Intel® Atom®x6000E Series/Pentium®/Celeron® SoC processor Qseven Module

# **User's Manual**

1<sup>st</sup> Ed – 01 October 2023

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Part No.E2047400100R

# Content

1. Get	tting Started.		4
1.1	Safety Preca	utions	4
1.2	Packing List.		4
1.3	Document Ar	nendment History	5
1.4	Manual Obje	ctives	6
1.5	System Spec	ifications	7
1.6	Architecture	Overview—Block Diagram	10
2. Hai	dware Confi	guration	11
2.1	Product Over	view	12
2.2	Connector Li	st	13
2.3	Setting Conn	ectors	14
2.3.	1 AT/ATX n	node selector (SW1)	14
	2.3.1.1	Signal Description –AT/ATX mode selection	14
2.3.	2 QSeven o	connector (GF1)	15
2.4	Installing Hea	atsink	17
3.BIOS	Setup		19
3.1	Introduction		20
3.2	Starting Setu	p	20
3.3	Using Setup.		21
3.4 Ge	etting Help		22
3.5	In Case of Pr	oblems	22
3.6	BIOS setup		23
3.6.	1 Main Mer	iu	23
3.6.	1.1 System L	anguage	24
3.6.	1.2 System D	ate	24
3.6.	1.3 System I	ime	24
3.6.	2 Advanced		24
	3.6.2.1	CPU Configuration	25
	3.6.2.2	Power & Performance	25
	3.6.2.2.1	CPU - Power Management Control	20
	3.0.2.3	FCH-FW Configuration	27
	3.0.2.3.1		21
	3631		20 29
	3.0.2.4	ACPI Settings	20 20
	3626	IT5571 Super IO Configuration	30
	0.0.2.0	······································	55

#### **User's Manual**

5. Mech	anical Drawi	ng	60
4.5	Install Etherr	net Driver	58
4.4	Install Audio	Driver	57
4.3	Install VGA	Driver	55
4.2	Install ME Dr	iver	54
4.1	Install Chipse	et Driver	53
4. Drive	rs Installatio	n	52
	3.6.6.4	Launch EFI Shell from filesystem device	51
	3.6.6.3	Restore Defaults	51
	3.6.6.2	Discard Changes and Reset	50
	3.6.6.1	Save Changes and Reset	50
3.6.	.6 Save and	l exit	50
3.6.	.5 Boot		49
	3.6.4.1.1	Key Management	
	3.6.4.1	Secure Boot	
3.6.	4 Security.		47
	3.6.3.3	Board & Panel Configuration	
	3.6.3.2.5	SCS Configuration	45
	3.6.3.2.4	- HD Audio Configuration	
	3.6.3.2.3	USB Configuration	
	3.6.3.2.2	SATA And RST Configuration	
	3.6.3.2.1	PCI Express Configuration	
	3.6.3.2	PCH-IO Configuration	
	3.6.3.1.2	Graphics Configuration	
	36311	Memory Configuration	
5.0.	3631	System Agent (SA) Configuration	
3 6	3 Chinset		
	36212	NVMe Configuration	
	3.0.2.10	Network Stack Configuration	
	3.0.2.9 3.6.2.10		32 20
	J.0.∠.0	Sorial Part Cancele Pediraction	
	3.0.Z./	EC 33/1 H/W MONITOR	
	3.6.2.6.1	Serial Port 1 Configuration	
	36261	Serial Port 1 Configuration	30

# **1. Getting Started**

#### **1.1 Safety Precautions**

Warning!



Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

#### **Caution!**



Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

**1.2 Packing List** 

- 1 x EQM-EHL Qseven Module
- 1 x Desiccant (5g)



If any of the above items is damaged or missing, contact your retailer.

# 1.3 Document Amendment History

Revision	Date By		Comment
1 <sup>st</sup>	October 2023	Avalue	Initial Release

#### **1.4 Manual Objectives**

This manual describes in details Avalue Technology EQM-EHL Qseven Module.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard IBM Technical References, unless it proved to be necessary to aid in the understanding of this board.

We strongly recommend that you study this manual carefully before attempting to set up EQM-EHL QSeven Module or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors regarding this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

# 1.5 System Specifications

System					
CDU	Onboard Intel® Celeron®/ Pentium®/Atom™ SoC BGA Processor				
CPU	(Elkhart Lake Platform 6~12W)				
BIOS	AMI uEFI BIOS, 256 Mbit SPI Flash ROM				
System Chipset	Elkhart lake SoC integrated				
I/O Chipset	EC ITE IT5571				
Suctom Momony	Onboard Single channel LPDDR4 4GB memory down (8GB for BOM				
System Memory	option) with 3200MT/s				
Watchdog Timer	H/W Reset, 1sec. ~ 65535sec. and 1sec./step				
LIAN Status Manitar	Monitoring System Temperature, Voltage and FAN Status with Auto				
H/W Status Monitor	Throttling Control				
ТРМ	SPI TPM, NuvoTon_NPCT754AADYX				
Storage					
eMMC	eMMC 5.1 64GB / 128 GB (optional)				
I/O Interface (SOM)					
PCI Express	4 x PCle Gen 3 x1				
UART	1 x UART				
USB3.1 / USB 2.0 1 x USB 3.2 Gen1 (5 Gbps) + 8 x USB2.0					
SATA	2 x SATA 6Gb/s				
SDIO	1 x SDIO				
I <sup>2</sup> C Bus	1 x I2C				
SMBus	1 x SMBus				
SD	1 x SD				
SPI	1 x SPI				
Display					
Graphic Chinsot	Intel® Elkhart Lake SoC Processor integrated Intel® UHD Gen11 LP				
Graphic Chipset	graphics				
	A: DP 1.4 Max resolution 4096x2160 @60Hz or HDMI 2.0b Max				
	resolution 4096x2160 @60Hz				
	B1: eDP 1.3 Max resolution 4096x2160 @60Hz only				
Spec. & Resolution	Or				
	B2: LVDS Max resolution 1920 x 1080@60Hz Dual channel 18/24-bits				
	LVDS (Chrontel CH7511A-BF eDP to LVDS)				
	Note: By BOM Option via HW/BIOS, refer to the block diagram for detail.				
Multiple Display	Up to 2 independent displays				

