User's Manual

AMD V2000 Mini-ITX Board
TM-FP6 / TM-FP6-4DP

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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

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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

➢ TM-FP6, supports two independent displays with DisplayPort /
   TM-FP6-4 DP, supports four independent displays with DisplayPort
   and one LVDS connector shared with DP1 DisplayPort
   - One DisplayPort supports a maximum resolution of 3840x2160@60Hz/144Hz
      * Support for DisplayPort 1.4 version, HDCP 2.3 and HDR

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 M.2 Slot E-key with 2230 type with PCIe x1 and USB2.0 for Wifi/BT

➢ One M.2 Slot M-key with 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

➢ Two USB3.1 Gen 2 ports at rear panel supporting transfer speed up to 10Gbps

➢ Supports wake-up from S3 and S4 modes

SATA Ports

➢ Two SATA3 ports with 6Gb/s data transfer rate

➢ Supports AHCI (Advanced Host Controller Interface)

Onboard LAN
➢ Two Gigabit Ethernet from Realtek® RTL8111H Gigabit controller

Onboard TPM
➢ Supports TPM2.0 from Infineon SLB9670

Onboard Audio
➢ Supports 7.1 channel High-Definition audio from Realtek ALC888S codec

I/O
➢ Onboard Fintek F71808AU/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~24V Jack, dimension: 5.6x2.6mm
➢ 2 x DisplayPorts (TM-FP6) / 4 x DisplayPorts (TM-FP6-DP)
➢ 2 x RJ45 Gigabit LAN port
➢ 2 x USB3.1 Gen 2 ports
➢ 2 x USB2.0 ports
➢ 1 x Line-Out port
➢ 1 x Mic-In port

Internal I/O Connectors
➢ 1 x DC-in 2-pin 12V~24V Power connector
➢ 1 x LVDS connector
➢ 2 x SATA3 connectors
➢ 1 x SATA Power header, 2.50mm pitch
➢ 4 x USB2.0 1x4 pin headers, 2.00mm pitch
➢ 1 x USB2.0 2x4 pin headers, 2.00mm pitch (supports 2 USB2.0 devices)
➢ 1 x Front Panel header, 2.00mm pitch
➢ 2 x COM headers, 2.54mm pitch

- ➢ 1 x GPIO header, 2.00mm pitch
- ➢ 1 x SPI header, 1.27mm pitch
- ➢ 1 x LVDS Backlight Control Header, 2.00mm pitch
- ➢ 1 x LVDS Brightness Control Header, 2.00mm pitch
- ➢ 1 x 4-pin CPU Fan header, 2.54mm pitch
- ➢ 1 x 4-pin SYSTEM Fan header, 2.54mm pitch
- ➢ 1 x Mic-In header, 2.00mm pitch
- ➢ 1 x Line-In header, 2.00mm pitch
- ➢ 1 x Speaker-Out header, 2.00mm pitch
- ➢ 1 x DP/LVDS Select jumper, 2.54mm pitch
- ➢ 1 x LVDS Panel Resolution Select jumper, 2.54mm pitch
- ➢ 1 x Auto Power ON jumper, 2.54mm pitch
- ➢ 1 x LVDS Voltage 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 20.04.2 64bit

Environmental
- ➢ Power Requirement: Power adapter of 12V~24V 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 5 for component description.
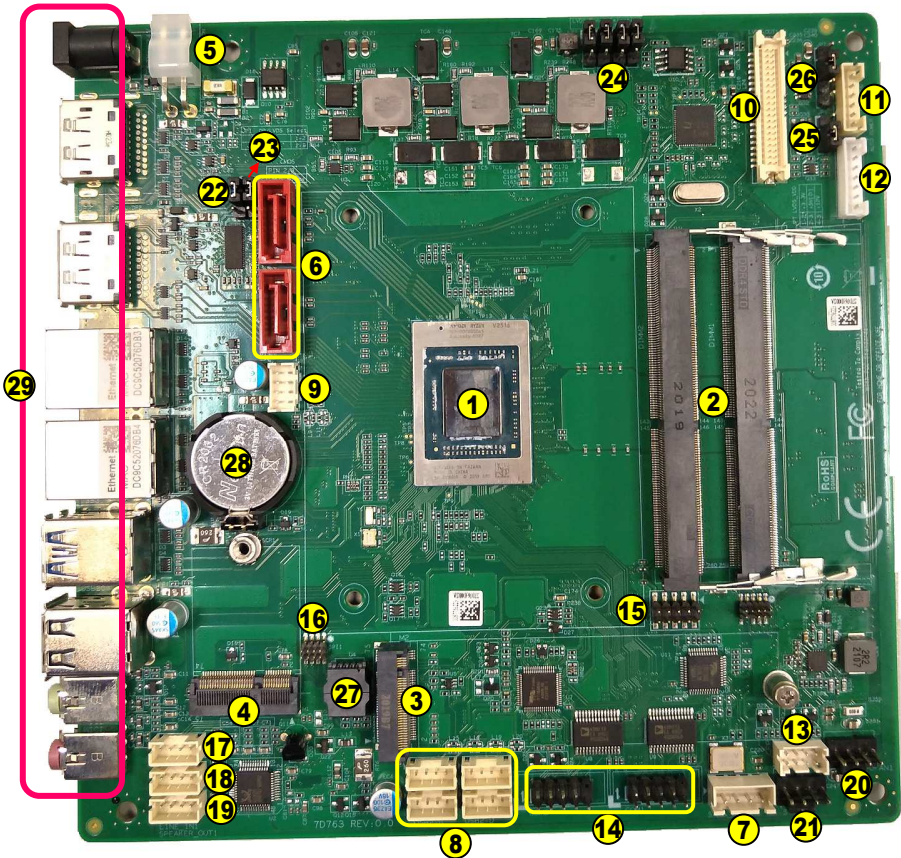
Note:
Picture is for reference only, actual board may be slightly different.

