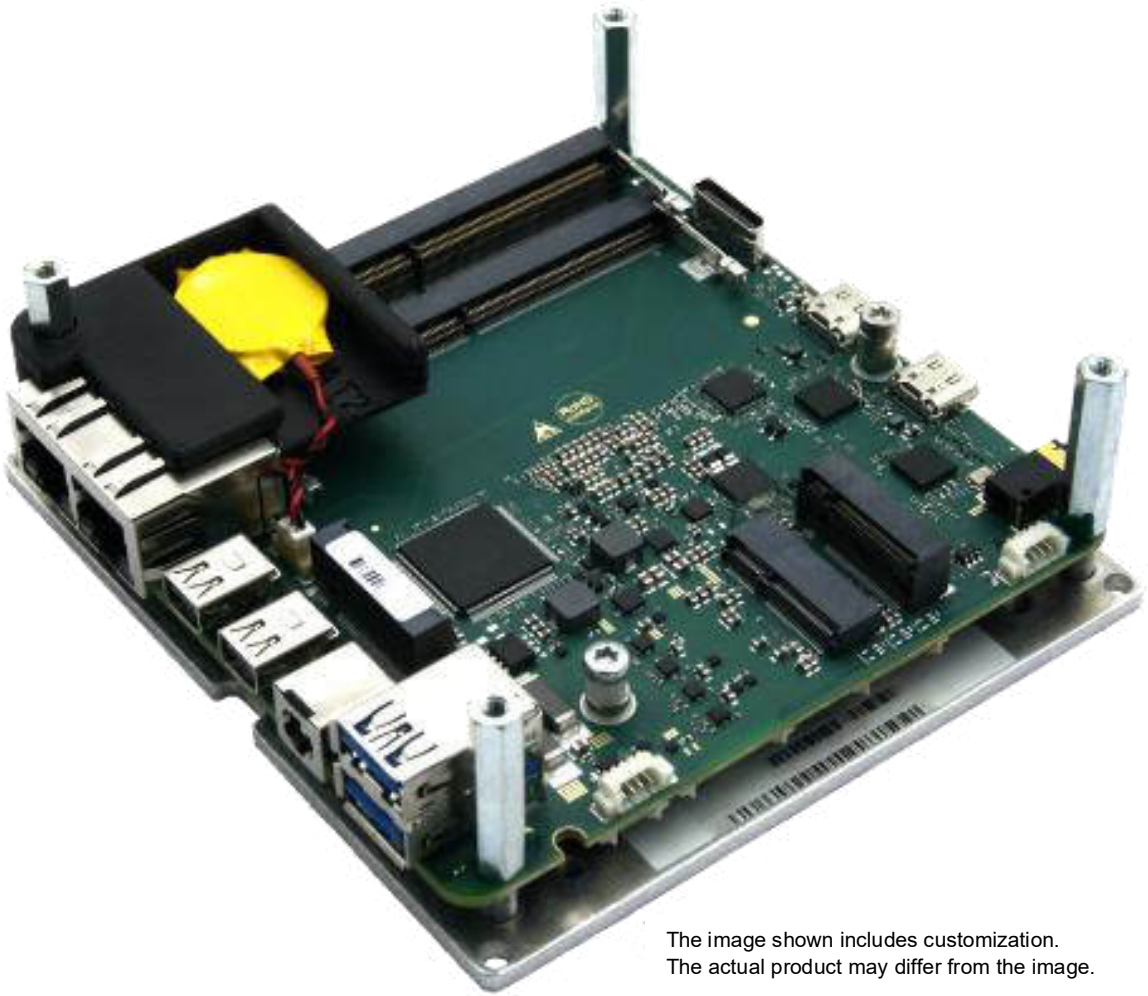
PROFIVE® NUCU “easy to integrate”
Hardware Reference Manual



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This product cannot be used as a stand-alone product!

Therefore, it has to be integrated together with other products like power supplies, mass storage devices (i. e. hard disks), etc. to be functional.

To meet FCC and/or CE requirements every component as well as the combination of all components has to be validated against all standards required for the end product.

In order to meet FCC and/or CE requirements this product has to be integrated into a proper housing, which provides appropriate shielding and insulation.

It is on the customer’s sole responsibility to assure that this end-product meets all required standards.

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This product will be free from defects in workmanship and material under normal and proper use for the period of time defined in our General Terms of Business, effective the date of the original shipment from E.E.P.D. GmbH.

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Product Returns

If you return the product to E.E.P.D. GmbH please remove all connections and peripheral equipment.

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

Packaging

The product is in a protective package to avoid damage during transport.

This protective package should be environmentally friendly recycled 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
12.02.2026	3.0	First release; covers HW Rev.2 and Rev.3	
21.04.2026	3.1	USB-C Power budget clarified	

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Used 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.

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1 Product Description

In the first chapter you will get a glance of all the integrated features. For further information and a brief description of all possible changes and extensions please refer to the corresponding chapter.

1.1 Feature Overview

Power Supply

Designed for min. 10.8 V to max. 26.4 V (DC) single power supply, 10 A fused. If 12 V Fan is used input voltage must be min. 13.2 V.

CPU variants with TDP up to 30 W: min. 90 W / recommended 120 W,
CPU variants with TDP up to 54 W: min. 120 W / recommended 150 W.

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.

Power Limit

Internal and external 3.3 V power max. 25 W.

Internal and external 5 V power max. 45 W.

Internal and external power is related to m.2 connectors, USB, FAN and display.

Processor Support

AMD Ryzen™ Embedded 8040 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)

AMD Ryzen™ 8000 series:

8440U / 4C / 8T / 3.3 GHz - 4.7 GHz / 15 W (15 – 30 W)

AMD Ryzen™ PRO 8000 Series:

8540U / 6C / 12T / 3.2 GHz - 4.9 GHz / 28 W (15 - 30 W)

Ethernet Controller

2x Intel® i226-V 2.5 Gbit/s Ethernet PCI Express® controllers with IEEE1588, Wake-on-LAN supported by ETH 1. No TSN support.

Other i226 variants on request.

RAM Support*

2x 32 GB dual channel up to DDR5-5600 SO-DIMM memory with ECC support (ECC not available with 8440U).

Display

2x Mini-DP++ connector, v1.4, up to 3840 x 2160 @ 60 Hz.

2x USB-C Alt Mode, up to 3840 x 2160 @ 60 Hz at the rear side.

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USB Support

1x Dual-USB 3.2 Gen2 (10 Gb/s, OCP = 1.5 A each), Type A at the front side.

2x USB4 Gen3x2 (up to 40 Gb/s, OCP = 3 A each/4.5 A both ports combined) or USB-C Alt Mode, Type C at the rear side.

2x USB 2.0 (480 Mb/s, OCP = 900 mA each) on Molex (PicoBlade) connector.

Storage Support*

1x M.2 Key M, 2280, PCIe Gen4 x4 NVMe.

Expansion Slots

1x Key E, 2230, support for PCIe Gen4 x2 or x1 / USB 2.0, e. g. for WLAN/BT.

1x Key B, 3042, support for PCIe Gen4 x2 / USB 2.0, e. g. for WWAN.

1x OCuLink x4 (SFF-8621 / SFF-9402) connector, PCIe Gen4 x4 interface (3.3 V / 5 V power on request).

Serial Ports

1x RS-232/485 (FDX|HDX) port on internal Molex (PicoBlade) connector.

Audio

HDA Codec with MIC IN, stereo headphone OUT on 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.

OS Support

Microsoft® Windows® 11

Linux Ubuntu 24.04 LTS

Extended Features

Onboard µ-Controller-IC for:

- Input voltage level detection
- Power-up sequencing and timing
- System reset management
- Temperature monitoring, fan control and watchdog
- Power button input

Feature connector (4x GPIO [3.3 V], max. 3x GPO [open drain/50 kHz], not fused)

Power and status LEDs

Power button onboard

Power button connector

RTC battery connector

AMD firmware Trusted Platform Module

TPM 2.0 support (Infineon SLB 9670)

Size approx. 121 x 108 x 27 mm

Weight approx. 250 g + options

*It is recommended to use SSDs with built-in heatsinks as well as additional memory cooling to ensure optimal thermal conditions.

Cooling for subsequent installation by the customer:
Ordering number: KIUKKRAM1

Factory assembled cooling:
Ordering number: KIUKKRAM2

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1.2 Environmental Specification

Max. Operating Temperature

0 °C to +60 °C ambient commercial grade

Adequate cooling provided, depending on variant and cooling system

CPU throttling may occur at higher ambient temperatures.

Max. Storage Temperature

-40 °C to +85 °C, non-condensing

Max. rel. Humidity for all versions

95 % @ 40 °C non-condensing while stored, 89% while working

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2 System Overview

This chapter describes the main hardware components of the NUCUX board.

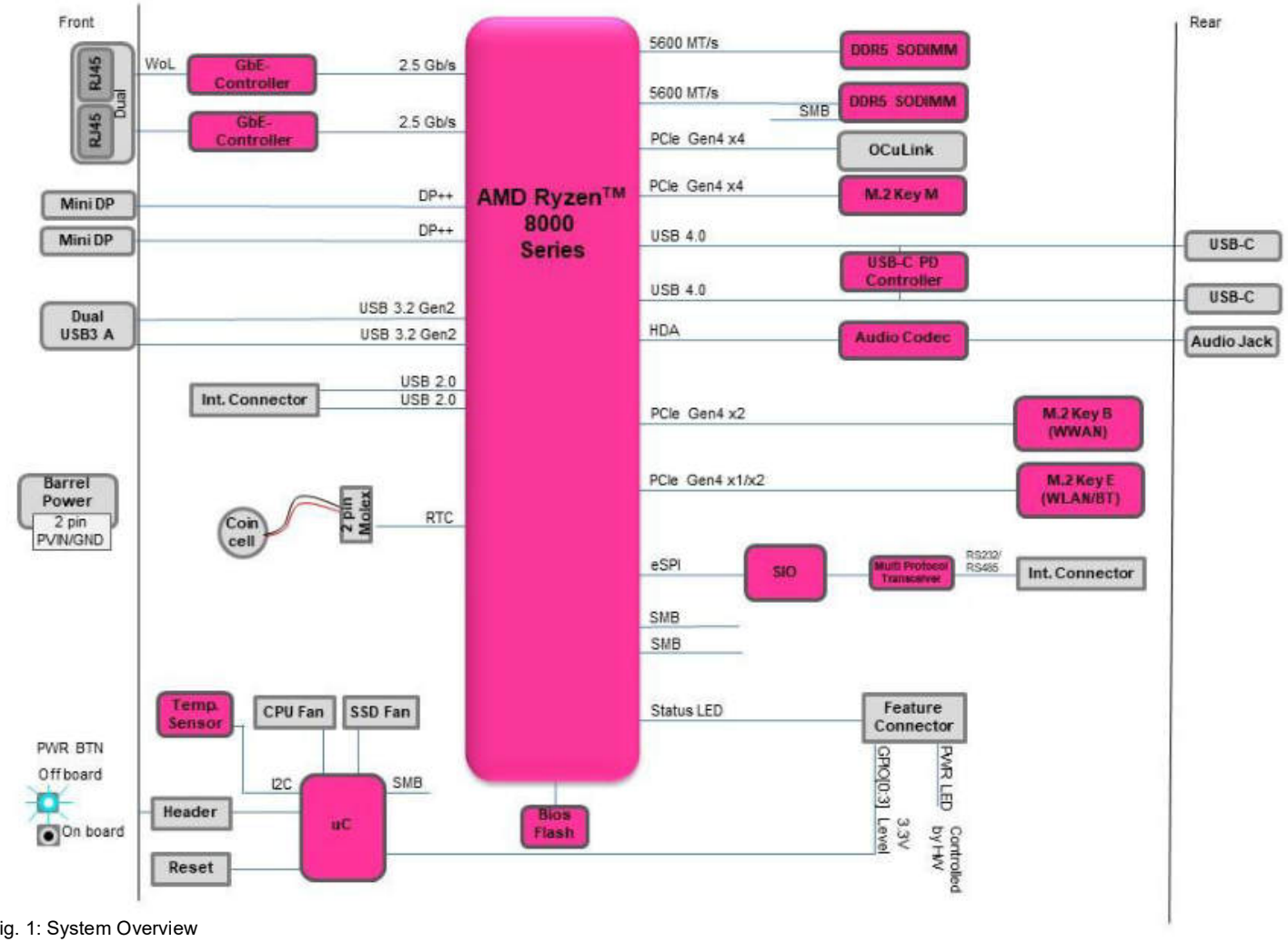

Fig. 1: System Overview

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3 Assembly

In order to obtain sufficient cooling, the “easy to integrate” unit with a heat spreader plate must be mounted to a cooling unit provided by customer with sufficient heat dissipation matching the TDP and ambient temperature.

