

AES-EL6KAx

Elkhart Lake SoC Fan-less Embedded System



User Manual

Acrosser Technology Co., Ltd. www.acrosser.com



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Purpose

This document is intended to provide the information about the features and use of the product.

Audience

The intended audiences are technical personnel, not for general audiences.

WARNING

Danger of explosion if batteries are incorrectly replaced. Always replace the battery with the same specifications. Dispose of used batteries according to the manufacturer's instructions.

Before running the system, make sure the power cord is firmly plugged into the socket.

CAUTION



IEC 60417-6172 (2012-09)

All power cords must be disconnected during product repair.

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1. Introduction

The Acrosser AES-EL6KAX is a small-sized system using the intel latest Elkhart Lake X6000 Series processor technology to improve to a 1.5x CPU performance enhancement and a 2x graphics performance boost than the past generations. Especially, AES-EL6KAX is designed with an optimized fanless thermal solution, compact I/O such as Dual HDMI output, USB, GbE, COM port, and 12V DC power inputs, which target suitable for industries of Automation, digital signage, smart City, and IoT edge. AES-EL6KAX is also compatible with more popular OS such as Microsoft Windows 10 IoT Enterprise and Linux OS 20.04.

Model Name	Model Parts Difference
AES-EL6KA1	N6210, 2 HDMI, Fanless design
	4GB LPDDR4, 2 LAN, 2 COM, 4 USB, 32GB eMMC, mSATA, M.2 2230 E
AES-EL6KA2	J6412, 2 HDMI, Fanless design 4GB LPDDR4, 2 LAN, 2 COM, 4 USB, 64GB eMMC, mSATA, M.2 2230 E

1.1. Specifications

CPU	•	Intel Atom [®] x6000E Series
	•	AES-EL6KA1 : N6210, 1.2GHz up to 2.6GHz, 2C/2T, 1.5MB cache, 6.5W
	•	AES-EL6KA2 : J6412, 2GHz up to 2.6GHz, 4C/4T, 1.5MB cache, 10W
Chipset	•	Elkhart Lake SoC
BIOS	•	AMI UEFI BIOS
Memory	•	On board DDR4 4GB
Storage	•	AES-EL6KA1: 32GB
	•	AES-EL6KA2: 64GB
SATA	•	1x SATA connector (Sata 3 Signal)
Video Interface	٠	2x HDMI 2.0
Ethernet	•	2x GbE Copper (RJ45), RTL8111H
USB	•	2x USB 3.2 (Type A)
	•	2x USB 2.0 (Type A)
Serial Port	•	2x RS232/422/485 DB9
LED	•	1x 2 LED 1) Green: Power 2) Yellow: HDD
Power Input	•	12V DC-in Jack



Power Button	•	1x power button
Antenna	•	2x Antenna hole (Ant 1 & Ant 2)
Expansion Slot		1x M.2 2230 E-key (for Wi-Fi/Bluetooth, PCIe/USB signal only)
	•	1x Mini PCIe (Full-Sized) (Default mSATA or USB2.0, PCIe set by BIOS)
Watch Dog	•	255 level
OS Support	•	Windows 10 (64 bit), Linux Kernel 4.8 & above (Ubuntu 22.04 64-bit)
Thermal Design	•	AES-EL6KA1/A2: Fan-less design without Aluminum
		heat-sink
Chassis	•	Iron chassis
Chassis	•	Iron chassis Din Rail mount kit (optional)
Chassis Dimension	•	heat-sink Iron chassis Din Rail mount kit (optional) 140 x 90 x 45 (mm)
Chassis Dimension Operating Temp/ Humidity	•	heat-sink Iron chassis Din Rail mount kit (optional) 140 x 90 x 45 (mm) 0 ~ 60°C / 0~90%
Chassis Dimension Operating Temp/ Humidity Storage Temp.	• • • • • • • • • • • • • • • • • • • •	heat-sink Iron chassis Din Rail mount kit (optional) $140 \times 90 \times 45 \text{ (mm)}$ $0 \sim 60^{\circ}\text{C} / 0 \sim 90\%$ $-40 \sim 80^{\circ}\text{C}$
Chassis Dimension Operating Temp/ Humidity Storage Temp. Certification	• • • • • • • • • • • • • • • • • • • •	heat-sink Iron chassis Din Rail mount kit (optional) 140 x 90 x 45 (mm) 0 ~ 60°C / 0~90% -40~80°C CE / FCC class A

1.2. Function Block Diagram





1.3. System Dissection

1.3.1. Dimensions



(The peripherals shown in this layout dimensions are used for illustration only, may not come with the package.)



1.3.2. Front I/O Panel



HDMI1, HDMI2



Pin #	Pin Name	Signal Type	Signal Level
1	HDMI_TX2+	DIFF	-
2	GND	GND	-
3	HDMI_TX2-	DIFF	-
4	HDMI_TX1+	DIFF	-
5	GND	GND	-
6	HDMI_TX1-	DIFF	-
7	HDMI_TX0+	DIFF	-
8	GND	GND	-
9	HDMI_TX0-	DIFF	-
10	HDMI_CLK+	DIFF	-



Pin #	Pin Name	Signal Type	Signal Level
11	GND	GND	-
12	HDMI_CLK-	DIFF	-
13	NC	-	-
14	NC	-	-
15	DDC_CLK	I/O	+5V
16	DDC_DATA	I/O	+5V
17	GND	GND	-
18	+5V	PWR	+5V
19	HDMI_HPD	-	-
20	HDMI_TX2+	DIFF	-
21	GND	GND	-
22	HDMI_TX2-	DIFF	-
23	HDMI_TX1+	DIFF	-
24	GND	GND	-
25	HDMI_TX1-	DIFF	-
26	HDMI_TX0+	DIFF	-
27	GND	GND	-
28	HDMI_TX0-	DIFF	-
29	HDMI_CLK+	DIFF	-
30	GND	GND	-
31	HDMI_CLK-	DIFF	-
32	NC	-	-
33	NC	-	-
34	DDC_CLK	I/O	+5V
35	DDC_DATA	I/O	+5V
36	GND	GND	-
37	+5V	PWR	+5V
38	HDMI_HPD	-	-



LAN1(1G), LAN2(2.5G)



Pin #	Pin Name	Signal Type	Signal Level
1P1	LAN1_MDI0+	DIFF	-
1P2	LAN1_MDI0-	DIFF	-
1P3	LAN1_MDI1+	DIFF	-
1P4	LAN1_MDI1-	DIFF	-
1P5	GND	GND	-
1P6	GND	GND	-
1P7	LAN1_MDI2+	DIFF	-
1P8	LAN1_MDI2-	DIFF	-
1P9	LAN1_MDI3+	DIFF	-
1P10	LAN1_MDI3-	DIFF	-
1L1	LAN1_LED_LNK#_ ACT	Signal	-
1L2	+V3P3A	VDD	3.3V
1L3	LAN1_LED_100#	Signal	-
1L4	LAN1_LED_1000#	Signal	-
2P1	LAN2_MDI0+	DIFF	-
2P2	LAN2_MDI0-	DIFF	-
2P3	LAN2_MDI1+	DIFF	-
2P4	LAN2_MDI1-	DIFF	-
2P5	GND	GND	-
2P6	GND	GND	-
2P7	LAN2_MDI2+	DIFF	-
2P8	LAN2_MDI2-	DIFF	-
2P9	LAN2_MDI3+	DIFF	-
2P10	LAN2_MDI3-	DIFF	-



Pin #	Pin Name	Signal Type	Signal Level
2L1	LAN2_LED_LNK#_ ACT	Signal	-
2L2	+V3P3A	VDD	3.3V
2L3	LAN2_LED_100#	Signal	-
2L4	LAN2_LED_1000#	Signal	-

USB3.2



Pin #	Pin Name	Signal Type	Signal Level
1	+V5A_USB12	PWR	+5V
2	USB2_0_DN	DIFF	-
3	USB2_0_DP	DIFF	-
4	GND	GND	-
5	USB3_0_RXN	DIFF	-
6	USB3_0_RXP	DIFF	-
7	GND	GND	-
8	USB3_0_TXN	DIFF	-
9	USB3_0_TXP	DIFF	-
10	+V5A_USB12	PWR	+5V
11	USB2_1_DN	DIFF	-
12	USB2_1_DP	DIFF	-
13	GND	GND	-
14	USB3_1_RXN	DIFF	-
15	USB3_1_RXP	DIFF	-



Pin #	Pin Name	Signal Type	Signal Level
16	GND	GND	-
17	USB3_1_TXN	DIFF	-
18	USB3_1_TXP	DIFF	-

Note: USB Power max current: 2.0A, 1.0A for each port.

DC12V





Signal Type Signal Level Pin # **Pin Name** +V_IN PWR +12V 1 2 GND GND _ 3 GND GND -



Status/HDD LED Indicator

::	Light	Display
	Yellow	Power
00	Green	SATA Device Activity
11	Green	Status

Power Button

101 101

You may use a thin and long object to reach into the hole and push the button in.



1.3.3. Rear I/O Panel



USB2.0

2x Standard USB2.0 Ports.

Note: USB Power max current: 2.0A, 1.0A for each port.

ANT1, ANT2

Reserved for installation of 2x optional SMA-type antennas.

