User's Manual

AMD V2000 Mini-ITX Board
IPC-FP6

Manual Revision 1.0

September 24, 2021

Federal Communications Commission (FCC) Statement

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with instructions contained in this manual, may cause harmful interference to radio and television communications. However, there is no guarantee that interference will not occur in a particular installation.

If this product does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the product into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Note1: Connecting this device to peripheral devices that do not comply with Class B requirements, or using an unshielded peripheral data cable, could also result in harmful interference to radio or television reception.

Note2: The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this product.

Note3: To ensure that the use of this product does not contribute to interference, it is necessary to use shielded I/O cables.

CE: Radiation of EN 55022 & Immunity of EN 55024

Waste Electrical and Electronic Equipment (WEEE) Statement

To protect the global environment, this product must be sent to separate collection facilities for recovery and recycling.

DISPOSAL

Do not dispose of this product as unsorted municipal waste. Collect such waste separately for special treatment.

Manufacturer

Sapphire Technology Limited

Unit 1909-1919, 19/F., Tower 2 Grand Central Plaza

138 Shatin Rural Committee Road

Shatin, Hong Kong

Table of Contents

Chapter 1 Introduction

1-1 Mainboard Specifications

APU
➢ AMD® V2000 series APU for FP6 package with Zen 2 core

Graphics
➢ AMD® Radeon series graphics
➢ Supports four independent displays with DisplayPort and one eDP connector shared with DP1 DisplayPort

Port	Supported resolution
DisplayPort 1.4 / eDP 1.3	3840x2160@60Hz

System Memory
➢ Two 260-pin DDR4 SDRAM SO-DIMM (ECC/Non ECC) sockets
➢ Supports 1.2V DDR4-2133/2400/2666/2933/3200 DIMMs with dual channel architecture
➢ Supports 4GB, 8GB, 16GB and 32GB DDR4 SO-DIMMs up to maximum 64GB

Expansion Slots
➢ One PCI Express 3.0 x8 slot
➢ One M.2 Slot E-key with 2230 type with PCIe x1 and USB2.0 for Wifi/BT
➢ One M.2 Slot M-key with 2242/2260/2280 storage type with PCIe x4 for SSD

USB Ports
➢ Eight USB 2.0 ports (two at rear panel, six onboard headers), supporting transfer speed up to 480Mbps (current limitations: 500mA)
➢ Two USB3.1 Gen 2 ports at rear panel supporting transfer speed up to 10Gbps (current limitations: 900mA)
➢ Supports wake-up from S3 and S4 modes

SATA Ports
➢ Two SATA3 ports with 6Gb/s data transfer rate (current limitations: 2A)

> ➢ Supports AHCI (Advanced Host Controller Interface)

Onboard LAN

➢ One Gigabit Ethernet from Realtek® RTL8111H Gigabit controller

➢ One 10 Gigabit Ethernet from Marvell® AQC107 Gigabit controller

Onboard TPM

➢ Supports TPM2.0 from Infineon SLB9670

Onboard Audio

➢ Supports 5.1 channel High-Definition audio from Realtek ALC662 codec

I/O

➢ Onboard Fintek F81803U/F81216AD LPC bus I/O controller

➢ Supports Hardware Monitor for fan speed monitoring, CPU and system temperature

Back Panel I/O Ports

➢ 1 x DC-in 12V~19V Jack, dimension: 5.6x2.6mm

➢ 4 x DisplayPorts

➢ 2 x COM ports

➢ 1 x RJ45 Gigabit LAN port

➢ 1 x RJ45 10 Gigabit LAN port

➢ 2 x USB2.0 ports

➢ 2 x USB3.1 Gen 2 ports

➢ 3 x audio jacks

Internal I/O Connectors

➢ 1 x DC-in 4-pin 12V~19V +/- 5% Power connector

➢ 1 x eDP connector

➢ 2 x SATA3 connectors

➢ 1 x SATA Power header, 2.50mm pitch

➢ 3 x USB2.0 headers, 2.54mm pitch (supports 6 USB2.0 ports)

➢ 1 x Front Panel header, 2.54mm pitch

- ➤ 1 x S/PDIF header, 2.54mm pitch
- ➤ 1 x Front Panel Audio header, 2.54mm pitch
- ➤ 1 x Speaker header, 2.54mm pitch
- ➤ 2 x COM headers, 2.54mm pitch
- ➤ 1 x GPIO header, 2.54mm pitch
- ➤ 1 x SMBus header, 2.54mm pitch
- ➤ 1 x SPI header, 1.27mm pitch
- ➤ 1 x Case Open header, 2.54mm pitch
- ➤ 1 x 4-pin CPU Fan header, 2.54mm pitch
- ➤ 1 x 3-pin SYSTEM Fan header, 2.54mm pitch
- ➤ 1 x LCD Backlight Power jumper, 2.54mm pitch
- ➤ 1 x LCD VDD Power jumper, 2.54mm pitch
- ➤ 1 x Auto Power ON jumper, 2.54mm pitch\
- ➤ 1 x eDP select jumper, 2.54mm pitch
- ➤ 1 x Clear CMOS jumper, 2.54mm pitch

BIOS
- ➤ 128Mb SPI Flash with AMI based BIOS
- ➤ Supports ACPI (Advanced Configuration and Power Interface)
- ➤ Onboard jumper to clear the CMOS data

Form Factor
- ➤ Mini ITX form factor of 170mm×170mm

Operating systems
- ➤ Supports Windows 10 64bit and Ubuntu 20.04.1 64bit

Environmental
- ➤ Power Requirement: Power adapter of 12V~19V DC OUT, input voltage tolerance +/- 5%, 150W, 5.5/2.5mm power jack
- ➤ Operating Temperature: 0°C~50°C (32°F~122°F)
- ➤ Storage Temperature: -20°C~80°C (-4°F~176°F)
- ➤ Relative Humidity: 10%~90%

1-2 Mainboard Layout

The following figure shows the location of components on the mainboard. See page 6 for component description.

Front view of mainboard:
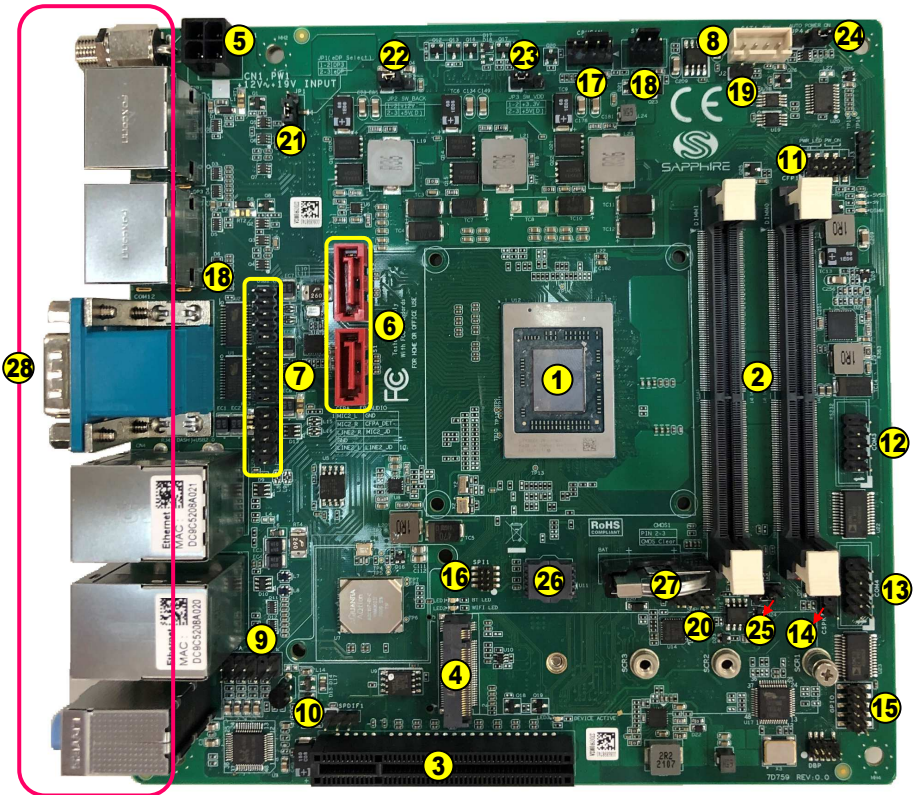
Back view of mainboard:
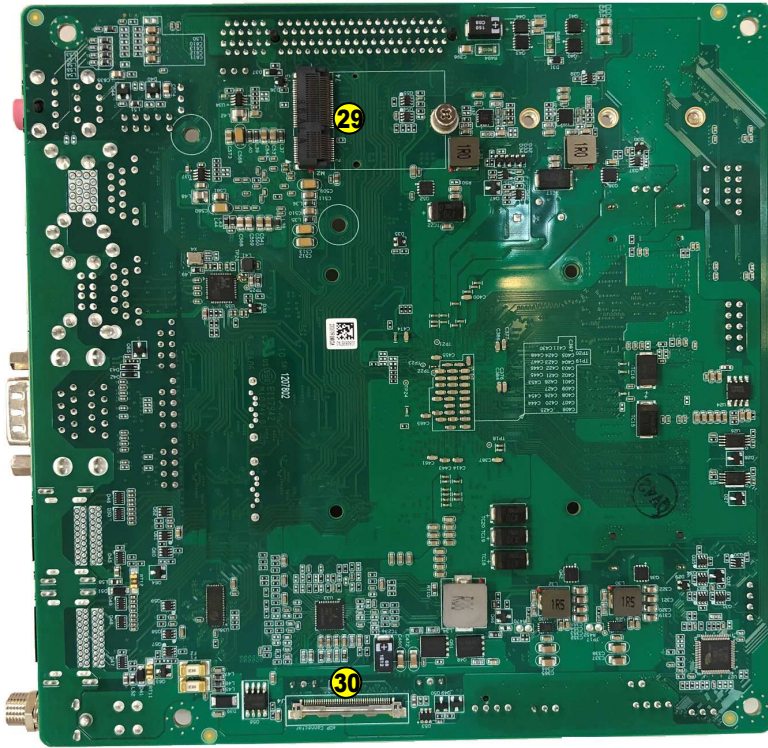
Note:
Picture is for reference only, actual board may be slightly different.

See next page for details.

