# *NF792 Series*

# *User's Manual*

**NO. G03-NF792-F**

**Revision: 3.0**

**Release date: October 1, 2019**

# 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

# ⚠ CAUTION 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.

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## Manual Revision Information

| Reversion | Revision History | Date |
|-----------|------------------|------|
| 3.0 | Third Edition | October 1, 2019 |

## Item Checklist

☑ Motherboard
☑ Cable(s)

# Chapter 1
# Introduction of the Motherboard

## 1-1    Feature of Motherboard

- Intel® Braswell series SoC Processor, with low power consumption never denies high performance

- Support DDR3L-1600, 2 * SO-DIMM slot, up to 8GB memory

- Realtek ALC662VD Audio

- 2 * Realtek 8111H Giga LAN

- Support 1 * SATA III (6Gb/s) & 1 * M.2 (M key 2242/2260)

- Support HDMI/VGA/LVDS, triple displays

- 2 * External COM and 4 * internal COM

- 3 * External USB3.0 & 1 * External USB2.0 & 6 * Internal USB2.0

- 1 * Parallel port

- 1 * Mini-PCIe slot & 1 * PCIe x1 slot

- 1 * SIM Card Holder

- ATX power

## 1-2    Specification

| Spec | Description |
|---|---|
| CPU | ● Intel® Braswell *SoC* CPU<br><br>*CPU model varies from different IPC options. Please consult your dealer for more information of onboard CPU.* |
| Memory | ● 2* Dual CH DDR3L 1600MHz SO-DIMM slot up to 8GB |
| Expansion Slot | ● 1* Full-size Mini PCIe slot<br>● 1* PCIex1 Slot<br>● 1* M.2 (M Key 2242/2260)<br>● 1* SIM Card Holder |
| Storage | ● 1* SATA III 6G/s Connector |
| LAN Chip | ● 2* Realtek® 8111H GbE<br>● Support Fast Ethernet LAN function of providing 10/100/1000Mbps Ethernet data transfer rate |
| Audio Chip | ● Realtek ALC662VD HD Audio Codec integrated<br>● Audio driver and utility included |
| BIOS | ● AMI Flash ROM |
| Rear I/O | ● 1* VGA<br>● 1* HDMI<br>● 2* RJ45, 10/100/1000 Mbps<br>● 3* USB3.0, 1* USB2.0 port<br>● 1* MIC, Line-in, Line-out port<br>● 2* COM ports ( COM1 support RS232/RS422/RS485)<br>● 1* Parallel port |
| Internal I/O | ● 6* USB 2.0<br>● 1* PS/2<br>● 1* LVDS/inverter<br>● 4* Serial ports<br>● 1* SATA3 (6.0Gb/s)<br>● 1* Mini PCIe (Full-size) |

| | <ul><li>1* M.2 (M key 2242/2260)</li><li>1* 8-bit GPIO</li><li>1* Chassis Intrusion</li><li>1* Audio Header</li><li>1* AT_ATX Mode</li><li>1* TPM (onboard option)</li><li>1* SIM Card Holder</li><li>1* SMBUS Header</li></ul> |
|---|---|

**Note:**

1. The module for **SODIMM1** and **SODIMM2** should be **DDR3L 1.35V** SODIMM and **not exceeding 8GB total capacity**.

**2**. The SODIMM installed should be of or above the memory clock the model supported, otherwise the board will not start.

