NF631 Series

User's Manual

P/N: G03-NF631-F

Revision: 4.0

Release date: August 13, 2021

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

⚠ 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.

USER'S NOTICE

Manual Revision Information

Reversion	Revision History	Date
4.0	Fourth Edition	August 13, 2021

Item Checklist

- ☑ Motherboard
- ☑ Cable(s)

Chapter 1: Introduction

1-1   Product Features

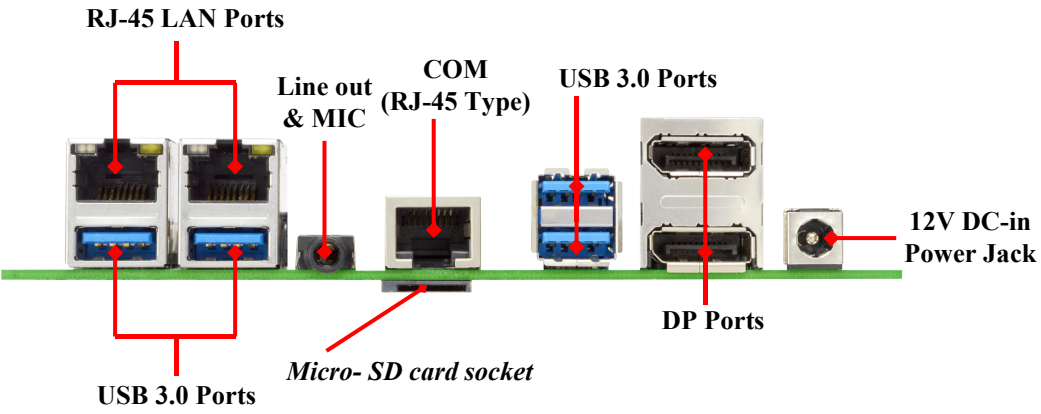■ Onboard Intel® Apollo Lake Series Processor, with low power consumption and high performance

■ Support 1 * SO-DIMM, up to 8GB memory

■ Support 2 * DP and 1 * eDP display ports, max 4K resolution

■ Support independent triple display

■ Support 1 * SATAIII (6Gb) device and 1 * M.2 (M key 2242) device

■ Support RJ-45 gigabit Ethernet LAN port

■ Support 4 * USB 3.0 data transport demand

■ Support Watchdog function

1-2 Specification

Spec	Description
CPU	● Intel® Apollo Lake series CPU
Memory	● 1 * DDR3L 1600MHz SO-DIMM up to 8GB DRAM
Expansion Slot	● 1 * full-size Mini-PCIE slot
Storage	● 1 * SATA III (6Gb/s) Connector ● 1 * M.2 slot (M key 2242) ● 1 * Micro-SD socket (Backside)
LAN Chip	● 2 * Intel i211AT GbE LAN Chip
Audio Chip	● Realtek ALC662VD Audio Codec Chip
BIOS	● 128Mbit AMI BIOS
Rear I/O	● 1 * DC 12V power-in connector ● 4 * USB 3.0 ports ● 1 * COM port (RJ-45 type) ● 1 * audio combo port (Line-out / MIC) ● 2 * RJ-45 LAN ports ● 2 * DP ports
Internal I/O	● 1 * Internal 12V power DC -in connector ● 1 * SATA Power and 1 * SATA III connector ● 1 * eDP header ● 1 * Front panel audio header & 1* SPDIF-out header ● 1 * 9-pin USB 2.0 header ● 5 * Serial port header (COM2 support RS232/RS422/RS485) ● 1 * GPIO header ● 1 * Front panel header ● 1 * SIM card socket ● 1* PS/2 KB&MS header & 1* SMBUS header ● 1*I2C header

1-3　　Layout Diagram

Rear IO Panel Diagram:

RJ-45 LAN Ports

Line out & MIC

COM (RJ-45 Type)

USB 3.0 Ports

USB 3.0 Ports

Micro- SD card socket

DP Ports

12V DC-in Power Jack

Internal Diagram-Front Side:

EDP Header

SATA Power-out Connector

Top: RJ-45 LAN Port
Bottom: USB 3.0 Port

Top: RJ-45 LAN Port
Bottom: USB 3.0 Port

Line out & MIC

SPDIFOUT Header

COM1
(RJ-45 type)

FP_AUDIO Header

USB 3.0 Ports

DP Ports

12V DC-in
Power Jack

Internal 12V
DC-in
Power Connector

*SIM Card
Slot

Serial Ports

Full-size
Mini-PCIE Slot
(MPE)

M.2 SATA Slot

GPIO Port
Header

SATAIII Port
Connector

USB 2.0
Ports Header

CPUFAN
Connecter

Front Panel
Header

DDR3L
SODIMM Slot

PS/2 KB &MS
Header

SMBUS
Header

I2C Header

*Note: SIM card socket only works when compatible SIM card installed & 3G LAN card installed in full-size Mini-PCIE (MPE) slot.

4

Internal Diagram-Back Side:

Intel CPU

Micro-SD Card Socket
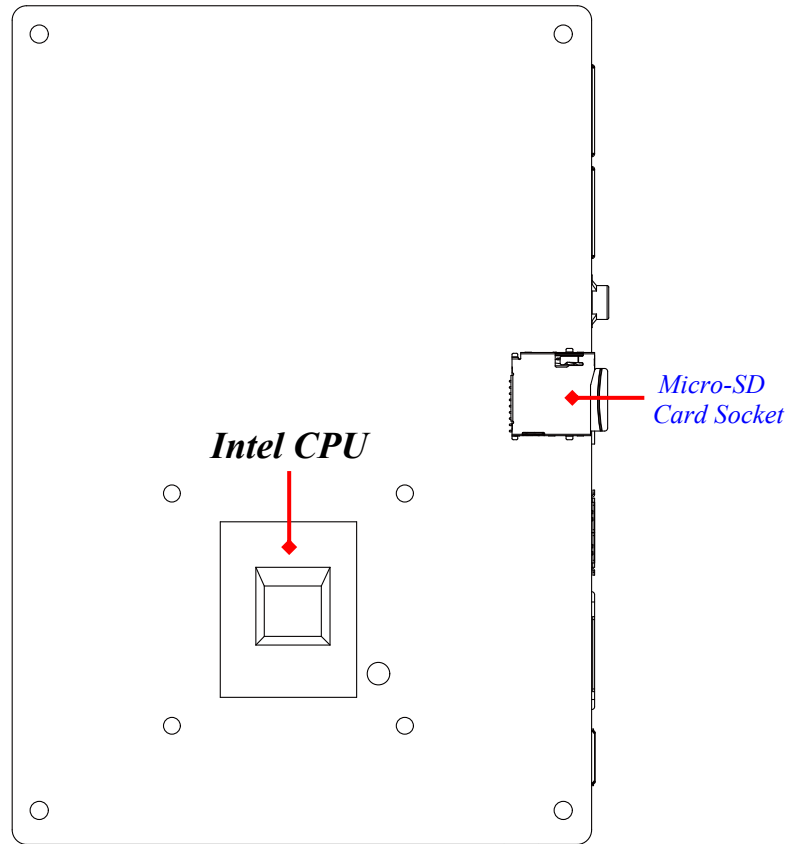
Note: CPU is the most important part of the board and very fragile to any possible harm. Make sure that there is no damage to the CPU during any installation procedures!

