ASRock®

# X300TM-ITX

User Manual

Version 1.0

Published November 2020



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 X300TM-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

- X300TM-ITX Motherboard (Thin Mini-ITX Form Factor)
- X300TM-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<br>• Solid Capacitor design |
| **CPU** | • Supports AMD AM4 Socket CPUs (Renoir, Picasso, Raven Ridge, up to 65W)<br>• Supports CPU up to 65W<br>• 5 Power Phase design |
| **Chipset** | • AMD X300 |
| **Memory** | • Dual Channel DDR4 Memory Technology<br>• 2 x DDR4 SO-DIMM Slots<br>• AMD Renoir series APUs support DDR4 3200/2933/2667/2400/2133 non-ECC, un-buffered memory*<br>• AMD Ryzen series CPUs (Picasso) support DDR4 2933/2667/2400/2133 non-ECC, un-buffered memory*<br>• AMD Ryzen series CPUs (Raven Ridge) support DDR4 2933/2667/2400/2133 non-ECC, un-buffered memory*<br>* Please refer to page 13 for DDR4 SO-DIMM maximum frequency support.<br>• Max. capacity of system memory: 64GB<br>• 15μ Gold Contact in SO-DIMM Slots |
| **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*<br>* Actual support may vary by CPU<br>• DirectX 12, Pixel Shader 5.0<br>• Shared memory default 2GB. Max Shared memory supports up to 16GB.<br>* The Max shared memory 16GB requires 32GB system memory installed.<br>• Three graphics output options: 2 x HDMI, 1 x LVDS ports<br>• Supports 2 x HDMI 2.1 with max. resolution up to 4K@60Hz<br>HDMI x 1 port (Rear)<br>HDMI x 1 port (Internal) |

- Supports Auto Lip Sync, Deep Color (12bpc), xvYCC and HBR (High Bit Rate Audio) with HDMI 2.1 Port (Compliant HDMI monitor is required)
- Supports LVDS with max. resolution up to 1920x1080 @ 60Hz
- Supports HDCP 2.3 with HDMI 2.1 Port
* Picasso supports HDCP 2.2 with HDMI 2.0 Port

| | |
|---|---|
| **Audio** | • Realtek ALC233 Audio Codec<br>• 1 x Headphone Jack<br>• 1 x MIC-In |
| **LAN** | • PCIE x1 Gigabit LAN 10/100/1000 Mb/s<br>• Realtek RTL8111GR<br>• Supports Wake-On-LAN<br>• Supports Lightning/ESD Protection<br>• Supports Energy Efficient Ethernet 802.3az<br>• Supports PXE |
| **I/O** | • 1 x DC Jack (Compatible with the 19V power adapter)<br>• 1 x Serial Port: COM<br>• 2 x HDMI Ports: HDMI1 (Rear), HDMI2 (Internal)<br>• 3 x USB 3.2 Gen1 Type-A Ports (Supports ESD Protection)<br>• 1 x USB 3.2 Gen1 Type-C (co-layout USB 3.2 Gen1 Type-A) Port (Supports ESD Protection)<br>• 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED)<br>• HD Audio Jacks: Line out / Microphone |
| **Storage** | • 1 x SATA3 6.0 Gb/s Connector, supports NCQ, AHCI and Hot Plug<br>• 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)<br>* Supports NVMe SSD as boot disks<br>* (Optional) 2 x SATA3 6.0 Gb/s Connectors, 1 x Ultra M.2 Socket, supports M.2 PCI Express module up to Gen3 x4 (32 Gb/s) |
| **Connector** | • 1 x Chassis Intrusion Header<br>• 1 x Panel Voltage Selection Header<br>• 1 x Backlight Inverter Voltage Selection Header |

English

3

- 1 x FPD Brightness Header
- 1 x Panel Off 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<br>• Supports "Plug and Play"<br>• ACPI 5.1 compliance wake up events<br>• Supports jumperfree<br>• SMBIOS 2.3 support<br>• DRAM Voltage adjustment |
| **Hardware Monitor** | • CPU Temperature Sensing<br>• CPU Fan Tachometer<br>• CPU Quiet Fan (Auto adjust chassis fan speed by CPU temperature)<br>• CPU Fan Multi-Speed Control<br>• CASE OPEN detection<br>• Voltage monitoring: +12V, +5V, +3.3V, CPU Vcore |
| **OS** | • Microsoft® Windows® 10 64-bit |
| **Power** | • 1 x DC Jack  (Supports 19V DC Power Adapters) |
| **Certifica-tions** | • FCC, CE<br>• ErP/EuP ready (ErP/EuP ready power supply is required) |