# 1-3 Main Board Diagram
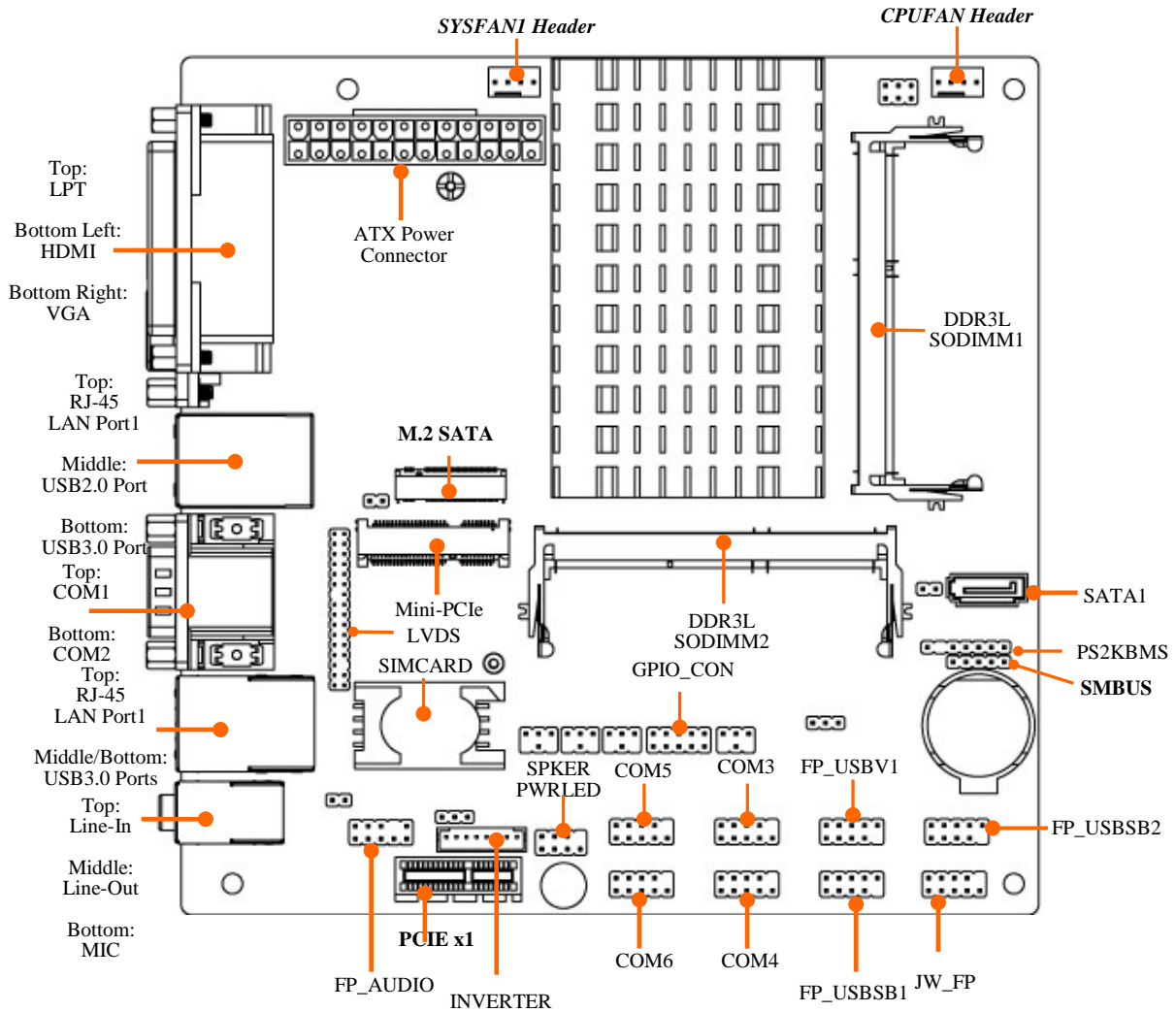
# Chapter 2
# Hardware Installation
## 2-1 Location of Internal Jumper and Connector
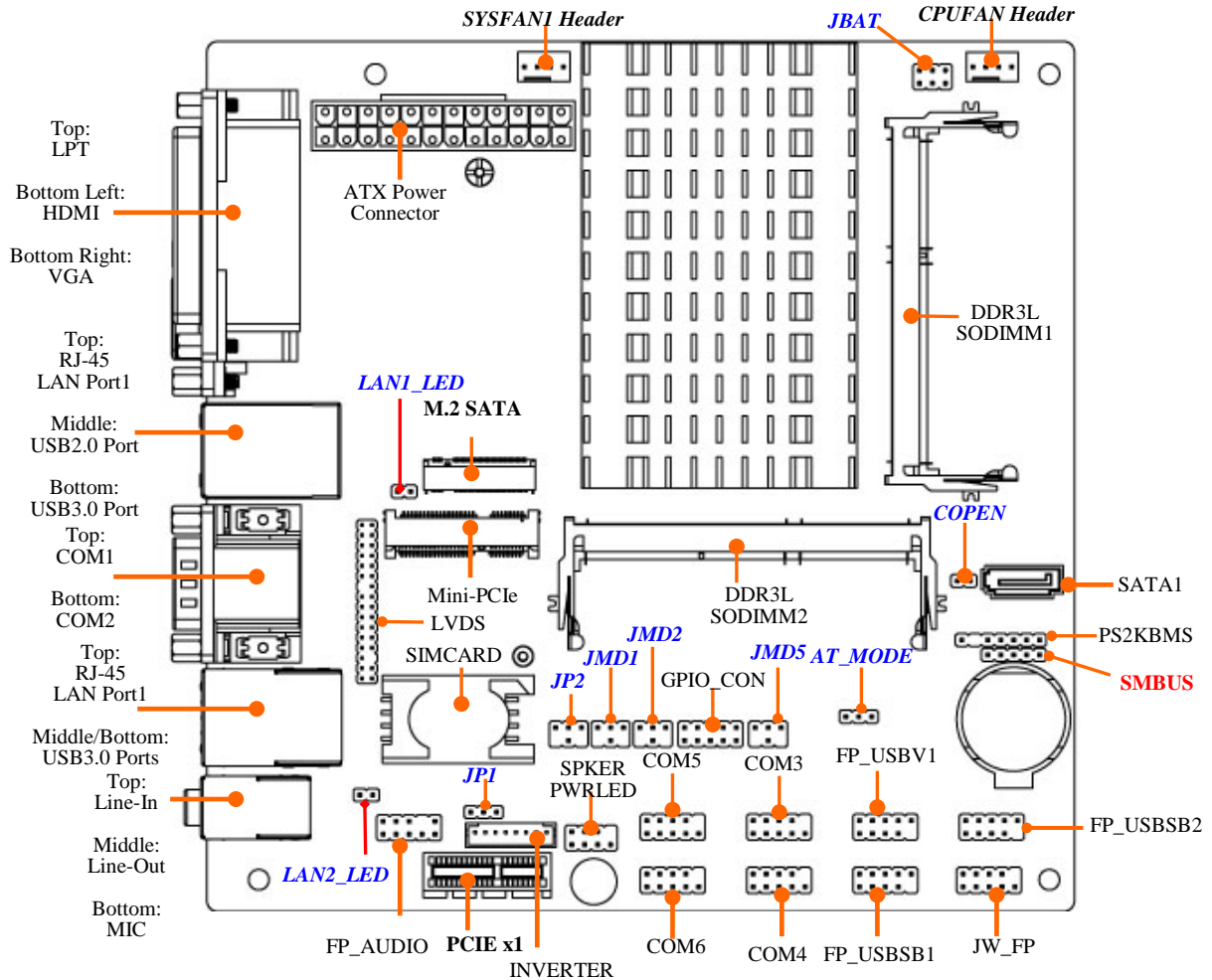
## 2-2 Internal Jumper and Connector Setting

### *(1) JBAT(6-pin): Clear CMOS / FLASH Select*



**2 4 6**
**1 3 5**

**1-2 Open:**
**Normal (Default);**
**1-2 Closed:**
**Clear CMOS;**

**2 4 6**
**1 3 5**

**3-4 Closed:**
**RTC Reset;**

**2 4 6**
**1 3 5**

**5-6 Closed:**
**Flash Override.**
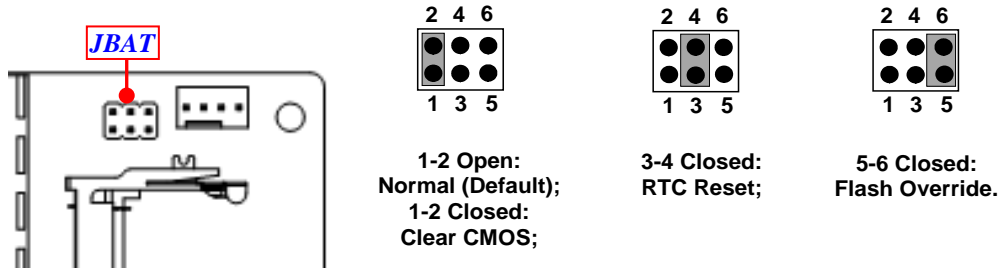
### *(2) COPEN (2-pin): Case Open Message Display Function Select*