COM1, COM2

	Pin #	RS-232 Signal	RS-422 Signal	RS-485 Signal
	1	DCD	RS-422_TX-	RS-485_D-
CON41	2	RX	RS-422_TX+	RS-485_D+
	3	ТХ	RS-422_RX+	
	4	DTR	RS-422_RX-	
	5	GND	GNA	GND
	6	DSR		
	7	RTS		
	8	CTS	+5V/+12V (0.5A)	+5V/+12V (0.5A)
	9	RI		



2. Components Assembly

The products shown in this procedule are used for illustration only, may not reflect the exact outlooks.

2.1. Module Installation

Step 1: Slopingly insert the module into the connector. (Do the same way for M.2 and mPCIE.)



Step 2: Use screws to lock the module to the nut position on the board.



Notes:

- As there are fifferent module interfaces, like M.2 B key, M.2 E key, or mPCIE, please comply with the one the system specification specified.
- As there are fifferent module specifications, like Half size, Full size, 3042, or 3052, please comply with the one the system specification specified.



2.2. RF Cable Installation

Step 1: Connect the RF plug to the module connector.



Notes:

- Wi-Fi: Support 2 RF cables at least.
- 4G LTE: Support 1 RF cable at least, up to 3 RF cables.
- 5G: Support 2 RF cables at least.
- Step 2: The foolproof position and shape of the joint should correspond with the opening of the system panel.







Step 3: Assemble the SMA end of the RF Cable and lock it with gasket and nut.



Notes:

- For the connector marked as GNSS or GPS, please install it on the system panel where the GPS antenna is located.
- The connector marked as MAIN or AUX is a 4G connector, please install it on the system panel marked 4G or 5G antenna. Use the MAIN connector first.





2.3. SSD Installation (Option)

Step 1: Remove the two screws that locked the bottom cover. Turn over to the top side. Push the top cover outward to open it.



Step 2: Use four screws to lock SSD with supporting tray (supports 7mm SSD only). Connect the SATA cable and SATA power cable.





Step 3: Place the SSD tray into position as shown here. Close the top cover and have it locked.





2.4. Din-rack Installation (Option)

Use four screws to lock the Din-rack with chassis.





3. AMI BIOS Setup

3.1. System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors.

System configuration verification

These routines check the current system configuration stored in the CMOS memory and BIOS NVRAM. If system configuration is not found or system configuration data error is detected, system will load optimized default and re-boot with this default system configuration automatically.

There are four situations in which you will need to setup system configuration:

- 1. You are starting your system for the first time.
- 2. You have changed the hardware attached to your system.
- 3. The system configuration is reset by Clear-CMOS jumper.
- 4. The CMOS memory has lost power and the configuration information has been erased.

The AES-EL6KAx CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

3.2. AMI BIOS Setup

AMI BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM and BIOS NVRAM so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press or <ESC> immediately. This will allow you to enter Setup.

Main

Set the date, use tab to switch between date elements.

Advanced

Enable disable boot option for legacy network devices.

Chipset

Host bridge parameters.



Boot

Enables/disable quiet boot option.

Security

Set setup administrator password.

Save & Exit

Exit system setup after saving the changes.

3.3. Setup Submenu: Main

Main Advanced Chipset Security	Aptio Setup – AMI Boot Save & Exit	
BIOS Information AEM-EL6KAx V1.0 (xx/xx/2023)	Anna i ann Maradana da	Set the Date. Use Tab to switch between Date elements. Default Ranges:
Compliancy	UEFI 2.7; PI 1.6	Months: 1–12 Days: Dependent on month
System Date System Time	[Tue 07/19/2022] [11:45:26]	Range of Years may vary.
Access Level	Administrator	
		↑↓: Select Item Enter: Select
		+/−: Change Opt. F1: General Help
		F2: Previous Values F3: Optimized Defaults F4: Save & Exit
		ESC: Exit
Varaian	9.94.4970 Conunidat (C) 9099	



3.4. Setup Submenu: Advanced

Aptio Setup – AMI Main <mark>Advanced</mark> Chipset Security Boot Save & Exit			
 CPU Configuration PCH-FW Configuration Trusted Computing SATA Configuration SDID Configuration Handware Monitor SIO Configuration Fouer Management Digital IO Port Configuration 	CPU Configuration Parameters		
	+t: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit		
Version 2.22.1282 Copyright (C) 2022 AMI			

3.4.1. CPU Configuration

Advanced	Aptio Setup – AMI		
CPU Configuration Processor Information Name Type Speed ID Stepping Number of Processors Microcode Revision Active Processor Cores Intel (VMX) Virtualization Technology Intel(R) SpeedStep(tm)	ElkhartLake ULX Intel(R) Pentium(R) J6426 @ 2.00GHz 2000 MHz 0x90661 B0 4Core(s) / 4Thread(s) 11 [All] [Enabled] [Enabled]	Number of cores to enable in each processor package. ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	

Active Processor Cores

Number of cores to enable in each processor package.



Intel (VMX) Virtualization Technology

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

3.4.2. PCH-FW Configuration





3.4.2.1. Firmware Update Configuration

Advanced	Aptio Setup — AMI		
Me FW Image Re-Flash FW Update	[Disabled] [Enabled]	Enable/Disable Me FW Image Re-Flash function.	
		<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>	
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- **Me FW Image Re-Flash** Enable/Disable Me FW Image Re-Flash function.
- FW Update Enable/Disable ME FW Update function.



3.4.3. Trusted Computing

Advanced	Aptio Setup – AMI	
TPM 2.0 Device Found Firmware Version: Vendor:	600.15 INTC	Enables or Disables BIOS support for security device. O.S. will not show Security Device _TCC_FEL protocol and
Security Device Support Active PCR banks Available PCR banks	(Enable) SHA256 SHA-1,SHA256,SHA384,SM3	INT1A interface will not be available.
SHA-1 PCR Bank SHA256 PCR Bank SHA384 PCR Bank SM3_256 PCR Bank	(Disabled) [Enabled] [Disabled] [Disabled]	
Pending operation Platform Hierarchy Storage Hierarchy Endorsement Hierarchy TPM 2.0 UEFI Spec Version Physical Presence Spec Version TPM 2.0 InterfaceType Device Select	[None] [Enabled] [Enabled] [TCG_2] [1.3] [CR8] [Auto]	<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	2.21.1278 Copyright (C) 202:	L AMI

Security Device Support

Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

- SHA-1 PCR Bank
 Enable or Disable SHA-1 PCR Bank.
- SHA256 PCR Bank Enable or Disable SHA256 PCR Bank.
- SHA384 PCR Bank
 Enable or Disable SHA384 PCR Bank.
- SM3_256 PCR Bank
 Enable or Disable SM3_256 PCR Bank.
- Pending Operation Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.
- Platform Hierarchy
 Enable or Disable Platform Hierarchy.
- Storage Hierarchy
 Enable or Disable Storage Hierarchy.
- Endorsement Hierarchy
 Enable or Disable Endorsement Hierarchy.



• TPM 2.0 UEFI Spec Version

Select the TCH2 Spec Version Support.

TCG_1_2: The Compatible mode for Win8/Win10.

TCG_2: Support new TCG2 protocol and event format for Win10 or later.

Physical Presence Spec Version

Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3

Device Select

TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both with the default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated.

3.4.4. SATA Configuration



- SATA Controller(s) Enable/Disable SATA Device.
- **Port*** Enable or Disable SATA Port.



3.4.5. SDIO Configuration

Advanced	Aptio Setup – AMI	
SDIO Configuration		▲ Enable or Disable SCS eMMC 5.1
eMMC 5.1 Controller SDIO Access Mode	[Enabled] [Auto]	Controller
Mass Storage Devices:		
Bus 0 Dev 1A Func 0 eMMC DA4064(62.5GB)	[Auto]	
		<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 2.21.1278 Copyright (C) 2021 AMI

• eMMC 5.1 Controller

Enable or Disable SCS eMMC 5.1 Controller.

SDIO Access Mode

Auto Option: Access SD device in DMA mode if controller supports it, other wise in PIO mode.

DMA Option: Access SD device in DMA mode.

PIO Option: Access SD device in PIO mode.



3.4.6. Hardware Monitor

Advanced	Aptio Setup — AMI	
Advanced CPU Temperature(DTS) System Temperature Fan1 Speed VCORE +12V +5V VMEM Smart Fan	: +42 % : +34 % : N/A : +1.648 V : +11.528 V : +5.087 V : +1.088 V [Enabled]	Enable or Disable Smart Fan
▶ Smart Fan Mode 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>
Versio	n 2.21.1278 Copyright (C) 202	1 AMI

3.4.6.1. Smart Fan Mode Configuration

Advanced	Aptio Setup – AMI		
Smart Fan Mode Configuration		Output PWM mode (push pull) to	
FAN1 Output Mode		Linear fan application circuit to control 3-wire fan speed by	
Fan 1 Smart Fan Control	[Auto Duty-Cycle Mode]	fan's power terminal.	
Temperature Source	[CPU(external)]	Output PWM mode (open drain)	
Temperature 1	60	to control Intel 4–wire fans.	
Temperature 2	50		
Temperature 3	40		
Temperature 4	30		
Duty Cycle 1	85		
Duty Cycle 2	70		
Duty Cycle 3	60		
Duty Cycle 4	50	↔+: Select Screen	
Duty Cycle 5	40	↑↓: Select Item	
		Enter: Select	
		+/-: Change Opt.	
		F1: General Help	
		F2: Previous Values	
		F3: Optimized Defaults	
		F4: Save & Exit	
		ESC: Exit	
Vancion 2 01 1270 Comunicht (P) 2001 AWT			
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Fan1 Output Mode

Output PWM mode (push pull) to control 4-wire fans. Linear fan application circuit to control 3-wire fan speed by fan's power terminal. Output PWM mode (open drain) to control Intel 4-wire fans.

