BRAV-7501

User's Manual

Ver.A1.0

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Version Note

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1	A1.0	first publish	20200709	Echo

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This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by JHC, or which have been subject to misuse, abuse, accident or improper installation.

JHC assumes no liability under the terms of this warranty as a consequence of such events.

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If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, JHC products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
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Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from JHC. Please contact your local supplier for ordering information. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class B

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a resident installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, in which case the user will be required to correct the interference at his own expense.

Technical Support and Assistance

Step 1. Visit the JHC web site at www.jhctech.com.cn where you can find the latest information about the product.

Step 2. Contact your distributor, sales representative, or JHC's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:

- Product name and serial number
- Description of your peripheral attachments
- Description of your software (operating system, version, application software, etc.)
- A complete description of the problem
- The exact wording of any error messages

CONTENTS

CHAPTER 1

General Information

1.1 Introduction

BRAV-7501 is an edge computing system for AIOT and industry 4.0 applications of JHCTECH. It powered by the Gen. 8th Intel® Coffee lake-S CPU, Up to 8-Core, running with workstation-grade Intel® C246 Chipset. 2-Ch DDR4, 4*DIMM 2666MHz memory, up to 128GB. advanced Intel® UHD Graphics 630, supporting DirectX 12, OpenGL 4.5 and OpenCL 2.0 API.

BRAV-7501 offers 1*HDMI, 2*DP, support 3 independent displays, 3*GbE LANs, support AMT12.0, 4*USB3.1 gen2 (10Gbps), 2*COM RS232/422/485, 8-bit DIO, 1*F-Mini PCIe with SIM slot, which supports 4G LTE/Wifi/BT/GPS.1*M.2 2280 M-Key(PCIe X4), support NVMe storage, multiple SATA3 (6Gbps) HDD/SSD are used for storage, support raid 0/1/5/10. It supports various expansion slots, including PCIe×16(or 2*PCIe X8), 2*PCIe×4. Flexible support NVIDIA® GeForce® RTX series graphics, Capture card. With ATX 600W power supply, BRAV-7501 series is widely used for industrial automation, AI edge computing, small intelligent workstations, multimedia service systems, visual control and so on.

1.2 Features

Key Features

- Up to 8 Cores, 8th generation Intel® Xeon®/Core™ i7/i5/i3 (Coffee Lake-S)
- Workstation-grade Intel® C246/Q370 chipset
- 4*DDR4 2666MHz, up to 128GB
- Expansion

  2*PCIe X16 slot (Gen3, support 1*PCIe X16 signal, If another slot is also connected to the device, it will automatically become 2*PCIe X8 signal)

  2*PCIe X8 slot (Gen3, 2*PCIe X4 signal)

  1*F-mini PCIe with SIM slot, support 4G LTE/GPS and Wifi/BT
- 2/4*2.5" SATA HDD/SSD trays, support Raid 0/1/5/10
- 1*M.2 2280 M-Key, support NVMe storage
- 2*DP, 1*HDMI, support 3 independent displays
- Realtek ALC662VD controller, 1*LINE OUT, 1*MIC
- 2*Intel I210AT, 1*Intel I219LM, supports Intel AMT 12.0

- 4*USB3.1, 7*USB2.1
- 8-bit DIO, 2*COM RS232/422/485
- ATX 600W power supply

1.3 Specifications

1.3.1 General

CPU: Up to 8 Cores, 8th generation Intel® Xeon®/Core™ i7/i5/i3 (Coffee Lake-S)

System Memory: 4*DDR4 2666MHz DIMM, Up to 128GB

Watchdog Timer: 255-level interval timer, setup by software

Serial Ports: 2* RS232/422/485 DB9 male

USB: 4*USB 3.1 gen2 Type A, 6*USB2.0 Type A, 1*USB 2.0 Type A port (inside)

DIO: 8-bit DIO, DB9 male

Expansion Interface:

1*Full size Mini PCIe (PCIeX1+USB) with SIM slot

PCI/PCIe slots:

2*PCIe X16 slot (Gen3, support 1*PCIe X16 signal, If another slot is also connected to the device, it will automatically become 2*PCIe X8 signal), Flexible support NVIDIA® GeForce® RTX series graphics

2*PCIe X8 slot (Gen3, 2*PCIe X4 signal)

Storage:1*M.2 2280 M-Key, support NVMe storage

2*3.5" SATA HDD/SSD bay, support Raid0,1 (BRAV-7501/S001)

4*2.5" SATA HDD/SSD trays, support Raid0/1/5/10 (BRAV-7501/S002)

1.3.2 Display

Chipset: Intel® UHD Graphics

Display Memory: Shared system memory

Resolution: HDMI 4096x2304@24Hz; DP 4096x2160@60Hz

1.3.3 Ethernet

Chipset: 2*Intel® I210AT Ethernet controllers

1* Intel® I219LM Ethernet controller, supports iAMT 12.0

Speed: 10/100/1000 Mbps Integrated

Interface: 3*RJ45

1.3.4 Audio

Chipset: Realtek ALC662VD controller

Interface: 1*Line-out, 1*MIC, 3.5mm phone jack

1.3.5 Power Consumption

Power Consumption: 374W (I7-8700, 16GB DDR , 2*4TB HDD, GTX-1660 Graphics)

Power Supply: ATX 600W power

1.4 Environmental Specifications

Operating temperature:

-20 ~ 50° C (SSD, Airflow)

Relative humidity: 10~90% @ 40°C (non-condensing)

Storage temperature: -40 ~ 85°C (-40 ~ 185°F)

Vibration loading during operation:

With SSD: 5.0 Grms, random, 5 ~ 500 Hz

With HDD:1.0 Grms, random, 5 ~ 500 Hz

Shock during operation:

With SSD: 50g, peak acceleration (11 ms duration)

With HDD:20g peak acceleration (11 ms duration)

EMC: CE, FCC Class B

1.5 BRAV-7501 Series Specifications

Model.	BRAV-7501
System	
Processor	8th generation Intel® Xeon®/Core™ i7/i5/i3 (Coffee Lake-S)
Chipset	Intel® C246/Q370
Memory	DDR4 2666MHz, 4*DIMM Socket, Up to 128GB
Storage	1*M.2 2280 M-Key, support NVMe storage 2*3.5" SATA SSD bay, support Raid0,1 (BRAV-7501/S001)

	4*2.5" SATA SSD trays, support Raid0/1/5/10 (BRAV-7501/S002)
I/O interface	
LAN	2*Intel® I210AT Ethernet 1* Intel® I219LM Ethernet, supports iAMT 12.0
USB	4*USB3.1 gen2 (External) 6*USB2.0 (External), 1*USB2.0 (Internal)
COM	2*RS232/422/485
DIO	8-bit DIO
Display	1*HDMI, 2*DP
PS/2	Keyboard & Mouse
Audio	1*Line Out, 1*MIC
Expansion	
Mini-PCIe	1*Full size Mini PCIe (PCIeX1+USB) with SIM slot
PCIe	2*PCIe X16 Slot 2*PCIe X8 Slot

1.6 Mechanical Specifications

The BRAV-7501 is the edge computing system of JHCTECH, consists of a JHC single board computer (ATX-I961).

Main Board Front (AXM-I961)

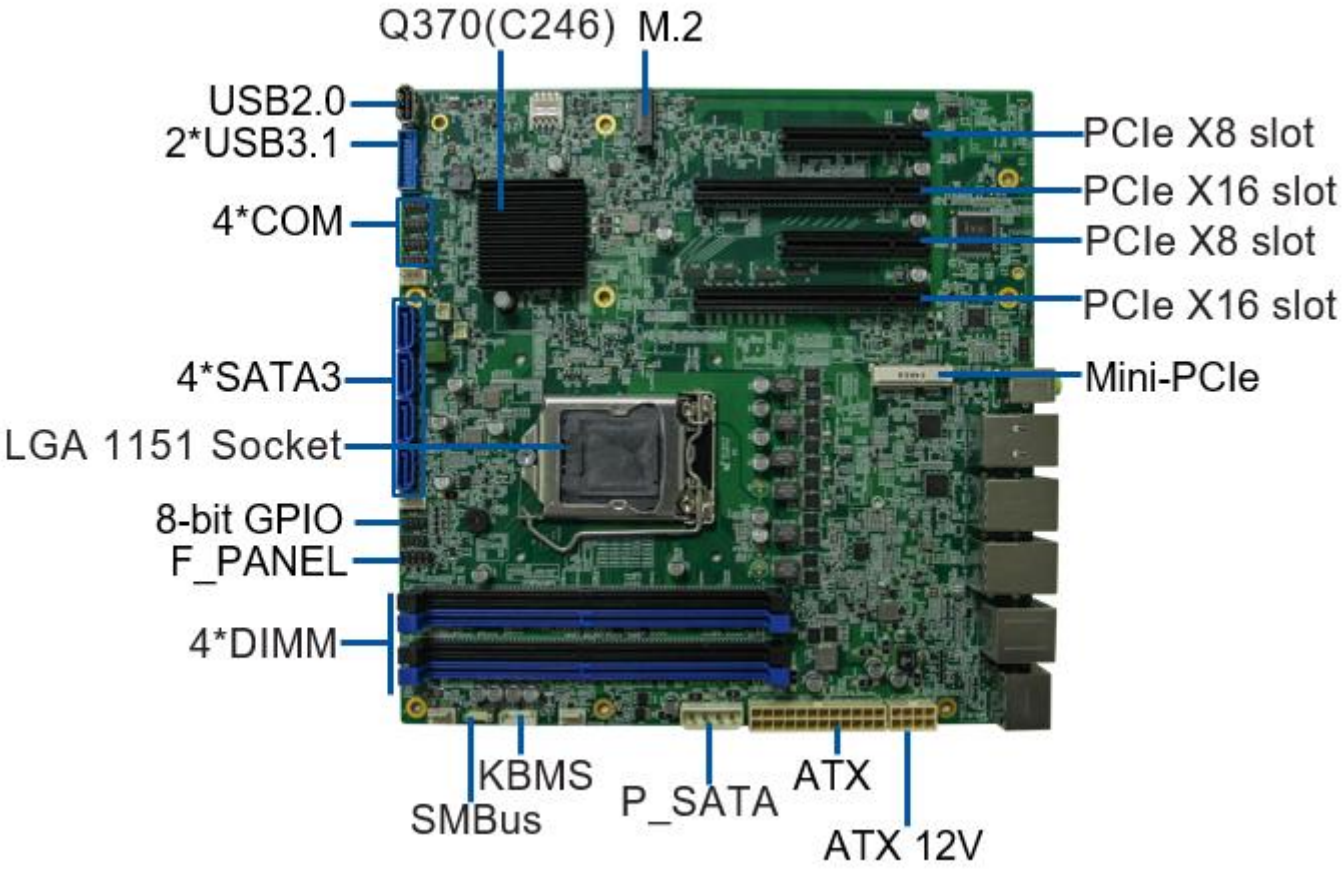


Figure 1.1

Coastline interface (AXM-I961)