**1**

**1-2 Open：**
**Normal (Default);**

**1**
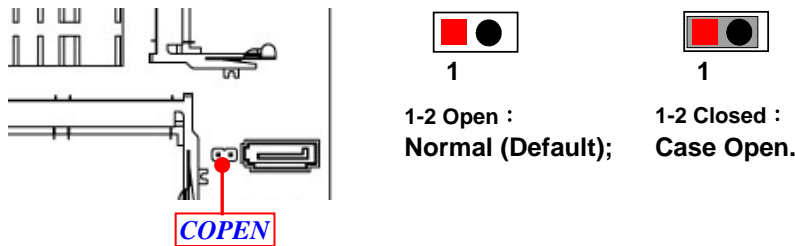
**1-2 Closed：**
**Case Open.**

*Pin (1-2) Close: 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.*

### *(3) AT_Mode (3-pin): AT/ATX Mode Function Select*



**Pin1**

**1-2 Closed:**
**ATX Mode**
**(Default);**

**Pin1**

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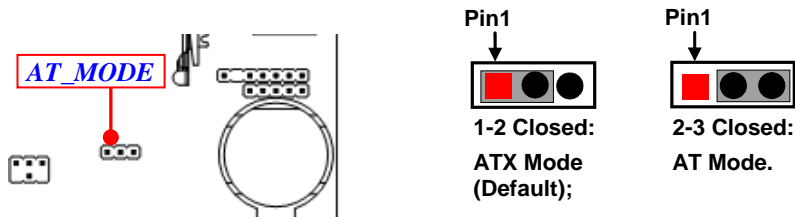
*ATX Mode Selected*: Press power button to power on after power input ready;
*AT Mode Selected:* Directly power on as power input ready.

## (4) JMD1/2/5 (4-pin): COM1/COM2/COM5 Port Pin9 Function Select

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

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

**4-6 Closed:
12V.**
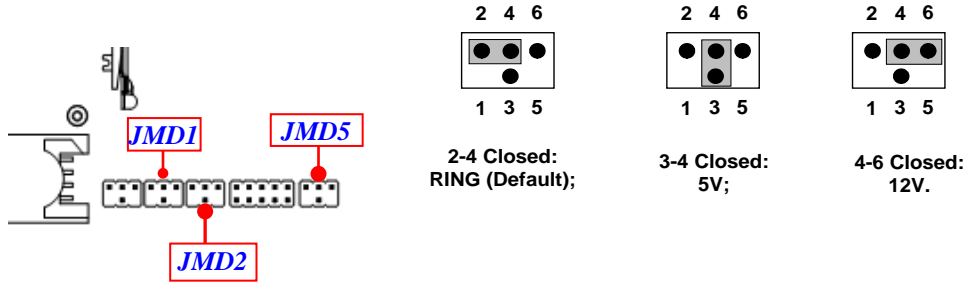
## (5) JP2 (4-pin): LVDS Panel VCC 3.3V/5V/12V Select

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

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

**4-6 Closed:
VCC= 12V.**
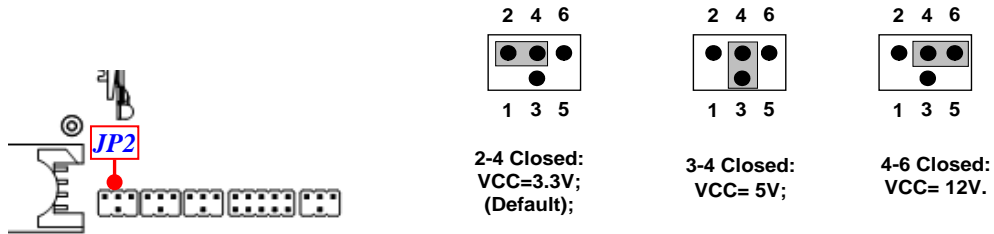
## (6) JP1 (3-pin): LVDS Backlight VCC 5V/12V Select

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

**2-3 Closed:
12V.**
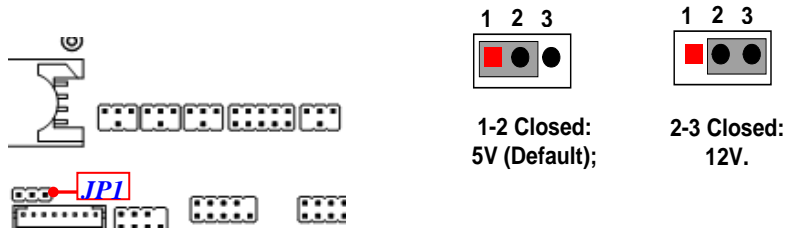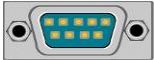
## (7) LAN1_LED / LAN2_LED (2-pin): LAN LED Activity Function Select
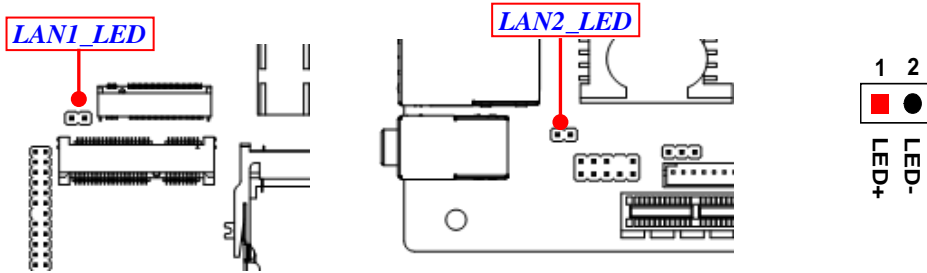


## 2-2-1 Connectors

### (1) Rear I/O Connectors



Parallel Port
RJ-45 Port1
COM1 Port
RJ-45 Port2
Blue: Line-IN
Green: Line-OUT
Pink: MIC
HDMI Port
VGA Port
USB 3.0 Port
USB 2.0 Ports
COM2 Port
USB 3.0 Port
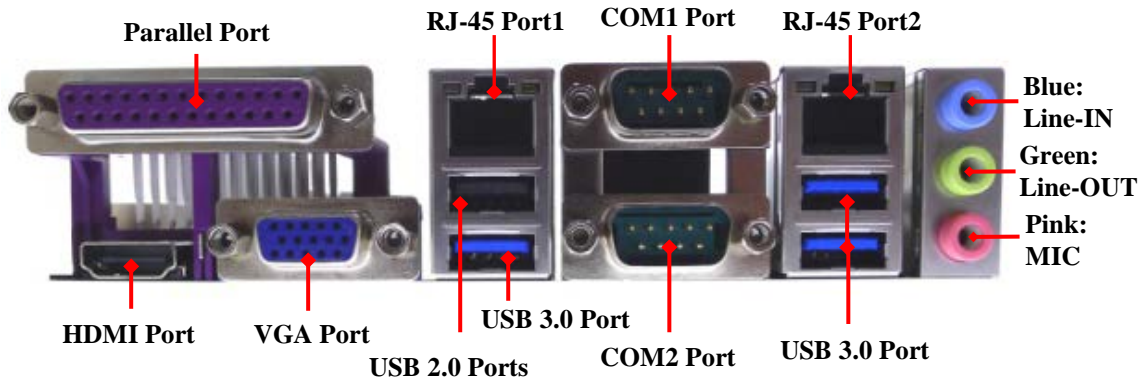
| Icon | Name | Function |
|------|------|----------|
| | **Parallel Port** | Also called LPT connector. Mostly for user to connect printer or scanner with parallel interface. |
| | **HDMI Port** | To connect display device that support HDMI specification. |
| | **VGA Port** | To connect display device that support VGA specification. |
| | **RJ-45 LAN Port** | This connector is standard RJ-45 LAN jack for Network connection. |
| | **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. |
| | **COM Port** | Mainly for user to connect external MODEM or other devices that supports Serial Communications Interface. |
| | **Audio Connectors** | **BLUE :** Line-in Connector<br>**GREEN :** Line-out Connector<br>**PINK :** MIC Connector |