Motherboard Jumper Positions:
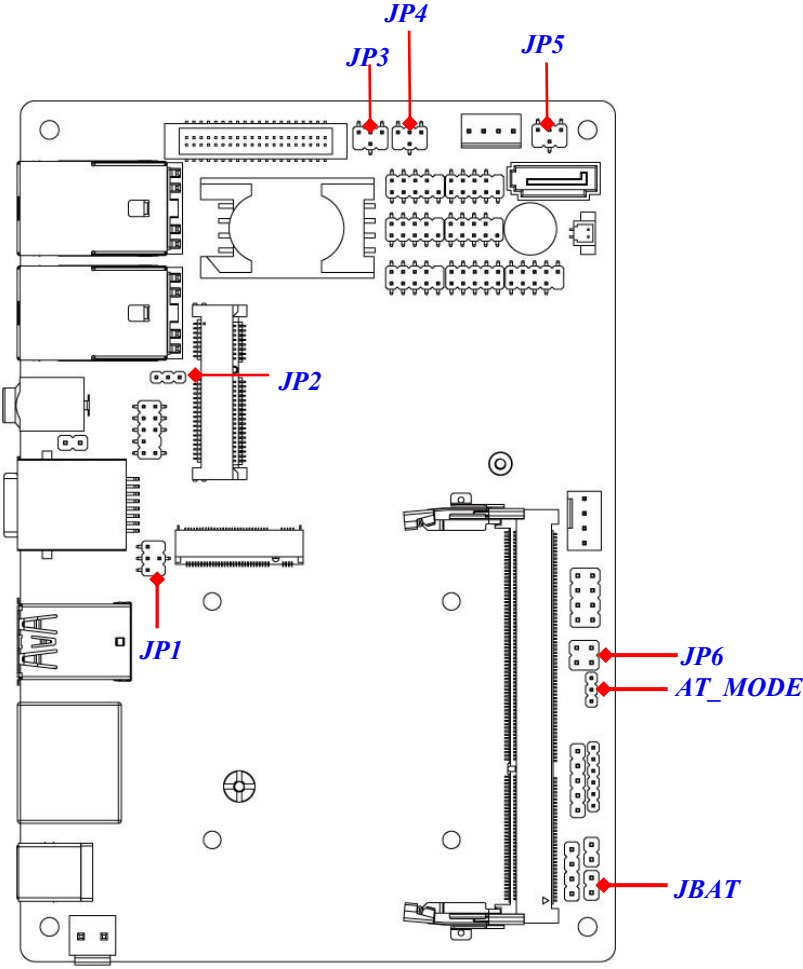
Jumper

Jumper	Name	Description
JP1	COM1 Port Pin9 Function	4-Pin Block
JP2	MPE Slot Power	3-Pin Block
JP3	eDP LCD Power	4-Pin Block
JP4	eDP Inverter Power	4-Pin Block
JP5	COM2 Pin9 Function	4-Pin Block
JP6	Case Open and TXE Function Select	4-Pin Block
AT_MODE	ATX/AT Mode Select	3-Pin Block
JBAT	CMOS Clear Setting	2-Pin Block

Connectors

Connector	Name
DCIN1	12V DC–in System Power Jack
DP1	DP Port Connector x2
USB1	USB 3.0 Port Connector x2
RJ45_COM1	COM Port Connector RJ-45 Type
AUDIO	Audio Line Out & MIC Connector
UL1	*Top:* RJ-45 LAN Port Connector *Bottom:* USB 3.0 Port Connector
UL2	*Top:* RJ-45 LAN Port Connector *Bottom:* USB 3.0 Port Connector
DCIN3	Internal 12V DC–in Power Connector
SATA	SATAIII Port Connector
PWROUT	SATA Power out Connector
CPUFAN	CPU Fan Connector

Headers

Header	Name	Description
EDP	EDP Header	40-pin Block
FP_AUDIO	Front Panel Header(PWR LED/ HD LED/Power Button /Reset)	9-pin Block
SPDIFOUT	HDMI S/PDIF-out Header	2-pin Block
USB2	USB 2.0 Port Header	9-pin Block
COM2/3/4/5/6	Serial Port Header	9-pin Block
GPIO	GPIO Port Header	10-pin Block
FP	Front Panel Header	8-pin Block
PS2KBMS	PS/2 Keyboard & Mouse Header	6-pin Block
SMBUS	SMBUS Header	5-pin Block
I2C	I2C Header	4-pin Block

Chapter 2: Hardware Installation

2-1 Jumper Settings

JP1 (4-pin): RJ45_COM1 Port Pin9 Function Select
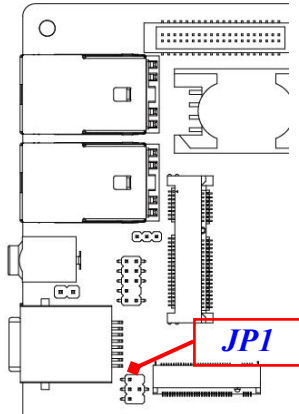
JP1→RJ45_COM1 Port Pin-9

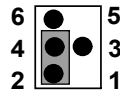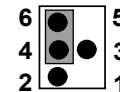| 2-4 Closed:	3-4 Closed:	4-6 Closed:
RI=NC;	RI= 5V;	RI= 12V.

JP2 (3-pin): MPE Slot Power Select
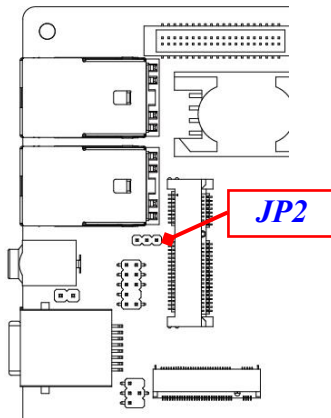
JP2→MPE Slot Power

1-2 Close: 3.3V Selected(Default);

2-3 Close: 3.3VSB Selected.

JP3 (4-pin): eDP LCD Power Select

JP3

JP3→eDP LCD VCC

2 4 6

1 3 5
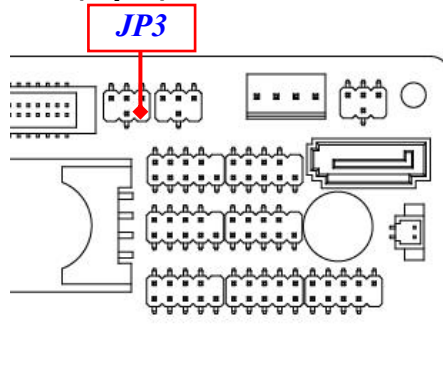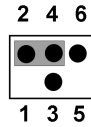
2-4 Closed: eDP
LCD VCC= 3.3V
(default);

2 4 6

1 3 5
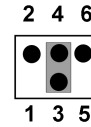
3-4 Closed: eDP
LCD VCC= 5V;

2 4 6

1 3 5
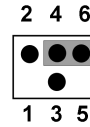
4-6 Closed: eDP
LCD VCC= 12V.

