

IndraControl VPB40.4

Control Cabinet PC

Operating Instructions
R911376309

Edition 03



Revision history

Edition 03, 2024-01

Refer to [tab. 1-1 "Revision history" on page 1](#)

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Editorial Department

Development Automation Systems Control Platform HoBr (MaKo/MePe)

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1 About this documentation

Editions of this documentation

Edition	Release date	Note
01	2016-06	First edition
02	2019-06	CDI+ interface supplemented
03	2024-01	UKCA label added, BIS label added

Tab. 1-1: Revision history

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.

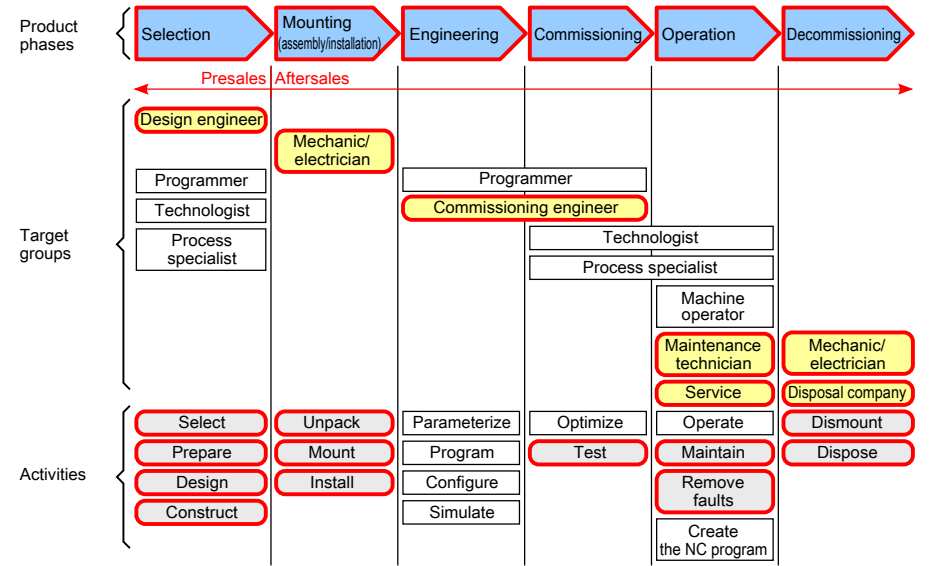


Fig. 1-1: Assigning the present documentation to the target groups, product phases and activities of the target group

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 instructions applies to all variants whose type code starts with "VPBxx.4...".

The type code specifications are located on the type plate of the device. Also refer to [chapter 2 "Product identification and scope of delivery" on page 2](#).

1.4 Related documents

Title	Part number and document type
IndraControl VAU 01.1	R911336867
UPS with Communication Interface	Operating Instructions
IndraControl VAP 01	R911339613
Power Supply Unit	Operating Instructions
IndraControl VDP 16.3, VDP 40.3, VDP 60.3	R911336378
Operator Display	Operating Instructions
IndraControl V-Devices	R911343901
Operating Systems	Project Planning Manual

Tab. 1-2: Related documents

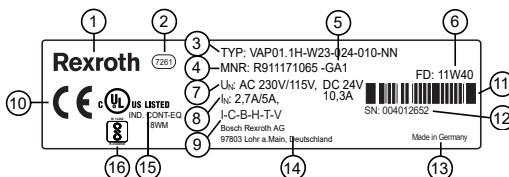
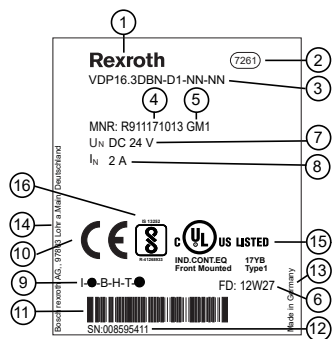
1.5 Customer feedback

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

The type plate is located on the rear side or at the side of the device.



- 1 Word mark
- 2 Division or plant number
- 3 Type name (type code)
- 4 Part number
- 5 State of revision
- 6 Manufacturing date (yyWww)
- 7 Nominal voltage
- 8 Nominal current

- 9 Test marking
- 10 CE mark
- 11 Underwriters Laboratories Inc. mark
- 12 Serial number
- 13 Name of origin
- 14 Company address
- 15 Serial number as barcode
- 16 BIS label

Fig. 2-1: Exemplary type plates

2.2 Scope of delivery

- Control cabinet PC IndraControl VPB 40.4
- Safety instructions
- 24 V female connector strip

3 Using safety instructions

3.1 Structure of the safety instructions

The safety instructions are structured as follows:

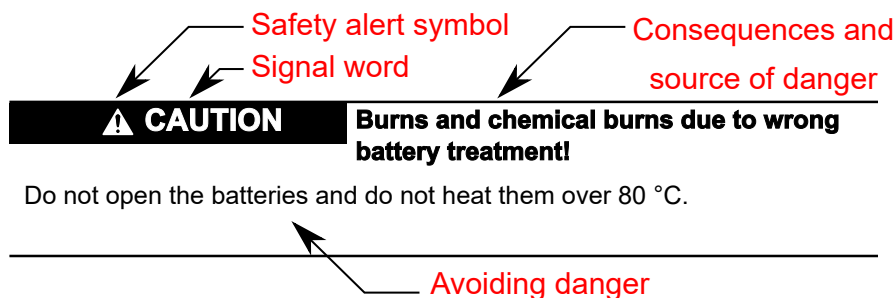


Fig. 3-1: Structure of the safety instructions

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 control cabinet PC IndraControl VPB 40.4 provides - together with an operator display (e.g. IndraControl VDP xx.3) - a PC-based operator terminal that can also have a control functionality. This functionality depends on the application and on the configuration.

NOTICE

Risk of damaging the device if not expressly stated accessories, mounting parts and other components, cables, lines and software and firmware are used

The control cabinet PC IndraControl VPB 40.4 may only be used with the accessories and mounting parts listed 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 control cabinet PC IndraControl VPB 40.4:

- Handling and assembly systems
- Food and packaging machines
- Printing and paper converting machines
- Machine tools
- Wood working machines

The control cabinet PC IndraControl VPB 40.4 may only be operated under the mounting and installation conditions, in the position of application and under the ambient conditions (temperature, degree of protection, humidity, EMC, etc.) specified in this documentation.

5 Spare parts, accessories and wear parts

5.1 Y-repeater

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
VAC01.1S-YD1-NNNN	R911171187	Y-repeater for CDI interface

5.2 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

5.3 External 24 V power supply unit

External 24 V power supply unit for IndraControl V-devices.

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

5.4 Uninterruptible power supply (UPS)

Ordering code	Part number	Description
VAU01.1U-024-024-240-NN	R911171024	Uninterruptible power supply DC 24 V, 240 watts with USB interface

5.5 Connecting cables for the CDI interface and the CDI+ interface

Connecting cables to connect the control cabinet PC to the operator display.

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

Ordering code	Part number	Description
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 (*****_*****_*****)	R911173781	Length 70 m

Further cable lengths are available upon request.



Two cables are always required for the CDI connection between the control cabinet PC and the operator display.

A cable is required for the CDI+ connection between the control cabinet PC and the operator display.

5.6 USB connecting cable (USB2.0)

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

5.7 USB connecting cable with increased noise immunity (USB2.0)



In noisy environments, use USB cables with increased noise immunity to connect the control cabinet PC to the uninterruptible power supply with communication interface.

Ordering code	Part number	Description
RKB0023/001,0 (*****_*****_*****)	R911171627	USB connecting cable with in- creased noise immunity, Length 1 m
RKB0023/003,0 (*****_*****_*****)	R911171414	USB connecting cable with in- creased noise immunity, Length 3 m

5.8 Wear parts

Wear parts are not subject to any warranty.

5.8.1 CMOS battery

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

5.8.2 Mechanical hard disk

The hard disk is an electromechanical wear part that is subject to wear during the operating time. The service life depends on the operating hours, the number of accesses to the hard disk as well as on vibration and shocks.

5.8.3 Solid State Drive

The SSD (Solid State Drive) shock resistance and temperature resistance is higher than of an ordinary hard disk. The hard disk is only subject to electrical and not to mechanical wear.

NOTICE

The SSD wears faster in case of defragmentation

Defragmentation is not necessary, as an SSD is an electronic storage medium.

5.8.4 Fans

Fans are mechanical wear components. Their service life is extremely temperature-dependent. The service life of the fan integrated into the housing, is as follows:

Ambient temperature	Service life
40 °C	60,000 hours
70 °C	30,000 hours

6 Ambient conditions

	In operation	Transport	Storage
Max. Ambient temperature	+5 °C to +45 °C	-20 °C to +60 °C	-20 °C to +60 °C
Max. Temperature gradient	Temporal temperature changes up to 3 K per minute	Temporal temperature changes up to 3 K per minute	Temporal temperature changes up to 3 K per minute
Humidity	Min. rel. humidity 5 %	Min. rel. humidity 5 %	Min. rel. humidity 5 %
	Max. rel. humidity 85 %	Max. rel. humidity 85 %	Max. rel. humidity 85 %
	Min. absolute humidity 1 g/m ³	Min. absolute humidity 1 g/m ³	Min. absolute humidity 1 g/m ³
	Max. absolute humidity 25 g/m ³	Max. absolute humidity 25 g/m ³	Max. absolute humidity 25 g/m ³
	Condensation not allowed	Condensation not allowed	Condensation not allowed
	Corresponds to climatic class 3K3 acc. to EN 60721-3-3	Corresponds to climatic class 2K2 acc. to EN 60721-3-2	Corresponds to climatic class 1K2 acc. to EN 60721-3-1
Air pressure	Up to 3,000 m above sea level acc. to EN 61131-2	Up to 3,000 m above sea level acc. to EN 61131-2	Up to 3,000 m above sea level acc. to EN 61131-2
Mechanical strength	Max. Vibration:	Max. Shock:	Max. Shock:
	Frequency range: 10 Hz to 150 Hz	15 g 11 ms	15 g 11 ms
	Excursion:	Acc. to EN 60068-2-27	Acc. to EN 60068-2-27
	0.75 mm at 10 Hz to 57 Hz		
	Acceleration:		
	1 g at 57 Hz to 150 Hz Acc. to EN 60068-2-6		
Contamination level acc. to EN 60664-1	2	2	2
Overvoltage category acc. to EN 60664-1	2	–	–

Tab. 6-1: Ambient conditions

NOTICE

Defective product due to gases jeopardizing functions

Due to the risk of corrosion, avoid sulphurous gases (e.g. sulphur dioxide (SO₂) and hydrogen sulphide (H₂S)). The product is not resistant against these gases.



