



8 a.m. - 5 p.m. Sales Available
International: 1-919-443-0207
Toll Free: 1-888-551-3082



Visit Our Website
www.wakeindustrial.com



Email Us
sales@wakeindustrial.com

All Products from Wake Industrial, LLC, come with:

Sales and Repairs

We specialize in providing immediate product delivery when your system goes down. We have thousands of In-Stock automation products and offer a full range of repair options.

Fast Shipping

We ship worldwide, offering any type of shipping method with all the major logistic companies such as FedEx, UPS, DHL, USPS, and a variety of freight carriers.

Quality Guarantee

With standards like our 1 year warranty on ALL products, we can guarantee a better customer service experience than any other company within our industry.

Damage Free Delivery



All of our products are cleaned, go through quality control and are shipped using a custom military grade foam to ensure your product arrives undamaged. We have the capability to ship both small 1lb products and large 200lb+ automation parts regardless of your location.

Stay In Touch

Wake Industrial, LLC
1620 Old Apex Road
Cary, NC 27513

*Wake Industrial is not affiliated
with nor an authorized distributor
or representative of any
manufacturers, brands or
products listed.*

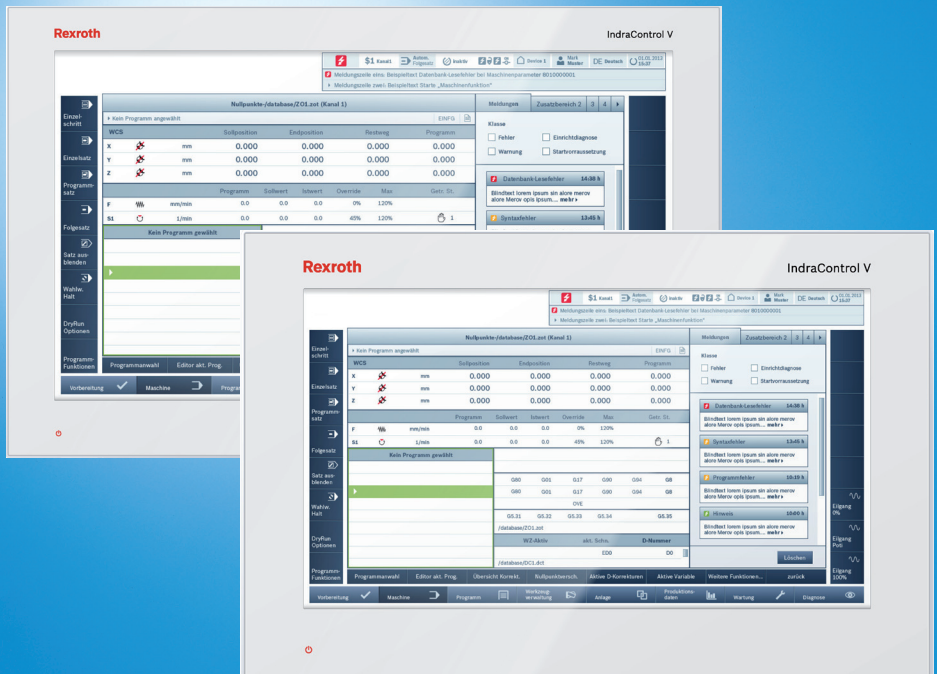
Call: 1-888-551-3082
International: 1-919-443-0207
Fax: 1-919-267-1705

Email: sales@wakeindustrial.com
Website: www.wakeindustrial.com

Rexroth IndraControl VDP 15.3, 18.3, 21.3 Multitouch Operator Display – Built-In Devices

R911341191
Edition 02

Operating Instructions



Record of Revision

Edition	Release Date	Notes
First edition	10.2013	--
Edition 02	03.2014	Revision

Copyright

© Bosch Rexroth AG 2014

This document, as well as the data, specifications and other information set forth in it, are the exclusive property of Bosch Rexroth AG. It may not be reproduced or given to third parties without its consent.

Liability

The specified data is intended for product description purposes only and shall not be deemed to be a guaranteed characteristic unless expressly stipulated in the contract. All rights are reserved with respect to the content of this documentation and the availability of the product.

Editorial Department

Development Automation Aystems Control Hardware HB (KaWa/PiGe)

Table of Contents

	Page
1 About this Documentation.....	1
2 Product Identification and Scope of Delivery.....	2
2.1 Product Identification.....	2
2.2 Scope of Delivery.....	3
3 Using the Safety Instructions.....	3
3.1 Safety Instructions – Structure.....	3
3.2 Explaining Signal Words and Safety Alert Symbol.....	4
3.3 Symbols Used.....	5
4 Intended Use.....	5
5 Spare Parts, Accessories and Wear Parts.....	6
5.1 Y-Repeater.....	6
5.2 External 24 V Power Supply Unit	6
5.3 Uninterruptible Power Supply (UPS).....	6
5.4 Connecting Cables for the CDI Interface.....	6
5.5 Wear Parts.....	7
6 Ambient Conditions.....	7
7 Technical Data.....	9
7.1 General Technical Data.....	9
7.2 Optical Characteristic Values.....	9
7.2.1 TFT.....	9
7.2.2 Input System or Multitouch Front.....	9
8 Standards.....	10
8.1 General Information.....	10
8.2 Used Standards.....	10
8.3 CE Marking.....	10
8.3.1 Declaration of Conformity	10
8.4 UL/CSA Certified.....	11
9 Interfaces.....	12
9.1 View.....	12

