

USER MANUAL

MRTM



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1. Safety rules

This manual provides information on the safe use of the UPS. Before unpacking and installing the UPS, read its contents and follow its instructions.



FULFILLED STANDARDS - EXECUTION

EN 62040-3 Uninterruptible Power Systems (UPS): Methods for determining the characteristics and test requirements.



FULFILLED STANDARDS - ELECTROMAGNETIC COMPATIBILITY

EN 62040-2 :2006 C3 Guaranteed Power Supply (UPS) Systems: Electromagnetic Compatibility.
EN 61000-2-2 :2002 Electromagnetic Compatibility (EMC): Environment. Levels of compatibility for disturbances of low-frequency and signaling in public low voltage power supply systems.
EN 61000-4-2 :2009 Electromagnetic Compatibility (EMC): Test and measurement methods - electrostatic discharge immunity test.
EN 61000-4-3 :2006 +A1 :2008 +A2 :2010 Electromagnetic Compatibility (EMC): Test and measurement methods - Resistance to radio frequency electromagnetic field.
EN 61000-4-4 :2004 +A1 :2010 Electromagnetic Compatibility (EMC): Test and measurement methods - Test for resistance to a series of fast electrical transient states.
EN 61000-4-5 :2006 Electromagnetic Compatibility (EMC): Test and measurement methods - Shock resistance test.
EN 61000-4-6 :2009 Electromagnetic compatibility (EMC): Test and measurement methods - Immunity to conducted disturbances, induced by radio frequency fields.
EN 61000-4-8 :2010 Electromagnetic Compatibility (EMC): Test and measurement methods - Testing for magnetic field frequency at the power grid.

The device complies with Directive 2004/108 / EC (EMC).



FULFILLED STANDARDS - SAFETY

EN 62040-1 :2008 Uninterruptible Power Systems (UPS): General requirements and requirements for UPS safety.
EN 60950-1:2006 Information technology devices. Security.
IEC 60417 Symbols used on devices.

The device complies with the 2006/95 / EC (LVD) directive.

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- Keep these operating instructions! The manual contains important instructions on the use of the UPS that should be followed during installation and use of the UPS device and batteries.
- Condensation may occur if the power supply is cold and is brought into a warm place. Therefore, you should wait at least 2 hours until it starts up.
- To reduce the risk of electric shock, the UPS should be installed in a pollution-free room with adequate temperature and humidity. The ambient temperature must not exceed 40 ° C.
- Do not install the power supply in a place exposed to direct sunlight or other heat sources.
- Do not connect devices that can overload the UPS output, e.g. laser printers, electric heaters, etc.
- Cables should be connected and arranged in such a way that no one can accidentally step on or disconnect them.
- The UPS must be connected to the electrical system with an efficient protective earth (GND).
- Do not block the ventilation openings on the UPS. Make sure the vents are exposed and there is a minimum of 25cm free space for free ventilation.
- The UPS power circuit should be protected with an appropriate overcurrent circuit breaker.
- The UPS has its own battery power source, so there may be voltage on the output strip, even though the UPS is not connected to the mains.
- Battery handling should be performed by trained personnel who are knowledgeable about battery operation and take appropriate precautions during its use.
- If it is necessary to replace the battery, use batteries of the same number and parameters, i.e. rated voltage, capacity and dimensions.

WARNING! Do not dispose of batteries in a fire. The battery may explode.

**WARNING! Do not open or damage the battery.
Released electrolyte is harmful to the skin and eyes. May be toxic.**

- The battery can present a risk of electric shock. The following precautions should be taken when working with batteries:

Remove watches, rings and other metal objects from your hand.

Use tools with insulated handles.

Wear rubber gloves and boots.

Do not lay tools or metal parts on top of the battery.

Disconnect the battery charging source before connecting or disconnecting the battery terminals.

Check if the battery is accidentally grounded. If present, remove ground fault source. Contact with any part of a grounded battery can cause an electric shock.

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2. Transport, unpacking the UPS

Check carefully whether the carton and the contents are not damaged. If any damage is found, immediately inform the shipping company and the power supply distributor.

Do not throw away the UPS packaging.

1. If no damage is found, carefully open the carton.
2. Unpack all protective elements (sponges, fillers).
3. Gently remove the UPS from the protective film and place it on a clean, flat and stable surface.

