



# CPT330B

Rugged IOT Edge Computer with Intel®  
Core™i7-9700TE



User's Manual

Revision Date: April. 15. 2020



## Safety Information

### Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your local distributor.

### Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter any technical problems with the product, contact your local distributor.

### Statement

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- All product specifications are subject to change without prior notice

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## Revision History

| Revision | Date (yyyy/mm/dd) | Changes       |
|----------|-------------------|---------------|
| V1.0     | 2020/04/15        | First release |

## Packing list

| Item | Description   | Q'ty |
|------|---|------|
| 1    | CPT330B Embedded System                                   | 1    |
| 2    | Driver CD   | 1    |
| 3    | 3-pin Terminal Block Power Connector (For DC Power Input) | 1    |



If any of the above items is damaged or missing, please contact your local distributor.

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## Chapter 1: Product Introduction

### 1.1 Key Features

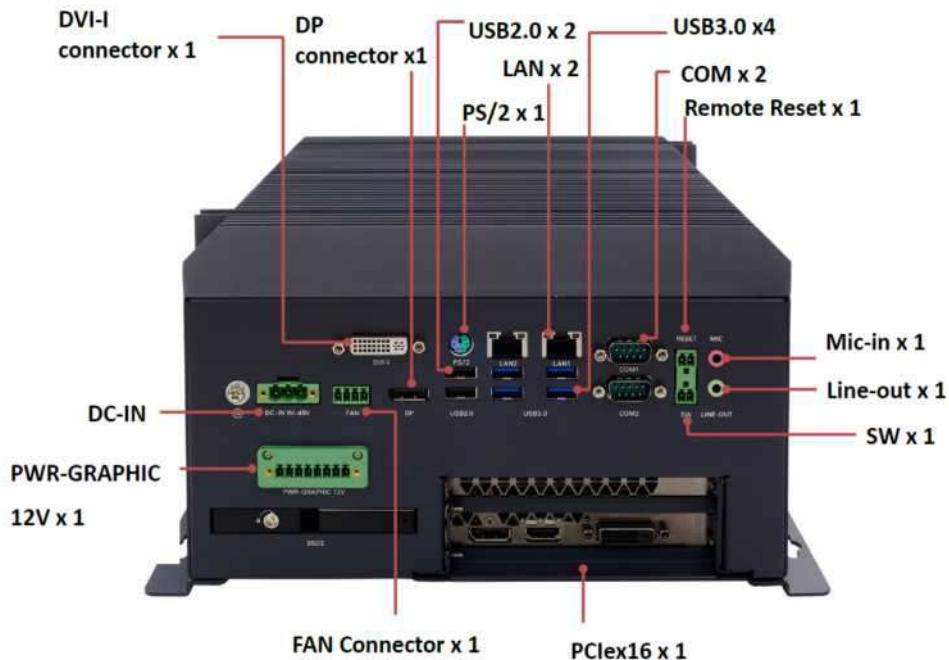
| System                                     |  |
|--|--|
| CPU Type                                   | 8 <sup>th</sup> /9 <sup>th</sup> Gen Intel® Coffee Lake Xeon-E / Core-i LGA1151 Socket Processor<br>TDP Max. 80W   |
| Chipset                                    | Intel® C246  |
| Memory Type                                | DDR4 2666MHz, 2 x 260-pin SO-DIMM, Max. 32GB   |
| Expansion Slot                             | 1 x PClex16  |
| Storage Device                             | 2 x 2.5" SATAIII HDD / SSD tray  |
| Front I/O                                  |  |
| Power Button                               | 1 x (with LED indicator)   |
| HDD LED                                    | 1  |
| DIO LED                                    | 1  |
| HDMI                                       | 1 x 19Pin HDMI1.4 connector, resolution up to 3840x2160@30Hz   |
| USB  | 2 x USB 3.0  |
| Rear I/O                                   |  |
| COM  | 2 x RS232 / 422 / 485 (Support Power 5V / 12V)   |
| Ethernet                                   | 2 x RJ45   |
| USB  | 4 x USB 3.1 Gen 2, 2 x USB 2.0   |
| PS/2                                       | 1  |
| DisplayPort                                | 1 x 20Pin DisplayPort connector, resolution up to 4096x2160@60Hz   |
| DVI-I                                      | 1 x 20Pin DVI-I connector, resolution up to 2560x1600@60Hz   |
| Terminal Block                             | 1 x 2Pin Terminal Block Remote Power ON/OFF<br>1 x 2Pin Terminal Block Remote Reset<br>1 x 4Pin Terminal Block External FAN Connector<br>1 x 3Pin Terminal Block Power Input |
| Audio                                      | 1 x Mic-in, 1 x Line-out   |
| Graphic External Power                     | 1 x 12V  |
| DC-in                                      | 1 x 9~48V  |
| Mechanical & Environment                   |  |
| Dimension (W x H x D)                      | 250x130x264.2mm  |
| Weight                                     |  |
| Chassis                                    | SECC + Aluminum Alloy, Corrosion Resistant   |
| Finish                                     | Anodic aluminum oxide (Color Iron gray and Black)  |
| Cooling                                    | Natural Passive Convection/Conduction. Fanless.  |
| Operating Temp.<br>(ambient with air flow) | 0 to 50°C  |
| Storage Temp.                              | -40 to +85°C   |
| Relative Humidity                          | 5% to 95%, non-condensing  |

## 1.2 Front Panel I/O Placement



|   |                        |
|---|------------------------|
| 1 | Power Button w/LED     |
| 2 | USB 3.0 x 2            |
| 3 | HDMI x 1               |
| 4 | 2.5" HDD/ SSD tray x 1 |

