

Original User Manual

Series Industrial PC



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Instruction Manual: Industrial PC

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1 Identification

Target group

This document is not intended for end customers! Necessary safety instructions for the end customer must be passed on by the machine builder or system provider and adopted in the respective national language.

Intended use

The devices described in this documentation are intended to enable the user to control, operate, observe, drive and visualise certain processes in industry or industrial contexts / environments. The devices must be used within the conditions and limits described in this documentation.

Improper use

The devices have not been designed and manufactured for use in applications where serious danger to life and health may occur. The equipment must not be used for the following purposes:

- Control of nuclear reactions in nuclear power plants
- Control systems of weapons
- Automatic control of aircraft air traffic control and mass transport systems
- Medical equipment for life support

Technical changes

Christ Electronic Systems GmbH reserves the right to change the information, designs and technical data contained in this documentation without prior notice.

History

The following editions of the manual have already been published:


Version	Comment
03/2025 Rev. 00	First edition

Table 1: History

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Design of safety instructions

The general structure of the safety instructions is shown below:


NOTICE	
	<p>Type of hazard and source of hazard</p> <p>Consequences in the event of non-compliance with the guideline</p> <ul style="list-style-type: none"> ➤ Measures to avoid hazards

The meaning of the colours of the safety instructions is shown below:

⚠ DANGER	
	<p>Indicates an imminent danger</p> <p>Failure to follow the instructions may result in death or serious injury.</p>

⚠ WARNING	
	<p>Indicates a dangerous situation</p> <p>Failure to follow the instructions may result in serious injury.</p>

⚠ CAUTION	
	<p>Indicates a possible dangerous situation</p> <p>Failure to follow the instruction may result in injury.</p>

NOTICE	
	<p>Indicates user tips and useful information</p> <p>Important information to avoid malfunctions.</p>

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2 Product description

Industrial PCs, as the heart of the machines in control cabinets, ensure smooth operation. The requirements placed on them are very different. For this reason, we offer our customers numerous product variants.

For a particularly long lifetime, there are no moving parts in the Industrial PCs. The Box PCs with passive cooling are therefore also particularly suitable for harsh industrial environments. Another advantage is the industrial-grade components that are available over a long period of time. The optional integrated UPS prevents data loss during power fluctuations. If the power fails, the devices are shut down properly.

The Industrial PCs can be loaded with either Windows or Linux before delivery and are then immediately ready for use.

Thanks to the compact housing design, Christ Industrial Computers can also be optimally used in confined spaces. Despite their small size, they deliver high performance when required.

Whether for IIoT applications or computing-intensive automation applications, the portfolio of industrial PCs meets a wide range of requirements. The processor performance classes Intel® Atom® Celeron™ or Core™ i3, i5, or i7 are suitable for a wide range of applications.

Memory expansion is also possible without any problems.

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2.1 System Overview

Argon

CPU	Intel® Atom® x6211E Dual Core 1.3 / 3.0 GHz	Intel® Atom® x6425E Quad Core 2.0 / 3.0 GHz
Graphic	Intel® UHD Graphics 350 MHz	Intel® UHD Graphics 500 MHz
Memory	1 x DDR4 slot, max. 32 GB	
BIOS	AMI Optio 5 BIOS	
Interfaces	2 x USB 3.2 Gen 1 Port (Type A) 2 x 2.5 GBit Ethernet (RJ45) 1 x RS-232 / RS-422 / RS-485 (Bios setting) (RJ50) 1 x Display Port 1.4	

Table 2: System overview Argon

Titanium

CPU	Intel® Celeron™ 6305E 1.8 GHz	Intel® Core™ i3-1115G4E 2.2 / 3.9 GHz	Intel® Core™ i5-1145G7E 1.5 / 4.1 GHz	Intel® Core™ i7-1185G7E 1.8 / 4.4 GHz
Graphic	Intel® UHD Graphics 1.25 GHz		Intel® Iris® Xe 1,3 GHz	
Memory	2 x DDR4 slot, in summary max. 64 GB			
BIOS	AMI Optio 5 BIOS			
Schnittstellen	4 x USB: 2 x USB 2.0 Port (Type A); 2 x USB 3.2 Gen1 Port (Type A) 3 x 2.5 GBit Ethernet (RJ45) 1 x RS-232 / RS-422 / RS-485 (Bios setting) (Sub-D) 1 x Display Port 1.4			

Table 3: System overview Titanium

Instruction Manual: Industrial PC

2.2 Housing Variant Industrial PC

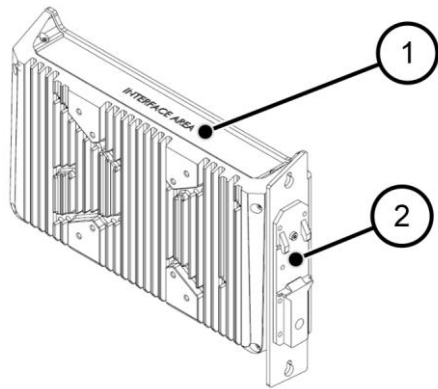


Illustration 1: Industrial PC

1	Interface area
2	DIN rail adapter, compatible with 35 mm x 7.5 mm and 35 mm x 15 mm DIN rails

Table 4: Industrial PC

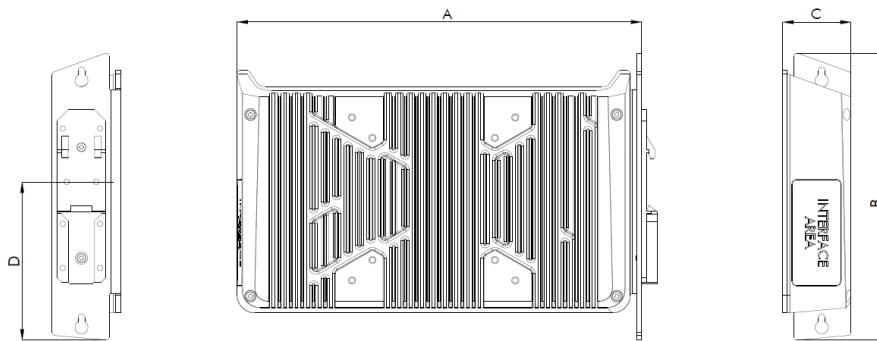


Illustration 2: Dimensions Industrial PC

Dimensions are given in millimeters.

