



# **PhanTAM-9XXC Series**

15.6", 21.5" Fanless Stainless Steel Display

# **User Manual**

Release Date	9		Revision
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# **Revision History**

Reversion	Date	Description	
1.0	2023/05/05	Official Version	
1.1	2023/06/15	1.2 delete 2.5" SSD for option	
1.2	2024/10/14	Page 3	
		1. Delete logistics statement	
		2. Add Safety Precauion	

# Warning!

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Electric Shock Hazard – Do not operate the machine with its back cover removed. There are dangerous high voltages inside.

#### Caution

Risk of explosion if the battery is replaced with an incorrect type.

Batteries should be recycled where possible. Disposal of used batteries must be in accordance with local environmental regulations.

#### Disclaimer

This information in this document is subject to change without notice. In no event shall Aplex Technology Inc. be liable for damages of any kind, whether incidental or consequential, arising from either the use or misuse of information in this document or in any related materials.

# **Safety Precautions**

Follow the messages below to prevent your systems from damage:

- Avoid your system from static electricity on all occasions.
- Prevent electric shock. Don't touch any components of this card when the card is power-on. Always disconnect power when the system is not in use.

• Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

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# Chapter 1\_\_\_\_\_

# **Getting Started**

# **1.1 Features**

- 15.6"/21.5" Intel<sup>®</sup> 11<sup>th</sup> Gen. Fanless Stainless Steel display
- Gap-free sealing and Slim Front Frame architecture at front bezel
- IP66/IP69K Full sealed with Anti-Corrosion Enclosure
- Special Hygienic Screws on I/O Cover
- Optional Robust Waterproof Wireless Antenna Cover and Air Pressure Balance Screw
- M12 Connectors with waterproof cover and chain
- DC 9~36V wide range power input

# **1.2 Specifications**

	PhanTAM-916CP/R(H)				PhanTAM-921CP/R(H)
System					
CPU			Onboard Intel® 2	11 <sup>th</sup> Gen (T	iger Lake-UP3) Processors:
		Co	ore™ i5-1145G7E	E (4C <i>,</i> 1.5 G	GHz, up to 4.1GHz, 28W TDP)
		Co	ore™ i3-1115G4E	E (2C, 2.2 G	GHz, up to 3.9GHz, 28W TDP)
Memory		2 x SO-	-DIMM up to 640	GB DDR4 3	200MHz(Dual Channel, Non-ECC)
Graphics			I	ntel®Iris®X	Ke Graphics
			Intel UHD (	Graphics fo	or 11 <sup>th</sup> Gen Processors
LVDS			1 x	18/24 bit	Dual Channel
Outside IO Port – Star	ndard M12	I/O Conne	ector on the Rea	r Side	
USB	1 x M12 8-	-pin for 2x USI	B2.0 with waterproof	cover and	
	chain				
		ι	JSB1/2:		
		CN1	Pin Define		8
		1	USB1 5V		3
		3	D1-		
		4	D1+		4 5 6
		7	GND		Pin Assignments Front View 正視圖
		2	USB2 5V		Provide the second seco
		5	D2-		
		6	D2+		

	8	GND	
Serial/Parallel	1 x M12 8-pin COM1, I	RS-232/422/485, Det	fault RS-
	232, with water	proof cover and chai	in
		Pin Define	
	1	DCD	8
	2	RXD	3
	3	TXD	
	4	DTR	4-5-6
	5	GND	Pin Assignments Front View 正視圖
	6	DSR	A CONTRACT OF A
	7	RTS	
	8	CTS	
LAN	1 x M12 8-pin for LAN w	ith waterproof cover a	and chain
		LAN:	
		Pin Define	200000
	1	LAN1_0+	8
	2	LAN1_0-	
	3	LAN1_1+	4
	4	LAN1_1-	5 Pin Assignments
	5	LAN1_2+	Front View 正視圖
	6	LAN1_2-	
	7	LAN1_3+	
	8	LAN1_3-	
Power	1 x M12 3-pin for DC p	nd chain	bot cover
		Pin Define	
		VC	
		/CC	
	4 0	GND	Pin Assignments
			Front View
Option I/O Port (Eith	er two)		
		112 connectors w	vith waterproof cap for selecting two from the following
	options:		

Option	2 x USB 2.0 1 x USB 3.2 Gen1 1 x COM			
Storage Space				
Storage		1 x M.2 M-Key 2280	(PClex4 as default)	
Expansion				
Expansion Slot	1 x M.2 2230 E-Key (PCIex2+USB2.0) socket for WIFI/BT and Antenna at rear side (option) 1 x Full-size mPCIe/mSATA with NANO-SIM (mPCIe as default, select by BIOS)			
RFID module		RFID module design on	the front side (option)	
Display – Standard LC	D			
Display Type	15.6" 1	FT LCD	21.5" TFT LCD	
Max. Resolution	1366 x 768	1920 x 1080	1920 x 1080	
Max. Color	16.7M	16.2M	16.7M	
Luminance (cd/m <sup>2</sup> )	400	450	250	
Contrast Ratio	500:1	800:1	1000:1	
Viewing Angle(H/V)	170/160 170/170		178/178	
Backlight Lifetime	50,000hrs 50,000hrs		50,000hrs	
Option	Optical bonding			
Display – High Brightness LCD (option)				
Display Type	15.6" 1	FT LCD	21.5" TFT LCD	
Max. Resolution	1366 x 768	1920 x 1080	1920 x 1080	
Max. Color	16.7M	16.2M	16.7M	
Luminance (cd/m <sup>2</sup> )	1000	1000	1000	
Contrast Ratio	1000:1	1000:1	1000:1	
Viewing Angle(H/V)	160/160	170/170	178/178	
Backlight Lifetime	50,000hrs	50,000hrs	50,000hrs	
Option	Optical bonding			
Touch Screen				
Туре	Resistive touch window (for R model) Projected capacitive touch screen (for P model)			
Interface	USB			
Light Transmission	Resistive touch window: over 80% Projected capacitive touch screen: over 90%			
Power				
Power Input	DC 9~36V			

Power Consumption	MAX:31.8W	MAX:34.05W		
	(916CP)	(921CP)		
Mechanical	Mechanical			
Color	304 Stainless steel enclosure (default)			
	316 Stainless steel	enclosure (option)		
Construction	Stainless ste	el enclosure		
Mounting	VESA mount 100 x	100 or SWING ARM		
IP Rating	IP66/	IP69К		
Dimension (mm)	403.4 x 254.4 x 64.9	539.4 x 331.4 x 61.9		
Net Weight(Kg)	5.1	7.9		
Environmental				
Operating	0~50°C			
temperature	(-20~60°C for option)			
Storage temperature	-30~70°C			
Storage humidity	10 to 90% @ 40°C, non- condensing			
Certification	Meet CE / FCC Class A			
Operating System	Windows 10 IoT ENT LTSC			
Support				

# **1.3** Dimensions

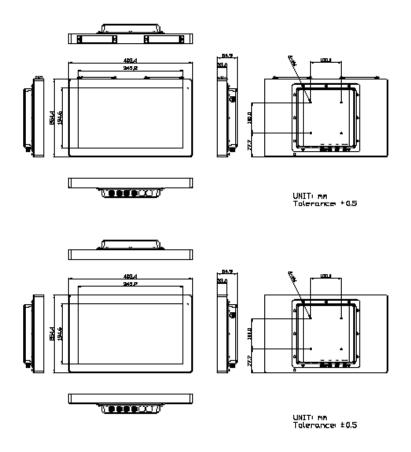


Figure 1.1: Dimensions of PHANTAM-916CP/R(H)

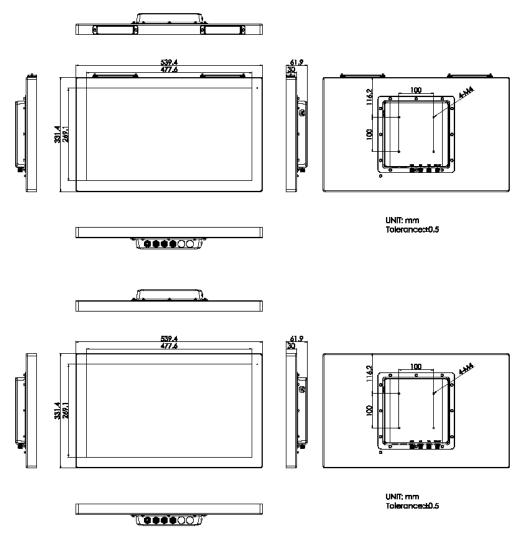


Figure 1.2: Dimensions of PHANTAM-921CP/R(H)

# **1.4 Brief Description of PhanTAM-9XXC Series**

PhanTAM-9XXC series with MOTHERBOARD Aaeon GENE-TGU6 is an IP66/IP69K rated with M12 connectors new generation stainless steel panel pc, which comes with 15.6" and 21.5" color TFT LCD. PhanTAM-9XXC series are wide range DC 9~36V power input and true flat front bezel designed with grade 304 stainless steel enclosure (grade 316 is for option). Futhermore, the models support resistive touch, and projected capacitive touch for option, and can be high brightness LCD and optical bonding designed for option. It supports touch on/off button on the side edge for hygienic cleaning nad ergonomic versatile mounting: SWING ARM or space-saving VESA mounting.



Figure 1.3: Front View PhanTAM-9XXC



Figure 1.4: Rear View of PhanTAM-9XXC

# 2.1 Motherboard Introduction

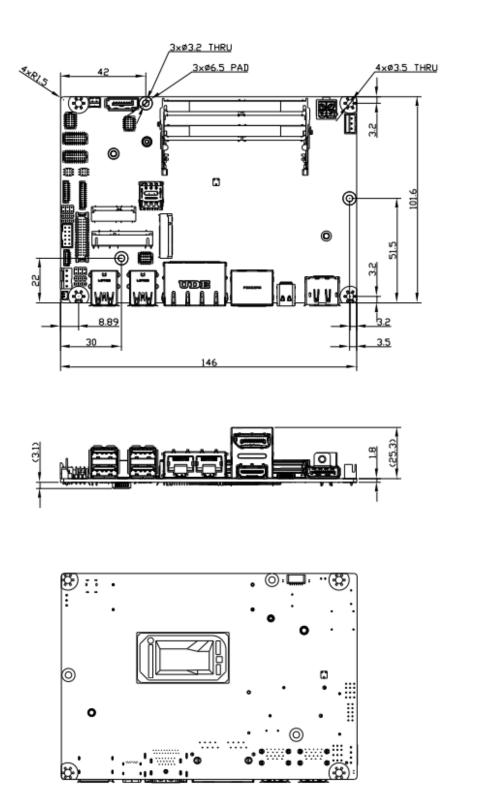
Standard 3.5" subcompact board developed on the basis of Intel 11<sup>th</sup> Generation Core<sup>™</sup>/Celeron Processor, which provides abundant peripheral interfaces to meet the needs of different customers. Also, it features one mPCIe/mSATA, dual GbE ports, 2-COM and 4 x USB3.2 Gen 2 Ports; one HDMI, one VGA and one LVDS interface.

Specifications		
Board Size	146mm x 107.7mm	
CPU Support	Intel <sup>®</sup> Core <sup>™</sup> i3-1115G4E(2C/4T, 2.20GHz, up to 3.90GHz, 15W, up 28W) Intel <sup>®</sup> Core <sup>™</sup> i5-1145G7E(4C/8T, 1.50GHz, up to 4.10GHz, 15W, up	
	to 28W)	
	Intel <sup>®</sup> Core™ i7-1185G7E(4C/8T, 1.80GHz, up to 4.40GHz, 15W, up to 28W)	
	Celeron <sup>®</sup> 6305E(2C/2T, 1.80GHz, 15W only)	
Chipset	SOC	
Memory Support	DDR4 up to 2400MHz, Dual Channel SODIMM x2, up to 64GB, IBECC	
Graphics	Intel <sup>®</sup> UHD Graphics Intel <sup>®</sup> Iris <sup>®</sup> Xe Graphics	
Display Mode	1 x HDMI 2.0b 1 x LVDS (18/24-bit dual LVDS) (optional: eDP1.4b) 2 x DP 1.4a 1 x DP 1.4 (Type C)	
Multi Display	Up to 4 Simultaneous Displays	
Wake on LAN	Yes	
BIOS	UEFI	
SATA	1 x SATAIII (6.0Gbps) 1 x +5V SATA Power Connector	

# 2.2 Specifications & Dimensions

1	<u> </u>
Video	LVDS/ eDP x 1 (default: LVDS) eDP: up to 1080P@60Hz
USB	2 x USB 2.0
Serial	3 x RS232/RS422/RS485 port, (COM1, COM3, COM4) 1 x RS232/RS422/RS485 port, support 5V/12V/RI(COM2)
Digital I/O	8-bit digital I/O 4-bit digital Input 4-bit digital Output
Battery	Lithium Battery 3V/240mAh
SMBus/I2C	I2C/SMBus x 1 (Default: SMBus)
SIM	Nano-SIM x 1
Audio	Support Audio via Realtek ALC897/892 audio codec Audio Interface: Line-in/Line-out/MIC 1x Audio Header
Expansion Bus	1 x Full-size mPCIe/mSATA slot (mSATA as default, , select by BIOS) M.2 M-Key 2280 x 1 (PCIe [x4]) M.2 E-Key 2230 x 1 (PCIe, USB2.0)
FAN	Smart Fan x 1
Touch Ctrl	4/5/8-wire touch controller(option)
Power Management	Wide Range DC+9V~36V (+12V option) 1 x 2-pin Phoenix connector Power supply type: AT/ATX
Switches and LED Indicators	1 x Power on/off switch 1 x Reset 1 x HDD LED status 1 x Power LED status 1 x Buzzer
External I/O port	4 x USB 3.2 Gen 2 Ports 1 x USB 3.2 Gen 2 Type C (PD5V/3A) 2 x RJ45 GbE LAN Ports 1 x HDMI 2.0b 2 x DP 1.4a 1 x DP 1.4 (Type C)

