

Rexroth IndraControl VAP 01.1 Power Supply Unit

R911339613
Edition 01

Operating Instructions



Change Record

Edition	Release Date	Notes
Edition 01	2014-08	First edition

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Editorial Department

Development automation systems, control platform GW (MK/MePe)

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1 About this Documentation

Overview on target groups and product phases

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

Example:

In the product phase "Mounting", the "Mechanic/electrician" can execute the activity "Install" using this documentation.

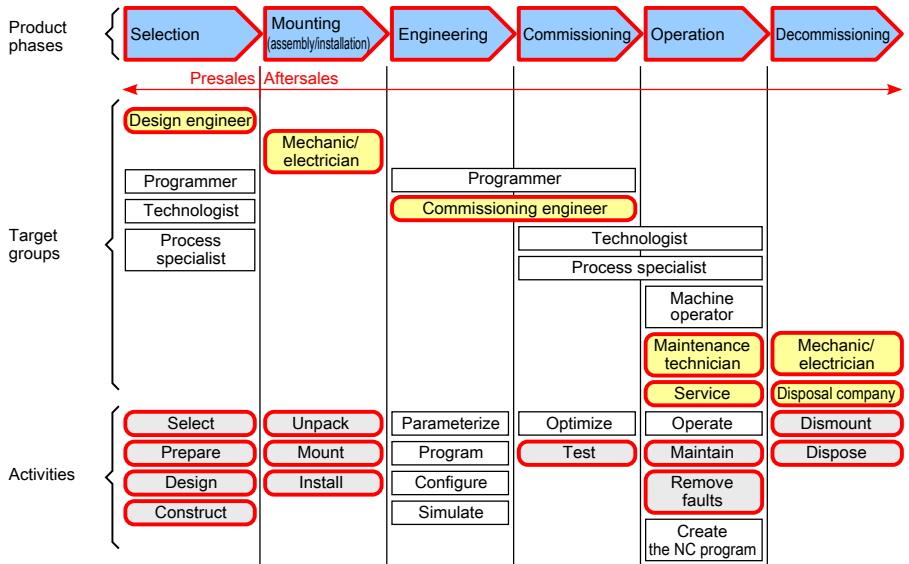


Fig. 1-1: Assigning the present documentation to the target groups, product phases and activities of the target group

Purpose

This document instructs the technical staff of the machine manufacturer on how to perform the mechanical and electrical installation safely and on how to commission the device.

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

Scope

This operating instruction applies to all variants whose type code starts with "VAP...".

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

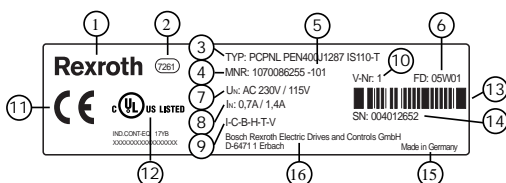
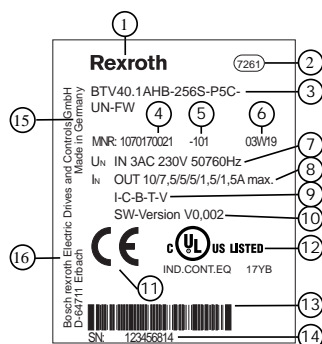
Related documents

We recommend the power supply unit VAP 01.1 for all Bosch Rexroth 24 volt devices. For more information, refer to the respective operating instructions in the media directory (<http://www.boschrexroth.com/various/utilities/mediadirectory/>).

2 Product Identification and Scope of Delivery

2.1 Product Identification

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



- | | | | |
|---|-----------------------------------|----|-------------------------------------|
| 1 | Logotype | 9 | Test marking |
| 2 | Division or plant number | 10 | Version number |
| 3 | Type designation code (type code) | 11 | CE mark |
| 4 | Parts number | 12 | Underwriters Laboratories Inc. mark |
| 5 | State of revision | 13 | Serial number as barcode |
| 6 | Date of manufacture (yyWwww) | 14 | Serial number |
| 7 | Nominal voltage | 15 | Designation of origin |
| 8 | Nominal current | 16 | Company address |

Fig. 2-1: Exemplary type plates

2.2 Scope of Delivery

- Power supply unit VAP 01.1
- Safety instructions

3 Using the Safety Instructions

3.1 Safety Instructions – Structure

The safety instructions are structured as follows:

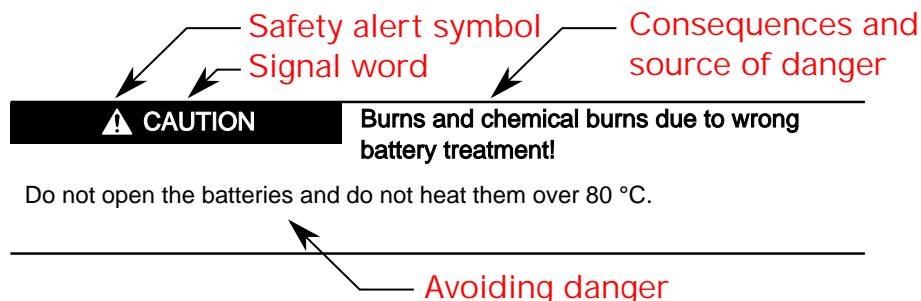


Fig. 3-1: Safety instructions – Structure

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 power unit supply VAP 01.1 is a compact 24 V power supply unit for industrial use. We recommend the power supply unit VAP 01.1 to supply the Bosch Rexroth components of the industrial automation with protective extra-low voltage supply. The power supply unit is designed for up to 240 watts.

