Electric Drives and Controls | Hydraulics | Linear Motion and Assembly Technologies | Pneumatics | Service

Rexroth
Bosch Group

Rexroth IndraControl VSB 40.3 Control Cabinet PC

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Project Planning Manual

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1 System Presentation

1.1 Brief Description VSB 40.3

The VSB 40.3 is a control cabinet PC that forms a PC-based operator terminal when combined with a VDP 16.3 or VDP 40.3 display. Depending on the application and configuration, the operator terminal can also fulfill control functionalities.

Fig. 1-1: VSB 40.3

The VSB 40.3 is connected with an operator display VDP 16.3 or VDP 40.3 via a connecting cable of up to 80 m to the serial CDI display interface. Thus, the VSB 40.3 can be installed in the control cabinet and the operating display in its door or at the machine.

1.2 Operating System

Due to license reasons, the VSB 40.3 devices are only delivered with already installed operating system.

1.3 Commissioning

Mount the device properly (see chapter 5 "Dimensions, Installation and Wiring" on page 25). Then, connect the device to the UPS and, if required, to the network.

2 Important Instructions on Use

2.1 Appropriate Use

2.1.1 Introduction

Rexroth products represent state-of-the-art developments and manufacturing. They are tested prior to delivery to ensure operational safety and reliability.

WARNING

Physical injury and material damage might result from inappropriate use of the products!

The products are designed for use in an industrial environment and may therefore only be used for the intended purpose. If they are not used as intended, situations causing personal injury as well as material damage can occur.

☞ Rexroth disclaims as manufacturer any warranty, liability or damages occurring due to inappropriate use of the products. Furthermore, Rexroth is not paying any compensation. The user is responsible for any risks resulting from inappropriate use of the products.

Before using Rexroth products, the following requirements must be met to ensure appropriate use of the products:

- Anyone handling one of the Rexroth products in any way has to read and understand the respective safety-related guidelines as well as the instructions on appropriate use.
- Hardware products have to remain in their original state, in other words, no modification regarding the design are allowed. Software products must not be decompiled and their source codes must not be modified.
- Damaged or faulty products must not be implemented or put into operation.
- It must be ensured that the products are installed as specified in the documentation.

2.1.2 Areas of Use and Application

The VSB 40.3 by Rexroth is a control cabinet PC and becomes a PC-based operator terminal when used with a VDP display. Depending on the application and configuration, control functionality can also be carried out.

☞ The VSB 40.3 may only be used with the accessories and add-on components specified in this documentation. Components that are not mentioned explicitly must neither be mounted nor connected. The same is applicable for cables and wires.

Operation may only be carried out in the component configurations and combinations specified and with the software and firmware specified in the respective functional description.

Typical areas of application of the VSB 40.3 are:

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

- Wood working machines

The VSB 40.3 may only be operated under the assembly conditions and installation conditions, in the specified position of application and under the specified ambient conditions (temperature, degree of protection, humidity, EMC etc.) given in this documentation.

2.2 Inappropriate Use

The application of control cabinet PC that are VSB 40.3 not within the specified areas of application or under operating conditions deviating from the operating conditions and technical data specified in the documentation is considered as "inappropriate".

control cabinet PC VSB 40.3 may not be used if ...

- it is exposed to operating conditions that do not fulfill the ambient conditions specified (for example, operation under water, under extreme temperature fluctuations or extreme maximum temperatures is not allowed);
- Rexroth has not explicitly released the intended applications – please also note the general statements in the general safety-related guidelines;

3 Safety Instructions for Electric Drives and Controls

3.1 Definitions of Terms

Application Documentation The entire documentation used to inform the user of the product about the use and safety-relevant features for configuring, integrating, installing, mounting, commissioning, operating, maintaining, repairing and decommissioning the product. The following terms are also used for this kind of documentation: User Guide, Operation Manual, Commissioning Manual, Instruction Manual, Project Planning Manual, Application Manual, etc.

Component Combination of elements with a specified function, which are part of a piece of equipment, device or system. Components of a drive and control system are, for example, supply units, drive controllers, mains choke, mains filter, motors, cables, etc.

Control System Several interconnected control components placed on the market as a single functional unit.

Device Finished product with a defined function, intended for users and placed on the market as an individual piece of merchandise.

Drive System A group of components consisting of electric motor(s), motor encoder(s) and cable(s), supply units and drive controllers, as well as possible auxiliary and additional components, such as mains filter, mains choke, etc.

Electrical Equipment Objects used to generate, convert, transmit, distribute or apply electrical energy, such as machines, transformers, switching devices, cables, lines, power-consuming devices, circuit board assemblies, plug-in units, control cabinets, etc.

Installation Several devices or systems interconnected for a defined purpose and on a defined site which, however, are not intended to be placed on the market as a single functional unit.

Machine Entirety of interconnected parts or units at least one of which is movable. Thus, a machine consists of the appropriate machine drive elements, as well as control and power circuits, which have been assembled for a specific application. A machine is, for example, intended for processing, treatment, movement or packaging of a material. The term "machine" also covers a combination of machines which are arranged and controlled in such a way that they function as a unified whole.

Manufacturer Individual or legal entity bearing responsibility for the design and manufacture of a product which is placed on the market in the individual's or legal entity's name. The manufacturer can use finished products, finished parts or finished elements, or contract out work to subcontractors. However, he must always have overall control and possess the required authority to take responsibility for the product.

Product Produced device, component, part, system, software, firmware, among other things.

Project Planning Manual Part of the application documentation used to support the dimensioning and planning of systems, machines or installations.

Qualified Persons In terms of this application documentation, qualified persons are those persons who are familiar with the installation, mounting, commissioning and operation of the components of the drive and control system, as well as with the hazards this implies, and who possess the qualifications their work requires. To comply with these qualifications, it is necessary, among other things,

- to be trained, instructed or authorized to switch electric circuits and devices safely on and off, to ground them and to mark them,

- to be trained or instructed to maintain and use adequate safety equipment,
- to attend a course of instruction in first aid.

User A person installing, commissioning or using a product which has been placed on the market.

3.2 General Information

3.2.1 Using the Safety Instructions and Passing Them on to Others

Do not attempt to install and operate the electric components of the drive and control system without first reading all documentation provided with the product. Read and understand these safety instructions and all user documentation prior to working with these components. If you do not have the user documentation for the components, contact your responsible Bosch Rexroth sales partner. Ask for these documents to be sent immediately to the person or persons responsible for the safe operation of the components.

If the component is resold, rented and/or passed on to others in any other form, these safety instructions must be delivered with the component in the official language of the user's country.

WARNING

Improper use of these components, failure to follow the safety instructions in this document or tampering with the product, including disabling of safety devices, could result in property damage, injury, electric shock or even death.

Observe the safety instructions!

3.2.2 Requirements for Safe Use

Read the following instructions before initial commissioning of the electric components of the drive and control system in order to eliminate the risk of injury and/or property damage. You must follow these safety instructions.

- Bosch Rexroth is not liable for damages resulting from failure to observe the safety instructions.
- Read the operating, maintenance and safety instructions in your language before commissioning. If you find that you cannot completely understand the application documentation in the available language, please ask your supplier to clarify.
- Proper and correct transport, storage, mounting and installation, as well as care in operation and maintenance, are prerequisites for optimal and safe operation of the component.
- Only qualified persons may work with components of the drive and control system or within its proximity.
- Only use accessories and spare parts approved by Bosch Rexroth.
- Follow the safety regulations and requirements of the country in which the electric components of the drive and control system are operated.
- Only use the components of the drive and control system in the manner that is defined as appropriate. See chapter "Appropriate Use".
- The ambient and operating conditions given in the application documentation at hand must be observed.
- Safety-relevant applications are only allowed if clearly and explicitly specified in the application documentation "Integrated Safety Technology". If

this is not the case, they are excluded. Safety-relevant are all such applications which can cause danger to persons and property damage.

- The information given in the application documentation with regard to the use of the delivered components contains only examples of applications and suggestions.

  The machine and installation manufacturer must

  – make sure that the delivered components are suited for his individual application and check the information given in this application documentation with regard to the use of the components,

  – make sure that his individual application complies with the applicable safety regulations and standards and carry out the required measures, modifications and complements.

- Commissioning of the delivered components is only allowed once it is sure that the machine or installation in which the components are installed complies with the national regulations, safety specifications and standards of the application.
- Operation is only allowed if the national EMC regulations for the application are met.
- The instructions for installation in accordance with EMC requirements can be found in the section on EMC in the respective application documentation.

  The machine or installation manufacturer is responsible for compliance with the limit values as prescribed in the national regulations.
- The technical data, connection and installation conditions of the components are specified in the respective application documentations and must be followed at all times.

National regulations which the user must take into account

- European countries: According to European EN standards
- United States of America (USA):
  – National Electrical Code (NEC)
  – National Electrical Manufacturers Association (NEMA), as well as local engineering regulations
  – Regulations of the National Fire Protection Association (NFPA)
- Canada: Canadian Standards Association (CSA)
- Other countries:
  – International Organization for Standardization (ISO)
  – International Electrotechnical Commission (IEC)

3.2.3 Hazards by Improper Use

- High electrical voltage and high working current! Danger to life or serious injury by electric shock!
- High electrical voltage by incorrect connection! Danger to life or injury by electric shock!
- Dangerous movements! Danger to life, serious injury or property damage by unintended motor movements!
- Health hazard for persons with heart pacemakers, metal implants and hearing aids in proximity to electric drive systems!
- Risk of burns by hot housing surfaces!

- Risk of injury by improper handling! Injury by crushing, shearing, cutting, hitting!
- Risk of injury by improper handling of batteries!
- Risk of injury by improper handling of pressurized lines!

3.2.4 Explanation of Safety Symbols and Hazard Classification

The safety instructions describe the following hazard classification. The hazard classification informs about the consequences resulting from non-compliance with the safety instructions:

Safety symbol	Signal word	Hazard classification according to ANSI Z535.4-2002
	Danger	Death or serious injury **will** occur.
	Warning	Death or serious injury **could** occur.
	Caution	Minor or moderate injury or property damage may occur.

Fig.3-1: Hazard Classification (According to ANSI Z535.4-2002)

3.3 Instructions with Regard to Specific Dangers

3.3.1 Protection Against Contact with Electrical Parts and Housings

☞ This section concerns components of the drive and control system with voltages of **more than 50 volts**.

Contact with parts conducting voltages above 50 volts can cause personal danger and electric shock. When operating components of the drive and control system, it is unavoidable that some parts of these components conduct dangerous voltage.

WARNING

High electrical voltage! Danger to life, risk of injury by electric shock or serious injury!

- Only qualified persons are allowed to operate, maintain and/or repair the electric components of the drive and control system.
- Follow the general installation and safety regulations when working on power installations.
- Before switching on, the equipment grounding conductor must have been permanently connected to all electric components in accordance with the connection diagram.
- Even for brief measurements or tests, operation is only allowed if the equipment grounding conductor has been permanently connected to the points of the components provided for this purpose.
- Before accessing electrical parts with voltage potentials higher than 50 V, you must disconnect electric components from the mains or from the power supply unit. Secure the electric component from reconnection.
- With electric components, observe the following aspects:

  Always wait **30 minutes** after switching off power to allow live capacitors to discharge before accessing an electric component. Measure the electrical voltage of live parts before beginning to work to make sure that the equipment is safe to touch.
- Install the covers and guards provided for this purpose before switching on.
- Never touch electrical connection points of the components while power is turned on.
- Do not remove or plug in connectors when the component has been powered.
- As a basic principle, residual-current-operated circuit-breakers cannot be used for electric drives to prevent direct contact.
- Secure built-in devices from penetrating foreign objects and water, as well as from direct contact, by providing an external housing, for example a control cabinet.

WARNING

High housing voltage and high leakage current! Danger to life, risk of injury by electric shock!

- Before switching on and before commissioning, ground or connect the components of the drive and control system to the equipment grounding conductor at the grounding points.
- Connect the equipment grounding conductor of the components of the drive and control system permanently to the main power supply at all times. The leakage current is greater than 3.5 mA.
- Establish an equipment grounding connection with a copper wire of a cross section of at least 10 mm^2 (8 AWG) or additionally run a second equipment grounding conductor of the same cross section as the original equipment grounding conductor.

3.3.2 Protective Extra-Low Voltage as Protection Against Electric Shock

Protective extra-low voltage is used to allow connecting devices with basic insulation to extra-low voltage circuits.

All connections and terminals with voltages between 5 and 50 volts at the components of the Bosch Rexroth drive and control system are PELV ("Protective Extra-Low Voltage") systems. It is allowed to connect devices equipped

with basic insulation (such as programming devices, PCs, notebooks, display units) to these connections.

WARNING

Danger to life, risk of injury by electric shock! High electrical voltage by incorrect connection!

If extra-low voltage circuits of devices containing voltages and circuits of more than 50 volts (e.g., the mains connection) are connected to Bosch Rexroth products, the connected extra-low voltage circuits must comply with the requirements for PELV ("Protective Extra-Low Voltage").

3.3.3 Protection Against Dangerous Movements

Dangerous movements can be caused by faulty control of connected motors. Some common examples are:

- Improper or wrong wiring or cable connection
- Operator errors
- Wrong input of parameters before commissioning
- Malfunction of sensors and encoders
- Defective components
- Software or firmware errors

These errors can occur immediately after equipment is switched on or even after an unspecified time of trouble-free operation.

The monitoring functions in the components of the drive and control system will normally be sufficient to avoid malfunction in the connected drives. Regarding personal safety, especially the danger of injury and/or property damage, this alone cannot be relied upon to ensure complete safety. Until the integrated monitoring functions become effective, it must be assumed in any case that faulty drive movements will occur. The extent of faulty drive movements depends upon the type of control and the state of operation.

WARNING

Dangerous movements! Danger to life, risk of injury, serious injury or property damage!

- A **risk assessment** must be prepared for the installation or machine, with its specific conditions, in which the components of the drive and control system are installed. As a result of the risk assessment, the user must provide for monitoring functions and higher-level measures on the installation side for personal safety. The safety regulations applicable to the installation or machine must be taken into consideration. Unintended machine movements or other malfunctions are possible if safety devices are disabled, bypassed or not activated.

To avoid accidents, injury and/or property damage:

- Keep free and clear of the machine's range of motion and moving machine parts. Prevent personnel from accidentally entering the machine's range of motion by using, for example:
  - Safety fences
  - Safety guards
  - Protective coverings
  - Light barriers
- Make sure the safety fences and protective coverings are strong enough to resist maximum possible kinetic energy.
- Mount emergency stop switches in the immediate reach of the operator. Before commissioning, verify that the emergency stop equipment works. Do not operate the machine if the emergency stop switch is not working.
- Prevent unintended start-up. Isolate the drive power connection by means of an emergency stop circuit or use a safe starting lockout.
- Make sure that the drives are brought to a safe standstill before accessing or entering the danger zone.
- Additionally secure vertical axes against falling or dropping after switching off the motor power by, for example,
  - mechanically securing the vertical axes,
  - adding an external braking/arrester/clamping mechanism or
  - ensuring sufficient equilibration of the vertical axes.
- The standard equipment **motor holding brake** or an external holding brake controlled by the drive controller is **not sufficient to guarantee personal safety**!
- Disconnect electrical power to the components of the drive and control system using the master switch and secure them from reconnection for:
  - Maintenance and repair work
  - Cleaning of equipment
  - Long periods of discontinued equipment use
- Prevent the operation of high-frequency, remote control and radio equipment near electric/electronic components of the drive and control system and their supply leads. If the use of these devices cannot be avoided, check the machine or installation, before initial commissioning of the drive and control system, for possible malfunctions when operating such high-frequency, remote control and radio equipment in its possible positions of normal use. It might possibly be necessary to perform a special electromagnetic compatibility (EMC) test.

3.3.4 Protection Against Magnetic and Electromagnetic Fields During Operation and Mounting

Magnetic and electromagnetic fields generated by current-carrying conductors or permanent magnets of electric motors represent a serious danger to persons with heart pacemakers, metal implants and hearing aids.

WARNING

Health hazard for persons with heart pacemakers, metal implants and hearing aids in proximity to electric components!

- Persons with heart pacemakers and metal implants are not allowed to enter the following areas:
  - Areas in which components of the drive and control systems are mounted, commissioned and operated.
  - Areas in which parts of motors with permanent magnets are stored, repaired or mounted.
- If it is necessary for somebody with a heart pacemaker to enter such an area, a doctor must be consulted prior to doing so. The noise immunity of implanted heart pacemakers differs greatly so that no general rules can be given.
- Those with metal implants or metal pieces, as well as with hearing aids, must consult a doctor before they enter the areas described above.

3.3.5 Protection Against Contact with Hot Parts

CAUTION

Hot surfaces of components of the drive and control system. Risk of burns!

- Do not touch hot surfaces of, for example, braking resistors, heat sinks, supply units and drive controllers, motors, windings and laminated cores!
- According to the operating conditions, temperatures of the surfaces can be **higher than 60 °C** (140 °F) during or after operation.
- Before touching motors after having switched them off, let them cool down for a sufficiently long time. Cooling down can require **up to 140 minutes**! The time required for cooling down is approximately five times the thermal time constant specified in the technical data.
- After switching chokes, supply units and drive controllers off, wait **15 minutes** to allow them to cool down before touching them.
- Wear safety gloves or do not work at hot surfaces.
- For certain applications and according to the respective safety regulations, the manufacturer of the machine or installation has to take measures to avoid injuries caused by burns in the end application. These measures can be, for example: Warnings at the machine or installation, guards (shieldings or barriers) or safety instructions in the application documentation.

3.3.6 Protection During Handling and Mounting

CAUTION

Risk of injury by improper handling! Injury by crushing, shearing, cutting, hitting!

- Observe the relevant statutory regulations of accident prevention.
- Use suitable equipment for mounting and transport.
- Avoid jamming and crushing by appropriate measures.
- Always use suitable tools. Use special tools if specified.
- Use lifting equipment and tools in the correct manner.
- Use suitable protective equipment (hard hat, safety goggles, safety shoes, safety gloves, for example).
- Do not stand under hanging loads.
- Immediately clean up any spilled liquids from the floor due to the risk of slipping.

3.3.7 Battery Safety

Batteries consist of active chemicals in a solid housing. Therefore, improper handling can cause injury or property damage.

CAUTION

Risk of injury by improper handling!

- Do not attempt to reactivate low batteries by heating or other methods (risk of explosion and cauterization).
- Do not attempt to recharge the batteries as this may cause leakage or explosion.
- Do not throw batteries into open flames.
- Do not dismantle batteries.
- When replacing the battery/batteries, do not damage the electrical parts installed in the devices.
- Only use the battery types specified for the product.

☞ Environmental protection and disposal! The batteries contained in the product are considered dangerous goods during land, air, and sea transport (risk of explosion) in the sense of the legal regulations. Dispose of used batteries separately from other waste. Observe the national regulations of your country.

3.3.8 Protection Against Pressurized Systems

According to the information given in the Project Planning Manuals, motors and components cooled with liquids and compressed air can be partially supplied with externally fed, pressurized media, such as compressed air, hydraulics oil, cooling liquids and cooling lubricants. Improper handling of the connected supply systems, supply lines or connections can cause injuries or property damage.

WARNING

Risk of injury by improper handling of pressurized lines!

- Do not attempt to disconnect, open or cut pressurized lines (risk of explosion).
- Observe the respective manufacturer's operating instructions.
- Before dismounting lines, relieve pressure and empty medium.
- Use suitable protective equipment (safety goggles, safety shoes, safety gloves, for example).
- Immediately clean up any spilled liquids from the floor due to the risk of slipping.

☞ Environmental protection and disposal! The agents (e.g., fluids) used to operate the product might not be environmentally friendly. Dispose of agents harmful to the environment separately from other waste. Observe the national regulations of your country.

4 Technical Data

4.1 PC Box

PC box	6 slots	
Processor	Celeron 440 min. 2 GHz	
Chip set	Integrated graphics controller with a maximum of 8 MB video memory	
RAM	1 GByte (4 GByte max.)	
Hard disk	80 GB, alternatively 2 × 80 GB (RAID) or 32 GB SSD	
Optional drives	DVD burner	
Interfaces	• CDI interface (compact display interface) screen and data interface to the VDP xx.3 • 1 × VGA connection (15-pin, HD-Sub) • 8 × USB connection (type A) • 2 × Ethernet connection (RJ 45, 10/100/1000 Base-T) • 1 × keyboard connection (PS/2) • 1 × mouse connection (PS/2) • 1 × serial standard interface RS232	
Slots Max. installation depth:	5 × PCI 190 mm	1 × PCIe (4-fold) 150 mm
Voltage supply	24 VDC	
Max. power consumption	200 W	
Degree of protection according to DIN EN 60529	PC box: IP 20	

Fig.4-1: Technical data, PC box

4.2 Technical Data of the 24 V Voltage Supply 200 W

Nominal input voltage:	DC 24 V		
Input voltage range:	DC 19 V to DC 32 V		
Period of power supply increase:	20 ms max. (0 V on the nominal input voltage)		
Input current:	6.7 A for DC 24 V		
Inrush current:	100 A		
Output voltages:	Current		Tolerances
	Min.	Max.	
+3.3 V	0 A	12 A	+2.93 V to +3.40 V
+5 V	1 A	12 A	+4.80 V to +5.20 V
+12 V	1 A	15.4 A	+11.4 V to +12.6 V
-12 V	0 A	0.5 A	–11.4 V to –12.6 V
+5 V standby	0 A	2 A	+4.75 V to +5.25 V

Max. output power:	184 W +3.3 V and +5 V: the max. output power may not exceed 80 W. +3.3 V, +5 V and +12 V: the max. output power may not exceed 184 W.
Efficiency (under full load):	> 0,78

Fig.4-2: Technical data of the 24 V power supply unit

When specifying the maximum output currents, observe that these are the maximum currents possible from the respective output voltage. However, it is not possible to draw the maximum current from all output voltages at the same time. The max. output power must not exceed 80 W at +3.3 V and +5 V. The max. output power may not exceed 184 W at +3.3 V, +5 V and +12 V.

4.3 Ambient Conditions

	In operation	Transport	Storage
Max. surrounding air temperature	+5 °C up to +45 °C	-20 °C up to +60 °C	-20 °C up 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% Max. rel. humidity 85% Min. absolute humidity 1 g/m^3 Max. absolute humidity 25 g/m^3 Condensation not allowed Corresponds to climatic class 3K3 acc. to EN 60721-3-3	Min. rel. humidity 5% Max. rel. humidity 75% Min. absolute humidity 1 g/m^3 Max. absolute humidity 25 g/m^3 Condensation not allowed Corresponds to climatic class 2K2 acc. to EN 60721-3-2	Min. rel. humidity 5% Max. rel. humidity 85% Min. absolute humidity 1 g/m^3 Max. absolute humidity 25 g/m^3 Condensation not allowed 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 up to 150 Hz Excursion: 0.075 mm for 10 to 57 Hz Acceleration: 1g for 57 to 150 Hz acc. to EN 60068-2-6	Max. shock 15 g 11 ms acc. to EN 60068-2-27	Max. shock 15 g 11 ms acc. to EN 60068-2-27
Degree of pollution according to EN 60664-1	2	2	2
Overvoltage category according to EN 60664-1	2	-	-

Fig.4-3: Ambient Conditions

4.4 Standards

4.4.1 Used Standards

The system components of the control cabinet PCs correspond to the following standards:

EN Standards

Standard	Meaning
EN 60,204-1	Electrical equipment of machines
EN 50,081-2	Generic standard, emitted interference (industrial environment)
EN 50,082-2	Generic standard, noise immunity (industrial environment)
EN 60,742	Transformer for 24 V power supply unit, protective separation
EN 60,950	Overvoltage category II
EN 61,131	Requirements regarding the 24 V outputs
EN 61 131-2	Requirements on the 24 V power supply
EN 418	Machine safety, EMERGENCY STOP devices
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 -3	Climatic class

Fig.4-4: Used standards

4.4.2 CE Marking

Declaration of Conformity

CE

The electronic products described in the project planning manual comply with the requirements and goals of the following EC guideline and with the agreed European standards:

EMC guideline 2004/108/EC

The electronic products described in the project planning manual comply with the requirements on the operation within the industrial environment:

Standard	Title	Edition
DIN EN 61000-6-4 (VDE 0839-6-4)	Electromagnetic compatibility (EMC) Volume: 6-4: Generic standards - Immunity for industrial environments (IEC 61000-6-4:2006)	September 2007
DIN EN 61000-6-2 (VDE 0839-6-2)	Electromagnetic compatibility (EMC) Volume: 6-2: Generic standards - emitted interference for industrial environments (IEC 61000-6-2:2005)	March 2006

Fig.4-5: Electromagnetic compatibility (EMC) standards

Note for the Machine Manufacturer

The electronic products described in this project planning manual do not fall under the machines listed in the EC guidelines. Therefore, explanations are not required for the 89/392/EMC guideline and do not exist.

89/392/EMC, the EC guideline for machines, specifies the requirements on a machine. In this guideline, a machine is defined as a combination of the components or mechanisms combined with each other. The described products belong to the electrical equipment of a machine. Therefore, they are to be included in the declaration of conformity of the machine manufacturer.

The standard EN 60204-1 (safety of machinery, general requirements on the electrical equipment of the machines) can be used for the electrical equipment of the machines.

☞ The CE marking is only valid for the device in its delivery status (ex works). After modifying the device, e.g. after plugging additional extension cards, CE compliance must be checked.