Temperature	Operating: 0°C to 60°C Storage: -40°C to 80°C
Humidity	0% - 90% relatively, non-condensing, operating
Power Consumption	Typical: 4.96A at +12V, Intel <sup>®</sup> i7-1185G7E, DDR4 3200MHz 32GB x 2 Maximum: 7.32A at +12V, Intel <sup>®</sup> i7-1185G7E, DDR4 3200MHz 32GB x 2
Watchdog Timer	255 Level
MTBF (Hrs)	329,884
EMI/EMS	CE/FCC class A



(Unit: mm)





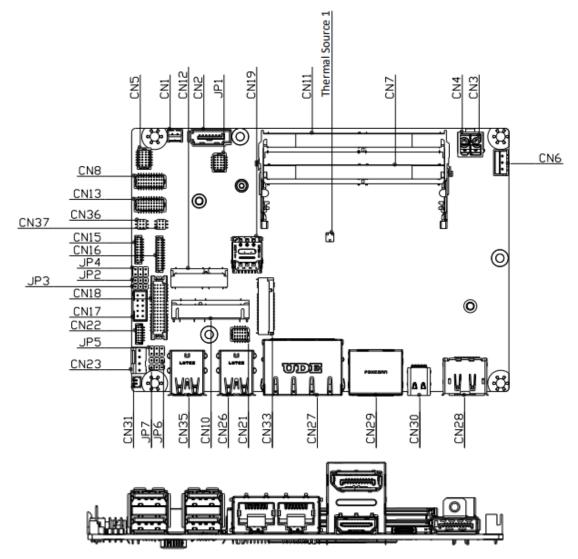


Figure 2.2: Jumpers and Connectors Location- Board Top

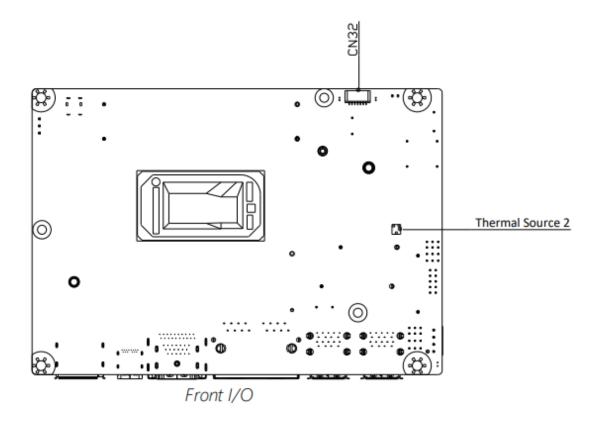


Figure 2.3: Jumpers and Connectors Location- Board Bottom

# 2.4 Jumpers Setting and Connectors

Please refer to the table below for all of the board's jumpers that you can configure for your application

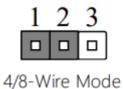
Label	Function
JP1	Front Panel Connector
JP2	Touch Screen 4/5/8-wire Mode Selection
JP3	Auto Power Button Enable/ Disable Selection
JP4	COM2 Pin 8 Function Selection
JP5	LVDS/eDP Port Backlight Inverter VCC Selection and Operating
	VDD Selection
JP6	LVDS/eDP Port Backlight Lightness Control Mode Selection
JP7	Clear CMOS Jumper

### 1. Front Panel Connector (JP1):

1		2
3		4
5		6
7		8
9		10

Pin	Function	Pin	Function
Pin 1	PWR_BTN-	Pin 2	PWR_BTN+
Pin 3	HDD_LED-	Pin 4	HDD_LED+
Pin 5	SPEAKER-	Pin 6	SPEAKER+
Pin 7	PWR_LED-	Pin 8	PWR_LED+
Pin 9	H/W RESET-	Pin 10	H/W RESET+

### 2. Touch Screen 4,5,8-Wire Selection (JP2):



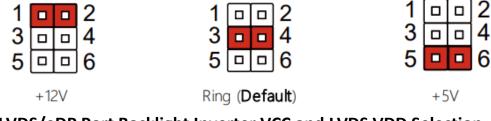
1	2	3

5-Wire Mode (Default)

### 3. Auto Power Button Enable/Disable Selection (JP3):



#### 4. COM2 Pin8 Function Selection (JP4):



5. LVDS/eDP Port Backlight Inverter VCC and LVDS VDD Selection (JP5):

Backlight VCC Selection			) Selection
1 • • 2 3 • • 4 5 • • 6	1	1 • • 2 3 • • 4 5 • • 6	1
+12V	+5V (Default)	+3.3V ( <b>Default</b> )	+5V

Note: JP5 Default is two (2) jumpers placed on pins 3-5 and pins 2-4.

### 6. LVDS/eDP Port Backlight Lightness Control Mode (JP6):



	1	2	3	
PWM	Mo	de	(De	fault)

### 7. Clear CMOS Jumper (JP9):

	1	2	3	
No	rma	l (D	efault)	

1	2	3
Clea	r CN	NOS

#### 8. List of Connectors :

Please refer to the table below for all of the board's connectors that you can configure for your application

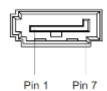
Label	Function
CN1	+5V Output for SATA HDD
CN2	SATA Port
CN3	External Power Input
CN5	Audio I/O Port
CN6	External +5VSB Input
CN7	DDR4 SO-DIMM Slot
CN8	COM Port 3, Port 4; RS232/422/485 Dual Port Header
CN10	Mini Card Slot (Full-Size)
CN11	DDR4 SO-DIMM Slot
CN12	M.2 E Key 2230
CN13	COM Port 1, Port 2; RS232/422/485 Dual Port Header
CN15	Touch Screen Connector (Optional)
CN16	eSPI Debug Port
CN17	Digital I/O Port
CN18	LVDS/eDP Port
CN19	Nano SIM Card Socket
CN21	USB2.0 Port 5, Port 6; Dual Port Header
CN22	LVDS/eDP Port Inverter/ Backlight Connector
CN23	CPU Fan
CN26	USB3.2 Gen 2 Port 1, Port 2, Dual Port Connector
CN27	LAN (RJ-45) Dual Port Connector; i225 (left), i219 (right)
CN28	DP Connector
CN29	DP and HDMI Connector
CN30	Type C Connector (USB3.2 Gen 2 Only)
CN31	Battery Connector
CN32	SPI BIOS Debug Port
CN33	M.2 M Key 2280
CN35	USB3.2 Gen 2 Port 3, Port 4, Dual Port Connector
CN36	i219 LED Connector
CN37	i225 LED Connector

#### 9. +5V Output for SATA HDD (CN1):

		5V 5 GND	
Pin	Pin Name	Signal Type	Signal Level
1	+5V	PWR	+5V at 1A
2	GND	GND	

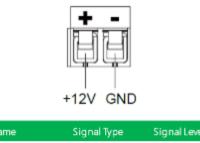
Note: Max current for Pin 1 is 1 Amp.

#### 10. SATA Port (CN2):



Pin	Pin Name	Signal Type	Signal Level	
1	GND	GND		
2	SATA_TX+	DIFF		
3	SATA_TX	DIFF		
4	GND	GND		
5	SATA_RX	DIFF		
6	SATA_RX+	DIFF		
7	GND	GND		

#### **10.** External Power Input (CN3):



Pin	P in Name	Signal Type	Signal Level
1	+ 12V	PWR	+9~+36V (or +12V) at 8A
2	GND	GND	

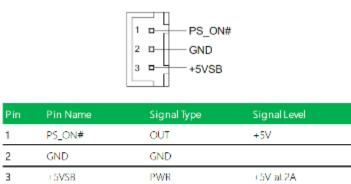
There are two types of power input, 9~36V or 12V (by BOM option).

### 11. Audio I/O Port (CN5):

F		
1		2
3		4
3 5 7		6 8
9		10
11		12

Pin	Pin Name	Signal Type
1	LOUT_R	OUT
2	MIC_R	IN
3	LOUT_L	OUT
4	MIC_L	IN
5	JD_LOUT	IN
6	JD_MIC	IN
7	AUD_GND	GND
8	AUD_GND	GND
9	JD_LIN	IN
10	LIN_R	IN
11	+VDD_AUD	PWR
12	LIN_L	IN

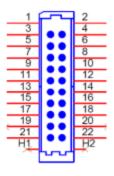
#### 12. External +5VSB Input (CN6):



#### 13. DDR SO-DIMM Slot (CN7):

Standard Specifications

#### 14. COM Port3, Port 4 Dual Header (CN8):



#### RS-232

Pin	Pin	Pin Name	Signal Type	Signal Level
1	2	DCD	IN	
3	4	RX	IN	
5	6	TX	OUT	±5V
7	8	DTR	OUT	±5V
9	10	GND	GND	
11	12	DSR	IN	
13	14	RTS	OUT	±5V
15	16	CTS	IN	
17	18	RI	IN	
19	20	NC		

#### RS-485

			100	
Pin	Pin	Pin Name	Signal Type	Signal Level
1	2	RS485_D-	I/O	±5V
3	4	RS485_D+	I/O	±5V
5	6	NC		
7	8	NC		
9	10	GND	GND	
11	12	NC		
13	14	NC		
15	16	NC		
17	18	NC		
19	20	NC		

			NJ-422	
Pin	Pin	Pin Name	Signal Type	Signal Level
1	2	RS422_TX-	OUT	+5V
3	4	RS422_TX+	OUT	±5V
5	6	RS422_RX+	IN	
7	8	RS422_RX-	IN	
9	10	GND	GND	
11	12	NC		
13	14	NC		
15	16	NC		
17	18	NC		
19	20	NC		

RS-422

# 15. Mini Card Slot (Full-Size) (CN10):

Pin	Pin Name	Signal Type	Signal Level
1	PCIE_WAKE#	IN	
2	+3.3VSB	PWR	+3.3V
3	NC		
4	GND	GND	
5	NC		
6	+1.5V	PWR	+1.5V
7	PCIE CLK REQ#	IN	
8	UIM_PWR	PWR	
9	GND	GND	
10	UIM_DATA	I/O	
11	PCIE_REF_CLK-	DIFF	
12	UIM_CLK	IN	
13	PCIE_REF_CLK+	DIFF	
14	UIM_RST	IN	
15	GND	GND	
16	UIM_VPP	PWR	
17	NC		
18	GND	GND	
19	NC		
20	W_DISABLE#	OUT	+3.3V
21	GND	GND	
22	PCIE_RST#	OUT	+3.3V
23	PCIE_RX-	DIFF	
24	+3.3VSB	PWR	+3.3V

25	PCIE_RX+	DIFF	
26	GND	GND	
27	GND	GND	
28	+1.5V	PWR	+1.5V
29	GND	GND	
30	SMB_CLK	I/O	+3.3V
31	PCIE_TX-	DIFF	
32	SMB_DATA	I/O	+3.3V
33	PCIE_TX+	DIFF	
34	GND	GND	
35	GND	GND	
36	USB_D-	DIFF	
37	GND	GND	
38	USB_D+	DIFF	
39	+3.3VSB	PWR	+3.3V
40	GND	GND	
41	+3.3VSB	PWR	+3.3V
42	NC		
43	GND	GND	
44	NC		
45	NC		
46	NC		
47	NC		
48	+1.5V	PWR	+1.5V
49	NC		
50	GND	GND	
51	NC		
52	+3.3VSB	PWR	+3.3V
	•		•

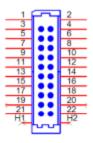
# 16. DDR SO-DIMM Slot (CN11):

Standard Specification

## 17. M.2 E-Key 2230 (CN12):

Standard Specification

## 18. COM Port1, Port 2 Dual Header (CN13):



#### RS-232

Pin	Pin	Pin Name	Signal Type	Signal Level
1	2	DCD	IN	
3	4	RX	IN	
5	6	ТХ	OUT	±5V
7	8	DTR	OUT	±5V
9	10	GND	GND	
11	12	DSR	IN	

Pin	Pin	Pin Name	Signal Type	Signal Level
13	14	RTS	OUT	±5V
15	16	CTS	IN	
17	18	RI/+5V/+12V	IN	
19	20	NC		

Note: RI/+5V/+12V for COM2 only.

RS-485					
Pin	Pin	Pin Name	Signal Type	Signal Level	
1	2	RS485_D-	I/O	±5V	
3	4	RS485_D+	I/O	±5V	
5	6	NC			
7	8	NC			
9	10	GND	GND		
11	12	NC			
13	14	NC			
15	16	NC			
17	18	NC			
19	20	NC			

RS-422					
Pin	Pin	Pin Name	Signal Type	Signal Level	
1	2	RS422_TX-	OUT	+5V	
3	4	RS422_TX+	OUT	±5V	
5	6	RS422_RX+	IN		
7	8	RS422_RX-	IN		
9	10	GND	GND		
11	12	NC			
13	14	NC			
15	16	NC			
17	18	NC			
19	20	NC			

Note 1: COM2 RS-232/422/485 can be set by BIOS setting. Default is RS-232.

Note 2: Pin 8 function can be set by JP4 (See Ch 2.3.4).

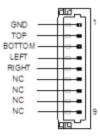
### 19. Touchscreen Connector (option) (CN15):

Note: Touch mode can be set by BIOS.

