

User Manual

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AIMB-U233

Intel 8th Gen U Series CORE i3/ i5/i7 CPU, eDP (LVDS), 2 HDMI, 2 LAN, 2 USB3.2 Gen2 x1, 4 COM (RS-232/422/485), M.2 E-Key, M.2 B-Key, M.2 M-Key NVMe



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This device complies with the requirements in Part 15 of the FCC regulations.

Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Regulations. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this device in a residential area is likely to cause harmful interference, in which case users are required to correct the interference at their own expense. The user is advised that any equipment changes or modifications not expressly approved by the party responsible for compliance would void compliance with the FCC regulations and, therefore, the user's authorization to operate the equipment.



Caution! There is a risk of a new battery exploding if incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Category	Speed	Capacity	Vendor	ADVANTECH P/N	ECC	Result	Remark
DDR4	2666	16GB	Advantech	AQD-SD4U16N26- SE	N	PASS	Intel® 8th Gen Core™ Maximum DDR4- 2400
DDR4	2666	8GB	Advantech	SQR- SD4N8G2K6SNBCB	N	PASS	
DDR4	2666	4GB	Advantech	SQR- SD4N4G2K6SNEFB	N	PASS	
DDR4	2400	4GB	Advantech	SQR- SD4N4G2K4SNEEB	N	PASS	
DDR4	2133	16GB	Advantech	AQD-SD4U16N21- SE	N	PASS	
DDR4	2133	8GB	Advantech	AQD-SD4U8GN21- SG	N	PASS	
DDR4	2400	16GB	Advantech	AQD-SD4U16N24- HE	N	PASS	
DDR4	3200	16GB	Advantech	96SD4-16G3200NN- MI	N	PASS	

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- 5. Write the RMA number clearly on the outside of the package and ship the product prepaid to your dealer.

Initial Inspection

Before installing the motherboard, please ensure that the following items are included in your shipment:

- Ix AIMB-U233Intel® 8th Gen Core™ i3-8145UE / i5-8365UE / i7-8665UE UTX Motherboard
- 1 x GPIO cable
- 2 x Serial Port Cable
- 3 x M.2 Screw
- 1 x Warranty Card
- 1 x On-Board CPU Cooler

If any of these items are missing or damaged, contact your distributor or sales representative immediately. All AIMB-U233 devices are mechanically and electrically inspected before shipment. Thus, your product should be free of marks and scratches and in perfect working order upon receipt. While unpacking AIMB-U233, check the product for signs of shipping damage (for example, a damaged box, scratches, dents, etc.). If the device is damaged or fails to meet the specifications, notify our service department or your local sales representative immediately. Please also notify the carrier. Retain the shipping carton and packing material for inspection by the carrier. After this inspection, we will make arrangements to repair or replace the unit.

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General Information

1.1 Introduction

AIMB-U233 is the newest UTX small form factor motherboard equipped with Intel® 8th Gen Core TM i3-8145UE/i5-8365UE/i7-8665UE processors and DDR4 2400 MHz up to 16 GB. The palm-sized industrial motherboard measures 137 x 112mm and offers fast graphics and media performance to support triple display output via 2 x HDMI1.4b, eDP (or LVDS), and 2 x 10/100/1000 Mbps Ethernet ports offering high-speed networking.

AIMB-U233 offers high speed, multiple I/O connectivity and expansion, including 2 USB3.2 Gen2 x1, 4 x COMs (2 RS-232, 2 RS-232/422/485), 1 x SATAIII 6 x GB/s connector, and 3 x M.2 (1 x M.2 E-Key, 1 x M.2 B-Key, 1 x M.2 M-Key NVMe) expansion slots for easy integration, and an TPM2.0 security feature.

All the features described above are incorporated into a space-saving, power-efficient, and cost-effective UTX small form factor.

1.2 Features

- Supports Intel® 8th Gen Core ™ i3-8145UE/i5-8365UE/i7-8665UE processors
- 1 x SO-DIMM Up to 16 GB DDR4 2400 MHz SDRAM
- Supports 1 x eDP (LVDS co-lay), 2 x HDMI, 3 Independent Displays
- Supports 2 x LAN, 2 x USB3.2 Gen2 x1 Type-A Ports, 4 COM Ports (RS-232/ 422/485, selected via BIOS)
- Supports 1 x M.2 E-Key, 1 x M.2 B-Key, 1 x M.2 M-Key NVMe
- Onboard TPM 2.0 support
- Supports Intel vPro (For i5 and i7 CPU)
- Supports RAID 0/1/5
- Palm size 137mm x 112 mm

1.3 Specifications

1.3.1 System

- **CPU:** Intel® 8th Gen Core[™] i3-8145UE/i5-8365UE/i7-8665UE
- BIOS: 256 Mb SPI AMI BIOS
- SATA hard disk drive interface: One onboard SATA connectors with a data transmission rate of up to 6 Gb/s

1.3.2 Memory

RAM: 1 x SO-DIMM DDR4 2400 MHz up to 16 GB

1.3.3 Input/Output

- M.2 Expansions: Supports 1 x M.2 E-Key (2230), 1 x M.2 B-Key (2242/3042), 1 x M.2 M-Key (2280 SATA or PCIe x4 NVME SSD)
- Serial ports: Four serial ports; COM1 & COM3 RS-232, COM2 RS-232/422/ 485 (Selected via BIOS) or COM4 RS-232/422/485 (Selected via BIOS)
- USB port: Supports 2 x USB3, 2 x Type-A Gen2 x1, 2 x USB2.0 internal pin header
- **GPIO connector:** One 16-bit general purpose input/output

1.3.4 Graphics

Controller: Intel Gen 9 graphics engine

- HDMI: Supports up to 3840 x 2160 @ 30 Hz
- LVDS: Supports 24-bit dual channel and up to 1920 x 1200, colay eDP (LVDS is BOM optional)
- eDP: Supports up to 4096x2304@60 Hz, colay with LVDS
- **Triple display:** 2 HDMI + eDP (or LVDS)

1.3.5 Ethernet LAN

- Supports up to 2 10/100/1000 Mbps Ethernet port (s) via PCI Express x1 bus, which provides a data transmission rate of 500 MB/s
- Controller: LAN1: Intel Jacksonville: I219LM GbE PHY; LAN2: Intel Springville: I211AT GbE

1.3.6 Industrial Features

 Watchdog timer: Can generate a system reset. The watchdog timer is programmable, with each unit equal to one second or one minute (255 levels)

1.3.7 Mechanical and Environmental Specifications

- Operating temperature: 0~60 °C (32~140 °F) with air flow 0.7 m/s
- Storage temperature: -40 ~ 85 °C (-40 ~ 185 °F)
- **Humidity:** 5 ~ 95% non-condensing
- Power supply voltage: +12 V
- Power consumption:+12 V, Windows Idle mode: 6.236 W (i7-8665UE with 16 GB SO-DDR4-2666) Windows Max Load: 22.971 W (i7-8665UE with 16 GB SO-DDR4-2666)
- Board size: 112 x 137 mm (4.4" x 5.4")
- Board weight: 3.5 kg

1.4 Jumpers and Connectors

The AIMB-U233 motherboard is equipped with connectors for linking the board to external devices such as hard disk drives. The board also features several jumpers for configuring the system according to specific applications.

The function of each board jumper and connector is listed in the table below. The procedure for setting jumpers is explained in subsequent sections of this chapter. Instructions for connecting external devices to the motherboard are provided in Chapter 2.

