Technical Manual

Of

Intel Braswell Series CPU

Based SBC

NO.G03-NU591-F

Revision: 4.0

Release date: October 1, 2019

Trademark:

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.

TABLE OF CONTENT

Environmental Safety Instruction

- Avoid the dusty, humidity and temperature extremes. Do not place the product in any area where it may become wet.

- 0 to 60 centigrade is the suitable temperature. (The figure comes from the request of the main chipset)

- Generally speaking, dramatic changes in temperature may lead to contact malfunction and crackles due to constant thermal expansion and contraction from the welding spots' that connect components and PCB. Computer should go through an adaptive phase before it boots when it is moved from a cold environment to a warmer one to avoid condensation phenomenon. These water drops attached on PCB or the surface of the components can bring about phenomena as minor as computer instability resulted from corrosion and oxidation from components and PCB or as major as short circuit that can burn the components. Suggest starting the computer until the temperature goes up.

- The increasing temperature of the capacitor may decrease the life of computer. Using the close case may decrease the life of other device because the higher temperature in the inner of the case.

- Attention to the heat sink when you over-clocking. The higher temperature may decrease the life of the device and burned the capacitor.

USER'S NOTICE

Manual Revision Information

Reversion	Revision History	Date
4.0	Fourth Edition	October 1, 2019

Item Checklist

☑ Motherboard
☑ Cable(s)

Chapter 1
Introduction of the Motherboard

1-1 Feature of Motherboard

- Onboard Intel® Braswell series SoC Processor, with low power consumption never denies high performance
- Support 1* DDR3L 1600 MHz SO-DIMM, up to 8GB
- Onboard 2 * RJ-45 gigabit Ethernet LAN port
- Onboard 1* full-size Mini-PCIE/MSATA shared slot
- Onboard 1* half-size Mini-PCIE slot
- Onboard 1* SIM card slot
- Support 1* SATAIII device
- 2* HDMI ports & 1* Display port, supports Triple Independent Display
- Support USB 3.0 data transport demand
- Support CPU Smart FAN
- Compliance with ErP standard
- Support Watchdog function

1-2 Specification

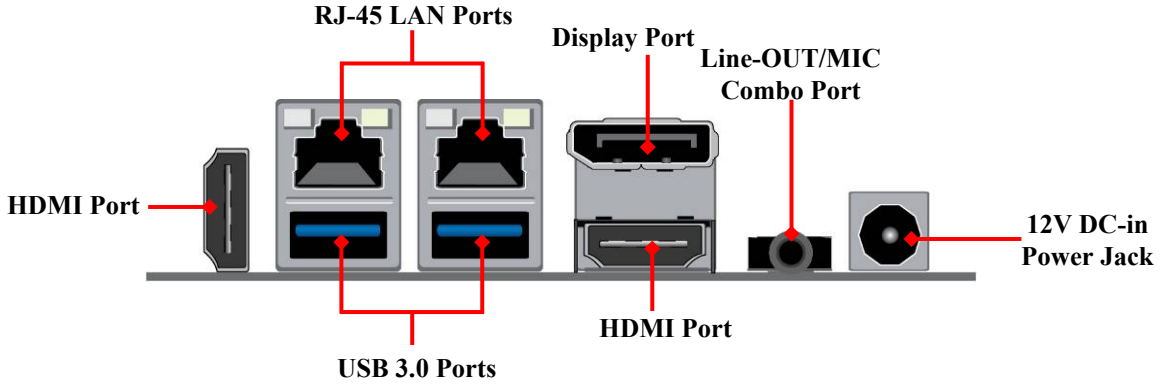
Spec	Description
Design	● NUC form factor; PCB size: 10.1 cm x 10.1 cm
Embedded CPU	● Intel® Braswell ***SoC*** CPU **CPU model varies from different IPC options. Please consult your dealer for more information of onboard CPU.*
Memory Slot	● 1 * DDR3L SODIMM Slot for un-buffered ****DDR3L 1600 MHz*** SDRAM, expandable to 8GB **Memory frequency range also depend on CPU support*
Expansion Slot	● 1* Full-size Mini-PCIE/MSATA shared slot **(MMPE)** ● 1* Half-size Mini-PCIE slot **(MPE)** ● 1* SIM card slot
Storage	● 1* SATAIII 6Gb/s port ● 1* Full-size Mini-PCIE/MSATA shared slot **(MMPE)**
LAN Chip	● Integrated with 2* Intel i211AT Gigabit LAN chip ● Support Fast Ethernet LAN function of providing 10/100/1000Mbps Ethernet data transfer rate
Audio Chip	● Realtek ALC662 HD audio chip
BIOS	● AMI 64MB Flash ROM
Rear Panel I/O	● 2* RJ-45 LAN port ● 2* USB 3.0 port ● 2* HDMI port ● 1* Display Port ● 1* Audio Line-Out & MIC combo jack ● 1* 12V DC-in system power Jack
Front Panel I/O	● 2* USB 3.0 port ● 1* Serial port (**COM1 supports RS232/422/485** function)
Internal I/O	● 1* SATA Power connector ● 1* FP_CON connector (on the backside) ● 1* CPU FAN header (on the backside/**optional)**

	● 1* 9-Pin USB 2.0/1.1 header for 2* USB 2.0/1.1 ports ● 2* LAN LED activity header ● 1* GPIO header ● 1* SMBUS header

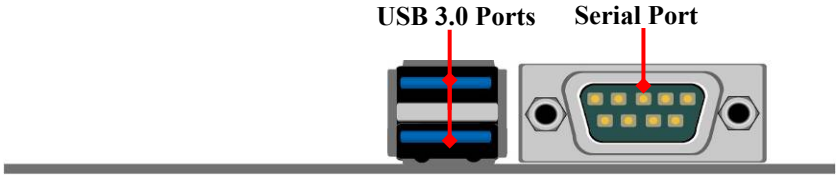
** **Note: 1.** Many PCs now include XHCI USB controllers which allow for the support of USB 3.0 and higher USB speeds. This inclusion of XHCI controllers has lessened the need for EHCI USB controllers within platforms. However, legacy operating systems (OS) may not natively recognize XHCI controllers. You might need to pre-install XHCI driver while desiring to install a non-xHCI OS (ex.Windows* 7) on Intel platforms which do not include EHCI controllers. Please contact your representative for more details. **2.** Braswell SOC will support memory speed at 1600 MHz and 1066 MHz only. If 1333 MHz DIMM is installed, it will run at 1066 MHz. It is not validated while installing 1066MHz DIMM with this SOC.*