NOTICE

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

The VAP 01.1 power supply units may only be used as intended and with the accessories and mounting parts specified in this documentation. Components that are not expressly mentioned must neither be attached nor connected. The same applies to cables and lines.

Only to be operated with the component configurations and combinations expressly defined and with the software and firmware specified in the corresponding documentations.

Typical areas of application of the power supply unit VAP01.1:

- Voltage supply for 24 V control components
- Voltage supply for 24 V HMI
- Voltage supply for PC components
- Voltage supply for centralized and decentralized inputs and outputs

The power supply unit VAP 01.1 may only be operated under the assembly and installation conditions, in the position of use and under the ambient conditions (temperature, degree of protection, humidity, EMC, etc.) specified in this documentation.

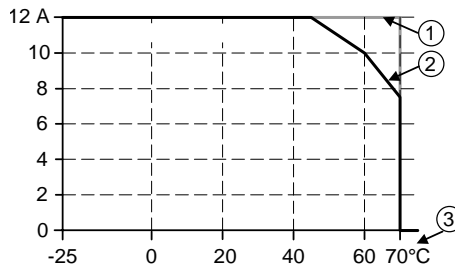
5 Spare Parts, Accessories and Wear Parts

There are no spare parts, accessories and wear parts for the power supply unit VAP 01.1.

6 Ambient Conditions

Operating temperature	-25 °C to +70 °C (-13 °F to 158 °F)	Reduced output current acc. to 6-1
Output current reduction	3.2 W/°C 6 W/°C	45-60 °C (113 °F to 140 °F) 60-70 °C (140 °F to 158 °F)
Storage temperature	-40 to +85 °C (-40 °F to 185 °F)	Storage and transport
Humidity	5 to 95 % r.H. (relative humidity)	IEC 60068-2-30 Do not apply voltage in case of condensation
Sinusoidal vibration	2-17.8 Hz: ±1.6 mm; 17.8-500 Hz: 2 g 2 hours per axis	IEC 60068-2-6
Shock	30 g 6 ms, 20 g 11 ms 3 bumps per direction, 18 bumps in total	IEC 60068-2-27
Height	0 to 6.000 m (0 to 20 000 ft)	Reduce output current or ambient temperature above 2000 m sea level.
Output current reduction (for height)	15 W/1000 m or 5 °C/1000 m	Above 2000 m (6500 ft), refer to the figure 6-2
Overvoltage category	III II	EN 50178, heights up to 2000 m Heights from 2000 m to 6000 m
Contamination level	2	EN 50178, non-conducting

Tab. 6-1: Ambient conditions



- ① Short-time
② Permanent

- ③ Ambient temperature

Fig. 6-1: Permitted output current depends on the ambient temperature at 24 V

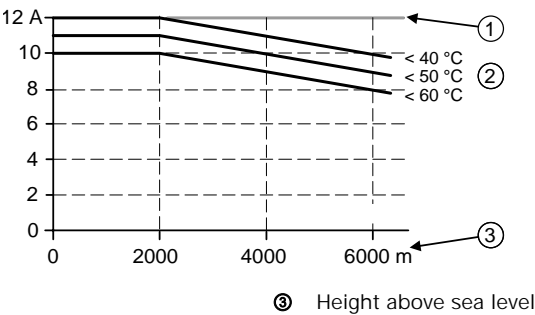


Fig. 6-2: Permitted output current depends on the height and the ambient temperature at 24 V

7 Technical Data

7.1 Input

AC input	nom.	100-120 V AC 200-240 V AC	Automatic input selection, TN-, TT-, IT mains Also refer to the figure 7-4
AC input range		90-132 V AC 180-264 V AC 85-90 V AC 264-300 V AC	100-120 V range, continuous operation 200-240 V range, continuous operation Short runtime or with output current reduction < 0.5 seconds
Input frequency	nom.	50-60 Hz	±6 percent

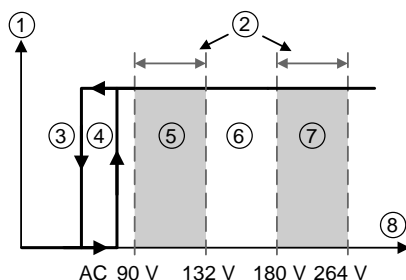
Tab. 7-1: Input

		100 V AC	120 V AC	230 V AC	
Input current	typ.	4.34 A	3.73 A	2.23 A	at 24 V, 10 A
Power factor	typ.	0.61	0.59	0.51	at 24 V, 10 A, refer to the figure 7-1
Crest factor	typ.	2,61	2,83	3,3	at 24 V, 10 A
Switch-on delay	typ.	700 ms	800 ms	850 ms	Refer to the figure 7-3
Rise times	typ.	35 ms	35 ms	35 ms	0 mF, 24 V, 10 A, refer to the figure 7-3
	typ.	75 ms	75 ms	75 ms	10 mF, 24 V, 10 A, refer to the figure 7-3
Switch-on over-shoot	max.	100 mV	100 mV	100 mV	Refer to the figure 7-3