## 1.3 Rear Panel I/O Placement



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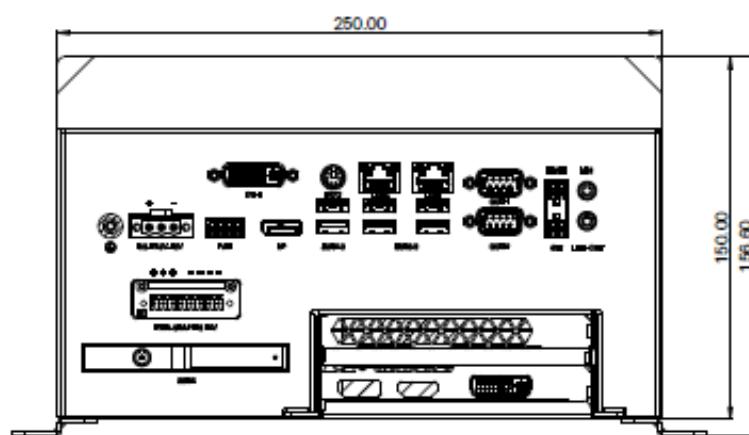
|    |   |
|----|---|
| 1  | COM x 2   |
| 2  | USB 3.1 x 4                                     |
| 3  | USB 2.0 x 2                                     |
| 4  | DP x 1  |
| 5  | DVI-I x 1                                       |
| 6  | LAN x 2   |
| 7  | PS/2 x 1  |
| 8  | Audio Jack (Mic-in, Line-out)                   |
| 9  | PClex16 Expansion Slot x 1                      |
| 10 | DC-In, 3P Terminal block x 1                    |
| 11 | Remote Power ON/OFF, 2Pin Terminal Block x 1    |
| 12 | Remote Reset, 2Pin Terminal Block x 1           |
| 13 | External FAN Connector, 4Pin Terminal Block x 1 |
| 14 | Graphic External Power, 8 Pin, 12V x 1          |

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## 1.4 Mechanical Dimensions



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## Chapter 2: Jumpers and Connectors

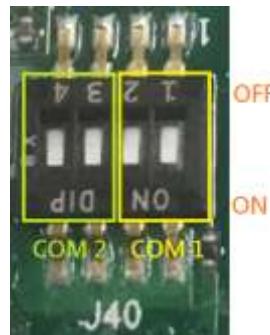
### 2.1 Jumper Setting

#### Power Supply Mode



| Pin  | Signal   |
|------|----------|
| UP   | ATX mode |
| Down | AT mode  |

#### COM Mode



| Switch setting | Mode | 1   | 2   |
|----------------|------|-----|-----|
| 1-2 → COM 1    | RI   | ON  | ON  |
|                | 5V   | ON  | OFF |
|                | 12V  | OFF | ON  |
| Switch setting | Mode |     |     |
| 3-4 → COM 2    | RI   | ON  | ON  |
|                | 5V   | ON  | OFF |
|                | 12V  | OFF | ON  |

### 2.2 Internal Connector Pin Definition

#### SATA Connector



| Pin | Signal Name |
|-----|-------------|
| P1  | VCC3        |
| P2  | VCC3        |
| P3  | VCC3        |

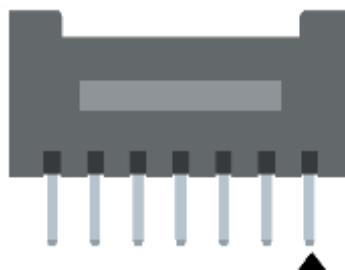
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|     |                |
|-----|----------------|
| P4  | GND            |
| P5  | GND            |
| P6  | GND            |
| P7  | VCC            |
| P8  | VCC            |
| P9  | VCC            |
| P10 | GND            |
| P11 | RES            |
| P12 | GND            |
| P13 | +12V           |
| P14 | +12V           |
| P15 | +12V           |
| S1  | GND            |
| S2  | SATAHDR_TXP0_C |
| S3  | SATAHDR_TXN0_C |
| S4  | GND            |
| S5  | SATAHDR_RXN0_C |
| S6  | SATAHDR_RXP0_C |
| S7  | GND            |

## SATA Power Header



| Pin | Signal Name |
|-----|-------------|
| 1   | VCC3        |
| 2   | GND         |
| 3   | VCC         |
| 4   | VCC         |
| 5   | GND         |
| 6   | +12V        |
| 7   | +12V        |

## SATA Signal Header



| Pin | Signal Name   | Description                  |
|-----|---------------|------------------------------|
| 1   | GND           | Ground                       |
| 2   | SATAHDR_TXP_C | SATA DATA Transmit(positive) |

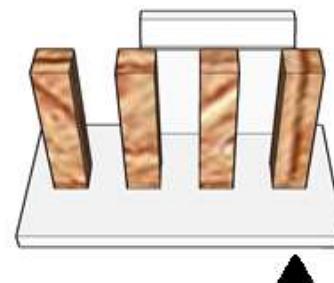
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|   |               |                              |
|---|---------------|------------------------------|
| 3 | SATAHDR_TXN_C | SATA DATA Transmit(negative) |
| 4 | GND           | Ground                       |
| 5 | SATAHDR_RXN_C | SATA DATA Receive(negative)  |
| 6 | SATAHDR_RXP_C | SATA DATA Receive(positive)  |
| 7 | GND           | Ground                       |
| 8 | G1            | GND                          |
| 9 | G2            | GND                          |

## Fan Header



| Pin | Signal       |
|-----|--------------|
| 1   | Ground       |
| 2   | +12V         |
| 3   | CPU_FAN_TACH |
| 4   | CPU_FAN_CTRL |

## 2.3 External Connector Pin Definition

### 3-pin terminal block for DC Input



| Pin | Signal         |
|-----|----------------|
| 1   | DC IN +9~48VIN |
| 2   | Ignition (IGN) |
| 3   | GND            |

### 4-pin Terminal Block for PWM Fan



| Pin | Signal |
|-----|--------|
| 1   |        |
| 2   |        |
| 3   |        |
| 4   |        |

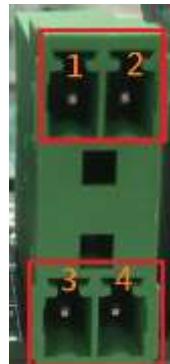
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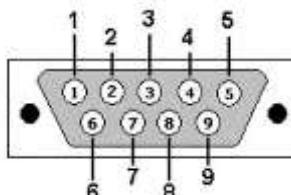
| Pin | Signal          |
|-----|-----------------|
| 1   | Ground          |
| 2   | +12V            |
| 3   | System_FAN_TACH |
| 4   | SYSTEM_FAN_CTRL |

## 2-pin Terminal Block for Remote Power ON/OFF and Reset



| Pin | Signal           |
|-----|------------------|
| 1   | Ground           |
| 2   | EXT Reset        |
| 3   | Ground           |
| 4   | EXT_PWRBT_ON/OFF |

## COM Pin definition



| Pin No | RS-232 | RS-422 | RS-485 |
|--------|--------|--------|--------|
| 1      | DCD    | TX-    | DATA-  |
| 2      | RX     | TX+    | DATA+  |
| 3      | RTX    | RX-    | NC     |
| 4      | DTR    | RX+    | NC     |
| 5      | GND    | GND    | GND    |
| 6      | DSR    | NC     | NC     |
| 7      | RTS    | NC     | NC     |
| 8      | CTS    | NC     | NC     |
| 9      | RI     | NC     | NC     |



## Chapter 3: AMI BIOS UTILITY

This chapter provides users with detailed descriptions on how to set up a basic system configuration through the AMI BIOS setup utility.