1-3 Layout Diagram

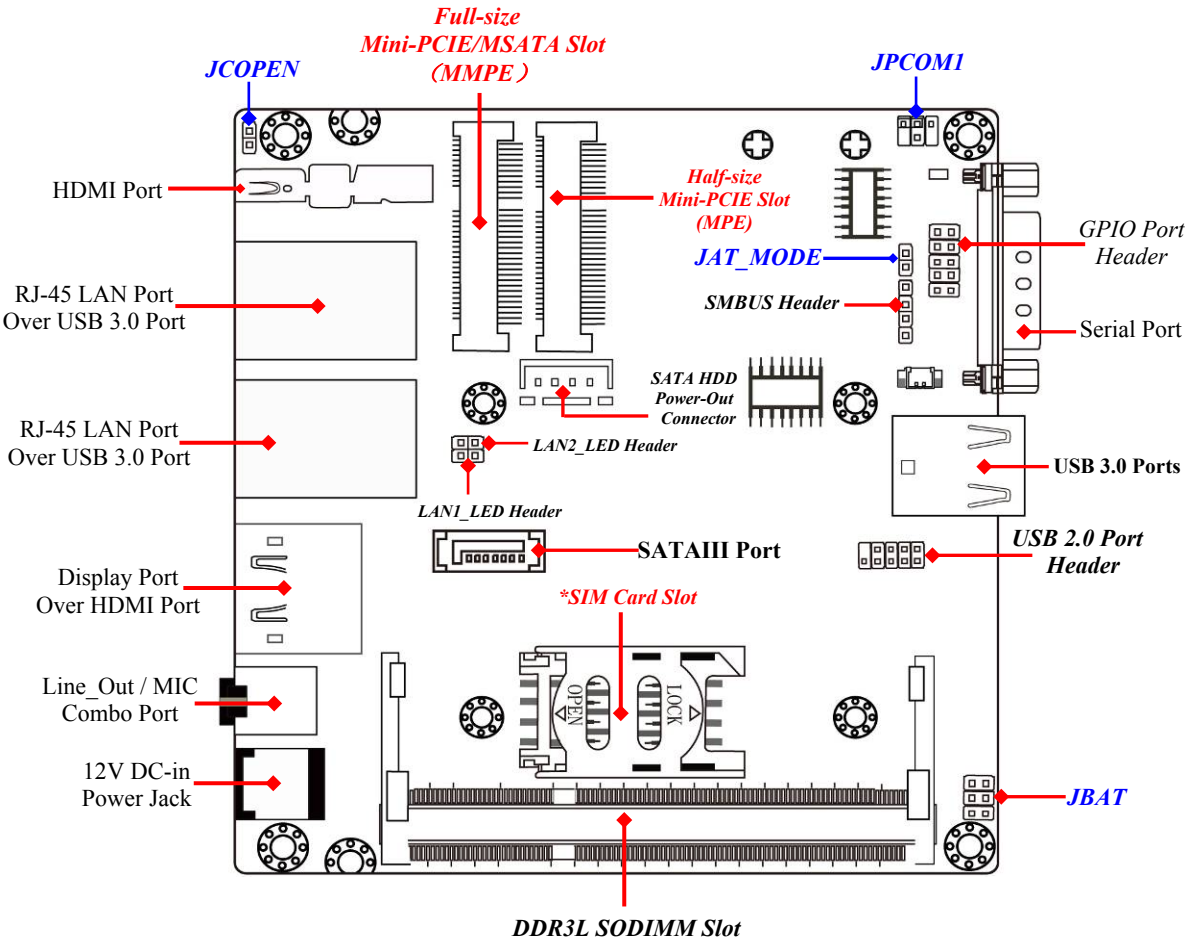
Rear IO Panel Diagram:



Front IO Panel Diagram:

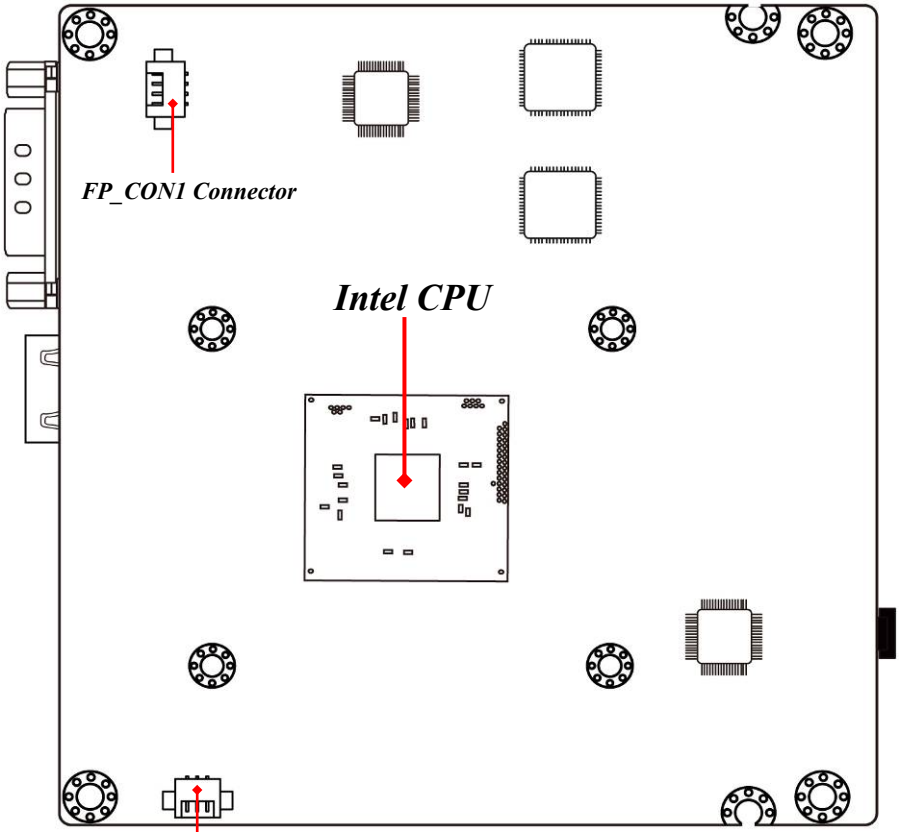


Internal Diagram-Front Side:



Note: 1. *SODIMM module should be* ***1.35V DDRIII*** *SODIMM and* ***not exceeding 8GB total capacity****.*
2. SIM card slot *only work* ***when*** *compatible SIM card installed & 3G LAN card installed in full-size Mini-PCIE* ***(MMPE)*** *slot.*

Internal Diagram-Back Side:



***Note: CPUFAN** connector is optional for specific model. Please refer to the product you purchased for actual specifications.*

Connectors

Connector	Name
HDMI2	HDMI Connector
UL1/UL2	***Top***: RJ-45 LAN Port Connector ***Bottom:*** USB 3.0 Port Connector
HDMI-DP	***Top***: Display Port Connector ***Bottom:*** HDMI Connector
AUDIO1	Line-Out/MIC Combo Connector
DCIN1	12V DC–in System Power Jack
USB1	USB 3.0 Port Connector x2
SATA	SATAIII Port Connector
PWOUT1	SATA Power out Connector
FP_CON1 (backside)	Front Panel Connector
**CPUFAN (backside, optional)*	CPUFAN Connector

Headers

Header	Name	Description
FP_USB1	USB 2.0 Port Header	9-pin Block
LAN1_LED/ LAN2_LED	LAN Activity LED Header	2-pin Block
GPIO_CON1	GPIO Header	10-pin Block
SMBUS	SMBUS Header	5-pin Block