See next page for details.

Item	Component description
1	AMD FP6 APU
2	DDR4 SO-DIMM *2
3	M.2 E-Key slot for Wifi/BT card
4	M.2 M-key for SSD device
5	2-pin 12V ~ 24V Power Connector
6	SATA3 Connector *2
7	SATA Power Header, 2.50mm pitch
8	USB 2.0 Header *4, 1x4pin 2.00mm pitch
9	USB 2.0 Header (Note), 2x4pin 2.00mm pitch
10	LVDS Connector
11	LVDS Backlight Control Header, 2.00mm pitch
12	LVDS Brightness Control Header, 2.00mm pitch
13	Front Panel Header, 2.00mm pitch
14	COM1/COM2 Header for RS232 mode, 2.54mm pitch
15	GPIO Header, 2.00mm pitch
16	SPI Header, 1.27mm pitch
17	Mic-In Header, 2.00mm pitch
18	Line-In Header, 2.00mm pitch
19	Speaker-Out Header, 2.00mm pitch
20	CPU Fan Header, 2.54mm pitch
21	SYSTEM Fan Header, 2.54mm pitch
22	DP1/ LVDS Select Jumper, 2.54mm pitch
23	Clear CMOS Jumper, 2.54mm pitch
24	LVDS Panel Resolution Select Jumper, 2.54mm pitch
25	Auto Power On Jumper, 2.54mm pitch
26	LVDS Voltage Select Jumper, 2.54mm pitch
27	BIOS
28	Battery
29	Back Panel Connectors (see next page for detail)

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

I/O Back Panel
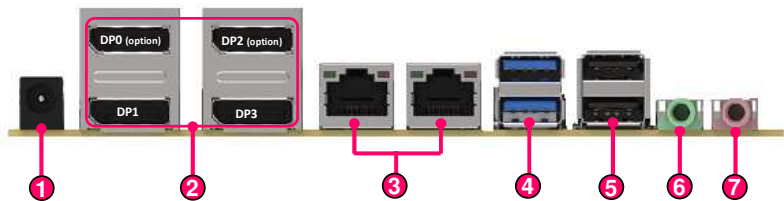
Item	Description	Item	Description
1	DC-IN 12V~24V Jack	5	USB2.0 Port *2
2	Display Port *4 (Note)	6	Line-Out Port
3	10/100/1000 Mbps LAN Port *2	7	Min-In Port
4	USB3.1 Gen 2 Port *2		

Note:
1) TM-FP6, 2 x DisplayPorts / TM-FP6-4DP, 4 x Displayports
2) DP1 is shared with LVDS connector (The default is DP1, to use LVDS connector, please change the JP1 jumper from "1-2" to "2-3" position).

LED status indicators of LAN Port

Two LEDs are built into the RJ-45 LAN connector. These LEDs indicate the status of the LAN.
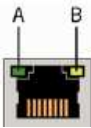
LED	LED Color	LED state	Indicates
A	Green	Off	LAN link is not established
		On	LAN link is established
		Blinking	LAN activity is occurring
B	N/A	Off	10 Mb/s data rate
	Green	On	100 Mb/s data rate
	Yellow	On	1000 Mb/s data rate

1-3 Mainboard Dimension

PCB Size: 170 x 170mm

TM-FP6 supports both active and passive cooling solutions:

Cooler size: 89 x 69 x 18.3 mm (active)
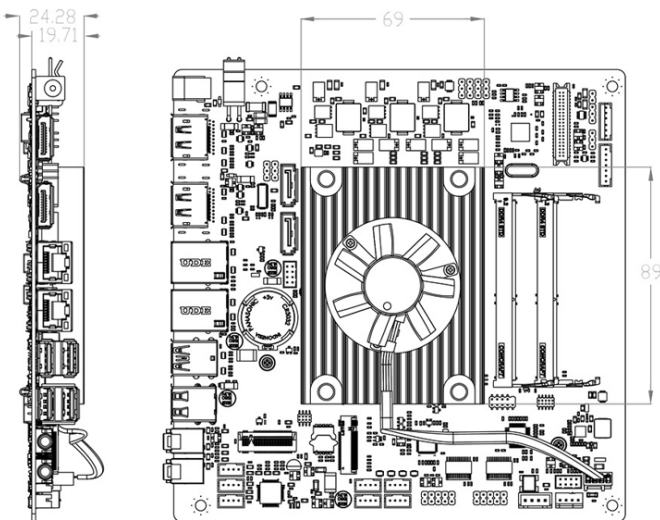
TM-FP6
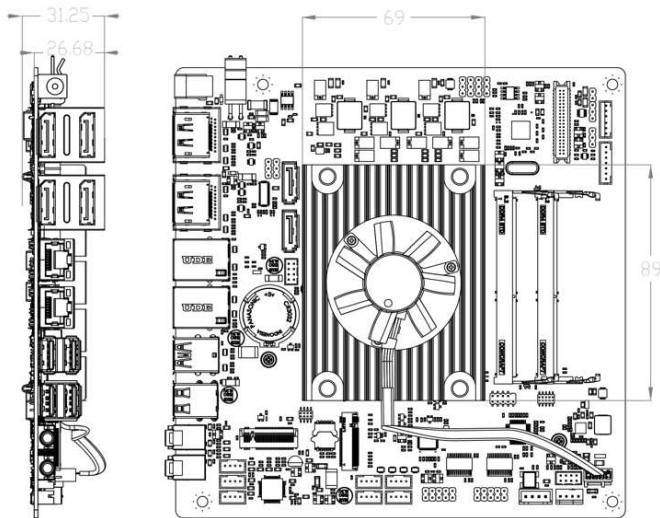
TM-FP6-4DP