English

# 1.3 Motherboard Layout
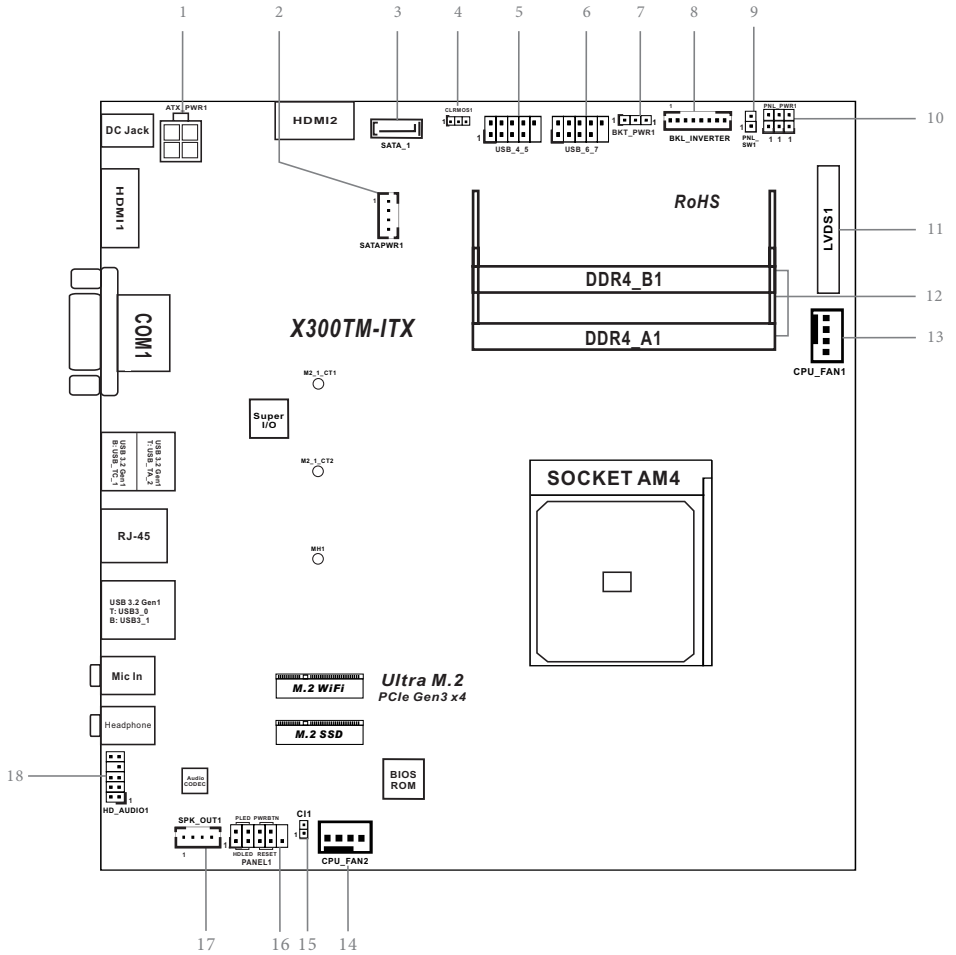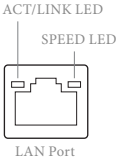
| No. | Description |
|-----|-------------|
| 1 | 4 pin 19V Power Connector (ATX_PWR1) |
| 2 | SATA Power Connector (SATAPWR1) |
| 3 | SATA3 Connector (SATA_1) |
| 4 | Clear CMOS Jumper (CLRCMOS1) |
| 5 | USB 2.0 Header (USB_4_5) |
| 6 | USB 2.0 Header (USB_6_7) |
| 7 | Backlight Inverter Voltage Selection Header (BKT_PWR1) |
| 8 | FPD Brightness Header (BLT_INVERTER) |
| 9 | Panel Off Header (PNL_SW1) |
| 10 | Panel Voltage Selection Header (PNL_PWR1) |
| 11 | LVDS Connector (LVDS1) |
| 12 | 2 x 260-pin DDR4 SO-DIMM Slots (DDR4_A1, DDR4_B1) |
| 13 | CPU Fan Connector (CPU_FAN1) |
| 14 | CPU Fan Connector (CPU_FAN2) |
| 15 | Chassis Intrusion Header (CI1) |
| 16 | System Panel Header (PANEL1) |
| 17 | Internal Speaker Header (SPK_OUT1) |
| 18 | Front Panel Audio Header (HD_AUDIO1) |

## 1.4 I/O Panel
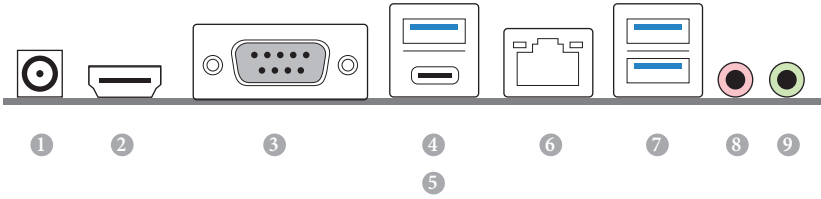


| No. | Description | No. | Description |
|-----|-------------|-----|-------------|
| 1 | DC Jack** | 6 | LAN RJ-45 Port* |
| 2 | HDMI Port (HDMI1) | 7 | USB 3.2 Gen1 Type-A Port (USB3_01) |
| 3 | COM Port | 8 | Microphone (Pink) |
| 4 | USB 3.2 Gen1 Type-A Port (USB_TA_2) | 9 | Line out (Lime) |
| 5 | USB 3.2 Gen1 Type-C Port (USB_TC_1) | | |