	Page
9.2 Overview.....	12
9.3 DC 24 V Voltage Supply.....	13
9.4 S1 DIP Switch.....	13
9.4.1 Overview.....	13
9.5 USB Interfaces.....	13
9.6 XSER Interfaces and XVID Interfaces.....	14
10 Assembly, Disassembly and Electrical Installation.....	15
10.1 Housing Dimensions.....	15
10.1.1 Rexroth Design.....	15
10.1.2 Rexroth Special Design.....	16
10.1.3 Bosch Design.....	17
10.2 Installation Notes.....	17
10.3 Assembly.....	17
10.4 VDP Assembly Dimensions.....	20
10.5 Disassembly.....	20
10.6 Electrical Wiring.....	21
10.6.1 Connecting the Control Cabinet PC to Operating Display.....	21
10.6.2 Connecting the OperatingDisplay to the 24 V Voltage Supply.....	23
10.6.3 Connection Scheme – Power Supply Unit, UPS, Control Cabinet PC and Operating Display.....	24
10.6.4 Recommendation for the Assembly of CDI Cables with Long Lengths in an Interference-Prone Environment.....	24
11 Commissioning.....	27
12 Device Description.....	28
12.1 General Information.....	28
12.2 Operating and Error Display.....	28
13 Error Causes and Elimination.....	28
14 Maintenance.....	29
14.1 General Information.....	29
14.2 Display.....	29
14.3 Cleaning Notes.....	29
14.4 Regular Maintenance Tasks.....	30
15 Ordering Information.....	30

	Page
15.1 Accessories and Spare Parts.....	30
15.2 Type Code.....	31
16 Disposal.....	31
16.1 Take-Back.....	31
16.2 Packaging.....	32
17 Service and Support.....	32
Index.....	35

1 About this Documentation

Overview – target groups and product phases

The activities, product phases and target groups that refer to the present documentation are marked in red color in the following figure.

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

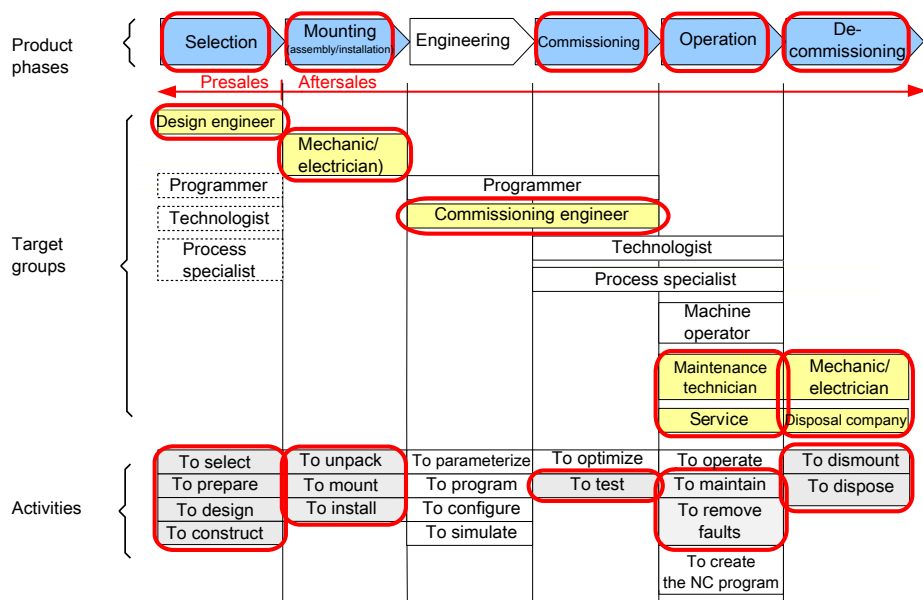


Fig. 1-1: Assigning the present documentation to the target groups, product phases and activities of the target group

Purpose

This document instructs the technical staff of the machine manufacturer on how to perform the mechanic and electrical installation in a safe way and on how to commission the device.

Required qualifications: 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.

Scope

This operating instruction is valid for all multitouch operating displays whose type code starts with "VDPxx.3...".

The type designation code specifications are located on the type plate of the device, see also [chapter 2.1 "Product Identification" on page 2](#).

Further 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. 1-1: Required and supplementing documentation

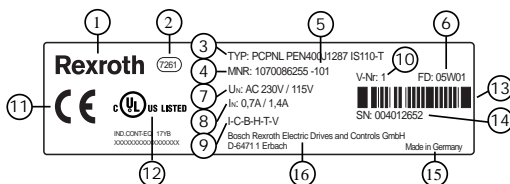
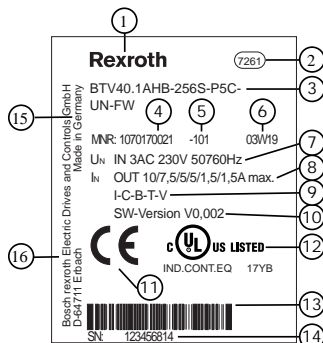
Customer feedback

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 panel.



- 1 Logotype
- 2 Division or plant number
- 3 Type code (type designation code)
- 4 Parts number
- 5 State of revision
- 6 Date of manufacture (yyWww)
- 7 Nominal voltage
- 8 Nominal current

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

Fig. 2-1: Type plates, example

2.2 Scope of Delivery

- Operating display
- Safety instructions
- Mounting kit
- 24 V female connector strip

3 Using the Safety Instructions

3.1 Safety Instructions – Structure

The safety instructions are structured as follows:

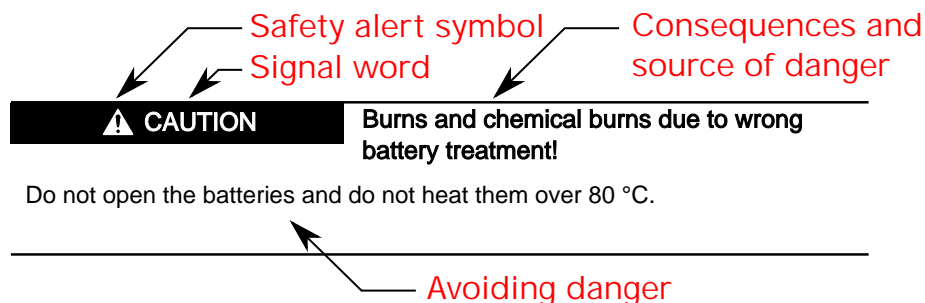


Fig. 3-1: Safety instructions – Structure

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 is meant to draw the reader's attention to the safety instruction and signifies the degree of danger.

