



OPERATION MANUAL



UPS FOR EXTERNAL BATTERIES

RESERVE-500
RESERVE-1000

Congratulations on your purchase of the REAL-EL products!

Please read this Operation Manual before using the unit and retain this Operation Manual in a safe place for future reference.

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1. BUYER RECOMMENDATIONS

- Unpack the device carefully. Make sure there are no accessories left in the box. Check up the device for damage; if the product was damaged during transportation, address the firm which carried out the delivery; if the product functions incorrectly, address the dealer at once.
- Check up the package contents and availability of the warranty card. Make sure the warranty card has a shop stamp, a legible signature or the seller’s stamp and purchase date, and the goods number corresponds to that in the warranty card. Remember that at the loss of warranty card or lack of coincidence of numbers you are deprived the right on warranty repair
- Do not switch on the product immediately after you bring it into a room from environment with negative temperature! After unpacking, the product should be kept in conditions of room temperature for at least 4 hours.

2. SAFETY MEASURES AND PRECAUTIONS

Before using this device, be sure to read the safety rules:

- Before operation, the battery should be recharged (battery, not included) for at least 12 hours. To do this, it is necessary to connect the UPS to the mains without load.
- The power of the connected load should not exceed the rated power indicated in the "Technical characteristics".
- Install the UPS in temperature-controlled rooms with ventilation. During operation, the body temperature may rise, which is a normal.
- Disconnect the UPS from the mains before connecting/disconnecting load cables to the UPS to reduce the risk of electric shock.
- In the case of an emergency, turn off the UPS and disconnect the power cords from the mains and batteries.
- It is strictly forbidden to open the case of the device - there is a high voltage inside. In case of complications, read the instructions or contact an authorized service center, the list of which is published on the website www.real-el.com
- Do not allow liquid to get inside the device, it can cause a short circuit and electric shock. In the event of signs of incorrect operation (sparks, smells, etc.), immediately disconnect the device from the mains and contact the nearest service center.
- This device is not intended for use by persons (including children) with limited physical, mental or mental capabilities, insufficient experience or knowledge; the use of the appliance by such persons is allowed only under the condition of supervision or provision of instructions on the use of household appliances by persons responsible for their safety.
- Do not use the device with a damaged power cord or plug, or after exposure to liquids, drops, or any other damage. To avoid electric shock, do not attempt to disassemble or repair the device yourself. If necessary, contact an authorized service center.

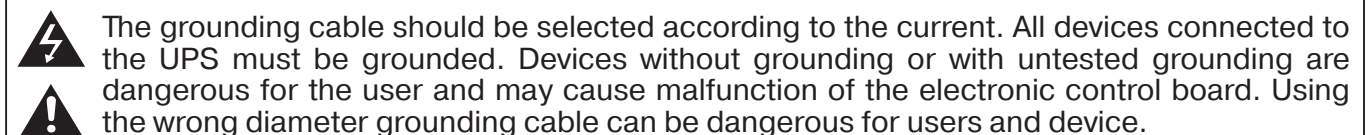


WARNING!

High voltage inside which can cause electric shock.

It is strictly forbidden to use the UPS in the following conditions:

- In dusty rooms and rooms containing flammable gas;
 - At a temperature above 40° and below -5 degrees Celsius;
 - If the humidity level is over 90%;
 - In direct sunlight or near heating elements;
 - In places of vibration;
 - Outdoor.
- In case of fire, use only powder fire extinguisher!
 - Try to place the device near the power source, then it will be easy for you to turn off the device if needed.



3. PACKAGE CONTENTS

- Uninterruptible power supply – 1 pc
- Operation Manual – 1 pc
- Warranty card – 1 pc

4. TECHNICAL DESCRIPTION

Operating principle

- This device is designed to operate with lead-acid maintenance-free 12 V AGM type batteries and belong to line-interactive uninterruptible power supply of continuous action with a long backup time. The principle of operation is based on the conversion of DC current from external batteries into pure sine wave AC current. The main purpose is to power household and industrial equipment critical to the form of the input current (boiler equipment, automation systems, etc.).
- The device is equipped with an automatic voltage regulator (AVR), which allows you to ensure the correct power supply of the load when the mains voltage increases/decreases without switching to battery operation mode.
- The "autostart" function ensures automatic switching on after power supply. If the input voltage after the power supply exceeds the limits of 160 V - 265 V, "autostart" is not activated, protection against low or high voltage is activated.

Recommendations for choosing batteries

- Select the capacity of the battery depending on the power of the connected load and for the required power reserve time, see tables 1 and 2 below. Based on the selected capacity, select the specific battery.
- The minimum recommended battery capacity is 50Ah for the 500VA model and 100Ah for the 1000VA model.
- Battery storage conditions must meet the requirements of the battery manufacturer.

