

IndraControl VDP 15.3, 18.3, 21.3 Multi Touch

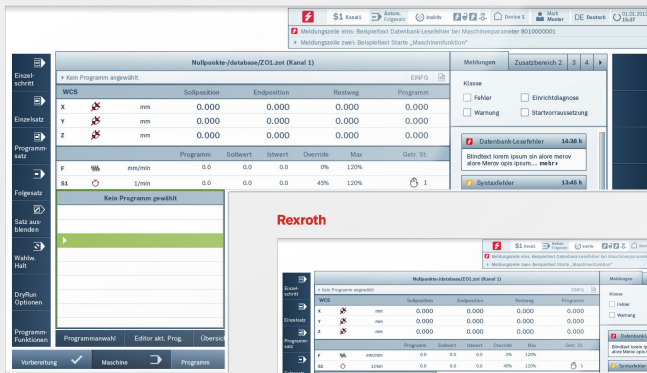
Operator Display – Built-In Devices

Operating Instructions
R911341191

Edition 03

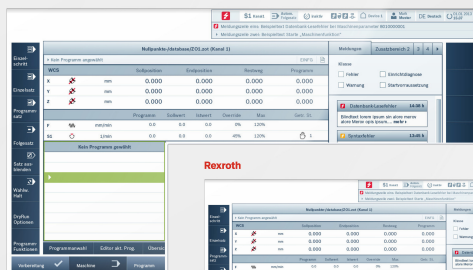
Rexroth

IndraControl V



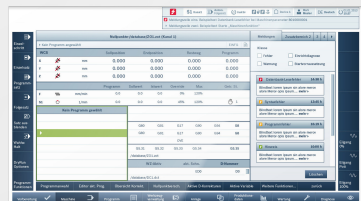
Rexroth

IndraControl V



Rexroth

IndraControl V



Change Record

Edition 03, 2018-08

Refer to [tab. 1-1 "Change Record" on page 1](#)

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Editorial Department

Development Automation Systems Control Hardware HB (MaKo/MePe)

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1 About this documentation

Editions of this documentation

Edition	Release Date	Notes
Edition 01	2013-10	First edition
Edition 02	2014-03	Revision
Edition 03	2018-05	Accessories supplemented, corrections

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.

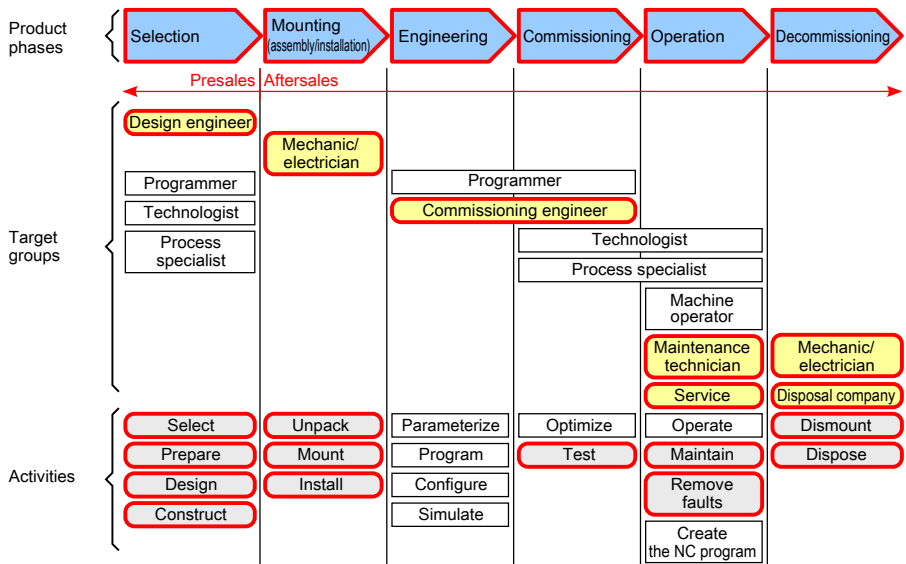


Fig. 1-1: Assigning the present documentation to the target groups, product phases and activities of the target group

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 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 Availability

This operating instruction applies to all multi-touch operator displays whose type code starts with "VDPxx.3...".

The type code specifications are located on the type plate of the device. Also refer to [chapter 2.1 "Product identification" on page 2](#).

1.4 Related documents

Title	Part number and document type
Rexroth IndraControl VAP 01 Power Supply unit	R911339613 Operating Instructions
Rexroth IndraControl VAU 01.1 UPS with Communication Interface	R911336867 Operating Instructions
Rexroth IndraControl VAC 01 Y-Repeater	R911336973 Operating Instructions
Rexroth IndraControl V-Devices Operating Systems	R911343901 Project Planning Manual

Tab. 1-2: Related documents

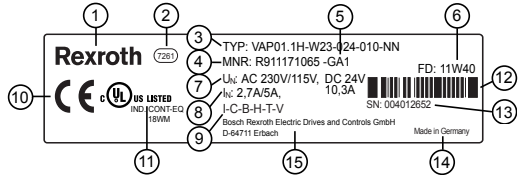
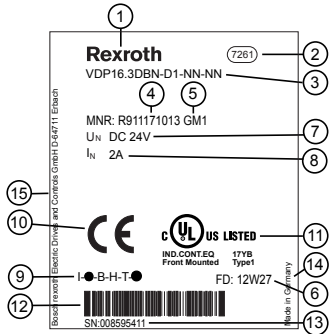
1.5 Customer feedback