JP4 (4-pin): eDP Inverter Power Select

JP4
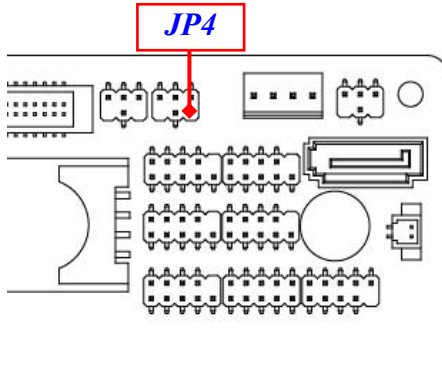
JP4→eDP Inverter VCC

2 4 6

1 3 5
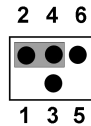
2-4 Closed: eDP
Inverter VCC= 5V
(default);

2 4 6

1 3 5
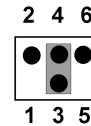
3-4 Closed: eDP
Inverter VCC= 12V;

2 4 6

1 3 5
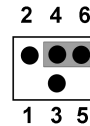
4-6 Closed: eDP
Inverter VCC=
adapter power.

JP5 (4-pin): COM2 Pin9 Function Select
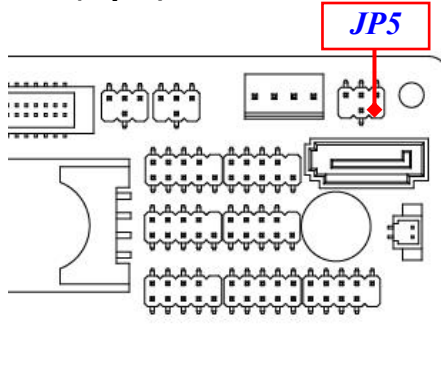
JP5→ COM2 Pin9 Select

```
  2  4  6        2  4  6        2  4  6
  ● ● ●          ● ● ●          ● ● ●
    ●              ●              ●
  1  3  5        1  3  5        1  3  5
```
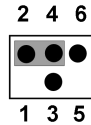
2-4 Closed:
RI = RS232
(default);
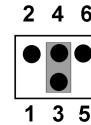
3-4 Closed:
RI = 5V;
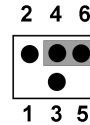
4-6 Closed:
RI = 12V.

JP6 (4-pin): Case Open and TXE/ME Select
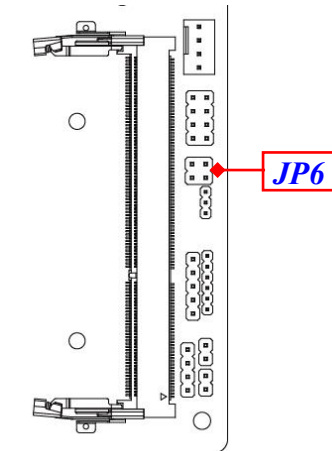
JP6→ Case Open and TXE/ME Select
Pin (1&2) Chassis Intrusion

```
4 ● ● 3
2 ● ■ ← Pin 1
```
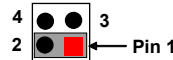
1-2 Open: Normal(Default);
1-2 Closed : Case Open Function
Selected (one touch)

Pin (3&4) TXE/ME

```
4 ● ● 3
2 ● ■ ← Pin 1
```
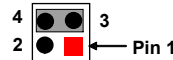
3-4 Open: Normal(Default)
3-4 Closed: Disable ME

AT_MODE (3-pin): AT/ATX Mode Function Select
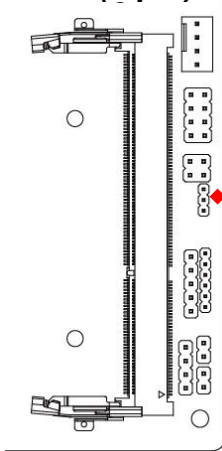
AT_MODE→AT/ATX Mode Select

AT_MODE

3
1
1-2 Closed:
ATX Mode Selected;

3
1
2-3 Closed:
AT Mode Selected.
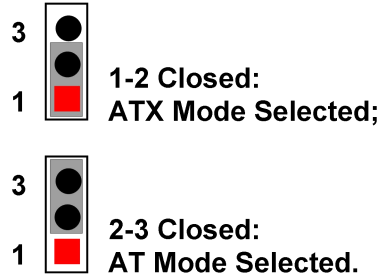
***ATX Mode Selected**: Press power button to power on after power input ready;*
AT Mode Selected: *Directly power on as power input ready.*

JBAT (2-pin): CMOS Clear Setting

JBAT→ CMOS Clear Setting

JBAT

1
1-2 Open: Normal;

1
1-2 Closed：Clear CMOS.
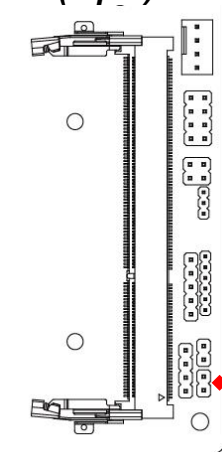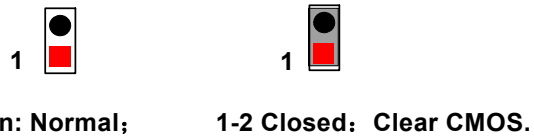
2-2   Connectors and Headers

2-2-1 Connectors

(1) Rear Panel Connectors
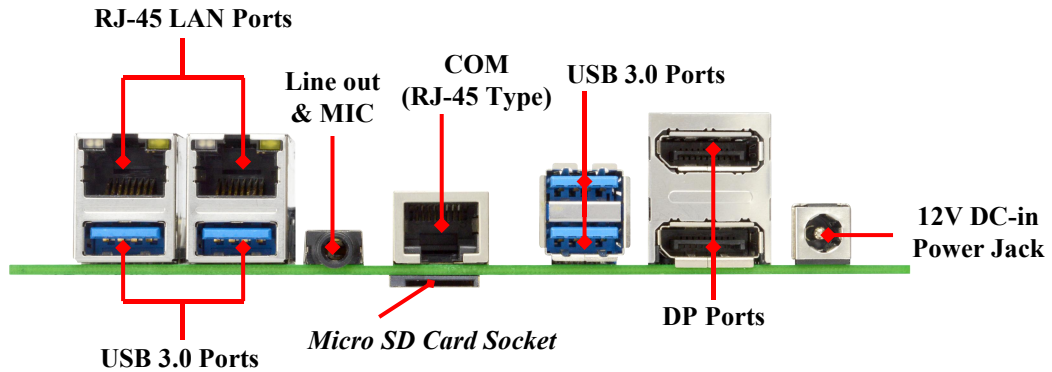
Icon	Name	Function
	RJ-45 LAN Port	This connector is standard RJ-45 LAN jack for Network connection.
	USB 3.0 Port	To connect USB keyboard, mouse or other devices compatible with USB specification. USB 3.0 ports supports up to 5Gbps data transfer rate.
	Line-Out/MIC Combo Connector	This connector can functions as audio Line-Out jack and MIC jack with compatible cables & devices.
	RJ45 COM Port	This connector is a RJ-45 COM port for console function.

	Display Port	To the system to corresponding display device with compatible DP cable.
	Power Connector	12V DC–in system power connector For user to connect compatible power adapter to provide power supply for the system.

