

# SCH3X2-D7 SCH3X2-RD7

# Micro-Grid Intel 13/12th CPU Fanless Computer



User's Manual Revision Date: Jul.2.2024



# **Safety Information**

# **Electrical safety**

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your local distributor.

# **Operation safety**

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter any technical problems with the product, contact your local distributor

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# **Revision History**

Revision	Date (yyyy/mm/dd)	Changes
V1.0	2024/01/15	First release
V1.1	2024/05/24	Change 2.5G to 1G for IEC-61850-3
V1.2	2024/7/2	Add Accessories Kit for option

# **Packing List**

ltem	Description	Q'ty
1	SCH3X2-D7/RD7 Micro-Grid Intel 13/12th CPU Fanless Computer	1
2	Driver CD	1
3	SSD Tray Key	1
4.	Single Rack Mount Bracket & Screw	1 set

# **Ordering information**

Model Number	Description
	Micro-Gird Fanless Computer with Intel 13th /12th Gen Intel <sup>®</sup> Raptor
	Lake-S/Alder Lake-S LGA1700 Socket Processor / Core i9/i7/i5/i3
SCH3X2-D7	Processor TDP 65W, up to 64G SO-DIMM DDR4 3200MHz, 2 × 1GbE RJ45,
	2 x USB3.2, 2 x USB3.0, 2 x USB2.0, 2 x DP, 2 x 2.5" SwapSSD Tray, DC-IN
	9~36V , Operating Temperature -20°C~+60°C
	Micro-Gird Fanless Computer with Intel 13th /12th Gen Intel <sup>®</sup> Raptor
	Lake-S/Alder Lake-S LGA1700 Socket Processor / Core i9/i7/i5/i3
SCH3X2-RD7	Processor / TDP 65W, up to 64G SO-DIMM DDR4 3200MHz, 2 × 1GbE
	RJ45, 2 x USB3.2, 2 x USB3.0, 2 x USB2.0, 2 x DP, 2 x 2.5" SwapSSD Tray,
	DC-IN 9~36V with redundant, Operating Temperature -20°C~+60°C

# Accessories Kit (Option)

P/N	Description	Q'ty	
	Accessories Kit for SCH3X2/SCH4X2	1 cot	
	Single Machine Rackmount Bracket	I Set	
0744501222000000	Accessories Kit for SCH3X2/SCH4X2	1 cot	
	Dual Machine Rackmount Bracket	1 Set	



# **RoHS Compliance**



# Perfectron RoHS Environmental Policy and Status Update

Perfectron is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with

European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2011/65/EU, to be your trusted green partner and to protect our environment.

In order to meet the RoHS compliant directives, Perfectron has established an engineering and manufacturing task force to implement the introduction of green products. The task force will ensure that we follow the standard Perfectron development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which Perfectron are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant

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# **Chapter 1 : Production Introduction**

# 1.1 Specifications

**System** 

CPU	13th/12th Gen Intel <sup>®</sup> Raptor Lake-S/Alder Lake-S LGA1700 Socket Processor / Core i9/i7/i5/i3 Processor up to TDP 65W
Memory Capacity	DDR4 SO-DIMM 3200 MHz up to 64G
Chipset	Q670
Display	
GPU	Intel <sup>®</sup> UHD Graphics
Display Port	DisplayPort 1.4, DP++ Max resolution up to 4K (4096x2304@60Hz)
2 <sup>nd</sup> Display Port	DisplayPort 1.4, DP++ Max resolution up to 4K (4096x2304@60Hz)
Expansion	
PCIe Slot	2 x PCle Gen4 x 8 Slot
Ethernet	
Ethernet	Intel® I219-LM Giga LAN
Front I/O	
Power Button	1 x Power Button
Indicator	1 x HDD backlight / 1 x Power backlight
USB3.0	2 x USB 3.0
Rear I/O	
Power Input	1 x 4P Terminal Block 9~36V DC-IN
LAN	2 x 1GbE RJ45
USB3.2	2 x USB 3.2
USB2.0	2 x USB2.0
DisplayPort	2 x DP
Storage	2 x Swap SSD Tray(1 x 2.5" 3D TLC 128GB)
Power	
Power Input	DC-IN 9~36V(With Redundant)



