

QBi-8665A (MWHLUDH)/ QBi-8365A (MWHLUEH)

10" x 10" Embedded Compact Board
User's Manual 1st Ed

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Packing List

Before setting up your product, please make sure the following items have been shipped:

Item	Quantity
QBi-8665A (MWHLUDH)/ QBi-8365A (MWHLUEH)	1
SATA power cable	1

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

About this Document

This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the GIGAIPC.com for the latest version of this document.

Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references

1. All cautions and warnings on the device should be noted.
2. Make sure the power source matches the power rating of the device.
3. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
4. Always completely disconnect the power before working on the system's hardware.
5. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
6. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
7. Always disconnect this device from any AC supply before cleaning.
8. While cleaning, use a damp cloth instead of liquid or spray detergents.
9. Make sure the device is installed near a power outlet and is easily accessible.
10. Keep this device away from humidity.
11. Place the device on a solid surface during installation to prevent falls
12. Do not cover the openings on the device to ensure optimal heat dissipation.
13. Watch out for high temperatures when the system is running.

14. Do not touch the heat sink or heat spreader when the system is running
15. Never pour any liquid into the openings. This could cause fire or electric shock.
16. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.
17. If any of the following situations arises, please the contact our service personnel:
 - i. Damaged power cord or plug
 - ii. Liquid intrusion to the device
 - iii. Exposure to moisture
 - iv. Device is not working as expected or in a manner as described in this manual
 - v. The device is dropped or damaged
 - vi. Any obvious signs of damage displayed on the device
- 18. DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.**

FCC Statement

Warning!



This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

Caution:

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

Attention:

Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte. Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur. Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage.

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量
GIGAIPC Main Board/ Daughter Board/ Backplane

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板 及其电子组件	○	○	○	○	○	○
外部信号 连接器及线材	○	○	○	○	○	○
<p>O:表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T 11363-2006 标准规定的限量要求以下。</p> <p>X:表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T 11363-2006 标准规定的限量要求。</p> <p>备注:此产品所标示之环保使用期限,系指在一般正常使用状况下。</p>						

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products
GIGAIPC Main Board/ Daughter Board/ Backplane

Component	Poisonous or Hazardous Substances or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCB & Other Components	O	O	O	O	O	
Wires & Connectors for External Connections	O	O	O	O	O	O
<p>O : The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement. X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement. Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only</p>						

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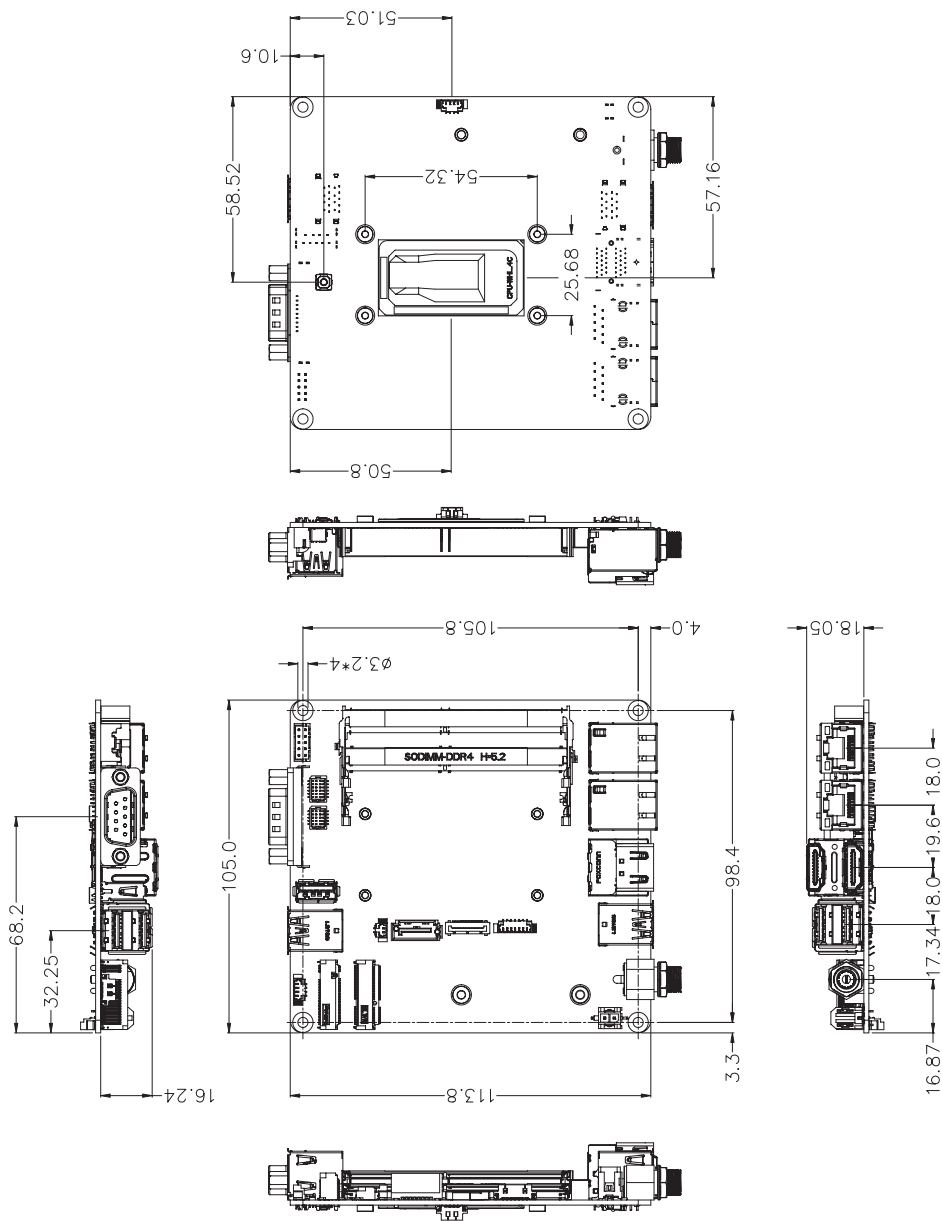
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Chapter 1

Chapter 1 - Product Specifications
QBi-8665A(MWHLUDH)/ QBi-8365A(MWHLUEH)



1.1 Specifications- QBi-8665A, QBi-8365A

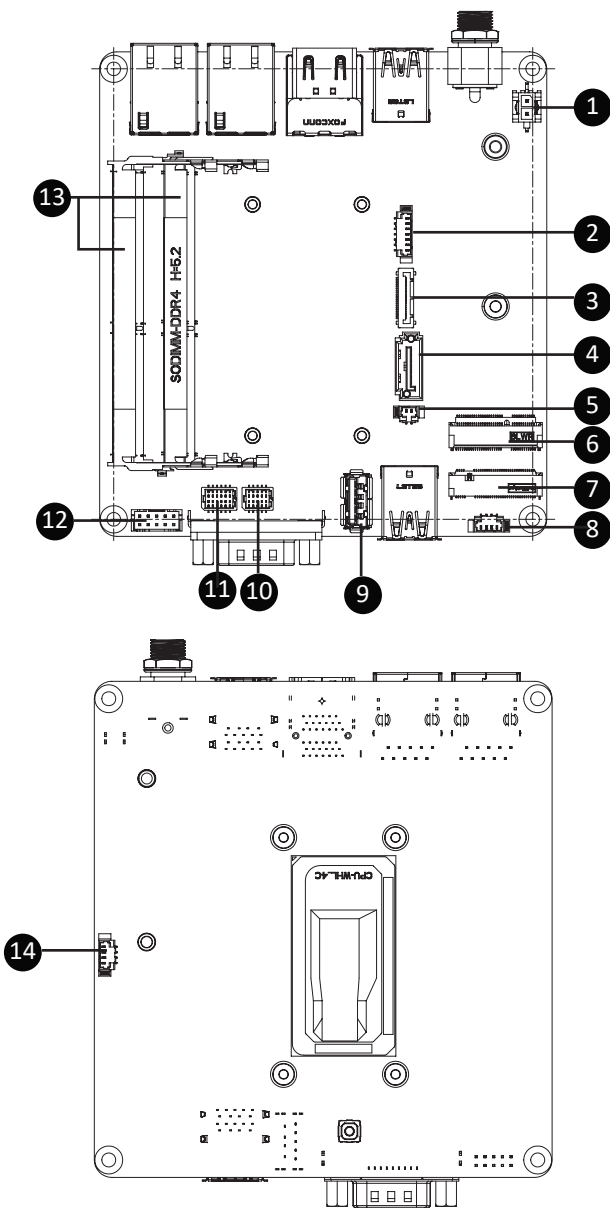
Motherboard	QBi-8665A	QBi-8365A
Form Factor	Embedded Compact Board 105W x 110D mm	
CPU	Intel® Core™ i7-8665UE Processor, 14nm, 4 cores, 8 threads, up to 4.40 GHz vPro support, TDP 15W 8 MB Intel® Smart Cache	Intel® Core™ i5-8365UE Processor, 14nm, 4 cores, 8 threads, up to 4.1 GHz vPro support, TDP 15W 6 MB Intel® Smart Cache
Socket	1 x FCBGA1528	
Chipset	—	
Memory	2 x DDR4 SO-DIMM sockets, Max. Capacity 32 GB Support Dual channel DDR4 2400 MHz memory modules	
Ethernet	2 x GbE LAN Ports (Intel® I219LM and Realtek® RTL8111HS)	
Video	Integrated Graphics Processor - Intel® UHD Graphics 620 : 2 x HDMI 1.4 ports, supporting a maximum resolution of 4096x2304 @24Hz 1 x eDP port, supporting a maximum resolution of 4096x2304 @ 60Hz (3 independent display outputs)	
Audio	Realtek® Audio Codec	
Storage	1 x SATA 6Gb/s Port	
Raid	RAID 0/1	
Expansion Slots	1 x 2280 M.2 M-Key (PCIe x4, SATA 6Gb/s) 1 x 2230 M.2 E-Key	
Internal I/O	1 x 2-pin power connector 1 x SATA power/eDP power header 1 x CPU fan header 1 x Front panel header 1 x Front panel audio header 1 x USB 2.0 header 1 x Vertical USB 3.2 Gen 1	

