



# **ABOS-9XXC** Series

15.6", 21.5" Button-Integrated Panel PC

# **User Manual**

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# **Revision History**

Reversion	Date	Description
1.0	2024/01/19	Official Version
1.1	2024/6/15	

# 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.

### 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.

#### **Pressure Testing Screw Warning:**

Before deploying your ABOS series system, it is crucial to ensure that the pressure testing screw is securely tightened. This precaution is essential to prevent potential issues arising from rapid air pressure changes during transportation, particularly in air shipments with unpressurized cabins.

Note: The pressure testing screw is intentionally loosened by half a turn before shipment.

Instructions for Tightening the Pressure Testing Screw:

#### **Prepare Tools:**

Obtain a 3mm hex screwdriver. Locate the Screw:

Identify the pressure testing screw, indicated within a circle on your system.

Tighten Clockwise:

Using the 3mm hex screwdriver, tighten the pressure testing screw clockwise until it is securely in place. Recommended Torque:

Apply a torque of 8~10 kgf-cm for optimal functionality. Caution:

Failure to tighten the pressure testing screw may lead to performance issues or damage during operation. Note to Users:

Always check and tighten the pressure testing screw upon receiving the system, ensuring its stability before deployment. Neglecting this step may compromise the functionality of your ABOS series system. For any questions or concerns regarding this procedure, please contact APLEX Technology's customer support.



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# **Getting Started**

### 1.1 Features

• 15.6"/21.5" FHD TFT LCD Panel PC

Chapter 1\_\_\_\_

- Intel<sup>®</sup> 11<sup>th</sup> Gen. (Tiger Lake-UP3) Processors
- 16:9 Widescreen with P-CAP Multi-touch Control
- Built-in Functional Buttons for Intuitive Operation
- Gap-free sealing and Slim Front Frame architecture at front bezel
- Top/Bottom Swing Arm Mounting
- IP65 Full-sealed with Anti-Corrosion Enclosure (with Swig ARM Kit)
- Available with Configurable Button Area for the installation of Hard-wired Elements
- DC 9~36V wide range power input

### **1.2 Specifications**

	ABOS-916CP	ABOS-921CP		
System	System			
CPU	Onboard Intel <sup>®</sup> 11 <sup>th</sup> Gen (Tiger Lake-UP3) Processors:			
	Core i3-1115G4E (2C, 2.2 GHz, 15W TDP)			
	Core i5-1145G7E (4C, 1.5 GHz, 15W TDP)			
Memory	2 x SO-DIMM up to 64GB DDR4 3200MHz (Dual Channel, Non-ECC)			
LVDS	1 x 18/	24 bit Dual Channel		
Outside IO Port				
USB	1 x USB2.0 (Type A)-Front			
	4 x USB 3.2(Type-A)-Rear			
	1 x USB 3.2 GEN2 Type C-Rear			
Serial/Parallel	1 x COM (RS-232/422/485, default)-COM1			
	1 x COM(RS-232/422/485, support 5V/12V/RI, option)-COM2			
LAN	1 x Intel i219LM RJ45 GbE LAN			
	1 x Intel i225LM, RJ45 2.5G LAN			
Power	1 x 3-pin Phoenix Connector for DC power			
Storage Space				
Storage	1 x M.2 M-Key 2280 (PCIex4) Socket for Optional PCIe/NVME SSD			
Expansion	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 (mSATA as default, select by BIOS) 1 x Nano SIM Card			
Functional Buttons	: Supports RAFI RAFIX-22-FS Serie	es		
ø				
Default Button:		Option Button:		
1 x USD2.0 Type A	with Cover	3 x Push Button/Black for Self-Defined		
1 x Push Button/Gr	een for START	1 x Key switch		
1 x Push Button/Re	d for STOP			
1 x Push Button/Blu	ue for Reset			
1 x Emergency Stop	Button			
Display – Standard	Display – Standard LCD			
Display Type	15.6" TFT LCD	21.5" TFT LCD		
Max. Resolution	1920 x 1080	1920 x 1080		
Max. Color	16.7M	16.7M		
Luminance	500 nits	250 nits		
(cd/m <sup>2</sup> )				
Contrast Ratio	1000:1	1000:1		
Viewing	178/178	178/178		
Angle(H/V)				
Backlight Lifetime	50,000hrs	50,000hrs		
Option	(	Optical bonding		
Display – High Brig	htness LCD (option)	1		
Display Type	15.6" TFT LCD	21.5" TFT LCD		
Max. Resolution	1920 x 1080	1920 x 1080		
Max. Color	16.7M	16.7M		
Luminance	1000 nits	1000 nits		
(cd/m²)				
Contrast Ratio	1000:1	1000:1		
Viewing	170/170	174/174		
Angle(H/V)				
Backlight Lifetime	50,000hrs	30,000hrs		

Option	0	ptical bonding	
Touch Screen	creen		
Туре	Projected	capacitive touch screen	
Interface		USB	
Light	Projected capacitive touch screen: over 90%		
Transmission			
Power			
Power Input	DC 9~36V onboard		
Power	MAX:34.99W	MAX:34.05W	
Consumption			
Mechanical			
Construction	Aluminum CNC enclosure		
	Rear Housing: Stainless Steel 304		
Mounting	SWING ARM (support CP-40 Rittal)		
IP Rating	Total IP65 (with Swing ARM kit)		
Bracket	Left-Right Handle: Aluminum CNC		
(Option)	Keyboard Holder: Aluminum CNC		
Dimension (mm)	409.9 x 341.1 x 162	545.8 x 418 x 162	
	(Without Handle and Holder)	(Without Handle and Holder)	
Net Weight(Kg)	10.23	17.5	
Environmental			
Operating	0~50°C		
temperature			
Storage	-30~70°C		
temperature			
Storage humidity	10 to 90% (	@ 40°C, non- condensing	
Certification	Mee	et CE / FCC Class A	
<b>Operating System</b>	Windows 10 IoT ENT LTSC/ V	Vindows 11 IoT/Linux Kernel 5.15(Ubuntu	
Support		20.04/22.04)	

### **1.3** Dimensions





UNIT: mm Tolerance:±0.5







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

The ABOS-9XXC series is a state-of-the-art stainless steel panel PC featuring Intel 11th Gen (Tiger Lake-UP3) technology. With an IP65 rating, Swing ARM kits, and 15.6"/21.5" TFT LCD displays, it excels in versatility. Robust Aluminum CNC and Stainless Steel 304 construction, wide DC power input, and options for high brightness LCD and optical bonding make it adaptable for diverse environments. The series supports responsive capacitive touch, and its configurable button area enhances customization for specialized applications. Ideal for industrial and commercial setups, it seamlessly integrates cutting-edge performance with rugged design.



Figure 1.3: Front View ABOS-916CP



Figure 1.4: Rear View of ABOS-916CP



Figure 1.5: Front View ABOS-921CP



Figure 1.6: Rear View of ABOS-921CP

## 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® Core™ i3-1115G4E(2C/4T, 2.20GHz, up to 3.90GHz, TDP 15W) Intel® Core™ i5-1145G7E(4C/8T, 1.50GHz, up to 4.10GHz, TDP 15W)
Chipset	SOC
Memory Support	DDR4 up to 3200MHz, 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 2 x DP 1.4a
Multi Display	3 Simultaneous Displays
Wake on LAN	Yes
BIOS	AMI UEFI
SATA	1 x SATAIII (6.0Gbps) 1 x +5V SATA Power Connector
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

### 2.2 Specifications & Dimensions

	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 mPCle/mSATA slot (mSATA as default, , select by BIOS) M.2 M-Key 2280 x 1 (PCle [x4]) M.2 E-Key 2230 x 1 (PCle, 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 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: $0^{\circ}$ C to $60^{\circ}$ C Storage: -40°C to $80^{\circ}$ 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

### **2.3 Jumpers and Connectors Location**



Figure 2.2: Jumpers and Connectors Location- Board Top



Figure 2.3: Jumpers and Connectors Location- Board Bottom

### 3.1 System Test and Initialization

The 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 erroris detected, the module will load the default configuration and reboot automatically.

There are four situations in which you will eed 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 restt by the Clear-CMOS jumper

4. 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 configurati ons., 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 B1OS 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 8BS priority and Quiet Boot options **Save & Exit** --Save your changes and ext the program

### 3.3 Setup Submenu:Main



### 3.4 Setup Submenu: Advanced

Hain Advanced System I/O Secu	Aptic Setup - AMI rity Boot Save & Exit	
Display Information Graphics Configuration System Information CPU Configuration Memory Configuration Manduare Monitor PCH-FW Configuration AREON Features Power Management AREON BIOS Robot		Graphics Configuration
In-Bend ECC Support TEN GBE Configuration	(Disabled)	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Versio	n 2.21.1278 Copyright (C) 20	21 AMI

d C ort d C d C re, the user ackno cers who have ac n cause unintenc	Optimal Default; Failsafe Default Optimal Default, Failsafe Default owledges the security risks. ccess to the Host Operating
d C ort d C re, the user ackno cers who have ac n cause unintenc	Optimal Default; Failsafe Default Optimal Default, Failsafe Default owledges the security risks. ccess to the Host Operating
ort d C re, the user ackno kers who have ac n cause unintenc	Optimal Default, Failsafe Default owledges the security risks. ccess to the Host Operating
d C re, the user ackno (ers who have ac n cause unintenc	Optimal Default, Failsafe Default owledges the security risks. ccess to the Host Operating
d C re, the user ackno kers who have ac n cause unintenc	Optimal Default, Failsafe Default owledges the security risks. ccess to the Host Operating
re, the user ackn kers who have ac n cause unintenc	owledges the security risks. ccess to the Host Operating
e BIOS stolen me	emory regions.
1	
C	Optimal Default, Failsafe Default
s based on the a	iddress range,
it	ts based on the a

IBECC Protect Region 0-7	Disabled	Optimal Default, Failsafe Default
	Enabled	

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

#### 3.4.1 Graphics Configuration

Advanced Advanced	Setup – AMI
Graphics Configuration ▶ LVDS Panel Configuration	Configure LVDS panel paramaters.
	++: Select Screen T1: Select Item Enter: Select +/-: Change Opt. F1: Reneral Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.21.127	8 Copyright (C) 2021 AMI

#### 3.4.1.1 LVDS Panel Configuration

Advanced	Aptio Setup – AMI	
LVDS Panel Configuration		Enable/Disabled this panel
LVOS/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>
Vers.	ion 2.21.1278 Copyright (C)	2021 AMI

