

# Rexroth IndraControl VAU 01.1 UPS with Communication Interface

**R9111336867**  
Edition 02

## Operating Instructions



Record of Revision

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Editorial Department

Development automation systems control hardware GW (KaWa/PiGe)

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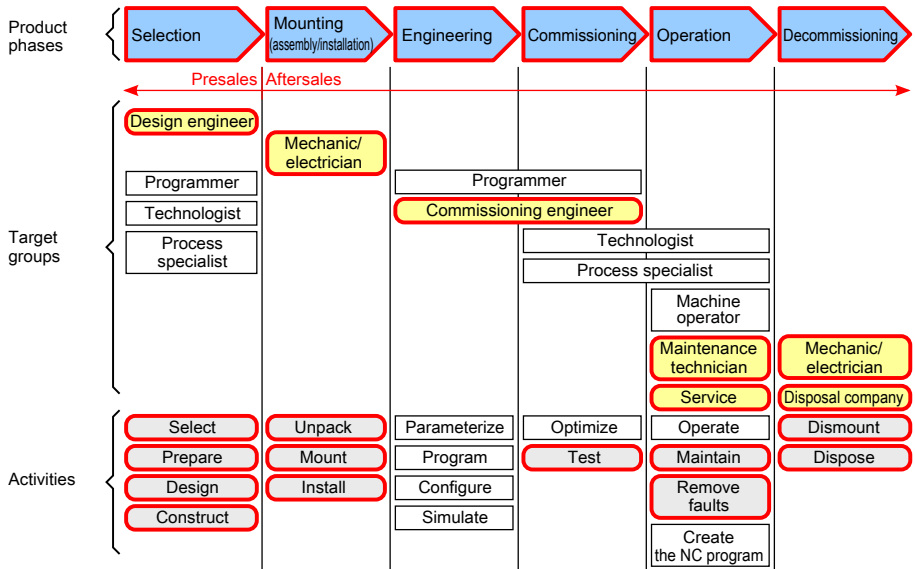
# 1 About this Documentation

## Overview – target groups and product phases

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

Example:

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



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

## Purpose

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

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

## Scope

These operating instructions apply for the following UPS:

- VAU 01.1U (UPS with USB interface and integrated battery, type designation code VAU01.1U-024-024-240-NN, parts number R911171024)
- VAU 01.1U (UPS with RS232 interface and integrated battery, type designation code VAU01.1S-024-024-240-NN, parts number R911307090)
- VAU 01.1Z (UPS with RS232 interface and integrated 24 V power supply unit, type designation code VAU01.1Z-Z24-024-60-NN, parts number R911170329)

The type designation code specifications are located on the type plate of the device (see [chapter 2.1 "Product Identification" on page 4](#) and [chapter 15.2 "Type Code" on page 45](#)).

Further documents

Title	Part number and document type
Rexroth IndraControl VAP 01 Power Supply Unit	<a href="#">R911339613</a> Operating Instructions

Tab. 1-1: Power supply unit documentation

VAU 01.1U:

Title	Part number and document type
Rexroth IndraControl VPP 16.3/40.3/60.3 Panel PC	<a href="#">R911339626</a> Operating Instructions
Rexroth IndraControl VSP xx.3 Panel PC	<a href="#">R911337705</a> Operating Instructions
Rexroth IndraControl VPB 40.3 Control Cabinet PC	<a href="#">R911336750</a> Operating Instructions
Rexroth IndraControl V Devices Operating Systems	<a href="#">R911343901</a> Project Planning Manual

Tab. 1-2: Further documents for the VAU 01.1U



**VAU 01.1S:**

Title	Part number and document type
Rexroth IndraControl VPP 21.1 Panel PC	<a href="#">R911305199</a> Project Planning Manual
Rexroth IndraControl VPP 21.2 Panel PC	<a href="#">R911323258</a> Project Planning Manual
Rexroth IndraControl VSB 40.1 Control Cabinet PC	<a href="#">R911310079</a> Project Planning Manual
Rexroth IndraControl VSP 16.1/40.1 Control Cabinet PC	<a href="#">R911308264</a> Project Planning Manual

**Tab. 1-3:** Further documents for the VAU 01.1S**VAU 01.1Z:**

Title	Part number and document type
Rexroth IndraControl VPP 21.1 Panel PC	<a href="#">R911305199</a> Project Planning Manual
Rexroth IndraControl VPP 21.2 Panel PC	<a href="#">R911323258</a> Project Planning Manual

**Tab. 1-4:** Further documents for the VAU 01.1Z**Terms and Abbreviations**

Designation	Explanation
UPS	Uninterruptible Power Supply. The UPS is used for timely-limited voltage supply of the connected device if the voltage supply (DC 24 V) fails.
UPS time	The UPS time is the time period in which the connected device is provided with output voltage of the UPS – after switching off of the input voltage.
UPS operation	Signal to the connected PC that the UPS is in the buffer mode and that the supply voltage "24V Out" switches off after a set time.

Time delay	This time delay prevents that "UPS operation" is signalled to the connected PC and initiated during the first 120 seconds after switching on if the input voltage is switched off within these 120 seconds.
UPS-NT Control software	The UPS-NT control software is used to monitor and control the UPS. The software has to be installed on the PC, to which the UPS is connected.
Shutdown delay time	The "Shutdown Delay Time" is the time which the shutdown of the connected PC is delayed, which is set in the UPS-NT software. The user can backup the data during this time.
Shutdown	Shutdown of the PC
USB	Universal Serial Bus. Serial bus system to connect a computer to external devices

**Tab. 1-5:** Terms and abbreviations used

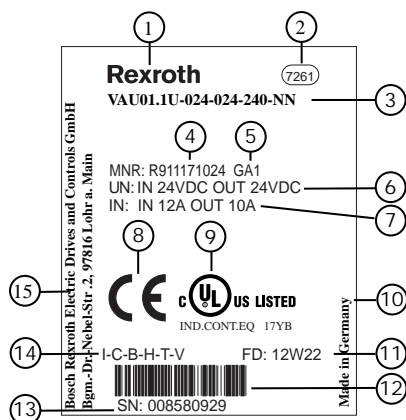
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# 2 Product Identification and Scope of Delivery

## 2.1 Product Identification

The type plate is located on the upper side of the device.



- 1 Logotype
- 2 Division or plant number
- 3 Type code (type designation code)
- 4 Part number
- 5 State of revision

- 6 Nominal voltage
- 7 Nominal current
- 8 CE mark
- 9 Underwriters Laboratories Inc. mark
- 10 Designation of origin

- 11 Date of manufacture (yyWww)
- 12 Serial number as barcode
- 13 Serial number

- 14 Test marking
- 15 Company address

Fig. 2-1: Type plate, example

## 2.2 Scope of Delivery

- UPS
- Safety instructions
- always one connector for X1S1 and X1S2

# 3 Using the Safety Instructions

## 3.1 Safety Instructions – Structure

The safety instructions are structured as follows:

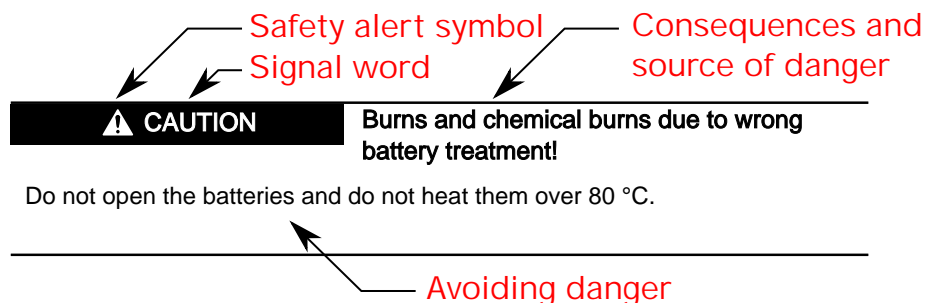


Fig. 3-1: Safety instructions – Structure

## 3.2 Explaining Signal Words and Safety Alert Symbol

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

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

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

**! DANGER**

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

---

### **WARNING**

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

---

---

### **CAUTION**

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

---

---

### ***NOTICE***

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

---

## 3.3 Symbols Used

Notes are displayed as follows:

---



This is a note.

---

Tips are displayed as follows:

---



This is a tip.

---

## 4 Intended Use

The Bosch Rexroth VAU 01.1U, VAU 01.1S and VAU 01.1Z are **Un**interruptible Power **S**upplies (UPS).

## NOTICE

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

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

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

The UPS can be used for the following panel PCs and control cabinet PCs:

### VAU 01.1U

- Panel PC **Rexroth IndraControl VPP 15.3/16.3/40.3/60.3**
- Panel PC **Rexroth IndraControl VPP 16.3/40.3/60.3**
- Panel PC **Rexroth IndraControl VSP 16.3/40.3/60.3**
- Control cabinet PC **Rexroth IndraControl VSB 40.3**

### VAU 01.1S

- Panel PC **Rexroth IndraControl VPP 21.1**
- Panel PC **Rexroth IndraControl VPP 21.2**
- Panel PC **Rexroth IndraControl VSP 16.1/40.1/60.3**

### VAU 01.1Z

- Panel PC **Rexroth IndraControl VPP 21.1**
- Panel PC **Rexroth IndraControl VPP 21.2**

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

## 5 Spare Parts, Accessories and Wear Parts

### 5.1 External 24 V Power Supply Unit

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

**Tab. 5-1:** Order data, 24 V power supply unit for UPS and IndraControl V devices

5.2 USB Cable with Increased Noise Immunity for VAU 01.1U

**NOTICE**

If the UPS is used in noisy environment, malfunctions are possible.

Use only USB cables with high noise immunity for the connection between control cabinet PC and uninterruptible power supply (VAU 01.1 U) with communication interface.

