

EM PRO mini E – Revision 1 - Device Reference Manual – P –



Manufacturer

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E.E.P.D. GmbH gives no warranty at all that their products will meet the FCC and CE standards when used in combination with other third party products or when used in any other way than specified.

Warranty

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

Reshipment

If you return the BoxPC 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 BoxPC system is in a protective package to avoid damage during transport.

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

Disposal of Device



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

Technical Support

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

Table of Contents

General Notes	1
Symbols	6
Safety Instructions	7
Safety of People	7
Device Safety.....	7
Cooling System.....	7
System Information	8
Required Tools	8
External Notice	8
Software.....	8
Options.....	8
Accessories	9
Intended Use	9
Scope of Delivery.....	10
Type Label	10
System Dimensions	10
DIN Rail Mounting (optional)	12
VESA Mounting (optional)	13
Technical Data	14
Interfaces	15

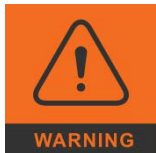
Connection Overview.....	15
Power Button with LED	16
HDD/SSD LED	17
Connections	18
Mini Display Ports	18
Dual-USB 3.1 Gen2 (900mA each)	18
2.5 Gigabit Ethernet Dual-Port.....	19
Power Connector (DC).....	19
RS232 Port 1	20
RS232 Port 2	20
Front USB-C Port (max. 1.5A)	20
Commissioning	21
Switching on the device / Operation	21
UEFI/BIOS	22
Entering Setup	22
Main Menu	23
Advanced Menu	27
Security Menu	57
Power Menu	61
Boot Menu.....	63
AMD PBS Menu.....	69
AMD CBS Menu.....	73

Exit Menu	91
Revision History	93
Index of Figures	94
Index of Tables.....	95
List of Abbreviations	96

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.



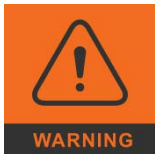
The information sign gives you further information and advice for optimal use of this product.
For example, it draws your attention to necessary or optional accessories.

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!

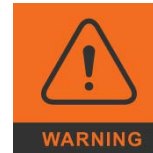


Please follow all safety instructions at the installation site. Make sure that no or only necessary cables are connected to the BoxPC during installation.



If access to the BoxPC interfaces is not available after installation, all necessary connections must be made before.

Device Safety



The BoxPC 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 BoxPC 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.

System Information

Required Tools

For the installation of the BoxPC system the following standard tools are recommended:

- Cable connection: Slot screwdriver
- Rail mounting: Torx screwdriver T10

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

External Notice

All external documentation to install the BoxPC system should be obeyed.

Software

Supported operating systems are:

Microsoft® Windows® 10
Microsoft® Windows® 10 IoT Enterprise
Linux Ubuntu 20.04 LTS.

Options

Options	Description
Memory*	V2000 processors: Max. 32 GB dual-channel DDR4 SODIMM up to 3200 MT/s, with ECC support
SSD*	64 GB – 2 TB
Operating System*	Windows® 10, Windows® 10 IoT Enterprise, Linux Ubuntu 20.04 LTS
*factory assembled on request #ODM option	

Tab. 1: Options

Accessories

For accessories please contact our sales department.

Accessories	Description
Power supply (90 W / 19 V)	Power supply incl. cable with EU plug
Display cable	Cable MiniDP to HDMI, 2 m, with interlock Cable MiniDP to DP, 2 m
DIN rail clip	DIN rail clip with screws for „TS35“ DIN rails
VESA mounting kit	VESA mounting plate with screws

Tab. 2: Accessories

Intended Use

The EM PRO mini is a personal computer to be used with Windows 10, Windows 10 IoT Enterprise or Ubuntu Linux 20.04 LTS. It has been designed for office and workshop environments.

Scope of Delivery

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

Type Label

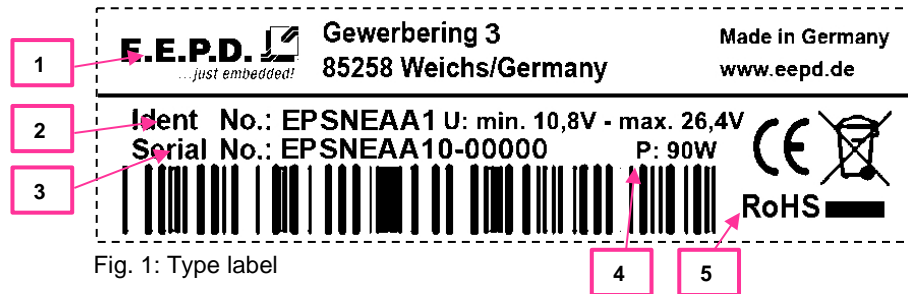


Fig. 1: Type label

- 1 – Manufacturer
- 2 – Product name
- 3 – Serial number with barcode
- 4 – Power input
- 5 – Certification information

System Dimensions

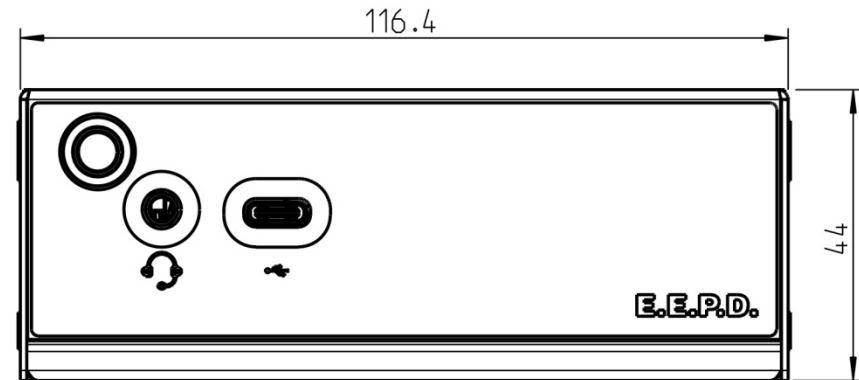


Fig. 2: Dimensions frontside, all values approx. in mm

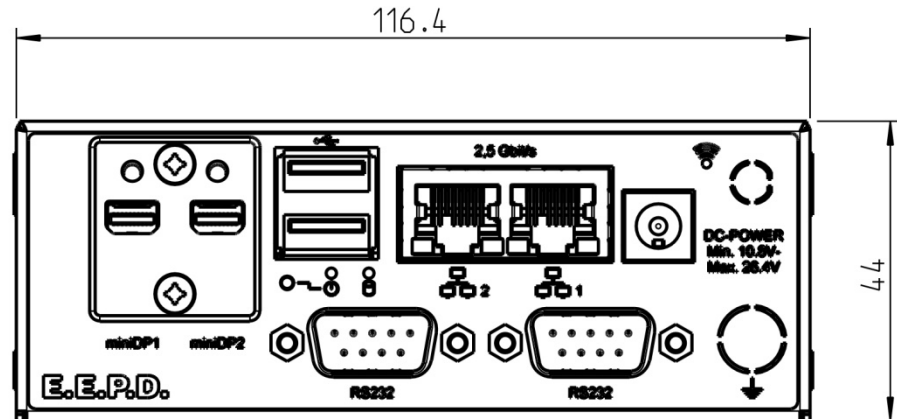


Fig. 3: Dimensions backside, all values approx. in mm

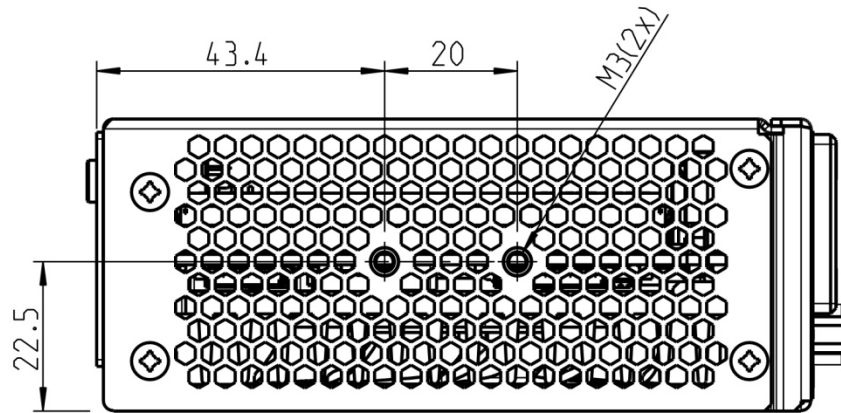


Fig. 4: Dimensions left side, all values approx. in mm

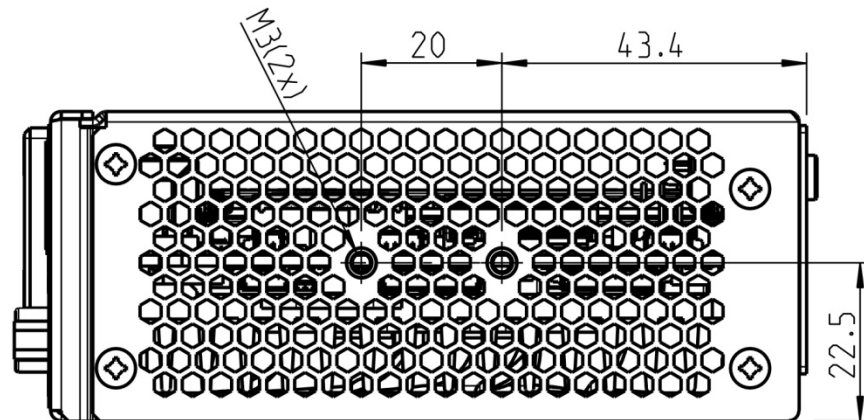


Fig. 5: Dimensions right side, all values approx. in mm

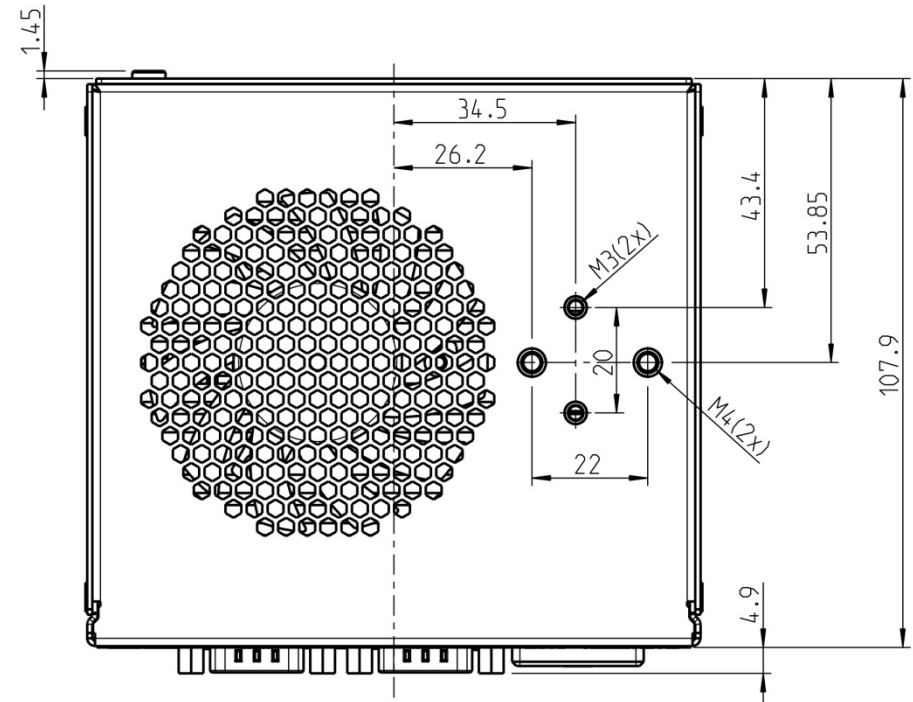


Fig. 6: Dimensions bottom side, all values approx. in mm

DIN Rail Mounting (optional)

The BoxPC is also designed for DIN rail mounting. There are threaded sleeves for mounting the optional DIN rail holder in various positions (Fig.7).



Symbolic view for both sides.

Fig. 7: DIN rail holder positions

Please follow the instructions below:

- Mount the top-hat rail holder with the two provided screws at the intended fastening points (see Fig.7). 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.

VESA Mounting (optional)

The BoxPC is also designed for VESA mounting. There is an optional VESA mount available (Fig.8).

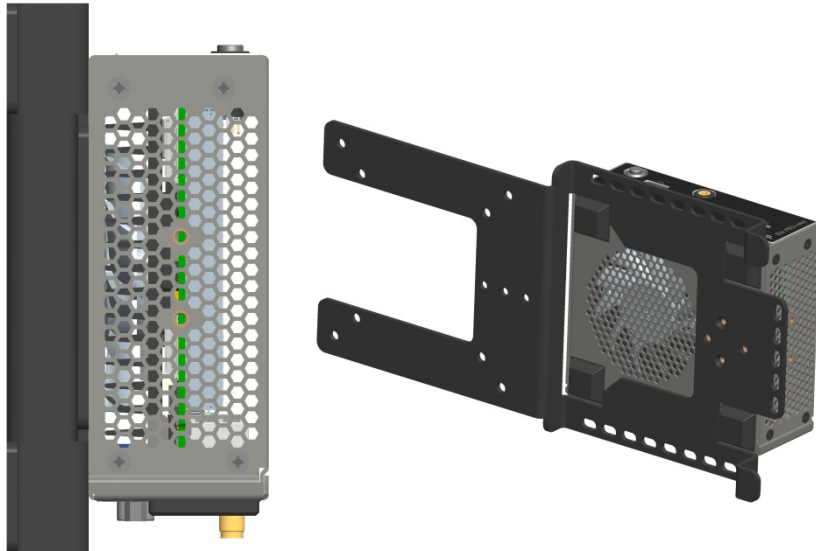


Fig. 8: Side View VESA mounted system

Technical Data

- AMD V2000 processor series:
 - V2516 / 6C / 12T / 2.1 GHz – 3.95 GHz / 10 – 25 W
 - V2718 / 8C / 16T / 1.7 GHz – 4.15 GHz / 10 – 25 W
- Memory V2000 processor series:
Max. 32 GB dual-channel DDR4 SODIMM up to 3200 MT/s,
with ECC support
- Ethernet: 2 Intel® i225 2.5Gbit with IEEE1588
- WiFi/BT (ODM option only): 802.11 AC with diversity / Bluetooth version 5
- SSD (optional): 1 M.2 PCIe/SATA + 1 PCIe only, 64 GB – 2 TB each
slot
- USB ports: 2 USB 3.1 Gen2 (**900mA each**) at rear side,
1 USB-C (**max. 1.5A**) at front side
- Serial ports: 2 RS-232
- 2 Mini-DP++ connectors up to 4096 x 2160 @ 60 Hz
- Sound 3.5 mm MIC in / headphone out, CTIA version
- Controlled FAN (PWM + Tacho) and hardware monitoring
- Power LED
- Power supply: Min. 10.8 V / Max. 26.4 V (DC)
- Operating temperature: min. 0 °C to max. +50 °C ambient
- Storage temperature: -40 °C to +85 °C
- Relative humidity: 95 % @ 40 °C, non-condensing
- Housing: sturdy metal case
- Mounting: stand alone or top-hat rail
- Dimensions approx.: 117 x 51 x 115 mm
- Weight: approx. 700g + memory + SSD
- Conformity: CE, ROHS, REACH

Interfaces

Connection Overview

The EM PRO mini BoxPC is equipped with the following standard interfaces:

- 1 – 2x Mini-DP++ connector
- 2 – Dual-USB 3.1 Gen2 port, type A (**900mA each**)
- 3 – 2x Ethernet 10/100/1000/2500 Mbit/s (RJ45), Port 1 supports WoL
- 4 – Power supply
- 5 – Power button (emergency power button on the rear side)
- 6 – 2x Serial port RS-232
- 7 – Sound 3.5 mm MIC in / headphone out, CTIA version
- 8 – USB-C port (**max. 1.5A**)
- 9 – WiFi/BT (ODM option only)

Front View



Fig. 9: BoxPC EM PRO mini front view

Rear View

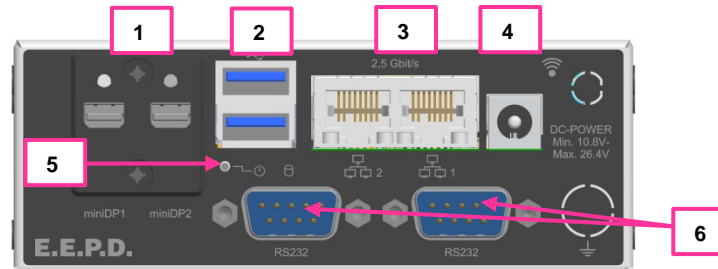


Fig. 10: BoxPC EM PRO mini rear view

Option:



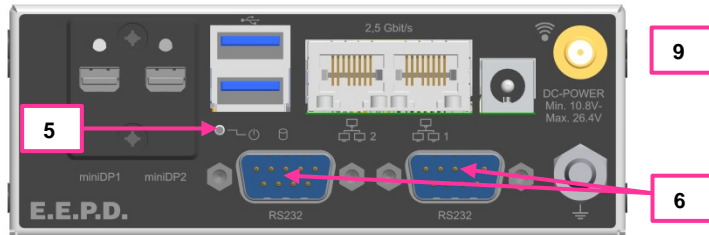


Fig. 11: BoxPC EM PRO mini rear view option

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.12) 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. 12: Power Button with LED

HDD/SSD LED

See fig.13 for the location of the second Power-LED and the HDD/SSD-LED.