	1	Ē	],
GND	-	- 0	Ľ.
TOP EXCITE	$\rightarrow$		
BOTTOM EXCITE			
LEFT EX CITE	$\rightarrow$		
RIGHT EX CITE	$\rightarrow$		
TOP SENSE	$\rightarrow$		
BOTTOM SENSE	$\rightarrow$		
LEFT SENSE			
RIGHT SENSE			9
	1	hر س	

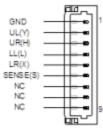
#### 8-Wire Mode

Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	TOP EXCITE	IN	
3	BOTTOM EXCITE	IN	
4	LEFT EXCITE	IN	
5	RIGHT EXCITE	IN	
6	TOP SENSE	IN	
7	BOTTOM SENSE	IN	
8	LEFT SENSE	IN	
9	RIGHT SENSE	IN	



4-Wire Mode

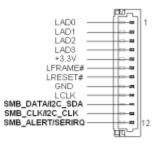
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	TOP	IN	
3	BOTTOM	IN	
4	LEFT	IN	
5	RIGHT	IN	
6	NC		
7	NC		
8	NC		
9	NC		



5-Wire Mode

Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	UL(Y)	IN	
3	UR(H)	IN	
4	LL(L)	IN	
5	LR(X)	IN	
6	SENSE(S)	IN	
7	NC		
8	NC		
9	NC		

# 20. eSPI Debug Port (CN16):



Pin	Pin Name	Signal Type	Signal Level
1	LAD0	I/O	+3.3V
2	LAD1	I/O	+3.3V
3	LAD2	I/O	+3.3V
4	LAD3	I/O	+3.3V
5	+3.3V	PWR	+3.3V
6	LFRAME#	IN	
7	LRESET#	OUT	+3.3V
8	GND	GND	
9	LCLK	OUT	
10	SMB_DATA/I2C_SDA	I/O	
11	SMB_CLK/12C_CLK	OUT	
12	SMB_ALERT/SERIRQ	IN	+3.3V

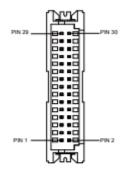
Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V at 0.5A
2	USB5_D-	DIFF	
3	USB5_D+	DIFF	
4	GND	GND	
5	GND	GND	

## 21. Digital I/O Connector (CN17):

DIO0 - 🖬 🚅	
DIO2	- DIO3
	- DIO5
DIO6	- DIO7
+5V -	- GND

Pin	Signal Description	Pin	Signal Description
1	PD0	2	PD1
3	PD2	4	PD3
5	PD4	6	PD5
7	PD6	8	PD7
9	+V5S (0.5A)	10	GND

## 22. LVDS/eDP Port (CN18):

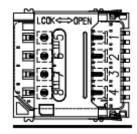


Note: LVDS LCD\_PWR can be set to +3.3V or +5V by JP5. (See Ch 2.3.5) Note: LVDS LCD\_PWR supports current of 2A

Pin	LVDS	eDP	Signal Type	Signal Level
1	BKL_ENABLE	BKL_ENABLE	OUT	
2	BKL_CONTROL	BKL_CONTROL	OUT	
3	LCD_PWR	LCD_PWR	PWR	+3.3V/+5V
4	GND	GND	GND	
5	LVDS_A_CLK-	eDP_TXN3	DIFF	
6	LVDS_A_CLK+	eDP_TXP3	DIFF	
7	LCD_PWR	LCD_PWR	PWR	+3.3V/+5V
8	GND	GND	GND	
9	LVDS_DA0-	eDP_TXN2	DIFF	
10	LVDS_DA0+	eDP_TXP2	DIFF	
11	LVDS_DA1-	eDP_TXN1	DIFF	
12	LVDS_DA1+	eDP_TXP1	DIFF	
13	LVDS_DA2-	eDP_TXN0	DIFF	
14	LVDS_DA2+	eDP_TXP0	DIFF	
15	LVDS_DA3-	NC	DIFF	
16	LVDS_DA3+	eDP_HPD	DIFF	
17	DDC_DATA	eDP_AUX_N	I/O	+3.3V
18	DDC_CLK	eDP_AUX_P	I/O	+3.3V
19	LVDS_DB0-	NC	DIFF	
20	LVDS_DB0+	NC	DIFF	
21	LVDS_DB1-	NC	DIFF	
22	LVDS_DB1+	NC	DIFF	
23	LVDS_DB2-	NC	DIFF	
24	LVDS_DB2+	NC	DIFF	
25	LVDS_DB3-	NC	DIFF	
26	LVDS_DB3+	NC	DIFF	

27	LCD_PWR	LCD_PWR	PWR	+3.3V/+5V
28	GND	GND	GND	
29	LVDS_B_CLK-	NC	DIFF	
30	LVDS_B_CLK+	NC	DIFF	

# 23. Nano SIM Card Socket (CN19):



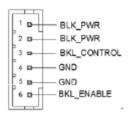
Pin	Pin Name	Signal Type	Signal Level
1	UIM_PWR	PWR	-
2	UIM_RST	IN	
3	UIM_CLK	IN	-
4	NC		
5	GND	GND	-
5	UIM_VPP	PWR	-
7	UIM_DATA	1/0	_
3	NC		-

## 24. USB 2.0 Port 5, Port6 Dual Header (CN21):

-	_	_	
$\sqrt{1}$	_	_	2
	Ш.	ш	~
3 5			4
			6 8
7			8
9			10
	Г	7	

	USB Port 5		USB Port 6
Pin	Pin Name	Pin	Pin Name
1	+5VSB (0.5A)	2	+5VSB (0.5A)
3	USB5_D-	4	USB6_D-
5	USB5_D+	6	USB6_D+
7	GND	8	GND
9	GND	10	GND

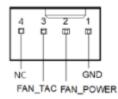
#### 25. LVDS/eDP Port Inverter/Backlight Connector (CN22):



Pin	Pin Name	Signal Type	Signal level
1	BKL_PWR	PWR	+5V / +12V
2	BKL_PWR	PWR	+5V / +12V
3	BKL_CONTROL	OUT	
4	GND	GND	
5	GND	GND	•
6	BKL_ENABLE	OUT	+3.3V

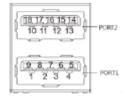
Note 1: LVDS BKL\_PWR can be set to +5V or +12V by JP5. (See Ch 2.3.5) Note 2: LVDS BKL\_PWR supports current of 1.5A Note 3: LVDS BKL\_CONTROL can be set by JP6. (See Ch 2.3.6)

#### 26. CPU Fan (CN23):



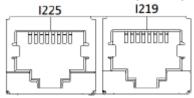
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	FAN_POWER	PWR	+12V at 1A
3	FAN_TAC	IN	
4	NC		-

#### 27. USB 3.2 Gen 2 Ports 1&2 Dual Connector (CN26):



Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V at 0.9A
2	USB0_D-	DIFF	
3	USB0_D+	DIFF	
4	GND	GND	
5	USB0_SSRX-	DIFF	
6	USB0_SSRX+	DIFF	
7	GND	GND	
8	USB0_SSTX-	DIFF	
9	USB0_SSTX+	DIFF	
10	+5VSB	PWR	+5V at 0.9A
11	USB1_D-	DIFF	·
12	USB1_D+	DIFF	
13	GND	GND	
14	USB1_SSRX-	DIFF	·
15	USB1_SSRX+	DIFF	
16	GND	GND	
17	USB1_SSTX-	DIFF	
18	USB1_SSTX+	DIFF	

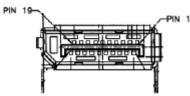
# 28. LAN (RJ-45) Dual Port i225 and i219 (CN27):



	i225		i219
Pin	Pin Name	Pin	Pin Name
1P1	LAN2_MDI0_P	2P1	LAN1_MDI0_P
1P2	LAN2_MDI0_N	2P2	LAN1_MDI0_N
1P3	LAN2_MDI1_P	2P3	LAN1_MDI1_P
1P4	LAN2_MDI1_N	2P4	LAN1_MDI1_N
1P7	LAN2_MDI2_P	2P7	LAN1_MDI2_P

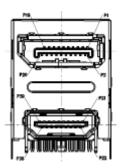
1P8	LAN2_MDI2_N	2P8	LAN1_MDI2_N
1P9	LAN2_MDI3_P	2P9	LAN1_MDI3_P
1P10	LAN2_MDI3_N	2P10	LAN1_MDI3_N

# 29. DP Connector (CN28):



Pin	Pin Name	Signal Type	Signal Level
1	DP1_TX0_DP	DIFF	
2	GND	GND	
3	DP1_TX0_DN	DIFF	
4	DP1_TX1_DP	DIFF	
5	GND	GND	
6	DP1_TX1_DN	DIFF	
7	DP1_TX2_DP	DIFF	
8	GND	GND	
9	DP1_TX2_DN	DIFF	
10	DP1_TX3_DP	DIFF	
11	GND	GND	
12	DP1_TX3_DN	DIFF	
13	GND	GND	
14	GND	GND	
15	DP1_AUX_DP	I/O	
16	GND	GND	
17	DP1_AUX_DN	I/O	
18	DP1_HPD	I/O	
19	GND	GND	
20	+V3P3S	PWR	+3.3V

## **30.** DP + HDMI Connector (CN29):



Pin	Pin Name	Signal Type	Signal Level
		DP Port	
1	DP2_TX0_DP	DIFF	
2	GND	GND	
3	DP2_TX0_DN	DIFF	
4	DP2_TX1_DP	DIFF	
5	GND	GND	
6	DP2_TX1_DN	DIFF	•
7	DP2_TX2_DP	DIFF	
	DP2_TX1_DN	DIFF	

8	GND	GND	
9	DP2_TX2_DN	DIFF	
10	DP2_TX3_DP	DIFF	
11	GND	GND	
12	DP2_TX3_DN	DIFF	
13	GND	GND	
14	GND	GND	
15	DP2_AUX_DP	I/O	
16	GND	GND	
17	DP2_AUX_DN	I/O	
18	DP2_HPD	I/O	
19	GND	GND	
20	+V3P3S	PWR	+3.3V
		HDMI Port	
21	HDMI_TX2+	HDMI Port DIFF	
21 22	HDMI_TX2+ GND	•	
		DIFF	· · · · · · · · · · · · · · · · · · ·
22	GND	DIFF	· · · · · · · · · · · · · · · · · · ·
22 23	GND HDMI_TX2-	DIFF GND DIFF	
22 23 24	GND HDMI_TX2- HDMI_TX1+	DIFF GND DIFF DIFF	
22 23 24 25	GND HDMI_TX2- HDMI_TX1+ GND	DIFF GND DIFF DIFF GND	
22 23 24 25 26	GND HDMI_TX2- HDMI_TX1+ GND HDMI_TX1-	DIFF GND DIFF DIFF GND DIFF	
22 23 24 25 26 27	GND HDMI_TX2- HDMI_TX1+ GND HDMI_TX1- HDMI_TX0+	DIFF GND DIFF DIFF GND DIFF DIFF	
22 23 24 25 26 27 28	GND HDMI_TX2- HDMI_TX1+ GND HDMI_TX1- HDMI_TX0+ GND	DIFF GND DIFF DIFF GND DIFF DIFF GND	
22 23 24 25 26 27 28 29	GND HDMI_TX2- HDMI_TX1+ GND HDMI_TX1- HDMI_TX0+ GND HDMI_TX0-	DIFF GND DIFF GND DIFF DIFF DIFF GND DIFF DIFF	
22 23 24 25 26 27 28 29 30	GND HDMI_TX2- HDMI_TX1+ GND HDMI_TX1- HDMI_TX0+ GND HDMI_TX0- HDMI_TX0-	DIFF GND DIFF GND DIFF DIFF GND DIFF GND DIFF DIFF DIFF	

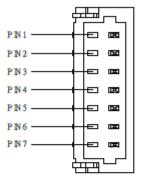
33	NC			
34	NC			
35	DDC_CLK	I/O	+5V	
36	DDC_DATA	I/O	+5V	
37	GND	GND		
38	+5V	PWR	+5V	
39	HDMI_HPD			

# 31. Battery Connector (CN31):

Pin	Pin Name	Signal Type	Signal Level
1	+3.3V	PWR	3.3V
2	GND	GND	

1 2

## 32. SPI BIOS Debug Port (CN32):

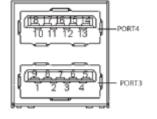


Pin	Pin Name	Signal Type	Signal Level
1	SPI_MISO	OUT	
2	GND	GND	
3	SPI_CLK	IN	
4	+3.3VSB	PWR	+3.3V
5	SPI_MOSI	IN	
6	SPI_CS	IN	
7	NC		

### 33. M.2 M-Key 2280 slot (CN33):

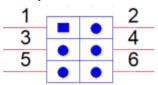
Standard Specification

## 34. USB 3.2 Gen 2 Ports 3&4 Dual Connector (CN35):



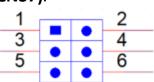
Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V at 0.9A
2	USB2_D-	DIFF	
3	USB2_D+	DIFF	
4	GND	GND	
5	USB2_SSRX-	DIFF	
6	USB2_SSRX+	DIFF	
7	GND	GND	_
8	USB2_SSTX-	DIFF	
9	USB2_SSTX+	DIFF	
10	+5VSB	PWR	+5V at 0.9A
11	USB3_D-	DIFF	
12	USB3_D+	DIFF	
13	GND	GND	
14	USB3_SSRX-	DIFF	
15	USB3_SSRX+	DIFF	
16	GND	GND	
17	USB3_SSTX-	DIFF	
18	USB3_SSTX+	DIFF	·
			•

## 35. i219 LED Connector (CN36):



Pin	Pin Name	Signal Type	Signal Level
1	LINK_ACT#	IO	·
2	+V3P3A	PWR	+3.3V
3	LAN_1000#	IO	
4	LAN_100#	10	
5	LAN_100#	ю	
6	LAN_1000#	IO	

**36.** i225 LED Connector (CN37):



Pin	Pin Name	Signal Type	Signal Level
1	LINK_ACT#	ю	
2	+V3P3A	PWR	+3.3V
3	LAN_2500#	10	
4	LAN_1000#	ю	
5	LAN_1000#	10	
6	LAN_2500#	Ю	

## 3.1 System Test and Initialization

The GENE-TGU6 board uses certain routines to perform testing and initialization during the boot up sequence. If an error, fatal or non-fatal, is encountered, the module will output a few short beeps or display an error message. The module can usually continue the boot up sequence with non-fatal errors.

The system configuration verification routines check the current system configuration against the values stored in the CMOS memory and BIOS NVRAM. If a system configuration is not found or an error is detected, the module will load the default configuration and reboot automatically.

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

1. You are starting your system for the first time

2. You have changed the hardware attached to your system

3. The system configuration was reset by the Clear-CMOS jumper

 The CMOS memory has lost power and the configuration information has been erased.

The system CMOS memory has an integral lithium battery backup for data retention. You will need to replace the battery unit when it runs down.

