ASRock

# AB350M PRO4/DASH

User Manual

Version 1.0
Published November 2018
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"Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate"

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# Contents

# Chapter 1 Introduction

Thank you for purchasing ASRock AB350M Pro4/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 manual, 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 manual will be subject to change without notice. In case any modifications of this manual 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 AB350M Pro4/DASH Motherboard (Micro ATX Form Factor)
- ASRock AB350M Pro4/DASH Quick Installation Guide
- ASRock AB350M Pro4/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)

English

## 1.2 Specifications

| | |
|---|---|
| **Platform** | • Micro ATX Form Factor<br>• Solid Capacitor design |
| **CPU** | • Supports AMD Socket AM4 A-Series APUs (Bristol Ridge) and Ryzen Series CPUs (Summit Ridge, Raven Ridge and Pinnacle Ridge<br>• Digi Power design<br>• 9 Power Phase design<br>• Supports 105W Water Cooling (Pinnacle Ridge); Supports 95W Water Cooling (Summit Ridge); Supports 65W Water Cooling (Raven Ridge) |
| **Chipset** | • AMD Promontory B350 |
| **Memory** | • Dual Channel DDR4 Memory Technology<br>• 4 x DDR4 DIMM Slots<br>• AMD Ryzen series CPUs (Pinnacle Ridge) support DDR4 3200+(OC)/2933(OC)/2667/2400/2133 ECC & non-ECC, un-buffered memory*<br>• AMD Ryzen series CPUs (Summit Ridge) support DDR4 3200+(OC)/2933(OC)/2667/2400/2133 ECC & non-ECC, un-buffered memory*<br>• AMD Ryzen series CPUs (Raven Ridge) support DDR4 3200+(OC)/2933/2667/2400/2133 non-ECC, un-buffered memory*<br>• AMD 7th Gen A-Series APUs support DDR4 2400/2133 non-ECC, un-buffered memory*<br>* For Ryzen Series CPUs (Raven Ridge), ECC is only supported with PRO CPUs.<br>* Please refer to Memory Support List on ASRock's website for more information. (http://www.asrock.com/)<br>* Please refer to page 22 for DDR4 UDIMM maximum frequency support.<br>• Max. capacity of system memory: 64GB<br>• 15µ Gold Contact in DIMM Slots |

**Expansion Slot**

**AMD Ryzen series CPUs (Summit Ridge and Pinnacle Ridge)**

- 1 x PCI Express 3.0 x16 Slot (PCIE2: x16 mode)*
- 1 x PCI Express 2.0 x16 Slot (PCIE4: x4 mode)

**AMD 7th A-Series APUs**

- 1 x PCI Express 3.0 x16 Slot (PCIE2: x8 mode)*
- 1 x PCI Express 2.0 x16 Slot (PCIE4: x4 mode)

**AMD Ryzen series CPUs (Raven Ridge)**

- 1 x PCI Express 3.0 x16 Slot (PCIE2: x8 mode) (If you use Athlon 2xxGE series APU, PCIE2 slot will run at x4 mode.)*
- 1 x PCI Express 2.0 x16 Slot (PCIE4: x4 mode)

* Supports NVMe SSD as boot disks

- 2 x PCI Express 2.0 x1 Slots
- Supports AMD Quad CrossFireX™ and CrossFireX™
- 1 x M.2 Socket (Key E), supports type 2230 WiFi/BT module

**Graphics**

- Integrated AMD Radeon™ Vega Series Graphics in Ryzen Series APU*
- Integrated AMD Radeon™ R-Series Graphics in A-series APU*

* Actual support may vary by CPU

- DirectX 12, Pixel Shader 5.0
- Shared memory default 2GB. Max Shared memory supports up to 16GB.

* The Max shared memory 16GB requires 32GB system memory installed.

- Three graphics output options: D-Sub, HDMI and DisplayPort 1.2
- Supports Triple Monitor
- Supports HDMI with max. resolution up to 4K x 2K (4096x2160) @ 24Hz / (3840x2160) @ 30Hz
- Supports DisplayPort 1.2 with max. resolution up to 4K x 2K (4096x2160) @ 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 HDMI and DisplayPort 1.2 Ports
- Supports Full HD 1080p Blu-ray (BD) playback with HDMI and DisplayPort 1.2 Ports

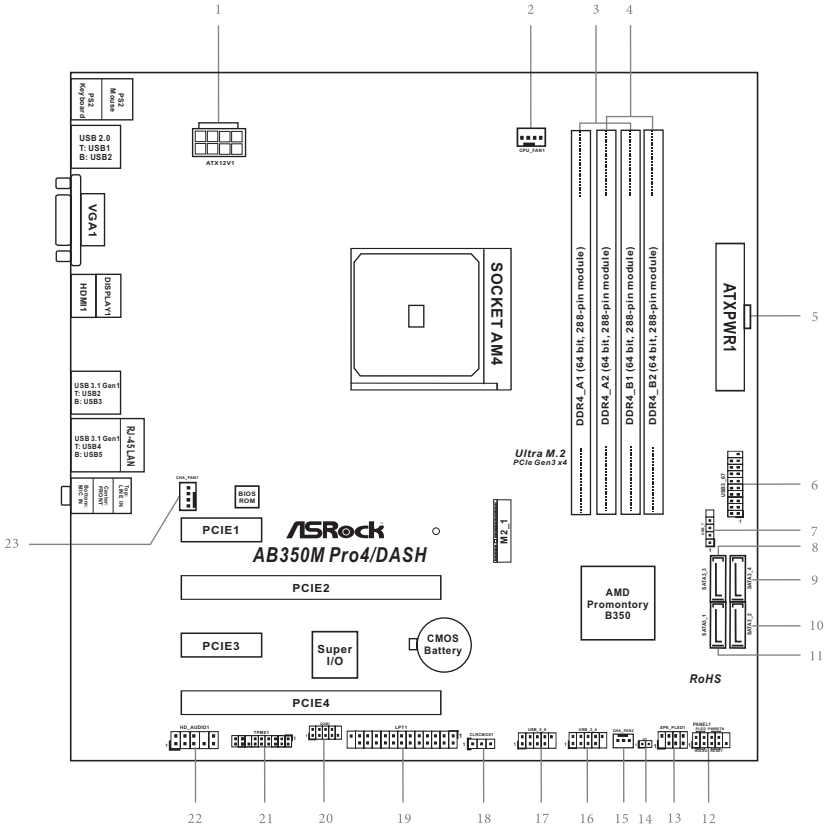
| | |
|---|---|
| **Audio** | • 7.1 CH HD Audio with Content Protection (Realtek ALC892 Audio Codec)<br>* To configure 7.1 CH HD Audio, it is required to use an HD front panel audio module and enable the multi-channel audio feature through the audio driver.<br>• Premium Blu-ray Audio support<br>• Supports Surge Protection<br>• ELNA Audio Caps |
| **LAN** | • PCIE x1 Gigabit LAN 10/100/1000 Mb/s<br>• Realtek RTL8111EPV<br>• Supports Wake-On-LAN<br>• Supports Lightning/ESD Protection<br>• Supports LAN Cable Detection<br>• Supports Energy Efficient Ethernet 802.3az<br>• Supports PXE<br>• Supports DASH |
| **Rear Panel I/O** | • 1 x PS/2 Mouse Port<br>• 1 x PS/2 Keyboard Port<br>• 1 x D-Sub Port<br>• 1 x HDMI Port<br>• 1 x DisplayPort 1.2<br>• 2 x USB 2.0 Ports (Supports ESD Protection)<br>• 4 x USB 3.1 Gen1 Ports (Supports ESD Protection)<br>• 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED)<br>• HD Audio Jacks: Line in / Front Speaker / Microphone |
| **Storage** | • 4 x SATA3 6.0 Gb/s Connectors, support RAID (RAID 0, RAID 1 and RAID 10), NCQ, AHCI and Hot Plug |

| | |
|---|---|
| **Connector** | • 1 x Chassis Intrusion Header<br>• 1 x Print Port Header<br>• 1 x COM Port Header<br>• 1 x TPM Header<br>• 1 x Power LED and Speaker Header<br>• 1 x CPU Fan Connector (4-pin)<br>* The CPU Fan Connector supports the CPU fan of maximum 1A (12W) fan power.<br>• 2 x Chassis Fan Connectors (1 x 4-pin, 1 x 3-pin) (Smart Fan Speed Control)<br>* CHA_FAN1 can auto detect if 3-pin or 4-pin fan is in use.<br>• 1 x 24 pin ATX Power Connector<br>• 1 x 8 pin 12V Power Connector<br>• 1 x Front Panel Audio Connector<br>• 1 x AMD LED Fan USB Header<br>• 2 x USB 2.0 Headers (Support 4 USB 2.0 ports) (Supports ESD Protection)<br>• 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<br>• Supports "Plug and Play"<br>• ACPI 5.1 compliance wake up events<br>• Supports jumperfree<br>• SMBIOS 2.3 support<br>• DRAM Voltage multi-adjustment |
| **Hardware Monitor** | • CPU/Chassis temperature sensing<br>• CPU/Chassis Fan Tachometer<br>• CPU/Chassis Quiet Fan<br>• CPU/Chassis Fan multi-speed control<br>• CASE OPEN detection<br>• Voltage monitoring: +12V, +5V, +3.3V, Vcore |
| **OS** | • Microsoft® Windows® 10 64-bit |
| **Certifications** | • FCC, CE<br>• ErP/EuP ready (ErP/EuP ready power supply is required) |

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

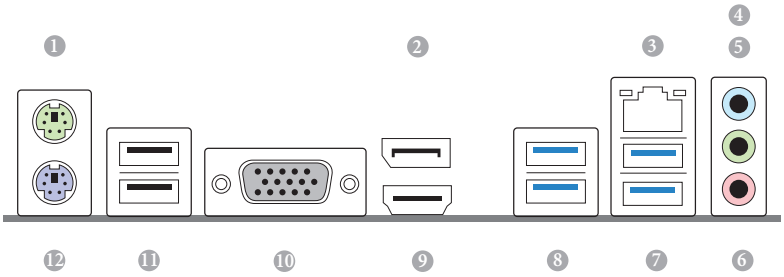
*Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using third-party overclocking tools. Overclocking may affect your system's stability, or even cause damage to the components and devices of 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



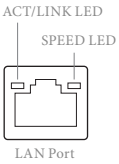
| No. | Description |
|---|---|
| 1 | ATX 12V Power Connector (ATX12V1) |
| 2 | CPU Fan Connector (CPU_FAN1) |
| 3 | 2 x 288-pin DDR4 DIMM Slots (DDR4_A1, DDR4_B1) |
| 4 | 2 x 288-pin DDR4 DIMM Slots (DDR4_A2, DDR4_B2) |
| 5 | ATX Power Connector (ATXPWR1) |
| 6 | USB 3.1 Gen1 Header (USB3_67) |
| 7 | AMD LED Fan USB Header (USB_7) |
| 8 | SATA3 Connector (SATA3_3) |
| 9 | SATA3 Connector (SATA3_4) |
| 10 | SATA3 Connector (SATA3_2) |
| 11 | SATA3 Connector (SATA3_1) |
| 12 | System Panel Header (PANEL1) |
| 13 | Power LED and Speaker Header (SPK_PLED1) |
| 14 | Chassis Intrusion Header (CI1) |
| 15 | Chassis Fan Connector (CHA_FAN2) |
| 16 | USB 2.0 Header (USB_3_4) |
| 17 | USB 2.0 Header (USB_5_6) |
| 18 | Clear CMOS Jumper (CLRCMOS1) |
| 19 | Print Port Header (LPT1) |
| 20 | COM Port Header (COM1) |
| 21 | TPM Header (TPMS1) |
| 22 | Front Panel Audio Header (HD_AUDIO1) |
| 23 | Chassis Fan Connector (CHA_FAN1) |