- Fan1 Smart Fan control Smart Fan Mode select.
- Manual Duty Mode
 Manual mode fan control, user can write expected duty cycle (PWM fan type) 1-100

3.4.7. SIO Configuration

Aptio Setup - ANI Advanced	
AMI SIO Driver Version : A5.15.00 Super IO Chip Logical Device(s) Configuration [*Active*] Serial Port 1 [*Active*] Serial Port 2	View and Set Basic properties of the SIO Logical device. Like IO Base, IRQ Range, DMA Channel and Device Mode.
WARNING: Logical Devices state on the left side of the control, reflects the current Logical Device state. Changes made during Setup Session will be shown after you restart the system.	
	<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>
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3.4.7.1. Serial Port Configuration

Advanced	Aptio Setup – AMI		
Serial Port 1 Configuration		Enable or Disable this Logical	
Use This Device		Device.	
Logical Device Settings: Current : IO=3F8h; IRQ=4;			
Possible:	[Use Automatic Settings]		
Mode :	[RS232]		
WARNING: Disabling SIO Logical Devic side effects.	es may have unwanted		
PROCEED WITH CAUTION.		↔: Select Screen ↑↓: Select Item	
		Enter: Select +/−: Change Opt.	
		F1: General Help F2: Previous Values	
		F3: Optimized Defaults F4: Save & Exit	
		ESC: Exit	
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- Use This Device Enable or Disable Serial Port (COM).
- **Possible:** Select an optimal setting for IO device.
- Mode: Uart RS232/422/485 selection.



3.4.8. Power Management

Advanced	Aptio Setup — AMI	
Power Management		Select system power mode.
Power Mode Restore AC Power Loss	(ATX Type) [Last State]	
Wake Events RTC wake system from S5	(Disabled)	
		<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 2.21.1278 Copyright (C) 2	021 AMI

- **Power Mode** Select power supply mode.
- Restore AC Power Loss Select power state when power is re-applied after a power failure.

• RTC wake system from S5

Fixed Time: System will wake on the hr :: min :: sec specified Dynamic Time: System will wake on the current time + Increase minutes(s). Bypass: BIOS will not control RTC wake function during system shutdown.



3.4.9. Digital IO Port Configuration

Advanced	Aptio Setup – AMI	
Digital IO Port Configuration		Set DIO as Input or Output
GPI0 Output Level GPI1 Output Level GPI2 Output Level GPI3 Output Level	(Output) (High) (Output) (High) (Output) (High) (Output) (High)	
		+: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
	2.21.1278 Copyright (C) 2021	

- DIO Port0~3
 Set DIO as Input or Output.
- Output Level Set output level when DIO pin is output.



3.5. Setup Submenu: Chipset

H Main Advanced Chipset Security Boo	ptio Setup – AMI t Save & Exit
▶ System Agent (SA) Configuration ▶ PCH-IO Configuration	System Agent (SA) Parameters ++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.2	.1278 Copyright (C) 2021 AMI

3.5.1. System Agent (SA) Configuration

Chipset	Aptio Setup – AMI	
System Agent (SA) Configuratio	1	Memory Configuration Parameters
VT-d	Supported	
 Memory Configuration Graphics Configuration 		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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3.5.1.1. Memory Configuration



3.5.1.2. Graphics Configuration



Internal Graphics

Keep IGFX enabled based on the setup options.



3.5.1.2.1. LVDS Panel Configuration

Chipset	Aptio Setup — AMI	
LVDS Panel Configuration		Enable/Disabled this panel
LVDS Panel Type Color Depth Backlight Mode	[Enabled] [1024x768060Hz] [18-Bit] [Windows Slider]	<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>
Versio	n 2.21.1278 Copyright (C) 202	1 AMI

- LVDS Enable/Disable this panel.
- LVDS Panel Type Select panel type.
- Color Depth Select Color Depth.
- Backlight Mode Select backlight control signal type.
- Backlight Type Select backlight control signal type.
- Backlight Level
 Select backlight control level.
- Backlight PWM Freq
 Select PWM frequency of backlight control signal.



3.5.2. PCH-IO Configuration

Chipset	Aptio Setup – AMI	
HD Audio Full-MiniCard Slot Function(CN11)	(Enabled) [SATA]	Control Detection of the HD-Audio device. Disabled = HOA will be unconditionally disabled Enabled = HDA will be unconditionally enabled. ++: Select screen 11 : Select Item Enter: Select +/-: Change Opt, F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version (2.21.1278 Copyright (C) 2021	AMI

HD Audio

Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled.

• Full-MiniCard Slot Function (CN11) Select function enabled for Full-MiniCard (CN11) Slot.



3.6. Setup Submenu: Security

Main Huvanceu Chipset Security boot Sa	VE & EXIT
Password Description	Set Administrator Password
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then thi is a power on password and must be entered t boot or enter Setup. In Setup the User will have Administrator rights. The password length must be in the following range: Minimum length 3 Newtere Length 20	S O
Administrator Password User Password	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt.
▶ Secure Boot	F1: General Heip F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.21.1278	Copyright (C) 2021 AWT

Change User/Super visor Password

You can install a Super visor password, and if you install a super visor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

If you highlight these items and press Enter, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press Enter after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

Removing the Password

Highlight this item and type in the current password. At the next dialog box press Enter to disable password protection.



3.6.1. Secure Boot

	Aptio Setup – AMI Security	
System Mode	Setup	Secure Boot feature is Active
Secure Boot	[Disabled] Not Active	Platform Key(PK) is encolled and the System is in User mode. The mode change requires
Secure Boot Mode ▶ Restore Factory Keys ▶ Reset To Setup Mode	[Custom]	platform reset
▶ Key Management		
		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
	Version 2.21.1278 Copyright (C)	2021 AMI

Secure Boot

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

Secure Boot Mode

Secure Boot mode options: Standard or Custom.

In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

Restore Factory Keys

Force System to User Mode. Install factory default Secure Boot key databases.

Reset to Setup Mode

Delete all Secure Boot key databases from NVRAM.



3.6.1.1. Key Management

Aptio Setup - AMI Security		
Vendor Keys	Valid	Install factory default Secure
Factory Key Provision • Restore Factory Keys • Reset To Setup Mode • Export Secure Boot vari • Enroll Efi Image	[Disabled] ables	reset and while the System is in Setup mode
Device Guard Ready ▶ Remove 'UEEI CA' from D	R	
 Restore DB defaults 		
Secure Boot variable Platform Key(PK) Key Exchange Keys Authorized Signatures Forbidden Signatures Authorized TimeStamps DSRecovery Signatures	Size Keys Key Source 0 0 No Keys 0 0 No Keys	<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 2.21.1278 Copyright (C) 2021 AMI		

Factory Key Provision

Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode.

- **Restore Factory Keys** Force System to User Mode. Install factory default Secure Boot key databases.
- 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. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).

- Remove 'UEFI CA' from DB Device Guard ready system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database (db).
- Restore DB defaults
 Restore DB variable to factory defaults.
- Secure Boot VariableS
 Enroll Factory Defaults or load certificates from a file:



- 1. Public Key Certificate in:
 - a) EFI_SIGNATURE_LIST
 - b) EFI_CERT_X509 (DER encoded)
 - c) EFI_CERT_RSA2048 (bin)
 - d) EFI_CERT_SHAXXX
- 2. Authenticated UEFI Variable
- 3. EFI PE/COFF Image (SHA256)

Key Source: Default, External, Mixed

3.7. Setup Submenu: Boot



Quiet Boot
 Enable or Disc

Enable or Disable Quiet Boot option.

- Network Stack Enable/Disable UEFI Network Stack.
- IPv4 PXE Support Enable/Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.



FIXED BOOT ORDER Priorities Sets the system boot order.

3.8. Setup Submenu: Save & Exit



- Save Changes and Reset Reset the system after saving the changes.
- Discard Changes and Exit Exit system setup without saving any changes.
- Restore Defaults

Restore/Load Default values for all the setup options.



