TRIO-UPS-2G/1AC/1AC/230V/ 750VA

Uninterruptible power supply



Data sheet
107056_en_01

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1 Description

The TRIO-UPS-2G uninterruptible power supply (UPS) is used to ensure that power for critical electrical loads continues to be supplied in the event of disturbances in the power supply network, e.g., due to mains breakdown or failure.

In doing so, the UPS switches to battery operation without interruption so that connected loads continue to be consistently supplied.

When mains power is restored, the UPS automatically returns to normal operation. The connected loads are again supplied via the power supply network and the battery is charged.

The product described here is an uninterruptible power supply (UPS) with integrated energy storage (2x 4 Ah).

Features

- Offline UPS in line with UPS classification code according to IEC 62040-3: VFD-SS-311
- Waveform Type: pure sine
- Optimum use of the buffer time and preventive battery monitoring
- Maximum energy efficiency: 95 % efficiency for charged energy storage device
- Startup from energy storage possible without mains input
- USB interface for connection to higher-level controllers, such as industrial PCs
- Can be extended with external energy storage (1x 24 V, 4 Ah)

Technical data (short form)	
Nominal input voltage	230 V AC
Input voltage range	184 V AC ... 264 V AC
Frequency range	45 Hz ... 55 Hz / 55 Hz ... 65 Hz
Current consumption	3 A (max.)
Nominal output voltage (U_N)	230 V AC
Nominal output current (I_N)	3 A
Apparent power	750 VA
Active power	600 W
Buffer period	20 min. (100 W) 4 min. (300 W) 1 min. (600 W)
Efficiency (100 % load, with charged energy storage)	> 95 %
MTBF (IEC 61709, SN 29500)	> 206000 h (40 °C)
Ambient temperature (operation)	0 °C ... 40 °C
Dimensions W/H/D	210 mm / 170 mm / 136 mm
Weight	5.7 kg
Battery technology	Lead rechargeable battery module
Battery type	2x Panasonic UP-VW1220P1 / BB Battery HR4.2-12FR
Nominal voltage (Energy storage)	24 V DC
Capacitance	4 Ah
Battery fuse	40 A, 32 V
Can be extended with external battery	yes , 1x 24 V / 4 Ah

All technical specifications are nominal and refer to a room temperature of 25 °C and 70% relative humidity at 2000 m above sea level.

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3 Ordering data

Description	Type	Item no.	Pcs./Pkt.
1AC/1AC/750 VA uninterruptible power supply with integrated energy storage, lead AGM, VRLA technology, 24 V DC, 4 Ah for 230 V AC applications.	TRIO-UPS-2G/1AC/1AC/ 230V/750VA	2905909	1

Accessories	Type	Item no.	Pcs./Pkt.
Energy storage device, lead AGM, VRLA technology, 24 V DC, 4 Ah. Connection via pin cable lug.	QUINT-BAT/24DC/ 3.4AH	2866349	1
Replacement battery, VRLA-AGM, 2x12 V DC, 4 Ah. Only for 1274117 UPS-BAT/PB/24DC/4AH, 2320267 QUINT-UPS/24DC/24DC/10/3.4AH from V/C 06, 2905908 TRIO-UPS-2G/1AC/1AC/120V/750VA, and 2905909 TRIO-UPS-2G/1AC/1AC/230V/750VA	UPS-BAT-KIT/PB/2X12V/4AH	1283116	1
Energy storage, VRLA-AGM, 24 V DC, 4 Ah, automatic detection and communication with QUINT UPS-IQ	UPS-BAT/PB/24DC/4AH	1274117	1
Used for communication between an industrial PC and Phoenix Contact devices with USB-Mini-B connection.	MINI-SCREW-USB-DATACABLE	2908217	1
2-piece universal wall adapter for securely mounting the device in the event of strong vibrations. The profiles that are screwed onto the side of the device are screwed directly onto the mounting surface. The universal wall adapter is attached on the left/right.	UWA 130	2901664	1
Fuse	FUSE 10A/400V GRL	2908358	1
Fuse	FUSE 40A/32V ATOF	2908357	2

You will find the latest accessories for the item at phoenixcontact.net/products.

4 Technical data

Input data	
Nominal input voltage	230 V AC
Input voltage range	184 V AC ... 264 V AC
Frequency range	45 Hz ... 55 Hz / 55 Hz ... 65 Hz
Current consumption	3 A (max.)
Permissible backup fuse	B6 / B10 / B16
Input connection data	
Connection method	Push-in connection
Conductor cross section, rigid	0.2 mm² ... 4 mm²
Conductor cross section, flexible	0.2 mm² ... 2.5 mm²
Conductor cross section AWG/kcmil	24 ... 12
Stripping length	10 mm
Output data	
Apparent power	750 VA
Nominal power (real power)	600 W
Power factor (cos phi)	0.8
Crest factor	2.8
Switch-over time	< 10 ms
Classification according to IEC 62040-3	VFD-SS-311
Output data (normal operation)	
Nominal output voltage (U_N)	230 V AC
Nominal output current (I_N)	3 A (750 VA)
Input fuse	10 A , 400 V , gRL
Overload capacity	in accordance with internal fuse
Efficiency (100 % load, with charged energy storage)	> 95 %
Output data (battery operation)	
Nominal output voltage (U_N)	230 V AC
Nominal output current (I_N)	3 A (750 VA)
Frequency (after automatic detection in mains operation)	50 Hz / 60 Hz
Form of output voltage	Pure sine
Overload capacity	125 % 5 s, then shuts down
Efficiency (100 % load)	~ 81 %
Output connection data	
Connection method	Push-in connection
Conductor cross section, rigid	0.2 mm² ... 4 mm²
Conductor cross section, flexible	0.2 mm² ... 2.5 mm²
Conductor cross section AWG/kcmil	24 ... 12
Stripping length	10 mm

Energy storage	
Battery technology	Lead rechargeable battery module
Battery type	2x Panasonic UP-VW1220P1 / BB Battery HR4.2-12FR
Capacitance	4 Ah
Battery fuse	40 A, 32 V
Charge current	0.7 A ... 1.1 A
Charging time	7 h
Service life	6 (20 °C)
Latest startup	6 Months (0 °C ... 20 °C) 6 Months ... 3 Months (20 °C ... 30 °C) 3 Months ... 1 Months (30 °C ... 40 °C)
Buffer time	100 W / 20 min. ; 300 W / 4 min. ; 600 W / 1 min.
Can be extended with external battery	yes , 1x 24 V / 4 Ah

Connection data for the external battery	
Connection method	Push-in connection
Conductor cross section, rigid	0.2 mm² ... 10 mm²
Conductor cross section, flexible	0.2 mm² ... 6 mm²
Conductor cross section AWG/kcmil	24 ... 8
Stripping length	15 mm

Status and diagnostic indicator / signal output Alarm	
Switching output	Transistor output, active
Output voltage	24 V (SELV)
Continuous load current	≤ 20 mA
Status display	LED (red)

