MANUAL

MD-1000PRO MD-2000PRO MDO-2000PRO
MD-1500PRO MD-3000PRO MDO-3000PRO

multimatic

multimatic

EDELSTROM
MD-PRO SERIES

1-3 KVA
1/1 PHASED

CE

Manual: **Operating Instructions**
Language: **English**
Issue Date: **09/2024**

Confidentiality
All information contained in this manual is provided to the customer under the condition that this information is treated confidentially and not disclosed to third parties.

Imprint

multimatic EDELSTROM GmbH, Im Wasen 2, D-78667 Villingendorf, Germany

Publisher Responsible for Content: multimatic EDELSTROM GmbH

Contents

1 General Information

1.1 Information about this Manual

This manual contains the essential guidelines for the safe, proper, and economical operation of the Uninterruptible power supply (UPS).

It applies to the following UPS Devices:

- MD-1000PRO
- MD-1500PRO
- MD-2000PRO
- MD-3000PRO
- MDO-2000PRO
- MDO-3000PRO

This manual is an integral part of the UPS system and must be kept near the UPS, where it is always accessible to authorized operating personnel.

Pay attention to the instructions in the manual!

Ensure that all individuals who work on or with the UPS carefully read and follow this manual.

Additionaly, the applicable rules and regulations for accident prevention at the installation site/ operation must be observed. In the event of conflicts with national safety regulations or instructions, the national safety instructions must be followed.

The multimatic EDELSTROM GmbH assumes no liability for damages resulting from non-compliance With the manual, even within the warranty period.

In addition to this manual, please refer to the relevant technical documentation for the battery modules and batteries.

1.2 Abbreviations

The abbreviation **UPS** stands for **u**ninterruptible **p**ower **s**upply. In the following manual, the term UPS is used to refer to the UPS device or system.

Accumulators are used as energy storage in the Ups systems. In this manual, the term **battery** Is used for this purpose.

1.3 Explanation of Symbols and Notices

To facilitate quick understanding of this manual and ensure the safe handling of UPS systems, the following warning notices and symboly are used.

Structure of Safety Notices

Type and source of the hazard.
Consequences of ignoring the instructions.
- ▶ Measures to avoid the hazard.

Safety Symbols

Symbol	Meaning
	**This symbol generally warns of potential injury hazards.** ▶ Follow these instructions to avoid injuries.
	**This symbol warns of injury risk due to electrical current.** ▶ Follow these instructions to avoid injuries caused by electric shock.
	**This symbol warns of injury risk when handling batteries.** ▶ Follow these instructions to avoid injuries.

Symbol	Meaning
	**This symbol warns of property damage due to electrostatic discharge.** ▶ Follow these instructions to avoid property damage.
VORSICHT	**‘This symbol generally warns of property damage.** ▶ Follow these instructions to avoid property damage.

Notation Conventions

Note	This symbol indicates important information and instructions that contribute to efficient and trouble-free operation.

1	Position numbers
▶	Action prompt
»SIGNAL«	Signal, message or command
☑	Requirements that must be met before subsequent actions can be carried out.

2 Safety

2.1 Intended Use

The UPS systems described in this manual provide protection for mission-critical areas such As server landscapes, network components, IT systems, or industrial facilities.

This system must only be operated:

- Indoors on a level surface
- Under the specified environmental conditions
- Without obstructing ventilation (**see Chapter 5.1 Requirements for the Installation Site**

Warning Against Misuse
UPS systems must only be used as intended. Any other or extended use, such as:

- Application in life-support systems, use in hospitals, or direct patient care
- Operation in areas with fire or explosion hazards, as well as in areas of extreme heat/cold or extreme humidity

is considered improper use. This also includes:

- Failure to follow the information in this manual, particularly the safety, installation, and maintenance chapters
- Opening or tampering with the UPS system
- Using replacement parts that are not approved by the manufacturer,

The manufacturer is not liable for any damages resulting from this. The risk is solely borne by the user.

2.2 General Safety Instructions

- Operate the product only in proper condition and as intended, with safety and hazard awareness, and in compliance with this manual.
- Work on the electrical equipment must only be carried out by authorized electricians following electrical engineering standards. There is a risk of death or serious injury and burns from electric shock if touching live wires or components.
- Operation is only permitted with the protective earth conductor connected. Ideally, connect the UPS to a separate, fused power line that has no other loads connected.
- Ensure that the UPS input voltage matches the mains supply voltage. Use a certified power cable with the specified cross-sections for the power system in use. Adhere to the specified cable lengths.
- The UPS has its own internal energy source (battery) and high-capacity capacitors. Life-threatening voltage may be present at the outputs even if the system is disconnected from the mains.
- Never open the UPS housing! Life-threatening voltage may be present inside, even if the system is disconnected from the mains.
- Do not insert any objects into the openings of the housing. Do not pour liquids over or into the housing. This can cause short circuits and/or electric shocks, fire, or injuries.
- To prevent damage when handling, charging, and operating the batteries, all manufacturer instructions and safety data sheets must be followed. All personnel must be trained in handling the batteries.

3 Scope of Delivery

3.1 Delivery and Unpacking

Health Hazard Due to Physical Overexertion or Falling Load.

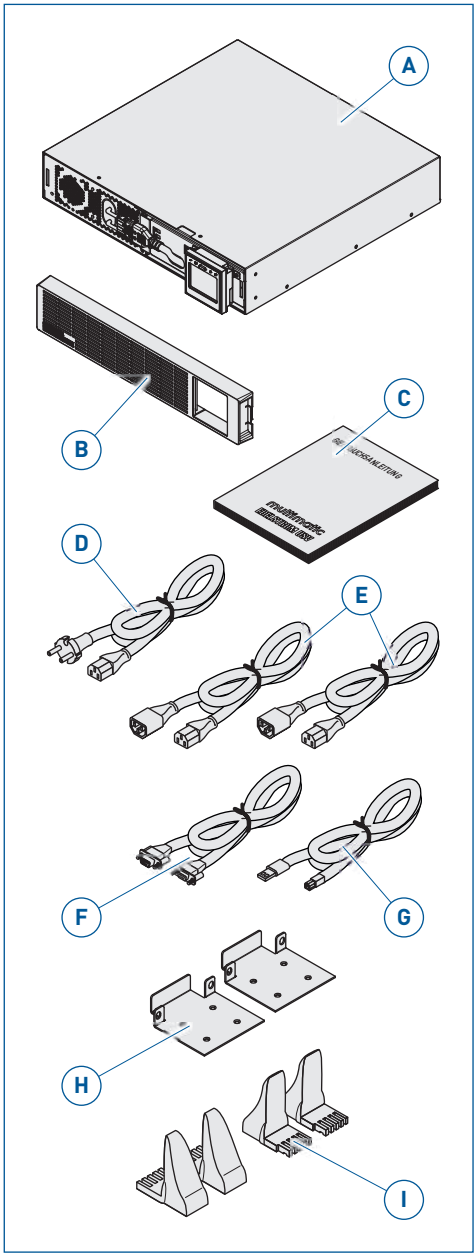
Due to the heavy weight of the UPS and battery modules, lifting, moving, or carrying them can lead to physical overexertion. Falling loads can cause injuries and property damage.

- Use appropriate lifting equipment and securing devices.
- Avoid manual handling of heavy loads. If manual handling is unavoidable, lift the load with multiple people.
- Follow safety regulations for lifting and transporting heavy loads!

The individual components of the UPS are delivered separately.
Transport the devices within the facility to the installation site according to applicable accident prevention regulations (UVVs).

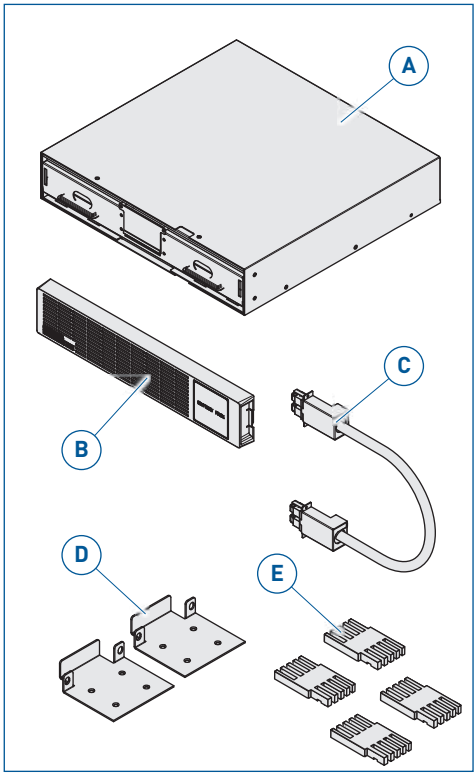
Unpacking

1. Check the condition of the packaging. If there are any damages, contact the shipping company and the dealer/manufacturer.
2. Remove the UPS and accessories from the packaging. Keep the packaging for future use or dispose of it properly.



Scope of Delivery for UPS Systems
MD-1000PRO
MD-1500PRO
MD-2000PRO
MD-3000PRO
MDO-2000PRO
MDO-3000PRO

- **A** UPS
- **B** Faceplate
- **C** Manual
- **D** UPS Power Cable
- **E** Load Connection Cable (IEC)
- **F** RS232 Cable
- **G** USB Cable
- **H** Mounting Brackets for Rack Installation
- **I** Stand Feet



Scope of Delivery for Battery Packs
MDBP-1000PRO
MDBP-1500PRO
MDBP-2000PRO
MDBP-3000PRO
MDOBP-2000PRO
MDOBP-3000PRO

- **A** Battery Pack
- **B** Faceplate
- **C** Connection Cable
- **D** Mounting Brackets for Rack Installation
- **E** Spacers for Stand Feet

4 Product Description

4.1 General

The UPS systems are double-conversion UPS units with bypass, meaning the load is supplied through a double conversion process from alternating current (AC) to direct current (DC) and back (rectifier/inverter). This ensures that the output voltage is completely isolated from the input voltage (VFI, Voltage and Frequency Independent).

The UPS units provide protection against common power disturbances, such as:

- Power outages, voltage sags, and voltage fluctuations
- Overvoltage or voltage spikes
- Electrical noise, frequency deviations, or distortions (harmonics).

They meet the requirements for secured power quality, energy distribution, and power management for computer networks and data centers, telecommunications systems, and industrial applications.

Communication
The UPS units are equipped with an RS232 interface, a USB interface, and a slot for additional interface cards, enabling easy remote control and monitoring.

Battery Management
The batteries are continuously charged if the UPS is connected to the mains supply. If the load is powered by the batteries, the UPS will shut down once the battery discharge limit voltage is reached.

4.2 Models

UPS Systems

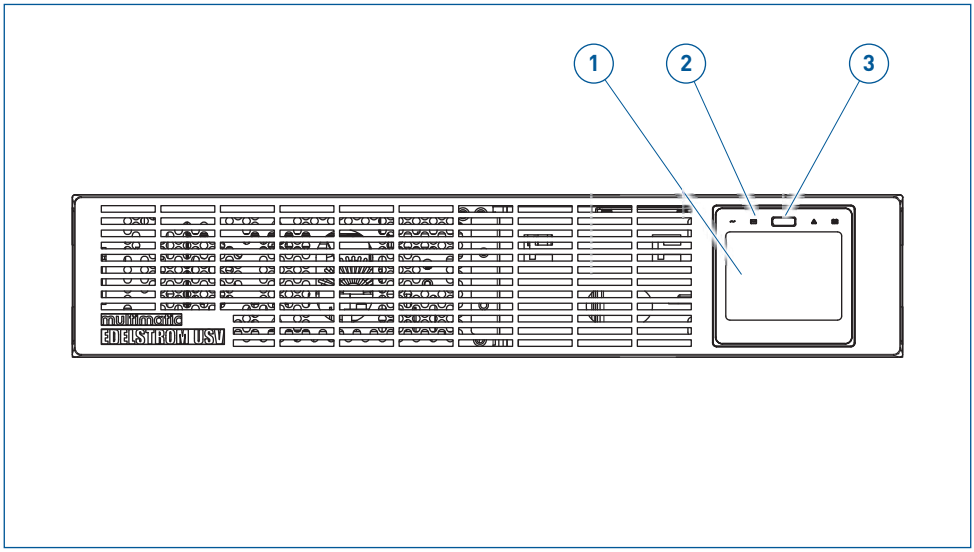
Type	Model	Battery
Standard Models	MD-1000PRO	integrated
	MD-1500PRO	integrated
	MD-2000PRO	integrated
	MD-3000PRO	integrated
Short Models	MDO-2000PRO	external
	MDO-3000PRO	external

Battery Packs

Type	Model	Compatible with UPS
Standard Models	MDBP-1000PRO	MD-1000PRO
	MDBP-1500PRO	MD-1500PRO
	MDBP-2000PRO	MD-2000PRO
	MDBP-3000PRO	MD-3000PRO
Short Models	MDOBP-2000PRO	MDO-2000PRO
	MDOBP-3000PRO	MDO-3000PRO

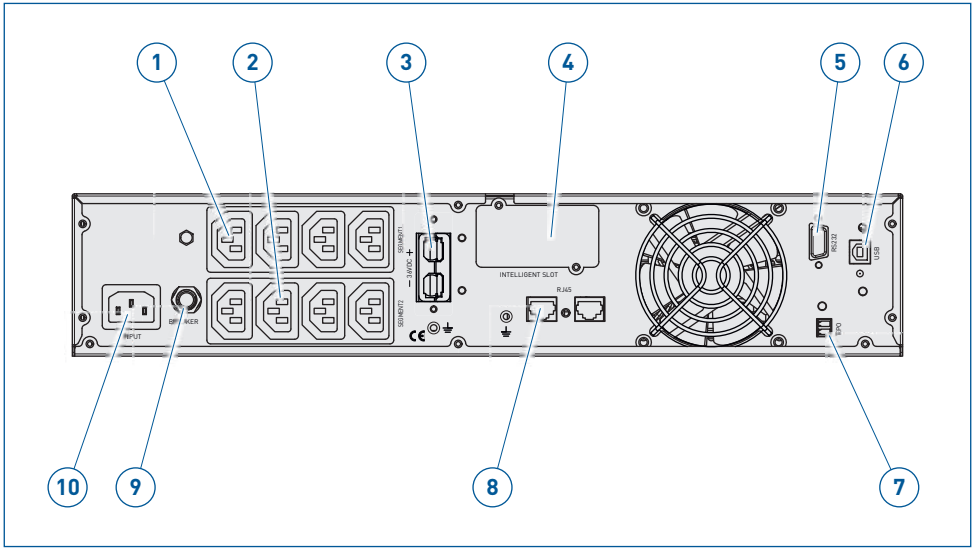
4.3 Device Components

4.3.1 Front Panel



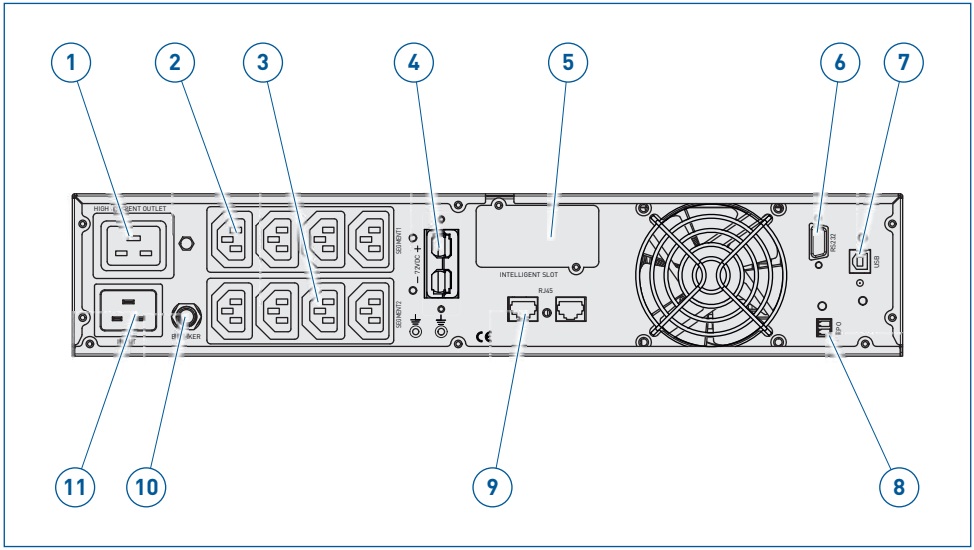
1 TOUCH Display
2 Status LEDs
3 ON/OFF Switch

