

# ***UPS***

**Uninterruptible Power System**

**Line Interactive UPS 325A/425A/525A/625A**

**Line Interactive Network UPS 425AP/525AP/625AP**

***USER'S MANUAL***

Printed in USA

## Important safety instructions

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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 that 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. These 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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## 1. INTRODUCTION

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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. It is based on microprocessor controls, with utility power connected, the charging is ongoing, no need to switch ON the UPS and at back-up mode, UPS can be automatically turned OFF if none of the connected loads is operating to save the battery energy. The indicator will be ON when battery needs replacement and a cyclic self-testing function is included in order to verify both the operation of the UPS and the condition of the battery.

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 UPSMON monitoring software (optional kits) makes your computer operate intelligent and provides you with the ability of perfect protection of your critical devices.

***Note: There is no guarantee that interference to radio/TV will not occur in a particular installation. If this UPS causes interference to radio or television reception, which can be determined by turning the UPS off and on, the user is encouraged to try to correct the interference by one or more of following measures:***

***connect the equipment to an outlet on a circuit different from that to which the receiver is connected***

***increase the separation between the equipment and the receiver***  
***reorient the receiving antenna***

## 2. Safety

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### CAUTION !

*To reduce the risk of electric shock, disconnect the UPS from the mains supply before installing a computer interface signal cable. Reconnect the power cord only after signaling interconnections have been made.*

*The internal energy source(the battery) cannot be de-energized by the user. The output may be energized when the unit is not connected to a mains supply.*

*The right way to de-energize the UPS properly in an emergency is to move the I/O switch to the OFF position and disconnect the power cord from the mains supply.*

*The socket-outlet shall be installed near the equipment and easily accessible.*

*Attention, hazardous through electric shock. Also with disconnection of this unit the main, hazardous voltage still may be accessible through supply from battery. The battery supply should be therefore disconnected in the plus and minus pole when maintenance of service work inside the UPS is considered.*

*Do not dispose of batteries in a fire, the battery may explore.*

*Do not open or mutilate the battery, released electrolyte is harmful to the skin and eyes.*

*A battery can present a risk of electric shock and high short circuit current. The following precaution should be observed when working on batteries*

- Remove watches, rings or other metal objects.*
- Use tools with insulated handles.*

*Caution: Risk of electric shock - hazardous live parts inside this unit are energized from the battery supply even when the input AC power is connected.*

*Caution: Risk of electric shock, do not remove cover. No user serviceable parts inside, Refer servicing to qualified service personnel.*

*Warning: To reduce the risk of fire, replace only with the same type and rating of fuse.*

*Warning: To reduce the risk of fire or electric shock, install in temperature and humidity controlled indoor area of conductive contaminants.*

## 3. Presentation

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### FRONT PANEL

#### 3.1 "REPLACE BATTERY" indicator (RED LED)

The LED illuminates when the UPS's battery is no longer useful and must be replaced.

**Note:** *When replace battery, disconnect the utility power then open the case and take notice of the battery's polarity while install the new battery to avoid short.*

#### 3.2 "BACK UP" indicator (YELLOW LED)

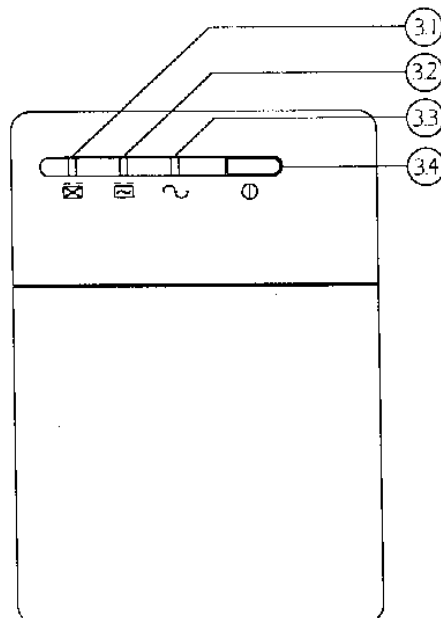
The LED illuminates when the UPS is supplying battery power to the loads.

#### 3.3 "LINE NORMAL" indicator (GREEN LED)

The LED illuminates when the line input voltage is normal.

#### 3.4 "ON/OFF/TEST/SILENCE" button

Press the button more than 3 seconds to turn the UPS on or off, press the button less than 1 second to activate the UPS's self-testing or silence the back up alarm.



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## **REAR PANEL**

### **3.5 COMPUTER INTERFACE (425AP/525AP/625AP models only)**

Provide both RS-232 and relay signal to support NOVELL, UNIX, DOS, WINDOWS and other operating systems.