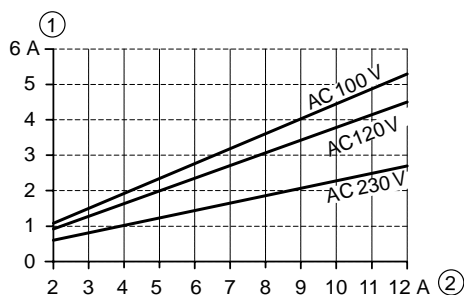
100VAC 120VAC 230VAC

Switch-on voltage	typ. 80 V AC	80 V AC	ns	Stable value, refer to the figure 7-1
Switch-off voltage	typ. 75 V AC	75 V AC	ns	Stable value, refer to the figure 7-1

- ① The power factor is the ratio of the true (or real) power to the apparent power in an AC circuit.
 ② The crest factor is the mathematical ratio of the peak value to the RMS value of the input current wave form.

Tab. 7-2: Input

- ① P_{OFF}
 ② Nominal input range
 ③ Switch-off
 ④ Switch-on
 ⑤ Valid range 100 to 120 V
 ⑥ Invalid range from 132 to 180 V. An operation within this range does not cause any damages
 ⑦ Valid range 200 to 240 V
 ⑧ V_{ON}

Fig. 7-1: Input voltage range

- ① Input current, typical
 ② Output current

Fig. 7-2: Input current depends on the input voltage

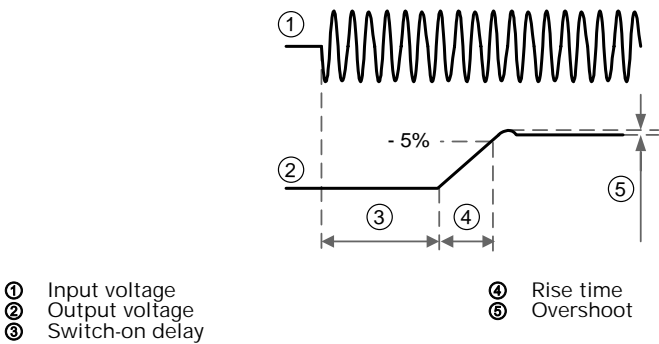
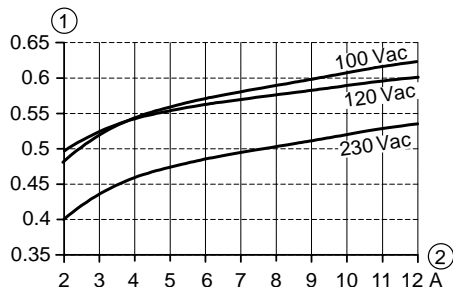


Fig. 7-3: Switch-on Response, Definitions



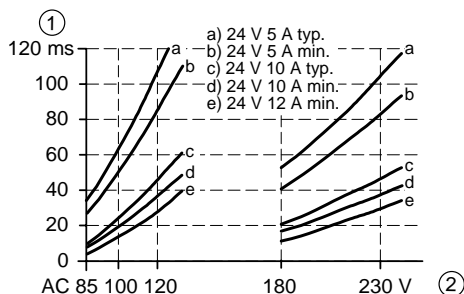
- ① Power factor, typical
② Output current

Fig. 7-4: Power factor and output current

7.2 Buffer Time

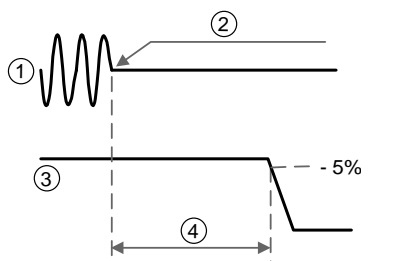
		100 VAC	120 VAC	230 VAC	
Buffer time	typ.	62 ms	107 ms	103 ms	5 A, 24 V, refer to the figure 7-5
	typ.	23 ms	46 ms	47 ms	10 A, 24 V, refer to the figure 7-5
	typ.	17 ms	35 ms	37 ms	12 A, 24 V, refer to the figure 7-5

Tab. 7-3: Buffer time



① Buffer time
② Input voltage

Fig. 7-5: Buffer time vs. Input voltage



① Input voltage
② Zero transition

③ Output voltage
④ Buffer time

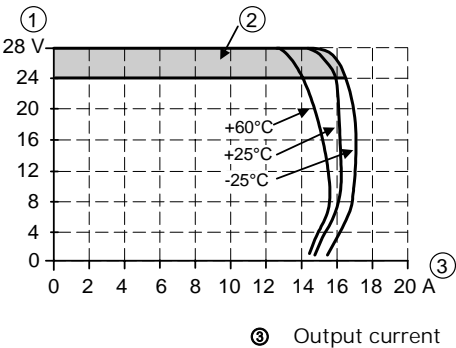
Fig. 7-6: Switch-off response, definitions

7.3 Output

Output voltage	nom.	24 V	
Adjustment range	Min.	24-28 V	Guaranteed
	Max.	30 V	End position, potentiometer clockwise
Factory settings		24.1 V	$\pm 0,2\%$, at full load, cold unit
Power control	Max.	70 mV	90 to 132 V AC or 180 to 264 V AC
Load control	Max.	100 mV	Static value, 0 A \rightarrow 10 A \rightarrow 0 A
Superimposed alternating and interference voltage	Max.	50 mVpp	20 Hz to 20 MHz, 50 ohms
Output capacity	typ.	7 000 μ F	