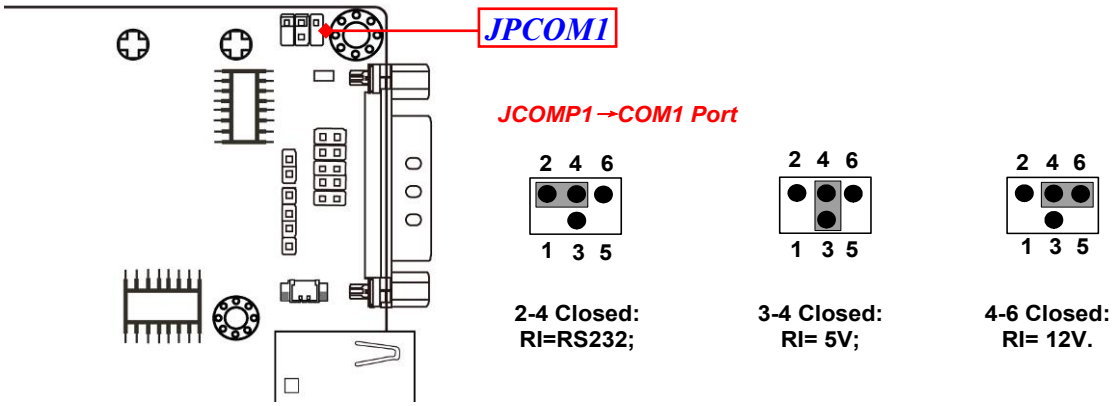
Jumper

Jumper	Name	Description
JPCOM1	COM1 Port Pin9 Function Select	4-Pin Block
JCOPEN	Case Open Message Display Function Select	2-Pin Block
JAT_MODE	ATX Mode & AT Mode Select	2-Pin Block
JBAT	***Pin (1-2):*** Clear Me Function Setting ***Pin (3-4):*** Clear CMOS RAM Setting ***Pin (5-6):*** Flash Descriptor Security Override	6-Pin Block

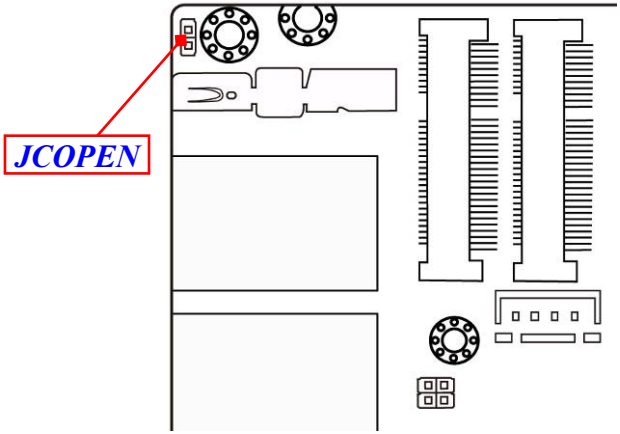
Chapter 2
Hardware Installation

2-1 Jumper Setting

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



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



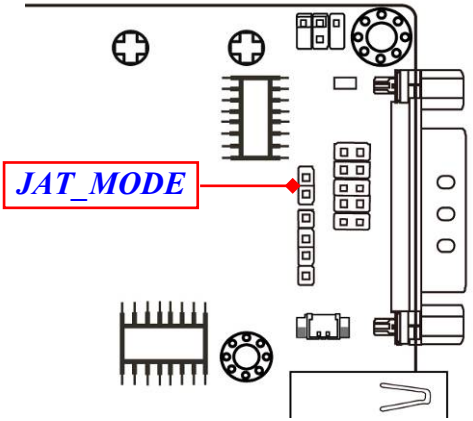
JCOPEN

1-2 Open: Normal(Defualt);

1-2 Short: Case Open Function Selected (One Touch).

***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.*

JAT_MODE (2-pin): ATX Mode &AT Mode Select



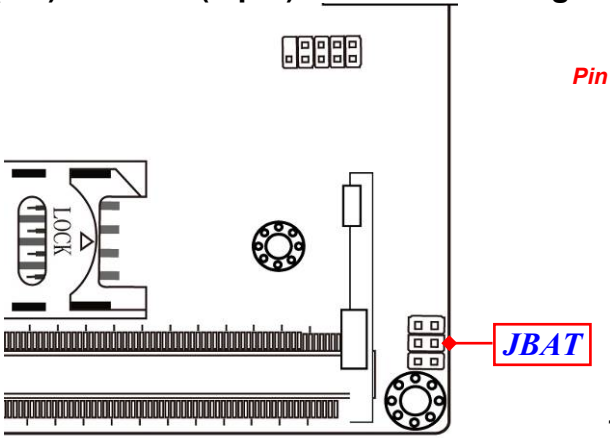
JAT_MODE

1-2 Open: ATX Mode Selected;

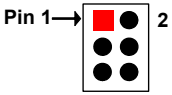
1-2 Closed：AT Mode Selected.

*****ATX Mode Selected:** Press power button to power on after power input ready;*
***AT Mode Selected:** Directly power on as power input ready.*
User needs to restart the system for the settings to take effect.

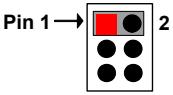
Pin (1-2) of JBAT (6-pin): Clear ME Setting



Pin (1-2) of JBAT→ Clear ME

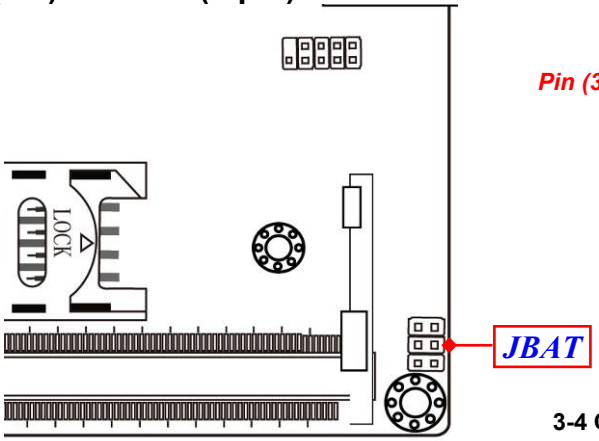


1-2 Open: Normal (Default);

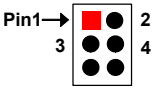


1-2 Closed: Clear ME(One Touch).

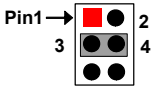
Pin (3-4) of JBAT (6-pin): Clear CMOS RAM Setting



Pin (3-4) of JBAT→Clear CMOS

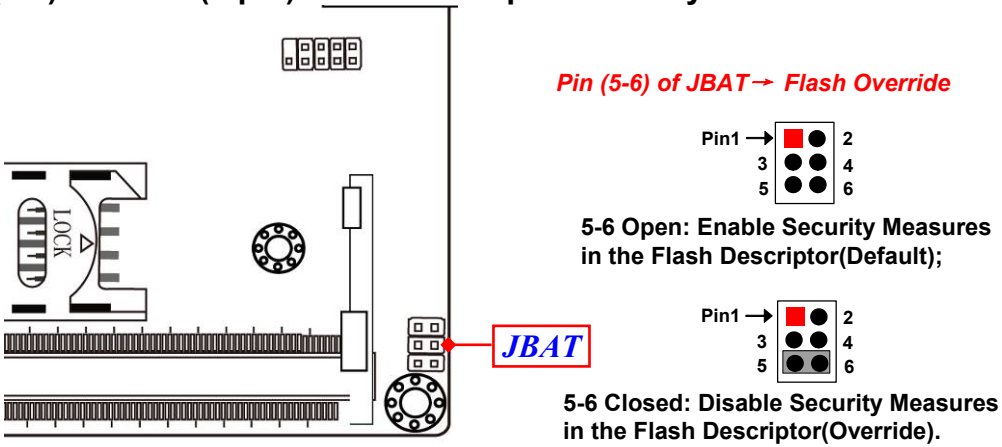


3-4 Open: Normal(Default);



3-4 Closed: Clear CMOS(One Touch).