(2) RJ45_COM1(8-pin block):RJ-45 COM Port Connector for Console
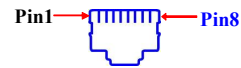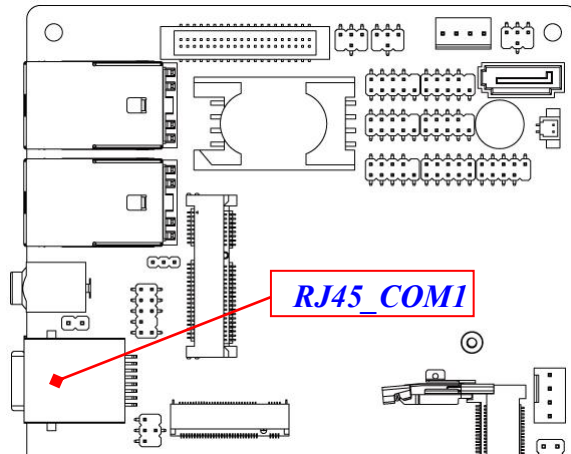
RJ45_COM1

Pin No.	Definition
1	RTS
2	DTR
3	TXD
4	GND
5	GND/VCC/+12V
6	RXD
7	DSR
8	CTS

*Note: Please set **Pin (2-4)** of Jumper **JP1** as closed, when apply Console cable to RJ45-COM1 port (refer to page-9).*

(3) DCIN3 (2-pin block):Internal 12V DC-in Power Connector

Pin1 →
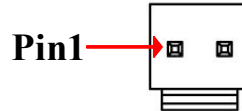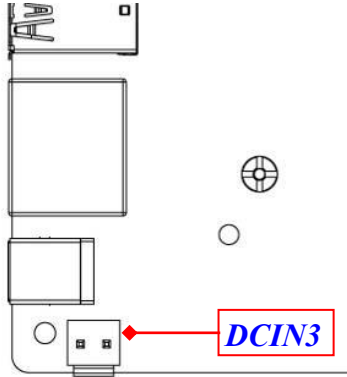
Pin No.	Definition
1	+12V DC_IN
2	GND

(4) PWROUT (4-pin): SATA Power Connector

PWOUT

← Pin1

+12V GND GND +5V
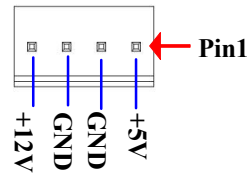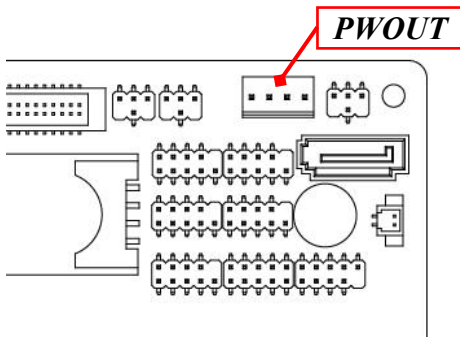
(5) SATA (7-pin Block): SATAIII Port connector

The board comes with a SATAIII port that supports 6GB/s transfer rate.
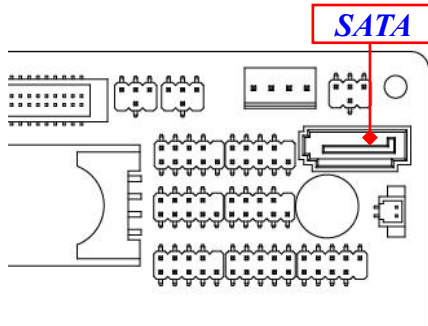
Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND
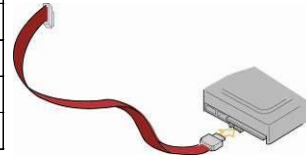
(6) CPUFAN (4-pin): CPU FAN Connector

Pin1

GND
+12V Fan Power
Fan Speed
Control
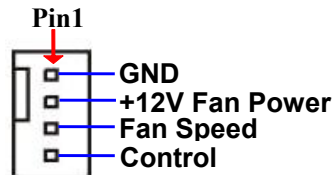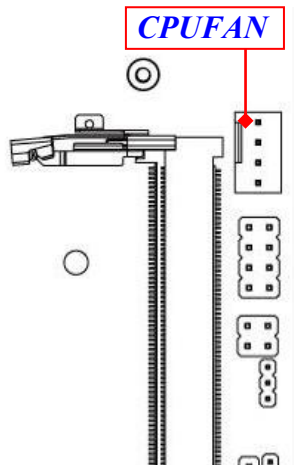
2-2-2 Headers

(1) EDP (40-pin): eDP Header
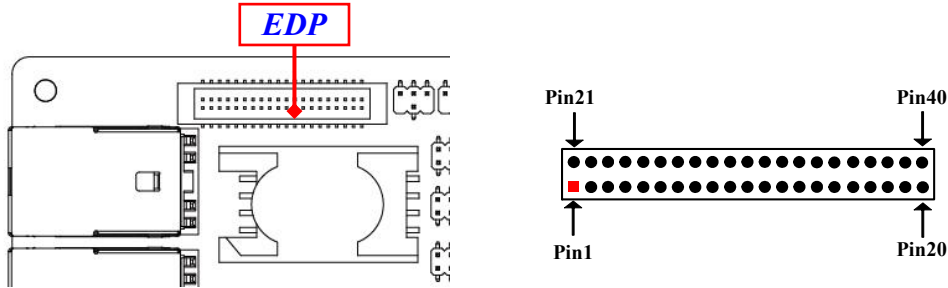
Pin NO.	Pin Define	Pin NO.	Pin Define
Pin 1	NC	Pin 21	NC
Pin 2	GND	Pin 22	NC
Pin 3	Lane3_N	Pin 23	GND
Pin 4	Lane3_P	Pin 24	GND
Pin 5	GND	Pin 25	GND
Pin 6	Lane2_N	Pin 26	GND
Pin 7	Lane2_P	Pin 27	HPD
Pin 8	GND	Pin 28	GND
Pin 9	Lane1_N	Pin 29	GND
Pin 10	Lane1_P	Pin 30	GND
Pin 11	GND	Pin 31	GND
Pin 12	Lane0_N	Pin 32	BL_ENABLE
Pin 13	Lane0_P	Pin 33	BL_PWM_DIM
Pin 14	GND	Pin 34	NC
Pin 15	AUX_CH_P	Pin 35	NC
Pin 16	AUX_CH_N	Pin 36	BL_PWR
Pin 17	GND	Pin 37	BL_PWR
Pin 18	LCD_VCC	Pin 38	BL_PWR
Pin 19	LCD_VCC	Pin 39	BL_PWR
Pin 20	LCD_VCC	Pin 40	NC