Heatsink size: 89 x 69 x 19 mm (passive)
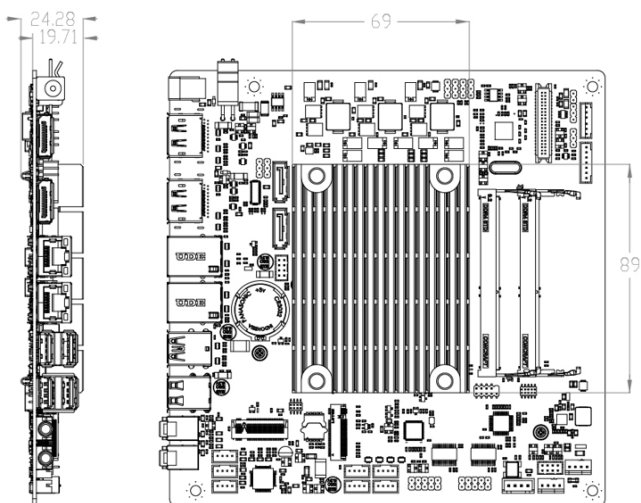
TM-FP6
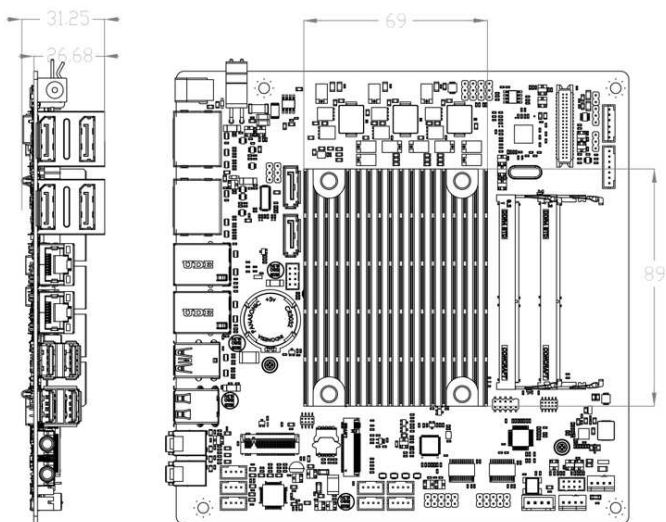
TM-FP6-4DP

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 the first DIMM in the top socket (DIMM slot 2).

To use 2 DIMMs: Install into DIMM slot 1 and DIMM slot 2.
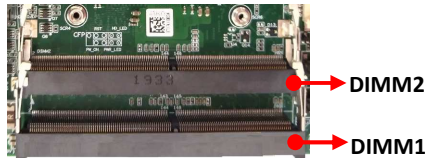
Memory Installation

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. Align the notch in the DIMM with the key in the socket.
2. Insert the DIMM firmly into the slot at a 30-45 degree angle, and until it clicks into 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 M.2 Slot E-key with 2230 type with PCIe x1 and USB2.0 for Wifi/BT.
One M.2 Slot M-key with 2280 storage type with PCIe x4 for SSD.

M1: M.2 E-key for wifi/bluetooth card

M2: M.2 M-key for M.2 SSD device

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

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

22

30

Unit: mm

12 contacts

Key E Slot

12 pins

Key E
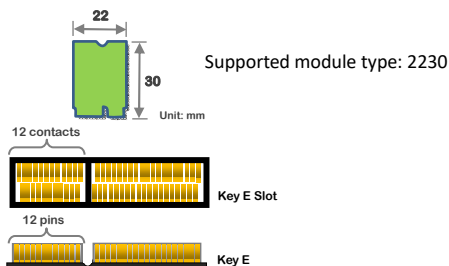
M.2 M-Key Slot

To install the M.2 SSD device:

1. 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: 2280
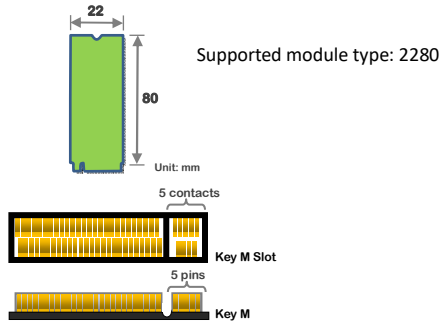
Removing Device Caution
• Remove the M.2 wifi/bluetooth card or M.2 SSD device at a 20-degree angle.
• Please DO NOT pull up the M.2 wifi/bluetooth card or M.2 SSD device to avoid damage to the M.2 slot.
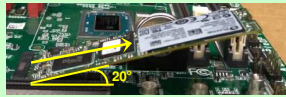
2-3 Connecting Cables and Jumper Settings