Notes:

- **When using a battery of two or more units, they must be of the same type and capacity (if the batteries have different capacities, they will have different internal resistance, as a result of which the charge level will be different).**

Table 1. Selection of batteries for the RESERVE-500

Battery capacity	Load 100 W	Load 200 W	Load 300 W
12 V/50 A · h	3 h	1,5 h	0,7 h
12 V/75 A · h	5 h	2,3 h	1,5 h
12 V/100 A · h	7 h	3 h	2 h

Table 2. Selection of batteries for the RESERVE-1000

Battery capacity	Load 100 W	Load 200 W	Load 300 W	Load 400 W	Load 500 W	Load 600 W
12 V/100 A · h	7 h	3 h	2 h	1,5 h	1 h	0,7 h
12 V/150 A · h	12 h	5 h	3 h	2 h	1,5 h	1 h
12 V/200 A · h	15 h	7 h	4,5 h	3 h	2,5 h	2 h

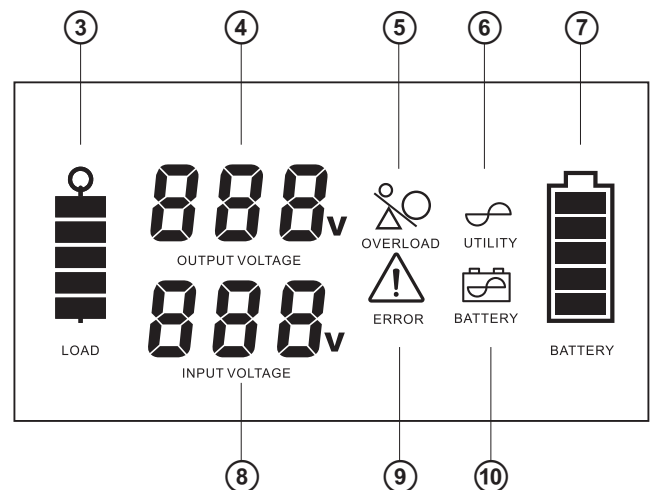
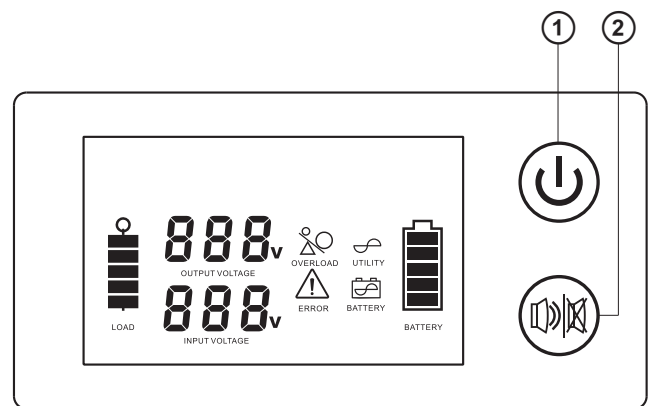
• When using multiple batteries, connect the batteries in parallel. To connect additional batteries, purchase additional cables separately. When connecting two or more batteries, the positive terminal of one battery is connected to the positive terminal of the other, the negative terminals are connected in the same way.

