



INSTRUCTIONS FOR:
INVERTER CHARGERS PURE SINE WAVE
12V DC INPUT, 2000 & 3000 WATT
MODEL NO's: KS2K110.01, KS3K110.01



Thank you for purchasing a Cosuper product. Manufactured to a high standard, this product will, if used according to these instructions and maintained properly, give you years of trouble free performance.

IMPORTANT: SPECIFICALLY, PLEASE NOTE THAT THE GLOBAL LF INVERTER CHARGER SHOULD NOT BE USED IN CONNECTION WITH LIFE SUPPORT SYSTEM OR OTHER MEDICAL EQUIPMENT OR DEVICES.
BEFORE USING THE INVERTER, YOU NEED READ AND SAVE THE SAFETY INSTRUCTIONS.



Refer to Instruction
Manual

1. SAFETY

>>Battery

▲ **DANGER!** - Beware, lead-acid batteries generate explosive gases during normal battery operation.

- ✓ Wash with soap and water immediately if battery acid contacts skin or clothing. If acid enters eye, flush immediately with cool, clean running water for at least 15 minutes and seek immediate medical attention.
- ✗ **DO NOT** smoke or allow a spark or flame in the vicinity of the battery or engine.
- ✓ If the battery terminals are corroded or dirty, clean them before attaching the leads.
- ❑ **WARNING!** To prevent the risk of sparking, short circuit and possible explosion **DO NOT** drop metal tools in the battery area, or allow them to touch the battery terminals.
- ✓ Before attaching to battery, remove personal metallic items such as rings, bracelets, necklaces and watches. A lead acid battery can produce a short-circuit current which is high enough to weld such items and cause severe burns.

>>Inverter/Charger

- ✗ **DO NOT** expose inverter to rain, snow, spray, bilge or dust. **DO NOT** cover or obstruct ventilations.
- ✓ **MAKE SURE** at least 30CM of clearance around inverter for air flow. Minimum air flow of 145CFM is required.
- ✓ **MAKE SURE** existing wiring is in good electrical condition. **DO NOT** operate inverter charger with damaged or substandard wiring.
- ✗ **DO NOT** install in compartments containing batteries or flammable materials or in locations which require ignition protected equipment.
- ✗ **DO NOT** disassemble this inverter charger. Internal capacitors remain charged after all power is disconnected. Attempting to service this inverter charger by yourself may cause electrical shock or fire.
- ❑ **WARNING!** Disconnect both AC and DC power from the KS2 inverter charger before any maintenance. Turning off controls will not reduce risk.
- ▲ **DANGER!** The output side of inverter's AC wiring at no time be no connected to public power or a generator. Beware the wiring connection.

2. INTRODUCTION

>>General Information

KS pure sine wave inverter charger is the combination of inverter, battery charger and AC autotransfer switch. This complete system with a peak conversion efficiency of 88%.

KS is the inverter charger with backup UPS function. When utility AC power cuts off, the transfer relay is de-energized and the load is transferred to inverter output. Once the qualified AC utility power is restored, the relay will be energized and the load is automatically reconnected to AC utility. This inverter charger unit is easily customized to battery priority via a DIP switch which helps extract maximum power from battery in renewable energy systems. Therefore KS inverter charger is suitable for renewable energy system, RV, marine and emergency appliances.

>>Applications

Power tools- circular saws, drills, grinders, sanders, buffers, weed and hedge trimmers, air compressor and etc.

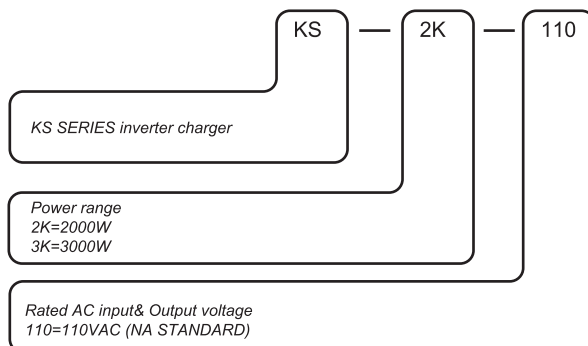
Office equipment- computers, printers, monitors, facsimile machines, scanners and etc.

Household appliances- vacuum, fans, lights, TV, refrigerator, microwave, coffee machine, toaster, blender and etc.

Industrial equipment- metal halide lamp, high pressure sodium lamp and etc.

NOTE, The inverter working time with full loads cannot over 60 minutes.

>>Model Information



Electrical Performance

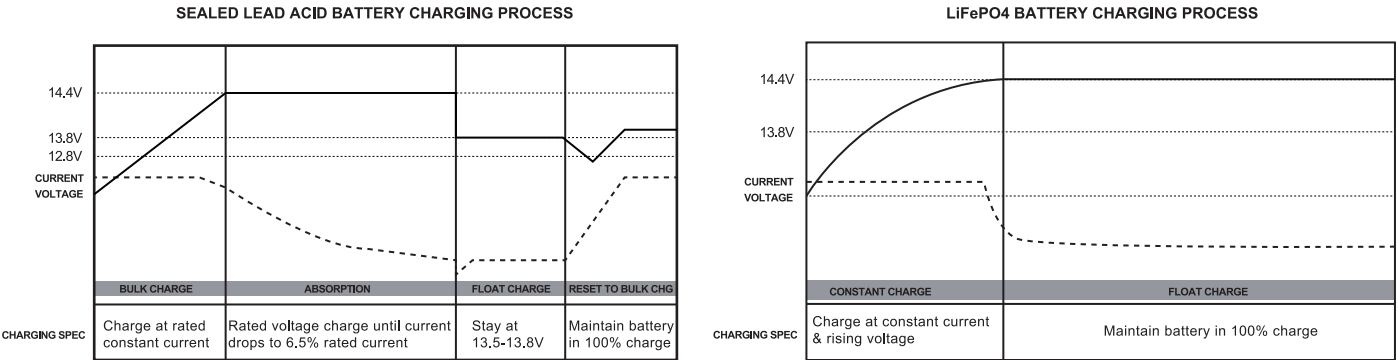
Topology

Inverter: Full bridge topology
Charger: Isolate boost topology

Because of high efficiency MOSFETS and 16bit, 4.9MHZ microprocessor and heavy transformer, it outputs PURE SINE WAVE AC with an average THD of 15%(Min 5%, Max 25%) depending of load connected and battery voltage. Peak efficiency of KS series is 88%.

