## **EPS-KBLHE**

Fanless Intel® 7th Generation CoreTM i7/ i5/ i3 Rugged Embedded System with Intel® QM175 Chipset

## **Quick Reference Guide**

3<sup>rd</sup> Ed – 03 October 2018

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Part No. E2017DAJ0A2R

#### **FCC Statement**

THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.

THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTATLLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS.

OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

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To receive the latest version of the user's manual; please visit our Web site at: <a href="http://www.avalue.com.tw/">http://www.avalue.com.tw/</a>

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## **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 EPS-KBLHE Packing List**

- 1 x EPS-KBLHE Fanless Intel® 7th Generation CoreTM i7/ i5/ i3 Rugged Embedded System with Intel® QM175 Chipset
- 1 x DVD-ROM contains the followings:
  - QRG in PDF file
  - Ethernet driver and utilities
  - Video drivers and utilities
  - Audio drivers and utilities
  - Chipset drivers and utilities
- Other major components include the followings:
  - Screw kit
  - Adapter
  - Power Cord
  - Wall Mount Kit



#### 1.3 ECM-KBLH Packing List

- 1 x 3.5" ECM-KBLH Micro Module
- 1 x DVD-ROM contains the followings:
  - User's Manual (this manual in PDF file)
  - Ethernet driver and utilities
  - Video drivers and utilities
  - Audio drivers and utilities
- 1 x Cable set contains the followings:
  - 1 x Audio cable (12pin, 2.0 pitch)
  - 1 x USB 2.0 cable (10P/2.0mm-10P/2.0mm)
  - 1 x Serial ATA cable (7-pin, standard)
  - 1 x Wire SATA power cable (15-pin, 4P/2.5mm)
  - 1 x Flat Cable 9P(M)-PHD (10P/2.0mm)
- 3M foam (VHB-4622 10mm\*20mm\*1.1mm)



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

## 1.3 EPS-KBLHE System Specifications

System					
CPU Onboard 7th generation Intel® Kabylake H Processor 45W/35W					
BIOS	AMI uEFI BIOS,128 Mbit SPI Flash ROM				
ысэ	iAMT supported				
System Chipset	Intel® Skylake PCH (SPT) QM175 Corp				
I/O Chipset	EC ITE IT8528E				
System Memory	1 x 260-Pin DDR4 2400MTs SO-DIMM				
Watchdog Timer	H/W Reset, 1sec. – 65535sec./min. 1sec. step				
Battery	Wide Temperature RTC Battery				
Expansion	1 x mini PCIe socket(with mSATA supported),				
Expansion	1 x M.2 B-Key (SSD Only)				
Storage					
	2 x 2.5" Drive Bay				
Combination	1 x M.2(B-Key)				
	1 x mSATA				
Front I/O					
USB Port	2 x USB 2.0				
Rear I/O					
Serial Port	2 x COM (1 x RS-232, 1 x RS-232/422/485, 485 supports auto-flow)				
USB Port	4 x USB 3.0				
Others	2 x Knockouts for Antenna Mounting				
Display					
Chipset	Intel® Kabylake Processor integrated Graphics				
Resolution	2 x HDMI1.4 : 4096 x 2160@24Hz				
Multiple Display	Dual display				
Ethernet					
Chinset	1 x Intel I210AT GbE controller				
	1 x Intel I219LM Gigabit Ethernet PHY				
Ethernet Interface	10/100/1000 Base-Tx compatible				
Lan Port	2 x RJ45 w/LED				
Audio					
Chipset	Realtek ALC233 HD codec Supports 2.1-CH Audio				
Audio Interface	Line-Out ,Line-In, Mic-In				
Audio Amp.	Internal 2W AMP.				
Mechanical & Envir	Mechanical & Environmental				
Power Connector	Lockable DC Jack				

Power Requirement	DC +12V(Default), DC +9 ~ 36V with Phoniex head(Factory option)			
Power Type	AT/ATX (ATX is default)			
	Single power ATX Support S0, S3, S4, S5			
ACPI	ACPI 5.0 Compliant			
Dimension	240 x 230 x 72 mm			
Weight	TBD KG			
Color	Black & Blue			
Mounting Kit	Wall mount kit is the standard accessory			
Reliability				
Vibration Test	With SSD/mSATA : 5Grms, IEC 60068-2-64, Random, 10 ~ 500Hz, 1hr/axis			
	With HDD : 0.5Grms, IEC 60068-2-64, Random, 10 ~ 500Hz, 1hr/axis			
Mechanical Shock	With SSD/mSATA : 50G, IEC 60068-2-27, Half Sine, 11ms			
Test	With HDD : 10G, IEC 60068-2-27, Half Sine, 11ms			
Drop Test	Avalue Standard Test Criteria			
Operating	-10°C ~ 50°C (w/SSD, mSATA) ambient w/ air flow(i7/i5)			
Temperature	-10°C ~ 60°C (w/SSD, mSATA) ambient w/ air flow(i3)			
Operating Humidity	5% ~ 90% relative humidity, non-condensing			
Weight	4.5Kg			
Storage	40%0 75%0			
Temperature				
Certification	CE, FCC Class B			
OS Supported	Win 10			



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

## 1.4 ECM-KBLH System Specifications

System				
CPU	Onboard 7th generation Intel® Kabylake H Processor 45W/35W/25W			
BIOS	AMI uEFO BIOS,128 Mbit SPI Flash ROM			
ысэ	iAMTsupported			
System Chipset	Intel® Skylake PCH (SPT) QM175 Corp			
I/O Chip	EC(IT8528E)			
System Memory	1 x 260-Pin DDR4 2400MTs SO-DIMM			
660	1 xM.2( 2242) SSD (B key)			
550	mSATA from MiniPCIe			
Watabdag Timor	H/W Reset, 1sec. – 65535sec./min.			
	1sec. or 1min. step			
HMI Status Manitar	Monitoring System Temperature, Voltage and FAN Status with Auto Throttling			
H/W Status Monitor	Control			
Expansion	1 x Full-Size Mini PCI Express Mini Card with mSATA supported			
Ruilt-in Touch	EETI ETP-CP-MER4485XRU			
Scroon (optional)	With 5-pin 2.0mm Box Header (Can be Selected to Support 4/ 5Wire Touch			
screen (optional)	Screen)			
I/O				
MIO	2 x SATA III,1 x RS232 (COM1)			
	1 x RS232/422/485 COM2,LPC,SPI			
USB	4 x USB3.0(dual deck USB connector for 2 USB3.0 port) , 2 x USB 2.0(Wafer)			
GPIO	8-bit GPIO			
Display				
Chipset				
- • • • • • • • • • • • • • • • • • • •	Intel® Kabylake Processor integrated Graphics			
Pacalution	Intel® Kabylake Processor integrated Graphics LVDS: 1920 x 1200@60Hz			
Resolution	Intel® Kabylake Processor integrated Graphics LVDS: 1920 x 1200@60Hz 2 x HDMI: 4096 x 2160@24Hz			
Resolution Multiple Display	Intel® Kabylake Processor integrated Graphics LVDS: 1920 x 1200@60Hz 2 x HDMI: 4096 x 2160@24Hz Triple display			
Resolution Multiple Display HDMI	Intel® Kabylake Processor integrated Graphics LVDS: 1920 x 1200@60Hz 2 x HDMI: 4096 x 2160@24Hz Triple display HDMI 1.4			
Resolution Multiple Display HDMI LCD Interface	Intel® Kabylake Processor integrated Graphics LVDS: 1920 x 1200@60Hz 2 x HDMI: 4096 x 2160@24Hz Triple display HDMI 1.4 Dual channel 18/24-bit LVDS (via 7511B)			
Resolution Multiple Display HDMI LCD Interface Audio	Intel® Kabylake Processor integrated Graphics LVDS: 1920 x 1200@60Hz 2 x HDMI: 4096 x 2160@24Hz Triple display HDMI 1.4 Dual channel 18/24-bit LVDS (via 7511B)			
Resolution Multiple Display HDMI LCD Interface Audio AC97 Codec	Intel® Kabylake Processor integrated Graphics LVDS: 1920 x 1200@60Hz 2 x HDMI: 4096 x 2160@24Hz Triple display HDMI 1.4 Dual channel 18/24-bit LVDS (via 7511B) Realtek ALC233 HD codec Supports 2.1-CH Audio			
Resolution Multiple Display HDMI LCD Interface Audio AC97 Codec Audio Amp	Intel® Kabylake Processor integrated Graphics LVDS: 1920 x 1200@60Hz 2 x HDMI: 4096 x 2160@24Hz Triple display HDMI 1.4 Dual channel 18/24-bit LVDS (via 7511B) Realtek ALC233 HD codec Supports 2.1-CH Audio Internal 2W AMP.			
Resolution Multiple Display HDMI LCD Interface Audio AC97 Codec Audio Amp Ethernet	Intel® Kabylake Processor integrated Graphics LVDS: 1920 x 1200@60Hz 2 x HDMI: 4096 x 2160@24Hz Triple display HDMI 1.4 Dual channel 18/24-bit LVDS (via 7511B) Realtek ALC233 HD codec Supports 2.1-CH Audio Internal 2W AMP.			
Resolution Multiple Display HDMI LCD Interface Audio AC97 Codec Audio Amp Ethernet	Intel® Kabylake Processor integrated Graphics LVDS: 1920 x 1200@60Hz 2 x HDMI: 4096 x 2160@24Hz Triple display HDMI 1.4 Dual channel 18/24-bit LVDS (via 7511B) Realtek ALC233 HD codec Supports 2.1-CH Audio Internal 2W AMP. 1 x Intel I210AT GbE controller			
Resolution Multiple Display HDMI LCD Interface Audio AC97 Codec Audio Amp Ethernet LAN Chip	Intel® Kabylake Processor integrated Graphics LVDS: 1920 x 1200@60Hz 2 x HDMI: 4096 x 2160@24Hz Triple display HDMI 1.4 Dual channel 18/24-bit LVDS (via 7511B) Realtek ALC233 HD codec Supports 2.1-CH Audio Internal 2W AMP. 1 x Intel I210AT GbE controller 1 x Intel I219LM Gigabit Ethernet PHY			

