

Panel PC

User's Manual

P/N: G03-PCNC8HCFP-F

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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

Copyright of this manual belongs to the manufacturer. No part of this manual, including the products and software described in it may be reproduced, transmitted or translated into any language in any form or by any means without written permission of the manufacturer.

This manual contains all information required for the utilization of this product to meet the user's requirements. But it will change, correct at any time without notice. Manufacturer provides this manual "as is" without warranty of any kind, and will not be liable for any indirect, special, incidental or consequential damages (including damages for loss of profit, loss of business, loss of use of data, interruption of business and the like).

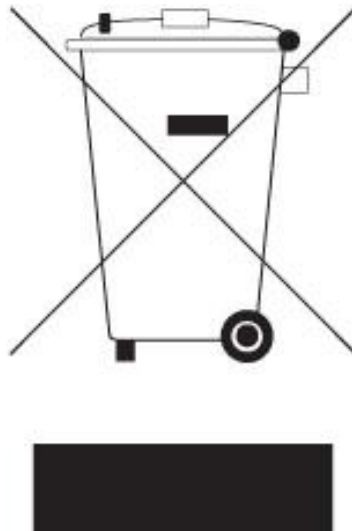
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Package Contents

AC-DC Adapter	Power Cord	WI-FI antenna	Fixed Parts
			
X1	X1	X2	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.

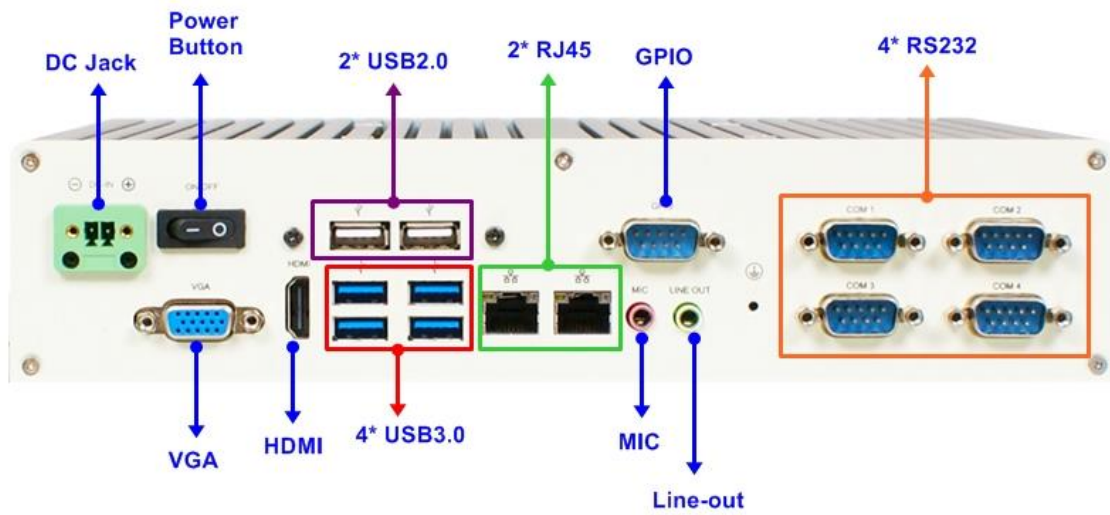
- 23.8" 250 nits brightness TFT LCD with LED backlight
- 10-points Multi Capacitive Touch
- Anti-Reflection Protection Glass
- Design for easy Wall mount, Panel Mount, VESA Mount installation
- A true Flat, easy-to-clean front surface with edge-to-edge design
- Front IP65 for protection against water and dust
- 12~24V DC-input Support, with EOS, OVP design
- Support 2* DDR4 2133/2400/2666MHz SO-DIMM up to 32GB
- Support dual Gigabit LAN
- USB 3.0 ports support lock device.
- Onboard 1 * SATAIII (6Gb/s) port & 1* M.2 M-key 2242 slot
- Onboard 1* PCIE x4 slot & 1* M.2 E-key 2230 PCIe slot (support CNVi)
- Support HDMI & VGA display output
- Support 4 * RS232 COM (COM1/2 Support 5V/12V TTL)
- Supports ACPI S3 Function
- Compliance with ErP Standard
- Support Watchdog Timer Technology

1-2 Specifications

Display	
Front Bazel	IP65, NEMA 4 rugged protection, metal front bazel
Display Type	23.8" with LED backlight
Brightness	250 nits
Display Color	16.7M
Resolution	1920x 1080 @ 60Hz
Viewing Angle (H/V)	160°/160°
Pixel Pitch	0.2745 x 0.2745 mm
Aspect Ratio	16:9
Contrast Ratio	1000:1
Response Time	25 ms
Touch Screen	
Type	Projective capacitive type
Active Range	528.04 x 297.46mm ±0.3mm
Transparency	85±5%
Operating Force	≤10g
Surface Hardness	≥6H(ASTM D3363, pressure 1N/45°)

Case	
Panel Material	Aluminum
Case Material	Iron
Color	Silver + white
Coating Requirement	Spray Paint
Main System	
CPU	Intel® LGA1151 Socket for Core I3,I5,I7 Pentium T Series processor
RAM	2* DDR4 SO-DIMM (Max 32GB)
Flash ROM	128MB SPI Flash ROM
Watchdog Timer	256 levels, 0~255 sec.
OS Support	Windows 10, Linux
Storage	
SATA	1* 2.5" SATA HDD
M.2 (M Key)	1 * M.2 Socket (2242 M Key)
Expansion	
M.2 (E Key)	1* M.2 E Key 2230 for WIFI or 3G/4G (Support CNVi)
I/O Connector	
I/O Ports and Switches	4* USB3.0, 2* USB2.0 4* RS232 1* HDMI 1* VGA 1* 8bit GPIO (5V) 1* Line-out, MIC 2* LAN (Intel® I211AT + I219LM Gigabit LAN) 1* Locking Jack 12~24V DC input 1* Power button
Power Input	
Input Power	AC version: 100~240V AC-DC 60W power adapter or DC version: 12V DC with over current protection fuse
Power Consumption	61.5W
Dimension	
Case Dimension	579.04*360.46*87.00mm
Certification	
Certification	CE, FCC, IP65(Front)-Option
Safety	
Shock	1ms duration
Vibration	5~500Hz/1Grms
Environment	
Temperature	Operating: -10 ~ 50° C Storage: -20 ~ 70° C
Warranty	
Warranty	2 Years Limited Warranty (Panel and Touch are only 1 Year Warranty)

1-3 I/O Outlets














Bottom View

Rear IO	Q'ty
DC-in	1
Power Button	1
VGA	1
HDMI	1
USB2.0	2
USB3.0	4
RJ-45	2
MIC	1
Line-Out	1
8-bit GPIO	1
RS232	4

1-4 Connector Pin Definition

(1) Connector Function

Icon	Name	Function
	DC-in Power Terminal Block	For user to connect compatible terminal power cables to provide power supply for the system.
	Power Button	Press to turn on/off the system.
	VGA Port	To connect display device that support VGA specification.
	HDMI Port	To connect display device that support HDMI specification.
	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 2.0 specification.
	COM Port	Mainly for user to connect external MODEM or other devices that supports Serial Communications Interface.
	RJ-45 LAN Port	This connector is standard RJ-45 LAN jack for Network connection.
	MIC Connector	User can connect microphone device to this port.
	Line-Out Connector	For user to connect external speaker, earphones, etc to transfer system audio output.
	GPIO Connector-Male	Male General Purpose Input Output port.

(2) I/O Connectors Pin Definition

VGA Port Connector

The pin assignment for VGA port is listed as follows:

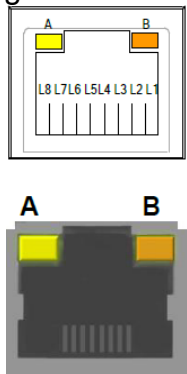


Pin No.	1	2	3	4	5
Definition	R	G	B	NC	GND
Pin No.	6	7	8	9	10
Definition	R-GND	G-GND	B-GND	+5V	GND
Pin No.	11	12	13	14	15
Definition	NC	SDA	H-SYN	V-SYN	SCL

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.