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 (Pin1 and 2)
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 (Pin5 and 6)
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 (Pin3 and 4)
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 (Pin7 and 8)
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.
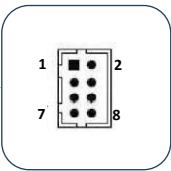
Pin	Definition	Pin	Definition
1	POWER_LED	2	SUSPEND_LED
3	HDD_LED+	4	HDD_LED-
5	GND	6	POWER_BUTTON
7	GND	8	RESET_BUTTON

2-pin 12V~24V Power Connector

PW_CON, This power connector is used to provide power to the system.　Align the power plug to the connector and press firmly until seated.
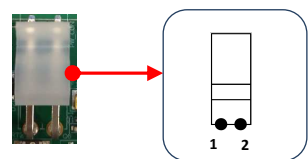
Pin	Definition
1	+12V~+24V
2	GND

DC-in Jack

Note:
There are two ways to source power to the board: DC jack or 2-pin power connector. Two different physical ports that can only be used one at a time.
e.g. When DC-in 12V ~ 24V jack is being used, the 2-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 2-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.
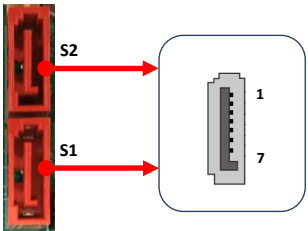
Pin	Definition
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

SATA Power Header

The SATA Power header is used to provide 5V and 12V power to SATA3 HDD(SSD).
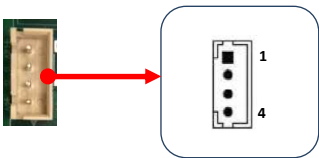
Pin	Definition
1	+12V
2	GND
3	GND
4	+5V

LVDS Connector

The mainboard provides one LVDS (Low-Voltage Differential Signaling) connector for connect internal panel.
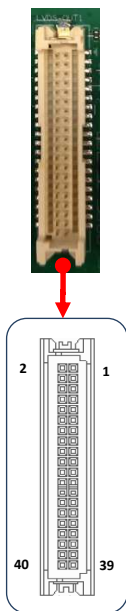
Pin	Definition	Pin	Definition
1	+12V	2	+12V
3	+12V	4	+12V
5	+12V	6	GND
7	+3.3V	8	GND
9	LVDS_VDD (3.3V, 5V, 12V selectable)	10	LVDS_VDD (3.3V, 5V, 12V selectable)
11	DDC_CLK	12	DDC_DATA
13	LVDS_BACKLIGHT_CONTROL	14	LVDS_VDD_ENABLE
15	LVDS_BACKLIGHT_ENABLE	16	GND
17	LVDS_A0#	18	LVDS_A0
19	LVDS_A1#	20	LVDS_A1
21	LVDS_A2#	22	LVDS_A2
23	LVDS_ACLK#	24	LVDS_ACLK
25	LVDS_A3#	26	LVDS_A3
27	GND	28	GND
29	LVDS_B0#	30	LVDS_B0
31	LVDS_B1#	32	LVDS_B1
33	LVDS_B2#	34	LVDS_B2
35	LVDS_BCLK#	36	LVDS_BCLK
37	LVDS_B3#	38	LVDS_B3
39	GND	40	GND

COM Header

The Serial port header (COM2/COM1, 2.54mm pitch) can provide two serial port via an optional COM port cable for RS232 mode.
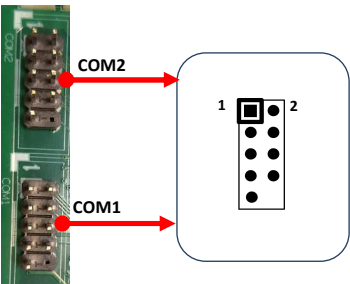
Pin	Definition
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI#
10	Empty

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

USB2.0 Header (1x4-pin / 2x4-pin)

This mainboard contains

Four 1x4-pin onboard header (2.00mm pitch) that can be used to connect to four external USB 2.0 devices.

One 2x4-pin onboard header (2.00mm pitch) that can be used to connect to two external USB 2.0 devices.

USB2-B   USB2-A
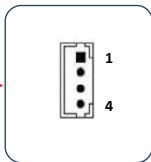
USB2-D   USB2-C

Pin	Definition
1	VDD
2	DATA-
3	DATA+
4	GND

USB2_P6_P7
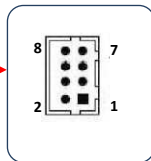
Pin	Definition	Pin	Definition
1	VDD	2	GND
3	DATA-	4	DATA+
5	DATA+	6	DATA-
7	GND	8	VDD

GPIO Header

There is a GPIO (General-purpose input/output) header (2.00mm pitch) on the motherboard. It can connect a variety of simple one- or two-wire devices.
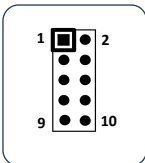
Pin	Definition	Pin	Definition
1	GPIO1	2	GPIO2
3	GPIO3	4	GPIO4
5	GPIO5	6	GPIO6
7	GPIO7	8	GPIO8
9	VCC (+3.3V_ALW)	10	GND

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

SPI Header

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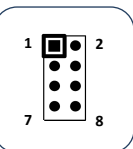
Pin	Definition	Pin	Definition
1	CS	2	VDD
3	SO	4	SOLD
5	WP	6	CLK
7	VSS	8	SI

