USER`S MANUAL

ON-LINE UPS

***U*ninterruptible *P*ower *S*ystem**

IP-9300-12

NOTES

CONTENTS

1. Introduction

The On-Line Series is an uninterruptible power supply incorporating double-converter technology. It provides perfect protection specifically for Novell, Windows NT and UNIX servers.

The double-converter principle eliminates all mains power disturbances. A rectifier converts the alternating current from the socket outlet to direct current. This direct current charges the batteries and powers the inverter. On the basis of this DC voltage, the inverter generates a sinusoidal AC voltage which permanently supplies the loads.

Computers and periphery are thus powered entirely by the mains voltage. In the event of power failure, the maintenance-free batteries power the inverter**.**

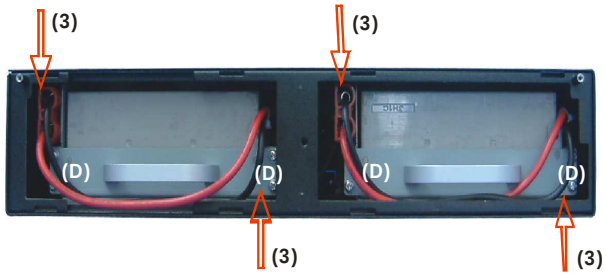
NOTES

2K/3K: Battery Bank

(1) Take out screw(A) first.

(2) Push the case out towards the direction as arrow shows to take off front panel.

(3) Take out terminals and screw(D),then it is okay to pull out battery case to replace battery.



(4) Please make sure all wires are connected correctly upon replacing batteries. After batteries are replaced and all wires are correctly connected,please check if voltage value is correct.
2K/3K: Voltage value should be 48VDC for each battery set(12V/7AH*4pcs).

(5) Put termainals and drive screws back in order..

2. Safety Instructions

PLEASE READ THE FOLLOWING USER MANUAL AND THE SAFETY INSTRUCTIONS BEFORE INSTALLING THE UNIT AND STARTING IT UP!

2.1 Transport

- Please transport the UPS system only in the original packaging (to protect against shock and impact).

2.2 Set-up

- Condensation may occur if the UPS system is moved directly from a cold to a warm environment. The UPS system must be absolutely dry before being installed. Please allow an acclimatisation time of at least two hours.
- Do not install the UPS system near water or in damp environments.
- Do not install the UPS system where it would be exposed to direct sunlight or near heat.
- Do not block off ventilation openings in the UPS system's housing.

2.3 Installation

- Do not connect appliances or items of equipment which would overload the UPS system (e.g. laser printers) to the UPS outlet socket.
- Place cables in such a way that no one can step on or trip over them.
- Do not connect domestic appliances such as hair dryers to UPS output sockets.
- The UPS can be operated by any individuals with no previous experience.
- Connect the UPS system only to an earthed shockproof socket outlet.
- The building wiring socket outlet (shockproof socket outlet) must be easily accessible and close to the UPS system.
- When installing the equipment, it should ensure that the sum of the leakage current of the UPS and the connected consumer does not exceed 3.5mA.

2.4 Operation

- Do not disconnect the mains cable on the UPS system or the building wiring socket outlet (shockproof socket outlet) during operations since this would cancel the protective earthing of the UPS system and of all connected loads.
- The UPS system features its own, internal current source (batteries). The UPS output sockets or output terminals block may be electrically live even if the UPS system is not connected to the building wiring socket outlet.
- In order to fully disconnect the UPS system, first press the Standby switch then disconnect the mains lead.
- Ensure that no fluids or other foreign objects can enter the UPS system.
- The UPS operates with hazardous voltages. Only qualified maintenance personnel may carry out repairs.