Internal I/O Connectors				
CMOS Battery	CR2032			
Audio	Line in ,Line-Out, Mic in			
СОМ	1 x RS232 (COM1) /1 x RS232/422/485 (COM2)			
Rear I/O Connector	S			
USB	4 x USB3.0			
LAN	2 x Ethernet			
HDMI	2 x HDMI			
LED	Front Panel LED Connector (for system use)			
Mechanical & Envir	onmental			
Power Requirement	+12V			
	Single power ATX Support S0, S3, S4, S5			
ACFI	ACPI 5.0 Compliant			
Power Type	AT/ATX			
Operating Temp.	0°C ~ 60°C			
Storage Temp.	-40°C ~ 75°C			
Operating Humidity	0% ~ 90% relative humidity, non-condensing			
Size (L x W)	5.7" x 4" (146mm x 101mm)			
Weight	0.44 lbs (0.2 Kg)			
OS Support	Win 10 / Linux			

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

#### 1.5 System Overview

1.5.1 Front View



#### 1.5.2 Rear View



Connectors		
Label	Function	Note
Power	Power on button	
USB2.0	USB 2.0 connector x 2	
USB3.0	USB 3.0 connector x 4	
COM1/2	Serial port 1/2 connector	
DC-IN	DC power-in connector	
LAN1/2	RJ-45 Ethernet 1/2	
HDMI1/2	HDMI connector 1/2	
DC-IN	DC Power-in connector	

HDD	HDD indicator
PWR	System power indicator
Switch	Power switch
Mic-in	Mic-in audio jack
Line-out	Line-out audio jack

#### **1.6 System Dimensions**

1.6.1 Front & Top view





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(Unit: mm)

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# 2. Hardware Configuration

#### Jumper and Connector Setting, Driver and BIOS Installing

For advanced information, please refer to:

1- ECM-KBLH included in this manual.



Note: If you need more information, please visit our website: http://www.avalue.com.tw

#### 2.1 EPS-KBLHE connector mapping

#### 2.1.1 Serial Port 1 connector (COM1)





Signal	PIN	PIN	Signal
DCD#	1	6	DSR#
RXD	2	7	RTS#
TXD	3	8	CTS#
DTR#	4	9	RI#
GND	5		

#### 2.1.2 Serial Port 2 connector (COM2)



RS-485						
Signal	PIN	PIN	Signal			
485_Tx-	1	6	NC			
485_Tx+	2	7	NC			
NC	3	8	NC			
NC	4	9	NC			
GND	5					



RS-232						
Signal	PIN	PIN	Signal			
DCD#	1	6	DSR#			
RXD	2	7	RTS#			
TXD	3	8	CTS#			
DTR#	4	9	RI#			
GND	5					

RS-422					
Signal	PIN	PIN	Signal		
422_Tx-	1	6	NC		
422_Tx+	2	7	NC		
422_Rx+	3	8	NC		
422_Rx-	4	9	NC		
GND	5				

#### 2.2 ECM-KBLH Overviews





## 2.3 ECM-KBLHE Jumper & Connector list

Jumpers		
Label	Function	Note
JCMOS	Clear CMOS	3 x 1 header, pitch 2.54mm
JRI	Serial port 1 pin9 signal select	3 x 2 header, pitch 2.00 mm
JAT	AT/ATX Input power select	3 x 1 header, pitch 2.00 mm
JVR	LCD backlight brightness adjustment	3 x 1 header, pitch 2.00 mm

Connectors		
Label	Function	Note
JBAT	Battery connector	2 x 1 wafer, pitch 1.25 mm
CPU_FAN	CPU fan connector	4 x 1 wafer, pitch 2.54 mm
SYS_FAN	System fan connector	4 x 1 wafer, pitch 2.54mm
JAUDIO	Audio connector	8 x 2 header, pitch 2.00 mm
JBKL	LCD inverter connector	5 x 1 wafer, pitch 2.00 mm Matching Connector: JST PHR-5
J422_485	Serial port 2 in RS-422/485 mode	3 x 2 header, pitch 2.00 mm
COM1	Serial port 1 connector	D-sub 9-pin, male
JCOM2	Serial port 2 connector	5 x 2 header, pitch 2.00 mm
JDIO	General purpose I/O connector	6 x 2 header, pitch 2.00 mm
JFP	Miscellaneous setting connector	4 x 2 header, pitch 2.00 mm
JLPC	LPC connector	7 x 2 header, pitch 2.00 mm
JLVDS	LVDS connector	20 x 2 header, pitch 1.25 mm Matching Connector: Hirose DF13-40DS-1.25C
JSPI	SPI connector	5 x 2 header, pitch 2.00mm
USB1/2	On-board connector for USB3.0 x 4	
JUSB	On-board header for USB2.0	5 x 2 header, pitch 2.00 mm
HDMI	DUAL HDMI connector	
LAN	RJ-45 Ethernet x 2	
LED1	HDD/Power LED indicator	
PWR	Power connector	2 x 2 wafer, pitch 4.20 mm
SATAPW1/2	SATA power connector 1/2	2 x 1 wafer, pitch 2.00 mm
SATA1/2	Serial ATA connector 1/2	

#### **EPS-KBLHE**

NGFF	M.2 KEY-B 2242 connector
MPCIE	Full size Mini-PCI-e connector
SODIMM	DDR4 SODIMM socket

#### 2.4 ECM-KBLH Jumpers & Connectors settings

2.4.1 Clear CMOS (JCMOS)



Protect\*



**Clear CMOS** 



\* Default

#### 2.4.2 Serial port 1 pin9 signal select (JRI)



\* Default

Ring\*



+5V

1	Б



□ □ □ □ □ □ 1 5



2.4.3 AT/ATX Input power select (JAT)



#### 2.4.4 LCD backlight brightness adjustment (JVR)



\* Default

**PWM Mode\*** 



DC Mode





2.4.5	LCD Inverter connector (	(JBKL)
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5	
Signal	PIN
+5V	5
VBRIGHT	4
BKLEN	3
GND	2
+12V	1

### 2.4.6 CPU fan connector (CPU\_FAN)





Signal	PIN
GND	1
+12V	2
EC_TACH0	3
FAN_PWM0	4

#### **EPS-KBLHE**



#### 2.4.7 System fan connector (SYS\_FAN)



Signal	PIN
GND	1
+12V	2
EC_TACH1	3
FAN_PWM1	4

#### 2.4.8 Serial port 2 connector (JCOM2)



1		9

Signal	PIN	PIN	Signal
COM_DCD#_1	1	2	COM_RXD#_1
COM_TXD_1	3	4	COM_DTR#_1
GND	5	6	COM_DSR#_1
COM_RTS#_1	7	8	COM_CTS#_1
COM_RI#_1	9	10	NC



2.4.9	Serial port 2 in RS-422/485 mode (J422_4	85)
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1	5

Signal	PIN	PIN	Signal
485-422_TXDN	1	2	422_RXDN
485-422_TXDP	3	4	422_RXDP
+5V	5	6	GND

#### 2.4.10 General purpose I/O connector (JDIO)



1			11

Signal	PIN	PIN	Signal
DIO_GP10	1	2	DIO_GP20
DIO_GP11	3	4	DIO_GP21
DIO_GP12	5	6	DIO_GP22
DIO_GP13	7	8	DIO_GP23
SMB_CLK_VCC	9	10	SMB_DATA_VCC
GND	11	12	+5V



#### 2.4.11 SATA Power connector 1/2 (SATAPW1/2)



Signal	PIN
GND	1
SATA_PWR1	2

2.4.12 Power connector (PWR)





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



#### 2.4.13 On-board header for USB2.0 (JUSB)

1		9

Signal	PIN	PIN	Signal
+5VSB	1	2	GND
USB_DN4	3	4	GND
USB_DP4	5	6	USB_DP5
GND	7	8	USB_DN5
GND	9	10	+5VSB

2.4.14 LPC connector (JLPC)



13			1

Signal	PIN	PIN	Signal
LPC_AD0	1	2	+3.3V
LPC_AD1	3	4	PLTRST#
LPC_AD	5	6	LPC_LFRAME#
LPC_AD03	7	8	CLK_PCI_JLPC
SERIRQ	9	10	GND
+5V	11	12	GND
+5VSB	13	14	GND

#### 2.4.15 LVDS connector (JLVDS)





Signal	PIN	PIN	Signal
+12V	39	40	+12V
GND	37	38	GND
LVDS_CLK2_N	35	36	LVDS_CLK1_N
LVDS_CLK2_P	33	34	LVDS_CLK1_P
GND	31	32	GND
LVDS_DATA7_N	29	30	LVDS_DATA6_N
LVDS_DATA7_P	27	28	LVDS_DATA6_P
GND	25	26	GND
LVDS_DATA5_N	23	24	LVDS_DATA4_N
LVDS_DATA5_P	21	22	LVDS_DATA4_P
GND	19	20	GND
LVDS_DATA3_N	17	18	LVDS_DATA2_N
LVDS_DATA3_P	15	16	LVDS_DATA2_P
GND	13	14	GND
LVDS_DATA1_N	11	12	LVDS_DATA0_N
LVDS_DATA1_P	9	10	LVDS_DATA0_P
GND	7	8	GND
LVDS_DDC_CLK	5	6	LVDS_DDC_DATA
+3.3V	3	4	+5V
+3.3V	1	2	+5V