4.3.2 Rear Panel MD-1000PRO, MD-1500PRO



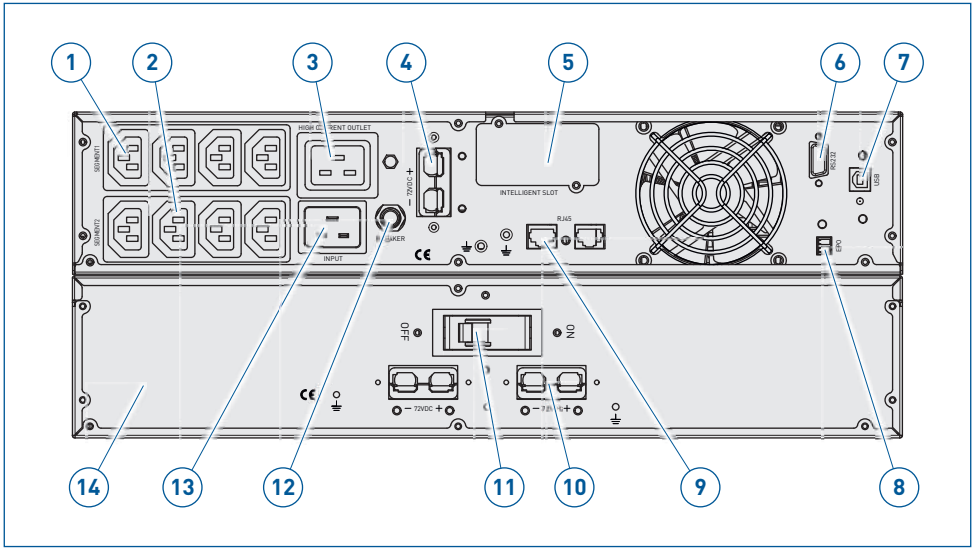
1 Output Connectors 4 × IEC 320 C13 (Segment 1) – programmable
2 Output Connectors 4 × IEC 320 C13 (Segment 2)
3 External Battery Pack Connection Port
4 Slot for Network Card (SNMP)/Relay Card
5 RS232 Port
6 USB Port
7 Terminals for External Emergency Power Off Switch (EPO)
8 RJ45 Port (Network/Fax/Modem/Surge Protection)
9 Fuse
10 Input Connection for Power Supply 230 V

4.3.3 Rear Panel MD-2000PRO, MD-3000PRO



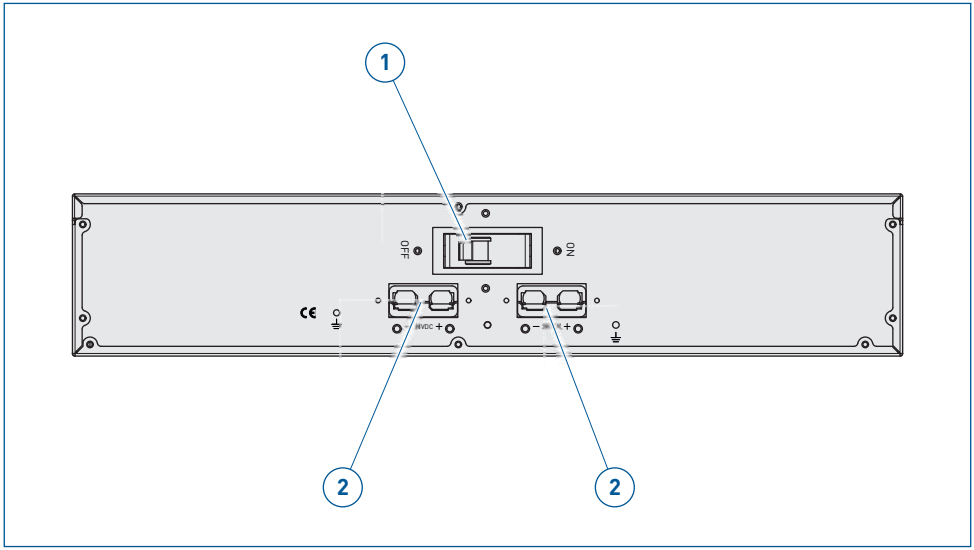
1 Output Connector IEC 320 C19
2 Output Connectors 4 × IEC 320 C13 (Segment 1) – programmable
3 Output Connectors 4 × IEC 320 C13 (Segment 2)
4 External Battery Pack Connection Port
5 Slot for Network Card (SNMP)/Relay Card
6 RS232 Port
7 USB Port
8 Terminals for External Emergency Power Off Switch (EPO)
9 RJ45 Port (Network/Fax/Modem/Surge Protection)
10 Fuse
11 Input Connection for Power Supply 230 V

4.3.4 Rear Panel MDO-2000PRO, MDO-3000PRO



1 Output Connectors 4 × IEC 320 C13 (Segment 1) – programmable
2 Output Connectors 4 × IEC 320 C13 (Segment 2)
3 Output Connector IEC 320 C19
4 External Battery Pack Connection Port
5 Slot for Network Card (SNMP)/Relay Card
6 RS232 Port
7 USB Port
8 Terminals for External Emergency Power Off Switch (EPO)
9 RJ45 Port (Network/Fax/Modem/Surge Protection)
10 Connection Port (UPS or additional external Battery Pack)
11 Battery Disconnect Switch
12 Fuse
13 Input Connection for Power Supply 230 V
14 Battery Pack

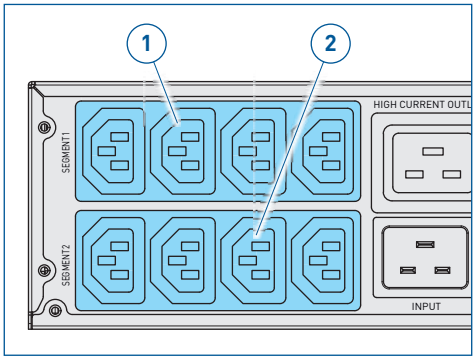
4.3.5 Rear Panel of Battery Packs



1 Battery Disconnect Switch
2 Connection Port (UPS or additional external Battery Pack)

4.4 Output Connectors

4.4.1 Output Connectors IEC 320 C13



1 Output Connectors: 4 × IEC 320 C13 (Segment 1) – programmable
2 Output Connectors: 4 × IEC 320 C13 (Segment 2)

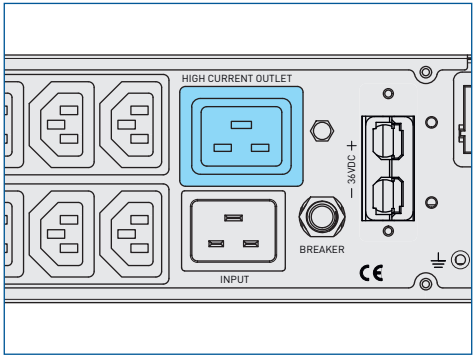
The output connectors are used to connect the load devices to the UPS. The maximum current flow allowed is 10 A.

Connectors in Segment 1 can be switched off earlier if needed. This can be configured through the EOD (Emergency Off Delay) level setting.

For example, with this feature, you can keep critical devices running during a power outage while shutting down devices connected to Segment 1. This functionality helps in effectively managing battery usage and conserving battery power.

Connectors in Segment 2 cannot be switched off. they remain powered until the UPS is completely turned off.

4.4.2 Output Connector IEC 320 C19

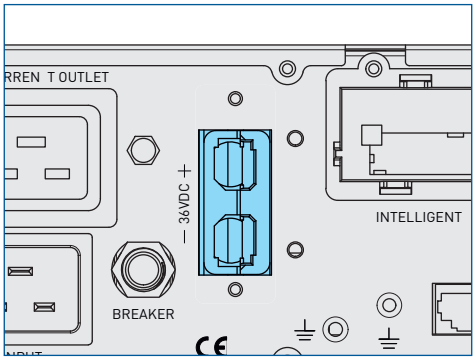


The output connectors are used for connecting load devices to the UPS. The maximum current flow allowed is 16 A.

Note

The MD-1000PRO and MD-1500PRO models do not have an output connector of this type.

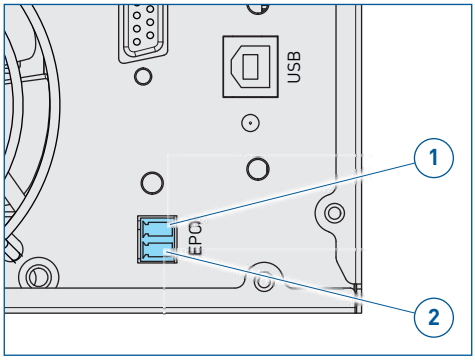
4.4.3 External Battery Pack Connection Socket



The connection socket is used for connecting an external battery pack.

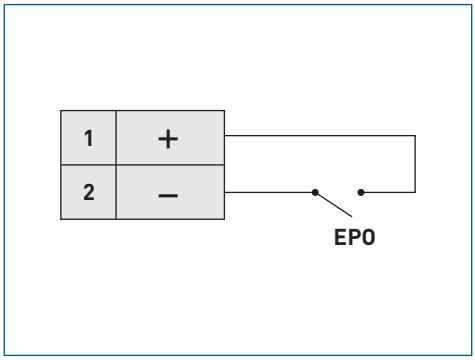
4.5 Communication Interfaces

4.5.1 EPO Interfaces

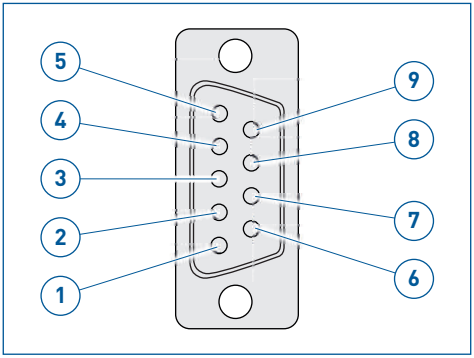


1 PIN 1
2 PIN 2

To activate the Emergency Power Off (EPO), PIN 1 and PIN 2 must be disconnected. In Normal operation, PIN 1 and PIN 2 are closed.



4.5.2 RS232 Interface



The RS232 communication interface provides all Relevant data for remote monitoring via a PC And UPS software.

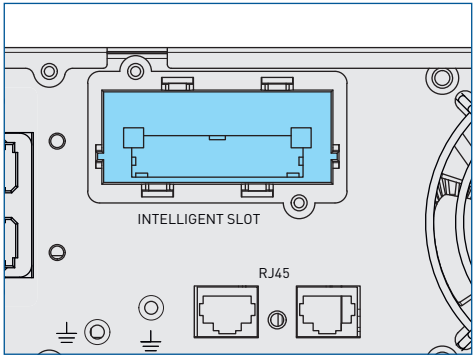
Settings and Pinout:
Baud Rate: 2400 bps
Data Length: 8 bits
Stop Bit: 1 bit
Parity: None

PIN	PC	USV
PIN 2: RxD (Receive Data)	Receive	Send
PIN 3: TxD (Transmit Data)	Send	Receive
PIN 5:Gnd (Ground)	Ground potential	

Note

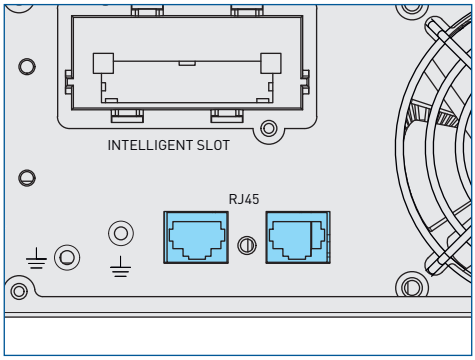
- In addition to the RS232 interface, a network card can be used.
- Alternatively, the USB interface can be used. The USB interface takes Priority over the RS232 interface.

4.5.3 Slot for Network Card (SNMP)/Relay Card



The UPS features a slot for an optional network Card (SNMP) or relay card.

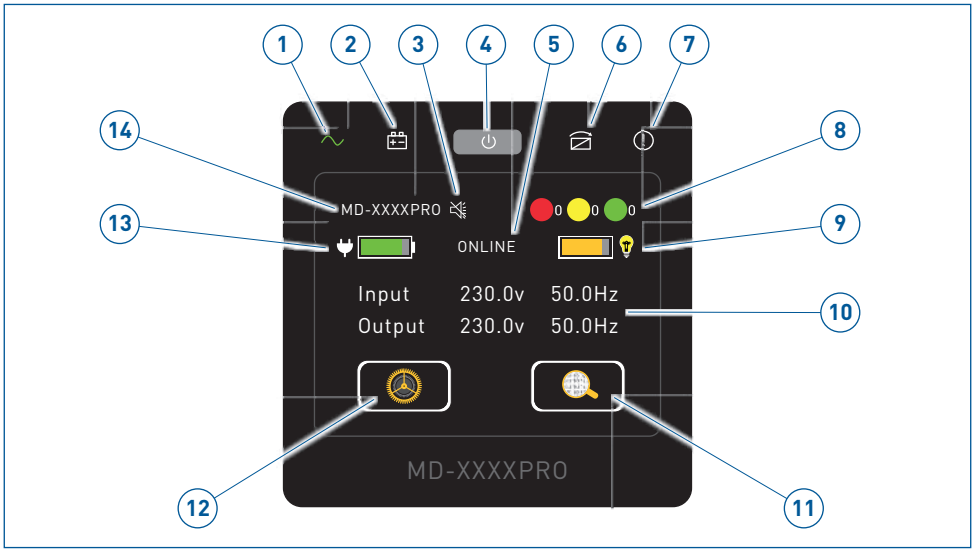
4.5.4 RJ45 Interface



The data line protection (RJ45) ensures that Network cables are protected against Overvoltage. These connections are not intended For communication with UPS or any accessories Such as bypass, etc.

