Panel PC

User's Manual

NO. G03-PCNP691CFP-F

Manual Revision: 2.0

Release Date：December 13, 2022

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

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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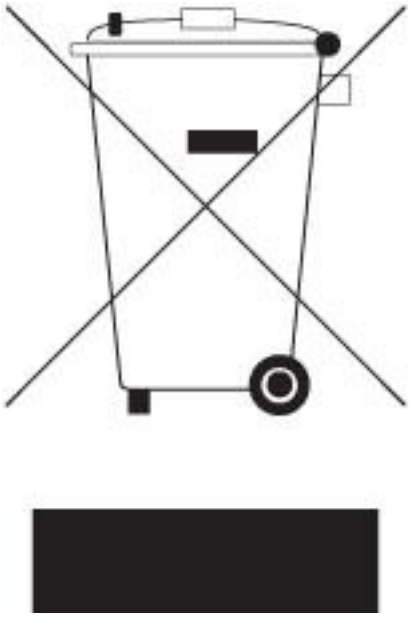
Package Contents

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.

- 8.0” 400 nits high brightness TFT LCD with LED backlight
- 10-points Multi Capacitive Touch
- Enclosed in robust aluminum casings
- A true Flat, easy-to-clean front surface with edge-to-edge design
- USB 3.0 Support Lock Device
- Front IP65 for protection against water and dust
- 12V DC-input Support, with EOS, OVP design
- Onboard Intel® Apollo Lake Series Processor, with low power consumption and high performance
- Support 1* DDR3L 1866 MHz SO-DIMM, up to 8GB
- Support HDMI video output
- Onboard 1* SATAIII port &1* M.2 Socket 3 slot for M-Key type 2242 SATA SSD
- Onboard 1* full-size Mini-PCIE slot & 1* SIM card slot
- Support 4G SIM card socket
- Support 802.11 b/g/n WiFi communication
- Support RJ-45 gigabit Ethernet LAN port
- Support USB 3.0 data transport demand
- Support RS232/422/485 serial port
- Compliance with ErP standard
- Support Watchdog function
- Solution for IoT, Machine Control & Intelligent Home

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 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.

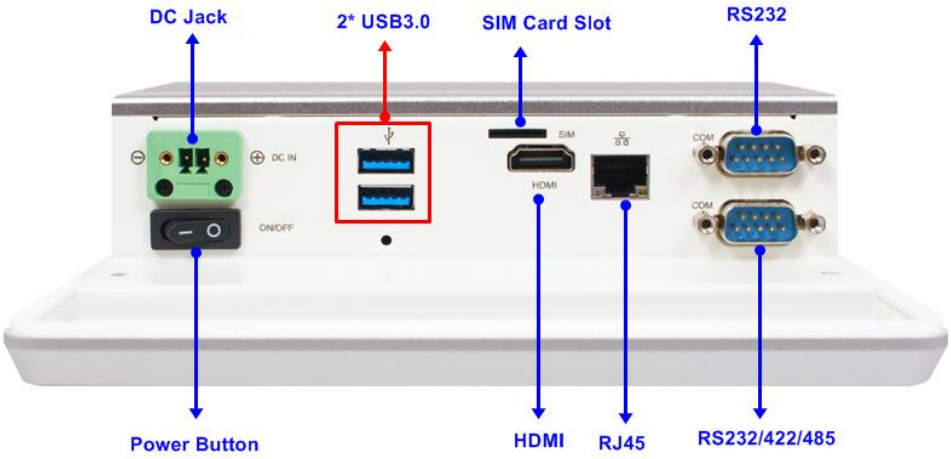
- ***CPU Usage:*** The CPU Usage diagram shows a beautiful data curve that indicates a pretty low CPU usage percentage for video playback of different formats.
- ***dB Value:*** The design of the system takes into consideration the needed quiet operating environment and the average dB value is below 26 under normal operation to ensure the tranquility.

1-2 Specifications

Display	
Front Bezel	IP65, NEMA 4 rugged protection, metal front bezel
Display Type	8.0" with LED Backlight
Brightness (cd/m²)	400 nits
Display Color	16.7M display color
Resolution	1024 x 768 @60Hz
Viewing Angle (H/V)	160°/160°
Pixel Pitch	0.158 x 0.158mm
Aspect Ratio	4:3
Contrast Ratio	700:1
Response Time	30 ms
Touch Screen	
Type	Projected capacitive type
Active Range	163.05 x 122.54mm ±0.2mm
Transparency	≧85%
Operating force	≦ 50g
Surface Hardness	≧ 6H(JIS-5400)
Glass Haze Value	≦ 3%
CASE	
Panel Material	Aluminum
Case Material	Iron
Color	Silver and White
Coating Requirement	Spray Paint
Main System	
CPU	Intel® Apollo Lake N3350 1.1GHz/DC processor
RAM	Support 1* DDR3L SO-DIMM (Max 8GB)
Flash ROM	128MB SPI Flash ROM
Watchdog Timer	256 levels, 0~255 sec.
OS Support	Windows 10/Linux
Storage	
M.2 M Slot	1 * M.2 M key (2242)

Expansion	
Mini-PCIE Slot	1* Mini PCIe for WIFI or 3G/4G
I/O Connector	
I/O Ports & Switches	1* 12V DC input Locking Jack 1* Power button 2* USB3.0 1* SIM card slot 1* HDMI 1* RJ-45 LAN GbE (Realtek® RTL8111H) 1* RS232/422/485 + 1* RS232
Power	
Power Input	AC version: 100~240V AC-DC 60W power adapter or DC version: 12VDC with over current protection fuse
Power Consumption	13W
Dimensions	
Case Dimensions	199.05 * 158.54 * 57.70mm
Certification Compliance	
Certifications	CE, FCC, IP65(Front)-Option
Environment	
Temperature	Operating: -10°C ~ 50°C
	Storage: -20°C ~ 70°C
Safety	
Shock	1ms duration
Vibration	5~500Hz/1Grms
Warranty	
Warranty	2 Years Limited Warranty（Panel and Touch is only Warranty 1 Year）

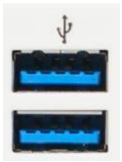
1-3 I/O Outlets



Rear IO	Q'ty
DC-in Jack	1
Power Button	1
USB3.0	2
SIM Card Slot	1
HDMI	1
RJ-45	1
RS232/422/485	1
RS232	1

1-4 Connector Pin Definition

(1) Connector Function

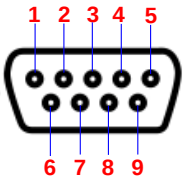
Icon	Name	Function
	**DC-in Power Connector**	For user to connect compatible terminal power block to provide power supply for the system.
	**Power Button**	Press to turn on/off the system.
	**USB 3.0 Port**	To connect USB keyboard, mouse or other devices compatible with USB specification. USB 3.0 ports supports up to 5Gbps data transfer rate.
	**SIM Card Slot**	For user to install compatible SIM card.
	**HDMI Port**	To connect display device that support HDMI specification.
	**RJ-45 LAN Port**	This connector is standard RJ-45 LAN jack for Network connection.
	**COM Port**	Mainly for user to connect external MODEM or other devices that supports Serial Communications Interface.

(2) I/O Connectors Pin Definition

COM Port Connector

RS232/422/485 Serial Port is expanded from COM1 header; RS232 Serial port is from COM2 serial port header.