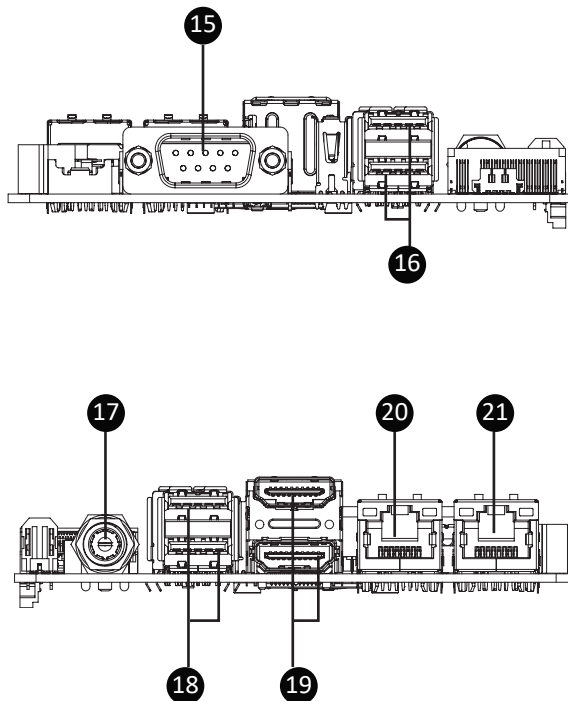
Motherboard	QBi-8665A	QBi-8365A
Front IO	2 x USB 3.2 Gen 2x1 1 x Power button 1 x COM Port (RS-232/422/485)	
Rear IO	2 x HDMI 2 x RJ45 LAN Ports 2 x USB 3.2 Gen 2x1 1 x Screw type DC Jack (+9V~36VDC)	
Side IO	—	
TPM	—	
OS Compatibility	Windows 10 (x64)	
Operating Properties	Operating temperature: 0°C to 60°C Operating humidity: 0-90% (non-condensing) Non-operating temperature: -40°C to 85°C Non-operating humidity: 0%-95% (non-condensing)	
Packaging Content	Carton size: 465 x 351 x 217 (mm) Packing Capacity: 10pcs Including: SATA Power cable 150mm x 1 (25CRI-150621-K1R)	
Order Information	Motherboard : 9MWHLUDHMR-SI	Motherboard : 9MWHLUEHMR-SI

Chapter 2

Chapter 2 – Hardware Information

2.1 Jumpers and Connectors



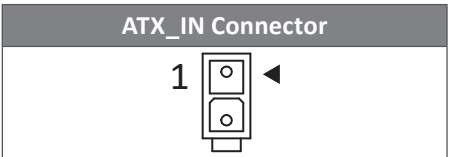
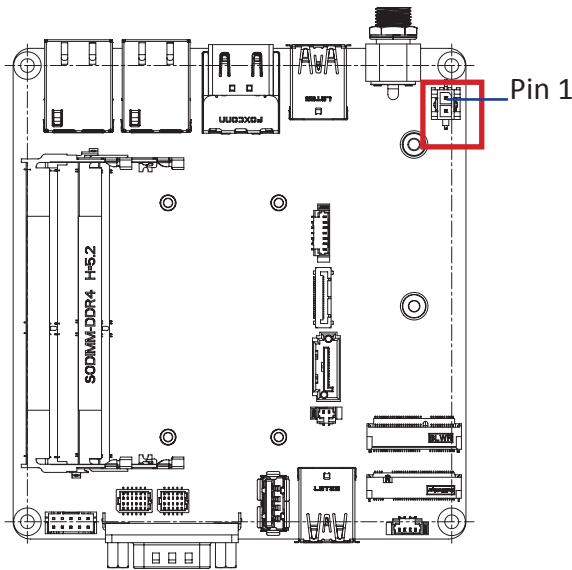


No	Code	Description
1	ATX_IN	ATX IN connector
2	SATA_PWR	1 x SATA power / eDP power header
3	EDP	Embedded Display Port Connector
4	SATA0	SATA 6.0 Gb/s Connector
5	BATTERY	Battery Cable Connector
6	M2E	E-key, Supports NGFF-2230 (WiFi/BT)
7	M2M	M-key, SATA 6.0 Gb/s, PCIe x4, Supports NGFF-2280 card

No	Code	Description
8	F_USB2_1	USB 2.0 Header
9	USB3_1	Vertical USB 3.2 Gen 1 connector
10	LPC_CN	LPC header
11	F_Panel	Front panel header
12	FP_AUDIO	Front panel audio header
13	SODIMM1 SODIMM2	DDR4 SO-DIMM Slot
14	CPU_FAN	CPU FAN Connector
15	COM	Serial port connector (RS-232/422/485)
16	FUSB31_1	Front USB 3.2 Gen 2x1 Port x 2
17	DC_IN	Screw type DC Jack
18	USB31_1	Front USB 3.2 Gen 2x1 Port x 2
19	HDMI_21	HDMI Port
20	LAN1	GbE LAN Port
21	LAN2	GbE LAN Port

2.2.1 ATX_IN (ATX IN Connector)

1

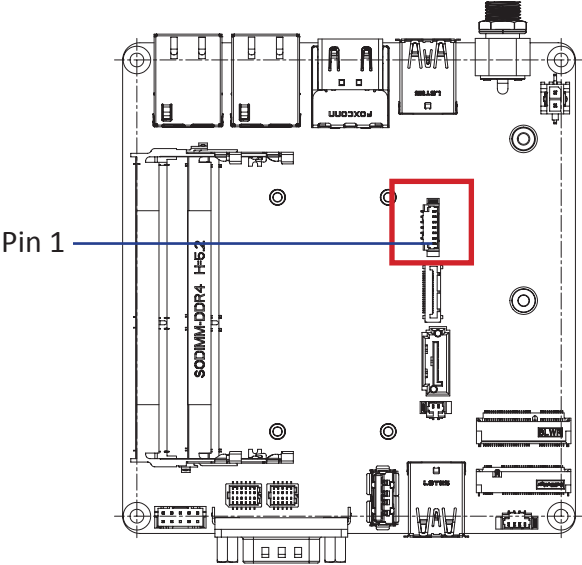


Connector PN	Vendor
99-01740-B004-A	TCONN

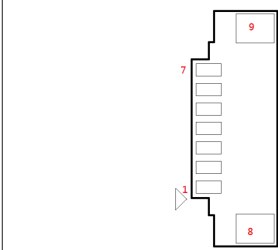
Pin No.	Definition
1	GND
2	DC_IN
G1	GND
G2	GND

2.2.2 SATA_PWR (SATA power / eDP power header)

2



SATA power / eDP power header



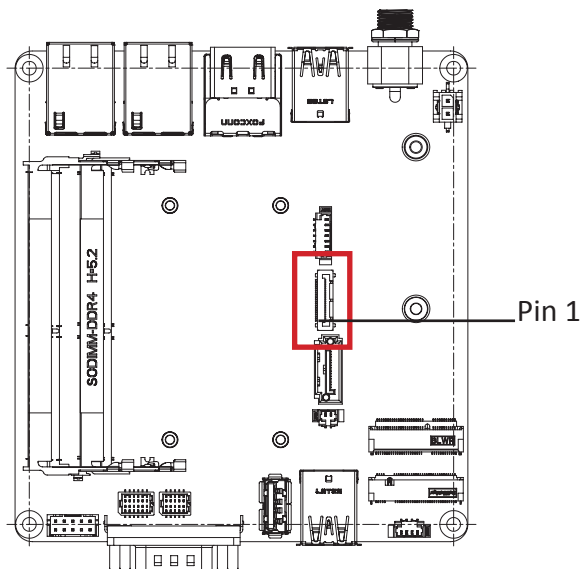
Pin No.	Definition
1	5V
2	5V
3	3V
4	GND
5	GND
6	12V
7	12V
8	GND
9	GND

Connector PN	Vendor
85205-0770N	ACES
A1250WV-S-07PC	JOINT-TECH

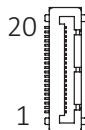
Note: *The header will automatically detect its eDP or SATA power function. Please make sure eDP cable PIN 16 must connect to GND.

2.2.3 EDP (Embedded Display Port Connector)

3



Embedded Display Port connector



Pin No.	Definition
17	EDP_HP
18	EDP_BKLTEN
19	EDP_VDDEN
20	EDP_BKLCTL

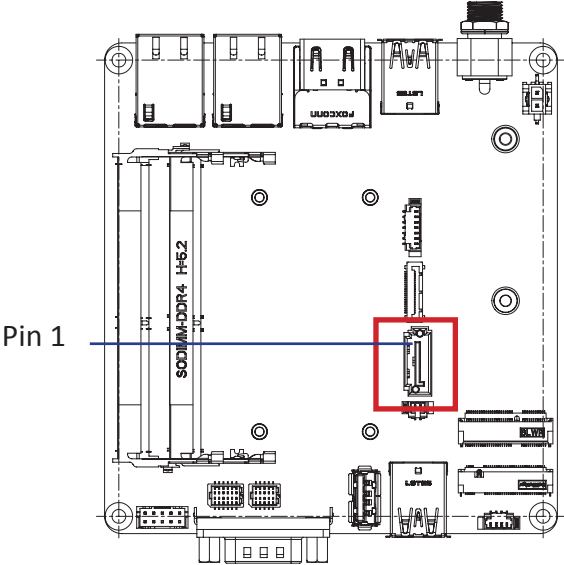
Pin No.	Definition
1	GND
2	EDP_TX0-
3	EDP_TX0+
4	GND
5	EDP_TX1-
6	EDP_TX1+
7	GND
8	EDP_TX2-
9	EDP_TX2+
10	GND
11	EDP_TX3-
12	EDP_TX3+
13	GND
14	EDP_AUX-
15	EDP_AUX+
16	GND


Connector PN	Vendor
115B20-100020-G4-R	STARCONN
CNTH252B2012	CONNECTER

Note: *Please make sure eDP cable PIN 16 must connect to GND.