It is recommended to improve the thermal transition with thermal paste or gap pads between the NUCU heat spreader plate and the cooling unit provided by customer. In order to obtain the necessary contact pressure, the mechanical fastening points according to Fig. 3 must be used. **The length of the M3 screws must be chosen so that they can be screwed into the mounting points by a maximum depth of 3 mm.**

E.E.P.D. recommends M3 Torx screws (metric class 8.8/grade 5 or better) with screw lock coating and a tightening torque of 0.75 Nm to a **maximum of 1 Nm**.

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3.1 Product Views

Top View

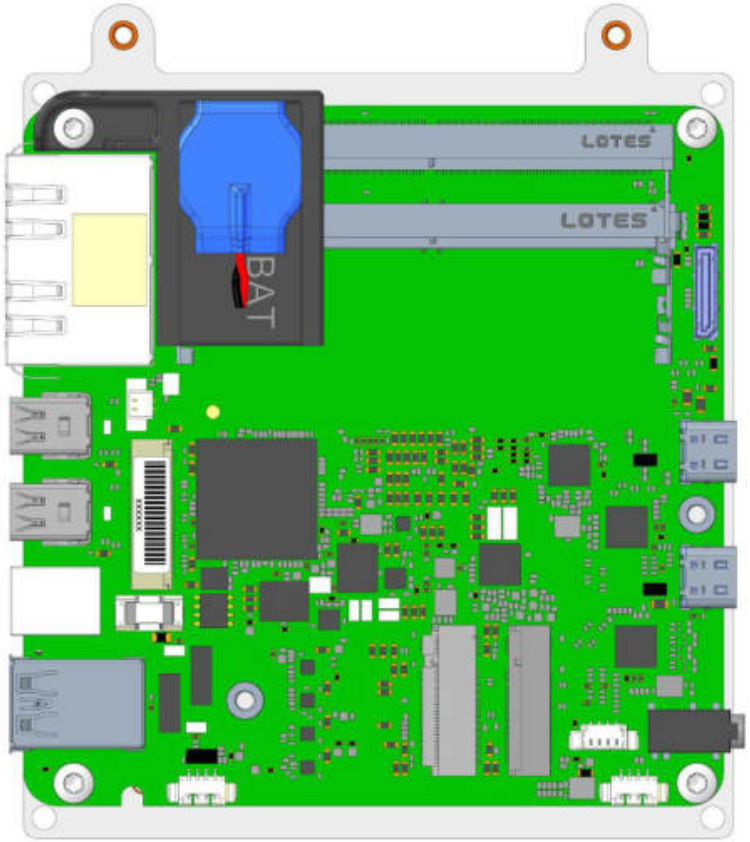

Fig. 2: Top View

Bottom View

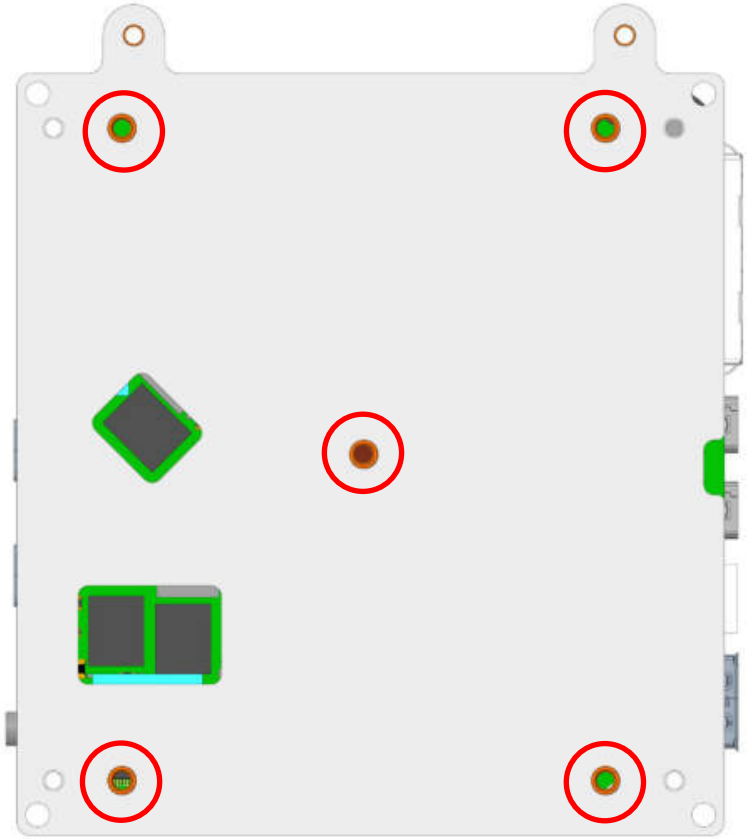

Fig. 3: Bottom View

Bottom view with heat spreader plate and mounting points for customer’s cooling unit. Please refer to chapter 3.3 for technical drawing.

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Front View

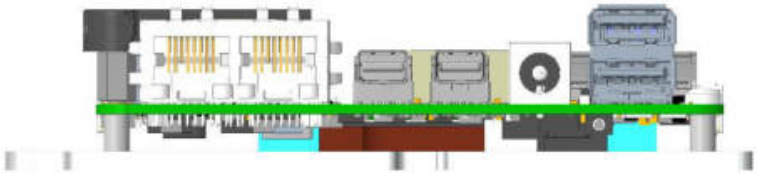

Fig. 4: Front View

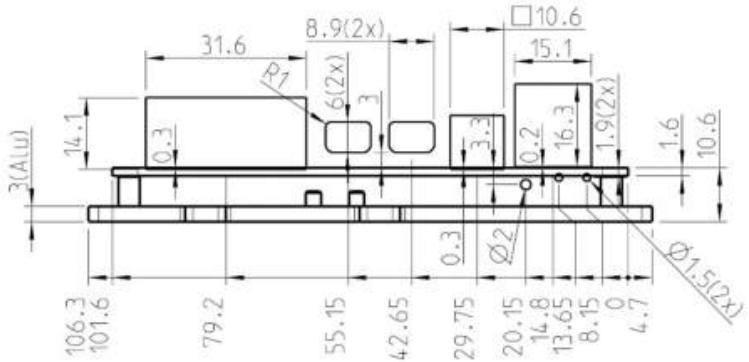

Fig. 5: Recommended Cutouts Front Panel, values [mm]

Rear View

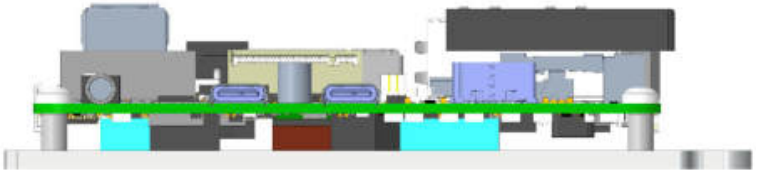

Fig. 6: Rear View

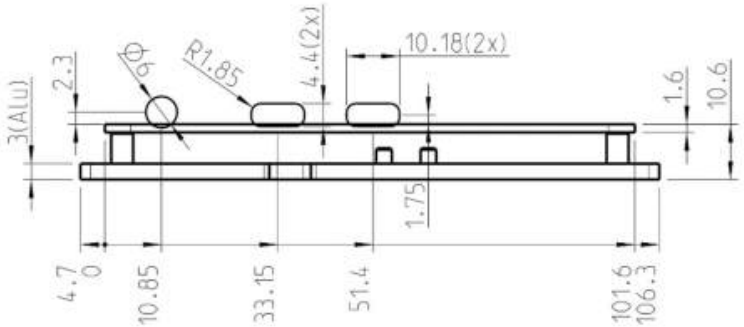

Fig. 7: Recommended Cutouts Rear Panel, values [mm]

Side View

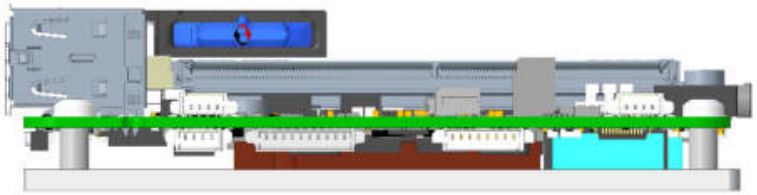

Fig. 8: Side View

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3.2 Mechanical Mounting

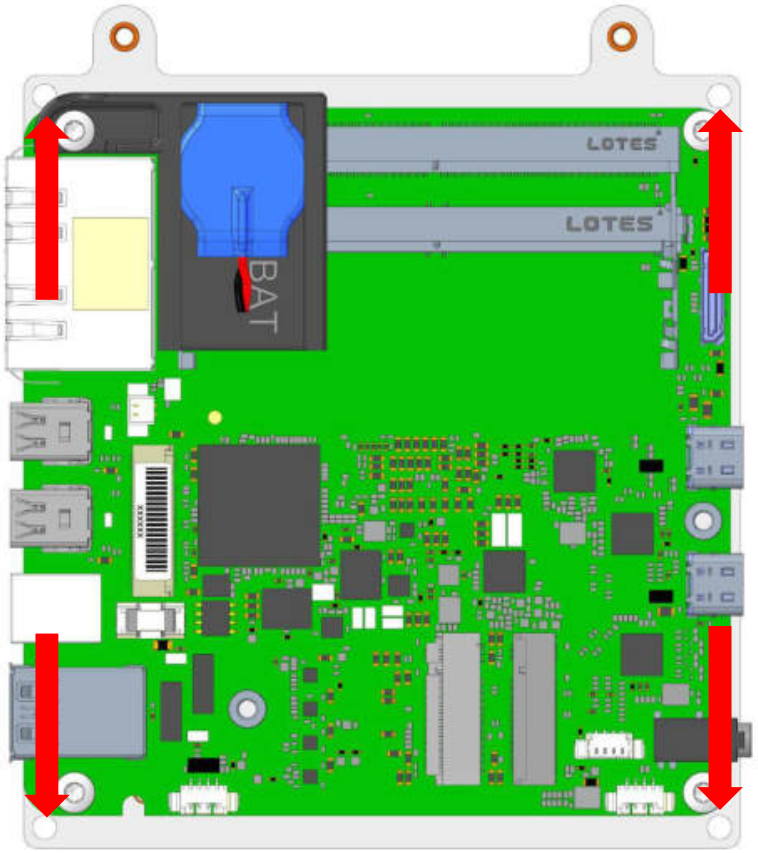

Fig. 9: Mechanical Mounting

CAUTION

The combination of “easy to integrate” NUCU and customer responsible cooling unit can be mounted using these four Ø 3.5 mm additional attachment points if necessary.

Disassembling the NUCU motherboard and the heat spreader plate will void the warranty.

Please note that the mounting holes are **not** connected to the board's ground plane by default.