4.6 LCD Control Panel

4.6.1 Overview



1 Normal Operation
2 Battery Operation
3 Mute
4 On/Off Button
5 Operating Mode
6 Bypass Operation
7 Fault/Alarm Message
8 Number of Current Faults, Alarms, and Events
9 Load Display
10 Status Information
11 Menu Information
12 Menu Setting and Control
13 Battery Charge Status
14 UPS Type

On/Off Button

Turning on the UPS

Press and hold the power button for more than 2 seconds to turn on the UPS.

Turning off the UPS

Press and hold the power button for more than 2 seconds to turn off the UPS. You will then be in OUT/OFF mode, and you can unplug the power cord within about 5 seconds to completely shut down the UPS.

Enabling/Disabling Bypass Operation

Press and hold the power button for approximately 1 second to enable or disable the bypass operation.

Note

The function to enable/disable bypass operation is only available if the bypass function has been activated in the menu under **Setting/UPS/Bypass Function**, **see Chapter 6.5.1 UPS, page 54**. In this case, the UPS cannot be turned off.

Status LEDs

Normal Operation

Battery Operation

Bypass operation

Fault

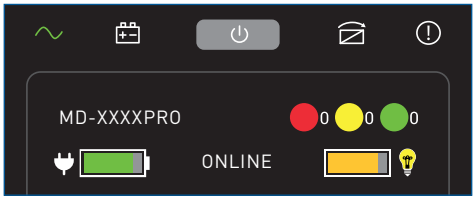
Alarm

LCD Display Symbols	
	**Mute** The symbol indicates that the signal tone is muted.
	**Faults, Alarms, and Events** Displays the number of current faults, alarms, and events. Tap the symbol to view the messages.
	**Load Indicator** The load capacity is shown by the number of yellow sections in the bar. Tap the symbol to get detailed information about the load capacity.
	**Battery Charge Level** The battery charge level is shown by the number of green sections in the bar. Tap the symbol to get detailed information about the battery charge level.
	**Battery Charging** The symbol indicates that the battery is charging.
Input **Output**	Input Voltage/ Input Frequency Output Voltage/ Output Frequency
	**Settings** Tap to open the **setting** and **control** menu.
	**Status Information** Tap to open the **Measure Info** and **Product Info** menu.
	**Setting** Tap the symbol to open the **Setting** menu, where the UPS parameters can be configured.
	**Control** Tap the symbol to open the **Control** menu to operate the UPS.
	**Measure Info** Tap the symbol to open the **Measure Info** menu, which displays the current status Of the UPS.
	**Product Info** Tap the symbol to open the **Product Info** menu, which displays the information About the UPS.

LCD Display Symbols	
	**Fault Record** Tapping this icon opens the **Fault Record** menu, displaying the last 20 faults of the UPS.
	**Home** Returns to the home menu.
	**Back** Returns to the previous menu level.
	**Up** Moves to the previous page.
	**Down** Moves to the next page.
	**Left** Moves to the left side.
	**Right** Moves to the right side.
	**YES** Confirm.
	**NO** Cancel.
	**ESC** Exit.
	**DEL** Delete.
	**OK** Apply.

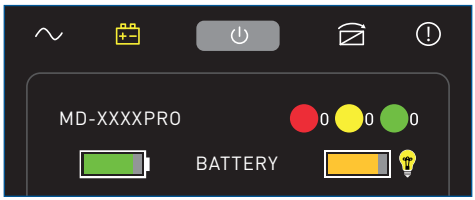
4.7 Operating Modes

4.7.1 Normal Operation



In normal operation, the load is continuously supplied with regulated and filtered alternating current (AC) by the inverters (rectifier/inverter). The mode ONLINE is displayed, and the status LED for normal operation lights up green.

4.7.2 Battery Operation

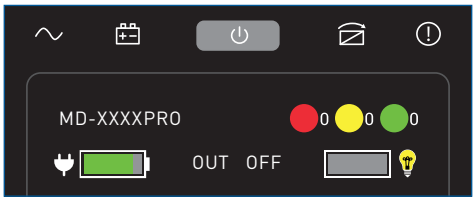


In the event of a power failure, the load is automatically supplied by the batteries. During battery operation, the mode BATTERY is displayed, the status LED for battery operation lights up yellow, and an audible alarm sounds every 4 seconds. This continues until the batteries are depleted or until the AC input voltage returns to within the UPS tolerances.

During discharge, the battery charge level for the current load is displayed.

Before the batteries are fully depleted, an alarm will sound until the UPS completely shuts down.

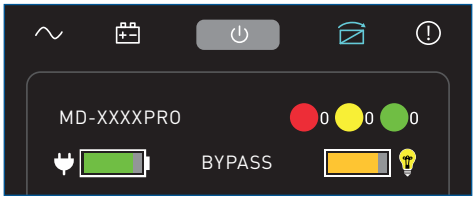
4.7.3 Out-Off Operation



When the UPS is connected to the power supply, it In this mode, the batteries are being charged, and the output is turned off.

The Mode OUT OFF is displayed.

4.7.4 Bypass Operation



In normal operation, with the input voltage within the allowable range, the UPS operates in its standard mode. In the event of an overload, the UPS automatically switches to Bypass mode. In this mode, the BYPASS indicator is shown, the status LED for Bypass operation lights up blue, and an audible alarm sounds.

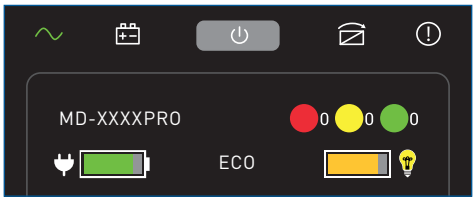
In Bypass mode, the load is supplied with AC mains voltage from the power grid through the internal bypass.

You can also manually activate Bypass mode. If the UPS is in normal operation and the mains voltage is within the acceptable range, press the power switch to switch to Bypass mode.

Note

By default, Bypass mode is not activated. You can activate Bypass mode in the menu **Setting/ UPS/Bypass Function, see Chapter 6.5.1 UPS, Page 54.**

4.7.5 Eco Mode (Energy-Saving Mode)

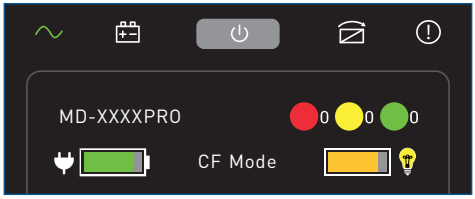


In Eco mode, the load is supplied with AC mains voltage from the power grid through the internal bypass. Tolerance ranges for output voltage and output frequency can be set for this bypass operation.

If the mains voltage does not meet these tolerances, the load is automatically supplied by tolerances, the load is automatically supplied, in the event of a power failure, the load is supplied By the batteries.

The mode ECO is displayed.

4.7.6 Converter Mode (Constant Voltage/Constant Frequency)

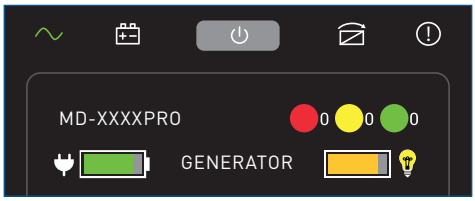


The UPS can be set to fixed voltage and frequency values, allowing operation of devices with different input voltages and frequencies.

In Converter mode, the output capacity of the UPS is reduced to 80%.

The mode CF Mode is displayed.

4.7.7 Generator Operation



The UPS can be supplied by a backup generator in the event of a power failure.

Generator operation has a wider frequency range compared to Normal operation:

- Normal Operation: 46 - 54 Hz
- Generator Operation: 40 - 70 Hz

The wider frequency range in Generator operation helps prevent the UPS from frequently switching to battery mode due to unstable frequency conditions. This ensures a stable 230 V/50 Hz output for the load.

All other UPS functions (such as battery protection) continue to operate correctly.

The mode "GENERATOR" is displayed.

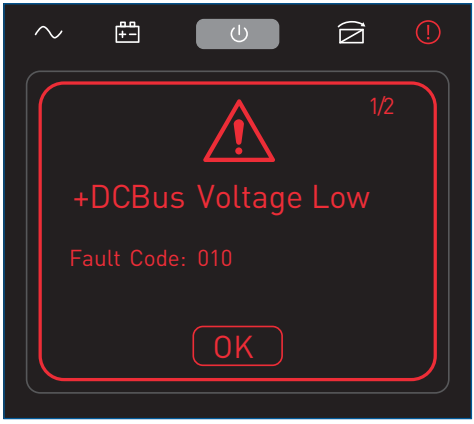
4.7.8 EPO (Emergency Power-off)

The UPS can be turned off using the Emergency Power-off (EPO) switch through the EPO interface. The EPO interface is located on the rear of the device.

The UPS is immediately switched off. The outputs are de-energized, and the UPS is locked.

1. Turn off the emergency stop switch.
2. Confirm the error message by pressing "OK". After about a minute, the alarm will stop sounding.

4.7.9 Fehlerbetrieb



The fault mode is active when an error occurs in the UPS. The UPS switches to fault mode and interrupts the output. The status LED for fault mode lights up red, and a continuous alarm sounds.

An error code and a brief description are displayed. Relevant information regarding the error code can be found in the error code table.

1. Fix the error.
2. Confirm the error message by pressing "OK". After about a minute, the alarm will stop sounding.

4.7.10 Alarm Mode

The alarm mode is activated when an alarm condition occurs in the UPS. In this mode, the status LED for faults lights up yellow, and an audible alarm sound.

A fault code and a brief description of the issue are displayed on the screen. You can refer to the fault code table for detailed information regarding the specific alarm.

Steps to respond to an alarm:

1. Acknowledge the alarm by pressing »OK«.

5 Installation and Connection

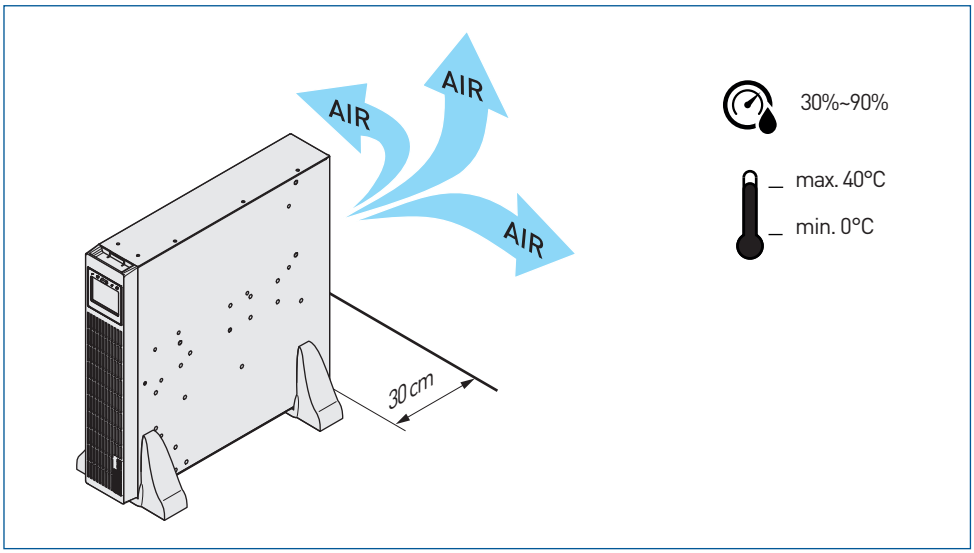
5.1 Location Requirements

CAUTION	Risk of damage due to unsuitable installation location An unsuitable location can lead to damage to the UPS and may cause further consequential damages. ► It is crucial to adhere to the guidelines provided in this section.

Location:
The UPS is intended for indoor use only. It is not suitable for use in dusty or corrosive environments, or in explosive atmospheres.

Requirements:

- The location must have a level and sufficiently load-bearing surface.
- Maintain a minimum distance of 30 cm (approximately 12 inches) between the rear of the device and the wall to ensure adequate ventilation.



Climatic Conditions

Relative Humidity: Up to 95%, non-condensing.

Temperature Range: 0°C to +40°C

Note Operating temperature has a significant impact on the lifespan of the batteries. Ideal temperatures range between +10°C and +20°C.

Derating Factors at Altitudes Above 1000 m Above Sea Level

The UPS should be installed in areas below 1000 meters above sea level. In locations above 1000 meters, derating according to IEC62040-3 is recommended. The following table serves as a reference.

Derating Factors at Altitudes Above 1000 m Above Sea Level:

Altitude Above Sea Level	Derating Factors	
	Natural Convection	Required Air Cooling
1000 m	1.000	1.000
1200 m	0.994	0.990
1500 m	0.985	0.975
2000 m	0.970	0.950
2500 m	0.955	0.925
3000 m	0.940	0.900
3500 m	0.925	0.875
3600 m	0.922	0.870
4000 m	0.910	0.850
4200 m	0.904	0.840
4500 m	0.895	0.825
5000 m	0.880	0.800

Table according to IEC62040-3: Unlisted altitudes can be interpolated.

5.2 Installation/Rack Mounting

The UPS units can be set up as standalone devices or mounted in a 19-inch rack. When installing a battery pack, the batteries should be inserted as the final step. The UPS is "hot-swappable," meaning that a qualified electrician can connect the batteries without fully shutting down the UPS.

Follow the instructions for battery installation as outlined in **Chapter 8.5 Battery Replacement, Page 76**, and adhere to the following safety precautions:

Dangers Associated with Batteries

Batteries pose specific hazards.

- To prevent damage during handling, charging, and operation, all guidelines provided by the respective manufacturers and safety data sheets must be strictly followed.
- All personnel handling batteries must be trained.
- Only qualified electricians should perform battery replacements.

Dangers associated with Electrical Hazard.

After setting up the UPS, significant temperature differences can cause Condensation.

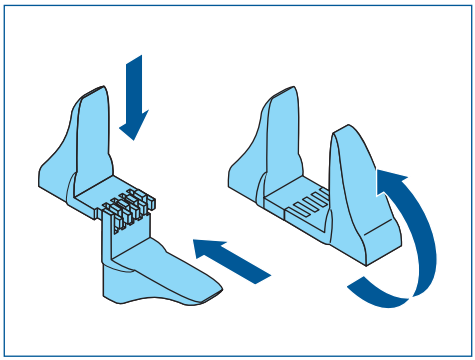
- Allow the UPS to acclimate for 2 hours before proceeding with any further steps.
- Ensure all condensed surfaces are completely dried.

The UPS unit is heavy!