Table 1.1:	Connector / Header List:	
	Description	Part Reference
1	SPI Pin Header	SPI1_CN1
2	ATX 12V power supply connector	ATX12V1
3	System Fan #1 connector	SYSFAN1
4	DC input Jack	DCIN1
5	IMVP8/9 PMBus KIT	JPMB1
6	HDMI #1	HDMI1
7	AT/ATX Mode selection	PSON1
8	LVDS VESA, JEIDA format selection pin header	JLVDS_VCON1
9	HDMI #2	HDMI2
10	VDD select for LVDS1 Panel	JLVDS1
11	Low Voltage Differential Signaling / EDP	LVDS_EDP1
12	Inverter power connector	INV1
13	HD Audio Interface (LINE-OUT)	AUDIO1
14	HD Audio Interface (MIC-IN)	AUDIO2
15	PWRBTN# / RESET# / HDD LED / PWR LED	JFP1
16	COM1 and COM2 Box Header	COM12
17	Serial ATA interface connector #1	SATA1
18	M.2 KEY-M connector	NGFF_M1
19	M.2 KEY-E connector	NGFF_E1
20	Serial ATA Power connector #1	SATAPWR1
21	Coin Battery wafer box	BAT1
22	Low pin count interface connector	LPC1
23	16-bits General Purpose I/O Pin Header	GPIO1
24	COM3 and COM4 Box Header	COM34
25	USB2.0 Front panel Header	USB34
26	COMS Mode selection	JCMOS1
27	USB3.1 GEN2 Stack connector	USB12
28	Dual port RJ45 Connector	LAN1+LAN2
29	M.2 KEY-B connector	NGFF_B1
30	Nano SIM Card holder	SIM1
31	DDR4 SO-DIMM Socket CH-A	DIMMA1
32	CPU FAN #1 connector	CPUFAN1

Chapter 1 General Information

1.5 Board Layout: Jumper and Connector Locations



Figure 1.1 Jumper and Connector Locations



Figure 1.2 Jumper and Connector Locations

1.6 AIMB-U233 Board Diagram



Figure 1.3 AIMB-U233 Board Diagram

1.7 Safety Precautions



Warning! Always completely disconnect the power cord from the chassis when working with the hardware. Do not connect devices while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.



Caution! Always ground yourself to remove any static charge before touching the motherboard. Modern electronic devices are very sensitive to electrostatic discharges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when not in the chassis.



Caution! The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.



Caution! There is a danger of a new battery exploding if incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

1.8 **Jumper Options**

This section provides instructions on how to configure the motherboard by setting jumpers and also outlines the default motherboard settings and options for each jumper.

1.8.1 Setting Jumpers

The motherboard can be configured according to the application requirements with the setting of jumpers. A jumper is a metal bridge used to close an electrical circuit. Jumpers typically consist of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" (or turn ON) a jumper, connect the pins with the clip. To "open" (or turn OFF) a jumper, simply remove the clip. Some jumpers comprise a set of three pins, labeled 1, 2, and 3. With these jumpers, simply connect either Pins 1 and 2, or Pins 2 and 3. A pair of needlenose pliers may be necessary for setting jumpers.

1.8.2 CMOS Mode Selection (JCOMS1)

Table 1.2: CMOS Mode Selection (JCOMS1)				
Function	Jumper Setting			
Normal (Default)				
Clear CMOS Data				

1.8.3 LVDS Panel Voltage Selection Header (JLVDS1)

Table 1.3: VDD select for LVDS1 Panel (JLVDS1)			
Function	Jumper Setting		
	2 4 6		
Jumper position for +3.3 V (Default)			
	1 3 5		
	2 4 6		
Jumper position for +5 V			
	1 3 5		
	2 4 6		
Jumper position for +12 V			
	1 3 5		

1.8.4 ATX/AT Mode Selection (PSON1)

Table 1.4: ATX/AT Mode selection (PSON1)			
Function	Jumper Setting		
AT Mode (Default)			
ATX Mode			



Connecting Peripherals

2.1 Introduction

Most of the device connectors can be accessed from the top of the board during installation in the chassis. If the system is installed with several cards or the chassis is packed, partial removal of the card may be necessary to make all connections. Please refer to the Appendix if you need more detailed information regarding the connectors and pin definitions.

2.2 LAN and USB Ports (LAN12, USB12/USB34)

AIMB-U233 provides 2 USB3.2 Gen2 x1 which are located on the rear side. The USB interface complies with the USB specification revision 3.2 that supports transmission rates of up to 10 Gbps and 2 x USB2.0 internal pin header that supports 480 Mbps.

The AIMB-U233 system is equipped with 2 high-performance 1000 Mbps Ethernet LAN adapters. All of them are supported by all major network operating systems. The RJ-45 jacks on the rear panel facilitate a convenient LAN connection.



Table 2.1: LAN LED Indicators			
LAN Mode	LAN Indicator		
1 Gbps link on	LED1 Green on		
100 Mbps link on	LED1 Orange on		
Active	LED2 Green flashing		

2.3 DC Input Connector (DCIN1)



2.4 Serial Ports (COM1, COM2, COM3, COM4)



AIMB-U233 supports four serial ports. COM1 and COM3 are RS-232. COM2 is RS-232/422/485 Selected via BIOS) and COM4 is RS-232/422/485 (Selected via BIOS). The IRQ and address ranges for both ports are fixed. However, users can disable the

port or change the parameters via the system BIOS setup. Users who experience problems with a serial device are advised to check the connector pin assignments.

2.5 Display Port Connector (HDMI 1/2)



2.6 System Fan (SYSFAN1)



2.7 CPU FAN (CPUFAN1)



2.8 Front Panel Connectors (JFP1)

Several external switches are provided for monitoring and controlling the AIMB-U233.



2.8.1 ATX Soft Power Switch (JFP1/RESET)

For computer cases equipped with ATX power supply, users should connect the Power On/Off button on the computer case for convenient Power On/Off functionality.

2.8.2 Reset (JFP1/RESET)

Many computer cases offer the convenience of a specific reset button. Connect the wire for the reset button.

2.8.3 HDD LED (JFP1/HDDLED)

An LED can be linked to the connector to indicate when the HDD is active.

2.8.4 Power LED Header (JFP1/PWR_LED)

Refer to Appendix A for detailed information regarding the pin assignments.

Two power supply connection modes exist. The first is the ATX power mode, where the system is powered on/off by momentarily pressing the power button. The second is the AT power mode, where the system is powered on/off using the power supply switch. The status differences indicated by the power LED are listed in the following table:

Table 2.2: ATX Power Supply LED Status			
Power Mode	LED (ATX power mode) (On/off by momentarily pressing the power button)	LED (AT power mode) (Powered on/off using the power supply switch)	
PSON1 jumper setting	Pins 2-3 closed	Pins 1-2 closed	
System On	On	On	
S3	Off	Off	
S4	Off	Off	
System Off	Off	Off	

2.9 HD Audio Interface LINE-OUT / Mic-In (AUDIO1 / AUDIO2)



2.10 Serial ATA Interface (SATA1 and SATAPWR1)



AIMB-U233 features a high-performance Serial ATA interface (up to 6 Gb/S).

2.11 AT/ATX Mode Selection Connector (PSON1)

AIMB-U233 supports ATX/AT mode selection by jumper, the default setting is pin 2-3 ATX mode.



2.12 SPI Flash Connector (SPI_CN1)

The SPI flash card pin header may be used to flash the BIOS.



2.13 Backlight Inverter Power Connector (INV1)



2.14 LVDS / eDP Panel Connector (LVDS_EDP1), BOM Options



2.15 LVDS Panel Voltage Selection Header (JLVDS1)



2.16 General Purpose I/O Connector (GPIO1)



2.17 CMOS Battery Connector (BAT1)



2.18 DDR4 SODIMM (DIMMA1)



2.19 M.2 M-Key (NGFF_M1)



2.20 M.2 B-Key and SIM slot (NGFF_B1 / SIM1)



2.21 M.2 E-Key (NGFF_E1)



2.22 CMOS Clear Pin Header (JCMOS1)



2.23 Low Pin Count Header (LPC1)





BIOS Operation

3.1 Introduction

With the AMI BIOS Setup program, users can modify the BIOS settings and control the special system features. The Setup program comprises several menus with options for adjusting or turning special features on or off. This chapter describes the basic navigation of the AIMB-U233 BIOS setup menu pages.

3.2 BIOS Setup

The AIMB-U233 Series is equipped with built-in AMI BIOS and a CMOS Setup Utility that allows users to configure specific settings or activate certain system features.

The CMOS Setup Utility saves the configuration in the CMOS RAM of the motherboard. When the system power is turned off, the battery on the board supplies the necessary power to preserve the CMOS RAM. When the power is turned on, press the button during the BIOS power-on self-test (POST) to access the CMOS Setup Utility screen.

Control Keys	
$<\uparrow><\downarrow><\leftrightarrow>>$	Move select item
<enter></enter>	Select item
<esc></esc>	Main Menu - Quit without saving changes to the CMOS Sub Menu - Exit current page and return to the Main Menu
<page +="" up=""></page>	Increase the numeric value or make changes
<page -="" down=""></page>	Decrease the numeric value or make changes
<f1></f1>	General help, for Setup Sub Menu
<f2></f2>	Item help
<f5></f5>	Load previous values
<f7></f7>	Load setup defaults
<f10></f10>	Save all CMOS changes

3.2.1 Main Menu

Press to enter the AMI BIOS CMOS Setup Utility and the Main Menu will appear on the screen. Use the arrow keys to select items and press <Enter> to access the submenu.

