ASRock

A320TM-ITX

User Manual

Version 1.0
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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.

CALIFORNIA, USA ONLY

The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.
"Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate"

AUSTRALIA ONLY

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage caused by our goods. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Contents

Chapter 1 Introduction

Thank you for purchasing A320TM-ITX motherboard. 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.

1.1 Package Contents

- A320TM-ITX Motherboard (Thin Mini-ITX Form Factor)
- A320TM-ITX Quick Installation Guide (Optional)
- 1 x Thin-Mini ITX I/O Shield (Optional)
- 1 x Mini ITX I/O Shield (Optional)
- 1 x Serial ATA (SATA) Data Cable (Optional)
- 1 x SATA Power Cable (Optional)
- 2 x Screws for M.2 Sockets (M2*2) (Optional)

1.2 Specifications

Platform	• Thin Mini-ITX Form Factor • Solid Capacitor design
CPU	• Supports AMD AM4 Socket CPUs (Picasso, Raven Ridge, Bristol Ridge, up to 65W) *Please refer to the "CPU Support List" on ASRock's website for more information. • Digi Power design • 5 Power Phase design • Supports CPU up to 65W • Supports LGA115x CPU Cooler
Chipset	• AMD Promontory A320
Memory	• 2 x DDR4 SO-DIMM Slots • AMD Ryzen series CPUs (Raven Ridge) support DDR4 2933/2667/2400/2133 non-ECC, un-buffered memory* • AMD 7th Gen A-Series APUs support DDR4 2133/1866 non-ECC, un-buffered memory* * Be sure to install the memory module into the DDR4_A2 slot as first priority; otherwise, the system may not boot up properly or may operate incorrectly. • Max. capacity of system memory: 64GB
Expansion Slot	• 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.

	• Dual graphics output: support HDMI and LVDS ports by independent display controllers • Supports 2 x HDMI 1.4 with max. resolution up to 4K x 2K (4096x2160) @ 24Hz / (3840x2160) @ 30Hz HDMI x 1 port (Rear) HDMI x 1 port (Side) • Supports LVDS with max. resolution up to 1920x1200 @ 60Hz • Supports Auto Lip Sync, Deep Color (12bpc), xvYCC and HBR (High Bit Rate Audio) with HDMI 1.4 Ports (Compliant HDMI monitor is required) • Supports HDCP 1.4 with HDMI 1.4 Port • Supports Full HD 1080p Blu-ray (BD) playback with HDMI 1.4 Ports
Audio	• Realtek ALC233 Audio Codec • 1 x Headphone Jack • 1 x MIC-In
LAN	• PCIE x1 Gigabit LAN 10/100/1000 Mb/s • Realtek RTL8111GR / RTL8111H • Supports Wake-On-LAN • Supports Lightning/ESD Protection • Supports Energy Efficient Ethernet 802.3az • Supports PXE
I/O	• 1 x DC Jack (Compatible with the 19V power adapter) • 1 x Serial Port: COM • 2 x HDMI Ports: HDMI1 (Rear), HDMI2 (Side) • 4 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: Front Speaker / Microphone

Storage

- 1 x SATA3 6.0 Gb/s Connector, supports NCQ, AHCI and Hot Plug
- 1 x Ultra M.2 Socket, supports M Key type 2260/2280 M.2 SATA3 6.0 Gb/s module and M.2 PCI Express module up to Gen3 x4 (32 Gb/s)*

* Supports NVMe SSD as boot disks

Connector

- 1 x Panel Power Jumper
- 1 x Backlight Power Jumper
- 1 x Panel Disable Jumper

	Short [Default]	Open
Panel (LVDS) as video output	X	O (Priority)
HDMI1 and HDMI2 as video output	O	O (After entering OS)

- 1 x Backlight Control Header
- 1 x LVDS Connector
- 2 x CPU Fan Connectors (4-pin)

* The CPU Fan Connectors support the CPU fan of maximum 1A (12W) fan power.

- 1 x 4 pin 19V Power Connector
- 1 x Front Panel Audio Connector
- 1 x Internal Speaker Header (4-Pin)
- 1 x SATA Power Connector
- 2 x USB 2.0 Headers (Support 4 USB 2.0 ports) (Supports ESD Protection)

