

FWS-7541

1U Rackmount Network Appliance

User's Manual 1st Ed

Last Updated: July 6, 2022

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Packing List

shipped: Item FWS-7541 • Console cable Ear bracket (pair) SATA cable SATA power cable HDD kit

Before setting up your product, please make sure the following items have been

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

Quantity

1

1

1

2

2 2 This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the AAEON.com for the latest version of this document.

Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references

- 1. All cautions and warnings on the device should be noted.
- All cables and adapters supplied by AAEON are certified and in accordance with the material safety laws and regulations of the country of sale. Do not use any cables or adapters not supplied by AAEON to prevent system malfunction or fires.
- 3. Make sure the power source matches the power rating of the device.
- 4. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
- Always completely disconnect the power before working on the system's hardware.
- No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
- 7. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
- 8. Always disconnect this device from any AC supply before cleaning.
- 9. While cleaning, use a damp cloth instead of liquid or spray detergents.
- 10. Make sure the device is installed near a power outlet and is easily accessible.
- 11. Keep this device away from humidity.
- 12. Place the device on a solid surface during installation to prevent falls
- 13. Do not cover the openings on the device to ensure optimal heat dissipation.
- 14. Watch out for high temperatures when the system is running.
- 15. Do not touch the heat sink or heat spreader when the system is running
- 16. Never pour any liquid into the openings. This could cause fire or electric shock.

Preface

- As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.
- 18. If any of the following situations arises, please the contact our service personnel:
 - i. Damaged power cord or plug
 - ii. Liquid intrusion to the device
 - iii. Exposure to moisture
 - Device is not working as expected or in a manner as described in this manual
 - v. The device is dropped or damaged
 - vi. Any obvious signs of damage displayed on the device

19. DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.

FCC Statement



This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

Caution:

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

Attention:

Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte. Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur. Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage. 产品中有毒有害物质或元素名称及含量

AAEON Embedded Box PC/ Industrial System

	有毒有害物质或元素					
部件名称	铅	汞	镉	六价铬	多溴联苯	多溴二苯醚
	(Pb)	(Hg)	(Cd)	(Cr(VI))	(PBB)	(PBDE)
印刷电路板	0	0	0		0	0
及其电子组件	0	0	0	0	0	0
外部信号	0	0	0		0	0
连接器及线材	0	0	0	0	0	0
外壳	0	0	0	0	0	0
中央处理器	0	0	0		0	0
与内存	0	0	0	0	0	0
硬盘	0	0	0	0	0	0
电源	0	0	0	0	0	0
D. 表示该有畫有害物质在该部件所有均质材料中的全量均在						

O: 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。

X:表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。

备注:

一、此产品所标示之环保使用期限,系指在一般正常使用状况下。 二、上述部件物质中央处理器、内存、硬盘、光驱、触控模块为选购品。

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

AAEON Embedded Box PC/ Industrial System

	Poisonous or Hazardous Substances or Elements			ıts		
Component	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCB & Other Components	0	0	0	0	0	0
Wires & Connectors for External Connections	0	0	0	0	0	0
Chassis	0	0	0	0	0	0
CPU & RAM	0	0	0	0	0	0
Hard Disk	0	0	0	0	0	0
PSU	0	0	0	0	0	0

O: The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement.

X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.

Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only

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Chapter 1

Product Specifications

1.1 Specifications

System	
Form Factor	1U Rackmount Network Appliance
Processor	Intel® Xeon® ICE-Lake-D LCC Processors
System Memory	DD4 SO-DIMM ECC DIMM slots x 2, up to
	64GB
Chipset	SoC
Ethernet	Intel® i350-AM4 Gigabit Ethernet x 12
	SFP+ x 4 from CPU
Bypass	2 Pairs
BIOS	AMI BIOS ROM
Serial ATA	On-board SATA III port x 3
	Mini Card socket x 2 (Co-lay mSATA) (Optional)
Expansion Interface	PCIe [x 8] slot x 1
	Mini Card Socket (PCIe/ USB/ mSATA) x 1 (Full
	size) with SIM (Optional)
	Mini Card Socket (PCIe + USB + mSATA) x 1
	(half size) (Optional)
	M.2 B-Key (3052) x 1 for 5G (USB3.0 + PCIe),
	with SIM
	M.2 E-Key (2230) x 1 (PCle)
USB	USB3.2 Gen1 x 2
Serial Port	RJ45 Console x 1
Watchdog Timer	1~255 step by software programmable

System	
RTC	Internal RTC
Fan	System Fan x 1
Color	Black
Power Supply	ATX with Auto Power Button
Dimension	16.93" x 7.87" x 1.73" (430mm x 200mm x
	44mm)
Power Requirement	AC/DC 1U Flex ATX 220W
MTBF (Hours)	-

Display	
Chipset	Ice-Lake-D LCC
Interface	VGA Port x 1 (via VGA module board)

I/O	
Front I/O Panel	Power LED x 1
	Status LED x 1
	HDD Active LED x 1
	USB3.1 Ports x 2
	Bypass LED x 2
	RJ-45 Console x 1
	RJ-45 IPMI Port x 1
	Parallel LCM Display and 4 Keypad x 1
	Software Programmable Button x 1
	SFP+ Port 10Gb (from CPU) x 4