Aptio Setup Util. Main Advanced Chipset Secur	ity – Copyright (C) 2020 Americ rity Boot Save & Exit	can Megatrends, Inc.
BIOS Information BIOS Vendor Core Version Compliancy Project Version Build Date and Time Access Level Project Board Version Power Type	American Megatrends 5.0.1.3 0.53 x64 UEFI 2.7; PI 1.6 AU23300P060X018 07/16/2020 08:34:33 Administrator AIMB-U233 ATX	Set the Time. Use Tab to switch between Time elements.
Memory Information Total Memory Memory Frequency System Date System Time	8192 MB 2400 MHz [Fri 07/24/2020] [09:31:15]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version_2.20.12	75. Copyright (C) 2020 America	n Megatrends, Inc.

The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is high-lighted in white. Often a text message will accompany it.

System Time/System Date

Use this option to change the system time and date. Highlight the System Time or System Date using the <Arrow> keys. Enter new values via the keyboard. Press the <Tab> or <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.

3.2.1.1 Trusted Computing

Aptio Setup Utility – Copyright (C) 2020 Am Main Advanced Chipset Security Boot Save & Exit	erican Megatrends, Inc.
 Platform Misc Configuration CPU Configuration Power & Performance PCH-FW Configuration Trusted Computing ACPI Settings NCT6126D Super IO Configuration NCT6126D HW Monitor SS RTC Wake Settings Serial Port Console Redirection Intel TXT Information USB Configuration CSM Configuration NVMe Configuration Tls Auth Configuration Network Stack Configuration 	Trusted Computing Settings ++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275. Copyright (C) 2020 Amer	ican Megatrends, Inc.

Security Device Support

Enable or Disable BIOS support for security device.

TPM20 Device Found		Enables or Disables BIOS
Firmware Version:	7.2	support for security device.
Vendor:	NTC	0.S. will not show Security
Security Device Support	[Enable]	Device. TCG EFI protocol and INT1A interface will not be
Active PCR banks	SHA-1,SHA256	available.
Available PCR banks	SHA-1,SHA256,SHA384	
SHA-1 PCR Bank	[Enabled]	
SHA256 PCR Bank	[Enabled]	
SHA384 PCR Bank	[Disabled]	
Pending operation	[None]	
Platform Hierarchy	[Enabled]	↔+: Select Screen
Storage Hierarchy	[Enabled]	↑↓: Select Item
Endorsement Hierarchy	[Enabled]	Enter: Select
TPM2.0 UEFI Spec Version	[TCG_2]	+/-: Change Opt.
Physical Presence Spec Version TPM 20 InterfaceType	[1.3] [TIS]	F1: General Help F2: Previous Values
In 20 Inter acergpe	[[13]	F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
3.2.1.2 ACPI Settings

Aptio Setup Utility – Copyright (C) 2020 Ameria Main Advanced Chipset Security Boot Save & Exit	can Megatrends, Inc.
 Platform Misc Configuration CPU Configuration Power & Performance PCH-FW Configuration Trusted Computing ACPI Settings NCT6126D Super IO Configuration NCT6126D HW Monitor S5 RTC Wake Settings Serial Port Console Redirection Intel TXT Information USB Configuration 	System ACPI Parameters.
 CSM Configuration NVMe Configuration Tls Auth Configuration Network Stack Configuration 	<pre> ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Aptio Setup Utility – Advanced	Copyright (C) 2020 Americar	n Megatrends, Inc.
ACPI Settings		Enables or Disables BIOS ACPI Auto Configuration.
Enable ACPI Auto Configuration	[Disabled]	
Enable Hibernation ACPI Sleep State Lock Legacy Resources S3 Video Repost	[Enabled] [S3 (Suspend to RAM)] [Disabled] [Disabled]	
		<pre>→+: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.20.1275. C	opyright (C) 2020 American ⊧	Megatrends, Inc.

- Enable ACPI Auto Configuration Enable or Disable ACPI Auto Configuration.
- Enable Hibernation This item allows users to Enable or Disable hibernation.

ACPI Sleep State

This item allows users to set the ACPI sleep state.

Lock Legacy Resources

This item allows users to lock legacy device resources.

3.2.1.3 Super I/O Configuration

Aptio Setup Utility – Copyright (C) 2020 Ame Main Advanced Chipset Security Boot Save & Exit	rican Megatrends, Inc.
 Platform Misc Configuration CPU Configuration Power & Performance PCH-FW Configuration Trusted Computing ACPI Settings NCT6126D Super IO Configuration NCT6126D HW Monitor S5 RTC Wake Settings Serial Port Console Redirection Intel TXT Information USB Configuration CSM Configuration NVMe Configuration Tls Auth Configuration Network Stack Configuration 	System Super IO Chip Parameters. ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275. Copyright (C) 2020 Ameri	can Megatrends, Inc.

Aptio Setup Utility – Advanced	Copyright (C) 2020 American	Megatrends, Inc.
NCT6126D Super IO Configuration		Set Parameters of Serial Port 1 (COMA)
Super IO Chip > Serial Port 1 Configuration > Serial Port 2 Configuration > Serial Port 3 Configuration > Serial Port 4 Configuration	NCT6126D	
		<pre>++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2,20,1275, Co	pyright (C) 2020 American M	egatrends. Inc.



Advanced		
Serial Port 2 Configuration		Enable or Disable Serial Port (COM)
Serial Port Device Settings	(Enabled) IO=2F8h; IRQ=3;	(con)
Change Settings Device Mode	[Auto] [RS232]	
		<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.20.1275. Co	pyright (C) 2020 American M	egatrends, Inc.

Aptio Setup Utility – Advanced	Copyright (C) 2020 American) Megatrends, Inc.
Serial Port 3 Configuration		Enable or Disable Serial Port (COM)
Serial Port Device Settings	[Enabled] IO=3E8h; IRQ=5;	(GUN)
Change Settings	[Auto]	
		++: Select Screen ↑↓: Select Item
		Enter: Select +/-: Change Opt. F1: General Help
		F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
Version 2.20.1275. C	opyright (C) 2020 American M	legatrends, Inc.

Aptio Setup Utility – Advanced	Copyright (C) 2020 American	Megatrends, Inc.
Serial Port 4 Configuration		Enable or Disable Serial Port (COM)
Serial Port Device Settings	[Enabled] IO=2E8h; IRQ=5;	
Change Settings Device Mode	[Auto] [RS232]	
		<pre>++: Select Screen \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$</pre>
		+/-: Change Opt. F1: General Help
		F2: Previous Values F3: Optimized Defaults F4: Save & Exit
		ESC: Exit
Version 2.20.1275. Co	pyright (C) 2020 American M	egatrends, Inc.

Serial Ports 1/2/3/4

This item allows users to Enable or Disable serial ports 1/2/3/4.

Change Settings

This item allows users to change the serial port 1/2/3/4 setting.

3.2.1.4 Hardware Monitor

This page shows the AIMB-U233 PC health status.

- Aptio Setup Utility Main Advanced Chipset Security	Copyright (C) 2020 American Megatrends, Inc. Boot Save & Exit
 Platform Misc Configuration CPU Configuration Power & Performance PCH-FW Configuration Trusted Computing ACPI Settings NCT6126D Super IO Configuration NCT6126D HW Monitor S5 RTC Wake Settings Serial Port Console Redirection Intel TXT Information USB Configuration CSM Configuration NVMe Configuration T1s Auth Configuration Network Stack Configuration 	Monitor hardware status ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275. C	pyright (C) 2020 American Megatrends, Inc.

Aptio Setup Utilit Advanced	y – Copyright (C) 2020 Ame	erican Megatrends, Inc.
PC Health Status		Enable or Disable Smart Fan
System temperature CPU temperature CPU FAN1 Speed SYS FAN1 Speed VCORE +5VSB +5V +12V AVCC 3VSB	: +44°C : +73°C : N/A : N/A : +0.760 V : +5.056 V : +5.056 V : +12.192 V : +3.360 V : +3.360 V	
3VVCC VBAT	: +3.360 V : +3.040 V	++: Select Screen ↑↓: Select Item
Smart Fan Function ▶ Smart Fan Function ▶ Digital I/O Configuration	[Enabled]	Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values
ACPI Shutdown Temperature Wake On Ring Watch Dog Timer	[Disabled] [Disabled] [Disabled]	F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275	. Copyright (C) 2020 Ameri	ican Megatrends, Inc.

