Technical Manual

Of

Intel Bay Trail Series CPU

Based

SBC

NO.G03-NP93-F

Revision: 5.0

Release date: October 1, 2019

Trademark:

*** Specifications and Information contained in this documentation are furnished for information use only, and are subject to change at any time without notice, and should not be construed as a commitment by manufacturer.**

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
5.0	Fifth Edition	October 1, 2019

Item Checklist

- ☑ Motherboard
- ☑ Cable(s)

Chapter 1
Introduction of the Motherboard

1-1 Feature of Motherboard

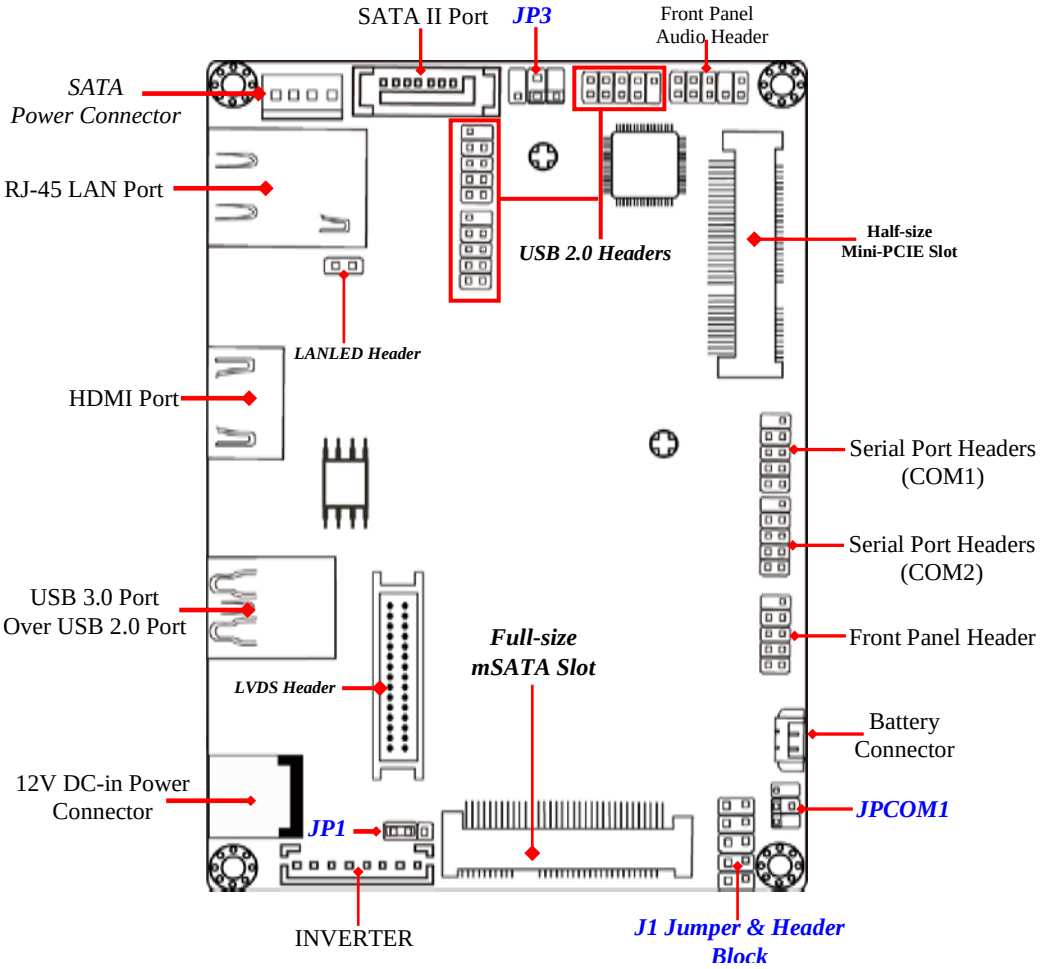
- Onboard Intel® Bay Trail Series Processor, with low power consumption never denies high performance
- Onboard 2GB DDR3L 1333 MHz DRAM
- Onboard one full-size MSATA slot
- Onboard one half-size Mini-PCIE slot
- Support 1 * SATAII device
- Support RJ-45 gigabit Ethernet LAN port
- Integrated with 1 * 24-bit dual channel LVDS header
- Support dual display output
- Support USB 3.0 data transport demand
- Compliance with ErP standard
- Support Watchdog function

1-2 Specification

Spec	Description
Design	● 8-layer SBC; PCB size: 100 mm x 72 mm
Embedded CPU	● Integrated with Intel® Bay Trail series CPU
Memory	● Onboard 2G un-buffered DDR3L 1333 MHz DRAM
Expansion Slot	● 1 * halt-size Mini-PCIE slot
Storage	● 1* SATA II 3G/s Connector ● 1 * full-size mSATA slot
LAN Chip	● Integrated with Realtek RTL8111G PCI-E Gigabit LAN chip ● Support Fast Ethernet LAN function of providing 10/100/1000Mbps Ethernet data transfer rate
Audio Chip	● Realtek ALC662 4-CH HD Audio Codec integrated ● Audio driver and utility included
BIOS	● 64Mbit Flash ROM
Rear I/O	● 1* DC 12V power-in connector ● 1* USB 2.0 port ● 1* USB 3.0 port ● 1* HDMI port ● 1* RJ-45 LAN port
Internal I/O	● 1* SATA Power connector ● 1* LVDS inverter ● 1* Front panel audio header ● 3* 9-pin USB 2.0 header (Expansible to 6* USB 2.0 ports) ● 1* LAN LED activity header ● 1* Front panel header ● 2* Serial port header *(*COM1 support RS232/RS422/RS485)* ● 1* LVDS header ● 1* J1 jumper & header combo block

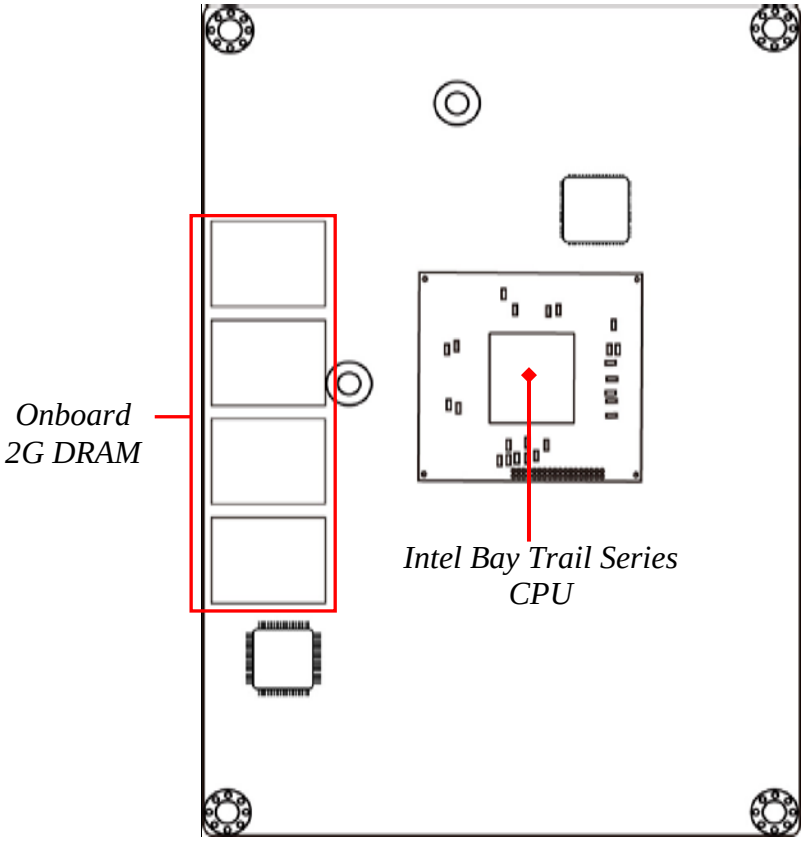
1-3 Layout Diagram

Internal Diagram-Front Side:



*** Note**: The 10-Pin J1 block is only optional for the latest upgraded PCB version. The previous J1 block only come with 8 pins.*

Internal Diagram-Back Side:



Connectors

Connector	Name
DCIN	DC 12V Power–in Connector
USB1(Top)	USB 2.0 Port Connector
USB1(Bottom)	USB 3.0 Port Connector
HDMI	High-Definition Multimedia Interface
LAN	RJ-45 Gigabit LAN Port Connector
SATA1	SATAII Port Connector
PWROUT1	SATA Power out Connector
INVERTER	LVDS Inverter Connector

Headers

Header	Name	Description
FP_AUDIO	Front Panel Audio Header	9-pin Block
USB2/3/4	USB 2.0 Header X3	9-pin Block
LAN_LED	LAN Activity LED Headers	2-pin Block
FP	Front Panel Header(PWR LED/ HDD LED/Power Button /Reset)	9-pin Block
COM1	Serial Header	9-pin Block
COM2	Serial Port Header	9-pin Block
LVDS	LVDS Header	30-pin Block

Jumper

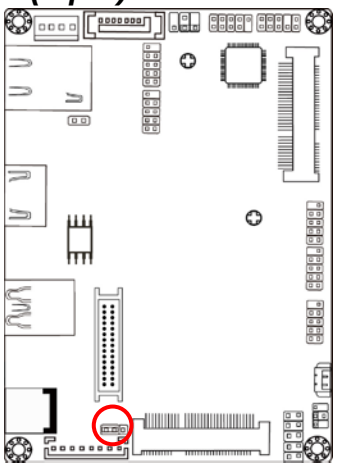
Jumper	Name	Description
JP1	INVERTER VLED 5V/12V Select	3-Pin Block
JPCOM1	COM1 Header Pin9 Function Select	4-Pin Block
JP3	LVDS VLCD 5V/3.3V /12V Select	4-Pin Block
J1 (Pin 1-3)	Clear CMOS Setting	10-Pin Block
J1 (Pin 5-7)	Clear ME Setting	10-Pin Block
J1 (Pin 2-4)	AT/ATX Mode Function Select	10-Pin Block
J1 (Pin 6-8)	Disable ME Function Select	10-Pin Block
J1 (Pin 9-10)	2-Pin Buzzer Header	10-Pin Block

** **Note**: Pin-9 & Pin-10 of J1 block is only optional for the latest upgraded PCB version. The previous J1 block only come with 8 pins.*

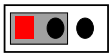
Chapter 2
Hardware Installation

2-1 Jumper Setting

JP1 (3-pin): INVERTER VLED 5V/12V Select

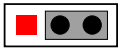


JP1→INVERTER



1 3

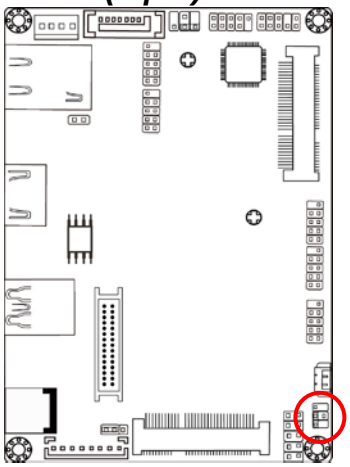
1-2 Closed: Inverter VLED= 5V;



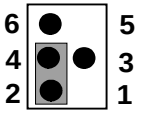
1 3

2-3 Closed: Inverter VLED= 12V.

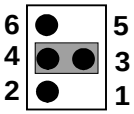
JPCOM1 (4-pin): COM1 Header Pin9 Function Select



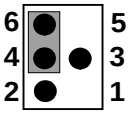
JCOMP1→COM1 Header



2-4 Closed:
RI=RS232;

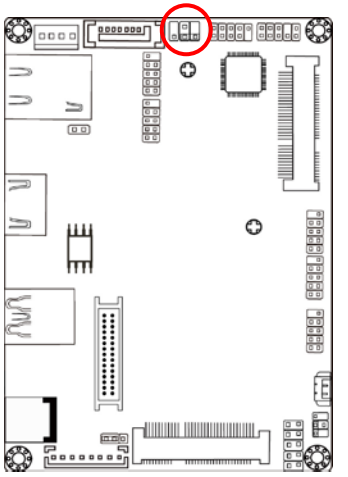


3-4 Closed:
RI= 5V;

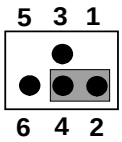


4-6 Closed:
RI= 12V.

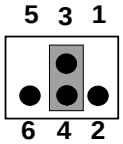
JP3 (4-pin): LVDS VLCD 3.3V/5V/12V Select



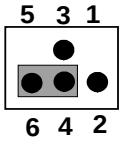
JP3→LVDS VLCD



2-4 Closed:
VLCD = 3.3V

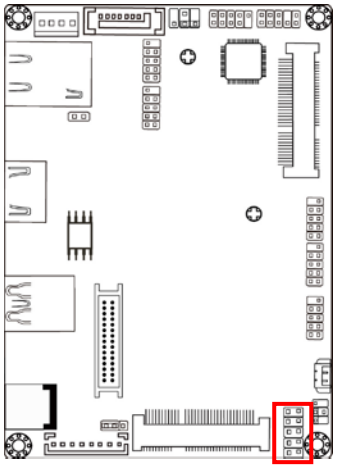


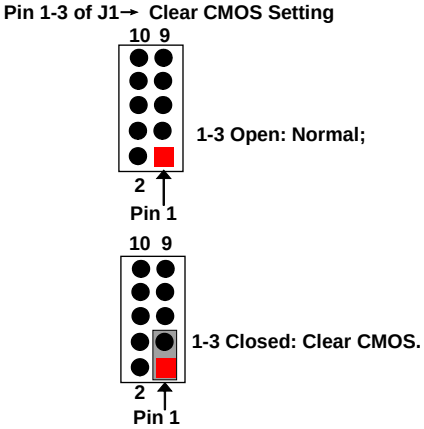
3-4 Closed:
VLCD = 5V;