Ordering code	Part number	Description
RKB0050/001,0	R911172944	USB connecting cable with increased noise immunity; length 1 m
RKB0050/003,0	R911172945	USB connecting cable with increased noise immunity; length 3 m

Tab. 5-2: Order data, USB connecting cable with increased noise immunity

5.3 RS232 Cable for VAU 01.1S and VAU 01.1Z

Ordering code	Part number	Description
KABEL 9POL USV 3m	10700089307	RS232 cable, 3 m

Tab. 5-3: Order data RS232 cable

5.4 End Clamp

Ordering code	Part number	Description
SUP-M01-ENDHALTER/PA	R911172352	End clamp (2 pieces)

Tab. 5-4: Order data, end clamp

5.5 Wear Parts

Wear parts are not subject to any warranty.

Battery for VAU 01.1U and VAU 01.1S

The service life of the battery is limited. The service life of the battery is approximately ten years at +25 °C. The service life is halved with each 10 °C temperature rise. For storing the VAU 01.1U and VAU 01.1S, observe also [chapter 14.4 "VAU 01.1U and VAU 01.1S – Storage" on page 44](#).

Ordering code	Part number	Description
AKKU 24V/2,5Ah	1070923287	Battery

Tab. 5-5: Order data, battery

## 6 Ambient Conditions

	In operation	Storage and transport
Ambient temperature	+5 °C to +45 °C	-20 °C to +60 °C
Maximum temperature gradient	Temporal temperature changes up to 3 °C per minute	Temporal temperature changes up to 3 °C per minute
Relative humidity	Climatic class 3K3 according to EN 60721, condensation not permissible. Max. 80 % humidity at 25 °C	Climatic class 3K3 according to EN 60721, condensation not permissible. Max. 80 % humidity at 25 °C
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
Mechanical strength	Maximum vibration Frequency range: 10 Hz to 150 Hz Excursion: 0.075 mm at 10 Hz to 57 Hz Acceleration: 1 g at 57 Hz to 150 Hz Test duration for each axis: 10 frequency cycles Frequency sweep rate: 1 octave/min According to EN 60068-2-6, test Fc	Maximum shock: 15 g according to EN 60068-2-27, no disturbance of the function
Degree of pollution	2	2

**Tab. 6-1:** Ambient Conditions

## 7 Technical Data

### 7.1 VAU 01.1U/VAU 01.1S

#### 7.1.1 Degree of Protection and Weight

Enclosure rating	IP 20
Weight	3.5 kg

**Tab. 7-1:** Degree of protection and weight

## 7.1.2 Input and Output Voltage

### Input voltage

#### VAU 01.1U

Nominal input voltage	DC 24 V (use a 24 V power supply unit according to DIN EN 60742, classification VDE 0551, for example the power supply unit VAP01.1H-W23-024-010-NN, part number R911171065)
Input voltage range	DC 24 V +20 %, -15 %
Emitted interference and surge immunity	$U_{\max} = 35 \text{ V}$ (for $t < 100 \text{ ms}$ )
Current consumption for $U_N$	Max. 12 A (2 A for charging the battery)
Input fuse	No
Switch-on threshold	$22 \text{ V} \pm 5 \%$
Switch-off threshold	$19 \text{ V} \pm 5 \%$
Max. power consumption	288 W (48 W for charging the battery)
Reverse voltage protection	Yes

**Tab. 7-2:** Input voltage 24 V

#### VAU 01.1S

Nominal input voltage	DC 24 V (use a 24 V power supply unit according to DIN EN 60742, classification VDE 0551, for example the power supply unit VAP01.1H-W23-024-010-NN, part number R911171065)
Input voltage range	DC 24 V +20 %, -15 %
Emitted interference and surge immunity	$U_{\max} = 35 \text{ V}$ (for $t < 100 \text{ ms}$ )
Current consumption for $U_N$	Max. 12 A (2 A for charging the battery)
Input fuse	No
Voltage rise of the supply voltage when switching on	Max. 500 ms (0 V to $U_N$ )
Voltage rise of the supply voltage when switching off	Max. 500 ms ( $U_N$ to 0 V)
Switch-on threshold	$15.5 \text{ V} \pm 5 \%$
Switch-off threshold	$20.2 \text{ V} \pm 5 \%$
Max. power consumption	288 W (48 W for charging the battery)
Reverse voltage protection	No

**Tab. 7-3:** Input voltage 24 V



### Output voltage

Nominal output voltage	DC 24 V (use a 24 V power supply unit according to DIN EN 60742, classification VDE 0551, for example the power supply unit VAP01.1H-W23-024-010-NN, part number R911171065)
Output voltage range	DC 24 V +20 %, -15 %
Current output at $U_N$	Maximum 10 A
Switching time	< 1 ms
Bridging time	3 minutes max.
Max. output power	240 W
Short-circuit protection	VAU 01.1S: No VAU 01.1U (from technical index GC1): Yes Note: A short circuit in the UPS VAU 01.1U results in an immediate switch-off of the output voltage. A new switch on can only take place after switching off/on of the input voltage. To load capacitive loads, a cut-out delay of 300 ms during the starting operation is incorporated. This results in a maximum permissible capacitive load of 5600 $\mu$ F at 5 A resistive load during the starting operation

Tab. 7-4: Output voltage 24 V

#### **NOTICE**

Overheating and possible damage to the UPS if the max. power consumption is exceeded.

The max. power consumption of the connected control cabinet PC or panel PC must not exceed the max. output power of the UPS of 240 W.

## 7.2 VAU 01.1Z

### 7.2.1 Degree of Protection and Weight

Enclosure rating	IP 20
Weight	1 kg

Tab. 7-5: Degree of protection and weight

## 7.2.2 Input and Output Voltage

### +24V input voltage

Nominal input voltage	DC 24 V (use a 24 V power supply unit according to DIN EN 60742, classification VDE 0551, for example the power supply unit VAP01.1H-W23-024-010-NN, part number R911171065)
Input voltage range	DC 24 V +20 %, -15 %
Emitted interference and surge immunity	$U_{\max} = 35 \text{ V}$ (for $t < 100 \text{ ms}$ )
Current consumption for $U_N$	Maximum 2.5 A
Input fuse	No
Voltage rise of the supply voltage when switching on	Max. 500 ms (0 V to $U_N$ )
Voltage rise of the supply voltage when switching off	Max. 500 ms ( $U_N$ to 0 V)
Switch-on threshold	15.5 V $\pm 5 \%$
Switch-off threshold	20.2 V $\pm 5 \%$
Max. power consumption	60 W
Reverse voltage protection	No

**Tab. 7-6:** Input voltage 24 V

### 115/230 VAC input voltage

Nominal input voltage	115/230 VAC
Input voltage range	85 – 264 VAC
Input frequency	47 – 63 Hz
Current consumption for $U_N$	115 VAC = 1.00 A typ. 230 VAC = 0.60 A typ.
Recommended protection	5 A

**Tab. 7-7:** 115/230 VAC input voltage

### Output voltage

Nominal output voltage	DC 24 V
Output voltage range	DC 24 V +20 %, -15 %
Current output at $U_N$	Maximum 2.5 A
Switching time	< 1 ms
Bridging time	3 minutes max.

Max. output power	60 W
Short-circuit protection	Yes

**Tab. 7-8:** Output voltage 24 V**NOTICE**

Overheating and possible damage to the UPS if the max. power consumption is exceeded.

The max. power consumption of the connected panel PC must not exceed the max. output power of the UPS of 60 W.

## 8 Standards

### 8.1 Used Standards VAU 01.1U and VAU 01.1S

Standard	Meaning
EN 60 61000-6-4	Generic standards - emission standard (industrial environments)
EN 60 61000-6-2	Generic standards – noise immunity (industrial environments)
EN 60664 -1	Overvoltage category II
EN 61558-2-6	Transformer for 24 V power supply unit, protective separation
EN 60 529	Degrees of protection (including housings and installation compartments)
EN 60,068-2-6	Vibration test
EN 60068-2-27	Shock test
EN 60721-3-3	Classification of ambient conditions, operation
EN 60721-3-2	Classification of ambient conditions, transport
EN 60721-3-1	Classification of ambient conditions, storage
UL 508	Industrial Control Equipment

**Tab. 8-1:** Used standards VAU 01.1U and VAU 01.1S

### 8.2 Used Standards VAU 01.1Z

Standard	Meaning
EN 60 61000-6-4	Generic standards - emission standard (industrial environments)
EN 60 61000-6-2	Generic standards – noise immunity (industrial environments)
EN 60664 -1	Overvoltage category II
EN 61558-2-6	Transformer for 24 V power supply unit, protective separation
EN 60950	Clearances and creepage distances office (environment) and power units

Standard	Meaning
EN 60 529	Degrees of protection (including housings and installation compartments)
EN 60,068-2-6	Vibration test
EN 60068-2-27	Shock test
EN 60721-3-3	Classification of ambient conditions
EN 60721-3-2	Classification of ambient conditions
EN 60721-3-1	Classification of ambient conditions
UL 508	Industrial Control Equipment