LVDS Backlight Control Header

This is an 1 x 6 pin with pitch 2.00 mm header for LVDS backlight control interface.
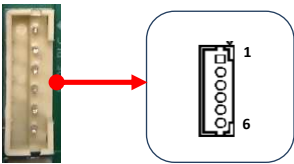
Pin	Definition
1	+12V
2	+12V
3	INVERTER ENABLE
4	LVDS_BACKLIGHT_CONTROL
5	GND
6	GND

LVDS Brightness Control Header

This is an 1 x 7 pin with pitch 2.00 mm header for LVDS brightness adjustment interface.
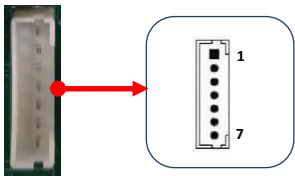
Pin	Definition
1	POWER ON BUTTON
2	NC
3	NC
4	BRIGHTNESS UP
5	BRIGHTNESS DOWN
6	GND
7	POWER LED

Mic-In Header

This is an 1 x 4 pin with pitch 2.00 mm header for Mic-in interface
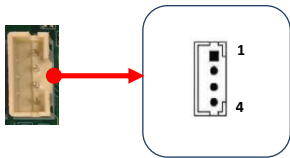
Pin	Definition
1	MIC_L
2	AUDIO_GND
3	MIC_R
4	MIC_In Plug In Detection

Line-In Header

This is an 1 x 4 pin with pitch 2.00 mm header for Line-in interface
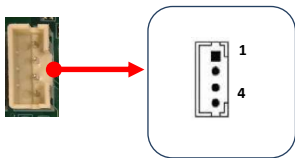
Pin	Definition
1	LINE_IN_L
2	AUDIO_GND
3	LINE_IN_R
4	LINE_IN Plug In Detection

Speaker-Out Header

This is an 1 x 4 pin with pitch 2.00 mm header for external speakers (1.8W for 8Ω/5V speaker, 3W for 4Ω/5V speaker).
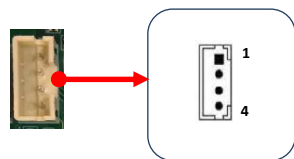
Pin	Definition
1	SPEARK_OUT_L
2	AUDIO_GND
3	AUDIO_GND
4	SPEARK_OUT_R

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.
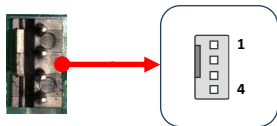
Pin	Definition
1	GND
2	+12V
3	Sense
4	Control

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.
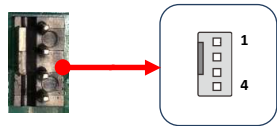
Pin	Definition
1	GND
2	+12V
3	Sense
4	Control

JP1 DP/LVDS Select Jumper

You can use JP1 to select DP1 or LVDS as the default output setting.
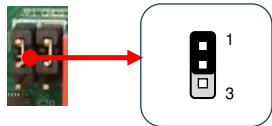
Pin	Settings
1-2	DP1 (Default)
2-3	LVDS

Pin	DP1	LVDS
1-2	✔	X
2-3	X	✔

JP2~JP5 LVDS Panel Resolution Select Jumper
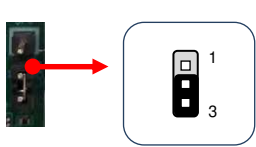
You can use JP2 to JP5 (2.54mm pitch) to select resolution of LVDS panel.

JP2,JP3,JP4,JP5
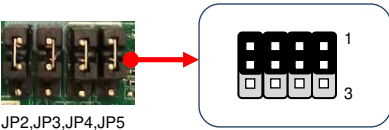
Pin	Settings
JP2:(1-2), JP3:(1-2), JP4:(1-2), JP5:(1-2) (1111)	21.5''W LED 1920x1080 AUO_M215H (Default)
JP2:(1-2), JP3:(1-2), JP4:(1-2), JP5:(2-3) (1110)	18.5''W LED 1366x768 AUO_M185_VD
JP2:(1-2), JP3:(1-2), JP4:(2-3), JP5:(1-2) (1101)	18.5''W LCD 1366x768 AUO_M185_V5
JP2:(1-2), JP3:(1-2), JP4:(2-3), JP5:(2-3) (1100)	17''W LCD 1280x1024 AUO_M17
JP2:(1-2), JP3:(2-3), JP4:(1-2), JP5:(1-2) (1011)	15''W 1024x768 AUO_15
JP2:(1-2), JP3:(2-3), JP4:(1-2), JP5:(2-3) (1010)	15''W 1024x768 CPT15

JP6 Auto Power ON Jumper
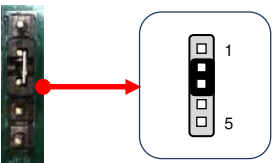
You can use JP6 (2.54mm pitch) to select to enable or disable the auto power on function.

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)

JP7 LVDS VDD Power Jumper

You can use JP7 (2.54mm pitch) to select LVDS VDD Voltage.

Pin	Settings
1-2	+3.3V
2-3	+5V (Default)
4-5	+12V

Clear CMOS Jumper

This mainboard contains a jumper (CMOS) 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.

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

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.