4. Appendix

4.1. I/O Information

4.1.1. Direct Memory Access (DMA) Map





4.1.2. I/O Address Map

~	📔 Input/output (IO)
	[00000000000000000 - 000000000000CF7] PCI Express Root Complex
	🏣 [00000000000000020 - 00000000000000021] Programmable interrupt controller
	늘 [0000000000000024 - 0000000000000025] Programmable interrupt controller
	늘 [000000000000028 - 000000000000029] Programmable interrupt controller
	늘 [00000000000002C - 00000000000002D] Programmable interrupt controller
	[000000000000002E - 0000000000002F] Motherboard resources
	늘 [0000000000000030 - 000000000000031] Programmable interrupt controller
	🛅 [000000000000034 - 00000000000035] Programmable interrupt controller
	to 00000000000000038 - 0000000000000000000
	[000000000000003C - 000000000000000000000
	🏣 [0000000000000040 - 000000000000043] System timer
	[00000000000004E - 0000000000004F] Motherboard resources
	🏣 [0000000000000050 - 0000000000000053] System timer
	to 000000000000000000000000000000000000
	to the sources [0000000000003 - 0000000000000003] Motherboard resources
	[0000000000000065 - 000000000000065] Motherboard resources
	to the sources [0000000000067 - 00000000000000067] Motherboard resources
	🏣 [0000000000000070 - 00000000000000070] Motherboard resources
	🏣 [0000000000000080 - 000000000000080] Motherboard resources
	to the resources [000000000002] [00000000000000000000000
	늘 [00000000000000A0 - 0000000000000A1] Programmable interrupt controller
	늘 [00000000000000A4 - 0000000000000A5] Programmable interrupt controller
	늘 [0000000000000A8 - 000000000000A9] Programmable interrupt controller
	to otroller [0000000000000AC - 0000000000000000 Programmable interrupt controller
	늘 [0000000000000B0 - 000000000000B1] Programmable interrupt controller
	🏣 [000000000000082 - 00000000000083] Motherboard resources
	to otroller [000000000000084 - 000000000000085] Programmable interrupt controller
	to otroller [000000000000088 - 00000000000000000000
	to other [0000000000000BC - 00000000000000BD] Programmable interrupt controller
	[00000000000002F8 - 000000000002FF] Communications Port (COM2)
	[0000000000003F8 - 00000000003FF] Communications Port (COM1)
	to ntroller [000000000000000000000000000000000000
	to the sources [00000000000680 - 00000000000069F] Motherboard resources
	🏣 [0000000000000000 - 0000000000000000 MoF] Motherboard resources
	🏣 [0000000000000A10 - 000000000000A1F] Motherboard resources
	to the resources [0000000000020 - 0000000000000000000000
	🏣 [0000000000000000 - 000000000000000000
	늘 [00000000000164E - 00000000000164F] Motherboard resources
	🏣 [000000000001800 - 0000000000018FE] Motherboard resources
	to the resources [00000000001854 - 000000000001857] Motherboard resources
	to the resources [000000000000000000000000000000000000



 Image: Control Contro Control Control Control Control Control Control Control Control C



4.1.3. IRQ Mapping Chart

Interrupt request (IRQ)	
ISA) 0x00000000 (00)	System timer
(ISA) 0x00000003 (03)	Communications Port (COM2)
(ISA) 0x00000004 (04)	Communications Port (COM1)
(ISA) 0x0000000E (14)	Intel(R) Serial IO GPIO Host Controller - INTC1020
(ISA) 0x00000023 (35)	Unknown device
(ISA) 0x00000024 (36)	Unknown device
to (ISA) 0x00000036 (54)	Microsoft ACPI-Compliant System
to (ISA) 0x0000037 (55)	Microsoft ACPI-Compliant System
to (ISA) 0x0000038 (56)	Microsoft ACPI-Compliant System
to (ISA) 0x00000039 (57)	Microsoft ACPI-Compliant System
Table (ISA) 0x000003A (58)	Microsoft ACPI-Compliant System
to (ISA) 0x000003B (59)	Microsoft ACPI-Compliant System
to (ISA) 0x000003C (60)	Microsoft ACPI-Compliant System
to (ISA) 0x0000003D (61)	Microsoft ACPI-Compliant System
to (ISA) 0x000003E (62)	Microsoft ACPI-Compliant System
Table (ISA) 0x0000003F (63)	Microsoft ACPI-Compliant System
tan (ISA) 0x00000040 (64)	Microsoft ACPI-Compliant System
to (ISA) 0x00000041 (65)	Microsoft ACPI-Compliant System
tan (ISA) 0x00000042 (66)	Microsoft ACPI-Compliant System
to (ISA) 0x00000043 (67)	Microsoft ACPI-Compliant System
tan (ISA) 0x00000044 (68)	Microsoft ACPI-Compliant System
to (ISA) 0x00000045 (69)	Microsoft ACPI-Compliant System
to (ISA) 0x00000046 (70)	Microsoft ACPI-Compliant System
to (ISA) 0x00000047 (71)	Microsoft ACPI-Compliant System
to (ISA) 0x00000048 (72)	Microsoft ACPI-Compliant System
tox (ISA) 0x00000049 (73)	Microsoft ACPI-Compliant System
tan (ISA) 0x0000004A (74)	Microsoft ACPI-Compliant System
Table (ISA) 0x0000004B (75)	Microsoft ACPI-Compliant System
tan (ISA) 0x000004C (76)	Microsoft ACPI-Compliant System
to (ISA) 0x0000004D (77)	Microsoft ACPI-Compliant System
(ISA) 0x0000004E (78)	Microsoft ACPI-Compliant System
Table (ISA) 0x0000004F (79)	Microsoft ACPI-Compliant System
tan (ISA) 0x00000050 (80)	Microsoft ACPI-Compliant System
to (ISA) 0x00000051 (81)	Microsoft ACPI-Compliant System
Table (ISA) 0x00000052 (82)	Microsoft ACPI-Compliant System
(ISA) 0x00000053 (83)	Microsoft ACPI-Compliant System
(ISA) 0x00000054 (84)	Microsoft ACPI-Compliant System
tan (ISA) 0x00000055 (85)	Microsoft ACPI-Compliant System
tan (ISA) 0x00000056 (86)	Microsoft ACPI-Compliant System
Table (ISA) 0x00000057 (87)	Microsoft ACPI-Compliant System
Tan (ISA) 0x00000058 (88)	Microsoft ACPI-Compliant System



to (ISA) 0x00000058 (88)	Microsoft ACPI-Compliant System
tai (ISA) 0x00000059 (89)	Microsoft ACPI-Compliant System
to (ISA) 0x0000005A (90)	Microsoft ACPI-Compliant System
ta (ISA) 0x0000005B (91)	Microsoft ACPI-Compliant System
to (ISA) 0x0000005C (92)	Microsoft ACPI-Compliant System
to (ISA) 0x0000005D (93)	Microsoft ACPI-Compliant System
ta (ISA) 0x0000005E (94)	Microsoft ACPI-Compliant System
to (ISA) 0x0000005F (95)	Microsoft ACPI-Compliant System
to (ISA) 0x00000060 (96)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x00000061 (97)	Microsoft ACPI-Compliant System
tai (ISA) 0x0000062 (98)	Microsoft ACPI-Compliant System
to (ISA) 0x00000063 (99)	Microsoft ACPI-Compliant System
to (ISA) 0x00000064 (100)	Microsoft ACPI-Compliant System
to (ISA) 0x00000065 (101)	Microsoft ACPI-Compliant System
to (ISA) 0x00000066 (102)	Microsoft ACPI-Compliant System
to (ISA) 0x00000067 (103)	Microsoft ACPI-Compliant System
to (ISA) 0x00000068 (104)	Microsoft ACPI-Compliant System
🛅 (ISA) 0x00000069 (105)	Microsoft ACPI-Compliant System
to (ISA) 0x0000006A (106)	Microsoft ACPI-Compliant System
to (ISA) 0x0000006B (107)	Microsoft ACPI-Compliant System
to (ISA) 0x0000006C (108)	Microsoft ACPI-Compliant System
to (ISA) 0x0000006D (109)	Microsoft ACPI-Compliant System
to (ISA) 0x0000006E (110)	Microsoft ACPI-Compliant System
ISA) 0x0000006F (111)	Microsoft ACPI-Compliant System
tin (ISA) 0x00000070 (112)	Microsoft ACPI-Compliant System
뻵 (ISA) 0x00000071 (113)	Microsoft ACPI-Compliant System
其 (ISA) 0x00000072 (114)	Microsoft ACPI-Compliant System
(ISA) 0x00000073 (115)	Microsoft ACPI-Compliant System
(ISA) 0x00000074 (116)	Microsoft ACPI-Compliant System
E (ISA) 0x00000075 (117)	Microsoft ACPI-Compliant System
(ISA) 0x00000076 (118)	Microsoft ACPI-Compliant System
(ISA) 0x00000077 (119)	Microsoft ACPI-Compliant System
(ISA) 0x00000078 (120)	Microsoft ACPI-Compliant System
[ISA] 0x00000079 (121)	Microsoft ACPI-Compliant System
E (ISA) 0x0000007A (122)	Microsoft ACPI-Compliant System
(ISA) 0x0000007B (123)	Microsoft ACPI-Compliant System
(ISA) 0x0000007C (124)	Microsoft ACPI-Compliant System
[ISA) 0x0000007D (125)	Microsoft ACPI-Compliant System
ta (ISA) 0x0000007E (126)	Microsoft ACPI-Compliant System
ta (ISA) 0x0000007F (127)	Microsoft ACPI-Compliant System
tal (ISA) 0x00000080 (128)	Microsoft ACPI-Compliant System
📰 (ISA) 0x00000081 (129)	Microsoft ACPI-Compliant System