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# OS support list

OS	Windows <sup>®</sup> 11 64bit, / Windows <sup>®</sup> 10 IoT LTSC 64bit (LTSC 2021)		
	Ubuntu 22.04 / Linux (support by request)		
Mechanical and Environmental			
Dimension	220 x 315 x167 mm ( W x D x H )		
Operating Temp.	-20°C to 60°C		
Storage Temp.	-40°C to 85°C		
Relative Humidity	5% to 95%, non-condensing		
System Design	Fanless		
Mechanical and Environmental			
IEC-61850-3 / IEEE-1613 / UL 62368-1 / EN60945 / CE / FCC			



# 1.2 SCH3X2-D7 Front Panel I/O Placement



# 1.3 SCH3X2-D7 Rear Panel I/O Placement







# 1.4 SCH3X2-RD7 Front Panel I/O Placement

## 1.5 SCH3X2-RD7 Rear Panel I/O Placement





# 1.6 SCH3X2-D7 Mechanical Dimensions

## Single System :



**Dual System :** 





# 1.7 SCH3X2-RD7 Mechanical Dimensions

## Single System :



**Dual System :** 





# **Chapter 2 : Rear I/O Port**

# 2.1 LAN port LED Indications

## 2.5G LAN :

Diagram	LED	Color	State	Condition
	Link	N/A	Off	LAN link is not established
LEFT Right		Green	On	LAN link is established
FF	-		Blinking	LAN activity occurring
		N/A	Off	10 M/100M b/s data rate
	Speed	Orange	On	1000 M data rate
		Green	On	2500 Mb/s data rate

## 1G LAN :

Diagram	LED	Color	State	Condition
		N/A	Off	LAN link is not established
	Link	Green	On	LAN link is established
			Blinking	LAN activity occurring
		N/A	Off	10 Mb/s data rate
<b>MELLILLER</b>	Speed	Green	On	100 Mb/s data rate
		Orange	On	1000 Mb/s data rate



# Chapter 3: System Setup

This chapter provides more detailed information and let you know how to install components into the SCH3X2-D7/RD7 series embedded system.



Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

# 3.1 2.5" Easy swap SSD installation

SCH3X2-D7/RD7 series supports two 2.5" Easy swap SSD

- Use Tri-angle security key to open keylock and pull out 2.5" SSD tray.
- Put 2.5"SSD on the tray and make sure SSD is fixed and push the tray back.
- Use Tri-angle security key to lock the tray door.





# 3.2 PCIe Card installation

SCH3X2-D7/RD7 series supports two PCIe Gen3 x 8 slot :

• Remove the back cover screws



• Remove the BKT-1 screw of the cover





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• Remove the BKT-2 screws of the cover



• 2\*PCIe x8 Slot





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Install PCIe Card



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Lock BKT-2 screw



Lock BKT-1 screw





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• Lock back cover screws





# **Chapter 4: AMI BIOS UTILITY**

This chapter provides users with detailed descriptions on how to set up a basic system configuration through the AMI BIOS setup utility.

# 4.1 Starting

100000

To enter the setup screens, perform the following steps:

- Turn on the computer and press the <Del> key immediately.
- After the <Del> key is pressed, the main BIOS setup menu displays. Other setup screens can be accessed from the main BIOS setup menu, such as the Chipset and Power menus.

# 4.2 Navigation Keys

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process. Some of the hot keys are <F1>, <F10>, <Enter>, <ESC>, and <Arrow> keys.

Some of the navigation keys may differ from one screen to another.		
Left/Right	The Left and Right < Arrow > keys moves the cursor to select a menu.	
	The Up and Down <arrow> keys moves the cursor to select a setup</arrow>	
Up/Down	screen or sub-screen.	
	The Plus and Minus < Arrow > keys changes the field value of a particular	
+- Plus/Wilnus	setup setting.	
Tab	The <tab> key selects the setup fields.</tab>	
F1	The <f1> key displays the General Help screen.</f1>	
F10	The <f10> key saves any changes made and exits the BIOS setup utility.</f10>	
Fcc	The <esc> key discards any changes made and exits the BIOS setup</esc>	
ESC	utility.	
Entor	The <enter> key displays a sub-screen or changes a selected or</enter>	
Enter	highlighted option in each menu.	