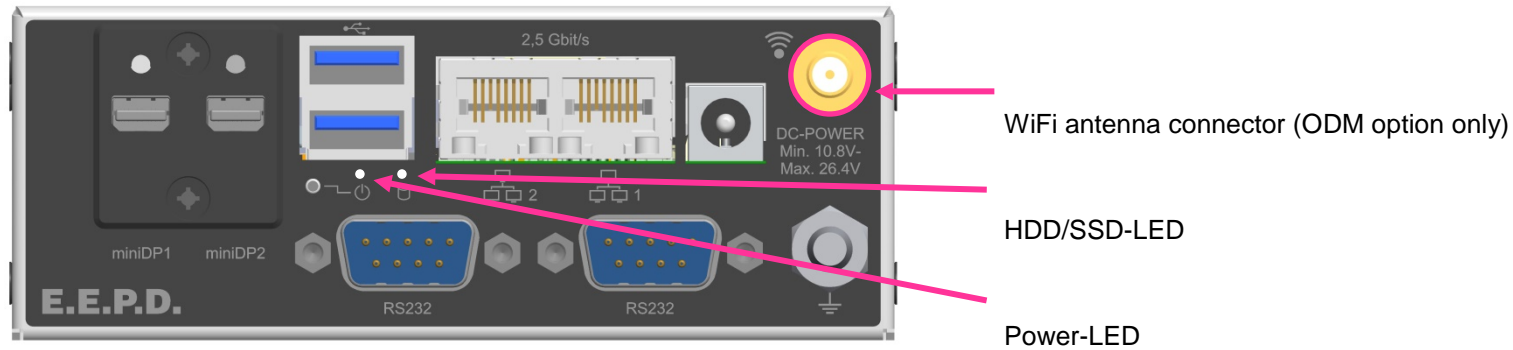


Fig. 13: Power-LED | HDD/SSD-LED

Connections

Mini Display Ports

Standard pin assignment

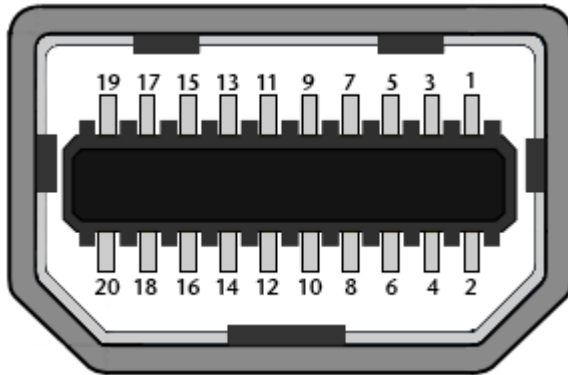


Fig. 14: Mini Display port schematic

Important Note:



There are two kinds of DisplayPort cables available:

Cables for direct connection to a Mini Display Port monitor with Pin 20 on both ends of the cable NOT connected.

Cables for use with dongles (e. g. Mini Display Port to Display Port, Mini Display Port to HDMI) with Pin 20 on both ends of the cable connected.

Possible effects if wrong cable is used:

- System might not start up properly.
- Dongle doesn't work properly (e.g. black display).

Dual-USB 3.1 Gen2 (900mA each)

Standard pin assignment

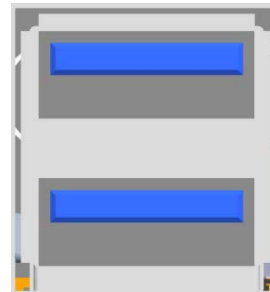


Fig. 15: Dual-USB 3.1 Gen2 detail

2.5 Gigabit Ethernet Dual-Port

Standard pin assignment

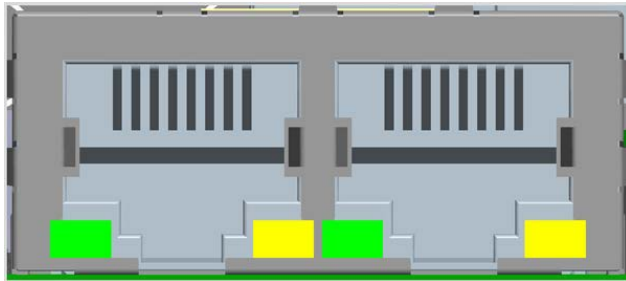


Fig. 16: Dual-Ethernet detail

Yellow LED

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

Green LED

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

Power Connector (DC)

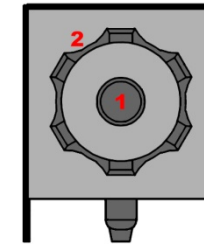


Fig. 17: Power connector schematic



Counterpart - plug:

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

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

Tab. 3: Pin assignment power connector

RS232 Port 1

9-pin D-Sub	Signal
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

Tab. 4: Pin assignment RS232

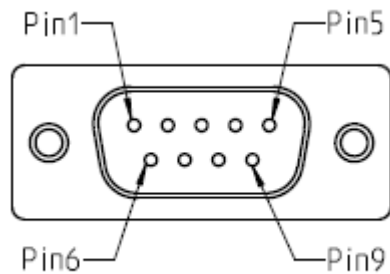


Fig. 18: 9-pin D-SUB connector

RS232 Port 2

9-pin D-Sub	Signal
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

Tab. 5: Pin assignment RS232

Front USB-C Port (max. 1.5A)

Standard pin assignment

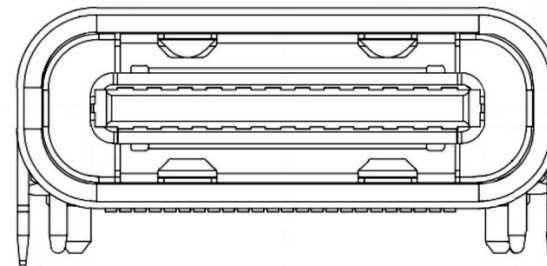
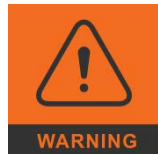


Fig. 19: USB-C Detail

Commissioning



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.

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.

UEFI/BIOS

The UEFI/BIOS ROM has a built-in Setup program that allows users to modify the basic system configurations. This type of information is stored in battery-packed CMOS RAM, so that Setup information is retained when the power is turned off.

Entering Setup

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

Main Menu

Once you enter the Setup Utility, the Main Menu (Figure 20) will appear on the screen.

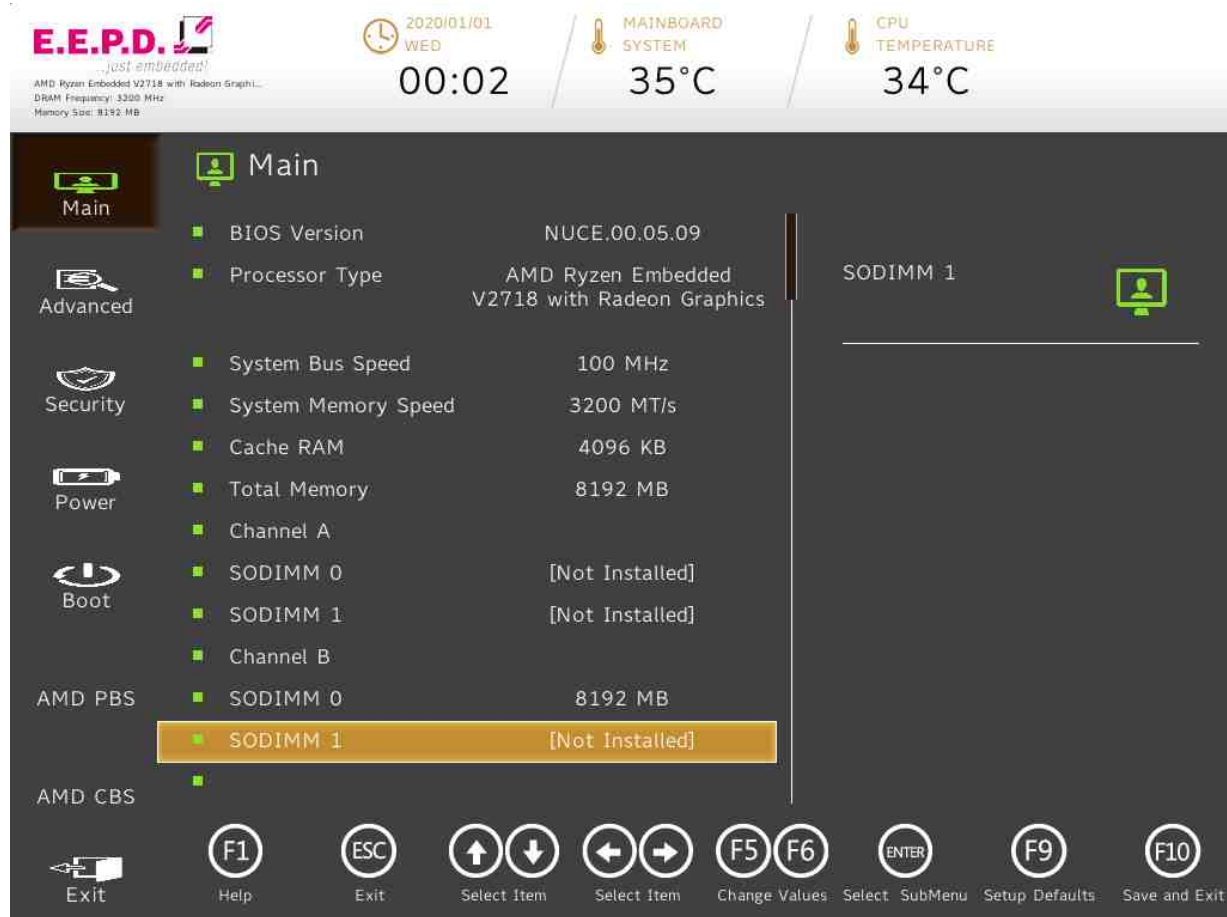


Fig. 20: Main Menu 1

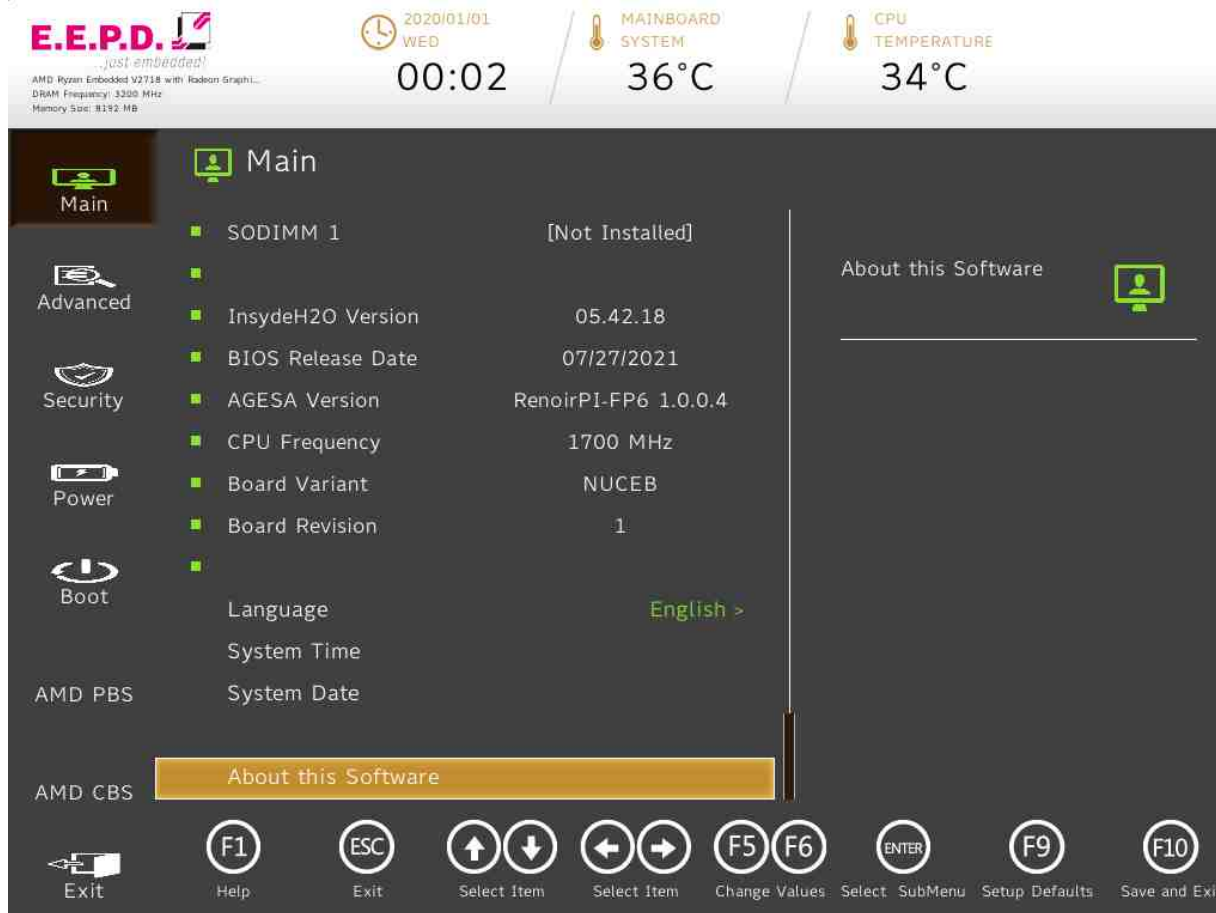


Fig. 21: Main Menu 2

BIOS Settings	Options	Description
Language	<English>*	Select the current default language used by the InsydeH2O.
System Time	No options	This is the help for the hour, minute, second field. Valid range is from 0 to 23, 0 to 59, 0 to 59. INCREASE/REDUCE : +/-.
System Date	No options	This is the help for the month field, day field, year field. 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. 6: Main Menu

Advanced Menu

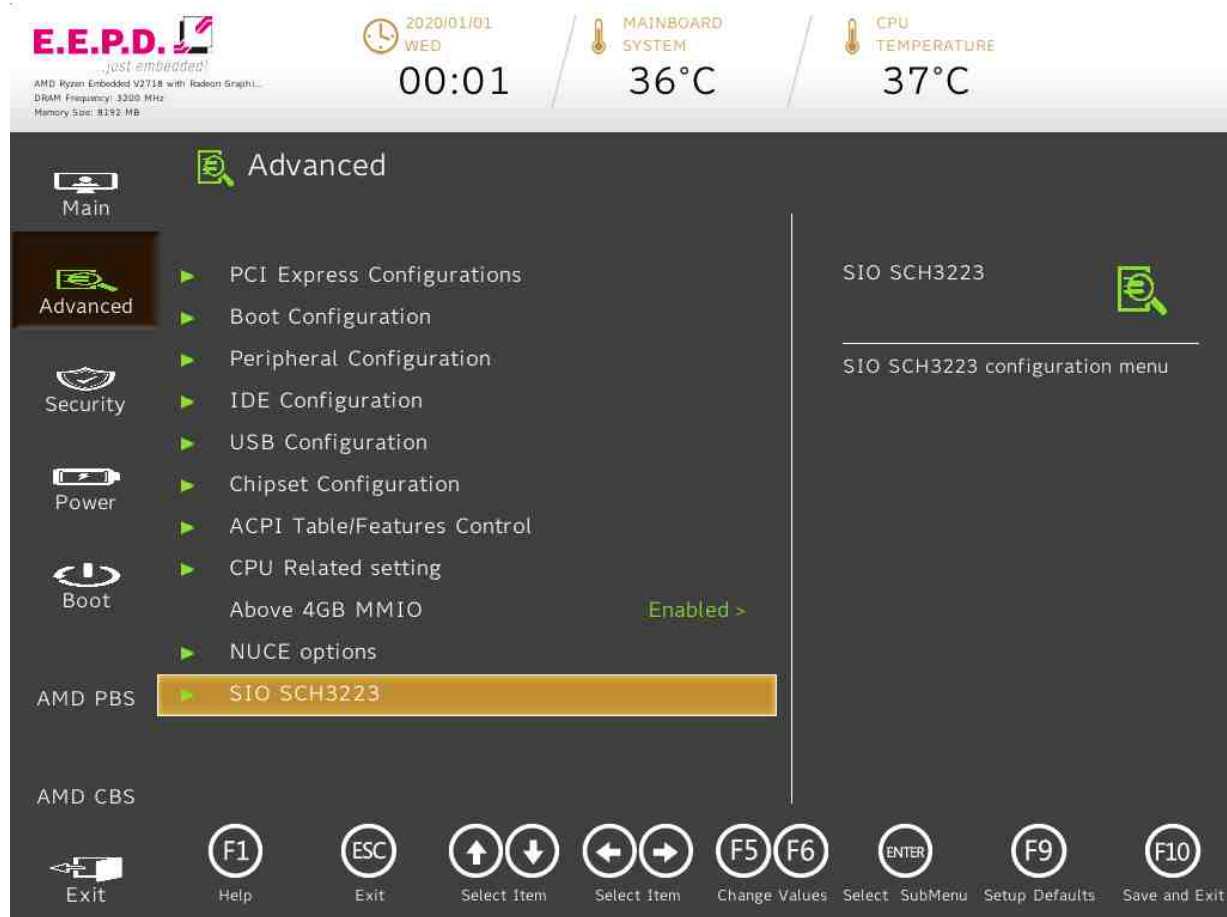


Fig. 22: Advanced Menu

BIOS Settings	Options	Description
PCI Express Configurations	No options	PCI Express Configurations
Boot Configuration	No options	Configures Boot Settings.
Peripheral Configuration	No options	Configures the peripheral devices.
IDE Configuration	No options	Select the IDE controller and hard disk drive type installed in your system
USB Configuration	No options	Configure the USB support
Chipset Configuration	No options	Advanced Chipset Configuration Options.
ACPI Table/Features Control	No options	Configures ACPI Tables/Features setting.
CPU Related setting	No options	CPU Related setting
Above 4GB MMIO	<Disabled> <Enabled>*	Enable/Disable above 4GB MemoryMappedIO BIOS assignment. It's only available with Uefi Boot Mode.
NUCE options	No options	NUCE options: Configure PIC watchdog!
SIO SCH3223	No options	SIO SCH3223 configuration menu