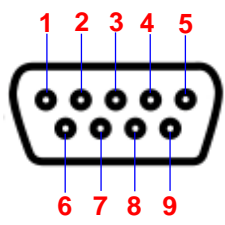
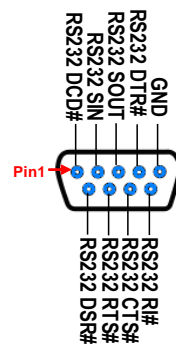
The pin assignment for RJ-45 Ethernet LAN connectors are listed as follows:



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)		

COM Port Connector

The pin assignment for RS-232 COM port is listed as follows:

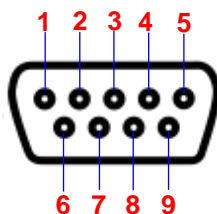



RS232 Mode

GPIO (9-pin Block): GPIO Port-Male

GPIO Port Connector

The pin assignment for GPIO connector is listed as follows:

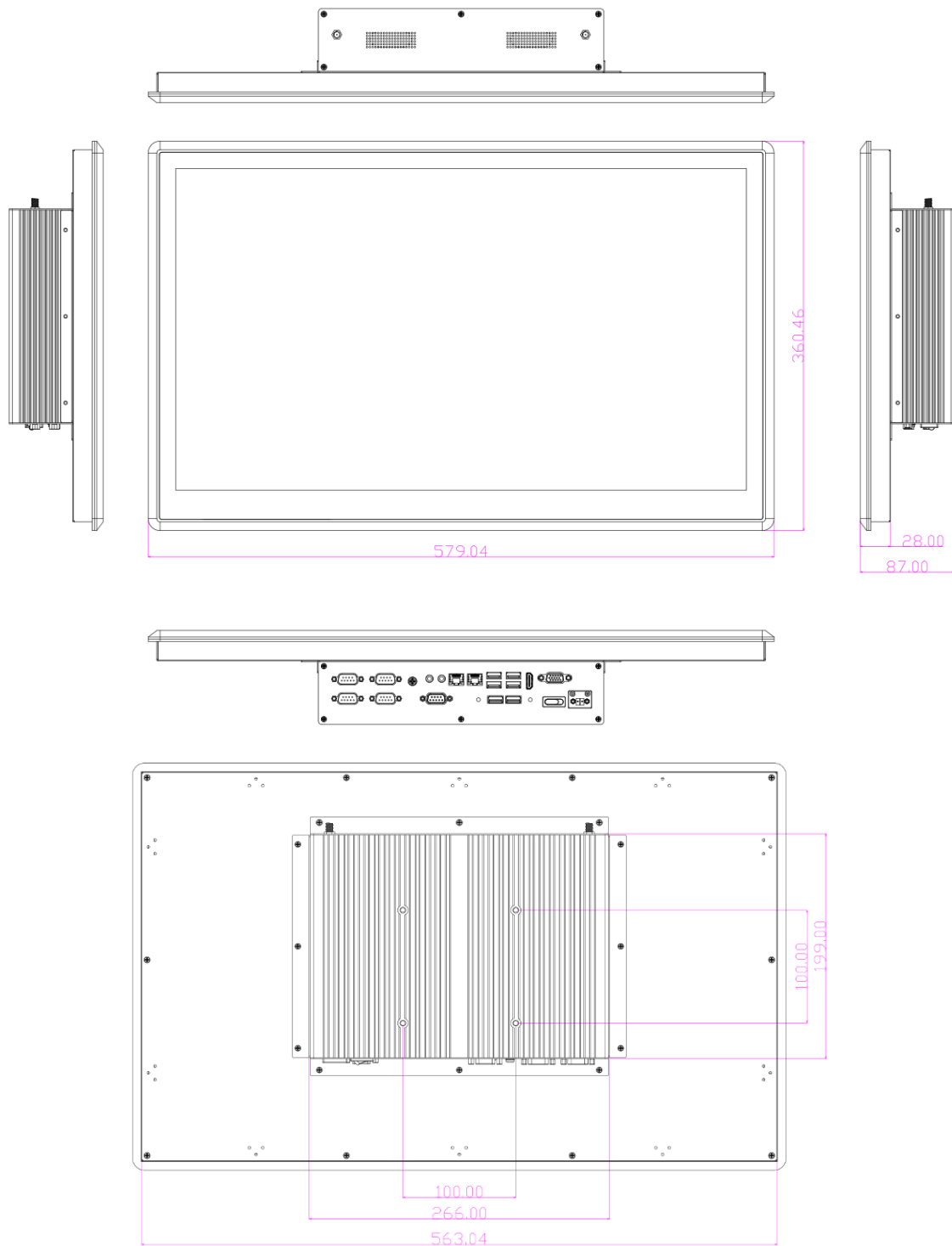


Pin No.	Definition
1	GPIO
2	GPIO
3	GPIO
4	GPIO
5	GND
6	GPIO
7	GPIO
8	GPIO
9	GPIO

Chapter 2

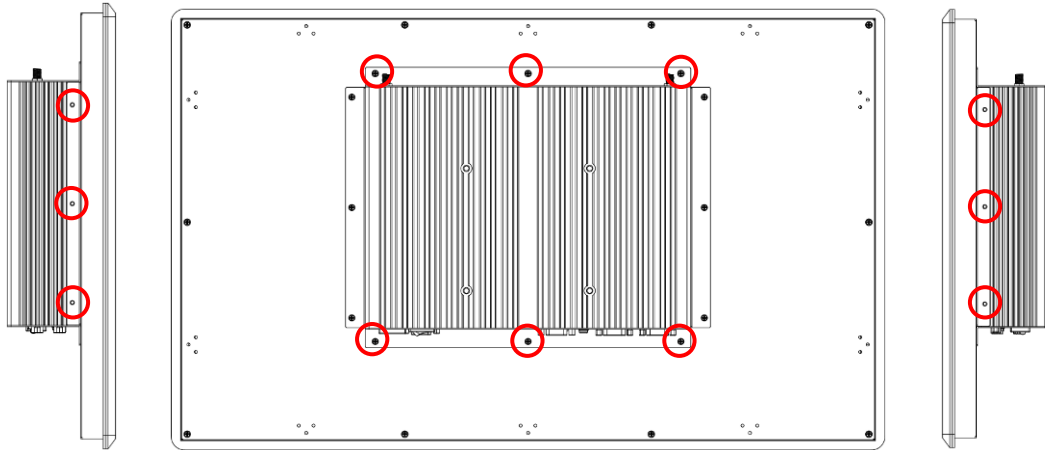
Hardware and Installation

2-1 Dimension and Outlines



** Measure Unit: mm.*

2-2 To Open the Chassis

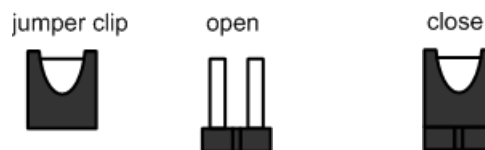


Use a screwdriver to unscrew the screws marked above that lock the back cover (see red circles). Remove them to open the chassis.

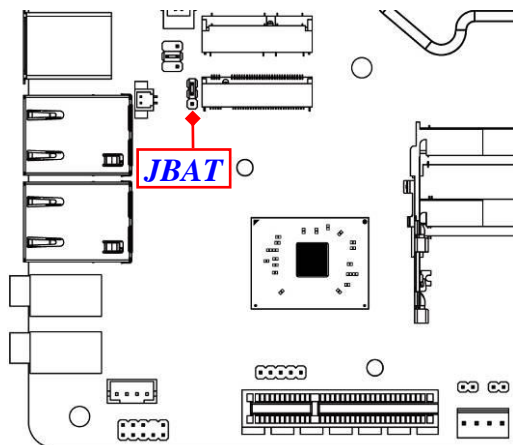
Notice: When lifting the cover up to open the chassis for further installation, see to it that the connecting cables are not unplugged. It is very important for the cables connected to their original places for normal functioning.

2-3 Jumper Settings

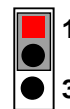
Jumper is a small component consisting of jumper clip and jumper pins. Install jumper clip on 2 jumper pins to close the pins. And remove jumper clip from 2 jumper pins to open the pins. The following diagram illustrates how to set up a jumper.



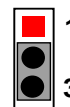
JBAT (3-pin): Clear CMOS RAM Settings



JBAT → Clear CMOS

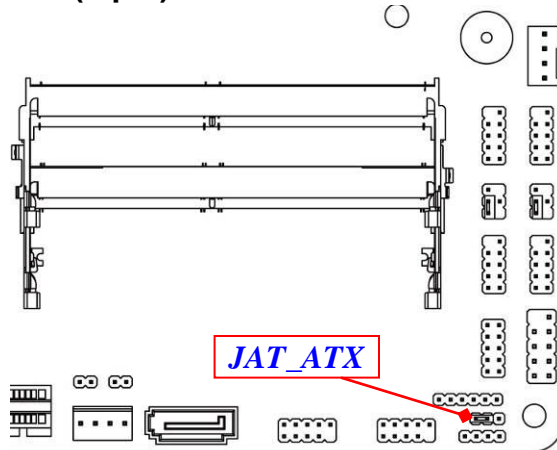


1-2 Closed: Normal(Default);

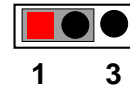


2-3 Closed: Clear CMOS Settings.