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# 4.3 Main Page

Main Advanced Security Boot	Aptio Setup – AMI Save & Exit Event Logs	
BIOS Information		Set the Date. Use Tab to
BIOS Vendor	American Megatrends	switch between Date elements.
Core Version	5.25	Default Ranges:
Compliancy	UEFI 2.8; PI 1.7	Year: 1900-9999
BIOS Version	B0230X02	Months: 1-12
Build Date	05/16/2022	Days: Dependent on month Range of Years may vary.
ME FW Version	16.0.15.1735	
Processor Information		
Intel(R) Pentium(R) Gold G7400T		
Microcode Revision	1E	
Total Memory	8192 MB	++: Select Screen
Memory Slot1	0 MB (DDR4)	11: Select Item
Memory Slot2	8192 MB (DDR4)	Enter: Select
Memory Frequency	2133 MHz	+/-: Change Opt. F1: General Help
Serial ATA Port 4	Empty	F2: Previous Values
Serial ATA Port 5	Empty	F3: Optimized Defaults
Serial ATA Port 6	Empty	F4: Save & Reset
Serial ATA Port 7	TS64GSSD450K (64.0GB)	ESC: Exit
System Date	[Mon 05/16/2022]	
System Time	[07:01:54]	

## **BIOS Information**

It displays BIOS related information.

#### **ME FW Version**

ME Firmware Version.

#### **Processor Information**

Display the installed CPU brand.

## **Memory Information**

This displays the installed memory size, installed memory size of Slot 1 & Slot2, and the installed memory frequency.

## Serial ATA Port 4/5/6/7

Display the installed SATA device model/size of port 4/5/6/7.

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## System Date

Set the Date. Use Tab to switch between Date elements. Default Ranges: Year: 1998-9999 Months: 1-12

Days: dependent on month. Range of Years may vary.

#### System Time

Set the Time. Use Tab to switch between Time elements.

hh: 0-23

mm: 0-59

ss: 0-59

## 4.4 Advance Page

Aptio Setup – A Main Advanced Security Boot Save & Exit Event L	MI .ogs
Doboard Device CPU Configuration VMD setup menu Trusted Computing NCT6126D Super IO Configuration Hardware Monitor SS RTC Wake Settings Network Stack Configuration NVMe Configuration	Onboard Device Configuration ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.22.1284 Copyrigh	nt (C) 2022 AMI

#### **Onboard Device**

Onboard Device Configuration

## **CPU Configuration**

**CPU Configuration Parameters** 

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#### VMD setup menu

VMD Configuration setting

## Trusted Computing

**Trusted Computing Settings** 

## NCT6126D Super IO Configuration

System Super IO Chip Parameters.

#### **HW Monitor**

Monitor hardware status

#### **S5 RTC Wake Settings**

Enable system to wake from S5 using RTC alarm.

#### Network Stack Configuration

Network Stack Settings.

#### **NVMe Configuration**

NVMe Device Options Settings

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# 4.4.1 Onboard Device

Advanced	Aptio Setup - AMI	
Turbo Mode State After G3 DVMT Pre-Allocated DVMT Total Gfx Mem Wake on LAN Enable HD Audio Chassis Intrusion	[Enabled] [S5 State] [60M] [256M] [Enabled] [Enabled] [Disabled]	Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled.
Ve	rsion 2.22.1284 Copyright (	C) 2022 AMI

#### **Turbo Mode**

Enable/Disable processor Turbo Mode (requires Intel Speed Step or Intel Speed Shift to be available and enabled. Disabled / Enabled

#### State After G3

Specify what state to go to when power is re-applied after a power failure (G3 state). S0 State / S5 State

## **DVMT Pre-Allocated**

Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device. 32M/F7 / 36M / 40M / 44M / 48M / 52M / 56M /60M / 64M

## **DVMT Total Gfx Mem**

Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device. 128M / 256M / MAX

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#### Wake on LAN Enable

Enable/Disable integrated LAN to wake the system. Disabled / Enabled

#### **HD** Audio

Control Detection of the HD-Audio device. Disabled: HDA will be unconditionally disabled. Enabled: HDA will be unconditionally enabled. Disabled / Enabled

#### **Chassis Intrusion**

Configure Chassis Intrusion. Disabled / Enabled / Reset

# 4.4.2 CPU Configuration

Main	Aptio Setup - AMI	
CPU Configuration		
ID Brand String VMX SMX/TXT	0x90675 Intel(R) Pentium(R) Gold G7400TE Supported Not Supported	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
	Version 2.22.1284 Copyright (C) 2	1922 AMI