Rear	I/O	Panel

AC Power Input x 1 Power Switch x 1 Rear Expansion Slot PCIe [x8 or x16] x 1 (Optional)

Invironmental	Parameters and	Dimensions
---------------	----------------	------------

Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	10 ~ 80%
Storage Humidity	10 ~ 80% @ 40C, non-condensing
Vibration	0.5G / 5 ~ 500Hz / operation
	1.5G / 5 ~ 500Hz / non-operation
Shock	10G peak acceleration (11 m sec. duration),
	operation
	20G peak acceleration (11 m sec. duration),
	non-operation

Miscellaneous	
ТРМ	TPM 2.0 SPI
GPIO	DIO pin header x 1 (4-in/4-out)
Mounting	Fix Rail and Slide Rail
Certification	CE / FCC Class A
OS	CentOS 7 or above
	Ubuntu 20.04.2 or above

Chapter 2

Hardware Information

2.1 Dimensions

System









Board

1U Rackmount Network Appliance

• FWS-754





Solder Side





2.2 Jumpers and Connectors

Component Side



2.3 List of Jumpers

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

Label	Function
CN5	Clear CMOS

2.3.1 Clear CMOS (CN5)

Setting	Configuration
Normal	1-3.2-4
Clear CMOS	3-5,4-6

Note: Normal is set as default.

2.4 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
LED9	Status LED
CN1, CN2, CN3	SATA Power
CN4	Battery Header
CN6, CN7	DDR4 SO-DIMM*2
CN10	DIO Header
CN11	Case Open
CN13	1Gb RJ45 Port
CN15	1Gb RJ45 Port

CN20	M.2 B-Key slot
CN21	Micro SIM
CN22	M.2 E-Key slot
CN23	USB3.1 + RJ45 Connector (IPMI Ethernet)
CN24	Serial Port
CN25, CN27	FAN1/FAN2
CN26, CN28	LCM
CN30	Console
CN31, CN32	ATX Power Connector
M1, M2, M3, M4	10Gb SFP+
GF1	PCIe*8 Gold Finger (NIM riser card PER-R40X only)
Sata1, Sata2, Sata3	SATA Connector
FP1	Front Panel Header
IPMI1	IPMI Slot
SW1	Software Programmable Button

Note: Bypass Function on CN13.

Note: PCIe*8 on GF1 is for NIM riser card PER-R40X only, not for standard PCIe signal.

2.4.1 Battery Holder (CN4)

Pin	Signal	Pin	Signal
1	+3.3V	2	Ground

2.4.2 Digital IO Pin Header (CN10)

Pin	Signal	Pin	Signal
1	Digital I/O bit1	2	Digital I/O bit2
3	Digital I/O bit3	4	Digital I/O bit4
5	Digital I/O bit5	6	Digital I/O bit6
7	Digital I/O bit7	8	Digital I/O bit8
9	+5V	10	GND

2.4.3 Front Panel Header (FP1)

Pin	Signal	Pin	Signal
1	Power Button SW+	2	Ground
3	Hardware Reset SW+	4	Ground
5	PWRLED	6	Ground
7	HDDACT	8	HDD LED-

2.4.4 Case Open Holder (CN11)

Pin	Signal	Pin	Signal
1	Ground	2	Case Open

2.4.5 M.2 B-Key Slot (CN20)

Pin	Signal	Pin	Signal
1	CFG3	2	+3.3V
3	GND	4	+3.3V
5	GND	6	PWR_OFF
7	USB2DN	8	W_DISABLE
9	USB2DP	10	NC
11	GND	-	-
-	-	20	NC
21	CFG0	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	PCIE1RXP	30	UIMRST
31	PCIE1RXN	32	UIMCLK
33	GND	34	UIMDAT
35	PCIE1TXN	36	UIMPWR
37	PCIE1TXP	38	DEVSLP
39	GND	40	NC
41	PCIEORXP	42	NC
43	PCIEORXN	44	NC
45	GND	46	NC
47	PCIEOTXN	48	NC
49	PCIEOTXP	50	PLTRST#
51	GND	52	NC
53	PCIECLKDN	54	WAKE#
55	PCIECLKDP	56	NC

57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	SIMDET
67	NC	68	32K_SUSCLK
69	CFG1	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	CFG2	-	-

2.4.6 M.2 E-Key Slot (CN22)

Pin	Signal	Pin	Signal
1	GND	2	+3.3V
3	NC	4	+3.3V
5	NC	6	NC
7	GND	8	NC
9	NC	10	NC
11	NC	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	GND
19	NC	20	NC
21	NC	22	NC
23	NC	32	NC
33	GND	34	NC
35	PCIEOTXP	36	NC

