EMS-SKLU Series

6th Gen Intel® Core™ Processor i7/i5/i3/Celeron Fanless Rugged Embedded System

Quick Reference Guide

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Part No. E2017AAG0ACR

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

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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 Packing List

- 1 x EMS-SKLU/EMS-SKLU-Marine 6th Gen Intel® Core™ Processor i7/i5/i3/Celeron Fanless Rugged Embedded System
- Other major components include the followings:
 - 44 Pin Multi I/O Cable
 - Wall Mount Kit
 - Terminal Block to Lockable DC Jack cable
 - DP to VGA Converter
 - 60W/120W adapter (optional)
 - Power cord (optional)



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

1.3 System Specifications

System		
	EBM-SKLUS (EMS-SKLU)	
	With IET Extension Board	
	EBM-SKLUS +AUX-M01 (EMS-SKLU-6 COM)	
	EBM-SKLUS +IET-BYPASS (EMS-SKLU-6 LAN Bypass)	
	EBM-SKLUS +IET-Normal LAN (EMS-SKLU- 6 LAN Normal)	
	EBM-SKLUS +IET-PSEBF (EMS-SKLU-PSEBF)	
Peerd	EBM-SKLUS +IET-PSEBT (EMS-SKLU-PSEBT)	
Board	EBM-SKLUS +AUX-M07 (EMS-SKLU-4 COM Isolation)	
	EBM-SKLUS +EBM-BYTS DB-A (EMS-SKLU-HDMI)	
	EBM-SKLUS +EBM-CDVS DB-A (EMS-SKLU-DVI)	
	EBM-SKLUS +EBM-BYTS DB-E (EMS-SKLU-USB)	
	EBM-SKLUS +AUX-M08 (EMS-SKLU-GPIO)	
	Marine Version	
	EBM-SKLUS+AUX-M07+ EBM-CDVS DB-B B1 (EMS-SKLU-Marine)	
	• Intel® Core™ i7-6600U Processor (4M Cache, up to 3.40 GHz)	
CDU	• Intel® Core™ i5-6300U Processor (3M Cache, up to 3.00 GHz)	
CPU	• Intel® Core™ i3-6100U Processor (3M Cache, 2.30 GHz)	
	Intel® Celeron® Processor 3955U (2M Cache, 2.00 GHz)	
BIOS	AMI UEFI BIOS 128 Mbit SPI Flash ROM	
I/O Chip	EC ITE IT8528E	
System Memory	One 260-pin SODIMM Socket Up to 16GB DDR4 2133MHz SDRAM	
Watchdog Timer	• H/W Reset, 1sec. ~ 65535sec.	
H/W Status		
Monitor	CPU & system temperature monitoring and voltages monitoring	
	Horizontal battery socket	
Battery	• Supports wide operating temperature (adjusting according to test result)	
	Supports no RTC battery mode	
	• IET interface (1 x DP, 4 x PClex1, 3 x USB, 1 x LPC, 1 x Line-Out(R/L), 1	
Furnancian	x SMBus)	
Expansion	• 1 x mini-PCIe Socket, supports PCIe, USB 2.0 and SIM Card slot	
	• 1 x M.2, supports B-Key 2242/3042 and SIM Card slot (SSD & 3G/4G)	
Storage		
Combination	• 1 x 2.5" Drive Bay	
Compination	• 1 x M.2 B-Key 2242/3042	

Others	•	support TPM2.0 (default), RAID 0/1	
Front Side External	I/O		
	•	1 x Dual deck USB connector for two USB 3.0 ports (USB 2.0 signal	
		included)	
	•	1 x Swappable 2.5" drive bay (SATA III, 2A, 12mm)	
	•	2 x SIM Card Slot (Mini PCIe, M.2)	
I/O Connector	•	1 x Push Button for Power on/off (Sunk type)	
	•	1 x Push Button for Reset (Hidden Type)	
	•	1 x 2-Pin Terminal Block for wire-control power on/off	
	•	1 x Power LED (Green)	
	•	1 x Storage LED (Green)	
Rear Side External	I/O		
	•	2 x COM(RS 232/ 422/ 485(4-wire) selectable by Jumper; RS 485	
		supports Auto Flow(EMS-SKLU, EMS-SKLU-6 LAN Bypass,	
		EMS-SKLU-6 LAN Normal, EMS-SKLU-PSEBF, EMS-SKLU-PSEBT,	
		EMS-SKLU-DVI, EMS-SKLU-USB, EMS-SKLU-GPIO)	
	•	6 x COM (RS 232/ 422/ 485(4-wire) selectable by Jumper; RS 485	
СОМ		supports Auto Flow (EMS-SKLU-6COM)	
	•	6 x COM (RS 232/ 422/ 485(4-wire) selectable by Jumper; RS 485	
		supports Auto; COM3 ~ COM6 Supported 2.5kv Isolation)	
		(EMS-SKLU-4COM Isolation)	
	•	4 x COM (C RS 232/ 422/ 485(4-wire) selectable by Jumper; RS 485	
		supports Auto) (EMS-SKLU-HDMI)	
	•	2 x Giga LAN (EMS-SKLU, EMS-SKLU-DVI ,EMS-SKLU-6 COM,	
		EMS-SKLU-4 COM Isolation, EMS-SKLU-Marine, EMS-SKLU-USB)	
	•	4 x Giga LAN (EMS-SKLU-HDMI)	
	•	4 x Giga LAN (2 port Powered LAN support IEEE802.at	
LAN		(EMS-SKLU-PSEBT)	
	•	6 x Giga LAN (EMS-SKLU-6 LAN Bypass, EMS-SKLU-6 LAN Normal)	
	•	6 x Giga LAN (4 port Powered LAN support IEEE802.af)	
		(EMS-SKLU-PSEBF, EMS-SKLU-GPIO)	
	•	1 x DP+ 1.2 (EMS-SKLU, EMS-SKLU-6 COM, EMS-SKLU-6 LAN	
		Bypass, EMS-SKLU-6 LAN Normal, EMS-SKLU-4 COM Isolation,	
		EMS-SKLU-PSEBF, EMS-SKLU-PSEBT,EMS-SKLU-Marine,	
Diamlay		EMS-SKLU-USB, EMS-SKLU-GPIO)	
Display	•	1 x DP+ 1.2, 1 x DVI (EMS-SKLU-DVI)	
	•	1 x DP+ 1.2, 1 x HDMI (EMS-SKLU-HDMI)	
		(DP ⁺ =DP to VGA converter is the standard accessory, and optional DP to	
		DVI, DP to HDMI converters)	
Audio	•	1 x Line-IN	

	•	1 x Mic-IN			
	•	1x Line-Out			
	•	1 x 44bit GPIO			
		(1 x 12bit GPIO, 6-bits for input	and 6-bit for output + 1 x 32bit GPIO		
		support 1.5KV isolation.) (EMS-SKLU-GPIO)			
		2 x 18-Pin Terminal Block for GPIO			
		-Supports 16-bit GPI & 16-bit GPO			
		-Supports 1.5KV Isolation			
		Input (DI)	Output (DO)		
GPIO		Input Channels: 16, source	Output Channels: 16, sink type.		
		type	Output Current: Max 250 mA Per		
		Input Voltage: 0~30Vdc input	channel		
		Dry Contacts:	External voltage 10 to 30Vdc,		
		Logic Level 0: Close to GND	open collector to 30V		
		Logic Level 1: Open			
		Wet Contacts:			
		Logic level 0: +10V to 24V			
		Logic Level 1: +3V Max			
	•	4 x USB 3.0 (Rear 2; Front 2) (E	MS-SKLU)		
	•	6 x USB 2.0/ 3.0 (Rear 4; Front	2) (EMS-SKLU-HDMI,		
		EMS-SKLU-DVI ,EMS-SKLU-6	COM, EMS-SKLU-6 LAN Bypass,		
		EMS-SKLU-6 LAN Normal, EM	S-SKLU-4 COM Isolation,		
038		EMS-SKLU-PSEBF, EMS-SKL	U-PSEBT,EMS-SKLU-Marine)		
	•	11 x USB2.0/ 3.0 (Rear 9, USB	3.0 x 6 + USB 2.0 x 3; Front 2)		
		(EMS-SKLU-USB)			
	•	3 x USB 2.0/3.0 (USB 3.0 x 2 +	USB 2.0 x 1) (EMS-SKLU-GPIO)		
SIM	•	2 x SIM Card Slot			
SMBUS	•	1 x SMBUS			
PS/2	•	2 x PS/2			
Power Input	• 1 x 3-Pin Terminal Block for DC-Input		-Input		
Antenna • 2 x Antenna mounting w/ cover					
Internal I/O Connec	Internal I/O Connector				
	•	1 x 7+15-pin SATAIII connector	(2A)		
	•	1 x 4-pin wafer connector for +5	V, +12V and GND output.		
	•	1 x 6-Pin wafer connector for DC-OUT			
I/O Connector	•	1 x 3-pin header for CMOS (protect*Clear)			
	•	2 x 2 x 3-pin header for COM1/ 2 pin 9 signal selection (+5, +12, Ring)			
	•	1 x 2 x 7-pin header for LPC			
	•	1 x 2 x 3-Pin header for SPI			

1 x 3-pin DIP Switch for Power mode (AT/ATX)		
	1 x Buzzer	
	1 x 1 x 5-Pin header for 1 x USB 2.0 reservation	
	• 1 x 3-pin for EC	
Display		
Chipset	Intel® Skylake Processor integrated Graphics	
	• 1 x DP+ 1.2	
Desclution	One Panel Display max. 4096x2304@60Hz	
Resolution	DP to VGA will be the standard accessory	
	DP to DVI-I and DP to HDMI will be the optional accessory	
Ethernet		
Chinest	1 x Intel I211AT GbE controller	
Chipset	1 x Intel I219LM Gigabit Ethernet PHY	
Ethernet Interface	10/100/1000 Base-Tx GbE compatible	
Audio		
Chipset	Realtek ALC888S HD codec	
Audio Interface	Mic-In, Line-In and Line-Out	
Mechanical & Envir	ronmental	
	• DC +9V ~ +32V (±0%), wide voltage single power input	
Power Requirement	TVS component for surge protection	
	Reverse current/voltage protection	
	Single power ATX Supports S0, S3, S4, S5	
ACPI	Compliant with ACPI 5.0	
Power Connector	2 Pin Terminal Block (V/L V/ Ground)	
Туре		
Power Mode	AT/ATX (ATX is the default setting)	
	• 240mm x 151.5mm x 45mm (EMS-SKLU)	
	• 240mm x 151.5mm x 60mm (EMS-SKLU-6 COM, EMS-SKLU-6 LAN	
Dimension	Bypass, EMS-SKLU-6 LAN Normal, EMS-SKLU-PSEBF,	
Dimension	EMS-SKLU-PSEBT, EMS-SKLU-4 COM Isolation, EMS-SKLU-HDMI,	
	EMS-SKLU-DVI, EMS-SKLU-USB)	
	• 240mm x 151.5mm x 75mm (EMS-SKLU-Marine, EMS-SKLU-GPIO)	
Weight	• 3 Kg	
Color	Black	
Mounting Kit	Wall mount kit (Standard)	
	Din Rail mount kit (Optional)	
Reliability		
CE/FCC	CE & FCC Class A w/ERP	
Safety	Avalue Standard Test Criteria	