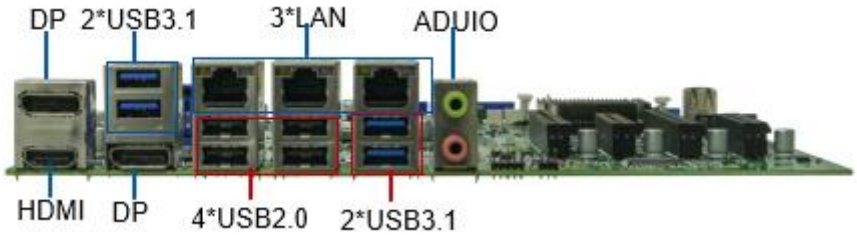


Figure 1.2

BRAV-7501 Dimension: **Unit: mm**

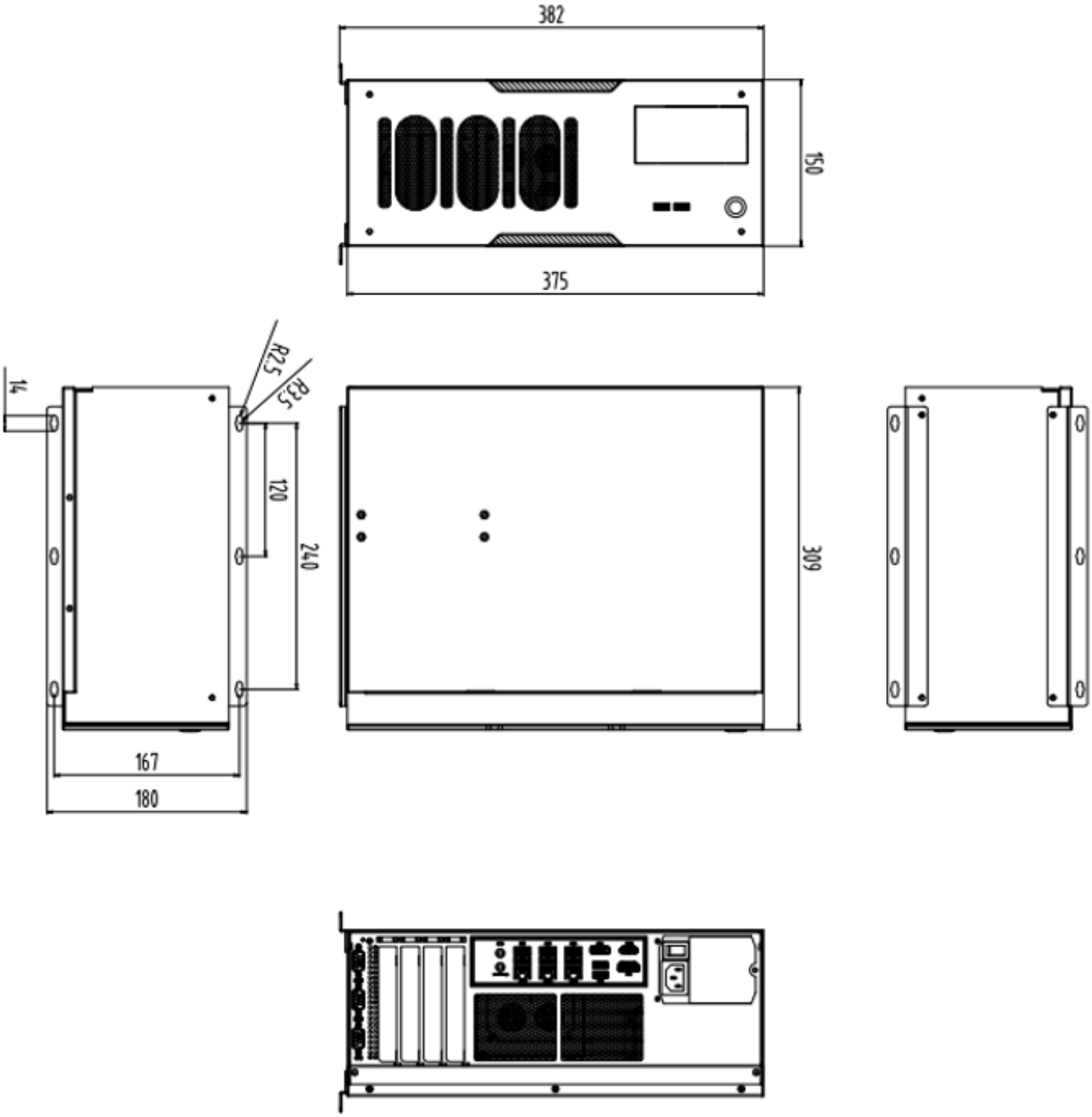


Figure 1.3

CHAPTER 2

Hardware Installation

2.1 Introduction

The following sections show jumpers settings and the external connectors and pin assignments for applications.

2.2 Jumpers setting

The BRAV-7501 Box Computer has a number of jumpers that allows you to configure your system to suit your application. The table below shows the function of each of the board's Jumpers:

Jumpers

Jumpers	Name	Description
CMOS	Clear CMOS Data Setting	Jumper
ATX	Set Power-on mode at AT or ATX	Jumper

2.2.1 CMOS -Clear CMOS Data jumper

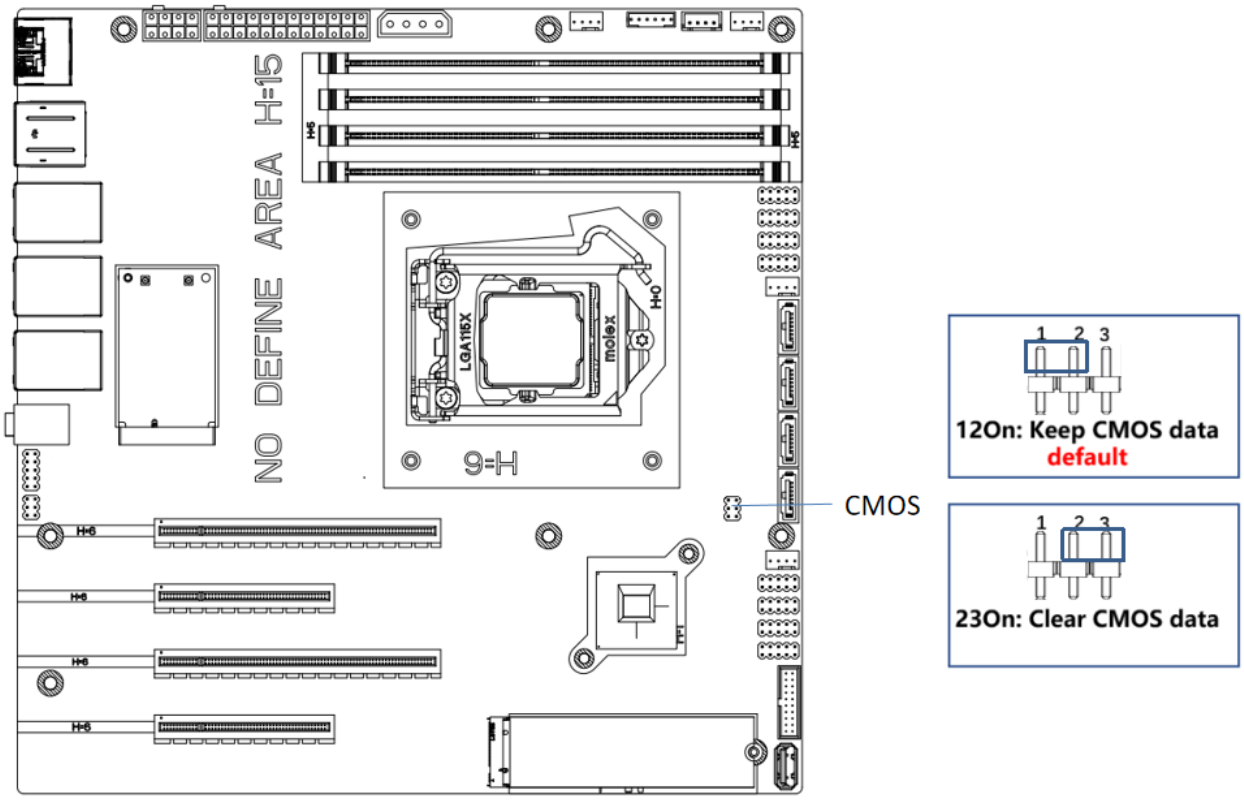


Figure 2. 1

If you encounter the followings

a) CMOS data becomes corrupted.

b) You forget the supervisor or user password.

you can reconfigure the system with the default values stored in the ROM BIOS.

To load the default values stored in the ROM BIOS, please follow the steps below.