Wake On Ring

This item allows users to Enable or Disable Wake On Ring functionality.

ACPI Shutdown Temperature

This item allows users to set the CPU temperature threshold at which the system automatically shuts down to prevent the CPU from overheating.

Watchdog Timer This item allows users to Enable or Disable the Watchdog timer.

3.2.1.5 Digital I/O Configuration

Aptio Setup Utilit Advanced	y – Copyright (C) 2020 Am	erican Megatrends, Inc.
PC Health Status		Configure the digital I/O pins
System temperature CPU temperature CPU FAN1 Speed SYS FAN1 Speed VCORE +SVSB +SV +12V AVCC 3VSB	: +44°C : +72°C : N/A : N/A : +0.760 V : +5.056 V : +5.056 V : +12.192 V : +3.360 V : +3.360 V	
SVVCC VBAT Smart Fan Function ▶ Smart Fan Function ▶ Digital I/O Configuration	: +3.360 V : +3.040 V [Enabled]	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values</pre>
ACPI Shutdown Temperature Wake On Ring Watch Dog Timer	[Disabled] [Disabled] [Disabled]	F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275	5. Copyright (C) 2020 Amer	rican Megatrends, Inc.

Aptio Setup Advanced	Utility – Copyright (C) 2020	O American Megatrends, Inc.
Digital I/O Configuration		Configure Digital I/O Pin.
Digital I/O Pin 1 Digital I/O Pin 2 Digital I/O Pin 3 Digital I/O Pin 4 Digital I/O Pin 5 Digital I/O Pin 6 Digital I/O Pin 7 Digital I/O Pin 8 Digital I/O Pin 9 Digital I/O Pin 10 Digital I/O Pin 11 Digital I/O Pin 12 Digital I/O Pin 13 Digital I/O Pin 14 Digital I/O Pin 15 Digital I/O Pin 16	[Input] [Input] [Input] [Input] [Input] [Input] [Input] [Input] [Input] [Input] [Input] [Input] [Input] [Input] [Input]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.2	20.1275. Copyright (C) 2020 (American Megatrends, Inc.

Digital I/O Configuration

This item will allow users to set up Digital I/O 1~16 to "input" or "output".

3.2.1.6 Smart Settings

Enable or Disable Smart Fan
++: Select Screen
11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit

mart Fan Mode Configuration		CPU Fan Mode Select
CPU Fan Mode	[SMART FAN IV Mode]	
CPUFAN Temperature 1	40	
CPUFAN DC/PWM 1	127	
CPUFAN Temperature 2	57	
CPUFAN DC/PWM 2	170	
CPUFAN Temperature 3	74	
CPUFAN DC/PWM 3	214	
CPUFAN Temperature 4	90	
CPUFAN DC/PWM 4	255	
CPUFAN Critical Temperature	90	
CPUFAN Critical Temp Tolerance 👘	1	
		++: Select Screen
System Fan Mode	[SMART FAN IV Mode]	↑↓: Select Item
SYSFAN Temperature 1	30	Enter: Select
SYSFAN DC/PWM 1	0	+/-: Change Opt.
SYSFAN Temperature 2	40	F1: General Help
SYSFAN DC/PWM 2	84	F2: Previous Values
SYSFAN Temperature 3	50	F3: Optimized Defaults
SYSFAN DC/PWM 3	168	F4: Save & Exit
SYSFAN Temperature 4	60	ESC: Exit
SYSFAN DC/PWM 4	255	
SYSFAN Critical Temperature	90	
SYSFAN Critical Temp Tolerance 👘	1	

Smart Fan Settings

Users are allowed to Enable/Disable smart fan and they can also configure smart fan.

3.2.1.7 S5 RTC Wake Settings

Aptio Setup Utilit Main Advanced Chipset Securi	y <mark>– Copyright (C) 2020 America</mark> y Boot Save & Exit	n Megatrends, Inc.
 Platform Misc Configuration CPU Configuration Power & Performance PCH-FW Configuration Trusted Computing ACPI Settings NCT6126D Super IO Configuration NCT6126D HW Monitor S5 RTC Wake Settings Serial Port Console Redirection Intel TXT Information USB Configuration CSM Configuration NVMe Configuration T1s Auth Configuration Network Stack Configuration 		Enable system to wake from S5 using RTC alarm ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275	. Copyright (C) 2020 American H	Megatrends, Inc.

Aptio Setup Advanced	Utility – Copyright (C) 2020 Ameria	can Megatrends, Inc.
Advanced Wake system from S5	[Disabled]	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) **: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.	20.1275. Copyright (C) 2020 America	n Megatrends, Inc.

Wake System From S5

Enable or Disable system wake on alarm event.

3.2.1.8 Serial Port Console Redirection

merican Megatrends, Inc.
Serial Port Console Redirection
<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
rican Megatrends, Inc.
merican Megatrends, Inc.
Legacy Console Redirection Settings

Console Redirection

This item allows users to Enable or Disable console redirection.

3.2.1.9 CPU Configuration

This page shows CPU Information.

Main Advanced Chipset Security Boot Save & Exit	
Platform Misc Configuration CPU Configuration Power & Performance PCH-FW Configuration Trusted Computing ACPI Settings NCT6126D Super ID Configuration NCT6126D HW Monitor SS RTC Wake Settings Serial Port Console Redirection Intel TXT Information USB Configuration CSM Configuration NVMe Configuration Tls Auth Configuration Network Stack Configuration	CPU Configuration Parameters ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
	American Megatrends, Inc.

Aptio Setup Utility - Advanced	Copyright (C) 2020 American	Megatrends, Inc.
ID Speed L1 Data Cache L1 Instruction Cache L2 Cache L3 Cache L4 Cache Microcode Revision VMX SMX/TXT	0x806EC 2000 MHz 32 KB x 4 32 KB x 4 256 KB x 4 8 MB N/A C6 Supported Supported	Enable/Disable AES (Advanced Encryption Standard)
C6DRAM CPU Flex Ratio Override CPU Flex Ratio Settings Intel (VMX) Virtualization Technology PECI Active Processor Cores Hyper-Threading BIST AES Intel Trusted Execution Technology Alias Check Request DPR Memory Size (MB) Reset AUX Content	<pre>[Enabled] [Disabled] 20 [Enabled] [Enabled] [A11] [Enabled] [Disabled] [Disabled] [Disabled] [Disabled] 4 [no]</pre>	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.20.1275. Co	ppyright (C) 2020 American M	egatrends, Inc.

Active Processor Cores

Number of cores to enable in each processor package.

Intel Virtualization Technology

When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

PECI

Enable or Disable PECI.

- Hyper-Threading
 Hyper-Threading Setting.
 BIST
 - Enable or Disable AES.
- AES Enable/disable Monitor Mwait.
- Intel Trusted Execution Technology Intel Trusted Execution Technology Setting.

CPU Power Management Configuration

CPU – Power Management Control		View/Configure Turbo Options
Boot performance mode Intel(R) SpeedStep(tm) Race To Halt (RTH) Intel(R) Speed Shift Technology HDC Control Turbo Mode View/Configure Turbo Options	[Max Non-Turbo Performance] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled]	
 CPU VR Settings Platform PL1 Enable Platform PL2 Enable Power Limit 4 Override C states Enhanced C-states C-State Auto Demotion C-State Un-demotion Package C-State Demotion Package C-State Un-demotion CState Pre-Wake IO MWAIT Redirection Package C State Limit C3 Latency Control(MSR 0x60A) Time Unit 	[Disabled] [Disabled] [Disabled] [Enabled] [C1 and C3] [C1 and C3] [Disabled] [Disabled] [Enabled] [Disabled] [Auto]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Boot performance mode

Boot performance mode settings.

Intel SpeedStep / Race to Halt / Speed Shift / HDC Control / Turbo Mode

C-States

Enabled or Disabled Enhanced C-State.

C-State Auto Demotion.

C-State Un-Demotion.

Package C-State Demotion.

Package C-State Un-Demotion.

 CState Pre-Wake Enabled or disabled.

■ IO MWAIT Redirection

Enabled or disabled.

