

Line Interactive UPS

KI SERIES

User's Manual

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Please study this manual carefully before operation.

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PREFACE

Please read this manual carefully before using the unit. When you start your UPS for the first time, it is recommended to plug on to the input power for twelve hours to make sure that the batteries are fully charged.

If there is any damage caused by transportation, please return the unit to distributor for repair or replacement. Because of both battery and high current circuitry are dangerous, don't attempt to do any repair.

Please don't insert input power line to UPS output socket. To maintain UPS' best status, we recommend to replacing the batteries once every two years.

Section I Introduction

- I. Product Introduction
- II. Unit Appearance
- III. Operation Principles

Product Introduction

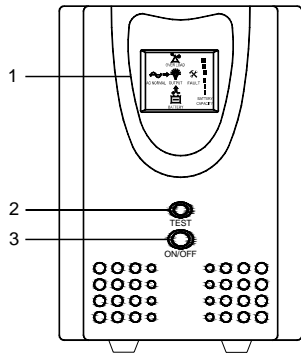
KI series UPS is a line-interactive UPS system that provides stable power for PCs, servers and electronic equipment. Surge, sag or complete power failure produced during utility power transmission may interfere with the normal operation of electronic equipment. KI series UPS provides standby power to protect equipment and data when utilities fail or abnormal.

KI series UPS is a smart UPS. The line-interactive UPS provides pure sine wave output for load whether the utility power is on or not. The lights on the UPS and alarm system indicate power status.

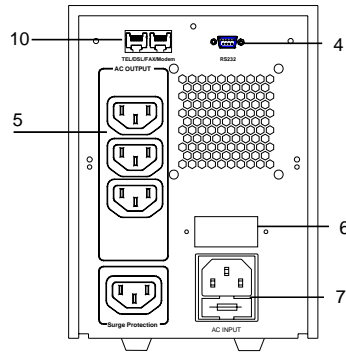
KI series UPS communicates with local net servers and other computer system via RS232 communication socket. RS232 socket provides information for main computer, such as voltage, current, temperature and frequency with UPSilon2000 power management software. It can turn off UPS remotely at the same time.

Unit Appearance (see figure 1)

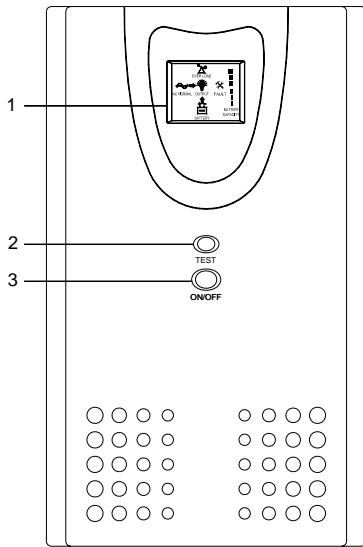
1. LCD display (All-On Status)
2. Battery test / Alarm silence button
3. Power on/off button
4. RS232 DB9 socket
5. Output socket
6. Extended battery connection socket
7. Input socket
8. The air breaker for the LINE
9. The air breaker for the Battery
10. TEL/DSL/FAX/Modem
11. Input and Output connecting terminal