LVDS/eDP	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disabled this p	anel	1. 19
LVDS Panel Type	640X480@60HZ	2.0
	800X480@60HZ	2.2
	800X600@60HZ	21
	1024X600@60HZ	5 /.
	1024X768@60HZ	Optimal Default, Failsafe Default
	1280X768@60HZ	
	1280X800@60HZ	2
	1280X1024@60HZ	2
	1366X768@60HZ	26
	1440X900@60HZ	
	1600X1200@60HZ	
	1920X1080@60HZ	
	1920X1200@60HZ	

Options Summary		
Select LCD panel used b	y Internal Graphics Device	e by selecting the appropriate
setup item.	38 W.	112 - 1124 - 1127 - 112
Color Depth	18-bit	Optimal Default, Failsafe Default
	24-bit	
	36-bit	
	48-bit	
Select panel type	2011 Contraction (111)	
Backlight Mode	BIOS & Application	
	Windows Slider	Optimal Default, Failsafe Default
Select backlight control	signal type	
Backlight Type	Normal	Optimal Default, Failsafe Default
d.	Inverted	
Select backlight control	signal type	
Backlight Level	0%	S
	10%	S
	20%	2
	30%	2
	40%	
	50%	
	60%	
	70%	
	80%	Optimal Default, Failsafe Default
	90%	
	100%	
Select backlight control	level	
Backlight PWM Freq	100Hz	
	200Hz	
	220Hz	Optimal Default, Failsafe Default
	500Hz	
	1.1KHz	
	2.2KHz	2.5
	6.5KHz	2.6
Select PWM frequency of	of backlight control signal	
Swing Level	150mV	
	200mV	
	250mV	
	300mV	Optimal Default, Failsafe Default
	350mV	
	400mV	

Options Summary		
Swing Level	450mV	
Select Swing Level		
Center Spreading Depth	no spreading	Optimal Default, Failsafe Default
	0.5%	6. · · · · · · · · · · · · · · · · · · ·
	1.0%	
	1.5%	5 <b>4</b> 4
	2.0%	28 3
	2.5%	20
Select Center Spreading D	epth	8

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	lierarchy	
Endorsement Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Endorsem	nent Hierarchy	
TPM2.0 UEFI Spec Version	TCG_1_2	
	TCG_2	Optimal Default, Failsafe Default
Select the TCG2 Spec Versio	n Support,	
TCG_1_2: Compatible mode	for Win8/Win10	
TCG_2: Support new TCG2 p	protocol and event	format for Win10 or later
Physical Presence Spec	1.2	
Mantan	13	Ontimal Default Failsafe Default

### 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) 15-114587E # 2.60GHz	hardware capabilities provided by Vanderpool Technology.
ID	0x80601	
Speed	2600 MHz	
L1 Data Cache	48 KB × 4	
L1 Instruction Cache	32 KB x 4	
L2 Cache	1280 KB × 4	
L3 Cache	8 MB	
L4 Cache	N/A	
VNX	Supported	Service and a service of the service
SHX/TXT	Supported	14: Select Screen 14: Select Iten
Intel (VMX) Virtualization Technology		Enter: Select
Intel(R) SpeedStep(tm)	[Enabled]	F1: General Help
Turbo Rode	[Enab1ed]	F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
28 ·····		and the second se
	Las 2 24 1229 Cosuelabt 181 65	O1 ANT

Options Summary		
Intel (VMX) Virtualization Technology	Disabled	
	Enabled	Optimal Default, Failsafe Default
When enabled, a VMM car Vanderpool Technology.	utilize the additi	ional hardware capabilities provided by
Intel(R) SpeedStep(tm)	Disabled	
	Enabled	Optimal Default, Failsafe Default
Allows more than two frequ	uency ranges to b	e supported.
Turbo Mode	Disabled	2
	Enabled	Optimal Default, Failsafe Default
Enable/Disable processor T enabled.	urbo Mode (requ	ires EMTTM enabled too). AUTO mear

#### 3.4.3 Memory Configuration



#### 3.4.4 Hardware Monitor

Aptio Setup - AMI Advanced		
System Temperature Bystem Temperature 2 CPUIFECIJ Temperature System FAN VCDRE +12V +5V WER +3,3V 3V5B 5V5B VBHT Shart Fan Bhart Fan Mode Configuration	: +30 % : +27 % : 2159 RPM : +1.720 V : +11.736 V : +5.129 V : +1.136 V : +3.312 V : +3.312 V : +3.236 V : +5.112 V : +3.068 V Enebled	Enable or Disable Smart Fan **: Select Screen 14: Solect Tran Enter: Select +/-: Change Opt. F1: General Heip P2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
VersL	on 2.21.1278 Copyright (C)	2021 AHI

Smart Fan	Disabled	
	Enabled	Optimal Default; Failsafe Default

#### 3.4.4.1 Smart Fan Mode Configuration

#### Auto Duty Cycle Mode

Aptio Setup - AMI		
Indvanced Emart Fan Hode Configuration Finit Dutout Hoos Fan 1 Start Fan Control Temperature Source Temperature 3 Temperature 3 Temperature 4 Duty Lycle 1 Duty Lycle 2 Duty Lycle 2 Duty Lycle 3 Buty Lycle 4 Duty Lycle 5	-Aptio Setup - AMI Dutcout PAH model (punh mull)) Hauto Duty-Cycle Hodel (Dru) 60 50 40 30 85 70 60 50 40	Cutput FWM rede (puth pull) to control 4-wire fams. Linear fam application circuit to control 3-wire fam speed by fam's power terninal Cutput FWM mode (upen drawn) to control Intel 4-wire fams. #*: Select Screen 14: Select Screen 14: Select Item Enter: Select Screen 14: Select Item Enter: Select Item Enter: Select Item Enter: Select Item Enter: Select Screen 14: Select Item Enter: Select I

FAN1 Output Mode	Output PWM mode	
	Linear Fan Application	
	Output PWM mode (open drain)	Optimal Default, Failsafe Default
Output PWM mode (r	such null) to control d-wire	fane \nlinear fan annication circuit
Output PWM mode (p to control 3-wire fan s drain) to control Intel	oush pull) to control 4-wire speed by fan's power termin 4-wire fans.	fans. \nLinear fan application circuit val. \nOutput PWM mode (open 1
Output PWM mode (p to control 3-wire fan s drain) to control Intel Fan 1 Smart Fan	oush pull) to control 4-wire speed by fan's power termin 4-wire fans. Manual Duty Mode	fans. \nLinear fan application circuit val. \nOutput: PWM mode (open
Output PWM mode (p to control 3-wire fan s drain) to control Intel Fan 1 Smart Fan Control	oush pull) to control 4-wire speed by fan's power termin 4-wire fans. Manual Duty Mode Auto Duty-Cycle Mode	fans. \nLinear fan application circuit val. \nOutput: PWM mode (open Optimal Default, Failsafe Default
Output PWM mode (p to control 3-wire fan s drain) to control Intel Fan 1 Smart Fan Control Smart Fan Mode Selec	oush pull) to control 4-wire speed by fan's power termin 4-wire fans. Manual Duty Mode Auto Duty-Cycle Mode tt	fans. \nLinear fan application circuit val. \nOutput: PWM mode (open Optimal Default, Failsafe Default
Output PWM mode (p to control 3-wire fan s drain) to control Intel Fan 1 Smart Fan Control Smart Fan Mode Selec Temperature Source	oush pull) to control 4-wire peed by fan's power termin 4-wire fans. Manual Duty Mode Auto Duty-Cycle Mode tt CPU	fans. \nLinear fan application circuit val. \nOutput PWM mode (open Optimal Default, Failsafe Default Optimal Default, Failsafe Default
Output PWM mode (p to control 3-wire fan s drain) to control Intel Fan 1 Smart Fan Control Smart Fan Mode Selec Temperature Source	oush pull) to control 4-wire speed by fan's power termin 4-wire fans. Manual Duty Mode Auto Duty-Cycle Mode st CPU System Temperature 2	fans. \nLinear fan application circuit val. \nOutput PWM mode (open Optimal Default, Failsafe Default Optimal Default, Failsafe Default

Select the monitored temperature source for this fan.

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

#### Manual Duty Mode

Aptic Setup Utili Edvanced	ty – Copyright (8) 2020 Amer	ican Megatrends, Inc.
Smart Fan Mode Configuration		Smart Fan Mode Select
FANI Output Mode fan i Spart fan Gontrol Menual Duty Mode	jiinear Fan Application (Manual Outy Mode) 60	++: Select Screen 11: Select Item Enter: Select +/-: Change Oct.
version a an data	5. Copyright (C) 2020 Americ	F1: Beneral Help F2: Provious Values F3: Dptimized Defaults F4: Dave & Exit EBC: Exit

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

### 3.4.5 PCH-FW Configuration

Advanced	Aptio Setup - AMI	
HE Firmware Version ▶ Firmware Update Configuration	15.0.23.1706	Configure Management Engine Technology Parameters
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Vers	ion 2.21.1278 Copyright (	C) 2021 AMI

### 3.4.5.1 Firmware Update Configuration

Advanced	Aptio Setup -	AMI
Me FW Inage Re-Flash FW Update	[Disəbled] [Enəbled]	Enable/Disable Me FN Image Re-Flash function.
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Options Summary	ersion 2.21.1278 Copyri	ght (C) 2021 AMI
Me FW Image Re-Flash	Disabled	Optimal Default, Failsafe Defa

Me FW Image Re-Flash	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable Me FW Ima	age Re-Flash funct	ion.
FW Update	Disabled	
wood and come	Enabled	Optimal Default, Failsafe Default

#### 3.4.6 Power Management

Advanced	Aptio Setup – AMI	
Power Management		Select system power mode.
Power Hode Restore AC Power Loss	(ATX Type) [Last State]	
Wake Events RTC wake system from S5	(Disabled)	
		++: Select Screen T1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Ver	sian 2.21.1278 Copyright ()	C) 2021 AMI

ATX Type	Optimal Default, Failsafe Default
AT Type	
Last State	Optimal Default, Failsafe Default
Always On	16
Always Off	
Disable	Optimal Default, Failsafe Default
Fixed Time	- 9 - 27 
Dynamic Time	
Bypass	
	ATX Type AT Type Last State Always On Always Off Disable Fixed Time Dynamic Time Bypass