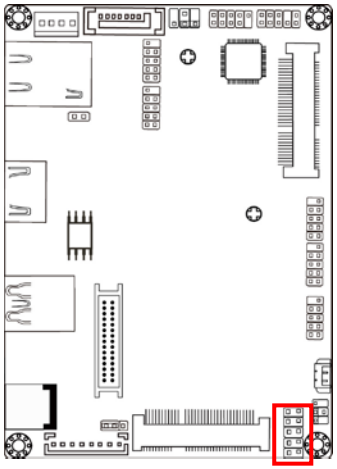
4-6 Closed:
VLCD = 12V;

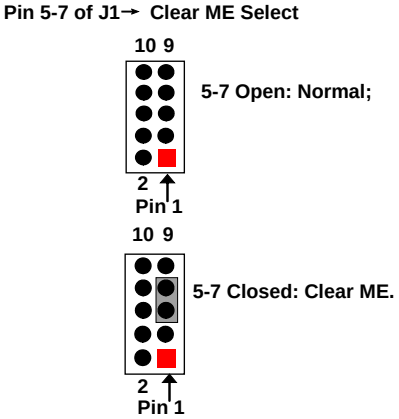
Pin 1-3 of J1 (10-pin): Clear CMOS Setting



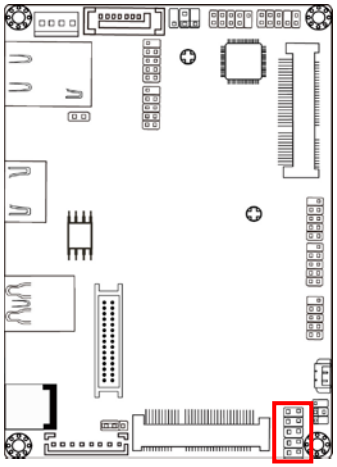


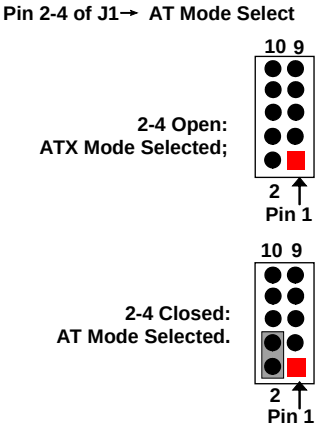
Pin 5-7 of J1 (10-pin): Clear Management Engine Setting





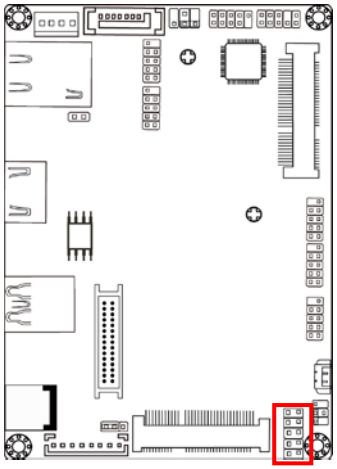
Pin 2-4 of J1 (10-pin): AT/ATX Mode Function Select

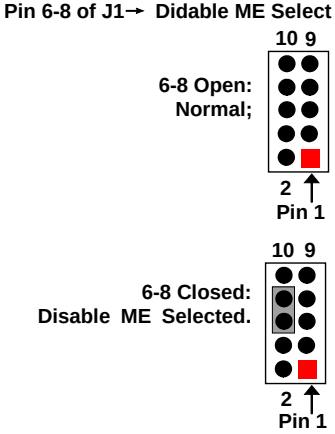




***ATX Mode Selected**: Press power button to power on after power input ready;*
***AT Mode Selected:** Directly power on as power input ready.*

Pin 6-8 of J1 (10-pin): Security Management Engine Function Select

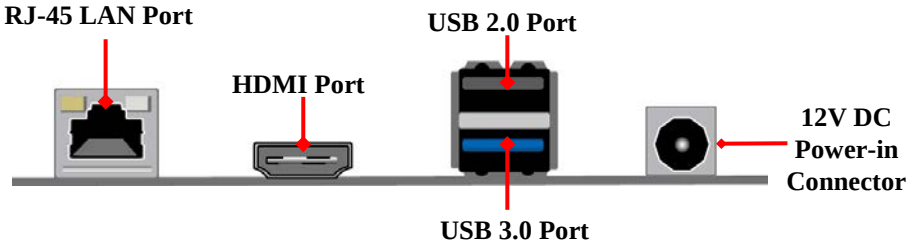




2-2 Connectors and Headers

2-2-1 Connectors

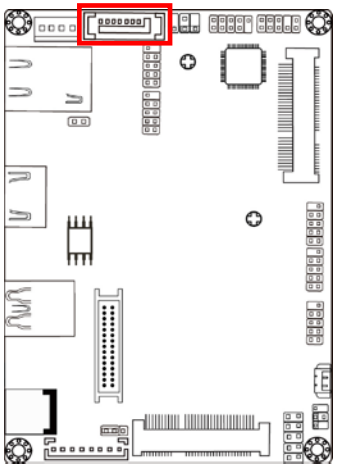
(1) Rear I/O Connectors



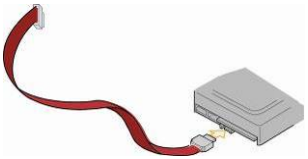
Icon	Name	Function
	12V DC-in Power Connector	For user to connect compatible power adapter to provide power supply for the system.
	USB 2.0 Port	To connect USB keyboard, mouse or other devices compatible with USB specification.
	USB 3.0 Port	To connect USB keyboard, mouse or other devices compatible with USB specification. USB 3.0 ports supports up to 5Gbps data transfer rate.
	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.

(2) SATA1 (7-pin): SATAII Port connector

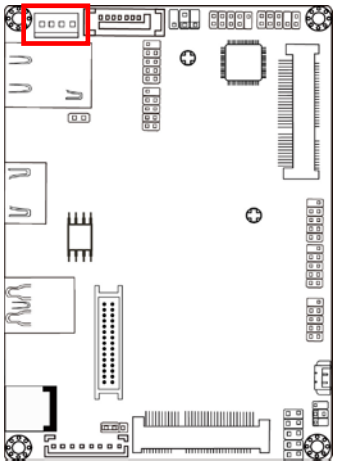
SATA1 port is a high-speed SATAII port that supports 3GB/s transfer rate.