2.2.4 SATA0 (SATA 6.0 Gb/s connector)

4



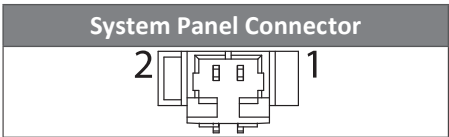
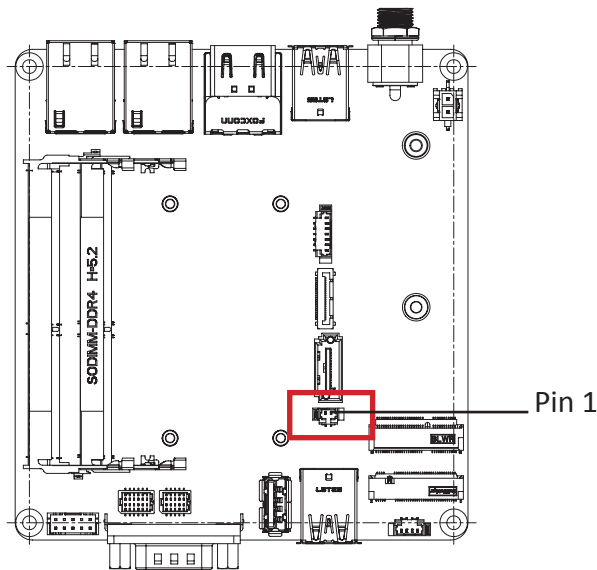
SATA 6.0 Gb/s connector	
	1 7

Connector PN	Vendor
WATF-07DBLBA1UW	WINWIN

Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

2.2.5 BATTERY (Battery connector)

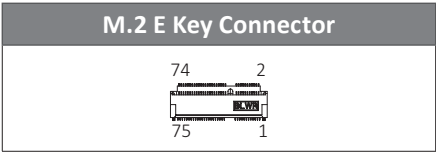
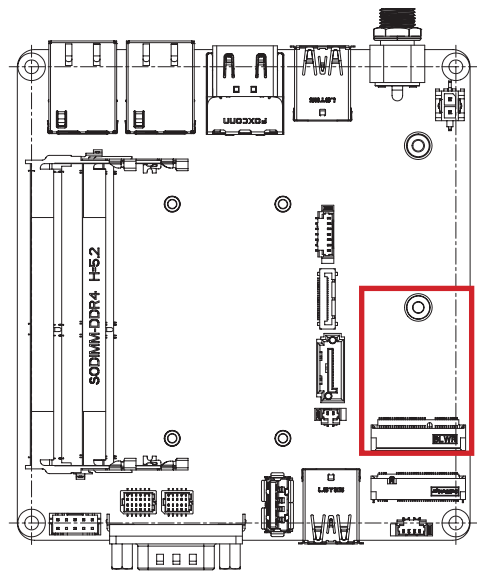
5



Pin No.	Definition
1	3.3V RTC
2	GND

2.2.6 M2E (E-key, Supports NGFF-2230 (WiFi/BT) Slot)

6



Pin No.	Definition	Pin No.	Definition
1	GND	2	3V
3	USB_D+	4	3V
5	USB_D-	6	NC
7	GND	8	NC
9	NC	10	NC
11	NC	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	GND
19	NC	20	BT_WAKE
21	NC	22	NC
23	NC		

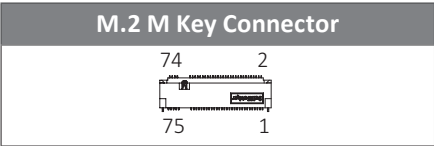
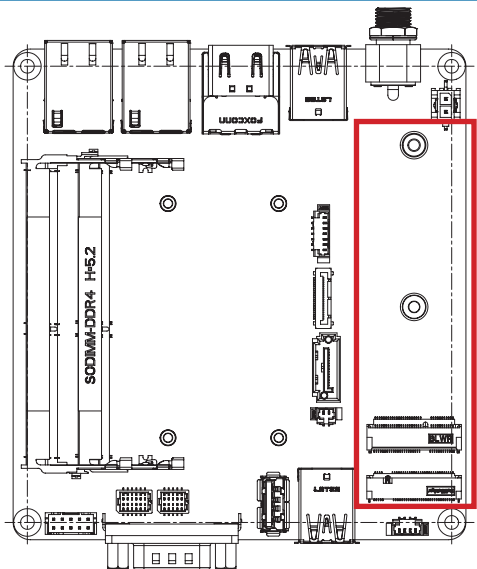
Pin No.	Definition	Pin No.	Definition
33	GND	32	NC
35	WLAN_TXP	34	NC
37	WLAN_TXN	36	NC
39	GND	38	CL_RST#

41	WLAN_RXP	40	CL_DATA
43	WLAN_RXN	42	CL_CLK
45	GND	44	NC
47	CLK_DP	46	NC
49	CLK_DN	48	NC
51	GND	50	SUSCLK
53	CLK_REQ	52	PLT_RST#
55	PCIE_WAKE	54	BT_Disable#
57	GND	56	WIFI_Disable#
59	NC	58	NC
61	NC	60	NC
63	GND	62	NC
65	NC	64	NC
67	NC	66	NC
69	GND	68	NC
71	NC	70	NC
73	NC	72	3V
75	GND	74	3V

Connector PN	Vendor
80152-4221	BELLWETHER

2.2.7 M2M (M-key, Supports NGFF-2280 (PCIe x4, SATA 6Gb/s)

7



Pin No.	Definition	Pin No.	Definition
1	GND	2	3.3V
3	GND	4	3.3V
5	NC	6	NC
7	NC	8	NC
9	GND	10	M2_LED
11	NC	12	3.3V
13	NC	14	3.3V
15	GND	16	3.3V
17	NC	18	3.3V
19	NC	20	NC
21	GND	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	PCI_E_RXN	30	NC
31	PCI_E_RXP	32	NC
33	GND	34	NC

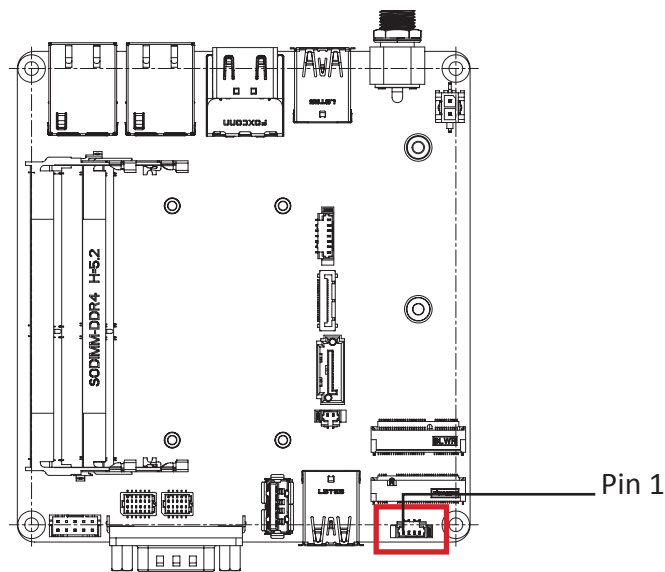
Pin No.	Definition	Pin No.	Definition
35	PCI_E_TXN	36	NC
37	PCI_E_TXP	38	DEVSLP
39	GND	40	SMB Clock
41	SATA_RXP	42	SMB DATA
43	SATA_RXN	44	SMB ALERT
45	GND	46	NC
47	SATA_TXN	48	NC
49	SATA_TXP	50	PLT_RST
51	GND	52	CK_REQ
53	CLK_N	54	PCI_E_WAKE#
55	CLK_P	56	NC
57	GND	58	NC

Pin No.	Definition	Pin No.	Definition
67	NC	68	SUSCLK
69	M2_SSD_Detect	70	3.3V
71	GND	72	3.3V
73	GND	74	3.3V
75	GND		

Connector PN	Vendor
80159-8521	BELLWETHER


2.2.8 F_USB2_1 (USB 2.0 Header)

8



USB 2.0 Header

1 2 3 4



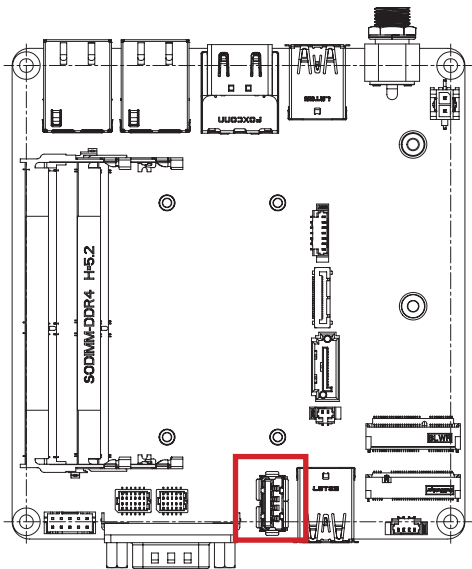
F_USB2.0

Pin No.	Definition
1	VCC
2	D- (USBN)
3	D+ (USBP)
4	GND

Connector PN	Vendor
A1250WV-S-04PNLBT1T00L	JOINT-TECH
50273-0047N-001	ACES

2.2.9 USB3_1 (Vertical USB 3.2 Gen 1 connector)

9



Vertical USB 3.2 Gen 1 connector



Connector PN

ABA-USB-126-P01

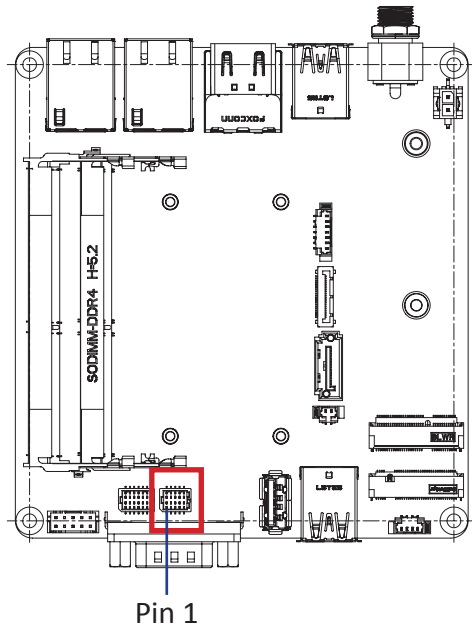
Vendor

LOTES

Pin No.	Definition	Pin No.	Definition
1	5V	10	5V
2	USB_D-	11	USB_D-
3	USB_D+	12	USB_D+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+

2.2.10 LPC_CN (LPC Header)

10



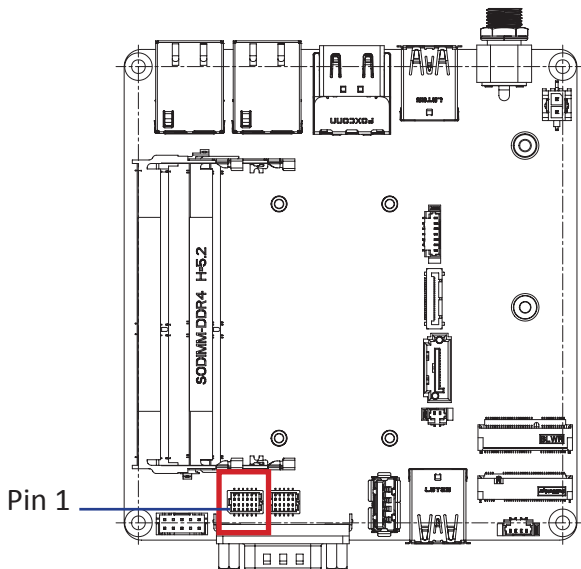
LPC Header	

Connector PN	Vendor
87216-1004-06	ACES

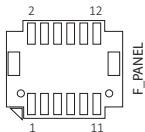
Pin No.	Definition
1	CK_LPC1_80H
2	GND
3	LFRAME#
4	LAD0
5	RLT_RST_80H#
6	LAD1
7	LAD3
8	LAD2
9	3.3V
10	SERIRQ