- Package C State Limit Package C State Limit Setting.
- Platform PL1
 Enable/Disable Platform PL1.
- Platform PL2 Enable/Disable Platform PL1.
- Power Limit 4 Override

3.2.1.10 AMT Configuration



3.2.1.11 CSM Configuration

Main Advanced Chipset Security Boot Save & Ex	it
Platform Misc Configuration CPU Configuration Power & Performance PCH-FW Configuration Trusted Computing ACPI Settings NCT6126D Super IO Configuration NCT6126D HW Monitor SS RTC Wake Settings Serial Port Console Redirection Intel TXT Information USB Configuration	CSM configuration: Enable/Disable, Option ROM execution settings, etc.
 CSM Configuration NVMe Configuration Tls Auth Configuration Network Stack Configuration 	<pre>++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Aptio Setup Utility Advanced	y – Copyright (C) 2020 America	n Megatrends, Inc.
Compatibility Support Module Configuration		Enable/Disable CSM Support.
CSM Support	[Enabled]	
CSM16 Module Version	07.82	
GateA20 Active INT19 Trap Response	[Upon Request] [Immediate]	
Boot option filter	[UEFI only]	
Option ROM execution		
Network Storage Video Other PCI devices	[UEFI] [UEFI] [UEFI] [UEFI]	<pre>++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.20.1275.	. Copyright (C) 2020 American	Megatrends, Inc.

CSM Support

Enable or Disable CSM Support.

3.2.1.12 NVMe Configuration

Aptio Setup Utility – C Main Advanced Chipset Security B	o <mark>yright (C) 2020 American</mark> ot Save & Exit	Megatrends, Inc.
 Platform Misc Configuration CPU Configuration Power & Performance PCH-FW Configuration Trusted Computing ACPI Settings NCT6126D Super IO Configuration NCT6126D HW Monitor S5 RTC Wake Settings Serial Port Console Redirection Intel TXT Information USB Configuration CSM Configuration NVMe Configuration T1s Auth Configuration Network Stack Configuration 		NVMe Device Options Settings ++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275. Cop	right (C) 2020 American M	Megatrends, Inc.

3.2.1.13 Network Stack Configuration

Aptio Setup Utility – Co Main Advanced Chipset Security Bo	yright (C) 2020 American Megatrends, Inc. t Save & Exit
 Platform Misc Configuration CPU Configuration Power & Performance PCH-FW Configuration Trusted Computing ACPI Settings NCT6126D Super IO Configuration NCT6126D HW Monitor S5 RTC Wake Settings Serial Port Console Redirection Intel TXT Information USB Configuration CSM Configuration NVMe Configuration T1s Auth Configuration Network Stack Configuration 	Network Stack Settings ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275. Copy	ight (C) 2020 American Megatrends, Inc.

etwork Stack	[Disabled]	Enable/Disable UEFI Network Stack
		++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

3.2.1.14 USB Configuration

Aptio Setup Utility – Copyright (C) 2020 America Main Advanced Chipset Security Boot Save & Exit	n Megatrends, Inc.
 Platform Misc Configuration CPU Configuration Power & Performance PCH-FW Configuration Trusted Computing ACPI Settings NCT6126D Super IO Configuration NCT6126D HW Monitor SS RTC Wake Settings Serial Port Console Redirection Intel TXT Information USB Configuration CSM Configuration NVMe Configuration Tls Auth Configuration Network Stack Configuration 	USB Configuration Parameters ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values
Version 2.20.1275. Copyright (C) 2020 American	F3: Optimized Defaults F4: Save & Exit ESC: Exit

Aptio Setup Utility - Advanced	Copyright (C) 2020 American	Megatrends, Inc.
USB Configuration		Enables Legacy USB support.
USB Module Version	23	AUTO option disables legacy support if no USB devices are connected. DISABLE option will
USB Controllers: 1 XHCI		keep USB devices available only for EFI applications.
USB Devices: 1 Drive, 1 Keyboard		
Legacy USB Support XHCI Hand-off	[Enabled]	
USB Mass Storage Driver Support	[Enabled] [Enabled]	
USB hardware delays and time-outs:		↔: Select Screen
USB transfer time-out	[20 sec]	†↓: Select Item
Device reset time-out	[20 sec]	Enter: Select
Device power-up delay	[Auto]	+/−: Change Opt. F1: General Help
Mass Storage Devices:		F2: Previous Values
USB3.0 FLASH DRIVE PMAP	[Auto]	F3: Optimized Defaults F4: Save & Exit
USB PWR OFF Configuration 1	[Disabled]	ESC: Exit
USB PWR OFF Configuration 2	[Disabled]	
USB PWR OFF Configuration 3	[Disabled]	
USB PWR OFF Configuration 4	[Disabled]	
Version 2.2 <u>0.1275. Co</u>	pyright (C) 2020 American M	egatrends, Inc.

Legacy USB Support

Enables support for legacy USB. Auto option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.

XHCI Hands Off

This is a workaround for OS without XHCI hand-off support. The XHCI ownership change should claim by XHCI driver.

USB Mass Storage Driver Support

This item allows users to Enable or Disable USB Mass Storage Driver.

USB Transfer Time-Out

Time-out value for control, bulk, and interrupt transfers.

Device Reset Time-Out

USB mass storage device start unit command time-out.

Device Power-Up Delay

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

Mass Storage Device

Mass storage device emulation type. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to a drive type.

■ USB PWR Configuration (USB Power On/Off Control)

Chapter 3 BIOS Operation

3.2.1.15 PCI Express Configuration

Aptio Setup Utilit Chipset	y – Cōpyright (C) 2020 f	American Megatrends, Inc.
PCH-IO Configuration		PCI Express Configuration
PCI Express Configuration SATA And RST Configuration Security Configuration HD Audio Configuration		settings
LAN1 Controller LAN1 PXE OpROM LAN2 Controller LAN2 PXE OpROM	[Enabled] [Disabled] [Enabled] [Disabled]	
PCIE Wake Restore AC Power Loss PCIE Device Initial Delay	[Disabled] [Power Off] O	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275	. Copyright (C) 2020 Ame	erican Megatrends, Inc.

Aptio Setup Chipset	Utility – Copyright (C)	2020 American	Megatrends, Inc.
PCI Express Configuration			PCI Express Root Port Settings.
PCI Express Clock Gating PCIe-USB Glitch W/A	[Enabled] [Disabled]		
▶ M.2 B-key Slot ▶ LAN2 Controller ▶ M.2 E-key Slot ▶ M.2 M-key Slot			
			<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.2	20.1275. Copyright (C) 2	020 American Me	egatrends, Inc.

3.2.1.16 SATA And RST Configuration

Aptio Setup Utilit Chipset	ty – Copyright (C) 2020 Ame	erican Megatrends, Inc.
SATA And RST Configuration SATA Controller(s) SATA Mode Selection Aggressive LPM Support SATA Controller Speed Serial ATA Port 1 Software Preserve Port 1 Spin Up Device SATA Device Type SATA Port 1 DevSlp DITO Configuration DITO Value DM Value M.2 B-key Slot Software Preserve M.2 B-key Port Spin Up Device SATA Device Type M.2 B-key Port Spin Up Device SATA Device Type M.2 B-key Port DevSlp DITO Configuration DITO Value DM Value DM Value	[Enabled] [AHCI] [Enabled] [Default] Empty Unknown [Enabled] [Disabled]	 Enable/Disable SATA Device. ++: Select Screen +1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
	5. Copyright (C) 2020 Ameri ty – Copyright (C) 2020 Ame	
Port 1 Spin Up Device SATA Device Tune	[Enabled] [Disabled] [Hand Disk Drive]	▲ Enable or Disable SATA Port

Chipset	.iiity – copyright (c) 2020 Amer	itan megatrenus, inc.
Port 1 Spin Up Device SATA Device Type SATA Port 1 DevSlp DITO Configuration DITO Value DM Value M.2 B-key Slot Software Preserve M.2 B-key Port Spin Up Device SATA Device Type M.2 B-key Port DevSlp DITO Configuration DITO Value DM Value M.2 M-key Slot Software Preserve M.2 M-key Port Spin Up Device SATA Device Type M.2 M-key Port Spin Up Device SATA Device Type M.2 M-key Port DevSlp DITO Configuration DITO Value DM Value M.2 M-key Port DevSlp DITO Configuration DITO Value DM Value	[Enabled] [Disabled] [Hard Disk Drive] [Disabled] [Disabled] 625 15 Empty Unknown [Enabled] [Disabled] [Disabled] [Disabled] [Disabled] 625 15 Empty Unknown [Enabled] [Disabled] [Disabled] [Disabled] [Hard Disk Drive] [Disabled]	 Enable or Disable SATA Port **: Select Screen **: Select Item Enter: Select */-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.	1275. Copyright (C) 2020 Americ	can Megatrends, Inc.