37	PCIEOTXN	38	NC
39	GND	40	NC
41	PCIEORXP	42	NC
43	PCIEORXN	44	NC
45	GND	46	NC
47	PCIECLKODP	48	NC
49	PCIECLKODN	50	32K_SUSCLK
51	GND	52	PLTRST#
53	CLKREQ#	54	DIS2#
55	WAKE#	56	DIS1#
57	GND	58	NC
59	PCIE1TXP	60	NC
61	PCIE1TXN	62	NC
63	GND	64	NC
65	PCIEORXP	66	NC
67	PCIEORXN	68	NC
69	GND	70	NC
71	PCIECLK1DP	72	+3.3V
73	PCIECLK1DN	74	+3.3V
75	GND	-	-

2.4.7 Serial Port (CN24)

Pin	Signal	Pin	Signal
1	DCD2	2	DSR2
3	RXD2	4	RTS2
5	TXD2	6	CTS2
7	DTR2	8	RI2
9	GND	-	-

2.5 Hardware Installation

This section details the hardware assembly steps for the FWS-7541. Please read this section thoroughly before beginning installation and ensure you have all necessary components ready. A Phillips head screwdriver is required.

2.5.1 Hard Disk Drive (HDD) Installation

Step 1: Unscrew the upper lid.



Step 2: Place assembled cushions on the hard disk driver bracket.



Chapter 2 – Hardware Information

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Step 4: Connect the SATA cable and power cable to the main board.



Step 5: Connect the SATA cable and power cable into the Hard Disk and put hard drive bracket on the chassis.



Step 6: Connect the SATA cable and power cable into the Hard Disk and put hard drive bracket on the chassis.



2.5.2 Heat Sink Installation

Step 1: Loosen the screw and remove the fan duct.



Step 2: Cover the Heatsink on the CPU and ensure the direction of the Heatsink does not obstruct the airflow.






2.5.3 NIM Installation

Step 1: Loosen the screws on the bottom of chassis.



Step 2: Remove the null Module cover or existing LAN module.



Step 3: Insert the LAN Module and fasten the screws.



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Chapter 3

AMI BIOS Setup

3.1 System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors.

System configuration verification:

These routines check the current system configuration stored in the CMOS memory and BIOS NVRAM. If system configuration is not found or system configuration data error is detected, system will load optimized default and re-boot with this default system configuration 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 is reset by Clear-CMOS jumper.

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

The FWS-7541 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

3.2 AMI BIOS Setup

AMI BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM and BIOS NVRAM so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press or <ESC> immediately. This will allow you to enter Setup.

Main

Set the date, use tab to switch between date elements.

Advanced

In here, can set power mode, USB configuration and check CPU type and speed.

Chipset

Host bridge parameters.

Boot

Enables/disable quiet boot option.

Security

Set setup administrator/user password.

Save & Exit

Exit system setup after saving the changes.

3.3 Setup Submenu: Main

Main Advanced Platform Configurat	Aptio Setup – AMI tion Socket Configuration	Security Boot Save & Exit
BIOS Information FWS-7541 R1.3 (K751AM13)(07/01/2	2022)	Set the Date. Use Tab to switch between Date elements. Default Banges:
BIOS Vendor Compliancy	American Megatrends UEFI 2.8; PI 1.7	Year: 1998-9999 Months: 1-12 Days: Dependent on month
System Date System Time	[Fri 07/01/2022] [13:24:49]	Range of Years may vary.
Access Level	Administrator	
		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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3.4 Setup Submenu: Advanced

Aptio Setup - AMI		
Main Advanced Flattorn configuration s	SOCKET CONTIGURATION SECURITY	
 Trusted Computing Hardware Monitor SIO Configuration Serial Port Console Redirection 	Trusted Computing Settings	
AAEON Features Power Management Digital IO Port Configuration LAN Bypass Configuration Case Open Configuration	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults	
	ESC: Exit	
Version 2.22.1283 Copyright (C) 2022 AMI		

3.4.1 Trusted Computing

Advanced	Aptio Setup – AMI	
TPM 2.0 Device Found	<u>.</u>	Enables or Disables
Firmware Version:	7.2	BIOS support for
Vendor:	NTC	security device. O.S. will not show Security
Security Device Support	[Enable]	Device. TCG EFI protocol and INT1A
Active PCR banks	SHA-1,SHA256	interface will not be
Available PCR banks	SHA-1,SHA256,SHA384	available.
SHA-1 PCR Bank	[Enabled]	
SHA256 PCR Bank	[Enabled]	↔+: Select Screen
SHA384 PCR Bank	[Disabled]	↑↓: Select Item
		Enter: Select
Pending operation	[None]	+/−: Change Opt.
Platform Hierarchy	[Enabled]	F1: General Help
Storage Hierarchy	[Enabled]	F2: Previous Values
Endorsement	[Enabled]	F3: Optimized Defaults
Hierarchy	•	F4: Save & Exit ESC: Exit

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Security Device	Enable	Optimal Default, Failsafe Default	
Support	Disable		
Enables or Disables E	BIOS support for security device	. O.S. will not show Security Device.	
TCG EFI protocol and	I INT1A interface will not be ava	ilable.	
SHA-1 PCR Bank	Enabled	Optimal Default, Failsafe Default	
	Disabled		
Enable or Disable SH	A-1 PCR Bank		
SHA256 PCR Bank	Enabled	Optimal Default, Failsafe Default	
	Disabled		
Enable or Disable SHA256 PCR Bank.			
SHA384 PCR Bank	Enabled		
	Disabled	Optimal Default, Failsafe Default	
Enable or Disable SHA384 PCR Bank.			
Pending operation	None	Optimal Default, Failsafe Default	
	TPM Clear		
Schedule an Operation for the Security Device. NOTE: Your Computer will reboot			
during restart in order to change State of Security Device.			