2.5 Maintenance, servicing and faults

- The UPS system operates with hazardous voltages. Repairs may be carried out only by qualified maintenance personnel.
- **Caution** - risk of electric shock. Even after the unit is disconnected from the mains power supply (building wiring socket outlet), components inside the UPS system are still connected to the battery and are still electrically live and dangerous.
- Before carrying out any kind of servicing and/or maintenance, disconnect the batteries and verify that no current is present and no hazardous voltage exist in the terminals of high capability capacitor such as BUS-capacitors.
- Only persons adequately familiar with batteries and with the required precautionary measures may replace batteries and supervise operations. Unauthorised persons must be kept well away from the batteries.
- **Caution** - risk of electric shock. The battery circuit is not isolated from the input voltage. Hazardous voltages may occur between the battery terminals and the ground. Before touching, please verify that no voltage is present!
- Batteries may cause electric shock and have a high short-circuit current. Please take the precautionary measures specified below and any other measures necessary when working with batteries:
  - remove wristwatches, rings and other metal objects
  - use only tools with insulated grips and handles.
- When changing batteries, install the same number and same type of batteries.
- Do not attempt to dispose of batteries by burning them. This could cause battery explosion.
- Do not open or destroy batteries. Escaping electrolyte can cause injury to the skin and eyes. It may be toxic.
- Please replace the fuse only by a fuse of the same type and of the same amperage in order to avoid fire hazards.
- Do not dismantle the UPS system.

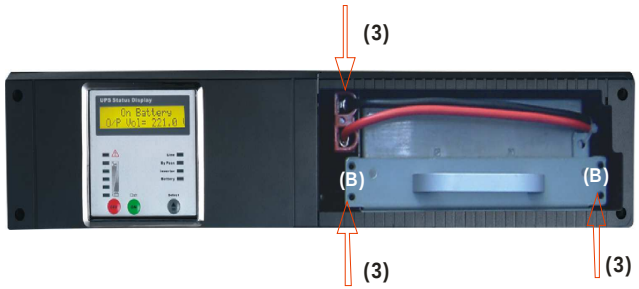
8. Battery Replacement

■ 1KVA: 19” Rack –mount UPS

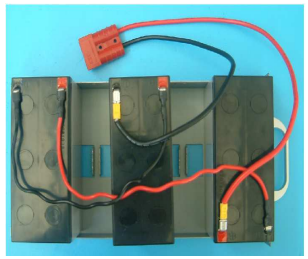
(1) Take out screw(A) first.

(2) Push the case out towards the direction as arrow shows to take off front panel.

(3) Take out terminals and screw(B),then it is okay to pull out battery case to replace battery.



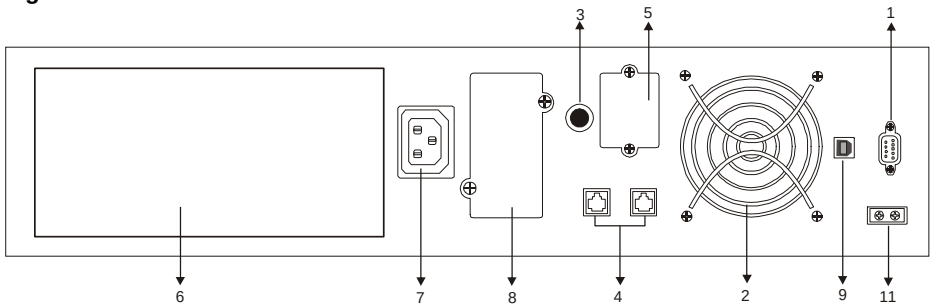
(4) Please make sure all wires are connected correctly upon replacing batteries.
After batteries are replaced and all wires are correctly connected,please check if voltage value is correct.
1KVA:Voltage value should be 36 VDC for each battery set(12V/7AH*3pcs).



(5) Put termainals and drive screws back in order..

