



NEXCOM International Co., Ltd.

# Intelligent Platform & Services Business Unit

## AI Edge Computer

### AIEdge-X<sup>®</sup>300

#### User Manual

# CONTENTS

## Preface

|  |      |
|--|------|
| Copyright .....                          | iv   |
| Disclaimer .....                         | iv   |
| Acknowledgements .....                   | iv   |
| Regulatory Compliance Statements .....   | iv   |
| Declaration of Conformity .....          | iv   |
| RoHS Compliance .....                    | v    |
| Warranty and RMA .....                   | vi   |
| Safety Information .....                 | viii |
| Installation Recommendations .....       | viii |
| Safety Precautions .....                 | ix   |
| Technical Support and Assistance .....   | x    |
| Conventions Used in this Manual .....    | x    |
| Global Service Contact Information ..... | xi   |
| Package Contents .....                   | xiii |
| Ordering Information .....               | xiv  |

## Chapter 1: Product Introduction

|                               |   |
|-------------------------------|---|
| AIEdge-X®300 .....            | 1 |
| Overview .....                | 1 |
| Key Features .....            | 1 |
| Hardware Specifications ..... | 2 |
| Physical Features .....       | 3 |
| Front Panel .....             | 3 |
| Rear Panel .....              | 3 |
| Mechanical Dimensions .....   | 4 |

## Chapter 2: Jumpers and Connectors

|  |    |
|--|----|
| Before You Begin .....   | 5  |
| Precautions .....  | 5  |
| Jumper Settings .....  | 6  |
| Locations of the Jumpers and Connectors for AIEdge-X®300 ..... | 7  |
| Top View .....   | 7  |
| Bottom View .....  | 8  |
| Jumpers & DIP Switches .....                                   | 9  |
| AT/ATX Mode Select .....                                       | 9  |
| Clear CMOS .....   | 9  |
| LVDS Panel Voltage Select .....                                | 10 |
| Backlight Control Voltage Select (Dimming) .....               | 10 |
| ME Flash Descriptor Security Override .....                    | 11 |
| LVDS Resolution Select .....                                   | 12 |
| Connector Pin Definitions .....                                | 13 |
| External I/O Interfaces .....                                  | 13 |
| LAN1 and LAN2 Port .....                                       | 13 |
| HDMI1, HDMI2 and HDMI3 Port .....                              | 13 |
| USB 3.0 Ports .....  | 14 |
| DC Power Input (+12V Only) .....                               | 14 |
| Internal Connectors .....                                      | 15 |
| LVDS Inverter Connector .....                                  | 15 |
| System Reset Header .....                                      | 15 |
| LED Connector .....  | 16 |
| Line-out Connector .....                                       | 16 |
| Mic-in Connector .....   | 17 |

|                                     |    |
|-------------------------------------|----|
| System Power Button Header .....    | 17 |
| FAN Connectors .....                | 18 |
| Debug Port/LPC Bus Connector .....  | 18 |
| COM Port Connectors .....           | 19 |
| Battery Connector .....             | 19 |
| LVDS Panel Connector .....          | 20 |
| Internal USB 2.0 Connectors .....   | 20 |
| USB Touch .....                     | 21 |
| ATX 4-pin Connector .....           | 21 |
| SATA Connector .....                | 22 |
| SATA Power Connector .....          | 22 |
| System Power Button Connector ..... | 23 |
| GPIO Connector .....                | 23 |
| M.2 Connector (M-Key) .....         | 24 |
| M.2 Connector (E-Key) .....         | 25 |
| PCIe x16 Slot .....                 | 26 |

## Chapter 3: System Setup

|  |    |
|--|----|
| Removing the Top Cover from the Chassis .....          | 28 |
| Installing an M.2 M-Key SSD Module (M-Key 2280) .....  | 29 |
| Removing/Adding a 2.5-inch SSD/HDD Storage Drive ..... | 31 |
| Installing a SO-DIMM Memory Module .....               | 32 |
| Installing a Wi-Fi Module (M.2 E-Key Slot) .....       | 33 |
| Installing a CPU .....                                 | 35 |
| Installing an Add-on Card .....                        | 38 |
| Wall Mounting Instructions .....                       | 41 |

## Chapter 4: BIOS Setup

|                                  |    |
|----------------------------------|----|
| About BIOS Setup .....           | 42 |
| When to Configure the BIOS ..... | 42 |
| Default Configuration .....      | 43 |
| Entering Setup .....             | 43 |
| Legends .....                    | 43 |
| BIOS Setup Utility .....         | 45 |
| Main .....                       | 45 |
| Advanced .....                   | 46 |
| Chipset .....                    | 55 |
| Security .....                   | 59 |
| Boot .....                       | 60 |
| Save & Exit .....                | 61 |

# PREFACE

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## Acknowledgements

AIEdge-X®300 is a trademark of NEXCOM International Co., Ltd. All other product names mentioned herein are registered trademarks of their respective owners.

## Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

## Declaration of Conformity

### FCC

This equipment has been tested and verified to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

### CE

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

## RoHS Compliance



### **NEXCOM RoHS Environmental Policy and Status Update**

NEXCOM is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2011/65/EU, to be your trusted green partner and to protect our environment.

RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

In order to meet the RoHS compliant directives, NEXCOM has established an engineering and manufacturing task force to implement the introduction of green products. The task force will ensure that we follow the standard NEXCOM development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NEXCOM are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant.

### **How to recognize NEXCOM RoHS Products?**

For existing products where there are non-RoHS and RoHS versions, the suffix "(LF)" will be added to the compliant product name.

All new product models launched after January 2013 will be RoHS compliant. They will use the usual NEXCOM naming convention.

## Warranty and RMA

### NEXCOM Warranty Period

NEXCOM manufactures products that are new or equivalent to new in accordance with industry standard. NEXCOM warrants that products will be free from defect in material and workmanship for 2 years, beginning on the date of invoice by NEXCOM.

### NEXCOM Return Merchandise Authorization (RMA)

- Customers shall enclose the “NEXCOM RMA Service Form” with the returned packages.
- Customers must collect all the information about the problems encountered and note anything abnormal or, print out any on-screen messages, and describe the problems on the “NEXCOM RMA Service Form” for the RMA number apply process.
- Customers can send back the faulty products with or without accessories (manuals, cable, etc.) and any components from the card, such as CPU and RAM. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, NEXCOM is not responsible for the devices/parts.
- Customers are responsible for the safe packaging of defective products, making sure it is durable enough to be resistant against further damage and deterioration during transportation. In case of damages occurred during transportation, the repair is treated as “Out of Warranty.”
- Any products returned by NEXCOM to other locations besides the customers’ site will bear an extra charge and will be billed to the customer.

### Repair Service Charges for Out-of-Warranty Products

NEXCOM will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

#### System Level

- Component fee: NEXCOM will only charge for main components such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistor, capacitor.
- Items will be replaced with NEXCOM products if the original one cannot be repaired. Ex: motherboard, power supply, etc.
- Replace with 3rd party products if needed.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

#### Board Level

- Component fee: NEXCOM will only charge for main components, such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistors, capacitors.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

## Warnings

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

## Cautions

Electrostatic discharge (ESD) can damage system components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

## Safety Information

Before installing and using the device, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.
- The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

## Installation Recommendations

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.



## Safety Precautions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a stable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection to protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
  - a. The power cord or plug is damaged.
  - b. Liquid has penetrated into the equipment.
  - c. The equipment has been exposed to moisture.
  - d. The equipment does not work well, or you cannot get it to work according to the user's manual.
  - e. The equipment has been dropped and damaged.
  - f. The equipment has obvious signs of breakage.
15. Do not place heavy objects on the equipment.
16. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.
17. **CAUTION:** DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
18. Ensure to connect the power cord of the power adapter to a socket-outlet with earthing connection.

## Technical Support and Assistance

1. For the most updated information of NEXCOM products, visit NEXCOM's website at [www.nexcom.com](http://www.nexcom.com).
2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:
  - Product name and serial number
  - Detailed information of the peripheral devices
  - Detailed information of the installed software (operating system, version, application software, etc.)
  - A complete description of the problem
  - The exact wordings of the error messages

### Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.
2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

## Conventions Used in this Manual



### Warning:

Information about certain situations, which if not observed, can cause personal injury. This will prevent injury to yourself when performing a task.



### Caution:

Information to avoid damaging components or losing data.



### Note:

Provides additional information to complete a task easily.

## Global Service Contact Information

### Headquarters

#### **NEXCOM International Co., Ltd.**

9F, No. 920, Chung-Cheng Rd.,  
ZhongHe District, New Taipei City, 23586,  
Taiwan, R.O.C.

Tel: +886-2-8226-7786

Fax: +886-2-8226-7782

[www.nexcom.com](http://www.nexcom.com)

### Asia

#### Taiwan

#### **NexAIoT Co., Ltd.**

#### **Taipei Office**

13F, No.920, Chung-Cheng Rd.,  
ZhongHe District,  
New Taipei City, 23586, Taiwan, R.O.C.

Tel: +886-2-8226-7796

Fax: +886-2-8226-7792

Email: [sales@nexcom.com.tw](mailto:sales@nexcom.com.tw)

[www.nexcom.com.tw](http://www.nexcom.com.tw)

#### **NexAIoT Co., Ltd.**

#### **Taichung Office**

16F, No.250, Sec. 2, Chongde Rd.,  
Beitun Dist.,

Taichung City 406, R.O.C.

Tel: +886-4-2249-1179

Fax: +886-4-2249-1172

Email: [sales@nexcom.com.tw](mailto:sales@nexcom.com.tw)

[www.nexcom.com.tw](http://www.nexcom.com.tw)

#### **NexCOBOT Taiwan Co., Ltd.**

13F, No.916, Chung-Cheng Rd.,  
ZhongHe District,  
New Taipei City, 23586, Taiwan, R.O.C.

Tel: +886-2-8226-7796

Fax: +886-2-8226-7792

Email: [sales@nexcom.com.tw](mailto:sales@nexcom.com.tw)

[www.nexcom.com.tw](http://www.nexcom.com.tw)

#### **GreenBase Technology Corp.**

13F, No.922, Chung-Cheng Rd.,  
Zhonghe Dist.,  
New Taipei City, 23586, Taiwan, R.O.C.

Tel: +886-2-8226-7786

Fax: +886-2-8226-7900

Email: [sales@nexcom.com.tw](mailto:sales@nexcom.com.tw)

[www.nexcom.com.tw](http://www.nexcom.com.tw)

### China

#### **NEXSEC Incorporated**

Floor 5, No.4, No.7 fengxian middle Rd.,  
(Beike Industrial Park), Haidian District,  
Beijing, 100094, China

Tel: +86-10-5704-2680

Fax: +86-10-5704-2681

Email: [sales@nexcom.cn](mailto:sales@nexcom.cn)

[www.nexcom.cn](http://www.nexcom.cn)

**NEXCOM Shanghai**

Room 603/604, Huiyinmingzun Plaza Bldg., 1,  
No. 609, Yunlin East Rd.,  
Shanghai, 200062, China  
Tel: +86-21-5278-5868  
Fax: +86-21-3251-6358  
Email: sales@nexcom.cn  
www.nexcom.cn

**NEXCOM Surveillance Technology Corp.**

Floor 5, Building C, ZhenHan Industrial Zone,  
GanKeng Community, Buji Street,  
LongGang District,  
ShenZhen, 518112, China  
Tel: +86-755-8364-7768  
Fax: +86-755-8364-7738  
Email: steveyang@nexcom.com.tw  
www.nexcom.cn

**NEXCOM United System Service**

Room 603/604, Huiyinmingzun Plaza Bldg. 1,  
No. 609, Yunlin East Rd.,  
Shanghai, 200062, China  
Tel: +86-21-5278-5868  
Fax: +86-21-3251-6358  
Email: renwang@nexcom.com.tw  
www.nexcom.cn

**NEXGOL**

1st Floor, Building B4, Electronic 2nd Area,  
(Phoenix Lake Industrial Park), Yongchuan Dist.,  
Chongqing City, 402160, China  
Tel: +86-23-4960-9080  
Fax: +86-23-4966-5855  
Email: sales@nexcobot.com  
www.nexgol.com/NexGoL

**Beijing NexGemo Technology Co.,Ltd.**

5th Floor, Gemotech Building, No.1, Development Rd.,  
Changping International Information Industry Base,  
Changping District,  
Beijing, 102206, China  
Tel: +86-10-8190-9399  
Fax: +86-10-8190-9456

**Japan****NEXCOM Japan**

9F, Tamachi Hara Bldg.,  
4-11-5, Shiba Minato-ku,  
Tokyo, 108-0014, Japan  
Tel: +81-3-5419-7830  
Fax: +81-3-5419-7832  
Email: sales@nexcom-jp.com  
www.nexcom-jp.com

**Europe****United Kingdom  
NEXCOM EUROPE**

10 Vincent Avenue,  
Crownhill Business Centre,  
Milton Keynes, Buckinghamshire  
MK8 0AB, United Kingdom  
Tel: +44-1908-267121  
Fax: +44-1908-262042  
Email: sales.uk@nexcom.eu  
www.nexcom.eu

**America  
USA****NEXCOM USA**

2883 Bayview Drive,  
Fremont CA 94538, USA  
Tel: +1-510-656-2248  
Fax: +1-510-656-2158  
Email: sales@nexcom.com  
www.nexcom.com

## Package Contents

Before continuing, verify that the AIEdge-X®300 package that you received is complete. Your package should have all the items listed in the following table.

| Item | Name   | Qty |
|------|--|-----|
| 1    | AIEdge-X300 System                                       | 1   |
| 2    | LGA115X 2U CPU Cooler for AIEdge-X300 COOLJAG:JYCPL79AGC | 1   |

### Optional Accessories

| Item | Part Number   | Name                | Description   |
|------|---------------|---------------------|---|
| 1    | 5060200565X00 | Thermal Pad For M.2 | 60x20x8mm K=4.2W/mk PK404                             |
| 2    | 50311F0326X00 | Screw               | Flat Head Screw Long Fei:F3x5 Nylok NI+Heat Treatment |

## Ordering Information

The following below provides ordering information for AIEdge-X®300.

