rexroth
A Bosch Company

IndraControl PR4 and VR4

Control cabinet PC and panel PC

Operating Instructions
R911384699

Edition 03

Change Record

Edition 03, 2020-06

Refer to tab. 1-1 "Change Record" on page 1

Change Record

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Liability

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Editorial Department

Development Automation Systems Control Platform JüKö (MaKo)

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1 About this documentation

Editions of this documentation

Edition	Release Date	Note
01	2018-01	First edition
02	2019-02	Revision
03	2020-06	Wireless interfaces removed

Tab. 1-1: Change Record

1.1 Overview on target groups and product phases

In the following illustration, the framed activities, product phases and target groups refer to the present documentation.

Example: In the product phase "Mounting (assembly/installation)", the "mechanic/electrician" can execute the activity "install" using this documentation.

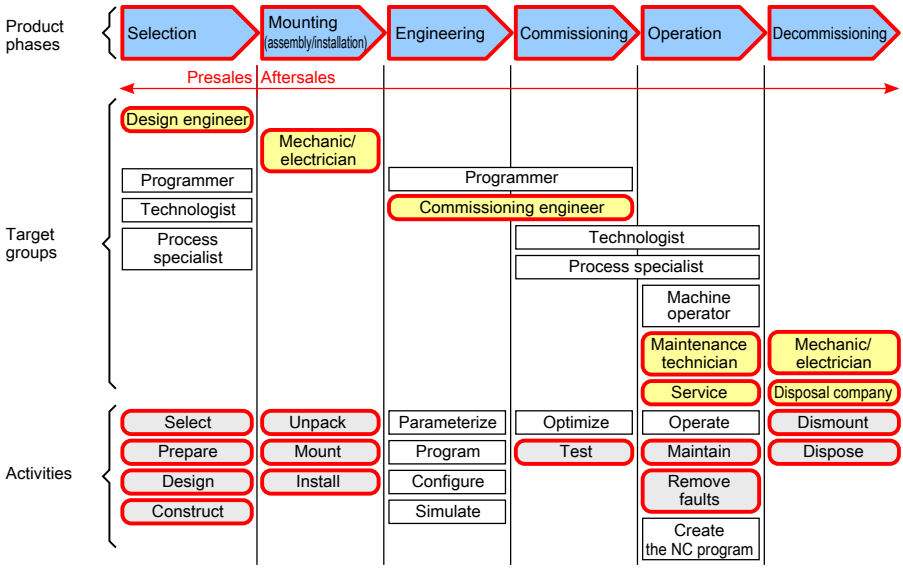


Fig. 1-1: Assigning the present documentation to the target groups, product phases and activities of the target group

1.2 Purpose

This document instructs the technical staff of the machine manufacturer on how to perform the mechanical and electrical installation safely and on how to commission the device.

Required qualification: Individual who is able to assess the tasks assigned and to identify possible safety risks owing to qualification in the subject, knowledge and experience. The individual should also be familiar with the standards and regulations.

1.3 Scope

This operating instruction applies to all industrial PCs and panel PCs whose type code starts either with "PR4..." or "VR4...": The type code is located on the type plate of the device, also refer to chapter 2.1 "Product identification" on page 3.

1.4 Further documents

Title	Part number and document type
Rexroth IndraControl	R911339613
VAP 01	Operating Instructions
Power Supply Unit	
Rexroth IndraControl	R911384733
PR and VR Devices	Project Planning Manual
Software Applications	
IndraControl	R911384727
PR and VR Devices	Project Planning Manual
Accessories	
VAC 08.1	Operating Instructions
CDI+ splitter	R911400465

Tab. 1-2: Required and supplementing documentation

1.5 Customer feedback

Customer requests, comments or suggestions for improvement are of great importance to us. Please email your feedback on the documentations to Feedback.Documentation@boschrexroth.de. Directly insert comments in the electronic PDF document and send the PDF file to Bosch Rexroth.

2 Product identification and scope of delivery

2.1 Product identification

Description	Example
Part number	PN: R911123456
Type code	TYPE: PR4100...
Serial number	SN: 123456789123456
Plant	(7260)
Manufacturing date	MD: 17W40
Name of origin	Made in...
Company address	Bosch Rexroth AG, 97816 Lohr, Germany
CE conformity marking	CE
Rexroth barcode	
Test marking	I-V-C-B-T-V
Voltage specification	In 24 V DC
Current specification	In 4.2 A
Ambient temperature	T(amb) 0-55 °C
Software release	FW: W10IOT 2016 LTSB 1V01
Certification markings	UL, FCC, China-RoHS, ...

Tab. 2-1: Specifications on the type plate, example

2.2 Scope of delivery

- Control cabinet PC or panel PC
- Safety instructions
- Assembling kit, depends on the device type
- 24 V connection terminal
- Firmware image USB recovery stick

3 Using safety instructions

3.1 Structure of the safety instructions

The safety instructions are structured as follows:

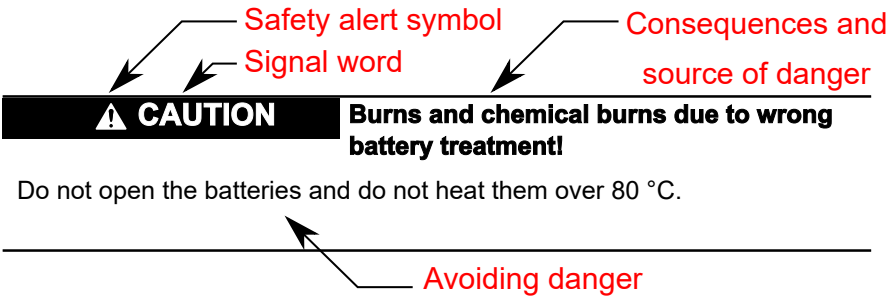


Fig. 3-1: Structure of the safety instructions

3.2 Explaining signal words and safety alert symbol

The safety instructions in this documentation contain specific signal words (danger, warning, caution, notice) and, if necessary, a safety alert symbol (according to ANSI Z535.6-2006).

The signal word draws attention to the safety instruction and indicates the risk potential.

The safety alert symbol (triangular safety reflector with exclamation marks), preceding the signal words Danger, Warning, Caution indicates hazards for persons.

⚠ DANGER

In case of non-compliance with this safety instruction, death or serious injury **will** occur.

⚠ WARNING

In case of non-compliance with this safety instruction, death or serious injury **can** occur.

⚠ CAUTION

In case of non-compliance with this safety instruction, minor or moderate injury can occur.

NOTICE

In case of non-compliance with this safety instruction, material damage can occur.

3.3 Symbols used

Pointers are displayed as follows:

This is a note.

Tips are displayed as follows:

This is a tip.

3.4 Explaining the signal alert symbol on the device

If this symbol is on your device, you have to observe the documentation on the device. The respective documentation informs on the type of hazard as well as the steps required to avoid this hazard.

4 Intended use

The PR4 and VR4 control cabinet and panel PCs are PC-based machine operator and visualization terminals. Depending on the application or configuration, they can also meet the control functionality. The devices are intended for the following use cases:

- Operator terminals, visualization terminals and programming terminals with an integrated soft control in stand-alone machines
- Operator terminals, visualization terminals and programming terminals for connected IndraControl controls

NOTICE

The device might be destructed if not the expressly stated accessories, mounting parts and other components, cables, lines, software and firmware are used.

The PR4 and VR4 and panel PCs may only be used as intended and with the accessories, mounting parts and other components specified in this documentation. Components that are not expressly mentioned must neither be attached nor connected. The same applies to cables and lines.

Only to be operated with the component configurations and combinations expressly defined and with the software and firmware specified in the corresponding functional description.

Typical areas of application of the operator display:

- Handling and assembly systems
- Packaging and food processing machines
- Printing and paper converting machines
- Machine tools
- Wood processing machines

The devices may only be operated under the mounting and installation conditions, the position and the ambient conditions (temperature, degree of protection, humidity, EMC etc.) specified in the related documentation.

5 Spare parts, accessories and wear parts

5.1 External 24 V power supply unit

Ordering code	Part number	Description
VAP01.1H-W23-024-010-NN	R911171065	External 24 V power supply unit for IndraControl V-devices

Tab. 5-1: External 24 V power supply unit for the operator display

5.2 Uninterruptible power supply

Ordering code	Part number	Description
VAU02.1S-024-024-072-NN	R911385289	Uninterruptible Power Supply 24 V DC, 72 watt with RS232 interface

Tab. 5-2: Uninterruptible power supply (UPS)

5.3 Splitter

Connecting unit to connect two operator displays with the same resolution and the same version to one control cabinet PC.

Ordering code	Part number	Description
VAC08.1SSP-HDM-2D2-NNNN	R911175117	Splitter for CDI+ interface

5.4 Connecting cables for CDI+ interface

Malfunctions caused by using inappropriate CDI+ cables.
Use only cables listed in the following overview.

Ordering code	Part number	Description
RKB0008/000,5 (*******-*******-*******)	R911171484	Length: 0.5 m
RKB0008/001,0 (*******-*******-*******)	R911171485	Length: 1 m
RKB0008/002,5 (*******-*******-*******)	R911170151	Length: 2.5 m
RKB0008/005,0 (*******-*******-*******)	R911170152	Length: 5 m
RKB0008/007,5 (*******-*******-*******)	R911172971	Length: 7.5 m
RKB0008/010,0 (*******-*******-*******)	R911170153	Length: 10 m
RKB0008/015,0 (*******-*******-*******)	R911171183	Length: 15 m
RKB0008/020,0 (*******-*******-*******)	R911171184	Length: 20 m
RKB0008/025,0 (*******-*******-*******)	R911170154	Length: 25 m
RKB0008/030,0 (*******-*******-*******)	R911171381	Length: 30 m
RKB0008/035,0 (*******-*******-*******)	R911171369	Length: 35 m
RKB0008/040,0 (*******-*******-*******)	R911171382	Length: 40 m
RKB0008/050,0 (*******-*******-*******)	R911171383	Length: 50 m
RKB0008/055,0 (*******-*******-*******)	R911173779	Length: 55 m
RKB0008/060,0 (*******-*******-*******)	R911173780	Length: 60 m
RKB0008/065,0 (*******-*******-*******)	R911173781	Length: 65 m
RKB0008/070,0 (*******-*******-*******)	R911173782	Length: 70 m

Tab. 5-3: Connecting cables to control cabinet PC, panel PC and operator display. Further cable lengths are available on request.

Further cable lengths are available upon request.

5.5 USB connecting cables (USB 2.0)

Ordering code	Part number	Description
RKB0019/000,5 (*******-*******-*******)	R911171165	USB connecting cable, length 0.5 m
RKB0019/001,0 (*******-*******-*******)	R911171166	USB connecting cable, length 1 m
RKB0019/003,0 (*******-*******-*******)	R911171167	USB connecting cable, length 3 m
RKB0019/005,0 (*******-*******-*******)	R911171168	USB connecting cable, length 5 m

5.6 Connecting cables of the display port

The listed display port cables are provided with a special shielding. The display port cables meet the following specifications:

- Conform to the display port 1.2
- Resolutions up to 4096 x 2160
- Supports HDCP 1.3 and DPCP

Ordering code	Part number	Description
RKB0063/003,0 (*******-*******-*******)	R911391713	Connecting cable of the display port, length 3 m
RKB0063/005,0 (*******-*******-*******)	R911391714	Connecting cable of the display port, length 5 m

5.7 Wear parts

Wear parts are not subject to any warranty.

5.7.1 CMOS battery

The service life of the CMOS battery of type BR2032 is 5 to 7 years.