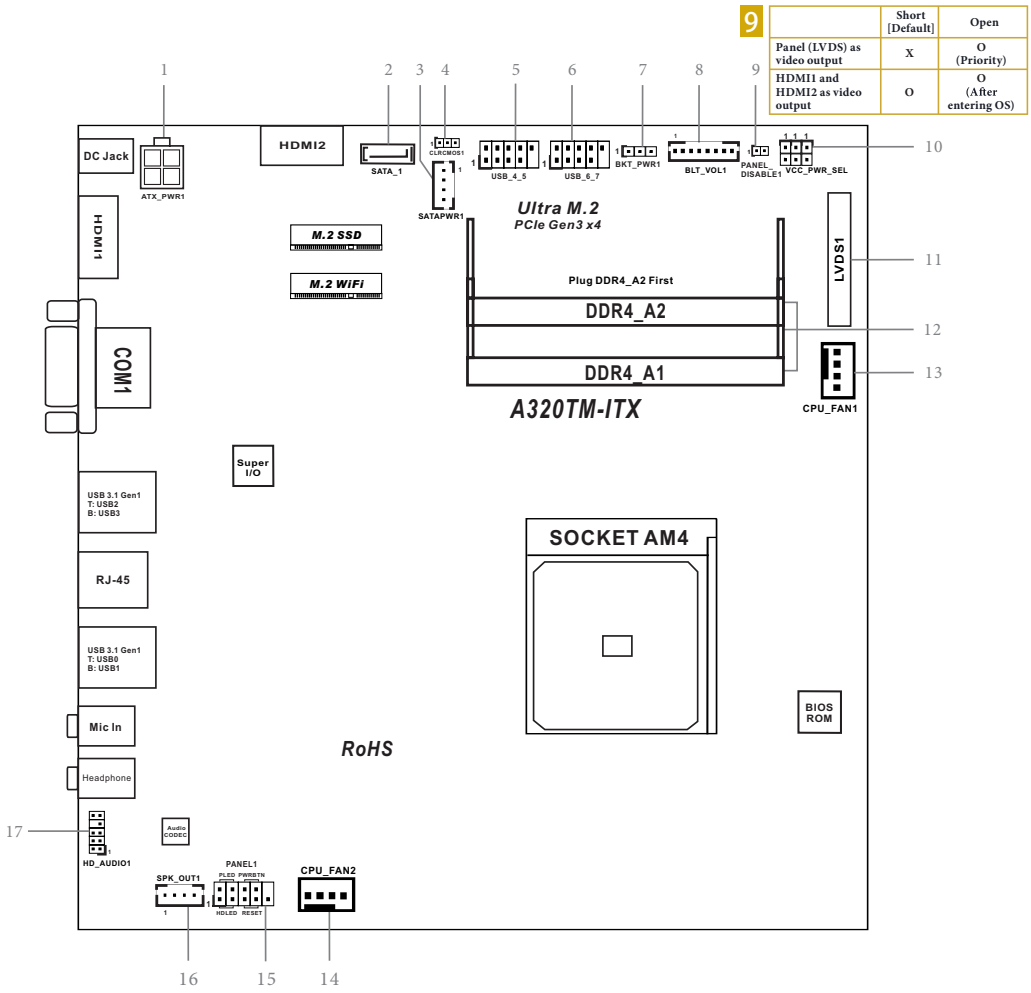
BIOS Feature

- AMI UEFI Legal BIOS with GUI support
- Supports "Plug and Play"
- ACPI 5.1 compliance wake up events
- Supports jumperfree
- SMBIOS 2.3 support
- CPU, DRAM, PCH 1.05V, PROM 2.5V, Voltage Multi-adjustment

Hardware Monitor	• CPU Temperature Sensing • CPU Fan Tachometer • CPU Quiet Fan (Auto adjust chassis fan speed by CPU temperature) • CPU Fan Multi-Speed Control • Voltage monitoring: +12V, +5V, +3.3V, CPU Vcore
OS	• Microsoft® Windows® 10 64-bit
Power	• 1 x DC Jack (Supports 19V DC Power Adapters)
Certifications	• FCC, CE • ErP/EuP ready (ErP/EuP ready power supply is required)

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.

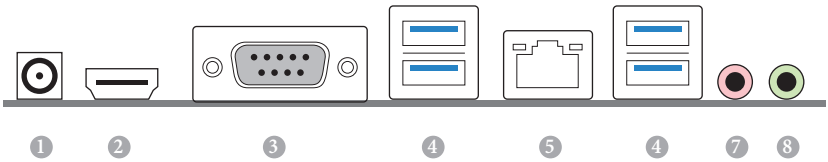
1.3 Motherboard Layout



	Short [Default]	Open
Panel (LVDS) as video output	X	O (Priority)
HDMI1 and HDMI2 as video output	O	O (After entering OS)

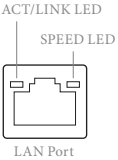
No.	Description
1	4 pin 19V Power Connector (ATX_PWR1)
2	SATA3 Connector (SATA_1)
3	SATA Power Connector (SATAPWR1)
4	Clear CMOS Jumper (CLRCMOS1)
5	USB 3.0 Header (USB3_4_5)
6	USB 3.0 Header (USB3_6_7)
7	Backlight Power Jumper (BKT_PWR1)
8	Backlight Control Header (BLT_VOL1)
9	Panel Disable Jumper (PANEL_DISABLE1)  1 2 <table><tr><th></th><th>Short [Default]</th><th>Open</th></tr><tr><td>Panel (LVDS) as video output</td><td>X</td><td>O (Priority)</td></tr><tr><td>HDMI1 and HDMI2 as video output</td><td>O</td><td>O (After entering OS)</td></tr></table>
10	Panel Power Jumper (VCC_PWR_SEL)
11	LVDS Connector (LVDS1)
12	2 x 260-pin DDR4 SO-DIMM Slots (DDR4_A1, DDR4_A2)
13	CPU Fan Connector (CPU_FAN1)
14	CPU Fan Connector (CPU_FAN2)
15	System Panel Header (PANEL1)
16	Internal Speaker Header (SPK_OUT1)
17	Front Panel Audio Header (HD_AUDIO1)

1.4 I/O Panel



No.	Description	No.	Description
1	DC Jack**	5	LAN RJ-45 Port*
2	HDMI Port (HDMI1)	6	USB 3.1 Gen1 Port (USB3_01)
3	COM Port	7	Microphone (Pink)
4	USB 3.1 Gen1 Port (USB3_23)	8	Front Speaker (Lime)

**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	Green	100Mbps connection
On	Link	Green	1Gbps connection

*** Please use a 19V power adapter for the DC jack. This jack accepts dual barrel plugs with an inner diameter of 2.5 mm and an outer diameter of 5.5 mm, where the inner contact is +19 (±10%) DC and the shell is (centre positive).*

DELTA	*DELTA-ADP-150TB-150W/19V*
HP	*HP-TBC-BA52-150W/19V*
FSP	*FSP-FSP150-ABAN1-150W/19V*
DELL	*FA130PE1-00-130W/19.5V*
DELL	*LA90PE0-01-90W/19.5V*
DELTA	*DELTA-ADP-180TB-180W/19V*
FSP	*FSP-FSP180-ABBN3-180W/19V*

This motherboard is available with support for either 4-pin ATX 19V power or DC-in power supplies. Please do not use two kinds of power supplies at the same time! Doing so may damage the motherboard components and devices. When you use the DC-in power adapter, please use the onboard SATA power connector to get the power for HDDs.

Chapter 2 Installation

This is a Thin Mini-ITX 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

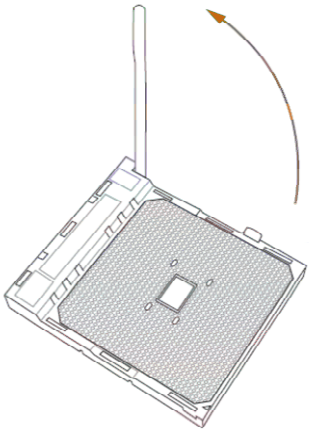
Take note of the following precautions before you install motherboard components or change any motherboard settings.

- 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.

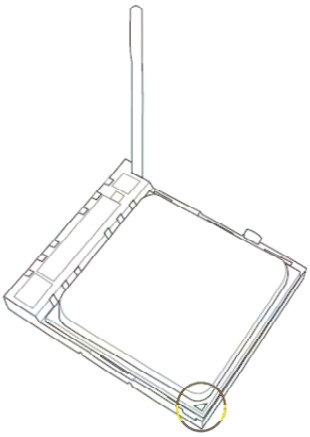
2.1 Installing the CPU

Unplug all power cables before installing the CPU.