### **AIEdge-X®300 (P/N: 10W20X30000X0)**

Industrial AI computing system at the edge powered by Intel® 8th/9th Gen. Intel® Core™ CPU for optional NVIDIA graphics card

### **Optional**

#### **AIBooster®-X8 (P/N: 10E000AIB00X0)**

Intel® Movidius™ Myriad™ X VPU PCIe deep learning accelerator card with heat sink and bracket

# CHAPTER 1: PRODUCT INTRODUCTION

## AIEdge-X®300

### Overview



### Key Features

- Support 8th/9th generation Intel® Core™ i5/i7/i9 and socket type processor up to 65W
- PCIe slot supports PCIe x16 graphics card up to 160W
- Validated for optional NVIDIA RTX 2060 graphics card
- Industrial AI system compact in size
- Support optional M.2 module for Wi-Fi and flash storage
- Support 1 x SATA 2.5" HDD/SSD or 1 x 3.5" HDD/SSD

## Hardware Specifications

### CPU Support

- Supports 8th/9th generation Intel® Core™ socket type processor up to 65W (LGA1151)
  - Intel® Core™ i9-9900T, 2.10 GHz, 8 Core, 35W
  - Intel® Core™ i7-8700, 3.20 GHz, 6 Core, 65W
  - Intel® Core™ i7-8700T, 2.40 GHz, 6 Core, 35W
  - Intel® Core™ i5-8500, 3.00 GHz, 6 Core, 65W
  - Intel® Core™ i5-8500T, 2.10 GHz, 6 Core, 35W

### Chipset

- Intel® PCH Q370

### Graphics

- Supports up to NVIDIA RTX 2060 (graphics card optional)
  - Integrated graphics powered by Intel® UHD Graphics 630
  - Suggested expansion card dimension within the limit of 204mm (L) x 121mm (W) x 39mm (H)
- Validated for optional graphics card
  - ASUS PH-RTX2060-O6G
  - Leadtek Quadro P2200

### Main Memory

- 2 x 260-pin SO-DIMM sockets support DDR4-2400/2666 MHz non ECC, un-buffered memory up to 32G (single socket max 16GB)

### Internal I/O

- 2 x RS232 COM port box header
- 8 Channels GPIO pin header
- 4 x USB 2.0 pin header
- 1 x SATA connector

### I/O Interface

- 1 x Power button with LED

- 1 x HDD LED
- 2 x Antenna holes
- 3 x HDMI 2.0
- 4 x USB 3.0
- 2 x RJ45 with LEDs for Gigabit LAN (Intel® I219-LM/I211-AT)
- 1 x COM 1 port RS232/RS422/RS485
- 1 x COM 2 port RS232
- 1 x Audio Line-out

### Storage

- 1 x SATA 2.5" HDD/SSD or 1 x 3.5" HDD/SSD
- 1 x M.2 M Key 2280 SSD with SATA/PCIe signal

### Expansion

- PCIe x16 Gen 3 slot (2-slot space available for graphics card)
- 1 x M.2 E Key 2230 supporting Wi-Fi module

### Power Supply

- 1 x 500W flex ATX power supply

### Environment

- Operating temperature: 0°C to 45°C
- Storage temperature: -20°C to 80°C
- Humidity: 10% to 90% (non-condensing)

### Certification

- CE (EMC EN55032 + EN55024)
- FCC Class A (EMI Part 15B)
- LVD

### Dimensions

- 360mm (W) x 250mm (D) x 85mm (H)

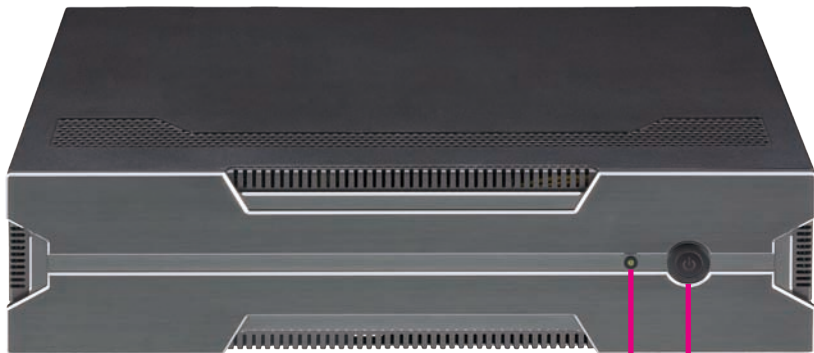
### Operating System

- Windows 10/Linux



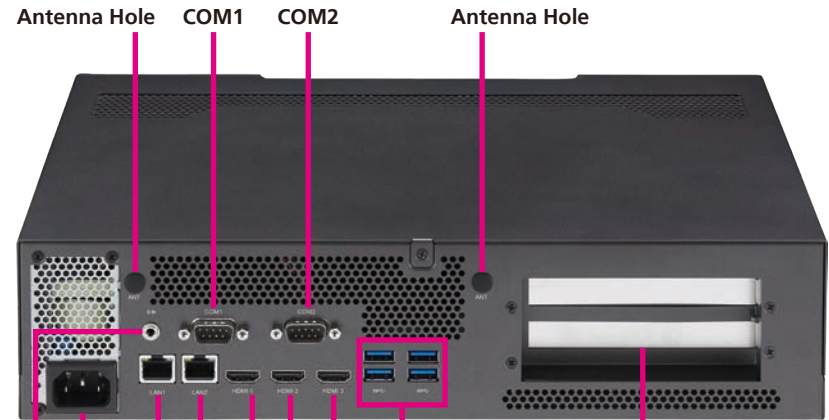
# Physical Features

## Front Panel



Storage LED    Power Button

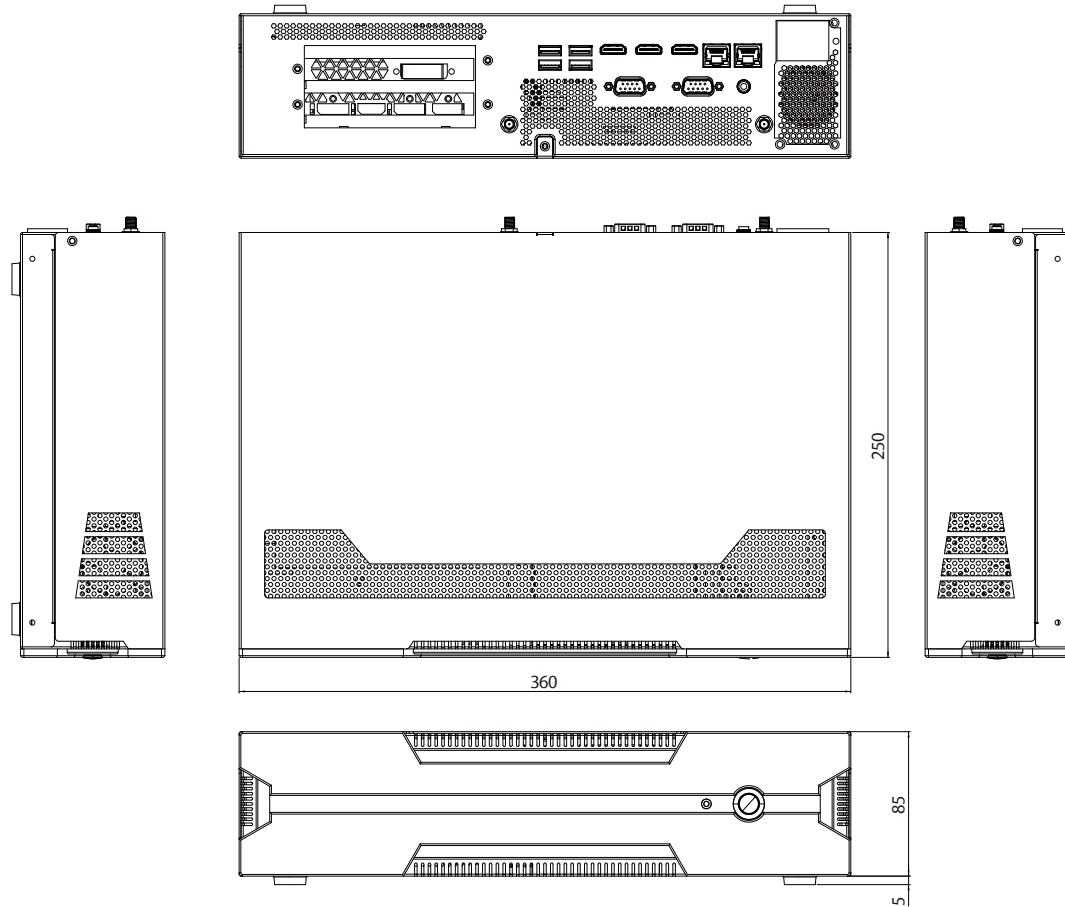
## Rear Panel



Antenna Hole    COM1    COM2    Antenna Hole

Line-out    AC Power Socket    LAN1    LAN2    HDMI1    HDMI2    HDMI3    USB 3.0    PCIe x16 Slot (2-Slot Space for GPU)

# Mechanical Dimensions



## CHAPTER 2: JUMPERS AND CONNECTORS

This chapter lists the locations of the jumpers and connectors for AEdge-X®300.

### Before You Begin

- Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
- Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
  - A Philips screwdriver
  - A flat-tipped screwdriver
  - A set of jewelers screwdrivers
  - A grounding strap
  - An anti-static pad
- Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.
- Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environments tend to have less static electricity than

dry environments. A grounding strap is warranted whenever danger of static electricity exists.

### Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous.

Follow the guidelines below to avoid damage to your computer or yourself:

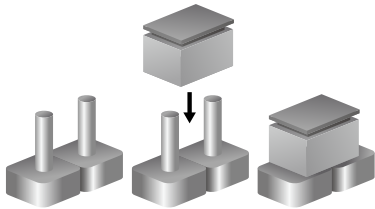
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

## Jumper Settings

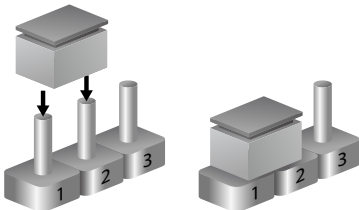
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is open.

Refer to the illustrations below for examples of what the 2-pin and 3-pin jumpers look like when they are short (on) and open (off).

Two-Pin Jumpers: Open (Left) and Short (Right)