The safety alert symbol (a triangle with an exclamation point), which precedes the signal words danger, warning and caution is used to alert the reader to personal injury hazards.

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 could occur.

NOTICE

In case of non-compliance with this safety instruction, property damage could occur.

3.3 Symbols Used

Notes are displayed as follows:



This is a note.

Tips are displayed as follows:



This is a tip.

4 Intended Use

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

NOTICE

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

The operator displays may be used only 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 is valid for cables and lines.

Operation must only be carried out with the hardware component configurations and combinations that are expressly specified and with the software and firmware indicated and specified in the respective documentation and functional descriptions.

Typical areas of application of the operator displays are:

- Handling systems and assembly systems
- Packaging and food processing machines
- Printing machines 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

Risk of destroying the touch screen or the front panel by using inappropriate items.

Operate the touch screen only with your finger or with a special touch pen (parts number 1070923266).

5 Spare Parts, Accessories and Wear Parts

5.1 Y-Repeater

Connecting unit to connect two operator displays featuring 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 the CDI Interface



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

Ordering code	Part number	Description
RKB0008/000,5 (***** - *****)	R911171484	Length: 0.5 m
RKB0008/001,0 (***** - *****)	R911171485	Length: 1 m
RKB0008/002,5 (***** - *****)	R911170151	Length: 2.5 m
RKB0008/005,0 (***** - *****)	R911170152	Length: 5 m

Ordering code	Part number	Description
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

Tab. 5-4: Connecting cables to control cabinet PC, panel PC and operator display
Further cable lengths are available on request.



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

5.5 Wear Parts

Wear parts are not subject to any warranty.

Backlight

The service life of the backlight is limited. After this time has been exceeded, the backlight will produce only 50 % of its original brightness. The service life is approx. 50,000 hours at an ambient temperature of 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

	In operation	Transport	Storage
Humidity	Min. relative humidity: 5 % Max. relative humidity: 85 % Min. absolute humidity: 1 g/m ³ Max. absolute humidity: 25 g/m ³ Condensation not al- lowed Corresponds to climatic class 3K3 acc. to EN 60721-3-3	Min. relative humidity: 5 % Max. relative humidity: 75 % Min. absolute humidity: 1 g/m ³ Max. absolute humidity: 25 g/m ³ Condensation not al- lowed Corresponds to climatic class 2K2 acc. to EN 60721-3-2	Min. relative humidity: 5 % Max. relative humidity: 85 % Min. absolute humidity: 1 g/m ³ Max. absolute humidity: 25 g/m ³ Condensation not al- lowed Corresponds to climatic class 1K2 acc. to EN 60721-3-1
Air pressure	Up to 3000 m above sea level acc. to EN 61131-2	Up to 3000 m above sea level acc. to EN 61131-2	Up to 3000 m above sea level acc. to EN 61131-2
Mechanical strength	Max. vibration: Frequency range: 10 Hz to 150 Hz Excursion: 0.075 mm at 10 Hz to 57 Hz Acceleration: 1 g at 57 Hz to 150 Hz acc. to EN 600068-2-6	Max. shock: 15 g 11 ms acc. to EN 60068-2-27, no disturbance of the function	Max. shock: 15 g 11 ms acc. to EN 60068-2-27, no disturbance of the function
Contamination level	2	2	2
Overvoltage category	2	-	-

Tab. 6-1: Ambient conditions



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

The ambient air must be dust-free. Housing and installation compartments must at least comply with degree of protection IP 54 according to DIN VDE 0470-1.

7 Technical Data

7.1 General Technical Data

	VDP 15.3GA (Rexroth design) VDP 15.3CL (Bosch design)	VDP 18.3GBN (Rexroth design)	VDP 21.3GC (Rexroth design) VDP 21.3CN (Bosch 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	Multitouch		
Surface of the front panel	Thermally tempered glass		
Enclosure rating	Front panel IP 65 according to DIN EN 60 529 Front type 1 according to NEMA (UL) Rear panel IP 20		
Voltage supply	DC 24 V (use a 24 V power supply unit according 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 is 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 the respective "Incoming Inspection" of the manufacturer.

7.2.2 Input System or Multitouch 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 FT quality standard (version December 2013) of the Fachgemeinschaft Eingabesysteme (German association for input systems).

8 Standards

8.1 General Information

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

8.2 Used Standards

Standard	Meaning
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, protective separation
EN 60,664 -1	Overvoltage category II
EN 61,131 -2	24 V outputs 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	Climatic class
EN 60,721-3-3	

Tab. 8-1: Used standards

8.3 CE Marking

8.3.1 Declaration of Conformity



The electronic products that are described in the present 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

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

Standard	Title	Edition
DIN EN 61000-6-4 (VDE 0839-6-4)	Electromagnetic Compatibility (EMC) Part: 6-4: Generic standards – emission standard for industrial environments (IEC 61000-6-4:2006)	September 2007
DIN EN 61000-6-2 (VDE 0839-6-2)	Electromagnetic Compatibility (EMC) Part: 6-2: Generic standards – noise immunity for industrial environments (IEC 61000-6-2:2005)	March 2006

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



Non-compliance with CE conformity due to modifications to the device.

The CE marking is only valid for the device in its delivery status. After having modified the device, the CE conformity is to be verified.

8.4 UL/CSA Certified



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 limited or missing certification. Thus, verify the registration according to the UL marking on the device.