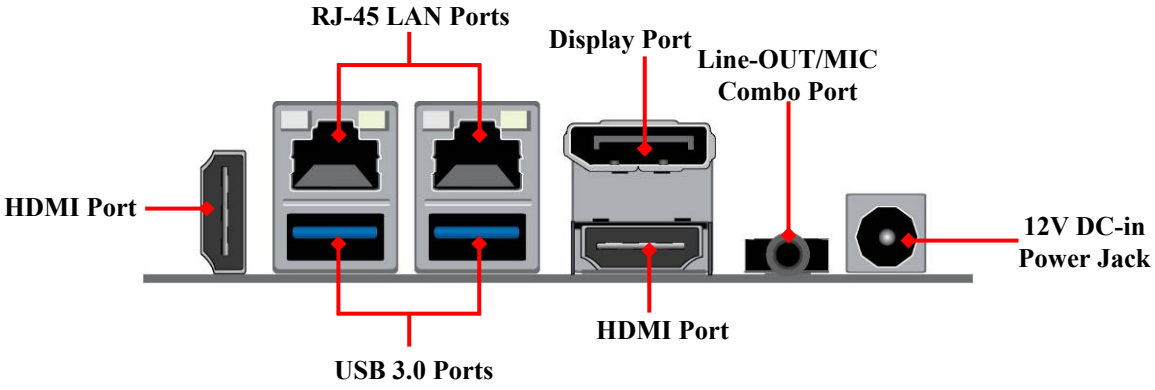
Pin (5-6) of JBAT (6-pin): Flash Descriptor Security Override



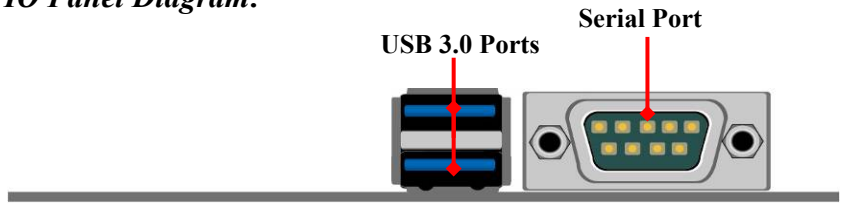
2-2 Connectors and Headers

2-2-1 Connectors

Rear IO Panel Diagram:



Front IO Panel Diagram:

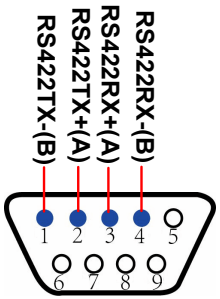


Icon	Name	Function
	**Power Connector**	12V DC–in system power connector For user to connect compatible power adapter to provide power supply for the system.
	**RJ-45 LAN Port**	This connector is standard RJ-45 LAN jack for Network connection.
	**USB 3.0 Port**	To connect USB keyboard, mouse or other devices compatible with USB specification. USB 3.0 ports supports up to 5Gbps data transfer rate.
	**HDMI Port**	To connect display device that support HDMI specification.
	**Display Port**	To the system to corresponding display device with compatible display port cable.
	**Line-Out/MIC Combo Connector**	This connector can functions as audio Line-Out jack and MIC jack with compatible cables & devices.
	**COM1:** ***RS232/422/485*** ***Serial Port***	Mainly for user to connect external MODEM or other devices that supports Serial Communications Interface.

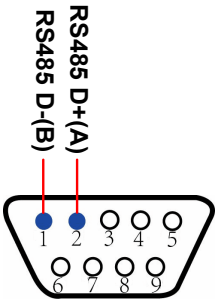
COM1 (9-pin Block): RS232/422/485 Serial Port

COM1 port can function as RS232/422/485 port. In normal settings COM1 functions as RS232 port. With compatible COM cable they can function as RS422 or RS 485 port.

User also needs to go to BIOS to set '***Transmission Mode Select***' for COM1 (refer to Page 22) at first, before using specialized cable to connect different pins of this port.



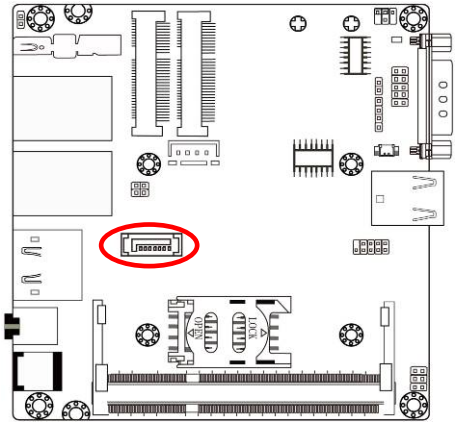
For RS422 Mode



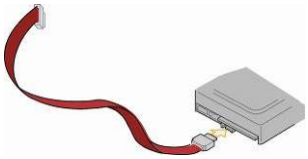
For RS485 Mode

SATA (7-pin Block): SATAIII Port connector

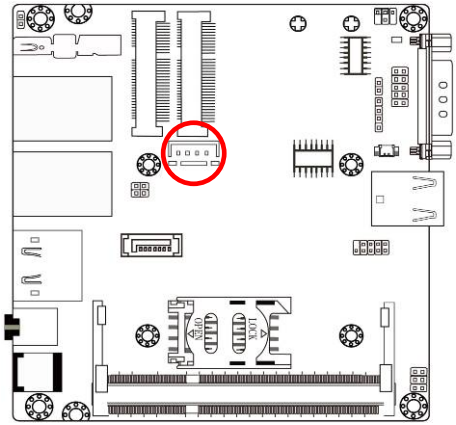
The board comes with a SATAIII port that supports 6GB/s transfer rate.

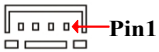


Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND



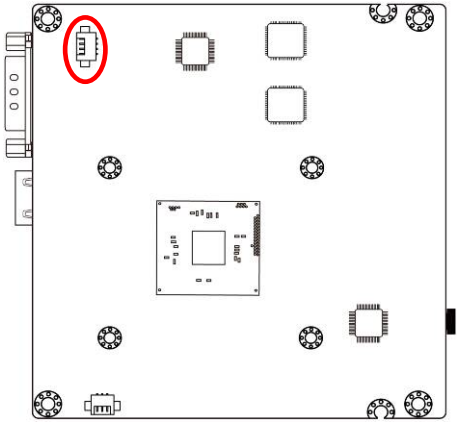
PWOUT1 (4-pin): SATA HDD Power-Out Connector