EMS-SKLU Series

Dust and Rain Test	• IP50		
Vibration Test	• With SSD : 5Grms, IEC 60068-2-64, Random, 5 ~ 500Hz, 1hr/axis		
Mechanical Shock	With SSD : 500rmg JEC 60068 2 27 Holf Sing 11mg		
Test	• With SSD : 50Grms, IEC 60068-2-27, Hall Sine, 11ms		
Drop Test	Avalue Standard Test Criteria		
	• [Group 1]		
	-20°C ~ 60°C (w/SSD) ambient w/ air flow		
	0°C ~ 40°C (w/HDD) ambient w/ air flow		
	(EMS-SKLU, EMS-SKLU-6 COM, EMS-SKLU-6 LAN Bypass, EMS-SKLU-6		
	LAN Normal, EMS-SKLU-4 COM Isolation, EMS-SKLU-HDMI,		
	EMS-SKLU-DVI,EMS-SKLU-Marine, EMS-SKLU-USB)		
Operating			
Temperature	• [Group 2]		
remperature	-20°C ~ 50°C (w/SSD) ambient w/ air flow		
	0°C ~ 40°C (w/HDD) ambient w/ air flow		
	(EMS-SKLU-PSEBF, EMS-SKLU-PSEBT, EMS-SKLU-GPIO)		
	The default setting of turbo boost technology is enabled in BIOS.		
	The processor frequency will be floating between base and turbo		
	frequencies when turbo boost technology is enabled.		
Operating Humidity	• 5% ~ 90% relative humidity, non-condensing		
Storage	• -40°C ~ 85°C		
Temperature			
Other Request	• IEC-60945 certified w/ EPM1718 Marine power board (Protected from the		
	weather (formerly class B))		
Compliant with fo	llowing Flexible IET Expansion Modules		
IET-6 LAN Bypass	• 4 x LAN support 2-Pair LAN bypass + 2 x USB 2.0		
IET-6 LAN Normal	• 4 x normal LAN + 2 x USB 2.0		
IET-PSEBF	• 4 x LAN support PoE 802.3af + 2 x USB 2.0		
IET-PSEBT	• 2 x LAN support PoE 802.3at + 2 x USB 2.0		
EBM-CDVS DB-A	• 1 x DVI-D + 2 x USB 2.0		
EBM-BYTS DB-E	• 4 x USB 3.0 + 3 x USB 2.0		
EBM-BYTS DB-A	• 1 x HDMI, 2 x RJ45, 2 x RS-232/422/485 (BIOS), 2 x USB 2.0		
AUX-M01	• 4 x RS-232/422/485(BIOS), 2 x USB 2.0		
AUX-M07	• 4 x RS-232/422/485(BIOS) w/ 2.5KV isolation, 2 x USB 2.0		



Note: Specifications are subject to change without notice.

1.4 System Overview

1.4.1 Front View

EMS-SKLU



EMS-SKLU-DVI/EMS-SKLU-HDMI/EMS-SKLU-PSEF/EMS-SKLU-PSET /EMS-SKLU-4 COM Isolation/EMS-SKLU-6 COM

/EMS-SKLU-6 LAN Bypass/EMS-SKLU-6 LAN Normal/EMS-SKLU-USB



EMS-SKLU-GPIO



1.4.2 Rear View

EMS-SKLU



EMS-SKLU-Marine



EMS-SKLU-DVI



EMS-SKLU-HDMI





EMS-SKLU-PSEF

EMS-SKLU-PSET



EMS-SKLU-4 COM Isolation



EMS-SKLU-6 COM





EMS-SKLU-6 LAN Bypass/EMS-SKLU-6 LAN Normal

EMS-SKLU-USB



EMS-SKLU-GPIO



EMS-SKLU

Connectors				
Label	Function	Note		
PWR	System power indicator			
HDD	HDD indicator			
Reset	Reset button			
USB3.0	4 x USB3.0 connector			
Ext. ON/OFF	Power on button			
DP	DP connector			

LAN1/2	RJ-45 Ethernet 1/2
COM1	Serial port connector 1
Multi function port	Multi-Function Port combined COM2,
	2 PS/2, Audio, GPIO and SMBus
DC-IN	DC power-in connector

EMS-SKLU-Marine

Connectors		
Label	Function	Note
PWR	System power indicator	
HDD	HDD indicator	
Reset	Reset button	
USB3.0	4 x USB3.0 connector	
USB	2 x USB2.0 connector	
Ext. ON/OFF	Power on button	
DP	DP connector	
LAN1/2	RJ-45 Ethernet 1/2	
COM1	Serial port connector 1	
Multi function port	Multi-Function Port combined COM2,	
	2 PS/2, Audio, GPIO and SMBus	
COM3/4/5/6	Serial port connector 3/4/5/6	support Isolation
DC-IN	DC power-in connector	

EMS-SKLU-DVI

Connectors		
Label	Function	Note
PWR	System power indicator	
HDD	HDD indicator	
Reset	Reset button	
USB3.0	4 x USB3.0 connector	
Ext. ON/OFF	Power on button	
DC-IN	DC power-in connector	
LAN1/2	RJ-45 Ethernet 1/2	
Multi function nort	Multi-Function Port combined COM2,	
	2 PS/2, Audio, GPIO and SMBus	
DVI-D	DVI-D connector	

EMS-SKLU Series

USB2.0	2 x USB2.0 connector
COM1	Serial port connector 1
DP	DP connector

EMS-SKLU-HDMI

Connectors		
Label	Function	Note
PWR	System power indicator	
HDD	HDD indicator	
Reset	Reset button	
USB3.0	4 x USB3.0 connector	
Ext. ON/OFF	Power on button	
DP	DP connector	
USB2.0	2 x USB2.0 connector	
COM1	Serial port connector 1	
COM3/4	Serial port connector 3/4	
DC-IN	DC power-in connector	
LAN1/2/3/4	RJ-45 Ethernet 1/2/3/4	
Multi function port	Multi-Function Port combined COM2,	
	2 PS/2, Audio, GPIO and SMBus	
HDMI	HDMI connector	

EMS-SKLU-PSEF

Connectors			
Label	Function	Note	
PWR	System power indicator		
HDD	HDD indicator		
Reset	Reset button		
USB3.0	4 x USB3.0 connector		
Ext. ON/OFF	Power on button		
DP	DP connector		
USB2.0	2 x USB2.0 connector		
COM1	Serial port connector 1		
DC-IN	DC power-in connector		
LAN1/2/3/4/5/6	RJ-45 Ethernet 1/2/3/4/5/6		
Multi-function port	Multi-Function Port combined Co	OM2,	

2 PS/2, Audio, GPIO and SMBus

EMS-SKLU-PSET

Connectors		
Label	Function	Note
PWR	System power indicator	
HDD	HDD indicator	
Reset	Reset button	
USB3.0	4 x USB3.0 connector	
Ext. ON/OFF	Power on button	
DP	DP connector	
USB2.0	2 x USB2.0 connector	
COM1	Serial port connector 1	
DC-IN	DC power-in connector	
LAN1/2/3/4	RJ-45 Ethernet 1/2/3/4	
Multi function port	Multi-Function Port combined COM	М2,
	2 PS/2, Audio, GPIO and SMBus	

EMS-SKLU-4 COM Isolation

Connectors		
Label	Function	Note
PWR	System power indicator	
HDD	HDD indicator	
Reset	Reset button	
USB3.0	4 x USB3.0 connector	
Ext. ON/OFF	Power on button	
DP	DP connector	
USB2.0	2 x USB2.0 connector	
COM1/3/4/5/6	Serial port connector 1/3/4/5/6	
DC-IN	DC power-in connector	
LAN1/2	RJ-45 Ethernet 1/2	
Multi function port	Multi-Function Port combined COM2	3
	2 PS/2, Audio, GPIO and SMBus	

EMS-SKLU-6 COM

Connectors

Label	Function	Note
PWR	System power indicator	
HDD	HDD indicator	
Reset	Reset button	
USB3.0	4 x USB3.0 connector	
Ext. ON/OFF	Power on button	
DP	DP connector	
USB2.0	2 x USB2.0 connector	
COM1/3/4/5/6	Serial port connector 1/3/4/5/6	
DC-IN	DC power-in connector	
LAN1/2	RJ-45 Ethernet 1/2	
Multi-function port	Multi-Function Port combined COM2,	
mulu-lunction port	2 PS/2, Audio, GPIO and SMBus	

EMS-SKLU-6 LAN Bypass/EMS-SKLU-6 LAN Normal

Connectors		
Label	Function	Note
PWR	System power indicator	
HDD	HDD indicator	
Reset	Reset button	
USB3.0	4 x USB3.0 connector	
Ext. ON/OFF	Power on button	
DP	DP connector	
USB2.0	2 x USB2.0 connector	
COM1	Serial port connector 1	
DC-IN	DC power-in connector	
LAN1/2/3/4/5/6	RJ-45 Ethernet 1/2/3/4/5/6	
Multi-function port	Multi-Function Port combined COM2,	
	2 PS/2, Audio, GPIO and SMBus	

EMS-SKLU-USB

Connectors		
Label	Function	Note
PWR	System power indicator	
HDD	HDD indicator	
Reset	Reset button	

USB3.0	8 x USB3.0 connector	
Ext. ON/OFF	Power on button	
DP	DP connector	
USB2.0	3 x USB2.0 connector	
COM1	Serial port connector 1	
DC-IN	DC power-in connector	
LAN1/2	RJ-45 Ethernet 1/2	
Multi-function port	Multi-Function Port combined COM2,	
	2 PS/2, Audio, GPIO and SMBus	