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3.3 Dimensions

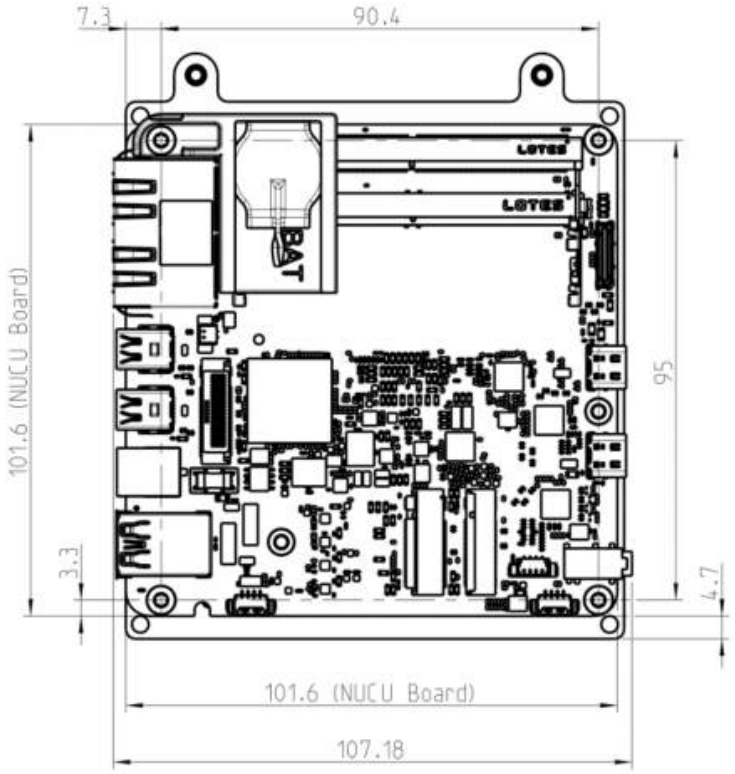

Fig. 10: Dimensions Top Side, values [mm]

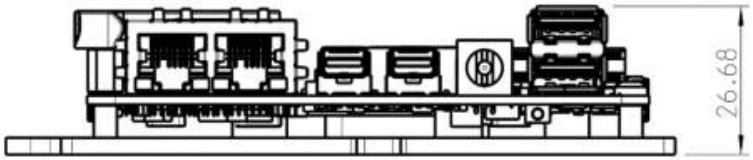

Fig. 11: Height of the Board, values [mm]

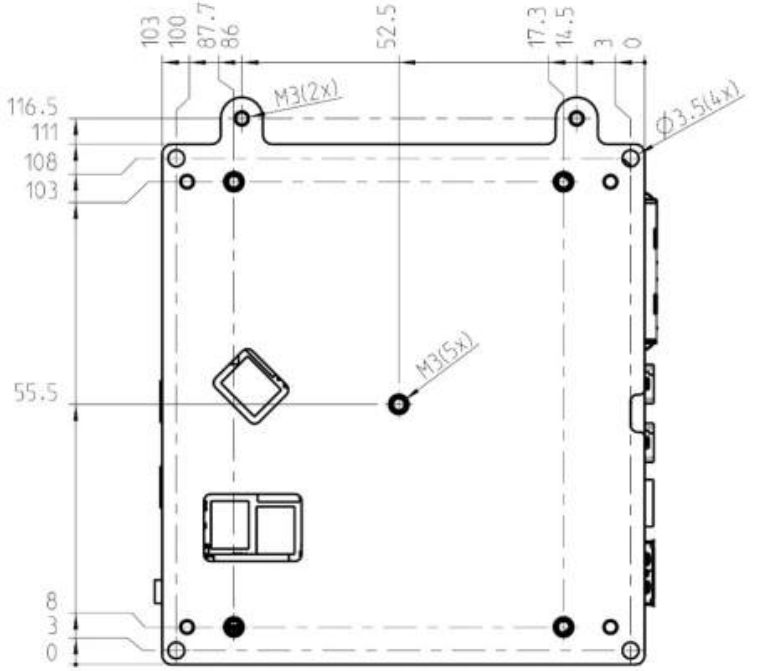

Fig. 12: Dimensions Bottom Side, values [mm]

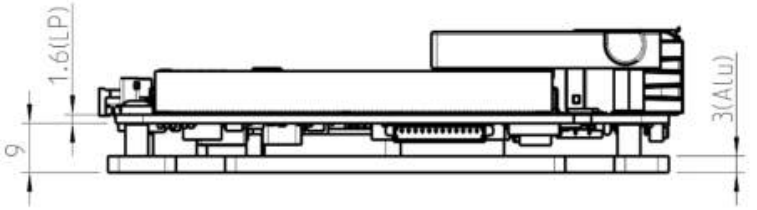

Fig. 13: Dimensions Heatspreader, values [mm]

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4 Feature Details

The following schedule contains all the necessary information to connect the board to your peripheral equipment.

On the left side of the page, you will see the position on the board (red mark) and on the right side a magnified image of the explained item.

The explanation provides general information, electrical specifications and a pin assignment table.

All voltages are DC:	
VCC	5 V +/- 5%
P3V3	3.3 V +/- 5%
P12V_FAN	12 V +/- 5%
PVIN (min. – max.)	10.8 – 26.4 V
VDD_FAN	12 V +/- 5%

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4.1 Connection Overview

Top Side

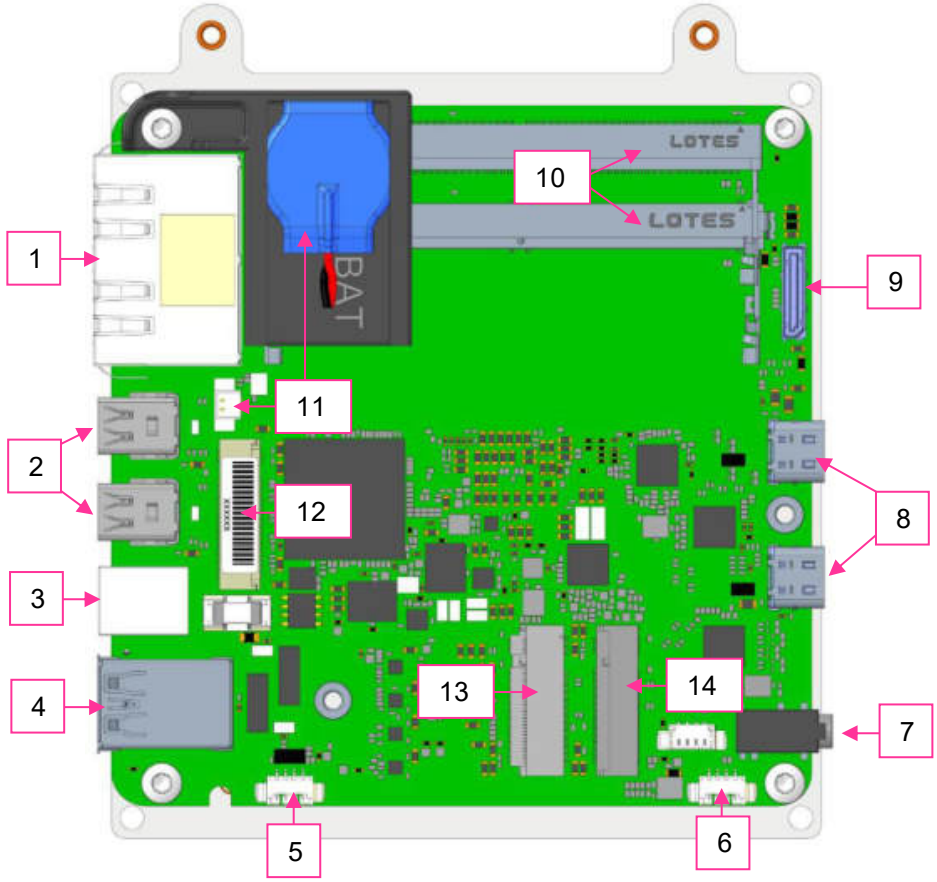

Fig. 14: Connection Overview Top Side

1 – 2.5 Gigabit Ethernet ports, see chapter *4.3*
2 – Mini Display port, see chapter *4.2*
3 – Power connector, see chapter *4.8*
4 – Dual-USB, see chapter *4.4*
5 – Auxiliary fan connector, see chapter *4.15*
6 – Power button connector, see chapter *4.17*
7 – Audio jack, see chapter *4.11*
8 – USB-C 4.0 ports, see chapter *4.5*
9 – OCuLink connector, see chapter *4.10*
10 – DDR5 SO-DIMM sockets, see chapter *4.7*
11 – Battery and Battery connector, see chapter *4.14*
12 – M.2 Key M socket, see chapter *4.9*
13 – M.2 Key E socket, see chapter *4.9*
14 – M.2 Key B socket, see chapter *4.9*

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Bottom Side

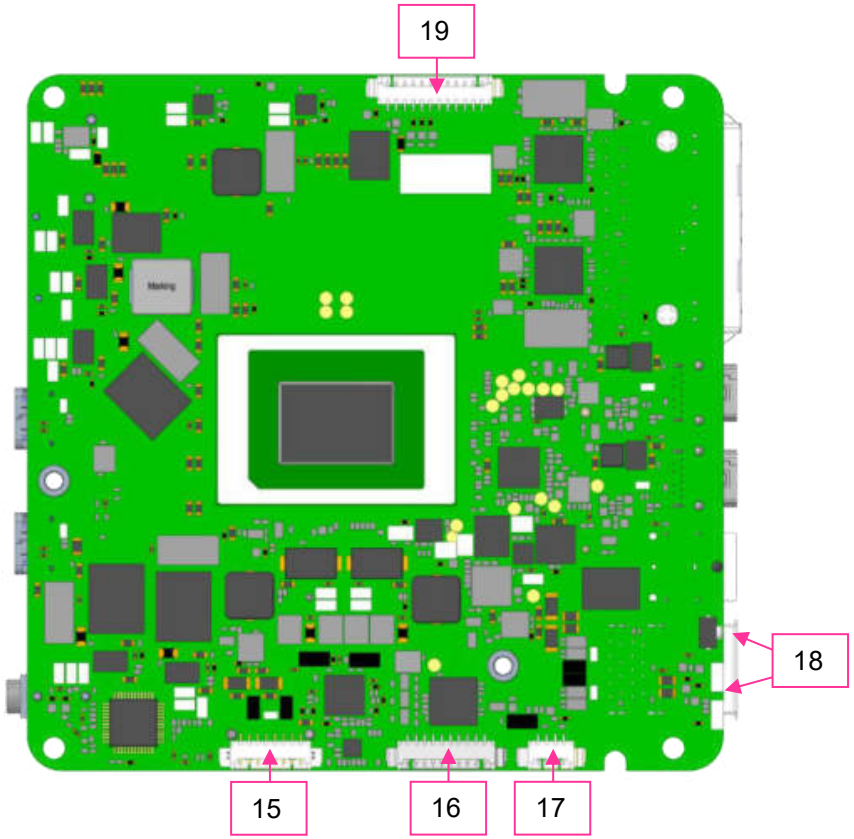

Fig. 15: Connection Overview Bottom Side

15 – internal USB 2.0 connector, see chapter *4.6*

16 – RS22/485 connector, see chapter *4.13*

17– CPU fan connector, see chapter *4.15*

18 – Power button, Power and SSD Activity LEDs, see chapter *4.16*

19 – Feature connector, see chapter *4.12*

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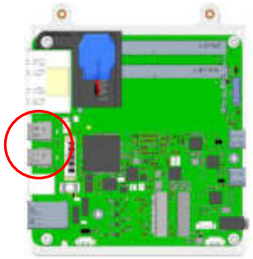
4.2 Mini-DP++ Connectors



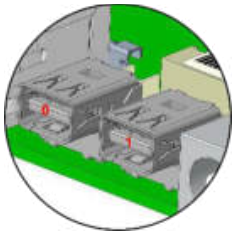


Fig. 16: Mini-DP++ Connectors Detail

Fig. 17: Mini-DP++ Connector Schematic

CAUTION

Important Note:

There are two types of DisplayPort cables:

If you connect the display directly to the Mini DP, please use cable with Pin 20 not connected.

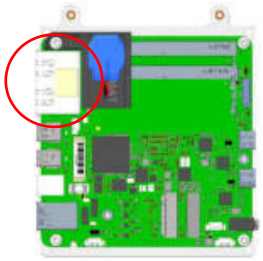
If you use active cables/adapters (e.g. Mini DP to DP, Mini DP to HDMI), please use cable with Pin 20 (supply voltage) on both ends that are connected.

Possible effects if wrong cable is used:

System might not start up properly.
Dongle does not work properly (black display).

4.3 2.5 Gigabit Ethernet Ports

The Dual-Ethernet socket uses two Intel® i226 controllers. Ethernet port 1 supports Wake-on-LAN.



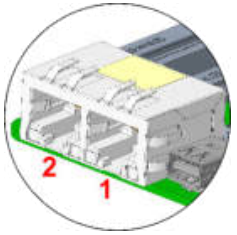


Fig. 18: Ethernet Dual-Port Detail

Yellow LED
Speed-LED is on during 2.5 and 1 Gbit transmission and switched off during 10/100 Mb/s 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.

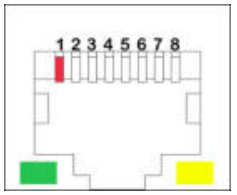


Fig. 19: Ethernet Port Schematic

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4.4 Dual-USB 3.2 Ports

USB 3.2 type A ports providing max. 1.5 A per port (OCP).
Support for USB 2.0 and USB 3.2 Gen1/Gen2 (up to 10 Gb/s).