### 3.1 Starting

To enter the setup screens, perform the following steps:

- Turn on the computer and press the <Del> key immediately.
- After the <Del> key is pressed, the main BIOS setup menu displays. Other setup screens can be accessed from the main BIOS setup menu, such as the Chipset and Power menus.

### 3.2 Navigation Keys

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.

Some of the hot keys are <F1>, <F10>, <Enter>, <ESC>, and <Arrow> keys.



Some of the navigation keys may differ from one screen to another.

|               |   |
|---------------|---|
| Left/Right    | The Left and Right <Arrow> keys moves the cursor to select a menu.                              |
| Up/Down       | The Up and Down <Arrow> keys moves the cursor to select a setup screen or sub-screen.           |
| +– Plus/Minus | The Plus and Minus <Arrow> keys changes the field value of a particular setup setting.          |
| Tab           | The <Tab> key selects the setup fields.   |
| F1            | The <F1> key displays the General Help screen.  |
| F10           | The <F10> key saves any changes made and exits the BIOS setup utility.                          |
| Esc           | The <Esc> key discards any changes made and exits the BIOS setup utility.                       |
| Enter         | The <Enter> key displays a sub-screen or changes a selected or highlighted option in each menu. |

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## 3.3 Main Page

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

A screenshot of the Aptio Setup Utility Main menu. The menu is titled "Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc." at the top. Below the title, there is a navigation bar with tabs: Main (which is selected), Advanced, Security, Boot, Save & Exit. The main content area displays various system information and configuration fields. On the right side of the menu, there is a vertical help panel with keyboard shortcuts and descriptions. At the bottom of the screen, it says "Version 2.20.1275. Copyright (C) 2019 American Megatrends, Inc."

| Category              | Setting                  | Description                               |                |
|-----------------------|--------------------------|---|----------------|
| Processor Information | Processor Type           | Intel(R) Xeon(R)<br>E-2176G CPU @ 3.70GHz |                |
|                       | Microcode Version        | B4  |                |
|                       | Memory Information       | Total Memory                              | 8192 MB        |
|                       |                          | Memory Solt1                              | 8192 MB (DDR4) |
|                       |                          | Memory Solt2                              | 0 MB (DDR4)    |
|                       |                          | Memory Speed                              | 2133 MHz       |
| Serial ATA Port       | Serial ATA Port 1        | Empty                                     |                |
|                       | Serial ATA Port 2        | Empty                                     |                |
|                       | Serial ATA Port 3        | Empty                                     |                |
|                       | Serial ATA Port 4(M.2)   | Empty                                     |                |
|                       | Serial ATA Port 5(mSATA) | Empty                                     |                |
|                       | Serial ATA Port 6(mSATA) | Empty                                     |                |
| System Date           | [Tue 10/15/2267]         |   |                |
| System Time           | [06:43:25]               |   |                |

### System Date

Use this function to change the system date.

Select System Date using the Up and Down <Arrow> keys. Enter the new values through the keyboard. Press the Left and Right <Arrow> keys to move between fields.

The date setting must be entered in MM/DD/YY format.

### System Time

Use this function to change the system time.

Select System Time using the Up and Down <Arrow> keys. Enter the new values through the keyboard. Press the Left and Right <Arrow> keys to move between fields.

The time setting is entered in HH:MM:SS format.

**Note:** The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30 P.M. as 17:30:00.

### Access Level

Display the access level of the current user in the BIOS.

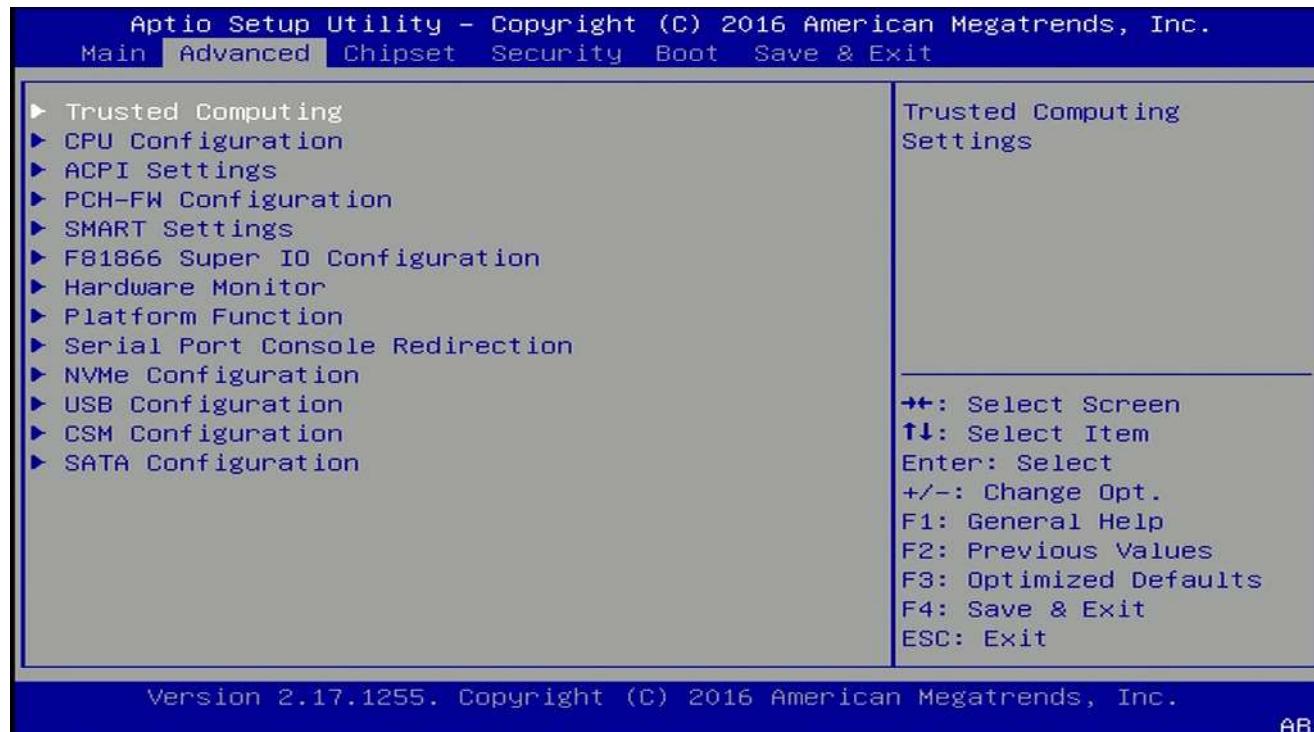
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## 3.4 Advanced Page

The Advanced Menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference. **Setting incorrect field values may cause the system to malfunction.**



A screenshot of the Aptio Setup Utility Advanced menu. The menu lists various configuration options under the "Advanced" tab. On the right side, there is a detailed description of the "Trusted Computing Settings" and a key legend for navigating the menu.