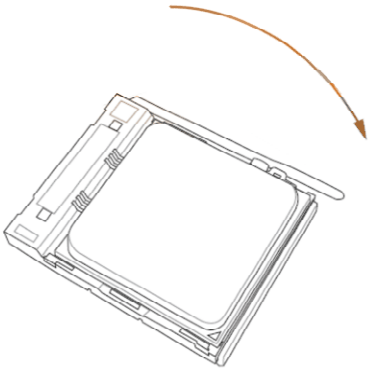
1



2



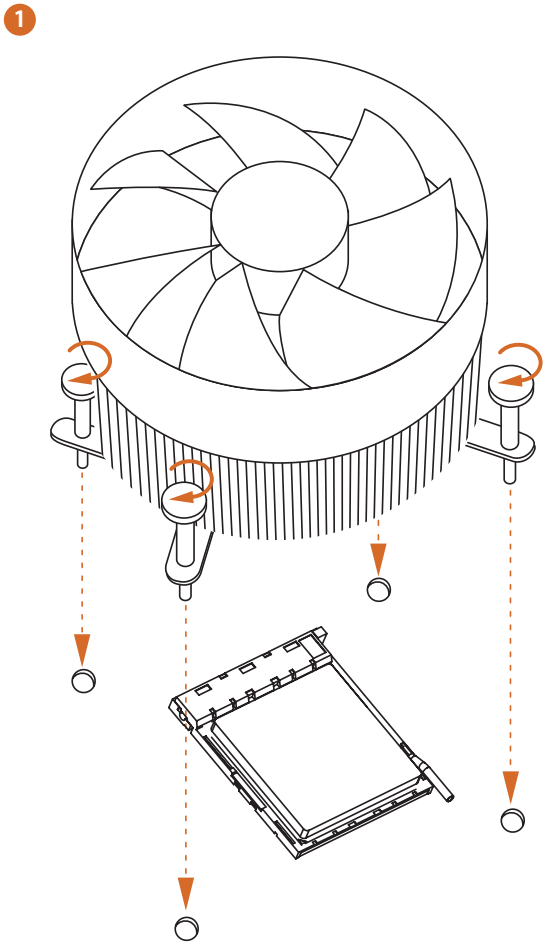
3



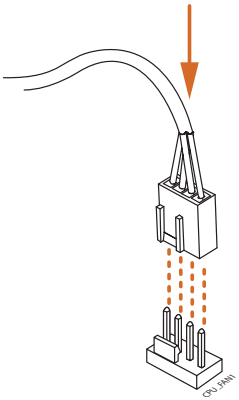
2.2 Installing the CPU Fan and Heatsink

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.



2



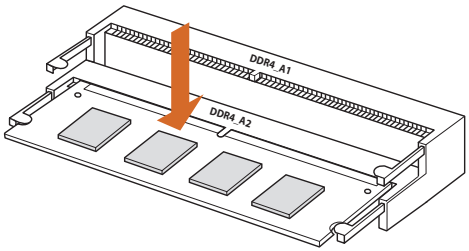
4-pin FAN cable

2.3 Installing Memory Modules (SO-DIMM)

This motherboard provides two 260-pin DDR4 (Double Data Rate 4) SO-DIMM slots.

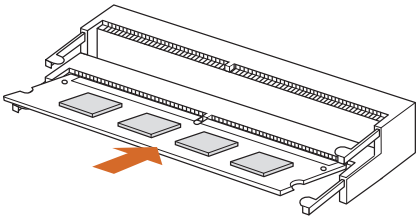
It is not allowed to install a DDR, DDR2 or DDR3 memory module into a DDR4 slot; otherwise, this motherboard and SO-DIMM may be damaged.

Be sure to install the memory module into the **DDR4_A2** slot as first priority; otherwise, the system may not boot up properly or may operate incorrectly.

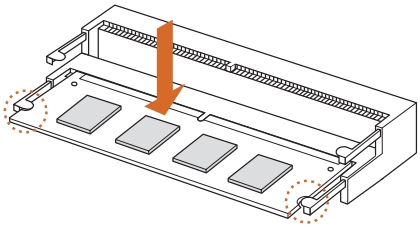


The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

1

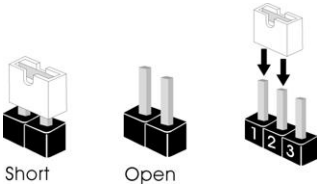


2



2.4 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
(CLRCMOS1)
(see p.6, No. 4)

CLRCMOS1 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 CLRCMOS1 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.

Backlight Power Jumper
(3-pin BKT_PWR1)
(see p.6, No. 7)

1-2 : +12V [Default]
2-3 : +19V

Warning:
If selected Backlight Power or Panel Power is higher than panel's spec, it may damage the panel.

Panel Power Jumper
(6-pin VCC_PWR_SEL)
(see p.6, No. 10)

+3V

+5V [Default]

+12V

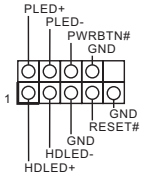
Panel Disable Jumper
(2-pin PANEL_DISABLE1)
(see p.6, No. 9)

	Short [Default]	Open
Panel (LVDS) as video output	X	O (Priority)
HDMI1 and HDMI2 as video output	O	O (After entering OS)

2.5 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. 15)



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.

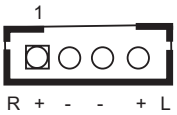
RESET (Reset Button):
Connect to the reset button on the chassis front panel. Press the reset button to restart the computer if the computer freezes and fails to perform a normal restart.

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.

Internal Speaker Header
(4-pin SPK_OUT1)
(see p.6, No. 16)

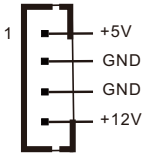


Please connect the chassis speaker to this header.

Serial ATA3 Connector
(SATA_1:
see p.6, No. 2)

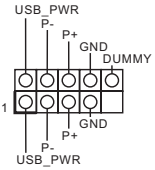
This SATA3 connector supports SATA data cable for internal storage devices with up to 6.0 Gb/s data transfer rate.

SATA Power Connector
(SATAPWR1:
see p.6, No. 3)



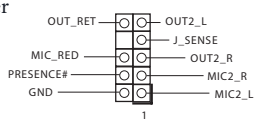
Please connect a SATA power cable.

USB 2.0 Headers
(9-pin USB_4_5)
(see p.6, No. 5)
(9-pin USB_6_7)
(see p.6, No. 6)



There are two headers on this motherboard. Each USB 2.0 header can support two ports.

Front Panel Audio Header
(9-pin HD_AUDIO1)
(see p.6, No. 17)



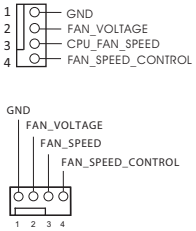
This header is for connecting audio devices to the front audio panel.