Item	Component description
1	AMD FP6 APU
2	DDR4 SO-DIMM *2
3	PCIe 3.0 x8 Slot
4	M.2 M-key for SSD device
5	4-pin 12V~19V Power Connector
6	SATA3 Connector *2
7	USB 2.0 Header *3[Note], 2.54mm pitch
8	SATA Power Header, 2.50mm pitch
9	Front Panel Audio Header, 2.54mm pitch
10	S/PDIF Header, 2.54mm pitch
11	Front Panel Header, 2.54mm pitch
12	COM3 Header for RS232 mode, 2.54mm pitch
13	COM4 Header for RS232 mode, 2.54mm pitch
14	Speaker Header, 2.54mm pitch
15	GPIO Header, 2.54mm pitch
16	SPI Header, 1.27mm pitch
17	CPU Fan Header, 2.54mm pitch
18	SYSTEM Fan Header, 2.54mm pitch
19	Case Open Header, 2.54mm pitch
20	SMBus Header, 2.54mm pitch
21	eDP Select Jumper, 2.54mm pitch
22	LCD Backlight Power Jumper, 2.54mm pitch
23	LCD VDD Power Jumper, 2.54mm pitch
24	Auto Power ON Jumper, 2.54mm pitch
25	Clear CMOS Jumper, 2.54mm pitch
26	BIOS
27	Battery
28	Back Panel Connectors (see next page for detail)
29	M.2 E-Key slot for Wifi/BT card
30	eDP Connector

Note: Each USB 2.0 Header can be used to connect 2 USB devices.

I/O Back Panel
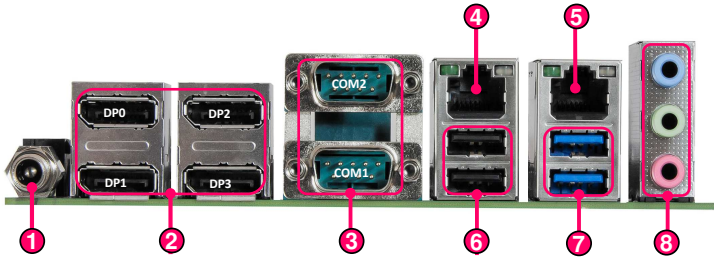
Item	Description	Item	Description
1	DC-IN 12V~19V Jack	5	10G bps RJ45 LAN Port
2	Display Port *4 (Note)	6	USB2.0 Port *2
3	COM Port *2 (RS232/485/422)	7	USB3.1 Gen 2 Port *2
4	1G bps RJ45 LAN Port	8	Audio Port *3

1. DC-IN Jack
   The DC-IN Jack supports only 12V~19V Input.
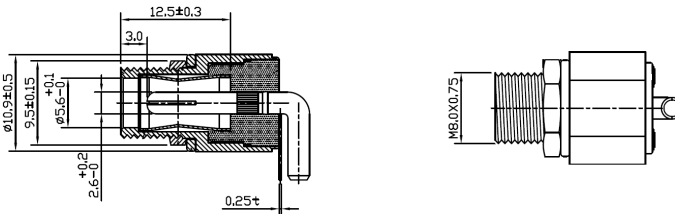
Reference DC power adapter:
- Output Power:
  90W – Without installed PCIe graphic card
  150W – With installed PCIe graphic card
- Output Voltage: 12V~19V
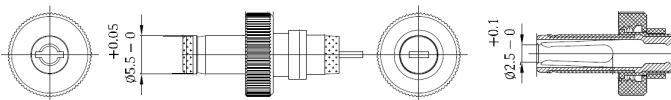
2. DisplayPort (DP0/DP1/DP2/DP3)

The DisplayPort provides support for high resolution displays, digital content protection. With a suitable adapter, DisplayPort may be used to drive displays with a VGA, DVI or HDMI interface.
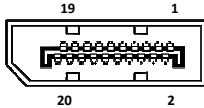
Pin	Definition	Pin	Definition
1	GND	2	Hot Plug Detect
3	ML_Lane 0 (p)	4	CONFIG1
5	ML_Lane 0 (n)	6	CONFIG2
7	GND	8	GND
9	ML_Lane 1 (p)	10	ML_Lane 3 (p)
11	ML_Lane 1 (n)	12	ML_Lane 3 (n)
13	GND	14	GND
15	ML_Lane 2 (p)	16	AUX_CH(p)
17	ML_Lane 2 (n)	18	AUX_CH(n)
19	GND	20	DP_PWR

Note:
DP1 is shared with eDP connector (The default is DP1, to use eDP connector, please change the JP1 jumper from "1-2" to "2-3" position).

3. COM Port (COM1/COM2)

It is a serial communication physical interface through which information transfers in or out one bit at a time. The data was transferred through serial ports to devices such as modems, terminals and various peripherals. These COM ports support RS232, RS485 and RS422 modes. The RS232, RS485 and RS422 mode configure in BIOS (Default is RS232).
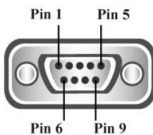
Pin	Definition	Pin	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND		

4. 1G bps RJ45 LAN Port

The mainboard provides two standard RJ-45 jacks for connecting to Local Area Network (LAN). Two LEDs are built into the RJ-45 LAN connector. These LEDs indicate the status of the LAN.
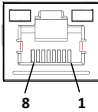
Pin	Definition	Pin	Definition
1	TX+	5	NC
2	TX-	6	RX-
3	RX+	7	NC
4	NC	8	NC

LED	LED Color	LED state	Indicates
A	Green	Off	LAN link is not established
		On	LAN link is established
		Blinking	LAN activity is occurring
B	N/A	Off	10M bps data rate
	Green	On	100M bps data rate
	Yellow	On	1000M bps data rate

5. 10G bps RJ45 LAN Port

The mainboard provides two standard RJ-45 jacks for connecting to Local Area Network (LAN). Two LEDs are built into the RJ-45 LAN connector. These LEDs indicate the status of the LAN.
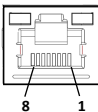
Pin	Definition	Pin	Definition
1	TX+	5	NC
2	TX-	6	RX-
3	RX+	7	NC
4	NC	8	NC

LED	LED Color	LED state	Indicates
A	Green	Off	LAN link is not established
		On	LAN link is established
		Blinking	LAN activity is occurring
B	N/A	Off	10M bps data rate
	Green	On	100M/1G/2.5G/5G bps data rate
	Yellow	On	10G bps data rate

6. USB2.0 Ports (two)

The mainboard provides an OHCI/EHCI (Open Host Controller Interface/ Enhanced Host Controller Interface) Universal Serial Bus root for attaching USB devices such as a keyboard, mouse or other USB-compatible devices. Supports data transfer rates up to 480Mb/s.

1   4
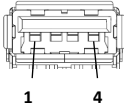
Pin	Definition
1	+5V
2	Data-
3	Data+
4	GND

7. USB3.1 Gen2 ports (two)

USB3.1 Gen2 ports are backward compatible with USB 3.0/2.0 devices. Supports data transfer rates up to 10Gpbs.

9   5

1   4
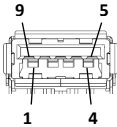
Pin	Definition	Pin	Definition
1	+5V	6	SSTX+
2	Data-	7	GND
3	Data+	8	SSRX-
4	GND	9	SSRX+
5	SSTX-		

8. Audio ports

This mainboard provides 2 or 6 channel audio. It is easy to differentiate between the audio functions by referring to the color of the jacks.

Blue → Line-In
Line-In / Real Speaker Out

Lime → Line-Out
Front Speaker Out / Headphone

Pink → Mic-In
Mic-In / Center/Subwoofer
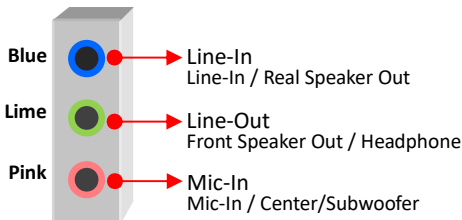
1-3 Mainboard Dimension

PCB Size: 170 x 170mm
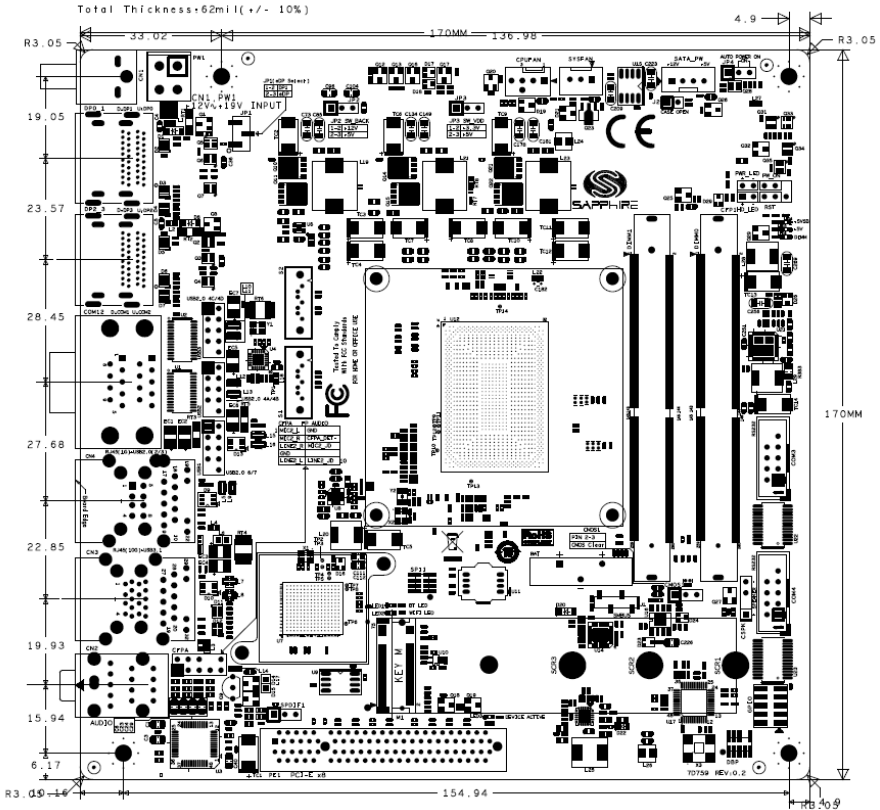
Cooler size: 98 x 71 x 36.5 mm (For V2748 / V2546)
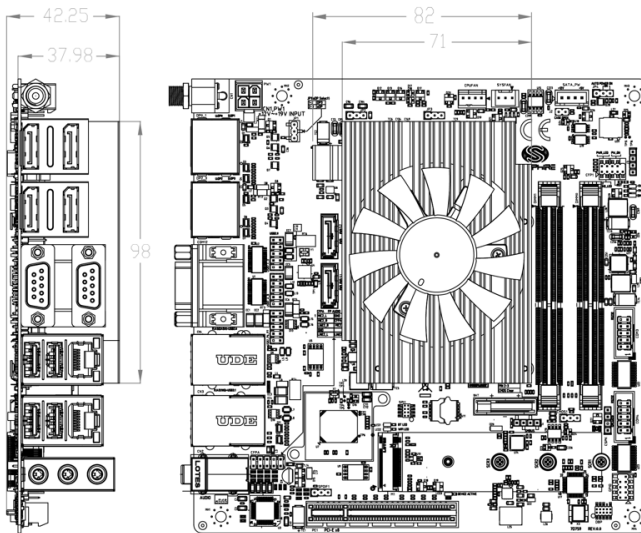
Cooler size: 60 x 60 x 36.9 mm (For V2718 / V2516)
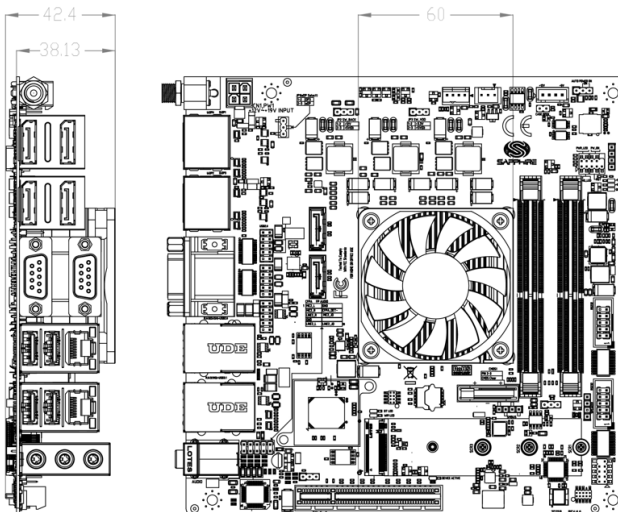
Chapter 2   Installation

2-1 Installing System Memory

This mainboard has two 260-pin SO-DIMM sockets (ECC/Non ECC) for DDR4 memory.