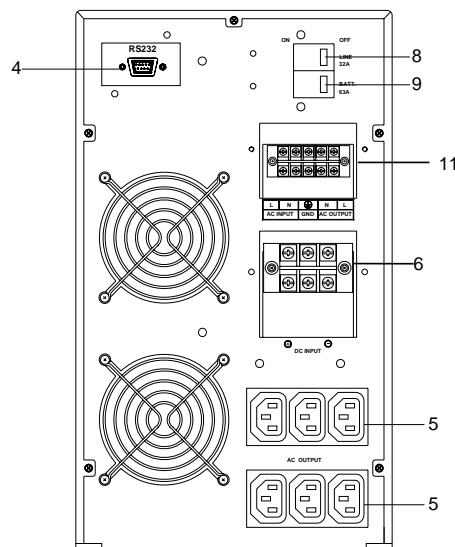
KI1000 Front Panel



KI 1000 Rear Panel



KI2000 KI3000 Front Panel



KI2000 KI3000 series Rear Panel

KI SERIES UPS LCD Schematic Diagram

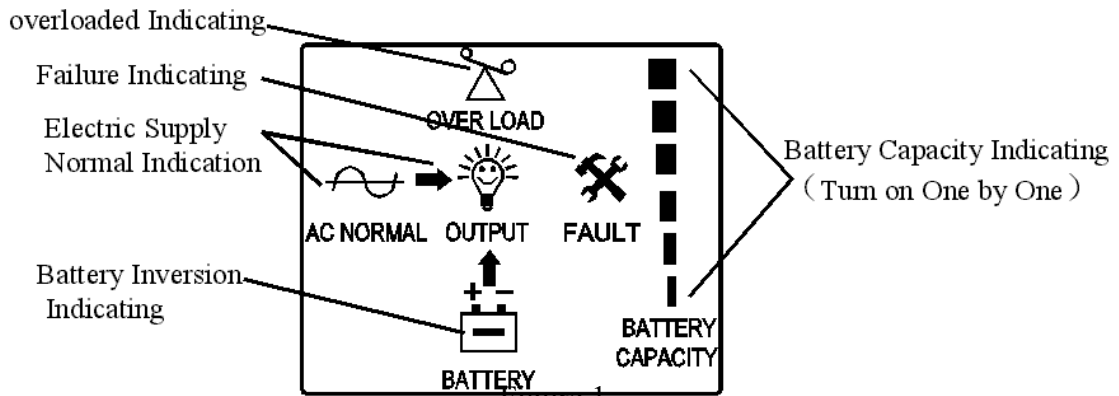









Figure 1

Instructions on Panel Indicating LCD and Buzzer

UPS Work Status	-Normal Electric Supply -Electric Supply is connected to the load -Battery is charging	-Normal Electric Supply -Electric Supply is connected to the load -Battery fully charged	-Electric Supply is down or abnormal -UPS is supplying power from the Inverter to the load	-UPS battery is fully discharged -Please save data and shut down computer immediately	-UPS output overloaded, please reduce the load, and plug the large-load equipment such as printer etc to the printer socket
LCD DISPLAY	AC NORMAL “  ” On OUTPUT “  ” On Battery Capacity Led Turn on One by One	AC NORMAL “  ” On OUTPUT “  ” On Battery Capacity Led All On	BATTERY “  ” On OUTPUT “  ” On Battery Capacity Led Turn off one by one The reduction of lighted battery capacity indication led means that the battery is discharging	Only one battery capacity Led	OVERLOAD “  ” On
BUZZER	Silent	Silent	Slow Beeping	Fast Beeping	Fast Beeping

Operation Principles (see Figure 2)

