# Panel PC

# User's Manual

**NO. G03-PCNC7ARHD-F**

**Manual Revision: 5.0**

**Release Date：April 21, 2025**

# TABLE OF CONTENT

# CAUTION  Safety Precautions

- Operate the product according to the correct installation steps and with great care to make sure safety and comfort using experience. Please refer to the following safety instruction guide to avoid danger of electric shock or fire. Abide by the previous safety instruction guide to use and maintain the product and the hard disk to make sure of safe operating environment.
- Please follow the instruction manual for operation guide.
- The appropriate operating temperature ranges from 0 °C–50 °C.
- The operation humidity for this product is 5% to 80% RH.
- To avoid high temperature, please DO NOT overload the maximum power of the external power supply while the system is consuming high voltage.  Be aware of the maximum temperature allowance of the power supply.
- See to it that the product is not working near the water.
- Always unplug power cable and other hardware cables from the system before cleaning.
- Apply only dry cloth for cleansing the product.
- Make sure that there is no heat source nearby when the product is working.
- Make sure that the thermal louver of the product is not blocked.
- Make sure to remove the power plug from the product when there is a thunder storm.
- Please remove the power plug from the product when you are not going to use the product for a long time.
- Make sure to set up or use the product on a stable surface.
- Make sure not to drop the product or strike it by any means.
- Make sure not to move the product when the power is on.
- Make sure not to step on the power cables and other cables or rest anything in them..
- Be sure to ground yourself to prevent static charge when installing any internal components. Use a grounding wrist strap and place all electronic components in any static-shielded devices. Most electronic components are sensitive to static electrical charge.
- Disconnect the power cord from the Panel PC unit prior to any installation. Be sure both the system and all external devices are turned off. Sudden surge of power could ruin sensitive components. Make sure the Panel PC unit is properly grounded. unit
-  Do not open the system's back cover. If opening the cover for maintenance is a must, only a trained technician is allowed to do so. Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

  - Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help to discharge any static electricity on human body.
  - When handling boards and components, wear a grounding wrist strap available from most electronic component stores.

- Please contact qualified technician for maintenance or repair.
- Use only accessories and parts that are made by the qualified manufacturer.

# User's Notice

# Package Contents

| WI-FI antenna | AC-DC Adapter |
|:---:|:---:|
|  |  |
| **X2** | **X1** |
| Power Cord | USB Fixed Parts |
|  |  |
| **X1** | **Optional** |

# Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.

# Chapter 1

# Introduction

## 1-1 General Descriptions

Thank you for purchasing the system, a new product developed, designed and manufactured under leading technical power and consistent dedication to fine workmanship.

- A true flat, easy-to-clean front surface with esge-to-edge design
- Streamlined enclosure for highly efficient heat dissipation enclosed in robust aluminum casing
- Strong solid aluminum frame design and fanless cooling system
- Support open frameless design
- Designed for mounting clips and VESA mount installation
- IO ports designed for easy connection
- Onboard Intel®  Bay Trail series SoC processor, with low power consumption never denies high performance
- Onboard 4GB DDR3L 1333Mhz SO-DIMM
- Support 1 * 2.5" SATA HDD Device, 1* Mini PCIe, 1* M.2 connector
- Support dual Gigabit LAN
- Support 4G SIM card socket
- Support 802.11 b/g/n WiFi communication
- Support VGA output
- Support multiple COM ports

***The system has the following features besides other basic functions:***

■ ***WiFi:*** the Mini PCI-E onboard socket in the board is integrated a with a WiFi card(802.11 b/g/n) that can act as a mini wireless modem when external antennas are connected. Different computers in the house can build wireless connections through the Mini TOP system and take necessary data from it, thus reducing the complexity in network establishment.

■ ***Giga LAN***: The system is integrated with Gigabit LAN network controller with ACPI management realizing efficient power management for the operating system.

■ ***USB3.0***: Experience Fastest data transfers at 5Gb/s with USB3.0 the new latest connectivity standard. Built connect easily with next-generation components and peripherals, USB3.0 transfers data 10x faster and backward compatible with previous USB2.0 components.

■ ***CPU Usage:*** The CPU Usage diagram shows a beautiful data curve that indicates a pretty low CPU usage percentage for video playback of different formats. GPU performances are excellent as well.

■ ***dB Value:*** The design of the system takes into consideration the needed quiet operating environment in the living room and the average dB value is below 26 under normal operation to ensure the tranquility when you are absorbed in film

watching.

# 1-2 Specifications

## Main CPU Board

- **<u>CPU</u>**
  - ➢ Intel® Bay Trail series SoC processor

- **<u>System Memory</u>**
  - ➢ Onboard 4GB DDR3L 1333MHz SO-DIMM

- **<u>BIOS</u>**
  - ➢ AMI 64MB Flash ROM

## I/O System

- **<u>Standard I/O</u>**

  ### For HPC104GR-HD1900B Series
  - ➢ 1* Power Button
  - ➢ 1* Lockable 9~28V DC-in Power Jack
  - ➢ 1* VGA
  - ➢ 2* RS-232/422/485
  - ➢ 2* USB 3.0
  - ➢ 4* USB 2.0 (2*USB 2.0 from Bottom rear IO+ 2*USB 2.0 from Front Panel)
  - ➢ 2* RJ-45 for Gigabit Ethernet (Intel i211AT)
  - ➢ 1* GPIO Port-Male

  ### For HPC150GR-HD1900B & HPC170GR-HD1900B Series
  - ➢ 1* Power Button
  - ➢ 1* Lockable 9~28V DC-in Power Jack
  - ➢ 1* VGA
  - ➢ 2* RS-232/422/485 + 2* RS-232
  - ➢ 2* USB 3.0
  - ➢ 4* USB 2.0 (from Bottom rear IO)
  - ➢ 2* RJ-45 for Gigabit Ethernet (Intel i211AT)
  - ➢ 1* GPIO Port -Female

  ### For HPC-185SC-HD1900B Series
  - ➢ 1* Power Button
  - ➢ 1* LackabLe 9~28V DC-in Power Jack
  - ➢ 1* VGA
  - ➢ 2* RS-232/422/485
  - ➢ 2* USB 3.0
  - ➢ 2* USB 2.0 (from Bottom rear IO)
  - ➢ 2* RJ-45 for Gigabit Ethernet (Intel i211AT)

# 1-3 I/O Outlets

*For HPC104GR-HD1900B Series:*



*Front Panel View*
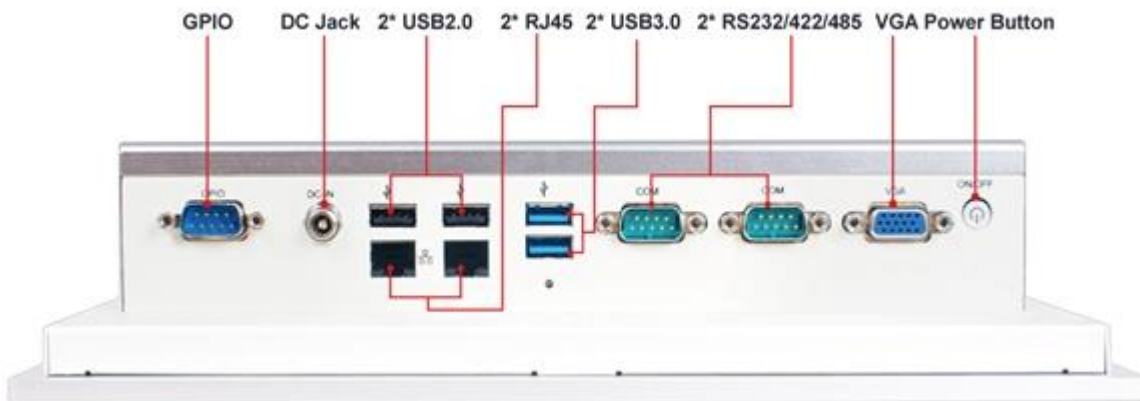


*Bottom View*

| HPC104GR-HD1900B | | | |
|---|---|---|---|
| **Rear IO** | | **Front    Panel** | |
| Power Button | 1 | / | / |
| DC-in | 1 | / | / |
| VGA | 1 | / | / |
| RS232/422/485 | 2 | / | / |
| RS232 | / | / | / |
| USB3.0 | 2 | / | / |
| USB2.0 | 2 | USB2.0 | 2 |
| RJ-45 | 2 | / | / |
| GPIO-male | 1 | / | / |

*For HPC150GR-HD1900B Series:*



2\*USB 2.0  GPIO  2\*RS232  DC Jack  2\*USB2.0  2\*RJ45  2\*USB3.0  2\*RS232/422/485  VGA  Power Button
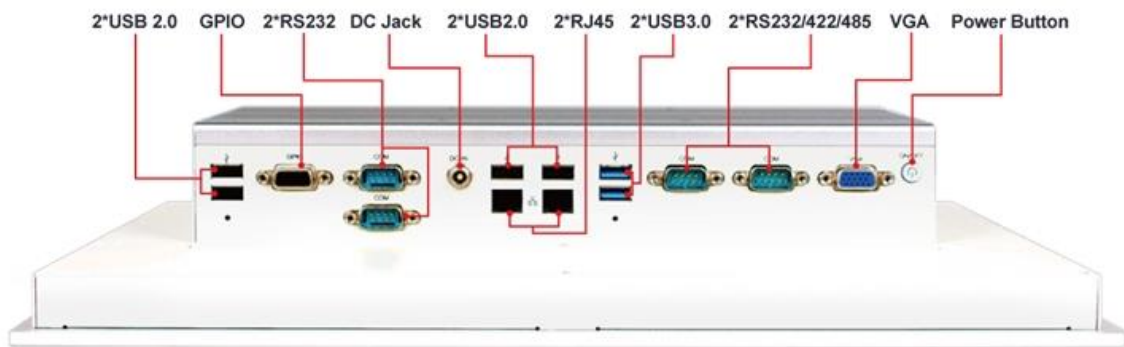
*Bottom View*

*For HPC170GR-HD1900B Series:*



2\*USB 2.0  GPIO  2\*RS232  DC Jack  2\*USB2.0  2\*RJ45  2\*USB3.0  2\*RS232/422/485  VGA  Power Button
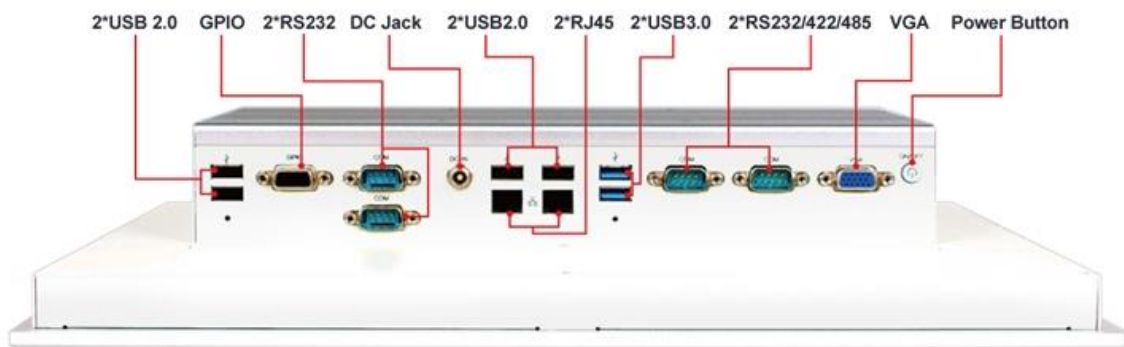
*Bottom View*

| HPC150GR-HD1900B/ HPC170GR-HD1900B | | | |
|---|---|---|---|
| **Rear IO** | | **Front    Panel** | |
| Power Button | 1 | / | / |
| DC-in | 1 | / | / |
| VGA | 1 | / | / |
| RS232/422/485 | 2 | / | / |
| **RS232** | **2** | / | / |
| USB3.0 | 2 | / | / |
| USB2.0 | **4** | / | / |
| RJ-45 | 2 | / | / |
| GPIO-female | 1 | / | / |