Platform Hierarchy	Enabled	Optimal Default, Failsafe Default	
	Disabled		
Enable or Disable Pla	atform Hierarchy		
Storage Hierarchy	Enabled	Optimal Default, Failsafe Default	
	Disabled		
Enable or Disable Sto	orage Hierarchy		
Endorsement	Enabled	Optimal Default, Failsafe Default	
Hierarchy	Disabled		
Enable or Disable En	dorsement Hierarchy		
TPM 2.0 UEFI Spec	TCG_2	Optimal Default, Failsafe Default	
Version	TCG_1_2		
Select the TCH2 Spec Version Support.			
TCG_1_2: The Compa	atible mode for Win8/Win10		
TCG_2: Support new TCG2 protocol and event format for Win10 or later			
Physical Presence	1.3	Optimal Default, Failsafe Default	
Spec Version	1.2		
Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not			
support 1.3			
Device Select	Auto	Optimal Default, Failsafe Default	
	TPM 1.2		
	TPM 2.0		
TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0			
devices, Auto will support both with the default set to TPM 2.0 devices if not found,			
TPM 1.2 devices will I	be enumerated.		

Chapter 3 - AMI BIOS Setup

3.4.2 Hardware Monitor

Advanced	Aptio Setup – AM	I
Pc Health Status		▲ Smart Fan function
· Smart Fan Function		Secting
CPU Temperature System Temperature	: +41 °c : +32 °c	
CPU FAN System FAN	: 2947 RPM : N/A	
VCORE VMEM +12V +3.3V 5VSB +5V VSB3V VBAT	: +1.787 V : +1.209 V : +12.295 V : +3.397 V : +5.041 V : +5.068 V : +3.357 V : +2.964 V	 **: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Ven	sion 2.22.1283 Copyright	(C) 2022 AMI

Chapter 3 - AMI BIOS Setup

3.4.3 System FAN Setting

Advanced	Aptio Setup – AMI	
Smart Fan Function		Smart Fan Mode Select
CPU Fan Setting CPU Fan Mode Manual PWM Setting	[Software Mode] 127	
System Fan Setting System Fan Mode Manual PWM Setting	[Software Mode] 127	
		<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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Manual PWM Setting	127	Optimal Default, Failsafe Default
Fan will work with this N	Manual PWM Value	

Advanced	Aptio Setup – AMI	
Smart Fan Function		Smart Fan Mode Select
CPU Fan Setting CPU Fan Mode Temperature select Fan off temperature limit Fan start temperature limit Fan full speed temperature limit Fan start PWM PNM SLOPE SETTING	[Automatic Mode] [CPU Temperature] 20 45 95 65 5	
System Fan Setting System Fan Mode Temperature select Fan off temperature limit Fan start temperature limit Fan full speed temperature limit Fan start PWM PWM SLOPE SETTING	[Automatic Mode] [CPU Temperature] 20 45 95 65 5	++: 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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Smart Fan 1 Mode	Automatic Mode	Optimal Default, Failsafe Default		
	Software Mode			
Smart Fan Mode Se	lect			
Fan off temperature	20	Optimal Default, Failsafe Default		
limit				
Fan will off when ter	mperature lower then this lim	it		
Fan start	45	Optimal Default, Failsafe Default		
temperature limit				
Fan will work when temperature higher then this limit				
Fan full speed	95	Optimal Default, Failsafe Default		
temperature limit				
Fan will full speed w	Fan will full speed when temperature higher then this limit			
Fan start PWM	65	Optimal Default, Failsafe Default		
Fan will full start with this PWM value				
PWM SLOPE	5	Optimal Default, Failsafe Default		
SETTING				
PWM SLOPE Selection				
Slope = PWM value / °C				

3.4.4 SIO Configuration

	Aptio Setup – AMI Advanced	
	AMI SID Driver Version : A5.17.00 Super IO Chip Logical Device(s) Configuration [*Active*] Serial Port 0 [*Active*] Serial Port 1 [*Active*] Parallel Port	View and Set Basic properties of the SIO Logical device. Like IO Base, IRQ Range, DMA Channel and Device Mode.
	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.	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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3.4.5 Serial Port 0 Configuration

Advanced	Aptio Setup – AMI	
Serial Port O Configura	tion	Enable or Disable this
Use This Device	[Enabled]	
Logical Device Settings: Current : IO=3F8h; I	RQ=4;	
Possible:	[Use Automatic Settings]	
WARNING: Disabling SIO L have unwanted side effec PROCEED WITH CAUTION.	ogical Devices may ts.	<pre> ++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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Use This Device	Enabled	Optimal Default, Failsafe Default	
	Disabled		
Enable or Disable th	Enable or Disable this Logical Device		
Possible	Use Automatic setting	Optimal Default, Failsafe Default	
	IO=3F8h; IRQ=4		
	IO=2F8h; IRQ=3		
Allows the user to change the device resource settings. New settings will be reflected			
on this setup page after system restarts			

