# IEC-3350

## Fanless Boxed Chassis System with Intel® Celeron® Processor

# User's Manual

**Version 1.0**

P/N: 4010335000100P

2020.09

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## Revision History

| Version | Date | Description |
|---|---|---|
| 1.0 | 2020.09 | Initial release |

Contents

## Copyright Notice



The information in this document is subject to change without prior notice in order to improve the reliability, design and function. It does not represent a commitment on the part of the manufacturer.

Under no circumstances will the manufacturer be liable for any direct, indirect, special, incidental, or consequential damages arising from the use or inability to use the product or documentation, even if advised of the possibility of such damages.



## Declaration of Conformity

### CE

The CE symbol on the computer indicates that it is in compliance with the directives of the Union European (EU). A Certificate of Compliance is available by contacting Technical Support.

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from ARBOR. Please contact your local supplier for ordering information.

**Warning**
This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

### FCC Class A

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.

NOTE:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the 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 instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

**RoHS**

ARBOR Technology Corp. certifies that all components in its products are in compliance and conform to the European Union's Restriction of Use of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive 2002/95/EC.

The above mentioned directive was published on 2/13/2003. The main purpose of the directive is to prohibit the use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE) in electrical and electronic products. Member states of the EU are to enforce by 7/1/2006.

ARBOR Technology Corp. hereby states that the listed products do not contain unintentional additions of lead, mercury, hex chrome, PBB or PBDB that exceed a maximum concentration value of 0.1% by weight or for cadmium exceed 0.01% by weight, per homogenous material. Homogenous material is defined as a substance or mixture of substances with uniform composition (such as solders, resins, plating, etc.). Lead-free solder is used for all terminations (Sn(96-96.5%), Ag(3.0-3.5%) and Cu(0.5%)).

**SVHC / REACH**

To minimize the environmental impact and take more responsibility to the earth we live, Arbor hereby confirms all products comply with the restriction of SVHC (Substances of Very High Concern) in (EC) 1907/2006 (REACH --Registration, Evaluation, Authorization, and Restriction of Chemicals) regulated by the European Union.

All substances listed in SVHC < 0.1 % by weight (1000 ppm)

## Important Safety Instructions

Read these safety instructions carefully

1. Read all cautions and warnings on the equipment.
2. Place this equipment on a reliable surface when installing. Dropping it or letting it fall may cause damage
3. Make sure the correct voltage is connected to the equipment.
4. For pluggable equipment, the socket outlet should be near the equipment and should be easily accessible.
5. Keep this equipment away from humidity.
6. The openings on the enclosure are for air convection and protect the equipment from overheating. DO NOT COVER THE OPENINGS.
7. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
8. Never pour any liquid into opening. This may cause fire or electrical shock.
9. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
10. 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 or damaged.
    f. The equipment has obvious signs of breakage.
11. Keep this User's Manual for later reference.

**Product Heat**

The computer generates heat during operation. Contact the computer's chassis with your body could cause discomfort or even a skin burn.

## Warning

The Box PC and its components contain very delicately Integrated Circuits (IC). To protect the Box PC and its components against damage caused by static electricity, you should always follow the precautions below when handling it:

1. Disconnect your Box PC from the power source when you want to work on the inside.
2. Use a grounded wrist strap when handling computer components.
3. Place components on a grounded antistatic pad or on the bag that came with the Box PC, whenever components are separated from the system.

## Replacing Lithium Battery

Incorrect replacement of the lithium battery may lead to a risk of explosion.

The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer.

Do not throw lithium batteries into the trash can. It must be disposed of in accordance with local regulations concerning special waste.

## Technical Support

If you have any technical difficulties, please consult the user's manual first at:

http://www.arbor-technology.com

Please do not hesitate to e-mail our customer service when you still cannot find out the answer.

E-mail:info@arbor.com.tw

## Warranty

This product is warranted to be in good working order for a period of one year from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster.

Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, or inability to use this product. Vendor will not be liable for any claim made by any other related party.

Vendors disclaim all other warranties, either expressed or implied, including but not limited to implied warranties of merchantability and fitness for a particular purpose, with respect to the hardware, the accompanying product's manual(s) and written materials, and any accompanying hardware. This limited warranty gives you specific legal rights.

Return authorization must be obtained from the vendor before returned merchandise will be accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description.

# Chapter 1

# Introduction

## 1.1. Product Highlights

- **Ultra Low Power and Fanless Design**
- **DisplayPort output supported**
- **Optional Wi-Fi Connection supported**
- **Rugged Design for Shock/Vibration Protection**
- **Easy Installation/Maintenance**

## 1.2. About this Manual

This manual is meant for the experienced users and integrators with hardware knowledge of personal computers. If you are not sure about the description herein, consult your vendor before further handling.

We recommend that you keep one copy of this manual for the quick reference for any necessary maintenance in the future. Thank you for choosing ARBOR products.

## 1.3. Specifications

| **System** | |
|---|---|
| CPU | Soldered onboard Intel® Celeron® Processor N3350 dual-core 1.10GHz |
| Memory | 1 x 204-pin DDR3L SO-DIMM socket, supporting 1600MHz SDRAM up to 8GB |
| | Optional pre-install 4GB/8GB DDR3L SO-DIMM Memory Module |
| Graphics | Integrated Intel® HD Graphic |
| LAN Chipset | 2 x Intel® i211AT PCIe GbE controllers |
| Watchdog Timer | 1~255 levels reset |
| **I/O** | |
| Serial Port | 2 x DB-9 male connector for RS-232 |
| | 1 x RJ-45 port for RS-232 |
| USB Port | 4 x USB 3.0/2.0 port |
| LAN | 2 x RJ-45 ports for GbE |

| | |
|---|---|
| Video Port | 2 x DisplayPort |
| Audio | 1 x Headpone jack connector for Line-out & Mic |
| Expansion Bus | 1 x Mini-card socket (Full Size) |
| **Environmental** | |
| Operating Temp. | 0 ~ 50°C (32 ~ 122°F), ambient w/ air flow |
| Storage Temp. | -40 ~ 85°C (-40 ~ 185°F) |
| Operating Humidity | 10 ~ 95% @ 60°C (non-condensing) |
| Vibration | 3 Grms/5~500Hz/random operation |
| Shock | Operating 40G (11ms), Non-operating 60G with M.2 |
| **Qualification** | |
| Certification | CE, FCC |
| Power Requirement | |
| Power Input | DC 12V input |
| Power Consumption | 0.58A@12V (typical w/ N3350) |
| **Storage** | |
| Storage | 1 x NGFF M.2 socket, optional pre-installed 32GB/64GB M.2 SSD |
| Mechanical | |
| Construction | Aluminum alloy |
| Weight | 766g (1.69lb) |
| Dimensions (W x D x H) | 163 x 109 x 50 mm (6.41” x 4.29” x 1.96”) |
| **OS Support** | |
| Windows 10 64-bit<br>Linux: Ubuntu | |

## 1.4. Inside the Package

Upon opening the package, carefully inspect the contents. If any of the items is missing or appears damaged, contact your local dealer or distributor. The package should contain the following items:

1 x IEC-3350


1 x **Accessory Box** that contains the following items:

- User's manual
- Wall mount kit
- 60W AC/DC adaptor with power cord
- RJ-45 to DB-9 male cable

## 1.5. Ordering Information

| | |
|---|---|
| **IEC-3350-N3350** | Barebone system with Intel® Celeron® Processor N3350 |

### 1.5.1. Standard Accessories

| | | |
|---|---|---|
| **Power Adaptor** | 12VDC, 5A, 60W, 2.5φ JACK, AC/DC Adaptor with power cord |  |
| **WMK-3350** | Wall mount kit |  |
| **COM Port Cable** | RJ-45 to DB-9 male cable |  |

### 1.5.2. Configure-to-Order Service

Make the computer more tailored to your needs by selecting one or more components from the list below to be fabricated to the computer.

