EM PRO midi Cube – Device Reference Manual

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

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

Product Returns

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**

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Revision History

Date	Version	Changes	Proofed
04.12.2025	2.0	First release; HW Rev.2	

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Symbols

The red danger sign warns you if incorrect operation puts your life or health at great risk. Both the components and the peripherals could be destroyed.

The orange warning sign warns you that an incorrect or missing operation could seriously endanger your health or destroy the used components.

The yellow caution sign indicates that an incorrect or missing action could damage the components.

The yellow ESD symbol indicates that electrostatic sensitive components could be destroyed. Unpack shielded components only with ESD protection such as an ESD wristband or on an ESD protected area.

The information sign gives you further information and advice for optimal use of this product.
For example, it draws your attention to necessary or optional accessories.

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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 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.

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1 System Information

1.1 Required Tools

For the installation of the EM PRO midi Cube the following standard tools are recommended:

- Cable connection: Slot screwdriver
- Socket wrench 5.5 mm
- Torx screwdriver T10

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

1.2 Software

Supported operating systems are:

Microsoft® Windows® 11
Linux Ubuntu 24.04 LTS

1.3 Intended Use

The EM PRO midi Cube is a personal computer to be used with Windows 11, or Linux Ubuntu 24.04 LTS. It has been designed for office and production areas. It is ideal for use in video and photo editing, 2D and 3D applications, graphic design, programming workstations, augmented and virtual reality. Designed for 24/7 operation.

1.4 Options

Options	Description
Memory modules[1]	2x 32 GB dual channel up to DDR5-5600 SO-DIMM memory with optional ECC support
SSD[1]	64 GB – 2 TB
WLAN/BT module kit[1,2]	M.2 WLAN/BT card with SMA connector
LTE/modem module kit[1,2]	M.2 LTE card with SMA connector
Operating System[1]	Windows® 11, Linux Ubuntu 24.04 LTS
[1] factory assembled on request [2] ODM option	

Tab. 1: Options

1.5 Accessories

For accessories, please contact our sales department **sales@eepd.de**

Accessories	Description
Power supply (150 W, fused to 10 A)	Power supply incl. cable with EU plug
Display cable	Cable MiniDP to HDMI, 2 m, with interlock Cable MiniDP to DP, 2 m

Tab. 2: Accessories

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1.6 Scope of Delivery

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

1.6.1 Type Label

Fig. 1: Type label

1 – Manufacturer
2 – Product name
3 – Power input voltage range (absolute voltage values)
4 – Serial number with barcode
5 – Certification information

1.7 System Dimensions

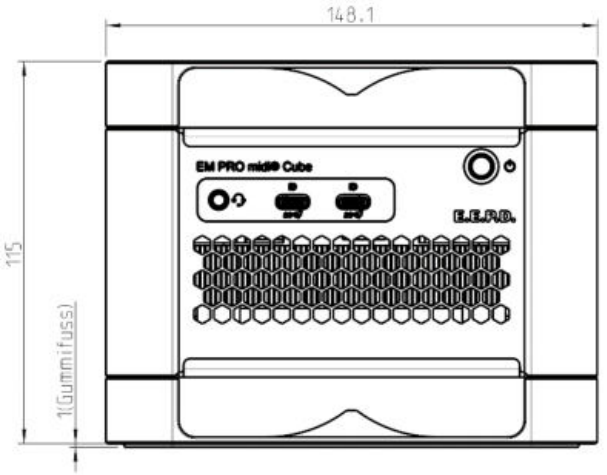

Fig. 2: Dimensions front side with cover, all values [mm] approx.

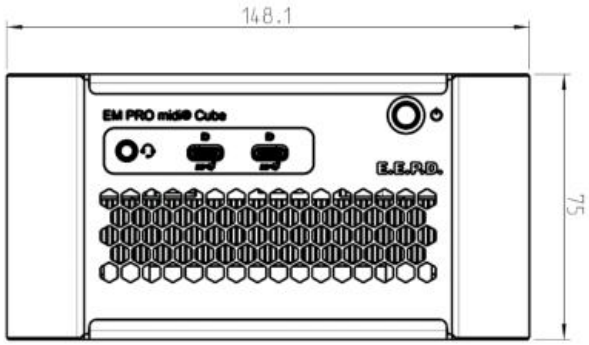

Fig. 3: Dimensions front without cover, all values [mm] approx.

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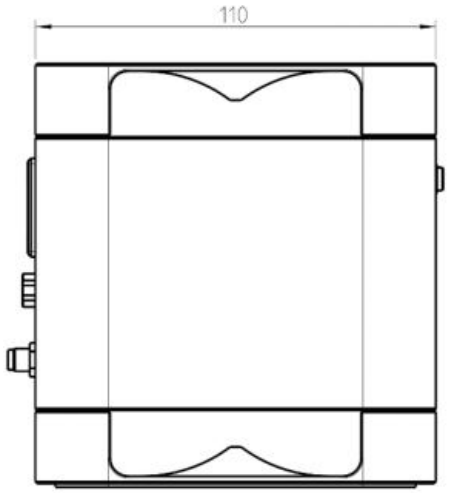

Fig. 4: Dimensions side, all values [mm] approx.

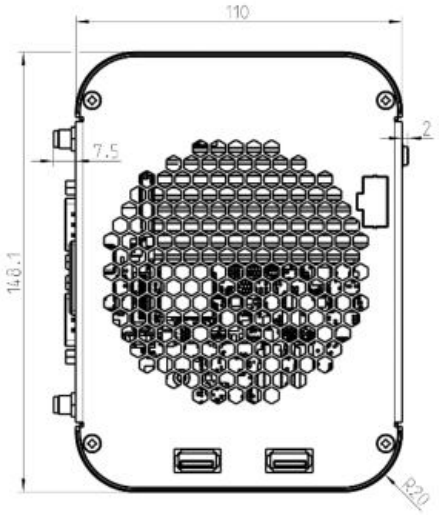

Fig. 5: Dimensions top side, all values [mm] approx.

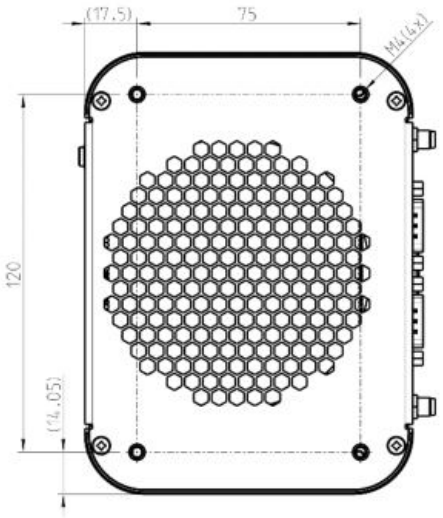

Fig. 6: Dimension custom mounting, all values [mm] approx.

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1.8 System Mounting

The EM PRO midi Cube is designed as stand-alone and also for mounting with a universal holder.

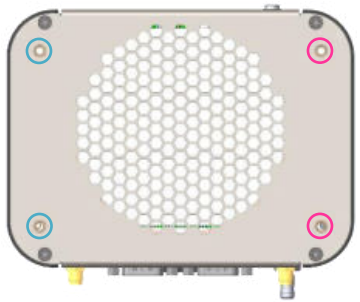

Fig. 7: Universal holder positions

Please follow the instructions below:

- Mount the universal holder with the two provided screws at the intended fastening points (see Fig. 7).
- Mount the top-hat rail holder with the two provided screws at the intended fastening points on the universal holder (see Fig. 8). The top-hat rail holder is suitable for “TS35” DIN rails.
- Place the system on the DIN rail. Swivel it inwards until it snaps securely into place.
- To detach the system, push it from bottom to top. Swivel it outwards and remove it.