1. Power-off the system and unplug the power cord.

2. Set CMOS pins 2 and 3 to On. Wait for a few seconds and set CMOS back to its default setting, pins 1 and 2 On.

3. Now plug the power cord and power-on the system.

2.2.2 ATX- AT/ATX Power on mode selection

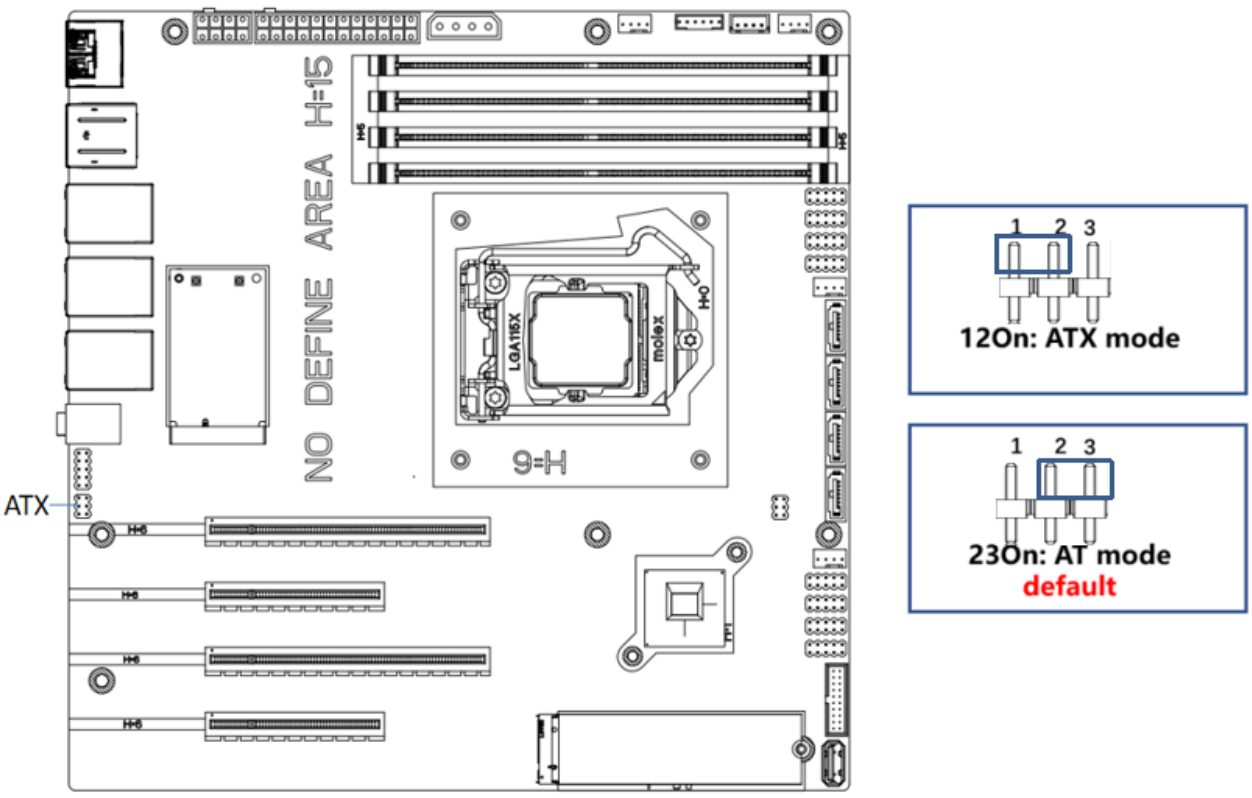


Figure 2. 2

The BRAV-7501 provides a AT/ATX jumper, which users can set Power-on mode by it. When you set pins 2 and 3 on, it means power on by AC Power; When you set pins 1 and 2 on, it means power on by Power button.

2.3 I/O Ports Indication

BRAV-7501 Rear Panel I/O Ports

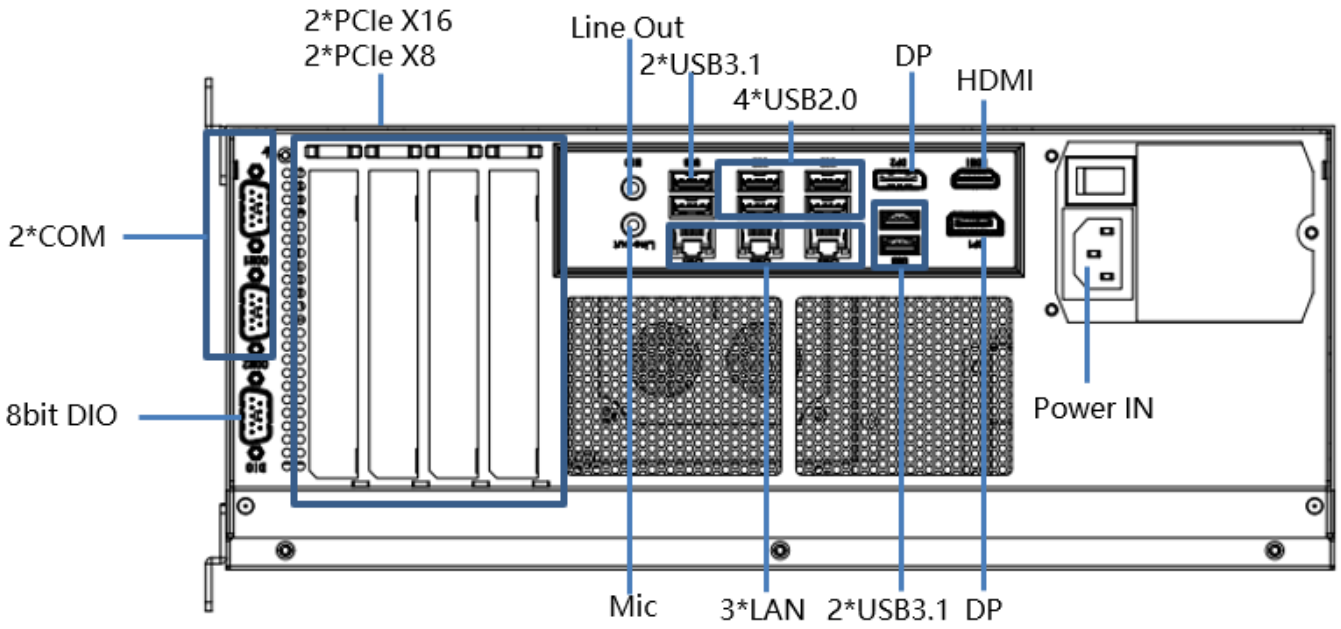


Figure 2. 3

The Rear panel I/O ports consist of the following:

- 1*Power input connector
- 1*Mic, 1*Line out: 3.5mm phone jack
- 2*DP, 1*HDMI
- 4*USB 2.0 Type A, 4*USB3.1 gen2 Type A
- 3*Gigabit LAN: RJ45 with LEDs
- 2*COM: DB9 2*RS232/422/485
- 8-bit DIO: DB9
- 2*PCIeX8, 2*PCIeX16

BRAV-7501 Front Panel I/O Ports

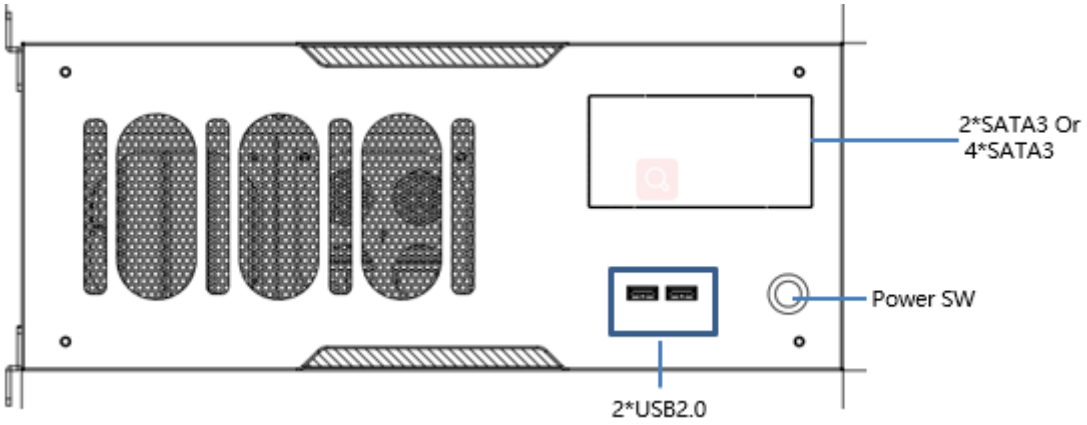


Figure 2. 4

The Front panel I/O ports consist of the following:

- 2*3.5" SATA SSD/HDD bay (BRAV-7501/S001)
- 4*2.5" SATA SSD/HDD trays (BRAV-7501/S002)
- 2*USB2.0
- Power SW

2.3.1 Ethernet Connector (LAN)

The BRAV-7501 is equipped with 2*Intel I210AT chips and 1*Intel I219LM for 10/100/1000Mbps Ethernet controllers. The product provides 3*RJ45, with LED indicators on the front side to show its Active/Link status (Green LED) and Speed status (yellow LED).

Table 2.1 for pin assignments.

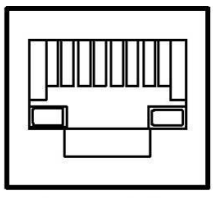


Figure 2. 5

Table 2.1: RJ-45 Connector pin assignments

Pin	10/100/1000BaseT Signal	Pin	10/100/1000BaseT Signal
1	TX+(10/100), LAN_DA+(GHz)	5	LAN_DC-(GHz)
2	TX-(10/100), LAN_DA-(GHz)	6	RX-(10/100), LAN_DB-(GHz)
3	RX+(10/100), LAN_DB+(GHz)	7	LAN_DD-(GHz)
4	LAN_DC+(GHz)	8	LAN_DD-(GHz)

2.3.2 USB Connector

The USB device allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

The BRAV-7501 provides 4*USB3.1 gen2, 7*USB2.0(one inside for dongle). The USB interface can be disabled in the system BIOS setup. Table 2.2 for USB2.0 pin assignments.

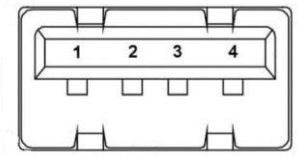


Figure 2. 6

Table 2.2: USB2.0 Port Pin Assignments			
Pin	Signal	Pin	Signal
1	USB_VCC	2	USB_D-
3	USB_D+	4	USB_GND

This USB2.0 is on the main board, used for dongle.

Figure 2. 7

Table 2.3 for USB3.1 pin assignments.

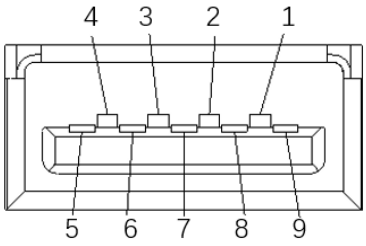


Figure 2. 8

Table 2.3: USB3.1 Port Pin Assignments			
Pin	Signal	Pin	Signal
1	VBUS	6	StdA_SSRX+
2	D-	7	GND_DRAIN
3	D+	8	StdA_SSTX-
4	GND	9	StdA_SSTX+
5	StdA_SSRX-	Shell	Shield

2.3.3 HDMI

The BRAV-7501 provides a high-resolution HDMI display port. They can support the most resolution up to 4096x2304@24Hz.

Table 2.4 for HDMI pin assignments.

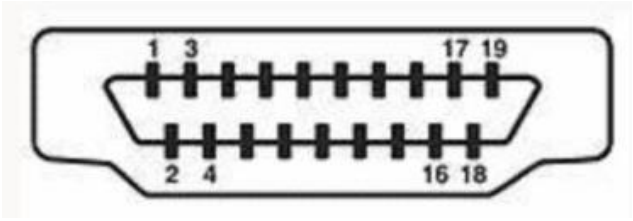


Figure 2. 9

Table 2.4: HDMI Pin Assignments					
Pin	Signal	Pin	Signal	Pin	Signal
1	DATA2_P	8	GND	15	SCL
2	GND	9	DATA0_N	16	SDA
3	DATA2_N	10	CLK_P	17	GND
4	DATA1_P	11	GND	18	VCC
5	GND	12	CLK_N	19	DETECT
6	DATA1_N	13	NC		
7	DATA0_P	14	NC		

2.3.4 DP

The BRAV-7501 provides 2 high-resolution DP ports, it supports the most resolution up to 4096*2160@60Hz.