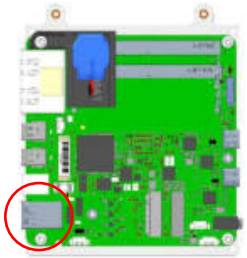


Fig. 20: Dual-USB-A 3.2 Port Detail

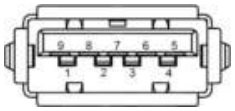
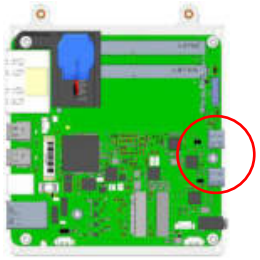


Fig. 21: USB-A 3.2 Port Schematic

4.5 USB4 Ports

USB4 Gen3x2 (up to 40 Gb/s) type C ports providing max. 3 A per port (OCP). Where the 2 type C ports together support max. 4.5 A.



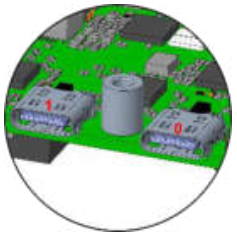


Fig. 22: USB-C Ports Detail

Fig. 23: USB-C Port Schematic

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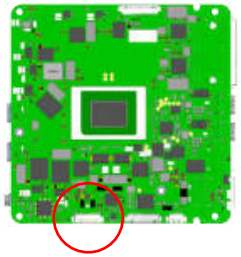
4.6 Internal USB 2.0 Connectors

USB 2.0 (480 Mb/s) internal connectors providing max. 900 mA (OCP).



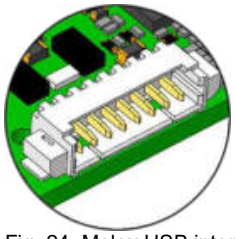


Fig. 24: Molex USB internal Connector Detail

Counterpart – plug:

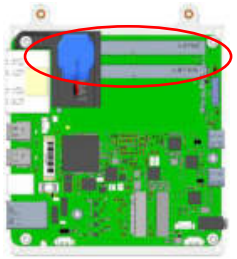
MOLEX Pico Blade 0510210900

Fig. 25: Molex USB internal Connector Schematic

Pin	Signal
1	VCC_USB2_6 → 5V +/- 5%, OCP = 900 mA
2	USB2_6_N
3	USB2_6_P
4	GND
5	VCC_USB2_7 → 5V +/-5%, OCP = 900 mA
6	USB2_7_N
7	USB2_7_P
8	GND

Tab. 1: USB internal Connector

4.7 DDR5 SO-DIMM Sockets



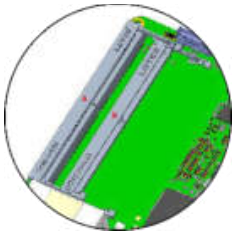


Fig. 26: DDR5 SO-DIMM Sockets Detail

Use only DDR5 SO-DIMM modules compliant with the DDR5 Standard.
Dual channel DDR5 SO-DIMM memory, max. 2x 32 GB, up to 5600 MT/s, with ECC support.

Assembly:

First slide RAM module into the RAM socket.
Then press the module in direction to the board till you hear it snap.

Disassembly:

First press both clamps outwards.
Then the RAM module will set upright automatically.
Remove the module from the socket.

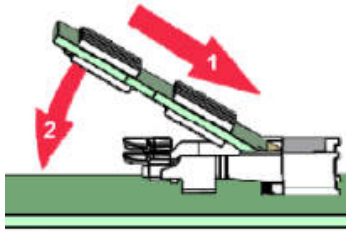


Fig. 27: RAM Assembly

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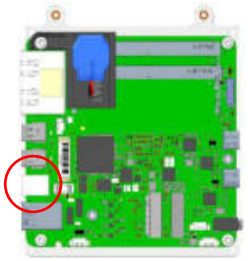
4.8 Power Connector

For a stable operation:

For CPU variants with TDP up to 30 W:
Please ensure a system power supply of min. 90 W.
E.E.P.D. recommends a system power supply of 120 W.

For CPU variants with TDP up to 54 W:
Please ensure a system power supply of min. 120 W.
E.E.P.D. recommends a system power supply of 150 W.

Power source must be capable to respond to fast load changes!
Supply voltage (PVIN) min. 10.8 V / max. 26.4 V (DC)



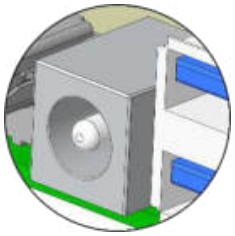


Fig. 28: Power Connector Detail

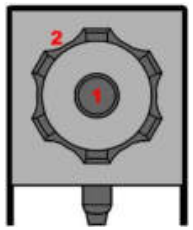


Fig. 29: Power Connector Schematic

Counterpart – plug:

CUI Devices Power Plug ID 2.5 mm, AD 5.5 mm, max. 7A

Ordering number: PP3-002B

Pin	Signal
1	PVIN
2	GND

Tab. 2: Power Connector

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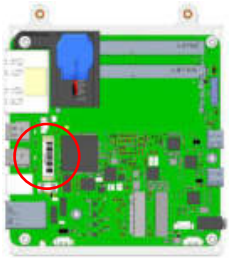
4.9 M.2 Sockets

M.2 Socket Key M

2280, PCIe Gen4 x4 NVMe, P3V3 max. 3.5 A, not fused



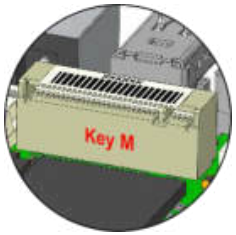
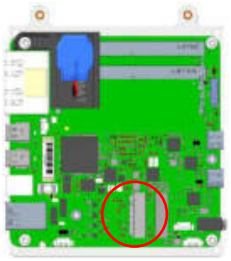


Fig. 30: M.2 Key M Connector Detail

M.2 Socket Key E

2230, PCIe Gen4 x1 or x2 and USB 2.0, P3V3 max. 2 A, not fused



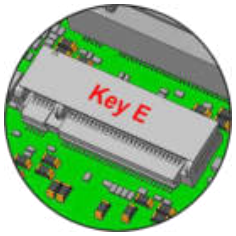
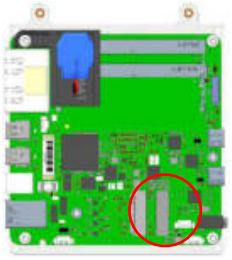


Fig. 31: M.2 Key E Connector Detail

M.2 Socket Key B

3042, PCIe Gen4 x2 and USB 2.0, P3V3 max. 2.5 A, not fused



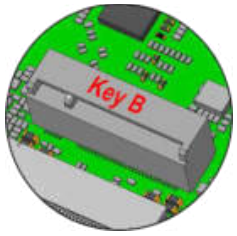


Fig. 32: M.2 Key B Connector Detail

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.

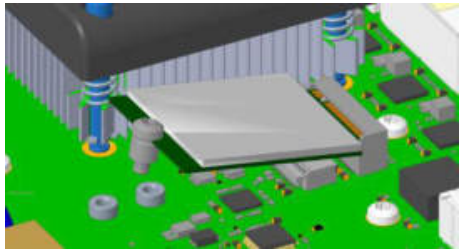


Fig. 33: M.2 Module Assembly Example

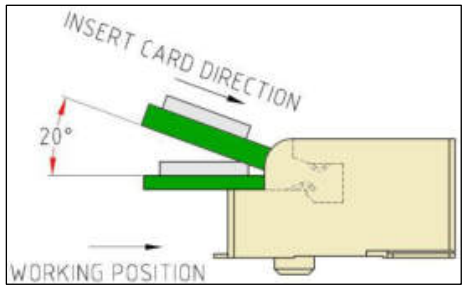


Fig. 34: M.2 Module Assembly Angle

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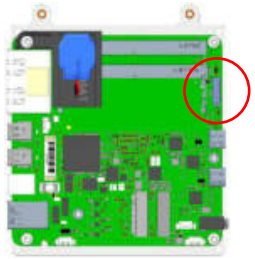
4.10 OCuLink Connector



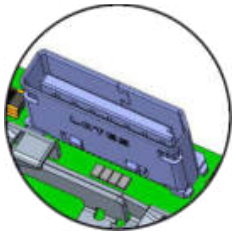
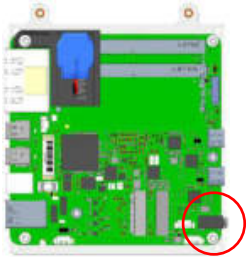


Fig. 35: OCuLink Connector Detail

Counterpart – plug:

OCuLink cable SFF-8611

4.11 Audio Jack



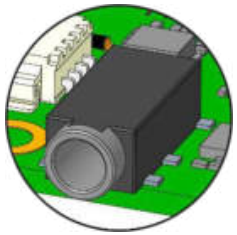


Fig. 36: Audio Jack Detail

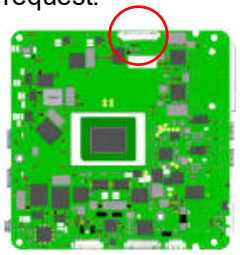
CAUTION

For optimum audio performance:

Please ensure to use cables provided by E.E.P.D.

4.12 Feature Connector

This feature requires Linux driver or Windows Library for OEM customers on request.



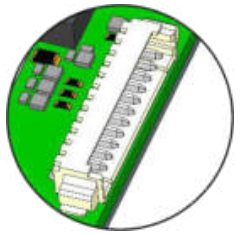


Fig. 37: Molex Feature Connector Detail

Counterpart – plug:

MOLEX Pico Blade
0510211200

Fig. 38: Molex Feature Connector Schematic

Pin	Signal	
1	3.3 V +/- 5% | 200 mA max.| not fused	
2	P12V_FAN: 12 V +/-5% | 250 mA max. | not fused	
3	GPIO0	max. 3.3 V / max. 15 mA sink/source
4	GPIO1	
5	GPIO2	
6	GPIO3	
7	GPO4	PWM open drain outputs with 100 Ω series resistor. I_{sink} max. = 25 mA
8	GPO5	
9	GPO6	
10	STATUS_LED_ANODE 3.3 V +/- 5% with 100 Ω series resistor (1/16W), 33 mA max., not fused	
11	STATUS_LED_CATHODE	
12	GND	

Tab. 3: Feature Connector

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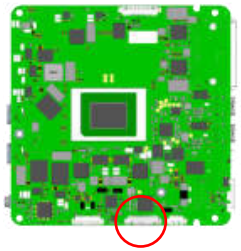
4.13 RS232/485 Connector



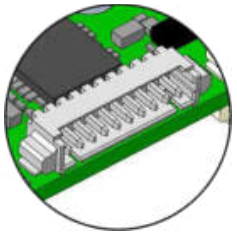


Fig. 39: Molex RS232/485 Connector Bottom Side Detail

Counterpart – plug:

MOLEX Pico Blade
0510211000

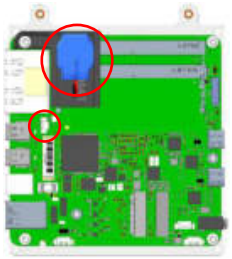
Fig. 40: Molex RS232/485 Connector Schematic

Pin	Signal RS232*	Signal RS485/FDX*	Signal RS485/HDX for Windows 10/11 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
10	GND	GND	GND

Tab. 4: RS232/485 Connector

*See BIOS setting chapter 5.4.7.1 UART Port 1 Configuration

4.14 Battery Connector and Battery



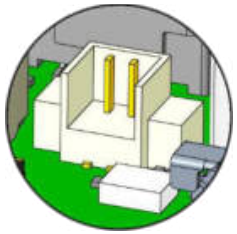


Fig. 41: Molex Battery Connector Detail

Counterpart – plug:

MOLEX Pico Blade
0510210200

Battery with cable ordering number:
W-BATCR1A

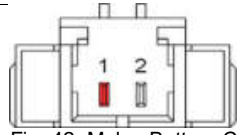


Fig. 42: Molex Battery Connector Schematic

Pin	Signal
1	BATT
2	GND

Tab. 5: Battery Connector

WARNING

Danger of explosion if battery is incorrectly replaced.

Use only Lithium cell assemblies from EEPD. Battery assemblies can be obtained through sales@eepd.de.
For proper function of the board change the battery every five years.