- Supports 4GB, 8GB, 16GB and 32GB DDR4 SO-DIMMs up to maximum 64GB.
- Supports 1.2V DDR4-2133/2400/2666/2933/3200 DIMMs with dual channel architecture.

Make sure that you install memory modules of the same type and density in different channel DIMM slots for Dual-Channel mode.

Memory Configuration

To use 1 DIMM: Install into either DIMM slot 0 or slot 1.
To use 2 DIMMs: Install into DIMM slot 0 and DIMM slot 1.

➡ **DIMM1**

➡ **DIMM0**
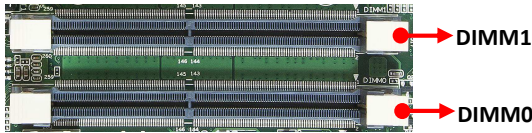
Memory Installation

DDR4 and DDR3 memory modules are physically different. Please only install DDR4 DIMMs on this mainboard. To make sure you have the correct DIMM, check that all the notches line up with the DDR4 DIMM slot.

To install the DIMM, follow these steps:
1. Pull both clips on either side of the slot outwards. Align the DIMM module with the slot.
2. Press modules straight down until the plastic clips close and the module fits tightly into the DIMM slot. Push clips inwards to make sure they are in place.

To remove DIMM from a socket, gently spread the socket's retention arms to disengage them from the DIMM.

Note: To avoid damaging the DIMM, do not touch its contact edge.

2-2 Installing Expansion Cards

The mainboard provides
One PCI Express 3.0 x8 slot
One M.2 Slot E-key with 2230 type with PCIe x1 and USB2.0 for Wifi/BT
One M.2 Slot M-key with 2242/2260/2280 storage type with PCIe x4 for SSD

In front side of mainboard:
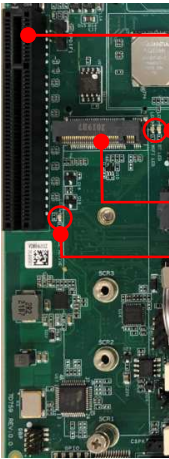
PE1: PCIe 3.0 x8 slot

LED1: When the M.2 slot is in bluetooth mode, this Green LED is on.
LED2: When the M.2 slot is in Wifi mode, this Green LED is on.

M1: M.2 M-key for M.2 SSD device

LED1: When the M.2 SSD device is functional, this Green LED is blinking.

In back side of mainboard:

M2: M.2 E-key for wifi/bluetooth card

Note:
Recommended torque for the M.2 hold down screws: 1 ~ 1.5lbf.

PCIe Slot

The design of this motherboard supports PCIe interface expansion card complying with the PCI Express specification.

To install a PCI Express card:

1. Place the card in an available PCI Express slot and press down on the card until it is completely seated in the slot. If the card is not seated properly, it could cause a short across the pins.

2. Secure the card's metal bracket to the chassis back panel with a screw.

M.2 E-Key Slot

To install the M.2 wifi/bluetooth card:

1. Remove screws and align the notch on the M.2 wifi/bluetooth card edge connector with the tab in the slot.

2. Plug the M.2 wifi/bluetooth card firmly into the slot at a 20-degree angle, and until it clicks into place.

3. Fasten M.2 wifi/bluetooth card onto the nut with accompanied screws.
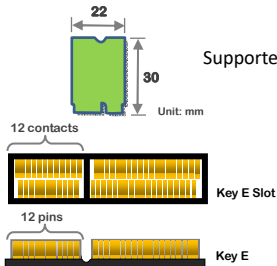
Supported module type: 2230

M.2 M-Key Slot

To install the M.2 SSD device:

1. Depending on the length of M.2 SSD device, need to find the corresponding nut location to be used. Remove screws and align the notch on the M.2 SSD device edge connector with the tab in the slot.

2. Plug the M.2 SSD device firmly into the slot at a 20-degree angle, and until it clicks into place.

3. Fasten M.2 SSD device onto the nut with accompanied screws.
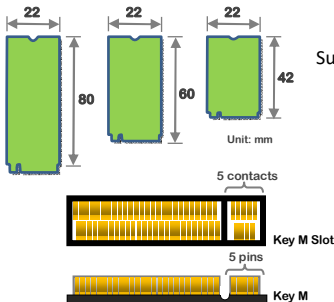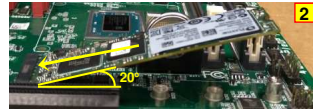
Supported module type: 2242 / 2260 / 2280

Removing Device Caution

- Remove the M.2 wifi/bluetooth card or M.2 SSD device at a 20-degree angle.

- Please DO NOT pull up the M.2 wifi/bluetooth card or M.2 SSD device to avoid damage to the M.2 slot.
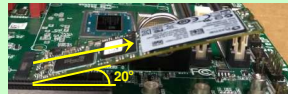
2-3 Connecting Cables and Jumper Settings

This section takes you through all the necessary connections on the mainboard.

Front Panel Header

The front panel header (CFP, 2.00mm pitch) on this motherboard is used to connect the front panel switches and LEDs.

▶ PWR_LED

Attach the front panel power LED cable to these two pins of the connector. The Power LED indicates the system's status.

System Status	Power LED indicates
S0	The LED is on
S5	The LED is off
S3	The LED will blink
S4	The LED is off

▶ PW_ON

Attach the power button cable from the case to these two pins. Pressing the power button on the front panel turns the system on and off rather than using the onboard button.

▶ HD_LED

Attach the hard disk drive indicator LED cable to these two pins. The HDD indicator LED indicates the activity status of the hard disks.

Note: The HDD indicator LED supports SATA HDD only.

▶ RESET

Attach the Reset switch cable from the front panel of the case to these two pins. The system restarts when the RESET switch is pressed.
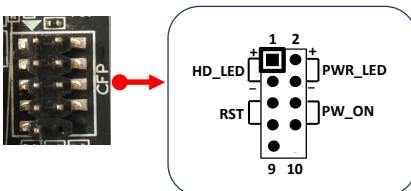
Header	Pin	Signal
HD_LED	1	HD_PWR
	3	HD Active
PWRLED	2	PWR LED+
	4	PWR LED-
RESET	5	Ground
	7	RST BTN
PWRSW	6	PWR BTN
	8	Ground
No Connect	9	+5V
Empty	10	Empty

4-pin 12V~19V Power Connector

PW1, This power connector is used to provide power to the system.   Align the power plug to the connector and press firmly until seated.
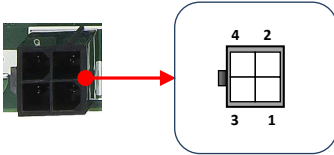
Pin	Definition
1	GND
2	GND
3	12V~19V
4	12V~19V
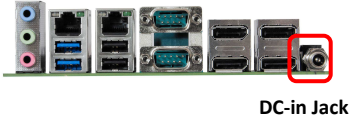
DC-in Jack

Note:
There are two ways to source power to the board: DC jack or 4-pin power connector. Two different physical ports that can only be used one at a time.
e.g. When DC-in 12V ~ 19V jack is being used, the 4-pin power connector shouldn't be connected to any power source.

Warning:
One of the power inputs may be damaged when connecting both DC jack and 4-pin power connector at the same time.

SATA3 Connector

The S1 and S2 are SATA3 Connectors and works at speeds of up to 6G/s. Each cable can be used to connect one SATA drive to the mainboard.

S2

S1
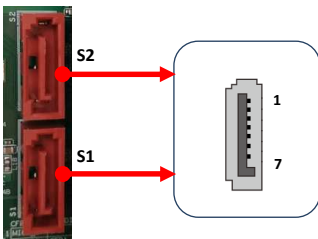
Pin	Definition
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

SATA Power Header

The SATA Power header is used to provide 5V and 12V power to SATA3 connector.

Pin	Definition
1	+12V
2	GND
3	GND
4	+5V
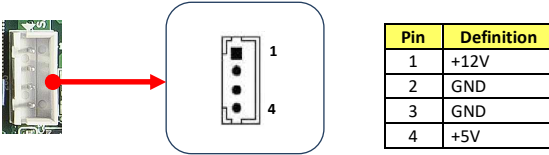
eDP Connector

The mainboard provides one eDP (Embedded DisplayPort) connector on back side for connect internal panel.