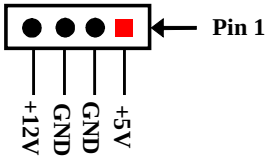


Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

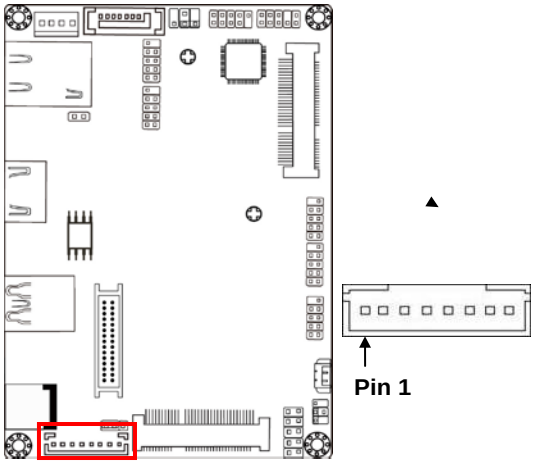


(3) PWROUT1 (4-pin): SATA Power Connector





(4) INVERTER (8-pin): LVDS Inverter Connector

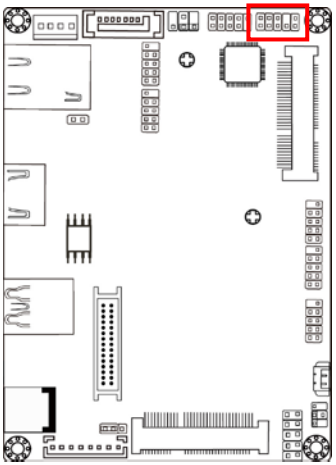


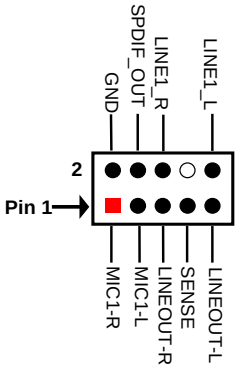
Pin No.	Definition
1	Backlight Enable
2	Backlight PWM
3	VLED
4	VLED
5	GND
6	GND
7	Backlight Up SW
8	Backlight Down SW

2-2-2 Headers

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

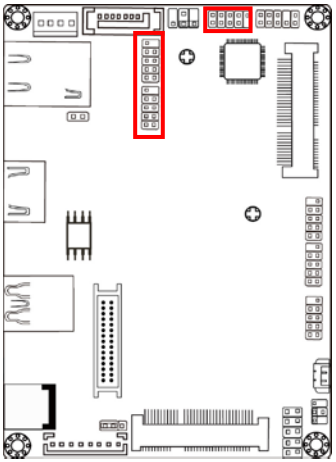
This header connects to Front Panel Line-out, MIC-In connector with cable.

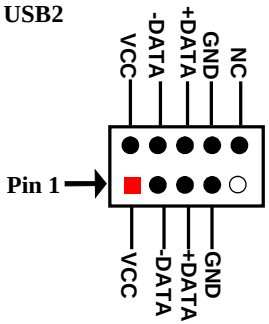


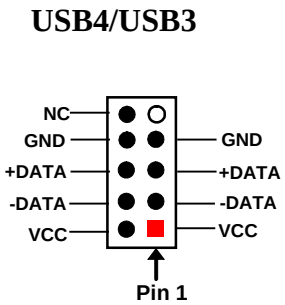


Line-Out, MIC Header

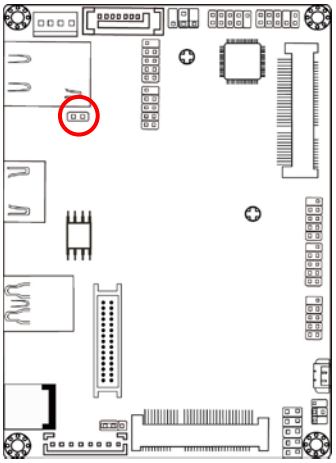
(2) USB2/USB3/USB4 (9-pin): USB 2.0 Port Header

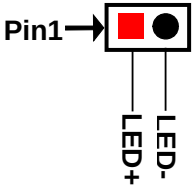




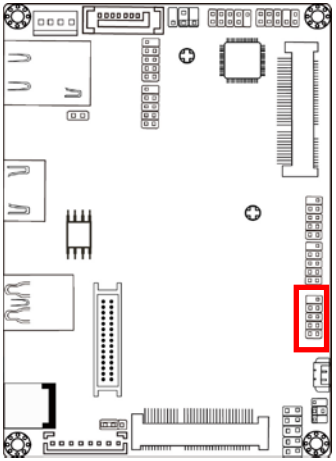


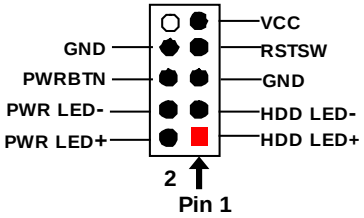
(3)LAN_LED (2-pin): LAN Activity LED Header



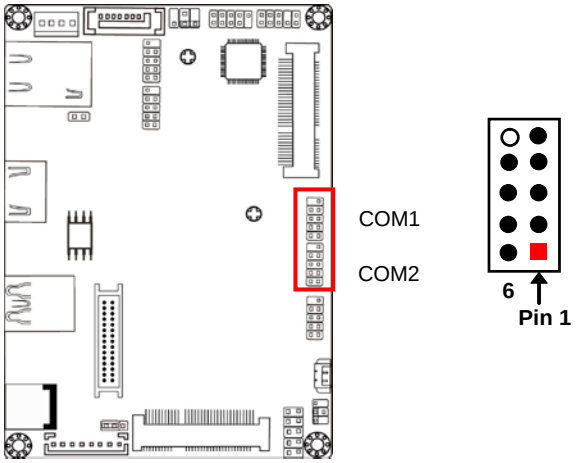


(4) FP (9-pin): Front Panel Header





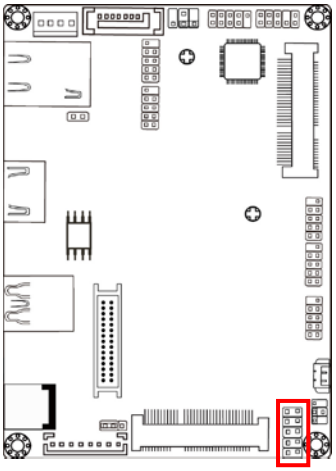
(5) COM1/2 (9-pin): Serial Port Headers

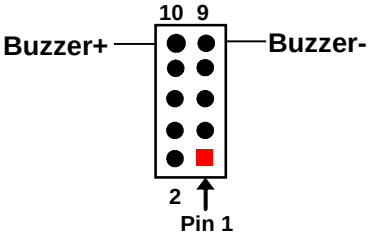


Pin NO.	RS232	*RS422	*RS485
Pin 1	DCD	TX-	DATA-
Pin 2	**RXD**	TX+	DATA+
Pin 3	**TXD**	RX+	NC
Pin 4	DTR	RX-	NC
Pin 5	GNG	GND	GND
Pin 6	DSR	NC	NC
Pin 7	RTS	NC	NC
Pin 8	CTS	NC	NC
Pin 9	RI	NC	NC

***Notice:** RS422, RS485 function is supported by COM1 header only, with compatible COM cable for RS422 or RS 485 function. User also needs to go to BIOS to set 'Transmission Mode Select' for COM1 (refer to Page 24).*

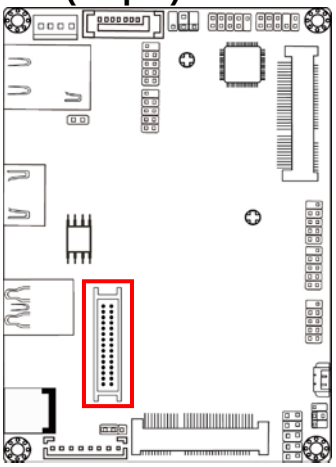
(6) Pin 9-10 of J1 (10-pin): Buzzer Header