SATA Configuration

SATA port / SATA mode / RAID Settings.

Chapter 3 BIOS Operation

3.2.2 Security

This page provides information of the Security on AIMB-U233.

3.2.2.1 Secure Boot

Aptio Setup Uti Main Advanced Chipset Secu	Lity – Copyright (C) 2020 Americ writy Boot Save & Exit	can Megatrends, Inc.
Password Description		Secure Boot configuration
If ONLY the Administrator's pa then this only limits access t only asked for when entering S If ONLY the User's password is is a power on password and mus boot or enter Setup. In Setup have Administrator rights. The password length must be in the following range: Minimum length Maximum length	to Setup and is Setup. s set, then this st be entered to	
Administrator Password User Password ▶ Secure Boot	LV	<pre>++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values</pre>
		F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.12	275. Copyright (C) 2020 Americar	n Megatrends, Inc.
	Lity <mark>–</mark> Copyright (C) 2020 Americ	can Megatrends, Inc.
System Mode	setup	Force System to User Mode.
Secure Boot	[Disabled] Inactive	Install factory default Secure Boot key databases
Secure Boot Mode ▶ Restore Factory Keys ▶ Reset To Setup Mode	[Custom]	
▶ Key Management		
		<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt.</pre>
		F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Secure Boot

Enabled / Disabled.

- Secure Boot Mode Secure Boot Mode Custom Setting.
- Restore Factory Key / Restore to Setup mode
- Key Management

3.2.3 Save & Exit



3.2.4 Boot



 Bootup NumLock State Select the keyboard Numlock state.

Quiet Boot

Enables or Disables Quiet Boot option.



Software and Service Introduction

4.1 Introduction

The mission of Advantech Embedded Software Services is to "enhance user quality of life with Advantech platforms and Microsoft® Windows® embedded technology." We equip Advantech platforms with Windows® embedded software products to more effectively support the embedded computing community. This eliminates the hassle of dealing with multiple vendors (hardware suppliers, system integrators, and embedded OS distributors) for specific projects. Our aim is to make Windows® embedded software solutions widely available to the embedded computing community.

4.2 Value-Added Software Services

Software API: An interface that defines the ways in which an application program may request services from libraries and/or operating systems. This software provides not only the underlying drivers required, but also a rich set of user-friendly, intelligent, and integrated interfaces that speed development, enhance security, and offer addon value for Advantech platforms. Furthermore, this software serves as a catalyst between developers and solutions, making Advantech embedded platforms easier and simpler to adopt and operate with customer applications.

4.2.1 Software API

4.2.1.1 Control

GPIO



SMBus



General purpose input/output is a flexible parallel interface that allows various custom connections. This interface also enables users to monitor the level of signal input or set the output status to switch the device on or off. Our API also provides programmable GPIO, enabling developers to dynamically set the GPIO input or output status.

SMBus is a system management bus defined by Intel Corporation in 1995. This interface is used in personal computers and servers for low-speed system management communications. The SMBus API allows developers to interface with an embedded system environment and transfer serial messages using SMBus protocols, facilitating multiple simultaneous device control.

4.2.1.2 Display

Brightness Control



Backlight



4.2.1.3 Monitor

Watchdog



Hardware Monitor



The Hardware Monitor API is a system health supervision API that inspects certain condition indices, such as fan speed, temperature, and voltage.

(system restart) after a certain number of seconds.

A watchdog timer is a device that performs a specific operation after a specified period of time when a malfunction occurs and the system cannot recover on its own. A watchdog timer can be programmed to perform a warm booting

The Brightness Control API allows developers to access

The Backlight API allows developers to control the backlight

embedded devices and easily control brightness.

(screen) in embedded devices.

4.2.1.4 Power Saving

CPU Speed



This feature uses Intel SpeedStep® Technology to reduce the system power consumption. The system automatically adjusts the CPU speed according to the system load.

System Throttling



This refers to a series of methods for reducing system power consumption by lowering the clock frequency. This API allows users to adjust the clock frequency from 87.5% to 12.5%.

4.2.2 Software Utility

BIOS Flash



The BIOS Flash utility allows customers to update the flash ROM BIOS version, or backup the current BIOS by copying the configuration from the flash chip to a file on the users' disk. The BIOS Flash utility also features a command line version and API for rapid implementation in customized applications.

Embedded Security ID



Embedded applications are the most important responsibilities for system integrators because they contain valuable intellectual property, design knowledge, and innovations, and are easily copied. This Embedded Security ID utility offers reliable security functions that allow users to secure application data within embedded BIOS.

Monitoring



The Monitoring API is a utility that allows users to monitor the system health indicators, such as voltage, CPU and system temperature, and fan speed. These system values are crucial. If critical errors occur and are not solved immediately, permanent damage to the device may result.



Chipset Software Installation Utility

5.1 **Before Installation**

Before installing the enhanced display drivers and utility software, please read the instructions provided in this chapter carefully. The drivers for AIMB-U233 are provided on the Advantech support website: http://support.advantech.com/Support/. This driver will guide and link users to the utilities and drivers required for Microsoft Windows-based systems. Software updates can be accessed from Microsoft* software service packs.



The files on the website are compressed. Do not attempt to install the drivers by copying the files manually. The Setup program provided must be used to install the drivers.

Please note, for most display drivers the relevant software application must be installed on the system before enhanced display drivers can be installed. In addition, for many of the installation procedures, user familiarity with both the relevant software applications and operating system commands is assumed. Thus, users are advised to review relevant operating system commands and pertinent sections of the application software user manual before attempting installation.

5.2 Introduction

The Intel[®] Chipset Software Installation (CSI) utility installs the Microsoft Windows INF files that specify the chipset component configuration on the OS. This is essential to enable the following features and functionality:

- Core PCI PnP services
- Serial ATA interface support
- USB support
- Identification of Intel[®] chipset components in the device manager



This utility is used for the following versions of Windows, and it has to be Note! installed before installing all the other drivers:

Windows 10 (64 bit)



Graphics Setup

6.1 Introduction

To benefit from the Intel® 8th Gen Core[™] i3-8145UE / i5-8365UE / i7-8665UE integrated graphics controller, users must install the graphics driver.

6.2 Windows 10



Before installing this driver, ensure the CSI utility is installed on the system. See Chapter 5 for information regarding installing the CSI utility.

Download the driver from website on your computer. Navigate to the "Graphics" folder and click "setup.exe" to complete the installation of the drivers for Windows 10.

Win 10(64bit) Driver for AIMB-U233

Solution :

Download File	Released Date	Download Site
AIMB-U233_Chipset_Win10(64bit).zip	2020-07-30	Primary Secondary
AIMB-U223_Graphic_Win10(64bit).zip	2020-07-30	Primary Secondary
AIMB-U223_Intel LAN_Win10(64bit).zip	2020-07-30	Primary Secondary
AIMB-U223_Intel ME_Win10(64bit).zip	2020-07-30	Primary Secondary
AIMB-U223_Audio_Win10(64bit).zip	2020-07-31	Primary Secondary
AIMB-U233_Intel RAID AHCI_Win10(64bit).zip	2020-08-04	Primary Secondary



LAN Configuration

7.1 Introduction

The AIMB-U233 system features 2 Gigabit Ethernet LANs via dedicated PCI Express x1 lanes (LAN1: Intel Jacksonville: I219LM GbE PHY; LAN2: Intel Springville: I211AT GbE).

7.2 Features

- Integrated 10/100/1000 Mbps transceiver
- Wake-on-LAN (WOL) support
- PCI Express X1 host interface

7.3 Installation



Before installing LAN drivers, ensure the CSI utility is installed on the system. See Chapter 5 for information regarding installing the CSI utility.

The Intel Jacksonville: I219LM GbE PHY and Intel Springville: I211AT GbE Gigabit integrated controllers support all major network operating systems. However, the installation procedure varies between systems. Please follow the driver setup procedure instructions specific to the operating system installed.

7.4 Windows 10 Driver Setup

Win 10(64bit) Driver for AIMB-U233

Download the driver from website on your computer. Navigate to the LAN drivers folder and click "setup.exe" to complete the installation of the drivers.