Pin	Definition	Pin	Definition
1	+3.3V	21	eDP_VDD(SW_VDD)
2	eDP_BACKVDD (SW_BACK)	22	eDP_VDD(SW_VDD)
3	eDP_BACKVDD (SW_BACK)	23	eDP_VDD(SW_VDD)
4	eDP_BACKVDD (SW_BACK)	24	GND
5	eDP_BACKVDD (SW_BACK)	25	eDP_AUX-
6	SMB_CLK	26	eDP_AUX+
7	SMB_DAT	27	GND
8	eDP_BLT_CTRL	28	eDP_TX0+
9	eDP_BACKLIGHT_EN	29	eDP_TX0-
10	GND	30	GND
11	GND	21	eDP_TX1+
12	GND	32	eDP_TX1-
13	GND	33	GND
14	eDP_HDP	34	eDP_TX2+
15	GND	35	eDP_TX2-
16	GND	36	GND
17	GND	37	eDP_TX3+
18	GND	38	eDP_TX3-
19	NC	39	GND
20	eDP_VDD(SW_VDD)	40	NC

USB2.0 Header

This mainboard contains two (2) USB 2.0 ports that are exposed on the rear panel of the chassis and also contains three 10-pin onboard header connectors (2.54mm pitch) that can be used to connect to six (6) external USB 2.0 devices.
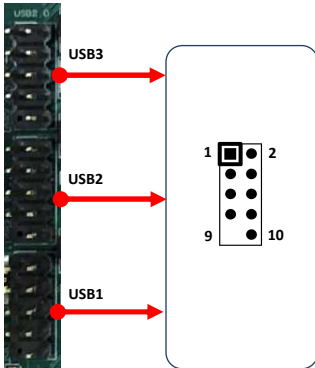
Pin	Definition	Pin	Definition
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Empty	10	No Connect

COM Header

The Serial port header (COM3/COM4, 2.54mm pitch) can provide two serial port via an optional COM port cable for RS232 mode.
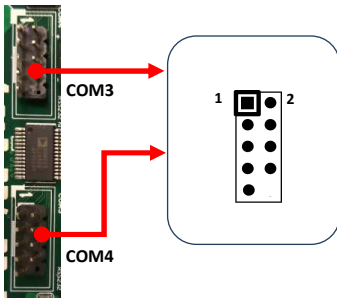
Pin	Definition
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI#
10	Empty

Note:
The pin definition of header and standard DB9 male pin out is different.

Case Open Header

This header is used to for a chassis open detect. When set, the warning message will appear during POST when the case is opened.

Pin	Definition
1	Case Open
2	GND

GPIO Header

There is a GPIO (General-purpose input/output) header (2.54mm pitch) on the motherboard. It can connect a variety of simple one- or two-wire devices.
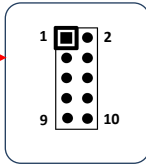
Pin	Definition	Pin	Definition
1	SIO_GPIO0(+3.3V)	2	SIO_GPIO4(+3.3V_ALW)
3	SIO_GPIO1(+3.3V)	4	SIO_GPIO5(+1.8V_ALW)
5	SIO_GPIO2(+3.3V_ALW)	6	SIO_GPIO6(+1.8V_ALW)
7	SIO_GPIO3(+3.3V_ALW)	8	SIO_GPIO7(+3.3V_ALW)
9	VCC (+3.3V_ALW)	10	GND

Note: +3.3V_ALW means +3.3V Standby Power.

SMBus Header

This is a SMBus interface header (2.54mm pitch).
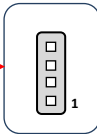
Pin	Definition
1	+3.3V Standby
2	SMBus CLOCK
3	SMBUS DATA
4	GND

SPI Header

The SPI header (1.27mm pitch) is for SPI signal interface.
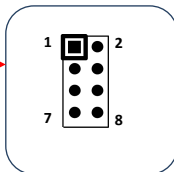
Pin	Definition	Pin	Definition
1	CS	2	VDD
3	SO	4	SOLD
5	WP	6	CLK
7	VSS	8	SI

CFPA Header

This header (2.54mm pitch) allows you to connect the front panel audio. The audio connector supports HD audio standard.
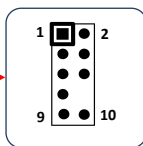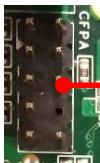
Pin	Definition	Pin	Definition
1	MIC_L	2	GND
3	MIC_R	4	AUD_PRST
5	OUT_R	6	MIC_JD
7	IO_JD	8	Empty
9	OUT_L	10	OUT_JD

S/PDIF Header

This header (2.54mm pitch) is used to connect S/PDIF (Sony & Philips Digital Interconnect Format) interface for digital audio transmission.
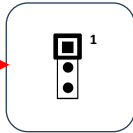
Pin	Definition
1	+5V
2	S/PDIF_Out
3	GND

Speaker Header

This header (2.54mm pitch) is used to connect the case's speaker for PC beeps.
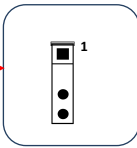
Pin	Definition
1	Speaker+
2	Empty
3	Speaker-
4	Speaker-

Fan Headers

There are two headers (CPUFAN and SYSFAN, 2.54mm pitch) on the motherboard. These fans can be speed detected/controlled and displayed in the Hardware Health Configuration section of the CMOS Setup. The fans are automatically turned off after the system enters S3, S4 or S5 mode.
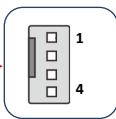
Pin	Definition
1	GND
2	+12V
3	Sense
4	Control

Note:
The CPU fan cable can be either a 3-pin or a 4-pin connector. Connect a 3-pin connector to pins 1, 2, and 3 on the mainboard connector.
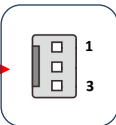
Pin	Definition
1	GND
2	+12V
3	Sense

JP1 eDP Select Jumper

You can use JP1 (2.54mm pitch) to use eDP connector.
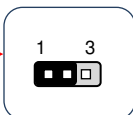
Pin	Settings
1-2	DP1 (Default)
2-3	eDP

Pin	DP1	eDP
1-2 (Default)	✔	X
2-3	X	✔

JP2 LCD Backlight Power Jumper

You can use JP2 (2.54mm pitch) to select LCD Backlight Voltage.
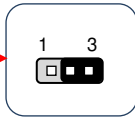
Pin	Settings
1-2	+12V
2-3	+5V (Default)

JP3 LCD VDD Power Jumper

You can use JP3 (2.54mm pitch) to select LCD Voltage.
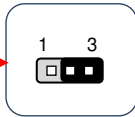
Pin	Settings
1-2	+3.3V
2-3	+5V (Default)

JP4 Auto Power ON Jumper

You can use JP4 (2.54mm pitch) to select to enable or disable the auto power on function.
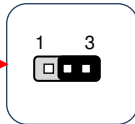
Pin	Settings
1-2	Disable. Press power button manually to power on after power input is connected to power source
2-3	Enable. Automatically power on when power input is connected to power source (Default)

Clear CMOS Jumper

This mainboard contains a jumper (CMOS1) that can clear CMOS data. If the CMOS data becomes corrupted or you forgot the supervisor or user password, clear the CMOS data to reconfigure the system back to the default values stored in the ROM BIOS.
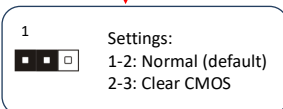
To clear CMOS data, please follow the steps below.

1. Turn off the system.
2. Change the jumper from "1-2" to "2-3" position for a few seconds.
3. Replace the jumper back to the "1-2" position.
4. Turn on the system and hold down the <Del> key to enter BIOS Setup.

Settings:
1-2: Normal (default)
2-3: Clear CMOS

2-4 System LED Status Indicators

This mainboard provides three LEDs to indicate the system's status.

- STANDBY LED (LED4, Blue): When the System is in Standby Mode, this LED is on. This LED will remain on as long as the motherboard is receiving constant power.

- POWER LED (LED5, Green): When the System is powered on, this LED is on.

- DIMM LED (LED6, Yellow): When the Memory slot is functional, this LED is on.
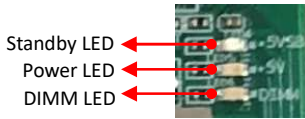
Chapter 3 Configuring the BIOS

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use.

3-1 Select Boot Device

Select Boot Device Menu allows you to set the first boot device without entering BIOS Setup.

During Power On Self Test (POST), you can press the <**F7**> key to enter select boot device menu. The system will directly boot from the device configured in Boot Menu.

```
┌─────────────────────────────────────────┐
│        Please Select boot device:       │
│  ─────────────────────────────────────  │
│  P1: DVDRW STA 24X24X12X                 │
│  P0: WDC WD3200AAKS-00VV3A0              │
│  Enter Setup                             │
│  ─────────────────────────────────────  │
│      ↑ and ↓ to move selection          │
│      ENTER to select boot device        │
│      ESC to boot using defaults          │
└─────────────────────────────────────────┘
```
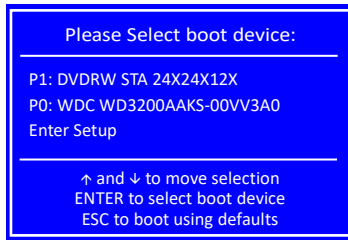
3-2 Enter BIOS Setup

The BIOS is the communication bridge between hardware and software. Correctly setting the BIOS parameters is critical to maintain optimal system performance.

Use the following procedure to change BIOS settings.

1. Power on the computer.
2. Press the <**Del>** or <**F2>** key to enter BIOS Setup during BIOS Power On Self Test (POST).

🔧 Note1: It is strongly recommended that you do not change the default BIOS settings. Changing some settings could damage your computer.

🔧 Note2: The BIOS options in this manual are for reference only. BIOS screens in manuals are usually the first BIOS version when the board is released and may be different from your purchased motherboard.

Users are welcome to download the latest BIOS version from our official website.

Control Keys

Please check the following table for the function description of each Control key.

Control Key(s)	Function Description
→ / ←	Moves cursor left or right to select screens
↑ / ↓	Moves cursor up or down to select items
<Enter>	To bring up the selected item
+ / -	To change option for the selected items
<F1>	To display the General Help Screen
<F2>	To load previous values for all the settings
<F3>/<F9>	To load optimized default values for all the settings
<F4>/<F10>	To save changes and exit the setup utility
<ESC>	To jump to the Exit Screen or exit the current screen

3-3 Main Menu

When entering the Aptio Setup Utility, the main menu screen appears. This main menu includes the system overview and displays the basic system configuration, such as BIOS information, memory size and system date/time.

```
         Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.
   Main    Advanced   Chipset    Security    Boot    Save & Exit

 BIOS Information                                       Set the Date. Use Tab to switch
 BIOS Vendor            American Megatrends             between Date elements.
 Core Version           5.16                            Default Ranges:
 Compliancy             UEFI 2.7;   PI 1.6              Year: 1998-9999
 Project Version        V030 (I936W030.ROM) x64         Months: 1-12
 Build Date and Time    08/26/2021 17:00:13             Days: Dependent on month
 Access Level           Administrator                   Range of Year may vary.

 Memory Information                                     →←:   Select Screen
 Total Memory           16384 MB (DDR4-3200)            ↑↓:   Select Item
                                                        Enter: Select
 System Date            [Tue 09/14/2021]                +/-:  Change Opt.
 System Time            [15:01:03]                      F1:   General Help
                                                        F2:   Previous Values
                                                        F3/F9: Optimized Defaults
                                                        F4/F10:Save & Exit
                                                        ESC:   Exit

         Version 2.20.1275.    Copyright (C) 2021 American Megatrends, Inc.
```

BIOS Information
This field displays the current BIOS version, build date and ID information etc..

Memory Information
Displays current system memory size.