| | | |
|---|---|---|
| **WiFi-AT2200** | Atheros AR9462 Wi-Fi module w/ 15cm internal wiring |  |
| **ANT-D11** | 1 x Wi-Fi Dual-band 2.4G/5G antenna |  |
| **4GB SO-DIMM** | DDR3L-1600 4GB SO-DIMM Memory module |  |
| **8GB SO-DIMM** | DDR3L-1600 8GB SO-DIMM Memory module | |
| **32GB SSD** | M.2 MLC 32GB |  |
| **64GB SSD** | M.2 MLC 64GB | |

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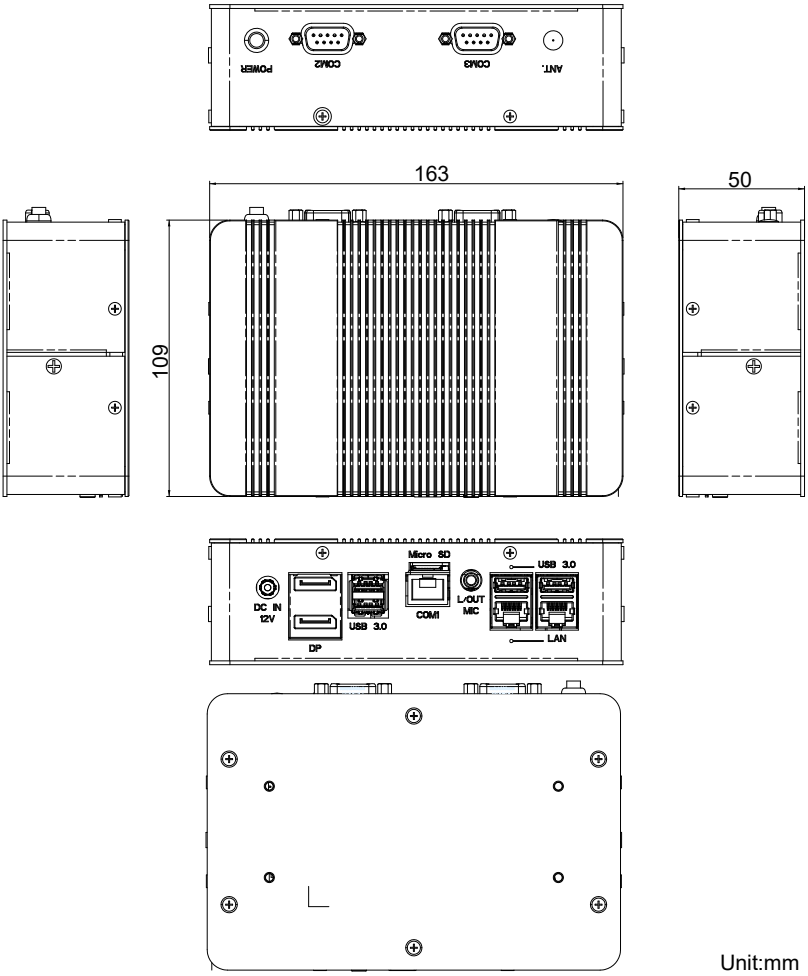
# Chapter 2

## Getting Started

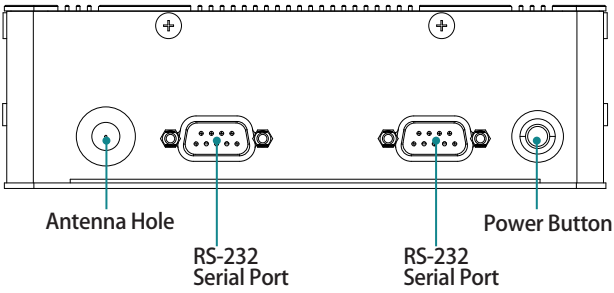
## 2.1. Dimensions



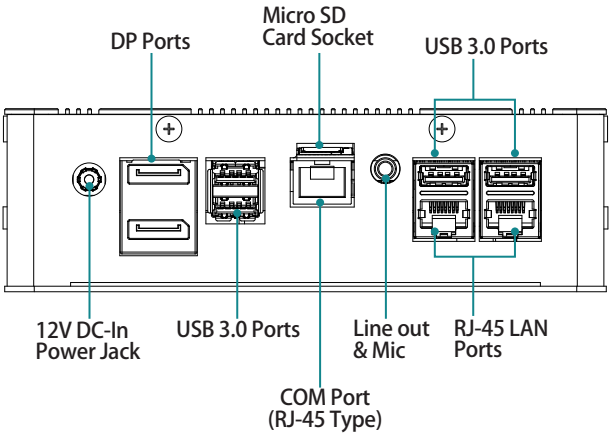

Unit:mm

## 2.2. Take A Tour

### Front View




### Rear View



## 2.3. Driver Installation Notes

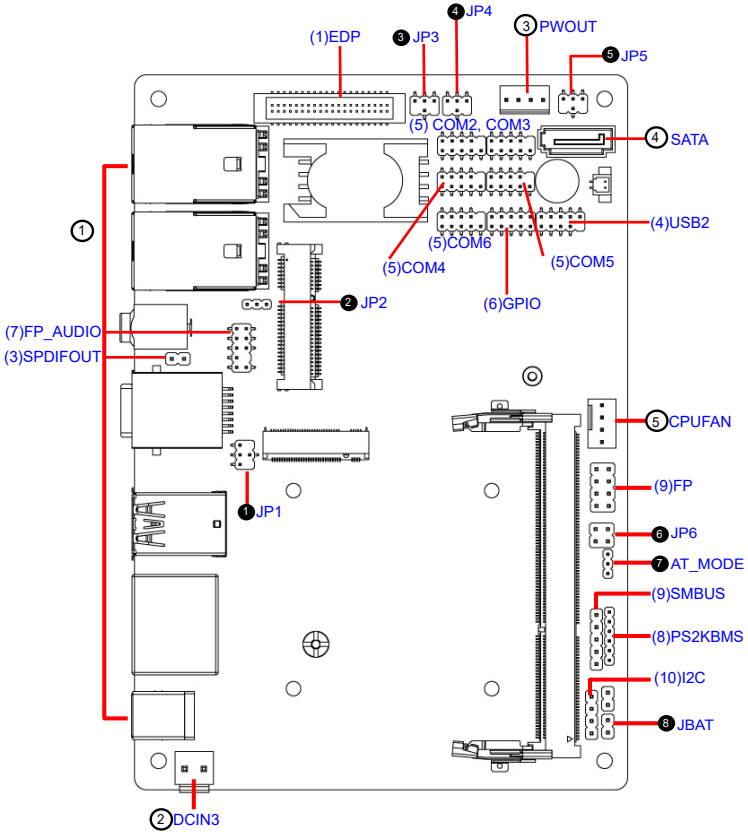
The computer supports Windows 10. To install the drivers, please go to our website at www.arbor-technology.com and download the driver pack from the product page.