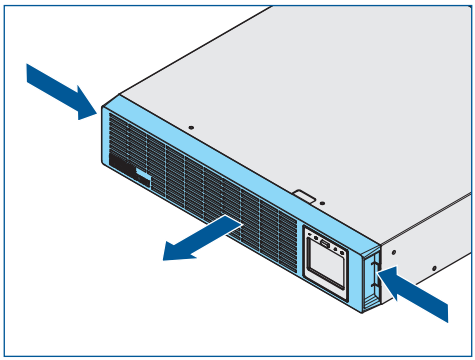
The UPS unit is heavy due to the batteries. Lifting, moving, or carrying the unit may lead to physical strain. Dropping the unit could result in injuries and property damage.

- Installation should be carried out by at least two people.

5.2.1 Setting Up as a Standalone Unit



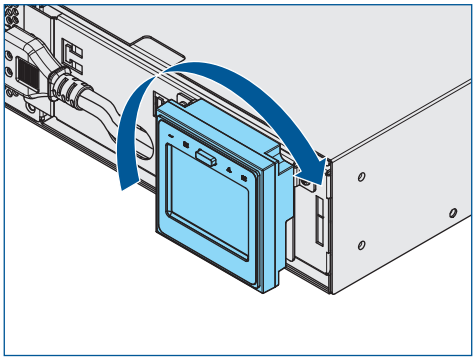
1. Insert the two foot elements together.
2. Pivot the right foot element 90° until it clicks into place.



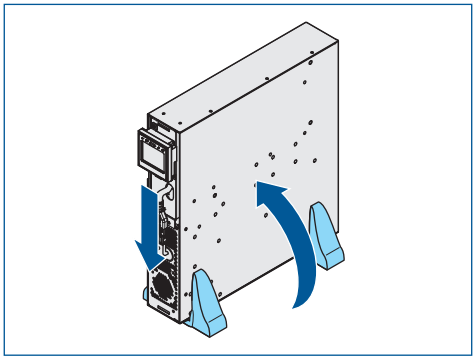
3. Detach the front panel by pressing in the side latches.

Note

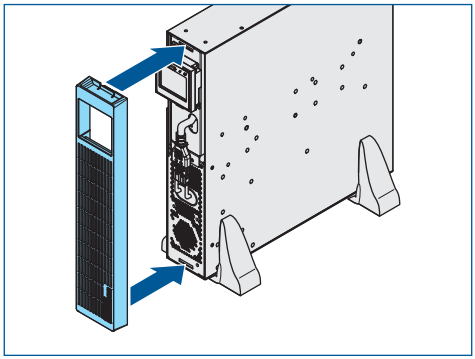
The front panel is included with the unit upon delivery and may not require removal.



4. Turn the display 90° clockwise.



5. Carefully stand the UPS unit upright and place it on the foot elements. **Caution: The unit is heavy! Ensure a second person assists you to avoid injury.**

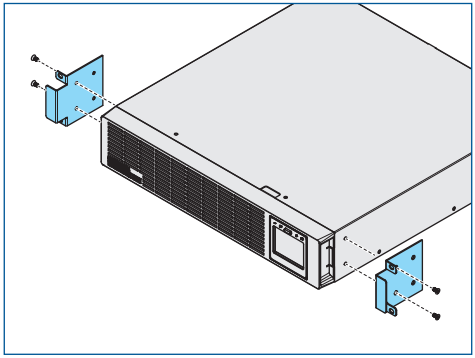


6. Attach the front panel to the unit.

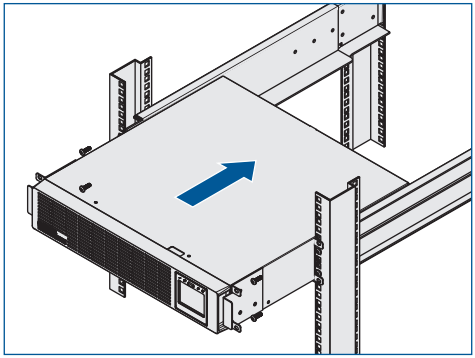
5.2.2 Installation in a 19-Inch Rack

Note

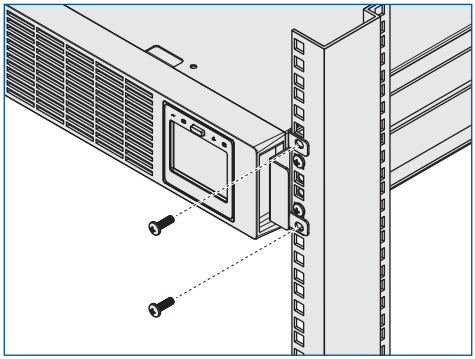
- To install the UPS in a 19-inch rack, you need a rack rail kit RSN/RMK3. Please refer to the corresponding multimatic Rack Rail Installation Guide RSN/RM RMK3.
- Optional battery packs should be installed below the UPS! Each battery pack also requires a rack rail kit RSN/RMK3.



1. Install the cover, **see Chapter 5.2.1 Setting up as a Standalone Unit, Page 40.**
2. Securely attach the two mounting brackets to the UPS.



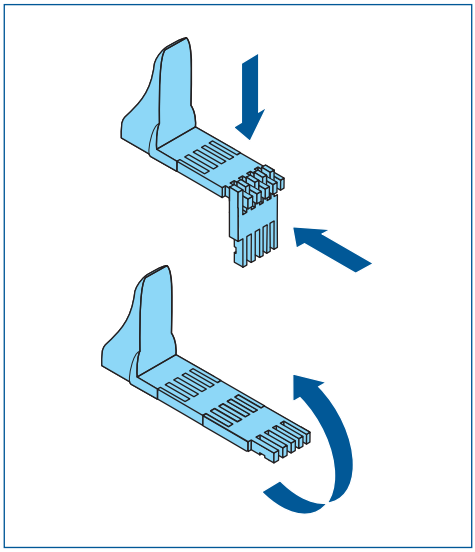
3. Install the two rack rails in your rack according to the provided installation guide.
4. With caution, slide the UPS onto the two rack rails. **Caution: The unit is heavy! Ensure a second person assists you to avoid injury.**



5. Secure the UPS to the rack on both sides using the mounting brackets. Use four M5x16 pan head screws for this purpose.

5.3 Setting Up and Connecting an External Battery Pack

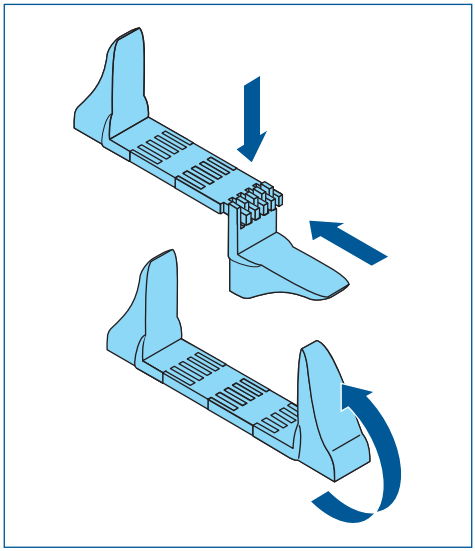
5.3.1 Standalone Unit



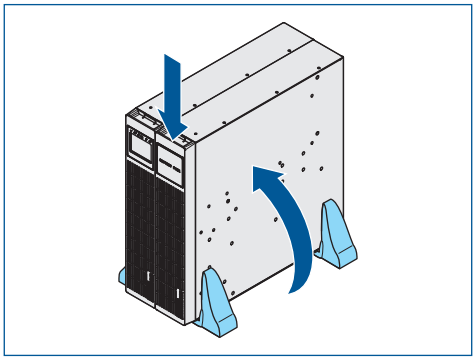
1. Attach the intermediate piece to the base.
2. Rotate the intermediate element 90° until it locks into place.
3. Follow the same procedure for the second intermediate element.

Note

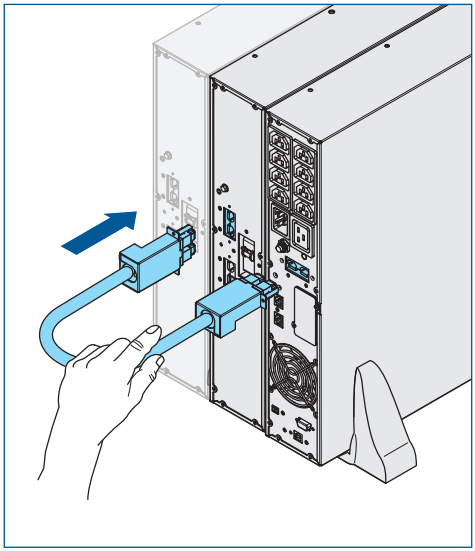
The intermediate elements are included and required per battery pack.



4. Attach the right foot element to the intermediate piece.
5. Rotate the foot element 90° until it locks into place.
6. Place the UPS between the foot elements as described in **Chapter 5.2.1. Caution: The UPS is heavy! Use two people to lift and position it.**



7. Place the battery pack next to the UPS between the foot elements. **Caution: The battery pack is heavy! Use two people to lift and position it.**



8. Remove the cover from the external battery pack connection port See Chapter 4 "Product Description," page 15.

.

9. Plug the connection cable into the UPS external battery port.

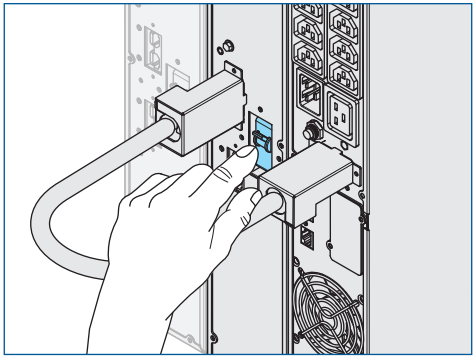
Note

The connection cable is included with the External battery pack.

10. Connect the UPS port to one of the two ports on the back of the external battery pack.

Note

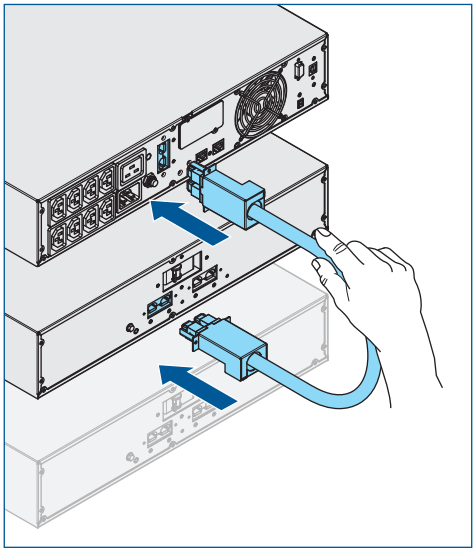
The second port on the back of the battery pack can be used to connect an additional battery pack.



11. Turn the battery breaker of the battery pack to the ON position.

5.3.2 19-Inch Rack Installation

Note Optional battery packs must be installed below the UPS!



1. Install the UPS and the optional battery pack in the rack, **see Chapter 5.3.2 "19-Inch Rack Installation," page 46.**
   Caution: Heavy! Involve a second person!

2. Remove the cover from the external battery pack connection port, as described in **Chapter 4 "Product Description," page 15.**

3. Plug the connection cable into the UPS external battery port.

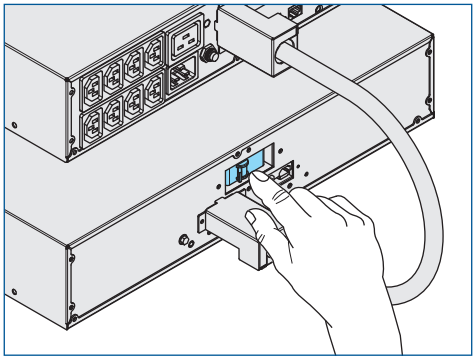
Note

The connection cable is included with the External battery pack.

4. Connect the UPS port to one of the two ports on the back of the external battery pack.

Note

The second port on the back of the battery pack can be used to connect an additional battery pack.

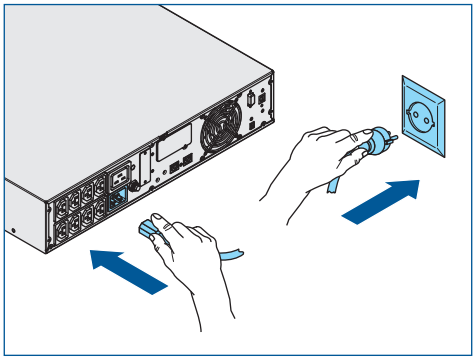


5. Switch the battery disconnect switch of the battery pack to ON.

5.4 Initial Commissioning

Danger of Electric Shock.
Life-threatening danger from parts under voltage.

- Ensure that the mains voltage matches the input voltage of the respective UPS.
- Use fuses and cable cross-sections according to the connected load.
- Observe the prescribed cable lengths.
- Ensure safe cable routing and installation.



1. Check the correct connection to the external battery pack (if available), **see Chapter 5.3 Setting Up and Connecting an External Battery Pack, Page 43.**
2. Install the desired accessories, such as a network card, relay card, PC connection, or EPO.
3. Connect the devices to be protected to the corresponding connection sockets of the UPS.

Note

Ensure that the devices to be protected do not exceed the UPS capacity to avoid an overload alarm.

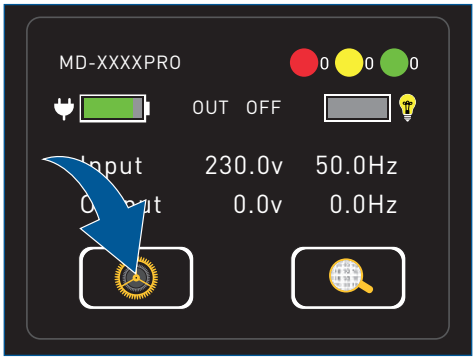
4. Plug the connection cable into the appropriate connection socket of the UPS.

5. Connect the power cable to the wall socket. The UPS will start. After startup, the UPS will be in the Out-Off mode, and the batteries will begin to charge.

Note

The UPS features phase detection. If you receive an error message "INPUT PHASE SEQUENCE ERROR CODE 001," the error status LED lights up red, and an audible signal sounds after plugging the power cable into the wall socket:

- ▶ Rotate the power plug 180°.



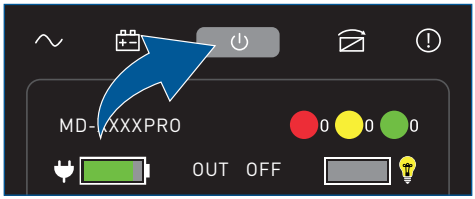
6. Set the display language on the LCD panel, **see Chapter 6.5.3 Display, Page 59.**
7. Enter the output voltage, **see Chapter 6.5.1 UPS, Page 54.**
8. Set the battery capacity, **see Chapter 6.5.2 Battery, Page 56.**

Note

After approximately 4-8 hours of charging, the batteries will reach 100% capacity and will be fully operational.