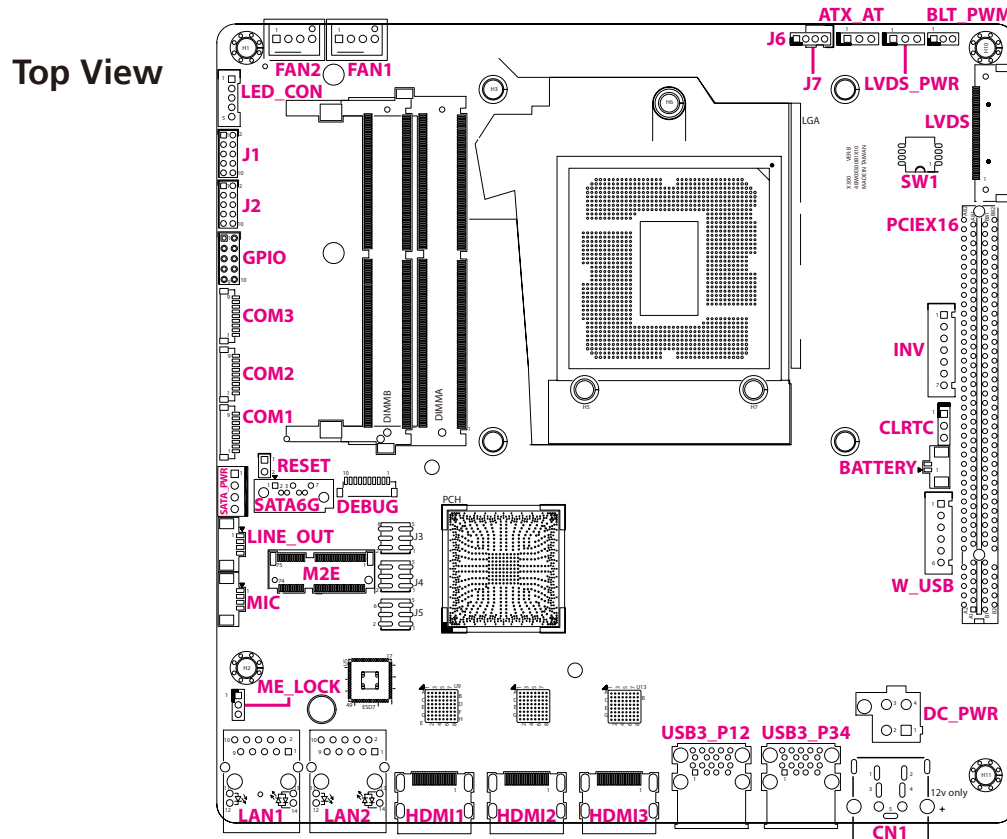


Three-Pin Jumpers: Pins 1 and 2 are Short

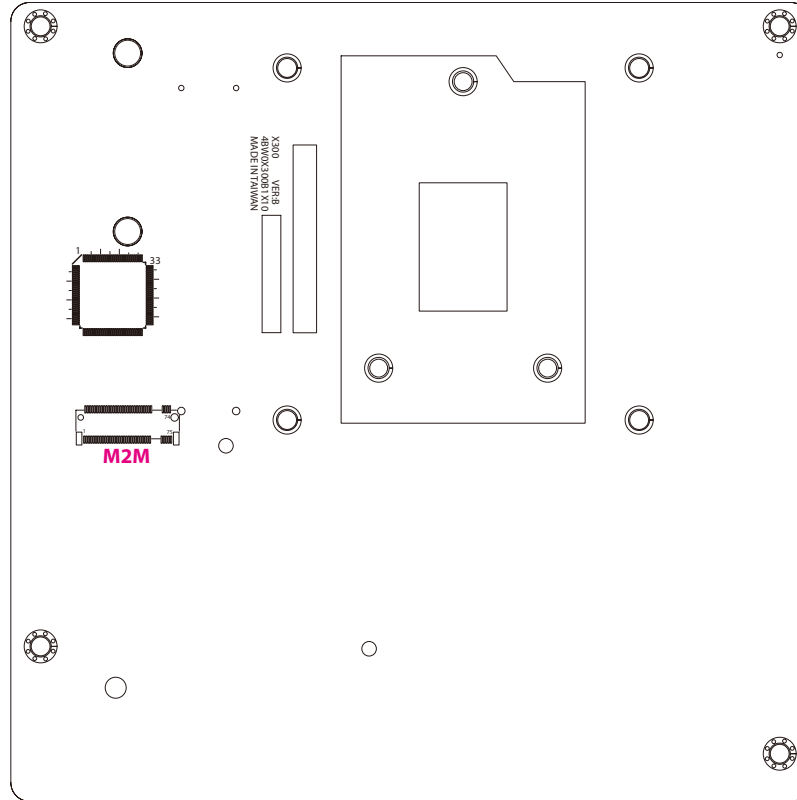


## Locations of the Jumpers and Connectors for AIEdge-X®300

The figure below is the top and bottom view of the mainboard used in AIEdge-X®300. It shows the locations of the jumpers and connectors.



### Bottom View



## Jumpers & DIP Switches

### AT/ATX Mode Select

Connector type: 1x3 3-pin header, 2.54mm pitch

Connector location: ATX\_AT



| Pin    | Settings |
|--------|----------|
| 1-2 On | ATX Mode |
| 2-3 On | AT Mode  |

1-2 On: default

### Clear CMOS

Connector type: 1x3 3-pin header, 2.54mm pitch

Connector location: CLRTC



| Pin    | Settings   |
|--------|------------|
| 1-2 On | Normal     |
| 2-3 On | Clear CMOS |

1-2 On: default

## LVDS Panel Voltage Select

Connector type: 1x3 3-pin header, 2.54mm pitch

Connector location: LVDS\_PWR



| Pin    | Settings |
|--------|----------|
| 1-2 On | 3.3V     |
| 2-3 On | 5V       |

1-2 On: default

## Backlight Control Voltage Select (Dimming)

Connector type: 1x3 3-pin header, 2.0mm pitch

Connector location: BLT\_PWM



| Pin    | Settings |
|--------|----------|
| 1-2 On | 3.3V     |
| 2-3 On | 5V       |

1-2 On: default



## ME Flash Descriptor Security Override

Connector type: 1x3 3-pin header, 2.0mm pitch

Connector location: ME\_LOCK



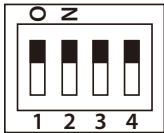
| Pin    | Settings |
|--------|----------|
| 1-2 On | Lock     |
| 2-3 On | Unlock   |

1-2 On: default

## LVDS Resolution Select

Connector type: 4-pin DIP switch

Connector location: SW1



| SW [3:0] | SW1 [3] | SW1 [2] | SW1 [1] | SW1 [0] | Function                      |
|----------|---------|---------|---------|---------|-------------------------------|
| 0000     | ON      | ON      | ON      | ON      | 800 x 600 6-bit Single Port   |
| 0001     | ON      | ON      | ON      | OFF     | 1024 x 768 6-bit Single Port  |
| 0010     | ON      | ON      | OFF     | ON      | 1024 x 768 8-bit Single Port  |
| 0011     | ON      | ON      | OFF     | OFF     | 1280 x 1024 6-bit Single Port |
| 0100     | ON      | OFF     | ON      | ON      | 1280 x 800 6-bit Single Port  |
| 0101     | ON      | OFF     | ON      | OFF     | 1280 x 960 6-bit Single Port  |
| 0110     | ON      | OFF     | OFF     | ON      | 1280 x 1024 8-bit Dual Port   |
| 0111     | ON      | OFF     | OFF     | OFF     | 1366 x 768 6-bit Single Port  |
| 1000     | OFF     | ON      | ON      | ON      | 1366 x 768 8-bit Single Port  |
| 1001     | OFF     | ON      | ON      | OFF     | 1440 x 900 8-bit Dual Port    |
| 1010     | OFF     | ON      | OFF     | ON      | 1400 x 1050 8-bit Dual Port   |
| 1011     | OFF     | ON      | OFF     | OFF     | 1600 x 900 8-bit Dual Port    |
| 1100     | OFF     | OFF     | ON      | ON      | 1680 x 1050 8-bit Dual Port   |
| 1101     | OFF     | OFF     | ON      | OFF     | 1600 x 1200 8-bit Dual Port   |
| 1110     | OFF     | OFF     | OFF     | ON      | 1920 x 1080 8-bit Dual Port   |
| 1111     | OFF     | OFF     | OFF     | OFF     | 1920 x 1200 8-bit Dual Port   |

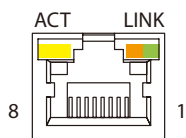
## Connector Pin Definitions

### External I/O Interfaces

#### LAN1 and LAN2 Port

Connector type: RJ45 port with LEDs

Connector location: LAN1 and LAN2



| Act             | Status        |
|-----------------|---------------|
| Flashing Yellow | Data activity |
| Off             | No activity   |

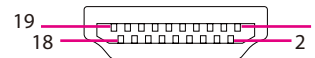
| Link          | Status               |
|---------------|----------------------|
| Steady Green  | 1G network link      |
| Steady Orange | 100Mbps network link |
| Off           | 10Mbps or no link    |

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | MDI_OP     | 2   | MDI_ON     |
| 3   | MDI_1P     | 4   | MDI_1N     |
| 5   | CT         | 6   | CT         |
| 7   | MDI_2P     | 8   | MDI_2N     |
| 9   | MDI_3P     | 10  | MDI_3N     |
| 11  | +3VSB      | 12  | ACTLED#    |
| 13  | LINK100#   | 14  | LINK1000#  |

#### HDMI1, HDMI2 and HDMI3 Port

Connector type: HDMI port

Connector location: HDMI1, HDMI2 and HDMI3

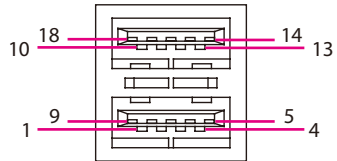


| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | TX2P       | 2   | GND        |
| 3   | TX2N       | 4   | TX1P       |
| 5   | GND        | 6   | TX1N       |
| 7   | TX0P       | 8   | GND        |
| 9   | TX0N       | 10  | CLKP       |
| 11  | GND        | 12  | CLKN       |
| 13  | CEC        | 14  | NC         |
| 15  | SCL        | 16  | SDA        |
| 17  | GND        | 18  | +5V        |
| 19  | HPD        |     |            |

## USB 3.0 Ports

Connector type: Dual USB 3.0 port

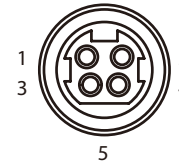
Connector location: USB3\_P12 and USB3\_P34



| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | +5V        | 2   | USB2_2N    |
| 3   | USB2_2P    | 4   | GND        |
| 5   | USB3_RX2N  | 6   | USB3_RX2P  |
| 7   | GND        | 8   | USB3_TX2N  |
| 9   | USB3_TX2P  | 10  | +5V        |
| 11  | USB2_1N    | 12  | USB2_1P    |
| 13  | GND        | 14  | USB3_RX1N  |
| 15  | USB3_RX1P  | 16  | GND        |
| 17  | USB3_TX1N  | 18  | USB3_TX1P  |

## DC Power Input (+12V Only)

Connector location: CN1



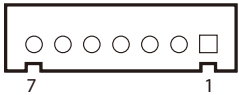
| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | +12VSUS    | 2   | +12VSUS    |
| 3   | GND        | 4   | GND        |
| 5   | CGND       |     |            |

## Internal Connectors

### LVDS Inverter Connector

Connector type: 1x7 7-pin header JST, 2.5mm pitch

Connector location: INV



| Pin | Definition       | Pin | Definition        |
|-----|------------------|-----|-------------------|
| 1   | 5V               | 2   | 12V               |
| 3   | 12V              | 4   | Backlight Control |
| 5   | GND              | 6   | GND               |
| 7   | Backlight Enable |     |                   |

### System Reset Header

Connector type: 1x2 2-pin header, 2.54mm pitch

Connector location: RESET



| Pin | Definition |
|-----|------------|
| 1   | RESET#     |
| 2   | GND        |

## LED Connector

Connector type: 1x5 5-pin header JST, 2.0mm pitch

Connector location: LED\_CON

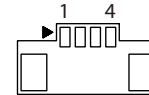


| Pin | Definition | Pin | Definition  |
|-----|------------|-----|-------------|
| 1   | HDD_LED-   | 2   | HDD_LED+    |
| 3   | GND        | 4   | Standby LED |
| 5   | PWR LED    |     |             |

## Line-out Connector

Connector type: 1x4 4-pin header, 1.25mm pitch

Connector location: LINE\_OUT

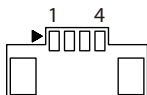


| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | LOUT_L     | 2   | GND        |
| 3   | LOUT_JD    | 4   | LOUT_R     |

## Mic-in Connector

Connector type: 1x4 4-pin header, 1.25mm pitch

Connector location: MIC



| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | MIC_L      | 2   | GND        |
| 3   | MIC_JD     | 4   | MIC_R      |

## System Power Button Header

Connector type: 1x2 2-pin header JST, 2.0mm pitch

Connector location: J7

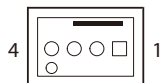


| Pin | Definition |
|-----|------------|
| 1   | PWRBTN#    |
| 2   | GND        |

## FAN Connectors

Connector type: 1x4 4-pin header, 2.54mm pitch

Connector location: FAN1 and FAN2

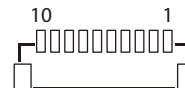


| Pin | Definition       | Pin | Definition        |
|-----|------------------|-----|-------------------|
| 1   | GND              | 2   | +12V              |
| 3   | FAN SPEED DETECT | 4   | FAN SPEED CONTROL |

## Debug Port/LPC Bus Connector

Connector type: 1x10 10-pin header, 1.0mm pitch

Connector location: DEBUG



| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | +3V        | 2   | SERIRQ     |
| 3   | LAD0       | 4   | LAD1       |
| 5   | LAD2       | 6   | LAD3       |
| 7   | LFRAME#    | 8   | 24MHZ      |
| 9   | PLTRST#    | 10  | GND        |



## COM Port Connectors

Connector type: 1x9 9-pin header, 1.0mm pitch

Connector location: COM1, COM2 and COM3



| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | DCD        | 2   | RXD        |
| 3   | TXD        | 4   | DTR        |
| 5   | GND        | 6   | DSR        |
| 7   | RTS        | 8   | CTS        |
| 9   | RI         |     |            |

## Battery Connector

Connector type: 1x2 2-pin header, 1.25mm pitch

Connector location: BATTERY

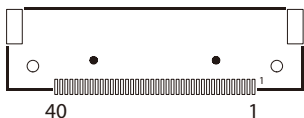


| Pin | Definition |
|-----|------------|
| 1   | BAT        |
| 2   | GND        |