4.4.3 UL/CSA Certified

The devices of the IndraControl VSB 40.3 family are certificated according to

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

UL file no. E210730

But there can be combination or extension stages with limited or missing certification. Thus, the registration is to be verified according to the UL marking on the device.

☞ The UL/CSA marking is only valid for the device in its delivery status (ex works). After modifying the device, e.g. after plugging additional extension cards, UL compliance must be checked.

4.5 Wear Parts

The wear parts as well as their service life are described in this section. Wear parts are not subject to any warranty. For maitenance notes of the wear parts, please refer to chapter 8.1 "General Information" on page 47 and for ordering information refer to chapter 11 "Ordering Information" on page 91.

CMOS battery The service life of a CMOS battery is at least five years. To exchange this battery, please contact the Bosch Rexroth Service.

Hard disk The hard disk is an electromechanical wear part that is subject to wear during the operating time. According to the specifications of the manufacturer the MTBF is 300,000 considering the following conditions:

Power on time	250 h/month or less than 3000 h/year
Operating hours	20 % or less of the power on time

Operating conditions	Temperature	5 °C up to 60 °C
	Rel. humidity	From 8 % to 90 %, not condensing
	Height	-300 m up to 3,000 m
	Accesses	30 % of the operating hours
Storage conditions	Temperature	-40 °C up to 65 °C
	Rel. humidity	From 5 % to 95 %, not condensing
	Height	-300 m up to 12,000 m
	Duration	< 3 months

Fig.4-6: Operating and storage conditions of the hard disk

The ambient conditions for the overall device given in chapter 4.3 "Ambient Conditions" on page 20 have to be kept.

Solid State Drive

The SSD (**S**olid **S**tate **D**rive) shock resistance and temperature resistance is higher compared to an ordinary hard disk. It is only subject to electrical and not to mechanical wear.

Operating hours (power-on hours)	8760 h/year (24/7 operation)
Operating time	100% of the operating hours
Surrounding air temperature	0 °C up to 70 °C

Fig.4-7: Service life

The MTTF is a calculated value and is 2 mill. hours if the surrounding air temperature is 25 °C.

SSD is an electronic storage medium. Defragmenting is not required. The SSD wears faster if it is often defragmented.

Fan

Fans are mechanical wear components, whose service life is extremely temperature-dependent. For the fan integrated in the housing, the following service life is specified by the manufacturer:

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

Fig.4-8: Service life of the fan

4.6 Compatibility Test

All Rexroth controls and drives are developed and tested according to the latest state-of-the-art of technology.

As it is impossible to follow the continuing development of all materials (e. g. lubricants in machine tools) which may interact with our controls and drives, it cannot be completely ruled out that any reactions with the materials used by Bosch Rexroth might occur.

For this reason, before using the respective material a compatibility test has to be carried out for new lubricants, cleaning agents etc. and our housings / our housing materials.

5 Dimensions, Installation and Wiring

5.1 General Information

All values in the illustrations are given in mm.

For a safe mounting of the VSB 40.3 – e. g. in a control cabinet – 2x four fastening holes are provided so that the VSB 40.3 can be horizontally or vertically mounted.

Bosch Rexroth recommends the mounting directions illustrated below.

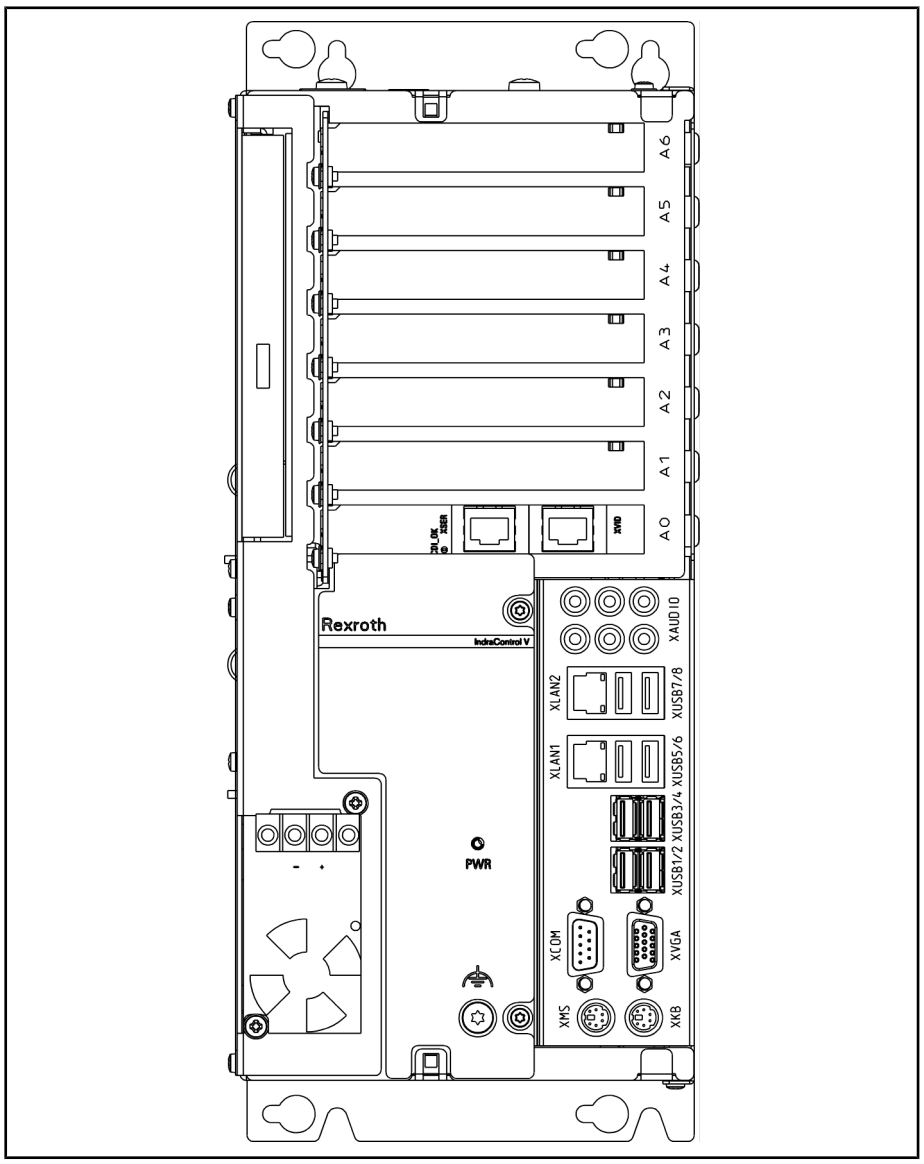


Fig.5-1: Front view of the VSB 40.3: vertical

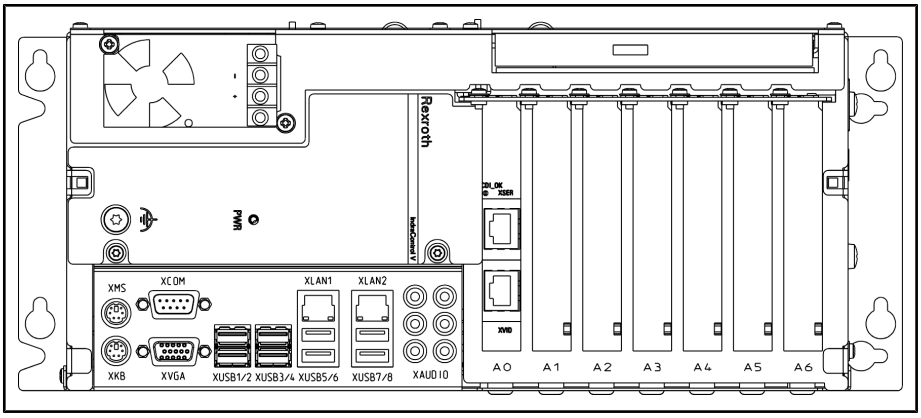


Fig.5-2: Front view of the VSB 40.3: horizontal

Do observe the space required for all installation positions of connectors and cables as well as for the opening drive. A space of at least 50 mm is required on all sides in order to guarantee a sufficient cooling of the VSB 40.3.

Observe additional space for maintenance, if required. Example: see fig. 8-3 "Position of the hard disk and of the fastening screws (inside)" on page 50. Observe also chapter 5.3 "Installation Notes" on page 28.

5.2 Installation Dimensions of the VSB 40.3

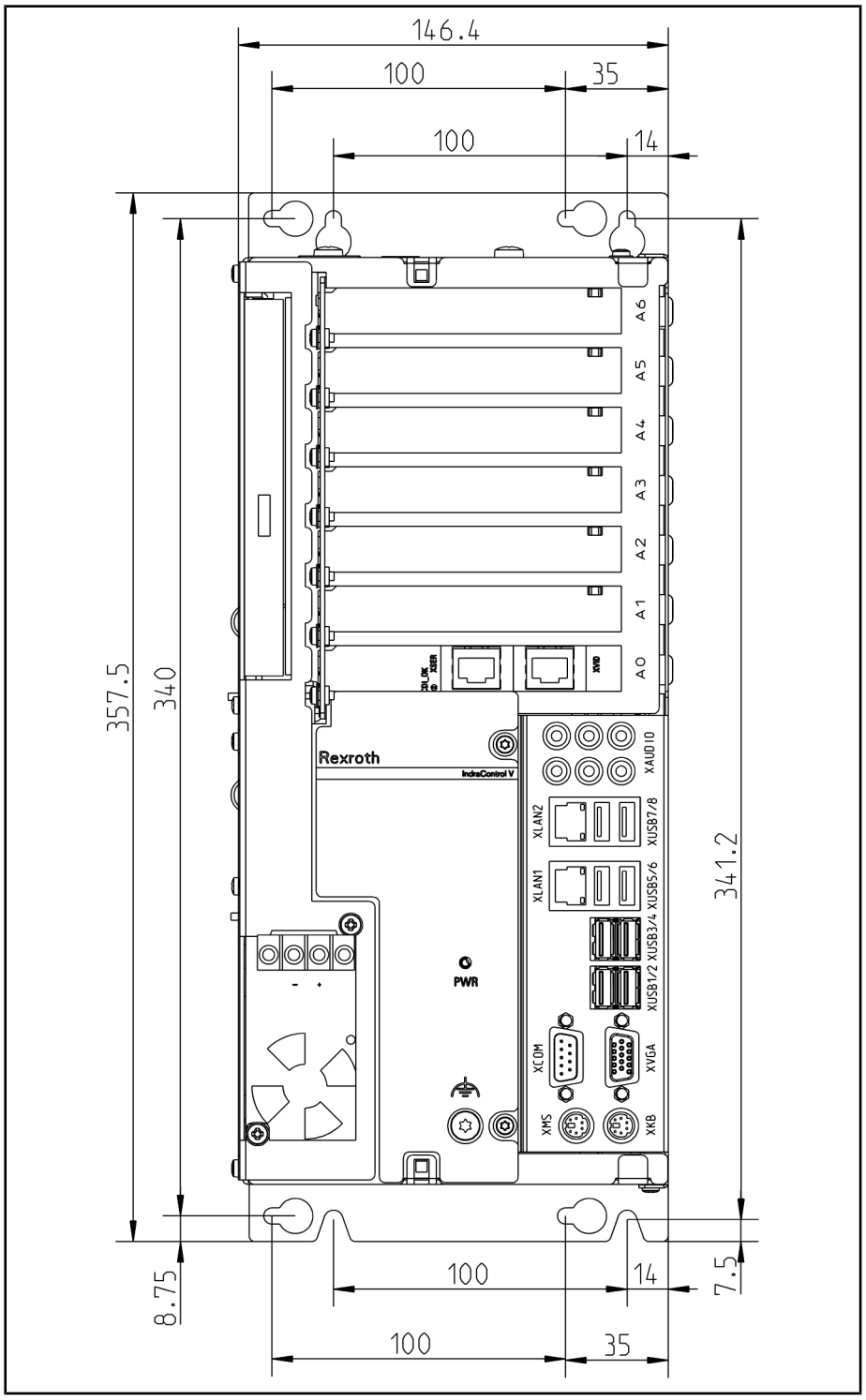


Fig.5-3: Installation dimensions front view

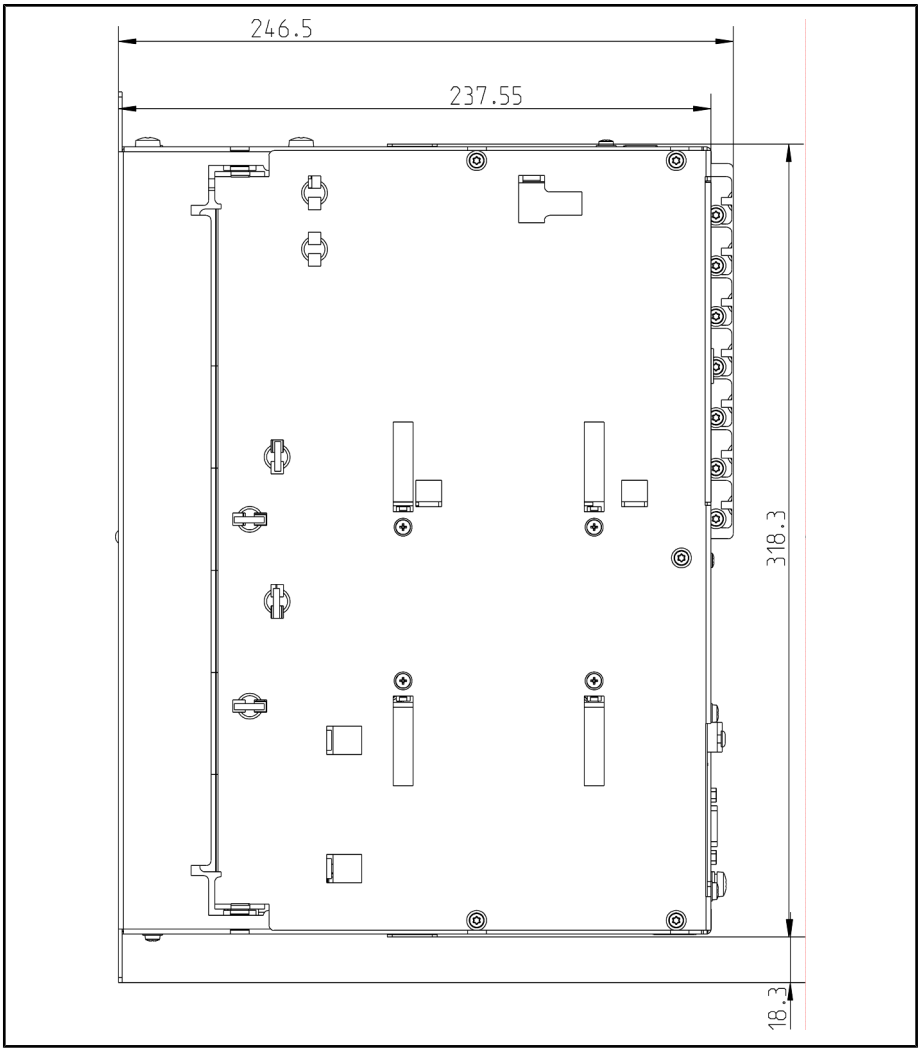


Fig.5-4: Mounting specifications for vertical mounting with connector panel in forward direction

5.3 Installation Notes

- Avoid installation locations exposed to direct UV/sunlight, because this causes additional heat development.
- When determining installation location and mounting position, observe that the optionally available drive can be opened unobstructed.
- Install the VSB in a way ensuring easy access to the connector panel.
- Provide a sufficient space of 50 mm (on all sides of the device) for sufficient cooling and cable routing.
- Lay all connecting cables in loops and use strain reliefs for all cables.
- Keep as much distance as possible to noise sources.
- Fasten the VSB 40.3 with four M5 screws at the integrated mounting brackets.

Maintenance distances

For maintenance the following distances must be kept:

- 240 mm for opening the housing cover.
- 150 mm for the DVD drive.

See the following figure:

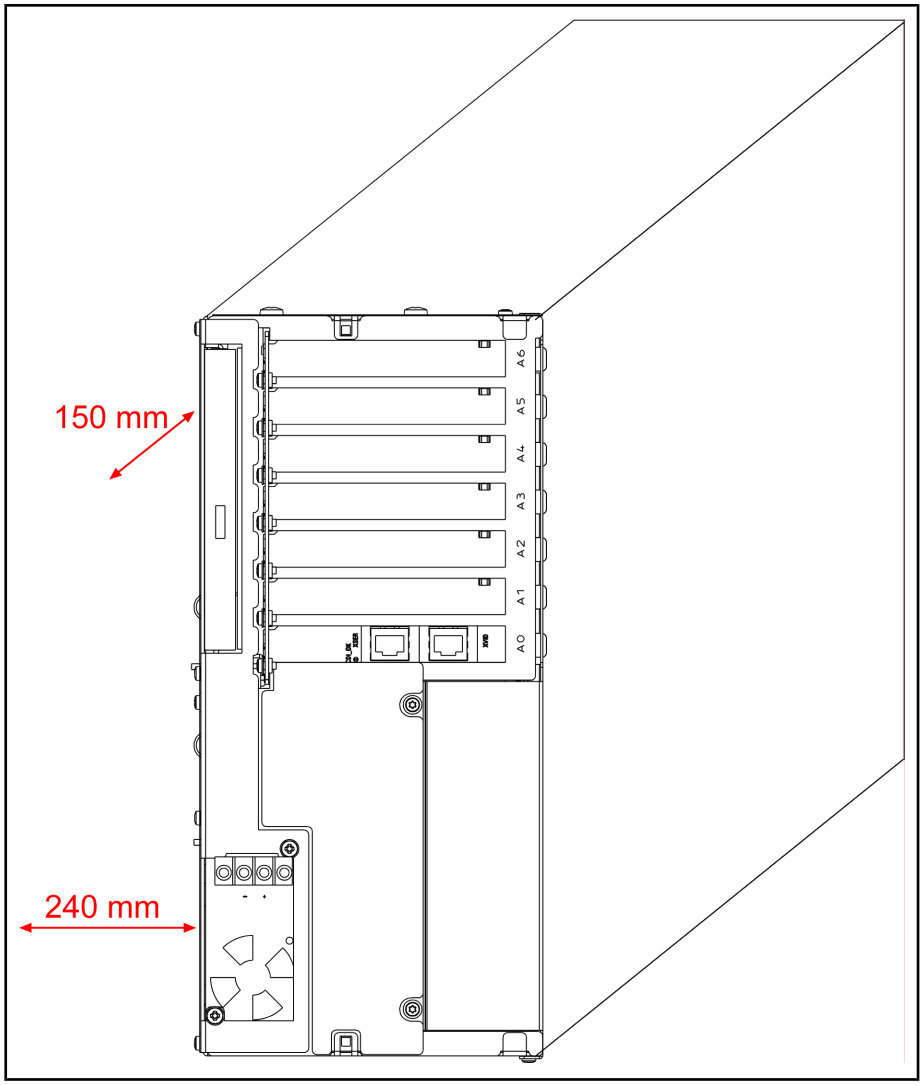


Fig.5-5: Maintenance distances

5.4 Wiring

DANGER

Danger without protective separation!

The 24 VDC input voltage must comply with the requirements of the "Protective separation"!

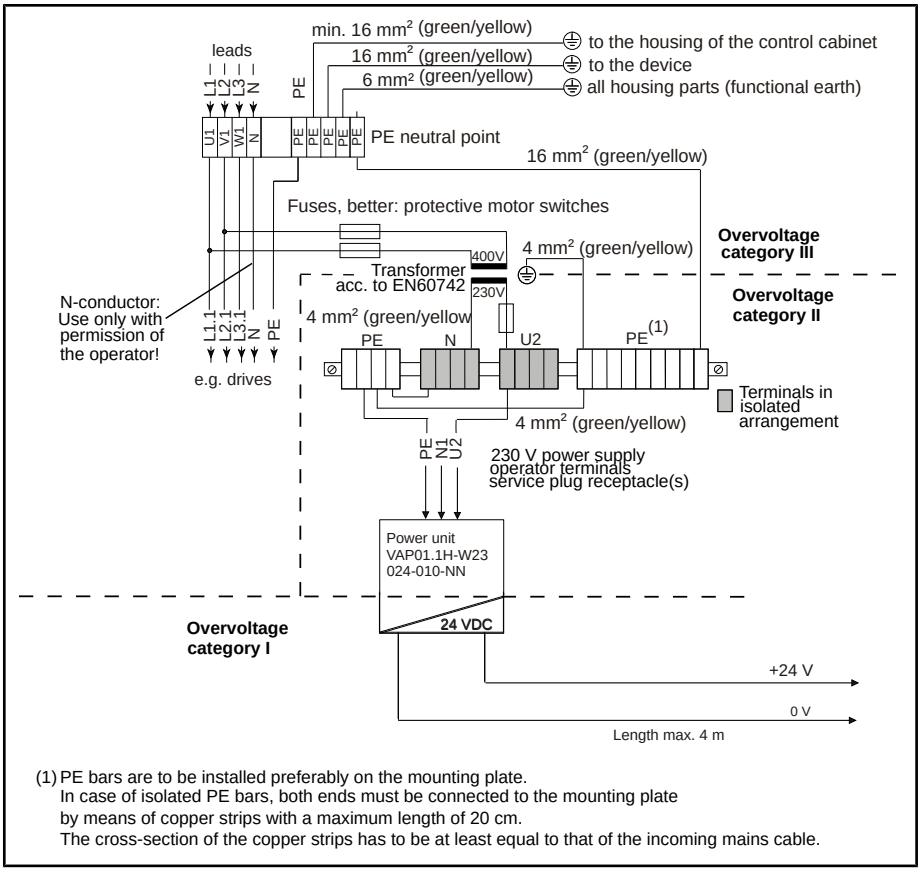
Plug and unplug the connector only if there is no voltage!

Interfering AC voltage components such as the ones resulting from an uncontrolled three-phase bridge circuit without smoothing and with a ripple factor (see DIN 40110/10.75, section 1.2) of 5 % are allowed.

That results in the greatest absolute value of 30.2 V as upper voltage limit. The lowest absolute value of 18.5 V is the lower voltage limit.

Dimensions, Installation and Wiring

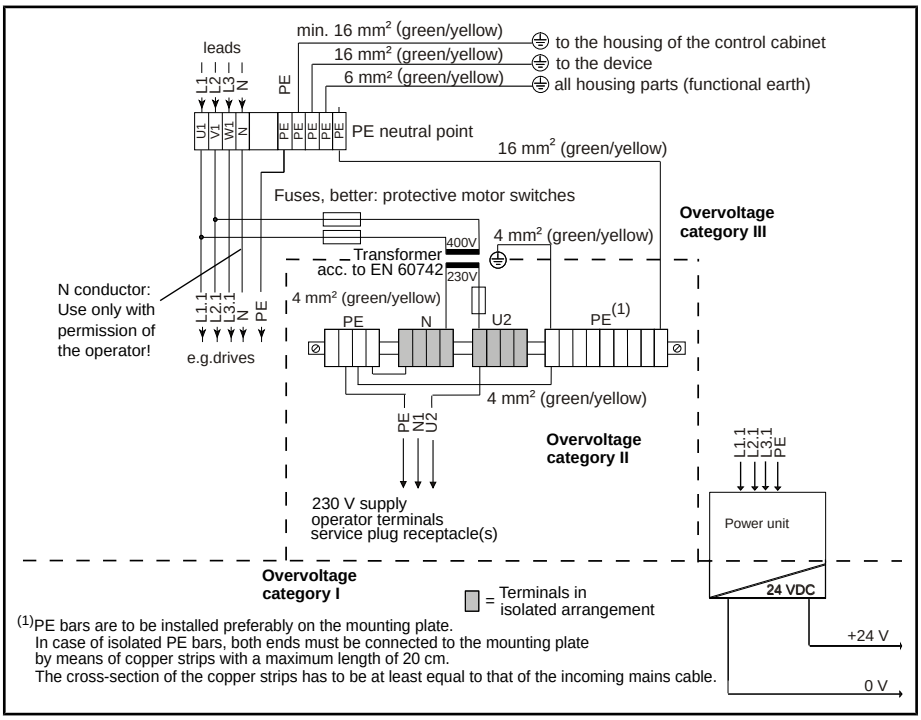
Wiring 230 V



(1) PE bars are to be installed preferably on the mounting plate.
In case of isolated PE bars, both ends must be connected to the mounting plate by means of copper strips with a maximum length of 20 cm.
The cross-section of the copper strips has to be at least equal to that of the incoming mains cable.

Fig.5-6: Wiring 230 V

Wiring 400 V



(1) PE bars are to be installed preferably on the mounting plate.
In case of isolated PE bars, both ends must be connected to the mounting plate by means of copper strips with a maximum length of 20 cm.
The cross-section of the copper strips has to be at least equal to that of the incoming mains cable.

