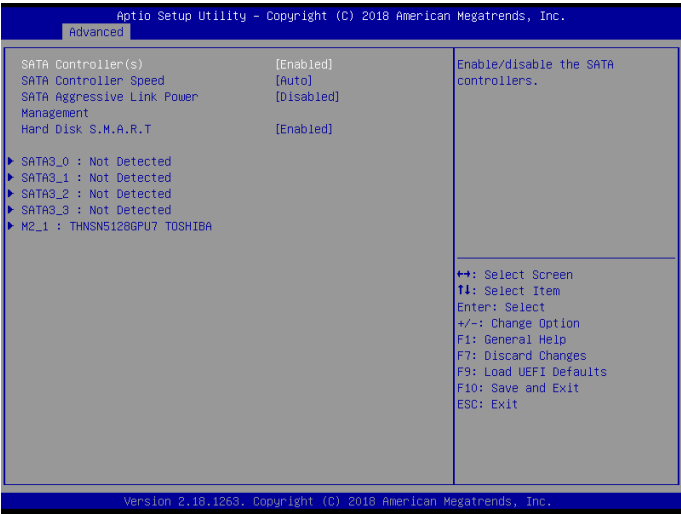
## Deep Sleep

Configure deep sleep mode for power saving when the computer is shut down.

## Restore on AC/Power Loss

Select the power state after a power failure. If [Power Off] is selected, the power will remain off when the power recovers. If [Power On] is selected, the system will start to boot up when the power recovers.

### 4.3.5 Storage Configuration



#### SATA Controller(s)

Enable/disable the SATA controllers.

#### SATA Controller Speed

Indicates the maximum speed the SATA controller can support.

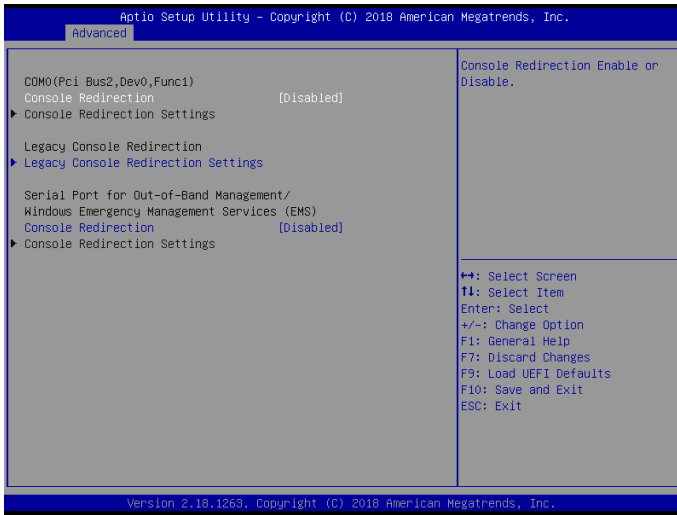
#### SATA Aggressive Link Power Management

SATA Aggressive Link Power Management allows SATA devices to enter a low power state during periods of inactivity to save power. It is only supported by AHCI mode.

#### Hard Disk S.M.A.R.T.

S.M.A.R.T stands for Self-Monitoring, Analysis, and Reporting Technology. It is a monitoring system for computer hard disk drives to detect and report on various indicators of reliability.