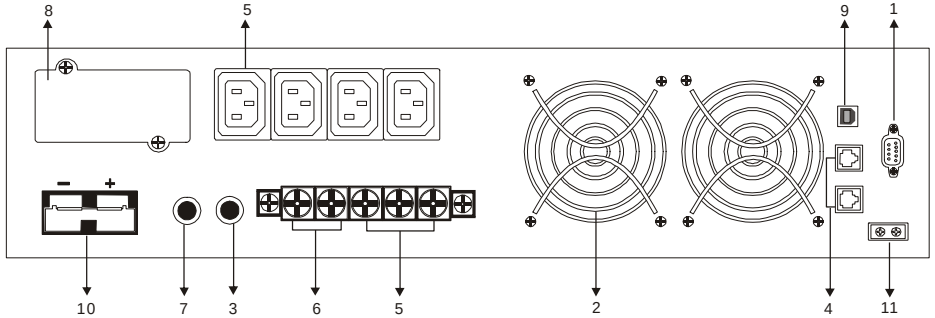
7.6 Appendix:

Figure 3: Back view of 1KVA



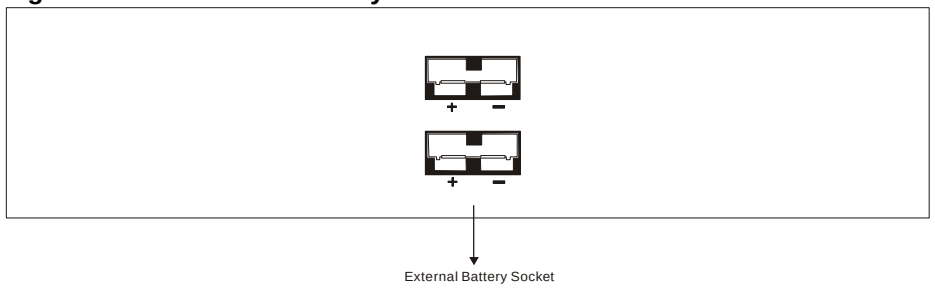
(1)Communication port
(2)Cooling Fan
(3)Input Breaker
(4)Tel/Modem Spike Protection Port
(5)External Battery Socket(Option)
(6)Output Socket
(7)Input Socket
(8)Intelligent Slot(Option)
(9)USB port (Option)
(11)E.P.O. Port (Option)

Figure 4: Back view of 2KVA/3KVA



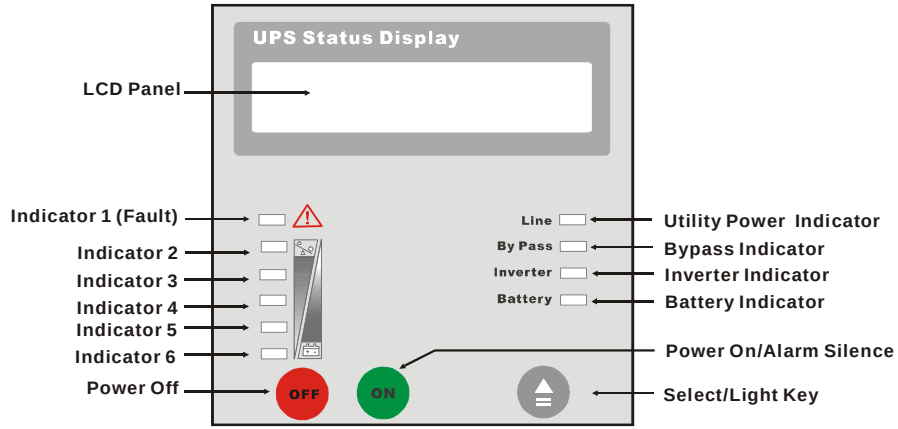
(1)Communication port
(2)Cooling Fan
(3)Input Breaker
(4)Tel/Modem Spike Protection Port
(5)UPS Output
(6)AC Input
(7)Output Breaker
(8)Intelligent Slot(Option)
(9)USB port (Option)
(10)External Battery Socket
(11)E.P.O. Port (Option)