6 Operation

6.1 Turning the UPS on

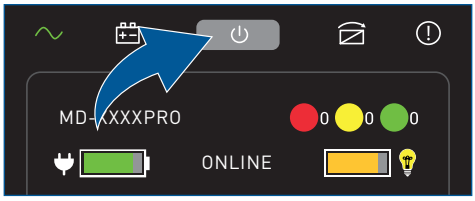


1. Connect the power supply. The UPS will start and enter OUT-Off mode.
2. Press and hold the power button for more than 2 seconds. The UPS will switch to normal operation. The operation mode ONLINE will be displayed, and the status LED for normal operation will light up green. The UPS is now ready for use.

6.2 Turning the UPS Off

Note

The Ups cannot be turned off if the bypass function is active. Deactivate the bypass function in the menu **Setting/UPS/Bypass Function, see Chapter 6.5.1 UPS, Page 54.**



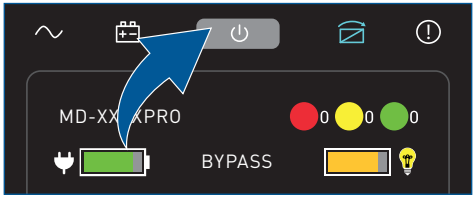
1. Hold down the power button for more than 2 seconds. The UPS will switch to Out-Off mode.
2. Disconnect the power supply.
3. Wait until the LCD panel turns off after about 20 seconds. The UPS is now turned off.

6.3 Enabling/Disabling Bypass Mode

Note

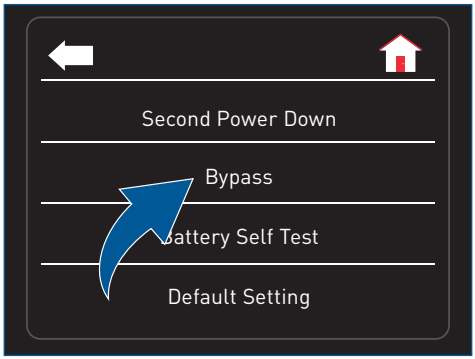
The function to enable or disable bypass mode is only available if bypass mode Has been activated in the menu **Setting/UPS/Bypass Function**. See **Chapter 6.5.1 UPS, Page 54**. In this case, the Ups cannot be turned off either.

Power Button



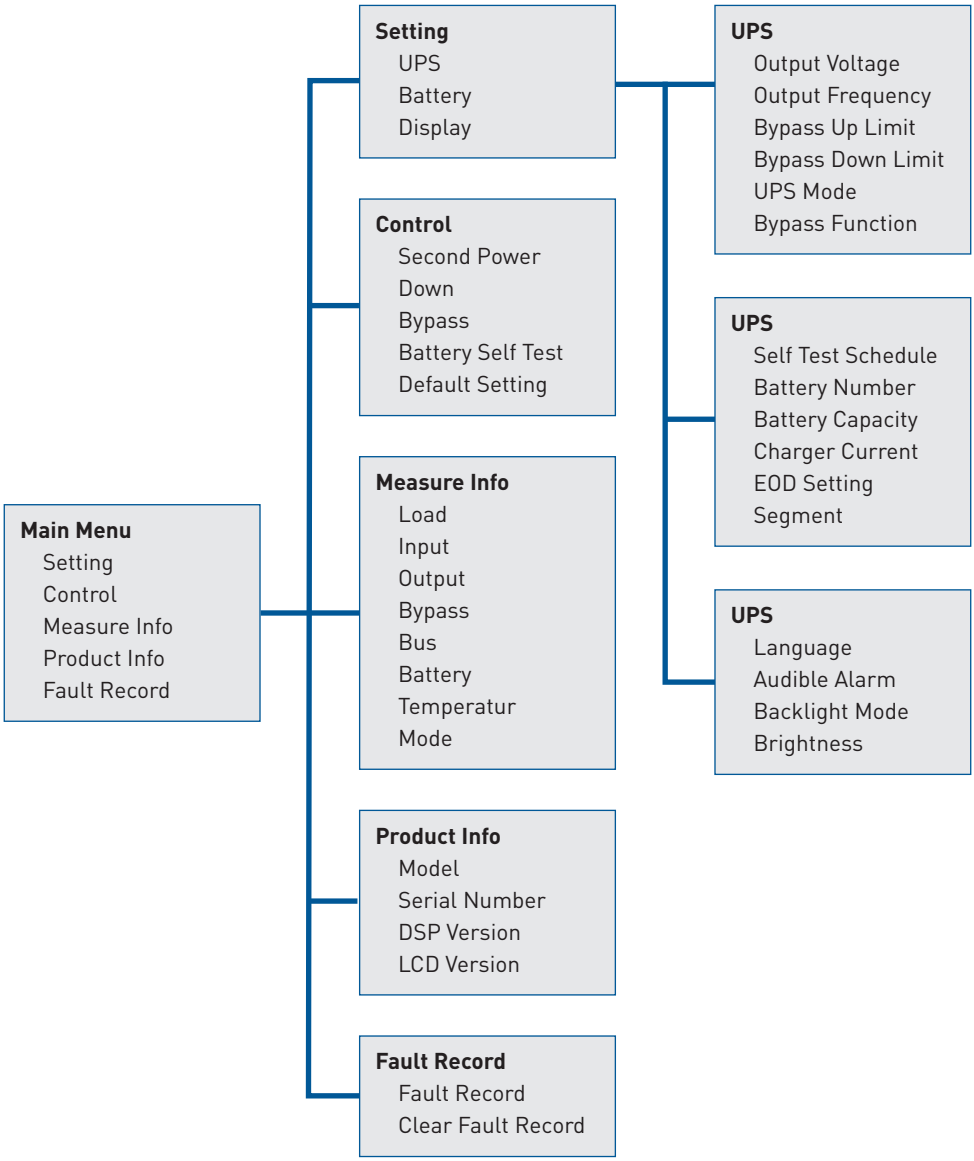
4. Hold the power button for about 1 second to enable or disable bypass mode. The operating mode BYPASS will be disabled, the status LED for bypass mode will light up blue, and a signal tone will sound.

Software

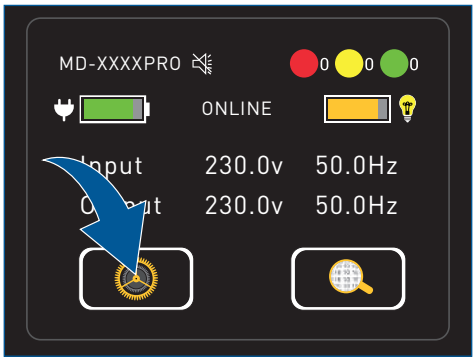


1. Tap the Bypass in Control menu to enable or disable bypass mode.

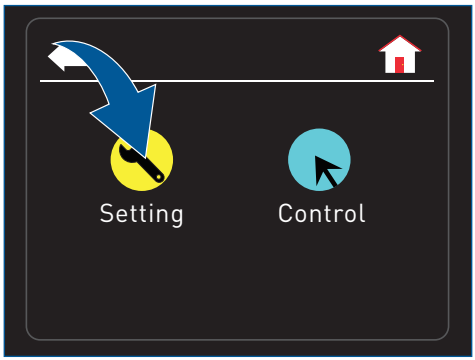
6.4 Menu Overview



6.5 Settings

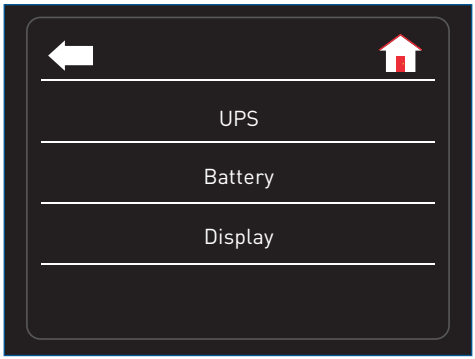


2. Tap on the **Settings** icon. You will be Directed to the **Settings and Control** menu.



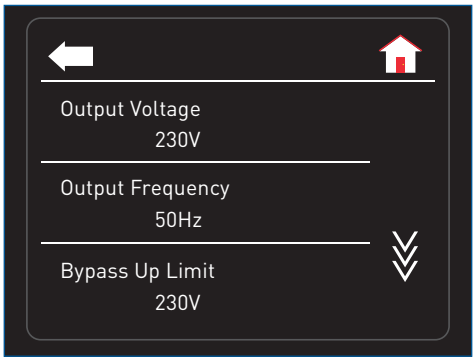
3. Tap on the **Setting** icon. You will be directed to the **Setting** menu.

   In the **Setting** menu, you have the option to adjust the parameters for the operation of the UPS, the batteries, and the display.



4. Select the desired menu option.

6.5.1 UPS



1. Tap on the desired menu to make the Corresponding settings.

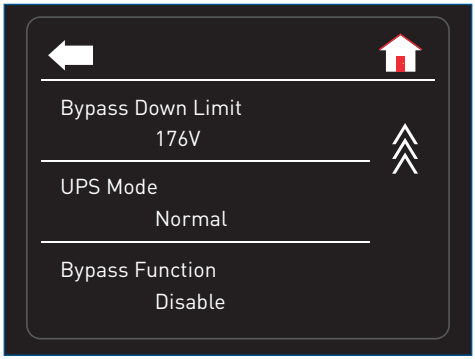
Output Voltage
Set the output voltage:
220 V
230 V (default)
240 V

Note

The output voltage must be set during the Initial startup. Changes to this setting can Only be made when the output is switched off.

Output Frequency
Set the output frequency:
50 Hz
60 V
Auto (default)

Bypass Up Limit
Set the upper limit for the bypass output voltage. The input is made via a numeric keypad.
230 V to 264 V (default)

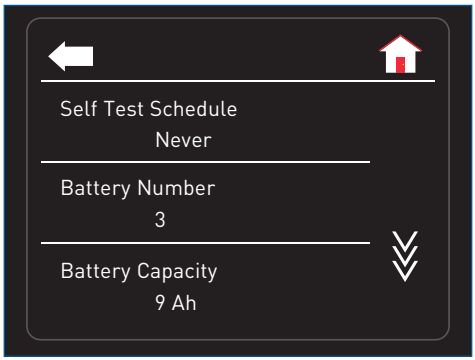


Bypass Down Limit
Set the lower bypass output voltage. The Input is made via a numeric keypad.
176 V (default) to 220 V

UPS Mode
Set the operating mode of the UPS:
Normal (default)
ECO
CF
Generator

Bypass Function
Enable or disable the bypass operating mode:
Enable
Disable (default)

6.5.2 Battery



1. Tap the desired menu to adjust the corresponding settings.

Self Test Schedule
Set when a self-test of the batteries should occur:
Never
Startup Only
Startup + 7 days
Startup + 14 days (default)

Battery Number
Cannot be set.

Battery Capacity
Enter the battery capacity. The input is made using a numeric keypad.
1-200 Ah

Note

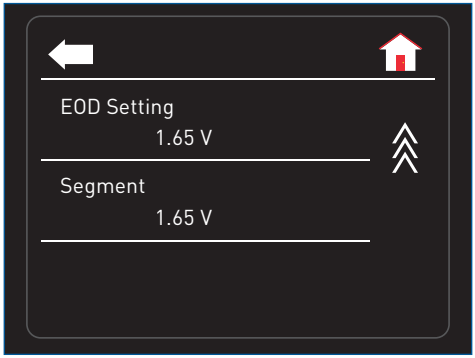
The batteries of the UPS models MD-1000PRO to MD-3000PRO have a capacity 9 Ah.

The battery capacity is factory-set. When additional battery packs are connected, adjust the value accordingly:

MD-1000PRO
MD-1500PRO
1 × battery pack = 18 Ah
2 × battery packs = 36 Ah
etc.

MD-2000PRO
MD-3000PRO
1 × battery pack = 18 Ah
2 × battery packs = 36 Ah
etc.

MDO-2000PRO
MDO-3000PRO
1 × battery pack = 9 Ah
2 × battery packs = 18 Ah
etc.

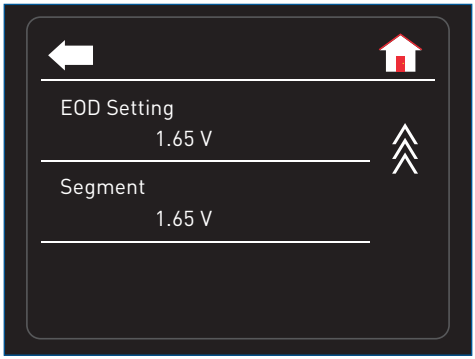


EOD Setting (Experts Only)
Set the shutdown thresold for the UPS.

1.65 V (default)
1.70 V
1.75 V
1.80 V

Note

A battery typically has 13,5 V, consisting of 6 cells at 2,25 V each. To prevent deep discharge Of the battery, we have generally defined the Shutdown threshold of the entire system at 1.65 V per cell for our installations.



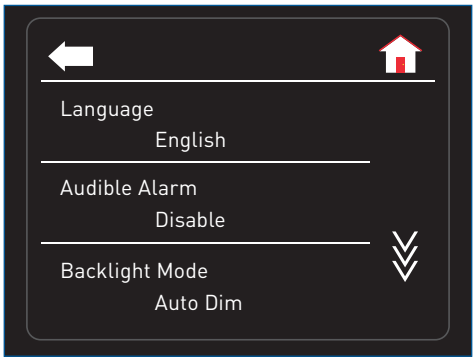
Segment (Experts only)
Set the shutdown threshold for the output Terminals of Segment1.
1.65 V (default)
1.70 V
1.75 V
1.80 V

Note

Only the output terminals of Segment 1 can be shut down at a certain battery voltage. The output terminals of Segment 2 will continue to be supplied with power until the UPS is completely shut down.

This allows you to keep critical devices (Segment 2) running during a power outage while shutting down other devices (Segment 1) early.