-		
b	(ISA) 0x00000080 (128)	Microsoft ACPI-Compliant System
	(ISA) 0x00000081 (129)	Microsoft ACPI-Compliant System
	(ISA) 0x00000082 (130)	Microsoft ACPI-Compliant System
	(ISA) 0x0000083 (131)	Microsoft ACPI-Compliant System
	(ISA) 0x00000084 (132)	Microsoft ACPI-Compliant System
	(ISA) 0x00000085 (133)	Microsoft ACPI-Compliant System
	(ISA) 0x00000086 (134)	Microsoft ACPI-Compliant System
	(ISA) 0x00000087 (135)	Microsoft ACPI-Compliant System
	(ISA) 0x00000088 (136)	Microsoft ACPI-Compliant System
	(ISA) 0x00000089 (137)	Microsoft ACPI-Compliant System
	(ISA) 0x0000008A (138)	Microsoft ACPI-Compliant System
	(ISA) 0x000008B (139)	Microsoft ACPI-Compliant System
	(ISA) 0x0000008C (140)	Microsoft ACPI-Compliant System
	(ISA) 0x0000008D (141)	Microsoft ACPI-Compliant System
	(ISA) 0x0000008E (142)	Microsoft ACPI-Compliant System
	(ISA) 0x0000008F (143)	Microsoft ACPI-Compliant System
	(ISA) 0x00000090 (144)	Microsoft ACPI-Compliant System
	(ISA) 0x00000091 (145)	Microsoft ACPI-Compliant System
	(ISA) 0x00000092 (146)	Microsoft ACPI-Compliant System
	(ISA) 0x00000093 (147)	Microsoft ACPI-Compliant System
	(ISA) 0x00000094 (148)	Microsoft ACPI-Compliant System
	(ISA) 0x00000095 (149)	Microsoft ACPI-Compliant System
	(ISA) 0x00000096 (150)	Microsoft ACPI-Compliant System
	(ISA) 0x00000097 (151)	Microsoft ACPI-Compliant System
	(ISA) 0x00000098 (152)	Microsoft ACPI-Compliant System
	(ISA) 0x00000099 (153)	Microsoft ACPI-Compliant System
	(ISA) 0x0000009A (154)	Microsoft ACPI-Compliant System
	(ISA) 0x0000009B (155)	Microsoft ACPI-Compliant System
	(ISA) 0x0000009C (156)	Microsoft ACPI-Compliant System
	(ISA) 0x0000009D (157)	Microsoft ACPI-Compliant System
	(ISA) 0x0000009E (158)	Microsoft ACPI-Compliant System
	(ISA) 0x0000009F (159)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A0 (160)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A1 (161)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A2 (162)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A3 (163)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A4 (164)	Microsoft ACPI-Compliant System
b	(ISA) 0x000000A5 (165)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A6 (166)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A7 (167)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A8 (168)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A9 (169)	Microsoft ACPI-Compliant System



	(ISA) 0x000000A8 (168)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A9 (169)	Microsoft ACPI-Compliant System
	(ISA) 0x000000AA (170)	Microsoft ACPI-Compliant System
	(ISA) 0x000000AB (171)	Microsoft ACPI-Compliant System
	(ISA) 0x000000AC (172)	Microsoft ACPI-Compliant System
	(ISA) 0x000000AD (173)	Microsoft ACPI-Compliant System
	(ISA) 0x000000AE (174)	Microsoft ACPI-Compliant System
	(ISA) 0x000000AF (175)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B0 (176)	Microsoft ACPI-Compliant System
b	(ISA) 0x000000B1 (177)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B2 (178)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B3 (179)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B4 (180)	Microsoft ACPI-Compliant System
-	(ISA) 0x000000B5 (181)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B6 (182)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B7 (183)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B8 (184)	Microsoft ACPI-Compliant System
b	(ISA) 0x000000B9 (185)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BA (186)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BB (187)	Microsoft ACPI-Compliant System
	(ISA) 0x00000BC (188)	Microsoft ACPI-Compliant System
1	(ISA) 0x000000BD (189)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BE (190)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BF (191)	Microsoft ACPI-Compliant System
	(ISA) 0x000000C0 (192)	Microsoft ACPI-Compliant System
	(ISA) 0x000000C1 (193)	Microsoft ACPI-Compliant System
	(ISA) 0x000000C2 (194)	Microsoft ACPI-Compliant System
	(ISA) 0x000000C3 (195)	Microsoft ACPI-Compliant System
	(ISA) 0x000000C4 (196)	Microsoft ACPI-Compliant System
	(ISA) 0x000000C5 (197)	Microsoft ACPI-Compliant System
	(ISA) 0x000000C6 (198)	Microsoft ACPI-Compliant System
	(ISA) 0x000000C7 (199)	Microsoft ACPI-Compliant System
	(ISA) 0x000000C8 (200)	Microsoft ACPI-Compliant System
	(ISA) 0x000000C9 (201)	Microsoft ACPI-Compliant System
	(ISA) 0x000000CA (202)	Microsoft ACPI-Compliant System
	(ISA) 0x000000CB (203)	Microsoft ACPI-Compliant System
	(ISA) 0x000000CC (204)	Microsoft ACPI-Compliant System
	(ISA) 0x00000100 (256)	Microsoft ACPI-Compliant System
	(ISA) 0x00000101 (257)	Microsoft ACPI-Compliant System
	(ISA) 0x00000102 (258)	Microsoft ACPI-Compliant System
	(ISA) 0x00000103 (259)	Microsoft ACPI-Compliant System
	(ISA) 0x00000104 (260)	Microsoft ACPI-Compliant System



늘 (ISA) 0x00000103 (259)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000104 (260)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000105 (261)	Microsoft ACPI-Compliant System
to (ISA) 0x00000106 (262)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x00000107 (263)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x00000108 (264)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x00000109 (265)	Microsoft ACPI-Compliant System
to (ISA) 0x0000010A (266)	Microsoft ACPI-Compliant System
to (ISA) 0x0000010B (267)	Microsoft ACPI-Compliant System
to (ISA) 0x0000010C (268)	Microsoft ACPI-Compliant System
to (ISA) 0x0000010D (269)	Microsoft ACPI-Compliant System
to (ISA) 0x0000010E (270)	Microsoft ACPI-Compliant System
to (ISA) 0x0000010F (271)	Microsoft ACPI-Compliant System
tox00000110 (272)	Microsoft ACPI-Compliant System
to (ISA) 0x00000111 (273)	Microsoft ACPI-Compliant System
to (ISA) 0x00000112 (274)	Microsoft ACPI-Compliant System
tox00000113 (275)	Microsoft ACPI-Compliant System
tox (ISA) 0x00000114 (276)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x00000115 (277)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000116 (278)	Microsoft ACPI-Compliant System
to (ISA) 0x00000117 (279)	Microsoft ACPI-Compliant System
tai (ISA) 0x00000118 (280)	Microsoft ACPI-Compliant System
tal: (ISA) 0x00000119 (281)	Microsoft ACPI-Compliant System
ta (ISA) 0x0000011A (282)	Microsoft ACPI-Compliant System
to (ISA) 0x0000011B (283)	Microsoft ACPI-Compliant System
ta (ISA) 0x0000011C (284)	Microsoft ACPI-Compliant System
ta (ISA) 0x0000011D (285)	Microsoft ACPI-Compliant System
ta (ISA) 0x0000011E (286)	Microsoft ACPI-Compliant System
to (ISA) 0x0000011F (287)	Microsoft ACPI-Compliant System
늘 (ISA) 0x00000120 (288)	Microsoft ACPI-Compliant System
tox00000121 (289)	Microsoft ACPI-Compliant System
tox00000122 (290)	Microsoft ACPI-Compliant System
tox00000123 (291)	Microsoft ACPI-Compliant System
tox (ISA) 0x00000124 (292)	Microsoft ACPI-Compliant System
to (ISA) 0x00000125 (293)	Microsoft ACPI-Compliant System
to (ISA) 0x00000126 (294)	Microsoft ACPI-Compliant System
tox00000127 (295)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000128 (296)	Microsoft ACPI-Compliant System
to (ISA) 0x00000129 (297)	Microsoft ACPI-Compliant System
ta (ISA) 0x0000012A (298)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x0000012B (299)	Microsoft ACPI-Compliant System
tail (ISA) 0x0000012C (300)	Microsoft ACPI-Compliant System