# 3.2 AMI BIOS Setup

The AMI BIOS ROM has a pre-installed Setup program that allows users to modify basic system configurations, which is stored in the battery-backed CMOS RAM and BIOS NVRAM so that the information is retained when the power is turned off.

To enter BIOS Setup, press <Del> or <ESC> immediately while your computer is powering up.

The function for each interface can be found below.

Main - Date and time can be set here. Press < Tab> to switch between date elements

Advanced - Access advanced hardware settings and Hardware Monitor

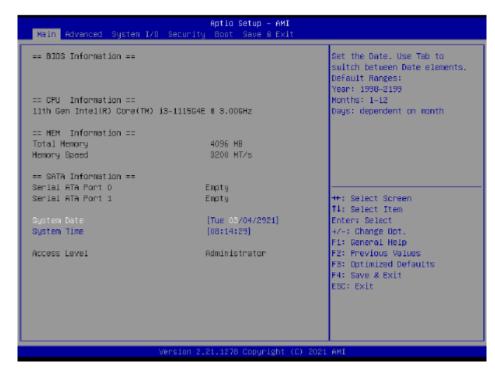
Chipset - Chipset settings and options

Security - Set admin and user passwords, access secure boot options

Boot-Boot options including BBS priority and Quiet Boot options

Save & Exit - Save your changes and exit the program

# 3.3 Setup Submenu: Main



# 3.4 Setup Submenu: Advanced

Display Information       Graphics Configuration         System Information       Graphics Configuration         CPU Configuration       Handware Monitor         Handware Monitor       POH-FM Configuration         AREON Features       Power Management         AREON BIDS Robot       #+: Select Screen         In-Bend ECC Support       [Disabled]         TEN GBE Configuration       #+: Select Item         Enter: Select       */-: Change Opt.         F1: Beneral Help       F2: Freevious Values         F2: Previous Values       F3: Optimized Defaults         F4: Save & Exit       ESC: Exit	Hain Advanced System I/0 Se	Aptic Setup – AMI curity Boot Save & Exi	
	<ul> <li>Graphics Configuration</li> <li>System Information</li> <li>CPU Configuration</li> <li>Hemory Configuration</li> <li>Henduare Monitor</li> <li>PCH-FW Configuration</li> <li>AFEON Features</li> <li>POwer Management</li> <li>AFEON BIDS Robot</li> <li>In-Bend ECC Support</li> </ul>	[Disabled]	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit

Options Summary				
In-Band ECC Support	Disabled			
	Enabled	Optimal Default; Failsafe Default		
Enable/Disabled In-Band E	CC Support			
In-Band ECC Error	Enabled			
Injection	Disabled	Optimal Default, Failsafe Default		
By enabling this Error Injection feature, the user acknowledges the security risks. Enabling Error Injection allows attackers who have access to the Host Operating System to inject IBECC errors that can cause unintended memory corruption and enable the leak of security data in the BIOS stolen memory regions.				
In-Band ECC Operation	0			
Mode	1			
	2	Optimal Default, Failsafe Default		
0: Functional Mode protects requests based on the address range,				
1: Makes all requests non-protected and ignore range checks,				
2: Makes all requests protected and ignore range checks				

Options Summary		
IBECC Protect Region 0-7	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disabled In-Band ECC for Region 0-7		

Note: In-Band ECC Support availability depends on CPU.

### 3.4.1 Graphics Configuration

Aptio Setup - Advanced	пМI	
Graphics Configuration	Configure LVDS panel parenators.	
▶ LVOS Panel Configuration		
	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.21.1278 Copyright (C) 2021 AMI		

### 3.4.1.1 LVDS Panel Configuration

Advanced	Aptio Setup — AMI	
LVDS Panel Configuration		Enable/Disabled this panel
LVDS/eDP	(Disabled)	
		<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>
Versi	an 2.21.1278 Copyright (C) 20:	21 AMI

Options Summary		
LVDS/eDP	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disabled this panel.		
LVDS Panel Type	640X480@60HZ	
	800X480@60HZ	
	800X600@60HZ	
	1024X600@60HZ	
	1024X768@60HZ	Optimal Default, Failsafe Default
	1280X768@60HZ	
	1280X800@60HZ	
	1280X1024@60HZ	
	1366X768@60HZ	
	1440X900@60HZ	
	1600X1200@60HZ	
	1920X1080@60HZ	
	1920X1200@60HZ	

Options Summary		
	nternal Graphics Device	by selecting the appropriate
setup item.		
Color Depth	18-bit	Optimal Default, Failsafe Default
	24-bit	
	36-bit	
	48-bit	
Select panel type	•	•
Backlight Mode	BIOS & Application	
-	Windows Slider	Optimal Default, Failsafe Default
Select backlight control sig	nal type	· · ·
Backlight Type	Normal	Optimal Default, Failsafe Default
	Inverted	
Select backlight control sig	nal type	•
Backlight Level	0%	
	10%	
	20%	
	30%	
	40%	
	50%	
	60%	
	70%	
	80%	Optimal Default, Failsafe Default
	90%	
	100%	
Select backlight control lev	el	•
Backlight PWM Freq	100Hz	
	200Hz	
	220Hz	Optimal Default, Failsafe Default
	500Hz	
	1.1KHz	
	2.2KHz	
	6.5KHz	
Select PWM frequency of b	acklight control signal	
Swing Level	150mV	
	200mV	
	250mV	
	300mV	Optimal Default, Failsafe Default
	350mV	
	400mV	
L	1	•

Options Summary		
Swing Level	450mV	
Select Swing Level		
Center Spreading Depth	no spreading	Optimal Default, Failsafe Default
	0.5%	
	1.0%	
	1.5%	
	2.0%	
	2.5%	
Select Center Spreading Depth		

Options Summary		
Platform Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or disable Platform H	lierarchy	
Storage Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Storage H	ierarchy	
Endorsement Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Endorsement Hierarchy		
TPM2.0 UEFI Spec Version	TCG_1_2	
	TCG_2	Optimal Default, Failsafe Default
Select the TCG2 Spec Version Support,		
TCG_1_2: Compatible mode	for Win8/Win10	
TCG_2: Support new TCG2 p	rotocol and event form	at for Win10 or later
Physical Presence Spec	1.2	
Version	1.3	Optimal Default, Failsafe Default
Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not		
support 1.3.		

### 3.4.2 CPU Configuration

Aptio Setup - AMI Advanced		
CPU Configuration		When enabled, a VMM can utilize the additional
Туре	11th Gen Intel(R) Core(TM) i5−114587E € 2.60GHz	hardware capabilities provided by Vanderpool Technology.
ID	0x80601	
Speed	2600 MHz	
Li Data Cache	48 KB × 4	
Li Instruction Cache	32 KB × 4	
L2 Cache	1280 KB × 4	
L3 Cache	8 MB	
L4 Cache	N/A	
VMX	Supported	
SMX/TXT	Supported	**: Select Screen T4: Select Iten
		Enter: Select
		+/-: Change Opt.
Intel(R) SpeedStep(tm)	[Enabled]	F1: General Help
Turbo Node	[Enabled]	F2: Previous Values
Tar as most	[en das secol	F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

Options Summary			
Intel (VMX) Virtualization	Disabled		
Technology	Enabled	Optimal Default, Failsafe Default	
When enabled, a VMM can utilize the additional hardware capabilities provided by			
Vanderpool Technology.			
Intel(R) SpeedStep(tm)	Disabled		
	Enabled	Optimal Default, Failsafe Default	
Allows more than two frequ	Allows more than two frequency ranges to be supported.		
Turbo Mode	Disabled		
	Enabled	Optimal Default, Failsafe Default	
Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled.			

#### 3.4.3 Memory Configuration



#### 3.4.4 Hardware Monitor

		Enable or Disable Smart Fan
System Temperature	: 430 %	
	: +27 %	
CPU(PECI) Temperature		
System FAN	: 2189 RPM	
CORE	: +1.720 V	
+12V	: +11.786 V	
+5V	: +5.129 V	
MEM	: +1.136 V	
F3,3V	: +3,312 V	
IVSB	: +3.296 V	
5VSB	: +5.112 V	
/BAT	: +3.088 V	++: Select Screen
		14: Select Iten
		Enter: Select
Smart Fan Mode Configuration		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

Options Summary		
Smart Fan	Disabled	
	Enabled	Optimal Default; Failsafe Default
Enable or Disable Smart Fan		

#### 3.4.4.1 Smart Fan Mode Configuration

#### Auto Duty Cycle Mode

Fan 1 Smart Fan Control Temperature Source Temperature 1 Temperature 2 Temperature 3 Temperature 4	[Output PHM mode (oush pull)] [Auto Outy-Cycle Mode] [cru] 60 50 40	control 4-wire fans. Linear fan application circuï to control 3-wire fan speed b fan's power terninal. Output PRM mode (open drain) to control Intel 4-wire fans.
Fan 1 Smart Fan Control Temperature Source Temperature 1 Temperature 2 Temperature 3 Temperature 4	[Auto Duty-Cycle Mode] [CPU] 50	fan's power terminal. Output FWM mode (open drain)
Temperature Source Temperature 1 Temperature 2 Temperature 3 Temperature 4	[CPU] 60 50	
Temperature 2 Temperature 3 Temperature 4	50	to control Intel 4-wire fans.
Temperature 3 Temperature 4	•••	
Temperature 4	40	
	30	
Duty Eycle 1	85	
Duty Cycle 2	70	
	60	
	50	++: Select Screen
Duty Cycle 5	40	14: Select Iten
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

Options Summary		
FAN1 Output Mode	Output PWM mode	
	(push pull)	
	Linear Fan Application	
	Output PWM mode (open drain)	Optimal Default, Failsafe Default
Output PWM mode (p	bush pull) to control 4-wire f	ans.\nLinear fan application circuit
to control 3-wire fan s	peed by fan's power termina	al. \nOutput PWM mode (open
drain) to control Intel	4-wire fans.	
Fan 1 Smart Fan	Manual Duty Mode	
Control	Auto Duty-Cycle Mode	Optimal Default, Failsafe Default
Smart Fan Mode Selec	t	
Temperature Source	CPU	Optimal Default, Failsafe Default
	System Temperature 2	
	System Temperature	
Select the monitored t	temperature source for this f	an.

Options Summary	
Duty Cyde	Auto fan speed control. Fan speed will follow different
Temperature	temperature by different duty cycle 1-100

#### Manual Duty Mode

Advanced	y – Copyright (C) 2020 Amer	
Smart Fan Mode Configuration		Smart Fan Node Select
FAN1 Output Mode	[Linear Fan Application]	
Fen 1 Smart Fen Control Manual Duty Mode	[Manual Duty Mode] 60	
		++: Select Screen 11: Select Item
		Enter: Select +/-: Change Opt.
		F1: Beneral Help F2: Previous Values
		FS: Dptimized Defaults F4: Save & Exit
		ESC: Exit
	. Copyright (C) 2020 Americ	

Options Summary		
Manual Duty Mode	60	Optimal Default, Failsafe Default
Manual mode fan control, user can write expected duty cycle (PWM fan type) 1-100		

### 3.4.5 PCH-FW Configuration

Advanced	Aptio Setup - AMI	
ME Firmware Version Firmware Update Configuration	15.0.23.1706	Configure Management Engine Technology Parameters
		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt.
		F1: Beneral Help F2: Previous Values F3: Dotimized Defaults F4: Save & Exit ESC: Exit
Version	n 2.21.1278 Copyright (C) 20	INN 130

### 3.4.5.1 Firmware Update Configuration

Advanced	Aptio Setup — AMI	
Ме FW Image Re-Flash FW Update	[Disəbled] [Enəbled]	Enable/Disable He FW Image Re-Flash function.
		<pre>#*: Select Screen tl: Select Item Enter: Select */-: Change Opt. Fi: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Ve	rsion 2.21.1278 Copyright (C	) 2021 AMI
ptions Summary		
le FW Image Re-Flash	Disabled	Optimal Default, Failsafe Defau
-	Enabled	
nable/Disable Me FW Ima	ge Re-Flash function.	
W Update	Disabled	

### 3.4.6 Power Management

Enable/Disable ME FW Update function.