Status and diagnostic indicator / signal output Battery Mode	
Switching output	Transistor output, active
Output voltage	24 V (SELV)
Continuous load current	≤ 20 mA
Status display	LED (yellow)

Status and diagnostic indicator / signal output Ready	
Switching output	Transistor output, active
Output voltage	24 V (SELV)
Continuous load current	≤ 20 mA

Status and diagnostic indicator / signal output Battery Charge	
Status indication	LED (yellow)

Status and diagnostic indicators/signal outputs AC OK, $P>P_n$, Remote	
Status indication	LED (green)

Status and diagnostic indicator / signal output Service	
Status indication	LED (red)

Signal connection data	
Connection method	Push-in connection
Conductor cross section, rigid	0.2 mm² ... 1.5 mm²
Conductor cross section, flexible	0.2 mm² ... 1.5 mm²
Conductor cross section AWG/kcmil	24 ... 16
Stripping length	8 mm

Remote control (Remote)	Digital control input (configurable)
Low signal	Connection to SGnd with < 2.7 kΩ
High signal	Open (> 35 kΩ between Remote and SGnd)

Battery-operated start (bat. start)	Digital control input low-active
Low signal	Connection to SGnd with < 2.7 kΩ
High signal	Open (> 200 kΩ between Bat.-Start and SGnd)

Interfaces	
USB classification	MINI-USB type B
Maximum cable length	3 m

Device combinations	
UPS connection in parallel	no
UPS connection in series	no

General data	
Overvoltage category	III
MTBF	> 206000 h (40 °C)
Degree of protection	IP20
Protection class	I
Type of housing	DX51D+AZ (steel sheet / Galvalume)
Hood version	PC + ABS
Dimensions W/H/D (normal mounting position/delivered condition)	210 mm / 170 mm / 136 mm
Weight	5.7 kg

Ambient conditions	
Ambient temperature (operation)	0 °C ... 40 °C
Ambient temperature (storage/transport)	-15 °C ... 40 °C (with charged energy storage device)
Max. permissible relative humidity (operation)	≤ 95 % (25 °C, non-condensing)
Installation height	≤ 3000 m (> 2000 m, observe derating)
Vibration (operation)	5 Hz ... 100 Hz, 0.7g (EN 60068-2-6)
Shock	20g in all directions (EN 60068-2-27) 30g in each space direction with UWA 130
Degree of pollution	2
Climatic class	3K3 (in acc. with EN 60721)

Standards

Uninterruptible power supply	EN 62040-1

Approvals



You will find the latest approvals for the item at phoenixcontact.net/products.

Electromagnetic compatibility / Conformance with EMC Directive 2014/30/EU		
Noise emission in accordance with EN 62040-2		
Conducted noise emission	EN 62040-02 (Class C2)	
Noise emission	EN 62040-02 (Class C2)	
Harmonic currents	EN 61000-3-2 (Class A)	
Immunity in accordance with EN 62040-2		
CE basic standard	**EN 62040-2 requirement**	**Tested**
Electrostatic discharge EN 61000-4-2		
Housing contact discharge	4 kV (Test Level 2)	6 kV (Test Level 3)
Housing air discharge	8 kV (Test Level 3)	8 kV (Test Level 3)
Comments	Criterion B	Criterion A
Electromagnetic HF field EN 61000-4-3		
Frequency range	80 MHz ... 1 GHz	80 MHz ... 3 GHz
Test field strength	10 V/m	10 V/m
Comments	Criterion A	Criterion A
Fast transients (burst) EN 61000-4-4		
Input	2 kV (Test Level 3 - asymmetrical)	2 kV (Test Level 3 - asymmetrical)
DC input	2 kV (Test Level 3 - asymmetrical)	2 kV (Test Level 3 - asymmetrical)
Output	2 kV (Test Level 3 - asymmetrical)	2 kV (Test Level 3 - asymmetrical)
Signal	2 kV (Test Level 3 - asymmetrical)	2 kV (Test Level 3 - asymmetrical)
Signal USB	2 kV	2 kV
Comments	Criterion B	Criterion A (B for USB)
Surge voltage load (surge) EN 61000-4-5		
Input	1 kV (Test Level 2 - symmetrical) 2 kV (Test Level 3 - asymmetrical)	1 kV (Test Level 2 - symmetrical) 2 kV (Test Level 3 - asymmetrical)
Output	1 kV (Test Level 2 - symmetrical) 2 kV (Test Level 3 - asymmetrical)	1 kV (Test Level 2 - symmetrical) 2 kV (Test Level 3 - asymmetrical)
Signal	1 kV (Test Level 2 - asymmetrical)	1 kV (Test Level 2 - asymmetrical)
Comments	Criterion B	Criterion A
Conducted interference EN 61000-4-6		
Frequency range	0.15 MHz ... 80 MHz	0.15 MHz ... 80 MHz
Voltage	10 V	10 V
Comments	Criterion A	Criterion A

Immunity in accordance with EN 62040-2		
CE basic standard	**EN 62040-2 requirement**	**Tested**
Power frequency magnetic field EN 61000-4-8		
Frequency	50 Hz	50 Hz
Test field strength	30 A/m	100 A/m
Comments	Criterion B	Criterion A

Key	
Criterion A	Normal operating behavior within the specified limits.
Criterion B	Temporary impairment to operational behavior that is corrected by the device itself.

5 Safety regulations and installation notes

5.1 Symbols used

Instructions and possible hazards are indicated by corresponding symbols in this document.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety measures that follow this symbol to avoid possible personal injuries.

There are different categories of personal injury that are indicated by a signal word.



WARNING

This indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

This indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



NOTE

Indication of a required action which if it is not performed may cause damage or malfunction to the device, hardware/software, or surrounding property.



This symbol and the accompanying text provide the reader with additional information or refer to detailed sources of information.

5.2 Safety and warning notes



WARNING: Danger to life by electric shock!

- Only skilled persons may install, start up, and operate the device.
- Never carry out work when voltage is present.
- Establish connection correctly and ensure protection against electric shock.
- Connect the protective conductor device terminal block ⏚ with ground.
- Operation of the device is only permitted in mains network systems with grounded neutral conductor. This mainly complies with the TN-C-S mains network type. National regulations must be observed.
- Cover termination area after installation in order to avoid accidental contact with live parts (e. g., installation in control cabinet).
- This unit receives power from more than one source - Disconnection of AC source and the energy storage is required to de-energize this unit before servicing.
- Keep flames, embers or sparks away from the module.
- When connecting the internal batteries, observe the polarity and do not short circuit the pole terminals.
- Provide a switch/circuit breaker close to the device at the AC input, AC output and at the battery terminals, which are labeled as the disconnecting device for this device.
- Do not disconnect the fuse and / or battery connection under hazardous location conditions.
- The batteries are maintenance free and may not be opened.
- Use copper cables for operating temperatures of >75 °C.