English

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".

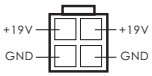
CPU Fan Connectors
(4-pin CPU_FAN1)
(see p.6, No. 13)

(4-pin CPU_FAN2)
(see p.6, No. 14)



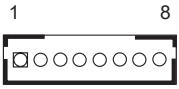
This motherboard provides two 4-Pin CPU fan (Quiet Fan) connectors. If you plan to connect a 3-Pin CPU fan, please connect it to Pin 1-3.

ATX 19V Power Connector
(4-pin ATX_PWR1
(see p.6, No. 1)



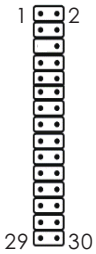
Please connect an ATX 19V power supply to this connector.
*The power supply plug fits into this connector in only one orientation.

Backlight Control Header
(8-pin BLT_VOL1)
(see p.6, No. 8)



1: BKLT_PWR
2: BKLT_PWR
3: BKLT_EN
4: BKLT_PWM
5: GND
6: GND
7: Brightness_Up
8: Brightness_Down

LVDS Panel Connector
(30-pin LVDS1)
(see p.6, No. 11)

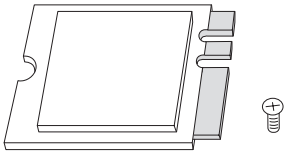


PIN	Signal Name	PIN	Signal Name
1	LCD_VDD	**16**	CLK1P
2	LCD_VDD	**17**	A3N
3	LCD_VDD	**18**	A3P
4	GND	**19**	A4N
5	N/A	**20**	A4P
6	GND	**21**	A5N
7	A0N	**22**	A5P
8	A0P	**23**	A6N
9	A1N	**24**	A6P
10	A1P	**25**	GND
11	A2N	**26**	GND
12	A2P	**27**	CLK2N
13	GND	**28**	CLK2P
14	GND	**29**	A7N
15	CLK1N	**30**	A7P

2.6 M.2 WiFi/BT Module Installation Guide

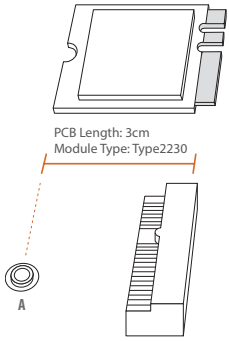
The M.2, also known as the Next Generation Form Factor (NGFF), is a small size and versatile card edge connector that aims to replace mPCIe and mSATA. The M.2 Socket (Key E) supports type 2230 WiFi/BT module.

Installing the WiFi/BT module



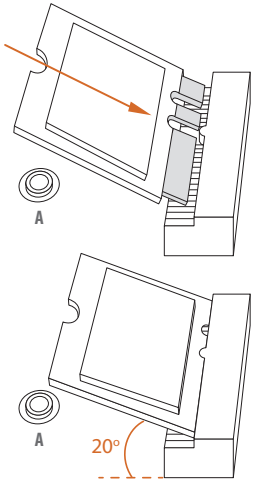
Step 1

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



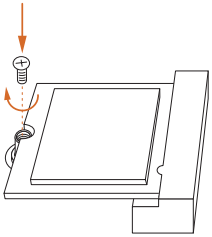
Step 2

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.



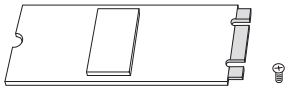
Step 4

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

2.7 M.2_SSD (NGFF) Module Installation Guide

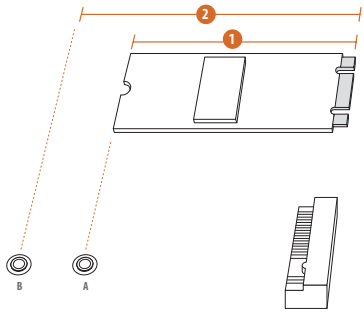
The M.2, also known as the Next Generation Form Factor (NGFF), is a small size and versatile card edge connector that aims to replace mPCIe and mSATA.
The Ultra M.2 Socket supports M Key type 2260/2280 M.2 SATA3 6.0 Gb/s module and M.2 PCI Express module up to Gen3 x4 (32 Gb/s).

Installing the M.2_SSD (NGFF) Module



Step 1

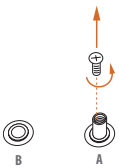
Prepare a M.2_SSD (NGFF) module and the screw.

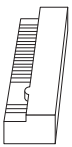


Step 2

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
Nut Location	A	B
PCB Length	6cm	8cm
Module Type	Type2260	Type 2280





Step 3

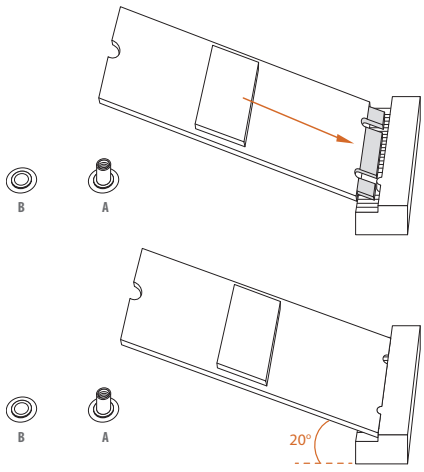
Remove the screw on the standoff and keep this screw for later use.

Step 4

Move the standoff based on the module type and length.
The standoff is placed at the nut location A by default. Skip Step 4 and 5 and go straight to Step 6 if you are going to use the default nut. Otherwise, release the standoff by hand.

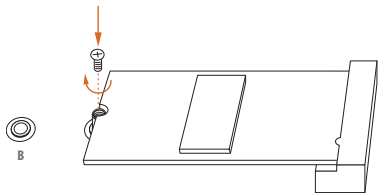
Step 5

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 6

Align and 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 7

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

M2_SATA:

Vendor	Capacity	P/N
ADATA	512GB	ADATA ASU800NS38-512GT-C
Crucial	240GB	Crucial-CT240M500SSD4-240GB
Crucial	250GB	Crucial-CT250MX500SSD4-250G
ezlink	120GB	ezlink P51B-80-120GB
LITEON	256GB	LITEON LJH-256V2G-256GB (2260)
SanDisk	128GB	SanDisk X400-SD8SN8U-128G
SanDisk	128GB	Sandisk Z400s-SD8SNAT-128G-1122
Transcend	64GB	Transcend TS64GMTS400-64GB (2242)
Transcend	256GB	Transcend TS256GMTS800-256GB
PLEXTOR	128GB	PLEXTOR PX-128M6G-2260-128GB (2260)
INTEL	240GB	INTEL-SSDSCKJF240A5-QS63-MLC-240G
INTEL	240GB	INTEL-540SSERIES-SSDSCKKW240H6-240G
V-Color-	240GB	V-Color-240G
WD	1TB	WD BLUE WDS100T1B0B-00AS40-1TB
WD	240GB	WD GREEN WDS240G1G0B-00RC30-240GB
WD	500GB	WD BLUE 3D NAND WDS500G2B0B-00YS70-500G