## 4.3.6 Serial Port Console Redirection



### Console Redirection

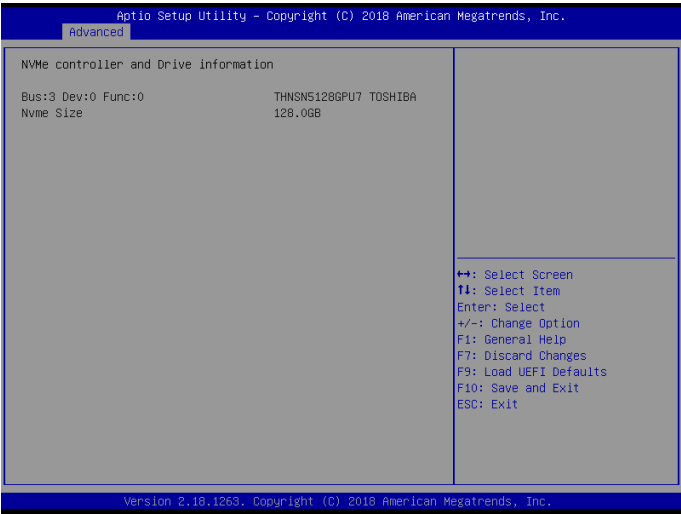
Use this option to enable or disable Console Redirection. If this item is set to Enabled, you can select a COM Port to be used for Console Redirection.

### Console Redirection Settings

Use this option to configure Console Redirection Settings, and specify how your computer and the host computer to which you are connected exchange information.

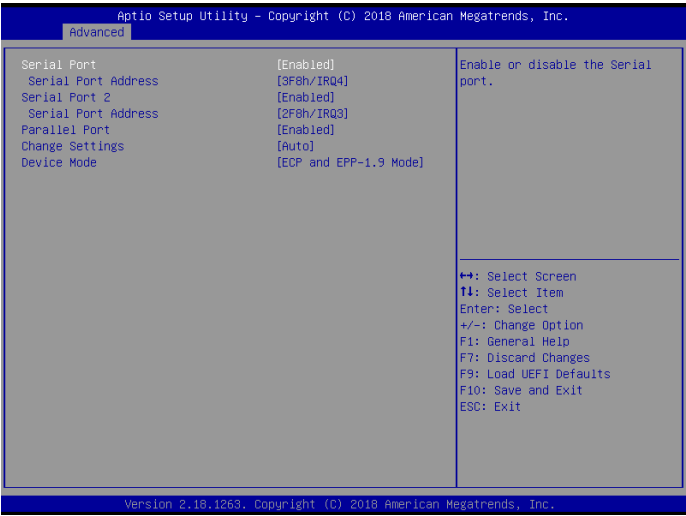


### 4.3.7 NVMe Configuration



The NVMe Configuration displays the NVMe controller and Drive information.

### 4.3.8 Super IO Configuration



#### Serial Port

Enable or disable the Serial port.

#### Serial Port Address

Select the address of the Serial port.

#### Serial Port 2

Enable or disable the Serial port.

#### Serial Port Address

Select the address of the Serial port.

#### Parallel Port

Enable or disable the Parallel port.

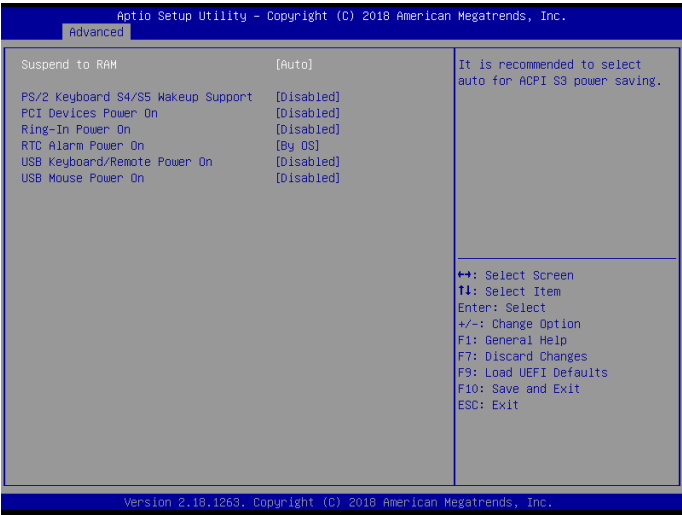
#### Change Settings

Select the address of the Parallel port.

#### Device Mode

Select the device mode according to your connected device.

### 4.3.9 ACPI Configuration



#### Suspend to RAM

Select disable for ACPI suspend type S1. It is recommended to select auto for ACPI S3 power saving.