Audio								
Audio Codec	Intel® HD Audio integrated in SoC							
Ethernet								
LAN Chipset	1x Intel® i226 LM/IT							
LAN Spec.	10/100/1000 Base-Tx GbE compatible							
Mechanical &								
Environmental								
Power Requirement	+5V DC							
	Single power ATX Support S0, S3, S4, S5							
ACPI	ACPI 5.0 Compliant							
Power Mode	ATX							
	Standard supports 0°C ~ 60°C							
Operating remp.	Extended supports -40°C ~ 85°C							
Storage Temp.	-40°C ~ 85°C (-40°F ~ 185°F)							
<b>Operating Humidity</b>	40°C @ 95% Relative Humidity, Non-condensing							
Size (L x W)								
(Please consult product								
engineers for the production	2.75" x 2.75" (70mm x 70mm)							
feasibility if the size is larger								
than 410x360mm or smaller								
than 80x70mm)								
Weight	0.02 kg							
	Random Vibration Operation 1 Test PSD: 0.00454G²/Hz , 1.5 Grms 2							
	System condition : operation mode 3 Test frequency : 5~500 Hz 4 Test							
	axis : X,Y and Z axis 5 Test time : 30 minutes per each axis 6							
	IEC60068-2-64 Test Fh 6 Storage : mSATA							
	Random vibration test (Non-operation)							
	1 PSD: 0.01818G²/Hz , 3.0 Grms							
	2 Non-Operation mode							
	3 Test Frequency : 5-500Hz							
Vibration Test	4 Test Axis : X,Y and Z axis							
vibration rest	5 30 min. per each axis							
	6 IEC 60068-2-64 Test:Fh							
	Package Vibration Test:							
	1 Test PSD : 0.026G²/Hz , 2.16 Grms							
	2 Test frequency : 5~500 Hz							
	3 Test axis : X,Y and Z axis							
	4 Test time : 30 minutes per each axis							
	5 IEC 60068-2-64 Test Fh							

	1 Wave from : Half Sine wave				
	2 Acceleration Rate : 10g				
	3 Duration Time : 11ms				
Shock Test	4 No. of shock : Z axis 300 times				
	5 Test Axis : Z axis				
	6 operation mode				
	7 Reference IEC 60068-2-27 testing procedures Test Eb : Shock Test				
	Package drop test				
	Reference ISTA 2A, Method : IEC-60068-2-32 Test:Ed Test Ea : Drop				
	Test				
Drop Test	1 Test phase : One corner, three edges, six faces				
	2 Test high : 96.5cm				
	3 Package weight : 5Kg				
	4 Test drawing				
	Windows* 10 & 11 IoT Enterprise (64-bit), Linux				
OS Information	* Elkhart Lake platform doesn't support Win11. The current message is				
	that Microsoft expects to support Win11 in 2024.				
	Please confirm if crrent Carrier board for EQM-APL can use in EQM-EHL.				
Carrier Board	The Carrier Board for EQM-APL: REV-Q703-B1-00R /				
	E9697Q70304R DIP REV-Q703 Rev.B1 W/Q7 VER:2.1				

Q

**Note:** Specifications are subject to change without notice.

#### EQM-EHL 1.6 Architecture Overview—Block Diagram

The following block diagram shows the architecture and main components of EQM-EHL QSeven Module.



# 2. Hardware Configuration

#### 2.1 Product Overview



#### 2.2 Connector List

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch.

It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper you connect the pins with the clip. To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.



The jumper settings are schematically depicted in this manual as follows:

0 0		1 2 3 O <b></b>
Open	Closed	Closed 2-3

A pair of needle-nose pliers may be helpful when working with jumpers.

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

The following tables list the function of each of the board's jumpers and connectors.

Connectors						
Label	Function	Note				
BIOS_SPI1	(Reserved for BIOS programming)	10P wafer, pitch 1.00mm (ACES 83217)				
SW1	AT/ATX mode selector					
GF1	QSeven connector					

# 2.3 Setting Connectors

2.3.1 AT/ATX mode selector (SW1)



\*Default

AT/ATX mode



AT mode\*







#### 2.3.1.1 Signal Description –AT/ATX mode selection

AT/ATX mode	Description
AT mode	
	Auto-power on, no need to press Power button to enable power on/off
ATX mode 21	Press the power button to enable power on/off

#### 2.3.2 QSeven connector (GF1)



Signal	PIN	PIN	Signal
GND1	1	2	GND2
GBE_MDI3-	3	4	GBE_MDI2-
GBE_MDI3+	5	6	GBE_MDI2+
GBE_LINK100#	7	8	GBE_LINK1000#
GBE_MDI1-	9	10	GBE_MDI0-
GBE_MDI1+	11	12	GBE_MDI0+
GBE_LINK#	13	14	GBE_ACT#
GBE_CTREF	15	16	SUS_S5#
WAKE#	17	18	SUS_S3#
GPO0	19	20	PWRBTN#
SLP_BTN#	21	22	LID_BTN#
GND3	23	24	GND4
GND5	25	26	PWGIN
BATLOW#	27	28	RSTBTN#
SATA0_TX+	29	30	SATA1_TX+
SATA0_TX-	31	32	SATA1_TX-
SATA_ACT#	33	34	GND6
SATA0_RX+	35	36	SATA1_RX+
SATA0_RX-	37	38	SATA1_RX-

Signal	PIN	PIN	Signal
GND7	39	40	GND8
BIOS_DISABLE#	41	42	SDIO_CLK#
SDIO_CD#	43	44	NC
SDIO_CMD	45	46	SDIO_WP
SDIO_PWR#	47	48	SDIO_DAT1
SDIO_DAT0	49	50	SDIO_DAT3
SDIO_DAT2	51	52	NC
NC	53	54	NC
NC	55	56	USB_OTG_PEN
GND9	57	58	GND10
HDA_SYNC	59	60	SMB_CLK
HDA_RST#	61	62	SMB_DAT
HDA_BITCLK	63	64	SMB_ALERT#
HDA_SDI	65	66	GP0_I2C_CLK
HDA_SDO	67	68	GP0_I2C_DAT
THRM#	69	70	WDTRIG#
THRMTRIP#	71	72	WDOUT
GND11	73	74	GND12
USB_P7-	75	76	USB_P6-
USB_P7+	77	78	USB_P6+
USB_6_7_OC#	79	80	USB_4_5_OC#
USB_P5-	81	82	USB_P4-
USB_P5+	83	84	USB_P4+
USB_2_3_OC#	85	86	USB_0_1_OC#
USB_P3-	87	88	USB_P2-
USB_P3+	89	90	USB_P2+
USB_VBUS	91	92	USB_ID
USB_P1-	93	94	USB_P0-
USB_P1+	95	96	USB_P0+
GND13	97	98	GND14
LVDS_A0+	99	LVDS_B0+	
LVDS_A0-	101	102	LVDS_B0-
LVDS_A1+	103	104	LVDS_B1+