Fig.5-7: Wiring 400 V

Control cabinet PC and display to UPS

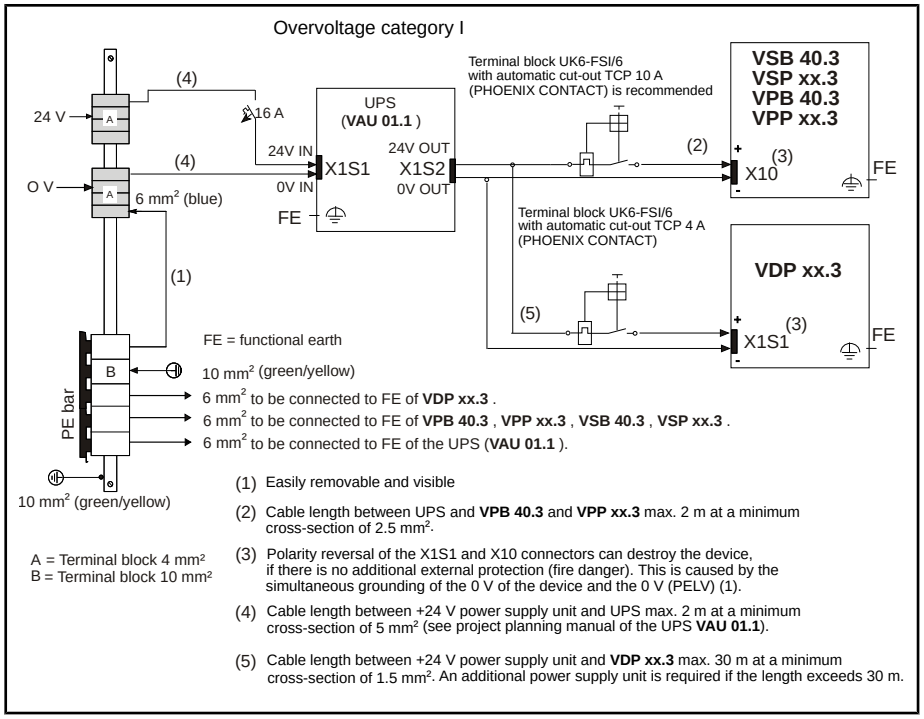


Fig.5-8: PC (VSB 40.3, VSP xx.3, VPB 40.3, VPP xx.3) and display (VDP xx.3) connected to an UPS

Only control cabinet PC connected to UPS

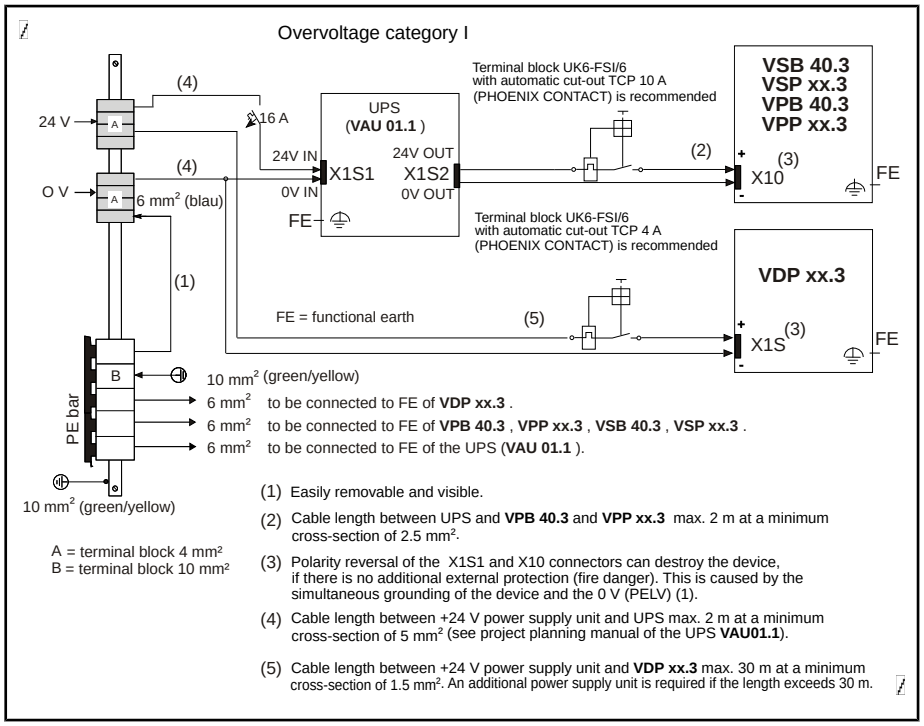


Fig.5-9: PC (VSB 40.3, VSP xx.3, VPB 40.3, VPP xx.3) connected to an UPS. Display (VDP xx.3) not connected to an UPS

6 Display and Operating Components

6.1 Power Button

Next to the connector panel (see fig. 7-1 "Position of the connections" on page 37), a button labeled with "PWR" is provided.

Due to the default setting of the BIOS, the control cabinet PC starts when voltage is applied. If you have changed this setting in the BIOS, the control cabinet PC can be started via the "PWR" power button.

In order that the control cabinet PC starts again when a voltage is applied, proceed as follows:

1. Start the BIOS setup by pressing <Del> while booting.
2. Change to the "Chipset" menu.
3. Select the setting "[Power On]" in "Restore on AC Power loss" under "South Bridge Chipset + Configuration".

6.2 Display, Monitor and Keyboard

6.2.1 Display

To display and operate the VSB 40.3 we recommend the displays VDP 16.3 and VDP 40.3, especially designed for industrial applications by Bosch Rexroth . The displays are connected with the VSB 40.3 via the CDI interface. The VDP operator displays are equipped with a foil keyboard AND/or with a touch screen.

☞ Operate the touch screen only with a touch pen or your finger.

You can also connect mouse and keyboard to these displays.

6.2.2 VGA Monitor

A standard monitor (female connector XVGA) can be connected to the VSB 40.3.

6.2.3 Selection of the Graphics Driver

When the VSB device is delivered, the settings allow to trigger a connected monitor and a connected VDP.

Activating the VDP or an external monitor

If the VDP connected to the CDI interface, the external monitor operated at the VGA connection or both are addressed, can be selected as follows:

1. Select "Intel(R) Extreme Graphics" in the task bar.

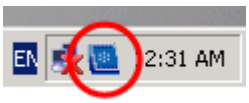


Fig.6-1: Intel® Extreme Graphics

2. Select **Graphics Options** ▸ **Graphics Properties**.

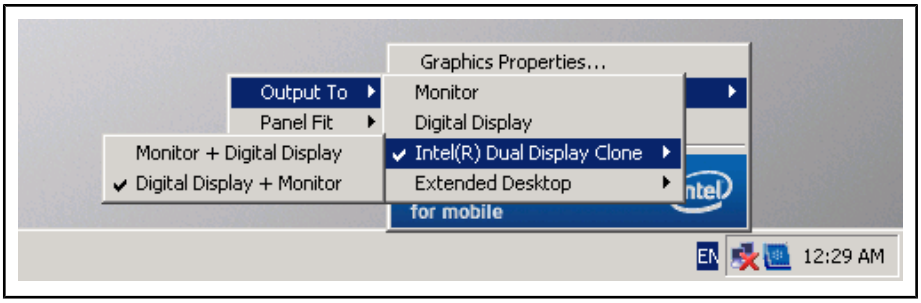


Fig.6-2: Graphics Properties

3. The "Digital Display and Monitor" window opens.

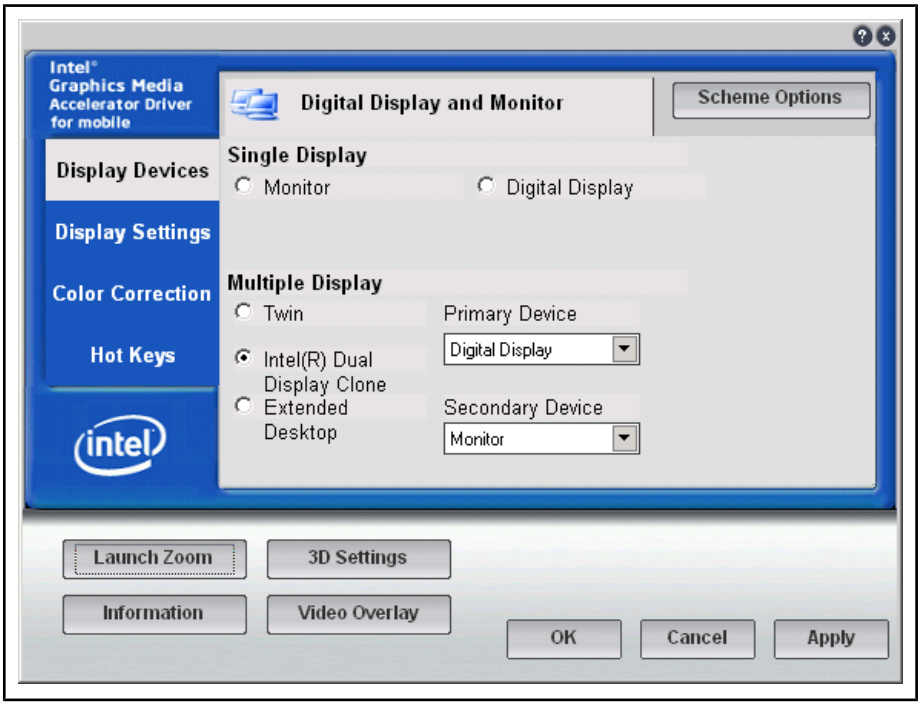


Fig.6-3: "Display Devices" tab

4. If an external monitor is connected, the user can select whether only the external monitor (selecting "Monitor"), only the screen of the connected display (selecting "Digital Display") of both the screens (selecting "Twin" or "Intel(R) Dual Display Clone") should be activated.
5. After confirming using "OK", another window opens in which the selection is to be reconfirmed by pressing "OK". Otherwise, the monitor selection is not applied.

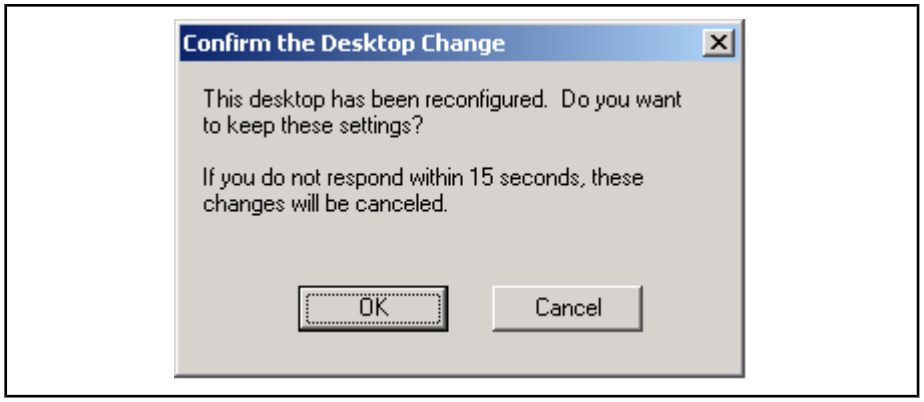


Fig.6-4: Confirming desktop changes

If the connected external monitor or the connected display is black, because the corresponding display is not activated, you can select the action using the key combinations illustrated in the following "Hot Keys" tab.

"Monitor" corresponds to the external monitor and "Digital Display" corresponds to the VDP display.

The key combinations can only be activated if a user is logged in!

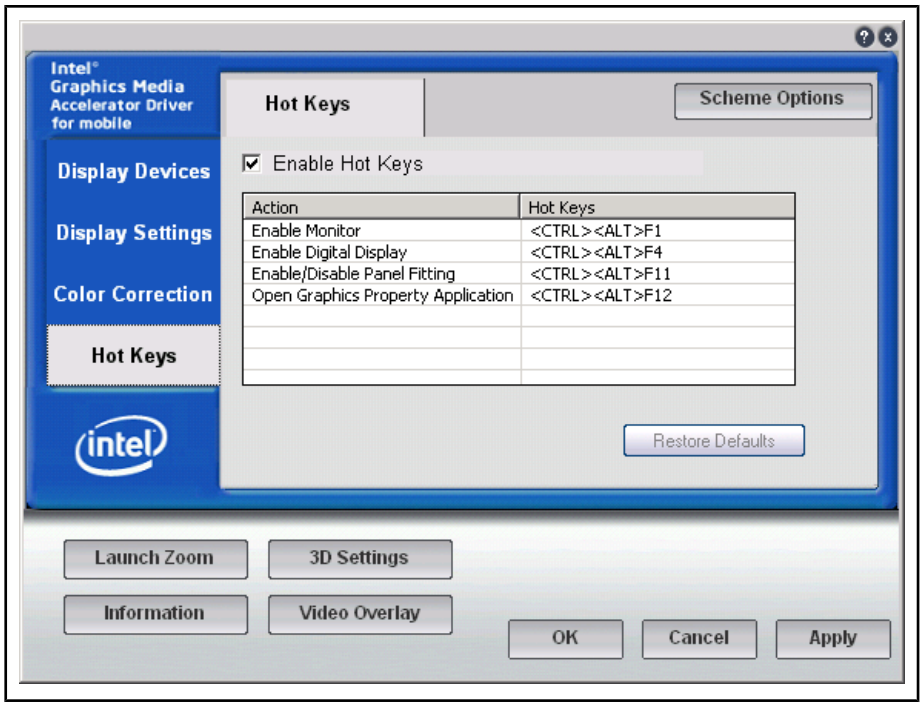


Fig.6-5: "Hot Keys" tab

7 PC Box

7.1 View on the Connector Panel

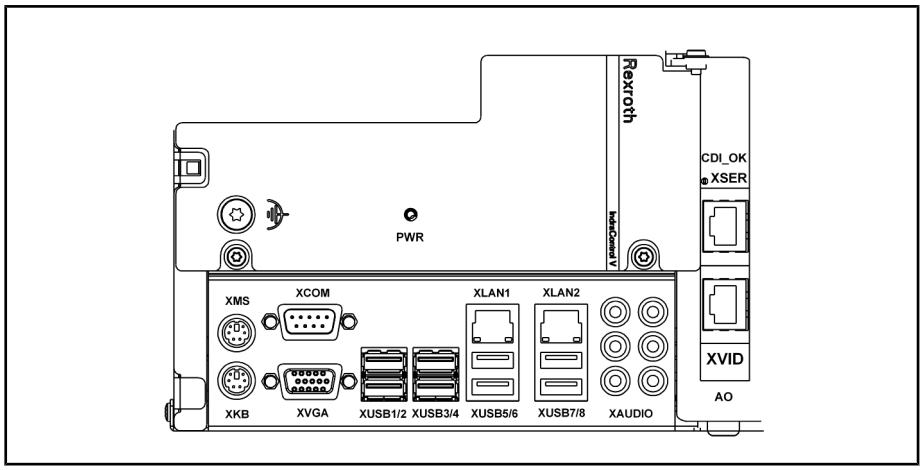


Fig.7-1: Position of the connections

7.2 Interfaces

7.2.1 General Information

Malfunctions due to insufficient shielding! Use only shielded cables and metallic or conductive connector/coupling covers with large-area shield support.

CAUTION

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

Please ensure that the functional earth ground is connected, because otherwise the electronics can be destroyed by a potential difference between the VDP xx.3 and the VSB 40.3 if the voltage supply is interrupted to only one device and established again.

7.2.2 Overview

Labeling of the housing	Connection type	Connector type (integrated)	Mating connector or cable (from outside)
X10	PC supply voltage: 24 VDC	Screw terminal	See chapter chapter 7.2 "Interfaces" on page 37
XCOM	Serial interface: RS232	D-Sub male connector, 9-pin	D-Sub female connector, 9-pin
XUSB 1 to 8	8 USB interfaces	USB female connector, 4-pin, type A	USB male connector, 4-pin

Labeling of the housing	Connection type	Connector type (integrated)	Mating connector or cable (from outside)
XLAN1, XLAN2[1)]	2 network connections: Ethernet 10Base T / 100Base X / 1000 Base T	RJ45 female connector, 8-pin	RJ45 connector (twisted pair, 8-wire)
XVGA	VGA connection for external monitor	VGA HD female connector, 15-pin	VGA HD male connector, 15-pin
XKB	PS/2 keyboard	Mini-DIN PS/2 female connector, 6-pin	Mini-DIN PS/2 male connector, 6-pin
XMS	PS/2 mouse	Mini-DIN PS/2 female connector, 6-pin	Mini-DIN PS/2 male connector, 6-pin
XSER	CDI interface "data"	RJ45 female connector	RJ45 connector
XVID	CDI interface "Screen"	RJ45 female connector	RJ45 connector
XAUDIO	Audio (disabled in the BIOS by default)	(see chapter 7.2.12 "Audio Interface XAudio" on page 44)	

Fig.7-2: Connector types VSB 40.3

7.2.3 PC Voltage Supply

24 VDC voltage supply

All internally required voltages are generated from the 24 VDC supply.

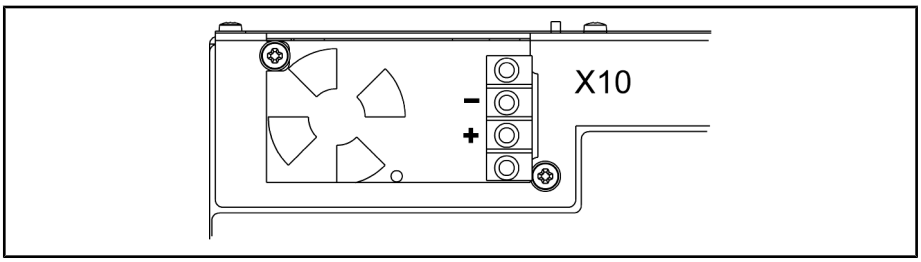


Fig.7-3: Connection terminals for the 24 VDC supply

For wiring connection terminals use copper wire only. Tighten the screws of the screw terminals with a torque of 4 lb in (0.4 Nm).

Parameters	Value
Input voltage U_N	24 VDC; (19 to 32 VDC)
Power consumption for 19 VDC	10 A max.

Fig.7-4: Technical data of the 24 VDC connection

1) *Information about LAN assignment in Windows XP, see chapter 7.2.7 "Ethernet Interface XLAN" on page 40.*

DANGER

Danger without protective separation!

The 24 VDC input voltage must comply with the requirements of the "Protective separation"!

Plug and unplug the connector only if there is no voltage!

Interfering AC voltage components such as the ones resulting from an uncontrolled three-phase bridge circuit without smoothing and with a ripple factor (see DIN 40110/10.75, section 1.2) of 5 % are allowed.

That results in the greatest absolute value of 30.2 V as upper voltage limit. The lowest absolute value of 18.5 V is the lower voltage limit.

For further information please refer to chapter 5.4 "Wiring" on page 29.

7.2.4 Serial Interface XCOM

XCOM – Serial interface

A serial standard interface is provided at the XCOM connection.

D-Sub male connector, 9-pin	
Type	RS232
Cable length	15 m max.
Cable type	Shielded, cross-section min. 0.14 mm^2
Transmission Rate	Max. 115200 bits/s
Handshake	Hardware and software handshake (XON, XOFF)
Interrupt (IRQ):	4
I/O address	AUTO (or 3F8H)
BIOS presetting	Enabled

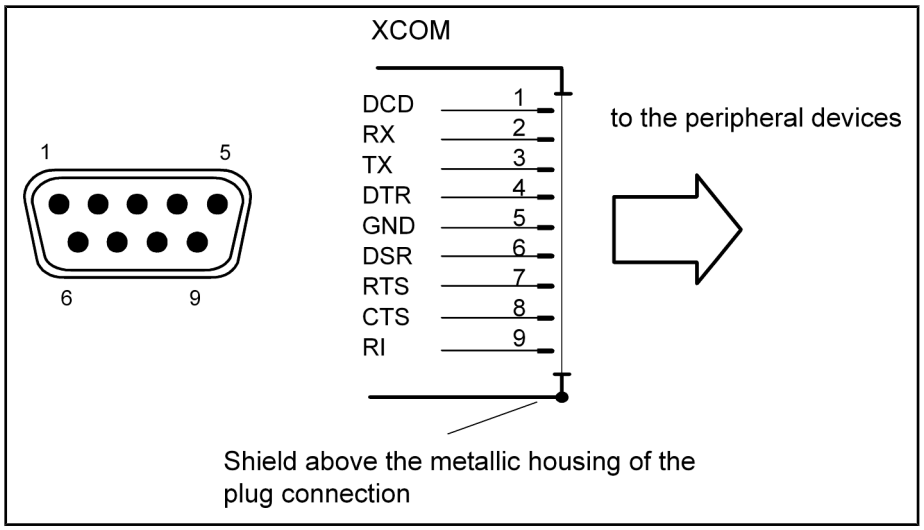


Fig.7-5: Pin assignment COM

7.2.5 Settings of the Serial Interface

Control panel

For the transfer parameter settings of the serial interfaces, please refer to the description of the installed operating system (for Windows under **Start ▸ Settings ▸ Control Panel ▸ ...**).

BIOS

The BIOS setting of COM (Serial Port A) is preset to AUTO (automatic parameter assignment). Apply the following settings to assign the parameters directly:

- COM = 3F8H

☞ Interrupt (IRQ) and I/O address have to correspond to the settings carried out in BIOS.

7.2.6 XUSB Interfaces

XUSB 1 to 8 – serial interfaces for printers, scanners, drives

The devices feature eight USB interfaces on the connector panel (XUSB). These interfaces are compatible to USB 1.1 and USB 2.0.

☞ The maximum power consumption of the connected devices must not exceed 500 mA. If the load exceeds 500 mA, the internal current monitoring is activated.

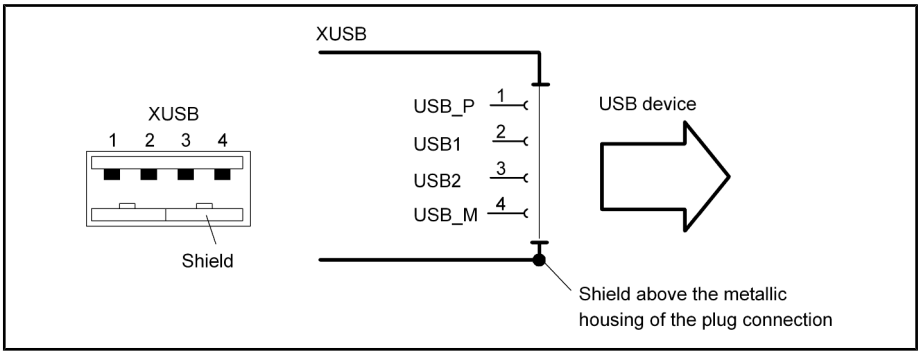


Fig.7-6: USB interfaces

Pin	Function
1	USB power supply (max. 500 mA)
2	Data -
3	Data +
4	USB ground

7.2.7 Ethernet Interface XLAN

XLAN1 and XLAN2 – network connection

The control cabinet PC can be connected to an Ethernet network via the XLAN Ethernet interface.

The LAN assignment in Windows XP to the XLAN devices at the device is preset as follows:

Designation in Windows XP	Designation at the housing
Local Area Connection	XLAN2
Local Area Connection 2	XLAN1

Fig.7-7: Assignment of the LAN interfaces in the operating system to the interfaces at the device

RJ45, female connector, 8-pin	
Type:	Ethernet 10/100/1000
Cable length:	100 m max.
Transmission rate:	10, 100 and 1000 MBit/s

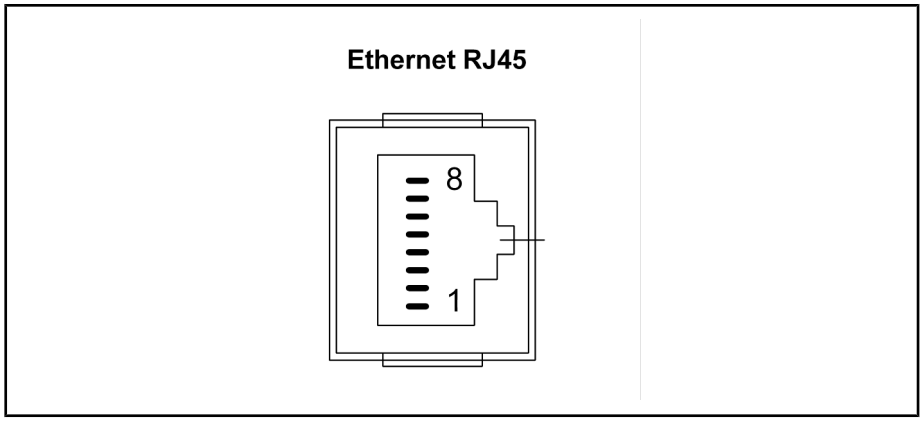


Fig.7-8: Ethernet interface XLAN

The driver configuration of the network connection can be called up in the task bar or in the "Control Panel" with the "Network board" icon. It can be set whether the data transmission should be carried out with 10 Mbits/s, 100 Mbits/s or 1000 MBit/s via the network.

☞ Observe that the network board of the remote station has to be able to process the same data transmission rate.

7.2.8 XVGA Interface

XVGA – Connection external monitor

An external monitor can be connected to the VGA connection (XVGA). The monitor can be operated via the integrated video adapter as or parallel to a VDP that is connected via the CDI display interface.