Tab. 7: Advanced Menu

PCI Express Configurations



Fig. 23: PCI Express Configurations

BIOS Settings	Options	Description
PSPP Policy	<Disabled> <Performance> <Balanced-High> <Balanced-Low>* <Power Saving> <Auto>	PCIe speed power policy

Tab. 8: PCI Express Configurations

Boot Configuration

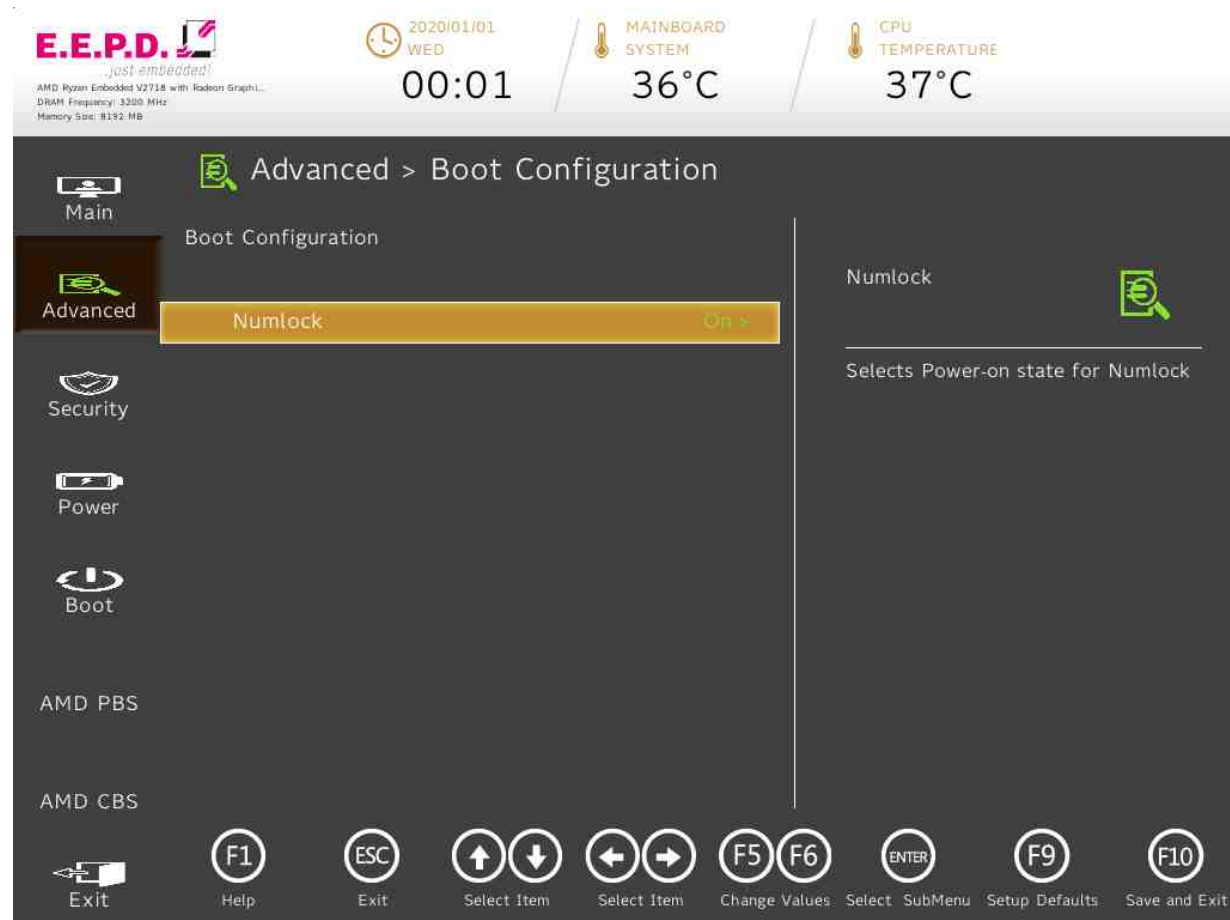


Fig. 24: Boot Configuration

BIOS Settings	Options	Description
Numlock	<Off> <On>*	Selects Power-on state for Numlock

Tab. 9: Boot Configuration

Peripheral Configuration

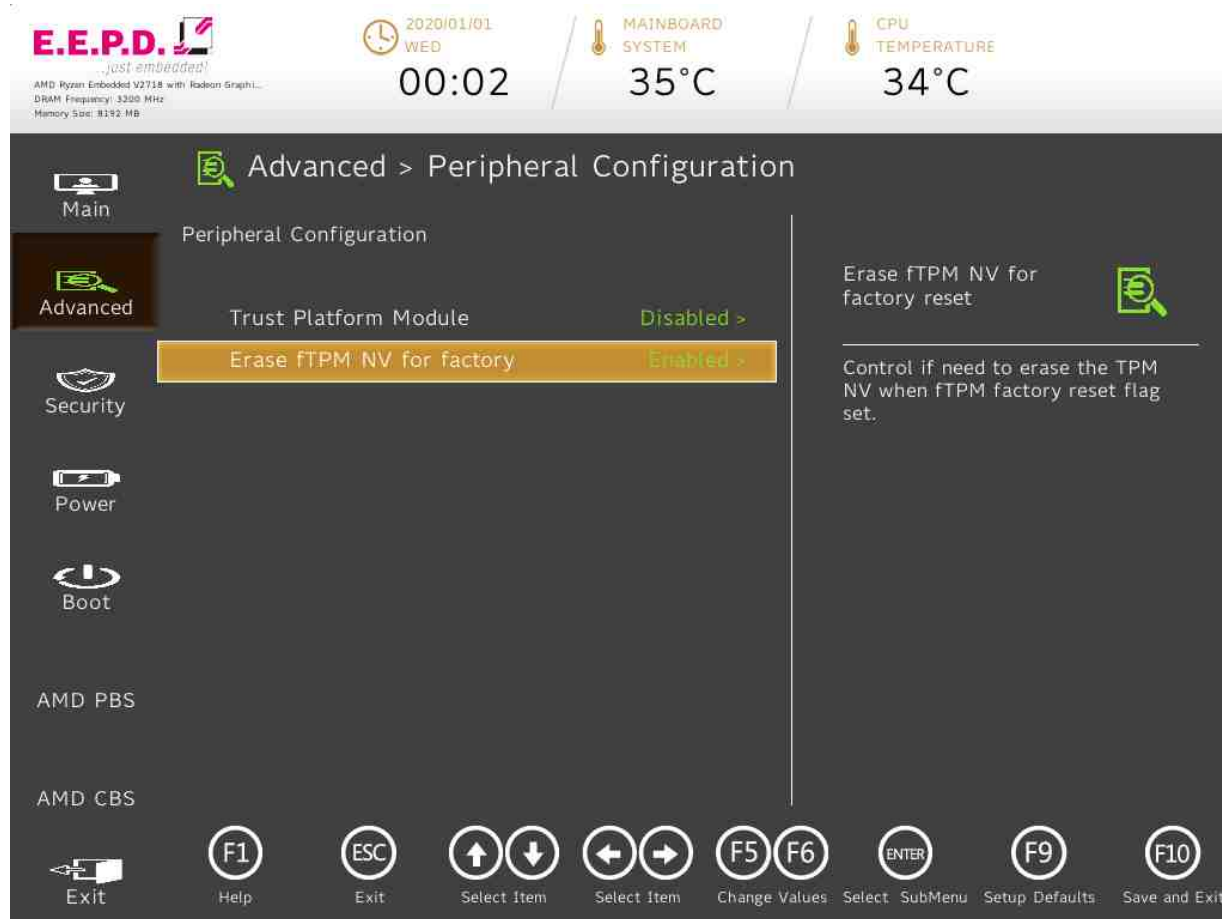


Fig. 25: Peripheral Configuration

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

Tab. 10: Peripheral Configuration

IDE Configuration

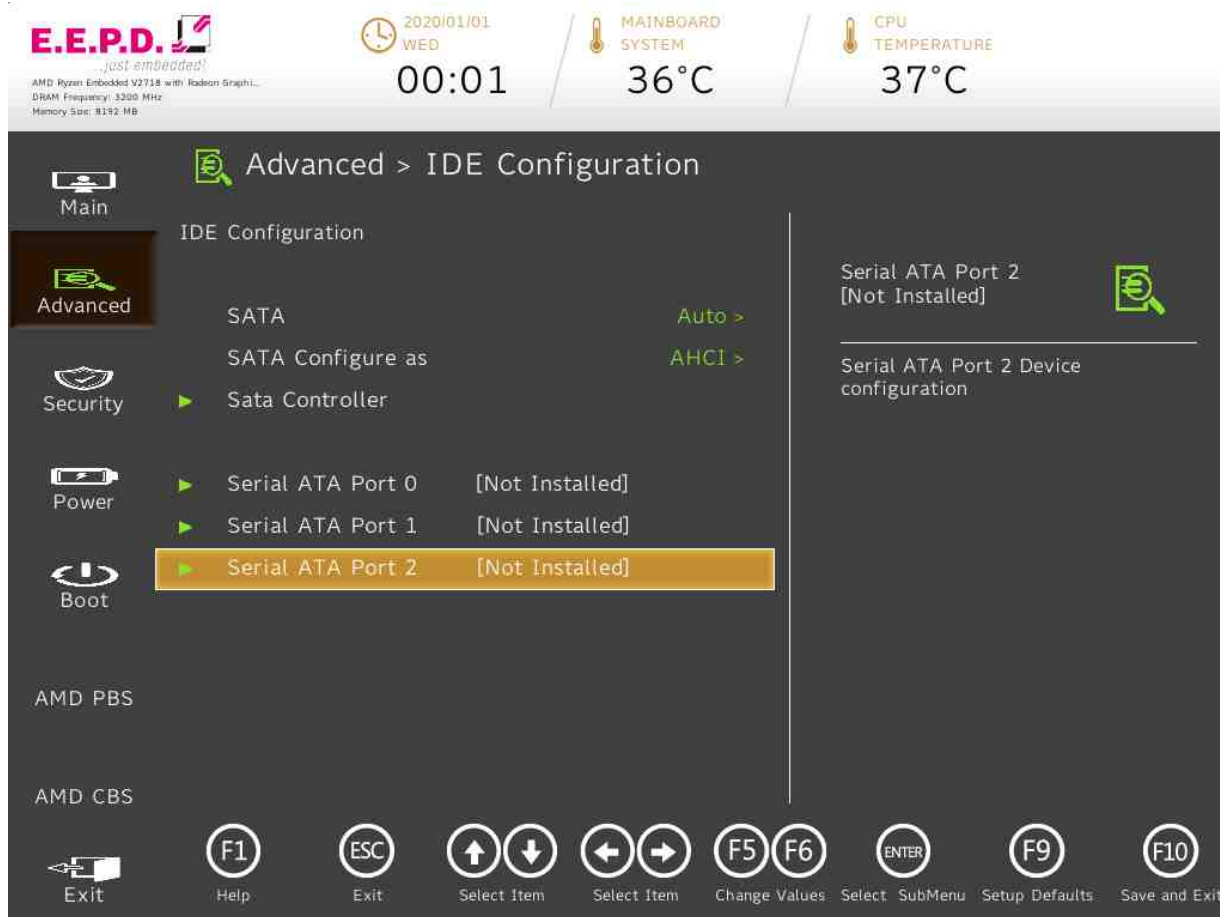


Fig. 26: IDE Configuration 1

BIOS Settings		Options	Description
SATA		<Disabled> <Auto>*	AUTO: Auto detect the SATA controller. DISABLED: Disable the SATA controller
SATA Configure as		<IDE> <AHCI>*	Set SATA Configure Type
Sata Controller		No options	Enable/Disable SATA Controller
Serial ATA Port 0	[Not Installed]	No options	Serial ATA Port 0 Device configuration
Serial ATA Port 1	[Not Installed]	No options	Serial ATA Port 1 Device configuration
Serial ATA Port 2	[Not Installed]	No options	Serial ATA Port 2 Device configuration

Tab. 11: IDE Configuration

SATA-Controller

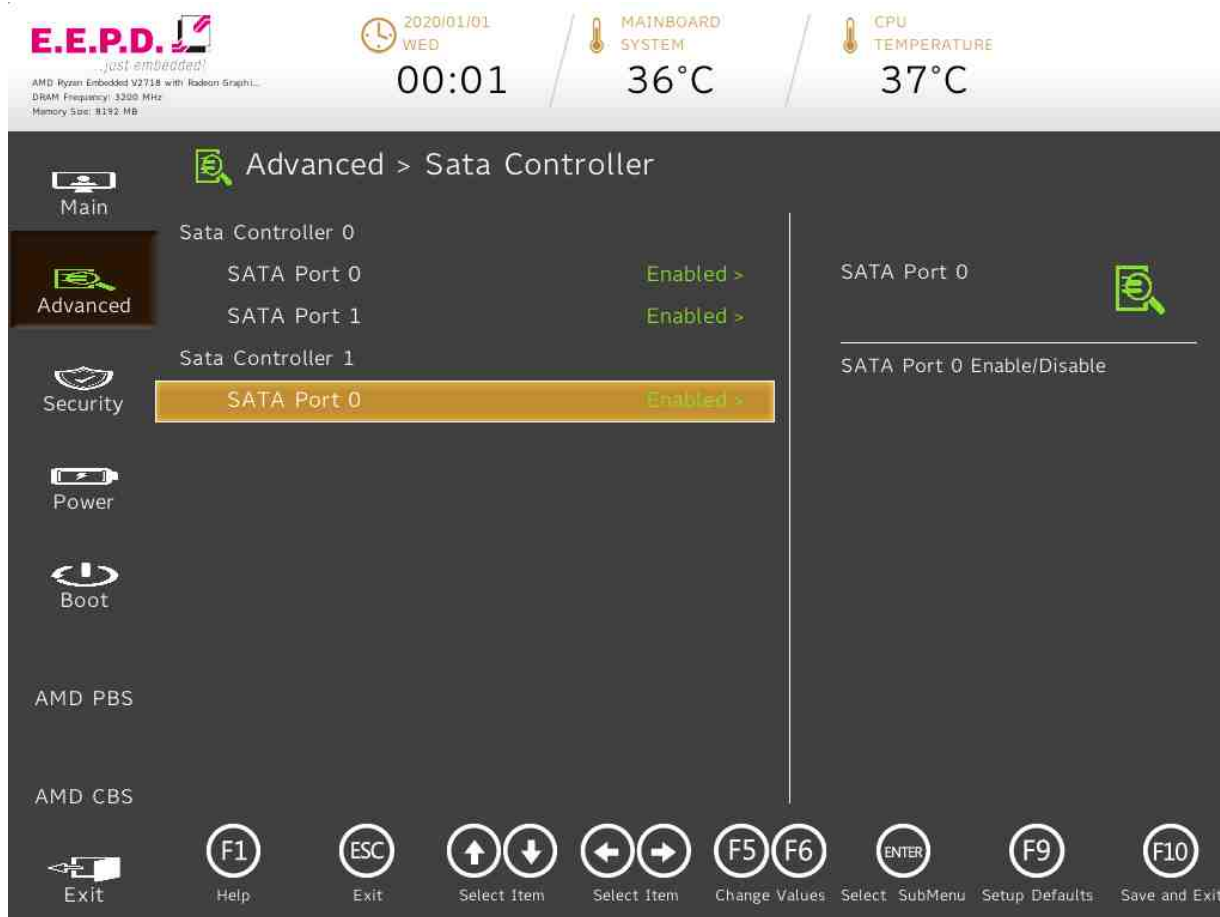


Fig. 27: SATA Controller 0

BIOS Settings		Options	Description
SATA Port 0		<Disabled> <Enabled>*	SATA Port 0 Enable/Disable
SATA Port 1		<Disabled> <Enabled>*	SATA Port 1 Enable/Disable
SATA Port 0		<Disabled> <Enabled>*	SATA Port 0 Enable/Disable