Table 2.5 for DP pin assignments.

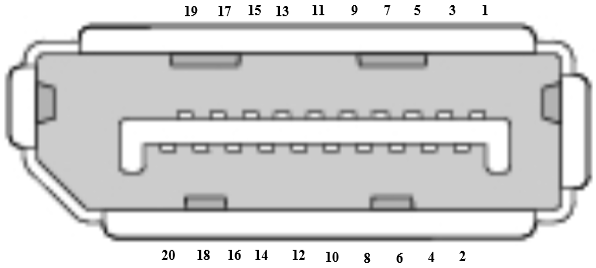


Figure 2. 10

Table 2.5: DP Pin Assignments					
Pin	Signal	Pin	Signal	Pin	Signal
1	DATA0_P	8	GND	15	AUXP
2	GND	9	DATA2_N	16	GND
3	DATA0_N	10	DATA3_P	17	AUXN
4	DATA1_P	11	GND	18	HPD
5	GND	12	DATA3_N	19	GND
6	DATA1_N	13	CTRL	20	PWR
7	DATA2_P	14	GND		

2.3.5 DIO Connector

The BRAV-7501 provides 8-bit DIO by a DB9 connector in rear. Table 2.6 for Pin assignments.

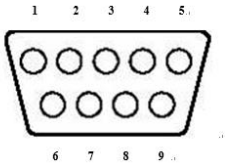


Figure 2. 11

Table 2.6: 8-bit DIO Pin Assignments			
Pine	DIO Signal	Pin	DIO Signal
1	GP70	2	GP71

3	GP72	4	GP73
5	GND	6	GP74
7	GP75	8	GP76
9	GP77		

(All of the above DIOs are TTL signals, digital inputs (high level 1: 2-5.25V, low level 0: 0-0.8V), digital output (high level 1: minimum 2.4V, low level 0: Maximum 0.4V).)

2.3.6 COM Connector

The BRAV-7501 provides 2 serial ports of COM1/2 by 2*D-sub 9-pin connectors. COM1/2 can be configured as RS232、RS422 or RS485 by BIOS setup. Table 2.7 for pin assignments.

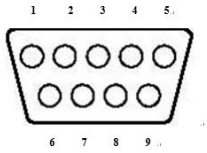


Figure 2. 12

Table 2.7: COM1/2 Serial Ports Pin Assignments

Pin	RS-232 Signal	RS-422 Signal	RS-485 Signal
1	DCD	TX-	DATA-
2	RxD	TX+	DATA+
3	TxD	RX+	NC
4	DTR	RX-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

2.3.7 COM Connector Serial ATA1/2/3/4 (S_SATA1/2/3/4)

Figure 2. 13

Table 2.8 for pin assignments.

Table 2.8: Serial ATA1/2/3/4 pin assignments			
Pin	Signal	Pin	Signal
1	GND	5	RX-
2	TX+	6	RX+
3	TX-	7	GND
4	GND		

2.3.8 CPU fan connector (CPU_FAN1/FAN2)

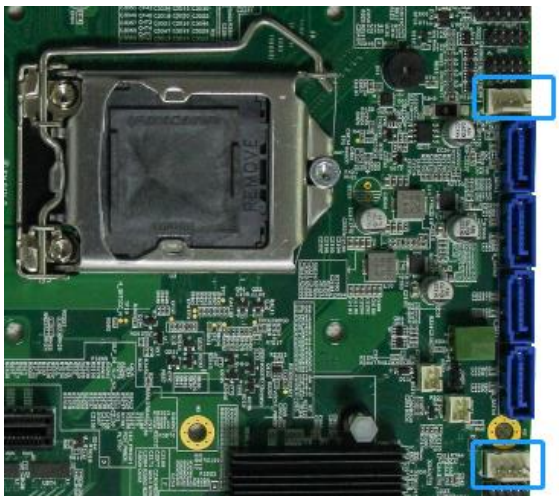


Figure 2. 14

Table 2.9: CPU_FAN/FAN2 Pin Assignments			
Pin	Signal	Pin	Signal
1	GND	2	12V
3	FAN_TAC	4	FAN_CTL

2.3.9 GPU fan connector (GPU_FAN1/FAN2)

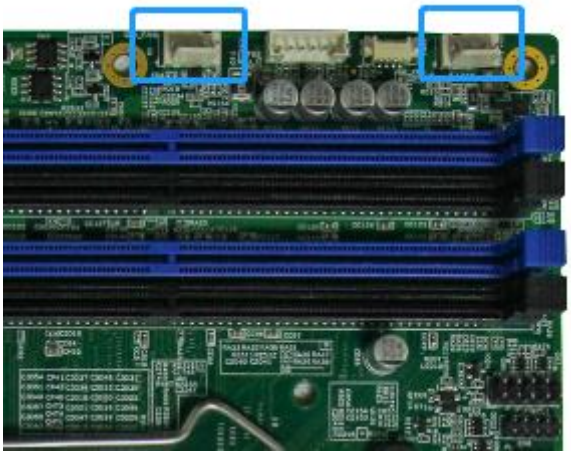


Figure 2. 15

Table 2.10 for pin assignments.

Table 2.10: GPU_FAN1/FAN2 Pin Assignments			
Pin	Signal	Pin	Signal
1	GND	2	+12V_FAN
3	FAN_TAC3	4	FAN_CTL3

2.3.10 SATA power connector (SATA_PWR1)

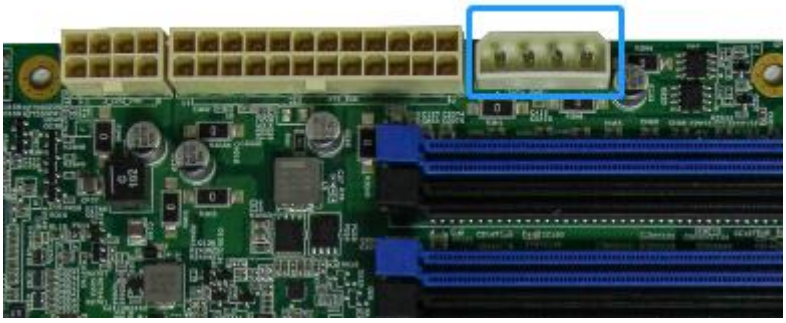


Figure 2. 16

Table 2.11 for pin assignments.

Table 2.11: SATA power connector			
Pin	Signal	Pin	Signal

1	5V	3	GND
2	GND	4	12V

2.3.11 Mini-PCIe Connector (MPE1)

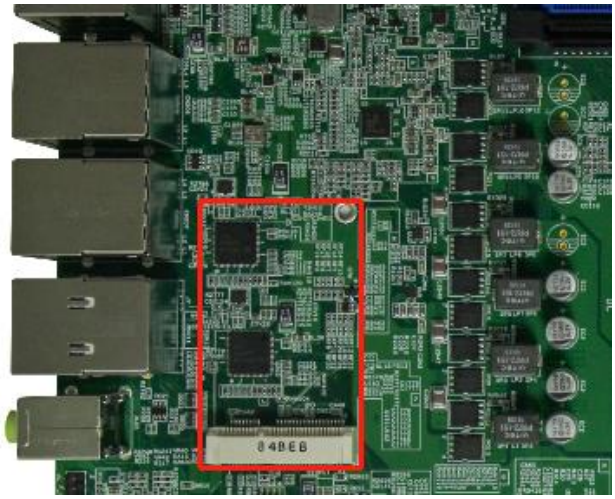


Figure 2. 17

Mini PCIe interface with PCIe and USB signal, Install Mini PCI Express cards such as network cards or other cards that comply to the Mini PCI Express specifications into the Mini PCI Express slot.

(Note: SIM0 slot is connected to MPE1 slot)

Figure 2. 18

2.3.12 SIM card connector (SIM0)

Figure 2. 19

SIM0 slot is connected to MPE1 slot.

2.3.13 M.2 connector (NGFF)

Figure 2. 20

M.2(NGFF) interface with PCIeX4 signal, Install M.2 2280 M-Key modules, such as NVMe SSD module and other PCIeX4 M.2 2280 M-Key module.

2.3.14 ATX Power Input Connector (ATX_PWR)

Figure 2. 21

Table 2.12 for ATX power input pin assignments.

Table 2.13: Power Input（ATX_PWR）port pin assignments

Pin	Signal	Pin	Signal
1	+3.3V1	13	+3.3V13
2	+3.3V2	14	-12V
3	GND3	15	GND15
4	+5V4	16	PS_ON#
5	GND5	17	GND17
6	+5V6	18	GND18
7	GND7	19	GND19
8	PWR_OK	20	-5V
9	+5VSB	21	+5V21
10	+12V10	22	+5V22

11	+12V10	23	+5V23
12	+3.3V12	23	GND24

2.3.15 CPU power input (J_CPU_PWR)

Figure 2. 22

2.3.16 PCIeX8 Slot (PCIE3/4)

The BRAV-7501 provides 2 standard PCIe X8 slot (PCIe X4 signal), which can support PCIeX4 device. The length of the expansion card should be less than 245mm.

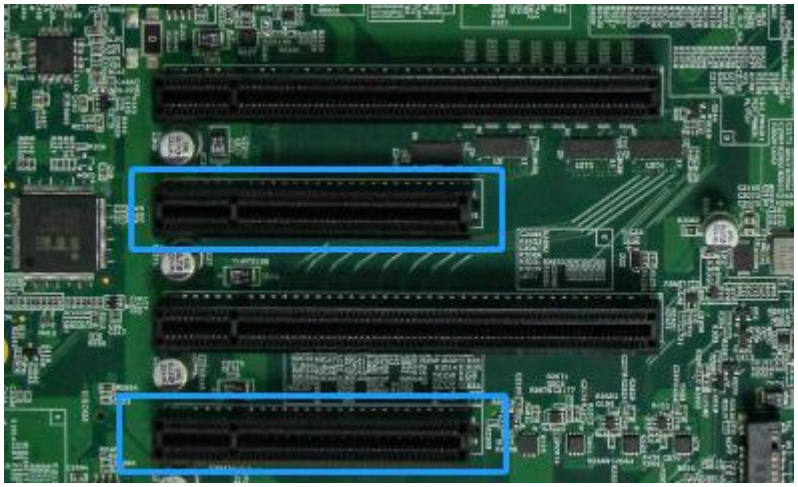


Figure 2. 23

2.3.17 PCIeX16 Slot (PCIE1/2)

The BRAV-7501 provides 2*PCIeX16 expansion slot. support 1*PCIe X16 signal, if another slot is also connected to the device, it will automatically become 2*PCIe X8 signal. The length of the expansion card should be less than 245mm.

