# EM® PRO rack – Revision 3 – Device Reference Manual – P –


Please note that some systems may differ from the picture shown above



E.E.P.D.
...just embedded!

## Manufacturer

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11/2024 Version 3.0

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## Warranty

The warranty and/or guarantee conditions according to the current terms and conditions of E.E.P.D. GmbH apply.

## Reshipment

If you return the EM® PRO system to E.E.P.D. GmbH please remove all connections and peripheral equipment.

Protect the unit with a suitable packaging, preferably use the original packaging.

## Packaging

The EM® PRO system is in a protective package to avoid damage during transport.

This protective package should be recycled in an environmentally friendly way after use.

## Disposal of Device

At the end of the lifetime please dispose and/or recycle the components of the device accordingly.

## Technical Support

For technical information about hardware and software please contact: **support@eepd.de**

# Table of Contents









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## Revision History

| Date | Version | Changes |
|---|---|---|
| 22.11.2024 | 3.0 | First release |
| | | |

## Symbols


The red danger sign warns you when a wrong or missing action dramatically endangers your life or health. The used components as well as the peripheral components could be destroyed.


The orange warning sign warns you when a wrong or missing action could seriously harm your health or destroy the used components.


The yellow caution sign warns you when a wrong or missing action could damage the component.


The yellow ESD sign draws your attention that static sensitive parts of the component could be destroyed. Unpack shielded components only with ESD protections like an ESD wrist strap.

The information sign gives you more information and advice for optimal use of this product. For example, it helps you to purchase necessary or optional accessories.

# Safety Instructions

## Safety of People


The product generates considerable heat. The housing transports this heat to the environment and thus becomes hot. Take care if you touch the housing as this may cause burns!


Please follow all safety instructions at the installation site. Make sure that no or only necessary cables are connected to the EM® PRO system during installation.

If access to the EM® PRO system interfaces is not available after installation, all necessary connections must be made before.

## Device Safety


The EM® PRO system operates exclusively within the specified AC (optional DC) voltage range. Repair work should only be made by an authorized and certified specialty retailer or by the manufacturer's customer service. Do not open the device to avoid damage.

Modifications that have not been approved by the manufacturer void the warranty. Dust, dirt, moisture, and extreme temperatures may significantly impair proper operation.


The device may only be opened by a qualified person.

## Cooling System


The EM® PRO system consists of a compact, robust metal housing with ventilation holes. It is equipped with an automated fan. To ensure sufficient heat dissipation, never cover the ventilation holes of the case. Do not place any objects onto the device.

# 1 Quick-start guide

If connections are no longer accessible after system installation, connect all cables before final mounting.

Before switching on for the first time, we recommend connecting or inserting:

- Monitor + power cable
- USB keyboard and mouse
- Network cable (optional)

Other plug & play devices can be connected after power-up.

If you don't use a monitor or keyboard, you can access the console via a service interface (Mini USB-B, see chapter *4.7*).

## 1.1 Switching on the device / Operation

After all preparations have been made, the system is ready to be connected to the power supply.
Press the power button (*Fig. 16/Fig. 10*) to switch on the system. When the system is powered, the Power-LED will be on.
If an operating system is installed, it will load now. An operating system installation can be performed with all common installation media such as USB stick, USB DVD drive or remote network start. The BIOS boot order has to be adjusted accordingly. To enter the BIOS setup, press the [DEL] (AMI BIOS) or [ESC] (Insyde BIOS) key immediately after switching on.
Please refer to the operating system manual for switching off / shutting down.

# 2 System Information

## 2.1 Intended Use

The EM® PRO Rack is a personal computer to be used with Windows 11, Windows 10, Windows 10 IoT Enterprise or Ubuntu Linux 24.04 LTS. It has been designed for office, workshop and rack mounting environments.

## 2.2 Required Tools

For the installation of the EM® PRO rack the following standard tool is recommended:

- Torx screwdriver T10

Other required tools are depending on the installation place and method.

## 2.3 Software

Supported operating systems are:

AMD V1000/R1000 processors:
Microsoft® Windows® 10
Microsoft® Windows® 10 IoT Enterprise
Linux Ubuntu 24.04 LTS

AMD R2000 processors series:
Microsoft® Windows® 11
Microsoft® Windows® 10
Microsoft® Windows® 10 IoT Enterprise
Linux Ubuntu 24.04 LTS

## 2.4 Options

| Options | Description |
|---|---|
| Memory* | V1000/R1000: up to 2x 16 GB dual channel up to DDR4-2400 SO-DIMM memory<br><br>R2000: up to 2 x 32 GB (R2000) dual channel up to DDR4-2400 (R2312) / DDR4-2667 (R2314, R2514) / DDR4-3200 (R2544) SO-DIMM memory depending on CPU variant<br><br>ECC support |
| SSD* | 64 GB – 2 TB |
| Operating System* | Windows® 11*[2], Windows® 10, Windows® 10 IoT Enterprise*[2], Linux Ubuntu 24.04 LTS |
| *factory-assembled on request<br>*[2]only available with AMD Ryzen™ Embedded R2000 processor series | |

Tab. 1: Options

## 2.5 Accessories

For accessories, please contact our sales department.

| Accessories | Description | |
|---|---|---|
| Mounting brackets | Rack mounting for 19-inch cabinets | |
| Rubber foots | For standalone purposes | |
| Up to 3 expansion slots for interface modules* | MGPI | GPIO Adapter |
| | MREL | Relay USB module |
| | MADC | Analogue to digital converter |
| | M232/M485 | RS-232/RS-485 Adapter |
| | METH | Gbit Ethernet Adapter |
| | MCAN | CAN Adapter |
| | MMC | Mini PCIe Adapter |
| Display cable | Cable DP to DP, 2 m<br>Cable DP to HDMI, 2 m | |
| USB-C adapter cable | USB-C to USB-A adapter cable for HID-devices | |
| Power button | Power button with LED | |

Tab. 2: Accessories

*For further information about the interface modules, please visit our website **USB I/O modules for industrial use** or contact our sales department.

## 2.6 Scope of Delivery

Before you begin installation, please check that your shipment is complete and contains the items listed on the delivery note.

### Type Label

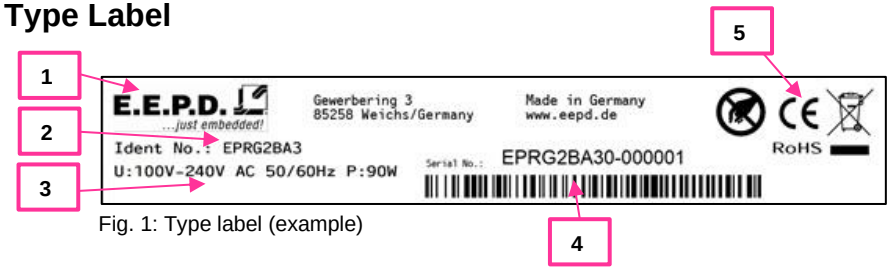


Fig. 1: Type label (example)

**1** – Manufacturer

**2** – Product name

**3** – Voltage input range and DC/AC type

**4** – Serial number with barcode

**5** – Certification information

## 2.7 System Dimensions

all values [mm] approx.

**Front view**

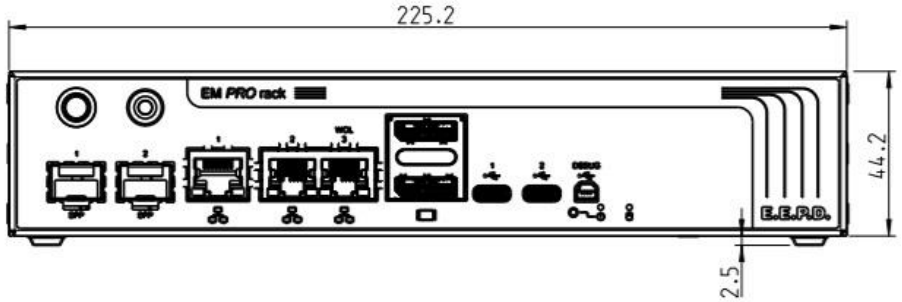


Fig. 2: Dimensions front view

**Rear view**

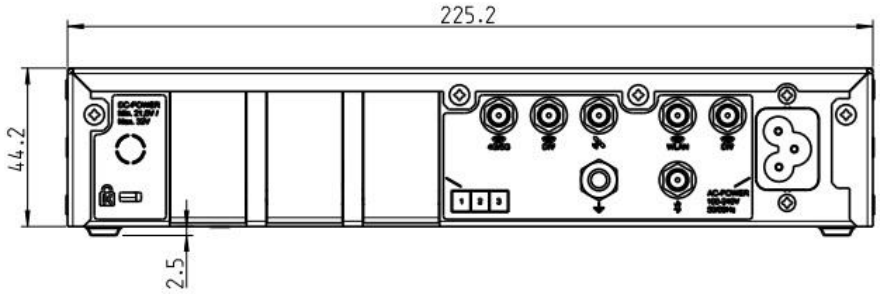


Fig. 3: Dimensions rear view







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### Side view

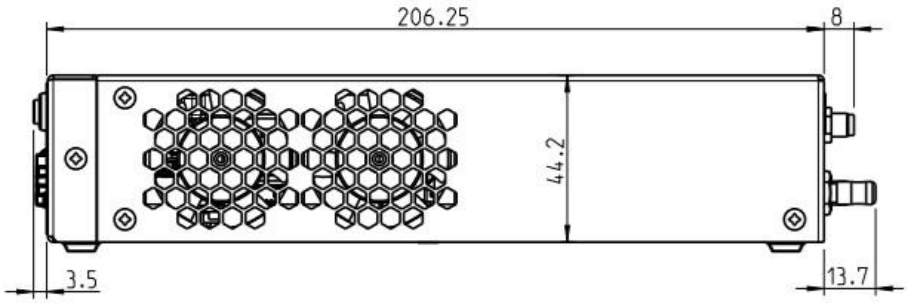


Fig. 4: Dimensions side view

### Top view

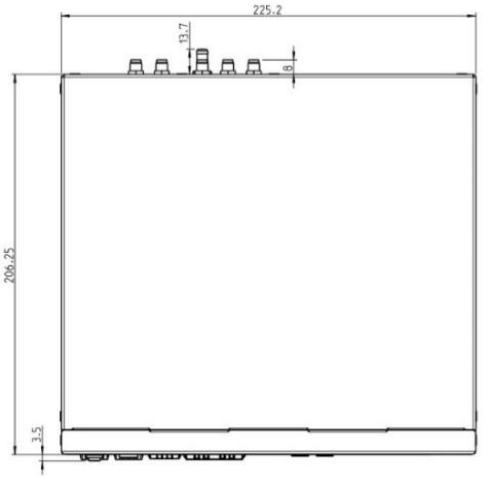


Fig. 6: Dimensions top view

### Top view with mounting brackets

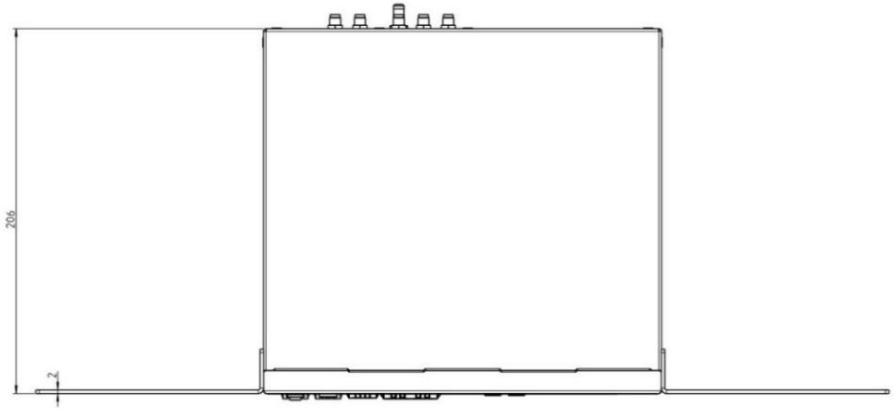


Fig. 5: Dimensions top view with optional mounting brackets

### Bottom view

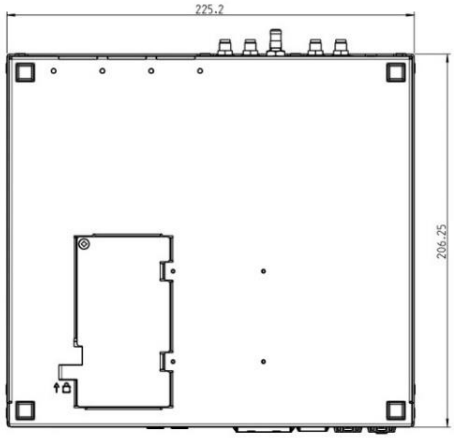


Fig. 7: Dimension bottom view

# 3 Technical Data

- AMD V1000 processor series:
  V1605B / 4C / 8T / 2.0 GHz – 3.6 GHz / 15 W (12 – 25 W)
- AMD R1000 processor series OEM/ODM only, upon request
- AMD R2000 processor series:
  R2312 / 2C / 4T / 2.7 GHz – 3.5 GHz / 15 W (12 – 25 W)
  R2314 / 4C / 4T / 2.1 GHz - 3.5 GHz / 15 W (12 - 35 W)
  R2514 / 4C / 8T / 2.1 GHz - 3.7 GHz / 15 W (12 - 35 W)
  R2544 / 4C / 8T / 3.35 GHz – 3.7 GHz / 35 W
- Memory:
  Up to 2x 16 GB (V1000/R1000) / 2 x 32 GB (R2000) dual channel up to DDR4-2400 (R2312) / DDR4-2667 (R2314, R2514) / DDR4-3200 (R2544) SO-DIMM memory depending on CPU variant, with ECC support
- Ethernet ports:
  Up to 3 Intel i225-LM with IEEE1588:
  1 Dual RJ45 at the front side,
  support for 10/100/1000/2500 Mbit Ethernet (Base-T)
  1 Single RJ45 at the front side,
  support for 10/100/1000/2500 Mbit Ethernet (Base-T)
  Support for Wake-on-LAN on port 3 only

  AMD V1000 and R1000 processors series:
  Up to 2x 10 Gbit/s SFP+ modules
- WiFi/BT (ODM option only)
- SSD (optional):
  1x M.2 Key M (2280) NVMe/PCIe Gen3 x4, PCIe only
  1x M.2 Key M (2280) NVMe/PCIe Gen3 x2, PCIe only
  64 GB – 2 TB each slot
- USB ports:
  2x USB-C 3.2 Gen2 (10Gb/s, OCP = 3000 mA) or USB-C Alt Mode (limited support) at front side
  1x Mini USB-B (4-pin) service interface (console), UART-to-USB
  2x USB 3.2 Gen2 (10Gb/s, OCP = 900 mA each) internal
  1x USB 2.0 (480 Mb/s, OCP = 900 mA) internal
- Display output:
  Up to 2x DisplayPort++, v1.4, up to 3840 x 2160 @ 60 Hz
  Up to 2x USB-C Alt Mode, up to 3840 x 2160 @ 60 Hz (only as secondary monitor)
- Up to 2 controlled FAN (PWM + Tacho) and hardware monitoring
- Power and status LEDs
- Power supply: 100 V - 240 V AC 50/60Hz,
  120 W / 200 W depending on CPU
- Operating temperature: min. 0 °C to max. +50 °C ambient commercial grade
  Adequate cooling provided, depending on variant and cooling system, CPU throttling may occur at higher ambient temperatures
- Storage temperature: -40 °C to +85 °C, non-condensing
- Relative humidity: 95 % @ 40 °C, non-condensing while stored, 89 % while working
- Housing: Sturdy metal case
- Mounting: Rack, stand alone
- Dimensions approx.: 226 x 210 x 45 mm
- Weight: approx. 1680 g + options

# 4 Interfaces

## 4.1 Connection Overview

The EM® PRO rack is equipped with the following standard interfaces:

**1** – Power button
**2** – Up to 2x 10 Gbit/s SFP+ modules (V1000/R1000)
**3** – Up to 3x Ethernet, Port 3 supports WoL
**4** – 2x DP++ connector
**5** – 2x USB-C port
**6** – 1x Mini USB-B (4-pin) service interface (console), UART-to-USB
**7** – Auxiliary power button (Fig. 16)
**8** – Power-LED
**9** – HDD/SSD-LED
**10** – Optional DC power in
**11** – Kensington lock
**12** – Slots for EM® USB-I/O-modules
**13** – Optional SMA connectors for WWAN, BT, WiFi antennas
**14** – Protective Earth (optional)
**15** – AC power in, 230 V IEC 60320 C6

**Front View**

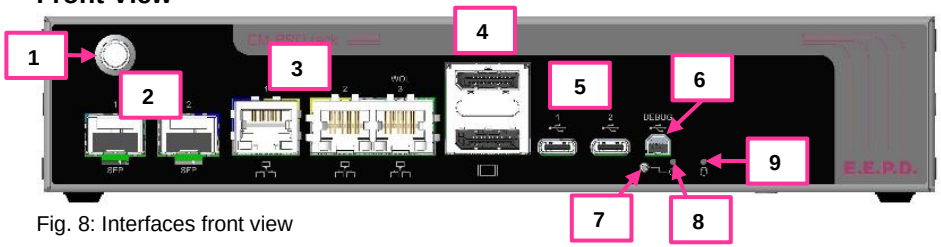


Fig. 8: Interfaces front view

**Rear View**

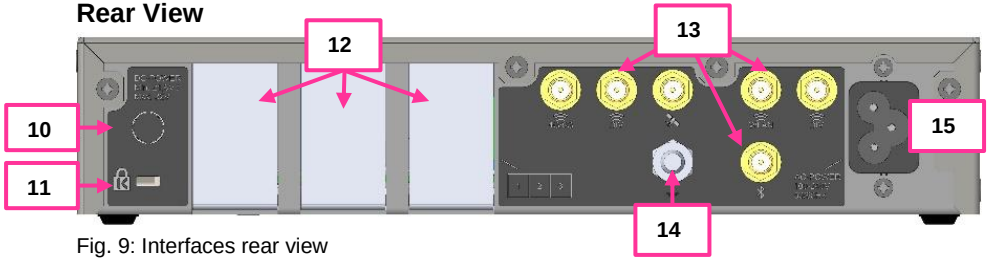


Fig. 9: Interfaces rear view

## 4.2 Power Button

The power button has an integrated LED that lights up a green ring around the power button when the system is turned on.
Press the power button (Fig. 10) once to switch the computer on and off.
Press and hold the power button (>4 Sec.) to hard power off the system. Hard power off may result in data loss.

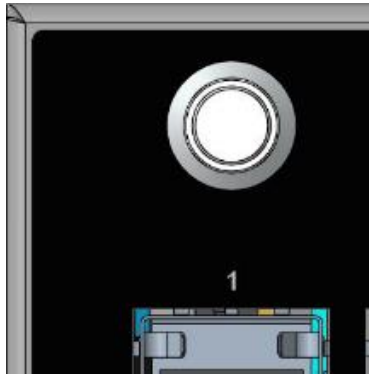

Fig. 10: power button with LED ring

## 4.3 SFP+ Modules

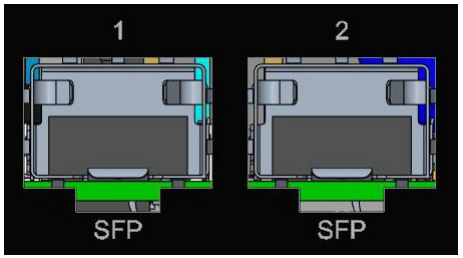

Fig. 11: SFP+ modules Detail

## 4.4 2.5 Gigabit Ethernet Ports

Standard pin assignment

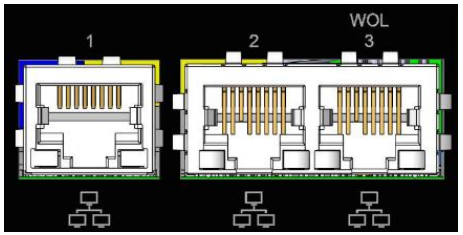

Fig. 12: Ethernet Ports Detail

**Yellow LED**
Speed-LED is on during 2.5 or 1 Gbit transmission and switched off during 10/100 Mbit transmission.

**Green LED**
Link-/Activity-LED is permanently on to indicate an active connection on the Ethernet port. LED blinks during communication with the Ethernet network.