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

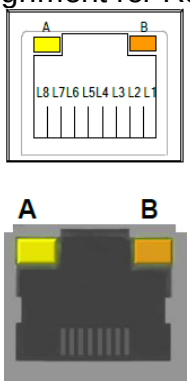
For RS232/422/485 COM port in normal settings can functions as RS232 port. With compatible COM cable they can function as RS422 or RS 485 port as well. User also needs to go to BIOS to set **'*Transmission Mode Select*'** for COM1 header (refer to Page 20) at first, before using specialized cable to connect different pins of this port.

Note: in the case that the COM port marked as RS232 port, it can not support RS422/485 function.

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:

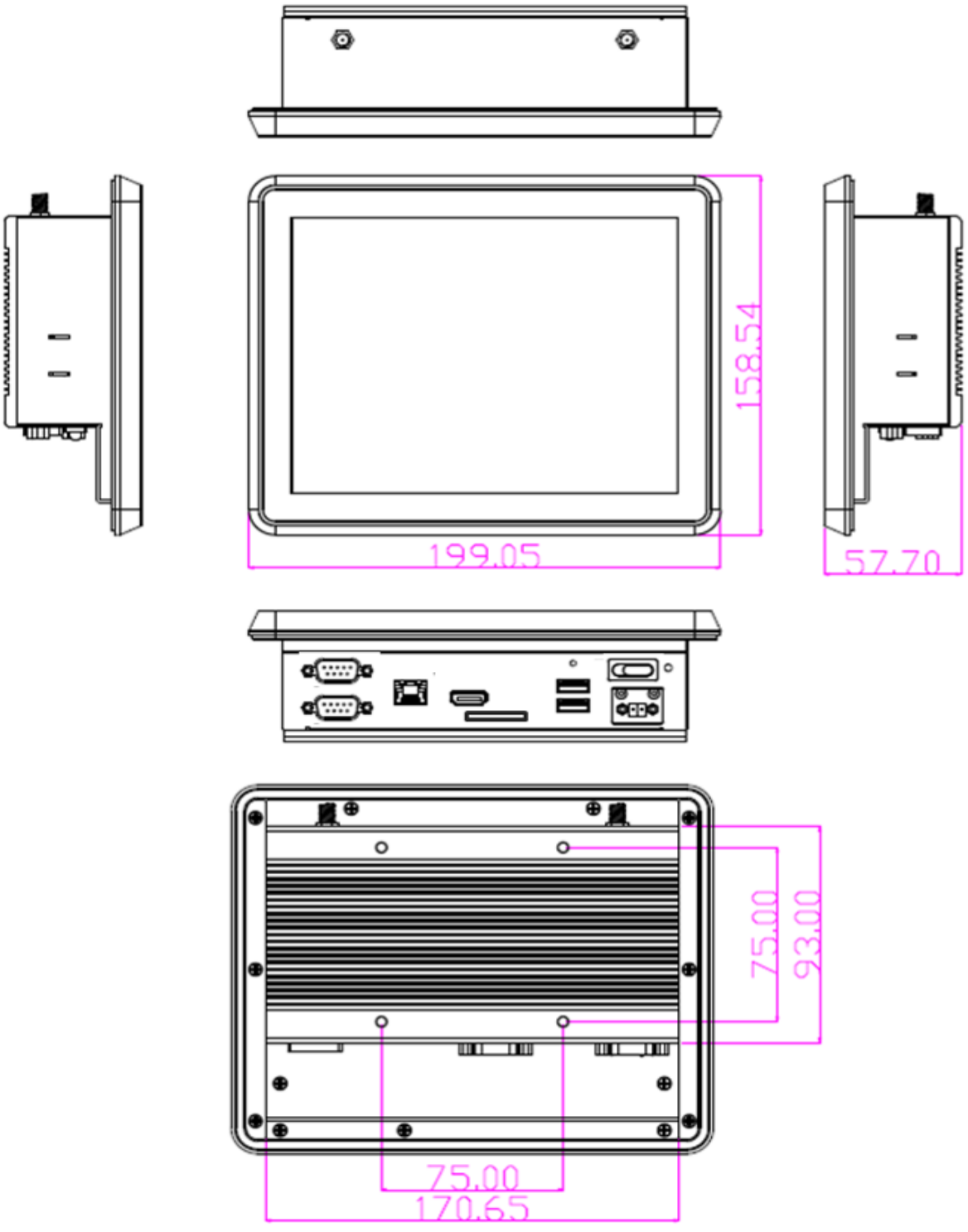


Pin	Definition	Pin	Definition
L1	MDI0+	L5	MDI2+
L2	MDI0-	L6	MDI2-
L3	MDI1+	L7	MDI3+
L4	MDI1-	L8	MDI3-
A	Active LED (Yellow)		
B	100 LAN LED (Green) / 1000 LAN LED (Orange)		

Chapter 2
Hardware and Installation

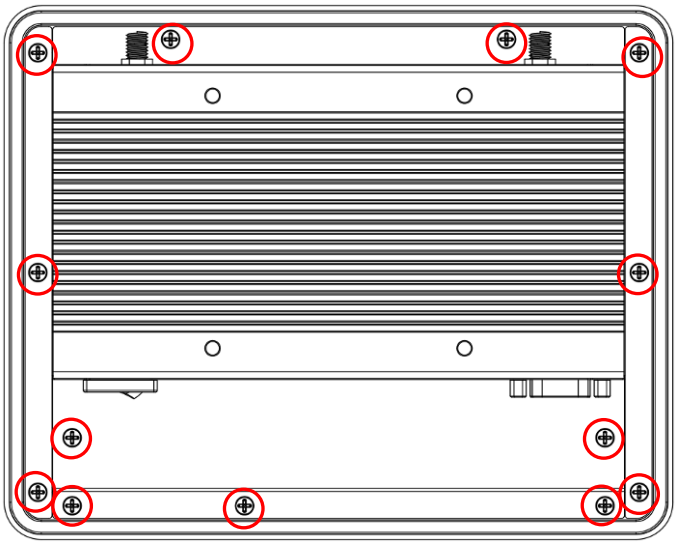
2-1 Dimension and Outlines

Product Dimension:



**** Measure Unit: mm.***

2-2 To Open the Chassis

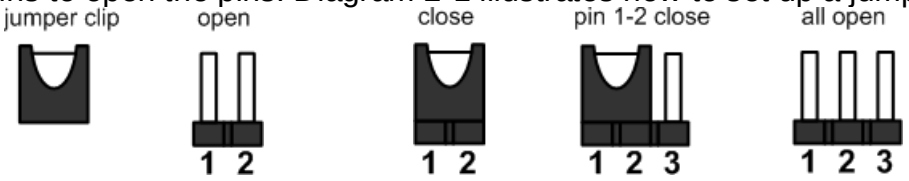


Use a screwdriver to unscrew the screws marked above that lock the back cover (see red circles). Remove them to open the chassis.

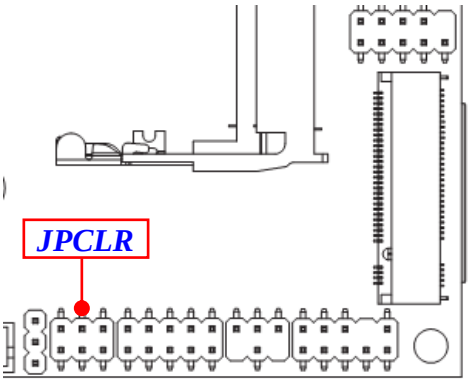
> ***Notice:*** *When lifting the cover up to open the chassis for further installation, see to it that the connecting cables are not unplugged. It is very important for the cables connected to their original places for normal functioning.*

2-3 Jumper Settings

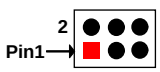
Jumper is a small component consisting of jumper clip and jumper pins. Install jumper clip on 2 jumper pins to close the pins. And remove jumper clip from 2 jumper pins to open the pins. Diagram 2-1 illustrates how to set up a jumper.