#### 2.4.16 Miscellaneous setting connector (JFP)

1		7

Signal	PIN	PIN	Signal
PWR_BTN_IN_EC#	1	2	GND
RESET_BT	3	4	GND
+5VSB	5	6	PWR_LED-
HDD_LED#	7	8	+5V

2.4.17 SPI connector (JSPI)



9		1

Signal	PIN	PIN	Signal
+3.3VSB	1	2	GND
SPI_CS0#	3	4	SPI_CLK
SPI_SO	5	6	SPI_SI
HOLD#	7	8	NC
EC_SMCLK_DEBUG	9	10	EC_SMDAT_DEBUG

#### 2.4.18 Battery connector (JBAT)



2.4.19 Audio connector (JAUDIO)



	Ē	
1	Ŀ	

Signal	PIN
GND	2
+3.3V	1

1				15

Signal	PIN	PIN	Signal
FRONT-R-OUT	1	2	FRONT-L-OUT
HD_AGND	3	4	HD_AGND
LINE1-R-IN	5	6	LIN1-L-IN
MIC1-R-IN	7	8	MIC1-L-IN
FRONT-JD	9	10	LINE1-JD
MIC1-JD	11	12	HD_AGND
SPK_L+	13	14	SPK_R+
SPK_L-	15	16	SPK_R-

#### 2.4.19.1 Signal Description – Audio connector (JAUDIO)

Signal	Signal Description		
LINE1-JD	AUDIO IN (LINE_RIN/LIN)sense pin		
FRONT-JD	AUDIO Out(ROUT/LOUT) sense pin		
MIC1-JD	MIC IN (MIC_RIN/LIN) sense pin		

### 2.5 Installing Hard Disk (EPS-KBLHE)



**Step1.** For HDD installation, please remove 8 screws to detach top cover, HDD enclosure from board & system assembly.

Step2. Fix HDD using the 12 screws in the Accessory Kit.

Step3. Re-assemble your system back through previous steps to complete the installation.



#### **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

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 <F2> or <Del> immediately after switching the system on, or

By pressing the <F2> or <Del> key when the following message appears briefly at the left-top of the screen during the POST (Power On Self Test).

#### Press <F2> or <Del> 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.

#### 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
↑	Move to previous item
$\downarrow$	Move to next item
<i>←</i>	Move to the item in the left hand
$\rightarrow$	Move to the item in the right hand
Esc key	Main Menu Quit and not save changes into NVRAM Status Page Setup Menu and Option Page Setup Menu Exit current page and return to Main Menu
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Previous Values
F3 key	Optimized defaults
F4 key	Save & Exit Setup

#### • 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 the F1 key again.

#### 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 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 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.

	Aptio Setup Utility – ( Main Advanced Chipset Security )	Copyright (C) 2017 American Boot Save & Exit	Megatrends, Inc.
F	BIOS Information BIOS Vendor Core Version Compliancy Project Version Build Date and Time Access Level EC Firmware Version BIOS Name System Language Board Information	American Megatrends 5.12 UEFI 2.5; PI 1.4 1ATQO 0.25 x64 08/17/2017 19:41:18 Administrator 08 CKBH2R10 [English]	Choose the system default language
	System Date System Time	[Thu 09/07/2017] [17:34:29]	<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 2.18.1263. Co	pyright (C) 2017 American Me	egatrends, Inc.

Aptio Setup Uti Main	lity – Copyright (C) 2017 America	an Megatrends, Inc.	
Board Information Board ID Fab ID LAN PHY Revision Processor Information Name Type Speed ID Stepping Package Number of Processors Microcode Revision GT Info IGFX VBIOS Version IGFX GOP Version IGFX GOP Version Total Memory Memory Frequency PCH Information	EPS-KBLHE (CKBH2R10) To be filled by O.E.M. A6 (B2 Stepping) Kabylake Halo Intel(R) Core(TM) i5-7442EQ CPU @ 2.10GHz 2100 MHz 0x906E9 B0/S0/M0 Not Implemented Yet 4Core(s) / 4Thread(s) SE GT2 (0x591B) N/A N/A 1.5.0.0 B192 MB 2133 MHz	★+: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.18.1	263. Copyright (C) 2017 American	Megatrends, Inc.	
Memory RC Version       1.5.0.0         Total Memory       8192 MB         Memory Frequency       2133 MHz         PCH Information	Aptio Setup Utility - Main	- Copyright (C) 2017 Americ	an Megatrends, Inc.
--	---	--	---
PCH Information       Name     SKL PCH-H       PCH SKU     QM175       Stepping     D1       Hsio Revision     52       Package     Not Implemented Yet	Memory RC Version Total Memory Memory Frequency	1.5.0.0 8192 MB 2133 MHz	
TXT Capability of Platform/PCH Supported Production Type Production	PCH Information Name PCH SKU Stepping Hsio Revision Package TXT Capability of Platform/PCH Production Type	SKL PCH-H QM175 D1 52 Not Implemented Yet Supported Production	
Dual Output Fast Read supportNot supported++: Select ScreenRead ID/Status Clock Freq17 MHz11: Select ItemWrite and Erase Clock Freq48 MHzEnter: SelectFast Read Clock Freq48 MHz+/-: Change Opt.Fast Read SupportSupportedF1: General HelpRead Clock Freq17 MHzF2: Previous ValuesNumber of Components1 ComponentSPI Component 0 Density16 MBF2: Flipting00 00	Dual Output Fast Read support Read ID/Status Clock Freq Write and Erase Clock Freq Fast Read Clock Freq Fast Read support Read Clock Freq Number of Components SPI Component 0 Density	Not supported 17 MHz 48 MHz 48 MHz Supported 17 MHz 1 Component 16 MB	<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>
ME FW Version 11.6.29.3287 ME Firmware SKU Corporate SKU V	ME FW Version ME FW Version ME Firmware SKU	00.00 11.6.29.3287 Corporate SKU	V

#### 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 day, month 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.

<ul> <li>CPU Configuration</li> <li>Power &amp; Performance</li> <li>PCH-FW Configuration</li> <li>Trusted Computing</li> <li>ACPI Settings</li> <li>ITB528 Super IO Configuration</li> <li>H/W Monitor</li> <li>SS RTC Wake Settings</li> <li>Serial Port Console Redirection</li> <li>Intel TXT Information</li> <li>Network Stack Configuration</li> <li>CSM Configuration</li> <li>WMe Configuration</li> <li>WSB Configuration</li> <li>USB Configuration</li> <li>USB Configuration</li> <li>It Select Screen</li> <li>Select Item</li> <li>Enter: Select</li> <li>H: Change Opt.</li> <li>F1: General Help</li> <li>F2: Previous Values</li> <li>F3: Optimized Defaults</li> <li>F4: Save &amp; Exit</li> <li>ESC: Exit</li> </ul>	Aptio Setup Utility Main Advanced Chipset Security	– Copyright (C) 2017 Am Boot Save & Exit	erican Megatrends, Inc.
	<ul> <li>CPU Configuration</li> <li>Power &amp; Performance</li> <li>PCH-FW Configuration</li> <li>Trusted Computing</li> <li>ACPI Settings</li> <li>IT8528 Super ID Configuration</li> <li>H/W Monitor</li> <li>SS RTC Wake Settings</li> <li>Serial Port Console Redirection</li> <li>Intel TXT Information</li> <li>Network Stack Configuration</li> <li>CSM Configuration</li> <li>WVME Configuration</li> <li>USB Configuration</li> </ul>		CPU Configuration Parameters ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

## 3.6.2.1 CPU Configuration

Use the CPU configuration menu to view detailed CPU specification and configure the CPU.

Aptio Setup Utility - Advanced	· Copyright (C) 2017 Americar	n Megatrends, Inc.
CPU Configuration		When enabled, a VMM can
Туре	Intel(R) Core(TM)	hardware capabilities provided
	15-7442EQ CPU @ 2.10GHz	by Vanderpool Technology.
IV Sneed	0X906E9 2100 MHz	
L1 Data Cache	32 KB × 4	
L1 Instruction Cache	32 KB × 4	
L2 Cache	256 KB × 4	
L3 Cache	6 MB	
VMX	Supported	
SMX/TXT	Supported	
		++: Select Screen
Intel (VMX) Virtualization	[Enabled]	T4: Select Item
Active Processor Cores	[A11]	+/-: Change Opt.
BIOS Guard	[Disabled]	F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		LOG. EAT
Version 2. <u>1</u> 8.1263. (	opyright (C) 2017 American M	Megatrends, Inc.

#### **Quick Reference Guide**

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 2 3	Number of cores to enable in each processor package.

### 3.6.2.2 Power & Performance

Aptio Setup Utility – Copyright (C) 2017 American Advanced	Megatrends, Inc.
Power & Performance	CPU – Power Management Control Options
▶ CPU – Power Management Control ▶ GT – Power Management Control	
	++: Select Screen †4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values
	F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2 18 1253 Convright (C) 2017 American M	gatrenda Inc

# 3.6.2.2.1 CPU – Power Management Control

Aptio Setup Utility - Advanced	· Copyright (C) 2017 Americar	n Megatrends, Inc.
<ul> <li>CPU - Power Management Control</li> <li>Intel(R) SpeedStep(tm)</li> <li>Turbo Mode</li> <li>View/Configure Turbo Options</li> <li>C states</li> </ul>	[Enabled] [Enabled] [Enabled]	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 2.18.1263. C	Copyright (C) 2017American ⊨	Wegatrends, Inc.

ltem	Option	Description
Intol® Speed Stop IM	Enabled[Default],	Allows more than two frequency ranges to be
	Disabled	supported.
	Enchlad [Default]	Enable/Disable processor Turbo Mode (requires
Turbo Mode Disabled	EMTTM enabled too). AUTO means enabled, unless	
	Disabled	max turbo ratio is bigger than 16 – SKL a0 W/A.
C States	Enabled[Default],	Enable/Disable CPU Power Management. Allows CPU
C States	Disabled	to go to C states when it's not 100293502184tilized.