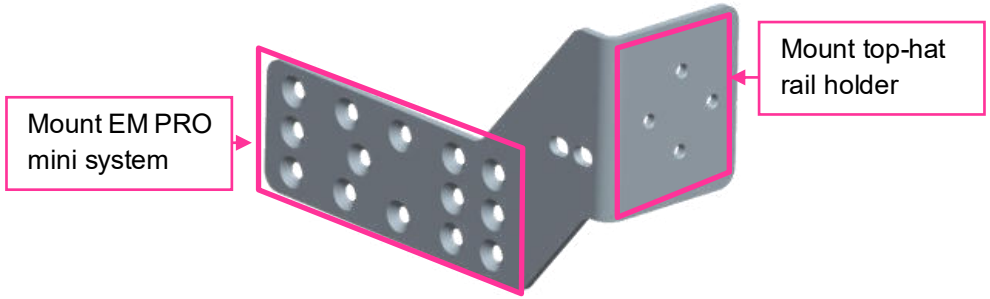

Fig. 8: Universal holder

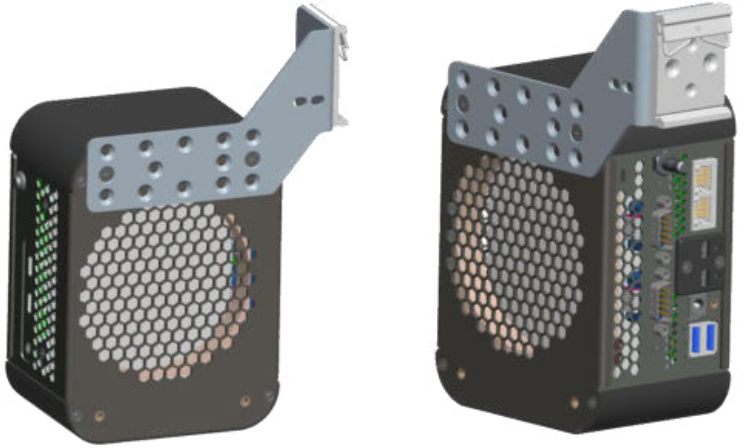

Fig. 9: EM PRO midi Cube with universal holder and top-hat rail holder

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2 Technical Data

- AMD Ryzen™ Embedded 8000 processor series:
  8845HS / 8C / 16T / 3.8 GHz – 5.1 GHz / 45 W (35 – 54 W)
  8645HS / 6C / 12T / 4.3 GHz – 5.0 GHz / 45 W (35 – 54 W)
  8840U / 8C / 16T / 3.3 GHz – 5.1 GHz / 28 W (15 – 30 W)
  8640U / 6C / 12T / 3.5 GHz – 4.9 GHz / 28 W (15 – 30 W)
  8440U / 4C / 8T / 3.3 GHz – 4.7 GHz / 28 W (15 – 30 W)
- Memory: 2x 32 GB dual channel up to DDR5-5600 SO-DIMM memory with optional ECC support
- Ethernet ports: 2x Intel® i226-V 2.5 Gbit/s with IEEE1588, Wake-on-LAN supported by ETH1
- WiFi/BT (ODM option only):
  802.11 AX with diversity / Bluetooth version 6
- SSD (optional): 1x m.2 NVMe, 64 GB – 2 TB
- USB ports:
  1x Dual-USB 3.2 Gen2 (10 Gb/s, OCP = 1.5 A each) type A at rear side,
  2x USB 2.0 (480 Mb/s, OCP = 900 mA each) type A at top side,
  2x USB4 Gen3x2 (up to 40 Gb/s, OCP = 3 A) type C at front side or USB-C Alt mode
- Serial port: 1x RS-232/485 (HDX/FDX) on D-Sub DE-9
- Display output:
  2x Mini-DP++ connectors, v1.4, up to 3840 x 2160 @ 60 Hz,
  2x USB-C Alt Mode, up to 3840 x 2160 @ 60 Hz
- Sound: MIC in / headphone out at 3.5 mm Audio Jack
- Cooling:
  CPU fan, 12 V, max. 250 mA, not fused
  optional auxiliary fan, 12 V, max. 250 mA, not fused
- Controlled FAN (PWM + Tacho) and hardware monitoring
- Power and status LEDs
- Power supply: Min. 10.8 V / Max. 26.4 V (DC),
  min. 120 W / recommended 150 W, fused to 10 A

Current rating of the power supply has to exceed the expected current draw depending on the system configuration, CPU variant and its TDP settings, and peripheral devices used with the system. Power supplies might derate due to lower efficiency at higher operating temperature. Insufficient power supply might lead to the system instability, shutdown and data loss.

- Power connector: 2-pin barrel connector for external DC power and ground; CUI devices power plug ID 2.5 mm, AD 5.5 mm, max. 7 A
- 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: robust brushed aluminum housing, anodized black
- Mounting: stand alone, optional hat rail
- Dimensions approx.: 148 x 110 x 115/75 mm
- Weight: approx. 1150 g + options

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3 Interfaces

3.1 Connection Overview

The EM PRO midi Cube is equipped with the following standard interfaces:

1 – 2x Ethernet 10/100/1000/2500 Mbit/s (RJ45), Port 1 supports WoL
2 – 2x Mini-DP++ connector
3 – Power supply
4 – Dual-USB 3.2 Gen2 port, type A
5 – Power button (auxiliary power button at the rear side → 5a)
6 – Serial port RS232/485
7 – Sound 3.5 mm MIC in / headphone out
8 – 2x USB4-C port
9 – WiFi/BT (ODM option only)
10 – additional electrical bonding
11 – 2x USB 2.0 port, type A

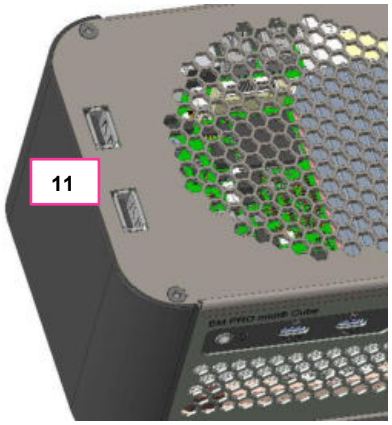

Fig. 10: USB 2.0 ports position

Front View

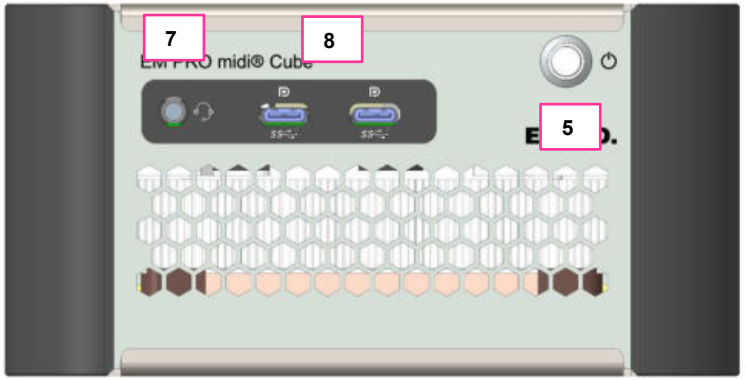

Fig. 11: EM PRO midi Cube front view

Rear View

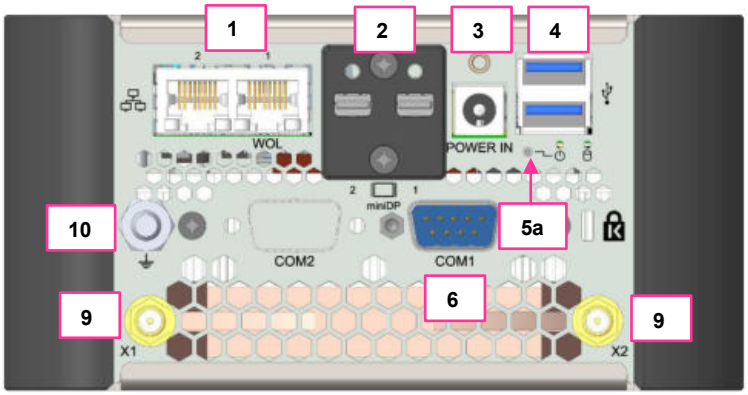

Fig. 12: EM PRO midi Cube rear view

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3.2 Power Button with LED

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. 13 or Fig. 14) once to switch the computer on and off.
Press and hold the power button (>4 Sec.) to hard power off the system in an emergency.

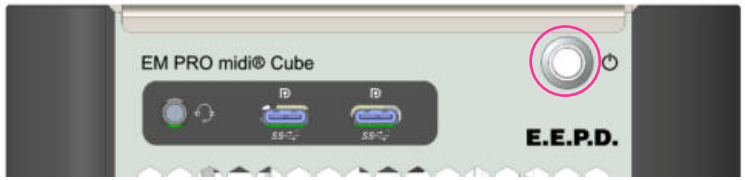

Fig. 13: Power Button with LED

3.3 Auxiliary Power Button | Power and HDD/SSD LED

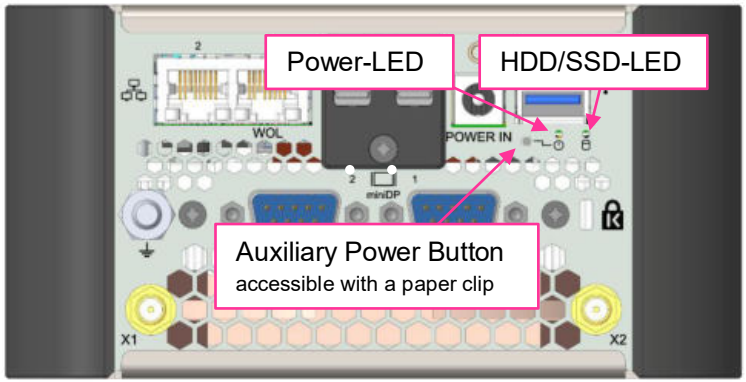

Fig. 14: Auxiliary power button | power and HDD/SSD-LED

3.4 Mini Display Ports

Standard pin assignment

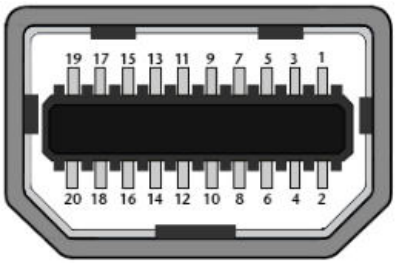

Fig. 15: Mini Display Port Schematic

CAUTION

Important note:

There are two kinds of DisplayPort cables:
If you connect the display directly to the Mini DP, please use cable with Pin 20 not connected.