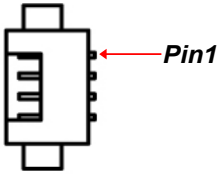




Pin No.	Definition
1	+5V
2	GND
3	GND
4	+12V

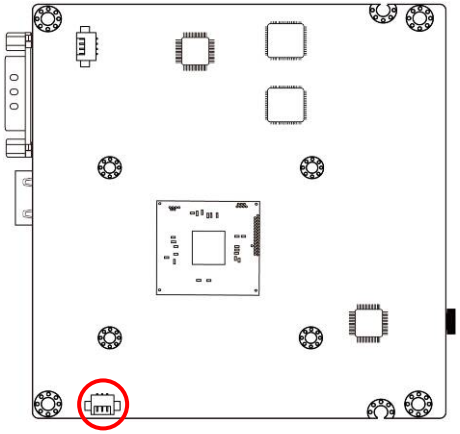
FP_CON1 (4-pin): Front Panel Connector

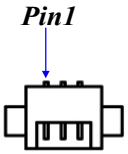




Pin No.	Definition
1	Power_SW
2	GND
3	PWRLED -
4	PWRLED+

CPUFAN (3-pin): CPUFAN Connector



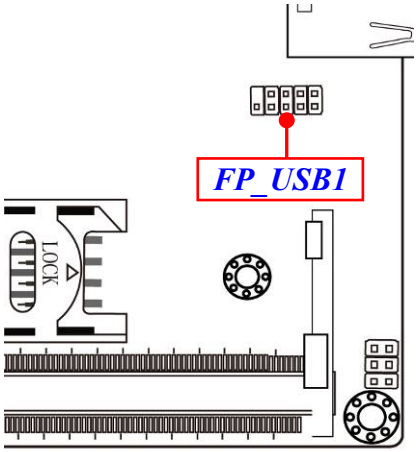


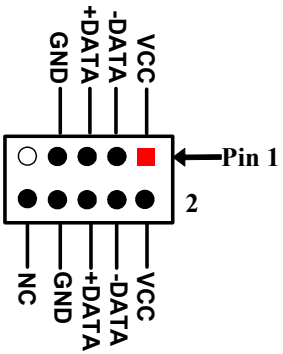
Pin No.	Definition
1	VCC
2	GND
3	Fan Detect

***Note: CPUFAN** connector is optional for specific model. Please refer to the product you purchased for actual specifications.*

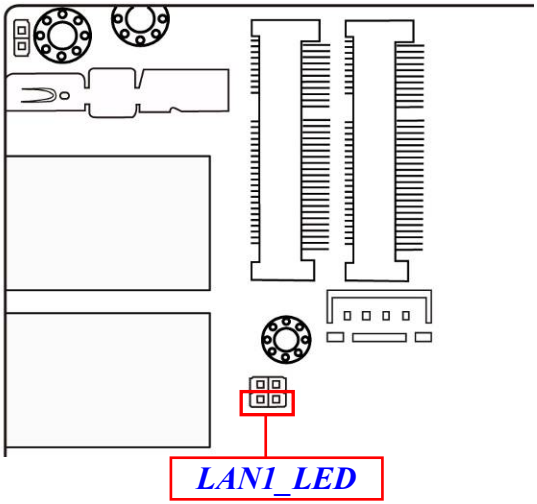
2-2-2 Headers

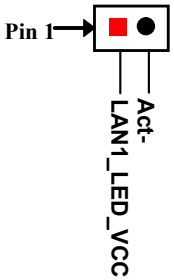
FP_USB1 (9-pin): USB 2.0 Port Header



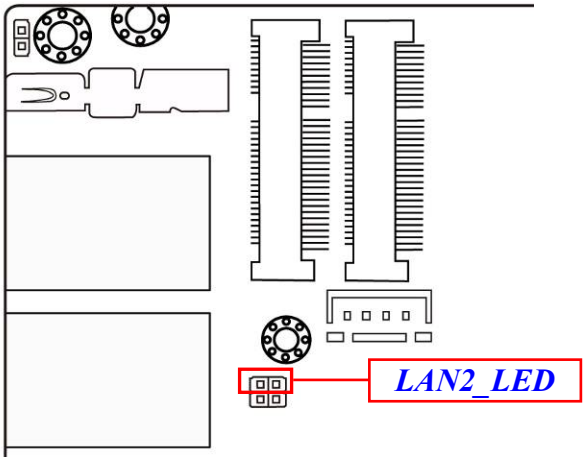


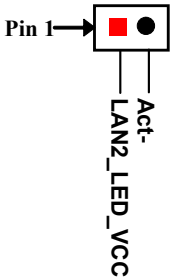
LAN1_LED (2-pin): LAN1 Activity LED Header



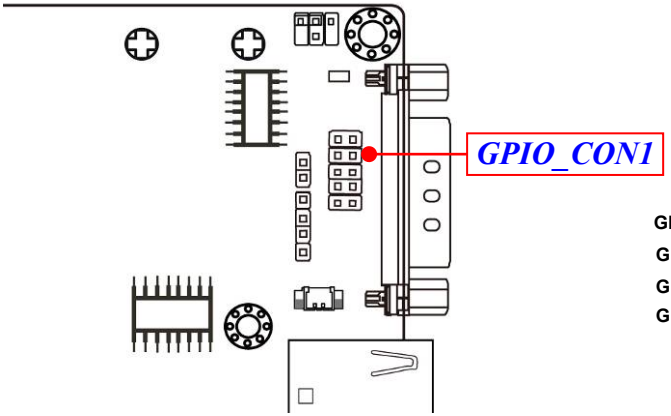


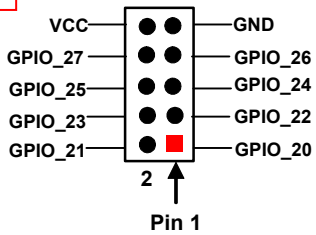
LAN2_LED (2-pin): LAN2 Activity LED Header



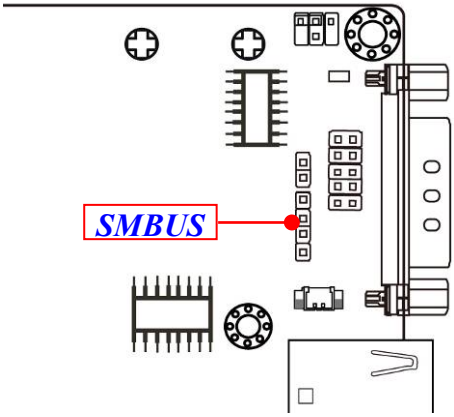


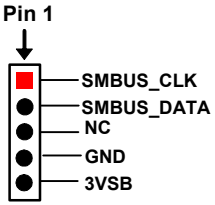
GPIO_CON1 (10-pin): GPIO Header





SMBUS (5-Pin): SM BUS Header





Chapter 3
Introducing BIOS

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

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

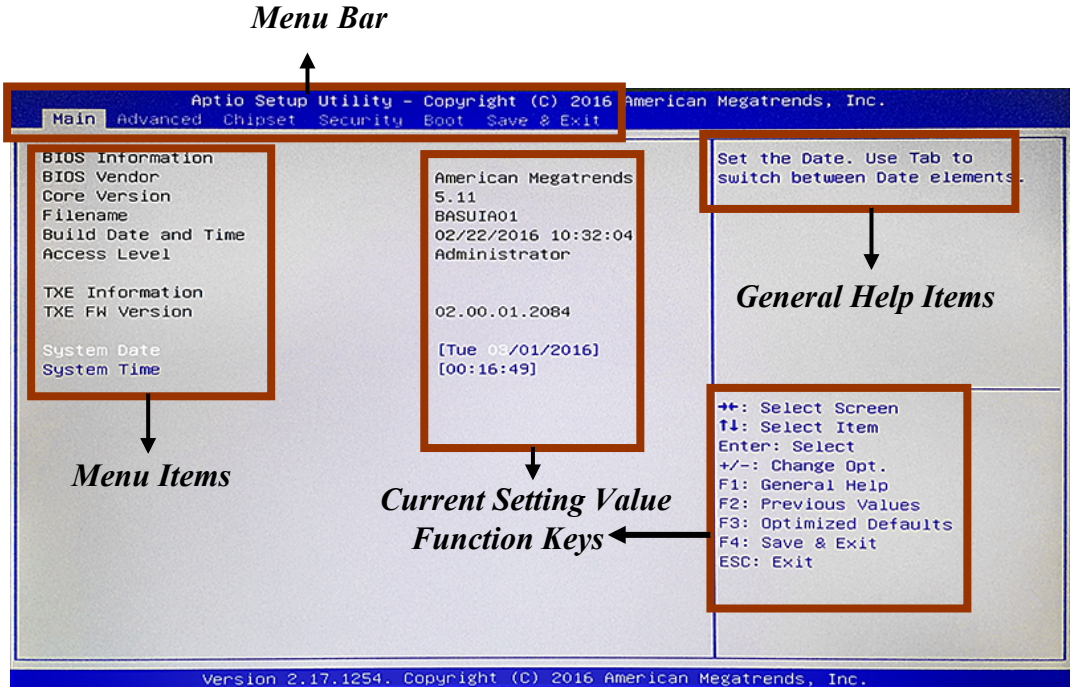
3-1 Entering Setup

Power on the computer and by pressing <Del> immediately allows you to enter Setup. If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

Press **<Del>** to enter Setup.