Tab. 12: SATA Controller 0

USB Configuration

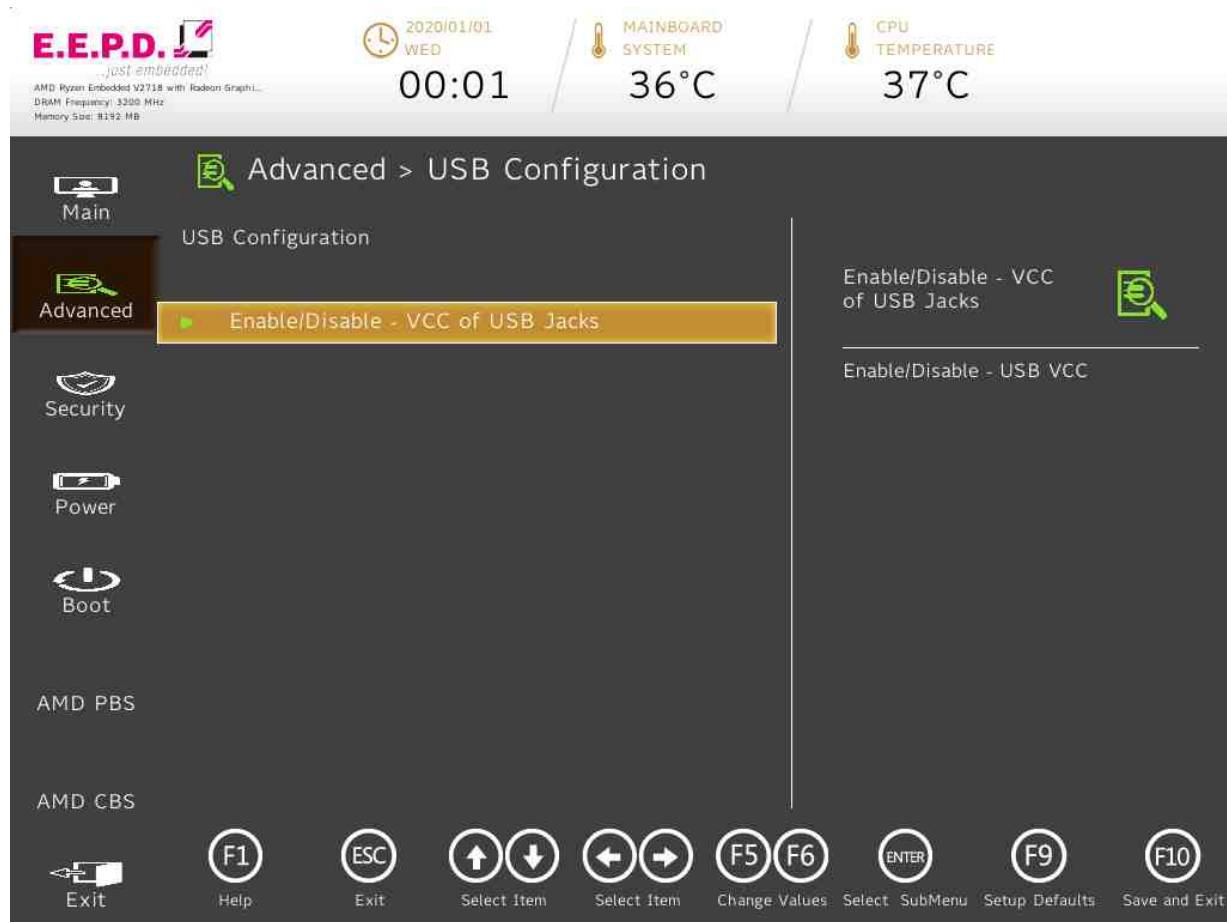


Fig. 28: USB Configuration

BIOS Settings		Options	Description
Enable/Disable – VCC of USB Jacks	No options		Enable/Disable – USB VCC

Tab. 13: USB Configuration

Enable/Disable – VCC of USB Jacks

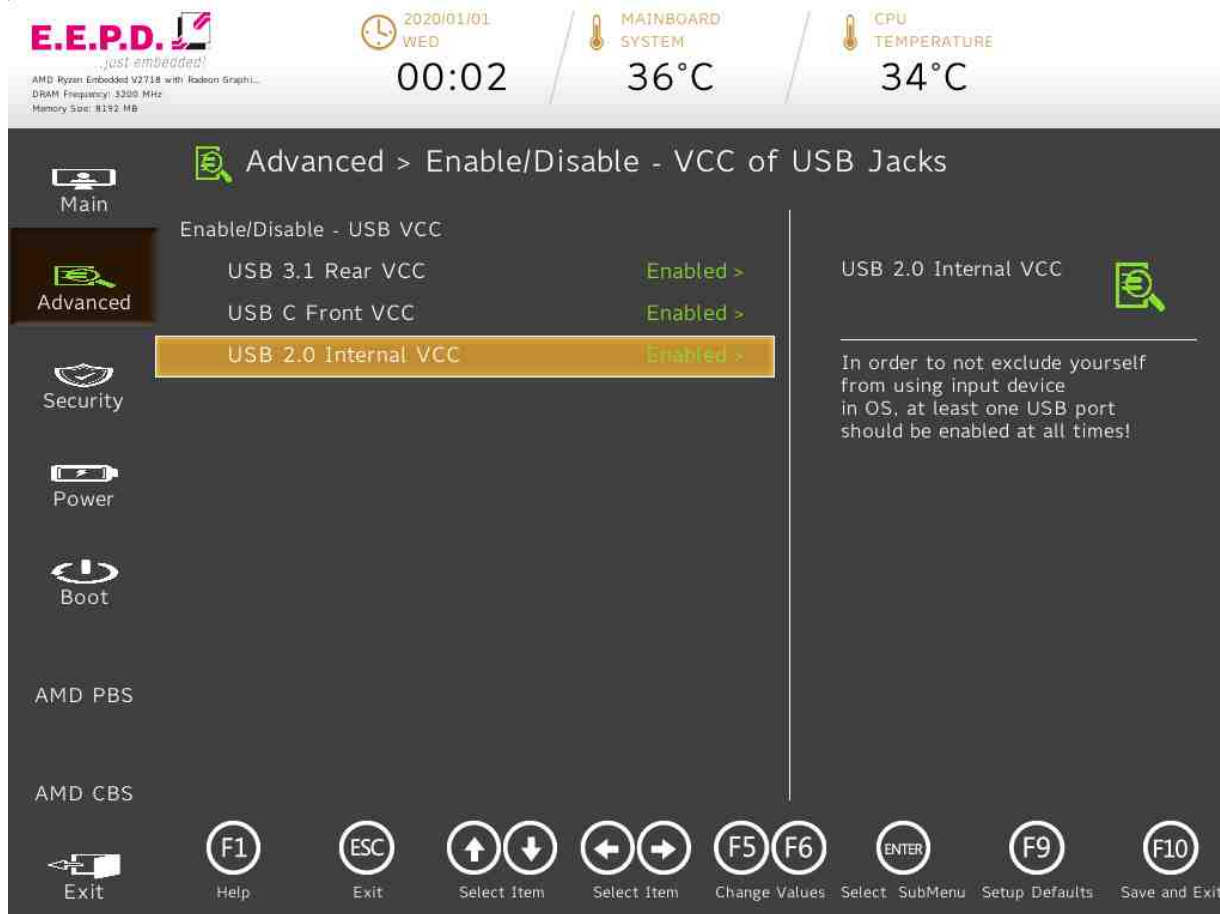


Fig. 29: USB Ports

BIOS Settings	Options	Description
USB 3.1 Rear VCC	<Disabled> <Enabled>*	In order to not exclude yourself from using input device in OS, at least one USB port should be enabled at all times!
USB C Front VCC	<Disabled> <Enabled>*	In order to not exclude yourself from using input device in OS, at least one USB port should be enabled at all times!
USB 2.0 Internal VCC	<Disabled> <Enabled>*	In order to not exclude yourself from using input device in OS, at least one USB port should be enabled at all times!

Tab. 14: USB Ports

Chipset Configuration



Fig. 30: Chipset Configuration

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

Tab. 15: Chipset Configuration

ACPI Table



Fig. 31: 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. 16: ACPI Table

CPU Related setting

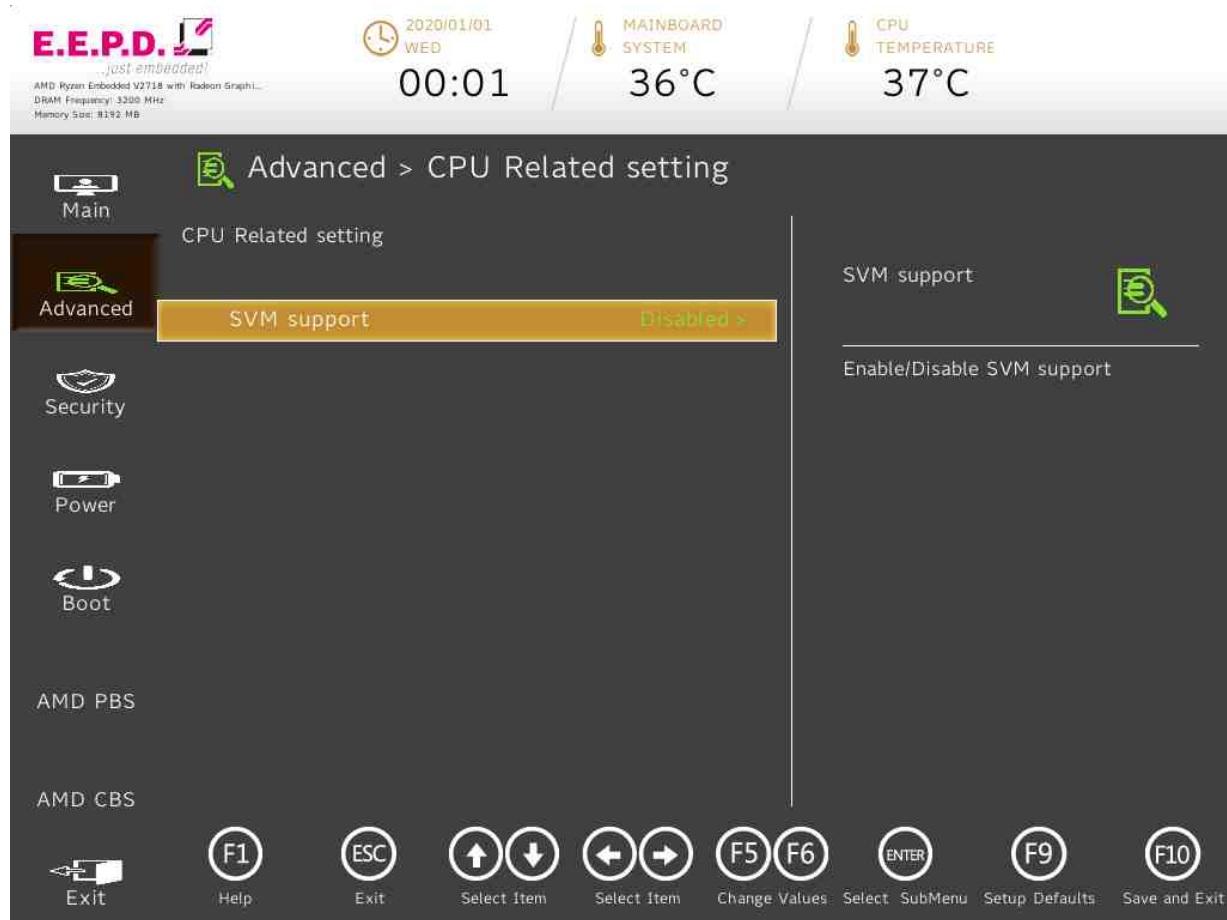


Fig. 32: CPU related setting

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

Tab. 17: CPU Related setting

NUCE options – Watchdog

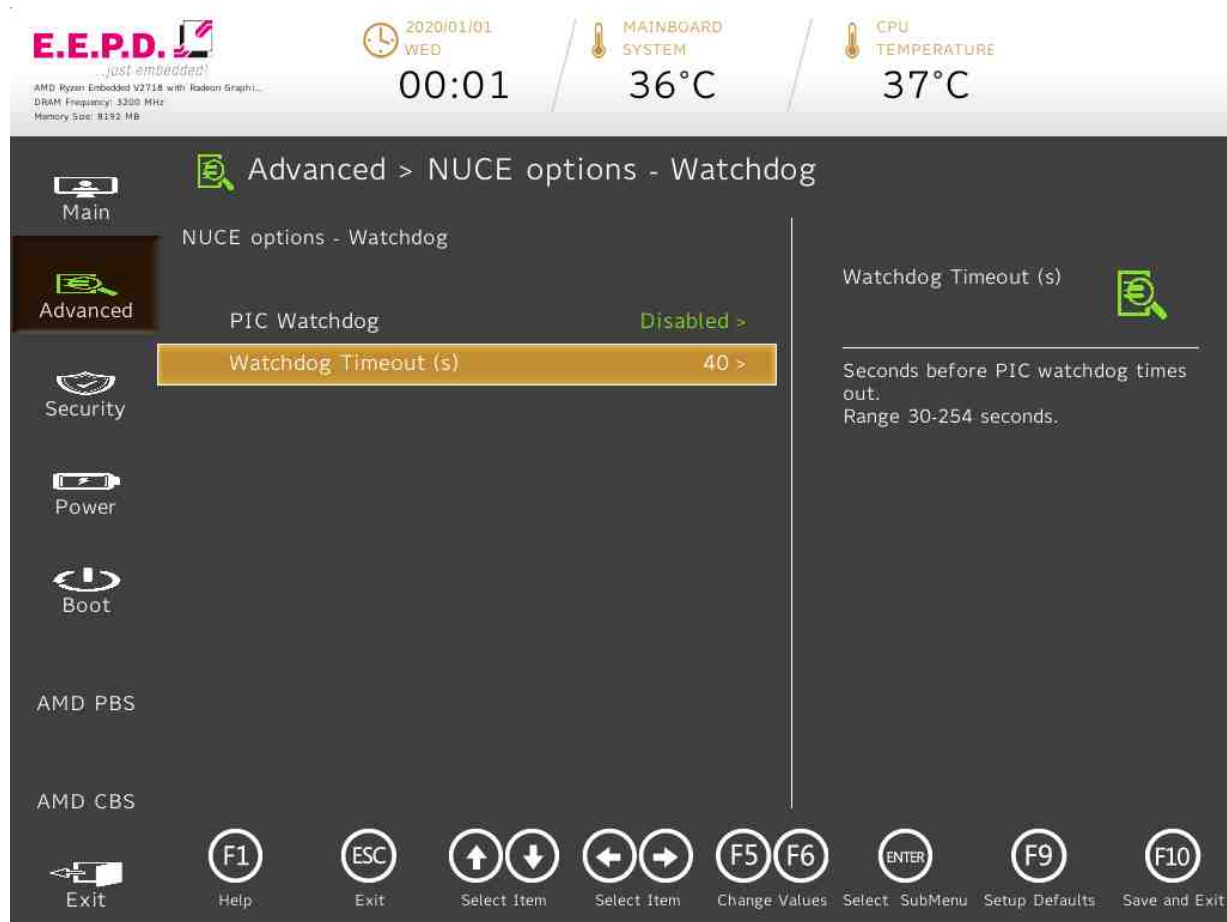


Fig. 33: NUCE options

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.

