BTC24-*

Box Thin Client for Industrial Applications

Manual



Your automation, our passion.

PEPPERL+FUCHS

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1 History of the Manual

The following editions of the manual have been released:

Version	Comments
08/2024	First edition
01/2025	Updated Certification Documentation
06/2025	Addition of ThinManager Minor corrections
06/2026	Minor corrections Addition of BIOS Battery Change Addition of Windows® 11

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2 Introduction

2.1 Content of this Document

This document contains information that you need in order to use your product throughout the applicable stages of the product life cycle. These can include the following:

- Product identification
- Delivery, transport, and storage
- Mounting and installation
- Commissioning and operation
- Maintenance and repair
- Troubleshooting
- Dismounting
- Disposal

Note

This document does not substitute the instruction manual.

Note

For full information on the product, refer to the further documentation on the Internet at www.pepperl-fuchs.com.

Note

For specific device information such as the year of construction, scan the QR code on the device. As an alternative, enter the serial number in the serial number search at www.pepperl-fuchs.com/device-information.

The documentation consists of the following parts:

- Present document
- Instruction manual
- Datasheet

Additionally, the following parts may belong to the documentation, if applicable:

- EU-type examination certificate
- EU declaration of conformity
- Attestation of conformity
- Certificates
- Control drawings
- Functional safety manual
- Cybersecurity documentation
- Other documents

2.2 Manufacturer

Pepperl+Fuchs Group Lilienthalstraße 200, 68307 Mannheim, Germany
Internet: www.pepperl-fuchs.com

2.3 Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismounting lies with the plant operator.

Only appropriately trained and qualified personnel may carry out mounting, installation, commissioning, operation, maintenance, and dismounting of the product. The personnel must have read and understood the instruction manual and the further documentation.

Prior to using the product make yourself familiar with it. Read the document carefully.

2.4 Symbols Used

This document contains symbols for the identification of warning messages and of informative messages.

Warning Messages

You will find warning messages, whenever dangers may arise from your actions. It is mandatory that you observe these warning messages for your personal safety and in order to avoid property damage.

Depending on the risk level, the warning messages are displayed in descending order as follows:



Danger!

This symbol indicates an imminent danger.

Non-observance will result in personal injury or death.



Warning!

This symbol indicates a possible fault or danger.

Non-observance may cause personal injury or serious property damage.



Caution!

This symbol indicates a possible fault.

Non-observance could interrupt the device and any connected systems and plants, or result in their complete failure.

Informative Symbols



Note

This symbol brings important information to your attention.



Tip

This symbol brings an useful tip to your attention.



Example

This symbol provides an example of the issue described.



Action

1. This symbol indicates a paragraph with instructions. You are prompted to perform an action or a sequence of actions.

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3 Product Description

3.1 Application

The BTC24-* is a rugged, industrial strength box thin client optimized for 24/7 operation. The BTC24-* has been specially designed for immunity to shock, vibration, and temperatures within a range of 0 ... +55 °C (industrial temperature grade) and is characterized by a fanless construction and industrial strength components.

This compact, stand-alone computer features an AMD Ryzen R2314 processor and a modern integrated graphics card. 4 DisplayPort interfaces support up to 4 monitors at Ultra HD resolution (4K at 60 Hz), making the BTC24-* ideal for monitoring and control applications in factory and process automation.

Additionally the device features a USB Type C port and three Ethernet ports.



Danger!

User access!

Warning! Do not open the device! The BTC24-* is a closed unit with no user-accessible parts.



Note

Radio Interference

This device has been tested and found to comply with the limits for a Class A digital device according to part 15 of the FCC regulations. These limits are designed to provide reasonable protection against harmful interference when the device is used in a commercial environment. This device generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instruction manual, it may cause interference with wireless connections. Operation of this device in a residential area is likely to result in interference that the operator has to correct at the operator's own expense.



Note

Honeywell User Documentation

Refer to the Honeywell user documentation for supported topologies and specifications.

Quad Monitor Setup



Figure 3.1 4 monitors with Ultra HD resolution (4K at 60 Hz)

The BTC24-* is optimized for modern, Ultra HD-compatible monitors (4K). In a standard scenario, up to 4 Ultra HD-capable monitors can be connected to the native DisplayPorts.

The DP++ functionality in the DisplayPort interface also allows the connection of monitors with an HDMI interface. Passive DisplayPort to HDMI adapter cables can be used and are available as accessories. When using an adapter, the maximum supported resolution is limited to Full HD.

An active DisplayPort to HDMI 2.0 adapter is required to connect an Ultra HD-capable monitor or TV through an HDMI 2.0 interface. These adapters are available as accessories.

DisplayPort™ Multi-Stream Transport (MST) protocol technology allows a series connection of up to three monitors. This requires monitors that have a DisplayPort™ MST hub. Monitor 1 is connected direct to the BTC24 DisplayPort™ and the video signal is connected to monitor 2, 3 and 4 in series.

3.2 Firmware

3.2.1 VisuNet RM Shell

Pepperl+Fuchs VisuNet Remote Monitors (RMs) and Box Thin Clients (BTC) are industrial-grade thin-client solutions that provide a simplified, modern user interface for operators. The firmware of an RM, called VisuNet RM Shell, enables users to easily access applications that run on a host system (e.g., workstation PC or server) via Ethernet.

With VisuNet RM Shell, the latest versions of common remote protocols, such as RDP 10 or VNC are supported. With these protocols, the RMs / BTCs can be easily integrated into all major process control systems—whether they are virtualized or conventional workstation-based setups.

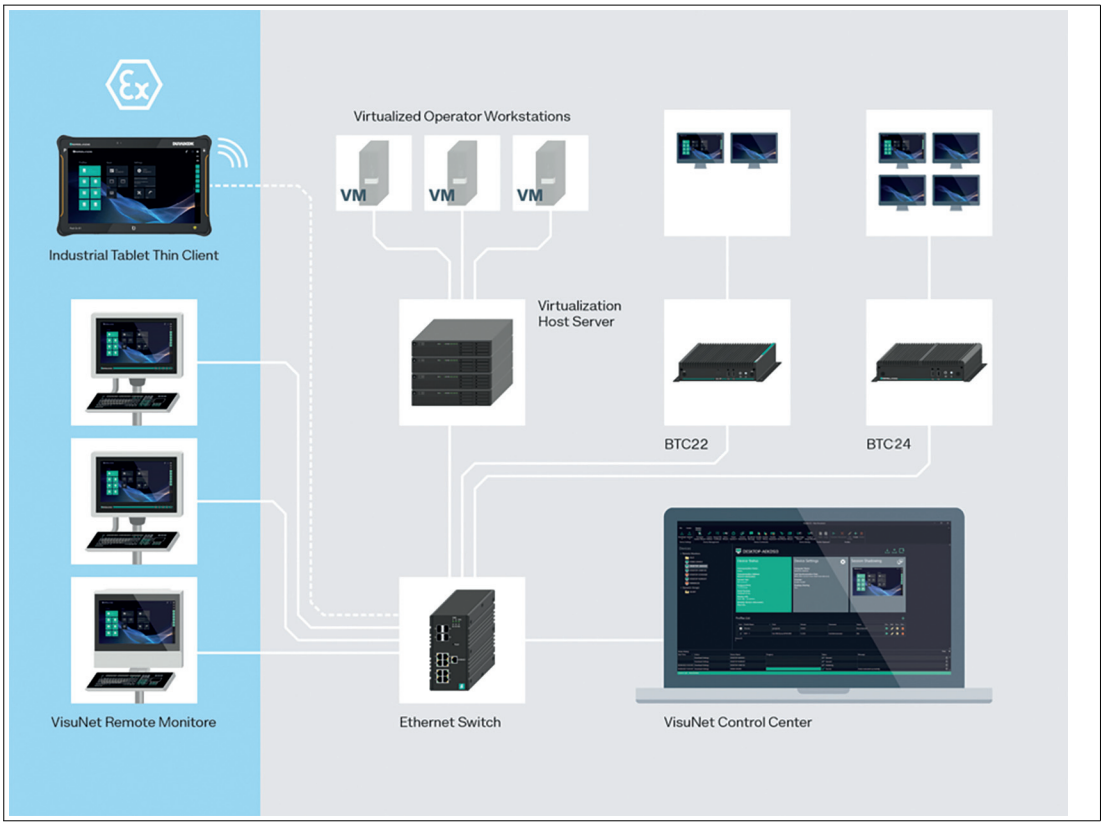


Figure 3.2

Further, VisuNet RM Shell has a tailored user interface, which only shows the important system aspects that are relevant for the configuration of the RM / BTC. This makes the integration of an RM / BTC into the process control system simpler than ever before. Configuring a new RDP connection, for example, can be done in a few steps. This is achieved via a consistent, touch-screen-optimized design across all protocol editors.

VisuNet RM Shell also helps increase process stability. It ensures a stable connection to the process control host system and an error-free display of the process pictures.

The auto-connect function can be used to configure RMs / BTCs in such a way that they automatically establish a connection to a designated host system, without any further intervention from the user. While temporarily interrupted connections are automatically re-established, backup hosts can be specified in VisuNet RM Shell to which an RM / BTC can automatically connect if a host system fails.

In addition to support for remote protocols, VisuNet RM Shell also offers restricted web browser features, which can be enabled via an optional professional license key. This allows fixed addresses to web applications like web-based Manufacturing Execution Systems (MES) to be defined. Users with administrator rights can restrict operator access to these pre-defined websites. This increases system security and reduces the risk of malware infiltration.

The VisuNet RM Shell 6 manual describes the features and functions of VisuNet RM Shell 6 in detail.

3.2.2 IGEL OS

As an alternative to the VisuNet RM Shell 6, the BTC24 can also be configured with IGEL OS 12 operating system which is based on Linux. The BTC is qualified and tested. The IGEL OS 12 operating system is preinstalled on the device (licences need to be ordered from IGEL directly).

For further information please refer to the according IGEL OS documentation: https://www.igel.com.

For hardware and software support please contact your local IGEL representative or technical support.

Check the the IGEL website regularly for security advisories and latest software updates.

3.2.3 ThinManager

In addition to the VisuNet RM Shell and the IGEL OS, the BTC22 is also available as a "ThinManager Ready" version. The device is qualified, tested, and listed on the ThinManager partner site with the following firmware and parameters:

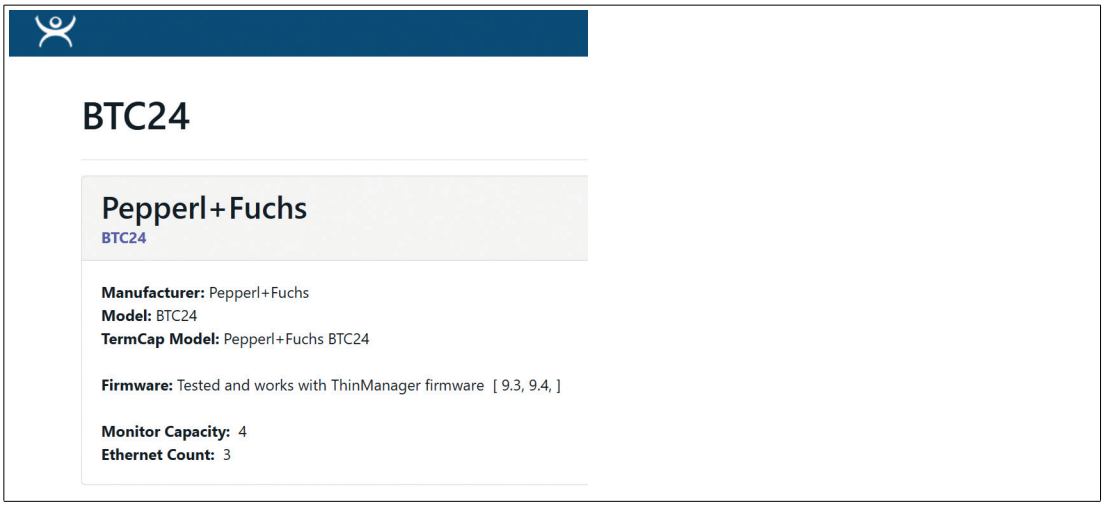


Figure 3.3

For further information please refer to the ThinManager documentation: https://partners.thinmanager.com/terminals/220

3.3 Technical Data

Hardware	
Processor	AMD Ryzen R2314
RAM	8 GB DDR4 (2x 4 GB dual-channel RAM)
Mass storage	64 GByte M.2 SSD *The mass storage displayed may be lower due to over-provisioning to increase the lifespan of the SSD (51 GByte of 64 GByte available due to reserved blocks and garbage collector).*

Supply	
Power supply	Input voltage: 12 ... 28 V DC Input current: max. 4.6 A ... 1.9 A Input via 2.5-mm power socket (with double insulation from the mains)
Maximum load (4x FHD Display, CPU full load, 23 W USB loads)	
8 GB RAM:	Maximum load (2.63 A) max. 50 W

Interface	
Interface type	**Front Side:** 1x USB 3.2 Gen 1 Type C 2x USB 2.0 Type A Power button Audio line out **Back side:** 3x 1000Base-T Ethernet 4x DisplayPort 1.4 1x DC (DC jack 5.5 x 2.5 mm with lock mechanism) 3x USB 3.2 Gen 1 Type A 1x RS-232/RS-485 with RJ45 connector

Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2021 EN 55032:2015+A11:2020+A1: 2020 EN 55011:2016+A1:2017+A11:2020+A2:2021 (Group 1, Class B)
RoHS	
Directive 2011/65/EU (RoHS)	EN IEC 63000:2018-12

Software	
Operating system	1: VisuNet RM Shell 6.x (based on Microsoft® Windows® 10 IoT Enterprise 2021 LTSC) 2: VisuNet RM Shell 6.x (based on Microsoft® Windows® 11 IoT Enterprise 2024 LTSC) **Optional:** J: IGEL OS 12 (based on Linux, pre-installed without licence) T: ThinManager Ready

Ambient conditions	
Operating temperature	**Temperature classes:** A: Industrial temperature grade 0°... 55° C (32 ... 131 °F)
Storage temperature	-20 ... 60 °C (-4 ... 140 °F)
Relative humidity	≤ 90% at 60°C (non-condensing acc. to EN 60068-2-78)
Shock resistance	40 g (11 ms) when operating 80 g (11 ms) when not operating
Vibration resistance	3 g_{rms} 5 ... 500 Hz

Mechanical specifications	
Housing material	Aluminum body and sheet metal, painted/powder-coated
Degree of protection	IP4x
Mass	2.47 kg
Dimensions	231.8 mm x 56.05 mm x 199.8 mm
Mounting	Desktop or wall mounting, VESA mount (100 x 100 mm and 75 x 75 mm) and DIN rail mounting via optional adapter
Note	Passive cooling, no moving parts **Power supply not included.**

International approvals	
Approved for	CE (EN61326-1/ EN55032/ EN55035 Class A) FCC Class B and ICES-003 Issue 7
UL approval	"UL Listed" for Canada and USA, E223772 (Ordinary Location)

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3.4 Dimensions and Nameplates

Dimensions

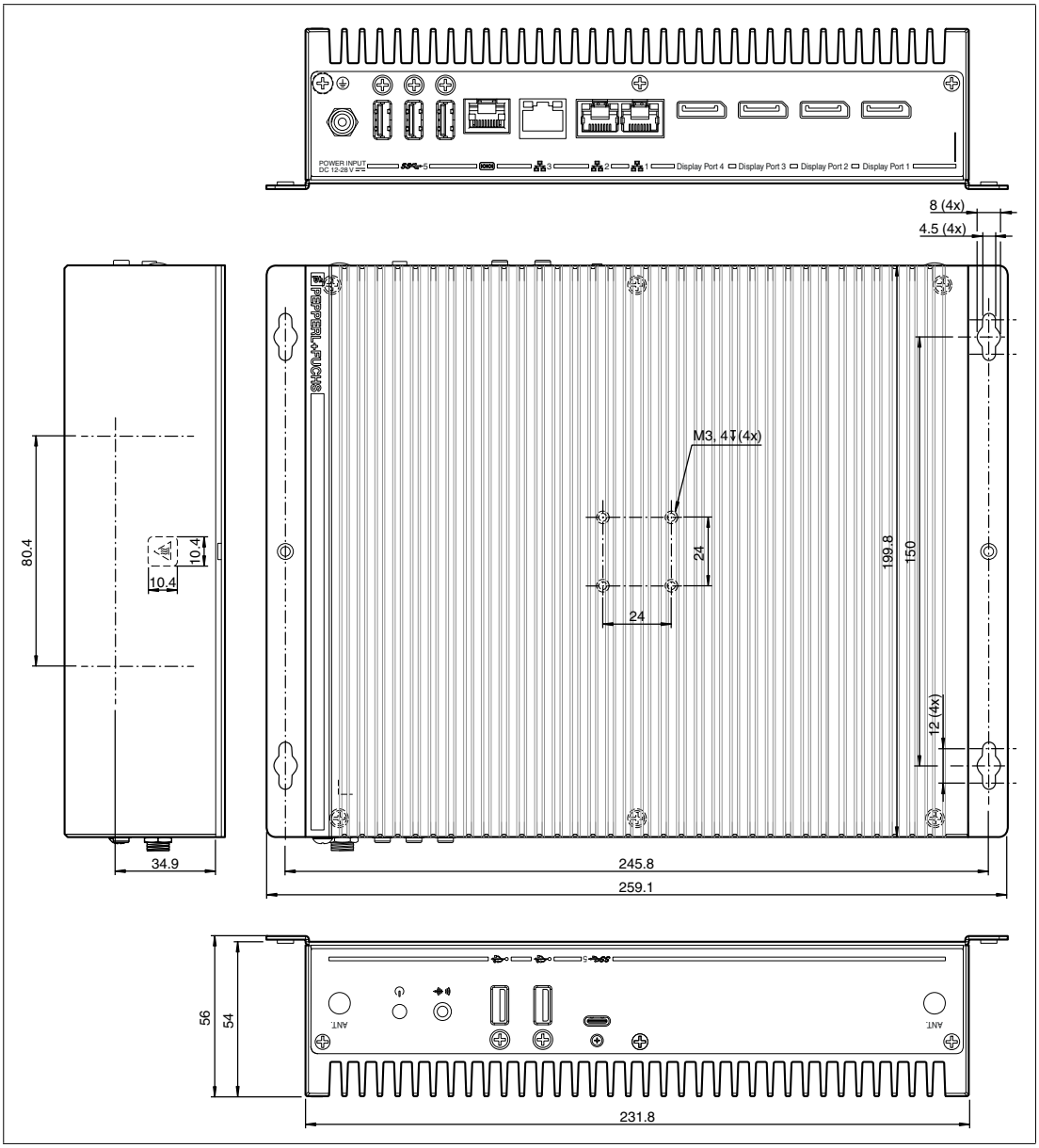


Figure 3.4 BTC24-* dimensions

Labels

The following labels are attached to the BTC22.