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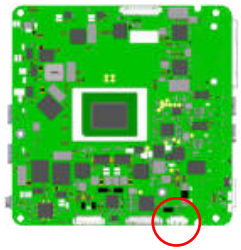
4.15 FAN Connectors

CPU FAN



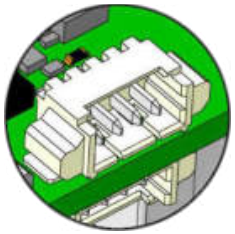


Fig. 43: Molex CPU FAN Connector Detail

Counterpart – plug:

MOLEX Pico Blade
0510210400

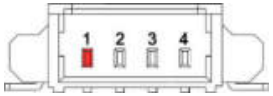
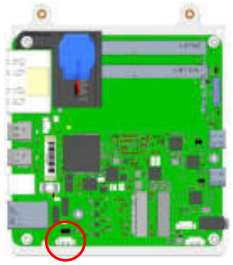


Fig. 45: Molex FAN Connector Schematic

Auxiliary FAN (e. g. for SSD)



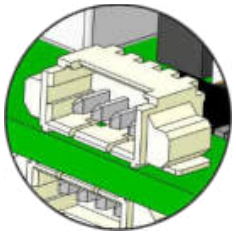


Fig. 44: Molex Auxiliary FAN Connector Detail

Pin	Signal
1	GND
2	VDD_FAN 12V +/- 5% | max. 250 mA | not fused
3	FAN_TACHO
4	FAN_PWM

Tab. 6: FAN Connectors

CAUTION

An incorrectly connected fan can cause damage to the fan and the board!

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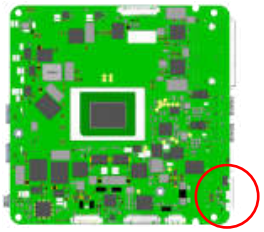
4.16 Power Button, Power and SSD Activity LEDs

Press power button once to start up.
Press power button to shut down into S3/S4/S5 (Standby/Hibernate/OFF; depending on OS setting).
Hold power button (> 4 sec.) for hard shut down into S5 (OFF). May result in data loss.



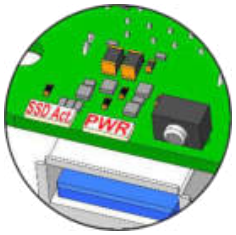
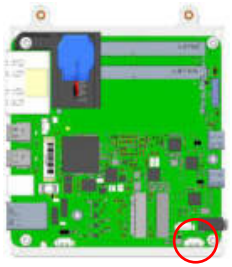


Fig. 46: Power Button/Power and SSD Activity LEDs Detail

4.17 Power Button Connector

Press power button once to start up.
Press power button to shut down into S3/S4/S5 (Standby/Hibernate/OFF; depending on OS setting).
Hold power button (> 4 sec.) for hard shut down into S5 (OFF). May result in data loss.



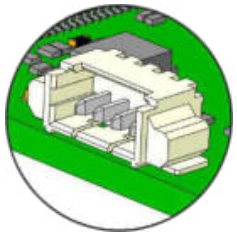


Fig. 47: Molex Power Button Connector Detail

Counterpart – plug:

MOLEX Pico Blade
0510210400

Fig. 48: Molex Power Button Connector Schematic

Pin	Signal
1	PWR_LED_ANODE 3.3V +/- 5% with 100 Ω series resistor | max. 33 mA, not fused
2	PWR_LED_CATHODE
3	GND
4	POWERBUTTON

Tab. 7: Power Button Connector

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5 BIOS

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

Asterisk (*) indicates default setting.

5.1 Entering Setup

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

5.2 Most Common Settings

Firmware / BIOS Version:
Setup Utility → Main (chapter *5.3*)
or Setup Utility → AMD PBS → AMD Firmware Version (chapter *5.6.1*)

2. Boot / PXE Boot:
Boot Manager
or Setup Utility → Boot (chapter *5.7*)

3. TDP, fan control, boost mode:
TDP setting (chapter *5.5.5*):
Setup Utility → AMD CBS → SMU Common Options → System Configuration

Fan control (chapter *5.5.5.1*):
Setup Utility → AMD CBS → SMU Common Options → CPU and Auxiliary Fan Control

Boost mode (chapter *5.5.1*):
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 *5.5.2.1*)

5. USB power
USB Power off in S5 (chapter *5.4.6*):
Setup Utility → Advanced → NUCU Options → USB Power off in S5
or
USB VCC control (chapter *5.4.3.1*):
Setup Utility → Advanced → USB Configuration

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5.3 Main Menu

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

Fig. 49: 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. 8: Main Menu

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5.4 Advanced Menu

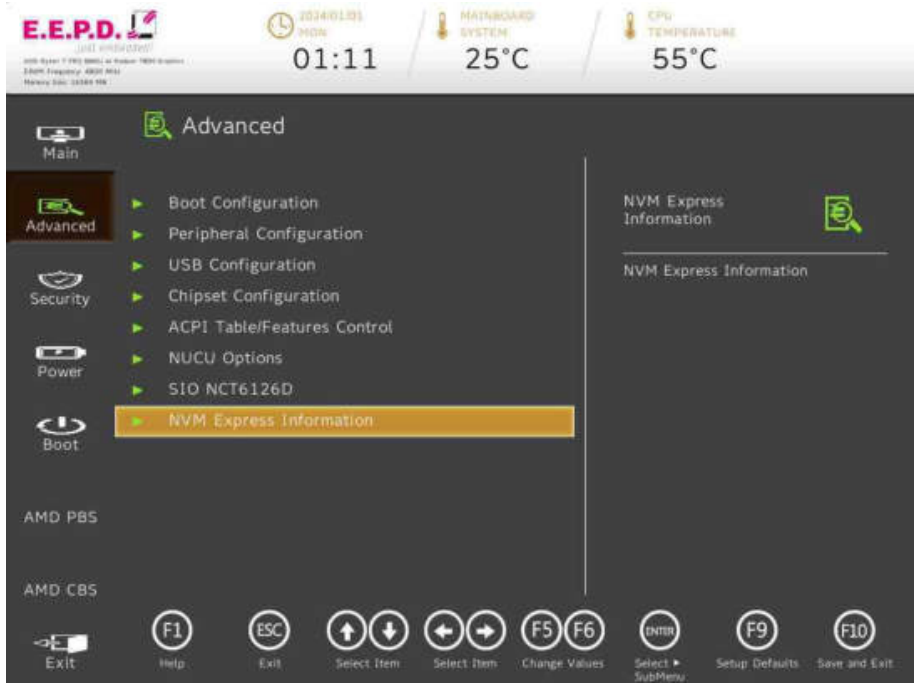

Fig. 50: Advanced Menu

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
SIO NCT6126D	See submenu	SIO NCT6126D configuration menu
NVMe Information	Info page	This function shows the connected NVMe devices.

Tab. 9: Advanced Menu

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5.4.1 Boot Configuration

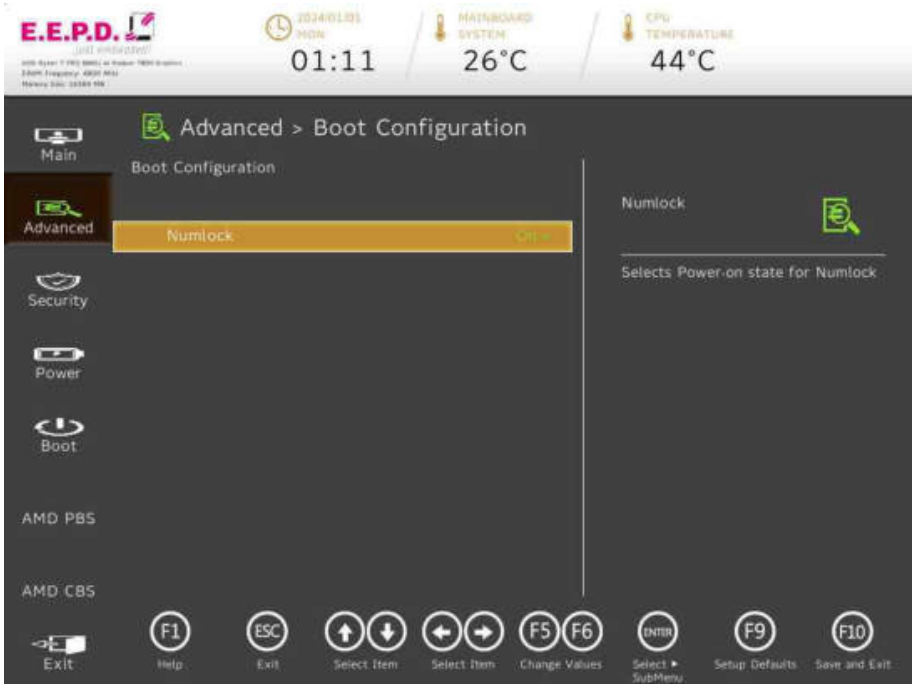

Fig. 51: Boot Configuration

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

Tab. 10: Boot Configuration

5.4.2 Peripheral Configuration

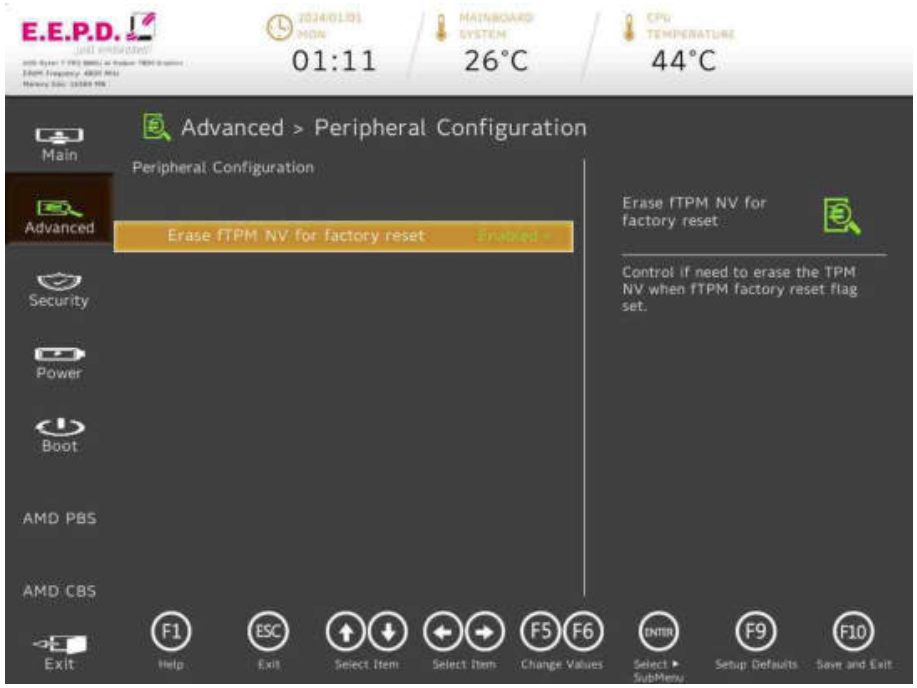

Fig. 52: Peripheral Configuration

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. 11: Peripheral Configuration

