

User Manual

DC-UPS

Uninterruptible power supply

3046-EN

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noax[®]
Technologies

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1 About this User Manual

1.1 Target group

This user manual is directed towards qualified technical staff.

It completes their knowledge for appropriate assembly, operation and service of the device but it does not substitute it.

1.2 Requirements

Basic technical knowledge for assembly, software installation and service of technical devices is required to understand and use the descriptions in this user manual correctly.

1.3 Signal words

Following signal words are used in this document:

- | | |
|-------------------|---|
| Danger | <i>Danger</i> describes warning notices where you will be in danger of being killed or severe injury if they are disregarded. |
| Warning | <i>Warning</i> describes warning notices where you will be in danger of minor injury or severe material damage if they are disregarded. |
| Precaution | <i>Precaution</i> describes warning notices where minor material damage could happen if they are disregarded. |

1.4 Symbols

Following symbols are used in this document:

1.4.1 Advice symbols

This user manual contains advice which should be followed for your personal safety and to avoid material damage.



Advice symbol for danger in association with one of the signal words **Precaution**, **Warning** or **Danger**.



Advice symbol for danger by electricity, in association with one of the signal words **Precaution**, **Warning** or **Danger**.



Advice symbol for danger by electrostatic discharge, in association with one of the signal words **Precaution**, **Warning** or **Danger**.



Advice symbol for danger by burning, in association with one of the signal words **Precaution**, **Warning** or **Danger**.



Advice symbol for danger by explosion, in association with one of the signal words **Precaution**, **Warning** or **Danger**.



Advice symbol for corrosives in association with one of the signal words **Precaution**, **Warning** or **Danger**.



Advice for the handling of the product.

An unexpected occurrence or condition could happen if this advice is disregarded.



Cross reference to other chapters.

1.4.2 List symbols

- List
 - Subitem of a list
- ▶ Instruction which has only one step.
- 1. Instruction which has several steps. The steps must be executed in the stated order.

1.5 Markings

Following markings are used in this document:

Marking	Description
<i>italic</i>	Emphasis
bold	Product description or strong emphasis
<code>Courier</code>	Term for software areas (GUI) and device labellings

1.6 Abbreviations

Following abbreviations are used in this document:

Abbreviation	Description
IPC	Industrial-PC
UPS	Uninterruptible Power Supply
DC	Direct Current
MCU	Micro Controller Unit
Windows	Operating system Microsoft Windows
DIO—connector	Digital In-/Output connector
GUI	Graphical User Interface
SELV	Safety Extra Low Voltage

2 General safety information

Please follow the valid VDE/IEC/EN regulations while using products with electrical voltage.

Documentation

- The device can be damaged and the user might lose the possible liability claim or warranty if you do not follow the user manual or the connection regulation, e.g. faulty exchange of terminal clamps.
- Keep this documentation and pass it on with the device.

Handling the device

- Pay attention to the weight of device during transport or mounting.
- The device should only be used when it is fully functional and free of damage. Damaged devices must be exchanged immediately, especially if:
 - the power cable or socket is damaged.
 - liquid is in the device.
 - the device has no function like described according to this documentation.
 - the housing is damaged.
- Do not let liquids or aggressive vapours in non-IP protected electronic areas.
- Device cleaning like it is described in chapter 9 (*Maintenance*).
- Do not attach or convert something at the device without prior permission of noax.
- Follow the disposal advice in this document.

Maintenance



Basically do not repair the device on your own. Always contact our noax hotline and send the device back for maintenance if necessary. Our service needs the important device information on the label of the **DC-UPS**. There are important information referring the features and production site of your device. Please always inform the engineer about the complete code and serial number (please look at chapter 10.3).



Accumulator exchange must be done according to ESD protection precautions (e.g. usage of correct ESD guard band). The device contains electronic boards with highly sensitive components against electrostatic discharge.

Accumulator

General handling instructions

- Do not short-circuit the accumulator.
- Do not connect the accumulator voltage reversed to the electric consumer or load it voltage reversed.
- Do not open the accumulator.
- Do not throw the accumulator on the ground or stress it with other strong physical strains.
- Do not heat the accumulator, e.g. during storage next to heat emission devices or by burning.
- Clean the accumulator with a dry or slightly dampened cloth. Do not clean it with benzine, oil, diluting agents or other products similar to mineral oil.
- Do not touch the electrolyt out of a damaged accumulator. It can cause irritation, inflammation or burn if it gets into contact with skin or eyes.
- Do not use connecting cables out of vinyl-chloride with a high proportion of plasticiser.
- Do not store the accumulator in a hermetically closed container.

Emergency measures

- If your skin or eyes get into contact with electrolyt immediately wash the affected parts with water and consult immediately a doctor.
- Remove the accumulator if electrolyt comes out (please look at chapter 9.2.1) and send the **DC-UPS** back for repair.
- If the accumulator is on fire or explodes due to false handling please use only the following fire-extinguishing agents:
 - CO₂ (carbon dioxide)
 - Foam
 - Dry chemicals
 - Water
 - Other substances like dry sand

3 Intended use

DC-UPS is an uninterruptible power supply that is designated for connection to a noax industrial PC with an external power supply.

It has been manufactured according to the latest technology and to the approved safety regulations.

Another usage is not intended. The user of the noax device is liable without limitation in case of damage. This is also effective for unauthorised modifications.

The intended use demands to keep the security advises that are described in this user manual.

The **DC-UPS** is firmly mounted and can be assembled stationary or in vehicles.

The **DC-UPS** is an option and can be connected additionally to a noax IPC with an external power supply.



Warning

The **DC-UPS** is only allowed to be operated with closed housing.



Danger

The external wiring of all **DC-UPS** terminal clamps must be according to the SELV – circuits.

4 Delivery contents

Following equipment is part of the delivery content of the **DC-UPS**:

Pos.	Article description	Quantity
1	DC-UPS	1
2	Accumulator, already assembled but not connected (F8 battery fuse is not connected)	1
3	Mounting square	2
4	Screws M4x5 with plates for mounting square	4
5	Screws M4x12 with plates for DC-UPS mounting	4
6	RS232 cable (9 pole D-SUB), 3 m (9 feet)	1
7	USB cable, 3m (9 feet)	1
8	Power connector, 4-pole	1
9	DIO connector, 10-pole	1
10	Flat connector fuse 30A/32VDC (battery fuse F8), green	2
11	Flat connector fuse 7.5A/32VDC (F4, F6), brown	2
12	noax USB stick with installation software	1
13	User manual DC-UPS	1
14	Connector cable set N7 or N8 (must be ordered separately *)	1

*) Each cable connector set contains:

- Connection cable **DC-UPS**—IPC
- Connection cable from the DC/DC converter for mobile application to **DC-UPS**
- Adapter for connection for the power supply to **DC-UPS**



look at chapter 13.3

Inspect the packaging content according to the delivery note.

If there are differences please contact our hotline.



Packaging material is reusable or can be recycled.

5 Construction and Function

The **DC-UPS** controls the voltage from external power supply to its DC input.

The system management is micro processor controlled and has the following functions:

- Voltage control
- Accumulator management
- Set parameter by Setup data

During interference-free power supply the **DC-UPS** puts the input voltage through to the industrial-PC.

If the input voltage drops below a critical value for secured IPC operation the **DC-UPS** automatically switches to its own power supply in a split second. It controls voltage sags or spikes and avoids power supply interruptions at the IPC.

The maximal time of battery operation depends on the current consumption of the connected device.

After the consumption of the accumulator capacity the IPC shuts down automatically without data loss. Only the service noaxSvc that is installed on the IPC is responsible for this function.

The **DC-UPS** remarks the changed status as soon as the input voltage reaches a normal value. It puts again the input voltage through to the IPC and loads the accumulator. If the IPC is shut down previously it will not be started automatically.

The uninterruptible power supply **DC-UPS** is only for noax industrial-PCs with DC power supply and is not intended to be used with other devices.

