

Box Thin Client for Industrial Applications

BTC14N-*

Manual



Your automation, our passion.

 **PEPPERL+FUCHS**

With regard to the supply of products, the current issue of the following document is applicable:
The General Terms of Delivery for Products and Services of the Electrical Industry, published
by the Central Association of the Electrical Industry (Zentralverband Elektrotechnik und Elek-
troindustrie (ZVEI) e.V.) in its most recent version as well as the supplementary clause:
"Expanded reservation of proprietorship"

Worldwide

Pepperl+Fuchs Group
Lilienthalstr. 200
68307 Mannheim
Germany
Phone: +49 621 776 - 0
E-mail: info@de.pepperl-fuchs.com

North American Headquarters

Pepperl+Fuchs Inc.
1600 Enterprise Parkway
Twinsburg, Ohio 44087
USA
Phone: +1 330 425-3555
E-mail: sales@us.pepperl-fuchs.com

Asia Headquarters

Pepperl+Fuchs Pte. Ltd.
P+F Building
18 Ayer Rajah Crescent
Singapore 139942
Phone: +65 6779-9091
E-mail: sales@sg.pepperl-fuchs.com
<https://www.pepperl-fuchs.com>

1	History of the Manual	4
2	Safety	5
2.1	Introduction	5
2.1.1	Content of this Document	5
2.1.2	Content of this Document	5
2.1.3	Content of this Document	6
2.1.4	Manufacturer	7
2.1.5	Target Group, Personnel	7
2.1.6	Symbols Used	7
3	Product Description	9
3.1	Application	9
3.2	Firmware	12
3.3	Technical Data	13
3.4	Dimensions and Nameplates	15
4	Installation	17
4.1	Mounting	17
4.2	Electrical Connection	26
4.3	I/O Connection	27
5	BIOS Settings	33
5.1	Creating a New BIOS Password	35
5.2	Changing Serial Interface Mode (RS-232, RS-485)	36
5.3	USB Configuration	38
5.4	Boot Configuration	39
5.5	Resetting the BIOS to Factory Settings	44
6	Service and Support	45
7	Accessories	46

1 History of the Manual

The following editions of the manual have been released:

Version	Comments
07/2022	Addition -N1 (Industrial temperature grade 0 ... 55 °C) and -TTR0 ACP ThinManager Ready BIOS variants

2 Safety

2.1 Introduction

2.1.1 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 instruction manual and 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.

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
- Additional documents

2.1.2 Content of this Document

This document contains information required to use the product in the relevant phases of the product life cycle. This may include information on the following:

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

- Dismounting
- Disposal



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.

The documentation comprises the following parts:

- This document
- Datasheet

In addition, the documentation may comprise the following parts, if applicable:

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

2.1.3

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 instruction manual and 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.

The documentation consists of the following parts:

- Present document
- Manual

- 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
- Additional documents

2.1.4 Manufacturer

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

2.1.5 Target Group, Personnel

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

Only appropriately trained and qualified personnel may carry out mounting, installation, commissioning, operation, maintenance, and dismantling 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.

2.1.6 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.



Action

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

3 Product Description

3.1 Application

The BTC14 is a rugged, industrial-strength box thin client optimized for 24/7 operation. The BTC14 has been specially designed for immunity to shock, vibration, and temperatures within an optional extended range of -20°C to +60°C (standard temperature grade) and is characterized by a fanless construction and industrial strength components. This compact, stand-alone computer features an AMD Ryzen Embedded V1202B processor and a modern integrated graphics card. Four DisplayPort interfaces support up to four monitors at Ultra HD resolution (4K at 60 Hz), making the BTC14 ideal for monitoring and control applications in factory and process automation.



Warning!

User access!

Do not open the device. The BTC14 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 pursuant 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.

Quad Monitor Setup with Full HD BTC14N-GP-TS40-DP-N1 and BTC14N-GP-TS40-DP-N0

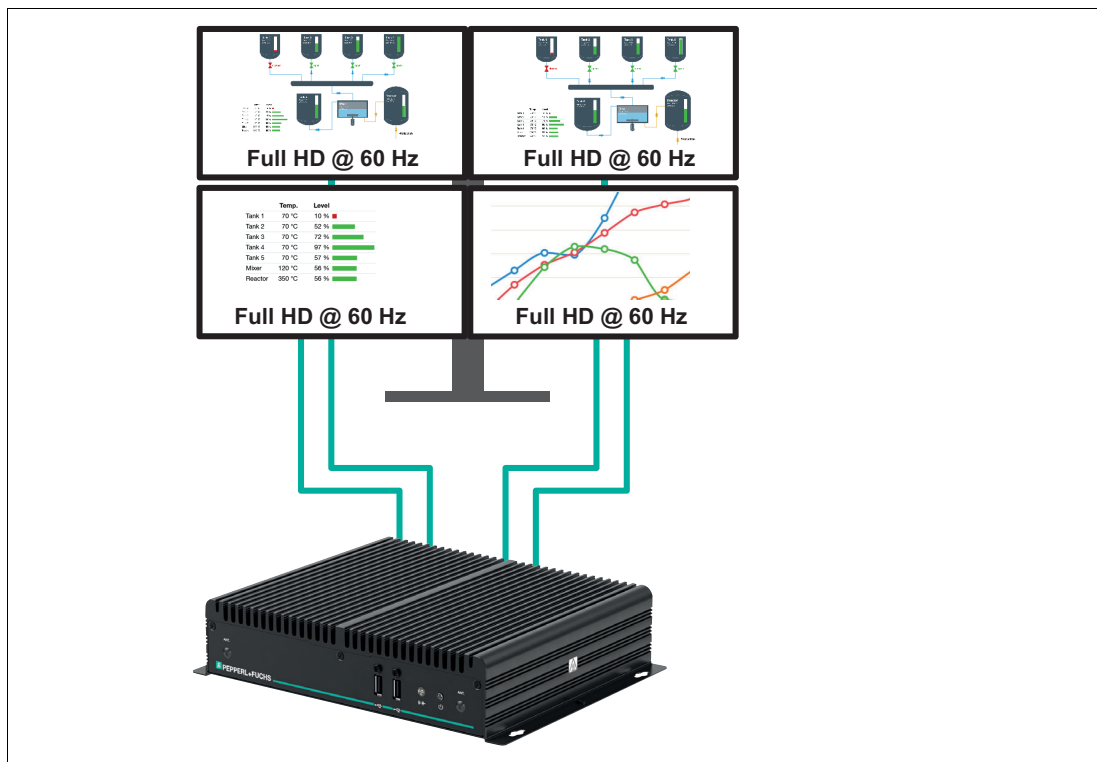


Figure 3.1 Four monitors with Full HD resolution at 60 Hz at 4 GB RAM.

The standard version of the BTC14 is the BTC14N-GP-TS40-DP-N0 which is equipped with 4-GB RAM. Up to four Full HD capable monitors can be connected to the native DisplayPorts™.

Quad Monitor Setup with 4K

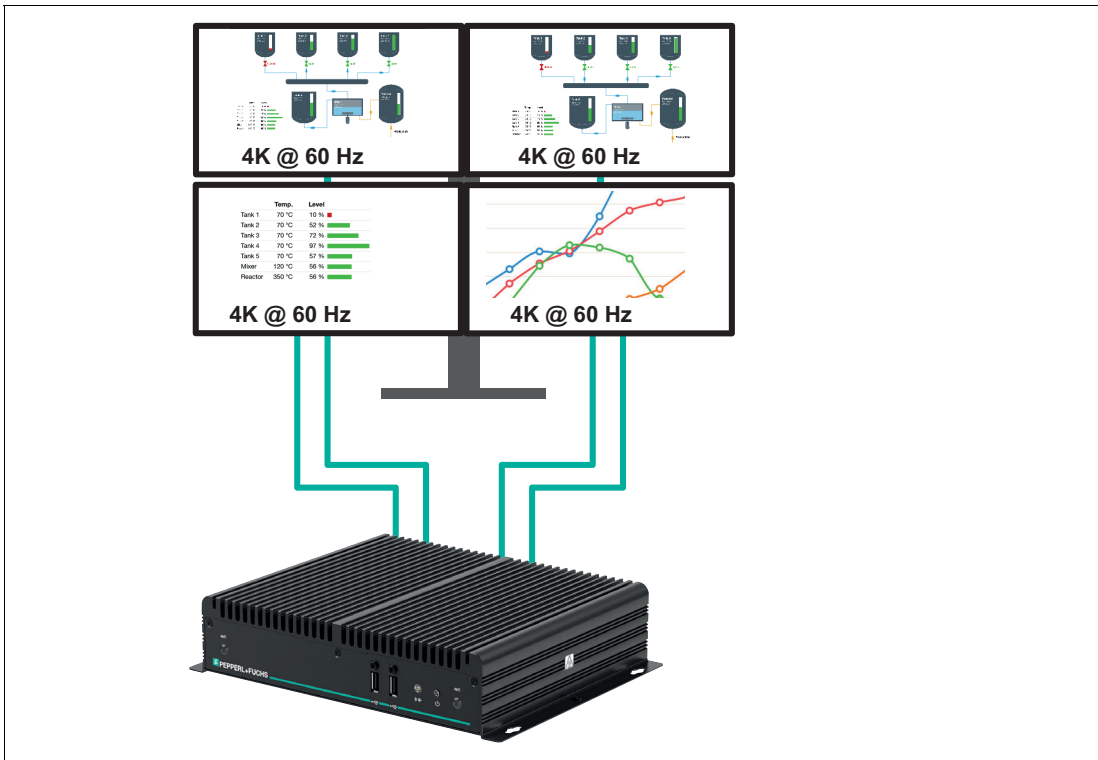


Figure 3.2 Four monitors with Ultra HD resolution (4k at 60 Hz) at 8 GB RAM

The BTC14 can optionally be equipped with 8-GB RAM. This optional version is designed for the usage of up to four 4-K monitors at 60 Hz.

Quad Monitor Setup with Full HD / 4K BTC14N-GP-TS41-DP-N0

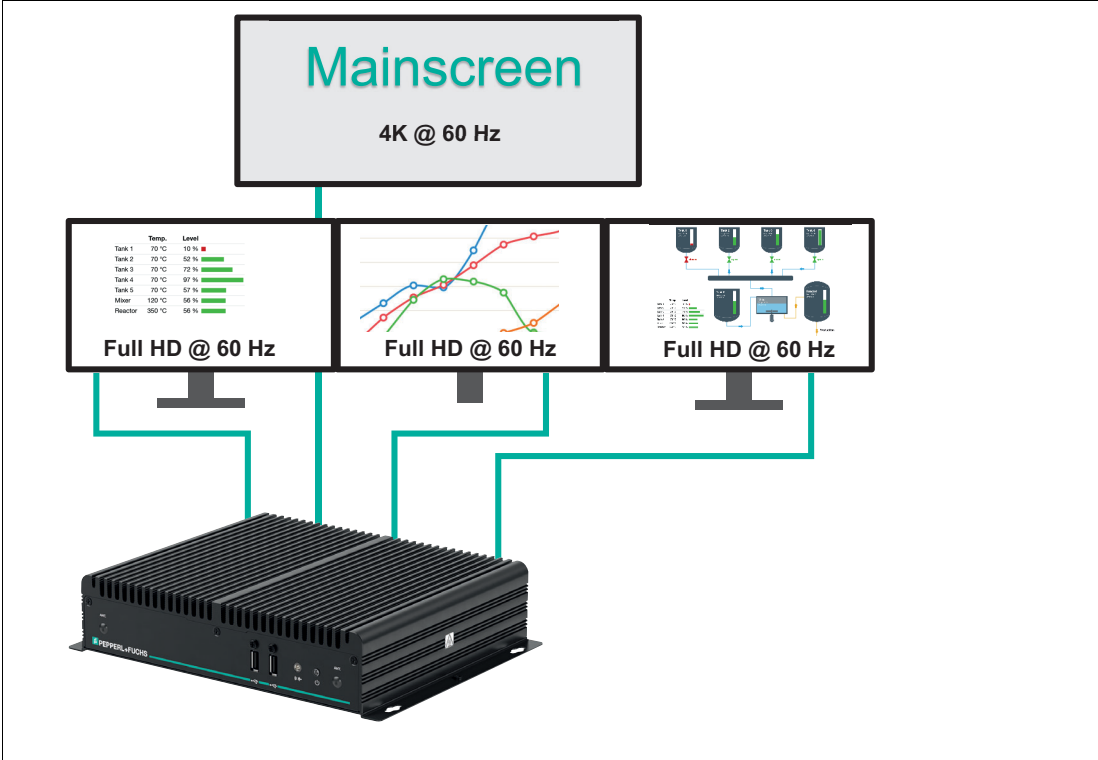


Figure 3.3 Example of a scenario with different Monitors 4 K (Ultra HD at 60 Hz) and Full HD monitors (8 GB RAM)

If a 4-K monitor must be connected to the BTC14, the 8-GB RAM option must be chosen. Full HD and 4-K monitors can then be combined as necessary.