ID
Displays CPU Signature

## **Brand String**

Displays the CPU brand string

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## VXM

L3 Cache Size

SMX/TXT

SMX/TXT Supported or Not

# 4.4.3 VMD setup menu

Main	Aptio Setup – AMI	
VMD Configuration		Enable/Disable to VMD
Enable VMD controller	[Disabled]	Controller
	·	
		++: Select Screen
		Enter: Select +/-: Change Opt.
		F1: General Help F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit
		ESC: Exit
Version 2	.22.1284 Copyright (C) 2022	AMI

# Enable VMD controller

Enable/Disable to VMD controller. Disabled / Enabled





# 4.4.4 Trusted Computing

Advanced	Aptio Setup – AM:	
Advanced TPM 2.0 Device Found Firmware Version: Vendor: Security Device Support Pending operation	600.18 INTC [Enable] [None]	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available. ++: Select Screen 11: Select Item Enter: Select
		+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Vers	ion 2.22.1284 Copyright	(C) 2022 AMI

## **Security Device Support**

Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available. Disabled / Enabled

## **Pending operation**

Schedule an Operation for the ecurity Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device. None / TPM Clear





# 4.4.5 NCT6126D Super IO Configuration

Advanced	Aptio Setup – AMI	
NCT6126D Super IO Configuration		Set Parameters of Serial Port
Super IO Chip • Serial Port 1 Configuration • Serial Port 2 Configuration	NCT6126D	<pre>1 (COMA)  ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
Version	2.22.1284 Copyright (C) 2022	AMI

# Serial Port 1 Configuration

Set Parameters of Serial Port 1 (COMA)

## **Serial Port 2 Configuration**

Set Parameters of Serial Port 2 (COMB)



# 4.4.6 Serial Port 1 Configuration



#### **Serial Port**

Enable or Disable Serial Port (COM). Disabled / Enabled

#### **Device Settings**

Device Super IO COM1 Address and IRQ.Read only

#### **Change Settings**

Select an optimal setting for Super IO Device.

Auto / IO=3E8h; IRQ=7;

/ IO=3E8h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

/ IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

/ IO=220h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

/ IO=228h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

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#### Mode Configuration

Configure serial port as RS232/RS422/RS485. 1T/1R RS422 / 3T/5R RS232 / 1T/1R RS485 TX ENABLE Low Active / 1T/1R RS422 with termination resistor / 1T/1R RS485 with termination resistor TX ENABLE Low Active / Disabled

# 4.4.7 Serial Port 2 Configuration



## **Serial Port**

Enable or Disable Serial Port (COM). Disabled / Enabled

#### **Device Settings**

Device Super IO COM2 Address and IRQ.Read only



## **Change Settings**

Select an optimal setting for Super IO Device.		
Auto / IO=3E8h; IRQ=7;		
/ IO=3E8h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;		
/ IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;		
/ IO=220h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;		
/ IO=228h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;		

## 4.4.8 Hardware Monitor

Advanced	Aptio Setup – AMI	
PC Health Status		If Enabled, POST monitors voltage, temperature, and fan
Hardware Monitor Alert Enable CPU Temperature CPU VR Temperature DIMM Temperature CPU Fan Speed System Fan Speed CPU_CORE_MON (CPUVCORE) V_1PO5_SB_MON (ATX5VSB/VINO) VDD2_MON (AUXTIN/VIN2) V_1PO5_PROC (VTT)	[Disabled] : +43 % : +37 % : +32 % : 1014 RPM : N/A : +0.880 V : +1.056 V : +1.201 V : +1.056 V	<pre>voltage, temperature, and fan status. If these values are out of range, BIOS display warning message and turn on beep sound. **: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Linear in	- 0 00 1001 0mm what (0) 00	DO ANT

#### Hardware Monitor Alert Enable

[Disabled If Enabled, POST monitors voltage, temperature, and fan status. If these values are out of range, BIOS display warning message and turn on beep sound. Disabled / Enabled]



# System Fan Enable (Suppressed if Hardware Monitor Alert is Disabled) If Enabled, POST monitors system fan status. If this value is out of range, BIOS display warning message and turn on beep sound. Disabled / Enabled

# 4.4.9 S5 RTC Wake Settings

Advanced	Aptio Setup – AMI	
Wake system from S5	[Disabled]	Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Vi	ersion 2.21.1278 Copyright (	C) 2020 AMI

#### Wake system from S5

Enable or disable System wake on alarm event. Select Fixed Time, system will wake on the hr:min:sec specified. Disabled / Fixed Time

## Wake up hour(Show when Wake system from S5 set to Fixed Time)

Select 0-23. For example enter 3 for 3am and 15 for 3pm.