3.4.6 Serial Port 1 Configuration

Advanced	Aptio Setup – AMI	
Serial Port 1 Configura	tion	Enable or Disable this
Use This Device	[Enabled]	
Logical Device Settings: Current : IO=2F8h; IM	RQ=3;	
Possible:	[Use Automatic Settings]	
WARNING: Disabling SIO Logical Devices may have unwanted side effects. PROCEED WITH CAUTION.		<pre>++: Select Screen tl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Usesion	0.00.4000.0-municipit. (0).00	NOO ANT

Options summary

Use This Device	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable th	nis Logical Device	
Possible	Use Automatic setting	Optimal Default, Failsafe Default
	IO=3F8h; IRQ=4	
	IO=2F8h; IRQ=3	
Allows the user to change the device resource settings. New settings will be reflected		
on this setup page after system restarts		

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3.4.7 Parallel Port Configuration

Advanced	Aptio Setup – AMI	
Parallel Port Configura	ation	Enable or Disable this
Use This Device	[Enabled]	LUgical Device.
Logical Device Settings: Current : IO=378h; I	RQ=5;	
Possible:	[Use Automatic Settings]	
Mode :	[Standard Parallel Port mode(SPP)]	<pre>++: Select Screen ↑↓: Select Item</pre>
WARNING: Disabling SIO L have unwanted side effec PROCEED WITH CAUTION.	ogical Devices may ts.	Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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Options summary:

Use This Device	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable this Logical Device		
Possible	Use Automatic setting	Optimal Default, Failsafe Default
	10=378h; IRQ=5	
	IO=378h; IRQ=5, 6, 7, 10, 11,	
	12	
	IO=278h; IRQ=5, 6, 7, 10, 11,	
	12	
	IO=3BCh; IRQ=5, 6, 7, 10,	
	11, 12	
Allows the user to d	handa the device resource se	ttings. New settings will be reflected

Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts

Mode	Standard Parallel Port mode Optimal Default, Failsafe Default
	(SPP)
	EPP Mode
	ECP Mode
	EPP mode & ECP mode
Change Para	Ilel Port mode. Some of the Modes require a DMA resource. After Mode

Change Parallel Port mode. Some of the Modes require a DMA resource. After Mode changing, Reset the System to reflect actual device settings

3.4.8 Serial Port Console Redirection

Aptio Setup – AMI Advanced		
COMO Console Redirection [Enabled] Console Redirection Settings Legacy Console Redirection Settings Serial Port for Out-of-Band Management/ Windows Emergency Management Services (EMS) Console Redirection [Disabled] EMS Console Redirection Settings	Console Redirection Enable or Disable. ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
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Console	Enabled	Optimal Default, Failsafe Default
Redirection	Disabled	
Console Redirection	Enable or Disable	
Console	Enabled	
Redirection EMS	Disabled	Optimal Default, Failsafe Default
Console Redirection Enable or Disable		

3.4.9 Console Redirection Settings

Advanced	Aptio Setup – AMI	
COMO Console Redirection Sett Terminal Type Bits per second Data Bits Parity Stop Bits Flow Control VT-UTF8 Combo Key Support Recorder Mode Resolution 100x31 Putty KeyPad	ings [VT100Plus] [115200] [8] [None] [1] [None] [Enabled] [Disabled] [Disabled] [VT100]	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100Plus: Extends VT100 to support color, function Keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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Options summary:

Terminal Type	VT100	
	VT100Plus	Optimal Default, Failsafe Default
	VT-UTF8	
	ANSI	
Emulation: ANSI: Ext	ended ASCII char set. VT100:	ASCII char set. VT100+: Extends
VT100 to support co	olor, function keys, etc. VT-UT	F8: Uses UTF8 encoding to map
Unicode chars onto	1 or more 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 may require lower speeds		
Data Bits	7	
	8	Optimal Default, Failsafe Default
Data Bits		