Signal	PIN	PIN	Signal	Signal	PIN	PIN	Signal
LVDS_A1-	105	106	LVDS_B1-	UART0_TX	171	172	UART0_RTS#
LVDS_A2+	107	108	LVDS_B2+	PCIE1_TX+	173	174	PCIE1_RX+
LVDS_A2-	109	110	LVDS_B2-	PCIE1_TX-	175	176	PCIE1_RX-
LVDS_PPEN	111	112	LVDS_BLEN	UART0_RX	177	178	UART0_CTS#
LVDS_A3+	113	114	LVDS_B3+	PCIE0_TX+	179	180	PCIE0_RX+
LVDS_A3-	115	116	LVDS_B3-	PCIE0_TX-	181	182	PCIE0_RX-
GND15	117	118	GND16	GND27	183	184	GND28
LVDS_A_CLK+	119	120	LVDS_B_CLK+	LPC_AD0	185	186	LPC_AD1
LVDS_A_CLK-	121	122	LVDS_B_CLK-	LPC_AD2	187	188	LPC_AD3
LVDS_BLT_CTRL	123	124	NC	LPC_CLK	189	190	LPC_FRAME#
NC	125	126	EDP0_HPD#/	SERIRQ	191	192	LPC_LDRQ#
	120	120	LVDS_BLC_DAT	VCC_RTC	193	194	SPKR
NC	127	128	LVDS_BLC_CLK	FAN_TACHOIN	195	196	FAN_PWMOUT
NC	129	130	NC	GND29	197	198	GND30
DP_LANE3+	131	132	USB_SSTX1-	SPI_MOSI	199	200	SPI_CS0#
DP_LANE3-	133	134	USB_SSTX1+	SPI_MISO	201	202	SPI_CS1#
GND17	135	136	GND18	SPI_SCK	203	204	NC
DP_LANE1+	137	138	DP_AUX+	VCC_5V_SB1	205	206	VCC_5V_SB2
DP_LANE1-	139	140	DP_AUX-	NC	207	208	NC
GND19	141	142	GND20	NC	209	210	NC
DP_LANE2+	143	144	USB_SSRX1-	NC	211	212	NC
DP_LANE2-	145	146	USB_SSRX1+	NC	213	214	NC
GND21	147	148	GND22	NC	215	216	NC
DP_LANE0+	149	150	HDMI_CTRL_SDA	NC	217	218	NC
DP_LANE0-	151	152	HDMI_CTRL_CLK	VCC_1	219	220	VCC_2
DP_HDMI_HPD#	153	154	DP_HPD#	VCC_3	221	222	VCC_4
PCIE_CLK_REF+	155	156	PCIE_WAKE#	VCC_5	223	224	VCC_6
PCIE_CLK_REF-	157	158	PCIE_RST#	VCC_7	225	226	VCC_8
GND23	159	160	GND24	VCC_9	227	228	VCC_10
PCIE3_TX+	161	162	PCIE3_RX+	VCC_11	229	230	VCC_12
PCIE3_TX-	163	164	PCIE3_RX-				
GND25	165	166	GND26				
PCIE2_TX+	167	168	PCIE2_RX+				
PCIE2_TX-	169	170	PCIE2_RX-				

# 2.4 Installing Heatsink

#### Standard Temperature



**Step1.** Using 4 screws to lock the Heatsink from PCB backside.

#### Wide Temperature



**Step1.** Using 4 screws to lock the Heatsink from PCB backside.



#### 3.1 Introduction

The BIOS setup program allows users to modify the basic system configuration. In this following chapter will describe how to access the BIOS setup program and the configuration options that may be changed.

#### 3.2 Starting Setup

The AMI BIOS<sup>™</sup> is immediately activated when you first power on the computer. The BIOS reads the system information contained in the NVRAM and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways: By pressing <Del> or <F2> immediately after switching the system on, or By pressing the <Del> or <F2> key when the following message appears briefly at the left-top of the screen during the POST (Power On Self Test).

#### Press <Del> or <F2> to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to.

#### Press F1 to Continue, DEL to enter SETUP

#### 3.3 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Button	Description
$\uparrow \downarrow \rightarrow \leftarrow$	Move
Enter	Select
+/-	Value
Esc	Exit
F1	General Help
F2	Previous Values
F3	Optimized Defaults
F4	Save & Exit Setup
<k></k>	Scroll help area upwards
<m></m>	Scroll help area downwards

#### Navigating Through The Menu Bar

Use the left and right arrow keys to choose the menu you want to be in.

**Note:** Some of the navigation keys differ from one screen to another.

#### • To Display a Sub Menu

Use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>. A " $\geq$ " pointer marks all sub menus.

#### 3.4 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or <Enter> key.

#### 3.5 In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AMI BIOS supports an override to the NVRAM settings which resets your system to its defaults.

The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

#### 3.6 BIOS setup

Once you enter the Aptio Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

#### 3.6.1 Main Menu

This section allows you to record some basic hardware configurations in your computer and set the system clock.

Main Advanced Chipset Security	Aptio Setup — AMI Boot Save & Exit	
BIOS Information BIOS Vendor Core Version Compliancy Project Version Build Date and Time Access Level EC 5571 Firmware BIOS Name System Language ▶ Intel RC	American Megatrends 5.19 UEFI 2.7; PI 1.6 1AWHS 0.11 x64 08/22/2023 17:45:16 Administrator 05 EQMEHL08 [English]	Choose the system default language
System Date System Time	[Mon 10/02/2023] [11:00:37]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.21.1278 Copyright (C) 2023 AMI		

Main	Aptio Setup — AMI	
FSP Information FSP version RC version Build Date FSP Mode PSE Information PSE version Board Information Board ID Fab ID LAN PHY Revision Processor Information Name Type Speed ID Stepping Package	09.03.09.23 09.03.09.23 API Mode N/A EQM-EHL(EQMEHLO8) N/A G45 N/A ElkhartLake ULX Intel(R) Celeron(R) N6211 @ 1.20GHz 1200 HHz 0x90661 B0 Not Implemented Yet	<pre>**: Select Screen 14: Select Item Enter: Select +/-: Change Opt, F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit */*</pre>
	Vencion 2 21 1279 Copunight (C) 2	ANT COO

#### 3.6.1.1 System Language

This option allows choosing the system default language.

#### 3.6.1.2 System Date

Use the system date option to set the system date. Manually enter the Month, day and year.

#### 3.6.1.3 System Time

Use the system time option to set the system time. Manually enter the hours, minutes and seconds.



**Note:** The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen. Visit the Avalue website (<u>www.avalue.com.tw</u>) to download the latest product and BIOS information.

#### 3.6.2 Advanced Menu

This section allows you to configure your CPU and other system devices for basic operation through the following sub-menus.