#### PS/2 Keyboard S4/S5 Wakeup Support

Allow the system to be waked up by a PS/2 Keyboard.

#### PCIe Devices Power On

Allow the system to be waked up by a PCIe device and enable wake on LAN.

#### Ring-In Power On

Allow the system to be waked up by onboard COM port modem Ring-In signals.

#### RTC Alarm Power On

Allow the system to be waked up by the real time clock alarm. Set it to By OS to let it be handled by your operating system.

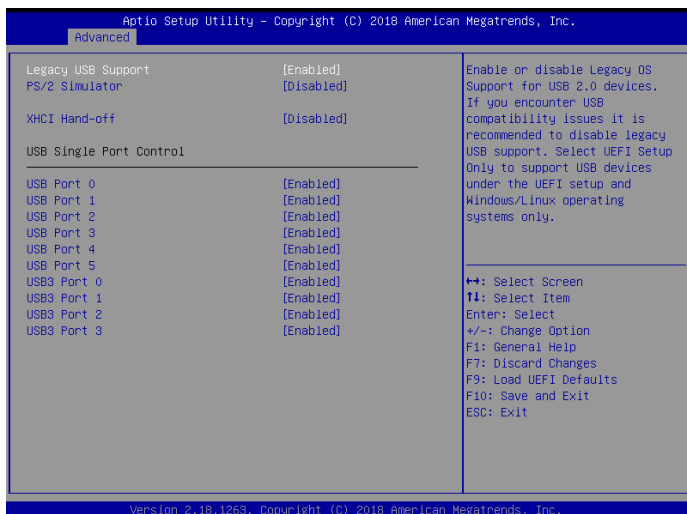
#### USB Keyboard/Remote Power On

Allow the system to be waked up by an USB keyboard or remote controller.

#### USB Mouse Power On

Allow the system to be waked up by an USB mouse.

### 4.3.10 USB Configuration



#### Legacy USB Support

Enable or disable Legacy OS Support for USB 2.0 devices. If you encounter USB compatibility issues it is recommended to disable legacy USB support. Select UEFI Setup Only to support USB devices under the UEFI setup and Windows/Linux operating systems only.

#### PS/2 Simulator

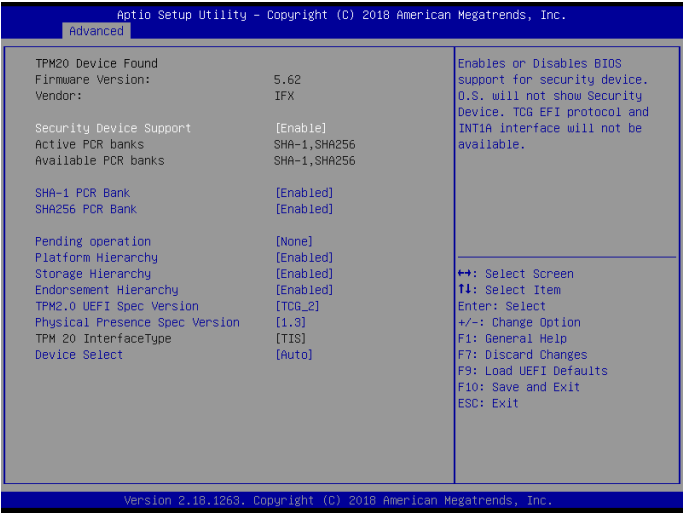
Enable PS/2 Simulator. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.

\*Enable this option if you install Windows 7.