The device is not resistant to gas jeopardizing the function [sulphur dioxide (SO₂), hydrogen sulphide (H₂S)].

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.



This is a product that corresponds to the limit values of the emitted interference of class A (industrial environments). This is a product that does *not* correspond to the limit values of the emitted interference 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).

7 Technical data

PC box	Type L	Type M	Type N	Type P	Type Q	Type R
Processor	Depending on the configuration, the following processors are available for all types: • Intel® Core™ i7-6820EQ 2.8 GHz Quad Core Turbo Boost 3.5 GHz 8 MB L2 cache • Intel® Core™ i5-6300U 2.4 GHz Dual Core Turbo Boost 3.0 GHz 3 MB cache • Intel® Celeron® 3955U 2.0 GHz Dual Core 2 MB cache					
Chip set	The following chip sets are used depending on the processor: • Core™ i7-6820EQ 2.8 GHz: Intel® QM170 • Core™ i5-6300U 2.4 GHz: Intel® 100 Series PCH-LP integrated in the multi-chip package • Celeron® C3955U 2.0 GHz: Intel® 100 Series PCH-LP integrated in the multi-chip package					

PC box	Type L	Type M	Type N	Type P	Type Q	Type R
RAM	- Intel® Core™ i7-6820EQ 2.8 GHz: 16 GB - Intel® Core™ i5-6300U 2.4 GHz and Intel® Celeron® C3955U 2.0 GHz: 8 GB					
Hard disk	- At least 320 GB or 2 × 320 GB (RAID1) or - At least 192 GB SSD or 2 × 192 GB SSD (RAID1)					
Interfaces	2 × RJ45, CDI interface (image and data interface to the VDP xx.3) or 1 × RJ45, CDI+ interface (image and data interface to the VDPxx.3 and DRxx) 1 × DisplayPort 4 × USB 2.0 port (type A, external) 2 × USB 3.0 port (type A, external) 1 × USB 3.0 port (type A, internal) 2 × Ethernet port (RJ 45, 10/100/1000 Base-T) 1 × voltage connection (3-pin) 1 × mSATA connection (internal) 1 × mPCIe connection (internal)					
Slots	2 × PCI	4 × PCI	1 × PCI 1 × PCIe	2 × PCIe	2 × PCI 2 × PCIe	4 × PCIe
PCI card length	Max. 175 mm					
PCIe card length	Max. 175 mm					
Degree of protection	IP 20					
Voltage supply	24 V DC (use a 24 V power supply unit acc. to DIN EN 60742, classification VDE 0551, for example the power supply unit VAP01.1H-W23-024-010-NN, part number R911171065)					
Max. power consumption	150 W					
Weight	Approx. 2.6 kg	Approx. 3.3 kg	Approx. 2.6 kg	Approx. 2.6 kg	Approx. 3.3 kg	Approx. 3.3 kg

Tab. 7-1: Technical data of the PC box

The specified maximum power consumption is including the power consumption of the extension cards, refer to ["Power drain of the extension cards" on page 22](#).

For details on the individual variants, refer to the type code (fig. 15-1 "Type code of the control cabinet PC IndraControl VPB 40.4" on page 51).

8 Standards

8.1 Standards used

EN standards

The system components of the control cabinet PC IndraControl VPB 40.4 correspond to the following standards. For the respective versions of the standards, refer to the respective declarations of conformity.

Standard	Title
IEC 60204-1	Safety of machinery – Electrical equipment of machines – Part 1: General requirements
IEC 61010-2-201	Insulation coordination for equipment within low-voltage – Part 1: Principles, requirements and tests
IEC 61131-2	Programmable controllers – Part 2: Equipment requirements and tests
ISO 13850	Safety of machinery – Emergency stop – Principles for design
IEC 60529	Degrees of protection provided by enclosures (IP code)
IEC 60068-2-6	Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)
IEC 60068-2-27	Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock
IEC 60721-3-1	Classification of environmental conditions Part 3: Classification of groups of environmental parameters and their severities Section 1: Storage

Standard	Title
IEC 60721-3-2	Classification of environmental conditions Part 3: Classification of groups of environmental parameters and their severities Section 2: Transportation
IEC 60721-3-3	Classification of environmental conditions Part 3: Classification of groups of environmental parameters and their severities Section 3: Stationary use at weather-protected locations

Tab. 8-1: Standards used

8.2 CE marking

8.2.1 EU declaration of conformity



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

EMC directive 2014/30/EU

EU RoHS DIRECTIVE 2011/65/EU

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

Standard	Title
IEC 61000-6-2	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Noise immunity for industrial environments
IEC 61000-6-4	Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments
EN IEC 63000	Technical documentation for the assessment of electrical and electronic equipment with regard to the restriction of hazardous substances

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



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.

For the EU declaration of conformity, go to the Bosch Rexroth media directory: <https://www.boschrexroth.com/mediadirectory>, search term **DCTC-30420-002**.

8.3 UL/CSA certification



The devices are certified according to

- **UL508** (Industrial Control Equipment) and
- **C22.2 no. 142-M1987** (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.

8.4 UK declaration of conformity

The products comply with the UK statutory instrument acc. to S.I. 2016/1091 (Electromagnetic Compatibility) and the UK RoHS regulation S.I. 2012/3032.

For the UK declaration of conformity, go to the Bosch Rexroth media directory: <https://www.boschrexroth.com/mediadirectory>, search term **DCTC-30420-032**.



8.5 BIS registration certificate

For the registration certificate of the Bureau of Indian Standards (BIS), go to the Bosch Rexroth media directory: <https://www.boschrexroth.com/mediadirectory>, search term **DCTC-30847-001**.



9 Interfaces

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 operator 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 and the operator display have to be connected to this neutral point.



To avoid malfunctions, use only shielded cables and metallic or conductive connector/coupling housings with large-area shield support.

9.1 Overview

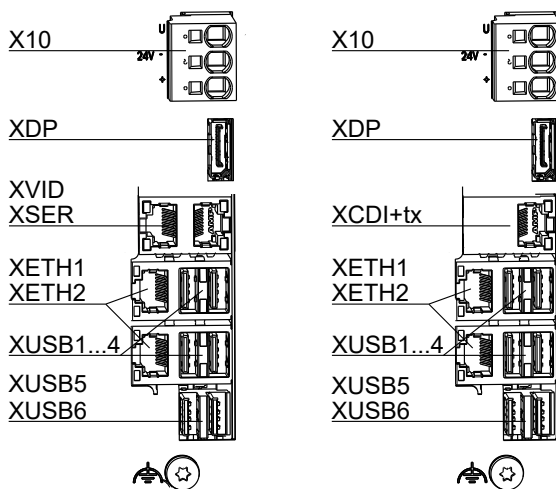


Fig. 9-1: Interfaces at the device

The following connections are available at the control cabinet PC:

Name at the housing	Connection type	Connection type (at the device)	Mating connector or cable (from outside)
X10	PC voltage supply: 24 V DC	Male connector terminal PC4/3-G7.62	Socket terminal PC4/3-G7.62
XDP	Connection for external monitor	DisplayPort socket, (20-pin)	DisplayPort plug, (20-pin)
XSER and XVID	CDI interface, data	RJ45 socket, 8-pin	RJ45 plug (Twisted pair, 8-wire)
	CDI interface, image	RJ45 socket, 8-pin	RJ45 plug (Twisted pair, 8-wire)
or XCDI+tx	CDI+ interface, data and image	RJ45 socket, 8-pin	RJ45 plug (Twisted pair, 8-wire)
XETH1, XETH2	Ethernet interfaces 10/100/1000 Base-T	RJ45 socket, 8-pin	RJ45 plug (Twisted pair, 8-wire)
XUSB1 to XUSB6	USB interfaces	USB socket, 4-pin, type A	USB plug, 4-pin

Internal connections

USB 3.0 interface	USB socket, 4-pin, type A	USB plug, 4-pin
mSATA interface	mSATA base	
mPCIe interface	mPCIe base	
2 slots or 4 slots (see "Available slots per PC box type" on page 21)	PCI/PCIe	PCI/PCIe card

9.2 PC voltage supply X10

The 24 V DC voltage supply for the control cabinet PC is connected via the "X10" connection.

All voltages internally required are generated without any electrical isolation via a DC/DC converter. The connection is designed as spring terminal, SPC 5/3-ST-7,62, 3-pin, grid 7.62 mm. Connect cables to it with the conductor cross-sections listed in [tab. "Conductor cross-sections permitted for the spring terminal at X10" on page 17](#).

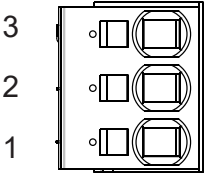


Fig. 9-2: 24 V DC connection, X10, pin assignment

Pin	Labeling	Function
1	+	Supply voltage 24 V
2	–	0 V supply voltage
3	U	Supply voltage available in front of the UPS (see chapter 10.3.2 "Connecting a UPS" on page 35)

NOTICE

Destruction of the control cabinet PC (fire hazard) due to polarity reversal of the connection at the X10 plug without additional external protection

Ensure that the polarity at the X10 plug and the dimensioning of the fuse are correct.