Note

The maximum amount of displays that can be connected either directly or in series to the BTC14 is 4. The intended use is to connect one display to each DisplayPort.

3.2 Firmware

VisuNet RM Shell 6

The VisuNet RM Shell 6 firmware allows the user to easily access applications running on a host system via Ethernet (e.g., workplace PC or server). VisuNet RM Shell 6 is based on Windows® 10 IoT Enterprise 2021 LTSC, embedded version of Windows® with long-term support that is compatible with the latest versions of popular remote protocols such as RDP 10, Citrix Receiver, and VNC. Using these protocols, the BTCs and other VisuNet Remote Monitors can be easily integrated into all major process control systems, whether they are virtual or they depend on conventional, workstation-based setups.

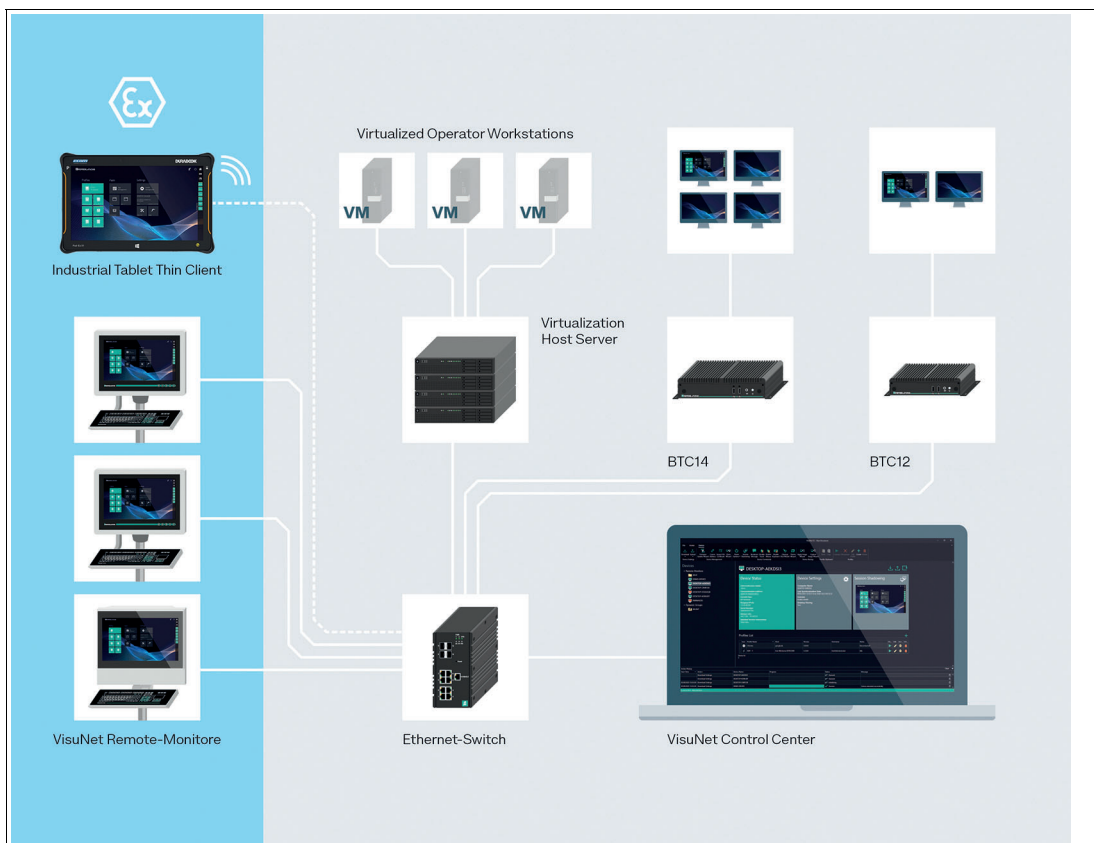


Figure 3.4

ACP ThinManager Ready

As an alternative to the VisuNet RM Shell 5, the BTC14 can also be ordered as ACP ThinManager "Ready" BIOS installed option. The device is qualified, tested and listed with the following parameters:

Make/OEM	Model	OEM Model	Video Chipset	Package Compatibility
Pepperl+Fuchs	BTC14	BTC14	AMD Radeon Vega 8	9.2

Table 3.1 For further information refer to the according ACP ThinManager documentation: https://kb.thinmanager.com/index.php/Supported_Hardware#Pepperl.2BFuchs

For more information about using VisuNet RM Shell 5, see the VisuNet RM Shell manual.



Note

Visit www.pepperl-fuchs.com regularly to check for the latest version of VisuNet RM Shell.

3.3

Technical Data

Hardware	
Processor	AMD Ryzen Embedded V1202B
RAM	4 GB DDR4 (standard) 8 GB DDR4 (optional)
Mass storage	32-GB M.2 MSATA MLC

Supply	
Power supply	Input voltage: 12 ... 28 V DC Input current: max. 4.46 A ... 1.48 A Input via 2.5-mm power socket (with double insulation from the power supply)

Interface	
Interface type	front: 2 x USB 2.0, power button, audio line out, 2 antenna connections (no preinstalled wireless interfaces) Back side: 2 x 1000BASE-T Ethernet, 4 x DisplayPort™ 1.2 (supports Ultra HD with 4K at 60 Hz), 1 x DC (DC jack 5.5 x 2.5 mm with lock mechanism), 2 x USB 3.0 (Super Speed), 1 x RS-232/RS-485 with DB-9 connector

Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013 EN 55032:2015, AC:2016
RoHS	
Directive 2011/65/EU (RoHS)	EN 50581:2012-09

Software	
Operating system	VisuNet RM Shell 6.x (based on Microsoft® Windows® 10 IoT Enterprise 2021 LTSC) Option TTR: ACP ThinManager Ready BIOS

Ambient conditions	
Operating temperature	Temperature classes: N1: Industrial temperature grade 0° ... 55° C (32 ... 131 °F) N0: Standard temperature grade -20 ... 60 °C (-4 ... 140 °F)
Storage temperature	-20 ... 60 °C (-4 ... 140 °F)

2023-05

Ambient conditions	
Relative humidity	≤ 90% at 40°C (non-condensing acc. to EN 60068-2-78)
Shock resistance	40 g (11 ms) when 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	1.6 kg
Dimensions	260 mm x 200 mm x 56 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	
UL approval	UL Listed for Canada and USA, E223772 (NRAQ, NRAQ7) (Ordinary Location)
Approved for	CE, 2014/30/EU (EMC), 2011/65/EU (RoHS)

Product Versions

Part No.	Part Name	Description
70164220	BTC14N-GP-TS40-DP-N0	BTC14 with standard enclosure - General-purpose Non-Ex - CE, FCC Part 15 Class B, UL Ord Loc Listed for US & Canada - AMD Ryzen V1202B, 4-GB RAM, 32 GB Flash, VisuNet RM Shell 6.x based on Windows® 10 IoT 2021 LTSC - 4x DisplayPort, 4x USB, 1x RS-232, 2x Gigabit Ethernet
70110484-100003	BTC14N-GN-TS41-DP-N0	BTC14 with standard enclosure - General-purpose Non-Ex - CE, FCC Part 15 Class B - AMD Ryzen V1202B, 8-GB RAM, 32 GB Flash, VisuNet RM Shell 6.x based on Windows® 10 IoT 2021 LTSC - 4x DisplayPort, 4x USB, 1x RS-232, 2x Gigabit Ethernet

Part No.	Part Name	Description
70110484-100004	BTC14N-GP-TTR0-DP-N0	BTC14 with standard enclosure - General-purpose Non-Ex - CE, FCC Part 15 Class B, UL Ord Loc Listed for US & Canada - AMD Ryzen V1202B, 4-GB RAM, ACP ThinManager Ready BIOS installed - 4x DisplayPort, 4x USB, 1x RS-232, 2x Gigabit Ethernet
70110484-100007	BTC14N-GP-TTR0-DP-N1	BTC14 with standard enclosure - General-purpose Non-Ex - CE, FCC Part 15 Class B, UL Ord Loc Listed for US & Canada - AMD Ryzen V1202B, 4-GB RAM, ACP ThinManager Ready BIOS installed - 4x DisplayPort, 4x USB, 1x RS-232, 2x Gigabit Ethernet - Industrial temperature grade 0 ... 55 °C

3.4 Dimensions and Nameplates

Dimensions

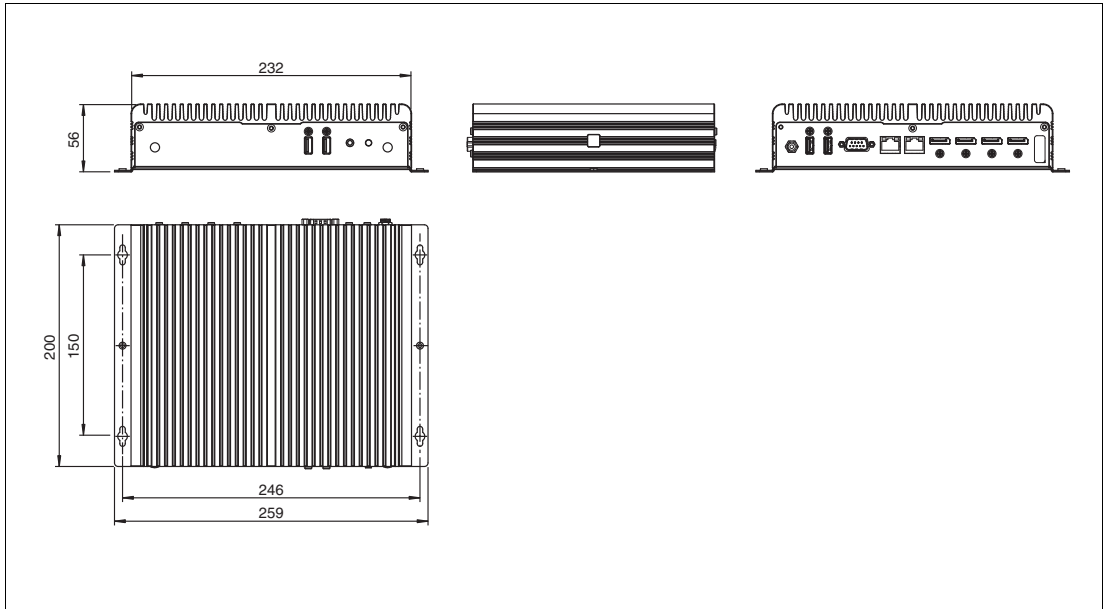


Figure 3.5

Labels

The following labels are attached to the BTC14:

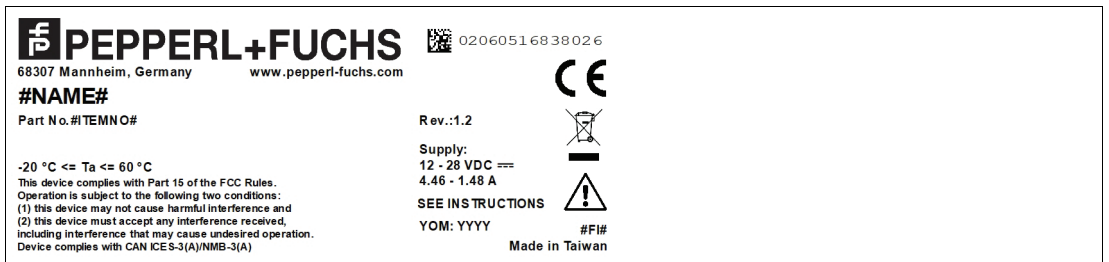


Figure 3.6 Nameplate BTC14

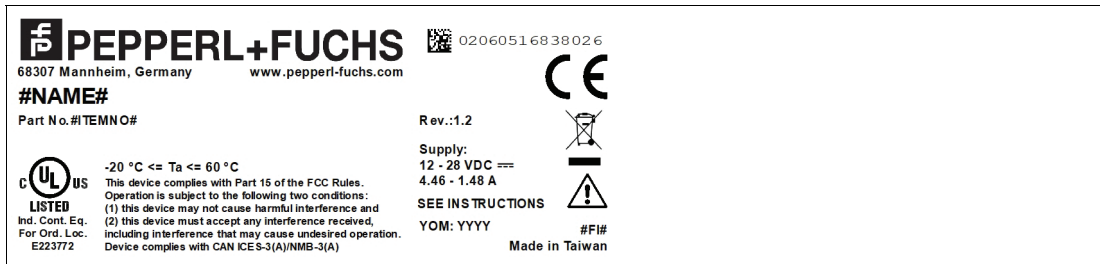


Figure 3.7 Nameplate BTC14



Figure 3.8 Hot Surface



Figure 3.9 Certificate of Authenticity (COA)