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 Date of manufacture (yyWww)
- 7 Nominal voltage
- 8 Nominal current

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

Fig. 2-1: Exemplary type plates

2.2 Scope of delivery

- Operator display
- Safety instructions
- Assembling kit
- 24 V female connector strip

3 Using safety instructions

3.1 Structure of the safety instructions

The safety instructions are structured as follows:

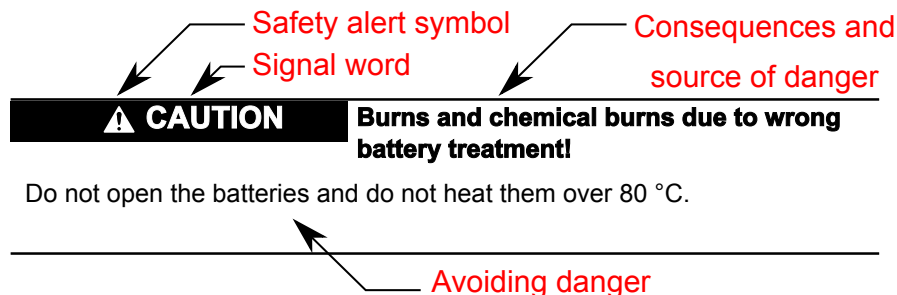


Fig. 3-1: Structure of the safety instructions

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 Bosch Rexroth operator displays are passive operator and visualization terminals. They form a PC-based operator terminal when used with a Bosch Rexroth control cabinet PC.

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 operator displays 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 operator displays 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 this documentation.

NOTICE

Danger of destruction of the touch screen if operated with inappropriate objects.

Operate the touch screen only with your finger or with a touch pen suitable for capacitive touch screens.

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-TCES	R911172852	Y-repeater for CDI interface

Tab. 5-1: Y-repeater

5.2 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 the IndraControl V devices

Tab. 5-2: External 24 V power supply unit for the operator display

5.3 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

Tab. 5-3: Uninterruptible power supply (UPS)

5.4 Connecting cables for CDI interface



Malfunctions caused by using inappropriate CDI cables.

Use only cables listed in the following.

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. 5-4: CDI connecting cable
Further cable lengths are available upon request.



Two cables are always required to establish a connection between the VxB and the VDP.

5.5 Connecting cables for the USB interface

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

Ordering code	Part number	Description
RKB0019/003,0 (*****_*****_*****)	R911171167	USB connecting cable, Length 3 m
RKB0019/005,0 (*****_*****_*****)	R911171168	USB connecting cable, Length 5 m

Tab. 5-5: Connecting cables to the control cabinet PC

5.6 Wear parts

Wear parts are not subject to any warranty.

Backlight

The service life of the backlight is limited. After this period, the backlight will produce only 50 % of its original brightness. The service life is 50,000 hours if the ambient temperature is 25 °C.

6 Ambient conditions

	In operation	Transport	Storage
Max. ambient temperature	+0 °C to +50 °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. relative humidity: 5 %	Min. relative humidity: 5 %	Min. relative humidity: 5 %
	Max. relative humidity: 85 %	Max. relative humidity: 75 %	Max. relative humidity: 85 %
	Min. absolute humidity: 1 g/m³	Min. absolute humidity: 1 g/m³	Min. absolute humidity: 1 g/m³
	Max. absolute humidity: 25 g/m³	Max. absolute humidity: 25 g/m³	Max. absolute humidity: 25 g/m³
	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

	In operation	Transport	Storage
Mechanical strength	Max. vibration: Frequency range: 10...150 Hz Excursion: 0.075 mm at 10...57 Hz Acceleration: 1 g at 57...150 Hz Acc. to EN 600068-2-6	Max. shock: 15 g 11 ms Acc. to EN 60068-2-27, No malfunction	Max. shock: 15 g 11 ms Acc. to EN 60068-2-27, No malfunction
Contamination level	2	2	2
Overvoltage category	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.

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 General technical data

	VDP 15.3GA (Rexroth design) VDP 15.3CL (Rexroth design)	VDP 18.3GBN (Rexroth design)	VDP 21.3GC (Rexroth design) VDP 21.3CN (Rexroth design)
Display	396 mm TFT (15") 1366 × 768 pixels 16.7 million colors	470 mm TFT (18") 1366 × 768 pixels 16.7 million colors	546 mm TFT (21") 1920 × 1080 pixels 16.7 million colors
Operation	Multi touch		
Surface of the front panel	Thermally tempered glass		
Degree of protection	Front panel IP 65 acc. to DIN EN 60 529 Front Type 1 acc. to NEMA (UL) Rear side 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 VAP01.1H-W23-024-010-NN, part number R911171065)		
Current consumption	Approx. 1 A	Approx. 1 A	Approx. 1.5 A
Power loss	Approx. 24 W	Approx. 24 W	Approx. 36 W
USB	Per USB port max. 500 mA, total current at all USB ports max. 1 A		
Weight	Approx. 4.8 kg	Approx. 6.5 kg	Approx. 7.4 kg

Tab. 7-1: Technical data of the VDP 15.3, VDP 18.3 and VDP 21.3

7.2 Optical characteristic values

7.2.1 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. This "incoming inspection" is provided by the Bosch Rexroth service if required.