2.2.11 F_PANEL (Front panel Connector)

11



Front Panel Connector



Connector PN

87216-1206-06

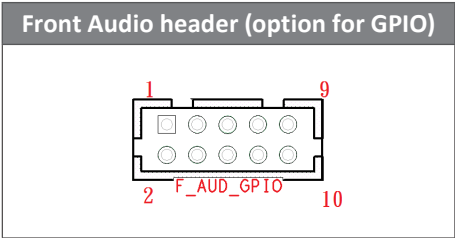
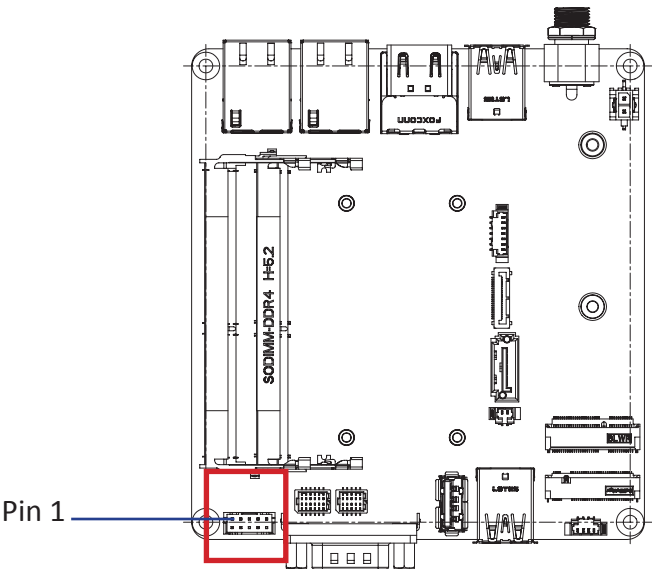
Vendor

ACES

Pin No.	Definition
1	SATA_LED_P (3.3V)
2	MPD+
3	GND
4	MPD-
5	GND
6	Panshw_D
7	PMU_RSTBTN_N_D
8	GND
9	5V
10	3.3V
11	5V
12	NC

2.2.12 FP_AUDIO (Front panel audio header)

12

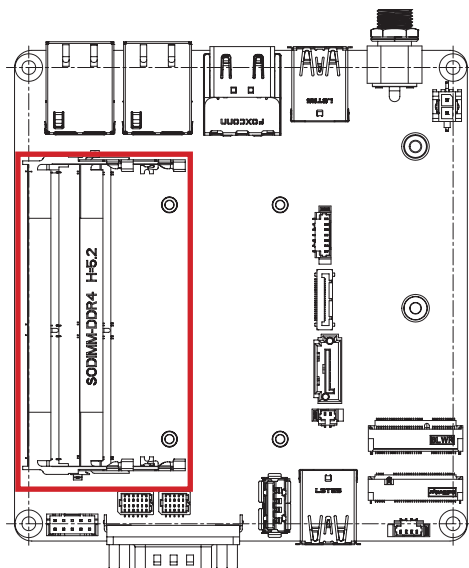


Connector PN	Vendor
725-81-10TW00	PINREX
A2004WV-2X05P46	JOINT-TECH

Pin No.	Definition	Pin No.	Definition
1	F_MIC1_L	2	AUD_AGND
3	F_MIC1_R	4	F_AUDIO_DET_C
5	F_HP_R	6	F_MIC_JD
7	FAUDIO_JD_C	8	NC
9	F_HP_L	10	FAUDIO_10

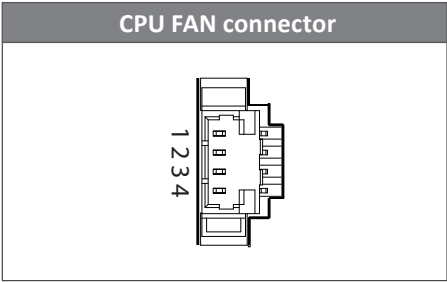
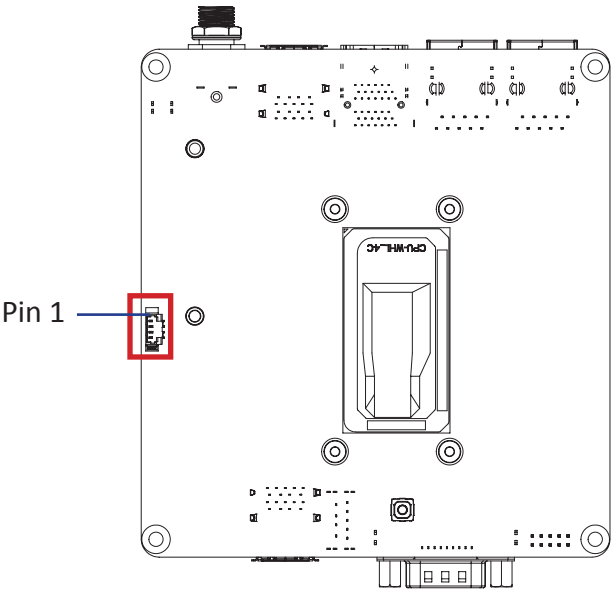
2.2.13 SODIMM1, SODIMM2 (DDR4 SO-DIMM Slot)

13



2.2.14 CPU FAN (CPU FAN connector)

14

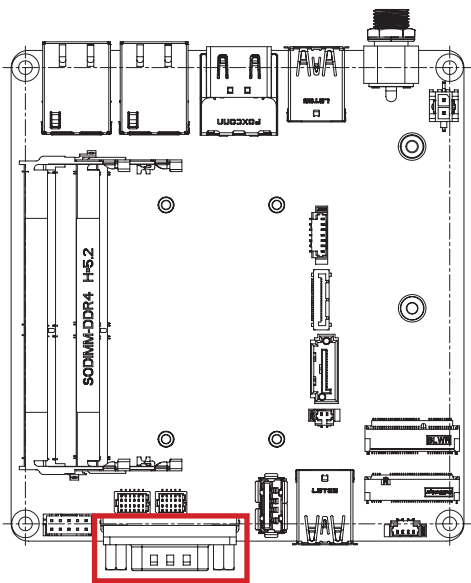


Connector PN	Vendor
85205-0470N	ACES
A1250WV-S-04PC	JOINT-TECH

Pin No.	Definition
1	GND
2	+5V
3	TACH_PWRFAN1
4	+5V

2.2.15 COM (Serial port connector, RS-232/422/485)

15



Serial port Connector

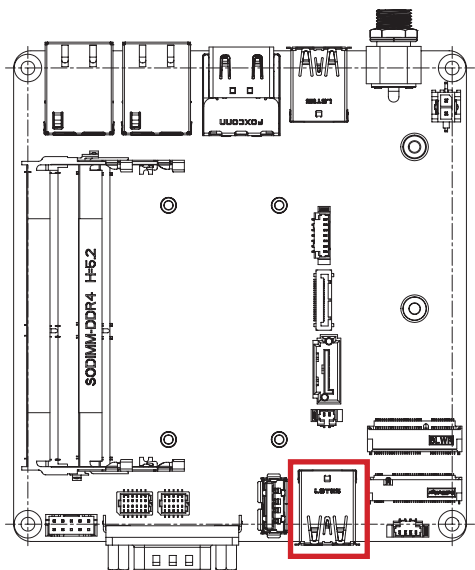
A detailed diagram of the serial port connector, showing a 9-pin D-sub connector. Pin 1 is indicated at the top and pin 6 at the bottom.

Connector PN	Vendor
SM41D1P1122N33N1	FENYING

Pin No.	RS-232	RS-422/485 Full Duplex	RS-485 Half Duplex
1	DCD	TX-	Data-
2	RXD	TX+	Data+
3	TXD	RX+	—
4	DTR	RX-	—
5	GND		
6	DSR	—	—
7	RTS	—	—
8	CTS	—	—
9	RI	—	—

2.2.16 FUSB31_1 (Front USB 3.2 Gen 2x1 connector)

16



USB 3.2 Gen 2x1 connector



Connector PN

UAA111C-841R1-4H

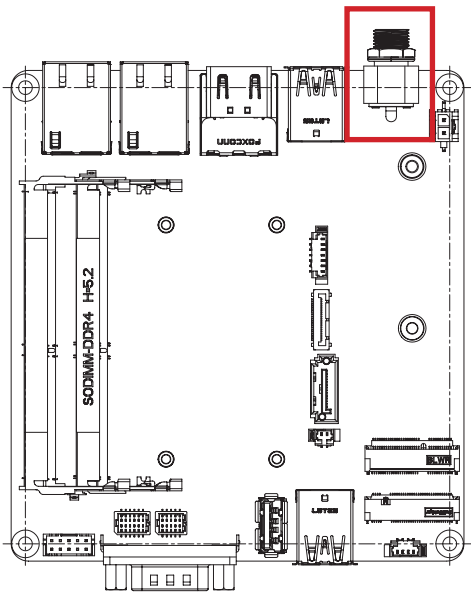
Vendor

FOXCONN

Pin No.	Definition	Pin No.	Definition
1	5V	10	5V
2	USB_D-	11	USB_D-
3	USB_D+	12	USB_D+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+

2.2.17 DC_IN (Screw type DC Jack connector)

17



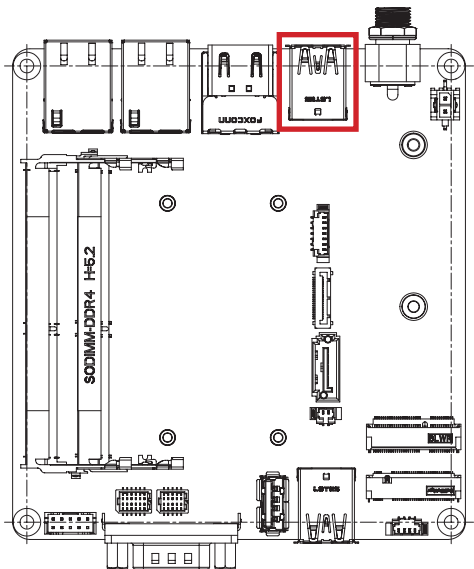
Screw Type DC Jack Connector

A detailed close-up diagram of the screw-type DC jack connector. It shows a hexagonal base with a central screw and two mounting tabs at the bottom.