Aptio Setup – AMI Main Advanced Chipset Security Boot Save & Exit	
<ul> <li>CPU Configuration</li> <li>Power &amp; Performance</li> <li>PCH-FW Configuration</li> <li>Trusted Computing</li> <li>ACPI Settings</li> <li>IT5571 Super IO Configuration</li> <li>EC 5571 HW monitor</li> <li>SS RTC Wake Settings</li> <li>Serial Port Console Redirection</li> <li>USB Configuration</li> <li>Network Stack Configuration</li> <li>NVMe Configuration</li> </ul>	CPU Configuration Parameters
	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.21.1278 Copyright (C) 20	23 AMI

#### 3.6.2.1 CPU Configuration

Advanced	Aptio Setup – AMI	
Advanced CPU Configuration Type ID Speed L1 Data Cache L1 Instruction Cache L2 Cache L3 Cache L4 Cache VMX SMX/TXT Intel (VMX) Virtualization Technology Active Processor Cores	Aptio Setup - AMI Intel(R) Celeron(R) N6211 @ 1.20GHz Ox90661 1200 MHz 32 KB x 2 32 KB x 2 1536 KB x 2 4 MB N/A Supported Not Supported [Enabled] [All]	<pre>When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.  ##: Select Screen 14: Select Item Enter: Select #/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Vers	ion 2 21 1278 Convergent (P) 2	1023 AMT

Item	Options	Description
Intel (VMX) Virtualization Technology	Disabled Enabled <b>[Default]</b> ,	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Active Processor Cores	All <b>[Default]</b> , 1	Number of cores to enable in each processor package.

#### 3.6.2.2 Power & Performance

Advanced Aptio	Setup – AMI
Power & Performance	CPU – Power Management Control Options
▶ CPU – Power Management Control	Options →+: 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) 2023 AMI

#### EQM-EHL 3.6.2.2.1 CPU - Power Management Control

Advanced	Aptio Setup – AMI	
CPU - Power Management Control Intel(R) SpeedStep(tm) Intel(R) Speed Shift Technology Turbo Mode ▶ View/Configure Turbo Options C states	[Enabled] [Disabled] [Enabled] [Disabled]	Allows more than two frequency ranges to be supported.
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.21.1278 Copyright (C) 2023 AMI		

ltem	Options	Description
Intol® Speed Stop IM	Disabled	Allows more than two frequency ranges to be
	Enabled[Default],	supported.
Intel® Speed Shift Technology	Disabled <b>[Default]</b> Enabled,	Enable/Disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states.
	Disabled	Enable/Disable processor Turbo Mode (requires
Turbo Mode	Enabled <b>[Default]</b> ,	EMTTM enabled too). AUTO means enabled.
C states	Disabled[Default]	Enable/Disable CPU Power Management. Allows
	Enabled	CPU to go to C states when it's not 100% utilized.

#### 3.6.2.2.1.1 View/Configure Turbo Options

Advanced	Aptio Setup – AMI	
Current Turbo Settings		
Max Turbo Power Limit Min Turbo Power Limit Package TDP Limit Power Limit 1 Power Limit 2 1-core Turbo Ratio 2-core Turbo Ratio	4095.875 0.0 6.500 6.0 20.0 30 30	
		++: Select Screen T1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Vi	ersion 2.21.1278 Copyright	(C) 2023 AMI

## 3.6.2.3 PCH-FW Configuration

Advanced	Aptio Setup – AMI	
ME Firmware Version ME Firmware Mode ME Firmware SKU ME Firmware Status 1 ME Firmware Status 2 ME State	15.40.10.2252 Normal Mode Consumer SKU 0x90000255 0x89100106 [Enabled]	When Disabled ME will be put into ME Temporarily Disabled Mode.
<ul> <li>Firmware Update Configuration</li> <li>PTT Configuration</li> </ul>		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
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Item	Options	Description
Me State	Disabled Enabled <b>[Default]</b> ,	When Disabled ME will be put into ME Temporarily Disabled Mode.

#### 3.6.2.3.1 Firmware Update Configuration

Advanced	Aptio Setup – AMI	
Me FW Image Re-Flash	[Disabled]	Enable/Disable Me FW Image Re-Flash function. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Item	Options	Description
Me FW Image Re-Flash	Disabled <b>[Default]</b> , Enabled	Enable/Disable Me FW Image Re-Flash function.

#### EQM-EHL 3.6.2.3.2 PTT Configuration

Advanced	Aptio Setup – A	IMI
PTT Capability / State	1 / 0	Selects TPM device: PTT or
		dTPM. PTT - Enables PTT in SkuMgr dTPM 1.2 - Disables PTT in SkuMgr Warning ! PTT/dTPM will be disabled and all data saved on it will be lost. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit ESC: Exit
Ver	sion 2.21.1278 Copyrigh	nt (C) 2023 AMI

Item	Options	Description
TPM Device Selection	dTPM <b>[Default]</b> , PTT	Select TPM device: PTT or dTPM. PTT-Enables PTT in SkuMgr dTPM 1.2 – Disables PTT in SkuMgr Warning! PTT/dTPM will be disabled and all data saved on it will be lost.

#### 3.6.2.4 Trusted Computing

Advanced	Aptio Setup – AMI	[
TPM 2.0 Device Found Firmware Version: Vendor:	7.2 NTC	Enables or Disables BIOS support for security device. D.S. will not show Security
Security Device Support		Jevice. IUG Eri protocol and INTIA interface will not be available.
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit F0: F0: F0: F0: F0: F0: F0: F0: F0: F0:
	ion 2.21.1278 Copyright	(C) 2023 AMI

Item	Options	Description
Security Device Support	Enables or Disables BIOS support for s	
	Disable	device. O.S. will not show Security Device.
	Enable <b>[Default]</b> ,	TCG EFI protocol and INT1A interface will not
		be available.

#### 3.6.2.5 ACPI Settings

Advanced	Aptio Setup — AMI	
ACPI Settings		Enables or Disables BIOS ACPI
Enable Hibernation ACPI Sleep State	[Enabled] [83 (Suspend to RAM)]	
		++: 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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Item	Options	Description
Frable ACDI Auto Configuration	Disabled[Default],	Enables or Disables BIOS ACPI Auto
Enable ACPI Auto Configuration	Enabled	Configuration.
		Enables or Disables System ability to
Enable Hibernation	Disabled	Hibernate (OS/S4 Sleep State). This
	Enabled <b>[Default]</b> ,	option may be not effective with some
		OS.
	Suspand Displad	Select the highest ACPI sleep state the
ACPI Sleep State	Suspend Disabled,	system will enter when the SUSPEDN
	SS (Suspend to RAM)[Default]	button is pressed.

#### 3.6.2.6 IT5571 Super IO Configuration

You can use this item to set up or change the IT5571 Super IO configuration for serial ports. Please refer to 3.6.2.6.1 for more information.

	Advanced	Aptio Setup – AMI	
ſ	IT5571 Super IO Configuration		Set Parameters of Serial Port 1 (COMA)
	Super IO Chip ▪ Serial Port 1 Configuration	IT5571	
			↔: Select Screen ↑↓: Select Item
			+/-: Change Opt. F1: General Help
			F2: Previous Values F3: Optimized Defaults F4: Save & Exit
			ESC: Exit
	Version	2 21 1278 Conuright (C) 2023	AMT

Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).