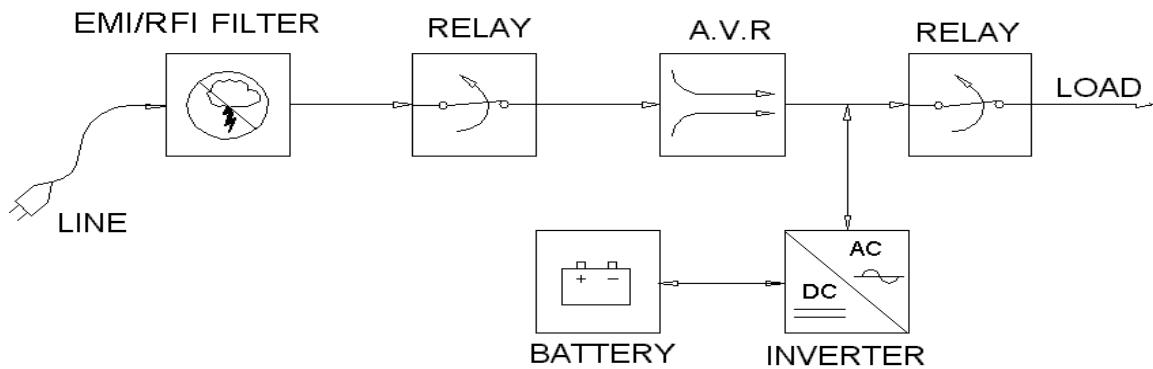


Figure 2

- EMI/RFI filter
The unit eliminates spikes interference and electromagnetic interference.
- Input relay
When utility power is abnormal, input relay operates and inverter provides supply to load. Input relay connects again and utility provides supply to load when utility resumes.
- Automatic stabilizer
Automatic stabilizer starts to work when utility voltage is beyond its limited range. It ensures output voltage keep within the voltage range that the equipment allows and avoid batteries discharging.
- Dual directional inverter
Dual directional inverter turns utility power to stabilised DC when utility power is normal. Inverter turns batteries energy to accurate sine wave AC when utility power is abnormal.
- Output control
Turn on or turn off load power via RS232 without interference to UPS operation.
- Battery
KI series UPS uses completely seal, valve-controlled, anti-leak lead acid batteries. UPS charges batteries according to battery situation in order to increase battery lifetime.

Section II Installation and Operation

- I. Installation and Notice
- II. Important Safety Instruction
- III. Operation and Running
- IV. UPS Monitor and Network Management

Installation and Notice

1. Unpack UPS

The unit is packed by firm carton in order to avoid possible damage during transportation. Please check that the packing box is in good condition. Contact with supplier if there is any damage on UPS.

Unpack the box, there should be:

- A unit of UPS
- A power cable
- A UPS operation manual
- A Management software

2. Location

The unit should be placed at a good office environment to avoid of damage.

- Please place it at a well ventilated environment.
- Make sure that no obstacle at the vent.
- Keep away from hot source and avoid of sun shinning directly.
- Avoid of dust and dampness.

3. Please check the label on the back of the unit and make sure that the regulation voltage and frequency on the label meet with local utility power source. Please do not operate the UPS, if it doesn't meet the specifications. Please make sure the unit is used to support data processing equipment and do not use it for hair dryer, electric drill and laser printer.

Important Safety Instruction

Important safety rules and regulation:

- **Check that UPS earth connection is good.**
- **The unit is not recommended for life support system and highly critical equipment.**
- **Don't locate UPS near magnetic materials. It may result data lost.**

Operation and Running

1. Insert power cable

Connect one end of the cable to wall socket and another end with the unit input.

Note: Earth connection of wall socket should be good.

2. UPS ON / OFF button

The button controls output voltage of UPS. UPS supplies load only when the batteries are in good condition. The unit can be started during emergence without connecting to utility power. Push and hold the button for one second to start or shut down UPS.

3. Batteries test and alarm silence button

The button has two functions. UPS tests battery capacity automatically when pressing the button for half second. Then, UPS works in battery status about ten seconds and indicate the capacity level of battery.

Press the button for half second to silent the alarm when UPS is in battery status. Alarm will re-activate again when UPS has some new problems after alarm is silent. Alarm can't be silent when battery voltage is low or not in battery status.

UPS monitor and network management

UPS monitor and communication

Communication Connector

KI series UPS provides a DB9 socket on the back panel of the unit. The pin number stands for:

<u>Pin Number</u>	<u>Description</u>
1.....	empty
2.....	serial communication output (same 9Pin)
3.....	serial communication input (same 6Pin)
4.....	empty
5.....	earth (same 7Pin)
6.....	serial communication input
7.....	earth
8.....	empty
9.....	serial communication output

Monitor and communication

KI series UPS line-interactive UPS communicates with PC, network station, net server and UNIX main machine via regulation RS232 connector on the back panel of the unit with UPSilon2000 smart management soft ware.

It can provide:

1. Shut down system normally

Check utility power failure and low battery voltage

Shut down UPS automatically

Alarm and record events of abnormal power

Set shutting down time by counting backwards and alarm at interval time

Change alarm information

Setting time to turn on or shut down the unit

Emergency shut down when UPS battery voltage is low

2. Monitor UPS current status

UPS current status is displayed on the monitor panel by diagram and data. It includes input/output voltage, utility frequency, load level, UPS internal temperature and battery voltage.