## 4.5 Dual DisplayPort

Standard pin assignment

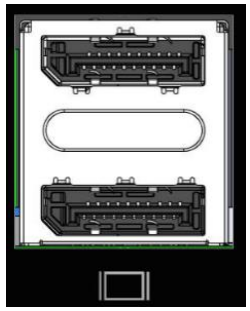

Fig. 13: Dual DisplayPort Detail

## 4.6 USB-C ports

Standard pin assignment

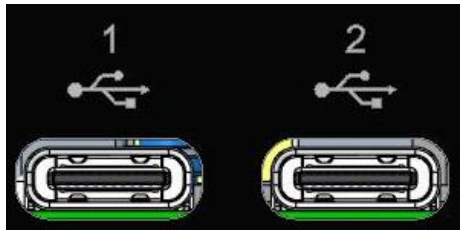


Fig. 14: USB-C Ports Detail

## 4.7 Service Interface

Service interface (console) with UART-to-USB interface. Data speed rate is configurable in the operating system.
Standard USB pin assignment

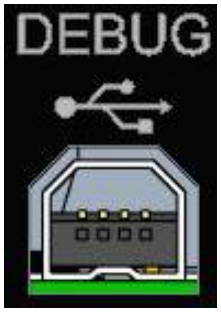


Fig. 15: Mini USB-B Detail

## 4.8 Auxiliary Power Button | HDD/SSD-LEDs

Press the auxiliary power button (Fig. 16) once to switch the computer on and off. Press and hold the auxiliary power button (>4 Sec.) to hard power off the system. Hard power off may result in data loss.

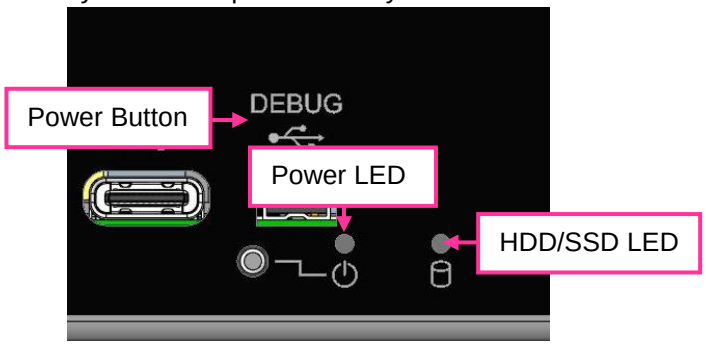


Fig. 16: Auxiliary power button and HDD/SSD-LEDs position

# 5 Opening the system

Incorrect installation of the RAM modules may void the warranty. The configuration of the RAM modules must be specified when ordering and will be installed by EEPD. Please contact our sales department for more information.

1. Turn off the system and disconnect from the electrical outlet.
2. Remove the 12 screws (M3X6) on the right, left and rear side of the system (4 screws each side, see Fig. 17, Fig. 18 and Fig. 19).
3. Lift the cover away from the system.
4. The assembly is carried out in reverse order.

CAUTION

Do not remove any screws other than those specified, otherwise the warranty will be void and you may damage the system.

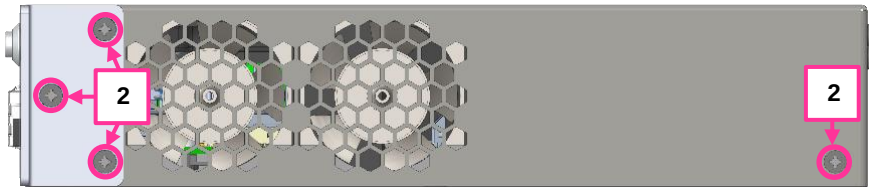


Fig. 17: screws on the left side

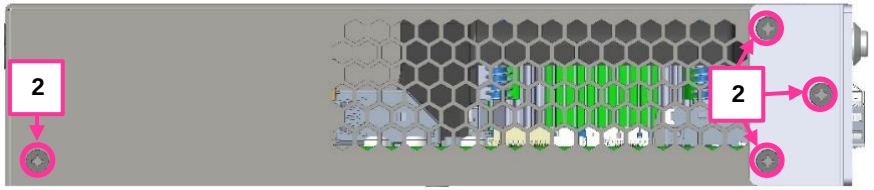


Fig. 18: screws on the right side

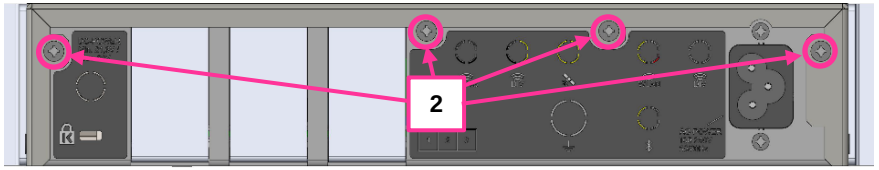


Fig. 19: screws on the rear side

## 5.1 Inside the system

### Top view

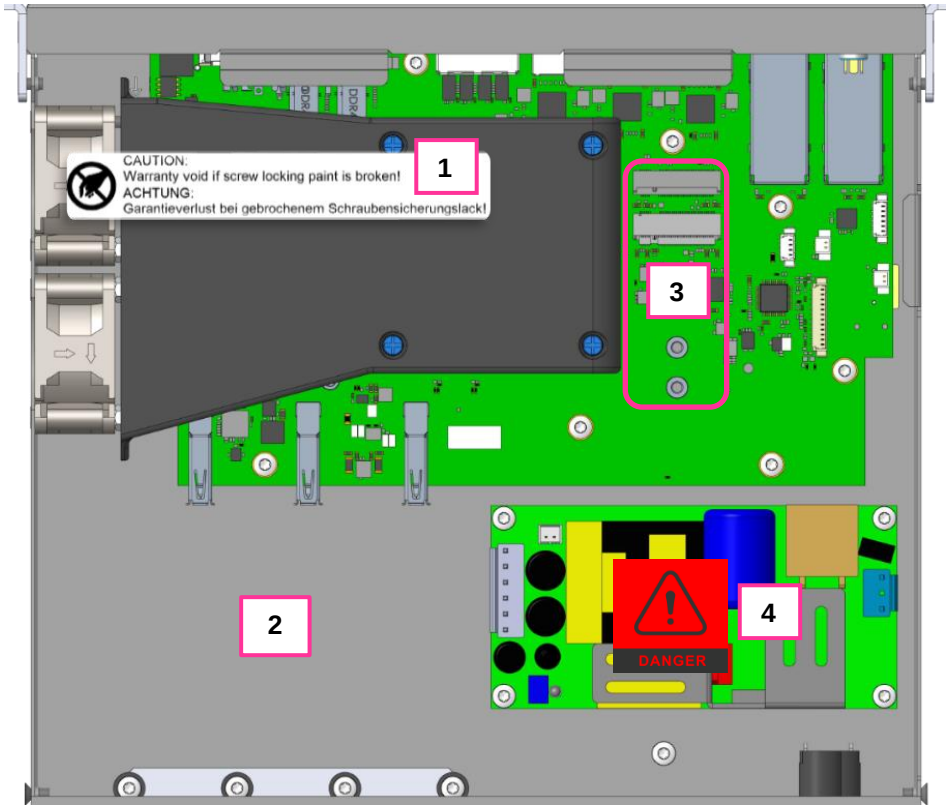


Fig. 20: top view of the system without cover

**1** – safety label

**2** – space for interface modules (see chapter 2.5)

**3** – slots for M.2 Key E / Key B modules (WiFi / BT)

**4** – power supply

CAUTION

Do not remove any screws, otherwise the warranty will be void and you may damage the system.

## 5.2 Installing M.2 modules

Insert the M.2 module into the corresponding slot at an angle. Press it down on the side that protrudes and secure it with the screw provided.

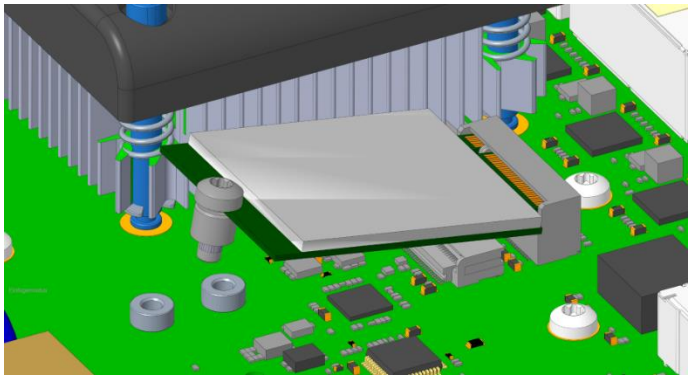

Fig. 21: M.2 Key B module assembly

## 5.3 Installing SSD

1. In order to open the SSD installation slot on the bottom, the top system case cover must be completely removed (see chapter 5).
2. Then the long screw (M3X30) near the fan, marked with a lock symbol, must be removed.
3. Now remove the screw on the SSD installation slot and carefully open it. Please use the installed flat head screws to mount the SSDs.
4. The assembly is carried out in the reverse order.

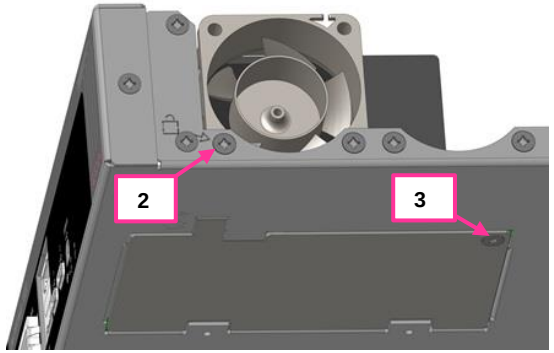


Fig. 22: opening of SSD installation slot

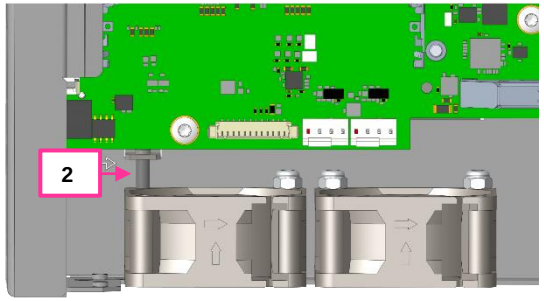


Fig. 23: M3X30 screw

Note:

Key M 1 = M.2 (2280) NVMe/PCIe Gen3 **x4**, PCIe only
Key M 2 = M.2 (2280) NVMe/PCIe Gen3 **x2**, PCIe only

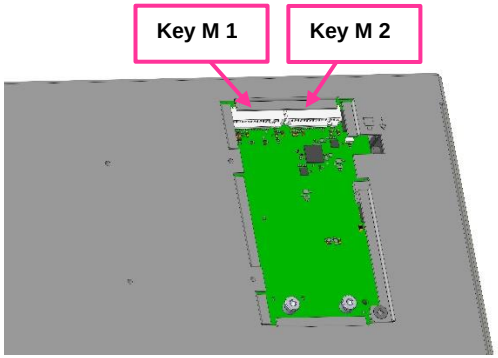


Fig. 24: SSD slots

# 6 AMI BIOS – V1000/R1000 variants

The following description shows a snapshot of the BIOS setup. Later BIOS updates may change the content slightly.

Asterisk (*) indicates default setting.

## 6.1 Entering Setup

Power on the board and press and hold [DEL] immediately to enter Setup.

## 6.2 Most Common Settings

1. Firmware / BIOS Version:
   Main (chapter *6.3*)

2. Boot / PXE Boot:
   Boot Priorities (chapter *6.6*)
   Advanced → Network Stack Configuration (chapter *6.4.7*)

3. TDP, fan control, boost mode:
   TDP setting:
      Advanced → AMD CBS → NBIO Common Options → System Configuration (chapter *6.4.9.2*)
   Fan control:
      Advanced → AMD CBS → NBIO Common Options → Fan Control (chapter *6.4.9.2.4*)
   Boost mode:
      Advanced → AMD CBS → Zen Common Options → Core Performance Boost (chapter *6.4.9.1*)

4. Change shared graphics memory
   Advanced → AMD CBS → NBIO Common Options → GFX Configurations → UMA Frame Buffer Size (chapter *6.4.9.2.1*)

5. USB power
   Advanced → AMD CBS → FCH Common Options → USB Configuration Options (chapter *6.4.9.3.1*)

## 6.3 Main Menu

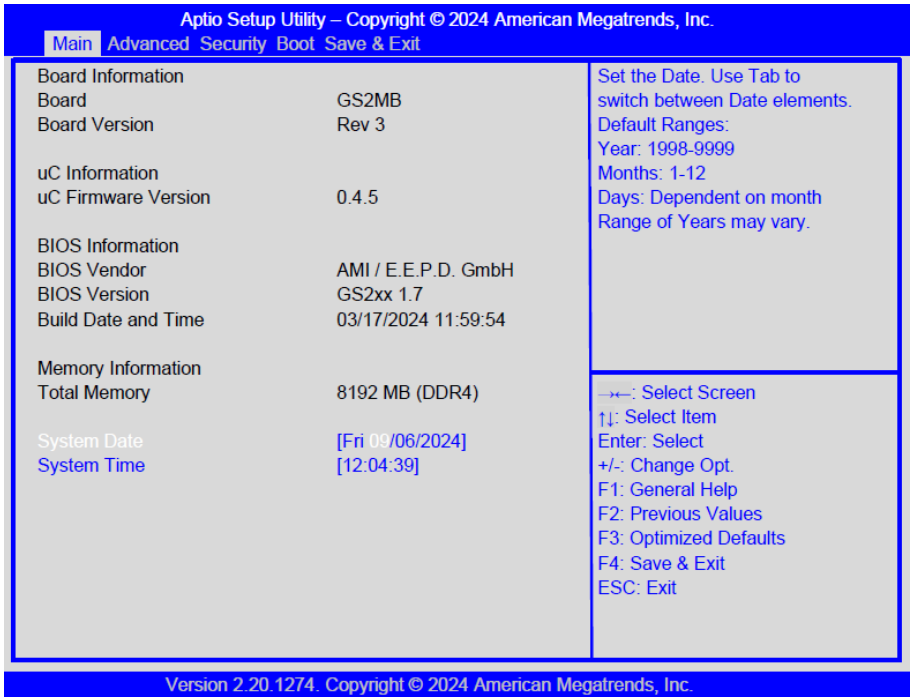


Fig. 25: Main Menu – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| System Date | | Set the Date. Use Tab to switch between Date elements.<br>Default Ranges:<br>Year: 1998-9999<br>Months: 1-12<br>Days: Dependent on month<br>Range of Years may vary. |
| System Time | | Set the Time. Use Tab to switch between Time elements. |

Tab. 3: Main Menu – AMI BIOS

## 6.4 Advanced Menu

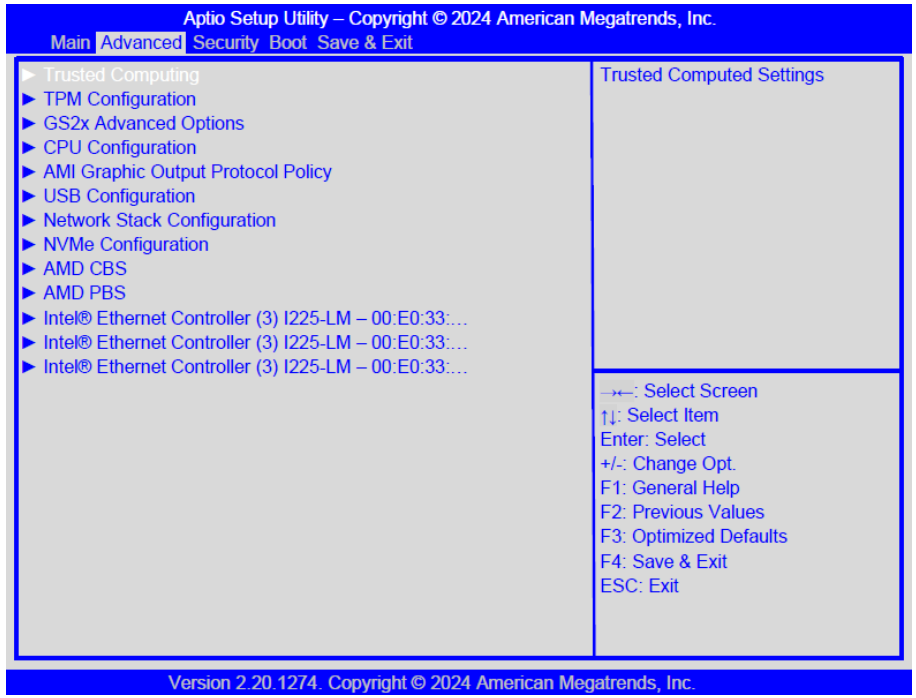


Fig. 26: Advanced Menu – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| Trusted Computing | See submenu | Trusted Computing Settings |
| TPM Configuration | See submenu | AMD fTPM Settings |
| GS2x Advanced Options | See submenu | Show more setup options and debug information |
| CPU Configuration | See submenu | CPU Configuration Parameters |
| AMI Graphic Output Protocol Policy | See submenu | In Dual Screen Operation, select the pre-OS boot graphic output Interface. |
| USB Configuration | See submenu | USB Configuration Parameters |
| Network Stack Configuration | See submenu | Network Stack Settings |
| NVMe Configuration | See submenu | NVMe Device Options Settings |
| AMD CBS | See submenu | AMD CBS Setup Page |
| AMD PBS | See submenu | AMD PBS Setup Page |
| Intel® Ethernet Controller (3) I225-LM | See submenu | Configure Gigabit Ethernet device parameters |

Tab. 4: Advanced Menu – AMI BIOS

### 6.4.1 Trusted Computing

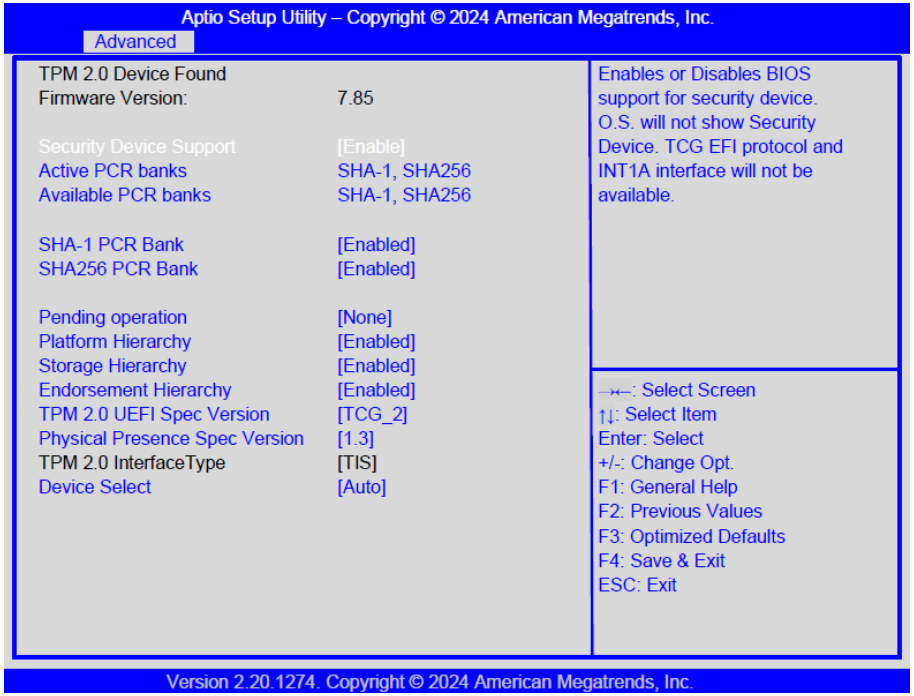


Fig. 27: Trusted Computing – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| Security Device Support | <Enabled>*<br><Disabled> | Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available. |
| SHA-1 PCR Bank | <Enabled>*<br><Disabled> | Enable or Disable SHA-1 PCR Bank. |
| SHA256 PCR Bank | <Enabled>*<br><Disabled> | Enable or Disable SHA256 PCR Bank |
| Pending operation | <None>*<br><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>*<br><Disabled> | Enable or Disable Platform Hierarchy |
| Storage Hierarchy | <Enabled>*<br><Disabled> | Enable or Disable Storage Hierarchy |
| Endorsement Hierarchy | <Enabled>*<br><Disabled> | Enable or Disable Endorsement Hierarchy |
| TPM 2.0 UEFI Spec Version | <TCG_1_2><br><TCG_2>* | Select the TCG2 Spec Version Support.<br>TCG_1_2: the Compatible mode for Win8/Win10<br>TCG_2: Support new TCG2 protocol and event format for Win10 or later |
| Physical Presence Spec Version | <1.2><br><1.3>* | Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3<br>Note some HCK tests might not support 1.3 |
| Device Select | <TPM 1.2><br><TPM 2.0><br><Auto>* | 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 be enumerated |