6 Ambient conditions

Humidity	85% at 40°C (non-condensing)
Operating temperature	0 to 55°C (with airflow 0.3 m/s)
Storage temperature	-20 to 60 °C
Shock protection	IEC 60068-2-27
Overvoltage category	2

Contamination level	2, no condensation allowed
Mechanical strength	IEC 60068-2-64
	Acceleration: SSD 2G

Tab. 6-1: Ambient conditions

The ambient air must not contain acids, alkaline solutions, corrosive agents, salts, metal vapors and other electrically conductive contaminants in high concentrations

The ambient air must be free from dust, housings and installation compartments must comply with the min. degree of protection IP 54 according to DIN VDE 0470-1.

This is a product that corresponds to the limit values of the emitted interference of class A (industrial environments), but not of class B (residential area and small enterprises).

When using the product in residential areas or small enterprises, the operator has to take actions to prevent radio interferences (also refer to DIN EN 55022).

NOTICE **Defective product due to gases jeopardizing functions**

Due to the risk of corrosion, avoid sulphurous gases (e.g. sulphur dioxide (SO_2) and hydrogen suphide (H_2S)). The product is not resistant against these gases.

NOTICE **Failure of the product due to contaminated air**

- The ambient air must not contain acids, alkaline solutions, corrosive agents, salts, metal vapors and other electrically conductive contaminants in high concentrations
- The devices to be installed into the housing and installation compartments must at least comply with the degree of protection IP 54 according to DIN EN 60529.
- The device shall be provided in a suitable fire enclosure in the end-use application.

7 Technical data

7.1 PC box

	PR4100	PR4200	PR4300
CPU	i3-6100U 2.3 GHz Dual Core	i5-6300U 2.4 GHz Dual Core	i7-6600U 2.6 GHz Dual Core
GPU	Intel® HD Graphics 5200		
Memory	DDR4, 8 GB RAM, 16 GB optional		
Audio	Analog output		
Bulk memory	• 64 GByte or 256 GByte SSD *or* 2 × 256 GByte SSD (RAID1)		
Mini PCIe (internal)	2 × Mini PCIe • mPCIe interface module		
PCIe slot	1 x PCIe, 10 W max., card length: 175 m max.		
Ethernet ports	2 × Gbit i210 with synchronous cycle 1 × Gbit i219		
Serial ports	1 × RS-232 1 × RS-232, RS-422, RS-485		
Serial port speed	115 kbps max.		
USB	2 × USB 2.0 2 × USB 3.0		
Display port	1 × DP		
CDI+tx	1 × CDI+tx operating display connection at a large distance (optional)		
TPM	TPM 2.0 (onboard) chip: INFINEON_SLB 9665TT2.0		
RTC battery	Button cell BR2032		
Mounting	Front uprights mounting		
Input voltage	24 V DC +25 %, -20 % with IEC 61131-2		
Power consumption	70 W max.		
Weight	4.6 kg		
Degree of protection	IP20		

Tab. 7-1: Technical data of the PR4100, the PR4200 and the PR4300

	2 × GBit LAN (optional)
Controller	Intel® I350-AM2 LAN Controller
Ethernet	10/100/1000 Mbps

Tab. 7-2: Technical data 2 × GBit LAN

	RS-422/485, electrically isolated (optional)
COM interface type	RS-422/485
Host interface	USB 2.0
Plug-in connector	2 x D-Sub, 9-pin, male.
Insulation protection	2,000 DC
ESD protection	15 KV
EFT protection	2,500 V
Surge protection	1,000 V DC

Tab. 7-3: Technical data RS-422/485, electrically isolated

	RS-232, electrically isolated (optional)
COM interface type	RS-232
Host interface	USB2.0
Plug-in connector	2x D-Sub 9-pin, male.
Insulation protection	2,000 V DC
ESD protection	15 KV
EFT protection	2,500 V
Surge protection	1,000 V DC

Tab. 7-4: Technical data of the RS-232, electrically isolated

7.2 Panel PC

Display	396 mm TFT (15")	546 mm TFT (21")
	1366 × 768 pixels	1920 × 1080 pixels
	16.2 million colors	16.7 million colors
Weight	Approx. 8.7 kg	Approx. 11.1 kg
Operation	Projected capacitive 10-point multitouch	
Surface of the front panel	Chemically strengthened front glass	
Degree of protection	Front panel IP 66	

Tab. 7-5: Technical data of the VR4x15 and the VR4x21

7.3 Optical characteristic values

7.3.1 TFT

The maximum permissible number and type of pixel errors of TFT displays depends on the manufacturer and is defined by the respective incoming inspection of the vendor.

7.3.2 Input system or multi-touch front

The maximum permissible number, type and size of defects on the front, on the glass or between the display and the front – such as trapped dust, dirt and scratches is defined in the FT quality guideline.

8 Standards

The products have been developed according to the current German edition of the standards at the time of product development.

8.1 Standards used

Standard	Description
EN 60204 -1	Safety of machinery – Electrical equipment of machines
EN 61000-6-4	Generic standards – Emission standard (industrial environments)
EN 61000-6-2	Generic standards – Noise immunity (industrial environments)
EN 60068-2-6	Vibration test
EN 60068-2-27	Shock test
EN 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements

Tab. 8-1: Standards used

8.2 FCC

This device was tested and complies with the limit values for a digital device of class A as per part 15 of the FCC rules. These limit values should ensure an appropriate protection against harmful interferences if the device is operated in an industrial area. This device creates and uses high-frequency, it can radiate it and it can cause harmful interferences of the wireless communication if it is not installed and used as specified in the operating instructions. Harmful interferences can result if this device is operated on a residential area. In this case, the user has to eliminate the interferences at his own expense.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- This device may not cause harmful interferences.
- This device has to tolerate any receiving interferences, including interferences that can cause undesired operation.

8.3 CE marking

8.3.1 Declaration of conformity

The electronic products described in these instructions comply with the requirements and the target of the following EU directive and the following harmonized European standards:

EMC directive 2014/30/EU

The electronic products described in the present instructions are intended for use in industrial environments and comply with the following requirements:

Standard	Title
DIN EN 61000-6-2	Electromagnetic compatibility (EMC) Part 6-2: Generic standards – Immunity for industrial environments
DIN EN 61000-6-4	Electromagnetic compatibility (EMC) Part 6-4: Generic standards – Emission standard for industrial environments

Tab. 8-2: Standards for electromagnetic compatibility (EMC)

Loss of CE conformity due to modifications at the device

CE marking applies only to the device upon delivery. After modifying the device, verify the CE conformity.

8.4 UL/CSA certified

The devices are certified acc. to

- UL 61010-2-201 (Industrial Control Equipment) and
- CSA22.2 No. 61010-2-201 (CSA)

UL file no. E210730.

However, there can be combinations or extension stages with a limited or missing certification. Thus, verify the registration according to the UL marking on the device.

Loss of UL/CSA conformity due to modifications at the device

UL and CSA marking applies only to the device upon delivery. After modifying the device, verify the UL and the CSA conformity.

9 Interfaces

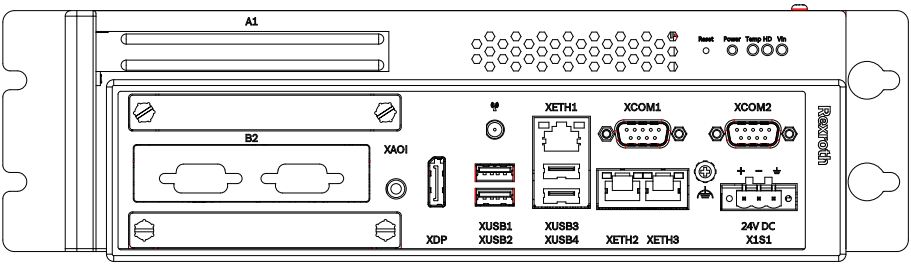


Fig. 9-1: Interfaces PR4 without CDI+ interface

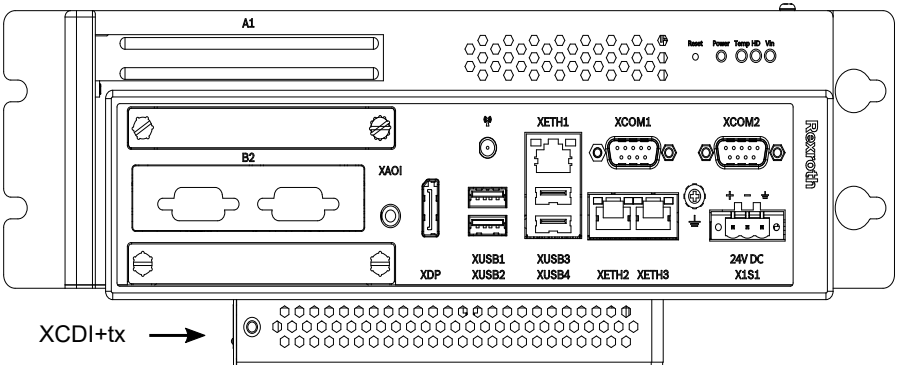


Fig. 9-2: Interfaces PR4 with CDI+ interface

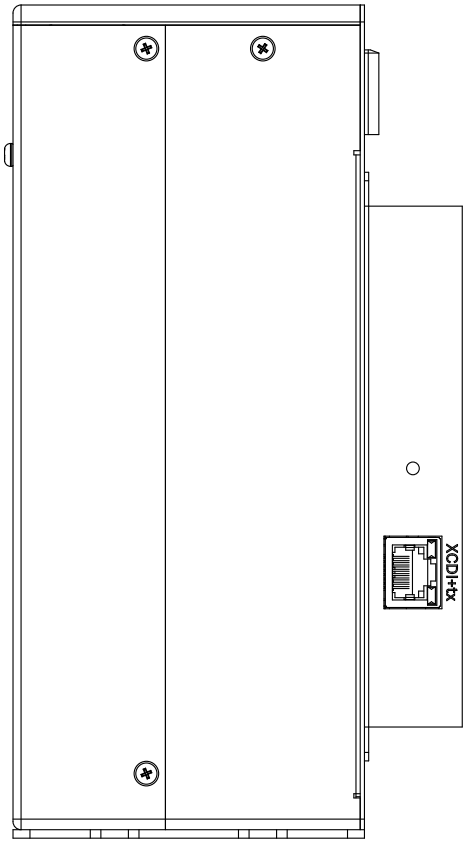


Fig. 9-3: PR4 CDI+ interface

9.1 Overview

The following connections are available:

Labeling at the housing	Connection type	Connection type (at the device)	Mating connector or cable (from outside)
X1S1	PC voltage supply	Male connector strip, 3-pin	Female connector strip, 3-pin
XCOM1/2	Serial interfaces	D-SUB plug, 9-pin	D-SUB socket, 9-pin
XETH1, XETH2, XETH3	Ethernet interfaces 10/100/1000 Base-T	RJ45 socket, 8-pin	RJ45 plug (twisted pair, 8-wire)
XUSB1, XUSB2	USB3.0 interfaces	USB socket, 8-pin, type A	USB plug, 8-pin, type A

Labeling at the housing	Connection type	Connection type (at the device)	Mating connector or cable (from outside)
XUSB3, XUSB4	USB2.0 interfaces	USB socket, 4-pin, type A	USB plug, 4-pin, type A
XDP	Connection for external monitor	Display port socket, (20-pin)	Display port plug, (20-pin)
	-	No function	-
XAOI	Connection for external audio	3.5 mm jack socket	3.5 mm jack plug
XDI+tx	Connection for a remote operating display Optional	RJ45 socket, 8-pin	RJ45 plug (twisted pair, 8-wire)

Tab. 9-1: Interfaces

NOTICE **Malfunctions due to insufficient shielding!**

Use only shielded cables and metallic or conductive connector/coupling covers with large-area shield support.

9.2 PC voltage supply X1S1

The 24 V DC voltage supply for the control cabinet PC is connected via the "X1S1" connection.