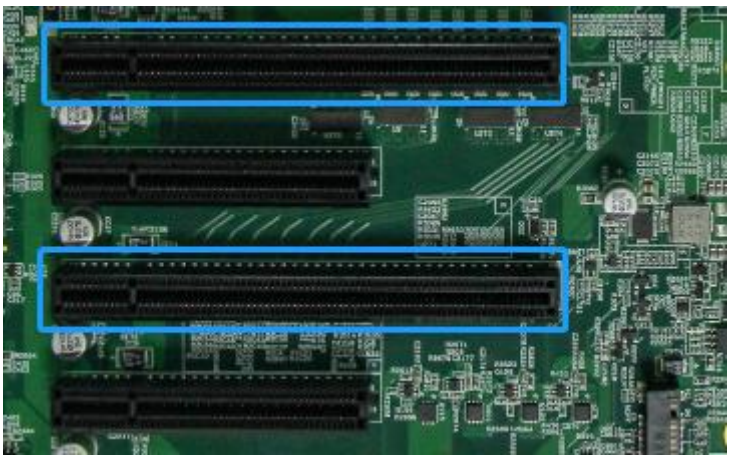


Figure 2. 24

2.4 Installation

Here the hardware installation takes BRAV-7501-S002 for example, and the installation operation of BRAV-7501-S002 is similar.

2.4.1 HDD/SSD Installation

Step 1: Press the HDD Tray Switch button to open the HDD tray;

Step 2: Install a 2.5-inch hard disk into the hard disk bracket;

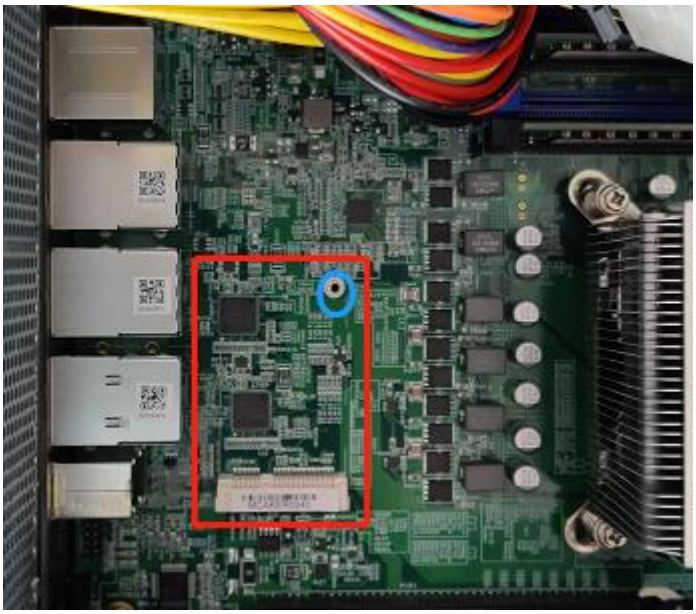
Step 3: Put the hard drive tray back into the hard drive case;

2.4.2 Installing mini-PCIe

Step 1: Unscrew 3 screws one the bottom cover, take away the bottom cover;

Step 2: Hold the Mini PCIe module with its notch aligned with the Mini PCIe socket of the board and insert it at a 30 degrees angle into the socket;

Step 3: Screw one screw to the holder;

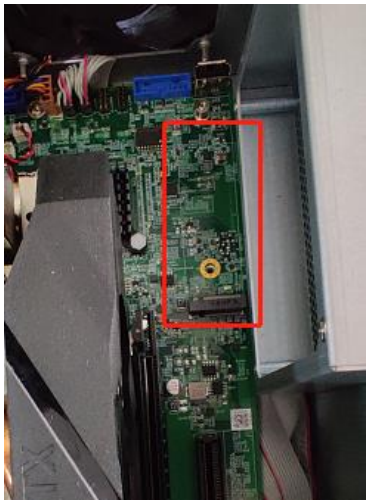


Step 4: Follow the reverse steps of disassembly to complete the product installation.

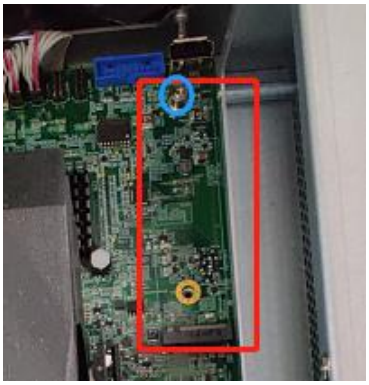
2.4.3 Installing M.2 2280 Module

Step 1: Unscrew 3 screws one the bottom cover, take away the bottom cover;

Step 2: Hold the M.2 module with its notch aligned with the NGFF socket of the mother board and insert it at a 30 degrees angle into the socket (Note: Pay attention to avoiding the hard disk cable during the installation process);



Step 3: Screw one screw to the holder as shown in the picture.



Step 4: Follow the reverse steps of disassembly to complete the product installation.

2.4.4 Installing Expansion Functional Module

Step 1: The step here is the same as above chapter "2.5.2 Installing Mini PCIe Module -Step 1", For details, please refer to the above chapter "2.5.2 Installing Mini PCIe Module -Step 1"

Step 2: Unscrew 4 screws on 4 bars, take off 4 bars;

Step 3: Put the PCIe functional module into the expansion slot;

Step 4: Screw a screw on the bar to secure the PCIe module;

Step 5: Follow the reverse steps of disassembly to complete the product installation.

CHAPTER 3

BIOS Setup

3.1 BIOS Description

BIOS is the communication bridge between hardware and software. How to correctly set the BIOS parameters is crucial for the system to work stably and whether the system works at its best.

This chapter describes how to change the system settings through the BIOS settings.

Note: For the purpose of better product maintenance, the manufacture reserves the right to change the BIOS items presented in this manual. The BIOS setup screens shown in this chapter are for reference only and may differ from the actual BIOS.

You need to make SETUP settings as follows:

1. An error message appears on the screen during the system self-test and asks for the SETUP setting.

2. You want to change the factory default settings based on customer characteristics.

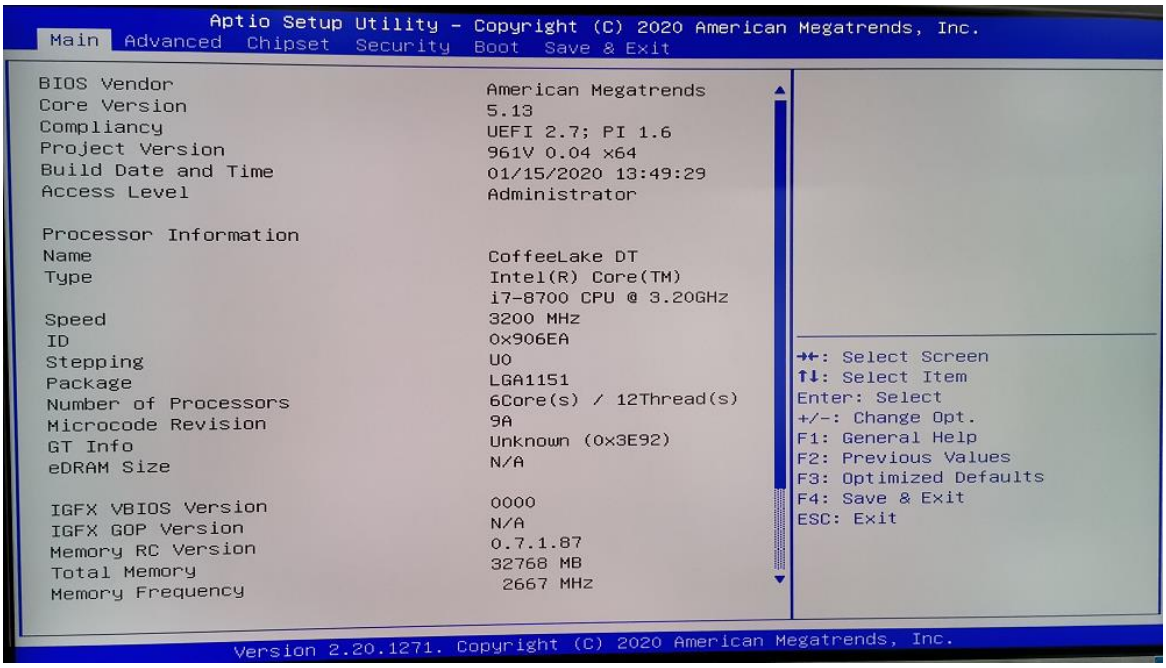
(But in general, customers are not recommended to set it up. In most cases, using the default value is already the best setting.)

The BIOS Setup Utility enables you to configure:

- Hard drives, diskette drives and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power Management features

3.1.1 Entering the Setup Utility

When you power on the system, BIOS enters the Power-On Self-Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, Press the "**DEL**" key to enter BIOS Setup Utility.



3.2 BIOS parameter settings

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle ▶) lead to submenus that enable you to change the values for the option. Use the cursor arrow keys to scroll through the items in the submenu.

In this manual, default values are enclosed in parenthesis. Submenu items are denoted by a triangle ▶. *The default BIOS setting for this motherboard apply for most conditions with optimum performance. We do not suggest users change the default values in the BIOS setup and take no responsibility to any damage caused by changing the BIOS settings.*

3.2.1 BIOS Navigation Keys

Enter the SETUP settings interface, The BIOS navigation keys are listed below:

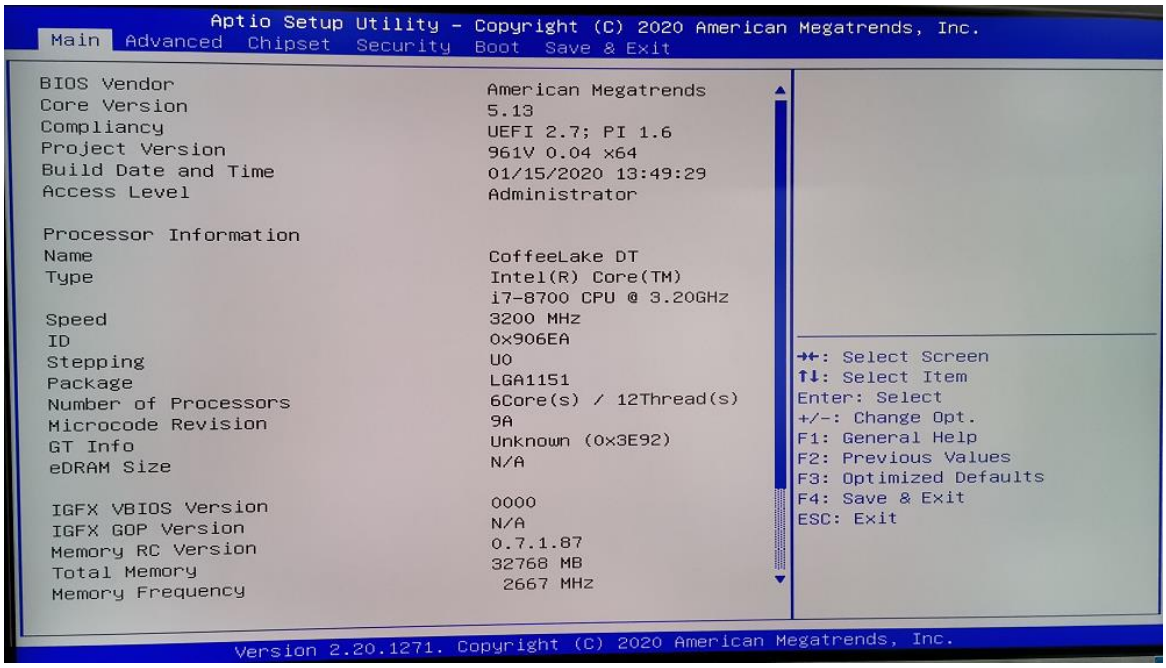
Table 3.1: The BIOS navigation keys

KEY	FUNCTION
ESC	Exit the current menu
↑↓→←	Scrolls through the items on a menu
+/-	Change Opt.
Enter	Select
F1	General Help
F2	Previous Values
F3	Optimized Defaults
F4	Save & Exit

3.2.2 Main Menu

When you enter the BIOS Setup program, the main menu appears, giving you an overview of the basic system information. Select an item and press <Enter> to display the submenu. Press <Esc> to back to the main menu.

The BIOS setup program provides a help screen. You can call up this help screen from any menu by simply pressing the <F1> key. This help screen lists the corresponding keys and possible selections. Press <Esc> to exit the help screen.



BIOS Information

This item shows the information of the BIOS vendor, version, build date and time etc.

Board Information

This item shows the basic information of the motherboard, including the Board ID and BIOS Version of the motherboard.

Processor Information

This item shows the basic information about the currently used processor, including name, type, speed, ID, core, Microcode version, etc.

IGFX VBIOS Version

This item shows the Current VBIOS version of the CPU integrated graphics.

Total Memory

This item shows the total memory size of the current motherboard.

Memory Frequency

This item shows the current memory operating frequency

PCH Information

This item shows the basic information about PCH, including name, model, type, etc.

ME FW Version

This item shows the version number of the ME firmware

ME firmware SKU

This item shows the ME firmware model number

System Language

Set the language interface of the BIOS.

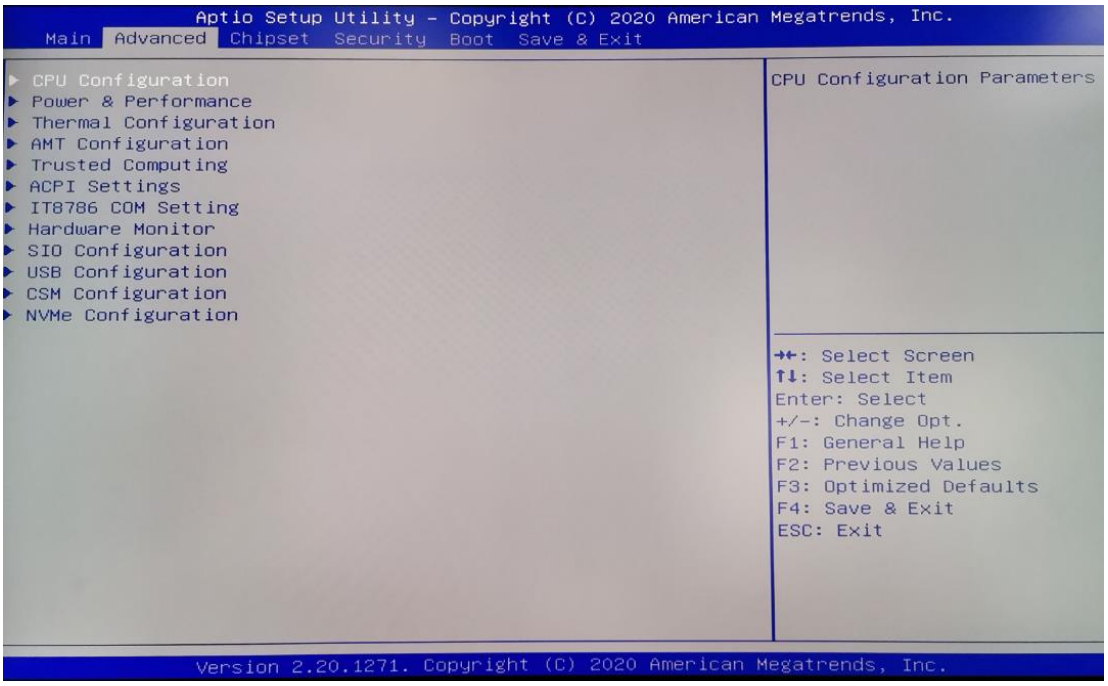
System Date

Set the date. The format of the date is <week><month><day><year>.

System Time

Set the time. The format of the time is <hour><minute><second>.

3.2.3 Advanced Menu



This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.

CPU Configuration

The configuration of the central processor, enter this sub-menu, there will be detailed details of the CPU, as well as various settings of the CPU.

Power & Performance Configuration

This item contains the Power & Performance configuration, enter this sub-menu, there will be detailed details of the Power & Performance, as well as related settings of the Power & Performance function.

Thermal Configuration

Thermal configuration, enter this sub-menu, there will be the setting of the thermal configuration

parameter.

AMT Configuration

This item contains the AMT configuration, enter this sub-menu, there will be detailed details of the ATM, as well as related settings of the configure intel (R) Active Management Technology parameters.

Trusted Computing

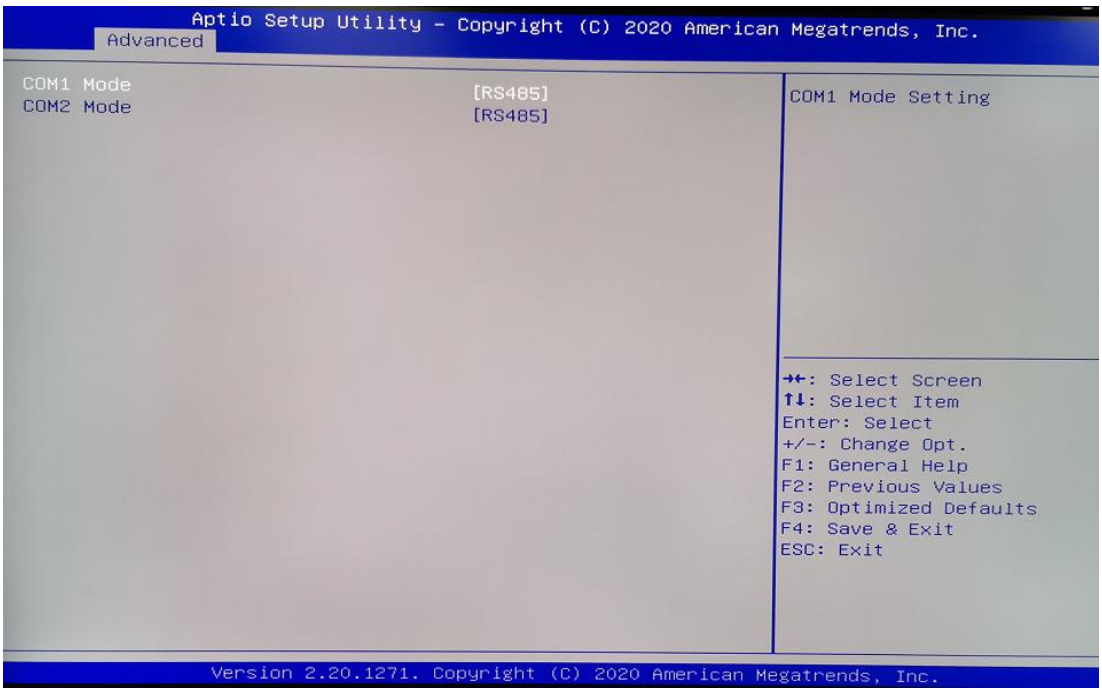
Trusted computing, enter this sub-menu, there will be the setting of the encryption security module (the motherboard will install the encryption module hardware will take effect)

ACPI Settings

Advanced configuration and power management interface settings, enter this submenu, there will be ACPI related settings

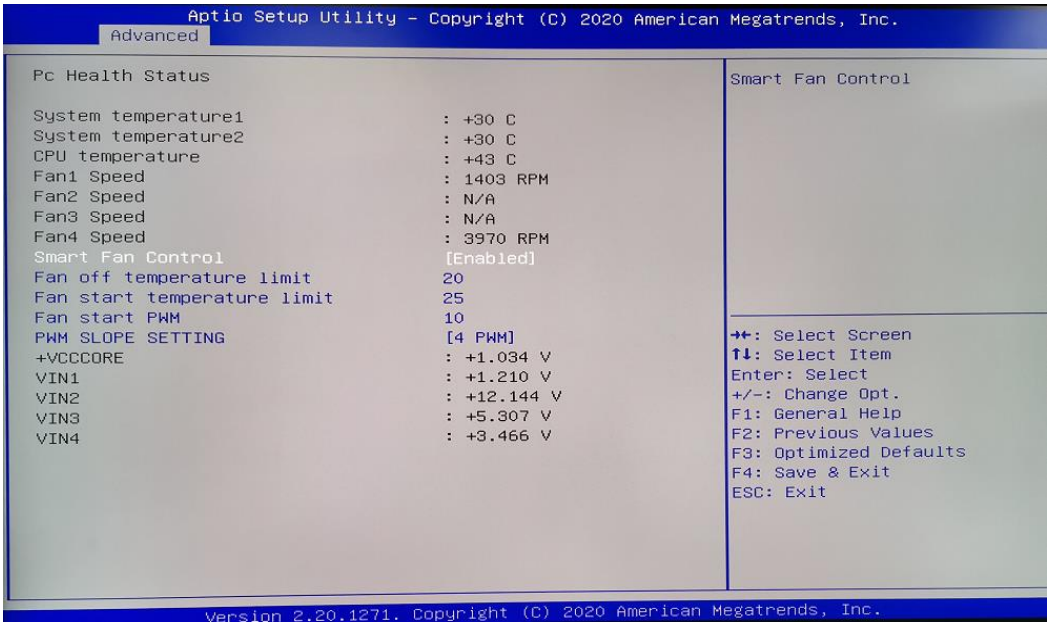
IT8786 COM setting

COM port settings, enter this sub-menu, there will be set COM working mode: RS422, RS232, RS485



Hardware Monitor

Hardware monitoring, enter this sub-menu, there will be CPU temperature, fan speed, status display of each common working voltage, as well as parameter settings of intelligent fan control.