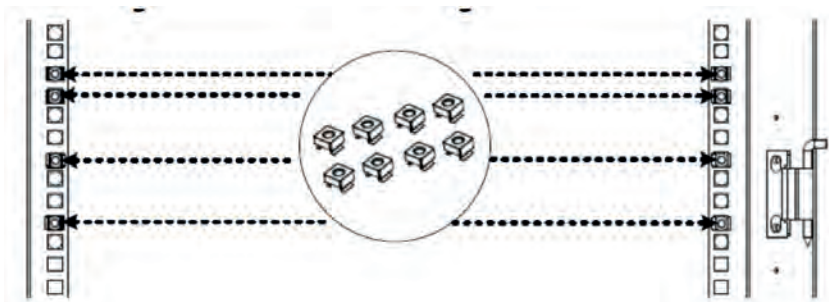
The UPS should only be transported in its original packaging to prevent mechanical damage, shock and impact.

2.1. UPS assembly

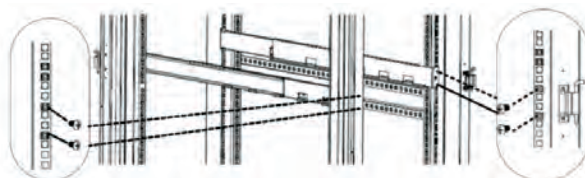
All models of power supplies are adapted for both horizontal and vertical mounting.

Horizontal installation in a rack 19 "

The PKX series power supply can be mounted in a 19 "rack." The UPS requires 3U space for installation. Each item requires optional mounting brackets in the rack.

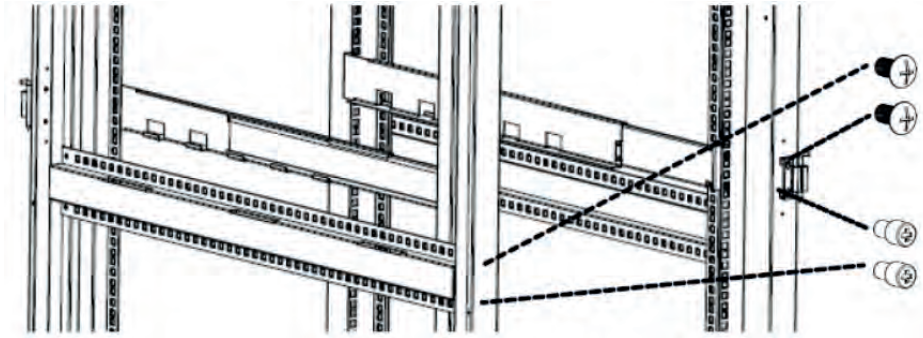


Secure the Rack rails with four M6 screws:

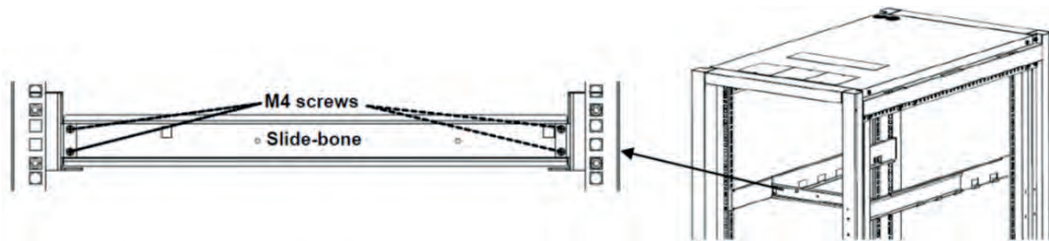


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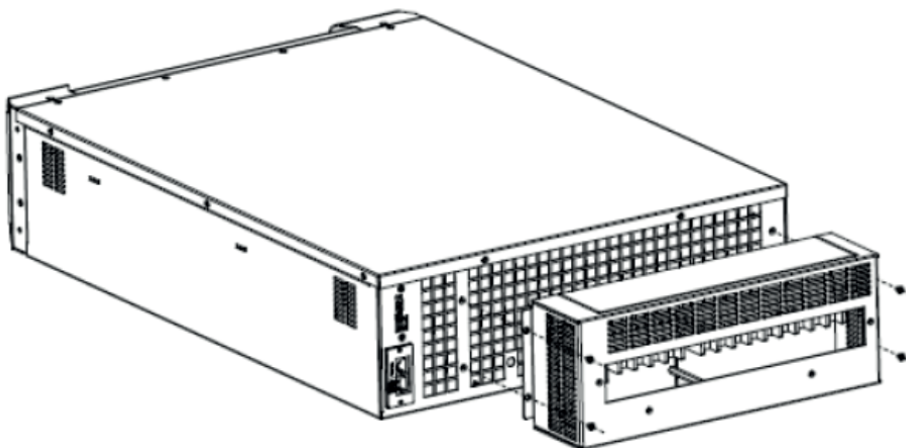
Adjust the length of the rails to the rack and fix the rails at the back:



Fasten the crossmember:

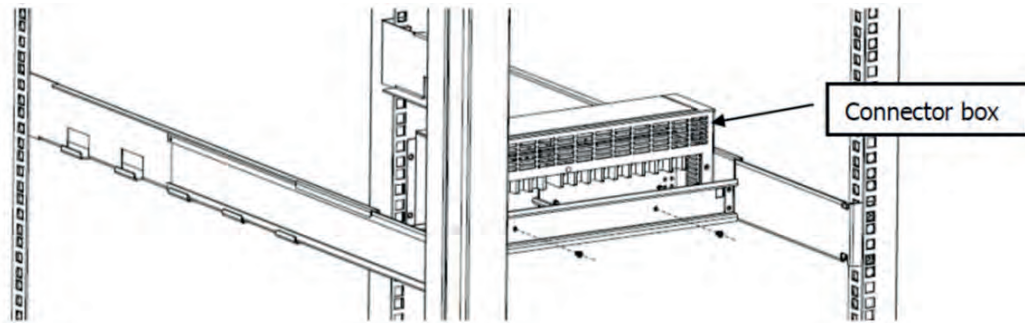


Disconnect the PDU panel from the UPS:

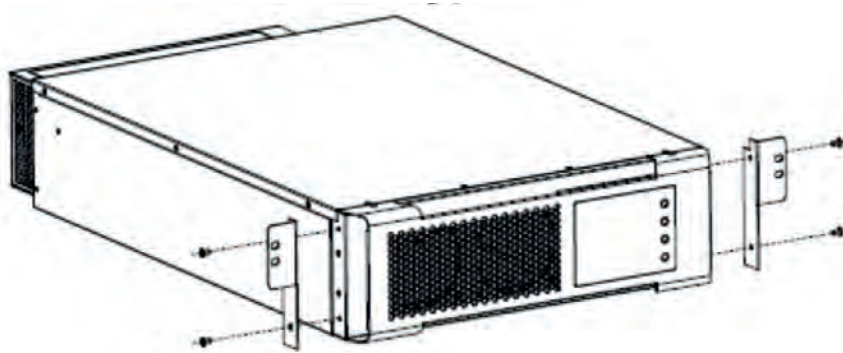


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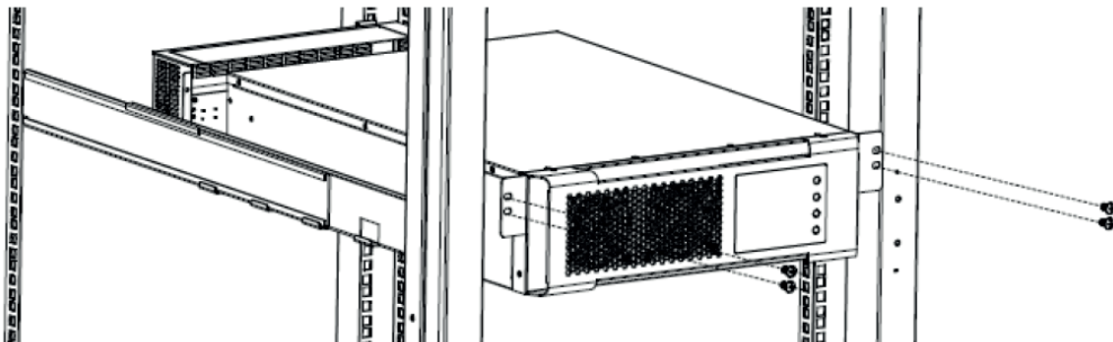
Mount the PDU panel in the rack:



Attach the ears to the UPS:



Place the UPS module on the rails and press it to the PDU:



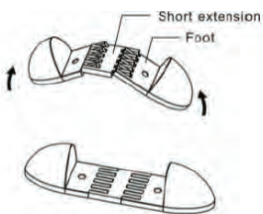
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Vertical assembly (Tower)

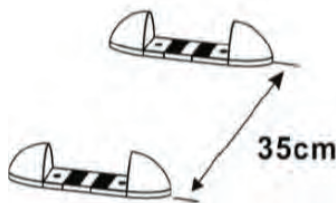
To install the power supply in the Tower position, use special stands to secure the power supply and enable its stable positioning in a vertical position. The set of bases includes connecting elements shorter and longer depending on the width of the UPS set.

In order to properly set the power supply and battery module (3U set):

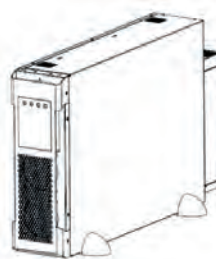
Step 1



Step 2

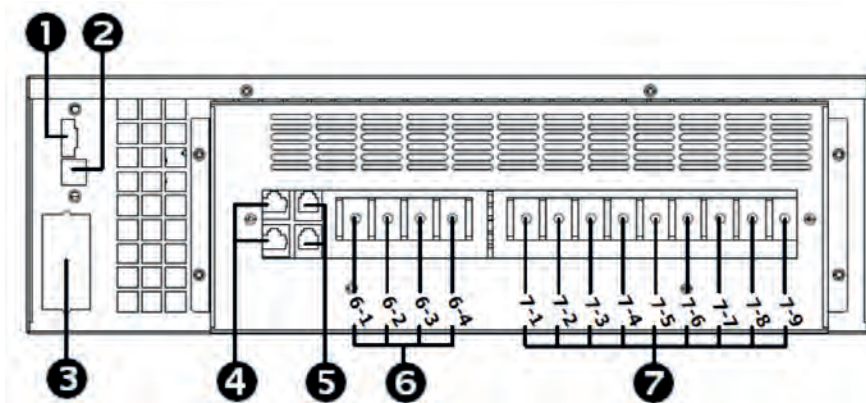


Step 3



3. Appearance and connection

3.1. UPS rear panel



1. Remote Emergency Stop (EPO) input
2. USB port
3. SNMP slot
4. Communication port for parallel operation
5. Current distribution port for parallel operation
6. Battery connection terminal
7. Input / output wire connection terminal

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3.2. Connecting the remote REPO switch

The UPS is equipped with an EPO port for connecting the Remote Emergency Power Off (REPO) switch. The EPO port is configured as NC (normally closed), the EPO is activated by breaking the connection between Pin 1 and Pin 2 (removing the jumper).

3.3. Connecting communication options

The UPS has two communication ports:



To enable automatic management and monitoring of the UPS, connect the USB cable provided with the UPS to the USB socket on the one side and to the USB socket on the computer on the other.

The software provided with the UPS allows to automate the processes of turning the receivers connected to the UPS on / off depending on the events that occur on the UPS (e.g. power outage, low battery, overload, etc.). The software also allows ongoing monitoring and recording of UPS event history.

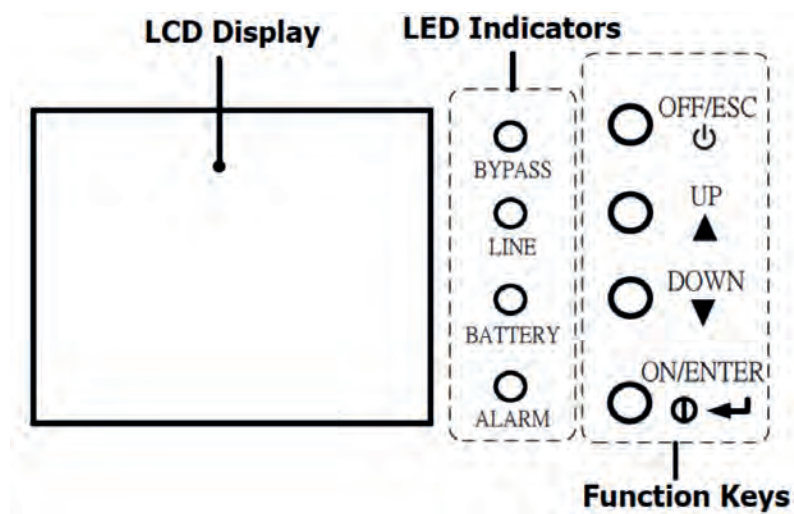
The UPS also has a slot for additional cards, which allows retrofitting an SNMP network card for remote communication via the network.