#### XHCI Hand-off

This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

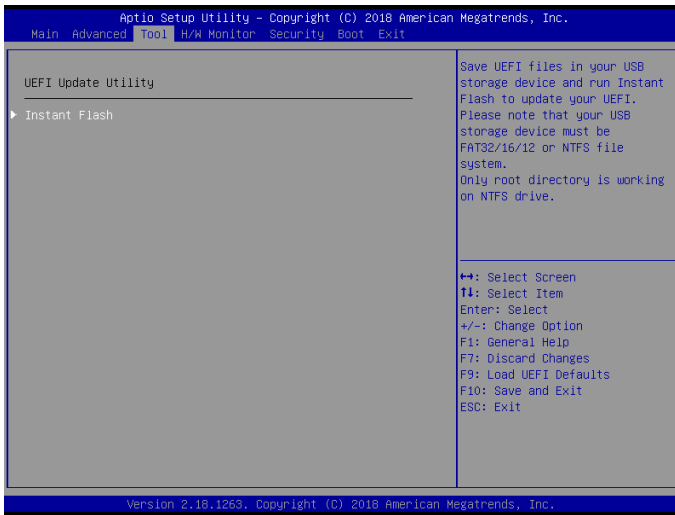
### 4.3.11 Trusted Computing



#### Security Device Support

Enable or disable BIOS support for security device.

## 4.4 Tools



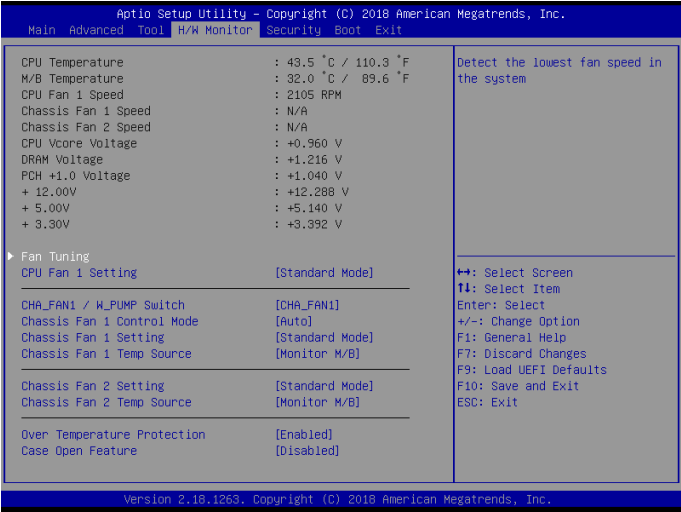
### UEFI Update Utility

#### Instant Flash

Save UEFI files in your USB storage device and run Instant Flash to update your UEFI.

# 4.5 Hardware Health Event Monitoring Screen

This section allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, fan speed and voltage.



## Fan Tuning

Measure Fan Min Duty Cycle.

## CPU Fan 1 Setting

Select a fan mode for CPU Fans 1, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

## CHA\_FAN1 / W\_Pump Switch

Select CHA\_FAN1 / W\_Pump mode.

## CHA\_FAN1 Control Mode

Select PWM mode or DC mode for CHA\_FAN1.

## Chassis Fan 1 Setting

Select a fan mode for Chassis Fan 1, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

## Chassis Fan 1 Temp Source

Select a fan temperature source for Chassis Fan 1.

## Chassis Fan 2 Setting

Select a fan mode for Chassis Fan 2, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

## Chassis Fan 2 Temp Source

Select a fan temperature source for Chassis Fan 2.

## Over Temperature Protection

When Over Temperature Protection is enabled, the system automatically shuts down when the motherboard is overheated.

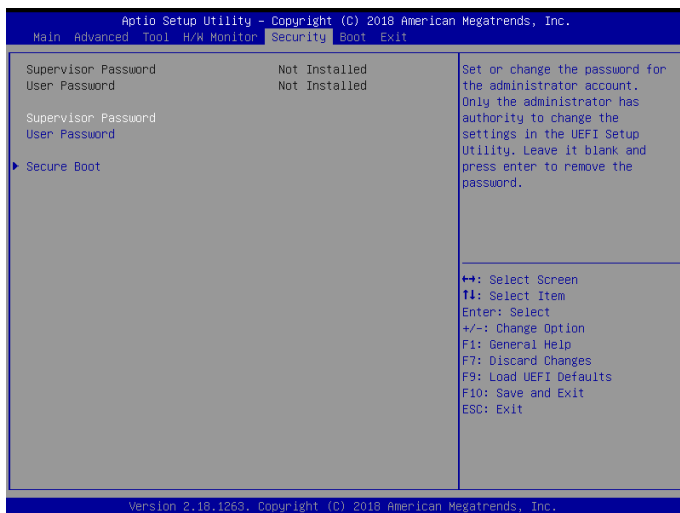
## Case Open Feature

Enable or disable Case Open Feature to detect whether the chassis cover has been removed.