**Tab. 8-2:** Used standards VAU 01.1Z

## 8.3 CE Marking

### 8.3.1 Declaration of Conformity



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

EMC Directive 2004/108/EC

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

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

**Tab. 8-3:** Standards for electromagnetic compatibility (EMC)



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

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

## 8.4 UL/CSA Certified



The devices are certified according to

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

UL file no. E210730

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



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

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

# 9 Interfaces

## 9.1 Connector Panel

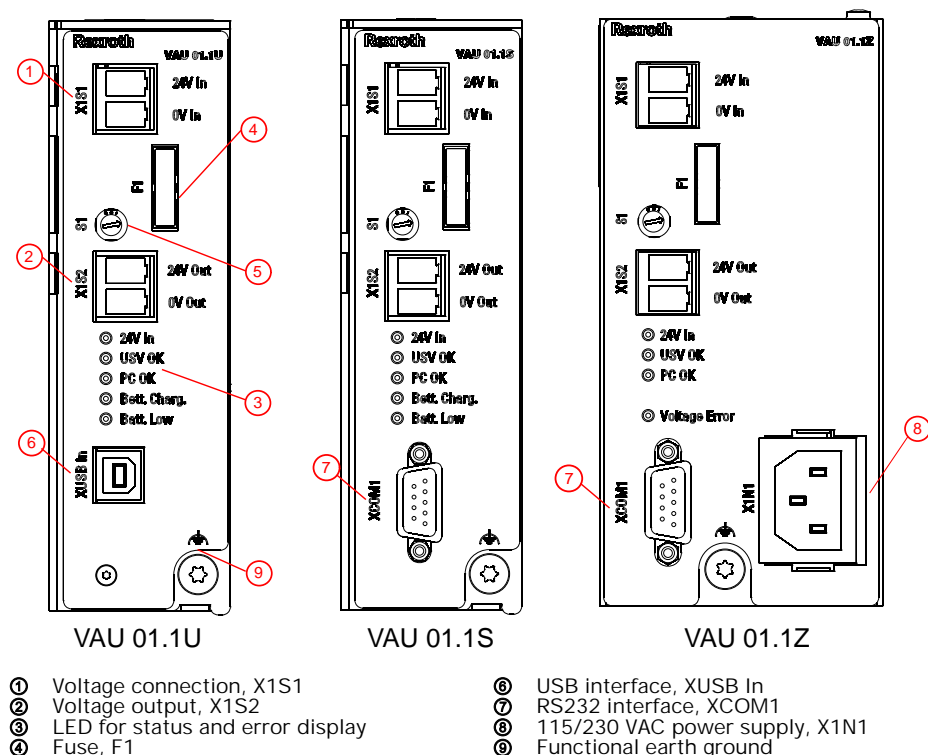



Fig. 9-1: Connector panel of the UPS

Designation at the housing	Connection type	Connector type (integrated)	Mating connector or cable (from outside)
X1S1	Voltage supply DC 24 V	Phoenix connector terminal, PC4/2-G-7.62, 2-pin	Phoenix female connector terminal, PC4/2-St-/7.62, 2-pin
X1S2	Output voltage DC 24 V	Phoenix connector terminal, PC4/2-G-7.62, 2-pin	Phoenix female connector terminal, PC4/2-St-/7.62, 2-pin
XUSB In VAU 01.1U	USB2.0 connection to the control cabinet PC. Length of cable: Max. 3 m  Use only a high-speed USB2.0 cable, see <a href="#">chapter 5.2 "USB Cable with Increased Noise Immunity for VAU 01.1U"</a> on <a href="#">page 8</a> .	USB female connector, 4-pin, type B	USB connector, 4-pin, type A
XCOM1 VAU 01.1S VAU 01.1Z	Serial interface RS232 (special assignment, see <a href="#">chapter 9.3 "VAU 01.1S and VAU 01.1Z – Serial Interface XCOM1"</a> on <a href="#">page 18</a> )	D-Sub female connector, 9-pin	D-Sub male connector, 9-pin
X1N1 VAU 01.1Z	115/230 VAC power supply	IEC AC connector	IEC AC connector, power line min. 3 x 0.75 mm <sup>2</sup>
	Functional earth ground (FE)	M5	Ring cable lug

**Tab. 9-1:** UPS – interfaces and connections

## 9.2 24 V Voltage Connection

The 24 V supply voltage is connected at X1S1. X1S2 provides the 24 V output voltage for the panel PC or control cabinet PC.

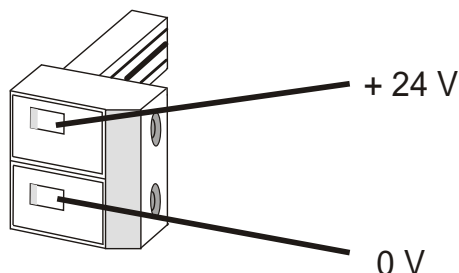


Fig. 9-2: Connection of the voltage supply and 24 V output voltage at the connector

## 9.3 VAU 01.1S and VAU 01.1Z – Serial Interface XCOM1

### 9.3.1 General Information



Malfunctions due to insufficient shielding!

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

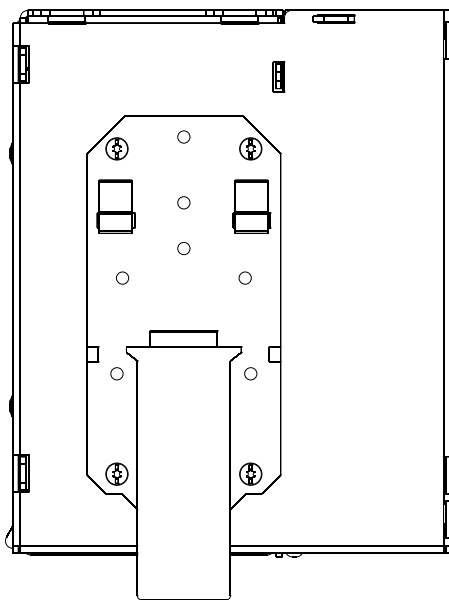
The electrical features of the XCOM1 interface correspond to the features of a standard COM interface. However, an other meaning is assigned to the signals.

## 10 Assembly, Disassembly and Electrical Installation

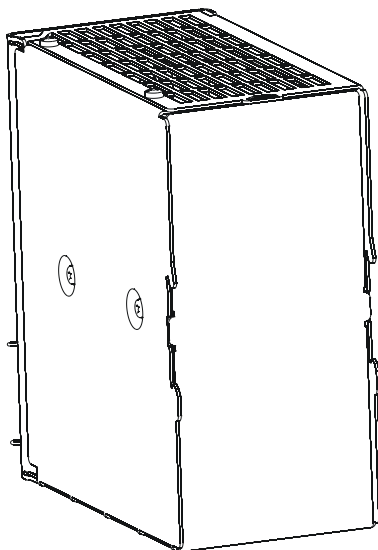
### 10.1 Installation Notes

- The UPS is provided for mounting on a mounting rail.





VAU 01.1U/VAU 01.1S



VAU 01.1Z

**Fig. 10-1:** Mounting rail holders on the rear panel of the UPS

- The LED displays have to be visible
- Provide the following minimum distances for sufficient cooling and cable routing:
  - To the bottom side 50 mm
  - To the top side 80 mm
  - To the front side 85 mm
- Provide the cables with a strain relief
- Keep as much distance as possible to noise sources, when installing the UPS

## 10.2 Housing Dimensions

The UPS has the following dimensions:

UPS	Width	Height	Depth (without connector)
VAU 01.1U/VAU 01.1S	123 mm	145 mm	128 mm
VAU 01.1Z	70 mm	145 mm	133 mm

**Tab. 10-1:** Dimensions

## 10.3 Mounting

### Mounting the UPS on the mounting rail

---

**⚠ CAUTION**

Possible personal injury and material damage due to a UPS that loosens from the mounting rail caused by insufficient fastening.

Fasten the UPS on a stable mounting rail. A mounting rail which is not stable enough can deform during transport, and therefore the UPS can get loose. Only use mounting rails made of steel TH 35-7.5 and TH 35-15 according to EN 60715.

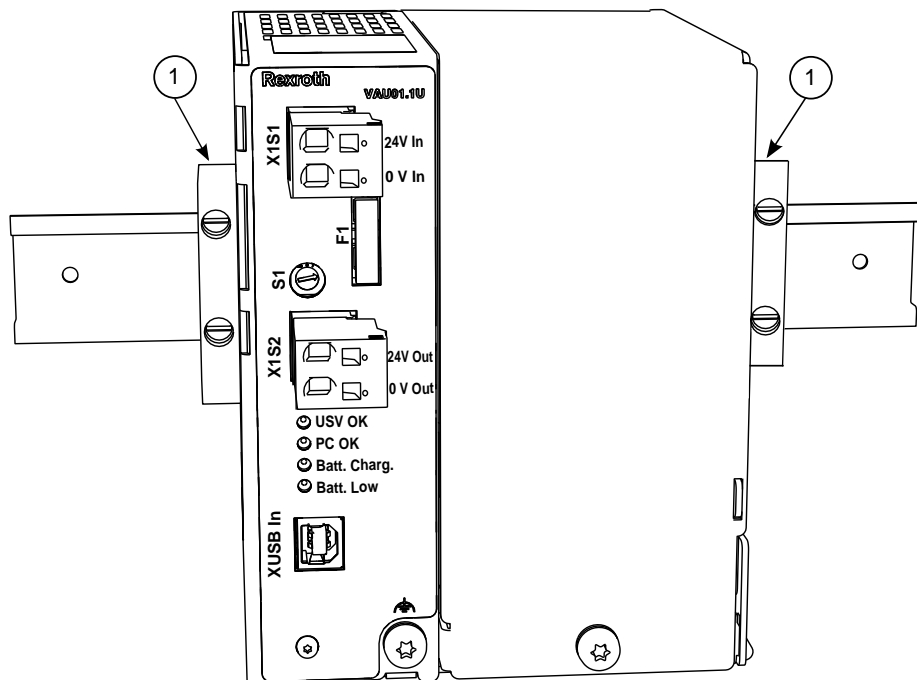
---

Determine the distance of the mounting holes according to EN 60715 appendix B.

Hang the UPS onto the mounting rail from above. Exert slight pressure to engage the UPS in the lower section of the housing.