Nameplate

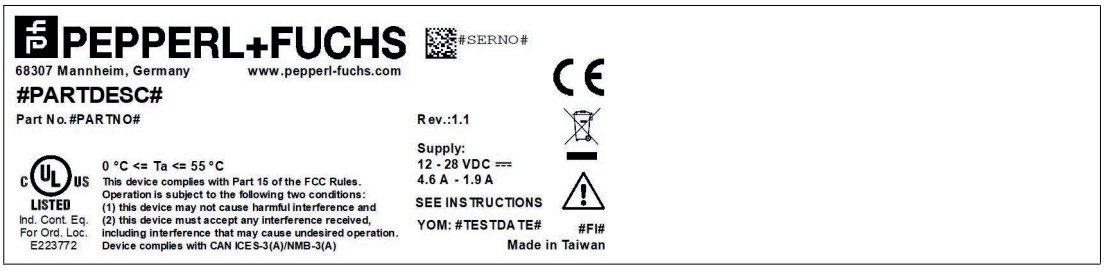


Figure 3.5

Warning



Figure 3.6 Operator needs consult this manual, all warnings as applicable need to be taken into consideration.

Hot surface



Figure 3.7

Certificate of Authenticity (COA)

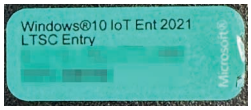


Figure 3.8 (Label example)

The data can be found on the product marking and on the COA label. The product marking is located on the side of the device. The COA label is only available with pre-installed Windows® operating systems and is affixed to the back of the device.

4 Installation

4.1 Mounting

Warning!
Installation!

The device must be installed by competent personnel in accordance with the instructions. All applicable laws and regulations must be carefully observed.

Preparation for Installation

Check the package contents and all accessories ordered for completeness and signs of damage. If the contents are incomplete, damaged, or do not match your order, contact your delivery service immediately.

Mounting

The device is intended for indoor use. If placed in a suitable housing, the device can also be used outdoors.

Note
If the device is used in a manner not prescribed by the manufacturer, the built-in protective function of the device may be impaired.

The device is cooled passively. Natural airflow is required to ensure proper cooling. If the device is installed in a housing, power dissipation from the device must be taken into account (see chapter 4.2).

Vertical installation provides optimal cooling since air passes through the cooling fins.

Observe the following recommended distances to other electrical components or to a housing wall:

- Below the device (if mounted vertically): ± 100 mm
- All other sides: ± 50 mm

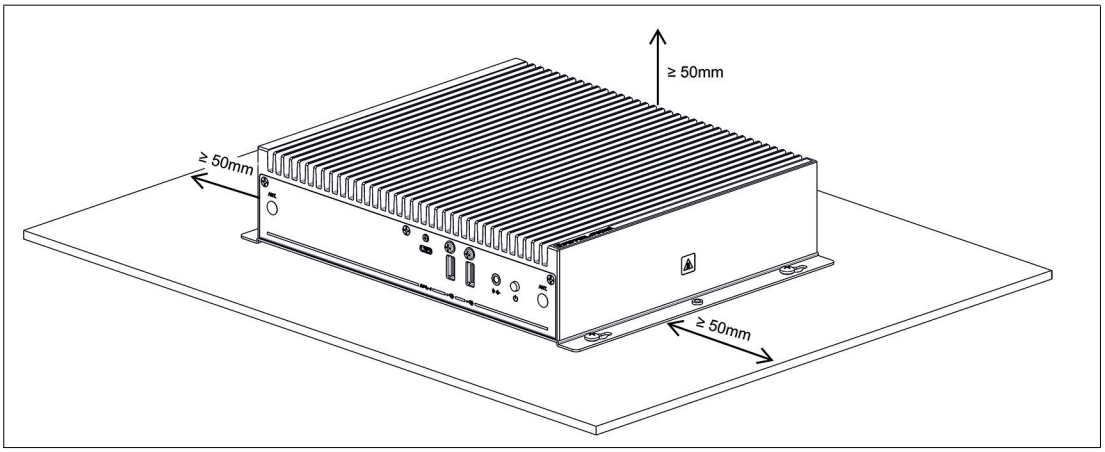


Figure 4.1 Horizontal mounting/desktop mounting

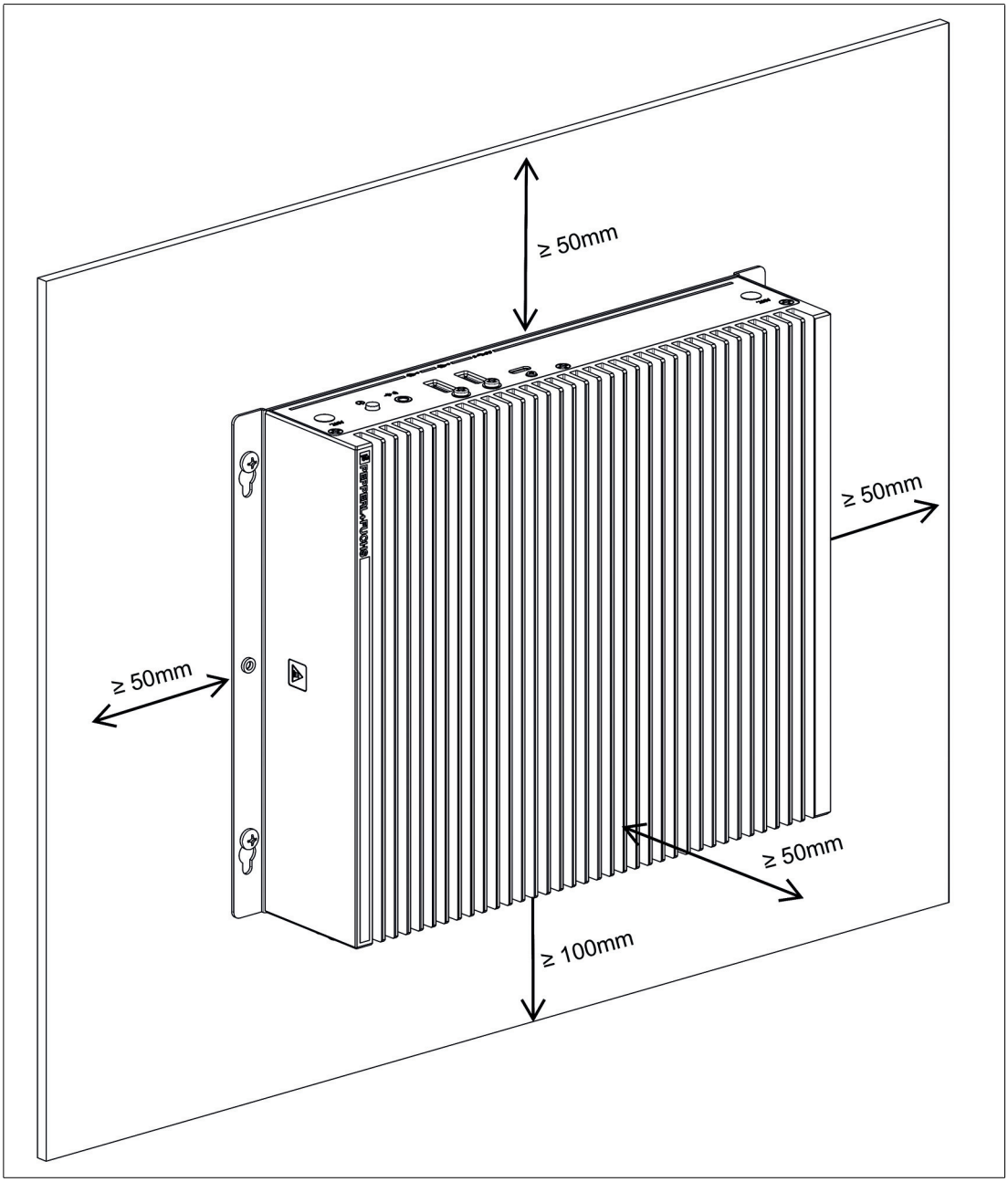


Figure 4.2 Vertical mounting

Danger!
Ambient conditions!
Do not operate the device outside the specified ambient temperature.

Warning!
Hot surface!
The surface of the device may become hot during operation.

DIN Rail Mounting

Following tools and installation materials required:
- Screwdriver,
- 4 anchors,
- 4 screws (included in scope of delivery).

1. Attach the DIN rail adapter to the back of the BTC24-*. Use the thread on the bottom of the BTC24-* to secure the adapter. Tighten the supplied screws to a tightening torque of 0.4 Nm.

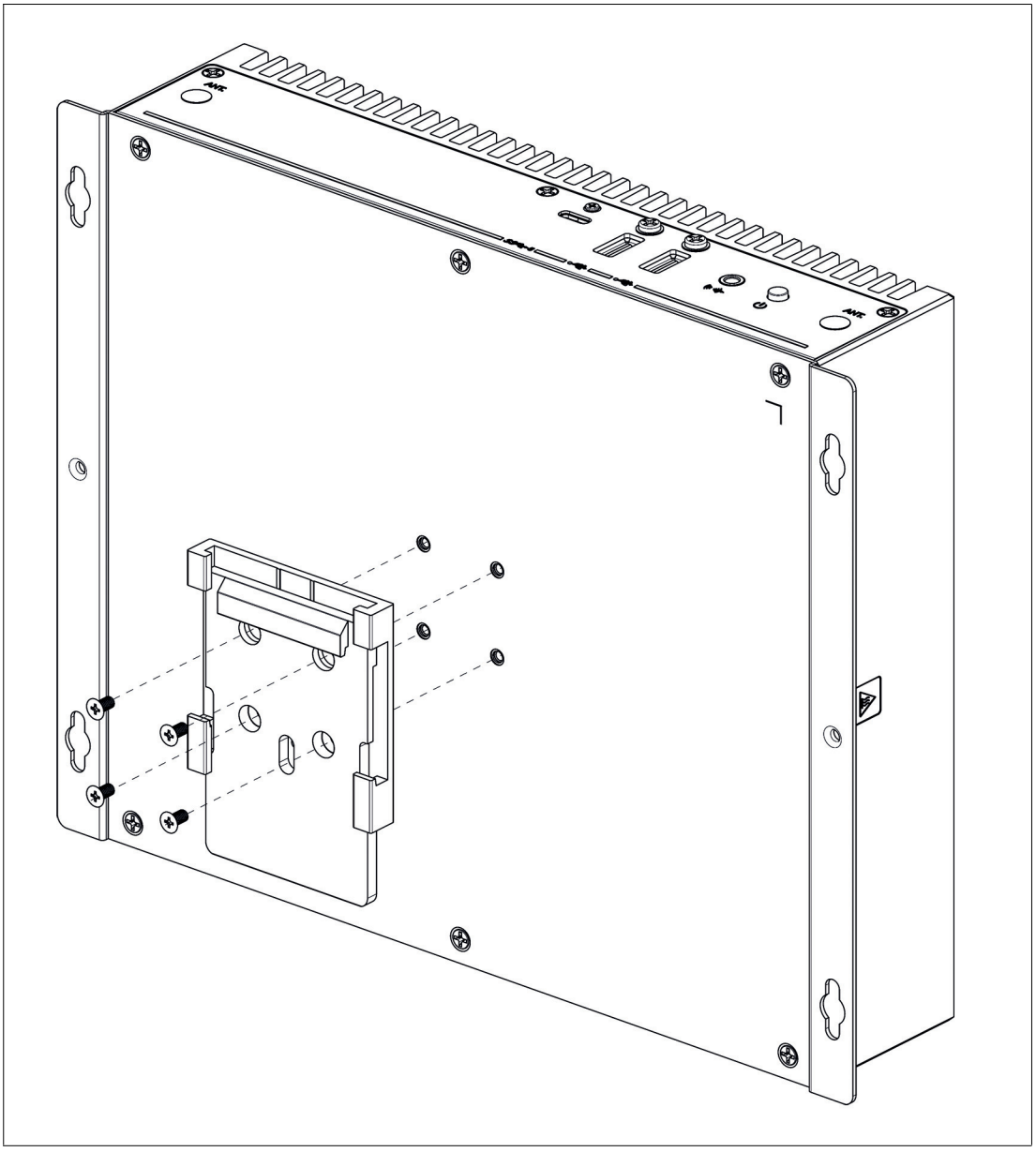


Figure 4.3

2. There is a movable clamp on the top of the DIN rail adapter. Install the BTC24-* at a slight angle with the movable clamp over the DIN mounting rail. Apply light pressure to pull the BTC24-* downward and clamp the adapter into the rail.

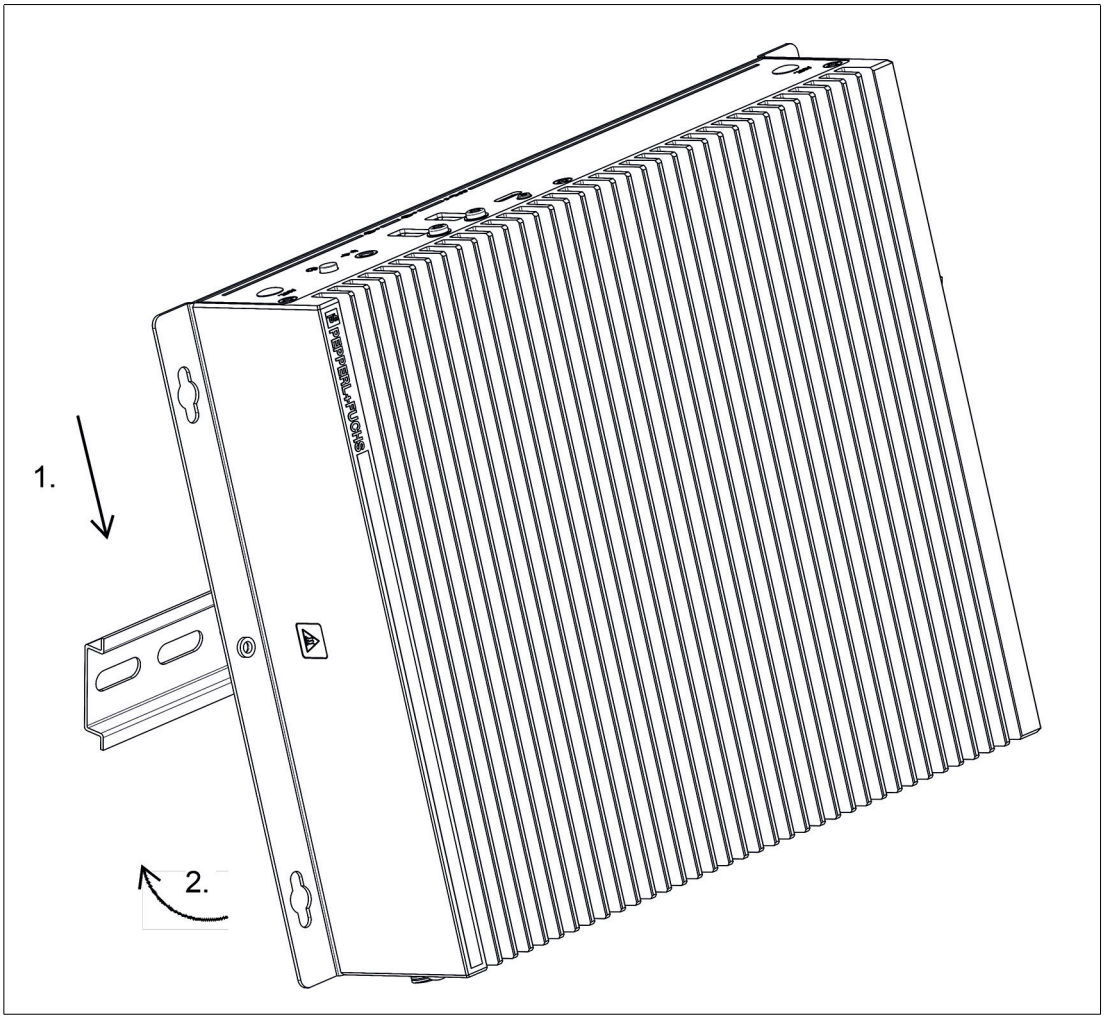


Figure 4.4

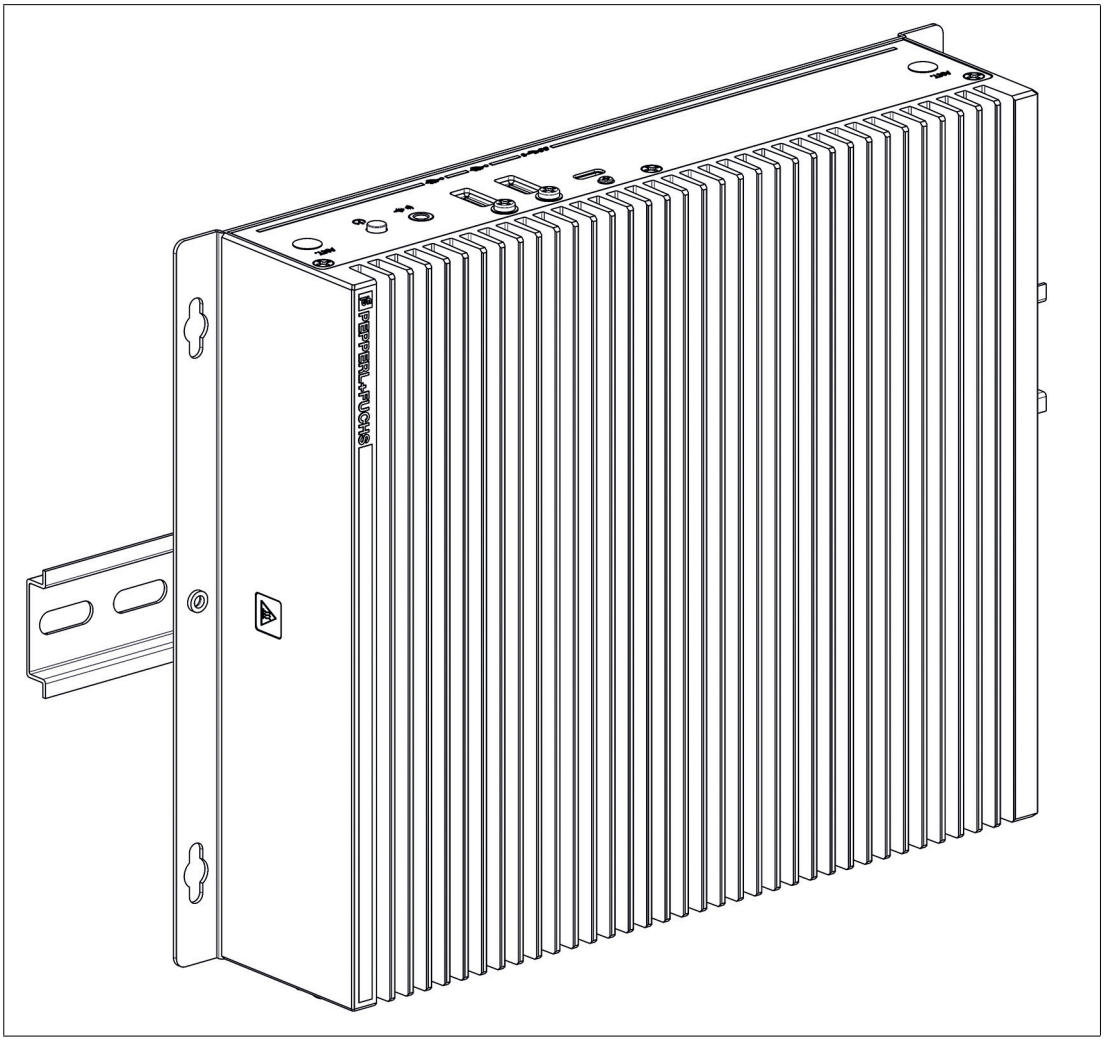


Figure 4.5

Wall Mounting

Caution!