# 3.6.2.2.1.1 View/Configure Turbo Options

Aptio Setup Utility – Advanced	Copyright (C) 2017 American	Megatrends, Inc.
Current Turbo Settings		Enable/Disable Energy Efficient P-state feature
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 3-core Turbo Ratio 4-core Turbo Ratio	4095.875 0.0 25.0 25.0 31.250 29 28 27 26	When set to 0, will disable access to ENERGY_PERFORMANCE_BIAS MSR and CPUID Function 6 ECX[3] will read 0 indicating no support for Energy Efficient policy setting. When set to 1 will enable access to ENERGY_PERFORMANCE_BIAS MSR
Energy Efficient P-state Package Power Limit MSR Lock Power Limit 1 Override Power Limit 2 Override Power Limit 2 1-Core Ratio Limit Override 2-Core Ratio Limit Override 3-Core Ratio Limit Override 4-Core Ratio Limit Override Energy Efficient Turbo	[Enabled] [Disabled] [Disabled] [Enabled] 0 29 28 27 26 [Enabled]	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.18.1263. C	opyright (C) 2017 American M	egatrends, Inc.

Item	Option	Description
Energy Efficient P-state	Enabled <b>[Default]</b> , Disabled	Enable/Disable Energy Efficient P-state feature. When set to 0, will disable access to ENERGY_PERFORMANCE_BIAS MSR and CPUID Function 6 ECX[3] will read 0 indicating no support for Energy Efficient policy setting. When set to 1 will enable access to ENERGY_PERFORMANCE_BIAS MSR 1B0h and CPUID Function 6 ECX[3] will read 1 indicating Energy Efficient policy setting is.
Package Power Limit MSR Lock	Disabled <b>[Default]</b> Enabled	Enable/Disable locking of Package Power Limit settings. When enabled, PACKAGE_POWER_LIMIT MSR will be locked and a reset will be required to unlock the register.
Power Limit 1 Override	Disabled <b>[Default]</b> Enabled	Enable/Disable Power Limit 1 override. If this option is disabled, BIOS will program the

		default values for Power Limit 1 and Power
		Limit 1 Time Window.
	Distin	Enable/Disable Power Limit 2 override. If this
Power Limit 2 Override	Disabled	option is disabled, BIOS will program the
	Enabled[Default]	default values for Power Limit 2.
		Power Limit 2 value in Milli Watts. BIOS will
		round to the nearest 1/8W when
		programming. If the value is 0, BIOS will
Power Limit 2	0	program this value as 1.25*TDP. For
		12.50W, enter 12500. Processor applies
		control policies such that the package power
		does not exceed this limit.
		1-Core Ratio Limit with range 0 to 83. The
		Minimum range may vary between
1-Core Ratio Limit Override	0-83	Processors. This 1-Core Ratio Limit Must be
		greater than or equal to 2-Core ratio Limit,
		3-Core Ratio Limit, 4-Core Ratio Limit.
2-Core Ratio Limit Override	0-83	2-Core Ratio Limit with range 0 to 83. The
		Minimum range may vary between
		Processors. This 2-Core Ratio Limit Must be
		Less than or equal to 1-Core Ratio Limit.
		4-Core Ratio Limit with range 0 to 83. The
3-Core Ratio Limit Override	0-83	Minimum range may vary between
5-00re Ratio Ellinit Override	0.00	Processors. This 4-Core Ratio Limit Must be
		Less than or equal to 1-Core Ratio Limit.
		1-Core Ratio Limit with range 0 to 83. The
		Minimum range may vary between
4-Core Ratio Limit Override	0-83	Processors. This 1-Core Ratio Limit Must be
		greater than or equal to 2-Core ratio Limit,
		3-Core Ratio Limit, 4-Core Ratio Limit.
		Enable/Disable Energy Efficient Turbo
		Feature. This feature will opportunistically
	Disabled	lower the turbo frequency to increase
Energy Efficient Turbo	Disabled, Enabled <b>[Default]</b>	efficiency. Recommended only to disable in
		overclocking situations where turbo
		frequency must remain constant. Otherwise,
		leave enabled.



# 3.6.2.2.2 GT – Power Management Control

Item	Option	Description
PC6(Pondor Stondby)	Enabled <b>[Default]</b> ,	Check to enable render
RCO(Render Standby)	Disabled	standby support.
	Default Max Frequency[Default]	
Maximum GT frequency	100Mhz/150Mhz/200Mhz/250Mhz/300Mhz	
	/350Mhz/400Mhz/450Mhz/500Mhz/550Mhz	Auto Lindotod
	/600Mhz/650Mhz/700Mhz/750Mhz/800Mhz	Auto Opdated.
	/850Mhz/900Mhz/950Mhz/1000Mhz/1050Mhz	
	/1100Mhz/1150Mhz/1200Mhz	

# 3.6.2.3 PCH-FW Configuration

Aptio Setup Utility -	- Copyright (C) 2017 American	Megatrends, Inc.
Advanced		
ME Firmware Version ME Firmware Mode ME Firmware SKU ME File System Integrity Value ME Firmware Status 1 ME Firmware Status 2 NFC Support	11.6.29.3287 Normal Mode Corporate SKU 2 0x90000255 0x8A108306 Disabled	Configure Intel(R) Active Management Technology Parameters
AMT BIOS Features ▶ AMT Configuration	[Enabled]	
ME Unconfig on RTC Clear	[Enabled]	
<ul> <li>Firmware Update Configuration</li> <li>PTT Configuration</li> </ul>		<pre>++: Select Screen t4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.18.1263. (	Copyright (C) 2017 American M	egatrends, Inc.

Item	Options	Description
ME Unconfig on RTC Clear	Disabled,	When Disabled ME will not be unconfigured on
	Enabled[Default]	RTC Clear.

## 3.6.2.3.1 AMT Configuration

Aptio Setup L Advanced	Jtility – Copyright (C) 2017 Ameri	ican Megatrends, Inc.
ASF support	[Enabled]	Enable/Disable Alert Standard
USB Provisioning of AMT CIRA Configuration ASF Configuration Secure Erase Configuration OEM Flags Settings MEBx Resolution Settings	[Disabled]	<pre>Format support.  +t: 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 2.18	3.1263. Copyright (C) 2017 America	an Megatrends, Inc.

Item	Option	Description
ASF support	Disabled, Enabled <b>[Default]</b>	Enable/Disable Alert Standard Format support.

USB Provisioning of AMT	Disabled <b>[Default]</b> , Enabled	Enable/Disable of AMT USB Provisioning.
-------------------------	--	---

# 3.6.2.3.1.1 CIRA Configuration

Aptio Setup Utility - Advanced	Copyright (C) 2017 American	Megatrends, Inc.
Activate Remote Assistance Process CIRA Timeout	[Disabled] O	Trigger CIRA boot Note: Network Access must be activated first from MEBx Setup.
		<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 2.18.1263. Co	pyright (C) 2017 American M	egatrends, Inc.

Item	Description
Activata Romoto Assistance Process	Trigger CIRA boot. Note: Network Access must be activated first
Activate Remote Assistance Process	from MEBx Setuup.

# 3.6.2.3.1.2 ASF Configuration

PET Progress [Enabled] WatchDog [Disabled] OS Timer O BIOS Timer O	Enable/Disable PET Events Progress to receive PET Events.
	<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>

Item	Option	Description
	Disabled,	Enable/Disable PET Events Progress to receive
FET Progress	Enabled[Default]	PET Events.
WatchDog	Disabled[Default],	Frakle/Dischle Wetch Dog Timor
	Enabled	Enable/Disable watchDog Timer.

# 3.6.2.3.1.3 Secure Erase Configuration

Advance	Aptio Setup Utility – ) d	Copyright (C) 2017 American	Megatrends, Inc.
Secure Erase m Force Secure E	iode inase	[Simulated] [Disabled]	Change Secure Erase module behavior: Simulated: Performs SE flow without erasing SSD Real: Erase SSD.
			++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
	Version 2.18.1263. Co	pyright (C) 2017 American Me	egatrends, Inc.

Item	Option	Description
Secure Erase mode	Simulated <b>[Default]</b> Real	Change Secure Erase module behavior: Simulated: Performs SE flow without erasing SSD Real: Erase SSD.
Force Secure Erase	Disabled <b>[Default]</b> , Enabled	Force Secure Erase on next boot.

# 3.6.2.3.1.4 OEM Flags Settings

Aptio Setup Utility Advanced	– Copyright (C) 2017	American Megatrends, Inc.
MEBx hotkey Pressed MEBx Selection Screen Hide Unconfigure ME Confirmation Prompt MEBx OEM Debug Menu Enable Unconfigure ME	[Disabled] [Disabled] [Disabled] [Disabled] [Disabled]	0EMFLag Bit 1: Enable automatic MEBx hotkey press. ++: 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 18 1263	Conunight (C) 2017 Am	enican Meratrende Inc

Item		Description
	Disabled <b>[Default]</b> ,	OEMFLag Bit 1: Enable automatic MEBx hotkey
MEBX Holkey Pressed	Enabled	press.
	Disabled <b>[Default]</b> , Enabled	OEMFLag Bit 2: Enable MEBx selection screen
		with 2 options: Press 1 to enter ME Configuration
MEBx Selection Screen		Screens Press 2 to initiate a remote connection
		Note: Network Access must be activated from
		MEBx Setup for this screen to be displayed.
Hido Unconfiguro ME	Disabled <b>[Default]</b> , Enabled	OEMFlag Bit 6: Hide Unconfigure ME
Confirmation		confirmation prompt when attempting ME
		unconfiguration.
MEBx OED Debug Menu Enable	Disabled[Default],	OEMFlag Bit 14: Enable OEM debug menu in
	Enabled	MEBx.
	Disabled[Default],	OEMFlag Bit 15: Unconfigure ME with resetting
Unconfigure ME	Enabled	MEBx password to default.