**Advanced Menu Options:**

- ▶ Trusted Computing
- ▶ CPU Configuration
- ▶ ACPI Settings
- ▶ PCH-FW Configuration
- ▶ SMART Settings
- ▶ F81866 Super IO Configuration
- ▶ Hardware Monitor
- ▶ Platform Function
- ▶ Serial Port Console Redirection
- ▶ NVMe Configuration
- ▶ USB Configuration
- ▶ CSM Configuration
- ▶ SATA Configuration

**Trusted Computing Settings:**

Trusted Computing Settings

**Key Legend:**

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

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AB

| Advanced                      | Description                                   |
|-------------------------------|---|
| ▶ Onboard Devices             | Onboard Device Configuration                  |
| ▶ CPU Configuration           | CPU Configuration Parameters                  |
| ▶ Trusted Computing           | Trusted Computing Settings                    |
| ▶ WatchDog                    | WatchDog Configuration                        |
| ▶ Super IO Configuration      | System Super IO Chip Parameters.              |
| ▶ NCT6116D HW Monitor         | Monitor hardware status                       |
| ▶ S5 RTC Wake Setting         | Enable System to wake from S5 using RTC alarm |
| ▶ Network Stack Configuration | Network Stack Settings                        |
| ▶ NVMe Configuration          | NVMe Device Options Settings                  |

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## 3.4.1 Onboard Device

Advanced

|                     |            |   |
|---------------------|------------|---|
| Turbo Mode          | [Enabled]  | Enable/Disable processor Turbo Mode (requires Intel Speed Step or Intel Speed Shift to be available and enabled). |
| State After G3      | [S5 State] |   |
| DVMT Pre-Allocated  | [64M]      |   |
| DVMT Total Gfx Mem  | [256M]     |   |
| SATA Mode Selection | [AHCI]     |   |
| Wake on LAN Enable  | [Enabled]  |   |
| HD Audio            | [Enabled]  |   |

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

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| Onboard Devices     | Value  | Onboard Device Configuration  |
|---------------------|--|---|
| Turbo Mode          | Disabled / [Enabled]   | Enable/Disable processor Turbo Mode (requires Intel Speed Step or Intel Speed Shift to be available and enabled). |
| State After G3      | S0 State / [S5 State]  | Specify what state to go to when power is re-applied after a power failure (G3 state).                            |
| DVMT Pre-Allocated  | [64M] / 32M/F7 / 36M / 40M / 44M / 48M / 52M / 56M / 60M         | Select DVMT 5.0 Pre-Allocated(Fixed) Graphics Memory size used by the Internal Graphics Device.                   |
| DVMT Total Gfx Mem  | 128MB / [256MB] /Max   | Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.                                    |
| SATA Mode Selection | [AHCI] / Intel RST Premium With Intel Optane System Acceleration | Determines how SATA controller(s) operate.  |
| Wake on LAN Enable  | [Enabled] / Disabled   | Enable/Disable integrated LAN to wake the system.   |
| HD Audio            | Disabled / [Enabled]   | Control Detection of the HD-Audio device.<br>Disable = HAD will be unconditionally disabled                       |

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|  |  |
|--|--|
|  | Enabled = HAD will be unconditionally enabled. |
|--|--|

## 3.4.2 CPU Configuration

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

Advanced

| CPU Configuration                             |   |
|---|---|
| Type  | Intel(R) Xeon(R)<br>E-2176G CPU @ 3.70GHz |
| ID  | 0x906EA                                   |
| Speed   | 3700 MHz                                  |
| L1 Data Cache                                 | 32 KB x 6                                 |
| L1 Instruction Cache                          | 32 KB x 6                                 |
| L2 Cache                                      | 256 KB x 6                                |
| L3 Cache                                      | 12 MB                                     |
| L4 Cache                                      | N/A                                       |
| VMX   | Supported                                 |
| SMX/TXT                                       | Supported                                 |
| Intel Trusted Execution Technology [Disabled] |   |

Enables utilization of additional hardware capabilities provided by Intel (R) Trusted Execution Technology. Changes require a full power cycle to take effect.

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

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| ► CPU Configuration                | Value                        | CPU Configuration Parameters  |
|------------------------------------|------------------------------|---|
| CPU Configuration                  |                              |   |
| Type                               | Intel® xxxx® xxxxxx xxxxxxxx |   |
| ID                                 | 0xXXXX                       |   |
| Speed                              | XXXX MHz                     |   |
| L1 Data Cache                      | EX. 32KB x 2                 |   |
| L1 Instruction Cache               | EX. 32KB x 2                 |   |
| L2 Cache                           | EX. 256KB x 2                |   |
| L3 Cache                           | EX. 3MB                      |   |
| L4 Cache                           |                              |   |
| VMX                                | Supported                    |   |
| SMX/TXT                            | Supported                    |   |
| Intel Trusted Execution Technology | [Enabled] / Disabled         | Enables utilization of additional hardware capabilities provided by Intel® Trusted Execution Technology. Changes require a full power cycle to take effect. |