AC Charger

KS inverter charger is equipped with an active PFC(Power Factor Corrected) multistage battery charger. The PFC is used to control the amount of power used to charge the batteries in order to obtain a power factor as close as possible to 1.
KS inverter charger is able to output max current as long as input AC voltage is in the range of 95-127VAC, and AC frequency is in range of 58-64Hz.

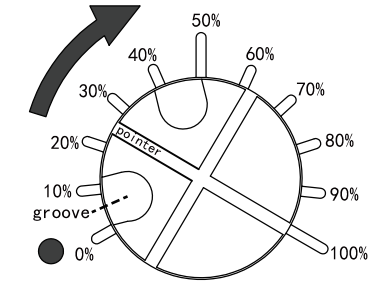


* Charge hours will be a little changed accroding to different battery type and capacity

KS inverter charger allows start up only with utility power and power the depleted batteries.
For 12VDC battery bank, after battery voltage goes below 10V, if inverter charger is still working and battery voltage remain higher than 2 Vdc, then inverter charger is able to charge the batteries once qualified AC inputs.
In DC priority model, the charging can be activated by restart inverter charger unit(turn off then turn on) manually before the battery voltage goes down below 9Vdc.

Charge Current

KS inverter charger unit allows adjust charge current manually by the switch on the top of inverter. Please note the pointer is between two grooves. NEVER reverse the pointer back over 0% position(as the silver point indicate) or switch over 100% position.



KS model	MAX Currents	KS model	MAX Currents
2000W 12V 120V	50 ± 5 Amps	3000W 12V 120V	75 ± 5 Amps

Battery selector

Switch setting	0	1	2	3	4	5	6	7	8	9
Battery type	Charge off Bypass only	Gel USA	AGM 1	AGM 2	Sealed lead acid	Gel EURO	Open Lead acid	Calcium	De-sulphation	LiFePO4
Boost (Vdc)		14.0	14.1	14.6	14.4	14.4	14.8	15.1	15.5 4 hours off	13.6
Float (Vdc)		13.7	13.4	13.7	13.6	13.8	13.3	13.6		/

* Battery selector is operational only in AC priority

*De-sulphation

Before attempting to use '8' position to do De-sulphation cycle you must clearly understand what it does, when and how you would use it.
De-sulphation can occur with infrequent use of batteries(nor), or if the batteries have been left discharged so low that they will not accept a charge. This high voltage charge cycle is designed to break down the sulphated crust that is preventing the plates taking a charge and allow the plates to clean up and to accept charge once again.

Automatic and uninterruptible transfer

In the case of a utility power failure or when the generating set is switched off, the KS will switch over to inverter operation and take over the supply of the connected devices. This is operated rapidly that operation of computers and other electronic devices are not disturbed (Uninterruptible Power Supply or UPS functionality). This makes the KS highly suitable as an emergency power system in industrial and telecommunication applications. This internal transfer switch is designed for heavy use when input utility supply is unstable.

DIP Switch

Switch NO.	Switch Fcuntion	Position: 0	Position: 1
SW1:		No Definition	
SW2:	Output frequency	50Hz	60Hz
SW3:	AC output	120V (230V)	110V (220V)
SW4:	DC/ AC priority	AC	DC

Default setting: SW2 - 1; SW3 - 1; SW4 - 0

PLEASE DO NOT MAKE ANY MODIFICATION ON THIS SWITCH WITHOUT AUTHORIZATION! FREQUENCY CHANGE CAUSES DANGER!

L.E.D Indicator

Line Mode INV Mode Fast CHG Float CHG Over Temp Over Load Save On Battery Selector	AC Mode Utility power input KS in fast charging KS bypass AC to connected loads	Line Mode INV Mode Fast CHG Float CHG Over Temp Over Load Save On Battery Selector	AC Mode, fast chg blink Utility power input Fast charge is coming to end KS bypass AC to connected loads
Line Mode INV Mode Fast CHG Float CHG Over Temp Over Load Save On Battery Selector	AC Mode Utility power input KS in float charging KS bypass AC to connected loads	Line Mode INV Mode Fast CHG Float CHG Over Temp Over Load Save On Battery Selector	AC Mode Utility power input KS in float charging KS bypass AC to connected loads Over temperature
Line Mode INV Mode Fast CHG Float CHG Over Temp Over Load Save On Battery Selector	AC Mode Utility power input KS in float charging KS bypass AC to connected loads Overload	Line Mode INV Mode Fast CHG Float CHG Over Temp Over Load Save On Battery Selector	DC Mode Battery power input KS in inverting
Line Mode INV Mode Fast CHG Float CHG Over Temp Over Load Save On Battery Selector	DC Mode Battery power input KS in inverting Over temperature	Line Mode INV Mode Fast CHG Float CHG Over Temp Over Load Save On Battery Selector	DC Mode Battery power input KS in inverting Overload

Audible alarm

- Battery voltage low 'INV Mode' green LED lit, buzzer beeps 0.5s every 5s
- Battery voltage high 'INV Mode' green LED lit, buzzer beeps 0.5s every 1s and fault after 60s
- Invert mode overload (1) 110%<load<125%(±10%), no audible alarm in 14 mintues. Beeps 0.5s every 1s in 15th minute and fault after 60s
(2) 125%<load<150%(±10%), beeps 0.5s every 1s and fault after 60s
(3) Load>150%(±10%), beeps 0.5s every 1s and fault after 20s
- Over temperature Heat sink temp. ≥105℃ , 'Over Temp' red LED lit, beeps 0.5s every 1s

Fan operation

KS2K110.01 and KS3K110.01, each model has one multiple controlled DC fan which starts working arrcoding to following logic.