Insufficient load capacity!

If the mounting surface for wall and vertical mounting does not have sufficient load capacity, the device may fall and be damaged.

It is the responsibility of the installer to select a suitable location with sufficient strength for the equipment.

Use suitable mounting screws with a diameter of 4 mm (not included in the scope of delivery) and the following installation diagram to secure the device to the wall. Use wall anchors if necessary.

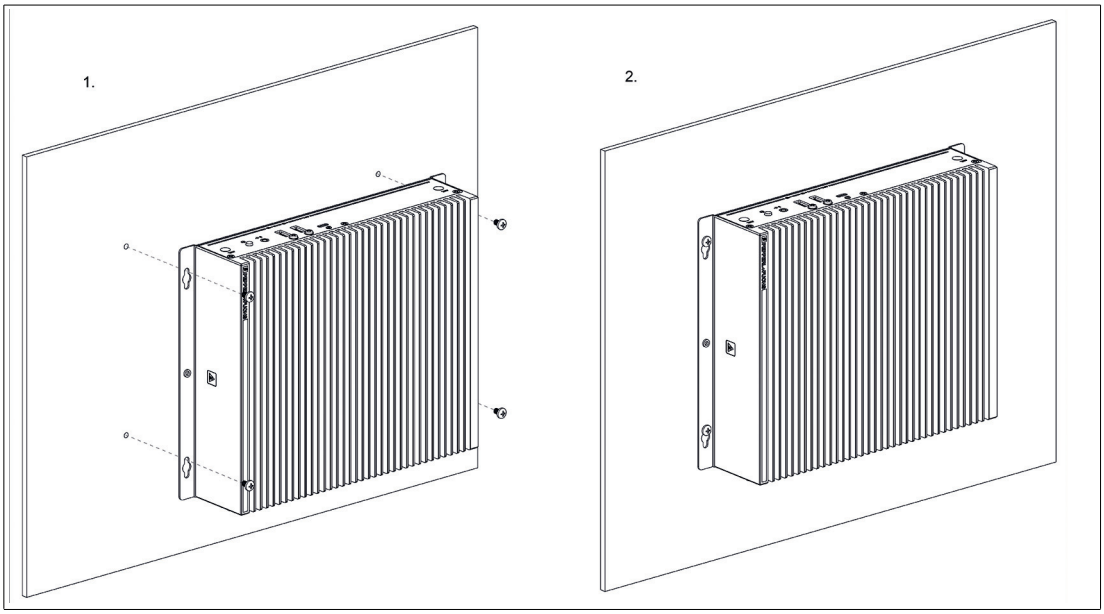


Figure 4.6

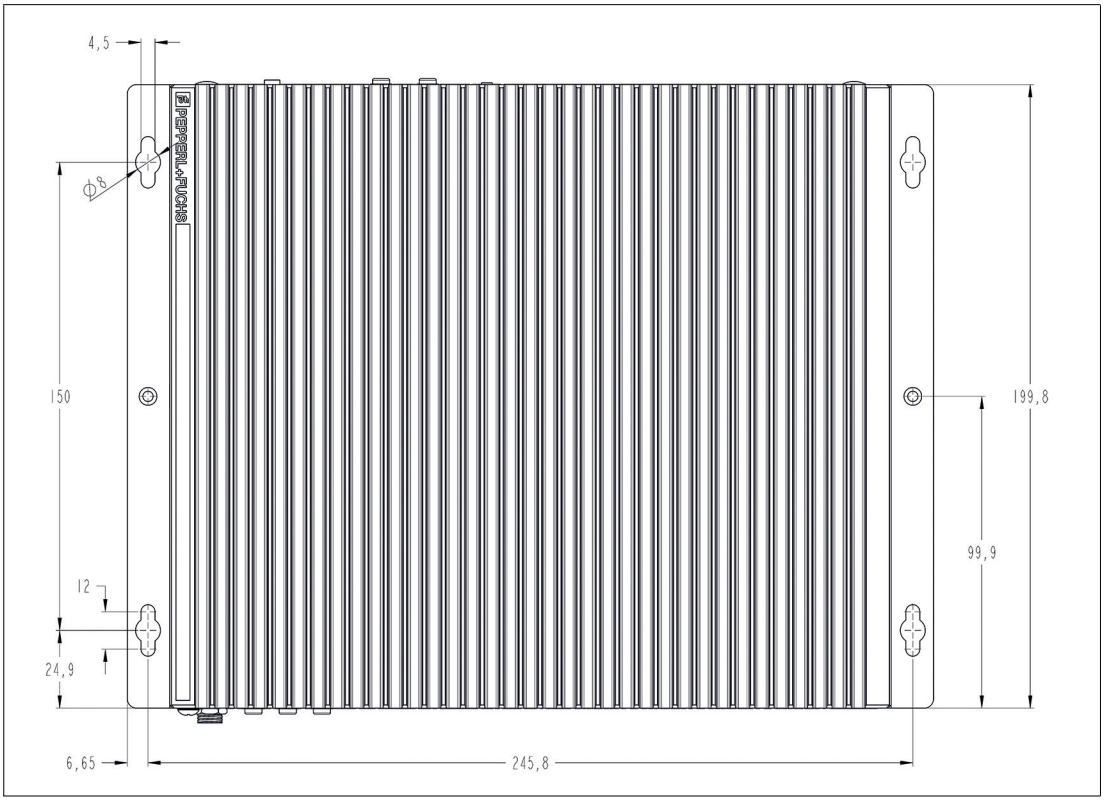


Figure 4.7 Installation diagram

VESA Mounting

1. Attach the VESA fixture (100 x 100 mm or 75 x 75 mm) to the VESA arm or the back panel of the monitor (using the screws provided by the monitor manufacturer).

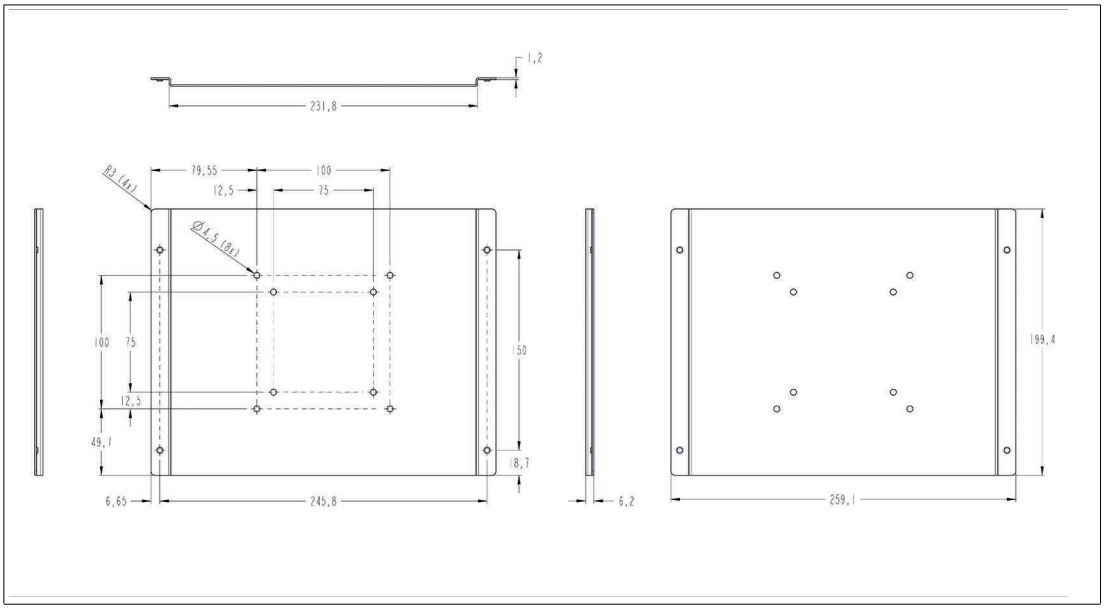


Figure 4.8

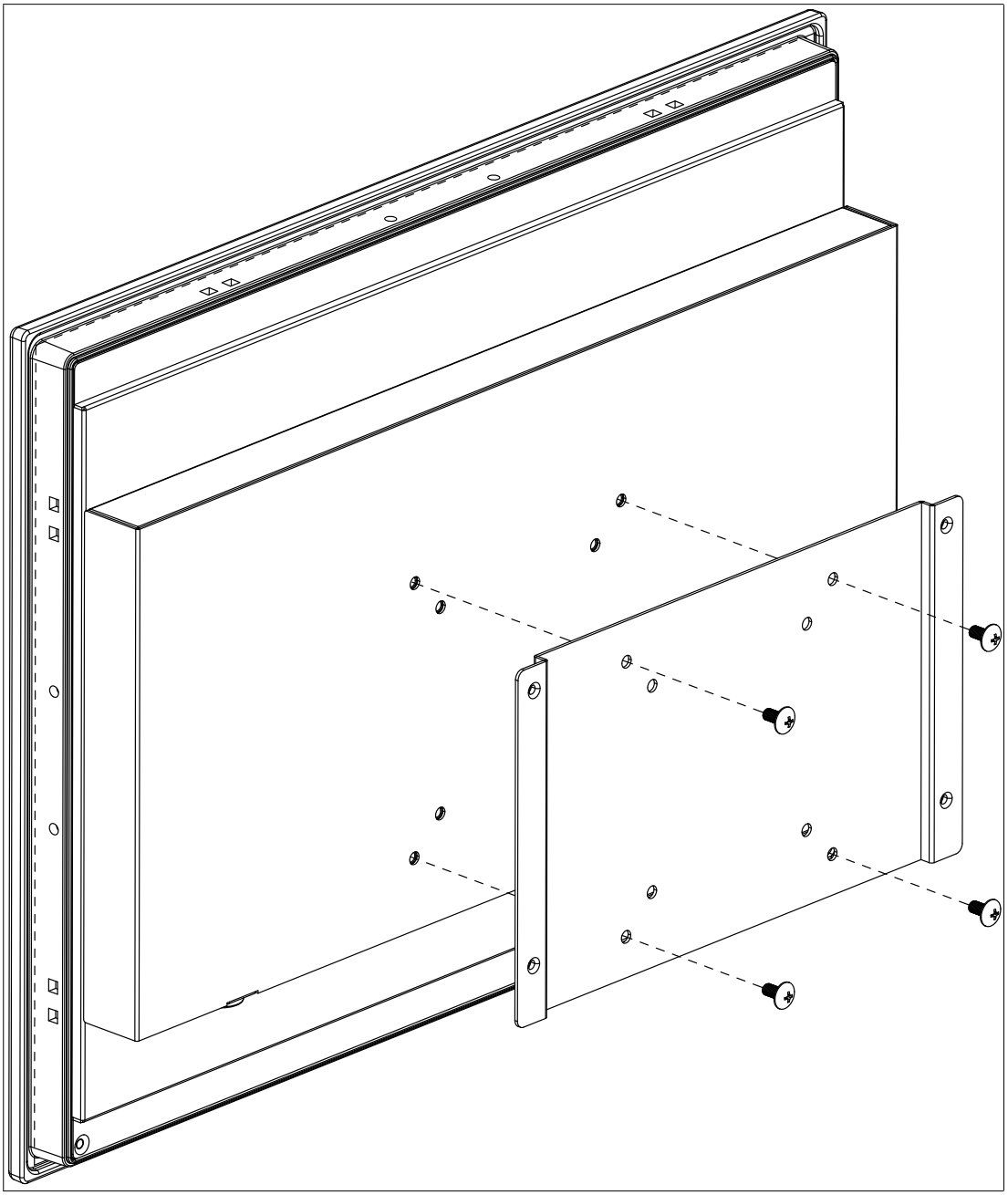


Figure 4.9

Danger!

Ambient temparature range

Warning. The ambient temperature range needs to be taken into consideration for use in hazardous locations.