#### Attaching the end clamps

Mount end clamps on the mounting rail on both sides of the UPS to avoid lateral moving of the UPS if vibrations occur. The end clamps are available as accessories, see [chapter 5.4 "End Clamp" on page 8](#).



① End clamps on the mounting rail

**Fig. 10-2:** End clamps

### Fixing the cables

Unfixed cables are not permitted. Therefore an appropriate fixing (e. g. installation in a cable channel) and a strain relief of the cables is required.

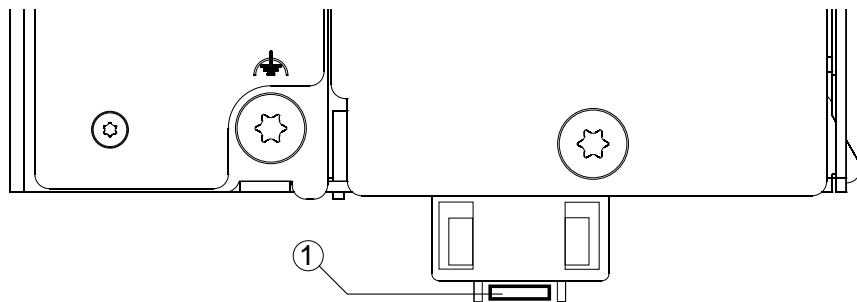
## 10.4 Disassembly

### Preparing the dismounting

- Shutdown the PC
- Disconnect the UPS from the voltage supply
- Remove the cable from the UPS

### VAU 01.1U/VAU 01.1S – unlocking the UPS

- Unlock the UPS from the mounting rail by pulling the release lever to the bottom side by using a screwdriver, see [fig. 10-3 "Position of the release lever of the mounting rail holder"](#) on page 22.



① Release lever

**Fig. 10-3:** Position of the release lever of the mounting rail holder

### Removing the UPS from the mounting rail

- Pull off the UPS from the mounting rail
- Finally, remove the UPS in upwards direction

## 10.5 Electrical Wiring

### 10.5.1 Connecting the DC 24 V to UPS and Panel PC or Control Cabinet PC

#### External power supply unit

A 24 V voltage supply supplies the UPS.

Use the Bosch Rexroth power supply unit VAP01.1H-W23-024-010-NN (see [chapter 5.1 "External 24 V Power Supply Unit" on page 7](#)). For further information on the external power supply unit and on the overvoltage category, please refer to the documentation of the power supply unit.

All lines of the 24 V voltage supply have to be laid such that they are isolated from lines carrying higher voltages.

#### **NOTICE**

**Damage to the panel PC, control cabinet PC and UPS if connected under voltage.**

Ensure that the panel PC, control cabinet PC and UPS are de-energized, before wiring.

## Wiring of the UPS, cable lengths and cable cross-sections

**NOTICE**

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

For wiring connection terminals use copper wire only. Tighten the screws of the screw terminal with a torque of 5.5 lb in (0.6 Nm).



To connect the cables to X1S1, X1S2 und X1S, strip the cables by 15 mm.

Observe the following cable lengths and cross-sections:

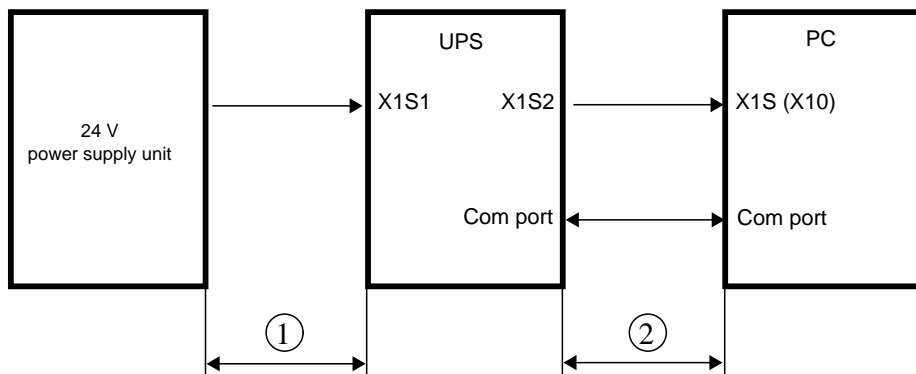


Fig. 10-4: Wiring of the UPS

## VAU 01.1U and VAU 01.1S

Cable length	Cross-sections when wired firmly
1 m to 7 m	2.5 mm <sup>2</sup> (AWG13)
8 m to 10 m	4.0 mm <sup>2</sup> (AWG11)

① see fig. 10-4 "Wiring of the UPS" on page 23

**Tab. 10-2:** Required cable cross-sections for the DC 24 V voltage supply depending on the cable length when wired firmly

The following data applies if the load changes immediately caused by connecting or disconnecting loads (not wired firmly) at the UPS:

Connection	Length	Cross-section
Power supply unit and UPS	Maximum 2 m	Min. 5.0 mm <sup>2</sup> (AWG10)
UPS and PC	Maximum 2 m	Min. 2.5 mm <sup>2</sup> (AWG13)

①, ② see [fig. 10-4 "Wiring of the UPS" on page 23](#)

**Tab. 10-3:** Cable lengths and cross-sections if the load changes

#### VAU 01.1Z

Cable length	Cross-sections when wired firmly
1 m to 7 m	1.0 mm <sup>2</sup> (AWG17)
8 m to 9 m	1.5 mm <sup>2</sup> (AWG15)
10 m	2.5 mm <sup>2</sup> (AWG13)

① see [fig. 10-4 "Wiring of the UPS" on page 23](#)

**Tab. 10-4:** Required cable cross-sections for the DC 24 V voltage supply depending on the cable length when wired firmly

The following data applies if the load changes immediately caused by connecting or disconnecting loads (not wired firmly) at the UPS:

Connection	Length	Cross-section
Power supply unit and UPS	Maximum 2 m	Min. 5.0 mm <sup>2</sup> (AWG10)
UPS and PC	Maximum 2 m	Min. 2.5 mm <sup>2</sup> (AWG13)

①, ② see [fig. 10-4 "Wiring of the UPS" on page 23](#)

**Tab. 10-5:** Cable lengths and cross-sections if the load changes

## 10.5.2 VAU 01.1Z – Connecting the 115/230 VAC Voltage Supply

The VAU 01.1Z UPS features an integrated power supply unit, which provides the buffer voltage for the PC, instead of a battery.

### Connection

1. Connect X1N1 to the 115/230 VAC connection of the main UPS as shown in the following figure.

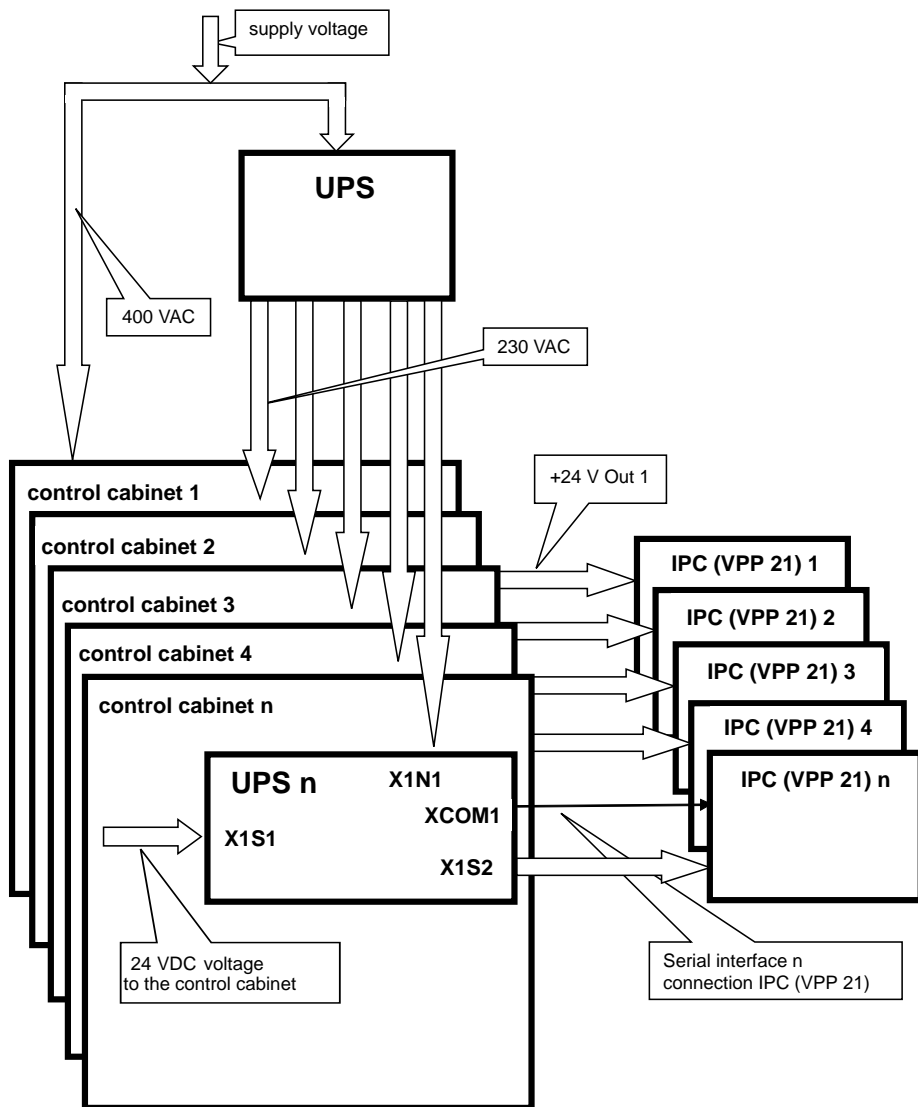


Fig. 10-5: Example: Voltage supply of several control cabinets

10.5.3 VAU 01.1U – Connecting the Panel PC or Control Cabinet PC to XUSB In

General Information

While connecting a UPS to a USB interface at a PC, the information on the existence and the state of the UPS are communicated to the PC via a USB connection. The communication is established via a virtual COM interface provided by the USB interface.