## LVDS Panel Connector

Connector type: 1x40 40-pin header, 0.5mm pitch

Connector location: LVDS

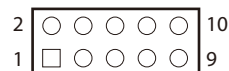


| Pin | Definition            | Pin | Definition            |
|-----|-----------------------|-----|-----------------------|
| 1   | LVDS0_D3+             | 2   | LVDS0_D3-             |
| 3   | LVDS0_D2+             | 4   | LVDS0_D2-             |
| 5   | LVDS0_D1+             | 6   | LVDS0_D1-             |
| 7   | LVDS0_D0+             | 8   | LVDS0_D0-             |
| 9   | LVDS1_D3+             | 10  | LVDS1_D3-             |
| 11  | LVDS1_D2+             | 12  | LVDS1_D2-             |
| 13  | LVDS1_D1+             | 14  | LVDS1_D1-             |
| 15  | LVDS1_D0+             | 16  | LVDS1_D0-             |
| 17  | GND                   | 18  | +V_PANEL (3.3V or 5V) |
| 19  | +V_PANEL (3.3V or 5V) | 20  | +V_PANEL (3.3V or 5V) |
| 21  | GND                   | 22  | 3.3V                  |
| 23  | GND                   | 24  | GND                   |
| 25  | GND                   | 26  | LVDS0_CLK+            |
| 27  | LVDS0_CLK-            | 28  | GND                   |
| 29  | GND                   | 30  | GND                   |
| 31  | SMBUS_CLK             | 32  | Backlight Enable      |
| 33  | Backlight Control     | 34  | LVDS1_CLK+            |
| 35  | LVDS1_CLK-            | 36  | +12V                  |
| 37  | +12V                  | 38  | +12V                  |
| 39  | NC                    | 40  | SMBUS_DAT             |

## Internal USB 2.0 Connectors

Connector type: 2x5 10-pin header, 2.0mm pitch

Connector location: J1 and J2

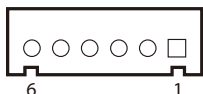


| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | 5V         | 2   | GND        |
| 3   | USB1N      | 4   | GND        |
| 5   | USB1P      | 6   | USB2P      |
| 7   | GND        | 8   | USB2N      |
| 9   | GND        | 10  | 5V         |

## USB Touch

Connector type: 1x6 6-pin header JST, 2.5mm pitch

Connector location: W\_USB

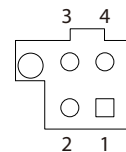


| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | 5V         | 2   | USB1N      |
| 3   | USB1P      | 4   | USB2N      |
| 5   | USB2P      | 6   | GND        |

## ATX 4-pin Connector

Connector type: 1x4 4-pin header

Connector location: DC\_PWR

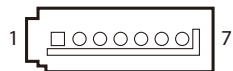


| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | +12VSUS    | 2   | +12VSUS    |
| 3   | GND        | 4   | GND        |

## SATA Connector

Connector type: Standard Serial ATA 7P (1.27mm, SATA-M-180)

Connector location: SATA6G



| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | GND        | 2   | SATA_TXP   |
| 3   | SATA_TXN   | 4   | GND        |
| 5   | SATA_RXN   | 6   | SATA_RXP   |
| 7   | GND        |     |            |

## SATA Power Connector

Connector type: 1x4 4-pin header, 2.5mm pitch

Connector location: SATA\_PWR



| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | +5V        | 2   | GND        |
| 3   | GND        | 4   | +12V       |

## System Power Button Connector

Connector type: 1x4 4-pin header, 2.0mm pitch

Connector location: J6

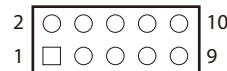


| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | +5V        | 2   | GND        |
| 3   | PWRBTN#    | 4   | GND        |

## GPIO Connector

Connector type: 2x5 10-pin header, 2.0mm pitch

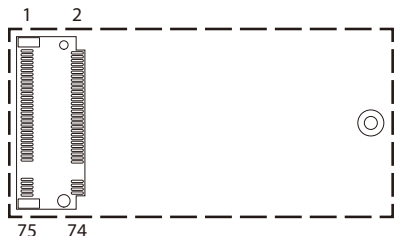
Connector location: GPIO



| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | +5V        | 2   | GND        |
| 3   | SIO_GP10   | 4   | SIO_GP11   |
| 5   | SIO_GP12   | 6   | SIO_GP13   |
| 7   | SIO_GP14   | 8   | SIO_GP15   |
| 9   | SIO_GP16   | 10  | SIO_GP17   |

## M.2 Connector (M-Key)

Connector location: M2M

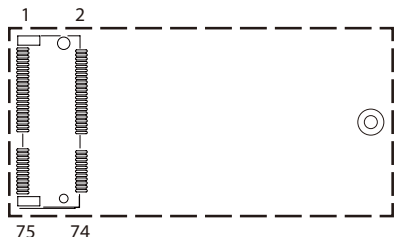


| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | GND        | 2   | +3VSB      |
| 3   | GND        | 4   | +3VSB      |
| 5   | PCIE4_RXN  | 6   | NC         |
| 7   | PCIE4_RXP  | 8   | NC         |
| 9   | GND        | 10  | M2M_LED#   |
| 11  | PCIE4_RXN  | 12  | +3VSB      |
| 13  | PCIE4_RXP  | 14  | +3VSB      |
| 15  | GND        | 16  | +3VSB      |
| 17  | PCIE3_RXN  | 18  | +3VSB      |
| 19  | PCIE3_RXP  | 20  | NC         |
| 21  | GND        | 22  | NC         |
| 23  | PCIE3_RXN  | 24  | NC         |
| 25  | PCIE3_RXP  | 26  | NC         |
| 27  | GND        | 28  | NC         |
| 29  | PCIE2_RXN  | 30  | NC         |
| 31  | PCIE2_RXP  | 32  | NC         |
| 33  | GND        | 34  | NC         |
| 35  | PCIE2_RXN  | 36  | NC         |
| 37  | PCIE2_RXP  | 38  | DEVSLP     |

| Pin | Definition          | Pin | Definition |
|-----|---------------------|-----|------------|
| 39  | GND                 | 40  | NC         |
| 41  | SATA_RXP(PCIE1_RXP) | 42  | NC         |
| 43  | SATA_RXN(PCIE1_RXN) | 44  | NC         |
| 45  | GND                 | 46  | NC         |
| 47  | SATA_TXN(PCIE1_TXN) | 48  | NC         |
| 49  | SATA_TXP(PCIE1_TXP) | 50  | RESET#     |
| 51  | GND                 | 52  | CLKREQ#    |
| 53  | CLK_PCIE_N          | 54  | WAKE#      |
| 55  | CLK_PCIE_P          | 56  | NC         |
| 57  | GND                 | 58  | NC         |
| 67  | NC                  | 68  |            |
| 69  | M2M_PEDET           | 70  | +3VSB      |
| 71  | GND                 | 72  | +3VSB      |
| 73  | GND                 | 74  | +3VSB      |
| 75  | GND                 |     |            |

## M.2 Connector (E-Key)

Connector location: M2E



| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | GND        | 2   | 3VSB       |
| 3   | USBP       | 4   | 3VSB       |
| 5   | USBN       | 6   | NC         |
| 7   | GND        | 8   | NC         |
| 9   | NC         | 10  | NC         |
| 11  | NC         | 12  | NC         |
| 13  | NC         | 14  | NC         |
| 15  | NC         | 16  | NC         |
| 17  | NC         | 18  | NC         |
| 19  | NC         | 20  | NC         |
| 21  | NC         | 22  | NC         |
| 23  | NC         |     |            |
|     |            | 32  | NC         |
| 33  | GND        | 34  | NC         |
| 35  | PCIE_TXP   | 36  | NC         |
| 37  | PCIE_TXN   | 38  | NC         |
| 39  | GND        | 40  | NC         |
| 41  | PCIE_RXP   | 42  | NC         |

| Pin | Definition | Pin | Definition    |
|-----|------------|-----|---------------|
| 43  | PCIE_RXN   | 44  | NC            |
| 45  | GND        | 46  | NC            |
| 47  | CLK_PCIEP  | 48  | NC            |
| 49  | CLK_PCIEN  | 50  | SUSCLK        |
| 51  | GND        | 52  | PLTRST#       |
| 53  | CLKREQ#    | 54  | BT_DISABLE#   |
| 55  | WAKE#      | 56  | WIFI_DISABLE# |
| 57  | GND        | 58  | NC            |
| 59  | NC         | 60  | NC            |
| 61  | NC         | 62  | NC            |
| 63  | GND        | 64  | NC            |
| 65  | NC         | 66  | NC            |
| 67  | NC         | 68  | NC            |
| 69  | GND        | 70  | NC            |
| 71  | NC         | 72  | 3VSB          |
| 73  | NC         | 74  | 3VSB          |
| 75  | GND        |     |               |

## PCIe x16 Slot

Connector location: PCIEX16



| Pin | Definition | Pin | Definition      |
|-----|------------|-----|-----------------|
| A1  | GND        | B1  | +12V            |
| A2  | +12V       | B2  | +12V            |
| A3  | +12V       | B3  | +12V            |
| A4  | GND        | B4  | GND             |
| A5  | NC         | B5  | SMBCLK          |
| A6  | NC         | B6  | SMBDAT          |
| A7  | NC         | B7  | GND             |
| A8  | NC         | B8  | +3.3V           |
| A9  | +3.3V      | B9  | NC              |
| A10 | +3.3V      | B10 | +3VSUS          |
| A11 | PCIRST#    | B11 | WAKE#           |
| A12 | GND        | B12 | NC              |
| A13 | CLK_PCIEP  | B13 | GND             |
| A14 | CLK_PCIEN  | B14 | TXP0            |
| A15 | GND        | B15 | TXN0            |
| A16 | RXP0       | B16 | GND             |
| A17 | RXN0       | B17 | PCIEX16_PRSENT# |
| A18 | GND        | B18 | GND             |

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| A19 | NC         | B19 | TXP1       |
| A20 | GND        | B20 | TXN1       |
| A21 | RXP1       | B21 | GND        |
| A22 | RXN1       | B22 | GND        |
| A23 | GND        | B23 | TXP2       |
| A24 | GND        | B24 | TXN2       |
| A25 | RXP2       | B25 | GND        |
| A26 | RXN2       | B26 | GND        |
| A27 | GND        | B27 | TXP3       |
| A28 | GND        | B28 | TXN3       |
| A29 | RXP3       | B29 | GND        |
| A30 | RXN3       | B30 | NC         |
| A31 | GND        | B31 | NC         |
| A32 | NC         | B32 | GND        |
| A33 | NC         | B33 | TXP4       |
| A34 | GND        | B34 | TXN4       |
| A35 | RXP4       | B35 | GND        |
| A36 | RXN4       | B36 | GND        |



| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| A37 | GND        | B37 | TXP5       |
| A38 | GND        | B38 | TXN5       |
| A39 | RXP5       | B39 | GND        |
| A40 | RXN5       | B40 | GND        |
| A41 | GND        | B41 | TXP6       |
| A42 | GND        | B42 | TXN6       |
| A43 | RXP6       | B43 | GND        |
| A44 | RXN6       | B44 | GND        |
| A45 | GND        | B45 | TXP7       |
| A46 | GND        | B46 | TXN7       |
| A47 | RXP7       | B47 | GND        |
| A48 | RXN7       | B48 | NC         |
| A49 | GND        | B49 | GND        |
| A50 | NC         | B50 | TXP8       |
| A51 | GND        | B51 | TXN8       |
| A52 | RXP8       | B52 | GND        |
| A53 | RXN8       | B53 | GND        |
| A54 | GND        | B54 | TXP9       |
| A55 | GND        | B55 | TXN9       |
| A56 | RXP9       | B56 | GND        |
| A57 | RXN9       | B57 | GND        |
| A58 | GND        | B58 | TXP10      |
| A59 | GND        | B59 | TXN10      |

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| A60 | RXP10      | B60 | GND        |
| A61 | RXN10      | B61 | GND        |
| A62 | GND        | B62 | TXP11      |
| A63 | GND        | B63 | TXN11      |
| A64 | RXP11      | B64 | GND        |
| A65 | RXN11      | B65 | GND        |
| A66 | GND        | B66 | TXP12      |
| A67 | GND        | B67 | TXN12      |
| A68 | RXP12      | B68 | GND        |
| A69 | RXN12      | B69 | GND        |
| A70 | GND        | B70 | TXP13      |
| A71 | GND        | B71 | TXN13      |
| A72 | RXP13      | B72 | GND        |
| A73 | RXN13      | B73 | GND        |
| A74 | GND        | B74 | TXP14      |
| A75 | GND        | B75 | TXN14      |
| A76 | RXP14      | B76 | GND        |
| A77 | RXN14      | B77 | GND        |
| A78 | GND        | B78 | TXP15      |
| A79 | GND        | B79 | TXN15      |
| A80 | RXP15      | B80 | GND        |
| A81 | RXN15      | B81 | NC         |
| A82 | GND        | B82 | NC         |

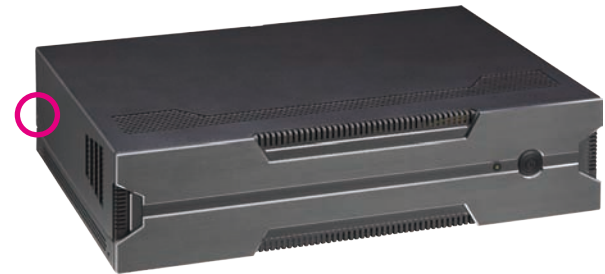
## CHAPTER 3: SYSTEM SETUP

### Removing the Top Cover from the Chassis



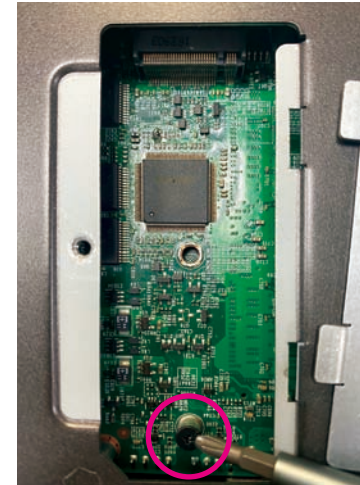
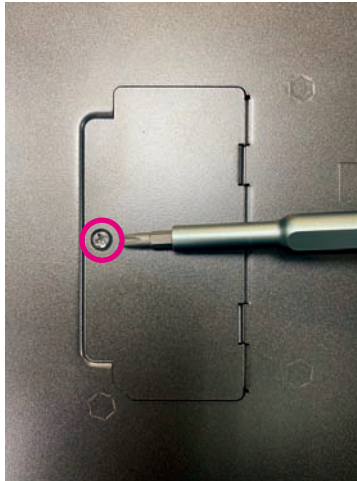
Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

1. Remove the three mounting screws around the chassis then lift up the top cover to remove it.



## Installing an M.2 M-Key SSD Module (M-Key 2280)

1. On the bottom of the system, loosen the screw on the bottom cover, and then remove the cover from the chassis.
2. Remove the screw on the standoff and put it in a safe place for later use.