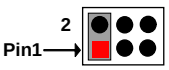
Pin 1&2 of JPCLR(6-pin): Clear CMOS RAM Settings



Pin (1&2) of JPCLR→ Clear CMOS

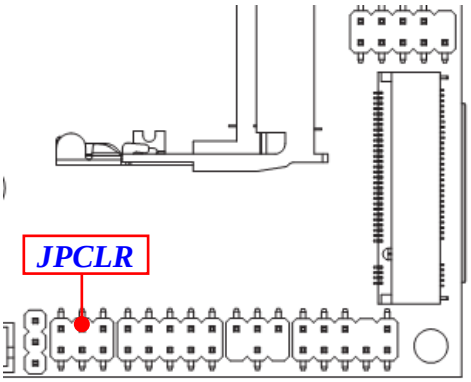


1-2 Open: Normal(Default);

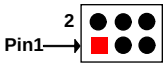


1-2 Closed: Clear CMOS(One Touch).

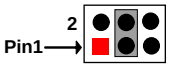
Pin 3&4 of JPCLR (6-pin): RTC Reset for Clear Flash



Pin (3&4) of JPCLR→
Reset RTC for Clear Flash

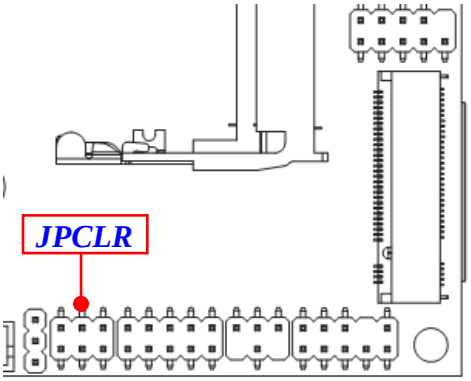


3-4 Open: Normal;

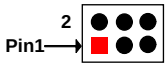


3-4 Closed: Reset RTC.

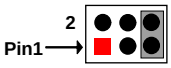
Pin 5&6 of JPCLR (6-pin): Flash Deacriptors Override Select



Pin (5&6) of JPCLR→ Flash Override

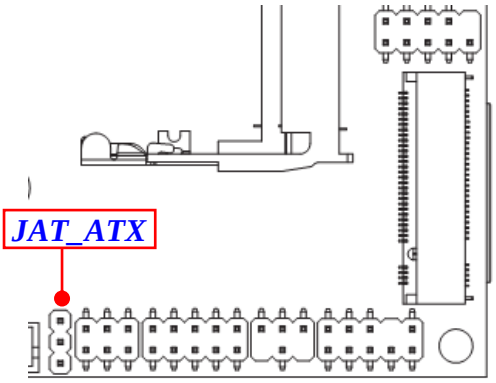


5-6 Open:Enable Security Measures in the Flash Descriptor(Default);

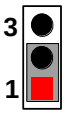


5-6 Closed: Disable Security Measures in the Flash Descriptor(Override).

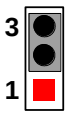
JAT_ATX (3-pin): AT Mode /ATX Mode Select



JAT_ATX→ATX/AT Mode Select



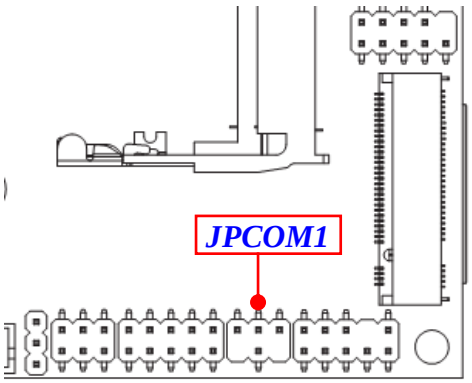
1-2 Closed: ATX Mode Selected;



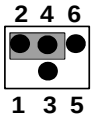
2-3 Closed: AT Mode Selected.

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

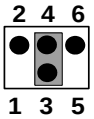
JPCOM1 (4-pin): COM1 Header Pin9 Function Select



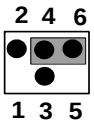
JPCOM1→COM1 Header Pin-9



2-4 Closed:
Pin9=RS232;

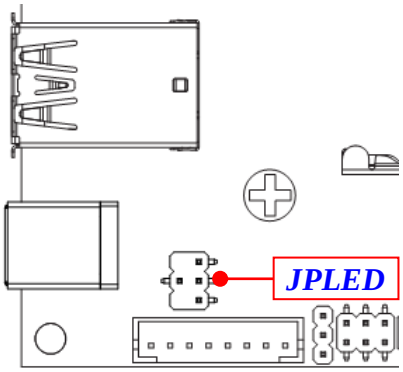


3-4 Closed:
Pin9 = 5V;

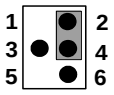


4-6 Closed:
Pin9 = 12V.

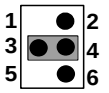
JPLED (4-pin): LVDS Panel Inverter Backlight LED VCC Select



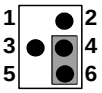
JPLED→LVDS Panel Backlight VCC



2-4 Closed:
VCC=5V;

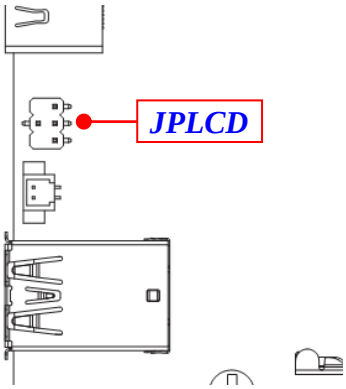


3-4 Closed:
VCC= 12V;

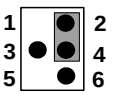


4-6 Closed:
VCC=Adapter 12V.

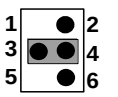
JPLCD (4-pin): LVDS Panel VCC 3.3V/5V/12V Select



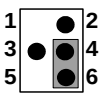
JPLCD→LVDS Panel VCC



2-4 Closed:
VCC=3.3V;

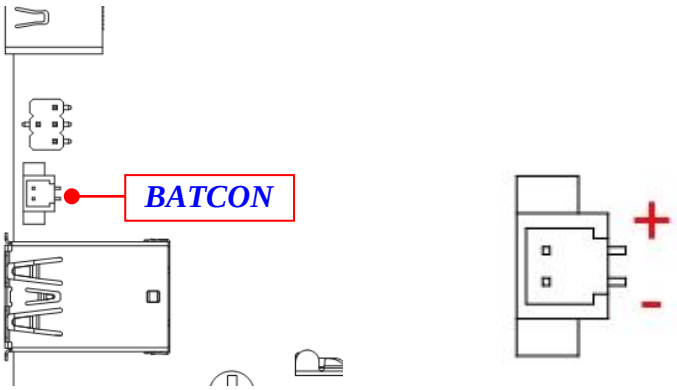


3-4 Closed:
VCC= 5V;



4-6 Closed:
VCC= 12V.