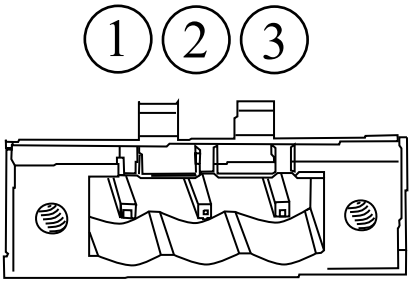


Fig. 9-4: Interface for 24 V voltage supply

Pin	Function
①	+24 V supply voltage
②	0 V supply voltage
③	Functional earth

Tab. 9-2:

9.3 USB interfaces XUSB1 to XUSB4

The devices are provided with four USB interfaces on the connector panel (XUSB1/2: SB 3.0, XUSB3/4: USB 2.0).

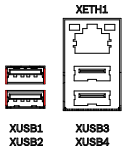


Fig. 9-5: USB interfaces

The maximum current carrying capacity per USB socket is 500 mA for the USB2.0 and 900mA for the USB3.0.

9.4 Ethernet interfaces XETH1, XETH2 and XETH3

The control cabinet PC can be connected to an Ethernet network via the Ethernet interfaces XETH1, XETH2 and XETH3.

9.5 DisplayPort XDP

At the display port (XDP), an operating display DR or a monitor can be connected to the display port interface. An active converter is required to connect a DVI or HDMI monitor, as the internal graphics card does not provide any automatic detection and switching between DVI-HDMI protocol and display port protocol. No image is shown if a passive adapter is used.

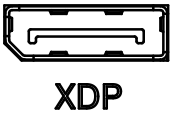


Fig. 9-6: Display port interfaces

9.6 Long distance XCDI+tx

At the long-distance (XCDI+tx), A cable length of up to 100 m can be used to interconnect remote operating displays to the individual devices.

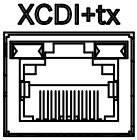


Fig. 9-7: XCDI+ connection

9.7 Optional extension modules

9.7.1 Ethernet interfaces

Gigabit Ethernet

PCIe 2 port Gigabit Ethernet.

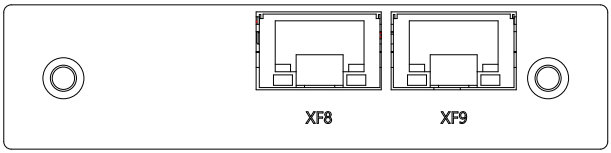


Fig. 9-8: Optional extension module 2 port Gigabit Ethernet

9.7.2 Serial interfaces

RS-422/485, electrically isolated

The RS-422/485 interfaces are two electrically galvanically isolated interfaces that are connected internally to the PC via the USB2.0 host.

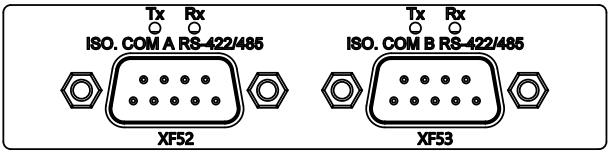


Fig. 9-9: Optional extension module, RS-422/485, electrically isolated

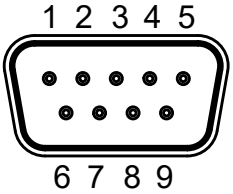


Fig. 9-10: Pin assignment RS-422/485, 9-pin, male

Pin	RS-422	RS-485
1	Tx-	Data-
2	Tx+	Data+
3	Rx+	–
4	Rx-	–

Pin	RS-422	RS-485
5	GND	GND
6	RTS-	–
7	RTS+	–
8	CTS+	–
9	CTS-	–

Tab. 9-3: Pin assignment RS-422/485, 9-pin, male

RS-232, electrically isolated

The RS-232 interfaces are two electrically galvanically isolated interfaces that are connected internally to the PC via the USB2.0 host.

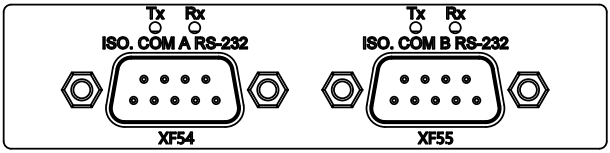


Fig. 9-11: Optional extension module, RS-232, electrically isolated

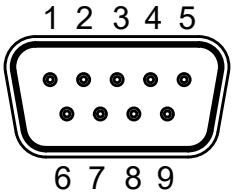


Fig. 9-12: Pin assignment RS-232, 9-pin, male

Pin	RS-232
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

Tab. 9-4: Pin assignment RS-232, 9-pin, male

10 Mounting, demounting and electric installation

NOTICE **Mechanic damage due to incorrect mounting torque.**

Tighten the screws and nuts with the corresponding torque according to the following table.

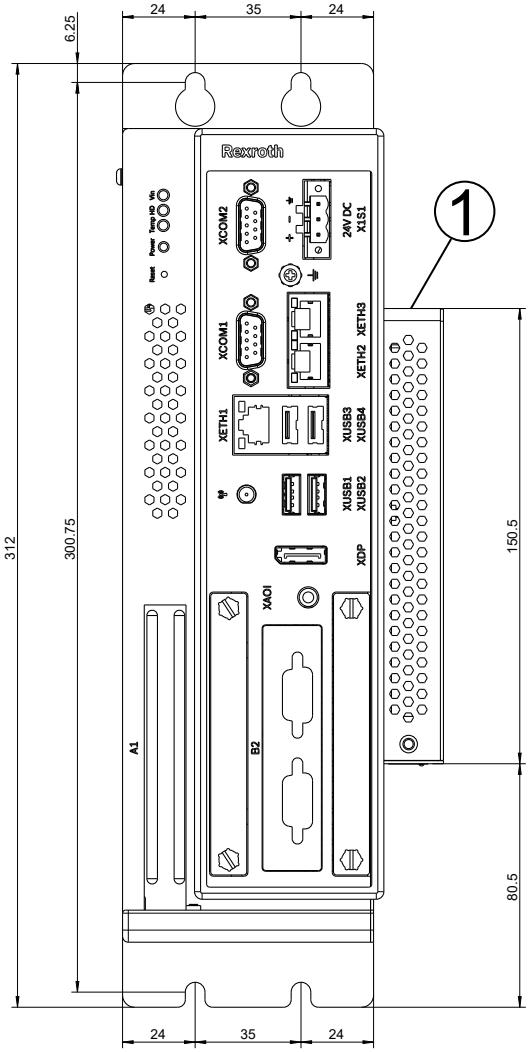
Thread	Mounting torque
M2.5	0.4 Nm
M3	0.7 Nm
M4	1.4 Nm
M5	2.8 Nm
M6	3.0 Nm

Tab. 10-1: Mounting torque

10.1 Dimensions of the BC box

The control cabinet PC can be mounted in front upright mounting using mounting holes. For the corresponding dimension, refer to the following figures:

☞ Fasten the devices using M6 screws.



① Optional CDI+ box

Fig. 10-1: Mounting dimensions for device, front upright mounting

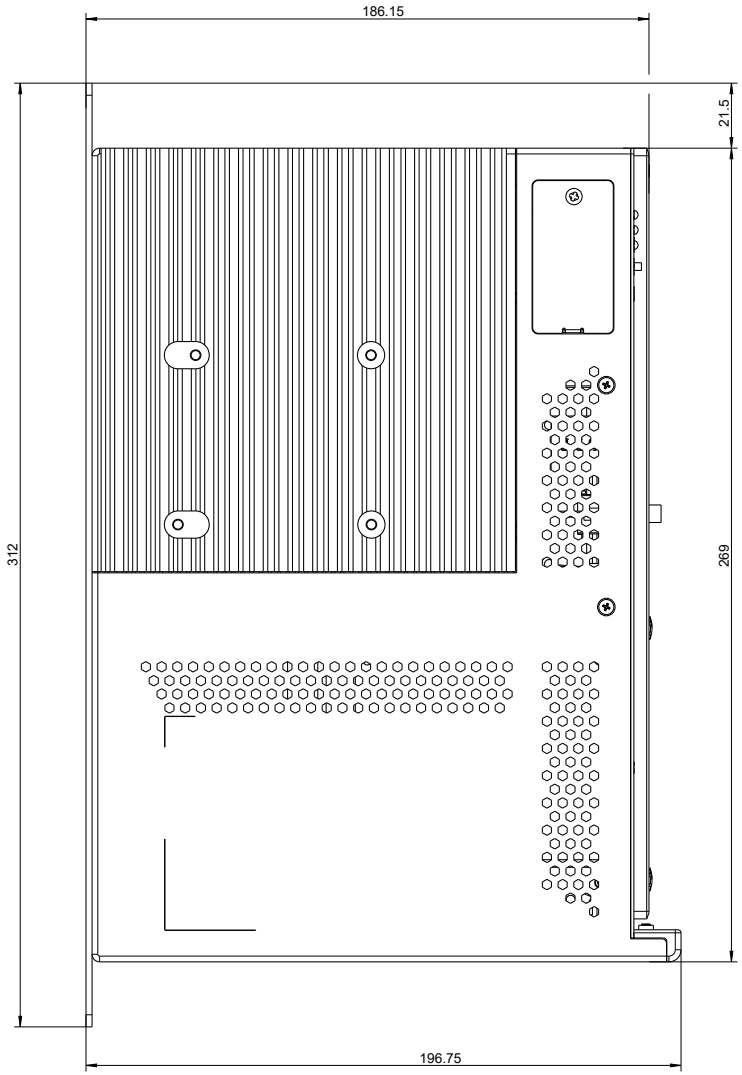
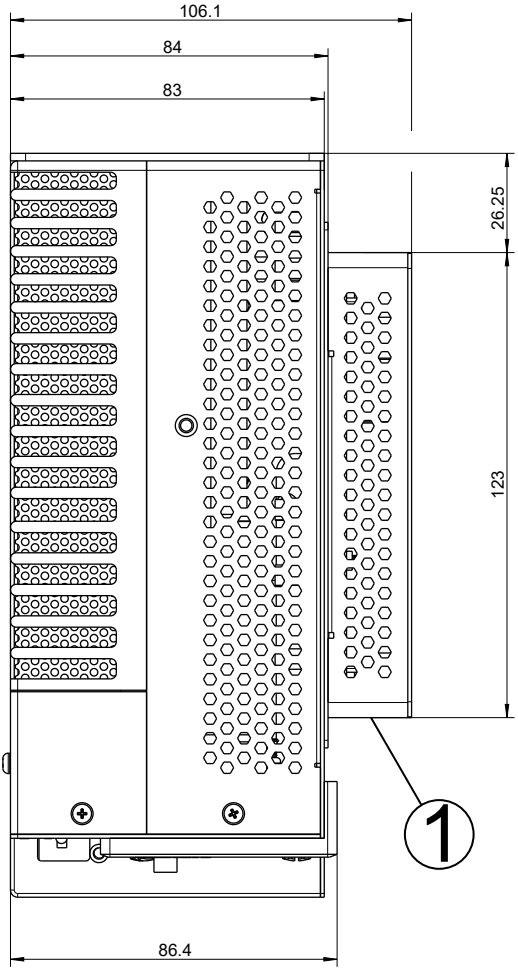