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

ACT/LINK LED

SPEED LED



LAN Port

| 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 |

*\*Specification for DC plug*



5.5 mm

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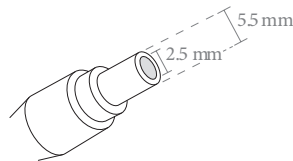
*This motherboard is available with support for either 4-pin ATX 19V power or DC-in power supplies. Please do not use two kinds of power supplies at the same time! Doing so may damage the motherboard components and devices. When you use the DC-in power adapter, please use the onboard SATA power connector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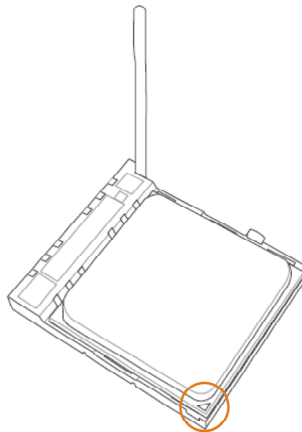
## 2.1 Installing the CPU

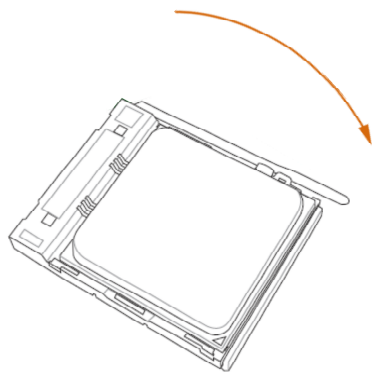*Unplug all power cables before installing the CPU.*

**1**

**2**
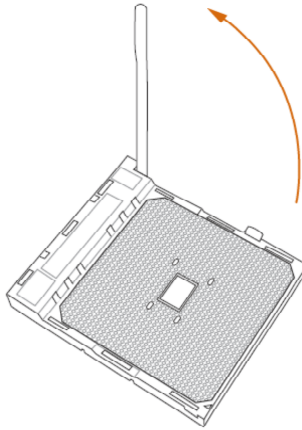
## 2.2 Installing the CPU Fan and Heatsink

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.*
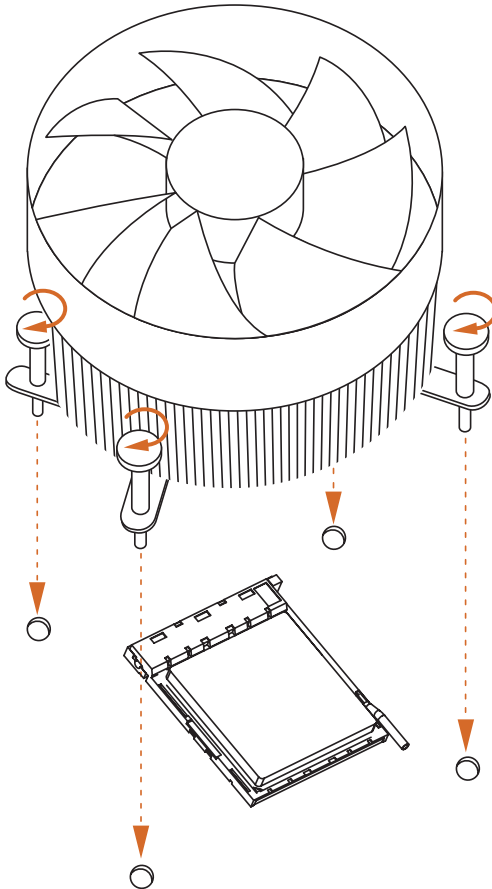
CPU_FAN1

## 2.3 Installing Memory Modules (SO-DIMM)

This motherboard provides two 260-pin DDR4 (Double Data Rate 4) SO-DIMM slots.
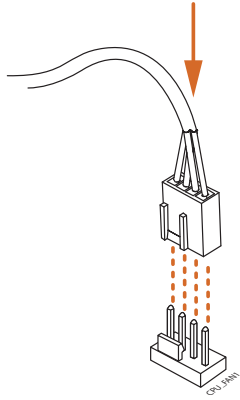
> ☆ *It is not allowed to install a DDR, DDR2 or DDR3 memory module into a DDR4 slot; otherwise, this motherboard and SO-DIMM may be damaged.*

### DDR4 SO-DIMM Maximum Frequency Support

Ryzen Series APUs (Renoir):

| UDIMM Memory Slot | | Frequency (Mhz) |
|---|---|---|
| A1 | B1 | |
| SR | - | 3200 |
| - | SR | 3200 |
| DR | - | 3200 |
| - | DR | 3200 |
| SR | SR | 3200 |
| DR | DR | 3200 |

Ryzen Series CPUs (Picasso):

| SO-DIMM Memory Slot | | Frequency (Mhz) |
|---|---|---|
| A1 | B1 | |
| SR | - | 2933 |
| - | SR | 2933 |
| DR | - | 2667 |
| - | DR | 2667 |
| SR | SR | 2993 |
| DR | DR | 2667 |