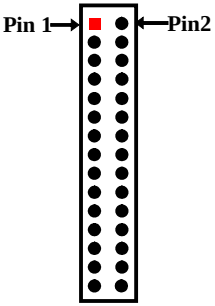




** **Note**: Pin-9 & Pin-10 of **J1** block is only optional for the latest upgraded PCB version. The previous J1 block only come with 8 pins.*

(7) LVDS (30-pin): 24-bit Dual Channel LVDS Header





Pin NO.	Pin Define	Pin NO.	Pin Define
Pin 1	LVDSB_DATAN3	Pin 2	LVDSB_DATAP3
Pin 3	LVDS_CLKBN	Pin 4	LVDS_CLKBP
Pin 5	LVDSB_DATAN2	Pin 6	LVDSB_DATAP2
Pin 7	LVDSB_DATAN1	Pin 8	LVDSB_DATAP1
Pin 9	LVDSB_DATAN0	Pin 10	LVDSB_DATAP0
Pin 11	NC/DDC_DATA	Pin 12	NC/DDC_CLK
Pin 13	GND	Pin 14	GND
Pin 15	GND	Pin 16	GND
Pin 17	LVDSA_DATAP3	Pin 18	LVDSA_DATAN3
Pin 19	LVDS_CLKAP	Pin 20	LVDS_CLKAN
Pin 21	LVDSA_DATAP2	Pin 22	LVDSA_DATAN2
Pin 23	LVDSA_DATAP1	Pin 24	LVDSA_DATAN1
Pin 25	LVDSA_DATAP0	Pin 26	LVDSA_DATAN0
Pin 27	VLCD	Pin 28	VLCD
Pin 29	VLCD	Pin 30	VLCD

Chapter 3
Introducing BIOS

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

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

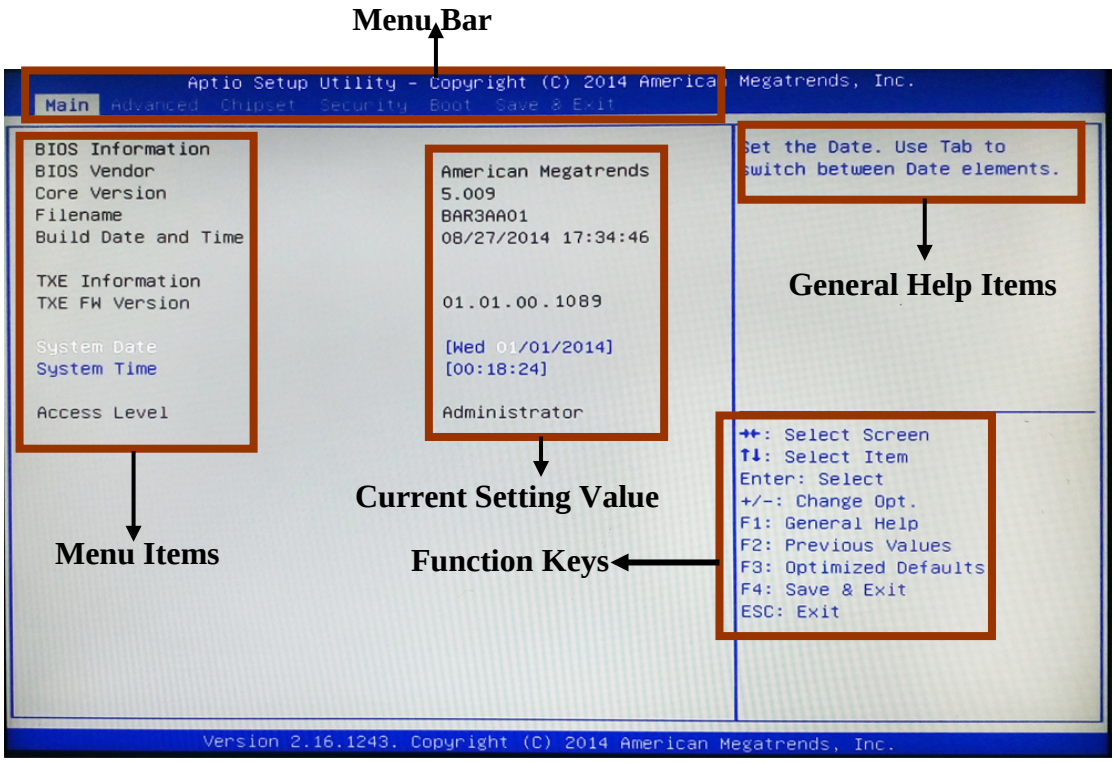
3-1 Entering Setup

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

Press **<Del>** to enter Setup

3-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:



BIOS Menu Screen

3-3 Function Keys

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

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

3-4 Getting Help

Main Menu

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

Status Page Setup Menu/Option Page Setup Menu

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

3-5 Menu Bars

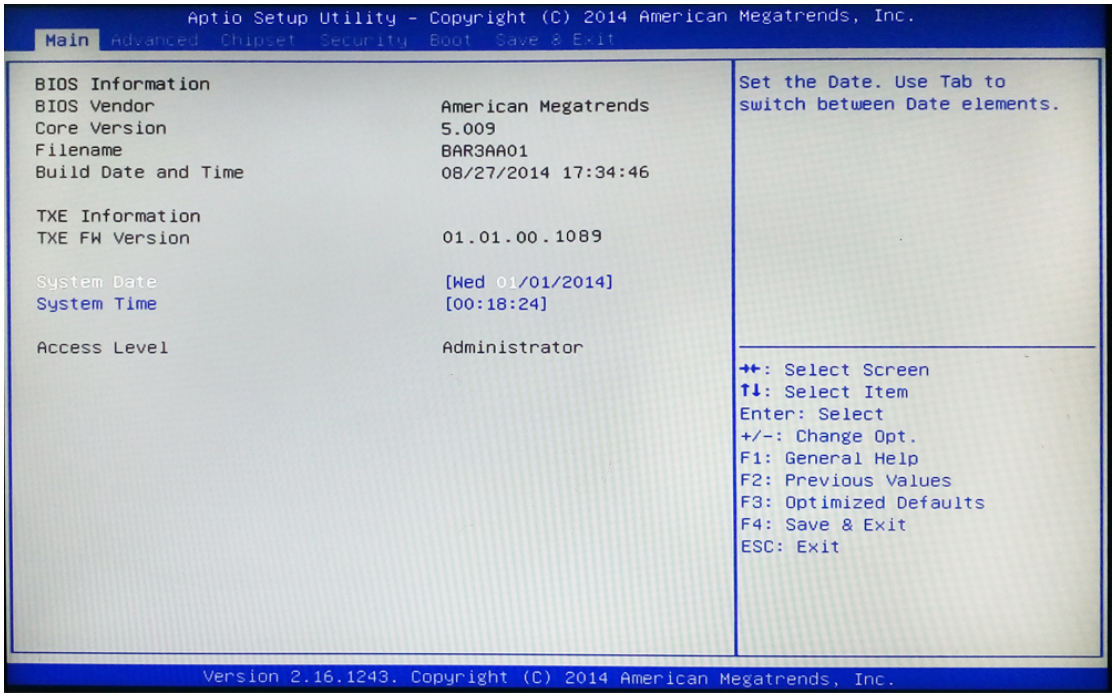
There are six menu bars on top of BIOS screen:

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

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

3-6 Main Menu

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



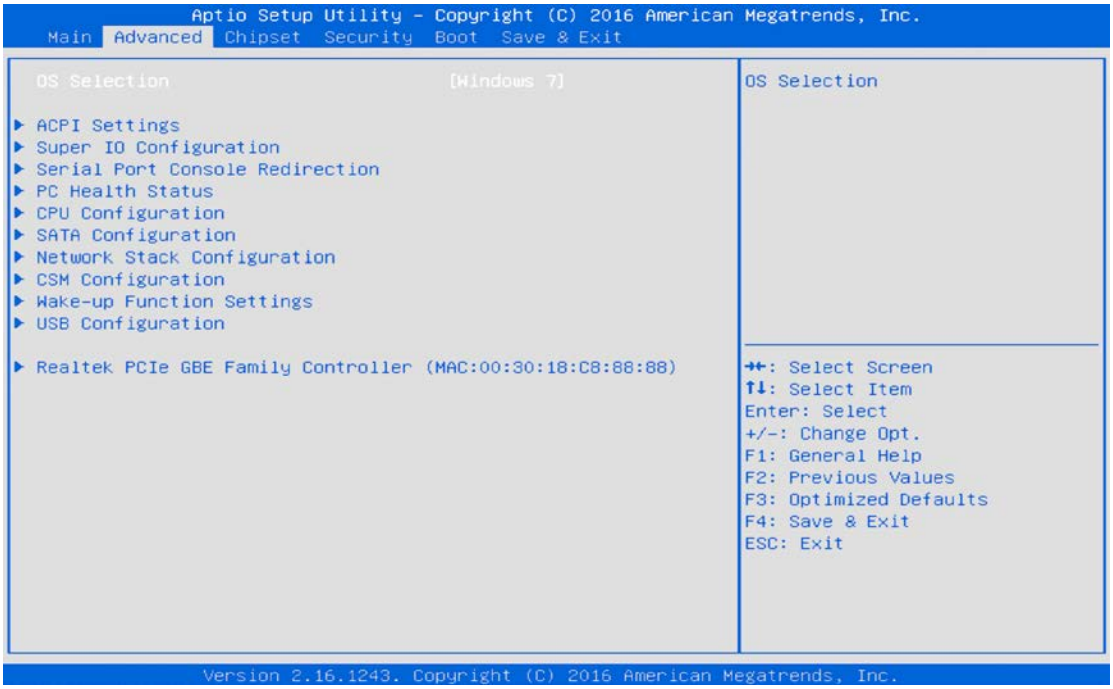
System Date

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

System Time

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

3-7 Advanced Menu



OS Selection

The optional settings: [Windows 8.X]; [Linux/Android]; [Windows 7].

**** 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.*

- **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].

Mode Speed Select

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

Serial Port FIF0 Mode

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

- **Serial Port 2 Configuration**

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

Serial Port

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

Change Settings

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

Serial Port FIF0 Mode

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

ERP Function

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

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

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

WatchDog Timer Value
User can set a value in the range of [10] to [255].

WatchDog Timer Unit
The optional settings are: [Sec.]; [Min.].

WatchDog Wake-up Timer in ERP
This item support WDT wake-up while ERP function is set as [Enabled].
The optional settings are: [Enabled]; [Disabled].
When set as [Enabled], the following sub-items shall appear:

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

WatchDog Timer Unit
The optional settings are: [Sec.]; [Min.].

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

- **Serial Port Console Redirection**

Press [Enter] to make settings for the following sub-items:
COM1/COM2

Console Redirection

Use this item to enable or disable COM1 Console Redirection.
The optional settings are: [Disabled]; [Enabled].
*When set as [Enabled], user can make further settings in the '**Console Redirection Settings**' screen:*

- **Console Redirection Settings**

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

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

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

[VT400].

Redirection After BIOS POST

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

Legacy Console Redirection

- **Legacy Console Redirection Settings**

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

Legacy Serial Redirection Port

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

The optional settings: [COM1]; [COM2].

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

Console Redirection

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

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

- **Console Redirection Settings**

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

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

Out-of-Band Mgmt Port

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

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 and set value in '**Shutdown Temperature**'.

  Shutdown Temperature

  Use this item to select system shutdown temperature.

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

- **CPU Configuration**

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

  Limit CPUID Maximum

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

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

  Execute Disable Bit

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

  Hardware Prefetcher

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

  Use this item to turn on/off the Mid Level Cache (L2) streamer prefetcher.

  Adjacent Cache Line Prefetch

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

  Use this item to turn on/off prefetching of adjacent cache lines.

  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

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

Enhanced C state

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

Max CPU C-State

This item controls Max C-state that the processor will support.
The optional settings: [C7]; [C6]; [C1].

- **SATA Configuration**

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

SATA Configuration

SATA Controller

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

SATA Speed Support

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

SATA Mode

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

SATA Port

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

m-SATA

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], Ipv4 boot optional will not be created.
PXE boot wait time
Use this item to set wait time to press [ESC] key to abort the PXE boot.

- **CSM Configuration**

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

- **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/min/sec 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).
**This function is supported when EUP Function is set as [Disabled].*
USB1 Wake-up from S3-S4/USB2 Wake-up from S3-S4/USB3 Wake-up from S3-S4/USB4 Wake-up from S3-S4
The optional settings: [Enabled]; [Disabled].
USB Wake-up is affected by ERP function in S4. Please disable ERP before activating this function in S4.