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4. LCD display support

4.1. Function keys

The UPS control panel has 4 keys for UPS and LCD operation.



Button	Function
ON/ENTER	<ul style="list-style-type: none"> - Turn on the UPS: Press and hold for more than 0.5 seconds to turn on the UPS - ENTER: Press the key to confirm the selection in the UPS menu
OFF/ESC	<ul style="list-style-type: none"> - UPS shutdown: Press and hold for more than 0.5 seconds to turn off the UPS - ESC: Press the key to return to the previous menu page.
UP	<ul style="list-style-type: none"> - Up arrow: Key to scroll up to the previous line in the UPS settings menu - Change up the digit selection in the settings
DOWN	<ul style="list-style-type: none"> - Down arrow: Key to scroll down to the next line in the UPS settings menu - Change down the digit selection in the settings
UP + DOWN	<ul style="list-style-type: none"> - Press both keys simultaneously to rotate the LCD panel 90°

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LED indicators

The status of the LEDs indicates the current status of the power supply and is described in the table below:

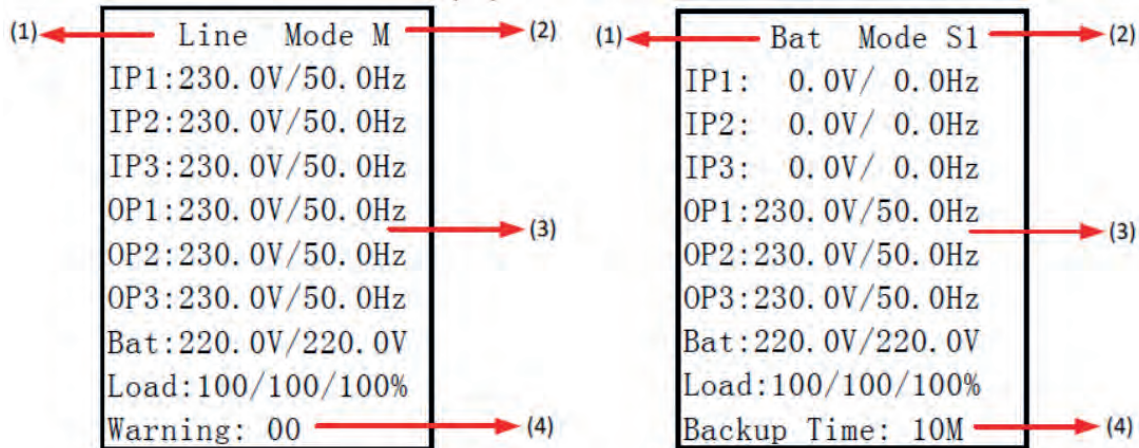
Mode	LED	Bypass	Line	Battery	Fault
UPS Start		●	●	●	●
No output		○	○	○	○
Bypass mode		●	○	○	○
Normal mode		○	●	○	○
Battery mode		○	○	●	○
Converter mode		○	●	○	○
Battery test		●	●	●	○
ECO mode		●	●	○	○
Fail		○	○	○	●

Audible alarms

UPS Status	UPS Sounds
Bypass	Single beep every 2 minutes
Battery mode	Single beep every 4 seconds
Low battery	Single beep every 1 second
Fail	Continuous tone
Warning (except overload)	Single beep every 1 second
Overload	Double beep every 1 second

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4.2. LCD panel



Description	Function
1	Current UPS status, e.g. Line (normal operation), Bat (battery operation)
2	Information about the UPS unit and the number of modules in parallel operation, e.g. M (Master main unit), S <n> (number of slave units in parallel operation), N (newly added power module)
3	Current UPS parameters
4	Battery capacity, warnings, work autonomy. Depending on the UPS mode, one of these items appears

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5. UPS operation

5.1. Switching on the UPS from the network

1. Turn the battery disconnecter located near the battery module or battery cabinet for external batteries to the ON position.
2. Turn on the UPS power at the UPS switchboard. When power is applied, the LCD panel lights up and the fans start working. A few seconds later, UPS starts Bypass mode.