5.1 Software

The supplied UPS service (noaxSvc) controls the **DC-UPS** state. The IPC will be shut down in case of failure. The conditions for shut down can be customized. Further information about UPS service installation can be found at chapter 7.

5.2 Hardware

The **DC-UPS** consists of the following components:

- Housing
 - Interfaces (RS232, USB, DIO, power supply In/Out)
 - LEDs (status display)
- Accumulator
- Mounting square
- Fuses

5.2.1 Housing

The housing of the **DC-UPS** consists of anodized aluminium (protective coating).

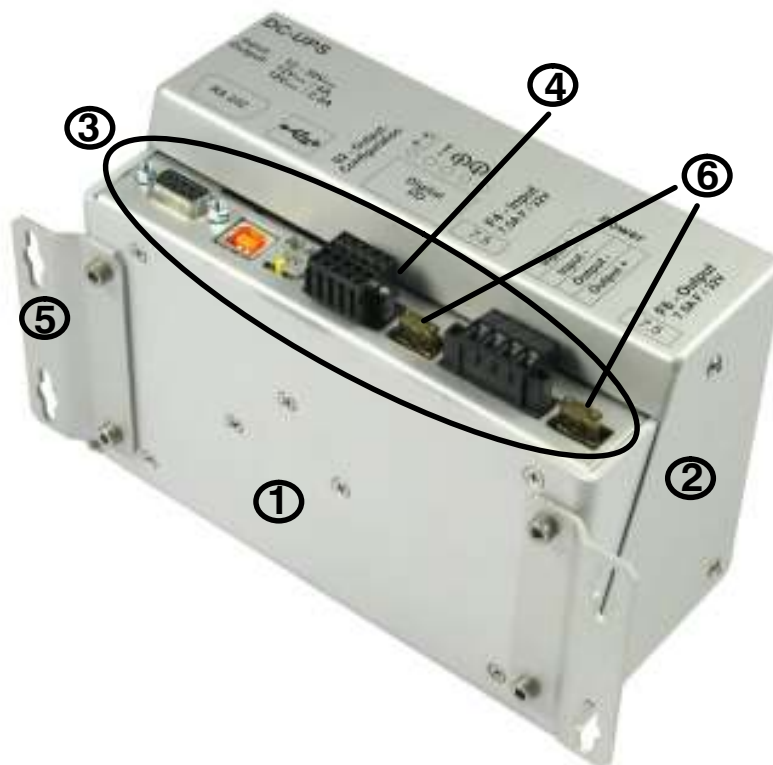


Fig. 1: **DC-UPS**

- ① Housing
- ② Cover
- ③ Interfaces
- ④ LEDs
- ⑤ 2x mounting squares
- ⑥ Fuses F4 and F6

5.2.2 Dimensioned drawing

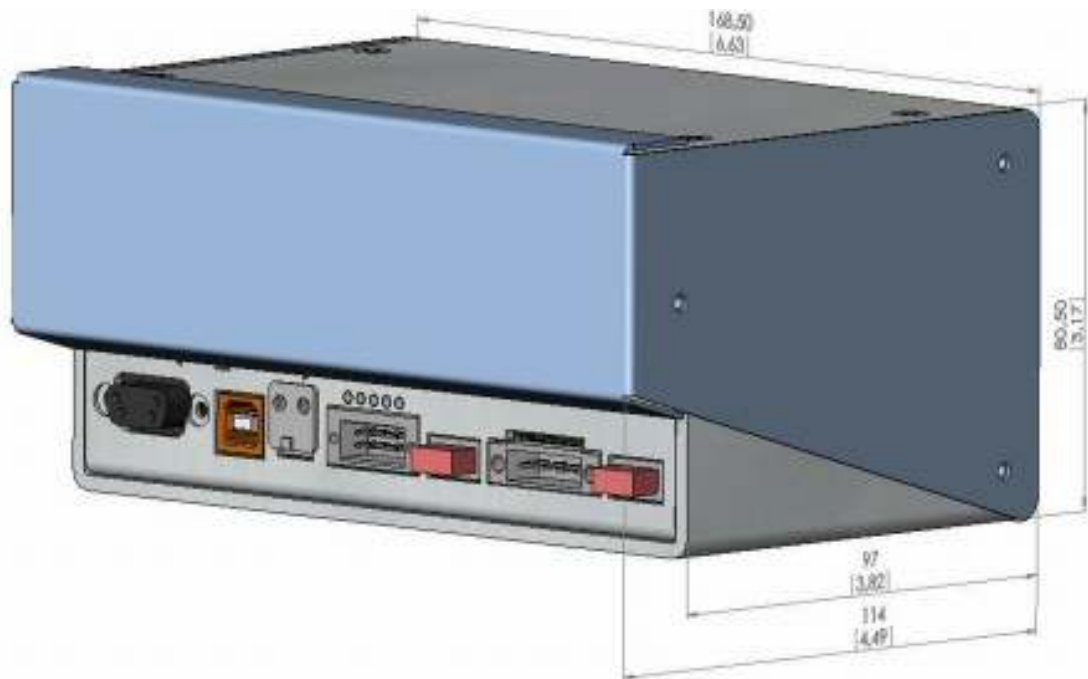


Fig. 2: View to the connectors, all measures are in mm [inch]



Look at chapter 13.1 for more information

5.2.3 Interfaces

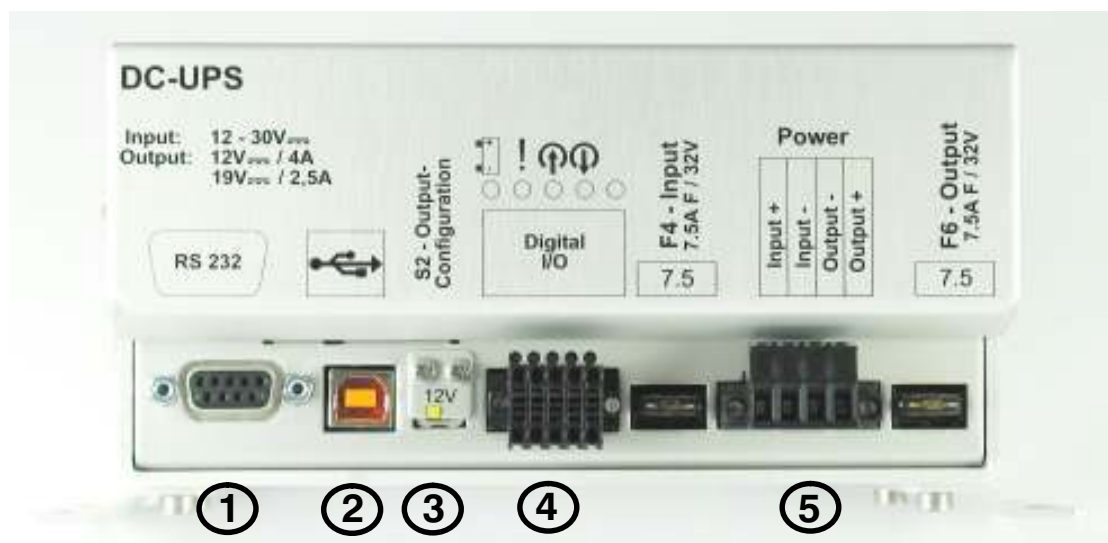


Fig. 3 Interfaces

- ① Communication with the PC: RS232, D-SUB, 9-pole, female jack
- ② Communication with the PC: USB, type B, female jack
- ③ S2-Output configuration: 12VDC or 24VDC
- ④ *without function (DIO interface in preparation)* 10-pole, connector
- ⑤ Input / Output voltage, 4-pole, connector



The pin configuration of the interfaces is described in chapter 13.2.