## 1.4 I/O Panel




| No. | Description | No. | Description |
|---|---|---|---|
| 1 | PS/2 Mouse Port | 7 | USB 3.1 Gen1 Ports (USB3_45) |
| 2 | DisplayPort 1.2 | 8 | USB 3.1 Gen1 Ports (USB3_23) |
| 3 | LAN RJ-45 Port* | 9 | HDMI Port |
| 4 | Line In (Light Blue)** | 10 | D-Sub Port |
| 5 | Front Speaker (Lime)** | 11 | USB 2.0 Ports (USB_1_2) |
| 6 | Microphone (Pink)** | 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.*

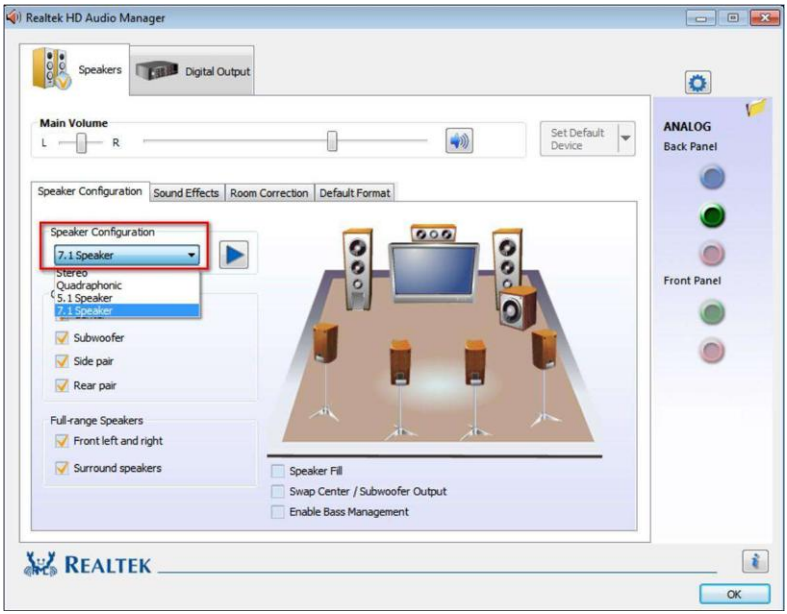



| Activity / Link LED | | Speed LED | |
|---|---|---|---|
| **Status** | **Description** | **Status** | **Description** |
| Off | No Link | Off | 10Mbps connection |
| Blinking | Data Activity | Orange | 100Mbps connection |
| On | Link | Green | 1Gbps connection |

English

*** 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

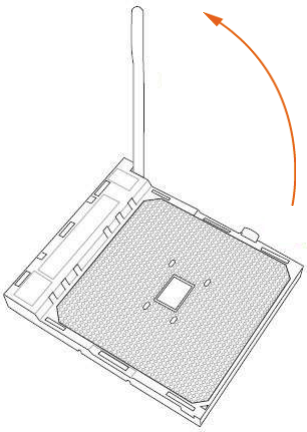
Take note of the following precautions before you install motherboard components or change any motherboard settings.

- Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you 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

*Unplug all power cables before installing the CPU.*

1



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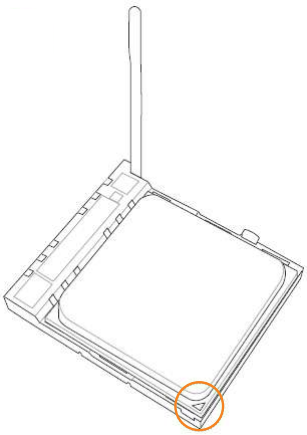


3

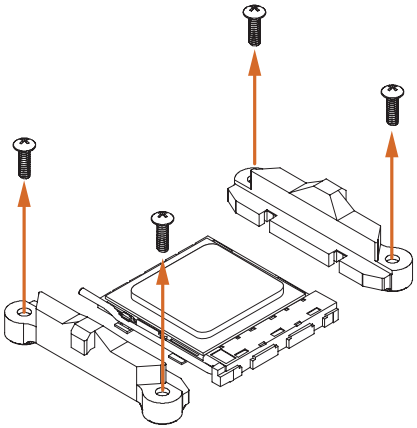
## 2.2 Installing the CPU Fan and Heatsink

After you install the CPU into this motherboard, it is necessary to install a larger heatsink and cooling fan to dissipate heat. You also need to spray thermal grease between the CPU and the heatsink to improve heat dissipation. Make sure that the CPU and the heatsink are securely fastened and in good contact with each other.

*Please turn off the power or remove the power cord before changing a CPU or heatsink.*

### Installing the CPU Box Cooler SR1

1



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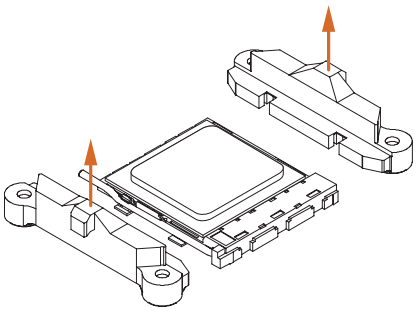

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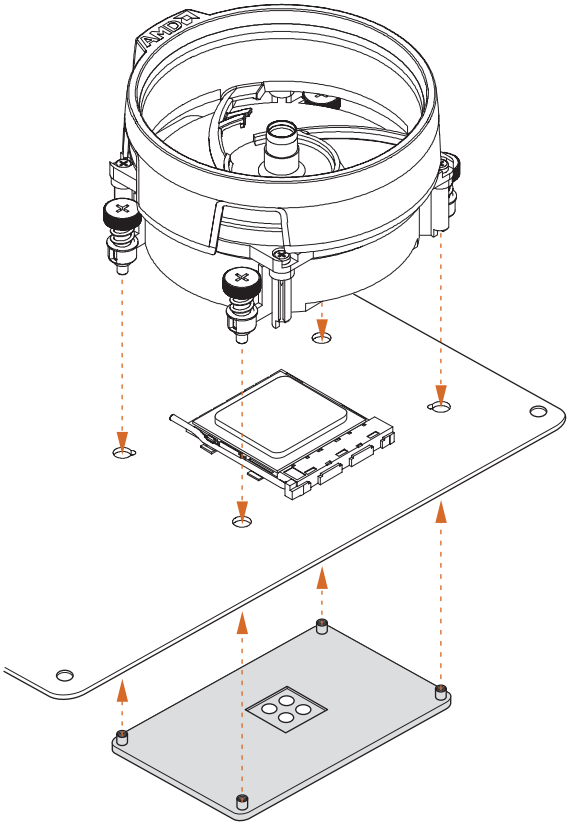

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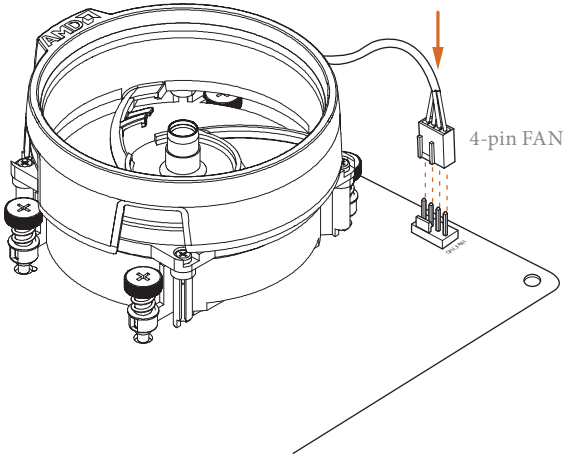
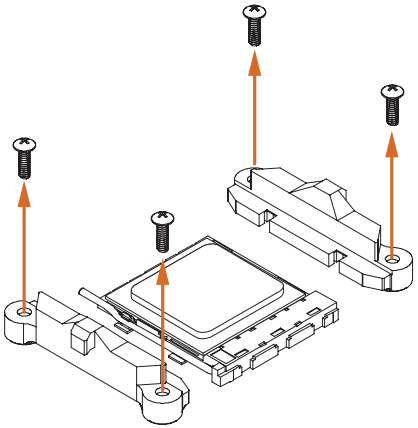


## Installing the AM4 Box Cooler SR2

1



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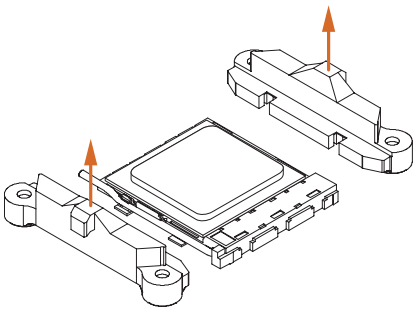

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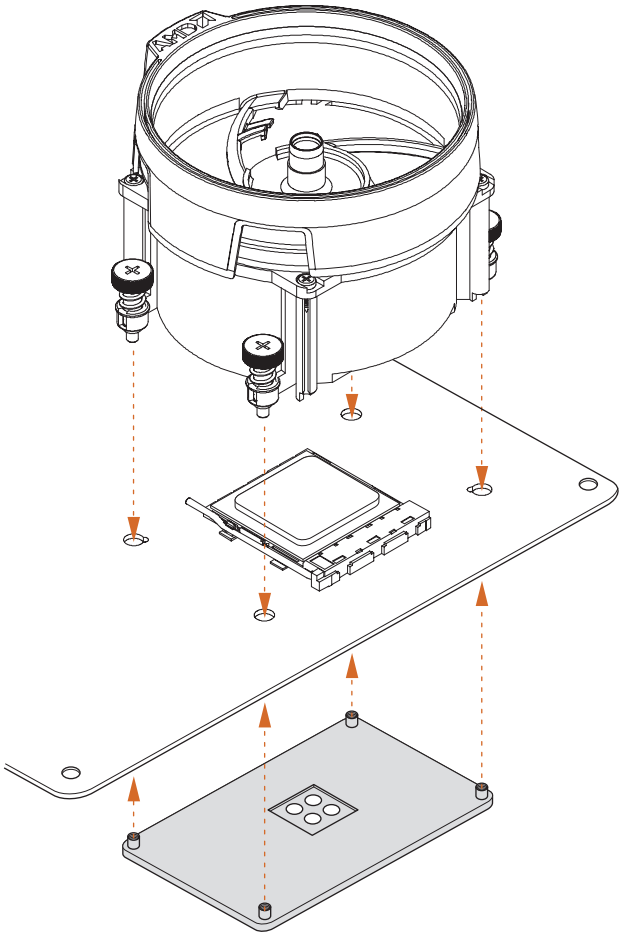