#### 3.6.2.6.1 Serial Port 1 Configuration

Serial Port 1 Configuration	
Serial Port [Enabled] Device Settings ID=3F8h; IRQ=4;	Enable or Disable Serial Port (COM) ++: Select Screen 11: Select Item
	Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

ltem	Option	Description
Serial Port	Disabled Enabled <b>[Default]</b> ,	Enable or Disable Serial Port (COM).

#### 3.6.2.7 EC 5571 H/W monitor

Advanced	Aptio Setup – AMI	
Pc Health Status Smart Fan Function CPU temperature CPU Fan Speed VIN VCORE DDR	[Disabled] : +64 C : N/A : +4.962 V : +1.611 V : +1.082 V	Enable or Disable Smart Fan ++: Select Screen 11- Select Tem
		Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Item	Option	Description
Smart Fan Function	Disabled <b>[Default]</b> , Enabled	Enable or Disable Smart Fan.

#### 3.6.2.8 S5 RTC Wake Settings

Advanced	Aptio Setup – AMI	
Wake system from S5	[Disabled]	Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified. Select DynamicTime, System will wake on the current time + Increase minute(s)
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Item	Options	Description
		Enable or disable System wake on alarm event.
	Disabled[Default],	Select FixedTime, system will wake on the
Wake system from S5	Fixed Time	hr::min::sec specified. Select DynamicTime,
	Dynamic Time	System will wake on the current time + Increase
		minutes(s).

#### 3.6.2.9 Serial Port Console Redirection



Item	Options	Description	
Concelo Redirection	Disabled[Default],	Canada Redirection Enable or Disable	
Console Redirection	Enabled	Console Redirection Enable of Disable.	
Console Redirection EMS	Disabled[Default],	Canaala Radiraction Enable or Disable	
	Enabled	Console Redirection Enable of Disable.	

#### 3.6.2.10 USB Configuration

The USB Configuration menu helps read USB information and configures USB settings.

Advanced	Aptio Setup – AMI	
USB Configuration		This is a workaround for OSes
USB Module Version	26	The XHCI ownership change should be claimed by XHCI
USB Controllers:		driver.
USB Devices: 1 Drive, 1 Keyboard, 1 Mouse		
XHCI Hand-off	[Enabled]	
USB Mass Storage Driver Support	[Enabled]	
USB hardware delays and time-outs:		
USB transfer time-out	[20 sec]	++: Select Screen
Device reset time-out	[20 sec]	↑↓: Select Item
Device power-up delay	[Auto]	Enter: Select +/-: Change Opt.
Mass Storage Devices:		F1: General Help
JetFlashTranscend 8GB 1100	[Auto]	F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version :	2.21.1278 Copyright (C) 202	3 AMI

Item	Options	Description
XHCI Hand-off	Enabled <b>[Default]</b> Disabled	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Enabled <b>[Default]</b> Disabled	Enable/Disable USB Mass Storage Driver Support.
USB transfer time-out	1 sec 5 sec 10 sec 20 sec <b>[Default]</b>	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10 sec 20 sec <b>[Default]</b> 30 sec 40 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	Auto <b>[Default]</b> Manual	Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100ms, for a Hub port the delay is taken form Hub descriptor.
Mass Storage Devices	Auto <b>[Default]</b> Floppy Forced FDD Hard Disk CD-ROM	Mass storage device emulation type. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to a drive type.

#### 3.6.2.11 Network Stack Configuration

Advanced	Aptio Setup – AMI	
Advanced	[Disabled]	Enable/Disable UEFI Network Stack ++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit F50: Exit
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Item	Options	Description
Network Stack	Enabled Disabled <b>[Default]</b>	Enable/Disable UEFI Network Stack.

#### 3.6.2.12 NVMe Configuration



#### 3.6.3 Chipset

Aptio Setup – AMI Main Advanced <mark>Chipset</mark> Security Boot Save & Exit	
<ul> <li>System Agent (SA) Configuration</li> <li>PCH-IO Configuration</li> <li>Board &amp; Panel Configuration</li> </ul>	System Agent (SA) Parameters ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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# 3.6.3.1 System Agent (SA) Configuration

	Chipset	Aptio Setup - AMI	
	System Agent (SA) Configuration		Memory Configuration Parameters
	VT-d	Supported	
••	Memory Configuration Graphics Configuration VT-d Above 4GB MMIO BIOS assignment	[Enabled] [Disabled]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
	Version 2	21 1278 Conuright (C) 2023	AMT

Item	Option	Description
	Disabled	VT d conchility
VI-d	Enabled[Default]	v I-d capability.
		Enable/Disable above 4GB
Above 4GB MMIO BIOS	Enabled	MemoryMapped IO BIOS assignment. This
assignment	Disabled[Default]	is disabled automatically when Aperture
		Size is set to 2048MB.

## 3.6.3.1.1 Memory Configuration

Chipset	Aptio Setup – AMI	
Memory Configuration		
Memory RC Version Memory Data Rate Memory Timings (tCL-tRCD-tRP-tRAS)	0.0.4.104 3200 MTPS 28-29-29-68	
Channel O Slot O Size Number of Ranks Manufacturer	Populated & Enabled 4096 MB (Unknown) 1 Micron	
		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
-Vencion (	) 21 1278 Popuniaht (P) 2022	OMT

## 3.6.3.1.2 Graphics Configuration

Chipset	Aptio Setup — AMI	
Graphics Configuration		Select the GTT Size
GTT Size Aperture Size	[8MB] [256MB]	++: 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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ltem	Option	Description
	2MB	
GTT Size	4MB	Select the GTT Size.
	8MB[Default]	
Aperture Size	128MB 256MB <b>[Default]</b> 512MB 1024MB	Select the Aperture Size. Note: Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.

## 3.6.3.2 PCH-IO Configuration

Chipset	Aptio Setup – AMI	
PCH-IO Configuration > PCI Express Configuration > SATA Configuration > USB Configuration > HD Audio Configuration > SCS Configuration	PCI Express Configuration settings	
	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
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#### 3.6.3.2.1 PCI Express Configuration

Aptio Setup — AM Chipset	MI	
PCI Express Configuration	PCI Express Root Port Settings.	
<ul> <li>PCI Express Root Port 1(Q7 port0)</li> <li>PCI Express Root Port 2(Q7 port1)</li> <li>PCI Express Root Port 3(Q7 port2)</li> <li>PCI Express Root Port 4(Q7 port3)</li> <li>PCI Express Root Port 5(LAN-I226)</li> </ul>		
	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>	
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# 3.6.3.2.1.1 PCI Express Root Port 1(Q7 port0)