A	B	C	D
248	176	42	97




Table 5: Dimensions Industrial PC

Instruction Manual: Industrial PC

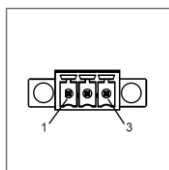
3 Description Hardware

The description of the hardware refers to the device interfaces and the possible extensions for the device.

3.1 External Interfaces

NOTICE	
	<p>External cable for Power Supply Malfunction occur</p> <ul style="list-style-type: none"> ➤ Prepare a proper earth connection on the power supply
NOTICE	
	<p>Signal and data cables Malfunction occur</p> <ul style="list-style-type: none"> ➤ Signal and data cables must be shielded and of high quality.
NOTICE	
	<p>Operating the interfaces outside their intended specification Malfunctions occur and the electronics of the device can be damaged or completely broken</p> <ul style="list-style-type: none"> ➤ All interfaces must be operated within their specification. Only cables and components that meet the requirements for the intended use of the interfaces may be connected.

Supply Connector screwable



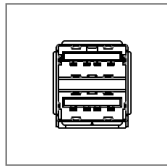
Mating Connector	Phoenix Connector MC 1,5 / 3-STF-3.5 (screwable)	
PIN	Function	Description
1	GND	Ground
2	FE	Functional Earth
3	+24 VDC	Supply

Table 6: Pinout Supply Connector screwable

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USB Host 2.0 (Type A)

Only cables with a length of up to 5 metres may be used.

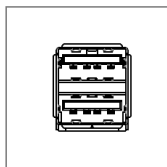


PIN	Function	Description
1	VBUS	USB VCC
2	D-	USB Data-
3	D+	USB Data+
4	GND	USB Ground

Table 7: Pinout USB 2.0

USB Host 3.2 Gen1 (Type A)

Only cables with a length of up to 3 metres may be used.

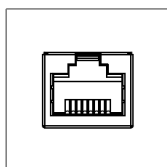


PIN	Function	Description
1	VBUS	USB VCC
2	D-	USB Data-
3	D+	USB Data+
4	GND	USB Ground
5	StdA_SSRX-	SuperSpeed transmitter differential pair
6	StdA_SSRX+	SuperSpeed transmitter differential pair
7	GND_DRAIN	Ground for signal return
8	StdA_SSTX-	SuperSpeed receiver differential pair
9	StdA_SSTX+	SuperSpeed receiver differential pair

Table 8: Pinout USB 3.2 Gen1

Ethernet 2.5 Gigabit

CAT6 S/FTP cables must be used.

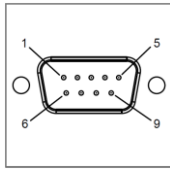


PIN	Function	Description
1	D1+	Transmit Data +
2	D1-	Transmit Data -
3	D2+	Receive Data+
4	D3+	Bidirectional +
5	D3-	Bidirectional -
6	D2-	Receive Data -
7	D4+	Bidirectional +
8	D4-	Bidirectional -

Table 9: pinout Ethernet 2.5 Gigabit

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Serial Connector (Titanium)



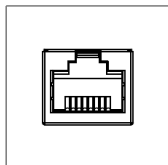
	RS-232		RS-422		RS-485	
PIN	Function	Description	Function	Description	Function	Description
1	DCD	Data Carrier Detect	TX-	Transmitter Differential Pair -	DATA-	Data Differential Pair A
2	RX	Receive Data	TX+	Transmitter Differential Pair +	DATA+	Data Differential Pair B
3	TX	Transmit Data	RX+	Receiver Differential Pair +	--	--
4	DTR	Data Transmit Ready	RX-	Receiver Differential Pair -	--	--
5	GND	Ground	GND	Ground	GND	Ground
6	DSR	Data Set Ready	--	--	--	--
7	RTS	Ready To Send	--	--	--	--
8	CTS	Clear To Send	--	--	--	--
9	RI	Ring Indicator	--	--	--	--

Table 10: Pinout Serial Connector Titanium

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Serial connector (Argon)

Connector type RJ50

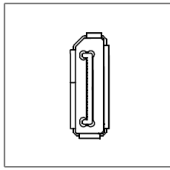


PIN	RS-232		RS-422		RS-485	
	Function	Description	Function	Description	Function	Description
1	DSR	Data Set Ready	--	--	--	--
2	GND	Ground	GND	Ground	GND	Ground
3	GND	Ground	GND	Ground	GND	Ground
4	TXD	Transmit Data	RX+	Receiver Differential Pair +	--	--
5	RXD	Receive Data	TX+	Transmitter Differential Pair +	DATA+	Data Differential Pair B
6	DCD	Data Carrier Detect	TX-	Transmitter Differential Pair -	DATA-	Data Differential Pair A
7	DTR	Data Terminal Ready	RX-	Receiver Differential Pair -	--	--
8	CTS	Clear To Send	--	--	--	--
9	RTS	Request To Send	--	--	--	--
10	RI	Ring Indicator	--	--	--	--

