

SERVICING INSTRUCTIONS

- USER'S MANUAL

Uninterruptible power supply unit LESTAR of SE series Line Interactive with AVR Auto-voltage Regulation

SE-1000/ SE-1400



Prior to switching on the uninterruptible power supply unit please read carefully these instructions and warranty conditions!

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1. USE OF THE UNINTERRUPTIBLE POWER SUPPLY UNIT

(Uninterruptible power supply unit) is designed for work with the equipment of information systems, such as: computers, networks, servers, modems, as well as other electronic equipment, such as revenue cash registers and telephone exchanges. Use of the uninterruptible power supply unit with electric appliances, such as refrigerators, electric water heaters, mechanical household appliances AGD, and other electric motors is unallowable. LESTAR will not bear any responsibility for damages caused as a result of improper connection of the afore mentioned equipment.

2. SAFETY INSTRUCTIONS



- ATTENTION!**
1. UPS is equipment designed for high voltage operation. Inside the unit there are live parts dangerous for human life!
 2. Please don't open yourself the casing, don't make repairs, etc. since this brings about hazard of electric shock. If you have some questions, please come into contact with our company, or the salesman.
 3. The device is not recommended for protection of life saving equipment!
 4. Please don't spill liquids on the UPS casing, or inside it.
 5. The uninterruptible power supply unit should be stored in dry rooms. Avoid location of UPS in the neighborhood of environment of considerable humidity, or in the vicinity of liquids, such as chemical water solutions.
 6. Avoid location of UPS in a place, where it will be exposed to the action of sun rays, or other heat sources, as well as in the places of low temperature. Recommended temperature range is 15°C - 25°C.
 7. Please don't plug ventilating holes making possible escape of heat from the interior of UPS.
 8. For connecting UPS please use grounded supply cable, connecting plug of UPS should be plugged-in to a socket having grounding circuit.
 9. Under normal working conditions when supplied from "supply mains" UPS is protected by a fuse against overloading and short circuit.
 10. Supply socket, to which UPS has been connected, should be located close to the device and should be easily accessible.
 11. The uninterruptible power supply unit should have its own source of power - internal accumulators. UPS output can be under tension even, if it has been disconnected from supply mains! Full disconnection of UPS from the source of power will take place after removal of the clamp from the accumulator. Such operation may be performed by an authorized serviceman only!
 12. In order to exchange the battery please contact with the service station indicated by LESTAR.
 13. This device is not a lightning protector. Should a house or antenna be directly struck by a lightning, UPS might not protect your equipment.
 14. The uninterruptible power supply unit should be connected to a socket, whose phase wire has been protected by a fuse of rated value not greater than 16A. This is in conformity with the regulations IEC 950 (EN 69550-2000) as far as user's safety is concerned. This aims the installer of the device to check the electric system of the building (room), where the uninterruptible power supply unit will operate.

3. AUTOMATIC RESET FUSE

Mains reset fuse may blow out automatically when a device which power consumption considerably exceeds rated value is connected or a short circuit is caused in supply network socket. The fuse is located on the UPS rear panel. In order to switch the fuse on, push a yellow reset button.

4. INSTALLATION, CONNECTION AND INSTALLING REMARKS

1. Unpack UPS in order to check, whether the product has not been damaged. Should any damages be detected, contact with the salesman.
2. Connect the AC supply cable to UPS socket.
3. Depress and hold back the power switch (15sec.). LED will illuminate, which means that UPS is supplied with alternating current.
4. Connect the computer supply cable, or the supply cable of other peripheral equipment (IEC 320) to output sockets of UPS. Then switch on the computer and disconnect UPS supply cable in order to check the unit for proper operation. Supply cable is to be disconnected by removing the plug with a grounding pin from the mains socket.
5. Prior to proceeding operation of the unit switch on UPS and charges the battery for 8 hours. This will enable to charge the accumulator. Should operation of the unit begin before a full charging of the accumulator, then the time of emergency operation will be shorter than the full capacity of the accumulator.
6. UPS is switched off by depression and hold back of the power switch, which is accompanied by extinguishing of LED
7. Don't use UPS with laser printers, electric motors and mechanized appliances because of a high starting current.
8. Don't connect the uninterruptible power supply unit to an electric system cooperating with a power generating set.
9. If you don't anticipate the use of UPS for a longer period of time, please charge the accumulator for minimum 12 hours every 3 months.
10. Full discharging of accumulator can lead to a considerable shortening of its service life. After discharging it should be charged again as soon as possible. If the device has been fully discharged for a period of time longer than 3 days, it could be irreversibly damaged!
11. Accumulator will re-gain its full operating capacity after about 1 month of mains operation.