0

## Wake up minute(Show when Wake system from S5 set to Fixed Time)

Select 0-59. For example enter 3 for 3am and 15 for 3pm.

0

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## Wake up second(Show when Wake system from S5 set to Fixed Time)

Select 0-59. For example enter 3 for 3am and 15 for 3pm. 0

# Wake system from S5 (when set to [Dynamic time])

Wake up minute increase

Select 1-5.

1

# 4.4.10 Network Stack Configuration

Advanced	Aptio Setup – American Megatrends International, LLC. Advanced	
Network Stack	[Disabled]	Enable/Disable UEFI Network Stack ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Ver. 2.2	1.1277 Copyright (C) 2020 American Megatrends	International, LLC.

#### Network stack

Enable/Disable UEFI Network Stack. Disabled / Enabled

## Ipv4 PXE Support (Available when Network stack Enabled)

Enable/Disable Ipv4 PXE Boot Support. If disabled IPV4 PXE boot option will not be created. Disabled / Enabled



## Ipv6 PXE Support (Available when Network stack Enabled)

Enable/Disable Ipv6 PXE Boot Support. If disabled IPV6 PXE boot option will not be created. Disabled / Enabled

# 4.4.11 NVMe Configuration

Aptio Setup – American Megatrends Internatio	nal, LLC.
NVMe Configuration	
NVMe Configuration No NVME Device Found	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
Ver. 2.21.1277 Copyright (C) 2020 American Megatrends	International, LLC.

#### (Device)

Here shows the Device Name you installed. A sample screenshot shows below.



→





Advanced	
Seg:Bus:Dev:Func	00:01:00:00
Model Number	INTEL SSDPEKKR128G7
Total Size	128.0 GB
Vendor ID	8086
Device ID	F1A5
Namespace: 1	Size: 128.0 GB

# 4.5 Security Page

Main Advanced Event Logs Se	Aptio Setup – AMI curity Boot Save & Exit	
Password Description		Set Administrator Password
If DNLY the Administrator's pas then this only limits access to only asked for when entering Se If DNLY the User's password is is a power on password and must boot or enter Setup. In Setup t have Administrator rights. The password length must be in the following range: Minimum length Maximum length	sword is set, Setup and is tup. set, then this be entered to he User will 3	
Administrator Password User Password	20	<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values</pre>
HDD Security Configuration: P0:ST2000NM0008–2F3100		F3: Optimized Defaults F4: Save & Reset ESC: Exit
▶ Secure Boot ▶ BIOS Update		
. University		

# Administrator Password

Set Administrator Password

#### User Password

Set User Password.

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## **HDD Security drive**

HDD Security Configuration for selected drive

Press Enter when selected to go into the associated Sub-Menu.

## Secure Boot

Set User Password.

Press Enter when selected to go into the associated Sub-Menu.

## **BIOS Update**

**BIOS Update support** 

Press Enter when selected to go into the associated Sub-Menu.

# 4.5.1 HDD Security configuation

HDD Password Description :		
Allows Access to Set, Modify an Hard Disk User Password User Password is mandatory to E If the 'Set User Password' optic do power cycle to enable the op HDD PASSWORD CONFIGURATION:	d Clear nable HDD Security. on is hidden, tion again.	
Security Supported : Security Enabled : Security Locked : Security Frozen : HDD User Pwd Status:	Yes No No Yes NOT INSTALLED	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>

(Device)	
Read only	

EARE

# 4.5.2 Secure Boot

	Aptio Setup - AMI Security	
System Mode	Setup	Secure Boot feature is Active
Secure Boot	[Enabled] Not Active	Platform Key(PK) is enrolled and the System is in User mode. The mode change requires
Secure Boot Mode Restore Factory Keys Reset To Setup Mode	[Standard]	platform reset
▶ Key Management		
		<pre>++: Select Screen f4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
1	/ersion 2.21.1278 Copyright (	(C) 2020 AMI

## Secure Boot

Secure Boot feature is Active if Secure Boot is Enabled. Platform Key (PK) is enrolled and the System is in User mode. The mode change requires platform reset. Disabled / Enabled

#### **Secure Boot Mode**

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. Custom / Standard

## **Restore Factory Keys**

Force System to User Mode. Install factory default Secure Boot key databases.