CAUTION: Hot surface

Depending on the ambient temperature and load on the uninterruptible power supply, the housing can become hot.

NOTE

- Observe the national safety and accident prevention regulations.
- Assembly and electrical installation must correspond to the state of the art.
- The uninterruptible power supply is a built-in device. The protection class IP20 of the device is meant to be applied in a clean and dry environment.
- The device must be installed in a control cabinet that can be locked and only opened by specialist staff.
- Horizontal mounting position (normal mounting position)
- Observe mechanical and thermal limits.
- Ensure sufficient convection (minimum gap above/ below: 50 mm). Housing can become hot.
- Ensure that the primary-side wiring and secondary-side wiring are the correct size and have sufficient fuse protection.
- You can find the connection parameters, such as the necessary stripping length for the wiring with and without ferrule, in the associated table.
- Protect the device against foreign bodies penetrating it, e.g., paper clips or metal parts.
- To reduce the risk of fire, replace only with same type and rating of fuse.
- To reduce the risk of fire, connect only to a circuit provided with the following maximum branch circuit overcurrent protection in accordance with the National Electrical Code, ANSI/NFPA 70.
- The uninterruptible power supply is maintenance-free. Repairs may only be carried out by the manufacturer. The warranty no longer applies if the housing is opened.
- The uninterruptible power supply may only be used for its intended use.
- Improper use invalidates the device protection.
- Only use batteries from the same batch when replacing the internal batteries.
- When storing the module, observe the latest startup date of the battery module and recharge, if necessary.

NOTE

Before transporting the uninterruptible power supply, always disconnect the battery connecting cable from a battery contact or remove the DC fuse in the battery compartment.

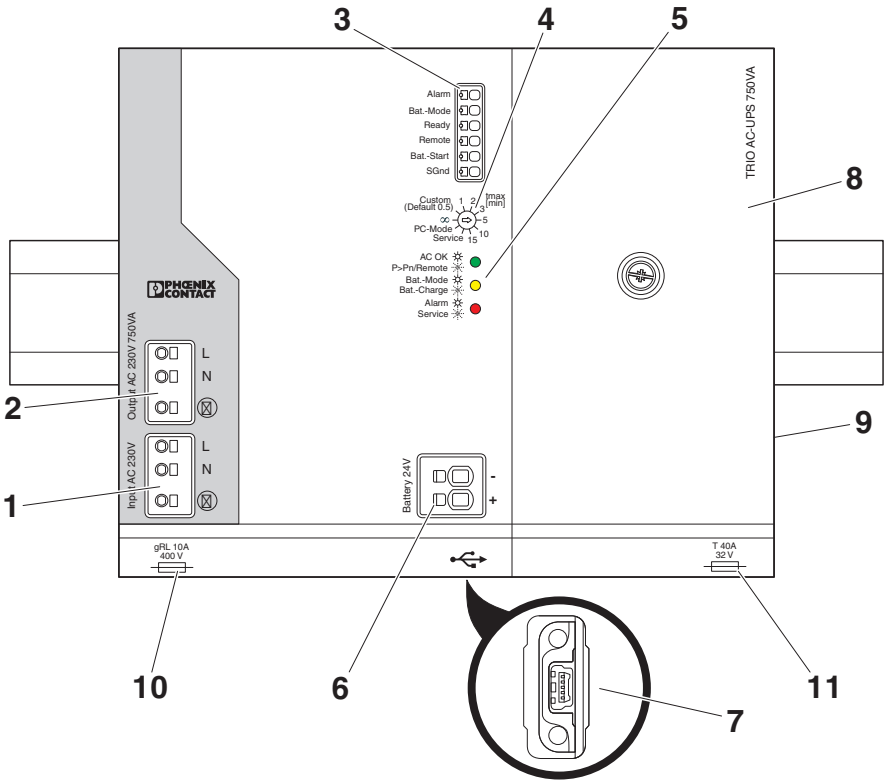
More follows

- Use current-limited source or suitable fuse.
- The switching outputs are active outputs according to SELV. These may only be operated on permitted SELV circuits.
- Keep these instructions in a safe place – this data sheet contains important safety notes which must be observed during installation and maintenance of the device and batteries.

6 Structure

6.1 Function elements

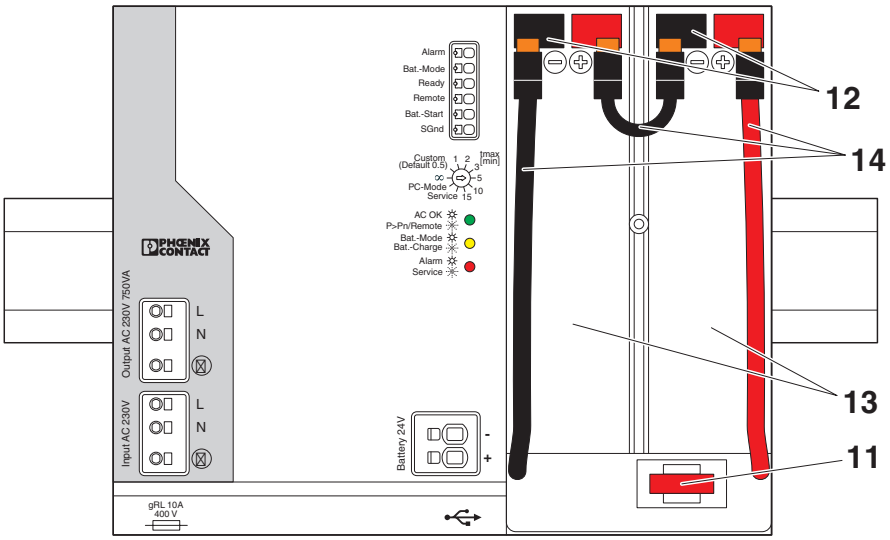
Figure 1 Position of the function elements (part 1)



Key

No.	Designation
1	Connection terminal blocks for AC input
2	Connection terminal blocks for AC outputs
3	Signaling connection terminal blocks
4	Rotary selector switch
5	LED signaling
6	Connection terminal blocks for external energy storage
7	USB interface MINI type B (bottom of device)
8	Energy storage cover
9	Universal DIN rail adapter (rear of housing)
10	Input fuse
11	Battery fuse

Figure 2 Position of the function elements (part 2)