The electrical properties of the XUSB In interface correspond to the properties of the standard USB interface.



The driver is part of the operating system of the panel PC or control cabinet PC; therefore no additional driver installation is required.

USB cable

Permitted cable lengths	Up to 3 m (maximum length)
Cable type:	
Data line	Shielded, min. cross-section 2 x 0.08 mm <sup>2</sup> (AWG28)
+5V voltage supply	2 x 0.25 mm <sup>2</sup> (AWG24)
Maximum current consumption	200 mA

Tab. 10-6: USB cable, requirements

Malfunctions

NOTICE

Malfunctions due to insufficient shielding!

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

NOTICE

Malfunctions due to too long cables!

Use short USB cables, if possible.

Use only one of the cables listed in [chapter 5.2 "USB Cable with Increased Noise Immunity for VAU 01.1U" on page 8](#).

These cables feature additional shield connectors which are connected to the functional earth ground connections of the control and of the UPS. Additionally, the UPS features a ferrite clamp between the USB connection and the bonding clip of the UPS.



## Connecting the USB cable

1. At first, attach the shield connector of the USB cable to the functional earth ground connection of the UPS (see ② in the following figure) with a tightening torque of 24.8 lbf in (2.8 Nm).



- ① USB Interface
- ② Shield connector of the USB cable

**Fig. 10-6:** Attaching the USB cable to the functional earth ground of the UPS

2. Plug the "type B" USB connector into "XUSB In" (see ① in the figure) on the UPS.
3. Plug the "type A" USB connector into a USB port of the panel PC or control cabinet PC.

## 10.5.4 VAU 01.1S and VAU 01.1Z – Connecting the Panel PC or Control Cabinet PC to XCOM1

### General Information

While connecting a UPS to a RS232 interface at a PC, the information on the existence and the state of the UPS are communicated to the PC via a serial interface.

The electrical features of the XCOM1 interface correspond to the features of a standard RS232 interface.



The driver is part of the operating system of the panel PC or control cabinet PC; therefore no additional driver installation is required.

RS232 cable

Permitted cable lengths	Up to 20 m (maximum length)
Cable type	Shielded, cross-section min. 0.08 mm <sup>2</sup> (AWG28)

Tab. 10-7: RS232 cable, requirements

Malfunctions

**NOTICE**

**Malfunctions due to insufficient shielding!**

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

**NOTICE**

**Malfunctions due to too long cables!**

Use short RS232 cables, if possible.

If possible, use only the cable listed in [chapter 5.3 "RS232 Cable for VAU 01.1S and VAU 01.1Z"](#) on page 8.

Connecting the RS232 cable

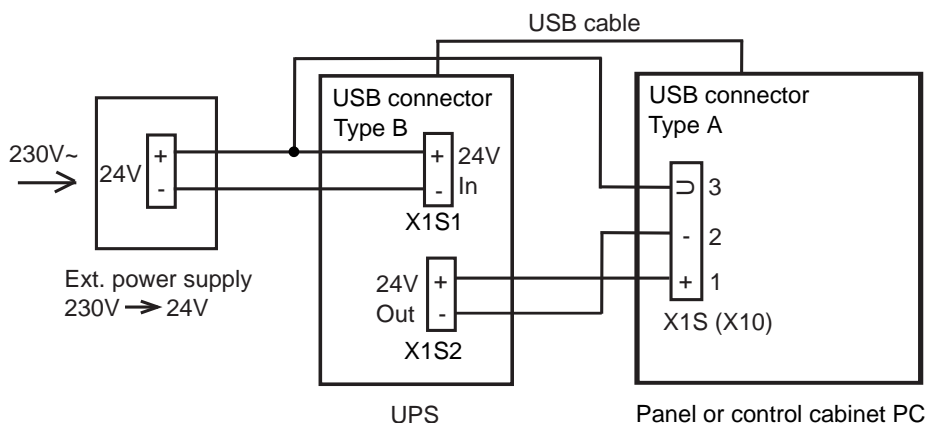
1. Plug the connector of the RS232 cable into XCOM1 at the UPS.
2. Plug the female connector of the RS232 cable into a COM interface at the panel PC or control cabinet PC.



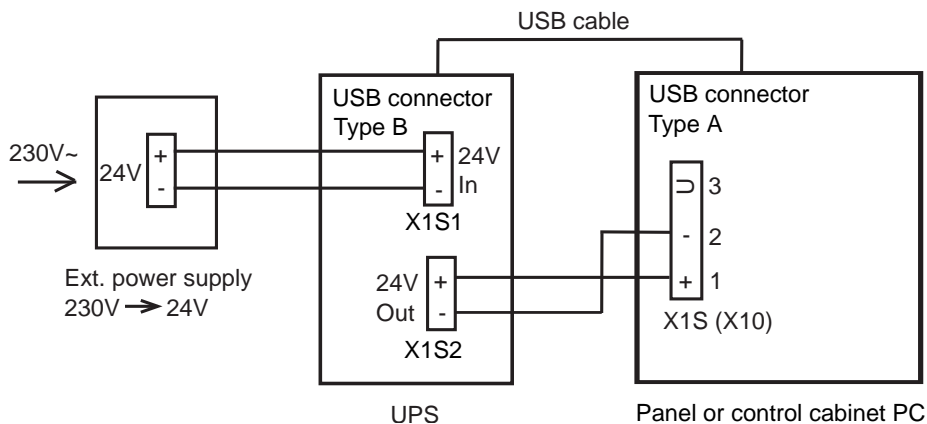
The UPS software, which is installed on the panel PC or control cabinet PC, recognizes automatically the COM interface which is connected to the UPS, if the software has been configured correspondingly ("Enable Scan" activated).

## 10.6 Overall Connection Scheme

### VAU 01.1U

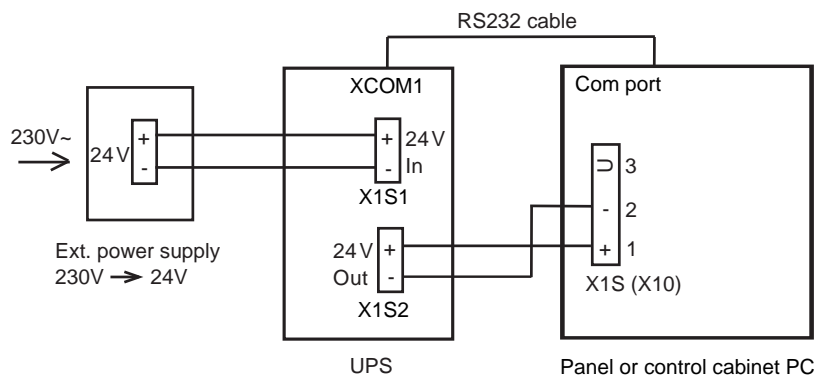


**Fig. 10-7:** Preferred connection: Connection scheme with power supply unit, UPS and panel PC or control cabinet PC for normal mode with fallback and simple mode



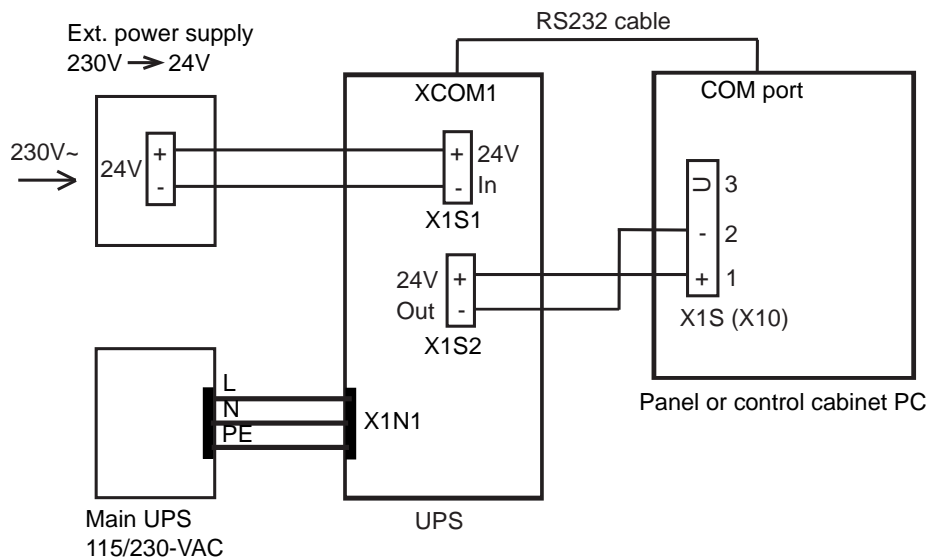
**Fig. 10-8:** Connection scheme with power supply unit, UPS and panel PC or control cabinet PC without fallback and simple mode

## VAU 01.1S



**Fig. 10-9:** Total connection scheme with power supply unit, UPS and panel PC or control cabinet PC

## VAU 01.1Z



**Fig. 10-10:** Total connection scheme with power supply unit, main UPS, UPS and panel PC or control cabinet PC

## 11 Commissioning

The product can be used directly.

The **UPS NT Control** software and the settings of the UPS times and delay times (rotary switch S1), which might have to be adjusted, are described in the documentation of the panel PCs or control cabinet PCs (see section "Further documents" in [chapter 1 "About this Documentation" on page 1](#)) as well as in [chapter 12.6 "Rotary Switch S1" on page 36](#).