5.2.4 LEDs

- ① Accumulator-LED (green)
- ② Error-LED (red)
- ③ Input-LED (yellow)
- ④ Output-LED (blue)
- ⑤ Reserve-LED, without function (orange)

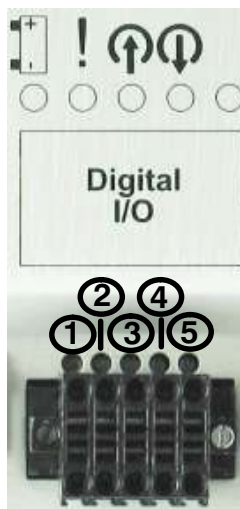







Fig. 4: LEDs

The LEDs display the following operating status:

LED	Status	Function / advise
Accumulator (green) 	On	The accumulator is ready.
	Blinking	The accumulator is actually in the loading status.
	Quick blinking	Accumulator is kept in reserve – The accumulator must be loaded immediately.
	Off	Accumulator is empty – The accumulator must be loaded before operation.
Error (red) 	On	System failure – A hardware complication or a critical incident happened.
	Off	System is ok.
Input (yellow) 	On	A correct input voltage is available.
	Off	A wrong or no input voltage is available. Check the S2-Output configuration.
Output (blue) 	On	Normal operation – output voltage is available. The input voltage is put through as output voltage.
	Blinking	Battery operation – the output voltage is available via the DC-UPS .
	Quick Blinking	Battery operation – operating system shutdown was activated. The output voltage is available. The operating system of the connected PC will be shut down.
	Off	No output voltage is available.
Reserve (orange) 	Off	Is actually not used.

5.2.5 Accumulator

The accumulator (lead-gel accumulator) supplies the UPS power supply in case of power failure. It is secured with the fuse F8. You can see it only if the cover is unscrewed.



look at chapter 5.2.7.

5.2.6 Mounting square

Assemble the delivered mounting squares with the screws M4x5 and the plates to the **DC-UPS** housing.

To mount the **DC-UPS** at the requested place please use the screws M4x12 with plates.

The **DC-UPS** can be adjusted in the best possible way by using the slotted holes.

5.2.7 Fuses

The **DC-UPS** has three replaceable fuses, two of them (F4, F6) are externally accessible. To use the accumulator fuse F8 the cover of the **DC-UPS** must be unscrewed.

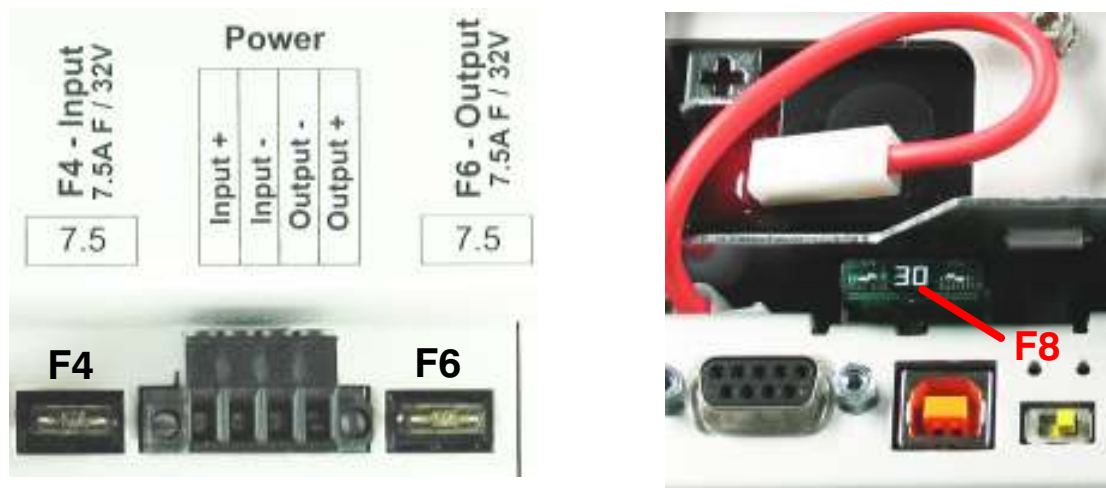


Fig. 5 Mini flat connector fuses (F4, F6) and flat connector fuse (F8)

Name	Type	Value	Secured Line
F4	Mini flat connector fuse brown (look at Fig.5)	7.5 A / 32 VDC	UPS input voltage
F6	Mini-flat connector fuse brown (look at Fig.5)	7.5 A / 32 VDC	UPS output voltage
F8	Flat connector fure green (look at Fig.5)	30 A / 32 VDC	To secure the accumulator (only accessible after opening the housing)

All other fuses of the **DC-UPS** recover by themselves and there is no need to replace them.

6 Mounting and Operation


6.1 Tools

You need the following tools for mounting and opening the **DC-UPS**:

- Hexagon screwdriver, size 1.0
- Hexagon screwdriver, size 3.0
- Cross slot screwdriver PH1
- Slot screwdriver PH2

6.2 Mounting

The **DC-UPS** is connected between external power supply and industrial PC (IPC). Besides the power supply there is also a data connection between the **DC-UPS** and the IPC (look at Fig.6) .

-  To secure the data communication between the **DC-UPS** and the IPC the **UPS service** must be installed at the IPC (look at chapter 7) .

There are two possible configurations to connect the **DC-UPS**:

- to a power supply (look at Fig.6)
- to a noax DC/DC converter (look at Fig.7)



look at chapter 13.3 to see the cable pin assignment

6.2.1 Connection scheme to a power supply

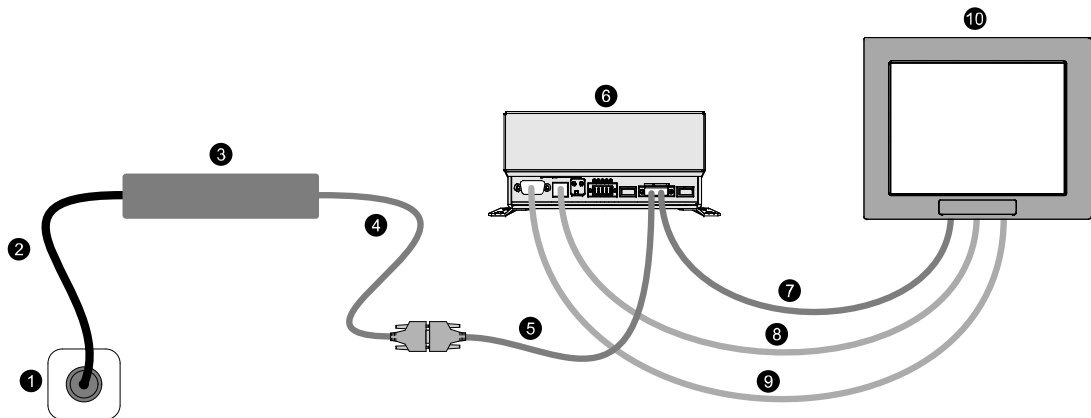


Fig. 6: Connection scheme **DC-UPS** to a power supply

- ① Power supply (socket)
- ② Power supply cable
- ③ External power supply
- ④ Low tension cable of the power supply
- ⑤ Adapter cable for external power supply
- ⑥ **DC-UPS** with mounted accumulator
- ⑦ Connector cable N7 or N8
- ⑧ USB control line (cannot be used with the RS232 control line at the same time)
- ⑨ RS232 control line (cannot be used with the USB control line at the same time)
- ⑩ Industrial PC with noax **UPS service**

① Connect the USB cable only after final software installation (look at chapter 7.2).