Advanced	Aptio Setup — AMI	
Power Management		Select system power mode.
Power Hode Restore AC Power Loss	(ATX Type) [Last State]	
Weke Events RTC wake system from S5	(Disabled)	
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Enabled

Optimal Default, Failsafe Default

Options Summary		
Power Mode	ATX Type	Optimal Default, Failsafe Default
	AT Type	
Select system power mode		
Restore AC Power Loss	Last State	Optimal Default, Failsafe Default
	Always On	
	Always Off	
IO Restore AC power Loss		
RTC wake system from S5	Disable	Optimal Default, Failsafe Default
	Fixed Time	
	Dynamic Time	
	Bypass	
Fixed Time: System will wake on the hr::min::sec specified./n Dynamic Time: System		
will wake on the current time + Increase minute(s)./n Bypass: BIOS will not control		
RTC wake function during system shutdown		

### 3.4.7 BIOS Robot

Advanced	Aptio Setup — AMI	
AREON BIOS Robot		Enabled – Robot set Watch Dog Timer(WDT)
Sends watch dog before BIDS FDST POST Timer (second) Sends watch dog before booting DS OS Timer (minute) Delayed POST (PEI phase) Delayed time (second) Delayed FOST (DXE phase) Delayed time (second) Reset system once Soft or hard reset	(Disabled) S0 (Disabled) S (Disabled) 10 (Disabled) 10 (Disabled) (Soft reset)	right after power on, before BLOS start POST process. And then Robot will clear WDT on compeletion of PDST. WDT will reset system autonatically if it is not cleared before its timer counts down to zero.
Device detecting configuration		<pre>+*: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: Reneral Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version	2.21.1278 Copyright (C) 2021	. AMI

Options Summary			
Sends watch dog before	Disabled	Optimal Default, Failsafe Default	
BIOS POST	Enabled	optimal boldale, raibale boldale	
Enabled - Robot set Watch Dog Time r(WDT) right after power on, before BIOS start			
	•	n of POST. WDT will reset system	
automatically if it is not clea	red before its timer co	unts down to zero.	
POST Timer (second)	30	Optimal Default, Failsafe Default	
Timer count set to Watch D	og Timer for POST.		
WARNING: Do not set to a	value equal to or shor	ter than normal POST time,	
otherwise system may neve	er complete POST unles	ss clearing BIOS settings. More	
than twice the normal POS	T time is suggested.		
Sends watch dog before	Disabled	Optimal Default, Failsafe Default	
booting OS	Enabled		
Enabled - Robot set Watch	Dog Timer (WDT) after	r POST completion, before BIOS	
transfers control to OS.			
-		am in OS must be responsible for	
clearing WDT. Also, this fund	ction should be disable	ed if OS is going to update itself.	
Options Summary			
OS Timer (minute)	3	Optimal Default, Failsafe Default	
Timer count set to Watch D	og Timer for OS loadir	ng.	
Delayed POST (PEI phase)	Disabled	Optimal Default, Failsafe Default	
	Enabled		
Enabled - Robot holds BIOS from starting POST, right after power on. This allows			
BIOS POST to start with sta	ble power or start afte	r system is physically warmed-up.	
Note: Robot does this before 'Sends watch dog'.			
Delayed time (second)	10	Optimal Default, Failsafe Default	
Period of time for Robot to	hold BIOS from POST.		
Delayed POST (DXE	Disabled	Optimal Default, Failsafe Default	
	Enabled		
phase)	Enabled		
		tion. This allows BIOS POST to	
	S before POST complet		
Enabled - Robot holds BIO	S before POST complet tart after system is phy	sically warmed-up.	
Enabled - Robot holds BIO start with stable power or s	S before POST complet tart after system is phy	sically warmed-up.	
Enabled - Robot holds BIO start with stable power or s <b>Note</b> : Robot does this after	S before POST complet tart after system is phy 'Sends watch dog befo 10	sically warmed -up. pre BIOS POST'.	
Enabled - Robot holds BIO start with stable power or s <b>Note</b> : Robot does this after <b>Delayed time (second)</b>	S before POST complet tart after system is phy 'Sends watch dog befo 10	sically warmed -up. pre BIOS POST'.	
Enabled - Robot holds BIO start with stable power or s <b>Note</b> : Robot does this after <b>Delayed time (second)</b> Period of time for Robot to	S before POST complet tart after system is phy 'Sends watch dog befo 10 hold BIOS from POST.	sically warmed -up. ore BIOS POST'. Optimal Default, Failsafe Default	
Enabled - Robot holds BIO start with stable power or s <b>Note</b> : Robot does this after <b>Delayed time (second)</b> Period of time for Robot to <b>Reset system once</b>	S before POST complet tart after system is phy 'Sends watch dog befo 10 hold BIOS from POST. Disabled Enabled	sically warmed -up. ore BIOS POST'. Optimal Default, Failsafe Default	
Enabled - Robot holds BIO start with stable power or s <b>Note</b> : Robot does this after <b>Delayed time (second)</b> Period of time for Robot to <b>Reset system once</b>	S before POST complet tart after system is phy 'Sends watch dog befo 10 hold BIOS from POST. Disabled Enabled tem for one time on ear	sically warmed -up. ore BIOS POST'. Optimal Default, Failsafe Default Optimal Default, Failsafe Default ch boot. This will send a soft or	
Enabled - Robot holds BIO start with stable power or s <b>Note</b> : Robot does this after <b>Delayed time (second)</b> Period of time for Robot to <b>Reset system once</b> Enabled - Robot resets system	S before POST complet tart after system is phy 'Sends watch dog befo 10 hold BIOS from POST. Disabled Enabled tem for one time on ear	sically warmed -up. ore BIOS POST'. Optimal Default, Failsafe Default Optimal Default, Failsafe Default ch boot. This will send a soft or	
Enabled - Robot holds BIO start with stable power or s <b>Note</b> : Robot does this after <b>Delayed time (second)</b> Period of time for Robot to <b>Reset system once</b> Enabled - Robot resets syst hard reset to onboard device	S before POST complet tart after system is phy 'Sends watch dog befo 10 hold BIOS from POST. Disabled Enabled tem for one time on eacters, thus puts devices t	sically warmed -up. ore BIOS POST'. Optimal Default, Failsafe Default Optimal Default, Failsafe Default ch boot. This will send a soft or o more stable state.	

### 3.4.7.1 Device Detecting Configuration

### Action: Rest System

<pre>&gt; Device #1 detecting configuration &gt; Device #2 detecting configuration &gt; Device #3 detecting configuration &gt; Device #3 detecting configuration &gt; Device #4 detecting configuration &gt; Device #5 detecting configuration If any device is detected in unexpected condition, the robot will do following Action IReset System] Soft on hand reset ISoft1 Retry-Count S At time IAfter show logo] #*: Select Screen 11: Select Item Enter: Select */-: Change Opt. F1: General Help F2: Previous Value</pre>	Advanced	Aptio Setup - AMI	
At time [After show logo] ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: Deneral Help F2: Previous Value F3: Optimized Defa F4: Save & Exit	<ul> <li>Device #1 detecting configuration</li> <li>Device #2 detecting configuration</li> <li>Device #3 detecting configuration</li> <li>Device #4 detecting configuration</li> <li>Device #5 detecting configuration</li> <li>If any device is detected in unexpect condition, the robot will do followin Action</li> </ul>	g [Reset System]	Device #1 detecting configuration
	Retry-Count	3	14: Select Item Enter: Select 4/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit

Options Summary			
Action	Reset System	Optimal Default, Failsafe Default	
	Hold System		
Select action that robot sho	buld do.		
Soft or hard reset	Soft	Optimal Default, Failsafe Default	
	Hard		
Select reset type robot sho	uld send on each boot.		
Retry-Count	3	Optimal Default, Failsafe Default	
Fill retry counter here. Robot will reset system at most counter times, and then let			
system continue its POST.			
At time	After show logo	Optimal Default, Failsafe Default	
	Before show logo		
Select robot action time:			
After show logo – Robot will do action after logo is displayed. System devices are			
almost ready.			
Before show logo – Robot will do action earlier before logo, but some devices may			
not be ready.			

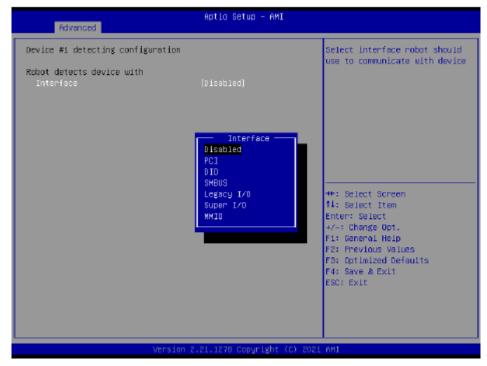
### Action: Hold System

Advanced	Aptio Setup - AMI	
Device detecting configuration • Device #1 detecting configuration • Device #2 detecting configuration • Device #3 detecting configuration • Device #4 detecting configuration • Device #5 detecting configuration If any device is detected in unexpect condition, the robot will do following Action Holding time out (second) At time		Select action that robot should do.
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Options Summary		
Action	Reset System	Optimal Default, Failsafe Default
	Hold System	
Select action that robot sho	ould do.	
Holding time out	10	Optimal Default, Failsafe Default
(second)		
Fill hold time out here. Rob	ot will hold system no l	longer then time-out value, and
then let system continue its	POST.	
At time	After show logo	Optimal Default, Failsafe Default
	Before show logo	
Select robot action time: After show logo - Robot will do actoin after logo is displayed. System devices are almost ready. Before show logo - Robot will do action earlier before logo, but some devices may not be ready.		

### 3.4.7.1.1 Device# Detecting Configuration

#### Interface: Disabled



Options Summary		
Interface	Disabled	Optimal Default, Failsafe Default
	PCI	
	DIO	
	SMBUS	
	Legacy I/O	
	Super I/O	
	MMIO	
Select interface robot should use to communicate with device.		

#### Interface: PCI

Advanced	Aptio Setup – AMI	
Device #1 detecting configurat	lon	Select the condition that robot should check for device.
Robot detects device with		Present - device is detected
Interface	(PCI)	According to register - Robot
BUS	0	read register according to
Device	0	configuration.
Function	0	Note: Device ulli be
		considered 'Present' by Robot,
Expecting		when data read from device is
Device	[is not]	not OxFF.
In condition	ISpecified register	
Register data is	lbitwise equal tol	++: Select Screen
Register offset	0	14: Select Item
Bit offset	0	Enter: Select
Bit value	(Lou)	+/-: Change Opt.
		Fi: General Help
		F2: Previous Values
		F3: Dptimized Defaults
		F4: Save & Exit
		ESC: Exit
		Device #1 detections
		Device #1 detecting c

Options Summary		
BUS	0	Optimal Default, Failsafe Default
Fill BUS number to a PCI	device, in hexadecimal. R	ange: 0 - FF
Device	0	Optimal Default, Failsafe Default
Fill DEVICE number to a F	CI device, in hexadecima	al. Range: 0 - FF
Function	0	Optimal Default, Failsafe Default
Fill FUNCTION number to a PCI device, in hexadecimal. Range: 0 - FF		
Device	is	
	ls not	Optimal Default, Failsafe Default
Select that robot should o	or should not do action if	condition met.
In condition	Present	Optimal Default, Failsafe Default
	Specified register data	
Select the condition that robot should check for device. Present - device is detected According to register - Robot read register according to configuration. <b>Note</b> : Device will be considered 'Present' by Robot, when data read from device is not 0xFF.		

Options Summary		
Register data is	bitwise equal to	Optimal Default, Failsafe Default
	bytewise equal to	
	bytewise lesser than	
	bytewise larger than	
Select how robot should	compare data read from	register, to a value configured
below.		
Register offset	0	Optimal Default, Failsafe Default
Fill register offset (or index) for robot to read, in hexadecimal. Range: 0 - FF		
Bit offset	0	Optimal Default, Failsafe Default
Fill bit offset for register, f	or robot to compare with	h bit value.
Bit value	Low	Optimal Default, Failsafe Default
	High	
Fill bit value for robot to compare register-bit with specified offset.		
Byte value	0	Optimal Default, Failsafe Default
Fill a byte value for robot to compare register data with, in hexadecimal.		
Range: 0 - FF		

Interface: DIO

Advanced	Aptio Setup — AMI	
Device #1 detecting configuration		Selet Device #1 detecting conf
Robot detects device with Interface DID pin number	(0 IO) (0 IOS)	USE to communicate with device
Expecting Device In High/Low level	(is not) [Low]	
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: OptImized Defaults F4: Save &amp; Exit ESC: Exit</pre>
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Options Summary		
Device	is	
	ls not	Optimal Default, Failsafe Default
Select that robot should or	should not do action if	condition met.
DIO pin number	DIO1	Optimal Default, Failsafe Default
	DIO*	
Fill DIO pin number. 0 - DIO0, 1 - DIO1, and so on.		
For COM express product: 0-3 - GPI0-3, 4-7 - GPO0-3		
Device	is	
	ls not	Optimal Default, Failsafe Default
Select that robot should or should not do action if condition met.		
In High/Low level	Low	Optimal Default, Failsafe Default
	High	
Select High/Low level of the DIO pin that robot should do action.		

Interface: SMBUS

Advanced	Aptio Setup — AMI	
Device #1 detecting configuration		Select interface robot should use to communicate with device
Robot detects device with Interface SMBUS Slave Address	(SMBUS) D	use to communicate with device
Expecting Device In condition	(is not) (Specified register date)	
Register data is Register offset	[bitwise equal to] O	
Bit offset Bit value	0 ILou]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: Beneral Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version	2.21.1278 Copyright (C) 2021	E AMI

Options Summary		
SMBUS Slave Address	0	Optimal Default, Failsafe Default
Fill slave address to a SM	MBUS device, in hexadecim	nal. Range: 0 - FF
Device	is	
	ls not	Optimal Default, Failsafe Default
Select that robot should	or should not do action if	condition met.
In condition	Present	Optimal Default, Failsafe Default
	Specified register data	
Select the condition that robot should check for device. Present - device is detected According to register - Robot read register according to configuration. <b>Note</b> : Device will be considered 'Present' by Robot, when data read from device is not 0xFF.		
Register data is	bitwise equal to	Optimal Default, Failsafe Default
	bytewise equal to	
	bytewise lesser than	
	bytewise larger than	
Select how robot should compare data read from register, to a value configured below.		

Options Summary			
Register offset	0	Optimal Default, Failsafe Default	
Fill register offset (or ind	lex) for robot to read, in he	exadecimal. Range: 0 - FF	
Bit offset	0	Optimal Default, Failsafe Default	
Fill bit offset for register,	Fill bit offset for register, for robot to compare with bit value.		
Bit value	Low	Optimal Default, Failsafe Default	
	High		
Fill bit value for robot to compare register-bit with specified offset.			
Byte value	0	Optimal Default, Failsafe Default	
Fill a byte value for robot to compare register data with, in hexadecimal.			
Range: 0 - FF			

### Interface: Legacy I/O

Advanced	Aptio Setup — AMI	
Device #1 detecting configuration		Select interface robot should
Robot detects device with Interface I/O Address	[Legacy I∕0] O	use to communicate with device
Expecting Device In condition	[is not] [Specified register data]	
Register data is Bit offset Bit value	Ibitwise equal tol O ILow)	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version :	2.21.1278 Copyright (C) 2021	- AMI

Options Summary		
I/O Address	0	Optimal Default, Failsafe Default
Fill I/O address device is	responding to. Range: 0~	FFFF
Device	is	
	ls not	Optimal Default, Failsafe Default
Select that robot should	or should not do action if	condition met.
In condition	Present	Optimal Default, Failsafe Default
	Specified register data	
Select the condition that robot should check for device.		
Present - device is detected		
According to register - Robot read register according to configuration.		
Note: Device will be considered 'Present' by Robot, when data read from device is		
not 0xFF.		
Register data is	bitwise equal to	Optimal Default, Failsafe Default
	bytewise equal to	
	bytewise lesser than	
	bytewise larger than	
Select how robot should compare data read from register, to a value configured		
below.		