Tab. 18: NUCE options

SIO SCH3223

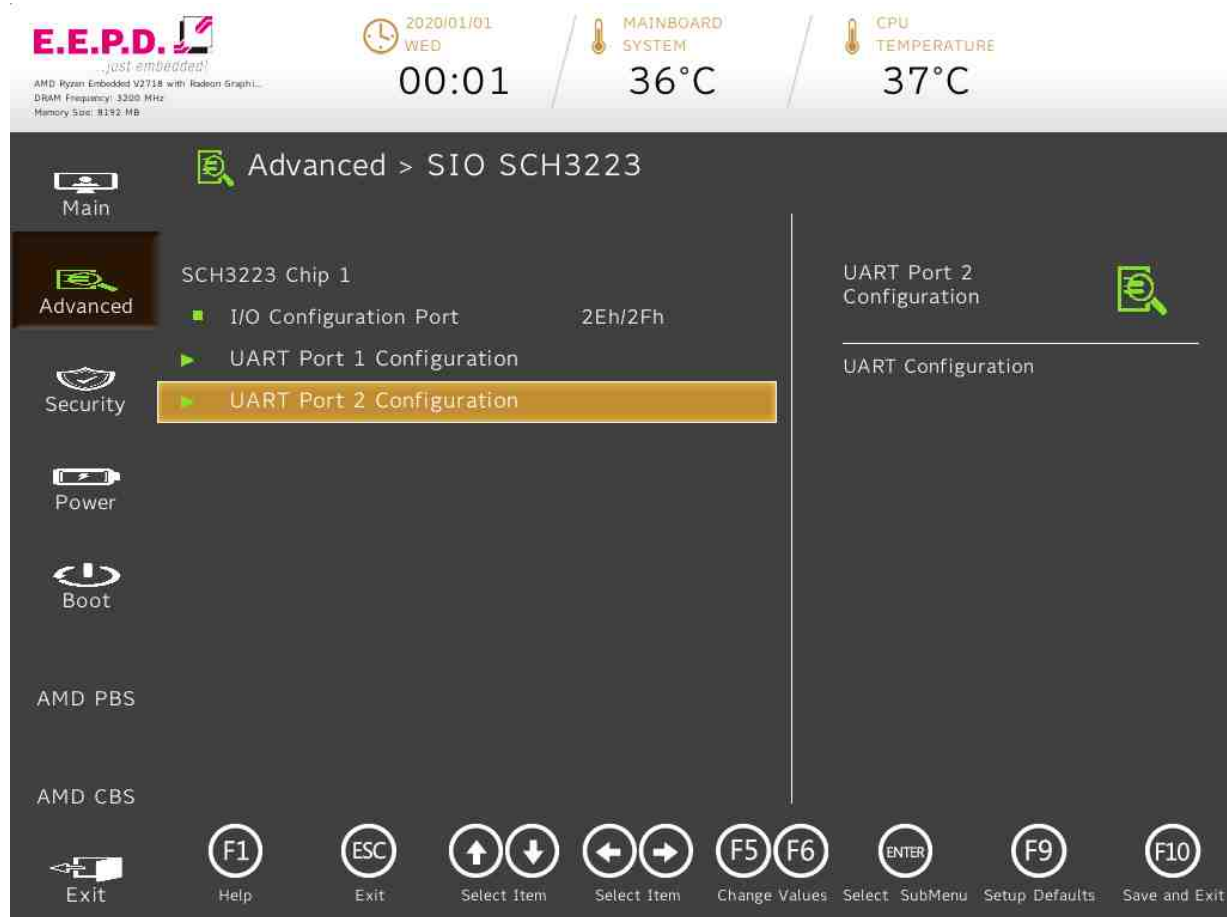


Fig. 34: SIO SCH3223

BIOS Settings		Options	Description
UART Port 1 Configuration	No options		UART Configuration
UART Port 2 Configuration	No options		UART Configuration

Tab. 19: SIO SCH3223

UART Port 1 Configuration

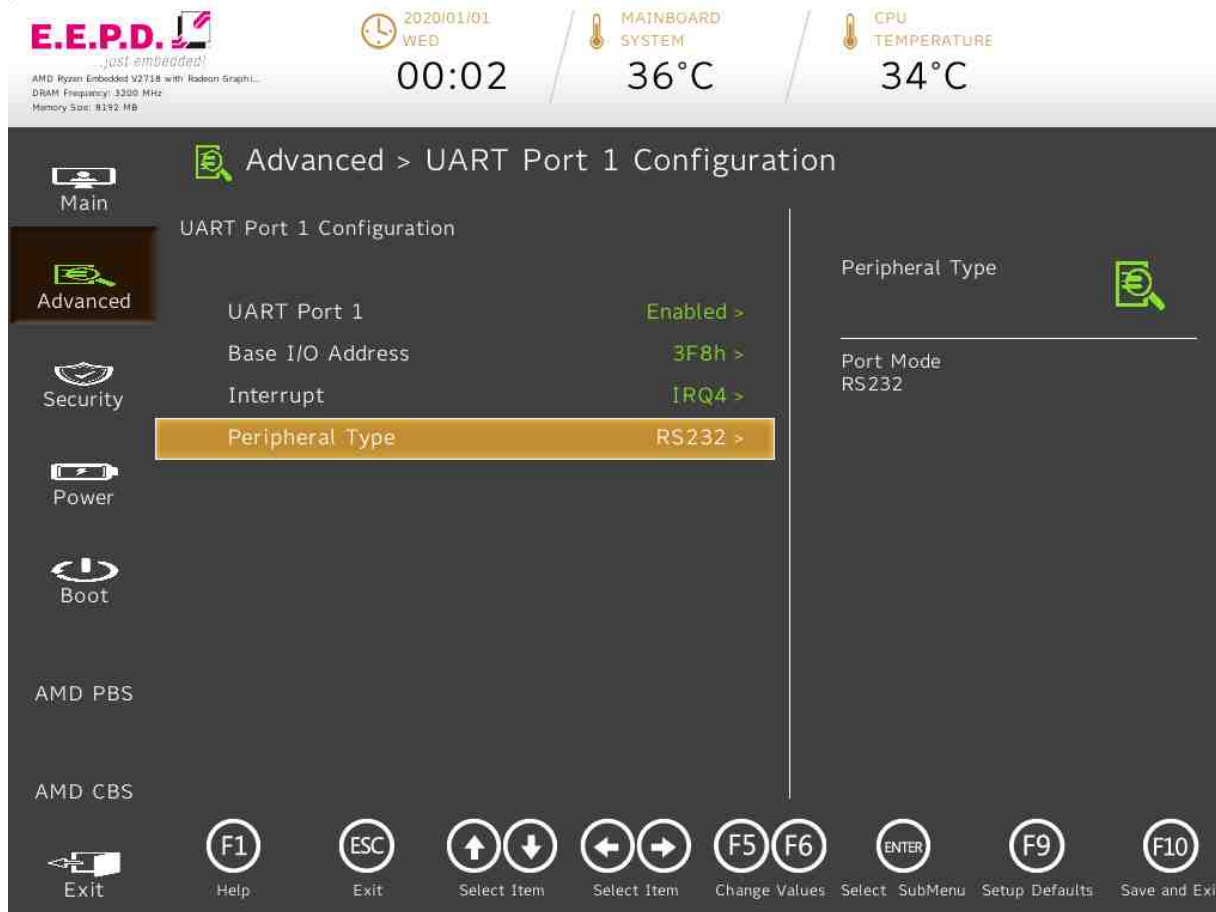


Fig. 35: UART Port 1 Configuration

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>*	Port Mode: RS232

Tab. 20: UART Port 1 Configuration

UART Port 2 Configuration

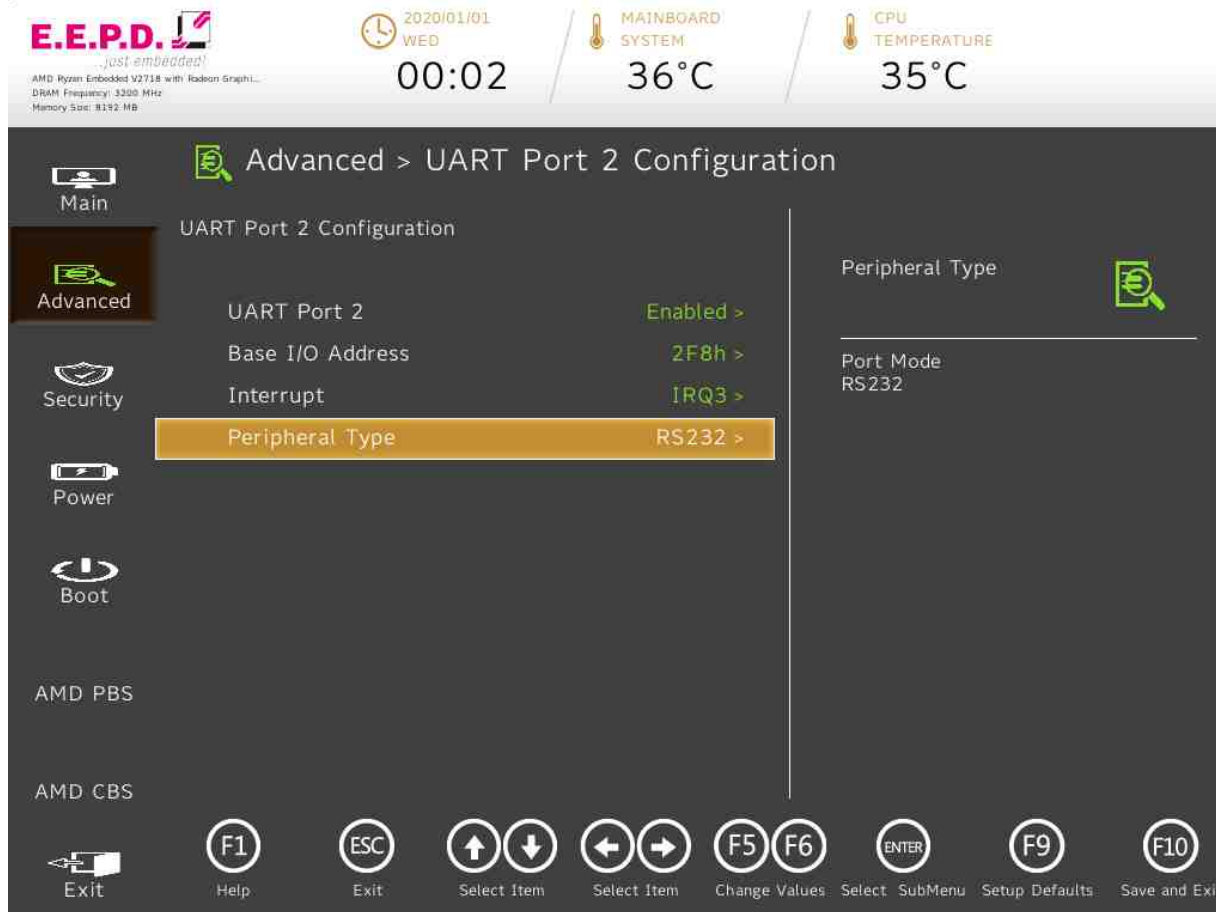


Fig. 36: UART Port 2 Configuration

BIOS Settings	Options	Description
UART Port 2	<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>*	Port Mode: RS232

Tab. 21: UART Port 2 Configuration

Security Menu

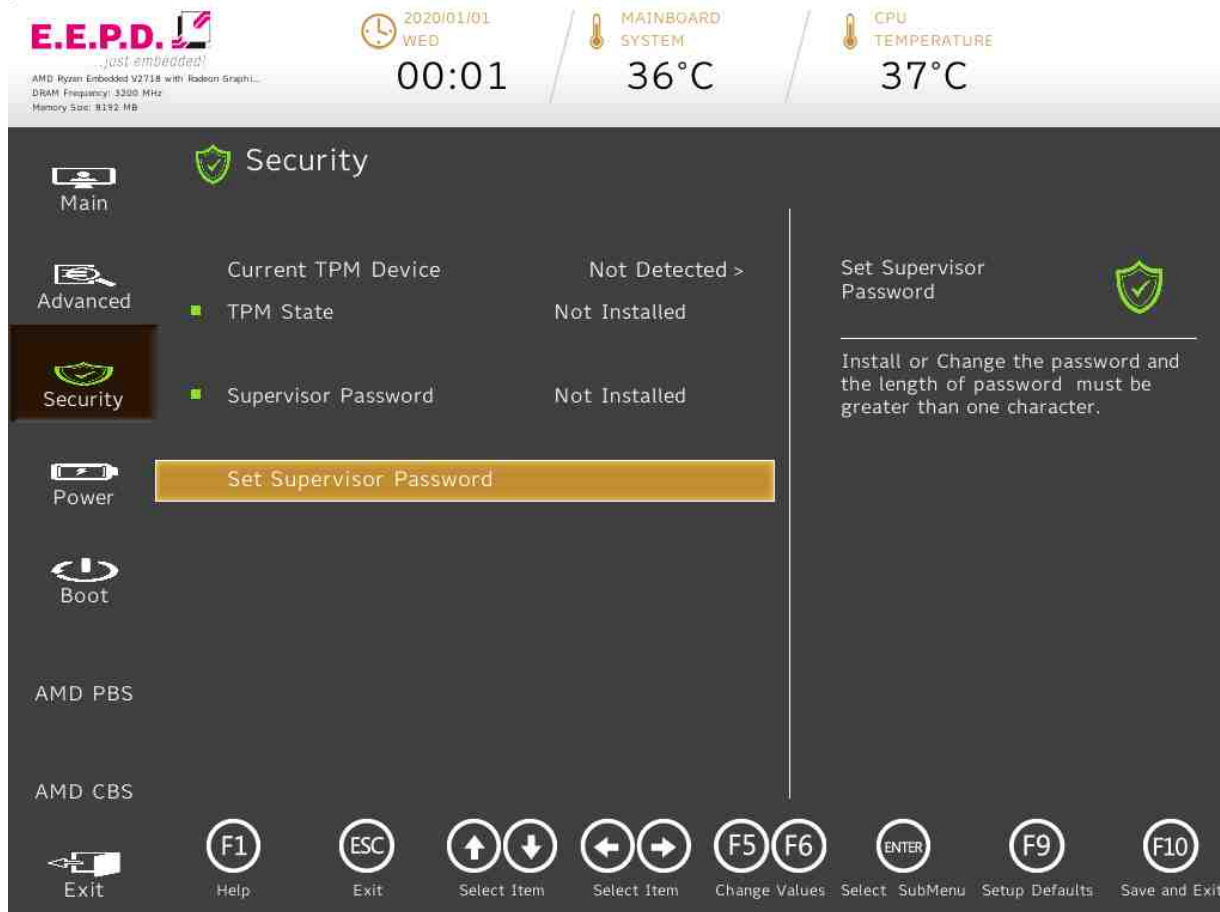


Fig. 37: Security Menu 1

BIOS Settings	Options	Description
Current TPM Device	<Not Detected> <TPM 1.2> <TPM 2.0>*	Current TPM Device: TPM1.2, or TPM2.0.
Set Supervisor Password	None	Install or Change the password and the length of password must be greater than one character.