Connector PN	Vendor
655-360-000	SHEN-MING

2.2.18 USB31_1 (Front USB 3.2 Gen 2x1 connector)

18



USB 3.2 Gen 2x1 connector



Connector PN

UAA111C-841R1-4H

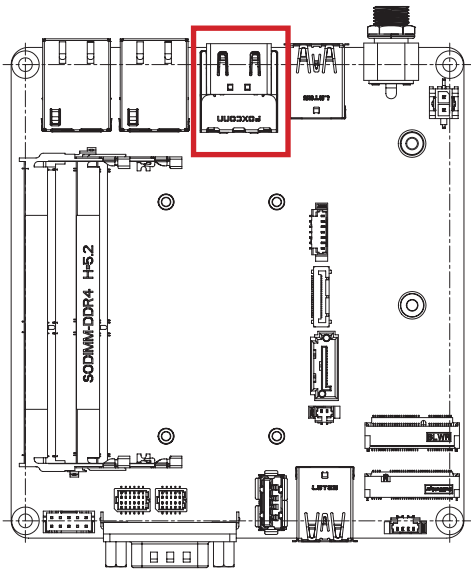
Vendor

FOXCONN

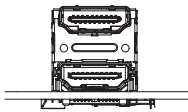
Pin No.	Definition	Pin No.	Definition
1	5V	10	5V
2	USB_D-	11	USB_D-
3	USB_D+	12	USB_D+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+

2.2.19 HDMI_21 (HDMI connector)

19



HDMI Connector



Connector PN

QJ11191-DFB1-4F

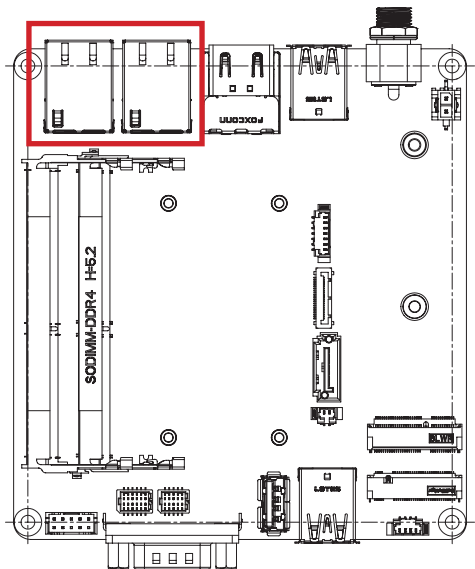
Vendor

FOXCONN

Pin No.	Definition	Pin No.	Definition
1	HDMI_D2+	13	NC
2	GND	14	NC
3	HDMI_D2-	15	HDMI_SCL
4	HDMI_D1+	16	HDMI_SDA
5	GND	17	GND
6	HDMI_D1-	18	5V
7	HDMI_D0+	19	HDMI_HPD
8	GND		
9	HDMI_D0-		
10	HDMI_CLK+		
11	GND		
12	HDMI_CLK-		

2.2.20 LAN1, LAN2 (GbE LAN port connector)

20 21



LAN Connector

81

Link /
Activity LED

Connection/
Speed LED

Pin No.	Definition
1	TX+ _D1
2	TX- _D1
3	RX+ _D2
4	BI+ _D3
5	BI- _D3
6	RX- _D2
7	BI+ _D4
8	BI- _D4

State	Description
Orange On	1Gbps data rate
Green On	100Mbps data rate
Off	10Mbps data rate

Connector PN	Vendor
RT7-GB-0003	UDE

www.gigaipc.com

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Chapter 3

Chapter 3 – BIOS

3.1 Introduction

BIOS (Basic input/output system) provides hardware detailed information and boot-up options, which include firmware to control, set-up and test all hardware settings. Therefore, BIOS is the communication bridge between OS/application software and hardware.

3.1.1 How to Entering into BIOS menu

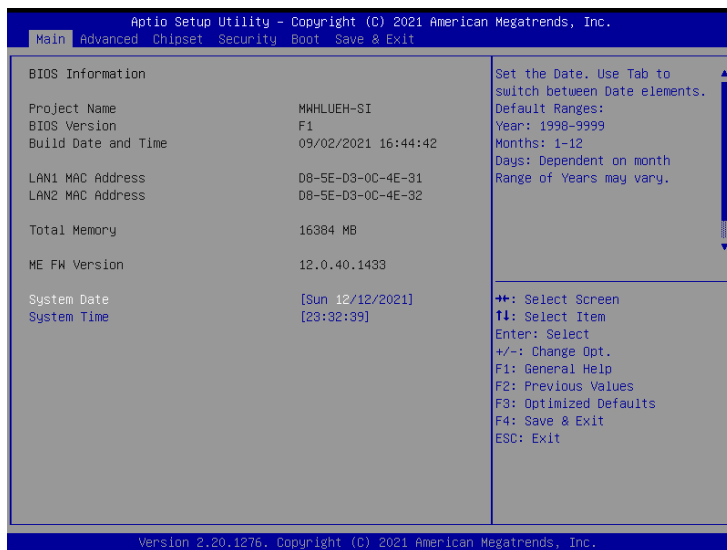
Once the system is power on, press the key as soon as possible to access into BIOS Setup program.

3.1.2 Function Keys to setup in BIOS Setup program

Function keys	Description
→←	Select Screen
↑↓	Select Item
Enter	Execute command or enter the submenu
+	Increase the numeric value or make changes
—	Decrease the numeric value or make changes
F1	General Help
F2	Previous Values
F3	Load Optimized Defaults Settings
F4	Save changes & Exit the BIOS Setup program
ESC	Exit the BIOS Setup program

3.2 The Main Menu

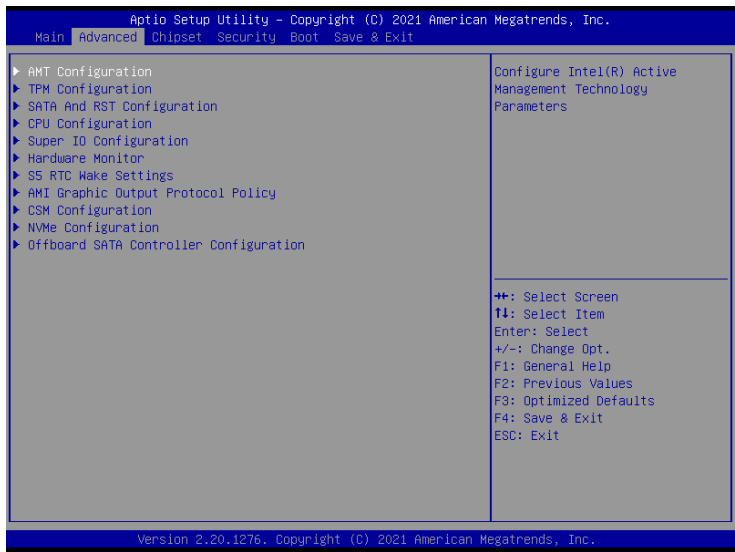
The main menu shows the basic system information.
Use arrow keys to move among the items.



Items	Description
Project Name	Shows Project name information
BIOS Version	Shows the BIOS version of the system
Build Date and Time	Shows the Build Date and Time when the BIOS was created.
LAN1 MAC Address	Shows LAN MAC Address information
LAN2 MAC Address	Shows LAN MAC Address information
Total Memory	Shows the total memory size of the installed memory
ME FW version	Shows ME firmware version
System Date	Set the Date for the system (Format : Weekday - Month - Day - Year)
System Time	Set the time for the system (Format : Hour - Minute - Second)

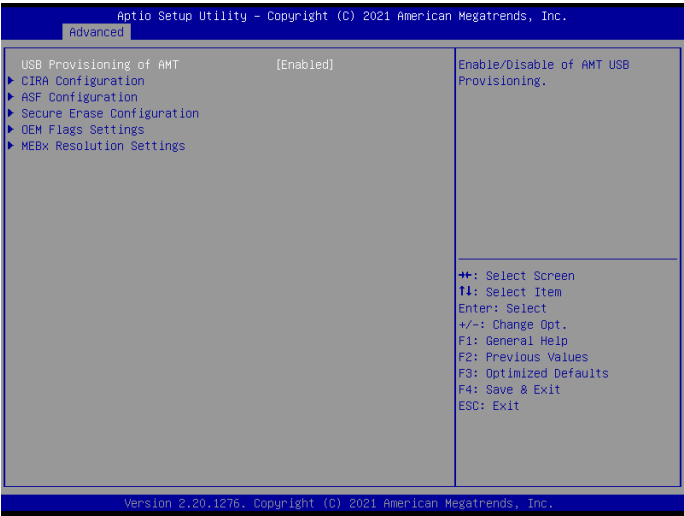
3.3 **Advanced**

The Advanced menu is to configure the functions of hardware settings through submenu. Use arrow keys to move among the items, and press <Enter> to access into the related submenu.



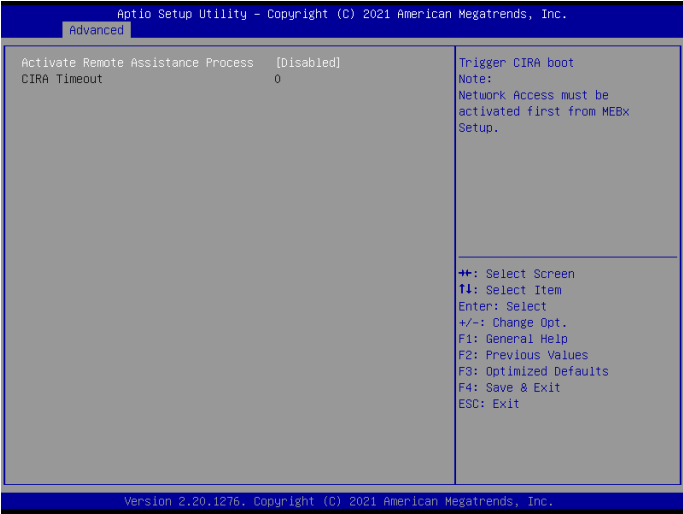
3.3.1 AMT Configuration

USB Provisioning of AMT



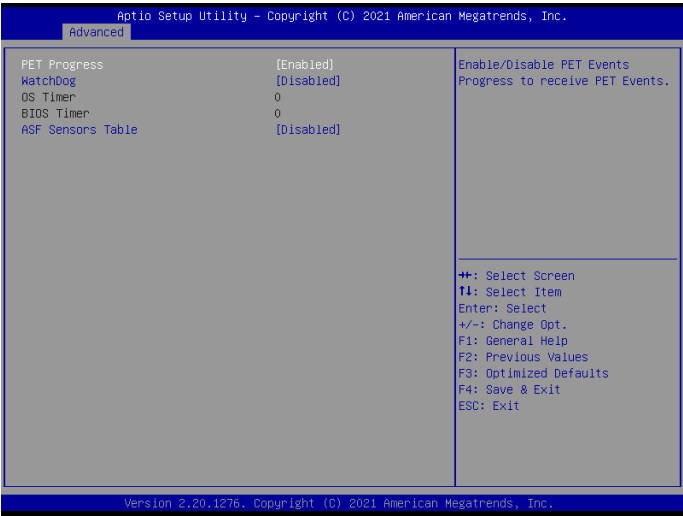
Item	Description
USB Provisioning of AMT	<p>Inserting a specially formatted USB drive into a system, to let the other system remotely control.</p> <p>Disabled : Disables USB Provisioning of AMT</p> <p>Enabled : Enables USB Provisioning of AMT (Default settings)</p>