The maximum brightness and color characteristics of TFT displays depends on the manufacturer and is defined by the respective specification of the manufacturer.

7.2.2 Input system (multi-touch front)

The maximum permissible number and type of defects on the front or the glass, such as trapped dust, scratches, etc. is defined in the FT¹⁾. The VDP multi-touch devices meet the quality guideline.

8 Standards

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

8.1 Standards used

Standard	Description
EN 60 204-1	Safety of machinery - Electrical equipment of machines
EN 61 000-6-4	Generic standards - Emission standard (industrial environments)
EN 61 000-6-2	Generic standards – Noise immunity (industrial environments)
EN 61 558-2-6	Transformer for 24 V power supply unit, safe separation
EN 60 664-1	Overvoltage category II
EN 61 131-2	24 V output requirements
EN 61 131-2	24 V current supply requirements
EN 60 529	Degrees of protection (including housings and installation compartments)
EN 60 068-2-6	Vibration test
EN 60 068-2-27	Shock test
EN 60 721-3-1 and EN 60 721-3-3	Climatic class

Tab. 8-1: Standards used

8.2 CE marking

8.2.1 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 2004/108/EC (valid until 04/19/2016)

EMC directive 2014/30/EU (valid from 04/20/2016)

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

1) *Quality standard (version December 2013) of the Fachgemeinschaft Eingabesysteme (German association for input systems)*

Standard	Title	Edition
DIN EN 61000-6-4	Electromagnetic compatibility (EMC) Part 6-4: Generic standards – Emission standard for industrial environments (EN 61000-6-4: 2007 + A1:2011)	September 2011
IEC 61000-6-2	Electromagnetic compatibility (EMC) Part 6-2: Generic standards – Immunity for industrial environments (EN 61000-6-2:2005)	2006 + B1:2011

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.

8.3 UL/CSA certified



The devices are certified acc. 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.

9 Interfaces

9.1 View

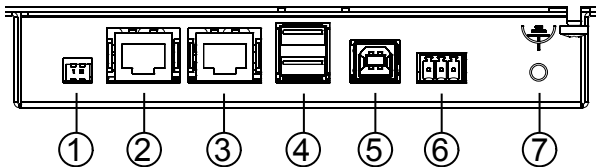


Fig. 9-1: Interfaces at the operator display

9.2 Overview

Name at the housing	Connection type	Connector type, integrated	Mating connector or cable (from outside)
① S1	Refer to chapter 9.4 "S1 DIP switch" on page 14		
② XVID	CDI interface, image	RJ45 socket	RJ45 plug
③ XSER	CDI interface, data	RJ45 socket	RJ45 plug
④ XUSB1/2	2 USB interfaces	USB socket, 4-pin, type A	USB plug, 4-pin, type A
⑤ XUSBIN	USB2.0 connection to the control cabinet PC. Maximum length 5 m Use only one high-speed USB 2.0 cable (refer to chapter 5.5 "Connecting cables for the USB interface" on page 7)	USB socket, 4-pin, type B	USB plug, 4-pin, type B
⑥ X1S1	24 V DC voltage supply	3-pin, MC1,5/3-G-3,5 THT	3-pin, FK-MCP 1,5/3-ST-3,5
⑦ 	Functional earth (FE)	M5	Ring cable lug

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.

9.3 24 V DC voltage supply

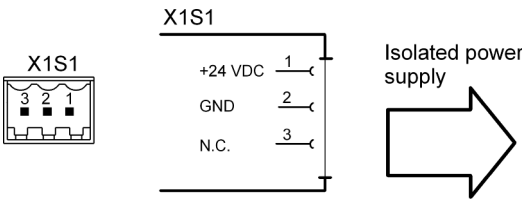


Fig. 9-2: Interface for 24 V voltage supply

Pin	Function
1	+24 V supply voltage
2	0 V supply voltage
3	n.c.

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.

9.4 S1 DIP switch

9.4.1 Overview

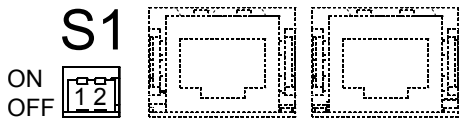


Fig. 9-3: S1 DIP switch at the connector panel of the operator display

Name at the housing	Switch type	Function
S1/1	DIP switch	No function
S1/2	DIP switch	OFF: Cable length to control cabinet PC ≤ 30 m ON: Cable length to control cabinet PC > 30 m

Tab. 9-2: DIP switch at the VDP

9.5 USB interfaces

There are two USB interfaces on the connector panel (XUSB1/2) at the devices and, depending on the variant, one interface on the front panel.