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

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

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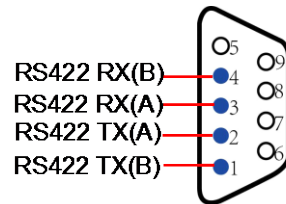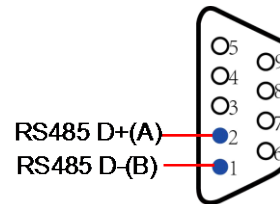


*For RS422 Mode*          *For RS485 Mode*

## (3) ATXPWR (24-pin Block): ATX Power Header
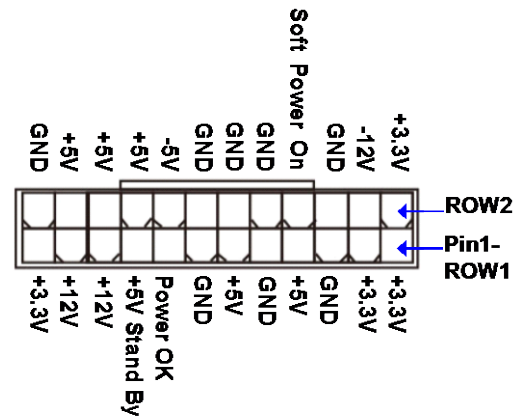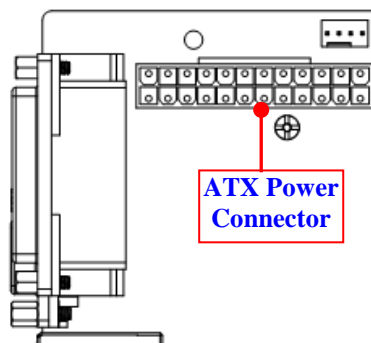
### (4) SATA1 (7-pin block):SATAIII Port connector

This connector is a high-speed SATAIII port that supports 6 GB/s transfer rate.

| Pin No. | Defnition |
|---------|-----------|
| 1 | GND |
| 2 | TXP |
| 3 | TXN |
| 4 | GND |
| 5 | RXN |
| 6 | RXP |
| 7 | GND |

SATA1
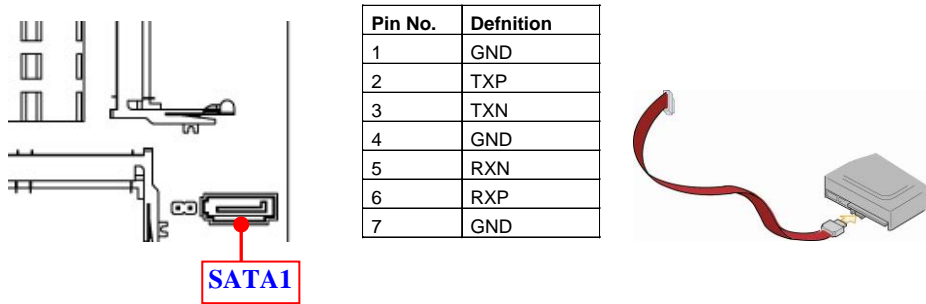
## 2-2-2 Headers

### (1) SYSFAN1/ CPUFAN (4-pin): FAN Headers

SYSFAN1 Header          CPUFAN Header

SYSFAN1

Control
Fan Speed
+12V Fan Power
GND

Pin1→

CPUFAN

Control
Fan Speed
+12V Fan Power
GND

Pin1→
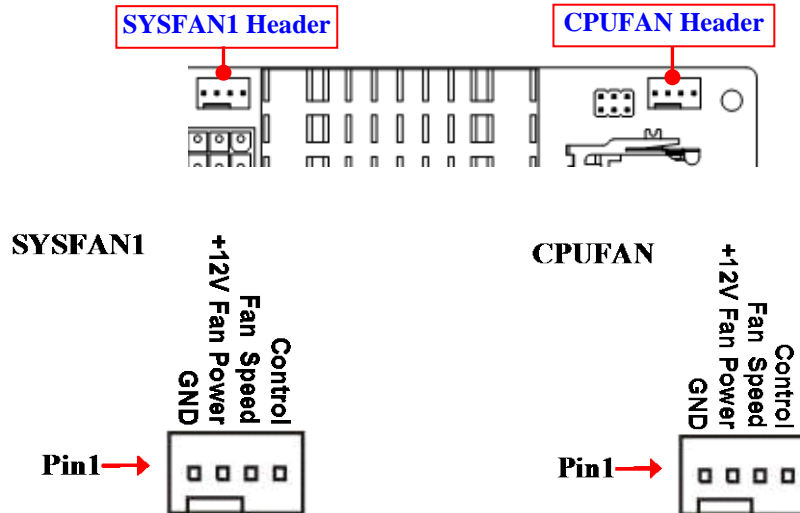
## (2) PS2KBMS (6-pin): PS/2 Keyboard & Mouse Header



Pin1 → VCC KB_DATA KB_CLK GND MS_CLK MS_DATA

PS2KBMS
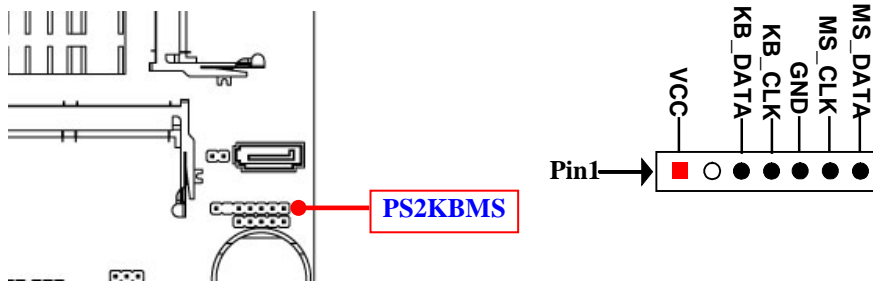
## (3) SMBUS (5-pin): SMBUS Header