Options Summary		
Bit offset	0	Optimal Default, Failsafe Default
Fill bit offset for register,	for robot to compare with	bit value.
Bit value	Low	Optimal Default, Failsafe Default
	High	
Fill bit value for robot to compare register-bit with specified offset.		
Byte value	0	Optimal Default, Failsafe Default
Fill a byte value for robot to compare register data with, in hexadecimal.		
Range: 0 - FF		

### Interface: Super I/O

Advanced	Aptio Setup - AMI	
Device #1 detecting configuration		Select interface robot should use to communicate with device
Robot detects device with Interface Super I/D LDN	(Super I∕D) D	use to communicate uith device
Expecting Device In condition	[is not] [Specified register data]	
Register data is Register offset Bit offset Bit value	lbitwise equal tol 0 0 [Low]	<pre>++: Select Screen t4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Dptimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
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Options Summary			
Super I/O LDN	0	Optimal Default, Failsafe Default	
Fill LDN number to a Su	per I/O device. Range: 0~	FF	
Device	is		
	ls not	Optimal Default, Failsafe Default	
Select that robot should	or should not do action if	condition met.	
In condition	Present	Optimal Default, Failsafe Default	
	Specified register data		
Select the condition that robot should check for device.			
Present - device is detected			
According to register - Robot read register according to configuration.			
Note: Device will be considered 'Present' by Robot, when data read from device is			
not 0xFF.	not 0xFF.		
Register data is	bitwise equal to	Optimal Default, Failsafe Default	
	bytewise equal to		
	bytewise lesser than		
	bytewise larger than		
Select how robot should compare data read from register, to a value configured			
below.			

Options Summary		
Register offset	0	Optimal Default, Failsafe Default
Fill register offset (or inde	ex) for robot to read, in he	exadecimal. Range: 0 - FF
Bit offset	0	Optimal Default, Failsafe Default
Fill bit offset for register, for robot to compare with bit value.		
Bit value	Low	Optimal Default, Failsafe Default
	High	
Fill bit value for robot to compare register-bit with specified offset.		
Byte value	0	Optimal Default, Failsafe Default
Fill a byte value for robot to compare register data with, in hexadecimal.		
Range: 0 - FF		

#### Interface: MMIO

Device #1 detecting configura	tion	Select interface robot should use to communicate with device
Robot detects device with		use to communicate with device
Interface	[DIMM]	
NMIO Address	0	
Expecting		
Device	[is not]	
In condition	[Specifled register date]	
	,	
Register data is	lbituise equal to	
Bit offset	0	
Bit value	[Lou]	++: Select Screen
		14: Select Item
		Enter: Select
		+/−: Change Opt. F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

Options Summary		
MMIO Address	0	Optimal Default, Failsafe Default
Fill Memory Mapped I/C	address device is respon	ding to. Range: 0~FFFFFFFF
Device	is	
	ls not	Optimal Default, Failsafe Default
Select that robot should	or should not do action if	condition met.
In condition	Present	Optimal Default, Failsafe Default
	Specified register data	
Select the condition that robot should check for device.		
Present - device is detected		
According to register - Robot read register according to configuration.		
Note: Device will be considered 'Present' by Robot, when data read from device is		
not 0xFF.		
Register data is	bitwise equal to	Optimal Default, Failsafe Default
	bytewise equal to	
	bytewise lesser than	
	bytewise larger than	
Select how robot should compare data read from register, to a value configured		
below.		

Options Summary			
Bit offset	0	Optimal Default, Failsafe Default	
Fill bit offset for register,	Fill bit offset for register, for robot to compare with bit value.		
Bit value	Low	Optimal Default, Failsafe Default	
	High		
Fill bit value for robot to compare register-bit with specified offset.			
Byte value	0	Optimal Default, Failsafe Default	
Fill a byte value for robot to compare register data with, in hexadecimal.			
Range: 0 - FF			

### 3.4.8 TSN GBE Configuration

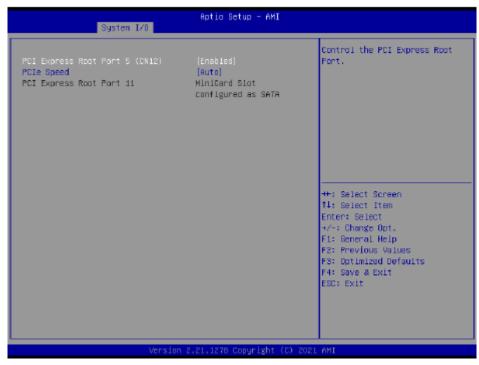
Hain	Aptio Setup – AMI	
PCH TSN LAN Controller Enable Timed TSN PCS PCH TSN Multi-Vc PCH TSN Port #1 Link Speed	[Enabled] [Disabled] [Disabled] [RefClk 3B.4Hhz 2.56bps]	Enable/Disable TSN LAN. ++: Select Screen 11: Select Item Enter: Select
		+/-: Change Opt. Fi: Beneral Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Options Summary		
PCH TSN LAN	Enabled	Optimal Default, Failsafe Default
Controller	Disabled	
Enable/Disable TSN LA	N	
Enable Timed TSN	Disabled	Optimal Default, Failsafe Default
PCS	Enabled	
Enable/Disable TSN PC	S. When enabled, TSN PCS	device will appear in ACPI table
PCH TSN Multi-Vc	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable PCH TS	N Multi Virtual Channels	
PCH TSN Port #1 Link	RefClk 24Mhz 2.5Gbps	
Speed	RefClk 24Mhz 1Gbps	Optimal Default, Failsafe Default
	RefClk 38.4Mhz	
	2.5Gbps	
	RefClk 38.4Mhz 1Gbps	
PCH TSN Link Speed config		

# 3.5 Setup Submenu: System I/O

System I/O PCI Express Configuration Storage Configuration	PCI Express Configuration settings
HD Audio Configuration Digital IO Port Configuration Legacy Logical Devices Configuration Serial Port Console Redirection	
PCH-IO Configuration	
	++: Select Screen
	14: Select Item Enter: Select +/-: Change Opt.
	Fi: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit
	ESC: Exit

#### 3.5.1 PCI Express Configuration



Options Summary		
PCI Express Root Port 5	Enabled	Optimal Default, Failsafe Default
(CN12) / Port11	Disabled	
Control the PCI Express Root Port.		
PCIe Speed	Auto	Optimal Default, Failsafe Default
	Gen1	
	Gen2	
	Gen3	
Control the PCI Express Speed		

### 3.5.2 Storage Configuration

Aptio Setup - AMI System I/0		
▶ NVMe Configuration		NVMe Device Options Settings
SATA Controller(s)	[Enabled]	
Serial ATA Port 1 Software Preserve Port 1 Hot Plug mSATA Port Software Preserve Port 0	Empty Unknown IEnobledi IDisabledi Empty Unknown [Enobled]	
		<pre>++: Select Screen t1: Select Item Enter: Select +/-: Change Opt. F1: Beneral Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
v	ersion 2.21.1278 Copyright	(C) 2021 AMI

Options Summary		
Disabled		
Enabled	Optimal Default, Failsafe Default	
ie.		
Disabled		
Enabled	Optimal Default, Failsafe Default	
Enable or Disable SATA Port		
Disabled	Optimal Default, Failsafe Default	
Enabled		
Designates this port as Hot Pluggable.		
	Enabled Enabled Enabled rt Disabled Enabled Enabled	

### 3.5.2.1 NVME Configuration

Aptic Setup - AMI Advanced	
NVMe Configuration	
No NVME Device Found	
	<pre>++: Select Screen 11: Select Item Enter: Select Item Enter: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.21.1278 Copyright (C) 2021	ANI

### 3.5.3 HD Audio Subsystem Configuration Settings

System I/O	Aptio Setup — AMI	
HD Audio Subsystem Configurat HD Audio	ion Settings [Enabled]	Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled.
		<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>
Ve	rsion 2.21.1278 Copyright (C	) 2021 AMI
Options Summary		
HD Audio	Disabled	
	Enabled	Optimal Default, Failsafe Defaul
Control Detection of the HI Disabled = HDA will be und		

Enabled = HDA will be unconditionally enabled.

### 3.5.4 Digital IO Port Configuration

System 1/0	Aptio Setup – AMI	
Digital IO Port Configuration 0101 Output Level 0102 Output Level 0103 Output Level 0104 Output Level 0105 0106 0107 0108	(Output) (High) (Output) (High) (Output) (High) (Output) (High) (Input 1) (Input 1) (Input 1) (Input 1) (Input 1) (Input 1) (Input 1)	Set DIO as Input or Output **: Select Screen 14: Select Item Enter: Select 4/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Options Summary		
DIO Port #	Output	
	Input	
Set DIO as Input or Output		-
Output Level	High	Optimal Default, Failsafe Default
	Low	
Set output level when DIO	pin is output	•

3.5.5 Legacy Logical Devices Configuration

AMI SIO Driver Version : A5.16.00	View and Set Basic properties of the SIO Logical device.
Super ID Chip Logical Device(s) Configuration	Like IO Base, IRQ Range, DMA
• [#Active*] Serial Port 1	Channel and Device Mode.
▶ [*Active*] Serial Port 2	
[#Active#] Serial Port 3	
▶ [*Active*] Serial Port 4	
WARNING: Logical Devices state on the left side of the control, reflects the current Logical Device state. Changes made during Setup Session will be shown after you restart the system.	
	++: Select Screen 14: Select Item
	tl: Select Item Enter: Select +/−: Change Opt.
	<pre>tl: Select Item Enter: Select +/-: Change Opt. F1: Beneral Help</pre>
	<pre>tl: Select Item Enter: Select +/-: Change Opt. F1: Beneral Help F2: Previous Values</pre>
	<pre>tl: Select Item Enter: Select +/-: Change Opt. F1: Beneral Help F2: Previous Values F3: Optimized Defaults</pre>
	<pre>tl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit</pre>
	<pre>tl: Select Item Enter: Select +/-: Change Opt. F1: Beneral Help F2: Previous Values F3: Optimized Defaults</pre>
	<pre>tl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit</pre>
	<pre>tl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit</pre>

### 3.5.5.1 Serial Port1 Configuration

System I/0	Aptio Setup — AMI	
Serial Port 1 Configuration		Enable on Disable this Logical Device.
	[Enabled]	
Logical Device Settings: Current : IO=3F6h; IRQ=4;		
Possible:	[Use Autonatic Settings]	
Hode :	[RS232]	
HARNING: Disabling SIO Logical De side effects.	vices may have unwanted	
PROCEED WITH DAUTION.		↔: Select Screen 14: Select Item
		Enter: Select
		+/-: Change Opt. F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
Versin	n 2.21.1278 Copyright (C) ;	2021 AMT

Options Summary		
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3F8h; IRQ=4	
	IO=2F8h; IRQ=3	
Allows user to change Device's Resource settings. New settings will be reflected on		
This Setup Page after System restarts.		
Mode	RS232	Optimal Default, Failsafe Default
	RS422	
	RS485	
UARTRS232, 422, 485 selection		

### 3.5.5.2 Serial Port2 Configuration

System I/0	Aptio Setup — AMI	
Serial Port 2 Configuration		Enable on Disable this Logical Device.
Use This Device	[Enabled]	Device.
Logical Device Settings: Current : IO=2FBh; IRQ=3;		
Possible:	[Use Autonatic Settings]	
Hode :	[RS232]	
WAANING: Disabling SIO Logical Devi side effects.	ces may have unwanted	
PROCEED WITH CAUTION.		↔: Select Screen 14: Select Item
		Enter: Select +/-: Change Opt.
		F1: General Help F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit
		ESC: Exit
Wersing	2.21.1278 Copyright (C) 2021	AMT

Options Summary		
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=2F8h; IRQ=3	
	IO=3F8h; IRQ=4	
Allows user to change I	Device's Resource settings.	New settings will be reflected on
This Setup Page after S	ystem restarts.	
Mode	RS232	Optimal Default, Failsafe Default
	RS422	
	RS485	
UART RS232, 422, 485	selection	

## 3.5.5.3 Serial Port3 Configuration

System I/O	Aptio Setup - AMI	
Serial Port 3 Configuration		Allows the user to change the device resource settings. New
Use This Device	[Enabled]	settings will be reflected on this setup page after system
Logical Device Settings: Current : IO=3E8h; IRQ=11;		restants.
Possible:	IUse Automatic Settings]	
Mode :	[RSZ32]	
WARNING: Disabling SIO Logical Devic side effects.	es may have unwanted	
PROCEED WITH CAUTION.		++: Select Screen †4: Select Item
		Enter: Select +/-: Change Opt.
		F1: Beneral Help F2: Previous Values F3: Dotimized Defaults
		F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2	.21.1278 Copyright (C) 2021	ANT

Options Summary		
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable this L	ogical Device.	-
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3E8h; IRQ=11	
	IO=2E8h; IRQ=11	
Allows user to change [	Device's Resource settings.	New settings will be reflected on
This Setup Page after S	ystem restarts.	
Mode	RS232	Optimal Default, Failsafe Default
	RS422	
	RS485	
UART RS232, 422, 485	selection	

### 3.5.5.4 Serial Port4 Configuration

System I/O	Aptio Setup - AMI	
Serial Port 4 Configuration		Enable on Disable this Logical Device.
Use This Device	[Enabled]	Device.
Logical Device Settings: Current : IO=2EBh; IRQ=11;		
Possible:	[Use Automatic Settings]	
Mode :	[RS232]	
WARNING: Disabling SIO Logical Devic side effects.	es may have unwanted	
PROCEED WITH CAUTION.		++: Select Screen 14: Select Item
		Enter: Select
		+/−: Change Opt. F1: General Help
		F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit
		ESC: Exit
version a	2.21.1278 Copyright (C) 2021	. 6MI

Options Summary		
Options Summary	1	1
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable this L	ogical Device.	
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=2E8h; IRQ=11	
	IO=3E8h; IRQ=11	
Allows user to change [	Device's Resource settings.	New settings will be reflected on
This Setup Page after S	ystem restarts.	
Mode	RS232	Optimal Default, Failsafe Default
	RS422	
	RS485	
UART RS232, 422, 485	selection	

### 3.5.6 Legacy Logical Devices Configuration

System I/O	Aptio Setup - AMI	
CDNO Console Redirection ▶ Console Redirection Settings	(Disabled)	Console Redirection Enable or Disable.
COM1(Pci Bus0,Dev0,Func0) (C Console Redirection	)isabled) Port Is Disabled	
Serial Port for Dut-of-Band Mindows Emergency Menagement Console Redirection EMS ▶ Console Redirection Settings	: Services (EMS) [Disabled]	
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Charge Opt.</pre>
		F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
		ESC: EXIL
\\	/ersion 2.21.1278 Copyright ()	C) 2021 AMI
Options Summary		
Console Redirection	Disabled	Optimal Default, Failsafe Def

Options summary		
Console Redirection	Disabled	Optimal Default, Failsafe Default
	Enabled	
Console Redirection Enable or Disable.		
Console Redirection EMS	Disabled	Optimal Default, Failsafe Default
	Enabled	
Console Redirection Enable or Disable.		