Chipset	Aptio Setup – AMI	
PCI Express Root Port 1(Q7 port0) ASPM L1 Substates PTM PCIe Speed	[Enabled] [Disabled] [Disabled] [Disabled] [Auto]	Control the PCI Express Root Port. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Vencion	9 91 1970 Copupidht (C) 909	

Item	Option	Description
PCI Express Root Port 1(Q7	Disabled	Control the DCI Everage Reat Part
port0)	Enabled[Default],	Control the PCI Express Root Port.
	Disabled[Default]	
	LOs	Set the ASPM Level: Force L0s – Force all
ASPM	L1	links to L0s State AUTO – BIOS auto
	L0sL1	configure DISABLE – Disables ASPM.
	Auto	
	Disabled[Default],	
L1 Substates	L1.1	PCI Express L1 Substates settings.
	L1.1 & L1.2	
DTM	Disabled[Default],	Enable/Disable Precision Time
PIM	Enabled,	Measurement.
	Auto[Default]	
PCIe Speed	Gen1	Calast DOIs around
	Gen2	Select Pole speed.
	Gen3	

# Aptio Setup - AMI Chipset PCI Express Root Port 2(Q7 port1) [Enabled] ASPM [Disabled] L1 Substates [Disabled] PTM [Disabled] PCIE Speed [Auto] ++: Select Screen 11: Select Item Enter: Select +-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Item	Option	Description
PCI Express Root Port 2(Q7	Disabled	
port1)	Enabled <b>[Default]</b> ,	Control the PCI Express Root Port.
	Disabled[Default]	
	LOs	Set the ASPM Level: Force L0s – Force all
ASPM	L1	links to L0s State AUTO – BIOS auto
	L0sL1	configure DISABLE – Disables ASPM.
	Auto	
	Disabled[Default],	
L1 Substates	L1.1	PCI Express L1 Substates settings.
	L1.1 & L1.2	
DTM	Disabled[Default],	Enable/Disable Precision Time
PIM	Enabled,	Measurement.
PCIe Speed	Auto[Default]	
	Gen1	Colort DClo ground
	Gen2	Select PCIe speed.
	Gen3	

#### 3.6.3.2.1.2 PCI Express Root Port 2(Q7 port1)

# 3.6.3.2.1.3 PCI Express Root Port 3(Q7 port2)

Chipset	Aptio Setup – AMI	
PCI Express Root Port 3(Q7 port2) ASPM L1 Substates PTM PCIe Speed	[Enabled] [Disabled] [Disabled] [Disabled] [Auto]	Control the PCI Express Root Port. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Vencion	9 91 1970 Conunight (C) 909	9 AMT

Item	Option	Description
PCI Express Root Port 3(Q7	Disabled	Control the DCI Everage Reat Part
port)	Enabled[Default],	Control the PCI Express Root Port.
	Disabled[Default]	
	LOs	Set the ASPM Level: Force L0s – Force all
ASPM	L1	links to L0s State AUTO – BIOS auto
	L0sL1	configure DISABLE – Disables ASPM.
	Auto	
	Disabled[Default],	
L1 Substates	L1.1	PCI Express L1 Substates settings.
	L1.1 & L1.2	
DTM	Disabled[Default],	Enable/Disable Precision Time
PIM	Enabled,	Measurement.
	Auto[Default]	
PCIe Speed	Gen1	Salast DCIs speed
	Gen2	Select Pole speed.
	Gen3	

Chipset	Aptio Setup – AMI	
PCI Express Root Port 4(Q7 port3) ASPM L1 Substates PTM PCIe Speed	[Enabled] [Disabled] [Disabled] [Disabled] [Auto]	Control the PCI Express Root Port. ++: 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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## 3.6.3.2.1.4 PCI Express Root Port 4(Q7 port3)

Item	Option	Description
PCI Express Root Port 4(Q7	Disabled	Control the DCI Everage Reat Part
port3)	Enabled[Default],	Control the PCI Express Root Port.
	Disabled[Default]	
	LOs	Set the ASPM Level: Force L0s – Force all
ASPM	L1	links to L0s State AUTO – BIOS auto
	L0sL1	configure DISABLE – Disables ASPM.
	Auto	
	Disabled[Default],	
L1 Substates	L1.1	PCI Express L1 Substates settings.
	L1.1 & L1.2	
DTM	Disabled[Default],	Enable/Disable Precision Time
PIM	Enabled,	Measurement.
	Auto[Default]	
PCIe Speed	Gen1	Calast DOIs around
	Gen2	Select POIe speed.
	Gen3	

# Aptio Setup - AMI Chipset PCI Express Root Port 5(LAN-1226) [Enabled] ASPM [Disabled] L1 Substates [Disabled] PTM [Disabled] PCIE Speed [Auto] \*\*: Select Screen 11: Select Item Enter: Select \*/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ES0: Exit

#### 3.6.3.2.1.5 PCI Express Root Port 5(LAN-I226)

Item	Option	Description
PCI Express Root Port	Disabled	Control the DCI Everges Dest Part
5(LAN-1226)	Enabled[Default],	Control the PCI Express Root Port.
	Disabled[Default]	
	LOs	Set the ASPM Level: Force L0s – Force all
ASPM	L1	links to L0s State AUTO – BIOS auto
	L0sL1	configure DISABLE – Disables ASPM.
	Auto	
	Disabled[Default],	
L1 Substates	L1.1	PCI Express L1 Substates settings.
	L1.1 & L1.2	
DTM	Disabled[Default],	Enable/Disable Precision Time
FIM	Enabled,	Measurement.
PCIe Speed	Auto[Default]	
	Gen1	Salast DCIs anad
	Gen2	
	Gen3	

#### 3.6.3.2.2 SATA And RST Configuration

Chipset	Aptio Setup – AMI	
SATA Configuration		Enable/Disable SATA Device.
SATA Controller(s) SATA Mode Selection	[Enabled] [AHCI]	
Serial ATA Port O Software Preserve Port O	Empty Unknown [Enabled]	
Serial ATA Port 1 Software Preserve Port 1	Empty Unknown [Enabled]	
		<pre>++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
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Item	Option	Description
SATA Controllor(a)	Disabled	Enable/Disable SATA Davies
SATA Controller(S)	Enabled[Default],	Enable/Disable SATA Device.
Port 0	Disabled	Enable or Disable SATA Port
	Enabled[Default],	Ellable of Disable SATA Folt
Dort 1	Disabled	Enable or Disable SATA Port
Port 1	Enabled[Default],	Enable of Disable SATA Port

# 3.6.3.2.3 USB Configuration

Chipset	Aptio Setup – AMI	
USB Configuration		Option to enable Compliance
XHCI Compliance Mode		Mode. Default is to disable Compliance Mode. Change to enabled for Compliance Mode testing.
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help
		F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Item	Option	Description
XHCI Compliance Mode	Disabled <b>[Default]</b> Enabled,	Option to enable Compliance Mode. Defaults is to disable Compliance Mode. Change to enabled for Compliance Mode testing.

