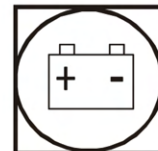


USER'S MANUAL

Line Interactive Uninterruptible Power System

4th Edition

701-0071272 UPS-7700B-04



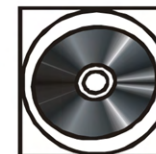
Emergency Backup Power Supply



For Use With Computer Loads Only



Power Surge/Noise Protection



Intelligent Auto-Shutdown Software



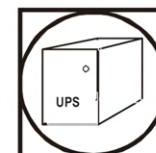
Internet Line Protection



Cost Efficiency



AVR Protection



Compact & Reliable Design

IMPORTANT SAFETY INSTRUCTIONS

Thank you for selecting this uninterruptible power system (UPS).
It provides you with better protection for connected equipment.

Please read this manual !

This manual provides safety, installation and operating instructions than will help you derive the fullest performance and service life that the UPS has to offer.

Please save this manual !

It includes important instructions for the safe use of this UPS and for obtaining factory service should the proper operation of the UPS come into question.

Please save or recycle the packaging materials !

The UPS's shipping materials were designing with great care to provide protection from transportation related damage. There materials are invaluable if you ever have to return the UPS for service. Damage sustained during transit is not covered under the warranty.

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CAUTION

- The UPS has electricity inside that is potentially hazardous. All repairs should be performed by qualified technician.
- The UPS has its own internal energy source (battery). The output receptacles may be alive even when the UPS is not connected to an AC supply.
- The UPS is suitable for computers and electronic equipment with substantially rectifier or capacitive loads, not suitable for electronic equipment with significant inductive loads, such as motors & fluorescent lamps.
- Be sure to operate within the power rating of the UPS. Below 1/2 or 1/3 of rated power is recommended for longer backup time & longer battery life.
- Do not place the UPS near excessive humidity, under sunshine, or close to heat-emitting sources.
- If the UPS is out of order, please detach power cord and consult your dealer right away. Do not open the UPS housing without well-trained technician.
- The unit should be supplied by grounded source. Do not operate the unit without ground source.
- The socket-outlet should be installed near the equipment and be easily accessible.
- Do not plug the UPS power cord into UPS's socket for the prevention of safety hazard.
- Installation should be performed by a qualified technician or electrician in accordance with local electrical codes.

INTRODUCTION

System Description

The product is line interactive UPS with the newest technology and powerful function. The Line Interactive UPS is with AVR function allows input voltage range from 75% to 125%, including on line voltage boost-up & buck down. An ideal protection equipment for critical connected loads.

In addition, This UPS provides advanced single telephone line or modem surge suppression through the modular connectors on the back panel.

The Line Interactive UPS and UPSilon2000 monitoring software (Optional kits) makes our computer operate intelligent and provides you with the ability of perfect protection of your critical devices.

Features

- Line interactive design.
- Easy LCD display.
- Provide boost and buck AVR to stabilize input voltage.
- Provides lightning, surge, overload, and short-circuit protection.
- Built-in CV battery charger and battery over drain protection.
- Auto restart when AC recovery.
- Cold start function
- Tel / Modem / Fax / Internet surge suppression.
- Option Bundle software : Automatically save your valuable files before auto shutdown.

SYSTEM CONCEPT

The purpose to present this chapter is to give you more precise conception about how UPS works..

1. Block Diagram

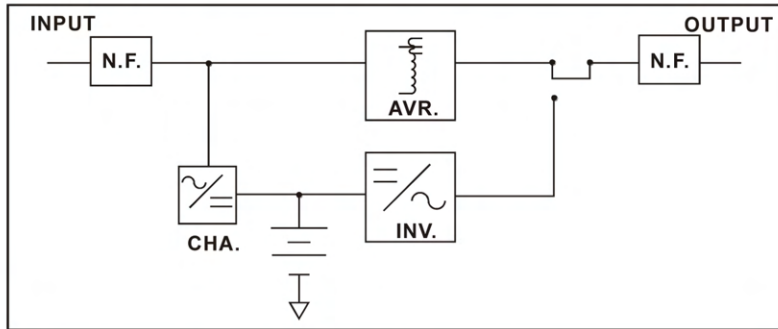


Fig. 1 shows how UPS works.

2. Normal Operation

There are two main loops when AC Utility normal the AC output loop and the battery charging loop. The AC output gets power from AC utility input and pass through AVR to support power to load. In the same time, the AC utility input is converted by AC/DC CHA and support charging power to charge batteries.