BATCON (2-pin): Battery Connector

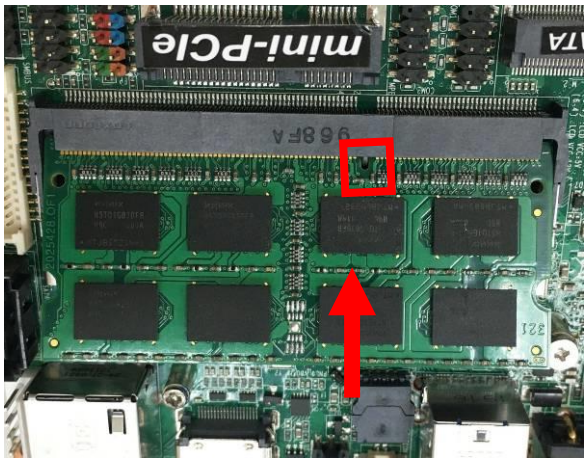


2-4 Hardware Installation

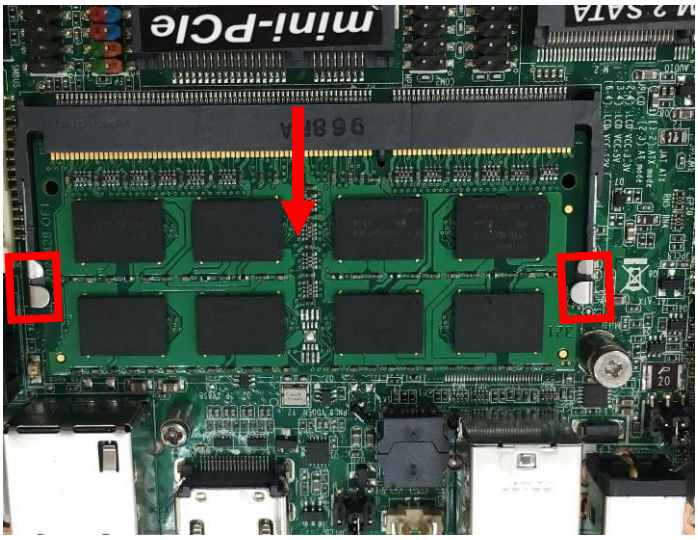
Remove the screws that lock the back cover to the system from the back side before hardware installation procedures (refer to 2-2).

2-4-1 To Install SO-DIMM to the Board

1. Locate the SO-DIMM slot on the board.

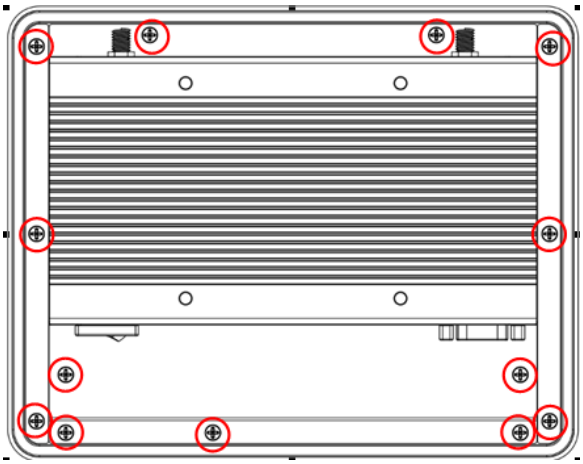


2. Insert the gold-figure side of the compatible SO-DIMM into the slot at a 30 degree. See to it that the break of the module fit into the notch of the slot.



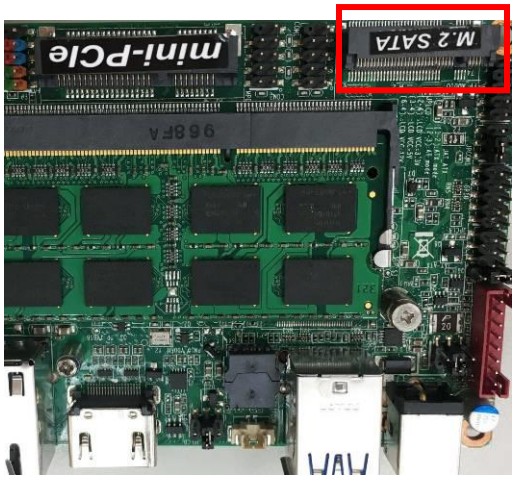
3. Press down to secure the SO-DIMM to the slot. The eject tabs will lock automatically if installing direction is correct.

2-4-2 To Install M.2 M key (2242) SATA Card

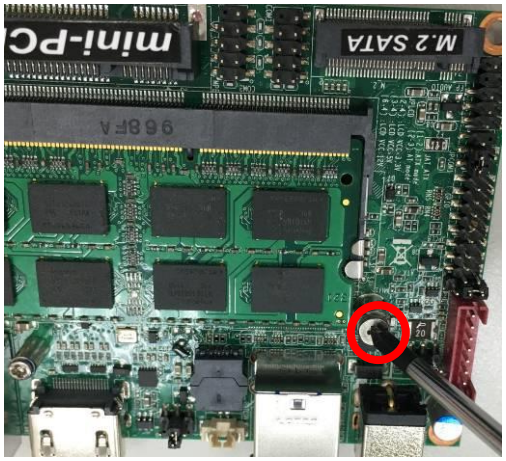


1. Place the Panel PC with this side up upon a flat operation platform. See to it to put a protective cushion under the panel to prevent possible damage.

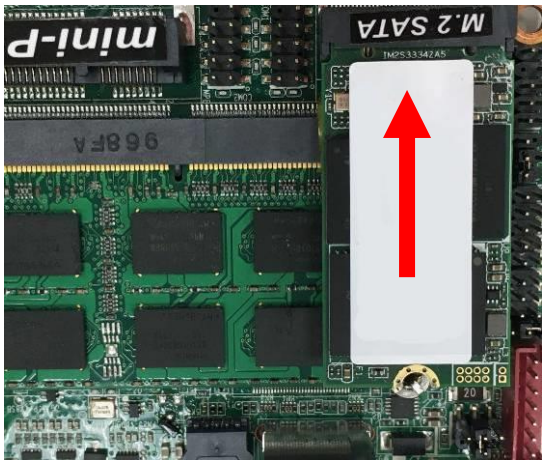
2. Remove the screws that lock the chassis on the back side of the system (refer to 2-2).



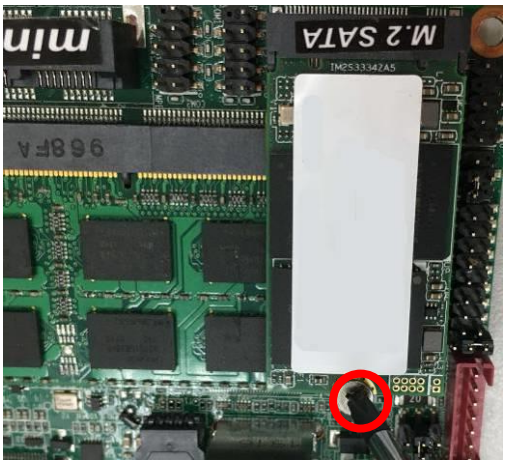
3. Locate the M.2 SATA slot on the board.



4. Remove the marked screw and use it to lock M.2 SATA card to the slot in later installation.



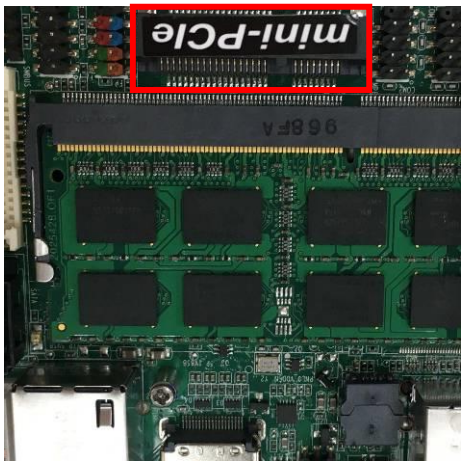
5. Insert the gold-figure side of the compatible M.2 SATA card into the slot until the pins fully fitted into the slot.