3-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:



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.
- **[F7]:** To enter pop-up boot menu to select boot device.
- 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

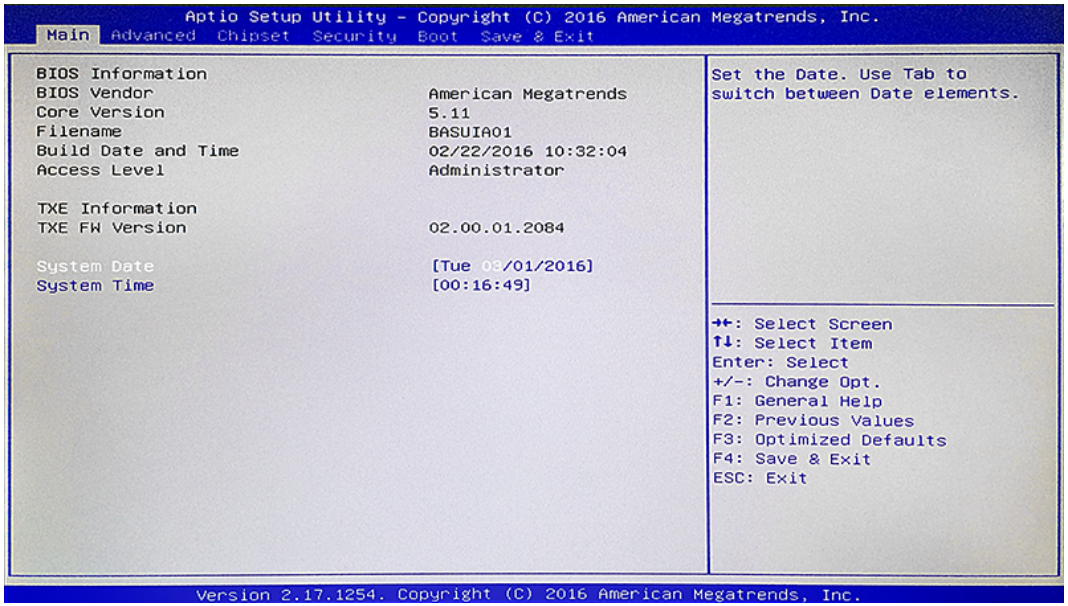
There are six menu bars on top of BIOS screen:

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.



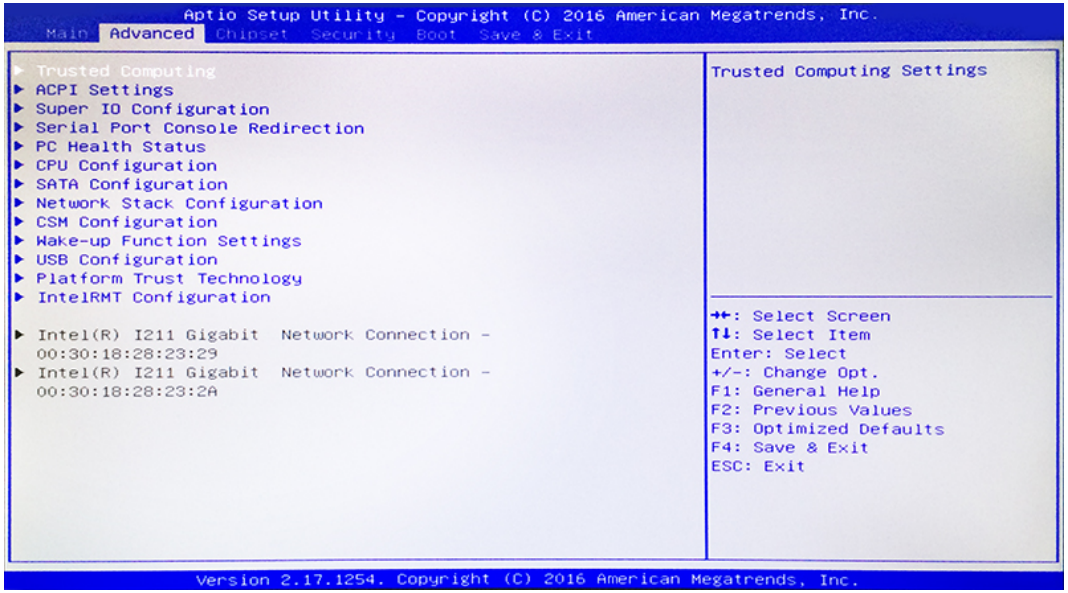
System Date

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



- **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. TCG EFI protocol and INT1A interface will not be available.

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

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

  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].

TPM2.0 UEFI Spec Version

Use this item to select the TCG2 spec. version supported.

The optional settings: [1.0]; [1.x].

[1.0]: compatible mode for Win8/Win10.

[1.x]: for TCG2 newer spec. compatible mode for Win10.

- **ACPI Settings**

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

ACPI Settings

ACPI Sleep State

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

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

- **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

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

Change Settings

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

Transmission Mode Select

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

Serial Port FIF0 Mode

The optional settings are: [16-Byte FIF0]; [32-Byte FIF0]; [64-Byte FIF0]; [128-Byte FIF0].

ERP Support

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

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

Case Open Detect

This item controls detect case open function.
The optional settings: [Disabled]; [Enabled].

WatchDog Reset Timer

Use this item to enable or disable WatchDog Timer 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 while ERP function is set as [Enabled].
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], the following sub-items shall appear:

WatchDog Wake-up Timer Value

The setting range is [10] ~ [4095] seconds, or [1] ~ [4095] minutes.

WatchDog Wake-up Timer Unit

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

ATX Power Emulate AT Power

This item displays current Emulate AT Power Status, motherboard power On/Off control by power supply. User needs to select 'AT or ATX Mode' on MB jumper at first (refer to ***Page 9***, **Pin (1&2) of J1** for ATX Mode & AT Mode Select).

- **Serial Port Console Redirection**

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

COM1

Console Redirection

Use this item to enable or disable COM1 Console Redirection.

The optional settings are: [Disabled]; [Enabled].
*When set as [Enabled], user can make further settings in the '**Console Redirection Settings**' screen:*

- **Console Redirection Settings**

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.
Press [Enter] to make settings for the following sub-items.