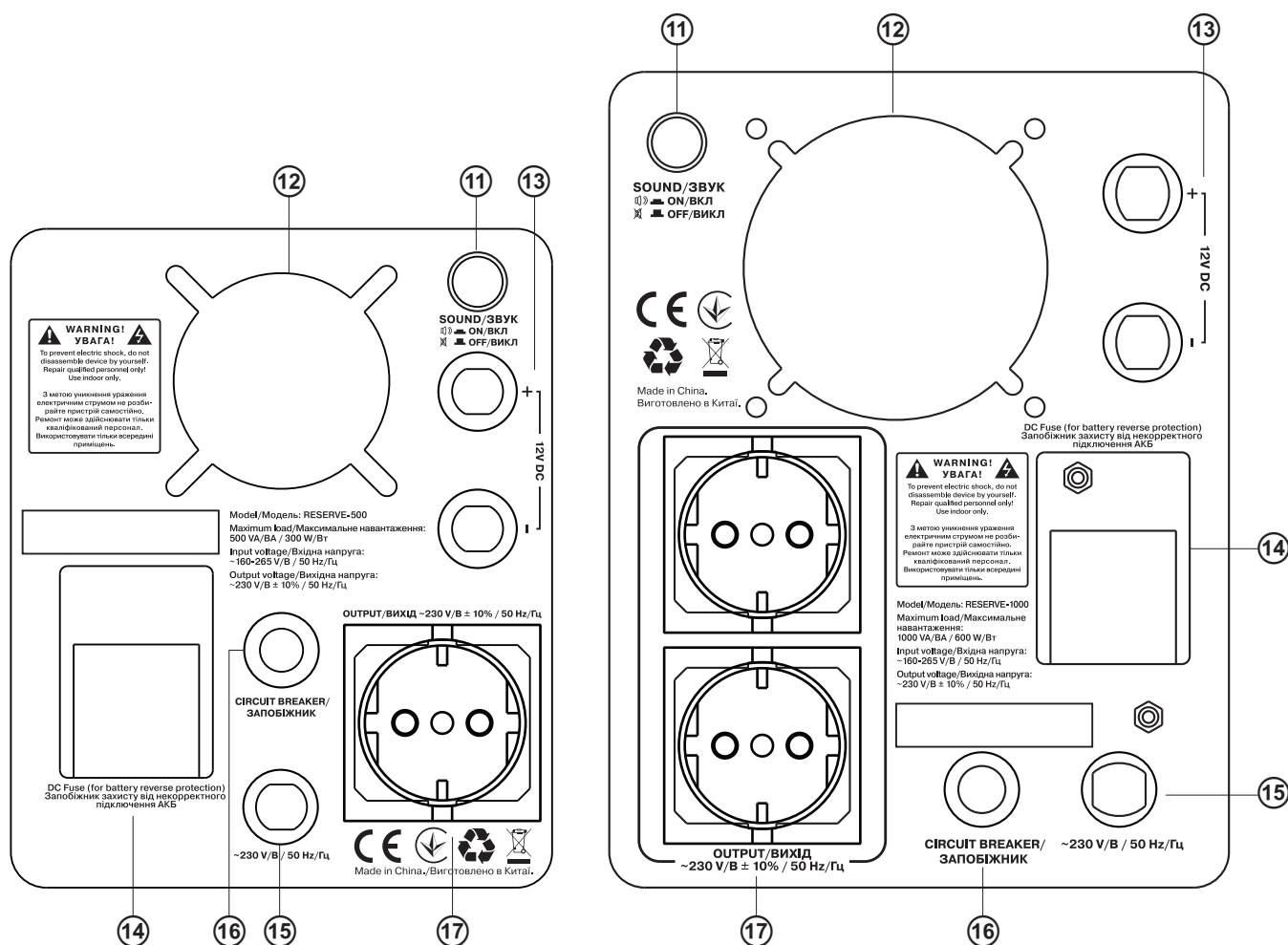
Features

- Pure sine wave of the output voltage
- Continuous action with long backup time
- Built-in voltage stabilizer
- Microprocessor control
- Protection against short circuit in the load connected to the UPS
- Overload protection
- Protection against increased or decreased mains voltage
- Protection against external influence IP-20
- Self-diagnosis at power-on
- Indication of operating modes on the LCD display
- Mode switching time is less than 4 msec
- Autostart function
- Low noise

Description

- ① ON/OFF switch
- ② Temporary mute button
- ③ LOAD: device load indicator
- ④ OUTPUT VOLTAGE: output voltage indicator
- ⑤ OVERLOAD: overload indicator
- ⑥ UTILITY: indicator of operation from the mains
- ⑦ BATTERY: charge level indicator
- ⑧ INPUT VOLTAGE: input voltage indicator
- ⑨ ERROR: error indicator
- ⑩ BATTERY: battery mode indicator
- ⑪ Permanent sound mute button
- ⑫ Cooling fan
- ⑬ Battery terminals « - » « + »
- ⑭ Fuse protection against incorrect battery connection
- ⑮ Built-in power cord
- ⑯ Input fuse
- ⑰ Output sockets ~230 V / 50 Hz





5. CONNECTION AND OPERATION

- Install the set (UPS + batteries) in a place with sufficient ventilation (free space around the UPS should be at least 25 cm).
- Connect the battery (purchased separately) to the UPS using the cables in the UPS, observing the polarity.

WARNING!!!

When connecting battery to the UPS, sparking is possible when touching the power terminals. Before using the UPS for the first time, it is necessary to charge the battery for at least 12 hours without load.

- Connect the UPS to a single-phase mains using the power cord. It is not necessary to turn on the UPS by button, after connecting to the mains - "autostart" function will start it automatically.
- Batteries need to be charged.
- To do this, leave the UPS on until the battery is fully charged.
- After charging the battery, press and hold the button until the device turns OFF.
- Disconnect the UPS from the network by removing the plug of the power cord from the outlet.
- Connect consumer devices to the switched-off UPS. Insert the mains plugs of the consumer devices into the UPS sockets.
- Reconnect the UPS plug to the mains, the "autostart" function will start it automatically.
- Then turn on the connected devices (the most powerful device first and the least powerful device last) using their switches.