EMS-SKLU-GPIO

Connectors		
Label	Function	Note
PWR	System power indicator	
HDD	HDD indicator	
Reset	2-pin remote reset	
USB3.0	2 x USB3.0 connector	
USB2.0	1 x USB2.0 connector	
DP	DP connector	
COM1/2	Serial port connector 1/2	
DC-IN	DC power-in connector	
LAN1/2/3/4/5/6	RJ-45 Ethernet 1/2/3/4/5/6	
Multi function port	Multi-Function Port combined COM2,	
	2 PS/2, Audio, GPIO and SMBus	
GPIO	32- bit GPIO	

1.5.1

1.5 System Dimensions





1.5.2 EMS-SKLU-Marine Front & Top view













(Unit: mm)

1.5.3 EMS-SKLU-DVI Front & Top view



1.5.4 EMS-SKLU-HDMI Front & Top view



1.5.5 EMS-SKLU-PSEF Front & Top view



(Unit: mm)

1.5.6 EMS-SKLU-PSET Front & Top view



(Unit: mm)

1.5.7 EMS-SKLU-4 COM Isolation Front & Top view





1.5.8 EMS-SKLU-6 COM Front & Top view



1.5.9 EMS-SKLU-6 LAN Bypass/EMS-SKLU-6 LAN Normal Front & Top view





1.5.10 EMS-SKLU-USB Front & Top view





1.5.11 EMS-SKLU-GPIO Front & Top view



2. Hardware Configuration

Jumper and Connector Setting, Driver and BIOS Installing

For advanced information, please refer to:

 EBM-SKLUS, AUX-M01, IET-6 LAN Bypass, IET-6 LAN Normal, IET-PSEBF (4 port af), IET-PSEBT (2 port at), AUX-M07, AUX-M08, EBM-BYTS DB-A, EBM-CDVS DB-A, EBM-CDVS DB-B and EBM-BYTS DB-E included in this manual.



Note: If you need more information, please visit our website:

http://www.avalue.com.tw

2.1 EMS-SKLU connector mapping

2.1.1 Serial port connector 1 (COM1)





Pin	RS-232	RS-485	RS-422
1	DCD	DATA1-	TXD-
2	RXD	DATA1+	TXD+
3	TXD	NC	RXD+
4	DTR	NC	RXD-
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		

2.1.2 Serial port connector 3/4/5/6 (COM3/4/5/6)





Pin	RS-232	RS-485	RS-422
1	DCD	DATA1-	TXD-
2	RXD	DATA1+	TXD+
3	TXD	NC	RXD+
4	DTR	NC	RXD-
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		

2.1.3 Multi-Function Port combined COM2, 2 PS/2, Audio, GPIO and SMBus (Multi-function port)





PIN	Signal	PIN	Signal	PIN	Signal	
1	LINE1_JD	16	FRONT_JD	31	LINE1_RIN	
2	MIC1_JD	17	LINEOUT_R	32	GND	
3	MIC_RIN	18	GND	33	LINE1_LIN	
4	GND	19	LINEOUT_L	34	+5V	
5	MIC_LIN	20	GND	35	DO3	
6	DO5	21	DO4	36	DO0	
7	DO2	22	DO1	37	DI3	
8	DI5	23	DI4	38	DI0	
9	DI2	24	DI1	39	SMB_CLK	
10	MSCK	25	SMB_DATA	40	NRIB#	
11	GND	26	GND	41	NRTSB#	
12	MSDA	27	NCTSB#	42	COM2_GND	
13	KBDA	28	NDSRB#	43	NTXDB_485RXP	
14	VCC_PS2	29	NDTRB#_485RXN	44	NDCDB#_485TXN	
15	KBCK	30	NRXDB_485TXP			



2.1.3.1 GPIO+SMBUS



Signal	PIN	PIN	Signal
	25	13	
	24	12	
	23	11	
	22	10	
SMBUS_DATA	21	9	
SMBUS_CLK	20	8	GND
GPI-D5	19	7	5V
GPI-D4	18	6	GPO-D5
GPI-D3	17	5	GPO-D4
GPI-D2	16	4	GPO-D3
GPI-D1	15	3	GPO-D2
GPI-D0	14	2	GPO-D1
		1	GPO-D0

2.1.3.2 COM2



Pin	RS-232	RS-485	RS-422
1	DCD	DATA1-	TXD-
2	RXD	DATA1+	TXD+
3	TXD	NC	RXD+
4	DTR	NC	RXD-
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		
2.2 EBM-SKLUS, AUX-M01, IET-6 LAN Bypass, IET-6 LAN Normal, IET-PSEBF (4 port af), IET-PSEBT (2 port at), AUX-M07, AUX-M08, EBM-BYTS DB-A, EBM-CDVS DB-A and EBM-BYTS DB-E Overviews

2.2.1 EBM-SKLUS



2.2.2 AUX-M01



2.2.3 IET-6 LAN Bypass



2.2.4 IET-6 LAN Normal



2.2.5 IET-PSEBF (4 port af)



2.2.6 IET-PSEBT (2 port at)



2.2.7 AUX-M07



2.2.8 AUX-M08



2.2.9 EBM-BYTS DB-A



2.2.10 EBM-CDVS DB-A



2.2.11 EBM-CDVS DB-B



2.2.12 EBM-BYTS DB-E



2.3 EBM-SKLUS Jumper & Connector list

Jumpers		
Label	Function	Note
JCMOS	Clear CMOS	3 x 2 header, pitch 2.00mm
JRI1/2	COM 1/2 pin 9 signal select	3 x 2 header, pitch 2.00 mm
JCOM_SEL1/2	Serial port 1/2 – RS232/422/485 mode select	4 x 3 header, pitch 2.00 mm
SW1	Multi-function select	DIP switch 8pin
Connectors		
Label	Function	Note
USB1	2 x USB3.0 connector	
USB2	On-board header for USB2.0	5 x 1 wafer, pitch 2.00 mm
USB3	2 x USB3.0 connector	
LAN1/2	RJ-45 Ethernet 1/2	
DB-1	Multi-function port	 COM2 Audio(line-in, line-out, mic-in) 2 x PS/2 for KB/MS 12 bit GPIO/SMBUS
COM1	Serial port connector 1	
MINI_PCIE1	Mini PCI Express connector	
CN5	Front Panel Connector	5 x 1 wafer, pitch 2.00 mm
PWRBTN1	Power on/off connector	1 x 2 terminal block, pitch 3.50 mm
PWRBTN2	Power on/off button	
RSTBTN1	Reset button	
LED_PWR1	LED Power	
LED_HD1	LED HDD	
SIMCARD1/2	SIM card slot 1/2	
SODDIM1	DDR4 SODIMM connector	
IET_CB1	IET Expansion slot	
JLPC1	LPC port connector	5 x 2 header, pitch 2.00 mm
JSPI1	SPI connector	4 x 2 header, pitch 2.00 mm
SATA1	Serial ATA connector	

DP1	DP connector		
NGFF1	M.2 KEY-B 2242/3042 connector		
DCOUT1	DC Output connector	6 x 1 wafer, pitch 2.50 mm	
		1 x 3 terminal block, pitch 5.08	
	DC-Input connector	mm	
JEC_ROM1	EC Debug connector	5 x 2 header, pitch 2.00 mm	

2.4 EBM-SKLUS Jumpers & Connectors settings

2.4.1 Multi-function select (SW1)



* Default



In Serial Port 1 mode

	RS-232*	RS-422	RS-485
1	OFF	ON	ON
2	ON	OFF	ON

In Serial Port 2 mode

	RS-232*	RS-422	RS-485
3	OFF	ON	ON
4	ON	OFF	ON

Power mode

	AT	ATX*
5	ON	OFF

DDI1 mode(IET)

	DisplayPort	HDMI*
6	ON	OFF

DDI2 mode(DP+)

	DisplayPort*	HDMI	Cable select
7	OFF	OFF	ON
8	ON	OFF	OFF

2.4.2 COM 1/2 pin 9 signal select (JRI1/2)







+5V

	5
	1

* Default

2.4.3 Serial port 1/2 RS-232/422/485 mode select (JCOM_SEL1/2)



RS-232*

12		10
3		1

RS-422/ 485



*Default

2.4.4 Clear CMOS (JCMOS1)



*Default

2.4.5 LPC port connector (JLPC1)



Normal*



Clear CMOS

	5
	1

	9
	1

Signal	PIN	PIN	Signal
GND	10	9	LPC_SERIRQ
CLK_24M_PORT80	8	7	LPC_AD3
LPC_LFRAME#	6	5	LPC_AD2
RST_PORT80#	4	3	LPC_AD1
+3.3V	2	1	LPC_AD0

2.4.6 SPI connector (JSPI1)



	7
	1

Signal	PIN	PIN	Signal
		7	HOLD#
SPI_SI	6	5	SPI_SO
SPI_CLK	4	3	SPI0_CS0#
GND	2	1	+3.3VSB

2.4.7 Front Panel Connector (CN5)







2.4.8 DC Output connector (DCOUT1)

•	•	•	•	•	•
LE					1

Signal	PIN
+VIN	1
+VIN	2
+VIN	3
GND	4
GND	5
GND	6

2.4.9 DC Input connector (JVIN1)





Signal	PIN
+DC_IN	1
CHASSIS_GND	2
GND	3



2.4.10 EC Debug connector (JEC_ROM1)

		9
		1
1		

Signal	PIN	PIN	Signal
EC_SMDAT_DE	10	0	EC_SMCLK_DE
BUG	10	10 9	BUG
NC	8	7	EC_HOLD#
EC_FMOSI	6	5	EC_FMISO
EC_FSCK	4	3	EC_FSCE#
GND	2	1	+VSPI_EC

2.4.11 On-board header for USB2.0 (USB2)





Signal	PIN
GND	5
GND	4
USB_z_PP2	3
USB_z_PN2	2
+5VSB	1



2.4.12 Power ON/OFF connector (PWRBTN1)



Signal	PIN
GND	2
PWRBTN#_R	1

2.5 AUX-M01, IET-6 LAN Bypass, IET-6 LAN Normal, IET-PSEBF (4 port af), IET-PSEBT (2 port at), AUX-M07, AUX-M08, EBM-BYTS DB-A, EBM-CDVS DB-A, EBM-CDVS DB-B and EBM-BYTS DB-E Jumper & Connector list

2.5.1 AUX-M01

Jumpers

Label	Function	Note
JRI3/4/5/6	COM 3/4/5/6 pin 9 signal select	3 x 2 header, pitch 2.00mm

Connectors

Label	Function	Note
USB1~2	USB connector 1~2	
USB3	USB connector 3	5 x 1 wafer, pitch 2.00mm
JUSB3	USB connector 3	5 x 1 header, pitch 2.00mm
COM3~6	Serial port connector 3~6	