*Notice:*

*1. The diagrams in this manual only serve for illustration, if there is any differences that we do not cover, please refer to the actual product you purchase.2.Model **HPC150GR& HPC170GR** series share the same IO specifications, as the above diagram shows; 3.The main differences of **HPC150GR & HPC170GR** series are mainly in size.*

*For HPC180SC-HD1900B Series:*
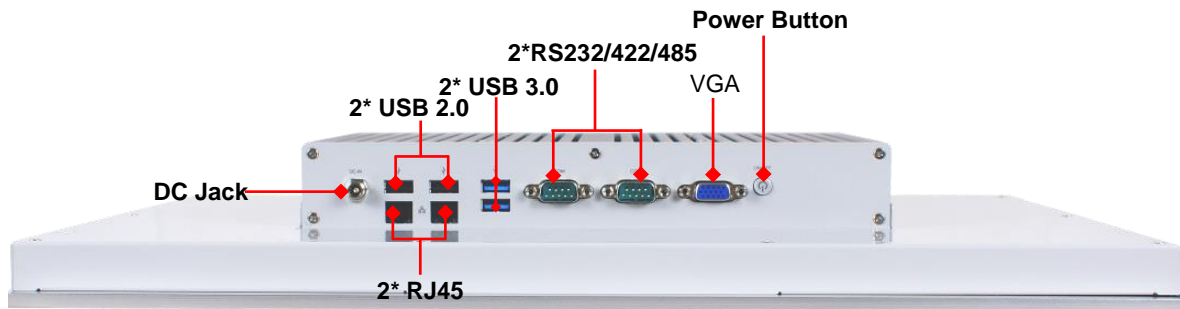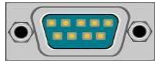


*Bottom View*

| HPC180SC-HD1900B | | | | |
|---|---|---|---|---|
| **Rear IO** | | **Front** | **Panel** | |
| Power Button | 1 | / | | / |
| DC-in | 1 | / | | / |
| VGA | 1 | / | | / |
| RS232/422/485 | 2 | / | | / |
| RS232 | / | / | | / |
| USB3.0 | 2 | / | | / |
| USB2.0 | 2 | / | | / |
| RJ-45 | 2 | / | | / |
| GPIO | / | / | | / |

# 1-4 Connector Pin Definition

## (1) Connector Function

| Icon | Name | Function |
|---|---|---|
| | **Power Button** | Press to turn on/off the system. |
| | **VGA Port** | To connect display device that support VGA specification. |
| | **COM Port** | Mainly for user to connect external MODEM or other devices that supports Serial Communications Interface. |
| | **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. |
| | **USB 2.0 Port** | To connect USB keyboard, mouse or other devices compatible with USB specification. |
| | **RJ-45 LAN Port** | This connector is standard RJ-45 LAN jack for Network connection. |
| | **DC-in Power Jack Connector** | For user to connect compatible power adapter to provide power supply for the system. |
| | **GPIO Connector-Male** | **Male** General Purpose Input Output port. |
| | **GPIO Connector-Female** | **Female** General Purpose Input Output port. |

## (2) I/O Connectors Pin Definition

### COM Port Connector

The pin assignment for RS-232/ 422/ 485 is listed as follows:
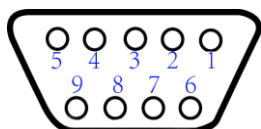


| Pin NO. | RS232 | *RS422 (optional) | *RS485 (optional) |
|---------|-------|-------------------|-------------------|
| 1 | DCD | TX- | DATA- |
| 2 | RXD | TX+ | DATA+ |
| 3 | TXD | RX+ | NC |
| 4 | DTR | RX- | NC |
| 5 | GND | GND | GND |
| 6 | DSR | NC | NC |
| 7 | RTS | NC | NC |
| 8 | CTS | NC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

COM1 & COM2 ports can function as RS232/422/485 port. In normal settings COM1/COM2 functions as RS232 port. With compatible COM cable they can function as RS422 or RS 485 port. User also needs to go to BIOS to set '*Transmission Mode Select*' for COM1/COM2 <span style="color:red">(refer to Page 25)</span> at first, before using specialized cable to connect different pins of this port.

### VGA Port Connector

The pin assignment for VGA port connector is listed as follows:



| Pin No. | 1 | 2 | 3 | 4 | 5 |
|---------|---|---|---|---|---|
| Definition | R | G | B | NC | GND |
| Pin No. | 6 | 7 | 8 | 9 | 10 |
| Definition | R-GND | G-GND | B-GND | +5V | GND |
| Pin No. | 11 | 12 | 13 | 14 | 15 |
| Definition | NC | SDA | H-SYN | V-SYN | SCL |

### RJ-45 Ethernet Connector

Ethernet connection can be established by plugging one end of the Ethernet cable into this RJ-45 connector and the other end (phone jack) to a 1000/100/10-Base-T hub.

The pin assignment for RJ-45 Ethernet LAN connectors are listed as follows:
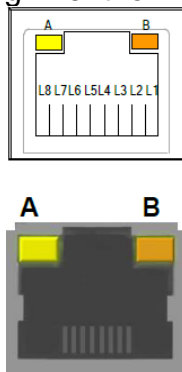


| Pin | Definition | Pin | Definition |
|-----|-----------|-----|-----------|
| L1 | MDI0+ | L5 | MDI2+ |
| L2 | MDI0- | L6 | MDI2- |
| L3 | MDI1+ | L7 | MDI3+ |
| L4 | MDI1- | L8 | MDI3- |
| A | Active LED (Yellow) | | |
| B | 100 LAN LED (Green) / 1000 LAN LED (Orange) | | |

### GPIO (9-pin Block): GPIO Port
### GPIO Port Connector
The pin assignment for GPIO connector is listed as follows:
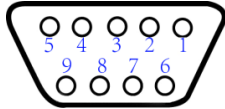
| Pin No. | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Definition | GPIO | GPIO | GPIO | GPIO | GND |
| Pin No. | 6 | 7 | 8 | 9 | |
| Definition | GPIO | GPIO | GPIO | GPIO | |

*Note: GPIO port comes in 2 types: male and female. Please refer to the actual specification of the product you purchase and choose compatible cable for correct connection.*

# Chapter 2
# Hardware and Installation
## 2-1 Dimension and Outlines

*Product Dimension for HPC104GR-HD1900B Series:*
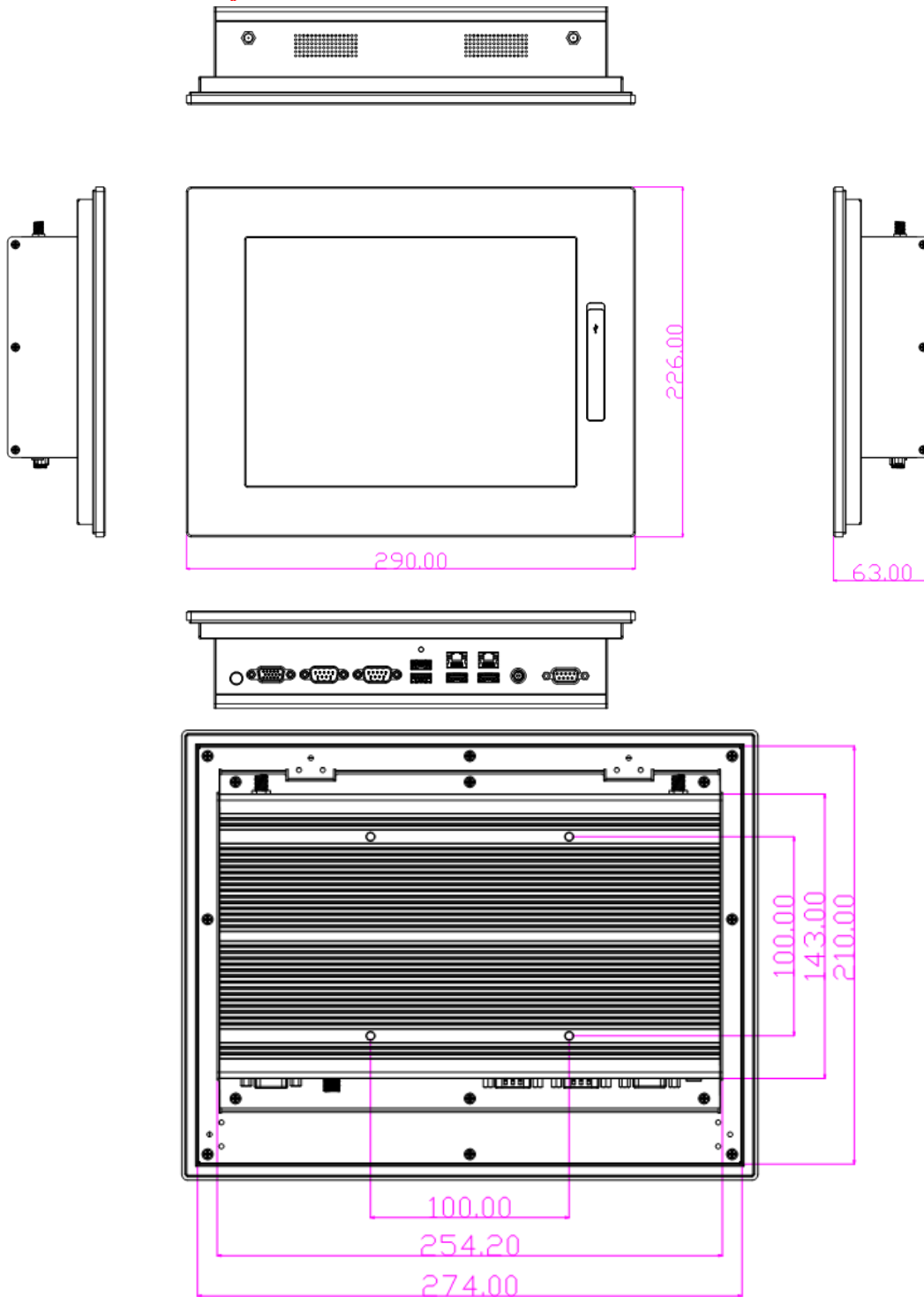