6.5.3 Display



1. Tap on the desired menu to make the corresponding settings.

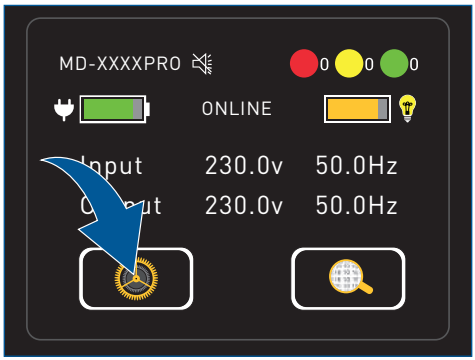
Language
Set the menu language:
English (default)
Chinese

Language
Enable or disable the sound and set the volume:
Disable
Soft
Medium
Loud (default)

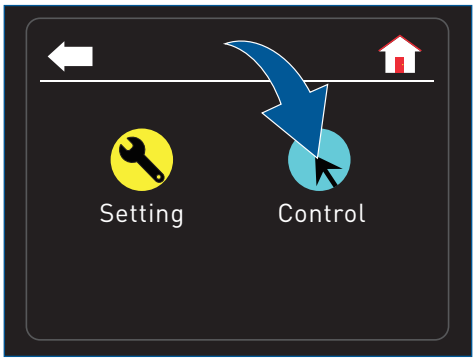
Backlight Mode
To save energy, the LCD backlight can be dimmed or turned off when no events are Active. Set the dimming behavior:
Always ON
Auto DIM (default)
Always Off

Brightness
Set the brightness level. Input is done via a Numeric keypad.
1 – 5 (default)

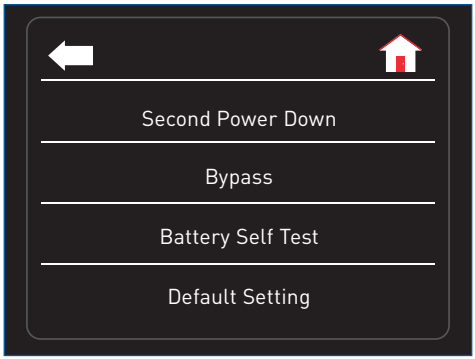
6.6 Control



1. Tap the **Settings** icon. You will enter the **Setting** and **Control** menu.



2. Tap the **Control** icon. You will access the **Control** menu.



3. Select the desired menu option.

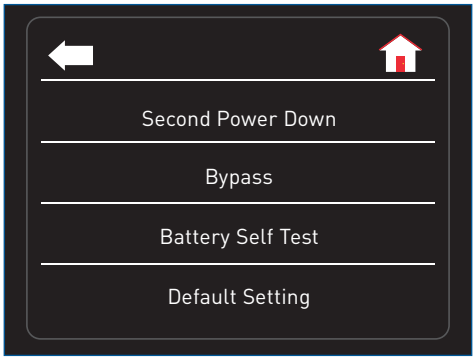
6.6.1 Second Power Down

1. Tap **Outlet** to toggle the power of Output Segment 1 on or off.

Note

Refer to the **Segment** menu for setting the power-down threshold of Output Segment 1 **see Chapter 6.5.2 Battery, page 56.**

6.6.2 Bypass

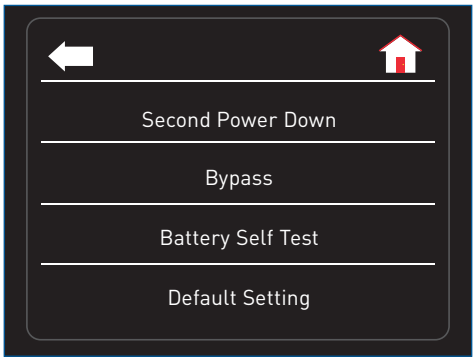


1. Tap **Bypass** to toggle the bypass operation on or off.

Note

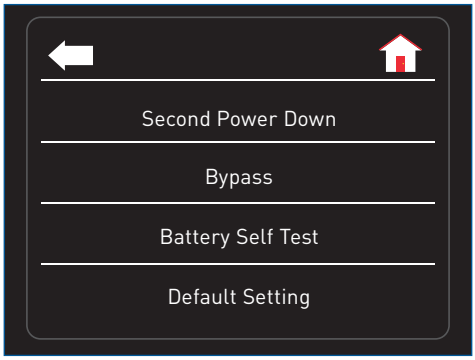
Tap Bypass to toggle the bypass must be activated in the **Setting/UPS/Bypass Function** menu**, see Chapter 6.5.1 UPS, page 54.**

6.6.3 Battery Self Test



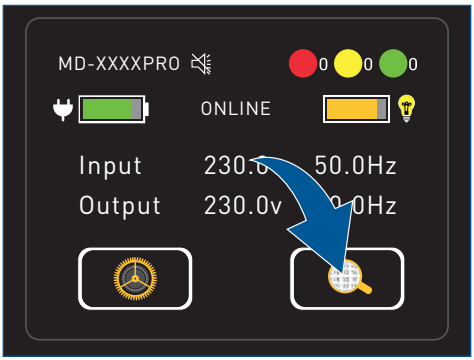
1. Tap **Battery Self Test** to start or cancel a battery self-test.

6.6.4 Default Setting



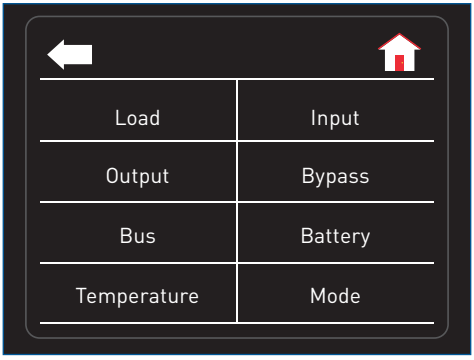
1. Tap **Default Setting** to restore the UPS to its factory default settings.

6.7 Measure Info



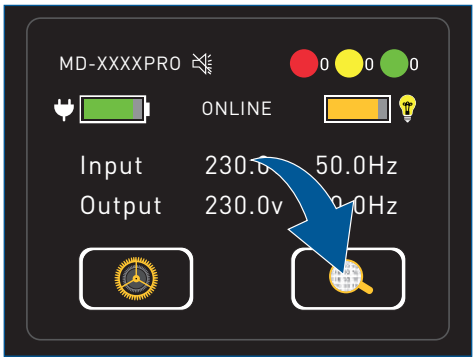
1. Tap the **Information** icon to enter the **Measure Info**, **Product Info**, and **Fault Record** menus**.**

2. Tap the **Measure Info** icon to access the the **Measure Info menu.**

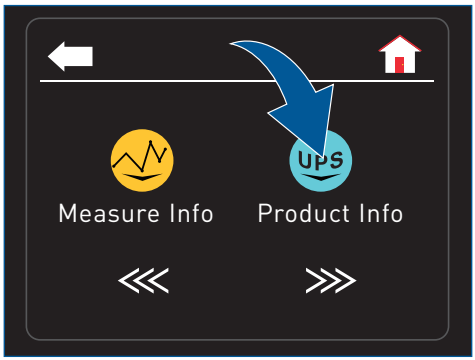


3. Select the desired menu to view detailed measurements for:
   Load
   Input
   Output
   Bypass
   Bus
   Battery
   Temperature
   Operating Mode

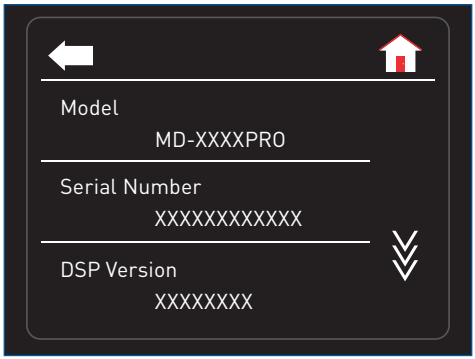
6.8 Product Info



1. Tap the **Information** icon to access the **Measure Info**, **Product Info**, and **Fault Record**.



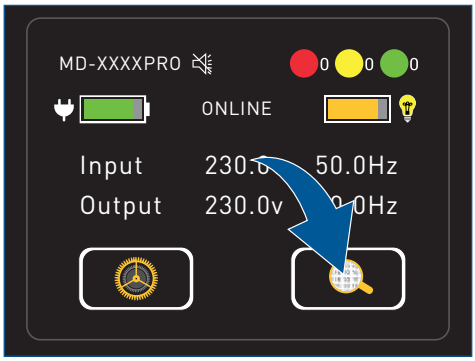
2. Tap the **Product Info** icon to enter the **Product Info** menu.



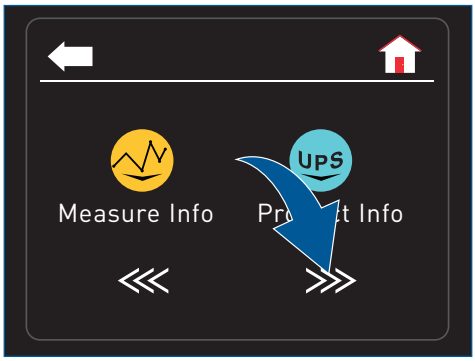
3. View detailed information about your UPS:
   Type
   Serial number
   DSP Version

and
LCD Version

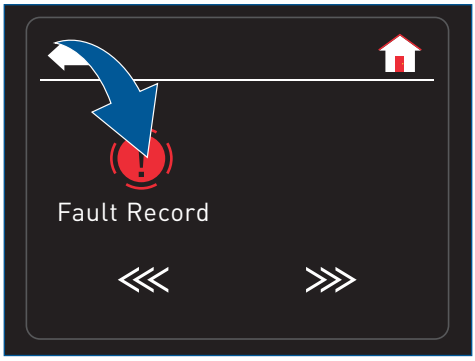
6.9 Fault Record



1. Tap the **Information** icon to access the **Measure Info**, **Product Info** and **Fault Record** menus.



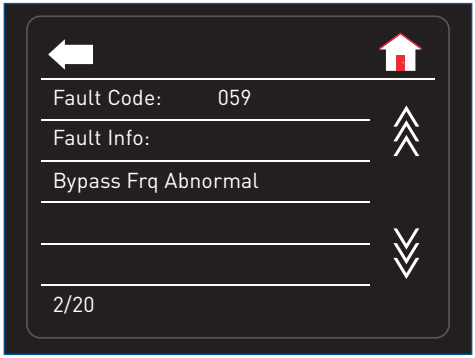
2. Tap one of the two arrows.



3. Tap the **Fault Record** icon to enter the **Fault Record** menu.

6.9.1 Fault Record

1. Tap **Fault Record** to view the list of fault messages.



Up to 20 fault messages are stored, each containing an error code and a brief description of the error. For details on error codes, refer to **Chapter 7.2 Error and Alarm Codes, page 72**.
Use the arrows to scroll through the fault messages.

6.9.2 Clear Fault

1. Tap Clear Fault to delete the list of fault messages.

7 Troubleshooting

When a fault occurs in the UPS, the fault mode is triggered. The fault status LED lights up red and an audible alarm (continuous tone) sounds. A fault code and a brief description are displayed on the screen.
In many cases, the input voltage is the cause of error messages. Therefore, first check if the input voltage is within the tolerance range.

Check the causes of the fault and rectify them. If the problem persists, please contact the multimatic customer service.

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Im Wasen 2
G-78667 Villingendorf
Fon +49 741 9292-99
Fax +49 741 9292-33
Mail service@edelstrom.eu
www.edelstrom.eu

7.1 Troubleshooting

Fault	Possible Cause	Remedy
The power is present, but no status LED lights up and no audible alarm sounds.	The power cord may be loose or not connected.	▶ Ensure the power cord is Correctly plugged into the UPS input.
Fault Code »41« Battery mode LED blinks	The internal battery or an external battery pack is incorrectly connected.	▶ Connect the internal or the external battery pack correctly.
Fault Code »39« Battery mode LED blinks	· The battery voltage is too high. · The charger is defective. · The bypass cap configuration on the control board is incorrect.	▶ Contact the multimatic customer service

Fault	Possible Cause	Remedy
Fault Code »45« Battery mode LED blinks	· The battery voltage is too low. · The charger is defective .	▶ Contact the multi-matic customer service.
Fault Code »26« Bypass mode LED blinks Normal mode LED blinks	Overload on the UPS output.	▶ Remove the Corresponding load.
Fault Code »32« Battery mode LED blinks	Short circuit on the UPS Output due to a load.	▶ Eliminate the short circuit by removing or replacing the load.
Fault Code »68« Fault mode LED is on	Fault with the device fan.	▶ Check if the device fan is Blocked. ▶ Remove the blockage and restart the UPS.
Fault Code »21«, »22«, »23«, »24« or »48«	Fault in the UPS	▶ Contact the multi-matic customer service.
Battery runtime is significantly reduced.	Batteries are not fully charged.	▶ Charge the UPS for at least 5 hours before checking the battery charge. If the charge is still low, contact the dealer.
	Faulty battery.	▶ Contact the multi-matic customer service for battery replacement.

7.2 Fault and Alarm Codes

Code	Fault Description	Category	Audible Alarm	Status LED
001	Input Phase Sequence Error	Fault	1x per second	Fault mode LED is on
002	Input Voltage High	Alarm	1x every 2 seconds	–
003	Input Voltage Low	Alarm	1x every 2 seconds	–
004	Input Frequency Abnormal	Alarm	1x every 2 seconds	–
005	+DC bus Over Voltage	Alarm	Continuous tone	Fault mode LED is on
006	-DC bus Over Voltage	Alarm	Continuous tone	Fault mode LED is on
008	+DC bus Low Volta-ge(output on)	Alarm	Continuous tone	Fault mode LED is on
009	-DC bus Low Volta-ge(output on)	Alarm	Continuous tone	Fault mode LED is on
010	+DC Bus Voltage Low(output off)	Alarm	Continuous tone	Fault mode LED is on
011	-DC Bus Voltage Low(output off)	Alarm	Continuous tone	Fault mode LED is on
012	DC bus Delta(line Mode)	Alarm	Continuous tone	Fault mode LED is on
013	DC bus Delta(on battery)	Alarm	Continuous tone	Fault mode LED is on
014	+DC Bus soft start Fail(line Mode)	Fault	Continuous tone	Fault mode LED is on
015	-DC Bus soft start Fail(line Mode)	Fault	Continuous tone	Fault mode LED is on
016	+DC Bus soft start Fail(Battery)	Fault	Continuous tone	Fault mode LED is on
017	-DC Bus soft start Fail(Battery)	Fault	Continuous tone	Fault mode LED is on

Code	Fault Description	Category	Audible Alarm	Status LED
018	+DC Bus Discharge Fail	Fault	Continuous tone	Fault mode LED is on
019	-DC Bus Discharge Fail	Fault	Continuous tone	Fault mode LED is on
021	Inverter Output Low	Fault	Continuous tone	Fault mode LED is on
022	Inverter Output High	Fault	Continuous tone	Fault mode LED is on
023	Inverter hardware CKT	Fault	Continuous tone	Fault mode LED is on
026	Inverter Overload	Alarm	1x per second	Normal Operation LED is on
027	Inverter Overload Time Out	Alarm	1x per second	Normal Operation LED is on
028	Inverter DC Over Voltage	Alarm	1x per second	Normal Operation LED is on
032	Output Short Circuit	Fault	Continuous tone	Fault mode LED is on
033	Output Over Voltage	Fault	Continuous tone	Fault mode LED is on
034	Output Svr Over Voltage	Fault	Continuous tone	Fault mode LED is on
035	Output Low Voltage	Fault	Continuous tone	Fault mode LED is on
039	+Battery Over Voltage	Alarm	1x per second	Battery Operation LED blinks
041	+Battery Disconnected	Alarm	2x per second	Battery Operation LED blinks
043	+Battery Low Pre Alarm	Alarm	2x per second	Battery Operation LED blinks
045	+Battery Low Voltage	Alarm	1x per second	Battery Operation LED blinks

Code	Fault Description	Category	Audible Alarm	Status LED
048	+Charger Error	Fault	Continuous tone	Fault mode LED is on
050	+Charger Over Voltage	Alarm	1x per second	Fault mode blinks
052	+Charger Low Voltage	Alarm	–	Fault mode blinks
057	Bypass Over Current	Alarm	1x per second	Bypass mode LED blinks
058	Bypass Voltage Abnormal	Alarm	–	Bypass mode LED blinks
059	Bypass Frequency Abnormal	Alarm	–	Bypass mode LED blinks
060	Bypass Overload	Alarm	1x per second	Bypass mode LED blinks
061	Bypass Overload Time Out	Alarm	1x per second	–
068	Fan Inoperative	Fault	Continuous tone	Fault mode LED is on
069	Heatsink over temp	Alarm	Continuous tone	Fault mode LED is on
071	Ambient Over Temperature	Alarm	1x per second	Fault mode LED is on
072	Ambient Low Tempera-ture	Alarm	1x per second	Fault mode LED is on
080	RAM Error	Fault	Continuous tone	Fault mode LED is on
095	EPO ACTIVATED	Fault	Continuous tone	Fault mode LED is on

8 Maintenance

8.1 General

Regular maintenance and testing of your installation ensure high reliability of your power supply. We recommend **annual maintenance** and inspection of your installation. Maintenance can be done on demand or through a maintenance contract with multimatic Service GmbH.