Turning on the UPS will turn on Bypass mode. The receivers are supplied with voltage from the UPS input during this time and are not protected against power outages. To start the UPS inverter, turn on the UPS - step 3.

3. To turn on the power supply, press the "On / Enter" key. The message "Turn On" will appear on the display - select "Yes" with the arrows and confirm with "ON / ENTER".
4. A few seconds later, the UPS turns on the inverter and starts operating in normal mode.

In the event that the supply voltage is out of tolerance, the UPS will start working with the battery. After discharging the battery, the power turns off. Power recovery causes the UPS to restart automatically to normal operation.

Warning! For maximum autonomy, please charge the batteries for at least 10 hours after first use. The maximum battery capacity is obtained after two full discharging / charging cycles.

5.2. Shutdown of the UPS to bypass mode or total power off

1. Turn off the UPS inverter by pressing the "OFF / ESC" key. The message "Turn Off" will appear on the display - use the arrows to select the "Yes" command and confirm with "ON / ENTER".

When the UPS is operating from the battery, the above procedure turns off the UPS and the output voltage of the UPS.

2. In the Bypass mode, the output voltage is supplied directly from the network. To turn off the UPS completely, turn off the loads connected to the UPS and then disconnect the UPS. A few seconds later, the UPS turns off the LCD panel and stops the fans.
3. Switch the battery disconnecter to the OFF position.

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5.3. Switching on the UPS from the battery

1. Turn the battery disconnecter located on the back of the battery module or near the battery cabinet for external batteries to the ON position.
2. To turn on the power supply, press the "On / Enter" key. The message "Turn On" will appear on the display - select "Yes" with the arrows and confirm with "ON / ENTER".
3. A few seconds later, the UPS turns on the inverter and starts working in battery mode.

5.4. Switching UPS to service bypass mode.

The following procedure applies to UPSs equipped with an external service bypass. Switching UPS to the service bypass mode means that the receivers are not protected against power outages.

1. Turn off the UPS inverter by pressing the "OFF / ESC" key. The message "Turn Off" will appear on the display - use the arrows to select the "Yes" command and confirm with "ON / ENTER".
2. To turn off the UPS completely, disconnect the UPS. A few seconds later, the UPS turns off the LCD panel and stops the fans.
3. Switch the battery disconnecter to the OFF position.

5.5. Switching UPS from service bypass mode to normal operation

1. Turn the battery disconnecter located on the back of the battery module or near the battery cabinet for external batteries to the ON position.
2. Turn on the UPS power at the UPS switchboard. When power is applied, the LCD panel lights up and the fans start working. A few seconds later, UPS starts Bypass mode.

Make sure the Bypass LED is on to move to the next step.

3. Switch the external Service Bypass from the BYPASS position to the UPS position.
4. To turn on the power supply, press the "On / Enter" key. The message "Turn On" will appear on the display - select "Yes" with the arrows and confirm with "ON / ENTER".
5. A few seconds later, the UPS turns on the inverter and starts operating in normal mode.

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6. Operating environment and operation of the UPS

6.1. Working conditions

To ensure proper working conditions for the guaranteed power supply system, the room in which the power supply is located must be clean, free of dust and dirt. From time to time (at least every 6 months or more often depending on the degree of dirt), clean the ventilation openings on the power supply to ensure free air flow.

To extend the life of the battery, the ambient temperature should be between 15-25 °C.

6.2. The storage conditions

If the UPS is not in use and storage or storage is foreseen, it is required to charge the battery from time to time to avoid damage. Depending on the storage temperature, connect the UPS to charge the battery at least every 6 months. Typically, the batteries are charged in 4h to 90% capacity, while it is recommended to leave the power supply turned on for a period of 24-48h to fully charge the batteries, which will extend their life.

Temp. storage up to 20 °C - charging every 6 months.

Temp. storage up to 30 °C - charging every 3 months.

Temp. storage up to 40 °C - charging every 1 month.

6.3. Battery change

If the UPS operating time is shorter by half than the nominal time with working batteries or when the UPS reports a battery alarm, the batteries should be replaced immediately.

After disconnecting the battery, the receivers are not protected against power outages.

It is not recommended to replace the battery during operation of UPS and receivers.

Do not replace the battery while the UPS is in battery mode!