*\* Measure Unit: mm.*

## Product Dimension for HPC150GR-HD1900B Series:



290.00

366.00

74.00

100.00
142.60
274.00

100.00
298.00
350.00
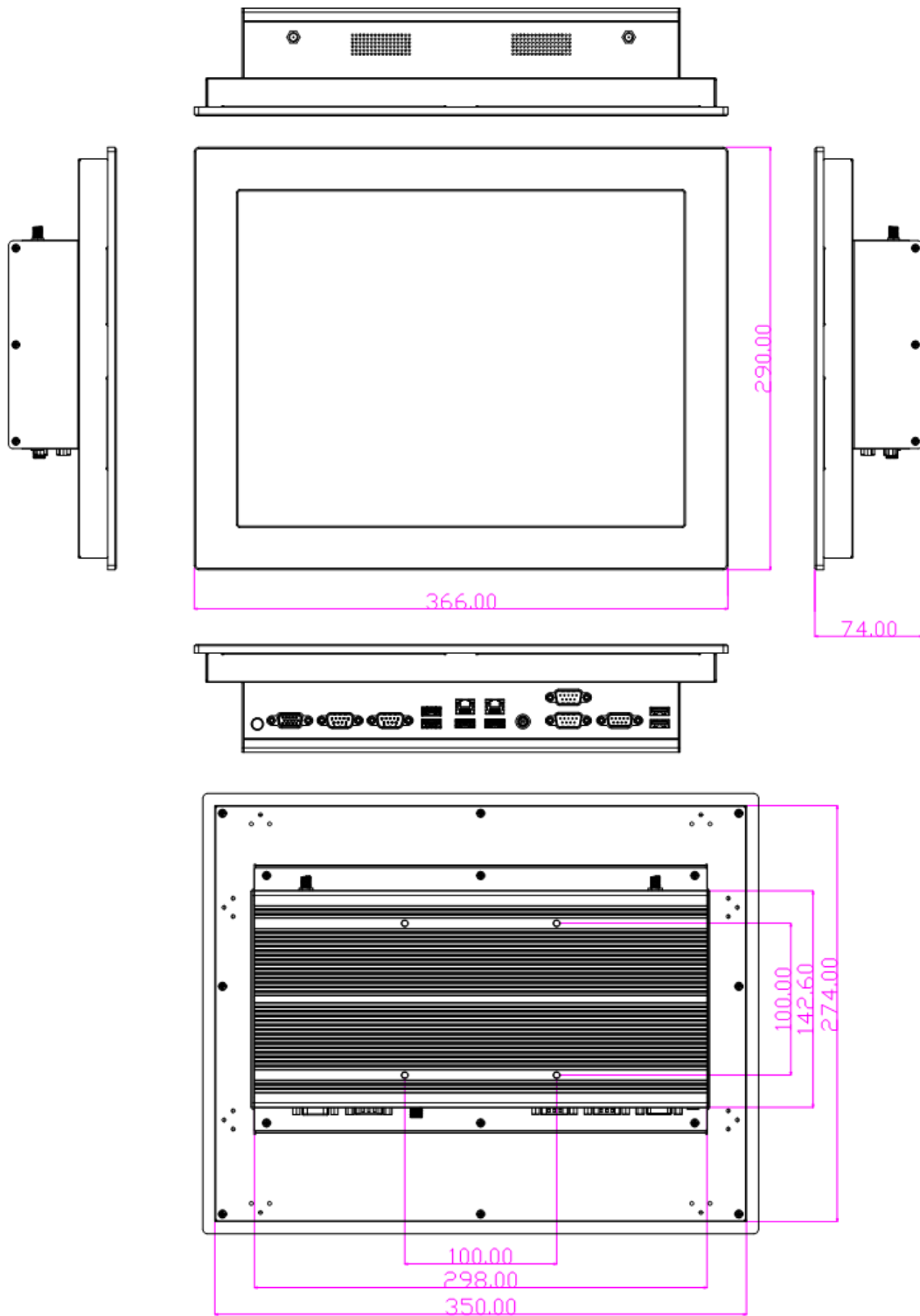
*** Measure Unit: mm.**

*Product Dimension for HPC170GR-HD1900B Series:*

335.00

400.00

100.00
142.60
319.00

100.00
298.00
384.00
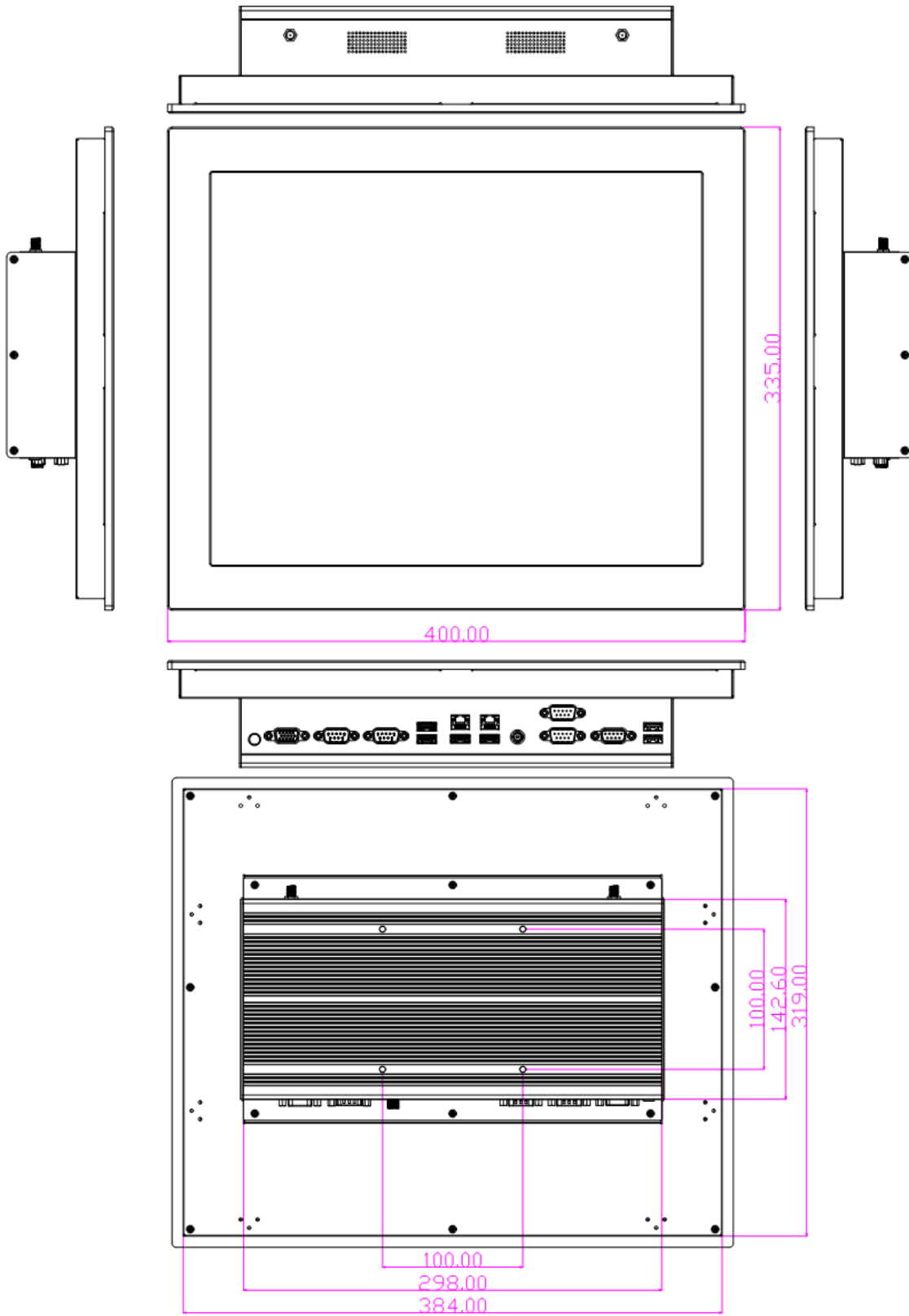
*\* Measure Unit: mm.*

*Product Dimension for HPC-185SC-HD1900B Series:*

308.00

480.00

84.00

100.00
152.00
292.00

100.00
266.50
464.00
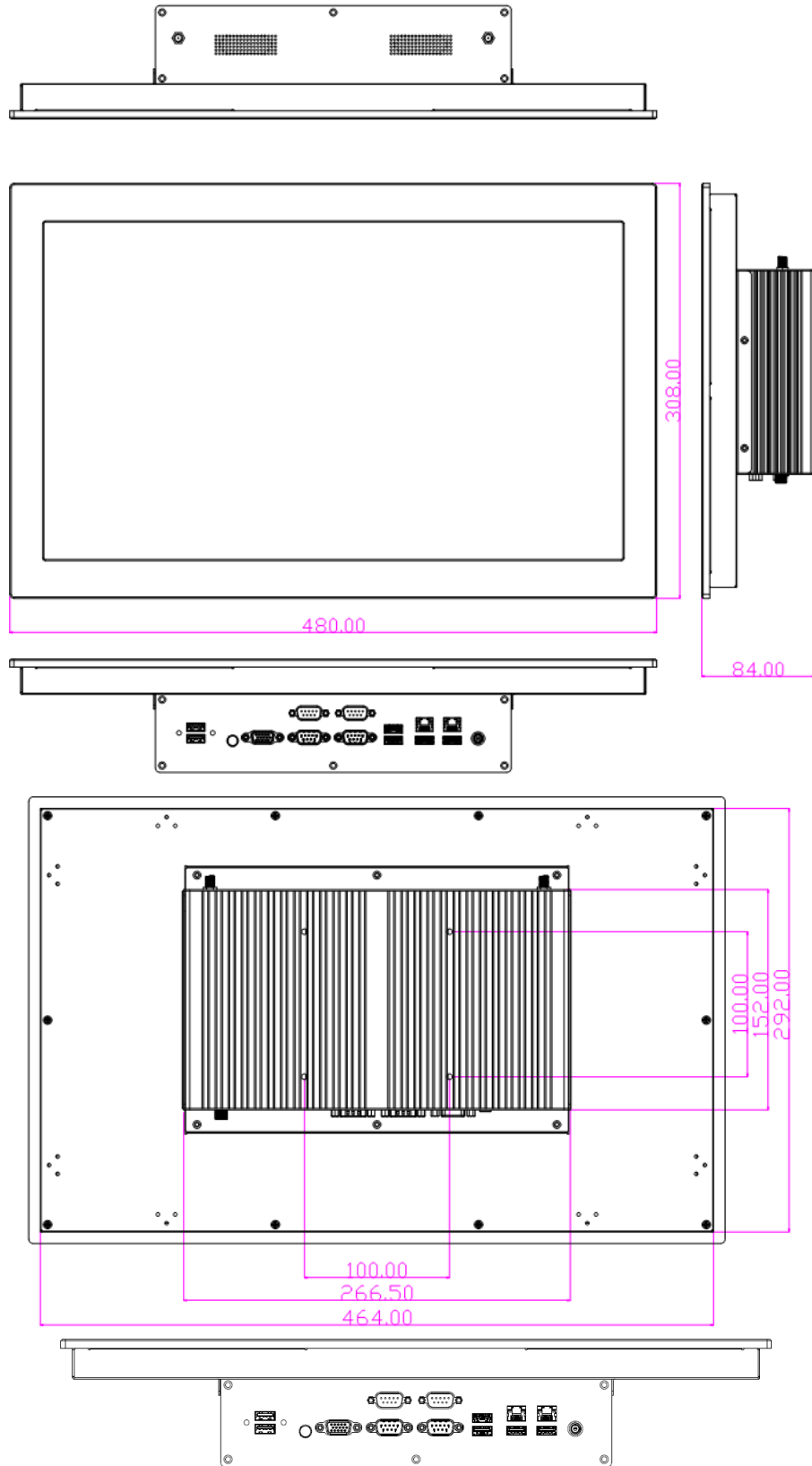
*\* Measure Unit: mm.*

## 2-2 To Open the Chassis

**HPC104GR-HD1900B Series**
**HPC150GR-HD1900B Series**
**HPC170GR-HD1900B Series**
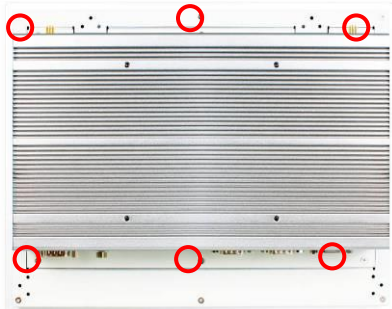
**HPC-185SC-HD1900B Series**



1. Unscrew the above marked 6 screws that lock the back cover (see red circles).



2. Use a screwdriver to remove the screws on the upper and lower side of the chassis cover (see above red circles in step-1).