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## 3.4.3 Trusted Computing



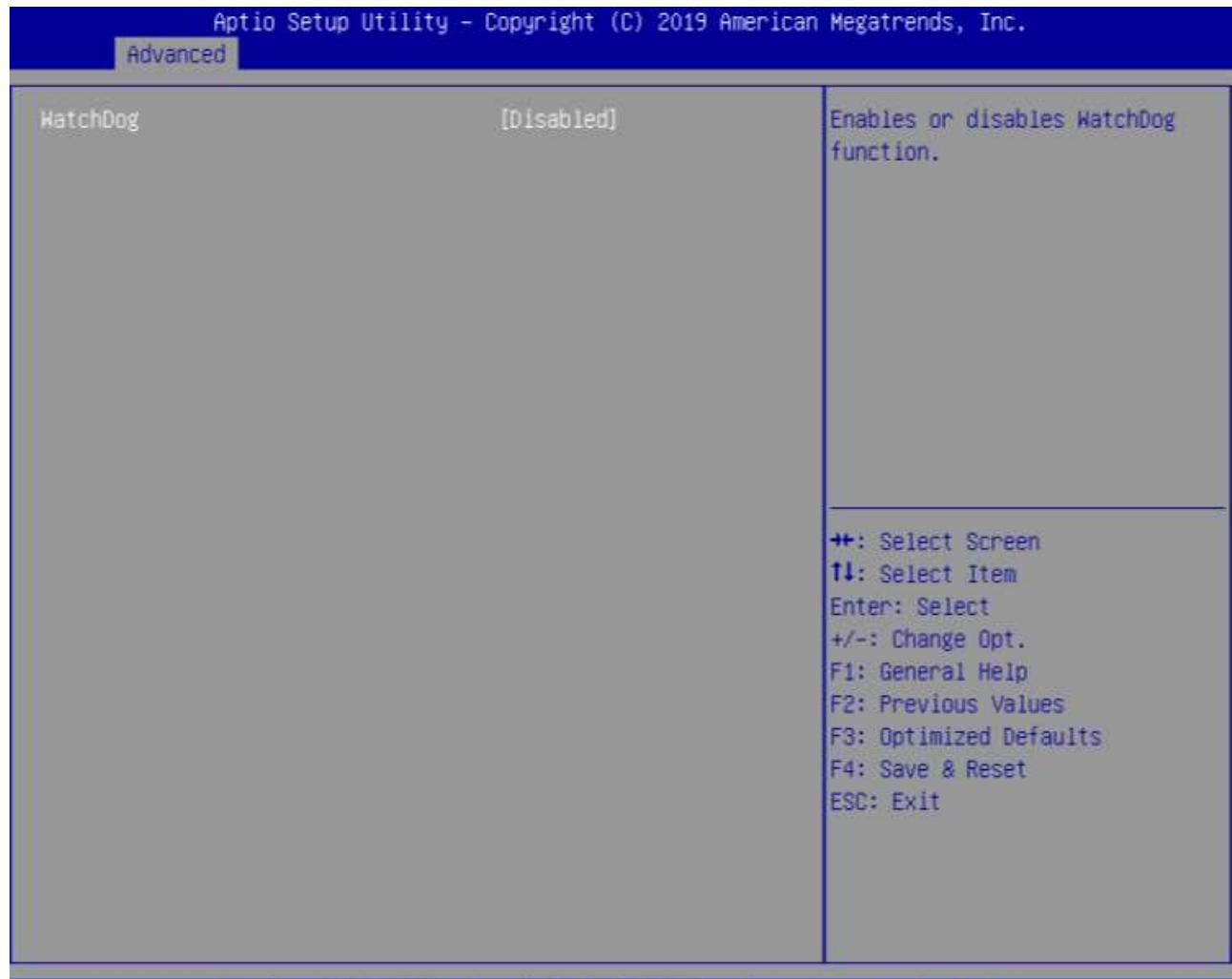
| Trusted Computing       | Value                | Trusted Computing Settings  |
|-------------------------|----------------------|---|
| TPM20 Device Found      |                      |   |
| Firmware Version:       | x.x                  |   |
| Vendor:                 | xxxxxx               |   |
| Security Device Support | [Disabled] / Enabled | 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. |
| Pending operation       | [None] / TPM Clear   | Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.            |

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## 3.4.4 WatchDog



The screenshot shows the Aptio Setup Utility interface. The title bar reads "Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.". A blue header bar contains the text "Advanced" and the current setting for "WatchDog" which is "[Disabled]". The main panel has a light gray background. On the right side of the main panel, there is descriptive text: "Enables or disables WatchDog function." Below this, a series of keyboard shortcuts are listed: ↑: Select Screen, ↓: Select Item, Enter: Select, +/-: Change Opt., F1: General Help, F2: Previous Values, F3: Optimized Defaults, F4: Save & Reset, ESC: Exit. At the bottom of the main panel, the text "Version 2.20.1275. Copyright (C) 2019 American Megatrends, Inc." is displayed.

| ▶ WatchDog | Value                | WatchDog Configuration                  |
|------------|----------------------|---|
| WatchDog   | [Disabled] / Enabled | Enables or Ddisables WatchDog function. |

## 3.4.5 Super IO Configuration

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Advanced

Super IO Configuration

Super IO Chip NCT6116D

► Serial Port 1 Configuration

► Serial Port 2 Configuration

Set Parameters of Serial Port 1 (COMA)

♦\*: Select Screen  
††: Select Item  
Enter: Select  
+/-: Change Opt.  
F1: General Help  
F2: Previous Values  
F3: Optimized Defaults  
F4: Save & Reset  
ESC: Exit

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| ► Super IO Configuration      | Value   | System Super IO Chip Parameters.               |
|-------------------------------|---|--|
| Super IO Configuration        |   |  |
| Super IO Chip                 | NCT6116D  |  |
| ► Serial Port 1 Configuration | Value   | Set Parameters of Serial Port 1 (COMA)         |
| Serial Port 1 Configuration   |   |  |
| Serial Port                   | Disabled / [Enabled]  | Enable or Disable Serial Port (COM)            |
| Device Settings               | IO=3F8h; IRQ=4  |  |
| Change settings               | [Auto] / IO=3F8h; IRQ=4<br>/ IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10,<br>11, 12<br>/ IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10,<br>11, 12<br>/ IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10,<br>11, 12<br>/ IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10,<br>11, 12 | Select an optimal settings for Super IO Device |
| Mode Configuration            | [RS232] / RS485 / RS422   | Configure serial port as RS232/RS422/RS485.    |
| ► Serial Port 2 Configuration | Value   | Set Parameters of Serial Port 2 (COMB)         |

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| Serial Port 2 Configuration |   |  |
|-----------------------------|---|--|
| Serial Port                 | Disabled / [Enabled]  | Enable or Disable Serial Port (COM)            |
| Device Settings             | IO=2E8h; IRQ=4  |  |
| Change settings             | [Auto] / IO=2E8h; IRQ=7<br>/ IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10,<br>11, 12<br>/ IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10,<br>11, 12<br>/ IO=2F0h; IRQ=3, 4, 5, 6, 7, 9, 10,<br>11, 12<br>/ IO=2E0h; IRQ=3, 4, 5, 6, 7, 9, 10,<br>11, 12 | Select an optimal settings for Super IO Device |
| Mode Configuration          | [RS232] / RS485 / RS422   | Configure serial port as RS232/RS422/RS485.    |