6.2.2 Connection scheme to a noax DC/DC converter

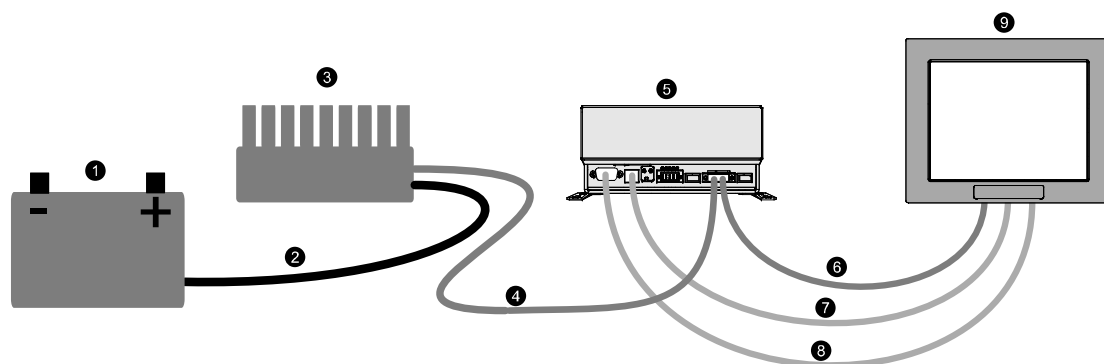


Fig. 7: Connection scheme **DC-UPS** to a noax DC/DC converter

- ① Battery
- ② Battery cable
- ③ noax DC/DC converter
- ④ Low tension cable of the noax DC/DC converter
- ⑤ **DC-UPS** with mounted accumulator
- ⑥ Connector cable N7 or N8
- ⑦ USB control line (cannot be used with the RS232 control line at the same time)
- ⑧ RS232 control line (cannot be used with the USB control line at the same time)
- ⑨ Industrial PC with noax **UPS service**

- ① Connect the USB cable only after final software installation (look at chapter 7.2).
- ① Lock the RS232, DIO and power connector after mounting.

6.3 Operation

6.3.1 DC-UPS mounting

The **DC-UPS** is mounted with the delivered angled mounting brackets with slotted holes.

There are diverse mounting possibilities for these angles at the **DC-UPS**:

- on the top
- at the bottom
- at the back



look at chapter 13.1

To open the cover of the mounted **DC-UPS**, e.g. for accumulator exchange, there must be a free space of 20cm (7.87 inches) at the left and right side of the housing and to the front.

The mounting holes for the angled mounting brackets can also be used for the mounting of the noax DC/DC converter which can be directly mounted at the **DC-UPS** as well.

- ① The **DC-UPS** is mounted with adapters – can be purchased at noax – to the DIN rail.

6.3.2 Output voltage configuration (Check S2-Output Configuration)

The **DC-UPS** can generate two different output voltages.



Fig. 8: S2 View in position 12VDC (left side) or 24VDC (right side)

- For the operation of the mainboard series with 12VDC nominal input voltage (e.g. N7)
- For the operation of the mainboard series with 24VDC nominal input voltage (e.g. N6 or N8) .

For changing the configuration unscrew the small aluminium plate at the S2-Output-Configuration. Push the switch S2 to the needed position.

Now you can fix the small plate again (vertically turned by 180°).



Warning

This electrical configuration of the **DC-UPS** must be carried out only disconnected from the current (disconnect the main power plug and remove the accumulator fuse F8). The new switch setting of S2 will be loaded **only** during power up.

6.3.3 Insert Battery Fuse F8



Danger

Follow the general safety information while handling the accumulator (look at chapter 2).



The accumulator fuse F8 has to be mounted to operate the **DC-UPS** (look at chapter 9.2.1).

6.3.4 Cable connection

Look at Fig. 7 and Fig. 8 to connect the cables.

Only use the delivered noax cables.

6.3.5 Software installation



look at chapter 7.2

6.3.6 USB or RS232 cable connection

Connect the USB or RS232 cable with the IPC and the **DC-UPS**.

6.3.7 USB driver installation

In case of using a USB cable connection the USB driver must be installed.



look at chapter 7.3

6.3.8 Error LED status after operation start

The error LED (red) must be off after the operation starts.



look at chapter 10

6.4 Safety precaution for power supply operation



Danger

It is not allowed to operate the **DC-UPS** in explosion-prone areas.



Danger

It is not allowed to mount the **DC-UPS** with the accumulator contacts at the bottom. In case of failure battery fluid could come out of the accumulator which could cause chemical burn or damage if other materials get in contact with this!



Danger

Absolutely avoid short circuits of the accumulator contacts, with the housing, with tools or other metal items. The high amount of energy could cause burns, explosions, fire or injuries!



Danger

To avoid electrostatic interference at highly sensitive electronic devices it is not allowed to operate the **DC-UPS** in airplanes, hospitals or other medical environment without prior authorization. Keep a minimum distance of about 20cm (7.87 inches) between heart pacemakers and the **DC-UPS**.



Danger

It is not allowed to attach or convert something at the device without prior manufacturer's authorization.



Warning

Pay attention that no potential differences are compensated via the device, e.g. via ground loops.



Warning

Check the supply voltage:

The **DC-UPS** can be set for a mainboard series with 12VDC or 24VDC nominal input voltage. Please check output and operating voltage of the connected system before you connect the **DC-UPS**. In addition the input voltage must be in the valid range. (look at chapter 12).



Warning

Pay attention to the right polarity of the accumulator. You can destroy the **DC-UPS** by wrong polarity! Always connect POSITIVE pole with RED cable and NEGATIVE pole with BLACK cable.



Warning

Pay attention to stability during transport.



Warning

Check whether the mentioned values on the label of the device match with the electric values of your power supply.

**Precaution**

If electrostatic interference in radio or TV reception is remarked during **DC-UPS** operation (noticeable by switching the **DC-UPS** on/off) the following measures can fix this interference:

- Adjust the receiving antenna newly or relocate it.
- Extend the distance between **DC-UPS** and receiving device.
- Connect the **DC-UPS** to another circuit.
- Contact your specialist supplier or a radio or TV technician.

**Precaution**

Pay attention to the environmental conditions mentioned in the technical data during mounting.

**Precaution**

Pay attention not to damage, modify, strain, bend or twist the cables while connecting. Do not put heavy items on the cables.

7 Software and Driver Installation

The installation of the **DC-UPS** software includes the following work:

- Installation of the UPS service.
- Driver installation for the USB connection (Windows XP/Vista or Windows 2000).

Both is found on the delivered noax USB stick.

① **You need administrative rights for installation.**

7.1 System requirements



Warning

If there is a customized Windows installation the Fast User Switching must be deactivated. In this case the UPS service cannot shut down the operating system.

① It could be necessary to adjust the IPC setup values while using a N7 mainboard (12VDC). E.g. the IPC automatically switches off to often during operation). There is the `N7_CFG_UPS.bat` data on the delivered USB stick. Please execute this data once.

7.2 Software

First the software must be installed for both operating systems Windows XP/Vista and Windows 2000.

1. Start the data `noaxSvc_setup.exe` out of your USB stick.
2. Now you are requested to select the language for the installation programme (German or English).

3. Now you can choose between the following components:
 - noaxSvc : Windows service for the **DC-UPS**
 - noaxInfo : Status display for the **DC-UPS**
 - USB driver : is necessary for the direct connection between the **DC-UPS** and the IPC via USB cable.



Fig. 9: Choice of components

4. Click to Next.
5. Now choose your destination folder.



Fig. 10: Destination folder

6. Click to Next.

7. Now there is the configuration of the UPS service.
There are four subitems.
 - A new configuration must be created for the initial operation.
 - If an already existing configuration should be used a corresponding data with suffix *.nxcfg* must be chosen.



Fig. 11: Configuration 1/4

8. Click to Next.
9. Important events like operating system shut down by UPS service can be recorded.
Choose the type of protocol.
 - Data: Events will be recorded in a text data.
 - System protocol or event log: Events will be recorded in the Windows event log.

- ① The event log can be found under the following path:
Control Panel -> Administrative Tools -> Event Viewer -> noax.



Fig. 12: Configuration 2/4

10. Click to Next.
11. In general there are two connecting possibilities for the **DC-UPS**: the USB interface and the COM interface with the RS232 cable.
- ① The USB cable is only allowed to be connected after the final software installation.
- ① Please select or enter the COM interface that is connected to the **DC-UPS**.