2.5.2 IET-6 LAN Bypass

Jumpers		
Label	Function	Note
SW1	Normal/Bypass mode selector	

Connectors

Label	Function	Note	
USB1~2	USB connector 1~2		
LAN1~4	LAN connector 1~4		
IET_CB1	IET Expansion slot		

2.5.3 IET-6 LAN Normal

Connectors		
Label	Function	Note
USB1~2	USB connector 1~2	
USB3	USB connector 3	5 x 1 wafer, pitch 2.00mm
LAN1~4	LAN connector 1~4	
PWR1	Power connector	6 x 1 wafer, pitch 2.50mm
IET_CB1	IET Expansion slot	

EMS-SKLU Series

2.5.4 IET-PSEBF (4 port af)

Connectors		
Label	Function	Note
USB1~2	USB connector 1~2	
USB3	USB connector 3	5 x 1 wafer, pitch 2.00mm
LAN1~4	LAN connector 1~4	
PWR1	Power connector	6 x 1 wafer, pitch 2.50mm
IET_CB1	IET Expansion slot	

2.5.5 IET-PSEBT (2 port at)

Connectors		
Label	Function	Note
USB1~2	USB connector 1~2	
USB3	USB connector 3	5 x 1 wafer, pitch 2.00mm
LAN1~2	LAN connector 1~2	
PWR1	Power connector	6 x 1 wafer, pitch 2.50mm
IET_CB1	IET Expansion slot	

2.5.6 AUX-M07

Connectors		
Label	Function	Note
USB1~2	USB connector 1~2	
COM3~6	Serial port connector 3~6	

2.5.7 AUX-M08

Jumpers		
Label	Function	Note
JDI1	Digital Input connector 1	8 x 2 header, pitch 2.00 mm
JDI2	Digital Input connector 2	8 x 2 header, pitch 2.00 mm
JDO1	Digital Output connector 1	8 x 2 header, pitch 2.00 mm
JDO2	Digital Output connector 2	8 x 2 header, pitch 2.00 mm

Connectors Label Function Note USB1~2 USB connector 1~2

DIO1	General purpose I/O connector	18 x 2 terminal, pitch 3.50 mm
JEC_ROM2	EC Debug connector	5 x 2 header, pitch 2.00 mm
LAN1~4	LAN connector 1~4	
PWR1	Power connector	6 x 1 wafer, pitch 2.50 mm
PWRBTN	Power button	
CN1	Remote power button	2 x 1 wafer, pitch 2.00 mm
IET_CB1	IET Expansion slot	

2.5.8 EBM-BYTS DB-A

Jumpers

Label	Function	Note
OJRI3/4	COM 3/4 pin 9 signal select	3 x 2 header, pitch 2.00mm

Connectors

Label	Function	Note
OUSB1~2	USB connector 1~2	
LAN2~3	RJ-45 Ethernet 2~3	
COM3~4	Serial port connector 3~4	
HDMI1	HDMI connector	3 x 2 header, pitch 2.00mm
OJP485	Serial port 1/2 – RS485 mode select	6 x 2 header, pitch 2.00mm

2.5.9 EBM-CDVS DB-A

Connectors

Label	Function	Note
USB1~2	USB connector 1~2	
PWRBTN	Power button	
LED_PWR	LED Power	
LED_HDD	LED HDD	
CN1	Front Panel connector 1	5 x 1 wafer, pitch 2.00 mm
DVI1	DVI connector	

2.5.10 EBM-CDVS DB-B

Connectors		
Label	Function	Note
DC-IN1	DC Input connector	6 x 1 wafer, pitch 2.50 mm

DC-OUT1	DC Output connector	6 x 1 wafer, pitch 2.50 mm

2.5.11 EBM-BYTS DB-E

Connectors

Label	Function	Note
USB1~3	3 x USB2.0 connector	
USB4~7	4 x USB3.0 connector	

2.6 AUX-M01 Jumpers & Connectors settings

2.6.1 COM 3/4/5/6 pin 9 signal select (JRI3/4/5/6)







+12V

5	1

* Default

2.6.2 USB connector (USB3)





Signal	PIN
GND	5
GND	4
PUSBP3	3
PUSBN3	2
PV5A_USB3	1

2.6.3 USB connector (JUSB3)



5	
1	

Signal	PIN
GND	5
GND	4
PUSBP3	3
PUSBN3	2
PV5A_USB3	1

2.6.4 SMBUS of TCA9555 address setting (PJP1)



1	
5	

Signal	PIN	PIN	Signal
GND	1	2	MC_9555A0
GND	3	4	MC_9555A1
GND	5	6	MC_9555A2

2.7 IET-6 LAN Normal Connectors settings

2.7.1 USB connector 3 (USB3)





Signal	PIN
+5VSB	1
USB_DN_3	2
USB_DP_3	3
GND	4
GND	5

2.7.2 Power connector (PWR1)





Signal	PIN
+V12-26V	1
+V12-26V	2
+V12-26V	3
GND	4
GND	5
GND	6

2.8 IET-PSEBF (4 port af) Jumpers & Connectors settings

2.8.1 USB connector 3 (USB3)





Signal	PIN
+5VSB	1
USB_DN_3	2
USB_DP_3	3
GND	4
GND	5

2.8.2 Power connector (PWR1)





Signal	PIN
+V12-26V	1
+V12-26V	2
+V12-26V	3
GND	4
GND	5
GND	6

2.9 IET-PSEBT (2 port at) Jumpers & Connectors settings

2.9.1 USB connector 3 (USB3)



		1
		-
	•	
	•	
	•[5
		-

Signal	PIN
+5VSB	1
USB_DN_3	2
USB_DP_3	3
GND	4
GND	5

2.9.2 Power connector (PWR1)





Signal	PIN
+V12-26V	1
+V12-26V	2
+V12-26V	3
GND	4
GND	5
GND	6

2.10 AUX-M07 Connector settings

2.10.1 SMBUS of TCA9555 address setting (SJP2)



1	
5	

Signal	PIN	PIN	Signal
GND	1	2	SMC_9555A0
GND	3	4	SMC_9555A1
GND	5	6	SMC_9555A2

2

2.11 AUX-M08 Connectors settings

2.11.1 Digital Input connector 1 (JDI1)



	D	ry		W	et*
1			2 1		

Mode	Digital Input		
Dru	Logic Level 0: Open		
Dry	Logic Level 1: Close to GND		
\\/ot*	Logic Level 0: +5V to 30V		
wei	Logic Level 1: +3V Max		

*Default





2.11.2 Digital Input connector 2 (JDI2)



Mode	Digital Input		
Dry	Logic Level 0: Open		
Dry	Logic Level 1: Close to GND		
\\/ot*	Logic Level 0: +5V to 30V		
wei	Logic Level 1: +3V Max		

*Default



Sink* TTL 2 1 1 2 0 0 0

2.11.3 Digital Output connector 1 (JDO1)

*Default

Note:

Output Voltage: Max 250 mA per channel, current sink type.



2.11.4 Digital Output connector 2 (JDO2)





Sink*		
		2

1

*Default

Note:

Output Voltage: Max 250 mA per channel, current sink type.





0	0	
18.40	IL LOUISE	1
10.00	DOM: N	•
100.00	DOM: 0	
18.00	110.00	
1101-01	DOM: N	
in the second	1000	
10.00	1000	
	Difference of	
1.0	111.05	
1.1	10.00	
	1101	
	10.00	
	100 K	
200	1000	
1112	10.05	35
0	0	00
-	-	

Signal	PIN	PIN	Signal
DIO_GPO0	2	1	DIO_GPI0
DIO_GPO1	4	3	DIO_GPI1
DIO_GPO2	6	5	DIO_GPI2
DIO_GPO3	8	7	DIO_GPI3
DIO_GPO4	10	9	DIO_GPI4
DIO_GPO5	12	11	DIO_GPI5
DIO_GPO6	14	13	DIO_GPI6
DIO_GPO7	16	15	DIO_GPI7
DIO_GPO8	18	17	DIO_GPI8
DIO_GPO9	20	19	DIO_GPI9
DIO_GPO10	22	21	DIO_GPI10
DIO_GPO11	24	23	DIO_GPI11
DIO_GPO12	26	25	DIO_GPI12
DIO_GPO13	28	27	DIO_GPI13
DIO_GPO14	30	29	DIO_GPI14
DIO_GPO15	32	31	DIO_GPI15
+VEXT_DO	34	33	+VEXT_DI
GND	36	35	GND

2.11.5 General purpose I/O connector (DIO1)

2.11.6 Power connector (PWR1)



	1
•	
-	
=	
■	

Signal	PIN
+VIN_PSE	1
+VIN_PSE	2
+VIN_PSE	3
GND	4
GND	5
GND	6

2.11.7 Remote power button (CN1)





Signal	PIN
PWRBTN_TO_EC#	1
GND	2

2.12 EBM-BYTS DB-A Jumpers & Connectors settings

2.12.1 COM 3/4 pin 9 signal select (OJRI3/4)



* Default

2.12.2 Serial port 1/2 – RS485 mode select (OJP485)



	_
	11
	1

In Serial Port 1 mode

PIN	ON	NC	
1-2	Auto Direction	RTS# Control*	
2.4	485TXP external	OPEN*	
3-4	biasing resistor		
БC	485TXN external	OPEN*	
5-6	biasing resistor		

In Serial Port 2 mode

	ON	NC	
7-8	Auto Direction	RTS# Control*	
0.10	485TXP external		
9-10	biasing resistor	OPEN	
11 10	485TXN external		
11-12	biasing resistor	OPEN	

2.12.3 SMBUS of TCA9555 address setting (OJP1)



1	
5	

Signal	PIN	PIN	Signal
GND	1	2	MC_9555A0
GND	3	4	MC_9555A1
GND	5	6	MC_9555A2

2.13 EBM-CDVS DB-A Connector settings

2.13.1 Front Panel Connector 1 (CN1)





Signal	PIN
NC	1
SYSRST#	2
GND	3
SATA_LED#	4
PWRSB_LED-	5

2.14 EBM-CDVS DB-B Connector settings

2.14.1 DC Input connector (DC-IN1)





Signal	PIN
+PWRIN	1
+PWRIN	2
+PWRIN	3
GND	4
GND	5
GND	6

2.14.2 DC Output connector (DC-OUT1)





Signal	PIN
+PWROUT	1
+PWROUT	2
+PWROUT	3
GND	4
GND	5
GND	6
2.15 Installing Hard Disk & Memory, PCI devices (EMS-SKLU)



- Step 1. Remove 4 screws from the bottom of your system and take it off.
- Step 2. Slide the DDR4 SODIMM into the memory socket and press it down until properly seated.
- Step 3. Insert MPCIE card into designated locations and fasten with 2 screws to complete MPCIE installation.
- Step 4. Insert M.2 B-Key card into designated locations and fasten with a screw to complete installation.