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

The UL and CSA marking is only valid for the device in its delivery status. After modifying the device, the UL and CSA conformity is to be verified.

9 Interfaces

9.1 View

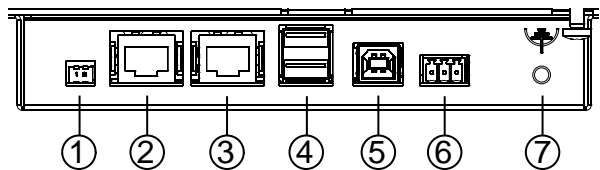



Fig. 9-1: Interfaces on the operating display

9.2 Overview

	Designation at the housing	Connection type	Connector type, integrated	Mating connector or cable (from outside)
	S1	See chapter 9.4 "S1 DIP Switch" on page 13		
	XVID	CDI interface, screen	RJ45 female connector	RJ45 connector
	XSER	CDI interface, data	RJ45 female connector	RJ45 connector
	XUSB1/2	2 USB interfaces	USB female connector, 4-pin, type A	USB connector, 4-pin, type A
	XUSBIN	USB2.0 connection to the control cabinet PC. Maximum length 5 m Use only a high-speed USB2.0 cable (see chapter 5 "Spare Parts, Accessories and Wear Parts" on page 6)	USB female connector, 4-pin, type B	USB connector, 4-pin, type B
	X1S1	DC-24-V voltage supply	3-pin, MC1,5/3-G-3,5THT	3-pin, FK-MCP 1,5/3-ST-3,5
		Functional earth ground (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 DC 24 V Voltage Supply

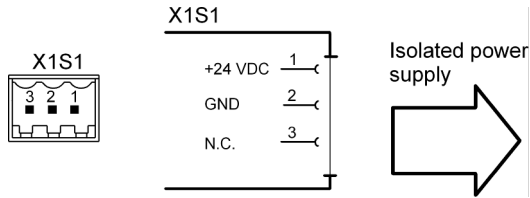


Fig. 9-2: Interface for 24 V voltage supply

Pin	Function
1	Supply voltage +24 V
2	Supply voltage 0 V
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" (parts number R911171065) for the voltage supply.

9.4 S1 DIP Switch

9.4.1 Overview

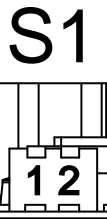


Fig. 9-3: S1 DIP switch on the connector panel of the operating display

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

Tab. 9-2: DIP switch at the VDP

9.5 USB Interfaces

The devices feature two USB interfaces on the connector panel (XUSB1/2), and, depending on the version, one interface on the front panel.

Operation of the USB ports on the operating display

The USB speed at the operating display depends on the cable length of the XSER connection and of the DIP switch setting, see [tab. 9-3 "USB speeds depending on the XSER cable length" on page 14](#):

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	Make sure that the connected device does not contain a USB hub
Longer than 30 meters	ON	12 Mb/s	Only a mouse and keyboards can be connected. Make sure that the connected device does not contain a USB hub

Tab. 9-3: USB speeds depending on the XSER cable length



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



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



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 and switches the power supply unit of the operating display off.

9.6 XSER Interfaces and XVID Interfaces

CDI Interface

The CDI interface is assigned to the two RJ45 female connectors XSER and XVID. The connection between the control cabinet PC and the operating display is established on these female connectors 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 screen interface (XVID).

XVID and XSER Markings

The CDI interfaces are color-coded on the device:

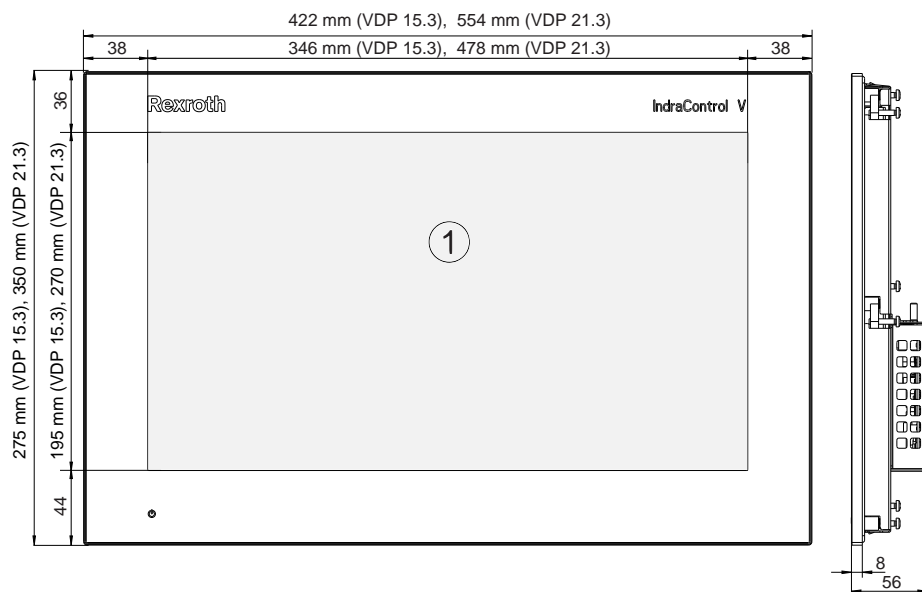
CDI interface, data (XSER)	Violet
CDI interface, screen (XVID)	Black