Table 11: Pinout serial connector Argon

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Display Port



PIN	Funktion	Beschreibung
1	DP data 0+	DP data 0+
2	GND	Masse
3	DP data0-	DP data0-
4	DP data1 +	DP data1 +
5	GND	Masse
6	DP data1-	DP data1 -
7	DP data2+	DP data2+
8	GND	Masse
9	DP data2-	DP data2-
10	DP data3+	DP data3+
11	GND	Masse
12	DP data3-	DP data3-
13	CONFIG1 CAD	Kabel Adapter erkannt
14	CONFIG2	Masse (Pull-Down)
15	AUX_CH+	Zusatzeinrichtung +
16	GND	Masse
17	AUX_CH-	Zusatzeinrichtung -
18	HPD	Hot Plug erkannt
19	GND	Masse
20	DP_PWR 3,3V	Versorgung DP

Table 12: Pinout Display Port

3.2 Add-On

The extension options offered by Christ as standard are described below.

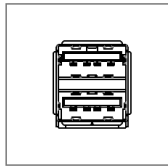
3.2.1 Add On Interface



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USB Host 2.0 (Type A)

Only cables with a length of up to 5 metres may be used.

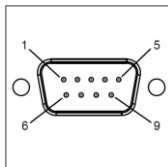


PIN	Function	Description
1	VBUS	USB VCC
2	D-	USB Data-
3	D+	USB Data+
4	GND	USB Ground

Table 13: Pinout USB 2.0

The maximum load for both interfaces is 0.5 A.

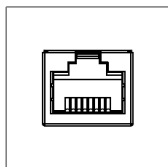
CAN connector



PIN	Function	Description
1	--	--
2	CAN_L	CAN Low Signal
3	CAN_GND	CAN Ground
4	--	--
5	--	--
6	--	--
7	CAN_H	CAN High Signal
8	--	--
9	--	--

Table 14: Pinout CAN connector

Ethernet Gigabit with PoE++

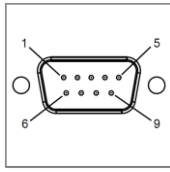


PIN	Function	Description
1	D1+	Transmit Data +
2	D1-	Transmit Data -
3	D2+	Receive Data+
4	D3+	Bidirectional +
5	D3-	Bidirectional -
6	D2-	Receive Data -
7	D4+	Bidirectional +
8	D4-	Bidirectional -

Table 15: Pinout Ethernet Gigabit with PoE++

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Serial RS-232



PIN	Function	Description
1	DCD	Data Carrier Detect
2	RX	Transmit Data -
3	TX	Receive Data
4	DTR	Transmit Data
5	GND	Data Transmit Ready
6	DSR	Ground
7	RTS	Data Set Ready
8	CTS	Clear To Send
9	RI	Ring Indicator

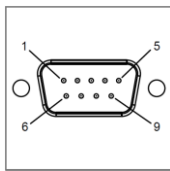
Table 16: Pinout Serial RS-232

Properties:

Galvanic isolation	1 kV (functional)
Data rate	up to 250 kbps

Table 17: Properties serial RS-232

Serial RS-485



PIN	Function	Description
1	DATA-	Data Differential Pair A
2	DATA+	Data Differential Pair B
3	--	--
4	--	--
5	GND	Ground
6	--	--
7	--	--
8	--	--
9	--	--

Table 18: Pinout Serial RS-485

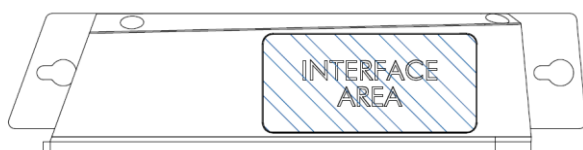
Properties:

Galvanic isolation	1 kV (functional)
Data rate	up to 500 kbps
Termination	Optional 120 Ω termination
Bias	680 Ω (PU/ PD)

Table 19: Properties Serial RS-485

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3.2.2 Add On Interface front



USB 2.0 front

Only cables with a length of up to 5 metres may be used.

Interface	1 x USB Host 2.0 (Type A)
Degree of protection	IP64 (IP67 with protection cap)

Table 20: Add On front USB 2.0

Power button front

Type	1 x MCS 16 (manufacturer: Schurter)
Degree of protection	IP65

Table 21: Add on power button front

3.2.3 UPS (Uninterruptible Power Supply)

The instructions for UPS Control can be found in the Download section of the Christ website: [Downloads](#)

Energy Storage	350 Ws
Charge Duration	35 seconds
Standard Configuration	Time until system shutdown: 1 s Time until display darkening: 0 s (no function) Display brightness: 5 % (no function) Power save mode: active
Supply Voltage	24 VDC \pm 20 %
Remaining residual capacity of 70 %	At 20 °C ambient temperature in continuous operation after 8.5 years At 30 °C ambient temperature in continuous operation after 4.3 years At 40 °C ambient temperature in continuous operation after 2.1 years At 50 °C ambient temperature in continuous operation after 1.1 years

The device was operated with the following conditions: operating system Windows 10 IoT, no applications, connection of external display with a brightness 0 %.

It must be ensured that the customer application is ended quickly enough for the panel to shut down properly. Otherwise, no protection against data loss or any other disfunction can be guaranteed. The buffer time can be significantly shorter depending on the CPU load and peripherals.

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Due to aging of the UPS during operation, the required buffer time should not exceed 70 % of the available discharge duration at the beginning.

The exact discharge duration and buffer time must be determined anew in every system setup.