## 3.6.3.2.4 HD Audio Configuration

Chipset	Aptio Setup – AMI	
HD Audio Subsystem Configuratio	n Settings	Control Detection of the
HD Audio	[Enabled]	<pre>HD-Audio device. Disabled = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled. **: Select Screen 14: Select Ttem Enter: Select t-/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Vens	ion 2.21.1278 Copyright (C) 20	23 AMI

ltem	Option	Description
HD Audio	Disabled Enabled <b>[Default]</b> ,	Control Detection of the HD-Audio device. Disable = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled.

#### 3.6.3.2.5 SCS Configuration

Chipset	Aptio Setup – AMI	
eMMC 5.1 Controller SDCard 3.0 Controller	[Enabled] [Enabled]	Enable or Disable SCS eMMC 5.1 Controller ++: 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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ltem	Option	Description
eMMC 5.1 Controller	Disabled Enabled <b>[Default]</b> ,	Enable or Disable SCS eMMC 5.1 Controller.
SDCard 3.0 Controller	Disabled Enabled <b>[Default]</b> ,	Enable or Disable SCS SDHC 3.0 Controller.

#### 3.6.3.3 Board & Panel Configuration



ltem	Option	Description
Active I VDS(Ch7511)	Disabled	Active Internal
Active EVD3(CII/311)	Enabled[Default]	LVDS(eDP->Ch7511-to-LVDS)
	1024x768 24/1 <b>[Default]</b>	
	800x600 18/1	
	1024x768 18/1	
	1366x768 18/1	
	1024x600 18/1	
	1280x800 18/1	
CH7511 EDID Panel Option	1920x1200 24/2	Port1-EDP to LVDS(Chrotel 7511) Panel
	1920x1080 18/2	EDID Option.
	1280x1024 24/2	
	1440x900 18/2	
	1600x1200 24/2	
	1366x768 24/1	
	1920x1080 24/2	
	1680x1050 24/2	
Brightness Control Method	BIOS[Default]	eDP Brightness Control Method. 1.BIOS
	OS Driver	2.OS Driver
	00%	
	25%	
eDP Back Light PWM	50%	Select eDP back light PWM duty.
	75%	
	100%[Default]	
	200[Default]	
	300	
	400	
	500	
eDP Back Light PWM	700	
Frequency	1k	Select eDP back light PWM Frequency
	2k	
	3k	
	5k	
	10k	
	20k	
ErP Function	Disabled <b>[Default]</b> ,	ErP Function (Deep S5).
	Enabled	
	Off[Default],	
PWR-On After PWR-Fail	On	AC loss resume.
	Last State	
	Disabled[Default],	
	30 sec	
	40 sec	
Watch Dog	50 sec	Select WatchDog.
	1 min	Ť
	2 min	
	10 min	
	30 min	
SHOW DMI INFO	Disabled[Default],	SHOW DMI INFO
	Enabled	

#### 3.6.4 Security

Main Advanced Chipset Securi	Aptio Setup – AMI ty Boot Save & Exit	
Password Description If ONLY the Administrator's pass then this only limits access to only asked for when entering Set If ONLY the User's password is s	word is set, Setup and is up. et, then this	Set Administrator Password
is a power on password and must boot or enter Setup. In Setup th have Administrator rights. The password length must be in the following range: Minimum length Maximum length	be entered to e User will 3	
Administrator Password User Password	20	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help
▶ Secure Boot		F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Administrator Password

Set setup Administrator Password

#### • User Password

Set User Password

#### 3.6.4.1 Secure Boot

Se	Aptio Setup – AMI curity	
System Mode	Setup	Secure Boot feature is Active
Secure Boot	[Disabled] Not Active	Platform Key(PK) is enrolled 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
		I↓: Select Item Enter: Select +/-: Change Opt.
		F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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ltem	Option	Description
		Secure Boot feature is Active if Secure Boot is
Secure Boot	Disabled[Default]	Enabled, Platform Key(PK) is enrolled and the
	Enabled	System is in User mode. The mode change
		requires platform reset
		Secure Boot mode options: Standard or Custom.
Secure Boot Mode	Standard	In Custom mode, Secure Boot Policy variables
	Custom[Default]	can be configured by a physically present user
		without full authentication

#### 3.6.4.1.1 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 var > Enroll Efi Image Device Guard Ready > Remove 'UEFI Ce' from	[Disabled] Hables	reset and while the System is in Setup mode
<ul> <li>Restore DB defaults</li> </ul>		
Secure Boot variable > Platform Key(PK) > Key Exchange Keys > Authorized Signatures > Forbidden Signatures > Authorized TimeStamps > OsRecovery Signatures	Size         Keys         Key Source           0         0         No Keys           0         0         No Keys	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

#### User's Manual

Item	Option	Description
Provision Fostery Default Kova	Disable[Default]	Allow to provision factory default Secure
Provision Factory Default Reys	Enable	Boot keys when System is in Setup Mode.

#### 3.6.5 Boot

Main Advanced Chipset	Aptio Setup – AMI Security <mark>Boot</mark> Save & Exit	
Boot Configuration Setup Prompt Timeout Bootup NumLock State Quiet Boot	1 [On] [Disabled]	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Mass Storage Devices:	eMMC TY2964(62.6GB)	
Boot Uption Priorities	Duindows Root Manager	
boot option #1	(eMMC TY2964)]	
Boot Option #2	[UEFI: JetFlashTranscend 8GB 1100, Partition 1	
	(JetFlashfranscend 868 1100)]	14: Select Item
Boot Option #3	[UEFI:	Enter: Select
	JetFlashTranscend 8GB	+/-: Change Opt.
	(JetElashTranscend 868	F1: General Help F2: Previous Values
	1100)]	F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
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Item	Option	Description	
Satur Brompt Timoout	1	Number of seconds to wait for setup activation	
Setup Frompt Timeout		key. 65535(0xFFFF) means indefinite waiting.	
Beatur Numl ook State	On <b>[Default]</b>	Coloct the Keyle and Numberly state	
Bootup NumLock State	Off	Select the Reyboard NumLock state	
Quiet Beet	Disabled[Default]	Enables or disables Quiet Boot option	
Quiet Boot	Enabled		
Boot Option #1/2/3	Set the system boot order.		

#### 3.6.6 Save and exit



Main Advanced Chipset Security Boot Save & Exit	
Main Advanced Chipset Security Boot Save & Exit         Save Options         Save Changes and Reset         Discard Changes and Reset         Default Options         Restore Defaults         Boot Override         Windows Boot Manager (eMMC TV2         UEF1: JetFlashTranscend 8GB 1100)         UEF1: JetFlashTranscend 8GB 1100)         UEF1: JetFlashTranscend 8GB 1100)         VEF1: Vers         No	<pre>+: Select Screen 1: Select Item nter: Select /-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
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#### 3.6.6.1 Save Changes and Reset

Reset the system after saving the changes.