4/1 1		Positive pole +	
	300V E138961 18AV		DC-IN
	1997 Burger Standy	Negative pole -	V- NC V+
Negative pole - 0 - 40 P1 💿 🕅	100±10 ±5 3 2 3 -30±5- P2		
Positive pole+	· · · · · ·		$\bigcirc \bigcirc$

WARNING: Please target the right pole when you are setting it. The black wire is corresponding to the negative pole and another one is positive pole.



- Step 1. Unfasten 2 screws from the HDD bracket and take it off.
- Step 2. Remove 4 screws to release the HDD bracket.
- Step 3. Slide HDD into its bracket until properly seated.
- **Step 4.** Secure HDD by means of 4 screws.

Step 5. Insert HDD bracket into designated locations and fasten with 2 screws to complete HDD installation.

2.16 Installing Mounting Brackets (EMS-SKLU)



- **Step 1.** Position brackets on rear sides, matching the holes on the system.
- Step 2. Insert and fasten screw on each side of the system to secure Mounting brackets.

2.17 Installing Hard Disk (EMS-SKLU-GPIO)



- Step 1. Remove 15 screws from the bottom and rear side of your system and take it off.
- Step 2. Remove 4 screws from the board and take it off.
- Step 3. Secure HDD by means of 4 screws.
- Step 4. Insert HDD bracket into designated locations and fasten with 4 screws to complete HDD installation.

Quick Reference Guide



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[™] 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 or <F2> immediately after switching the system on, or By pressing the or <F2> key when the following message appears briefly at the

left-top of the screen during the POST (Power On Self Test).

Press 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
↑	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 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.

Aptio Setup Utility – Main Advanced Chipset Security	Copyright (C) 2016 American Boot Save & Exit	Megatrends, Inc.
BIOS Information BIOS Vendor Core Version Compliancy Project Version Build Date and Time Access Level EC 8528 Firmware BIOS Name System Language ▶ Platform Information	American Megatrends 5.11 UEFI 2.4; PI 1.3 1ASOI 0.30 x64 07/25/2016 12:09:57 Administrator 03 BSKLUSR1 [English]	Choose the system default language
System Date System Time	[Sat 02/27/2016] [03:31:37]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.17.1255. C	opyright (C) 2016 American M	legatrends. Inc.

Aptio Setup Utility Main	– Copyright (C) 2016 Ameri	can Megatrends, Inc.
		1
Processor Information		
Name	SkyLake	
Brand String	Intel(R) Core(TM)	
-	13-6100U CPU @ 2.30GHz	
Frequency	2200 MHz	
Processor ID	406E3	
Stepping		
Number of Processors	2Core(s) / 4Inread(s)	
Microcode Revision	55	
GI INTO	G12	
Nemery DO Versier	1 0 0 1	
Memory RC Version	1.8.V.1 4000 MD	the Colort Concer
Memory Engrupped	4030 MD	the Select Streen
Melliony Frequency	2133 MHZ	Fotop: Soloct
PCH Information		Litter: Select
Name		F1: Concept Wein
	PCH_LP_Mobile_(U)	F1: General help F2: Provious Values
	Premium SVII	E2: Optimized Defaults
Stepping	21/01	F4: Save & Evit
LAN PHV Revision	B2	FSC+ Evit
	DC .	
ME EW Version	11.0.0.1194	
ME Firmware SKU	Corporate SKU	
Version 2.17.1255.	Copyright (C) 2016 America	n Megatrends, Inc.

EMS-SKLU Series

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.

Aptio Setup Utility – Copyright (C) 2016 American Main Advanced Chipset Security Boot Save & Exit	Megatrends, Inc.
 Trusted Computing ACPI Settings AMT Configuration PCH-FW Configuration IT9528 Super ID Configuration EC 8528 HW monitor SS RTC Wake Settings Serial Port Console Redirection CPU Configuration Intel TXT Information SATA Configuration Network Stack Configuration CSM Configuration USB Configuration 	Trusted Computing Settings +: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.17.1255. Copyright (C) 2016 American Me	egatrends, Inc.

3.6.2.1 Trusted Computing

Aptio Setup Utility – (Advanced	Copyright (C) 2016 American	Megatrends, Inc.
TPM20 Device Found Security Device Support Active PCR banks Available PCR banks	[Enable] SHA-1 SHA-1,SHA256	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 SHA256 PCR Bank	[Enabled] [Disabled]	
Pending operation Platform Hierarchy Storage Hierarchy Endorsement Hierarchy TPM2.0 UEFI Spec Version TPM 20 InterfaceType	[None] [Enabled] [Enabled] [1.0] [TIS]	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.17.1255. Cop	oyright (C) 2016 American Me	egatrends, Inc.

Item	Options	Description
Security Device Support	Disable, Enable [Default]	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 [Default] ,	Enables or Disables SHA-1 PCR Bank.
SHA256 PCR Bank	Disabled [Default] Enabled,	Enables or Disables SHA256 PCR Bank.
Pending operation	None [Default] , 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 [Default] ,	Enable or Disable Platform Hierarchy.
Storage Hierarchy	Disabled Enabled [Default] ,	Enable or Disable Storage Hierarchy.
Endorsement Hierarchy	Disabled Enabled [Default] ,	Enable or Disable Endorsement Hierarchy.
TPM2.0 UEFI Spec Version	1.0 [Default] , 1.x	Select the TCG2 Spec Version Support. 1.0: the Compatible mode for Win8/Win10, 1.x: For TCG2 newer spec for Win10.

3.6.2.2 ACPI Settings



ltem	Options	Description
Enable Hibernation	Disabled Enabled [Default] ,	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
ACPI Sleep State	Suspend Disabled, S3 (Suspend to RAM) [Default]	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
ACPI Low Power S0 Idle	Disabled [Default] , Enabled	Enable or Disable ACPI Low Power S0 Idle Support.
ErP Function	Disabled [Default] , Enabled	ErP Function (Deep S5).
PWR-On After PWR-Fail	Off [Default] On Last state	AC loss resume.
Watch Dog	Disabled [Default] , 30 sec 40 sec 50 sec 1 min 2 min 10 min 30 min	Select WatchDog.

3.6.2.3 AMT Configuration

Aptio Setur Advanced) Utility – Copyright (C) 2016 Am	merican Megatrends, Inc.
Intel AMT [Un-Configure ME [[Enabled] [Disabled]	Enable/Disable Intel (R) Active Management Technology BIOS Extension. Note : iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device
		<pre>++: Select Screen f4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.	17.1255. Copyright (C) 2016 Amer	rican Megatrends, Inc.

Item	Options	Description
Intel AMT	Disabled Enabled [Default] ,	Enable/Disable Intel® Active Management Technology BIOS Extension. Note: iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device.
Un-Configure ME	Disabled [Default] Enabled,	OEMFlag Bit 15: Un-Configure ME without password.

3.6.2.4 PCH-FW Configuration

Aptio Setup Utility – Advanced	Copyright (C) 2016 American	Megatrends, Inc.
ME FW Version ME Firmware Mode ME Firmware Type ME Firmware SKU PTT Capability / State NFC Support ME Unconfig on RTC Clear State ME State fTPM Switch Selection Firmware Update Configuration	11.0.0.1194 Normal Mode Full Sku Firmware Corporate SKU 1 / 0 Disabled [Enabled] [Enabled] [GPDMA Work-Around]	Selects the desired fTPM solution to be used. ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.17.1255. Co	pyright (C) 2016 American M	egatrends, Inc.

Item	Options	Description
fTPM Switch Selection	GPDMA Work-Around[Default],	Select the desired fTPM solution to be
	MSFT QFE Solution	used.

3.6.2.4.1 Firmware Update Configuration

	Aptio Setup Utility – Advanced	Copyright (C) 2016 American	Megatrends, Inc.
Me Fi	√ Image Re-Flash	[Disabled]	Enable/Disable Me FW Image Re-Flash function.
			<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
	Version 2.17.1255. Co	ppyright (C) 2016 American M	legatrends, Inc.

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

3.6.2.5 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 3.6.2.5.1~ 3.6.2.5.2 for more information.

	Aptio Setup Utilit Advanced	y – Copyright (C) 2016 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		1 (COMA) ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
	Version 2.17.1255	. Copyright (C)	2016 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).

3.6.2.5.1 Serial Port 1 Configuration

Aptio Setup Utilii Advanced	y – Copyright (C) 2016 Americ:	an Megatrends, Inc.
Serial Port 1 Configuration		Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=3F8h; IRQ=4;	
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.17.1255	5. Copyright (C) 2016 American	Megatrends, Inc.

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

3.6.2.5.2 Serial Port 2 Configuration

Aptio Setup Utility Advanced	– Copyright (C) 2016 America	n Megatrends, Inc.
Serial Port 2 Configuration		Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=2F8h; IRQ=3;	
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.17.1255.	Copyright (C) 2016 American	Megatrends, Inc.

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

3.6.2.6 EC 8528 H/W Monitor

Aptio S Advanced	Setup Utility – Copyright (C) 2016 American Megatrends	, Inc.
Pc Health Status			
CPU temperature System temperature VIN_L VCORE	: +53 C : +41 C : +12.105 V : +0.855 V	++: Select 14: Select Enter: Sel +/-: Chang F1: Genera F2: Previo	Screen Item ect e Opt. 1 Help us Values
		F3: Optimi F4: Save & ESC: Exit	zed Defaults Exit
Versi	on 2.17.1255. Copyright (C)	2016 American Megatrends,	Inc.

Aptio Setup U Advanced	Jtility – Copyright (C) 2016 Am	erican Megatrends, Inc.
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 & Exit ESC: Exit</pre>

3.6.2.7 S5 RTC Wake Settings

Item	Options	Description
Wake system from S5	Disabled [Default] , 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).

3.6.2.8 Serial Port Console Redirection

Aptio Setup Utility - (Advanced	Copyright (C) 2016 American	Megatrends, Inc.
COM1 Console Redirection Console Redirection Settings Legacy Console Redirection Legacy Console Redirection Settings Serial Port for Out-of-Band Managemen Windows Emergency Management Services Console Redirection Console Redirection Settings	[Disabled] nt∕ s (EMS) [Disabled]	Console Redirection Enable or Disable.
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.17.1255. Co	oyright (C) 2016American M	egatrends, Inc.

Item	Options	Description
Console Redirection	Disabled [Default] , Enabled	Console Redirection Enable or Disable.