System	Energy Storage 350 Ws
Intel® Atom® x6211E Dual Core 1.3 / 3.0 GHz	25 s
Intel® Atom® x6425E Quad Core 2.0 / 3.0 GHz	25 s
Intel® Celeron™ 6305E 1.8 GHz	22 s
Intel® Core™ i3-1115G4E 2.2 / 3.9 GHz	18 s *
Intel® Core™ i5-1145G7E 1.5 / 4.1GHz	12 s *
Intel® Core™ i7-1185G7E 1.8 / 4.4 GHz	12 s *



Table 22: UPS discharge duration

* It is recommended to use the PowerSaving setting in UPSControl.exe and to throttle the system to 50 % utilisation.

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4 Mounting

This chapter describes all the steps for assembly. The following warnings are safety instructions that must be applied throughout the assembly chapter and in every other life cycle of the device.


NOTICE	
	<p>Power Supply Disturbance of the proper operation</p> <ul style="list-style-type: none"> ➤ The device must be operated with protective low voltage (< 28.8 VDC).
⚠ WARNING	
	<p>Dropping a device Injuries and bruises to the legs and / or feet</p> <ul style="list-style-type: none"> ➤ Wear safety shoes

4.1 Torque

All screws must be tightened to the following tightening torques unless a different tightening torque is required.

Screw	Torque
M2	0.3 Nm
M3	1.0 Nm
M4	2.3 Nm

4.2 Connection of the power supply

NOTICE	
	<p>Short circuit Power Supply / device may be damaged</p> <ul style="list-style-type: none"> ➤ The power supply connection must be mounted in a voltage-free state.

Use conductors with a cross-section of 0.75 mm² to 1.5 mm². Use the MC 1,5/ 3-STF-3,5 PCB connector from Phoenix.

Strip the insulation from the individual wires of the conductor (1). Insert these into the connection contacts (3) of the PCB connector and tighten the screw contacts (2) with a screwdriver and a maximum torque of 0.3 Nm.

The rear view (4) of the connector is shown for clarification.

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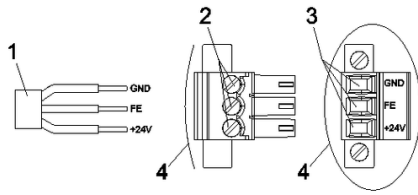


Illustration 3: Connection of the power supply

4.3 Mounting Industrial PC

There are two ways to assemble the Industrial PC.

- Way 1: top-hat rail
- Way 2: wall

Mounting on the top-hat rail:

Step 1:

Hook the Industrial PC onto the fastening rail at an angle from above. Press the Industrial PC down until it hooks into place.

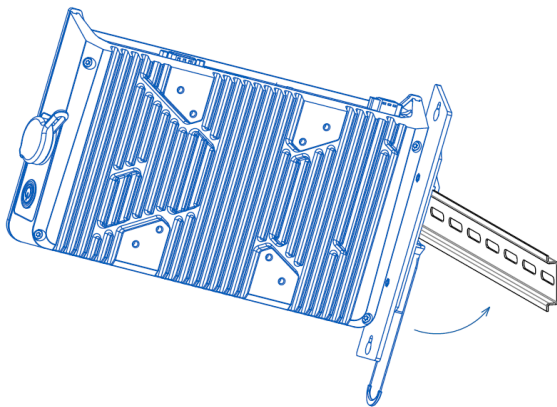


Illustration 4: Mounting top-hat rail Step 1

Step 2:

The industrial PC hangs on the fastening rail.

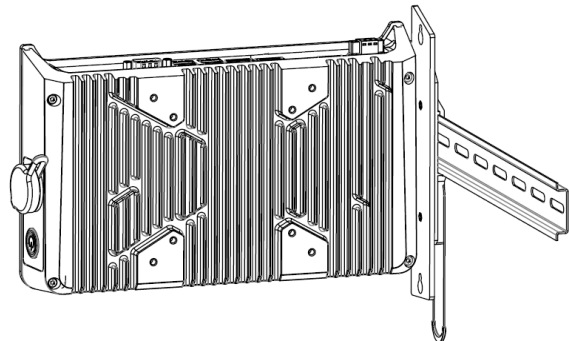


Illustration 5: Mounting top-hat rail Step 2

Instruction Manual: Industrial PC

Mounting on the wall:

Step 1:

Screw in the screws. The distance between the wall and the screwhead about 5 mm.

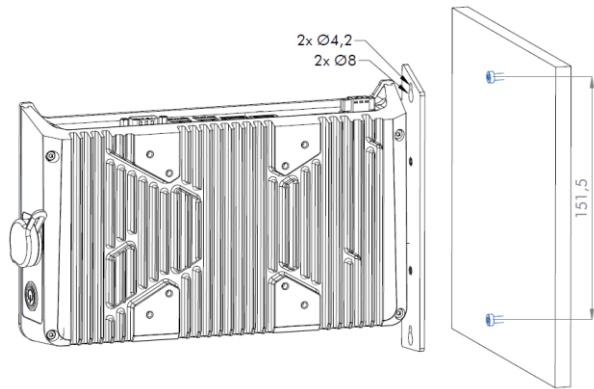


Illustration 6: Mounting wall Step 1

Step 2:

Slide the IPC with the larger hole onto the screws previously screwed in.

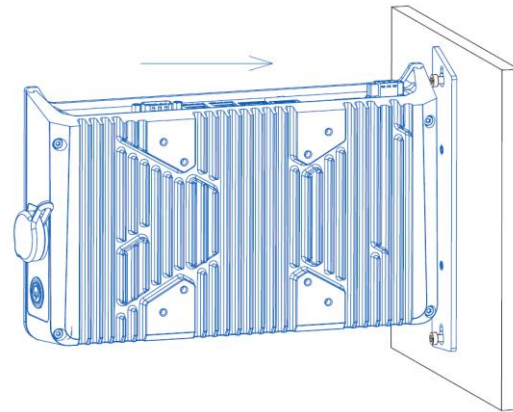


Illustration 7: Mounting wall Step 2

Step 3:

Let the IPC slide down.