Tab. 5: Trusted Computing – AMI BIOS

### 6.4.2 TPM Configuration

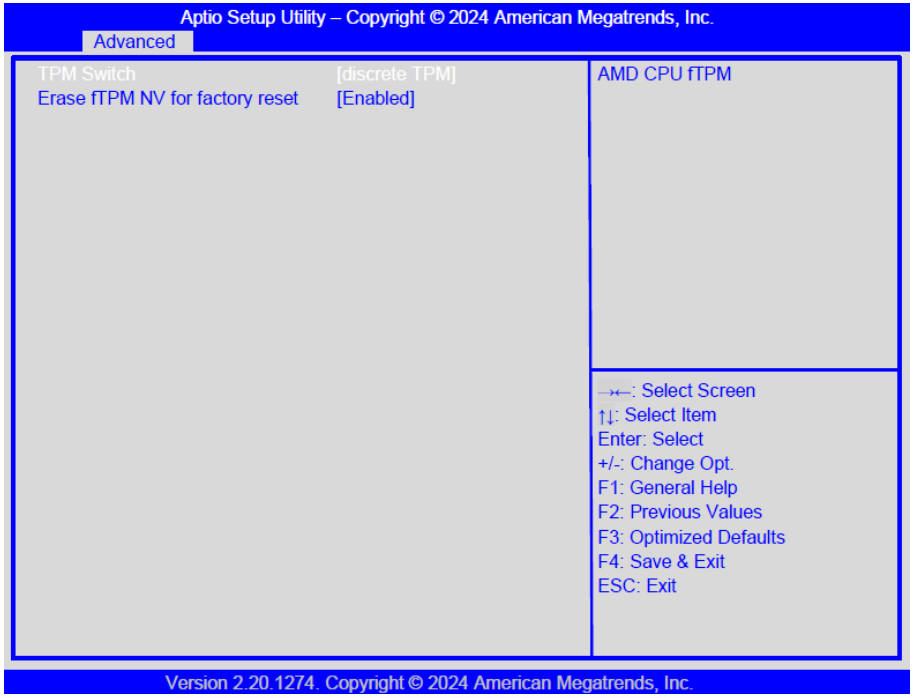


Fig. 28: TPM Configuration – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| TPM Switch | <AMD firmware TPM><br><disable TPM><br><discrete TPM>* | AMD CPU fTPM |
| Erase fTPM NV for factory reset | <Enabled>*<br><Disabled> | When New CPU is installed, select “Enabled” to reset fTPM, if you have BitLocker or encryption-enabled system, the system will not boot without a recovery key. Select “Disabled” to keep previous fTPM record and continue system boot, fTPM will NOT be enabled with new CPU unless fTPM is reset (reinitialized) |

Tab. 6: TPM Configuration – AMI BIOS

### 6.4.3 GS2x Advanced Options

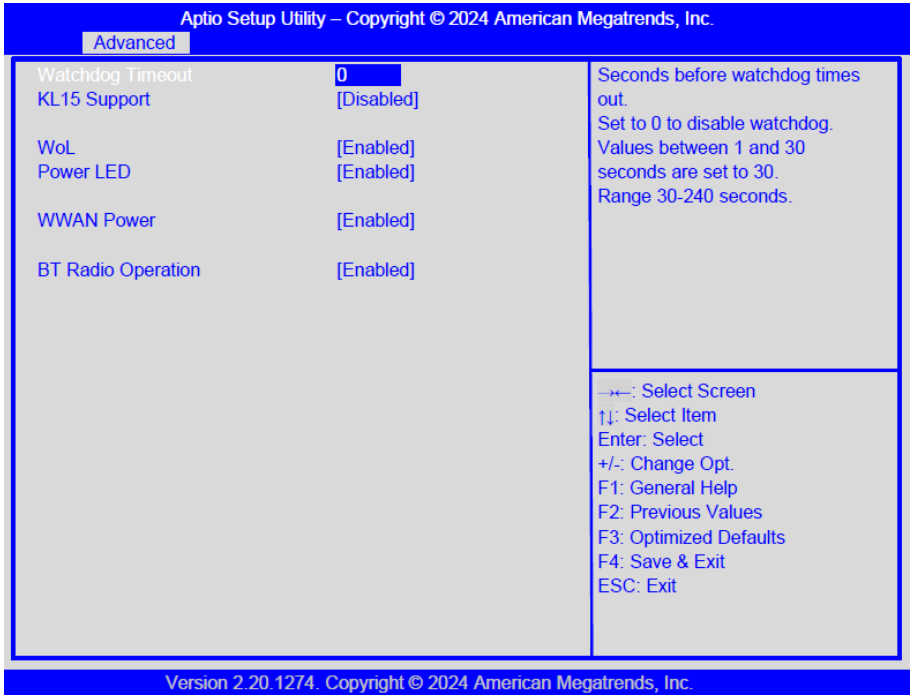


Fig. 29: GS2x Advanced Options – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| Watchdog Timeout | | Seconds before watchdog times out. Set to 0 to disable watchdog. Values between 1 and 30 seconds are set to 30. Range 30-240 seconds. |
| KL15 Support | <Enabled> <Disabled>* | Enable/Disable KL15 support |
| WoL | <Enabled>* <Disabled> | Enable/Disable the WoL |
| Power LED | <Enabled>* <Disabled> | Power LED |
| WWAN Power | <Enabled>* <Disabled> | Enable/Disable the WWAN PWR |
| WLAN Radio Operation (variant specific) | <Enabled>* <Disabled> | Enable/Disable the WLAN radio operation |
| BT Radio Operation | <Enabled>* <Disabled> | Enable/Disable the BT radio operation |

Tab. 7: GS2x Advanced Options – AMI BIOS

### 6.4.4 CPU Configuration

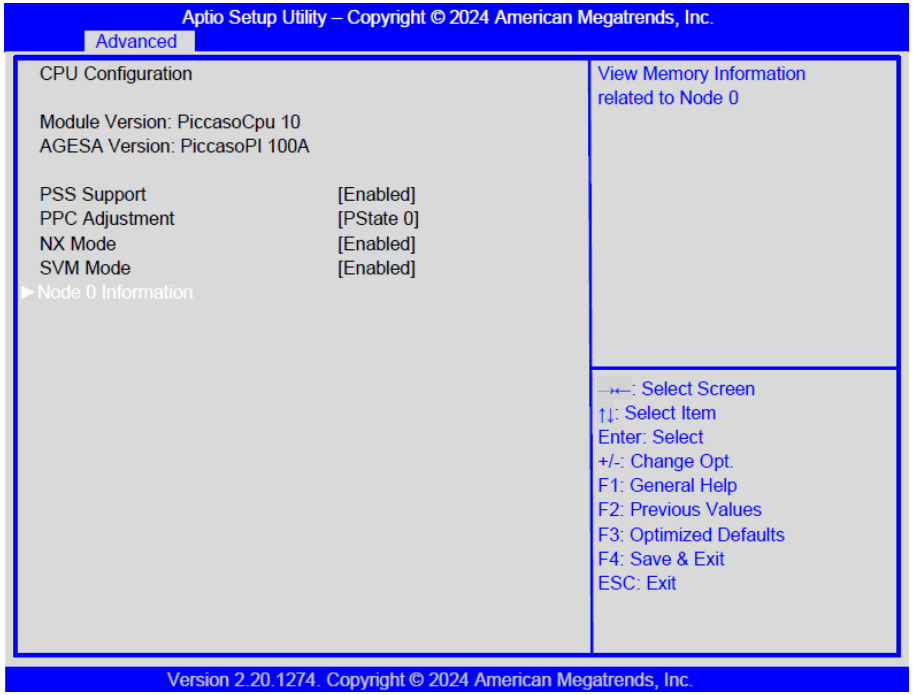


Fig. 30: CPU Configuration – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| Node 0 Information | See submenu | View Memory Information related to Node 0 |

Tab. 8: CPU Configuration – AMI BIOS

#### 6.4.4.1 Node 0 Information

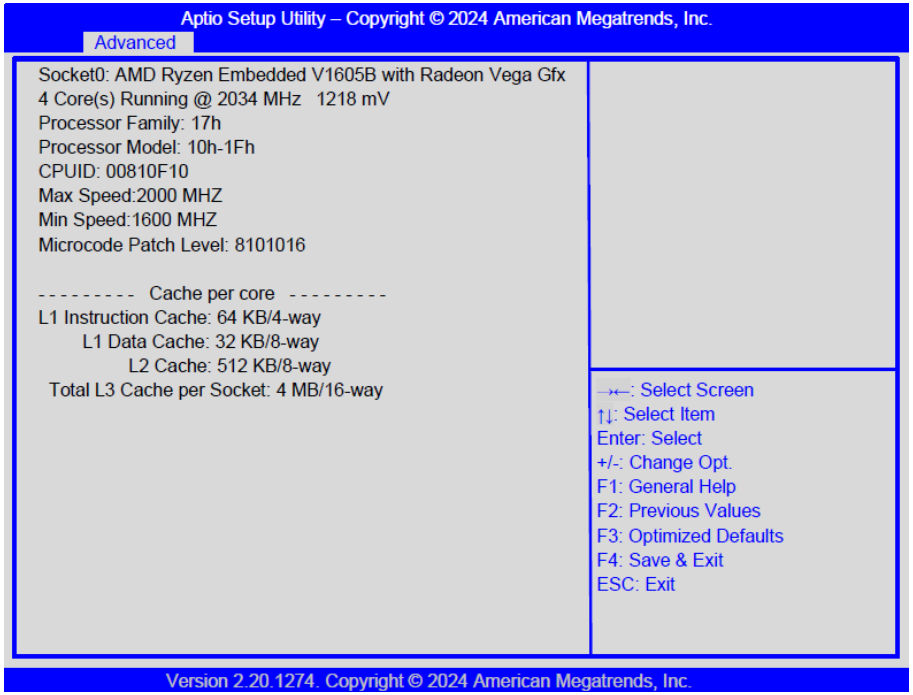


Fig. 31: Node 0 Information – AMI BIOS

### 6.4.5 AMI Graphic Output Protocol Policy

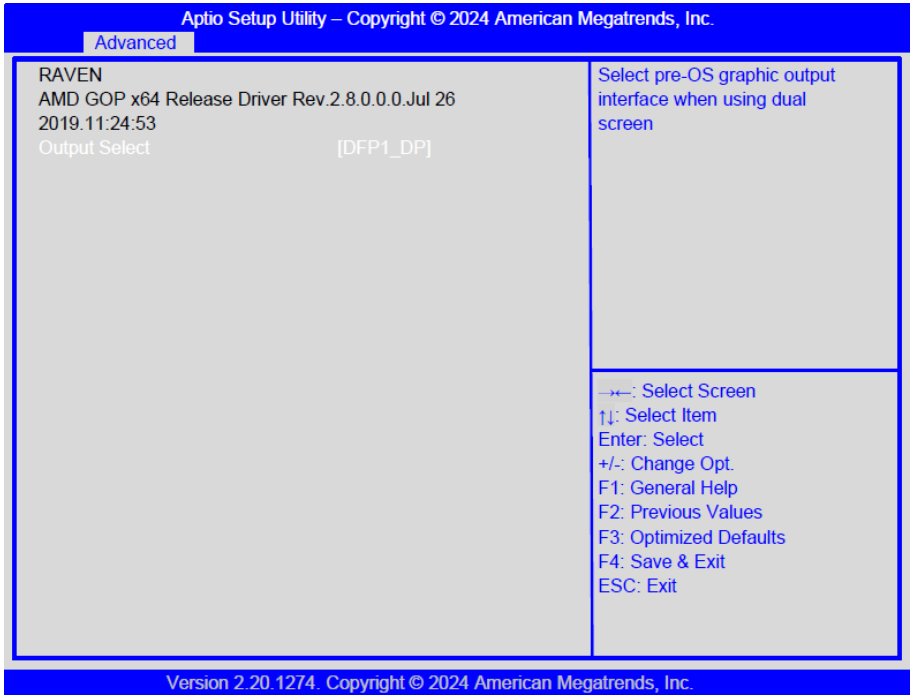


Fig. 32: AMI Graphic Output Protocol Policy – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| Output Select | <DFP1_DP>* | Select pre-OS graphic output interface when using dual screen |

Tab. 9: AMI Graphic Output Protocol Policy – AMI BIOS

### 6.4.6 USB Configuration

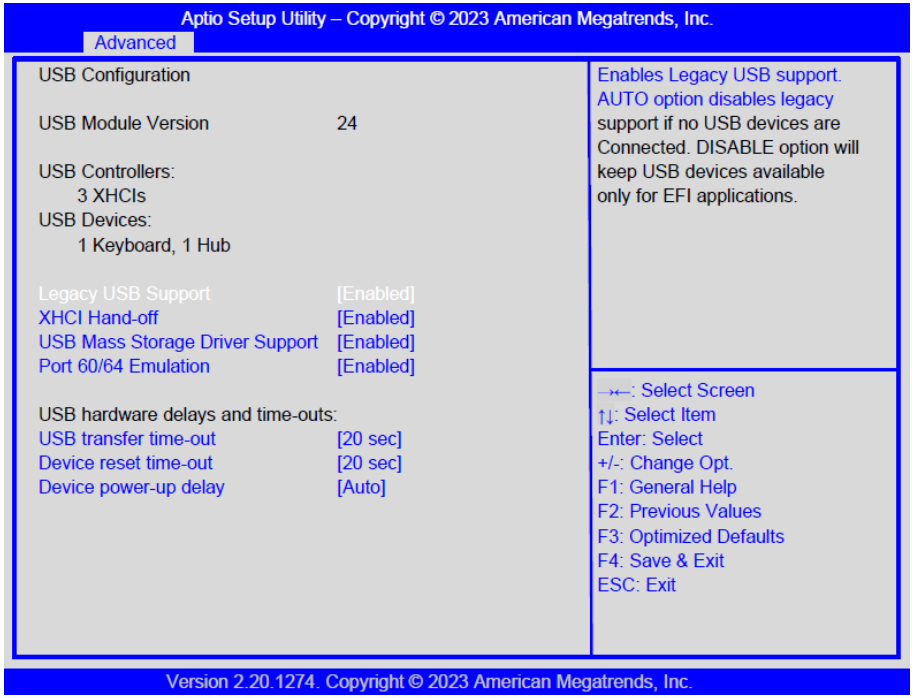


Fig. 33: USB Configuration – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| Legacy USB Support | <Enabled>*<br><Disabled><br><Auto> | Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications. |
| XHCI Hand-off | <Enabled>*<br><Disabled> | This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver. |
| USB Mass Storage Driver Support | <Enabled>*<br><Disabled> | Enable/Disable USB Mass Storage Driver Support |
| Port 60/64 Emulation | <Enabled>*<br><Disabled> | Enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes. |
| USB transfer time-out | <1 sec><br><5 sec><br><10 sec><br><20 sec>* | The time-out value for Control, Bulk and Interrupt transfers. |
| Device reset time-out | <10 sec><br><20 sec>*<br><30 sec><br><40 sec> | USB mass storage device Start Unit command time-out. |
| Device power-up delay | <Auto>*<br><Manual> | Maximum time the device will take before it properly reports itself to the Host Controller. “Auto” uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor. |

Tab. 10: USB Configuration – AMI BIOS

### 6.4.7 Network Stack Configuration

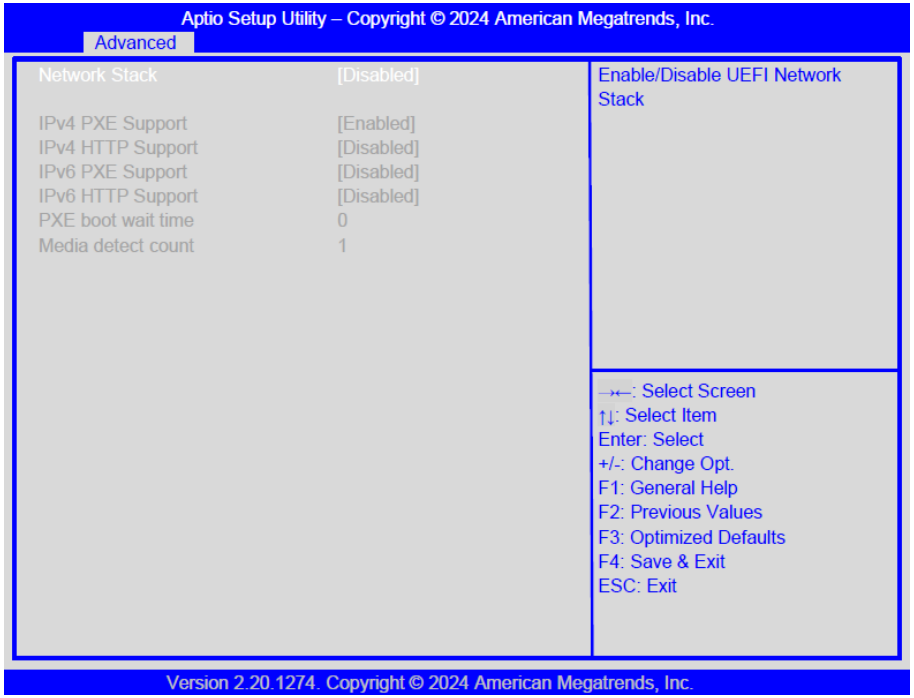


Fig. 34: Network Stack Configuration – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| Network Stack | <Enable><br><Disable>* | Enable/Disable UEFI Network Stack |
| IPv4 PXE Support | <Enable>*<br><Disable> | Enable/Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available |
| IPv4 HTTP Support | <Enable><br><Disable>* | Enable/Disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available |
| IPv6 PXE Support | <Enable><br><Disable>* | Enable/Disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available |
| IPv6 HTTP Support | <Enable><br><Disable>* | Enable/Disable IPv6 HTTP boot support. If disabled, IPv6 HTTP boot support will not be available |
| PXE boot wait time | <0 - 5> | Wait seconds to press ESC key to abort the PXE boot. Use either +/- or numeric key to set the value |
| Media detect count | <1 - 50> | Number of times the presence of media will be checked. Use either +/- or numeric key to set the value. |

Tab. 11: Network Stack Configuration – AMI BIOS

### 6.4.8 NVMe Configuration

This function shows the connected NVMe devices.