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

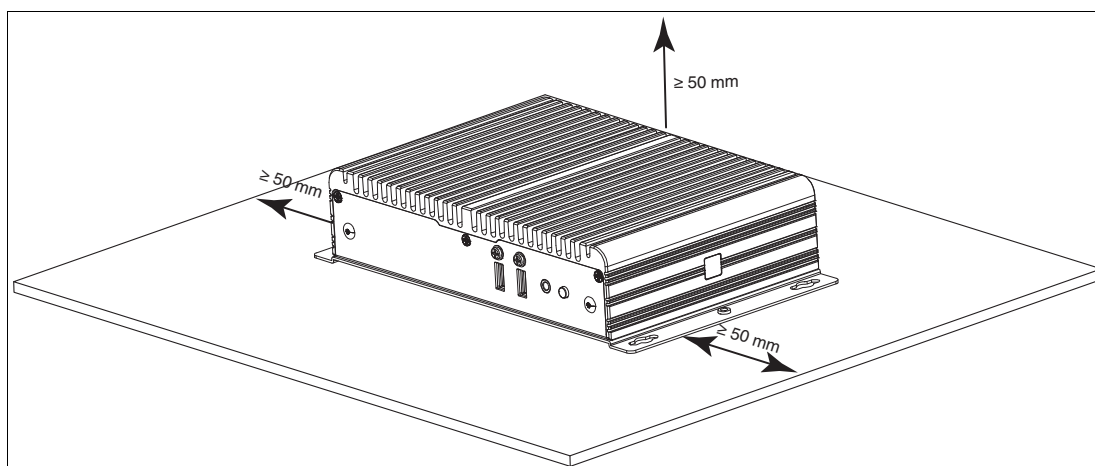


Figure 4.1 Horizontal mounting/desktop mounting

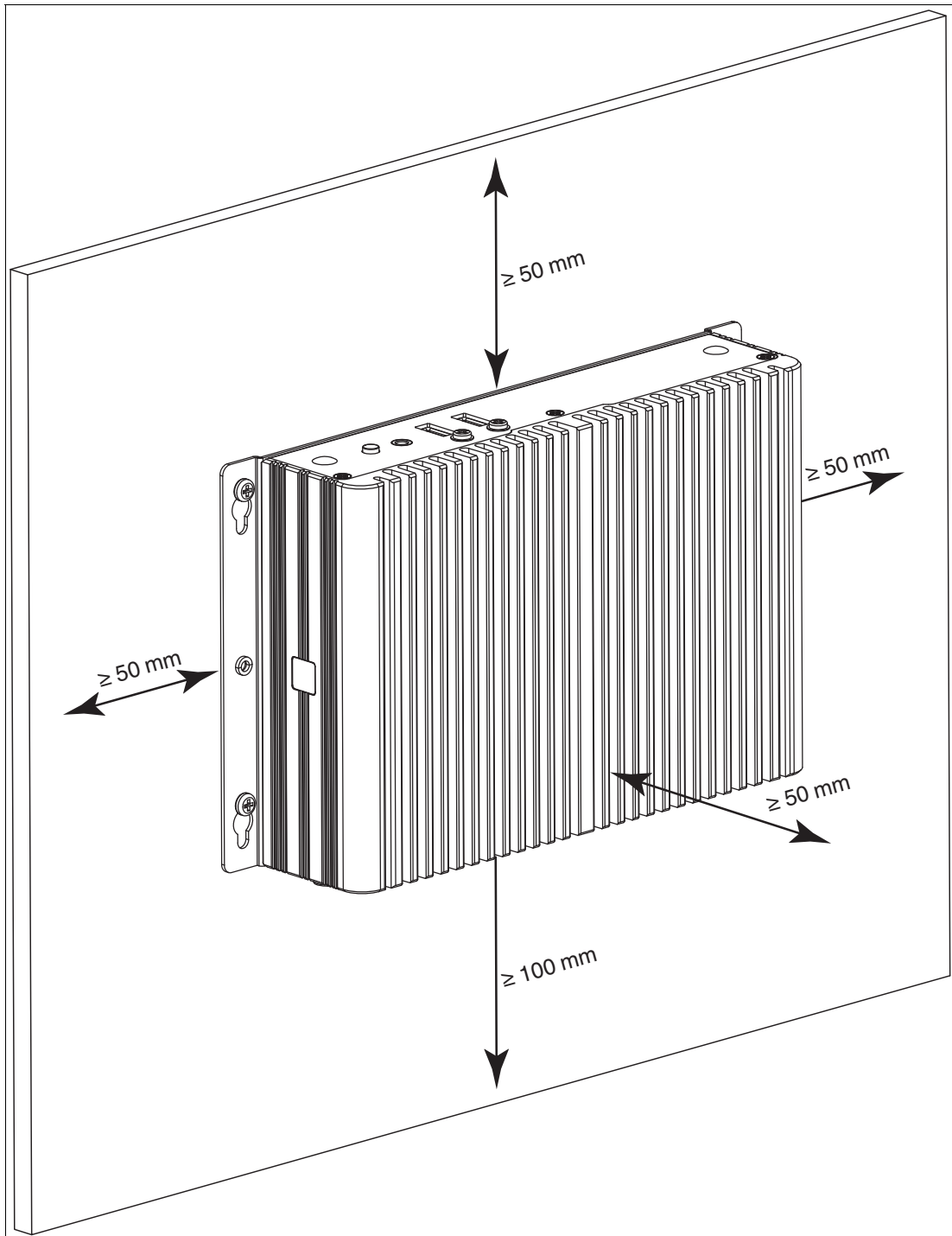


Figure 4.2 Vertical mounting



Caution!

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

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 BTC14. Use the thread on the bottom of the BTC14 to secure the adapter. Tighten the supplied screws to a tightening torque of 0.4 Nm.

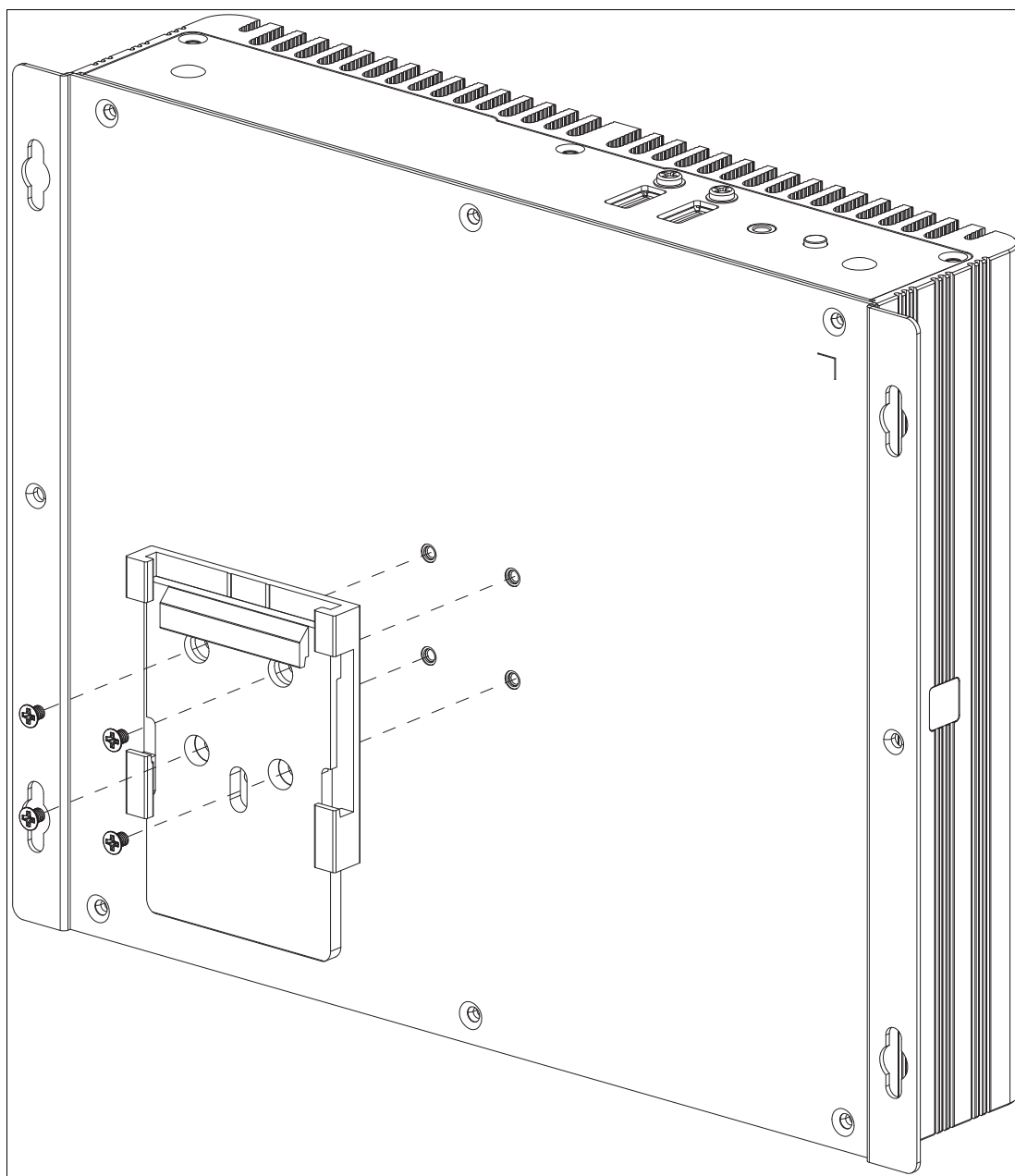


Figure 4.3

2. There is a movable clamp on the top of the DIN rail adapter. Install the BTC14 at a slight angle with the movable clamp over the DIN mounting rail. Apply light pressure to pull the BTC14 downward and clamp the adapter into the rail.