System Date
Allows you to set the system date.The format is <Day><Month><Date><Year>.

  [Day]   Weekday from Sun. to Sat., this is automatically displayed by BIOS.

  [Month]   The month from 1 to 12.

  [Date]   The date from 1 to 31 can be keyed by numeric function keys.

  [Year]   The year can be adjusted by users.

System Time
Allows you to set the system time. The time format is
<hour>:<minute>:<second>.

3-4 Advanced Menu

The Advanced menu items allow you to change the settings for the CPU, USB and other system devices. Press <Enter> to display the configuration options.

Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.	
Main **Advanced** Chipset Security Boot Save & Exit	
▶ Trusted Computing	Trusted Computing Settings.
▶ ACPI Settings	
▶ Hardware Monitor	
▶ RTC Wake Settings	
▶ CPU Configuration	
▶ SATA Configuration	
▶ SIO Configuration	
▶ PCI Subsystem Settings	
▶ USB Configuration	→←: Select Screen
▶ Network Stack Configuration	↑↓: Select Item
▶ CSM Configuration	Enter: Select
▶ NVMe Configuration	+/-: Change Opt.
▶ Onboard Devices	F1: General Help
	F2: Previous Values
▶ AMD CBS	F3/F9: Optimized Defaults
▶ AMD PBS	F4/F10:Save and Exit
	ESC: Exit
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▶ **Trusted Computing**

Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.	
Advanced	
TPM 2.0 Device Found	Enables or Disables BIOS
Firmware Version: 7:40	support for security device.
Vender: IFX	O.S. will not show Security
	Device. TCG EFI protocol and
Security Device Support [Enable]	INT1A interface will not be
Active PCR banks SHA-1,SHA256	available.
Available PCR banks SHA-1,SHA256	
SHA-1 PCR Bank [Enabled]	→←: Select Screen
SHA256 PCR Bank [Enabled]	↑↓: Select Item
	Enter: Select
Pending operation [None]	+/-: Change Opt.
Platform Hierarchy [Enabled]	F1: General Help
Storage Hierarchy [Enabled]	F2: Previous Values
Endorsement Hierarchy [Enabled]	F3/F9: Optimized Defaults
TPM 2.0 UEFI Spec Version [TCG_2]	F4/F10:Save and Exit
Physical Presence Spec Version [1.3]	ESC: Exit
TPM 2.0 Interface Type [TIS]	
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Security Device Support
Enables or disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available. When enabled, the related items will appear.
Options: Enabled, Disabled.

SHA-1 PCR Bank
Enable or disable SHA-1 PCR Bank.
Options: Enabled, Disabled.

SHA256 PCR Bank
Enable or disable SHA256 PCR Bank.
Options: Enabled, Disabled.

Pending operation
Schedule an Operation for the Security Device.
NOTE: Your Computer will reboot during restart in order to change State of Security Device.
Options: None, TPM Clear.

Platform Hierarchy
Enables or disable Platform Hierarchy.
Options: Enabled, Disabled.

Storage Hierarchy
Enables or disable Storage Hierarchy.
Options: Enabled, Disabled.

Endorsement Hierarchy
Enables or disable Endorsement Hierarchy.
Options: Enabled, Disabled.

TPM2.0 UEFI Spec Version
Select the TCG2 Spec Version Support.
TCG_1_2: The Compatible mode for Win8/Win10.
TCG_2: Support new TCG2 protocol and event format for Win10 or later.
Options: TCG_1_2, TCG_2.

Physical Presence Spec Version
Select to Tell 0.S. to support PPI Spec version 1.2 or 1.3. Note some HCK tests might not support 1.3.
Options: 1.2, 1.3.

▶ **ACPI Settings**

Advanced

ACPI Settings

Enable Hibernation	[Enabled]
ACPI Sleep State	[S3 (Suspend to RAM)]
APU ACPI Shutdown Temperature	[Disabled]
EuP Function	[Disabled]

Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3/F9: Optimized Defaults
F4/F10:Save and Exit
ESC: Exit

Enable Hibernation

This item allows you to enable system ability to Hibernate (OS/S4 Sleep Sate). This option may be not effective with some OS.

Options: Enabled, Disabled.

ACPI Sleep State

Allow you to select the power saving modes for ACPI function.

Options: Suspend Disabled, S3 (Suspend to RAM).

APU ACPI Shutdown Temperature

If the APU temperature is higher than ACPI shutdown temperature, the system will shut down. When set to "Enabled" option. The following items will appear.

> **Shutdown Temperature**
>
> Allows you set a value of temperature for system shutdown.
> The default is 80.

EuP Function

Enables the EuP (Energy Using Products) function, allows BIOS to switch off some power at S5 state to get system ready for the EuP requirement to reduce power consumption.

Options: Enabled, Disabled.

▶ **Hardware Monitor**

```
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    Advanced

   PC Health Status
   APU Fan Stopped Working Prompt        [Disabled]

 ▶ SmartFan Configuration

   APU Temperature                       : +41 ºC
   System Temperature                    : +34 ºC
   APUFAN Speed                          : 1544 RPM         →←:  Select Screen
   System Speed                          : N/A              ↑↓:  Select Item
   APU Vcore                             : +1.184 V         Enter: Select
   APU NB                                : +0.736 V         +/-:  Change Opt.
   VCC3V                                 : +3.328 V         F1:   General Help
                                                            F2:   Previous Values
                                                            F3/F9: Optimized Defaults
                                                            F4/F10:Save and Exit
                                                            ESC:   Exit

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```

APU Fan Stopped Working Prompt

When the cooler is damaged or the APU fan connector is not connected even other factors affecting fan operation, the APU Fan will be stopped working. Meanwhile the system will automatically restart and appear prompt message (Shown below) during POST.

You can make a selection to enter the system.

▶ **Smart Fan Configuration**

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Advanced	

SmartFan Configuration		Fan Mode Setting
APUFan Mode Setting	[SmartFan]	
Highest Fan Speed In Percentage	100	
1st Temperature Threshold (ºC)	90	
2nd Fan Speed In Percentage	60	
2nd Temperature Threshold (ºC)	70	
3rd Fan Speed In Percentage	50	→←: Select Screen
3rd Temperature Threshold (ºC)	60	↑↓: Select Item
4th Fan Speed In Percentage	40	Enter: Select
4th Temperature Threshold (ºC)	50	+/-: Change Opt.
Lowest Fan Speed In Percentage	30	F1: General Help
		F2: Previous Values
System Fan Mode Setting	[SmartFan]	F3/F9: Optimized Defaults
Highest Fan Speed In Percentage	100	F4/F10:Save and Exit
1st Temperature Threshold (ºC)	60	ESC: Exit
2nd Fan Speed In Percentage	87	
2nd Temperature Threshold (ºC)	50	
3rd Fan Speed In Percentage	75	
3rd Temperature Threshold (ºC)	40	
4th Fan Speed In Percentage	62	
4th Temperature Threshold (ºC)	30	
Lowest Fan Speed In Percentage	50	

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APUFan Mode Setting / System Fan Mode Setting

This item controls the speed of the various fans on the motherboard.

SmartFan: When you want the speed of the fans automatically controlled based on temperature.

Manual By DutyCycle: To set the fan speed to a constant rate, the speed from 0% to 100%.

Manual By RPM: This item sets the fan speed at a fixed.

APU / System Temperature

Displays the current APU / System Temperature.

APUFAN Speed / System Speed

Displays the current APU / System Fan Speeds.

APU Vcore / APU NB / VCC3V

The current voltages are automatically detected and displayed by the system.

▶ RTC Wake Settings

```
                Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.
         Advanced

   Wake system at specific Time          [Disabled]          Enable or disable System wake
                                                             on alarm event. When enabled,
   Wake System duration after            [Disabled]          System will wake on the
   shutdown                                                  hr::min::sec specified.


                                                             →←:  Select Screen
                                                             ↑↓:   Select Item
                                                             Enter: Select
                                                             +/-:   Change Opt.
                                                             F1:   General Help
                                                             F2:   Previous Values
                                                             F3/F9: Optimized Defaults
                                                             F4/F10:Save and Exit
                                                             ESC:   Exit

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```

Wake system at specific Time
Enable or disable system wakeup on alarm event. When enabled, the related items will appear.
Options: Enabled, Disabled.

> **Wake up days of the week**
> This item allows you to select days of the week to wake up the system.
> Options: Every day, Selective.
>
> **Wake up hour / Wake up minute**
> This item allows you to set the system to wake up at the hr:min specified.

Wake System duration after shutdown
When enabled, system will wake up at current time + Increment in minutes(s) after shutdown. When enabled, the related items will appear.
Options: Enabled, Disabled.

> **Duration (minute)**
> This item allows you to set duration time to wake system.
> Options: 1 ~ 30.

▶ CPU Configuration

Advanced

CPU Configuration

Module Version: RenoirCpu 08
AGESA Version: RenoirPI 1004

NX Mode   [Enabled]
SVM Mode   [Enabled]
▶ CPU Information

Enable or disable No-execute page protection function

→←:   Select Screen
↑↓:   Select Item
Enter: Select
+/-:   Change Opt.
F1:   General Help
F2:   Previous Values
F3/F9: Optimized Defaults
F4/F10:Save and Exit
ESC: Exit

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NX Mode
Enable or disable No-execute page protection function.
Options: Enabled, Disabled.
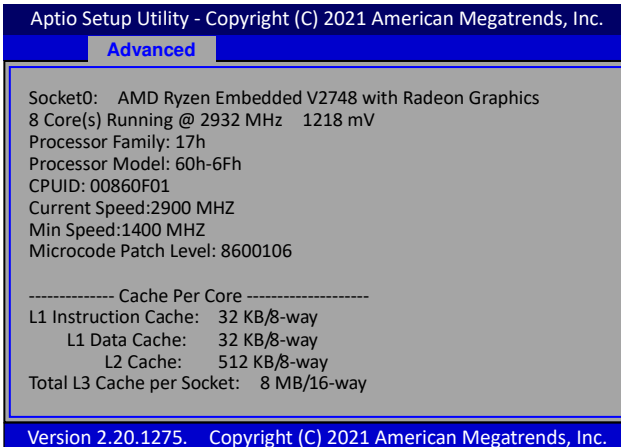
SVM Mode
Enables the CPU SVM (Secure Virtual Machine) function.
Options: Enabled, Disabled.