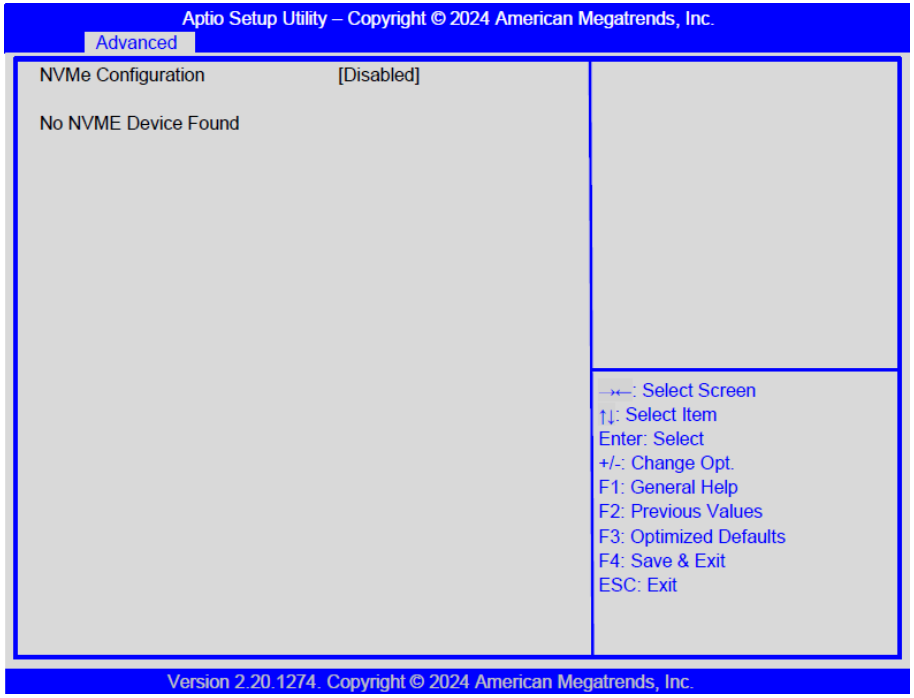


Fig. 35: NVMe Configuration – AMI BIOS

### 6.4.9 AMD CBS

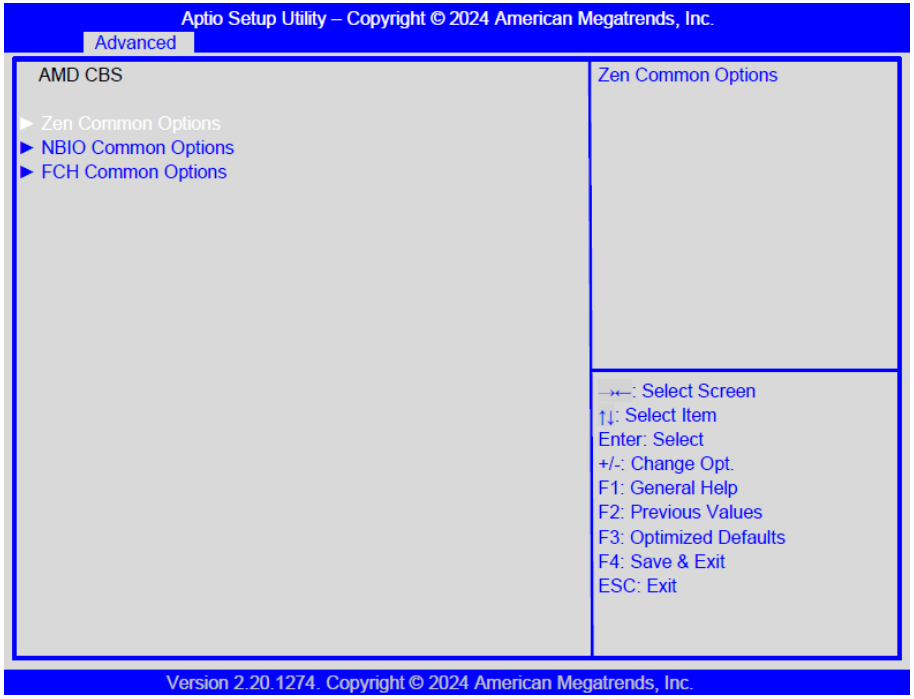


Fig. 36: AMD CBS – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| Zen Common Options | See submenu | Zen Common Options |
| NBIO Common Options | See submenu | NBIO Common Options |
| FCH Common Options | See submenu | FCH Common Options |

Tab. 12: AMD CBS – AMI BIOS

### 6.4.9.1 Zen Common Options

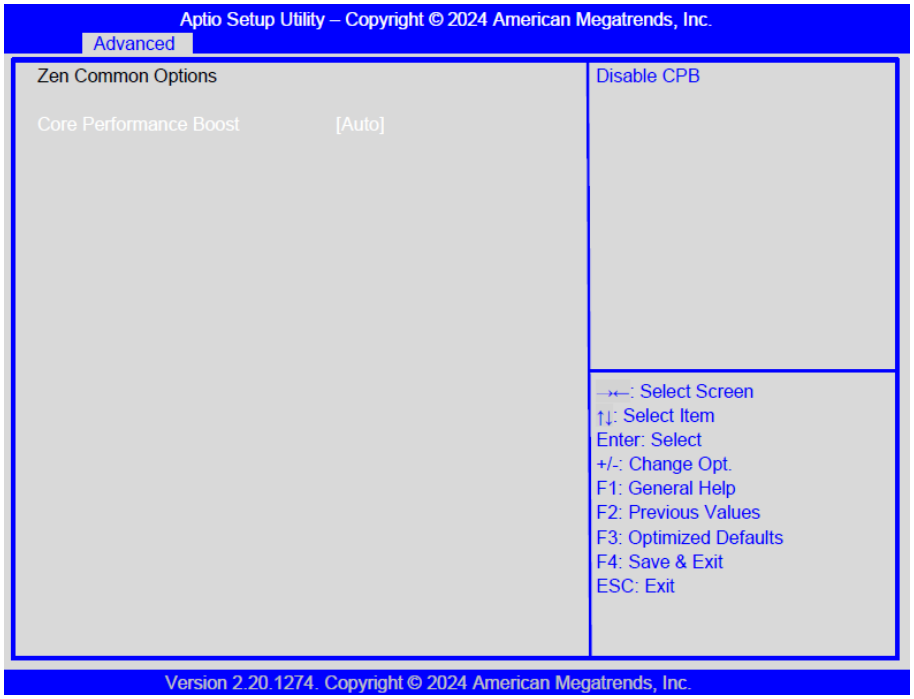


Fig. 37: Zen Common Options – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| Core Performance Boost | <Disabled>* <Auto> | This allows the processor to dynamically adjust and control the processor operating frequency to enable performance improvement, provided the processor has sufficient power and is within temperature specifications. |

Tab. 13: Zen Common Options – AMI BIOS

### 6.4.9.2 NBIO Common Options

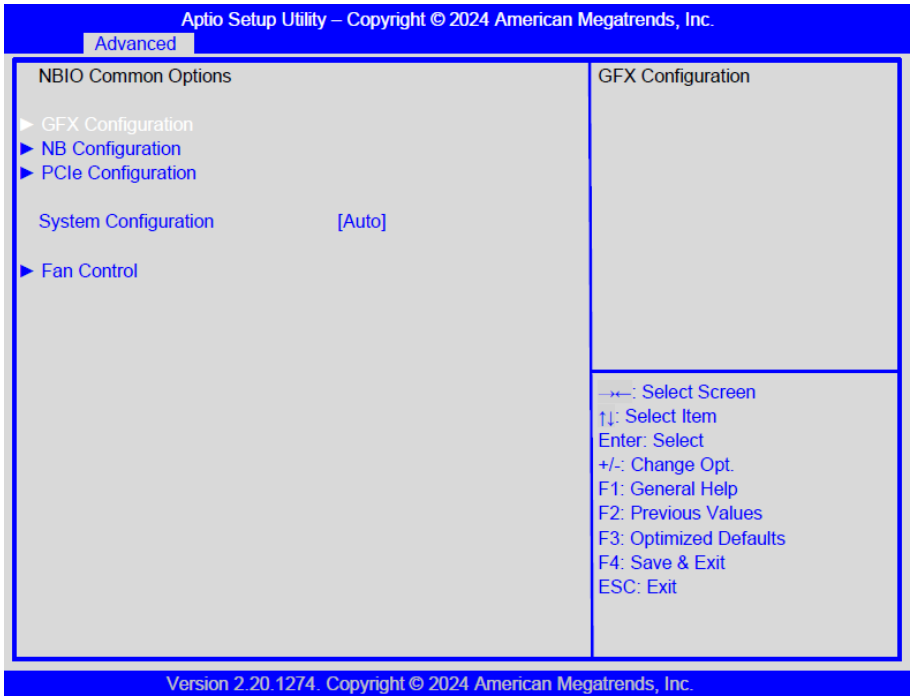


Fig. 38: NBIO Common Options – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| GFX Configuration | See submenu | GFX Configuration options |
| NB Configuration | See submenu | NB Configuration options |
| PCIe Configuration | See submenu | PCIe Configuration options |
| System Configuration | <Minimum> <Nominal> <Maximum> <Auto>* | Set the TDP settings with minimum, nominal and maximum TPD values for each variant. Auto sets default value |
| Fan Control | See submenu | Fan Control options |

Tab. 14: NBIO Common Options – AMI BIOS

#### 6.4.9.2.1 GFX Configuration

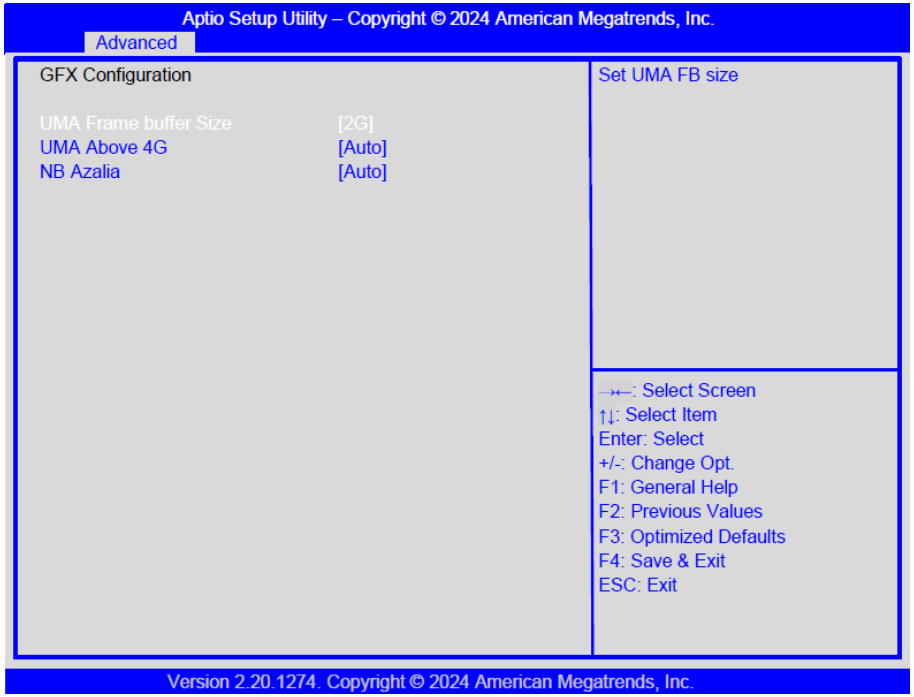


Fig. 39: GFX Configuration – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| UMA Frame buffer Size | <Auto>*, <64M>, <128M>, <256M>, <384M>, <512M>, <80M>, <96M>, <768M>, <1G>, <2G>, <3G>, <4G>, <6G>, <8G>, <16G> | Set UMA Frame Buffer Size. This allows the system to manage the amount of shared memory for graphics. For systems equipped with 8GB of RAM or more, set the UMA buffer size to 1GB or 2GB. |
| UMA Above 4G | <Disabled> <Enabled> <Auto>* | If requested UMA frame buffer size can't be fit under 4GB or the system has enough available memory above 4GB, this option may be set to TRUE to allow UMA frame buffer size to be allocated successfully. |
| NB Azalia | <Disabled> <Enabled> <Auto>* | Enable Integrate HD Audio controller |

Tab. 15: GFX Configuration – AMI BIOS

#### 6.4.9.2.2 NB Configuration

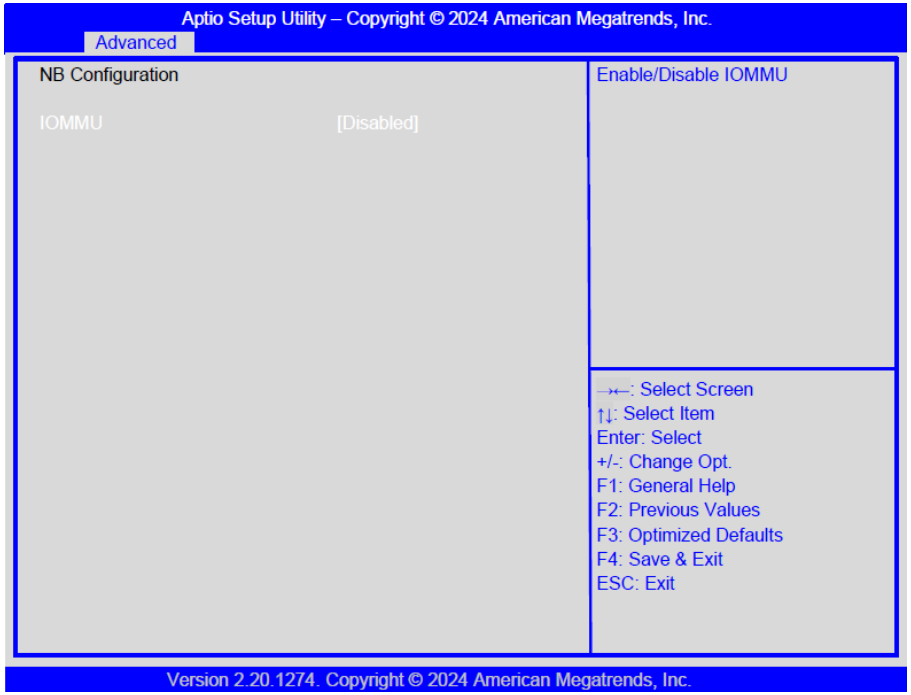


Fig. 40: NB Configuration – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| IOMMU | <Disabled>*<br><Enabled> | Enable/Disable IOMMU |

Tab. 16: NB Configuration – AMI BIOS

#### 6.4.9.2.3 PCIe Configuration

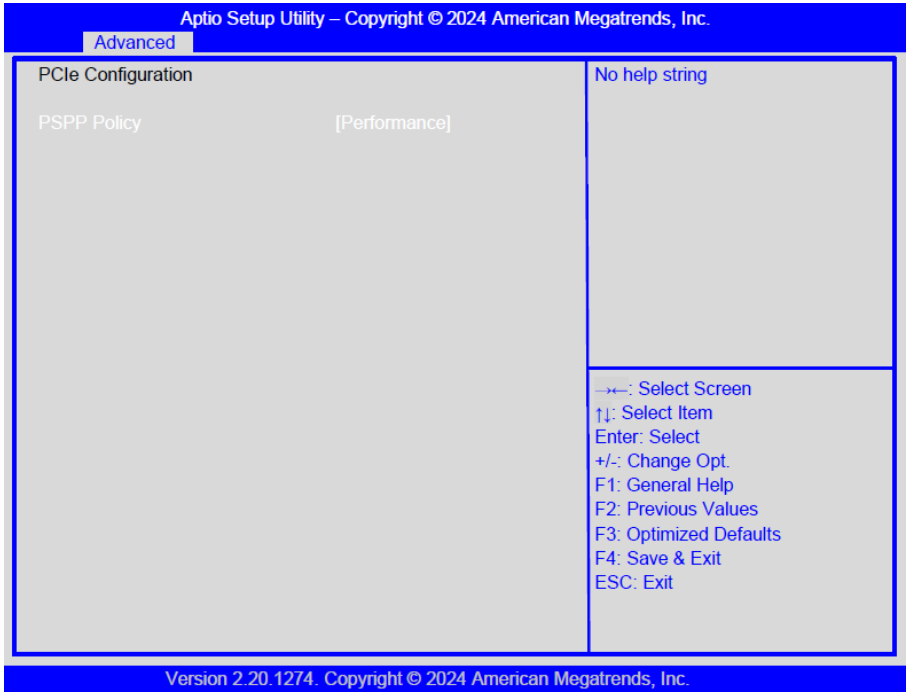


Fig. 41: PCIe Configuration – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| PSPP Policy | <Disabled><br><Performance><br><Balanced><br><Power Saving><br><Auto>* | PSPP Policy. This item allows you to set PCIe speed power policy |

Tab. 17: PCIe Configuration – AMI BIOS

#### 6.4.9.2.4 Fan Control

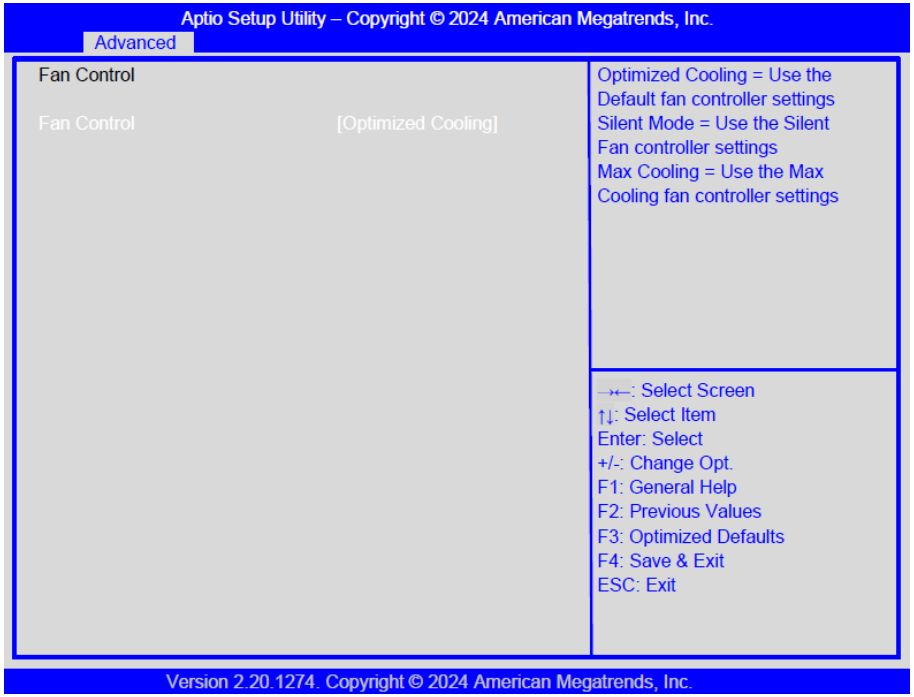


Fig. 42: Fan Control – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| Fan Control | <Optimized Cooling>*<br><Silent Mode><br><Max Cooling> | Optimized Cooling = Use the default fan controller settings<br>Silent Mode = Use the Silent fan controller settings<br>Max Cooling = Use the Max Cooling fan controller settings |

Tab. 18: Fan Control – AMI BIOS

#### 6.4.9.3 FCH Common Options

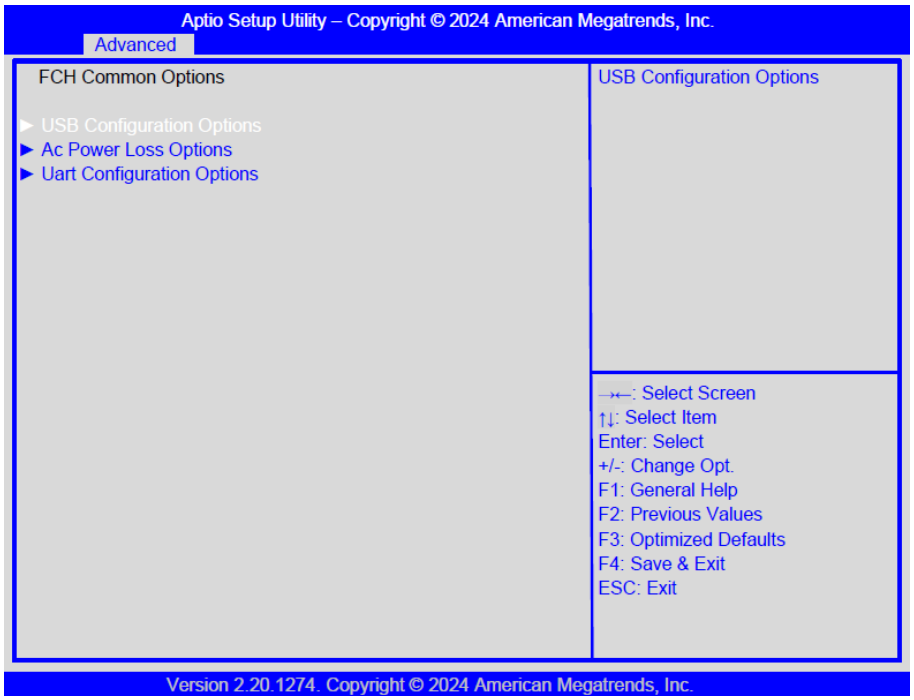


Fig. 43: FCH Common Options – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| USB Configuration Options | See submenu | USB Configuration Options |
| Ac Power Loss Options | See submenu | Ac Power Loss Options |
| Uart Configuration Options | See submenu | Uart Configuration Options |

Tab. 19: FCH Common Options – AMI BIOS

#### 6.4.9.3.1 USB Configuration Options

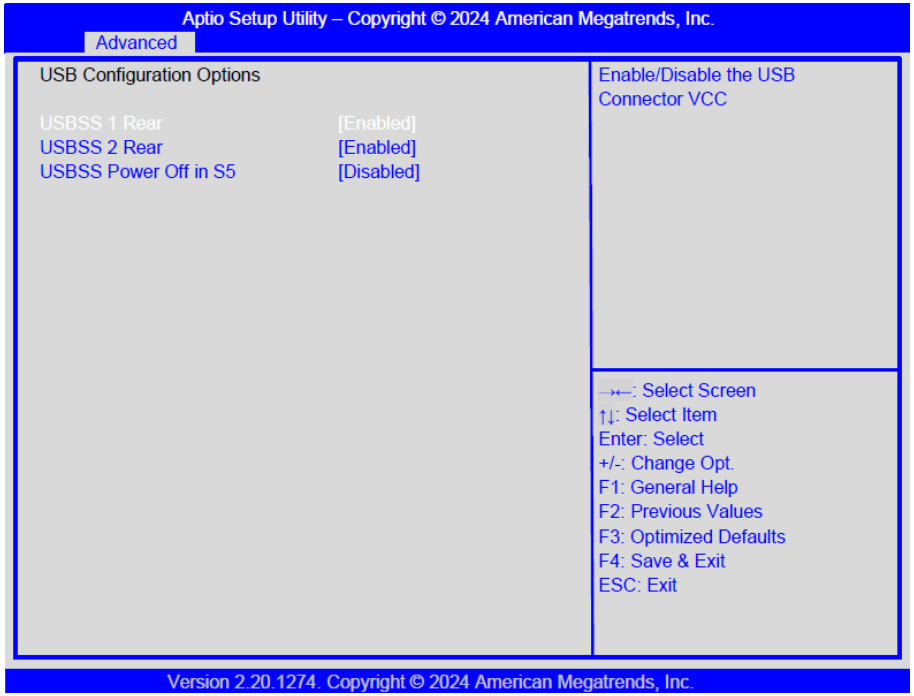


Fig. 44: USB Configuration Options – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| USBSS 1 Rear | <Disabled><br><Enabled>* | Enable/Disable the USB connector VCC |
| USBSS 2 Rear | <Disabled><br><Enabled>* | |
| USBSS Power Off in S5 | <Disabled>*<br><Enabled> | Enable/Disable the USB connector VCC only in S5 (System Power Off)! |