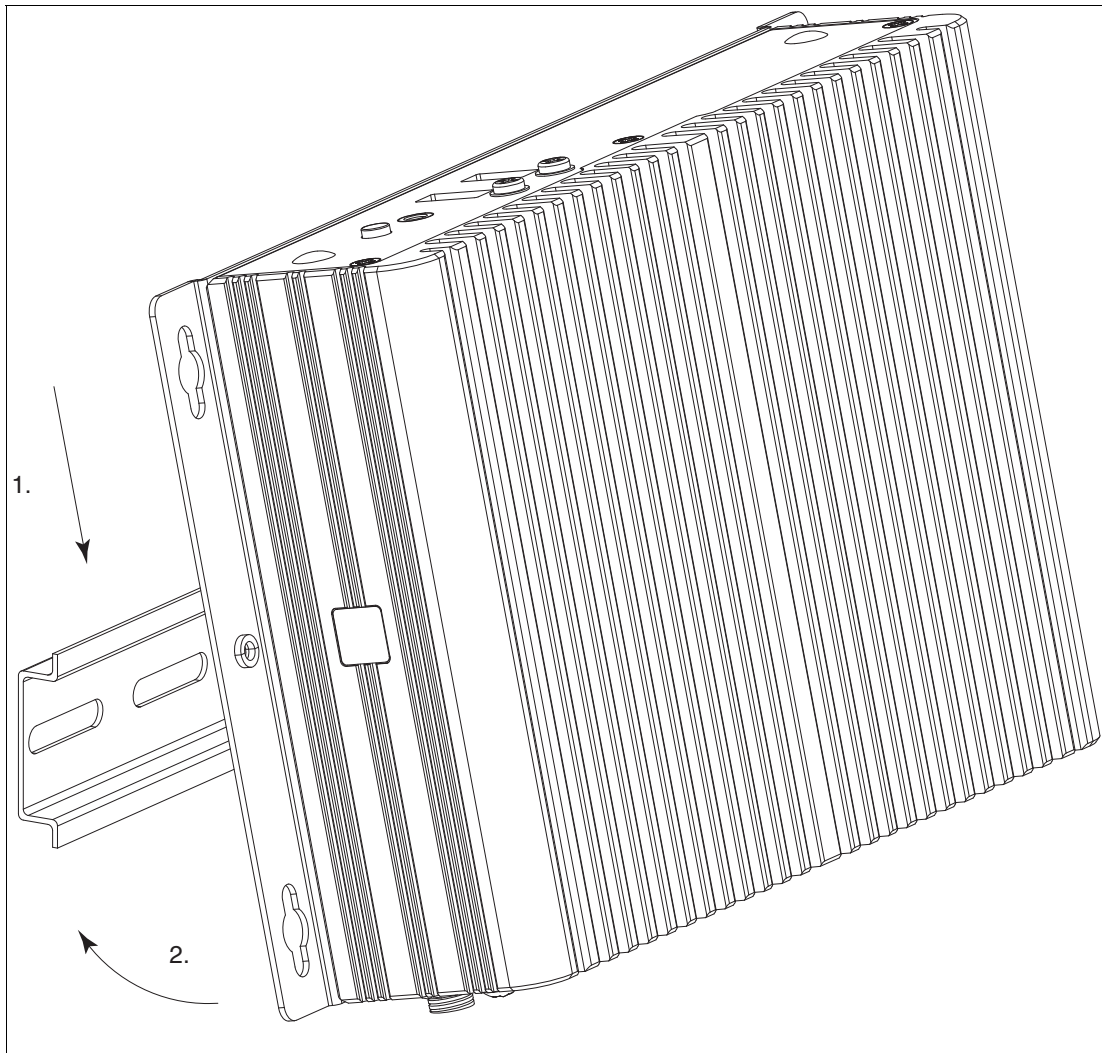


Figure 4.4

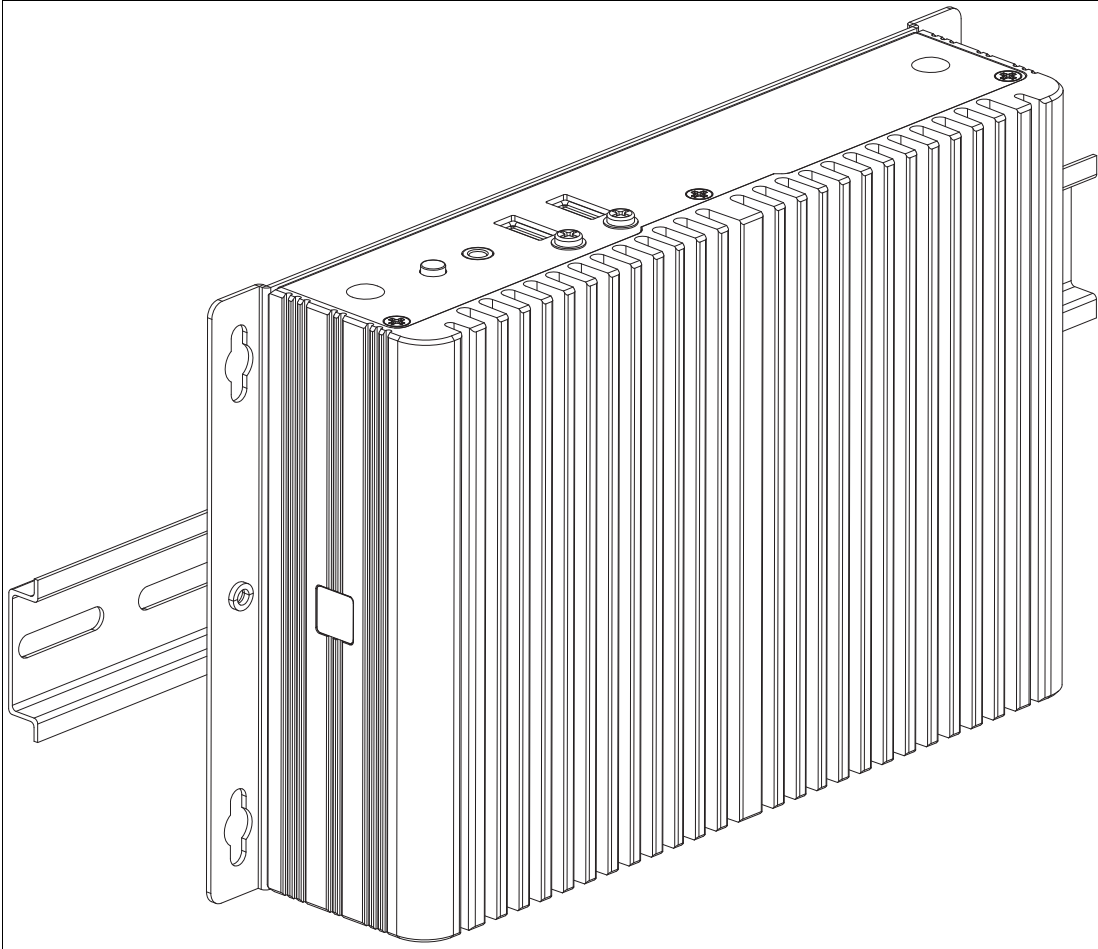


Figure 4.5



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.

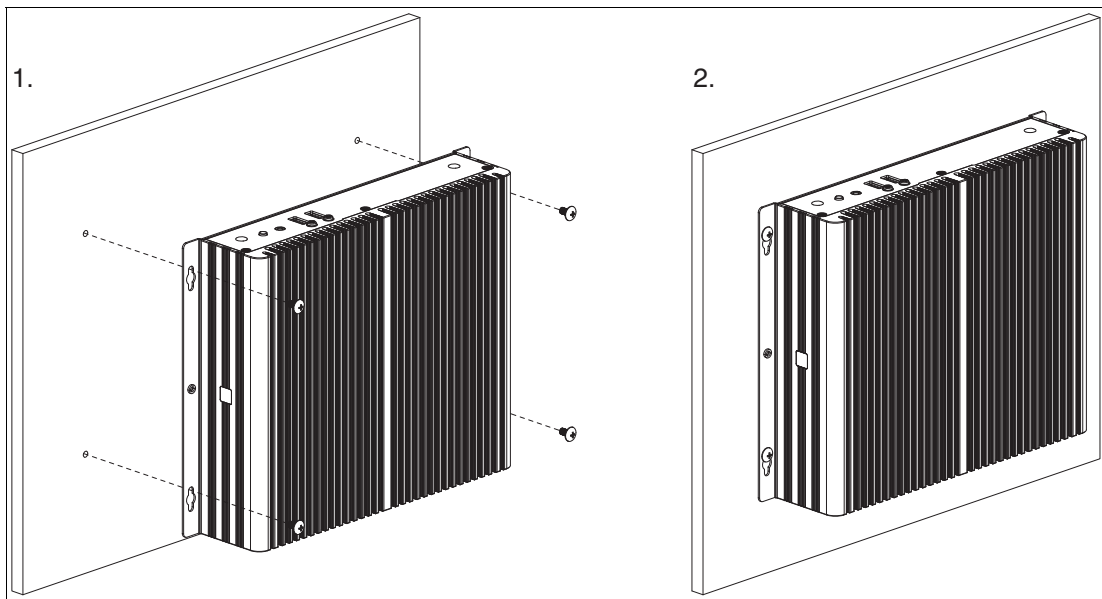


Figure 4.6

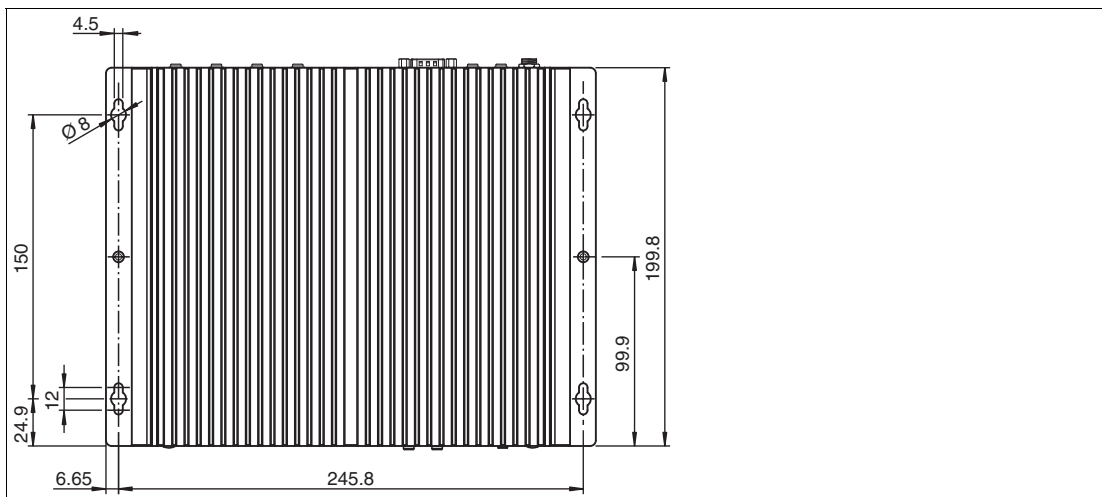


Figure 4.7 Installation diagram



VESA Mounting



Note

The VESA fixture is not included on BTC14 delivery. You can order a VESA fixture as accessories: see chapter "Accessories".