#### 3.4.7 BIOS Robot

Advanced	Aptio Setup - AMI	
AFEON BIDS Robot Sends watch dog before BIDS FUST POST Timer (second) Sends watch dog before booting DS OS Timer (minute) Delayed POST (FCI phase) Delayed POST (FCI phase) Delayed FOST (DXE phase) Delayed fime (second) Reset system once Soft or hard reset > Device detecting configuration	(Disabled) 90 [Disabled] 3 [Disabled] 10 [Disabled] 10 [Disabled] [Soft reset]	Enabled - Robot set Natch Dog Timer(NDT) right after power on, before BIDS start POST process. And then Robot will clear MDT on compeletion of PDST, MDT will reset system automatically if it is not cleared before its timer counts down to zero.
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Options Summary			
Sends watch dog before	Disabled	Optimal Default, Failsafe Default	
BIOS POST	Enabled		
Enabled - Robot set Watch	Dog Time r(WDT) right	after power on, before BIOS start	
POST process. Robot will clear WDT on completion of POST. WDT will reset system			
automatically if it is not clea	ared 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 unle	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.			
WARNING: Before enabling	this function, a progra	am in OS must be responsible for	
clearing WDT. Also, this fun	ction should be disable	ed if OS is going to update itself.	
Options Summary		ř.	
OS Timer (minute)	3	Optimal Default, Failsafe Default	
Timer count set to Watch E	og Timer for OS loadir	ng.	
Delayed POST (PEI phase)	Disabled	Optimal Default, Failsafe Default	
Delayed POST (PEI phase)	Disabled Enabled	Optimal Default, Failsafe Default	
Delayed POST (PEI phase) Enabled - Robot holds BIC	Disabled Enabled S from starting POST, r	Optimal Default, Failsafe Default ight after power on. This allows	
Delayed POST (PEI phase) Enabled - Robot holds BIC BIOS POST to start with sta	Disabled Enabled S from starting POST, r able power or start afte	Optimal Default, Failsafe Default ight after power on. This allows r system is physically warmed -up.	
Delayed POST (PEI phase) Enabled - Robot holds BIC BIOS POST to start with sta Note: Robot does this befo	Disabled Enabled S from starting POST, r able power or start afte re 'Sends watch dog'.	Optimal Default, Failsafe Default ight after power on. This allows r system is physically warmed -up.	
Delayed POST (PEI phase) Enabled - Robot holds BIC BIOS POST to start with sta Note: Robot does this befor Delayed time (second)	Disabled Enabled S from starting POST, r able power or start afte re 'Sends watch dog'. 10	Optimal Default, Failsafe Default ight after power on. This allows r system is physically warmed -up. Optimal Default, Failsafe Default	
Delayed POST (PEI phase) Enabled - Robot holds BIC BIOS POST to start with sta Note: Robot does this befor Delayed time (second) Period of time for Robot to	Disabled Enabled S from starting POST, r able power or start afte re 'Sends watch dog'. 10 hold BIOS from POST.	Optimal Default, Failsafe Default ight after power on. This allows r system is physically warmed -up. Optimal Default, Failsafe Default	
Delayed POST (PEI phase) Enabled - Robot holds BIC BIOS POST to start with sta Note: Robot does this befor Delayed time (second) Period of time for Robot to Delayed POST (DXE	Disabled Enabled S from starting POST, r able power or start afte re 'Sends watch dog'. 10 hold BIOS from POST. Disabled	Optimal Default, Failsafe Default ight after power on. This allows r system is physically warmed -up. Optimal Default, Failsafe Default Optimal Default, Failsafe Default	
Delayed POST (PEI phase) Enabled - Robot holds BIC BIOS POST to start with sta Note: Robot does this befor Delayed time (second) Period of time for Robot to Delayed POST (DXE phase)	Disabled Enabled S from starting POST, r able power or start afte re 'Sends watch dog'. 10 hold BIOS from POST. Disabled Enabled	Optimal Default, Failsafe Default ight after power on. This allows r system is physically warmed -up. Optimal Default, Failsafe Default Optimal Default, Failsafe Default	
Delayed POST (PEI phase) Enabled - Robot holds BIC BIOS POST to start with sta Note: Robot does this befor Delayed time (second) Period of time for Robot to Delayed POST (DXE phase) Enabled - Robot holds BIC	Disabled Enabled S from starting POST, r able power or start afte re 'Sends watch dog'. 10 hold BIOS from POST. Disabled Enabled S before POST complet	Optimal Default, Failsafe Default ight after power on. This allows r system is physically warmed -up. Optimal Default, Failsafe Default Optimal Default, Failsafe Default tion. This allows BIOS POST to	
Delayed POST (PEI phase) Enabled - Robot holds BIC BIOS POST to start with sta Note: Robot does this befor Delayed time (second) Period of time for Robot to Delayed POST (DXE phase) Enabled - Robot holds BIC start with stable power or start with stable power or st	Disabled Enabled S from starting POST, r able power or start after re 'Sends watch dog'. 10 hold BIOS from POST. Disabled Enabled S before POST complet start after system is phy	Optimal Default, Failsafe Default ight after power on. This allows r system is physically warmed -up. Optimal Default, Failsafe Default Optimal Default, Failsafe Default tion. This allows BIOS POST to sically warmed -up.	
Delayed POST (PEI phase) Enabled - Robot holds BIC BIOS POST to start with sta Note: Robot does this befor Delayed time (second) Period of time for Robot to Delayed POST (DXE phase) Enabled - Robot holds BIC start with stable power or s Note: Robot does this after	Disabled Enabled S from starting POST, r able power or start after re 'Sends watch dog'. 10 hold BIOS from POST. Disabled Enabled S before POST complet start after system is phy 'Sends watch dog before	Optimal Default, Failsafe Default ight after power on. This allows r system is physically warmed -up. Optimal Default, Failsafe Default Optimal Default, Failsafe Default tion. This allows BIOS POST to sically warmed -up. ore BIOS POST'.	
Delayed POST (PEI phase) Enabled - Robot holds BIC BIOS POST to start with sta Note: Robot does this befor Delayed time (second) Period of time for Robot to Delayed POST (DXE phase) Enabled - Robot holds BIC start with stable power or s Note: Robot does this after Delayed time (second)	Disabled Enabled S from starting POST, r able power or start afte re 'Sends watch dog'. 10 hold BIOS from POST. Disabled Enabled S before POST complet start after system is phy 'Sends watch dog befor 10	Optimal Default, Failsafe Default ight after power on. This allows r system is physically warmed -up. Optimal Default, Failsafe Default Optimal Default, Failsafe Default tion. This allows BIOS POST to sically warmed -up. ore BIOS POST'. Optimal Default, Failsafe Default	
Delayed POST (PEI phase) Enabled - Robot holds BIC BIOS POST to start with sta Note: Robot does this befor Delayed time (second) Period of time for Robot to Delayed POST (DXE phase) Enabled - Robot holds BIC start with stable power or s Note: Robot does this after Delayed time (second) Period of time for Robot to	Disabled Enabled S from starting POST, r able power or start after re 'Sends watch dog'. 10 hold BIOS from POST. Disabled Enabled S before POST complete start after system is phy 'Sends watch dog befin 10 hold BIOS from POST.	Optimal Default, Failsafe Default ight after power on. This allows r system is physically warmed -up. Optimal Default, Failsafe Default Optimal Default, Failsafe Default tion. This allows BIOS POST to sically warmed -up. ore BIOS POST'. Optimal Default, Failsafe Default	
Delayed POST (PEI phase) Enabled - Robot holds BIC BIOS POST to start with sta Note: Robot does this befor Delayed time (second) Period of time for Robot to Delayed POST (DXE phase) Enabled - Robot holds BIC start with stable power or s Note: Robot does this after Delayed time (second) Period of time for Robot to Reset system once	Disabled Enabled S from starting POST, r able power or start afte re 'Sends watch dog'. 10 hold BIOS from POST. Disabled S before POST complet start after system is phy 'Sends watch dog befor 10 hold BIOS from POST. Disabled	Optimal Default, Failsafe Default ight after power on. This allows r system is physically warmed -up. Optimal Default, Failsafe Default Optimal Default, Failsafe Default tion. This allows BIOS POST to sically warmed -up. ore BIOS POST'. Optimal Default, Failsafe Default Optimal Default, Failsafe Default	
Delayed POST (PEI phase) Enabled - Robot holds BIC BIOS POST to start with sta Note: Robot does this befor Delayed time (second) Period of time for Robot to Delayed POST (DXE phase) Enabled - Robot holds BIC start with stable power or s Note: Robot does this after Delayed time (second) Period of time for Robot to Reset system once	Disabled Enabled S from starting POST, r able power or start after re 'Sends watch dog'. 10 hold BIOS from POST. Disabled Enabled S before POST complet start after system is phy 'Sends watch dog befin 10 hold BIOS from POST. Disabled Enabled Enabled	Optimal Default, Failsafe Default ight after power on. This allows r system is physically warmed -up. Optimal Default, Failsafe Default Optimal Default, Failsafe Default tion. This allows BIOS POST to sically warmed -up. ore BIOS POST'. Optimal Default, Failsafe Default Optimal Default, Failsafe Default	
Delayed POST (PEI phase) Enabled - Robot holds BIC BIOS POST to start with sta Note: Robot does this befor Delayed time (second) Period of time for Robot to Delayed POST (DXE phase) Enabled - Robot holds BIC start with stable power or s Note: Robot does this after Delayed time (second) Period of time for Robot to Reset system once Enabled - Robot resets sys	Disabled Enabled S from starting POST, r able power or start afte re 'Sends watch dog'. 10 hold BIOS from POST. Disabled Enabled S before POST complet start after system is phy 'Sends watch dog befi 10 hold BIOS from POST. Disabled Enabled Enabled Enabled Enabled	Optimal Default, Failsafe Default ight after power on. This allows r system is physically warmed -up. Optimal Default, Failsafe Default Optimal Default, Failsafe Default tion. This allows BIOS POST to sically warmed -up. ore BIOS POST'. Optimal Default, Failsafe Default Optimal Default, Failsafe Default optimal Default, Failsafe Default	
Delayed POST (PEI phase) Enabled - Robot holds BIC BIOS POST to start with sta Note: Robot does this befor Delayed time (second) Period of time for Robot to Delayed POST (DXE phase) Enabled - Robot holds BIC start with stable power or s Note: Robot does this after Delayed time (second) Period of time for Robot to Reset system once Enabled - Robot resets sys hard reset to onboard devi	Disabled Enabled S from starting POST, r able power or start afte re 'Sends watch dog'. 10 hold BIOS from POST. Disabled Enabled S before POST complet start after system is phy 'Sends watch dog befor 10 hold BIOS from POST. Disabled Enabled Enabled Enabled Enabled Enabled	Optimal Default, Failsafe Default ight after power on. This allows r system is physically warmed -up. Optimal Default, Failsafe Default Optimal Default, Failsafe Default tion. This allows BIOS POST to sically warmed -up. ore BIOS POST'. Optimal Default, Failsafe Default Optimal Default, Failsafe Default Optimal Default, Failsafe Default	
Delayed POST (PEI phase) Enabled - Robot holds BIC BIOS POST to start with sta Note: Robot does this befor Delayed time (second) Period of time for Robot to Delayed POST (DXE phase) Enabled - Robot holds BIC start with stable power or s Note: Robot does this after Delayed time (second) Period of time for Robot to Reset system once Enabled - Robot resets syst hard reset to onboard devi Soft or hard reset	Disabled Enabled S from starting POST, r able power or start after re 'Sends watch dog'. 10 hold BIOS from POST. Disabled Enabled S before POST complet start after system is phy 'Sends watch dog befin 10 hold BIOS from POST. Disabled Enabled Enabled tem for one time on ea ces, thus puts devices t Soft reset	Optimal Default, Failsafe Default ight after power on. This allows r system is physically warmed -up. Optimal Default, Failsafe Default Optimal Default, Failsafe Default tion. This allows BIOS POST to 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. Optimal Default, Failsafe Default	
Delayed POST (PEI phase) Enabled - Robot holds BIC BIOS POST to start with sta Note: Robot does this befor Delayed time (second) Period of time for Robot to Delayed POST (DXE phase) Enabled - Robot holds BIC start with stable power or s Note: Robot does this after Delayed time (second) Period of time for Robot to Reset system once Enabled - Robot resets sys hard reset to onboard devi Soft or hard reset	Disabled Enabled S from starting POST, r able power or start afte re 'Sends watch dog'. 10 hold BIOS from POST. Disabled Enabled S before POST complet start after system is phy 'Sends watch dog befin 10 hold BIOS from POST. Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Optimal Default, Failsafe Default ight after power on. This allows r system is physically warmed -up. Optimal Default, Failsafe Default Optimal Default, Failsafe Default tion. This allows BIOS POST to 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. Optimal Default, Failsafe Default	