HD female connector, 15-pin	
Cable length	1.5 m max.
Cable type	Shielded, cross-section min. 0.14 mm^2
Max. resolution	2048 × 1536 pixels, 75 Hz, max. 4294 mio. colors

PC Box

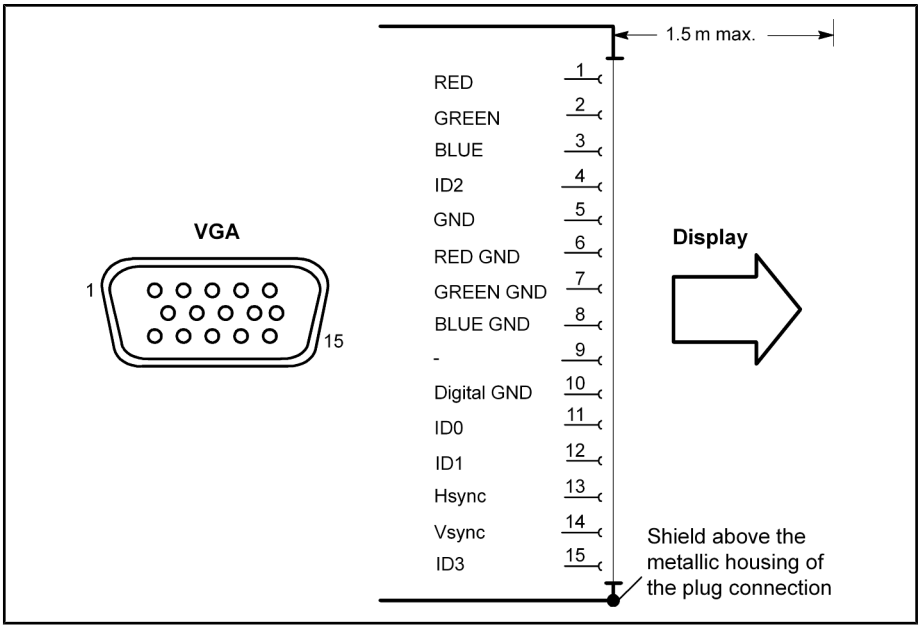


Fig.7-9: VGA interface

Wrong settings of resolution and color may destroy the monitor!

Observe the technical data of the monitor and adapt the operating system parameters accordingly.

WARNING

7.2.9 Keyboard Interface XKB

XKB – PS/2 mini DIN keyboard interface

PS/2 Mini DIN female connector, 6-pin	
Cable length	1.5 m max.
Cable type	Shielded, cross-section min. 0.14 mm²

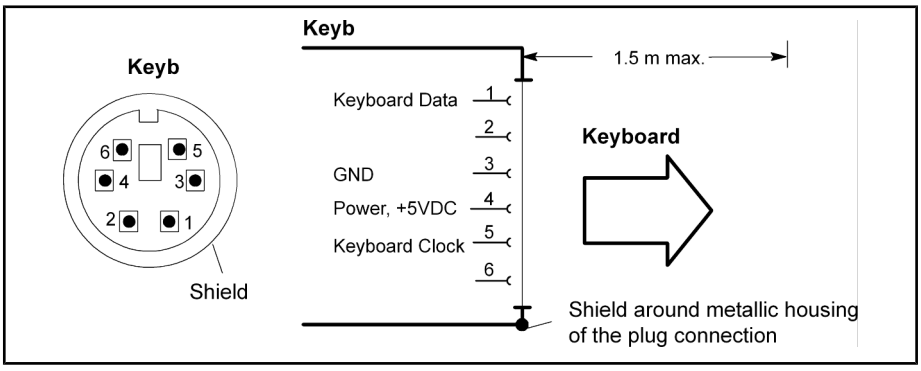


Fig.7-10: Keyboard interface

7.2.10 Mouse Interface XMouse

XMouse – PS/2 mouse interface

PS/2 Mini DIN female connector, 6-pin	
Cable length	1.5 m max.
Cable type	Shielded, cross-section min. 0.14 mm²

PS/2 Mini DIN female connector, 6-pin	
Interrupt (IRQ):	12
BIOS presetting	PS/2 mouse support: EnabledPS/2 Mouse: Auto detect

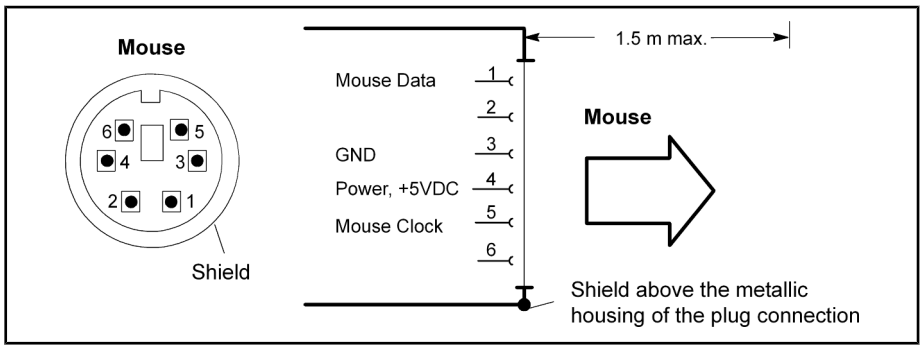


Fig.7-11: Mouse interface XMS

If a PS/2 mouse is not recognized by the system, the mouse has to be activated in the BIOS by switching from "Disabled" to "Autodetect". The operating system will not recognize the plugging-in of an external mouse after completed startup, because the mouse is initialized during the booting process.

☞ The connected mouse is to be compy with the PS/2 standard. Generally, the BIOS reserves IRQ 12 for the PS/2 mouse. If there are address conflicts, e. g., if IRQ 12 is already used by different PC extension cards, the IRQ of this extension card is to be changed to another, still unassigned IRQ.

7.2.11 CDI Interface

CDI Interface

The CDI display interface is assigned to the two RJ45 female connectors XSER and XVID. Connect either a VDP 16.3 or a VDP 40.3 operator display to these female connectors using ready-made cables available as accessories (see chapter 11.2.3 "Connecting Cable for the CDI Interface" on page 92).

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

The USB signals and the digital data (M-keys, LEDs, control signals) are transferred to/from the VDP xx.3 via the data interface.

The DVI signals are transferred via the screen interface.

☞ **It is dangerous to plug and remove CDI cables when voltage is applied.**

The functional earth ground (FE) is always to be used.

☞ The display identification of a VDP xx.3 is only once active after switching on the VPB 40.3. That means that if a VDP xx.3 is plugged and then removed or if a VDP is connected when starting the control cabinet PC, only a VDP xx.3 with the same resolution can be connected again. Thus, it is ensured that the screen output on the connected VDP xx.3 automatically works after a voltage breakdown, without the need to switch the screen output to the VDP by the keyboard.

PC Box

☞ Use only cables listed in chapter 11.2 "Accessories" on page 91.

7.2.12 Audio Interface XAudio

At the XAudio connections also Audio inputs and outputs are available. The Audio interfaces are disabled in the BIOS ex works.

Connector color	2-channel	4-channel	6-channel	8-channel
Light blue	Line in	Line in	Line in	Line in
Lime	Line out	Front speaker out	Front speaker out	Front speaker out
Pink	Mic in	Mic in	Mic in	Mic in
Gray	-	-	-	Side speaker out
Black	-	Rear speaker out	Rear speaker out	Rear speaker out
Yellow orange	-	-	Center, sub-woofer	Center, sub-woofer

Fig.7-12: Assignment of 7.1 + 2-channel audio connection

7.2.13 Connection of a UPS

UPS with USB Interface

When connecting an UPS to an USB interface at the VSB 40.3, the information regarding the existence and the status of the UPS are communicated to the VSB 40.3 via a USB connection.

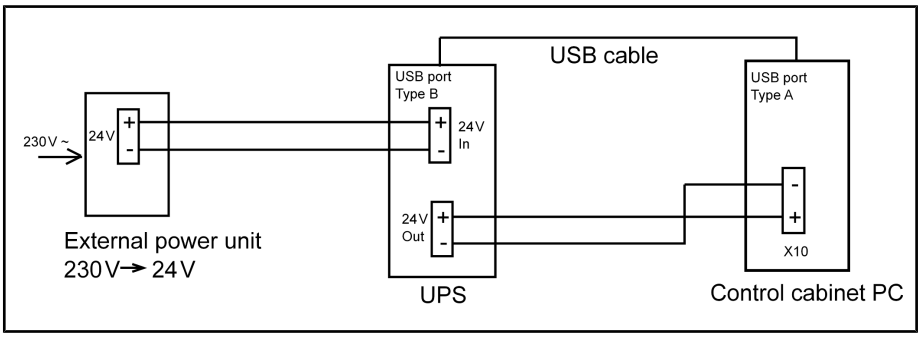


Fig.7-13: UPS with communication (via USB) to the control cabinet PC

The communication is established via a virtual COM interface. A USB interface provides the virtual COM interface.

☞ The USB connection XUSB2 has already been configured for the UPS connection when shipped.

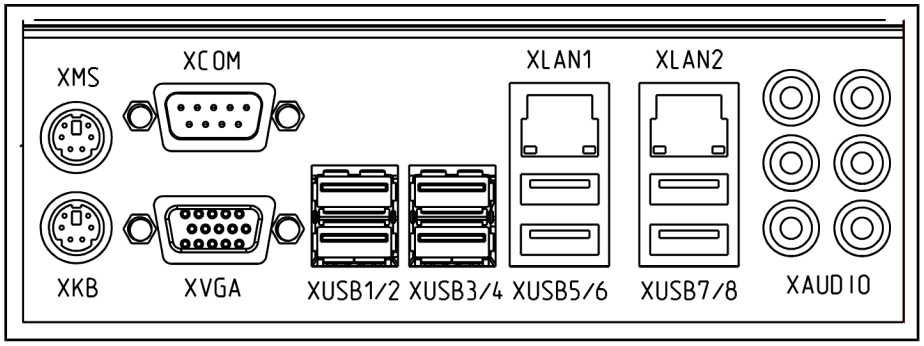


Fig.7-14: Connecting the UPS to the XUSB2 USB connection

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.

There is a defined assignment of the UPS to the USB interface for firmware version 01VRS.

For further information about UPS cabling please refer to chapter 5.4 "Wiring" on page 29.

8 Maintenance and Installation

8.1 General Information

control cabinet PCs of the VSB design are maintenance-free. Some components are subject to wear and must be replaced (see chapter 4.5 "Wear Parts" on page 22).

If the screws were removed due to maintenance, they are now to be fastened with the respective mounting torques specified in the following table.

Threads	Mounting torques
M2.5	0.4 Nm
M3	0.7 Nm
M4	1.4 Nm
M5	2.8 Nm

Fig.8-1: Mounting torques

Maintenance

Include the following measures in the maintenance schedule:

- At least once a year, all plug and terminal connections of the components are to be checked regarding proper tightness and possible damage. Check that cables are not broken or crushed. Damaged parts must be replaced immediately.
- The fan is to be checked at least once a year.

DANGER

Risk of injury by rotating fan impeller!

The fan impeller is not to be touched with the hands and may not come into contact with other objects.

- Ensure that the VSB 40.3 is connected to a working uninterruptible power supply unit (UPS).

Bosch Rexroth provides uninterruptible power supplies for the 24 V supply as accessory (see chapter 11.2 "Accessories" on page 91).

8.2 CMOS Battery

The battery used for buffering the RAM, BIOS and the clock has a limited service life (see chapter 4.5 "Wear Parts" on page 22).

This lithium battery may not be changed by the user. The battery may only be exchanged by the Bosch Rexroth Service (see chapter 12 "Service and Support" on page 95) or by personnel trained and authorized by the Service.

WARNING

Batteries might 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.

8.3 Hard Disk

8.3.1 General Information

WARNING

Loss of data!

All required application data as well as operating system settings are to be backed up on an external data carrier!

WARNING

Damages on the VSB 40.3 due to electrostatic discharges!

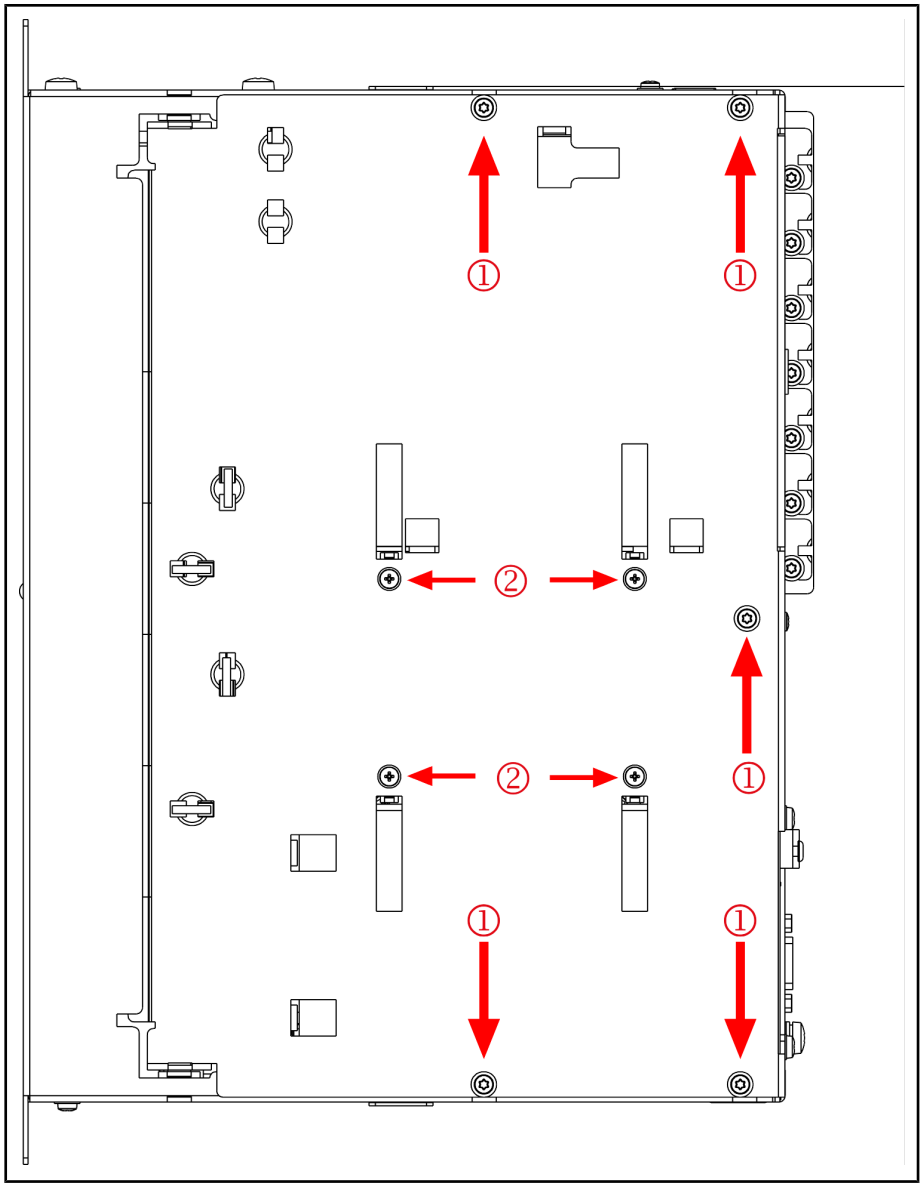
Comply with all ESD protective measures while working with modules and components! Avoid electrostatic discharges!

☞ To store user data and to avoid the reinstallation of the operating system and application programs after a hard disk exchange, back-up the well-working hard disk at regular intervals.

☞ The hard disk to be inserted must already be provided with an installed operating system, if no external boot medium is connected to the control cabinet PC! In any case, we recommend you to have a completely installed operating system on the hard disk to shorten the installation time!

8.3.2 Exchanging the Hard Disk of the VSB 40.3

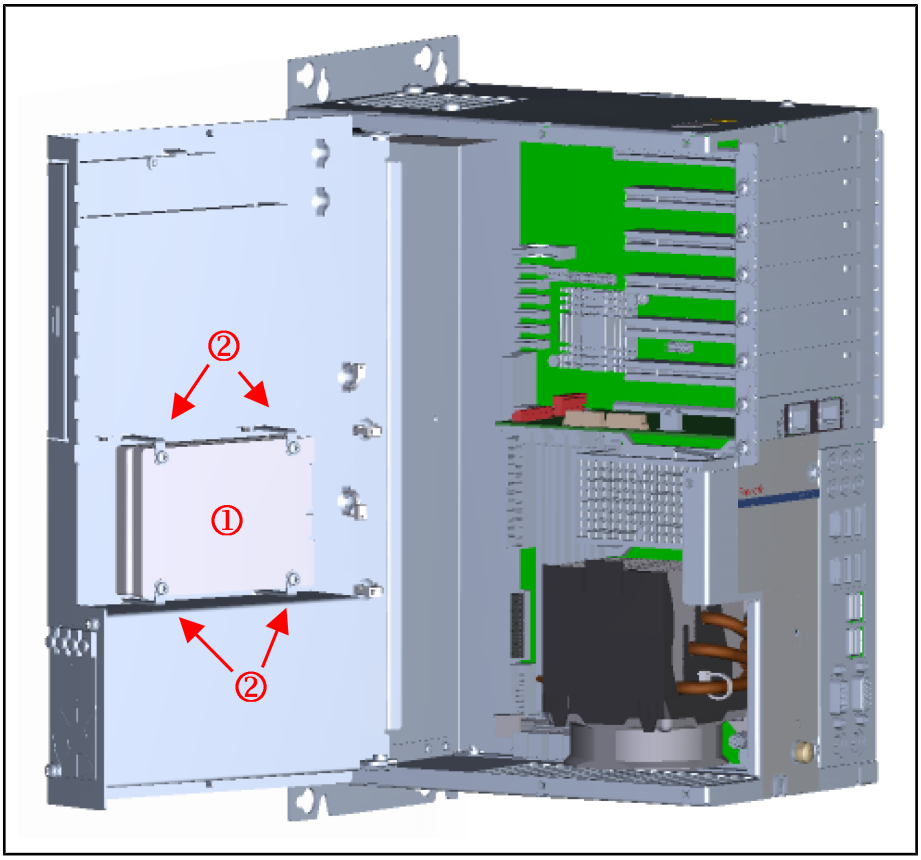
1. All required user data as well as the operating system settings of your system are to be stored either on an external storage medium or via the network connection! For the back up, see also chapter 9 "Software" on page 55.
2. Switch off the supply voltage.
3. Wait until the power supply unit switches off automatically after the UPS operation.
4. Ensure that no voltage is in the control cabinet PC. Disconnect the PC power supply from the X10 connection, if required, see "24 VDC voltage supply" on page 38.
5. Remove the five marked screws on the housing side, see fig. 8-2 "Loosen the fastening screws at the mounting frame" on page 49:



① Housing screws
② Hard disk screws

Fig.8-2: Loosen the fastening screws at the mounting frame

6. Open the device by opening the device door. One or two hard disks are located in the middle of the inner side of the device door, see fig. 8-3 "Position of the hard disk and of the fastening screws (inside)" on page 50.



① Hard disk
② Hard disk screws

Fig.8-3: Position of the hard disk and of the fastening screws (inside)

7. Remove the connecting cables of the hard disk.
8. Remove the fastening screws of the hard disk. After mounting, the four fastening screws for the hard disks are located either on the rear side of the device door or on the fastening screw holders.
9. Exchange the old hard disk for a new hard disk.
10. The new hard disk is to be fixed according to the mounting location using screws.

☞ Observe the different screw lengths for the outer and inner fastening screws of the hard disk.

11. Reconnect the connecting cables to the hard disk. Connection pins must not be bent!
12. Close the device door and fasten the five marked screws, see fig. 8-2 "Loosen the fastening screws at the mounting frame" on page 49.
13. The new hard disk parameters are automatically identified by the system. If the operating system does not boot automatically, the power supply is to be interrupted for at least 10 seconds. A restart is to be carried out again.
14. After a regular booting of the PC, the user data as well as the operating system settings for the normal operating mode are to be restored.

8.4 Extension Cards

8.4.1 General Information

PCIe slots and PCI slots are available for plugging extension cards. The maximum performance for all extension cards for the devices provided with a Celeron 440 processor is a total of 100 watt. The maximum performance for all extension cards with an Intel® Core2™ processor is 70 watt.

WARNING

Risk of damage to the control cabinet PC or to the extension cards due to electrostatic discharges!

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

WARNING

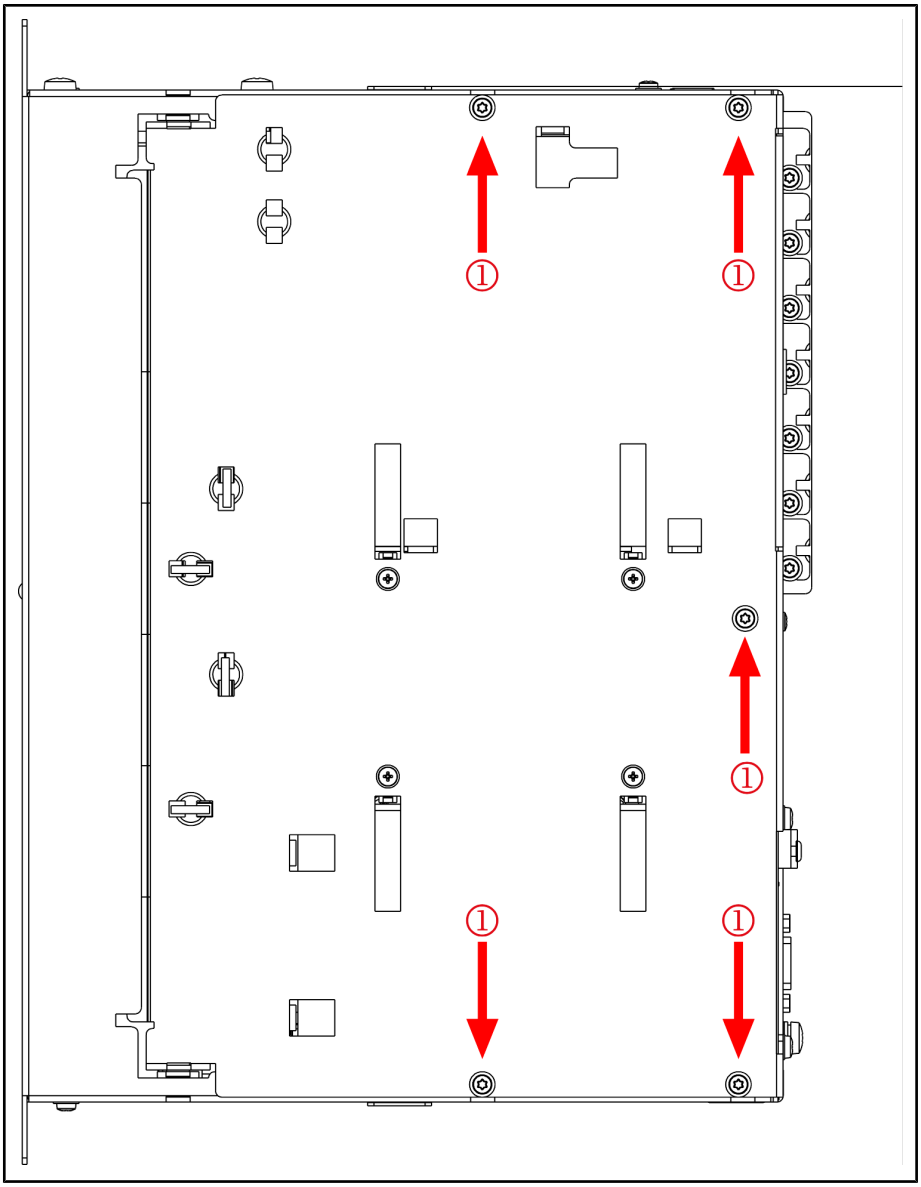
Risk of damage to the control cabinet PC or corruption of application software due to the use of of non-released extension cards!

Only released extension cards are to be installed. Installation is only to be carried out by authorized personnel.

8.4.2 Inserting Extension Card

1. All required user data as well as the operating system settings of the system are to be stored either on an external storage medium or via the network connection! See also chapter 9 "Software" on page 55.
2. Switch off the supply voltage.
3. Wait until the power supply unit switches off automatically after the UPS operation.
4. Ensure that no voltage is in the control cabinet PC. Disconnect the PC voltage supply from the X10 connection, if required, see "24 VDC voltage supply" on page 38.
5. Remove the five marked screws at the housing side, see fig. 8-2 "Loosen the fastening screws at the mounting frame" on page 49.

Maintenance and Installation



① Housing screws

Fig.8-4: Loosen the fastening screws at the mounting frame

6. Open the device by opening the device door.
7. Loosen and remove the fastening screw of the corresponding sheet, see fig. 8-5 "Position of the slot plates and the fastening screws" on page 53.

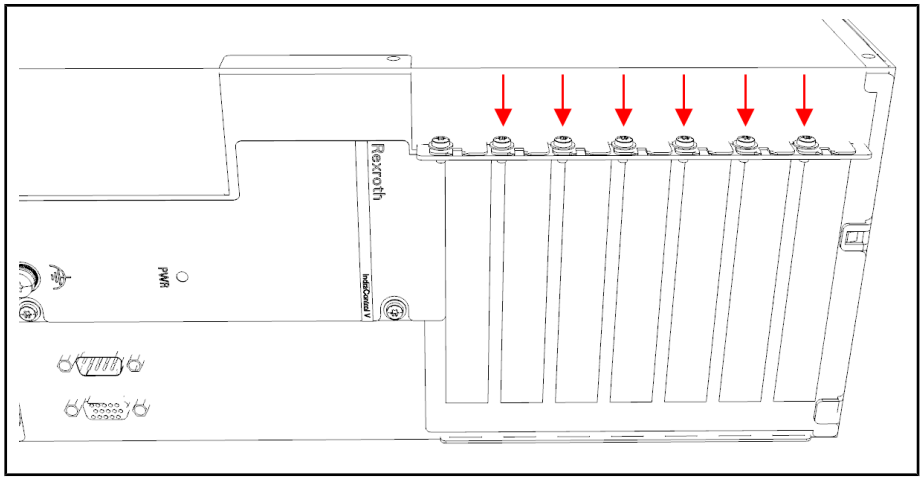


Fig.8-5: Position of the slot plates and the fastening screws

8. Insert the plug-in assembly directly. Don't use force. The connections are to be inserted in the plug on the main board.
9. Fasten the plug-in assembly with the screw used to fix the sheet.
10. Close the device door and fasten the five marked screws, see fig. 8-2 "Loosen the fastening screws at the mounting frame" on page 49.