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

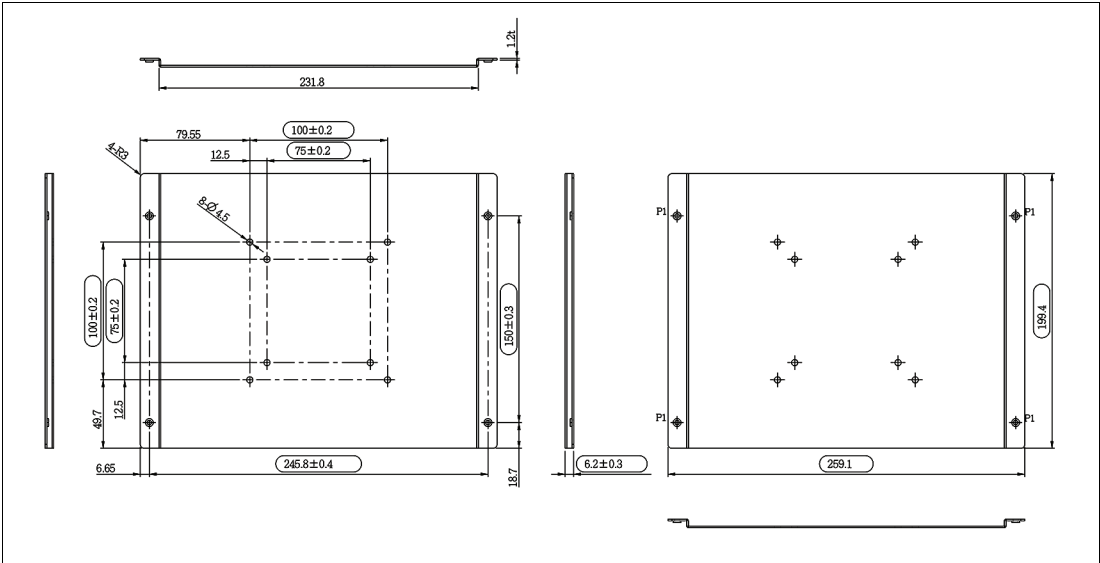


Figure 4.8 Dimensions VESA fixture

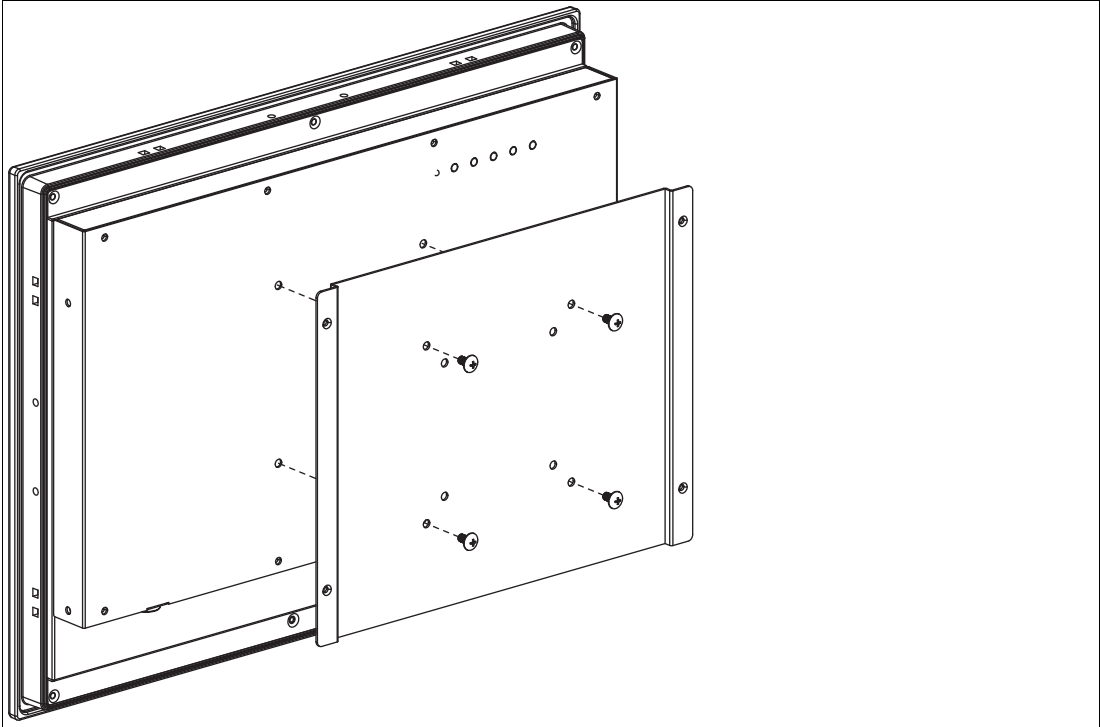


Figure 4.9

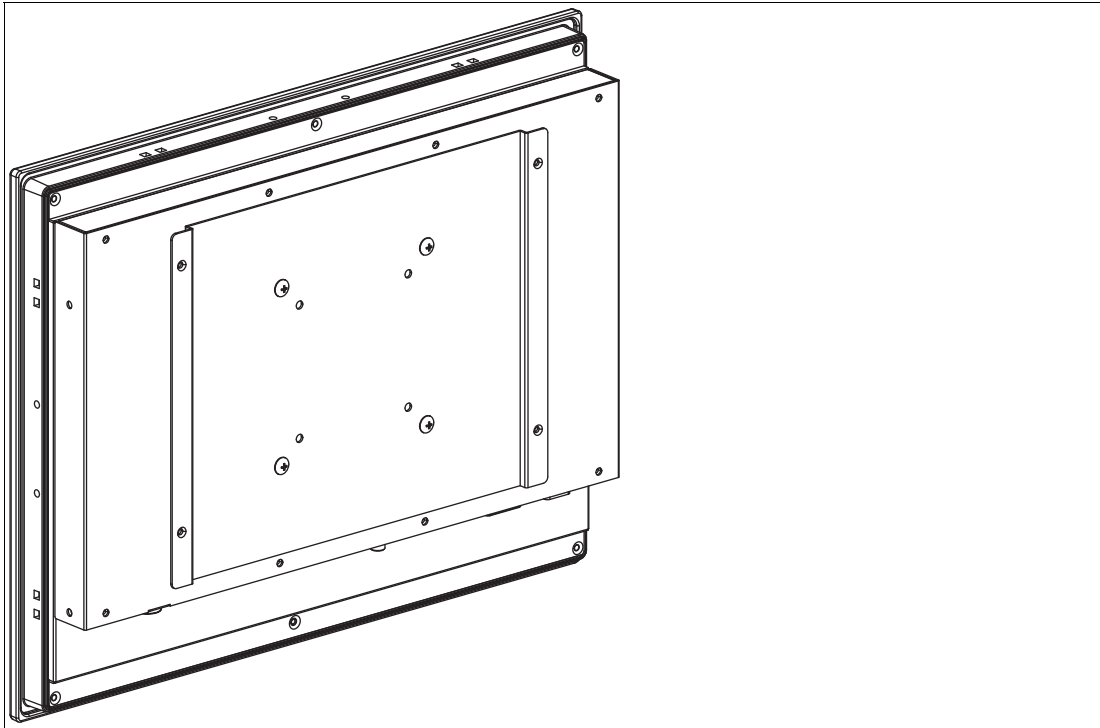


Figure 4.10

2. Secure the BTC14 to the VESA fixture using the supplied screws.
3. Screw M4, tightening torque: 0.7 ± 0.1 Nm

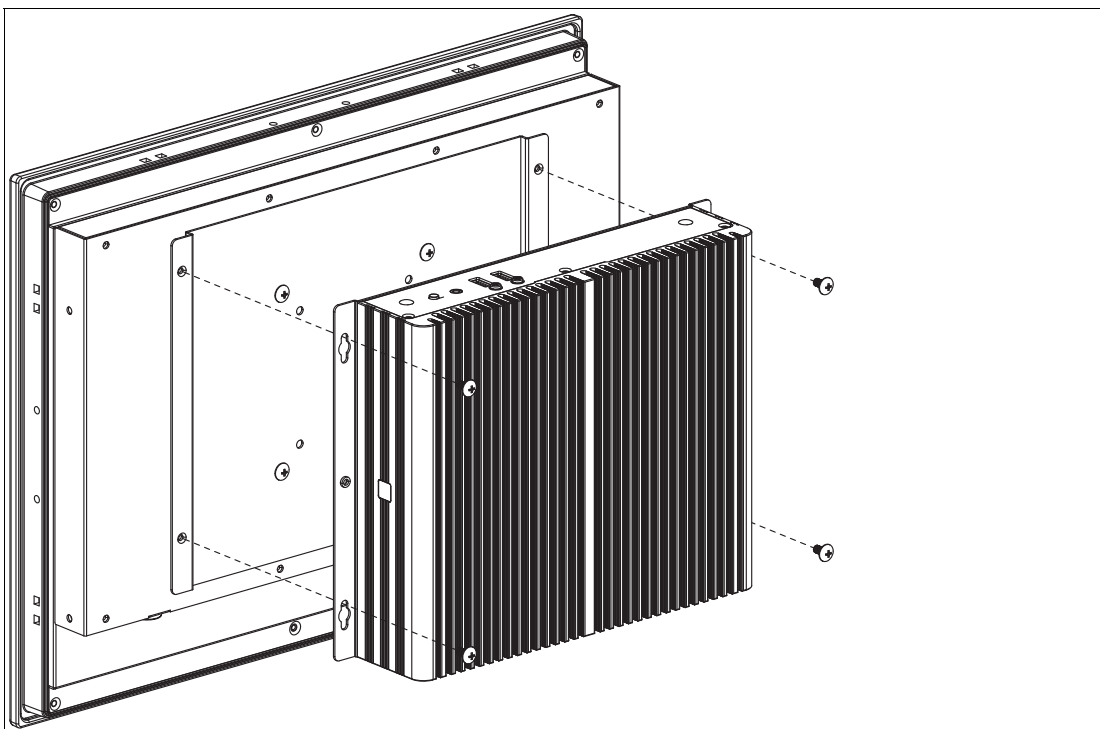


Figure 4.11

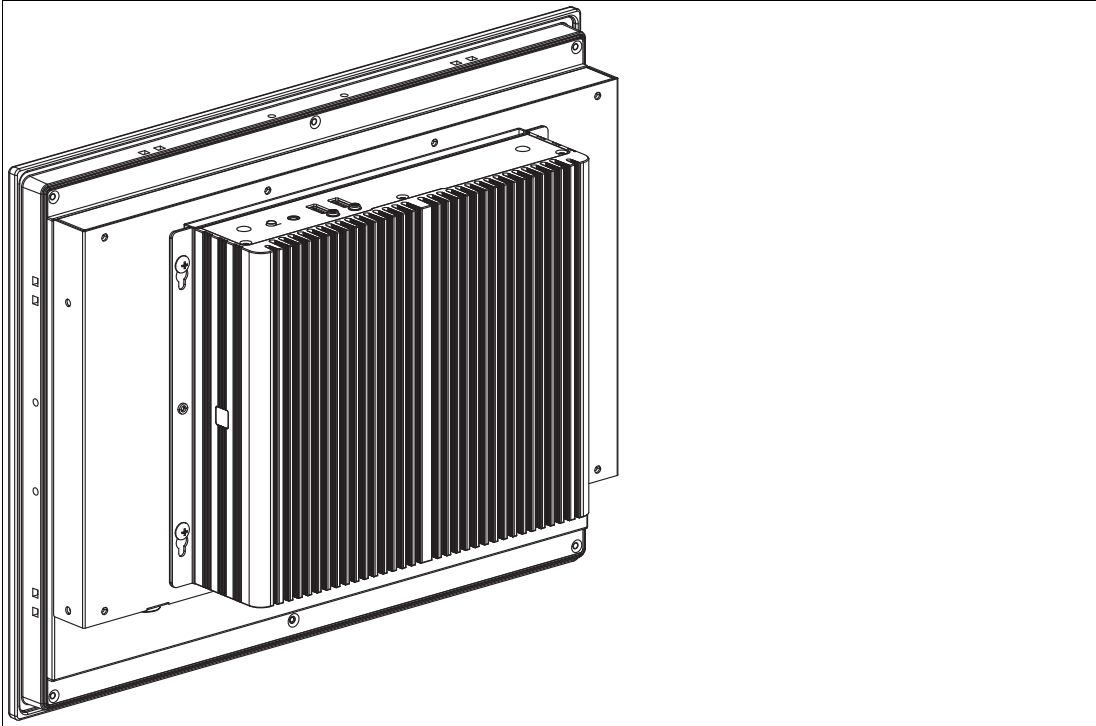


Figure 4.12

4.2 Electrical Connection

Power consumption at 28 V supply voltage:

- Maximum load: 54.3 W (CPU full load, 14 W total output power to USB ports)
- Normal operation: 34.7 W (CPU full load, "no additional electrical consumers")
- Standby: 1.7 W

Power dissipation:

- Maximum heat dissipation: 40.3 W (CPU full load, 14 W total output power to USB ports)
- Normal operation: power dissipation = power consumption

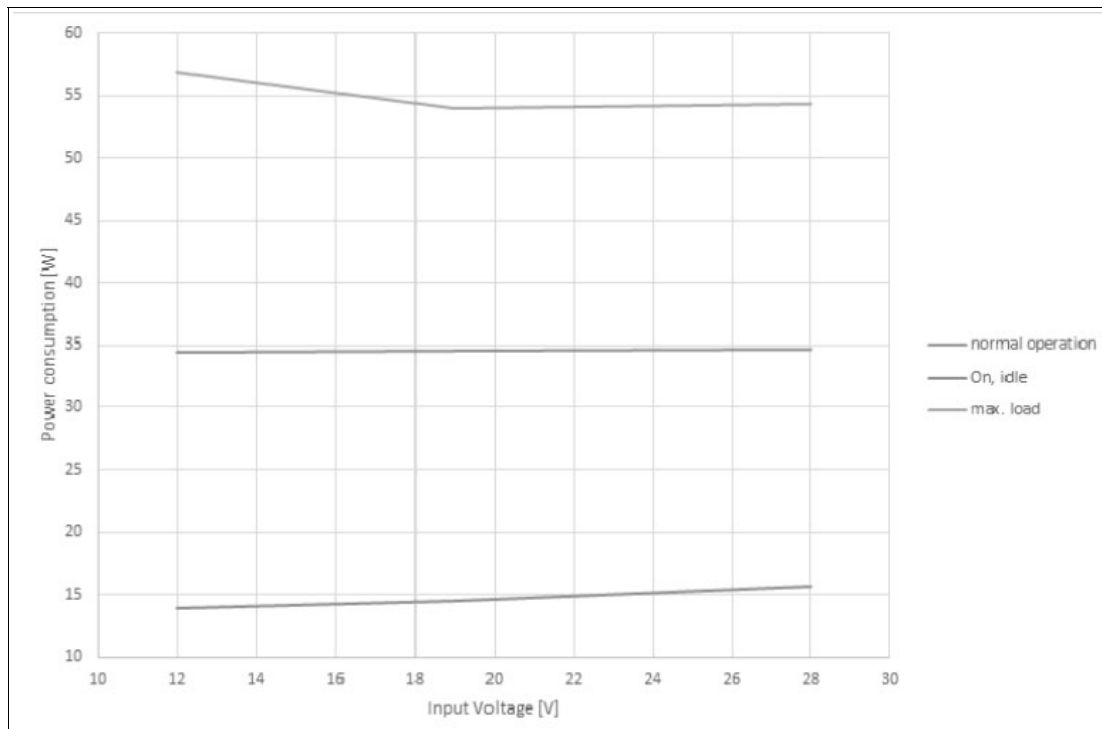


Figure 4.13



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 BTC14 to the network via the Ethernet port.
3. Connect the BTC14 to the mouse and keyboard via the USB 2.0 port.
4. Connect the BTC14 via one or several DisplayPorts™ to the corresponding display. 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 BTC14 to the AC/DC power supply (e.g., FSP065-RBBN3).



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 BTC14.