## 4.6 Security Screen

In this section you may set or change the supervisor/user password for the system. You may also clear the user password.



### Supervisor Password

Set or change the password for the administrator account. Only the administrator has authority to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

### User Password

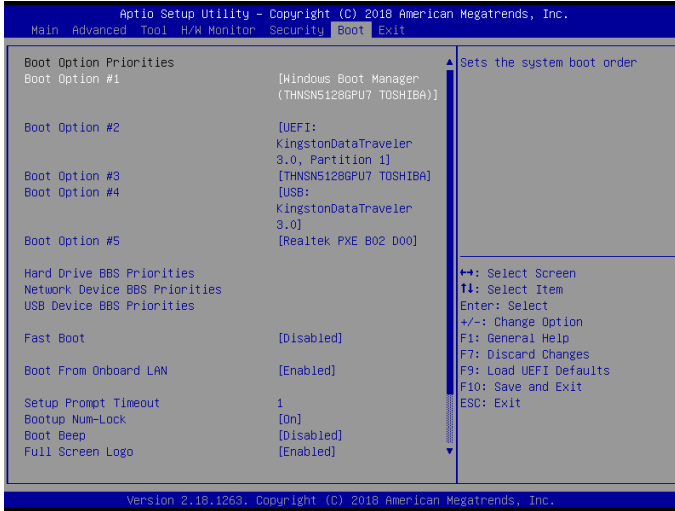
Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

### Secure Boot

Use this item to enable or disable support for Windows 8.1 Secure Boot.

## 4.7 Boot Screen

This section displays the available devices on your system for you to configure the boot settings and the boot priority.



### Fast Boot

Fast Boot minimizes your computer's boot time. In fast mode you may not boot from an USB storage device. Ultra Fast mode is only supported by Windows 8.1 and the VBIOS must support UEFI GOP if you are using an external graphics card. Please notice that Ultra Fast mode will boot so fast that the only way to enter this UEFI Setup Utility is to Clear CMOS or run the Restart to UEFI utility in Windows.

### Boot From Onboard LAN

Allow the system to be waked up by the onboard LAN.

### Setup Prompt Timeout

Configure the number of seconds to wait for the setup hot key.

### Bootup Num-Lock

Select whether Num Lock should be turned on or off when the system boots up.

### Boot Beep

Select whether the Boot Beep should be turned on or off when the system boots up. Please note that a buzzer is needed.

## Full Screen Logo

Enable to display the boot logo or disable to show normal POST messages.

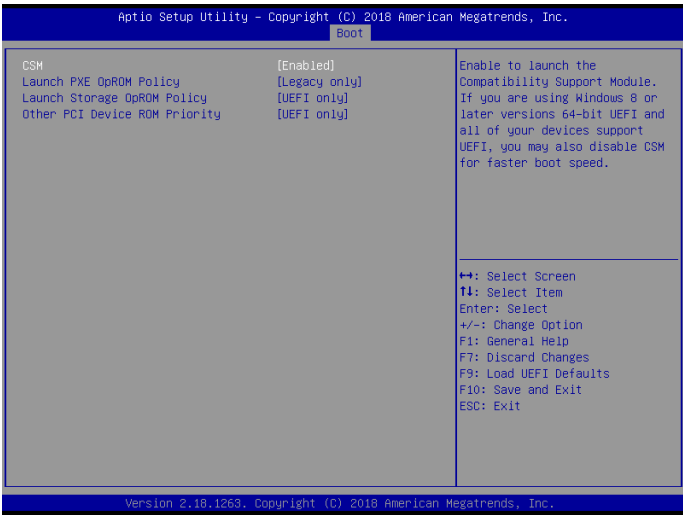
## AddOn ROM Display

Enable AddOn ROM Display to see the AddOn ROM messages or configure the AddOn ROM if you've enabled Full Screen Logo. Disable for faster boot speed.