Fig. 13: Configuration 3/4

12. Click to Next.
13. As a standard feature the system will be shut down at flat battery. In addition there can be further options configured to shut down the system.



Fig. 14: Configuration 4/4

14. Click to Next.

15. By integration of the noax UPS service in the Start Menu the log-data and the config-data can be opened with the editor at the same time.

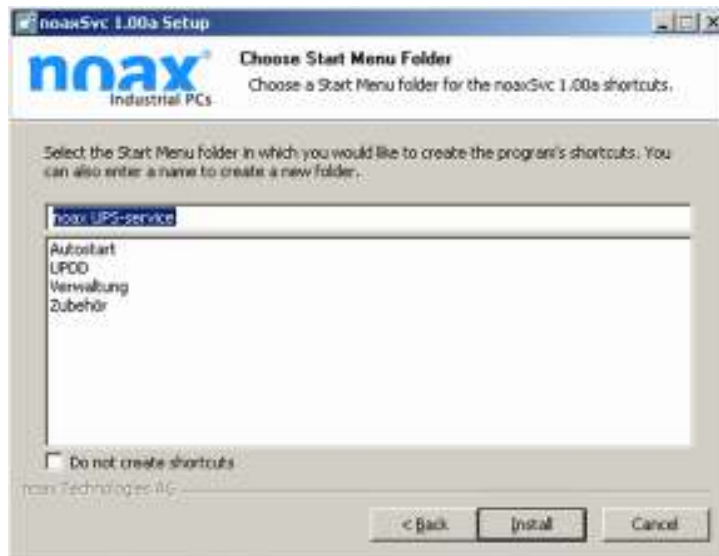


Fig. 15: Start service

16. Click to Next.

- ① If there is the failure message: The software failed to pass the Windows-Logo-Test ignore it and continue installation.

17. The service can be started immediately after installation.



Fig. 16: Start service

18. Click to Finish.

19. The software installation is finalized now. In case you need to connect the DC-UPS with USB or RS232 cable please do this now.

7.3 USB driver

In principle there has to be distinguished between Windows XP/Vista and Windows 2000 during driver installation.

- ① Please secure the USB cable connection between IPC and **DC-UPS** during USB driver installation.

7.3.1 For Windows XP/Vista

- ① If the IPC is connected with the **DC-UPS** via USB cable the installation assistant will be started.

1. Driver installation



Fig. 17: Driver installation USB connection

2. Click to Next.

- ① If there is the failure message: The software failed to pass the Windows-Logo-Test ignore it and continue installation.



Fig. 18: Finish the USB connection

3. Click to Finish.
4. Next step, setting a virtual COM port for the USB connection.



Fig. 19: Driver Installation virtual COM port

5. Click to Next.

- ① If there is the failure message: The software failed to pass the Windows-Logo-Test ignore it and continue installation.



Fig. 20: Finish the virtual COM port

6. Click to Finish.

- ① You can reboot your PC now.

7.3.2 For Windows 2000

- ① If the IPC is connected with the **DC-UPS** via USB cable the installation assistant will be started.

1. Driver installation for noax **DC-UPS**.
Click Next.



Fig. 21: Driver installation for noax **DC-UPS**

2. Install Hardware Device Drivers.
Click on Search for a suitable driver for my device.



Fig. 22: Driver installation USB connection

3. Click Next.

4. Next step, Locate Driver Files.
Select the point Specify a location.



Fig. 23: Locate Driver Files

5. Click Next.
6. Enter the USB driver path.
- ① The USB driver is on the delivered USB stick.



Fig. 24: manufacturer's file

7. Click *OK*.
8. The data ftdibus.inf is automatically found and installed.



Fig. 25: Drivers's file search result for ftdibus.inf

9. Click Next .

10. Windows has finished installing the software for this device.



Fig. 26: Finish Windows 2000 1st part

11. To close this wizard, click Finish.

12. Installation of USB serial port.



Fig. 27: USB serial port

13. Click Next.

14. Install hardware device drivers.

Select Search for a suitable driver for my device.



Fig. 28: Driver installation USB serial port

15. Click Next.

16. Next step, Locate Driver Files.

Select the point Specify a location.



Fig. 29: Locate Driver Files

17. Click Next.

18. Enter the USB driver path.

① The USB driver is on the delivered USB stick.



Fig. 30: manufacturer's file

19. Click *OK*.

20. The data ftdiport.inf is automatically found and installed.



Fig. 31: Driver files search result for ftdiport.inf

21. Click *Next*.



Fig. 32: Finish Windows 2000 2nd part

22. Click *Finish*.

23. The Windows 2000 driver installation is finished.

8 Uninstalling

If you would like to uninstall the software you will find a shortcut to the uninstalling programme “Uninstall” in the Start Menu under noax service
In case you have not created an entry in the Start Menu during installation you can delete this UPS service also via Control Panel -> Software.

❗ Possible existing log-data are not deleted during uninstalling.

9 Maintenance

9.1 Cleaning



Danger

Danger of electric shock. Switch off device and disconnect it from power supply and accumulator.



Warning

Danger of damaging device. Absolutely not use for cleaning:

- High pressure damp
- Cleaning cloths out of hard fibre
- wet cleaning cloths

Follow these steps to clean the device:

1. Switch off device, disconnect it from power supply and pull off the F8 fuse.
2. Moisten a soft, lint-free cleaning cloth with water.



Do not apply the cleaning agent directly to the device.

3. Apply cleaning agent to the cleaning cloth.
4. Clean the device with the cleaning cloth. Pay attention not to get cleaning agent inside the device.
5. Completely remove any cleaning agent from the device with a clean cloth.
6. Connect device with power supply and switch it on.

9.2 Accumulator

The accumulator of the **DC-UPS** is maintenance-free and there is no need for special servicing.



Precaution

Store the **DC-UPS** in a cool and dry place and with fully charged accumulator.



Precaution

Do not deeply discharge the accumulator! We recommend to charge the accumulator every 6 months to avoid damage during storage of the **DC-UPS**.



Warning

Accumulator exchange must be done according to ESC protection precautions (e.g. usage of correct ESD guard band). The **DC-UPS** contains electronical boards with highly sensitive components against electrostatic discharge.



The accumulator must be exchanged ever 12 - 18 months to ensure a trouble-free operation of the **DC-UPS**.

The accumulator and the accumulator fuse are inside the **DC-UPS**. Pay attention to the following procedure for inspection or exchange.

9.2.1 Accumulator removal

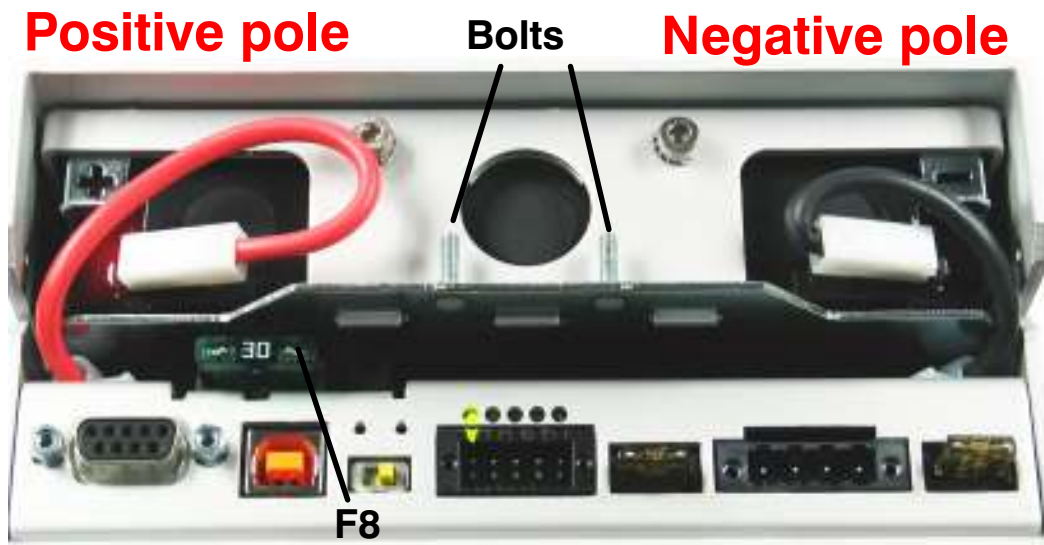


Fig. 33: Interior view with accumulator and accumulator fuse (F8)

1. Open the **DC-UPS** cover with the six outside located hexagon socket screws.
 2. **First** disconnect the **black** cable from the **NEGATIVE pole**.
 3. **Then** disconnect the **red** cable from the **POSITIVE pole**.
 4. The accumulator unit can be taken out of the **DC-UPS** by using the bolts.
 5. Remove the accumulator mounting angle with the two hexagon socket screws.
 6. The accumulator can be taken out of the accumulator unit laterally.
- ① For insertion or changing the accumulator fuse (F8 30A / 32VDC) only the **DC-UPS** cover with the six outside located hexagon socket screws must be removed.