⚠ WARNING

Danger without safe separation!

The 24 V DC input voltage must comply with the requirements of the "safe separation"!

Plug and remove the plug connection only if there is no voltage!

Conductor cross-sections permitted for the spring terminal at X10

Conductors	Cross-section
Conductor cross-section inflexible, max.	10 mm ²
Conductor cross-section inflexible, recommended	2.5 mm ²
Conductor cross-section flexible, max.	6 mm ²
Conductor cross-section flexible, recommended	2.5 mm ²
Conductor cross-section flexible with core end sleeves without plastic sleeve, max.	6 mm ²
Conductor cross-section flexible with core end sleeves without plastic sleeve, recommended	2.5 mm ²
Conductor cross-section flexible with core end sleeves with plastic sleeve, max.	4 mm ²

Conductors	Cross-section
Conductor cross-section flexible with core end sleeves with plastic sleeve, recommended	2.5 mm ²
Conductor cross-section AWG/kcmil, max.	8
Conductor cross-section AWG/kcmil, recommended	13

9.3 USB interfaces XUSB1 to XUSB6

The devices are provided with six USB interfaces on the connector panel (XUSB1/2 XUSB3/4 and XUSB5/6). There is another USB 3.0 interface in the housing, refer to [chapter 9.8 "Internal interfaces" on page 21](#).

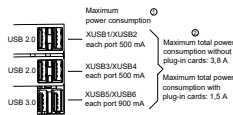


Fig. 9-3: Current carrying capacity of the six USB connections



①: The USB ports are monitored in pairs. If, e. g. XUSB1 switches off, as the power consumption has been exceeded (> 500 mA), XUSB2 switches off as well.



②: The specified 3.8 A are applied for the operation without further 5 V consumers (e. g. PCI plug-in cards). Limit the operation with further 5 V consumers to a total power consumption of 1.5 A to prevent that the internal power supply unit switches off accidentally.



If the maximum power consumption has been exceeded, a message is displayed that the USB devices are disabled. The USB devices operate again as soon as less than 500 mA current is consumed from a USB 2.0 socket or less than 900 mA from a USB 3.0 socket. Additionally, the USB error message in the taskbar has to be acknowledged manually.



Connect only USB devices which comply with the noise immunity according to the EMC directive (industrial environments). This avoids an unintended switch-off of the control cabinet PC.



If there is an mPCIe module internally, a USB 2.0 device connected to XUSB5 does not operate anymore. A possibly connected USB 3.0 device is still functioning.

9.4 Ethernet interfaces XETH1 and XETH2

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

The LAN assignment under Windows to the XLAN connections at the device is set as follows by default:

Labeling under Windows 7	Labeling at the device
Local Area Connection	XETH1
Local Area Connection 2	XETH2
Labeling under Windows 10	
Ethernet	XETH1
Ethernet 2	XETH2

RJ45, socket, 8-pin

Type:	Ethernet 10 Base-T, 100 Base-T, 1000 Base-T
Cable length:	100 m max.
Transmission rate:	10, 100 or 1000 MBit/s

9.5 DisplayPort XDP

At the DisplayPort (XDP), a monitor with DisplayPort interface, a DVI monitor or an HDMI monitor can be connected (via adapter).

Display port socket, 20-pin

Max. resolution:	4 K
------------------	-----

The color depth and the resolution of the VDP operator display and a monitor connected to the DisplayPort can be set in the properties of the graphic card under "Display" on the "Color settings" page. Select the respective display under "Select display".

These are the following assignments under "Select display":

- Digital display: VDP operator display
- Digital display 2: Monitor at the DisplayPort



The BIOS is configured and thus ensures that all connected output devices can be controlled while booting.

If IndraControl VPB 40.4 is supposed to simultaneously output the screen on a connected monitor at the DisplayPort and at the VDP operator display under Windows, this can be set in the properties of the graphic card:

- Click on the icon of the graphics driver in the taskbar and right-click to select "Graphic properties" from the context menu. Go to "Multiple displays" under "Display", select "Clone displays" and press **Apply**.

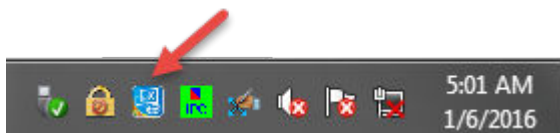


Fig. 9-4: Graphics driver icon in the task bar

If the screen output is only set for one display device (setting "Single display") in the properties of the graphic card, use the shortcut <Ctrl>+<Alt>+<F1> under Windows to open a dialog to toggle the screen output between the monitor at the DisplayPort and the VDP operator display.

The previously described setting options are only available if a monitor is connected to the DisplayPort.

The graphics driver stores the last output device. After a restart, the images are only output on the last saved output device.

9.6 CDI interfaces XVID and XSER

The CDI interface is assigned to the two RJ45 sockets XSER and XVID. Connect the operator display to these sockets. The corresponding cables are available as accessories, see [chapter 5.5 "Connecting cables for the CDI interface and the CDI+ interface" on page 6](#).

The CDI interface includes the data interface (XSER) as well as the image interface (XVID).

The USB signals and the digital data (touch, M-keys, LEDs and control signals) are transferred via the data interface.

The DVI signals are transferred via the display interface.



To avoid malfunctions, use only cables listed in [chapter 5.5 "Connecting cables for the CDI interface and the CDI+ interface" on page 6](#).

The CDI interfaces are color-coded on the device:

CDI interface, data (XSER)	Violet
CDI interface, image (XVID)	Black

9.7 CDI+ interfaces XCDI+tx

Connect the operating display to the CDI+ interface. The corresponding cables are available as accessories, see [chapter 5.5 "Connecting cables for the CDI interface and the CDI+ interface"](#) on page 6.

The CDI+ interface sends data signals and video signals. USB signals and digital data belong to data signals (touch, M-keys, LEDs and control signals).



To avoid malfunctions, use only cables listed in [chapter 5.5 "Connecting cables for the CDI interface and the CDI+ interface"](#) on page 6.

9.8 Internal interfaces

There are three more interfaces internally:

- 1 × USB 3.0
- 1 × mSATA
- 1 × mPCIe
- The USB 3.0 interface is intended for USB devices that have to be connected permanently to a USB interface, e.g. a USB dongle
- An mSATA SSD hard disk module can for example be installed in the mSATA base
- An mPCIe WLAN module can for example be installed in the mSATA base

9.9 Extension cards

For plugging extension cards, up to four slots for PCI cards and PCIe cards are available. The number of slots available depends on the PC box type (refer to the following table). The maximum length allowed for the cards is 175 mm.

Available slots per PC box type

PC box type	Slot A1	Slot A2	Slot A3	Slot A4
Type L	PCI	PCI	–	–
Type M	PCI	PCI	PCI	PCI
Type N	PCI	PCIe	–	–
Type P	PCIe	PCIe	–	–
Type Q	PCI	PCI	PCIe	PCIe
Type R	PCIe	PCIe	PCIe	PCIe

Power drain of the extension cards

The total power allowed to be drained from the slots depends on the processor used (refer to the following table).

Ambient temperature	Intel® Celeron® C3955U 2.0 GHz	Intel® Core™ i5-6300U 2.4 GHz	Intel® Core™ i7-6820EQ 2.8 GHz
Up to 35 °C	111 W	111 W	81 W
35 °C to 45 °C	70 W	70 W	50 W

10 Mounting, dismounting and electric installation

10.1 Installation notes

10.1.1 Cables routing

- Lay all connecting cables in loops and use strain reliefs for all cables
- Keep the maximum possible distance from interference sources
- Do not route the CDI and CDI+ cables in parallel to motor cables or to other noise sources, as the CDI connection can be disturbed

10.1.2 Housing distances for maintenance tasks

Provide a space on all sides of the device for sufficient cooling and cable routing. Comply with the following housing distances to execute maintenance tasks directly at the device in the control cabinet:

- To maintain the fan and exchange the battery, go up by 120 mm (refer to the following figure)
- For changing the hard disk 150 mm to the front (refer to the following figure)
- In the installed state, the internal connections of USB, mSATA and mPCIe have to be accessible. Ensure sufficient distance on the right. For the position of the connections, refer to [chapter 10.1.3 "Internal connections for USB, mSATA modules and mPCIe modules"](#) on page 23

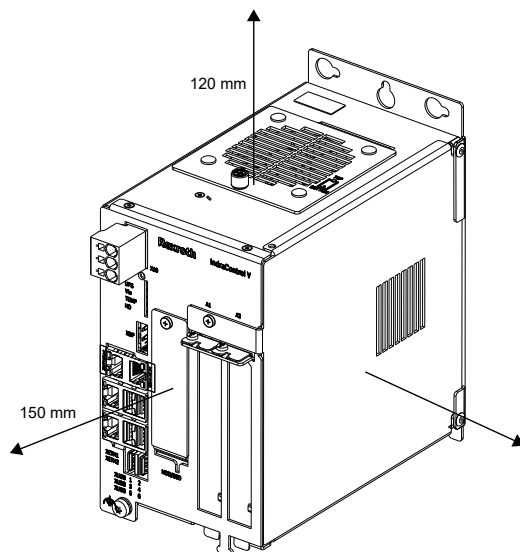
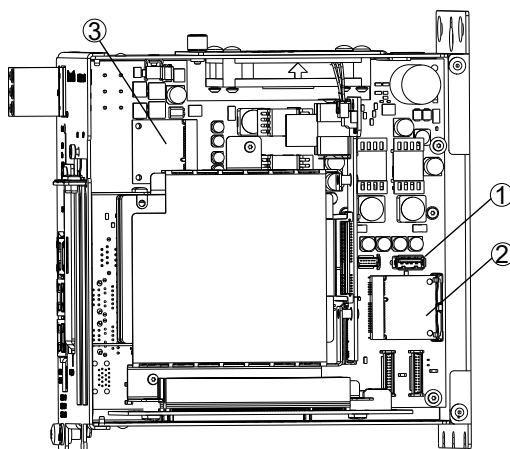


Fig. 10-1: Housing distances for maintenance tasks

10.1.3 Internal connections for USB, mSATA modules and mPCIe modules



①
USB 3.0

② mSATA
③ mPCIe

Fig. 10-2: Position of the internal interfaces

**Possible restrictions for the 2-slot variant:**

When using a PCI card or a PCIe card with a card length > 145 mm, the USB port is covered by the card. The USB port can then only be used for very short USB sticks (e.g. mouse radio receiver).