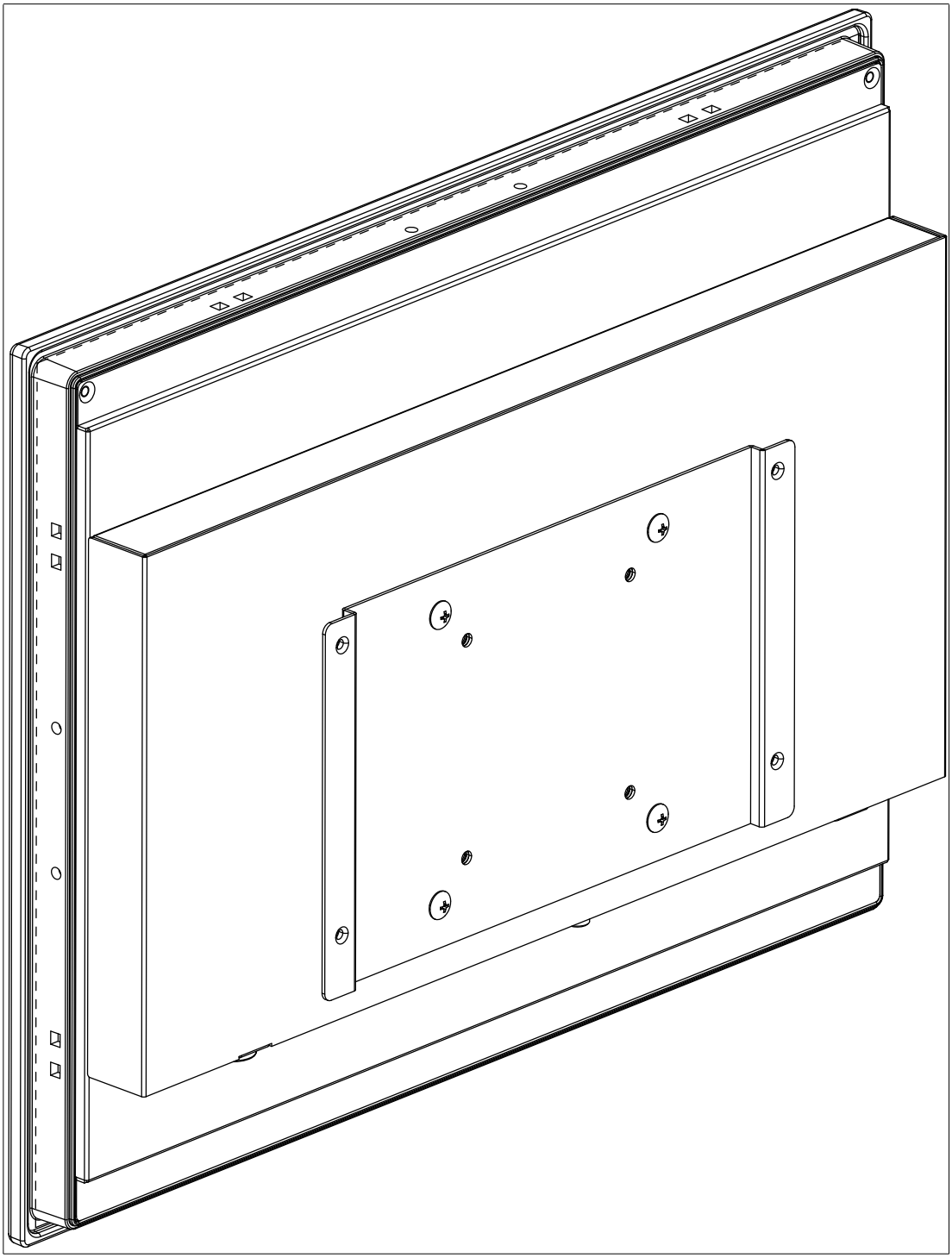


Figure 4.10

2. Secure the BTC24-* to the VESA fixture using the supplied screws.

3. Screw M4, tightening torque: 0.7 ± 0.1 Nm

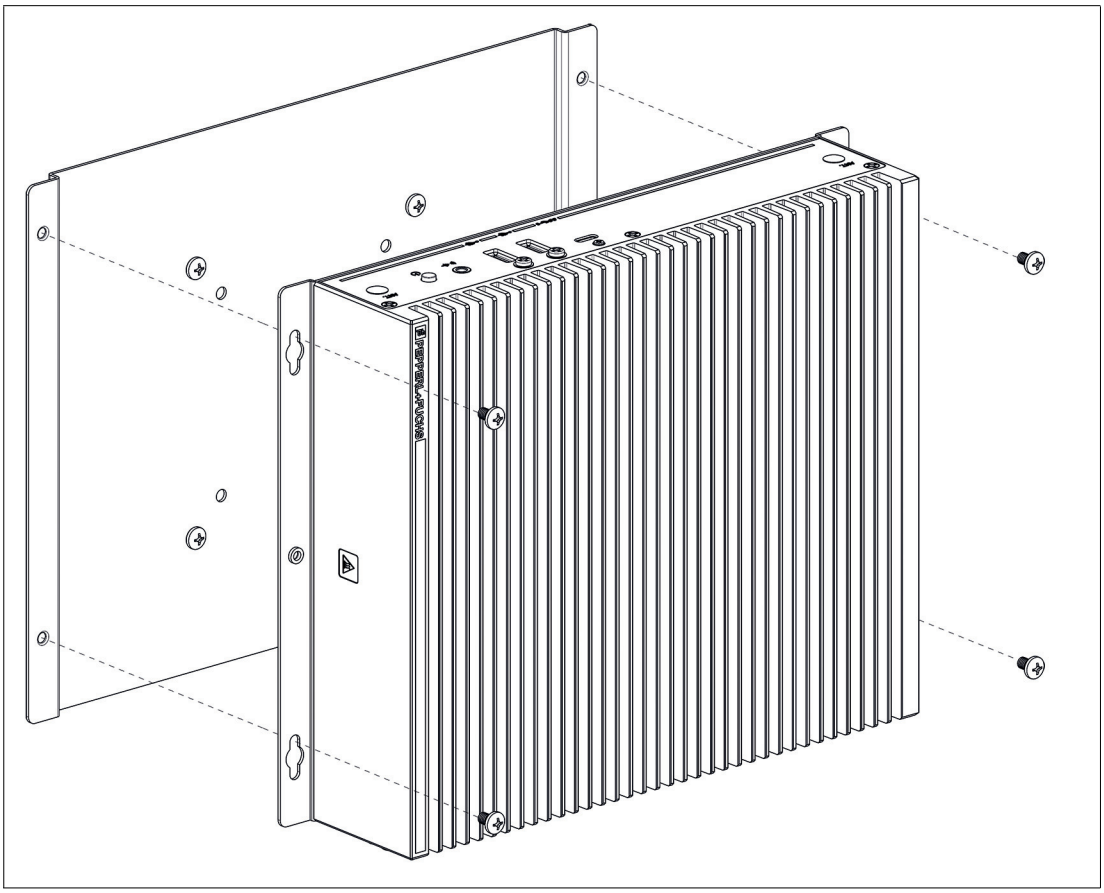


Figure 4.11

4.2 Electrical Connection

Power consumption at 19 V supply voltage:

- Maximum load: 50W (4x FHD monitors, CPU full load, 14W USB loads)
- Normal operation: 24W (4x FHD monitors, CPU full load, mouse, keyboard)

Commissioning

1. Remove the dummy plugs from the ports where connections are to be made. To prevent dust ingress, leave the dummy plugs in ports that are not in use.
2. Connect the BTC24-* to the network via the Ethernet port.
3. Connect the BTC24-* to the mouse and keyboard via the USB 2.0 port.
4. Connect the BTC24-* to the display via a DisplayPort™. The DisplayPort™ interface provides mechanical strain relief to protect against vibration. Locking mechanisms are available as accessories for additional strain relief.
5. Optional strain-relief locking mechanisms can also be attached to the USB ports.
6. Connect the BTC24-* to the AC/DC power supply (e.g., FSP065-REBN2).

Note

Strain-relief locking mechanisms are available as accessories. The screws required to secure the locking mechanisms are supplied in the scope of delivery for the BTC24-*.

4.3 I/O Connection

Tip

Connnections should be mechanically secured by e.g. the "yellow" cable retainer and/or the screws for each type of connection.

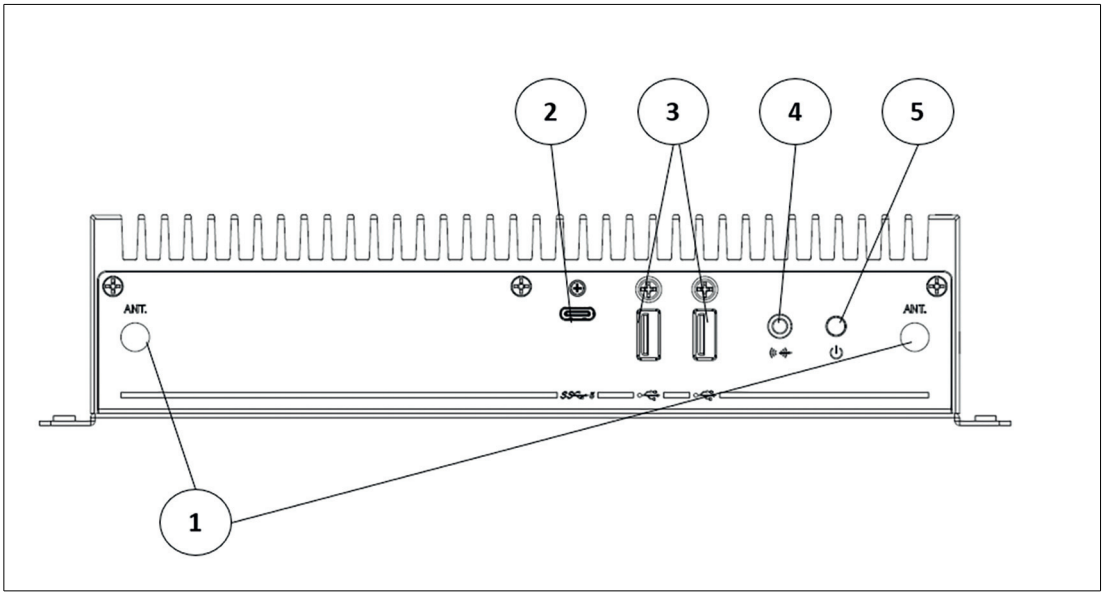


Figure 4.12 BTC24-* ports, front

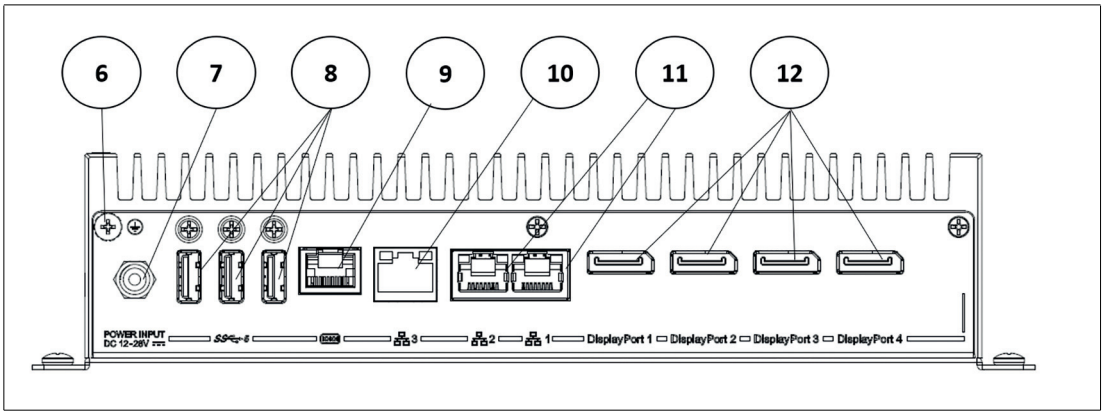


Figure 4.13 BTC24-* ports, backside

Port Overview

Number	Interface type	Description
Front		
1	Antenna opening x 2 (dummy plug)	Dummy plug antenna connections, one on the left and one on the right
2	USB Type C	3.2 Gen 1
3	USB	USB A 2.0 x 2

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Number	Interface type	Description
4	Audio	Line output x 1
5	Symbol	On/off switch
Back		
6	Ground connection	Not required for standard installations
7	Power plug	5.5 x 2.5 mm DC jack bush with locking mechanism (M8 screw) 12 VDC to 28 VDC  Polarity
8	USB[1]	USB-A 3.2 Gen 1 x 3
9	COM	RS-232/RS-485 port with RJ45 connector x 1
10	Ethernet 3 (tertiary port) 1000BaseT RJ45 plug	1000BaseT RJ45 plug
11	(Secondary port) Ethernet 1 and 2 (Primary port)	1000BaseT RJ45 plug
12	DisplayPort™ 1 DisplayPort™ 2 DisplayPort™ 3 DisplayPort™ 4	DP 1.4 up to 4 x 4K (Ultra-HD) at 60 Hz

1. This port is not to be used in a hazardous location

RJ45 Port RS-232 Pinout

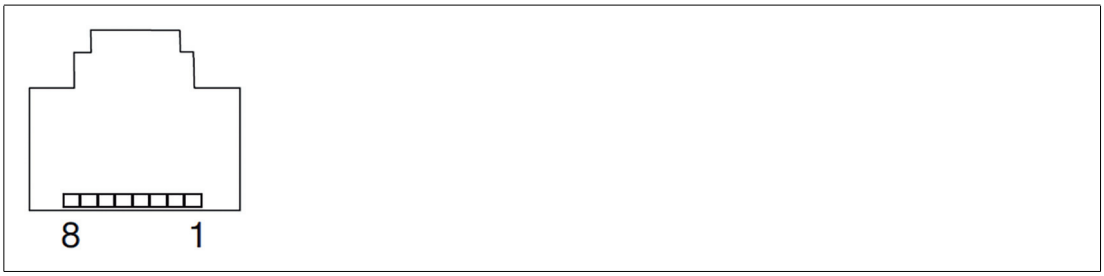


Figure 4.14 RJ-45

Pin	RJ-45	DSUB DE-9	Description
1	DSR	DCD	Data Carrier Detect (E)
2	DCD	RXD	Received Data (E)
3	DTR	TXD	Transmitted Data (A)
4	GND	DTR	Data Terminal Ready (A)
5	RXD	GND	Ground
6	TXD	DSR	Data Set Ready (E)
7	CTS	RTS	Request to Send (E)
8	RTS	CTS	Clear to Send (E)

RJ45 Port RS-485 Pinout

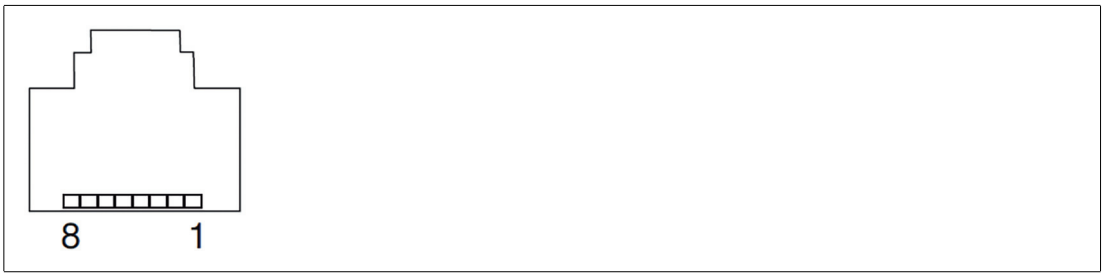


Figure 4.15 RJ-45

Pin	RJ-45	DSUB DE-9
1	COM_POWER (Jumper option)	RS-485_D-
2	RS-485_D-	RS-485_D+
3		-
4	GND	-
5	RS-485_D+	GND
6		COM_POWER (Jumper option)
7		-
8		-

RJ45 Port RS-422 Pinout

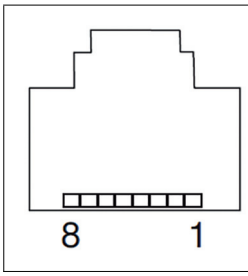


Figure 4.16 RJ-45

Pin	RJ-45	DSUB DE-9
1	COM_POWER (Jumper option)	RS-422_TX-
2	RS-422_TX-	RS-422_TX+
3	RS-422_RX-	RS-422_RX+
4	GND	RS-422_RX-
5	RS-422_TX+	GND
6	RS-422_RX+	COM_POWER (Jumper option)
7		
8		

RJ45 Port

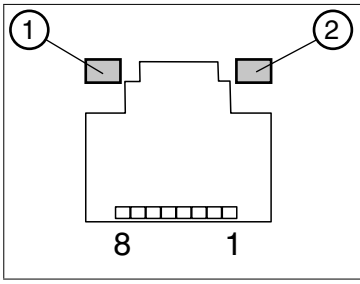


Figure 4.17 RJ45 pinout with LED display

Pin	Type	Color
1	Transceive Data+	WH/OR
2	Transceive Data-	OR/WH or OR
3	Receive Data+	WH/GN
4	Bidirectional Data+	BU/WH or BU
5	Bidirectional Data-	WH/BU
6	Receive Data-	GN/WH or GN
7	Bidirectional Data+	WH/BN
8	Bidirectional Data-	BN/WH or BN

LED Indicator

No.	Type	Description
1	Right LED	Yellow Off – No Connection / No Link Yellow On – Connection / Link Established Yellow Flashing – Connection / Link Established with Data actively being transmitted
2	Left LED	LED Off – 10 Mbps Speed detected Green On – 100 Mbps Speed detected Orange – 1 Gbps Speed detected

DisplayPort™

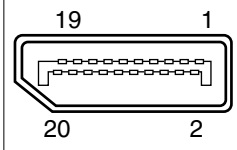


Figure 4.18

Pin	Type	Description	Input/output
1	ML_Lane0+	DP Data 0+	Output
2	GND	Ground	-
3	ML_Lane0-	DP Data 0-	Output
4	ML_Lane1+	DP Data 1+	Output
5	GND	Ground	-
6	ML_Lane1-	DP Data 1-	Output
7	ML_Lane2+	DP Data 2+	Output
8	GND	Ground	-
9	ML_Lane2-	DP Data 2-	Output
10	ML_Lane3+	DP Data 3+	Output
11	GND	Ground	-
12	ML_Lane3-	DP Data 3-	Output
13	CONFIG1 CAD	Cable-adapter detection	Input
14	CONFIG2	Ground (pull down)	-
15	AUX_CH+	Auxiliary channel+	Input/output
16	GND	Ground	-
17	AUX_CH-	Auxiliary channel-	Input/output
18	HPD	Hot Plug Detect	Input
19	GND	Ground	-
20	DP_PWR	+3.3 V (fused)	Output

USB Ports



Figure 4.19 USB 2.0

Pin	Type	Description
1	USB_P5V_-fused (A)	+5 V (fused)
2	USB_D0M (I/O)	Data-
3	USB_D0P (I/O)	Data+
4	USB_GND	GND

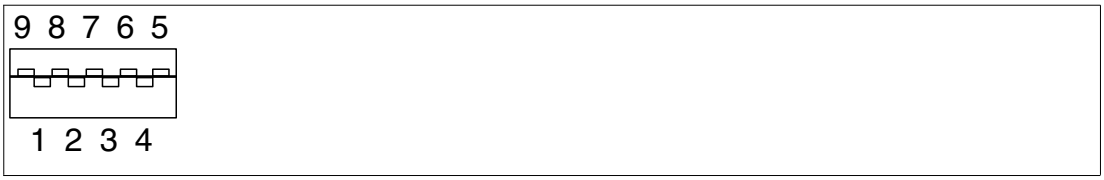


Figure 4.20 USB 3.0

Pin	Type	Description	Input/out-put
1	VBUS	+ 5 V (fused)	Output
2	D-	Data channel USB 2.0	Input/output
3	D+	Data channel USB 2.0	Input/output
4	GND	Ground	-
5	RX-	Data channel USB 3.0	Input
6	RX+	Data channel USB 3.0	Input
7	GND	Ground	-
8	TX-	Data channel USB 3.0	Output
9	TX+	Data channel USB 3.0	Output

USB Type C 3.2 Pinout

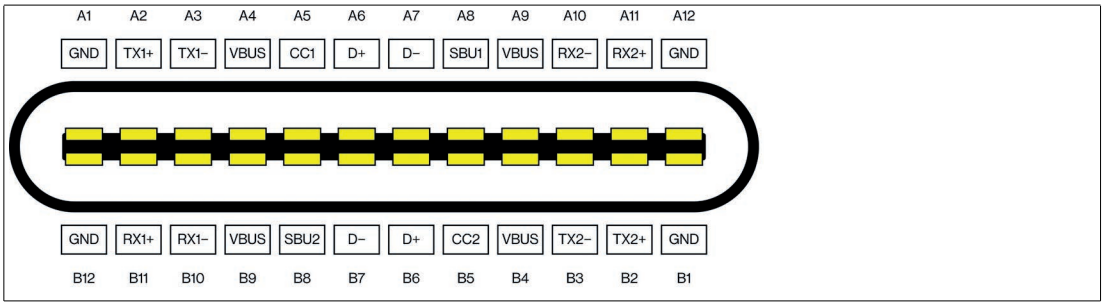


Figure 4.21

Pin	USB Type C 3.2
A1	GND
A2	TX1+
A3	TX1-
A4	VBUS
A5	CC1
A6	D+
A7	D-
A8	SBU1
A9	VBUS
A10	RX2-
A11	RX2+
A12	GND
B1	GND
B2	TX2+
B3	TX2-
B4	VBUS
B5	CC2
B6	D+
B7	D-
B8	SBU2
B9	VBUS
B10	RX1-
B11	RX1+
B12	GND