### **3.6 OUTPUT POWER RECEPTACLES**

### **3.7 AC INPUT POWER RECEPTACLE**

### **3.8 TEL./MODEM SURGE PROTECTION**

**(425AP/525AP/625AP models only)**

Surge protection for telephone and modem line to have the complete safety connection for INTERNET service.

## 4. Installation

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### 4.0 Inspection

Inspect the UPS upon receipt. The packaging is recyclable; save it for reuse or dispose of it properly.

### 4.1 Placement

Install the UPS in a protected area with adequate air flow and free of excessive dust. Do not operate the UPS where the temperature and humidity is outside the specified limits.

### 4.2 Connect Computer Interface (425AP/525AP/625AP models only)

UPSMON (or other power management software) and an interface kits can be used with this UPS. Use only kits supplied or approved by the manufacturer. If used, connect the interface cable to the 9 pin computer interface port on the back panel of the UPS.

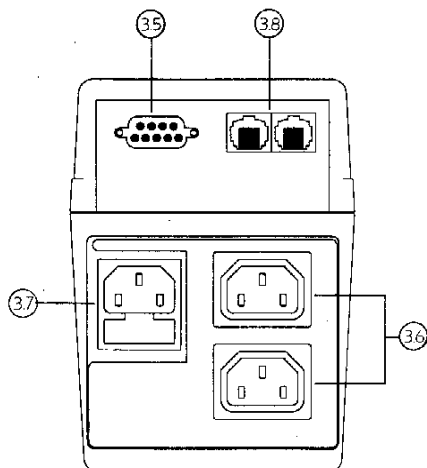
**Note: Computer interface connection is optional. The UPS works properly without a computer interface connection.**

### 4.3 Connect to Utility

Connect the AC input power connector to utility power to power up the UPS.

### 4.4 Charge the battery

The UPS charges its battery whenever it is connected to utility power. For best results, charge the battery for 4 hours in the initial use.





#### **4.5 Connect the loads**

Plug the loads into the output connectors on the rear of the UPS. To use the UPS as a master on/off switch, make sure all of the loads are switched on.

***Caution: Never connect a laser printer or plotter to the UPS with other computer equipment. A laser printer or plotter periodically draws significantly more power than when idle, and may overload the UPS.***

#### **4.6 Connect the telephone/modem lines**

(425AP/525AP/625AP models only)

Connect a single line telephone or a modem line into the telephone/modem surge protection sockets on the back of the UPS. The RJ-45/RJ-11 modular sockets accept standard single line telephone connections. This connection will require another length of telephone cable (supplied).

***Note: This connection is optional. It is not necessary to use this UPS.***

***Caution: The telephone line current limiting feature could be rendered inoperable if improperly installed. Make sure that the telephone line from the wall is plugged into the connector marked "IN", and the device to be protected (telephone, modem, etc.) is plugged into the connector marked "OUT".***

***Caution: This surge protection device is for indoor use only and never install telephone wiring during a lightning storm.***

## 5. Operation

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### 5.1 Switch on

With the UPS plugged in, press and hold the on/off/test/silence button more than 1 second until "LINE NORMAL" LED lit to switch the ups on. The UPS will perform self-testing each time when it is switched on.

**Note: When switched off the UPS maintains the battery charge and will respond to commands received through the computer interface port.**

### 5.2 Switch off

By pressing and hold the on/off/test/silence button more than 3 seconds until the "LINE NORMAL" or "BACK UP" LED off.

### 5.3 SELF-TEST

Use the self-test to verify both the operation of the UPS and the condition of the battery. In normal utility power, push the on/off/test/silence button less than 1 second and UPS performs a self-test function. During the self-test, the UPS operates a back up mode.

**Note: During the self-test, the UPS briefly operates the loads on-battery (the on-battery LED comes on).**

**If the UPS passes the self-test, it returns to on-line operation. The on-battery LED does off and the on-line LED goes on steady.**

**If the UPS fails the self-test it immediately returns to on-line operation and lights the replace battery LED. The loads are not affected. Recharge the battery overnight and perform the self-test again. If the replace battery LED is still on, ask our nearest dealer to replace battery.**

### 5.4 SILENCE

In "BACK UP" mode, push on/off/test/silence less than 1 second to silence the audible alarm. (The function is void when under condition of "LOW BATTERY" or "OVERLOAD")

**Note: At back-up mode, UPS can be automatically turned off if none of the connected loads is operating.**

## 6. Alarm

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### **6.1 "BACK UP" (slow alarm)**

When in BACK UP mode, the YELLOW LED illuminates and the UPS sounds an audible alarm. The alarm stops when the UPS returns to LINE NORMAL operation.