## 3.4.6 NCT6116D HW Monitor

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Advanced

|   |  |
|---|--|
| PC Health Status  | If Enabled, POST monitors voltage, temperature, and fan status. If these values are out of range, BIOS display warning message and turn on beep sound. |
| Hardware Monitor Alert Enable   | [Disabled]   |
| CPU Temperature   | : +54 °C   |
| CPU VR Temperature  | : +32 °C   |
| DIMM Temperature  | : +31 °C   |
| System Fan_Internal Speed   | : 1831 RPM   |
| System Fan_External Speed   | : N/A  |
| VCore   | : +1.136 V   |
| PCH IO volt   | : +1.048 V   |
| System Memory   | : +1.200 V   |
| AVSB  | : +3.344 V   |
| VSB3V   | : +3.296 V   |
| **: Select Screen<br>!!: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Reset<br>ESC: Exit |  |

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| ► NCT6116D HW Monitor         | Value                | Monitor hardware status   |
|-------------------------------|----------------------|---------------------------|
| PC Health Status              |                      |                           |
| Hardware Monitor Alert Enable | [Disabled] / Enabled | If Enabled, POST monitors |

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|                           |        |  |
|---------------------------|--------|--|
|                           |        | voltage, temperature, and fan status. If these values are out of range, BIOS display warning message and turn on beep sound. |
| CPU Temperature           | xx °C  |  |
| CPU VR Temperature        | xx °C  |  |
| DIMM Temperature          | xx °C  |  |
| System Fan_Internal Speed | xx RPM |  |
| System Fan_External Speed | xx RPM |  |
| VCORE                     | xx V   |  |
| PCH IO volt               | xx V   |  |
| System Memory             | xx V   |  |
| AVSB                      | xx V   |  |
| VSB3V                     | xx V   |  |

## 3.4.7 S5 RTC Wake Setting

A screenshot of the Aptio Setup Utility interface. The title bar reads "Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.". Below the title bar, there is a blue navigation bar with the word "Advanced". The main configuration screen shows a single setting: "Wake system from S5" with a value of "[Disabled]". To the right of this setting is a detailed description: "Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified. Select DynamicTime , System will wake on the current time + Increase minute(s)". At the bottom right of the configuration area, there is a legend of keyboard shortcuts:

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

At the very bottom of the screen, there is a footer bar with the text "Version 2.20.1275. Copyright (C) 2019 American Megatrends, Inc."

|                       |       |                               |
|-----------------------|-------|-------------------------------|
| ▶ S5 RTC Wake Setting | Value | Enable System to wake from S5 |
|-----------------------|-------|-------------------------------|

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| using RTC alarm                     |  |  |
|-------------------------------------|--|--|
| Wake System with Fixed Time from S5 | [Disabled] / Fixed Time / Dynamic Time | Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified. Select DynamicTime , System will wake on the current time + Increase minute(s) |

## 3.4.8 Network Stack Configuration



The screenshot shows the Aptio Setup Utility interface. The title bar reads "Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc." Below it, a sub-menu bar has "Advanced" selected. The main configuration area displays the "Network Stack" setting, which is currently set to "[Disabled]". To the right of the setting, a detailed description states: "Enable/Disable UEFI Network Stack". At the bottom right of the configuration area, there is a legend of keyboard shortcuts:

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

At the very bottom of the screen, a footer bar displays the text "Version 2.20.1275. Copyright (C) 2019 American Megatrends, Inc."

| ► Network Stack Configuration | Value                | Network Stack Settings            |
|-------------------------------|----------------------|-----------------------------------|
| Network Stack                 | [Disabled] / Enabled | Enable/Disable UEFI Network Stack |

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## 3.4.9 NVMe Configuration



The image shows a screenshot of the Aptio Setup Utility interface, specifically the NVMe Configuration section. The title bar reads "Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc." A blue header bar at the top contains the text "Advanced" and the section title "NVMe Configuration". Below this, a message says "No NVME Device Found". On the right side of the screen, there is a legend of keyboard shortcuts:

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

At the bottom of the screen, a blue footer bar displays the text "Version 2.20.1275. Copyright (C) 2019 American Megatrends, Inc."

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## 3.5 Security Page

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

Main Advanced Security Boot Save & Exit

|  |                |   |                |    |   |
|--|----------------|---|----------------|----|---|
| <p><b>Password Description</b></p> <p>If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.</p> <p>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.</p> <p>The password length must be in the following range:</p> <table><tr><td>Minimum length</td><td>3</td></tr><tr><td>Maximum length</td><td>20</td></tr></table> <p><b>Administrator Password</b></p> <p><b>User Password</b></p> <ul style="list-style-type: none"><li>▶ Secure Boot</li><li>▶ BIOS Update</li></ul> | Minimum length | 3 | Maximum length | 20 | <p><b>Set Administrator Password</b></p> <p>++: Select Screen<br/>!!: Select Item<br/>Enter: Select<br/>+/-: Change Opt.<br/>F1: General Help<br/>F2: Previous Values<br/>F3: Optimized Defaults<br/>F4: Save &amp; Reset<br/>ESC: Exit</p> |
| Minimum length   | 3              |   |                |    |   |
| Maximum length   | 20             |   |                |    |   |

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| Security                                  | Value | Description                                   |
|---|-------|---|
| Password Description                      |       |   |
| Administrator Password                    | xxxx  | Set Administrator Password                    |
| User Password                             | xxxx  | Set User Password                             |
| ▶ HDD Security drive(EX:<br>xxxxxxxxxxxx) |       | HDD Security Configuration for selected drive |
| ▶ Secure Boot                             |       | Secure Boot configuration                     |
| ▶ BIOS Update                             |       | BIOS Update support                           |

### 3.5.1 Secure Boot

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Security

|                        |                          |   |
|------------------------|--------------------------|---|
| System Mode            | User                     | 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 |
| Secure Boot            | [Disabled]<br>Not Active |   |
| Secure Boot Mode       | [Custom]                 |   |
| ► Restore Factory Keys |                          |   |
| ► Reset To Setup Mode  |                          |   |
| ► Key Management       |                          |   |