If you use active cables/adapters (e.g. Mini DP to DP, Mini DP to HDMI), please use cable with Pin 20 (supply voltage) on both ends that are connected.

Possible effects if wrong cable is used:
System might not start up properly.
Dongle does not work properly (black display).

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3.5 USB Ports

Standard pin assignments

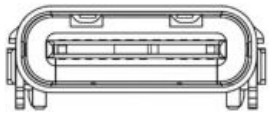

Fig. 16: USB4 Schematic

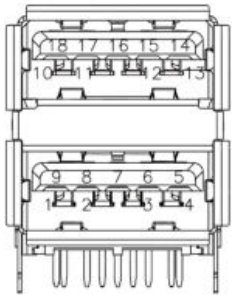

Fig. 17: Dual USB-A 3.2 schematic

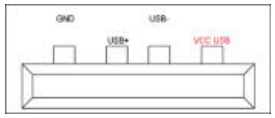

Fig. 18: USB-A 2.0 schematic

3.6 Gigabit Ethernet Dual-Port

Standard pin assignment

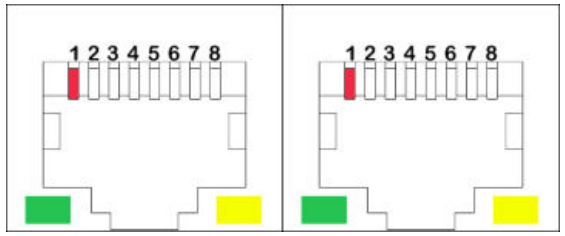

Fig. 19: Dual-Ethernet schematic

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.

3.7 Power Connector (DC)

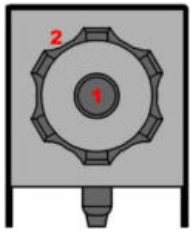

Fig. 20: Power connector schematic

Counterpart - plug:

CUI Devices Power Plug ID 2.5mm, AD 5.5mm, max. 7 A
Ordering number: PP3-002B

Pin	Signal	Description
1	PVIN	DC+ (min 10.8 V to max. 26.4 V) min. 19 V recommended
2	GND	Ground

Tab. 3: Pin assignment power connector

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3.8 Serial Port

This option must be enabled in the BIOS → UART Configuration Options, see chapter 6.4.7.1.
The serial RS232/485 interface is provided by a multiprotocol transceiver.
The connector is a standard 9-pin D-Sub connector (Fig. 21)

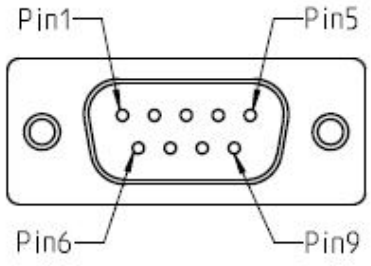

Fig. 21: 9-pin D-SUB connector

9-pin D-Sub	Signal RS232	Signal RS485/FDX	Signal RS485/HDX for Windows 11 only
1	DCD	RS485-TX_N	RS485-RX/TX_N
2	DSR	-	-
3	RXD	RS485-TX_P	RS485-RX/TX_P
4	RTS	-	-
5	TXD	RS485-RX_P	-
6	CTS	-	-
7	DTR	RS485-RX_N	-
8	-	-	-
9	VCC 5 V +/-5%, max. 500 mA not fused	VCC 5 V +/-5%, max. 500 mA not fused	VCC 5 V +/-5%, max. 500 mA not fused

Tab. 4: Pin assignment RS232 ports

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4 Opening the System

All internal installations may only be performed at an ESD-protected workstation.

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

1. Turn off the system and disconnect from the electrical outlet.
2. Remove the top protective cover (see Fig. 22).
3. Remove the four top distance bolts as shown in Fig. 22.
4. Lift the top perforated grid cover (Fig. 23).
5. The assembly is carried out in reverse order. Fasten the distance bolts with max. **0.5 Nm**.

Fig. 22: Remove protective cover and distance bolts

Fig. 23: Lift the top cover

4.1 Installing M.2 Modules/SSD

Insert the module into the corresponding slot (Fig. 26) at an angle. Press it down on the side that protrudes and secure it with the screw provided (max. **0.5 Nm**).

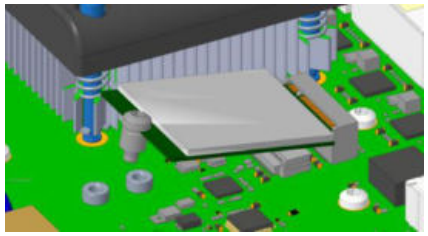

Fig. 24: M.2 module assembly example

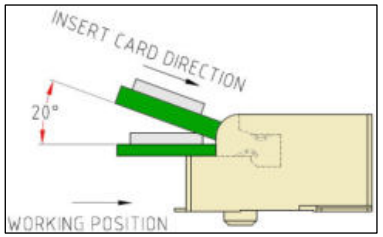

Fig. 25: M.2 module assembly angle

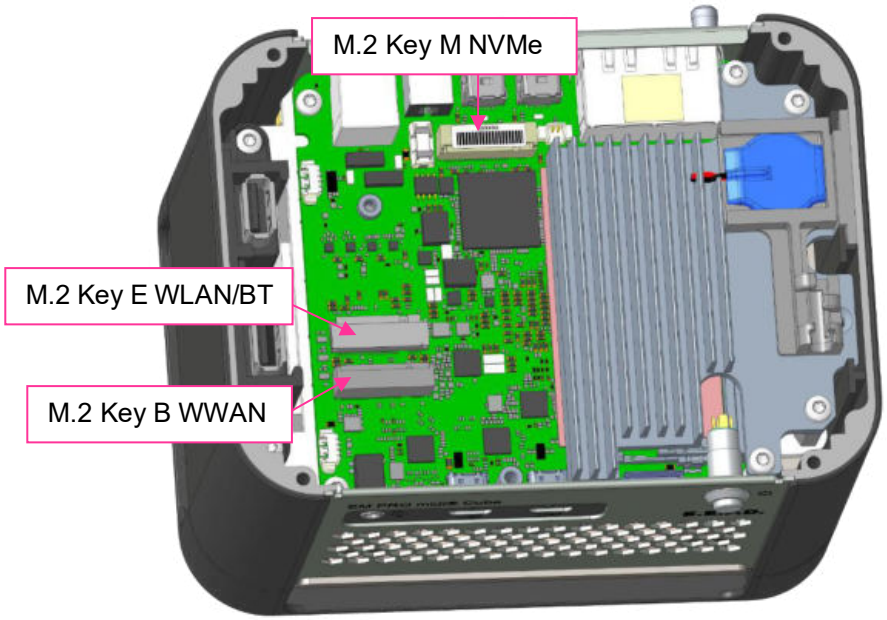

Fig. 26: M.2 module positions

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5 Start-up Guide

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

Only connect the power cable when the power supply is switched off.

Before commissioning, we recommend connecting or inserting:

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

Other plug & play devices can be connected after commissioning.

5.1 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 to switch on the system. When the system is powered, the Power LED on the power button will be on.
If an operating system is installed, it will start 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 [ESC] key immediately after switching on.
Please refer to the operating system manual for switching off / shutting down.

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6 BIOS

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 [ESC] immediately to enter Setup.

6.2 Most Common Settings

Firmware / BIOS Version:
Setup Utility → Main (chapter *6.3*)
or Setup Utility → AMD PBS → AMD Firmware Version (chapter *6.6.1*)

2. Boot / PXE Boot:
Boot Manager
or Setup Utility → Boot (chapter *6.7*)

3. TDP, fan control, boost mode:
TDP setting (chapter *6.5.5*):
Setup Utility → AMD CBS → SMU Common Options → System Configuration

Fan control (chapter *6.5.5.1*):
Setup Utility → AMD CBS → SMU Common Options → CPU and Auxiliary Fan Control

Boost mode (chapter *6.5.1*):
Setup Utility → AMD CBS → CPU Common Options → Core Performance Boost

4. Change shared graphics memory
Setup Utility → AMD CBS → NBIO Common Options → GFX Configurations → UMA Frame Buffer Size (chapter *6.5.2.1*)

5. USB power
USB Power off in S5 (chapter *6.4.6*):
Setup Utility → Advanced → NUCU Options → USB Power off in S5
or
USB VCC control (chapter *6.4.3.1*):
Setup Utility → Advanced → USB Configuration

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6.3 Main Menu

Once you enter the Setup Utility, the Main Menu will appear on the screen:

Fig. 27: Main Menu

This setup menu shows an overview of board configuration, CPU type, memory and firmware revisions.