**Mounting an mSATA SSD hard disk module at the 2-slot variant:**

The mSATA SSD hard disk module has to be installed before installing a PCI card or a PCIe card with a card length > 145 mm, as the mSATA base of the plug-in card is covered after mounting such cards.

10.1.4 Connecting USB device, mSATA module and mPCIe module at the internal connection



It is recommended to install the modules to be mounted before mounting the control cabinet PC into the control cabinet.

NOTICE

Damages to the device due to electrostatic discharges!

Comply with all ESD protective measures while working with modules and components! Avoid electrostatic discharges!

NOTICE

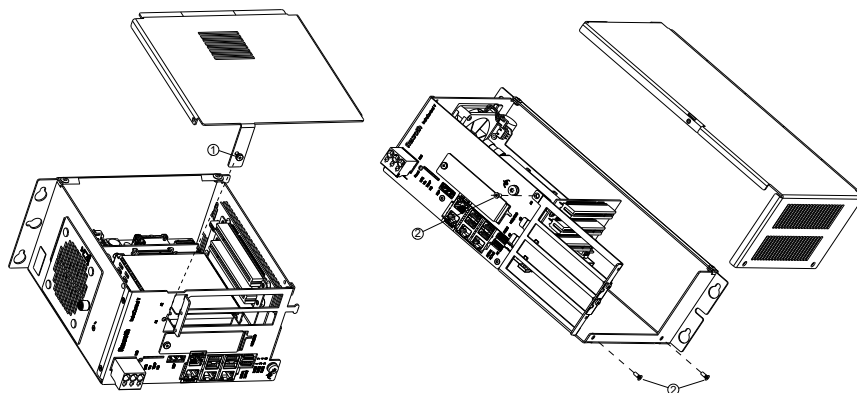
Risk of damage to the IndraControl VPB 40.4 by mounting non-released modules and USB devices!

- Install only released modules and USB devices
- Modules and USB devices may only be installed by authorized personnel

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

1. Switch off the supply voltage.
2. If operated with a UPS, wait until the control cabinet PC switches off automatically. The UPS LED on the connector panel of the control cabinet PC is red until the UPS switches off the power supply unit.
3. Remove all plugs from the control cabinet PC.
4. Loosen the fastening screws of the control cabinet PC and remove the control cabinet PC from the mounting panel.
5. Position the control cabinet on a plane support and ensure that the right housing cover points up.

6. 2-slot variants: Loosen the fastening screw (cross recess) of the housing cover (refer to ① in the following figure).
- 4-slot variants: Remove the fastening screws of the housing cover (refer to ② in the following figure).



- ① Fastening screw of the housing cover of 2-slot variants
② Fastening screws of the housing cover of 4-slot variants

Fig. 10-3: Position of the housing cover and the fastening screw(s)

7. Remove the housing cover.
8. Plug the USB device into the USB port or plug the mSATA module or the mPCIe module into the intended slot.
9. Mount the housing cover again.

10.1.5 Installing extension cards

NOTICE

Damages to the device due to electrostatic discharges!

Comply with all ESD protective measures while working with modules and components! Avoid electrostatic discharges!

NOTICE

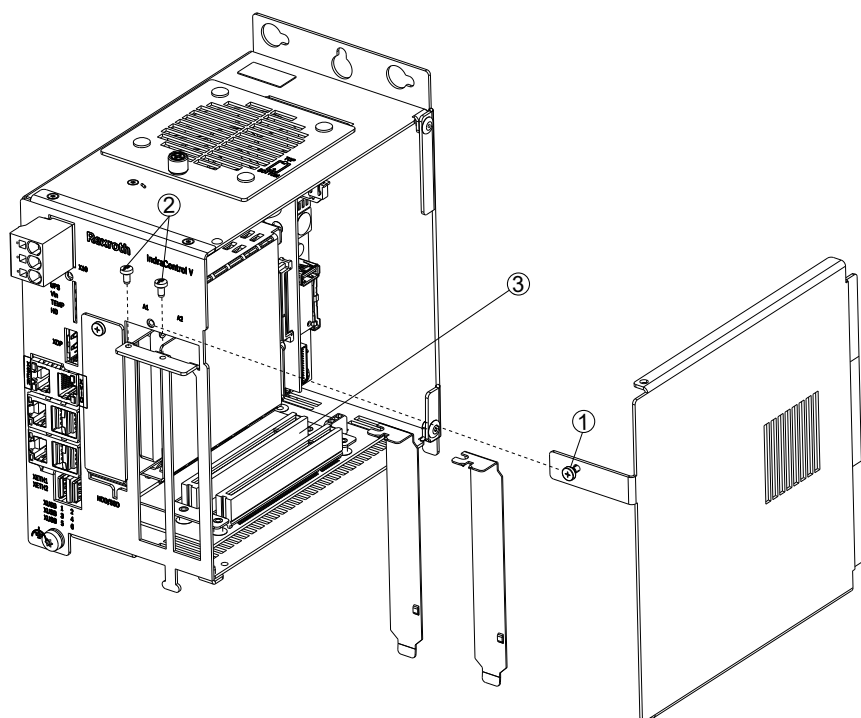
Risk of damage to the IndraControl VPB 40.4 or corruption of application software due to the use of non-released extension cards!

- Install only released extension cards
 - The extension cards may only be installed by authorized personnel
-

Steps 1 - 3 are omitted if the control cabinet PC is not yet installed in the control cabinet.

1. Switch off the supply voltage.
2. If operated with a UPS, wait until the control cabinet PC switches off automatically. The UPS LED on the connector panel of the control cabinet PC is red until the UPS switches off the power supply unit.
3. Remove all plugs from the control cabinet PC.
4. **Control cabinet PC with two slots:**

Loosen the undetachable fastening screw (cross recess) of the housing cover (refer to ① in the following figure).

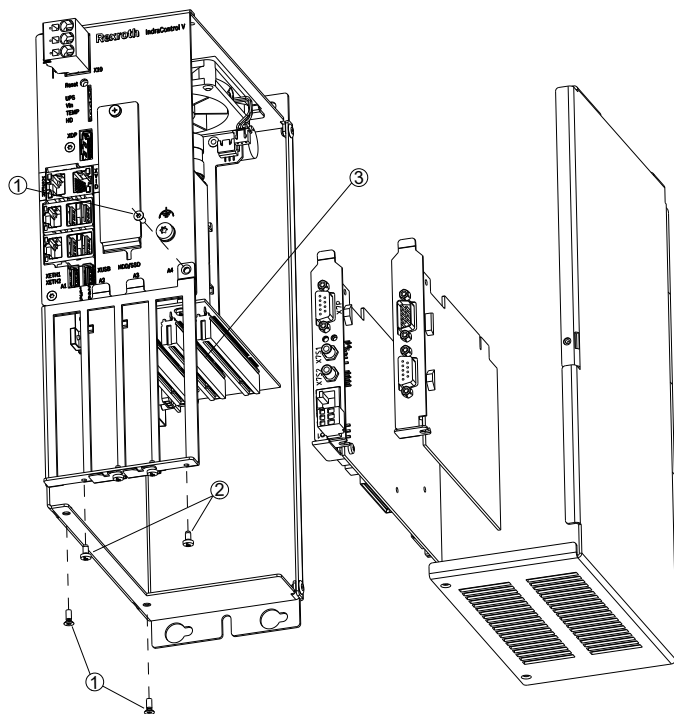


- | | |
|--|---|
| ① Fastening screw of the housing cover (cross recess) | ③ 2 PCI/PCle slots (depends on the PC box type) |
| ② Fastening screws of the slot covers (internal hexagon T10) | |

Fig. 10-4: Position of the housing cover and of the fastening screws for control cabinet PCs or two slots

Control cabinet PC with four slots:

Remove the fastening screws (internal hexagon T10) of the housing cover (see ① in the following table).



- ① Fastening screws of the housing cover (internal hexagon T10)
 ② Fastening screws of the slot covers (internal hexagon T10)

- ③ 4 PCI/PCle slots (depends on the PC box type)

Fig. 10-5: Position of the housing cover and of the fastening screw for control cabinet PCs with four slots

5. Remove the housing cover.
6. Remove the fastening screw (internal hexagon T10) of the slot cover and the slot cover itself.
7. Insert the extension card and fix it using a fastening screw.
8. Mount the housing cover.

If the card is equipped with a Plug-and-Play (PnP) function, the card is automatically detected by the operating system and integrated into the system, provided that there are no hardware conflicts (IRQ etc.) with other extension cards or connected devices.