Tab. 22: Security Menu

Storage Password Setup Page



Fig. 38: Storage Password Setup

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. 23: Storage Password Setup

Power Menu

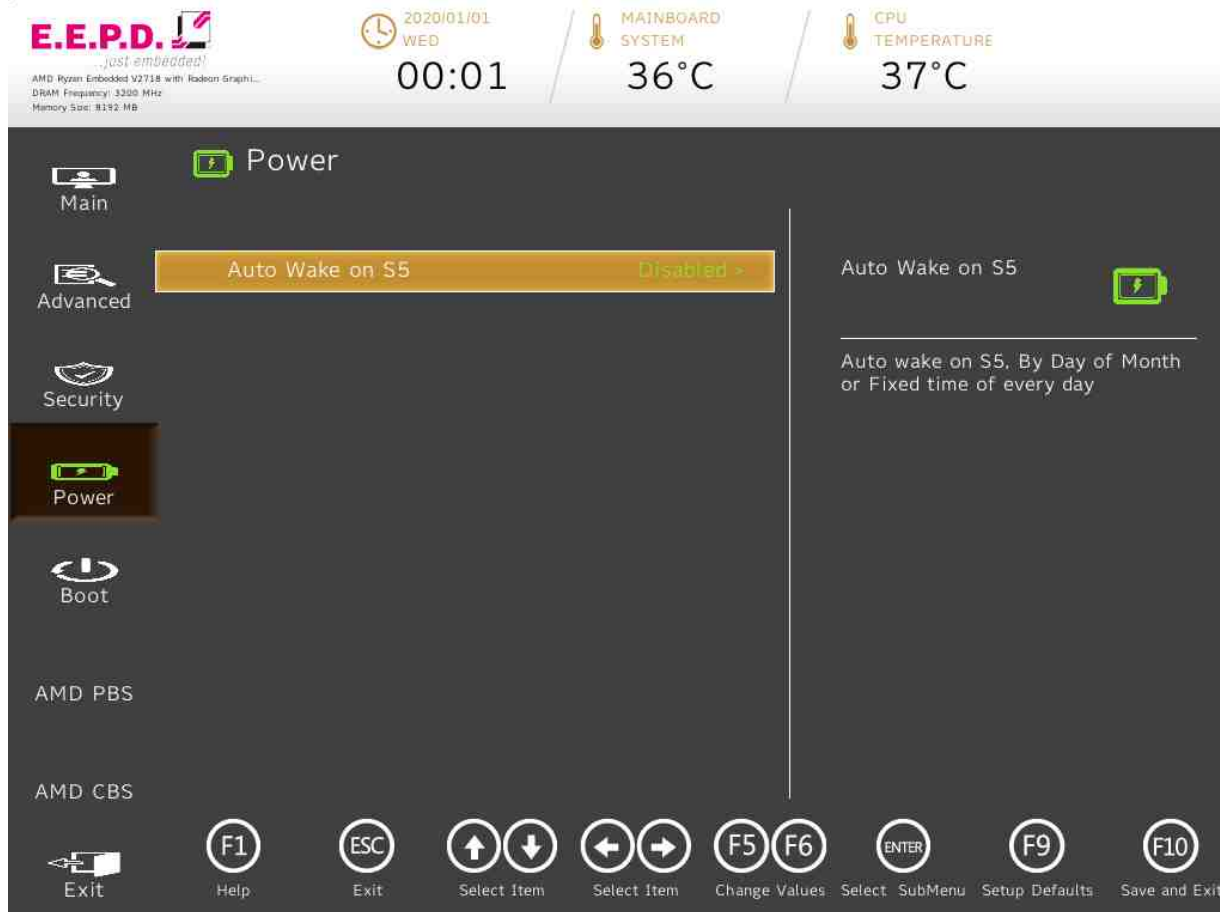


Fig. 39: Power Menu

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. 24: Power Menu

Boot Menu

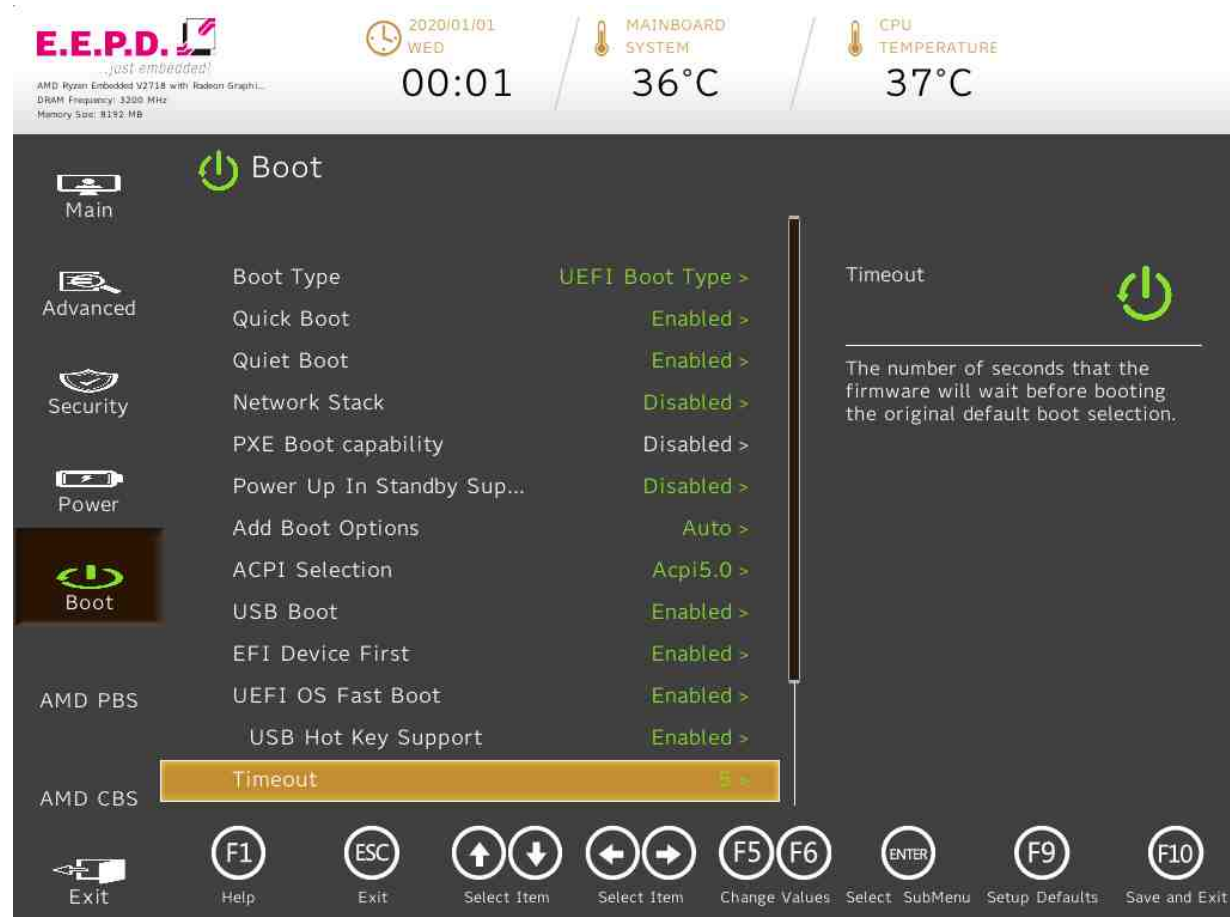


Fig. 40: Boot Menu 1

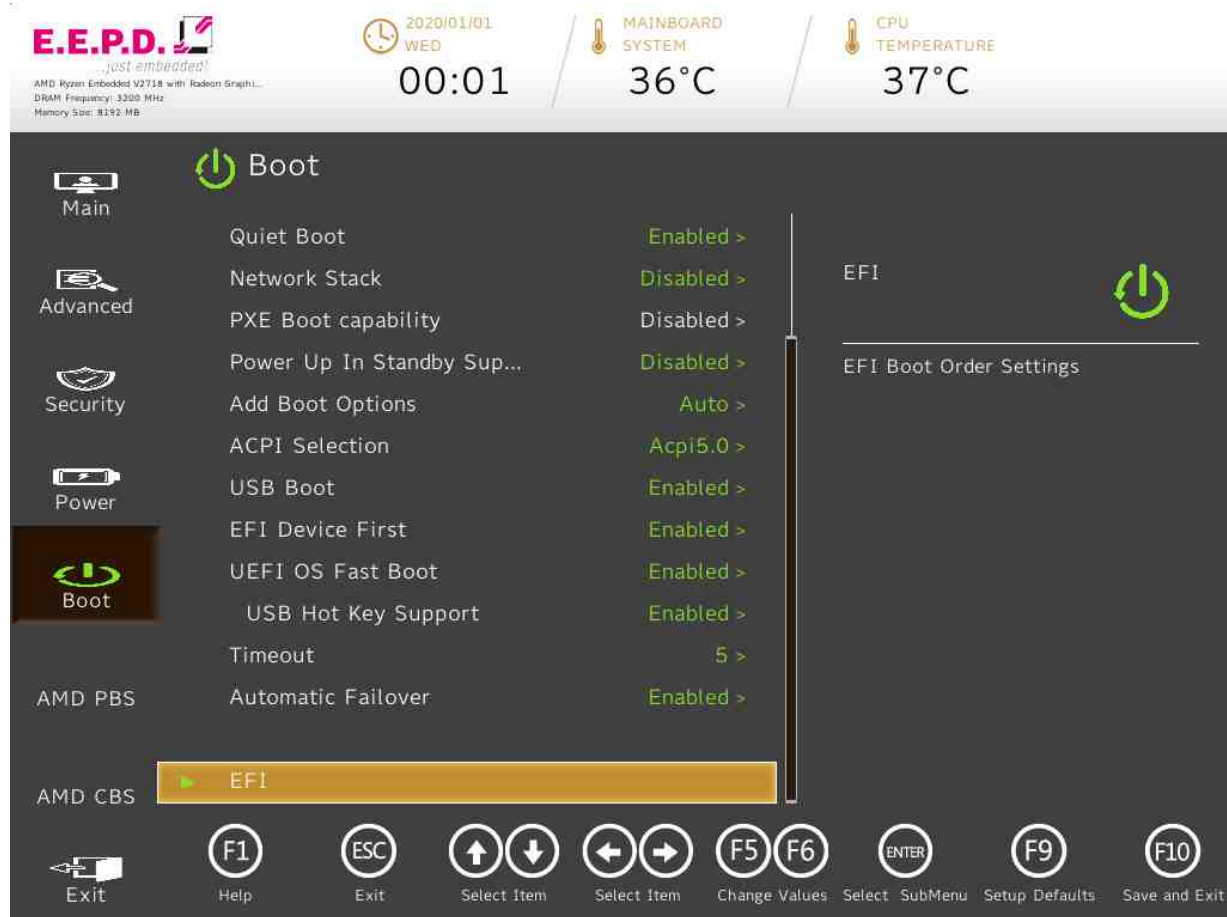


Fig. 41: Boot Menu 2

BIOS Settings	Options	Description
Boot Type	<Dual Boot Type> <Legacy Boot Type> <UEFI Boot Type>*	Select boot type to Dual type, Legacy type or UEFI type
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: Windows 8 BitLocker Unlock UEFI IPv4/IPv6 PXE Legacy PXE OPRM
PXE Boot capability	<Disabled>*	Disabled : Support Network Stack UEFI PXE : IPv4/IPv6 Legacy : Legacy PXE OPRM only
Power Up In Standby Support	<Enabled> <Disabled>*	Disable or enable Power Up In Standby Support. The PUIS feature set allows devices to be powered-up into the Standby power management state to minimize inrush current at power-up and to allow the host to sequence the spin-up of devices.
Add Boot Options	<First> <Last> <Auto>*	Position in Boot Order for Shell,Network and Removables
ACPI Selection	<Acpi4.0> <Acpi5.0>* <Acpi6.0> <Acpi6.1> <Acpi6.2> <Acpi6.3>	Select booting to Acpi3.0/Acpi1.0B
USB Boot	<Enabled>* <Disabled>	Disables or enables booting to USB boot devices.

EFI Device First	<Disabled> <Enabled>*	Determine EFI device first or legacy device first. If enable, it is EFI device first. If disable, it is Legacy device first.
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 [5]	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.
EFI	No options	EFI Boot Order Settings

Tab. 25: Boot Menu

EFI

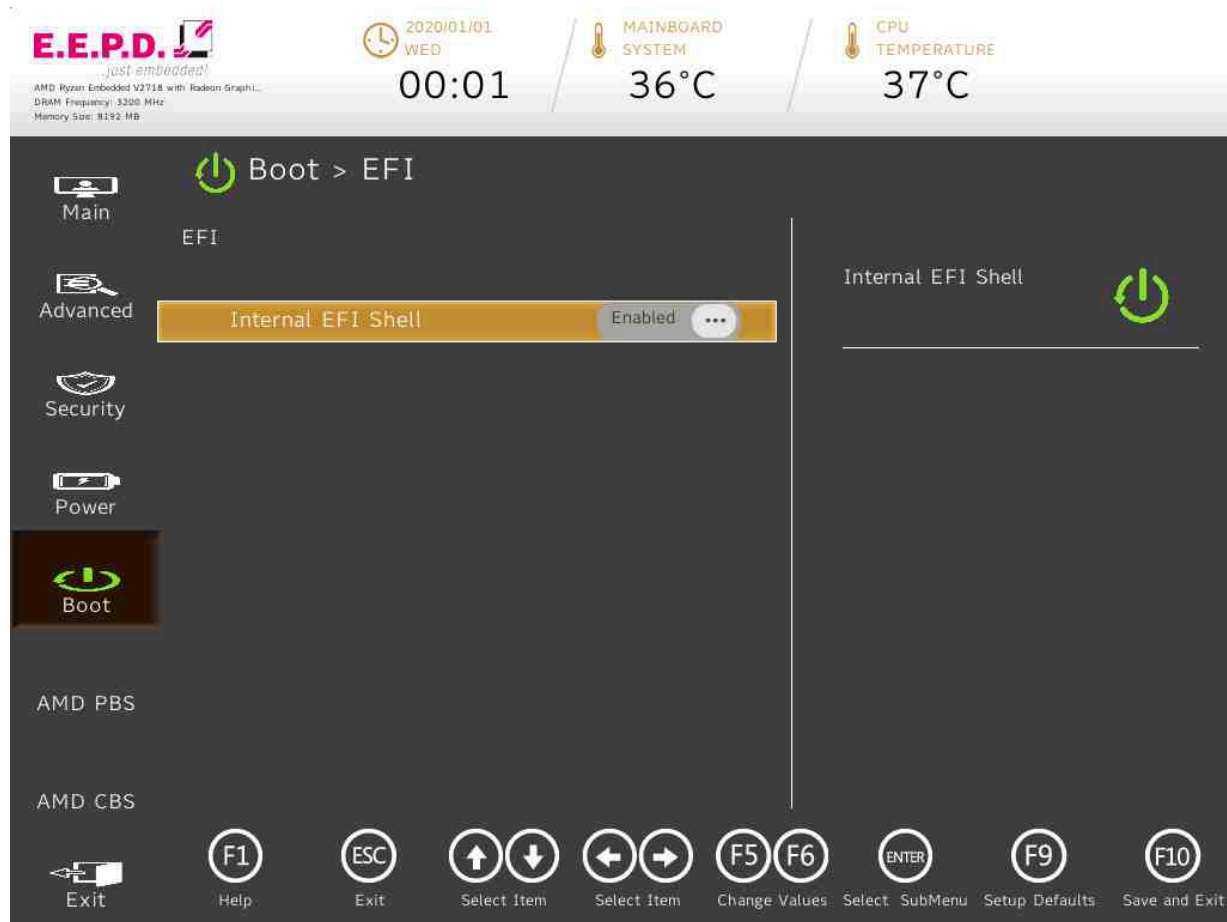


Fig. 42: EFI

BIOS Settings		Options	Description
Internal EFI Shell		[]* [X]	

Tab. 26: EFI

AMD PBS Menu



Fig. 43: AMD PBS Option

BIOS Settings	Options	Description
AMD Firmware Version	No options	Show all of AMD Firmware Version
M.2 Key M SATA/PCIE Selection	<Force PCIE> <Force SATA> <Auto Detection>*	M.2 Key M SATA/PCIE Selection usage: SATA, PCIE or Auto Detection
M.2 Key B Power Enable	<Disabled> <Enabled>*	Enable/Disable power of M.2 Key B Slot
M.2 Key E Antenna Power Enable	<Disabled> <Enabled>*	Enable/Disable antenna power of M.2 Key E Slot
Above 4GB MMIO Limit	<35bit (32GB)> <36bit (64GB)> <37bit (128GB)> <38bit (256GB)> <39bit (512GB)> <40bit (1TB)>* <41bit (2TB)> <42bit (4TB)> <43bit (8TB)> <44bit (16TB)> <45bit (32TB)> <46bit (64TB)> <47bit (128TB)> <48bit (256TB)>	Select Above 4GB MMIO Limit to 35~48bits limit.
S3/Modern Standby Support	<S3 Enable>* <Modern Standby Enable>	Switch S3/Modern Standby
Wake on PME	<Disabled> <Enabled>*	Determines the action taken when the system power is off and a PCI Power Management Enable wake up event occurs.