Recommended rotary switch positions (S1) for the different UPS variants:

● **VAU 01.1U (from technical index GC1)**

Recommended rotary switch position 8 or 9 with simple mode connection and fallback for the IPC series:

- VPxxx.3xxx-xxxNN-D1D-xN-NN-FW; from February 2014 1st generation
- VPxxx.3xxx-xxxNN-D2D-xN-NN-FW; from February 2014 1st generation
- VPxxx.3xxx-xxxNN-xxD-xN-NN-FW; 2nd generation

The connection "U" at IPC has to be wired (see [fig. 10-7 "Preferred connection: Connection scheme with power supply unit, UPS and panel PC or control cabinet PC for normal mode with fallback and simple mode" on page 29](#)). Thus, the fallback mode is enabled in the IPC.

**Advantage:** An extreme EMC interference, influencing the USB connection between UPS and IPC does not result in an immediate PC shut-down.

The UPS buffers until the IPC has shut down (integrated monitoring and emergency switch off of the UPS if the IPC does not shut down in case of error).

**Important:** The set time has to be greater than the time the PC requires for a controlled shut down. A sufficient reserve has to be taken into consideration.

The checkbox "Enable Shutdown on COM fail" must not be activated in the UPS software (UPS NT Control Software) running on the IPC.

**Disadvantage:** If the time span is too short, uncontrolled standstill of the system can occur. Sporadically, the IPC cannot be started anymore due to loss of data.

● **VAU 01.1U (< from technical index GC1)**

Recommended rotary switch position 1 to 3 with simple mode connection and fallback for the IPC series:

- VPxxx.3xxx-xxxNN-D1D-xN-NN-FW; from February 2014 1st generation
- VPxxx.3xxx-xxxNN-D2D-xN-NN-FW; from February 2014 1st generation
- VPxxx.3xxx-xxxNN-xxD-xN-NN-FW; 2nd generation

The connection "U" at IPC has to be wired (see [fig. 10-7 "Preferred connection: Connection scheme with power supply unit, UPS and panel PC or control cabinet PC for normal mode with fallback and simple mode" on page 29](#)). Thus, the fallback mode is enabled in the IPC.

**Advantage:** An extreme EMC interference, influencing the USB connection between UPS and IPC does not result in an immediate PC shut-down. The UPS buffers the set time.

**Important:** The set time has to be greater than the time the PC requires for a controlled shut down. A sufficient time reserve has to be taken into consideration.

The checkbox "Enable Shutdown on COM fail" must not be activated in the UPS software (UPS NT Control Software) running on the IPC.

**Disadvantage:** If the time span is too short, uncontrolled standstill of the system can occur. Sporadically, the IPC cannot be started anymore due to loss of data.

- **VAU 01.1S and VAU 01.1Z**

Recommended rotary switch 1 to 3 for IPC series:

- VSxxx.1
- VSxxx.3

**Advantage:** The RS232 interface between UPS and IPC has a very high EMC resistance (previous standard).

**Important:** The set time has to be greater than the time the PC requires for a controlled shut down. A sufficient time reserve has to be taken into consideration.

**Disadvantage:** If the time span is too short, uncontrolled standstill of the system can occur. Sporadically, the IPC cannot be started anymore due to loss of data.

## 12 Device Description

### 12.1 General Information

The VAU 01.1U, VAU 01.1S and VAU 01.1Z are UPS (**U**ninterruptible **P**ower **S**upplies), which provide power to the connected device for a limited time if the supply voltage fails (DC 24 V).

The UPS can provide the connected device with 24 V and 10 A (2.5 A for VAU 01.1Z) for max. three minutes (VAU 01.1U from technical index GC1: six). The communication between UPS and panel PC or control cabinet PC occurs on the VAU 01.1U via a USB interface (XUSB In) , and on the VAU 01.1S and VAU 01.1Z via a RS232 interface (XCOM1).

The UPS consists of the following components:

- Enclosed metal housing
- Battery integrated in the device (VAU 01.1U and VAU 01.1S)
- Integrated power supply unit (VAU 01.1Z)
- Display and operating components on the front panel.
- Integrated burst and surge protection for the connected device.

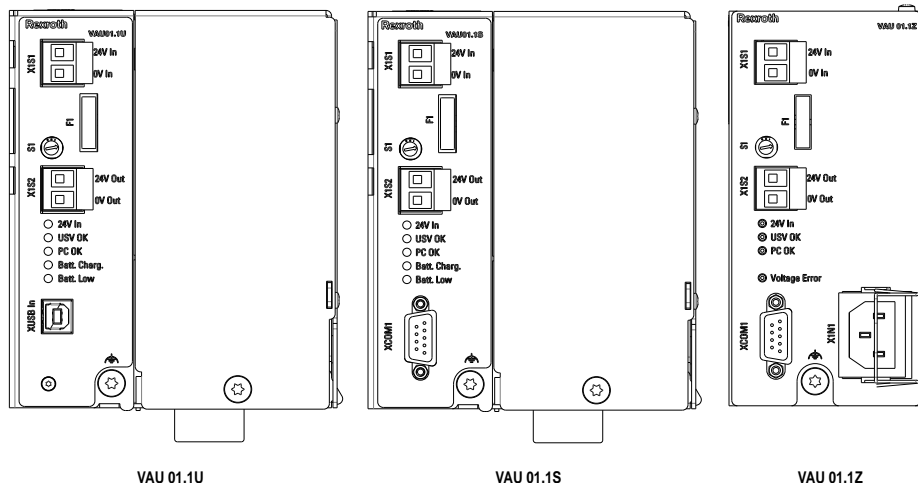


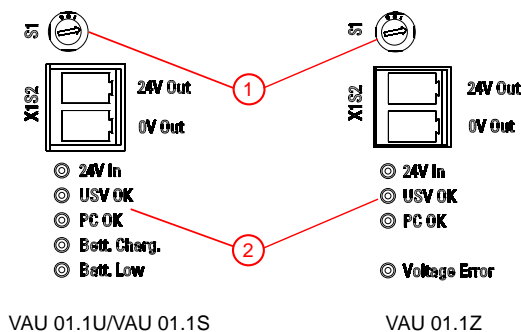
Fig. 12-1: Front view VAU 01.1U, VAU 01.1S and VAU 01.1Z

## 12.2 Software

As the communication between UPS and connected panel PC or control cabinet PC occurs via a USB or RS232 interface, the UPS software "UPS-NT-Control-Software" has to be started in the connected device. The installation is described in the relevant documentation of the control cabinet PC or of the panel PC, see "Further documents" in [chapter 1 "About this Documentation" on page 1](#).

## 12.3 Operating and Display Components

In addition to the connection terminals, display and operating elements are arranged on the connector panel.



- ① Rotary switch, S1
- ② LED for status and error display

Fig. 12-2: Connector panel of the UPS

## 12.4 Operating and Error Display

On the front panel of the UPS five LEDs are arranged to display the device states.

Start the measures specified in the following table if one of the succeeding LEDs displays an error or a note.

LED	Designation	Meaning	Measure
<b>24 V IN</b>	LED lights green	Normal operation	-
	LED is off	DC 24 V missing	Check the cable of the voltage supply which is connected to X1S1.
<b>UPS OK</b>	LED lights green	Normal operation	-
	LED is off	Internal voltages missing	For further information, please contact the Bosch Rexroth Service, see <a href="#">chapter 17 "Service and Support"</a> on page 47
<b>PC OK</b>	VAU 01.1U: LED flashes green (5 s on, 1 s off) VAU 01.1S, VAU 01.1Z: LED lights green	Normal operation	-
	LED is off	Connected PC is booting	Wait until the boot process of the connected PC is finished.
		<ul style="list-style-type: none"> <li>VAU 01.1U: Interface cable between UPS (XUSB In) and PC (USB port) is not plugged</li> <li>VAU 01.1S/VAU 01.1Z: Interface cable between UPS (XCOM1) and PC (Com Port) is not plugged</li> <li>The cable is defective</li> </ul>	Check the interface cable
		<ul style="list-style-type: none"> <li>Connected PC power supply unit has no supply voltage or</li> <li>Connected PC power supply has not started yet</li> </ul>	Check the PC cable connected to X1S2
		<ul style="list-style-type: none"> <li>UPS software has not started</li> </ul>	<ul style="list-style-type: none"> <li>Check the connected PC.</li> <li>Check that the UPS software has been started</li> </ul>



LED	Designation	Meaning	Measure
<b>Batt. Charg.<sup>1)</sup></b>	LED lights green	Battery is charged. Guaranteed UPS bridging time cannot be kept	Wait until the battery is loaded (LED is off or is flashing)
	LED is off or is flashing	Battery is charged. The UPS is ready to operate	-
<b>Batt. Low<sup>1)</sup></b>	LED lights red (more than 500 ms)	Battery is either discharged, not connected or fuse F1 (front side) is defective. (The LED is triggered by the UPS software)	<ul style="list-style-type: none"> <li>Keep the UPS switched on so that the battery can be loaded (max. five hours). If the LED continues flashing after this time, check the battery and, if necessary, replace the battery.</li> <li>Check the fuse F1</li> </ul>
	LED lights red (500 ms after switching on)	Battery is defective or the deep discharge threshold of 18 V is reached. (The LED is independently triggered by the UPS software)	Check if the battery is connected to the circuit board.  Keep the UPS switched on so that the battery can be loaded (max. five hours). If the LED continues flashing after this time, check the battery and, if necessary, replace the battery.
	LED is off	Normal operation	-
<b>Voltage Error<sup>2)</sup></b>	LED is lighting red	AC power supply unit is defective or not connected	Check the 115V/230 VAC voltage and the F1 fuse on the front panel
	LED is off	Normal operation	-

Tab. 12-1: LED description

## 12.5 Fuse F1

The FKS fuse (20 A, 32 V on VAU 01.1U/VAU 01.1S, 4 A, 32 V on VAU 01.1Z) is located on the front panel. The fuse protects the output side of the battery of the VAU 01.1U and VAU 01.1S, and the output side of the integrated power supply unit of the VAU 01.1Z. Without fuse F1 no UPS operation is possible.



