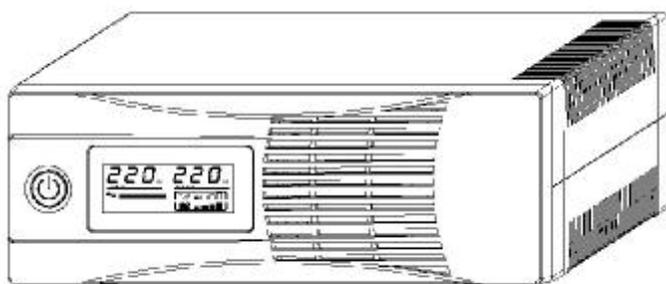


USER MANUAL



General Precautions

1. Before using this Inverter, read all instructions and cautionary markings on :
(1) Inverter (2) the batteries (3) this manual
2. **CAUTION** --To reduce risk of injury, charge only lead-acid rechargeable batteries. Other types of batteries may cause damage and injury.
3. Do not expose Inverter to rain, snow or liquids of any type. Inverter is designed for indoor.
4. Do not disassemble Inverter. Take it to a qualified service center when service or repair is required.
5. **WARNING:** Provide ventilation to outdoors from the battery compartment. The battery enclosure should be designed to prevent accumulation and concentration of hydrogen gas at the top of the compartment.
6. **NEVER** charge a frozen battery.
7. Input/output AC wiring must be no less than 18 AWG gauge copper wire and rated for 75°C or higher. Battery cables must be rated for 75°C or higher and should be no less than 10AWG gauge. The inner diameter of the copper ring terminal which is used to connect battery cables to Inverter DC terminals should be no less than 6mm.
8. Be extra cautious when working with metal tools around batteries. Short-circuiting the batteries could cause an explosion.
9. Read the battery manufacturer's installation and maintenance instructions prior to operating.

Personnel Precautions

1. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
2. Avoid touching eyes while working near batteries.
3. **NEVER** smoke or allow a spark or flame in vicinity of a battery.
4. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with batteries. Batteries can produce a short-circuit current high enough to make metal melt, and could cause severe burns.
5. If a remote or automatic generator start system is used, disable the automatic starting circuit or disconnect the generator to prevent accident during servicing.

Introduction

This Inverter is a DC-to-AC inverter with auto line-to-battery transfer and integrated charging system, serving as an extended run UPS, a standalone power source or an automotive inverter.

Inverter supplies power from AC power and DC source. When AC cable is connected to a wall socket, utility power goes to connected equipment(s) and/or charges the battery set via charging system. In UPS mode, Inverter automatically convert battery energy into AC power for backing up the connected devices.

Features:

- I Automatic line-to-battery switchover
- I Selectable Input voltage ranges
- I High efficient DC-to-AC conversion, minimizing energy loss
- I Rack Tower design for flexible placement
- I Built-in enhanced charger
- I Intelligent 2-stage charger control for efficient charging and preventing overcharge
- I Provides overload protection
- I Auto restart while AC recovery
- I Multi-function LCD display and buzzer alarms

Operation

Front Panel Controls and LCD display

Shown below are the controls and indicator lights on the front of Inverter.

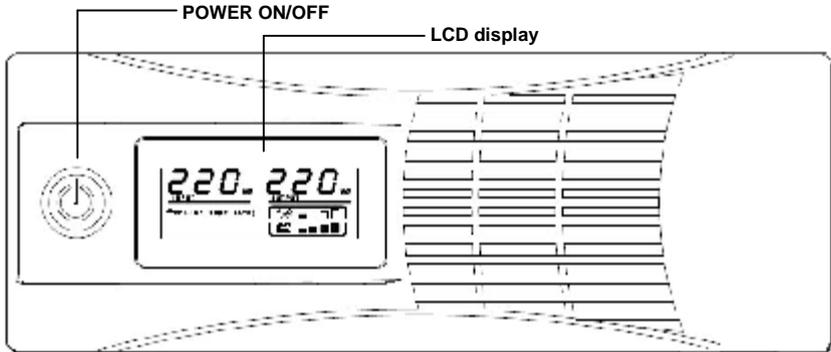


Figure 1 Front Panel

Power On/Off

Power on/off button is shown as above. Once Inverter has been properly installed and batteries are connected, press this button and Inverter will turn on automatically, and works in mains mode or inverter mode according to input AC source's status. When press this button again, Inverter will turn off automatically.

LCD DISPLAY

1. LCD Back-Light

The LCD will always turns on when inverter works, including in off charging mode and fault mode.

2. When LCD starts to work, it will display all information for 3 seconds.



3. When in AC mode, it will display as below.



4. When in Battery mode, it will display as below. And the mark  will flicker every 1second.



5. When in off charging mode, it will display as below. Battery capacity displays same as below item 5.



6. When in charging mode, the battery segments will display as below.

status	Battery voltage					
	12V	24V	1	2	3	4
CC/CV	Bat>13V	Bat>26.0V	Solid on	Solid on	Solid on	Flashing
	Bat>12.5V	Bat>25.0V	Solid on	Solid on	Flashing1	Flashing2
	Bat>12.0V	Bat>24.0V	Solid on	Flashing1	Flashing2	Flashing3
	Bat<=12.0V	Bat<=24.0V	Flashing1	Flashing2	Flashing3	Flashing4
Floating	Any battery voltage		Solid on	Solid on	Solid on	Solid on

Remark: Off mode charging is same.