M2_PCIE:

Vendor	Capacity	P/N
ADATA	256GB	ADATA ASX8200 Pro-256G
ADATA	512GB	ADATA SX8200 PRO-512GB (ASX8200PNP)
ADATA	512GB	ADATA ASX7000NPC-512GT-C (XPG SX7000)
Apacer	240GB	Apacer AP240GZ280-240G
Crucial	1TB	CRUCIAL P1-1T
Crucial	500GB	CRUCIAL P1-500G
INTEL	16GB	Intel Optane Memory 16GB (MEMPEK1W016GA)(NVMe)
INTEL	32GB	Intel Optane Memory 32GB (MEMPEK1J032GA)(NVMe)
INTEL	256GB	INTEL 760P-SSDPEKKW256G8-256GB
INTEL	128GB	INTEL 600P-SSDPEKKW128G7-128GB
INTEL	512GB	INTEL 660P SERIES-SSDPEKNW512G8-512G
INTEL	512GB	INTEL 6000P-SSDPEKKF512G7-512GB
KINGS-TON	240GB	KINGSTON A1000-SA1000M8/240G (Gen3 x2)
KINGS-TON	480GB	KINGSTON KC1000 SKC1000/480G
PLEXTOR	256GB	PLEXTOR PX-256M8SeGN-256GB
PLEXTOR	256GB	PLEXTOR PX-256M8PeG-256GB
PLEXTOR	512GB	PLEXTOR M9PEG-PX-512M9PEGN-512G
PATRIOT	240GB	PATRIOT Hellfire M2 (240G)
Samsung	512GB	Samsung 950PRO-MZVKV512-512GB

Vendor	Capacity	P/N
Samsung	128GB	Samsung MZ-VLW1280-128GB (PM961)
Samsung	512GB	Samsung MZ-V7P512-512G (970PRO)
Samsung	250GB	Samsung MZ-V7E250-250G (970EVO)
Samsung	250GB	Samsung MZ-V6E250-250G (960 EVO)
Team	240GB	Team CARDEA-240G
TOSHIBA	256GB	TOSHIBA OCZ RD400-256G
TOSHIBA	128GB	TOSHIBA XG3-128G
WD	512GB	WD SDAPNUW-512G-1006 (SN520) (Gen3 x2)
WD	1TB	WD Black SN750-1TB (WDS100T3X0C-00SJG0)
WD	512GB	WD WDS512G1X0C-00ENX0-512GB

2.5" HDD:

Vendor	Capacity	P/N
TOSHIBA	1TB	TOSHIBA-MQ02ABD100H-MLC-NAND8G+HD1T-1T
SEAGATE	500GB	SEAGATE-ST500LM021-3Y/P-500G
SEAGATE	1TB	SEAGATE-FIRECUDA-LX015-ST1000LX015-5Y/P-7mm-1T-W/8G
WD	750GB	WD-BLACK-WD7500BPKX-750G
WD	1TB	WD-RED-WD10JFCX-INTELLIPOWER-1T
WD	1TB	WD-BLUE-WD10SPZX-00Z10T0-1T-3Y-02
HGST	1TB	HGST-HTS721010A9E630-1TB

2.5" SSD:

Vendor	Capacity	P/N
KINGSTON	120GB	KINGSTON-V300-SV300S37A-120G
KINGSTON	120GB	KINGSTON-HYPERX-FURY-RGB-SHFR200/240G-240G-W/RGB CABLEx1
KINGSTON	240GB	KINGSTON-HYPERX-SAVAGE-SHSS37A/240G
TOSHIBA	128GB	TOSHIBA-Q300 PRO-HDTS412AZSTA-128G
TOSHIBA	120GB	TOSHIBA-Q300-HDTS712AZSTA-120G
WYVO	240GB	WYVO-APS1-SSB240GTLC4-SA-AF-240G
ADATA	120GB	ADATA-GAMING-XPG-SX930-ASX930S3-120GM-C-120G
ADATA	256GB	ADATA-ULTIMATE-SU900-ASU900SS-256GM-C-256G
APACER	120GB	APACER-PANTHER-AS350-AP120GAS350-1-120G
TRAN-SCEND	128GB	TRANSCEND-SSD340K-TS128GSSD340K-128G
TRAN-SCEND	128GB	TRANSCEND-SSD370S-TS128GSSD370S-128G
INTEL	240GB	INTEL-730SERIES-SSDSC2BP240G4R5-240GB

Vendor	Capacity	P/N
INTEL	128GB	545S SERIES-SSDSC2KW128G8X1-128G
SANDISK	128GB	SANDISK-X300-SD7SB6S-128G
SANDISK	240GB	SANDISK-EXTREME PRO-SDSSDXPS-240G
PLEXTOR	256GB	PLEXTOR-M6V-PX-256M6V-256G
PLEXTOR	256GB	PLEXTOR-M6 PRO-PX-256M6PRO-256G
CRUCIAL	250GB	CRUCIAL-MX500-CT250MX500SSD1-250G-5Y
CRUCIAL	120GB	CRUCIAL-BX500-CT120BX500SSD1-120G-3Y
OCZ	120GB	OCZ-VECTOR180-VTR180-25SAT3-120G-120G
OCZ	120GB	OCZ-TRION100-TRN100-25SAT3-120G
WD	120GB	WD-GREEN-WDS120G2G0A-00JH30-120G-3Y
WD	250GB	WD-BLUE-WDS250G2B0A-00SM50-250G-5Y
UMAX	240GB	UMAX-S330-HDUM330SSD240G-240G-3Y
PIONEER	120GB	PIONEER-APS-SL3N-APS-SL3N-120-120G-3Y
ANACONDA	240GB	ANACONDA-TS SERIES-TS240201803718-240G-3Y
KLEVV	240GB	KLEVV-NEO-N500-D240GAA-N500-240G-3Y
TCELL	240GB	TCELL-TT650-240G-3Y
Liteon	240GB	LITE-ON-MU3-PH6-PH6-CE240-L2-240G-3Y
V-Color	240GB	V-COLOR-VSS100-VSS100-240G-FO-240G-3Y
HIKVISION	480GB	HIKVISION-C100-HS-SSD-C100-480G-3Y
SAMSUNG	250GB	SAMSUNG-860EVO-MZ-76E250BW-MZ7LH-250HAHQ-250G
TEAM	250GB	TEAM GROUP-T-FORCE-DELTA RGB-T253TR250G3C313-5V-250G-3Y

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.