BIOS Settings	Options	Description
System Time	No options	Set the time. Use Tab to switch between time elements [hour:min:sec]. 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 [month/day/year]. 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. 5: Main Menu

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6.4 Advanced Menu

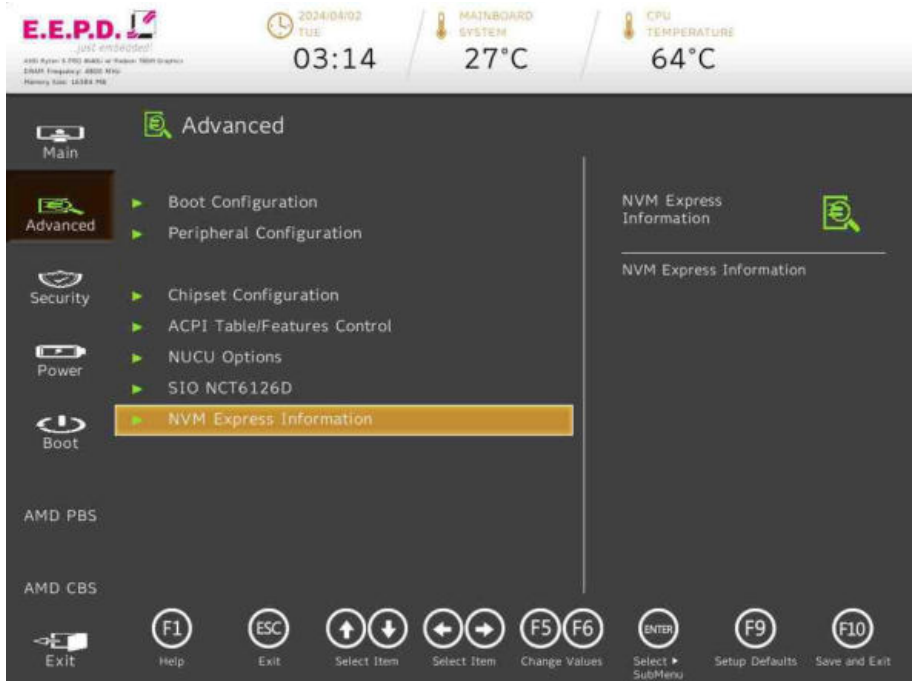

Fig. 28: Advanced Menu

BIOS Settings	Options	Description
Boot Configuration	See submenu	Configures Boot Settings.
Peripheral Configuration	See submenu	Configures the peripheral devices.
USB Configuration	See submenu	Configure the USB support
Chipset Configuration	See submenu	Advanced Chipset Configuration Options.
ACPI Table/Features Control	See submenu	Configures ACPI Tables/Features setting.
NUCU options	See submenu	Configure: PIC Watchdog, Wake on LAN, Power & Effect LED, USB Power off in S5
SIO NCT6126D	See submenu	SIO NCT6126D configuration menu
NVMe Information	See submenu	This function shows the connected NVMe devices.

Tab. 6: Advanced Menu

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6.4.1 Boot Configuration

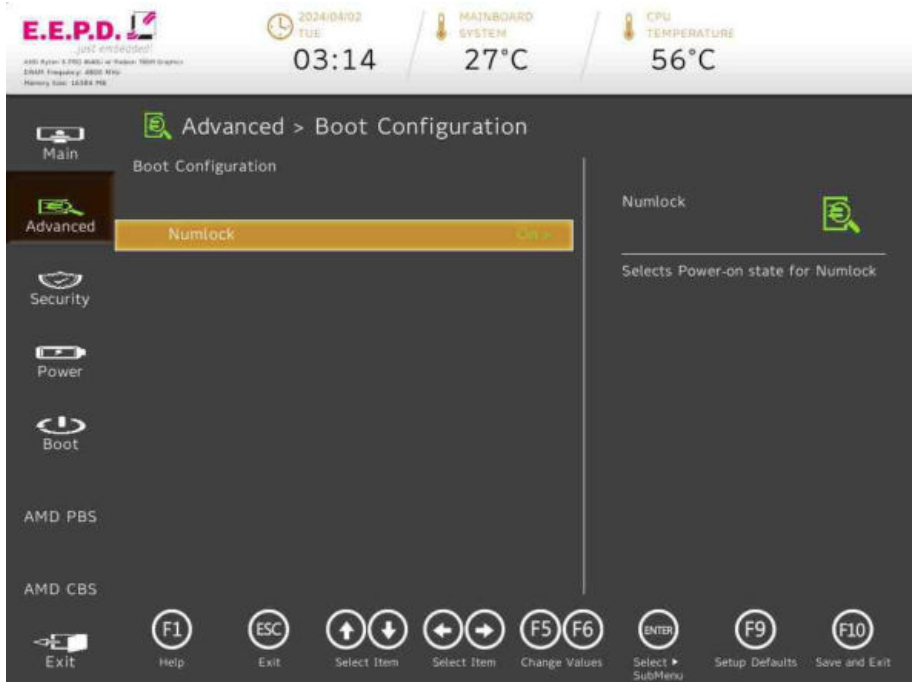

Fig. 29: Boot Configuration

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

Tab. 7: Boot Configuration

6.4.2 Peripheral Configuration

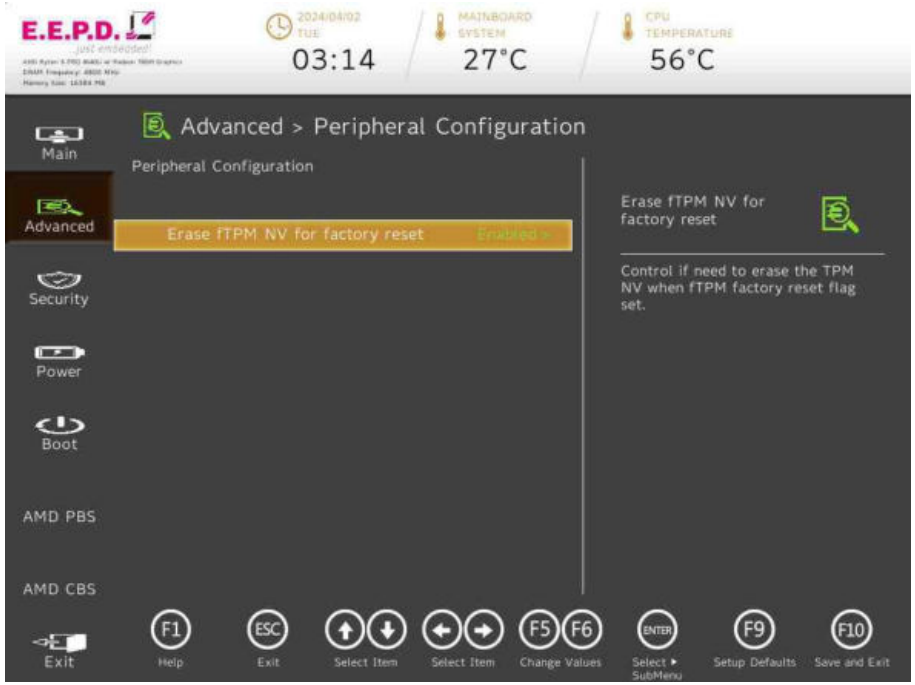

Fig. 30: Peripheral Configuration

BIOS Settings	Options	Description
Erase fTPM NV for factory reset	<Disabled> <Enabled>*	Control if need to erase the TPM NV when fTPM factory reset flag set.

Tab. 8: Peripheral Configuration

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6.4.3 USB Configuration

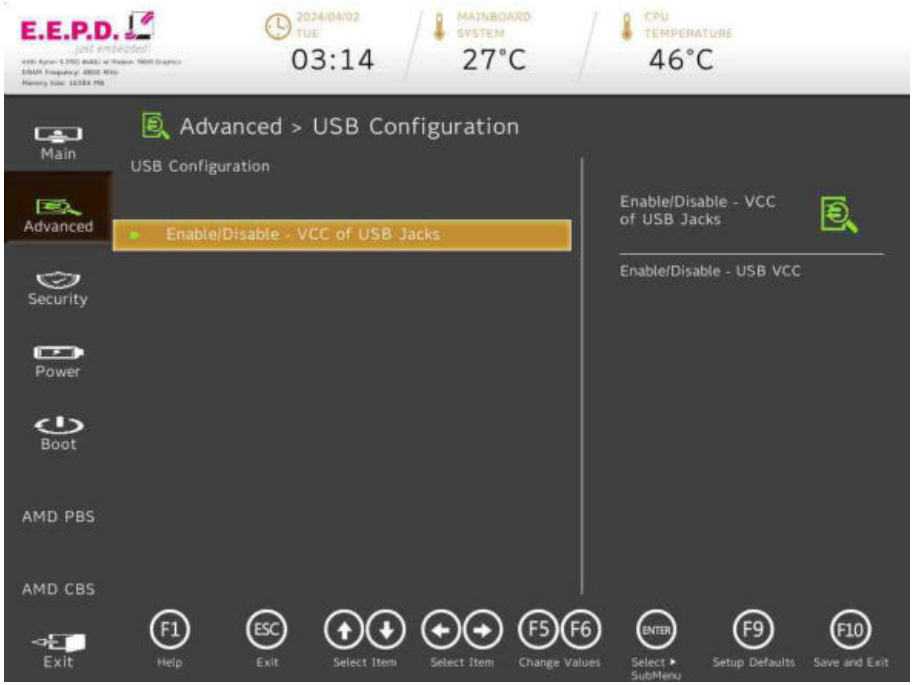

Fig. 31: USB Configuration

BIOS Settings	Options	Description
Enable/Disable – VCC of USB Jacks	See submenu	Enable/Disable – USB VCC

Tab. 9: USB Configuration

Note:
In order to not exclude yourself from the BIOS setup, at least one USB port should be enabled at all times.