### 3.4.7.1 Device Detecting Configuration

#### Action: Rest System

Aptio Setup — AMI Advanced		
Device detecting configuration • Device A1 detecting configuration • Device A2 detecting configuration • Device A3 detecting configuration • Device A4 detecting configuration • Device A5 detecting configuration • Device A5 detecting configuration If any device is detected in una condition, the robot will do for Action Soft or hand reset Retry-Count At time	se on an on expected llowing IReset System) ISoft1 9 IRfter show logol	Device #1 detecting configuration
- 14492	ine i ol 1990 readelett /r/	SADT ANT

Options Summary	18	- 45
Action	Reset System	Optimal Default, Failsafe Default
	Hold System	
Select action that robo	t should do.	- <b>F</b>
Soft or hard reset	Soft	Optimal Default, Failsafe Default
Characteristic and the state	Hard	0
Select reset type robot	should send on each boo	ot,
Retry-Count	3	Optimal Default, Failsafe Default
Fill retry counter here. I system continue its PO	Robot will reset system at ST.	most counter times, and then let
At time	After show logo	Optimal Default, Failsafe Default
	Before show logo	
Select robot action time After show logo – Rob almost ready. Before show logo – Ro not be ready.	e: ot will do action after log bot will do action earlier l	o is displayed. System devices are before logo, but some devices may

### Action: Hold System

Advanced	LO SETUD — AMI
Device detecting configuration Device A1 detecting configuration Device A2 detecting configuration Device A3 detecting configuration Device A5 detecting configuration Device A5 detecting configuration If any device is detected in unexpected condition, the echot will do following mation Incl Holding time out (second) 10 At time Inft	1 Eacternd er show logol #*: Belect Screen 11: Belect Screen 11: Belect Item Enter: Salect 4/-i Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Options Summary		
Action	Reset System	Optimal Default, Failsafe Default
	Hold System	
Select action that robo	t should do.	
Holding time out (second)	10	Optimal Default, Failsafe Default
Fill hold time out here. then let system continu	Robot will hold system no ie its POST.	o longer then time-out value, and
At time	After show logo	Optimal Default, Failsafe Default
	Before show logo	
Select robot action time After show logo - Robo almost ready. Before show logo - Ro not be ready.	e: ot will do actoin after logo bot will do action earlier b	o is displayed. System devices are before logo, but some devices may

### 3.4.7.1.1 Device# Detecting Configuration

#### Interface: Disabled



<b>Options Summary</b>	10	
Interface	Disabled	Optimal Default, Failsafe Default
	PCI	
	DIO	
	SMBUS	
	Legacy I/O	15
	Super I/O	
	MMIO	
Select interface rob	oot should use to commun	icate with device.

#### Interface: PCI

Select the condition that robot should check for device. Fresent - 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 DMFF.
<pre>##: Select Screen ##: Select Item Enter: Select #/~: Change Opt. F1: General Heip F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

<b>Options Summary</b>		
BUS	0	Optimal Default, Failsafe Default
Fill BUS number to	a PCI device, in hexadecimal	I. Range: 0 - FF
Device	0	Optimal Default, Failsafe Default
Fill DEVICE number	to a PCI device, in hexadeci	mal. Range: 0 - FF
Function	0	Optimal Default, Failsafe Default
Fill FUNCTION num	ber to a PCI device, in hexad	decimal. Range: 0 - FF
Device	is	
	ls not	Optimal Default, Failsafe Default
Select that robot sh	ould or should not do action	n if condition met.
In condition	Present	Optimal Default, Failsafe Default
	Specified register data	
Select the condition Present - device is of According to regist Note: Device will be not 0xFF.	that robot should check for detected er - Robot read register acco e considered 'Present' by Rol	r device. ording to configuration. bot, when data read from device is

Options Summary		
Register data is	bitwise equal to	Optimal Default, Failsafe Default
	bytewise equal to	
	bytewise lesser than	
	bytewise larger than	
Select how robot sho below.	ould compare data read fror	n register, to a value configured
Register offset	0	Optimal Default, Failsafe Default
Fill register offset (or	index) for robot to read, in I	nexadecimal. Range: 0 - FF
Bit offset	0	Optimal Default, Failsafe Default
Fill bit offset for regis	ter, for robot to compare wi	th bit value.
Bit value	Low	Optimal Default, Failsafe Default
	High	
Fill bit value for robo	t to compare register - bit wit	h specified offset.
Byte value	0	Optimal Default, Failsafe Default
Fill a byte value for ro Range: 0 - FF	obot to compare register da	ta with, in hexadecimal.

Interface: DIO

Advanced	Aptio Setup – AMI	
Device #1 detecting configuration	מי	Seles Device #1 detecting con
Robot detects device with Interface DID oin number Expecting Device In High/Low level	010]  0105] [is not] [iau]	**: Select Screen 1: Select Item Enter: Select +*: Charge Oot, F1: General Help F2: Previout Values F3: Optimized Defaults F4: Seve 8 Exit F4: Seve 8 Exit
Vers	ian 2.21.1278 Coayright (C	) BULL AMI

Options Summary		
Device	ÎS	-
	ls not	Optimal Default, Failsafe Default
Select that robot should	d or should not do a	iction if condition met.
DIO pin number	DIO1	Optimal Default, Failsafe Default
	DIO*	
Fill DIO pin number, 0 -	DIO0, 1 - DIO1, and	so on
Fill DIO pin number. 0 - For COM express produ	DIO0, 1 - DIO1, and uct: 0-3 - GPI0-3, 4-	1 so on. 7 - GPO0-3
Fill DIO pin number. 0 - For COM express produ Device	DIO0, 1 - DIO1, and uct: 0-3 - GPI0-3, 4- is	3 so on. 7 - GPO0-3
Fill DIO pin number. 0 - For COM express produ Device Select that robot should	DIO0, 1 - DIO1, and uct: 0-3 - GPI0-3, 4- is Is not d or should not do a	d so on. 7 - GPO0-3 Optimal Default, Failsafe Default Iction if condition met.
Fill DIO pin number. 0 - For COM express produ Device Select that robot should In High/Low level	DIO0, 1 - DIO1, and uct: 0-3 - GPI0-3, 4- is Is not d or should not do a Low	d so on. 7 - GPO0-3 Optimal Default, Failsafe Default iction if condition met. Optimal Default, Failsafe Default

Interface: SMBUS

Advanced	Aptio Setup — AMI	
Device #1 detecting configurat	ton	Select interface robot should use to communicate with device
Robot detects device with Interface SHBUS Slave Address	(SMEUS) D	
Expecting Device In condition	(is not) (Specified register date)	
Register data is Register offset Bit offset Bit value	[bitwice equal to] 0 0 [Low]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: Seneral Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Ver	sion 2.21.1278 Cosyright (C) 2	021. MMI

Options summary		
SMBUS Slave Address	0	Optimal Default, Failsafe Default
Fill slave address to a Sl	MBUS device, in hexadeci	mal. Range: 0 - FF
Device	is	1
	ls not	Optimal Default, Failsafe Default
Select that robot should	d or should not do action	if condition met.
In condition	Present	Optimal Default, Failsafe Default
A CONTRACTOR OF A CONTRACT		
Select the condition tha Present - device is dete According to register -	Specified register data it robot should check for cted Robot read register accor	device. ding to configuration.
Select the condition tha Present - device is dete According to register - <b>Note</b> : Device will be cor not 0xFF.	Specified register data t robot should check for cted Robot read register accor nsidered "Present" by Rob	device. ding to configuration. ot, when data read from device is
Select the condition tha Present - device is dete According to register - <b>Note</b> : Device will be cor not 0xFF. <b>Register data is</b>	Specified register data it robot should check for icted Robot read register accor hsidered 'Present' by Rob bitwise equal to	device. ding to configuration. ot, when data read from device is Optimal Default, Failsafe Default
Select the condition tha Present - device is dete According to register - <b>Note</b> : Device will be cor not 0xFF. <b>Register data is</b>	Specified register data t robot should check for cted Robot read register accor nsidered 'Present' by Rob bitwise equal to bytewise equal to	device. ding to configuration. ot, when data read from device is Optimal Default, Failsafe Default
Select the condition tha Present - device is dete According to register - <b>Note</b> : Device will be cor not 0xFF. <b>Register data is</b>	Specified register data it robot should check for icted Robot read register accor hsidered 'Present' by Rob bitwise equal to bytewise lesser than	device. ding to configuration. ot, when data read from device is Optimal Default, Failsafe Default

<b>Options Summary</b>	1	
Register offset	0	Optimal Default, Failsafe Default
Fill register offset (o	r index) for robot to i	read, in hexadecimal. Range: 0 - FF
Bit offset	0	Optimal Default, Failsafe Default
Fill bit offset for reg	ister, for robot to con	npare with bit value.
Bit value	Low	Optimal Default, Failsafe Default
	High	
Fill bit value for rob	ot to compare registe	er-bit with specified offset.
Byte value	0	Optimal Default, Failsafe Default
Fill a byte value for Range: 0 - FF	robot to compare req	gister data with, in hexadecimal.