► CPU Information

Displays current processor information.
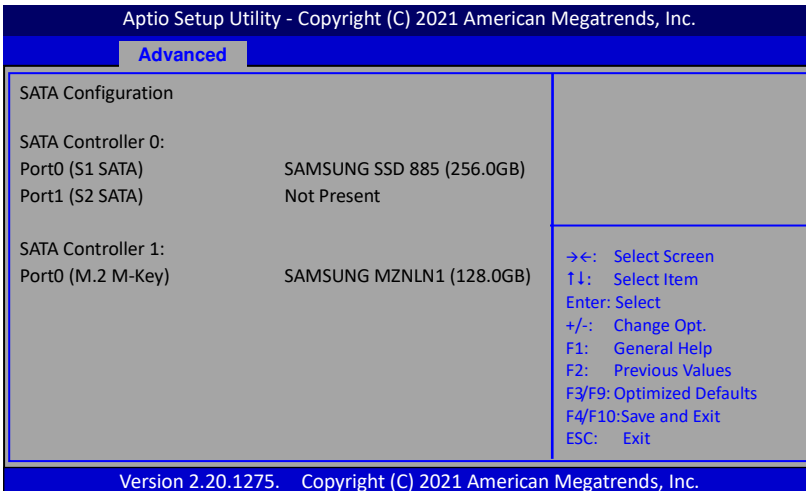
```
Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.
  Advanced

  Socket0:    AMD Ryzen Embedded V2748 with Radeon Graphics
  8 Core(s) Running @ 2932 MHz    1218 mV
  Processor Family: 17h
  Processor Model: 60h-6Fh
  CPUID: 00860F01
  Current Speed:2900 MHZ
  Min Speed:1400 MHZ
  Microcode Patch Level: 8600106

  -------------- Cache Per Core --------------------
  L1 Instruction Cache:   32 KB/8-way
        L1 Data Cache:    32 KB/8-way
            L2 Cache:     512 KB/8-way
  Total L3 Cache per Socket:   8 MB/16-way

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```

► SATA Configuration

```
Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.
    Advanced

SATA Configuration

SATA Controller 0:
Port0 (S1 SATA)              SAMSUNG SSD 885 (256.0GB)
Port1 (S2 SATA)              Not Present


SATA Controller 1:
Port0 (M.2 M-Key)            SAMSUNG MZNLN1 (128.0GB)      →←:   Select Screen
                                                          ↑↓:   Select Item
                                                          Enter: Select
                                                          +/-:   Change Opt.
                                                          F1:    General Help
                                                          F2:    Previous Values
                                                          F3/F9: Optimized Defaults
                                                          F4/F10:Save and Exit
                                                          ESC:   Exit

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```

Port0 (S1 SATA) / Port1 (S2 SATA) / Port0 (M.2 M-Key)

This field shows SATA ports connection state.

▶ SIO Configuration

AMD SIO Driver Version: A5.10.00

Super IO Chip Logical Device(s) Configuration
▶ [*Active*]   Serial Port 1
▶ [*Active*]   Serial Port 2
▶ [*Active*]   Serial Port 3
▶ [*Active*]   Serial Port 4

WARNING: Logical Device state on the left side of the control, reflects the current Logical Device state. Changes made during Setup Session will be shown after you restart the system.

View and Set Basic properties of the SIO Logical device. Like IO Base, IRQ Range, DMA Channel and Device Mode.

→←:   Select Screen
↑↓:   Select Item
Enter: Select
+/-:   Change Opt.
F1:   General Help
F2:   Previous Values
F3/F9: Optimized Defaults
F4/F10:Save and Exit
ESC: Exit

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[*Active*] Serial Port 1/[*Active*] Serial Port 2/[*Active*] Serial Port 3/ [*Active*] Serial Port 4

View and Set Basic properties of the SIO Logical device. Like IO Base, IRQ Range, DMA Channel and Device Mode.

▶ PCI Subsystem Settings

AMI PCI Driver Version: A5.01.19

PCI Settings Common for all Devices:
SR-IOV Support   [Disabled]

Change Settings of the Following PCI Devices:

WARNING: Changing PCI Device(s) settings may have unwanted side effects! System may HANG! PROCEED WITH CAUTION.

If system has SR-IOV capable PCIe Devices, this option Enables or Disables Single Root IO Virtualization Support.

→←:   Select Screen
↑↓:   Select Item
Enter: Select
+/-:   Change Opt.
F1:   General Help
F2:   Previous Values
F3/F9: Optimized Defaults
F4/F10:Save and Exit

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SR-IOV Support

If system has SR-IOV capable PCIe devices, this option enables or disables Single Root IO Virtualization support.

Options: Enabled, Disabled.

▶ **USB Configuration**

Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.	
Advanced	
USB Configuration	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLED option will keep USB devices available only for EFI applications.
USB Module Version　　　　　25	
USB controllers:　　2 XHCIs	
USB Devices:　　1 Keyboard, 1 Mouse	
Legacy USB Support　　　　[Enabled]	→←:　Select Screen
XHCI Hand-off　　　　　　　[Enabled]	↑↓:　Select Item
USB Mass Storage Driver Support　[Enabled]	Enter: Select
USB Hardware delays and time-outs:	+/-:　Change Opt.
USB transfer time-out　　　[5 sec]	F1:　　General Help
Device reset time-out　　　[10 sec]	F2:　　Previous Values
Device power-up delay　　　[Auto]	F3/F9: Optimized Defaults
	F4/F10:Save and Exit
	ESC:　　Exit
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Legacy USB Support

Allows you to select legacy support for USB devices.

Enabled: Enables Legacy USB support.

Disabled: Keep USB devices available only for EFI application.

Auto: Disables 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.

Options: Enabled, Disabled.

USB Mass Storage Driver Support

Allows you to enable or disable USB Mass Storage Driver support.

Options: Enabled, Disabled.

USB transfer time-out

The time-out value for control, bulk, and interrupt transfers.

Options: 1 sec, 5 sec, 10 sec, 20 sec.

Device reset time-out

Sets USB mass storage devices start unit command time-out.

Options: 10 sec, 20 sec, 30 sec, 40 sec.

Device power-up delay

Maximum time the device will take before it properly reports itself to the Host controller. 'Auto' uses default values: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.

Options: Auto, Manual.

> **Device power-up delay in seconds**
>
> This item is used to set a wait time in seconds for device power-up delay.
> Options: 1 ~ 40.

▶ **Network Stack Configuration**

Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.		
Advanced		
Network Stack	[Enabled]	Enable/Disable UEFI Network Stack
Ipv4 PXE Support	[Enabled]	
Ipv4 HTTP Support	[Disabled]	
Ipv6 PXE Support	[Enabled]	
Ipv6 HTTP Support	[Disabled]	
PXE boot wait time	0	
Media detect count	1	→←: Select Screen
		↑↓: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3/F9: Optimized Defaults
		F4/F10:Save and Exit
		ESC: Exit
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Network Stack

This item is used for network boot in UEFI mode.

Options: Enabled, Disabled.

> **Ipv4 PXE Support**
>
> This item is used to enable or disable the Ipv4 PXE boot support. If disabled, Ipv4 PXE boot option will not be available.
> Options: Enabled, Disabled.

Ipv4 HTTP Support

This item is used to enable or disable the Ipv4 HTTP boot support. If disabled, Ipv4 HTTP boot option will not be available.
Options: Enabled, Disabled.

Ipv6 PXE Support

This item is used to enable or disable the Ipv6 PXE boot support. If disabled Ipv6 PXE boot option will not be available.
Options: Enabled, Disabled.

Ipv6 HTTP Support

This item is used to enable or disable the Ipv6 HTTP boot support. If disabled, Ipv6 HTTP boot option will not be available.
Options: Enabled, Disabled.

PXE boot wait time

This item is used to set a wait time in seconds for PXE boot. Press ESC key to abort the PXE boot.
Options: 0~5 sec.

Media detect count

Number of times presence of media will be checked.

▶ CSM Configuration

Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.		
Advanced		
Compatibility Support Module Configuration		Enable/Disable CSM Support
CSM Support	[Enabled]	
CSM16 Module Version	07.83	
GateA20 Active	[Upon Request]	
Option ROM Messages	[Force BIOS]	
INT19 Trap Response	[Immediate]	→←: Select Screen
HDD Connection Order	[Adjust]	↑↓: Select Item
		Enter: Select
Boot option filter	[UEFI and Legacy]	+/-: Change Opt.
		F1: General Help
Option ROM execution		F2: Previous Values
		F3/F9: Optimized Defaults
Network	[Legacy]	F4/F10:Save and Exit
Storage	[Legacy]	ESC: Exit
Video	[Legacy]	
Other PCI devices	[UEFI]	
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CSM Support

This item allows enable or disable the CSM (Compatibility Support Module) configuration.

Options: Enabled, Disabled.

GateA20 Active

This feature determines how Gate A20 is used to address memory above 1MB.

Upon Request: GA20 can be disabled using BIOS services.

Always: Do not allow disabling GA20.

Option ROM Message

Sets display mode for Option ROM.

Force BIOS: To force to a BIOS-compatible output. This will show the option ROM messages.

Keep Current: To keep the current video mode. This will suppress option ROM messages. Option ROMs requiring interactive inputs may not work properly in this mode.

INT19 Trap Response

This item allows BIOS reaction on INT19 trapping by option ROM.

Immediate: Execute the trap right away.

Postponed: Execute the trap during legacy boot.

HDD Connection Order

Some OS require HDD handles to adjusted, i.e. OS is installed on drive 80h.

Options: Adjust, Keep.

Boot option filter

This option controls what devices system can boot to UEFI or Legacy.

Options: UEFI and Legacy, Legacy only, UEFI only.

Option ROM execution

This field controls the execution policy for Network, Storage, Video and other PCI devices.

Options: Do not launch, Legacy, UEFI.