There are the following causes if the functions of the new card are not available after the system boot:

- The card is not correctly positioned in the slot
- The driver software of the card is not or incorrectly installed

- IRQ (Interrupt) conflict with other PC hardware components of the control cabinet PC
- The software of the card was not installed

10.1.6 BIOS settings

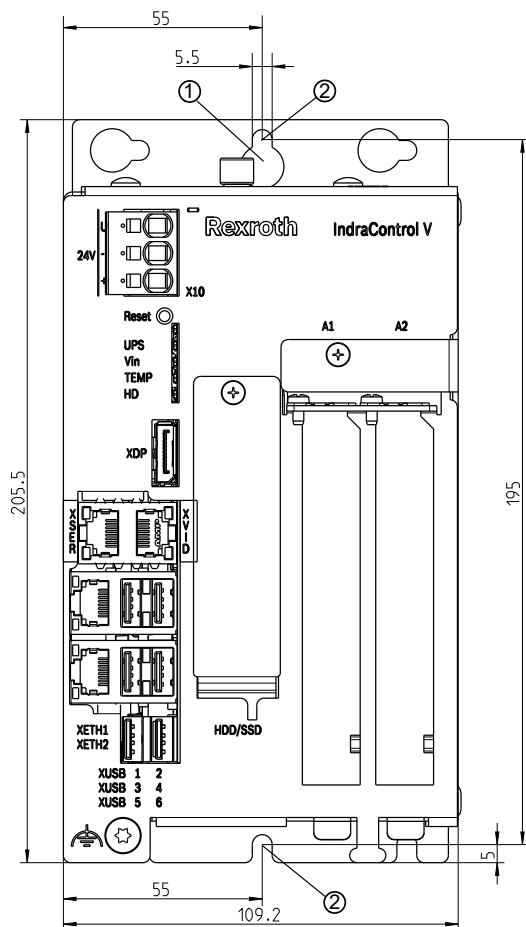
No further settings have to be made in the BIOS setup. The corresponding settings have already been set for the normal operation.

10.2 Housing dimensions

The control cabinet PC can be mounted using mounting holes. For the corresponding dimensions, please refer to the following figures:



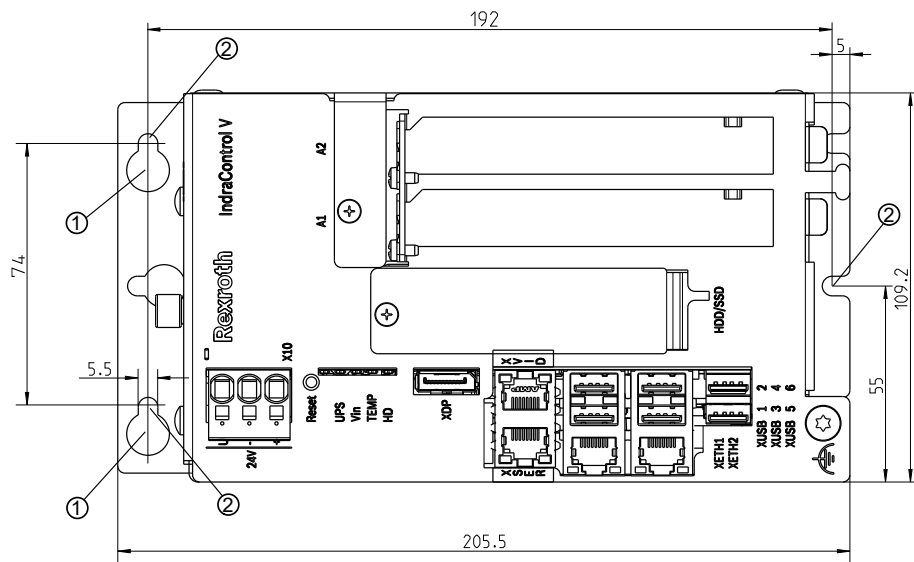
Fix the devices with M5 screws.



① Keyhole for vertical mounting

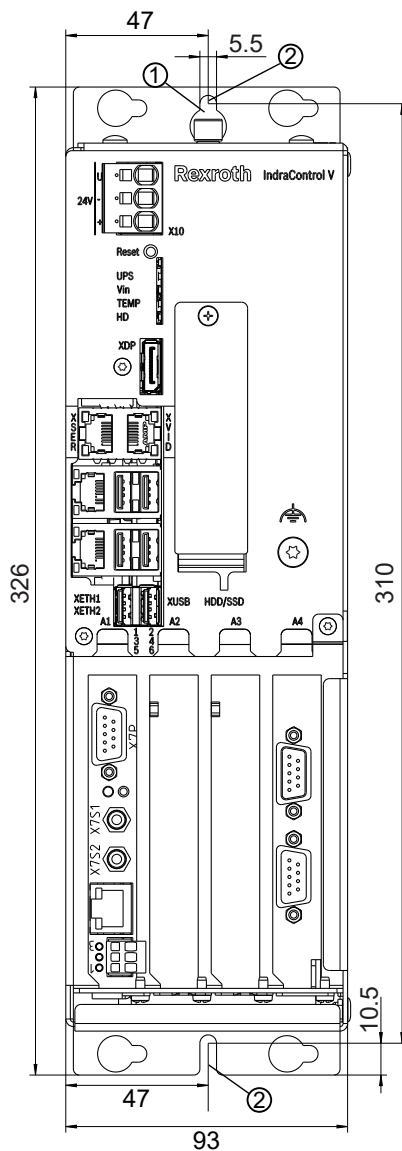
② Slots to hang in the device

Fig. 10-6: Housing dimensions for devices with two slots, vertical mounting



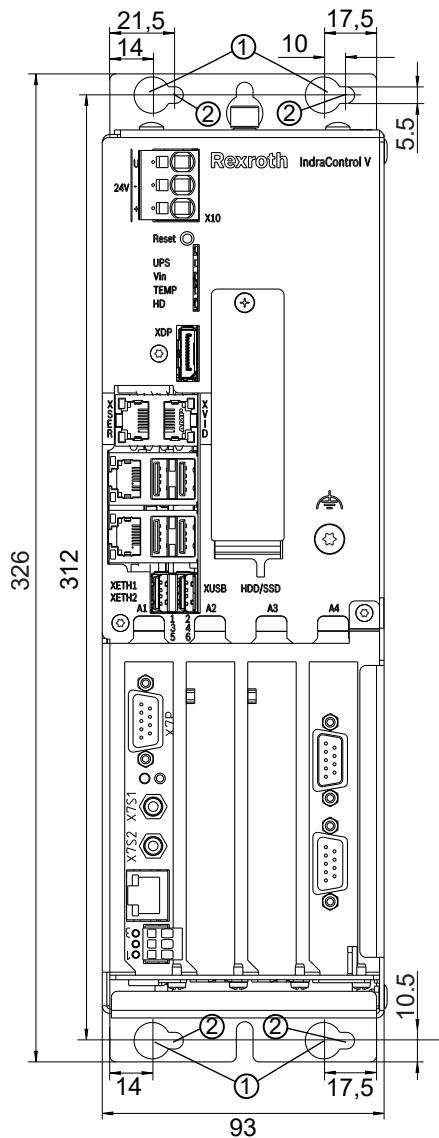
- ① Keyholes for horizontal mounting
- ② Slots to hang in the device