Condition	Enter condition	Leave condition	Speed
Heat sink temperature	T< 85 ℃	T≥ 85 ℃	50%
	T≥ 85 ℃	T< 80 ℃	100%
Charge current	I≤ 50% MAX	I> 50% MAX	50%
	I> 50% MAX	I≤ 40% MAX	100%
Load percentage (INV Mode)	Load< 50%	Load≥ 50%	50%
	Load≥ 50%	Load≤ 40%	100%

Auto gen start

Battery goes to low voltage level and not be able to keep continuous output, inverter will alarm and send the boost signal to start the back generator. And turen generator off after battery voltage recovers to rated level. Auto gen start only works with generators designed to work with this feature.

3. INSTALLATION

Getting Started

When a motorized appliance or a tool turns on, there is an initial surge of power to start. This surge of power is referred to as the "starting load" or "peak load." Once started, the tool or appliance requires less power to operate. This is referred to as the "continuous load" in terms of power requirements. You will need to determine how much power your tool or appliance requires to start up (starting load) and its continued running power requirements (continuous load). Power consumption is rated in watts, or it can be calculated from amperes (amps). This information is usually stamped or printed on most appliances and equipment. If this information is not indicated on the appliance or equipment, check the owner's manual.

Multiply: AC AMPS X 110 (AC voltage) = WATTS
* This formula yields a close approximation of the continuous load of your appliance.

Multiply: WATTS X 1.5 = Starting Load
* This formula yields a close approximation of the starting load of most appliances. Exceptions are motorized appliances such as pumps, freezers and air conditioners. These appliances can have startup loads of up to three to eight times the rated watts.

Determining the DC Power Requirement

Powering multiple appliances from the high-power KS series inverter requires a 12 volt bank of batteries (several batteries). To calculate the a pproximate power in amps a 12 volt battery bank has to supply you need. To know the current, or amps required for powering the continuous AC load, a shortcut method is to divide the continuous AC load wattage by 12. For example, the continuous AC load is 1500 watts. The current (amps) is: 1500/12 or 125 amps at 12 VDC.

Sizing the Battery Bank

To determine the minimum battery bank ampere-hour rating that you will need to operate appliances from the inverter, and any DC appliances powered by the battery bank, follow these steps:

1. List the maximum wattage that the inverter has to provide (as above).
2. Estimate the number of hours the appliances will be in use between battery recharges. This will differ depending on appliances. As an example, a typical home-use coffeemaker draws 500 watts during its brew time of 5 minutes; it maintains the temperature of the pot at about 100 watts. Typical use of a microwave oven is only for a few minutes. Some longer operating time appliances are lamps, TVs, computers and refrigerator / freezers.
3. Determine the total watt-hours of energy needed. Then multiply the average power consumption in watts by the number of hours of run time. For example: 1500 watts for 10 hours = 15,000 watt hours. Using the 1500 watts (or 150 Amps) for 10 hours example as above, then 150 amps is needed for 10 hours. This provides us with the basic amp-hours (AH) of battery that is required. Ten hours at 150 amps equals 1500 Amp Hours (AH). This answer is just a beginning because there are other conditions that determine actual run time.

- These include:
- AC appliance load and time in use (basic Amp Hour)
 - Cable gauge and length (cable losses)
 - Charge level of the batteries (between use, chargers have to be able to fully charge the batteries)
 - Temperature of the batteries (colder batteries provide fewer amps)
 - Age and condition of the batteries (older batteries lose capacity/amp hours)
 - Compliance with turning off unnecessary AC and DC loads.If there is any doubt about sizing the battery bank, it is safe to overestimate the amp hour requirements of the battery bank.

Note:
The type of batteries you use to power your high power inverter is important. Operating a high-power inverter will routinely discharge batteries and they will require frequent recharging. Batteries used to start engines are not designed to repeatedly charge and discharge. KS recommends using "deepcycle" or "marine" rated batteries.

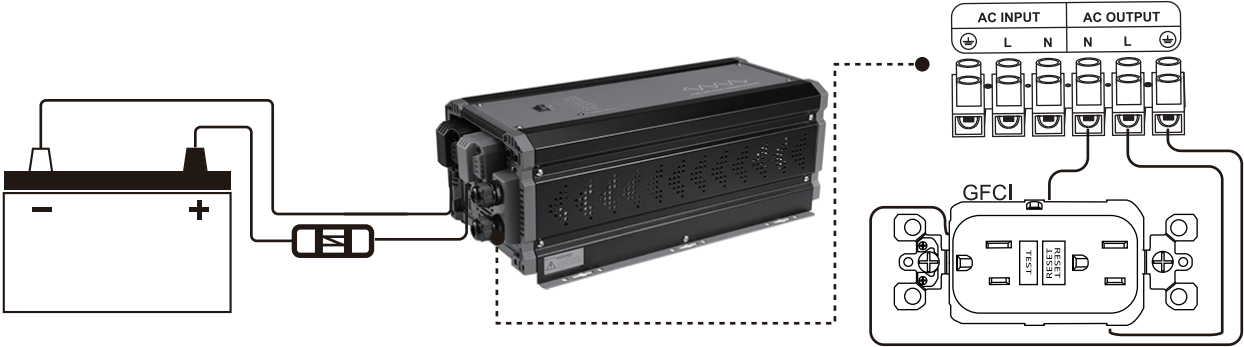
Cable Gauges

When connecting the inverter to a battery bank use the thickest stranded insulated copper wire available, in the shortest length practical. Recommended cable gauges are as follows:

KS model	DC Wire Gage	KS model	DC Wire Gage
2000W 12V 120V	AWG 1/0	3000W 12V 120V	AWG 4/0

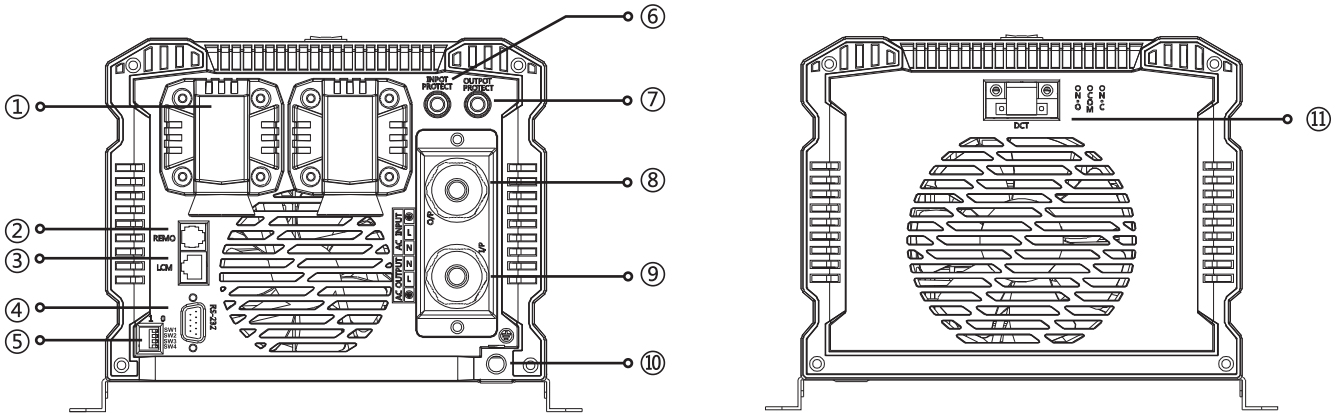
WARNING:
DANGER OF BATTERY EXPLOSION – INSTALL A FUSE

Battery banks can deliver very high levels of current that can vaporize metal, start fires and cause explosions. KS recommends installing one ANL type fuse and fuse holder close to the positive battery bank terminal. This fuse protects the batteries from accidental DC cable shorts, which can cause batteries to explode. ANL fuses and fuse holders are available at most marine supply stores



NOTE: Sparking is normal for the first connection. Make sure you have good secure connections – But do not over-tighten.

Preview of KS Series Inverter



- ① DC input terminal

② RJ11 remote port for KS-RS1

③ RJ45 remote port for KS-PD1

④ TCP/IP(optional) port

⑤ DIP switch
- ⑥ AC input protection restoration

⑦ AC output protection restoration

⑧ AC input port

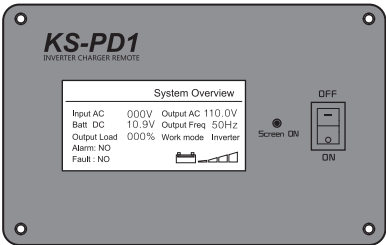
⑨ AC output port

⑩ GND terminal

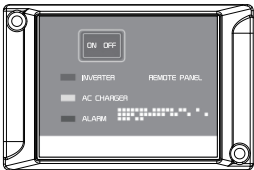
⑪ Auto gen start terminal

***Remote Controller**

KS inverter charger gives two different remote controllers by communication ports RJ45. Remote controller and inverter charger switch work in parallel, inverter charger can be controlled by only one side. Never cut the communication cable during inverter working even if inverter is turned off. It will damage the remote PCB inside if the cable is short circuited during cutting.



KS-PD1



KS-RS1

Mounting Instructions

- Your KS series Inverter should not be mounted under the hood of a vehicle.
- If installing in a vehicle, choose a dry, cool, ventilated area closest to the battery as practical. Before drilling any mounting holes, make sure that there are no wires, fuel lines, or tanks directly behind the surface to be drilled. To mount the inverter:
1. Inverter must be OFF.
 2. The inverter should be mounted horizontally.
 3. Position the inverter against the mounting surface and mark locations of the mounting screw openings.
 4. Remove the inverter and drill four mounting holes.
 5. Fasten the inverter to the mounting surface using corrosion-resistant fasteners sized #10 or larger.

Connecting Inverter

1. Prepare all cable ends with cable lugs.
2. Install a circuit breaker or high current fuse and fuse holder in the positive line as close to the battery as possible.
3. Make sure the inverter On/Off switch is turned OFF.
4. Connect the cables to the DC input terminals on the rear of the inverter. The red terminal is positive (+) and the black terminal is negative (-).
 - a. Connect the positive cable to the inverter and battery positive terminals.
 - b. Connect the negative cable to the inverter and battery negative terminals.
- e. Connect an insulated wired from the chassis-ground terminal at the front panel of the inverter to the vehicle’s chassis or any other ground point.

Operation

1. Turn On the inverter.
2. Turn OFF the inverter.
3. When you have confirmed that the appliance to be operated is turned off, connect AC output to the distribution panel and to appliances.
4. Turn ON the inverter.
5. Turn the appliance on.
6. Plug in additional appliances and turn them on.