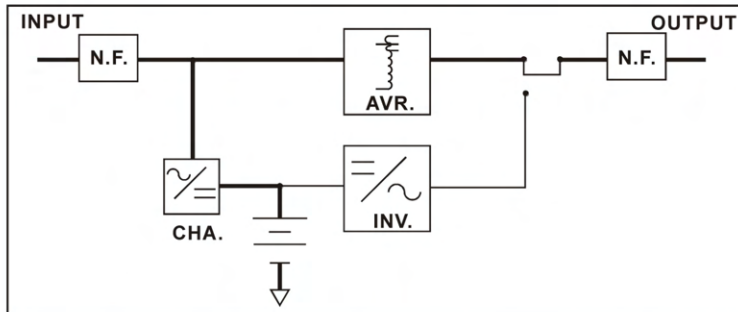


Fig. 2 shows how the UPS works when AC Utility normal.

3. AC Utility Failure

If AC utility fails, the UPS quickly detects the problem and activates the inverter. The inverter. The DC/AC inverter changes DC power from the batteries into AC and provides continuous uninterruptible power to load.

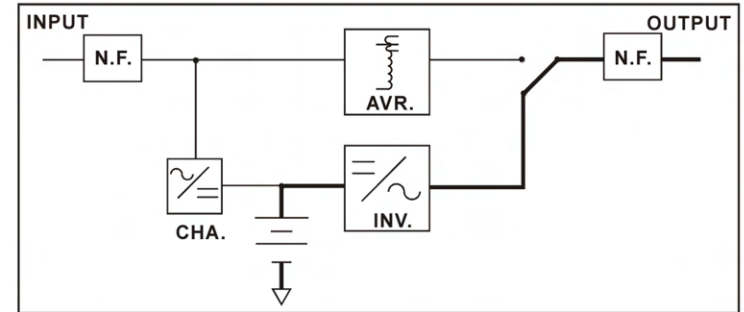
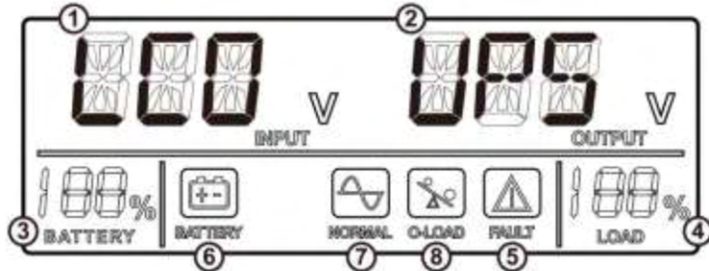


Fig. 3 shows how the UPS works when AC Utility Failure

OVERVIEW

Front Panel

1. LCD Indication Table:



No.	Indication	Description
1	Input Voltage	Indicate input line voltage value.
2	Output Voltage	Indicate output voltage value.
3	Battery Capacity	Estimated battery capacity, the accuracy is influenced by UPS operation mode and load level.
4	Load Level	The load level, percentage of full load.
5	Fault	UPS is in fault condition and alarm will beep continuously.
6	Battery	AC power is abnormal and UPS is on back-up mode.
7	Normal	UPS is under normal status.
8	Overload	UPS is overloaded. Buzzer will beep continuously. Please remove some load.

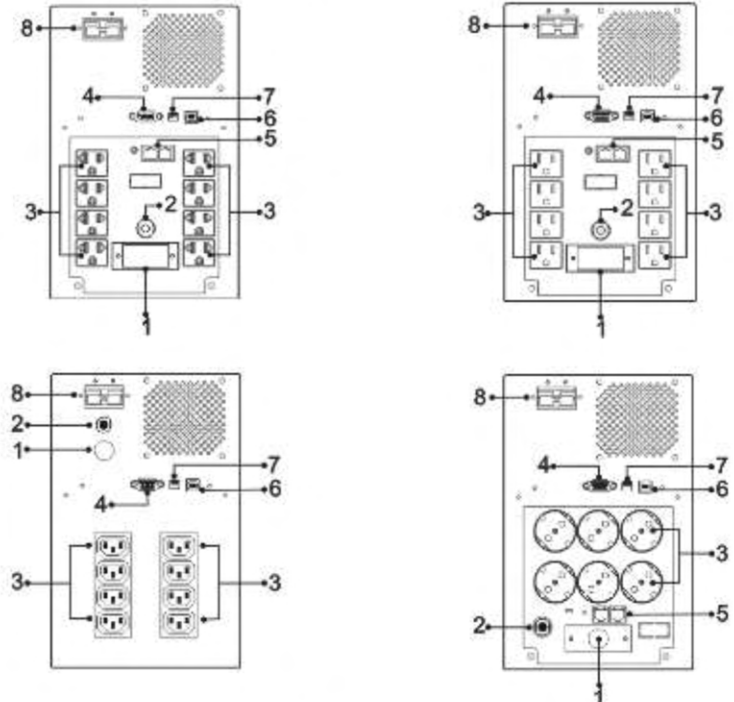
2. Switch of Power On/Off: Turn on / off the UPS