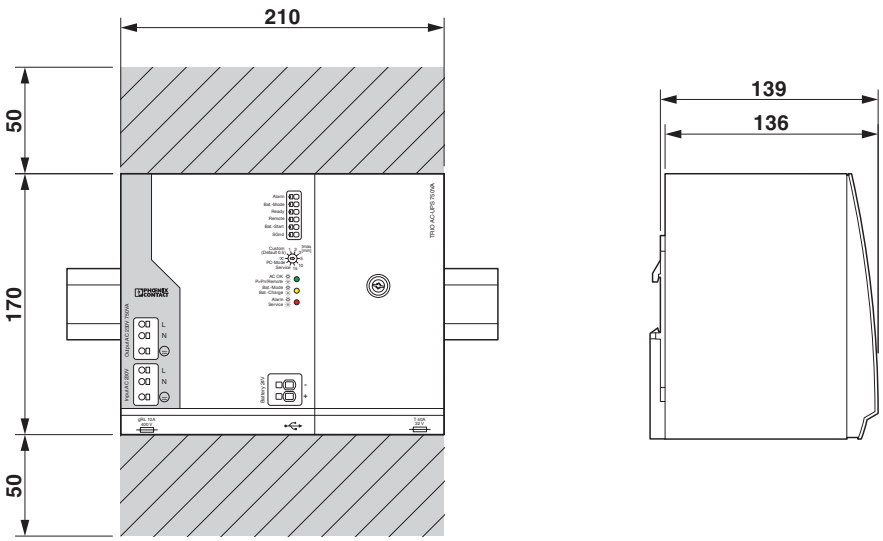


Key

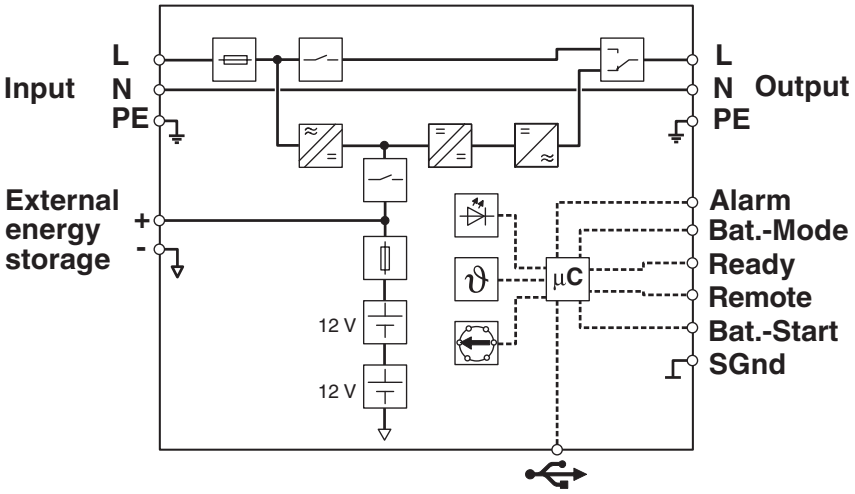
No.	Designation
11	Battery fuse
12	Energy storage connection contacts
13	Energy storage
14	Battery connecting cables

6.2 Device dimensions and keep-out areas

Figure 3 Device dimensions and keep-out areas



6.3 Block diagram



Element	Meaning
µC	Microprocessor
	LED
	Battery module
	Switch
	Temperature sensor
	Selector switch
	Fuse
	Rectifier with electrical isolation
	DC/DC converter with electrical isolation
	Inverter
	Changeover switch

7 Mounting and removing

NOTE

The device must be installed in a control cabinet that can be locked and only opened by specialist staff.

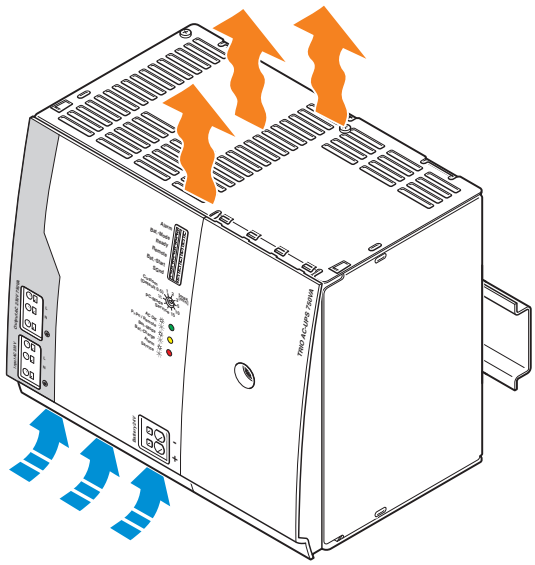
7.1 Convection

NOTE: enable convection

The housing can become very hot, depending on the ambient temperature and module load.

In order to ensure sufficient convection, we recommend a minimum vertical distance of 50 mm to the other devices.

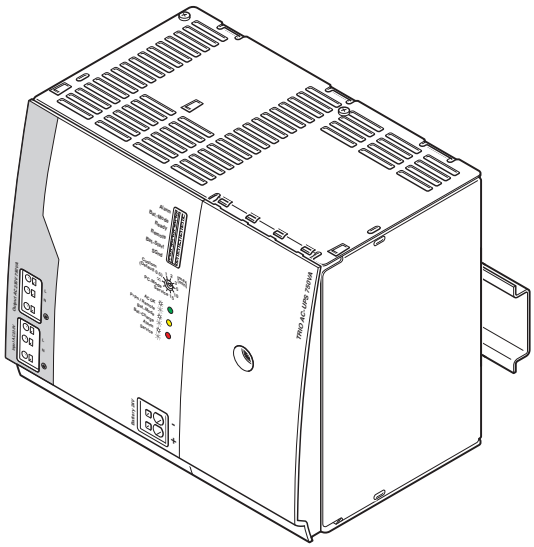
Figure 4 Convection



7.2 Normal mounting position

The device can be snapped onto all DIN rails according to EN 60715 and should only be mounted in the normal mounting position.

Figure 5 Normal mounting position

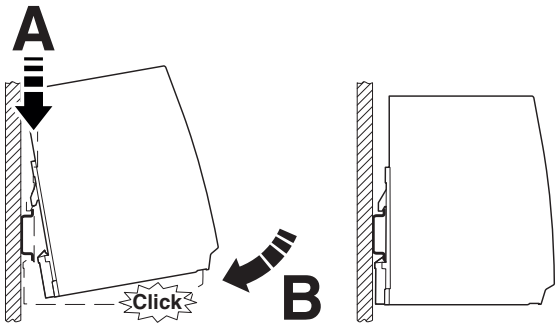


7.3 Mounting the UPS

Proceed as follows to mount the device:

1. In the normal mounting position the device is mounted on the DIN rail from above. Make sure that the universal DIN rail adapter is in the correct position behind the DIN rail (A).
2. Then press the device down until the universal DIN rail adapter audibly latches into place (B).
3. Check that the device is securely attached to the DIN rail.

Figure 6 Snapping onto the DIN rail

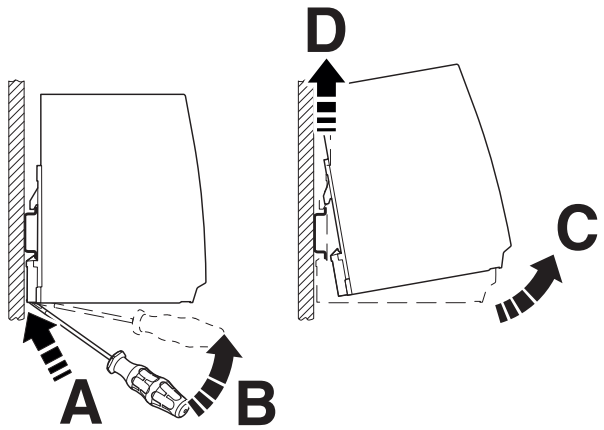


7.4 Removing the UPS

Proceed as follows to remove the device:

1. Take a suitable screwdriver and insert this into the lock hole on the universal DIN rail adapter (A).
2. Release the lock by lifting the screwdriver (B).
3. Carefully swivel the device forward (C) so that the lock slides back into the starting position.
4. Then separate the device from the DIN rail (D).