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

There can be different reasons why the functions - based on the new card - are not available after the system reboot:

- The card is not properly positioned in the PCI slot.
- The driver software of the card was not installed or was installed faulty.
- IRQ (Interrupt) conflict with other PC hardware components.
- The software of the card was not installed.

9 Software

9.1 Windows XP Multi-User-Interface (MUI)

At delivery the English version of Windows XP is preinstalled on the VSB 40.3 devices. Further languages are available for the installation. They can be installed via the "MUI Inst" desktop icon.

① Mulit-User-Interface-Software icon

Fig.9-1: "MUI Inst" desktop icon

The following dialog appears after calling the Windows XP MUI installation:

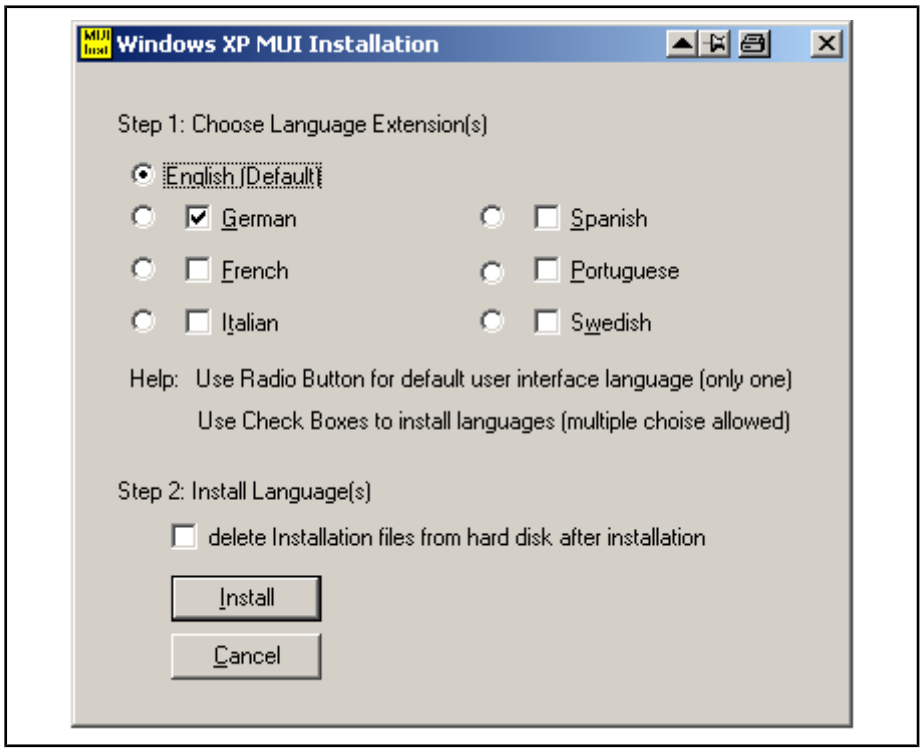


Fig.9-2: "Windows XP MUI Installation" dialog

In "Step 1" choose the languages to be installed on the system by selecting the corresponding checkbox. Choose the language to be preset during system start by selecting the corresponding radio button.

Under "Step 2" all installation files can be removed from the hard disk to get more free storage space on the hard disk. Select the checkbox if the installation files are to be removed.

☞ If several languages are installed, the languages can be changed using "Regional and Language Options" in the Windows Control Panel.

9.2 Data backup with Acronis True Image Echo Workstation

9.2.1 Introduction

Overview

This chapter describes the execution of a data backup of the entire system at the Rexroth PC operating devices.

The VSB 40.3 can be ordered with or without backup software. Backups can be created manually or automatically if the device has been ordered with the backup software. We recommend you to execute data backups cyclically to be able to restore quickly the original state in case of failure (e.g. defective hard disk).

This chapter describes a data backup solution that serves to backup and recover the operating system and the installed user programs (entire system) by a backup of the partition or hard disk, but not by a "selective" backup of user data . Acronis True Image also supports the backup of individual files and directories.

☞ This is a brief description based on the "Build 8163" version. The entire documentation of the Acronis True Image Echo Workstation Software is available at "C:\Support\Software\Acronis" or on the internet at http://www.acronis.de/enterprise/download/docs/.

☞ The backup software is only provided in English.

☞ We recommend you to carry out a backup after the start since the provided Recovery CD restores only the Windows operating system.

Why to Backup Data?

EDP systems are no static systems. Data is continuously created, modified, moved or deleted. Components are added or removed, updates are carried out and settings are modified. There are many reasons to backup this data and settings:

- Saving data in case of a hardware failure.
- Restoring the system environment after incorrect operation.
- Saving basic settings of a system.
- Archiving a system status before carrying out an update.
- Providing an identical system environment.

Definition of hardware and software requirements

Rexroth Industrial PC

If the industrial PC has been ordered with data backup software, please find the "Acronis True Image Echo Workstation" software installed in the C:\ProgramFiles\Acronis directory. If further components (e.g. Acronis True Image Management Console) are to be installed later, this can be done by calling the "TrueImageWorkstationEchoLicenseServer_s_en.exe" program. The license key for a new installation is visible on the device or is contained in the license documentation.

Backup Media

- PC in the network (backup server)

- internal or external USB CD/DVD burner
- external USB hard disk

Network

- 10/100 Mbits network
- TCP/IP network protocol
- DHCP server in the network

9.2.2 System Presentation

The "Acronis True Image Echo Workstation" software tool is used for carrying out the data backup. The software can be started via a desktop icon under Windows or via the Recovery Manager with F11 key (see chapter 9.2.10 "Creating Bootable Rescue Media" on page 68).

Fig.9-3: Acronis desktop icon

After the start of the program, the main program window opens (see fig. 9-4 "Acronis True Image Echo Workstation main window" on page 58). The following functions are available:

- **Pick a Task**
  - **Backup**

    Backup of files, directories, individual partitions or of the entire hard disk.
  - **Recovery**

    Recovery of the entire hard disk, individual partitions or individual partitions and files.
- **Manage Tasks**
  - **Tasks**

    Execution of planned tasks (e.g. automatic backup, see chapter 9.2.12 "Planning Tasks" on page 69).
  - **Logs**

    Display of log book entries of already executed tasks.
- **or Pick a Tool**
  - **Explore and Validate Backup Archives**

    Display of contents of the backup archive, mount/unmount images (allows access to a drive), validation of backup archives for verifying data consistency, creation of a copy of backup archives, conversion of a backup into a virtual disk format, e.g. VMware.
  - **Manage Harddisks**

    Cloning a disk, adding a new disk, wizard for creating a dynamic drive.
  - **Activate Acronis Startup Recovery Manager**

Start the Startup Recovery Manager during the boot process of the PC, see chapter 9.2.3 "Acronis Secure Zone und Startup Recovery Manager" on page 59.

– **Manage System Restore**

  Switching on or off of Microsoft System Restore.

– **Create Bootable Rescue Media**

  Creating a bootable medium (CD, DVD, USB stick).

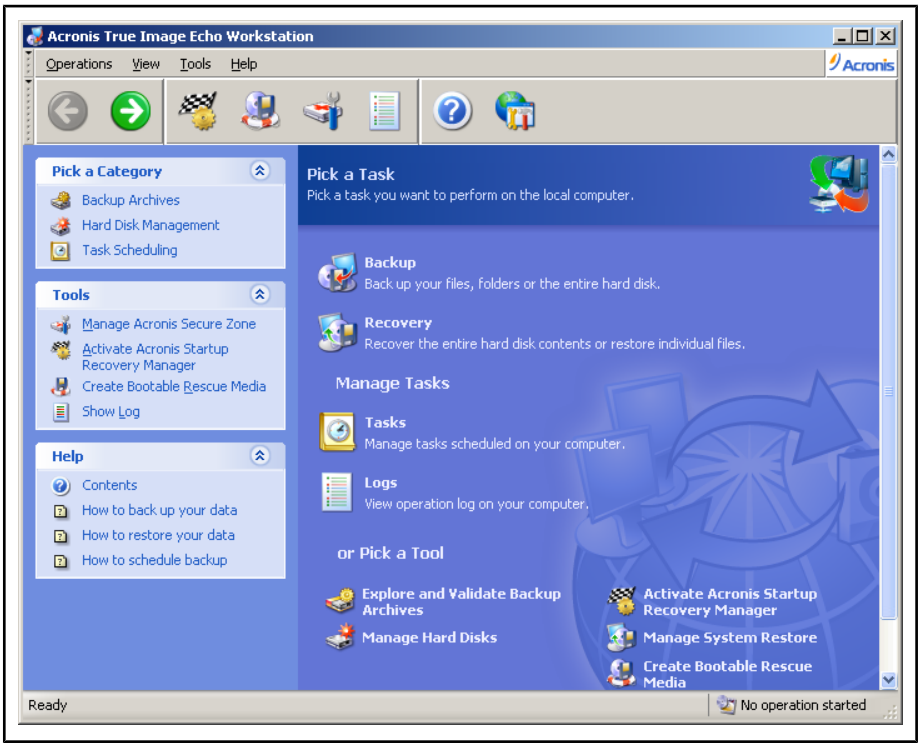


Fig.9-4: Acronis True Image Echo Workstation main window

Acronis True Image Echo Workstation

Acronis True Image is a program that provides backup functions for hard disks or partitions. It creates an exact image of the hard disk or single partitions and allows restoring all contents, including the operating systems, all programs as well as personal data and settings.

Images can be saved on the hard disk, writeable CDs/DVDs, USB hard disks and network resources. WindowwXP-like Wizards can be intuitively operated and explain step by step the necessary actions.

Image files can be incrementally extended. During the recovery of hard disks and partitions different backup states can be selected.

Archive Files

Archive files have the extension "tib". These files contain the images of the partitions or hard disks. In addition, data of the partitions or hard disk and information, with which the recovery is realized, are contained. An archive file can contain images of several partitions and hard disks.

During the backup process the data can be compressed and can be splitted into several image archive files.

☞ It is not recommended to archive images directly on removable media like e. g. CDs or DVDs, as a flow control of the data is missing because of the direct writing on these data carriers. Furthermore, we recommend you to divide the image archives during the creation into the corresponding size and to transmit the files after the backup process to the removable media and to verify them.

Images of partitions contain all files and directories, independent of their properties (hidden, system, etc.), the Master Boot Record (MBR), the File Allocation Table (FAT) and the Root directory.

In a partition image only the hard disk sectors containing user data are saved. The image archives can be protected with a password.

Incremental Backup

An image archive contains one or several images. Generally, these are compressed copies of partitions or entire drives. It is not only possible, to record several partitions or hard disks in an archive file and to restore them separately, the data of an image archive can also be updated. To achieve this, a technology is used, that is similar to the incremental data backup. Thereby, only the data modified since the last image creation are saved. This process (differential backup) saves time and memory space. Please consider that the basis of an incremental backup is always a preceding full disk backup. Therefore, the software analyzes at first, if an incremental backup is possible. If a full disk backup does not exist, it is always created at first.

Further advantage of incremental backups: The recovery of a partition from the image archive is possible with different states generated from different image creation times. Not only the image of the respective last backup, but also e. g. the image created at a certain time in the past can be restored.

9.2.3 Acronis Secure Zone und Startup Recovery Manager

Acronis Secure Zone

In the case, that local partitions are damaged and e. g. cannot boot anymore, but the physical state of the HDD is still alright, it is possible to restore images locally from the Acronis Secure Zone.

The Acronis Secure Zone is a zone on the hard disk, that is inaccessible by ordinary Windows applications. Image archives for quick recovery of partitions or hard disks can be safely archived in this especially protected hard disk partition. Additionally, the Acronis Secure Zone includes parts of the Acronis Startup Recovery Manager, with which the Acronis True Image can be activated in error case before starting the operating system and with which a corrupted system partition can be recovered. Thus, partitions can be recoverd, even if the Windows operating system does not start anymore. Also the rescue media to start Acronis True Image is not required, as the information to execute the program is integrated in the Acronis Startup Recovery Manager.

☞ The Acronis Secure Zone is created as logic drive in the extended partition. The used file system is FAT32. It cannot be accessed via a drive letter. Furthermore, no direct access to the image archives is stored there, except for Acronis True Image itself.

Acronis Startup Recovery Manager

The Acronis Startup Recovery Manager is a boot manager with a Linux mini operating system, with which Acronis True Image can be started by pressing the F11 key, independently from the installed Windows, before a possibly damaged operating system boots. The main task of the Acronis Startup Recovery Manager is the recovery of damaged operating system partitions. Also other partitions can be recovered or backed up. The Acronis True Image started from Acronis Startup Recovery Manager offers all functions, that are also possible during the start of a rescue media.

☞ The Acronis Startup Recovery Manager can be activated only together with the Acronis Secure Zone.

Creating the Acronis Secure Zone

The Acronis Secure Zone is not implemented on Rexroth industrial PCs as default. After a hard disk exchange a saved hard disk image is restored, it also might be necessary to recreate the Secure Zone.

Create the Acronis Secure Zone in the main program window via "Activate Acronis Startup Recovery Manager". After the selection a wizard guides you through the required steps:

1. **Welcome to the Activate Acronis Startup Manager Wizard!**

   Wizard start window.

2. **Create Acronis Secure Zone**

   Selecting the partition on which Acronis Secure Zone is to be created.

   Note: We recommend you not to use the operating system partition, but for example the D:\ partition.

3. **Size**

   Enter the desired size of the Acronis Secure Zone via a slider or direct input. The proposed value can be taken as the size of Acronis Secure Zone can be changed at any time via "Manage Acronis Secure Zone" in "Tools" (on the left of the main program window).

   Note: To have enough memory space for a basic backup and supplementary incremental backups, a size of 10 GB (min.) is recommended. The memory space reserved for Acrons Secure Zone cannot be used for other applications.

4. **Acronis Secure Zone Protection**

   A password can be entered for accessing the Acronis Secure Zone.

   Caution: The password must be case sensitive!

5. **Proceed**

   Finishing the wizard. If Acronis Secure Zone is created, the wizard displays a message. Press the OK button to complete the process.

☞ After creation of the Acronis Secure Zone, the Acronis Startup Recovery Manager is automatically activated. During each boot process before starting Windows XP a message appears for approx. 3 seconds

Starting Acronis Loader...

Press F11 for Acronis Startup Recovery Manager...

The Acronis Startup Recovery Manager can be deactivated or reactivated via "Activate Acronis Startup Recovery Manager" at any time.

9.2.4 Creating Image Archives

☞ Before the image creation it must ensured, that there is enough space on the target data carrier to store the image archive.

It is only allowed to backup data, if the Windows operating system and the machine control are running and after explicit release of the respective control system.

Generally, we recommend you to backup Windows system partitions via the Acronis Startup Recovery Manager, if the Windows operating system is not running.

The main programm window contains the "Backup" function. After clicking on the icon, the wizard for image creation starts:

1. **Welcome to the Create Backup Wizard!**

   Wizard start window.

2. **Select Backup Type**

   Selection of the backup type. There are two checkboxes for selecting if a full backup (individual partition, all partitions) or a partial backup (individual directories and files) is to be executed. A note that informs about what can be stored in the marked backup type appears in the "Description" zone.

3. **Partitions Selection**

   Select partition(s) to be backed up. All partitions of the hard disk for selection are displayed.

   Note: In this selection also the selection of the Acronis Secure Zone is displayed. If this partition or the complete hard disk including the Acronis Secure Zone is selected for backup, a note appears, that an image of this zone is not recommended, as it contains itself only backed up images. If the Acronis Secure Zone is not included in the backup, it must be newly created on a new hard disk after the recovery of the backup.

4. **Source File Exclusion**

   Exclusion of certain file types or directories. Certain file types or directories can be excluded from storing in the image. After the selection of a file type in the window further file types can be added or removed.

5. **Backup Archive Location**

   Select storage location and file name for the image archive. A directory on one of the partitions or of an external device (CD/DVD, USB hard disk) must be selected. There is still the possibility to create a new directory. Saving the image on a network drive is also possible. The file name for the image can be freely selected. If the Acronis Secure Zone is selected as storage location, a note is displayed under "File name" that no file name has to be defined.

6. **Select Backup Mode**

   Selection of the backup mode. Possible backup modes:

   - Create a new full backup archive

     Creates a full image of individual files, directories, partitions or the entire hard disk.

   - Create an incremental backup

     Creates an image containing only the changes after the last full backup or the last incremental backup.

   - Create a differential backup archive

     Creates an image containing only the changes after the last full backup.

     Note: Before the first incremental backup can be performed, a full image must exist.

-

7. **Choose Backup Options**

   Possible options are the default and the user-specific option. Via user-specific options individual options can be switched on/off or modified. The following options are available:

   - Archive Protection

     Defining a password for access to the archive.

   - Pre/Post commands

     Defining commands (or batch files) to be executed before or after the backup.

   - Database support

     A lot of Window services, including mail and database servers, like Microsoft Exchange or Microsoft SQL Server, work with many opened files. Therefore we recommend you to stop the operation of the processes of these services during the snaphot for the creation of the backup archive file. This can done with this option.

   - Compression level

     Four compression rates are available:

     – None (no compression)
     – Normal
     – High
     – Maximum

     The higher the compression level, the smaller is the memory space requirement for the image archive file. However, the required time to create and restore the image archive file is higher. We recommend you to use the "normal" compression rate.

   - Backup performance

     The priority of the backup process and the write speed to the storage medium can be modified.

   - Notifications

     Allows the sending of e-mails or messages via Windows Messenger after completion of the backup process.

   - Event tracing

     This option allows the sending of the backup report to the Windows Event Log application.

   - Archive splitting

     Allows the splitting of the archive into several files. The splitting can be done automatically or can be defined by entering a fixed size. This is recommendable if you store an archive on your hard disk and want to burn it to a CD-R/RW, DVD-R/RW or DVD+R/RW later on.

   - Dual destination

     Allows the storage of a copy of a backup in the Acronis Secure Zone in a selected directory.

   - Error handling

     Here can be defined how errors are handled during the backup process.

   - Additional settings

Allows the automatic validation (validation of data integrity) of the backup after completion.

8. **Archive Comments**

   Here, you can enter a meaningful comment about the image archive file. This comment will simplify the identification of the image archive file at a later time.

9. **Proceed**

   Finishing the wizard and starting the image creation.

☞ For finishing the creation of an image archive file (=backup archive file), we recommd you to validate it with "Validate Backup Archive" under "Explore and Validate Backup Archives" in the main window.

9.2.5 Validating Image Archives

Image archives serve to backup or archive data. Thus, the data integrity is the most important property of an image archive. Therefore each image archive is to be validated after the creation.

To do so, the Acronis True Image main program window provides the "Validate Backup Archive" function under "Explore and Validate Backup Archives". The only step after the start window serves to select the image archive file to be checked. Acronis True Image automatically focuses on the file containing the last backup. After clicking **Proceed** Acronis True Image starts to validate the archive. At the end of the validation a message about the successful action is displayed.

☞ If Acronis True Image finds an error, the image creation should be repeated. In this case an other data carrier is to be taken as storage medium.

9.2.6 Update and Extend Image Archives

It is not required to create a full image during each data backup. For this, the incremental image creation can be performed. During an incremental image creation, only the sectors of the partitions or hard disk are saved, that have been changed since the last complete image creation. This information is saved as part of the image archive in a new file in the directory of the full image archive. The name of the new file is the file name of the full image archive in conjunction with a consecutive number (see note). Incremental image creation is only reasonable on hard disk or network drives, because using a removable media the full backup is no longer provided when writing the incremental file.

☞ The archives of the incremental backup are always filed in the directory of the selected full backup. The incremental archive files are marked with a consecutive number at the end of the file name.

Example:

Name of the full image archive: Backup_Drive_C

Name of the 1st incremental archive file: Backup_Drive_C**2**

Name of the 2nd incremental archive file: Backup_Drive_C**3**

The incremental backup of a partition is started in the main program window with the "Backup" function. After clicking on the icon, the wizard for image creation starts:

1. **Welcome to the Create Backup Wizard!**

   Wizard start window.

2. **Select Backup Type**

   Selection of the backup type. There are two checkboxes for selecting if a full backup (individual partition, all partitions) or a partial backup (individual directories and files) is to be performed. A note that informs about what can be stored in the marked backup type appears in the "Description" zone.

3. **Partitions Selection**

   Select partition(s) to be backed up. All partitions of the hard disk for selection are displayed.

   Note: In this selection also the selection of the Acronis Secure Zone is displayed. If this the Acronis Secure Zone or the full hard disk including the Acronis Secure Zone is selected for backup, a note appears, that an image of this zone is not recommended, as it contains itself only backed up images.

4. **Source File Exclusion**

   Exclusion of certain file types or directories. Certain file types or directories can be excluded from storing in the image. After the selection of a file type in the window further file types can be added or removed.

5. **Backup Archive Location**

   Select the image archive file to be updated or extended.

6. **Select Backup Mode**

   Select "Create an incremental backup".

7. If the archive defined in ⑤ is protected with a password, the **Archive Protection** dialog appears for entering the password.

8. **Choose Backup Options**

   Via "Set the options manually" different settings for the backup process can be defined. The possible options are described in ⑦ in chapter 9.2.4 "Creating Image Archives " on page 60.

9. **Archive Comments**

   Here, you can enter a meaningful comment about the image archive file. This simplifies the identification of the image archive at a later time.

10. **Proceed**

    Finishing the wizard and starting the image creation.

9.2.7 Restoring Image Archives

It might be possible to restore images because of various reasons. The most frequent causes are hard disk defects, a virus, the recovery after a program test or a defect of the operating system, e. g. by working with the registration editor. The recovery of one or several partitions from an image archive is started in the main program window via the "Recover" function.

We recommended you to restore image archives only with the Startup Recovery Manager or the rescue media.

Windows system partitions can only be restored by the Startup Recovery Manager or by the rescue media.

Recovery of a hard disk or partition with the Startup Recovery Manager

For recovery of a hard disk or partition with Startup Recovery Manager do the following:

Reboot the PC and press the F11 key as soon as the following message appears:

Starting Acronis Loader...

Press F11 for Acronis Startup Recovery Manager...

Select the "Acronis True Image Echo Workstation (Full version)" with the ⍓ key (arrow to top) and press the enter key. Acronis True Image Echo Workstation starts.

After clicking "Recovery", the wizard for image creation starts:

1. **Welcome to the Restore Data Wizard!**

   Wizard start window.

2. **Backup Archive Selection**

   Select the image archive to be restored.

3. If the selected archive is password-protected, the **Archive Protection** dialog appears for entering the password.

4. **Backup Date Selection**

   This dialog displays all images (including data of creation and comment) of the archive, which was selected under ②.

   Select the image to be restored.

5. **Restoration Type Selection**

   Recovery of a hard disk, partitions or individual files or directories can be selected.

6. **Partition or Disk to Restore**

   If in step ⑤ "Restore disks or partitions" was selected, this dialog is displayed. The hard disk or partition to be restored can be defined here.

7. **Restored Partition Location**

   Select the partition, on which the image is to be restored.

   Caution: The target zone is to be carefully selected, so that the right hard disk zone is overwritten.

   - If you select a target hard disk or a target partition, the selected target hard disk or partition is overwritten.
   - If as target sector a non-partitioned sector of the hard disk is specified, a new partition is created.

8. **Restored Partition Type**

   If the partition, containing the operating system, is restored, "Active" must be selected. For all further partitions select "Logical".

9. **Restored Partition Size**

   This dialog allows the reducing of partitions to be restored.

10. **Next selection**

    Choose if a further partition or hard disk is to be restored. If this is not the case, select "No I do not".

11. **Restoration Options**

    Here further options can be selected, for example:

    - The validation of the backup archive before recovery.

- A reboot of the PC after the recovery is finished.
- Suppressing of messages during recovery.

12. **Proceed**

    Finishing the wizard and starting the restoration.

Recovery at running Windows operating system

If the partition containing the operating system is selected as target for the recovery, after presssing **Proceed** a warning is displayed that a reboot is required. If the message is confirmed with "Reboot", there is a reboot with subsequent start of the Startup Recovery Manager and start of the recovery. If the message is confirmed with "Cancel", the wizard is finished.

☞ After restoring all partitions on a new hard disk, it may be necessary to reactivate the Startup Recovery Manager (see chapter 9.2.3 "Acronis Secure Zone und Startup Recovery Manager" on page 59).

9.2.8 Exploring Image Archives

Acronis True Image offers the possibility to explore image archives and to open or copy selected files from the archive. Acronis True Image uses Windows Explorer.

The function for exploring an image file can be found in the main program window under "Explore and Validate Backup Archives". After clicking on this icon a selection of different function is displayed. Click "Explore Backup Archives". In the next window the archive to be explored must be selected.