8.2 Safety

Danger from electrical current.
Life-threatening risk from live parts.
- Do not open the UPS under any circumstances.
- The UPS should only be serviced by qualified electrical personnel in accordance with electrical engineering rules.

8.3 Maintenance of Device Fans

The estimated lifespan of the device fans is about 20,000 to 40,000 hours of continuous operation. Dust, dirt, and environmental conditions can shorten this lifespan. We recommend checking and cleaning the device fans **annually**.

8.4 Maintenance of Batteries

The average lifespan of the installed batteries is 3 to 6 years, depending on operating temperature and the number of charge-discharge cycles. Good battery condition is essential for the UPS to perform its function satisfactorily. The following inspection methods are available:

Battery Test
We recommend testing the batteries monthly (**see Chapter 6.6.3 Battery Self Test, page 63**) and replacing them if necessary (**see Chapter 8.5 Battery Replacement, page 76**).

Full Test via SNMP (Load Test)
To ensure the safe operation of the battery, an automatic or manual battery test can be regularly performed via the SNMP/Web interface. We recommend testing the batteries every 3 to 6 months, especially if the battery is seldom used under normal operation (**see Chapter 8.5 Battery Replacement, Page 76).**

After a complete battery test via SNMP/Web interface to check the battery autonomy, the charger requires at least 5 hours to recharge the battery to 100% capacity.

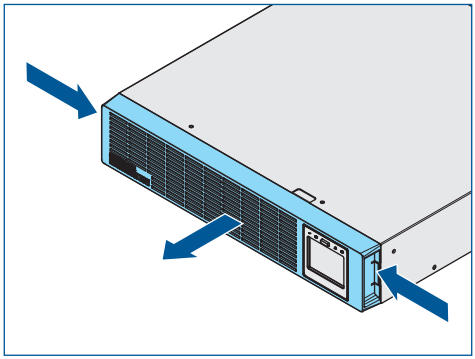
To avoid self-discharge and irreversible deep discharge of the battery, the UPS system should be operated **for at least 12 hours every 3 months.**

8.5 Battery Replacement

Hazards associated with handling batteries.
Handling, charging, and operating batteries can present specific hazards.
- To prevent damage, follow all manufacturer guidelines and safety data sheets.
- All employees must be trained in handling batteries.
- Battery replacement must only be performed by qualified electrical personnel.

The batteries are heavy!
Due to the high weight of the batteries, lifting, moving, or carrying them may lead to physical strain. Dropping the batteries can cause injuries and property damage.
- Pull the batteries out of the device onto a level surface at the same height.
- Slide the new batteries into the device on a level surface at the same height.

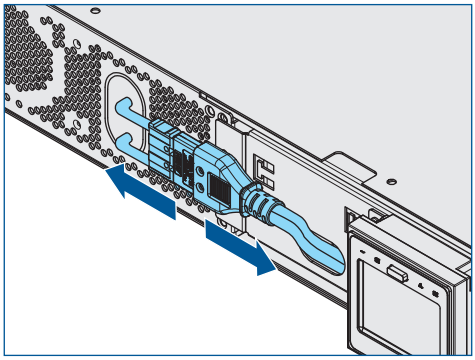
VORSICHT The UPS is hot-swappable. Only a qualified electrician can perform the battery replacement without fully shutting down the UPS.



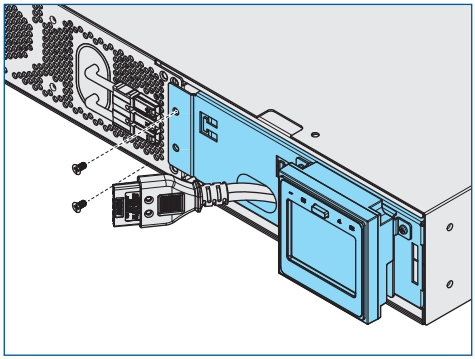
1. Remove the cover by pressing the side latches.

Note

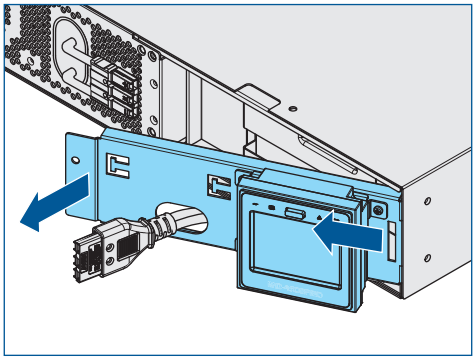
The cover is included with the delivery and does not need to be removed initially.



2. Disconnect the connector between the UPS and the battery.



3. Remove the two fastening screws from the cover.

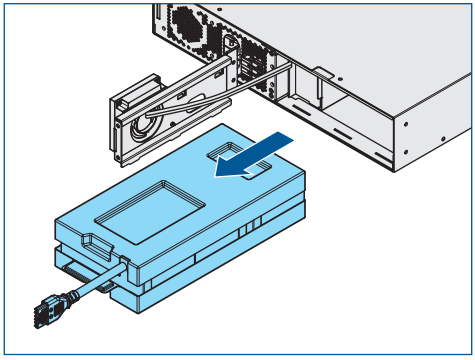


4. Fold the cover forward and carefully pull it off the two mounting bolts in the enclosure.

Attention

Be mindful of the internal cables! The LCD display connection cable must not be disconnected!

5. Pull the battery connector through the opening in the cover.



6. Remove the battery from the enclosure.
7. Replace the battery.
8. Reassemble in the reverse order.

8.6 Cleaning

VORSICHT

Damage from improper cleaning.
Incorrect cleaning agents or methods can cause damage.

- ▶ Only clean the UPS with a soft, non-fiber shedding dust cloth.
- ▶ Do not use chemical cleaners such as alcohol, acetone, or solvents.

8.7 Storage

To ensure a non-operational UPS remains functional over a long period, observe the following:

- The storage area must be dry and clean.
- Store the unit on a flat surface and secure it to prevent tipping and unauthorized use.
- Completely cover the unit to prevent dirt and dust from entering.
- Avoid exposing the unit to extreme cold or heat.
- Charge the batteries for 5 hours before storing the UPS.
- Storage at -25°C to 40°C: Charge the batteries for 1 to 2 hours every 3 months.
- Storage at 40°C to 45°C: Charge the batteries for 1 to 2 hours every 2 months. Connect the UPS to the power supply for this.

9 Technical Specifications

Type	MD-1000PRO	MD-1500PRO	MD-2000PRO	MD-3000PRO	MDO-2000PRO	MDO-3000PRO
Technology	VFI-SS-111 per IEC/EN 62040-3 (Online Double Conversion)					
Power						
Power (VA)	1000	1500	2000	3000	2000	3000
Power (Watt)	1000	1500	2000	3000	2000	3000
Power factor (pf)	1					
Phases Input / Output	Single phase / Single phase					
Input						
Nominal Voltage	230 VAC (configurable220/230/240 VAC)					
Voltage Range	110 – 286 VAC bei 50 % Last / 176 – 264 VAC bei 100 % Last					
Frequency	50/60 Hz (40 - 70 Hz)					
Connection	1 × IEC 320 C14 (10 A)			1 × IEC 320 C20 (16 A)		
Generator Input/ Operation	adjustable					
Output						
Nominal Voltage	230 VAC (configurable 220/230/240 VAC)					
Frequency	50/60 Hz Auto Sensing					
Transfer Time	0 ms (none)					
Waveform Type	Sine wave					
Load/Crest Factor	3:1					
THD	<3 % (Linear Load) <5 % (Non-Linear Load)					
Overload Behavior (AC Mode)	105 % – 125 % for 60 seconds 125 % – 130 % for 30 seconds					
Overload Behavior (Battery Mode)	105 % - 125 % for 60 seconds 125 % – 130 % for 10 seconds >130 % for 200 ms					
Efficiency	Up to 92 % in Online Mode / up to 97 % in ECO Mode					
Connections	8 × IEC 320 C13 (10 A)			8 × IEC 320 C13 (10 A) + 1 × IEC 320 C19 (16 A)		

Type	MD-1000PRO	MD-1500PRO	MD-2000PRO	MD-3000PRO	MDO-2000PRO	MDO-3000PRO
1 Switchable Segment	Segment 1 Programmable with 4 × IEC 320 C13 (10 A) + Segment 2 with 4 × IEC 320 C13 (10 A)		Segment 1 Programmable with 4 × IEC 320 C13 (10 A) + Segment 2 with 4 × IEC 320 C13 (10 A) + 1x IEC 320 C19 (16 A)			
Battery (Autonomy Time at 80 % Load *)						
Internal Batteries	7 min	4 min	9 min	5 min	9 min	5 min
Battery Pack (per Battery Pack)	+32 min MDBP-1000PRO	+19 min MDBP-1500PRO	+35 min MDBP-2000PRO	+19 min MDBP-3000PRO	+16 min MDOBP-2000PRO	+9 min MDOBP-3000PRO
Battery Charging Current	2A					
Hot-Swap	Yes					
Lifetime	5 years as per EUROBAT, 10 years as per EUROBAT optional					
Replacement Battery Kit for UPS	MM-MD1000/1500PRO		MM-MD2000/3000PRO		MM-MDO2000/3000PRO	
Replacement Battery Kit for Battery Pack	MM-MDBP1000/1500PRO		MM-MDBP2000/3000PRO		MM-MDOBP2000/3000PRO	
Communication						
Interfaces	1 × RS232, 1 × USB, 1 × Slot for SNMP Card or Relay Card					
EPO	Terminal blocks for external emergency power off switch (EPO)					
Display	LCD + LED					
Software	multimatic Management Software					
Optional Communication	SNMP Card, Relay Card					
Optional Sensors	Temperature Sensor, Humidity Sensor Only possible in combination with an SNMP Card (Professional Version)					
Dimensions and Weights						
Form Factor	Tower / Rackmount (19")					
Dimensions of the UPS (H × W× D)						
Tower	440 × 88 × 460 mm		440 × 88 × 600 mm		440 × 176 × 460 mm	
Rackmount (19")	88 (2HE) × 440 × 460 mm		88 (2HE) × 440 × 600 mm		176 (4HE) × 440 × 460 mm	
Net weight UPS Unit	17 kg		27 kg		9 kg UPS +23 kg Battery Pack	
Shipping weight UPS Unit	20 kg		30 kg		12 kg UPS +25 kg Battery Pack	

Type	MD-1000PRO	MD-1500PRO	MD-2000PRO	MD-3000PRO	MDO-2000PRO	MDO-3000PRO
Shipping Dimensions UPS Unit	202 × 555 × 590 mm		202 × 555 × 732 mm		202 × 555 × 590 mm UPS + 202 × 555 × 590 mm Battery Pack	
Battery Pack Dimensions (H × W× D)						
Tower	440 × 88 × 460 mm		440 × 88 × 600 mm		440 × 88 × 460 mm	
Rackmount (19")	88 (2HE) × 440 × 460 mm		88 (2HE) × 440 × 600 mm		88 (2HE) × 440 × 460 mm	
Net Weight Battery Pack	23 kg		41 kg		23 kg	
Shipping Weight Battery Pack	25 kg		43 kg		25 kg	
Shipping Dimensions Battery Pack	202 × 555 × 590 mm		202 × 555 × 732 mm		202 × 555 × 590 mm	
Optional Accessories	19" Rack Mounting Rails, External Bypass					

Environment and Safety						
Thermal Energy	105 W	157,50 W	160 W	240 W	160 W	240 W
Noise Level	⩽ 50 dBA					
Protection Degree	IP20					
Operating Temperature	0 – 40 °C					
Relative Humidity	0 to 95% (non-condensing)					
Safety Markings	IEC/EN62040-1, IEC/EN60950-1					
EMV Markings	IEC/EN62040-2 (Class 2)					
Certifications	CE					
Warranty**	36 months on device and battery					

* The runtime values are approximate and may vary depending on battery age, charge and discharge cycles, temperature, etc.
**Warranty is subject to the warranty terms and conditions.

Declaration of Conformity

Units marked with the CE symbol comply with EU harmonized standards and directives.

The EU Declaration of Conformity for this product is available upon request.

10 Decommissioning and Disposal

Danger from electrical current.
There is a risk of death from live electrical parts.

- The UPS should only be disassembled by authorized electrical professionals in accordance with electrical regulations.
- Before disassembling, disconnect the UPS from all external power sources.
- Note that the UPS has its own internal energy source (battery) and high-capacity capacitors. Dangerous voltages may still be present at the output terminals even if the unit is disconnected from the mains supply.

Batteries are classified as hazardous waste and must be handed over to a specialized recycling company.

Electronic devices contain valuable materials. Defective electronic devices should be disposed of by a specialized recycling company.

Do not dispose of batteries and electronic devices with regular household waste.

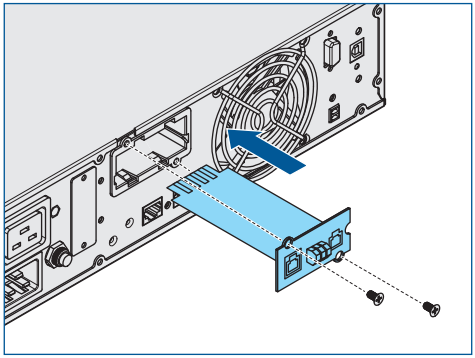
11 Additional Information

11.1 Network or Relay Card Installation

Installation

ESD Protected Area!
Network and relay cards are electrostatic discharge (ESD) sensitive components. Observe ESD precautions during handling.

- Installation should only be carried out by a qualified electrical technician.