Figure 7 Removing from the DIN rail



7.5 Retrofitting the universal wall adapter

The UWA 130 universal wall adapter (Item No. 2901664) is used to attach the uninterruptible power supply directly to the mounting surface.

The use of the universal wall adapter is recommended under extreme ambient conditions, e.g., strong vibrations. Thanks to the tight screw connection between the uninterruptible power supply and the universal wall adapter or the actual mounting surface, an extremely high level of mechanical stability is ensured.

The UWA 130 is attached to the uninterruptible power supply by means of the Torx screws of the universal wall adapter.

The maximum tightening torque of the Torx screw (Torx® T10) is 0.7 Nm.

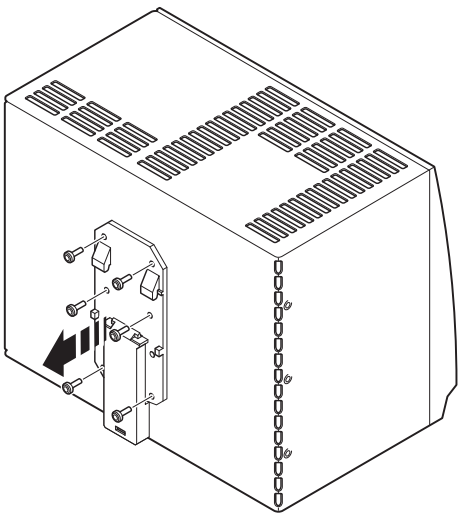
Make sure you use suitable mounting material when attaching to the mounting surface.

7.5.1 Mounting the UWA 130 2-piece universal wall adapter

Proceed as follows to disassemble the universal DIN rail adapter that comes pre-mounted:

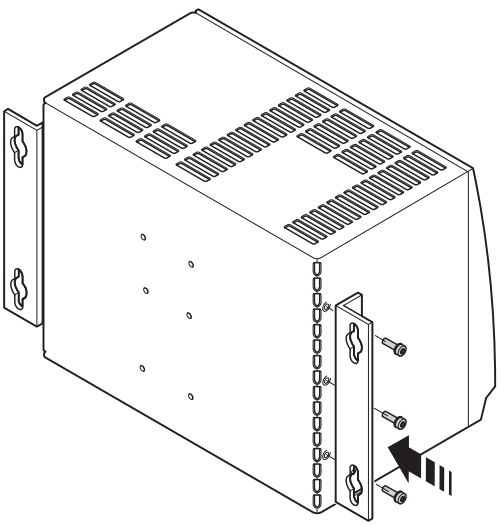
1. Remove the screws for the universal DIN rail adapter using a suitable screwdriver (Torx 10).
2. Remove the universal DIN rail adapter from the rear of the uninterruptible power supply.

Figure 8 Disassembling the universal DIN rail adapter



3. Screw the two-piece universal wall adapter onto the uninterruptible power supply.

Figure 9 Mounting the UWA 130 universal wall adapter

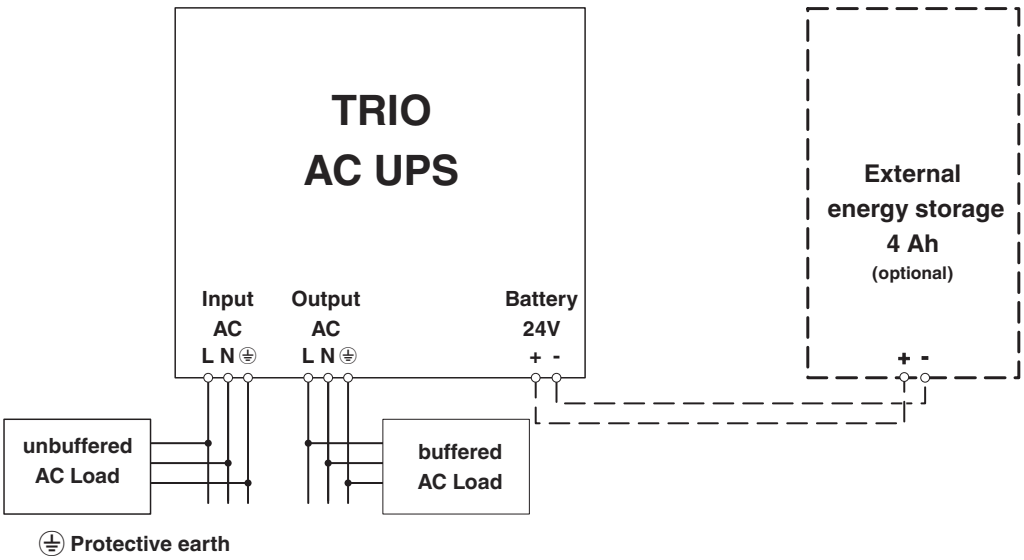


7.6 Installation of individual components

WARNING

Provide a switch/circuit breaker close to the device at the AC input, AC output and at the battery terminals, which are labeled as the disconnecting device for this device.

Figure 10 Schematic design



The image is a schematic representation of the design and does not contain all parts.

Observe the installation instructions.

NOTE

As so-called wear parts, batteries are not provided with a warranty. Deep discharge and storage beyond the permitted temperature range lead to irreversible damage to batteries.

To ensure a long service life for the batteries and high system availability at high output powers or a high number of discharge cycles to be expected, use an optional external battery.

8 Device connection

8.1 Connecting the internal energy storage

NOTE

Prior to commissioning the device, connect the battery connection cable to the free battery contact.

WARNING

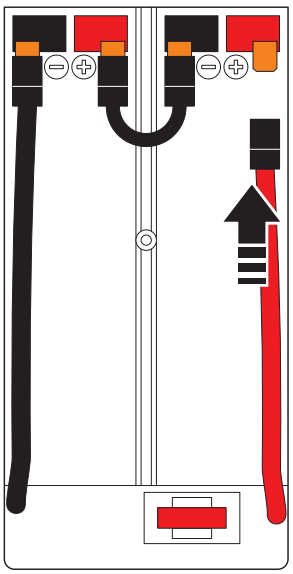
When connecting the internal batteries take note of the polarity.

Do not short circuit the pole terminals.

8.1.1 Connecting the battery connection cable

1. Open the battery compartment using a suitable screwdriver.
2. Connect the battery connection cable to the free battery contact.
3. Close the cover of the battery compartment.