3. UPS self test

Setting UPS self test automatically at interval time

Continue to test until battery fully discharge

Setting UPS self test time

4. Power status analysis

Record and analyze power status

UPS information analysis
Print information and recorded document

5. Smart save file.

Press self setting button to save or leave program without macro order in MS-DOS interface. It also can close program in Windows if the file saves automatically. If the file has not been named, UPSilon2000 will save it in the name of TEMP.
Please refer to UPSilon2000 operation manual.

Network communication

KI 1000 line-interactive UPS provides a socket for Ethernet SNMP (options). Using SNMP software, the unit is compatible with software and hardware which are popular on the internet, net operation system. It also can support some operation system, such as HP Openview, IBM Netview, SUN Netmanager. The UPS can connect to the network via SNMP adapter or interface card. SNMP provides UPS current operation information and communication via network management system.

Note: Signal cable must be well isolated and stay away from other power cable passageway.

Section III Maintenance

I. Maintenance

II. Battery maintenance and installation

Maintenance

Keep ventilation vent clear. Disconnect input cable (press the test button on the panel or issue test order via UPSilon2000 power monitor software) and conduct battery test every month. Please standby with all the relevant information before testing. The battery life of UPS is 3-5 years in normal status. Replace the batteries if the battery condition is no good. If you don't use battery for a long time, we suggest you to discharge the battery every half year and then recharge them.

Battery maintenance and installation

Don't attempt to open up the batteries because the internal electrolysis liquid can hurt your skin or eyes. When you replace the battery, please pay attention to the following preventive measures in order to avoid electrical shock or short circuit .

1. Don't wear any metal materials, such as watch, ring, etc.
2. Use tools with insulation handlebar
3. Wear rubber sleeve and shoes
4. Discharge the body static electricity before touching the battery
5. Discharge the batteries or disconnect battery terminals before connecting
6. Don't put tools or metal materials on the top of the batteries
7. Don't place the batteries near fire
8. Don't smoke
9. Ensure UPS is completely shut down and disconnect with utility power before replacing the batteries

Section IV Specifications

Model	KI 1000 KI 1000 L	KI 2000 KI 2000 L	KI 3000 KI 3000 L
Capacity	1000VA	2000VA	3000VA
Input Features			
Voltage Range (VAC)	150-300		
Frequency (Hz)	50/60 ± 5%(50/60Hz settings)		
Phase	Single-Phase, Three-Wire		
Waveform	Sine wave		
Battery Voltage (VDC)	24	48	72
KI series battery	2 PCS 7Ah/12V battery.	4 PCS 7Ah/12V battery.	6 PCS 7Ah/12V battery.
Charging current(A)	1 /≤10(L)	1 /≤10 (L)	1 /≤10(L)
Inverter Output			
Capacity (VA/W)	1000/700	2000/1400	3000/2100
Voltage (VAC)	220/230/240 ±2% (battery mode) 207~253 (AC mode)		
Frequency (Hz)	50/60± 0.1% (battery mode)		
Waveform	Pure sine wave, THD < 3%		
Switching Time	Typical value 6ms, including detection time and switching time (Synchronous switch-over)		
Efficiency	77% BAT MODE	80% BAT MODE	
Overload	Utility power status: Load ≥200%, lasting 3 seconds Load ≥150%, lasting 5 minutes Battery status: Load ≥150%, lasting 1 second Load ≥120%, lasting 30 seconds		
Other Characteristics			
Backup Time	7minutes for standard model; Random configure for long time model		
The features:	DC cold start, self-start upon the electricity resume after low battery protection, automatic battery test.		
Communication	RS232 port (standard), USB port and SNMP adapter (optional)		
Alarm	Output Overload, Battery Low Voltage, Utility Power Abnormal, UPS Breakdown		
Panel Indication	LCD shows UPS operation status		
Sound Level (dB)	<55		
Protection	Battery low Protection, Overload Protection, Short-circuit Protection, Over-Temperature Protection		
Relative Humidity	0-95% without condensation		
Tempriture	0~40°C		
Dimension (mm) (WxDxH)	156x450x215	198x525x345	198x525x345
Weight (Kg)	16 /13 (L)	35 /26 (L)	44 /30 (L)

All specifications subject to change without noticing.