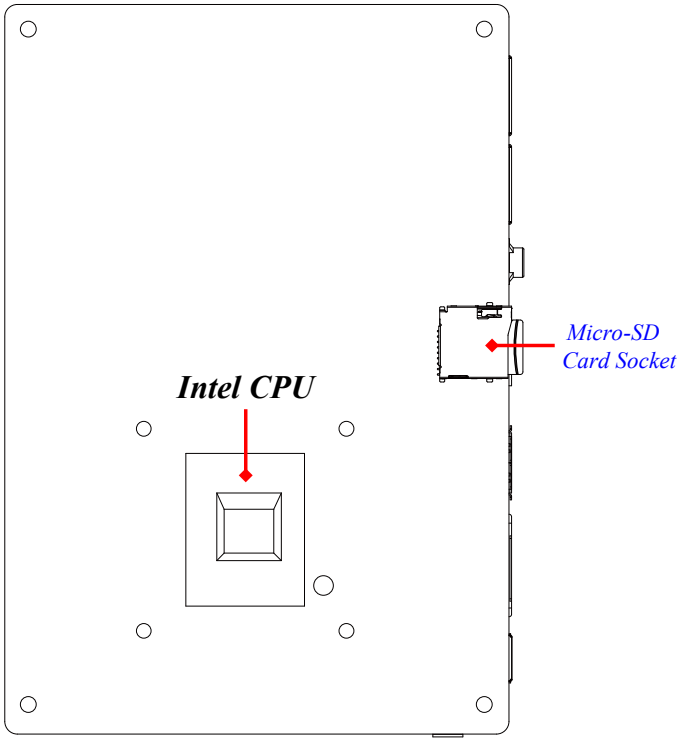
| Device | Driver Path |
|---|---|
| **Audio** | \Audio |
| **Chipset** | \Chipset\inf |
| **Ethernet** | \Ethernet\intellan |
| **IRMT** | \IRMT |
| **ISH** | \ISH |
| **SIO** | \SIO\Serial_IO\x64 |
| **TXW** | \TXW\txe |
| **VGA** | \VGA\win64 |

# Chapter 3

# System Configuration

## 3.1. Board Layout

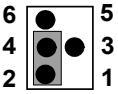



Micro-SD
Card Socket
Intel CPU

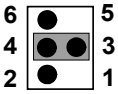
## 3.2. Jumpers

### ❶JP1 (4-pin): COM1 Port Pin9 Function Select

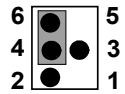
*JP1→COM1 Port Pin-9*




**2-4 Closed: RI=NC;**



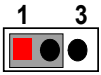

**3-4 Closed: RI= 5V;**



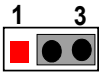

**4-6 Closed: RI= 12V.**

### ❷JP2 (3-pin): MPE Slot Power Select

*JP2→MPE Slot Power*



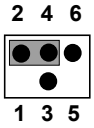

**1-2 Close: 3.3V Selected(Default);**



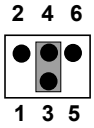

**2-3 Close: 3.3VSB Selected.**

### ❸JP3 (4-pin): eDP LCD Power Select

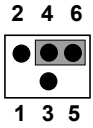
**JP3→eDP LCD VCC**




**2-4 Closed: eDP LCD VCC= 3.3V (default);**



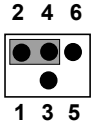

**3-4 Closed: eDP LCD VCC= 5V;**



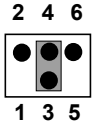

**4-6 Closed: eDP LCD VCC= 12V.**

## ❹JP4 (4-pin): eDP Inverter Power Select

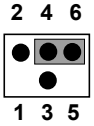
**JP4→eDP Inverter VCC**




2-4 Closed: eDP Inverter VCC= 5V (default);



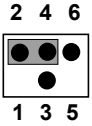

3-4 Closed: eDP Inverter VCC= 12V;



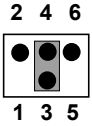

4-6 Closed: eDP Inverter VCC= adapter power.

## ❺JP5 (4-pin): COM2 Pin9 Function Select

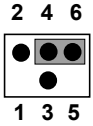
**JP5→ COM2 Pin9 Select**




2-4 Closed: RI = RS232 (default);



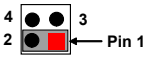

3-4 Closed: RI = 5V;




4-6 Closed: RI = 12V.

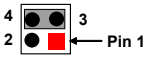
## ❻JP6 (4-pin): Case Open and TXE/ME Select

***JP6→ Case Open and TXE/ME Select***
***Pin (1&2) Chassis Intrusion***



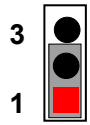

1-2 Open: Normal(Default);
1-2 Closed : Case Open Function Selected (one touch)

***Pin (3&4) TXE/ME***

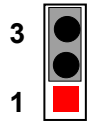



3-4 Open: Normal(Default)
3-4 Closed: Disable ME

**❼AT_MODE (3-pin): AT/ATX Mode Function Select**




**1-2 Closed:**
**ATX Mode Selected;**




**2-3 Closed:**
**AT Mode Selected.**

**❽JBAT (2-pin): CMOS Clear Setting**

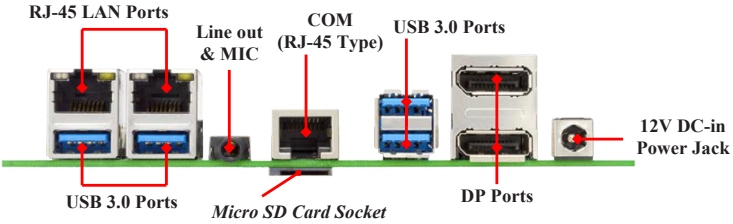
**JBAT→ CMOS Clear Setting**


**1-2 Open: Normal；**


**1-2 Closed：Clear CMOS.**

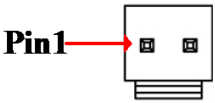
## 3.3. Connectors

### ① Rear Panel Connectors



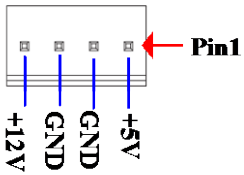

| Connector | Description |
|---|---|
| **RJ-45 LAN Port** | This connector is standard RJ-45 LAN jack for Network connection. |
| **USB 3.0 Port** | To connect USB keyboard, mouse or other devices compatible with USB specification. USB 3.0 ports supports up to 5Gbps data transfer rate |
| **Line-Out/MIC Combo Connector** | This connector can functions as audio Line-Out jack and MIC jack with compatible cables & devices. |
| **RJ45 COM Port** | This connector is a RJ-45 COM port for console function. |
| **Display Port** | To the system to corresponding display device with compatible DP cable. |
| **Power Connector** | 12V DC–in system power connector<br>For user to connect compatible power adapter to provide power supply for the system. |

### ②DCIN3 (2-pin block):Internal 12V DC-in Power Connector



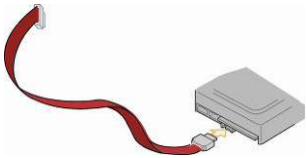

| Pin No. | Definition |
|---|---|
| 1 | +12V DC_IN |
| 2 | GND |

### ③PWROUT (4-pin): SATA Power Connector

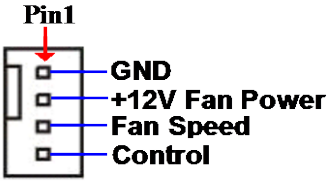



### ④SATA (7-pin Block): SATAIII Port connector

| Pin No. | Definition |
|---|---|
| 1 | GND |
| 2 | TXP |
| 3 | TXN |
| 4 | GND |
| 5 | RXN |
| 6 | RXP |
| 7 | GND |

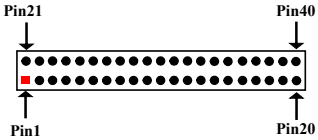


### ⑤CPUFAN (4-pin): CPU FAN Connector



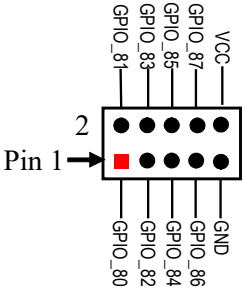
## 3.4. Headers

### (1)EDP (40-pin): eDP Header

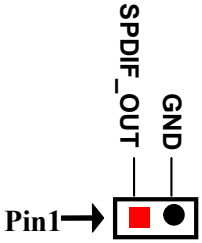



| Pin NO. | Pin Define | Pin NO. | Pin Define |
|---|---|---|---|
| Pin 1 | NC | Pin 21 | NC |
| Pin 2 | GND | Pin 22 | NC |
| Pin 3 | Lane3_N | Pin 23 | GND |
| Pin 4 | Lane3_P | Pin 24 | GND |
| Pin 5 | GND | Pin 25 | GND |
| Pin 6 | Lane2_N | Pin 26 | GND |
| Pin 7 | Lane2_P | Pin 27 | HPD |
| Pin 8 | GND | Pin 28 | GND |
| Pin 9 | Lane1_N | Pin 29 | GND |
| Pin 10 | Lane1_P | Pin 30 | GND |
| Pin 11 | GND | Pin 31 | GND |
| Pin 12 | Lane0_N | Pin 32 | BL_ENABLE |
| Pin 13 | Lane0_P | Pin 33 | BL_PWM_DIM |
| Pin 14 | GND | Pin 34 | NC |
| Pin 15 | AUX_CH_P | Pin 35 | NC |
| Pin 16 | AUX_CH_N | Pin 36 | BL_PWR |
| Pin 17 | GND | Pin 37 | BL_PWR |
| Pin 18 | LCD_VCC | Pin 38 | BL_PWR |
| Pin 19 | LCD_VCC | Pin 39 | BL_PWR |
| Pin 20 | LCD_VCC | Pin 40 | NC |