### 3.5.6.1 Console Redirection Settings

System I/0	Aptio Setup — AMI	
CONO Console Redirection Settings Terminal Type Bits per second Deta Bits Perity Stop Bits Flow Control VT-UTF9 Combo Key Support Recorder Hode Resolution 100x31 Putty KeyPad	[ANSI] [115200] [8] [None] [1] [None] [Enabled] [Disabled] [Disabled] [VT100]	Enulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Version	1 2.21.1278 Copyright (C) 202	1 AMI

Options Summary		
Terminal Type	VT100	
	VT100+	
	VT-UTF8	
	ANSI	Optimal Default, Failsafe Default
Emulation: ANSI: Extended	ASCII char set. VT100:	ASCII char set. VT100+: Extends
VT100 to support color, fur	nction keys, etc. VT-UTF	8: Uses UTF8 encoding to map
Unicode chars onto 1 or m	ore bytes.	
Bits Per second	9600	
	19200	
	38400	
	57600	
	115200	Optimal Default, Failsafe Default
Selects serial port transmission speed. The speed must be matched on the other		
side. Long or noisy lines m	ay require lower speed	s.
Data Bits	7	
	8	Optimal Default, Failsafe Default
Data Bits		

Options Summary			
Parity	None	Optimal Default, Failsafe Default	
	Even		
	Odd		
	Mark		
	Space		
A parity bit can be sent wi	th the data bits to detec	t some transmission errors. Even:	
parity bit is 0 if the num of	'l's in the data bits is eve	en. Odd: parity bit is 0 if num of 1's	
in the data bits is odd. N	lark: parity bit is always `	1. Space: Parity bit is always 0.	
	not allow for error dete	ction. They can be used as an	
additional data bit.	1		
Stop Bits	1	Optimal Default, Failsafe Default	
	2		
Stop bits indicate the end	of a serial data packet. (	A start bit indicates the	
		munication with slow devices may	
require more than 1 stop b	oit.		
Flow Control	None	Optimal Default, Failsafe Default	
	Hardware RTS/CTS		
Flow control can prevent data loss from buffer overflow. When sending data, if the			
		t to stop the data flow. Once the	
		-start the flow. Hardware flow	
control uses two wires to s			
	end start/stop signals.	1	
VT-UTF8 Combo Key	Disabled		
VT-UTF8 Combo Key Support	Disabled Enabled	Optimal Default, Failsafe Default	
VT-UTF8 Combo Key	Disabled Enabled		
VT-UTF8 Combo Key Support	Disabled Enabled tion Key Support for AN Disabled		
VT-UTF8 Combo Key Support Enable VT-UTF8 Combinat	Disabled Enabled tion Key Support for AN	ISI/VT100 terminals	
VT-UTF8 Combo Key Support Enable VT-UTF8 Combinat Recorder Mode With this mode enabled o	Disabled Enabled tion Key Support for AN Disabled Enabled	SI/VT100 terminals Optimal Default, Failsafe Default is to capture Terminal data.	
VT-UTF8 Combo Key Support Enable VT-UTF8 Combinat Recorder Mode	Disabled Enabled tion Key Support for AN Disabled Enabled	SI/VT100 terminals Optimal Default, Failsafe Default	
VT-UTF8 Combo Key Support Enable VT-UTF8 Combinat Recorder Mode With this mode enabled o Resolution 100x31	Disabled Enabled tion Key Support for AN Disabled Enabled nly text will be sent. This Disabled Enabled	SI/VT100 terminals Optimal Default, Failsafe Default is to capture Terminal data.	
VT-UTF8 Combo Key Support Enable VT-UTF8 Combinat Recorder Mode With this mode enabled of Resolution 100x31 Enables or disables extend	Disabled Enabled tion Key Support for AN Disabled Enabled nly text will be sent. This Disabled Enabled led terminal resolution	SI/VT100 terminals Optimal Default, Failsafe Default is to capture Terminal data. Optimal Default, Failsafe Default	
VT-UTF8 Combo Key Support Enable VT-UTF8 Combinat Recorder Mode With this mode enabled o Resolution 100x31	Disabled Enabled tion Key Support for AN Disabled Enabled nly text will be sent. This Disabled Enabled Ied terminal resolution VT100	SI/VT100 terminals Optimal Default, Failsafe Default is to capture Terminal data.	
VT-UTF8 Combo Key Support Enable VT-UTF8 Combinat Recorder Mode With this mode enabled of Resolution 100x31 Enables or disables extend	Disabled Enabled tion Key Support for AN Disabled Enabled nly text will be sent. This Disabled Enabled led terminal resolution	SI/VT100 terminals Optimal Default, Failsafe Default is to capture Terminal data. Optimal Default, Failsafe Default	
VT-UTF8 Combo Key Support Enable VT-UTF8 Combinat Recorder Mode With this mode enabled of Resolution 100x31 Enables or disables extend	Disabled Enabled tion Key Support for AN Disabled Enabled nly text will be sent. This Disabled Enabled Ied terminal resolution VT100	SI/VT100 terminals Optimal Default, Failsafe Default is to capture Terminal data. Optimal Default, Failsafe Default	
VT-UTF8 Combo Key Support Enable VT-UTF8 Combinat Recorder Mode With this mode enabled of Resolution 100x31 Enables or disables extend	Disabled Enabled tion Key Support for AN Disabled Enabled Disabled Enabled Enabled Ied terminal resolution VT100 UNUX	SI/VT100 terminals Optimal Default, Failsafe Default is to capture Terminal data. Optimal Default, Failsafe Default	
VT-UTF8 Combo Key Support Enable VT-UTF8 Combinat Recorder Mode With this mode enabled of Resolution 100x31 Enables or disables extend	Disabled Enabled tion Key Support for AN Disabled Enabled Disabled Enabled Ied terminal resolution VT100 UNUX XTERMR6	SI/VT100 terminals Optimal Default, Failsafe Default is to capture Terminal data. Optimal Default, Failsafe Default	
VT-UTF8 Combo Key Support Enable VT-UTF8 Combinat Recorder Mode With this mode enabled of Resolution 100x31 Enables or disables extend	Disabled Enabled tion Key Support for AN Disabled Enabled Disabled Enabled Ied terminal resolution VT100 UNUX XTERMR6 SCO	SI/VT100 terminals Optimal Default, Failsafe Default is to capture Terminal data. Optimal Default, Failsafe Default	

### 3.5.7 PCH-IO Configuration

MiniCard Slot Function [PCle]	Select function enabled for Full size MiniCard Slot(CN4)
	<pre>#*: Select Screen T4: Select Iten Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.21.1278 Copyright	(C) 2021 (MI
Options Summary MiniCard Slot Function SATA	

PCIe Select function enabled for Full size MiniCard Slot (CN10)

### 3.6 Setup Submenu: Security

	y Boot Save & Exit	19 American Megatrends, Inc. :
Password Description		Set Administrator Pessword
If ONLY the Administrator's passu then this only limits access to S only asked for when entering Setu If ONLY the User's password is se is a power on password and must b boot or enter Setup. In Setup the have Administrator rights. The password length must be in the following range: Winhum length	etup and is p. t, then this e entered to	
Maximum length	20	
Administrator Password User Password	20	++: Select Screen 14: Select Iten Enter: Select +/-: Change Opt. F1: General Heip
► Secure Boot		F1: Optimized Defaults F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20,1275.	Copyright (C) 2019	American Megatrends, Inc.

#### Change User/Administrator Password

You can set an Administrator Password or User Password. An Administrator Password must be set before you can set a User Password. The password will be required during boot up, or when the user enters the Setup utility. A User Password does not provide access to many of the features in the Setup utility.

Select the password you wish to set, and press Enter. In the dialog box, enter your password (must be between 3 and 20 letters or numbers). Press Enter and retype your password to confirm. Press Enter again to set the password.

#### Removing the Password

Select the password you want to remove and enter the current password. At the next dialog box press Enter to disable password protection.

### 3.6.1 Trusted Computing

	Aptio Setup - AM Security	
Configuration Security Device Support NO Security Device Found		Enables or Disables BIOS support for security device. O.S. will not show Security Device. TEB EFI protocol and INTIA interface will not be available.
		<pre>+*: Select Screen T4: Select Iten Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Same &amp; Exit ESO: Exit</pre>
V	ersion 2.21.1278 Copyright	(C) 2021 AMI
Options Summary		
Security Device Support	Disable	
	Enable	Optimal Default, Failsafe Default
Enables or Disables BIOS s O.S. will not show Security available.		evice. ocoland INT1A interface will not be
SHA-1 PCR Bank	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable SHA-1P	CR Bank	
SHA256 PCR Bank	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable SHA256	PCR Bank	
Pending Operation	None	Optimal Default, Failsafe Default
	TPM Clear	
Schedule an Operation for during restart in order to c		NOTE: Your Computer will reboot itv Device.
		,
Options Summary		
Platform Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or disable Platform	*	
Storage Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Storage		
Endorsement Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Endorse		1
TPM2.0 UEFI Spec Version		
	TCG_2	Optimal Default, Failsafe Default
Select the TCG2 Spec Version		
TCG_1_2: the Compatible m		and the Mint O
ICG 2: Support new ICG2		ormat for Win10 or later
	1 1 2	1
Physical Presence Spec	1.2	
Physical Presence Spec Version	1.3	Optimal Default, Failsafe Default 2 or 1.3. Note some HCK tests might

#### 3.6.2 Secure Boot

	Aptio Setup - AMI Security	
System Mode	Setup	Secure Boot feature is Active if Secure Boot is Enabled,
Secure Boot	Disabled Not Active	Platform Key(PK) is enrolled and the System is in User mode. The mode change requires
Secure Boot Hode ► Restore Factory Keys ► Reset To Setup Hode	IOustoni	platform reset
▶ Key Management		
		++: Select Screen 14: Select Iten Enter: Select
		+/-: Change Opt. F1: General Help F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit ESC: Exit
		Eddi EXII
	Unerlag 0.01 1020 Occurlate 10	

Options Summary			
Secure Boot	Disabled	Optimal Default, Failsafe Default	
	Enabled		
Secure Boot feature is Activ	e if Secure Boot is Enab	oled, Platform Key (PK) is enrolled	
and the System is in User m	node. The mode chang	e requires platform reset	
Secure Boot Mode	Custom	Optimal Default, Failsafe Default	
	Standard		
Secure Boot mode options:	Standard or Custom.		
In Custom mode, Secure Boot Policy variables can be configured by a physically			
present user without full authentication			
Restore Factory Keys			
Force System to User Mode	e. Install factory default	Secure Boot key databases	
Reset To Setup Mode			
Delete all Secure Boot key databases from NVRAM			

#### 3.6.2.1 Key Management

Aptio Setup Utility – Copyright (C) 2019 American Megatrends, Inc. Security		
Vendor Keys	Vəlid	Install factory default Secure Boot keys after the platform
Factory Key Provision > Restore Factory Keys > Reset To Setup Mode > Export Secure Boot variables > Enroll Efi Image Device Buand Ready > Remove 'UEFI CA' from DB > Restore DB defaults		reset and while the System is in Setup mode
Secure Boot variable   Size  K Platforn Key(PK)   0  Key Exchange Keys   0  Authorized Signatures   0  Forbüdden Signatures   0  Authorized TimeStamps   0  DosRecovery Signatures   0	0 Na Keys 0 Na Keys	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: Beneral Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

Options Summary Factory Key Provision Disabled Optimal Default, Failsafe Default Enabled Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PK) is enrolled and the System is in User mode. The mode change requires platform reset Restore Factory Keys Force System to User Mode. Install factory default Secure Boot key databases Reset To Setup Mode Delete all Secure Boot key databases from NVRAM Export Secure Boot variables Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device Enroll Efi Image Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db)