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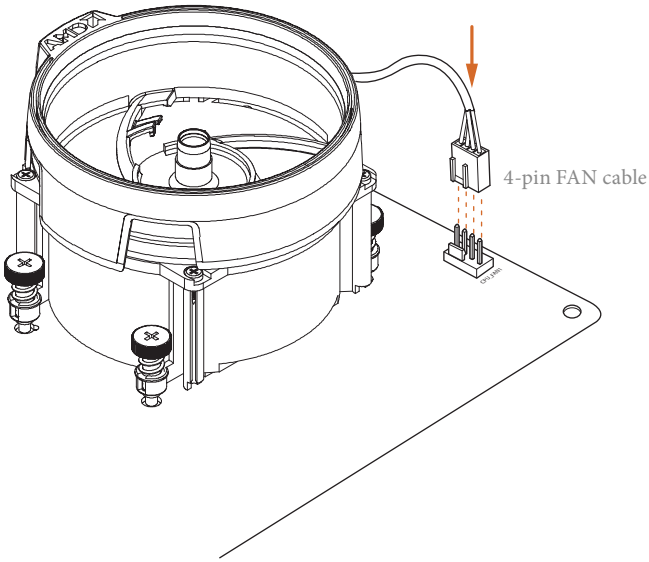
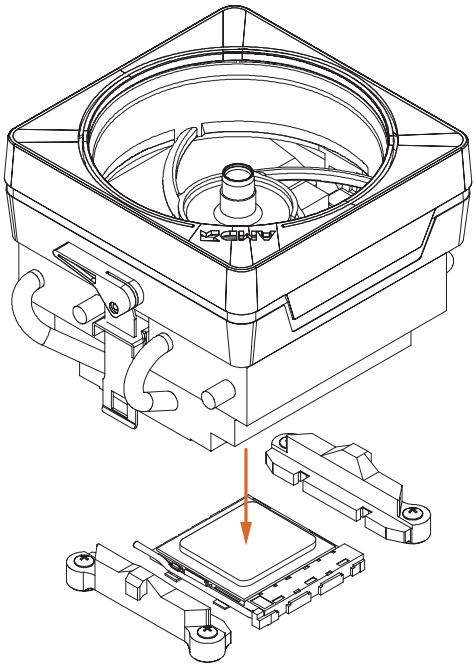


## Installing the AM4 Box Cooler SR3

1



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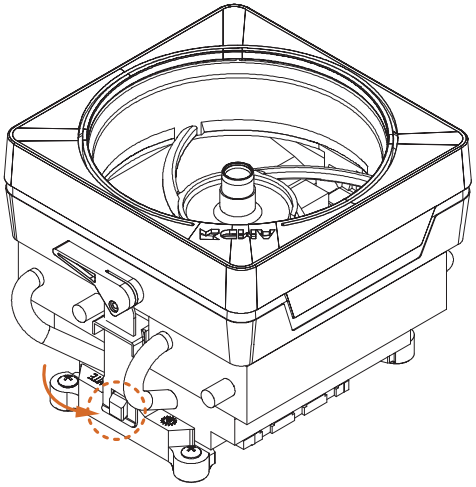
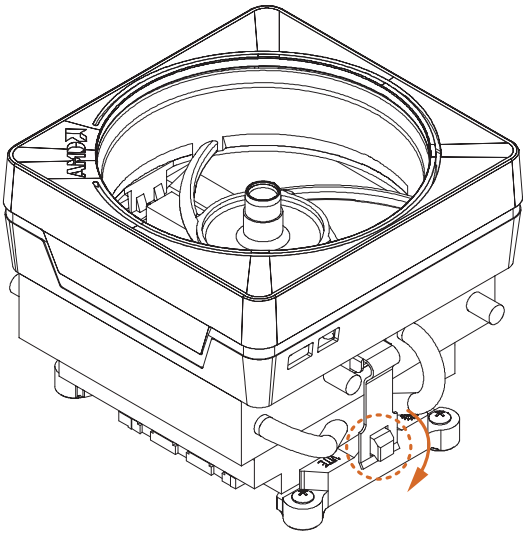
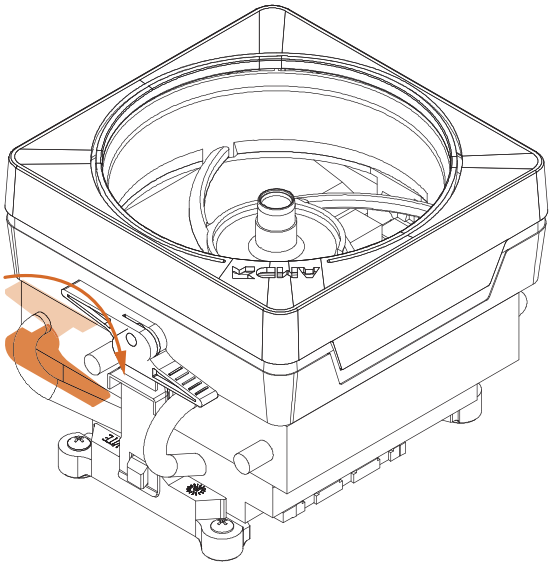


3




4



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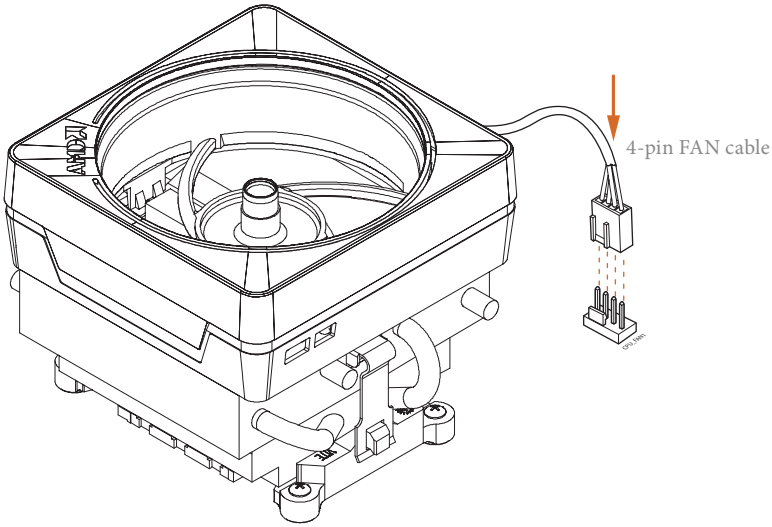


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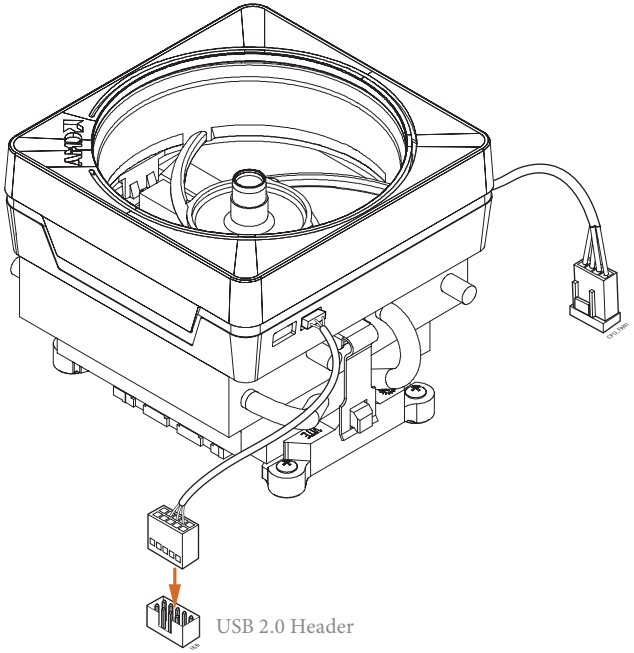



Please note that this connector is the interface to the LED control board on the SR3, it requires the AMD utility "SR3 Settings Software" to control the LED.

*The diagram shown here are for reference only. Please refer to page 28 for the orientation of USB Header.

## 2.3 Installing Memory Modules (DIMM)

This motherboard provides four 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 or three 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.*

### DDR4 UDIMM Maximum Frequency Support

A-Series APUs:

| UDIMM Memory Slot | | | | Frequency (Mhz) |
|---|---|---|---|---|
| A1 | A2 | B1 | B2 | |
| - | SR | - | - | 2400 |
| - | DR | - | - | 2400 |
| - | SR | - | SR | 2400 |
| - | DR | - | DR | 2133 |
| SR | SR | SR | SR | 1866 |
| SR/DR | DR | SR/DR | DR | 1866 |

Ryzen Series CPUs (Pinnacle Ridge):

| UDIMM Memory Slot | | | | Frequency (Mhz) |
|---|---|---|---|---|
| A1 | A2 | B1 | B2 | |
| - | SR | - | - | 2667 |
| - | DR | - | - | 2400 |
| - | SR | - | SR | 2667 |
| - | DR | - | DR | 2400 |
| SR | SR | SR | SR | 2133 |
| SR/DR | DR | SR/DR | DR | 1866 |

Ryzen Series CPUs (Summit Ridge):

| UDIMM Memory Slot | | | | Frequency (Mhz) |
|---|---|---|---|---|
| A1 | A2 | B1 | B2 | |
| - | SR | - | - | 2667 |
| - | DR | - | - | 2667 |
| - | SR | - | SR | 2667 |
| - | DR | - | DR | 2400-2667 |
| SR | SR | SR | SR | 2133-2400 |
| SR/DR | DR | SR/DR | DR | 1866-2133 |

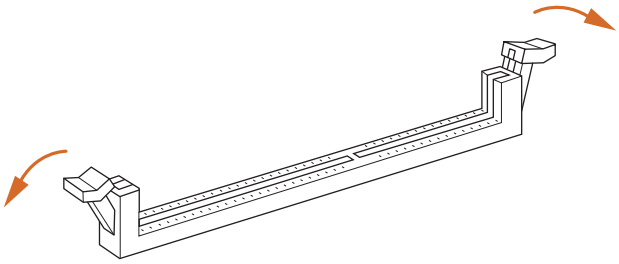
Ryzen Series CPUs (Raven Ridge):

| UDIMM Memory Slot | | | | Frequency (Mhz) |
|---|---|---|---|---|
| A1 | A2 | B1 | B2 | |
| - | SR | - | - | 2933 |
| - | DR | - | - | 2667 |
| - | SR | - | SR | 2667 |
| - | DR | - | DR | 2400 |
| SR | SR | SR | SR | 2133 |
| SR/DR | DR | SR/DR | DR | 1866 |

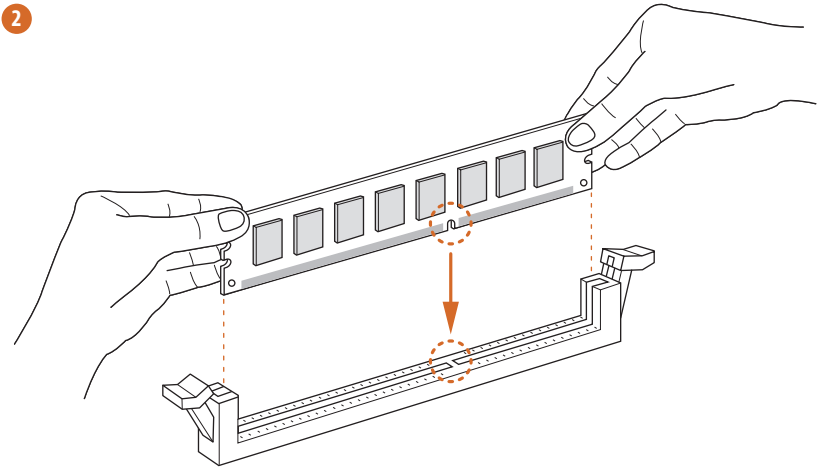
SR: Single rank DIMM, 1Rx4 or 1Rx8 on DIMM module label
DR: Dual rank DIMM, 2Rx4 or 2Rx8 on DIMM module label

*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.*

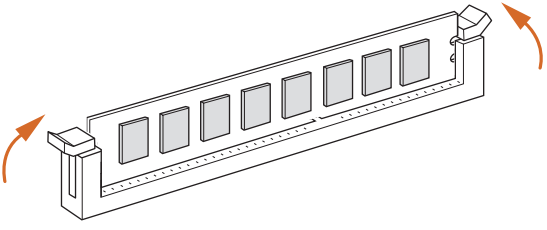
1



2



3



## 2.4 Expansion Slots (PCI Express Slots)

There are 4 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.*

**PCIe slots:**

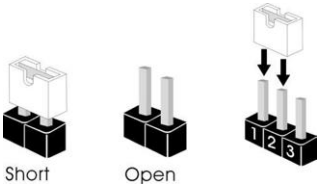
PCIE1 (PCIe 2.0 x1 slot) is used for PCI Express x1 lane width cards.
PCIE2 (PCIe 3.0 x16 slot) is used for PCI Express x16 lane width graphics cards.
PCIE3 (PCIe 2.0 x1 slot) is used for PCI Express x1 lane width cards.
PCIE4 (PCIe 2.0 x16 slot) is used for PCI Express x4 lane width graphics cards.