Output current	nom.	12 A	At 24 V, at < 45 °C ambient temperature, refer to the figure 7-7
	nom.	10 A	At 24 V, at < 60 °C ambient temperature, refer to the figure 7-7
	nom.	10.3 A	At 28 V, at < 45 °C ambient temperature, refer to the figure 7-7
	nom.	8.6 A	At 28 V, at < 60 °C ambient temperature, refer to the figure 7-7
Output rate	nom.	288 W	At < 45 °C ambient temperature
	nom.	240 W	At < 60 °C ambient temperature
Short circuit current	Min.	14 A	Load resistance 100 mOhms, Refer to the figure 7-7
	max.	18 A	Load resistance 100 mOhms, Refer to the figure 7-7

Tab. 7-4: Output



- ① Output voltage
② Setting range
③ Output current

Fig. 7-7: Output voltage and output current, typical

Peak current capacity (up to several milliseconds)

The power supply unit VAP 01.1 can generate a peak current higher than the specified short-time withstand current. The current consumption load can be started and more power switches can be safely operated. The output capacitor in the power supply unit provides additional current. During this process, the capacitors are discharged causing a voltage drop at the output. For detailed characteristics, refer to [chapter 7.8 "Peak Current Strength" on page 13](#).

Voltage drop of peak current	typ.	24 V to 18.5 V	At 20 A for 50 ms, resistive load
	typ.	24 V to 17.5 V	At 50 A for 2 ms, resistive load
	typ.	24 V to 12 V	At 50 A for 5 ms, resistive load

Tab. 7-5: Peak current capacity

		100 VAC	120 VAC	230 VAC	
Efficiency	typ.	90,70 %	91,00 %	91,60 %	10 A, 24 V
Power loss	typ.	5.8 W	8.4 W	7.5 W	0 A
	typ.	12.0 W	12.3 W	11.3 W	5 A, 24.5 V
	typ.	25.1 W	24.1 W	22.4 W	10 A, 24.5 V
	typ.	31.9 W	29.6 W	27.9 W	12 A, 24.5 V

Tab. 7-6: Efficiencies and losses

7.4 Failure Safety

		100 VAC	120 VAC	230 VAC	
Expected service life	Min.	38,000 h	50,000 h	75,000 h	40 °C, 24 V, 10 A
	Min.	27,000 h	34,000 h	53,000 h	40 °C, 24 V, 12 A
	Min.	93,000 h	99,000 h	118,000 h	40 °C, 24 V, 5 A
	Min.	108,000 h	15 years	15 years	25 °C, 24 V, 10 A
MTBF SN 29500,		612,000 h	638,000 h	821,000 h	40 °C, 24 V, 10 A
		520,000 h	542,000 h	698,000 h	40 °C, 24 V, 12 A
IEC 61709		1,019,000 h	1,058,000 h	1,393,000 h	25 °C, 24 V, 10 A

Tab. 7-7: Failure safety

7.5 Protective Properties

Output protection	Electrically protected against overload, idling and short circuits	
Output overvoltage protection	typ. 35 V DC max. 39 V DC	If an internal power supply unit error occurs, a redundant circuitry limits the maximum output voltage. The output is shut down and the power supply unit tries to restart.
Output overcurrent protection	Electronically limited	Refer to the figure 7-7
Degree of protection	IP 20	EN/IEC 60529
Protection against entering	> 3.5 mm	E.g. screws, small parts
Protection against over-temperature	Yes	Output shutdown with automatic restart
Transient protection at input	MOV	Metal oxide varistor
Internal input fuse	T6.3 A H.B.C.	Cannot be exchanged by user

Tab. 7-8: Protection properties

7.6 Safety

Input and output separation		
Safety extra low voltage (SELV) IEC/EN 60950-1		
Functional extra-low voltage with protective separation (PELV)		
Doubled or increased insulation		
Protection class	I	PE (grounding with protective function) connection required
Insulation strength	> 5 MΩ	Input to output, 500 V DC
Protective conductor resistance	< 0.1 Ω	Between housing and protective conductor terminal
Touch current (leakage current)	Typ. 0.36 mA	100 V AC, 50 Hz, TN mains
	Typ. 0.50 mA	120 V AC, 60 Hz, TN mains
	Typ. 0.64 mA	230 V AC, 50 Hz, TN mains
	< 0.45 mA	110 V AC, 50 Hz, TN mains
	< 0.62 mA	132 V AC, 60 Hz, TN mains
	< 0.85 mA	264 V AC, 50 Hz, TN mains

Tab. 7-9: Safety

7.7 Insulation Resistance

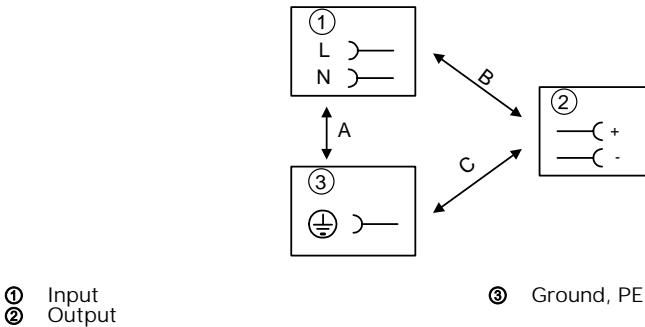


Fig. 7-8: Insulation resistance

		A	B	C
Type test	60 s	2,500 V AC	3,000 V AC	500 V AC
Factory test	5 s	2,500 V AC	2,500 V AC	500 V AC
Field test	5 s	2,000 V AC	2,000 V AC	500 V AC

Tab. 7-10: Insulation resistance

Type and factor tests

Type and factory tests made by the manufacturer. Do not repeat these checks in the field!