3. Remove the screws on left and right side of the chassis cover as well to dissemble the chassis cover.

> **Notice:** *When lifting the cover up to open the chassis for further installation, see to it that the connecting cables are not unplugged. It is very important for the cables connected to their original places for normal functioning.*

# 2-3 Jumper Settings

Jumper is a small component consisting of jumper clip and jumper pins. Install jumper clip on 2 jumper pins to close the pins. And remove jumper clip from 2 jumper pins to open the pins. Diagram 2-1 illustrates how to set up a jumper.
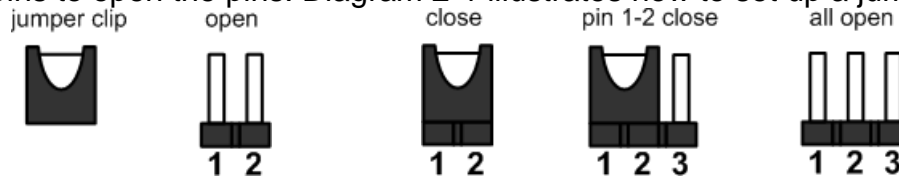


## (1) JP1 (3-pin): eDP Backlight VCC 5V /12V Select



**1-2 Closed:**
**5V (Default);**

**2-3 Closed:**
**12V.**

## (2) JP2 (4-pin): eDP LCD VCC 3.3V / 5V /12V Select



**2-4 Closed:**
**3.3V (Default);**

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

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

## (3) JBAT1 (4-pin): Clear CMOS Setting



**3-4 Closed:**
**(Default);**

**2-4 Closed:**
**CLEAR CMOS;**
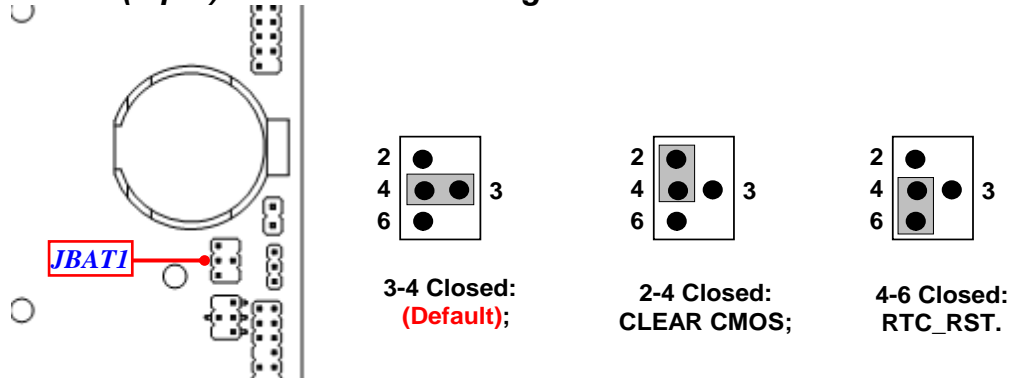
**4-6 Closed:**
**RTC_RST.**

## (4) COPEN (2-pin): Case Open Message Display Function Select

**COPEN→Case Open Detection**

Pin1→ ■

**1-2 Open: Normal;**

Pin1→ ■

**1-2 Closed: Case Open Function Selected.**
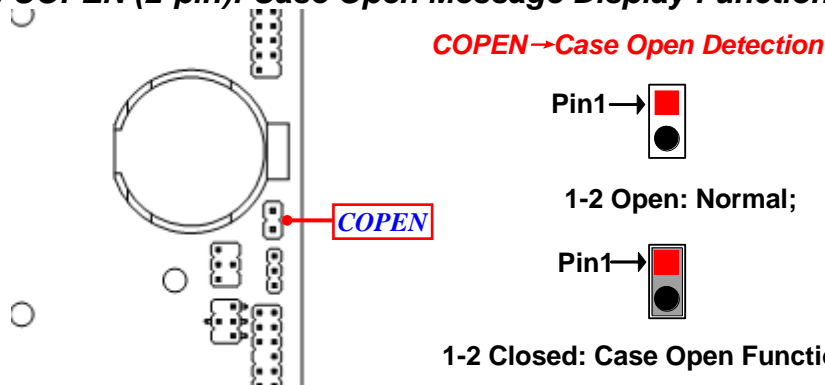
**Pin 1-2 Closed:** *Case open display function enabled. Use needs to enter BIOS and enable 'Case Open Detect' function. In this case if you case is removed, next time when you restart your computer a message will be displayed onscreen to inform you of this.*

## (5) AT_MODE (3-pin): AT/ATX Mode Function Select

**AT_MODE→ATX/AT Mode Select**

3  1

**1-2 Close: ATX Mode Selected(Default);**

3  1

**2-3 Close: AT ModSelected.**
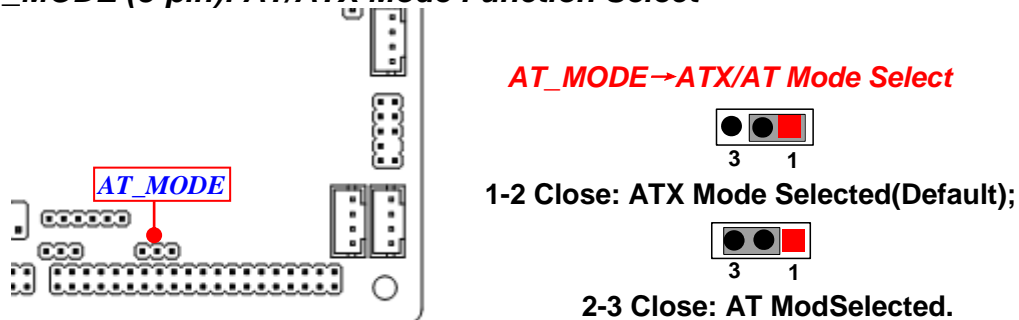
*\*ATX Mode Selected: Press power button to power on after power input ready;*
*AT Mode Selected: Directly power on as power input ready.*

## (6) JPLED (3-pin): LVDS Backlight VCC 5V / 12V Select

1
3

1
3

**1-2 Closed:**
**5V (Default);**
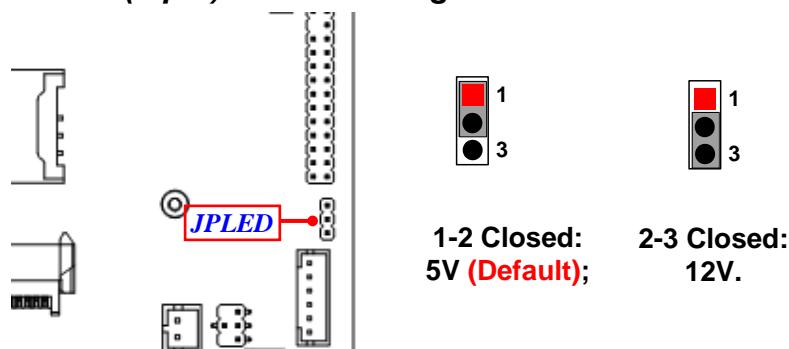
**2-3 Closed:**
**12V.**

## (7) JPLCD (4-pin): LVDS LCD VCC 3.3V / 5V /12V Select

3  2 4 6

3  2 4 6

3  2 4 6

**2-4 Closed:**
**3.3V (Default);**

**3-4 Closed:**
**5V;**
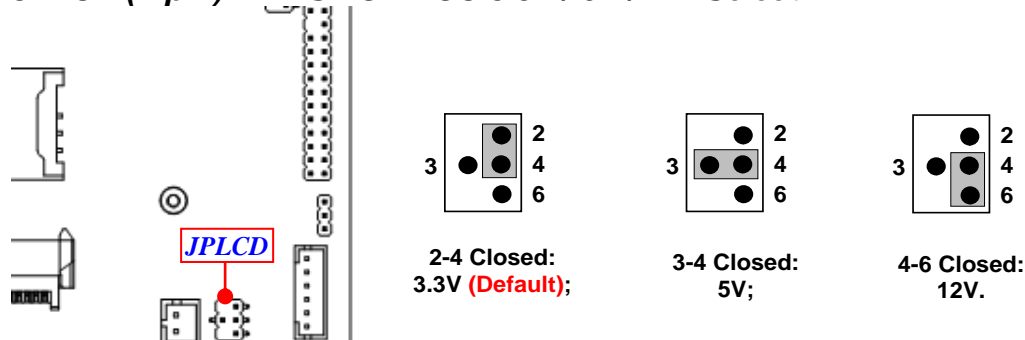
**4-6 Closed:**
**12V.**

## (8) JP4 (3-pin): PS2 5VSB / VCC Select
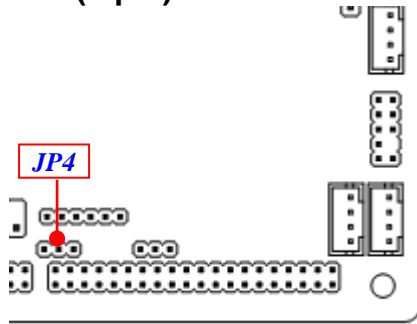
*JP4→PS2 5VSB/VCC Select*

**3   1**

**1-2 Close: 5VSB (Default);**

**3   1**

**2-3 Close: VCC.**

## (9) JPCOM1/2 (4-pin): COM1/COM2 5V /12V Select

JPCOM1

JPCOM2

| 6 | | |
|---|---|---|
| 4 | | 3 |
| 2 | | |

**2-4 Closed:**
**RING (Default);**

| 6 | | |
|---|---|---|
| 4 | | 3 |
| 2 | | |

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

| 6 | | |
|---|---|---|
| 4 | | 3 |
| 2 | | |
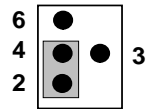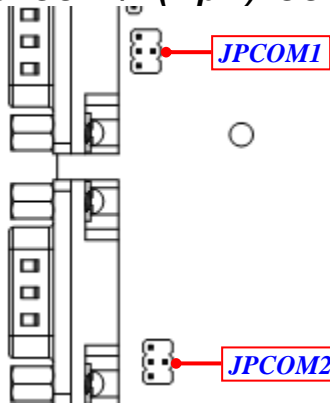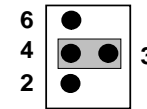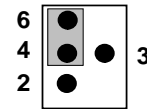
**4-6 Closed:**
**12V.**

## (10)   JPCOM3/4 (4-pin): COM3/COM4 5V/12V Select

JPCOM3

JPCOM4

**3**

**6   4   2**
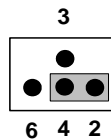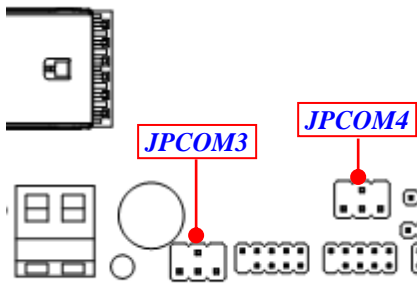
**2-4 Closed:**
**RING (Default);**