5. DESCRIPTION OF OPERATION

SERVER POWER PLUS AVR SE-1000, SE-1400 series UPS systems are up-to-date power supplies dedicated to key elements of computer networks like PCs, servers and workstations, etc. Using UPS eliminates undesirable noise in 230V mains (overvoltage, current pulses, voltage decays), and makes computer equipment operation stable and failure-free. A green LED is switched on during normal mains operation mode. The UPS filters voltage and deprives it of electrical noises, and in the case of voltage decrease (within the range between 172V up to 230V) AVR system increases the voltage to 230V. In this mode of operation a yellow LED is switched on (BOOST mode). In the case of voltage increase over 230V (in the range between 230V up to 288V) AVR system decreases voltage and makes it stable on the level of 230V. A yellow LED is then switched on (BUCK mode). In the case of mains power supply failure, the UPS starts to operate with a battery in a fraction of second (less than 3 ms). In this mode of operation a green LED flashes together with audible signal beeps every 4 seconds. The UPS provides power from a battery and after up to 40 minutes (depending on the type of UPS and load) it cuts the power. Just before battery discharging, both a green LED and an audible signal increase their frequencies informing about very soon UPS switch off. A green LED is switched off when the UPS is down. UPS overload (while in emergency power supply mode) is shown by red LED switched on and continuous audible signal. In this case UPS would be shut down in few up to few dozens of seconds (depending on load). In emergency power supply time (with a battery) depends on UPS and load types and is up to 40 minutes. The UPS is equipped with so called "cold start" functionality allowing to start the operation of the system without mains power. You can find the details of the functionality in the chapter describing power supply properties.

6. POWER STRIPS

Products, that the uninterruptible power supply units perform also the function of anti-interference strips, is erroneous. Extended LESTAR strips (of POWER MULTIPROTECTOR, POWER MASTER HIGH series) have incomparably greater possibilities of attenuation and adsorption of energy than UPS units available on the market. As a result, their application ensures far greater efficiency and better protection of your valuable equipment. In order to better understand the level of protection, compare the data given below with the data of the uninterruptible power supply units.

	Absorption of pulse energy	Max. current	Attenuation
POWER MULTIPROTECTOR	1176 Joules	19,500A	70 dB
POWER MASTER HIGH	480 Joules	15,500A	60 dB

Most uninterruptible power supply units have filtering systems and varistor attenuators of very low values of the adsorbed energy. Some of them don't have them at all and so the existing level of protection is questionable. Hence, in the case of a strong impact and damaged varistor attenuator also the application of an anti-interference strip before the UPS being connected also brings about a considerable financial advantage, because the possible cost of service and repair of the strip is considerably lower than of each UPS separately. We do recommend the use of LESTAR supply strips and comparison of the data and technical parameters.