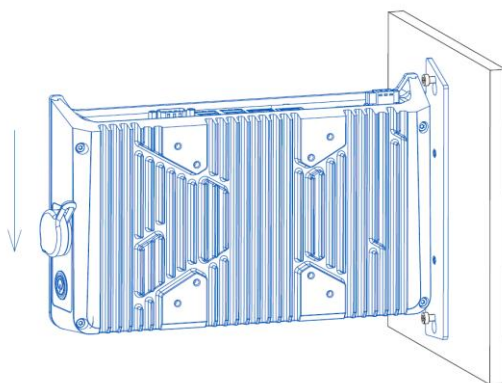


Illustration 8: Mounting wall Step 3

Step 4:

Tighten screws.

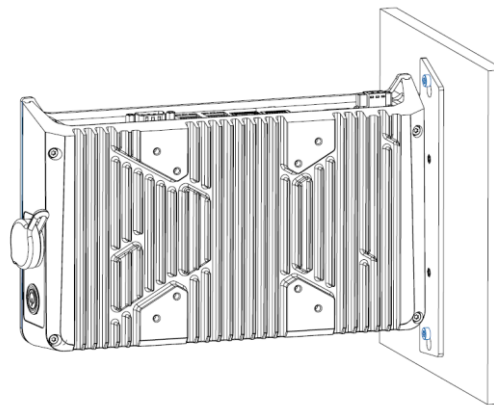


Illustration 9: Mounting wall Step 4

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4.4 Dismounting Industrial PC

Dismounting on the top-hat rail:

Step 1:

Pull down on the pull cord to release the Industrial PC.

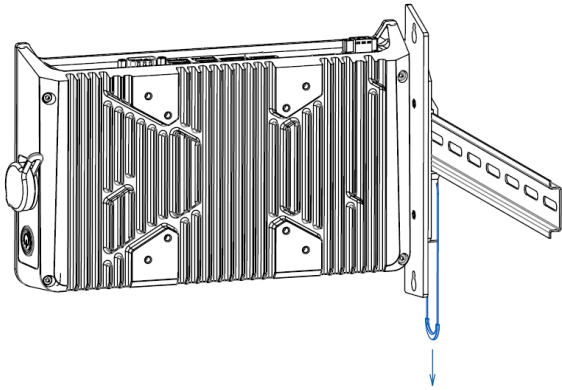


Illustration 10: Dismounting Industrial PC Step 1

Step 2:

Tilt the Industrial PC forward with the pull cord pulled at the bottom and unhook it at the top.

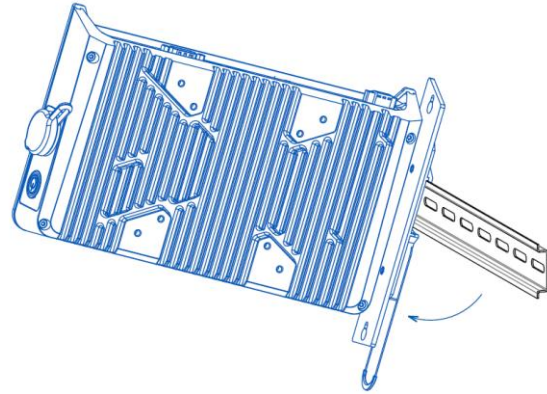


Illustration 11: Dismounting Industrial PC Step 2

Dismounting on the wall:

Step 1:

Loosen the screws so that the distance between the wall and the screwhead is about 5 mm.

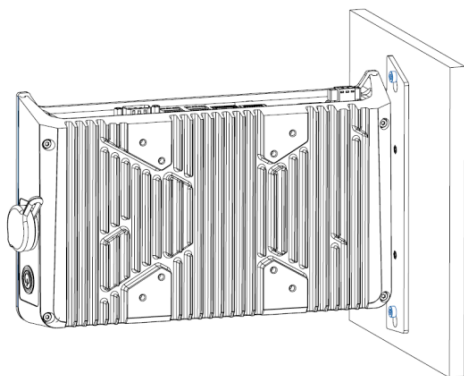


Illustration 12: Dismounting wall Step 1

Step 2:

Push the IPC upwards.

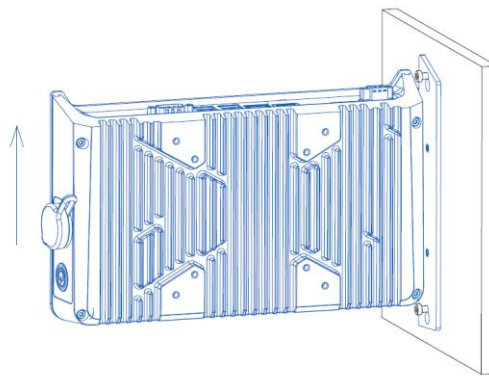


Illustration 13: Dismounting wall Step 2

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Step 3:

Lift the IPC away from the wall with the screws through the larger hole.

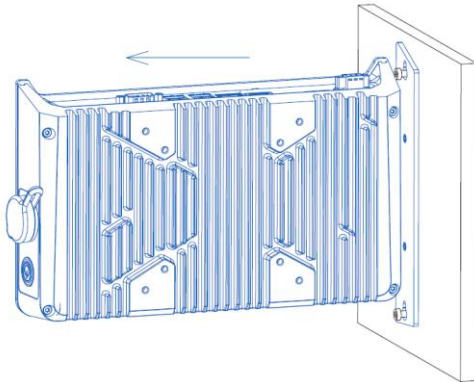


Illustration 14: Dismounting wall Step 3

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5 Commissioning

To put the device into operation, connect the power supply to the unit.