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## **Reset to Setup Mode**

Delete all Secure Boot key databases from NVRAM.

#### **Key Management**

Enables expert users to modify Secure Boot Policy variables without full authentication

# 4.5.3 Key Management

Sec	Aptio Setup – AMI urity	
Sec Vendor Keys Factory Key Provision Pastore Factory Keys Pastore Factory Keys Reset To Setup Mode Secure Boot variable   Size  Platform Key (PK)  Key Exchange Keys (KEK)  Authorized Signatures (db)  Forbidden Signatures(dbx)  Authorized TimeStamps(dbt)  OsRecovery Signatures(dbr)  Export Secure Boot variables Enroll Efi Image	Valid [Disabled] Keys  Key Source 0  0  No Keys 0  0  No Keys	Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode
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#### **Factory Key Provision**

Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode. Disabled / Enabled

#### **Restore Factory Keys**

Force System to User Mode. Install factory default Secure Boot key databases

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Delete all Secure Boot key databases from NVRAM

## Platform Key (PK)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate:

a)EFI\_SIGNATURE\_LIST

b)EFI\_CERT\_X509 (DER)

c)EFI\_CERT\_RSA2048 (bin)

d)EFI\_CERT\_SHAXXX

2.Authenticated UEFI Variable

3.EFI PE/COFF Image(SHA256)

Key Source:

Factory, External, Mixed

## Key Exchange Keys

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate:

a)EFI\_SIGNATURE\_LIST

b)EFI\_CERT\_X509 (DER)

c)EFI\_CERT\_RSA2048 (bin)

d)EFI\_CERT\_SHAXXX

2.Authenticated UEFI Variable

3.EFI PE/COFF Image(SHA256)

Key Source:

Factory, External, Mixed





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## **Authorized Signatures**

Enroll Factory Defaults or load certificates from a file:

1.Public Key Certificate:

a)EFI\_SIGNATURE\_LIST

b)EFI\_CERT\_X509 (DER)

c)EFI\_CERT\_RSA2048 (bin)

 $d) {\sf EFI\_CERT\_SHAXXX}$ 

2.Authenticated UEFI Variable

3.EFI PE/COFF Image(SHA256)

Key Source:

Factory, External, Mixed

## Forbidden Signatures

Enroll Factory Defaults or load certificates from a file:

1.Public Key Certificate:

a)EFI\_SIGNATURE\_LIST

b)EFI\_CERT\_X509 (DER)

c)EFI\_CERT\_RSA2048 (bin)

d)EFI CERT SHAXXX

2.Authenticated UEFI Variable

3.EFI PE/COFF Image(SHA256)

Key Source:

Factory, External, Mixed

## Authorized TimeStamps

Enroll Factory Defaults or load certificates from a file:

1.Public Key Certificate:

a)EFI\_SIGNATURE\_LIST

b)EFI\_CERT\_X509 (DER)

c)EFI\_CERT\_RSA2048 (bin)

d)EFI\_CERT\_SHAXXX

2.Authenticated UEFI Variable

3.EFI PE/COFF Image(SHA256)

Key Source:

Factory, External, Mixed



## **OsRecovery Signatures**

Enroll Factory Defaults or load certificates from a file:

1.Public Key Certificate:

a)EFI\_SIGNATURE\_LIST b)EFI\_CERT\_X509 (DER)

c)EFI\_CERT\_RSA2048 (bin)

d)EFI\_CERT\_SHAXXX

2.Authenticated UEFI Variable

3.EFI PE/COFF Image(SHA256)

Key Source:

Factory, External, Mixed

## Export Secure Boot variables

Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device

## Enroll Efi Image

Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db)

# **7**STARLAKE



# 4.5.4 BIOS Update

Aptio Setup - AMI Security	
Path for ROM Image Notice : ROM Image must in the root folder of storage device. File name must match with current BIOS project.	Enter the path to the BIOS update option **: Select Screen fl: Select Item Enter: Select +/-: Change Opt.
Vection 2 21 1278 Convictot (C)	F1: deferal help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit

# Path for ROM Image

Enter the path to the BIOS update option.