SIO Configuration

Super IO configuration, enter this sub-menu, there will be the port configuration of the serial/parallel port which are included in IO.

CSM Configuration

CSM (Compatibility Support Module) configuration, enter this sub-menu, there will be various settings to support UEFI startup and non-UEFI startup. If you need to start the traditional MBR device, you need to enable CSM. Turning off the CSM turns it into a pure UEFI boot.

USB Configuration

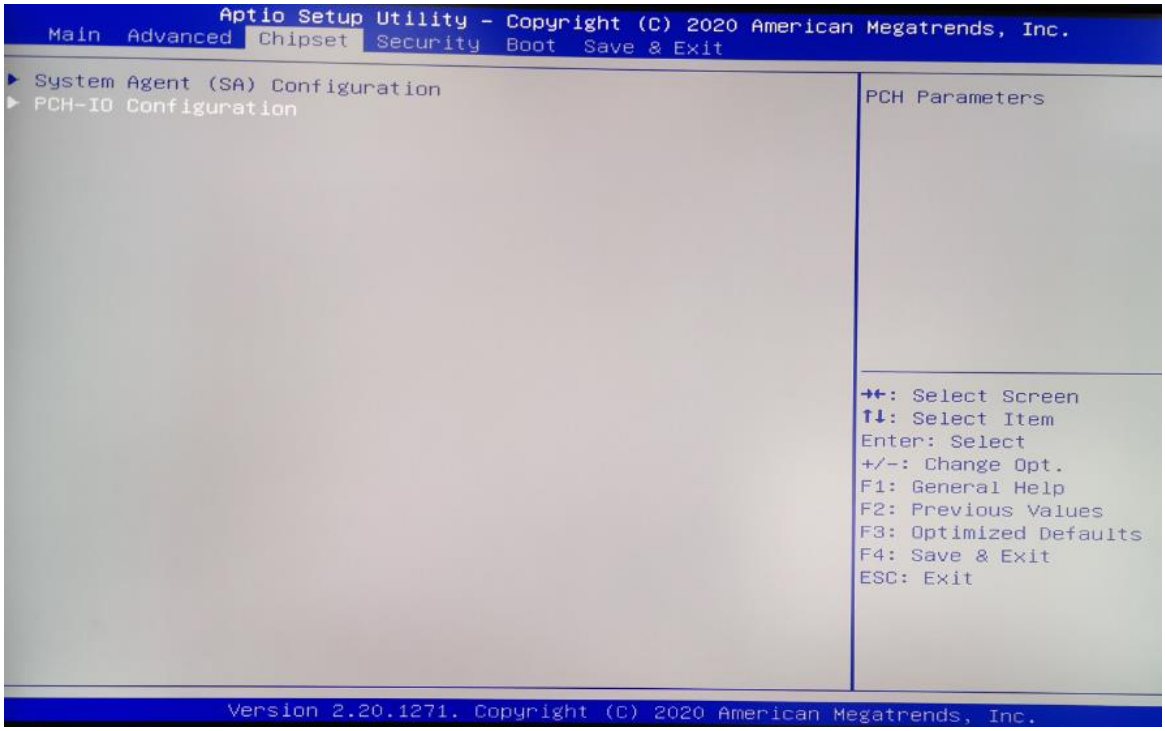
USB configuration, enter this sub-menu, there will be USB-related detailed settings.

NVMe Configuration

NVMe device settings, enter this sub-menu, there will be set NVMe device.

3.2.4 Chipset Menu

The chipset menu items allow you to change the settings for the North Bridge chipset, South Bridge chipset and other system.



System Agent (SA) Configuration

Memory Configuration

Memory configuration, enter this submenu, there will be detailed memory information.

Graphics Configuration

Image processing configuration, enter this sub-menu, there will be CPU-integrated graphics related settings.

PEG Port Configuration

PEG graphics configuration, enter this sub-menu, there will be related settings for the external graphics card.

PCH-IO Configuration (South Bridge Configuration)

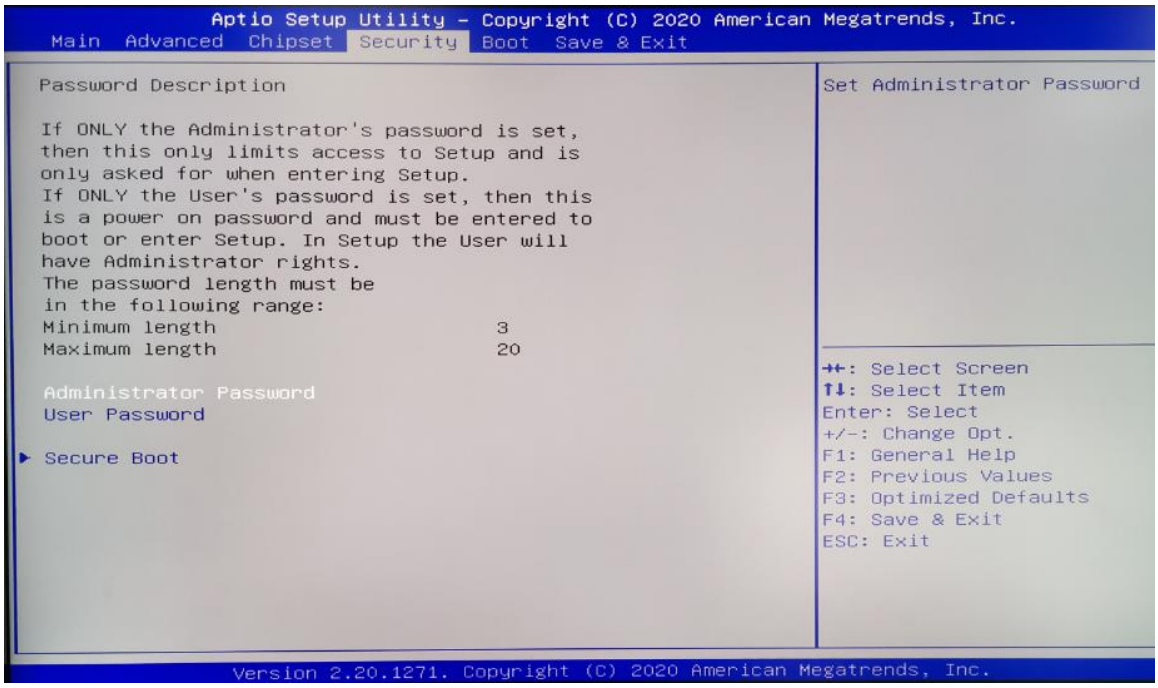
SATA And RST Configuration

SATA hard disk and fast storage configuration, enter this sub-menu, there will be related settings of the hard disk.

HD Audio Configuration

High-fidelity audio, which controls the switch settings of the motherboard's sound card.

3.2.5 Security menu



Administrator Password

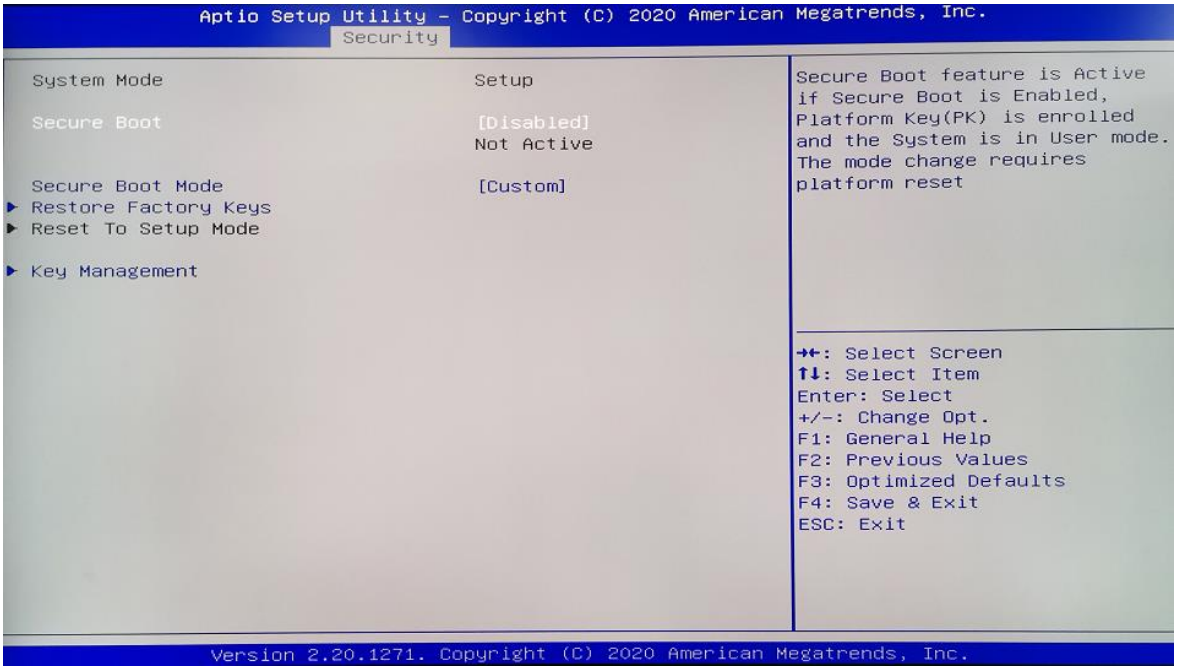
This item sets the information of the administrator password.