The device starts.

Further steps for commissioning are not necessary.

5.1 Function of the power button

If the device has a power button, it behaves according to the following standard.

When the device is plugged into the power supply, the device boots up without having to press the power button.

If the power button is pressed while the device is running, the device shuts down.

If the power button is pressed while the device is not running, the device starts up. The power supply must be present at the device.

Notice:

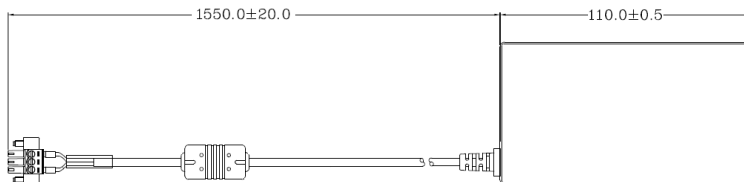
A different behaviour may occur if the device does not have the standard configuration.

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6 Accessories and Spare Parts


The accessories listed here have been checked by Christ and are compatible with the products. The following accessories are available:

6.1 Power supply



Input Voltage	90 - 264 VAC
Input Current	max. 1 A
Input Frequency	47 - 63 Hz
Consumption with unloaded output	max. 0.075 W
Output Voltage	24 VDC
Output Current	max. 2.5 A
Interne Verbindungen	GND and PE are internally connected
Temperature Range Operation	0 - 70°C
Humidity Operation	20 - 80% RH non condensing

Table 23: Power supply

NOTICE	
	<p>The power supply shown here has a limited power capacity.</p> <p>If the required power of the device exceeds the rated capacity of the power supply, the device may not operate properly.</p> <ul style="list-style-type: none"> ➤ In this case, the customer must select and size an appropriate power supply.

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7 Software

The Software chapter describes settings and functions that may be required to use the device.

7.1 BIOS Basic Settings

AMI BIOS ROM has built-in settings program that allows users to make basic settings. This information is stored in a battery supported CMOS RAM, so it remains stored even when there is no power supply.

Accessing the BIOS works by pressing the "Del" key several times while the device is booting.

The following tabs in the BIOS enable various settings.

Main	Set date
Advanced	Make advanced BIOS settings like: COM, ACPI, etc.
Chipset	SATA and RST configuration
Security	Set administrator password
Boot	Set Boot Option
Save & Exit	Save the settings made and initiate a restart. (Also possible with the F4 key on the keyboard)

Table 24: BIOS

Pressing F3 and confirming the query "Load Optimized Defaults?" with "Yes" restores the delivery state.



Illustration 15: BIOS

7.1.1 COM Port configuration

Argon

In order for the serial port to recognise RS-232, RS-422 or RS-485, the following settings must be made in the BIOS:

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1. Select "Advanced" tab
2. Select "F81804 Super IO Configuration"
3. Select "Serial Port1 Configuration"
4. Make setting in "Device Mode" (RS232, RS485 TX High Active, RS485 TX Low Active, RS485 with Termination TX Low Active, RS422, RS422 with Termination)
5. Save with keystroke "F4" (confirmation with "Yes")

Titanium

In order for the serial port to recognise RS-232, RS-422 or RS-485, the following settings must be made in the BIOS:

1. Select "Advanced" tab
2. Select "F81964 Super IO Configuration"
3. Select "Serial Port1 Configuration"
4. Under "SERIAL PORT MODE SELECT" select the mode (RS232, RS422, RS485)
5. If RS422 or RS485 mode has been selected, settings can be made for "RS422/RS485 Termination" or "RTS Auto Flow Control"
6. Save with keystroke "F4" (confirmation with "Yes")

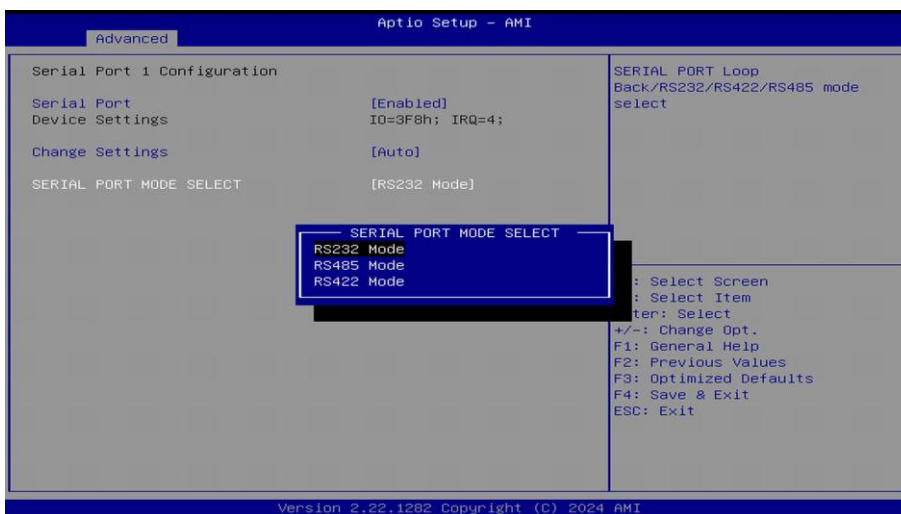


Illustration 16: BIOS COM Port Titanium

7.1.2 Set Boot Priority

Argon / Titanium

If you want to boot from a USB device, the following settings must be made in the BIOS:

1. Select "Boot" tab
2. Select "Boot Option #1"
3. Select USB device with "Enter"
4. Save with keystroke "F4" (confirmation with "Yes")