Pin1 → CLK DATA NC GND 3VSB

SMBUS
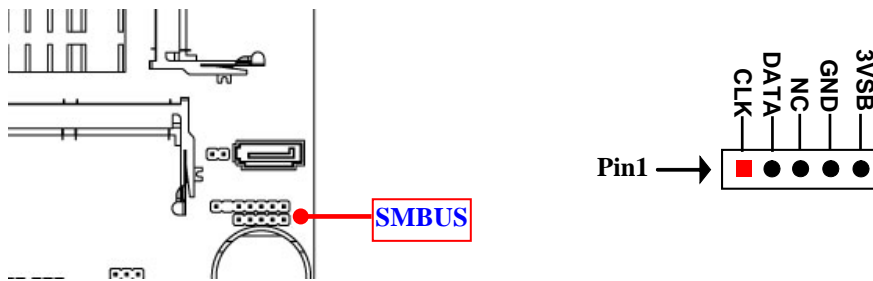
## (4) FP_USBV1 (9-pin): USB 2.0 Port Header
## POWER: NORMAL POWER (VCC5V) without wake up function



FP_USBV1

FP_USBSB2

FP_USBSB1

Pin 1 →

VCC -DATA +DATA GND NC
VCC -DATA +DATA GND
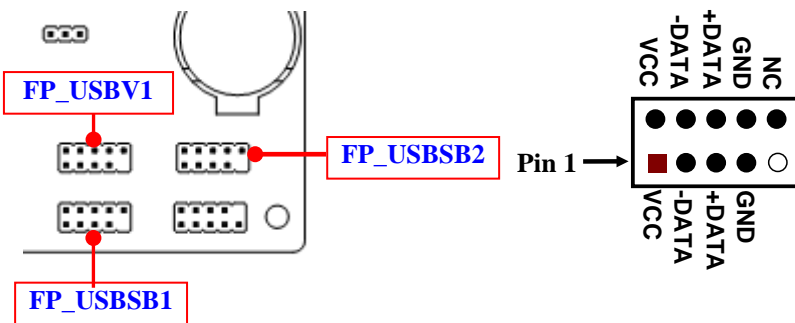
## (5) FP_USBSB1 / FP_USBSB2 (9-pin): USB 2.0 Port Header
### POWER: STANDBY POWER (5VSB) with wake up function

FP_USBV1

FP_USBSB2

FP_USBSB1

Pin 1

NC
GND
+DATA
-DATA
VCC

VCC
-DATA
+DATA
GND
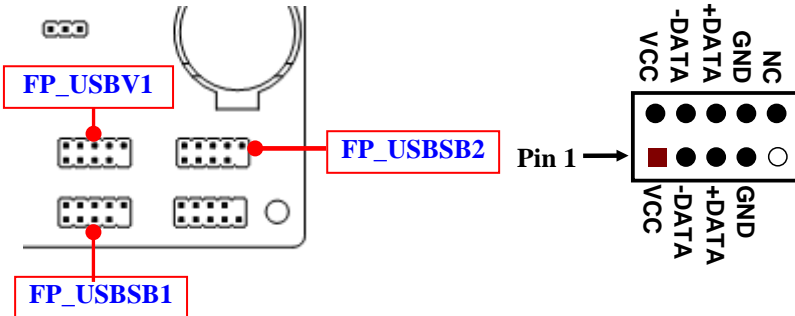
## (6) JW_FP (9-pin): Front Panel Header

JW_FP

Pin 1

PWR LED+
PWR LED-
PWRBTN
GND

HDD LED+
HDD LED-
GND
RSTSW
VCC
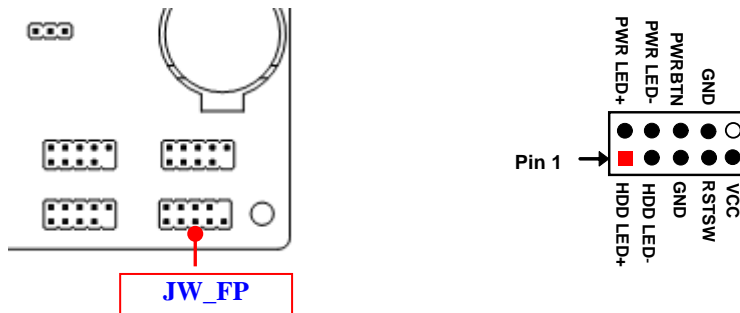
## (7) COM3 / COM4 / COM5 / COM6 (9-pin): RS232 Serial Port Header

COM5   COM3

COM6   COM4

Pin6
Pin1

DSR
RTS
CTS
RI

DCD
RXD
TXD
DTR
GND
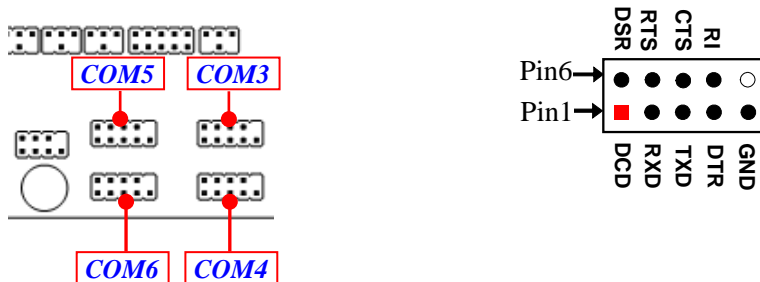
## (8) GPIO_CON (10-pin): GPIO Header

GPIO_CON

GPIO01 GPIO03 GPIO31 GPIO33 VCC

2

Pin1

GPIO00 GPIO02 GPIO30 GPIO32 GND
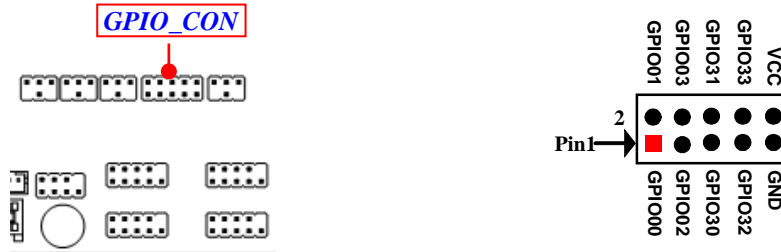
## (9) SPEAK PWRLED (7-pin): SPEAKER and PWRLED Header