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

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Security

|   |                   |   |
|---|-------------------|---|
| Vendor Keys                                   | Modified          | Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode |
| Factory Key Provision                         | [Disabled]        |   |
| ► Restore Factory Keys                        |                   |   |
| ► Reset To Setup Mode                         |                   |   |
| ► Export Secure Boot variables                |                   |   |
| ► Enroll Efi Image                            |                   |   |
| Device Guard Ready                            |                   |   |
| ► Remove 'UEFI CA' from DB                    |                   |   |
| ► Restore DB defaults                         |                   |   |
| Secure Boot variable   Size  Keys  Key Source |                   |   |
| ► Platform Key(PK)                            | 835  1  Factory   | ++: Select Screen   |
| ► Key Exchange Keys                           | 1560  1  Factory  | ††: Select Item   |
| ► Authorized Signatures                       | 3143  2  Factory  | Enter: Select   |
| ► Forbidden Signatures                        | 3724  77  Factory | +/-: Change Opt.  |
| ► Authorized TimeStamps                       | 0  0  No Keys     | F1: General Help  |
| ► OsRecovery Signatures                       | 0  0  No Keys     | F2: Previous Values   |
|   |                   | F3: Optimized Defaults  |
|   |                   | F4: Save & Reset  |
|   |                   | ESC: Exit   |

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| ► Secure Boot          | Value                 | Secure Boot configuration   |
|------------------------|-----------------------|---|
| System Mode            | xxxx                  |   |
| Secure Boot            | [Disabled] / Enabled  | Secure Boot feature is Active if Secure Boot is Enable, Platform Key(PK) is enrolled and the System is in User mode. The mode change requires platform reset          |
| Secure Boot Mode       | Standard / [Customer] | Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication |
| ► Restore Factory Keys | [Yes] / No            | Force System to User Mode.<br>Install factory default Secure Boot key database  |
| ► Reset To Setup Mode  | [Yes] / No            | Delete all Secure Boot key databases from NVRAM   |
| ► Key Management       |                       | <b>Enables expert users to modify Secure Boot Policy variables without full authentication</b>  |
| Vendor Keys            | Invalid / Valid       |   |
| Factory Key Provision  | [Disabled] / Enabled  | Install factory default Secure Boot keys after the platform reset and while the System is in Setup  |

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| mode   |   |  |
|--|---|--|
| ► Restore Factory Keys                           | [Yes] / No                                    | Force System to User Mode.<br>Install factory default Secure Boot key database   |
| ► Reset To Setup Mode                            | [Yes] / No                                    | Delete all Secure Boot key databases from NVRAM  |
| ► Export Secure Boot variables                   | Drive: \Path                                  | Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device  |
| ► Enroll Efi Image                               | xxxxxxxxxxxxxxxxxxxxxx                        | Allow the image to run in Secure Boot mode.<br>Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db)  |
| Device Guard ready                               |   |  |
| ► Remove 'UEFI CA' from DB                       |   | Device Guard ready system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database (db)  |
| ► Remove DB defaults                             | [Yes] / No                                    | Restore DB variable to factory defaults  |
| Secure Boot variables   Size   Keys   Key Source |   |  |
| ► Platform Key(PK)                               | [Details] / Export / Update / Delete          | Enroll Factory Defaults or load certificates from a file:<br><br>1. Public Key Certificate:<br>a) EFI_SIGNATURE_LIST<br>b) EFI_CERT_X509 (DER)<br>c) EFI_CERT_RSA2048 (bin)<br>d) EFI_CERT_SHAXXX<br><br>2. Authenticated UEFI Variable<br><br>3. EFI PE/COFF Image(SHA256)<br><br>Key Source:<br>Factory, External, Mixed |
| ► Key Exchange Keys                              | [Details] / Export / Update / Append / Delete | Enroll Factory Defaults or load certificates from a file:<br><br>1. Public Key Certificate:<br>a) EFI_SIGNATURE_LIST<br>b) EFI_CERT_X509 (DER)<br>c) EFI_CERT_RSA2048 (bin)<br>d) EFI_CERT_SHAXXX<br><br>2. Authenticated UEFI Variable<br><br>3. EFI PE/COFF Image(SHA256)<br><br>Key Source:<br>Factory, External, Mixed |
| ► Authorized Signatures                          | [Details] / Export / Update / Append / Delete | Enroll Factory Defaults or load certificates from a file:<br><br>1. Public Key Certificate:<br>a) EFI_SIGNATURE_LIST<br>b) EFI_CERT_X509 (DER)<br>c) EFI_CERT_RSA2048 (bin)<br>d) EFI_CERT_SHAXXX<br><br>2. Authenticated UEFI Variable<br><br>3. EFI PE/COFF Image(SHA256)<br><br>Key Source:<br>Factory, External, Mixed |
| ► Forbidden Signatures                           | [Details] / Export /                          | Enroll Factory Defaults or load certificates from a  |

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|                         |   |  |
|-------------------------|---|--|
|                         | Update / Append / Delete                      | file:<br>1. Public Key Certificate:<br>a) EFI_SIGNATURE_LIST<br>b) EFI_CERT_X509 (DER)<br>c) EFI_CERT_RSA2048 (bin)<br>d) EFI_CERT_SHAXXX<br>2. Authenticated UEFI Variable<br>3. EFI PE/COFF Image(SHA256)<br>Key Source:<br>Factory, External, Mixed   |
| ► Authorized TimeStamps | [Details] / Export / Update / Append / Delete | Enroll Factory Defaults or load certificates from a file:<br>1. Public Key Certificate:<br>a) EFI_SIGNATURE_LIST<br>b) EFI_CERT_X509 (DER)<br>c) EFI_CERT_RSA2048 (bin)<br>d) EFI_CERT_SHAXXX<br>2. Authenticated UEFI Variable<br>3. EFI PE/COFF Image(SHA256)<br>Key Source:<br>Factory, External, Mixed |
| ► OsRecovery Signatures | [Details] / Export / Update / Append / Delete | Enroll Factory Defaults or load certificates from a file:<br>1. Public Key Certificate:<br>a) EFI_SIGNATURE_LIST<br>b) EFI_CERT_X509 (DER)<br>c) EFI_CERT_RSA2048 (bin)<br>d) EFI_CERT_SHAXXX<br>2. Authenticated UEFI Variable<br>3. EFI PE/COFF Image(SHA256)<br>Key Source:<br>Factory, External, Mixed |

## 3.5.2 BIOS Update

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A screenshot of the Aptio Setup Utility interface. The title bar reads "Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc." and the sub-header "Security". The main menu on the left lists "Path for ROM Image". A "Notice :" section states: "ROM Image must in the root folder of storage device. File name must match with current BIOS project." To the right of this is a large empty text area labeled "Enter the path to the BIOS update option". At the bottom right of the screen is a legend of keyboard shortcuts:

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

At the very bottom of the screen, the text "Version 2.20.1275. Copyright (C) 2019 American Megatrends, Inc." is displayed.

## 3.6 Boot Page

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Main Advanced Security Boot Save & Exit

Boot Configuration  
Setup Prompt Timeout [1]  
Bootup NumLock State [Off]

Number of seconds to wait for setup activation key.  
65535(0xFFFF) means indefinite waiting.