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

10 Assembly, Disassembly and Electrical Installation

10.1 Housing Dimensions

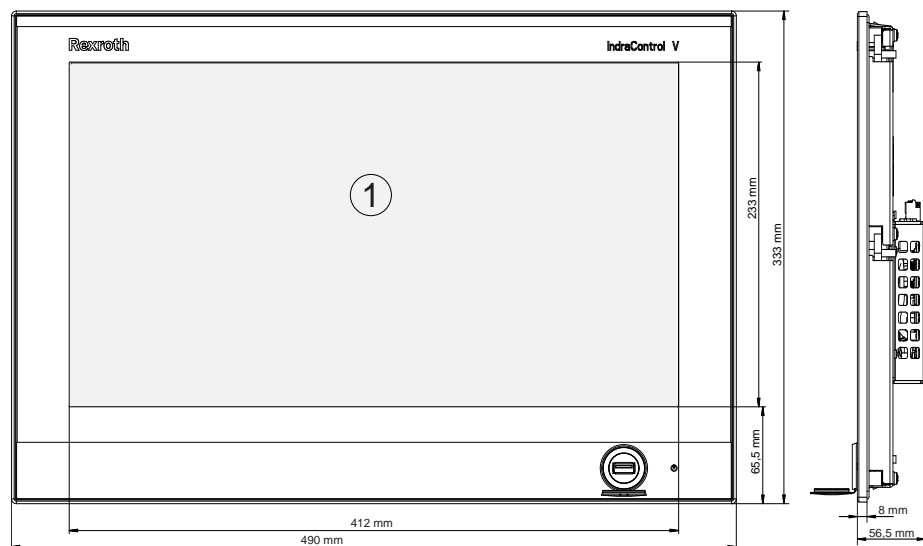
10.1.1 Rexroth Design



① Field of vision of the display

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

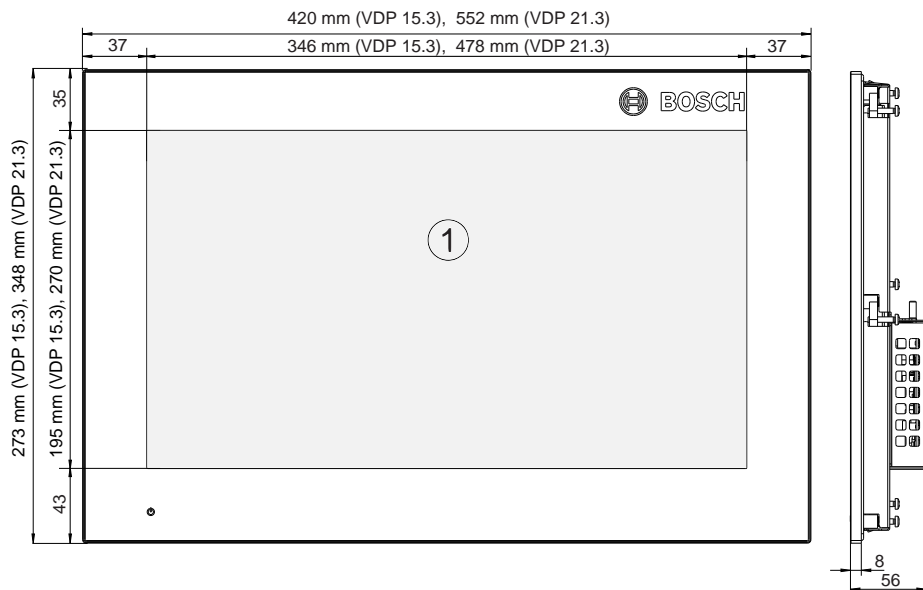
10.1.2 Rexroth Special Design



① Field of vision of the display

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

10.1.3 Bosch Design



① Field of vision of the display

Fig. 10-3: Housing dimensions of the operating display VDP 15.3/VDP 21.3 in millimetres, Bosch design

10.2 Installation Notes

- Provide a space of 50 mm on all sides of the device for sufficient cooling and cable routing.
- The LED displays on the connector must not be covered.
- Lay all cable in loops. Use strain reliefs for all cables.
- Only install the operating display vertically, with a max. deviation of $\pm 45^\circ$, measured from the vertical.
- Do not lay the CDI cables in parallel to the motor cables or other noise sources as otherwise the CDI connection may be disturbed. Keep as much distance as possible to noise sources.

10.3 Assembly

Assemble the operating display as follows:

**Loss of degree of protection IP 65!**

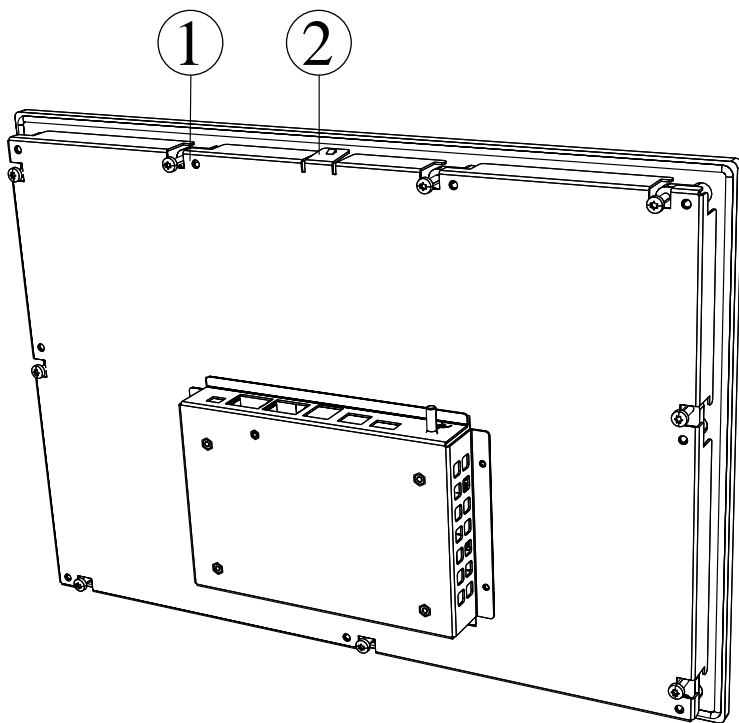
The housing in which the operating display is installed, has to fulfil the following conditions:

- free from impurities
- sufficient mechanical strength and flatness

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

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

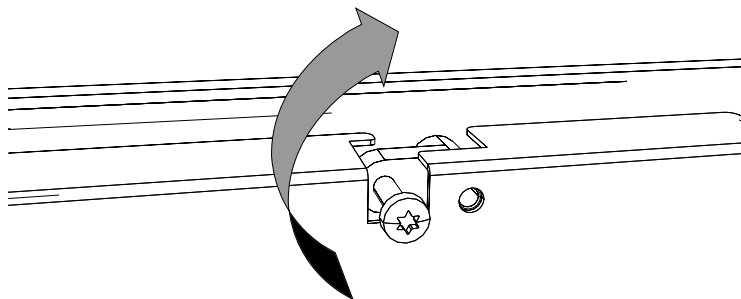
1. Creating a panel cut-out, see [fig. 10-6 "Assembly dimensions in millimetres" on page 20](#).
2. Insert the operating display from the front in the cut-out until the click-in lug at the top of the device latches in the cut-out.



- ① Clamp fastenings
② Click-in 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

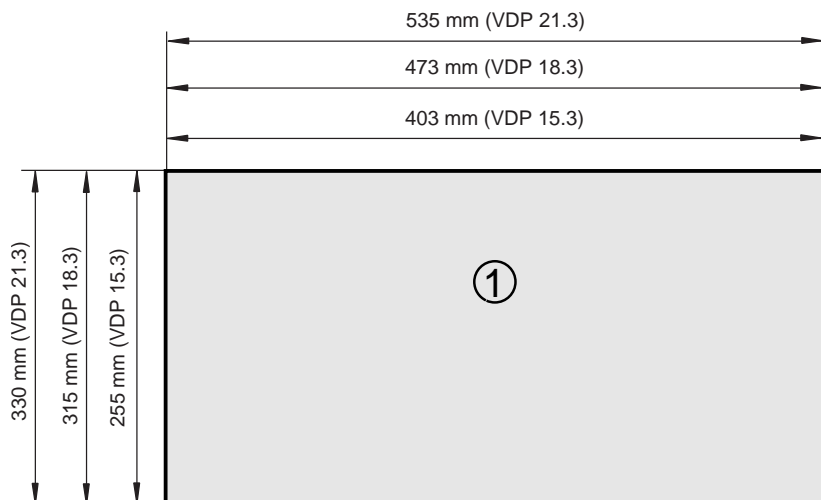
Mechanic damage due to incorrect mounting torque.

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

Threads	Mounting torques
M2.5	0.4 Nm
M3	0.7 Nm
M4	1.4 Nm
M5	1.0 Nm

Tab. 10-1: Mounting torques

10.4 VDP Assembly Dimensions



① Mounting cut-out

Fig. 10-6: Assembly dimensions in millimetres

10.5 Disassembly

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

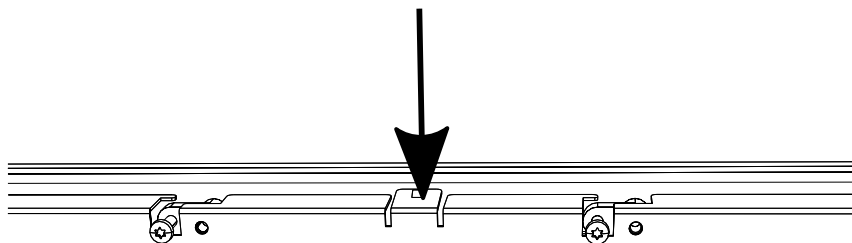


Fig. 10-7: Click-in lug

6. Remove the operating display from the mounting frame.

10.6 Electrical Wiring

10.6.1 Connecting the Control Cabinet PC to Operating Display

Connection diagram

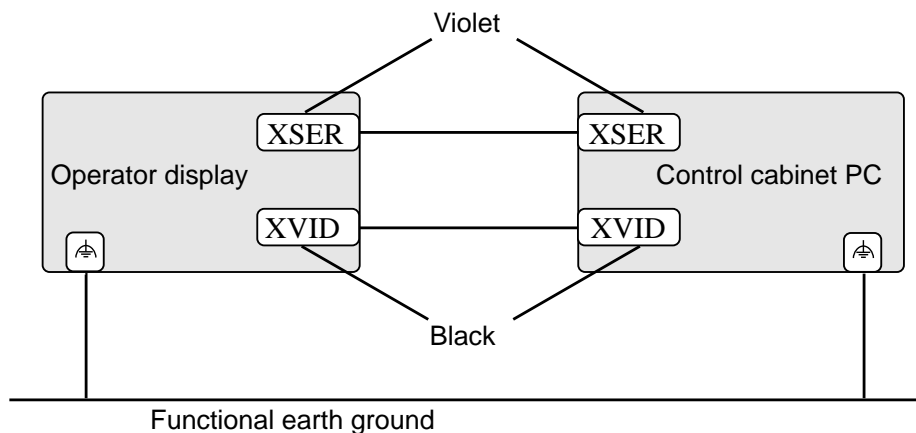


Fig. 10-8: Wiring the operating display to the control cabinet PC

Connection

1. Connect the functional earth ground.



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

NOTICE

Material damages to electronics due to missing functional earth ground connection!

Ensure that the functional earth ground 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 functional earth ground and operating display VDP xx.3 and VPB 40.3, VSB 40.3 is recommended. If the functional earth ground is wired at a neutral point, also the control cabinet PC (VPB 40.3, VSB 40.3) is to be connected to this neutral point.



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

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



Breakdown of the operation due to mechanical forces which impact the CDI cables.

Avoid mechanical stress (tensile, compressive, torsional and lateral forces) caused by connectors to the RJ45 female connector.



Breakdown of the operation due to changed CDI cables.