**3**

**6   4   2**

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

**3**

**6   4   2**
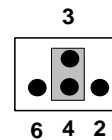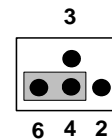
**4-6 Closed:**
**12V.**

## 2-4 Hardware Installation

Remove the screws that lock the back cover to the system from the back side before hardware installation procedures (refer to 2-2).
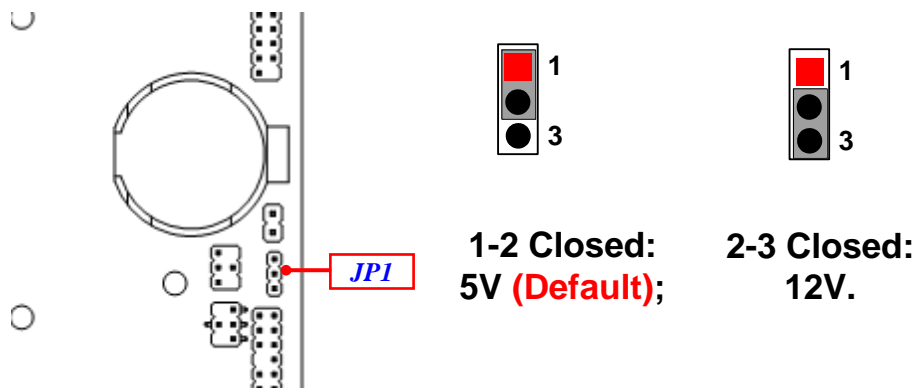
*Notice: When lifting the cover up to open the chassis for further installation, see to it that the connecting cables are not unplugged. It is very important for the cables connected to their original places for normal functioning.*
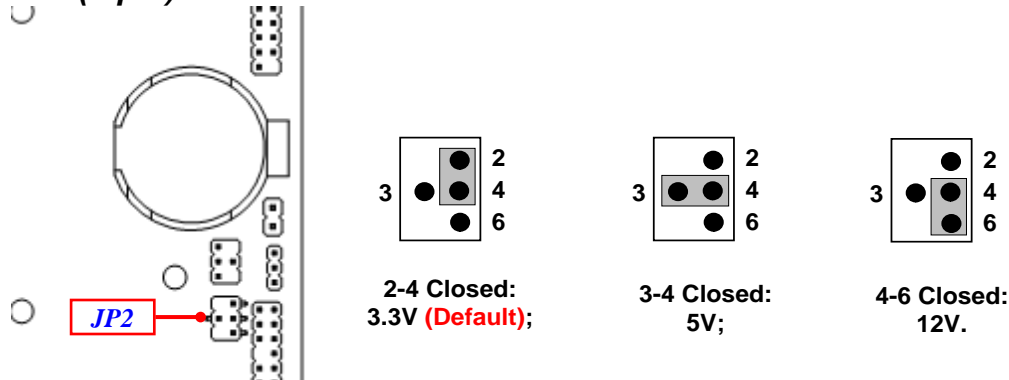
## 2-4-1 To Install HDD

Please refer to the following instructions and illustration to install a 2.5" SATA HDD.

Before installation, **please refer to 2-2** to open the back cover and dissemble the pre-installed HDD racks from the system.
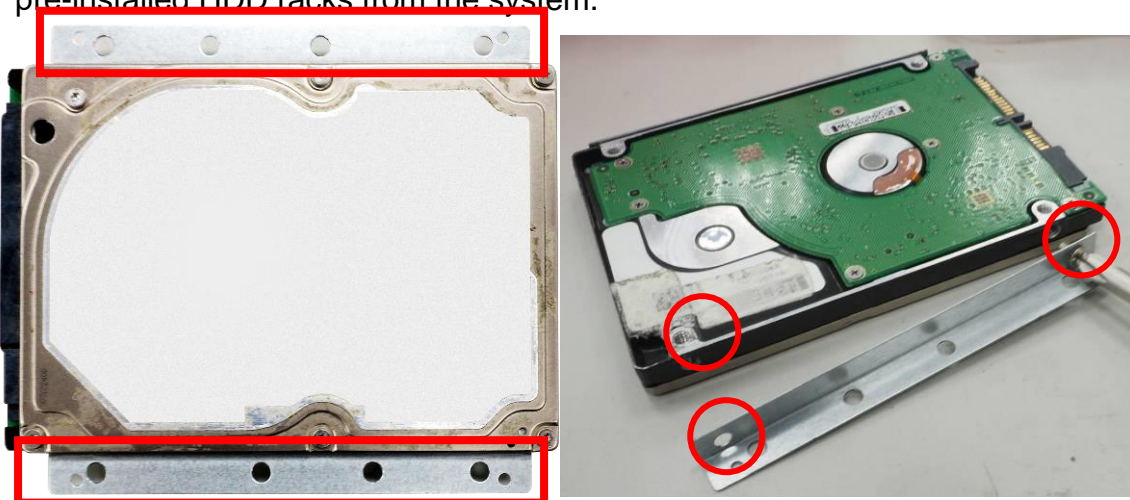


1. Align the racks to both sides of the SATA HDD as showed above. Match the screw holes of the racks to corresponding screw holes of the HDD.

2. Lock the HDD to the HDD racks by tightening screws into matched screw holes.
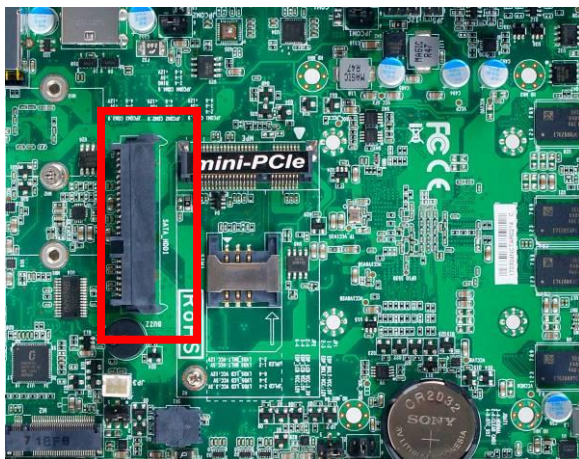


3. Find the 2.5'' HDD connector on the motherboard.
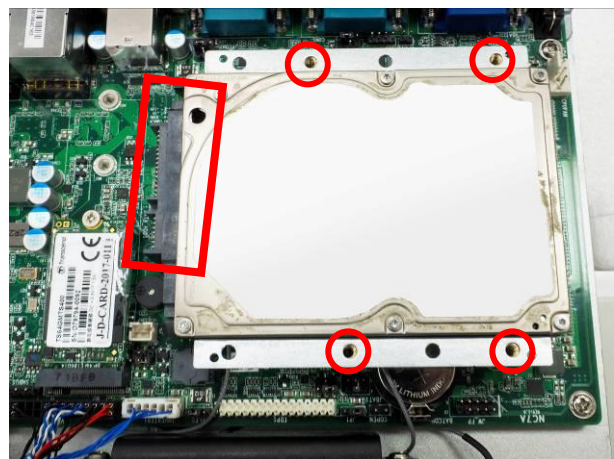
4. Push the installed HDD into HDD connector on the board as showed. Lock the racked with HDD installed to the board by tightening the screws in the marked spots.

## 2-4-2 To Install M2 SSD Card

This M2 Socket 3 connector support compatible type 2242/2260/2280 SATA module.

| Nut Location | MH1 | MH2 | MH3 |
|---|---|---|---|
| Card Length | 4.2 cm | 6 cm | 8 cm |
| Module Type | Type 2242 | Type 2260 | Type 2280 |





1. Find M2 SATA Slot on the motherboard.
2. Prepare compatible M.2 SATA. Deferent type of cards has different length. Find corresponding nut location for further installation.





3. Remove the screw post and nut fixed at location **MH2** by default (Skip step 2 & 3 and go straight to Step 4 if you are going to use the default nut).

4. Lock the screw post into the location corresponding to the length of the module you wish to install.

5. Align and insert corresponding M.2 module, as the photo shows.

6. Tighten up the screw to secure the module into the M.2 connector. Mare sure not over-tighten the screw to avoid possible damage to the module.

## 2-4-3 To Install Wireless LAN Card

Please refer to the following instructions and illustration for the installation of the wireless LAN card.





1. Locate the Mini-PCIE card slot on the board. Remove the marked screw and use it to lock WIFI card to the slot in later installation.
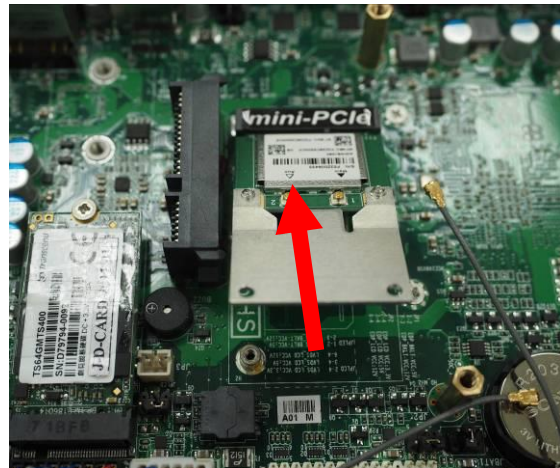
2. Insert the gold-figure side of the compatible WI-FI card into the slot and press down.
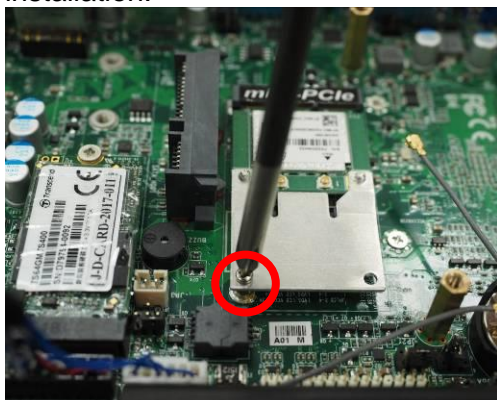




3. Lock the card to the board by tightening up the screw to the marked spot.

4. Press the metal hat on the end of the antenna string to the antenna slot on the card as showed.
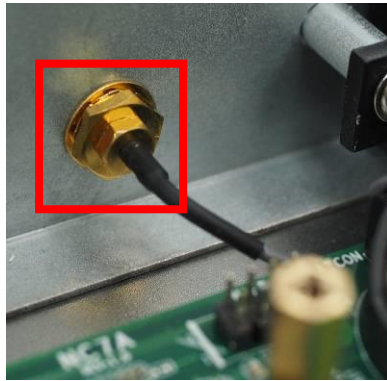
5.  **Internal View:** Put the above metal gasket into the antenna head at first, and then push this antenna head into the back side of the rear panel.



6.  **External View:** Put the metal ring into the antenna head, and then lock the antenna head to the front side of the rear panel the above hexagonal bolt.

After the above steps finished, please remove the antenna plugs from the Wi-Fi antenna holes in the rear panel. Connect the external Wi-Fi receiver antenna to the antenna connector on the rear panel.