### PCIe Slot Configurations

| | PCIE1 | PCIE2 | PCIE3 | PCIE4 |
|---|---|---|---|---|
| **A-Series APUs** | x1 | x8 | x1 | x4 |
| **Ryzen Series CPUs (Pinnacle Ridge)** | x1 | x16 | x1 | x4 |
| **Ryzen Series CPUs (Summit Ridge)** | x1 | x16 | x1 | x4 |
| **Ryzen Series CPUs (Raven Ridge)** | x1 | x8 | x1 | x4 |
| **Athlon 2xxGE series APU** | x1 | x4 | x1 | x4 |

## 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". The illustration shows a 3-pin jumper whose pin1 and pin2 are "Short" when a jumper cap is placed on these 2 pins.




| | | |
|---|---|---|
| Clear CMOS Jumper (CLRMOS1) (see p.7, No. 18) | 1_2 Default | 2_3 Clear CMOS |

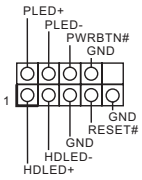
CLRMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin2 and pin3 on CLRMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. 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. Please be noted that the password, date, time, and user default profile will be cleared only if the CMOS battery is removed.

*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.7, No. 12)




Connect the power switch, reset switch 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.

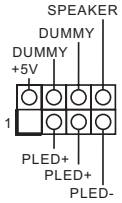
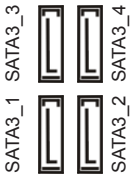
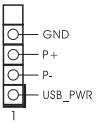
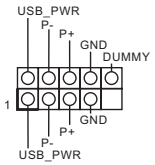
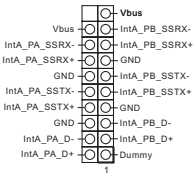
***PWRBTN (Power Switch):***
*Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.*

***RESET (Reset Switch):***
*Connect to the reset switch on the chassis front panel. Press the reset switch 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 S3 sleep state. The LED is off when the system is in S4 sleep state or powered off (S5).*

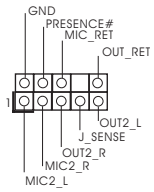
***HDLED (Hard Drive Activity LED):***
*Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.*

*The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, 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.*

| | | |
|---|---|---|
| Power LED and Speaker Header<br>(7-pin SPK_PLED1)<br>(see p.7, No. 13) |  | Please connect the chassis power LED and the chassis speaker to this header. |
| Serial ATA3 Connectors<br>(SATA3_1:<br>see p.7, No. 11)<br>(SATA3_2:<br>see p.7, No. 10)<br>(SATA3_3:<br>see p.7, No. 8)<br>(SATA3_4:<br>see p.7, No. 9) |  | These four SATA3 connectors support SATA data cables for internal storage devices with up to 6.0 Gb/s data transfer rate. |
| AMD LED Fan USB Header<br>(4-pin USB_7)<br>(see p.7, No. 7) |  | This header is used for connecting the USB connector on the AMD SR3 Heatsink. |
| USB 2.0 Headers<br>(9-pin USB_3_4)<br>(see p.7, No. 16)<br>(9-pin USB_5_6)<br>(see p.7, No. 17) |  | There are two headers on this motherboard. Each USB 2.0 header can support two ports. |
| USB 3.1 Gen1 Header<br>(19-pin USB3_67)<br>(see p.7, No. 6) |  | There is one header on this motherboard. Each USB 3.1 Gen1 header can support two ports. |

English

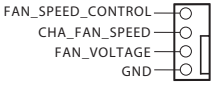
Front Panel Audio Header
(9-pin HD_AUDIO1)
(see p.7, No. 22)




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".*

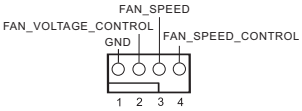
Chassis Fan Connectors
(4-pin CHA_FAN1)
(see p.7, No. 23)



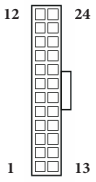
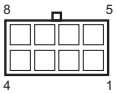
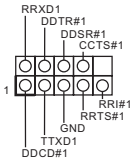
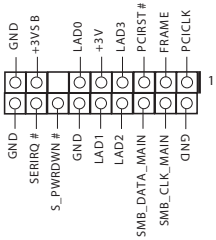

Please connect fan cables to the fan connectors and match the black wire to the ground pin.

(3-pin CHA_FAN2)
(see p.7, No. 15)


CPU Fan Connector
(4-pin CPU_FAN1)
(see p.7, No. 2)

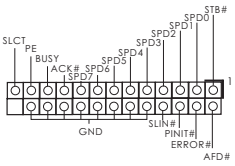



This motherboard provides a 4-Pin CPU fan (Quiet Fan) connector. If you plan to connect a 3-Pin CPU fan, please connect it to Pin 1-3.

| | | |
|---|---|---|
| ATX Power Connector<br>(24-pin ATXPWR1)<br>(see p.7, No. 5) |  | 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<br>(8-pin ATX12V1)<br>(see p.7, No. 1) |  | This motherboard provides a 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<br>(9-pin COM1)<br>(see p.7, No. 20) |  | This COM1 header supports a serial port module. |
| Chassis Intrusion Header<br>(2-pin CI1)<br>(see p.7, No. 14) |  | This motherboard supports CASE OPEN detection feature that detects if the chassis cove has been removed. This feature requires a chassis with chassis intrusion detection design. |
| TPM Header<br>(17-pin TPMS1)<br>(see p.7, No. 21) |  | 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. |

English

Print Port Header
(25-pin LPT1)
(see p.7, No. 19)



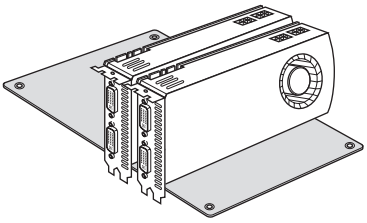

This is an interface for print port cable that allows convenient connection of printer devices.

## 2.7 CrossFireX™ and Quad CrossFireX™ Operation Guide

This motherboard supports CrossFireX™ and Quad CrossFireX™ that allows you to install up to two identical PCI Express x16 graphics cards.

1. *You should only use identical CrossFireX™-ready graphics cards that are AMD certified.*
2. *Make sure that your graphics card driver supports AMD CrossFireX™ technology. Download the drivers from the AMD's website: www.amd.com*
3. *Make sure that your power supply unit (PSU) can provide at least the minimum power your system requires. It is recommended to use a AMD certified PSU. Please refer to the AMD's website for details.*
4. *If you pair a 12-pipe CrossFireX™ Edition card with a 16-pipe card, both cards will operate as 12-pipe cards while in CrossFireX™ mode.*
5. *Different CrossFireX™ cards may require different methods to enable CrossFireX™. Please refer to AMD graphics card manuals for detailed installation guide.*

### 2.7.1 Installing Two CrossFireX™-Ready Graphics Cards



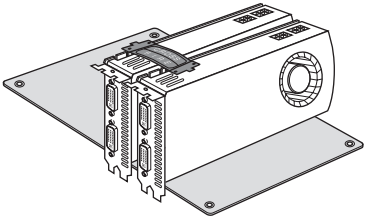
***Step 1***

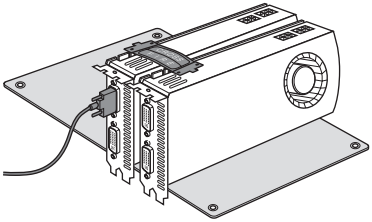
Insert one graphics card into PCIE2 slot and the other graphics card to PCIE4 slot. Make sure that the cards are properly seated on the slots.


CrossFire Bridge

***Step 2***

Connect two graphics cards by installing a CrossFire Bridge on the CrossFire Bridge Interconnects on the top of the graphics cards. (The CrossFire Bridge is provided with the graphics card you purchase, not bundled with this motherboard. Please refer to your graphics card vendor for details.)





***Step 3***

Connect a VGA cable or a DVI cable to the monitor connector or the DVI connector of the graphics card that is inserted to PCIE2 slot.

## 2.7.2 Driver Installation and Setup

***Step 1***

Power on your computer and boot into OS.

***Step 2***

Remove the AMD drivers if you have any VGA drivers installed in your system.

*The Catalyst Uninstaller is an optional download. We recommend using this utility to uninstall any previously installed Catalyst drivers prior to installation. Please check AMD's website for AMD driver updates.*

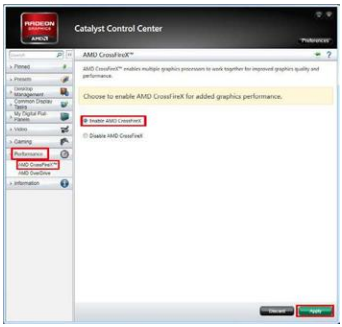
***Step 3***

Install the required drivers and CATALYST Control Center then restart your computer. Please check AMD's website for details.


AMD Catalyst Control Center

***Step 4***

Double-click the **AMD Catalyst Control Center** icon in the Windows® system tray.




***Step 5***

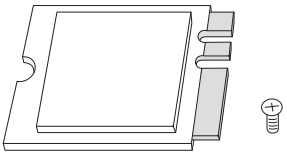
In the left pane, click **Performance** and then **AMD CrossFireX™**. Then select **Enable AMD CrossFireX** and click **Apply**. Select the GPU number according to your graphics card and click **Apply**.

English

## 2.8 M.2 WiFi/BT Module Installation Guide

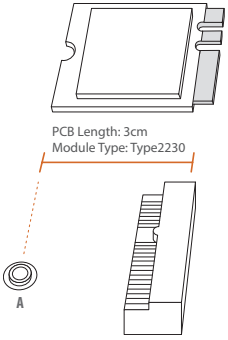
The M.2, also known as the Next Generation Form Factor (NGFF), is a small size and versatile card edge connector that aims to replace mPCIe and mSATA. The M.2 Socket (Key E) supports type 2230 WiFi/BT module.

### Installing the WiFi/BT module



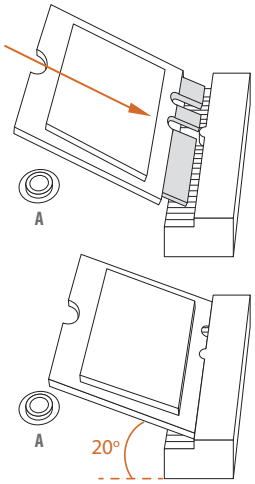
***Step 1***

Prepare a type 2230 WiFi/BT module and the screw.



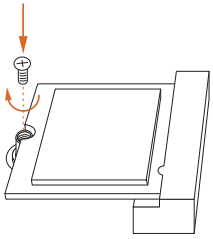

***Step 2***

Find the nut location to be used.