Ensure that the fuse is set "before" using the UPS.

<sup>1)</sup> Only valid for VAU 01.1U and VAU 01.1S

<sup>2)</sup> Only valid for VAU 01.1Z

## 12.6 Rotary Switch S1

### 12.6.1 General Information

The switch position is in the delivery status "3".

#### UPS times

The UPS time is the time period in which the connected device is provided with output voltage of the UPS – after switching off the input voltage. Set different UPS times by S1 rotary switch . Change UPS times in steps of 60 seconds by switch positions 0 to 3 and 4 to 9.

#### Time delay

This time delay prevents that "UPS operation" is signalled to the connected PC and initiated during the first 120 seconds after switching on if the input voltage is switched off within these 120 seconds.

### 12.6.2 Timing Depending on the Position of S1 Rotary Switch

#### Settable UPS times and time delays

Position of the rotary switch	UPS time "t" in seconds	Time delay in seconds
0	5	120
1	60	120
2	120	120
3	180	120
4	5	-
5	60	-
6	120	-
7	180	-
8 <sup>1)</sup>	240	120
9 <sup>1)</sup>	360	120

1) From technical index GC1

**Tab. 12-2:** Settable UPS times and time delays

#### Switch position 1 to 3, 8, 9 (for production mode)

For switch positions 1 to 3, 8, 9, the time delay (120 seconds), which is integrated in the UPS, is activated. This time delay prevents that "UPS operation" is signalled to the connected PC and initiated during the first 120 seconds after switching on if the input voltage is switched off within these 120 seconds. Nevertheless, the output voltage of the UPS is buffered by the integrated battery and thus remains available for the connected PC. After the first 120 seconds time delay, "UPS operation" is signalled to the connected PC and is initiated if the input voltage remains switched off. In case of a voltage failure, the set UPS time is active (switch position 0 to 3, 8, 9. Thus, it is ensured that a voltage fail-

ure of the supply voltage does not effect the initialization phase of the connected PC in any way).

### Switch position 8 and 9

After the input voltage has been switched off, the UPS is in UPS mode. The PC shuts down and switches the power supply unit in the PC off after the operating system has been shut down successfully. The switch off of the power supply unit voltages is detected by the UPS via the +5 V voltage of the USB interface. The UPS switches the output voltage off. Consequently, the input voltage of the connected PC is also switched off immediately.

The UPS with the connected PC can be switched on immediately and an new switch on cycle starts.

If switching off of the +5 V voltage of the USB interface is not possible after shutting down the PC, an internal timer switches the UPS off.



This function extension can only be used if the USB connection between UPS and IPC is established.

---



We recommend the switch positions 1 to 3, 8, 9 for the production mode.

---



The time, which is set by the switch, has to ensure that the system/station including the applications can shutdown **completely**.

---

### Switch position 4 to 7 (for commissioning)

If switch positions 4 to 7 are used, the timer (time delay of 120 seconds) integrated in the UPS is switched off. Thus, unnecessary waiting times, e.g. during commissioning, are avoided. After commissioning reset the switch to the switch positions 0 to 3.



We recommend switch positions 4 to 7 **exclusively** for commissioning to avoid waiting times.

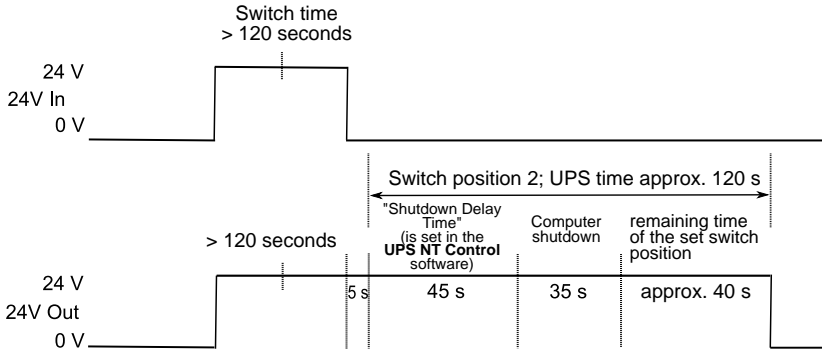
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## 12.6.3 Timing Depending on the Position of Rotary Switch S1 and Settings in the UPS-NT Control Software

For further information on the UPS-NT Control software, please refer to the relevant documentation of the connected device, see also "Further documents" in [chapter 1 "About this Documentation" on page 1](#).

### Example

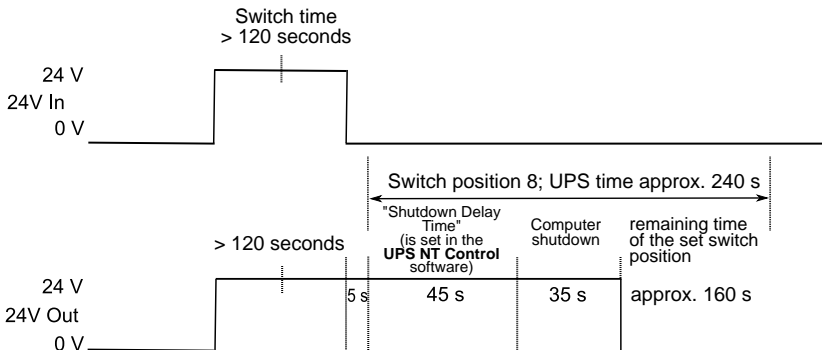
Switch position 2, Shutdown Delay Time = 45 seconds



**24V In** Input voltage DC 24 V on the UPS of the power supply unit  
**24V Out** Output voltage DC 24 V of the UPS to supply the connected PC

**Fig. 12-3:** Timing for rotary switch S1 in position "2"

Switch position 8, Shutdown Delay Time = 45 seconds



**24V In** Input voltage DC 24 V on the UPS of the power supply unit  
**24V Out** Output voltage DC 24 V of the UPS to supply the connected PC

**Fig. 12-4:** Timing for rotary switch S1 in position "8"

Observe that the timing behavior depends on the switch position "and" on the "Shutdown Delay Time", which is set in the "UPS-NT Control" software. Via this software times from 1 second to 45 seconds can be set.

## 13 Error Causes and Elimination

Device states are indicated on the front panel via LED.

The arrangement of the LED on the front panel is shown in [chapter 12.4 "Operating and Error Display"](#) on page 34.

Error	Correction
Wrong communication between UPS and PC	<ul style="list-style-type: none"> <li>• Cable not connected</li> <li>• Wrong cable (without shielding)</li> </ul>
UPS does not fit stable on the mounting rail	<ul style="list-style-type: none"> <li>• Use only mounting rails made of steel according to EN 60715 (see <a href="#">chapter 10.3 "Mounting" on page 20</a>).</li> </ul>
No output voltage at connector X1S2 during UPS operation	<ul style="list-style-type: none"> <li>• Check fuse F1</li> </ul>

**Tab. 13-1:** Error causes and error elimination

## 14 Maintenance

### 14.1 General Information

#### **NOTICE**

Loss of IP degree of protection due to incorrect maintenance.

The IP degree of protection must be ensured during maintenance!

### 14.2 Regular Maintenance Tasks

The UPS is maintenance-free. However, a few parts are subject to wear and have to be replaced after a certain number of operating hours.

- At least once a year, all plug and terminal connections of the components are to be checked regarding proper tightness and possible damage.
- Make sure that cables are not broken or crimped
- Replace damaged parts immediately.

### 14.3 VAU 01.1U and VAU 01.1S – Exchanging the Battery

If the battery is replaced by your own skilled staff, observe the following instructions:

#### **⚠ CAUTION**

Fire or explosion hazard by use of wrong battery types!

Replace the battery only by a battery type permitted by Bosch Rexroth.

## ⚠ CAUTION

Fire, explosions or burns due to wrong battery treatment!

The battery must not be charged externally, opened, heated over 80 °C and burnt.

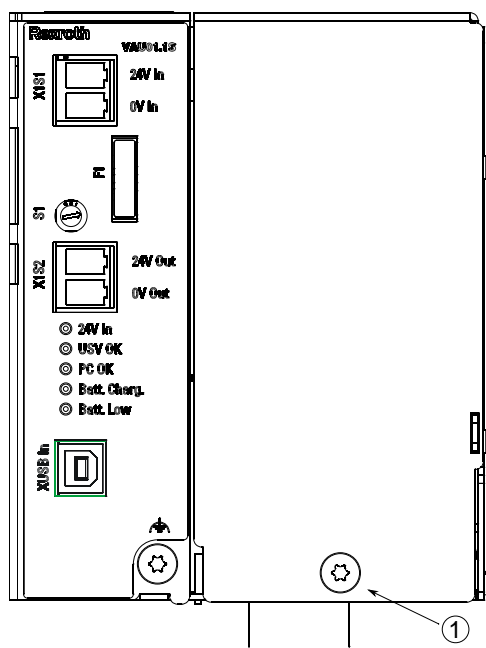


The battery is designed for the use under normal temperature conditions. The max. ambient temperature is 60 °C.

To exchange the battery, proceed as described in the following sections.

### Steps for exchanging the battery

1. Shut down the PC.
2. Disconnect the supply voltage of the UPS.
3. Remove fuse F1 on the front side.
4. Open the cover by loosening screw M5 at the UPS, see [fig. 14-1 "Position of M5 screw for opening the UPS" on page 40](#).