Figure 5: Back view of Battery Bank

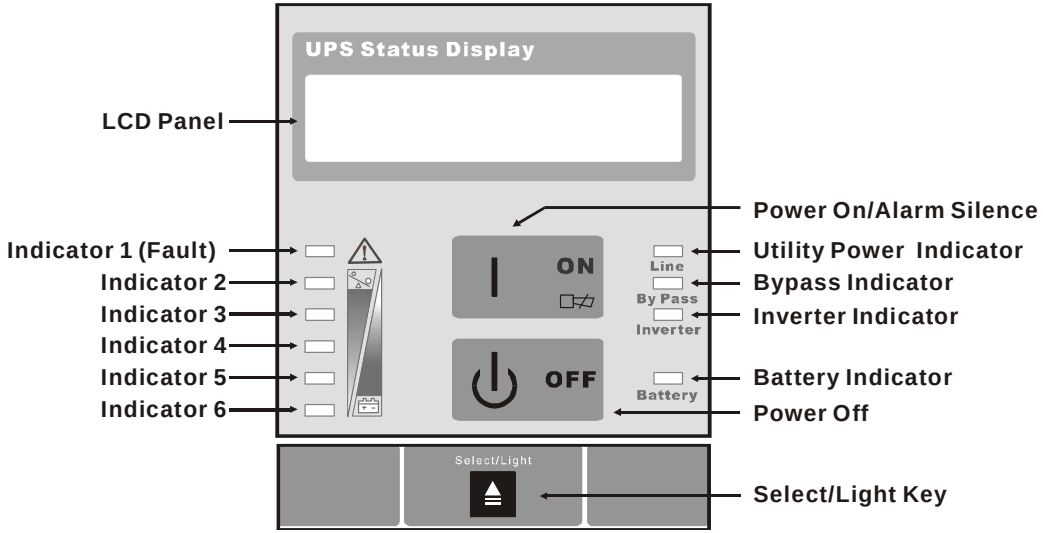


3.System Description

19" Rack-mount UPS



Tower UPS



Switch	***Function***
ON-Switch	1. Turn on UPS system: By pressing the ON-Switch "I", the UPS system is turned on. 2. Deactivate acoustic alarm: By pressing this switch, an acoustic alarm can be deactivated.
OFF-Switch	When mains power is normal, the UPS system switches to Standby mode by pressing OFF-Switch "⏻". It is then switched to Bypass and the inverter is off. At this moment, the output sockets are supplied with voltage via the bypass if the mains power is available.
Display	***Function***
LINE LED	1. The green LINE LED lights up if mains voltage is applied to the UPS input. 2. LINE LED blinks when the phase and neutral conductor have been reversed at the input of the UPS system. 3. If LINE LED and BATTERY-LED light up, the mains power supply is out of tolerance.
BATTERY LED	The orange-coloured BATTERY-LED lights up when the mains power has failed and the inverter is being powered by the batteries.
BYPASS LED	The orange-coloured BYPASS LED lights up when the UPS system is supplying voltage provided by the mains power via the bypass.
INVERTER LED	The green-coloured INVERTER LED lights up if the UPS system is supplying voltage provided by the mains power via the inverter.
FAULT LED	The red FAULT LED lights up and an acoustic warning signal is issued continuously when the UPS system is in fault condition. Press the Standby switch in order to turn off the warning tone.
Display	***Function***
Load and battery capacity LED	1. These LEDs show the load of the UPS system if the mains power is available (normal operation): 6th LED 0% -35 % 5th LED 36% -55 % 4th LED 56% -75 % 3rd LED 76%-95 % 2nd LED 96%-105 %. 2. In the battery operation, the LEDs indicate the capacity of the batteries: 2nd LED 1 % -35 % 3rd LED 36% -55 % 4th LED 56% -75 % 5th LED 76% -95 % 6th LED 96% -100 %.