#### Interface: Legacy I/O

Advanced	Aptio Setup — AMI	
Device #1 detecting configure Robot detects device with Interface I/D Address Expecting Device In condition	ition [Legacy I/0] D [is_not] [Specified register data]	Select interface robot should use to communicate with device
Register data is Bit offset Bit value	lbitwise equal tol 0 Itowl	<pre>#*: Select Screen fL: Select Item Enter: Select +/-: Change Opt. FL: General Help FC: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

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

Options Summar	У	
Bit offset	0	Optimal Default, Failsafe Default
Fill bit offset for re	gister, for robot to com	npare with bit value.
Bit value	Low	Optimal Default, Failsafe Default
	High	
Fill bit value for ro	bot to compare registe	er-bit with specified offset.
Byte value	0	Optimal Default, Failsafe Default
Fill a byte value fo Range: 0 - FF	r robot to compare rec	gister data with, in hexadecimal.

#### Interface: Super I/O

Rivanced	Aptio Setup — AMI	
Device #1 detecting configuration	1	Select interface robot should use to communicate with device
Robot detects device with Interface Super 1/D LDN	(Super 1/0) 0	
Expecting Device In condition	(is not) [Specified register datej	
Register data is Register offset Bit offset Bit value	lbitwise equal to) 0 1 itow)	<pre>#*: Select Screen #1: Select Item Enter: Select +/-: Change Opt. f1: Seneral Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Net s to	a 2 21 1228 Convelset /D) 2	TO L ANT

Options Summary		
Super I/O LDN	0	Optimal Default, Failsafe Default
Fill LDN number to a	Super I/O device. Range: 0	~FF
Device	is	
	ls not	Optimal Default, Failsafe Default
Select that robot sho	ould or should not do action	if condition met.
In condition	Present	Optimal Default, Failsafe Default
	Specified register data	
Select the condition Present - device is de	Specified register data that robot should check for etected r - Robot read register accor	device.
Select the condition Present - device is de According to registe <b>Note</b> : Device will be not 0xFF	Specified register data that robot should check for etected r - Robot read register accor considered 'Present' by Rob	device. ding to configuration. iot, when data read from device is
Select the condition Present - device is de According to registe <b>Note</b> : Device will be not 0xFF. <b>Register data is</b>	Specified register data that robot should check for etected r - Robot read register accor considered 'Present' by Rob bitwise equal to	device. rding to configuration. iot, when data read from device is Optimal Default, Failsafe Default
Select the condition Present - device is de According to registe <b>Note</b> : Device will be not 0xFF. <b>Register data is</b>	Specified register data that robot should check for etected r - Robot read register accor considered 'Present' by Rob bitwise equal to bytewise equal to	device. ding to configuration. oot, when data read from device is Optimal Default, Failsafe Default
Select the condition Present - device is de According to registe <b>Note</b> : Device will be not 0xFF. <b>Register data is</b>	Specified register data that robot should check for etected r - Robot read register accor considered 'Present' by Rob bitwise equal to bytewise equal to bytewise lesser than	device. rding to configuration. rot, when data read from device is Optimal Default, Failsafe Default

<b>Options Summary</b>	9	2 s
Register offset	0	Optimal Default, Failsafe Default
Fill register offset (o	r index) for robot to r	ead, in hexadecimal. Range: 0 - FF
Bit offset	0	Optimal Default, Failsafe Default
Fill bit offset for reg	ister, for robot to com	ipare with bit value.
Bit value	Low	Optimal Default, Failsafe Default
	High	
Fill bit value for rob	ot to compare registe	r-bit with specified offset.
Byte value	0	Optimal Default, Failsafe Default
Fill a byte value for Range: 0 - FF	robot to compare reg	ister data with, in hexadecimal.

#### Interface: MMIO

Advanced	u
Device #i detecting configuration  Robot detects device with Interface [MMID] MMID Eddress 0  Expecting Device I is not] In condition [Specified regist data]  Register data is Ibitwise equal to Bit value I Loui	er 4 **: Select Screen 1: Select Screen 1: Select Item Enter: Select +<: Change Opt. F1: Deneral Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESCI Exit

Options Summary		
MMIO Address	0	Optimal Default, Failsafe Default
Fill Memory Mapped	I I/O address device is respo	onding to. Range: 0~FFFFFFFF
Device	is	
	ls not	Optimal Default, Failsafe Default
Select that robot sho	uld or should not do action	if condition met.
In condition	Present	Optimal Default, Failsafe Default
	Specified register data	
Note: Device will be not 0xFF.	r - Robot read register accor considered 'Present' by Rob	iot, when data read from device is
Register data is	bitwise equal to	Optimal Default, Failsafe Default
	bytewise equal to	
	bytewise lesser than	
	bytewise larger than	
Select how robot sho below.	ould compare data read from	n register, to a value configured

Options Summary		
Bit offset	0	Optimal Default, Failsafe Default
Fill bit offset for re	gister, for robot to com	ipare with bit value.
Bit value	Low	Optimal Default, Failsafe Default
	High	
Fill bit value for ro	bot to compare registe	r-bit with specified offset.
Byte value	0	Optimal Default, Failsafe Default
Fill a byte value fo Range: 0 - FF	r robot to compare reg	ister data with, in hexadecimal.

#### 3.4.8 TSN GBE Configuration

Main	Aptio Setup — AMI	
PCH TSN LAN Controller Enable Timed TSN PCS PCH TSN Nulti-VC PCH TSN Port #1 Link Speed	[Enabled] [Disabled] [RefClk 38.4Hhz 2.56bps]	Enable/Disable TSN LAN. ++: Select Screen 11: Select Item Enter: Select +/-: Change Oct. F1: General Help F2: Frevious Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Vers	an 2.21.1278 Conurisht (C)	2021 AMT

Options Summary	<i>85</i>	43
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 PC	S device will appear in ACPI table
PCH TSN Multi-Vc	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable PCH TS	N Multi Virtual Channels	12 17
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 co	onfig	

### 3.5 Setup Submenu: System I/O

Aptio Setup - AMI Main Advanced <mark>System I/O</mark> Security Boot Save & Exit		
System 1/0 P FOI Express Configuration Storage Configuration HD Audio Configuration Digital IO Port Configuration Legacy Logical Devices Configuration Serial Port Console Redirection PCH-ID Configuration	PCI Express Configuration settings	
Version 2.21.1278 Copyri	ght (C) 2021 AMI	

#### 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 Ro	oot Port.	
PCIe Speed	Auto	Optimal Default, Failsafe Default
	Gen1	
	Gen2	
	Gen3	
Control the PCI Express Sp	beed	F

#### 3.5.2 Storage Configuration

Aptio Setup - AMI System I/0		
NVRe Configuration		NVMe Device Options Settings
SATA Controller(s)	[Enabled]	
Serial ATA Port 1 Software Preserve Port 1 Hot Plug	Empty Unknown IEnabled] IDisabled]	
mSATA Port Software Preserve Port 0	Empty Unknown [Enabled]	
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: Beneral Help
		F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Options Summary	3	
SATA Controller(s)	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable SATA D	evice.	
Port 0/1	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SATA	Port	
Hot Plug	Disabled	Optimal Default, Failsafe Default
	Enabled	
Designates this port as	Hot Pluggable.	

#### 3.5.2.1 NVME Configuration

Advanced Advanced	- AMI
NUME Configuration No NUME Device Found	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: Beneral Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESD: Exit
Version 2.21.1278 Copy	right (C) 2021 AMI

#### **3.5.3 HD Audio Subsystem Configuration Settings**

Syst	Aptio Setup - AM) em I/0	
HD Audio Subsystem Do	nfiguration Settings	Control Detection of the
HD Audio	[Enabled]	HD-Audio device. Disabled = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled. "#: Select Screen f4: Select Item Enter: Select */-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Oefaults F4: Save & Exit ESC: Exit
	Version 2.21.1278 Copyright	(C) 2021 AMI
Options Summary		
HD Audio	Disabled	

 Disabled
 Disabled

 Enabled
 Optimal Default, Failsafe Default

 Control Detection of the HD-Audio device.
 Optimal Default, Failsafe Default

 Disabled = HDA will be unconditionally disabled
 Enabled

### 3.5.4 Digital IO Port Configuration

Syste	Aptio Setup -	ANI
Digital ID Port Config OUD1 Output Level DID2 Output Level DID3 Output Level DID4 Output Level DID5 OUD6 DID7 DID8	unation (Output) (High) (Output) (High) (Output) (High) (Output) (High) Ifnout 1 Ifnout 1 Ifnout 1 Ifnout 1 Ifnout 1	Set DIO as Input or Output ++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Option: Summary	Version 2.21.1278 Copyriş	sht (C) 2021 AMI
DIO Port #	Output Input	
Set DIO as Input or O	utput	
Output Level	High Low	Optimal Default, Failsafe Default
Set output level when	DIO pin is output	

3.5.5 Legacy Logical Devices Configuration

Aptio Setup - AMI System 1/0	
AMI SIO Driver Version : A5.16.00 Super ID Chip Logical Device(s) Configuration FACTIVENT Serial Port 1 FACTIVENT Serial Port 2 FACTIVENT Serial Port 3 FACTIVENT Serial Port 4 MMENING: 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.	View and Set Basic properties of the SIO Logical device. Like IO Base, IRQ Range, DNA Channel and Device Mode.
	++: Select Screen fl: Select Item Enter: 681ect +/-: Change Opt. Fl: Beneral Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.21.1278 Copyright (C) 20	21 AMI