6.4.3.1 Enable/Disable – VCC of USB Jacks

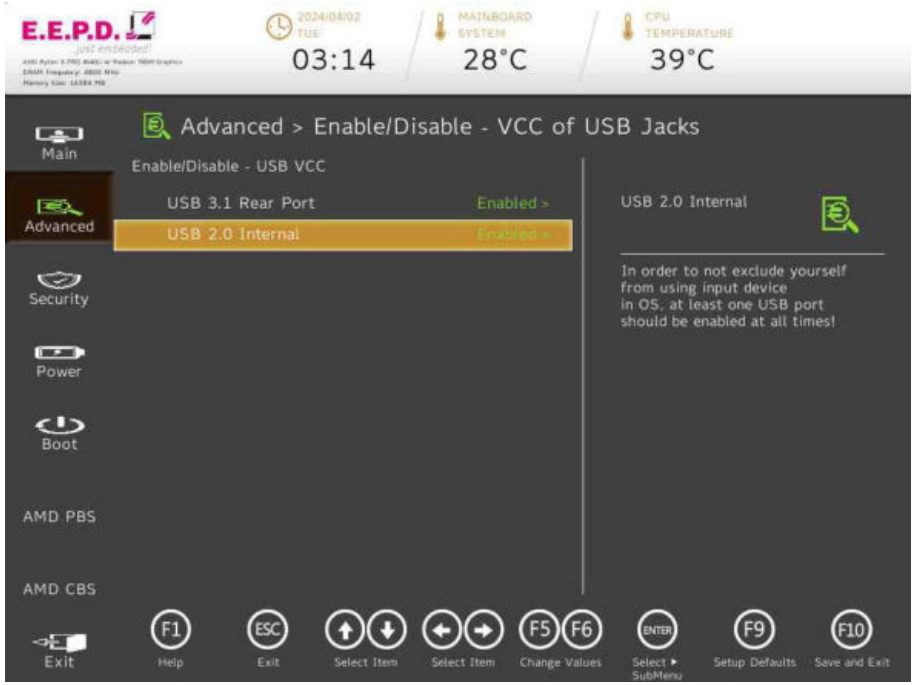

Fig. 32: USB Ports

BIOS Settings	Options	Description
USB 3.1 Rear Port	<Disabled> <Enabled>*	This function allows you to enable or disable the power for the Rear USB port.
USB 2.0 Internal	<Disabled> <Enabled>*	This function allows you to enable or disable the power for the internal USB port.

Tab. 10: USB Ports

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6.4.4 Chipset Configuration

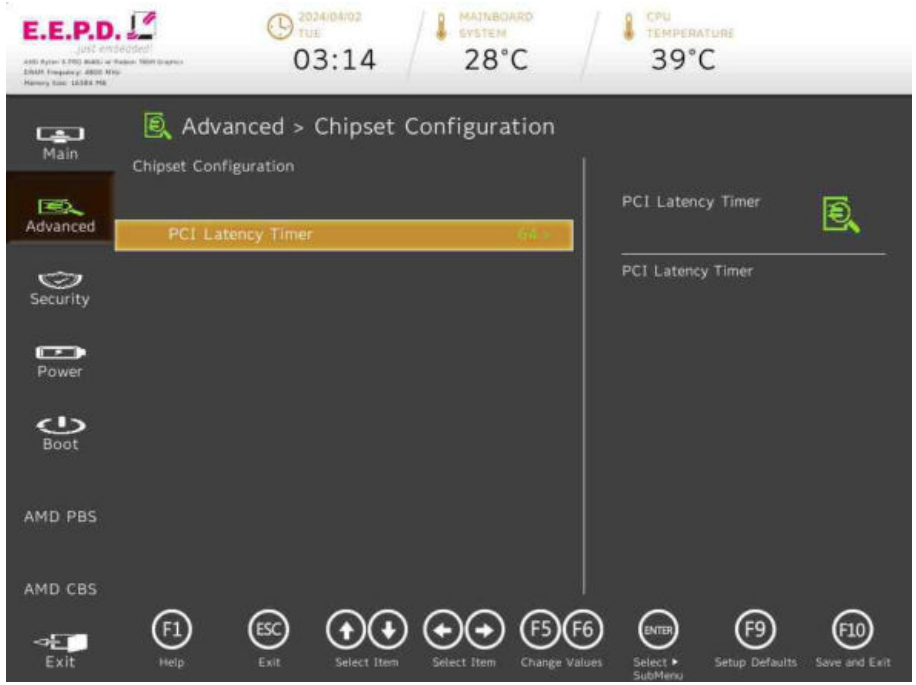

Fig. 33: Chipset Configuration

BIOS Settings	Options	Description
PCI Latency Timer	<32> <64>* <96> <128> <160> <192> <224> <248>	PCI Latency Timer

Tab. 11: Chipset Configuration

6.4.5 ACPI Table/Features Control

Fig. 34: ACPI Table

BIOS Settings	Options	Description
HPET - HPET Support	<Disabled> <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. 12: ACPI Table

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6.4.6 NUCU options

Fig. 35: NUCU options

BIOS Settings	Options	Description
PIC Watchdog	<Disabled>* <Enabled>	Enable/Disable the PIC watchdog
Watchdog Timeout (s)	Adjust value [30-254] Default value [40]*	Seconds before PIC watchdog times out. Range 30-254 seconds.
Wake on LAN	<Disabled> <Enabled>*	Enable/Disable Wake on LAN
Power LED Mode	<Disabled> <Enabled>*	Set Power LED Mode (Enable/Disable)
EFFECT-RGB-LED	<Disabled>* <Enabled>	Set GPO [4:6] LED Mode: Enabled = Temperature dependent RGB-LED for Indication of heat Disabled = normal GPO function
USB 3.1 Rear Port	<Disabled>* <Enabled>	Force USB VCC Off in S5. [Disabled]: Leaves VCC of USB Jack unchanged as in Advanced > USB Configuration > Enable/Disable - VCC of USB Jacks [Enabled]: Switches USB VCC off in S5 (System Power Off)!
USB 2.0 Internal	<Disabled>* <Enabled>	

Tab. 13: NUCU options

CAUTION

Enabling watchdog leads to the reset of the board after time out. Please contact EEPD for further instructions.

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6.4.7 SIO NCT6126D

Fig. 36: SIO NCT6126D

BIOS Settings	Options	Description
UART Port 1 Configuration	See submenu	UART Configuration

Tab. 14: SIO NCT6126D

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6.4.7.1 UART Port 1 Configuration