Fig. 10-7: Housing dimensions for devices with two slots, horizontal mounting



- ① Keyhole for vertical mounting
- ② Slots to hang in the device

Fig. 10-8: Housing dimensions, devices with four slots, vertical mounting



① Keyholes for horizontal mounting

② Slots to hang in the device

Fig. 10-9: Housing dimensions, devices with four slots, horizontal mounting

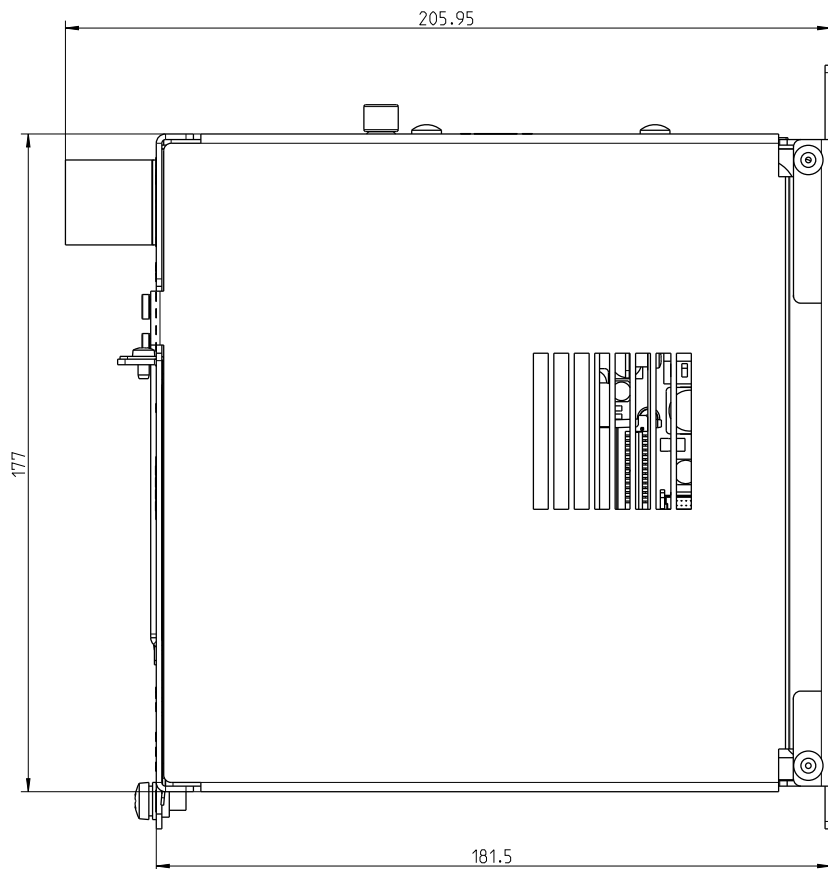


Fig. 10-10: Housing dimensions, devices with two slots, side view from the right

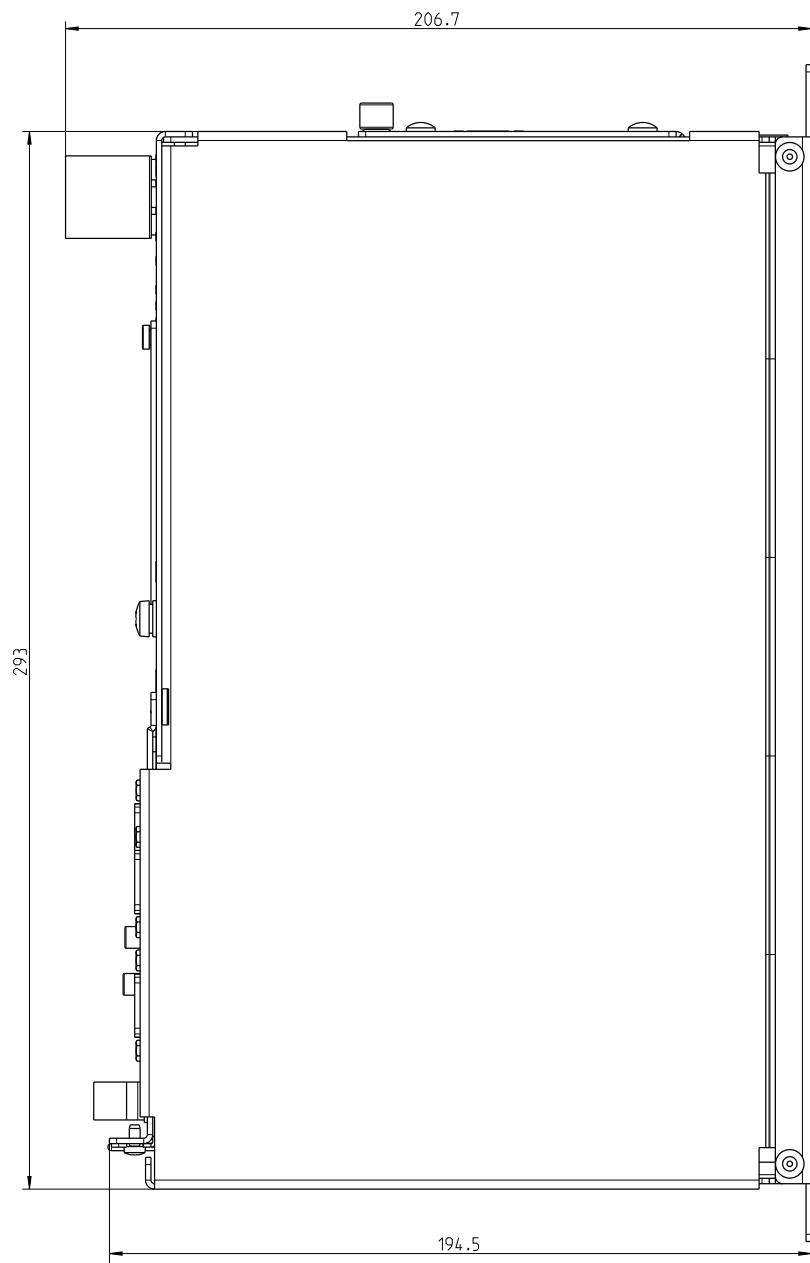


Fig. 10-11: Housing dimensions, devices with four slots, side view from the right

10.3 Electric connection

10.3.1 Connecting 24 V supply to the control cabinet PC

1. Connect the functional earth.



2. Connect the "X10" interface for the 24 V voltage supply to the industrial power supply unit or to the UPS (if available).

For details on how to connect to a UPS, refer to [chapter 10.3.2 "Connecting a UPS" on page 35](#).

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 operator 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 and the operator display have to be connected to this neutral point.

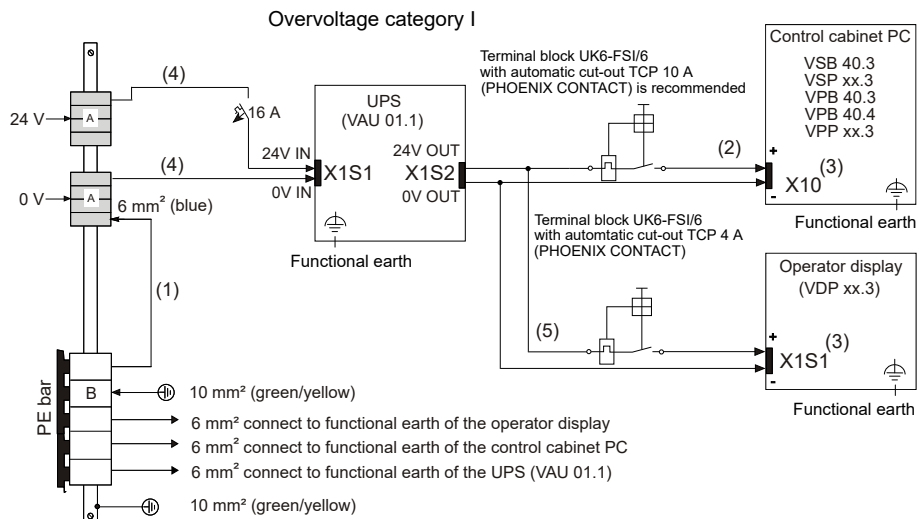
Use a 24 V industrial power supply unit acc. to DIN EN 60742, classification VDE 0551, for example "VAP01.1H-W23-024-010-NN" (part number R911171065) for the voltage supply.

10.3.2 Connecting a UPS



Please note that the maximum power consumption of the control cabinet PC does not exceed the maximum output power of the UPS.

Connection diagram



- A** Terminal block 4 mm²
B Terminal block 10 mm²
 ① Easy to remove and visible
 ② Cable length between the UPS and the control cabinet PC is max. 2 m at a cross-section of min. 2.5 mm²
 ③ Polarity reversal of the X1S1 and X10 plugs can sporadically result in destruction of the device (fire hazard) if no additional external protection is provided. The reason is a simultaneous grounding

- of the 0 V of the device and of the 0 V (PELV) (1)
 ④ Cable length between the +24 V power supply unit and the UPS: 1 m to 7 m, 2.5 mm² cross-section, 8 m to 10 m, 4.0 mm² cross-section (refer to the documentation of the UPS VAU01.1)
 ⑤ Cable length between the +24 V power supply unit and the operator display is max. 30 m at a cross-section of min. 1.5 mm². If the cable length exceeds 30 m, a separate power supply unit is required

Fig. 10-12: Control cabinet PC and operator display connected to a UPS

UPS with USB interface

When connecting a 24 V power supply unit to a USB interface at the control cabinet PC, information on the existence and the status of the UPS are communicated to the control cabinet PC.

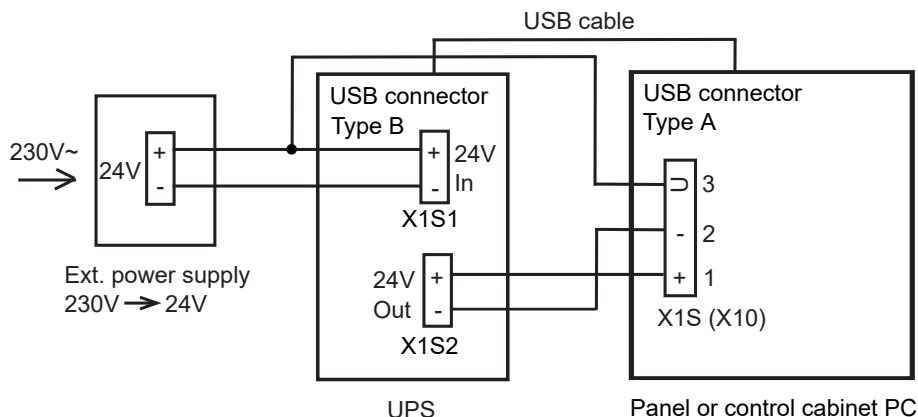


Fig. 10-13: Preferred wiring: Overall connection diagram with power supply unit, UPS and panel PC or control cabinet PC for normal mode with fallback and simple mode

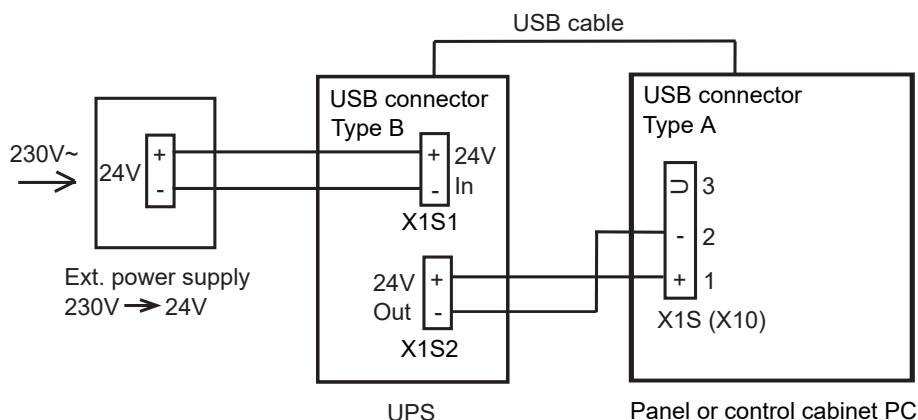


Fig. 10-14: Overall connection diagram with power supply unit, UPS and panel PC or control cabinet PC without fallback and simple mode

The communication is established via a virtual COM interface. This virtual COM interface is provided by the USB interface.



The driver is installed after the first connection of the UPS via the USB cable. A virtual COMn (e.g. COM3) interface is created in the operating system.

UPS without USB interface

To identify the connection of this UPS using the power supply electronics in the control cabinet PC, connect the 24 V voltage (24V In) applied to the UPS input to pin 3 of the X10 (U).