Aptio Setup Utili Advanced	ity – Copyright (C) 2017	American Megatrends, Inc.
Non-UI Mode Resolution UI Mode Resolution Graphics Mode Resolution	[Auto] [Auto] [Auto]	Resolution for non-UI text mode.
		<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>

# 3.6.2.3.1.5 MEBx Resolution Settings

Item		Description	
	Auto <b>[Default]</b> ,		
Non-UI Mode Resolution	80x25	Resolution for non-UI text mode.	
	100x31		
UI Mode Resolution	Auto[Default],		
	80x25	Resolution for UI text mode.	
	100x31		
Graphics Mode Resolution	Auto[Default],		
	640x480	Possilution for graphics mode	
	800x600	Resolution for graphics mode.	
	1024x768		

Aptio Advanced	Setup Utility – Copyright	(C) 2017 American	Megatrends, Inc.
Me FW Image Re-Flas	n [Disabled	]	Enable/Disable Me FW Image Re-Flash function.
			<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>
Vers	ion 2.18.1263. Copyright (C	) 2017 American M	egatrends, Inc.

# 3.6.2.3.2 Firmware Update Configuration

Item	Option	Description
ME FW Image Re-Flash	Disabled <b>[Default]</b> , Enabled	Enable/Disable Me FW Image Re-Flash function.

# 3.6.2.3.3 PTT Configuration

Aptio Setup Ut Advanced	tility – Copyright (C) 2017 Ame	erican Megatrends, Inc.
PTT Capability / State	1 / 0	Selects TPM device: PTT or
TPM Device Selection PTP aware OS	[dTPM] [PTP Aware]	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 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.18	.1263. Copyright (C) 2017 Ameri	.can Megatrends, Inc.

Item	Option	Description
TPM Device Selection	dTPM <b>[Default]</b> , PTT	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.

# 3.6.2.4 Trusted Computing

Aptio Setup Utility Advanced	– Copyright (C) 2017 America	n Megatrends, Inc.
TPM20 Device Found Security Device Support Active PCR banks Available PCR banks SHA-1 PCR Bank SHA256 PCR Bank Pending operation Platform Hierarchy	[Enable] SHA-1,SHA256 SHA-1,SHA256 [Enabled] [Enabled] [None] [Enabled]	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INTIA interface will not be available.
Storage Hierarchy Endorsement Hierarchy TPM2.0 UEFI Spec Version Physical Presence Spec Version TPM 20 InterfaceType Device Select	[Enabled] [Enabled] [TCG_2] [1.3] [TIS] [Auto]	<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 2.18.1263.	Copyright (C) 2017 American	Megatrends, Inc.

Item	Options	Description
Security Device Support	Disable, Enable <b>[Default]</b>	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	Disabled Enabled <b>[Default]</b> ,	Enable or Disable SHA-1 PCR Bank.
SHA256 PCR Bank	Disabled Enabled <b>[Default]</b> ,	Enable or Disable SHA256 PCR Bank.
Pending operation	None <b>[Default]</b> , TPM Clear	Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.
Platform Hierarchy	Disabled Enabled <b>[Default]</b> ,	Enable or Disable Platform Hierarchy.
Storage Hierarchy	Disabled Enabled <b>[Default]</b> ,	Enable or Disable Storage Hierarchy.
Endorsement Hierarchy	Disabled Enabled <b>[Default]</b> ,	Enable or Disable Endorsement Hierarchy.

TPM2.0 UEFI Spec Version	TCG_1_2 TCG_2 <b>[Default]</b> ,	Select the TCG2 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	1.2 1.3 <b>[Default]</b> ,	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 TPM 2.0 Auto <b>[Default]</b> ,	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.

# 3.6.2.5 APCI Settings

Aptio Setup Utility – Advanced	Copyright (C) 2017 American	) Megatrends, Inc.
ACPI Settings		Enables or Disables BIOS ACPI
Enable ACPI Auto Configuration		nuto configuration.
Enable Hibernation ACPI Sleep State S3 Video Repost	[Enabled] [S3 (Suspend to RAM)] [Disabled]	
ErP Function Pwr-On After PWR-Fail Wake Up By Ring Watch Dog	[Disabled] [Off] [Disabled] [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 2.18.1263. Cc	pyright (C) 2017 American M	egatrends. Inc.

ltem	Options	Description
Enable ACPI Auto	Disabled <b>[Default]</b> ,	Enables or Disables BIOS ACPI Auto
Configuration	Enabled	Configuration.
Enable Hibernation	Disabled Enabled <b>[Default]</b> ,	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some OS.
ACPI Sleep State	Suspend Disabled, S3 (Suspend to RAM) <b>[Default]</b>	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
S3 Video Repost	Disabled <b>[Default]</b> , Enabled	Enable or Disable S3 Video Repost.
ErP Function	Disabled <b>[Default]</b> , Enabled	ErP Function (Deep S5).

Pwr-On After PWR-Fail	Off <b>[Default]</b> On Last state	Select the power station after power failure.
Wake Up By Ring	Disabled <b>[Default]</b> , Enabled	System wake up by ring (from S3~S5).
Watch Dog	Disabled <b>[Default]</b> , 30 sec 40 sec 50 sec 1 min 2 min 10 min 30 min	Select Watch Dog Timer (WDT) Mode.

# 3.6.2.6 IT8528 Super IO Configuration

You can use this item to set up or change the IT8528 Super IO configuration for serial ports. Please refer to 3.6.2.6.1~ 3.6.2.6.2 for more information.

	Aptio Setup Utili Advanced	ity – Copyright (	C) 2017 American	Megatrends, Inc.
Γ	IT8528 Super IO Configuration			Set Parameters of Serial Port
	Super IO Chip Serial Port 1 Configuration Serial Port 2 Configuration	IT8528		<pre>1 (COMA) ++: Select Screen tl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
	Version 2.18.126	3. Copyright (C)	2017 American Me	egatrends, Inc.

Item	Description
Serial Port 1 Configuration Set Parameters of Serial Port 1 (COMA).	
Serial Port 2 Configuration	Set Parameters of Serial Port 2 (COMB).

3.6.2.6.1 Serial Port 1 Configuration



Item	Option	Description	
Serial Port	Enabled[Default],	Enable or Disable Serial Port (COM)	
Senarron	Disabled		

## 3.6.2.6.2 Serial Port 2 Configuration

Aptio Setup Utility Advanced	– Copyright (C) 2017 Americ	an Megatrends, Inc.
Serial Port 2 Configuration		Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=2F8h; IRQ=3;	
UART2 232 422 485	[RS232]	
		++: Select Screen
		Enter: Select +/-: Change Opt.
		F1: General Help F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.18.1263.	Copyright (C) 2017 American	Megatrends, Inc.

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

	UART 232[Default]	
UART 232 422 485	UART 422	Change the Serial Port as RS232/422/485.
	UART 485	

#### 3.6.2.7 HW Monitor

Aptio Set Advanced	up Utility – Copyright (C) 2017 America	n Megatrends, Inc.
Pc Health Status		Enable or Disable Smart Fan
Smart Fan Function		
VIN(Voltage) VCORE(Voltage) CPU temperature System temperature CPU_Fan speed(RPM) SYS_FAN1 speed(RPM)	: +12.408 V : +0.864 V : +49 C : +32 C : 4578 RPM : N/A	
		<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>
LVersion	2.18.1263. Copyright (C) 2017 American	Megatrends, Inc.

ltem	Options	Description
Smart Fan Function	Enabled, Disabled <b>[Default]</b>	Enables or Disables Smart Fan.

## 3.6.2.7.1 Smart Fan Mode Configuration



ltem	Option	Description
	Manual Mode <b>[Default]/</b> ,	
	Mode 01/02/03/04/05	CPU Smart Fan Mode Select (Manual, Mode
CPU Smart Fan Mode	/06/07/08/09/10	1. Mode 20)
	/11/12/13/14/15	1~Mode 20).
	/16/17/18/19/20	
Fan PWM (0-255)	0-255 <b>[Default]</b>	Fan PWM duty (0-255).

## 3.6.2.8 S5 RTC Wake Settings

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)
		<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>

	Item	Options	Description
Wa	ake system from S5	Disabled <b>[Default]</b> , Fixed Time Dynamic Time	Enable or disable System wake on alarm event. Select Fixed Time, system will wake on the hr::min::sec specified. Select Dynamic Time, System will wake on the current time + Increase minute(s).

[Fixed Time] [Disabled] 0 0	Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified. Select DuramicTime Sustem
U	will wake on the current time + Increase minute(s)
	<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>
	3. Conuright (E) 2017 Amer

Item	Options	Description	
Wake system from S5	Disabled, Fixed Time <b>[Default]</b> Dynamic Time	Enable or disable System wake on alarm event. Select Fixed Time, system will wake on the hr::min::sec specified. Select Dynamic Time, System will wake on the current time + Increase minute(s).	
Wake up day of week	Disabled <b>[Default]</b> Monday-Friday Monday-Saturday	Wake up day of week. (Monday-Friday) or (Monday-Saturday).	
Wake up day	1-31	Select 0 for daily system wake up 1-31 for which day of the month that you would like the system to wake up.	
Wake up hour	0-23	Select 0-23 For example enter 3 for 3am and 15 for 3pm.	
Wake up minute	0-23	Select 0-23 For example enter 3 for 3am and 15 for 3pm.	
Wake up second	0-23	Select 0-23 For example enter 3 for 3am and 15 for 3pm.	