Ryzen Series CPUs (Raven Ridge):

| SO-DIMM Memory Slot | | Frequency (Mhz) |
|---|---|---|
| A1 | B1 | |
| - | SR | 2933 |
| SR | - | 2933 |
| - | DR | 2667 |
| DR | - | 2667 |
| SR | SR | 2667 |
| DR | DR | 2400 |

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

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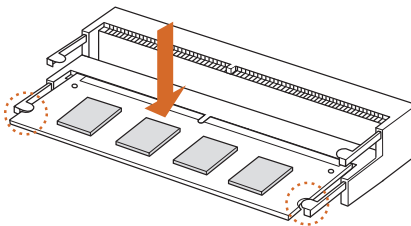
*The SO-DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.*
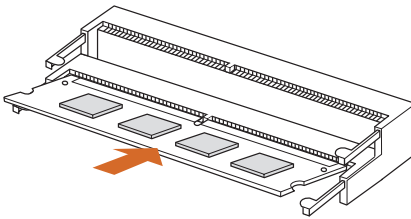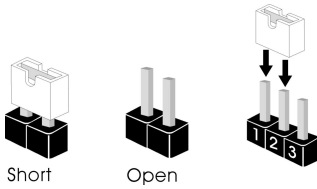
## 2.4 Jumpers Setup

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.

Short    Open

Clear CMOS Jumper
(CLRMOS1)
(see p.5, No. 4)

1_2

Default

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.*

Backlight Inverter Voltage
Selection Header
(3-pin BKT_PWR1)
(see p.5, No. 7)

1-2 : +12V
2-3 : +19V

| 1 | 2 | 3 |

Panel Voltage Selection
Header
(6-pin PNL_PWR1)
(see p.5, No. 10)

+3V          +5V [Default]          +12V

**Warning:**

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

## 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.5, No. 16)

PLED+
PLED-
PWRBTN#
GND

1

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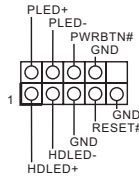
Connect the power button, reset button and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

🔍⊕ **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
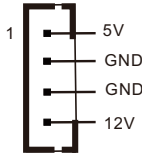(4-pin SPK_OUT1)
(see p.5, No. 17)

1

R + - - + L
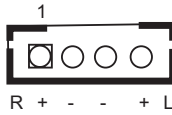
Please connect the chassis
speaker to this header.

Serial ATA3 Connector
(SATA_1:
see p.5, No. 3)

SATA_1

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.5, No. 2)

1
5V
GND
GND
12V

Please connect SATA
power cable.

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

USB_PWR
P-
P+
GND
DUMMY

1
GND
P+
P-
USB_PWR
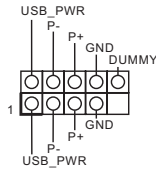
There are two headers
on this motherboard.
Each USB 2.0 header can
support two ports.

Front Panel Audio Header
(9-pin HD_AUDIO1)
(see p.5, No. 18)

OUT_RET
MIC_RED
PRESENCE#
GND
OUT2_L
J_SENSE
OUT2_R
MIC2_R
MIC2_L
1
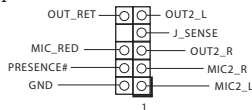
This header is for
connecting audio devices
to the front audio panel.

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.
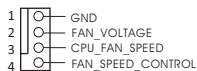
   C. Connect Ground (GND) to Ground (GND).

   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".

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CPU Fan Connectors
(4-pin CPU_FAN1)
(see p.5, No. 13)

1 — GND
2 — FAN_VOLTAGE
3 — CPU_FAN_SPEED
4 — FAN_SPEED_CONTROL

(4-pin CPU_FAN2)
(see p.5, No. 14)

GND
FAN_VOLTAGE
FAN_SPEED
FAN_SPEED_CONTROL

1  2  3  4
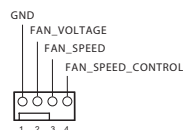
This motherboard provides two 4-Pin CPU fan (Quiet Fan) connectors. If you plan to connect a 3-Pin CPU fan, please connect it to Pin 1-3.

---

ATX 19V Power Connector
(4-pin ATX_PWR1
(see p.5, No. 1)

+19V — +19V
GND — GND

Please connect an ATX 19V power supply to this connector.

*The power supply plug fits into this connector in only one orientation.

---

FPD Brightness Header
(8-pin BKL_INVERTER)
(see p.5, No. 8)

1          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.5, No. 11)

1 2

29 30

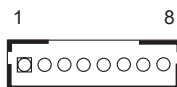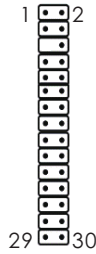| PIN | Signal Name | PIN | Signal Name |
|-----|-------------|-----|-------------|
| 1 | LCD_VDD | 16 | CLK1P |
| 2 | LCD_VDD | 17 | A3N |
| 3 | LCD_VDD | 18 | A3P |
| 4 | GND | 19 | A4N |
| 5 | N/A | 20 | A4P |
| 6 | GND | 21 | A5N |
| 7 | A0N | 22 | A5P |
| 8 | A0P | 23 | A6N |
| 9 | A1N | 24 | A6P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

Chassis Intrusion Header
(2-pin CI1)
(see p.5, No. 15)

GND
Signal
1

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.