Fig. 34: Accumulator unit

9.2.2 Accumulator insertion

1. Insert the accumulator in the accumulator unit.
2. Fix the accumulator mounting angle with the two hexagon socket screws.
3. Insert the accumulator unit in the **DC-UPS**.
- ① Check the polarity: positive pole is opposite of the RS232 D-Sub connector, negative pole is opposite of the power connector (look at Fig. 33)
4. **First** connect the **red** cable with the **POSITIVE pole** of the accumulator.
5. **Then** connect the **black** cable with the **NEGATIVE pole** of the accumulator.
6. Close the **DC-UPS** housing with the six outside located hexagon socket screws.



Danger

Accumulator and fuses are only allowed to be exchanged by authorized personnel. The stated values and technical data of the accumulator and the fuses must be absolutely observed.



Danger

Only accumulators of the same type and manufacturer are allowed to be used.



look at chapter 12

10 Error correction

This section provides information about the measures to be taken in case of device failures.

- ① The devices will not switch on or off automatically in case of the following internal failures:

- Internal voltage too high / too low
- Internal system temperature too high / too low

10.1 Error codes

When an error occurs, the integrated MCU displays an error code via the control panel LEDs which provide detailed information about the error type.

As soon as the Error LED is displayed continuously the LEDs AKKU, INPUT and OUTPUT will no longer have their normal function and will display an error code. Possible LED states are “off”, “slow blinking”, “fast blinking” and “on”.

Please write down each LED state (error code), type and serial number of the device and contact the noax hotline under:

Hotline Europe		Hotline North America	
Tel.	+49 (0) 8092 8536 33	Tel.	+1 704 992 1606
Fax	+49 (0) 8092 8536 55	Fax	+1 704 992 1712
eMail:	hotline@noax.com	eMail:	hotline@noaxna.com

- ① Error code information can be found on the website in our online FAQ. (look at chapter 10.4).

10.2 Fuse exchange



Danger

Fuses are allowed to be exchanged only by authorized personel. The stated values and technical data of the fuses must be absolutely observed!

10.3 Repair procedure

Please observe the following points to ensure a fast and smooth repair procedure:

- Please use the service form available on our website at **www.noax.com**. It can be downloaded as PDF or Wordfile. Please fill out the form as completely as possible and attach it to the return shipment.
- Please ensure a safe transport and a fitting packaging. Use the original packaging if possible. **We are not liable for any damages that may occur during transport.**
- We recommend using UPS Standard for shipping. The shipment must be pre-paid. We will also accept unpaid UPS Standard shipments during the warranty period. We do not accept extra services such as express services, etc.
- In emergencies, we do offer loan equipment for the repair duration for a small fee. Please contact our hotline.
- After receipt of shipment our service department will send you a confirmation of receipt.

10.4 FAQ – Frequently Asked Questions

Our FAQ list can be found on our website **www.noax.com** under **Service and Support**. This is the first place to check solutions when you have a problem.

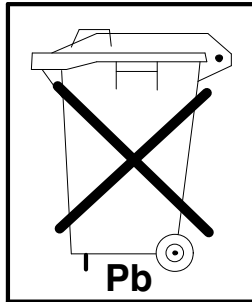
10.5 Technical download area

The technical download area can be found under “**Service und Support**” on our website **www.noax.com**.

There you can find:

- Manuals and documentations for the **DC-UPS** and additional accessory
- Drivers, e.g. for the USB connection to the **DC-UPS**
- Software

11 Waste disposal



It is not allowed to dispose the **DC-UPS** at the end of its life time via the normal garbage. The disposal must be via the noax service department.

Please contact our service department for further information.

You do an important contribution to environment if you recycle or do material utilization or other utilization of old devices.

Disposal of used accumulators / batteries

You as enduser are legally bounded (battery regulation) to return all used batteries and accumulators; it is strictly forbidden to dispose it via the garbage!

Pollutant accumulators / batteries are marked with the corresponding symbols that point out the prohibition of disposal via the garbage. The marking of the crucial heavy metal is Cd (cadmium), Hg (mercury) and Pb (lead).

Please deliver free of charge used accumulators / batteries to a recycling company in your local authority or contact the noax service department for further information.

You fulfill the legal regulations and do an important contribution to environmental protection.



Warning

Accumulators are restricted to dispose via garbage.

12 Technical data

General

Product description	DC-UPS (uninterruptible power supply)
Battery type	lead-gel accumulator 6 V / 7.2 Ah with 4.8mm (0.19 inches) connectors (Faston 187) Dimension L x W x H: 151mm x 34mm x 94mm (5.94 x 1.34 x 3.7 inches) Manufacturer: Panasonic
Interim period	
	in general > 5 min (nominal load)
	Type N7 40 min typ.*), depends on IPC configuration
	Type N8 20 min typ.*), depends on IPC configuration
Interfaces	<ul style="list-style-type: none">• RS232• USB 1.1 (high retention) (Plug in force 52.51N and unplug force 51.18N)• DIO with tension spring (clamping area 0.08mm² – 1mm², AWG 18)

*) Accumulator at +20°C (+68°F), new and fully loaded

Mechanics

Dimensions (L x W x H)	168.5 x 80.5 x 114 mm (6.63 x 3.17 x 4.49 inches)
Weight	without accumulator: about 1.1 kg (2,43 lb) with accumulator: about 2.4 kg (5,29 lb)
Housing material	anodized aluminium
Protection class	IP 40
Shock and vibration	DIN EN 60721-3-5, class 5M3

Electrical data

Voltages	
Input (S2 in position 12VDC)	11.8 V _{DC} up to 12.6 V _{DC}
Output (S2 in position 12VDC)	Normal operation: 0.2 VDC typ. below input voltage Battery operation: 12.2 V _{DC}
Input (S2 in position 24VDC)	19.0 V _{DC} up to 29.8 V _{DC}
Output (S2 in position 24VDC)	Normal operation: 0.2 VDC typ. below input voltage Battery operation: 19.1 V _{DC}
Output voltage	
S2 in position 12VDC	4 A max.
S2 in position 24VDC	2.5 A max.
Output power (current)	48 W max.