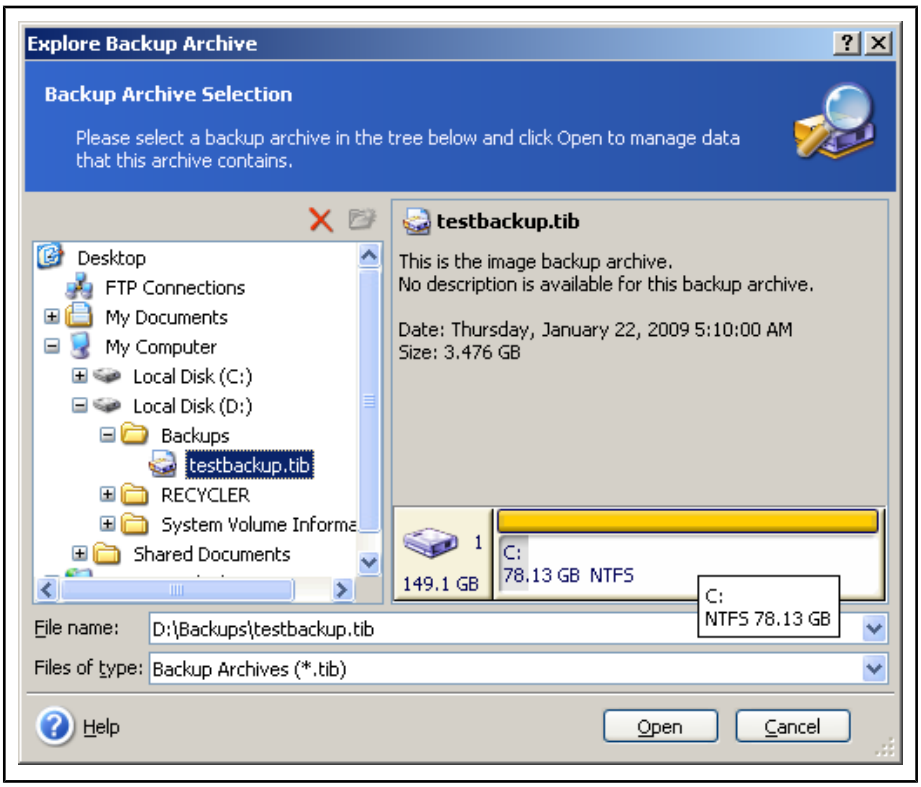


Fig.9-5: Dialog for selecting the archive to be explored

Then the selected archive and all corresponding archives (incremental and differential backups) are displayed.

In order to explore an incremental backup the following backups must be available: all before created incremental backups and the full backup, which served as basis. Even if only one part of the backup is missing, the exploration cannot be performed. In order to explore a differential backup, the full backup, which served as basis, must be available.

By double-clicking the archive to be opened is selected. The partition from which the archive contains data and the creation date are displayed.

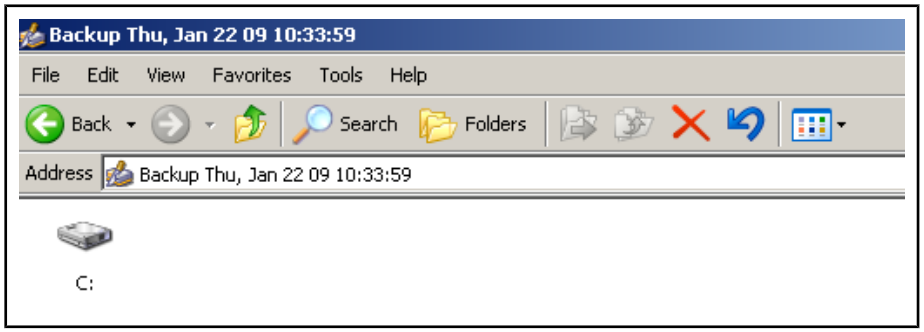


Fig.9-6: Explorer display

After double-clicking on the drive icon all directories contained in the archive are displayed. Directories can be opened and explored and data can be copied from the directories, if necessary.

If an image archive consists of several partial archives, they must be available as a whole to include the contained images. Therefore, it is not possible to integrate images distributed on CDs/DVDs. If this should be necessary, all partial archives must be copied in a common directory on the hard disk.

9.2.9 Removing Image Archives

The function for removing image files is in "Explore Backup Archives". This is a subfunction of "Explore and Validate Backup Archives". After clicking "Explore Backup Archives" a window opens for selecting the archive to be removed.

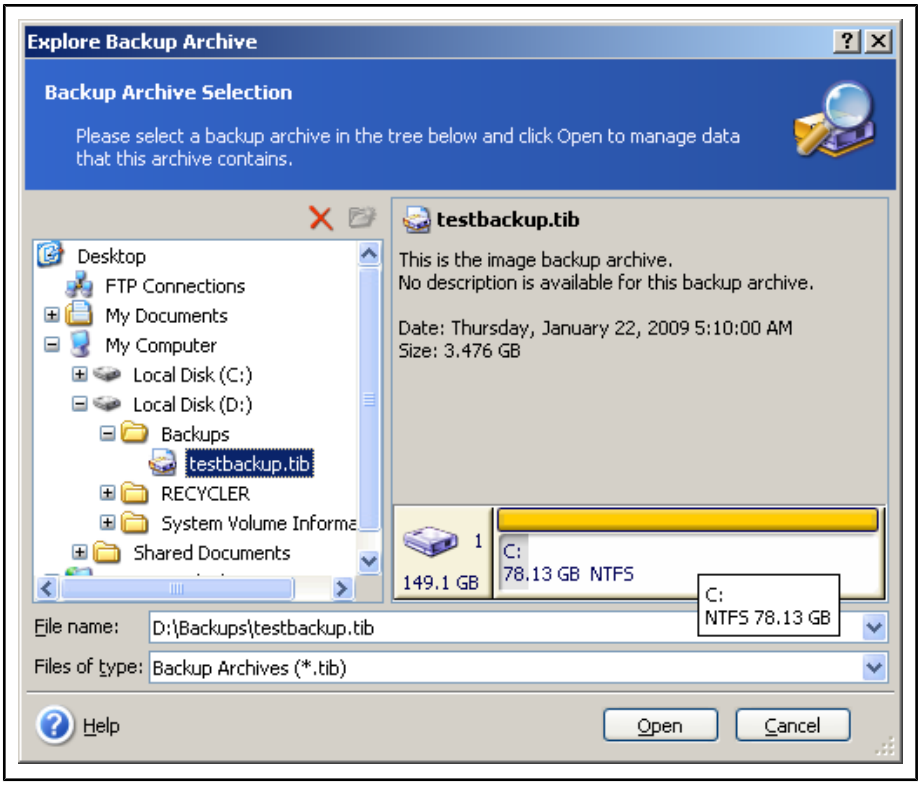


Fig.9-7: Dialog for removing an archive

The marked archive can be deleted by using the  icon (above the directory tree) or via the context-sensitive menu (right mouse-click). There is an additional request if the file is to be deleted.

Also several archives can be marked and deleted at the same time.

9.2.10 Creating Bootable Rescue Media

In case of irreparable hard disks or after the installation of a new hard disk, the computer can be started with Acronis True Image via a bootable rescue media on an external data carrier. The bootable rescue media can be created on the following data carriers:

- **CD or DVD**

  An installed or external USB-CD/DVD burner required for the creation.

  Note: If you want to create a DVD as bootable media, use a DVD+R, as problems may occur if a DVD-R is used. We recommend you to test the functionality of the created bootable media in any case.

- **USB stick**

  For the creation a USB stick with a minimum capacity of 64 MB is required.

The creation of the bootable rescue media is started in the main program window via the "Create Bootable Rescue Media" function. The procedure describes the creation of a bootable USB stick that automatically starts the Acronis True Image Software.

After clicking on the icon, the wizard for the creation of bootable rescue media starts.

1. **Welcome to Acronis Media Builder**

   Wizard start window.

2. **Rescue Media Contents Selection**

   "Acronis True Image Echo Workstation (Full version)" is to be selected. This version contains the drivers required for booting USB media.

3. **Bootable Media Selection**

   Select the USB stick from the list. The stick is displayed as "Removable Drive" [e.g. Removable Disk (E:)].

4. **Proceed**

   Finishing the wizard and starting the creation of a bootable USB stick.

9.2.11 Network Support

Windows software

No settings are required for the Windows software. The available Windows network is used.

Bootable rescue media, Startup Recovery Manager

Network with DHCP server

In networks with DHCP server it is not necessary to make settings neither in the bootable rescue media nor after the start of Acronis True Image via the Startup Recovery Manager.

Network without DHCP Server

In networks without DHCP server it is not necessary to enter data manually after the start of the bootable rescue media or after the start of Acronis True Image via the Startup Recovery Manager. Via **Extras ▸ Options** the network adapter (eth0) can be configured. At least the IP address, the subnet mask and the default gateway are to be entered.

Network adapter	Display of the network adapter
Hardware address	Display of the MAC address
DHCP	Display if used/not used
IP address	Entry of the IP address
Subnet mask	Entry of the subnet mask
DNS suffix	Optional
Default gateway	Entry of the IP address of the default gateway
DNS server	Optional
WNS server	Optional

Fig.9-8: Manual network configuration of the rescue media

If the network settings are manually entered, after double-clicking "Computers near me" partially no network resources are indicated. Here the UNC path name must be entered in the file name box (e. g. "\\server\Enable\" or "\\<ip_address> \enable\"). When accessing another computer in the network the user name and the password are requested. To log in a Windows domain, place the name of the domain followed by a backslash before the user name (e. g."domain \user").

9.2.12 Planning Tasks

To keep the backups automatically as up-to-date as possible, tasks can be created (time-controlled backup orders).

We recommend you to determine, that such tasks are executed at times, at which the control systems are not in productive operation.

Tasks can only be created in the main program window under Windows. The procedure is nearly the same as for "Create image archives" (see chapter 9.2.4 "Creating Image Archives " on page 60) extended by the time settings.

For creating a **Backup task**: Click on the "Tasks" function in the main program window.

1. **Scheduled Tasks**

   During the first calling this window is empty. The tasks you have created are listed there. This enables you to select and to edit (modify) already created tasks as well as to change the task name. By enabling the "Create" icon a new task is created. The wizard for creating a task is started.

2. **Welcome to the Schedule Task Wizard!**

   Wizard start window.

3. **Task Type Selection**

   Select the "Back up" type for a backup task.

4. **Select Backup Type**

   Select "My Computer" as backup type.

5. **Partitions Selection**

   Select the partition to be saved.

6. **Source File Exclusion**

   Exclusion of certain file types or directories. Certain file types or directories can be excluded from storing in the image. After the selection of a file type in the window further file types can be added or removed.

7. **Backup Archive Location**

   Select storage location and file name for the image archive. A directory on one of the partitions can be selected. There is still the possibility to create a new directory. The storing of an image on a network drive or on an external media (USB hard disk, internal or external CD or DVD burner) is possible as well. The file name for the image can be freely selected. If the Acronis Secure Zone is selected as storage location, a note is displayed under "File name" that no file name is to be defined.

8. **Select Backup Mode**

   Selection of the backup mode. Possible backup modes:

   - Create a new full backup archive

     Creates a new full image of individual files, directories, partitions or of the entire hard disk.

   - Create an incremental backup

     Creates an image containing only the changes after the last full backup or the last incremental backup.

   - Create a differential backup archive

     Creates an image containing only the changes after the last full backup.

     Note: Before the first incremental or differential backup can be performed, a full image must exist.

   - **Choose Backup Options**

     Possible options are the default and the user-specific option. Via user-specific options individual options can be switched on/off or modified. For automatic backup tasks "Set the options manually" is to be selected in any case; and under "Additional Settings" "Validate

backup archive upon its creation completion" is to be marked to switch on the validation of the created archive.

The possible options are described in ⑦ in chapter 9.2.4 "Creating Image Archives " on page 60.

9. **Archive Comments**

   Here, a meaningful comment about the image archive file can be entered. This comment simplifies the identification of the image archive at a later time.

10. **Task Running Scheduling**

    Here the execution time of the task is displayed. In the example **Daily** is selected.

11. **Daily Execution of Task**

    Possible times are:

    - Start time

      Starting time of the task is displayed.
    - Every day

      The task is executed every weekday.
    - Weekdays

      The task is executed only at weekdays.
    - Every

      Execution in certain day intervals.
    - Repeat task every

      Multiple daily execution of a task.

12. **User Information**

    Enter and confirm your user name and login keyword.

    Note: If no login keyword is entered, the task possibly cannot be executed.

13. **Finish**

    Finishing the wizard and saving the task.

9.3 Software for UPS Monitoring

9.3.1 General Information

This UPS NT software controls and monitors the external uninterrupted power supply for the panel PC and the control cabinet PC.

The communication between the program and the UPS is performed via a virtual serial interface via an USB port (default port is XUSB2).

The program runs as Windows service. It is started automatically during system start-up and can be finished or deactivated only by an authorized user.

The UPS logic is designed for a safe shutdown of all application programs as well as of the operating system. It is not designed to maintain the operation in case of a longer voltage breakdown!

Software

DANGER

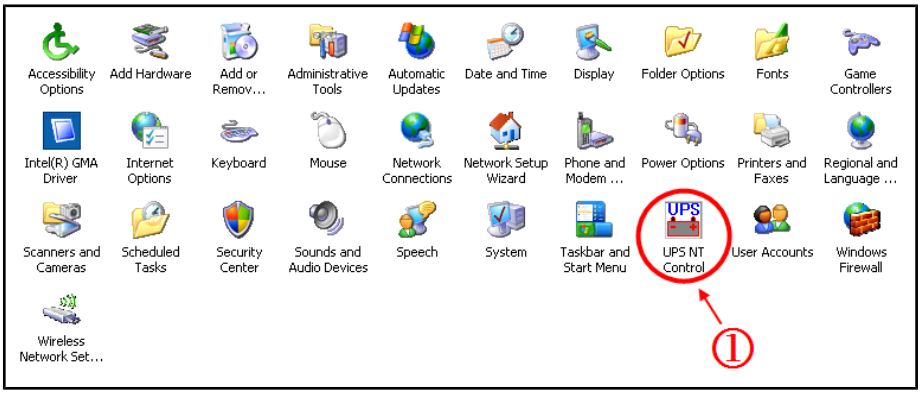
Uncontrolled machine movements or data loss when the batteries are defective!

If no batteries are available or if the batteries are defective or discharged, the system RESET is executed after a voltage breakdown, without prior notice!

This could cause uncontrolled machine movements or data loss.

9.3.2 Configuration

Calling the configuration software is carried out in the Windows XP Control Panel by selecting the "UPS NT Control " icon .



① UPS NT control software icon

Fig.9-9: UPS program icon in the Windows XP Control Panel

The dialog shown in fig. 9-10 "Configuration dialog of the UPS NT software" on page 73 is used for specifying the starting behavior and the runtime behavior of the UPS NT software. The individual values of the configuration are saved in the registry.

A stop and a subsequent restart of the service with modified parameters is performed after pressing "OK".

The UPS NT Control always runs as a Windows service. Changing the user does not influence this behavior. The user cannot end the program without administrator rights or cannot stop the monitoring.

The following dialog appears after starting the program:

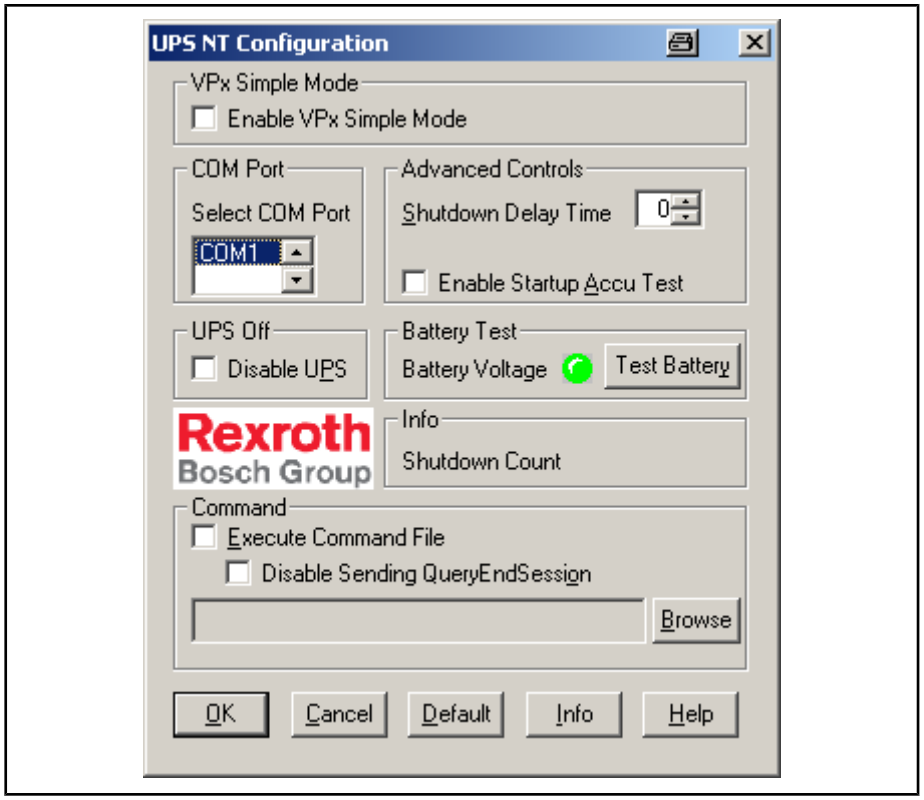


Fig.9-10: Configuration dialog of the UPS NT software

Enable VPx Simple Mode

VPx.3 devices can be operated in a "simple UPS mode" without communication interface. During simple UPS operation the UPS receives only the command for switching off the control. Further functions are not available in this mode and therefore they are hidden in this dialog.

Com Port

With "Select COM Port" the (virtual) serial communication interface to be connected to the UPS can be selected. The delivery setting is COM3. This setting corresponds to the USB port XUSB2.

☞ In new systems the UPS can be connected to any interface as the software automatically identifies this interface. There is a defined assignment of the UPS to the USB interface for firmware version 01VRS.

Advanced Controls

- Shutdown Delay Time

  With "Shutdown Delay Time" the delay time for the shutdown is defined. During this period of time the user can backup his data. If the data is not saved, the applications end after the specified time without any confirmation dialog!

- Enable Startup Accu Test

  If "Enable Startup Accu Test" is selected, the UPS battery is tested during each system restart. If an error occurs during the test, a corresponding message is displayed.

- Disable UPS

  If "Disable UPS" is selected, the UPS function is switched off. Only reasonable for testing and installation purposes.

- Default

Default values of the dialog elements can be preset by using the "Default" button. Default values are:

- Shutdown Delay Time: 30 seconds
- Enable Startup Accu Test: active
- Disable UPS: inactive

Command

In the "Command" group an executable program (*.exe; *.bat) can be entered and activated that should be started and executed after the initialization of the shutdown. This is to be used if applications that do not react on messages received from the complete system are to be stopped in order to avoid data loss.

Generally, the respective clearing and terminating programs are entered and activated. If several programs have to be executed or if the programs have transfer parameters, they have to be combined and entered in a batchfile.

The entry must not contain any request parameters and the program must not initialize any shutdown!

- Disable Sending QueryEndSession

  The "QueryEndSession" message is sent by the operating system to inform about the shut-down of the system. This "Disable Sending QueryEndSession" setting impedes the sending of the system message QueryEndSession to the whole system after a voltage breakdown. This setting can only be activated if the "Execute Command File" checkboxes are selected. This can be necessary if a certain sequence is to be followed after ending the applications.

  It is absolutely required to enter the responsible application as program to be executed. The application is also responsible for sending the "QueryEndSession" message to the system!

Info

- Shutdown Count

  The given value indicates the number of shut-downs of the system caused by the UPS function. A battery change is recommended after 3000 forced shut-downs.

Remarks

- General

  All important events are saved in the Windows Event Viewer.

- Battery Test

  The battery test is started by pressing the "Test Battery" button. If the battery test fails, the LED next to the "Test Battery" button switches from green to red.

- Disable UPS

  If this checkbox is enabled in the normal operating mode and if there is a voltage breakdown, a proper system shutdown is no longer possible!

  The "Disable UPS" function is only to be used during the commissioning of the system or during the installation of the software. Do observe that for normal operation "Disable UPS" is unselected!

9.3.3 Installation Notes

The UPS program consists of 3 parts:

1. The control program: ups_nt.cpl
2. The actual service program: ups_nt.exe
3. The help file: ups-nt.hlp

All files are to be located in the $SystemRoot$\System32 directory. After calling the Control Panel, the "UPS NT Control" icon appears (see fig. 9-9 "UPS program icon in the Windows XP Control Panel" on page 72).

The settings for the service can be set here.

The service can be stopped or exited only by using the Service Manager in the Computer Management (Services). The Service Manager can be accessed for example under **Control Panel ▸ Administrative Tools ▸ Services**.

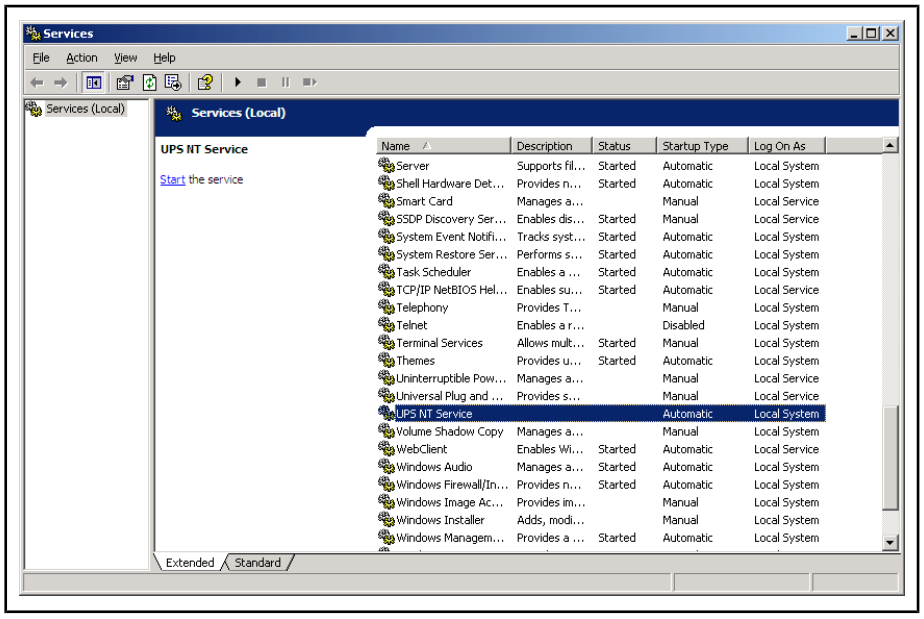


Fig.9-11: "Service Manager" in the Computer Management

Then the marked entry "UPS NT Service" can, depending on the state, be started, stopped or exited via the context menu entries "Start", "Stop" or "Exit".

Administrator rights are required!

9.4 Maintenance Software

9.4.1 General Information

For all VSB 40.3 devices, the maintenance software "IPCMnt.exe" is installed by default. With this software different information about the device can be obtained or settings and tests can be carried out.

Call the software via **Start ▸ ProgramFiles ▸ Bosch Rexroth ▸ IPCMnt.exe**.

The maintenance software contains the following tabs:

- "Touch", touch screen calibration, see chapter 9.4.2 "Touch" on page 76.
- "el. Type Plate" electronic type plate, see chapter 9.4.3 "El. Type Plate" on page 77.
- "SMART" information about the hard disk, see chapter 9.4.4 "SMART" on page 77.
- "HW Monitor" HW information, see chapter 9.4.5 "HW Monitor" on page 78.
- "About" device informationen, see chapter 9.4.6 "About" on page 79.

9.4.2 Touch

For touch operations with devices provided with a touch screen, the following preparatory measures can be executed:

- Touch screen calibration (Calibrate)
- Testing the calibration (Test)
- Behavior of the right mouse button

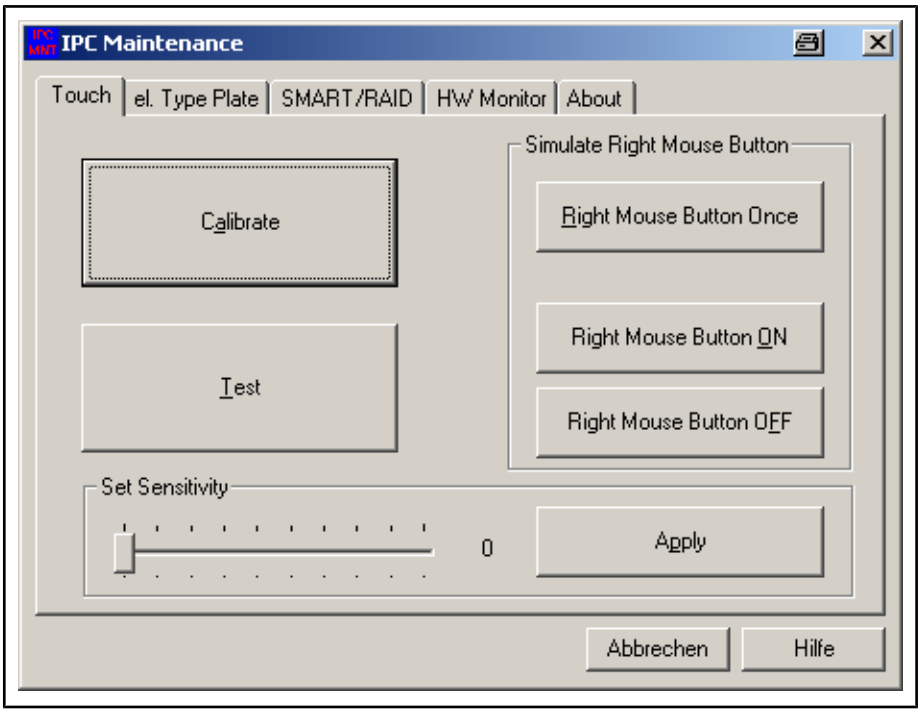


Fig.9-12: Touch screen settings dialog

Calibrate After the activation of the "Calibrate" button 5 markings (red crosses) are subsequently displayed. By pressing the respective position, the data required for the calibration is collected and after pressing the 5th cross for calibration, the position is transferred to the touch controller. An "OK" button appears for confirming the successful calibration.