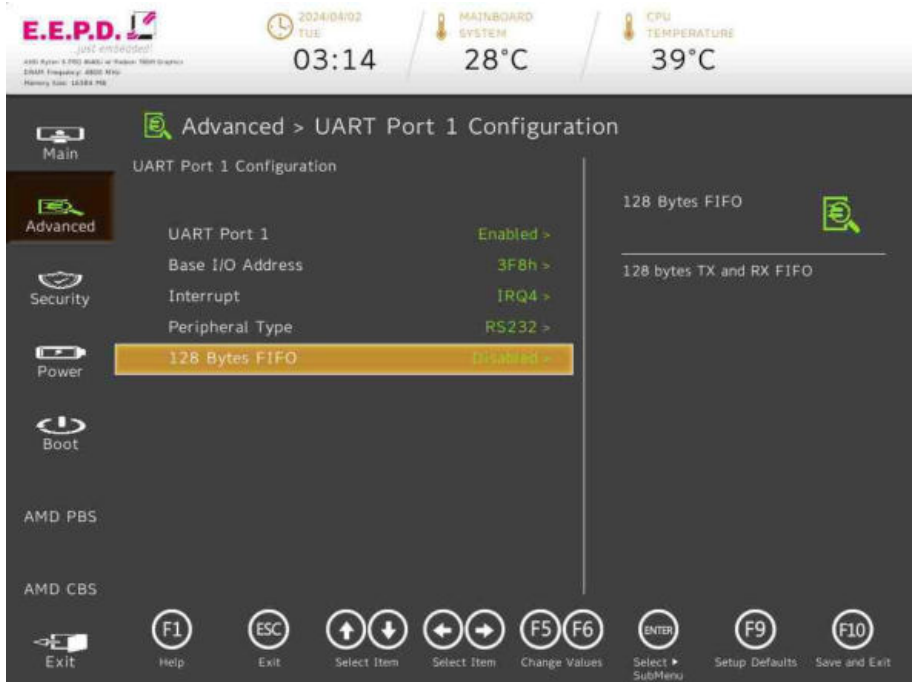

Fig. 37: UART Port 1 Configuration

BIOS Settings	Options	Description
UART Port 1	<Disabled> <Enabled>*	Configure UART port using options: [Disabled] Disable device [Enabled] Enable device and use below settings
Base I/O Address	<3F8h>* <2F8h> <3E8h> <2E8h> <338h> <228h> <220h> <238h>	System I/O base resources
Interrupt	<IRQ3> <IRQ4>* <IRQ6> <IRQ7> <IRQ11>	System interrupt resources
Peripheral Type	<RS232>* <RS422> <RS485 FULL DUPLEX> <RS485 HALF DUPLEX>	Choose Port Mode RS232 RS422 RS485 Full Duplex RS485 Half Duplex
128 Bytes FIFO	<Disabled>* <Enabled>	128 bytes TX and RX FIFO

Tab. 15: UART Port 1 Configuration

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6.4.8 NVMe Information

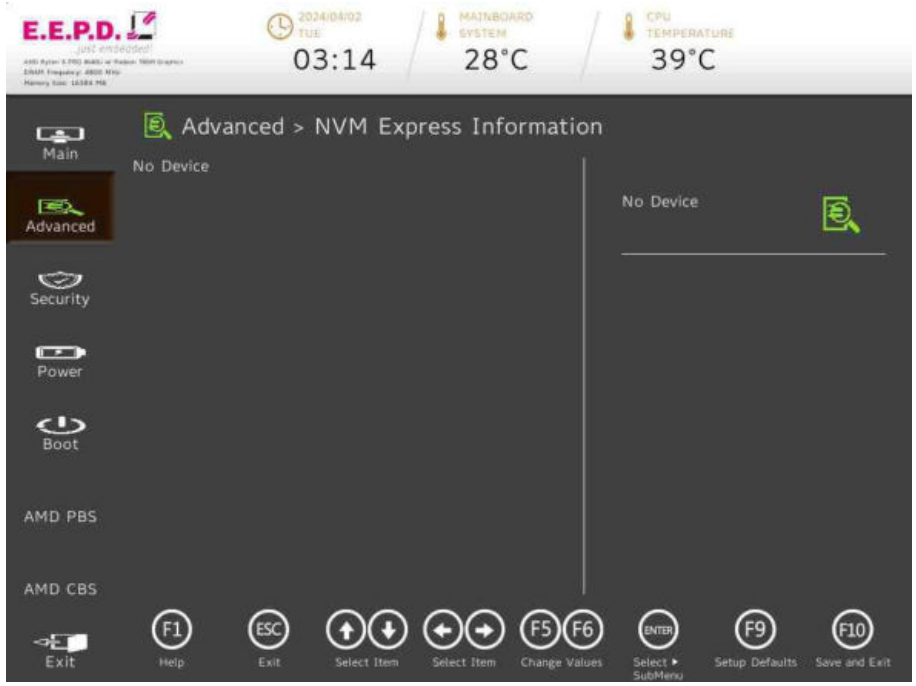

Fig. 38: NVMe Information

BIOS Settings	Options	Description
NVMe Information	Info page	This function shows the connected NVMe devices.

Tab. 16: NVMe Information

6.5 AMD CBS

Fig. 39: AMD CBS

BIOS Settings	Options	Description
CPU Common Options	See submenu	CPU Common Options
NBIO Common Options	See submenu	NBIO Common Options
FCH Common Options	See submenu	FCH Common Options
SMU Common Options	See submenu	SMU Common Options
SOC Miscellaneous Control	See submenu	SOC Miscellaneous Control

Tab. 17: AMD CBS

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6.5.1 CPU Common Options

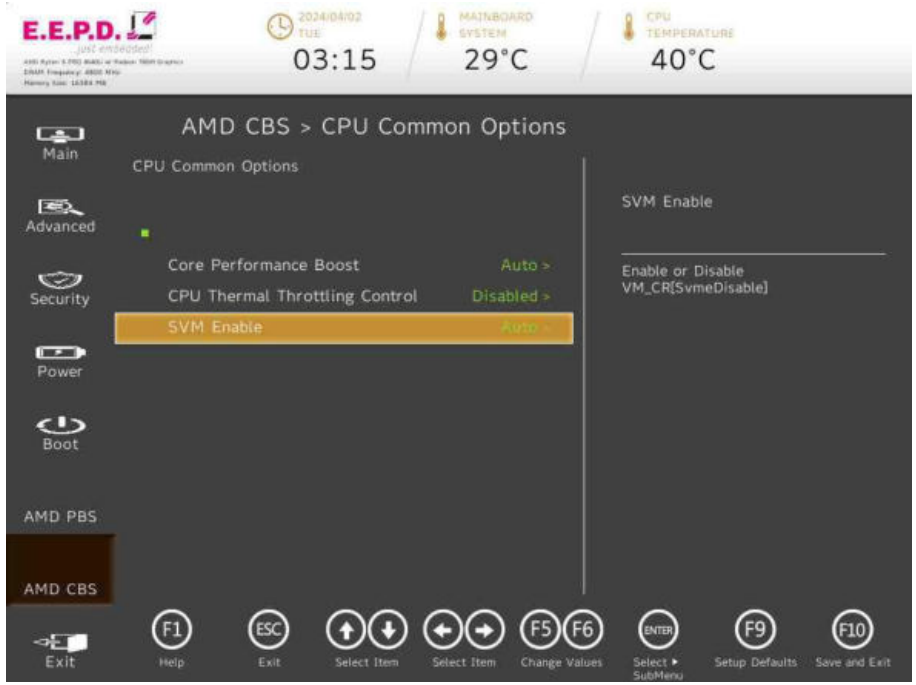

Fig. 40: CPU Common Options

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.
CPU Thermal Throttling Control	<Disabled>* <Enabled>	CPU Thermal Throttling Enable/Disable
SVM Enable	<Enabled> <Disabled> <Auto>*	Enable or disable the secure virtual machine

Tab. 18: CPU Common Options

6.5.2 NBIO Common Options

Fig. 41: NBIO Common Options

BIOS Settings	Options	Description
GFX Configurations	See submenu	GFX Configuration

Tab. 19: NBIO Common Options

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6.5.2.1 GFX Configurations

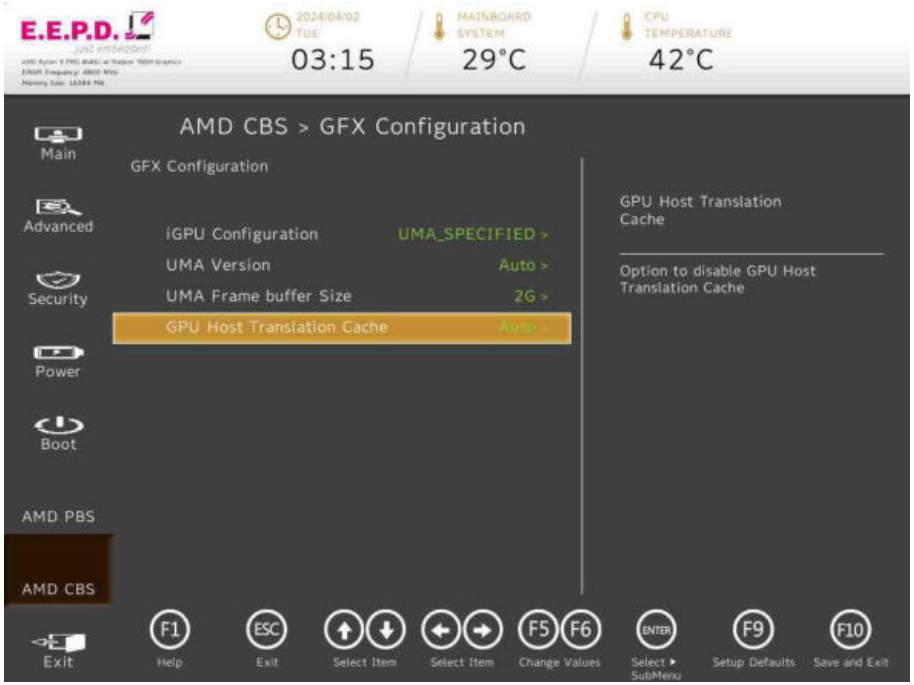

Fig. 42: GFX Configurations

BIOS Settings	Options	Description
iGPU Configuration	<UMA_SPECIFIED>* <UMA_AUTO>	UMA Mode. Select UMA_SPECIFIED to set UMA Frame Buffer Size.
UMA Version	<Legacy> <Non-Legacy> <Auto>*	UMA Legacy Version UMA Non-Legacy Version Hybrid Secure
UMA Frame Buffer Size	<Auto> <512M> <768M> <1G> <2G>* <3G> <4G> <8G> <16G>	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.
GPU Host Translation Cache	<Disabled> <Enabled> <Auto>*	Option to disable GPU Host Translation Cache