Additional power input	< 1 W (without battery loading)
	< 14 W (with battery loading)
Safety Extra Low Voltage	SELV

Environmental condition

Temperature	
Operating	–20 °C up to +50 °C (–4°F up to +122°F)
Storage/transport	–30 °C up to +60 °C (–22°F up to +140°F)
Humidity:	5 % – 90 % relative humidity, non-condensing

13 Appendix

13.1 Technical drawings

13.1.1 Mounting angles fixing on the top

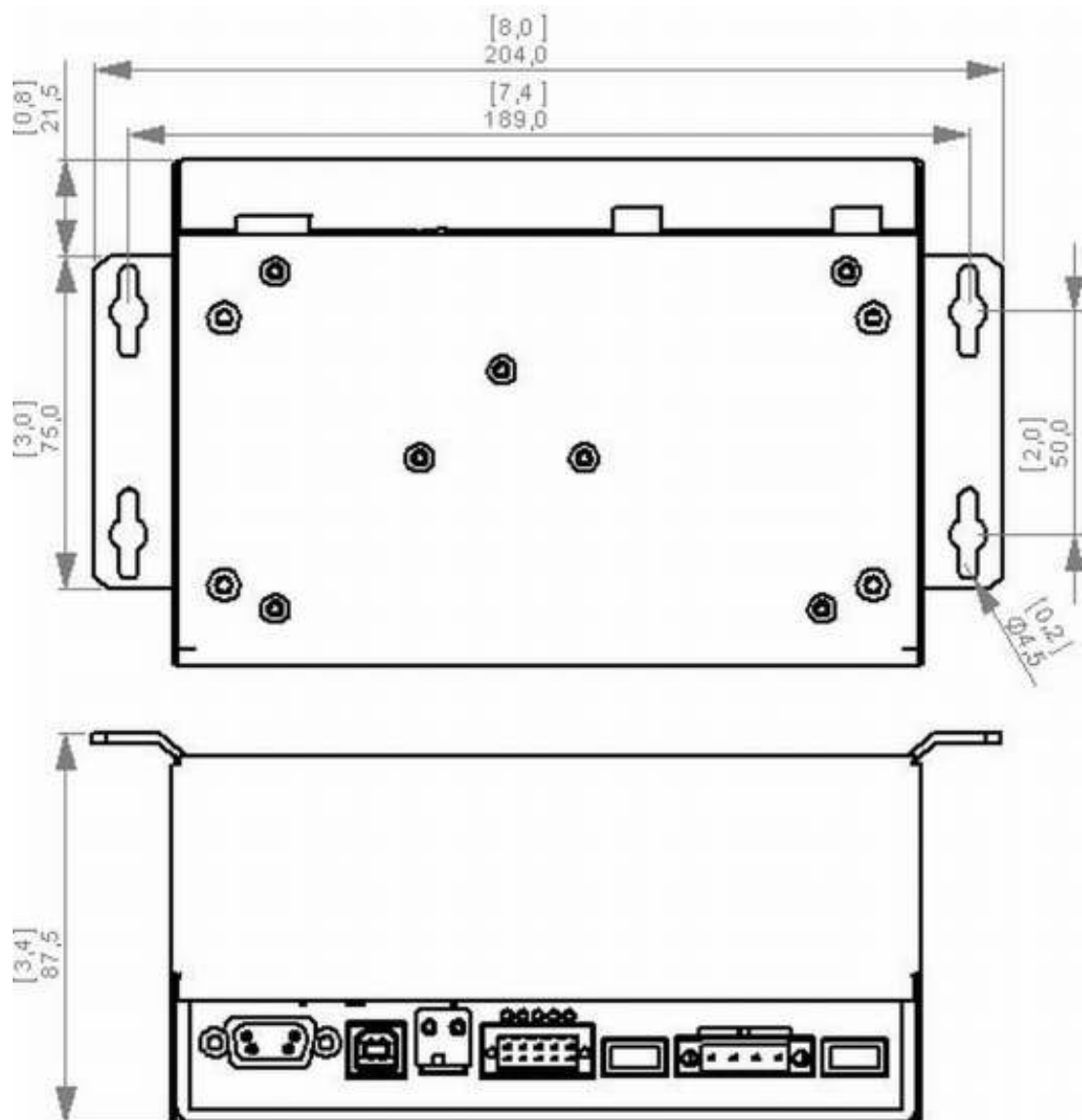


Fig. 35: Dimensions and drilling holes for mounting on the top in mm [inch]

13.1.2 Mounting angles fixing on the bottom

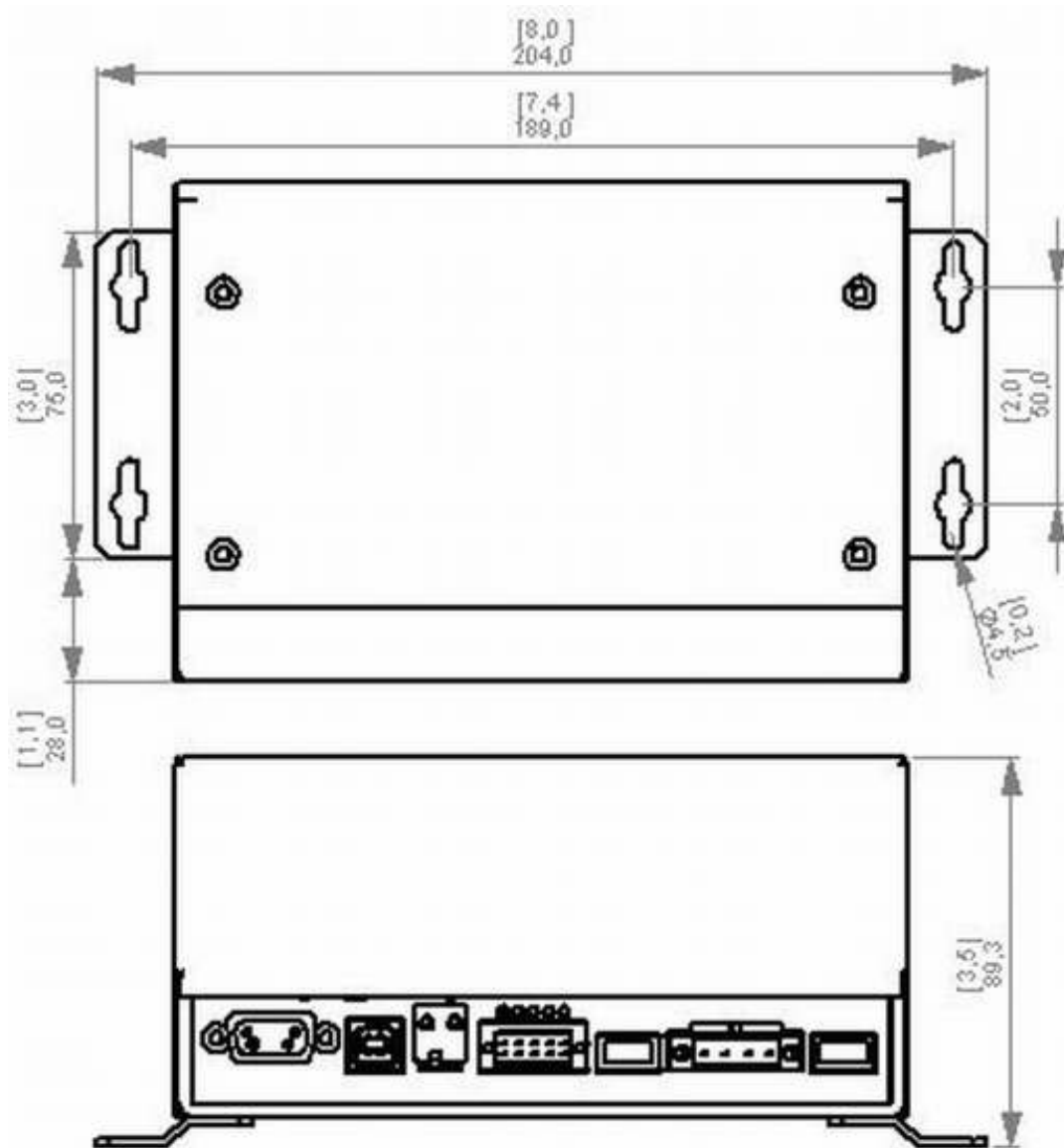


Fig. 36: Dimensions and drilling holes for mounting on the bottom in mm [inch]