	(ISA) 0x0000012C (300)	Microsoft ACPI-Compliant System
	(ISA) 0x0000012D (301)	Microsoft ACPI-Compliant System
	(ISA) 0x0000012E (302)	Microsoft ACPI-Compliant System
	(ISA) 0x0000012F (303)	Microsoft ACPI-Compliant System
	(ISA) 0x00000130 (304)	Microsoft ACPI-Compliant System
	(ISA) 0x00000131 (305)	Microsoft ACPI-Compliant System
	(ISA) 0x00000132 (306)	Microsoft ACPI-Compliant System
	(ISA) 0x00000133 (307)	Microsoft ACPI-Compliant System
	(ISA) 0x00000134 (308)	Microsoft ACPI-Compliant System
	(ISA) 0x00000135 (309)	Microsoft ACPI-Compliant System
	(ISA) 0x00000136 (310)	Microsoft ACPI-Compliant System
	(ISA) 0x00000137 (311)	Microsoft ACPI-Compliant System
	(ISA) 0x00000138 (312)	Microsoft ACPI-Compliant System
	(ISA) 0x00000139 (313)	Microsoft ACPI-Compliant System
	(ISA) 0x0000013A (314)	Microsoft ACPI-Compliant System
	(ISA) 0x0000013B (315)	Microsoft ACPI-Compliant System
	(ISA) 0x0000013C (316)	Microsoft ACPI-Compliant System
	(ISA) 0x0000013D (317)	Microsoft ACPI-Compliant System
	(ISA) 0x0000013E (318)	Microsoft ACPI-Compliant System
	(ISA) 0x0000013F (319)	Microsoft ACPI-Compliant System
	(ISA) 0x00000140 (320)	Microsoft ACPI-Compliant System
	(ISA) 0x00000141 (321)	Microsoft ACPI-Compliant System
	(ISA) 0x00000142 (322)	Microsoft ACPI-Compliant System
	(ISA) 0x00000143 (323)	Microsoft ACPI-Compliant System
	(ISA) 0x00000144 (324)	Microsoft ACPI-Compliant System
	(ISA) 0x00000145 (325)	Microsoft ACPI-Compliant System
	(ISA) 0x00000146 (326)	Microsoft ACPI-Compliant System
	(ISA) 0x00000147 (327)	Microsoft ACPI-Compliant System
	(ISA) 0x00000148 (328)	Microsoft ACPI-Compliant System
	(ISA) 0x00000149 (329)	Microsoft ACPI-Compliant System
	(ISA) 0x0000014A (330)	Microsoft ACPI-Compliant System
	(ISA) 0x0000014B (331)	Microsoft ACPI-Compliant System
	(ISA) 0x0000014C (332)	Microsoft ACPI-Compliant System
	(ISA) 0x0000014D (333)	Microsoft ACPI-Compliant System
	(ISA) 0x0000014E (334)	Microsoft ACPI-Compliant System
	(ISA) 0x0000014F (335)	Microsoft ACPI-Compliant System
	(ISA) 0x00000150 (336)	Microsoft ACPI-Compliant System
b	(ISA) 0x00000151 (337)	Microsoft ACPI-Compliant System
b	(ISA) 0x00000152 (338)	Microsoft ACPI-Compliant System
	(ISA) 0x00000153 (339)	Microsoft ACPI-Compliant System
	(ISA) 0x00000154 (340)	Microsoft ACPI-Compliant System
	(ISA) 0x00000155 (341)	Microsoft ACPI-Compliant System



-		
	(ISA) 0x00000154 (340)	Microsoft ACPI-Compliant System
	(ISA) 0x00000155 (341)	Microsoft ACPI-Compliant System
	(ISA) 0x00000156 (342)	Microsoft ACPI-Compliant System
	(ISA) 0x00000157 (343)	Microsoft ACPI-Compliant System
	(ISA) 0x00000158 (344)	Microsoft ACPI-Compliant System
	(ISA) 0x00000159 (345)	Microsoft ACPI-Compliant System
	(ISA) 0x0000015A (346)	Microsoft ACPI-Compliant System
	(ISA) 0x0000015B (347)	Microsoft ACPI-Compliant System
	(ISA) 0x0000015C (348)	Microsoft ACPI-Compliant System
	(ISA) 0x0000015D (349)	Microsoft ACPI-Compliant System
	(ISA) 0x0000015E (350)	Microsoft ACPI-Compliant System
	(ISA) 0x0000015F (351)	Microsoft ACPI-Compliant System
	(ISA) 0x00000160 (352)	Microsoft ACPI-Compliant System
b	(ISA) 0x00000161 (353)	Microsoft ACPI-Compliant System
	(ISA) 0x00000162 (354)	Microsoft ACPI-Compliant System
	(ISA) 0x00000163 (355)	Microsoft ACPI-Compliant System
	(ISA) 0x00000164 (356)	Microsoft ACPI-Compliant System
	(ISA) 0x00000165 (357)	Microsoft ACPI-Compliant System
	(ISA) 0x00000166 (358)	Microsoft ACPI-Compliant System
	(ISA) 0x00000167 (359)	Microsoft ACPI-Compliant System
	(ISA) 0x00000168 (360)	Microsoft ACPI-Compliant System
b	(ISA) 0x00000169 (361)	Microsoft ACPI-Compliant System
	(ISA) 0x0000016A (362)	Microsoft ACPI-Compliant System
	(ISA) 0x0000016B (363)	Microsoft ACPI-Compliant System
b	(ISA) 0x0000016C (364)	Microsoft ACPI-Compliant System
b	(ISA) 0x0000016D (365)	Microsoft ACPI-Compliant System
	(ISA) 0x0000016E (366)	Microsoft ACPI-Compliant System
	(ISA) 0x0000016F (367)	Microsoft ACPI-Compliant System
	(ISA) 0x00000170 (368)	Microsoft ACPI-Compliant System
b	(ISA) 0x00000171 (369)	Microsoft ACPI-Compliant System
	(ISA) 0x00000172 (370)	Microsoft ACPI-Compliant System
	(ISA) 0x00000173 (371)	Microsoft ACPI-Compliant System
b	(ISA) 0x00000174 (372)	Microsoft ACPI-Compliant System
b	(ISA) 0x00000175 (373)	Microsoft ACPI-Compliant System
	(ISA) 0x00000176 (374)	Microsoft ACPI-Compliant System
	(ISA) 0x00000177 (375)	Microsoft ACPI-Compliant System
	(ISA) 0x00000178 (376)	Microsoft ACPI-Compliant System
b	(ISA) 0x00000179 (377)	Microsoft ACPI-Compliant System
	(ISA) 0x0000017A (378)	Microsoft ACPI-Compliant System
	(ISA) 0x0000017B (379)	Microsoft ACPI-Compliant System
	(ISA) 0x0000017C (380)	Microsoft ACPI-Compliant System
b	(ISA) 0x0000017D (381)	Microsoft ACPI-Compliant System



	(ISA) 0x0000017C (380)	Microsoft ACPI-Compliant System
	(ISA) 0x0000017D (381)	Microsoft ACPI-Compliant System
	(ISA) 0x0000017E (382)	Microsoft ACPI-Compliant System
	(ISA) 0x0000017F (383)	Microsoft ACPI-Compliant System
	(ISA) 0x00000180 (384)	Microsoft ACPI-Compliant System
	(ISA) 0x00000181 (385)	Microsoft ACPI-Compliant System
	(ISA) 0x00000182 (386)	Microsoft ACPI-Compliant System
	(ISA) 0x00000183 (387)	Microsoft ACPI-Compliant System
	(ISA) 0x00000184 (388)	Microsoft ACPI-Compliant System
	(ISA) 0x00000185 (389)	Microsoft ACPI-Compliant System
	(ISA) 0x00000186 (390)	Microsoft ACPI-Compliant System
	(ISA) 0x00000187 (391)	Microsoft ACPI-Compliant System
	(ISA) 0x00000188 (392)	Microsoft ACPI-Compliant System
	(ISA) 0x00000189 (393)	Microsoft ACPI-Compliant System
b	(ISA) 0x0000018A (394)	Microsoft ACPI-Compliant System
	(ISA) 0x0000018B (395)	Microsoft ACPI-Compliant System
	(ISA) 0x0000018C (396)	Microsoft ACPI-Compliant System
	(ISA) 0x0000018D (397)	Microsoft ACPI-Compliant System
	(ISA) 0x0000018E (398)	Microsoft ACPI-Compliant System
	(ISA) 0x0000018F (399)	Microsoft ACPI-Compliant System
	(ISA) 0x00000190 (400)	Microsoft ACPI-Compliant System
	(ISA) 0x00000191 (401)	Microsoft ACPI-Compliant System
	(ISA) 0x00000192 (402)	Microsoft ACPI-Compliant System
	(ISA) 0x00000193 (403)	Microsoft ACPI-Compliant System
	(ISA) 0x00000194 (404)	Microsoft ACPI-Compliant System
	(ISA) 0x00000195 (405)	Microsoft ACPI-Compliant System
	(ISA) 0x00000196 (406)	Microsoft ACPI-Compliant System
	(ISA) 0x00000197 (407)	Microsoft ACPI-Compliant System
	(ISA) 0x00000198 (408)	Microsoft ACPI-Compliant System
b	(ISA) 0x00000199 (409)	Microsoft ACPI-Compliant System
	(ISA) 0x0000019A (410)	Microsoft ACPI-Compliant System
	(ISA) 0x0000019B (411)	Microsoft ACPI-Compliant System
	(ISA) 0x0000019C (412)	Microsoft ACPI-Compliant System
	(ISA) 0x0000019D (413)	Microsoft ACPI-Compliant System
	(ISA) 0x0000019E (414)	Microsoft ACPI-Compliant System
	(ISA) 0x0000019F (415)	Microsoft ACPI-Compliant System
	(ISA) 0x000001A0 (416)	Microsoft ACPI-Compliant System
b	(ISA) 0x000001A1 (417)	Microsoft ACPI-Compliant System
	(ISA) 0x000001A2 (418)	Microsoft ACPI-Compliant System
	(ISA) 0x000001A3 (419)	Microsoft ACPI-Compliant System
	(ISA) 0x000001A4 (420)	Microsoft ACPI-Compliant System
	(ISA) 0x000001A5 (421)	Microsoft ACPI-Compliant System