Tab. 20: USB Configuration Options – AMI BIOS

#### 6.4.9.3.2 Ac Power Loss Options

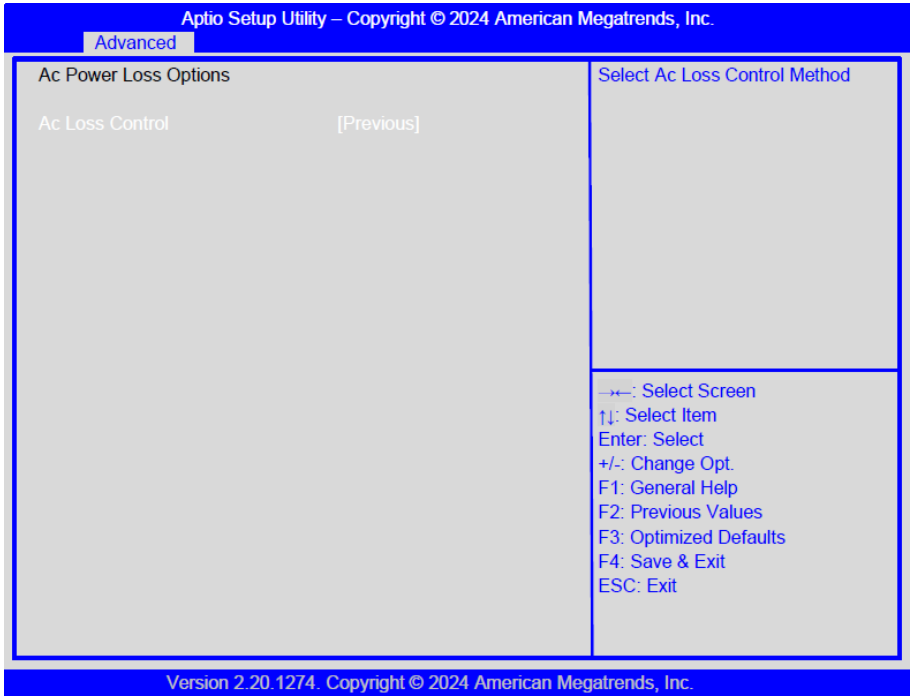


Fig. 45: Ac Power Loss Options – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| Ac Loss Control | <Always Off><br><Always On><br><Previous>* | This function allows you to set the power status after a power failure. Select [Always Off] to keep the system power off after a power failure. Select [Always On] to turn the system power after a power failure. Select [Previous] to allow the System to resume its last power state before a power failure. |

Tab. 21: Ac Power Loss Options – AMI BIOS

#### 6.4.9.3.3 Uart Configuration Options

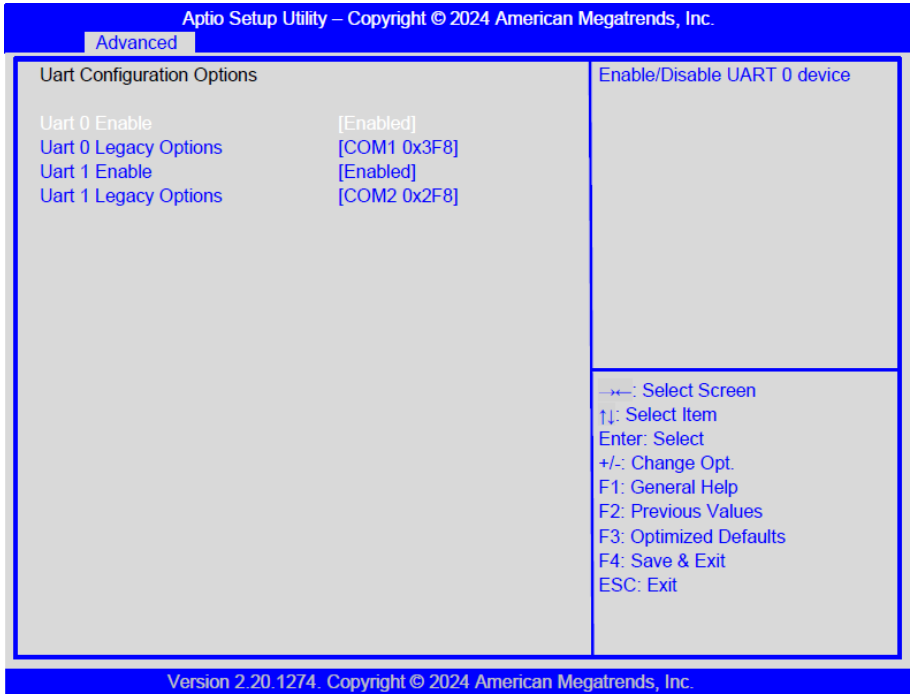


Fig. 46: Uart Configuration Options – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| Uart 0 Enable | <Disabled><br><Enabled>*<br><Auto> | Enable/Disable UART 0 device |
| Uart 0 Legacy Options | <Disabled><br><COM1 0x3F8>*<br><COM2 0x2F8><br><COM3 0x3E8><br><COM4 0x2E8><br><Auto> | This function specifies the base I/O port address of a user-specified serial port. Select Auto to allow the BIOS to automatically assign the base I/O address. |
| Uart 1 Enable | <Disabled><br><Enabled>*<br><Auto> | Enable/Disable UART 1 device |
| Uart 1 Legacy Options | <Disabled><br><COM1 0x3F8><br><COM2 0x2F8>*<br><COM3 0x3E8><br><COM4 0x2E8><br><Auto> | This function specifies the base I/O port address of a user-specified serial port. Select Auto to allow the BIOS to automatically assign the base I/O address. |

Tab. 22: Uart Configuration Options – AMI BIOS

### 6.4.10 AMD PBS

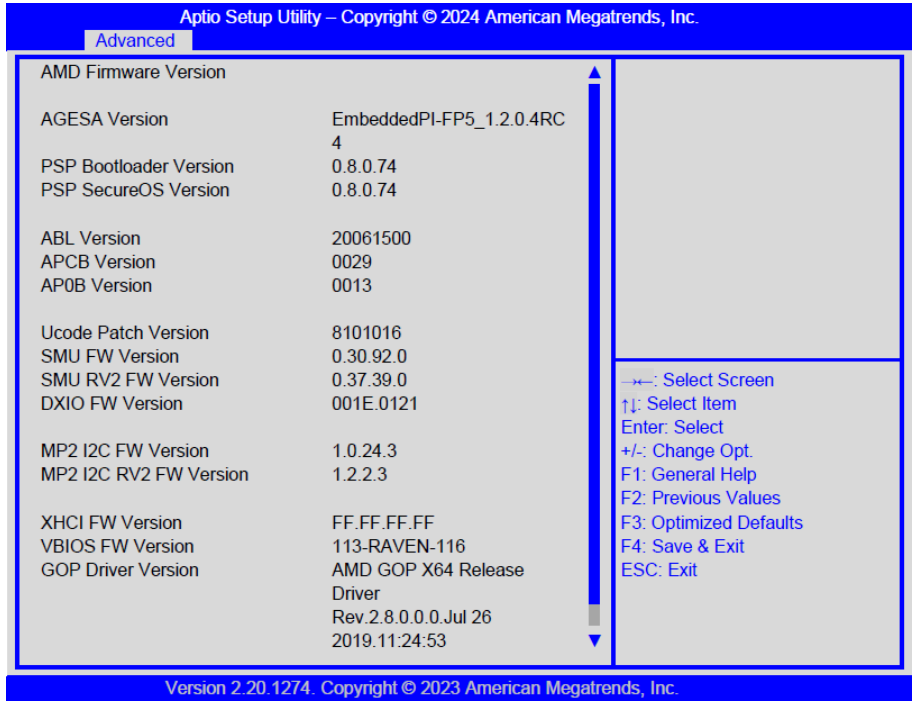


Fig. 47: AMD PBS – AMI BIOS

## 6.5 Security Menu

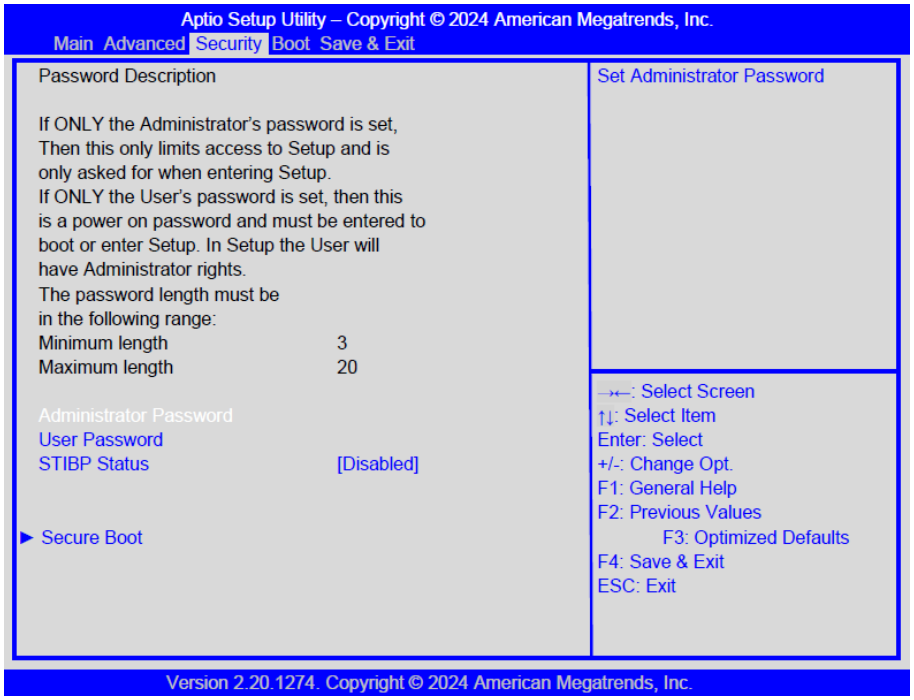


Fig. 48: Security Menu – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| Administrator Password | | Set Administrator Password |
| User Password | | Set User Password |
| STIBP Status | <Disabled>* <Enabled> | Single Thread Indirect Branch Predictor (STIBP) is a method to mitigate indirect branch target injection attacks on AMD products. |
| Secure Boot | See submenu | Secure Boot configuration |

Tab. 23: Security Menu – AMI BIOS

### 6.5.1 Secure Boot

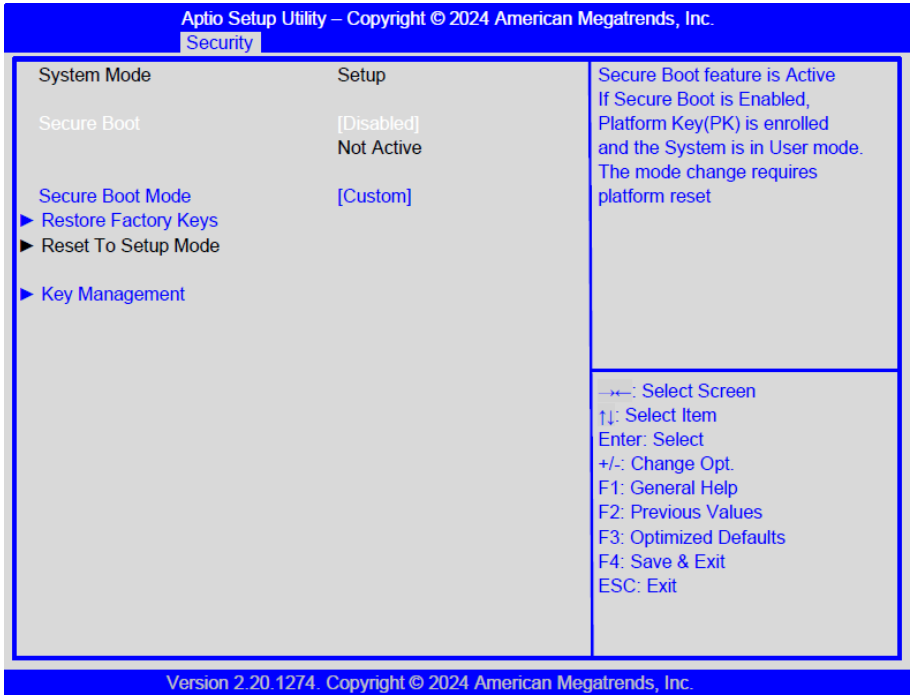


Fig. 49: Secure Boot – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| Secure Boot | <Disabled>*<br><Enabled> | Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PK) is enrolled and the System is in User mode. The mode change requires platform reset. |
| Secure Boot Mode | <Standard><br><Custom>* | Secure Boot mode options: Standard or Custom.<br>In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication. |
| Restore Factory Keys | | Force System to User Mode. Install factory default Secure Boot key databases. |
| Key Management | See submenu | Enables expert users to modify Secure Boot Policy variables without full authentication. |

Tab. 24: Secure Boot – AMI BIOS

### 6.5.1.1 Key Management

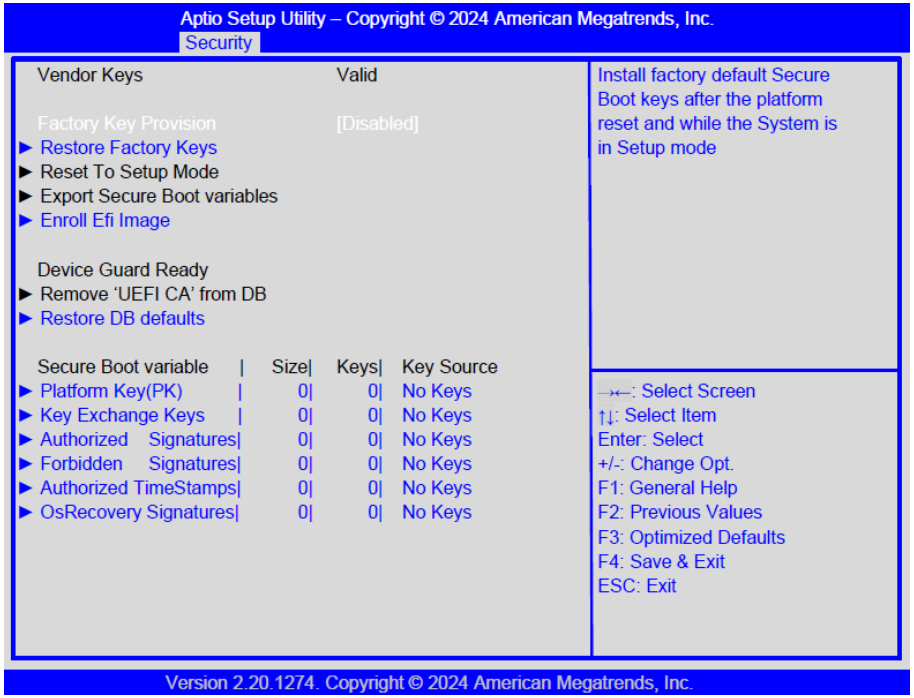


Fig. 50: Key Management – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| Factory Key Provision | <Disabled>* <Enabled> | Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode. |
| Restore Factory Keys | | Force System to User Mode. Install factory default Secure Boot key databases. |
| 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). |
| Restore DB defaults | | Restore DB variable to factory defaults. |
| Platform Key (PK) | | Enroll Factory Defaults or load certificates from a file:<br>1. Public Key Certificate:<br>a) EFI_SIGNATURE_LIST<br>b) EFI_CERT_X509 (DER)<br>c) EFI_CERT_RSA2048 (bin)<br>d) EFI_CERT_SHAXXX<br>2. Authenticated UEFI Variable<br>3. EFI PE/COFF Image (SHA256)<br>Key Source:<br>Factory, External, Mixed |
| Key Exchange Keys | | Enroll Factory Defaults or load certificates from a file:<br>1. Public Key Certificate:<br>a) EFI_SIGNATURE_LIST<br>b) EFI_CERT_X509 (DER)<br>c) EFI_CERT_RSA2048 (bin)<br>d) EFI_CERT_SHAXXX<br>2. Authenticated UEFI Variable<br>3. EFI PE/COFF Image (SHA256)<br>Key Source:<br>Factory, External, Mixed |
| Authorized Signatures | | Enroll Factory Defaults or load certificates from a file:<br>1. Public Key Certificate:<br>a) EFI_SIGNATURE_LIST<br>b) EFI_CERT_X509 (DER)<br>c) EFI_CERT_RSA2048 (bin)<br>d) EFI_CERT_SHAXXX<br>2. Authenticated UEFI Variable |

| | | |
|---|---|---|
| | | 3. EFI PE/COFF Image (SHA256)<br>Key Source:<br>Factory, External, Mixed |
| Forbidden Signatures | | Enroll Factory Defaults or load certificates from a file:<br>1. Public Key Certificate:<br>a) EFI_SIGNATURE_LIST<br>b) EFI_CERT_X509 (DER)<br>c) EFI_CERT_RSA2048 (bin)<br>d) EFI_CERT_SHAXXX<br>2. Authenticated UEFI Variable<br>3. EFI PE/COFF Image (SHA256)<br>Key Source:<br>Factory, External, Mixed |
| Authorized TimeStamps | | Enroll Factory Defaults or load certificates from a file:<br>1. Public Key Certificate:<br>a) EFI_SIGNATURE_LIST<br>b) EFI_CERT_X509 (DER)<br>c) EFI_CERT_RSA2048 (bin)<br>d) EFI_CERT_SHAXXX<br>2. Authenticated UEFI Variable<br>3. EFI PE/COFF Image (SHA256)<br>Key Source:<br>Factory, External, Mixed |
| OsRecovery Signatures | | Enroll Factory Defaults or load certificates from a file:<br>1. Public Key Certificate:<br>a) EFI_SIGNATURE_LIST<br>b) EFI_CERT_X509 (DER)<br>c) EFI_CERT_RSA2048 (bin)<br>d) EFI_CERT_SHAXXX<br>2. Authenticated UEFI Variable<br>3. EFI PE/COFF Image (SHA256)<br>Key Source:<br>Factory, External, Mixed |

Tab. 25: Key Management – AMI BIOS

## 6.6 Boot Menu

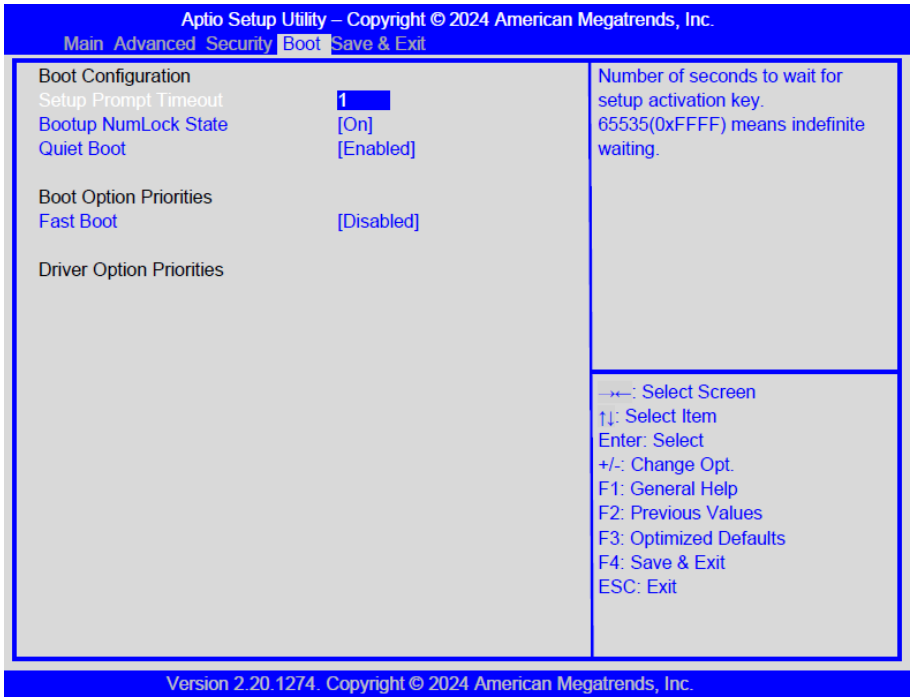


Fig. 51: Boot Menu – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| Setup Prompt Timeout | | Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting. |
| Bootup NumLock State | <On>* <Off> | Select the keyboard NumLock state |
| Quiet Boot | <Disabled> <Enabled>* | Enables or disables Quiet Boot option. |
| Fast Boot | <Disabled>* <Enabled> | Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect or BBS boot options. |