4.3 I/O Connection

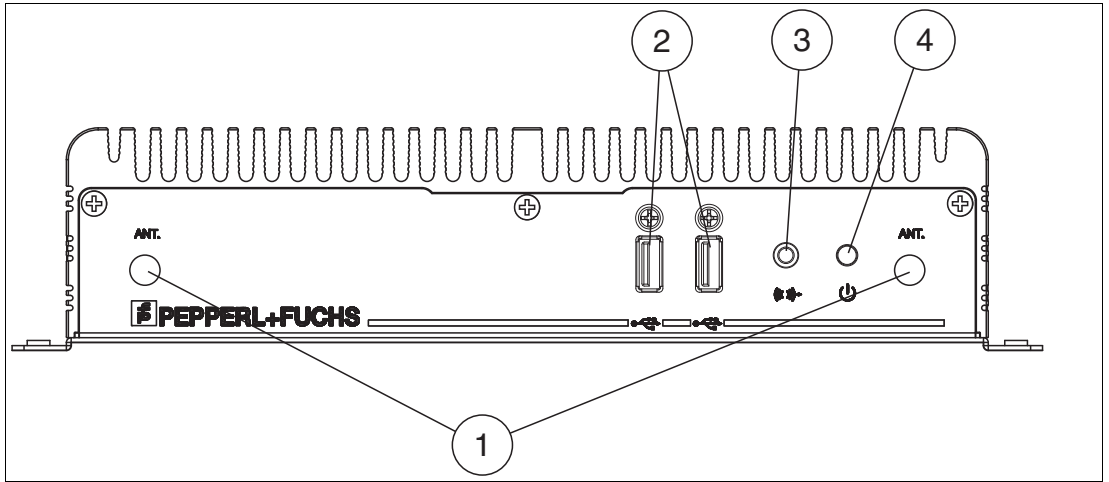


Figure 4.14 BTC14 ports, front

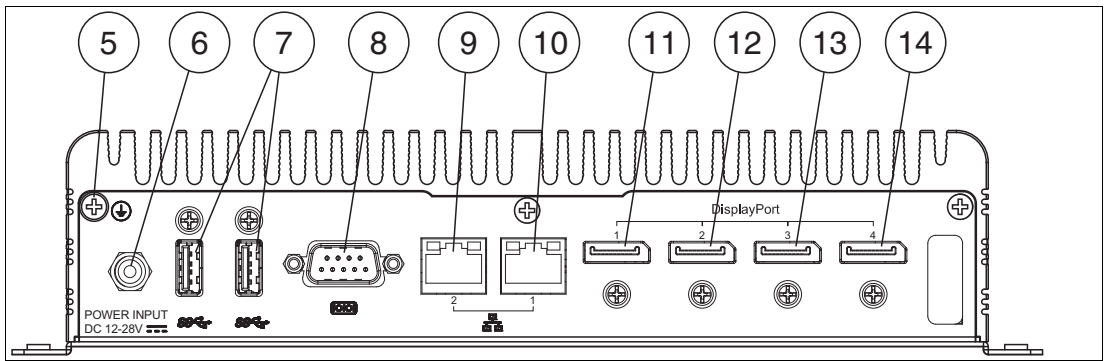



Figure 4.15 BTC14 ports, back

Port Overview

No.	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 ¹	USB 2.0 x 2
3	Audio	Line output x 1
4	Symbol	On/off switch
Back		
5	Ground connection	Not required for standard installations

No.	Interface type	Description
⑥	Power plug	5.5 x 2.5 mm DC jack bush with locking mechanism (M8 screw) 12 VDC to 28 VDC  Polarity
⑦	USB ¹ <Default - ¹ Font>	USB 3.0 (Super Speed) x 2
⑧	COM	RS-232/RS-485 port with DB-9 connector x 1
⑨	Ethernet 2 (Secondary port)	1000BaseT RJ45 plug
⑩	Ethernet 1 (Primary port)	
⑪	DisplayPort™ 2	DP 1.2 up to 2 x 4K (Ultra-HD) at 60 Hz (Up to 3 Full HD monitors via series connection)
⑫	DisplayPort™ 1	

1. Only four of these USB ports can be operated simultaneously in high-current mode, max. 14 W.

RS-232 Port



Figure 4.16

Pin	Type	Description
1	DCD	Data Carrier Detect (E)
2	RxD	Received Data (E)
3	TxD	Transmitted Data (A)
4	DTR	Data Terminal Ready (A)
5	M	Ground
6	DSR	Data Set Ready (E)
7	RTS	Request to Send (A)
8	CTS	Clear to Send (E)
9	RI_V	Incoming Call (E) (5 V or 12 V, max. 500 mA)

2023-05

RS-485 Port

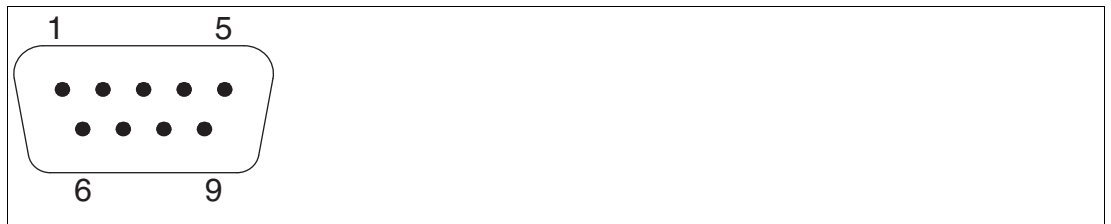


Figure 4.17

Pin	Type	Description
1	Data-	Transmit/receive data- (I/O) for half duplex mode
2	Data+	Transmit/receive data+ (I/O) for half duplex mode
3	Not connected	-
4	Not connected	-
5	M	Signal ground
6	Not connected	-
7	Not connected	-
8	Not connected	-
9	Not connected	-

RJ45 Port



Figure 4.18 RJ45 pinout with LED display

Pin	Type
1	Transceive Data+
2	Transceive Data-
3	Receive Data+
4	Bidirectional Data+
5	Bidirectional Data-
6	Receive Data-
7	Bidirectional Data+
8	Bidirectional Data-

LED Indicator

No.	Type	Description
①	Green LED	Off: no connection Flashing: active data On: connection
②	Yellow LED	Off: 10 Mbit/s connection Flashing: 100 Mbit/s connection On: 1 Gbit/s connection

DisplayPort™



Figure 4.19

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 4.20 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

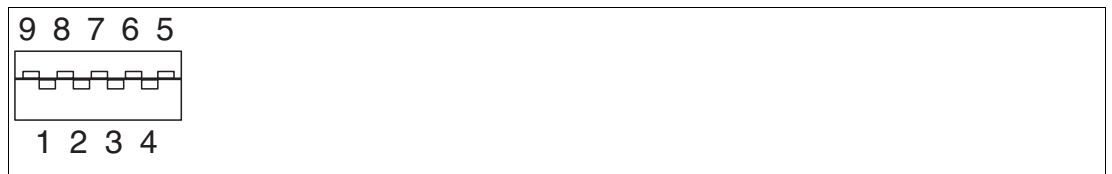


Figure 4.21 USB 3.0

Pin	Type	Description	Input/output
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

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	Orange LED	On: port is active, no data exchange. Flashing: port is active, data exchange. Off: port is active.
②	Green LED	Off: 10 Mbit/s connection Flashing: 100 Mbit/s connection On: 1 Gbit/s connection

5 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 BTC14). The BIOS is protected by the default password: `pepper1`. 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 "pepper!" 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.

BIOS Setup Menu

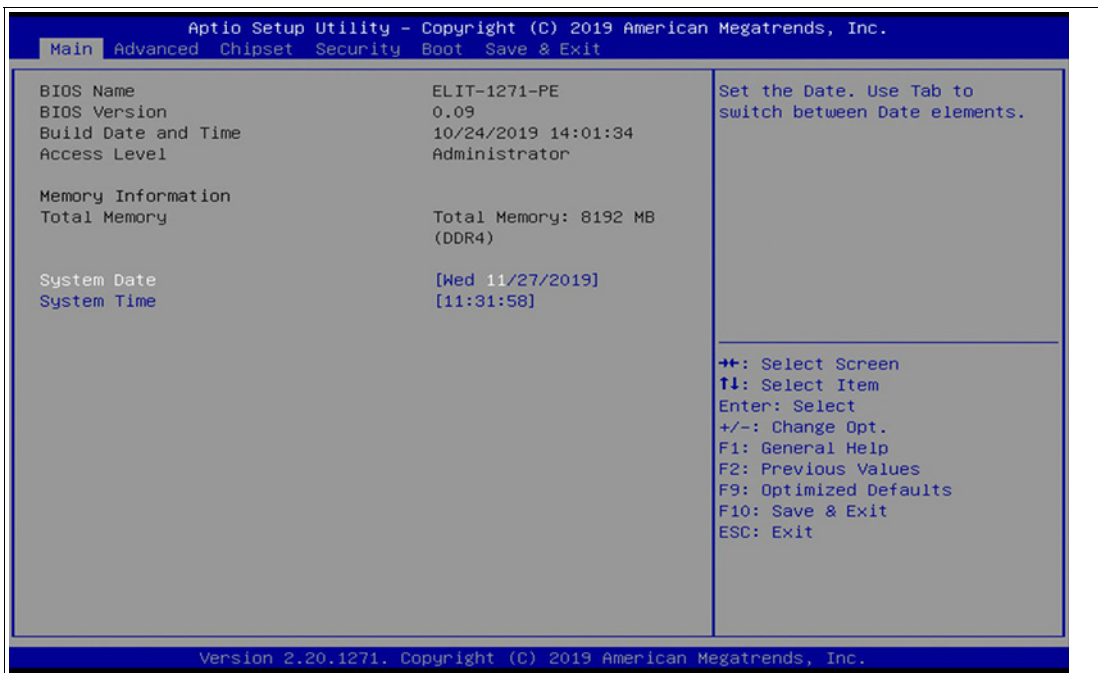


Figure 5.1 BIOS setup menu—home screen



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.

5.1 Creating a New BIOS Password

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

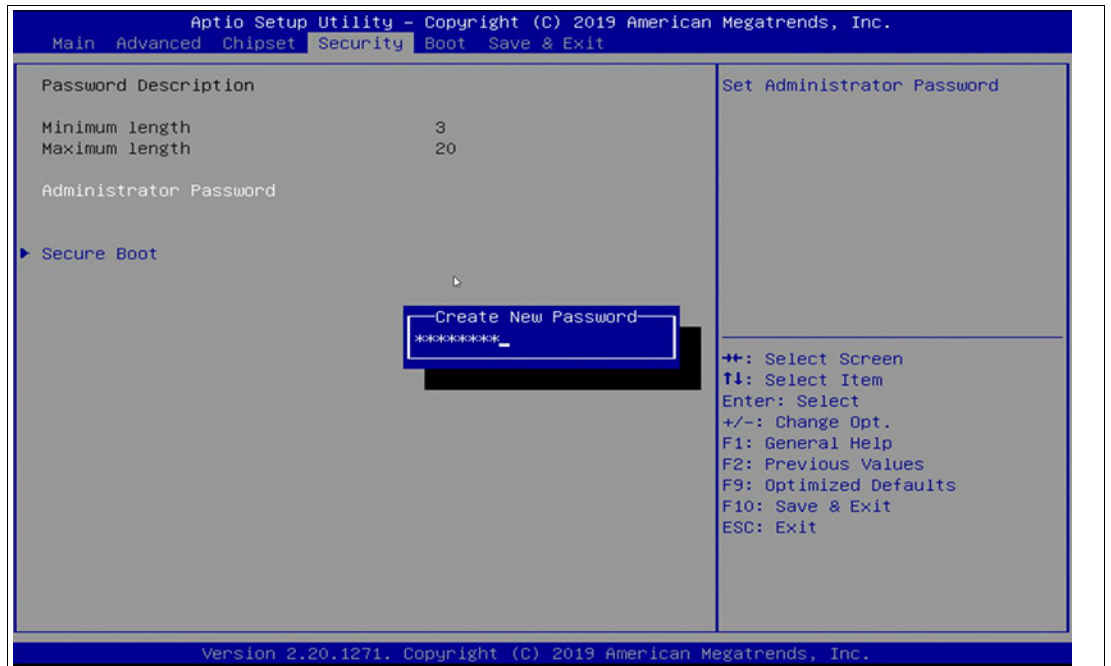


Figure 5.2 "Security" BIOS menu



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.

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

Select **Advanced** from the BIOS setup page.