Press the on/off/test/silence button during on-battery alarms to stop the beeping.

### **6.2 "LOW BATTERY" (rapid alarm)**

In BACK UP mode, when the battery energy runs low, the UPS beeps rapidly until the UPS shuts down from battery exhaustion or returns to LINE NORMAL operation.

### **6.3 "OVERLOAD" (continuous alarm)**

When the UPS is overloaded (the connected loads exceed the maximum rated capacity) the UPS emits continuous alarm to warn a overload condition. Disconnect nonessential load equipment from UPS to eliminate the overload.

## 7. Software options

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### 7.1 UPSMON Software

The UPSMON software is applied standard RS-232 interface to perform monitoring functions, and then provides an orderly shutdown of a computer in the event of power failure. Moreover, UPSMON displays all the diagnostic symptoms on monitor, such as Voltage, Frequency, Battery level and so on..

The software is available for DOS, Windows 3.1x, Windows 95 & Windows NT V3.5 or later.

### 7.2 Interface Kits

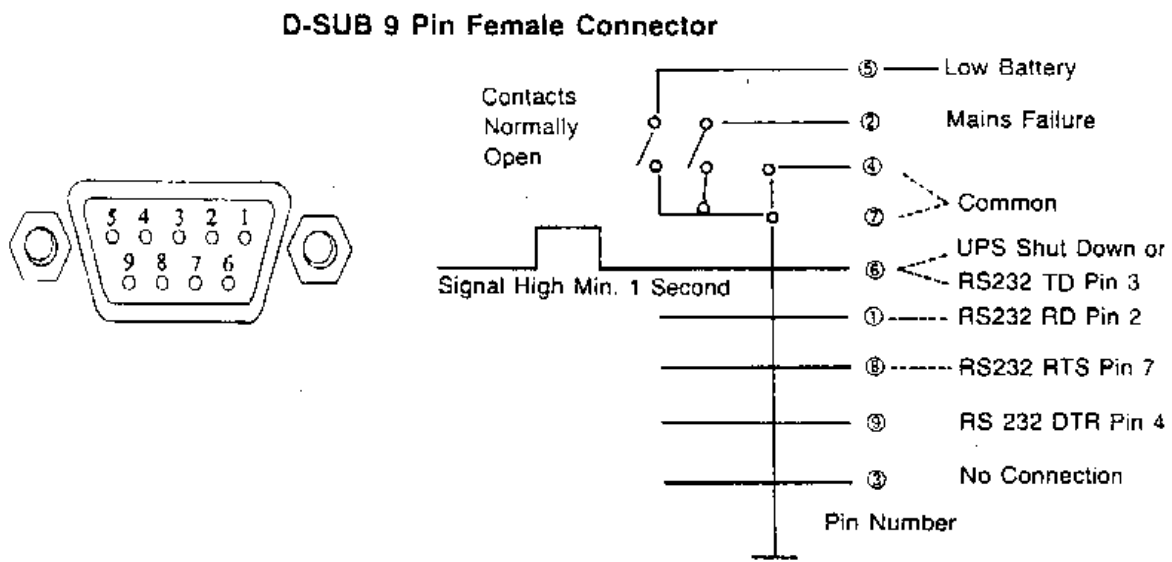
A series of interface kits is available for operation systems that provide UPS monitoring. Each interface kit includes the special interface cable required to convert status signals from the UPS into signals which individual operating system recognize. The interface cable at UPS side must be connected to REMOTE PORT , at computer side can be either COM 1 or COM 2. The other installation instructions and powerful features please refer to READ.ME file.

***Caution: Use only factory supplied or authorized UPS monitoring cable !***

## 8. Computer Interface Port

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The computer interface port has the following characteristics:



## 9. Battery Replacement

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Your battery should run anywhere from 3-5 years before even needing to be replaced.

Please follow the instructions below for easy battery replacement.

- 1) Unplug unit from AC power source and disconnect all connected equipment.
- 2) Disconnect AC power cord from unit..
- 3) Turn unit upside down and using a phillips screw driver, unscrew the 4 screws holding the top of the unit to the bottom. Put screws in a safe place for reconnection.
- 4) Holding the top together firmly with the bottom, turn the entire unit right side up.
- 5) Carefully lift top cover off and place to the side. The connecting wires and electronics will be exposed. Be careful not to touch any inner components when changing the battery.
- 6) Remove the 2 connecting wires from the battery.
- 7) You can now easily remove the battery from the unit

**Caution: Do not dispose of battery in fire.**

**Caution: Do not attempt to open the battery.**

**Caution: The following precautions should be taken when replacing the battery**

***remove watches, rings, etc...***

***use tools with insulated handles***

- 8) Place your new battery in the same position/direction and reconnect the wires red wire-position(+) and black wire negative(-)
- 9) Please follow steps 5,4 and 3 (in that order) to reconnect the entire unit.
- 10) Please follow manual instructions in order to properly reconnect your equipment.