Tab. 20: GFX Configurations

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6.5.3 FCH Common Options

Fig. 43: FCH Common Options

BIOS Settings	Options	Description
Ac Power Loss Options	See submenu	Ac Power Loss Options

Tab. 21: FCH Common Options

6.5.4 Ac Power Loss Options

Fig. 44: Ac Power Loss Options

BIOS Settings	Options	Description
Ac Loss Control	<Always Off> <Always On>* <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. 22: Ac Power Loss Options

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6.5.5 SMU Common Options

Fig. 45: SMU Common Options

BIOS Settings	Options	Description
CPU and Auxiliary Fan Control	See submenu	CPU and Auxiliary Fan Control
System Configuration	<15W-54W POR Configuration> (depending on the system) R8640U (15-30W,28W*) R8840U (15-30W,28W*) R8645HS (35-54W,45W*) R8845HS (35-54W,45W*)	Warning: Select System Configuration may cause the system to hang, as some System Configuration may not be supported by your OPN.

Tab. 23: SMU Common Options

6.5.5.1 CPU and Auxiliary Fan Control

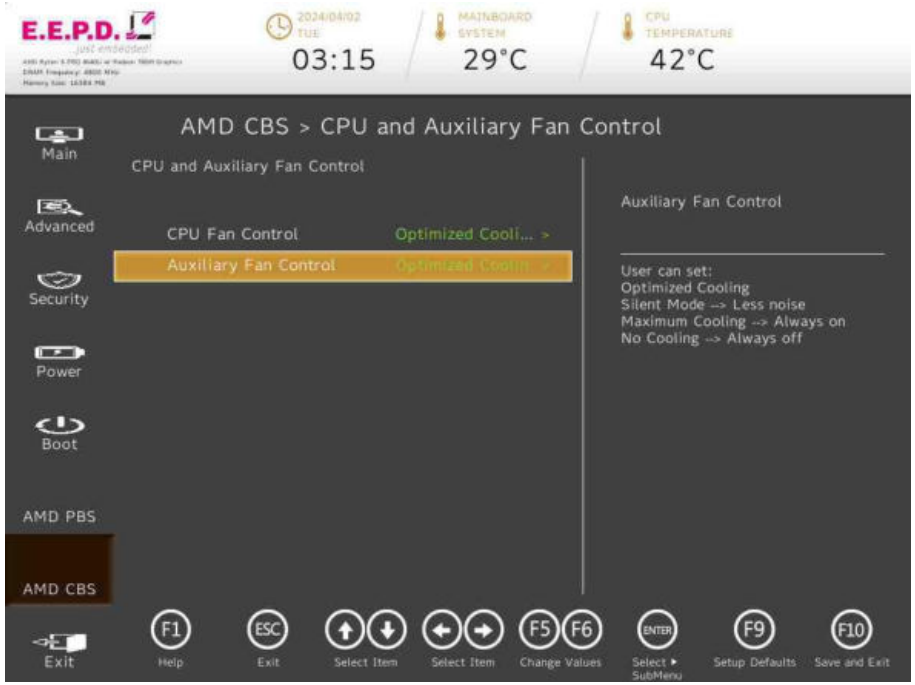

Fig. 46: CPU and Auxiliary Fan Control

BIOS Settings	Options	Description
CPU Fan Control	<Optimized Cooling>* <Silent Mode> <Maximum Cooling> <No Cooling>	Optimized Cooling → Automatic PWM control depending on temperature Silent Mode → Less noise (30%) Maximum Cooling → Always on (100%) No Cooling → Always off
Auxiliary Fan Control		

Tab. 24: CPU and Auxiliary Fan Control

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6.5.6 SOC Miscellaneous Control

Fig. 47: SOC Miscellaneous Control

BIOS Settings	Options	Description
Trusted Platform Module	<Auto> <Disabled> <Enable dTPM>* <Enable ASP fTPM> <Enable Pluton fTPM>	Enable/Disable TPM physical presence.
Pluton Security Processor	<Auto>* <Disabled> <Enabled>	This option is used to enable/disable Pluton Security Processor

BIOS Settings	Microsoft Security Levels
Options	<Customized>* <dTPM Level 1 without Pluton Security Processor> <dTPM Level 2 without Pluton Security Processor> <dTPM Level 3 without Pluton Security Processor> <Pluton fTPM Level 1> <Pluton fTPM Level 2> <Pluton fTPM Level 3> <dTPM Level 1 with Pluton Security Processor> <dTPM Level 2 with Pluton Security Processor> <dTPM Level 3 with Pluton Security Processor> <ASP fTPM Level 0> <ASP fTPM Level 1> <ASP fTPM Level 2>
Description	This option provides one stop configuration for SCPC (Note: Firmware Anti-rollback is excluded). For Level 1, it will configure TPM, SVM, IOMMU, SecureBoot; For Level 2, it will configure TPM, SVM, IOMMU, DMAr, SecureBIO, SecureBoot; For Level 3, it will configure TPM, SMM Isolation, SVM, IOMMU, DMAr, TSME, SecureBIO, SecureBoot, Modern Standby. Regard TPM configuration, dTPM refers to discrete TPM. Pluton fTPM refers to Pluton firmware TPM. ASP fTPM refers to ASP firmware TPM. NOTE: FAR is required for Level3 and please enable it manually in CBS-> SOC Miscellaneous Control / Firmware Anti-rollback (FAR) / FAR Switch. dTPM with Pluton security processor is recommend configuration for Level1/2/3

Tab. 25: SOC Miscellaneous Control

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6.6 AMD PBS Option

Fig. 48: AMD PBS Option

BIOS Settings	Options	Description
AMD Firmware Version	See submenu	Show all of AMD Firmware Version
WWAN Power Control	<Enabled>* <Disabled>	Enable/disable Power of M.2 Key B Slot (WWAN)
WWAN Radio Operation	<Enabled>* <Disabled>	Enable/disable Radio operation of M.2 Key B Slot (WWAN)
WLAN Radio Operation	<Enabled>* <Disabled>	Enable/disable WLAN radio operation of M.2 Key E Slot
BT Radio Operation	<Enabled>* <Disabled>	Enable/disable Bluetooth (BT) radio operation of M.2 Key E Slot