Panel Off Header
(2-pin PNL_SW1)
(see p.5, No. 9)

GND
PWRDN
1
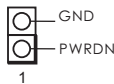
This header can be used to
connect a switch that turns on/
off the LVDS panel display's
backlight.

## 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
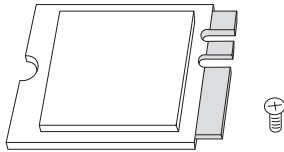


**Step 1**

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



PCB Length: 3cm
Module Type: Type2230

A

**Step 2**

Find the nut location to be used.



A

A    20°
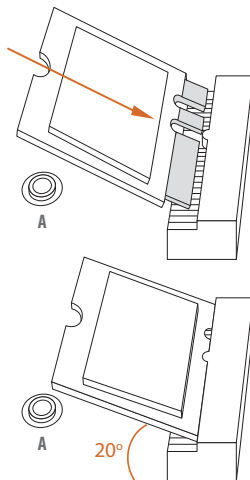
**Step 3**

Gently insert the WiFi/BT module into the M.2 slot. Please be aware that the module only fits in one orientation.
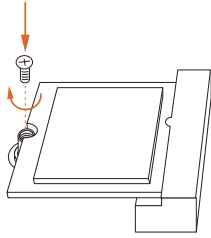
**Step 4**

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.
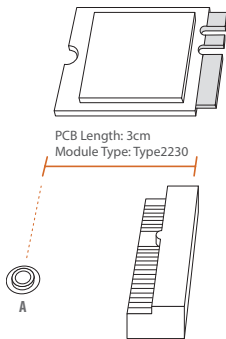The Ultra M.2 Socket supports M Key type 2260/2280 M.2 SATA3 6.0 Gb/s module and M.2 PCI Express module up to Gen3 x4 (32 Gb/s).

### Installing the M.2_SSD (NGFF) Module
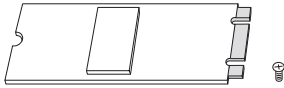
**Step 1**

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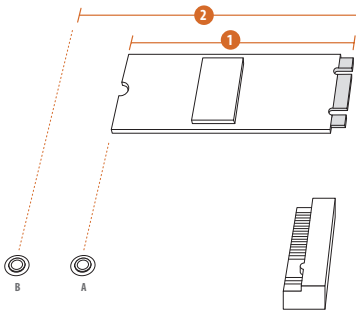
**Step 2**

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 |
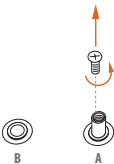
**Step 3**

Remove the screw on the standoff and keep this screw for later use.
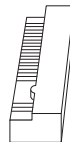
**Step 4**

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.
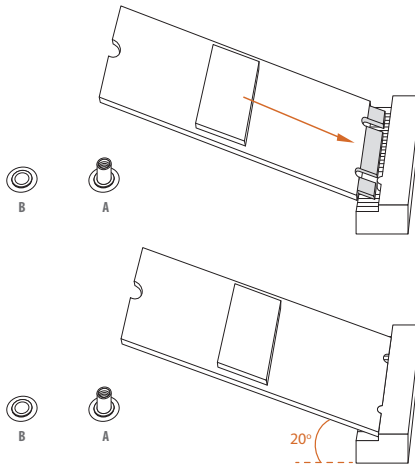
**Step 6**

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.

20°
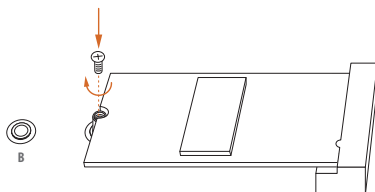
**Step 7**

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

English

25

## 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 |
| TRANSCEND | 128GB | TRANSCEND-SSD340K-TS128GSSD340K-128G |
| TRANSCEND | 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.

**English**

# 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.
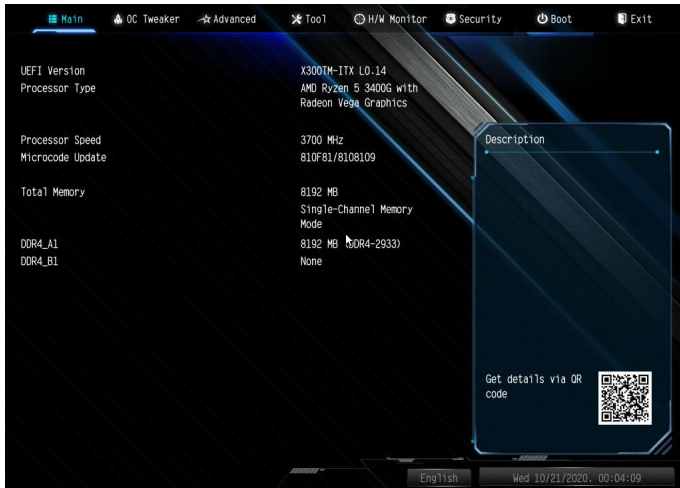
## 4.3 OC Tweaker Screen