## 10. Troubleshooting

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<b>PROBLEM</b>	<b>POSSIBLE CAUSE</b>	<b>ACTION TO TAKE</b>
UPS not on LED not light	On/off/test/silence button not pushed or push too short	Press the on/off/test/silence button more than 1 second
	Battery voltage less than 10V	Recharge the ups at least 4 hours
	PCB failure	Replace the PCB, call for service
	Load less than 20W at battery mode	Normal condition
UPS always at battery mode	Power cord lose	Replug the power cord
	AC FUSE burn out	Replace the AC fuse
	Line voltage too high, too low or black out	Normal condition
	PCB failure	Replace PCB, call for service
Back up time too short	battery not fully charged	Recharge the UPS at least 4 hours
	PCB failure	Replace PCB, call for service
Buzzer continuous beeping	Overload	Remove the noncritical loads
RED LED light	Battery failure	Replace battery, call for service

## 11. Storage

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### 10.1 Storage conditions

Store the UPS covered and upright in a cool , dry location, with its battery fully charged. Before storing, charger the UPS for at least 4 hours. Remove any accessories in the accessory slot and disconnect any cables connected to the computer interface port to avoid unnecessary draining the battery.

### 10.2 Extended storage

During extended storage in environments where the ambient temperature is -15 to +30 (+5 to +86 ), charge the UPS' s battery every 6 months.

During extended storage in environments where the ambient temperature is +30 to +45 (+86 to +113 ), charge the UPS' s battery every 3 months.

## 12. Specifications

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MODEL		325A	425A(P)	525A(P)	625A(P)
INPUT	Capacity	325VA	425VA	525VA	625VA
	Voltage	100V, 110V, 120V, 220V, 232V, 240V, +/-25%			
	Frequency	50 or 60Hz +/-5% (auto sensing)			
OUTPUT	Voltage (on battery)	Simulated sine wave at Line Input +/-5%			
	Frequency (on battery)	50 or 60Hz +/-0.5%			
	Voltage Regulation AVR	AVR automatically increase output voltage 15% above input voltage if -9% to-25% of nominal. AVR decrease output voltage 13% below input voltage if+9% to 25% of nominal			
	Transfer Time	2/4 milliseconds, including detection time			
PROTECTION and FILTERING	Spike Protection	320 joules, 2ms			
	EMI/RFI filter	10dB at15MHz, 50dB at 30MHz (for xxxAP models only)			
	Overload Protection	UPS automatic shutdown if overload exceeds 110% of nominal at 60 second and 130% at 3 seconds.			
	Unit Input	Fuse for overload & short circuit protection			
	10Baase-T Cable Port	Network (UTP, RJ-45) compatible jacks (for xxxAp models only)			
	Short Circuit	UPS output cut off immediately or input fuse protection			
BATTERY	Type	Sealed, maintenance-free lead acid			



	Typical Recharge Time	4 hours (to 90% of full capacity)			
	Protection	Automatic self-test & discharge protection, replace battery indicator			
	Back up Time	10 - 30 minutes (depending on computer load)			
PHYSICAL	Net Weight Kg(lbs)	4.7(10.4)	5.8(12.8)	6.2(13.7)	6.5(14.3)
	Shipping Weight Kg(lbs)	5.0(11.0)	6.1(13.4)	6.5(14.3)	6.9(15.2)
	Dimension(mm) WxDxH	97x260x135	97x320x135		
	Input Inlet	IEC 320 power inlet			
ALARM	Battery Back-Up	Slow beeping sound (about 0.47Hz)			
	Battery Low	Rapid beeping sound (about 1.824Hz)			
	Overload	Continue beeping sound			
INTERFACE	RS-232 Interface	Bi-directional communication port (for xxxAP models only)			
CONFORMANCE	Safety	cUL, TUV, CE, meet FCC			
	Surge	Meet IEEE 587 standard			
ENVIRONMENT	Ambient operation	6,000 meters max. elevation, 0-95% humidity non-condensing 0-48 deg C			
	Audible noise	<40dBA (1 meter from surface)			
	Storage condition	15000 meters max. elevation			

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