CIRA Configuration



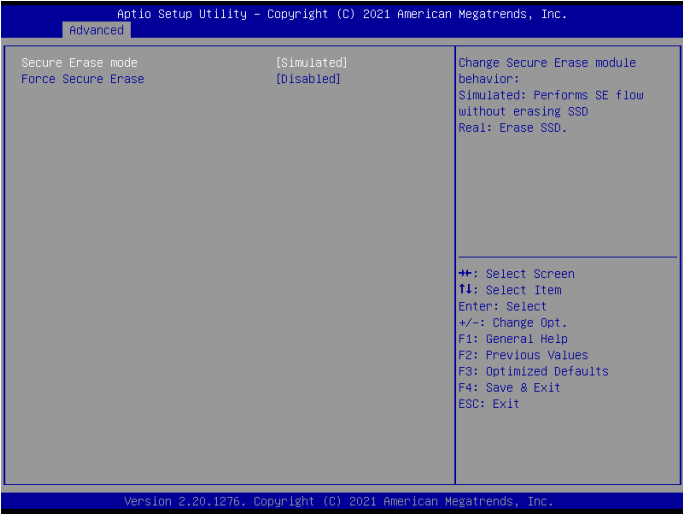
Item	Description
Activate Remote Assistance Process	Trigger CIRA boot Disabled : Disables TPM feature (Default setting) Enabled : Enables TPM feature

ASF Congifuration



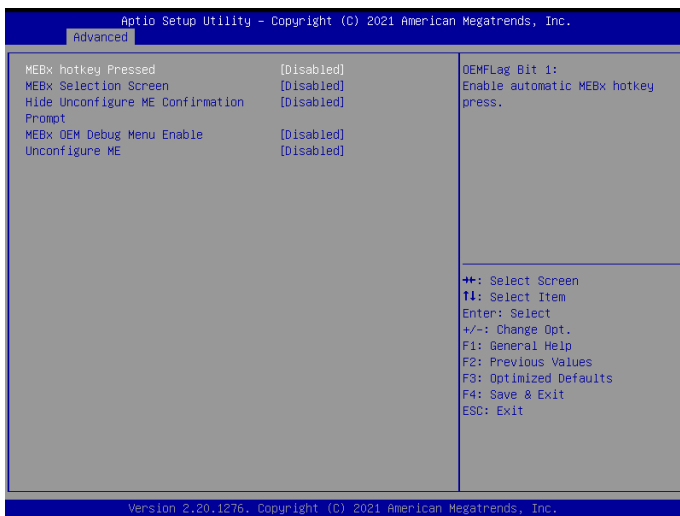
Item	Description
PET Progress	Choose to receive PET events or not Disabled : Disables PET Progress Enabled : Enables PET Progress (Default settings)
WatchDog	Choose to enables watchdog timer or not Disabled : Disables watchdog Timer (Default settings) Enabled : Enables watchdog Timer
OS Timer	Sets OS Watchdog Timer.
BIOS Timer	Sets BIOS Timer.
ASF Sensors Table	Disabled : Disables ASF Sensors Table (Default settings) Enabled : Enables ASF Sensors Table

Secure Erase Configuration



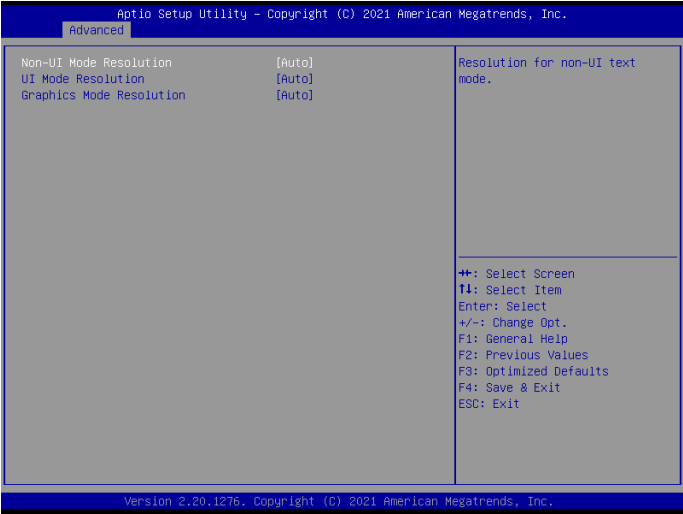
Item	Description
Secure Erase mode	Choose to enables secure erase mode or not. Simulated : Performs SE flow without erasing SSD (Default setting) Real : Erase SSD
Force Secure Erase	Force Secure Erase on next boot. Disabled : Disables Force Secure Erase (Default settings) Enabled : Enables Force Secure Erase

OEM Flags Settings



Item	Description
MEBx hotkey Pressed	Enables or Disables automatic MEBx hotkey press. Disabled : Disables MEBx hotkey Pressed (Default settings) Enabled : Enables MEBx hotkey Pressed
MEBx Selection Screen	Enables or Disables MEBx Selection Screen. Disabled : Disables MEBx Selection Screen (Default settings) Enabled : Enables MEBx Selection Screen
Hide Unconfigure ME Confirmation Prompt	To hide un-configured ME without password confirmation prompt. Disabled : Disables Hide Unconfigure ME Confirmation Prompt (Default settings) Enabled : Enables Hide Unconfigure ME Confirmation Prompt
MEBx OEM Debug Menu Enable	Enables or Disables MEBx debug message. Disabled : Disables MEBx OEM Debug Menu Enable (Default settings) Enabled : Enables MEBx OEM Debug Menu Enable
Unconfigure ME	To Un-configure ME without password. Disabled : Disables Unconfigure ME (Default settings) Enabled : Enables Unconfigure ME

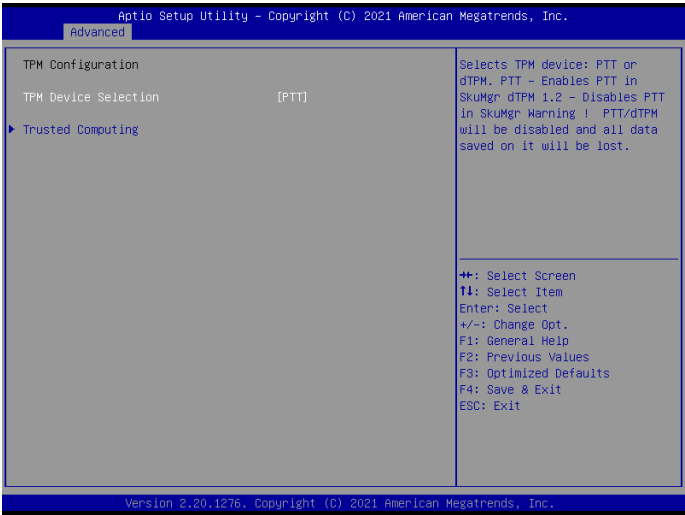
MEBx Resolution Settings



Item	Description
Non-UI Mode Resolution	Resolution for non-UI text mode. Option items : Auto (Default setting), 80x25, 100x31
UI Mode Resolution	Resolution for UI text mode. Option items : Auto (Default setting), 80x25, 100x31
Graphics Mode Resolution	Resolution for graphics mode. Option items : Auto (Default setting), 640x480, 800x600, 1024x768

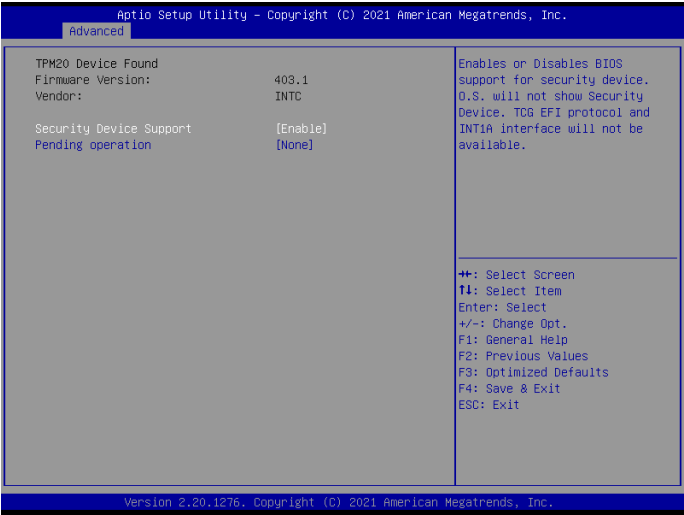
3.3.2 TPM Configuration

Use TPM Configuration submenu to choose TPM interface.



Item	Description
TPM Device Selection	PTT : Internal TPM (Default setting) dTPM : External TPM (When using External TPM module or having TPM chip on MB)

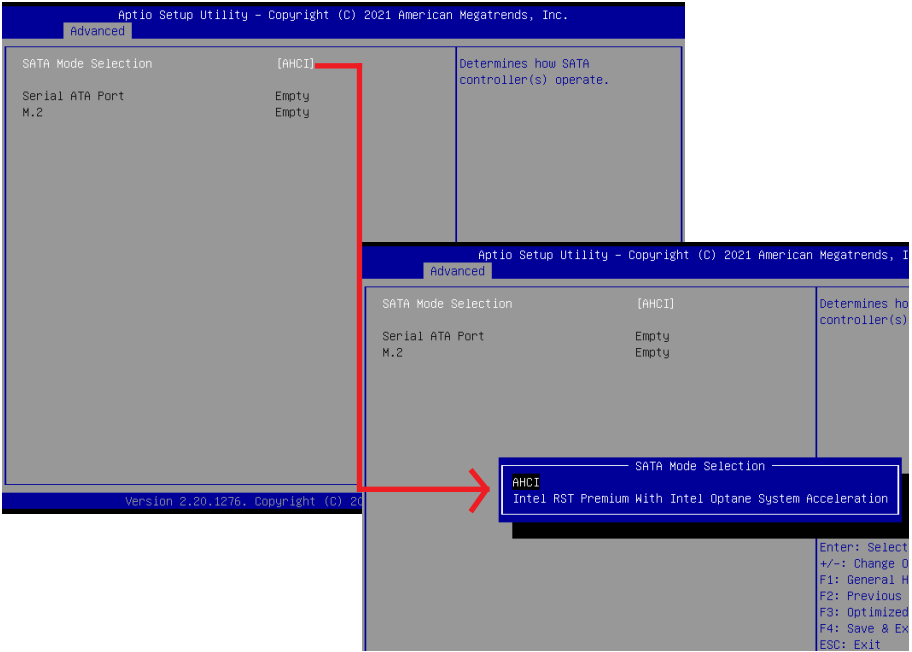
Trusted Computing : Shows TPM information, and TPM module configuration setting.