Field test rules

Use suitable test equipment and apply voltage at a slow ramp. Connect L and N like all output poles.

The output voltage is floating and is ohmically not connected to the ground.

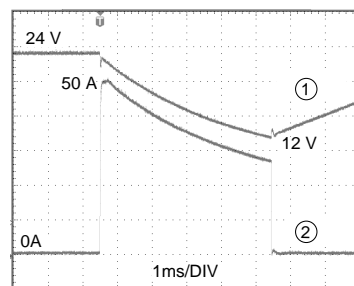
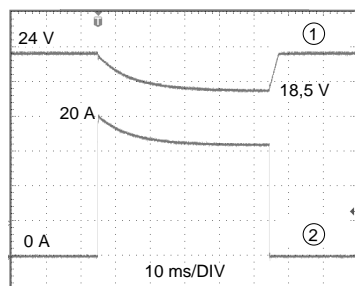
To meet the requirements on the functional extra-low voltage with protective separation (PELV) acc. to EN60204-1 § 6.4.1, the positive and the negative pole or any other part of the output circuitry should be connected to the protective conductor system. Thus, an immediate start of the load or that it cannot be switched off anymore in case of undetected earth faults can be avoided.

7.8 Peak Current Strength

Magnet coils, contactors and pneumatic modules are often equipped with a stationary coil and a pickup coil. The switch-on power requirement of a pickup coil is many times higher than the requirement of the stationary coil. The power requirement is normally also higher than the nominal output current (including the power supplies). This also applies if the capacitive load is started.

Branch circuits are often protected by circuit breakers or fuses. In case of a short circuit or overload in the branch circuit, a certain amount of overcurrent is required to blow the fuse. The peak current strength ensures the safe operation of the subsequent circuit breakers.

If the input voltage is switched-on before such an event occurs, the integrated output capacitors in the power supply unit can provide additional current. Discharging a capacitor causes a voltage drop at the output. Two typical voltage drops are shown in the following example:



- ① Output voltage
- ② Output current

Fig. 7-9: Peak load 20 A (resistive) for 50 ms; output voltage drops from 24 V to 18.5 V. Peak load 50 A (resistive) for 5 ms; output voltage drops from 24 V to 12 V

7.9 Charging Accumulators

The power supply unit VAP 01.1 may not be used to charge accumulators.

7.10 Feeding-Back Load

Devices such as decelerating motors and inductors can feed back voltage to the power supply unit. This property is also called "electromotive force" (EMF).

The power supply unit VAP 01.1 is interference resistant. No malfunctions occur if the voltage is fed back to the power supply unit irrespective of whether the power supply unit is switched on or off.

The maximum fed-back voltage is 35 V DC. The fed-back energy can be calculated using the integrated output capacitor, see [chapter 7.3 "Output" on page 9](#).

8 Standards

8.1 Standards used

Standard	Meaning
EN 61558-2-17	Safety of power transformers
EN/IEC 60204-1	Safety of machinery
EN/IEC 61131-1	Programmable controllers

Tab. 8-1: Standards used

8.2 CE Marking

8.2.1 Declaration of Conformity



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

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

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



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

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

8.3 UL/CSA Certification



The devices are certified according to

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

UL file no. E239264

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.

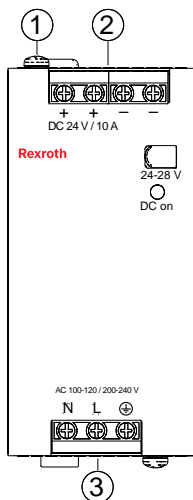


Loss of UL/CSA conformity due to modifications at the device.

UL and CSA marking applies only to the device in its delivery state. After modifying the device, UL conformity and CSA conformity are to be verified.

9 Interfaces

9.1 Connector Panel



- ① Protective earth (PE) terminal
- ② Connection terminal for output voltage
- ③ Connection terminal for input voltage

Fig. 9-1: Connector panel of the power supply unit VAP 01.1

9.2 Protective Earth (PE) Terminal

Ensure a sufficient conductor cross section during protective earth wiring. Also note EN 60204 Part 1 (maximum electric resistance and check of the protective earth wiring).