SPEAK PWRLED

POWER LED+ POWER LED- POWER LED-
POWER LED+ POWER LED-

Pin2

Pin1

SPEAKER+ XX XX SPEAKER-
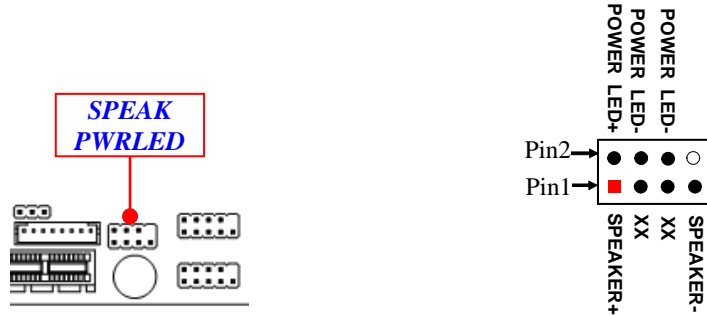
## (10)    FP_AUDIO1 (9-pin): Line-Out, MIC-In Header
This header connects to Front Panel Line-out, MIC-In connector with cable.

GND DETECT MIC_JD LINE_OUT_JD

2

Pin 1

MIC2_L MIC2_R LINEOUT2_R SENSE LINEOUT_L

FP_AUDIO
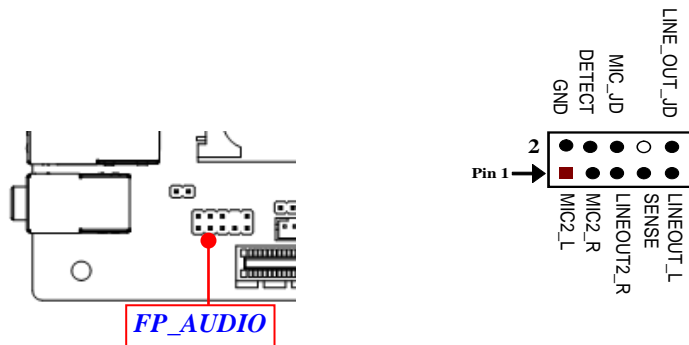
## (11)　LVDS (32-Pin): 24-bit dual channel LVDS Header
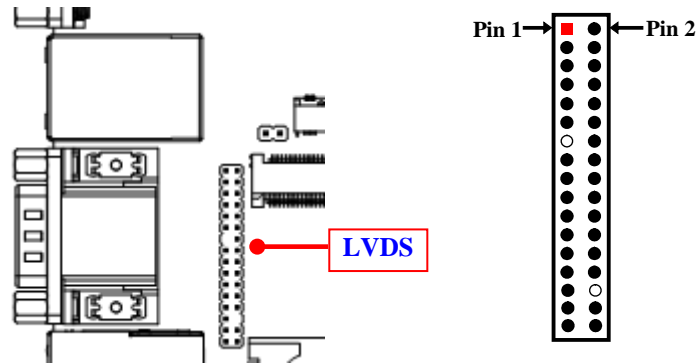
| Pin NO. | Pin Define | Pin NO. | Pin Define |
|---------|------------|---------|------------|
| Pin 1 | LVDSB_DATAN3 | Pin 2 | LVDSB_DATAP3 |
| Pin 3 | LVDS_CLKBN | Pin 4 | LVDS_CLKBP |
| Pin 5 | LVDSB_DATAN2 | Pin 6 | LVDSB_DATAP2 |
| Pin 7 | LVDSB_DATAN1 | Pin 8 | LVDSB_DATAP1 |
| Pin 9 | LVDSB_DATAN0 | Pin 10 | LVDSB_DATAP0 |
| Pin 11 | LVDS_DDC_DAT | Pin 12 | LVDSA_DCC_CLK |
| Pin 13 | XX | Pin 14 | LVDS_DETECT- |
| 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 | LCD_VCC | Pin 28 | XX |
| Pin 29 | LCD_VCC | Pin 30 | LCD_VCC |
| Pin 31 | GND | Pin 32 | GND |

## (12)     INVERTER (8-pin): LVDS Inverter Connector
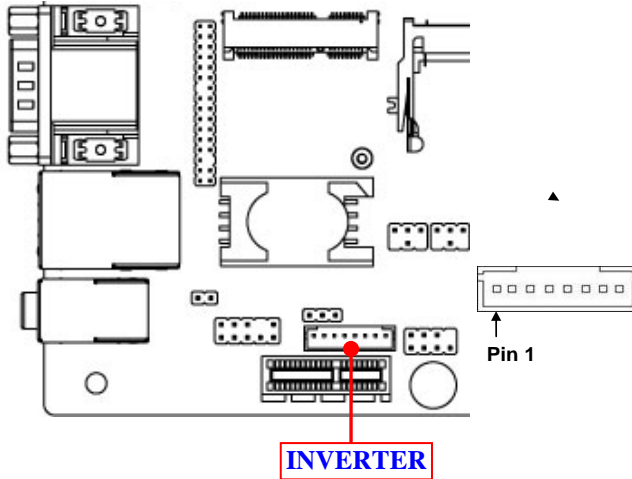
| Pin No. | Definition |
|---------|-----------|
| 1 | Backlight Enable |
| 2 | Backlight PWM |
| 3 | PVCC |
| 4 | PVCC |
| 5 | GND |
| 6 | GND |
| 7 | Backlight Up SW |
| 8 | Backlight Down SW |

**Pin 1**

**INVERTER**

*Warning!* Find **Pin-1** *location of the inverter and make sure that the installation direction is correct! Otherwise serious harm will occur to the board/display panel!!*

# Chapter 3
# Introducing BIOS

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:

*Menu Bar*

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

   BIOS Information                                        Set the Date. Use Tab to
   BIOS Vendor              American Megatrends             switch between Date elements.
   Core Version            5.11
   Filename               BASNIA01
   Build Date and Time    09/13/2017 09:49:07
   Access Level           Administrator
                                                          General Help Items
   TXE Information
   TXE FW Version         02.00.05.3107

   System Date            [Wed 09/13/2017]
   System Time            [18:08:29]
                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit

           Version 2.17.1254. Copyright (C) 2017 American Megatrends, Inc.
```

*Menu Items*

*Current Setting Value*
*Function Keys*

## 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.

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

  BIOS Information                                          Set the Date. Use Tab to
  BIOS Vendor                 American Megatrends           switch between Date elements.
  Core Version                5.11
  Filename                    BASNIA01
  Build Date and Time         09/13/2017 09:49:07
  Access Level                Administrator

  TXE Information
  TXE FW Version              02.00.05.3107

  System Date                 [Wed 09/13/2017]
  System Time                 [18:08:29]

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



              Version 2.17.1254. Copyright (C) 2017 American Megatrends, Inc.
```

**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



```
           Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
     Main  Advanced  Chipset  Security  Boot  Save & Exit
  ┌─────────────────────────────────────────────────┬──────────────────────────┐
  │ ► Trusted Computing                             │ Trusted Computing Settings│
  │ ► ACPI Settings                                 │                          │
  │ ► Super IO Configuration                        │                          │
  │ ► Serial Port Console Redirection               │                          │
  │ ► PC Health Status                              │                          │
  │ ► CPU Configuration                             │                          │
  │ ► SATA Configuration                            │                          │
  │ ► Network Stack Configuration                   │                          │
  │ ► CSM Configuration                             │                          │
  │ ► Wake-up Function Settings                     │                          │
  │ ► USB Configuration                             │                          │
  │ ► Platform Trust Technology                     │                          │
  │ ► IntelRMT Configuration                        │ ↔: Select Screen         │
  │                                                 │ ↑↓: Select Item          │
  │ ► Realtek PCIe GBE Family Controller (MAC:00:30:18:17:10:4F) │ Enter: Select │
  │ ► Realtek PCIe GBE Family Controller (MAC:00:30:18:17:10:50) │ +/-: Change Opt. │
  │                                                 │ F1: General Help         │
  │                                                 │ F2: Previous Values      │
  │                                                 │ F3: Optimized Defaults   │
  │                                                 │ F4: Save & Exit          │
  │                                                 │ ESC: Exit                │
  └─────────────────────────────────────────────────┴──────────────────────────┘
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```

‣ **Trusted Computing**
Press [Enter] to enable or disable Security Device Support.
*Configuration*

**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:
*<u>ACPI Settings</u>*

**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:
*<u>Super IO Configuration</u>*

　　▸ **Serial Port 1 Configuration**
Press [Enter] to make settings for the following items:
*<u>Serial Port 1 Configuration</u>*

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

▶ **Serial Port 2 Configuration/ Serial Port 3 Configuration/ Serial Port 4 Configuration/ Serial Port 5 Configuration/ Serial Port 6 Configuration**
Press [Enter] to make settings for the following items:
***Serial Port 2/3/4/5/6 Configuration***

**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.
The optional settings are: [Auto]; [IO=3F8h; IRQ=4]; [IO=2F8h; IRQ=3]; [IO=3E8h; IRQ=4]; [IO=2E8h; IRQ=3] for '**Serial Port 2 Confoguration**'.
The optional settings are: [Auto]; [IO=3F8h; IRQ=10]; [IO=2F8h; IRQ=10]; [IO=3E8h; IRQ=10]; [IO=2E8h; IRQ=10]; [IO=2F0h; IRQ=10]; [IO=2E0h; IRQ=10] for '**Serial Port 3 Confoguration**'.
The optional settings are: [Auto]; [IO=3F8h; IRQ=10]; [IO=2F8h; IRQ=10]; [IO=3E8h; IRQ=10]; [IO=2E8h; IRQ=10]; [IO=2F0h; IRQ=10]; [IO=2E0h; IRQ=10] for '**Serial Port 4 Confoguration**'.
The optional settings are: [Auto]; [IO=3F8h; IRQ=11]; [IO=2F8h; IRQ=11]; [IO=3E8h; IRQ=11]; [IO=2E8h; IRQ=11]; [IO=2F0h; IRQ=11]; [IO=2E0h; IRQ=11] for '**Serial Port 5 Confoguration**'.
The optional settings are: [Auto]; [IO=3F8h; IRQ=11]; [IO=2F8h; IRQ=11]; [IO=3E8h; IRQ=11]; [IO=2E8h; IRQ=11]; [IO=2F0h; IRQ=11]; [IO=2E0h; IRQ=11] for '**Serial Port 6 Confoguration**'.
**Serial Port FIF0 Mode**
The optional settings are: [16-Byte FIF0]; [32-Byte FIF0]; [64-Byte FIF0]; [128-Byte FIF0].

▸ **Parallel Port Configuration**
Press [Enter] to make settings for the following items:
*Parallel Port Configuration*

**Parallel Port**
Use this item to enable or disable serial port (LPT/LPTE).
The optional settings are: [Disabled]; [Enabled].
**Change Settings**
Use this item to select an optimal setting for super IO device.
The optional settings are: [Auto]; [IO=378h; IRQ=5];
[IO=378h; IRQ=5,6,7,9,10,11,12]; [IO=278h; IRQ=5,6,7,9,10,11,12];
[IO=3BCh; IRQ=5,6,7,9,10,11,12].
**Device Mode**
The optional settings are: [STD Printer Mode]; [SPP Mode]; [EPP-1.9 and SPP Mode]; [EPP-1.7 and SPP Mode]; [ECP Mode]; [ECP and EPP 1.9 Mode]; [ECP and EPP 1.7 Mode].

**OS Select for Serial Port**
The optional settings: [Windows]; [LINUX].

**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].

**PS2 KB/MS Connect**
The optional settings are: [Keyboard First]; [Mouse First].

**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**
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:
<u>*COM1*</u>

**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/SYSFAN1 Smart Mode**
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], the following sub-items shall appear:
**CPUFAN/SYSFAN1 Full-Speed Temperature**

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