Test Use the "Test" button for generating a test image with different markings for testing the precision of the current calibration.

Right Mouse Button ... Use the "Simulate Right Mouse Button" buttons for testing the simulation behavior of the right mouse button.

The following options are available:

- Right Mouse Button Once

  After pressing the "Right Mouse Button Once" button the next "Touch click" is interpreted as right mouse button.

- Right Mouse Button ON

  After pressing the "Right Mouse Button ON" button the next "Touch clicks" are interpreted as right mouse button. This mode is finished by touch double-clicking into the active dialog window.

- Right Mouse Button OFF

  The "Right Mouse Button OFF" button can also be used for exiting the "Right Mouse Button ON" mode. However, this is only possible with an externally connected USB mouse.

For devices provided with a touch screen, a software is preinstalled for permanent availability of this function (see chapter 9.5 "Simulation of the Right Mouse Button" on page 79).

Set Sensitivity Use the "Set Sensitivity" slider for setting the sensitivity with which the mouse-pointer follows the movement. Click "Apply" for applying the settings.

9.4.3 El. Type Plate

The "El. Type Plate" dialog gives information about the "electronic type plate", of the basic devices (local) and of the displays connected to the basic operating devices (remote). Use the "Reread" button for displaying current data.

The following information can be shown.

- Material text
  Material designation of the device
- Material
  Parts number
- Index
  Output index of the device
- Serial no.
  Serial number of the device
- Power On Hours
  Display of the operating hours up to now

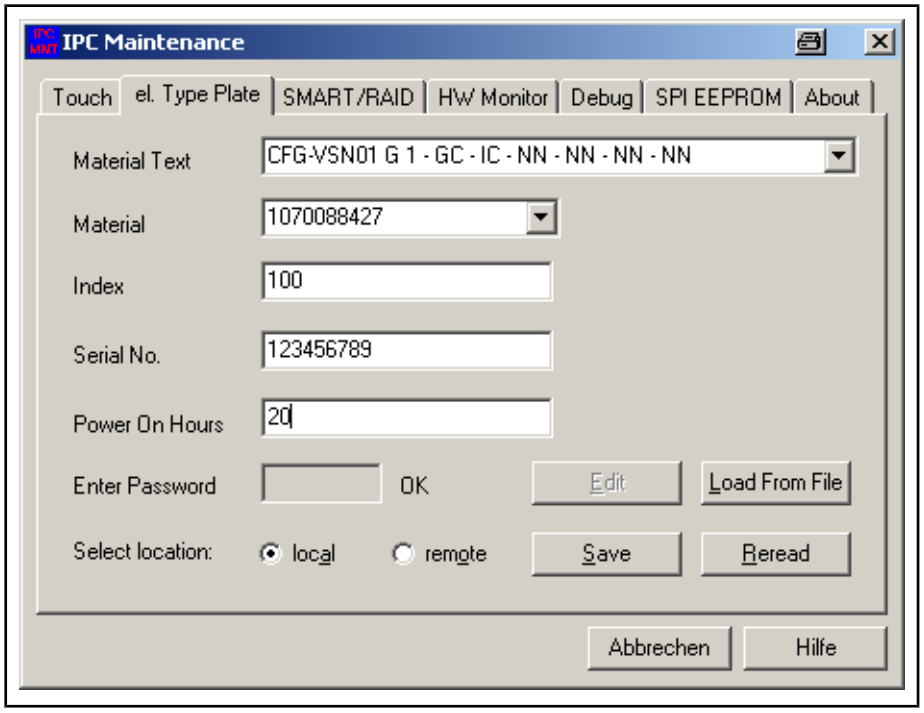


Fig.9-13: Display of the data of the electronic type plate

9.4.4 SMART

This dialog shows the SMART (**S**elf-**M**onitoring, **A**nalysis and **R**eporting **T**echnology) information about the integrated hard disk or the solid state drive (SSD).

The IPC service program evaluates the SMART parameters cyclically, see chapter 9.6 "IPC Service Program" on page 80.

Software

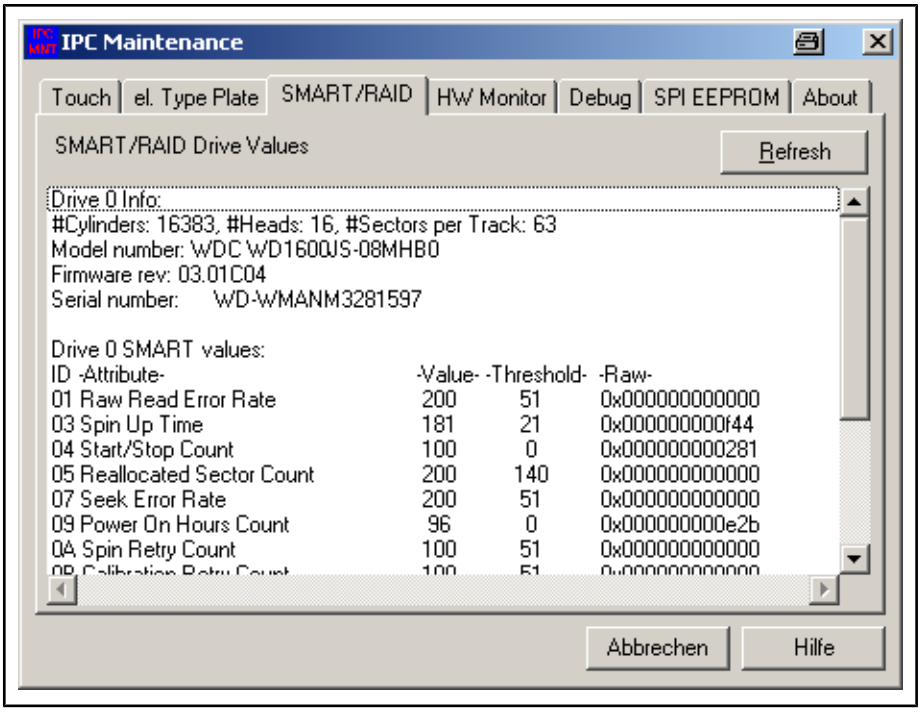


Fig.9-14: SMART information about the integrated hard disk

☞ If the system is configured as RAID system, **no** information is available!

9.4.5 HW Monitor

In the "HW Monitor" dialog the current values of different operating parameters can be displayed. After pressing the "Start" button, the values available are shown. Use the "Refresh Interval[s]" slider for setting the interval for renewing data from one to ten seconds. When pressing the "Stop" button, the currently determined values are "frozen" and the refresh is stopped.

The following information can be shown (if available):

- **CPU Temp. [C]**
  CPU temperature Celsius
- **CMOS Bat. [V]**
  Voltage of the CMOS battery (button cell) in [V]
- **CPU Fan [1/min]**
  Revolutions of the CPU fan in r/min
- **Case Fan [1/min]**
  Revolutions of the housing fan in r/min

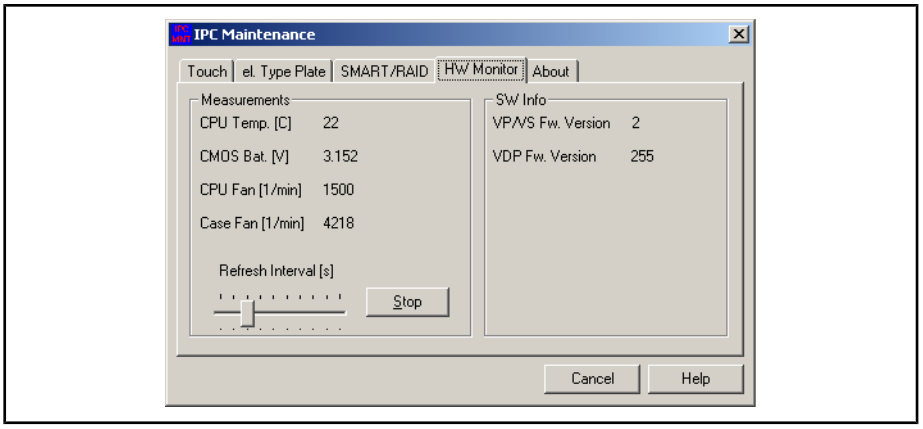


Fig.9-15: Display of operating parameters

9.4.6 About

This display provides the following information (if available):

- **Exe Info**
  Current software version of the program
- **Board Info**
  Integrated motherboard type
- **Keyboard Controller Info**
  Information about the keyboard controller

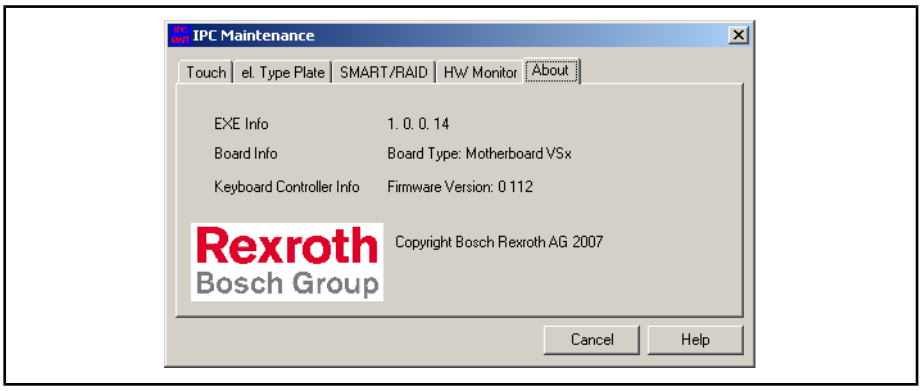


Fig.9-16: Information about the program version, motherboard and keyboard controller

9.5 Simulation of the Right Mouse Button

9.5.1 General Information

This software is used for simulating a click with the right mouse button. This is always required when context-sensitive commands are to be executed in the dialog. For devices with touch screen the software is started automatically, the program icon is in the taskbar. If the program does not start automatically, it can be started via **Start** ▸ **ProgramFiles** ▸ **Bosch Rexroth** ▸ **MgMsBut**.

Fig.9-17: Icon of the right mouse button simulation

When using this function, the task bar is to be fixed via the context-sensitive menu.

9.5.2 Function

Basic function

By clicking the icon in the taskbar, the functionality is switched so that the next click on a dialog element is interpreted as a click with the right mouse button.

This is indicated by an icon change from  to  in the taskbar.

After clicking, the display and the clicking interpretation change back to the normal function  .

Extended function

The following context-sensitive menu appears if you click again on the icon which causes the switching to the "right mouse button":

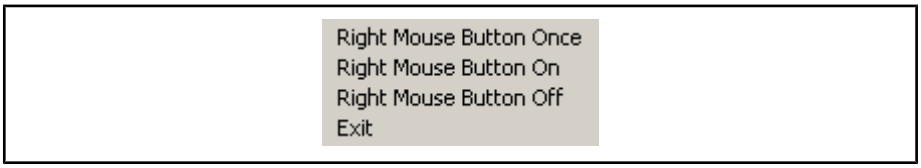


Fig.9-18: Context-sensitive menu

The following functions can be selected:

- **Right Mouse Button Once**

  As described in the basic function
- **Right Mouse Button On**

  All clicks are interpreted as clicks using the "right" mouse button. This function can be exited by double-clicking on the icon in the taskbar. The current function (left or right mouse button active) is represented by the respective icon.
- **Right Mouse Button Off**

  It is used to help only and can only be achieved with a second mouse (e.g. USB device) if the "Right Mouse Button On" function is activated.
- **Exit**

  Finishs the program

9.6 IPC Service Program

The "IPCSvc" program serves for permanent monitoring of different operating parameters of the following devices:

- VPP xx.3
- VPB xx.3
- VSP xx.3
- VSB xx.3

The following operating parameters can be cyclically monitored:

1. State of the hard disk based on the evaluation of SMART parameters or state of the RAID system[1)]
2. Voltage monitoring of board voltage and CMOS battery.

[1)] *Depending on structure and configuration of the system.*

3. Temperature monitoring of the housing temperature, system temperature and CPU temperature.
4. Standstill monitoring of the CPU fan and housing fan.

The "IPCSvc" program is located in the "C:\Support\IPCMaintenance\Setup-IPCSvc.exe" directory. After starting the following dialog opens (fig. 9-19 "IPCSvc configuration dialog" on page 81):

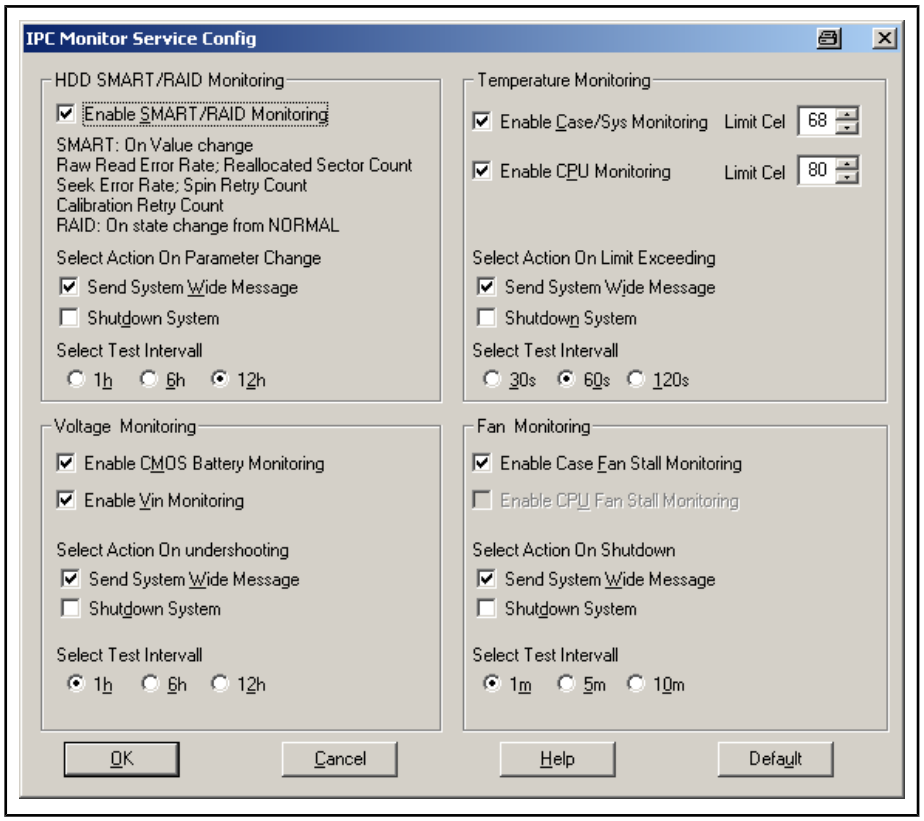


Fig.9-19: IPCSvc configuration dialog

Each group of the dialog is responsible for a certain hardware monitoring.

If a monitored event occurs, the reaction set under "Select Action" is executed. A message is preset, which is valid for the whole system, that displays the result for the user in a message box. In addition, the system can be triggered for shutdown.

In the "Select Test Intervall" zone the interval for tests is set.

9.7 USB Connection

The USB connection at the front can be disabled or enabled while the system is booting. To do so, call the "C:\Support\IPCMaintenance\VxPUSBCtrl.exe" program with the `on` (enabled) or `off` (disabled) parameters in the command line. This setting is only enabled during the runtime of the system and is not stored.

For a permanent setting start the `VxPUSBCtrl.exe on|off` command line program while starting the system with the autostart function:

1. Open the "C:\Documents and settings\[USER]\Start menu\Program files \Autostart" directory (replace the value for "USER" respectively).
2. Open the context-sensitive menu by right mouse-click and choose **New**.

☞ This program enables or disables only the USB interface on the front panel.

9.8 Autologin

If "mkautolg.vbs" (in the C:\Support\IPCMaintenance\ directory) is called, the user "Rexroth" is entered as Autologin with his password. Please observe that the user "Rexroth" has administrator rights.

9.9 Analog VGA Monitor

Calling "InstallVSAnalogMonSupport.cmd" on VS devices allows the connection of an analog monitor to the VGA interface of the basis device at any time and the immediate display of the screen contents.

9.10 M-Key-UpperClassFilter

9.10.1 General Information

From firmware version 02VRS and higher, the M-Key-UpperClassFilter driver is installed and active ex works. The M-Key-UpperClassFilter driver is used for maintaining the downward compatibility of the M-Key-Code when existing software products are used on devices of the Vxx.3 generation. The incoming keyboard data stream is analyzed and as soon as a M-key-code (F13-F24,...) is detected, the corresponding Ctrl-LRShift-Alt-<n> code is inserted in the data stream. This is done in the kernel level of the operating system.

☞ If a USB special keyboard is used, it may be required to deactivate the M-Key-UpperClassFilter, see chapter 9.10 "M-Key-UpperClassFilter" on page 82.

9.10.2 Activating and Deactivating the M-Key-UpperClassFilter

For activating and deactivating use the batch files `mkeyfilter-activate.cmd` and `mkeyfilter-deactivate.cmd`. After the execution of the batch files the system restarts. The batch files are in the **Support ▸ MKey-Filter Driver** directory.

9.11 RAID

9.11.1 General Information

The RAID system can be used either for better data security or for fast access. RAID means "Redundant Array Of Independent Disks".

If the VSx.3 device was ordered as RAID1 system, no further settings are to be made in the BIOS.

The values in the "Default settings" of the BIOS refer to a VSx.3 device with **one** hard disk (HDD or SSD). If the "Default settings" are loaded at an existing RAID1 system, the RAID1 system can be recovered with the following measures.

9.11.2 Installing RAID1 System in the BIOS

To install a RAID1 system in a VSx.3 device, the following BIOS entries are required:

1. Start the BIOS during booting with the <Del> key.

2. Select the "Advanced" dialog in the BIOS.
3. Select under "ATA/IDE Configuration" the "Enhanced" entry, see fig. 9-20 "Configure ATA/IDE as RAID" on page 83

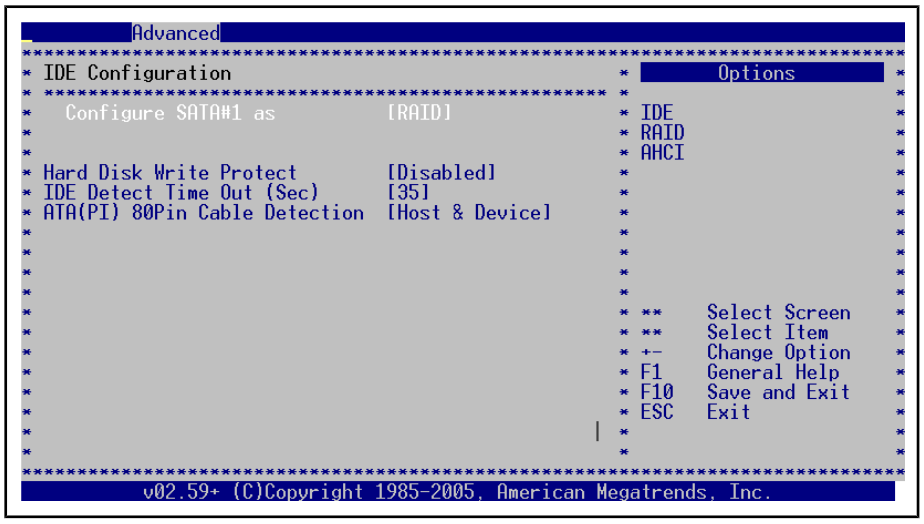


Fig.9-20: Configure ATA/IDE as RAID

4. Select under "Configure SATA as" the "RAID" entry.
5. Select the "Boot" dialog in the BIOS.
6. Select under "Boot Prority Selection" the "Device Based" value, see fig. 9-21 "Select the boot priority" on page 83.

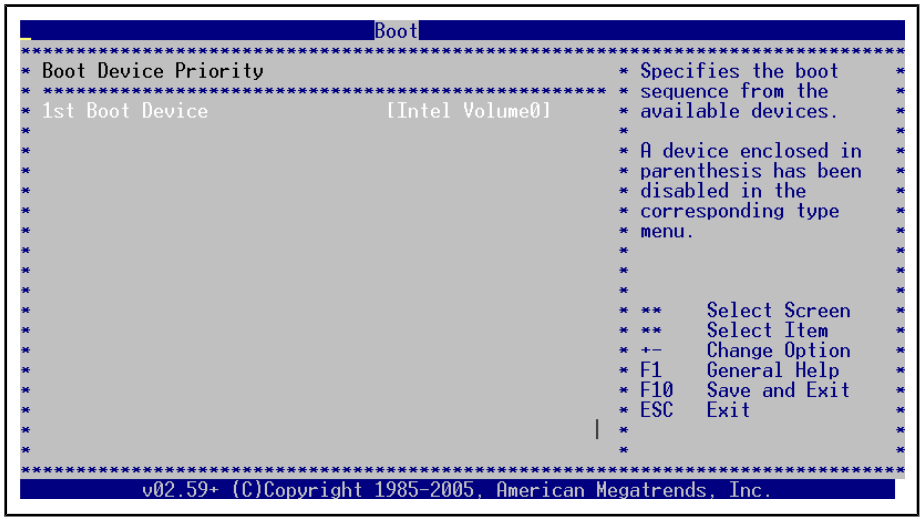


Fig.9-21: Select the boot priority

7. Exit and save the settings by pressing F10.
8. During subsequent booting the following is displayed, see fig. 9-22 "Display of the boot process after RAID configuration" on page 84.

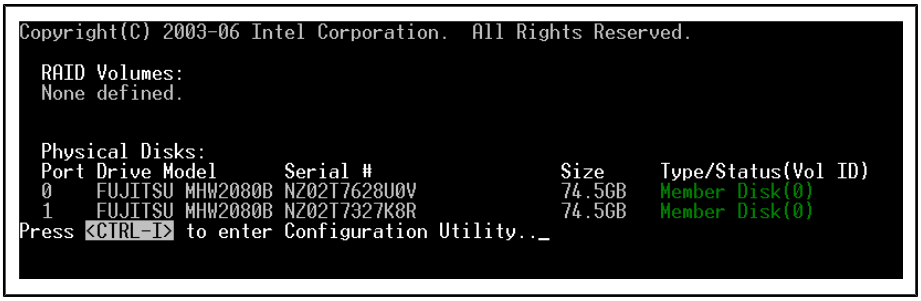
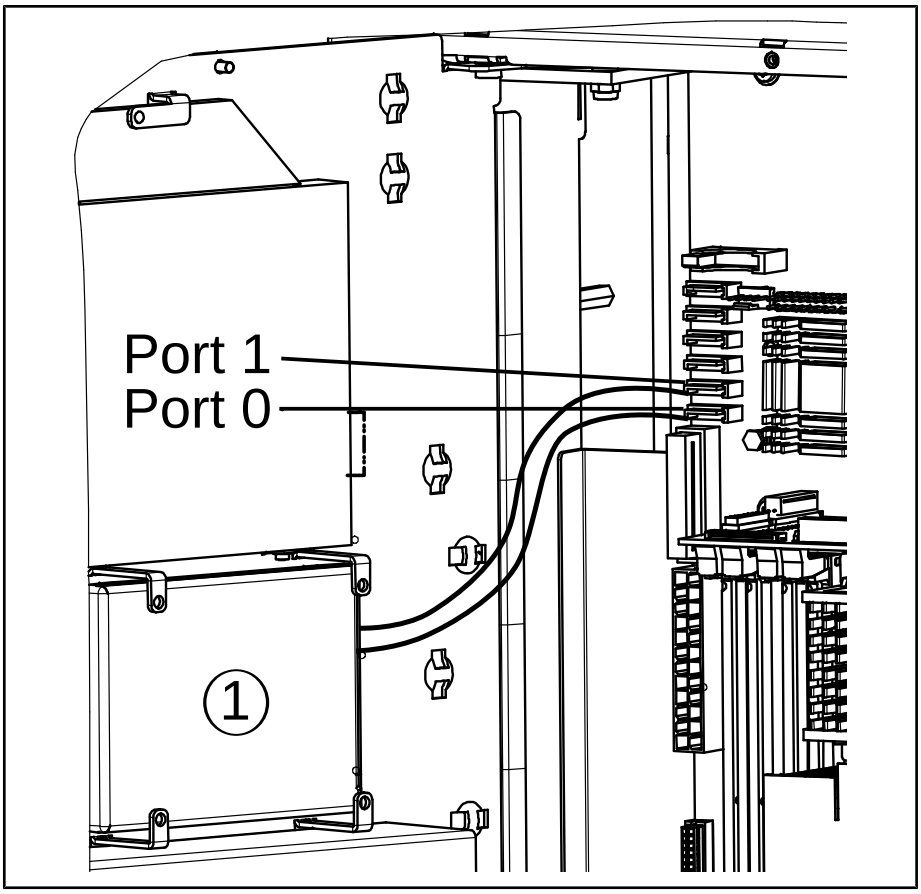


Fig.9-22: Display of the boot process after RAID configuration

The assignment of hard disks to "Port 0" and "Port 1" is defined via the connections, see fig. 9-23 "Position of the hard disk and assignment to the ports" on page 84.