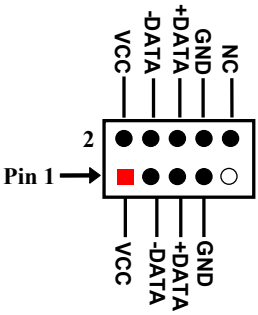
### (2) FP_AUDIO (9-pin): Line-Out, MIC-In Header



**(3)SPDIFOUT (2-pin): HDMI SPDIF Out Header**

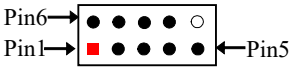



**(4)USB2 (9-pin): USB 2.0 Port Pin Header**

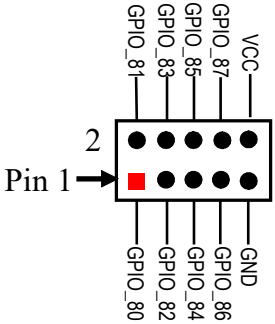



**(5)COM2/3/4/5/6 (9-pin): Serial Port Headers**

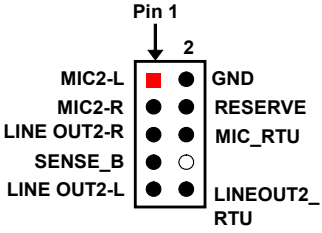
| Pin NO. | RS232 | *RS422 | *RS485 |
|---|---|---|---|
| Pin 1 | DCD | TX- | DATA- |
| Pin 2 | RXD | TX+ | DATA+ |
| Pin 3 | TXD | RX+ | NC |
| Pin 4 | DTR | RX- | NC |
| Pin 5 | GNG | GND | GND |
| Pin 6 | DSR | NC | NC |
| Pin 7 | RTS | NC | NC |
| Pin 8 | CTS | NC | NC |
| Pin 9 | RI | NC | NC |



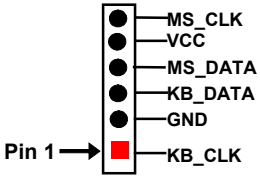

**(6)GPIO (10-pin): GPIO Header**



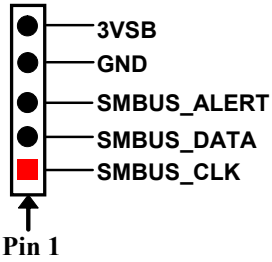

**(7)FP (8-pin): Front Panel Header**



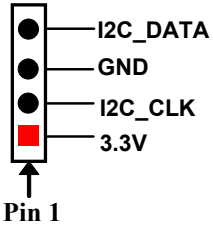
**(8)PS2KBMS (6-pin): PS/2 Keyboard & Mouse Header**




**(9)SMBUS (5-pin): SMBUS Header**




**(10)I2C(4-pin): I2C Header**

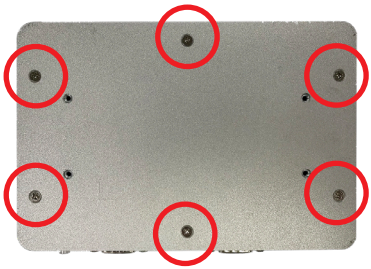


# Chapter 4

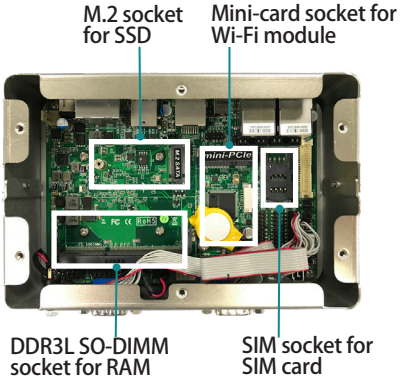
# Installation and Maintenance

## 4.1. Disassemble the Computer

1. Place the computer upside down on a flat surface. Loosen and remove the 6 screws from the computer's bottom side.

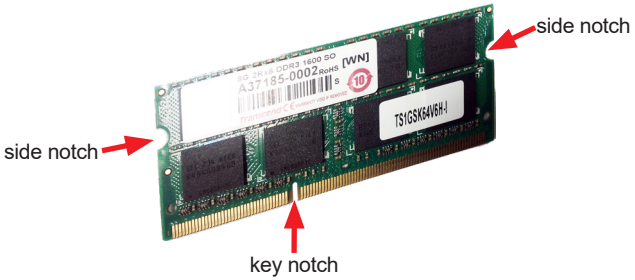


2. Remove the bottom cover completely from the computer.



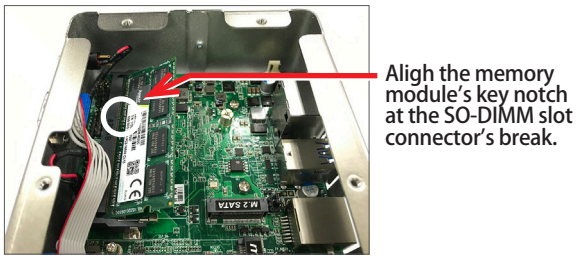
## 4.2. Install Memory Module

The main board has one dual inline memory module (DIMM) socket. Load the computer with a memory module to make the computer run programs. The memory module for the computer's SO-DIMM socket should be a 204-pin DDR3L with a "key notch" off the centre among the pins, which enables the memory module for particular applications. There are another two notches at each left and right side of the memory module to help fix the module in the socket.




**To install a memory module:**

1. Confront the memory module's edge connector with the SO-DIMM slot connector. Align the memory module's key notch at the break on the SO-DIMM slot connector.




2. Confront the memory module's edge connector with the SO-DIMM slot connector. Align the memory module's key notch at the break on the SO-DIMM slot connector. By a slanted angle, fully plug the memory module until it cannot be plugged any more.

3. Press down the memory module until it is auto-locked in place.

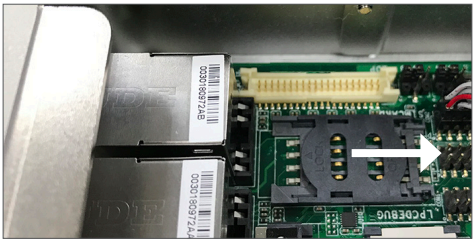
## 4.3. Install M.2 Module

1. Plug the M.2 module to the socket's connector by a slanted angle. Fully plug the module, and note the notch on the module should meet the break of the connector.

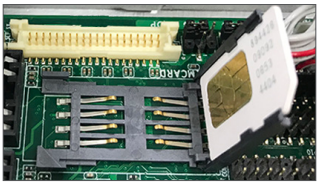

2. Press the module down and fix the module in place using one screw.


## 4.4. Install SIM Card

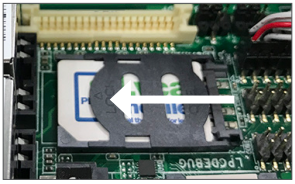
1. Slide the SIM card holder cover towards the OPEN edge and then lift the cover to open it.