Fig. 10-2: Housing dimensions, left side view



① Optional CDI+ box

Fig. 10-3: Housing dimensions, top view

10.2 Housing dimensions of the panel PCs, front views VR4x15 and VR4x21

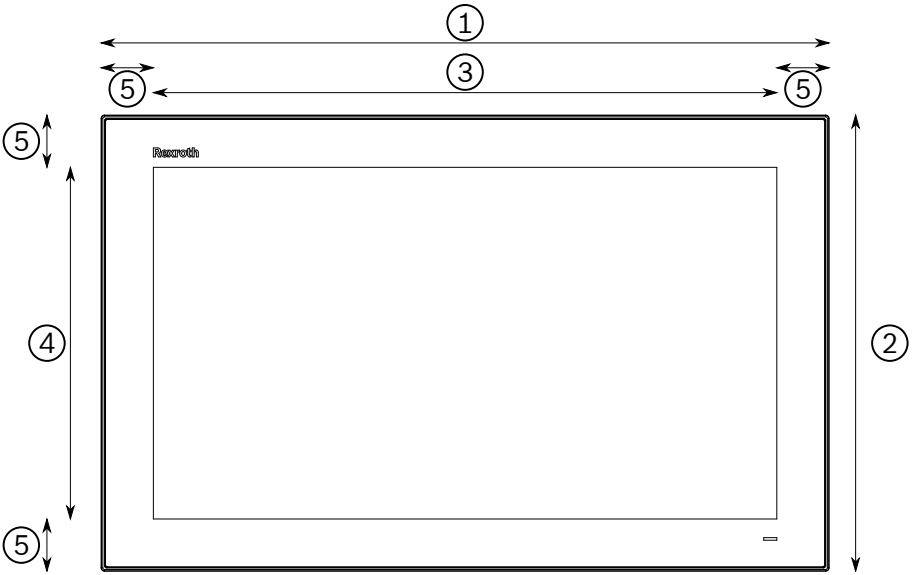


Fig. 10-4: Front view of the Panel PC

	①	②	③	④	⑤
Display size	Device width	Device height	Display width	Display height	Frame width
15"	420	269	246	195	37
21"	558	350	478	270	40

Tab. 10-2: Housing dimensions of the VR4x15 and VR4x21 in millimeters

10.3 Housing dimensions of the panel PC VR4x15

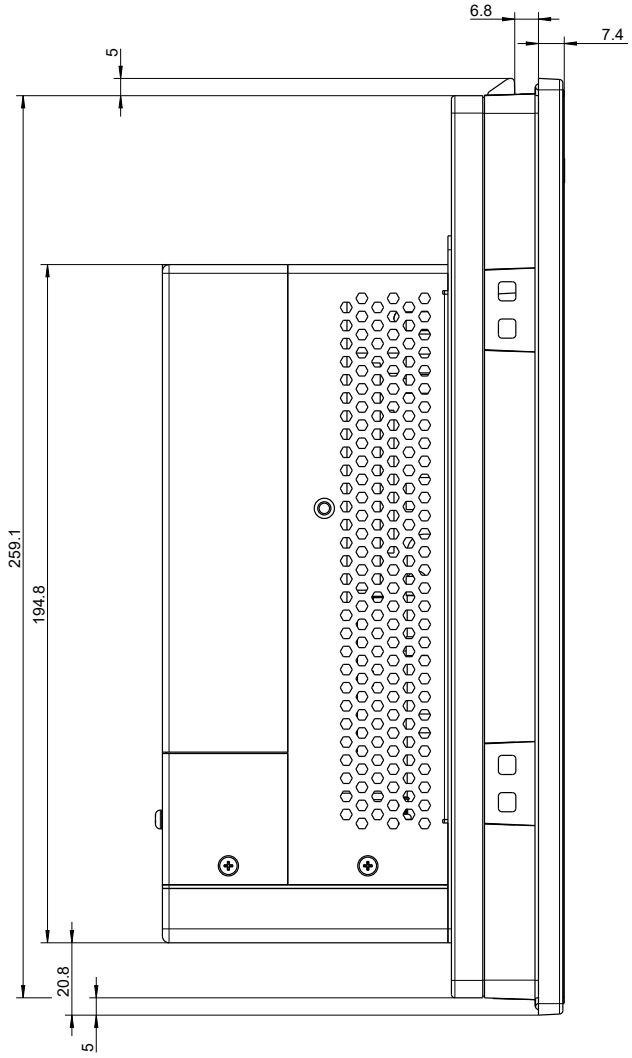


Fig. 10-5: Housing dimensions of the device VR4x15, left side view

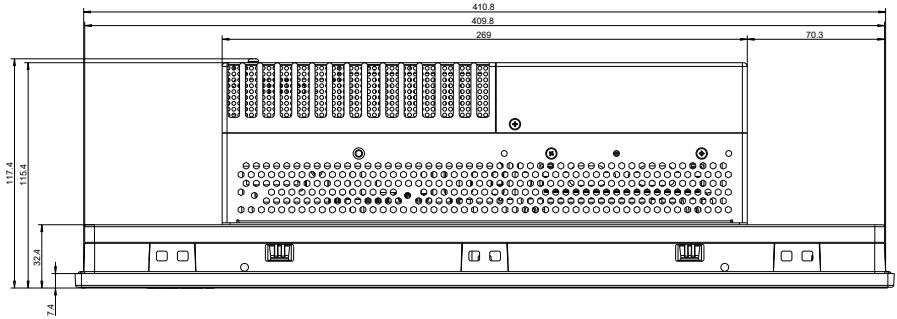


Fig. 10-6: Housing dimensions of the device VR4x15, top view

10.4 Housing dimensions of the panel PC VR4x21

The panel PC of type VR4x21 is available as horizontal and as vertical variant. Only the horizontal variant is described in the following, as the variants differ only in the front labeling.

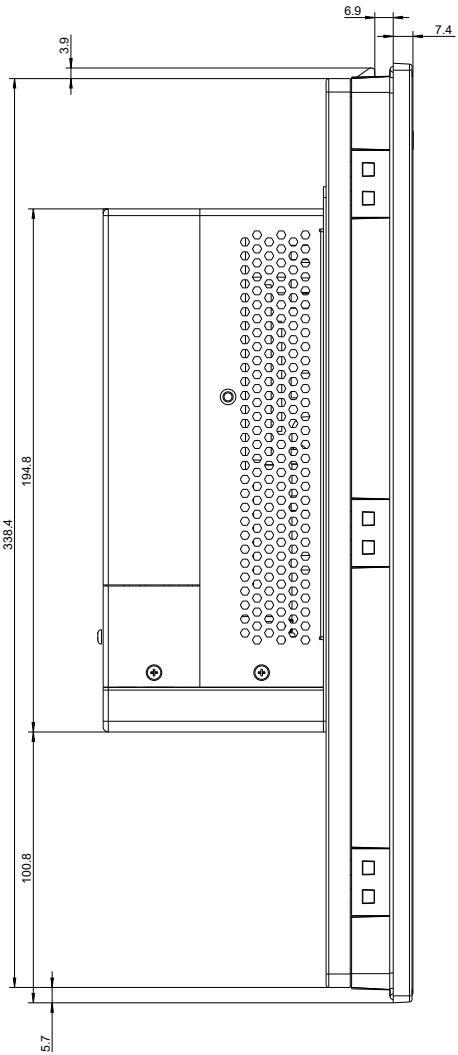


Fig. 10-7: Housing dimensions of the device VR4x21, left side view

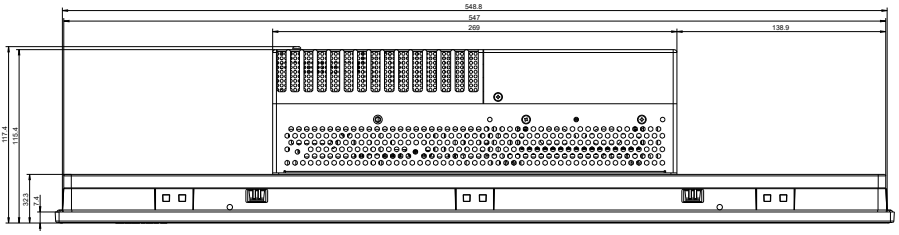


Fig. 10-8: Housing dimensions of the device VR4x21, top view

10.5 Installation notes

- Provide a space of 50 mm on all sides for sufficient cooling and cable routing.
- The LED display on the operator panel must not be covered.
- Wire all cables in loops. Use strain reliefs for all cables.
- Install the operator display only vertically, with a max. deviation of ±45°, measured from the vertical.
- Do not lay the CDI cables in parallel to motor cables or to other noise sources, as the CDI connection can be disturbed. Keep the maximum distance possible from interference sources.

10.6 Installing components

10.6.1 Installing PCIe card

The steps 1- 4 are omitted if the box PC is not yet mounted into the control cabinet.

1. Switch off the supply voltage.
2. If operated with a UPS, wait until the box PC switches off automatically.
3. Remove all plugs from the box PC.
4. Loosen the fastening screws of the box PC and remove the box PC from the mounting panel.
5. Position the control cabinet on a plane support and ensure that the right housing cover points up.
6. Touch the housing or ground connection (not the power supply) to discharge any electrostatic charge from your body.
7. Remove the six M3 screws from the housing cover.