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Parity	None	Optimal Default, Failsafe Default
-	Even	
	Odd	
	Mark	
	Space	
A parity bit can be	sent with the data bits to det	ect some transmission errors.
Even: parity bit is 0	if the num of 1's in the data	bits is even.
Odd: parity bit is 0	if num of 1's in the data bits i	is odd. Mark: parity bit is always 1.
Space: Parity bit is	always 0. Mark and Space Pa	rity do not allow for error detection.
They can be used a	as an additional data bit.	
Stop Bits	1	Optimal Default, Failsafe Default
	2	
Stop bits indicate t	he end of a serial data packe	t. (A start bit indicates the beginning).
The standard settir	ng is 1 stop bit. Communicatio	on with slow devices may require more
than 1 stop bit.	.	
Flow Control	None	Optimal Default, Failsafe Default
	Hardware RTS/CTS	
Flow control can p	revent data loss from buffer o	overflow. When sending data, if the
receiving buffers a	re full, a 'stop' signal can be s	ent to stop the data flow. Once the
buffers are empty,	a 'start' signal can be sent to	re-start the flow. Hardware flow control
uses two wires to s	end start/stop signals.	
VT-UTF8 Combo	Enabled	Optimal Default, Failsafe Default
Key Support	Disabled	
Enable VT-UTF8 C	ombination Key Support for <i>i</i>	ANSI/VT100 terminals
Recorder Mode	Enabled	
	Disabled	Optimal Default, Failsafe Default
With this mode en	abled only text will be sent. T	his is to capture Terminal data.
Resolution 100x31	Enabled	
	Disabled	Optimal Default, Failsafe Default
Enables or disables	s extended terminal resolution	า
Putty KeyPad	VT100	Optimal Default, Failsafe Default
	LINUX	
	XTERMR6	
	SCO	
	escn	
	VT400	
Select FunctionKey	and KeyPad on Putty	1

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3.4.10 Legacy Console Redirection Settings

Advanced	Aptio Setup – AMI	
Legacy Console Redirection Settings		Select a COM port to display redirection of
Redirection COM Port Resolution Redirect After POST	(COMO) [80x24] [Always Enable]	Legacy OS and Legacy OPROM Messages
		++: Select Screen t↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version	2 22 1283 Copupidht (P) 2	022 AMT

Redirection COM	COM0	Optimal Default, Failsafe Default
Port		
Select a COM port to display redirection of Legacy OS and Legacy OPROM Message		cy OS and Legacy OPROM Message
Resolution	80x24	Optimal Default, Failsafe Default
	80x25	
On Legacy OS, the Number of Rows and Columns supported redirection		

3.4.11 Power Management

Advanced	Aptio Setup – AMI	
Power Management		Select system power mode.
Power Mode Restore AC Power Loss	(ATX Type] [Last State]	
Wake Events System Wake On RTC	[Disabled]	
		<pre>→+: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

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Options summary:

Power Mode	АТХ Туре	Optimal Default, Failsafe Default
	АТ Туре	
Select system powe	r mode.	
Restore AC Power	Last State	Optimal Default, Failsafe Default
Loss	Always On	
	Always Off	
System Wake On	Disabled	Optimal Default, Failsafe Default
RTC	By Date	
	By Weekday	
	Bypass	
By Date: System will wake on the day with hr::min::sec specified./n By Weekday: System will wake on the enabled weekday with hr::min::sec specified./n		

Bypass: BIOS will not control RTC wake function

3.4.12 Digital IO Port Configuration

Advanced	Aptio Setup –	AMI
Digital IO Port C	onfiguration	Set DIO as Input or Output
DI01 Output Level DI02 Output Level DI03 Output Level DI04 Output Level DI05 DI06 DI07 DI08	[Output] [High] [Output] [High] [Output] [High] [Input] [Input] [Input] [Input]	++: 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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DIO	Input	
	Output	
Set DIO as Input or	Output	
Output Level	High	Optimal Default, Failsafe Default
	Low	
Set output level whe	en DIO pin is output	

3.4.13 LAN Bypass Configuration

Advanced	Aptio Setup – AM:	I
LAN Bypass Configuration	า	Configure LAN Bypass Status LED
LAN Bypass Status LED	[LED OFF]	
LAN Bypass Kit 1 Configu Mode for Power-on Mode for Power-off LAN Bypass Kit 2 Configu Mode for Power-on Mode for Power-off	uration [PassTru] [PassTru] uration [PassTru] [PassTru]	++: Select Screen
WDT Configuration	[System Reset]	<pre>\$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$</pre>

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Lan Bypass Status	LED OFF	Optimal Default, Failsafe Default
LED	RED LED ON	
	RED LED BLINK	
	RED LED FAST BLINK	
	GREEN LED ON	
	GREEN LED BLINK	
	GREEN LED FAST BLINK	
Configure LAN Bypass status LED		
Mode for Power-on	PassTru	Optimal Default, Failsafe Default
	Bypass	
Configure LAN kit behavior when system is in power-on state. (Bypass/Pass Through)		wer-on state. (Bypass/Pass Through)
Mode for Power-off	PassTru	Optimal Default, Failsafe Default
	Bypass	
Configure LAN kit behavior when system is in power-off state. (Bypass/Pass Through)		
WDT Configuration	System Reset	Optimal Default, Failsafe Default
	Force Bypass	
Configure WDT behavior, System Reset, Force Bypass		

3.4.14 Case Open Configuration

Advanced	Aptio Setup – AMI	
Case Open Configuration		Case Open detecting function
Case Open Warning Chassis Opened	[Disabled] [No]	<pre>++: Select Screen ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults E4: Optimized Defaults E4: Optimized Defaults</pre>
		ESC: Exit
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Case Open	Disabled	Optimal Default, Failsafe Default
Warning	Enabled	
	Clear	
Case Open dete	ecting function	