Item	Description
Security Device support	Enabled : Enables TPM feature (Default setting) Disabled : Disables TPM feature

Item	Description
Pending operation	None : No execution will be conducted (Default setting) TPM clear : Set to clear data on TPM

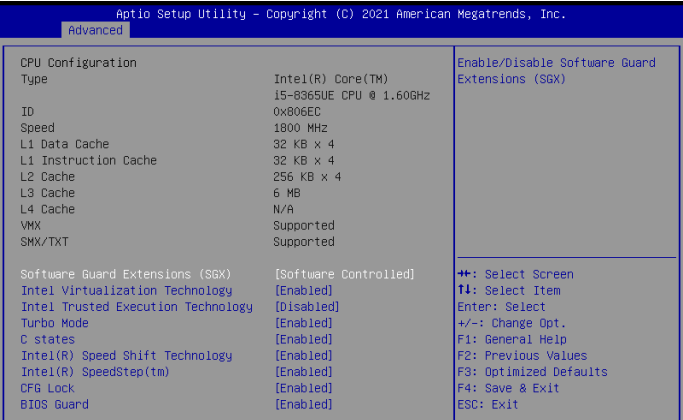
3.3.3 SATA And RST Configuration



Item	Description
SATA Mode Selection	AHCI : Configures the SATA controllers to AHCI mode. (Default setting) Intel RST Premium With Intel Optane System Acceleration : Enables RAID mode for the SATA controller
Serial ATA Port	shows 2.5" SATA HDD/SSD information
M.2	shows M.2 SATA interface SSD information

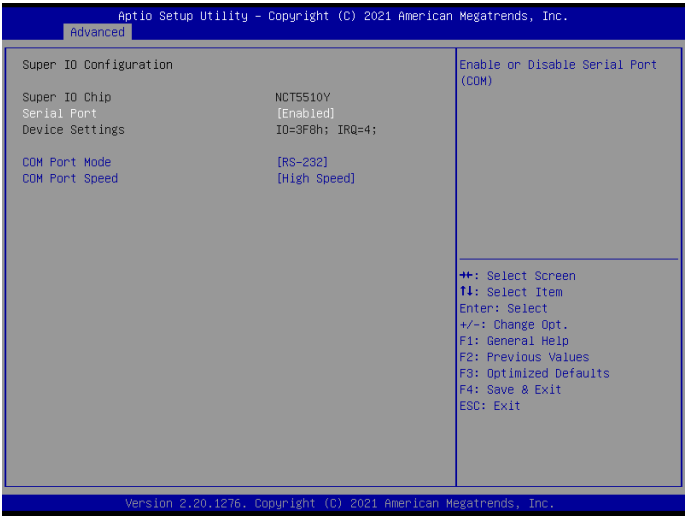
3.3.4 CPU Configuration

This submenu shows detailed CPU informations.



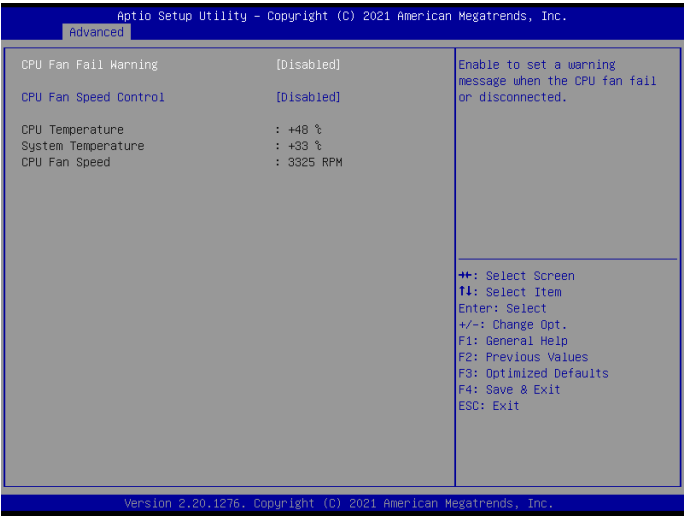
Item	Description
Software Guard Extensions (SGX)	Disabled : Disables Software Guard Extensions (SGX) Enabled : Enables Software Guard Extensions (SGX) Software Controlled : If this item is selected, SGX will be controlled by SGX application for UEFI boot OS (Default setting)
Intel Virtualization Technology	Virtualization enhanced by Intel® Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple virtual systems. Enabled : Enables Intel Virtualization Technology (Default setting) Disabled : Disables Intel Virtualization Technology
Intel Trusted Execution Technology	To protect the confidentiality and integrity of data from external attacks. Enabled : Enables Intel Trusted Execution Technology Disabled : Disables Intel Trusted Execution Technology (Default setting)
Turbo Mode	Enabled : Enables Turbo Mode (Default setting) Disabled : Disables Turbo Mode
C states	Command CPU to enter into low power consumption mode when CPU is under idle mode. Enabled : Enables C states (Default setting) Disabled : Disables C states
Intel(R) Speed Shift Technology	To speed up CPU frequency transition time from basic frequency to maximum frequency. Enabled : Enables Intel(R) Speed Shift Technology Interrupt control (Default setting) Disabled : Disables Intel(R) Speed Shift Technology Interrupt control
Intel(R) SpeedStep(tm)	According to Intel CPU loading, Intel SpeedStep Technology will automatically adjust the CPU voltage and core frequency to decrease heat and power consumption for power saving. Enabled : Enables Intel SpeedStep Technology (Default setting) Disabled : Disables Intel SpeedStep Technology
CFG Lock	Enabled : Configure MSR 0xE2[15] , CFG Lock bit (Default setting) Disabled : Disables CFG Lock
BIOS Guard	To protect BIOS data from external attacks. Enabled : Enables BIOS Guard (Default setting) Disabled : Disables BIOS Guard

3.3.5 Super I/O Configuration



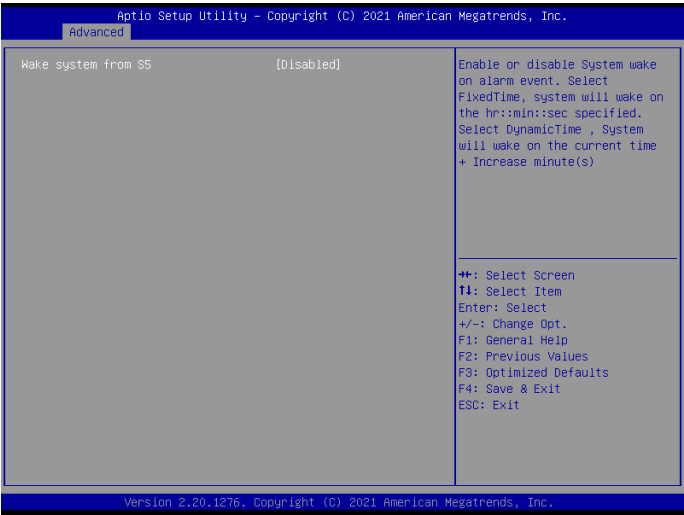
Item	Description
Super IO Chip	Shows Super I/O chip model
Serial Port	Enable or Disable Serial Port Enabled : Enables Serial Port function (Default setting) Disabled : Disables Serial Port function
COM Port Mode	Choose RS-232, RS-422, or RS-485 feature
COM Port Speed	Choose COM Port Speed Low Speed : 250Kbps for RS-232/422/485 High Speed : 1.5Mbps for RS-232, 10Mbps for RS-422/485 (Default setting)

3.3.6 Hardware Monitor



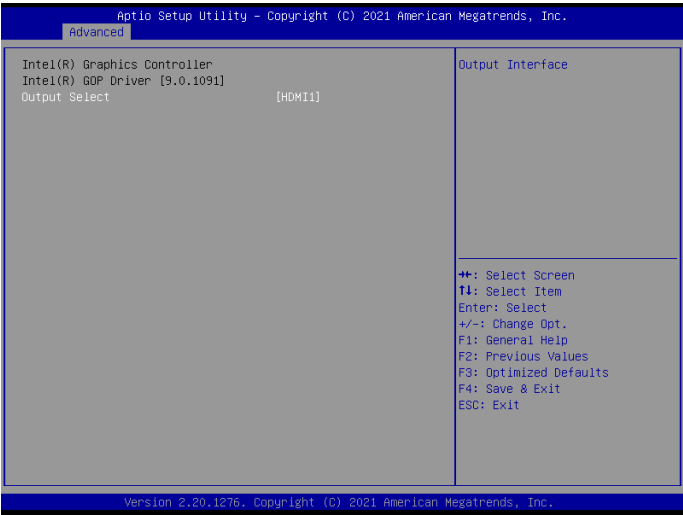
Item	Description
CPU Fan Fail Warning	Enabled : Enables CPU FAN Fail warning alert function Disabled : Disables CPU FAN Fail warning alert function (Default setting)
CPU Fan Speed Control	Enabled : Fan speed set by BIOS default Full Speed : Set Fan operates at full speed Disabled : Disables CPU Fan speed control for fanless system (Default setting)
CPU Temperature	Shows current CPU temperature
System Temperature	Shows current system temperature
CPU Fan Speed	Shows current CPU fan Speed

3.3.7 S5 RTC Wake Settings



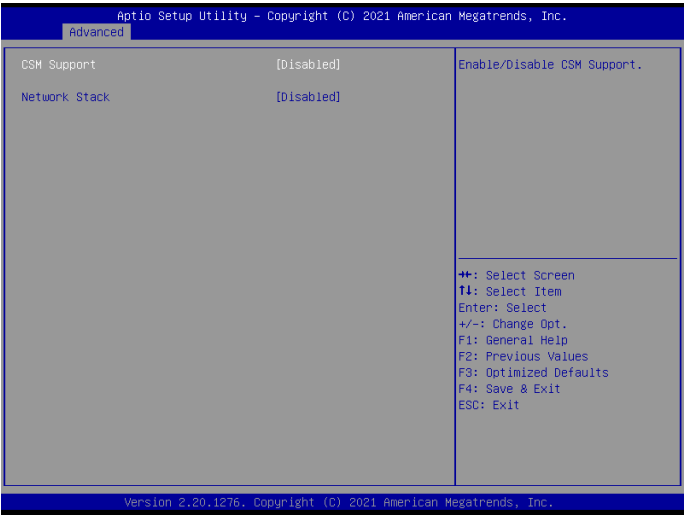
Item	Description
Wake system from S5	Enable or Disable System to wake on a specific time. Disabled : Disables system to wake on a specific time (Default setting) Fixed Time : Enables system to wake on a specific time (Format : hr : min : sec)

3.3.8 AMI Graphic Output Protocol Policy



Item	Description
Output Select	Choose default monitor output when there are more than one monitor plugged on the motherboard.