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
Boot	For configuring boot settings and boot priority
Security	For security settings
Exit	Exit the current screen or the UEFI Setup Utility

4.1.2 Navigation Keys

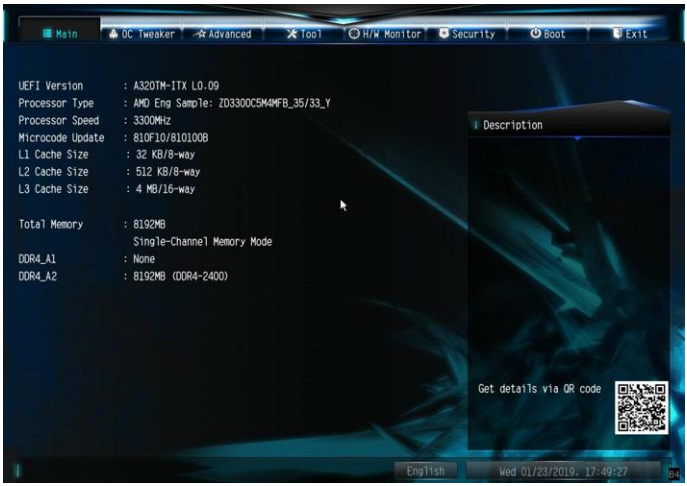
Use <←> key or <→> key to choose among the selections on the menu bar, and use < ↑ > key or < ↓ > key to move the cursor up or down to select items, then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

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.

CPU Configuration

SOC Voltage(VID)

Configure the voltage for the VID-requested SOC supply level.

SMT Mode

This item can be used to disable symmetric multithreading. To re-enable SMT, a power cycle is needed after selecting [Auto].

Warning: S3 is not supported on systems where SMT is disabled.

DRAM Timing Configuration

DRAM Information

Browse the serial presence defect (SPD) for DDR4 modules.

DRAM Frequency

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

Voltage Configuration

DRAM Voltage

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

Adapter Select

Use this to select the adapter. The default value is [120W].

Performance Mode

Use this to enable or disable performance mode The default value is [Disabled].

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.

Save User UEFI Setup Profile to Disk

Save current UEFI settings as an user default profile to disk.

Load User UEFI Setup Profile to Disk

Load previously saved user defaults from the disk.

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, AMD CBS and AMD PBS.

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

UEFI Configuration

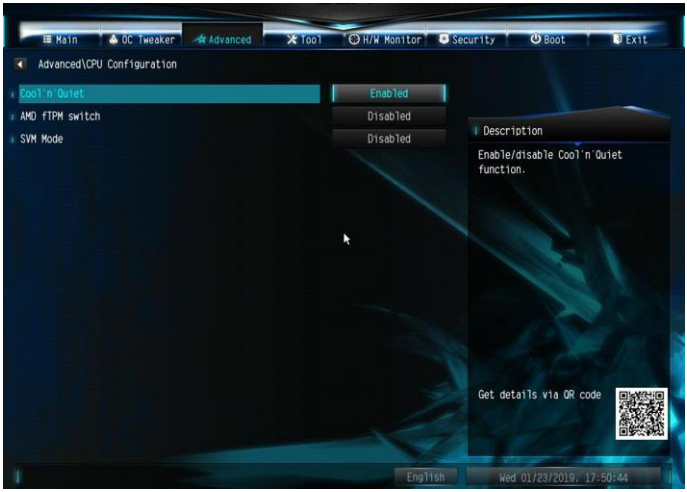
Active Page on Entry

Select the default page when entering the UEFI setup utility.

Full HD UEFI

When [Auto] is selected, the resolution will be set to 1920 x 1080 if the monitor supports Full HD resolution. If the monitor does not support Full HD resolution, then the resolution will be set to 1024 x 768. When [Disable] is selected, the resolution will be set to 1024 x 768 directly.

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.

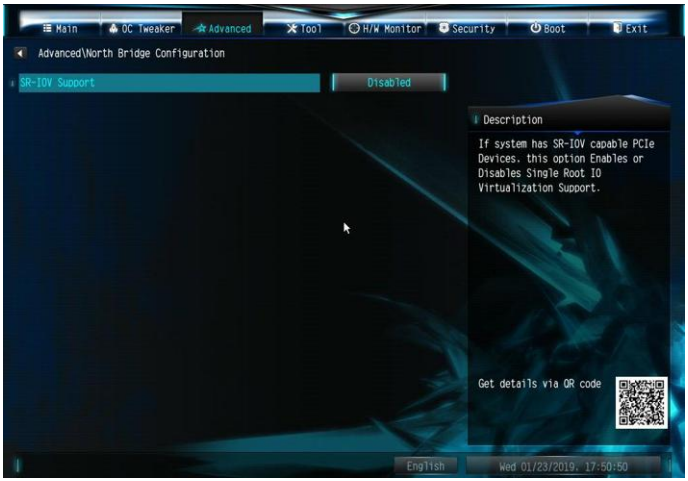
AMD fTPM Switch

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].

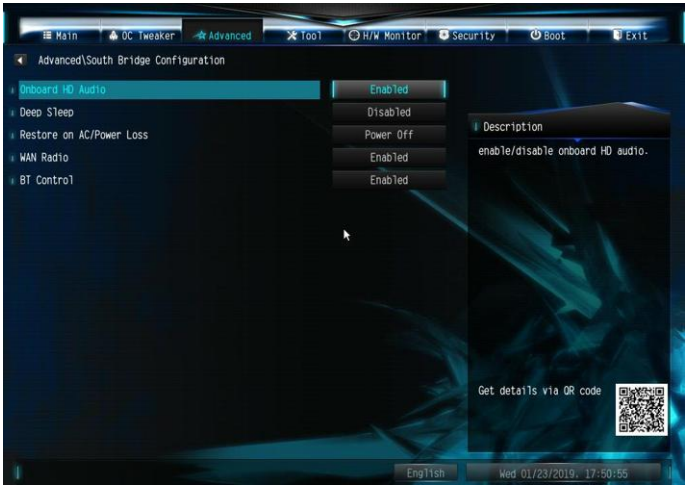
4.4.2 North Bridge Configuration



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.

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.