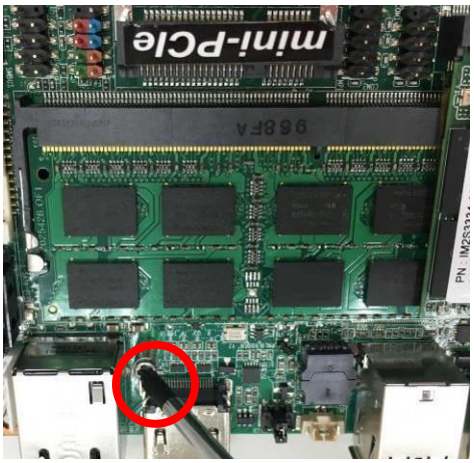
6. Lock the card to the board by tightening up the screw to the marked spot.

2-4-3 To Install Wireless LAN Card

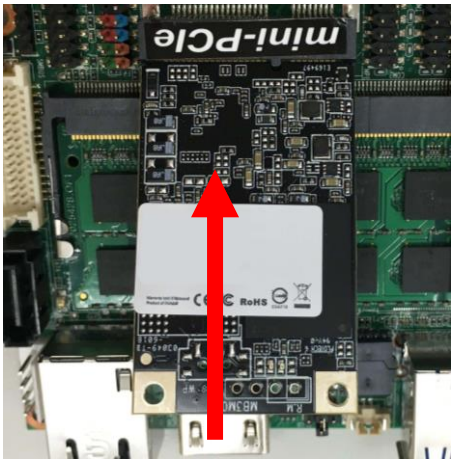
Please refer to the following instructions for the installation of the wireless LAN card.



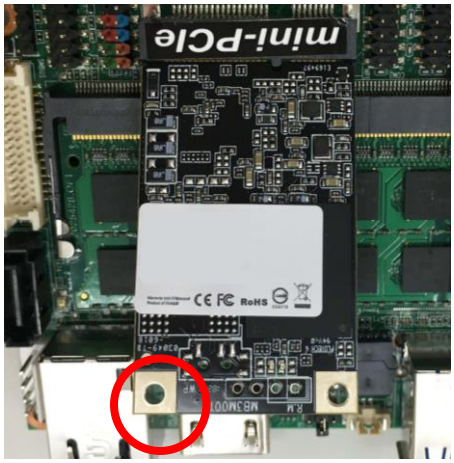
1. Locate the Mini-PCIE card slot on the board.



2. Remove the marked screw and use it to lock WIFI card to the slot in later installation.

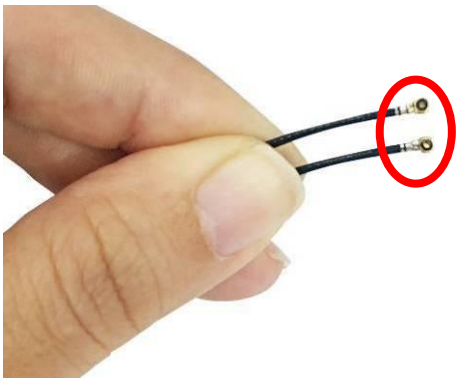


3. Insert the gold-figure side of the compatible WI-FI card into the slot and press down.



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

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



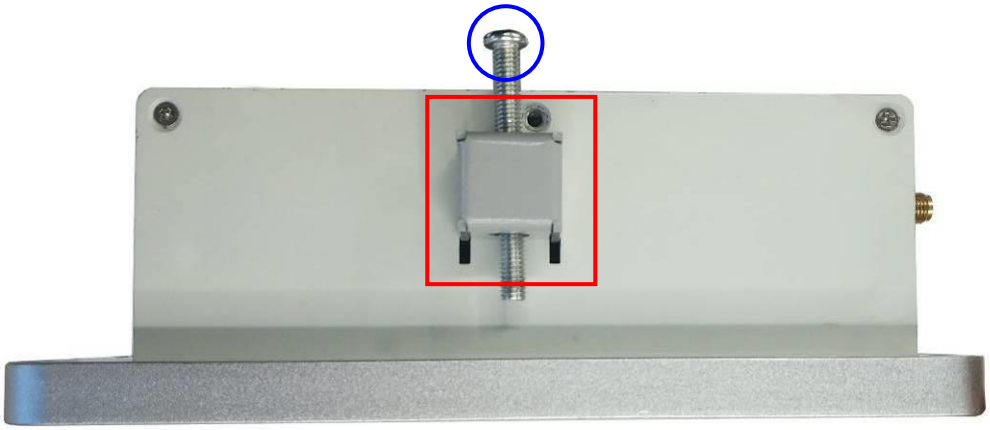
6. Tear off the tape to find metal hats of WiFi antenna string.

7. Press the metal hats on the end of the antenna strings to the antenna slots on the card as showed (the outlook of the above part is for illustration only).

2-4-4 To Install Optional Fixed Parts

1. Insert corresponding edges of the fixed part into the slots until them matched. Make sure the fix part is installed in the way the photo shows, with protruding tips upwards.

2. The models that support this fixing mode have pairs of slots reserved on both sides of the system. User can choose the height or position of installing spot.



3. Insert corresponding edges of the fixed part into the slots until them matched. Tightening up the screw so that the fixed part can be fitted into the slots tightly. Install other fixed parts to the system in the same way.

***Note:**Fixed parts are only optional for specific models. Please refers to the actual prodcut for speficication.*

Chapter 3
Introducing BIOS

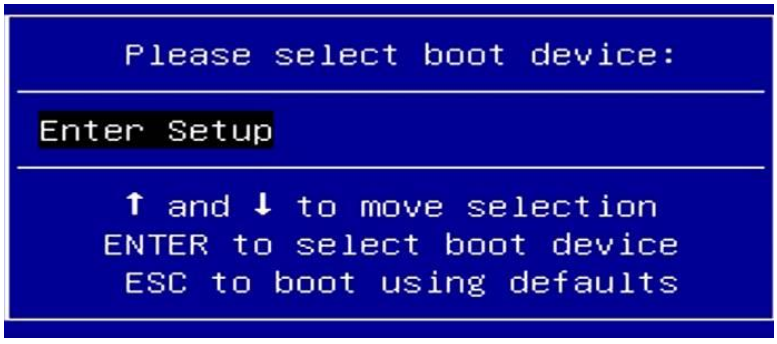
Notice!	The BIOS options in this manual are for reference only. Different configurations may lead to difference in BIOS screen and BIOS screens in manuals are usually the first BIOS version when the board is released and may be different from your purchased motherboard. Users are welcome to download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