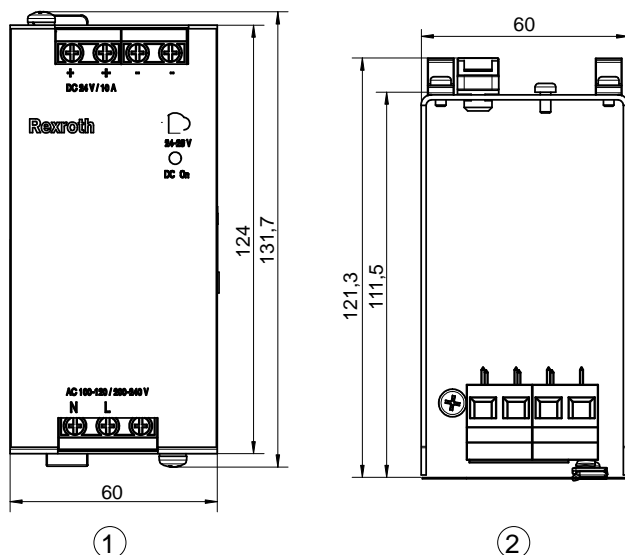
⚠ WARNING

Dangerous shock currents caused by Insufficient PE connections!

PE connections must not be affected by mechanical, chemical or electrochemical influences. The connection must be permanently fix.

10 Mounting, Demounting and Electric Installation

10.1 Housing Dimensions



① Front view

② Top View

Fig. 10-1: Housing dimensions

10.2 Installation Notes

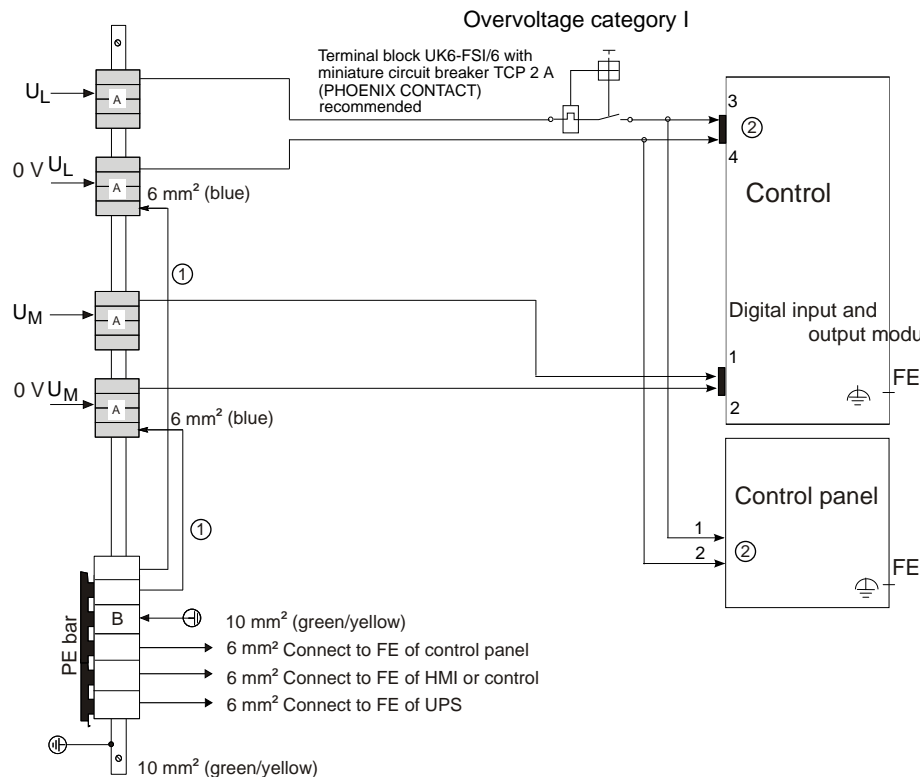
- The power supply unit VAP 01.1 is intended for mounting rail mounting
- The LED display has to be visible
- Provide the following minimum distances for a sufficient cooling and mounting:
 - 50 mm to the bottom side
 - 80 mm to the upper side
- Lay all connecting cables in loops
- Provide cables with strain relief
- Keep the biggest distance possible to noise sources when installing the power supply unit VAP 01.1

10.3 Mounting

1. Hang the power supply unit VAP 01.1 onto the mounting rail from above and exert slight pressure to engage the UPS in the lower section of the housing.
2. Mount end clamps on the mounting rail on both sides of the power supply unit to avoid lateral motion in case of vibrations.
3. Connect and fix cables.

10.4 Demounting

1. Shut down connected devices.
2. Switch off supply voltage of the power supply unit.
3. Detach and remove cabling.
4. Release power supply unit.



FE Functional earth
 A Insulated terminal block
 B Non-insulated terminal block
 ① Easy to remove and visible

② Polarity reversal of the connectors can result in device destruction (fire hazard) if no additional external protection is provided. Reason: Grounding 0 V (PELV) in the device while grounding 0 V (PELV).

Fig. 10-3: Cabling

⚠ DANGER

Danger of lethal injury due to hazardous electric voltage

- Connect power supply units generating protective extra-low voltage (PELV) (24 V) only to the supply voltages they are designed for. Note the overvoltage categories, see [fig. 10-2 "Power Routing 230 V" on page 19](#)
- Do not apply supply voltage to the protective extra-low voltage.