## Boot Failure Guard Message

If the computer fails to boot for a number of times the system automatically restores the default settings.

## CSM (Compatibility Support Module)



## CSM

Enable to launch the Compatibility Support Module. Please do not disable unless you're running a WHCK test.

## Launch PXE OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.

## Launch Storage OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.

## Other PCI Device ROM Priority

For PCI devices other than Network. Mass storage or Video defines which OpROM to launch.

## 4.8 Exit Screen



### Save Changes and Exit

When you select this option the following message, “Save configuration changes and exit setup?” will pop out. Select [OK] to save changes and exit the UEFI SETUP UTILITY.

### Discard Changes and Exit

When you select this option the following message, “Discard changes and exit setup?” will pop out. Select [OK] to exit the UEFI SETUP UTILITY without saving any changes.

### Discard Changes

When you select this option the following message, “Discard changes?” will pop out. Select [OK] to discard all changes.

### Load UEFI Defaults

Load UEFI default values for all options. The F9 key can be used for this operation.

### Launch EFI Shell from filesystem device

Copy shellx64.efi to the root directory to launch EFI Shell.

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## Contact Information

If you need to contact ASRock or want to know more about ASRock, you're welcome to visit ASRock's website at <http://www.asrock.com>; or you may contact your dealer for further information. For technical questions, please submit a support request form at <https://event.asrock.com/tsd.asp>

### **ASRock Incorporation**

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# DECLARATION OF CONFORMITY

Per FCC Part 2 Section 2.1077(a)



**Responsible Party Name:** ASRock Incorporation

**Address:** 13848 Magnolia Ave, Chino, CA91710

**Phone/Fax No:** +1-909-590-8308/+1-909-590-1026

hereby declares that the product

**Product Name :** Motherboard

**Model Number :** H310CM-HDVP/DASH

Conforms to the following specifications:

☒ FCC Part 15, Subpart B, Unintentional Radiators

## Supplementary Information:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Representative Person's Name: James

Signature :

A handwritten signature in black ink, appearing to read 'James', with a long, sweeping horizontal stroke extending to the right.

Date : May 12, 2017

# EU Declaration of Conformity



For the following equipment:

**Motherboard**

(Product Name)

**H310CM-HDVP/DASH / ASRock**

(Model Designation / Trade Name)

**ASRock Incorporation**

(Manufacturer Name)

**2F., No.37, Sec. 2, Jhongyang S. Rd., Beitou District, Taipei City 112, Taiwan (R.O.C.)**

(Manufacturer Address)

☒ **EMC —Directive 2014/30/EU (from April 20th, 2016)**

☐ EN 55022:2010/AC:2011 Class B

☒ EN 55024:2010/A1:2015

☒ EN 55032:2012+AC:2013 Class B

☒ EN 61000-3-3:2013

☒ EN 61000-3-2:2014

☐ **LVD —Directive 2014/35/EU (from April 20th, 2016)**

☐ EN 60950-1 : 2011+ A2: 2013

☐ EN 60950-1 : 2006/A12: 2011

☒ RoHS — Directive 2011/65/EU

☒ CE marking

(EU conformity marking)



**ASRock EUROPE B.V.**

(Company Name)

**Bijsterhuizen 1111 6546 AR Nijmegen The Netherlands**

(Company Address)

Person responsible for making this declaration:

(Name, Surname)

**A.V.P**

(Position / Title)

**December 14, 2018**

(Date)

P/N: 15G062139000AK V1.0