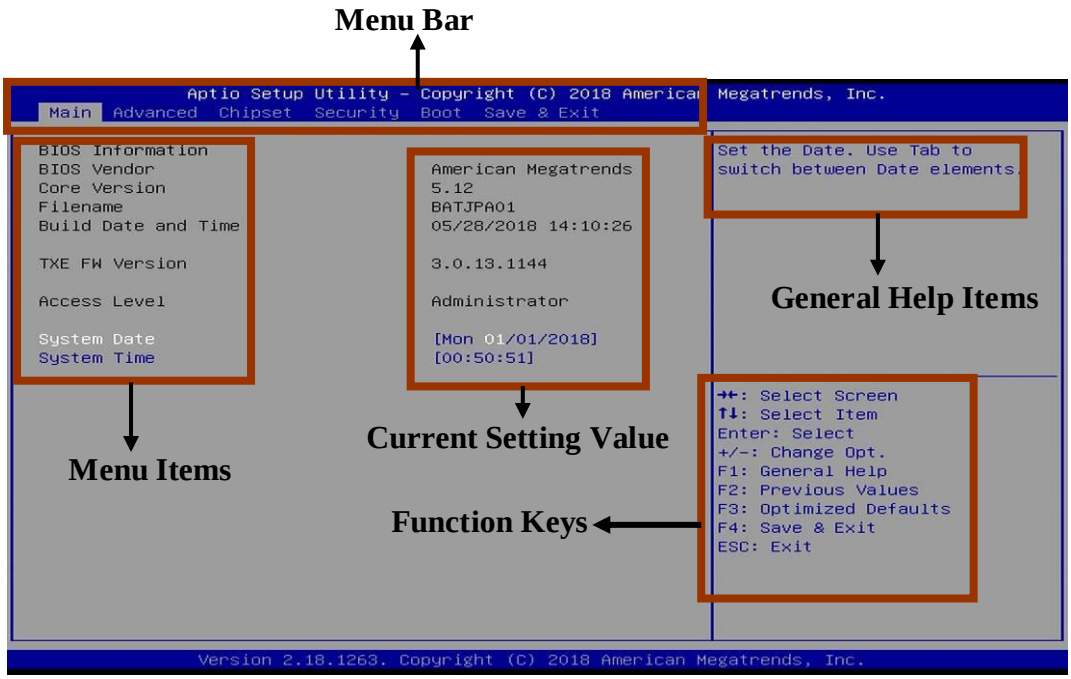
Press **<Del>** to enter Setup; press < **F7**> to enter pop-up Boot menu.



BIOS Boot Menu Screen (boot device options please refer to actual configuration)

3-2 BIOS Menu Screen

The following diagram show a general 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 value.
- [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

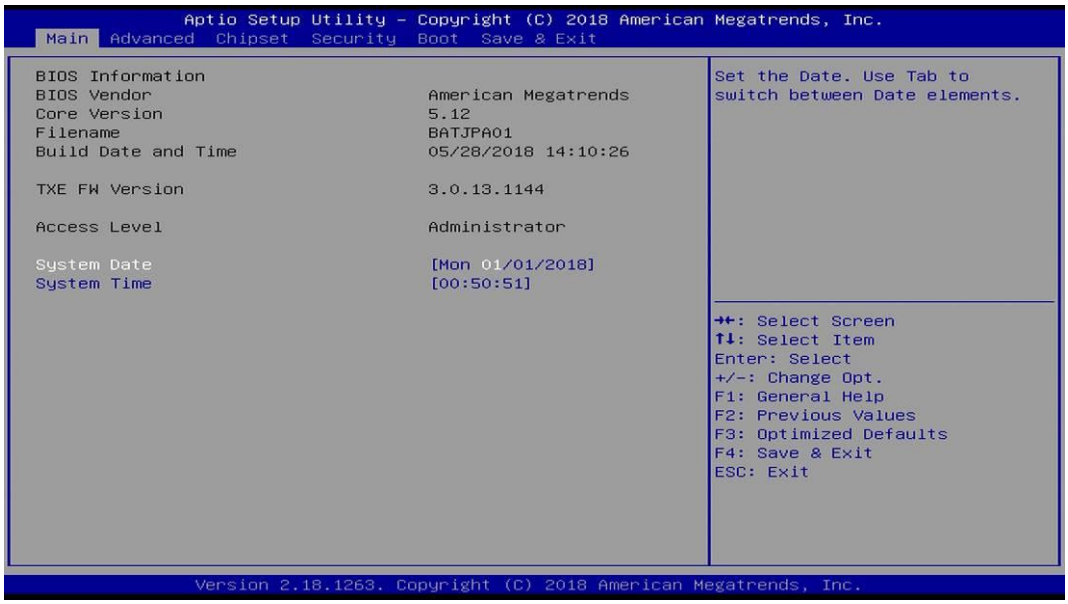
There are six menu bars on top of BIOS screen:

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.

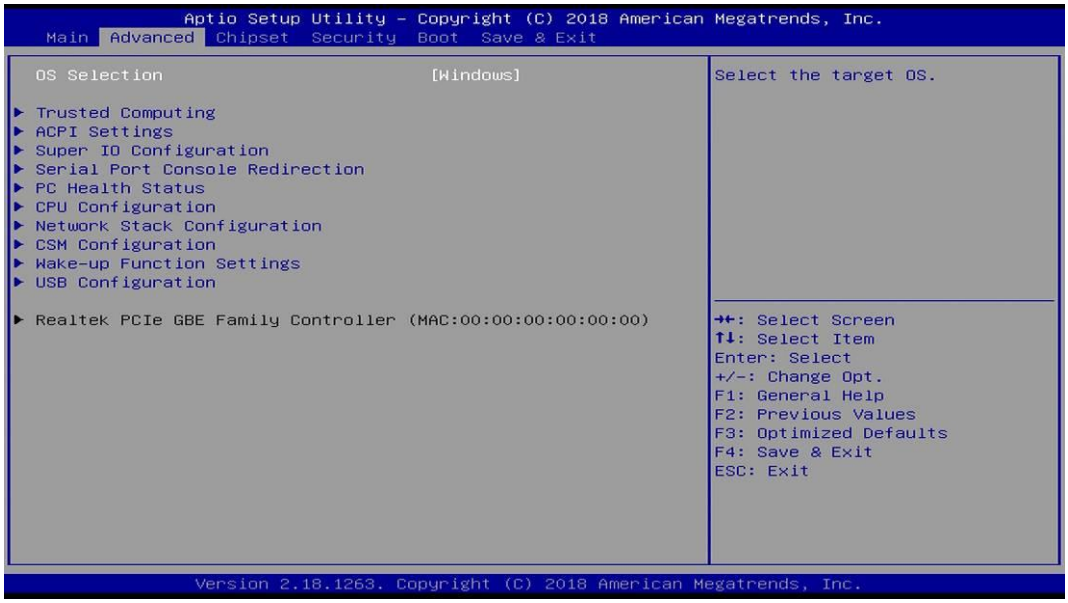
3-6 Main Menu

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

3-7 Advanced Menu



OS Selection

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

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

- **Trusted Computing**

Press [Enter] to enable or disable '**Security Device Support**'.

TPM20 Device Found

Security Device Support

Use this item to enable or disable BIOS support for security device.

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

Active PCR Banks

The optional setting is: [SHA-1].

Available PCR Banks

The optional setting is: [SHA-1, SHA256].

SHA-1 PCR Bank

Use this item to enable or disable SHA-1 PCR Bank.

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

SHA256 PCR Bank

Use this item to enable or disable SHA256 PCR Bank.

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

► **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)].

► **Super I/O Configuration**

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

Super IO Configuration

► **Serial Port 1 Configuration**

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

Serial Port 1 Configuration

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. **Changing setting may conflict with system resources.**

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

Transmission Mode Select

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

Mode Speed Select

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

► **Serial Port 2 Configuration**

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

Serial Port 2 Configuration

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. **Changing setting may conflict with system resources.**

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

ERP Support

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

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

WatchDog Reset Timer

Use this item to enable or disable WDT reset function. 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].

WatchDog Reset Timer Unit

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

WatchDog Wake-up Timer

This item support WDT wake-up.

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

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

WatchDog Wake-up Timer Value

User can select 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 9***, Pin 1-2 of AT_COPEN block 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: [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].

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]; [Intel Linux]; [XTERMR6]; [SCO]; [ESCN]; [VT400].

Redirection After BIOS POST

The optional settings are: [Always Enable]; [BootLoader].
Whet [Bootloader] is selected, then Lagacy Console Redirection is disabled before booting to legacy OS. When [Always Enable] is selected, then Legacy Console is enabled for legacy OS. Default setting for this option is set to [Always Enable].