Terminal Type
The optional settings are: [VT100]; [VT100+]; [VT-UTF8]; [ANSI].
Bits per second
The optional settings are: [9600]; [19200]; [38400]; [57600]; [115200].
Data Bits
The optional settings are: [7]; [8].
Parity
The optional settings are: [None]; [Even]; [Odd];[Mark]; [Space].
Stop Bits
The optional settings are: [1]; [2].
Flow Control
The optional settings are: [None]; [Hardware RTS/CTS].
VT-UTF8 Combo Key Support
The optional settings are:[Disabled]; [Enabled].
Recorder Mode
The optional settings are: [Disabled]; [Enabled].
Resolution 100x31
The optional settings are: [Disabled]; [Enabled].
Legacy OS Redirection Resolution
The optional settings are: [80x24]; [80x25].
Putty Keypad
The optional settings are: [VT100]; [LINUX]; [XTERMR6]; [SCO]; [ESCN]; [VT400].

Redirection After BIOS POST

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

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

Console Redirection

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

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

- **Console Redirection Settings**

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

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

Out-of-Band Mgmt Port

The default setting is: [COM1].

Terminal Type

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

Bits per second

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

Flow Control

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

Data Bits

The default setting is: [8].

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

Parity

The default setting is: [None].

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

Stop Bits

The default setting is: [1].

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

- **PC Health Status**

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

  - **SmartFAN Configuration**

  Press [Enter] to make settings for SmartFAN Configuration:

  CPUFAN Smart Mode

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

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

  CPUFAN Full-Speed Temperature

  Use this item to set CPUFAN full speed temperature. Fan will run at full speed when above the preset temperature.

  CPUFAN Full-Speed Duty

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

  CPUFAN Idle-Speed Temperature

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

  CPUFAN Idle-Speed Duty

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

  Shutdown Temperature Configuration

  Use this item to select system shutdown temperature.

  The optional settings are: [Disabled]; [70°C/156°F]; [75°C/164°F]; [80°C/172°F]; [85°C/180°F]; [90°C/188°F].

- **CPU Configuration**

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

  Limit CPUID Maximum

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

  This item should be set as [Disabled] for Windows XP.

Intel Virtualization Technology
The optional settings: [Enabled]; [Disabled].
When set as [Enabled], a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
EIST
The optional settings: [Disabled]; [Enabled].
Use this item to enable or disable Intel SpeedStep.
CPU C State Report
Use this item to enable or disable CPU C state report to OS.
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], the following item shall appear:
Max CPU C-State
This item controls Max C-state that the processor will support.
The optional settings: [C7]; [C6]; [C1].
Package C State Limit
Use this item to set Package C State limit.
The optional settings: [C1]; [C3]; [C6]; [C7].

- **SATA Configuration**

Press [Enter] to make settings for the following sub-items:
SATA Configuration
SATA Controller
The optional settings are: [Enabled]; [Disabled].
When set as [Enabled], the following items shall appear:
SATA Mode Selection
The default setting is: [AHCI].
SATA Interface Speed
The item is for user to set the maximum speed the SATA controller can support.
The optional settings are: [Gen1]; [Gen2]; [Gen3].
SATA Port1/mSATA
Port1
The optional settings are: [Enabled]; [Disabled].

- **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 optional will not be created.

  Ipv6 PXE Support

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

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

  PXE Boot Wait Time

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

  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 Configuration

  Boot Option Filter

  This item controls Legacy/UEFI ROMs priority.

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

  Network

  This item controls the execution of UEFI and legacy PXE OpROM.

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

  Storage

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

  The optional settings are: [Do not launch]; [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-up by RTC alarm.

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

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

Wake-up System with Dynamic Time

Use this item to enable or disable system wake-up by RTC alarm.

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

When set as [Enabled], system will wake on the current time + increased minute(s).The settings range is from [1] ~ [60] minute(s).

- **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.

- **Platform Trust Technology**

  Press [Enter] to make settings for the following sub-item:
  TPM Configuration
  fTPM
  The optional settings are: [Enabled]; [Disabled].

- **IntelRMT Configuration**

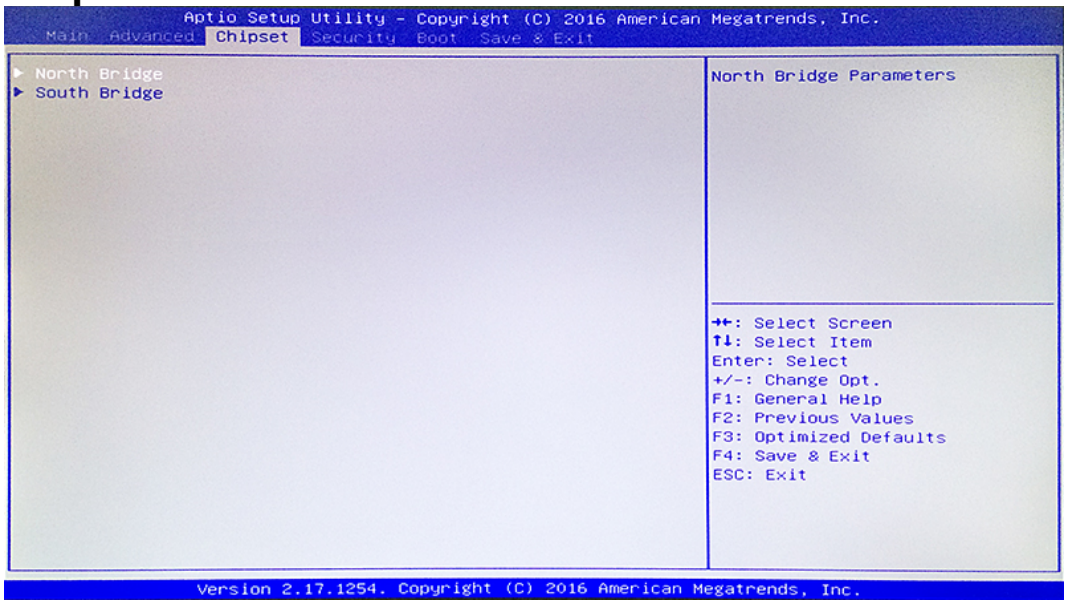
  Press [Enter] to make settings for the following sub-item:
  IntelRMT Configuration
  Intel RMT Support
  The optional settings are: [Enabled]; [Disabled].
  *When set as **[Enabled]**, user can make further settings in the following item:*

  HW Notification
  This item is for user to select hardware notification enabling status.
  The optional settings are: [Disabled]; [Enabled].

- **Intel(R) I211 Gigabit Network Connection -XX:XX:XX:XX:XX:XX/ Intel(R) I211 Gigabit Network Connection -XX:XX:XX:XX:XX:XX**

  This item gives Intel gigabit ethernet controller basic driver information.

3-8 Chipset Menu



- **North Bridge**

  Press [Enter] to view memory configurations or make settings for the following sub-items:

  PAVC

  Use this item to enable or disable protected audio video control.

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

  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]; [96M]; [128M]; [160M]; [192M]; [224M];

[256M]; [288M]; [320M]; [352M]; [384M]; [416M]; [448M]; [480M]; [512M].

DVMT Total Gfx Mem

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

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

Aperture Size

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

GTT Size

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

Primary IGFX Boot Display

The optional settings are: [Auto]; [HDMI1]; [HDMI2]; [Display Port].

Secondary IGFX Boot Display

The optional settings are: [Auto]; [HDMI1]; [HDMI2]; [Display Port].

- **South Bridge**

Press [Enter] to further setting USB device configuration.