3.6.2.8.1 Legacy Console Redirection Settings

Aptio Setu; Advanced) Utility – Copyright (C) 2016 America	an Megatrends, Inc.
Legacy Serial Redirection	Port [COM1]	Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages
		<pre> ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.	17.1255. Copyright (C) 2016 American	Megatrends, Inc.

Item	Option	Description
Legacy Serial Redirection Port	COM1[Default],	Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages.

3.6.2.9 CPU Configuration

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

Aptio Setup Utility Advanced	y – Copyright (C) 2016 Am	erican Megatrends, Inc.
CPU Configuration		Enabled for Windows XP and Linux (05 antipized for
Intel(R) Core(IM) i3-6100U CPU @	2 30GHz	Huper-Threading Technology)
CPU Signature	406E3	and Disabled for other OS (OS
Microcode Patch	SE	not optimized for
Max CPU Speed	2300 MHz	Hyper-Threading Technology).
Min CPU Speed	400 MHz	When Disabled only one thread
CPU Speed	2200 MHz	per enabled core is enabled.
Processon Cores	2	
Hyper Threading Technology	Supported	
Intel VT–x Technology	Supported	
Intel SMX Technology	Not Supported	
64-bit	Supported	· · · · · · · · · · · · · · · · · · ·
EIST Technology	Supported	→+: Select Screen
CPU C3 state	Supported	↑↓: Select Item
CPU C6 state	Supported	Enter: Select
CPU C7 state	Supported	+/-: Change Opt.
CPU C8 state	Supported	F1: General Help
CPU C9 state	Supported	F2: Previous Values
CPU C10 state	Supported	F3: Optimized Defaults
		F4: Save & Exit
L1 Data Cache	32 kB x 2	ESC: Exit
L1 Code Cache	32 kB x 2	
L2 Cache	256 KB X 2	
L3 Cache	3 MB	▼
Vancian 2 47 4055	Popupidht (C) 2016 Area	icon Morathanda Tha
Version 2.17.1255.	. copyright (c) zoib Hiller	ican negatienus, inc.

3.6.2.10 Intel TXT Information

Aptio Setup Utility – Advanced	Copyright (C) 2016 American	Megatrends, Inc.
Intel TXT Information		
Chipset BiosAcm Chipset Txt Cpu Txt Error Code Class Code Major Code Minor Code	Production Fused Debug Fused Not Supported None 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 2.17.1255. C	opyright (C) 2016 American M	egatrends, Inc.

3.6.2.11 SATA Configuration

Aptio Setup Utility Advanced	– Copyright (C) 2016 America	an Megatrends, Inc.
SATA Controller(s) SATA Test Mode Aggressive LPM Support	[Enabled] [Disabled] [Enabled]	Enable or disable SATA Device.
Serial ATA Port 1 Software Preserve Port 1 SATA Device Type Serial ATA Port 2(M.2) Software Preserve Port 2 SATA Device Type	Empty Unknown [Enabled] [Hard Disk Drive] Empty Unknown [Enabled] [Hard Disk Drive]	
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2 <u>.1</u> 7.1255.	Copyright (C) 2016 American	Megatrends, Inc.

Item	Options	Description
SATA Controller(s)	Enabled [Default] Disabled,	Enable or disable SATA Device.
SATA Test Mode	Enabled Disabled [Default] ,	Test Mode Enable/Disable (Loop Back).
Aggressive LPM Support	Enabled [Default] Disabled	Enable PCH to aggressively enter link power state.
Port 1/2	Enabled [Default] Disabled,	Enable or Disable SATA Port.
SATA Device Type	Hard Disk Drive [Default] Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.

Note: RAID/RST Mode support RAID 0 & RAID 1. To set RAID configuration, please follow the instruction below.

Set RAID 0 (DATA Striping)

Step 1:

- Select "Advanced" Page
- Select "SATA Configuration" Item
- Select "SATA mode selection" Item as "RAID"
- Save and Reset System



Step 2: Enter "Intel® Rapid Storage Technology"

- Select "Advanced" Page
- Select "Intel® Rapid Storage Technology

▶ Intel(R) Rapid Storage Technology	This formset allows the user
 Frusted computing ACPI Settings AMT Configuration PCH-FN Configuration IT8528 Super IO Configuration EC 8528 HW monitor S5 RTC Wake Settings Serial Port Console Redirection CPU Configuration Intel TXT Information SATA Configuration Notwerk Stock Configuration 	to manage RAID volumes on the Intel(R) RAID Controller
 CSM Configuration USB Configuration 	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Step 3: Enter "Create RAID Volume"

- Select "Create RAID Volume



Step 4: Enter "Name "as "name of raid "and Set "RAID Level" as "RAID0"

- Enter "Name" item as "name of raid"
- Select "RAID Level" item as "RAID0"

Aptio Setup Utility - Advanced	Copyright (C) 2020 American	Megatrends, Inc.
Create RAID Volume		Select RAID Level
Name: RAID Level:	Volume1 [RAIDO(Stripe)]	
Select Disks: SATA 0.1, 2.5" SATA SSD 3SE CA11806250060041, 29.86B SATA 0.2, TS326MTS400I C390700001, 29.86B	[] []	
Strip Size: Capacity (MB): ▶ Create Volume	RAID Level: RAIDO(Stripe) RAID1(Mirror) Recovery	++: Select Screen ↑↓: Select Item
Select at least two disks		Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit
		ESC: Exit
Version 2.17.1255. C	opyright (C) 2020 American M	egatrends, Inc.

Step 5:

- Select disk SATA 0.1 and SATA 0.2
- Select "Strip Size"
- Select "Capacity"
- Enter "Create Volume"

Aptio Setup Utility - Advanced	Copyright (C) 2020 American	Megatrends, Inc.
Create RAID Volume		Create a volume with the
Name: RAID Level:	Volume1 [RAIDO(Stripe)]	
Select Disks: SATA 0.1, 2.5" SATA SSD 3SE	[X]	
SATA 0.2, TS32GMTS400I C390700001, 29.8GB	[X]	
Strip Size: Capacity (MB):	[64KB] 61063	
▶ Create Volume		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
	nunisht (C) 2020 American M	



Step 6: Completed. This page show the information of raid created by user

> Delete Raid 0:

Step1: Enter "Delete"

Aptio Setup Utility - (Advanced	Copyright (C) 2020 American	Megatrends, Inc.
RAID VOLUME INFO Volume Actions ▶ Delete		
Name: RAID Level: Strip Size: Size: Status: Bootable:	Volume1 RAIDO(Stripe) 64KB 59.6GB Normal Yes	
▶ SATA 0.1, 2.5" SATA SSD 3SE CA1180629 ▶ SATA 0.2, TS32GMTS400I C390700001, 29	50060041, 29.8GB 9.8GB	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.17.1255. Co	oyright (C) 2020 American M	egatrends, Inc.



Aptio Setup Utility – Copyright (C) 2020 American Advanced	Megatrends, Inc.
Delete	Deleting a volume will reset
Delete the RAID volume? ALL DATA ON VOLUME WILL BE LOST!	
Yes ▶ No	
	++: Select Screen †↓: Select Item
	Enter: Select +/-: Change Opt. E1: General Helm
	F2: Previous Values F3: Optimized Defaults
	F4: Save & Exit ESC: Exit
Version 2.17.1255. Copyright (C) 2020 American Me	gatrends, Inc.

Set RAID 1 (DATA Mirroring)

Step1: Enter "Create RAID Volume"



Step2:

- Enter "Name " as "name of raid"
- Set "RAID Level " as "RAID1"
- Select disk "SATA 0.1" and "SATA 0.2"
- Select "Strip Size"
- Select "Capacity"
- Enter "Create Volume"

Aptio Setup Utility – (Advanced	Copyright (C) 2020 American	Megatrends, Inc.
Create RAID Volume		Create a volume with the
Name: RAID Level:	Volume1 [RAID1(Mirror)]	Sectings specified above
Select Disks: SATA 0.1, 2.5" SATA SSD 3SE CA11806250060041 29 868	[X]	
SATA 0.2, TS32GMTS400I C390700001, 29.8GB	[X]	
Capacity (MB):	30531	
▶ Create Volume		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.17.1255. Co	pyright (C) 2020American M	egatrends, Inc.

Step 3: Raid 1 be created. Select"Volume1" to see detail.

Aptio Setup Utility – Copyright (C) 2020 American Advanced	Megatrends, Inc.
Intel(R) RST 14.8.0.2377 RAID Driver	Select to see more information about the RAID Volume
RAID Volumes: ▶ Volume1, RAID1(Mirror), 29.8GB, Normal	
	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.17.1255. Copyright (C) 2020 American M	egatrends, Inc.



Step 4: Completed. This page show the information of raid created by user.

Delete Raid 1

Step1: Enter "Delete"



Step2: Select "Yes" to delete RAID



3.6.2.12 Network Stack Configuration

Network Stack	[Disabled]	Enable/Disable UEFI Network
		Stack
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Item Options		Description
Network Stack	Enabled Disabled [Default] ,	Enable/Disable UEFI Network Stack.

i igui a (ion	Enable/Disable CSM Suppor
	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

3.6.2.13 CSM Configuration

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

3.6.2.14 USB Configuration

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

Aptio Setup Utility - Advanced	Copyright (C) 2016 American	Megatrends, Inc.
USB Configuration		Enables Legacy USB support.
USB Module Version	13	AUTO option disables legacy support if no USB devices are
USB Controllers: 1 XHCI		keep USB devices available
USB Devices: 1 Drive 1 Keuboard 1 Mouse	2 Hubs	
i bi ive, i keyboli u, i house,	2 11003	
Legacy USB Support XHCI Hand—off	[Enabled] [Enabled]	
USB Mass Storage Driver Support	[Enabled]	
Port 60/64 Emulation	[Disabled]	++: Select Screen
USB hardware delays and time-outs:		t↓: Select Item
USB transfer time-out	[20 sec]	Enter: Select
Device reset time-out	[20 SEC]	F1: Ceneral Help
pevice power up deidy	[hato]	F2: Previous Values
Mass Storage Devices:		F3: Optimized Defaults
hp v220w 1100	[Auto]	F4: Save & Exit
		ESC: Exit
Version 2.17.1255. C	opyright (C) 2016 American M	legatrends, Inc.

Item	Options	Description
Legacy USB Support	Enabled [Default] Disabled Auto	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
XHCI Hand-off	Enabled [Default] Disabled	hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Enabled [Default] Disabled	Enable/Disable USB Mass Storage Driver Support.
Port 60/64 Emulation	Disabled [Default] Enabled	Enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.
USB transfer time-out	1 sec 5 sec 10 sec 20 sec [Default]	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10 sec 20 sec [Default] 30 sec 40 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	Auto [Default] 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.
Hp v220w 1100	Auto [Default] 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 d drive type.