3. Insert the M.2 SSD module into the M.2 slot at a 45-degree angle until the gold-plated connector on the edge of the module completely disappears. With the module fully inserted, tighten the screw removed earlier into the mounting hole on the module to secure it.

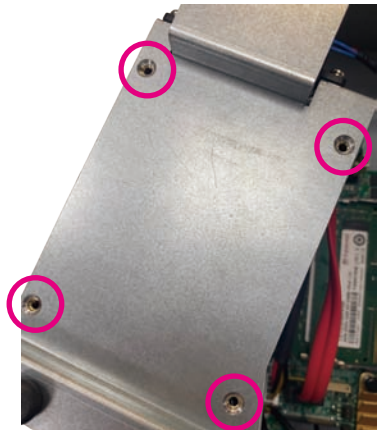
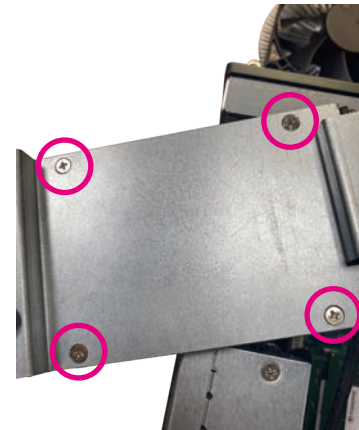


## Removing/Adding a 2.5-inch SSD/HDD Storage Drive

1. Remove the three screws on the storage drive bracket, then lift up the bracket.



2. Remove the two screws on the connector side of the bracket, then turn over the bracket and remove the four screws on the bottom. Then unplug the SSD/HDD from the connector.



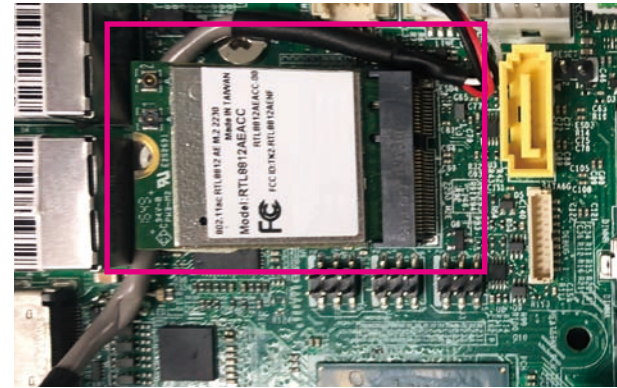
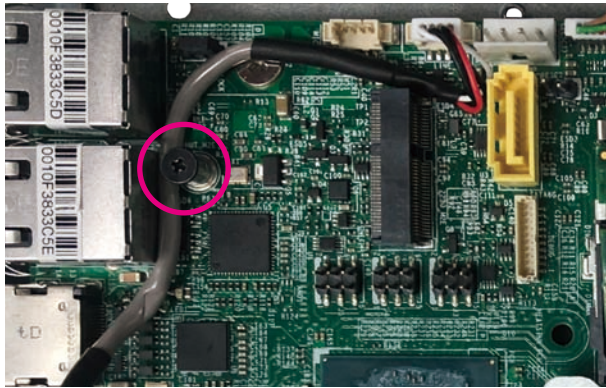
## Installing a SO-DIMM Memory Module

1. With the top cover removed, install a memory module in the SO-DIMM socket. Insert the module into the socket at an approximately 30-degree angle. Push the module down until the clips on both sides of the socket lock into position. The gold-plated connector on the edge of the module will almost completely disappear inside the socket.



## Installing a Wi-Fi Module (M.2 E-Key Slot)

1. With the top cover removed, locate the M.2 E-key slot and remove the screw on the standoff and put it in a safe place for later use.
2. Insert the Wi-Fi module into the slot at a 45-degree angle until the gold-plated connector on the edge of the module completely disappears inside the slot.



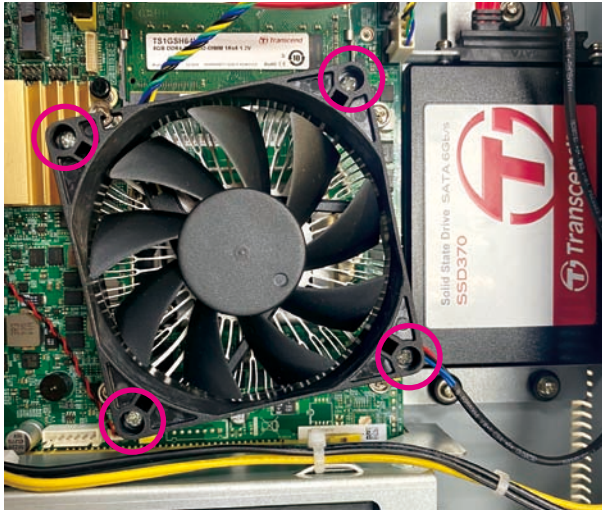
3. Push the module down and tighten the screw removed earlier into the mounting hole on the module to secure it.





## Installing a CPU

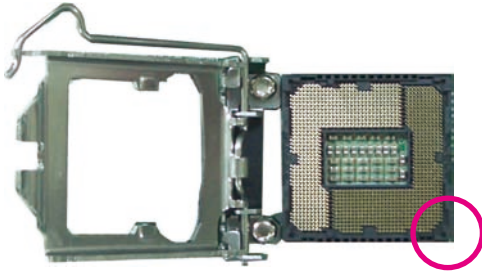
1. Loosen the four mounting screws on the CPU heat sink fan then remove it to access the CPU socket.
2. Unlock the socket by pushing the load lever down, moving it sideways until it is released from the retention tab; then lift the load lever up.



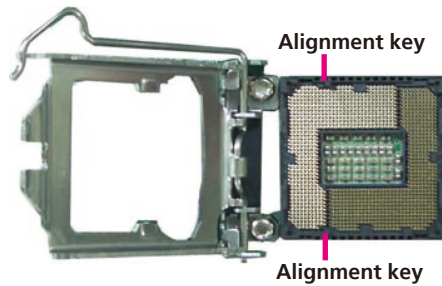
Retention Tab

Load Lever

3. Insert the CPU into the socket. The triangular edge on the CPU must align with the corner of the CPU socket shown on the photo.



The CPU's notch will at the same time fit into the socket's alignment key.



4. Close the load plate and then hook the load lever under the retention tab.

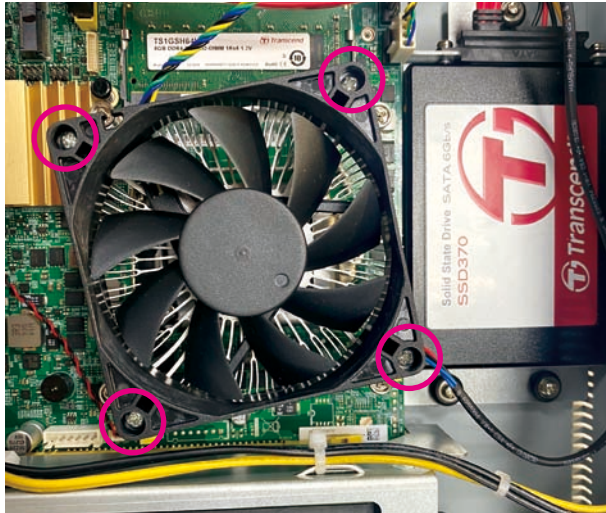


- Handle the CPU by its edges and avoid touching the pins.
- The CPU will fit in only one orientation and can easily be inserted without exerting any force.



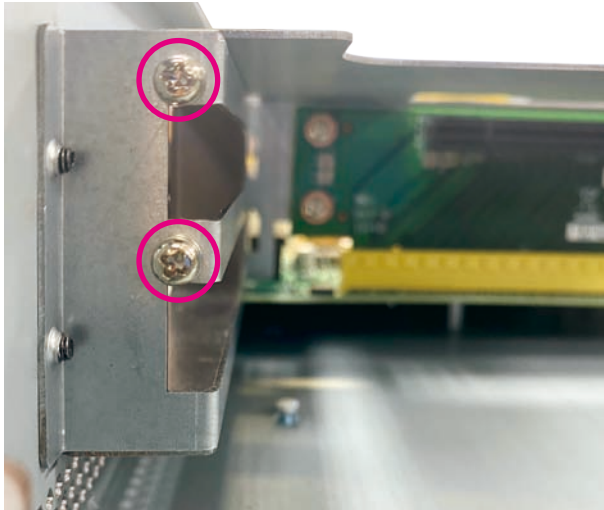
Do not force the CPU into the socket. Forcing the CPU into the socket may bend the pins and damage the CPU.

5. Reinstall the CPU heat sink fan with the four mounting screws removed earlier.

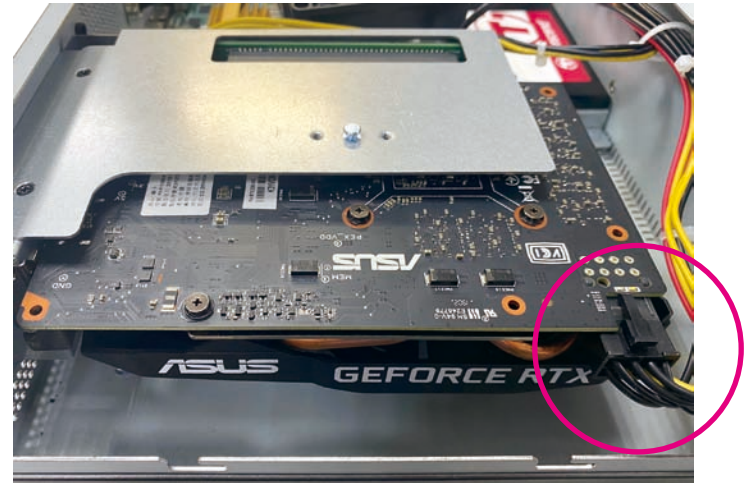
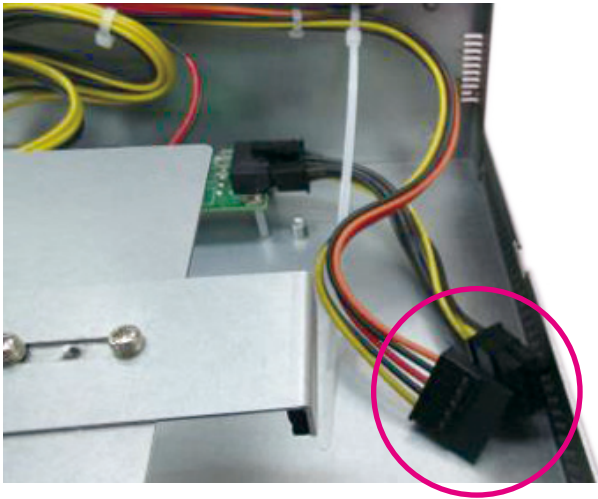


## Installing an Add-on Card

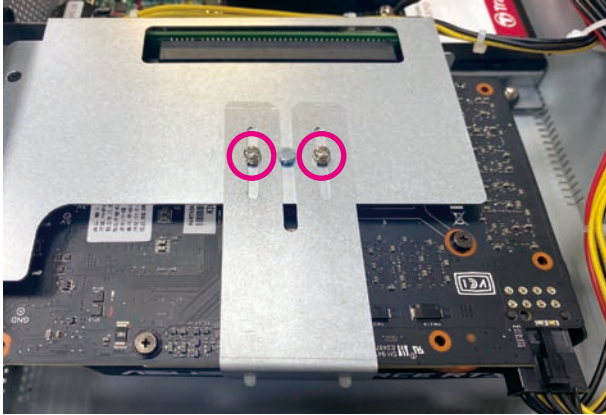
1. Remove the two screws on the bracket as shown below, then plug in the add-on card on the riser card.