#### 3.5.5.1 Serial Port1 Configuration

Aptio Setup - AMI System I/0		
Serial Port 1 Configuration		Enable on Disable this Logical
Use This Device	[Enabled]	Device.
Logical Device Settings: Current : IO=3F8h; IRQ=4;		
Possible: Mode :	[Use Automatic Settings] [RS232]	
Settings] Mode : [RS232] HARNING: Disabling SIO Logical Devices may have unwanted side effects. PROCEED WITH CAUTION.		<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>
10.5 million (10.5 million (10	a pr same commister / p) popr	6.MT

<b>Options Summary</b>	41	45.
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable th	is Logical Device.	
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3F8h; IRQ=4	
	10=2F8h; IRQ=3	10
Allows user to chang This Setup Page afte	e Device's Resource settings. r System restarts.	New settings will be reflected on
Mode	RS232	Optimal Default, Failsafe Default
	RS422	
	RS485	2
UARTRS232, 422, 48	35 selection	1

### 3.5.5.2 Serial Port2 Configuration

Serial Port 2 Configuration	
CONTRACTOR OF A CONTRACTOR OF	Enable on Disable this Logical
Use This Device (Enabled)	Uevice.
Logical Device Settings: Current : IO=2F8h; IRQ=3;	
Possible: [Use Automatic Settings]	
Mode : [RS232]	
HARNING: Disabling SIO Logical Devices may have unus side effects. PROCEED WITH CAUTION.	++: Select Screen ++: Select Item Enter: Select +/-: Change Opt. Fi: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

<b>Options Summary</b>		5a
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable th	is Logical Device.	
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=2F8h; IRQ=3	35
	10=3F8h; IRQ=4	
Allows user to chang This Setup Page afte	e Device's Resource settings. r System restarts.	New settings will be reflected on
Mode	RS232	Optimal Default, Failsafe Default
	RS422	
	RS485	
UART RS232, 422, 44	85 selection	÷.

### 3.5.5.3 Serial Port3 Configuration

System I/O	Aptio Setup - AMI	
Serial Port 3 Configuration		Allous the user to change the
Use This Device	[Enabled]	settings will be reflected on this setup page after system
Logical Device Settings: Current : IO=3EBh; IRQ=11;		restants.
Possible:	[Use Automatic	
Mode :	[RS232]	
Settings Mode : [RS232] WARNING: Disabling SIO Logical Devices may have unwanted side effects. PROCEED WITH CAUTION.		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version	2.21.1278 Copyright (C) 20	21 AMI

<b>Options Summary</b>		
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable th	is Logical Device.	
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3E8h; IRQ=11	15
	10=2E8h; IRQ=11	
Allows user to chang This Setup Page afte	e Device's Resource settings. r System restarts.	New settings will be reflected on
Mode	RS232	Optimal Default, Failsafe Default
	RS422	
	RS485	
UARTRS232, 422, 44	85 selection	÷.

### 3.5.5.4 Serial Port4 Configuration

System I/O	Aptio Setup – AMI	
Serial Port 4 Configuration Use This Device Logical Device Settings:	(Enabled)	Enable or Disable this Logical Device.
Possible: Mode : MPRNING: Disabling SIO Logical D	IUse Automatic SettingsI IRS232] wevices may have unwanted	
side effects. PROCEED WITH CAUTION.		++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. Fl: Beneral Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Versi	on 2.21.1278 Copyright (D) a	021. AMI

<b>Options Summary</b>	se 111	90-
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable th	is Logical Device.	
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	10=2E8h; IRQ=11	
	10=3E8h; IRQ=11	
Allows user to chang This Setup Page afte	e Device's Resource settings. r System restarts.	New settings will be reflected on
Mode	RS232	Optimal Default, Failsafe Default
	RS422	22
	RS485	
UARTRS232, 422, 48	35 selection	10 10

### 3.5.6 Legacy Logical Devices Configuration

CINO.		Console Redirection Enable or
Console Redirection	[Disabled]	Disedie,
Console Redirection Settings		
CDM1(Pci Bus0,Dev0,Func0) (Disab	Led)	
Console Redirection	Port Is Disabled	
Serial Port for Dut-of-Band Manag	genent/	
Hindows Emergency Management Serv	vices (EMS)	
► Console Redirection EMS ► Console Redirection Settings	1015801601	
		de- Salert Screen
		14: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: Weneral Help F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
Versi	an 2.21.1278 Copyright (C	) 2021 AMI

And a second second second	
Disabled	Optimal Default, Failsafe Default
Enabled	
or Disable.	
Disabled	Optimal Default, Failsafe Default
Enabled	
	Disabled Enabled or Disable. Disabled Enabled

### 3.5.6.1 Console Redirection Settings

System I/0	Aptio Setup - AMI	
CDM0 Console Redirection Settings Terminal Type Bits per second Data Bits Parity Stop Bits Flow Control VT-UTF8 Combo Key Support Recorder Mode Resolution 100x31 Putty KeyPad	(AKSI) [115200] [0] [Wane] [1] [Wane] [Enabled] [Disabled] [Disabled] [VT100]	Emulation: ANSI: Extended ASCII char set. VTIOD: ASCII char set. VTIOD: Extends VTIOD to support color, function Keys, etc. VT-UTFB: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes. +*: Select Screen fl: Select Item Enter: Select */-: Change Opt. F1: Reneral Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Versio	n 2.21.1278 Copyright (C)	2021 AMI

Options Summary		
Terminal Type	VT100	
	VT100+	0
	VT-UTF8	0
	ANSI	Optimal Default, Failsafe Default
Emulation: ANSI: Exter VT100 to support colo Unicode chars onto 1	nded ASCII char set. V r, function keys, etc. V or more bytes.	F100: ASCII char set. VT100+: Extends T-UTF8: Uses UTF8 encoding to map
Bits Per second	9600	
	19200	
	38400	
	57600	
	115200	Optimal Default, Failsafe Default
Selects serial port transide. Long or noisy line	ismission speed. The sp es may require lower s	peed must be matched on the other peeds.
Data Bits	7	
	8	Optimal Default, Failsafe Default
Data Bits	96 - C	*****