*NOTE: Please use an extended bracket when using a half-size Mini card.*

## 2-4-4 To Install Optional USB Device Fixed Parts
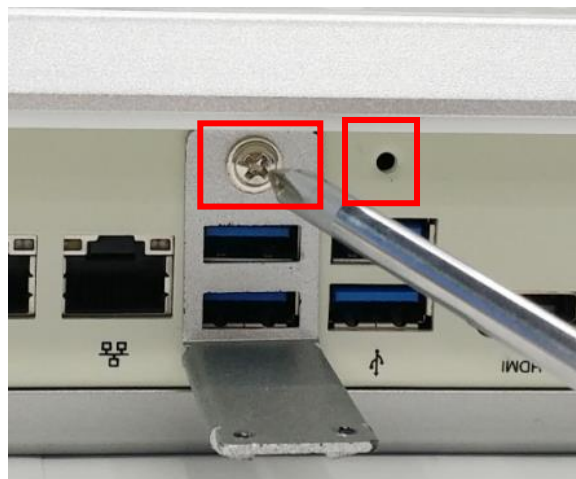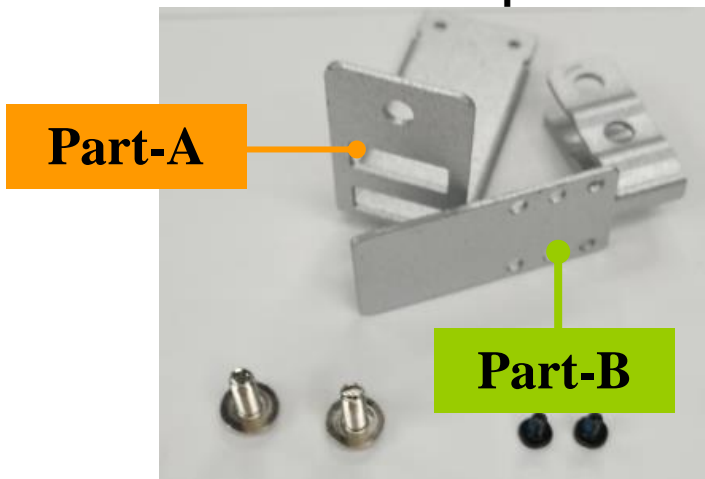


1.  The USB device fixed accessories include **Part-A**, **Part-B** and 2 sets of screws of different size.

2.  Align the screw hole of **Part-A** to corresponding screws hole from the IO panel of the chassis, and then lock **Part-A** to the panel with the bigger screw, as the photo shows.
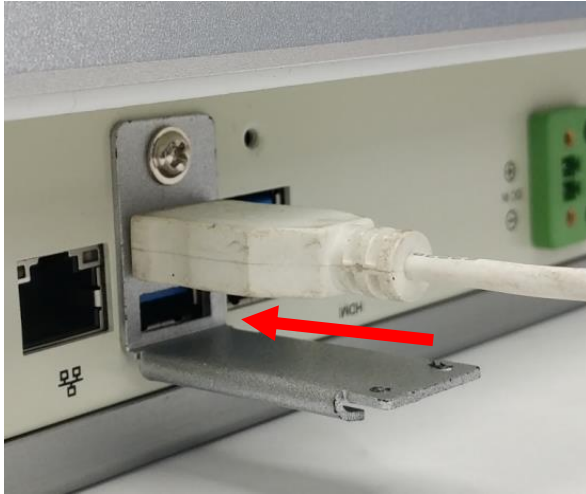
3. Insert the cable end of USB device you wish to connect to USB port of the chassis, as the photo shows.
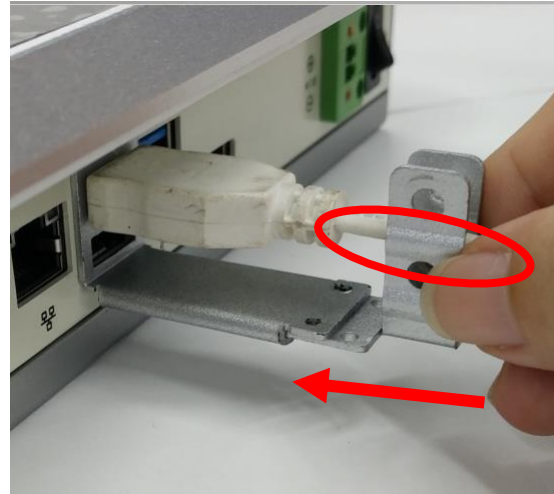
4. Insert **Part-B** into corresponding slot of the **Part-A** and choose the installing length by adjusting the screw holes from both parts. Make sure the screw holes from both parts matched and the USB cable fitted into the reserved slot of **Part-B**, as the photo shows.





5. Turn over the system on a flat operation platform and lock **Part-B** to **Part-A** by tightening the 2 screws in the marked spots.
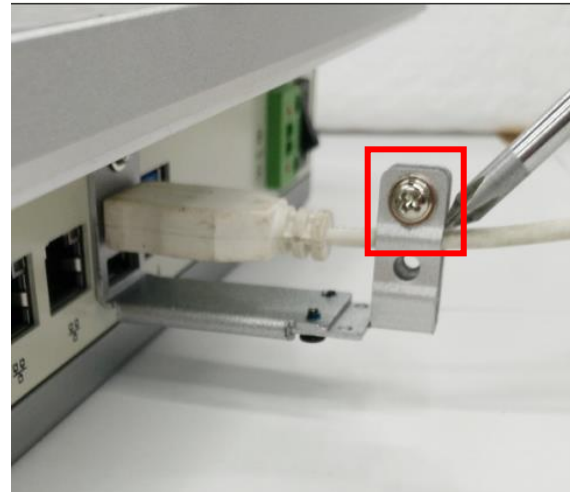
6. Fastening the USB device cable by tightening up the other screw in the marked spot.

# Chapter 3
# Introducing BIOS

| | |
|---|---|
| **Notice!** | The BIOS options in this manual are for reference only. Different configurations may lead to difference in BIOS screen and BIOS screens in manuals are usually the first BIOS version when the board is released and may be different from your purchased motherboard. Users are welcome to download the latest BIOS version form our official website. |

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.

## 3-1    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

## 3-2    BIOS Menu Screen

The following diagram show a general BIOS menu screen:

BIOS Menu Screen
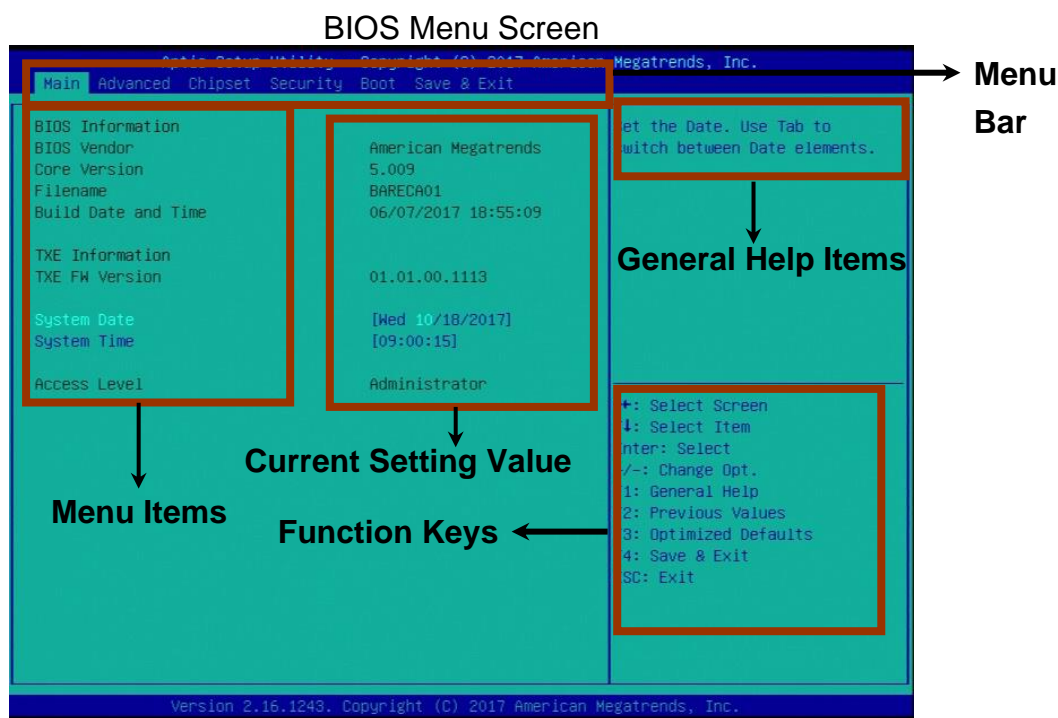


## 3-3    Function Keys

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 values.
- **[F3]:** Optimized defaults.
- **[F4]:** Save & Exit.
- Press **<Esc>** to quit the BIOS Setup.

## 3-4    Getting Help

**Main Menu**

The on-line description of the highlighted setup function is displayed at the top right corner the screen.

**Status Page Setup Menu/Option Page Setup Menu**

Press [F1] to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <**Esc**>.

# 3-5 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.

# 3-6   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.
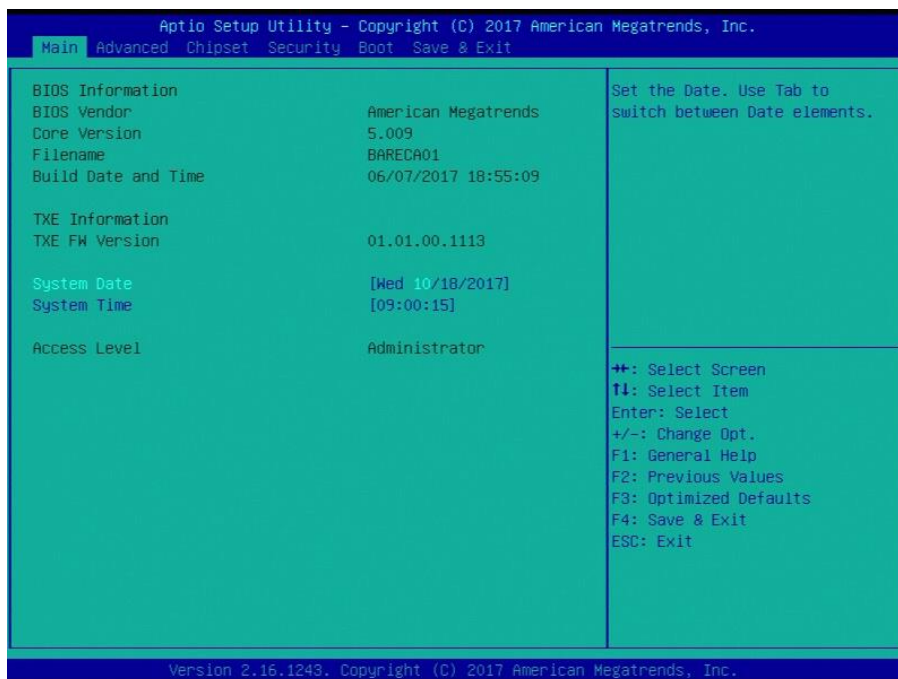


**System Date**
Set the date. Please use [Tab] to switch between date elements.
**System Time**
Set the time. Please use [Tab] to switch between time elements.

## 3-7 Advanced Menu

```
                Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
         Main  Advanced  Chipset  Security  Boot  Save & Exit

         OS Selection                         [Windows 7]              OS Selection

        ▶ Trusted Computing
        ▶ ACPI Settings
        ▶ Super IO Configuration
        ▶ Serial Port Console Redirection
        ▶ PC Health Status
        ▶ CPU Configuration
        ▶ SATA Configuration
        ▶ Network Stack Configuration
        ▶ CSM Configuration
        ▶ Wake-up Function Settings
        ▶ USB Configuration
                                                                      ↔: Select Screen
        ▶ Intel(R) I211 Gigabit  Network Connection -                 ↑↓: Select Item
          00:30:18:28:21:02                                           Enter: Select
        ▶ Intel(R) I211 Gigabit  Network Connection -                 +/-: Change Opt.
          00:30:18:28:21:03                                           F1: General Help
                                                                      F2: Previous Values
                                                                      F3: Optimized Defaults
                                                                      F4: Save & Exit
                                                                      ESC: Exit



                Version 2.16.1243. Copyright (C) 2017 American Megatrends, Inc.
```

**OS Selection**
Use this item to select OS.
The optional settings are: [Windows 8.X]; [Linux/Android]; [Windows 7].

▶ **Trusted Computing**
Press [Enter] to make settings for the following sub-item:
*__Configuration__*
**Security Device Support**
Use this item to enable or disable BIOS support for security device. OS will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], the following sub-items shall appear:
  **TPM State**
  Use this item to enable or disable Security Device. NOTE: computer will reboot during restart in order to change state of the Device.
  The optional settings: [Disabled]; [Enabled].