2. Plug in the 6+2-pin power cable for graphics card or 3.5-inch HDD/SSD storage drive if necessary, then refasten the two screws on the graphics card bracket to secure the card firmly.



3. On the rear side of the add-on card, fasten the two screws on the bracket to fix the add-on card.



## Wall Mounting Instructions

To mount the system on to a wall or some other surface using the two mounting brackets, please follow the steps below.

1. On each side of the system, align the two retention screw holes in each bracket with the retention screw holes on the sides of the system.
2. Secure the brackets to the system by inserting two retention screws into each bracket.



Wall Mount Bracket



Specification of the wall mount screw:  
Round Head Screw Long Fei:P6#32TX8L\_w/Spring+Flat Washer

3. Drill holes in the intended installation surface.
4. Align the mounting holes on the sides of the mounting brackets with the predrilled holes on the mounting surface.
5. Insert four retention screws, two in each bracket, to secure the system to the wall.



Fasten screws to mount the system to the wall

# CHAPTER 4: BIOS SETUP

This chapter describes how to use the BIOS setup program for AIEdge X®300. The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

To check for the latest updates and revisions, visit the NEXCOM website at [www.nexcom.com.tw](http://www.nexcom.com.tw).

## About BIOS Setup

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters.

These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the setup program affect how the computer performs. It is important, therefore, first to try to understand all the setup options, and second, to make settings appropriate for the way you use the computer.

## When to Configure the BIOS

- This program should be executed under the following conditions:
  - When changing the system configuration
  - When a configuration error is detected by the system and you are prompted to make changes to the setup program
  - When resetting the system clock
  - When redefining the communication ports to prevent any conflicts
  - When making changes to the Power Management configuration
  - When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.



## Default Configuration


Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

## Entering Setup












When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing <Del> allows you to enter Setup.

Press the  key to enter Setup:


## Legends

| Key   | Function   |
|---|--|
|    | Moves the highlight left or right to select a menu.                      |
|    | Moves the highlight up or down between sub-menus or fields.              |
|    | Exits the BIOS Setup Utility.  |
|    | Scrolls forward through the values or options of the highlighted field.  |
|    | Scrolls backward through the values or options of the highlighted field. |
|    | Selects a field.   |
|    | Displays General Help.   |
|    | Load previous values.  |
|    | Load optimized default values.   |
|   | Saves and exits the Setup program.                                       |
|  | Press <Enter> to enter the highlighted sub-menu                          |


## Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

## Submenu

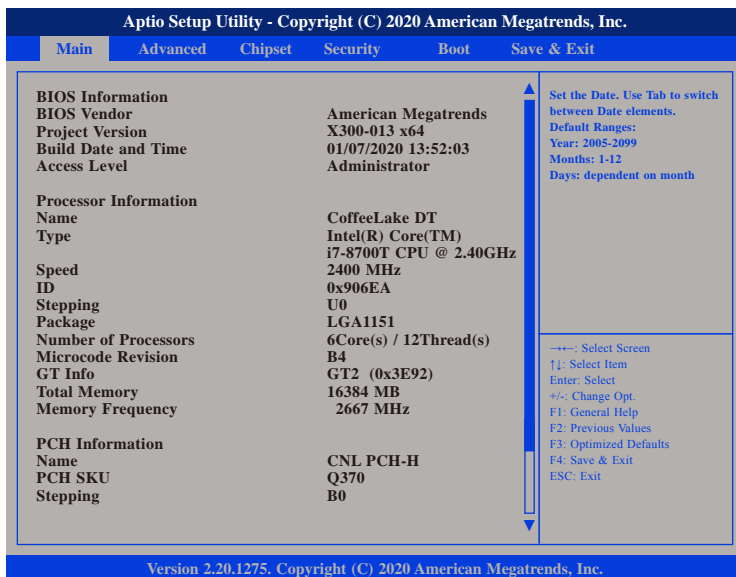
When “▶” appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press  .

## BIOS Setup Utility

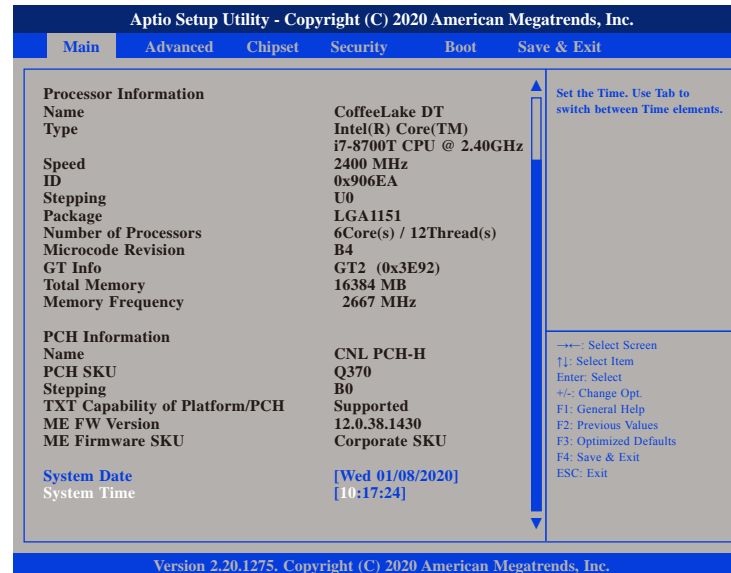
Once you enter the AMI BIOS Setup Utility, the Main Menu will appear on the screen. The main menu allows you to select from several setup functions and one exit. Use arrow keys to select among the items and press  to accept or enter the submenu.

### Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.



| Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc. |                        |  |          |      |             |
|--|------------------------|--|----------|------|-------------|
| Main   | Advanced               | Chipset  | Security | Boot | Save & Exit |
| <b>BIOS Information</b>  |                        | Set the Date. Use Tab to switch between Date elements. |          |      |             |
| BIOS Vendor  | American Megatrends    | Default Ranges:  |          |      |             |
| Project Version  | X300-013 x64           | Year: 2005-2099  |          |      |             |
| Build Date and Time  | 01/07/2020 13:52:03    | Months: 1-12   |          |      |             |
| Access Level   | Administrator          | Days: dependent on month                               |          |      |             |
| <b>Processor Information</b>                                       |                        | ←: Select Screen                                       |          |      |             |
| Name   | CoffeeLake DT          | ↑: Select Item   |          |      |             |
| Type   | Intel(R) Core(TM)      | Enter: Select  |          |      |             |
| Speed  | i7-8700T CPU @ 2.40GHz | +/-: Change Opt.                                       |          |      |             |
| ID   | 2400 MHz               | F1: General Help                                       |          |      |             |
| Stepping   | 0x906EA                | F2: Previous Values                                    |          |      |             |
| Package  | U0                     | F3: Optimized Defaults                                 |          |      |             |
| Number of Processors   | LGA1151                | F4: Save & Exit  |          |      |             |
| Microcode Revision   | 6Core(s) / 12Thread(s) | ESC: Exit  |          |      |             |
| GT Info  | B4                     |  |          |      |             |
| Total Memory   | GT2 (0x3E92)           |  |          |      |             |
| Memory Frequency   | 16384 MB               |  |          |      |             |
|  | 2667 MHz               |  |          |      |             |
| <b>PCH Information</b>   |                        |  |          |      |             |
| Name   | CNL PCH-H              |  |          |      |             |
| PCH SKU  | Q370                   |  |          |      |             |
| Stepping   | B0                     |  |          |      |             |
| <b>System Date</b>   |                        |  |          |      |             |
| System Time  | Supported              |  |          |      |             |
|  | 12.0.38.1430           |  |          |      |             |
|  | Corporate SKU          |  |          |      |             |
|  | [Wed 01/08/2020]       |  |          |      |             |
|  | [10:17:24]             |  |          |      |             |
| Version 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.    |                        |  |          |      |             |



| Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc. |                        |  |          |      |             |
|--|------------------------|--|----------|------|-------------|
| Main   | Advanced               | Chipset  | Security | Boot | Save & Exit |
| <b>Processor Information</b>                                       |                        | Set the Time. Use Tab to switch between Time elements. |          |      |             |
| Name   | CoffeeLake DT          |  |          |      |             |
| Type   | Intel(R) Core(TM)      |  |          |      |             |
| Speed  | i7-8700T CPU @ 2.40GHz |  |          |      |             |
| ID   | 2400 MHz               |  |          |      |             |
| Stepping   | 0x906EA                |  |          |      |             |
| Package  | U0                     |  |          |      |             |
| Number of Processors   | LGA1151                |  |          |      |             |
| Microcode Revision   | 6Core(s) / 12Thread(s) |  |          |      |             |
| GT Info  | B4                     |  |          |      |             |
| Total Memory   | GT2 (0x3E92)           |  |          |      |             |
| Memory Frequency   | 16384 MB               |  |          |      |             |
|  | 2667 MHz               |  |          |      |             |
| <b>PCH Information</b>   |                        |  |          |      |             |
| Name   | CNL PCH-H              |  |          |      |             |
| PCH SKU  | Q370                   |  |          |      |             |
| Stepping   | B0                     |  |          |      |             |
| <b>System Date</b>   |                        |  |          |      |             |
| System Time  | Supported              |  |          |      |             |
|  | 12.0.38.1430           |  |          |      |             |
|  | Corporate SKU          |  |          |      |             |
|  | [Wed 01/08/2020]       |  |          |      |             |
|  | [10:17:24]             |  |          |      |             |
| Version 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.    |                        |  |          |      |             |

### System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 2005 to 2099.

### System Time

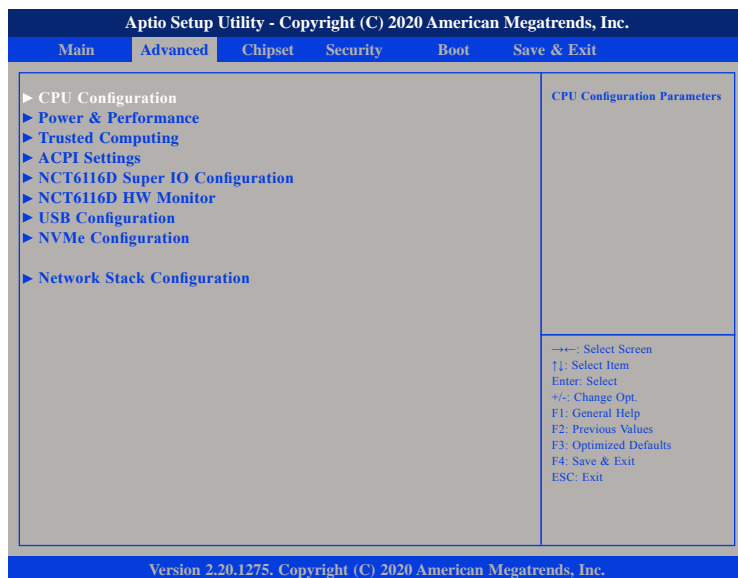
The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

## Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

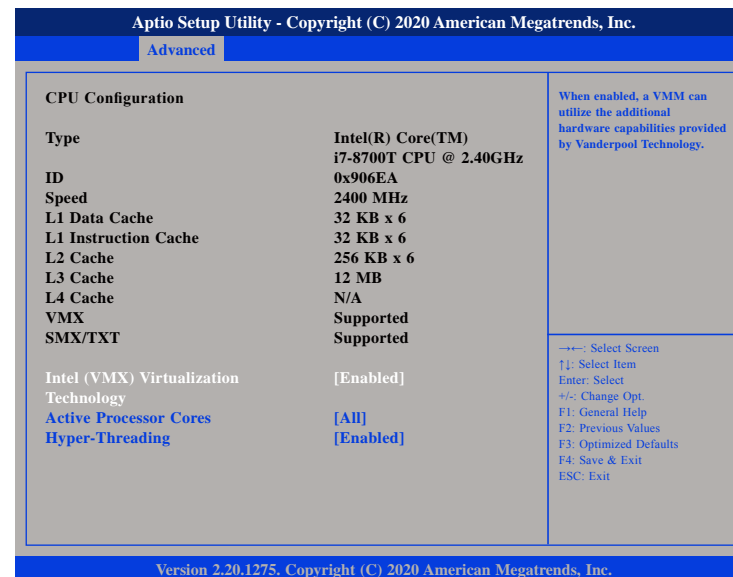


Setting incorrect field values may cause the system to malfunction.



## CPU Configuration

This section is used to view CPU status and configure CPU parameters.



### Intel® (VMX) Virtualization Technology

When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

### Active Processor Cores

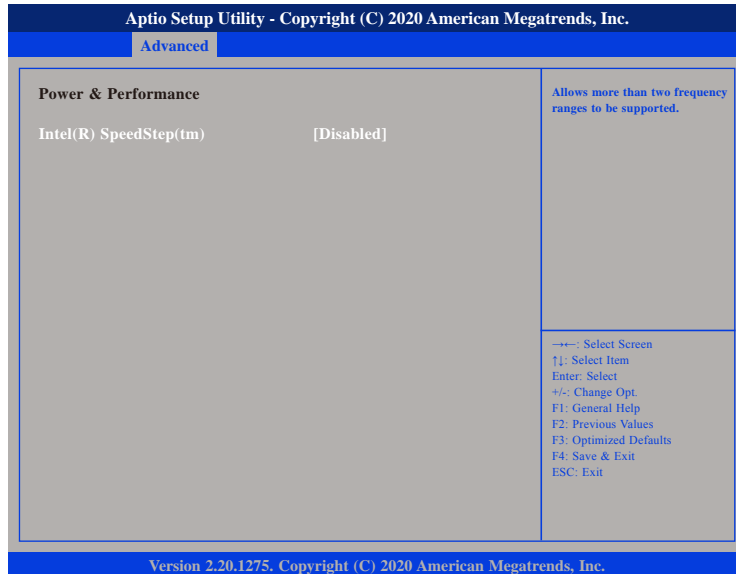
Select the number of cores to enable in each processor package.