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
```
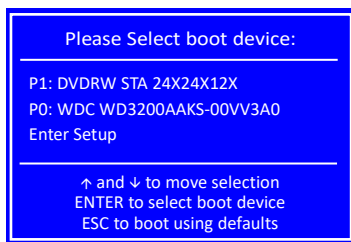
3-2 Enter BIOS Setup

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          V013 (I914I013.ROM) x64           Months: 1-12
  Build Date and Time      09/10/2021 12:19:30               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              [Mon 10/25/2021]                  +/-:   Change Opt.
  System Time              [15:01:03]                        F1:   General Help
                                                             F2:   Previous Values
                                                             F3/F9: Optimized Defaults
                                                             F4/F10:Save & Exit
                                                             ESC:   Exit

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```

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.
  Vendor:                   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
Enable or disable Platform Hierarchy.
Options: Enabled, Disabled.

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

Endorsement Hierarchy
Enable 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**

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

Advanced		
PC Health Status		
APU Fan Stopped Working Prompt	[Disabled]	
► SmartFan Configuration		
APU Temperature	: +57 ºC	
System Temperature	: +34 ºC	
APUFAN Speed	: 895 RPM	→←: Select Screen
SYSFAN Speed	: N/A	↑↓: Select Item
APU Vcore	: +1.256 V	Enter: Select
APU NB	: +0.744 V	+/-: Change Opt.
VCC3V	: +3.312 V	F1: General Help
		F2: Previous Values
		F3/F9: Optimized Defaults
		F4/F10:Save and Exit
		ESC: Exit
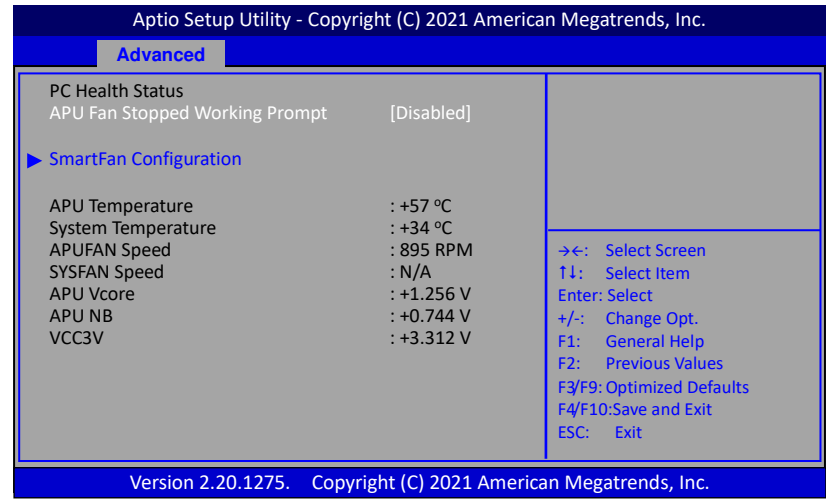
APU Fan Stopped Working Prompt

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.

American Megatrends

Version 2.20.1275. Copyright (C) 2021 American Megatrends, Inc.
BIOS Date: 09/10/2021 12:19:30   Ver: I914I013

CPU Fan Stopped Working.
Press <F1> to continue
Press <F2> or <DEL> to enter setup

▶ Smart Fan Configuration

```
         Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.
  ┌─────────────────────────────────────────────────────────────────────────┐
  │ Advanced                                                                  │
  ├────────────────────────────────────────────────┬──────────────────────────┤
  │ SmartFan Configuration                          │ Fan Mode Setting         │
  │ APU Fan Mode Setting                [SmartFan]  │                          │
  │ Highest Fan Speed In Percentage      100        │                          │
  │ Highest Temperature Threshold (ºC)   85         │                          │
  │                                                 │                          │
  │ 2nd Fan Speed In Percentage          60         │ →←:  Select Screen       │
  │ 2nd Temperature Threshold (ºC)       80         │ ↑↓:  Select Item         │
  │                                                 │ Enter: Select            │
  │ 3rd Fan Speed In Percentage          50         │ +/-:  Change Opt.        │
  │ 3rd Temperature Threshold (ºC)       70         │ F1:   General Help       │
  │                                                 │ F2:   Previous Values    │
  │ 4th Fan Speed In Percentage          30         │ F3/F9: Optimized Defaults│
  │ 4th Temperature Threshold (ºC)       60         │ F4/F10:Save and Exit     │
  │                                                 │ ESC:   Exit              │
  │ Lowest Fan Speed In Percentage       20         │                          │
  │ System Fan Mode Setting             [SmartFan]  │                          │
  │   Temperature Limit of Highest       60         │                          │
  │   Temperature Limit of Lowest        30         │                          │
  │   Fan Highest Setting                100        │                          │
  │   Fan Lowest Setting                 50         │                          │
  └────────────────────────────────────────────────┴──────────────────────────┘
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```