10.5.2 Terminals and Wiring

Type	Screw terminals
Solid wire	0.5-6 mm ²
Stranded wires	0.5-4 mm ²
American wire gauge	20-10 AWG
Cable markers	Permitted, but not required
Insulation stripping length	7 mm / 6.985 mm
Screwdriver	3.5 mm slitted or pozidrive no. 2 (only for screw terminals)
Recommended tightening torque	0.8 Nm, 71 b.in (only for screw terminals)

Tab. 10-1: Terminals and wiring
Installation notes:

- Use the suitable copper cable designed for an operating temperature of:
 - 60°C for an ambient temperature of 45°C and
 - 75°C for an ambient temperature of at least 60°C.
- Comply with the national installation codes and guidelines!
- Ensure that all stranded wires lead to the terminal connection!
- Depending on the conductor cross section, up to two wires with the same maximum amperage are permitted in one connection (does not apply to protective earth conductors).
- Use this unit only with PE connection

10.5.3 Parallel Use to Increase Output Rate

To increase the output rate, another power supply unit may no be connected in parallel.

10.5.4 External Input Protection

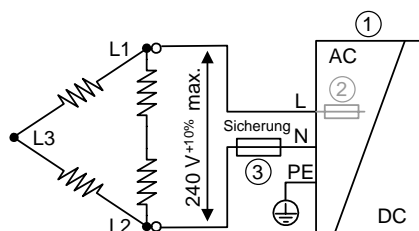
The unit was tested and admitted for branch circuits up to 20 A. An external protection is only required if the supply branch provides an amperage higher than 20 A. In some countries, regional regulations can apply. Check the regional regulations and guidelines.

A minimum value is required to avoid unwanted fuse switch-off when using external fuses.

		B-characteristic value (slow-blow)	C-characteristic value (fast-blow)
Amperage	Max.	20 A	20 A
	Min.	10 A	6A

Tab. 10-2: External input protection

10.5.5 Two-Phase Operation



- ① Power supply unit
② Internally protected

- ③ Fuse

Fig. 10-4: Schematically for a two-phase operation

Note for a two-phase operation:

1. A two-phase connection can be used as long as the supply voltage does not exceed $240\text{ V} + 10\%$.
2. Protect the N-input with a fuse or a circuit breaker. The N-input is not protected internally and connected to a phase conductor in this case.

For the recommended fuses and circuit breakers, refer to [chapter 10.5.4 "External Input Protection"](#) on [page 21](#).

10.6 Use in Tightly Sealed Housing

If the power supply unit VAP 01.1 is installed in a tightly sealed housing, the temperature inside the housing is higher than outside the housing. The temperature inside the housing defines the ambient temperature of the power supply unit.

Installation results:

The power supply unit is located in the center of the box. There is no other heat source in the box.

Housing	Rittal Type IP66 box PK 9519 100, plastics, $180 \times 180 \times 165\text{ mm}$
Load	24 V , 8 A ; (= 80 %) load is outside the box
Input	230 V AC
Temperature inside the box	48.9°C (measured with a distance of 2 cm of the housing, in the center of the power supply unit)
Temperature outside the box	$23,3^\circ\text{C}$
Temperature rise	25.6 K

Tab. 10-3: Technical data when using a tightly sealed housing

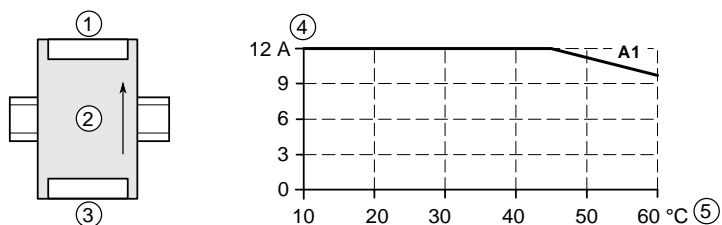
10.7 Installation Orientations

For mounting positions deviating from the mounting positions of the primary connections at the ground and at the output, the continuous output rate or the

maximum ambient temperature can be limited. The degree of reduction determines the service life of the power supply unit. Two different current carrying capacity curves are available for the continuous operation:

Curve A1: Recommended output current

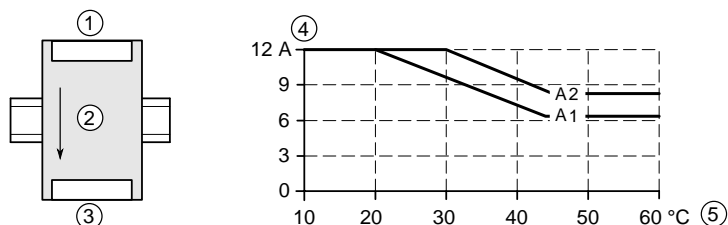
Curve A2: Maximum output current (service life is half the service life of A1).



- ① Output
- ② Power supply unit
- ③ Input

- ④ Output current
- ⑤ Ambient temperature

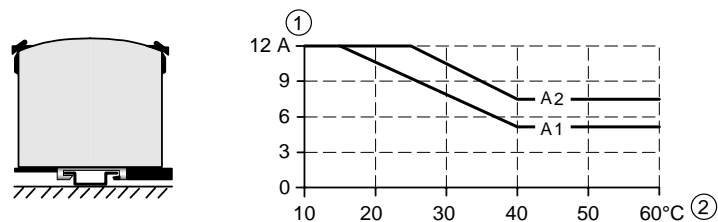
Fig. 10-5: Mounting position A: Standard position