# 4.6 Boot Page

Aptio Setup – Am Main Advanced Event Logs Securit	erican Megatrends Internati y Boot Save & Exit	onal, LLC.
Main Advanced Event Logs Securit Boot Configuration Setup Prompt Timeout Bootup NumLock State FIXED BOOT ORDER Priorities Boot Option #1 Boot Option #2 Boot Option #3 Boot Option #4 Boot Option #5 Boot Option #6 Boot Option #7 Boot Option #8 > UEFI Hard Disk Drive BBS Priorities > UEFI USB Key Drive BBS Priorities	Image: Provide the second s	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting. ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset
		ESC: EXIT
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## Setup Prompt Timeout

Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

1

## Bootup NumLock State

Select the keyboard NumLock state.

On / Off

# Boot Option #1 ~ Boot Option #8

[Sets the system boot order. Device Name / Disabled

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#### (UEFI) Hard Disk Drive BBS Priorities

Specifies the Boot Device Priority sequence from available Hard Disk Drives.

#### (UEFI) USB KEY Drive BBS Priorities

Specifies the Boot Device Priority sequence from available Hard Disk Drives.

#### (UEFI) USB Hard Disk Drive BBS Priorities

Specifies the Boot Device Priority sequence from available Hard Disk Drives.

# 4.6.1 (List Boot Device Type) Drive BBS Priorities

	Aptio Setup – A	merican Megatrends Internati Boot	onal, LLC.
Boot Option #1		[Windows Boot Manager (P0: InnoDisk Corp mSATA 3ME2)]	Sets the system boot order ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
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#### **Boot Option #1**

Sets the system boot order.

Boot Device Name #1 of this type / Disabled



# 4.7 Save & Exit Page

Aptio Setup – American Megatrends Internat Main Advanced Event Logs Security Boot <mark>Save &amp; Exit</mark>	ional, LLC.
Save Changes and Reset Discard Changes and Reset Restore Defaults	Reset the system after saving the changes.
	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Reset ESC: Exit</pre>
Ver. 2.21.1277 Copyright (C) 2020 American Megatreno	is International, LLC.

## **Discard Changes and Exit**

Exit system setup without saving any changes.

## Save Changes and Reset

Reset the system after saving the changes.

#### **Restore Defaults**

Restore/Load Default values for all the setup options.





# 4.8 Event Logs

Aptio Setup – AMI Main Advanced Security Boot Save & Exit <mark>Event Logs</mark>	
<ul> <li>Change Smbios Event Log Settings</li> <li>View Smbios Event Log</li> </ul>	Press (Enter> to change the Smbios Event Log configuration.
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## Change Smbios Event Log Settings

Press <Enter> to change the Smbios Event Log configuration.

## **View Smbios Event Log**

Press <Enter> to change the Smbios Event Log records.



# 4.8.1 Change Smbios Event Log Setting

Event Logs	Aptio Setup — AMI	
Enabling/Disabling Options Smblos Event Log	[Enabled]	Change this to enable or disable all features of Smbios
Erasing Settings Erase Event Log When Log is Full	[No] [Do Nothing]	
		<pre>++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values</pre>
		F3: Optimized Defaults F4: Save & Reset ESC: Exit
Vanci	on 2 21 1278 Conucidat (C	) 2020 AMT

## **Smbios Event Log**

Change this to enable or disable all feature of Smbios Event Logging during boot.

Disabled / Enabled

#### **Erase Event Log**

Choose options for erasing Smbios Event Log. Erasing is done prior to any logging activation during reset.

No / Yes, next reset / Yes, every reset

## Whea Log is Full

Choose options for reactions to a full Smbios Event Log. Do Nothing / Erase Immediately





# 4.8.2 ViewSmbios Event Log

Event Logs	Ap	tio Setup – AMI	
DATE TIME ERROR COD	SEVERITY	COUNT	DESCRIPTION
06/04/20 06:35:10 Smbios 0x1	) N/A	N/A	Log Area Reset and Count is applicable only for Multi-Events
Version 2.21.1278 Copyright (C) 2020 AMI			

## DATE / TIME / ERROR CODE / SEVERITY / COUNT

Description: Log Area Reset and Count is applicable only for Multi-Events. By Events.

MM/DD/YY HH:MM:SS Smbios 0x16 N/A N/A