JAT_ATX(3-pin): ATX Mode/ AT Mode Select

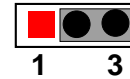


JAT_ATX→ATX/AT Mode Select



1 3

1-2 Closed: ATX Mode Selected;

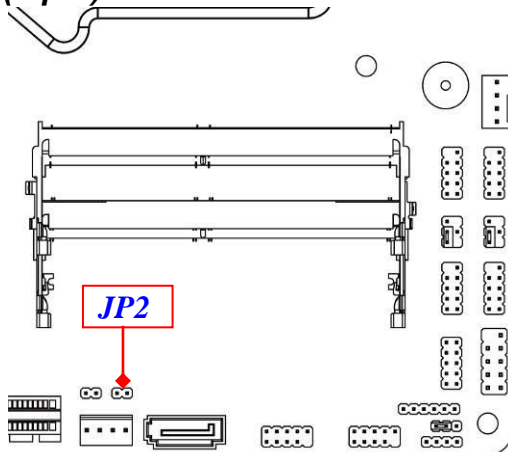


1 3

2-3 Closed: AT Mode Selected.

**ATX Mode Selected: Press power button to power on after power input ready;
AT Mode Selected: Directly power on as power input ready.*

JP2 (2-pin): ME Features Select



JP2→ME Features Select



Pin1

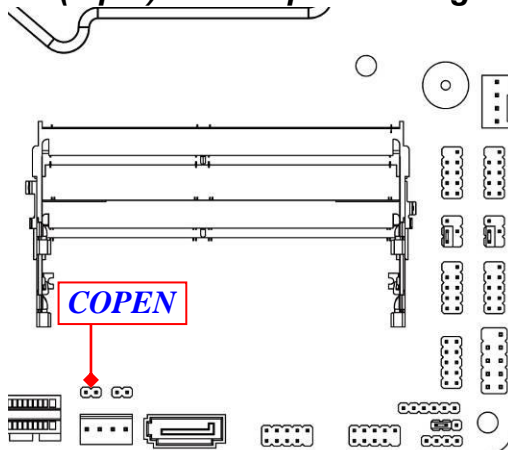
1-2 Open: Enable ME Features;



Pin1

1-2 Closed: Disable ME Features.

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



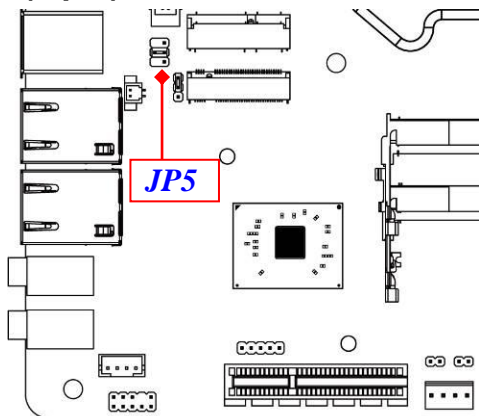
COPEN→Case Open Detection



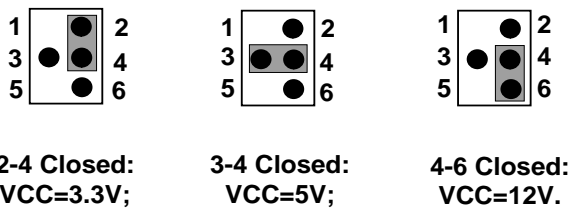
Pin1

Pin 1-2 Short: When Case open function pin short to GND, the Case open function was detected. When Used, needs to enter BIOS and enable 'Case Open Detect' function. In this case if your case is removed, next time when you restart your computer, a message will be displayed on screen to inform you of this.

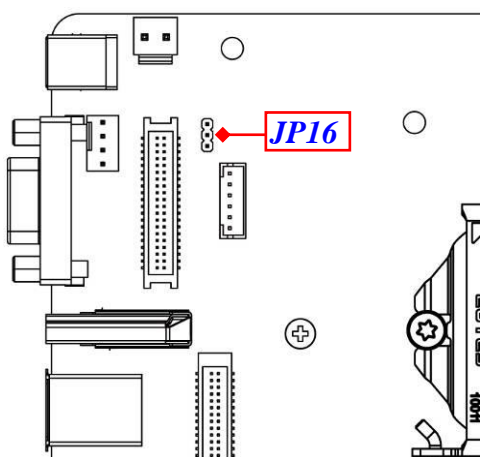
JP5 (4-pin): LVDS Panel Power VCC Select



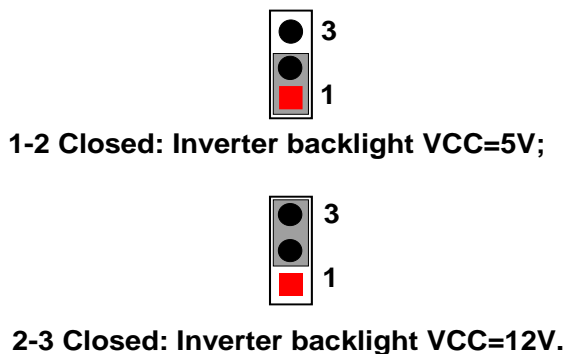
JP5→LVDS Panel Power VCC Select



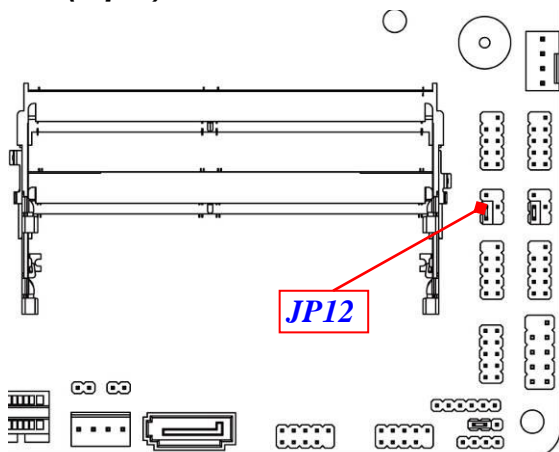
JP16 (3-pin): LVDS Inverter Backlight VCC Select