FIG. 1. DIAGRAM OF CONNECTION OF THE STRIP- UPS - COMPUTER SYSTEM



7. PROPERTIES AND FUNCTIONS

- ✓ **FULL AVR FUNCTION**
Operation with AVR function consists in regulation of output voltage on a level of 230 V (+/-10%). In spite of fluctuations of the input voltage within the limits from 172 V up to 288 V, the output voltage is constant. Voltage regulation is effected without drawing energy from an accumulator.
- ✓ **LINEAR INTERACTIVE SUPPLY OF UPS OUTPUT**
AVR function is combined with switching over to operation with supply from accumulator, when the threshold of operation of AVR system has been exceeded. Within the range of voltage from 172 V up to 288 V regulation of output voltage takes place by means of AVR function. Should voltage drop below 172V, or raise above 288V, then the uninterruptible power supply unit will be switched over to operation with supply from an accumulator.
- ✓ **COLD START**
The uninterruptible power supply unit can be started when not supplied from the supply mains. This function is possible only for a standard set consisting from a computer and 15" monitor and is activated by switching on the power switch. The uninterruptible power supply unit will then operate in the emergency mode of operation and will take energy from the accumulator.
- ✓ **TELEPHONE AND LAN NETWORK FILTER**
UPS offers the possibility of connection of a modem, or telephone. Telephone line is protected against over-voltage and interference, which can occur in the telephone network.
- ✓ **PROTECTION OF ACCUMULATOR FULL DISCHARGING**
Microprocessor automatic system for testing and control of operation of the emergency uninterruptible power supply unit protects the uninterruptible power supply unit against full discharging. Should condition close to full discharging be detected, then the uninterruptible power supply unit will be completely disconnected.
- ✓ **SOUND SIGNAL OF OVERLOADING, OR FULL DISCHARGING OF ACCUMULATOR**
Full discharging of accumulator and switching off of the uninterruptible power supply unit in a short time is signalled by a quick flickering of the green diode and a single sound signal lasting 1 second.
- ✓ **AUTOMATIC SWITCHING OFF IN THE CASE OF A SHORT CIRCUIT OR OVERLOADING**
The uninterruptible power supply unit is being automatically switched off in the case of overloading, or short circuit. This is being signalled by a long acoustic signal.
- ✓ **PROTECTION AGAINST OVER-VOLTAGE IN SUPPLY MAINS**
The uninterruptible power supply unit protects the equipment connected to it against over-voltage and current pulses, which can appear in supply mains. This is effected by rapid varistors characterized by a big energy absorption (476 Joules).
- ✓ **6 X OUTPUT SOCKETS**
In order to be connected to a computer the uninterruptible power supply unit has been provided with six output sockets. Active power expressed in Watts connected to the both sockets may not exceed 600 W (for SE-1000), 910 W (for SE-1400).
- ✓ **SOFTWARE FOR COMMUNICATION PORT**
Power supply is equipped with RJ48 comms port that is linked to PC USB interface using a special cord which is enclosed in the set. After having been connected to the computer, it together with the software renders possible control of operation of emergency uninterruptible power supply unit.

8. DESIGN OF THE UNINTERRUPTIBLE POWER SUPPLY UNIT

ALARMS AND SIGNALING

						BUZZER	OPERATING STATUS
☼	☼	☼	☼	☼	☼	—	Buck Mode
—	☼	—	—	—	—	—	AC Normal
—	☼	—	—	—	—	—	Boost Mode
—	—	☼	—	—	—	—	Continuously audio signal
—	—	—	☼	—	—	—	1 beep on every 4 sec.
—	—	—	—	☼	—	—	Backup power
—	—	—	—	—	☼	—	Beep intermittently (see WARNING)

☼ LED tur on continuously, ☼ LED flashing - LED off.

WARNING! - OVERLOAD



AC mode:

- 105% - Beep 2 times every 1 sec.
 - 140% - Beep 4 times every 1 sec.
- Battery mode:
- 105% - Beep 2 times every 1. After 20 sec. UPS will shutdown automatically.
 - 140% - Immediately shutdown.

EXTERNAL ELEMENTS

FIG. 2 FRONT PANEL

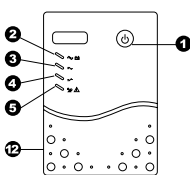
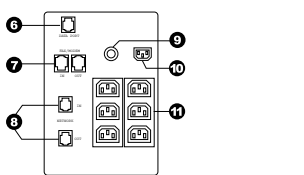


FIG. 3 REAR PANEL



1. On/Off Switch, 2. Green diode, 3. Yellow BUCK diode, 4. Yellow BOOST diode, 5. Red diode, 6. Data port, 7. Telephone surge protection port, 8. LAN Network surge protection port, 9. Automatic reset fuse, 10. AC Power Inlet 230V, 11. Output sockets, 12. Name plate.