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5.4.3 USB Configuration

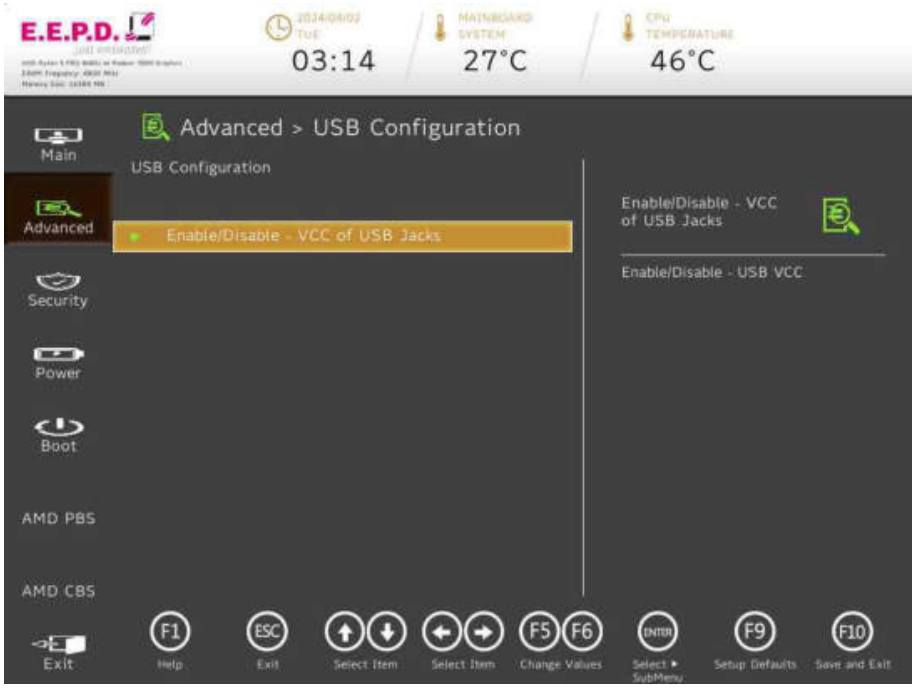

Fig. 53: USB Configuration

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

Tab. 12: USB Configuration

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

5.4.3.1 Enable/Disable – VCC of USB Jacks

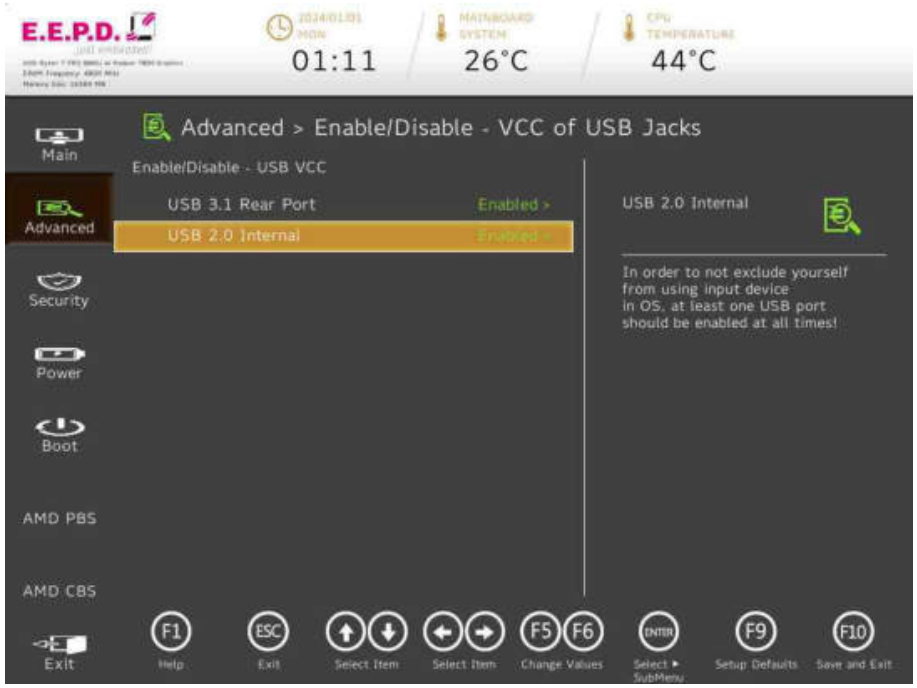

Fig. 54: USB Ports

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. 13: USB Ports

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5.4.4 Chipset Configuration

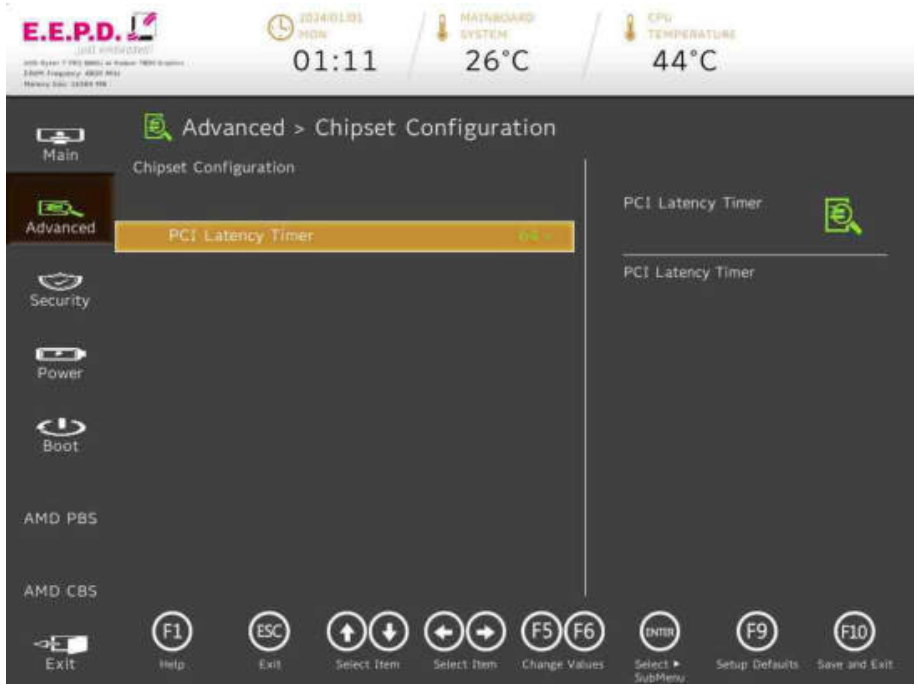

Fig. 55: Chipset Configuration

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

Tab. 14: Chipset Configuration

5.4.5 ACPI Table/Features Control

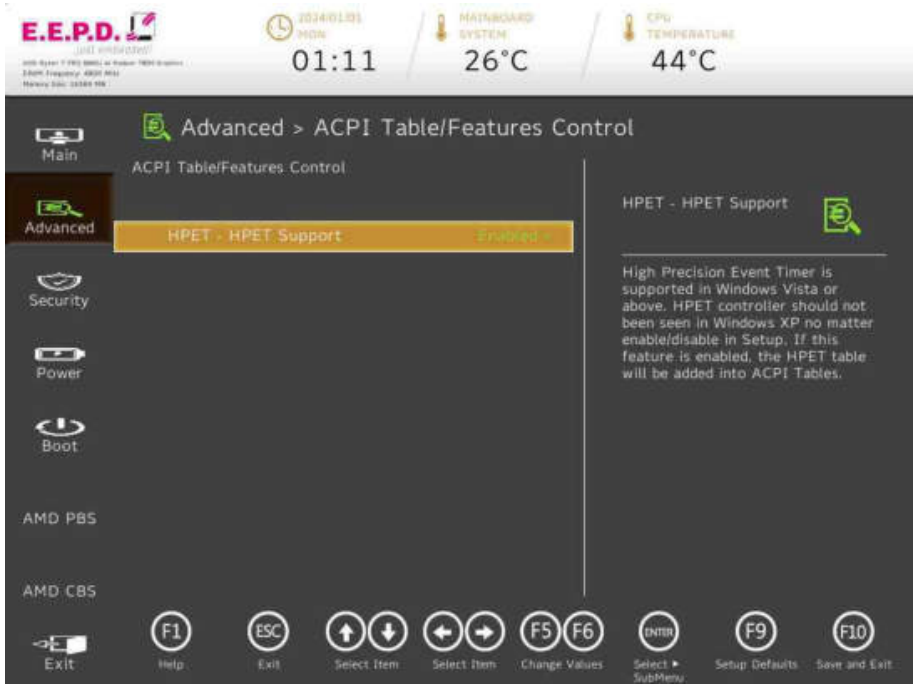

Fig. 56: ACPI Table

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. 15: ACPI Table

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5.4.6 NUCU Options

Fig. 57: NUCU Options

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

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>	
PCIe OcuLink max. Gen.	<Auto>* <Gen1> <Gen2> <Gen3> <Gen4>	Set PCIe OcuLink max. Gen.

Tab. 16: NUCU Options

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5.4.7 SIO NCT6126D

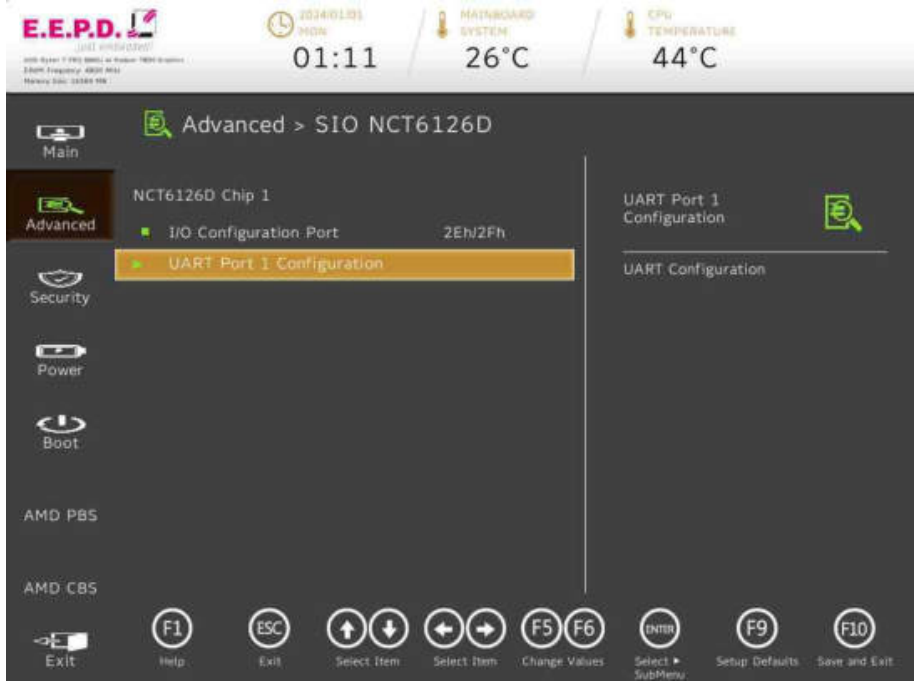

Fig. 58: SIO NCT6126D

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

Tab. 17: SIO NCT6126D

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5.4.7.1 UART Port 1 Configuration

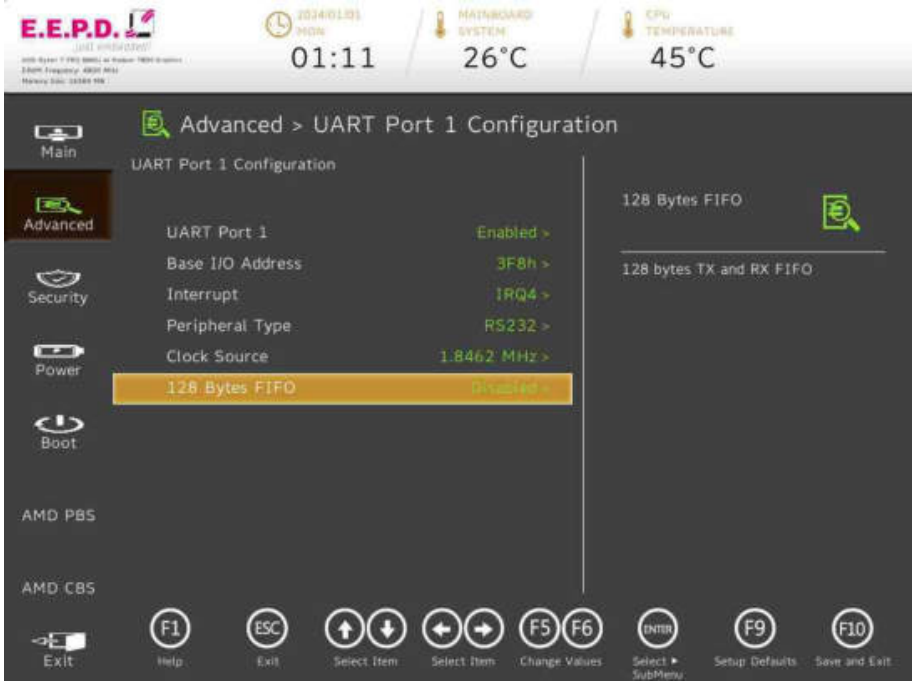

Fig. 59: UART Port 1 Configuration

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
Clock Source	<1.8462 MHz>* <2 MHz> <24 MHz> <14.769 MHz>	Clock Source
128 Bytes FIFO	<Disabled>* <Enabled>	128 bytes TX and RX FIFO