Tab. 26: Boot Menu – AMI BIOS

## 6.7 Save & Exit Menu

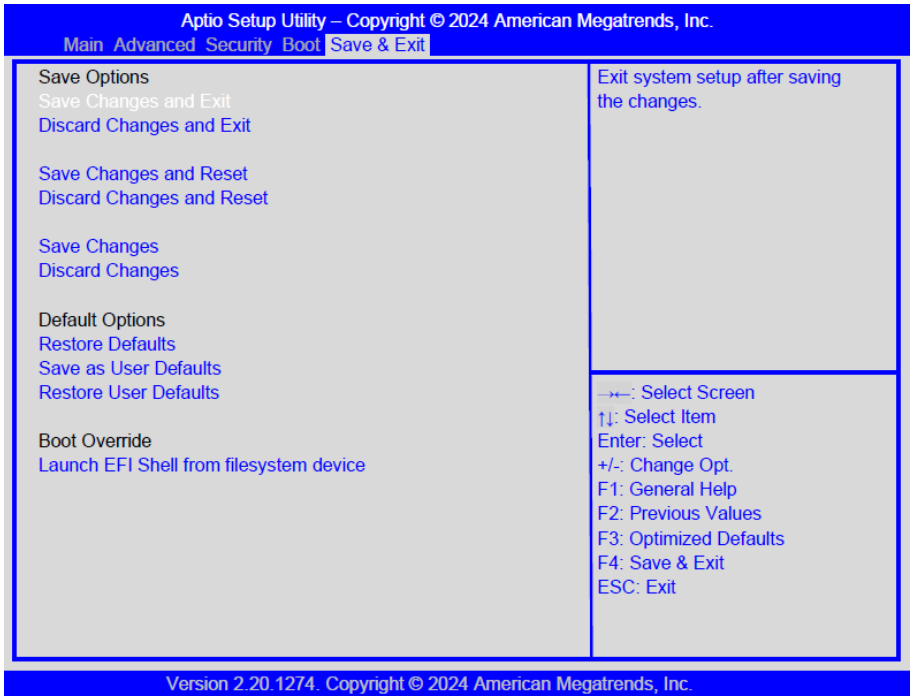


Fig. 52: Save & Exit Menu – AMI BIOS

| BIOS Settings | Options | Description |
|---|---|---|
| Save Changes and Exit | | Exit system setup after saving the changes. |
| Discard Changes and Exit | | Exit system setup without saving any changes. |
| Save Changes and Reset | | Reset the system after saving the changes. |
| Discard Changes and Reset | | Reset system setup without saving any changes. |
| Save Changes | | Save changes done so far to any of the setup options. |
| Discard Changes | | Discard changes done so far to any of the setup options. |
| Restore Defaults | | Restore/Load default values for all the setup options. |
| Save as User Defaults | | Save the changes done so far as User Defaults. |
| Restore User Defaults | | Restore the User Defaults to all the setup options. |
| Launch EFI Shell from filesystem device | | Attempts to Launch EFI Shell application (Shell.efi) from one of the available filesystem devices. |

Tab. 27: Save & Exit Menu – AMI BIOS

# 7 Insyde BIOS – R2000 variants

The following description shows a snapshot of the BIOS setup. Later BIOS updates may change the content slightly.

Asterisk (*) indicates default setting.

## 7.1 Entering Setup

Power on the board and press and hold [ESC] immediately to enter Setup.

## 7.2 Most Common Settings

1. Firmware / BIOS Version:
   Main (chapter 7.4)

2. Boot / PXE Boot:
   Boot → Network Stack Configuration (chapter 7.8)

3. TDP, fan control, boost mode:
   TDP setting:
   AMD CBS → NBIO Common Options → System Configuration (chapter 7.6.2)

   Fan control:
   AMD CBS → NBIO Common Options → Fan Control (chapter 7.6.2.2)
   Boost mode:
   Advanced → AMD CBS → Zen Common Options → Core Performance Boost (chapter 7.6.1)

4. Change shared graphics memory
   AMD CBS → NBIO Common Options → GFX Configurations → UMA Frame Buffer Size (chapter 7.6.2.1)

5. USB power
   Advanced → USB Configuration Options → Enable/Disable – VCC of USB Jacks (chapter 7.5.4.1)

## 7.4 Main Menu

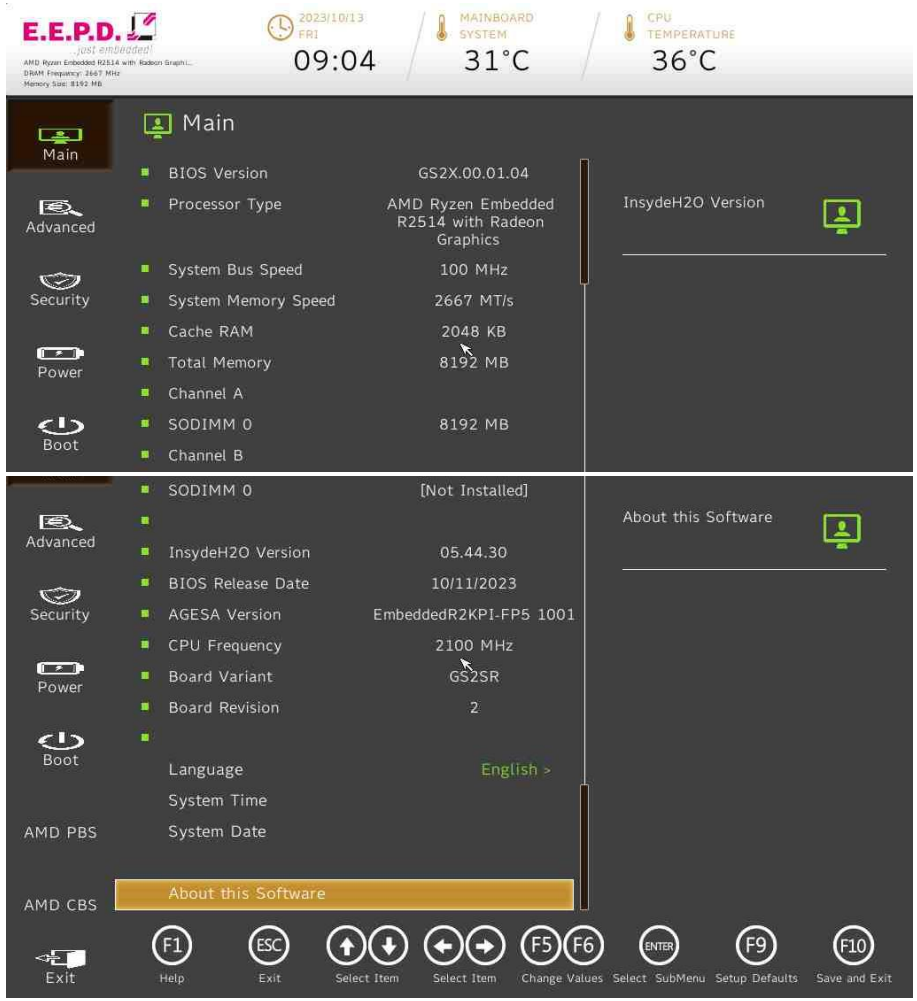


Fig. 53: Main Menu – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| Language | <English>* | |
| System Time | No options | Set the time. Use tab to switch between time elements. Valid range is from 0 to 23, 0 to 59, 0 to 59. INCREASE/REDUCE: +/- |
| System Date | No options | Set the date. Use tab to switch between date elements. Valid range is from 1 to 12, 1 to 31, 2000 to 2099. (Error checking will be done against month/day/year combinations that are not supported.) INCREASE/REDUCE: +/- |
| About this software | | |

Tab. 28: Main Menu – InsydeH2O

## 7.5 Advanced Menu


Fig. 54: Advanced Menu – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| Boot Configuration | See submenu | Configures Boot Settings |
| Peripheral Configuration | See submenu | Configures the peripheral devices. |
| NVMe Configurations | See submenu | This functions shows the connected NVMe devices |
| USB Configuration | See submenu | Configure the USB support |
| ACPI Table/Features Control | See submenu | Configures ACPI Tables/Features setting |
| CPU related setting | See submenu | CPU Related settings |
| Above 4GB MMIO | <Disabled> <Enabled>* | Enable/Disable above 4GB MemoryMappedIO BIOS assignment. It's only available with Uefi Boot mode. |
| GS2XX options | See submenu | GS2XX options: Configure PIC watchdog! |

Tab. 29: Advanced Menu – InsydeH2O

### 7.5.1 Boot Configuration

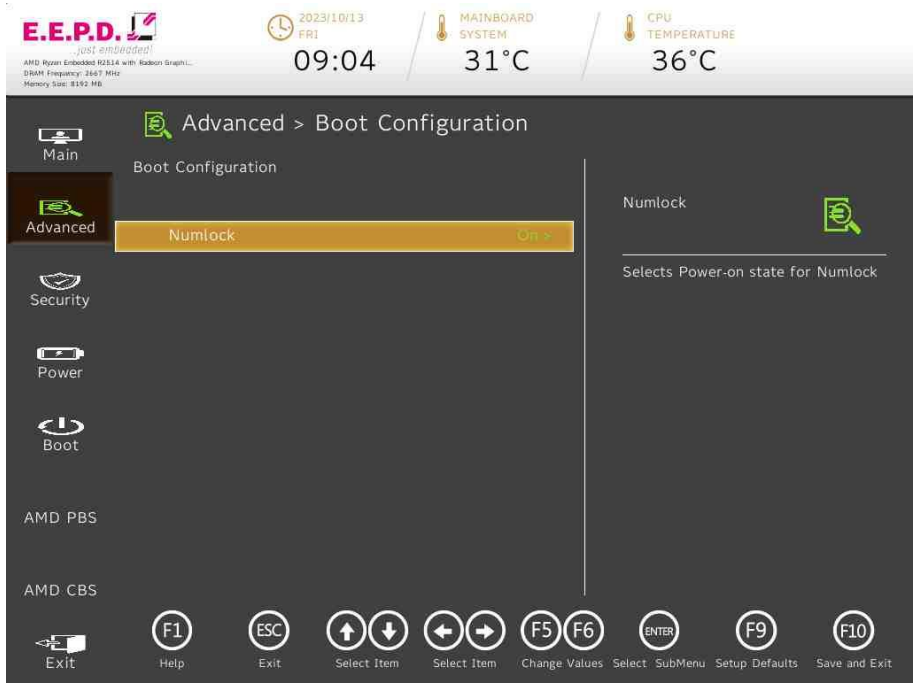


Fig. 55: Boot Configuration – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| Numlock | <Off><br><On>* | Configuration of Numlock key at power up. |

Tab. 30: Boot Configuration – InsydeH2O

### 7.5.2 Peripheral Configuration

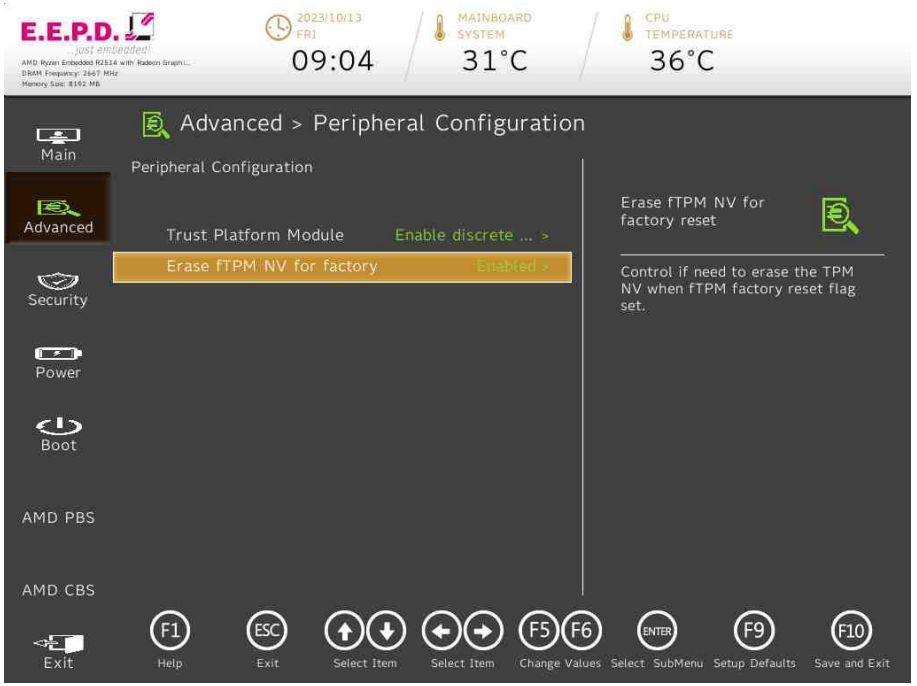


Fig. 56: Peripheral Configuration – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| Trust Platform Module | <Disabled><br><Enable discrete TPM>*<br><Enable firmware TPM> | Enable/Disable TPM physical presence. Need to reboot when set from disable to enable before selecting TPM Operation. |
| Erase fTPM NV for factory reset | <Disabled><br><Enabled>* | Control if need to erase the TPM NV when fTPM factory reset flag set. |

Tab. 31: Peripheral Configuration – InsydeH2O

### 7.5.3 NVMe Configurations

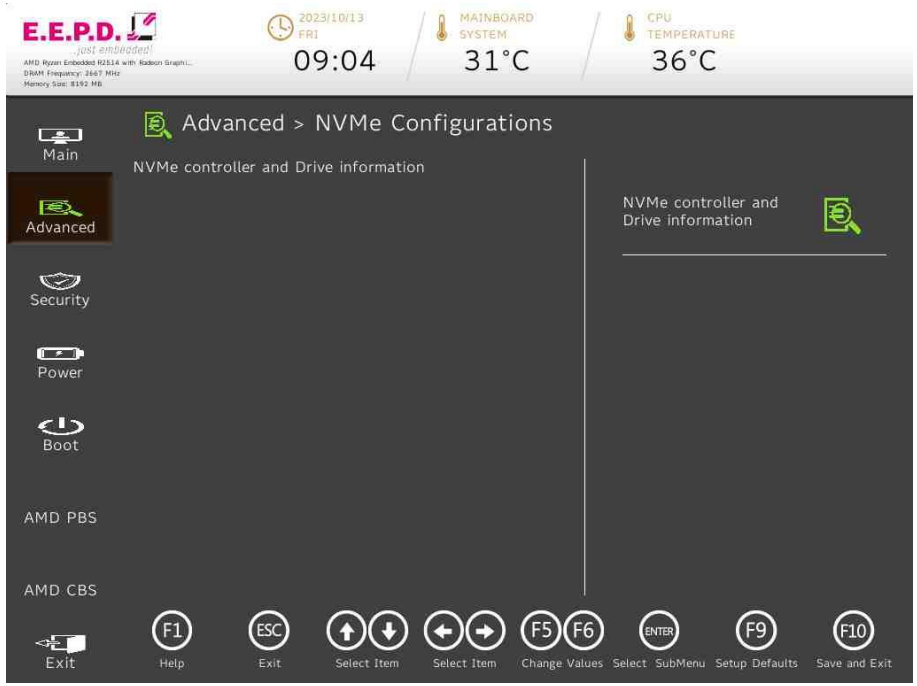


Fig. 57: NVMe Configurations – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| NVMe Configuration | | This function shows the connected NVMe devices |

Tab. 32: NVMe Configurations

### 7.5.4 USB Configuration

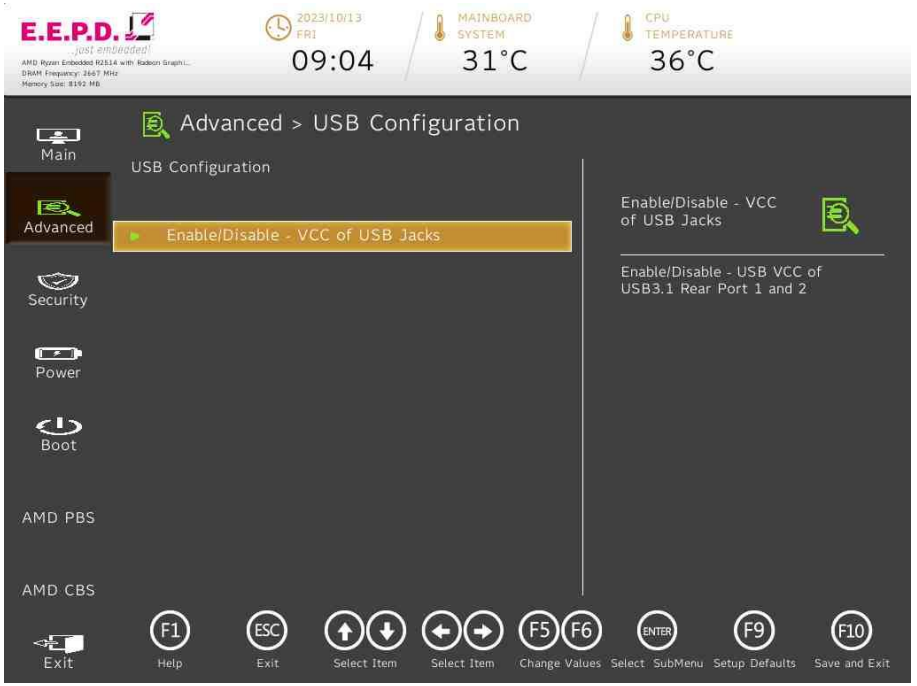


Fig. 58: USB Configurations – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| Enable/Disable – VCC of USB Jacks | No options | Enable/Disable – USB VCC of USB3.1 Rear Port 1 and 2 |

Tab. 33: USB Configuration – InsydeH2O

#### 7.5.4.1 Enable/Disable – VCC of USB Jacks

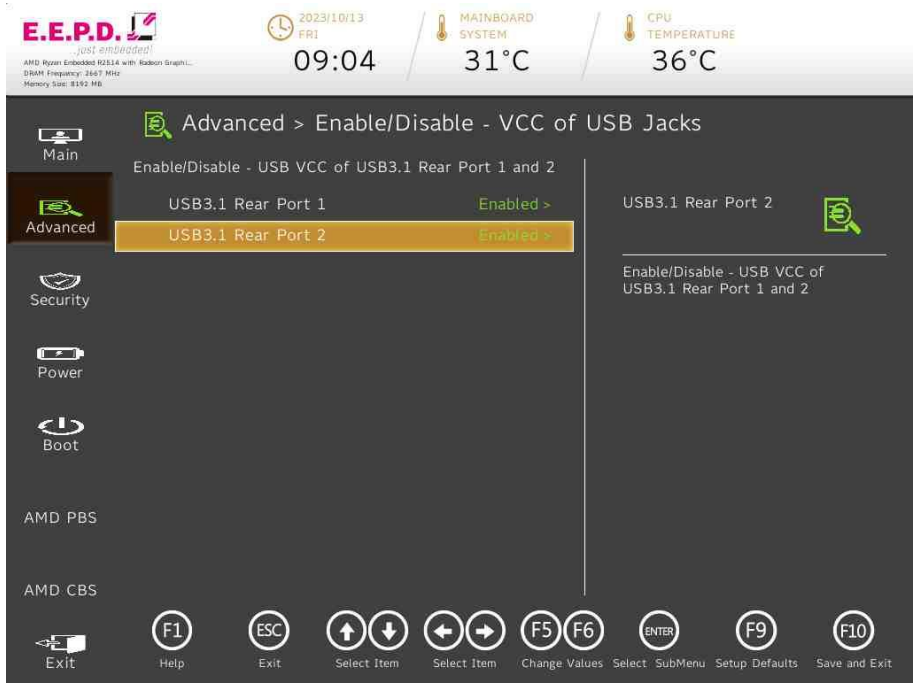


Fig. 59: Enable/Disable – VCC of USB Jacks – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| USB 3.1 Rear Port 1 | <Disabled><br><Enabled>* | Enable/Disable – USB VCC of USB 3.1 Rear Port 1 |
| USB 3.1 Rear Port 2 | <Disabled><br><Enabled>* | Enable/Disable – USB VCC of USB 3.1 Rear Port 2 |