THE PERSON NEWSFREE PERSON NEWSFREE PERSON NEWSFREE		
Parity	None	Optimal Default, Failsafe Default
50 1	Even	
	Odd	
	Mark	
	Space	
A parity bit can be sent v parity bit is 0 if the num of in the data bits is odd. Mark and Space Parity do additional data bit.	with the data bits to of I's in the data bits Mark: parity bit is alv o not allow for error	detect some transmission errors. Even: is even. Odd: parity bit is 0 if num of 1's ways 1. Space: Parity bit is always 0. detection. They can be used as an
Stop Bits	1	Optimal Default, Failsafe Default
	2	
require more than 1 stop Flow Control	None	Optimal Default, Failsafe Default
Flow Control	None Usedu and DTC//	opumai Deladir, Paisale Deladir
Flow control can prevent	data loss from buffe	er overflow. When sending data, if the
Flow control can prevent receiving buffers are full, buffers are empty, a 'star control uses two wires to	data loss from buffe a 'stop' signal can b t' signal can be sent send start/stop sig	er overflow. When sending data, if the e sent to stop the data flow. Once the to re-start the flow. Hardware flow nals.
Flow control can prevent receiving buffers are full, buffers are empty, a 'star control uses two wires to VT-UTF8 Combo Key	data loss from buffe a 'stop' signal can b t' signal can be sent send start/stop sig Disabled	er overflow. When sending data, if the be sent to stop the data flow. Once the to re-start the flow. Hardware flow nals.
Flow control can prevent receiving buffers are full, buffers are empty, a 'star control uses two wires to VT-UTF8 Combo Key Support	data loss from buffe a 'stop' signal can b t' signal can be sent send start/stop sig Disabled Enabled	er overflow. When sending data, if the be sent to stop the data flow. Once the to re-start the flow. Hardware flow nals. Optimal Default, Failsafe Default
Flow control can prevent receiving buffers are full, buffers are empty, a 'star control uses two wires to VT-UTF8 Combo Key Support Enable VT-UTF8 Combin	data loss from buffe a 'stop' signal can b t' signal can be sent send start/stop sig Disabled Enabled ation Key Support fe	er overflow. When sending data, if the re sent to stop the data flow. Once the to re-start the flow. Hardware flow nals. Optimal Default, Failsafe Default or ANSI/VT100 terminals
Flow control can prevent receiving buffers are full, buffers are empty, a 'star control uses two wires to VT-UTF8 Combo Key Support Enable VT-UTF8 Combin Recorder Mode	data loss from buffe a 'stop' signal can b t' signal can be sent send start/stop sig Disabled Enabled ation Key Support fe Disabled	er overflow. When sending data, if the re sent to stop the data flow. Once the to re-start the flow. Hardware flow nals. Optimal Default, Failsafe Default or ANSI/VT100 terminals Optimal Default, Failsafe Default
Flow control can prevent receiving buffers are full, buffers are empty, a 'star control uses two wires to VT-UTF8 Combo Key Support Enable VT-UTF8 Combin Recorder Mode	data loss from buffe a 'stop' signal can b t' signal can be sent send start/stop sig Disabled Enabled ation Key Support fe Disabled Enabled	er overflow. When sending data, if the be sent to stop the data flow. Once the to re-start the flow. Hardware flow nals. Optimal Default, Failsafe Default or ANSI/VT100 terminals Optimal Default, Failsafe Default
Flow control can prevent receiving buffers are full, buffers are empty, a 'star control uses two wires to VT-UTF8 Combo Key Support Enable VT-UTF8 Combin Recorder Mode With this mode enabled	data loss from buffe a 'stop' signal can be t' signal can be sent send start/stop sig Disabled Enabled Disabled Enabled Enabled only text will be sent	er overflow. When sending data, if the be sent to stop the data flow. Once the it to re-start the flow. Hardware flow nals. Optimal Default, Failsafe Default or ANSI/VT100 terminals Optimal Default, Failsafe Default t. This is to capture Terminal data.
Flow control can prevent receiving buffers are full, buffers are empty, a 'star control uses two wires to VT-UTF8 Combo Key Support Enable VT-UTF8 Combin Recorder Mode With this mode enabled Resolution 100x31	data loss from buffe a 'stop' signal can be send start/stop sig Disabled Enabled ation Key Support fe Disabled Enabled only text will be sen Disabled	er overflow. When sending data, if the be sent to stop the data flow. Once the it to re-start the flow. Hardware flow nals. Optimal Default, Failsafe Default or ANSI/VT100 terminals Optimal Default, Failsafe Default t. This is to capture Terminal data. Optimal Default, Failsafe Default
Flow control can prevent receiving buffers are full, buffers are empty, a 'star control uses two wires to VT-UTF8 Combo Key Support Enable VT-UTF8 Combin Recorder Mode With this mode enabled Resolution 100x31	data loss from buffe a 'stop' signal can be send start/stop sig Disabled Enabled Enabled Enabled only text will be sen Disabled Enabled Enabled	er overflow. When sending data, if the be sent to stop the data flow. Once the to re-start the flow. Hardware flow nals. Optimal Default, Failsafe Default or ANSI/VT100 terminals Optimal Default, Failsafe Default t. This is to capture Terminal data. Optimal Default, Failsafe Default
Flow control can prevent receiving buffers are full, buffers are empty, a 'star control uses two wires to VT-UTF8 Combo Key Support Enable VT-UTF8 Combin Recorder Mode With this mode enabled Resolution 100x31 Enables or disables exter	data loss from buffe a 'stop' signal can be send start/stop signal can be sent send start/stop signal Disabled Enabled Enabled Enabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	er overflow. When sending data, if the re sent to stop the data flow. Once the to re-start the flow. Hardware flow nals. Optimal Default, Failsafe Default or ANSI/VT100 terminals Optimal Default, Failsafe Default to capture Terminal data. Optimal Default, Failsafe Default
Flow control can prevent receiving buffers are full, buffers are empty, a 'star control uses two wires to VT-UTF8 Combo Key Support Enable VT-UTF8 Combin Recorder Mode With this mode enabled Resolution 100x31 Enables or disables exter Putty KeyPad	data loss from buffe a 'stop' signal can be t' signal can be sent send start/stop sig Disabled Enabled Disabled Enabled Disabled Enabled Disabled Enabled VT100	er overflow. When sending data, if the re sent to stop the data flow. Once the to re-start the flow. Hardware flow nals. Optimal Default, Failsafe Default or ANSI/VT100 terminals Optimal Default, Failsafe Default t. This is to capture Terminal data. Optimal Default, Failsafe Default optimal Default, Failsafe Default
Flow control can prevent receiving buffers are full, buffers are empty, a 'star control uses two wires to VT-UTF8 Combo Key Support Enable VT-UTF8 Combin Recorder Mode With this mode enabled Resolution 100x31 Enables or disables exter Putty KeyPad	data loss from buffe a 'stop' signal can be send start/stop sig Disabled Enabled Enabled Disabled Enabled Disabled Enabled Enabled Usabled Usabled Enabled Usabled Usabled Usabled Usabled Usabled Usabled Usabled Usabled	er overflow. When sending data, if the be sent to stop the data flow. Once the it to re-start the flow. Hardware flow nals. Optimal Default, Failsafe Default or ANSI/VT100 terminals Optimal Default, Failsafe Default ton Optimal Default, Failsafe Default tion
Flow control can prevent receiving buffers are full, buffers are empty, a 'star control uses two wires to VT-UTF8 Combo Key Support Enable VT-UTF8 Combin Recorder Mode With this mode enabled in Resolution 100x31 Enables or disables exter Putty KeyPad	data loss from buffe a 'stop' signal can be send start/stop sig Disabled Enabled Enabled Disabled Enabled Enabled Enabled Enabled Uisabled Enabled Uisabled Enabled Uisabled Enabled XTERMR6	er overflow. When sending data, if the be sent to stop the data flow. Once the it to re-start the flow. Hardware flow nals. Optimal Default, Failsafe Default or ANSI/VT100 terminals Optimal Default, Failsafe Default ton Optimal Default, Failsafe Default optimal Default, Failsafe Default
Flow control can prevent receiving buffers are full, buffers are empty, a 'star control uses two wires to VT-UTF8 Combo Key Support Enable VT-UTF8 Combin Recorder Mode With this mode enabled Resolution 100x31 Enables or disables exter Putty KeyPad	data loss from buffe a 'stop' signal can be send start/stop signal can be be send start/stop signal can be be send start/stop signal Disabled Enabled Disabled Enabled Disabled Enabled Disabled Enabled Med terminal resolution VT100 UNUX XTERMR6 SCO	er overflow. When sending data, if the be sent to stop the data flow. Once the it ore-start the flow. Hardware flow nals. Optimal Default, Failsafe Default or ANSI/VT100 terminals Optimal Default, Failsafe Default ton Optimal Default, Failsafe Default optimal Default, Failsafe Default
Flow control can prevent receiving buffers are full, buffers are empty, a 'star control uses two wires to VT-UTF8 Combo Key Support Enable VT-UTF8 Combin Recorder Mode With this mode enabled Resolution 100x31 Enables or disables exter Putty KeyPad	data loss from buffe a 'stop' signal can be send start/stop signal can be sent isend start/stop signal Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled USABLE Enabled Enabled Enabled SCO ESCN	er overflow. When sending data, if the be sent to stop the data flow. Once the it o re-start the flow. Hardware flow nals. Optimal Default, Failsafe Default or ANSI/VT100 terminals Optimal Default, Failsafe Default ton Optimal Default, Failsafe Default optimal Default, Failsafe Default
Flow control can prevent receiving buffers are full, buffers are empty, a 'star control uses two wires to VT-UTF8 Combo Key Support Enable VT-UTF8 Combin Recorder Mode With this mode enabled Resolution 100x31 Enables or disables exter Putty KeyPad	data loss from buffe a 'stop' signal can be send start/stop signal can be sent isend start/stop signal can be sent Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled USABLE Enabled Ena	er overflow. When sending data, if the be sent to stop the data flow. Once the it o re-start the flow. Hardware flow nals. Optimal Default, Failsafe Default or ANSI/VT100 terminals Optimal Default, Failsafe Default tor ANSI optimal Default, Failsafe Default Optimal Default, Failsafe Default optimal Default, Failsafe Default

#### 3.5.7 PCH-IO Configuration

	Select function enabled for
	Full size MiniCard Slot(CN4
	<pre>+*: Select Screen 14: Select Iten Enter: Select +/-: Change Opt. F1: General Help F2: Frevious Values F3: Optimized Defaults F4: Case &amp; Fult</pre>
	ESC: Exit
	t (C) 2021 AMI

Options Summary		
MiniCard Slot Function	SATA	Optimal Default, Failsafe Default
	PCle	
Select function enabled for Full size MiniCard Slot (CN10)		

### 3.6 Setup Submenu: Security

Aptio Setup Utility - Copyright (C) 2019 American Megetrenos, Inc. Nain Advanced Chipset Security Boot Seve & Exit		
Password Description		Set Administrator Password
If ONLY the Administrator's then this only limits access only asked for when enterin if ONLY the User's password is a power on password and boot or enter Setup. In Set have Administrator rights. The password length must be in the following range: Windows length	s password is set, is to Setup and is ig Setup. d is set, then this must be entered to tup the User will e	
Maximum length	20	-
		++: Select Screen
Edministrator Passured		T+: Select Iten
User Passuord		+/-: Change Dpt.
		Fi: General Help
• Secure Baot		F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

#### 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 - AMI	
Configuration Security Device Support NO Security Device Found	[Enable]	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TOS EFF protocol and DMTMS interface will not be available. **: Select Screen T4: Select Screen T4: Select Ten Enter: Select */-: Change Opt. F1: General Helo F2: Previous Values F3: Optimized Defaults F4: Save 8 ENI
Options Summary	rsion 2,21,1278 Occyright (C	ESC: Exit
Security Device Support	Disable	
becany bence support	Enable	Optimal Default, Failsafe Default
Enables or Disables BIOS s O.S. will not show Security available.	upport for security devi Device. TCG EFI protoc	ce. oland INTIA 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	5. 2.
Contra and Anna A	Enable	Optimal Default, Failsafe Default
Enable or Disable SHA256	PCR Bank	
Pending Operation	None	Optimal Default, Failsafe Default
5	TPM Clear	
Schedule an Operation for	the Security Device. NO	OTE: Your Computer will reboot
during restart in order to c	hange State of Security	Device.
Options Summary		
Platform Hierarchy	Disabled	
ind dominicial day	Enabled	Optimal Default Failsafe Default
Enable or disable Platform	Hierarchy	
Storage Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Storage	Hierarchy	
Endorsement Hierarchy	Disabled	
i serveran en	Enabled	Optimal Default, Failsafe Default
Enable or Disable Endorser	ment Hierarchy	
TPM2.0 UEFI Spec Version	TCG_1_2	2
	TCG_2	Optimal Default, Failsafe Default
Select the TCG2 Spec Versio TCG_1_2: the Compatible m TCG_2: Support new TCG2	on Support, Iode for Win8/Win10 protocol and event for	mat f <mark>or</mark> Win10 or later
Physical Presence Spec	1.2	)
Version	1.3	Optimal Default, Failsafe Default
Select to Tell O.S. to suppor	t PPI Spec Version 1.2 c	or 1.3. Note some HCK tests might
not support 1.3.		