4. INDICATE & ALARM

		Save On	Over Load	Over Temp	Float CHG	Fast CHG	INV Mode	Line Mode	Audible Alarm	Inverter	AC charger	Fault
Charge Function	Constant current charge					ON		ON			ON	
	Constant voltage charge					blink		ON			ON	
	Float				ON			ON			ON	
	Standby							ON			ON	
Inverter	Inverter On						ON			ON		
Alarms	Battery low voltage					ON			beep 0.5 s every 5 s	ON		ON
	Battery high voltage					ON			beep 0.5 s every 5 s	ON		ON
	Over load(INV mode)		ON			ON			beep 0.5 s every 5 s	ON		ON
	Over temp(INV mode)			ON		ON			beep 0.5 s every 5 s	ON		ON
	Over temp(line mode)			ON		ON	ON		beep 0.5 s every 5 s		ON	ON
	Over charge					ON		ON	beep 0.5 s every 5 s		ON	ON
Fault Mode	Fan lock								beep continuous			ON
	Battery high voltage					ON			beep continuous			ON
	Inverter mode overload		ON						beep continuous			ON
	Over temp			ON					beep continuous			ON
	Back voltage							blink	beep continuous			ON

5. TROUBLE SHOOTING

Symptom	Possible cause	Solution suggested
Inverter will not turn on during initial power up	Batteries are not connected; loose battery-side connections or low battery voltage	Check batteries and cable connection. Check DC fuse and breaker; Charge Battery
NO AC output voltage and no indicator lights ON	Inverter has been manually transitioned to OFF mode	Press the switch to ON position
AC output voltage is low and inverter turn loads OFF in a short time	Low battery voltage and low capacity level	Check battery condition and recharge if possible
Charger is inoperative and unit will not accept AC	AC voltage drops out of inverter charger AC input range	Check AC voltage for proper voltage and frequency
Charger is supplying a lower charge rate	Charger controls are improperly yet. Low AC input voltage; Loose battery or AC input connection	Refer to section on adjusting the “charge rate”; Source qualified AC power; Check all DC/ AC connections
Charger turns OFF while charging from a generator	High AC input voltage from the generator	Load generator down with a heavy load; Turn generator output voltage down
*Noise from transformer/case	Applying specific loads such as electrical heater	Remove the loads

*Reason for noise from transformer/case

When in inverter mode sometimes the transformer and/ or case may vibrate and makes noise.

***If the noise is created by transformer;**

This mainly caused by HALF BRIDGE LOAD, the load uses only half cycle of power (figure 1). This tends to cause an imbalance of magnetic field of transformer, reducing its rated working freq from 20KHz to 15KHz(it varies according to different loads). In such a case the frequency of noise falls exactly into the range 200Hz to 20KHz that human ear can hear.

The most common load of such kind is electrical heater and hair drier.

***If the noise is created by case;**

Normally when loaded with inductive loads, the magnetic field generated by transformer keeps attracting or releasing the steel case at a specific freq, this may also cause noise.

Reducing load power or using an inverter with bigger capacity will normally solve this problem. The noise will not do any harm to the inverter or the loads.

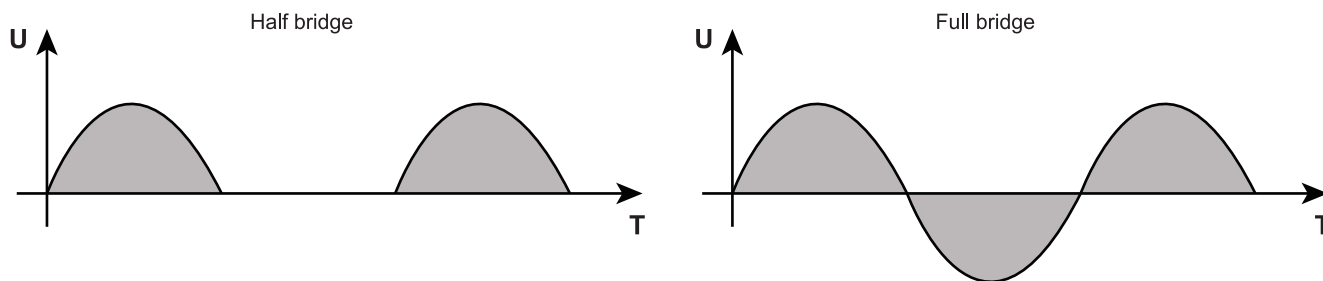


Figure 1

FAQ

Q. Why does the inverter turn itself off?

A. If the inverter's audible alarm sounds and a fault L.E.D illuminates, this indicates that there is a fault or error, and the inverter may turn off. Most commonly this would be caused by an appliance that is drawing too much power (overloading), low battery voltage or voltage drop due to insufficient size cables or poor connections.

Q. The Inverter will not run my appliance even though the appliance draws less power (Watts) than the size of the inverter?

A. Electrical appliances can be divided into three groups by the way they draw energy (current) from their power supply. These groups are "Resistive", "Inductive" and "Capacitive" appliances or also called "loads". Some appliances may draw all three types of power.

Resistive Loads such as normal incandescent lights (wire filament) always draw a constant power (watts) from the power supply, that is a 100 Watt light will draw approximately 100 Watts from the power supply at all times. Resistive loads are the easiest appliances for an inverter to run.

Inductive Loads such as a refrigerator (Electric Motor) require a large rush of power (surge current) to start and then usually draw a more constant power once running. Inductive loads contain coils of wire (motors, transformers, ballasts, solenoids). When the power is first turned on, these coils of wire draw a large surge current which forms the magnetic flux (magnetic field) which allows these appliances to work. This magnetic flux is a kind of stored energy.

The most common inductive appliances are: fridges, air compressors, transformers/ chargers, pumps, power tools and fluorescent lights. These appliances may draw up to 10 times their normal running power to start up; that is to run a 80W fridge you may need a 600 or 1000 Watt inverter.

Capacitive Loads such as many TV's or many electronic appliances require a large surge current to start only when they have not been used for a while. This is often due to large capacitors in the power supply that must be quickly charged when the appliance is turned on. If the appliance is not used for a few days these capacitors slowly go flat. Resetting the inverter a couple of times may allow these appliances to work.