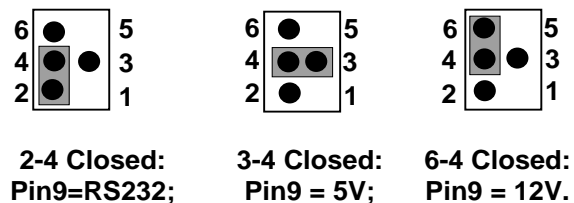
JP16→LVDS INVERTER Backlight VCC



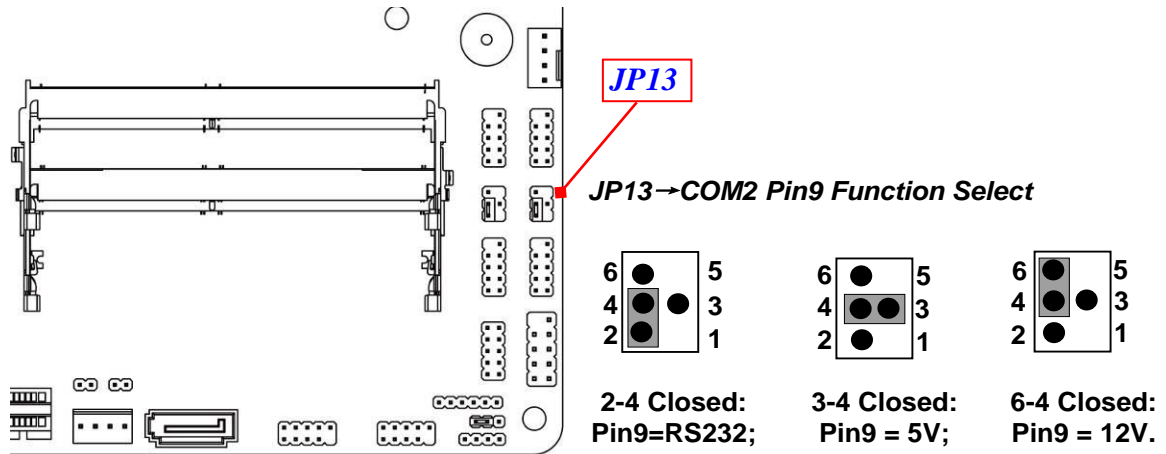
JP12 (4-pin): COM1 Pin9 Function Select



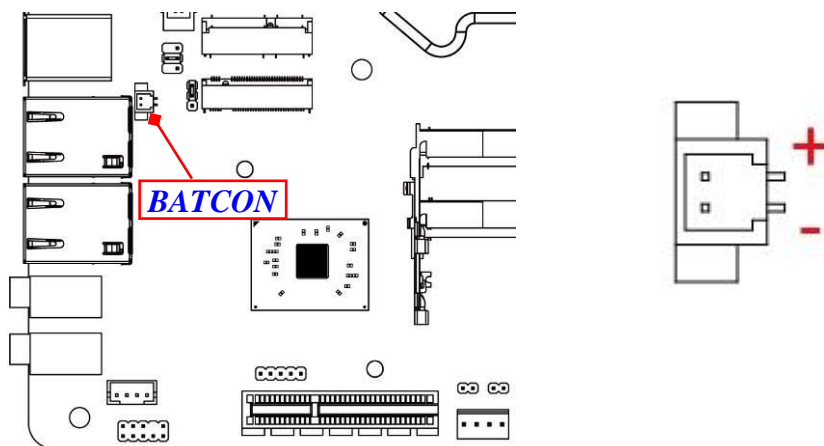
JP12→COM1 Pin9 Function Select



JP13 (4-pin): COM2 Pin9 Function Select



BATCON (2-pin): Battery Connector



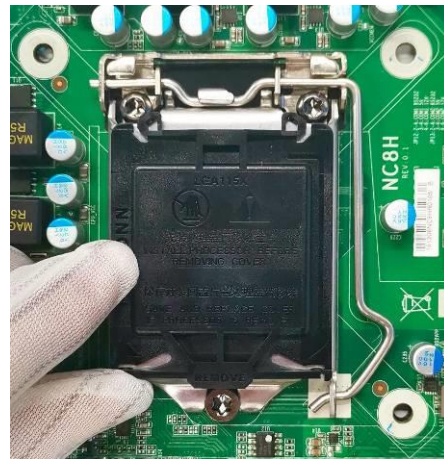
2-4 Hardware Installation

Remove the screws that lock the back cover to the system from the back side before hardware installation procedures (refer to 2-2).

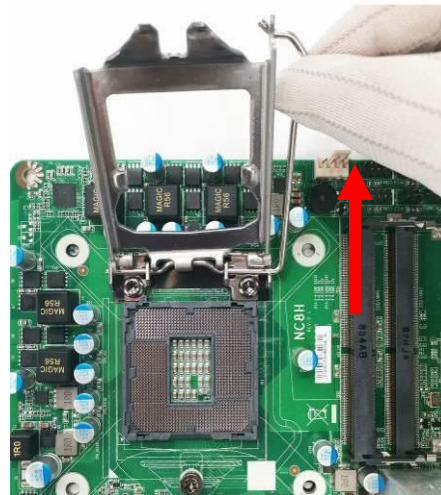
Notice: When lifting the cover up to open the chassis for further installation, see to it that the connecting cables are not unplugged. It is very important for the cables connected to their original places for normal functioning.

2-4-1 To Install CPU

Please refer to the following instructions and illustration to install compatible CPU. Before installation, **please refer to 2-2** to open the back cover from the system.



1. Find CPU socket on the board. Please make sure that CPU socket is facing towards you and the level is on your right hand side.
2. Remove the plastic protective cover from the socket (Put it to the original place if CPU is not installed. Do not touch the metal contact point of the CPU socket).



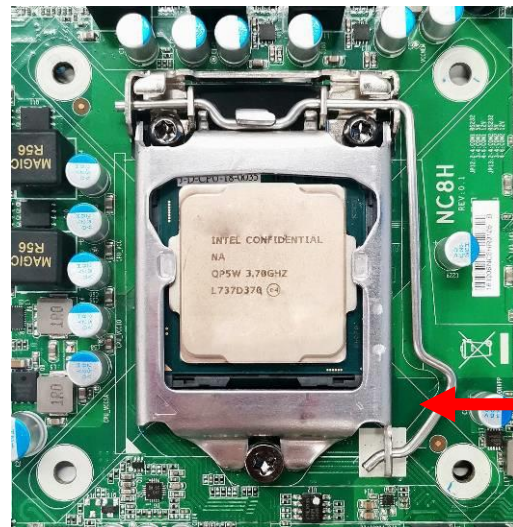
3. Press down the level and move it towards the right side to free it from the hook.
4. Open the level upwards about 135 degree and the metal protection plate will be pulled up at the same time.



5. Make sure that Pin-1 Golden Finger Indicator in the place as shown in the above photo and match the two alignment keys on the CPU with two points of the socket. CPU can only be correctly installed in this direction. Incorrect installation might cause damage to CPU.

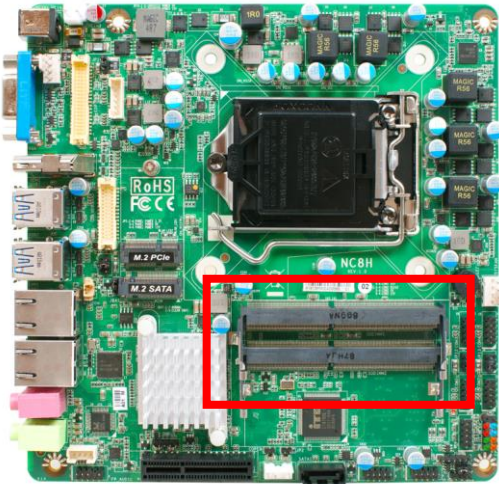


6. Put down the load plate in the direction shown 7. above.

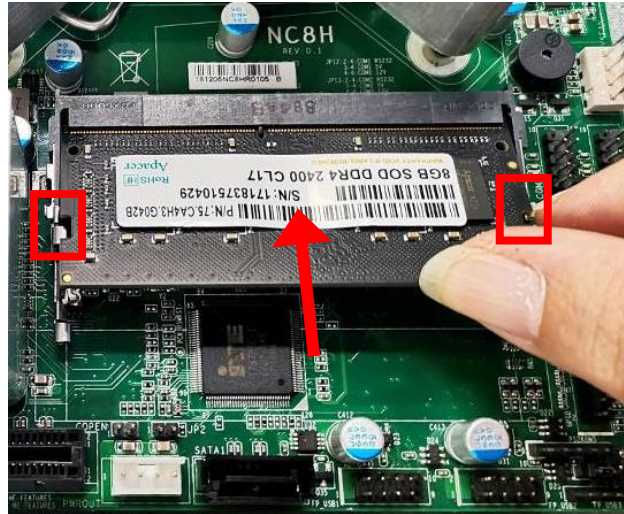


7. Press down the load level and move it leftwards to make sure it is locked under the notch.

2-4-2 To Install SO-DIMM



1. Find the SO-DIMM slot on the board for further installation.



2. Insert the gold-figure side of the compatible SO-DIMM into the slot and press down. The eject tabs will lock automatically if installed correctly.

2-4-3 To Install Wireless LAN Card

Please refer to the following instructions for the installation of the Wi-Fi card into M.2 PCIe slot.



1. Locate the M.2. PCIe, type-2230 slot on the board.



2. Remove the marked screw nut reserved for M.2 SATA card installation first.



3. The screw post located on the lower side is reserved for M.2 PCIe card.



4. Remove the screw post.



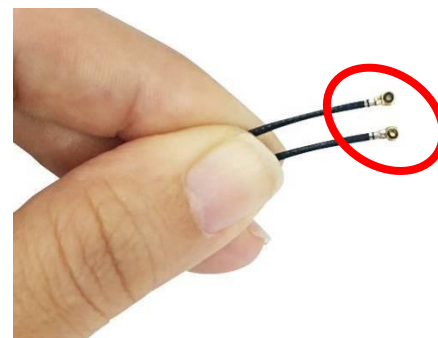
5. Insert the gold-figure side of compatible card into M.2. PCIe slot. See to it that the golden-figure side is fully inserted into the slot.



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



7. The metal hats on the end of the antenna string are sealed by acetate tape to avoid possible damage to the system.



8. Tear off the tape to find metal hats of Wi-Fi antenna strings.

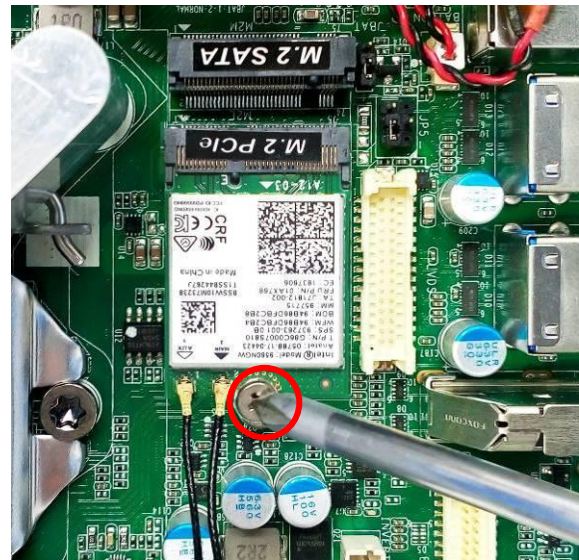
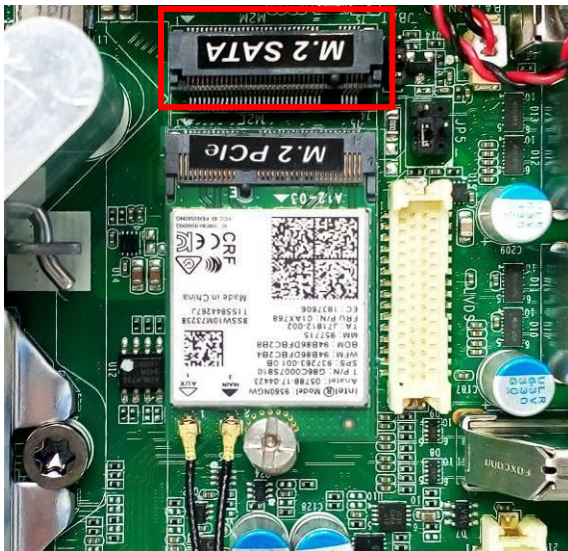


9. Press the metal hats of the antenna string ends to the antenna slots on the card as showed.
10. If you do not need to install M.2 SATA card, lock the previously removed screw to its original place.