Figure 11 Connecting the battery connection cable

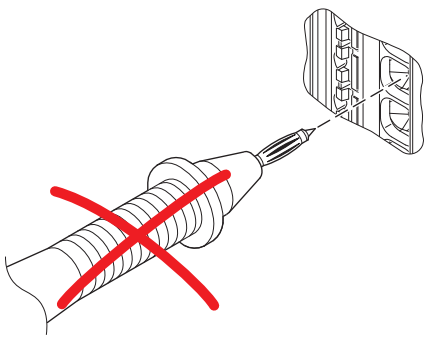


8.2 Push-in connection technology

The connection terminal blocks have a front-side push-in connection design. The wiring of the uninterruptible power supply is performed by plugging in, without tools.

NOTE: Damage to the Push-in connection terminal blocks is possible

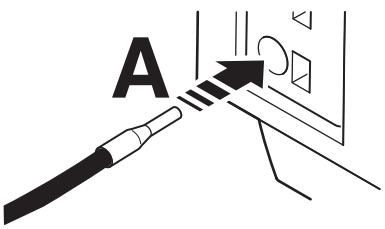
Do not plug test pins into the Push-in connection terminal blocks. The maximum pluggable depth of the Push-in connection terminal blocks is limited. In addition, when the test pin is plugged in, the unlocking button (pusher) is covered to such an extent that unlocking is not possible or only possible to an insufficient extent. If you do not push the unlocking button (pusher) down completely when you are pulling the test pin out, then the Push-in connection terminal block will become damaged.



8.2.1 Plug in connecting cable

The wiring is carried out by simply plugging the connecting cable into the contact opening provided. Insert the connecting cable as far as it will go.

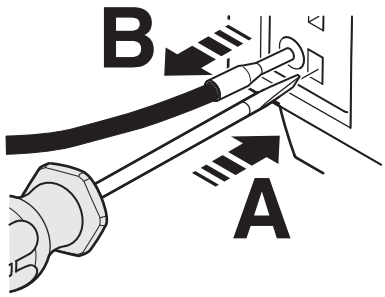
Figure 12 Insert connecting cable (push-in connection technology)



8.2.2 Loosen the connecting cable

To disconnect the wiring, take a suitable screwdriver and insert it into the opening for release. Then carefully pull the connecting cable out of the contact opening.

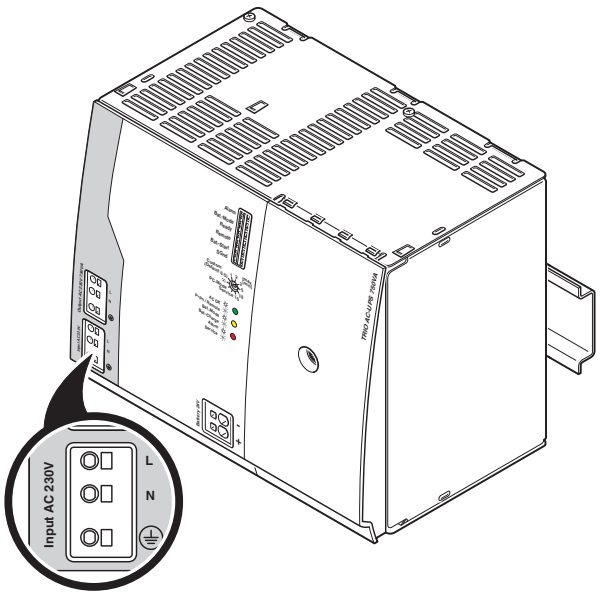
Figure 13 Release connecting cable (push-in connection technology)



8.3 AC input

The supply voltage is connected via "Input AC" connection terminal blocks.

Figure 14 Connection terminal blocks, AC input

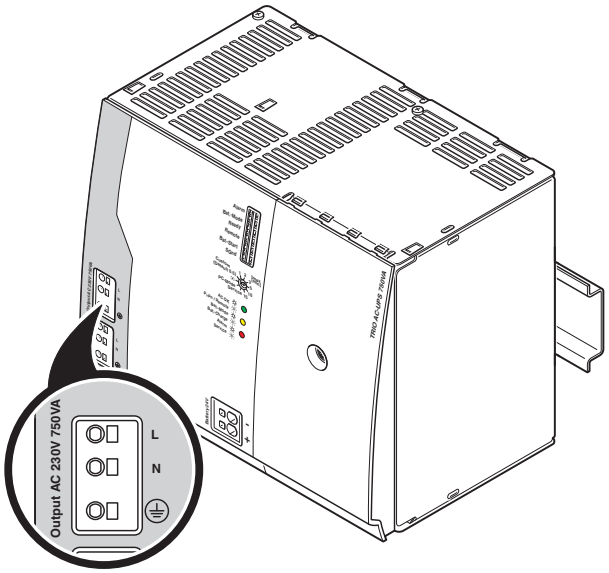


If loads must not be supplied in the event of a mains voltage dip or failure, they must be connected directly to the input of the uninterruptible power supply as an unbuffered AC load.

8.4 AC output

Buffered output voltage is connected via "Output AC" connection terminal blocks.

Figure 15 Connection terminal blocks, AC output

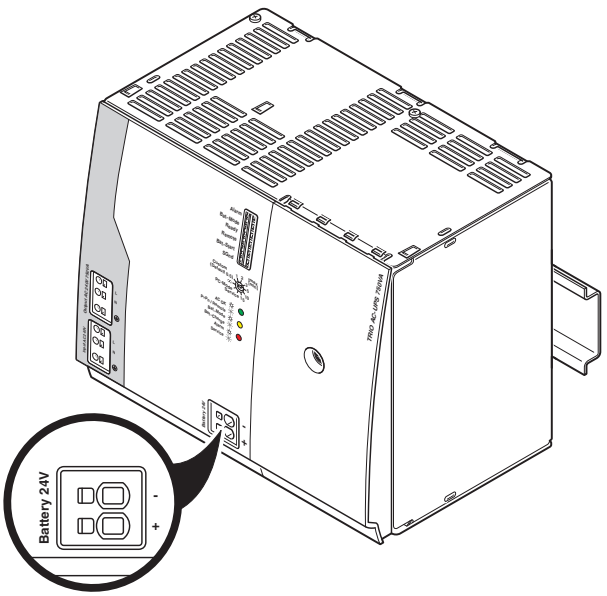


8.5 Battery 24V

In addition to the internal energy storage you also have the option of connecting external energy storage.

The external energy storage is connected via the “Battery 24V” connection terminal blocks.

Figure 16 Connection terminal blocks Battery 24V



9 Device operation

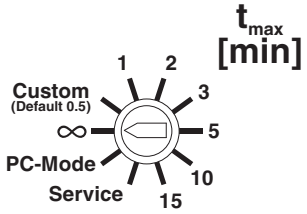
9.1 Rotary selector switch

You can set the following functions via the rotary selector switch on the front of the device:

– Buffer period
– PC mode
– Service mode

Use a suitable screwdriver to set the rotary selector switch.