- **USB Configuration**

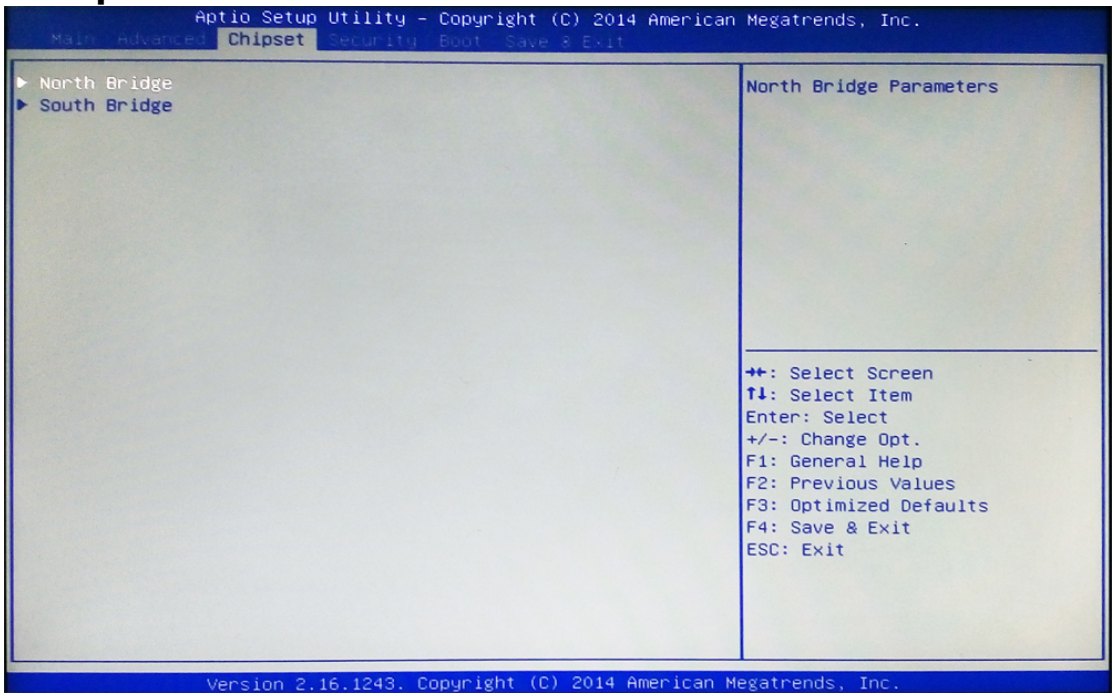
Press [Enter] to make settings for the following sub-items:
USB Configuration
Legacy USB Support
The optional settings are: [Enabled]; [Disabled]; [Auto].
[Enabled]: To enable legacy USB support.
[Disabled]: To keep USB devices available only for EFI specification,
[Auto]: To disable legacy support if no USB devices are connected.
XHCI Hand-off
This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
The optional settings are: [Enabled]; [Disabled].
EHCI Hand-off
This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.
The optional settings are: [Disabled]; [Enabled].

USB Mass Storage Driver Support
The optional settings are: [Disabled]; [Enabled].
USB hardware delay and time-outs:

USB Transfer Time-out
Use this item to set the time-out value for control, bulk, and interrupt transfers.
The optional settings are: [1 sec]; [5 sec]; [10 sec]; [20 sec].
Device Reset Time-out
Use this item to set USB mass storage device start unit command time-out.
The optional settings are: [10 sec]; [20 sec]; [30 sec]; [40 sec].
Device Power-up Delay
Use this item to set maximum time the device will take before it properly reports itself to the host controller. 'Auto' uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor.
The optional settings: [Auto]; [Manual].
Select [Manual] you can set value for the following sub-item: '**Device Power-up Delay in Seconds'.**
Device Power-up Delay in Seconds
The delay range is from [1] to [40] seconds, in one second increments.

- **Reltek PCIe GBE Family Controller (MAC:XX:XX:XX:XX:XX:XX)**
  Use this item to get driver information and configure Realtek ethernet controller parameter.

3-8 Chipset Menu



- **North Bridge**

  Press [Enter] to view current using memory information and make settings for the following sub-items:

  PAVC

  Use this item to enable or disable Protected Audio Video Control.

  The optional settings are: [Disabled]; [LITE Mode]; [SERPENT Mode].

  DVMT Pre-Allocated

  Use this item to select DVMT 5.0 pre-allocated (fixed) graphics memory size used by the internal graphics device.

  The optional settings are: [64M]; [96M]; [128M]; [160M]; [192M]; [224M]; [256M]; [288M]; [320M]; [352M]; [384M]; [416M]; [448M]; [480M]; [512M].

DVMT Total Gfx Mem
Use this item to select DVMT 5.0 total graphics memory size used by the internal graphics device.
The optional settings are: [128 MB]; [256 MB]; [MAX].
Aperture Size
The optional settings are: [128 MB]; [256 MB]; [512MB].
GTT Size
The optional settings are: [1MB]; [2 MB].
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 optional settings are: [VBIOS Default]; [HDMI]; [LVDS].
**** Note**: [LVDS] option only shows up when '**Active LVDS**' item is set as [Enabled].*
Active LVDS
The optional settings are: [Disabled]; [Enabled].
[Disable]: VBIOS does not enable LVDS.
[Enable]: VBIOS enable LVDS driver by integrated encoder.
** **Note**: When set as '**Enabled**', user can make further settings in '**LCD Panel Type**'*
LCD Panel Type
Use this item to select LCD panel resolution.
The optional setting are: [640 x 480 18-bit]; [800x 600 18-bit]; [1024 x 600 18-bit]; [1024 x 768 24-bit]; [1280 x 720 18-bit]; [800 x 480 18-bit]; [1366 x 768 18-bit]; [1440 x 900 18-bit]; [1366 x 768 24-bit]; [1440 x 900 24-bit]; [1280 x 1024 24-bit]; [1400 x 1050 24-bit]; [1600 x 900 24-bit]; [1680 x 1050 24-bit]; [1600 x 1200 24-bit]; [1920 x 1080 24-bit].

- **South Bridge**

Press [Enter] to make further setting in the following sub-items:
Mini PCIE
The optional settings are: [Enabled]; [Disabled].

Mini PCIE Speed

The optional settings are: [Auto]; [Gen2]; [Gen1].

Onboard PCIE LAN

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

Audio Controller

Use this item to control the detection of the Azalia HD Audio device.
The optional settings are: [Disabled]; [Enabled].
[Disabled]: Azalia will be unconditionally disabled;
[Enabled]: Azalia will be unconditionally enabled;

Azalia HDMI Codec

Use this item to enable or disable internal HDMI codec for Azalia.
The optional settings are: [Enabled]; [Disabled].

- **USB Configuration**

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

USB Configuration

USB 3.0 Support

This item is for user to select mode of operation of XHCI controller.
The optional settings are: [Enabled]; [Auto]; [Disabled].