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 setting is: [COM1].

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.*

► **PC Health Status**

Press [Enter] to view current hardware health status.

► **CPU Configuration**

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

VT-d

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

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

EIST

Use this item to enable or disable Intel SpeedStep.

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

C-States

Use this item to enable or disable C State.

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

Enhanced C-states

Use this item to enable or disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-state.

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

Max Package C State

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

The optional settings: [PC2]; [PC1]; [C0].

Max Core C State

This item controls the max Core C State that cores will support.

The optional settings: [Fused Value]; [Core C10]; [Core C9] [Core C8]; [Core C 7]; [Core C 6]; [Core C1]; [Unlimited].

► **Network Stack Configuration**

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

Network Stack

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

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

Ipv4 PXE Support

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

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

PXE Boot Wait Time
Use this item to set wait time to press [ESC] key to abort the PXE boot.
Media Detect Count
Use this item to set number of times presence of media will be checked.
The optional settings range from [1] to [50].

- **CSM Configuration**

Press [Enter] to make settings for the following sub-items:
Compatibility Support Module Configuraton
Boot option filter
This item controls Legacy/UEFI ROMs priority.
The optional settings are: [UEFI and Legacy]; [Legacy only]; [UEFI only].
Network
This item controls the execution of UEFI and Legacy PXE OpROM.
The optional settings are: [Do not launch]; [UEFI]; [Legacy].
Storage
This item controls the execution of UEFI and Legacy Storage OpROM.
The optional settings are: [Do not launch]; [UEFI]; [Legacy].
Video
This item controls the execution of UEFI and Legacy Video OpROM.
The optional settings are: [UEFI]; [Legacy].
Other PCI devices
This item determines OpROM execution policy for devices other than Network, storage or video.
The optional settings are: [Do not launch]; [UEFI]; [Legacy].

- **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 minutes.
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], system will wake on the current time + increased minute(s).
USB Wake-up from S4
Use this item to enable or disable USB wake-up fromS4.
The optional settings: [Disabled]; [Enabled].
******Note****: This function is supported when '****ERP Support****' is set as [Disabled].*

- **USB Configuration**

Press [Enter] to make settings for the following sub-items:
USB Configuration
Legacy USB Support
The optional settings are: [Enabled]; [Disabled]; [Auto].
[Enabled]: To enable legacy USB support.
[Disabled]: To keep USB devices available only for EFI specification,
[Auto]: To disable legacy support if no USB devices are connected.

XHCI Hand-off

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

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

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.

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'.**

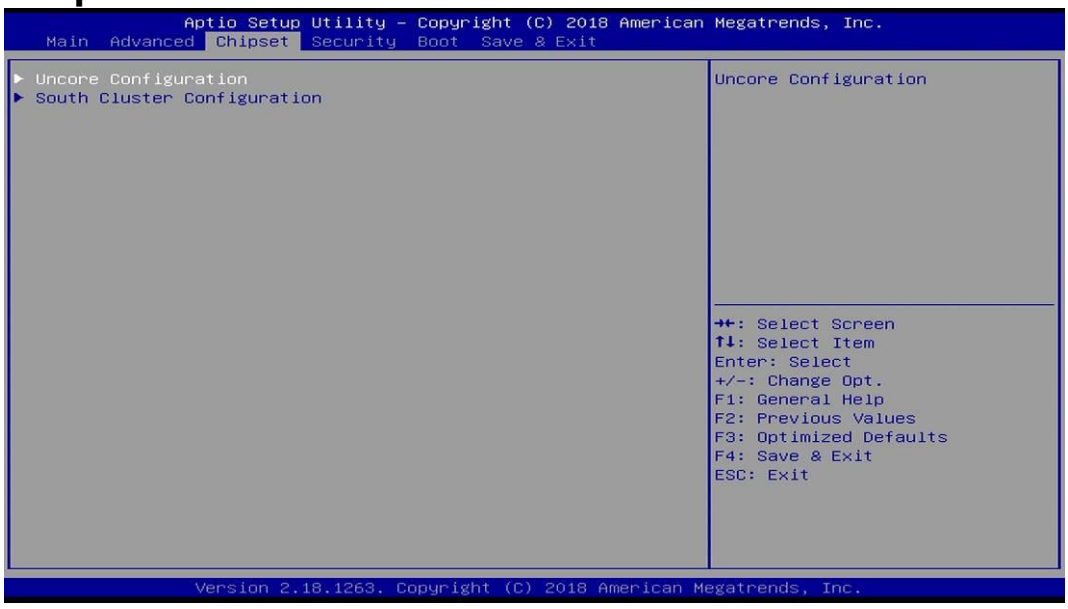
Device Power-up Delay in Seconds

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

► **Realtek PCIe GBE Family Controller(MAC:XX:XX:XX:XX:XX:XX**

These items show current network brief information.

3-8 Chipset Menu



► **Uncore Configuration**

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

GTT Size

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

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].

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

When set as **[Disabled], only '**Primary IGFX Boot Display**' shows up, with only one default setting [**Auto**].*

*When set as **[Enabled]**, both '**Primary IGFX Boot Display**' and '**Secondary IGFX Boot Display**' will show up for user to make further settings. User can also make further settings in **'LVDS Panel Type'** and '**LVDS FW Protect**':*

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.
The default setting is: [Auto] when '**Active LFP**' is set as [Disabled].
The optional settings are: [Auto]; [HDMI]; [LVDS] when '**Active LFP**' is set as [Enabled].

Secondary IGFX Boot Display
Secondary boot display selection will appear based on your selection.
The optional settings are: [Disabled]; [HDMI].

LVDS Panel Type
Use this item to select LCD panel used by Internal Graphics Device by selecting the appropriate setup item.
The optional settings are: [800 x 480 1ch18bit]; [800 x 600 1ch 18bit]; [800 x 600 1ch 24bit]; [1024 x 600 1ch 18bit]; [1024 x 768 1ch 18bit]; [1024 x 768 1ch 24bit]; [1280 x 768 1ch 24bit]; [1280 x 800 1ch 18bit]; [1280 x 800 1ch 24bit]; [1366 x 768 1ch 18bit]; [1366 x 768 1ch 24bit]; [1440 x 900 2ch 18bit]; ; [1440 x 900 2ch 24bit]; [1280 x 1024 2ch 24bit]; [1680 x 1050 2ch 24bit]; [1920 x 1080 2ch 24bit].

LVDS FW Protect
The optional settings are: [Disabled]; [Enabled].

Memory Information
The working memory information will be on display.