Ethernet Port



Figure 4.22

Pin	Type	Description
1	BI_DA+	Bidirectional data A+, input/output
2	BI_DA-	Bidirectional data A-, input/output
3	BI_DB+	Bidirectional data B+, input/output
4	BI_DC+	Bidirectional data C+, input/output
5	BI_DC-	Bidirectional data C-, input/output
6	BI_DB-	Bidirectional data B-, input/output
7	BI_DD+	Bidirectional data D+, input/output
8	BI_DD-	Bidirectional data D-, input/output

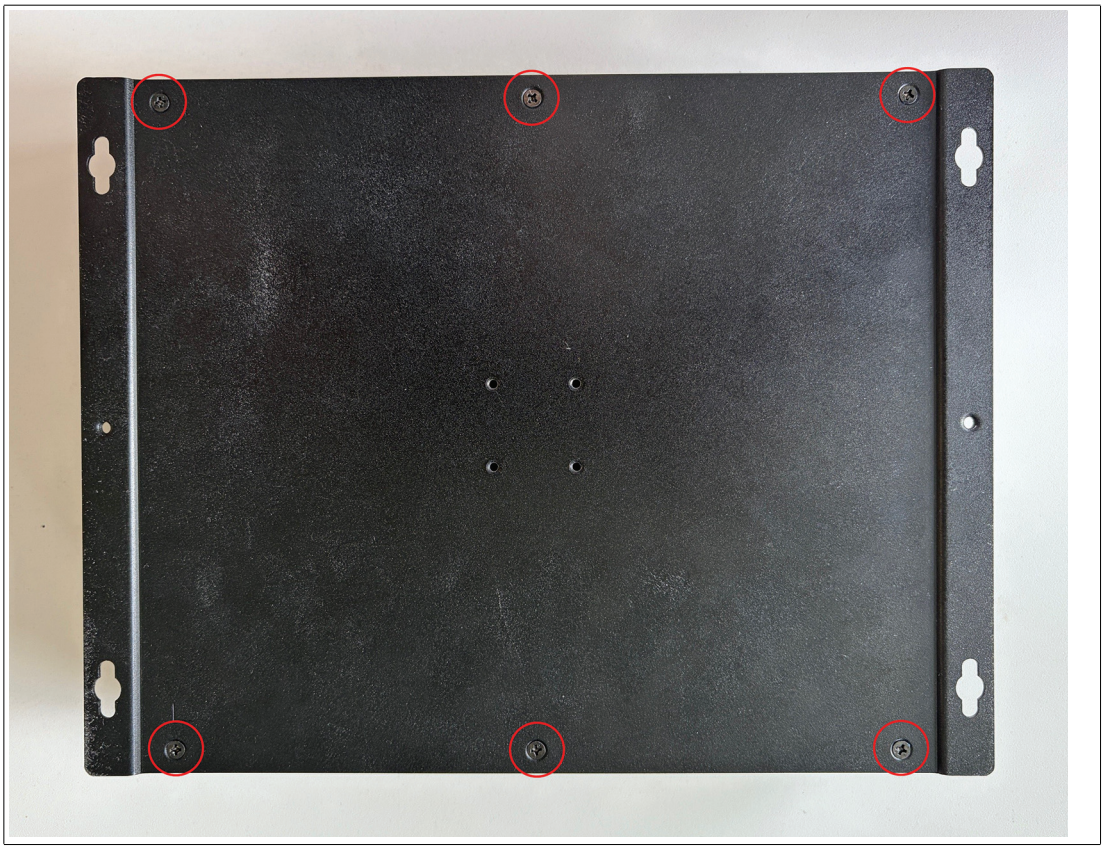
LED Indicator

No.	Type	Description
1	Left LED	Yellow Off – No Connection / No Link Yellow On – Connection / Link Established Yellow Flashing – Connection / Link Established with Data actively being transmitted
2	Right LED	LED Off – 10 Mbps Speed detected Green On – 100 Mbps Speed detected Orange – 1 Gbps Speed detected

4.4 BIOS Battery Change

Step-by-Step BIOS Battery Replacement

1. Loosen the 6 screws and remove the back panel.

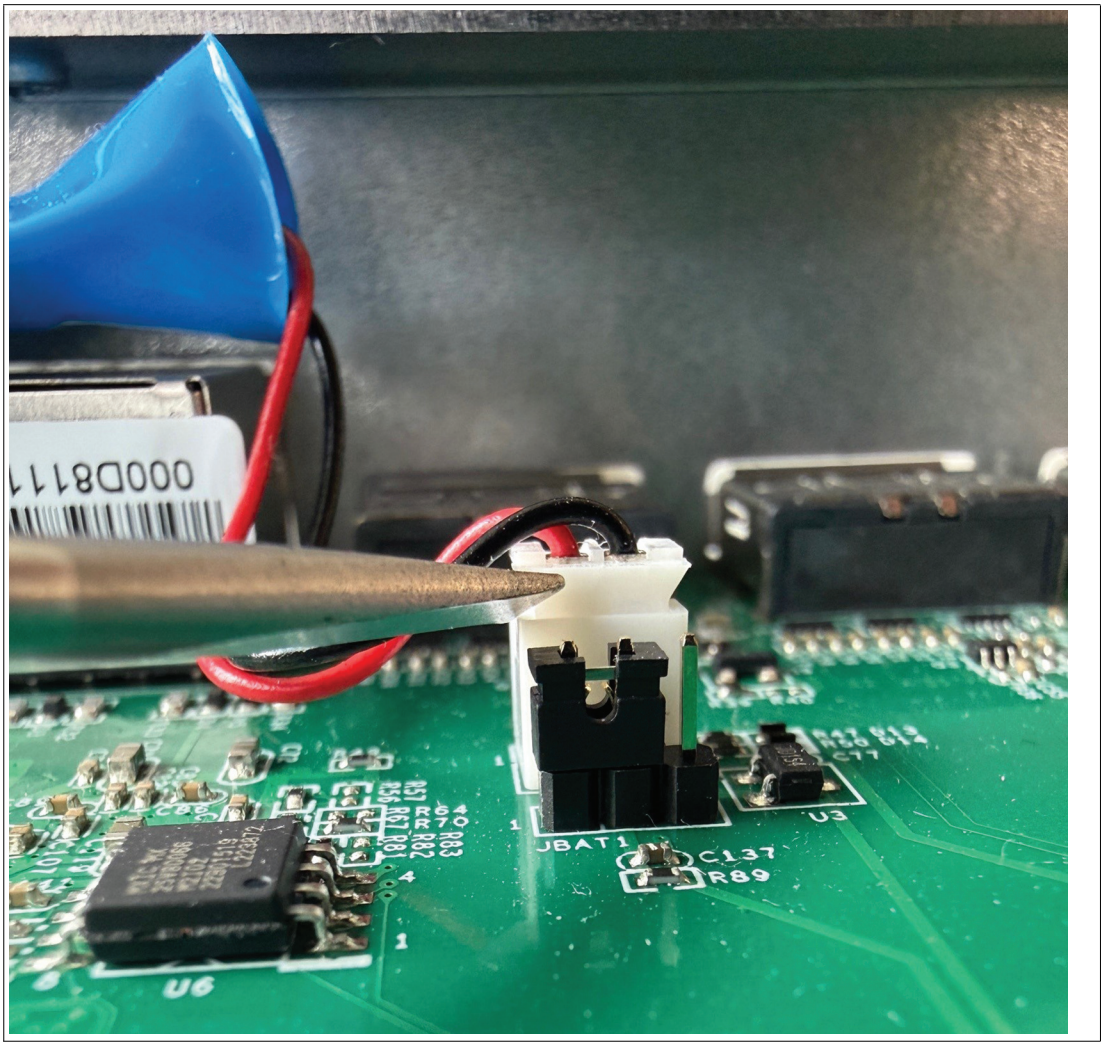




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2. Carefully unplug the connector.



3. Use double sided tape (e.g. 3M 4930) to secure a new battery in the same spot.
4. Connect the plug to the circuit board.
5. Place the back plate on the device and tighten the screws to 2 Nm.

5 EDID Emulation

EDID (Extended Display Identification Data) Emulation replicates a display's information to ensure compatibility and optimal performance between display devices and video sources. When activated, EDID emulation helps prevent disruptions and maintains consistent video output. This technology resolves issues such as "no signal" errors or distorted images that can occur if a display port is accidentally disconnected or if the monitor's resolution changes.

Other advantages of EDID emulation are enhanced compatibility, ensuring that displays work correctly with the connected devices, stable performance with consistent and smooth video output and the resolution of common problems like "no signal" errors or distorted images.

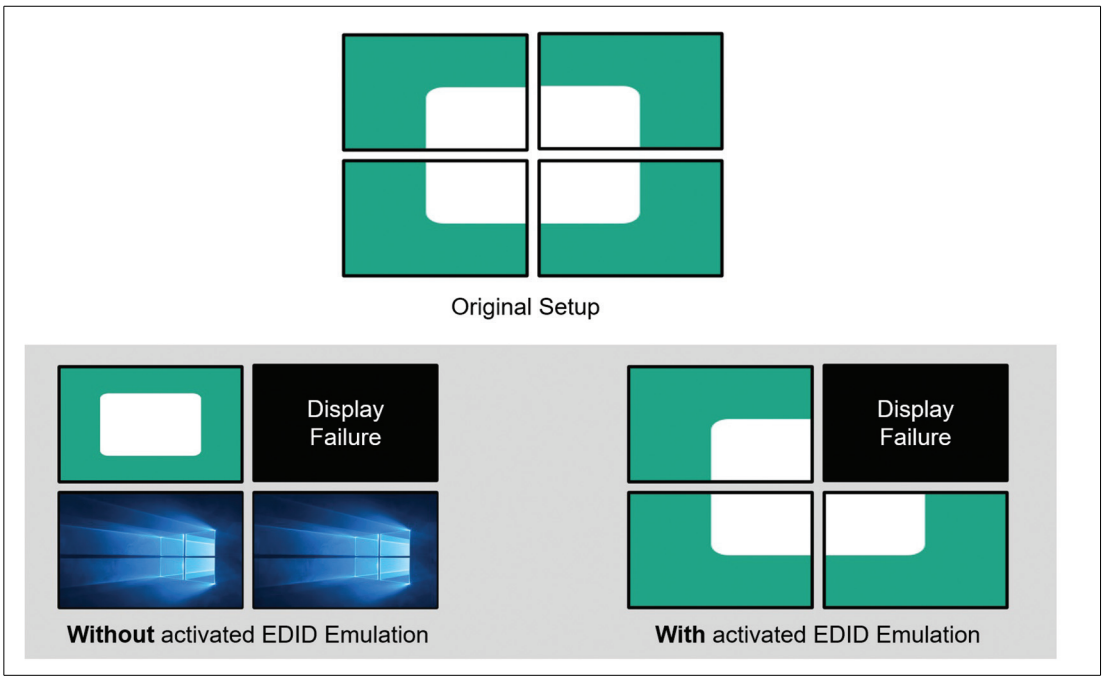


Figure 5.1

To activate and configure EDID emulation follow the steps below:

1. Login as an administrative account in VisuNet RM Shell.

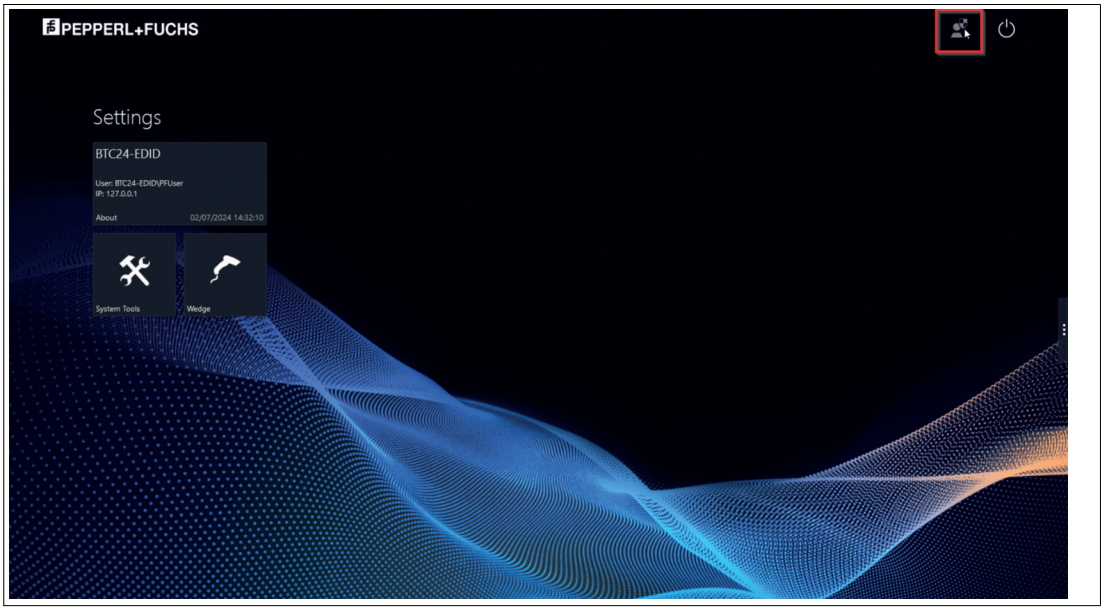


Figure 5.2

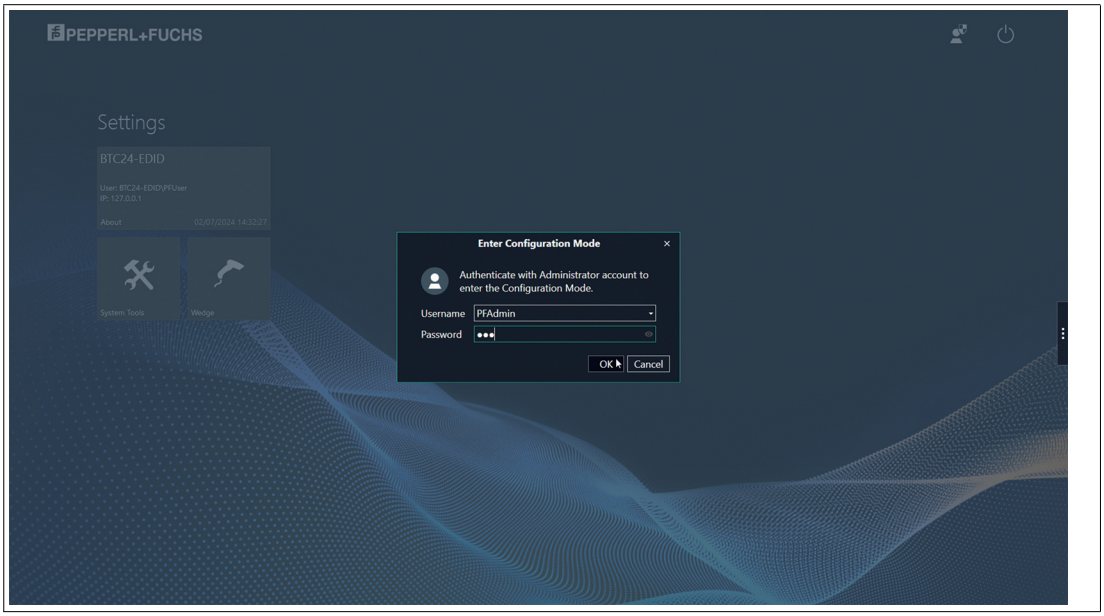


Figure 5.3

2. Click on "Open Radeon Software" under "Display & Touchscreen type" in System Management to open the Radeon Software by AMD

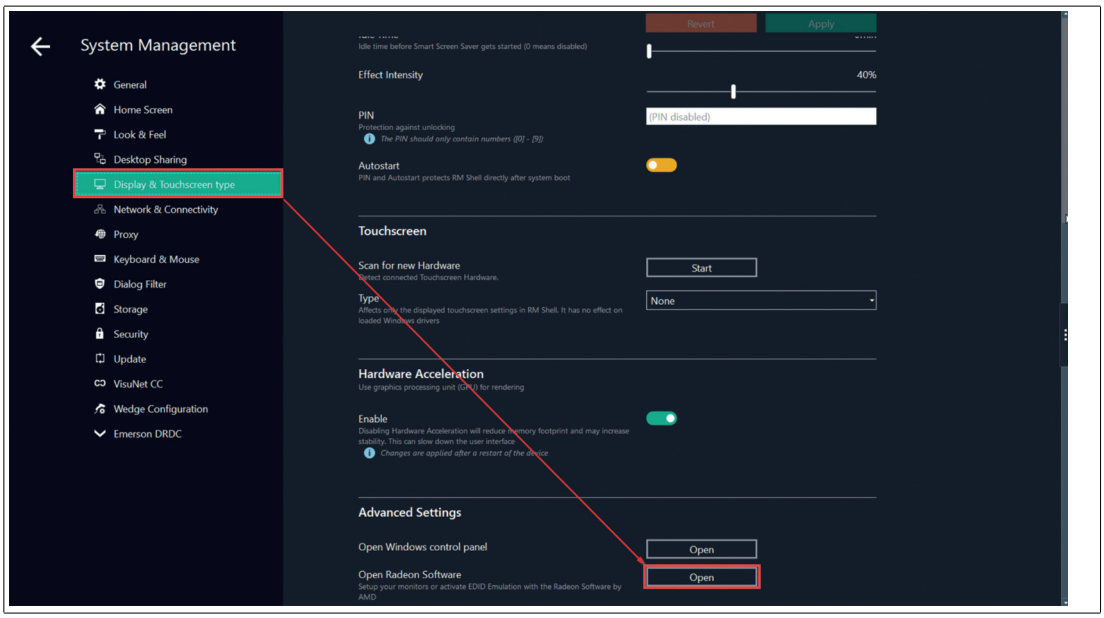


Figure 5.4

3. Switch to the EDID tab.

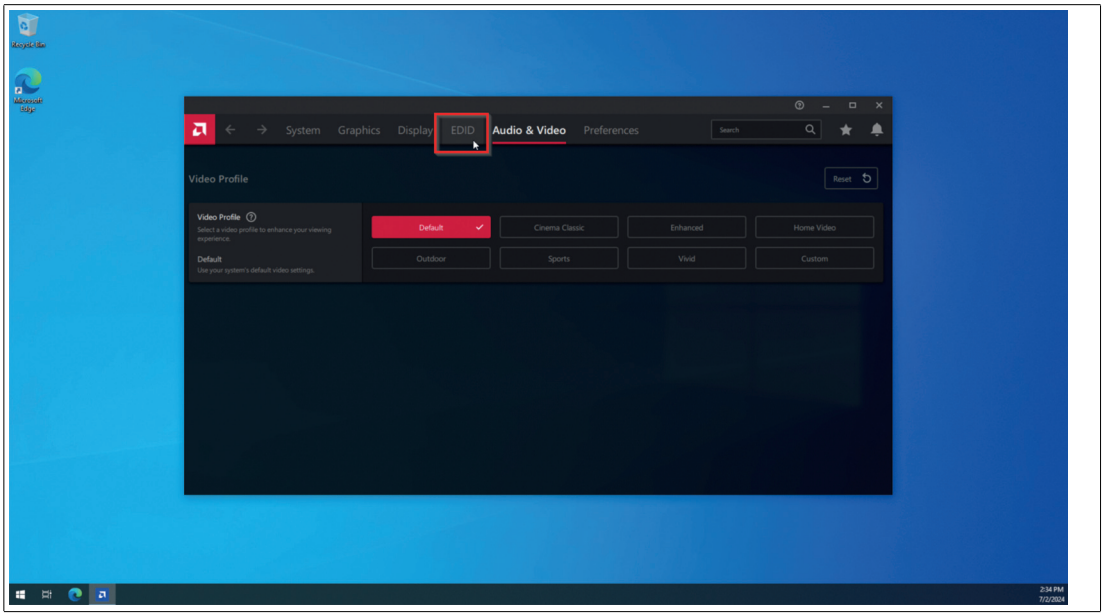


Figure 5.5

Warning!