Aptio Setup Ut Advanced	ility – Copyright (C) 2017	American Megatrends, Inc.
Wake system from S5 Wake up minute increase	[Dynamic Time] 1	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)
		<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>
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Item	Options	Description
Wake system from S5	Disabled, Fixed Time Dynamic Time <b>[Default]</b>	Enable or disable System wake on alarm event. Select Fixed Time, system will wake on the hr::min::sec specified. Select Dynamic Time, System will wake on the current time + Increase minute(s).
Wake up minute increase	1-5	1-5.

## 3.6.2.9 Serial Port Console Redirection

Aptio Setup Utility – C Advanced	Copyright (C) 2017 American	Megatrends, Inc.
COMO Console Redirection ▶ Console Redirection Settings	[Disabled]	Console Redirection Enable or Disable.
Console Redirection	Port Is Disabled	
Serial Port for Out-of-Band Managemen Windows Emergency Management Services Console Redirection	nt∕ s (EMS) [Disabled]	++: Select Screen
► Console Redirection Settings		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
Console Redirection	Disabled <b>[Default]</b> ,	Console Redirection Enable or Disable
	Enabled	Console Redirection Enable of Disable.

# 3.6.2.9.1 Legacy Console Redirection Settings

Aptio Setup Advanced	Utility – (	Copyright	(C) 2017	American	Megatrends, Inc.
Legacy Serial Redirection	Port	[COMO]			Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages
					<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.	18.1263. Cop	pyright (C	) 2017 An	merican Me	egatrends, Inc.

ltem	Option	Description
Logacy Sorial Podiraction Port		Select a COM port to display redirection of
Legacy Serial Redirection Fort	COMULDelanit	Legacy OS and Legacy OPROM Messages.

### 3.6.2.9.2 Console Redirection Settings

Aptio Setup Uti Advanced	lity – Copyright (C) 2017 An	merican Megatrends, Inc.
Out-of-Band Mgmt Port Terminal Type Bits per second Flow Control Data Bits Parity Stop Bits	[СОМО] [VT-UTF8] [115200] [None] 8 None 1	Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.
		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Item	Option	Description
Out-of-Band Mgmt Port	COM0[Default]	Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.
Terminal Type	VT100 VT100+ VT-UTF8 <b>[Default]</b> ANSI	VT-UTF8 is the preferred terminal type for out-of-band management. The next best choce is VT100+ and then VT100. See above, in Console Redirection Settings page, for more Help with Terminal Type/Emulation.
Bits per second	9600 19200 57600 115200 <b>[Default]</b>	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
Flow Control	None <b>[Default]</b> Hardware RTS/CTS Software Xon/Xoff	Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

# 3.6.2.10 Intel TXT Configuration

Aptio Se Advanced	tup Utility – Copyright (C) 2017 Americar	n Megatrends, Inc.
Intel TXT Information		
Chipset BiosAcm Chipset Txt Cpu Txt Error Code Class Code Major Code Minor Code	Production Fused Production Fused Supported None None None None	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version	2.18.1263. Copyright (C) 2017 American ⊧	legatrends, Inc.

Aptio Set Advanced	up Utility – Copyright (C) 2017 A	merican Megatrends, Inc.
Network Stack	[Disabled]	Enable/Disable UEFI Network Stack
		<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>

# 3.6.2.11 Network Stack Configuration

Item	Options	Description
Network Stack	Enabled Disabled <b>[Default]</b>	Enable/Disable UEFI Network Stack.

Aptio Setu;	o Utility – Copyright (C) 2017 Am	erican Megatrends, Inc.
Advanced		
Network Stack Ipv4 PXE Support Ipv4 HTTP Support Ipv6 PXE Support Ipv6 HTTP Support PXE boot wait time Media detect count	[Enabled] [Disabled] [Disabled] [Disabled] [Disabled] 0 1	Enable/Disable UEFI Network Stack
		<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.	.18.1263. Copyright (C) 2017 Amer	ican Megatrends, Inc.

	Options	Description	
Network Stack	Enabled <b>[Default]</b> Disabled	Enable/Disable UEFI Network Stack.	
Ipv4 PXE Support	Enabled Disabled <b>[Default]</b>	Enable Ipv4 PXE Boot Support. If disabled	

Inv/ HTTD Support	Enabled	Enable Ipv4 HTTP Boot Support. If disabled	
	Disabled[Default]	IPV4 HTTP boot option will not be created.	
Inv6 DVE Support	Enabled	Enable Ipv6 PXE Boot Support. If disabled	
	Disabled[Default]	IPV6 PXE boot option will not be created.	
Ipv6 HTTP Support	Enabled Disabled <b>[Default]</b>	Enable Ipv6 HTTP Boot Support. If disabled	
		IPV6 HTTP boot option will not be created.	
PXE boot wait time     0       Media detect count     1	0	Wait time to press ESC key to abort the PXE	
	0	boot.	
	1	Number of times presence of media will be	
		checked.	

# 3.6.2.12 CSM Configuration

Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc. Advanced				
Compatibility Support M	Compatibility Support Module Configuration			
CSM Support				
		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit		
Version	2.18.1263. Copyright (C) 2017 Americ	an Megatrends, Inc.		

Item	Options	Description	
CSM Support	Enabled	Enable/Disable CSM Support	
	Disabled[Default]		

Aptio Setup Utility - Advanced	Copyright (C) 2017 American	Megatrends, Inc.		
Compatibility Support Module Configu	Enable/Disable CSM Support.			
CSM Support				
CSM16 Module Version	N/A, reset required			
GateA2O Active Option ROM Messages INT19 Trap Response	[Upon Request] [Force BIOS] [Immediate]			
Boot option filter	[Legacy only]			
Option ROM execution				
Network Storage Video Other PCI devices	[Do not launch] [Legacy] [Legacy] [Legacy]	<ul> <li>H: Select litem</li> <li>Enter: Select</li> <li>+/-: Change Opt.</li> <li>F1: General Help</li> <li>F2: Previous Values</li> <li>F3: Optimized Defaults</li> <li>F4: Save &amp; Exit</li> <li>ESC: Exit</li> </ul>		
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Item Options		Description	
CSM Support	Enabled <b>[Default]</b> Disabled	Enable/Disable CSM Support.	
GateA20 Active	Upon Request <b>[Default]</b> Always	UPON REQUEST – GA20 can be disabled using BIOS service. ALWAYS – do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.	
Option ROM Messages	Force BIOS <b>[Default]</b> Keep Current	Set display mode for Option ROM.	
INT19 Trap Response	INT19 Trap Response Immediate[Default] F Postponed a		
Boot Option filter	UEFI and Legacy Legacy only <b>[Default]</b> UEFI only	This option controls Legacy/UEFI ROMs priority.	
Network	Do not launch <b>[Default]</b> UEFI Legacy	Controls the execution of UEFI and Legacy PXE OpROM.	
Storage	Do not launch UEFI Legacy <b>[Default]</b>	Controls the execution of UEFI and Legacy Storage OpROM.	
Video	Do not launch UEFI Legacy <b>[Default]</b>	Controls the execution of UEFI and Legacy Video OpROM.	
Other PCI devices	Do not launch UEFI Legacy <b>[Default]</b>	Determines OpROM execution policy for devices other than Network, Storage, or Vide.	

#### 3.6.2.13 NVMe Configuration



## 3.6.2.14 USB Configuration

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

Aptio Setup Utility - Advanced	Copyright (C) 2017 Americar	) Megatrends, Inc.
USB Configuration		Enables Legacy USB support.
USB Module Version	17	support if no USB devices are
USB Controllers:		keep USB devices available
USB Devices: 1 Drive, 1 Keyboard, 1 Mouse		only for chi applications.
Legaru USB Sunnort	[Enabled]	
XHCI Hand-off	[Enabled]	
USB Mass Storage Driver Support	[Enabled]	
Port 60/64 Emulation	[Disabled]	
		++: Select Screen
USB hardware delays and time-outs:	100 J	T4: Select Item
USB transfer time-out	[20 sec]	Enter: Select
Device newer-up delau	[20 Sec]	F1: General Heln
	[naco]	F2: Previous Values
Mass Storage Devices:		F3: Optimized Defaults
MultipleCard Reader 1.00	[Auto]	F4: Save & Exit
		ESC: Exit
Version 2.18.1263. Co	pyright (C) 2017American M	iegatrends, Inc.

Item	Options	Description
Legacy USB Support	Enabled <b>[Default]</b> Disabled Auto	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep SUB devices available only for EFI applictions.

## **Quick Reference Guide**

XHCI Hand-off	Enabled <b>[Default]</b> Disabled	This is a workaround for OSew without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.	
USB Mass Storage Driver Support	Enabled[Default]	Enable/Disable USB Mass Storage Driver	
	Disabled	Support.	
Port 60/64 Emulation	Enabled Disabled <b>[Default]</b>	Enable I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware	
		OSes.	
	1 sec		
USB transfor time out	5 sec	The time-out value for Control, Bulk, and	
USB transfer time-out	10 sec	Interrupt transfers.	
	20 sec[Default]		
	10 sec		
	20 sec[Default] USB mass storage device Start Unit co		
Device reset time-out	30 sec	time-out.	
	40 sec		
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.	
	Auto[Default]	Mass storage device emulation type. 'AUTO'	
	Floppy	enumerates devices according to their media	
Mass Storage Devices	Forced FDD	format. Optical drives are emulated as	
	Hard Disk	'CDROM', drives with no media will be	
	CD-ROM	emulated according to a drive type.	