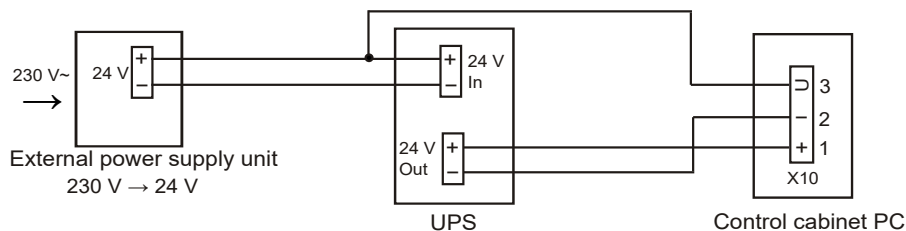


Fig. 10-15: Connecting an external UPS without communication to the control cabinet PC

NOTICE

Wrong initialization of the CDI interface and no image output at the connected display VDP xx.3 if the input voltage has been switched on too early

If the control cabinet PC is shut down under Windows and the 24 V input voltage is switched off, the input voltage can only be switched on again when the V_{IN} LED is off.

10.3.3 Recommendation when mounting of CDI cables with long lengths in an interference-prone environment

The CDI cable is a connection cable with RJ45 plug to connect the CDI interface of the control cabinet PC to the remote operator display or the Y-repeater.

The mounting recommendations described in the following facilitate an optimized signal transmission. In particular in case of great cable lengths and distances between the control cabinet PC and the remote operator display, ensure that the cable is installed correctly and that the shield is connected correctly.



To protect the CDI interfaces from surge voltages, connect the CDI cables to earth potential when entering or leaving a building.

Cables routing

Comply with the following when routing the cables:

- Keep the maximum possible distance to interference-prone cables and lines
- Limit parallel routing with other lines

- Keep the maximum possible distance to sources of interference such as drives and frequency converters
- Mechanical protection against tensile load and compressive load on the cables
- Comply with the permissible bending and torsional stress of the cable

Potential equalization

Ensure that there are no compensating current flows via the cable shield of the CDI cables between device and machine parts while creating the equipotential bonding.

Shielding

The shielding is an important component of the CDI cable. The shielding is used to shield the data wires in the cable against electrical interferences from the environment.

The shielding has to be connected to the potential equalization of the devices to shield the data wires. In most cases, a connection via the RJ45 connectors is sufficient.

Avoid collection of dirt at the RJ45 plug while drawing the cables in the system.

Remove any collection of dirt from the shield surfaces of the RJ45 plug before plugging it in.



Fig. 10-16: RJ45 plug shielding areas

Additional shielding connection in case of strong electrical interferences and long cables

In case of strong electrical interferences and long cable lengths, it can be required to additionally connect the shielding to the earthing potential.

Assemble suitable EMC shielding clamp close to the control cabinet PC, the remote operator display or the Y-repeater.

Ensure that the CDI cable is not crimped when connecting the shielding to the equipotential bonding. Avoid mechanical stress (tensile, compressive) on the plug. Use an EMC shielding clamp suitable for the cable diameter. Crimping of the cable impairs the electrical properties of the CDI cable.

Observe the following when mounting the shield connection:

1. Only remove the CDI cable jacket on the length required for the connection.



The CDI cable is sensitive to mechanical load where the jacket was removed. Ensure that the CDI cable shielding is not damaged when removing the cable jacket.



Fig. 10-17: CDI cable with RJ45 plug



Fig. 10-18: CDI cable with partially removed jacket

2. Remove the foil shield.



CDI cables are equipped with an additional foil shield. The foil shield must not be used for the connection. The foil shield is usually plastic-coated on one side for an improved stability. The plastic coating is insulating.



Fig. 10-19: Foil shield of the CDI cable



Fig. 10-20: Foil shield removed

3. Fasten cable with EMC shielding clamp.



Ensure that the CDI cable is not crimped when connecting the shielding to the equipotential bonding. Use an EMC shielding clamp suitable for the cable diameter. Crimping of the cable impairs the electrical properties of the CDI cable. Avoid mechanical stress (tensile, compressive) on the plug.

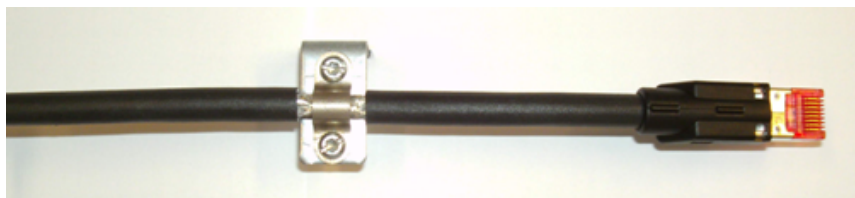


Fig. 10-21: Example: Attached shielding clamp

More shielding clamps:



- ① Company Ikotec
- ② Company Phoenix Contact

Fig. 10-22: Shielding clamps

11 Commissioning

The product can be used directly. No configuration is required.

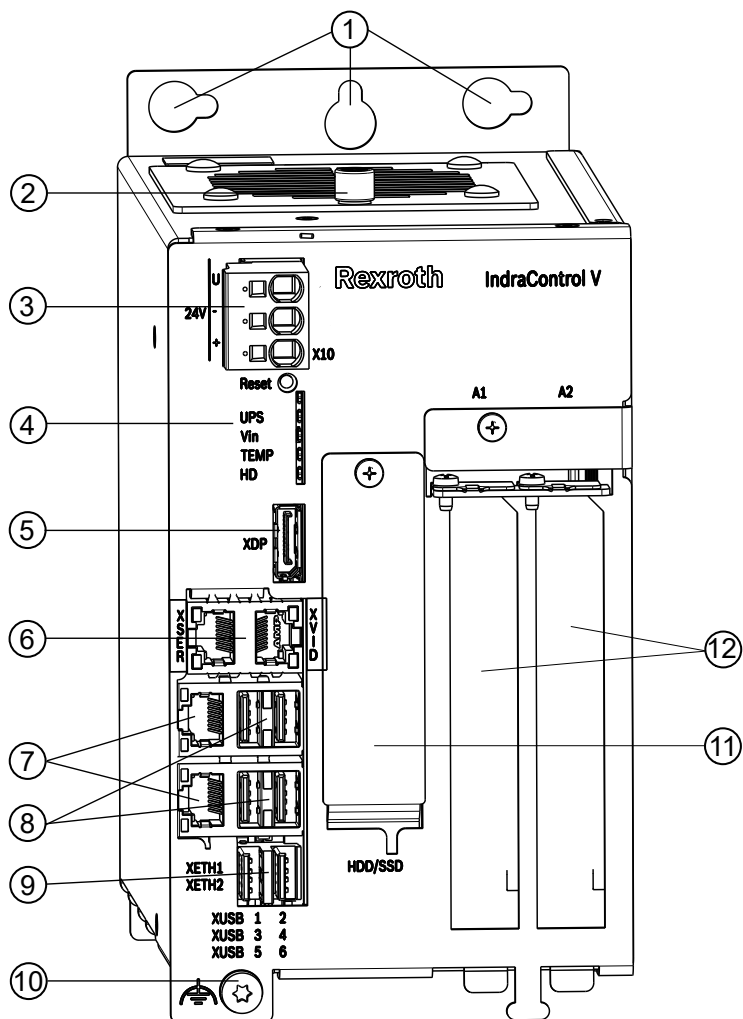
For software descriptions, refer to the project planning manual "IndraControl V-Devices Operating Systems" (see [tab. 1-2 "Related documents" on page 2](#)). The following functions are described in this project planning manual:

- Settings for dual monitor operation
- Data backup using the "Acronis" backup and recovery software
- Software for UPS monitoring
- Software for touch calibration and SMART analysis
- Simulation of the right mouse key
- Hardware event monitoring with response trigger
- Auto login
- M-key UpperClass filter for downwards compatibility of the M-key codes
- RAID system for higher data security and fast data access

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](#)).

12 Device description



- | | |
|--|-------------------------------------|
| ① Keyholes for mounting | ⑦ 2 × Ethernet interfaces |
| ② Knurled screw of the fan cover | ⑧ 4 × USB 2.0 interfaces |
| ③ Plug for voltage supply | ⑨ 2 × USB 3.0 interfaces |
| ④ Status LEDs and "Reset" button | ⑩ Grounding screw (hexalobular T25) |
| ⑤ DisplayPort | ⑪ Hard disk cover |
| ⑥ CDI+ interface (1 × RJ45) or CDI interfaces (2 × RJ45) | ⑫ 2 × slots for extension cards |

Fig. 12-1: Front view of an IndraControl VPB 40.4 control cabinet PC, types L, N, P

NOTICE

Data loss caused by incorrect switch-off without UPS

In case of a missing UPS, shut down the control cabinet PC via the software of the operating system only and not by interrupting the current supply. **This applies particularly to RAID systems.**

12.1 Operating and error displays

There are four LEDs on the connector panel of the IndraControl VPB 40.4 to display the device states and errors. Apply the specified measure if one of the following LEDs either indicates an error or a note, see [tab. 12-1 "LEDs for operating and error display on the connector panel"](#) on page 44.



Some LEDs, e.g. the CPU temperature monitoring, are only active if the service software has been configured accordingly.

LED	Display	Description	Action
V _{in}	LED green	Normal operation	–
	LED off	No supply voltage (24 V DC)	Check the supply voltage at the power supply unit!
TEMP	LED off	Normal operation	–
	LED is flashing red (flashing frequency approx. 2 Hz)	Fan is not rotating or is rotating too slowly	Check the fan on the control cabinet PC!
	LED is red	Overtemperature	Reduce the ambient temperature!
UPS	LED off	Normal operation	–
	LED red	The control cabinet PC is currently operating in battery mode, i. e. no supply voltage is available!	Restore the power supply and initiate a controlled restart!