***Step 3***

Gently insert the WiFi/BT module into the M.2 slot. Please be aware that the module only fits in one orientation.



***Step 4***

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

# 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

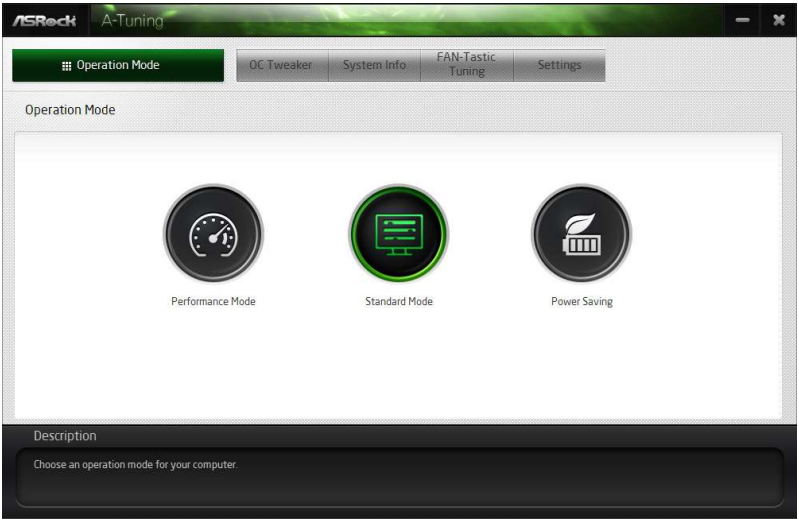
A-Tuning can be downloaded from ASRock Live Update & APP Shop. After the installation, you will find the icon "A-Tuning" on your desktop. Double-click the "A-Tuning" icon, A-Tuning main menu will pop up.

### 3.2.2 Using A-Tuning

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

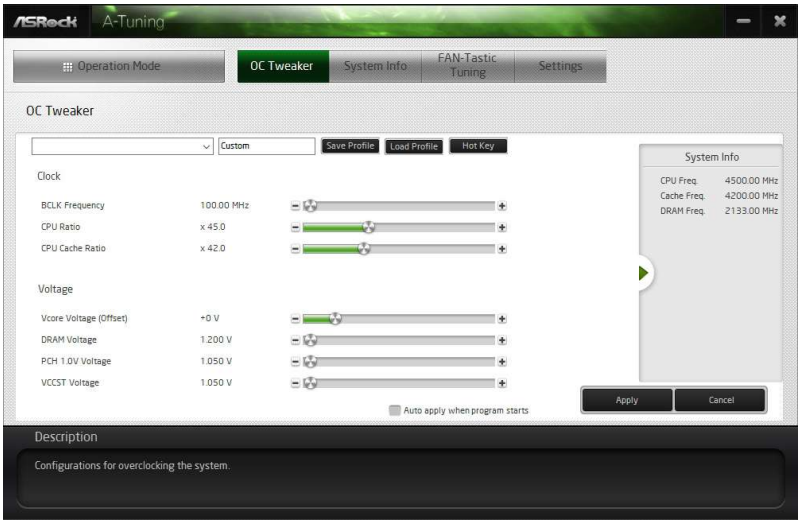
#### Operation Mode

Choose an operation mode for your computer.



## OC Tweaker

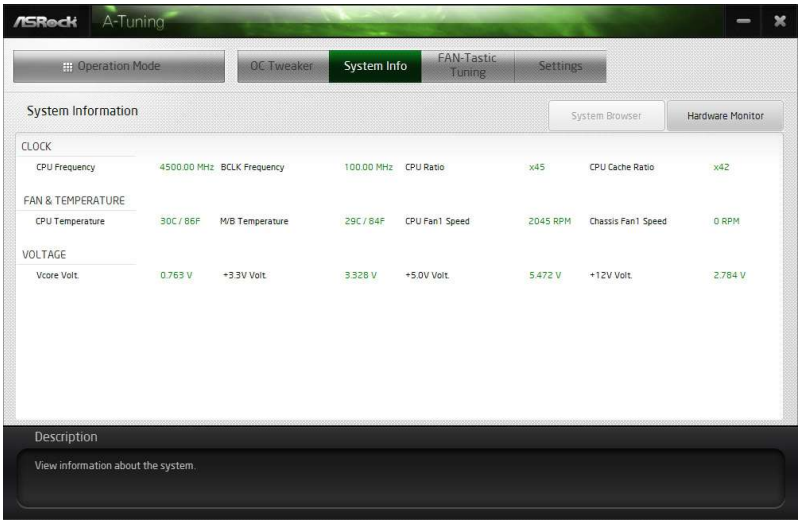
Configurations for overclocking the system.




## System Info

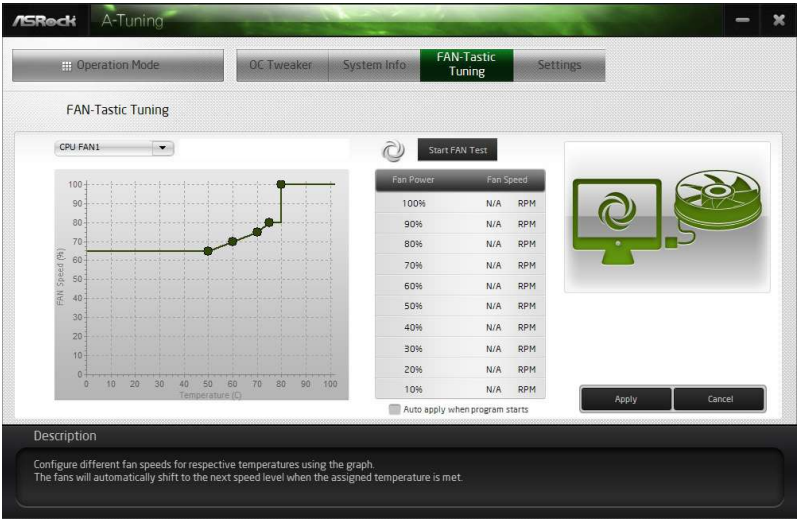
View information about the system.

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



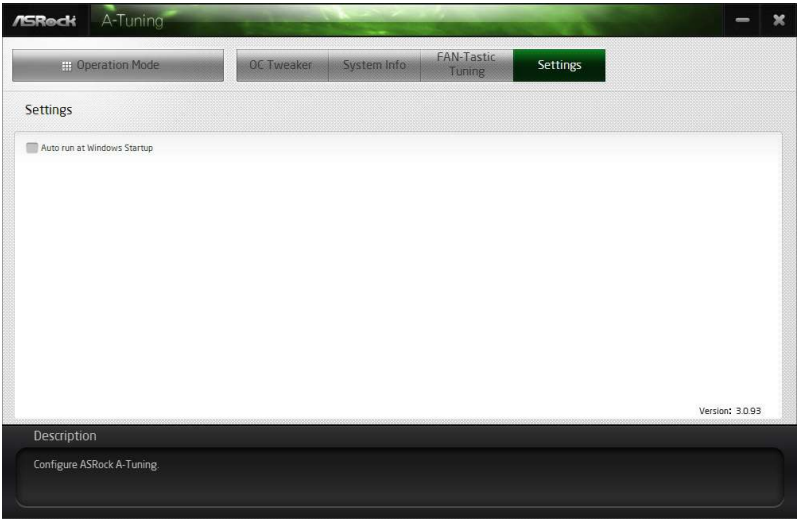
## FAN-Tastic Tuning

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.



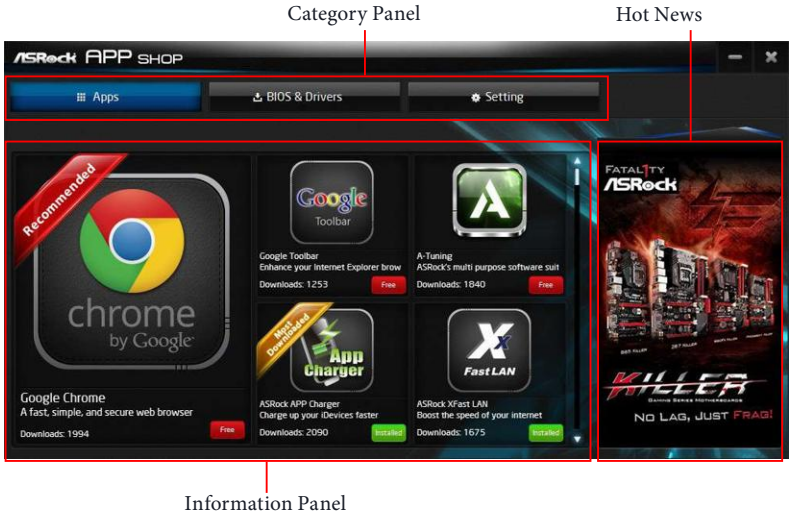
## 3.3 ASRock Live Update & APP Shop

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 intalled it or not.

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

Installed - 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 Free 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.

English

## 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" New Version appears below the installed app icon.


***Step 1***

Click on the app icon to see more details.

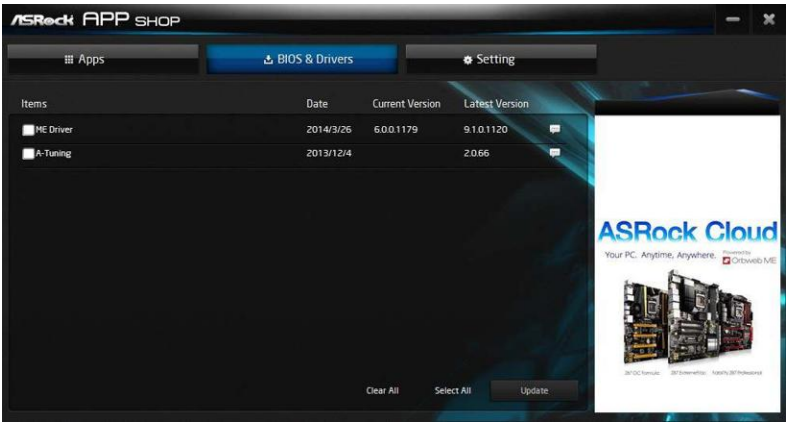
***Step 2***

Click on the yellow icon New Version 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:

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

## 4.1.2 Navigation Keys

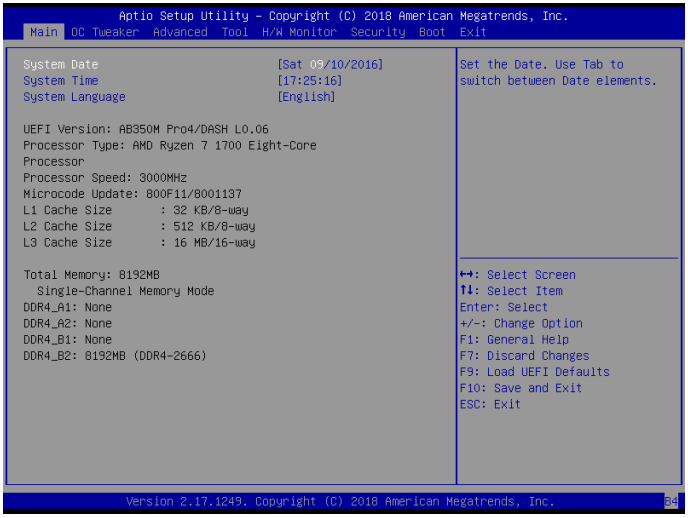
Use <←> key or <→> key to choose among the selections on the menu bar, and use < ↑ > key or < ↓ > key to move the cursor up or down to select items, then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

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 |

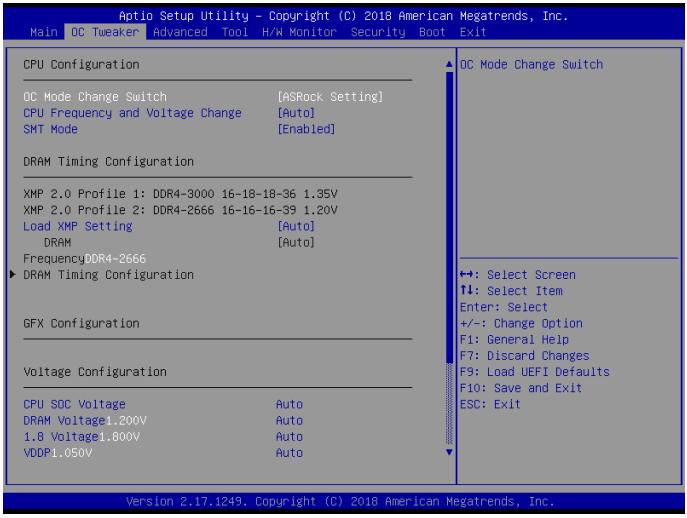
## 4.2 Main Screen

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



## 4.3 OC Tweaker Screen

In the OC Tweaker screen, you can set up overclocking features.