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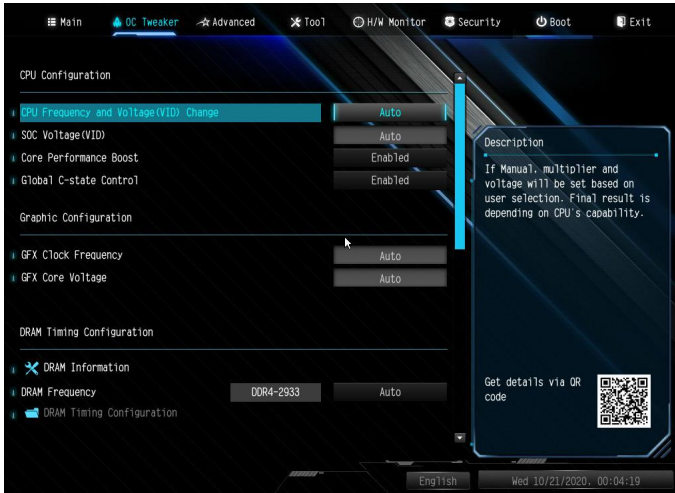


🔍 *Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.*

### CPU Configuration

### CPU Frequency and Voltage(VID) Change

If this item is set to [Manual], the multiplier and voltage will be set based on user selection. Final result is depending on the CPU's capability.

### SOC Voltage(VID)

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

### Core Performance Boost

Configure the AMD Core Performance Boost (CPB).

### Global C-state Control

Controls IO based C-state generation and DFC-states

### Graphic Configuration

### GFX Clock Frequency (Only for processor with integrated graphics)

This item allows you to alter the frequency for the GFX clock frequency. After you alter the GFX Clock Frequency settings, make sure to adjust the GFX Core Voltage settings.

*The adjustable range is dependent on the CPU being installed.

### GFX Core Voltage (Only for processor with integrated graphics)

This item allows you to alter the voltage for the GFX Core Voltage.

*The adjustable range is dependent on the CPU being installed.

### 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

### CPU Vcore Voltage (Offset)

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

### VDDCR SOC Voltage (Offset)

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

### DRAM Voltage

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

### Manually Control Adapter Power

Use this to Manually Control Adapter Power.

### XFR Enhancement

### Precision Boost Overdrive

This option set to [Auto] by default.

[Disabled] Behaves the same as Auto.

[Enabled] Sets Motherboard defined PBO Limits (PPT, TDC, EDC).

[Manual] Allows you to set your own PBO values (PPT, TDC, EDC).

### Precision Boost Overdrive  Scalar

This option set to [Auto] by default.

[Disabled] Part runs with a scalar of 1X, i.e. normal operation.

[Manual]  Part runs with a scalar of customized value.

### 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, Onboard Devices Configuration, Storage Configuration, ACPI Configuration, LVDS Control, Trusted Computing and AMD Firmware Version.
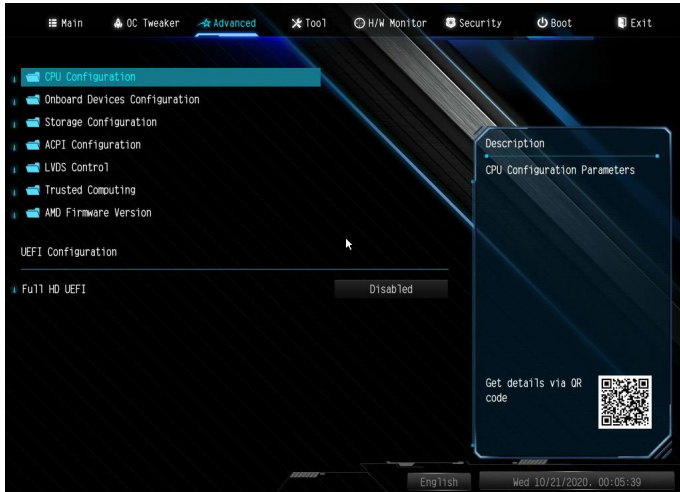


*Setting wrong values in this section may cause the system to malfunction.*

### UEFI Configuration

### 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



### PSS Support

Use this to enable or disable the generation of ACPI_PPC, _PSS, and _PCT objects.

### NX Mode

Use this to enable or disable NX mode.

### SVM Mode

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

### 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.

### IOMMU

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

### AMD fTPM Switch

Use this to enable or disable AMD CPU fTPM.

## 4.4.2 Onboard Devices Configuration



### SR-IOV Support

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

### UMA Frame buffer Size (Only for processor with integrated graphics)

This item allows you to set the size of the UMA frame buffer.

### 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.

### 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 Device

Enable/disable the onboard WAN device.

### WAN Radio

Configure the WiFi module's connectivity.

### BT Control

Enable/disable the bluetooth's connectivity.

### Onboard LAN

This allows you to enable or disable the "Onboard LAN" feature.

### COM Port Switch

Switch between 80 Port debug or COM port support.