9.5.1 Operating USB ports at operator display

Cable length of the XSER connection	DIP switch 2	USB speed	Note
Up to 5 meters	OFF	12 Mb/s	-
Up to 5 meters	OFF	480 Mb/s (USB2.0)	An additional USB cable between control cabinet PC and XUSBIN is required
From 5 to 30 meters	OFF	12 Mb/s	The connected device may not contain a USB hub
More than 30 meters	ON	12 Mb/s	Only mouse and keyboard can be connected. The connected device may not contain a USB hub

Tab. 9-3: USB speed depends on XSER cable length



Interference-free USB2.0 connection only up to a cable length of 5 meters.



Connect only USB devices that meet the USB2.0 specification.



If any problems result when using USB3.0 devices, please contact the Bosch Rexroth Service.



The cables of the connected USB devices have to comply with the USB2.0 specifications.



If the total current of all USB ports exceeds 1 A, the power supply unit switches off the operator display.

9.6 XSER and XVID interfaces

9.6.1 CDI interface

The CDI interface is assigned to the two RJ45 sockets XSER and XVID. The connection between the control cabinet PC and the operator display is established at these sockets via two ready-made cables available as accessory, see [chapter 5 "Spare parts, accessories and wear parts" on page 6](#).

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

9.6.2 XVID and XSER marking

The CDI interfaces are color-coded on the device:

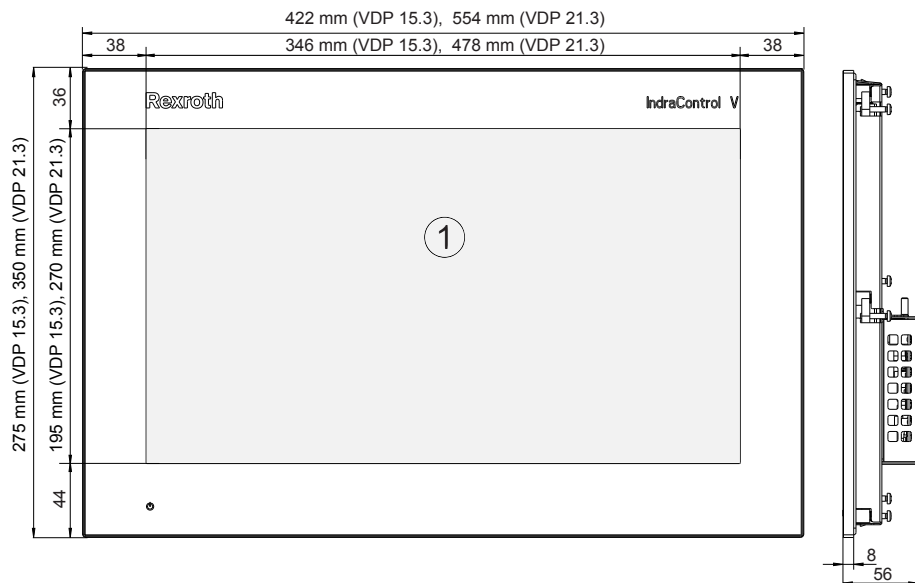
CDI interface, data (XSER)	Violet
CDI interface, image (XVID)	Black

Tab. 9-4: Color-coding of the interface

10 Mounting, demounting and electric installation

10.1 Housing dimensions

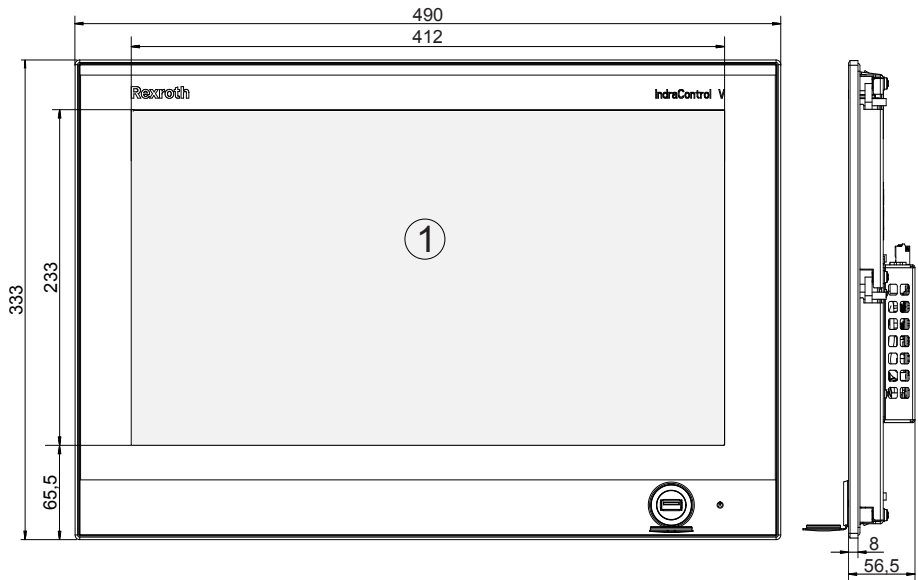
10.1.1 Rexroth design



① Visual range of the display

Fig. 10-1: Housing dimensions of the operator display VDP 15.3/VDP 21.3 in millimeters, Rexroth design