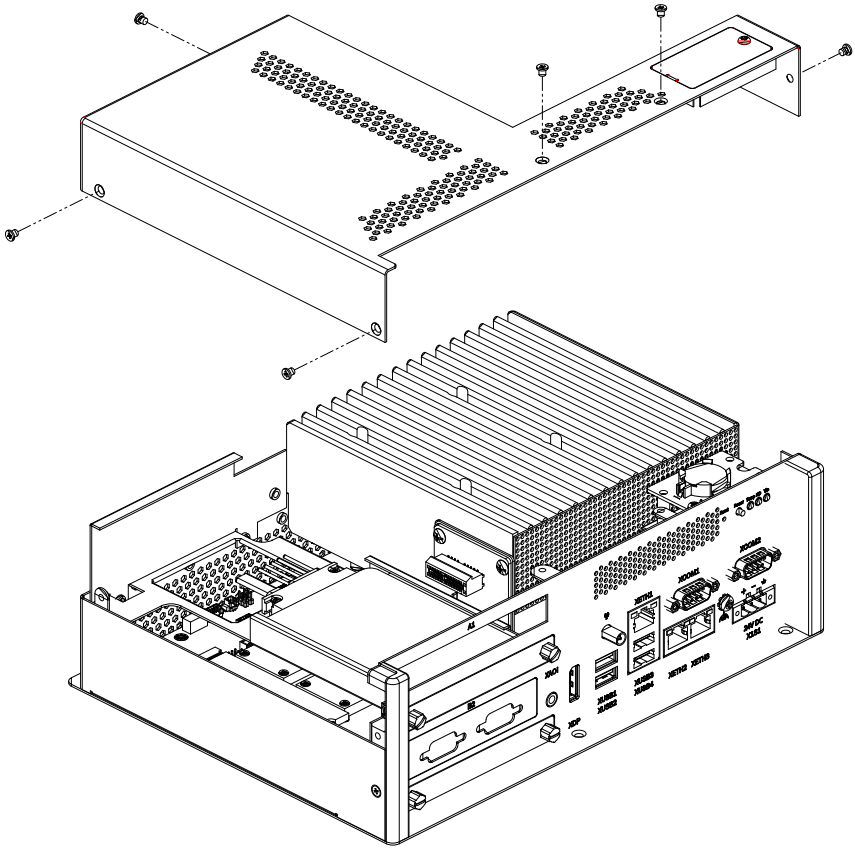


Fig. 10-9: Removing housing cover

8. Plug in the PCIe card into the PCIe slot and fix it with the M3 screw.

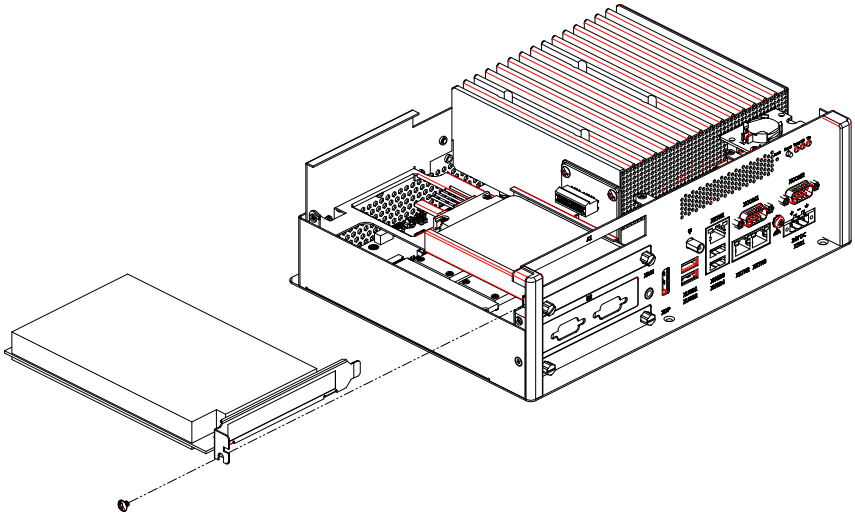
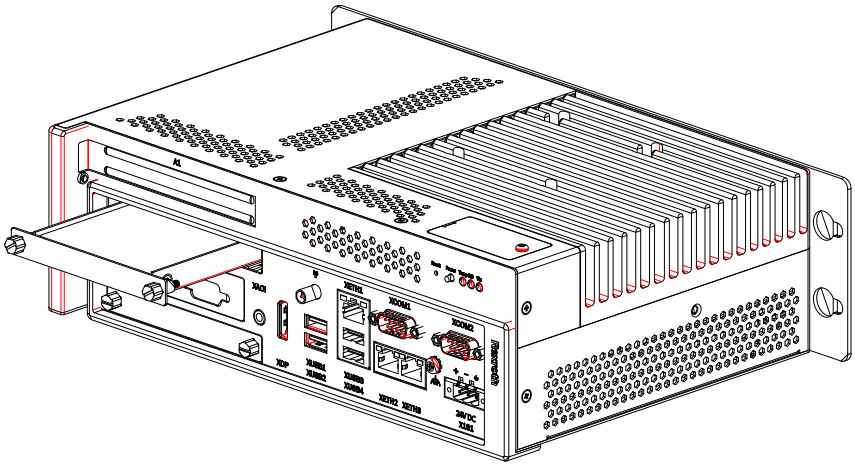


Fig. 10-10: Inserting PCIe card

9. Mount the housing cover again.

10.6.2 SSD and HDD mas memory installation

1. Loosen the screws of the hard disk holder



① Fastening screws of the hard disk holder

Fig. 10-11: Hard disk holder

2. Install the hard disk into the hard disk holder and tighten the screws.

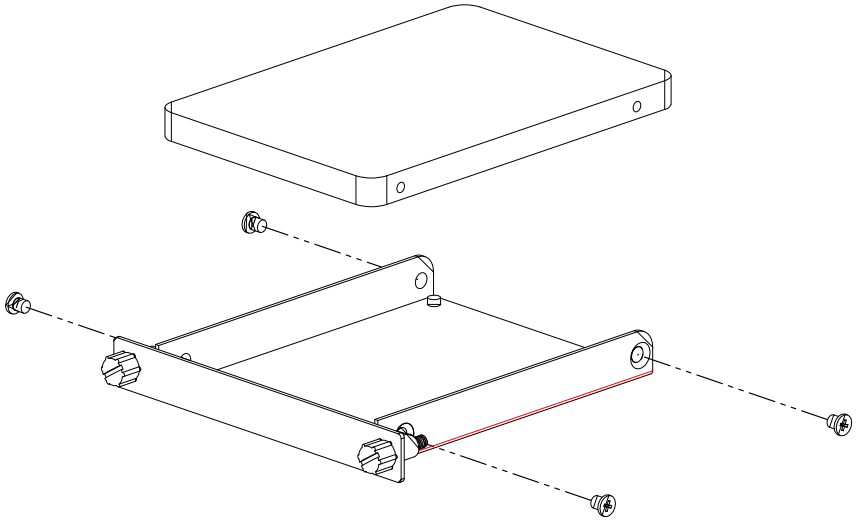


Fig. 10-12: Hard disk holder

3. Place the mounted hard disk holder into the hard disk slot

The upper hard disk holder is labeled with "TOP" and the lower hard disk holder is labeled with "BOT".

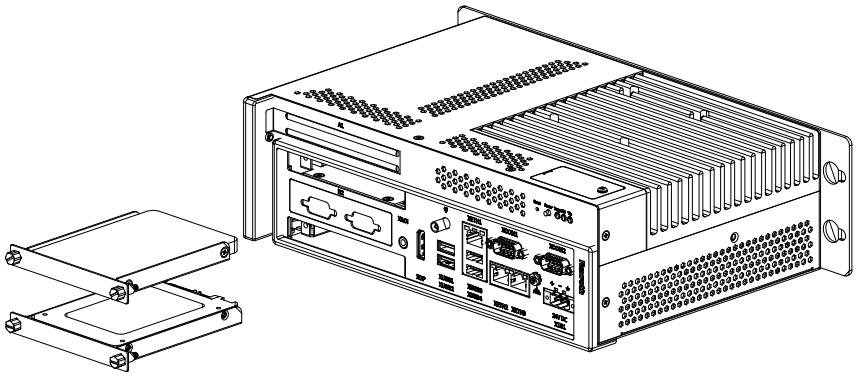


Fig. 10-13: Inserting hard disks into the device

10.6.3 CFast module

The devices PR4/VR4 can be ordered with the "CFast module" option. The CFast module is always installed in the slot next to the PCIe slot.

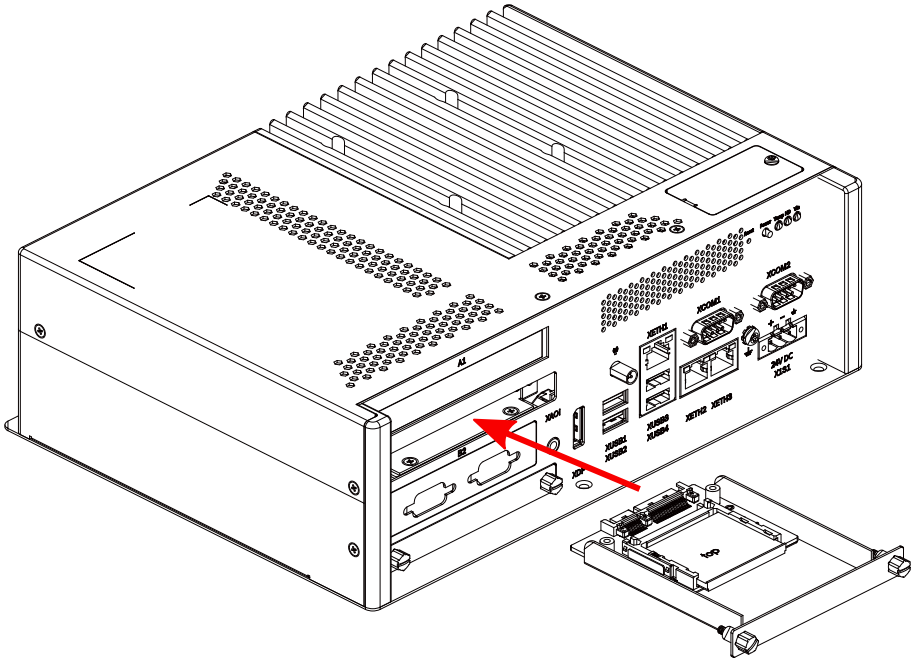


Fig. 10-14: Mounting position of the CFast module

10.6.4 Replacing the CMOS battery

To replace the CMOS battery BR2032, open the cover on the top of the housing.

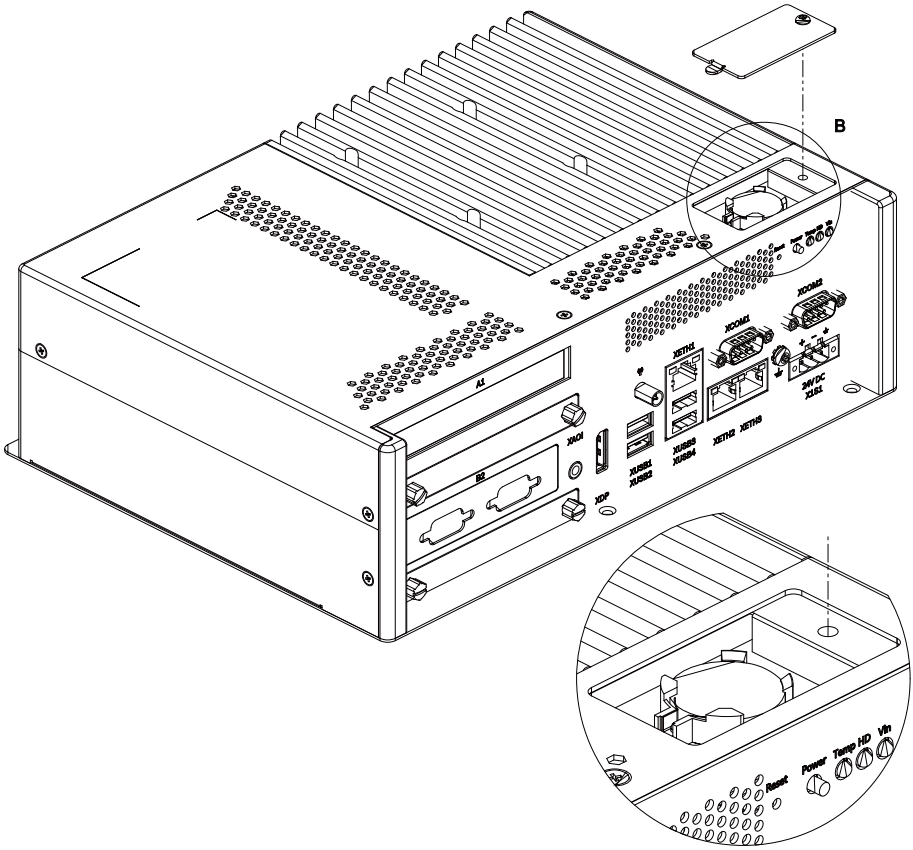


Fig. 10-15: Replacing the CMOS battery

Ensure the correct polarity when inserting the new CSMO battery!

10.7 Device mounting of the panel PC

Install the panel PC as follows:

Loss of degree of protection IP 66!

The housing in which the panel PC is installed, has to meet the following conditions:

- Free from impurities
- Sufficient mechanical strength and flatness

These criteria influence the required IP degree of protection to a great extent.

Further required measures have to be taken depending on the mounting location, e. g. the stabilization of the mounting frame.

Material thickness to mount the Panel PC:

The panel PC is mounted into the housing. The material thickness of the housing has to be between 2 and 6 mm.

1. Creating a mounting cut-out, refer to chapter 10.8 "Mounting cut-out" on page 38
2. Remove two mounting screws at the bottom of the display. These screws fixedly attach the display when inserted into the mounting cut-out.