Download File	Released Date	Download Site
AIMB-U233_Chipset_Win10(64bit).zip	2020-07-30	Primary Second
AIMB-U223_Graphic_Win10(64bit).zip	2020-07-30	Primary Second
AIMB-U223_Intel LAN_Win10(64bit).zip	2020-07-30	Primary Second
AIMB-U223_Intel ME_Win10(64bit).zip	2020-07-30	Primary Second
AIMB-U223_Audio_Win10(64bit).zip	2020-07-31	Primary Second
AIMB-U233_Intel RAID AHCI_Win10(64bit).zip	2020-08-04	Primary Second



Pin Assignments

A.1 Pin Assignments

Connector and Header List:

	Description	Part Reference
1	SPI Pin Header	SPI1_CN1
2	ATX 12V power supply connector	ATX12V1
3	System Fan #1 connector	SYSFAN1
4	DC input Jack	DCIN1
5	IMVP8/9 PMBus KIT	JPMB1
6	HDMI #1	HDMI1
7	AT/ATX Mode selection	PSON1
8	LVDS VESA, JEIDA format selection pin header	JLVDS_VCON1
9	HDMI #2	HDMI2
10	VDD select for LVDS1 Panel	JLVDS1
11	Low Voltage Differential Signaling / EDP	LVDS_EDP1
12	Inverter power connector	INV1
13	HD Audio Interface (LINE-OUT)	AUDIO1
14	HD Audio Interface (MIC-IN)	AUDIO2
15	PWRBTN# / RESET# / HDD LED / PWR LED	JFP1
16	COM1 and COM2 Box Header	COM12
17	Serial ATA interface connector #1	SATA1
18	M.2 KEY-M connector	NGFF_M1
19	M.2 KEY-E connector	NGFF_E1
20	Serial ATA Power connector #1	SATAPWR1
21	Coin Battery wafer box	BAT1
22	Low pin count interface connector	LPC1
23	16-bits General Purpose I/O Pin Header	GPI01
24	COM3 and COM4 Box Header	COM34
25	USB2.0 Front panel Header	USB34
26	COMS Mode selection	JCMOS1
27	USB3.1 GEN2 Stack connector	USB12
28	Dual port RJ45 Connector	LAN1+LAN2
29	M.2 KEY-B connector	NGFF_B1
30	Nano SIM Card holder	SIM1
31	DDR4 SO-DIMM Socket CH-A	DIMMA1
32	CPU FAN #1 connector	CPUFAN1

A.1.1 SPI Pin Header (SPI1_CN1)



Pin	Signal	Pin	Signal	
1	SPI_CS0#	2	SPI_PWR	
3	SPI_MISO	4	NC	
5	NC	6	SPI_CLK	
7	GND	8	SPI_MOSI	

A.1.2 ATX 12V power supply connector (ATX12V1)



Pin	Signal
1	GND
2	GND
3	+12V
4	+12V

A.1.3 System Fan #1 connector (SYSFAN1)



Pin	Signal
1	GND
2	SYSTEM FAN1 VCC
3	SYSTEM FAN1 SPEED
4	SYSTEM FAN1 PWM
2 3 4	SYSTEM FAN1 SPEED

A.1.4 DC input Jack (DCIN1)



Pin	Signal	
1	VCC (Center)	
2	GND	

A.1.5 IMVP8/9 PMBus KIT (JPMB1)

	X	Ø
1		3

Pin	Signal	
1	Advantech Define	
2	Advantech Define	
3	Advantech Define	

A.1.6 HDMI #1 (HDMI1)



Pin	Signal	Pin	Signal
1	TMDS Data2+	2	GND
3	TMDS Data2-	4	TMDS Data1+
5	GND	6	TMDS Data1-
7	TMDS Data0+	8	GND
9	TMDS Data0-	10	TMDS Clock+
11	GND	12	TMDS Clock-
13	NC	14	NC
15	SCL	16	SDA
17	GND	18	+5V Power
19	Hot Plug Detect		
A.1.7 AT/ATX Mode selection (PSON1)



Pin	Signal	
1	AT	
2	+3.3V	
3	ATX	

A.1.8 LVDS VESA, JEIDA format selection pin header (JLVDS_VCON1)



Pin	Signal	
1	+3.3V	
2	Advantech define	
3	GND	

A.1.9 HDMI #2 (HDMI2)



Pin	Signal	Pin	Signal	
1	TMDS Data2+	2	GND	
3	TMDS Data2-	4	TMDS Data1+	
5	GND	6	TMDS Data1-	
7	TMDS Data0+	8	GND	
9	TMDS Data0-	10	TMDS Clock+	
11	GND	12	TMDS Clock-	
13	NC	14	NC	
15	SCL	16	SDA	
17	GND	18	+5V Power	
19	Hot Plug Detect			

A.1.10VDD select for LVDS1 Panel (JLVDS1)



Pin	Signal	Pin	Signal
1	NC	2	+5V
3	+12V	4	VDD
5	NC	6	+3.3V

A.1.11 Low Voltage Differential Signaling / EDP (LVDS_EDP1)

PIN1																					
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LVDS

Pin	Signal	Pin	Signal
1	VDD	2	VDD
3	LVDS DETECT#	4	GND
5	VDD	6	VDD
7	LVDS_OD0-	8	LVDS_ED0-
9	LVDS_OD0+	10	LVDS_ED0+
11	GND	12	GND
13	LVDS_OD1-	14	LVDS_ED1-
15	LVDS_OD1+	16	LVDS_ED1+
17	GND	18	GND
19	LVDS_OD2-	20	LVDS_ED2-
21	LVDS_OD2+	22	LVDS_ED2+
23	GND	24	GND
25	LVDS_OCK-	26	LVDS_ECK-
27	LVDS_OCK+	28	LVDS_ECK+
29	GND	30	GND
31	N.C	32	N.C
33	GND	34	GND
35	LVDS_OD3-	36	LVDS_ED3-
37	LVDS_OD3+	38	LVDS_ED3+
39	LVDS ENBKL	40	LVDS VCON

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EDP

Pin	Signal	Pin	Signal
1	VDD	2	VDD
3	LVDS DETECT#	4	GND
5	VDD	6	VDD
7	EDP_TX2-	8	N.C
9	EDP_TX2+	10	N.C
11	GND	12	GND
13	EDP_TX1-	14	N.C
15	EDP_TX1+	16	N.C
17	GND	18	GND
19	EDP_TX0-	20	N.C
21	EDP_TX0+	22	N.C
23	GND	24	GND
25	EDP_TX3-	26	N.C
27	EDP_TX3+	28	N.C
29	GND	30	GND
31	EDP_AUX+	32	EDP_AUX-
33	GND	34	EDP_HPD
35	N.C	36	N.C
37	N.C	38	N.C
39	N.C	40	GND

A.1.12 Inverter power connector (INV1)

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Pin	Signal
1	+12V
2	GND
3	BKL EN
4	BKL CTRL
5	+5V

A.1.13HD Audio Interface (LINE-OUT) (AUDIO1)



Pin	Signal	
1	LINE OUT - L	
2	LINE OUT - R	

A.1.14HD Audio Interface (MIC-IN) (AUDIO2)



Pin	Signal	
1	MIC IN - L	
2	MIC IN - R	
3	GND	
4	Jack Detection	

A.1.15PWRBTN# / RESET# / HDD LED / PWR LED Header (JFP1)



Pin	Signal	Pin	Signal
1	HDD LED+	2	PWRBTN+
3	HDD LED-	4	PWRBTN-
5	PWR LED+	6	RESET+
7	PWR LED-	8	RESET-

Appendix A Pin Assignments

A.1.16COM1 and COM2 Box Header (COM12)



Pin	Signal	Pin	Signal
1	DCD# [1]	2	DSR# [1]
3	RXD [1]	4	RST# [1]
5	TXD [1]	6	CTS# [1]
7	DTR# [1]	8	RI# [1]
9	GND	10	GND
11	DCD# [2]	12	DSR# [2]
13	RXD [2]	14	RST# [2]
15	TXD [2]	16	CTS# [2]
17	DTR# [2]	18	RI# [2]
19	GND	20	GND

A.1.17 Serial ATA interface connector #1 (SATA1)



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

A.1.18KEY-M connector (NGFF_M1)