*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.*

### Voltage Configuration

#### CPU SOC Voltage

Configure the voltage for the CPU SOC.

#### DRAM Voltage

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

#### 1.8 Voltage

Use this to select 1.8 Voltage. The default value is [Auto].

#### VDDP

Configure the voltage for the VDDP.

### Save User Default

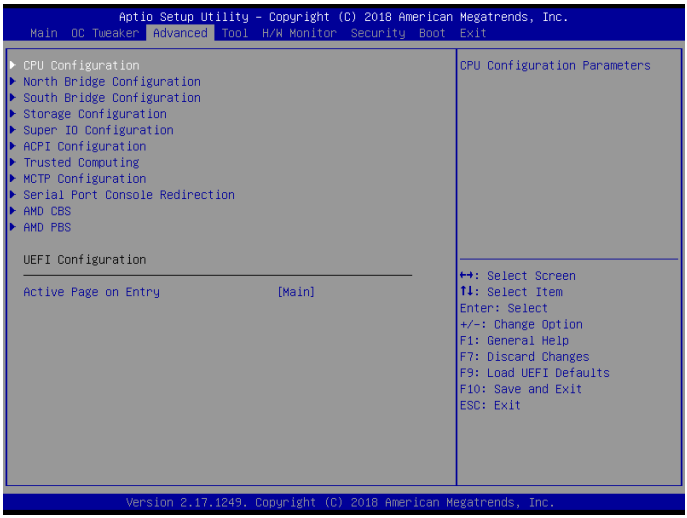
Type a profile name and press enter to save your settings as user default.

### Load User Default

Load previously saved user defaults.

## 4.4 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, North Bridge Configuration, South Bridge Configuration, Storage-Configuration, Super IO Configuration, ACPI Configuration, Trusted Computing, MCTP Configuration, Serial Port Console Redirection, AMD CBS and AMD PBS.



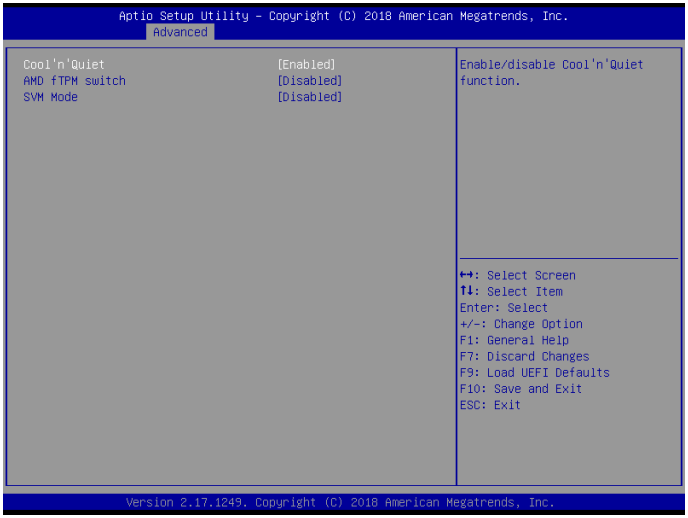

*Setting wrong values in this section may cause the system to malfunction.*

### UEFI Configuration

### Active Page on Entry

Select the default page when entering the UEFI setup utility.

## 4.4.1 CPU Configuration




### Cool 'n' Quiet

Use this item to enable or disable AMD's Cool 'n' Quiet™ technology. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled]. If you install Windows® OS and want to enable this function, please set this item to [Enabled]. Please note that enabling this function may reduce CPU voltage and memory frequency, and lead to system stability or compatibility issue with some memory modules or power supplies. Please set this item to [Disable] if above issue occurs.

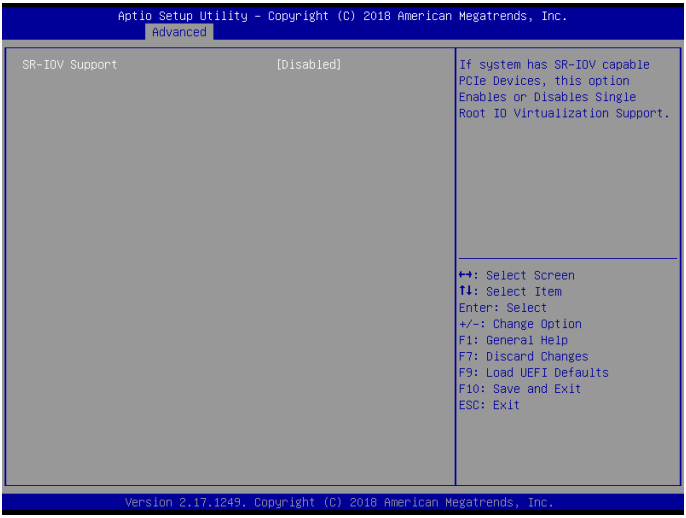
### AMD fTPM Switch

Use this to enable or disable AMD CPU fTPM.

### SVM Mode

When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by AMD-V. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled].

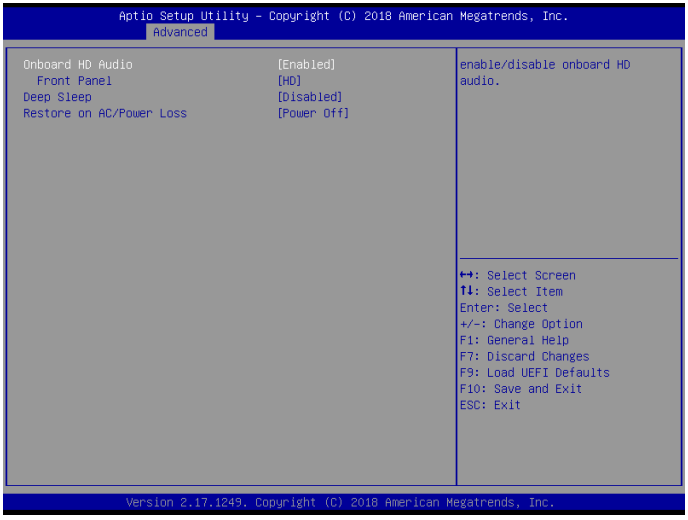
## 4.4.2 North Bridge Configuration




### SR-IOV Support

Enable/disable the SR-IOV (Single Root IO Virtualization Support) if the system has SR-IOV capable PCIe devices.

## 4.4.3 South Bridge Configuration




### 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

Enable/disable front panel HD audio.

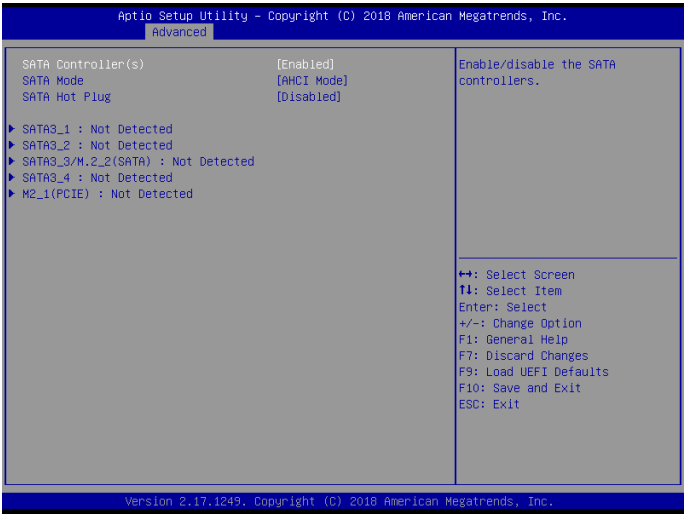
### Deep Sleep

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.

## 4.4.4 Storage Configuration




### SATA Controller(s)

Enable/disable the SATA controllers.

### SATA Mode

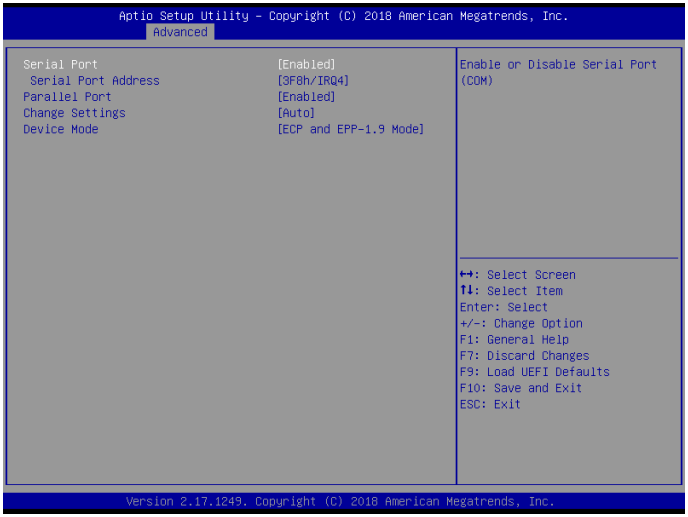
AHCI: Supports new features that improve performance.

RAID: Combine multiple disk drives into a logical unit.

### SATA Hot Plug

Enable/disable the SATA Hot Plug function.

## 4.4.5 Super IO Configuration




### Serial Port

Enable or disable the Serial port.

### Serial Port Address

Select the address of the Serial port.

### Parallel Port

Enable or disable the Parallel port.

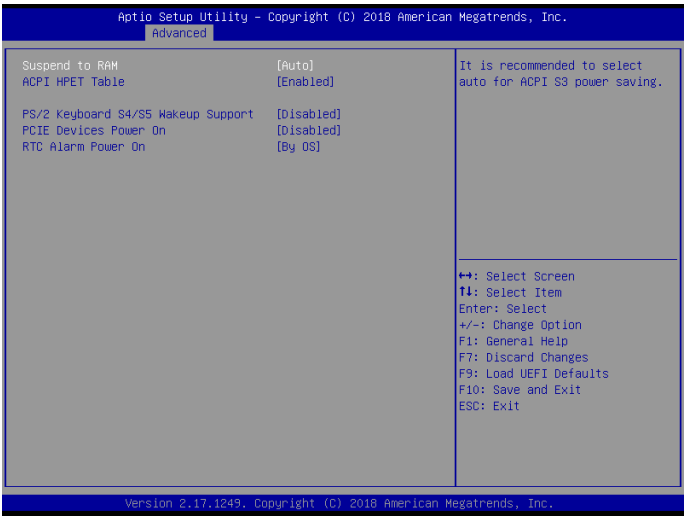
### Change Settings

Select the address of the Parallel port.