Tab. 18: UART Port 1 Configuration

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5.5 AMD CBS

Fig. 60: 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. 19: AMD CBS

5.5.1 CPU Common Options

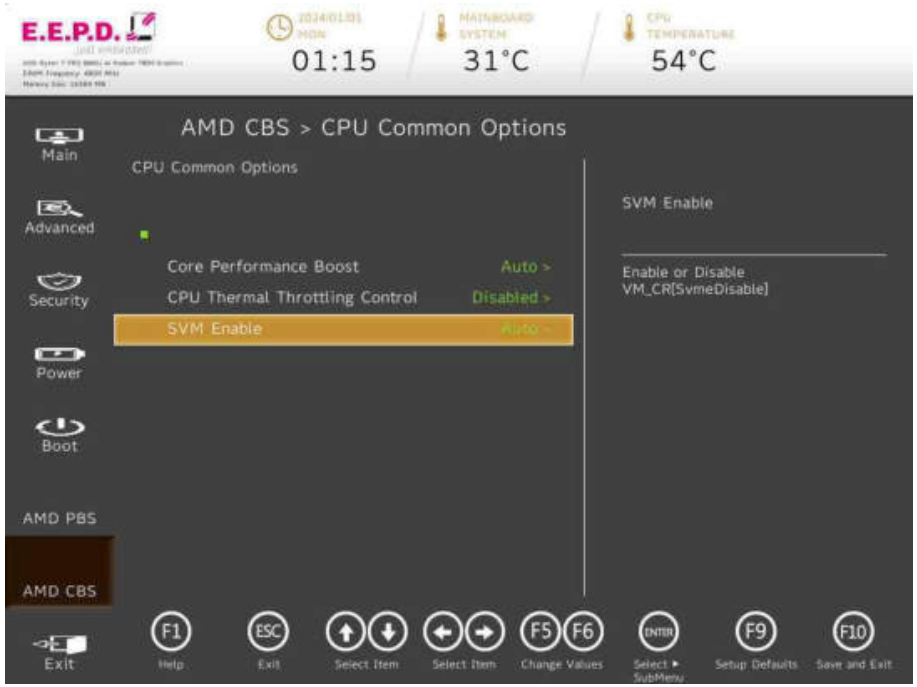

Fig. 61: CPU Common Options

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. 20: CPU Common Options

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5.5.2 NBIO Common Options

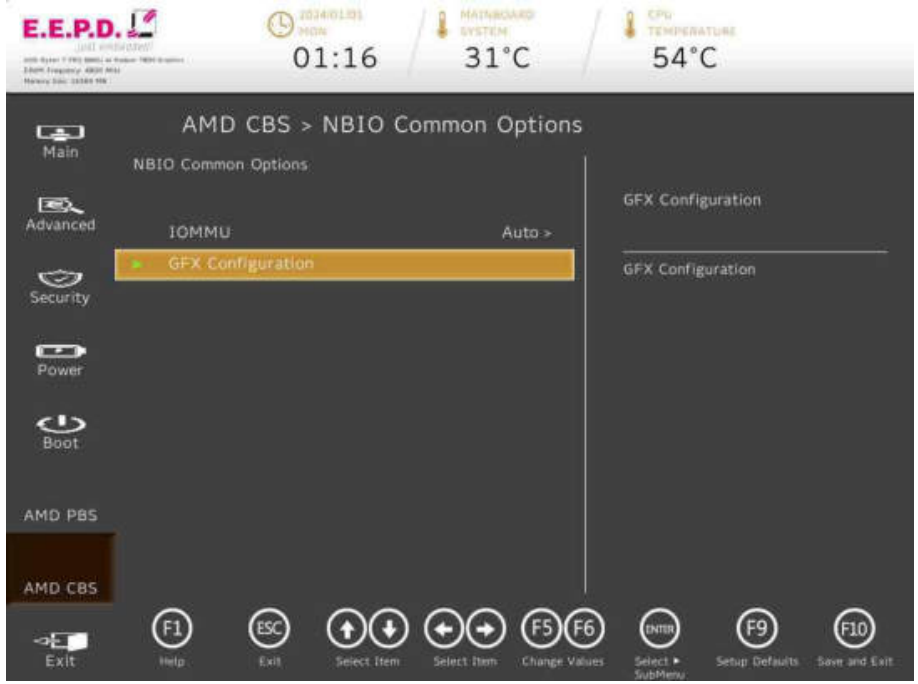

Fig. 62: NBIO Common Options

BIOS Settings	Options	Description
IOMMU	<Disabled> <Enabled> <Auto>*	Enable/Disable I/O Memory Management Unit
GFX Configurations	See submenu	GFX Configuration

Tab. 21: NBIO Common Options

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5.5.2.1 GFX Configurations

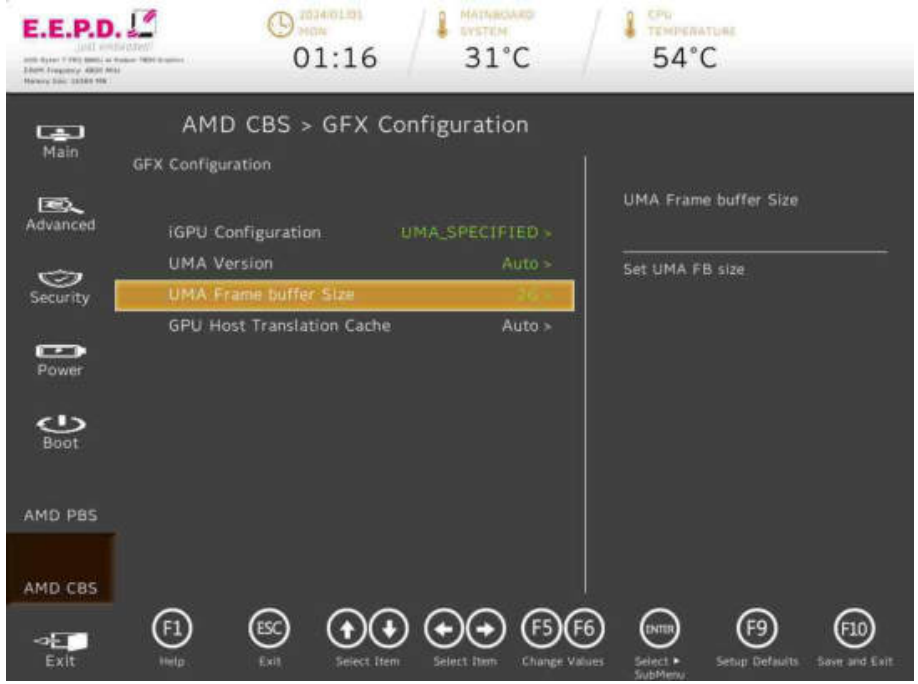

Fig. 63: GFX Configurations

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. 22: GFX Configurations

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5.5.3 FCH Common Options

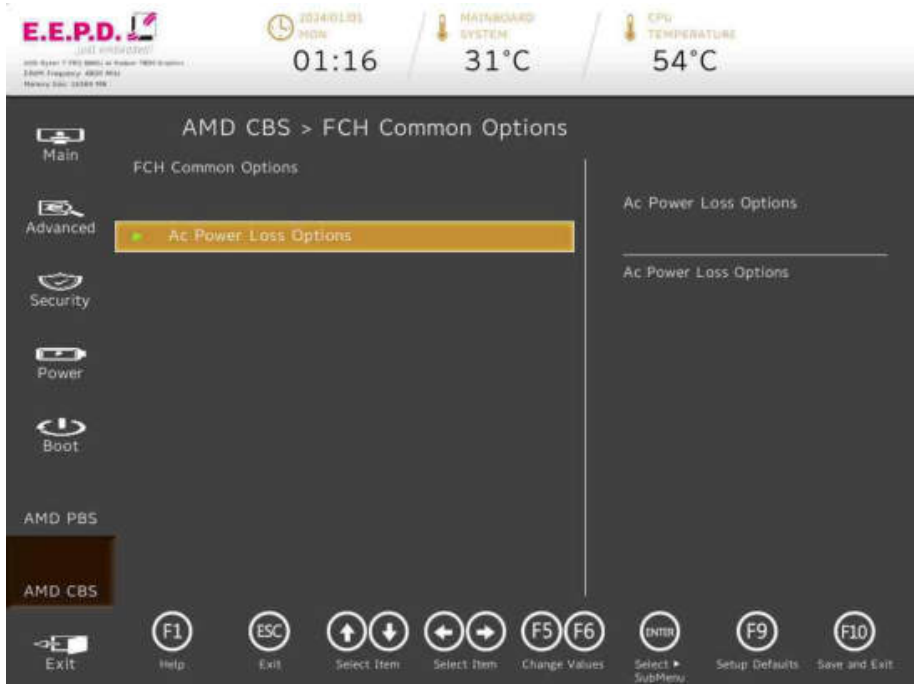

Fig. 64: FCH Common Options

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

Tab. 23: FCH Common Options

5.5.4 Ac Power Loss Options

Fig. 65: 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. 24: Ac Power Loss Options

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5.5.5 SMU Common Options

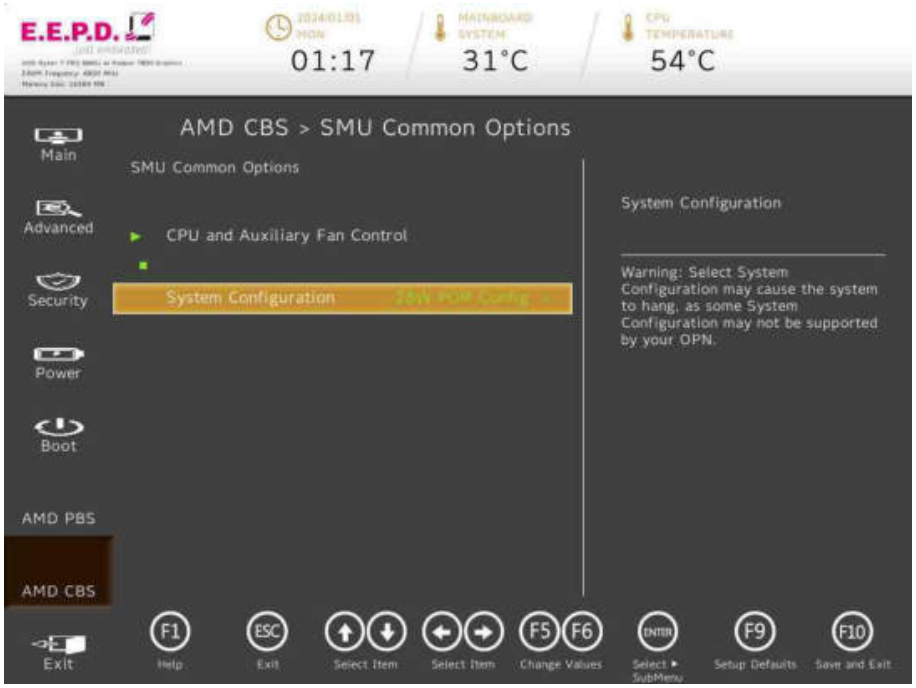

Fig. 66: SMU Common Options

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. 25: SMU Common Options

5.5.5.1 CPU and Auxiliary Fan Control

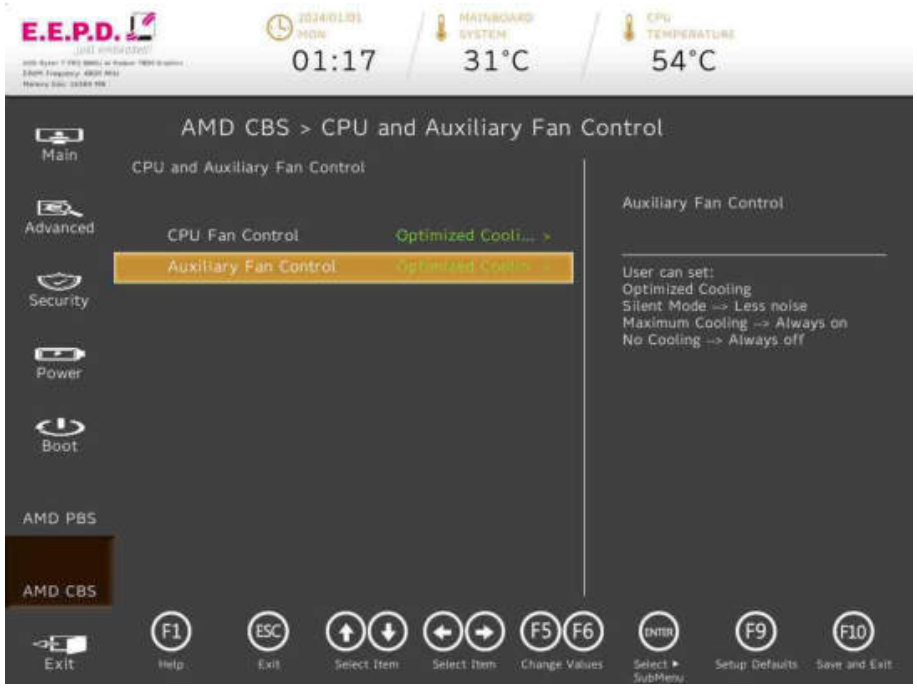

Fig. 67: CPU and Auxiliary Fan Control

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. 26: CPU and Auxiliary Fan Control