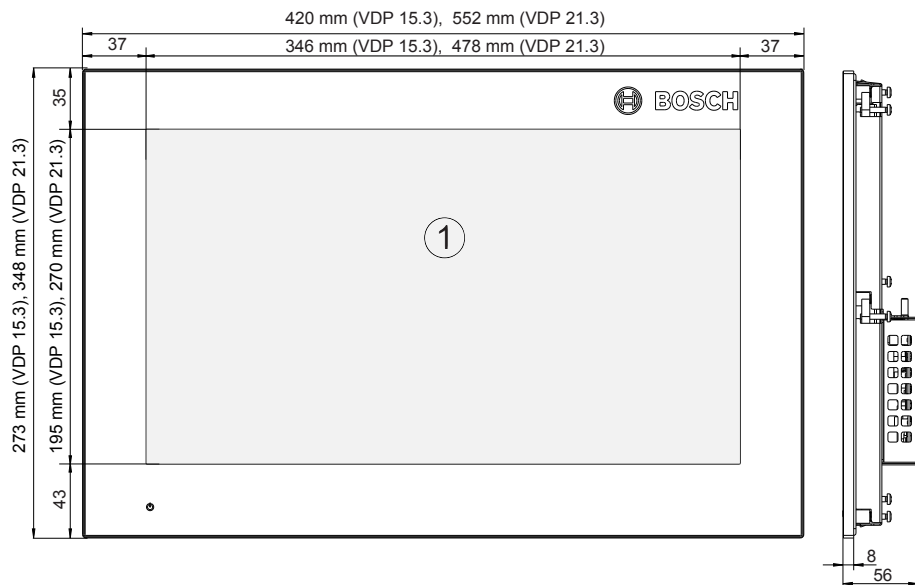
10.1.2 Special Rexroth design



① Visual range of the display

Fig. 10-2: Housing dimensions of the operator display VDP 18.3 in millimeters, special Rexroth design

10.1.3 Bosch design



① Visual range of the display

Fig. 10-3: Housing dimensions of the operator displays VDP 15.3 and VDP 21.3 in millimeters, Bosch design

10.2 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 $\pm 45^\circ$, 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.

10.3 Mounting

To mount the operator display, proceed as follows:



Loss of degree of protection IP 65!

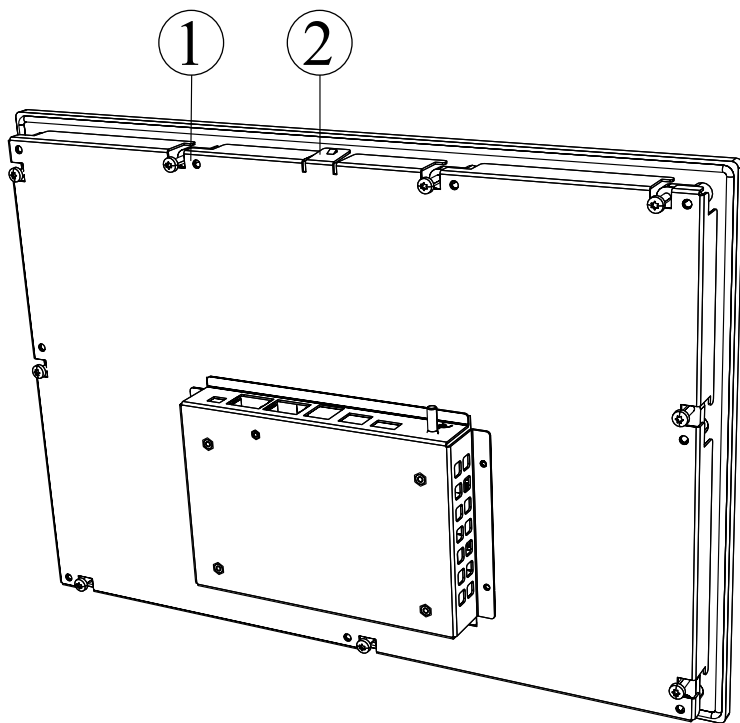
The housing, in which the operator display is installed, has to fulfill the following conditions:

- 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.

1. Prepare a mounting cut-out, refer to [fig. 10-6 "Mounting cut-out, specifications in millimeters" on page 21.](#)
2. Insert the operator display from the front into the cut-out until the latching lug at the top of the device latches in the cut-out.