To be able to clearly identify the cables, label the cables, e.g. with a cable marker 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, see also operating instruction of the Y-repeater, part number [R911336973](#).



Screen output interference due to VDP device exchange during running operation 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 and then removed or if a VDP is connected when starting the control cabinet PC, only a VDP with the same resolution can be connected again. Thus, it is ensured that the screen output on the connected and disconnected VDP is executed automatically without switching the screen output to the VDP using the 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 the OperatingDisplay to the 24 V Voltage Supply

Connection diagram

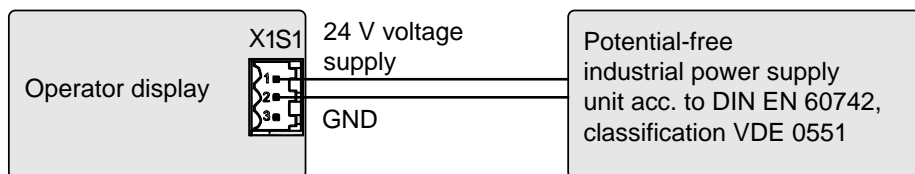


Fig. 10-9: Wiring the operating display to the control cabinet PC

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" (parts number R911171065) for the voltage supply.

NOTICE

In case of greater distances between VDP and control cabinet PC exceeds 50 m, equalizing currents may flow when using a non-isolated power supply unit as pin 2 is internally connected to the housing.

In this case an isolated power supply unit has to be used.

UPS



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

If the operating display is connected together with the control cabinet PC to the "24 V Out" of the external UPS, the user still can access the operating display during the shutdown in the event of a power failure.

10.6.3 Connection Scheme – Power Supply Unit, UPS, Control Cabinet PC and Operating Display

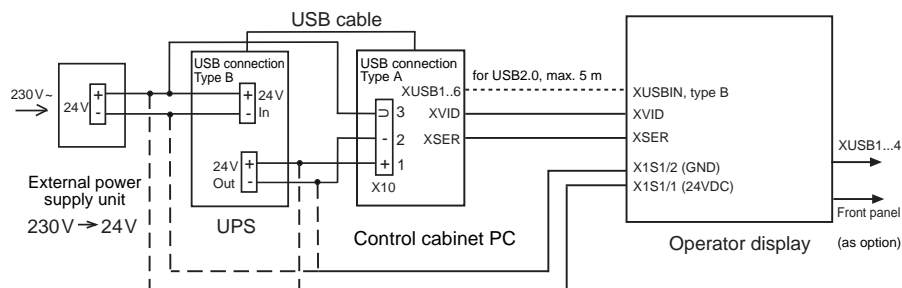


Fig. 10-10: Connection scheme – power supply unit, UPS, control cabinet PC and operating display

10.6.4 Recommendation for the Assembly of CDI Cables with Long Lengths in an Interference-Prone Environment

General Information

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

These assembly instructions facilitate an optimized signal transmission. In particular in case of long cable lengths and great distances between the control cabinet PC and the remote operating display, make sure that the cable is installed correctly and the shield is connected correctly.

Laying the Cables

Refer to the following information regarding the cable installation:

- 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 cable
- Comply with the permissible bending and torsional stress of the cable
- Avoid collection of dirt at the RJ45 connector which can occur during drawing in of the cables in the installation.

Equipotential Bonding

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

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 of the environment. The shielding has to be connected to the equipotential bonding 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 connector prior to plugging the connector in.



Fig. 10-11: RJ45 connector shield surfaces

Additional Shield Connection in Case of Strong Electrical Interferences and Long Cable Lengths

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

Refer to the following information regarding the additional shield connection installation:

- Assemble suitable EMC shield clamp close to the control cabinet PC, the remote operating display or the Y-repeater
- Make sure that the CDI cable is not crimped when connecting the shielding to the equipotential bonding
- Avoid mechanic load (compressive load, tensile load) on the connector
- Use EMC shield clamps compatible with the cable diameter. Crimping of the cable impairs the electrical properties of the CDI cable.

Comply with the following steps during the assembly of 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 in the area where the jacket has been removed. Make sure that the CDI cable shielding is not damaged when removing the cable jacket.



Fig. 10-12: CDI cable with RJ45 connector



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 connection to the shield clamp. The foil shield is usually plastic-coated on one side for an improved stability. The plastic-coat insulates the foil shield.



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



Fig. 10-15: Foil shield removed

3. Fasten cable with EMC shield clamps.

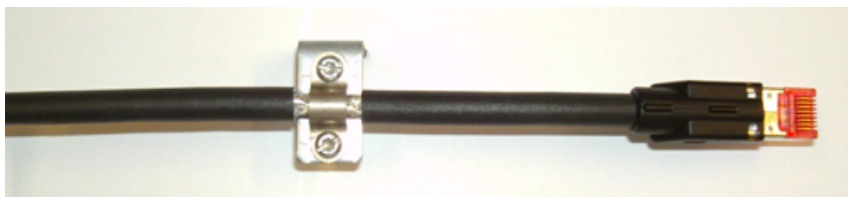


Fig. 10-16: CDI cable with shield clamp

More shield clamps:



- ① Manufacturer: Ikotec
- ② Manufacturer: Phoenix Contact

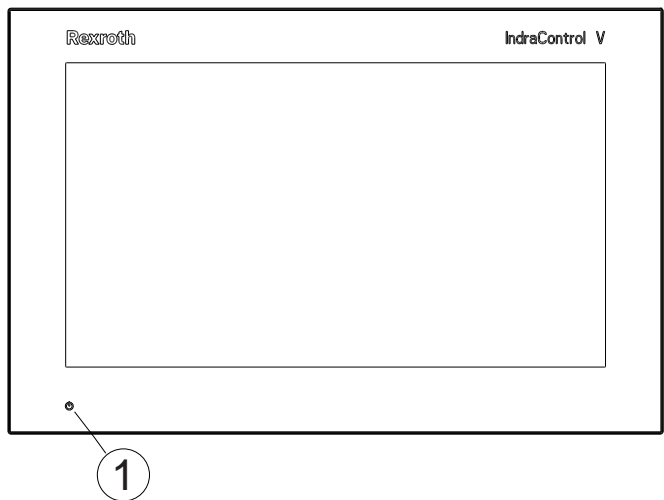
Fig. 10-17: Shield clamps

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 Display

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

Symbol, LED	Display	Meaning	Measure
 Power	LED green	Normal operation With Y-repeater: This VDP is the active device	-
	LED off	No supply voltage DC 24 V	Check supply voltage
	LED is 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: Status LED and LED for error display on the front panel

13 Error Causes and Elimination

The error display on the front panel is described in [chapter 12.2 "Operating and Error Display"](#) on page 28.