Tab. 27: AMD PBS Option

AMD Firmware Version

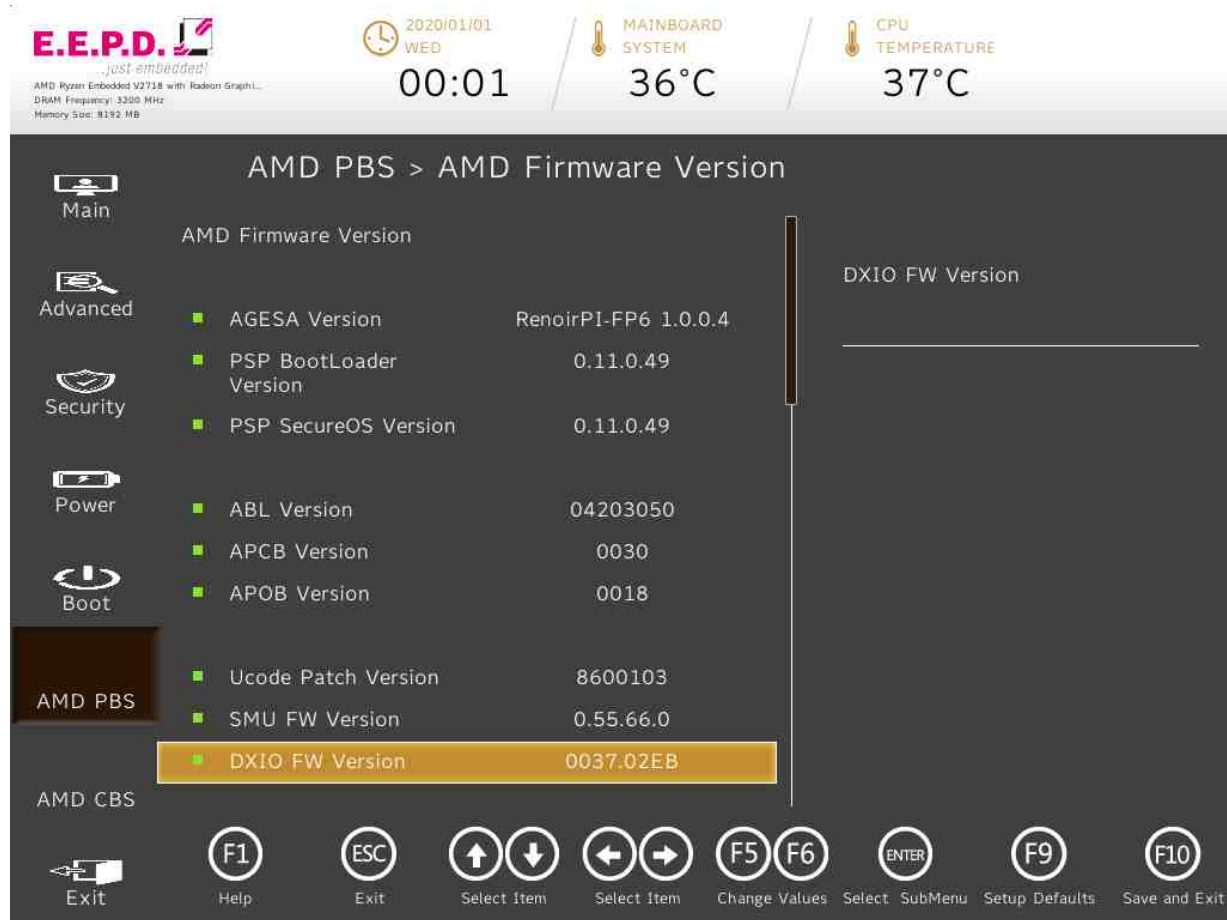


Fig. 44: AMD Firmware Version 1

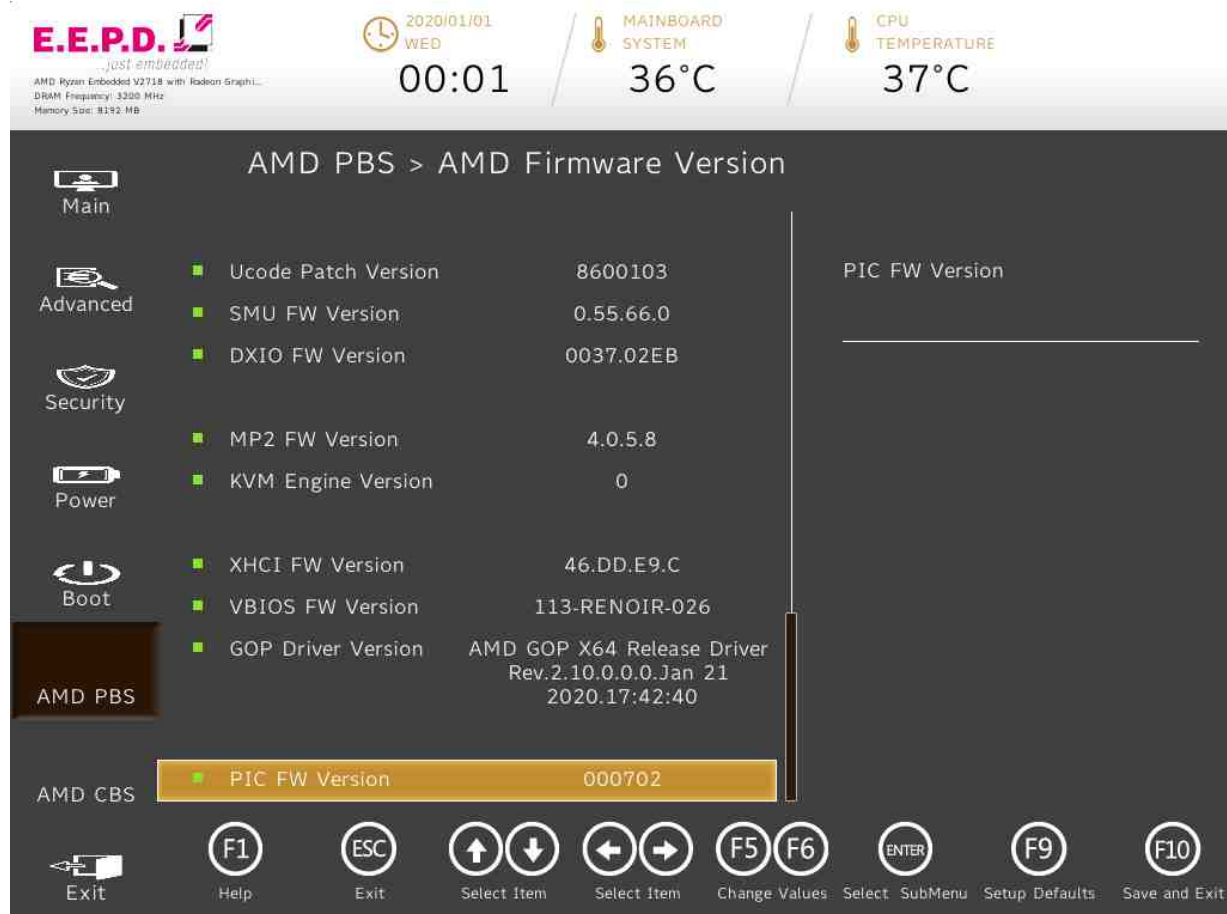


Fig. 45: AMD Firmware Version 2

AMD CBS Menu



Fig. 46: AMD CBS

BIOS Settings		Options	Description
CPU Common Options	No options		CPU Common Options
NBIO Common Options	No options		NBIO Common Options
FCH Common Options	No options		FCH Common Options

Tab. 28: AMD CBS

CPU Common Options

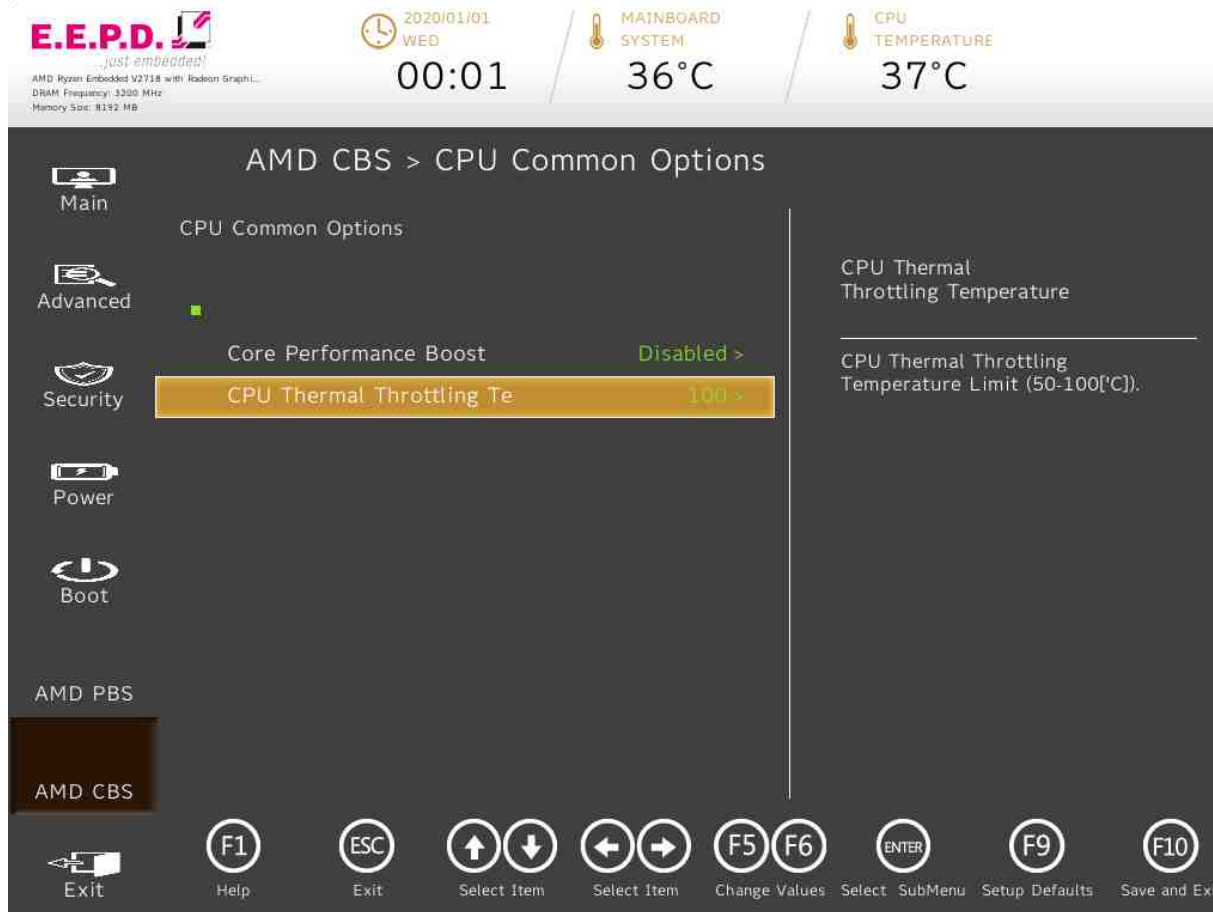


Fig. 47: CPU Common Options

BIOS Settings	Options	Description
Core Performance Boost	<Disabled*> <Auto>	Disable CPB
CPU Thermal Throttling Temperature	Adjust value [50-100] Default value [100]	CPU Thermal Throttling Temperature Limit (50-100[°C])

NBIO Common Options



Fig. 48: NBIO Common Options

BIOS Settings		Options	Description
GFX Configuration	No options		GFX Configuration
SMU Common Options	No options		SMU Common Options

Tab. 29: NBIO Common Options

GFX Configuration

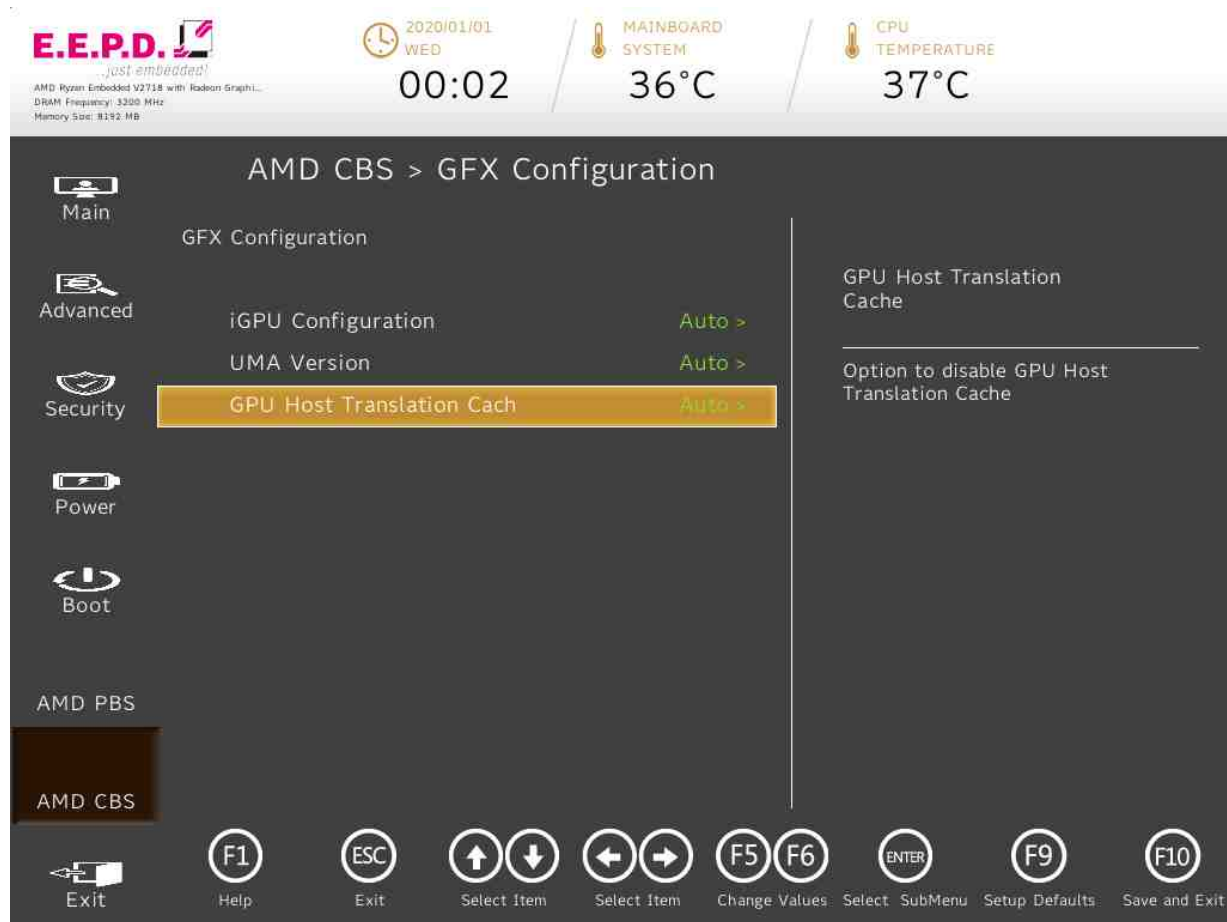


Fig. 49: GFX Configuration

BIOS Settings	Options	Description
iGPU Configuration	<Auto> <iGPU Disabled> <UMA_SPECIFIED> <UMA_AUTO> <UMA_GAME_OPTIMIZED>	UMA Mode
UMA Version	<Legacy> <Non-Legacy> <Hybrid Secure> <Auto>	UMA Legacy Version UMA Non Legacy Version Hybrid Secure
GPU Host Translation Cache	<Disabled> <Enabled> <Auto>	Option to disable GPU Host Translation Cache

Tab. 30: GFX Configuration

SMU Common Options

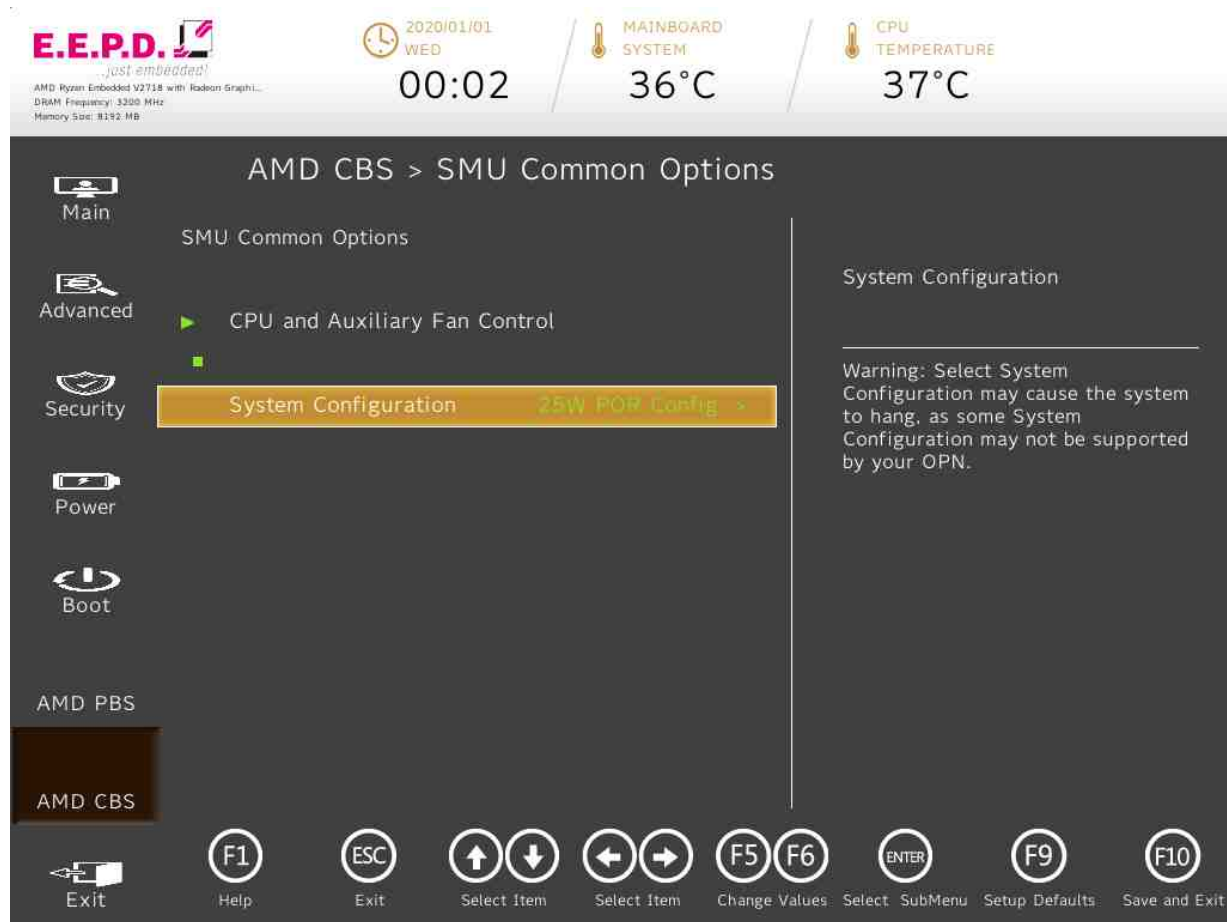


Fig. 50:SMU Common Options

BIOS Settings	Options	Description
CPU and Auxiliary Fan Control	No options	CPU and Auxiliary Fan Control
System Configuration	<15W POR Configuration> <18W POR Configuration> <25W POR Configuration>	Warning: Select System Configuration may cause the system to hang, as some System Configuration may not be supported by your OPN.