- ① Clamp fastenings
② Latching lug

Fig. 10-4: Position of clamp fastenings

3. Fold out the clamp fastenings.

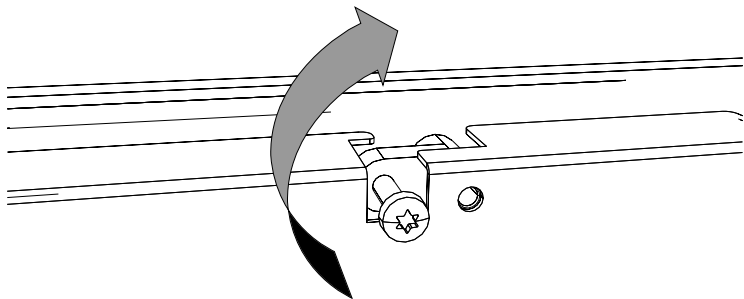


Fig. 10-5: Clamp fastening

4. Tighten the clamping screws.

NOTICE

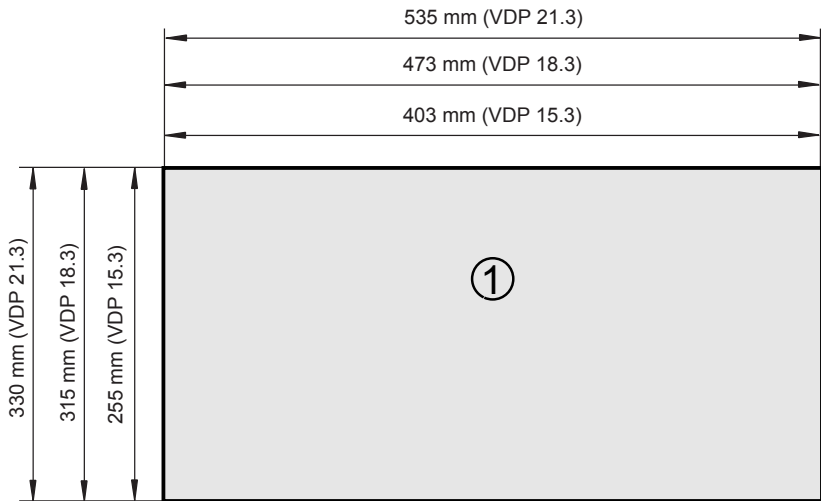
Damage to the mechanics caused by wrong tightening torque

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

Thread	Mounting torque
M2,5	0.4 Nm
M3	0.7 Nm
M4	1.4 Nm
M5 (clamping screws)	1.0 Nm

Tab. 10-1: Tightening torques

10.4 Mounting cut-out



① Mounting cut-out

Fig. 10-6: Mounting cut-out, specifications in millimeters

10.5 Demounting

1. Disconnect the operator display.
2. Remove all connected cables.
3. Loosen the screws of the clamp fastenings.
4. Fold in the clamp fastenings.
5. Press the latching lug of the installation aid.

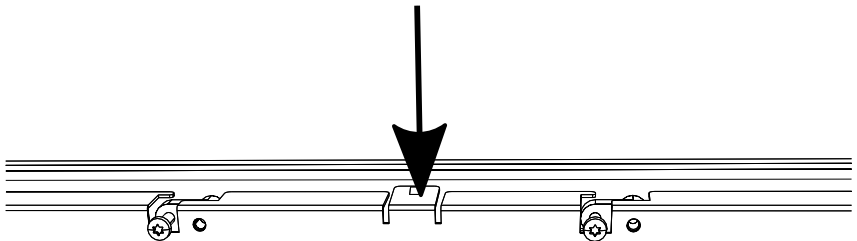


Fig. 10-7: Latching lug

6. Remove the operator display from the mounting frame.

10.6 Electric connection

10.6.1 Connecting operator display to control cabinet

Connection diagram

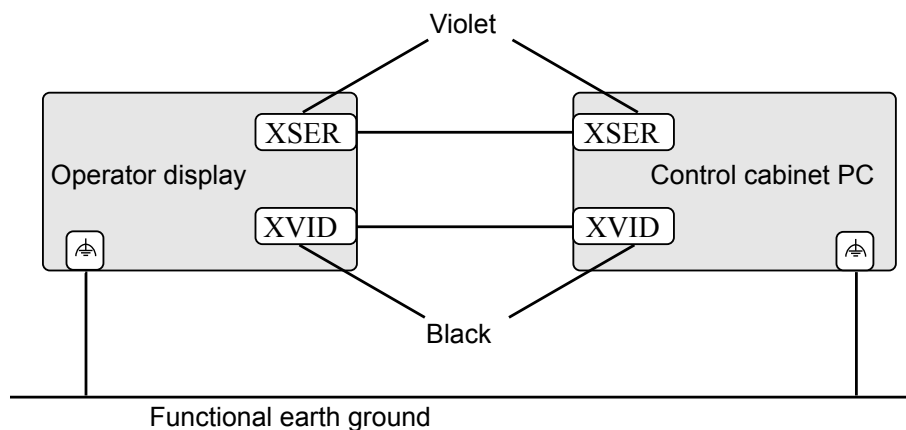


Fig. 10-8: Cabling operator display with control cabinet PC

Connection

1. Connect the functional earth.



2. Connect the violet RJ45 data interface "XSER" at the operator display to the RJ45 data interface "XSER" at the control cabinet PC.
3. Connect the black RJ45 image data interface "XVID" at the operator display to the RJ45 image data interface "XVID" at the control cabinet PC.

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 VDP and the PC if the voltage supply is interrupted to only one device and re-established. A direct connection between the functional earth and the operator displays VDP xx.3 and the control cabinet VPB 40.3 and VPB 40.3, VSB 40.3 is recommended. If the functional earth is wired at a neutral point, also connect the control cabinet PC (VPB 40.3, VSB 40.3) to this neutral point.