LED	Display	Description	Action
HD	LED flashing green	Hard disk access	–
	LED is flashing green (with a flashing frequency of approx. 2 Hz) ¹⁾	Warning: SMART analysis is identifying errors. Observe that this warning message is not displayed if RAID is used	Exchange hard disk
Reset	LED is red	Monitoring LED for the “Reset” button. The LED is on as long as the “Reset” button is pressed	–

Tab. 12-1: LEDs for operating and error display on the connector panel

NOTICE

Wrong initialization of the CDI interface and no image output at the connected display VDP xx.3 if the input voltage has been switched on too early

If the control cabinet PC is shut down under Windows and the 24 V input voltage is switched off, the input voltage can only be switched on again when the V_{IN} LED is off.

13 Error causes and troubleshooting

For information on the error display on the front panel, refer to [chapter 12.1 "Operating and error displays" on page 44](#).

Errors	Troubleshooting
Wrong display resolution	● Set the correct display resolution in the graphics driver ● Restart the control cabinet PC
The device switches off unintendedly	Check the max. current consumption of the connected USB devices

1) Provided that the IPC Service program (IPCSvc) is installed

Errors	Troubleshooting
No image output	For CDI interfaces: • Check that both CDI cables (XSER and XVID) are connected • Check that the CDI cables (XSER and XVID) are not interchanged For CDI+ interfaces: • Check whether the CDI+ cable is connected
No or incorrect network data transmission if the data transmission rate is set manually	The network card of the remote station has to be able to process the same data transmission rate as the control cabinet PC. If necessary, change the data transmission rate under Control Panel ► Network Card

Tab. 13-1: Error causes and troubleshooting



Repairs at the device by the customer are not permitted. Exceptions are maintenance works listed in the chapter "Maintenance".

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

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

Dissolving the labeling at the device by solvents!

- Do not use any solvents (e. g. diluents) for cleaning!

NOTICE

Destruction of screw terminals, insufficient contact and loss of UL certification if no copper wire is used or due to wrong tightening torque.

Use only copper wire for wiring the connection terminals. Tighten the screws of the screw terminals with the following torque:

Thread	Mounting torque
M2,5	0.4 Nm
M3	0.7 Nm
M4	1.4 Nm
M5	2.8 Nm

Tab. 14-1: Tightening torques



Ensure that the IP degree of protection of the device is kept during maintenance.

Include the following tasks into the maintenance schedule:

- Check all plug and terminal connections of the components for proper tightness and possible damage at least annually. Check that cables are not broken or crushed. Replace damaged parts immediately
- Check the fan regarding soiling and increased running noise at least annually



Function compatibility for spare parts is ensured for at least ten years.

14.1 Hard disks

The standard hard disk is mounted on a carrier plate that can be pulled out from the housing after removing the cover. The hard disk can be replaced, including the installation frame.

NOTICE

Damages to the device due to electrostatic discharges!

Comply with all ESD protective measures while working with modules and components! Avoid electrostatic discharges!



To avoid data loss and new installation of the operating system and application programs, backup hard disk data regularly.

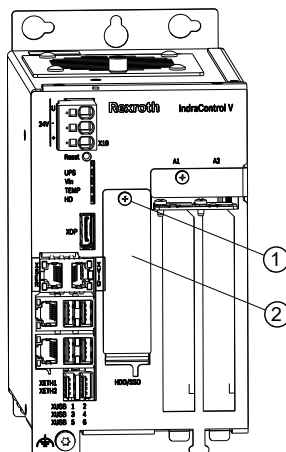


The new hard disk, including the installation frame, is provided upon delivery. The new hard disk is always installed with the installation frame.

To exchange a hard disk, proceed as follows:

1. Store all required user data as well as the operating system settings of your system either on an external storage medium or via the network connection!

2. Switch off the supply voltage.
3. If operated with a UPS, wait until the control cabinet PC switches off automatically. The UPS LED on the connector panel of the control cabinet PC is red until the UPS switches off the internal power supply unit.
4. Remove all plugs.
5. Remove the screw of the hard disk cover on the front panel of the control cabinet PC. Now the hard disk carrier including the hard disk(s) can be pulled out from the housing.



- ① Screw of the hard disk cover
- ② Hard disk cover

Fig. 14-1: Position of the hard disk carrier

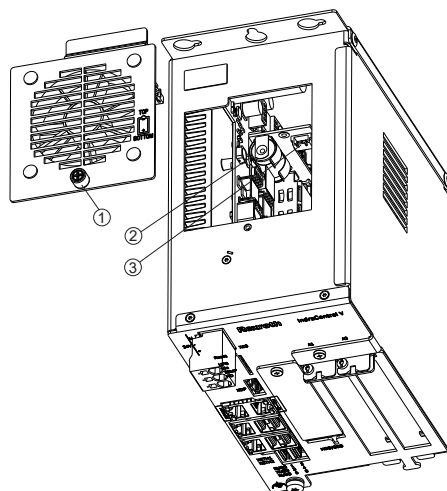
6. The new hard disk parameters are detected automatically by the system. If the operating system does not boot automatically after switch-on, do interrupt the power supply for at least ten seconds and then restart.
7. After booting the control cabinet PC, restore the user data and the operating system settings for the normal operation.



If an SSD (Solid State Drive) is used, avoid defragmentation. Thus, the wear of the SSD reduces.

14.2 Fan

The fan is located on the top in the PC box.



- ① Knurled screw of the fan tray
② CMOS battery

- ③ Fan plug connection

Fig. 14-2: Fan tray



CAUTION

Risk of injury by rotating fan impeller!

Do not touch the fan impeller with your hands and ensure that it does not come into contact with other objects.

Exchanging the fan

1. Disconnect the control cabinet PC from voltage.
2. Loosen the knurled screw.
3. Carefully remove the fan (including the fan cover).
4. Remove the supply cable of the fan from the board of the control cabinet PC.
5. Connect the supply cable of the new fan to the board of the control cabinet PC.
6. Install the new fan.
7. Tighten the knurled screw.



The connecting cable of the fan is connected to a PCB via a plug connection.

The cable may not be attached to anything and must **not be crimped**. The connecting cable of the fan has to be installed in an "upward-directed" loop while mounting the fan!

14.3 CMOS battery

The battery used to buffer remanent data (clock etc.) has a limited service life (see [chapter 5.8 "Wear parts" on page 8](#)).

For the position of the lithium battery in the control cabinet PC, refer to [fig. 14-2 "Fan tray" on page 49](#).

WARNING

Batteries can cause fire, explosions or chemical burn.

Do not load, remove, destroy, burn or heat batteries over 100 °C. Dispose old batteries immediately and properly. Keep away from children!

Battery exchange

1. Disconnect the control cabinet PC from voltage.
2. Loosen the knurled screw of the fan module, see [fig. 14-2 "Fan tray" on page 49](#).
3. Carefully remove the fan (including the fan cover).
4. Remove the empty battery.
5. Insert the new battery, positive terminal to the bottom (observe the label on the battery!).
6. Insert the fan again.
7. Tighten the knurled screw.



The connecting cable of the fan is connected to a PCB via a plug connection.

The cable may not be attached to anything and must **not be crimped**. The connecting cable of the fan has to be installed in an "upward-directed" loop while mounting the fan!

15 Ordering information

For ordering information on accessories and spare parts, please refer to [chapter 5 "Spare parts, accessories and wear parts" on page 6](#).

The control cabinet PC IndraControl VPB 40.4 is available in different variants according to the following type code.

Abbrev. column	1	2	3	4	6	7	8	9	0	1	2	3	4	6	7	8	9	0	2	1	2	3	4	6	7	8	9	0	3	5	1	2	3	4
Example:	V	P	B	4	0	.	4	D	1	L	-	8	G	0	N	N	-	D	7	D	-	D	N	-	N	N	-	F	W					

Product
VPB..... = VPB

Line
40..... = 40

Series
4..... = 4

Control panel interface
CDI..... = D1
CDI+ = D2

PC box
2 slots, 2 x PCI..... = L
4 slots, 4 x PCI..... = M
2 slots, 1 x PCI + 1 x PCIe..... = N
2 slots, 2 x PCIe..... = P
4 slots, 2 x PCI + 2 x PCIe..... = Q
4 slots, 4 x PCIe..... = R

Memory capacity (RAM) ¹⁾
8 GB..... = 8G0
16 GB..... = 16G

Interface
Without special interface..... = NN

System configuration
Celeron C3955U, 2,00 GHz..... = C4
Core i5-6300U, 2,40 GHz..... = D7
Core i7-6820EQ, 2,80 GHz..... = D8

Connecting voltage
DC 24 V..... = D

Hard disk (HD) ²⁾
2,5", min. 320 GB..... = D
2,5", min. 320 GB (2 x HDD in Raid 1)..... = E
2,5", min. 192 GB, Solid State Disk (SSD)..... = H
2,5", min. 192 GB (2 x SSD in Raid 1)..... = K
2,5", min. 192 GB (2 x SSD) = M

Drive
Without..... = N

Other design
Without..... = NN

Firmware and Software
Denotes that firmware and software must be ordered as separate subposition..... = FW

Note:

1) Memory capacity „8G0“ is only available with system configuration „C4“ and „D7“
Memory capacity „16G“ is only available with system configuration „D8“
By the memory capacity it is a minimum disclosure

2) Hard disk (HD) „E“ is only available with system configuration „D7“ and „D8“
Harddisk (HD) „K“ is only available with system configuration „D7“ and „D8“

Fig. 15-1: Type code of the control cabinet PC IndraControl VPB 40.4

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. PCBs and hard drives as defined in the electronic equipment act.

16.1 Return

For disposal, our products can also 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.

16.3 Batteries and accumulators

Batteries and accumulators can be labelled with this symbol.



The symbol indicating "separate collection" for all batteries and accumulators is the crossed-out wheeled bin.

The end user within the EU is legally obligated to return used batteries. Outside the validity of the EU Directive 2006/66/EC keep the stipulated directives.

Used batteries can contain hazardous substances, which can harm the environment or the health of the individual when they are stored incorrectly or disposed of.

After use, the batteries or accumulators contained in Rexroth products have to be disposed of according to the country-specific collection system.

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)

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Notes

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