FIXED BOOT ORDER Priorities

|                |                 |
|----------------|-----------------|
| Boot Option #1 | [USB Floppy]    |
| Boot Option #2 | [CD/DVD]        |
| Boot Option #3 | [USB CD/DVD]    |
| Boot Option #4 | [Hard Disk]     |
| Boot Option #5 | [USB Key]       |
| Boot Option #6 | [USB Hard Disk] |
| Boot Option #7 | [Network]       |

UEFI USB Key Drive BBS Priorities

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

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| Boot                        | Value  | Description  |
|-----------------------------|--|--|
| Setup Prompt Timeout        | 1  | Number of seconds to wait for setup activation key.<br>65535(0xFFFF) means indefinite waiting. |
| Bootup NumLock State        | On / [Off]   | Select the keyboard NumLock state  |
| FIXED BOOT ORDER Priorities |  |  |
| Boot Optoin #1              | [USB Floppy] / CD/DVD / USB CD/DVD / Hard Disk / USB Key / USB Hard Disk / Network / Disable | Sets the system boot orfer   |
| Boot Optoin #2              | USB Floppy / [CD/DVD] / USB CD/DVD / Hard Disk / USB Key / USB Hard Disk / Network / Disable | Sets the system boot orfer   |
| Boot Optoin #3              | USB Floppy / CD/DVD / [USB CD/DVD] / Hard Disk / USB Key / USB Hard Disk / Network / Disable | Sets the system boot orfer   |
| Boot Optoin #4              | USB Floppy / CD/DVD / USB CD/DVD / [Hard Disk] / USB Key / USB Hard                          | Sets the system boot orfer   |

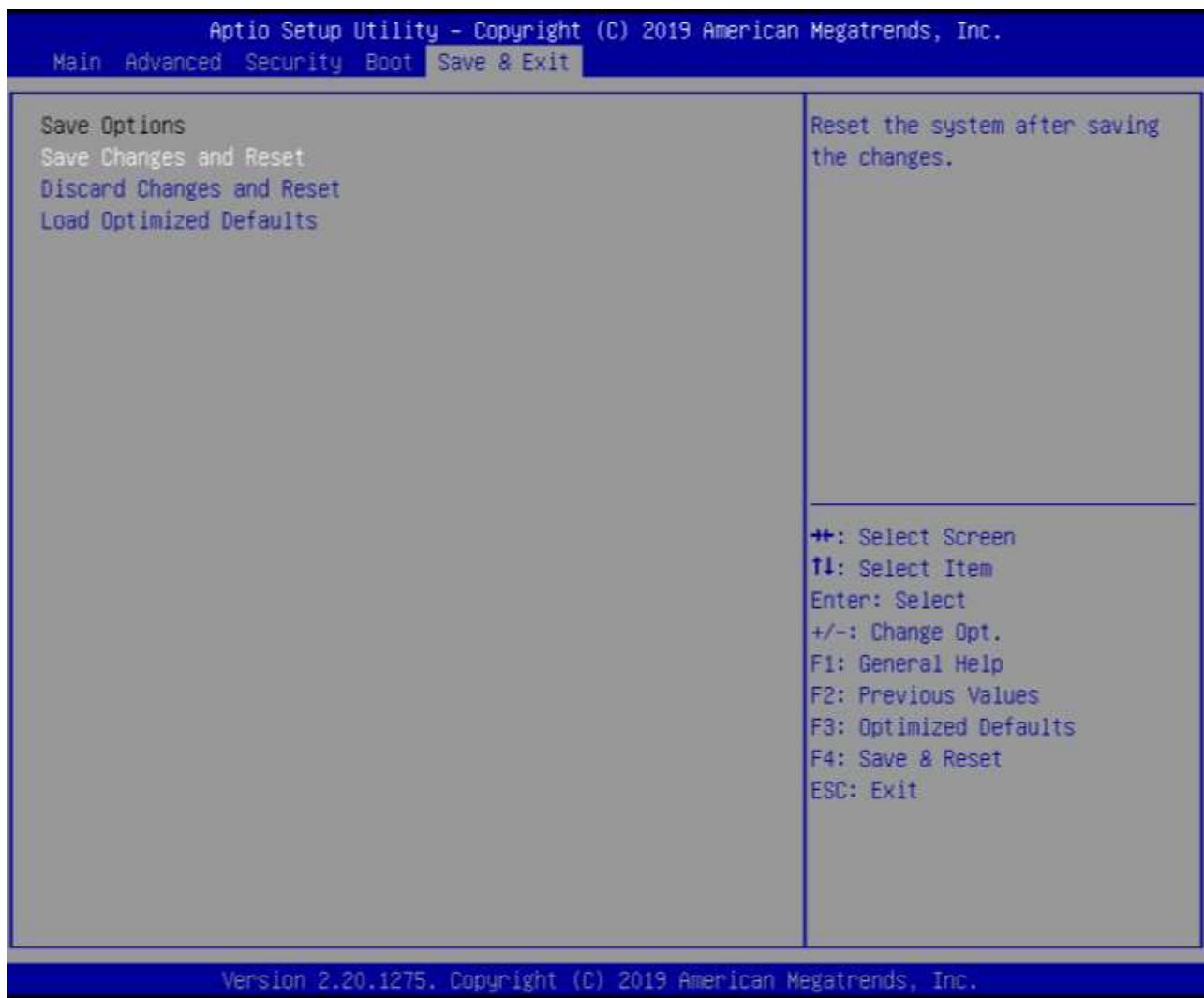
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|                | Disk / Network / Disable   |                            |
|----------------|--|----------------------------|
| Boot Optoin #5 | USB Floppy / CD/DVD / USB CD/DVD / Hard Disk / [USB Key] / USB Hard Disk / Network / Disable | Sets the system boot orfer |
| Boot Optoin #6 | USB Floppy / CD/DVD / USB CD/DVD / Hard Disk / USB Key / [USB Hard Disk] / Network / Disable | Sets the system boot orfer |
| Boot Optoin #7 | USB Floppy / CD/DVD / USB CD/DVD / Hard Disk / USB Key / USB Hard Disk / [Network] / Disable | Sets the system boot orfer |

## 3.7 Save & Exit Page



| Save & Exit               | Description  |
|---------------------------|--|
| Save Changes and Reset    | Reset the system after saving the changes.             |
| Discard Changes and Reset | Reset system setup without saving any changes.         |
| Load Optimized Defaults   | Restore/Load Default values for all the setup options. |