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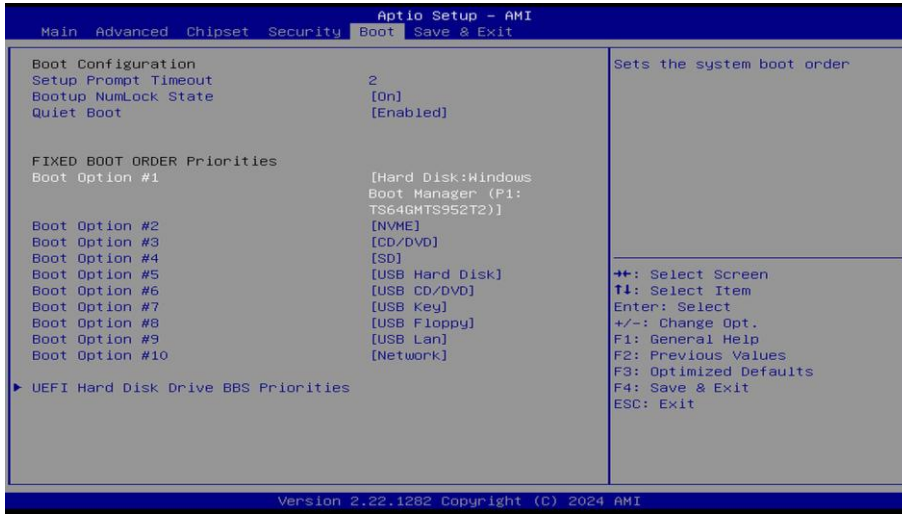


Illustration 17: BIOS Boot Priority

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7.2 BIOS Update

7.2.1 Preparation

Copy the AMI BIOS update files to a USB stick

You can obtain the required files from Christ Electronic Systems. These are the same for Argon and Titanium.

The following illustration is only an example.

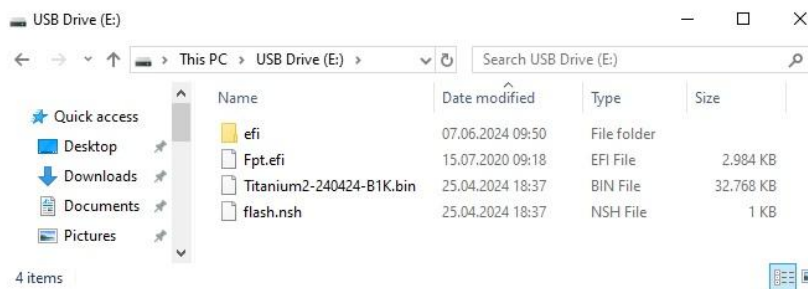


Illustration 18: BIOS update files

7.2.2 Perform Update

Insert the FAT32 formatted USB stick with the required files into the device.

Set the USB stick to Hard Disk Boot Priority in the BIOS. You can read about the procedure under [Boot Priority](#).

The EFI Update Script is automatically detected on the USB stick and starts the update process.

- Confirm the question: "Enter 'q' to quit, any other key to continue:" with Enter.

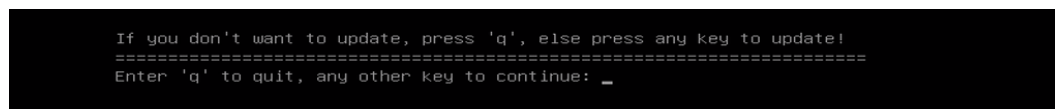


Illustration 19: BIOS update

- Confirm the question "Do you want to continue? Y/<N> or q to quit:" with "y"
 - Note: If you are using a German keyboard, confirm with "z"
- The update is executed
- The message "FPT Operation Successful" indicates successful completion



Illustration 20: BIOS update successful

- Disconnect the power supply
- Restore the power supply and enter the BIOS again (do not reboot)
- Press the F3 key to confirm the question "Load Optimized Defaults" with "Yes"
- Press the F4 key to save and exit

7.3 Redo Backup and Recovery

The instructions for Christ Redo Backup and Recovery can be found in the Download section of the Christ website: [Downloads](#)

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7.4 Enhanced Write Filter EWF

Instructions on how to set EWF and UWF filters can be found in the download section of the Christ website: [Downloads](#)


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8 Maintenance

The following chapter describes maintenance measures that can be performed by a qualified end user.

NOTICE	
	<p>Damage to the seals, damage to the housing Loss of IP protection class</p> <ul style="list-style-type: none"> ➤ There must be no permanent exposure to substances containing large amounts of oils or fats.

8.1 Cleaning

NOTICE	
	<p>Electronics may be damaged Function of the Industrial PC disturbed</p> <ul style="list-style-type: none"> ➤ The device may only be cleaned when it is switched off or unplugged. ➤ After cleaning, allow the Industrial PC to dry completely.

To clean the device, use a soft cloth moistened with detergent solution.

The cleaning agent must not be applied directly to the device. Under no circumstances may aggressive solvents, chemicals or scouring agents be used.

8.2 Maintenance

It does not require any maintenance on the part of the user.

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9 Technical Data

This chapter summarizes the technical data.