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

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

Pin 1

	2	
MIC2-L	■ ●	GND
MIC2-R	● ●	RESERVE
LINE OUT2-R	● ●	MIC_RTU
SENSE_B	● ○	
LINE OUT2-L	● ●	LINEOUT2_RTU

FP_AUDIO
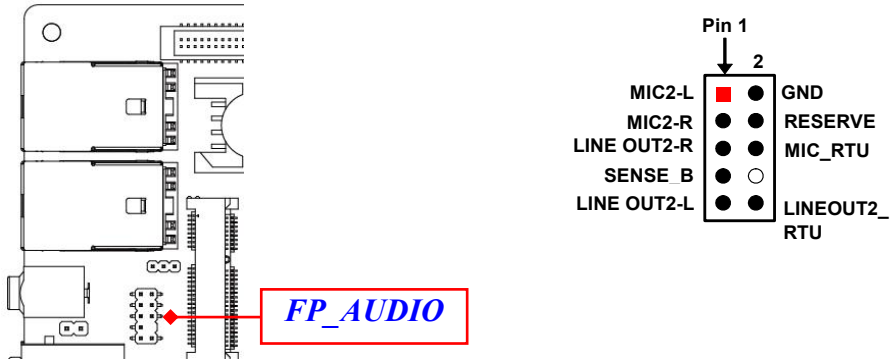
(3) SPDIFOUT (2-pin): HDMI SPDIF Out Header

SPDIF_OUT   GND

Pin1 → ■ ●

SPDIFOUT
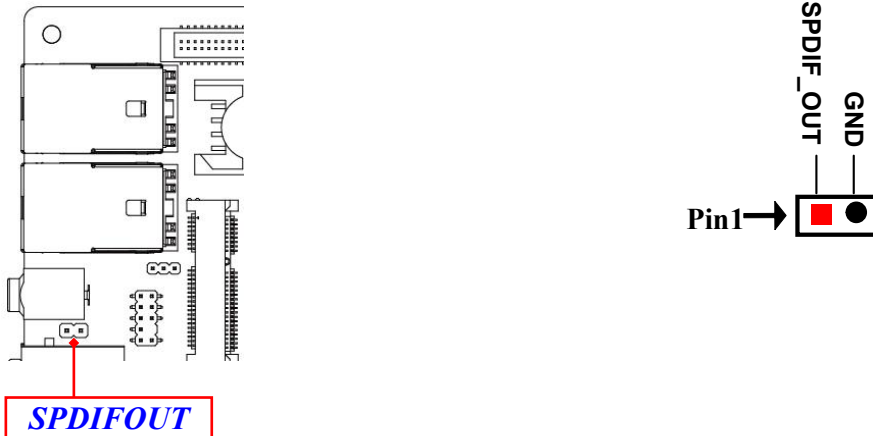
(4) USB2 (9-pin): USB 2.0 Port Pin Header

VCC
-DATA
+DATA
GND
NC

2

Pin 1 →

VCC
-DATA
+DATA
GND

USB2
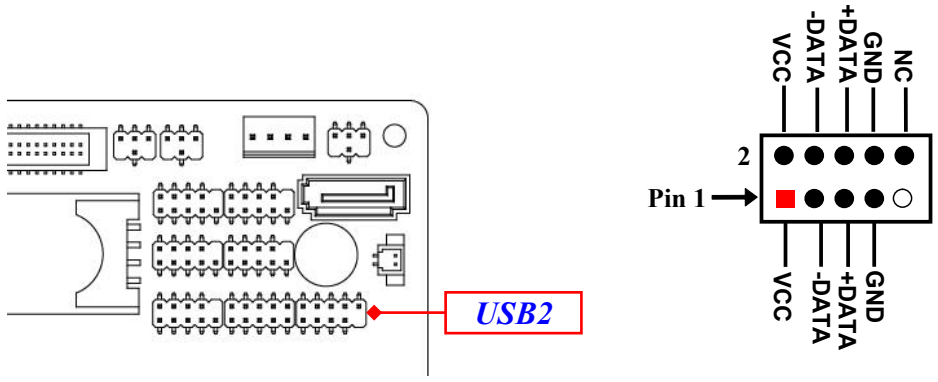
(5) COM2/3/4/5/6 (9-pin): Serial Port Headers

COM2   COM3

COM4   COM6   COM5
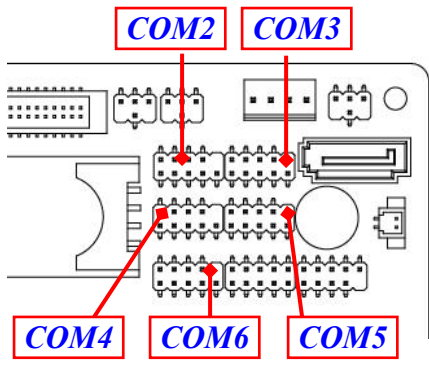
Pin NO.	RS232	*RS422	*RS485
Pin 1	DCD	TX-	DATA-
Pin 2	RXD	TX+	DATA+
Pin 3	TXD	RX+	NC
Pin 4	DTR	RX-	NC
Pin 5	GNG	GND	GND
Pin 6	DSR	NC	NC
Pin 7	RTS	NC	NC
Pin 8	CTS	NC	NC
Pin 9	RI	NC	NC

Pin6 →
Pin1 →   ← Pin5
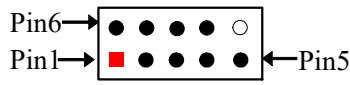
Notice: RS422, RS485 function is supported by COM2 header only, with compatible COM cable for RS422 or RS 485 function. User also needs to go to BIOS to set 'Transmission Mode Select' for COM2.