2. Insert the SIM card into the card holder as shown below.

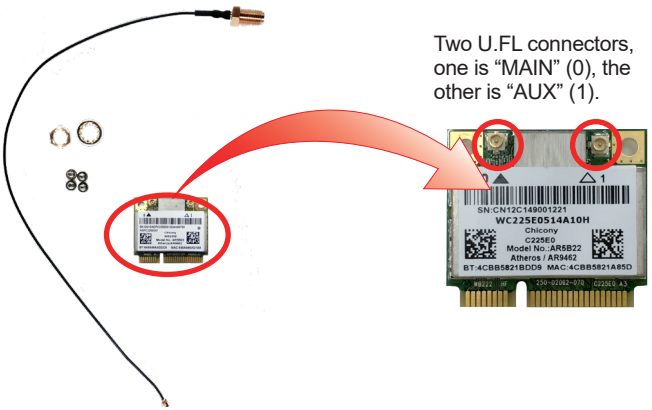


3. Close the SIM card holder door and slide the door to the LOCK edge to lock into place.

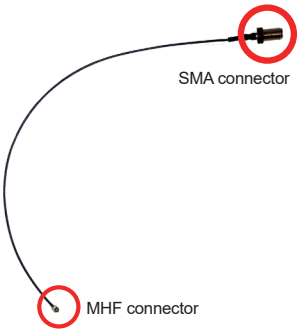


## 4.5. Install Wi-Fi Module

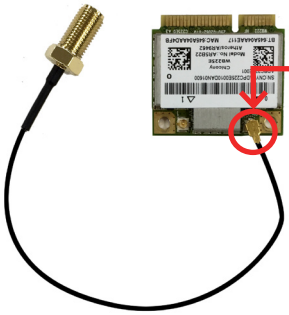
1. Prepare the Wi-Fi module kit. The module is a half-size module of **PCI Express Mini-card** form factor, with two U.FL connectors, one is “MAIN“ (marked 0), and the other is “AUX“ (marked 1).



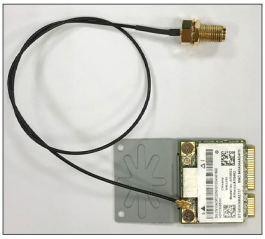

2. Have the RF antenna. The antenna has an SMA connector on one end and an MHF connector on the other.




3. Connect the RF antenna’s MHF connector to the Wi-Fi module’s main connector marked 0.



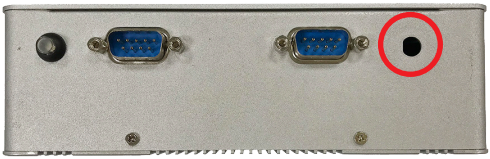

4. Extend the half-size module with a "mini half bracket". Join them together by using two screws as shown below.



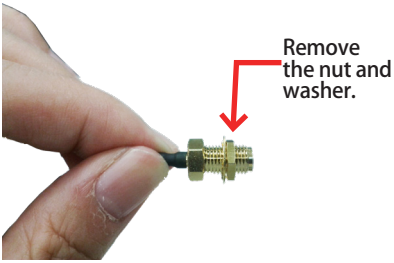
5. Plug the Wi-Fi module to the socket's connector by a slanted angle. Fully plug the module, and note the notch on the wireless module should meet the break of the connector.

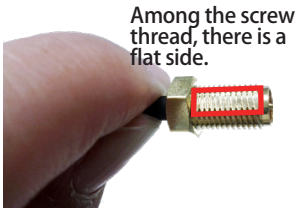
6. Press the module down and fix the module in place using one screw.


7. Remove the plastic plug from the computer's rear panel to make antenna hole. Keep the plastic plug for any possible restoration in the future.

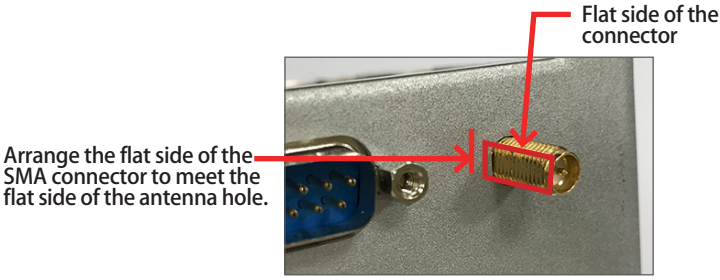


8. From the other end of the RF antenna, which is an SMA connector, remove the washer and the nut. Save the washer and nut for later use. Note the SMA connector has the form of a threaded bolt, with one flat side.

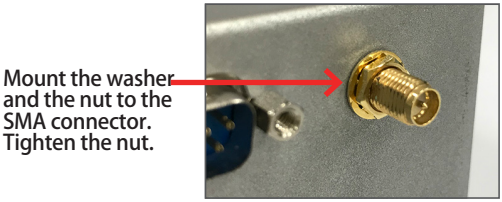



9. Pull the SMA connector through the above mentioned antenna hole. Note to meet the aforesaid flattened side with the antenna hole's flat side.




10. Mount the washer first and then the nut to the SMA connector. Make sure the nut is tightened.

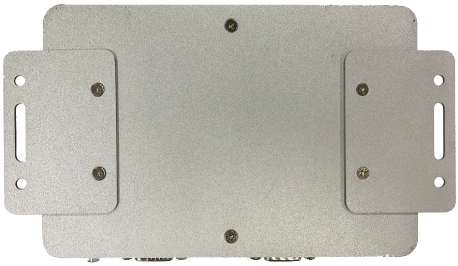



11. Have the external antenna(s). Screw and tightly fasten the antenna(s) to the SMA connector(s).

## 4.6. Wall Mounting (optional)

Prepare the wall mount kit and a screwdriver for wall mounting. Follow the instructions below:

1. Position the computer with the bottom side facing up.
2. Align the screw holes of the wall mount bracket with the ones of the main unit. Using the M3 screws included in the wall mount kit, fasten the wall mount bracket to the computer's bottom case.
3. Repeat the step above to secure another wall mount bracket.
4. When the bracket is attached, the computer can be hanged on the wall as the way you want.



# Chapter 5

# BIOS

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program will gain control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

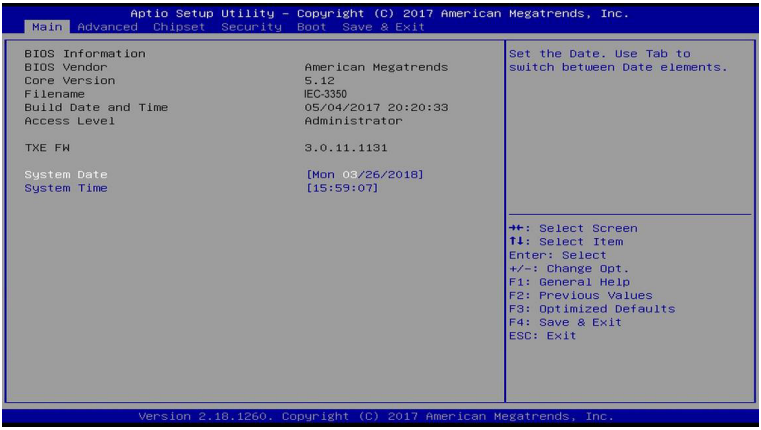
## 5.1. Entering Setup

Power on the computer and by pressing <Del> immediately allows you to enter Setup. If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>,

<Alt> and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

Press <Del> to enter Setup

The following diagram show a general BIOS menu screen:



### 5.1.1. Function Keys

In the above BIOS Setup main menu of, you can see several options. We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

- Press← (left, right) to select screen;
- Press ↓ (up, down) to choose, in the main menu, the option you want to confirm or to modify.
- Press <Enter> to select.
- Press <+>/<–> keys when you want to modify the BIOS parameters for the active option.
- [F1]: General help.
- [F2]: Previous value.
- [F3]: Optimized defaults.
- [F4]: Save & Exit.
- Press <Esc> to quit the BIOS Setup.
- [F7]: User can press this key to enter Boot Menu when system start up.