Mini PCIE

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

Mini PCIE Speed

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

Onboard PCIE LAN1

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

Onboard PCIE LAN2

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

Audio Controller

Use this item to control detection of the Azalia device.

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

[Disabled]: Azalia will be unconditionally disabled;

[Enabled]: Azalia will be unconditionally enabled.

Azalia HDMI Codec

Use this item to enable or disable internal HDMI codec for Azalia.

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

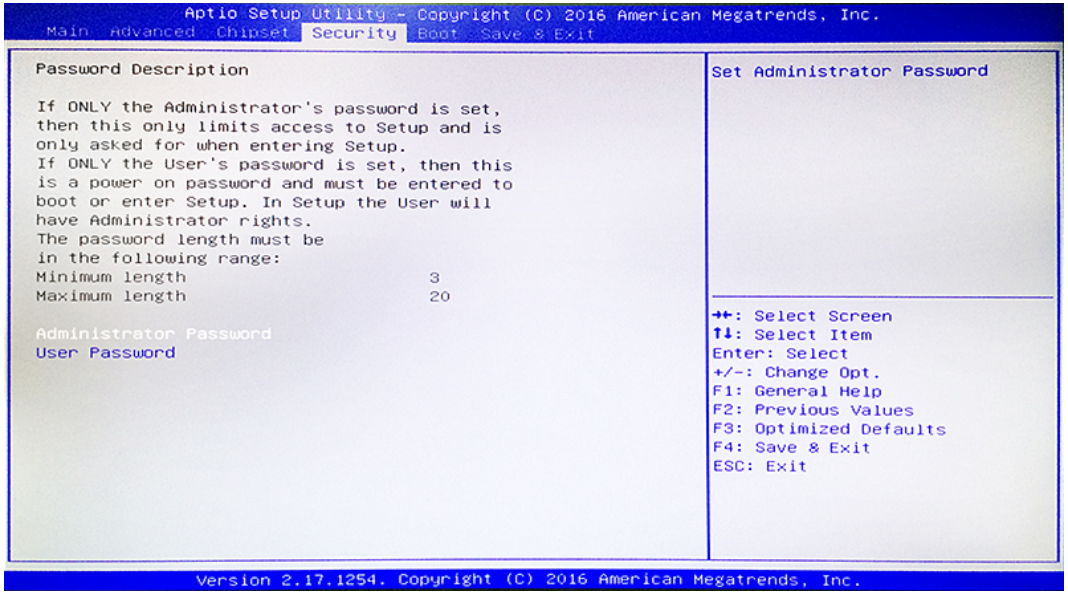
PWR Status after PWR Failure

Use this item to select AC power state when power is re-applied after a power failure.

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

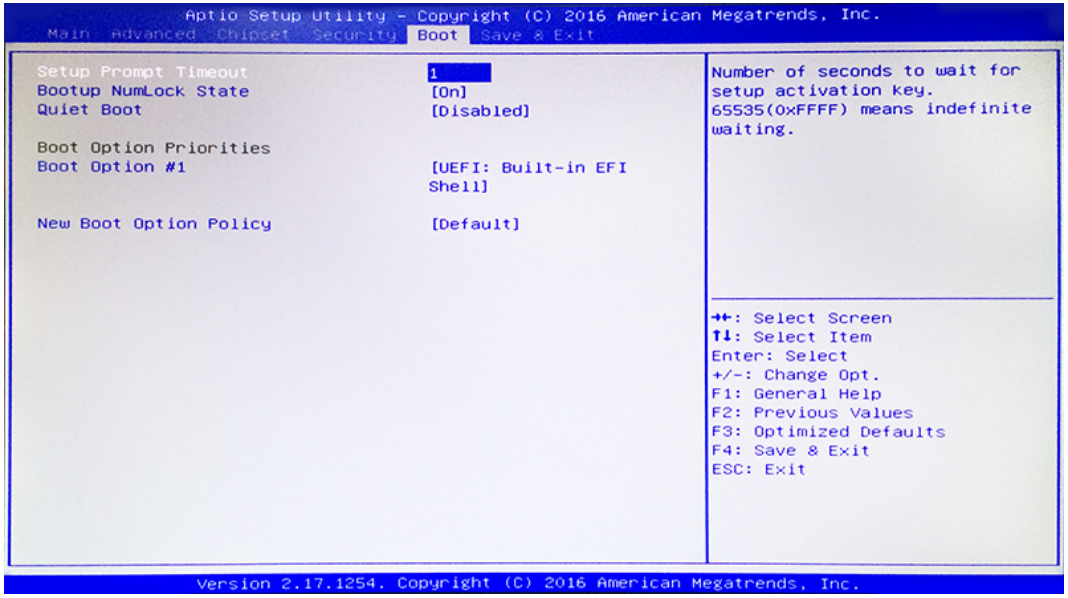
**Note:* *The option [Always On] and [Former State] are affected by ERP function. Please disable ERP to support [Always On] and [Former State] function.*

3-9 Security Menu



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

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…

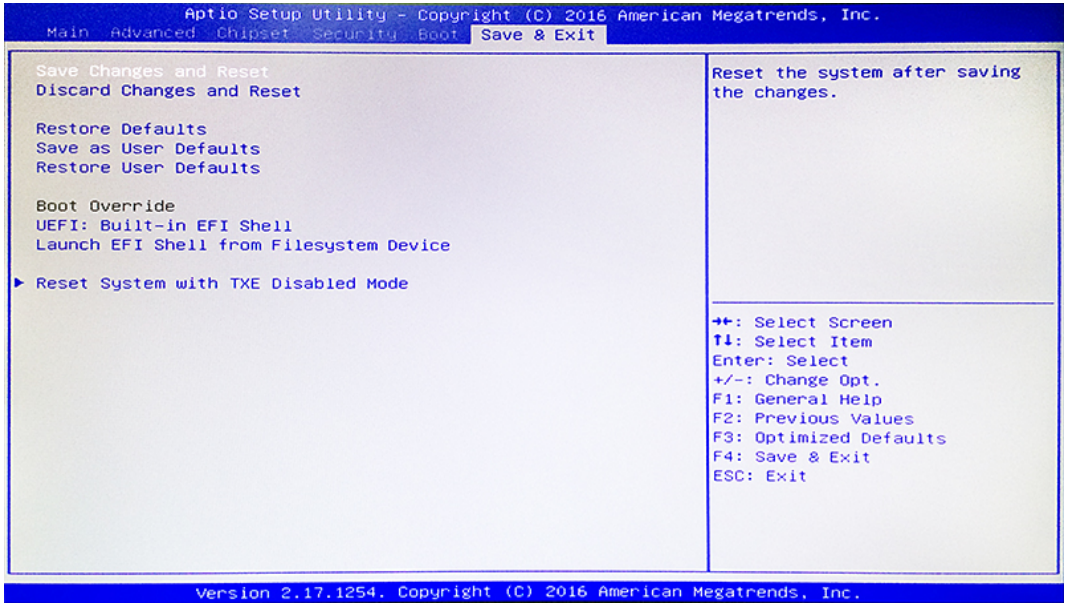
Use this item to decide system boot order from available options.

New Boot Option Policy

This item controls the placement of newly detected UEFI boot options.

The optional settings are: [Default]; [Place First]; [Place Last].

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 the user defaults to all the setup options.

Boot Override

Boot Override

UEFI:xx/…

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

Launch EFI Shell from filesystem device

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

Reset System with TXE disable Mode

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