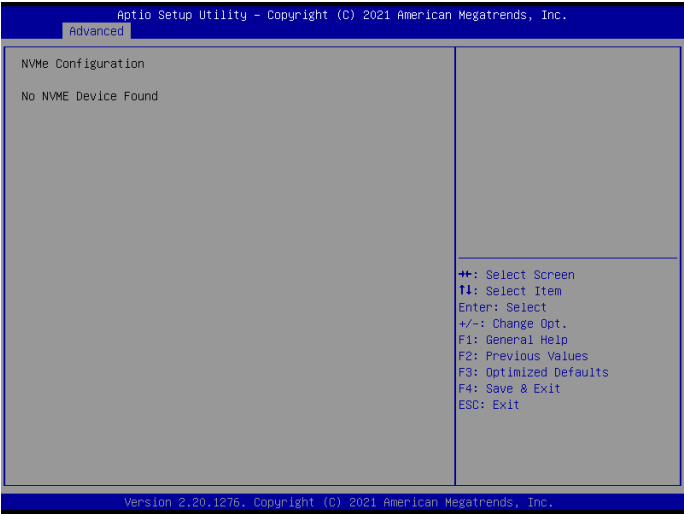
3.3.9 CSM Configuration



Item	Description
CSM Support	Choose UEFI or Legacy Mode Disabled : UEFI Mode only (Default setting) Enabled : Enables Legacy Mode feature
Network Stack	When system is power on, install LAN driver under UEFI mode Disabled : Disables UEFI Network Stack (Default setting) Enabled : Enables UEFI Network Stack

3.3.10 NVMe Configuration

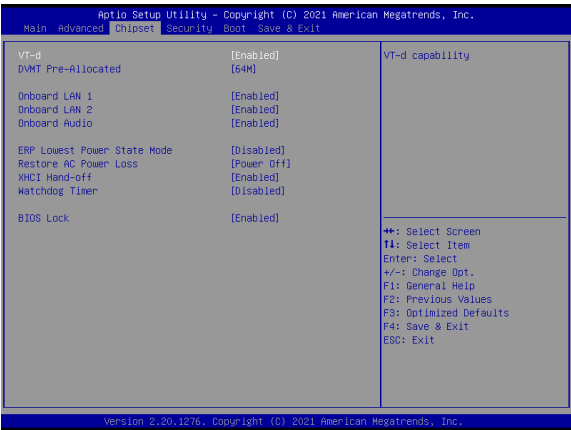
NVMe Configuration shows information when your M.2 NVMe PCIe SSD is installed.



3.3.11 Offboard SATA Controller Configuration

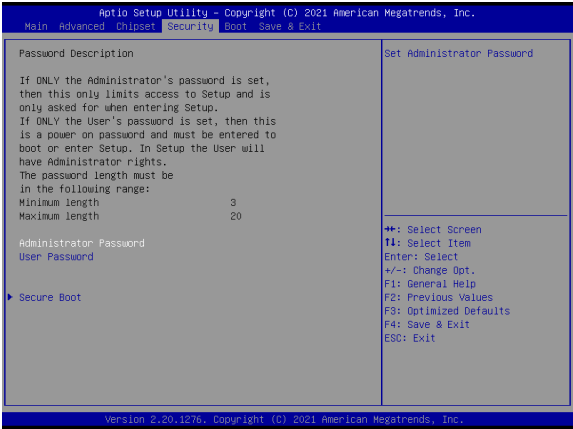


3.4 Chipset

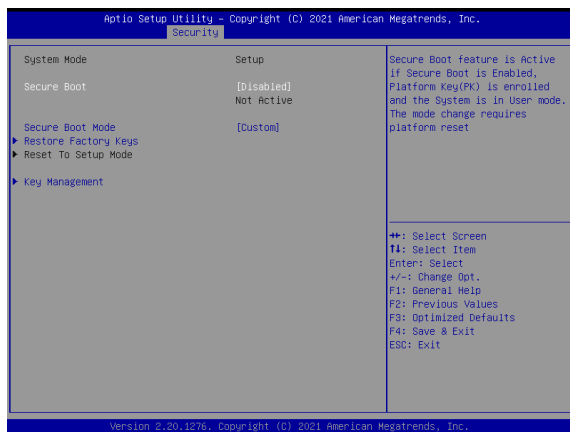


Item	Description
VT-d	Enabled : Enables VT-d function (Default setting) Disabled : Disables VT-d function
DVMT Pre-Allocated	Use DVMT Pre-Allocated to set the amount of system memory which is installed to the integrated graphics processor Option items : 32M , 64M(Default setting)
Onboard LAN1 Onboard LAN2	Enable/Disable onboard LAN controller Enabled : Enables onboard LAN controller (Default setting) Disabled : Disables onboard LAN controller
Onboard Audio	Enable/Disable onboard audio controller Enabled : Enables onboard audio controller (Default setting) Disabled : Disables onboard audio controller
ErP Lowest Power State Mode	Enable/Disable power saving funtion Enabled : Enables ERP Lowest Power State Mode Disabled : Disabled ERP Lowest Power State Mode (Default setting)
Restore AC Power Loss	To set which option the system should returns if a sudden power loss occured Power off : Do not power on when the power is back (Default setting) Power on : System power on when the power is back Last state : Restore the system to the state before power loss occurs
XHCI Hand-off	Enable/Disable XHCI Hand-off function Enabled : Enables XHCI Hand-off function (Default setting) Disabled : Disables XHCI Hand-off function
Watchdog Timer	Enable/Disable Watchdog Timer function Enabled : Enables Watchdog Timer function Disabled : Disabled Watchdog Timer function (Default setting)
BIOS Lock	Enable/Disable BIOS Lock function Enabled : Enables BIOS Lock function (Default setting) Disabled : Disabled BIOS Lock funtion

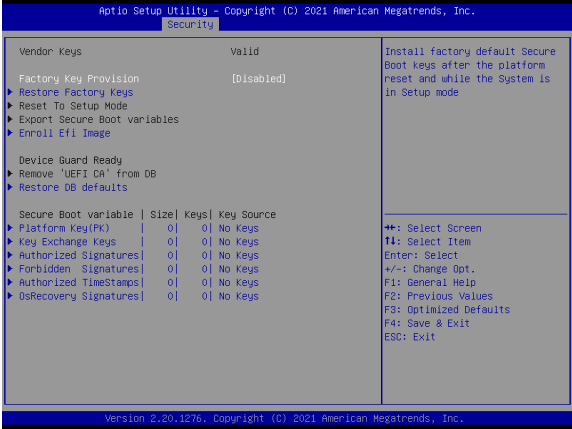
3.5 Security



Item	Description
Administrator Password	To set up Administrator's password Minimum length : 3 Maximum length : 20
User Password	To set up User's password Minimum length : 3 Maximum length : 20
Secure Boot	Press <Enter> to configure the advanced items



Item	Description
Secure Boot	Secure Boot requires all the applications that are running during the booting process to be pre-signed with valid digital certificates Enabled : Enables Secure Boot function Disabled : Disables Secure Boot function (Default setting)
Secure Boot Mode	Standard : Standard mode Custom : Custom mode (Default setting)
Restore Factory Keys	To restore factory settings Yes : Agree to restore factory settings No : Cancel to restore factory settings
Reset To Setup Mode	Yes : Agree to setup mode No : Cancel to setup mode
Key Management	Enables expert users to modify Secure boot policy variables without full authentication Press <Enter> to configure the advanced items

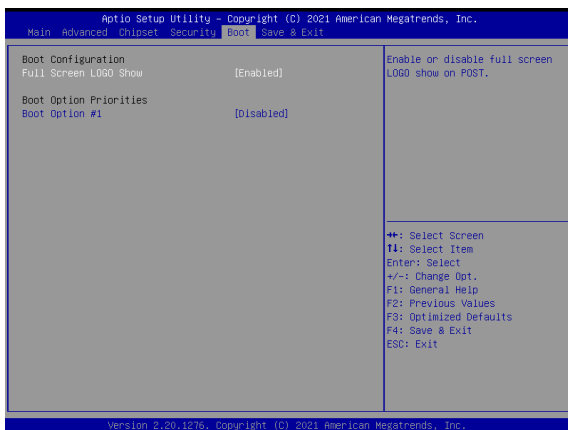


Item	Description
Factory Key Provision	Install factory default Secure Boot keys after the platform reset and while the system is in Setup mode Enabled : Enables Factory Key Provision Disabled : Disables Factory Key Provision (Default setting)
Restore Factory Keys	To restore factory settings
Reset To Setup Mode	Delete all Secure boot key databases from NVRAM
Export Secure Boot variables	Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device
Enroll Efi Image	Allow the image to run in Secure Boot mode
Remove 'UEFI CA' from DB	To remove 'UEFI CA' from database
Restore DB defaults	Restore DB variables to factory defaults Yes : Agree to restore DB defaults No : Cancel to restore DB defaults

Item	Description
Platform Key (PK)	These items allows you to enroll factory defaults or load Certificates from a file.
Key Exchange Keys	
Authorized Signatures	
Forbidden Signatures	
Authorized TimeStamps	
OsRecovery Signatures	

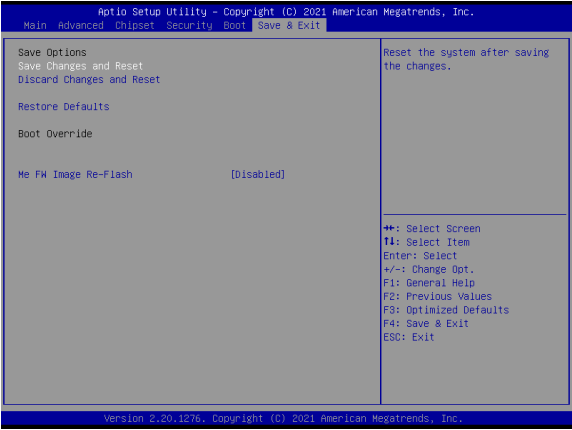
3.6 Boot

This Boot menu allows you to set/change system boot options



Item	Description
Full Screen LOGO Show	Enable/Disable full screen LOGO show on POST screen Enabled : Enables Full screen LOGO Show on POST screen (Default setting) Disabled : Disables Full screen LOGO Show on POST screen
Boot Option #1	Shows the information of the storage that be installed in the system Choose/set the boot priority

3.7 Save & Exit



Item	Description
Save Changes and Reset	After configuring all the options that you wish to change, choose this option to save all the changes and reboot the system Yes : Agree to save and reset No : Cancel to save and reset
Discard Changes and Reset	Choose this option to reboot the system without saving any changes Yes : Agree to discard changes and reset No : Cancel to discard changes and reset
Restore Defaults	Restore/Load default values for all the setup options Yes : Agree to load optimized defaults No : Cancel to load optimized defaults
Me FW Image Re-Flahs	Enable/Disable Me FW image re-flash function Enabled : Enables Me FW image re-flash function Disabled : Disables Me FW image re-flash function (Default setting)