13.1.3 Mounting angles fixing at the back side

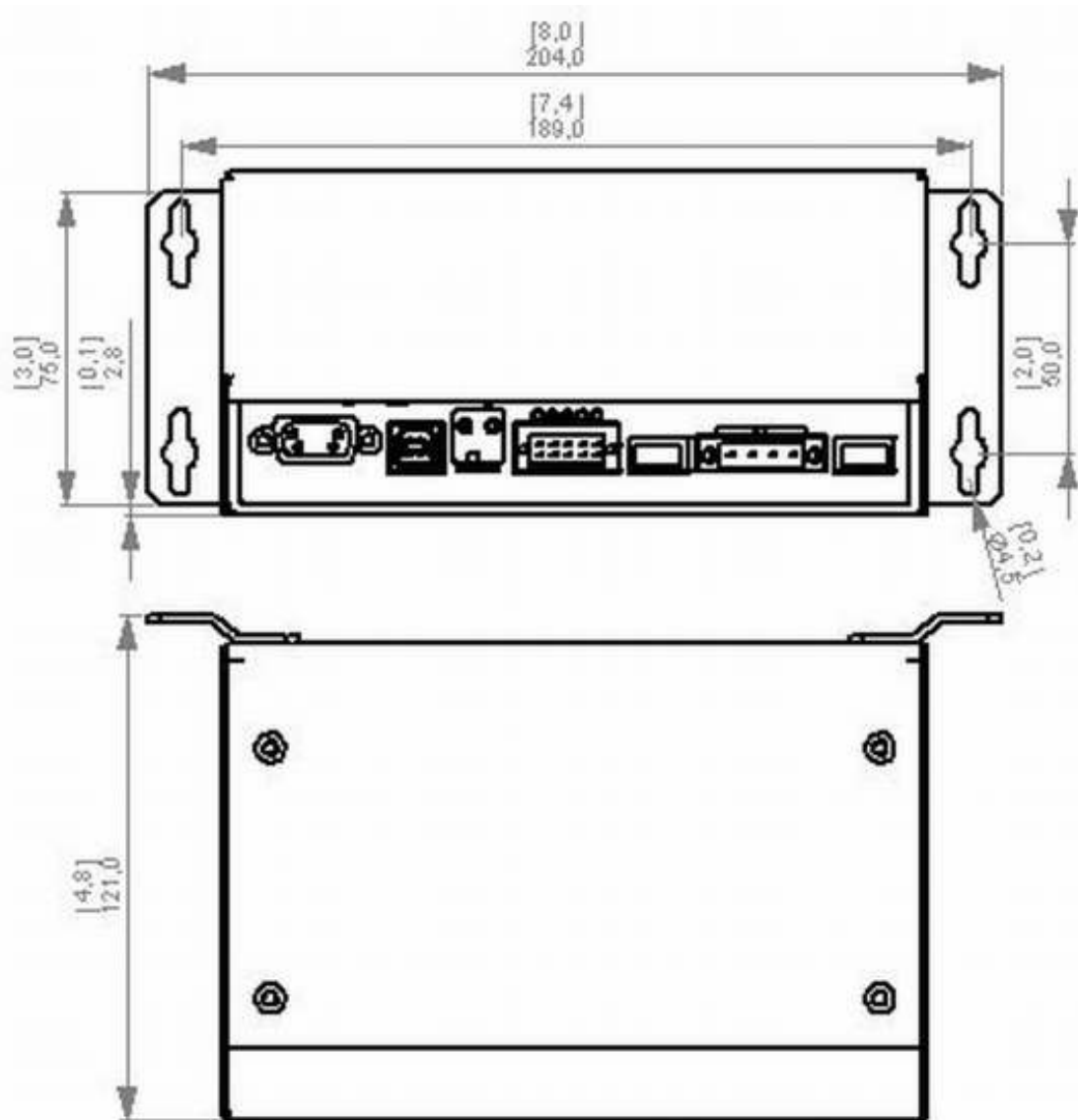



Fig. 37: Dimensions and drilling holes for mounting at the back side in mm [inch]

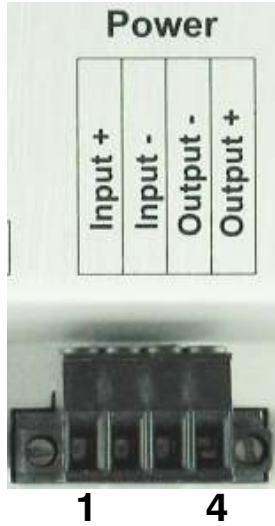
13.2 Pin assignment of the interfaces

13.2.1 RS232

- ① All interface signals (incl. GND) are NOT galvanic isolated from the housing ground and the power supply voltages in the device. Please pay attention to the safety informations.


D-SUB connector, 9-pole (Connector view)	Pin	Signal	Type
	1	DTR (Data Terminal Ready)	Out
	2	TxD (Transmit Data)	Out
	3	RxD (Receive Data)	In
	4	DSR (Dataset Ready)	In
	5	GND (Ground)	—
	6	DCD (Data Carrier Detect)	In
	7	CTS (Clear To Send)	In
	8	RTS (Request To Send)	Out
	9	RI (Ring Indicator)	In

13.2.2 Input / Output voltage

Mainboard connector, 4-pole (Connector view)	Pin	Signal	Type
	1	Input voltage positive	IN+
	2	Input voltage negative	IN—
	3	Output voltage negative (to the IPC)	OUT—
	4	Output voltage positive (to the IPC)	OUT+

13.2.3 Digital I/O

The Digital I/O consists of three independent inputs and one relay with changeover contact as output.

Mainboard connector, 10-pole (Connector view)	Pin	Signal	Type
	1	Relay Input	11
	2	N/C contact	12
	3	N/O contact	14
	4	not assigned	—
	5	Input3 —	In
	6	Input3 +	In
	7	Input2 —	In
	8	Input2 +	In
	9	Input1 —	In
	10	Input1 +	In

① The Digital I/O is in preparation.


13.3 Cable description

13.3.1 Cable set N8




Fig. 38: Cable with adapter for N8

Cable connector N8

High power contacts, 2-pole – Connector view	Pin	Signal	Wire colour
	A1	+24V	orange, red
	A2	GND	brown, black

Cable connector N8

High power contacts, 2-pole – Connector view	Pin	Signal	Wire colour
	A1	+24V	orange, red
	A2	GND	brown, black

13.3.2 Cable set N7



Fig. 39: Cable with adapter for N7


Cable connector N7

Power connector, 4-pole (View to soldered connectors)	Pin	Signal	Wire colour
	1	+12V	orange
	2	+12V	red
	3	GND	brown
	4	GND	black

Cable connector N7

Female jack, 4-pole (View to the contacts)	Pin	Signal	Wire colour
	1	+12V	orange
	2	+12V	red
	3	GND	brown
	4	GND	black


13.3.3 Ferrules

Double ferrules with protection collar	Signal	Wire colour
	+12V	orange
	+12V	red
	GND	brown
	GND	black

13.3.4 Cable DC/DC converter



Fig. 40: Cable for DC/DC converter

Blade receptacle	Signal	Wire colour
	+12V or +24V	blue
	GND	brown

14 Declarations of conformity

14.1 CE conformity

All noax **DC-UPS** mentioned in this User Manual complies with the requirements and regulations according to the CE conformity.

14.2 FCC conformity

All noax **DC-UPS** mentioned in this User Manual complies with the requirements and regulations according to the FCC conformity.

Additional information regarding to FCC Rules:

- This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.
- These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
- This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
- Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

14.3 ROHS

noax Technologies AG complies with the requirements of RoHS (Restriction of Hazardous Substances, RoHS).

14.4 WEEE

noax Technologies AG (ear Reg.-Nr. DE27359889) complies with the requirements of WEEE (Waste Electrical and Electronic Equipment) and supports redemption of old devices free of charge (excluding transportation costs to noax Technologies AG).

14.5 Declarations of conformity as download

All current declarations of conformity can be downloaded under the section **"Service & Support" – "Certificates"** on the website **www.noax.com**.

If you do not have internet access please contact our hotline.

15 Your notes

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