3.6.3 Chipset

Apt: Main Advanced (<mark>io Setup Utility –</mark> Chipset <mark>Security</mark>	Copyright (C Boot Save &) 2016 American Exit	Megatrends,	Inc.
▶ System Agent (SA) ▶ PCH-IO Configurat:	Configuration ion			System Agent	(SA) Parameters
				++: Select S t1: Select I Enter: Selec +/-: Change F1: General F2: Previous F3: Optimize F4: Save & E ESC: Exit	creen tem t Volues Values d Defaults xit
Ver	rsion 2.17.1255. Co	opyright (C)	2016 American Me	egatrends, In	с.

3.6.3.1 System Agent (SA) Configuration

Apti	io Setup Utility – (Chipset	Copyright (C) 2016	American	Megatrends,	Inc.
System Agent Bridg SA PCIe Code Versi VT–d	ge Name ion	Skylake 1.8.0.0 Supported		VT-d capabil	lity
Graphics Configurat Memory Configurati	ation ion			++: Select S 1: Select J Enter: Select +/-: Change F1: General F2: Previous F3: Optimize F4: Save & E ESC: Exit	Screen Item it Opt. Help s Values d Defaults ixit
Ver	rsion 2.17.1255. Com	oyright (C) 2016 Am	nerican Me	gatrends, Ir	ю.

ltem	Option	Description
VT-d	Enabled[Default]	VT-d capability.
	Disabled	t i a capacinty:

3.6.3.1.1 Graphics Configuration

Aptio Setup Chipset	Utility – Copyright	(C) 2016 American	Megatrends, Inc.
Graphics Configuration			
			++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.	17.1255. Copyright ((C) 2016 American M	egatrends, Inc.

3.6.3.1.2 Memory Configuration

Aptio Setup Utility - Chipset	Copyright (C) 2016 American	Megatrends, Inc.
Memory Configuration			Maximum Value of TOLUD. Dunamic assignment would
Memory RC Version Memory Frequency Total Memory VDD DIMM#0 DIMM#2 Memory Timings (tCL-tRCD-tRP-tRAS) Max TOLUD	1.8.0.1 2133 MHz 4096 MB 1200 4096 MB Not Present 15-36 [Dynamic]		adjust TOLUD automatically based on largest MMIO length of installed graphic controller
			<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2 17 1255 Cr	nuright (C) :	2016 American M	edatrends Inc

Item	Option	Description
	Dynamic [Default]	Maximum Value of TOLUD. Dynamic
Max TOLUD	1GB/1.25GB/1.5GB/1.75GB	assignment would adjust TOLUD
	/2GB/2.25GB/2.5GB/2.75GB	automatically based on largest MMIO length
	/3GB/3.25GB	of installed graphic controller.

3.6.3.2 PCH-IO Configuration



Item	Option	Description	
PCH LAN Controller	Disabled	Enable or disable onboard NIC.	
	Enabled[Default]		
I AN PHY Drives I AN WAKE#	Disabled[Default]	Enable/Disable LAN Phy driving LAN_WAKE#	
LAN FITT DIVES LAN_WARE#	Enabled	else platform drives LAN_WAKE#.	

3.6.3.2.1 PCI Express Configuration

Aptio Setup Utility – Copyright (C) 2016 American <mark>Chipset</mark>	Megatrends, Inc.
PCI Express Configuration	PCI Express Root Port 2 Settings.
 PCI Express Root Port 2(mPCIe) PCI Express Root Port 3(I210/211) PCIE Port 4 is assigned to LAN PCI Express Root Port 5(IET) PCI Express Root Port 6(IET) PCI Express Root Port 7(IET) PCI Express Root Port 8(IET) PCI Express Root Port 12(M.2) 	
	++: Select Screen †4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.17.1255. Copyright (C) 2016 American Me	egatrends, Inc.

	Aptio Setup Utility - Chipset	- Copyright (C) 2016 American	Megatrends, Inc.
PCI Express F ASPM Support L1 Substates PCIE Speed	Chipset	[Enabled] [Disabled] [L1.1 % L1.2] [Auto]	Control the PCI Express Root Port. ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Opticate Opterate
			F3: Optimized Defaults F4: Save & Exit ESC: Exit

3.6.3.2.1.1 PCI Express Root Port2 (mPCle)

Item	Option	Description	
PCI Express Root Port 2	Enabled [Default] , Disabled	Control the PCI Express Root Port.	
	Disabled [Default],		
	LOs	Set the ASPM Level: Force L0s – Force all	
ASPM Support	L1	links to L0s State AUTO – BIOS auto	
	L0sL1	configure DISABLE – Disables ASPM.	
	Auto		
	Disabled		
1 1 Substates	L1.1	PCI Express I 1 Substates settings	
LI Substates	L1.2	FOI Express LT Substates settings.	
	L1.1 & L1.2[Default],		
	Auto[Default]		
PCIe Speed	Gen1	Salast DCI Evoress part apoad	
	Gen2	Select FOI Express port speed.	
	Gen3		

	Aptio Setup Utility – Chipset	Copyright (C) 2016 Americar	n Megatrends, Inc.
PCI Express F ASPM Support L1 Substates PCIe Speed	Root Port 3	[Enabled] [Disabled] [l1.1 & L1.2] [Auto]	Control the PCI Express Root Port. ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
	Vancian 9 17 1955 P	opunisht (C) 2016 Amonicon k	lagataanda Taa

3.6.3.2.1.2 PCI Express Root Port3 (I210/211)

Item	Option	Description	
PCI Express Root Port 3	Enabled [Default] , Disabled	Control the PCI Express Root Port.	
	Disabled [Default],		
	LOs	Set the ASPM Level: Force L0s – Force all	
ASPM Support	L1	links to L0s State AUTO – BIOS auto	
	L0sL1	configure DISABLE – Disables ASPM.	
	Auto		
	Disabled		
1 1 Substatos	L1.1	PCI Express I 1 Substates settings	
LI Substates	L1.2	r of Express ET Substates settings.	
	L1.1 & L1.2[Default],		
	Auto[Default]		
PCIe Speed	Gen1	Select PCI Express part speed	
	Gen2	Select FOI Express port speed.	
	Gen3		

3.6.3.2.1.3 PCI Express Root Port5 (IET)

Ar	otio Setup Utility –) Chipset	Copyright (C) 2016 American	Megatrends, Inc.
PCI Express Root ASPM Support L1 Substates PCIe Speed		[Enabled] [Disabled] [L1.1 & L1.2] [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		
DCI Exercise Reat Part 5	Enabled[Default],	Control the BCI Everage Reat Part		
PCI Express Root Port 5	Disabled	Control the PCI Express Root Port.		
	Disabled [Default],			
	L0s	Set the ASPM Level: Force L0s – Force all		
ASPM Support	L1	links to L0s State AUTO – BIOS auto		
	L0sL1	configure DISABLE – Disables ASPM.		
	Auto			
	Disabled			
L 1 Substatas	L1.1	PCI Express I 1 Substates settings		
LI Substates	L1.2	FCI Express LT Substates settings.		
	L1.1 & L1.2[Default],			
	Auto[Default]			
PCIe Speed	Gen1	Select BCI Express part apoed		
	Gen2	Select FOI Express port speed.		
	Gen3			
Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc. Chipset PCI Express Root Port 6 [Enabled] ASPM Support [Disabled] L1 Substates [L1.1 & L1.2] PCIE Speed [Auto] Control the PCI Express Root Port. ++: Select Screen 11: Select Item Enter: Se				
--	--	-------------------	--	---
PCI Express Root Port 6 [Enabled] ASPM Support [Disabled] L1 Substates [L1.1 & L1.2] 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	Aptio	Setup Utility – C	opyright (C) 2016 American	Megatrends, Inc.
PCI Express Root Port 6 [Enabled] ASPM Support [Disabled] L1 Substates [L1.1 & L1.2] 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		ipset		
	PCI Express Root Por ASPM Support L1 Substates PCIe Speed	rt 6	[Enabled] [Disabled] [L1.1 & L1.2] [Auto]	<pre>control the PCI Express Root Port. ++: Select Screen tl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

3.6.3.2.1.4 PCI Express Root Port6 (IET)

ltem	Option	Description	
PCI Express Root Port 6	Enabled [Default] , Disabled	Control the PCI Express Root Port.	
	Disabled [Default],		
	LOs	Set the ASPM Level: Force L0s – Force all	
ASPM Support	L1	links to L0s State AUTO – BIOS auto	
	L0sL1	configure DISABLE – Disables ASPM.	
	Auto		
	Disabled		
1 1 Substatos	L1.1	PCI Express I 1 Substates settings	
LI Substates	L1.2	FOI Express LT Substates settings.	
	L1.1 & L1.2[Default],		
PCIe Speed	Auto[Default]		
	Gen1	Salact PCI Express part speed	
	Gen2	Select FOI Expless poil speed.	
	Gen3		

3.6.3.2.1.5 PCI Express Root Port7 (IET)

Ap	tio Setup Utility –) Chipset	Copyright (C) 2016 American	Megatrends, Inc.
PCI Express Root ASPM Support L1 Substates PCIE Speed	Port 7	[Enabled] [Disabled] [L1.1 & L1.2] [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
	Version 2 17 1255 Co	ouright (C) 2016 American Ma	agetrends Inc

Item	Option	Description
PCI Express Root Port 7	Enabled [Default] ,	Control the PCI Express Root Port
	Disabled	
	Disabled [Default],	
	LOs	Set the ASPM Level: Force L0s – Force all
ASPM Support	L1	links to L0s State AUTO – BIOS auto
	L0sL1	configure DISABLE – Disables ASPM.
	Auto	
	Disabled	
L1 Substates	L1.1	PCI Express I 1 Substates settings
LI Substates	L1.2	FOI Express ET Substates settings.
	L1.1 & L1.2[Default],	
PCIe Speed	Auto[Default]	
	Gen1	Solact PCI Express part speed
	Gen2	Select FOI Express port speed.
	Gen3	

DOT Fundade Deat Deat 0	[Each lead]	Control the DOT Supress Dev
ASPM Support	[Endored] [Disabled]	Port
L1 Substates	[L1.1 & L1.2]	i or c.
PCIe Speed	[Auto]	
		++: Select Screen
		↑↓: Select Item
		Enter: Select
		+/-: Unange Upt.
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