**CPUFAN/SYSFAN1 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/SYSFAN1 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/SYSFAN1 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]; [65$^{\circ}$C/148$^{\circ}$F]; [70$^{\circ}$C/156$^{\circ}$F]; [75$^{\circ}$C/164$^{\circ}$F]; [80$^{\circ}$C/172$^{\circ}$F]; [85$^{\circ}$C/180$^{\circ}$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.

**EIST**
The optional settings: [Disabled]; [Enabled].
Use this item to enable or disable Intel SpeedStep.

**Turbo Mode**
Use this item to enable or disable CPU Turbo Mode.
The optional settings: [Disabled]; [Enabled].

**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].
**S0ix**
Use this item to enable or disable CPU S0ix state.
The optional settings: [Disabled]; [Enabled].

▸ **SATA Configuration**
Press [Enter] to make settings for the following sub-items:
***SATA 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/M.2.SATA***
**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).

**PS2 KB/MS Wake-Up from S3-S5**

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

*__Note__: PS2 KB/MS wake-up function is affected by ERP function in S4-S5. Please disable ERP before activating this function in S4-S5.*

**USB Wake-Up from S3-S4**

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

*__Note__: USB wake-up function 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].

**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].
▸ **Realtek PCIe GBE Family Controller (MAC:XX:XX:XX:XX:XX:XX)/ Realtek PCIe GBE Family Controller (MAC:XX:XX:XX:XX:XX:XX)**
This item gives Intel gigabit ethernet controller basic driver information.

## 3-8 Chipset Menu



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

     ▶ North Bridge                                              North Bridge Parameters
     ▶ South Bridge




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



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```

▶  **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]; [CRT]; [HDMI] when '**Active LFP**' is set as [Disabled], or [Auto]; [CRT]; [LVDS]; [HDMI] when '**Active LFP**' is set as [Enabled].

**Secondary IGFX Boot Display**

The optional settings are: [Disabled]; [CRT]; [HDMI] when '**Active LFP**' is set as [Disabled], or [Disabled]; [CRT]; [LVDS]; [HDMI] when '**Active LFP**' is set as [Enabled].

**Active LFP**

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

[**Disable**]: VBIOS does not enable LVDS.

[**Enable**]: VBIOS enable LVDS driver by integrated encoder.

*The default setting is: [Disabled].*

*When set as [Enable], user can make further settings in '**LVDS Panel Type**' and '**Backlight Control**'.*

**LVDS Panel Type**

Use this item to select LCD panel resolution used by internal graphics device by selecting the appropriate setup item.

The optional setting are: [800 x 480 1ch 18-bit]; [800x 600 1ch 18-bit]; [800x 600 1ch 24-bit]; [1024 x 600 1ch 18-bit]; [1024 x 768 1ch 18-bit];  [1024 x 7681ch 24-bit]; [1280 x 768 1ch 24-bit]; [1280 x 800 1ch 18-bit];   [1280 x 800 1ch 24-bit]; [1366 x 768 1ch 18-bit]; [1366 x 768 1ch 24-bit]; [1440 x 900 2ch 18-bit]; [1440 x 900 2ch 24-bit]; [1280 x 1024 2ch 24-bit]; [1680 x 1050 2ch 24-bit]; [1920 x 1080 2ch 24-bit].

**Backlight Control**

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

**Max T0LUD**
Use this item to select he maximum value of T0LUD.
The optional settings are: [2GB]; [2.25GB]; [2.5GB]; [2.75GB]; [3GB].

▸ **South Bridge**
Press [Enter] for further settings in the following items:
**Onboard PCIE LAN2**
The optional settings are: [Enabled]; [Disabled].
**PCIE Slot (x1)**
The optional settings are: [Enabled]; [Disabled].
　　**PCIE Slot (x1) Speed**
　　The optional settings are: [Auto]; [Gen 2]; [Gen 1].
**Mini PCIE**
The optional settings are: [Enabled]; [Disabled].
　　**Mini PCIE Speed**
　　The optional settings are: [Auto]; [Gen 2]; [Gen 1].

**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].
**System State after Power Failure**
Use this item to select system power state when AC 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 Support'. Please disable ERP to support [Always On] and [Former State] function.*

# 3-9 Security Menu

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

    Password Description                              Set Administrator Password

    If ONLY the Administrator's password is set,
    then this only limits access to Setup and is
    only asked for when entering Setup.
    If ONLY the User's password is set, then this
    is a power on password and must be entered to
    boot or enter Setup. In Setup the User will
    have Administrator rights.
    The password length must be
    in the following range:
    Minimum length                    3
    Maximum length                    20

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


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```

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

## 3-10 Boot Menu



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

 Setup Prompt Timeout                 1                        Number of seconds to wait for
 Bootup NumLock State                 [On]                     setup activation key.
 Quiet Boot                           [Disabled]               65535(0xFFFF) means indefinite
                                                               waiting.
 Boot Option Priorities
 Boot Option #1                       [UEFI: Built-in EFI
                                      Shell]

 New Boot Option Policy               [Default]
 UEFI Boot                            [Enabled]


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



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```

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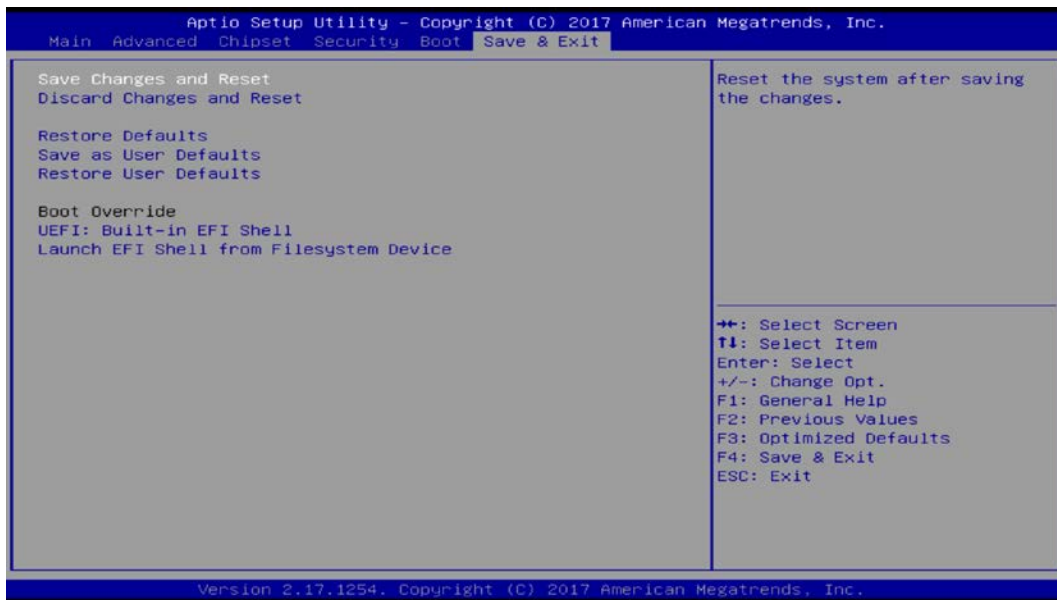The optional settings are: [Default]; [Place First]; [Place Last].

**UEFI Boot**

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

[Auto]: If the 1$^{st}$ boot HDD is GPT then enable UEFI boot options, otherwise disable.

[Enabled]: Enable all UEFI boot options.

[Enabled]: Disable all UEFI boot 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 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 file system device**
This item is used for attempts to launch EFI shell application from one of the available file system devices.