Pin	Signal	Pin	Signal	
1	GND	2	+3.3V	
3	GND	4	+3.3V	
5	PERn3	6	NC	
7	PERp3	8	NC	
9	GND	10	NC	
11	PETn3	12	+3.3V	
13	PETp3	14	+3.3V	
15	GND	16	+3.3V	
17	PERn2	18	+3.3V	
19	PERp2	20	NC	
21	GND	22	NC	
23	PETn2	24	NC	
25	PETp2	26	NC	
27	GND	28	NC	
29	PERn1	30	NC	
31	PERp1	32	NC	
33	GND	34	NC	
35	PETn1	36	NC	
37	PETp1	38	DEVSLP	
39	GND	40	NC	
41	PERn0 / SATA-B+	42	NC	
43	PERp0 / SATA-B-	44	NC	
45	GND	46	NC	
47	PETn0 / SATA-A-	48	NC	
49	PETp0 / SATA-A+	50	PERST#	
51	GND	52	CLKREQ#	
53	REFCLKn	54	PEWAKE#	
55	REFCLKp	56	NC	
57	GND	58	NC	
59	Connector Key	60	Connector Key	
61	Connector Key	62	Connector Key	
63	Connector Key	64	Connector Key	
65	Connector Key	66	Connector Key	
67	NC	68	SUSCLK	
69	PEDET	70	+3.3V	
71	GND	72	+3.3V	
73	GND	74	+3.3V	
75	GND			

Appendix A Pin Assignments

A.1.19M.2 KEY-E connector (NGFF_E1)



Pin	Signal	Pin	Signal
1	GND	2	+3.3V
3	USB_D+	4	+3.3V
5	USB_D-	6	WiFi_LED#
7	GND	8	I2S SCLK
9	SDIO CLK	10	I2S BCLK
11	SDIO CMD	12	I2S SDO
13	SDIO DATA0	14	I2S SDI
15	SDIO DATA1	16	BT_LED#
17	SDIO DATA2	18	GND
19	SDIO DATA3	20	UART WAKE#
21	SDIO WAKE#	22	UART RXD
23	SDIO RESET#	24	Connector Key
25	Connector Key	26	Connector Key
27	Connector Key	28	Connector Key
29	Connector Key	30	Connector Key
31	Connector Key	32	UART TXD
33	GND	34	UART CTS
35	PETp0	36	UART RTS
37	PETn0	38	CL_RST#
39	GND	40	CL_DAT
41	PERp0	42	CL_CLK
43	PERn0	44	COEX3
45	GND	46	COEX2
47	REFCLKp0	48	COEX1
49	REFCLKn0	50	SUSCLK
51	GND	52	PERST0#
53	CLKREQ0#	54	W_DISABLE2#
55	PEWAKE0#	56	W_DISABLE1#
57	GND	58	NC
59	PETp1	60	NC
61	PETn1	62	NC
63	GND	64	RESERVED
65	PERp1	66	PERST1#
67	PERn1	68	CLKREQ1#
69	GND	70	PEWAKE1#
71	REFCLKp1	72	+3.3V
73	REFCLKn1	74	+3.3V
75	GND		

A.1.20 Serial ATA Power connector #1 (SATAPWR1)



Pin	Signal	
1	+5V	
2	GND	
3	GND	
4	+12V	

A.1.21 Coin Battery wafer box (BAT1)



Pin	Signal	
1	+VBAT	
2	GND	

A.1.22 Low pin count interface connector (LPC1)



Pin	Signal	Pin	Signal	
1	LPC CLK	2	LPC AD1	
3	LPC RESET#	4	LPC AD0	
5	LPC FRAME#	6	+3.3V	
7	LPC AD3	8	GND	
9	LPC AD2	10	NC	

A.1.2316-bits General Purpose I/O Pin Header (GPIO1)

2			4	A	A	A	A	A	18 A
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Pin	Signal	Pin	Signal
1	GPIO0	2	GPIO8
3	GPIO1	4	GPIO9
5	GPIO2	6	GPIO10
7	GPIO3	8	GPIO11
9	GPIO4	10	GPIO12
11	GPIO5	12	GPIO13
13	GPIO6	14	GPIO14
15	GPI07	16	GPIO15
17	+5V AUX	18	GND

A.1.24 COM3 and COM4 Box Header (COM34)



Pin	Signal	Pin	Signal
1	DCD# [3]	2	DSR# [3]
3	RXD [3]	4	RST# [3]
5	TXD [3]	6	CTS# [3]
7	DTR# [3]	8	RI# [3]
9	GND	10	GND
11	DCD# [4]	12	DSR# [4]
13	RXD [4]	14	RST# [4]
15	TXD [4]	16	CTS# [4]
17	DTR# [4]	18	RI# [4]
19	GND	20	GND

A.1.25USB2.0 Front panel Header (USB34)

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	1				9

Pin	Signal	Pin	Signal
1	VBUS #3	2	VBUS #4
3	D- [3]	4	D- [4]
5	D+ [3]	6	D+ [4]
7	GND	8	GND
		10	GND

A.1.26COMS Mode selection (JCMOS1)

D	5	×	
1	1	3	

Pin	Signal
1	VBAT
2	RTC
3	GND

A.1.27 USB3.1 GEN2 Stack connector (USB12)



Pin	Signal	Pin	Signal	
1	VBUS #1	2	D- [1]	
3	D+ [1]	4	GND	
5	RX- [1]	6	RX+ [1]	
7	GND	8	TX- [1]	
9	TX+ [1]	10	VBUS #2	
11	D- [2]	12	D+ [2]	
13	GND	14	RX- [2]	
15	RX+ [2]	16	GND	
17	TX- [2]	18	TX+ [2]	

A.1.28 Dual port RJ45 Connector (LAN1+LAN2)



Pin	Signal	
C1	MDI0+	
C2	MDI0-	
C3	MDI1+	
C4	MDI1-	
C5	MDI2+	
C6	MDI2-	
C7	MDI3+	
C8	MDI3-	

A.1.29M.2 KEY-B (NGFF_B1)



Pin	Signal	Pin	Signal	
1	CONFIG_3	2	+3.3V	
3	GND	4	+3.3V	
5	GND	6	FULL_CARD_POWER_OFF#	
7	USB_D+	8	W_DISABLE1#	
9	USB_D-	10	LED1#	
11	GND	12	Connector Key	
13	Connector Key	14	Connector Key	
15	Connector Key	16	Connector Key	
17	Connector Key	18	Connector Key	
19	Connector Key	20	NC	
21	CONFIG_0	22	NC	
23	WAKE_ON_WWAN#	24	NC	
25	DPR	26	W_DISABLE2#	
27	GND	28	NC	
29	PERn1 / USB3.1-Rx-	30	UIM - RESET	
31	PERp1 / USB3.1-Rx+	32	UIM - CLK	
33	GND		UIM - DATA	
35	PETn1 / USB3.1-Tx-	/ USB3.1-Tx- 36 UIM - PWR		
37	PETp1 / USB3.1-Tx+	38	NC	
39	GND	40	NC	
41	PERn0 / SATA-RX+	42	NC	
43	PERp0 / SATA-RX-	44	NC	
45	GND	46	NC	
47	PETn0 / SATA-TX-	48	NC	
49	PETp0 / SATA-TX+	50	PERST#	
51	GND	52	CLKREQ#	
53	REFCLKn	54	PEWAKE#	
55	REFCLKp	56	NC	
57	GND	58	NC	
59	NC	60	NC	
61	NC	62	NC	
63	NC	64	NC	
65	NC	66	NC	
67	RESET#	68	SUSCLK(32kHz)	

69	CONFIG_1	70	+3.3V	
71	GND	72	+3.3V	
73	GND	74	+3.3V	
75	CONFIG_2			

A.1.30 SIM Card holder (SIM1)



Pin	Signal
C1	SIM PWR
C2	SIM RESET
C3	SIM CLK
C5	GND
C3 C5 C6	SIM VPP
C7	SIM DATA

A.1.31 DDR4 SO-DIMM Socket CH-A (DIMMA1)

Please see JEDEC STANDARD.

A.1.32 CPU FAN #1 connector (CPUFAN1)



1 GND 2 CPU FAN VCC 3 CPU FAN SPEED 4 CPU FAN PWM	n S	Signal
3 CPU FAN SPEED	(GND
	(CPU FAN VCC
4 CPU FAN PWM	(CPU FAN SPEED
	(CPU FAN PWM



www.advantech.com

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All product specifications are subject to change without notice.

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