# 3.6.3 Chipset

Main Advance	Aptio Setup Utility ed Chipset Securit	– Copyright () y Boot Save (	C) 2017 Ámerican & Exit	Megatrends, 1	Inc.
▶ System Agent ( ▶ PCH-IO Configu	(SA) Configuration uration			System Agent	(SA) Parameters
				++: Select Sc 14: Select It Enter: Select +/-: Change C F1: General H F2: Previous F3: Optimized F4: Save & Exit ESC: Exit	creen tem t Dpt. Help Values d Defaults Kit
	Version 2.18.1263.	Copyright (C)	2017 American Me	egatrends, Inc	o

# 3.6.3.1 System Agent (SA) Configuration

		Aptio Setup Utility – ( Chipset	Copyright (C) 2017 American	Megatrends, Inc.
	System Agent	(SA) Configuration		Graphics Configuration
	SA PCIe Code VT-d	Version	1.5.0.0 Supported	
Þ	Graphics Conf VT-d		[Enabled]	
				<pre>++: Select Screen tl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
		Version 2.18.1263. Co	oyright (C) 2017 American Me	egatrends, Inc.

Item	Option	Description
VT-d	Enabled[Default]	VT-d capability
	Disabled	

### 3.6.3.1.1 Graphics Configuration

Aj	otio Setup Utility Chipset	y – Copyright (C)	2017 American	Megatrends, Inc.
Graphics Config	uration			Select the Aperture Size Note : Above 4GB MMIO BIOS assignment is automatically
Aperture Size DVMT Total Gfx I ▶ LCD Control	4em	[256MB] [256M]		enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.
				<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 2.18.1263	. Copyright (C) 2	2017 American Ma	egatrends, Inc.

Item	Option	Description
Aperture Size	128MB 256MB <b>[Default]</b> 512MB 1024MB 2048MB	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.
DVMT Total Gfx Mem	256M <b>[Default]</b> 128M MAX	Select DVMT 5.0 Total Graphics Memory size used by the Internal Graphics Device.

### 3.6.3.1.1.1 LCD Control

Aptio Setup Utility Chipset	– Copyright (C) 2017 America	an Megatrends, Inc.
LCD Control		Select the Video Device which
Primary IGFX Boot Display	[VBIOS Default]	<ul> <li>Will be ablivated during rosh.</li> <li>This has no effect if external graphics present.</li> <li>Secondary boot display selection will appear based on your selection.</li> <li>VGA modes will be supported only on primary display</li> <li>**: Select Screen</li> <li>14: Select Item Enter: Select +/-: Change Opt.</li> <li>F1: General Help</li> <li>F2: Previous Values</li> <li>F3: Optimized Defaults</li> <li>F4: Save &amp; Exit</li> <li>ESC: Exit</li> </ul>
Version 2 18 1263	Conveight (C) 2017 American	Megatrends Inc

Item	Option	Description
Primary IGFX Boot Display	VBIOS Default[Default],	Select the Video Device which will be
	EFP	activated during POST. This has no effect if
	LFP	external graphics present. Secondary boot
	EFP3	display selection will appear based on your
	EFP2	selection. VGA modes will be supported
	EFP4	only on primary display.

# 3.6.3.2 PCH-IO Configuration

	Aptio Setup Utility - ( Chipset	Copyright (C) 2017 American	Megatrends, Inc.
Γ	PCH-IO Configuration		PCI Express Configuration
	PCI Express Configuration SATA And RST Configuration USB Configuration HD Audio Configuration		Settings
	PCH LAN Controller Wake on LAN Enable Mini PCIe WLAN Enable Serial IRQ Mode Port 80h Redirection	[Enabled] [Enabled] [Enabled] [Continuous] [LPC Bus]	
			++: Select Screen t1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
	Version 2,18,1263 - Cor	nuright (C) 2017 American M	evatrends. Inc.

Item	Option	Description	
	Disabled	Enable or disable enhand NIC	
PCH LAN Controller	Enabled[Default]	Enable of disable onboard NIC.	
Wake on LAN Enchlo	Disabled	Enable or disable integrated LAN to wake	
	Enabled[Default]	the system.	
Mini PCle WLAN Enable	Disabled	Mini DOlo wifi DE Kill	
	Enabled[Default]		
Seriel IBO Mede	Quiet	Configure Seriel IDO Made	
Serial IRQ Mode	Continuous[Default]	Conligure Senai IRQ Mode.	
Port 80h Redirection	LPC Bus[Default]	Control where the Dort 90h evolge are cent	
	PCIE Bus	Control where the Port 80h Cycles are sent	

# 3.6.3.2.1 PCI Express Configuration

Aptio Setup Utility - Chipset	Copyright (C) 2017 American	Megatrends, Inc.
PCI Express Configuration		PCI Express Root Port 6
PCIE Port assigned to LAN	5	Settings.
<ul> <li>PCI Express Root Port 6</li> <li>PCI Express Root Port 15</li> <li>PCI Express Root Port 16</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 6

Aptio Setup Utility Chipset	– Copyright (C) 2017 Americar	) Megatrends, Inc.
Chipset PCI Express Root Port 6 Topology ASPM L1 Substates PCIe Speed	[Enabled] [Unknown] [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
Version 2.18.1263.	Copyright (C) 2017American M	legatrends, Inc.

Item	Option	Description
PCI Express Root Port 6	Enabled <b>[Default]</b> , Disabled	Control the PCI Express Root Port.
Topology	Unknown <b>[Default]</b> x1,	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.

	x4		
	Sata Express		
	M2		
	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],		
1.4 Substates	L1.1	DCI Everage 1.1 Substates actings	
LI Substates	L1.2	POI Express LT Substates settings.	
	L1.1 & L1.2		
	Auto[Default]		
PCIe Speed	Gen1	Configure DOIs Speed	
	Gen2		
	Gen3		

## 3.6.3.2.1.2 PCI Express Root Port 15



Item	Option	Description
PCI Express Root Port 15	Enabled <b>[Default]</b> , Disabled	Control the PCI Express Root Port.
Topology	Unknown <b>[Default]</b> x1, x4 Sata Express M2	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.
ASPM	Disabled <b>[Default]</b> , L0s L1	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.

	L0sL1	
	Auto	
L1 Substates	Disabled[Default],	
	L1.1	PCI Express L1 Substates settings.
	L1.2	
	L1.1 & L1.2	
PCIe Speed	Auto[Default]	
	Gen1	Configure PCIe Speed.
	Gen2	
	Gen3	

# 3.6.3.2.1.3 PCI Express Root Port 16

Aptio Setup Utility Chipset	– Copyright (C) 2017 America	n Megatrends, Inc.
PCI Express Root Port 16 Topology ASPM L1 Substates PCIe Speed	[Enabled] [Unknown] [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

Item	Option	Description
PCI Express Root Port 16	Enabled <b>[Default]</b> , Disabled	Control the PCI Express Root Port.
Topology	Unknown x1 <b>[Default]</b> , x4 Sata Express M2	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.
ASPM	Disabled <b>[Default]</b> , L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled <b>[Default]</b> , L1.1 L1.2	PCI Express L1 Substates settings.

	L1.1 & L1.2	
PCIe Speed	Auto <b>[Default]</b> Gen1 Gen2 Gen3	Configure PCIe Speed.
PCIE6 CLKREQ Mapping Override	Default <b>[Default]</b> No CLKREQ Custom number	PCIE CLKREQ Qverride for default platform mapping.

# 3.6.3.2.2 SATA And RST Configuration

Aptio Setup Uti Chipset	lity – Copyright (C) 2017 Amer:	ican Megatrends, Inc.
SATA Controller(s) SATA Mode Selection SATA Controller Speed Serial ATA Port O	[Enabled] [AHCI] [Default] Empty	Enable/Disable SATA Device.
Software Preserve Port O SATA Device Type Topology Serial ATA Port 1 Software Preserve Port 1	Unknown [Enabled] [Hard Disk Drive] [ISATA] Empty Unknown [Enabled]	
SFIR Device Type Topology Serial ATA Port 2 Software Preserve Port 2 SATA Device Type Topology Serial ATA Port 3	[ISATA] [ISATA] Empty Unknown [Enabled] [Solid State Drive] [ISATA] Empty	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults</pre>
Software Preserve Port 3 SATA Device Type Topology	Unknown [Enabled] [Solid State Drive] [M2]	F4: Save & Exit ESC: Exit
Version 2.18.1	263. Copyright (C) 2017 America	an Megatrends, Inc.

Item	Options	Description
SATA Controller(s)	Enabled <b>[Default]</b> Disabled,	Enable/Disable SATA Device.
SATA Mode Selection	AHCI <b>[Default]</b> , RAID	Determines how SATA controller(s) operate.
SATA Controller Speed	Default <b>[Default]</b> Gen1 Gen2 Gen3	Indicates the maximum speed the SATA controller can support.
Port 0	Enabled <b>[Default]</b> Disabled	Enable or Disable SATA Port.
SATA Device Type	Hard Disk Drive <b>[Default]</b> Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
Technology	Unknown ISATA <b>[Default]</b> Direct Connect	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.

	Flex M2	
Port 1	Enabled <b>[Default]</b> Disabled	Enable or Disable SATA Port.
SATA Device Type	Hard Disk Drive <b>[Default]</b> Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
Technology	Unknown ISATA <b>[Default]</b> Direct Connect Flex M2	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.
Port 2	Enabled <b>[Default]</b> Disabled	Enable or Disable SATA Port.
SATA Device Type	Hard Disk Drive Solid State Drive <b>[Default]</b>	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
Technology	Unknown ISATA <b>[Default]</b> Direct Connect Flex M2	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.
Port 3	Enabled <b>[Default]</b> Disabled	Enable or Disable SATA Port.
SATA Device Type	Hard Disk Drive Solid State Drive <b>[Default]</b>	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
Technology	Unknown ISATA Direct Connect Flex M2 <b>[Default]</b>	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.