▶ NVMe Configuration

```
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    Advanced

    NVMe Configuration

  ▶ Samsung SSD 970 EV0 Plus 250GB

                                              →←:   Select Screen
                                              ↑↓:   Select Item
                                              Enter: Select
                                              +/-:   Change Opt.
                                              F1:    General Help
                                              F2:    Previous Values
                                              F3/F9: Optimized Defaults
                                              F4/F10:Save and Exit
                                              ESC:   Exit

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```
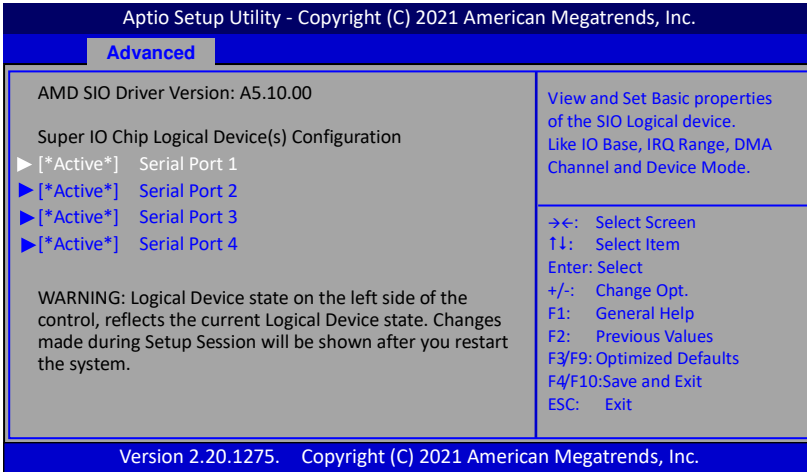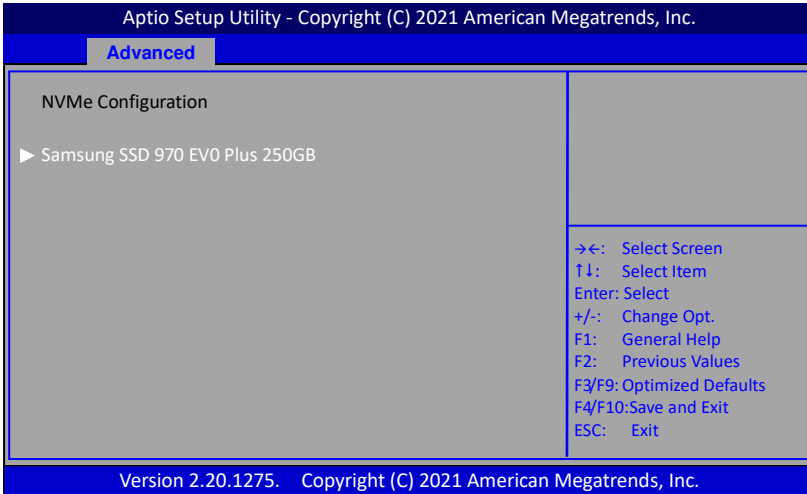
This field is displayed the NVMe controller and Drive information.

▶ Onboard Devices

```
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         Advanced

  PCIEx8 Slot                  [Enabled]        Enable/Disable PCIEx8 Slot
  Onboard 10 Gigabit LAN       [Enabled]
  Onboard Gigabit LAN          [Enabled]
  M.2 E-Key Socket (PCIE x1)   [Enabled]
  M.2 M-Key Socket (PCIE x4)   [Enabled]
  HD Audio Azalia Device       [Enabled]
  Bluetooth device (M.2 E-key) [Enabled]
                                                →←:   Select Screen
  WatchDog Timer               [Disabled]       ↑↓:   Select Item
  Chassis Intrusion Detect     [Disabled]       Enter: Select
                                                +/-:   Change Opt.
  COM1 Mode Selection          [RS232]          F1:    General Help
  COM2 Mode Selection          [RS232]          F2:    Previous Values
                                                F3/F9: Optimized Defaults
  ▶ GPIO Header Control                         F4/F10:Save and Exit
                                                ESC:   Exit

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```

Onboard 10 Gigabit LAN / Onboard Gigabit LAN

Allows you to enable or disable the onboard LAN controller.

Options: Enabled, Disabled.

M.2 E-Key Socket (PCIE x1)
Allows you to enable or disable the M.2 E-Key Socket.
Options: Disabled, Enabled.

M.2 M-Key Socket (PCIE x4)
Allows you to enable or disable the M.2 M-Key Socket.
Options: Disabled, Enabled.

HD Audio Azalia Device
Allows you to enable or disable the onboard High Definition Audio controller.
Options: Disabled, Enabled.

Bluetooth device (M.2 E-key)
Allows you to enable or disable the Bluetooth devices.
Options: Disabled, Enabled.

WatchDog Timer
Allow you to enable WatchDog timer expires during OS boot. When set to "Enabled" option. The following items will appear.

Time of watchdog timer (second)
Allows you set a period of seconds for watchdog timer.
Options: 5 ~ 255 second.

Chassis Intrusion Detect
The chassis intrusion detection alerts you whenever your computer chassis was opened. If the case cover is opened, the system will automatically restart and appear prompt message (Shown below) during POST.
You can press **<F6>** key to pass this warning then enter the system.

COM1 Mode Selection / COM2 Mode Selection
Allows you to select RS232/RS485/RS422 Mode.
Options: RS422, RS232, RS485 Receiver Half Duplex, RS485 Driver Half Duplex.

GPIO Header Control
This sub-item is for GPIO (General-purpose input/output) header control, each GPIO is accessible via a connector pin.

▶ AMD CBS

```
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   Advanced

   AMD CBS                                           CPU Common Options

 ▶ CPU Common Options
 ▶ UMC Common Options
 ▶ NBIO Common Options
 ▶ FCH Common Options
                                                    →←:    Select Screen
                                                    ↑↓:    Select Item
                                                    Enter: Select
                                                    +/-:   Change Opt.
                                                    F1:    General Help
                                                    F2:    Previous Values
                                                    F3/F9: Optimized Defaults
                                                    F4/F10:Save and Exit
                                                    ESC:   Exit

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```

☛CPU Common Options

Core Performance Boost
Allows you set the Core Performance Boost.
Options: Disabled, Auto.

► UMC Common Options

DDR4 Common Options

DRAM Timing Configuration

```
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   Advanced

   DRAM Timing Configuration                          I Accept

   WARNING - DAMAGE CAUSED BY USE OF
   YOUR AMD PROCESSOR OUTSIDE OF
   SPECIFICATION OR IN EXCESS OF FACTORY
   SETTINGS ARE NOT COVERED UNDER YOUR
   AMD PRODUCT WARRANTY AND MAY NOT
   BE CONVERED BY YOUR SYSTEM
   MANUFACTURE'S WARRANTY.


   Operating your AMD processor outside of
   specification or in excess of factory settings,
   including but not limited to overclocking,
   may damage or shorten the life of your
   processor or other system components,        →←:   Select Screen
   create system instabilities (e.g., data loss and  ↑↓:   Select Item
   corrupted images) and in extreme cases may   Enter: Select
   result in total system failure. AMD does not  +/-:   Change Opt.
   provide support or service for issues or      F1:   General Help
   damages related to use of an AMD processor    F2:   Previous Values
   outside of processor specifications or in     F3/F9: Optimized Defaults
   excess of factory settings.                   F4/F10:Save and Exit
   ► I Decline                                   ESC:   Exit
   ► I Accept

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```

Select "I Accept" item to enter the overclock function.

Overclock
When set to "Enabled", allow you to individually set overclock parameters.
Options: Auto, Enabled.

Memory Clock Speed
Recommend to select and follow below items option only.
1200MHz → 2400MHz
1600MHz → 3200MHz

> Note:
> Please attention DRAM timing configuration "WARNING" description. If there is no boot after setting, please to do CMOS clear.

Common RAS

ECC Configuration

DRAM ECC Symbol Size
Use this option to select the DRAM ECC Symbol Size.
Options: x4, x8, Auto.

DRAM ECC Enable
Use this option to enable/disable DRAM ECC. Auto will set
ECC to enable.
Options: Enabled, Disabled, Auto.

DRAM UECC Retry
Use this option to enable/disable DRAM UECC Retry.
Options: Enabled, Disabled

▶ **NBIO Common Options**

IOMMU
This item allows you to enable or disable the IOMMU (Input/Output
Memory Management Unit).
Options: Disabled, Enabled, Auto.

PSPP Policy
This item allows you to select PCIe speed power policy.
Options: Disabled, Performance, Balanced, Power Saving, Auto.

GFX Configuration

iGPU Configuration
Allows you to select the UMA mode.
Options: Auto, iGPU Disabled, UMA_SPECIFIED, UMA_AUTO,
UMA_GAME_OPTIMIZED,.

UMA Frame buffer Size
This item will only appear when "iGPU Configuration" item
is set to "UMA_SPECIFIED" option. It controls the amount of
system memory that is allocated to the integrated graphics
processor.
Options: Auto, 64M, 80M, 96M, 128M, 256M, 384M, 512M,
768M, 1G, 2G, 3G, 4G, 8G, 16G.

Display Resolution
This item will only appear when "iGPU Configuration" item
is set to "UMA_AUTO" option. It allows you select the

display resolution.
Options: 1920x1080 and below, 2560x1600, 3840x2160, Auto.

Audio Configuration

DP/HDMI Audio
Allows you to enable or disable the Integrated HD Audio Controller.
Options: Disabled, Enabled, Auto

SMU Common Options

System Configuration
This item allows you to select the System Configuration.
Options:
10W POR Configuration
15W POR Configuration
25W POR Configuration
35W POR Configuration
45W POR Configuration
54W POR Configuration
Auto.

Warning: Select System Configuration may cause the system to hang, as some System Configuration may not be supported by your OPN.

▶FCH Common Options

AC Power Loss Options

Ac Loss Control
Enables your computer to automatically restart or return to its last operating status after power returns from a power failure.
Options: Always Off, Always On, Previous, Auto.

▶ **AMD PBS**

Advanced

AMD Firmware Version

Primary Video Adaptor   [Ext Graphics (PEG)]

Show all of AMD Firmware Version

→←:   Select Screen
↑↓:   Select Item
Enter: Select
+/-:   Change Opt.
F1:   General Help
F2:   Previous Values
F3/F9: Optimized Defaults
F4/F10:Save and Exit
ESC: Exit
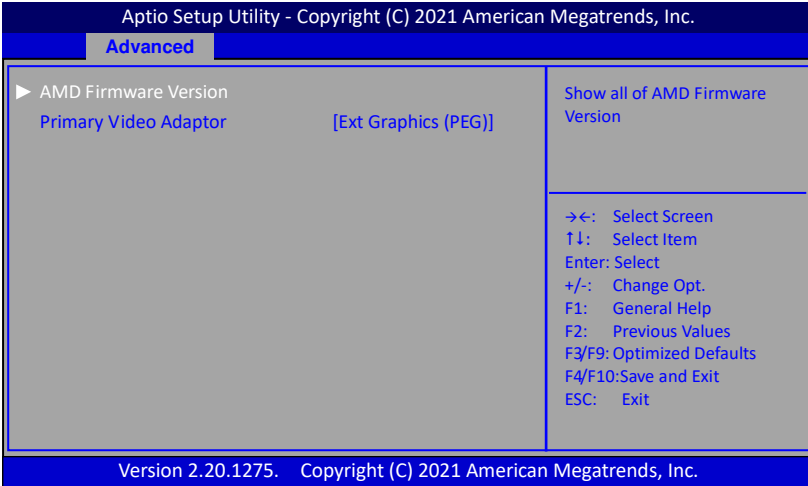
▶ **AMD Firmware Version**

Show all of AMD Firmware Version.

Advanced

AMD Firmware Version

AGESA Version	EmbeddedPI-FP6_1.0.0.3
PSP BootLoader Version	0.11.0.65
PSP SecureOS Version	0.11.0.65
ABL Version	11253031
APCB Version	0030
APOB Version	0018
Ucode Patch Version	8600106
SMU FW Version	0.55.82.0
DXIO FW Version	0037.02FB
MP2 FW Version	4.0.5.8
KVM Engine Version	48.48.2071
XHCI FW Version	CD.7F.1A.FC
VBIOS FW Version	113-RENOIR-026
GOP Driver Version	0

Primary Video Adaptor

This item allows you to select Internal/External Graphics.