Error	Correction
No image visible	<ul style="list-style-type: none"> ● Connect the supply voltage, check the X1S1 connection ● Connect the CDI cable correctly, check XVID and XSER ● Set the screen output in the graphics driver to "VDP" ● Switch on the voltage at the VDP before or at the same time as the control cabinet PC
Distorted display due to incorrect display resolution	<ul style="list-style-type: none"> ● Set the correct display resolution in the graphics driver ● Restart the control cabinet PC
The USB flash drive does not function, although other USB devices function	<ul style="list-style-type: none"> ● Set the DIP switch on the VDP to <30 m ● Note: USB flash drives can only be used up to a cable length of 30 meters
USB devices and touch screen do not work	<ul style="list-style-type: none"> ● Set the DIP switch according to the cable length.

Tab. 13-1: Error causes and error elimination

14 Maintenance

14.1 General Information

NOTICE

Loss of IP degree of protection due to incorrect maintenance.

The IP degree of protection must be ensured during maintenance!

14.2 Display

The backlight is subject to wear, see [chapter 5.5 "Wear Parts" on page 7](#).

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

14.3 Cleaning Notes

NOTICE

Disintegrating of face-plate sealing due to solvent!

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

14.4 Regular Maintenance Tasks

- At least once a year, all plug and terminal connections of the components are to be checked regarding proper tightness and possible damage.
- Check for wire break or crimped lines.
- Damaged parts must be replaced immediately.

15 Ordering Information

15.1 Accessories and Spare Parts

For ordering information about accessories and spare parts, please 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	1	2	3	4	5	6	7	8	9	20	1	2
Example:	V	D	P	1	5	.	3	C	L	N	-	D	1	-	N	N	-	N	N			
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																						
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 Aluminum housing (Zone A).....																						
= C2																						
In Aluminum housing (Zone A+B+C).....																						
= C3																						
In stainless steel housing (Zone A).....																						
= C4																						
In stainless steel housing (Zone A+B+C).....																						
= C5																						
1) Note:																						
Front GA, GB and GC not possible with housing C2, C3, C4 and C5																						
Front CL and CN 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 Helpdesk & Hotline** 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 resulting in the malfunction
- Type plate name of the affected products, in particular type codes and serial numbers

- Your contact data (phone and fax number as well as your email address)

Index

0 ... 9

24 V voltage supply..... 13

A

Accessories..... 6

Ambient conditions..... 7

Assembly..... 15

Assembly dimensions..... 20

B

Backlight..... 7

Bending radius..... 22

C

Cable..... 6

Cable installation CDI cable..... 24

CDI cable, long..... 24

CDI interface..... 6, 14

CE marking..... 10

Cleaning notes..... 29

Commissioning..... 27

Complaints..... 2

Connecting cables to the control cabinet PC..... 6

Connector panel..... 12

Criticism..... 2

Customer Feedback..... 2

D

DC 24 V voltage supply..... 13

Declaration of conformity..... 10

Device description..... 28

Dimensions..... 20

DIP switch..... 13

Disassembly..... 15, 20

Disposal..... 31

Documents, further..... 2

E

Electrical wiring..... 21

Error causes..... 28

Error displays..... 28

External 24 V power supply unit.... 6

F

Feedback..... 2

H

Housing dimensions..... 15

I

Installation notes..... 17

Intended use..... 5

Interfaces..... 12

 XUSB interfaces..... 13

 XVID interface..... 14

Interference-prone environment... 24

L

LED..... 28

M

Maintenance..... 29

N

24 V power supply unit..... 6

O

Operating and error display..... 28

Optical characteristic values..... 9

P

Panel cut-out..... 20

Product identification..... 2

S

S1 DIP switch..... 13

Safety alert symbol..... 4

Safety instructions..... 3, 4

Scope of delivery..... 3

Service life

 Backlight..... 7

Shielding CDI cable..... 24

Signal words..... 4

Spare parts..... 6

Standards..... 10

Suggestions..... 2

Supply voltage..... 23

Support	
See service hotline.....	32
Symbols.....	5

T

Target groups.....	1
Technical data.....	9
Voltage supply.....	13
Type plate.....	2

U

UL/CSA certified.....	11
Uninterruptible power supply.....	6
UPS.....	6
USB interfaces.....	13
Use, intended.....	5

V

Voltage supply.....	13, 23
Voltage supply (DC 24 V).....	13

W

Wear parts.....	6
Wiring, electrical.....	21

X

XUSB interfaces.....	13
----------------------	----

Y

Y-repeater.....	2, 6
-----------------	------

Notes

Bosch Rexroth AG
Electric Drives and Controls
P.O. Box 13 57
97803 Lohr, Germany
Bgm.-Dr.-Nebel-Str. 2
97816 Lohr, Germany
Tel. +49 9352 18 0
Fax +49 9352 18 8400
www.boschrexroth.com/electrics



R911341191

DOK-SUPPL*-VDPXX.3MTBU-IT02-EN-P