Q. Why does it damage the inverter if the battery leads are reverse-connected?

A. Your inverter uses sophisticated electronics to convert DC battery power to AC mains power. If you accidentally connect the inverter to the battery incorrectly (reverse polarity) a large current will be drawn by the inverter which will blow the protection fuse. As this occurs some of the high current could damage sensitive electronic components. Because of this risk it is important to always double-check the battery polarity before making any connections.

Q. How do I check or change the fuses?

A. KS inverters contain internal fuses and should only be checked or replaced by a qualified electrical appliance repairer.

THE DC SUPPLY MUST BE DISCONNECTED BEFORE ANY REPAIR, THEN TURN THE ON/OFF SWITCH OF THE INVERTER "ON" TO DISCHARGE THE CAPACITORS.

Q. Can I run laptop computers and other sensitive electrical appliances?

A. Yes. KS's pure sine wave output is suitable for medical equipment and sensitive electrical appliances. They allow you to watch television without static, operate computers and gaming consoles and run fluorescent lights.

6. SPECIFICATION

Power Input/Output		KS2K110.01		KS3K110.01
Output power		2000W		3000W
Surge power		6000W		9000W
Output voltage		100/110/120 VAC±5%;		
Output frequency		50/60 HZ ± 0.5%		
Idle consumption (Fully loaded)		40W		80W
Waveform		Pure sine wave (THD<3%)		
AC input range		90-135 VAC		
AC input frequency		50/60 HZ ± 0.5%		
DC input voltage		12 VDC		
DC voltage range		10.5-16.0 VDC		
Efficiency	110VAC	86%		86%

AC Charger/Bypass				
DC output voltage		Bulk(13.0-14.9V); Absorption(14.9-15.1V); Float charge(13.3-13.8V)		
Over charge protection		15.7 VDC		
Charge current	110VAC	50±5 A		75±5 A
Transfer time		< 10 ms		
Input waveform		Pure sine wave (Utility power or generator)		
MAX bypass current		30A		40A

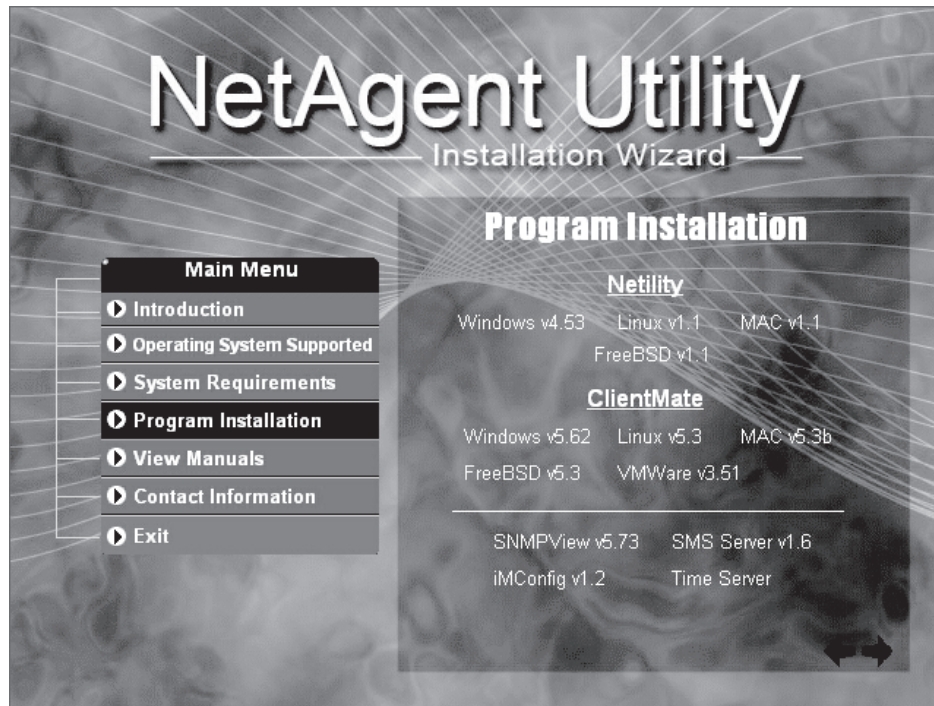
Control & Signal				
LED indicator		7-led for working mode		
Remote control(optional)		KS-PD1; KS-RS1		
Dip switch		Charge current; Output frequency; AC output voltage; DC/ AC priority		
Network function		Stand-alone, or TCP/ IP optional		
Battery type		Lithium, Gel, AGM, Wet or customized		
Dry contact terminal		By relay		

General Specification				
Safety		UL458: 2015 Ed.6; CSA C22.2		
EMC		FCC part15 Class A		
Operating / Storage temp		-20- 50 ℃ / -30- 70 ℃		
Working humidity		-20- 90% RH		
Weight(Kg/lb)		17/ 37		20/ 44
Dimension(mm/in)		455*250*185/ 18*10*7		

7. TCP/ IP MONITOR

Please use **WINDOWS** operation system higher than XP version.