### 5.1.2. Menu Bars

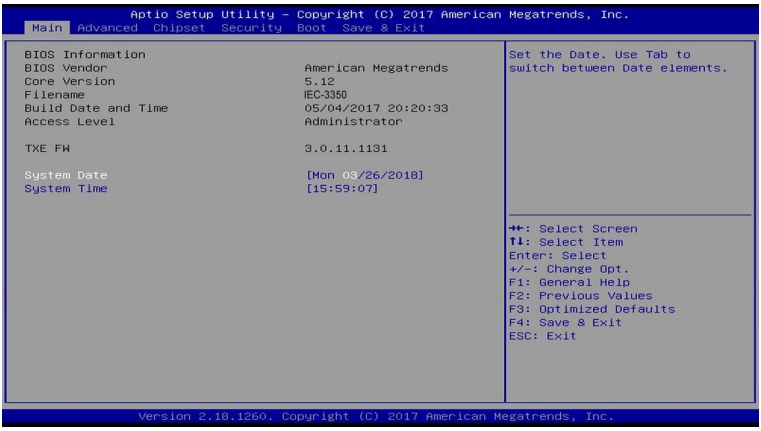
There are six menu bars on top of BIOS screen:

| | |
|---|---|
| **Main** | To change system basic configuration |
| **Advanced** | To change system advanced configuration |
| **Chipset** | To change chipset configuration |
| **Security** | Password settings |
| **Boot** | To change boot settings |
| **Save & Exit** | Save setting, loading and exit options. |

User can press the right or left arrow key on the keyboard to switch from menu bar. The selected one is highlighted.

## 5.2. Main Menu

Main menu screen includes some basic system information. Highlight the item and then use the <+> or <-> and numerical keyboard keys to select the value you want in each item.



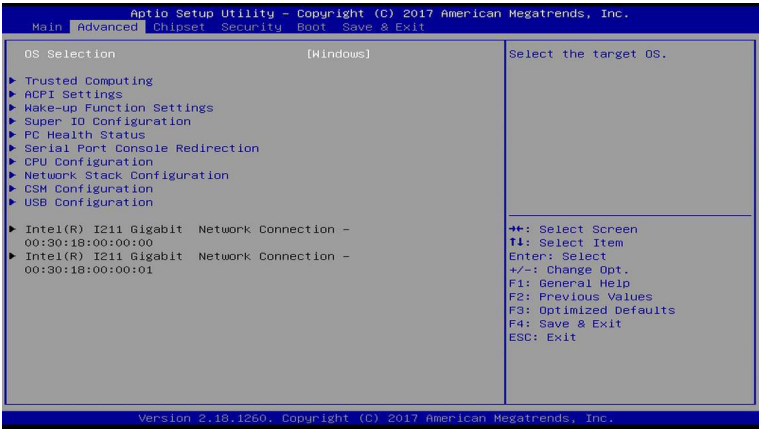

### System Date

Set the date. Please use [Tab] to switch between date elements.

### System Time

Set the time. Please use [Tab] to switch between time elements.

## 5.3. Advanced Menu




### OS Selection

The optional settings: [Windows]; [Intel Linux]; [MSDOS].

** **Note:** User need to go to this item to select the OS mode before installing corresponding OS driver, otherwise problems will occur when installing the driver.*

### ► Trusted Computing

Press [Enter] to make settings for the following sub-item:

### Configuration

### Security Device Support

Use this item to select the enable or disable BIOS support security devices. The optional setting are: [Enabled]; [Disabled]

### ► ACPI Settings

Press [Enter] to make settings for the following sub-item:

### ACPI Settings

### ACPI Sleep State

Use this item to select the highest ACPI sleep state the system will enter when the suspend button is pressed.

The optional settings are: [Suspend Disabled]; [S3 (Suspend to RAM)].

### ► Wake-up Function Settings

Press [Enter] to make settings for the following sub-item:

#### Wake-up System With Fixed Time

The optional setting are: [Enabled]; [Disabled].

#### Wake-up System With Dynamic Time

The optional setting are: [Enabled]; [Disabled].

#### PS2 KB/MS Wake-up

The optional setting are: [Enabled]; [Disabled].

#### USB S3/S4 Wake-up

The optional setting are: [Enabled]; [Disabled].

#### USB S5 Power

The optional setting are: [Enabled]; [Disabled].

### ► Super I/O Configuration

Press [Enter] to make settings for the following sub-items:

#### Super IO Configuration

#### ERP Support

The optional setting are: [Disabled] ; [Auto]

This item should be set as [Disabled] if you wish to have all active wake-up functions.

### ► Serial Port 1/3/4/5/6 Configuration

Press [Enter] to make settings for the following items:

### Serial Port

Use this item to [Enabled] or [Disabled] serial port (COM).

### Change Settings

Use this item to select an optimal setting for super IO device.

### Serial Port FIFO Mode

The optional settings are: [16-Byte FIFO]; [32-Byte FIFO]; [64-Byte FIFO]; [128-Byte FIFO].

### Serial Port 2 Configuration

Press [Enter] to make settings for the following items:

### Serial Port

Use this item to enable or disable serial port (COM).

### Change Settings

Use this item to select an optimal setting for super IO device.

### Transmission Mode Select

The optional settings are: [RS422]; [RS232]; [RS485].

### Mode Speed Select

The optional settings are: [RS232/RS422/RS485=250kbps]; [RS232=1Mbps, RS422/RS485=10Mbps].

### Serial Port FIFO Mode

The optional settings are: [16-Byte FIFO]; [32-Byte FIFO]; [64-Byte FIFO]; [128-Byte FIFO].

### WatchDog Timer

Use this item to [Enabled] or [Disabled] WatchDog Timer Control. When set as [Enabled], the following sub-items shall appear:

### WatchDog Timer Value

User can set a value in the range of [4] to [255].

### WatchDog Timer Unit

The optional settings are: [Sec.]; [Min.].

### WatchDog Wake-up Timer in ERP

This item support WDT wake-up while ERP function is set as [Enabled]. The optional settings are: [Enabled]; [Disabled].

When set as [Enabled], the following sub-items shall appear:

### WatchDog Timer Value in ERP

User can select a value in the range of [10] to [4095] seconds when 'WatchDog Timer Unit in ERP' set as [Sec]; or in the range of [1] to [4095] minutes when 'WatchDog Timer Unit in ERP' set as [Min].

### WatchDog Timer Unit

The optional settings are: [Sec.]; [Min.].

### ATX Power Emulate AT Power

This item support Emulate AT power function, MB power On/Off control by power supply. Use needs to select 'AT or ATX Mode' on MB jumper at first (ATX Mode & AT Mode Select).

### Case Open Detect

Use this item to [Enabled] or [Disabled] case open detect or not.

### PS2 KB/MS Connect

The optional setting are [Keyboard First] or [Mouse First]

### ► PC Health Status

Press [Enter] to make settings for the following sub-items:

### ► SmartFAN Configuration

Press [Enter] to make settings for SmartFan Configuration:

## SmartFAN Configuration

### CPUFAN Type

The optional settings are: [3-Pin]; [4-Pin].

### CPUFAN Smart Mode

The optional settings are: [Disabled]; [Enabled].

When set as [Enabled], the following sub-items shall appear:

### CPUFAN Full-Speed Temperature

Use this item to set CPUFAN (/SYSFAN1/SYSFAN2) full speed temperature. Fan will run at full speed when above this pre-set temperature.

### CPUFAN Full-Speed Duty

Use this item to set CPUFAN (/SYSFAN1/SYSFAN2) full-speed duty. Fan will run at full speed when above this pre-set duty.

### CPUFAN Idle-Speed Temperature

Use this item to set CPUFAN (/SYSFAN1/SYSFAN2) idle speed temperature. Fan will run at idle speed when below this pre-set temperature.