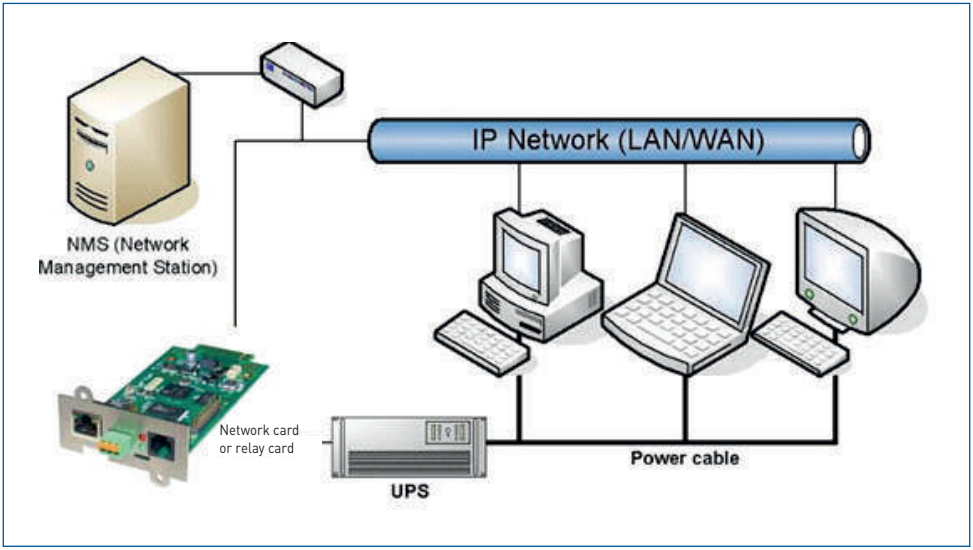


1. Take off the cover from the communication card slot.
2. Insert the network card or relay card into the slot.
3. Fasten the network or relay card with the two screws.

Note

By default, and during configuration mode, the SNMP card has the **IP address 10.10.10.10** and the **subnet mask 255.255.255.0.**

Description



For configuration, both LAN cables and cross-over cables can be used, depending on the network card of the PC/notebook. For initial setup, it is recommended to avoid using devices such as hubs and switches.

The recommended network settings for the client PC during setup are:

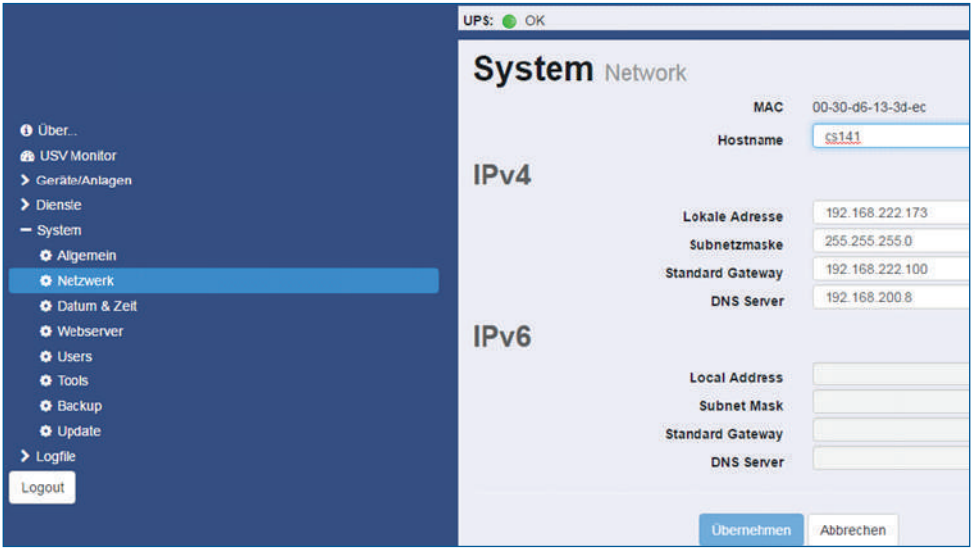
IP Adress	10.10.10.11
Subnet Mask	255.255.255.0
Gateway	10.10.10.11 (will then be automatically hidden)
DNS	empty

If the adapter responds to a PING command, you can access the default address in the browser. Different response times for PING do not indicate a fault. Due to different UPS protocols, the adapter may not respond to each ping signal at the same speed. A persistent timeout is the only indication of a problem.

It is strongly recommended to set a static IP address, as the CS141 is also used for multi-server shutdown via RCCMD, and there is a possibility that the DHCP server may fail. Additionally, in some environments, the reception of RCCMD messages may be restricted to specific IP addresses.

Initial Setup

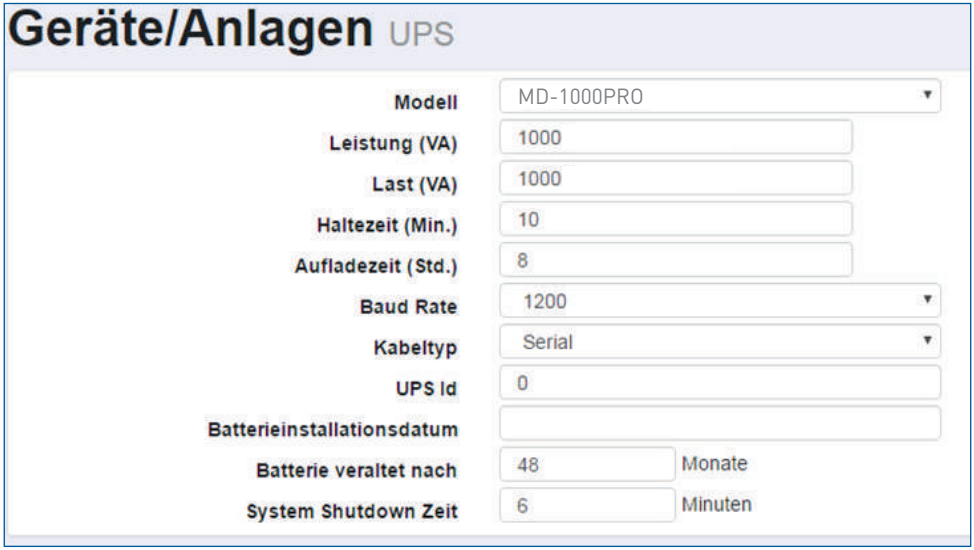
Note	**Important Information!** All settings are applied immediately when you click "APPLY". If you switch pages before applying the settings, all previously made changes will be discarded.



To access the system, log in with the administrator account and password (default: cs141-snmp). Navigate to Setup > System > Network. Here, you will need to specify a hostname, enter the IP address, subnet mask, and gateway. Optionally, you can set a DNS server.

After you have made the settings, click "Apply". If the switch on the device was previously set to "Configured Address", the CS141 will now attempt to redirect you to the new IP address. You may need to adjust the IP of the client accordingly. If you change the switch setting later, you should restart the device via the Reboot button in the web interface or alternatively, interrupt the power supply for 5 seconds.

Navigate through the menu to Setup > Devices/Systems > UPS > Configuration.



Select your UPS model from the list. If your UPS is not listed, contact your manufacturer for an alternative model that can be configured. If you have not received specific baud rate settings, keep the default settings.

The System Shutdown Time value indicates when the system shutdown should be executed in the event of a power failure.

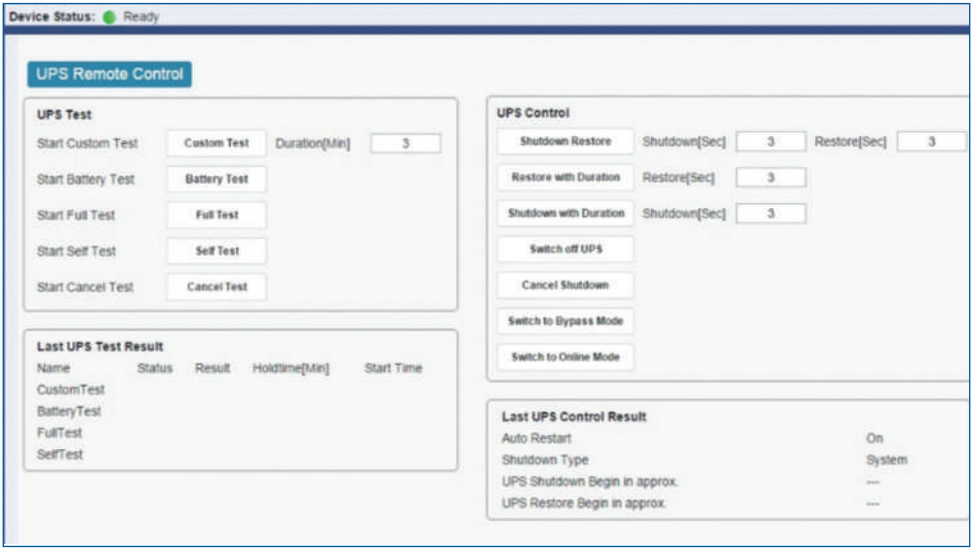
Note

Important Information!
If the incorrect cable type is selected, there will be no communication with the UPS.

Please note the System Shutdown Time field. This value specifies how many minutes before a complete battery discharge the System Shutdown event will be triggered. Do not use this event to trigger shutdown signals with RCCMD, as the remaining time in this status is not reliable. Use the Powerfail event for this purpose. The adapter will generate a warning message if the value for "Battery Outdated After" exceeds the battery installation date.

UPS Functions

The CS141 can be used like a remote control to execute commands and tests supported by the UPS. Please note that the functions and displayed screens may vary between UPS models, and functions will only be executed if the device supports them.



11.2 EPO Function Test

1. Ensure that the UPS is turned off and disconnected from the power supply.
2. Connect the external emergency power-off switch to the two pins of the EPO interface **(refer to Chapter 4.7.8 EPO (Emergency Power-off), page 35).**

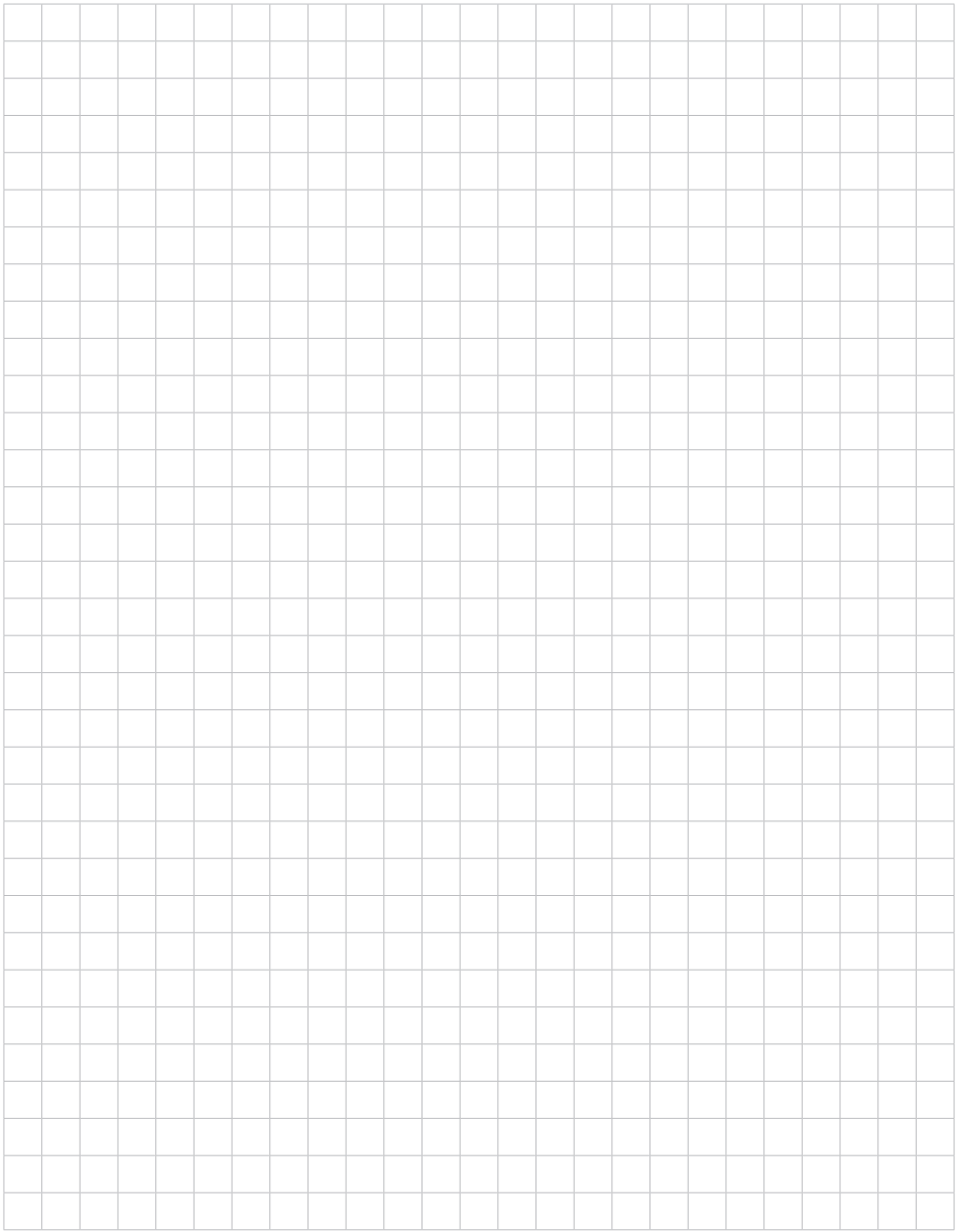
Note In normal operation, the two pins are connected via a shorting bridge.

3. Power on the UPS.
4. Activate the emergency power-off switch.
5. Verify that the UPS is turned off (e.g., by disconnecting the power plug).

Note The UPS will shut down when the emergency power-off switch is activated, indicating that the EPO interface is correctly wired and functioning.

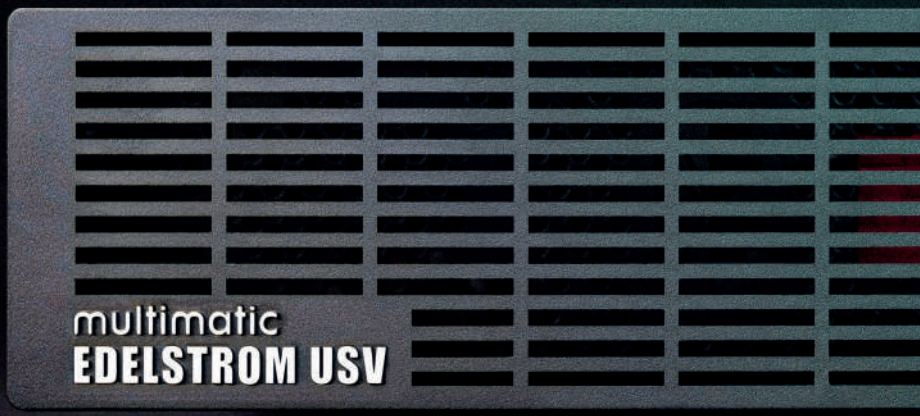
6. To resume normal operation, reconnect the external emergency power-off switch.
7. Restart the UPS.

Note Ensure that the EPO interface functions correctly before using the UPS with a critical load to prevent unexpected power outages for the load.



V1.1

09/2024 Subject to technical changes



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