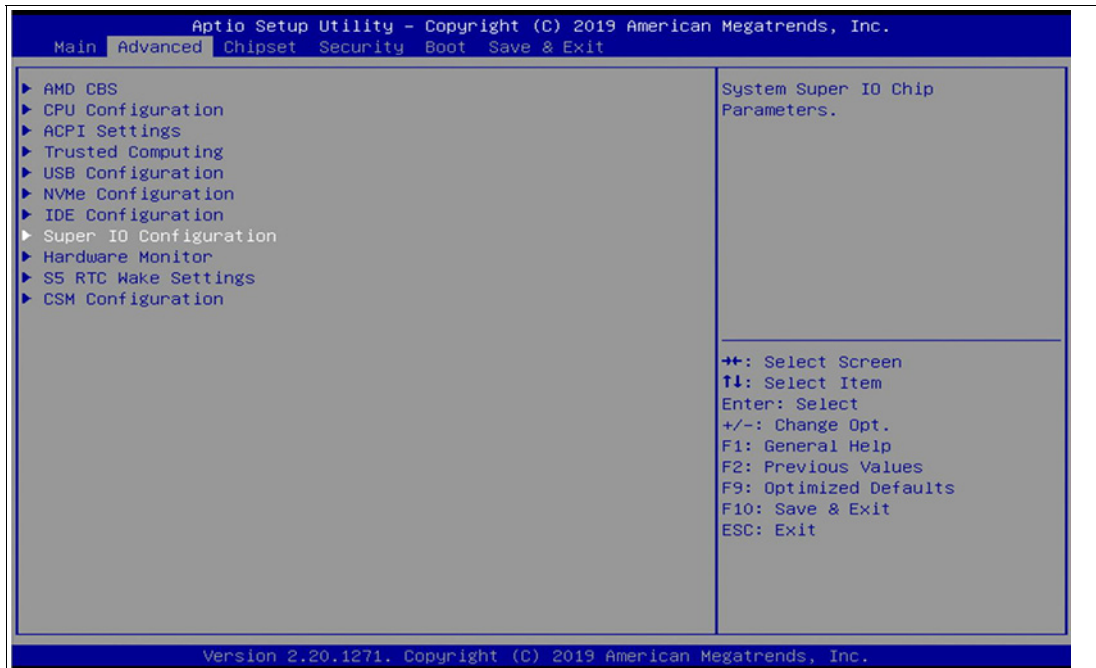


Figure 5.3 "Advanced" BIOS menu



Configuring Advanced Settings

F81866 Super IO Configuration allows you to view and configure the Super I/O Chip parameters.

1. Select the port you want to set using the arrow keys. Press ENTER.
2. Select *Enabled* or *Disabled*. Press ENTER in the pop-up window.
3. The enabled port selects the appropriate setting change and device mode. Press ENTER.

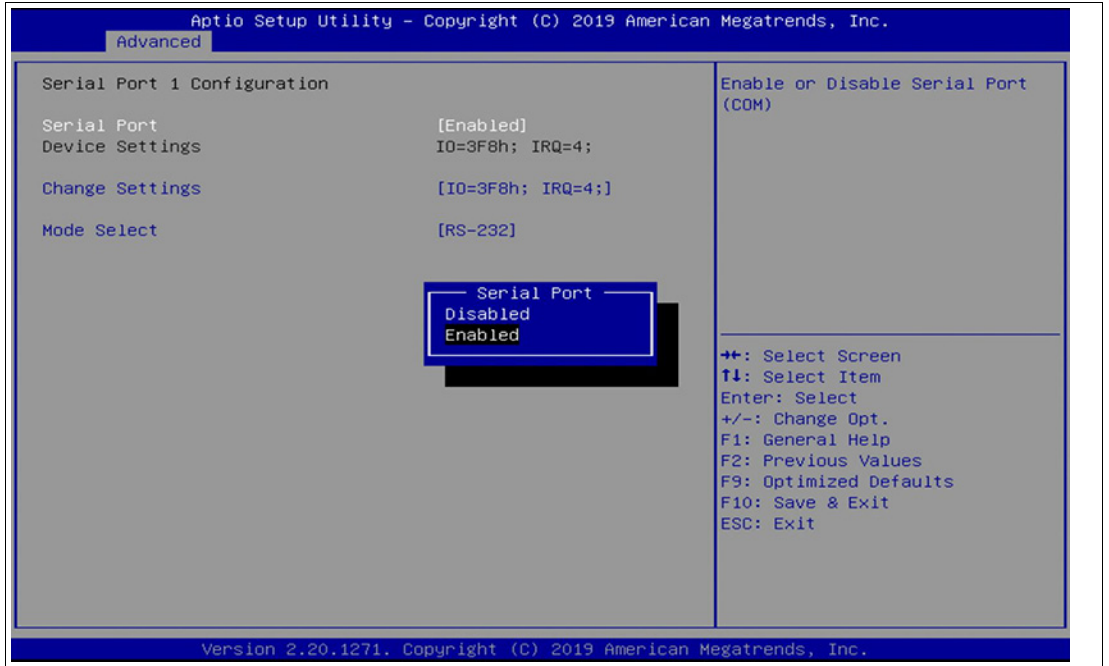


Figure 5.4 Serial Port

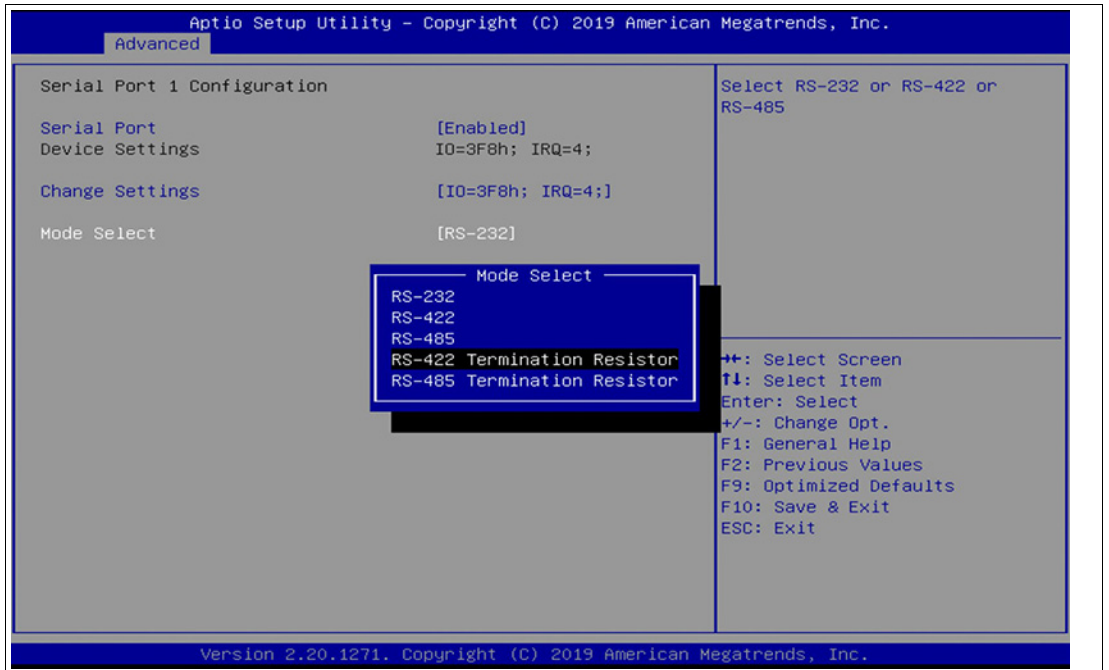


Figure 5.5 Mode Select

Settings for Serial Port 1

Device settings	Mode select
IO=3F8h; IRQ=4;	RS-232
IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12	RS-422
IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12	RS-485
IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12	RS-422 Termination Resistor
IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12	RS-485 Termination Resistor

5.3 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.

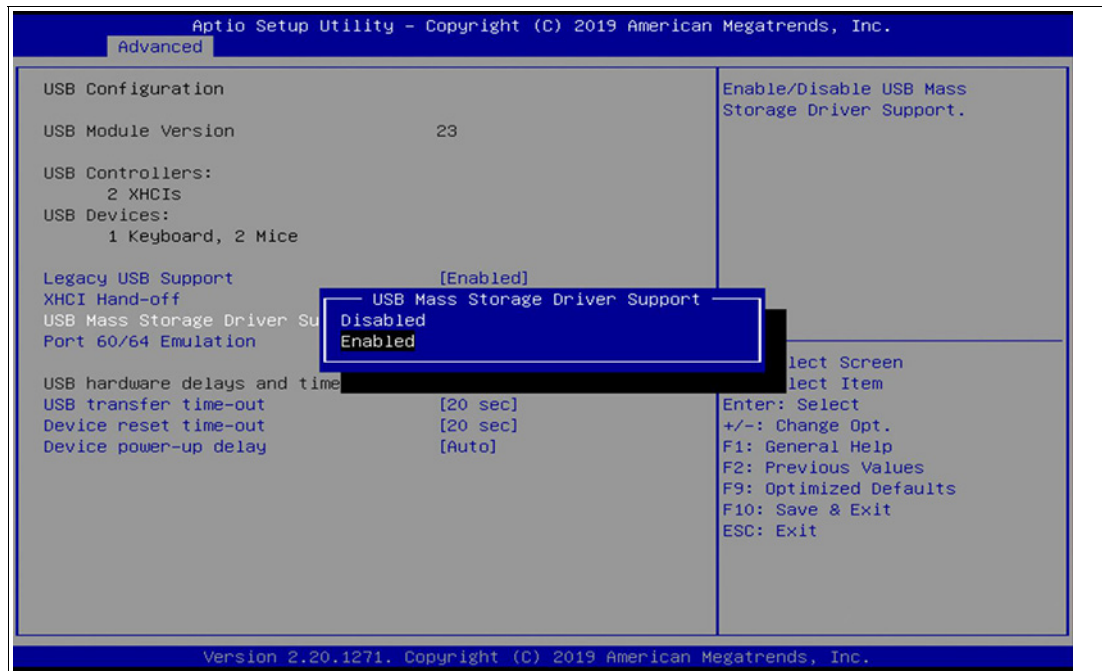


Figure 5.6 Enabling and disabling the USB device



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.

5.4 Boot Configuration

Select `Boot` from the BIOS setup page.

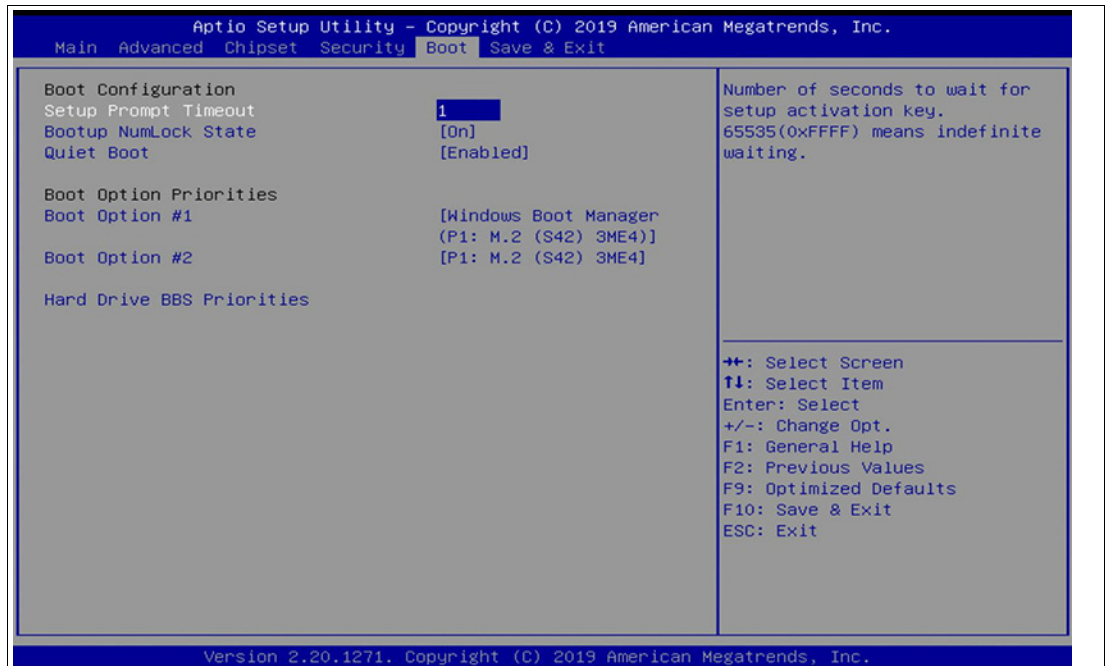


Figure 5.7 "Boot" BIOS menu

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 **Advanced** from the BIOS setup page.