Tab. 26: AMD PBS Option

6.6.1 AMD Firmware Version

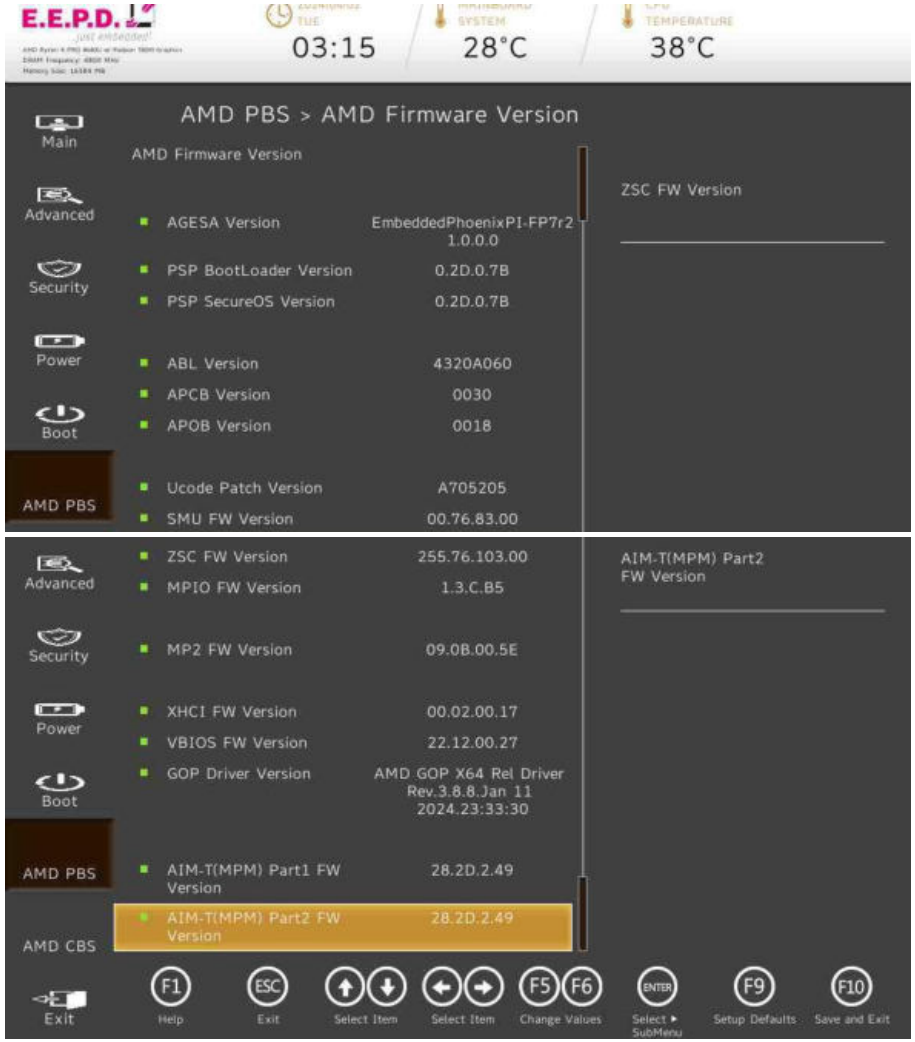

Fig. 49: AMD Firmware Version

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6.7 Boot Menu

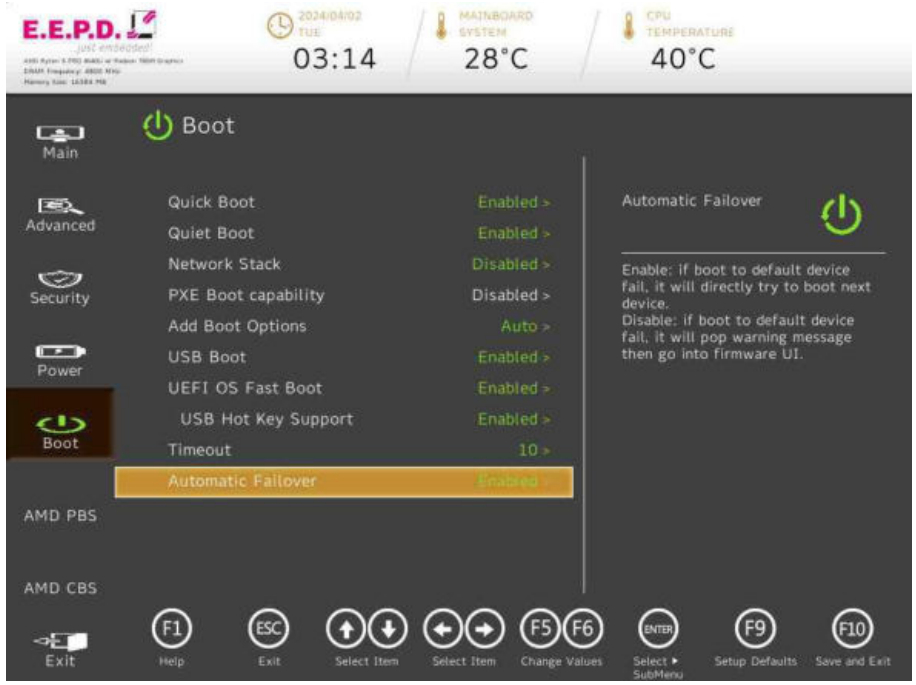

Fig. 50: Boot Menu

BIOS Settings	Options	Description
Quick Boot	<Enabled>* <Disabled>	Allows InsydeH2O to skip certain tests while booting. This will decrease the time needed to boot the system.
Quiet Boot	<Enabled>* <Disabled>	Disables or enables booting in Text Mode.
Network Stack	<Disabled>* <Enabled>	Network Stack Support: UEFI IPv4/IPv6 PXE Legacy PXE OPROM
PXE Boot capability	<Disabled>*	Disabled: Support Network Stack UEFI PXE: IPv4/IPv6 Legacy: Legacy PXE OPROM only
Add Boot Options	<First> <Last> <Auto>*	Position in Boot Order for Shell, Network and Removables
USB Boot	<Enabled>* <Disabled>	Disables or enables booting to USB boot devices.
UEFI OS Fast Boot	<Enabled>* <Disabled>	If enabled the system firmware does not initialize keyboard and check for firmware menu key.
USB Hot Key Support	<Disabled> <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] Default value [10]*	The number of seconds that the firmware will wait before booting the original default boot selection.
Automatic Failover	<Disabled> <Enabled>*	Enable: if boot to default device fail, it will directly try to boot next device. Disable: if boot to default device fail, it will pop warning message then go into firmware UI.

Tab. 27: Boot Menu

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6.8 Power Menu

Fig. 51: Power Menu

BIOS Settings	Options	Description
Auto Wake on S5	<Disabled>* <By Every Day> <By Day of Month>	Auto wake on S5, By Day of Month or Fixed time of every day

Tab. 28: Power Menu

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6.9 Exit Menu

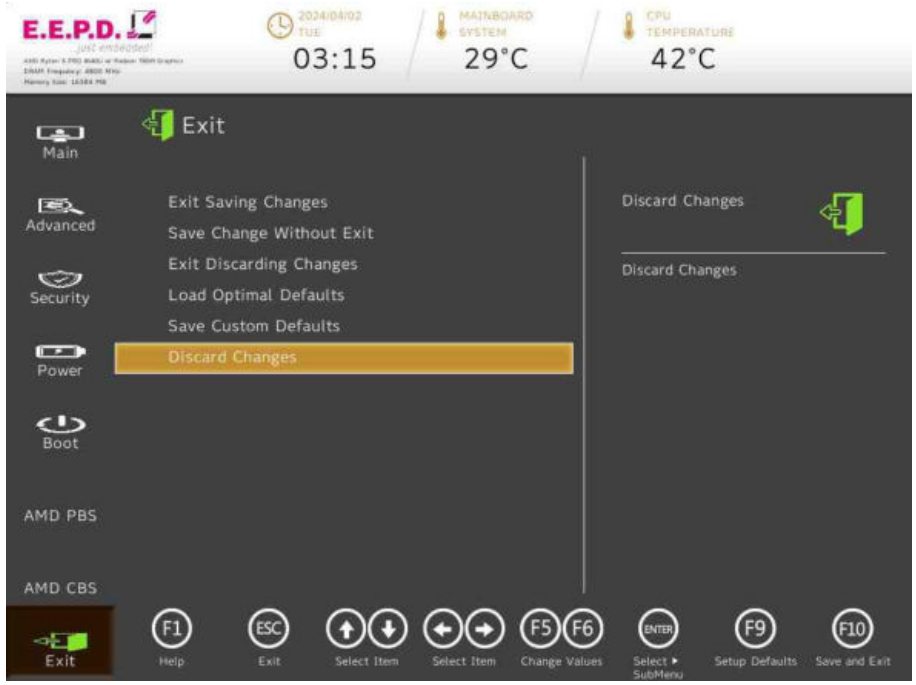

Fig. 52: Exit Menu

BIOS Settings	Options	Description
Exit Saving Changes		Exit system setup after saving your changes.
Save Change Without Exit		Save your changes without exiting system.
Exit Discarding Changes		Exit system setup without saving your changes.
Load Optimal Defaults		Load Optimal Defaults to all the setup options.
Save Custom Defaults		Save changes done so far as Custom Defaults.
Discard Changes		Discard changes done so far to any of the setup options.

Tab. 29: Exit Menu

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6.10 Security Menu

Fig. 53: Security Menu

BIOS Settings	Options	Description
Current TPM Device	<Not Detected> <TPM 2.0 (AMD)> <TPM 2.0 (MSFT)> <TPM 2.0 (IFX)>*	Current TPM Device: TPM1.2, or TPM2.0. Go to *SoC Misc. Control* to select TPM device *(6.5.6)*
TrEE Protocol Version	<1.0> <1.1>*	TrEE Protocol Version: 1.0 or 1.1
TPM Availability	<Available>* <Hidden>	When hidden, don't expose TPM to OS Warning: If Supervisor/User password is verified with TPM, change this option will disable password automatically
TPM Operation	<No Operation>* <Enable> <SetPCRBanks(Algorithm)> <LogAllDigests> <SetPPRequiredForClear_True> <SetPPRequiredForClear_False> <SetPPRequiredForTurnOn_False> <SetPPRequiredForTurnOn_True> <SetPPRequiredForTurnOff_False> <SetPPRequiredForTurnOff_True> <SetPPRequiredForChangePCRs_False> <SetPPRequiredForChangePCRs_True> <SetPPRequiredForChangeEPS_False> <SetPPRequiredForChangeEPS_True> <ChangeEPS>	Select one of the supported operations to change TPM2 state.
Clear TPM	[…] [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. 30: Security Menu

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6.10.1 Storage Password Setup Page

Fig. 54: Storage Password Setup Page

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

Tab. 31: Storage Password Setup Page

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List of Abbreviations

AC	Alternating current
APAC	Asia Pacific and countries
BIOS	Basic input/output system
BT	Bluetooth
DC	Direct current
DDR5	Fifth 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
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

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