3.5 Setup Submenu: Platform Configuration

Aptio Setup - AMI	
Main Advanced Platform Configuration Socket	Configuration Security
 PCH-IO Configuration Server ME Configuration 	PCH Parameters
 Setup Warning: Setting items on this Screen to incorrect values may cause system to malfunction!	
	<pre>++: Select Screen \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$</pre>
	F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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3.5.1 PCH-IO Configuration

Aptio Setup – AMI Platform Configuration	
PCH-IO Configuration	Device Options Settings
▶ SATA Configuration	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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3.5.2 SATA Configuration

Aptio Setup – AMI Platform Configuration	
▶ Controller 3 SATA Configuration	SATA Controller 3 Device Options Settings ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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3.5.3 Controller 3 SATA Configuration

Aptio Setup - AMI Platform Configuration			
Controller 3 SATA Config	uration	SATA test settings	
SATA Configuration SATA Port O SATA Port 1 SATA Port 2 SATA Port 3 SATA Port 4	[Enabled] [Not Installed] [Not Installed] [Not Installed] [Not Installed] [Not Installed]		
		<pre>++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>	
Version 2 22 1283 Convright (C) 2022 AMI			

SATA Configuration	Enabled	Optimal Default, Failsafe Default
-	Disabled	
SATA test setting		

3.5.4 General ME Configuration

Aptio Setup – AMI Platform Configuration			
General ME Configuration Oper. Firmware Version Backup Firmware Version Recovery Firmware Version ME Firmware Status #1 ME Firmware Status #2 Current State Error Code Recovery Cause	11:5.0.3.67 N/A 11:5.0.3.67 0x00000245 0x8011C006 Operational No Error N/A	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
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3.5.5 Socket Configuration

	Aptio Setup	- AMI		
Main Advanced Platform	Configuration	Socket	Configuration	Security 🕨 🕨
 Processor Configuration Memory Configuration IIO Configuration Advanced Power Management 	Configuration		Displays an option to c Processor S	d provides hange the ettings
			++: Select fl: Select Enter: Sele +/-: Change F1: General F2: Previou F3: Optimiz F4: Save & ESC: Exit	Screen Item ct Opt. Help s Values ed Defaults Exit
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3.5.6 Processor Configuration

	Aptio Setup – AMI Socket Co	nfiguration
Processor Configuration 		Enables Hyper Threading (Software Method to Enable/Disable Logical
Processor BSP Revision	606C1 - ICX-D LCC B	Processor threads.
Processor Socket	Socket 0 Socket 1	
Processor ID	000606C1*	
Processor Frequency	2.200GHz	
Processor Max Ratio	16H	
Processor Min Ratio	08H	
Microcode Revision	01000150	
L1 Cache RAM(Per Core)	80KB	++: Select Screen
L2 Cache RAM(Per Core)	1280KB	I+: Select Item
L3 Cache RAM(Per	10240KB	Enter: Select
Package)		+/-: Change Upt.
Processor 0 Version	Intel(R) Xeon(R) D-1/13	F1: General Help
	NI CPU @ 2.20GHz	F2: Previous Values
		F3: Optimized Defaults
Hyper-Threading [ALL]	[Enable]	F4: Save & Exit
		ESC: Exit

Hyper-Threading	Enabled	Optimal Default, Failsafe Default
[ALL]	Disabled	
Enables Hyper Threading (Software Method to Enable/Disable Logical Processor		
threads.		

3.5.7 Memory Configuration

	Aptio Setup - AMI
	Socket Configuration
	Displays memory topology with Dimm Integrated Memory Controller (iMC)
Þ	Memory Topology
	++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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3.5.8 Memory Topology

	Aptio Setup	- AMI	
		Socket Cor	nfiguration
 SocketO.ChA.DimmO: 2133MT/s SODIMM 	UNKNOWN SR×8	4GB	++: Select Screen ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults
			ESC: Exit

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3.5.9 IIO Configuration

	Aptio Setup - AMI		
	Socket Cor	nfiguration	
	IIO Configuration		
Þ	Socket0 Configuration		
		↔: Select Screen ↑↓: Select Item	
		Enter: Select	
		+/−: Change Opt.	
		F1: General Help	
		F2: Previous Values	
		F3: Uptimized Defaults F4: Save & Evit	
		ESC: Exit	
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3.5.10 Socket0 Configuration

Aptio Setup — AMI Socket	Configuration
IOUO (IIO PCIe Port 1) [Auto]	Selects PCIe port Bifurcation for selected slot(s)
Vancian 2 22 1202 Comunight (C)	2022 AMT

IOU0 (IIO PCIe Port	Auto	Optimal Default, Failsafe Default
1)	X4x4x8	
	X8x8	
	X16	
Selects PCIe port Bifurcation for selected slot(s)		
3.5.11 Advanced Power Management Configuration

	Aptio Setup	- AMI	
		Socket	Configuration
Advanced Power Management	Configuration		Hardware P–State setting
▶ Hardware PM State Control			
			++: Select Screen 14: Select Item
			rter: Select +/−: Change Opt. F1: General Help F2: Previous Values
			F3: Optimized Defaults F4: Save & Exit ESC: Exit
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3.5.12 Hardware PM State Control