### CPUFAN Idle-Speed Duty

Use this item to set CPUFAN (/SYSFAN1/SYSFAN2) idle speed duty. Fan will run at idle speed when below this pre-set duty.

## ► Serial Port Console Redirection

Press [Enter] to make settings for the following sub-items:

### COM1

### Console Redirection

Use this item to enable or disable COM1 Console Redirection. The optional settings are: [Disabled]; [Enabled].

*When set as [Enabled], user can make further settings in the '**Console Redirection Settings**' screen:*

### ► Console Redirection Settings

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

Press [Enter] to make settings for the following sub-items:

#### Terminal Type

The optional settings are: [VT100]; [VT100+]; [VT-UTF8]; [ANSI].

#### Bits per second

The optional settings are: [9600]; [19200]; [38400]; [57600]; [115200].

#### Data Bits

The optional settings are: [7]; [8].

#### Parity

The optional settings are: [None]; [Even]; [Odd];[Mark]; [Space].

#### Stop Bits

The optional settings are: [1]; [2].

#### Flow Control

The optional settings are: [None]; [Hardware RTS/CTS].

#### VT-UTF8 Combo Key Support

The optional settings are: [Disabled]; [Enabled].

#### Recorder Mode

The optional settings are: [Disabled]; [Enabled].

#### Resolution 100x31

The optional settings are: [Disabled]; [Enabled].

#### Legacy OS Redirection Resolution

The optional settings are: [80x24]; [80x25].

### Putty Keypad

The optional settings are: [VT100]; [LINUX]; [XTERMR6]; [SCO]; [ESCN]; [VT400].

### Redirection After BIOS POST

The optional settings are: [Always Enable]; [BootLoader].

### Legacy Console Redirection

### ► Legacy Console Redirection Settings

Press [Enter] to make settings in 'Legacy Serial Redirection Port'. Legacy Serial Redirection Port

Use this item to select a COM port to display redirection of Legacy OS and Legacy OPROM messages.

The optional settings: [COM1].

### Serial Port for Out-of-Band Management/ Windows Emergency Management Services (EMS) Console Redirection

The optional settings: [Disabled]; [Enabled].

*When set as [Enabled], user can make further settings in '**Console Redirection Settings**' screen:*

### ► Console Redirection Settings

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

Press [Enter] to make settings for the following sub-items.

### Out-of-Band Mgmt Port

The optional settings are: [COM1].

### Terminal Type

The optional settings are: [VT100]; [VT100+]; [VT-UTF8]; [ANSI].

### Bits per second

The optional settings are: [9600]; [19200]; [57600]; [115200].

### Flow Control

The optional settings are: [None]; [Hardware RTS/CTS]; [Software Xon/Xoff].

### Data Bits

The default setting is: [8].

*This item may or may not show up, depending on different configuration.

### Parity

The default setting is: [None].

*This item may or may not show up, depending on different configuration.

### Stop Bits

The default setting is: [1].

*This item may or may not show up, depending on different configuration.

### ► CPU Configuration

Press [Enter] to view current CPU configuration and make settings for the following sub-items:

### Intel Virtualization Technology

The optional settings: [Disabled]; [Enabled].

### VT-d

The optional settings: [Disabled]; [Enabled].

### EIST

The optional settings are: [Disabled]; [Enabled]. Use this item to enable or disable Intel SpeedStep. C States

The optional settings: [Disabled]; [Enabled].

When set as [Enabled], the following item shall appear:

### Enhanced C state

Use this item to enable or disable CPU Enhanced C state. The optional settings: [Disabled]; [Enabled].

### Max Core C-State

This item controls Max C-state that the processor will support.

The optional settings: [Fused value]; [C10]; [C9]; [C8]; [C7]; [C6]; [C1]; [Unlimited]

### ► Network Stack Configuration

Press [Enter] to go to 'Network Stack' screen to make further settings.

### Network Stack

The optional settings are: [Enabled]; [Disabled].

When set as [Enabled], the following sub-items shall appear:

### Ipv4 PXE Support

The optional settings are: [Disabled]; [Enabled].

Use this item to enable Ipv4 PXE Boot Support. When set as [Disabled], Ipv4 PXE boot optional will not be created.

### Ipv4 HTTP Support

The optional settings are: [Disabled]; [Enabled].

Use this item to enable Ipv4 HTTP Boot Support. When set as [Disabled], Ipv4 HTTP boot optional will not be created.

### Ipv6 PXE Support

The optional settings are: [Disabled]; [Enabled].

Use this item to enable Ipv6 PXE Boot Support. When set as [Disabled], Ipv6 PXE boot optional will not be created.

### Ipv6 HTTP Support

The optional settings are: [Disabled]; [Enabled].

Use this item to enable Ipv6 HTTP Boot Support. When set as [Disabled], Ipv6 HTTP boot optional will not be created.

### PXE boot wait time

Use this item to set wait time to press [ESC] key to abort the PXE boot.

### Media detect count

Use this item to set the number of times which media will be checked.

### ► CSM Configuration

Press [Enter] to make settings for the following sub-items:

### Compatibly Support Module Configuration

### Boot Option Filter

This item controls Legacy/UEFI ROMs priority.

The optional settings are: [UEFI and Legacy]; [Legacy Only]; [UEFI Only].

### Network

This item controls the execution of UEFI and legacy PXE OpROM. The optional settings are: [Do not launch]; [UEFI only]; [Legacy only]. Storage

This item controls the execution of UEFI and Legacy Storage OpROM. The optional settings are: [Do not launch]; [UEFI only]; [Legacy only].

### Video

This item controls the execution of UEFI and Legacy Video OpROM. The optional settings are: [UEFI]; [Legacy].

### Other PCI devices

This item determines OpROM execution policy for devices other than Network, storage or video.

The optional settings are: [Do not launch]; [UEFI]; [Legacy].

## ► USB Configuration

Press [Enter] to make settings for the following sub-items:

### USB Configuration

### Legacy USB Support

The optional settings are: [Enabled]; [Disabled]; [Auto].

[Enabled]: To enable legacy USB support.

[Disabled]: To keep USB devices available only for EFI specification, [Auto]: To disable legacy support if no USB devices are connected. XHCI Hand-off

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

The optional settings are: [Enabled]; [Disabled].

### EHCI Hand-off

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

The optional settings are: [Disabled]; [Enabled].

### USB Mass Storage Driver Support

The optional settings are: [Disabled]; [Enabled].

### USB hardware delay and time-outs:

### USB Transfer Time-out

Use this item to set the time-out value for control, bulk, and interrupt transfers. The optional settings are: [1 sec]; [5 sec]; [10 sec]; [20 sec].

### Device Reset Time-out

Use this item to set USB mass storage device start unit command time-out. The optional settings are: [10 sec]; [20 sec]; [30 sec]; [40 sec].

### Device Power-up Delay

Use this item to set maximum time the device will take before it properly reports itself to the host controller. ‘Auto’ uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor.

The optional settings: [Auto]; [Manual].

Select [Manual] you can set value for the following sub-item: 'Device Power-up Delay in Seconds'.

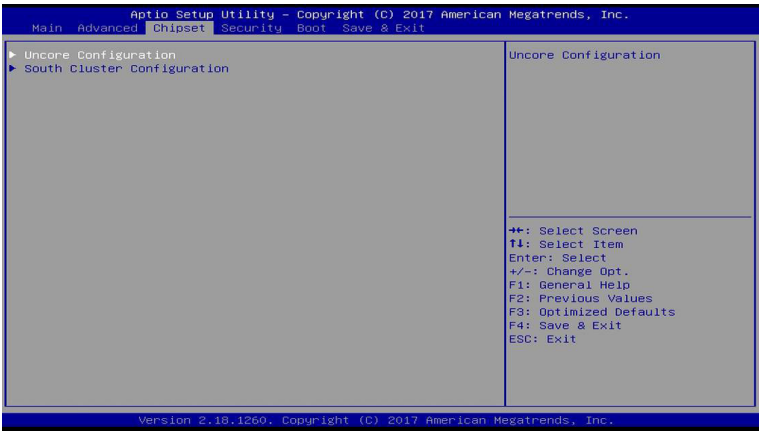
### Device Power-up Delay in Seconds

The delay range is from [1] to [40] seconds, in one second increments.