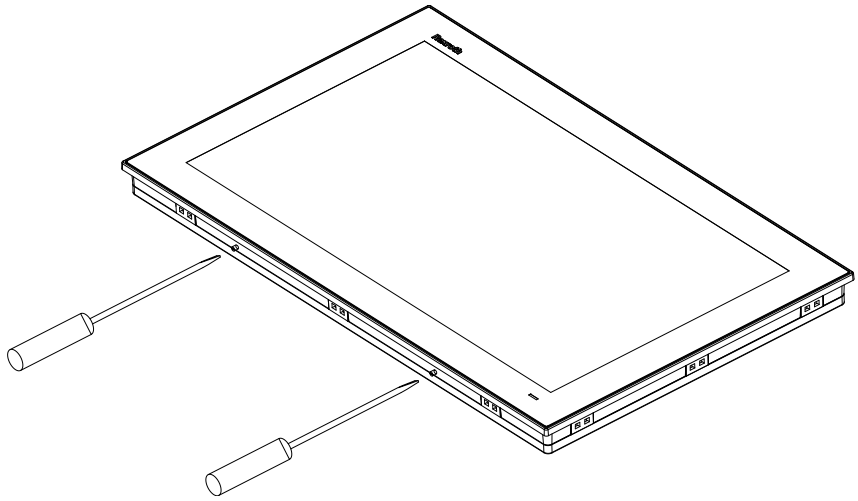
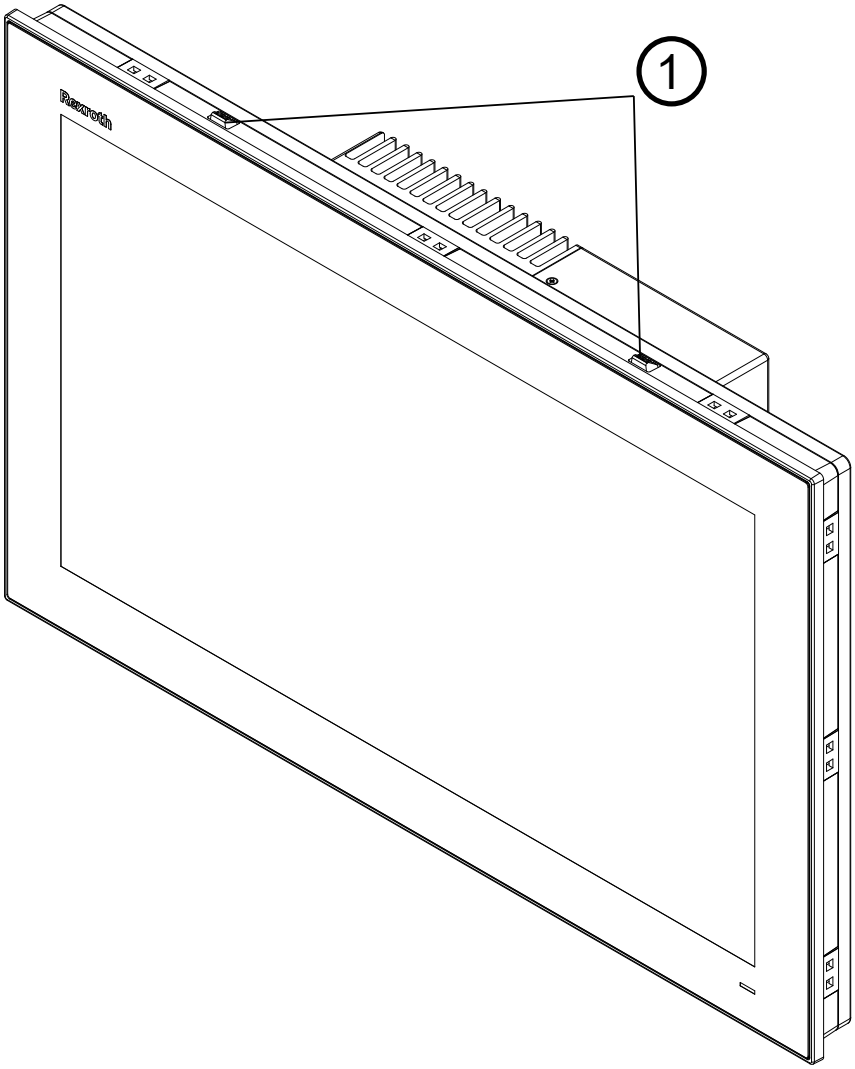


Fig. 10-16: Mounting screws at the bottom of the display

3. Install the panel PC into the mounting cut-out. The detents fasten the panel PC in the opening.



① Detents

Fig. 10-17: Detents on the upper side of the display

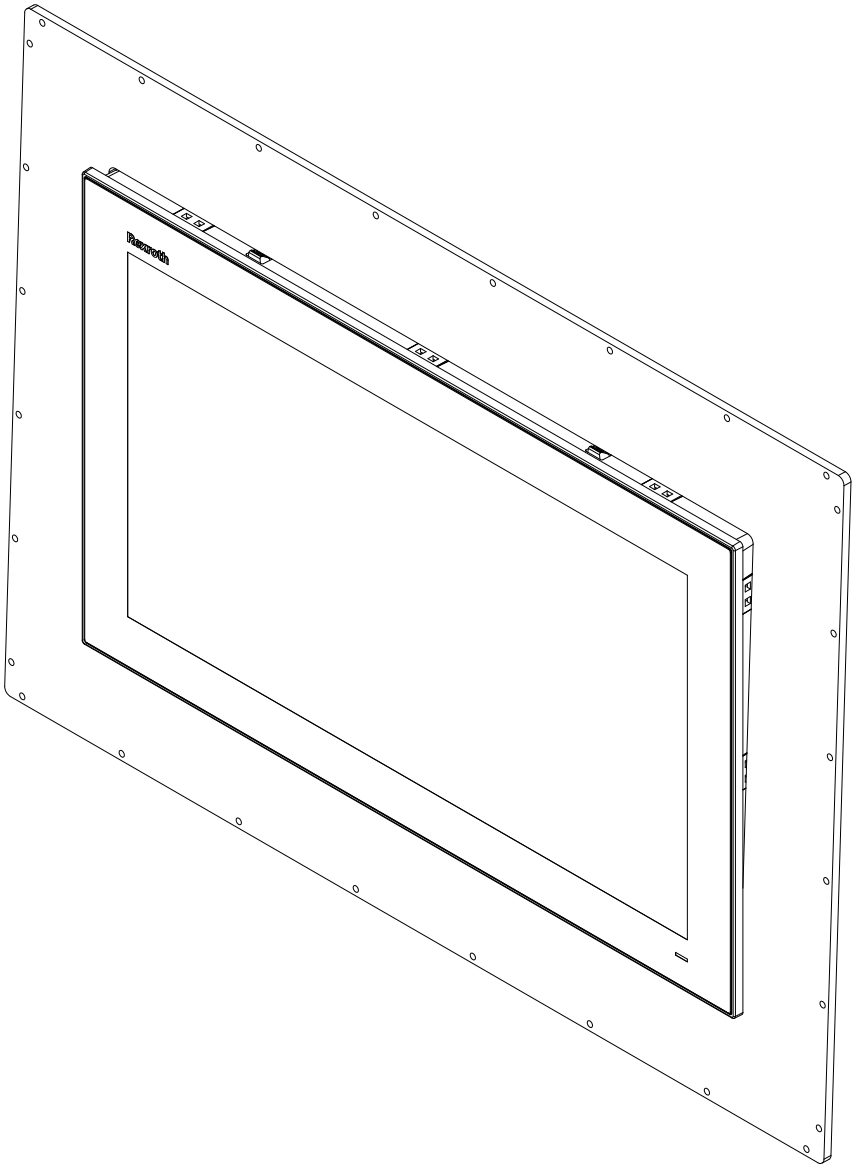


Fig. 10-18: Display in the mounting cut-out

4. Insert each fastening element into an opening and pull the fastening element back until it is in the rear part of the opening:

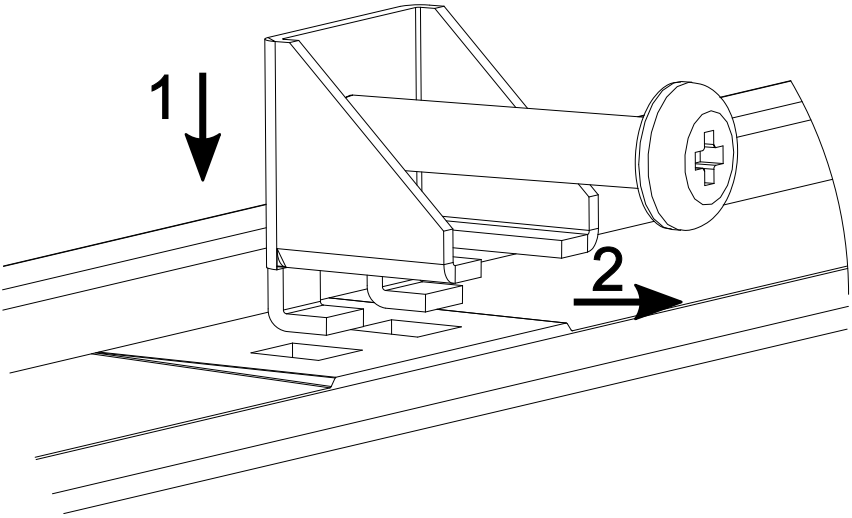


Fig. 10-19: Inserting fastening element into the opening

5. Tighten the cross-slotted screws.

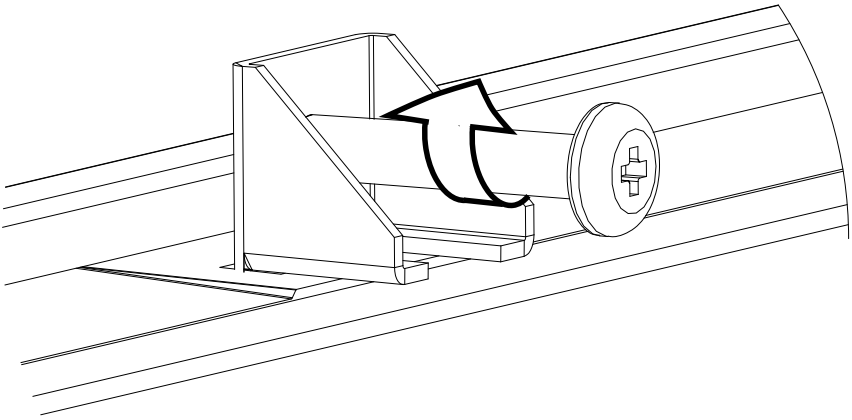
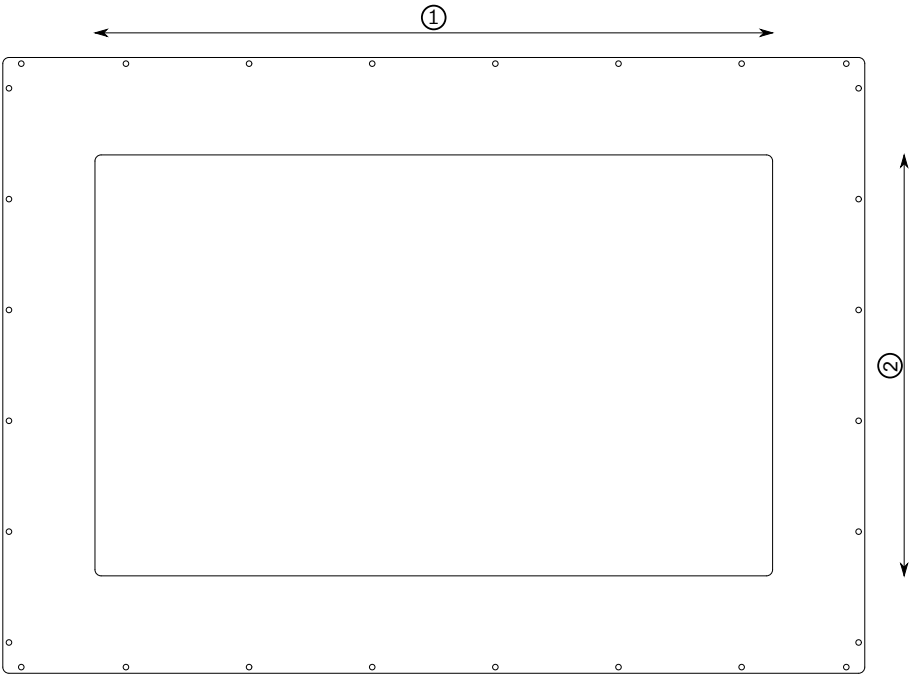


Fig. 10-20: Panel PC holders

To ensure a high degree of moisture resistance, use a mounting torque of 0.5 Nm (4.5 lb-in).