- ① Input
- ② Power supply unit
- ③ Output

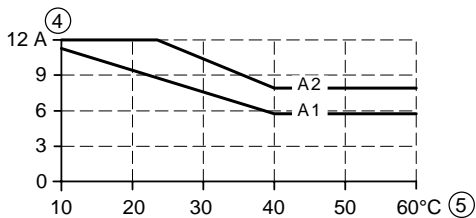
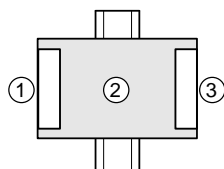
- ④ Output current
- ⑤ Ambient temperature

Fig. 10-6: Mounting position B (reverse)



- ① Output current
- ② Ambient temperature

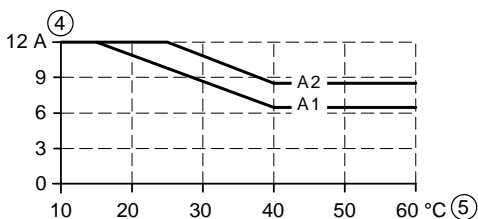
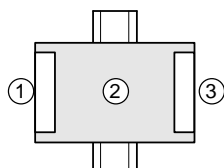
Fig. 10-7: Mounting position C (table-top mounting)



- ① Input
- ② Power supply unit
- ③ Output

- ④ Output current
- ⑤ Ambient temperature

Fig. 10-8: Mounting position D (clockwise horizontal)



- ① Output
- ② Power supply unit
- ③ Input

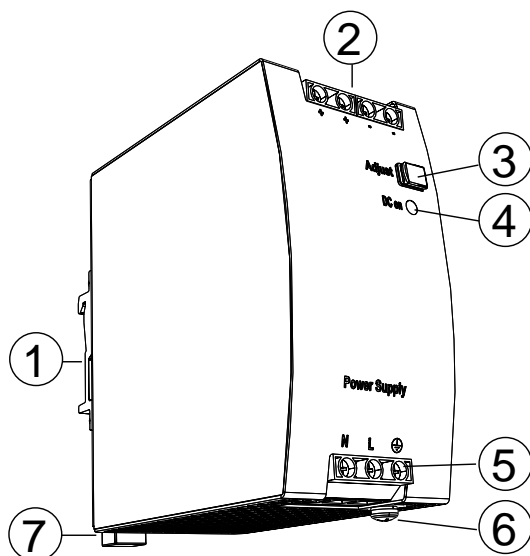
- ④ Output current
- ⑤ Ambient temperature

Fig. 10-9: Mounting position E (anticlockwise horizontal)

11 Commissioning

The power supply unit VAP 01.1 can be used directly. No configuration is required.

12 Device Description



- | | |
|--|--|
| ① Mounting rail suspension | ⑥ Connection terminal for input voltage |
| ② Connection terminal for output voltage | ⑦ Additional PE connection |
| ③ Adjusting screw for output voltage | |
| ④ LED operating display | ⑦ Releasing the mounting rail suspension |

Fig. 12-1: Device view

13 Error Causes and Troubleshooting

Device states are indicated at the front panel via LED.

Error	Troubleshooting
Power supply unit not stable on mounting rail	<ul style="list-style-type: none"> ● Use only mounting rails made of steel acc. to EN 60715
No output voltage, LED operating display off	<ul style="list-style-type: none"> ● Input voltage not connected or outside the specified values ● Output voltage short-circuited

Tab. 13-1: Error causes and troubleshooting

14 Maintenance

14.1 General Information

NOTICE

Loss of IP degree of protection due to incorrect maintenance.

Ensure the IP degree of protection during maintenance!

14.2 Regular Maintenance Tasks

- Check all plug and terminal connections of the components for proper tightness and possible damage at least once a year
- Check that no cables are broken or pinched
- Replace damaged parts immediately

15 Ordering Information

15.1 Accessories and Spare Parts

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

15.2 Type Code

According to the type code, the power supply unit VAP 01.1 is available as the following variant:

Abbrev. Column	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Example:	V	A	P	0	1	.	1	H	-	W	2	3	-	0	2	4	-	0	1	0	-	N	N		
Product																									
VAP																									
Line																									
01																									
Design																									
1																									
Type of construction																									
Top hat rail mounting.																									
Input voltage																									
100...120 V / 200...240 V, Autoselect =																									
Output voltage																									
DC 24 V.																									
Output current																									
E.g., 10 A.																									
Other design																									
None.																									

Fig. 15-1: Type code of the power supply unit VAP 01.1

16 Disposal

16.1 Return

For disposal, our products can be returned free of charge. However, the products must be free of remains like oil and grease or other impurities.

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

Send the products free of charge to the following address:

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

16.2 Batteries and Accumulators

Batteries and accumulators can be labeled with this symbol.



The symbol (crossed out wheel bin) indicates that batteries have to be collected separately.

Within the EU, the end user is legally bound to return used batteries. Outside the validity of the EU Directive 2006/66/EC, comply with the regulations.

Used batteries can contain hazardous substances, which can harm environment and health when improperly stored or disposed.

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

16.3 Packaging

The packaging material consists of cardboard, plastics, wood or styrofoam. Packaging material can be recycled anywhere.

For ecological reasons, please do not return empty packages to Bosch Rexroth.

17 Service and Support

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

Service Germany

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

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

Phone:	+49 9352 40 5060
Fax:	+49 9352 18 4941
E-mail:	service.svc@boschrexroth.de
Internet:	http://www.boschrexroth.com

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

Service worldwide

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

Preparing information

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

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

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Notes

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