Options: Int Graphics (IGD), Ext Graphics (PEG).

3-5 Chipset Menu

The chipset menu items allow you to change the advanced chipset settings.
Press <Enter> to display the sub-menu.

Main	Advanced	Chipset	Security	Boot	Save & Exit

▶ South Bridge

▶ North Bridge

South Bridge Parameters

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3/F9: Optimized Defaults
F4/F10:Save and Exit
ESC: Exit

▶ **South Bridge**

Chipset

▶ SB USB Configuration

Options For SB USB Configuration

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3/F9: Optimized Defaults
F4/F10:Save and Exit
ESC: Exit

▶ **SB USB Configuration**

USB3.2 Port (Rear Panel, Top) / USB3.2 Port (Rear Panel, Bottom) / USB2.0 Port (Rear Panel, Top) / USB2.0 Port (Rear Panel, Bottom) /

USB2.0 Port 1 (USB2_P6_P7 Header) / USB2.0 Port 2 (USB2_P6_P7 Header) / USB2.0 Hub (USB2_A_B & USB2_C_D Header)

Allows you to enable or disable USB ports.

Options: Enabled, Disabled.

▶ **North Bridge**

```
            Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.
                        Chipset

  North Bridge Configuration                         View Information related to
                                                     Socket 0
  Memory Information

  Total Memory: 16384 MB (DDR4)

 ▶ Memory Information                             →←:    Select Screen
                                                  ↑↓:    Select Item
                                                  Enter: Select
                                                  +/-:   Change Opt.
                                                  F1:    General Help
                                                  F2:    Previous Values
                                                  F3/F9: Optimized Defaults
                                                  F4/F10:Save and Exit
                                                  ESC:   Exit

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```

▶**Memory Information**

Displays the memory related information.

```
            Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.
                        Chipset

  Memory Information

  Staring Address: 0 KB
     Ending Address: 16777215 KB

  Dimm1:
     Dimm0: size=8192 MB
     Current speed=2400 MTs
     Max speed=2400 MTs
  Dimm0:
     Dimm0: size=8192 MB
     Current speed=2400 MTs
     Max speed=2400 MTs

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```

3-6 Security Menu

The Security menu allows you to change the system security settings.

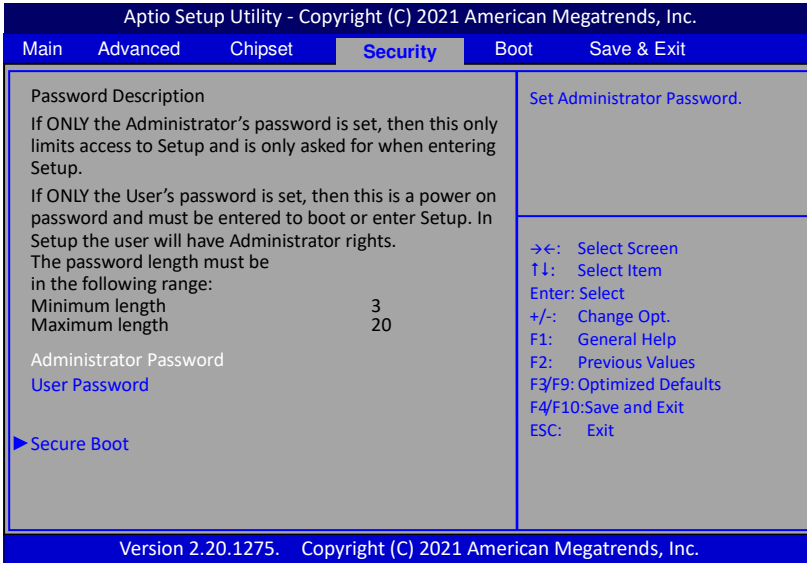| Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.					
Main	Advanced	Chipset	**Security**	Boot	Save & Exit

Password Description

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

User Password

►Secure Boot

Set Administrator Password.

→←:   Select Screen
↑↓:   Select Item
Enter: Select
+/-:   Change Opt.
F1:   General Help
F2:   Previous Values
F3/F9: Optimized Defaults
F4/F10:Save and Exit
ESC: Exit

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Administrator Password

This function is used to set, change or delete the Administrator password. If there is already a password installed, the system asks for this first. To clear a password, simply enter nothing and acknowledge by pressing Return. To set a password, enter it twice and acknowledge by pressing Return. The password must be 3 to 20 characters long.

User Password

This function is used to set, change or delete the User password. If there is already a password installed, the system asks for this first. To clear a password, simply enter nothing and acknowledge by pressing Return. To set a password, enter it twice and acknowledge by pressing Return. The password must be 3 to 20 characters long.
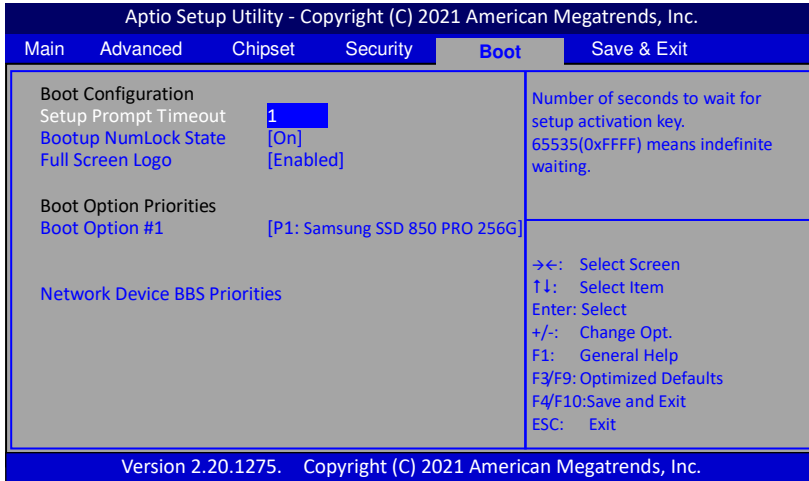
Secure Boot

Secure Boot feature is Active if Secure Boot is Enabled. Platform Key (PK) is enrolled and the system is in user mode. The mode change requires platform reset.

3-7 Boot Menu

The Boot menu is used to configure the boot settings and the boot priority.

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Main	Advanced	Chipset	Security	**Boot**	Save & Exit

```
Boot Configuration                              Number of seconds to wait for
Setup Prompt Timeout        1                   setup activation key.
Bootup NumLock State        [On]                65535(0xFFFF) means indefinite
Full Screen Logo            [Enabled]           waiting.

Boot Option Priorities
Boot Option #1              [P1: Samsung SSD 850 PRO 256G]
                                                →←:  Select Screen
Network Device BBS Priorities                   ↑↓:  Select Item
                                                Enter: Select
                                                +/-:  Change Opt.
                                                F1:   General Help
                                                F3/F9: Optimized Defaults
                                                F4/F10:Save and Exit
                                                ESC:  Exit
```

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Setup Prompt Timeout
This is used to set an additional time the POST should wait for the operator to press the key to enter setup. The time is entered in seconds.

Bootup NumLock State
Selects the state of the keyboard's Numlock function after POST.
Options: On, Off.

Full Screen Logo
This item allows you to enable or disable the full screen logo display feature.
Options: Enabled, Disabled.

Boot Option Priorities
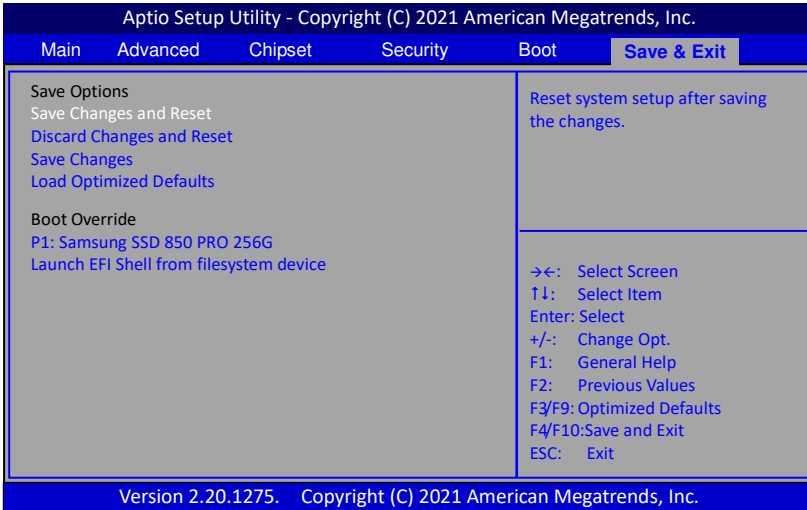These items specify the boot device priority sequence of the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system.

Network Device BBS Priorities
Allows you to configure the boot order for a specific Network device class.

3-8 Save & Exit Menu

The Save & Exit menu allows you to load the optimal default values for BIOS, and save or discard your changes to the BIOS items.

Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.					
Main	Advanced	Chipset	Security	Boot	**Save & Exit**

```
Save Options                                    Reset system setup after saving
Save Changes and Reset                          the changes.
Discard Changes and Reset
Save Changes
Load Optimized Defaults

Boot Override
P1: Samsung SSD 850 PRO 256G                    →←:   Select Screen
Launch EFI Shell from filesystem device         ↑↓:   Select Item
                                                Enter: Select
                                                +/-:   Change Opt.
                                                F1:    General Help
                                                F2:    Previous Values
                                                F3/F9: Optimized Defaults
                                                F4/F10:Save and Exit
                                                ESC:   Exit
```

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Save Options
Allows you to save the options you made.

Save Changes and Reset
This resets system after saving the changes.

Discard Changes and Reset
This resets system without saving the changes.

Save Changes
Allows you to save the changes you made.

Load Optimized Defaults
The Load default values are the factory settings of this motherboard.

Boot Override
This group of functions includes a list, each of them corresponding to one device within the boot order. Select a drive to immediately boot that device regardless of the current boot order.

Launch EFI Shell from filesystem device
Attempts to launch EFI Shell application (Shellx64.efi) form one of the available filesystem devices.

Chapter 4   Driver Installation

After the operating system has been installed, you need to install drivers for this mainboard.

The support DVD that came with the motherboard contains necessary drivers and useful utilities that enhance the motherboard features.

4-1 Driver Install

Insert the bundled driver DVD into your optical drive and the main menu will be displayed on your PC screen. Click each item button and select the item you want to install.

<Main Page>

🔖 Note: If Autorun function is not enabled in your computer, browse the contents of the support DVD to locate the file autorun.exe, and click this file to run the DVD.