3.6.3.2.1.6 PCI Express Root Port8 (IET)

Item	Option	Description
PCI Express Root Port 8	Enabled [Default] , Disabled	Control the PCI Express Root Port.
	Disabled [Default],	
	LOs	Set the ASPM Level: Force L0s – Force all
ASPM Support	L1	links to L0s State AUTO – BIOS auto
	L0sL1	configure DISABLE – Disables ASPM.
	Auto	
	Disabled	
l 1 Substatos	L1.1	PCI Express I 1 Substates settings
LI Substates	L1.2	r of Express ET Substates settings.
	L1.1 & L1.2[Default],	
PCIe Speed	Auto[Default]	
	Gen1	Select PCI Express part speed
	Gen2	Select FOI Express port speed.
	Gen3	

нрт	ID SETUD UTIL		0046 0	Manager and the second se	Tran
	Chipset	rig – copyright (c)	2016 Hilerican	megatrenus,	inc.
PCI Express Root ASPM Support L1 Substates PCIe Speed	Port 12	[Enabled] [Disabled] [L1.1 & L1.2] [Auto]		Control the Port.	PCI Express Root
				+: Select S 14: Select I Enter: Selec +/-: Change F1: General F2: Previous F3: Optimize F4: Save & E ESC: Exit	creen tem t Opt. Help Values d Defaults xit

3.6.3.2.1.7 PCI Express Root Port12 (M.2)

Item	Option	Description	
PCI Express Root Port 12	Enabled [Default] , Disabled	Control the PCI Express Root Port.	
	Disabled [Default],		
	LOs	Set the ASPM Level: Force L0s – Force all	
ASPM Support	L1	links to L0s State AUTO – BIOS auto	
	L0sL1	configure DISABLE – Disables ASPM.	
	Auto		
	Disabled		
1 1 Substates	L1.1	PCI Express I 1 Substates settings	
LI Substates	L1.2	FOI Express LT Substates settings.	
	L1.1 & L1.2[Default],		
	Auto[Default]		
PCIe Speed	Gen1	Salast DCI Evoress part apoad	
	Gen2	Select FOI Express port speed.	
	Gen3		

3.6.3.2.2 USB Configuration



ltem	Option	Description
USB Brocondition	Enabled	Precondition work on USB host controller
USB Precondition	Disabled[Default],	and root ports for faster enumeration.
	FALSE [Default] ,	Option to disable Compliance Mode. Default
XHCI Disable Compliance Mode		is FALSE to not disable Compliance Mode.
	IRUE	Set TRUE to disable Compliance Mode.
USD SS Developed Companies #2(M 2)	Disabled[Default]	Frable/Dischla LICD sort
USB SS Physical Connector #2(M.2)	Enabled	Enable/Disable USB port.

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc. Chipset HD Audio Configuration HD Audio [Auto] Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled Auto = HDA will be enabled if present, disabled otherwise. #*: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Save & Exit ESC: Exit Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.

3.6.3.2.3 HD Audio Configuration

Item	Option	Description
HD Audio	Disabled Enabled Auto [Default] ,	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 menu

System Mode Secure Boot Vendor Keys Secure Boot Secure Boot Mode Key Management	Setup Not Active Not Active [Disabled] [Custom]	Secure Boot can be enabled if 1.System running in User mode with enrolled Platform Key(PK) 2.CSM function is disabled
		++: 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
Secure Boot	Disabled [Default] Enabled	Secure Boot can be enabled if 1.System running in User mode with enrolled Platform Key(PK) 2.CSM function is disabled.
Secure Boot Mode	Standard Custom [Default]	Secure Boot mode selector. 'Custom' Mode enables users to change Image Execution policy and manage Secure Boot Keys.

3.6.4.1.1 Key Management

Aptio Setup Utility – Copyright (C) 2016 American <mark>Security</mark>	Megatrends, Inc.
Provision Factory Default keys [Disabled] • Enroll all Factory Default keys • Save all Secure Boot variables	Install factory default Secure Boot keys when System is in Setup Mode
Secure Boot variable Size Key# Key source Platform Key(PK) 0 0 Key Exchange Keys 0 0 Authorized Signatures 0 0 Forbidden Signatures 0 0 Authorized TimeStamps 0 0	
	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.17.1255. Copyright (C) <u>2016</u> American Me	gatrends, Inc.

Item	Option	Description
Provision Fostery Default keys	Enabled,	Install factory default Secure Boot Keys
Provision Factory Default Reys	Disabled[Default]	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 [Default] Off	Select the Keyboard NumLock state
Quiet Boot	Disabled [Default] Enabled	Enables or disables Quiet Boot option
Fast Boot	Disabled [Default] 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 #1/2	Set the system boot or	der.

3.6.6 Save and exit

Aptio Setup Utility – Copyright (C) 2016 American Main Advanced Chipset Security Boot Save & Exit	Megatrends, Inc.
Save Options Save Changes and Reset Discard Changes and Reset	Reset the system after saving the changes.
Default Options Restore Defaults	
Boot Override UEFI: hp v220w 1100, Partition 1 Launch EFI Shell from filesystem device	
	<pre>++: Select Screen tl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.17.1255. Copyright (C) 2016 American M	egatrends, Inc.



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.



(intel)

Restart Later

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. If the warning message appears while the installation process, click Continue to go on.

Readme File Infor	mation		Inter
***********	***************	***********	**********
Product: In	ntel(R) Chipset De	vice Software	
* Version: 10	0.1.1		
* Target PCH,	/Chipset: Client P	latforms	
" Date: 2015	-06-03		
NOTE .			
Filler	or the list of sup	ported chipset	s, please refer
te	o the Release Note	5	.,
CONTENTS OF	THIS DOCUMENT		
		*********	*******
This document	contains the foll	owing sections	
 Overview 	43 V747		
System Red	quirements		
Contents (of the Distributio	n Package	
SA. Public	and NUA Configur	ations	
6			>

Step 3. Click Install.





Intel(R) Chipset Device Software



Step 2. Click Accept.

Step 4. Click Restart Now/Restart Later to 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. If the warning message appears while the installation process, click Continue to go on.

Setup	×
Intel® Management Engine Components Welcome	intel
You are about to install the following product:	
Intel® Management Engine Components	
It is strongly recommended that you exit all programs before conti Click Next to continue, or click Cancel to exit the setup program.	nuing.
Intel Corporation	Back Next > Cancel





Step 2. Click Next.



Step 3. Click Next to proceed setup.

You have successfully installed the following components: - Intel® Management Engine Interface - Serial Over LAN - Local Management Service - Intel® Management and Security Status - Intel® Security Assist	ntel® Management Engine Compo Completion	nents	(intel)_
- Intel® Management Engine Interface - Serial Over LAN - Local Management service - Intel® Management and Security Status - Intel® Security Assist	ou have successfully installed the following con	nponents:		-
	- Intel® Management Engine Interface - Serial Over LAN - Local Management Service - Intel® Management and Security Status - Intel® Security Assist			
Click here to open log file location.	Click <u>here</u> to open log file location.			

Step 4. 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.



Intel® Installation Framework

Intel® Graphics Drive

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



X Intel[®] Graphics Driver ntel. Welcome to the Setup Program This setup program will install the following components:

Intel® Installation Framework

- Intel® Display Audio Driver It is strongly recommended that you exit all programs before continuing. Click Next to continue. Automatically run WinSAT and enable the Windows Aero desktop theme (if supported). Next > Cancel

Step 1. Click Next to continue installation.



Step 3. Click Next.

ntel® Graphics Driver	lintal
etup Progress	interv
Please wait while the following setup operations are p	erformed:
Deleting Registry Key: HKLM\SOFTWARE\Intel\IGDI Deleting File: C:\ProgramData\Microsoft\Windows\St Deleting File: C:\ProgramData\Microsoft\Windows\St Deleting File: C:\ProgramData\Microsoft\Windows\St Deleting File: C:\ProgramData\Microsoft\Windows\St	art Menu\Programs\Intel\Intel(R) HD Gray art Menu\Programs\Intel(R) HD Graphics art Menu\Programs\Intel(R) Graphics and art Menu\Programs\Intel\Intel(R) Graphic aphics Control Panel.Ink
Deleting File: C: Users Public/Desktop/Intel(R) HD Gr Deleting File: C: VprogramData/Microsoft/Windows/St Deleting File: C: Users/Public/Desktop/Intel(R) Iris(T) Deleting Registry Key: HKLM\SOFTWARE\Intel\GFX\I Deleting Registry Key: HKLM\SOFTWARE\Intel\GFX\I Click Next to continue.	art Menu \Programs \Intel \Intel (R) Iris(TM) 4) Graphics Control Panel.Ink Internal\AudioFix nternal\AudioFix

Step 4. Click Next.



Step 5. Click Finish to complete setup.

Step 2.

Click **Yes** to accept license agreement.

EMS-SKLU Series

4.4 Install Audio Driver (For Realtek ALC888S)

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 1. Click Next to continue setup.



Step 2. 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.

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Do not copy, install, or use this softw (collectively, the "Software") provide ("Agreement") until you have carefu By copying, installing, or otherwise t the terms of this Agreement. If you d	vare and any as ed under this lic illy read the follo using the Softwa to not agree to t	sociated materia ense agreement wing terms and are, you agree to he terms of this	als t conditions. be bound by Agreement,
Do not copy, install, or use this softw (collectively, the "Software") provide ("Agreement") until you have carefu By copying, installing, or otherwise to the terms of this Agreement. If you d cost core, install acrues the Software O I accept the terms in the license agreem	ware and any as ed under this lic Illy read the follo using the Softwa to not agree to t went	sociated materia ense agreement wing terms and are, you agree to he terms of this	als t conditions. be bound by Agreement, <u>P</u> rint
Do not copy, install, or use this softw (collectively, the "Software") provide ("Agreement") until you have carefu By copying, installing, or otherwise in the terms of this Agreement. If you d I accept the terms in the license agreem I do not accept the terms in the license	vare and any as ed under this lic Illy read the follo using the Softwa do not agree to t hent agreement	sociated materia ense agreement wing terms and are, you agree to he terms of this	als t conditions. b be bound by Agreement, <u>Print</u>

Step 3. Click Next.



	2010	×
Setup Options Select the program features you want	installed.	(intel)
Install:		
Drivers Dirte(R) PROSet for Windows* De Advanced Network Services Windows* PowerShell Module Intel(R) Network Connections SNN	vice Manager 1P Agent	
Feature Description		

Step 1. Click Install Drivers and Software.





Step 5. Click Install.

Step 2. Click Next.

EMS-SKLU Series



Step 6. Click Finish to complete the setup.