### Serial Port

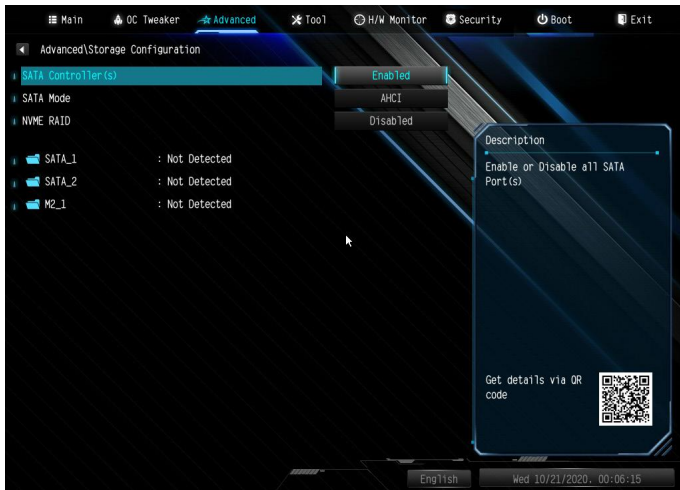Enable or disable the Serial port.

### Device Settings

Select the device mode according to your connected device.

### Change Settings

Select the address of the Serial port.

### 4.4.3 Storage Configuration



### SATA Controller(s)

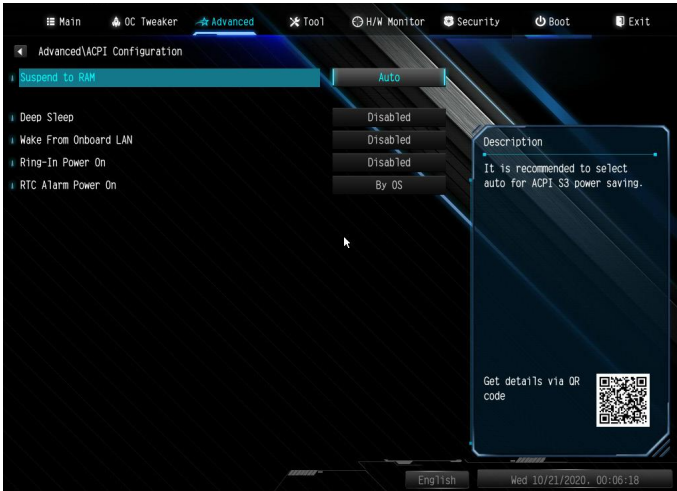Enable/disable the SATA controllers.

### SATA Mode

AHCI: Supports new features that improve performance.

RAID: Combine multiple disk drives into a logical unit.

### NVME RAID

 Enable or disable NVMe RAID mode.

### 4.4.4 ACPI Configuration



## Suspend to RAM

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

## Deep Sleep

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

## Wake from Onboard LAN

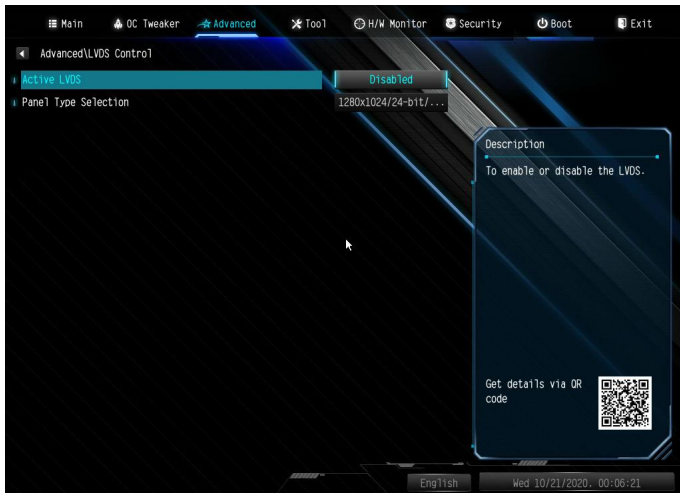Allow the system to be waked up by a onboard LAN.

## Ring-In Power On

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

## RTC Alarm Power On

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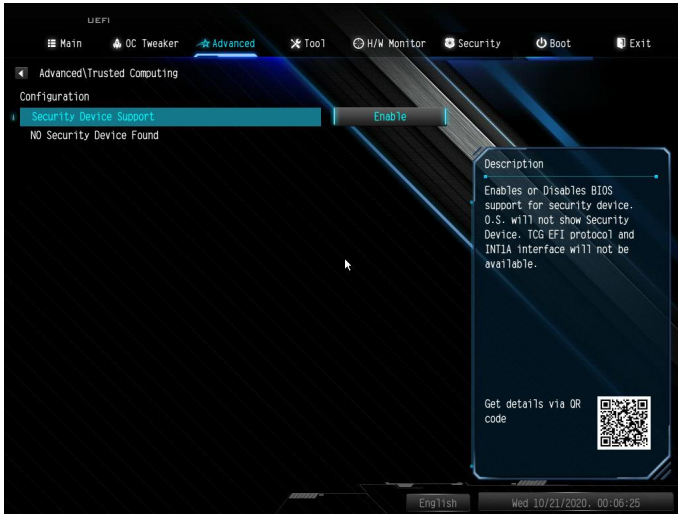
## 4.4.5 LVDS Control



### Active LVDS

Enable or disable LVDS Control.