9. TECHNICAL DATA

Model	Uninterruptible Power Supply units of ServerPowerPlus AVR SERIES		
	SE-1000	SE-1400	
Moc	1000VA / 600W	1400VA / 910W	
Input	Rated input voltage	-230V	
	Rated input current	4,35A	6,0A
Output	Switching over threshold supply mains-UPS	-172V +/- 288V	
	Input frequency	50 Hz +/- 5%	
	Output voltage range (AVR)	230V +/- 10%	
	Voltage control	230V +/- 3%	
	Output frequency of accumulator	50 Hz +/- 1%	
	Frequency regulation	+/- 1Hz	
Course form	Approximate sinusoid		
Switching over time	< 2 ms		
Accumulators	Type	Sealed lead-acid accumulator, service-less	
	Back-up time P _{max} / P 0,5max	4 - 17 min	5-18 min
	Charging time	8 hodin k 90% zcela objemu	
	Kind of accumulator	12 V 7Ah x 2	12 V 9Ah x 2
Protections	Protection of accumulator	Auto-test and full accumulator charging protection	
	Auto-test	Auto-test - after every switching on	
Light indicator	Signaling diode	Steady LED light - Normal AC power	
		Slow flashing green LED - Backup Power	
		Fast flashing green LED - battery low, ready to power off.	
		Lit off - UPS off	
Electric protection	Protection against current surge	476 Jouli	
	Protection against overload	Automatic electronic cutting off in the case of a short-circuit	
		Automatic reset fuse on input 6A or 16A	
	Voltage filtration	Interference eliminator RFI/EMI	
Protection Modem/Supply mains		RJ 11 for telephone filter and RJ 45 for LAN Network	
Communication with computer	Interface	RJ 48 to PC USB	
	Software	Lestar PowerX1	
Other	Dimensions (mm) length x width x height	305x150x216	375x150x216
	Weight	13,8 kg	16,5 kg
Working conditions		Temp. 0-40°C up to 90% humidity Storage does not cause condensation 15°C to 45°C	
Input sockets		6 output sockets	
Noise level		Up to 30 dB from a distance of 1 meter	

Right of modifications without separate notification reserved by the manufacturer.

10. MALFUNCTIONS AND REMEDIES

PROBLEM	CHECK - CORRECT
UPS can not turn on and LED not lit	<ol style="list-style-type: none"> 1. Press and hold the On/Off switch for 15 sec. or until you hear a beep sound. 2. Battery voltage is too low, check and charge.
Units connected to an emergency uninterruptible power supply unit are not working.	<ol style="list-style-type: none"> 1. Check conductors uninterruptible power supply unit - receiver for proper connection. 2. Check the fuse at the uninterruptible power supply unit inlet, if blown out replace (spare fuse in tool set). 3. Check and, if necessary reduce the value of the load of the connected units.
Alarm - switched on sound signal, flickering of diode	<ol style="list-style-type: none"> 1. The units connected to the uninterruptible power supply unit have an excessive power, check and if necessary reduce the load. 2. The uninterruptible power supply unit is damaged - switch off the uninterruptible power supply unit and contact with the service station.
The uninterruptible power supply unit operates being supplied from accumulator	<ol style="list-style-type: none"> 1. Check presence of voltage in this supply socket, to which the uninterruptible power supply unit has been connected. 2. Check and replace (exchange), if necessary, the input fuse in the uninterruptible power supply unit (spare fuse in a tool kit). 3. Check the supply cable.
Short working time when being supplied from accumulator	<ol style="list-style-type: none"> 1. Accumulator has not been fully charged - check, or recharge. 2. Check whether the uninterruptible power supply unit is not overloaded. 3. Accumulator is damaged, get in contact with the service station.
Software not working	<ol style="list-style-type: none"> 1. Check and correct interface cable.

1. LESTAR uninterruptible power supply unit x 1
2. Cable IEC 320 - for the unit being supplied x 2
3. Power supply cable x 1
4. Servicing instructions + warranty card x 1
5. Telephone cable x 1
6. Communications cable x 1
7. Software on CD or download x 1