▶ **ACPI Settings**
Press [Enter] to make settings for the following sub-item:
**ACPI Sleep State**
Use this item to select ACPI sleep state the system will enter when the suspend button is pressed.
The optional settings are: [Suspend Disabled]; [S3 only (Suspend to RAM)].

▶ **Super I/O Configuration**
Press [Enter] to make settings for the following sub-items:
*__Super IO Configuration__*
  ▶ **Serial Port 1/2 Configuration**
  Press [Enter] to make settings for the following items:
  **Serial Port**
  Use this item to enable or disable serial port (COM).

---

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

**Change Settings**

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

The optional settings are: [Auto]; [IO=3F8h; IRQ=4;]; [IO=2F8h; IRQ=3;]; [IO=3E8h; IRQ=4;]; [IO=2E8h; IRQ=3;].

**Transmission Mode Select**

Use this item to select transmission mode.

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

**Serial Port FIFO Mode**

Use this item to select an optimal setting for FIFO Mode.

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

▸ **Serial Port 3/4/5/6 Configuration**

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

**Serial Port**

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

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

**Change Settings**

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

The optional settings are: [Auto]; [IO=3F8h; IRQ=10;]; [IO=2F8h; IRQ=10;]; [IO=3E8h; IRQ=10;]; [IO=2E8h; IRQ=10;]; [IO=2F0h; IRQ=10;]; [IO=2E0h; IRQ=10;].

**Serial Port FIFO Mode**

Use this item to select an optimal setting for FIFO Mode.

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

**OS Select for Serial Port**

Serial port supports for Windows or Linux. The optional settings are: [Windows]; [LINUX].

**ERP Support**

Use this item to disable or enable ERP to active all wake-up functions.

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

**Case Open Detect**

Use this item to disable or enable case open functions and show message in POST.

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

**PS2 KB/MS Connect**

Use this item to set PS2 Connect Primary Devices.

The optional settings are: [Keyboard First]; [Mouse First].

**WatchDog Reset Timer**

This item support WDT reset function.

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

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

**WatchDog Reset Timer Value**

User can set a value in the range of [10] to [255] seconds or in the range of [1] to [255] minutes.

**WatchDog Reset Timer Unit**

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

**WatchDog Wake-up Timer**
Support WDT Wake-up.
The optional settings: [Disabled]; [Enabled]. When set as [Enabled], the following sub-items shall appear:

**WatchDog Wake-up Timer Value**
User can set a value in the range of [10] to [4095] seconds when '**WatchDog Wake-up Timer Unit**' set as [Sec.], or in the range of [1] to [4095] minutes when '**WatchDog Wake-up Timer Unit**' set as [Min.].

**WatchDog Wake-up 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 (refer to *Page 14*, AT_MODE jumper for ATX Mode / AT Mode Select).

▸ **Serial Port Console Redirection**
*COM1*
**Console Redirection**
The optional settings: [Disabled]; [Enabled]. When set as [Enabled], the following sub-items shall appear:

▸ **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 items:

**Terminal Type**
The optional settings: [VT100]; [VT100+]; [VT-UTF8]; [ANSI].
Emulation: VT100: ASCII char set; VT100+: Extends VT100 to support color, function keys, etc.; VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes; ANSI: Extended ASCII char set.

**Bits per second**
Use this item to select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
The optional settings: [9600]; [19200]; [38400]; [57600]; [115200].

**Data Bits**
The optional settings: [7]; [8].

**Parity**
A parity bit can be sent with the data bits to detect some transmission errors.
The optional settings: [None]; [Even]; [Odd]; [Mark]; [Space].
Even: parity bit is 0 if the num of 1's in the data bits is odd; Mark: parity bit is always 1; Space: Parity bit is always 0; Mark and Space Parity do not allow for error detection.

**Stop Bits**
Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard settings is 1 stop bit. Communication with slow devices may require more than 1 stop bit.
The optional settings: [1]; [2].

**Flow Control**

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a "stop" signal can be sent to stop the data flow. Once the buffers are empty, a "start" signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

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

**VT-UTF8 Combo Key Support**

Use this item to enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.

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

**Recorder Mode**

With this mode enable only text will be sent. This is to capture Terminal data.

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

**Resolution 100x31**

Use this item to enable or disable extended terminal resolution.

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

**Legacy OS Redirection Resolution**

On Legacy OS, the Number of Rows and Columns supported redirection.

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

**Putty KeyPad**

Use this item to select FunctionKey and KeyPad on Putty.

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

**Redirection After BIOS POST**

The settings specify if BootLoader is selected then Legacy console redirection is disabled before booting to Legacy OS. Default value is Always Enable wich means Legacy Console Redirection is enabled for Legacy OS.

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

*__Serial Port for Out-of-Band Management/__*
*__Windows Emergency Management Services (EMS)__*

**Console Redirection**

The optional settings: [Disabled]; [Enabled]. When set as [Enabled], the following sub-items shall appear:

▶ **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 items:

**Out-of-Band Mgmt Port**

The default setting is are: [COM1].

**Terminal Type**

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

Emulation: VT100: ASCII char set; VT100+: Extends VT100 to support color, function keys, etc.; VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes; ANSI: Extended ASCII char set.

VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and them VT100.

**Bits per second**

Use this item to select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
The optional settings: [9600]; [19200]; [57600]; [115200].

**Flow Control**

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a "stop" signal can be sent to stop the data flow. Once the buffers are empty, a "start" signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.
The optional settings: [None]; [Hardware RTS/CTS]; [Software Xon/Xoff].

▸ **PC Health Status**

Press [Enter] to view current hardware health status, set shutdown temperature, or make further settings in '**SmartFan Configuration**'.

*SmartFAN Configuration*

Press [Enter] to make settings for SmartFAN Configuration:

**CPUFAN Type**

The optional settings are: [4-Pin]; [3-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 full speed temperature. Fan will run at full speed when above the pre-set temperature.

**CPUFAN Full-Speed Duty**

Use this item to set CPUFAN full speed duty. Fan will run at full speed when above the pre-set duty.

**CPUFAN Idle-Speed Temperature**

Use this item to set CPUFAN idle speed temperature. Fan will run at idle speed when below the pre-set temperature.

**CPUFAN Idle-Speed Duty**

Use this item to set CPUFAN idle speed duty. Fan will run at idle speed when below the pre-set duty.

**Shutdown Temperature**

Use this item to select system shutdown temperature.
The optional settings are: [Disabled]; [70°C/156°F]; [75°C/164°F]; [80°C/172°F]; [85°C/180°F]; [90°C/188°F].

▸ **CPU Configuration**

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

**Limit CPUID Maximum**

The optional settings: [Disabled]; [Enabled].
This item should be set as [Disabled] for Windows XP.

**Execute Disable Bit**

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

**Hardware Prefetcher**

The optional settings are: [Disabled]; [Enabled].
Use this item to enable the Mid Level Cache (L2) streamer prefetcher.

**Adjacent Cache Line Prefetch**

The optional settings are: [Disabled]; [Enabled].
Use this item to enable Mid Level Cache (L2) prefetching of adjacent cache lines.
**EIST**
The optional settings are: [Disabled]; [Enabled].
Use this item to enable or diable Intel Speed Step function.
**CPU C State Report**
Use this item to enable or disable CPU C state report to OS.
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], user can see **Enhanced C state**:
   **Enhanced C state**
   Use this item to enable or disable CPU Cstate.
   The optional settings: [Disabled]; [Enabled].
**Max CPU C-State**
This item controls Max C-state that the processor will support.
The optional settings: [C7]; [C6]; [C1].
**S0ix**
Use this item to enable or disable CPU S0ix state.
The optional settings: [Disabled]; [Enabled].

▶ **SATA Configuration**
Press [Enter] to make settings for the following sub-items:
**SATA Controller**
The optional settings are: [Enabled]; [Disabled].
When user set it as [Enabled], the following items will show up for user to make further settings:
   **SATA Speed Support**
   The optional settings are: [Gen1]; [Gen2].
   **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].

▶ **Network Stack Configuration**
Press [Enter] to go to '**Network Stack**' screen to enable or disable UEFI Network Stack.
**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 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 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.

▸ **CSM Configuration**
*Compatibility Support Module Configuration*
**Boot Option Filter**
This option 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 option controls the execution of UEFI and Legacy Storage OpROM.
The optional settings are: [Do Not Launch]; [UEFI only]; [Legacy only].
**Other PCI Devices**
This item determines OpROM execution policy for devices other than Network, storage or video.
The optional settings are: [UEFI First]; [Legacy Only].

▸ **Wakeup Function Settings**
Press [Enter] to make settings for the following sub-items:
**Wake-up System with Fixed Time**
Use this item to enable or disable system wake-up by RTC on alarm event.
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], system will wake on the Hour/Minute/Second specified.
**Wake-up System with Dynamic Time**
Use this item to enable or disable system wake-up by RTC on alarm.
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], system will wake on the (current time) + (Increase minute(s)). The range is from [1] to [60] minute(s). .
**PS2 KB/MS Wake-Up from S3-S5**
PS2 KB/MS Wake-up is affected by ERP function in S4-S5. Please disable ERP before activating this function in S4-S5.
The optional settings: [Disabled]; [Enabled].
**USB1 Wake-up from S3**
Use this item to enable or disable USB wake-up. It is affected by ERP function in S4. Please disable ERP before activating this function in S4.
The optional settings: [Disabled]; [Enabled].

▸ **USB Configuration**
*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 Delays 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.

# 3-8 Chipset Menu



▶ **North Bridge**
Press [Enter] to view current using memory information and make settings for the following sub-items:
**PAVC**
Use this item to enable or disable Protected Audio Video Control.
The optional settings are: [Disabled]; [LITE Mode]; [SERPENT Mode].
**DVMT Pre-Allocated**
Use this item to select DVMT 5.0 pre-allocated (fixed) graphics memory size used by the internal graphics device.
The optional settings are: [64M]; [96M]; [128M]; [160M]; [192M]; [224M]; [256M];

[288M]; [320M]; [352M]; [384M]; [416M]; [448M]; [480M]; [512M].

**DVMT Total Gfx Mem**

Use this item to select DVMT 5.0 total graphics memory size used by the internal graphics device.

The optional settings are: [128M]; [256M]; [MAX].

**Aperture Size**

The optional settings are: [128M]; [256M]; [512MB].

**GTT Size**

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

**Primary IGFX Boot Display**

Use this item to select the video device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display.

The optional settings are: [VBIOS Default]; [CRT]; [LFP].

**Active LFP**

The optional settings are: [Disable]; [LVDS]; [eDP].

When set as [**LVDS**], user can make settings in '**LCD Panel Type**'.

The optional settings are: [800x600 24-bit 1ch]; [800x600 18-bit 1ch]; [1024x600 18-bit 1ch]; [1024x768 24-bit 1ch]; [1024x768 18-bit 1ch]; [800x480 18-bit 1ch]; [1366x768 18-bit 1ch]; [1440x900 18-bit 2ch]; [1366x768 24-bit 1ch]; [1440x900 24-bit 2ch]; [1280x1024 24-bit 2ch]; [1280x800 18-bit 1ch]; [1280x800 24-bit 1ch]; [1680x1050 24-bit 2ch]; [1280x768 24-bit 1ch]; [1920x1080 24-bit 2ch].