APU Fan 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 / SYSFAN 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

```
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  Advanced

 CPU Configuration                                      Enable or disable No-execute
                                                        page protection function
 Module Version: RenoirCpu 08
 AGESA Version: Embedded-FP6 PI 1006

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

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 V2516 with Radeon Graphics
   6 Core(s) Running @ 2119 MHz    1218 mV
   Processor Family: 17h
   Processor Model: 60h-6Fh
   CPUID: 00860F01
   Current Speed:2100 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

Advanced

AMD SIO Driver Version: A5.10.00

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

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

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

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

▶ PCI Subsystem Settings

Advanced

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

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**

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, 1 Hub		
Legacy USB Support	[Enabled]	→←: 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
XHCI Hand-off	[Enabled]	
USB Mass Storage Driver Support	[Enabled]	
USB Hardware delays and time-outs:		
USB transfer time-out	[5 sec]	
Device reset time-out	[10 sec]	
Device power-up delay	[Auto]	

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 device 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 value: 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
  Ipv4 PXE Support           [Enabled]          Stack
  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 the 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
Boot option filter	[UEFI and Legacy]	Enter: Select
		+/-: Change Opt.
Option ROM execution		F1: General Help
		F2: Previous Values
Network	[Legacy]	F3/F9: Optimized Defaults
Storage	[Legacy]	F4/F10:Save and Exit
Video	[Legacy]	ESC: Exit
Other PCI devices	[UEFI]	
Version 2.20.1275. Copyright (C) 2021 American Megatrends, Inc.		

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 be 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

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
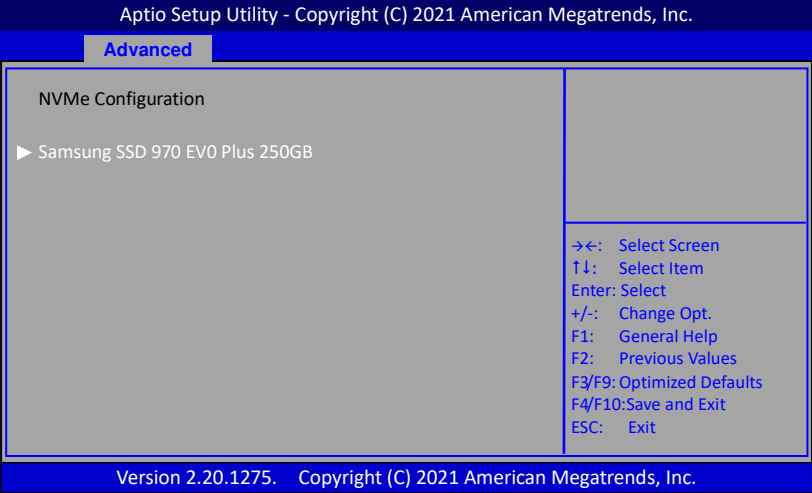
This field is displayed the NVMe controller and Drive information.

▶ Onboard Devices

Advanced

Onboard GigaLAN0	[Enabled]
Onboard GigaLAN1	[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]
WatchDog Timer	[Disabled]

Enable/Disable Onboard GigaLAN

→←:   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

Onboard GigaLAN0 / Onboard GigaLAN1
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.

▶ **AMD CBS**

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

Global C-state Control
Allows you to control the IO based C-state generation and DF C-states.
Options: Disabled, Enabled, Auto.

☛ UMC Common Options

DDR4 Common Options

DRAM Timing Configuration

```
┌─────────────────────────────────────────────────────────────────────┐
│      Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.│
├─────────────────────────────────────────────────────────────────────┤
│   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         │ →←:  Select Screen   │
│ processor or other system components,          │ ↑↓:  Select Item     │
│ create system instabilities (e.g., data loss and│ Enter: Select       │
│ corrupted images) and in extreme cases may     │ +/-:  Change Opt.    │
│ result in total system failure. AMD does not   │ F1:  General Help    │
│ provide support or service for issues or       │ F2:  Previous Values │
│ damages related to use of an AMD processor     │ F3/F9: Optimized Defaults│
│ outside of processor specifications or in      │ F4/F10:Save and Exit │
│ excess of factory settings.                    │ ESC:  Exit           │
│ ▶ I Decline                                    │                      │
│ ▶ I Accept                                 ▼   │                      │
├──────────────────────────────────────────────┴──────────────────────┤
│      Version 2.20.1275.   Copyright (C) 2021 American Megatrends, Inc.│
└─────────────────────────────────────────────────────────────────────┘
```

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.

UMA Version

Allows you to select the UMA version.

Options: Legacy, Non-Legacy, Hybrid Secure, 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, 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.

▶ AMD PBS

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

  ▶ AMD Firmware Version                        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

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

▶ AMD Firmware Version

Show all of AMD Firmware Version.

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

  VBIOS FW Version           113-V2000-001R
  GOP Driver Version         0

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

3-5 Chipset Menu

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

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

▶ South Bridge                              South Bridge Parameters
▶ North Bridge

                                           →←:   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

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

▶ South Bridge

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

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```

▶ 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

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

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                         Set Administrator Password.  │
│  If ONLY the Administrator's password is set,                             │
│  then this only limits access to Setup and is                             │
│  only asked for when entering Setup.                                      │
│  If ONLY the User's password is set, then this                            │
│  is a power on password and must be entered                               │
│  to boot or enter Setup. In Setup the user will                           │
│  have Administrator rights.                    →←:   Select Screen         │
│  The password length must be                   ↑↓:   Select Item          │
│  in the following range:                       Enter: Select              │
│  Minimum length                3               +/-:  Change Opt.          │
│  Maximum length               20               F1:   General Help         │
│                                                F2:   Previous Values      │
│  Administrator Password                        F3/F9: Optimized Defaults   │
│  User Password                                 F4/F10:Save and Exit        │
│                                                ESC:   Exit                 │
│  HDD Security Configuration                                               │
│  Samsung SSD 970 EVD Plus 250GB                                           │
│                                                                            │
│  ▶ Secure Boot                                                            │
├──────────────────────────────────────────────────────────────────────────┤
│        Version 2.20.1275.   Copyright (C) 2021 American Megatrends, Inc.   │
└──────────────────────────────────────────────────────────────────────────┘
```
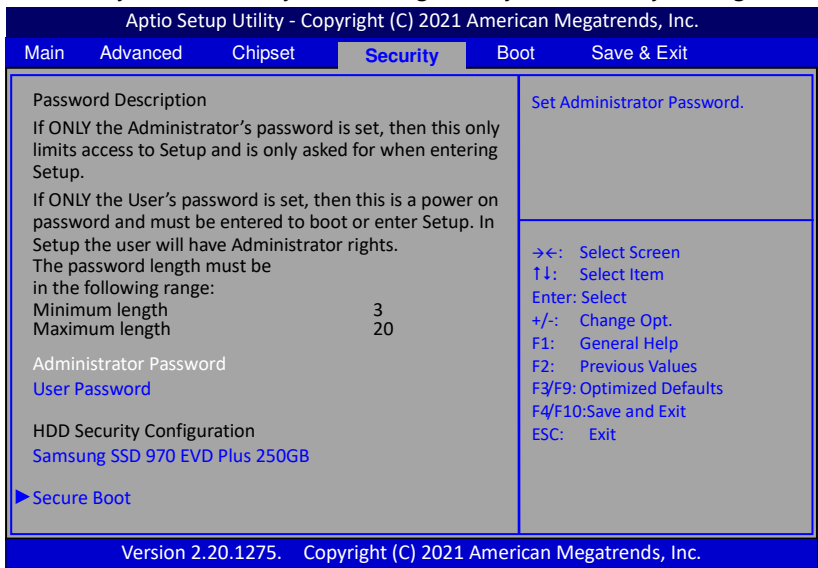
Administrator Password