Install Netility (Windows V4.53), ClientMate(Windows V5.62), SNMPView V5.73



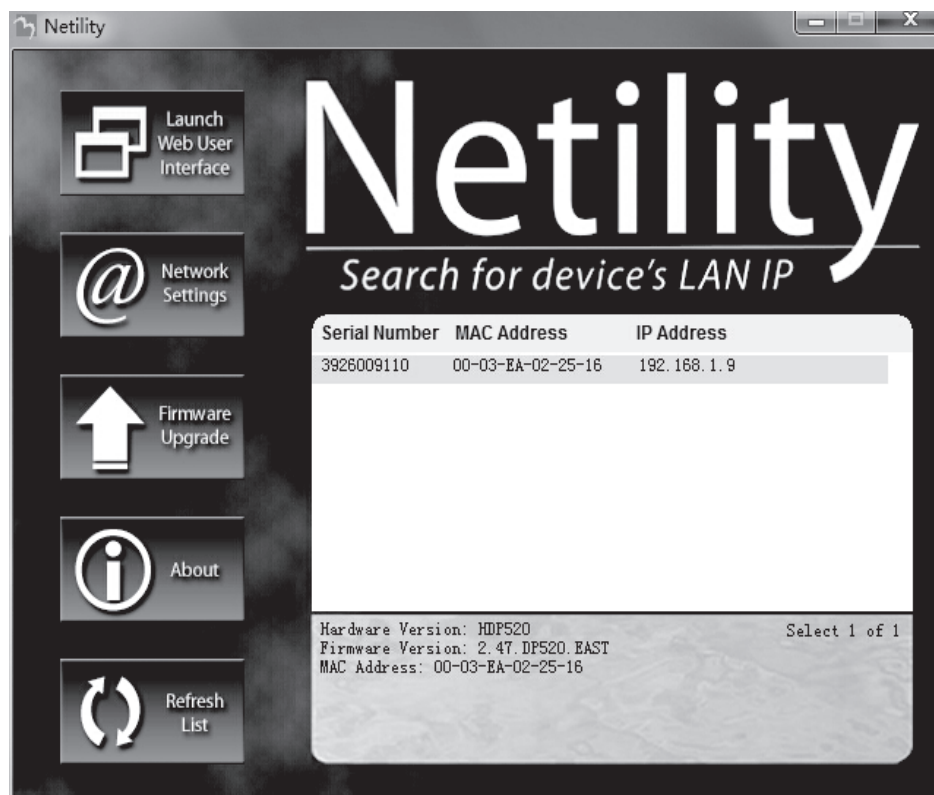
Make the correct connection of TCP/ IP server

Run netility, set the following parameter:

IP address: 192.168.1.9

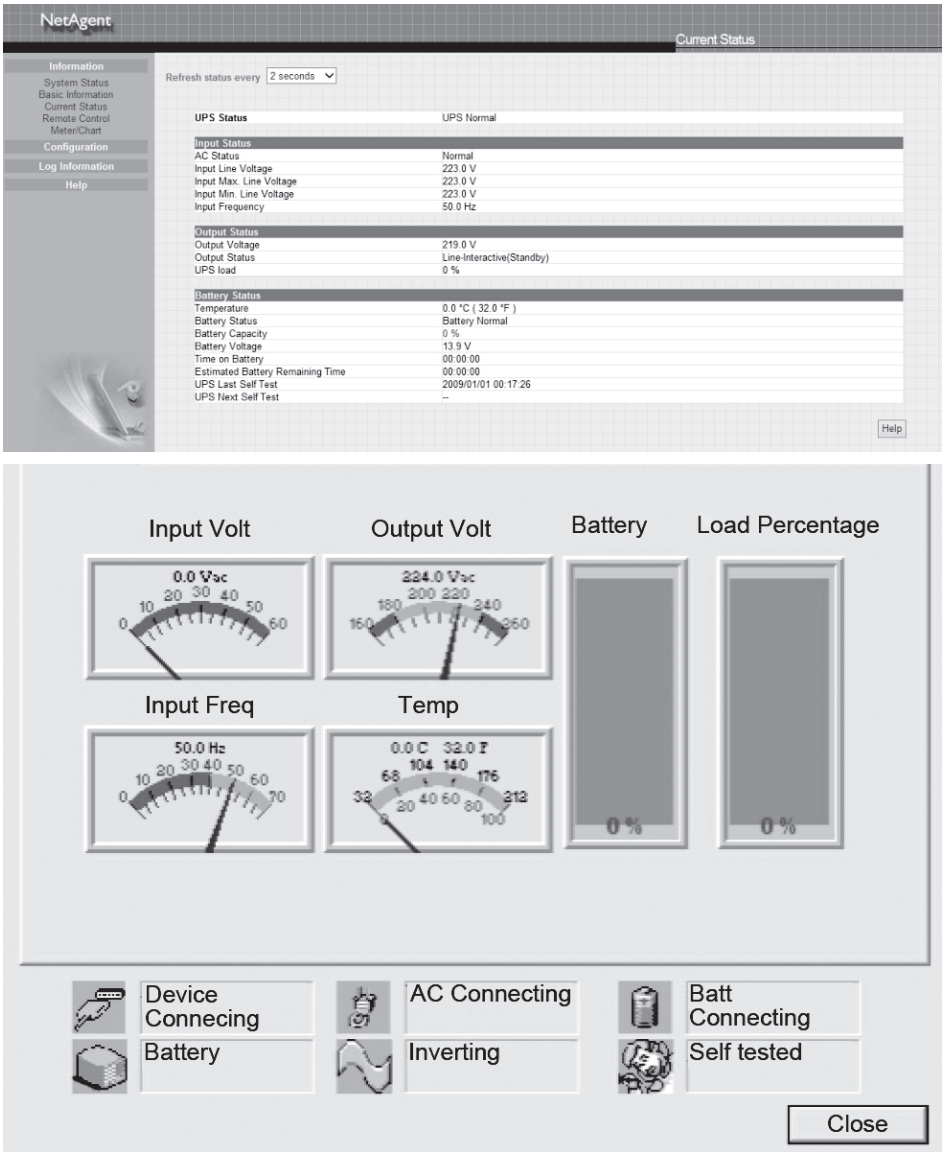
Subnet Mask: 255.255.0.0

Gateway: 192.168.1.1

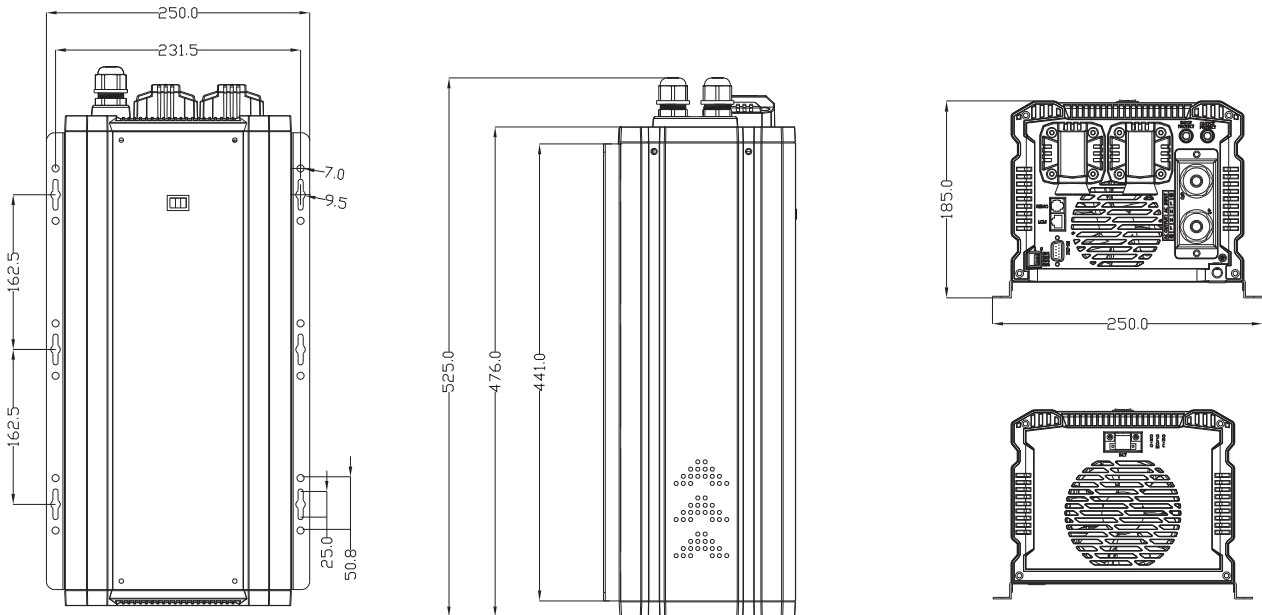


6. TCP/ IP MONITOR

Go to 192.168.1.9 in your browser



7. DIMENSION



2000-3000W

8. WARRANTY

What does this warranty cover? This Limited Warranty is provided by KS2 CORP INC and covers defects in workmanship and materials in your KS2K110.01 and KS3K110.01. This warranty period lasts for 18 months from the date of purchase at the point of sale to you, the original end user customer. Proof of purchase is required to make warranty claims.

What will KS2 do? KS2 will, at its option, repair or replace the defective product free of charge, provided that you notify KS2 of the product defect within the Warranty Period, and provided that KS2, through inspection, establishes the existence of such a defect and that it is covered by this Limited Warranty. KS2 will, at its option, use new and / or reconditioned parts in performing warranty repair and building replacement products. KS2 reserves the right to use parts or products of original or improved design in the repair or replacement. If KS2 repairs or replaces a product, its warranty continues for the remaining portion of the original Warranty Period or 90 days from the date of the return shipment to the customer, whichever is greater.

How do you get service? If your product requires troubleshooting or warranty service, contact your dealer. If you are unable to contact your dealer, or the dealer is unable to provide service, contact KS2 directly at:

Email: sales@ks2corp.com

Website: www.ks2corp.com

What does this warranty not cover? This Limited Warranty does not cover normal wear and tear of the product or costs related to the removal, installation, or troubleshooting of the customer's electrical systems. This warranty does not apply to, and KS2 will not be responsible for, any defect in or damage to:

1. The product if it has been misused, neglected, improperly installed, physically damaged or altered, either internally or externally, or damaged from improper use or use in an unsuitable environment;
2. The product if it has been subjected to fire, water, generalized corrosion, biological infestations, or input voltage that creates operating conditions beyond the maximum or minimum limits listed in the KS2 product specifications including high input voltage from generators and lightning strikes;
3. The product if repairs have been done to it other than by KS2 or its authorized service centers (hereafter "ASCs");
4. The product if it is used as a component part of a product expressly warranted by another manufacturer;
5. The product if its original identification (trade-mark, serial number) markings have been defaced, altered, or removed.

9. RMA Policy

Return Material Authorization Policy

Before returning a product directly to KS2 you must obtain a Return Material Authorization (RMA) number and the correct factory "Ship To" address. Products must also be shipped prepaid. Product shipments will be refused and returned at your expense if they are unauthorized, returned without an RMA number clearly marked on the outside of the shipping box, if they are shipped collect, or if they are shipped to the wrong location.

When you contact KS2 to obtain service, please have your instruction manual ready for reference and be prepared to supply:

- The serial number of your product
- Information about the installation and use of the unit
- Information about the failure and / or reason for the return
- A copy of your dated proof of purchase.

Return Procedure

1. Package the unit safely, preferably using the original box and packing materials. Please ensure that your product is shipped fully insured in the original packaging or equivalent. This warranty will not apply where the product is damaged due to improper packaging.
2. Include the following:
 - The RMA number supplied by KS2 CORP INC. clearly marked on the outside of the box.
 - A return address where the unit can be shipped. Post Office Boxes are not acceptable.
 - A contact telephone number where you can be reached during work hours.
 - A brief description of the problem.
3. Ship the unit prepaid to the address provided by your KS2 customer service representative.

If you are returning a product, in addition to the above, you MUST include return freight funds and are fully responsible for all documents, duties, tariffs, and deposits.

*This specifications are subject to changes without notice.

*KS2 CORP INC reserves rights of final interpretation and correction.



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