EDID saves and emulates display configurations. If you connect a display and emulate its configurations, only that display may be compatible. If you connect a new display, disable EDID emulation first to save the new display's configurations.

4. Configure the desired settings. You can emulate all displays simultaneously or select specific ones to emulate. To remove EDID emulation, click the same button again. You can view the emulated configurations by hovering over the specific ports or by opening the editing view, which can be accessed by right-clicking on the specific port.

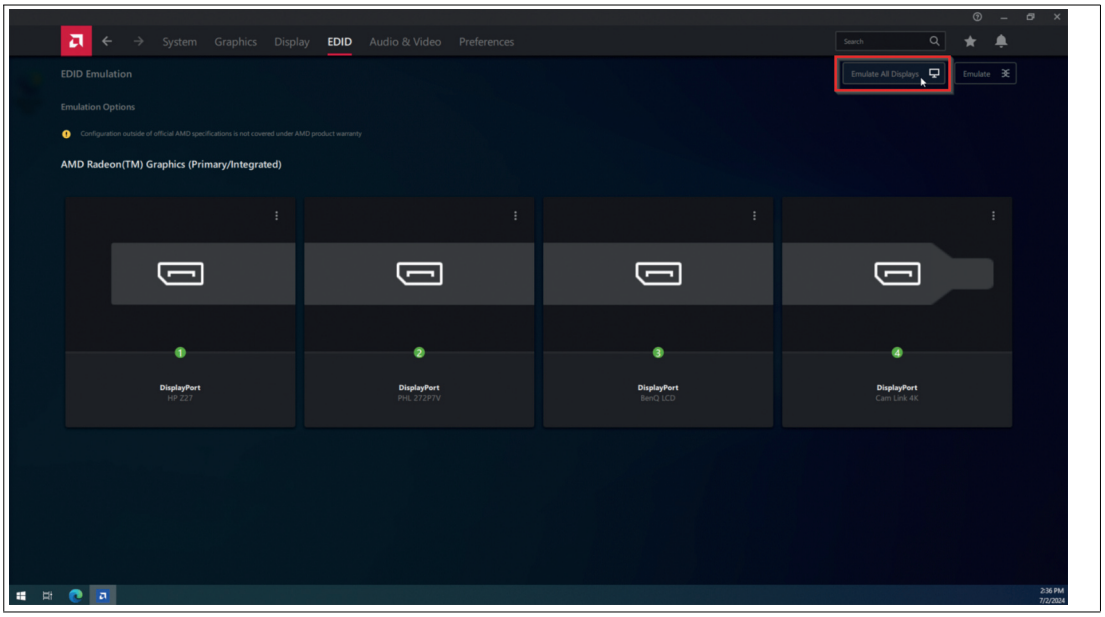


Figure 5.6

6 BIOS Settings

Caution!

Warranty

Access to the BIOS is prohibited. Any access to the BIOS is at your own risk and is not covered by the warranty for repairs. Arbitrary changes to BIOS settings may affect device functionality. The BIOS is set according to customer requirements by default.

Note

All BIOS settings are optimized for standard applications (use cases of BTC24-*). The BIOS is protected by the default password: `pepperl`. You must enter the password each time you enter the BIOS. To prevent unauthorized access and changes to the BIOS, we advise you to set your own strong administrator password once you have installed the device.

Getting Started

1. Switch on the device.
2. During power-on, press DELETE on the keyboard.
3. Enter "pepperl" for the password.
4. Press ENTER.

Navigation

Shortcut	Function	Description
Left/right arrow keys	Select screen	Menu bar and select a BIOS setup page, e.g., the main page
Up/down arrow key and click	Select element	Select a BIOS setup element or a subpage
Enter/double-click	Select	Select an option to edit its value or access a submenu
+ -	Change option	Change the field value of a specific setup element, e.g., date, time
F1	General Help	Displays the general Help window.
F2	Previous values	Loads previous values into the BIOS setup menu
F9	Optimized default values	Loads optimized default values into the BIOS setup menu
F10	Save and exit	Saves the current configuration and exits the BIOS setup menu
ESC	Exit	The <ESC> key allows the user to discard all changes and exit the BIOS setup menu. Press the <ESC> key to exit the BIOS setup menu without saving any changes. The following screen appears: `Press the <Enter> key to discard changes and exit the menu. Or use the arrow keys to select "No" and then press the <Enter> key to cancel this function and return to the previous screen.`

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BIOS Setup Menu

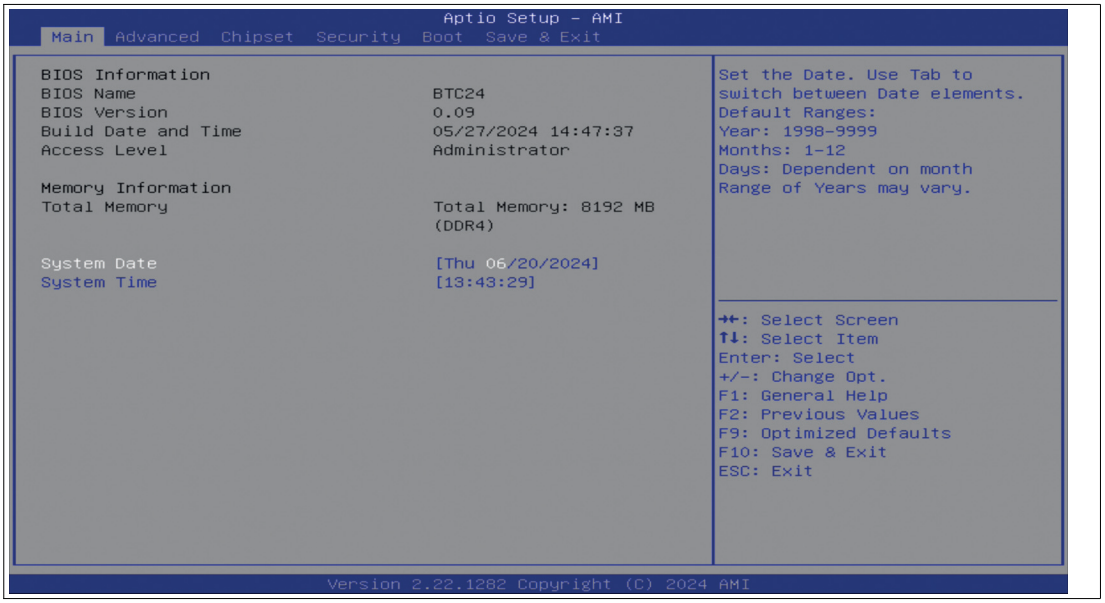


Figure 6.1 BIOS setup menu—home screen

Setting the System Date

1. Use the arrow keys to set the date.
2. Navigate to month, day, and year in sequence. Enter the appropriate value. Press ENTER to move to the next field.
3. Press F10 to save the changes.

Setting the System Time

1. Use the arrow buttons to set the time.
2. Navigate to hour, minute, and seconds in sequence. Enter the appropriate value. Press ENTER to move to the next field.
3. Press F10 to save the changes.

6.1 Creating a New BIOS Password

Select `Security` from the BIOS setup page to open the "Security" BIOS setup page.

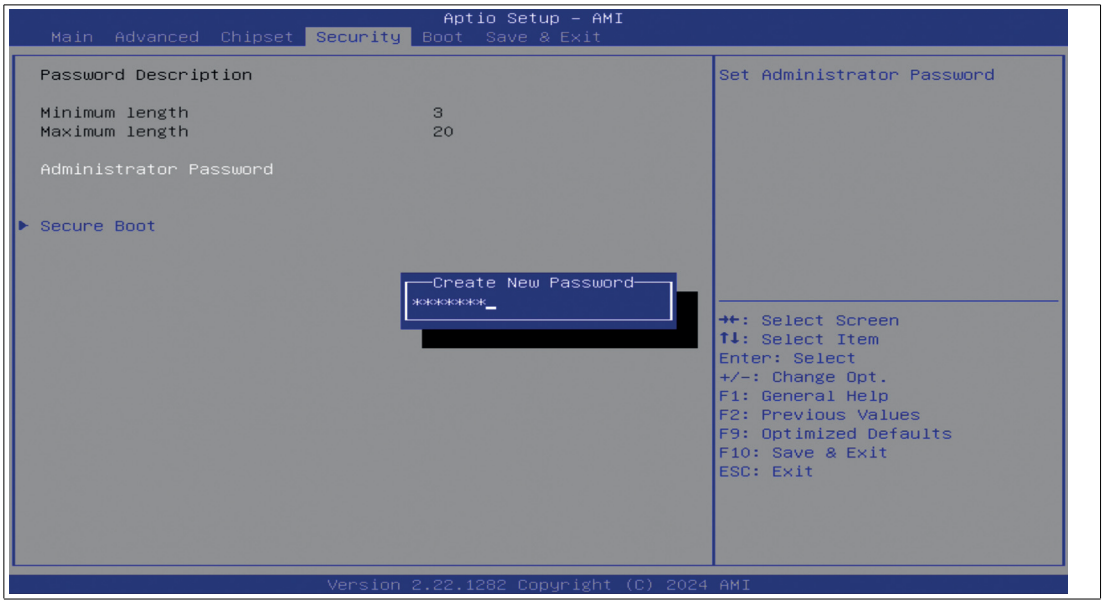


Figure 6.2 "Security" BIOS menu

Changing the BIOS Password

The "Security" setup page allows you to set an administrator password for the BIOS.

1. Select `Setup Administrator Password` using the arrow keys and press Enter.
2. Enter a password of at least 3 characters. The password can be up to 20 characters long and is case sensitive.
3. Re-enter the password when the pop-up window appears prompting you to confirm the password.

Note

After changing, note down the password and keep it in a safe place. Pepperl+Fuchs assumes no liability in the event that the password is lost. If you forget the password, the device must be returned to Pepperl+Fuchs for a complete reset.

6.2 Changing Serial Interface Mode (RS-232, RS-485)

Select `Advanced` from the BIOS setup page.

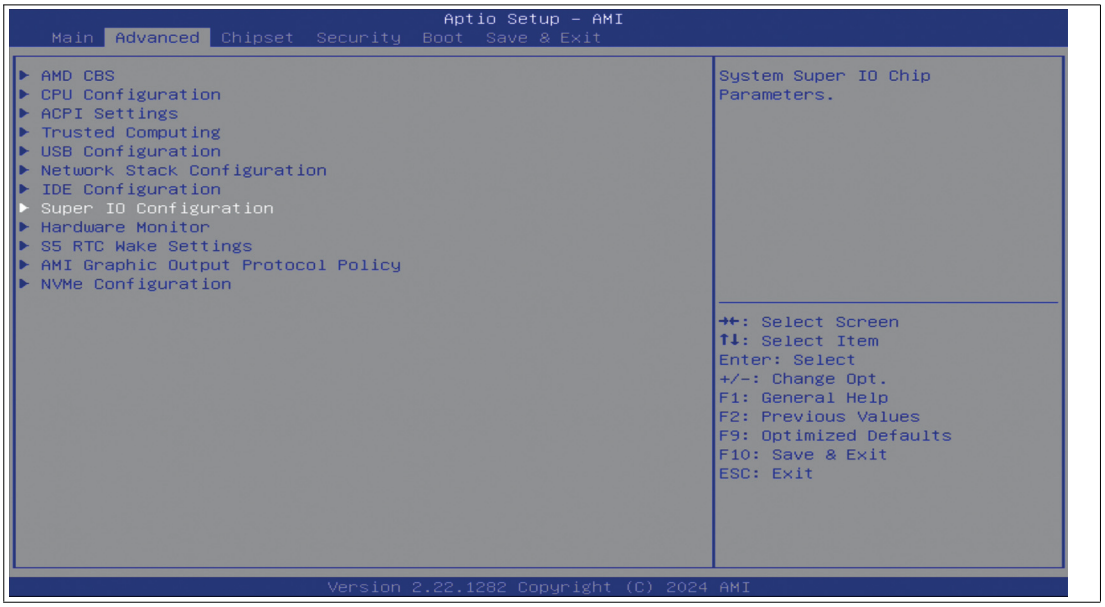


Figure 6.3 "Advanced" BIOS menu

Configuring Advanced Settings

`Super IO Configuration` allows you to view and configure the Super I/O Chip parameters.

1. Select "Serial Port 1 Configuration". Press ENTER.
2. Select `Enabled` or `Disabled`. Press ENTER in the pop-up window.
3. Select the desired serial mode.

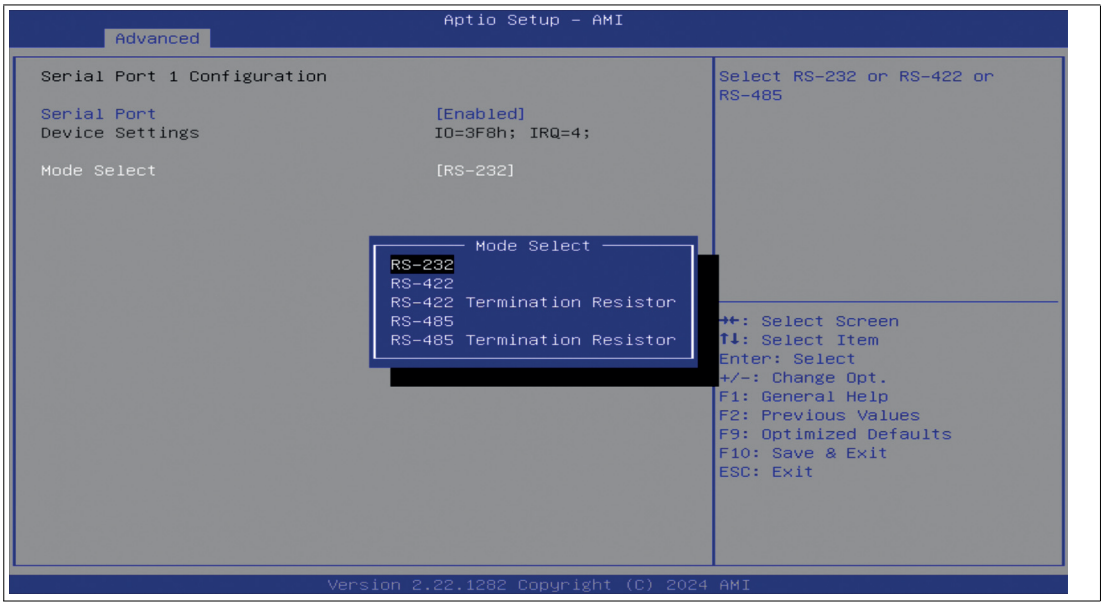


Figure 6.4

Settings for Serial Port 1

Mode select
RS-232 RS-422 RS-422 Termination Resistor RS-485 RS-485 Termination Resistor

6.3 USB Configuration

`USB Configuration` allows you to view and configure USB parameters.

The USB device displays the USB device detected by the BIOS during the power-on self-test.

Enabling and Disabling the USB Device

1. Select `USB Mass Storage Driver Support` using the arrow keys and press Enter.
2. Select `Enabled` or `Disabled` as needed. Press Enter in the pop-up window.