### Device Mode

Select the device mode according to your connected device.

## 4.4.6 ACPI Configuration




### Suspend to RAM

It is recommended to select auto for ACPI S3 power saving.

### ACPI HPET Table

Enable the High Precision Event Timer for better performance and to pass WHQL tests.

### PS/2 Keyboard Power On

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

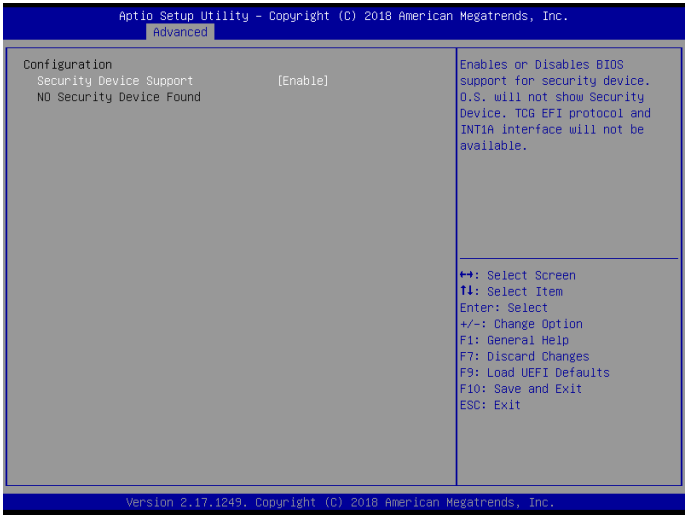
### PCIE Devices Power On

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

### 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.

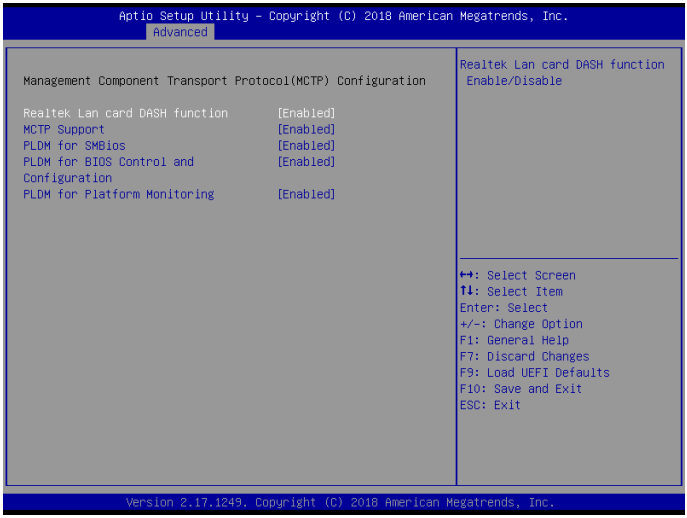
## 4.4.7 Trusted Computing




### Security Device Support

Enable to activate Trusted Platform Module (TPM) security for your hard disk drives.

## 4.4.8 MCTP Configuration




### Realtek Lan Card DASH Function

Enable or disable Realtek Lan card DASH function.

### MCTP Support

Enable or disable MCTP support.

### PLDM for SMBIOS

Enable or disable PLDM for SMBIOS.

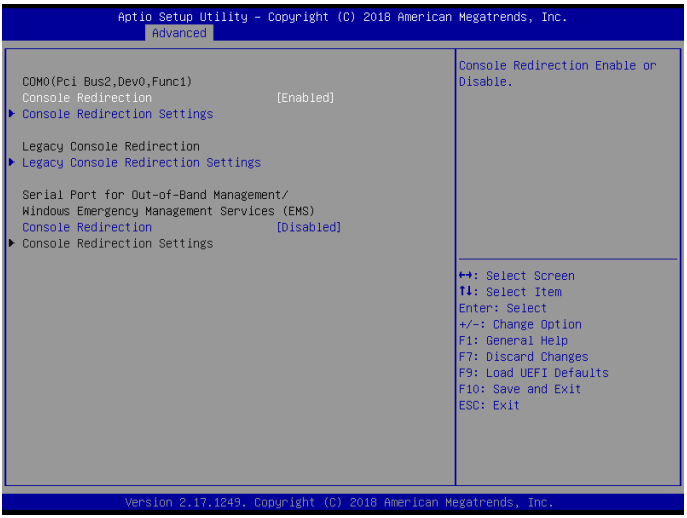
### PLDM for BIOS Control and Config

Enable or disable PLDM for BIOS control and Configuration.

### PLDM for Platform Monitoring

Enable or disable PLDM for PLDM for platform monitoring.

## 4.4.9 Serial Port Console Redirection



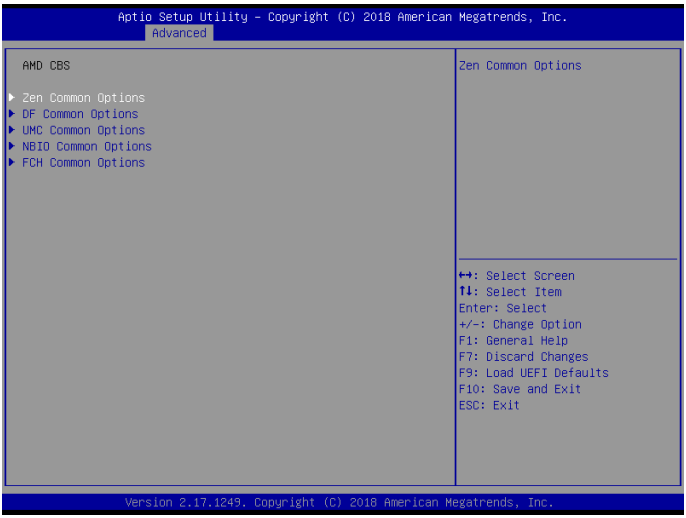

### Console Redirection

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.

## 4.4.10 AMD CBS




### Zen Common Options

### RedirectForReturnDis

From a workaround for GCC/C000005 issue for XV Core on CZ A0, setting MSRC001_1029 Decode Configuration (DE_CFG) bit 14 [DecfgNoRdrctForReturns] to 1.

### L2 TLB Associativity

0 - L2 TLB ways [11:8] are fully associative. 1 - =L2 TLB ways [11:8] are 4K-only.

### Platform first Error Handling

Enable/disable PFEH, cloak individual banks, and mask deferred error interrupts from each bank.

### Core Performance Boost

Disable CPB.

### Enable IBS

Enables IBS through MSRC001_1005[42] and disables SpecLockMap through MSRC001_1020[54].

### Global C-state Control

Controls IO based C-state generation and DF C-states.

### Opcache Control

Enables or disables the Opcache.

### OC Mode

OC1 - 16 cores/3.6GHz on 1.3375V
OC2 - 8 cores/3.7GHz on 1.369V
OC3 - 4 cores/3.75GHz on 1.374V\nMax Stress - 16 cores/3.8GHz on 1.400V

### SEV-ES ASID Space Limit

SEV VMs using ASIDs below the SEV-ES ASID Space Limit must enable the SEV-ES feature.
The valid values for this field are from 0x1 (1) - 0x10 (16).

### Core/Thread Enablement

### Downcore control

Sets the number of cores to be used. Once this option has been used to remove any cores, a POWER CYCLE is required in order for future selections to take effect.

### SMTEN

This item can be used to disable symmetric multithreading. To re-enable SMT, a POWER CYCLE is needed after selecting the 'Auto' option.
Warning: S3 is NOT SUPPORTED on systems where SMT is disabled.

### Streaming Stores Control

Enables or disables the streaming stores functionality.

### DF Common Options

### DRAM scrub time

Provide a value that is the number of hours to scrub memory.

### Redirect scrubber control

Control DF::RedirScrubCtrl[EnRedirScrub]

### Disable DF sync flood propagation

Control DF::PIEConfig[DisSyncFloodProp].

### Freeze DF module queues on error

Controls DF::PIEConfig[DisImmSyncFloodOnFatalError]
Disabling this option sets DF:PIEConfig[DisImmSyncFloodOnFatalError].

### GMI encryption control

GMI encryption control

### Control GMI link encryption

xGMI encryption control

### Control xGMI link encryption

### CC6 memory region encryption

Control whether or not the CC6 save/restore memory is encrypted

### Location of private memory regions

Controls whether or not the private memory regions (PSP, SMU and CC6) are at the top of DRAM or distributed. Note that distributed requires memory on all dies. Note that it will always be at the top of DRAM if some dies don't have memory regardless of this option's setting.

### System probe filter

Controls whether or not the probe filter is enabled. Has no effect on parts where the probe filter is fuse disabled.

### Memory interleaving

Controls fabric level memory interleaving (AUTO, none, channel, die, socket). Note that channel, die, and socket has requirements on memory populations and it will be ignored if the memory doesn't support the selected option.

### Memory interleaving size

Controls the memory interleaving size. The valid values are AUTO, 256 bytes, 512 bytes, 1 Kbytes or 2Kbytes. This determines the starting address of the interleave (bit 8, 9, 10 or 11).

### Channel interleaving hash

Controls whether or not the address bits are hashed during channel interleave mode. This field should not be used unless the interleaving is set to channel and the interleaving size is 256 or 512 bytes.

### Memory Clear

When this feature is disabled, BIOS does not implement MemClear after memory training (only if non-ECC DIMMs are used).

### UMC Common Options

### DDR4 Common Options

### DRAM Controller Configuration

DRAM Controller Configuration

### DRAM Power Options

### Cmd2T

Select between 1T and 2T mode on ADDR/CMD

### Gear Down Mode

Configure the Gear Down Mode.

### CAD Bus Configuration

### CAD Bus Timing User Controls

Setup time on CAD bus signals to Auto or Manual

### CAD Bus Drive Strength User Controls

Drive Strength on CAD bus signals to Auto or Manual

### Data Bus Configuration

### Data Bus Configuration User Controls

Specify the mode for drive strength to Auto or Manual

### Common RAS

### Data Poisoning

Enable/disable data poisoning: UMC_CH::EccCtrl[UcFatalEn] UMC_CH::EccCtrl[WrEccEn]
Should be enabled/disabled together.

### Security

### TSME

Transparent SME: AddrTweakEn = 1; ForceEncrEn =1; DataEncrEn = 0

### Data Scramble

Data scrambling: DataScrambleEn

## DRAM Memory Mapping

### Chipselect Interleaving

Interleave memory blocks across the DRAM chip selects for node 0.

### BankGroupSwap

Configure the BankGroupSwap.

### BankGroupSwapAlt

Configure BankGroupSwapAlt.

### Address Hash Bank

Configure the bank address hashing.

### Address Hash CS

Configure the CS address hashing.

## NVDIMM

### Memory MBIST

### MBIST Enable

Configure the Memory MBIST.

### MBIST SubType Test

Select MBIST Subtest - Single Chipselect, Multi Chipselect, Address Line Test or execute All test

### MBIST Aggressors

Enable or disable MBIST Aggressor test.

### MBIST Per Bit Slave Die Reporting

Enable or disable MBIST per bit slave die result report.

## NBIO Common Options

### NB Configuration

### IOMMU

Use this to enable or disable IOMMU. The default value of this feature is [Disabled].

### Determinism Slider

[Auto]

Use default performance determinism settings

### cTDP Control

[Auto]

Use the fused cTDP.

[Manual]

User can set customized cTDP.

### Fan Control

[Auto]

Use the default fan controller settings.

[Manual]

User can set customized fan controller settings.