Tab. 34: Enable/Disable – VCC of USB Jacks – InsydeH2O

#### 7.5.5 ACPI Table/Features Control


Fig. 60: ACPI Table/Features Control – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| HPET – HPET Support | <Disabled><br><Enabled>* | High Precision Event Timer is supported in Windows Vista or above. HPET controller should not been seen in Windows XP no matter enable/disable in SCU. If this feature is enabled, the HPET table will be added into ACPI Tables. |

Tab. 35: ACPI Table/Features Control – InsydeH2O

### 7.5.6 CPU Related setting

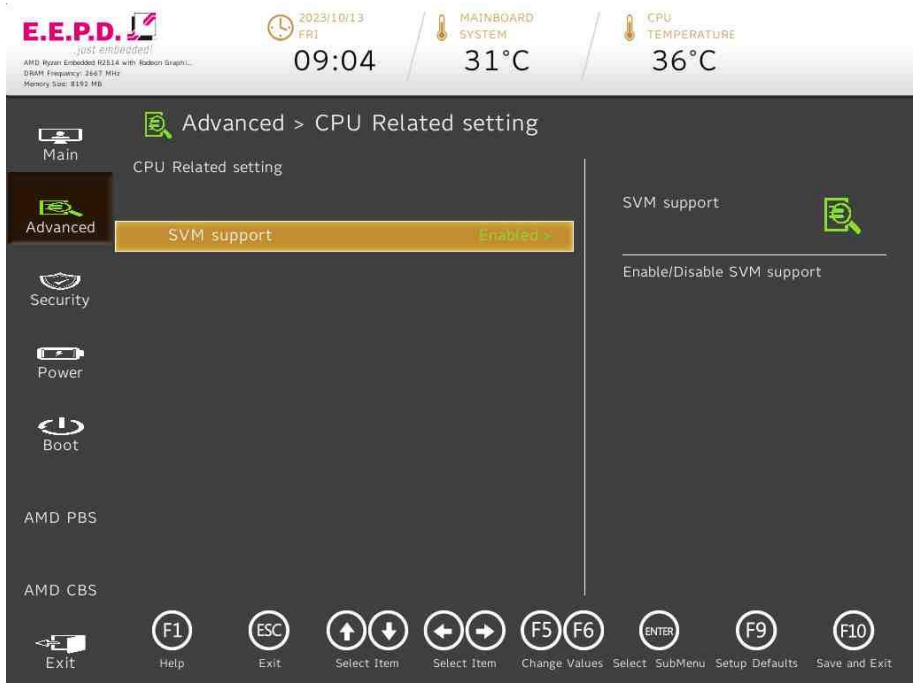


Fig. 61: CPU related setting – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| SVM support | <Disabled><br><Enabled>* | Enable/Disable SVM support |

Tab. 36: CPU related setting – InsydeH2O

### 7.5.7 GS2XX options – Watchdog

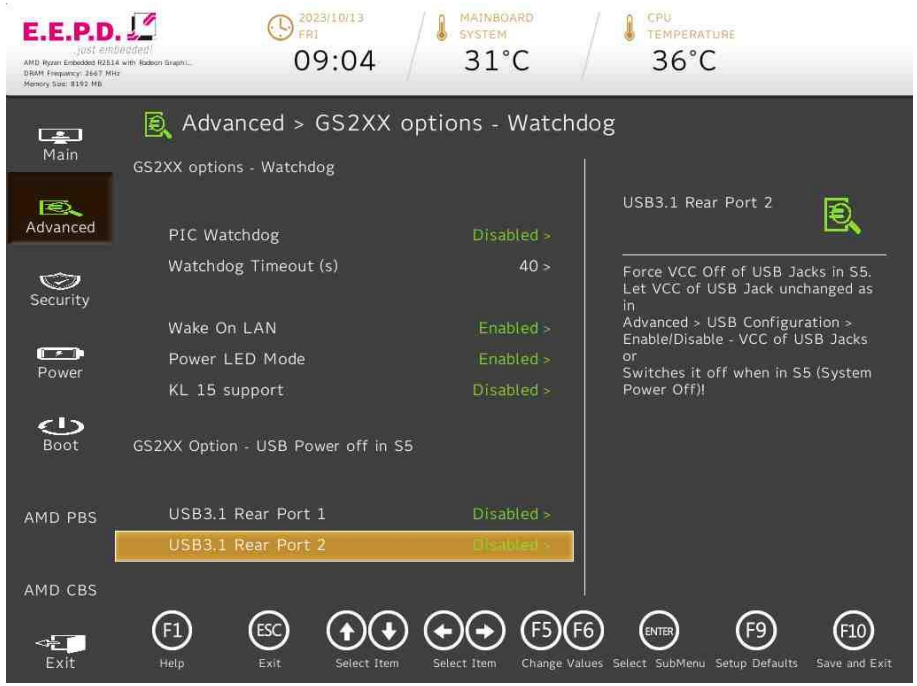


Fig. 62: GS2XX options – Watchdog – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| PIC Watchdog | <Disabled>*<br><Enabled> | Enable/Disable the PIC watchdog |
| Watchdog Timeout (s) | Adjust value [30-254]<br>Default value [40]* | Seconds before PIC watchdog times out.<br>Range: 30-254 seconds. |
| Wake on LAN | <Disabled><br><Enabled>* | Enable/Disable wake on LAN |
| Power LED Mode | <Disabled><br><Enabled>* | Set Power LED Mode (Enable/Disable) |
| KL15 support | <Disabled>*<br><Enabled> | KL15 support (Enable/Disable)<br>If enabled, set AMD CBS > FCH Common Options > AC Power Loss Options -> Always Off<br>To achieve minimum of power consumption when system is Off, set also in GS2XX option -> USB Power Off in S5 to Enabled (for all USB Ports) and Wake on LAN to Disabled<br>In addition set in OS that power button press -> shuts down the system! |
| USB3.1 Rear Port 1 | <Disabled>*<br><Enabled> | Force VCC Off of USB Jacks in S5.<br>Let VCC of USB Jack unchanged as in<br>Advanced > USB Configuration > Enable/Disable - VCC of USB Jacks or<br>Switches it off when in S5 (System Power Off)! |
| USB3.1 Rear Port 2 | <Disabled>*<br><Enabled> | |

Tab. 37: GS2XX options – Watchdog – InsydeH2O

## 7.6 AMD CBS

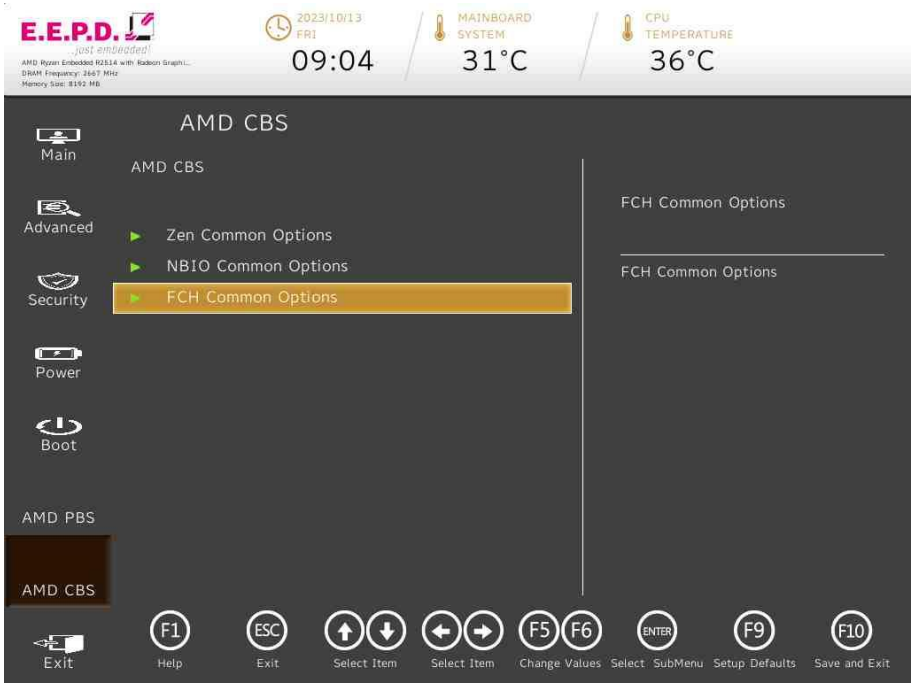


Fig. 63: AMD CBS – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| Zen Common Options | See submenu | Zen Common Options |
| NBIO Common Options | See submenu | NBIO Common Options |
| FCH Common Options | See submenu | FCH Common Options |

Tab. 38: AMD CBS – InsydeH2O

### 7.6.1 Zen Common Options


Fig. 64: Zen Common Options – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| Core Performance Boost | <Disabled>* <Auto> | Disable CPB |
| CPU Thermal Throttling Control | <Disabled>* <Enabled> | CPU Thermal Throttling Enable/Disable |

Tab. 39: Zen Common Options – InsydeH2O

### 7.6.2 NBIO Common Options


Fig. 65: NBIO Common Options – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| GFX Configuration | No options | GFX Configuration |
| CPU and Auxiliary Fan Control | No options | CPU and Auxiliary Fan Control |
| System Configuration | <35W POR Configuration>* | Warning: Select System Configuration may cause the system to hang, as some System Configuration may not be supported by your OPN. |

Tab. 40: NBIO Common Options – InsydeH2O

### 7.6.2.1 GFX Configuration

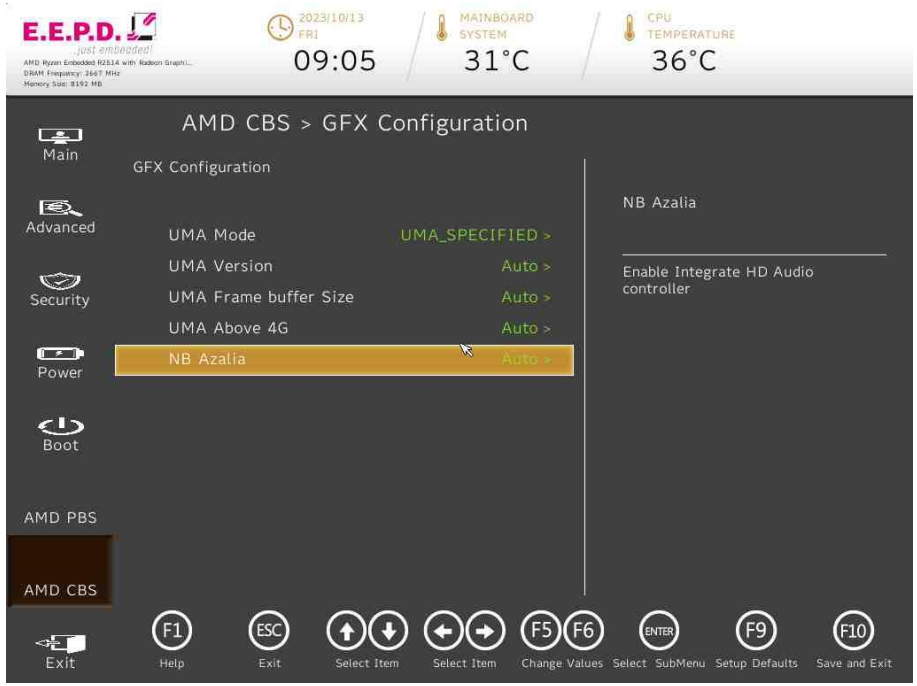


Fig. 66: GFX Configuration – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| UMA Mode | <Auto><br><UMA_SPECIFIED>*<br><UMA_AUTO> | UMA Mode |
| UMA Version | <Legacy><br><Non-Legacy><br><Hybrid Secure><br><Auto>* | UMA Legacy Version<br>UMA Non Legacy Version<br>Hybrid Secure |
| UMA Frame buffer Size | <Auto>*<br><64M><br><128M><br><256M><br><384M><br><512M><br><80M><br><96M><br><768M><br><1G><br><2G><br><3G><br><4G><br><6G><br><8G><br><16G> | Set UMA FB size |
| UMA Above 4G | <Disabled><br><Enabled><br><Auto>* | If requested UMA frame buffer size can't be fit under 4GB or the system has enough available memory above 4GB, this option may be set to TRUE to allow UMA frame buffer size to be allocated successfully. |
| NB Azalia | <Disabled><br><Enabled><br><Auto>* | Enable Integrate HD Audio controller |

Tab. 41: GFX Configuration – InsydeH2O

### 7.6.2.2 CPU and Auxiliary Fan Control

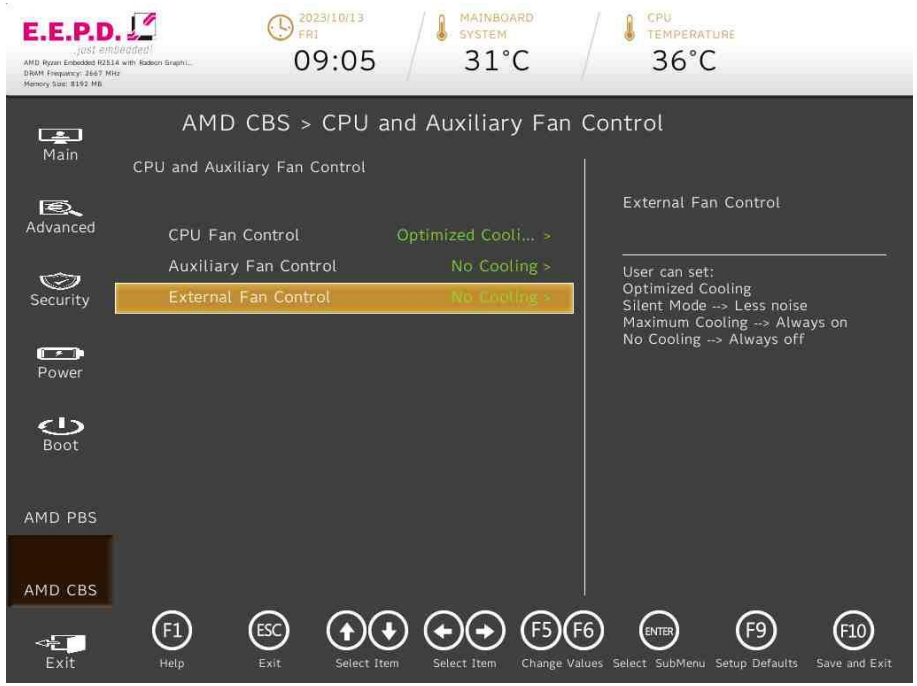

Fig. 67: CPU and Auxiliary Fan Control – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| CPU Fan Control | <Optimized Cooling>*<br><Silent Mode><br><Maximum Cooling><br><No Cooling> | User can set:<br>Optimized Cooling<br>Silent Mode --> Less noise<br>Maximum Cooling --><br>Always on<br>No Cooling --> Always off |
| Auxiliary Fan Control | <Optimized Cooling><br><Silent Mode><br><Maximum Cooling><br><No Cooling>* | User can set:<br>Optimized Cooling<br>Silent Mode --> Less noise<br>Maximum Cooling --><br>Always on<br>No Cooling --> Always off |
| External Fan Control | <Optimized Cooling><br><Silent Mode><br><Maximum Cooling><br><No Cooling>* | User can set:<br>Optimized Cooling<br>Silent Mode --> Less noise<br>Maximum Cooling --><br>Always on<br>No Cooling --> Always off |
| CPU Fan Control | <Optimized Cooling>*<br><Silent Mode><br><Maximum Cooling><br><No Cooling> | User can set:<br>Optimized Cooling<br>Silent Mode --> Less noise<br>Maximum Cooling --><br>Always on<br>No Cooling --> Always off |

Tab. 42: CPU and Auxiliary Fan Control – InsydeH2O

### 7.6.3 FCH Common Options

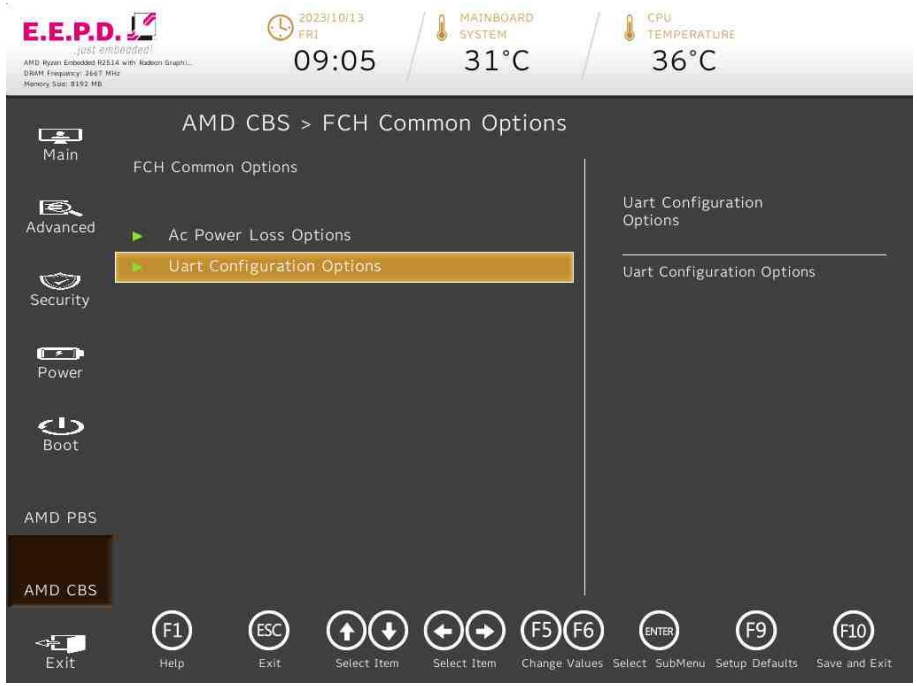


Fig. 68: FCH Common Options – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| Ac Power Loss Options | No options | Ac Power Loss Options |
| Uart Configuration Options | No options | Uart Configuration Options |

Tab. 43: FCH Common Options – InsydeH2O

#### 7.6.3.1 Ac Power Loss Options


Fig. 69: Ac Power Loss Options – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| Ac Loss Control | <Always Off><br><Always On><br><Previous>* | Select Ac Loss Control Method |

Tab. 44: Ac Power Loss Options – InsydeH2O

### 7.6.3.2 Uart Configuration Options

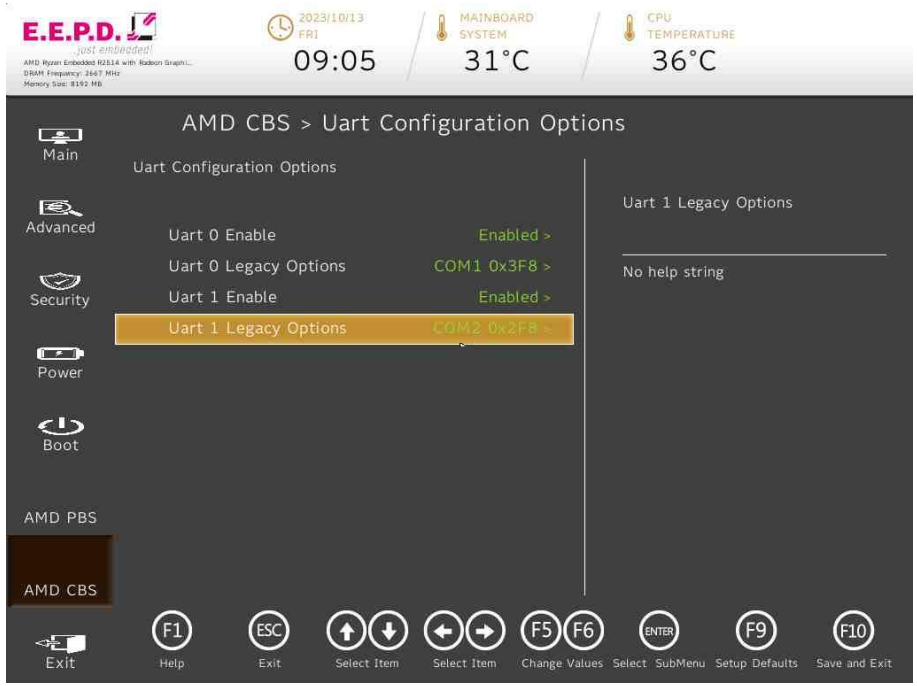

Fig. 70: Uart Configuration Options – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| Uart 0 Enable | <Disabled><br><Enabled>* | No help string |
| Uart 0 Legacy Options | <Disabled><br><COM1 0x3F8>*<br><COM2 0x2F8><br><COM3 0x3E8><br><COM4 0x2E8> | No help string |
| Uart 1 Enable | <Disabled><br><Enabled>* | No help string |
| Uart 1 Legacy Options | <Disabled><br><COM1 0x3F8><br><COM2 0x2F8>*<br><COM3 0x3E8><br><COM4 0x2E8> | No help string |