### Hyper-Threading

Enables or disables hyper-threading technology.

## Power & Performance

This section is used to configure the CPU power management features.

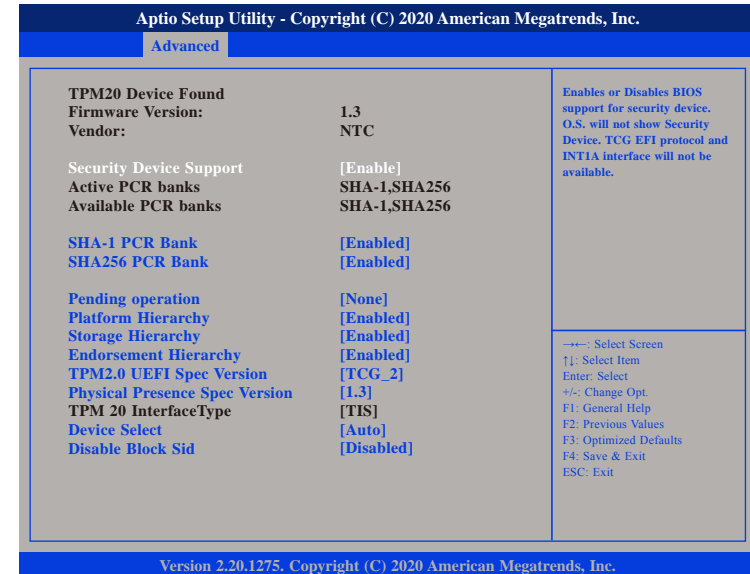


### Intel® SpeedStep

Enables or disables Intel Speedstep technology.

## Trusted Computing

This section is used to configure Trusted Platform Module (TPM) settings.



### Security Device Support

Enables or disables BIOS support for security device. O.S will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

### SHA-1 PCR Bank

Enables or disables SHA-1 PCR Bank.

### SHA256 PCR Bank

Enables or disables SHA256 PCR Bank.

### Pending operation

Schedules an operation for the security device.

### Platform Hierarchy

Enables or disables Platform Hierarchy.

### Storage Hierarchy

Enables or disables Storage Hierarchy.

### Endorsement Hierarchy

Enables or disables Endorsement Hierarchy.

### TPM2.0 UEFI Spec Version

Configures the TPM2.0 UEFI spec version.

TCG\_1\_2: The compatible mode for Windows 8/Windows 10.

TCG\_2: Support new TCG2 protocol and event format for Windows 10 or later.

### Physical Presence Spec Version

Configures which physical presence spec version the OS will support. Please note that some HCK tests might not support 1.3.

### Device Select

TPM 1.2 will restrict support to TPM 1.2 devices. TPM 2.0 will restrict support to TPM 2.0 devices. Auto will support both TPM 1.2 and 2.0 devices with the default set to TPM 2.0 devices if not found, and TPM 1.2 devices will be enumerated.

### Disable Block Sid

Enables or disables the option to allow SID authentication in TCG storage device.

## ACPI Settings

This section is used to configure ACPI settings.



### Enable Hibernation

Enables or disables system ability to hibernate (OS/S4 Sleep State). This option may not be effective with some OS.

### ACPI Sleep State

Select the highest ACPI sleep state the system will enter when the suspend button is pressed. The options are Suspend Disabled and S3 (Suspend to RAM).

## NCT6116D Super IO Configuration

This section is used to configure the serial ports.



### Super IO Chip

Displays the Super I/O chip used on the board.

## Serial Port 1 Configuration

This section is used to configure serial port 1.



### Serial Port

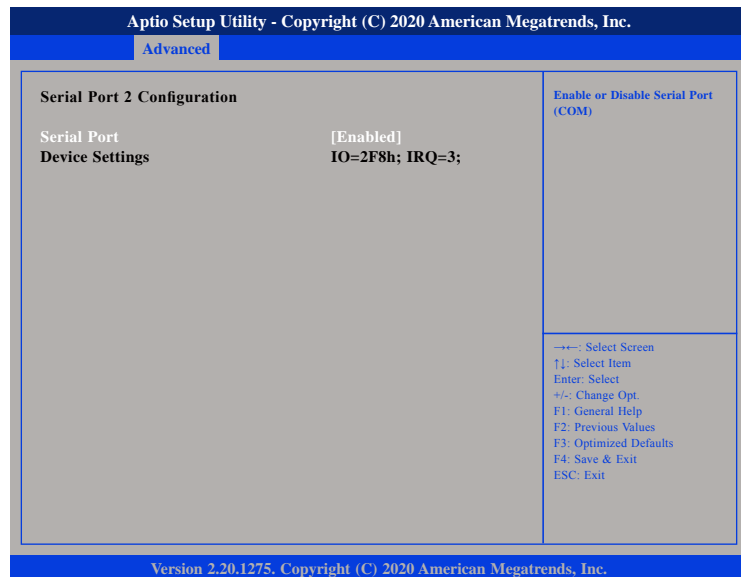
Enables or disables the serial port.

### Onboard Serial Port Mode

Select this to change the serial port mode to RS232, RS422, RS485 No Terminator or RS485 With Terminator.

### Serial Port 2 Configuration

This section is used to configure serial port 2.

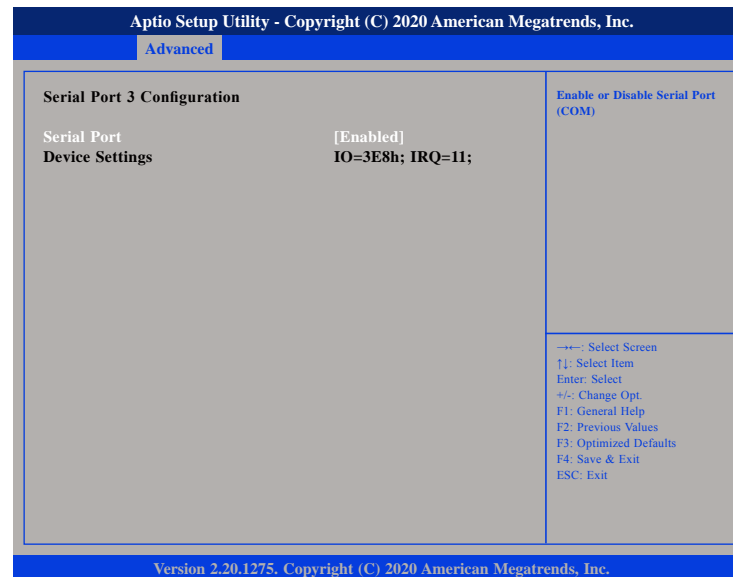


#### Serial Port

Enables or disables the serial port.

### Serial Port 3 Configuration

This section is used to configure serial port 3.



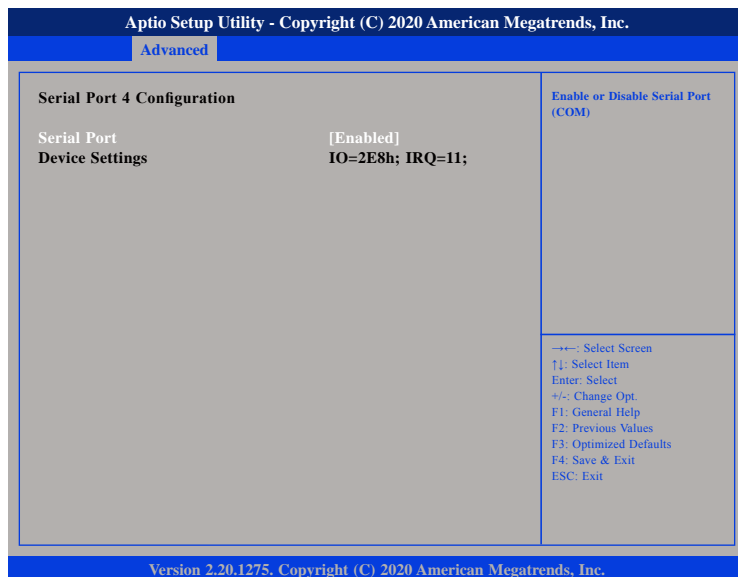
#### Serial Port

Enables or disables the serial port.



## Serial Port 4 Configuration

This section is used to configure serial port 4.

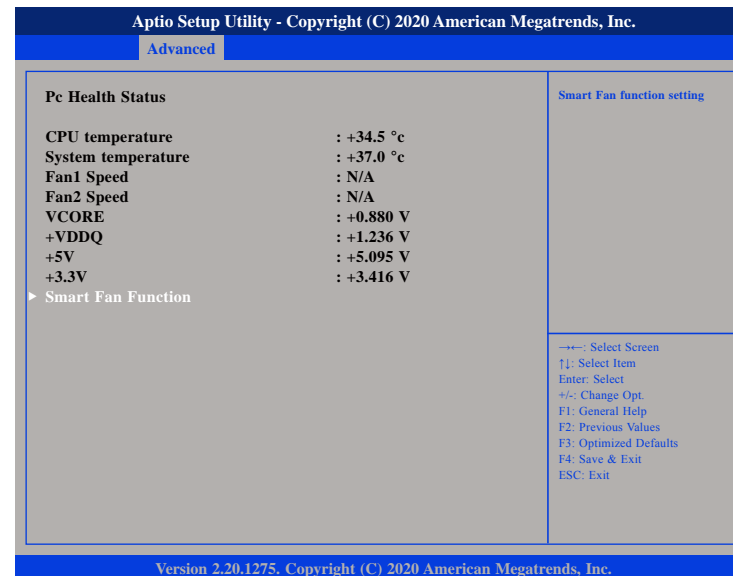


### Serial Port

Enables or disables the serial port.

## NCT6116D HW Monitor

This section is used to monitor hardware status such as temperature, fan speed and voltages.



### CPU temperature

Detects and displays the current CPU temperature.

### System temperature

Detects and displays the current system temperature.

### Fan1 and Fan2 Speed

Detects and displays the current fan speed of the fans connected to Fan 1 and Fan 2.

### VCORE to +3.3V

Detects and displays the output voltages.

## Smart Fan Function



### Smart Fan 1 and Smart Fan 2 Mode

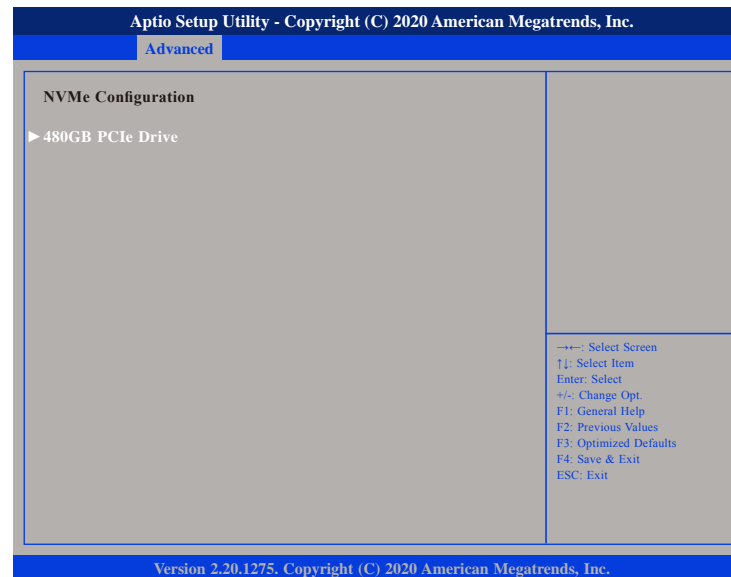
Enables or disables Smart Fan Mode for Fan 1 and Fan 2.

### Manual PWM Setting (Fan 1 and Fan 2)

Configures the fan speed of Fan 1 and Fan 2 manually when the fan mode is set to Manual mode.

## NVMe Configuration

This section is used to configure the NVMe devices installed.



### NVMe Device (480GB PCIe Drive)

Enters the submenu of the NVMe device.

## NVMe Device (480GB PCIe Drive)

| Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc. |                        |  |
|--|------------------------|--|
| Advanced   |                        |  |
| Seg:Bus:Dev:Func   | 00:04:00:00            | Select either Short or Extended Self Test. Short option will take couple of minutes and extended option will take several minutes to complete.                                 |
| Model Number   | 480GB PCIe Drive       |  |
| Total Size   | 480.1 GB               |  |
| Vendor ID  | 1BCD                   |  |
| Device ID  | 5008                   |  |
| Namespace: 1   | Size: 480.1 GB         |  |
| <b>Device Self Test:</b>   |                        |  |
| Self Test Option   | [Short]                |  |
| Self Test Action   | [Controller Only Test] |  |
| Run Device Self Test   |                        |  |
| Short Device Selftest Result                                       | [Not Available]        | --+-- Select Screen<br>↑↓ Select Item<br>Enter: Select<br>+/- Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>ESC: Exit |
| Extended Device Selftest Result                                    | [Not Available]        |  |
| Version 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.    |                        |  |

### Run Device Self Test

Run the device self test according to the self test option and action selected. Pressing the Esc key will abort the test.