9.1 Mechanical Specifications

Housing	Aluminium
Weight	max. 1.2 kg
Dimensions	See table Dimensions
Mounting	DIN rail adapter, compatible with 35 mm x 7.5 mm and 35 mm x 15 mm DIN rails Wall mounting with screws
Cooling	Passive

Table 25: Mechanical Specifications

9.2 Electrical Specifications

Supply voltage	19.2 VDC ... 28.8 VDC
Power consumption	See table Power Consumption
Inrush current (load-independent)	max. 70A for 80 μ s (Used power supply: FSP060-DAAN3)
Protection class	The device complies with protection class III
Earthing	Functional Earthing (Cable cross-section has to be identical to the supply lines)
Battery lifetime	4 years (constantly turned off)


Table 26: Electrical specifications

9.3 Power Consumption

	Intel® Atom® x6211E Dual Core 1.3 / 3.0 GHz	Intel® Atom® x6425E Quad Core 2.0 / 3.0 GHz
Power Consumption	35 W	40 W

	Intel® Celeron™ 6305E 1.8 GHz	Intel® Core™ i3-1115G4E 2.2 / 3.9 GHz	Intel® Core™ i5-1145G7E 1.5 / 4.1GHz	Intel® Core™ i7-1185G7E 1.8 / 4.4 GHz
Power Consumption	50 W	55 W	60 W	55 W

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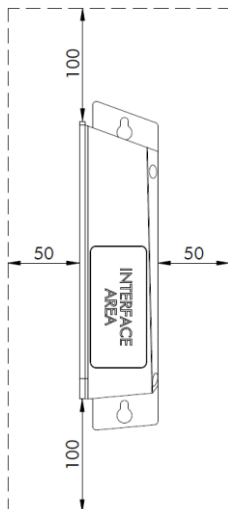
NOTICE	
	<p>Specifications are maximum values</p> <p>Peripheral devices are considered (e.g. 1 x USB 2.0 equals 2,5 W)</p> <ul style="list-style-type: none"> ➤ Provide sufficient power


9.4 Environmental Conditions

Ambient Temperature (Standard Conditions)	0 ~ 45 °C
Storage Temperature	-10 ~ 70 °C
Humidity	5 ~ 80 % (non-condensing)
Protection Class (Standard Conditions)	IP20
Transportation and Storage	Suitable packaging can dampen vibrations and reduce their impact on the product.
max. Installation Altitude	2000 m
Cooling	Natural air convection

Table 27: Environmental conditions

The following distances in millimeters must be maintained on all sides:



NOTICE	
	<p>Insufficient air supply to the device</p> <p>Overheating</p> <ul style="list-style-type: none"> ➤ Never cover the device completely or operate it in a small, unventilated housing

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9.5 Temperature test

The values for ambient temperature and humidity were determined under worst-case conditions. The maximum workload of the system was achieved by the BurnInTest from PassMark Software Pty Ltd.

The test ran under 100 % utilisation of:

- CPU
- RAM
- GPU

9.6 IP Protection Class

The protection class only can be guaranteed under the following conditions:

- The device is installed correctly
- All components and covers of the interfaces are assembled
- Compliance with all environmental conditions

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10 Standards and Approvals

The device meets the following requirements.

10.1 CE Marking



The device has been tested in accordance with the applicable EU directives and the associated harmonized standards.

10.2 RoHS



The device complies with the requirements of EU Directive 2011/65/EU (RoHS 2) and its amendment EU 2015/863 (RoHS 3).

10.3 Electromagnetic Compatibility

Emitted Interference	EN55032 Class A
Immunity of supply line DC	±2 kV according to IEC 61000-4-4; EFT ± 0,5 kV according to IEC 61000-4-5; Surge asymmetrical
Immunity of signal lines	±1 kV according to IEC 61000-4-4; EFT
ESD	± 4 kV Contact discharge according to EN61000-4-2 ± 8 kV Air discharge according to EN 61000-4-2
Immunity of conducted emission	3 V 150 kHz – 80 MHz, 80% AM nach IEC 61000-4-6
Immunity of high-frequency radiation	3 V/m 80 MHz – 1 GHz, 80% AM nach IEC 61000-4-3 3 V/m 1 GHz – 6 GHz, 80% AM nach IEC 61000-4-3

Table 28: Electromagnetic Compatibility

The device complies with the requirements of the EU Electromagnetic Compatibility Directive 2014/30/EU with the harmonized standards listed below:

EN 55032: 2015 Class A	Electromagnetic compatibility of multimedia equipment - Emission Requirements
EN 55035: 2017	Electromagnetic compatibility of multimedia equipment - Immunity requirements

10.4 Environmentally Appropriate Disposal

The device must not be disposed of with domestic waste.



The appliance complies with the requirement of the EU Directive WEEE 2012/19/EU, which is symbolised by the symbol with the crossed-out dustbin.

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In order to enable environmentally friendly recycling, the various materials must be separated from one another.

Disposal must be carried out in accordance with the applicable legal regulations.

Component parts	Disposal
Enclosure	Metal Recycling
Electronic	Electronics Recycling
Paper / cardboard packaging	Paper / Cardboard boxes Recycling
Plastic packing materials	Plastics Recycling

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11 Technical Support

Despite the highest quality standards and detailed function tests of all our products, damage or failure can always occur in the daily handling of our equipment. The failure of a machine in production costs a lot of money. That is why the Christ company processes complaints as quickly as possible.

You can send the device to us without prior notice. All you need to do is fill out the [repair cover letter](#) and enclose it with the touch panel or IPC so that the service department can start the repair quickly. When the device arrives, it goes through a defined process that clearly documents all processes and makes the respective status traceable. As soon as your panel or IPC is registered in our system, you will receive a confirmation of receipt so that you can also get a precise overview.

Technical Support can be contacted as follows:

Service, Repair and Technical Support

Phone: +49 8331 8371-500

Fax: +49 8331 8371-497

E-Mail: service@christ-es.de

Or directly via the Homepage.

[Christ Service](#)

11.1 Device Seal

A device seal is affixed to every Christ device in order to prove whether the device has been opened by a third party. In case of a defect, please do not open the device, but contact our service department. They will discuss the further procedure with you.

Opening the device will void the warranty.

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