	test and the second	
1	(ISA) 0x000001A4 (420)	Microsoft ACPI-Compliant System
	(ISA) 0x000001A5 (421)	Microsoft ACPI-Compliant System
	(ISA) 0x000001A6 (422)	Microsoft ACPI-Compliant System
	(ISA) 0x000001A7 (423)	Microsoft ACPI-Compliant System
	(ISA) 0x000001A8 (424)	Microsoft ACPI-Compliant System
	(ISA) 0x000001A9 (425)	Microsoft ACPI-Compliant System
	(ISA) 0x000001AA (426)	Microsoft ACPI-Compliant System
	(ISA) 0x000001AB (427)	Microsoft ACPI-Compliant System
	(ISA) 0x000001AC (428)	Microsoft ACPI-Compliant System
	(ISA) 0x000001AD (429)	Microsoft ACPI-Compliant System
	(ISA) 0x000001AE (430)	Microsoft ACPI-Compliant System
	(ISA) 0x000001AF (431)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B0 (432)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B1 (433)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B2 (434)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B3 (435)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B4 (436)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B5 (437)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B6 (438)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B7 (439)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B8 (440)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B9 (441)	Microsoft ACPI-Compliant System
	(ISA) 0x000001BA (442)	Microsoft ACPI-Compliant System
	(ISA) 0x000001BB (443)	Microsoft ACPI-Compliant System
	(ISA) 0x000001BC (444)	Microsoft ACPI-Compliant System
	(ISA) 0x000001BD (445)	Microsoft ACPI-Compliant System
	(ISA) 0x000001BE (446)	Microsoft ACPI-Compliant System
	(ISA) 0x000001BF (447)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C0 (448)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C1 (449)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C2 (450)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C3 (451)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C4 (452)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C5 (453)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C6 (454)	Microsoft ACPI-Compliant System
b	(ISA) 0x000001C7 (455)	Microsoft ACPI-Compliant System
1	(ISA) 0x000001C8 (456)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C9 (457)	Microsoft ACPI-Compliant System
	(ISA) 0x000001CA (458)	Microsoft ACPI-Compliant System
Þ	(ISA) 0x000001CB (459)	Microsoft ACPI-Compliant System
	(ISA) 0x000001CC (460)	Microsoft ACPI-Compliant System
	(ISA) 0x000001CD (461)	Microsoft ACPI-Compliant System



	(ISA) 0x000001CC (460)	Microsoft ACPI-Compliant System
	(ISA) 0x000001CD (461)	Microsoft ACPI-Compliant System
	(ISA) 0x000001CE (462)	Microsoft ACPI-Compliant System
	(ISA) 0x000001CF (463)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D0 (464)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D1 (465)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D2 (466)	Microsoft ACPI-Compliant System
b	(ISA) 0x000001D3 (467)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D4 (468)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D5 (469)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D6 (470)	Microsoft ACPI-Compliant System
b	(ISA) 0x000001D7 (471)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D8 (472)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D9 (473)	Microsoft ACPI-Compliant System
	(ISA) 0x000001DA (474)	Microsoft ACPI-Compliant System
	(ISA) 0x000001DB (475)	Microsoft ACPI-Compliant System
	(ISA) 0x000001DC (476)	Microsoft ACPI-Compliant System
	(ISA) 0x000001DD (477)	Microsoft ACPI-Compliant System
	(ISA) 0x000001DE (478)	Microsoft ACPI-Compliant System
b	(ISA) 0x000001DF (479)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E0 (480)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E1 (481)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E2 (482)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E3 (483)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E4 (484)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E5 (485)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E6 (486)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E7 (487)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E8 (488)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E9 (489)	Microsoft ACPI-Compliant System
	(ISA) 0x000001EA (490)	Microsoft ACPI-Compliant System
	(ISA) 0x000001EB (491)	Microsoft ACPI-Compliant System
	(ISA) 0x000001EC (492)	Microsoft ACPI-Compliant System
	(ISA) 0x000001ED (493)	Microsoft ACPI-Compliant System
	(ISA) 0x000001EE (494)	Microsoft ACPI-Compliant System
	(ISA) 0x000001EF (495)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F0 (496)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F1 (497)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F2 (498)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F3 (499)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F4 (500)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F5 (501)	Microsoft ACPI-Compliant System



	tai (ISA) 0x000001EF (495)	Microsoft ACPI-Compliant System
	ta (ISA) 0x000001F0 (496)	Microsoft ACPI-Compliant System
	to (ISA) 0x000001F1 (497)	Microsoft ACPI-Compliant System
	ta (ISA) 0x000001F2 (498)	Microsoft ACPI-Compliant System
	ta (ISA) 0x000001F3 (499)	Microsoft ACPI-Compliant System
	ta (ISA) 0x000001F4 (500)	Microsoft ACPI-Compliant System
	to (ISA) 0x000001F5 (501)	Microsoft ACPI-Compliant System
	ta (ISA) 0x000001F6 (502)	Microsoft ACPI-Compliant System
	to (ISA) 0x000001F7 (503)	Microsoft ACPI-Compliant System
	ta (ISA) 0x000001F8 (504)	Microsoft ACPI-Compliant System
	to (ISA) 0x000001F9 (505)	Microsoft ACPI-Compliant System
	ta (ISA) 0x000001FA (506)	Microsoft ACPI-Compliant System
	ta (ISA) 0x000001FB (507)	Microsoft ACPI-Compliant System
	ta (ISA) 0x000001FC (508)	Microsoft ACPI-Compliant System
	to (ISA) 0x000001FD (509)	Microsoft ACPI-Compliant System
	ta (ISA) 0x000001FE (510)	Microsoft ACPI-Compliant System
	tai (ISA) 0x000001FF (511)	Microsoft ACPI-Compliant System
	E (PCI) 0x00000010 (16)	High Definition Audio Controller
	(PCI) 0x00000010 (16)	Intel SD Host Controller
	to (PCI) 0x00000010 (16)	Intel(R) Serial IO I2C Host Controller - 4B44
	to (PCI) 0x00000011 (17)	Intel(R) Serial IO I2C Host Controller - 4B45
	(PCI) 0xFFFFFFEC (-20)	Intel(R) Serial IO I2C Host Controller - 4BBA
	(PCI) 0xFFFFFFED (-19)	Intel(R) Serial IO I2C Host Controller - 4BB9
	(PCI) 0xFFFFFFEE (-18)	Intel(R) Serial IO I2C Host Controller - 4BC0
	(PCI) 0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	Intel(R) Management Engine Interface #1
	(PCI) 0xFFFFFFF0 (-16)	Intel(R) Serial IO I2C Host Controller - 4BBF
	(PCI) 0xFFFFFFF1 (-15)	Intel(R) Serial IO SPI Host Controller - 4B84
	(PCI) 0xFFFFFFF2 (-14)	Intel(R) Serial IO UART Host Controller - 4B97
	to (PCI) 0xFFFFFFF3 (-13)	Intel(R) Serial IO UART Host Controller - 4896
	(PCI) 0xFFFFFFF4 (-12)	Intel(R) Integrated Sensor Solution
	(PCI) 0xFFFFFFF5 (-11)	Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
	(PCI) 0xFFFFFFF6 (-10)	Intel(R) UHD Graphics
	(PCI) 0xFFFFFFF7 (-9)	Realtek PCIe GbE Family Controller #2
	(PCI) 0xFFFFFFF8 (-8)	Realtek PCIe GbE Family Controller
	(PCI) 0xFFFFFFF9 (-7)	Standard SATA AHCI Controller
	(PCI) 0xFFFFFFFA (-6)	Intel(R) PCI Express Root Port #6 - 4B3E
	(PCI) 0xFFFFFFB (-5)	Intel(R) PCI Express Root Port #2 - 4B3A
	(PCI) 0xFFFFFFFC (-4)	Intel(R) PCI Express Root Port #1 - 4B39
	(PCI) 0xFFFFFFFD (-3)	Intel(R) PCI Express Root Port #3 - 4B3B
	(PCI) 0xFFFFFFFE (-2)	Intel(R) PCI Express Root Port #0 - 4B38
1	Large Memory	ann ann a bhair ann an ann an t- Chuir ann ann a' ann an ann ann ann ann ann a
ī	Memory	



4.1.4. Large Memory Map

- ✓ ♣ DESKTOP-NRBQB4H
 - > Direct memory access (DMA)
 - > 🎽 Input/output (IO)
 - > 🞽 Interrupt request (IRQ)
 - ✓ ▲ Large Memory
 - to [000000400000000 0000007FFFFFFFF] PCI Express Root Complex
 - > 🞽 Memory