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5.5.6 SOC Miscellaneous Control

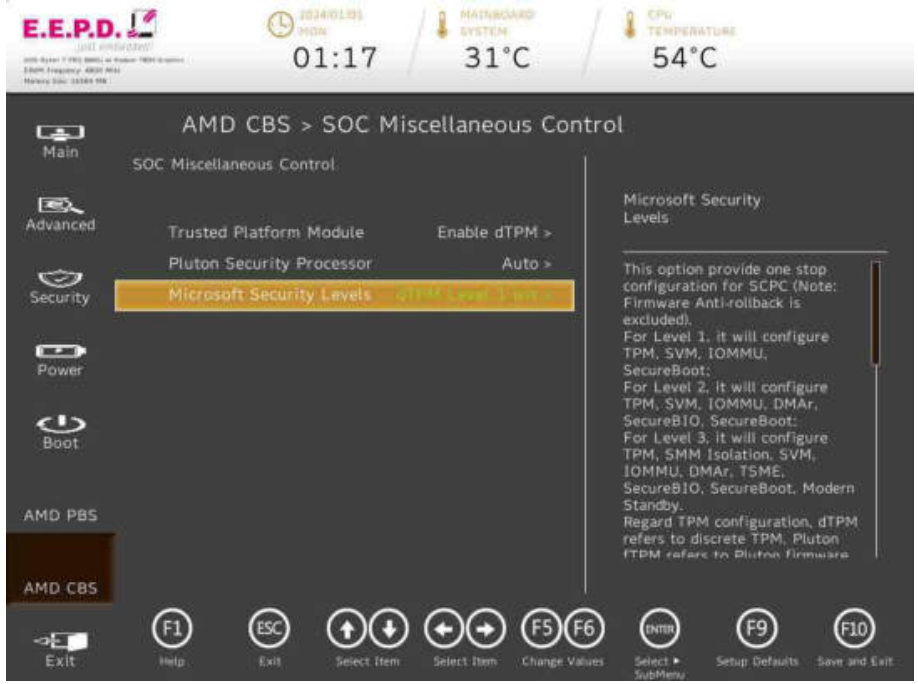

Fig. 68: SOC Miscellaneous Control

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. 27: SOC Miscellaneous Control

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5.6 AMD PBS Menu

Fig. 69: AMD PBS Menu

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
USB-C Port 0	<Disabled> <Enabled>*	Enable/Disable PD USB4/PCIe Tunnel support; If USB4/PCIe Tunneling is disabled, the port operates in standard USB-C mode
USB-C Port 1	<Disabled> <Enabled>*	

Tab. 28: AMD PBS Menu

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5.6.1 AMD Firmware Version

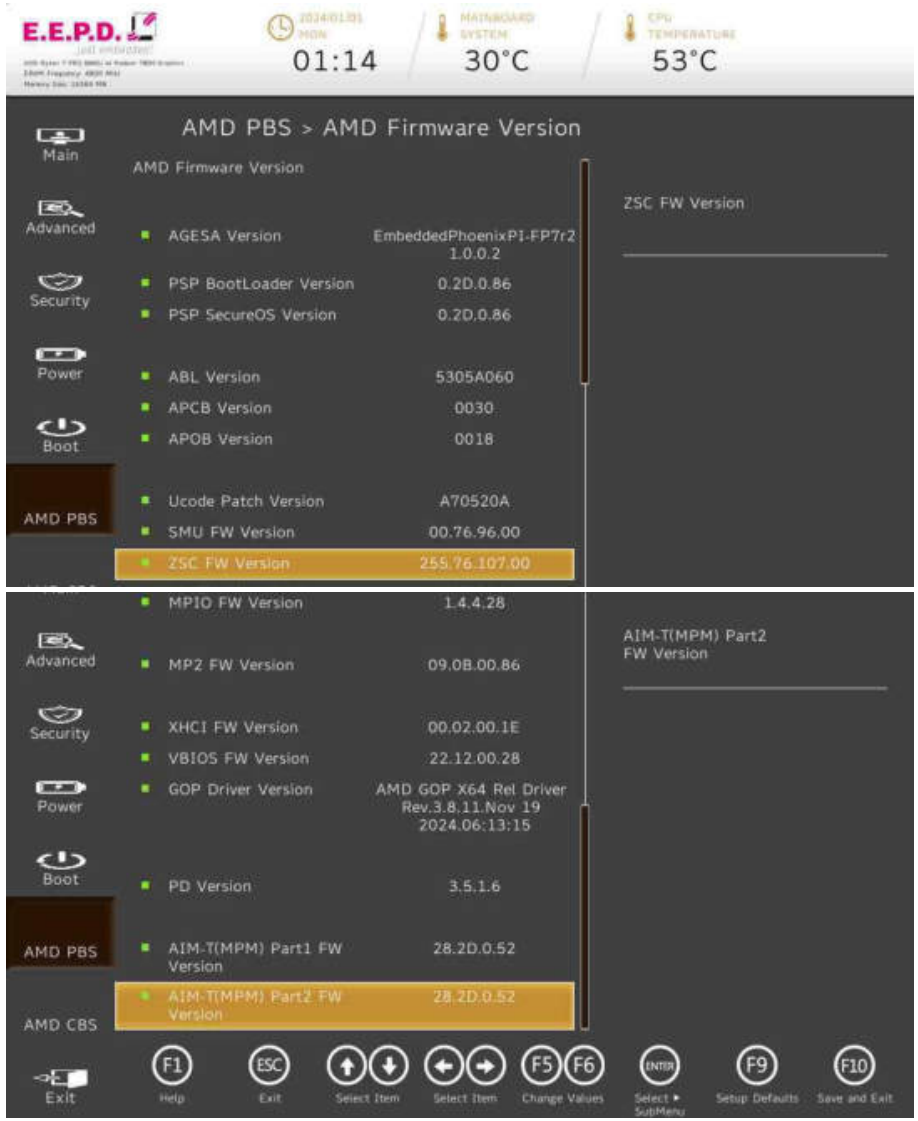

Fig. 70: AMD Firmware Version

5.7 Boot Menu

Fig. 71: 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.

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Network Stack	<Disabled>* <Enabled>	Network Stack Support: Windows 8 BitLocker Unlock 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.
Group Boot Options	<Grouped> <Non-Grouped>*	Boot options are grouped or not.
Sync Order	<Disabled>* <Sync Boot Order> <Sync Boot Device Type Order>	Disabled: No effect. Sync Boot Order: Group boot options in Boot Order is adjusted to follow boot device type priority. Sync Boot Device Type Order: Boot device type order is adjusted to follow the order of group boot options in Boot Order.
Adjust Non-BIOS Boot Options	<Disabled> <Enabled>*	When enabled, position of Non-BIOS created boot options will be adjusted to follow boot options position policy each time before enumerate boot devices.

Tab. 29: Boot Menu

5.8 Power Menu

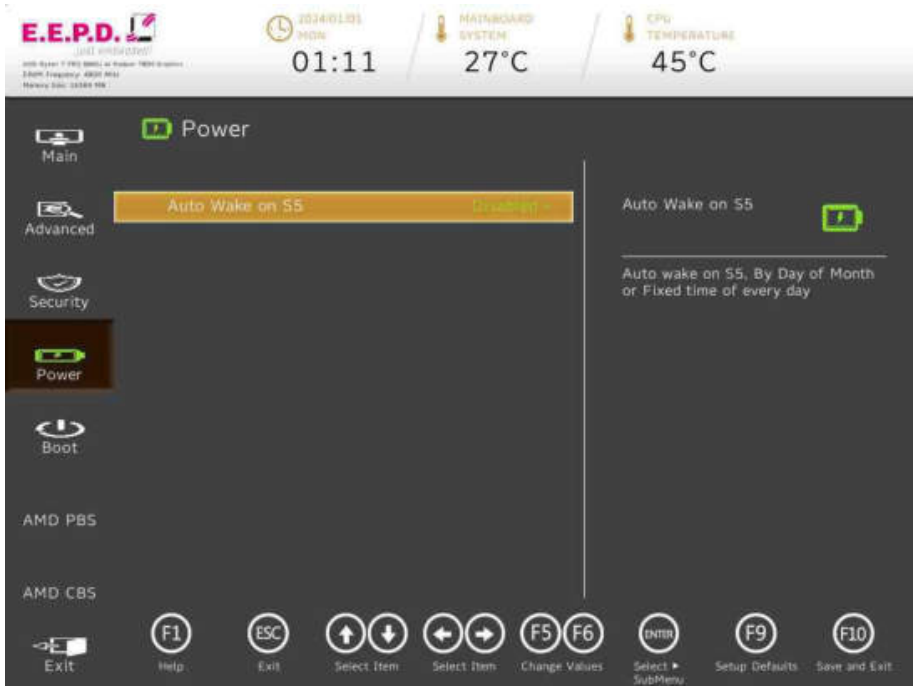

Fig. 72: Power Menu

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. 30: Power Menu

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5.9 Exit Menu

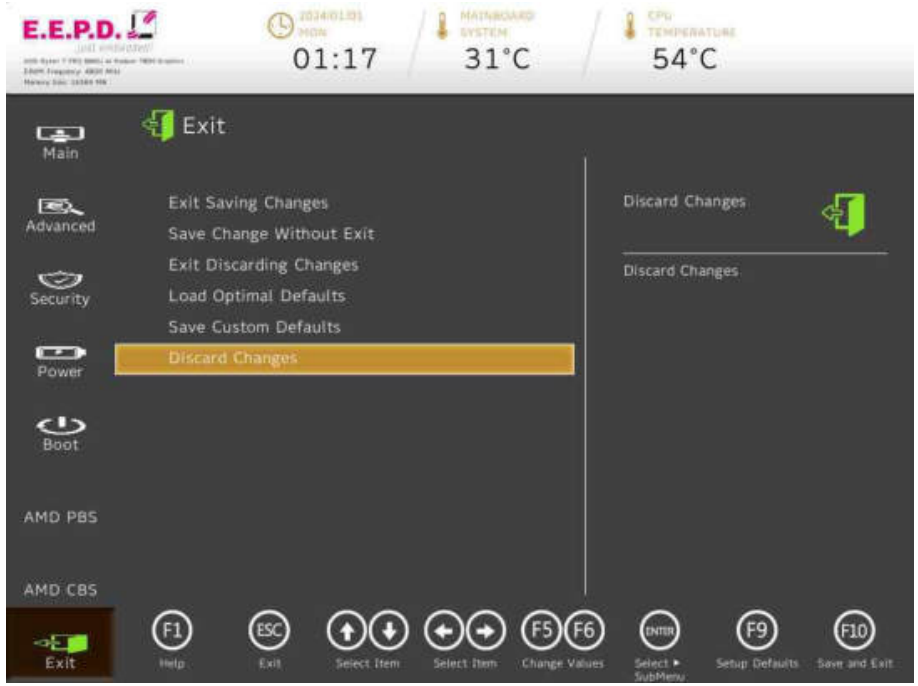

Fig. 73: Exit Menu

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. 31: Exit Menu

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5.10 Security Menu

Fig. 74: Security Menu

BIOS Settings	Options	Description
Current TPM Device	<Not Detected> <TPM 1.2> <TPM 2.0 (IFX)>*	Current TPM Device: TPM1.2, or TPM2.0. Go to *SoC Misc. Control* to select TPM device (*5.5.6)*
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. 32: Security Menu

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5.10.1 Storage Password Setup Page

Fig. 75: 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. 33: Storage Password Setup Page

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Terminology

BT	Bluetooth
CPU	Central Processing Unit or processor
DC	Direct Current
DDR5	Fifth generation „Double Data Rate” memory technology
DP	Display port
ECC	Error Correcting Code
2.5 Gigabit Ethernet	Ethernet connection with a frame transfer speed up to 2500 Mbit/s
GND	Ground
MIC	Microphone
M.2	Next generation mSATA
OCP	Over Current Protection
PWM	Pulse-Width Modulation
RAM	Random Access Memory
RS-232	Serial standard interface
RS-485	Serial standard interface
SoC	System on a Chip means the integration of all or a large part of the functions of a programmable electronic system on a single chip
SO-DIMM	Small Outline Dual Inline Memory Module
SSD	Solid State Drive
USB	Universal Serial Bus
Watchdog	A watchdog (timer) is a computer hardware timing device that triggers a system reset if the main program hangs, in order to keep the computer running
WLAN	Wireless Local Area Network
WWAN	Wireless Wide Area Network

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