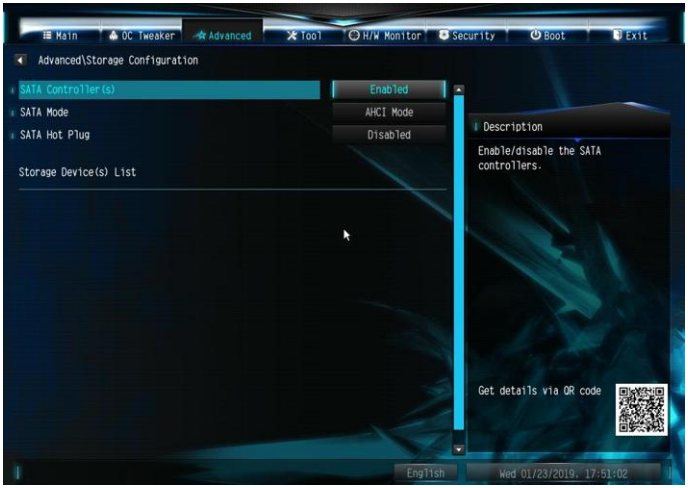
WAN Radio

Enable/disable the WiFi module's connectivity.

BT Control

Enable/disable the bluetooth's connectivity.

4.4.4 Storage Configuration



SATA Controller(s)

Enable/disable the SATA controllers.

SATA Mode

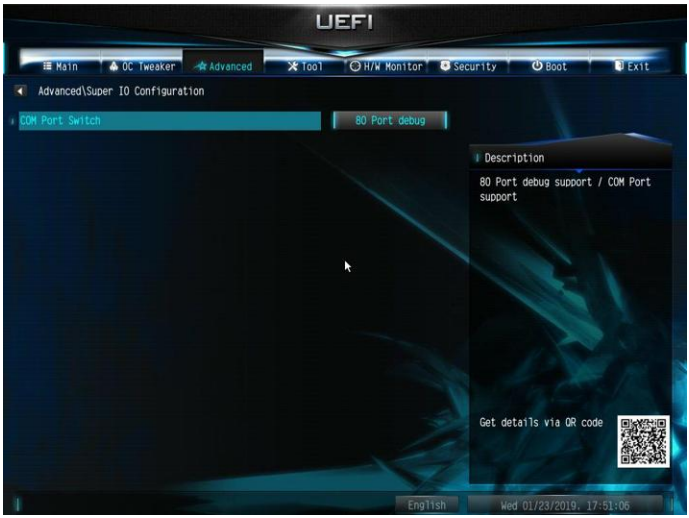
AHCI: Supports new features that improve performance.

RAID: Combine multiple disk drives into a logical unit.

SATA Hot Plug

Enable/disable the SATA Hot Plug Function.

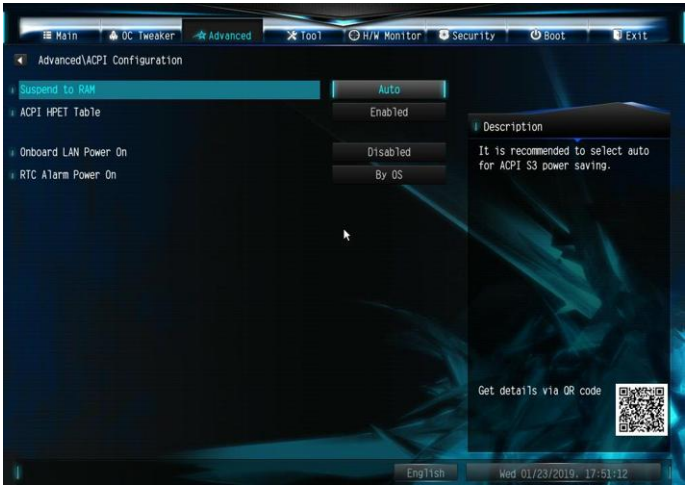
4.4.5 Super IO Configuration



COM Port Switch

Switch between 80 Port debug or COM port support.

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.

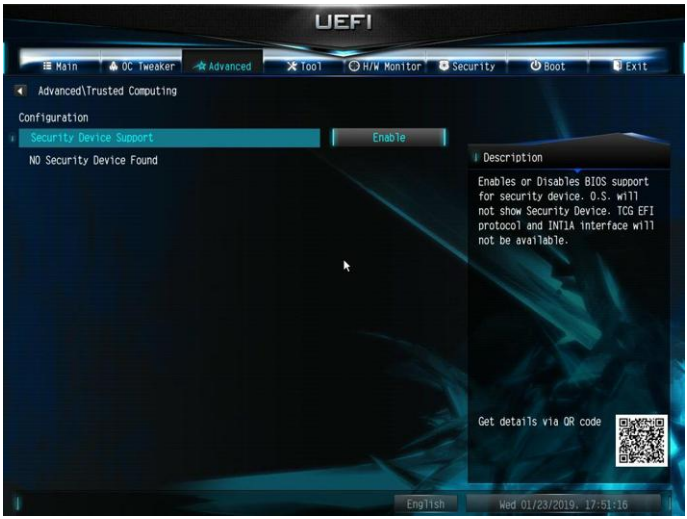
Onboard LAN Power On

Allow the system to be waked up by a onboard 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.

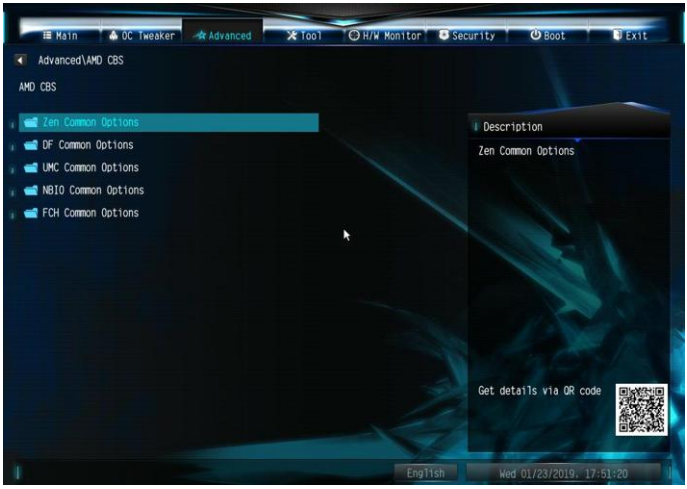
4.4.7 Trusted Computing



Security Device Support

Enable or disable BIOS support for security device.