Tab. 45: Uart Configuration Options – InsydeH2O

## 7.7 AMD PBS Option

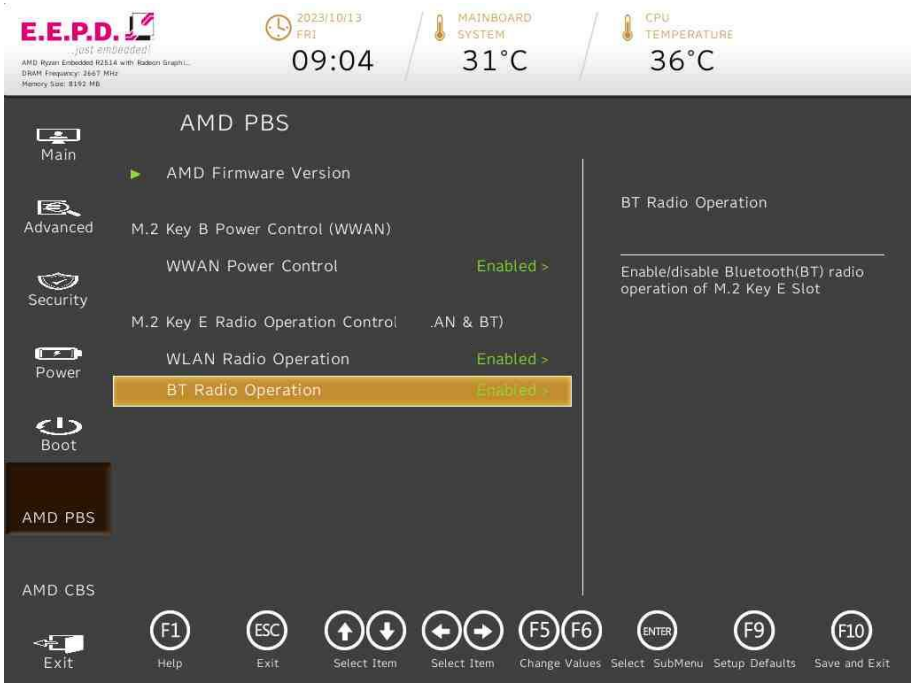


Fig. 71: AMD PBS Option – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| AMD Firmware Version | No options | Show all of AMD Firmware Version |
| WWAN Power Control | <Disabled><br><Enabled>* | Enable/disable power of M.2 Key B Slot |
| WLAN Radio Operation | <Enabled>*<br><Disabled> | Enable/disable WLAN radio operation of M.2 Key E Slot |
| BT Radio Operation | <Enabled>*<br><Disabled> | Enable/disable Bluetooth(BT) radio operation of M.2 Key E Slot |

Tab. 46: AMD PBS Option – InsydeH2O

### 7.7.1 AMD Firmware Version

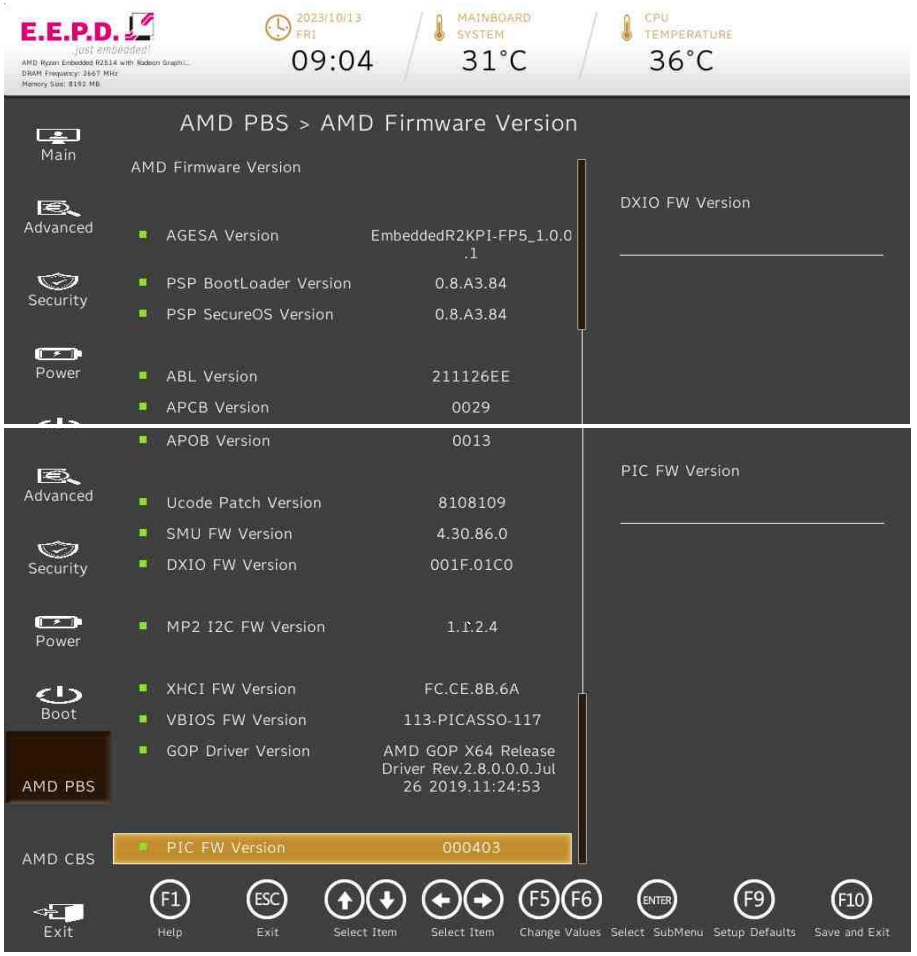


Fig. 72: AMD Firmware Version – InsydeH2O

## 7.8 Boot Menu

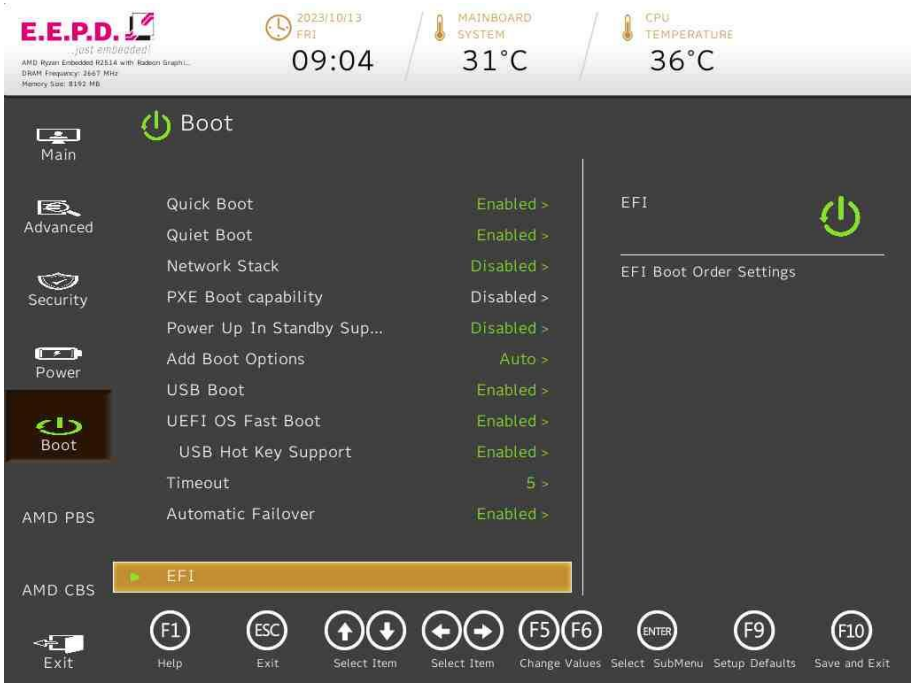


Fig. 73: Boot Menu – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| Quick Boot | <Enabled>*<br><Disabled> | Allows InsydeH2O to skip certain tests while booting. This will decrease the time needed to boot the system. |
| Quiet Boot | <Enabled>*<br><Disabled> | Disables or enables booting in Text Mode. |
| Network Stack | <Disabled>*<br><Enabled> | Network Stack Support:<br>Windows 8 BitLocker Unlock |
| | | UEFI IPv4/IPv6 PXE<br>Legacy PXE OPROM |
| PXE Boot capability | <Disabled>* | Disabled : Support Network Stack<br>UEFI PXE : IPv4/IPv6<br>Legacy : Legacy PXE OPROM only |
| Power Up In Standby Support | <Enabled><br><Disabled>* | Disable or enable Power Up In Standby Support.<br>The PUIS feature set allows devices to be powered-up into the Standby power management state to minimize inrush current at power-up and to allow the host to sequence the spin-up of devices. |
| Add Boot Options | <First><br><Last><br><Auto>* | Position in Boot Order for Shell,Network and Removables |
| USB Boot | <Enabled>*<br><Disabled> | Disables or enables booting to USB boot devices. |
| UEFI OS Fast Boot | <Enabled>*<br><Disabled> | If enabled the system firmware does not initialize keyboard and check for firmware menu key. |
| USB Hot Key Support | <Disabled><br><Enabled>* | Enable/Disable to support USB hot key while booting. This will decrease the time needed to boot the system. |
| Timeout | Adjust value [0-10]<br>Default value [5] | The number of seconds that the firmware will wait before booting the original default boot selection. |
| Automatic Failover | <Disabled><br><Enabled>* | Enable: if boot to default device fail, it will directly try to boot next device.<br>Disable: if boot to default device fail, it will pop warning message then go into firmware UI. |
| EFI | No options | EFI Boot Order Settings |

Tab. 47: Boot Menu – InsydeH2O

### 7.8.1 EFI

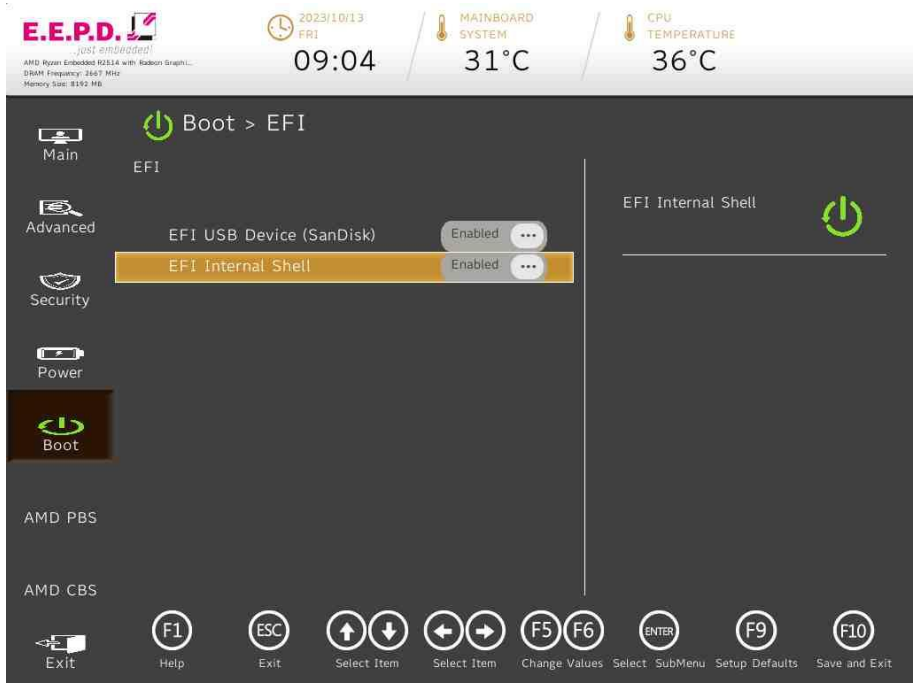


Fig. 74: EFI – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| EFI USB Device (SanDisk) | [ ]*<br>[ X ] | |
| EFI Internal Shell | [ ]*<br>[ X ] | |

Tab. 48: EFI – InsydeH2O

## 7.9 Power Menu

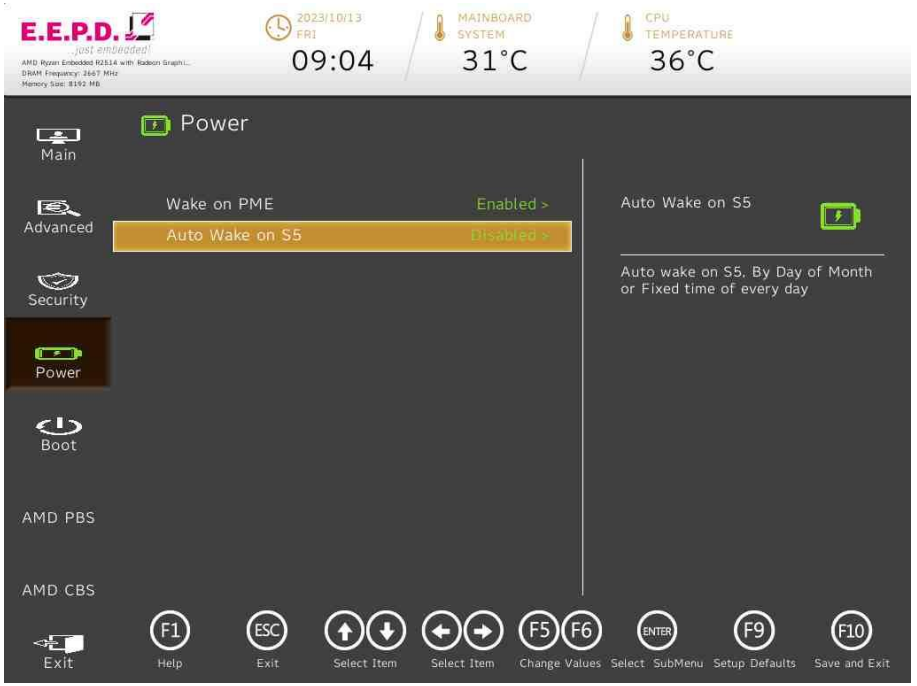


Fig. 75: Power Menu – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| Wake on PME | <Disabled><br><Enabled>* | Determines the action taken when the system power is off and a PCI Power Management Enable wake up event occurs. |
| Auto Wake on S5 | <Disabled>*<br><By Every Day><br><By Day of Month> | Auto wake on S5, By Day of Month or Fixed time of every day |

Tab. 49: Power Menu – InsydeH2O

## 7.10 Exit Menu

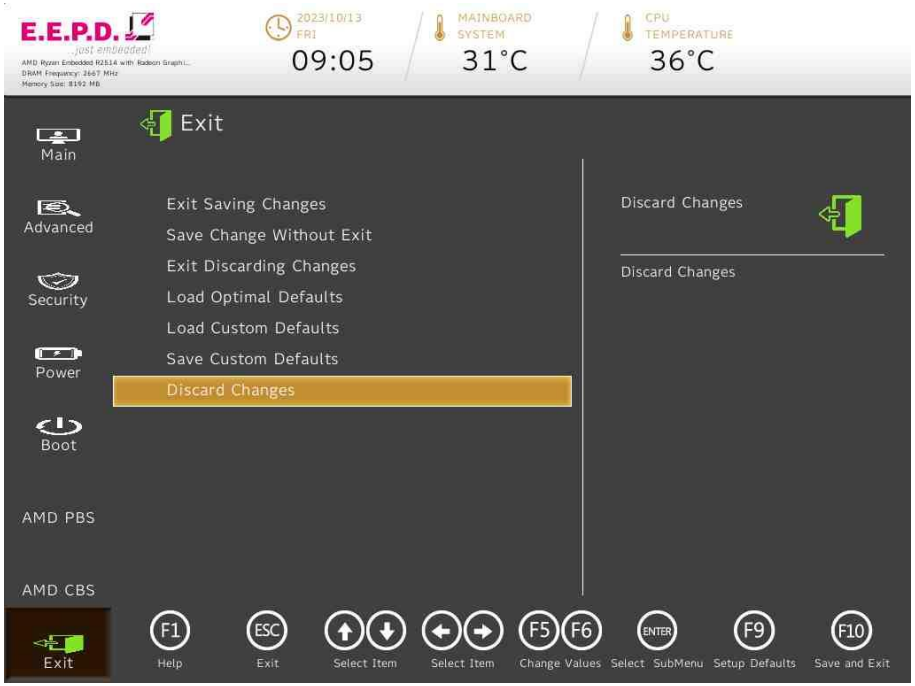


Fig. 76: Exit Menu – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| Exit Saving Changes | | Exit system setup and save your changes. |
| Save Change Without Exit | | Save your changes and without exiting system. |
| Exit Discarding Changes | | Exit system setup and without saving your changes. |
| Load Optimal Defaults | | Load Optimal Defaults. |
| Load Custom Defaults | | Load Custom Defaults. |
| Save Custom Defaults | | Save Custom Defaults |
| Discard Changes | | Discard Changes |

Tab. 50: Exit Menu – InsydeH2O

## 7.11 Security Menu


Fig. 77: Security Menu – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| Current TPM Device | <Not Detected><br><TPM 1.2><br><TPM 2.0 (DTPM)>* | Current TPM Device: TPM1.2, or TPM2.0. |
| TrEE Protocol Version | <1.0><br><1.1>* | TrEE Protocol Version: 1.0 or 1.1 |
| TPM Availability | <Available>*<br><Hidden> | When hidden, don't expose TPM to OS |
| TPM Operation | <No Operation>*<br><Enable><br><SetPCRBanks(Algorithm)><br><LogAllDigests><br><SetPPRequiredForClear_True><br><SetPPRequiredForClear_False><br><SetPPRequiredForTurnOn_False><br><SetPPRequiredForTurnOn_True><br><SetPPRequiredForTurnOff_False><br><SetPPRequiredForTurnOff_True><br><SetPPRequiredForChangePCRs_False><br><SetPPRequiredForChangePCRs_True><br><SetPPRequiredForChangeEPS_False><br><SetPPRequiredForChangeEPS_True><br><ChangeEPS> | Select one of the supported operations to change TPM2 state. |
| Clear TPM | [ ]<br>[ X ] | Clear TPM. Removes all TPM context associated with a specific Owner. |
| Set Supervisor Password | None | Install or change the password and the length of password must be greater than one character. |

Tab. 51: Security Menu – InsydeH2O

### 7.11.1 Storage Password Setup Page


Fig. 78: Storage Password Setup Page – InsydeH2O

| BIOS Settings | Options | Description |
|---|---|---|
| TCG Storage Action | <No Operation>*<br><Enable_BlockSIDFunc><br><Disable_BlockSIDFunc><br><PPRequiredForEnableBlockSID_True><br><PPRequiredForEnableBlockSID_False><br><PPRequiredForDisableBlockSID_True><br><PPRequiredForDisableBlockSID_False> | Change BlockSID actions, includes enable or disable BlockSID, Require or not require physical presence when remote enable or disable BlockSID |

Tab. 52: Storage Password Setup Page – InsydeH2O

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E.E.P.D. ...just embedded!

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E.E.P.D. ...just embedded!

## List of Abbreviations

| | |
|---|---|
| AC | Alternating current |
| APAC | Asia Pacific and countries |
| BIOS | Basic input/output system |
| BT | Bluetooth |
| DC | Direct current |
| DDR4 | Fourth generation „double data rate“ memory technology |
| DP | Display port |
| EMEA | Europe, Middle East, Africa |
| GND | Ground |
| GNSS | Global Navigation Satellite System |
| IoT | Internet of Things |
| LTE | Long Term Evolution |
| MIC | Microphone |
| M.2 | Next generation mSATA |
| NVME | Non-Volatile Memory Express |
| OCP | Over Current Protection |
| PWM | Pulse-width modulation |
| RAM | Random access memory |
| RS-232 | Serial standard interface |
| RS-485 | Serial standard interface |
| SD | Secure digital memory card |
| SIM | Subscriber identity module |
| SMA | Subminiature version A connector |
| SO-DIMM | Small outline dual inline memory module |
| SSD | Solid state drive |
| UART | Universal Asynchronous Receiver / Transmitter |
| USB | Universal serial bus |
| WLAN | Wireless local area network |
| WWAN | Wireless wide area network |


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