### LVDS Panel Type Selection

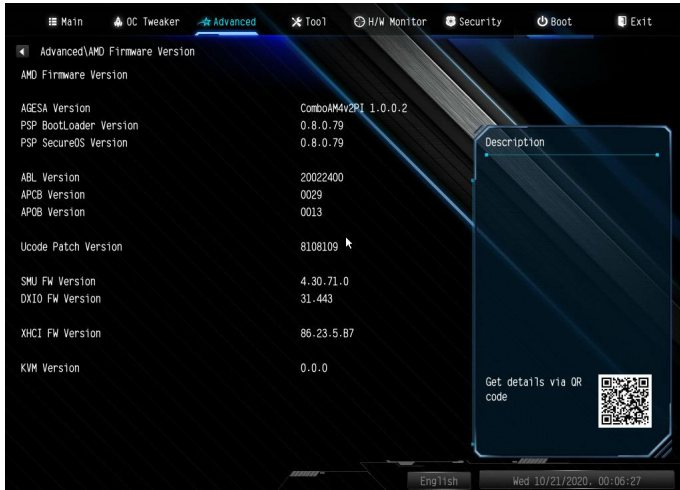Select the appropriate LVDS panel resolution.

## 4.4.6 Trusted Computing



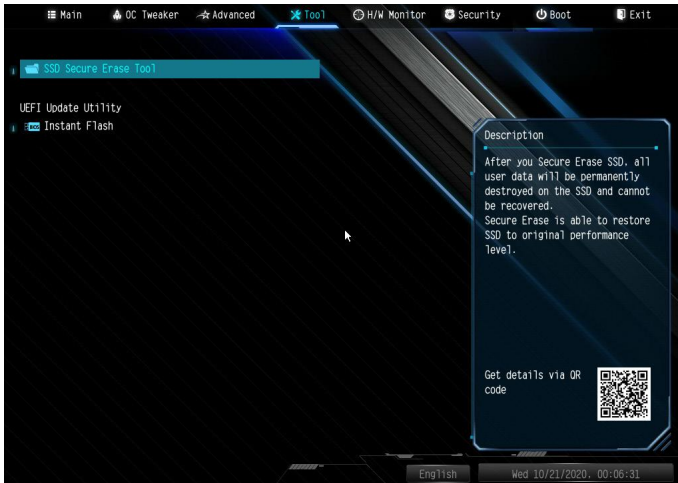### Security Device Support

Enable or disable BIOS support for security device.

### 4.4.7 AMD Firmware Version



This page shows the AMD firmware version.

## 4.5 Tools



### 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.

### CPU Fan 2 Temp Source

Select a fan temperature source for CPU Fan 2.

### Over Temperature Protection

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

### Case Open Feature

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

## 4.7 Security Screen

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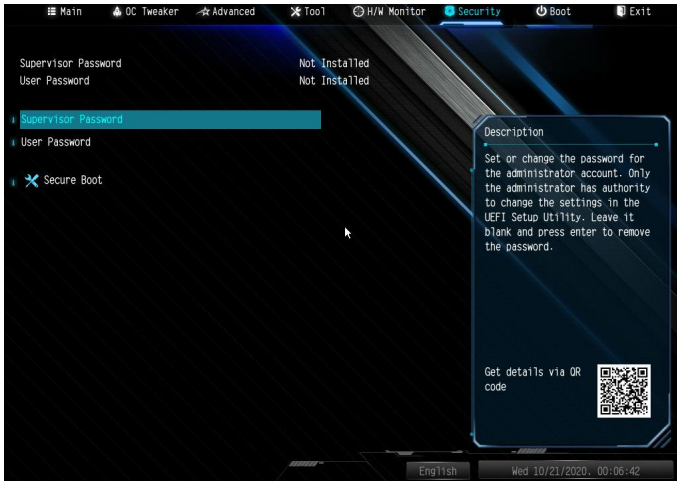


### Supervisor Password

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.

### Full Screen Logo

Enable to display the boot logo or disable to show normal POST messages.
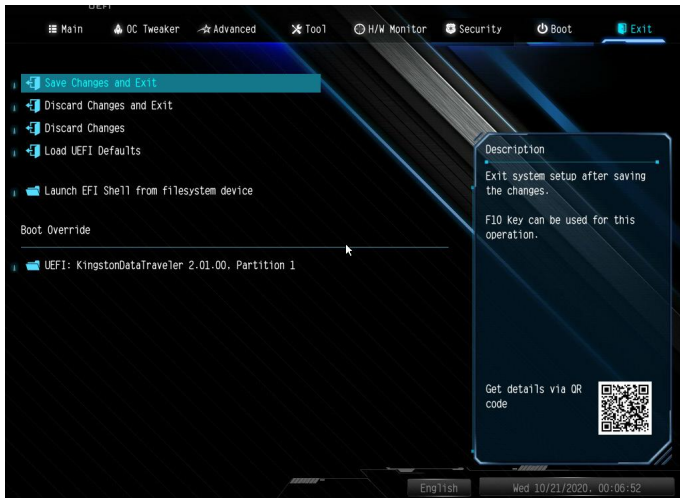
## CSM (Compatibility Support Module)



### 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 : X300TM-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)

**X300TM-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

$C\epsilon$     (EU conformity marking)