4.4.8 AMD CBS

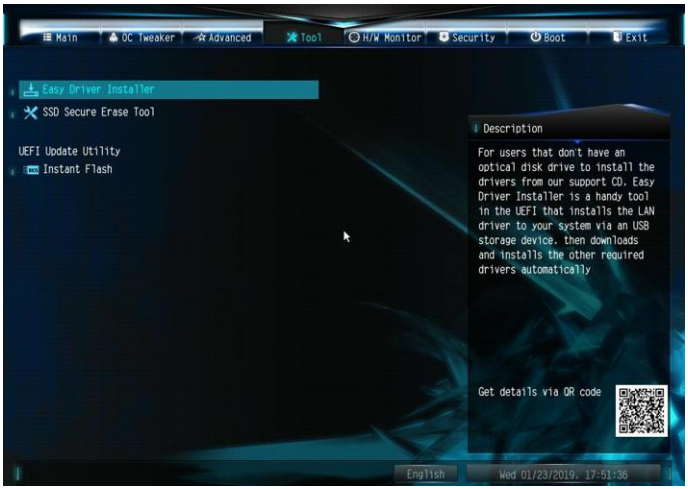


The AMD CBS menu accesses AMD specific features.

4.4.9 AMD PBS

The AMD PBS menu accesses AMD specific features.

4.5 Tools



Easy Driver Installer

For users that don't have an optical disk drive to install the drivers from our support CD, Easy Driver Installer is a handy tool in the UEFI that installs the LAN driver to your system via an USB storage device, then downloads and installs the other required drivers automatically.

SSD Secure Erase Tool

Use this tool to securely erase SSD.

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 2 Setting

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

Over Temperature Protection

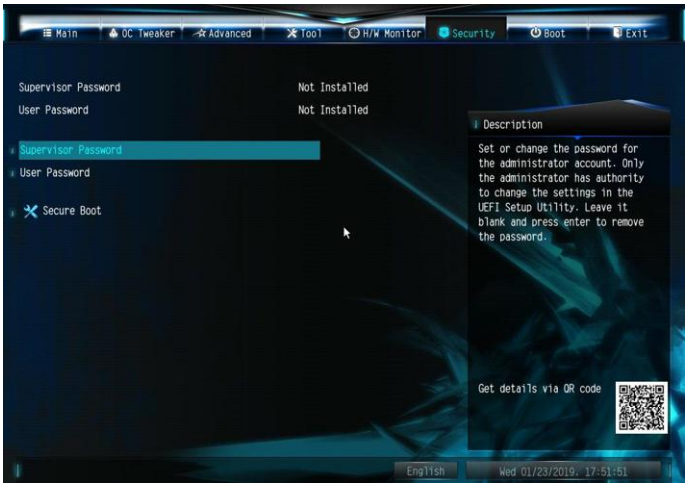
When Over Temperature Protection is enabled, the system automatically shuts down when the motherboard is overheated.

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

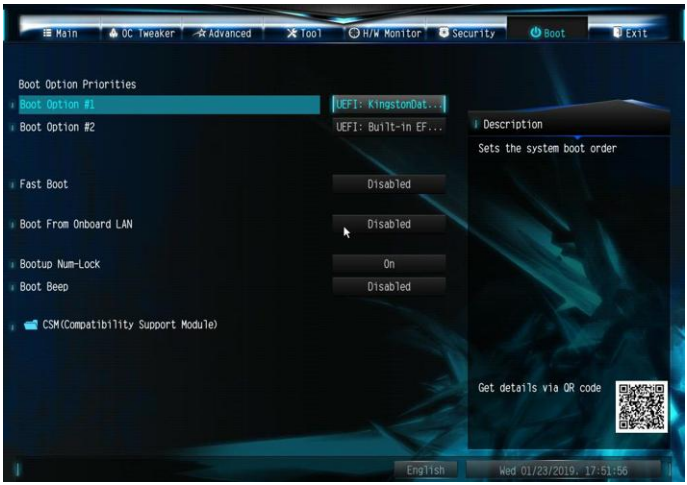
Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

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.

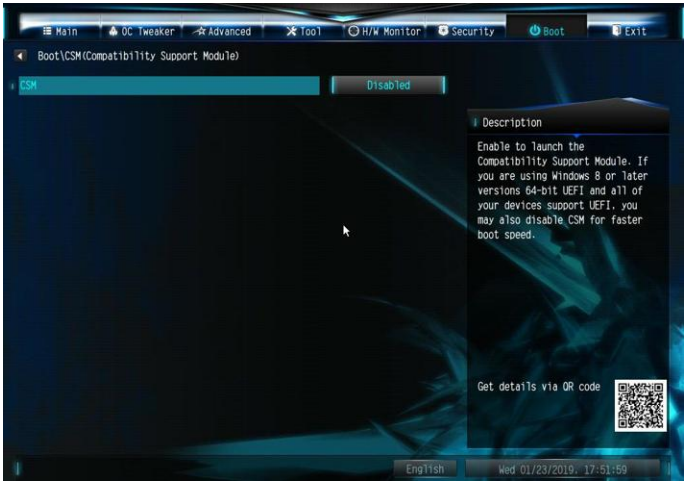
Bootup Num-Lock

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.

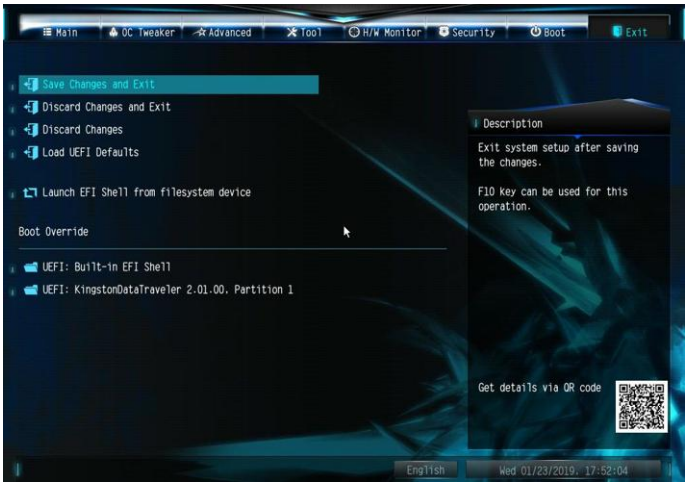
CSM (Compatibility Support Module)



CSM

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

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.

DECLARATION OF CONFORMITY

Per FCC Part 2 Section 2.1077(a)

Product Name : Motherboard

Model Number : A320TM-ITX

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.

EU Declaration of Conformity

For the following equipment:

Motherboard

(Product Name)

A320TM-ITX

(Model Designation / Trade Name)

☒ **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

CE (EU conformity marking)