   **Note: Please go back to 'Primary IGFX Boot Display' for further setting:**
   The optional settings are: [VBIOS Default]; [CRT]; [LFP].

When set as [**eDP**], user can make settings in '**Backlight Control**'.

The optional settings are: [PWM Inverted]; [PWM Normal].

   **Note: Please go back to 'Primary IGFX Boot Display' for further setting:**
   The optional settings are: [VBIOS Default]; [CRT]; [LFP].

▸ **South Bridge**

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

**Mini PCIE**

Use this item to enable or disable Mini-PCIE.

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

   **Speed**
   Use this item to select PCIe Port Speed.
   The optional settings are: [Auto]; [Gen2]; [Gen1].

**Onboard PCIE LAN1/LAN2**

Use this item to control the Onboard PCIE LAN1/LAN2 device.

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

**Audio Controller**

Use this item to control the detection of the Azalia HD Audio device.

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

[**Disabled**]: Azalia will be unconditionally disabled;

[**Enabled**]: Azalia will be unconditionally enabled;

▸ **USB Configuration**

**USB 3.0 Support**

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

*** Note:** When set as [Auto] or [Disabled], USB 2.0 Support is applicable, for user to make further settings.*

**USB 2.0 Support**

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

**System State after Power Failure**

Use this item to select the system state when AC power is re-applied after a power loss. The options- <Always On> and <former State> are affected by ERP function. Please disable ERP to support <Always On> and <Former State>.

The optional settings are: [Always Off]; [Always On]; [Former State].

# 3-9 Security Menu

```
          Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
    Main  Advanced  Chipset  Security  Boot  Save & Exit

   Password Description                               Set Administrator Password

   If ONLY the Administrator's password is set,
   then this only limits access to Setup and is
   only asked for when entering Setup.
   If ONLY the User's password is set, then this
   is a power on password and must be entered to
   boot or enter Setup. In Setup the User will
   have Administrator rights.
   The password length must be
   in the following range:
   Minimum length                    3
   Maximum length                    20
                                                      →←: Select Screen
                                                      ↑↓: Select Item
   Administrator Password                             Enter: Select
   User Password                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit



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```

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

**Administrator Password**

Press [Enter] to create new administrator password. Press again to confirm the new administrator password.

**User Password**

Press [Enter] to create new user password. Press again to confirm the new user password.

# 3-10 Boot Menu

```
                 Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
     Main  Advanced  Chipset  Security  Boot  Save & Exit

     Boot Configuration                                           Number of seconds to wait for
     Setup Prompt Timeout            1                            setup activation key.
     Bootup NumLock State            [On]                         65535(0xFFFF) means indefinite
                                                                  waiting.
     Quiet Boot                      [Disabled]

     Boot Option Priorities
     Boot Option #1                  [UEFI: Built-in EFI
                                     Shell ]


                                                                  →←: Select Screen
                                                                  ↑↓: Select Item
                                                                  Enter: Select
                                                                  +/-: Change Opt.
                                                                  F1: General Help
                                                                  F2: Previous Values
                                                                  F3: Optimized Defaults
                                                                  F4: Save & Exit
                                                                  ESC: Exit




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```

## *Boot Configuration*

**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**
Use this item to set system boot order.
The optional settings are: [UEFI: Built-in EFI Shell]; [Disabled].

# 3-11 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***

**UEFT: Built-in EFI Shell**

Launch Internal EFI shell application (shell.efi).

▸ **Reset System with TXE Disabled Mode**

Press [Enter] for TXE to run into the temporary disable mode. Ignore if TXE Ignition FM.

# Chapter 4
# Touch Panel

**HPC104GR-HD1900B** is designed based on the technology of 5-wire analog resistive type multi-touch screen of which specifications are listed below:

# Specification

| Display | |
|---|---|
| **Front Bazel** | NEMA 4 rugged protection, metal front bazel |
| **Display Type** | 10.4'' with LED backlight |
| **Brightness** | 400 nits |
| **Display Color** | 262K |
| **Resolution** | 800 x 600 @ 60Hz |
| **Viewing Angle (H/V)** | 130º/140 º |
| **Pixel Pitch** | 0.264 x 0.264 mm |
| **Aspect Ratio** | 4:3 |
| **Contrast Ratio** | 400:1 |
| **Response Time** | 25 ms |
| Touch Screen | |
| **Type** | 5 wires analog resistive type |
| **Active Range** | 211.58 x 158.75 mm ±0.2mm |
| **Transparency** | 80±3% |
| **Surface Hardness** | ≥3H(ASTM D3363,pressure 750g/45 º) |
| **Operating Force** | ≤80g |
| **Knock Test** | 10,000,000 times keystrokes |

**HPC150GR-HD1900B** is designed based on the technology of 5-wire analog resistive type multi-touch screen of which specifications are listed below:

# Specification

| Display | |
|---|---|
| **Front Bazel** | NEMA 4 rugged protection, metal front bazel |
| **Display Type** | 15.0'' with LED backlight |
| **Brightness** | 350 nits |
| **Display Color** | 262K |
| **Resolution** | 1024 x 768 @ 60Hz |
| **Viewing Angle (H/V)** | 170º/160 º |
| **Pixel Pitch** | 0.297 x 0.297 mm |
| **Aspect Ratio** | 4:3 |
| **Contrast Ratio** | 700:1 |
| **Response Time** | 5.7 ms |
| Touch Screen | |
| **Type** | 5 wires analog resistive type |
| **Active Range** | 304.10 x228.10 mm ±0.2mm |
| **Transparency** | 80±3% |
| **Surface Hardness** | ≥3H(ASTM D3363,pressure 750g/45 º) |
| **Operating Force** | ≤80g |
| **Knock Test** | 10,000,000 times keystrokes |

**HPC170GR-HD1900B** is designed based on the technology of 5-wire analog resistive type multi-touch screen of which specifications are listed below:

# Specification

| Display | |
|---|---|
| **Front Bazel** | NEMA 4 rugged protection, metal front bazel |
| **Display Type** | 17.0'' with LED backlight |
| **Brightness** | 350 nits |
| **Display Color** | 16.7M |
| **Resolution** | 1280 x 1024 @ 60Hz |
| **Viewing Angle (H/V)** | 170º/160 º |
| **Pixel Pitch** | 0.264 x 0.264 mm |
| **Aspect Ratio** | 4:3 |
| **Contrast Ratio** | 1000:1 |
| **Response Time** | 3.5 ms |
| **Touch Screen** | |
| **Type** | 5 wires analog resistive type |
| **Active Range** | 337.00 x269.50mm± 0.2mm |
| **Transparency** | 80±3% |
| **Surface Hardness** | ≥3H(ASTM D3363,pressure 750g/45 º) |
| **Operating Force** | ≤80g |
| **Knock Test** | 10,000,000 times keystrokes |

**HPC-185SC-HD1900B** is designed based on the technology projective capacitive type screen of which specifications are listed below:

# Specification

| Display | |
|---|---|
| **Front Bazel** | NEMA 4 rugged protection, metal front bazel |
| **Display Type** | 18.5'' with LED backlight |
| **Brightness** | 250 nits |
| **Display Color** | 16.7M |
| **Resolution** | 1366 x 768 @ 60Hz |
| **Viewing Angle (H/V)** | 178º/178 º |
| **Pixel Pitch** | 0.3 x 0.3 mm |
| **Aspect Ratio** | 16:9 |
| **Contrast Ratio** | 1000:1 |
| **Response Time** | 5.5 ms |
| **Touch Screen** | |
| **Type** | Projective capacitive type |
| **Active Range** | 440.8 x 271.4 mm ±0.2mm |
| **Transparency** | 85±5% (Glass haze value: ≤3%) |
| **Surface Hardness** | ≥6H(JIS-5400) |
| **Operating Force** | / |
| **Knock Test** | 10,000,000 times keystrokes |

# Appendix

## General Notices

European Union CE Marking and Compliance Notices

Products intended for sale within the European Union are marked with the Conformity European (CE) Making, which indicates compliance with the applicable Directive and European standards and amendments identified.

**Shielded Cables Notice**

All connections to other computing devices must be made using shielded cables to maintain compliance with FCC regulations.

**Peripheral Devices Notice**

Only peripherals (input/out devices, terminals, printers, etc) certified to comply with Class B limits may be attached to this equipment. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

## Wireless Related Information

Wireless Interoperability

Wireless LAN PCI Express Mini Card is designed to be interoperable with any wireless LAN product that is based on Direct Sequence Spread Spectrum (DSSS), Complementary Code Keying (CKK), and/or Orthogonal Frequency Division Multiplexing (OFDM) radio technology, and is compliant to:

The IEEE802.11a/b/g/n Standard on Wireless LANs was defined and approved by the Institute of Electrical and Electronics Engineers.

The Wireless Fidelity (WiFi) certification as defined by the Wi-Fi Alliance.

Usage Environment and Your Health

Wireless LAN PCI Express Mini Card emits radio frequency electromagnetic energy like other radio devices. However, the level of energy emitted is far much less than the electromagnetic energy emitted by wireless devices like for example mobile phones.

Due to the fact that Wireless LAN PCI Express Mini Card operates within the guidelines found in radio frequency safety standards and recommendations, we believe the integrated wireless cards are safe for use by consumers. These standards and recommendations reflect the consensus of the scientific community and result from deliberations of panels and committees of scientists who continually review and interpret the extensive research literature.

In some situation or environment, the use of Wireless LAN PCI Express

Mini Card may be restricted by the proprietor of the building or responsible representatives of the organization. These situations may for example include:

Using the integrated wireless cards on board of airplanes, or in hospitals

In any other environment that the risk of interference to other devices and service are perceived or identified to be harmful.

If you are uncertain of the policy that applies on the use of wireless devices in a specific organization (e.g., airport or hospital), you are encouraged to ask for authorization to use Wireless LAN PCI Express Mini Card prior to turning on the computer.

## Electronic Emissions Notices
### European Union Compliance Statement Class B Compliance
European Union – Compliance to the Electromagnetic Compatibility Directive

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. We cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the installation of option cards from other manufacturers.

This product has been tested and found to comply with the limits Class B Information Technology Equipment according to European Standard EN55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication devices.

Properly shielded and grounded cables and connectors must be used in order to reduce the potential for causing interference to radio and TV communications and to other electrical or electronic equipment.

## FCC Rules and Regulations-Part 15
This devices uses, generates and radiates radio frequency energy. The radio frequency energy produced by this device is well below the maximum exposure allowed by the Federal Communications Commission (FCC)

● This device complies with the limits for the Class B digital device pursuant to Part 15 subject to the following two conditions:
● This device may not cause harmful interference.
● This device must accept any interference received, including interference that may cause undesired operation.

The FCC limits are designed to provide reasonable protection against harmful interference when the equipment is installed and used in accordance with the instruction manual and operated in a commercial environment. However, there is no guarantee that interference will not occur in a particular commercial installation, or if operated in a residential area.

If harmful interference with radio or television reception occurs when the device is turned on, the user must correct the situation at the user's own expense. The user is encouraged to try one or more of the following corrective measures:

● Re-orient or relocate the receiving antenna.
● Increase the separation between the equipment and receiver.
● Connect the equipment into an outlet on a circuit different from that on which the receiver is connected.
● Consult the dealer or an experienced radio/TV technician for help.

**CAUTION:** The Part 15 radio device operates on a non-interference basis with other devices operating at this frequency. Any changes or modification to said product not expressly approved by Intel could void the user's authority to operate this device.