Notes:

- ***If you need to forcibly shut down the UPS, first turn off the mains circuit breakers of the consumers, and then turn off the UPS in the order described above. To turn on the UPS again, press and hold the button.***
- ***If the UPS is not used for a long time, the battery should be charged every three months. Check the battery manufacturer's care instructions.***
- ***If the UPS is not used for a long time, disconnect it from the mains and disconnect the battery pack. Since this UPS implements the "autostart" function, a voltage failure in the network will lead to an automatic start of the UPS.***

"Cold start" function

- You can turn on the UPS without connecting to the mains using the "Cold start" function with the button ①.

Note. *It is not recommended to use the cold start function if a heavy load is connected.*

Sound alarm and protection

- At the moment of switching to battery power (if the mains voltage disappears), the UPS emits short beeps. During battery operation, the UPS emits periodic beeps.
- To turn off this function for a short time, press the button ② on the front control panels, or turn off the beeps using the button on the back panel ⑪ to permanently disable beeps.
- In the case of a low battery charge (in battery operation mode), the UPS emits sound signals.
- If a connected load is higher than the rated load, the UPS will beep and then automatically shut down.
- In the case of an emergency situation (short circuit in the connected device or connection of the device with a load higher than the nominal one), fuse may fail.

Storage conditions

- The temperature and humidity of the room where you intend to install the device must meet the standards specified in the "Technical characteristics" table.
- The UPS should be stored with fully charged batteries.
- Battery storage conditions must meet the requirements of the battery manufacturer.

6. TROUBLESHOOTING

Problem	Cause	Solution
The UPS is connected to the mains, but the indicator does not light.	<ol style="list-style-type: none"> 1. The button ① is not pressed. 2. Input fuse ⑩ has come into action. 3. Unreliably connected cables. 	<ol style="list-style-type: none"> 1. Press button ①. 2. Switch off the load. Press the fuse button. If the UPS operation is normal, check the load power. 3. Check cable connections to batteries.
The UPS beeps and operates in the off-line mode even with normal voltage in the mains.	<ol style="list-style-type: none"> 1. The UPS found depressions or surges in input voltage and has gone to the standby mode. 2. Input fuse ⑩ has come into action. 3. Safety fuse burned out. 4. Poor contact in the UPS connection circuits to the mains. 	<ol style="list-style-type: none"> 1. It is normal phenomenon. The UPS protects the equipment against voltage disorders of the mains. 2. Disconnect the load. Press the fuse button. If the UPS operation is normal, check the load capacity. 3. Disconnect the load. You will replace the fuse of that face value. 4. Check the UPS connection reliability to the mains.
The UPS operates from the mains, but does not operate in the off-line mode.	<ol style="list-style-type: none"> 1. Batteries are discharged greatly. 2. Defective batteries. 3. The UPS is to be repaired. 4. Unreliably connected cables. 	<ol style="list-style-type: none"> 1. Disconnect all equipment and charge batteries in full. 2. Replace batteries. 3. Consult with the service center. 4. Check cable connections to batteries.
The UPS beeps long during operation from the mains.	Overload.	Decrease the connected load power.
The UPS does not provide the expected time of operation in the off-line mode or it is switched off.	<ol style="list-style-type: none"> 1. Batteries are discharged greatly. 2. Defective batteries. 3. Unreliably connected cables. 	<ol style="list-style-type: none"> 1. Charge batteries in full. 2. Replace batteries. 3. Check the connection reliability of cables to batteries.

If none of the above methods can solve the problem, please seek professional advice at your nearest service center. Never attempt to repair the product yourself.

7. TECHNICAL SPECIFICATIONS

Model	RESERVE-500	RESERVE-1000
Output rated power	500 VA	1000 VA
Active power	300 W	600 W
Input voltage	~160 – 265 V \ 50 Hz	~160 – 265 V \ 50 Hz
Output voltage	~230 V \pm 10 % \ 50 Hz	~230 V \pm 10 % \ 50 Hz
Output voltage form	Pure sine wave	Pure sine wave
Mode of operation	continuous, long-acting	continuous, long-acting
Switch time	<4 msec	<4 msec
Battery: connected, external (must be purchased separately)	12 V unmaintained sealed lead-acid batteries	12 V unmaintained sealed lead-acid batteries
Charging current	8 A \pm 1 A	13 A \pm 2 A
Working temperature	-5 ~ 40 °C	-5 ~ 40 °C
Relative humidity	before 90 % (without condensation)	before 90 % (without condensation)
Storage temperature	-15 ~ 45 °C	-15 ~ 45 °C
Dimensions	140 × 180 × 350 mm	160 × 240 × 390 mm
Weight	5.1 kg	7.9 kg

Notes:

- *Specifications given in this table are supplemental information and cannot give occasion to claims.*
- *Technical specifications and package contents are subject to change without notice due to the improvement of TM REAL-EL production.*



Models: **STAB WM-500, STAB WM-10000**

Manufacturer: ENEL GROUP OU, Katusepapi tn 6, Lasnamäe linnaosa, Tallinn, Harju maakond, 11412, Estonia. Made in China.

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