Figure 17 Rotary selector switch

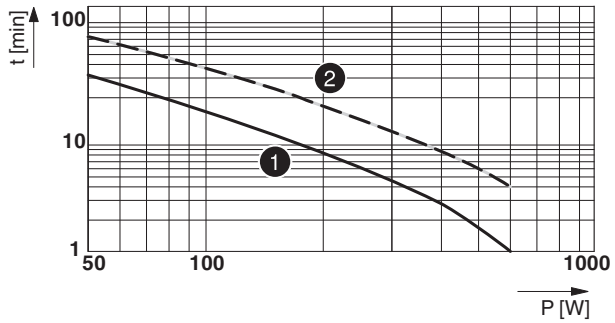


9.2 Setting the buffer time

Rotary selector switch setting	Meaning
1, 2, 3, 5, 10, 15	The UPS switches off after the set buffer time.
Custom (default 0.5)	The UPS switches off after the individual buffer time set via UPS-CONF. If a buffer time is not set, the UPS shuts down after 30 seconds.
∞ (unlimited, delivery state)	Buffering with the total stored energy. An alarm is generated as soon as the voltage of the energy storage falls below 20.4 V (default).

Refer to the following diagram for possible buffer times for varying discharge capacity.

Figure 18 Buffer time/discharge current diagram



1 with internal energy storage

2 with internal and external optional energy storage

9.3 PC mode

In PC mode, you can individually parameterize the chronological sequence of the UPS functions via the UPS-CONF configuration software.

To access the PC mode of the UPS, set the rotary selector switch to PC mode.

The following components are required for the PC mode function:

Data cable MINI-SCREW-USB-DATACABLE (Item No. 2908217)

Configuration software UPS-CONF (Item No. 2320403)

In the event of a mains failure, one PC can continue to work, perform a controlled shutdown, and restart automatically.

1. Delay time

If the mains supply is not restored during the delay time, the PC is shut down.

2. Program start

After the delay time has expired, it is possible to start a program.

Example: a software backup starts which ensures successive backup of system data.

3. PC shutdown

The time required for PC shutdown is set here.

4. PC no-load time

Only if the PC is shut down and the mains supply is restored in the meantime is the output voltage interrupted for the reset time and the PC then started automatically.

9.4 Service mode

When working in a system, it may be necessary to switch the uninterruptible power supply unit over to service mode.

To access the Service mode of the UPS, set the rotary selector switch to Service.

In this operating mode, DC battery connection terminal blocks are deactivated using software. The active signal output is always activated when the unit is switched over to service mode.

9.5 Changing the internal energy storage

WARNING

When connecting the batteries take note of the polarity.

Do not short circuit the pole terminals.

WARNING

The batteries are maintenance free and may not be opened.

NOTE

When replacing batteries, always use new batteries from the same production batch.

When storing the battery modules, observe the latest startup date and recharge, if necessary. The batteries may only be recharged in an uninterruptible power supply.

1. Set the rotary selector switch to Service.
2. Unscrew the screw connection of the battery compartment on the front of the UPS. Use a suitable screwdriver to do this.
3. Remove the cover of the battery compartment.
4. Disconnect the battery connecting cable connectors from the battery contacts.
5. Carefully remove the batteries from the housing.
6. Carefully insert the new batteries (UPS-BAT-KIT/PB/ 2X12V/4AH) into the housing.
7. Connect the battery connecting cable connectors to the battery contacts.
8. Close the cover of the battery compartment.
9. Fix the cover by tightening the screw using the screwdriver.
10. Exit Service mode.
11. Set the buffer time or PC mode.

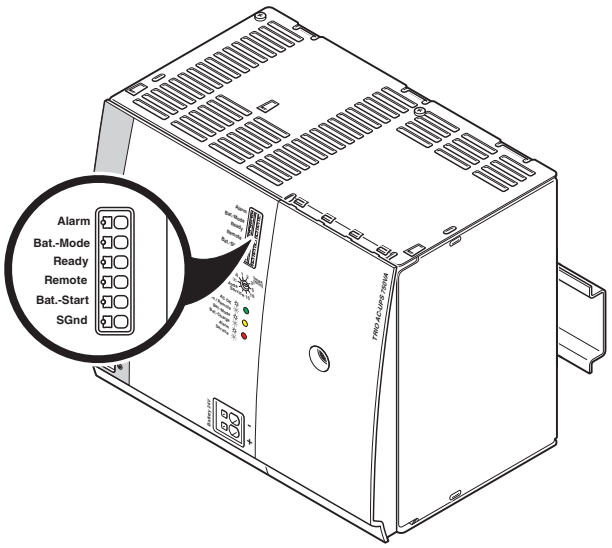
Notes on disposal

Do not dispose of the UPS and battery modules in household waste! They should be disposed of according to the currently applicable national regulations.

You can return used batteries and accumulators to Phoenix Contact or the manufacturer.

9.6 Remote contact

Figure 19 Signal outputs



You can use the Remote signal terminal to:

1. Suppress and exit battery operation.
2. Perform controlled shutdown of the PC in normal operation and battery operation.
3. Perform controlled shutdown of the PC in battery operation.

To perform these steps, you must connect the Remote signal terminal to the SGnd signal terminal.

This sets the UPS internal Remote signal.

9.6.1 Suppressing and exiting battery operation

You can switch off the UPS using the function to suppress and exit battery operation.

This function is always active when a buffer time is set.

This function is the default setting in PC mode.

In normal operation, the remote signal is indicated by the flashing green LED (see section: Signaling).

In the event of mains failure, battery operation is not started.

If the Remote signal is generated in battery operation, then battery operation is exited immediately. The UPS output is switched off. This procedure cannot be reversed. The UPS is only activated once the input voltage is applied.

9.6.2 Controlled PC shutdown in normal operation and battery operation

You can perform controlled shutdown of the PC in normal operation and battery operation via the UPS-CONF configuration software.

This setting only applies in PC mode.

The remote signal is indicated by the flashing green LED (see section: Signaling).

The PC shuts down, and the delay time under Item 1 is skipped (see PC mode section).

Once the PC has shut down, the UPS output is switched off. When input voltage is present, the connected energy storage devices remain charged and the system is ready to use. When you reset the Remote signal, the UPS output is switched on again.

Once the PC has shut down in battery operation, the UPS output is switched off. This procedure cannot be reversed. The UPS is only activated once the input voltage is applied.

9.6.3 Controlled PC shutdown in battery operation

You can perform controlled shutdown of the PC when battery operation is entered via the UPS-CONF configuration software:

This setting only applies in PC mode.

The remote signal is indicated by the flashing green LED (see section: Signaling).

If the remote signal is generated in normal operation, the PC is shut down when battery operation is entered. The delay time under Item 1 is skipped (see section: PC mode).

Once the PC has shut down, the UPS output is switched off.

This procedure cannot be reversed. The UPS is only activated once the input voltage is applied.