	Aptio Setup – AM	I
	Soc	ket Configuration
Hardware PM State Cont	rol	Disable: Hardware Achooses a P–state based
Hardware P-States	[Disable]	on OS Request (Legacy P-States) Native Mode:Hardware chooses a P-state based on OS guidance Out of Band ▼
		fl: Select Item Enter: Select +/-: Change Opt.
		F1: General Help F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Hardware P-States	Disable	Optimal Default, Failsafe Default
	Native Mode	
Disable: Hardware chooses a P-state based on OS Request (Legacy P-States)		
Native Mode: Hardware chooses a P-state based on OS guidance		
Out of Band Mode: Hardware autonomously chooses a P-state (no OS guidance)"		

Main Advanced Platfo	Aptio Setup − AMI rm Configuration Socket	Cor	nfigurationSecurity
Password Description		1	Set Administrator Password
If ONLY the Administrate then this only limits at only asked for when ent If ONLY the User's passe is a power on password a boot or enter Setup. In have Administrator righ	or's password is set, ccess to Setup and is ering Setup. word is set, then this and must be entered to Setup the User will ts.		
in the following range:			↔: Select Screen
Minimum length	3		†↓: Select Item
Maximum length	20		Enter: Select
Administrator Password User Password			+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Change User/Administrator Password

You can install an Administrator password, and if you install an administrator password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

If you highlight these items and press Enter, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press Enter after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

Removing the Password

Highlight this item and type in the current password. At the next dialog box press Enter

to disable password protection.

3.6.1 Secure Boot

	Aptio Setup – AMI	
		Security
System Mode	Setup	Secure Boot feature is Active if Secure Boot
Secure Boot	[Disabled]	is Enabled,
	Not Active	Platform Key(PK) is enrolled and the System
Secure Boot Mode	[Custom]	is in User mode.
▶ Restore Factory Keys		The mode change
▶ Reset To Setup Mode		requires platform reset
▶ Key Management		
		++: Select Screen
		↑↓: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

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Secure Boot	Disabled	Optimal Default, Failsafe Default	
	Enabled		
Secure Boot feature	is Active if Secure Boot is Ena	abled,	
Platform Key(PK) is e	enrolled and the System is in	User mode.	
The mode change re	equires platform reset		
Secure Boot Mode	Standard		
	Custom	Optimal Default, Failsafe Default	
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	Force System to User Mode.		
Keys	Install factory default Secure Boot key databases		

3.6.1.1 Key Management

	Aptio Setup – AMI	Security
Vendor Keys Factory Key Provision ▶ Restore Factory Keys ▶ Reset To Setup Mode	Valid [Disabled]	Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode
Secure Boot variable Platform Key Key Exchange Keys () Authorized Signatures Forbidden Signatures() Authorized TimeStamps() OsRecovery Signatures() Export Secure Boot var Enroll Efi Image	Size Keys Key Source (PK) 0 0 No Keys KEK) 0 0 No Keys (db) 0 0 No Keys dbx) 0 0 No Keys dbt) 0 0 No Keys dbt) 0 0 No Keys dbt) 0 0 No Keys dbr) 0 0 No Keys iables 1 1 1	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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Factory Key	Disabled	Optimal Default, Failsafe Default	
Provision	Enabled		
Install factory defaul	; tall factory default Secure Boot keys after the platform reset and while the System is		
in Setup mode			
Restore Factory	Force System to User Mode.		
Keys	Install factory default Secure Boot key databases		
Enroll Efi Image	Allow Efi image to run in Secure Boot mode.		
	Enroll SHA256 Hash certifica	ite of a PE image into Authorized	
	Signature Database (db)		

Secure Boot Variables

Enroll Factory Defaults or load certificates from a file:

- 1. Public Key Certificate in:
 - a) EFI_SIGNATURE_LIST
 - b) EFI_CERT_X509 (DER encoded)
 - c) EFI_CERT_RSA2048 (bin)
 - d) EFI_CERT_SHAXXX
- 2. Authenticated UEFI Variable
- 3. EFI PE/COFF Image (SHA256)

Key Source: Default, External, Mixed

3.7 Setup Submenu: Boot

Aptio Setup – AMI <mark>⊲</mark> Boot <mark>Save & Exit</mark>		
Boot Configuration Quiet Boot Network Stack	[Enabled] [Disabled]	Enables or disables Quiet Boot option
FIXED BOOT ORDER Priorit Boot Option #1 Boot Option #2 Boot Option #3 Boot Option #4	ies [UEFI Hard Disk] [UEFI CD/DVD] [UEFI USB Device] [UEFI Network]	<pre>++: Select Screen tl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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Quiet Boot	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable Quiet Bo	ot option.	
Network Stack	Enabled	
	Disabled	Optimal Default, Failsafe Default
Enable/Disable UEFI Network Stack.		

3.8 Setup Submenu: Save & Exit

Aptio Setup - AMI ◀ Boot Save & Exit	
Save Options	Reset the system after saving the changes.
Save Changes and Reset	
Discard Changes and Exit	
Default Options Restore Defaults	
	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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