### 3.6.3.2.3 USB Configuration



Item	Option	Description
XHCI Disable Compliance Mode	FALSE <b>[Default]</b> , TRUE	Option to disable Compliance Mode. Default is FALSE to not disable Compliance Mode. Set TRUE to disable Compliance Mode.

#### 3.6.3.2.4 HD Audio Configuration


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

## 3.6.4 Security



## • Administrator Password

Set setup Administrator Password

### User Password

Set User Password

## 3.6.4.1 Secure Boot



ltem	Option	Description
	Dischlad <b>[Dafault]</b>	Secure Boot can be enabled if 1.System running in
Attempt Secure Boot		User mode with enrolled Platform Key(PK) 2.CSM
	Enabled	function is disabled.
	Standard	Secure Boot mode selector: Standard/Custom. In
Secure Boot Mode	Stanuaru Custom [Defeuit]	Custom mode Secure Boot Variables can be
	Custom[Default]	configured without authentication.

## 3.6.4.1.1 Key Management

Provision Factory Defaults       [Disabled]         Install Factory Default keys         Enroll Efi Image         Save all Secure Boot variables         Secure Boot variable   Size  Keys#  Key Source         Platform Key(PK)       0  0  No Key         Authorized Signatures        0  0  No Key         Authorized Signatures        0  0  No Key         Authorized TimeStamps        0  0  No Key         DSRecovery Signatures        0  0  No Key	Allow to provision factory default Secure Boot Keys when System is in Setup Mode ++: 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
Provision Factory Defaults	Disabled[Default]	Allow to provision factory default Secure
FIOUSION Factory Deladits	Enabled	Boot keys when System is in Setup Mode.

#### 3.6.5 Boot



Item	Option	Description
Setup Prompt Timeout	1~ 65535	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On <b>[Default]</b> Off	Select the Keyboard NumLock state
Quiet Boot	Disabled <b>[Default]</b> Enabled	Enables or disables Quiet Boot option
Fast Boot	Disabled <b>[Default]</b> Enabled	Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.
Boot Option #1	Set the system boot orde	er.

## 3.6.6 Save and exit



## 3.6.6.1 Save Changes and Reset

Reset the system after saving the changes.

## 3.6.6.2 Discard Changes and Reset

Any changes made to BIOS settings during this session of the BIOS setup program are discarded. The setup program then exits and reboots the controller.

## 3.6.6.3 Restore Defaults

This option restores all BIOS settings to the factory default. This option is useful if the controller exhibits unpredictable behavior due to an incorrect or inappropriate BIOS setting.

## 3.6.6.4 Launch EFI Shell from filesystem device

Attempts to Launch EFI Shell application (Shellx64.efi) from one of the available filesystem devices.

# **4. Drivers Installation**



**Note**: Installation procedures and screen shots in this section are for your reference and may not be exactly the same as shown on your screen.

# 4.1 Install Chipset Driver

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **/Driver\_Chipset/Intel/ECM-KBLH**.



**Note:** The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.

Intel(R) Chipset Device Software
You are about to install the following product: Intel(R) Chipset Device Software It is strongly recommended that you exit all programs before continuing. Press Next to continue, or press Cancel to exit the setup program.
Next Cancel



## Step 3. Click Install.





## Step1. Click Next.



Step 2. Click Accept.

# 4.2 Install Display Driver

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **/VGA/ECM-KBLH**.



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

tel® Installation Framework	_	-		×
Intel® Graphics Drive	r			
Velcome to the Setup Program			(int	el
This setup program will install the following compone - Intel® Graphics Driver - Intel® Display Audio Driver	ents:			
It is strongly recommended that you exit all program	ms before conti	nuing, Click Ne:	xt to continu	ie.
기Automatically run WinSAT and enable the Windo	ows Aero deskt	op theme (if su	pported).	
_				
	< <u>B</u> ack	<u>N</u> ext >	Canc	el

Step 1. Click Next to continue installation.



**Step 2.** Click **Yes** to accept license agreement.



## Step 3. Click Next.

	(intel
etup Progress	/intel
	(inter
Please wait while the following setup operations are performed	d:
Deleting File: C: \ProgramData \Wicrosoft \Windows \Start Menu\ Deleting File: C: \ProgramData \Wicrosoft \Windows \Start Menu\ Deleting File: C: \ProgramData \Wicrosoft \Windows \Start Menu\ Deleting File: C: \DegramData \Wicrosoft \Windows \Start Menu\ Deleting File: C: \Users \Public \Desktop \Intel(R) HD Graphics Co Deleting File: C: \Users \Public \Desktop \Intel(R) HD Graphics and M Deleting File: C: \ProgramData \Wicrosoft \Windows \Start Menu\ Deleting File: C: \Users \Public \Desktop \Intel(R) HD Graphics and M Deleting File: C: \Users \Public \Desktop \Intel(R) HD Graphics and M Deleting File: C: \Users \Public \Desktop \Intel(R) HD Graphics and M Deleting Registry Key: HKLM \SOFT \WARE \Intel(R) FIN \Graphica Click Next to continue.	VPrograms Vintel (Intel (R) HD Gray A VPrograms Vintel (R) HD Graphics I VPrograms Vintel (R) Graphics and VPrograms Vintel (Intel (R) Graphic Introl Panel.Ink Itedia Control Panel.Ink VPrograms Vintel Vintel (R) Iris(TM) cis Control Panel.Ink AudioFix
<	>

# Step 4. Click Next.



Step 5. Click Finish to complete setup.

# 4.3 Install LAN Driver (For Intel I219LM)

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to

/Driver\_Gigabit/Intel/I219LM/ECM-KBLH\_LAN.



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

Intel(R) Network Connections Install Wizard Welcome to the install wizard for Intel(R) Network Connections	×
Installs drivers, Intel(R) Network Connections, and Advanced Networking Services.	
WARNING: This program is protected by copyright law and international treaties.	
< Bade Next >	Cancel

### Step 1. Click Next.



Step 2. Click Next.

ntei(K) Network Connections Install Wizard	ł		×
Setup Options			(intal)
Select the program features you want inst	talled.		linter
Install:			
Device drivers			
Intel® PROSet			
Intel® Advanced Network Service	es.		
Feature Description	< Back	Next >	Cancel

## Step 3. Click Next.

🖟 Intel(R) Network Connections Install Wizard	3
Ready to Install the Program	(intol
The wizard is ready to begin installation.	Inter
Click Install to begin the installation.	
If you want to review or change any of your installation setti exit the wizard.	ngs, dick Back. Click Cancel to
< <u>B</u> ack	Install Cancel

## Step 4. Click Install.

🔀 Intel(R) Network Connections Install Wizard	×
Install wizard Completed	(intel)
To access new features, open Device Manager, and view the properties of the network adapters.	

Step 5. Click Finish to complete setup.

# 4.4 Install ME Driver

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to /Utility/ECM-KBLH\_ME.



**Note:** The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.

Setup			×
Intel® Management Engine Compon Welcome	ents	(intel	
You are about to install the following product:			
Intel® Management Engine Components			
It is strongly recommended that you exit all progr Click Next to continue, or click Cancel to exit the s	ams before continuing. setup program.		

Step1. Click Next to start installation.

Setup			×
Intel® Management Engine Components License Agreement	2	(inte	D
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / 3	SV Distribution &	Single User)	^
IMPORTANT - READ BEFORE COPYING, INSTALLING O Do not use or load this software and any associated m until you have carefully read the following terms and c Software, you agree to the terms of this Agreement. I install or use the Software.	R USING. aterials (collective onditions. By loadi f you do not wish	ly, the "Softw ng or using th to so agree, o	are") e do not
Please Also Note: * If you are an Original Equipment Manufacturer (OEM (IHV), or Independent Software Vendor (ISV), this con * If you are an End-User, then only Exhibit A, the INTE applies.	), Independent Ha Iplete LICENSE AG EL SOFTWARE LIC	ardware Vendo REEMENT app ENSE AGREEM	or olies; MENT,
 For OEMs, IHVs, and ISVs:			
LICENSE. This Software is licensed for use only in conju Use of the Software in conjunction with non-Intel comp	unction with Intel o	component pro not licensed	oducts.
$\square$ I accept the terms in the License Agreement.			
ntel Corporation	< <u>B</u> ack	Next >	Cancel

Step 2. Click Next.

Setup		
intel® Management Engine Components Destination Folder	(	intel
Click Next to install to the default folder, or click Change to	choose another de	stination folder.
C:\Program Files (x86)\Intel\Intel(R) Management Engine	Components	
		Change
		<u>I</u>
ntel Corporation	< Back New	vt > Cance

Step 3. Click Next.



Step 4. Click Finish to complete setup.

# 4.5 Install Serial IO Driver

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to /Utility/ECM-KBLH\_SerialIO.



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

Setup		×
Intel® Serial IO Welcome	(intel)	A Summer
You are about to install the following product:		
Intel® Serial IO		
It is strongly recommended that you exit all programs before Click Next to continue, or click Cancel to exit the setup pro	ore continuing. ogram.	
Intel Corporation	(Back Next) Care	1

Step 1. Click Next to continue installation.







## Step 3. Click Next.

Setup	×
Intel® Serial IO Confirmation	(intel)
You are about to install the following components: - Intel® Serial IO GPIO Driver - Intel® Serial IO UART Driver	
Intel Corporation	< Back Next > Cancel

# Step 4. Click Next.

Do <u>n</u> 't Install
evice software is saf

Step 5. Complete setup.

# 4.6 Install Audio Driver (For Realtek ALC233)

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to /Driver\_Audio/Realtek/ALC233/ECM-KBLH\_Audio.



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



Step 1. Click Next to continue installation.



Step 2. Click Finish to complete setup.