### Self Test Option

Configures the method used for self test.

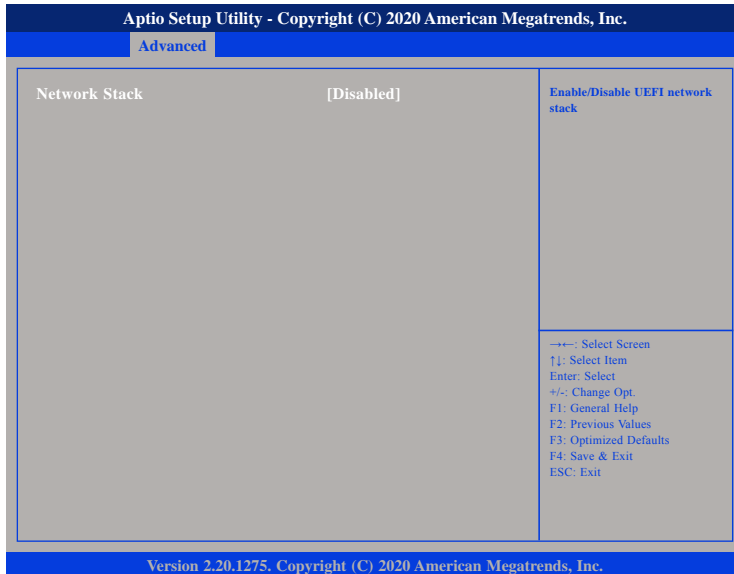
- Short Short option will take couple of minutes to complete.
- Extended Extended option will take several minutes to complete.

### Self Test Action

Configures the items used for self test. Controller Only Test and Controller and NameSpace Test options are available. Selecting Controller and NameSpace Test will take longer to complete.

## Network Stack Configuration

This section is used to configure the network stack.



### Network Stack

Enables or disables UEFI network stack.

## Chipset

This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources.



### System Agent (SA) Configuration

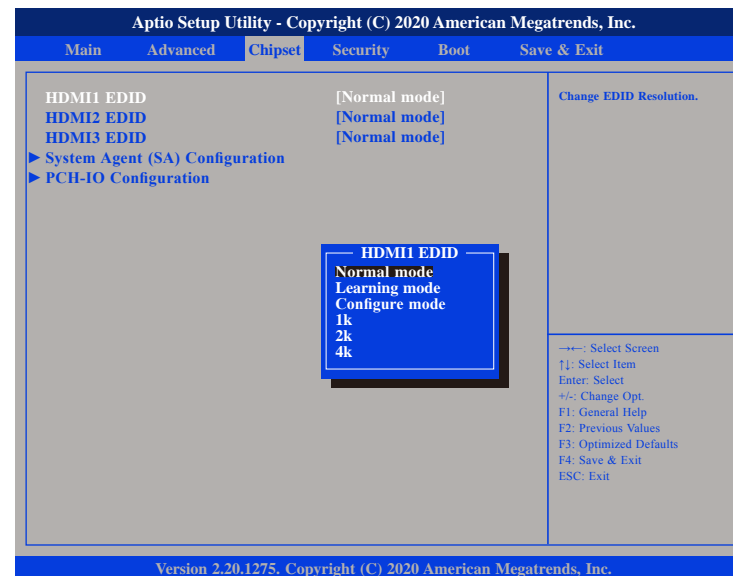
System Agent (SA) parameters.

### PCH-IO Configuration

PCH-IO parameters.

## HDMI1 EDID to HDMI3 EDID

Configures the EDID resolution for HDMI1 to HDMI3.



### HDMI1 EDID

Normal mode  
Learning mode  
Configure mode  
1k mode  
2k mode  
4k mode

Standard (without EDID function)  
Save the resolution setting of customer's monitor  
Load the resolution setting from "Learning mode"  
1k Resolution  
2k Resolution  
4k Resolution

## System Agent (SA) Configuration

This section is used to configure the System Agent (SA) configuration.



### Graphics Configuration

Enters the Graphics Configuration submenu.

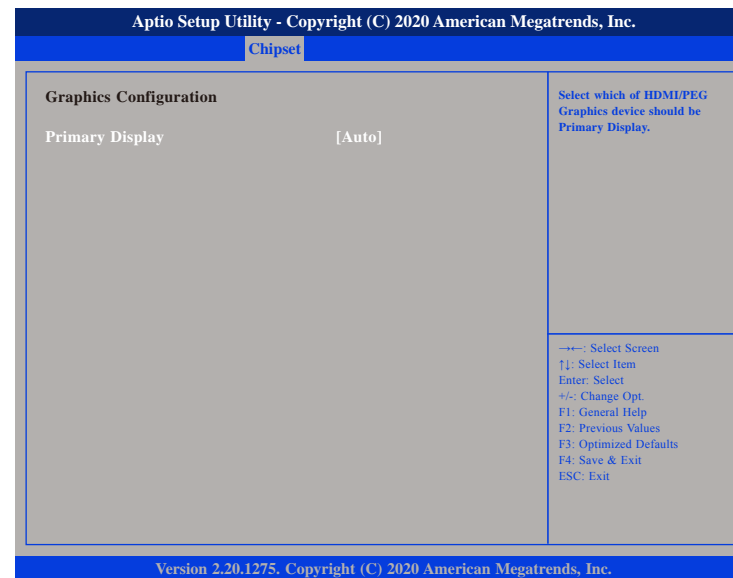
### PEG Port Configuration

Enters the PEG Port Configuration submenu.

### VT-d

Enables or disables VT-d function on MCH.

## Graphics Configuration



### Primary Display

Select which HDMI/PEG graphics device should be the primary display.

## PEG Port Configuration



### Enable Root Port

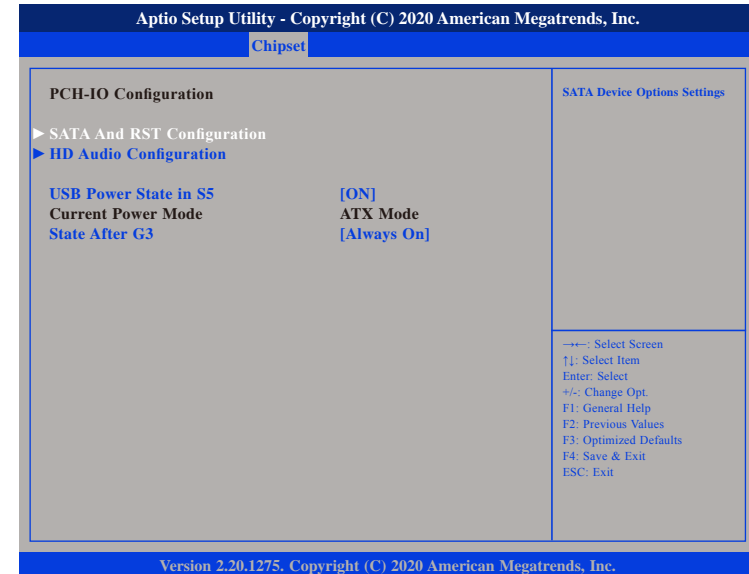
Enables or disables the root port.

### Max Link Speed

Configures the maximum link speed of the PEG device.

## PCH-IO Configuration

This section is used to configure PCH-IO configuration.



### USB Power State in S5

Configures the USB power state in S5.

### State After G3

Configures the power state when power is re-applied after a power failure (G3 state).

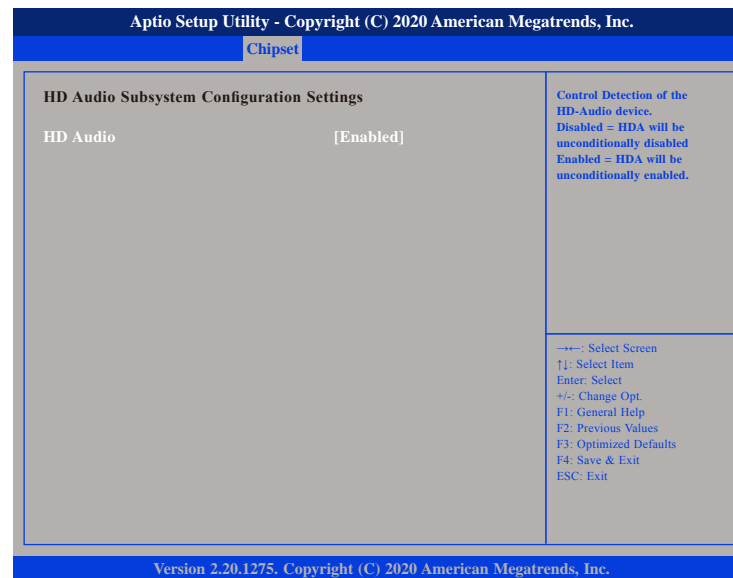
## SATA And RST Configuration



### SATA Controller(s)

Enables or disables SATA device.

## HD Audio Configuration



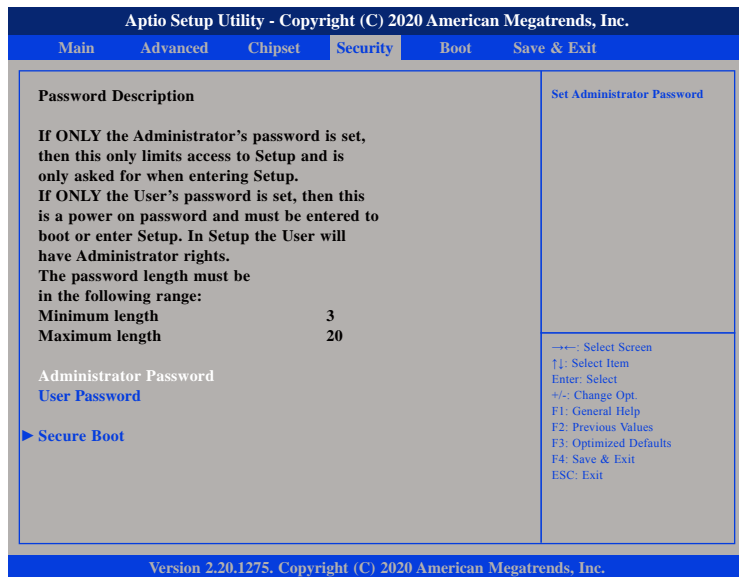
### HD Audio

Control detection of the HD audio device.

- Disabled      HD audio will be unconditionally disabled.
- Enabled      HD audio will be unconditionally enabled.



## Security



### Administrator Password

Select this to reconfigure the administrator's password.

### User Password

Select this to reconfigure the user's password.

## Secure Boot



### Secure Boot

Select this to enable or disable Secure Boot. Secure Boot only works when the system runs in user mode.

### Secure Boot Mode

Select this to configure the Secure Boot mode.

Standard

Fixed secure boot policy.

Custom

Secure boot policy variables can be configured by a physically present user without full authentication.

## Key Management



### Factory Key Provision

Select this to enable or disable the installation of factory default secure boot keys after the platform resets during system setup mode.

## Boot



### Setup Prompt Timeout

Selects the number of seconds to wait for the setup activation key. 65535(0xFFFF) denotes indefinite waiting.

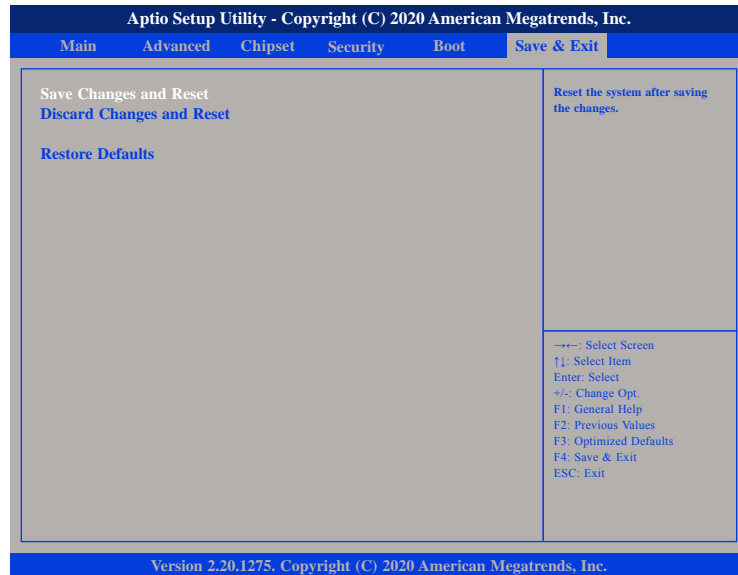
### Bootup NumLock State

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

### Boot Option Priorities

Adjust the boot sequence of the system. Boot Option #1 is the first boot device that the system will boot from, next will be #2 and so forth.

## Save & Exit



### Save Changes and Reset

To save the changes and reset, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

### Discard Changes and Reset

To exit the Setup utility and reset without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting.

### Restore Defaults

To restore the BIOS to default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.