#### 3.6.6.2 Discard Changes and Reset

Reset system setup without saving any changes.

#### 3.6.6.3 Restore Defaults

Restore/Load Default values for all the setup options.

#### 3.6.6.4 Launch EFI Shell from filesystem device

Attempts to Launch EFI Shell application (Shell.efi) from one of the available filesystem devices.



#### 4.1 Install Chipset Driver

All drivers can be found on the Avalue Official Website:

http://www.avalue.com.tw.



**Note:** The installation procedures and screen shots in this section are based on Windows 10 operation system.

nte <sub>Rea</sub>	((R) Chipset Device Software (intel)	
**** *   *   *	<pre>Product: Intel(R) Chipset Device Software Package version: 10.1.18766.8273 Installer version: 3.1.7.143 Pate: 05/21/2021</pre>	
1	NOTE: For the list of supported chipsets, please refer to the Release Notes	
**** * ( **** This	XMTENTS OF THIS DOCUMENT	
1. 2.	Overview System Requirements	>
	Back Install Cancel	

#### Step 3. Click Install.





#### Step1. Click Next.



Step 2. Click Accept.

Step 4. Complete setup.

#### 4.2 Install ME Driver

All drivers can be found on the Avalue Official Website:

http://www.avalue.com.tw.



Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.

Setup	×
Intel® Management Engine Components Destination Folder	(intel)
Click Next to install to the default folder, or click Change t	o choose another destination folder.
C:\Program Files (x86)\Intel\Intel(R) Management Engine	e Components
	Change
Intel Corporation	
	< <u>Back</u> <u>Next&gt;</u> <u>Cancel</u>



Step1. Click Next to start installation.



Step 2. Click Next.

Step 3. Click Next to continue installation.

Setup			
Intel® Management Engine Components Progress	(	intel	
Please wait while the product is being installed.			
			_
Intel Corporation	< Back N	ext > Cano	cel

Step 4. Click Finish to complete setup.



Step 5. Click Finish to complete setup.

#### 4.3 Install VGA Driver

All drivers can be found on the Avalue Official Website:

http://www.avalue.com.tw.



**Note:** The installation procedures and screen shots in this section are based on Windows 10 operation system.

intel. Grap	hics Driver Installer
Pre-Install	Something's not right.
Setup	Digital signature of the driver is missing. Install anyway?
Install	
Done!	
	Yes No





#### Step 1. Click Begin installation.



Step 2. Click Next.

Step 4. Click Start.

intel. <sub>Grap</sub>	ohics Driver Installer	
Pre-Install	Installing new graphics driver	
– Setup	Show details	
– Install		
Done!	Did you know? Did you know that intel was the first to build a fully DX12-compliant GPU?	
	Car	ncel

Step 5. Click Cancel.





Step 6. Click Cancel.

Step 7. Click Finish to complete setup.

#### 4.4 Install Audio Driver

All drivers can be found on the Avalue Official Website:

http://www.avalue.com.tw.



**Note:** The installation procedures and screen shots in this section are based on Windows 10 operation system.



#### Step 3. Installing.



	Uninstall Complete InstallShield Wizard has finished uninstalling Realtek Audio Driver. Realtek audio driver has been uninstalled. If you want to re-install the Realtek audio driver, please restort the computer. Realtek setup program will install audio driver automatically after reboot.
InstallShield	< Back Finish Cancel

Step 1. Click Next to continue setup.



Step 2. Click Cancel.

**Step 4.** Click **Finish** to complete the setup.

#### 4.5 Install Ethernet Driver

All drivers can be found on the Avalue Official Website:

http://www.avalue.com.tw.



**Note:** The installation procedures and screen shots in this section are based on Windows 10 operation system.

Thease read the following incluse agree	ement carefully.	inte	ntel	
SOF TWARE LI	CENSE AGREEME	INT	^	
This LIWITED DISTRIBUTION LICENSE F	AGREENIENI ( Agreement	, 10 0 00111 001		
Inis Limited Distribution Uncerse A between You and Intel Corporation - of the Materials. If You are accepting with Your work for Your employer, to authority to bind your employer to to using the Materials, You agree to the Materials and destroy all copies. 1. DEFINITIONS.	and its affiliates ("Intel"). this Agreement on behal fou represent and warrar his Agreement. By downl ese terms. If You do not a	If governs Your use If of or in conjunction It that You have the loading, installing, or gree, do not use the	n	
Inis Limited Distribution Netlense A between You and Intel Corporation a of the Materials. If You are accepting with Your work for Your employer, 1 authority to bind your employer to t using the Materials, You agree to the Materials and destroy all copies. 1. DEFINITIONS. 1.1. "Including" means includii accent the terms in the livence arrange	Noncompany ( Agreement and its affiliates ("intel"). this Agreement on behal fou represent and warrar this Agreement. By downl see terms. If You do not a ng but not limited to, whe	It governs Your use If of or in conjunction to that You have the loading, installing, or gree, do not use the ther or not	n	

#### Step 3. Click Next to continue setup.

intel.

Intel® Network Connections	×	Intel(R) Network Connections Install Wizard	×
intel Network Connections		Select the program features you want installed.	intel.
Install <u>D</u> rivers and Inst View <u>U</u> ser Gu View <u>R</u> elease	Software all or update drivers and software for Intel® Netw ides Votes	Install: Device drivers Intel® PROSet Intel® Advanced Network Services Feature Description	
Networking at Intel.com	Version: 27.4.0.1	Step 4 Click Next	ext > Cancel
Intel(R) Network Connections Install Wizard		Intel(R) Network Connections Install Wizard	×



#### Step 5. Click Install.

Ready to Install the Program

The wizard is ready to begin installation.

If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.

< Back Install Cancel

Click Install to begin the installation.

Step 2. Click Next.

#### **User's Manual**

聞 Intel(R)	Network Connections Install Wizard	- 🗆 🗙	🕼 Intel(R) Network Connections Install Wizard	×
Installin The pro	g Intel(R) Network Connections gram features you selected are being installed.	intel.	Install wizard Completed	intel.
J	Please wait while the install wizard installs Intel(R) Network ( This may take several minutes. Status:	Connections.	A shortcut has been created in the Start Menu. You can al desktop, if desired. To access new features, launch the In Configuration Utility from the Start Menu.	so create one on the tel(R) PROSet Adapter
			Additional Options: Create Desktop Shortcut Launch Intel(R) PROSet Adapter Configuration Utility	
	< <u>B</u> ack <u>N</u> ext >	Cancel	< <u>B</u> ack	Einish Cancel

Step 6. Installing.

Step 7. Click Finish to complete the setup.





Unit: mm



EQM-EHL User's Manual 61