### ► Intel I211 Gigabit Network Connection (MAC:XX:XX:XX:XX:XX:XX)

Use this item to get MAC address information.

## 5.4. Chipset Menu




### ► Uncore Configuration

Press [Enter] to make settings for the following sub-items:

### GOP Configuration

### GTT Size

The optional settings: [2MB]; [4MB]; [8MB].

### DVMT Pre-Allocated

The optional settings: [64MB]; [96MB]; [128MB]; …… [480MB]; [512MB].

### DVMT Total Gfx Mem

The optional settings: [128MB]; [256MB]; [MAX].

### PAVP Enable

The optional settings: [Enabled]; [Disabled].

### Brightness Level

The optional settings: [20]; [40]; [60]……. [240]; [255].

### South Cluster Configuration

Press [Enter] to make settings for the following sub-items:

### ► SATA Configuration

### SATA Controller

The optional settings: [Enabled]; [Disabled].

### SATA Speed Support

The item is for user to set the maximum speed the SATA controller can support. The optional settings are: [Gen1]; [Gen2]; [Gen3].

### SATA Mode

The optional settings are: [IDE Mode]; [AHCI Mode].

### SATA Port

The optional settings are: [Enabled]; [Disabled].

### M.2

The optional settings are: [Enabled]; [Disabled].

### ► USB Configuration

### XHCI Mode

The optional settings: [Enabled]; [Disabled].

### SD Card Support

The optional settings: [Enabled]; [Disabled]

### HD-Audio Support

The optional settings: [Enabled]; [Disabled]

### Onboard Lan1 Controller

The optional settings: [Enabled]; [Disabled]

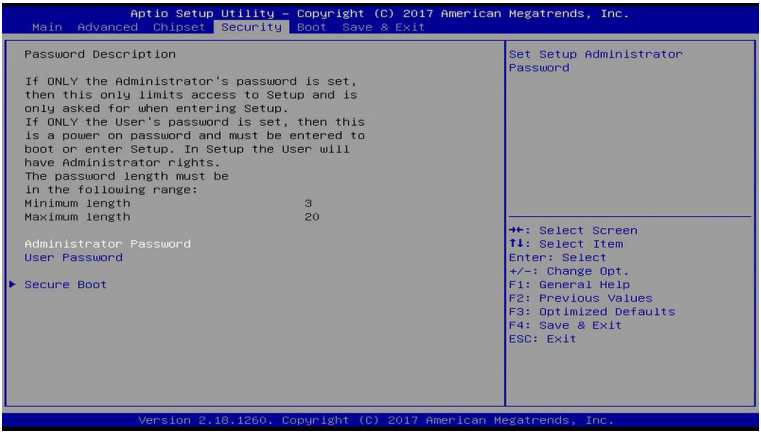
### Onboard Lan2 Controller

The optional settings: [Enabled]; [Disabled]

### System State After Power Failure

The optional settings: [Always Off]; [Always On]; [Former state]

## 5.5. Security Menu




Security menu allow users to change administrator password and user password settings.

### ► Secure Boot

Press [Enter] to make settings for the following sub-items:

### Secure Boot Control

The optional settings: [Disabled]; [Enabled].

### Secure Boot Mode

The optional settings: [Standard]; [Custom].

When set as [Standard], BIOS will install factory default keys. When set as [Custom], users can set [Key Management]

### ► Key Management

Press [Enter] to make settings for the following items:

### Provision Factory Defakt Keys

The optional settings: [Disabled]; [Enabled].

### Enroll all Factory Default Keys

The optional settings: [Yes]; [No]. Press [Yes] to install default keys.

### Save all Secure Boot Variables

Press [Enter] to save secure boot variables.

### Platform Key(PK)

The optional settings: [Set New Key]; [Delete Key].

### Key Exchange Keys

The optional settings: [Set New Key]; [Append Key]; [Delete Key].

### Authorized Signatures

The optional settings: [Set New Key]; [Append Key]; [Delete Key].

### Forbidden Signatures

The optional settings: [Set New Key]; [Append Key]; [Delete Key].

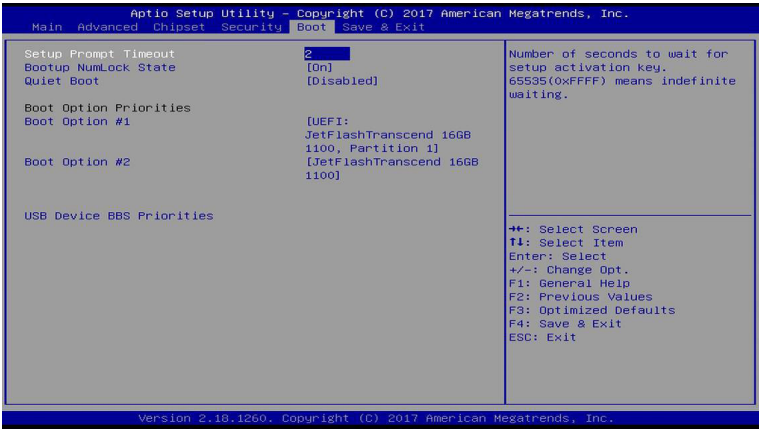
### Authorized Time Stamps

The optional settings: [Set New Key]; [Append Key].

### Os Recovery Signatures

The optional settings: [Set New Key]; [Append Key].

## 5.6. Boot Menu




### Setup Prompt Timeout

Use this item to set number of seconds to wait for setup activation key.

### Bootup Numlock State

Use this item to select keyboard numlock state. The optional settings are: [On]; [Off].

### Quiet Boot

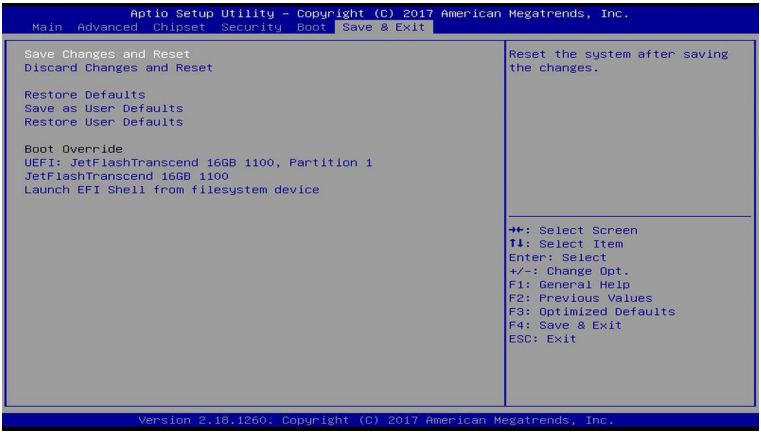
The optional settings are: [Disabled]; [Enabled].

### Boot Option Priorities

Boot Option#1/2…

The optional settings are: [UEFI: Built-in EFI Shell]; [Disabled].

## 5.7. Save & Exit Menu




### Save Changes and Reset

This item allows user to reset the system after saving the changes.

### Discard Changes and Reset

This item allows user to reset the system without saving any changes.

### Restore Defaults

Use this item to restore /load default values for all the setup options.

### Save as User Defaults

Use this item to save the changes done so far as user defaults.

### Restore User Defaults

Use this item to restore defaults to all the setup options.

### Boot Override

### UEFI:xx/…

Press this item to select the device as boot disk after save configuration and reset.

### Launch EFI Shell from filesystem device

This item is used for attempts to launch EFI shell application from one of the available file system devices.