► **South Cluster Configuration**

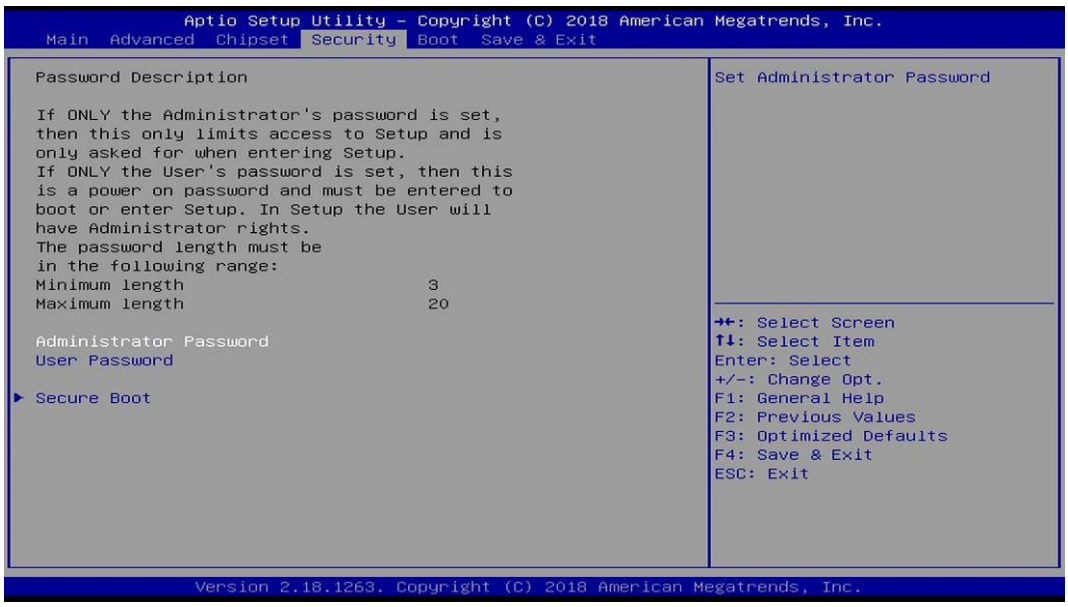
▸ **PCI Express Configuration**
Press [Enter] to make settings for the following sub-items:
Peer Memory Write Enable
The optional settings: [Disabled]; [Enabled].
Compliance Mode
The optional settings: [Disabled]; [Enabled].

Onboard PCIE LAN
The optional settings: [Disabled]; [Enabled].

▸ **SATA Configuration**
Press [Enter] to make settings for the following sub-items:
SATA Controller(s)
The optional settings are: [Enabled]; [Disabled].
When set as [Enabled], the following items shall appear:
SATA Mode Selection
The default setting is: [AHCI].
Use this item to enable or disable each SATA port.
SATA Port
SATA Port
The optional settings: [Disabled]; [Enabled].
M.2
M.2
Use this item to enable or disable M.2 SATA device.
The optional settings: [Disabled]; [Enabled].

HD-Audio Support
Use this item to enable or disable HD-Audio Support.
The optional settings are: [Disabled]; [Enabled].
System State after Power Failure
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 Control

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

  Secure Boot can be enabled if 1. System running in user mode with enrolled Platform Key (PK); 2. CSM function is disabled.

  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.

  **When set as [Custom], user can make further settings in 'Key Management'.*

  - **Key Management**

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

  Provision Factory Default Keys

  This item is for user to install factory default secure boot keys when system is in Setup Mode.

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

  - **Enroll all Factory Default Keys**

  This item forces system to User Mode-install all Factory Default keys.

  - **Save all Secure Boot Variables**

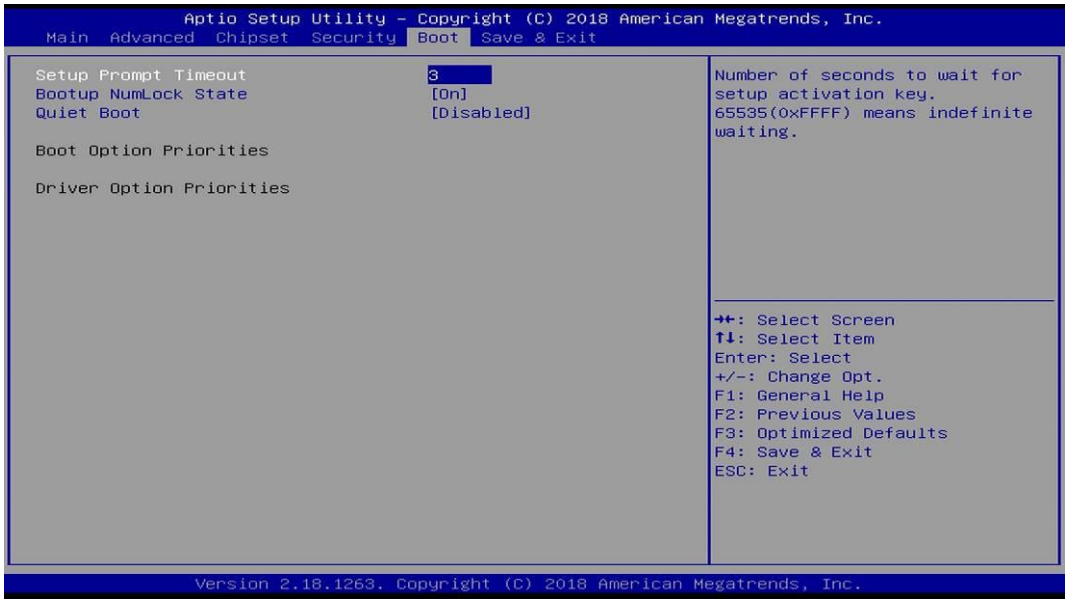
  This item will save NRRAM content of all Secure Boot variables to the files (WFI_SIGNATURE_LIST data format) in root folder on a target file system device.

  - **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_SHA256 (bin)
  2. Authenticated UEFI Variable

3-10 Boot Menu



Setup Prompt Timeout

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

Bootup Numlock State

Use this item to select keyboard numlock state.

The optional settings are: [On]; [Off].

Quiet Boot

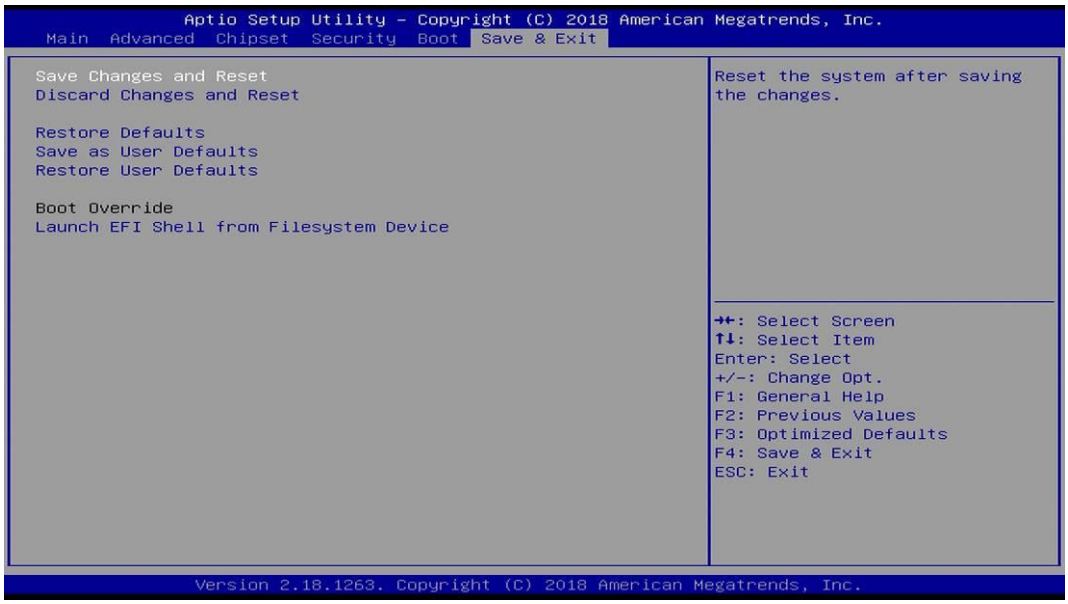
The optional settings are: [Disabled]; [Enabled].

Boot Option Priorities

Boot Option #1/ Boot Option #2…

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

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

The available options here are dynamically updated and make system boot to any boot option selected.
Lauch EFI Shell from filesystem device
Use this item to launch EFI shell application (shell.efi) from one of the available filesystem device.

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.