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.

HDD Security Configuration

*** Advisable to Power Cycle System after Setting Hard Disk Passwords ***. Discard of Save changes option in setup does not have any impact on HDD when password is set or removed. If the 'Set HDD User Password' option is hidden, do power cycle to enable the option again.

To set a password, enter it twice and acknowledge by pressing Return. The password must be 1 to 12 characters long.

Clear HDD password, please follow these steps:

1. Select Set User Password, and enter original HDD Password.

```
-----Enter Current Password-----
-
```

2. To Clear Password, please input "Enter".

```
-----Create New Password-----
-
```

3. To complete clearing old password, please select "Yes" when the following message shows up.

```
-------- WARNING --------

Clear Old Password. Continue?

    Yes              No
```
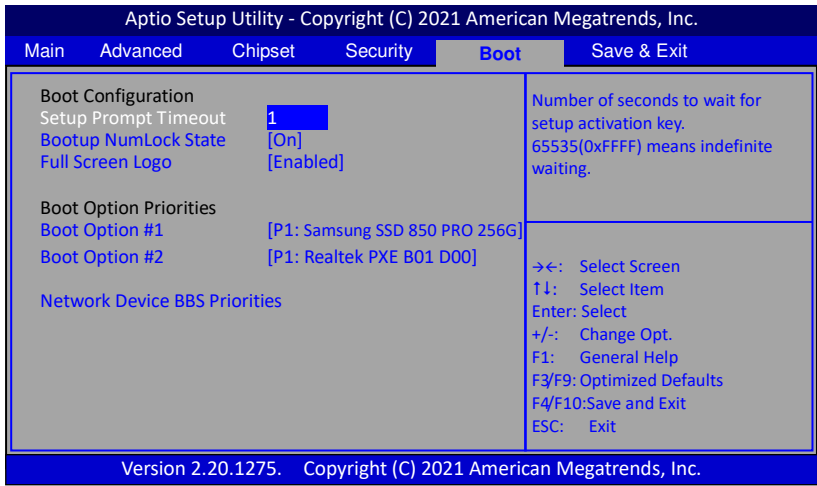
Secure Boot
Secure Boot feature is Active if Secure Boot is Enabled. Platform Key (PK) is enrolled and the system is in user mode. The mode change requires platform reset.

3-7 Boot Menu

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

Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.					
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]
Boot Option #2              [P1: Realtek PXE B01 D00]        →←:  Select Screen
                                                             ↑↓:  Select Item
Network Device BBS Priorities                                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
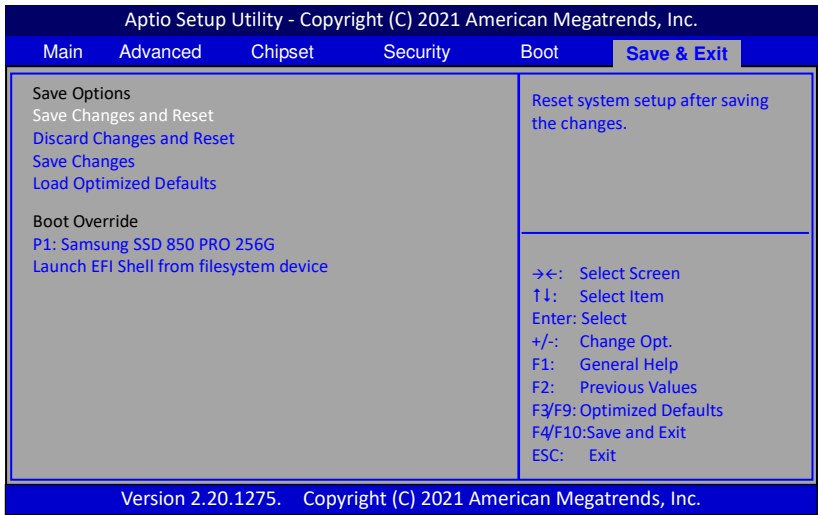These items specify the boot device priority sequence of the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system.

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.

<u>Chapter 4   Driver Installation</u>

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.