7.6 Appendix:

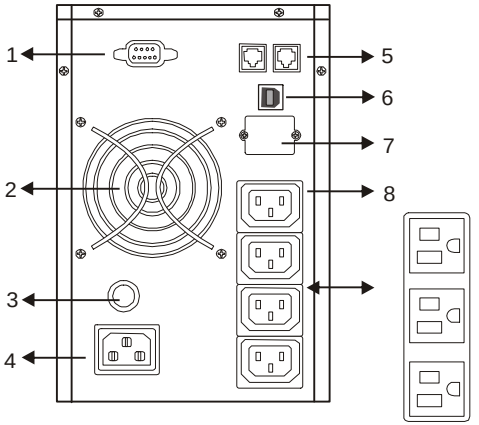


Figure 1: Back View of 1KVA

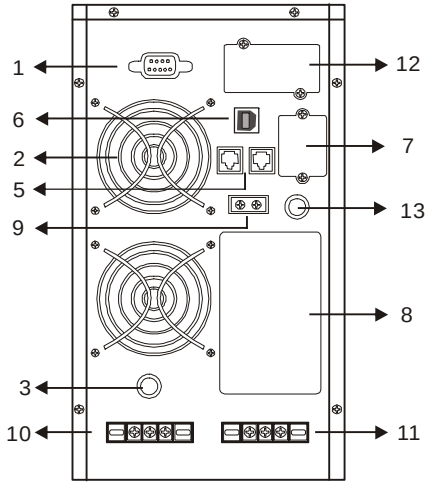


Figure 2: Back view of 2KVA/3KVA

1. Communication port
2. Cooling Fan
3. Input Breaker
4. Input Socket
5. Tel / Modem Spike Protection Port
6. USB Port (Option)
7. External Battery Socket (Option)
8. Output Socket
9. E.P.O. Port (Option)
10. Input
11. Output
12. Intelligent Slot (Option)
13. Output Breaker

5. Troubleshooting

If the UPS system does not operate correctly, please attempt to solve the problem using the table below.

Problem	*Possible cause*	*Remedy*
No indication, no warning tone even though system is connected to mains power supply	No input voltage	Check building wiring socket outlet and input cable
LINE LED blinks	Phase and neutral conductor at input of UPS system are reversed	Rotate mains power socket by 180° or connect UPS system according to chapter 5 “Connection and operation”
LINE-LED blinks and BATTERY-LED lights up	Input power and/or frequency are out of tolerance	Check input power source and inform dealer if necessary
LINE and BYPASS LED light up even though the power supply is available	Inverter not switched on	Press On-Switch “I”
INVERTER LED lights up, warning tone at intervals (every 1 or 4 seconds)	Mains power supply has failed	Switching to battery mode automatically. When audible alarm sounding every 1 second, battery is almost empty.
FAULT LED lights, warning tone once a second	Overload	Remove loads of UPS output
FAULT-LED lights up, permanent warning tone	UPS fault	Notify dealer!!
Emergency supply period shorter than nominal value	Batteries are not fully charged / batteries defective	Charge the batteries for at least 1-2 hours and then check capacity. If the problem still persists, consult your dealer.

Please have the following information at hand before calling the After-Sales Service Department:

1. Model number, serial number
2. Date on which the problem occurred
3. Detailed description of the problem

6. Maintenance

6.1 Operation

The UPS system contains no user-serviceable parts. If the battery service life (3 - 5 years at 25 ℃ ambient temperature) has been exceed ed, the batteries must be exchanged. In this case, please contact your dealer.

6.2 Storage

If the batteries are stored in temperate climatic zones, they should be charged every three months for 1-2 hours (see Chapter "Connection and Operation"). You should shorten the charging intervals to two months at locations subject to high temperatures.