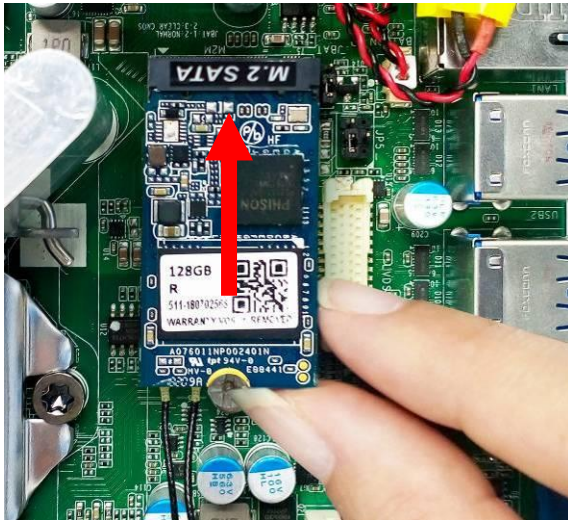
****Note:** Please connect the external Wi-Fi receiver antenna to the antenna head on the panel after all installation steps finished.

2-4-4 To Install M.2 SATA SSD Card

This M.2 Socket 3 connector supports compatible type-2242 SATA SSD module.



1. Locate the M.2 SATA type-2242 slot on the board.
2. Remove the marked screw fixed on the screw post for M.2 SATA card installation.

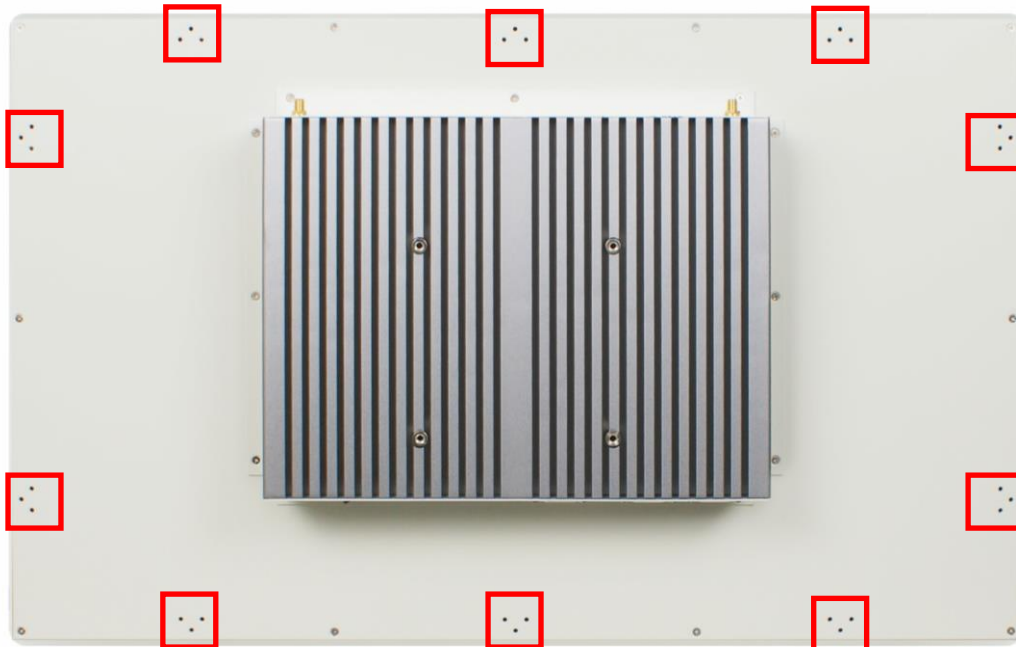


3. Align and insert corresponding M.2 SATA, type-2242 module, as the photo shows. See to it that the golden-figure side is fully inserted into the slot.

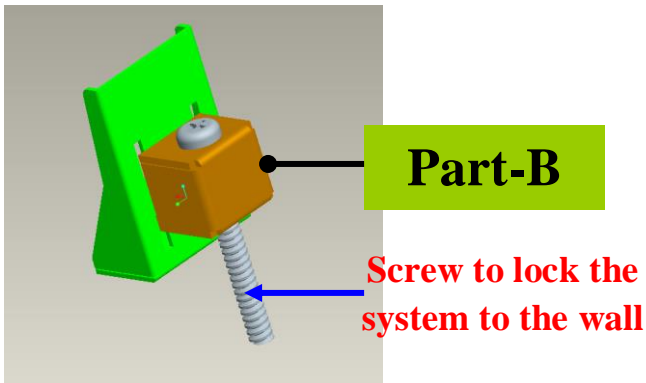
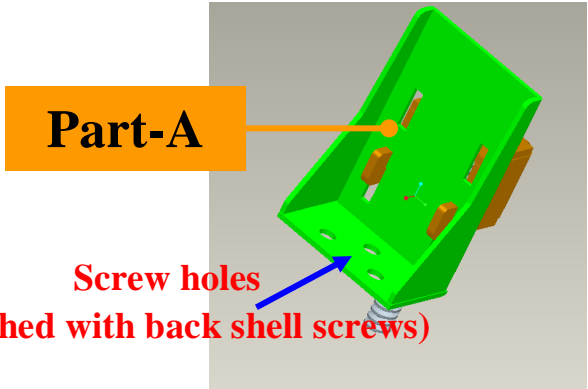


4. Tighten up the previously-removed screw to secure the module into the slot. Make sure not over-tighten the screw to avoid possible damage to the module.

2-4-5 To Install Optional Wall Mount Fixing Parts

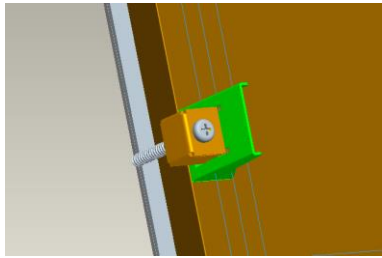


1. There are 8 sets of screw holes on the back shell reserved for wall mount fixing parts installation, as the marked frames above show.



2. **Part-A** of wall mount fixing part. Align the screw holes of **Part-A** to corresponding screws of the back shell and then lock it with compatible screws.

3. **Part-B** of wall mount fixing part. Insert the edges of **Part-B** into corresponding slots of the **Part-A** until they matched.



4. Make sure the fixed part is installed in the way the photo shows, with protruding tips upwards.

5. Tightening up the screw so that the fixed part can be fitted into the slots tightly and lock the system into pre-punched wall holes. Install other fixed parts to the system in the same way.

***Note:1. Fixed parts are only optional for specific models. Please refer to the actual product for specification; 2. The photos in the manual are for illustration purpose only. If there are any differences between the photos and the actual product, please refer to the actual product.**

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.