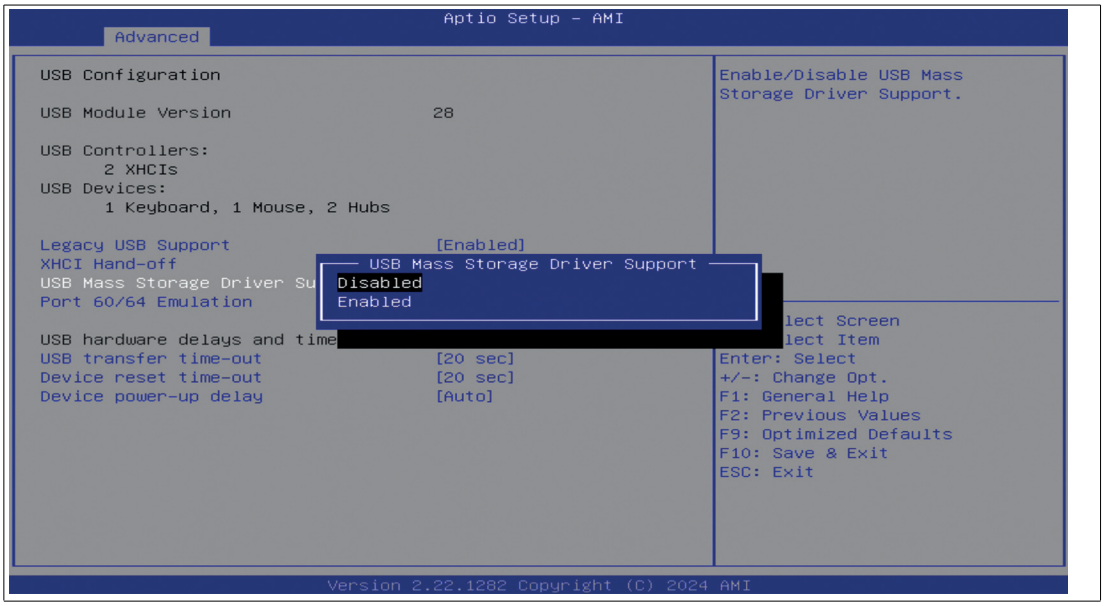


Figure 6.5 Enabling and disabling USB Mass Storage Driver Support

6.4 Boot Configuration

Select `Boot` from the BIOS setup page.

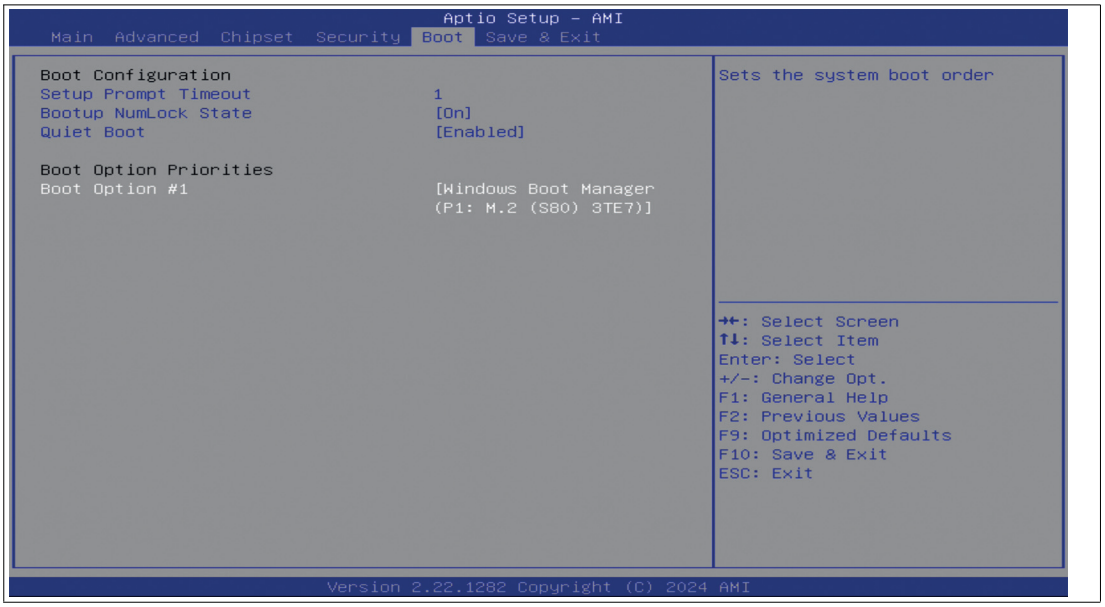


Figure 6.6 "Boot" BIOS menu

You can change the following settings on the "Boot" configuration page:

- Setup Prompt Timeout: Sets the time period within which the Delete key must be pressed to enter the BIOS at power-on.
- BootUp NumLock State: Enables and disables the numeric keys on the keyboard.

Set the PXE-ROM before changing boot options.

Enabling Boot via LAN (PXE)

1. Select the "Advanced" tab.
2. Select `Network Stack Configuration` with the arrow keys and press ENTER.

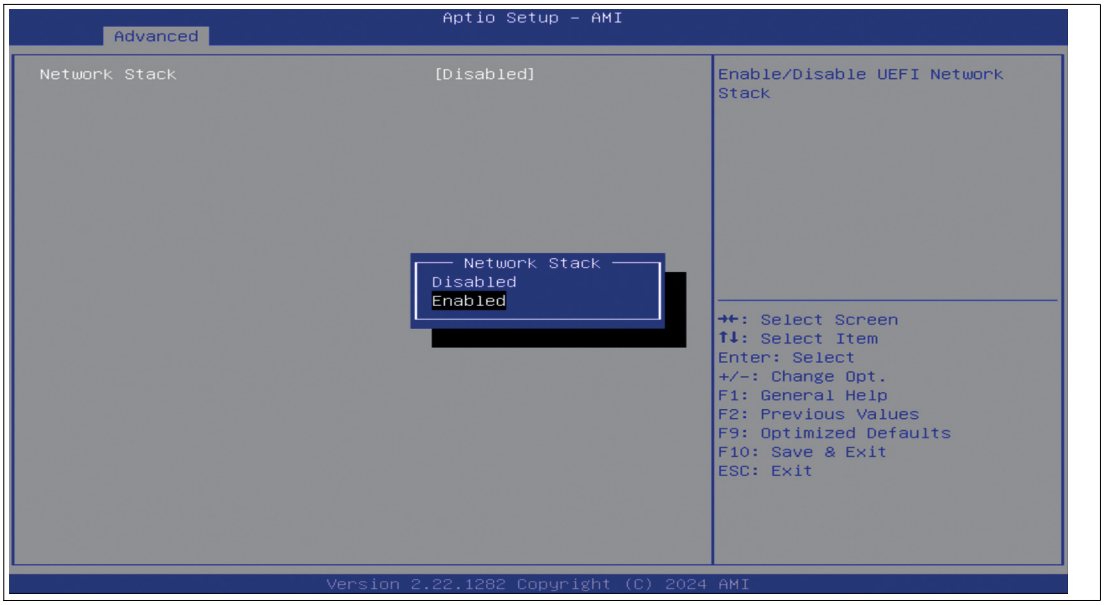


Figure 6.7 Configuring the compatibility support module

3. Enable "Network Stack" to enable network boot.

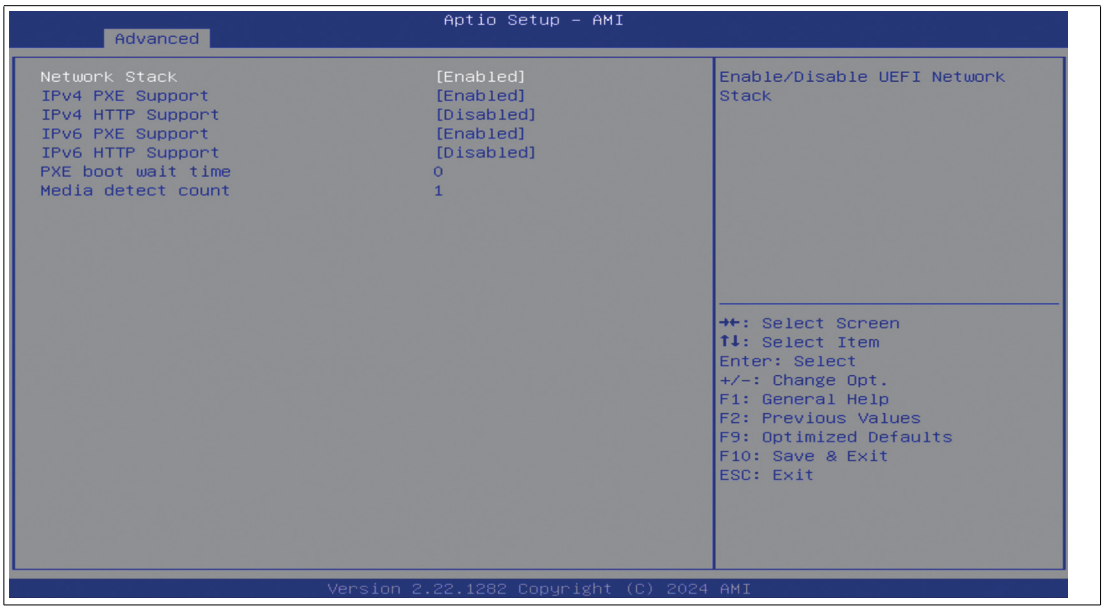


Figure 6.8

Setting Priorities for Boot Options

The "Boot" page allows you to set the priority of all boot devices.

1. Using the arrow keys, select the `Boot Option Priority` you wish to change. Press ENTER. The options window will open.

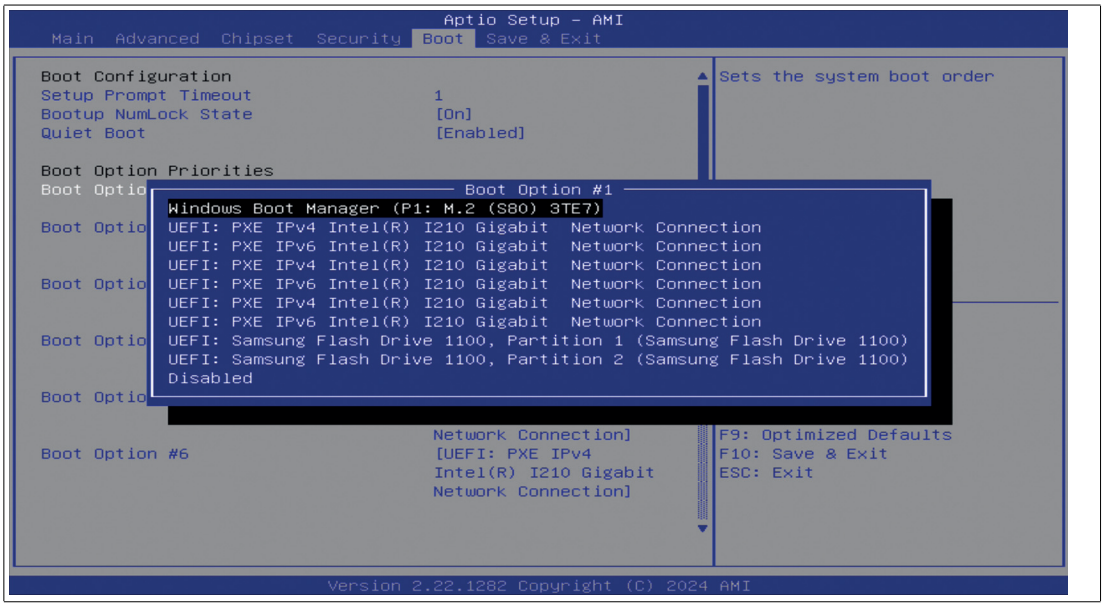


Figure 6.9 Boot option priorities

2. When enabled and connected a Network or USB Boot, those options are aditionally shown to the default boot option "Windows Boot Manager (P1: M.2 (S80) 3TE7)".

Power Management

The system starts automatically when the power supply is turned on. In the event of a power failure, the device will also automatically power up after the power supply has been restored. Can be changed at section "Chipset" --> PCH-IO Configuration --> Power on after power fail.

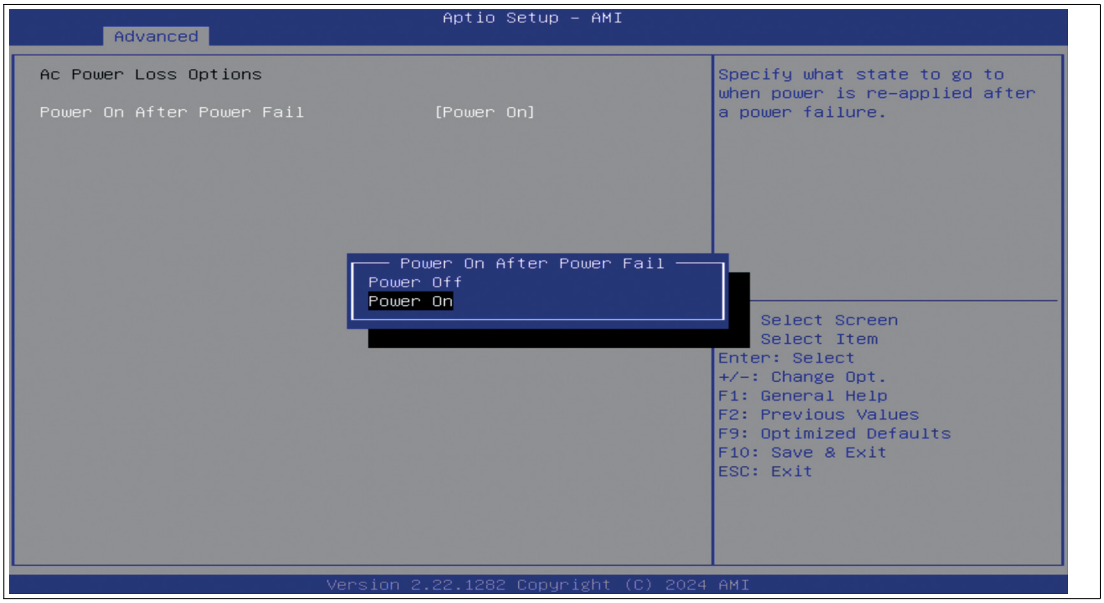


Figure 6.10

Save Options

Select "Save & Exit" from the BIOS setup page.

Save the changes and exit the system.

When you have finished making changes to the system configuration, save the changes using the following instructions.

Saving Configuration Changes

1. Select Save Changes and "Exit" using the arrow keys. Press ENTER.
2. Select Yes. Press ENTER to save the changes and exit the system.
3. Select No to exit the process without saving the changes.

The new system configuration settings take effect after the system is restarted.

Discarding Changes and Exiting the System

Use the following instructions to exit the system without saving the changes.

1. Using the arrow keys, select Discard Changes and "Exit." Press ENTER.
2. Select Yes. Press ENTER to discard the changes and exit the system.
3. Select No to exit the process.

6.4.1 Advanced - Booting from USB Stick

1. Go to the "Advanced" tap
2. Go to USB Configuration If you want to boot with USB stick, USB Mass Storage Driver Support must be set to Enabled.

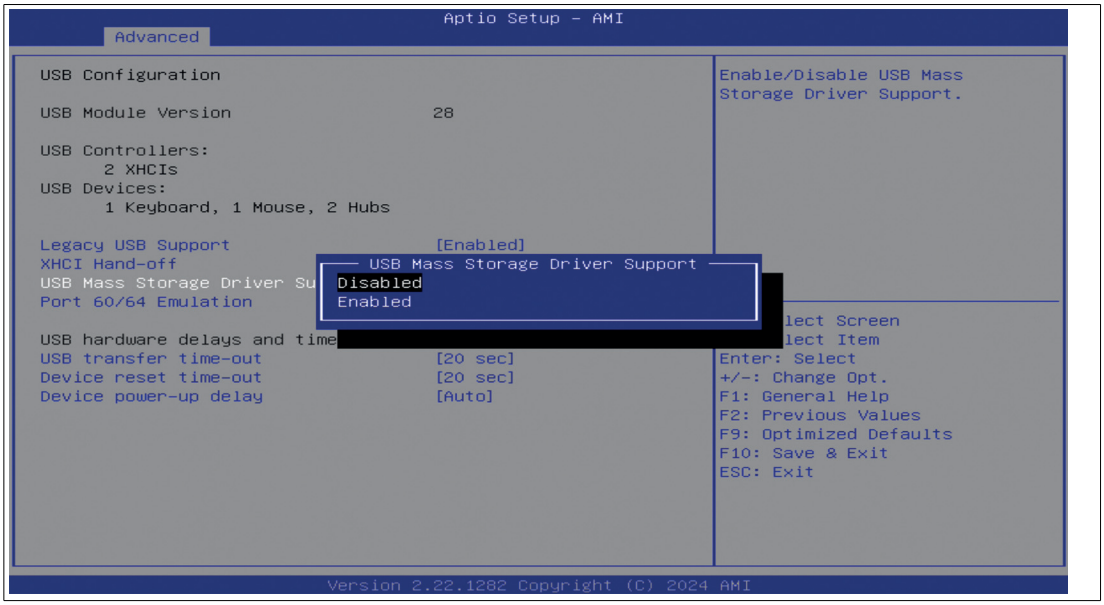


Figure 6.11

3. Select "Save and exit" or press the F10 key.
4. The system reboots automatically.
5. Click "Delete" to enter BIOS again.

6. Go to "Boot" tab and select the USB flash drive as boot option (Boot Option #1).

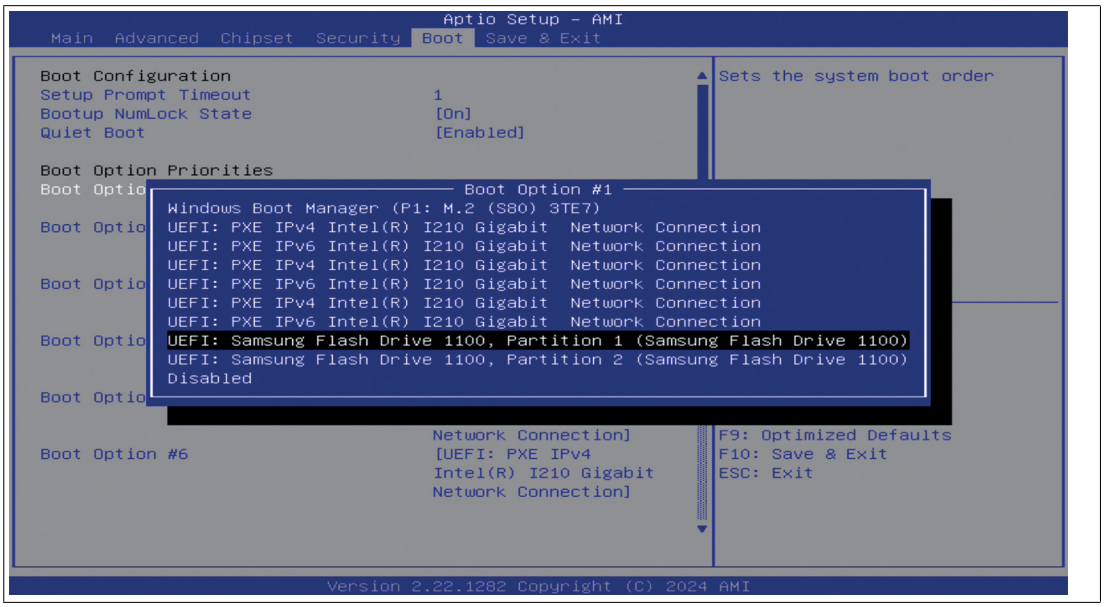


Figure 6.12

7. Select "Save and exit" or press the F10 key.

6.5 Resetting the BIOS to Factory Settings

Restoring Default Settings

You can restore the system using the following instructions.