Tab. 31: SMU Common Options

CPU and Auxiliary Fan Control

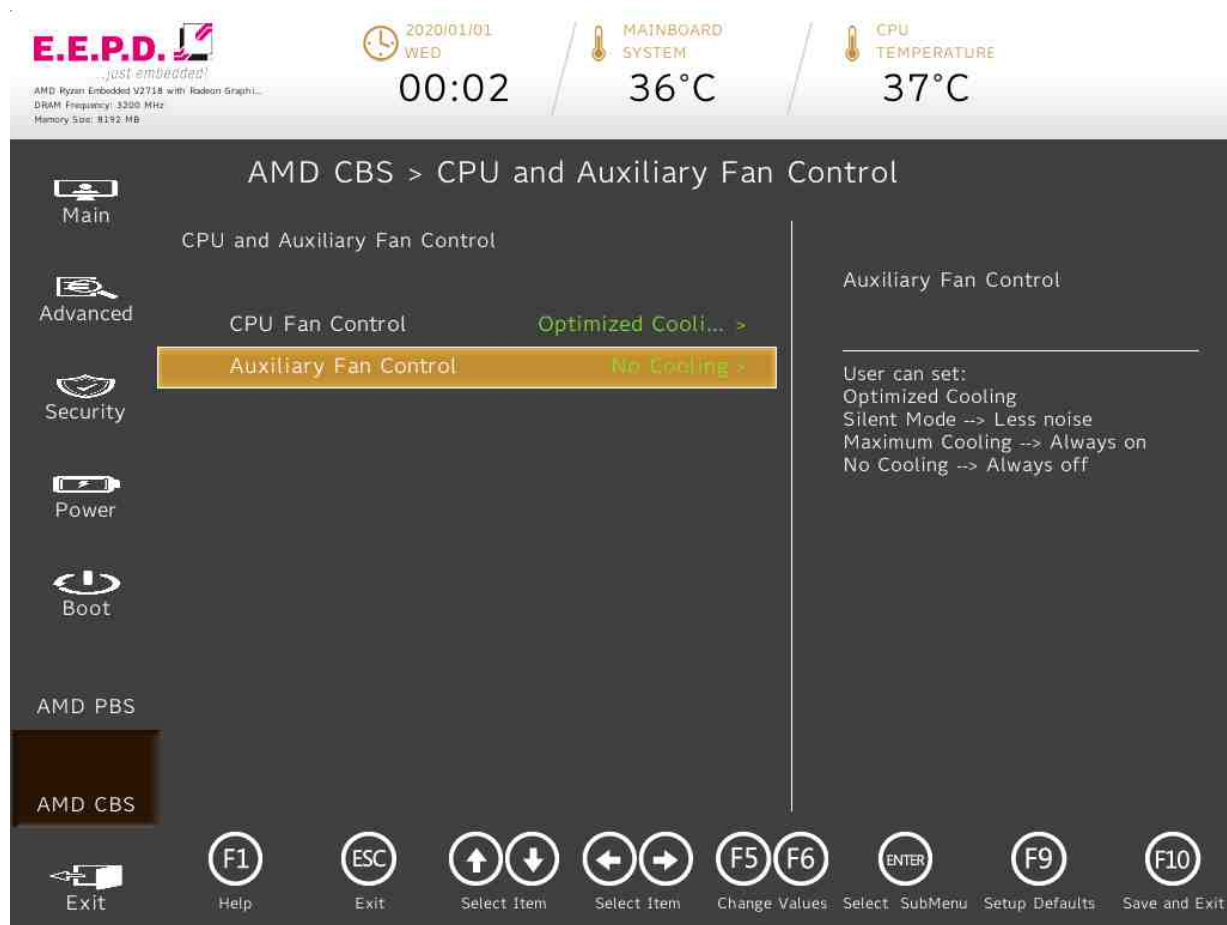


Fig. 51: CPU and Auxiliary Fan Control

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

Tab. 32: CPU and Auxiliary Fan Control

FCH Common Options

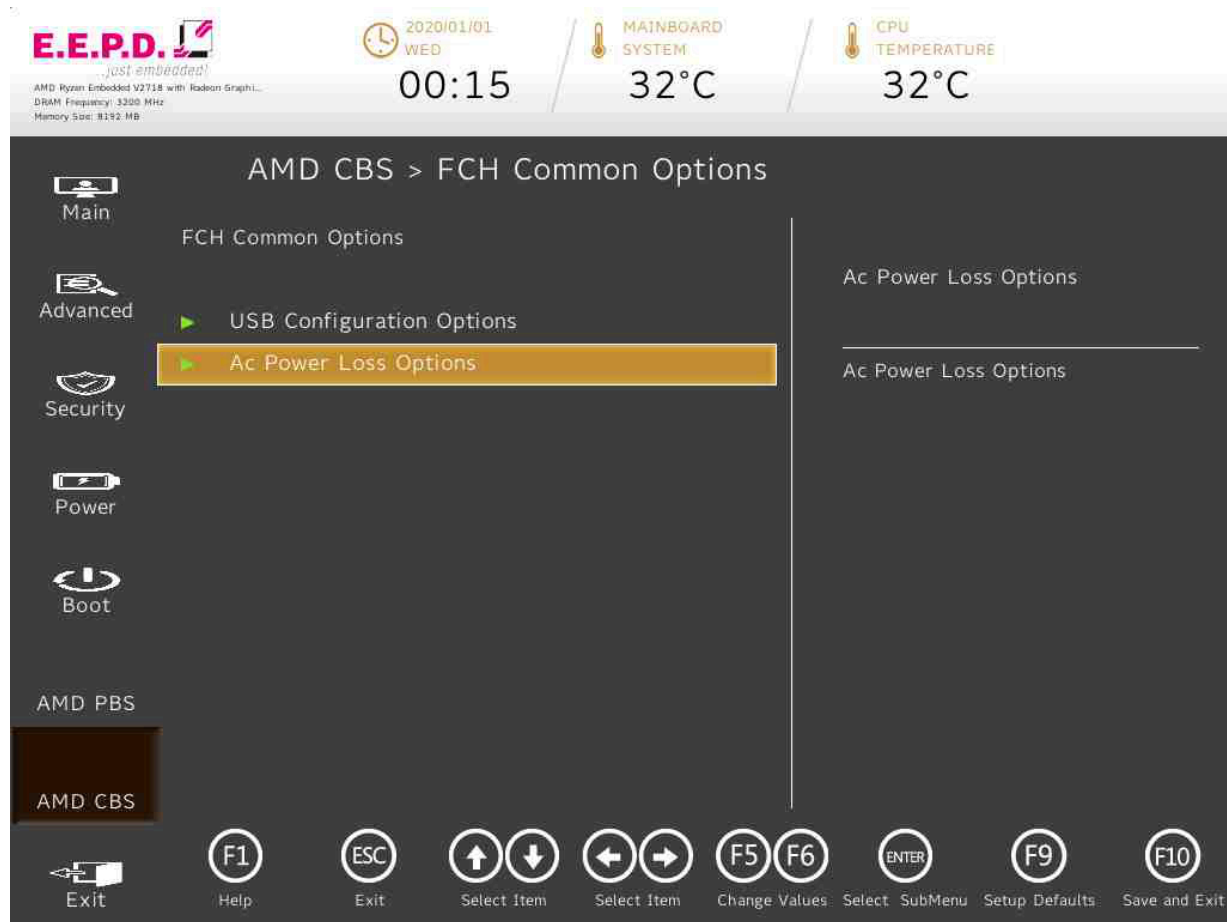


Fig. 52: FCH Common Options

BIOS Settings		Options	Description
USB Configuration Options	No options		USB Configuration Options
Ac Power Loss Options	No options		Ac Power Loss Options

Tab. 33: FCH Common Options

USB Configuration Options



Fig. 53: USB Configuration Options

BIOS Settings	Options	Description
XHCI0 controller enable	<Enabled> <Disabled> <Auto>*	Enable or disable USB3 controller.
XHCI1 controller enable	<Enabled> <Disabled> <Auto>*	Enable or disable USB3 controller.

Tab. 34: USB Configuration Options

Ac Power Loss Options



Fig. 54: Ac Power Loss Options

BIOS Settings	Options	Description
Ac Loss Control	<Always Off> <Always On> <Reserved> <Previous>* <Auto>	Select Ac Loss Control Method

Tab. 35: Ac Power Loss Options

Exit Menu

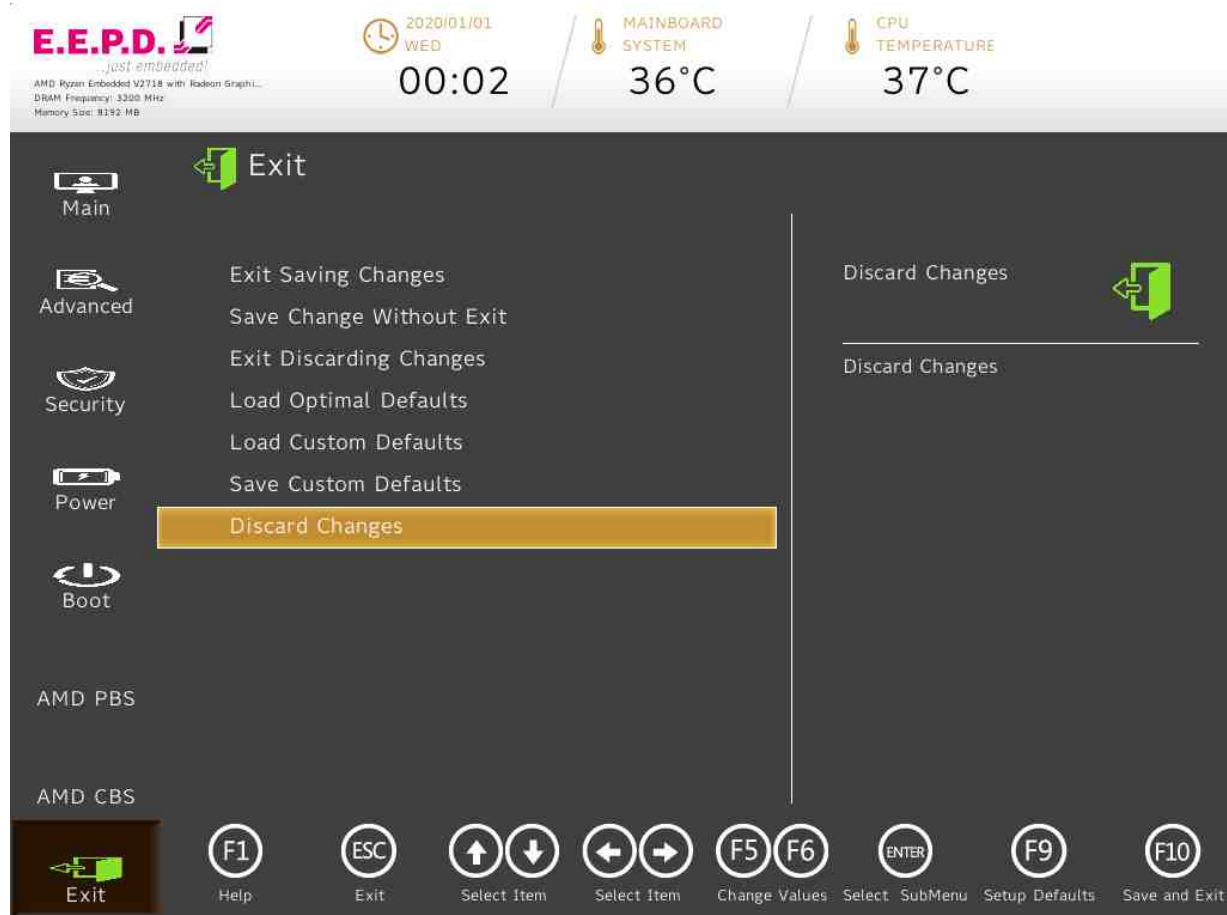


Fig. 55: Exit Menu

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

Tab. 36: Exit Menu

Revision History

Date	Version	Changes
17.05.2021	1.0	First release
29.07.2021	1.1	BIOS Update and some corrections
23.09.2021	1.2	Some corrections

Index of Figures

Fig. 1: Type label	10	Fig. 29: USB Ports	41
Fig. 2: Dimensions frontside, all values approx. in mm	10	Fig. 30: Chipset Configuration	43
Fig. 3: Dimensions backside, all values approx. in mm	10	Fig. 31: ACPI Table	45
Fig. 4: Dimensions left side, all values approx. in mm	11	Fig. 32: CPU related setting	47
Fig. 5: Dimensions right side, all values approx. in mm	11	Fig. 33: NUCE options	49
Fig. 6: Dimensions bottom side, all values approx. in mm	11	Fig. 34: SIO SCH3223	51
Fig. 7: DIN rail holder positions	12	Fig. 35: UART Port 1 Configuration	53
Fig. 8: Side View VESA mounted system	13	Fig. 36: UART Port 2 Configuration	55
Fig. 9: BoxPC EM PRO mini front view	15	Fig. 37: Security Menu 1	57
Fig. 10: BoxPC EM PRO mini rear view	15	Fig. 38: Storage Password Setup	59
Fig. 11: BoxPC EM PRO mini rear view option	16	Fig. 39: Power Menu	61
Fig. 12: Power Button with LED	16	Fig. 40: Boot Menu 1	63
Fig. 13: Power-LED HDD/SSD-LED	17	Fig. 41: Boot Menu 2	64
Fig. 14: Mini Display port schematic	18	Fig. 42: EFI	67
Fig. 15: Dual-USB 3.1 Gen2 detail	18	Fig. 43: AMD PBS Option	69
Fig. 16: Dual-Ethernet detail	19	Fig. 44: AMD Firmware Version 1	71
Fig. 17: Power connector schematic	19	Fig. 45: AMD Firmware Version 2	72
Fig. 18: 9-pin D-SUB connector	20	Fig. 46: AMD CBS	73
Fig. 19: USB-C Detail	20	Fig. 47: CPU Common Options	75
Fig. 20: Main Menu 1	24	Fig. 48: NBIO Common Options	77
Fig. 21: Main Menu 2	25	Fig. 49: GFX Configuration	79
Fig. 22: Advanced Menu	27	Fig. 50: SMU Common Options	81
Fig. 23: PCI Express Configurations	29	Fig. 51: CPU and Auxiliary Fan Control	83
Fig. 24: Boot Configuration	31	Fig. 52: FCH Common Options	85
Fig. 25: Peripheral Configuration	33	Fig. 53: USB Configuration Options	87
Fig. 26: IDE Configuration 1	35	Fig. 54: Ac Power Loss Options	89
Fig. 27: SATA Controller 0	37	Fig. 55: Exit Menu	91
Fig. 28: USB Configuration	39		

Index of Tables

Tab. 1: Options	8	Tab. 29: NBIO Common Options	78
Tab. 2: Accessories	9	Tab. 30: GFX Configuration	80
Tab. 3: Pin assignment power connector	19	Tab. 31: SMU Common Options	82
Tab. 4: Pin assignment RS232	20	Tab. 32: CPU and Auxiliary Fan Control	84
Tab. 5: Pin assignment RS232	20	Tab. 33: FCH Common Options	86
Tab. 6: Main Menu	26	Tab. 34: USB Configuration Options	88
Tab. 7: Advanced Menu	28	Tab. 35: Ac Power Loss Options	90
Tab. 8: PCI Express Configurations	30	Tab. 36: Exit Menu	92
Tab. 9: Boot Configuration	32		
Tab. 10: Peripheral Configuration	34		
Tab. 11: IDE Configuration	36		
Tab. 12: SATA Controller 0	38		
Tab. 13: USB Configuration	40		
Tab. 14: USB Ports	42		
Tab. 15: Chipset Configuration	44		
Tab. 16: ACPI Table	46		
Tab. 17: CPU Related setting	48		
Tab. 18: NUCE options	50		
Tab. 19: SIO SCH3223	52		
Tab. 20: UART Port 1 Configuration	54		
Tab. 21: UART Port 2 Configuration	56		
Tab. 22: Security Menu	58		
Tab. 23: Storage Password Setup	60		
Tab. 24: Power Menu	62		
Tab. 25: Boot Menu	66		
Tab. 26: EFI	68		
Tab. 27: AMD PBS Option	70		
Tab. 28: AMD CBS	74		

List of Abbreviations

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