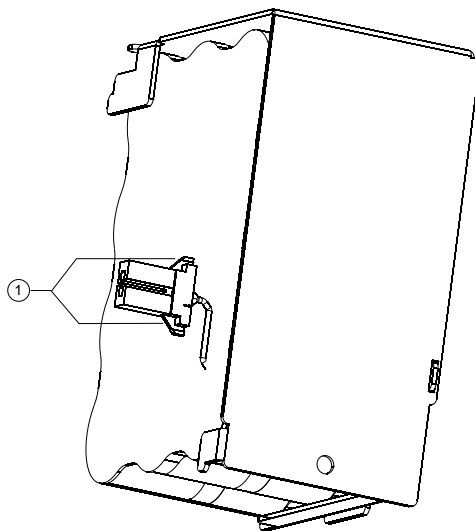


- ① Screw for opening the UPS

**Fig. 14-1:** Position of M5 screw for opening the UPS

5. ● The battery is attached at the cover. Therefore, open the cover carefully

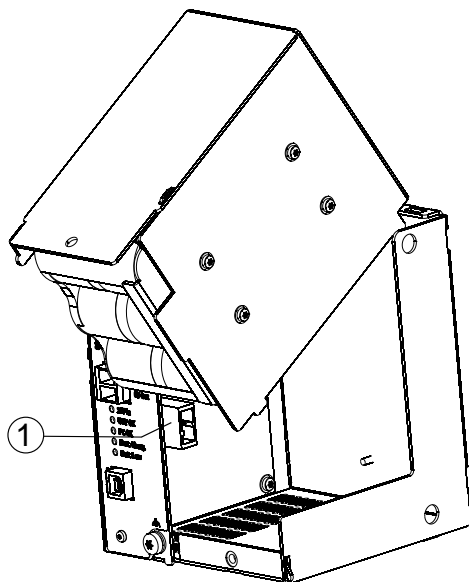
- Loosen the connector of the battery by pressing the release at the plug housing, see (1) in [fig. 14-2 "Plug position at the battery" on page 41](#)



① Plug interlock

**Fig. 14-2:** Plug position at the battery

6.
  - As soon as the cover is opened (see [fig. 14-3 "Opened cover at the UPS" on page 42](#)), the cover can be separated from the housing.

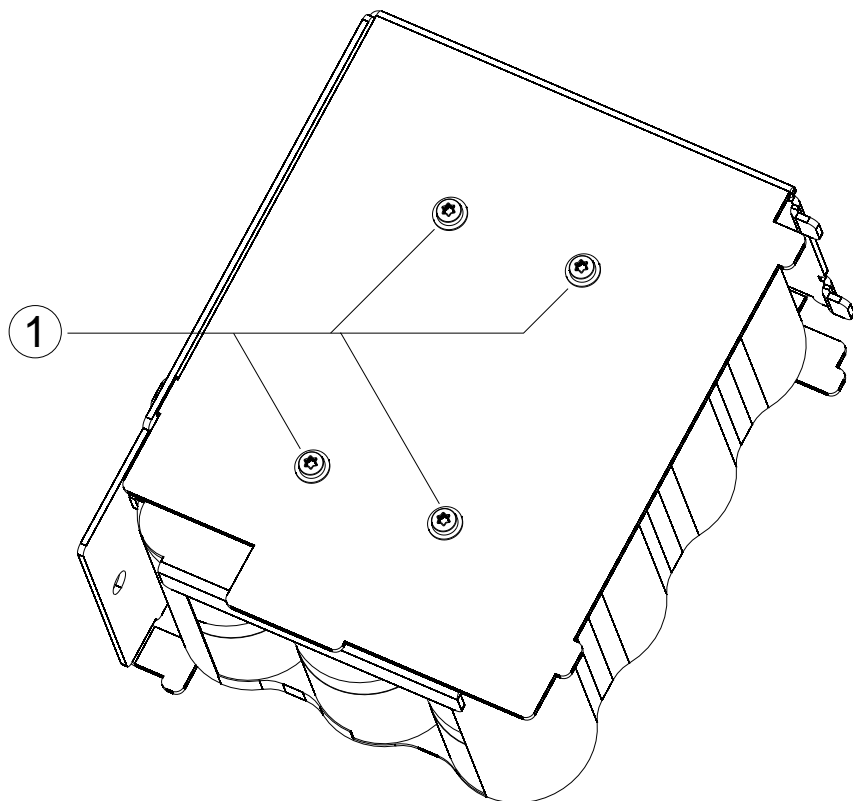


① Connectors at the UPS

**Fig. 14-3:** Opened cover at the UPS

7. ● Remove the battery from the cover by loosening the four M3 screws, see [fig. 14-4 "Position of the four M3 screws" on page 43.](#)





① Fastening screws of the battery

**Fig. 14-4:** Position of the four M3 screws

Dispose the battery immediately and properly. Observe the notes given in [chapter 16 "Disposal" on page 46](#).

8. •

### **NOTICE**

**Battery damage due to inadequate screws.**

Attach the new battery by using the four original M3 screws. A longer screw might damage the housing of the battery.

- Observe that only a battery which is permitted by Bosch Rexroth is installed, e. g. the battery "AKKU24V/2,5Ah" (Bosch Rexroth parts number: 1070923287)
- Tighten the four M3 screws [fig. 14-4 "Position of the four M3 screws" on page 43](#) with a torque of 6.2 lbf in (0.7 Nm)

9. Plug the battery connector until the battery engages.
10.
  - Close the cover
  - Attach the cover with the original M5x10 Z4 screw to the housing by tightening it with a torque of 24.8 lbf in (2.8 Nm)
11. Refit fuse F1.

---

**NOTICE**

**Possible data loss due to an uncharged battery.**

If the new battery is not yet charged, there is no sufficient UPS protection for a controlled shutdown of the PC during the charging period. Therefore use completely charged batteries, if possible. The charging time of a 2.5 Ah battery is approx. five hours.

---

### Testing the new battery

1. Switch on the supply voltage for the UPS again.
2. Observe the "Batt. Charg." display on the front panel:
  - LED "Batt. Charg." lights green: Battery is charged
  - LED "Batt. Charg." flashes: The battery is nearly completely charged
  - Unlit LED "Batt. Charg." indicates that the battery is charged. The darker the LED flashes, the higher the charging status of the battery

## 14.4 VAU 01.1U and VAU 01.1S – Storage

### Recommended value for the storage time

The storage time is two years at an average ambient temperature of +25 °C.

---

**NOTICE**

**Battery damage due to deep discharge.**

If the storage temperature is unclear or if the storage time has exceeded two years, check the open-circuit voltage of the battery regularly – as described in the following section!

---

### Checking the open-circuit voltage

To check the open-circuit voltage of the battery, insert a voltmeter between the fusible wire of fuse F1 (see [chapter 12.5 "Fuse F1" on page 35](#)) and the 0 V connection of X1S1.

---

**NOTICE**

**UPS damage due to short-circuit.**

A short-circuit must not be caused during voltage measuring because a measurement at the fusible wire of the fuse might deactivate its function!

---

The open-circuit voltage of the battery must not fall below +21 V, as otherwise the battery cells might be damaged.

For this reason, start the charging process of the battery as of an open-circuit voltage of +22 V by connecting the UPS to the +24 V supply. The charging process starts automatically.

## 15 Ordering Information

### 15.1 Accessories and Spare Parts

For ordering information about accessories and spare parts, please refer to [chapter 5 "Spare Parts, Accessories and Wear Parts" on page 7](#).

### 15.2 Type Code

The UPS is available in the following variants according to the type designation code:

Abbrev. Column	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6				
Example:	V	A	U	0	1	.	1	U	-	0	2	4	-	0	2	4	-	2	4	0	-	N	N							
<b>Product</b>																														
UPS for																														
IndraControl V = VAU																														
<b>Line</b>																														
01..... = 01																														
<b>Design</b>																														
1..... = 1																														
<b>Type of construction</b> ①																														
Standard..... = S																														
Standard with USB interface .. = U																														
Control for central UPS..... = Z																														
<b>Input voltage</b> ①																														
DC 24 V..... = 024																														
AC 230 V +-10%, 50/60 Hz. .... = 230																														
DC 24 V + AC 100...240 V, 50/60 Hz = Z24																														
<b>Output voltage</b> ①																														
DC 24 V..... = 024																														
AC 230 V +-10%, 50/60 Hz. .... = 230																														
<b>Maximum power</b> ①																														
e.g. 240 W. .... = 240																														
<b>Other design</b>																														
none..... = NN																														
<b>① Note:</b> Available configurations																														
VAU01.1S-024-024-240-NN																														
VAU01.1S-230-230-300-NN																														
VAU01.1U-024-024-240-NN																														
VAU01.1Z-Z24-024-060-NN																														

Fig. 15-1: Type designation code for the VAU 01.1 variants

# 16 Disposal

## 16.1 Take-Back

Our products can be returned to our premises free of charge for disposal. However, the products must be free of impurities like oil, grease or other impurities. Furthermore, the products returned for disposal must not contain any undue foreign material or foreign components.

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

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

## 16.2 Packaging

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

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

## 16.3 Batteries and Accumulators

Batteries and accumulators can be labelled with this symbol.



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

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

Used batteries can contain hazardous substances, which can harm the environment or the people's health when they are improperly stored or disposed of.

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

## 17 Service and Support

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

### Service Germany

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

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

Phone: **+49 9352 40 5060**

Fax: **+49 9352 18 4941**

E-mail: [service.svc@boschrexroth.de](mailto:service.svc@boschrexroth.de)  
Internet: <http://www.boschrexroth.com>

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

### **Service worldwide**

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

### **Preparing information**

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

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

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## Notes

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