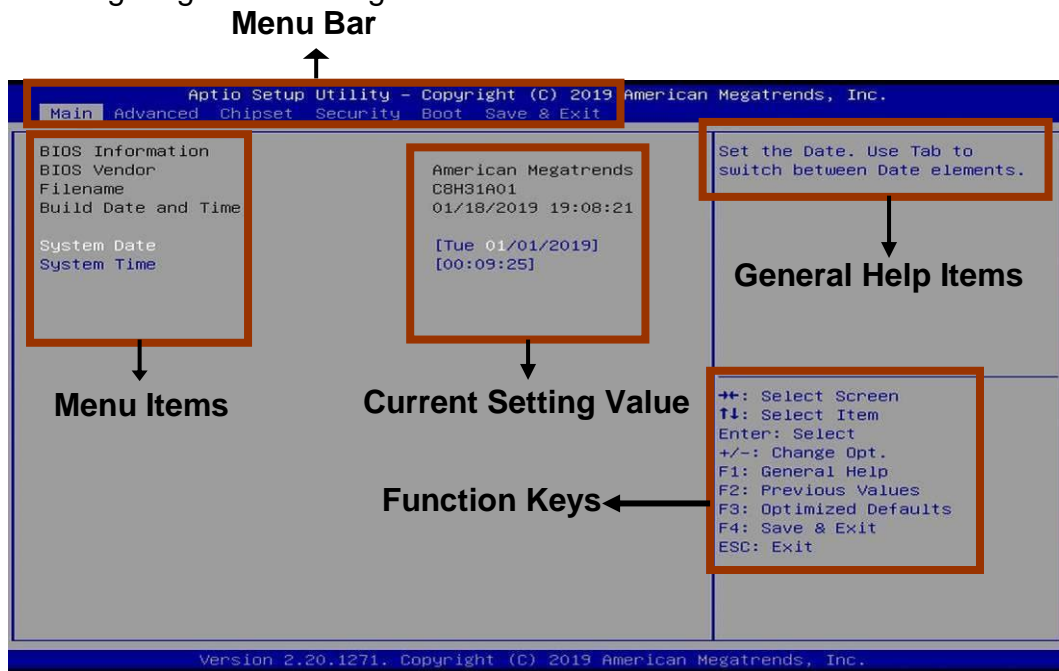
3-1 Entering Setup

Power on the computer and by pressing 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 **** 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 exit from 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

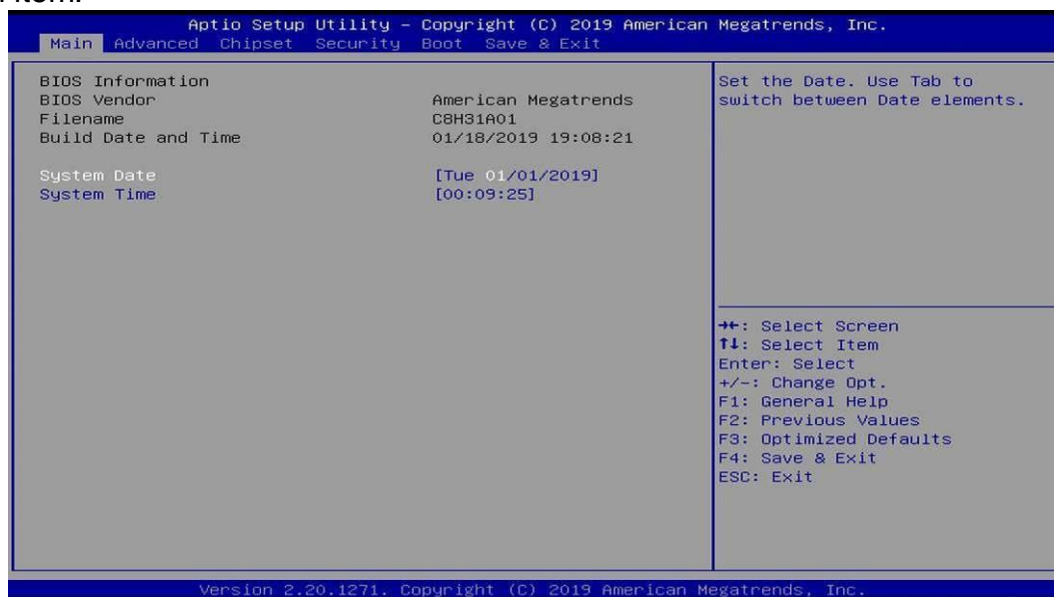
There are six menu bars on top of BIOS screen:

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.



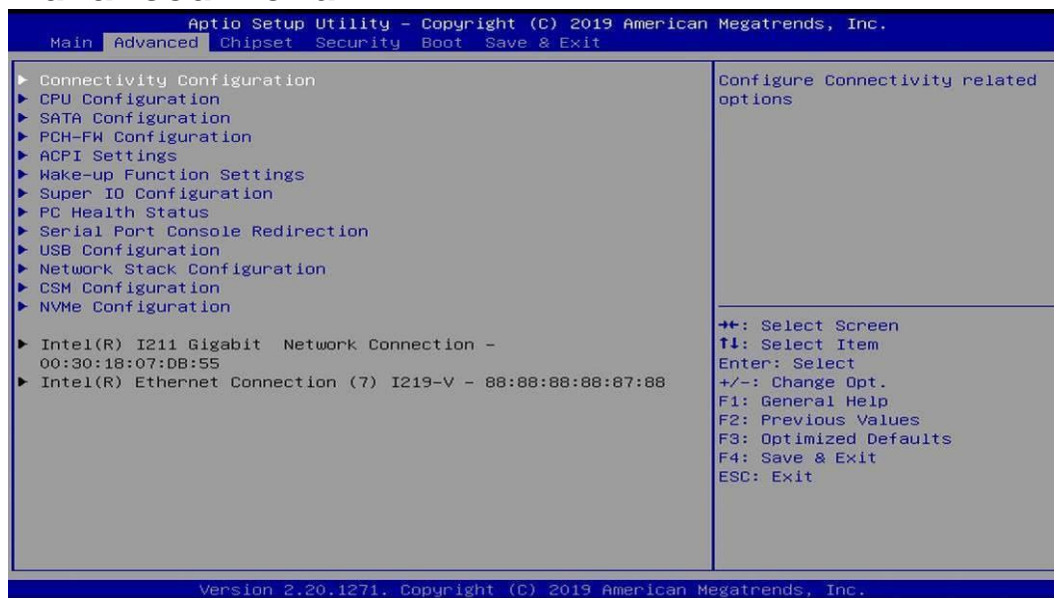
System Date

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



▶ **Connectivity Configuration**

Use this item to configure Connectivity related options. Press [Enter] to make settings for the following sub-items:

CNVi Configuration

CNVi Mode

This option configures Connectivity.

The optional settings: [Disabled Integrated]; [Auto Detection].

[Auto Detection] means that if Discrete Solution is discovered it will be enabled by default. Otherwise Integrated Solution (CNVi) will be enabled;

[Disabled Integrated] disables Integrated Solution.

▶ **CPU Configuration**

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

Hyper-Threading

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

When set as [Disabled] only one thread per enabled core is enabled.

[Enabled]: for Windows and Linux (OS optimized for Hyper-Threading Technology).

[Disabled]: for other OS (OS optimized not for Hyper-Threading Technology).

**Note: 'Hyper-Threading' item may or may not show up, depending on different CPU.*

Intel (VMX) Virtualization Technology

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

When set as [Enabled], a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Intel(R) SpeedStep(tm)

This item allows more than two frequency ranges to be supported.

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

C states

Use this item to enable or disable CPU power management.

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

When set as [Enabled], it allows CPU to go to C states when it is not 100% utilized.

Turbo Mode

Use this item to enable or disable Turbo Mode.

**Note: This item might not be available depending on configuration.*

▶ **SATA Configuration**

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

SATA Configuration

SATA Controller(s)

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

When set as [Enabled], user can make further settings in the following items:

SATA Mode Selection

The default setting is: [AHCI].

SATA1

Port

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

Use this item to enable or disable device connected respective port.

Hot Plug

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

M.2

Port

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

Use this item to enable or disable M2M port.

▶ **PCH-FW Configuration**

Press [Enter] to view ME information and make settings in the following sub-item:

▶ **Firmware Update Configuration**

Use this item to configure Management Engine Technology parameters.

Press [Enter] to make settings for 'ME FW Image RE-Flash'.

ME FW Image Re-Flash

Use this item to enable or disable ME FW Image Re-Flash function.

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

** In the case that user needs to update ME firmware, user should set 'ME FW Image Re-Flash' as [Enabled], save the settings and exit. The system will turn off and reboot after 4 seconds. If the user goes to BIOS screen again will find this item is set again as [Disabled], but user can still re-flash to update firmware next time.*

▶ **ACPI Settings**

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

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-items:

Wake-up System with Fixed Time

Use this item to enable or disable system wake on alarm event.

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

When set as [Enabled], system will wake on the hour/min/sec specified.

Wake-up System with Dynamic Time

Use this item to enable or disable system wake on alarm event.

System will wake on the current time + Increase minute(s).

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

When set as [Enabled], system will wake on the current time + increased minute(s).

PS2 KB/MS Wake-up

Use this item to enable or disable PS2 KB/MS wake-up from S3/S4/S5.

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

**Note: This function is supported when 'ERP Support' is set as [Disabled].*

USB S3/S4 Wake-up

Use this item to enable or disable USB S3/S4 wakeup. This function is only supported when ERP function is disabled.

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

**Note: This function is supported when 'ERP Support' is set as [Disabled].*

USB S5 Power

Use this item to enable or disable USB power after power shutdown.

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

**Note: This function is supported when 'ERP Support' is set as [Disabled].*

▶ **Super I/O Configuration**

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

Super IO Configuration

ERP Support

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

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

▶ **Serial Port 1 Configuration/ Serial Port 2 Configuration/ Serial Port 3 Configuration/ Serial Port 4 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: [Disabled]; [Enabled].