① Hard disks

Fig.9-23: Position of the hard disk and assignment to the ports

9. Press <CTRL+I> to call the RAID configuration dialog, see fig. 9-24 "RAID configuration dialog in the BIOS" on page 85.

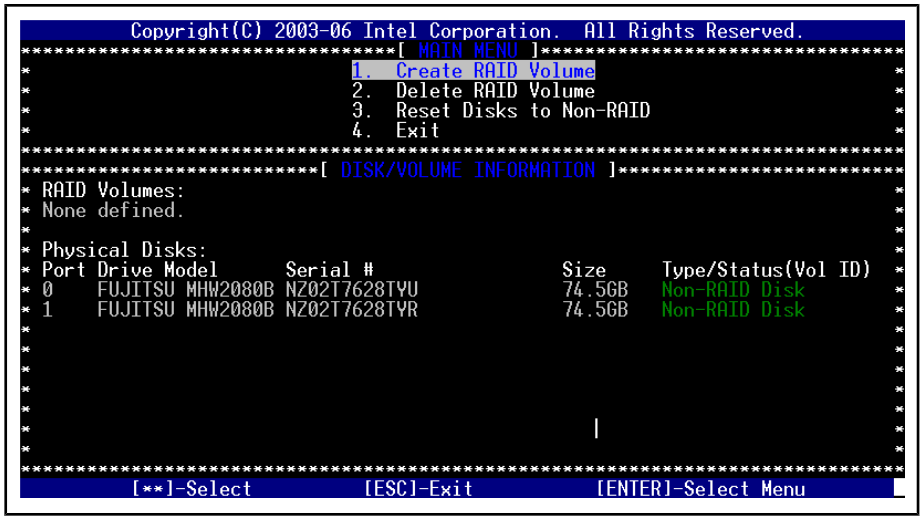


Fig.9-24: RAID configuration dialog in the BIOS

The welcome page of the configuration dialog displays possible menu options in the top part. The bottom part displays the current RAID configuration of the hard disks.

10. Select <1> "Create RAID Volume".
11. Define the parameters for RAID operation in the following dialog, see fig. 9-25 "Parameters for RAID operation" on page 85.

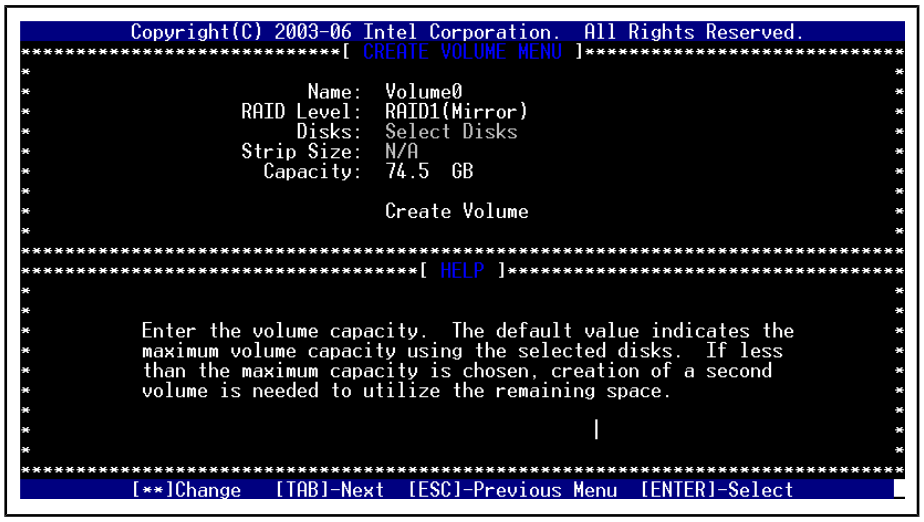


Fig.9-25: Parameters for RAID operation

Select under "RAID Level" the "RAID1(Mirror)" value if a better data security should be reached by data mirroring. The data mirroring causes that, in case of a hard disk failure, there is no data loss and the system still can be booted. The mirroring causes that the capacity of the entire hard disk is halved.

12. Confirm the entries with <Enter>. The following dialog displays an overview of your setting, see fig. 9-26 "Overview RAID configuration" on page 86.

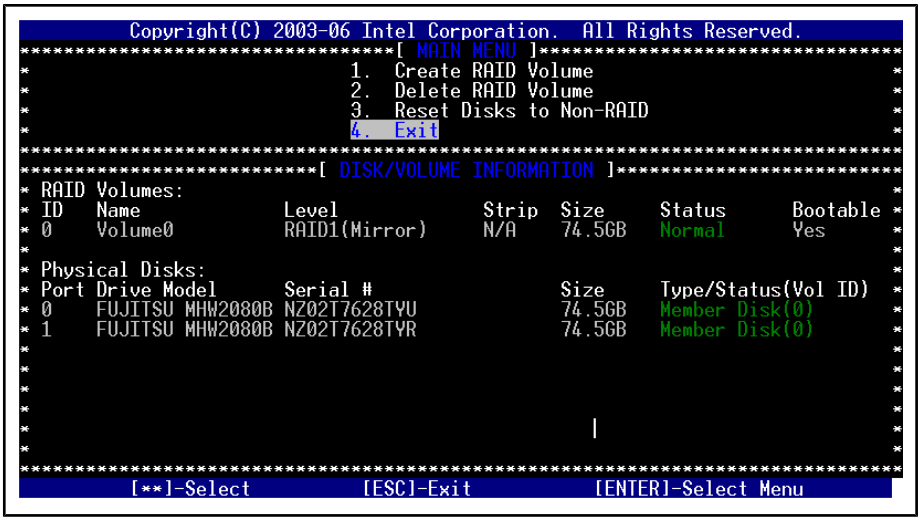


Fig.9-26: Overview RAID configuration

Save and exit the dialog with "Exit".

If a hard disk fails, the software outputs "Degrated" as status message of the RAID system during booting. In the following example (fig. 9-27 "Hard disk failure of the RAID system" on page 86) the right hard disk is failed at Port 1:

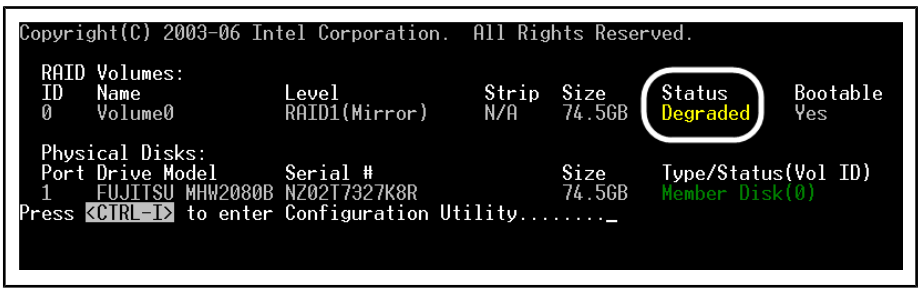


Fig.9-27: Hard disk failure of the RAID system

9.11.3 RAID System under Windows

RAID system in the device manager

A RAID system that was installed in the BIOS can be displayed in the device manager under Windows. To do so, call the device manager (**Start ▸ Settings ▸ Control Panel ▸ Administrative Tools ▸ Computer Management ▸ System Tools ▸ Device Manager**).

"SCSI and RAID controllers" contains the "Intel(R) 82801 GHM SATA RAID Controller" entry, see fig. 9-28 "RAID controller in the device manager" on page 87.

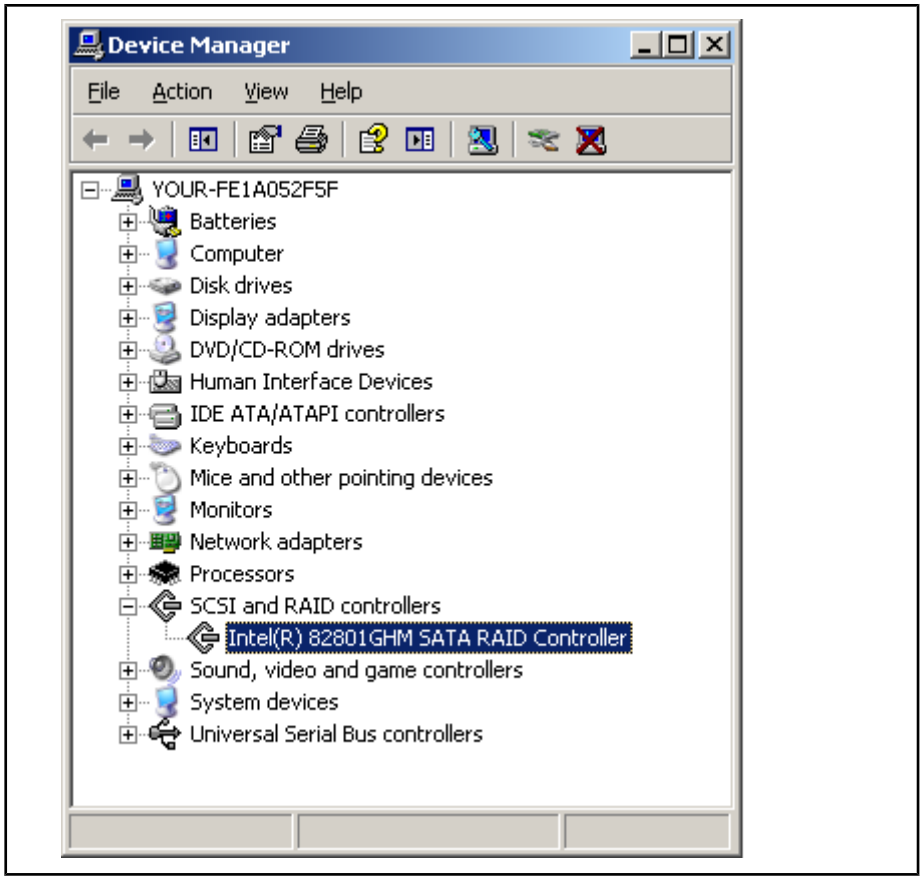


Fig.9-28: RAID controller in the device manager

Display status of the RAID system

The status of the RAID system can be displayed with the "Intel Matrix Storage Console". The program is not installed ex works. The installation program "iata76_enu.exe" is filed in the "C:\Support\Software\RAID" directory. Start the installation program and follow the instructions.

After the installation the "Intel Matrix Storage Console" is available at **Start ▸ Programs ▸ Intel(R) Storage Manager**, see fig. 9-29 "Path "Intel Matrix Storage Console"" on page 87.

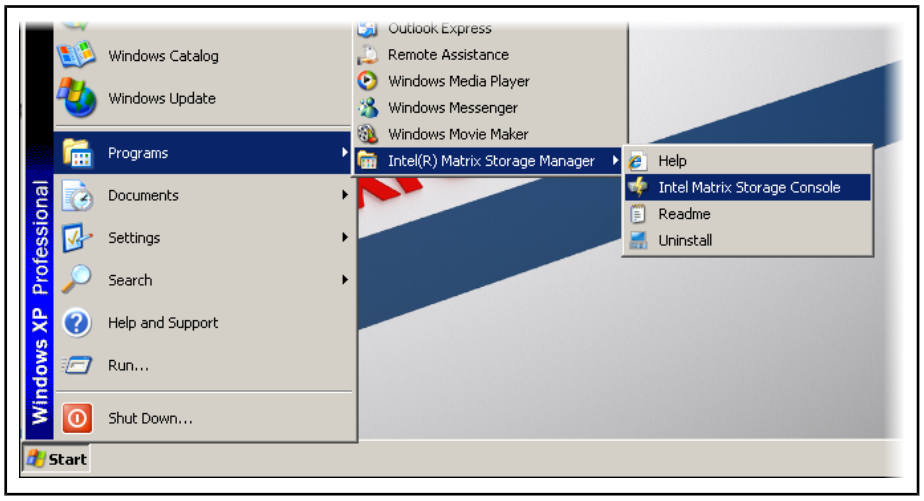


Fig.9-29: Path "Intel Matrix Storage Console"

After starting the program, it opens in the default mode, see fig. 9-30 "View of "Intel Matrix Storage Console" in the "Basic Mode"" on page 88.

Software

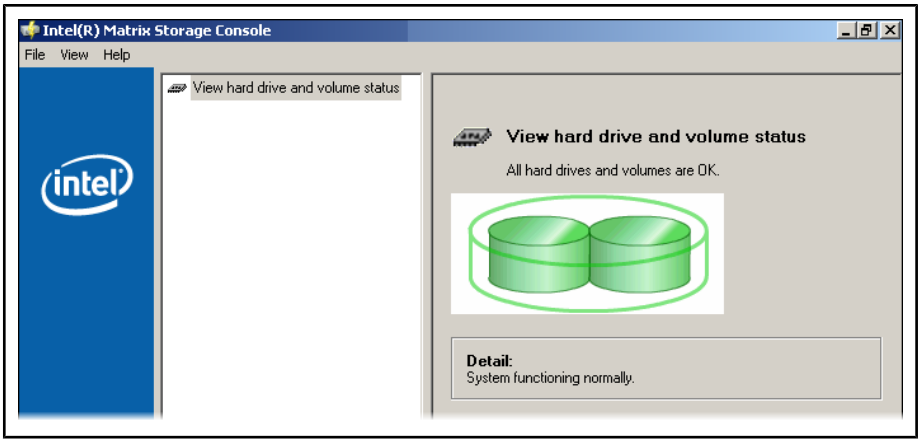


Fig.9-30: View of "Intel Matrix Storage Console" in the "Basic Mode"

You can switch from the **View** menu into the extended mode, see fig. 9-31 "View of "Intel Matrix Storage Console" in the "Advanced Mode"" on page 88.

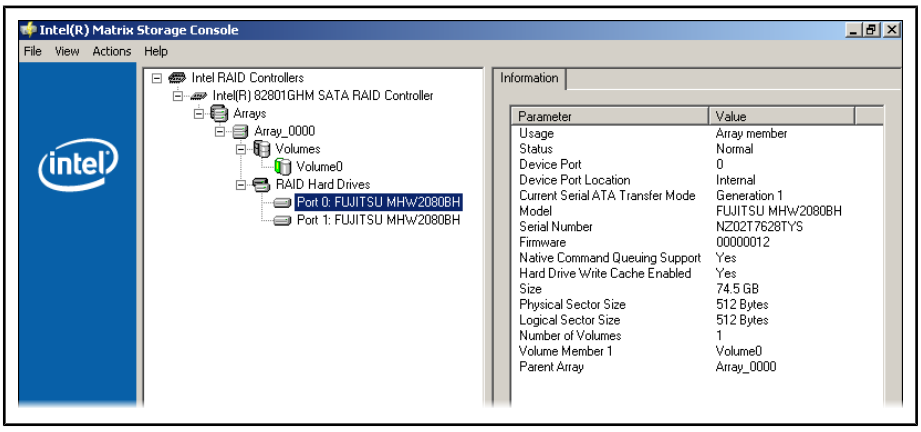
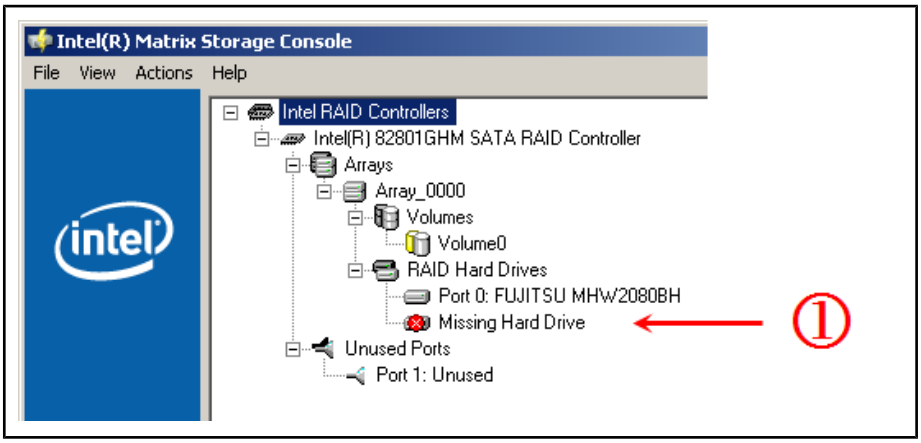


Fig.9-31: View of "Intel Matrix Storage Console" in the "Advanced Mode"

In case of hard disk failure the software indicates the defective hard disk. In the following example (fig. 9-32 "View of "Intel Matrix Storage Console" in case of defective hard disk" on page 88) the hard disk is failed at Port 1: This is the right disk on the carrier plate of the hard disk.



① Failed hard disk at Port 1

Fig.9-32: View of "Intel Matrix Storage Console" in case of defective hard disk

Position of the hard disks, see fig. 9-23 "Position of the hard disk and assignment to the ports" on page 84.

10 Environmental Protection and Disposal

10.1 Environmental Protection

Production Processes

The products are made with energy- and resource-optimized production processes which allow re-using and recycling the resulting waste. We regularly try to replace pollutant-loaded raw materials and supplies by more environment-friendly alternatives.

Prohibited Substances

We guarantee that our products include no substances according to the chemicals-ban-decree. We furthermore declare that our products are free of mercury, asbestos, PCB and chlorinated hydrocarbons.

No Release of Hazardous Substances

Our products do not contain any hazardous substances which may be released in the case of appropriate use. Normally, our products will not have any negativ influences on the environment.

Significant Components

Basically, our products contain the following components:

Electronic devices
- Steel
- Aluminum
- Copper
- Synthetic materials
- Electronic components and modules

Motors
- Steel
- Aluminum
- Copper
- Brass
- Magnetic materials
- Electronic components and modules

10.2 Disposal

Return of Products

Our products can be returned to our premises free of charge for disposal. It is a precondition, however, that the products are free of oil, grease or other dirt.

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
Buergermeister-Dr.-Nebel-Strasse 2
97816 Lohr am Main, Germany

Packaging

The packaging materials consist of cardboard, wood and polystyrene. These materials can be recycled anywhere without any problem.

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

Recycling

Most of the products can be recycled due to their high content of metal. In order to recycle the metal in the best possible way, the products must be disassembled into individual modules.

Metals contained in electric and electronic modules can also be recycled by means of special separation processes. The synthetic materials remaining after these processes can be thermally recycled.

If the products contain batteries or accumulators, these have to be removed before recycling and disposed of.

11 Ordering Information

11.1 Type Designation Code VSB 40.3

The control cabinet PC VSB 40.3 is available in various versions according to the following type designation code.

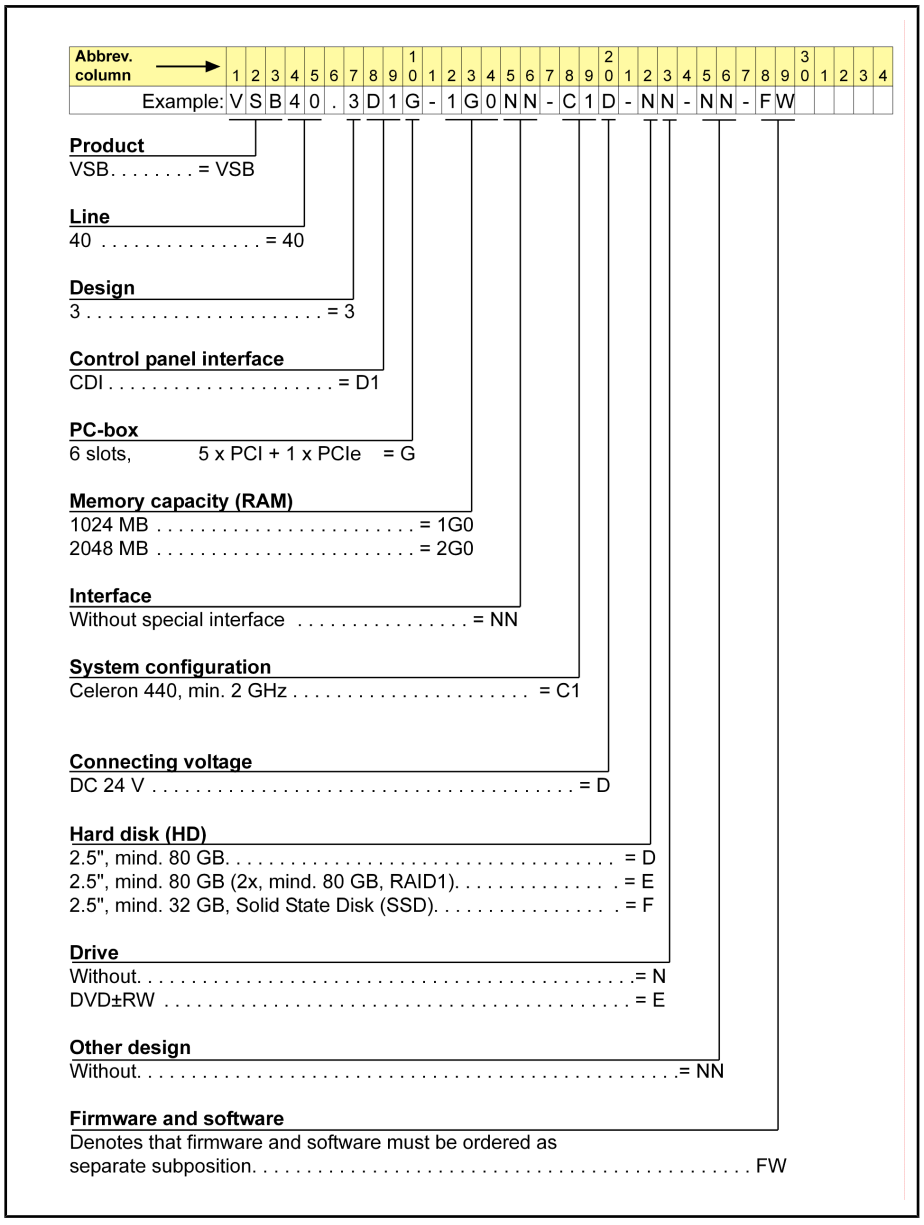


Fig. 11-1: Type designation code VSB 40.3

11.2 Accessories

11.2.1 External 24 V Power Supply Unit

External 24 V power supply unit for VSB 40.3.

Ordering Information

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

Fig.11-2: 24 V power supply unit for VSB 40.3

11.2.2 External UPS with USB Communication Interface

External uninterrruptible power supply unit for VSB 40.3.

Ordering designation	Parts number	Description
VAU01.1U-024-024-240-NN	R911171024	External UPS for IndraControl V devices

Fig.11-3: UPS for VSB 40.3

11.2.3 Connecting Cable for the CDI Interface

Connecting cables to connect the control cabinet PC (VSB 40.3, VPB 40.3) and the operator display (VDP xx.3).

Ordering designation	Parts 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
RKB0008/010,0 (*******-*******-*******)	R911170153	Length: 10 m
RKB0008/015,0 (*******-*******-*******)	R911170183	Length: 15 m
RKB0008/020,0 (*******-*******-*******)	R911170184	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

Fig.11-4: Connecting cables to the control cabinet PC

Further cable lengths on request.

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

11.2.4 USB Connecting Cable

USB cable for connecting the control cabinet PC (VSB 40.3) and the UPS (VAU01.1U) to the communication interface.

Ordering designation	Parts 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

Fig.11-5: USB connecting cable for VSB 40.3

11.2.5 USB Connecting Cable With Increased Noise Immunity

USB cable with increased noise immunity for connecting the control cabinet PC (VSB 40.3) and the UPS (VAU01.1U) to the USB communication interface.

Ordering designation	Parts number	Description
RKB0023/001,0 (*******-*******-*******)	R911171627	USB connecting cable with increased noise immunity, length 1 m
RKB0023/003,0 (*******-*******-*******)	R911171414	USB connecting cable with increased noise immunity, length 3 m

Fig.11-6: USB connecting cable for VSB 40.3

12 Service and Support

Our service helpdesk at out headquarters in Lohr, Germany, will assist you with all kinds of enquiries. Out of helpdesk hours please contact our German service department directly.

	Helpdesk	Service Hotline Germany	Service Hotline Worldwide
Time [1]	Mo-Fr 7:00 am - 6:00 pm CET	Mo-Fr 6:00 pm - 7:00 am CET Sa-Su 0:00 am - 12:00 pm CET	Outwith Germany please contact our sales/service office in your area first. For hotline numbers refer to the sales office addresses on the Internet.
Phone	+49 (0) 9352 40 50 60	+49 (0) 171 333 88 26 or +49 (0) 172 660 04 06	
Fax	+49 (0) 9352 40 49 41	–	
e-mail	service.svc@boschrexroth.de	–	
Internet	http://www.boschrexroth.com You will also find additional notes regarding service, maintenance (e.g. delivery addresses) and training.		

1) Central European Time (CET)

Preparing Information

For quick and efficient help please have the following information ready:

- detailed description of the fault and the circumstances
- information on the type plate of the affected products, especially type codes and serial numbers
- your phone, fax numbers and e-mail address so we can contact you in case of questions.

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