3. Switch of UPS Test: UPS self-testing function. Please activate this function on AC mode by pressing switch once.

Rear Panel

- AC line input socket** :Connect power cable from the UPS to AC utility.
- AC input breaker** :Contain the breaker to protect the UPS from over current from incoming AC utility.
- Output receptacles** :Connect power cables of computer equipment to this sockets.
- Dry Contact interface** :This socket combines relay contact signals DB9 connector.
- Phone/Fax/Modem jack** :Telecom transfer ports provide users to extend the applications.
- USB port**: Communication port.
- UPS setup switch**:
 Dip1. ↑ Low load auto shutdown: OFF. ↓ Low load (below 50W) auto shutdown: ON.
 Dip2. ↑ DC-Start: OFF. ↓ DC-Start: ON.
 Dip3. ↑ Buzzer auto-reset: (To adjust the switch down to silence the audible alarm when UPS is under backup model. But, the function is disabled when UPS is under condition of "Battery low")
 ↓ Buzzer auto-reset: (UPS continue buzzing under backup mode.)

8. EXT.BATTERY: Connect external battery cable for battery bank to the UPS.



INSTALLATION AND OPERATION

Upon receipt of the UPS, inspect the shipping carton for damage. If there is any obvious damage, immediately report it to the selling dealer or the delivering carrier. If there is no damage to the shipping carton, unpack the unit and inspect the unit for damage.

The UPS is designed for installation in a protected environment within a temperature range from 32°F to 104°F and relative humidity of 0~90% without condensation. Do not block inlets and outlets. Install the system in a location free from excessive dust and chemical fumes.

Check the identification label to verify the UPS voltage and power rating match the available line voltage and load requirements.

Operation:

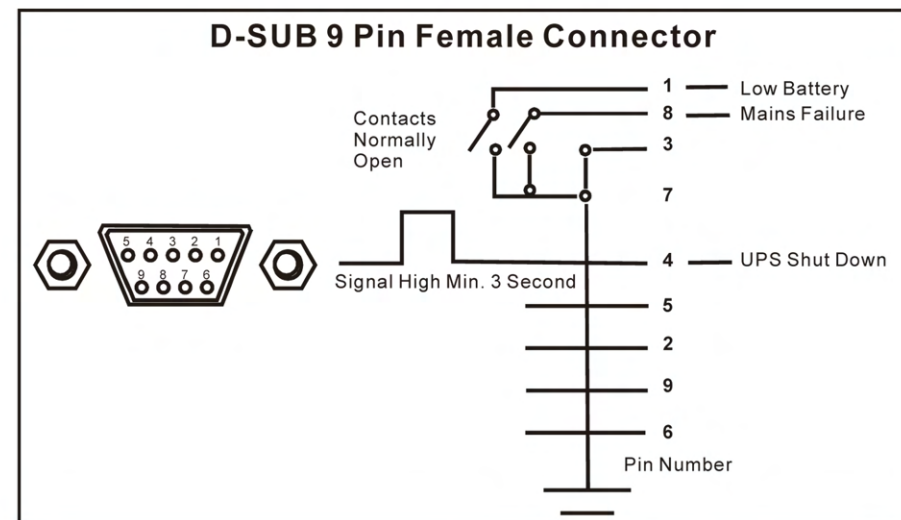
1. When UPS is connected to utility, but UPS is not powered on, UPS will charge battery automatically and LCD display will show "UPS off".
2. To turn on the UPS unit, press the power On/Off Switch once. To turn off the UPS unit, press the power On/Off Switch again.
3. DC Start.
When the UPS is off and there is no utility, it's still possible to cold start the UPS unit to power the loads
4. When UPS is under battery mode and battery voltage is too high or low, buzzer will beep. Buzzer will beep twice every 8 seconds when city utility is black out.