7. Technical data

7.1 Engineering specifications

MODEL	1KVA	2KVA	3KVA
INPUT			
Phase	Single		
Frequency	46 Hz ~ 54Hz / 56 Hz ~ 64 Hz		
Current (A) 110V / 220V	12A / 7A	20A/10A	30A / 16A
OUTPUT			
Power rating	1KVA / 0.7KW	2KVA/1.4KW	3KVA / 2.1KW
Voltage	110 / 115 / 120 or 220 / 230 / 240 * (± 2%) VAC		
Frequency	(50Hz/ 60Hz) * (± 0.2%) Hz (Battery Mode)		
Wave Form	Sinusoidal		
BATTERIES			
Number and Type	3 * 12V / 7Ah	8 * 12V / 7Ah	

7.2 Operating Environment

Ambient Temperature	0℃ to 40℃
Operating Humidity	20% to 90%, non-condensing
Altitude	<1500m
Storage Temperature	-15℃ to 40℃

7.3 Typical stored energy time (Battery mode)

Typical values at 25℃ in minutes:

Model	100% LOAD	50% LOAD
1KVA	5	14
2KVA	9	21
3KVA	5	17.5

7.4 Dimensions and weights

Tower UPS

Model	Dimensions, D*W*H (mm)	Net Weight (kg)
1KVA	408*143*207	13
2KVA	460*192*340	32
3KVA	460*192*340	33

Battery Bank for Tower UPS

Model	Dimensions, D*W*H (mm)	Net Weight (kg)
BB-36V-14AH FOR 1K	408*143*207	20
BB-96-14AH FOR 2K/3K	460*192*340	50

19” Rack-mount UPS

Model	Dimensions, D*W*H (mm)	Net Weight (kg)
1KVA	465*19”*2U	16
2KVA	465*19”*2U	33
3KVA	465*19”*2U	33

Battery Bank for 19” Rack-mount UPS

Model	Dimensions, D*W*H (mm)	Net Weight (kg)
BBR2-36V-14AH FOR 1K	465*19”*2U	38
BBR2-96V-7AH FOR 2K/3K	465*19”*2U	43

7.5 Communication Port

The following is the pin assignment and description of DB-9 connector.

Pin#	Description	I/O
2	TXD	Output
3	RXD	Input
5	GND	Input
9	Wake up	Output

4. Connection and Operation

The system may be installed and wired only by qualified electricians in accordance with applicable safety regulations!

When installing the electrical wiring, please note the nominal amperage of your incoming feeder.

4.1 Inspection

Inspect the packaging carton and its contents for damage. Please inform the transport agency immediately should you find signs of damage.

Please keep the packaging in a safe place for future use.

NOTE: Please ensure that the incoming feeder is isolated and secured to prevent it from being switched back on again.

4.2 Connection

4.2.1 UPS Input Connection

If the UPS is connected via the power cord, please use a proper socket with protection against electric current, and pay attention to the capacity of the socket: over 10A for 1KVA and over 16A for 3KVA.

4.2.2 UPS Output Connection

Model	Output Socket :IEC/ NEMA 5-15R (pcs)		Terminal Block
	Tower UPS	19” Rack-mount UPS	
1KVA	4 / 3	2 / 6	Nil
2KVA	2 / 6	4 / 3	Available
3KVA	2 / 6	4 / 3	Available

4.3 Computer Connection

Connect your computer to the outlet sockets of the UPS system following the above procedure.

Caution!
*** Do not connect equipment which would overload the UPS system (e.g. laser printers).**
*** Do not connect domestic appliances to the UPS system.**

4.4 Battery Charge

Fully charge the batteries of the UPS system by leaving the UPS system connected to the mains for 1-2 hours. You may use the UPS system directly without charging it but the stored energy time may be shorter than the nominal value specified.

4.5 Turn On

To turn on the UPS system, press the ON-Switch “I“ on the front panel.

NOTE: The INVERTER-LED lights up after 10 seconds. The BYPASS-LED then goes out and the ventilation system switches on. The UPS system is now operating correctly.

4.6 Test Function

Test the function of the UPS system by either pressing the On-Switch “I“ or disconnecting the input of the UPS system from the power supply.