4.1.5. Memory Address Map

~	Memory
2000	to [000000000000000 - 0000000000000000000
	[000000007FC00000 - 000000007FC03FFF] Realtek PCIe GbE Family Controller
	[000000007FC00000 - 000000007FCFFFFF] Intel(R) PCI Express Root Port #3 - 4B3B
	to [00000007FC00000 - 00000000BFFFFFF] PCI Express Root Complex
	🗇 [000000007FC04000 - 000000007FC04FFF] Realtek PCIe GbE Family Controller
	[000000007FD00000 - 000000007FD03FFF] Realtek PCIe GbE Family Controller #2
	[000000007FD00000 - 000000007FDFFFF] Intel(R) PCI Express Root Port #0 - 4B38
	[000000007FD04000 - 000000007FD04FFF] Realtek PCIe GbE Family Controller #2
	a [000000007FE00000 - 000000007FE01FFF] Standard SATA AHCI Controller
	a [000000007FE02000 - 000000007FE027FF] Standard SATA AHCI Controller
	a [000000007FE03000 - 000000007FE030FF] Standard SATA AHCI Controller
	🛅 [00000000C0000000 - 00000000CFFFFFFF] Motherboard resources
	to [0000000FD000000 - 0000000FD68FFFF] Motherboard resources
	to 000000000000000000000000000000000000
	to [00000000FD6A0000 - 00000000FD6AFFFF] Intel(R) Serial IO GPIO Host Controller - INTC1020
	to [00000000FD6B0000 - 00000000FD6BFFFF] Intel(R) Serial IO GPIO Host Controller - INTC1020
	to [00000000FD6B0000 - 00000000FD6CFFFF] Motherboard resources
	to [00000000FD6C0000 - 00000000FD6CFFFF] Intel(R) Serial IO GPIO Host Controller - INTC1020
	to 000000000000000000000000000000000000
	to GPIO Host Controller - INTC1020 [] Intel(R) Serial IO GPIO Host Controller - INTC1020
	to [00000000FD6F0000 - 00000000FDFFFFF] Motherboard resources
	to [0000000FE000000 - 0000000FE01FFF] Motherboard resources
	[00000000FE010000 - 00000000FE010FFF] Intel(R) SPI (flash) Controller - 4B24
	To [00000000FE032000 - 00000000FE032FFF] Motherboard resources
	🏣 [00000000FE033000 - 00000000FE033FFF] Motherboard resources
	🙀 [00000000FE050000 - 00000000FE053FFF] Unknown device
	🙀 [0000000FE060000 - 0000000FE063FFF] Unknown device
	to [00000000FE200000 - 00000000FE7FFFF] Motherboard resources
	to [00000000FEC80000 - 00000000FECFFFF] Motherboard resources
	i [00000000FED00000 - 00000000FED003FF] High precision event timer
	[00000000FED20000 - 00000000FED7FFF] Motherboard resources
	[00000000FED40000 - 00000000FED44FFF] Trusted Platform Module 2.0
	[00000000FED45000 - 00000000FED8FFF] Motherboard resources
	a [00000000FED90000 - 00000000FED93FFF] Motherboard resources
	[00000000FEDA0000 - 00000000FEDA0FF] Motherboard resources
	[00000000FEDA1000 - 00000000FEDA1FFF] Motherboard resources
	[00000000FEE00000 - 00000000FEEFFFF] Motherboard resources
	00000000FF000000 - 00000000FFFFFFF] Motherboard resources
	[000000400000000 - 000000400FFFFFF] Intel(R) UHD Graphics
	[] [000000600000000 - 0000006000FFFFF] Intel(R) UHD Graphics
	[0000006001320000 - 000000600132FFFF] Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)

to [00000000FD6A0000 - 00000000FD6AFFF] Intel(R) Serial IO GPIO Host Controller - INTC1020
to [0000000FD6B0000 - 0000000FD6BFFFF] Intel(R) Serial IO GPIO Host Controller - INTC1020
to [0000000FD6B0000 - 0000000FD6CFFFF] Motherboard resources
to 000000000000000000000000000000000000
to [00000000FD6D0000 - 00000000FD6DFFFF] Intel(R) Serial IO GPIO Host Controller - INTC1020
to [00000000FD6E0000 - 00000000FD6EFFFF] Intel(R) Serial IO GPIO Host Controller - INTC1020
to [0000000FD6F0000 - 0000000FDFFFFF] Motherboard resources
to [00000000FE000000 - 00000000FE01FFFF] Motherboard resources
🏣 [00000000FE010000 - 00000000FE010FFF] Intel(R) SPI (flash) Controller - 4B24
🏣 [00000000FE032000 - 00000000FE032FFF] Motherboard resources
to the resources [0000000FE033000 - 00000000FE033FFF] Motherboard resources
📓 [0000000FE050000 - 0000000FE053FFF] Unknown device
🕼 [00000000FE060000 - 00000000FE063FFF] Unknown device
늘 [00000000FE200000 - 00000000FE7FFFFF] Motherboard resources
to [00000000FEC80000 - 00000000FECFFFF] Motherboard resources
🏣 [00000000FED00000 - 00000000FED003FF] High precision event timer
to [00000000FED20000 - 00000000FED7FFF] Motherboard resources
[00000000FED40000 - 00000000FED44FFF] Trusted Platform Module 2.0
[00000000FED45000 - 00000000FED8FFF] Motherboard resources
to [00000000FED90000 - 00000000FED93FFF] Motherboard resources
to the sources [0000000FEDA0000 - 00000000FEDA0FFF] Motherboard resources
to the sources [0000000FEDA1000 - 00000000FEDA1FFF] Motherboard resources
to [00000000FEE00000 - 00000000FEEFFFFF] Motherboard resources
🏣 [0000000FF000000 - 0000000FFFFFFF] Motherboard resources
[000000400000000 - 000000400FFFFFF] Intel(R) UHD Graphics
[000000600000000 - 0000006000FFFFFF] Intel(R) UHD Graphics
[0000006001320000 - 000000600132FFFF] Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
te [0000006001346000 - 00000060013460FF] Intel(R) SMBus Controller - 4B23
[0000006001349000 - 0000006001349FFF] Intel SD Host Controller
ta [0000007FFFCEB000 - 0000007FFFCEBFFF] Intel(R) Management Engine Interface #1
to [0000007FFFCEC000 - 0000007FFFCECFFF] Intel(R) Serial IO I2C Host Controller - 4B45
to [0000007FFFCED000 - 0000007FFFCEDFFF] Intel(R) Serial IO I2C Host Controller - 4B44
to [0000007FFFCEE000 - 0000007FFFCEFFFF] Intel(R) Serial IO I2C Host Controller - 48BA
[0000007FFFCF0000 - 0000007FFFCF1FFF] Intel(R) Serial IO I2C Host Controller - 48B9
to [0000007FFFCF2000 - 0000007FFFCF3FFF] Intel(R) Serial IO I2C Host Controller - 4BC0
to [0000007FFFCF4000 - 0000007FFFCF5FFF] Intel(R) Serial IO I2C Host Controller - 4BBF
to [0000007FFFCF6000 - 0000007FFFCF7FFF] Intel(R) Serial IO SPI Host Controller - 4884
to [0000007FFFCF8000 - 0000007FFFCF9FFF] Intel(R) Serial IO UART Host Controller - 4B97
to [0000007FFFCFA000 - 0000007FFFCFBFFF] Intel(R) Serial IO UART Host Controller - 4896
to [0000007FFFCFC000 - 0000007FFFCFFFF] High Definition Audio Controller
to [0000007FFFD00000 - 0000007FFFDFFFF] High Definition Audio Controller
to [0000007FFFE00000 - 0000007FFFFFFFF] Intel(R) Integrated Sensor Solution

DSSER



5. FAQ

Q 1. Where can I find the serial number of this product?

• The serial number (S/N) is a label printed with alpha-numeric character. You can find the S/N label on the bottom of this product or on its packing box.



Technical Support Form

We deeply appreciate your purchase of Acrosser products. Please find the "**tech_form. doc**" file in our utility CD. If you have any questions or problems about Acrosser products, please fill in the following information. We will answer your questions in the shortest time possible.

Describe Your Info and Acrosser System Info

Your Company Name:	
Your Contact Info:	Phone Number:
Your E-Mail Address:	
Your Company Address:	
Acrosser Model Name:	
Acrosser Serial Number:	
Describe System Configuration	
CPU Type:	
Memory Size:	
 Storage Device (e.g. HDD, CF, or SSE 	D):
Additional Peripherals (e.g. Graphic Caller Content of Caller Calle	ard):
Operating System & Version (e.g. Win	dows 7 Embedded):
Special API or Driver:	
	(If yes, please provide it for debug.)
Running Applications:	
Others:	
Describe Your Problems or Questio	ns:
Send the above information to one • Acrosser Local Sales Representative • Acrosser Authorized Sales Channels • Acrosser Inquiry http://www.acrosse	of the following Acrosser contacts:

• Acrosser FAX Number --- 886-2-29992887





Acrosser Headquarters

241402新北市三重區重新路5段609巷4號3樓之8 Rm. 8, 3F., No. 4, Ln. 609, Sec. 5, Chongxin Rd., Sanchong Dist., New Taipei City 241402, Taiwan (R.O.C.) TEL: +886-2-29999000 FAX: +886-2-29992887

Acrosser Taichung Office

414台中市烏日區僑仁街8號10樓之1 10F.-1, No.8, Qiaoren St., Wuri Dist., Taichung City 414, Taiwan (R.O.C.) TEL: +886-4-2337-0715 FAX: +886-4-2337-3422

Acrosser China Subsidiary

深圳市欣扬通电子有限公司 深圳市福田区泰然八路安华工业区6号楼7层 706室 (邮编: 518040) Room 706, floor 7, building 6, Anhua Industrial Zone, Tairan 8th Road, Futian District, Shenzhen, China (Postal: 518040) TEL: +86-755-83542210 FAX: +86-755-83700087

Acrosser Nanjing Office

欣扬通电子有限公司 南京办事处
江苏省南京市江宁区天元东路228号504室
(邮编: 211100)
Room 504, No. 228, Tian Yuan East Rd.,
Jiang Ning Dist., Nanjing City, Jiangsu Province,
China (Postal: 211100)
Mobile: 13611932003
TEL: +86-025-86137002
FAX: +86-025-86137003

Acrosser Beijing Office

欣扬通电子有限公司 北京办事处 北京市昌平区沙河镇沙阳路巩华新村8号楼2单元 1403室 (邮编: 102206) Room 1403, Unit 2, Building 8, Gonghua Village, Shahe Town, Changping District, Beijing, China (Postal: 102206) Mobile: 13311317329

Acrosser USA Inc.

8351 Elm Ave. Suite 107, Rancho Cucamonga, CA91730, USA TEL: +1-909-476-0071 FAX: +1-909-466-9951