1. Use the arrow keys to select `Restore Defaults`. Press ENTER.
2. Select `Yes`. Press ENTER to load the optimized default settings.
3. Select `No` to exit the process.

Restoring the Factory Settings with F9

1. Press F9: `Optimized Defaults`. Press ENTER.
2. Select `Yes`. Press ENTER to load the optimized default settings.
3. Select `No` to exit the process.

6.6 Secure Boot

Note

Secure Boot is recommended.

Secure Boot

1. Go to "Security" tab to enable Secure Boot.

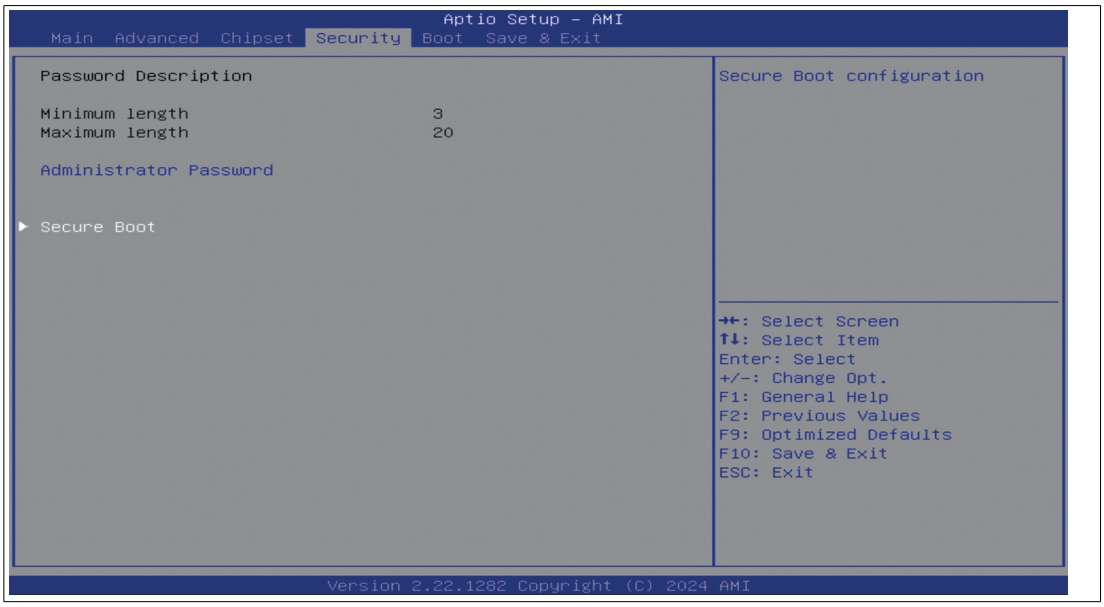


Figure 6.13

2. Enable Secure Boot.

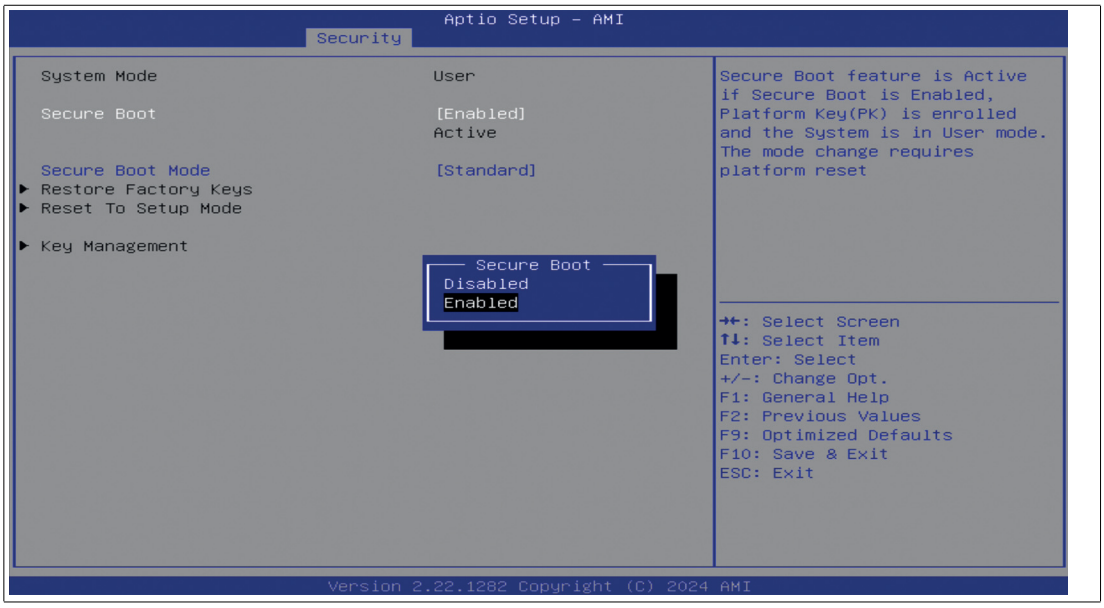


Figure 6.14

S5 RTC Wake Settings

Enable system to wake from S5 using RTC alarm. It is used to wake the system at a specific time.

1. Go to the "Advanced" tab
2. Select "Wake system from S5"

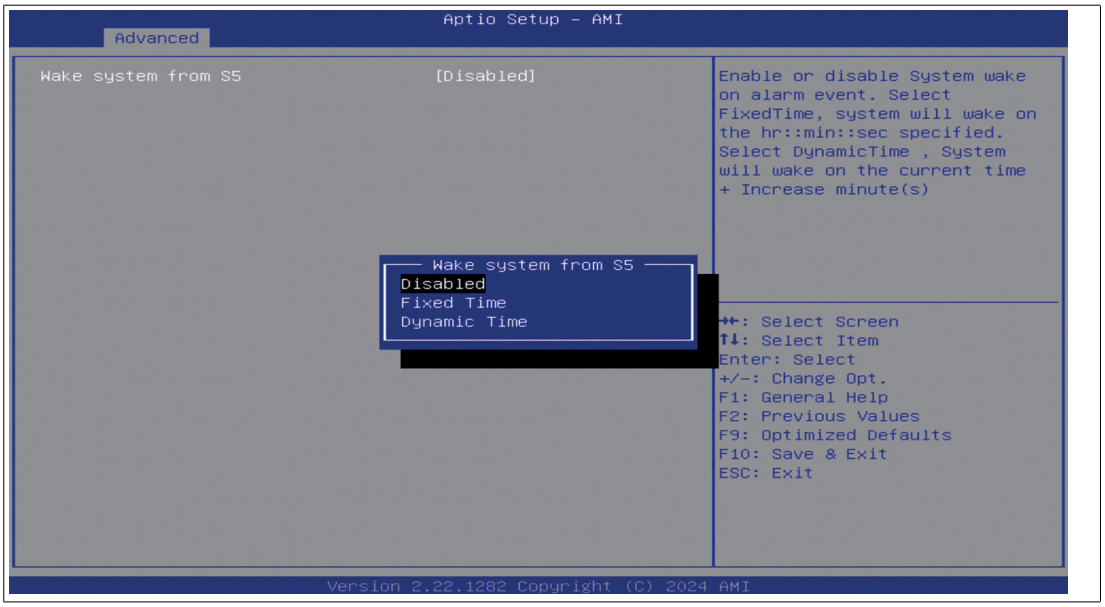


Figure 6.15

3. Chose between Fixed Time and Dynamic Time and configure the desired settings.

Deactivate LAN ports

1. Go to the "Advanced" tab. Select "PCI-E Port Configuration" and then "PCI Express Configuration".

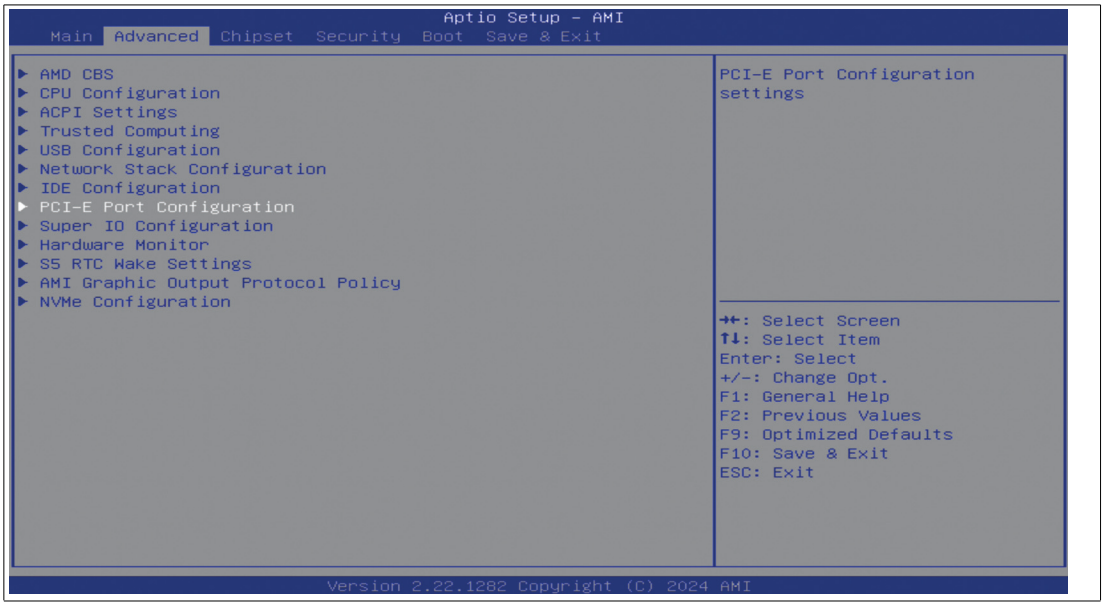


Figure 6.16

2. Choose the LAN Port you like to enable / disable.

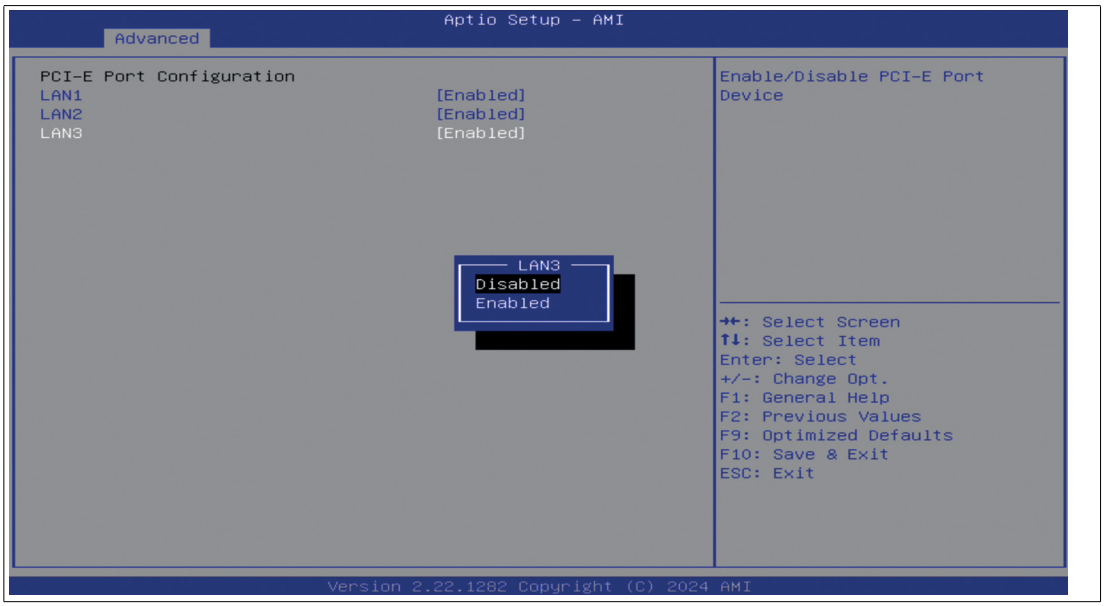


Figure 6.17

3. Disable/Enable the desired LAN port.

6.7 Adjust Frame Buffer Rate

Graphics-intensive processes can be optimized via the BIOS.

Note

For standard setups up to 4x 4K setup with 4 RDP sessions, it is strongly recommended to keep the default setting of 512MB (default).

To adjust the Frame buffer rate, go to `Advanced -> AMD CBS -> NBIO Common Options -> GFX Configuration`

1. Set `"Integrated Graphics Controller"` to `[Forces]`.
2. Set the frame buffer size to `"Auto"` or select the desired size.

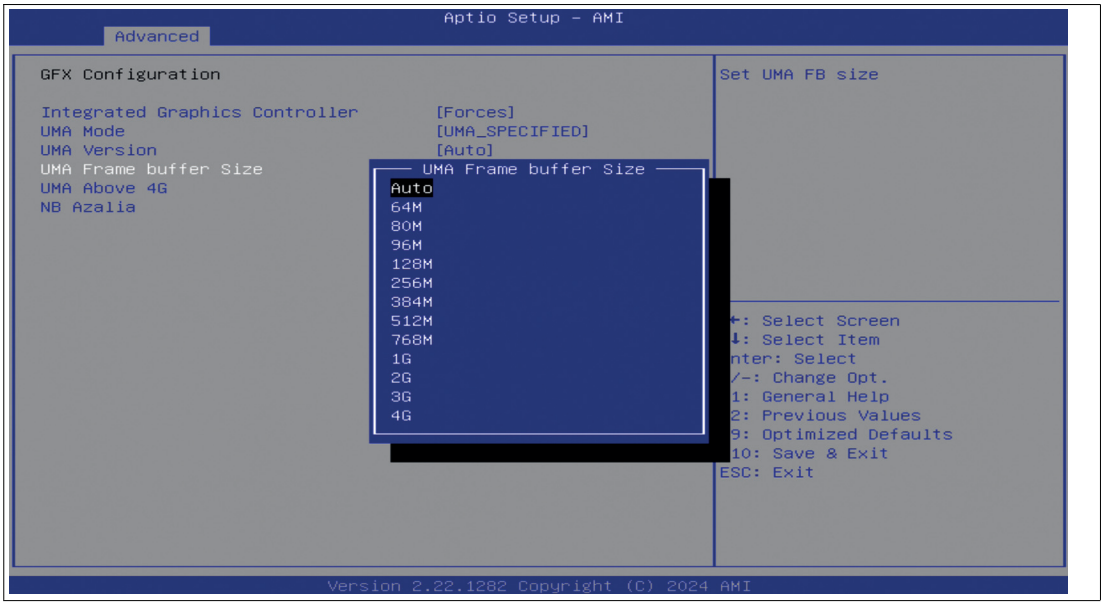


Figure 6.18

Note

When the frame buffer size is set to auto, 2GB of RAM are reserved. With that configuration, remote connections (RDP, VNC) may no longer function smoothly.

7 Service and Support

For more information about the products described in this document, visit www.pepperl-fuchs.com.

Have the following information ready when contacting your local representative or technical support:

- Product name
- Serial number of the product
- Image version and VisuNet RM Shell version

IGEL OS configuration

For software and hardware support please contact your local IGEL representative or technical support.

Check the IGEL website regularly for security advisories and latest software updates.

2026-06

8 Appendix

8.1 Accessories

Power Supply, Cables, and Connectors

Part number	Type code	Description
548328	FSP065-RBBN3	AC/DC power supply Input: 100 VAC – 240 VAC, 50 Hz – 60 Hz Output: 19 VDC Maximum current: 3.42 A Connector: 2.5 mm DC socket with locking mechanism Approvals: CE, FCC class B, UL listed, GS, CCC Power cable: 1 x EU type and 1 x US type
548400	ATEN-LockPro	Locking device for securing cables on the BTC24-* Each pack contains 10 locks
70105588	S-BN-19/1800-UK1	Power supply cable with protective conductor Type: IEC-60320-C5 Country: United Kingdom, Ireland (Type G, BS 1363) Length: approx. 1.8 m
70105589	S-BN-19/1800-AU1	Power supply cable with protective conductor Type: IEC-60320-C5 Country: Australia (Type I, AS 3112) Length: approx. 1.8 m
70105590	S-BN-19/1800-CH1	Power supply cable with protective conductor Type: IEC-60320-C5 Country: Switzerland (Type J, SEV 1011) Length: approx. 1.8 m
70105591	S-BN-19/1800-IT1	Power supply cable with protective conductor Type: IEC-60320-C5 Country: Italy (Type L, CEI 23-16-VII) Length: approx. 1.8 m
70105592	S-BN-19/1800-DK1	Power supply cable with protective conductor Type: IEC-60320-C5 Country: Denmark (Type K, IEC 60906-1) Length: approx. 1.8 m
70100504	BTC12-CBL-DC-JACK-2100	Connector: 5.5/2.5 mm DC socket with locking mechanism Open cable ends with wire end ferrules Cable length: 2.1 m
70172207	ADAPTER-RJ45-DE9	Adapter cable RJ45 to D-SUB9 Cable length: 19.5 cm

Mounting Aids

Part number	Type code	Description
548401	BTC12-KIT-DIN-RAIL	DIN rail mounting kit for BTC
548402	BTC12-KIT-VESA-MOUNT	VESA mounting bracket kit for BTC (100 x 100mm and 75 x 75 mm)
70188558	BTC-KIT-VERTICAL-STAND	Vertical stand for BTC (Box Thin Client)

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