9.7 Battery start (Bat.-Start)

You can use the Bat.-Start signal terminal to start the UPS without supply voltage on the input side and create an autonomous supply for the load. To do this, you must connect the Bat.-Start signal terminal to the SGnd signal terminal.

The output voltage provided at the load is 230 V/50 Hz.

The maximum duration of the autonomous supply for the load depends on the charging state of the battery.

The signaling corresponds to the signaling for battery operation (see Signaling section).

To exit autonomous operation, you must disconnect the Bat.-Start signal terminal and the SGnd signal terminal.

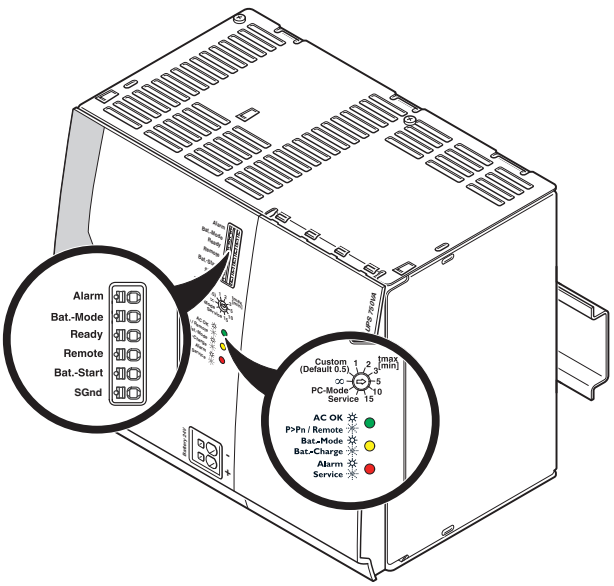
WARNING: Danger to life by electric shock!

In this operating mode, the load connected to the AC output is supplied by the energy storage device.

10 Signaling

Various LED indicators are available for visual function monitoring of the uninterruptible power supply. Active signal outputs can be used to forward this data to a higher-level control system.

Figure 20 LED indicators and signal outputs



10.1 LED indicators and signal outputs

For UPS signaling and the corresponding states, please refer to the table below.

Figure 21 Signal states

Status LED			Switching output			Note
Green	Yellow	Red	Bat.-Mode	Ready	Alarm (active low)	
○	○	○	low	low	low	Device off
●	●	●	low	low	high	Initialization, LED test (~3 sec.)
●	○	○	low	high	high	Mains operation, battery is fully charged
	✳ D = 50%	○	low	low or high	high	Mains operation, battery charging in process
	●	○	high	low	high	Battery mode
	○	●	low	low	low	Mains operation, battery failure
	○	✳ D = 50%	low	low	low	Mains operation, service mode for battery change
	●	●	high	low	low	Battery mode, battery voltage low
✳ D = 50%	○	○	low	high	high	Mains operation, overload (battery mode not possible), battery is fully charged
	●	○	high	low	high	Battery mode, overload (only possible for a short time)
	✳ D = 50%	○	low	low or high	high	Mains operation, overload (battery mode not possible), battery charging in process
	○	●	low	low	low	Mains operation, overload (battery mode not possible), battery failure
	○	✳ D = 50%	low	low	low	Mains operation, overload (battery mode not possible), service mode for battery change
✳ D = 85%	○	○	low	high	high	Mains operation, remote contact shorted to SGnd, battery is fully charged
	✳ D = 50%	○	low	low or high	high	Mains operation, remote contact shorted to SGnd, battery charging in process
	●	○	high	low	high	Battery mode, remote contact shorted to SGnd, (only PC-Mode)
	○	●	low	low	low	Mains operation, remote contact shorted to SGnd, battery failure
	○	✳ D = 50%	low	low	low	Mains operation, remote contact shorted to SGnd, service mode for battery change



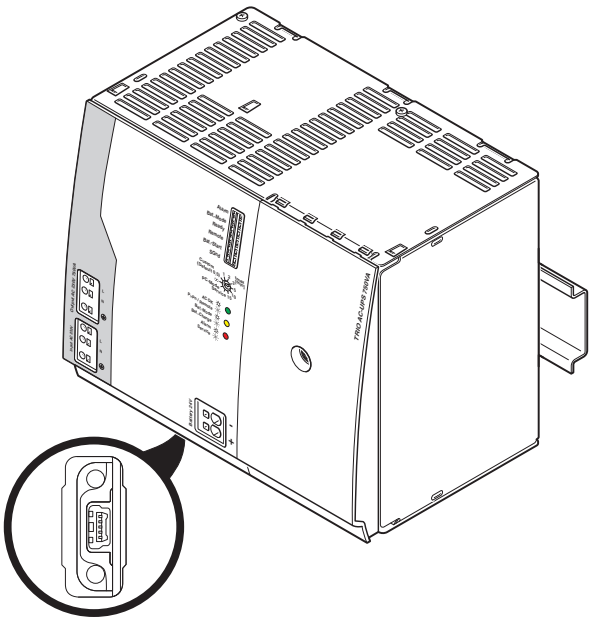
11 Interface

11.1 USB interface MINI type B

The uninterruptible power supply is equipped with a USB Mini type B interface for data transmission.

A data cable is required for communicating with a PC or a higher-level controller.

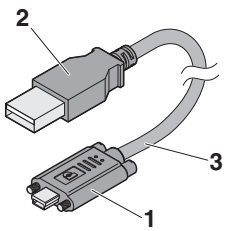
Figure 22 USB interface MINI type B (bottom of device)



MINI-SCREW-USB-DATACABLE

The uninterruptible power supply unit is connected to the USB PC connection with data cable MINI-SCREW-USB-DATACABLE (Item No. 2908217) via USB interface mini type B.

Figure 23 MINI-SCREW-USB-DATACABLE



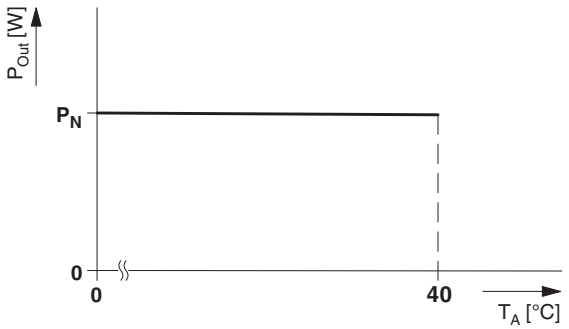
No.	Designation
1	Mini type B USB connector with screw connection
2	USB plug type A
3	Cable length: 3 m

12 Derating

12.1 Ambient temperature

In the ambient temperature range, the uninterruptible power supply supplies the nominal power (P_N).

Figure 24 Temperature-dependent derating



12.2 Installation height

The uninterruptible power supply can be operated at an installation height of up to 2000 m without any limitations. Different data applies for installation locations above 2000 m due to the differing air pressure and the reduced convection cooling associated with this.

Figure 25 Altitude-dependent derating