When wiring CDI cables with a diameter of 7.4 mm, observe the following bending radii:

- Radius when bended once during wiring: $4 \times$ cable diameter
- Minimum bending radius when moved permanently: $8 \times$ cable diameter
- Optimum bending radius when moved permanently: $12.5 \times$ cable diameter



Malfunction due to mechanical forces on the CDI cables.

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



Malfunction operation due to interchanged CDI cables.

To clearly identify cables, label them, e.g. with cable markers or clips.



The maximum cable length depends on the display resolution:

- Up to 50 meters: 1920×1080 pixels (only VDP 21.3)
- Up to 70 meters: 1366×768 pixels (only VDP 15.3 and VDP 18.3)

Longer cables can be used when using a Y-repeater. Also refer to the operating instruction of the Y-repeater, part number [R911336973](#).



Screen output interference due to VDP device exchange at runtime if the resolution of the exchanged device is different.

The display resolution is detected only once after switching on the control cabinet PC. Consequently, if a VDP is plugged in and then removed or if a VDP is connected upon control cabinet PC startup, only a VDP with the same resolution can be connected again. Thus, it is ensured that the screen output at the connected VDP is executed automatically without changing the screen output to the VDP via keyboard.



Malfunctions caused by using inappropriate cables.

Use only cables listed in [chapter 5 "Spare parts, accessories and wear parts" on page 6](#).

10.6.2 Connecting operator display to 24 V voltage supply

Connection diagram

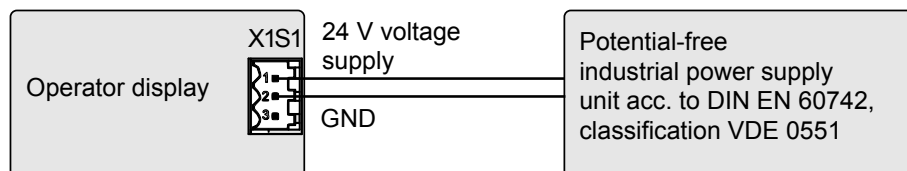


Fig. 10-9: Cabling operator display with control cabinet PC

Connection

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

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.

NOTICE

In case of greater distances between VDP and control cabinet PC, equalizing currents may flow when using a non-isolated power supply unit as pin 2 is internally connected to the housing.

In this case, use an isolated power supply unit.

UPS



The display immediately darkens in case of a power failure if the operator display is directly connected to the 24 V supply voltage without UPS. The user cannot execute any actions via the operator display during the shutdown of the control cabinet PC.

If the operator display is connected together with the control cabinet PC to the "24 V Out" of the external UPS (VAU 01.1), the user can still access the operator display during shutdown due to a power failure.

10.6.3 Overall connection scheme

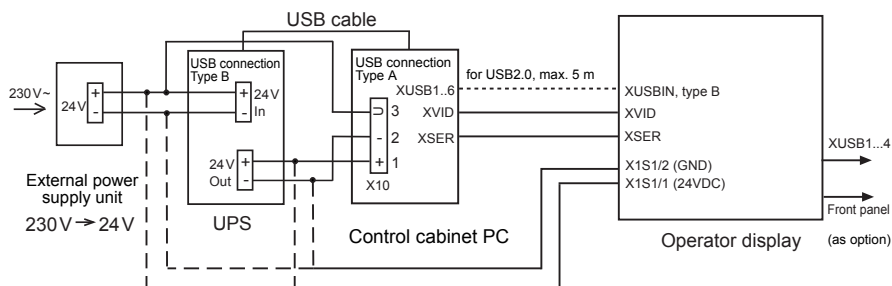


Fig. 10-10: Connection diagram with power supply unit, UPS, control cabinet PC and operator display

10.6.4 Recommendation for the 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.

These mounting recommendations 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.

Cables routing

Observe the following when routing 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 and compressive load on the cables
- Comply with the permissible bending stress and torsional stress of the cable
- Avoid collection of dirt at the RJ45 plug which can occur while drawing the cables into the system.

Potential equalization

Ensure that no compensating current flows via the cable shield of the CDI cables between device and machine parts during the installation of 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.

Remove any collection of dirt from the shield surfaces of the RJ45 plugs before plugging them in.



Fig. 10-11: 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.

Observe the following for an additional shielding connection:

- Mount 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 the cable impairs the electrical properties of the CDI cable

To mount the shielding connection, proceed as follows:

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. 10-12: CDI cable with RJ45 plug



Fig. 10-13: 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 with the shielding clamp. The foil shield is usually plastic-coated on one side for an improved stability. The plastic coating is insulating.