(6) GPIO (10-pin): GPIO Header
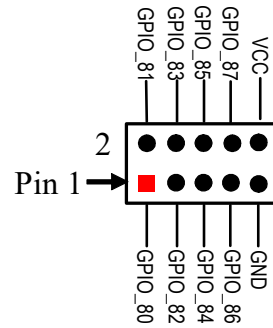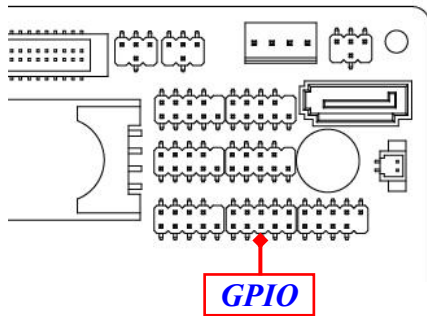
(7) FP (8-pin): Front Panel Header
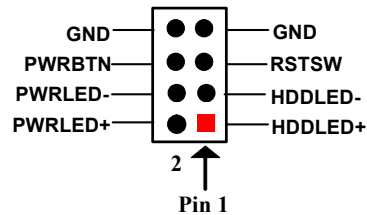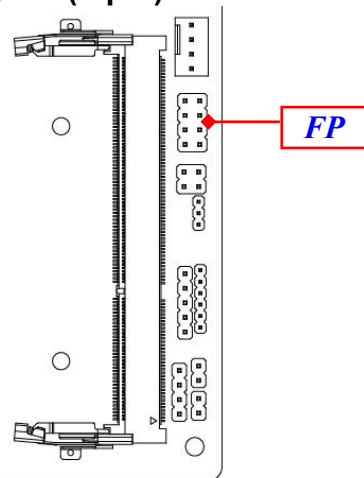
(8) PS2KBMS (6-pin): PS/2 Keyboard & Mouse Header


```
● —— MS_CLK
● —— VCC
● —— MS_DATA
● —— KB_DATA
● —— GND
Pin 1 → ■ —— KB_CLK
```
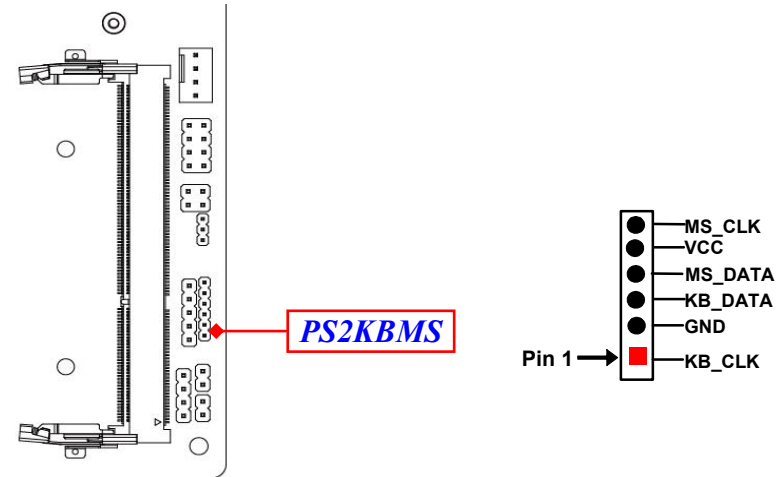
(9) SMBUS (5-pin): SMBUS Header
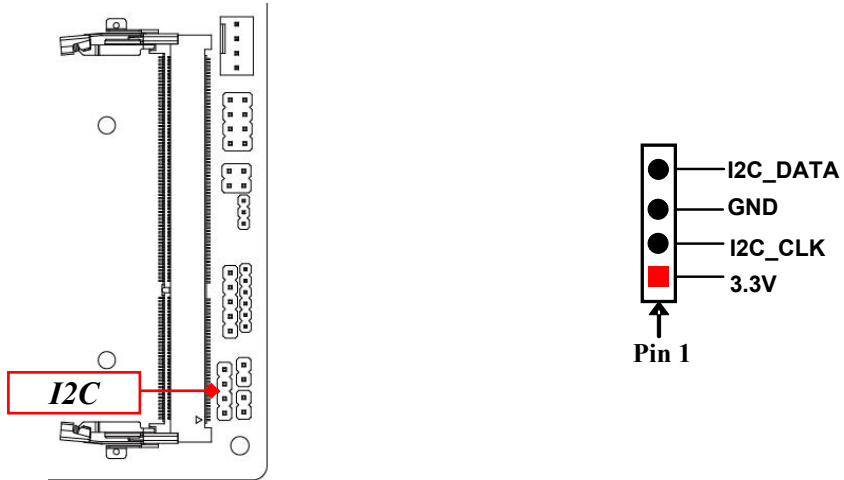

```
● —— 3VSB
● —— GND
● —— SMBUS_ALERT
● —— SMBUS_DATA
■ —— SMBUS_CLK
Pin 1
```

(10)   I2C(4-pin): I2C   Header

Chapter 3: BIOS SETTING

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	5.12	
Filename	F631AA01	
Build Date and Time	05/04/2017 20:20:33	
Access Level	Administrator	
		General Help Items
TXE FW	3.0.11.1131	
System Date	[Mon 03/26/2018]	
System Time	[15:59:07]	

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

Current Setting Value
Function Keys

Menu Items

Version 2.18.1260. Copyright (C) 2017 American Megatrends, Inc.

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.

```
            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                   5.12
      Filename                       F631AA01
      Build Date and Time            05/04/2017 20:20:33
      Access Level                   Administrator

      TXE FW                         3.0.11.1131

      System Date                    [Mon 03/26/2018]
      System Time                    [15:59:07]

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

            Version 2.18.1260. Copyright (C) 2017 American Megatrends, Inc.
```

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

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

     OS Selection                        [Windows]              Select the target OS.

   ▶ Trusted Computing
   ▶ ACPI Settings
   ▶ Wake-up Function Settings
   ▶ Super IO Configuration
   ▶ PC Health Status
   ▶ Serial Port Console Redirection
   ▶ CPU Configuration
   ▶ Network Stack Configuration
   ▶ CSM Configuration
   ▶ USB Configuration

   ▶ Intel(R) I211 Gigabit  Network Connection -      →←: Select Screen
     00:30:18:00:00:00                                ↑↓: Select Item
   ▶ Intel(R) I211 Gigabit  Network Connection -      Enter: Select
     00:30:18:00:00:01                                +/-: Change Opt.
                                                      F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit



              Version 2.18.1260. Copyright (C) 2017 American Megatrends, Inc.
```

OS Selection

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

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

▶ **Trusted Computing**

   Press [Enter] to make settings for the following sub-item:
   <u>Configuration</u>

   Security Device Support

   Use this item to select the enable or disable BIOS support security devices.

The optional setting are: [Enabled]; [Disabled]

▶ **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)].

▶ **Wake-up Function Settings**
Press [Enter] to make settings for the following sub-item:
Wake-up System With Fixed Time

The optional setting are: [Enabled]; [Disabled].
Wake-up System With Dynamic Time

The optional setting are: [Enabled]; [Disabled].
PS2 KB/MS Wake-up

The optional setting are: [Enabled]; [Disabled].
USB S3/S4 Wake-up

The optional setting are: [Enabled]; [Disabled].
USB S5 Power

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

▶ **Super I/O Configuration**
Press [Enter] to make settings for the following sub-items:
Super IO Configuration

ERP Support

The optional setting are: [Disabled] ; [Auto]
This item should be set as [**Disabled**] if you wish to have all active wake-up functions.

▸ **Serial Port 1/3/4/5/6 Configuration**
Press [Enter] to make settings for the following items:
Serial Port
Use this item to [Enabled] or [Disabled] serial port (COM).
Change Settings
Use this item to select an optimal setting for super IO device.
Serial Port FIFO Mode
The optional settings are: [16-Byte FIFO]; [32-Byte FIFO]; [64-Byte FIFO]; [128-Byte FIFO].

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

WatchDog Timer
Use this item to [Enabled] or [Disabled] 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 [4] 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).

Case Open Detect
Use this item to [Enabled] or [Disabled] case open detect or not.

PS2 KB/MS Connect
The optional setting are [Keyboard First] or [Mouse First]

▸ **PC Health Status**
Press [Enter] to make settings for the following sub-items:
► **SmartFAN Configuration**

Press [Enter] to make settings for SmartFan Configuration:
SmartFAN Configuration

CPUFAN Type
The optional settings are: [3-Pin]; [4-Pin].

CPUFAN Smart Mode
The optional settings are: [Disabled]; [Enabled].
When set as [Enabled], the following sub-items shall appear:
CPUFAN Full-Speed Temperature
Use this item to set CPUFAN (/SYSFAN1/SYSFAN2) full speed temperature. Fan will run at full speed when above this pre-set temperature.
CPUFAN Full-Speed Duty
Use this item to set CPUFAN (/SYSFAN1/SYSFAN2) full-speed duty. Fan will run at full speed when above this pre-set duty.
CPUFAN Idle-Speed Temperature
Use this item to set CPUFAN (/SYSFAN1/SYSFAN2) idle speed temperature. Fan will run at idle speed when below this pre-set temperature.
CPUFAN Idle-Speed Duty
Use this item to set CPUFAN (/SYSFAN1/SYSFAN2) idle speed duty. Fan will run at idle speed when below this pre-set duty.

▶ **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].

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].

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].
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.

▶ **CPU Configuration**
Press [Enter] to view current CPU configuration and make settings for the following sub-items:
Intel Virtualization Technology
The optional settings: [Disabled]; [Enabled].
VT-d
The optional settings: [Disabled]; [Enabled].
EIST
The optional settings are: [Disabled]; [Enabled].
Use this item to enable or disable Intel SpeedStep.
C States
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 Core C-State
This item controls Max C-state that the processor will support.
The optional settings: [Fused value]; [C10]; [C9]; [C8]; [C7]; [C6]; [C1]; [Unlimited]

▶ **Network Stack Configuration**
Press [Enter] to go to '**Network Stack**' screen to make further settings.
Network Stack
The optional settings are: [Enabled]; [Disabled].
When set as [Enabled], the following sub-items shall appear:
Ipv4 PXE Support
The optional settings are: [Disabled]; [Enabled].
Use this item to enable Ipv4 PXE Boot Support. When set as [Disabled], Ipv4 PXE

boot optional will not be created.

Ipv4 HTTP Support

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

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

Ipv6 HTTP Support

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

Use this item to enable Ipv6 HTTP Boot Support. When set as [Disabled], Ipv6 HTTP 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 the number of times which media will be checked.

▸ **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].

Video

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

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