DRY CONTACT INTERFACE

The dry contact interface (DB9 port) on the back of the UPS may be connected to a host computer. This port allows the computer to monitor the status of the UPS and control the operation of the UPS.

Pin out information:

PIN#	Description	I/O
PIN1	Battery low, normally open, active close	Output
PIN2	N.C.	
PIN3	Common Ground	Input
PIN4	Remote shut down, keep this pin high (+5~+12V) for 3S will turn off the UPS	
PIN5	N.C.	Input Output
PIN6	N.C.	
PIN7	Must keep in high state	
PIN8	Line fail, normally open, active close	
PIN9	N.C.	



BATTERY FACTS

The battery is the only periodically serviceable parts in the UPS. An expected life is approx. 3~5 years. However, frequent long discharges or ambient temperatures above 80°F will shorten battery life. Therefore, it is recommended to replace the batteries every 3 years after initiating the unit.

Recharge batteries every 3 months is necessary if it is not in use because it may cause batteries over-drain.

WARNING

Only a qualified technician should replace the battery. Batteries have high short-circuit current capacity; mistakes in connecting or disconnecting can cause connections to arc or weld and could cause severe burns.

STORAGE

The UPS should only be stored if the battery is fully charged. Avoid storage temperatures above 80°F as battery life is significantly shortened. Every 90 days remove the unit from storage and plug it in for 24 hours to recharge the batteries. Batteries may be damaged if left in storage and not recharge every 90 days.

IMPORTANT NOTICE

Please use same type and same rating of batteries for replacement.

Do not replace it with the battery that exceeds specified rating.

SPECIFICATIONS

Capacity	VA	2000VA	3000VA
Input	Voltage	100VAC/110VAC/120VAC or 220VAC/230VAC/240VAC $\pm 25\%$	
	Frequency	50Hz or 60Hz $\pm 5\%$	
Output	Voltage (Batt. Mode)	100VAC/110VAC/120VAC or 220VAC/230VAC/240VAC $\pm 10\%$	
	Frequency	50Hz or 60Hz $\pm 1\text{Hz}$	
	Waveform	Modified sine wave	
	Transfer Time	Less than 6ms (typical)	
Battery	Battery Type	12V/7AH*4Pcs	12V/9AH*4Pcs
	Recharge Time	5 hours to 90% of full capacity	
Indicator	LCD	I/P & O/P Voltage & Frequency, Load %, Battery %	
Alarm	Battery Back-up	Sounding every 3 seconds	
	Battery Low	Sounding every 1 second	
	Overload	Continue beeping sound	
Protection	Overload	Fuse & current limited	
	Short Circuit	Fuse & current limited & cut-off	
	Batt. Low Cut-off	No battery drain after cut-off	
Physical	Dimension, D*W*H	390*182*285	
Environment	Temperature	0-40°C (32-104°F) at full load,	
	Humidity	0~90% relative humidity (non-condensing)	
	Noise Level	Lees than 40db (at 1 meter)	
Interface	USB & DB9	Communication port	
	Software	UPSilon2000	

TROUBLE SHOOTING

If the UPS failed to operate properly, please review the following checks firstly.
If the problem remain, please consult sales agent for service.

- Is the Master power switched on?
- Is the UPS plugged into a correctly working outlet?
- Is the line voltage within the rating specified?
- Is the fuse on the rear panel blown?
- Is the UPS over loaded?
- Is battery not fully charged? Dead battery? Charger failure?

Please provide the following information when call for service.

1. Model number, serial number.
2. Date of the problem occurred, date of purchase.
3. Full description of the problem including load, LCD, and alarm status, installation condition, working environment, etc.
- 4.

Trouble-Shooting Chart		
Problem	Possible Cause	Solution
UPS is not turned on, LCD is not lighted, and no alarm.	Switch on front panel is in "Off" position.	Press "Power On/Off" button to turn on UPS.
	Breaker on rear panel is damaged.	Replace breaker and restart UPS.
	Power cord is loose.	Check if input power cord is plugged into wall outlet tightly.
UPS stays at battery mode always.	Power cord is loose.	Check if input power cord is plugged into wall outlet tightly.
	Breaker on rear panel is damaged.	Replace breaker and restart UPS. If problem remains, call for service.
Backup time is shorter than rated.	Batteries are not fully charged	Recharge batteries for at least 6 hours and then test backup time again. If problem remains, call for service.

NOTES