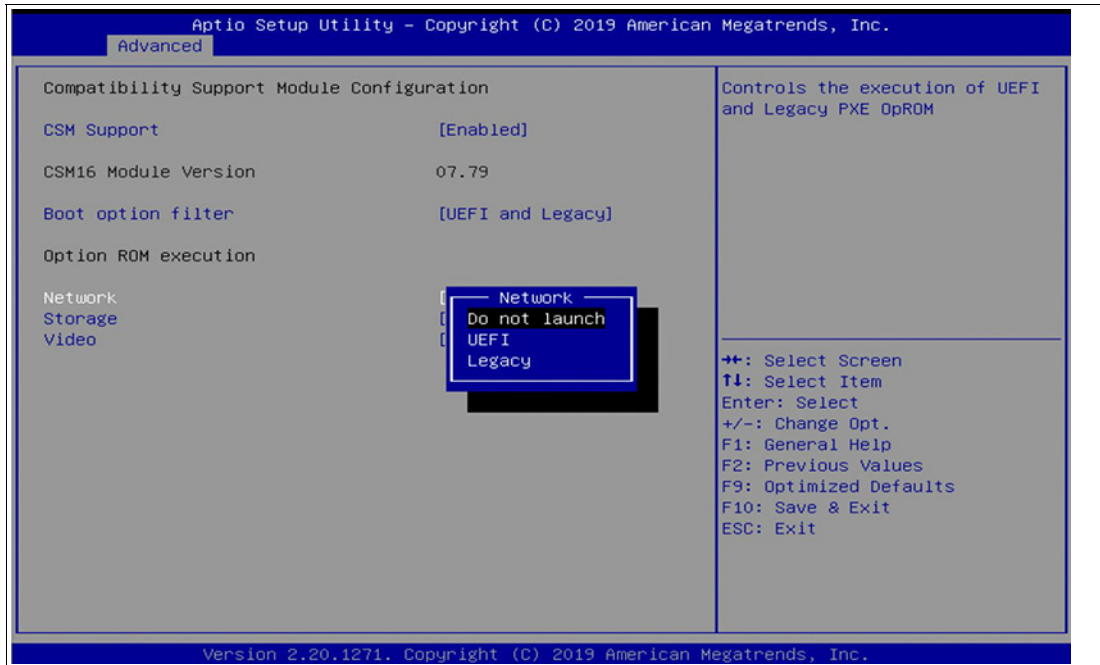


Figure 5.8 Configuring the compatibility support module

2. Select **CSM Configuration** with the arrow keys and press **ENTER**.
3. Select **Network** with the arrow keys. Press **ENTER**. Select **UEFI** or **Legacy**, depending on what your PXE server supports. Press **ENTER** in the pop-up window.



Setting Priorities for Boot Options

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

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

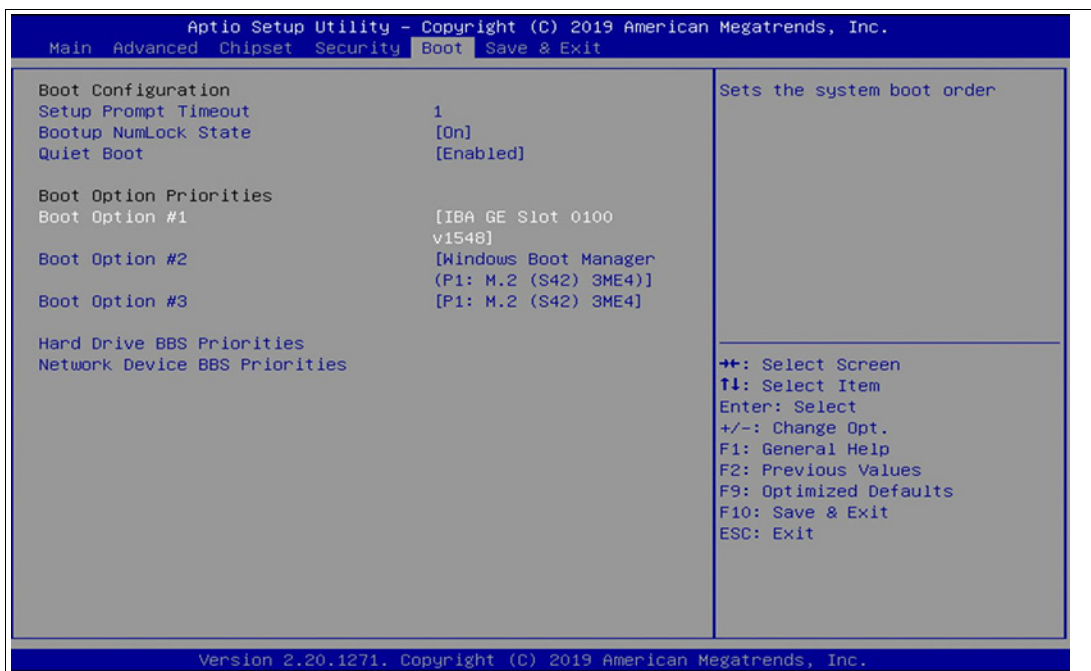


Figure 5.9 Boot option priorities

- Select the equipment category `PXE= IBA GE Slot 0100 v1548` or `Windows Boot ManagerP1: M.2 (S42) 3ME4` depending on the port being used. Press `ENTER`.



Power Management

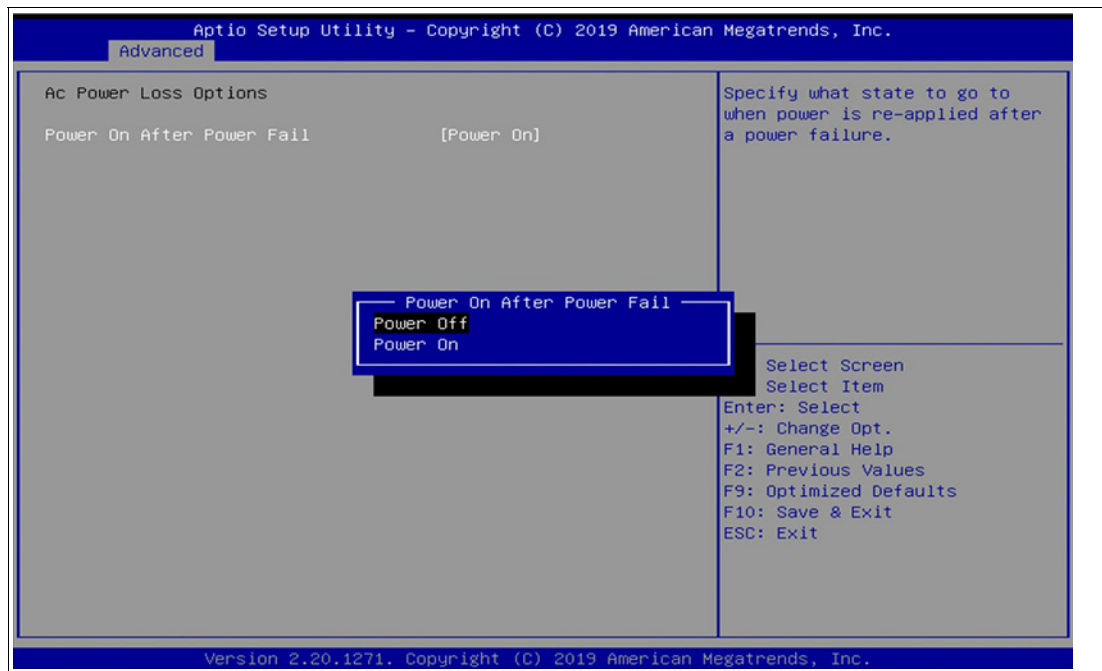


Figure 5.10 Power Management

1. Select **Advanced** from the BIOS setup page.
2. Select **FCH Common Options** with the arrow keys and press **ENTER**.
3. Select **AC Power Loss Options** and press **ENTER**. Specify what state to go when power is re-applied after a power failure, choose between **Power off** and **Power on**.



Secure Boot

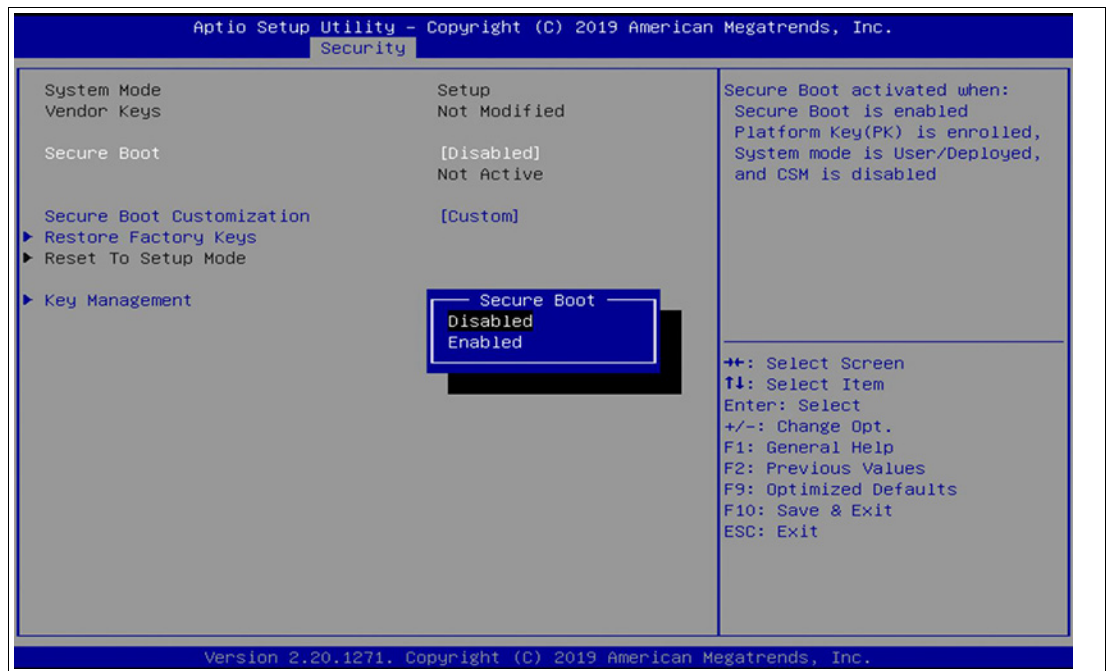


Figure 5.11 Secure Boot

1. Select `Security` from the BIOS setup page.
2. Select `Secure Boot` with the arrow keys and press `ENTER`.
3. Select `Secure Boot` and press `ENTER` to activate the secure boot. Per default secure boot is disabled.

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.

5.5 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 Service and Support

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

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

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

7 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 BTC12/BTC14 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

Mounting Aids

Part number	Type code	Description
548401	BTC12-KIT-DIN-RAIL	DIN rail mounting kit for BTC12 and BTC14
70116274	BTC14-KIT-VESA-MOUNT	VESA-Mounting bracket kit for BTC14

Video Cables and Video Adapters

Part number	Type code	Description
548403	CLUB3D-CAC-1073	Active adapter cable for BTC14 DisplayPort™ 1.2 connector to HDMI 2.0 UHD connector (4K at 60 Hz) Cable length: 3 m
548404	CLUB3D-CAC-1056	Passive adapter cable for BTC14 DisplayPort™ 1.1 connector to HDMI 1.4 socket Cable length: 0.2 m
548405	CLUB3D-CAC-2070	Active adapter cable for BTC14 DisplayPort™ 1.2 connector to HDMI 2.0 UHD socket (4K at 60 Hz) Cable length: 0.2 m
548406	STARTECH-DP2DVI2	Passive adapter cable for BTC14 DisplayPort™ 1.1 connector to DVI-D socket Cable length: 0.25 m
548407	STARTECH-DP2VGA3	Active adapter cable for BTC14 DisplayPort™ 1.1 connector to VGA socket Cable length: 0.15 m

Your automation, our passion.

Explosion Protection

- Intrinsic Safety Barriers
- Signal Conditioners
- FieldConnex® Fieldbus
- Remote I/O Systems
- Electrical Ex Equipment
- Purge and Pressurization
- Industrial HMI
- Mobile Computing and Communications
- HART Interface Solutions
- Surge Protection
- Wireless Solutions
- Level Measurement

Industrial Sensors

- Proximity Sensors
- Photoelectric Sensors
- Industrial Vision
- Ultrasonic Sensors
- Rotary Encoders
- Positioning Systems
- Inclination and Acceleration Sensors
- Fieldbus Modules
- AS-Interface
- Identification Systems
- Displays and Signal Processing
- Connectivity

Pepperl+Fuchs Quality

Download our latest policy here:

www.pepperl-fuchs.com/quality