10.8 Mounting cut-out



① Mounting cut-out

Fig. 10-21: Mounting cut-out

Display size	Width ②	Height ③
15"	412.40	261.70
	Tolerance ±0.7	Tolerance ±0.4
21"	550.30	341.80
	Tolerance ±0.7	Tolerance ±0.4

Tab. 10-3: Mounting cut-out in millimeters

Ensure the IP protection class:

- Observe the tolerance specifications for the mounting cut-out!
- Observe the wall thickness for the mounting cut-out! Minimum of 2 mm and maximum of 6 mm.
- Consider the weight of the display and of the PC. Especially if there is a strong vibration. Reinforce the front plate with slates at the internal side close of the mounting cut-out if required.

10.9 Demounting

1. Disconnect the panel PC from voltage.
2. Remove all connected cables.
3. Loosen the screws of the fastening elements.
4. Remove the fastening elements.
5. Press the detents of the installation aid from top. Ensure that the panel PC is prevented from falling out of the mounting cut-out!
6. Remove the panel PC from the mounting frame.

10.10 Electric installation

10.10.1 Connecting the control cabinet PC to the operating display

Connection diagram

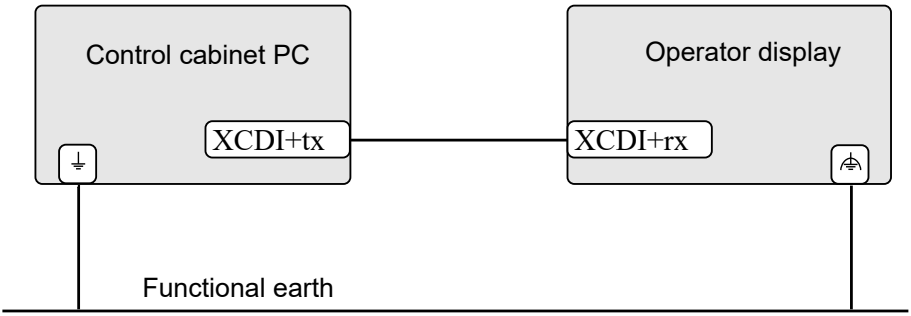


Fig. 10-22: Wiring the control cabinet PC to the operating display

Connection

1. Connect the functional earth.

2. Connect the XCDI+tx interface at the control cabinet PC to the XCDi+rx interface at the respective operating display using a CDI+ cable.

NOTICE **Material damages to electronics due to missing functional earth!**

Ensure that the functional earth is connected, as otherwise the electronics can be destroyed by a potential difference between the operating display and the control cabinet PC if the voltage supply is interrupted to only one device and established again. A direct connection of the functional earth between the operator display and the control cabinet PC is optimal. If the functional earth is connected to a neutral point, the control cabinet PC has to be connected to this neutral point as well.

When installing CDI cables with a diameter of 7.4 mm, observe the following bending radius:

- Radius (when bended once while routing): 4 × cable diameter
- Minimum bending radius (when moved permanently): 8 × cable diameter
- Optimum bending radius (when moved permanently): 12.5 × cable diameter

Operation breakdown due to mechanical forces on the CDI cables.

Avoid mechanical stress (tensile, compressive, torsional and lateral forces) caused by plugs to the RJ45 socket.

Malfunctions caused by using inappropriate cables.

Use only cables listed in chapter 5.4 "Connecting cables for CDI+ interface" on page 7

10.10.2 Connecting the control cabinet PC to multiple operating displays

Up to three operating displays IndraControl DR/DE can be connected serially to the IndraControl PR4 devices using the CDI+ interface. The operating displays only operate in the “Clone” mode. The advanced mode can only be used if a second display is connected to the display port. The touch function is always active on all operating displays. Entries can not be blocked at individual operating displays.

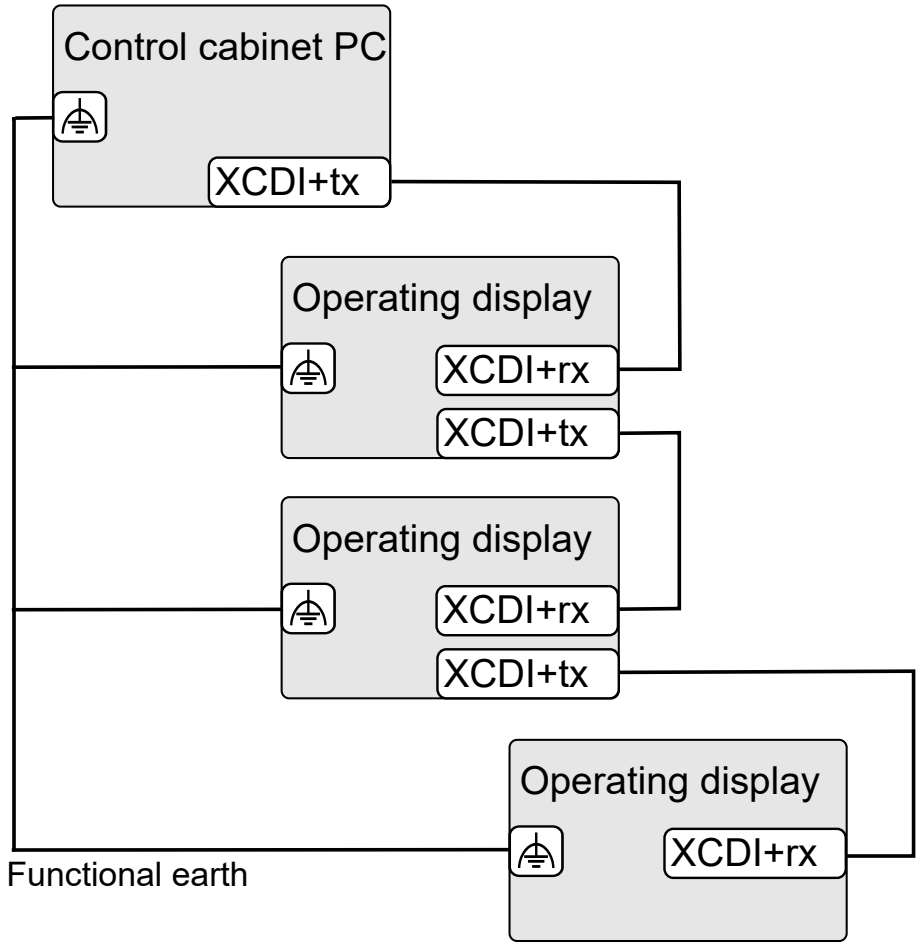


Fig. 10-23: Wiring up to three operating displays CDI+ at a PR4

Note for operating displays that devices in the variant "CDI+-rx/tx" are required at the first and second location. The variant with "CDI +rx" is sufficient for the last location.

10.10.3 Connecting the control cabinet PC to the 24 V voltage supply

1. Connect the "X1S1" interface for the 24 V voltage supply to the industrial power supply unit.

For the voltage supply, use a 24 V industrial power supply unit acc. to DIN EN 60742, classification VDE 551, for example "VAP01.1H-W23-024-010-NN" (part number R911171065).

10.10.4 Total connection diagram - Power supply unit, UPS and control cabinet PC

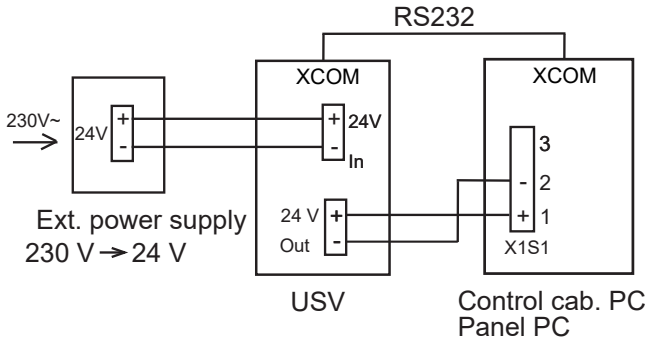


Fig. 10-24: Total connection diagram - Power supply unit, UPS and control cabinet PC

11 Commissioning

11.1 IT security

The operation of installations, systems and machines requires the implementation of an integral concept for state-of-the-art IT security. Bosch Rexroth products are part of this integral concept. Bosch Rexroth product characteristics have to be taken into consideration in an integral IT security concept. The relevant characteristics are documented in the IT security guideline (R911342562).

11.2 Configuring the extension modules "RS-422/RS-485"

The extension module "RS-422/RS-485" has to be configured before use. Therefore, a jumper "CN2" and a slide switch are available at "SW1".

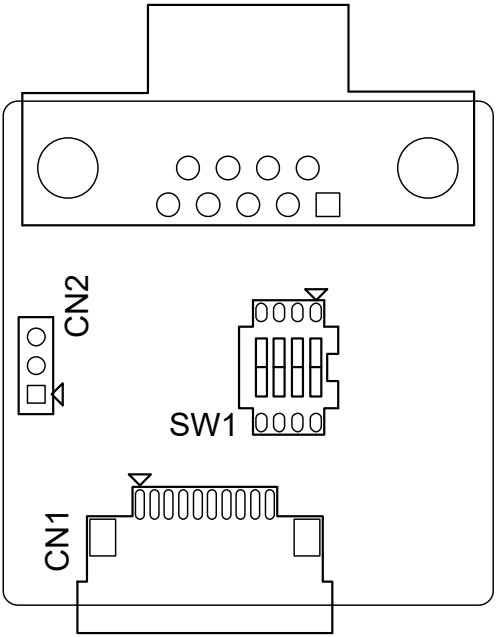


Fig. 11-1: Configuring the extension modules RS-422/RS-485

Pin	Description
1-2	RS-422 master
2-3	RS-485/RS-422 slave (default setting)

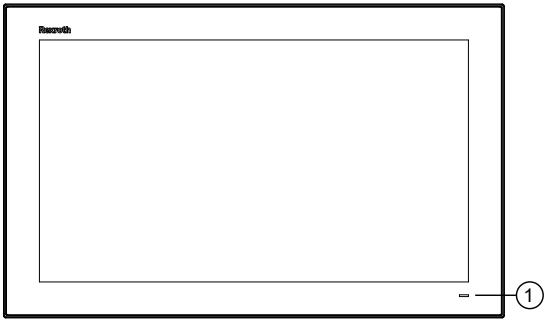
Tab. 11-1: Master and slave settings of RS-422 and RS-485 at CN2

Terminating resistor	Switch positions
120 ohms	1(D+/-) on 2(RX+/-) on 3,4 off
300 ohms	3(D+/-) on 4(RX+/-) on 1,2 off