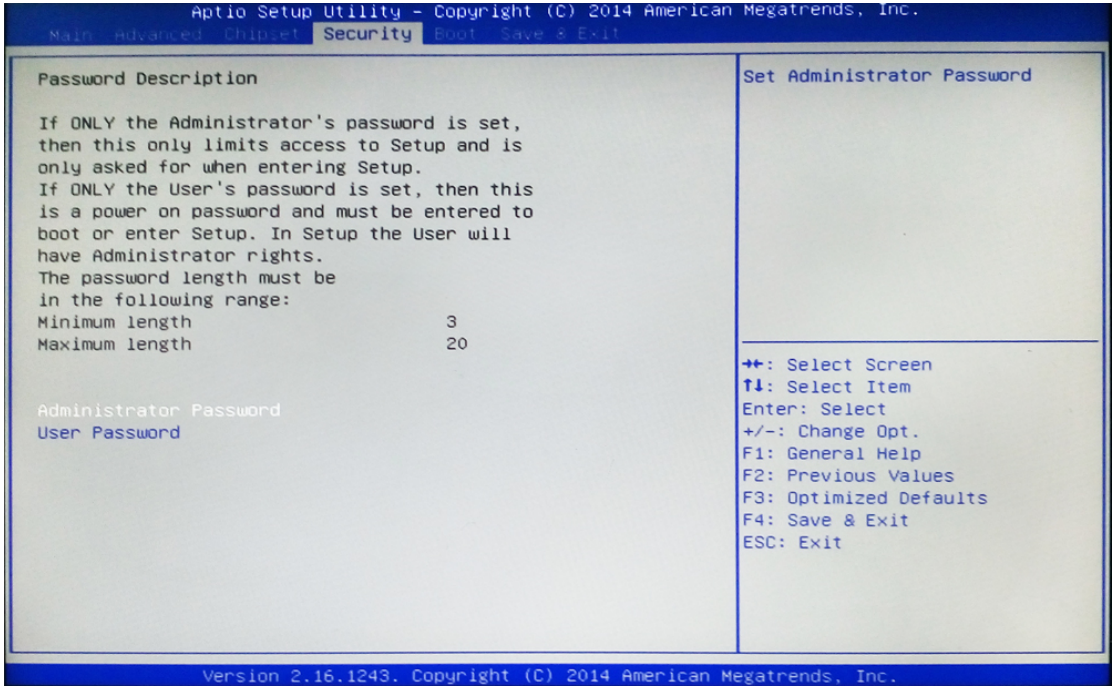
USB 2.0 Support

This item is for user to control the USB EHCI (USB2.0) functions. One EHCI controller must always be enabled.
The optional settings are: [Enabled]; [Disabled].

System state after Power Failure

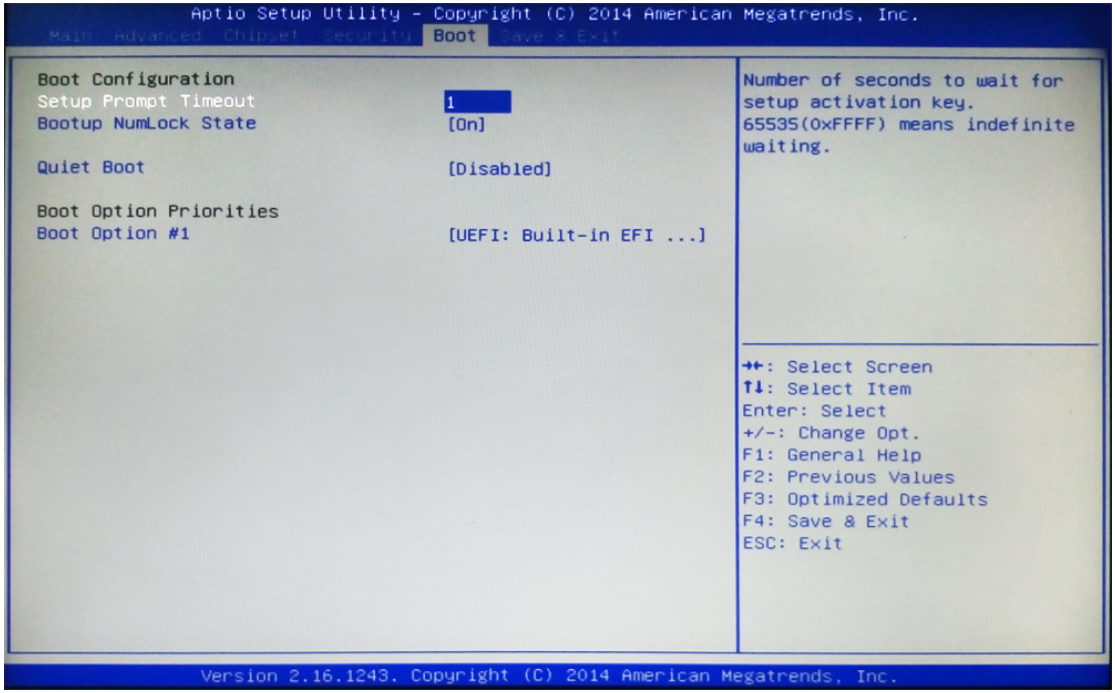
Use this item to select AC power state when ACpower is re-applied after a power failure. The optional settings are: [Always On]; [Always Off]; [Former State].
*[Always On] and [Former State] options are affected by ERP function. Please disable ERP to support [Always On] and [Former State].

3-9 Security Menu



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

3-10 Boot Menu



Boot Configuration

Setup Prompt Timeout

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

Bootup Numlock State

Use this item to select keyboard numlock state.

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

Quiet Boot

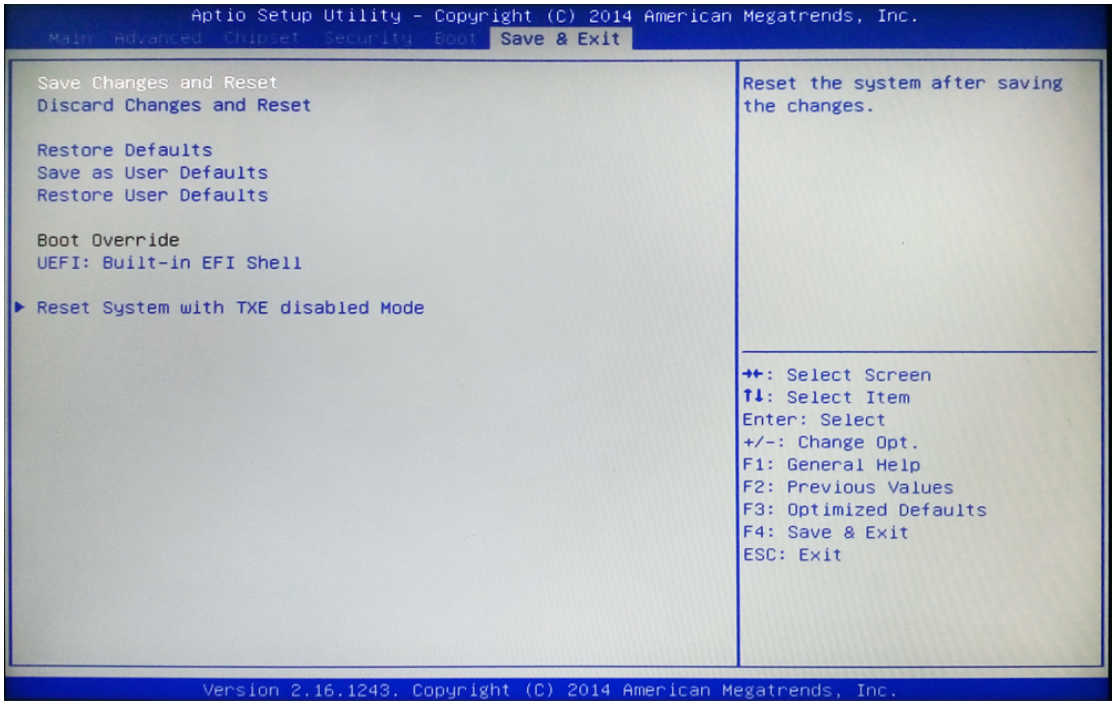
The optional settings are: [Disabled]; [Enabled].

Boot Option Priorities

Boot Option#1/2…

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

3-11 Save & Exit Menu



Save Changes and Reset

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

Discard Changes and Reset

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

Restore Defaults

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

Save as User Defaults

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

Restore User Defaults

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

Boot Oerride

UEFI: Built-in EFI Shell

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

Reset System with TXE disable Mode

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