### PSI

Disable PSI.

### ACS Enable

Enable ACS.

### PCIe ARI Support

### Enables Alternative Routing-ID Interpretation

### CLDO_VDDP Control

[Manual]

If this option is selected, user can set customized CLDO_VDDP voltage.

### HD Audio Enable

Enable HD Audio.

### FCH Common Options

### SATA Configuration Options

### SATA Controller

Disable or enable OnChip SATA controller

### Sata RAS Support

Disable or enable Sata RAS Support

### Sata Disabled AHCI Prefetch Function

Configure the Sata Disabled AHCI Prefetch function.

### Aggresive SATA Device Sleep Port 0

Configure the Aggresive SATA Device Sleep Port 0.

### Aggresive SATA Device Sleep Port 1

Configure the Aggresive SATA Device Sleep Port 1.

### USB Configuration Options

### XHCI controller enable

Configure the USB3 controller.

### SD (Secure Digital) Options

### SD Configuration Mode

Select SD Mode.

### Ac Power Loss Options

Select Ac Loss Control Method.

### I2C Configuration Options

### Uart Configuration Options

### ESPI Configuration Options

### XGBE Configuration Options

### eMMC Options

### NTB Common Options

### DRAM Memory Mapping

### Chipselect Interleaving

Interleave memory blocks across the DRAM chip selects for node 0.

### BankGroupSwap

Configure the BankGroupSwap.

### BankGroupSwapAlt

Configure the BankGroupSwapAlt.

### Address Hash Bank

Configure the bank address hashing.

### Address Hash CS

Configure the CS address hashing.

### NVDIMM

### Memory MBIST

### MBIST Enable

Configure the Memory MBIST.

### MBIST SubType Test

Select MBIST Subtest - Single Chipselect, Multi Chipselect, Address Line Test or execute all test.

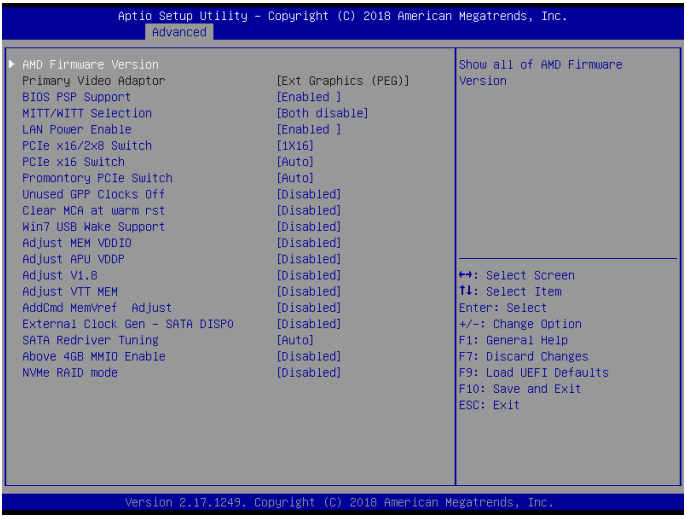
### MBIST Aggressors

Configure the MBIST Aggressor test.

### MBIST Per Bit Slave Die Reporting

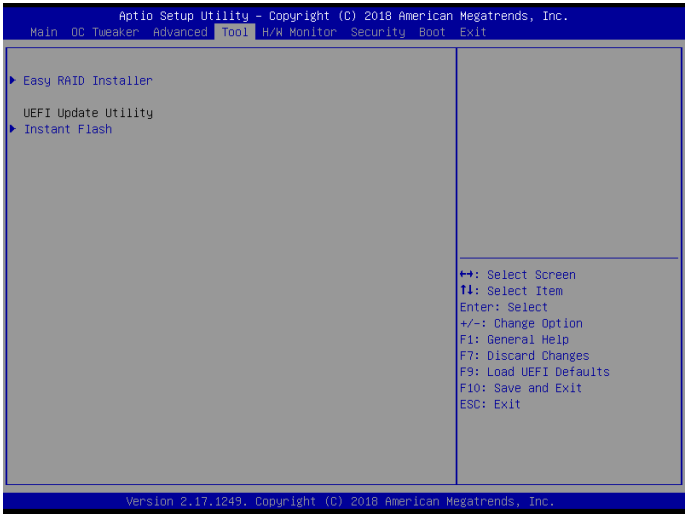
Configure the MBIST per bit slave die result report.

## 4.4.11 AMD PBS




The AMD PBS menu accesses AMD specific features.

## 4.5 Tools




### Easy RAID Installer

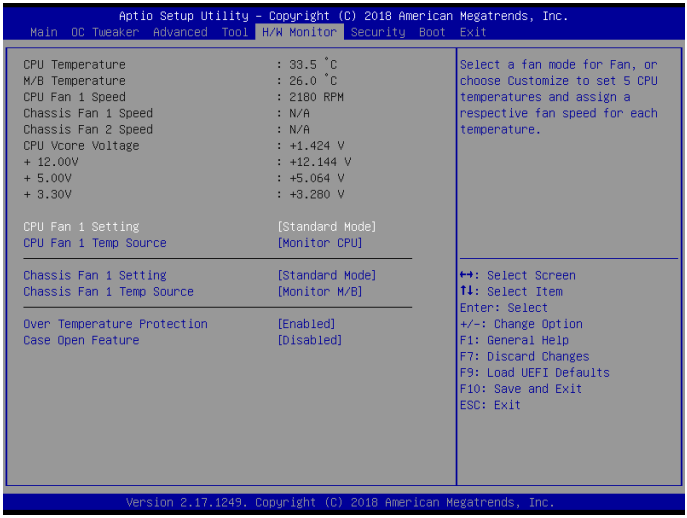
Easy RAID Installer helps you to copy the RAID driver from the support CD to your USB storage device. After copying the drivers please change the SATA mode to RAID, then you can start installing the operating system in RAID mode.

### Instant Flash

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

## 4.6 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.




### CPU Fan 1 Setting

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

### CPU Fan 1 Temp Source

Select a fan temperature source for CPU Fan 1.

### 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.

### Over Temperature Protection

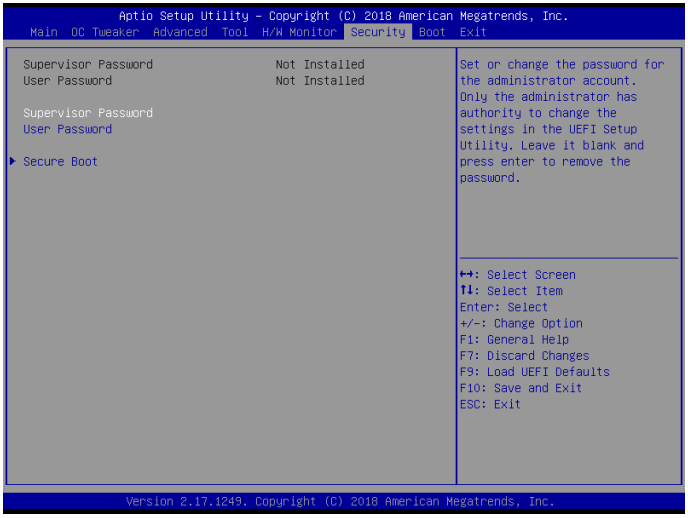
When Over Temperature Protection is enabled, the system automatically shuts down when the motherboard is overheated.

### Case Open Feature

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

## 4.7 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

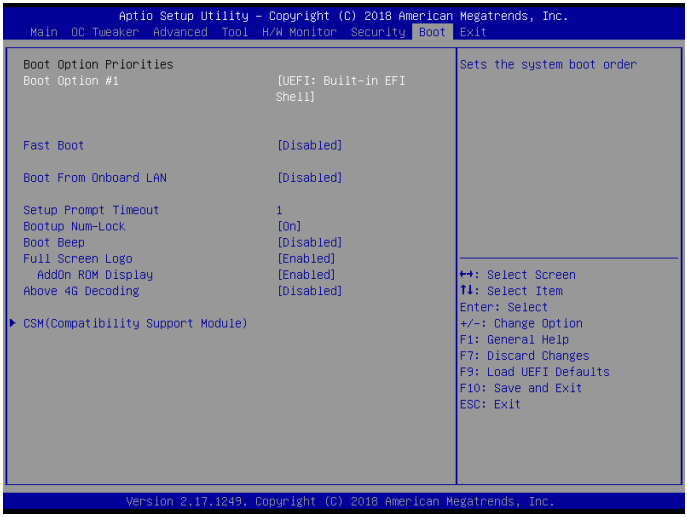
Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

### Secure Boot

Enable to support Secure Boot.

## 4.8 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.

### 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.

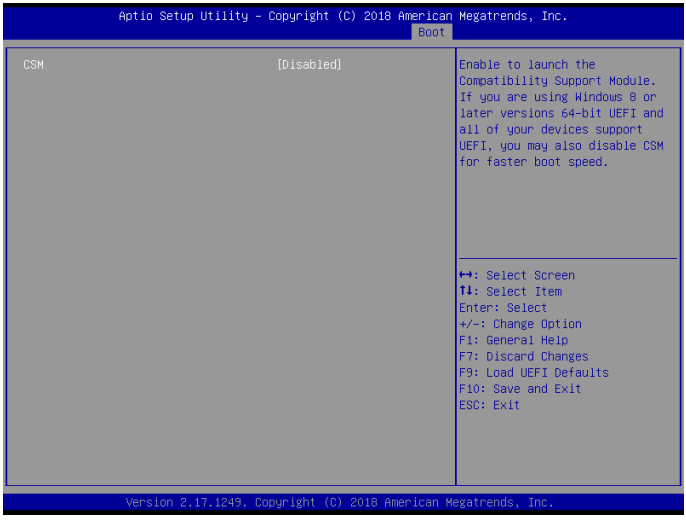
## AddOn ROM Display

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.

## 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).

## CSM (Compatibility Support Module)




## CSM

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

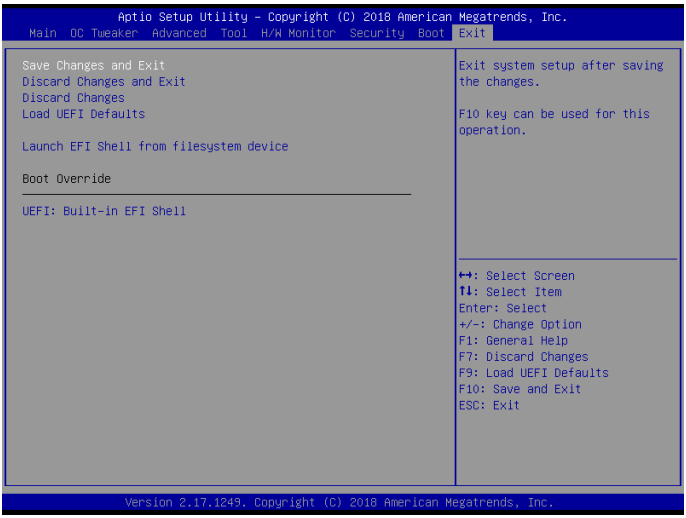
## Launch PXE OpROM Policy

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.

## 4.9 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.

## 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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**ASRock America, Inc.**

13848 Magnolia Ave, Chino, CA91710

U.S.A.

Phone: +1-909-590-8308

Fax: +1-909-590-1026

# 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 : AB350M Pro4/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 :

Date : **May 12, 2017**

# EU Declaration of Conformity

For the following equipment:

**Motherboard**

(Product Name)

**AB350M Pro4/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)

CE

**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 28, 2018**

(Date)

P/N: 15G062140001AK V1.1