Tab. 11-2: Terminating resistor settings of RS-422 and RS-485 at SW1

12 Device description

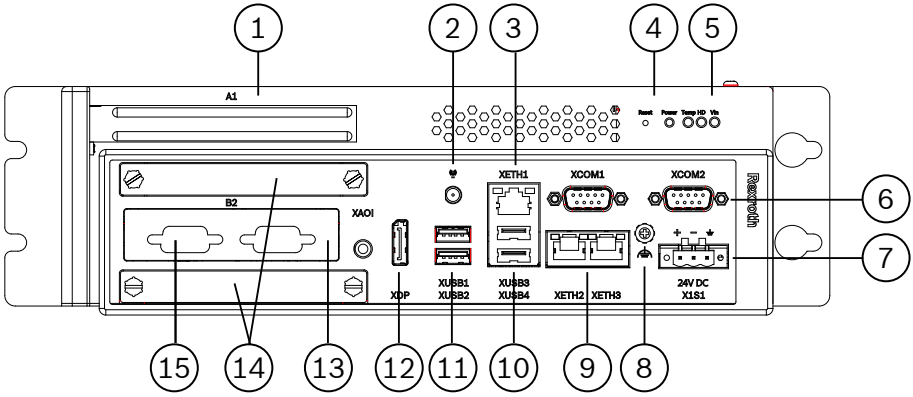
12.1 Display



① Status displays

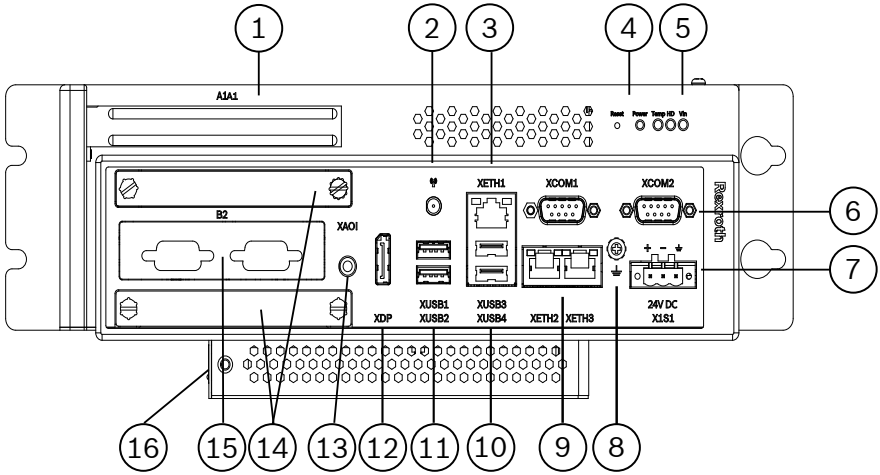
Fig. 12-1: Front view

12.2 PC box



① PCIe slot
② Antenna socket (no function)
③ Ethernet interface
④ Power and Reset button
⑤ Status LED
⑥ Serial interfaces
⑦ Voltage supply
⑧ Functional earth
⑨ Ethernet interfaces
⑩ USB interfaces (USB2.0)
⑪ USB Interfaces (USB3.0)
⑫ Display port interfaces
⑬ Analog audio interface
⑭ Bulk memory
⑮ mPCIe interface module

Fig. 12-2: PC box



⑯ CDI+tx

Fig. 12-3: PC box with optional CDI+tx interface

12.2.1 Reset and power button

Reset button	Press less than three seconds	Hardware reset
	Press more than three seconds	Windows recovery
Power button	On, off	

Tab. 12-1: Reset and power buttons

12.2.2 Operating and error display of the display

A status LED is positioned in the lower area of the front plate.

Symbol, LED	Display	Description	Action
Power	LED green	Normal operation	-
	LED off	No supply voltage of 24 V DC	Check supply voltage
	LED orange	Panel PC is booting	-

Tab. 12-2: Status LEDs for operating and error display on the front panel

12.2.3 Operating and error display of the PC box

The status LED are located at the interfaces, refer to on page 0 ④.

Symbol, LED	Display	Description	Action
Temp	LED red	Overtemperature	Reduce the ambient temperature!
	LED off	Normal temperature	–
HD	LED flashing green	Hard disk access	–
V_{IN}	LED green	Supply voltage (24 V DC) OK	–
	LED off	Supply voltage (24 V DC) not present or insufficient	Check the supply voltage at the power supply unit!

Tab. 12-3: Status LEDs for operating and error display at the PC box

13 Error causes and troubleshooting

For information on the error display on the front panel, refer to chapter 12.2.2 "Operating and error display of the display" on page 45

Errors	Correction
No image visible	• Connect the supply voltage and check the X1S1 connection • Connect the display port or CDI+ cables correctly • If panels with a display port are used, use only Bosch Rexroth display cables to connect the panels, refer to chapter 5.6 "Connecting cables of the display port" on page 8. • Use only active DVI and HDMI display port adapters. When using simple passive adapters, no image is displayed at the DVI or HDMI monitor.
Distorted display due to incorrect display resolution	• Set the correct display resolution in the graphics driver. The standard resolution of the Windows images (also for the recovery sticks) is FullHD (1920×1080). Set the correct value once if displays with a smaller resolution are used • Restart the control cabinet PC

Tab. 13-1: Error causes and troubleshooting

14 Maintenance

Only the maintenance works at the device listed in this chapter are permitted.

For further information in the event of repair, please contact the Bosch Rexroth Service.

NOTICE **Loss of IP degree of protection due to incorrect maintenance.**

Ensure that the IP degree of protection remains during maintenance!

14.1 Cleaning notes

NOTICE **Dissolving front glass sealing with solvent!**

- Do not use solvents
- Do not use high pressure cleaning device

14.2 Scheduled maintenance tasks

- Check all plug and terminal connections of the components for proper tightness and possible damage at least once a year
- Check for wire breaks or crimped lines.
- Damaged parts must be replaced immediately.

15 Ordering information

15.1 Accessories and spare parts

For ordering information on accessories and spare parts, refer to chapter 5 "Spare parts, accessories and wear parts" on page 6

15.2 Type code

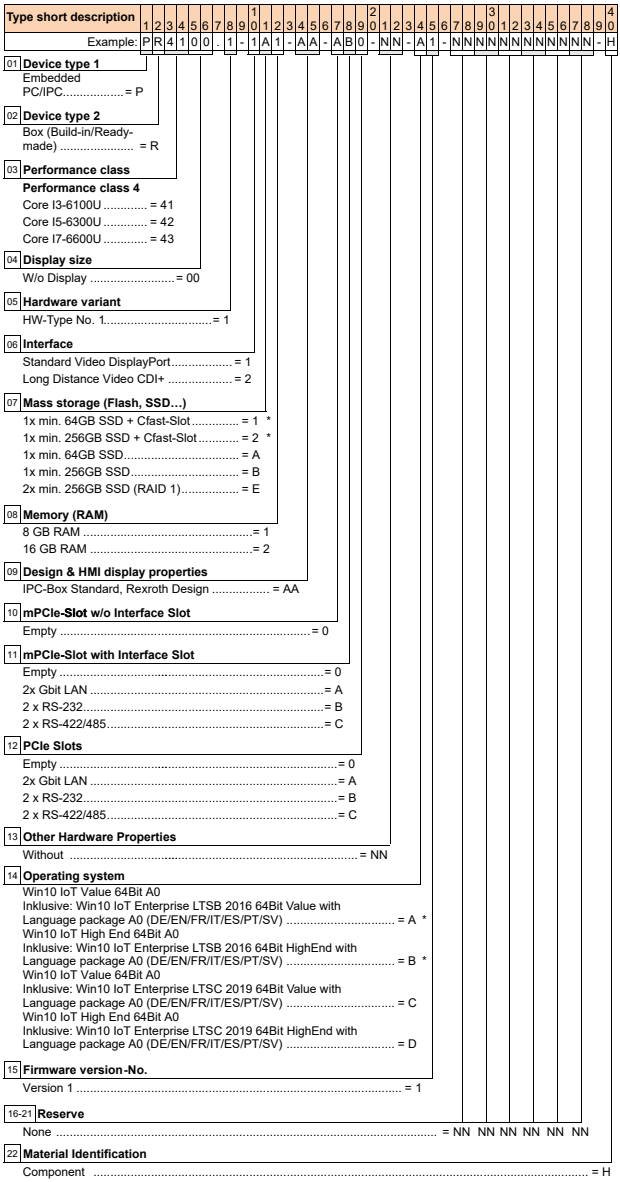


Fig. 15-1: Type code for PR4 devices

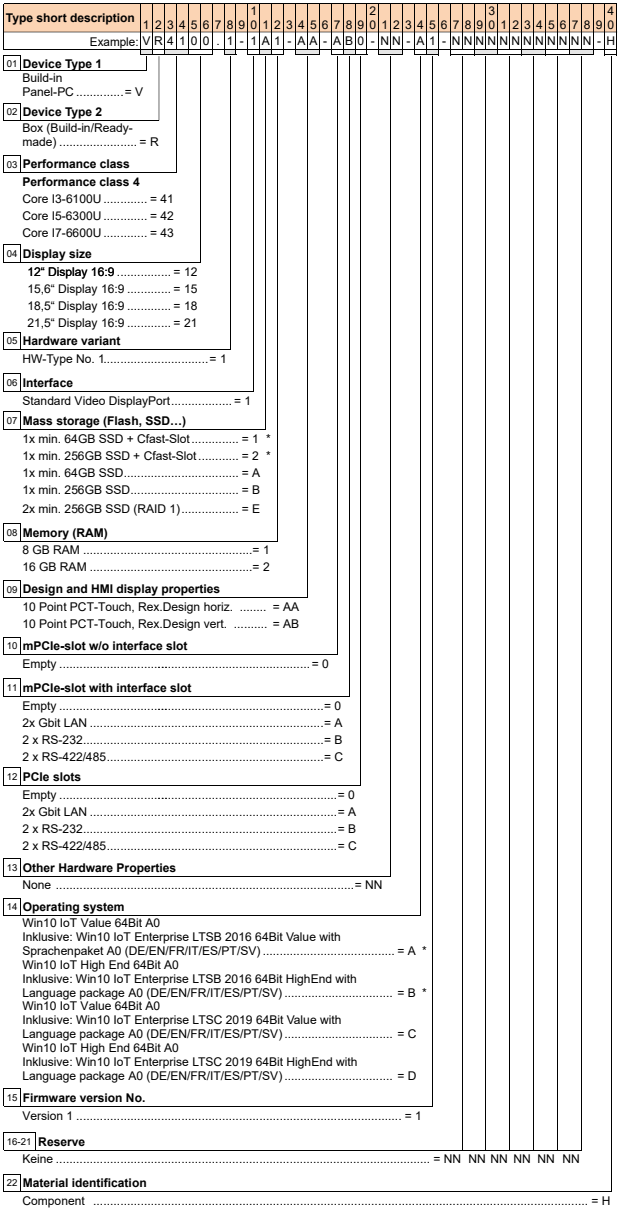


Fig. 15-2: Type code for VR4 devices

16 Disposal

For disposal, unmount the devices completely. Recycle the different materials individually. Housing parts belong to metal.

Dispose the electronic components of the device, e.g. drives and hard disks, as defined in the electronic equipment act.

16.1 Return

For disposal, our products can be returned free of charge. However, the products must be free from remains such as oil, grease or other impurities.

Furthermore, the products returned for disposal must not contain any undue foreign substances or external components.

Send the products free of charge to the following address:

Bosch Rexroth AG
Electric Drives and Controls
Bürgermeister-Dr.-Nebel-Straße 2
97816 Lohr am Main, Germany

16.2 Packaging

The packaging material consists of cardboard, plastics, wood or styrofoam. Packaging material can be recycled anywhere.

For ecological reasons, please do not return empty packages.

17 Service and support

Our worldwide service network provides an optimized and efficient support. Our experts offer you advice and assistance should you have any queries. You can contact us **24/7**.

Service Germany

Our technology-oriented Competence Center in Lohr, Germany, is responsible for all your service-related queries for electric drive and controls.

Contact the **Service Hotline** and **Service Helpdesk** under:

Phone:	**+49 9352 40 5060**
Fax:	**+49 9352 18 4941**
E-mail:	service.svc@boschrexroth.de
Internet:	http://www.boschrexroth.com

Additional information on service, repair (e.g. delivery addresses) and training can be found on our internet sites.

Service worldwide

Outside Germany, please contact your local service office first. For hotline numbers, refer to the sales office addresses on the internet.

Preparing information

To be able to help you more quickly and efficiently, please have the following information ready:

- Detailed description of malfunction and circumstances
- Type plate specifications of the affected products, in particular type codes and serial numbers
- Your contact data (phone and fax number as well as your e-mail address)

Index

Notes

rexroth
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