#### 3.6.2 Secure Boot

	Aptio Setup – AMI Security	
System Mode	Setup	Secure Boot feature is Active
Secure Boot	IDisebled Not Active	Platform Key(PK) is encolled and the System is in User mode. The mode change requires
Secure Boot Hode • Restore Factory Keys • Reset To Setup Mode	lCustoni	platform reset
▶ Key Management		
		Enter: Select +/-: Change Opt.
		F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit
		ESC: EXII

Options Summary		
Secure Boot	Disabled	Optimal Default, Failsafe Default
	Enabled	
Secure Boot feature is Ar and the System is in Use	ctive if Secure Boot i r mode. The mode o	s Enabled, Platform Key (PK) is enrolled change requires platform reset
Secure Boot Mode	Custom	Optimal Default, Failsafe Default
	Standard	
Secure Boot mode optio	ns: Standard or Cust	tom.
present user without full	authentication	s can be configured by a physically
Restore Factory Keys		
Force System to User Me	ode. Install factory d	efault Secure Boot key databases
Reset To Setup Mode	54	
Delete all Secure Boot ke	ey databases from N	VRAM

#### 3.6.2.1 Key Management

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc. Security		
Vendor Keys	Vəlid	Install factory default Secure
Factory Key Provision • Restore Factory Keys • Reset To Setup Mode • Export Secure Boot variables • Erroll Efi Image Device Buard Ready • Remove 'UEFI DA' from DB • Restore DB defaults	(Disabled)	reset and while the System is in Setup mode
Secure Boot veriable   Size  Platforn Key(PK)   0  Key Exchange Keys   0 Authorized Signatures   0  Forbidden Signatures   0  Authorized TimeStamps   0  OsRecovery Signatures   0	Keys  Key Source 0  No Keys 0  No Keys 0  No Keys 0  No Keys 0  No Keys 0  No Keys	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESD: Exit</pre>

Options Summary		
Factory Key Provision	Disabled	Optimal Default, Failsafe Default
	Enabled	
Secure Boot feature is Ac and the System is in User	tive if Secure Boot i mode. The mode (	s Enabled, Platform Key (PK) is enrolled change requires platform reset
Restore Factory Keys		
Force System to User Mo	de. Install factory d	efault Secure Boot key databases
Reset To Setup Mode		
Delete all Secure Boot ke	y databases from N	IVRAM
Export Secure Boot variables		
Copy NVRAM content of system device	Secure Boot variab	les to files in a root folder on a file
Enroll Efi Image		
Allow the image to run in image into Authorized Si	Secure Boot mode gnature Database (	e Enroll SHA256 Hash certificate of a P db)

Remove 'UER CA' from	1	1
DB		
Device Guard ready syster Authorized Signature data	n must not list 'Mi base (db)	crosoft UEFI CA' Certificate in
Restore DB defaults		
Restore DB variable to fact	ory defaults	
Platform Kev(PK)	Details	5 · ·
	Export	
	Update	
	Delete	
Key Exchange Keys	Details	
	Export	
	Update	
	Append	
	Delete	
Authorized Signatures	Details	
	Export	
	Update	
	Append	
	Delete	
Forbidden Signatures	Details	
	Export	
	Update	
	Append	
	Delete	
Authorized TimeStamps	Update	
	Append	
OsRecovery Signatures	Update	
	Append	
<ul> <li>a) EFI_SIGNATURE_LIST</li> <li>b) EFI_SIGNATURE_LIST</li> <li>b) EFI_CERT_X509 (DER)</li> <li>c) EFI_CERT_RSA2048 (bd) EFI_CERT_SHAXXX</li> <li>2. Authenticated UEFI Varia</li> </ul>	in)	un a ne.
3.EFI PE/COFF Image (SHA	4256)	
Key Source: Factory, Extern	nal Mixed	

### 3.7 Setup Submenu: Boot



Quiet Boot	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enables or disables sh	nowing boot logo.	
Network Stack	Disabled	Optimal Default, Failsafe Default
	-	

#### 3.7.1 BBS Priorities

Aptio Setup	Utility - Copyright (C) 2019 Americ Boot	an Hegatrends, Inc.
Boot Option #1	(Windows Ebot Manager (P1: TS64G55D370))	Sets the system boot order **: Select Screen 14: Select Item Enter: Select */-: Chage Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESD: Exit
Version 2.2		

### 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.

Intel(R) Chipset Device Software	(intel)
You have successfully installed the following product: Intel(R) Chipset Device Software	
Press Finish to complete the setup process.	
<u>View Log Files</u>	Finish

### 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.

ntel® Installation Framework		( <u>144</u> )		×
Intel® Graphics Driv	ver			
Readme File Information			(inte	
Refer to the Readme file below to view the sys	tem requirements a	and installation ir	nformation.	
Driver Version: 27.20.100.9268				^
Release Version: Production Version			- 1	
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 >	Cancel	
		·		-

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

ntel® Graphics Driver	
etup Progress	(inte
Please wait while the following setup operations are p Deleting File: C:\ProgramData\Microsoft\Windows\St Deleting File: C:\ProgramData\Microsoft\Windows\St	performed: art Menu\Programs\Intel(R) Graphics and ∧ art Menu\Programs\Intel\Intel(R) Graphic
Deleting File: C:\Users\Public\Desktop\Intel(R) HD Gr Deleting File: C:\Users\Public\Desktop\Intel(R) Graph Deleting File: C:\ProgramData\Wicrosoft\Windows\St Deleting File: C:\ProgramData\Wicrosoft\Windows\St	"aphics Control Panel.Ink nics and Media Control Panel.Ink art Menu\Programs\Intel\Intel(R) Iris(R) ( art Menu\Programs\Intel(R) Iris(R) Graph Graphics Control Panel Ink
Deleting File: C:\Users\Public\Desktop\Intel(R) Iris(R Deleting File: C:\Users\Public\Desktop\Intel\Intel(R) Deleting Registry Key: HKLM\SOFTWARE\Intel\GFX\ Deleting Registry Key: HKLM\SOFTWARE\Intel\GFX\	Iris(R) Graphics Control Panel.Ink Internal/AudioFix Internal/AudioFix

**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.	
InstallSnield	< Back Next > Cance	el

Step2. Click Finish to complete the installation.



## 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 Instal	ll Wizard		×
Welcome to the install wizard Network Connections	for Intel(R)		intel.
Intel(R) Network Conne wizard which will guide y process. Please wait.	ctions Setup is prep rou through the pro	aring the install gram setup	
	< 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.

License Agreement		
Please read the following license ag	greement carefully.	intel
SOFTWAR	E LICENSE AGREEMENT	^
OF THE SOFTWARE UNTIL YO	L, ACCESS, COPY, OR US DU HAVE READ AND ACCE	E ANY PORTION EPTED THE
COPYING, ACCESSING, OR U LEGALLY BOUND BY THE TEF AGREEMENT. If You do not agu benefit You act has not authoriz do not install, access, copy, or Software in Your possession.	SING THE SOFTWARE, YO SING THE SOFTWARE, YO RMS AND CONDITIONS OF ree to be bound by, or the er red You to accept, these terr use the Software and destro	STALLING, DU AGREE TO BE THIS ntity for whose ms and conditions, by all copies of the
COPYING, ACCESSING, OR U LEGALLY BOUND BY THE TEF AGREEMENT. If You do not agu benefit You act has not authoriz do not install, access, copy, or Software in Your possession.	THIS AGREEMENT. BY INS ISING THE SOFTWARE, YC RMS AND CONDITIONS OF ree to be bound by, or the en red You to accept, these term use the Software and destro	STALLING, DU AGREE TO BE THIS ntity for whose ms and conditions, by all copies of the Print
<ul> <li>COPYING, ACCESSING, OR U LEGALLY BOUND BY THE TEF AGREEMENT. If You do not agu benefit You act has not authoriz do not install, access, copy, or Software in Your possession.</li> <li>I accept the terms in the license agr O I do not accept the terms in the lice</li> </ul>	THIS AGREEMENT. BY INS SING THE SOFTWARE, YO RMS AND CONDITIONS OF ree to be bound by, or the er red You to accept, these terr use the Software and destro	STALLING, DU AGREE TO BE THIS ntity for whose ms and conditions, by all copies of the Print

#### Step3. Click Next to continue.

ntel(R) Network Connections Install Wiz	ard		×
Setup Options	1000		intol
Select the program features you want	installed.		II ILEI.
Install:			
Device drivers			
Intel® Advanced Network Ser	vices		
Feature Description			
	< Back	Next >	Cancel

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

🛃 Intel(R) Network Connections Install Wizard	×
Ready to Install the Program	the second s
The wizard is ready to begin installation.	intel.
Click Install to begin the installation,	
If you want to review or change any of your installation setting exit the wizard.	is, click Back. Click 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 desktop, if desired. To access new features, launch the Intel Configuration Uti <mark>l</mark> ity from the Start Menu.	create one on the (R) PROSet Adapter
Additional Options:	
Launch Intel(R) PROSet Adapter Configuration Utility	
< Back F	inish Cancel

# Chapter 5 Bu

# **Button Pin Setting**

### 5.1 Loosen Swing ARM screws

Use screwdriver to loosen 6 pcs of screws at the side of the swing arm as pointed in picture below.



### **5.2 Buttons Pin Setting**

Set buttons' pin as definition below to connect to specified related system functions.





	no the courses	-	man int to manner
5	S8_LED(+24V)	6	S8_LED(GND)
7	S7 N/O contact	8	S7 N/O contact
8	57_N/C contact	10	57_N/C contact
11	\$7_LED(+24V)	12	S7_LED(GND)
13	S6_N/O contact	14	56_N/O contact
15	56_N/C contact	16	56_N/C contact
17	\$6_LED(+24V)	18	S6_LED(GND)
19	55_LED(+24V)	20	S5_LED(GND)
	CN4	_20P	
1	S5_N/O contact	2	S5_N/O contact
3	55_N/C contact	4	55 N/C contact
			and the continuer
5	S4_N/O contact	6	S4_N/O contact
5	S4_N/O contact S4_N/C contact	6 8	S4_N/O contact S4_BN/C contact
5 7 8	S4_N/O contact 54_N/C contact S4_LED(+24V)	6 8 10	S4_N/O contact S4_BN/C contact S4_LED(GND)
5 7 8 11	S4_N/O contact S4_N/C contact S4_LED(+24V) S3_N/O contact	6 8 10 12	S4_N/O contact S4_BN/C contact S4_LED(GND) S3_N/O contact
5 7 8 11 13	S4_N/O contact S4_N/C contact S4_LED(+24V) S3_N/O contact S3_N/C contact	6 8 10 12 14	S4_N/O contact S4_BN/C contact S4_LED(GND) S3_N/O contact S3_N/C contact
5 7 8 11 13 15	S4_N/O contact S4_LED(+24V) S3_N/O contact S3_N/C contact S3_LED(+24V)	6 8 10 12 14 16	S4_N/O contact S4_BN/C contact S4_LED(GND) S3_N/O contact S3_N/C contact S3_LED(GND)
5 7 8 11 13 15 17	S4_N/O contact 54_N/C contact 54_LED(+24V) S3_N/O contact 53_N/C contact S3_LED(+24V) S2_LED(+24V)	6 8 10 12 14 16 18	S4_N/O contact S4_BN/C contact S4_LED(GND) S3_N/O contact S3_N/C contact S3_LED(GND) S2_LED(GND)



TB-628_For Emergency_20P			
1	NA	2	NA
3	NA	4	NA
5	NA	6	NA
7	NA	8	NA
8	NA	10	NA
11	NA	12	NA
13	NA	14	NA
15	NA	16	NA
17	NA	18	NA
19	S1_N/C contact	20	S1_N/C contact

### 5.3 Fix screws back

After setting, fix the 6 pcs screws back on the swing arm with screwdriver.