Fig. 10-14: Foil shield of the CDI cable



Fig. 10-15: Foil shield removed

3. Fasten cable with EMC shielding clamp.

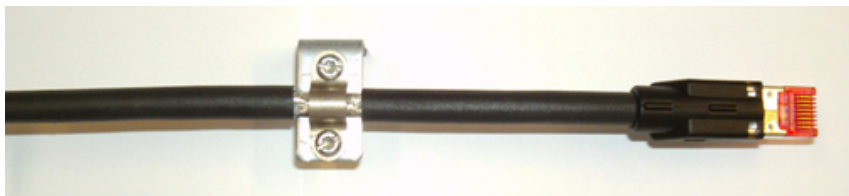


Fig. 10-16: CDI cable with shielding clamp

More shielding clamps:



- ① Vendor: Ikotec
- ② Vendor: Phoenix Contact

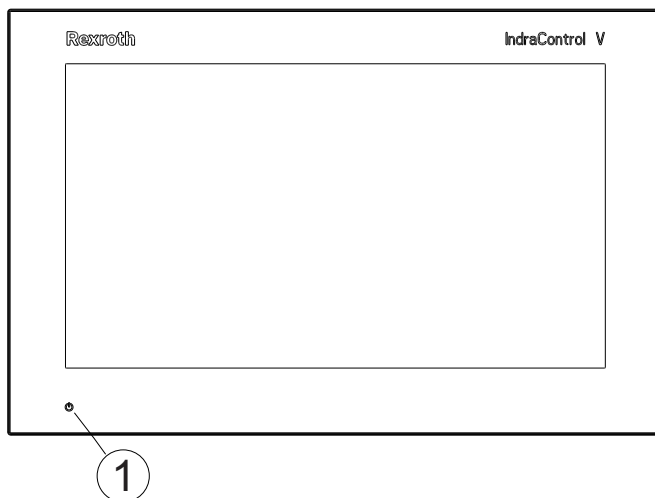
Fig. 10-17: Shielding clamps

11 Commissioning

The product can be used directly, no configuration is required.

12 Device description

12.1 General information



① Status displays

Fig. 12-1: Front view

12.2 Operating and error displays

An LED for the operating display is located in the lower part of the front panel.

Symbol, LED	Display	Description	Action
 Power	LED green	Normal operation With Y-repeater: This VDP is the active device	-
	LED off	No supply voltage of 24 V DC	Check supply voltage
	LED flashing green	No serial connection to the control cabinet PC	Check cables
		With Y-repeater: This VDP is not the active device	No action

Tab. 12-1: LED for operating and error display on the front panel

13 Error causes and troubleshooting

For information on the error display on the front panel, refer to [chapter 12.2 "Operating and error displays" on page 29](#).

Errors	Troubleshooting
No image visible	● Connect the supply voltage and check the X1S1 connection ● Connect the CDI cable correctly and check XVID and XSER ● Set the image output in the graphics driver to "VDP" ● Switch on the voltage at the operator display before or with the control cabinet PC
Distorted display due to incorrect display resolution	● Set the correct display resolution in the graphics driver ● Restart the control cabinet PC
The USB flash drive does not work, although other USB devices work	● Set the DIP switch on the VDP to <30 m ● Note: USB memory sticks can only be used up to a cable length of 30 meters
USB devices and touch screen do not work	● Set the DIP switch appropriately to the cable length
Limited operability of the operator display	● Avoid strong high-frequency interferences close to the operator display

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

NOTICE

Loss of IP degree of protection due to incorrect maintenance.

Ensure that the IP degree of protection remains during 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.

14.1 Display

The backlight is subject to wear, see [chapter 5.6 "Wear parts" on page 8](#).

A fading backlight causes a progressive deterioration display readability. Thus, a replacement is necessary. For further information, please contact the Bosch Rexroth Service.

14.2 Cleaning notes

NOTICE

Dissolving front glass sealing with solvent!

- Do not use solvents.
- Do not use high pressure cleaning devices.

14.3 Scheduled maintenance tasks

- 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.

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

Short text column	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Example:	V	D	P	1	5	.	3	C	L	N	-	D	1	-	N	N	-	N	N	.	2	0	1	2

Product
VDP = VDP

Line
15 = 15
18 = 18
21 = 21

Design
3 = 3

Front panel and display¹⁾
Rexroth Design
15,6" Multitouch = GA
18,5" Multitouch with front USB = GB
21,5" Multitouch = GC
21,5" Multitouch vertical..... = GK

Customized Design
Bosch: 15,6" Multitouch = CL
Bosch: 21,5" Multitouch = CN

Additional option
Without = N

Control panel interface
CDI = D1

Interface
Without = NN

Other design¹⁾
Without = NN
In Aluminum housing = CH
In stainless steel housing (Zone A+B+C)..... = C5

1) Note:
Front GA, GB and GC not possible with housing C5
Front CL, CN and GB not possible with housing CH

Fig. 15-1: Type code VDP 15.3/18.3/21.3

16 Disposal

16.1 Take-Back

Our products can be returned to our premises free of charge for disposal. However, the products must be free of impurities like oil, grease or other impurities.

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

Send the products "free domicile" to the following address:

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

16.2 Packaging

The packaging materials consist of cardboard, plastic material, wood or expanded polystyrene (EPS). The packaging materials can be recycled without any problem.

For ecological reasons, please refrain from returning the empty packages to us.

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

Bosch Rexroth AG

Electric Drives and Controls

P.O. Box 13 57

97803 Lohr, Germany

Bgm.-Dr.-Nebel-Str. 2

97816 Lohr, Germany

Phone +49 9352 18 0

Fax +49 9352 18 8400

www.boschrexroth.com/electrics



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