User Password

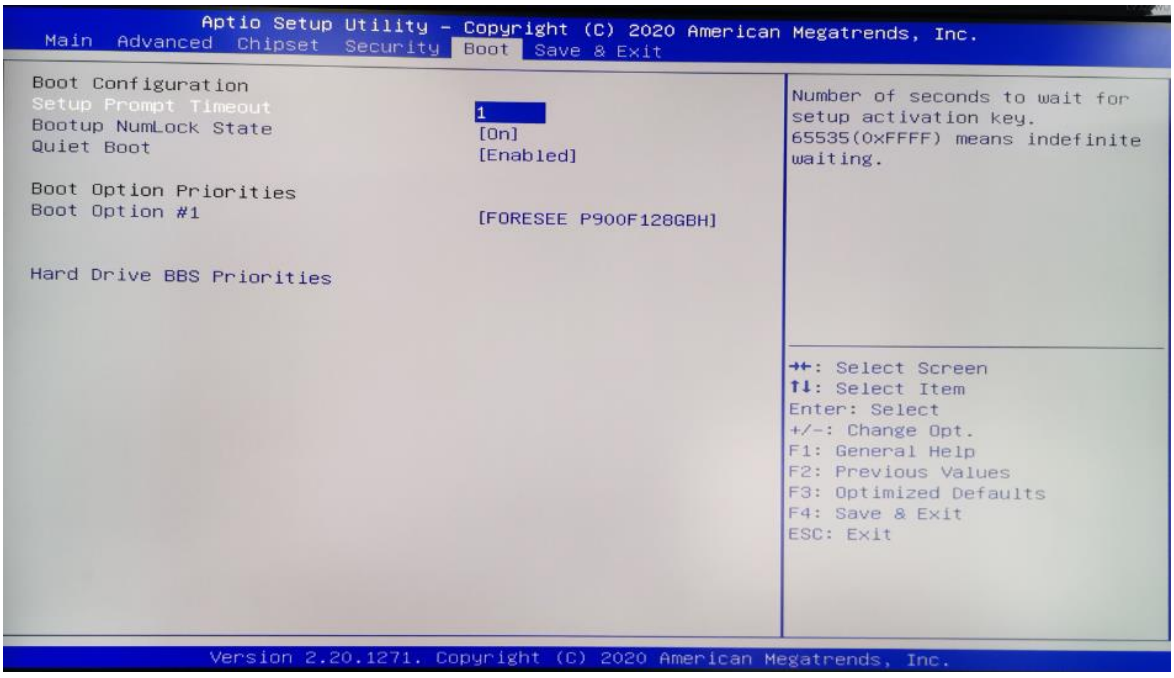
This item sets the information of the normal user password.

Secure Boot

This item sets the information of the secure boot.Secure Boot feature is Actice if Secure Boot is Enabled,Platform key(PK) is enrolled and mode change requires platform reset



3.2.6 Boot menu



Setup Prompt Timeout

Setup prompts for waiting time. This option is to set the time to wait for the Del key to enter the BIOS setup after booting.

Bootup NumLock State

Set the state of the small numeric keypad at startup.

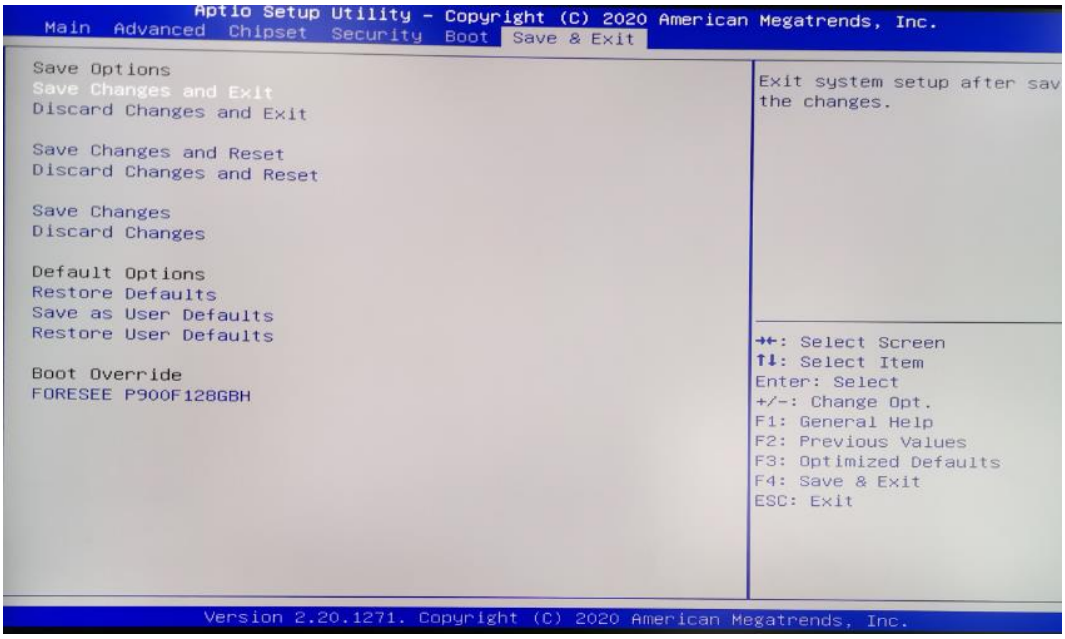
Quiet Boot

Switch full screen logo control

Set Boot Priority

Start device priority settings. If the user wants to install the operating system, please set "Boot Option #1" as your CD-ROM device or your U disk device (make sure that your CD-ROM drive has an operating system or your U disk has a PE system). After the setting is completed, press the "F4" button to save and exit. The system will boot from your CD-ROM drive or USB flash drive.

3.2.7 Save & Exit menu



Save changes and Exit;

This item enables you to save the changes that you have made and exit.

Discard Changes and Exit;

This item enables you to discard the changes that you have made and exit.

Save Changes and Reset;

This item enables you to save the changes that you have made and reset.

Discard Changes and Reset;

This item enables you to discard the changes that you have made and reset.

Save Changes;

This item enables you to save the changes that you have made.

Discard Changes;

This item enables you to discard the changes that you have made.

Restore Defaults;

This item enables you to restore the system defaults.

Save as User Defaults;

This item enables you to save the changes as user defaults that you have made.

Restore User Defaults;

This item enables you to restore the user defaults.

3.3 Updating the BIOS

The BIOS (Basic Input and Output System) Setup Utility displays the system's configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS provides the underlying driver for hardware resources and is the bridge between hardware and operating system. Now hardware and various applications are constantly updated. When your system encounters problems, such as the system does not support the latest published CPU, you need to upgrade your BIOS.

NOTE:

1. Only upgrade the BIOS if you encounter problems and need to.
2. To upgrade the BIOS, please use the BIOS read/write program attached to our driver CD or download the updated version of the program from the relevant website.
3. Do not turn off the power or reboot the system during the upgrade process, so your BIOS data will be damaged and the system may not boot.
4. After the refresh is complete, you need to manually optimize the LOAD Default.
5. To prevent accidents, please backup the current BIOS data first.

CHAPTER 4

Driver Installation

The BRAV-7501 comes with a CD-ROM that contains all drivers and utilities that meet your needs.

4.1 Follow the sequence below to install the drivers:

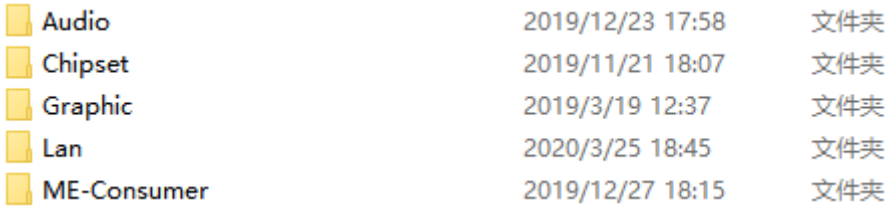


Figure 5. 1

Step 1 – Install Graphic Driver

Step 2 – Install Audio Driver

Step 3 – Install Chipset Driver

Step 4 – Install LAN Driver

Step 5 – Install ME Driver

Please read instructions below for further detailed installations.

4.2 Installation:

Insert the BRAV-7501 CD-ROM into the CD-ROM drive. And install the drivers in turn.

Step 1 – Install Graphic Driver

1. Double click on the AMT folder and double click on the Setup.exe
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 2 – Install Audio Driver

1. Double click on the Audio folder and double click on the Setup.exe
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 3 –Install Chipset Driver

1. Double click on the Chipste folder and double click on the Setup.exe
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 4 –Install LAN Driver

1. Double click on the LAN folder and double click on the Setup.exe
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 5 –Install ME Driver
1. Double click on the ME folder and double click on the Setup.exe
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

4.4 Utility Software Reference

All the utility software available from this page is Windows compliant. They are provided only for the convenience of the customer. The following software is furnished under license and may only be used or copied in accordance with the terms of the license. These software(s) are subject to change at any time without prior notice. Please refer to the support disk for available software.

CHAPTER 5

SYSTEM RESOURCE

5.1 WDT and GPIO

/* ==========

1 * void jhctech_init();

2 * function description: library initializated, This function must be called before calling other functions

3 * parameter description：

4 * creation date：

5*==========*/

/* ==========

1 * void jhctech_init();

2 * function description: library release, Pair with jhctech_init, release the library's occupied resources when not needed

3 * parameter description：

4 * creation date：

5* ==========*/

/*==========

1 * void watchdog_set(int time);

2 * function description：Watchdog function

3 * parameter description：time is to Set the dog feeding time，Value between 0 and 255

Setting 0 means to turn off the watchdog

4 * creation date：

5*==========*/

/*==========

1 * void smbus_8pin_gpio_mode(int port,int mode);

2 * function description: Subcard input and output mode settings

3 * parameter description:

Parameter: port represents the number of the GPIO, 1 or 2

Mode 8 bit of a bit, each bit controls the input and output mode of a GPIO pin,

Bit =1, the corresponding pin is used as the input port.

Bit =0, the corresponding pin is used as an output port.

Return value Bit7 Bit6 Bit5 Bit4 Bit3 Bit2 Bit1 Bit0

GPIO pin PIN8 PIN7 PIN6 PIN5 PIN4 PIN3 PIN2 PIN1

Note: The output value is valid only when the pin is in output mode.

4 * creation date：

5*==========*/

/*==========

* void sio_gpio_output(WORD port,BYTE value);

2 * function description： high and low levels output of the subcard

3 * parameter description:

Parameter: port represents the number of the GPIO, 1 or 2

Level 8 bit of a bit, each bit controls a GPIO pin output value,

Bit =1, means output high level

Bit =0, means output low level

Return value Bit7 Bit6 Bit5 Bit4 Bit3 Bit2 Bit1 Bit0

GPIO pin PIN8 PIN7 PIN6 PIN5 PIN4 PIN3 PIN2 PIN1

Note: The output value is valid only when the pin is in output mode.

4 * creation date：

5*==========*/

/*==========

1 * int sio_gpio_input(WORD port);

2 * function description：read the motherboard GPIO input level

3 * parameter description：

Return value：return a byte (8 bit), each bit of the 8-bit corresponding to the level state of a GPIO pin

Return value Bit7 Bit6 Bit5 Bit4 Bit3 Bit2 Bit1 Bit0

GPIO pin PIN8 PIN7 PIN6 PIN5 PIN4 PIN3 PIN2 PIN1

parameter：port fill in sub-card GPIO number, 1 or 2

Note: The read value is valid only when the pin is in input mode

4 * creation date：

5*==*/

Note: If you want more programs of the motherboard's watchdog and GPIO, please call +86-0755-86021176-(8021)/+86-0755-86021176-(8023) for more information.