Options Summary         Remove 'UER CA' from         DB         Device Guard ready system must not list 'Microsoft UEFI CA' Certificate in         Authorized Signature database (db)         Restore DB defaults         Restore DB variable to factory defaults         Platform Key(PK)       Details         Export         Update         Delete         Key Exchange Keys       Details         Export         Update         Delete         Authorized Signatures         Petails         Export         Update         Details         Export         Update         Append         Delete         Authorized Signatures         Details         Export         Update         Append         Delete		
DB       Image: Constraint of the system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database (db)         Restore DB defaults       Image: Constraint of the system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database (db)         Restore DB defaults       Image: Constraint of the system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database (db)         Restore DB defaults       Image: Constraint of the system must not list 'Microsoft UEFI CA' Certificate in Authorized Signatures         P latform Key(PK)       Details         Export       Image: Constraint of the system must not list 'Microsoft UEFI CA' Certificate in Authorized Signatures         Key Exchange Keys       Details         Export       Image: Constraint of the system must not list 'Microsoft UEFI CA' Certificate in Authorized Signatures         Authorized Signatures       Details         Export       Image: Constraint of the system must not list 'Microsoft UEFI CA' Certificate in Authorized Signatures		
Authorized Signature database (db)         Restore DB defaults          Restore DB variable to factory defaults          P latform Key(PK)       Details         Export          Update          Delete          Key Exchange Keys       Details         Export          Update          Details          Export          Update          Details          Export          Update          Details          Export          Update          Append          Details          Export          Update          Details          Export          Update          Authorized Signatures       Details         Export          Update		
Authorized Signature database (db)         Restore DB defaults          Restore DB variable to factory defaults          P latform Key(PK)       Details         Export          Update          Delete          Key Exchange Keys       Details         Export          Update          Details          Export          Update          Details          Export          Update          Details          Export          Update          Append          Details          Export          Update          Details          Export          Update          Authorized Signatures       Details         Export          Update		
Restore DB variable to factory defaults         P latform Key(PK)       Details         Export       Update         Delete       Details         Key Exchange Keys       Details         Export       Update         Details       Export         Update       Details         Export       Update         Details       Export         Update       Details         Export       Update         Authorized Signatures       Details         Export       Update         Update       Details		
P latform Key(PK) Details Export Update Delete Key Exchange Keys Export Update Append Delete Authorized Signatures Export Update Append Delete		
Export       Update       Delete       Key Exchange Keys       Details       Export       Update       Append       Delete       Authorized Signatures       Export       Update       Lete		
Update       Delete       Key Exchange Keys     Details       Export       Update       Append       Delete       Authorized Signatures       Export       Update       Lette		
Delete       Key Exchange Keys     Details       Export     Update       Append     Delete       Delete     Details       Export     Update       Update     Update		
Key Exchange Keys     Details       Export     Update       Append     Delete       Authorized Signatures     Details       Export     Update		
Export       Update       Append       Delete       Authorized Signatures       Export       Update		
Update       Append       Delete       Authorized Signatures       Export       Update		
Append Delete Authorized Signatures Export Update		
Authorized Signatures Details Export Update		
Authorized Signatures Details Export Update		
Export Update		
Update		
Append		
Delete		
Forbidden Signatures Details		
Export		
Update		
Append		
Delete		
Authorized TimeStamps Update		
Append		
OsRecovery Signatures Update		
Append		
Enroll Factory Defaults or load certificates from a file:		
1.Public Key Certificate:		
a) EFI_SIGNATURE_LIST		
b) EFI_CERT_X509 (DER)		
c) EFI_CERT_RSA2048 (bin)		
d) EFI_CERT_SHAXXX 2.Authenticated UEFI Variable		
3.EFIPE/COFF Image (SHA256)		
Key Source: Factory, External, Mixed		

# 3.7 Setup Submenu: Boot

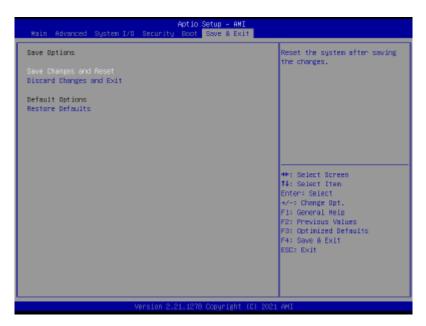


Options Summary		
Quiet Boot	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enables or disables showing boot logo.		
Network Stack	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable UEFI Network Stack		

#### 3.7.1 BBS Priorities

Horizo Serap o	Aptio Setup Utility – Copyright (C) 2019 American Magatrends, Inc.		
Boot Option #1	(⊭indows Boot Manager (P1: TS∺4GSSD370))	Sets the system boot order **: Select Screen 14: Select Tren Enter: Select	
		+/-: Change Opt. Fi: General Help F2: Previous Values F3: Optimized Defaults F4: Sawe & Exit ESC: Exit	

# 3.8 Setup Submenu: Save & Exit



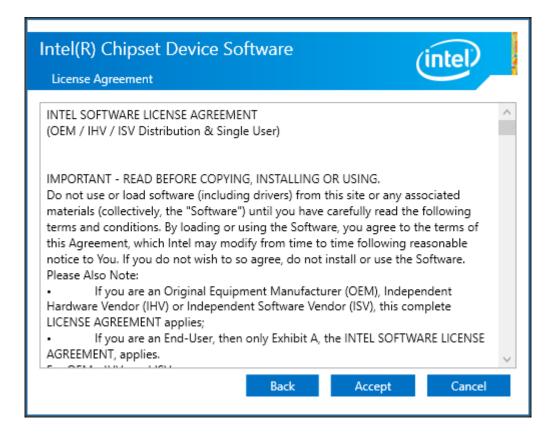
# **Chapter 4** Installation of Drivers

## 4.1 Intel<sup>®</sup> Chipset Device Software

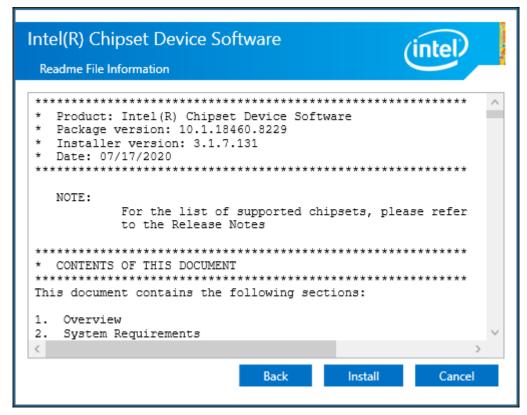
To install the Intel<sup>®</sup> Chipset Device Software, please follow the steps below. **Step 1.** Here is welcome page. Please make sure you save and exit all programs before install. Click **Next**.



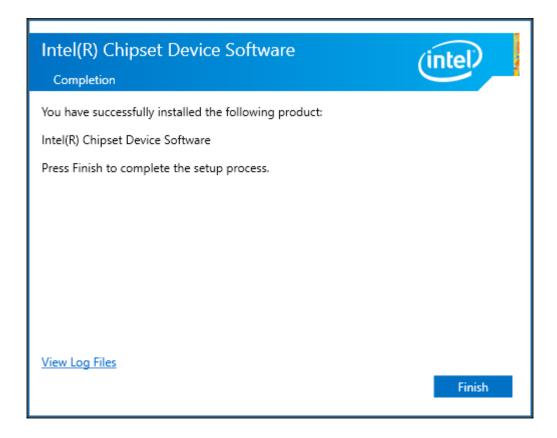
**Step2.** Read the license agreement. Click **Accept** to accept all of the terms of the license agreement.



Step3. Click Install to begin the installation.



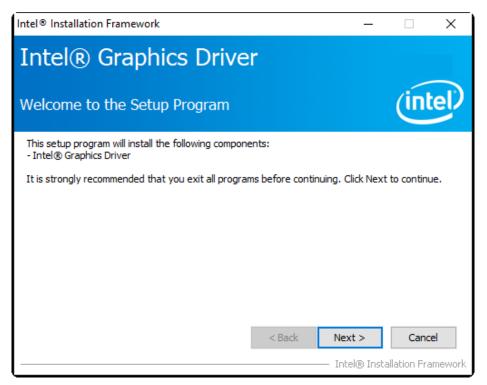
Step5. Click Finish to finish installation.



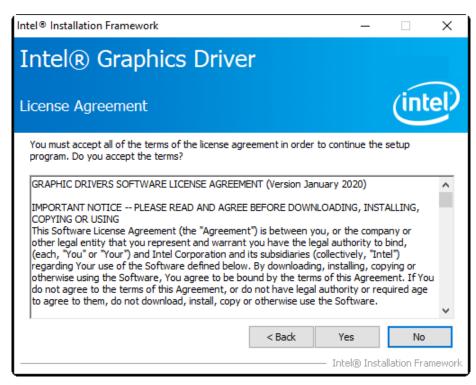
# 4.2 Intel<sup>®</sup> VGA Chipset

To install the Intel<sup>®</sup> VGA Chipset, please follow the steps below.

Step1. Click Next.



**Step2.** Read the license agreement. Click **Yes** to accept all of the terms of the license agreement.



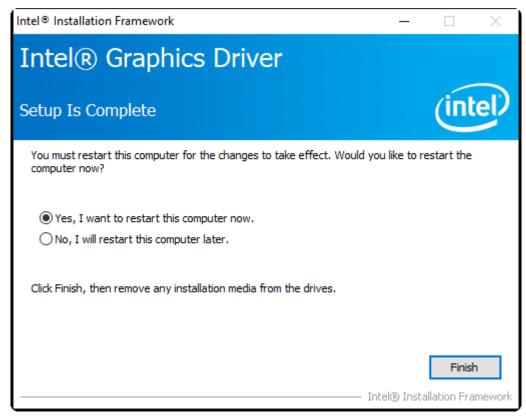
Step3. Click Next to continue.

Intel® Installation Framework		—		×
Intel® Graphics Drive	r			
Readme File Information			(int	el
Refer to the Readme file below to view the system	requirements a	nd installation ir	nformation	
Driver Version: 27.20.100.9268 Release Version: Production Version				^
Operating System(s): Microsoft Windows* 10-64 (RS3) Microsoft Windows* 10-64 (RS4) Microsoft Windows* 10-64 (RS5) Microsoft Windows* 10-64 (19H1) Microsoft Windows* 10-64 (19H2) Microsoft Windows* 10-64 (20H1)				~
	< Back	Next >	Cano	el
		— Intel® Inst	allation Fra	mework

### Step4. Click Next to continue the program.

Intel® Installation Framework	
Intel® Graphics Drive	r
Setup Progress	(intel)
Please wait while the following setup operations ar	e performed:
Deleting File: C: \ProgramData \Microsoft\Windows Deleting File: C: \ProgramData \Microsoft\Windows Deleting File: C: \Users \Public\Desktop\Intel(R) HD Deleting File: C: \Users \Public\Desktop\Intel(R) Gra Deleting File: C: \ProgramData \Microsoft\Windows Deleting File: C: \ProgramData \Microsoft\Windows Deleting File: C: \Users \Public\Desktop\Intel(R) Iris Deleting File: C: \Users \Public\Desktop\Intel(R) Iris Deleting File: C: \Users \Public\Desktop\Intel\Intel(R) Deleting Registry Key: HKLM\SOFTWARE\Intel\GF Deleting Registry Key: HKLM\SOFTWARE\Intel\GF	\Start Menu \Programs\Intel\Intel(R) Graphic Graphics Control Panel.lnk aphics and Media Control Panel.lnk \Start Menu \Programs\Intel\Intel(R) Iris(R) ( \Start Menu \Programs\Intel(R) Iris(R) Graph s(R) Graphics Control Panel.lnk R) Iris(R) Graphics Control Panel.lnk X\Internal\AudioFix
Click Next to continue.	>
	Next >

**Step5.** Select **Yes, I want to restart this computer now**. Click **Finish** to complete installation.



# 4.3 Realtek Audio Driver

To install the Realtek Audio Driver, please follow the steps below.

Step1. Select setup language you need. Click Next to continue.

Realtek Audio Driver Setup (4.77)	6.0.9107.1 x64 Edition	×
	Welcome to the InstallShield Wizard for Realtek Audio Driver The InstallShield Wizard will install Realtek Audio Driver on your computer. To continue, dick Next.	
InstallShield	< Back Cancel	4

**Step2.** Click **Finish** to complete the installation.

Realtek Audio Driver Setup (4.77)	6.0.9107.1 x64 Edition
	InstallShield Wizard Complete
	The InstallShield Wizard has successfully installed Realtek Audio Driver. Before you can use the program, you must restart your computer.
	Yes, I want to restart my computer now.
	No, I will restart my computer later. Remove any disks from their drives, and then dick Finish to complete setup.
InstallShield	< Back Finish Cancel

# 4.4 Intel<sup>®</sup> LAN Driver

To install the Intel<sup>®</sup> LAN Driver, please follow the steps below.

**Step1.** Here is welcome page. Please wait for program setup process.

🖟 Intel(R) Network Connections Install Wizard	×
Welcome to the install wizard for Intel(R) Network Connections	intel.
Intel(R) Network Connections Setup is preparing the install wizard which will guide you through the program setup process. Please wait.	
< Back Next >	Cancel

**Step2.** Read the license agreement. Select I accept the terms in the license agreement and click Yes to accept all of the terms of the license agreement.

🕼 Intel(R) Network Connections Install Wizard	×
License Agreement	in hel
Please read the following license agreement carefully.	intel.
SOFTWARE LICENSE AGREEMENT	^
DO NOT DOWNLOAD, INSTALL, ACCESS, COPY, OR USE ANY OF THE SOFTWARE UNTIL YOU HAVE READ AND ACCEPTED T TERMS AND CONDITIONS OF THIS AGREEMENT. BY INSTALLIN COPYING, ACCESSING, OR USING THE SOFTWARE, YOU AGR LEGALLY BOUND BY THE TERMS AND CONDITIONS OF THIS AGREEMENT. If You do not agree to be bound by, or the entity for benefit You act has not authorized You to accept, these terms and do not install, access, copy, or use the Software and destroy all co Software in Your possession.	THE IG, IEE TO BE whose conditions,
	· · · · · · ·
$\odot$ I accept the terms in the license agreement	Print
$\bigcirc$ I do not accept the terms in the license agreement	
< Back Next >	Cancel

### Step3. Click Next to continue.

Intel(R) Network Connections Install Wiz	ard		×
Setup Options Select the program features you want i	installed.		intel.
Install:			
Device drivers Intel® PROSet Intel® Advanced Network Serv	vices		
Feature Description			
	< Back	Next >	Cancel

### **Step4.** Click **Install** to begin the installation.

🖟 Intel(R) Network Connections Install	Wizard		×
Ready to Install the Program			200 B - 1
The wizard is ready to begin installation			intel.
Click Install to begin the installation.			
If you want to review or change any of exit the wizard.	your installation	settings, <mark>click</mark> Back. C	lick Cancel to
	< Back	Install	Cancel

Step5. Click Install to begin the installation.

🖟 Intel(R) Network Connections Install Wizard	×			
Install wizard Completed	intel.			
A shortcut has been created in the Start Menu. You can also create one or desktop, if desired. To access new features, launch the Intel(R) PROSet A Configuration Utility from the Start Menu.				
Additional Options:				
Launch Intel(R) PROSet Adapter Configuration Utility				
< Back Finish	Cancel			