Other PCI devices

This item determines OpROM execution policy for devices other than Network, storage or video.

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

▶ **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.

▶ **Intel I211 Gigabit Network Connection (MAC:XX:XX:XX:XX:XX:XX)**
Use this item to get MAC address information.

3-8 Chipset Menu
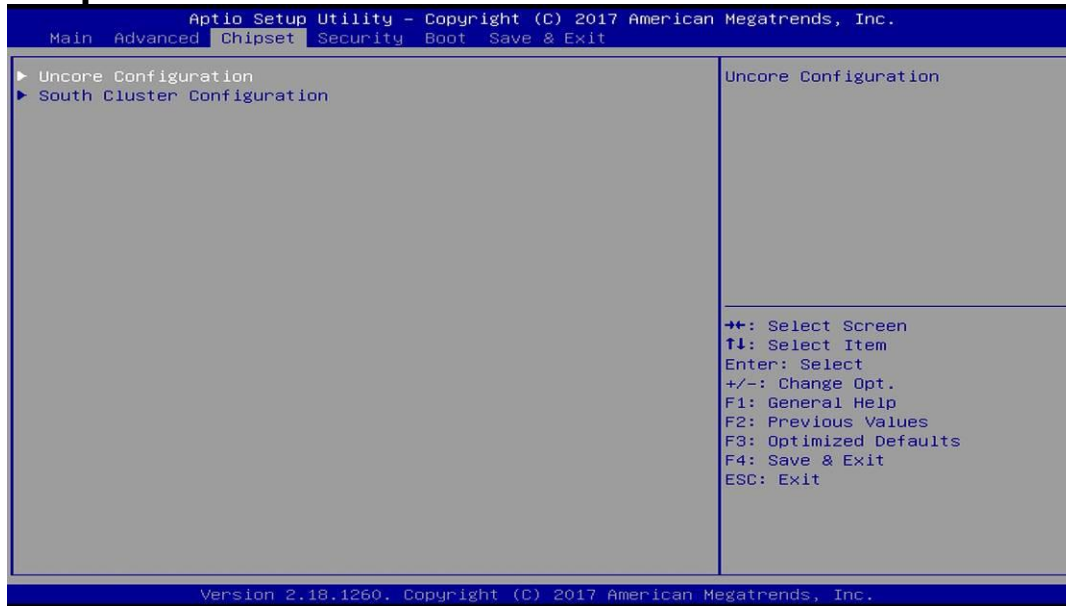
‣ **Uncore Configuration**
Press [Enter] to make settings for the following sub-items:
GOP Configuration
GTT Size
The optional settings: [2MB]; [4MB]; [8MB].
DVMT Pre-Allocated
The optional settings: [64MB]; [96MB]; [128MB]; …… [480MB]; [512MB].
DVMT Total Gfx Mem
The optional settings: [128MB]; [256MB]; [MAX].
PAVP Enable
The optional settings: [Enabled]; [Disabled].

Brightness Level

The optional settings: [20]; [40]; [60]……. [240]; [255].

South Cluster 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]; [Gen3].
SATA Mode
The optional settings are: [IDE Mode]; [AHCI Mode].
SATA Port
The optional settings are: [Enabled]; [Disabled].
M.2
The optional settings are: [Enabled]; [Disabled].

▸ **USB Configuration**
XHCI Mode
The optional settings: [Enabled]; [Disabled].
SD Card Support
The optional settings: [Enabled]; [Disabled]
HD-Audio Support
The optional settings: [Enabled]; [Disabled]
Onboard Lan1 Controller
The optional settings: [Enabled]; [Disabled]
Onboard Lan2 Controller
The optional settings: [Enabled]; [Disabled]
System State After Power Failure
The optional settings: [Always Off]; [Always On]; [Former state]

3-9 Security Menu
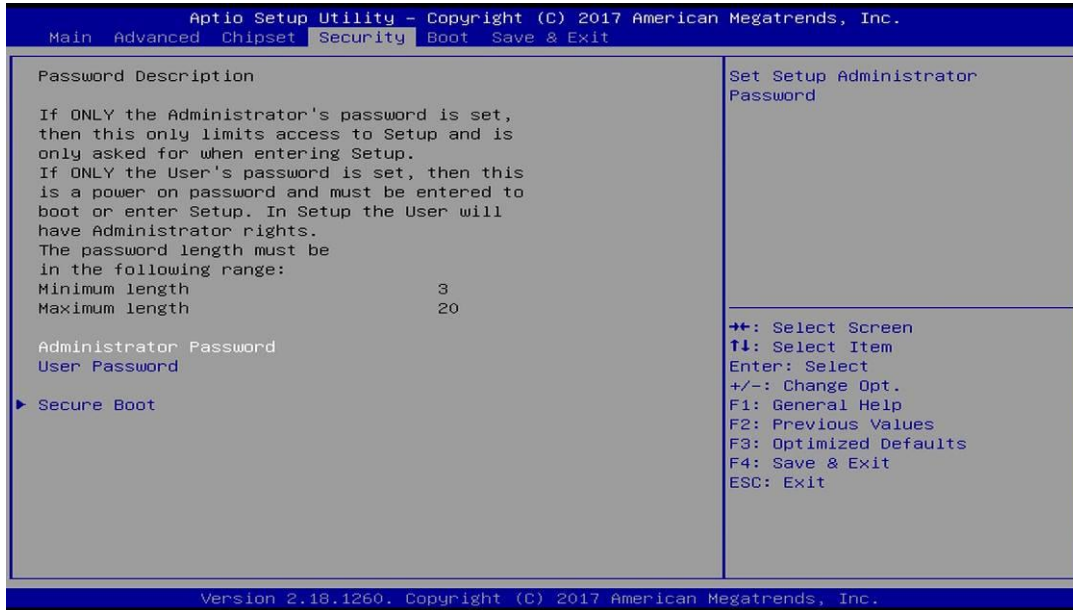
Security menu allow users to change administrator password and user password settings.

▸ **Secure Boot**
Press [Enter] to make settings for the following sub-items:
Secure Boot Control
The optional settings: [Disabled]; [Enabled].
Secure Boot Mode
The optional settings: [Standard]; [Custom].
When set as [Standard], BIOS will install factory default keys.   When set as [Custom], users can set [Key Management]

  ▸ **Key Management**

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

Provision Factory Defakt Keys
The optional settings: [Disabled]; [Enabled].

▶ **Enroll all Factory Default Keys**
The optional settings: [Yes]; [No].   Press [Yes] to install default keys.

▶ **Save all Secure Boot Variables**
Press [Enter] to save secure boot variables.

▶ **Platform Key(PK)**
The optional settings: [Set New Key]; [Delete Key].

▶ **Key Exchange Keys**
The optional settings: [Set New Key]; [Append Key]; [Delete Key].

▶ **Authorized Signatures**
The optional settings: [Set New Key]; [Append Key]; [Delete Key].

▶ **Forbidden Signatures**
The optional settings: [Set New Key]; [Append Key]; [Delete Key].

▶ **Authorized Time Stamps**
The optional settings: [Set New Key]; [Append Key].

▶ **Os Recovery Signatures**
The optional settings: [Set New Key]; [Append Key].

3-10 Boot Menu
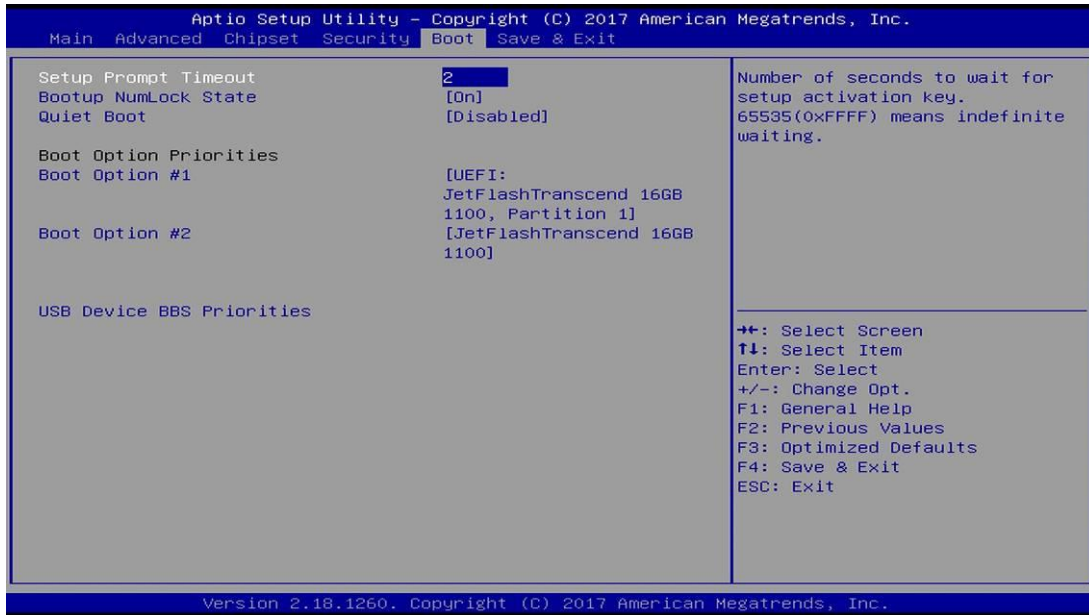
Setup Prompt Timeout
Use this item to set number of seconds to wait for setup activation key.
Bootup Numlock State
Use this item to select keyboard numlock state.
The optional settings are: [On]; [Off].
Quiet Boot
The optional settings are: [Disabled]; [Enabled].
Boot Option Priorities

Boot Option#1/2…
The optional settings are: [UEFI: Built-in EFI Shell]; [Disabled].

3-11 Save & Exit Menu

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

  Save Changes and Reset                                    Reset the system after saving
  Discard Changes and Reset                                 the changes.

  Restore Defaults
  Save as User Defaults
  Restore User Defaults

  Boot Override
  UEFI: JetFlashTranscend 16GB 1100, Partition 1
  JetFlashTranscend 16GB 1100
  Launch EFI Shell from filesystem device
                                                            →←: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit


          Version 2.18.1260. Copyright (C) 2017 American Megatrends, Inc.
```
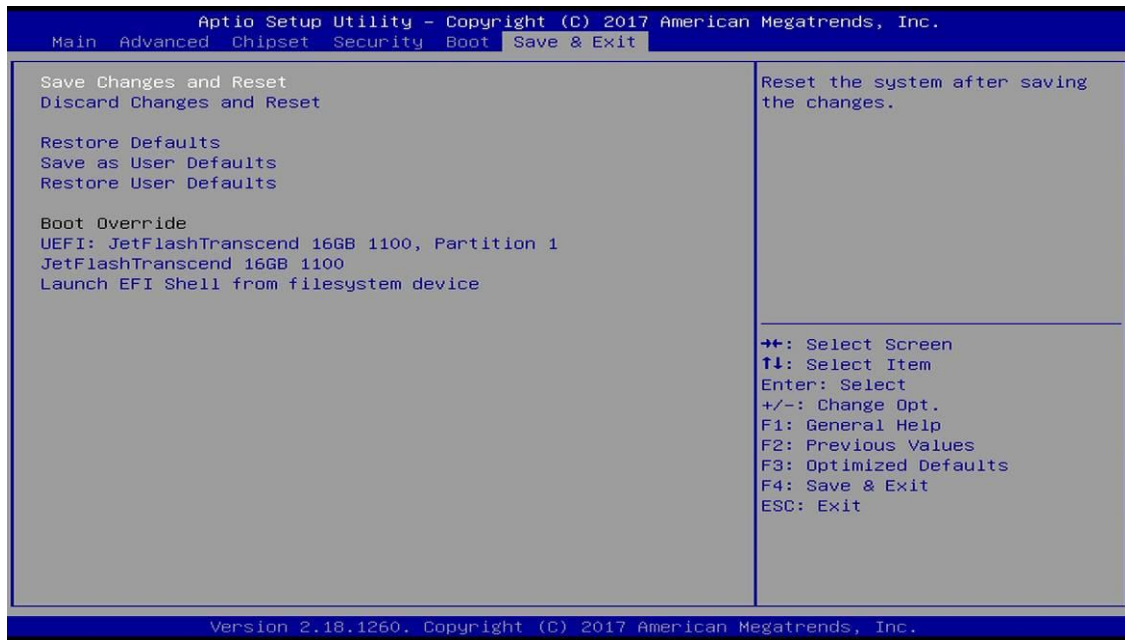
Save Changes and Reset

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

Discard Changes and Reset

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

Restore Defaults

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

Save as User Defaults

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

Restore User Defaults

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

Boot Override

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.

Chapter 4: GPIO and WATCHDOG SAMPLE Code

4-1 WATCHDOG SAMPLE CODE

Please go to the following web site.   Then, click "Driver" to get the watchdog sample code:

http://www.jetwayipc.com/search.asp?keys=NF631

4-2 GPIO SAMPLE CODE

Please go to the following web site.   Then, click "Driver" to get the GPIO sample code:

http://www.jetwayipc.com/search.asp?keys=NF631