Change Settings

Use this item to select an optimal setting for super IO device. Changing setting may conflict with system resources.

WatchDog Reset Timer

Use this item to enable or disable WDT reset function.

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

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

WatchDog Reset Timer Value

User can select a value in the range of [10] to [255] seconds when 'WatchDog Reset Timer Unit' set as [Sec]; or in the range of [1] to [255] minutes when 'WatchDog Reset Timer Unit' set as [Min].

WatchDog Reset Timer Unit

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

Case Open Detect

Use this item to detect case has already open or not, show message in POST.

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

When set as [Enabled], system will detect if COPEN has been short or not (*refer to Page 8 COPEN jumper for case open detection*); if COPEN is short, system will show Case Open Message during POST.

▶ **PC Health Status**

Press [Enter] to view current hardware health status, or make further settings in 'SmartFAN Configuration'.

▶ **SmartFAN Configuration**

Press [Enter] to make settings for SmartFan Configuration:

SmartFAN Configuration

CPUFAN / SYSFAN Smart Mode

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

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

CPUFAN / SYSFAN Full-Speed Temperature

Use this item to set CPUFAN/SYSFAN full speed temperature. Fan will run at full speed when above this pre-set temperature.

CPUFAN / SYSFAN Full-Speed Duty

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

CPUFAN / SYSFAN Idle-Speed Temperature

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

CPUFAN / SYSFAN Idle-Speed Duty

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

▶ **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: [ANSI]: Extended ASCII char set; [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.

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 even; [Odd]: parity bit is 0 if 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 setting 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].

Putty KeyPad

Use this item to select FunctionKey and KeyPad on Putty.

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

Legacy Console Redirection

► Legacy Console Redirection Settings

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

Legacy Console Redirection Settings

Redirection COM Port

For user to select a COM port to display redirection of legacy OS and Legacy OPROM messages.

The optional settings are: [COM1]; [COM1(Pci Bus0, Dev0, Func0) (Disabled)].

Resolution

This item is for user to select the number of Rows and Columns supported redirection.

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

Redirect After POST

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

When [**Bootloader**] is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When [**Always Enabled**] is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is

set to [Always Enabled].

**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 optional settings: [COM1]; [COM1(Pci Bus0, Dec0,Func0) (Disabled)].

Terminal Type

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

[VT-UTF8] is the preferred terminal type for out-of-band management. The next best choice is [VT100+] and them [VT100]. See above, in Console Redirection Settings page, for more help with Terminal Type/Emulation.

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].

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.*

▶ **USB Configuration**

Use this item to set USB Configuration Parameters.

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].

USB Mass Storage Driver Support

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

USB hardware delay and time-out:

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.

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

[**Auto**] uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor. Select [**Manual**] you can set value for the following sub-item: **Device Power-up delay in seconds**, the delay range in from 1 to 40 seconds, in one second increments.

▶ **Network Stack Configuration**

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

Network Stack

Use this item to enable or disable UEFI Network Stack.

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

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 option 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. Use either +/- or numeric keys to set the value.

Media Detect Count

Use this item to set number of times presence of media will be checked. Use either +/- or numeric keys to set the value.

▶ **CSM Configuration**

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

CSM Support

Use this item to enable or disable CSM Support

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

Option ROM execution

Network

This option controls the execution of UEFI and Legacy PXE OpROM.

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

Storage

This option controls the execution of UEFI and Legacy Storage OpROM.

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

Other PCI devices

This item is for PCI devices other than Network, Mass storage or video defines which OpROM to launch.

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

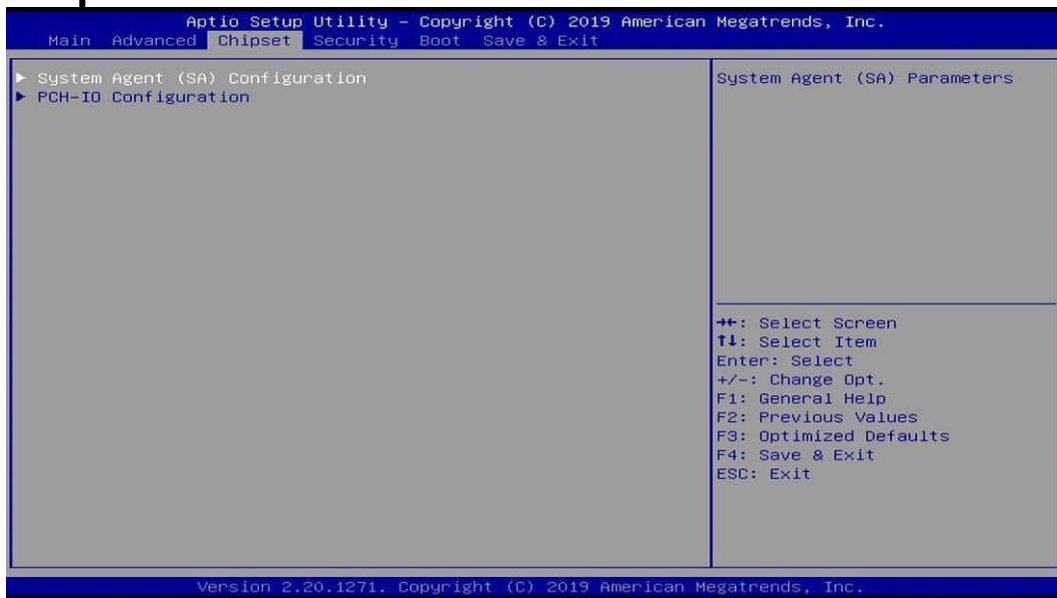
▶ NVMe Configuration

Press [Enter] to check NVMe controller and driver information.

▶ Intel(R) I211 Gigabit Network Connection- XX:XX:XX:XX:XX:XX/ Intel(R) Ethernet Connection (7) I219-V- XX:XX:XX:XX:XX:XX

These items show current network brief information.

3-8 Chipset Menu



▶ System Agent (SA) Configuration

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

VT-d

Use this item to enable or disable VT-d capability.

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

▶ Memory Configuration

Press [Enter] to view brief information for the working memory module.

▶ Graphics Configuration

Press [Enter] to make further settings for Graphics Configuration.

Graphics Configuration

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.

The optional settings are: [VBIOS Default]; [HDMI]; [VGA]; [LVDS]; [eDP].

***Note:** In the case that the 'Primary IGFX Boot Display' is select as [[HDMI],[VGA] [LVDS] or [eDP], user can make further settings in 'Secondary IGFX Boot Display':

Secondary IGFX Boot Display

Use this item to select the secondary Display device.

The optional settings are: [Disabled]; [HDMI]; [VGA] and [LVDS].

Aperture Size

Use this item to select the Aperture Size. Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.

The optional settings are: [128MB]; [256MB]; [512MB]; [1024MB]; [2048MB].

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: [32M]; [64M].

DVMT Total Gfx Mem

Use this item to select DVMT 5.0 Total Graphic Memory size used by the Internal Graphics Device.

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

eDP Backlight Control

Use this item to select Back Light Control settings.

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

LVDS Panel Type

Use this item to manually select LCD panel type.

The optional setting are: [800x 480 18bit Single]; [800x 600 18bit Single]; [800x 600 24bit Single]; [1024 x 600 18bit Single]; [1024 x 768 18bit Single]; [1024 x 768 24bit Single]; [1280 x 768 24bit Single]; [1280 x 800 18bit Single]; [1280 x 800 24bit Single]; [1366 x 768 18bit Single]; [1366 x 768 24bit Single]; [1440 x 900 18bit Dual]; [1440 x 900 24bit Dual]; [1280 x 1024 24bit Dual]; [1680 x 1050 24bit Dual]; [1920 x 1080 24bit Dual].

▶ **PCH-IO Configuration**

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

PCH-IO Configuration

HD Audio

This item controls detection of the HD-Audio device.

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

[**Disabled**]: HDA will be unconditionally disabled.

[**Enabled**]: HAD will be unconditionally enabled.

Onboard Lan1 Controller

Use this item to enable or disable corresponding onboard NIC device or controller.

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

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

Wake on LAN Enable

Use this item to enable or disable integrated LAN to wake the system.

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

Onboard Lan2 Controller

Use this item to enable or disable corresponding onboard NIC device or controller.

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

M2E Slot

Use this item to enable or disable M2E slot PCI Express root port function.

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

PCIE1 Slot

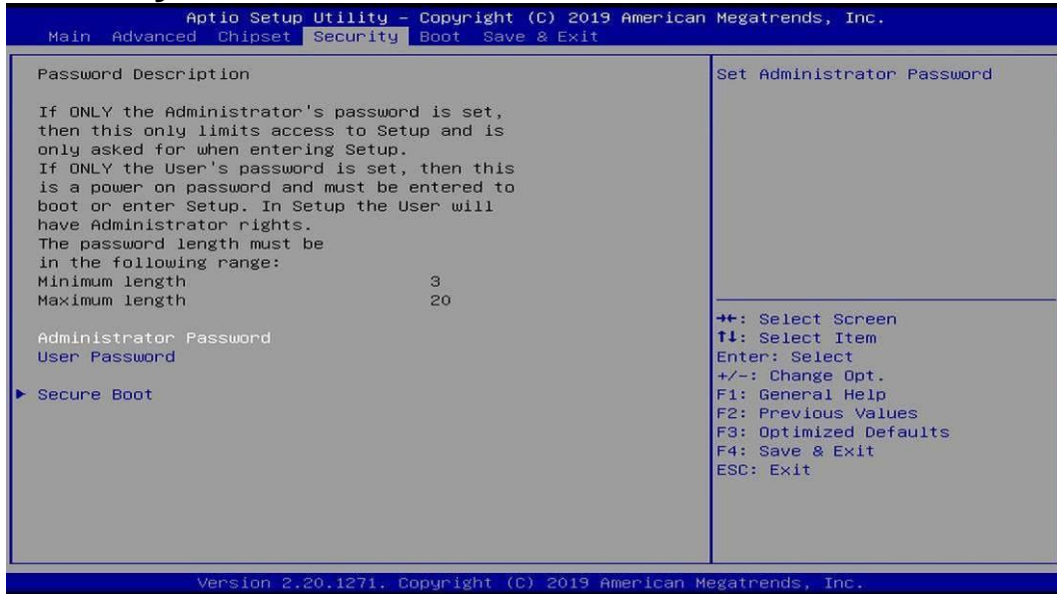
Use this item to enable or disable PCIE1 slot PCI Express root port function.
The optional settings are: [Disabled]; [Enabled].

State After G3

Use this item to specify what state to go to when power re-applied after a power failure (G3 state).

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

3-9 Security Menu



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

Administrator Password

If there is no password present on system, please press [Enter] to create new administrator password. If password is present on system, please press [Enter] to verify old password then to clear/change password. Press again to confirm the new administrator password.

User Password

If there is no password present on system, please press [Enter] to create new administrator password. If password is present on system, please press [Enter] to verify old password then to clear/change password. Press again to confirm the new administrator password.

▶ Secure Boot

Press [Enter] to make customized secure settings:

Secure Boot

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

Secure Boot feature is active if Secure Boot is enabled, Platform Key (PK) is enrolled and the system is in User mode. The mode change requires platform reset.

Secure Boot Mode

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

Set UEFI Secure Boot Mode to Standard mode or Custom mode. This change is effective after save. After reset, this mode will return to Standard mode.

In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

**When set as [Custom], user can make further settings in the following items that show up:*

▶ **Restore Factory Keys**

Use this item to force system to User Mode, to install factory default Secure Boot key databases.

▶ **Reset To Setup Mode**

Use this item to delete all Secure Boot Key databases from NVRAM.

▶ **Key Management**

This item enables experienced users to modify Secure Boot variables, which includes the following items:

Factory Key Provision

This item is for user to install factory default secure boot keys after the platform reset and while the system is in Setup mode.

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

▶ **Restore Factory Keys**

Use this item to force system into User Mode. Install factory default Secure Boot Key databases.

▶ **Reset to Setup Mode**

Use this item to delete all Secure Boot key databases from NVRAM.

▶ **Export Secure Boot variables**

Use this item to copy NVRAM content of Secure Boot variables to files in a root folder on a file system device.

▶ **Enroll Efi Image**

This item allows the image to run in Secure Boot Mode.

Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).

Device Guard Ready

▶ **Remove 'UEFI CA' from DB**

Device Guard ready system must not list 'Microsoft EFI CA' Certificate in Authorized Signature database (db).

▶ **Restore DB defaults**

Use this item to restore DB variable to factory defaults.

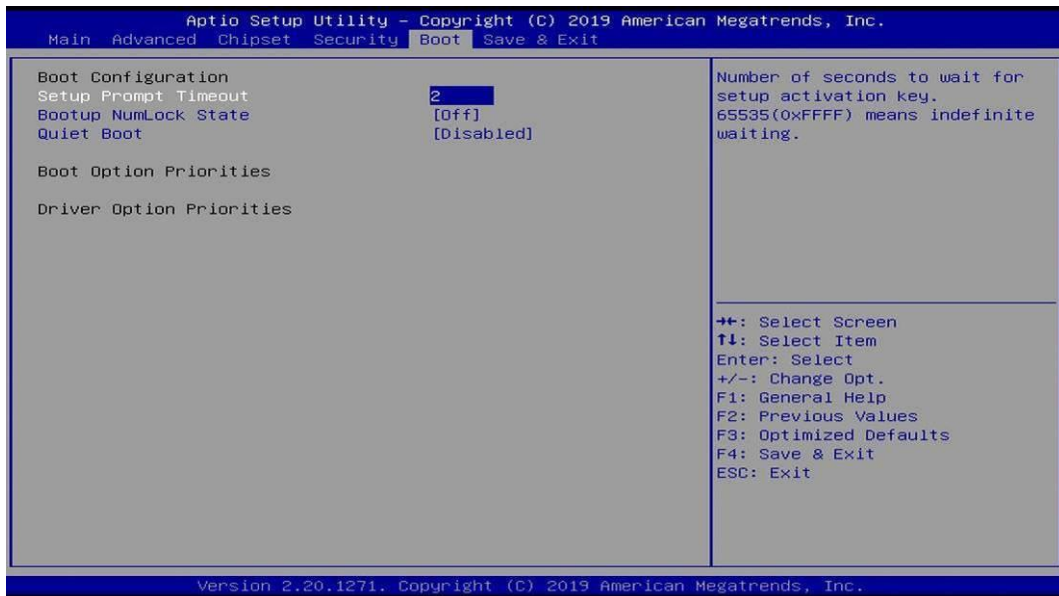
Secure Boot Variable/Size/Keys/Key Source

▶ **Platform Key (PK)/Key Exchange Keys/Authorized Signature/Forbidden Signature/ Authorized TimeStamps/OS Recovery Signatures**

Use this item to enroll Factory Defaults or load the keys from a file with:

1. Public Key Certificate in:
 - a) EFI_SIGNATURE_LIST
 - b) EFI_CERT_X509 (DER encoded)
 - c) EFI_CERT_RSA2048 (bin)
 - d) EFI_CERT_SHAXXX (bin)
 2. Authenticated UEFI Variable
 3. EFI PE/COFF Image (SHA256)
- Key Source: Factory, External, Mixed.

3-10 Boot Menu



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

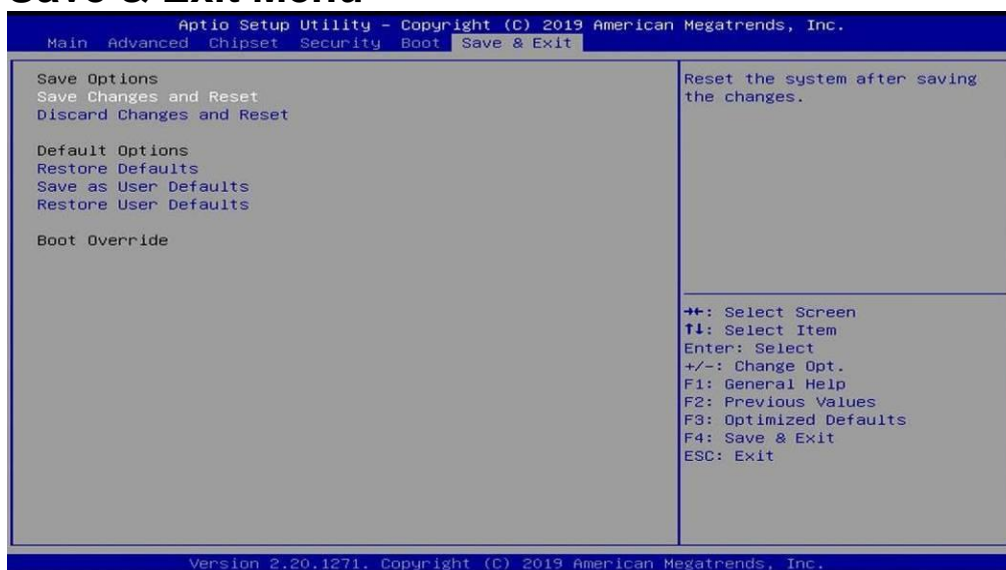
The optional settings are: [Disabled]; [Enabled].

Boot Option Priorities

Boot Option #1/ Boot Option #2...

Use this item to decide system boot order from available options.

3-11 Save & Exit Menu



Save Options

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.

Default Options**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 the user defaults to all the setup options.

Boot Override**UEFI: Built-in EFI Shell**

Press this item and a dialogue box shall appear to ask if user wish to save configuration and reset.

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 device 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.