7. Load level definition(the tolerance is $\pm 10\%$ rating power):

Load Level	Load bar Indication
 □	0%~25%
 □□	25%~50%
 □□□	50%~75%
 □□□□	75%~100%

When over load, the ma  will flicker every 1second.

8. Battery capacity definition in inverter mode (24V battery indication is as twice as 12V battery , the tolerance is $\pm 0.2V$) :

Battery Level	Battery bar Indication
 □	battery voltage $\leq 11V$
 □ □	$11V \leq$ battery voltage $\leq 11.5V$
 □ □ □	$11.5V \leq$ battery voltage $\leq 12.5V$
 □ □ □ □	battery voltage $> 12.5V$

When battery low, the mark  will flicker every 1second.

9. Troubleshooting.

When in fault mode, it will display as below.



Fault code table

Fault mode	Line mode		Battery mode	
	Fault code	Output status	Fault code	Output status
Overload 1 (Vout < 195V)	/	/	0	Off
Output voltage RMS low	/	/	2	Off
Short circuit	/	/	3	Off
Fan locked	4	On	4	Off
Battery voltage high	5	On	5	Off
Overload 2 (Vout $\geq 195V$; Pout > 80% rated half-wave load)	6	On	6	Off
Overload 3 (When unit powers half-wave load, difference value between peak voltage of positive half waveform and negative half waveform > 150V and last out 20 cycles)	/	/	7	Off
Output voltage RMS high	/	/	8	Off
Peak output voltage high	/	/	8	Off

If any abnormal situations occur that are not listed above, please call service people immediately.

Back Panel Description

Shown below are the components on the back of Inverter.

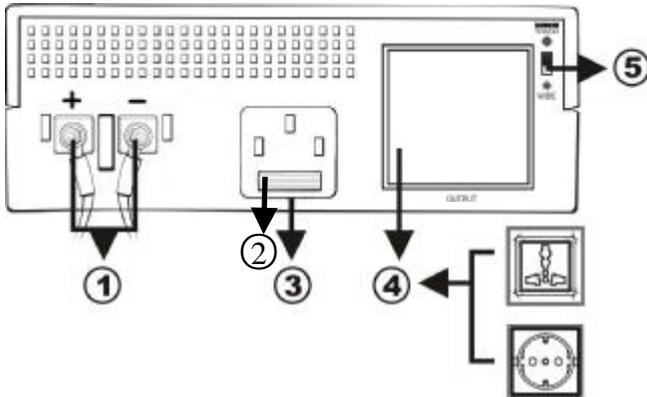


Figure 2 Back Panel

①DC Input Connector (Battery Terminal)

②Input Fuse

③AC Input Receptacle

④Output Receptacle(s)

⑤Input Voltage Range Selector : (Input voltage range is defined in specification chapter, and output voltage is the same as input voltage in mains mode)

A. Select '**Narrow**' setting for general electrical appliance: If you select this mode, the Inverter operating voltage in Line mode is within 170~280Vac (90~145Vac) with the same output voltage. The line sensitivity is higher. Hence, you can connect the computer systems or other precision home equipment when you select this mode.

B. Select '**Wide**' setting to save energy: If you select this mode, the Inverter operating voltage in Line mode will be extended within 90~280Vac (50~145Vac) with the same output voltage. The Inverter is with the lower line sensitivity. Moreover, there will be taking a long transfer

time when the Inverter transfer from Normal mode to Battery mode during power failure. Hence, you can connect the home equipments, such as light bulb, fan, fluorescent tube, or TV when you select this mode.

Caution!! If you select the ‘Wide’ mode and connect the computer to the output of Inverter, the computer may reboot if the input voltage is too low to be accepted. In addition, the long transfer time will happen when power failure makes the computer reboot.

Battery Connection

Step 1- Pinch the bottom of DC input cover and Open it. See Figure 4.

Step 2- Following battery polarity guide located near battery terminal! Place the battery cable ring terminal over Inverter’s battery terminal. Tighten the M5 nut. Do not place anything between the flat part of battery terminal and the battery cable ring terminal, or overheating may occur.

Caution! DO NOT place anything between battery cable ring terminals and battery terminals. The terminal stud is not designed to carry current. Apply Anti-oxidant paste to terminals after terminals have been torqued.

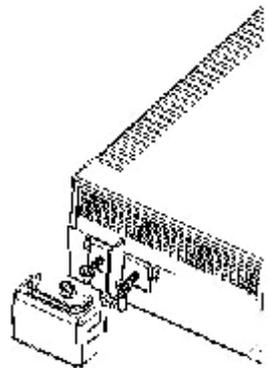
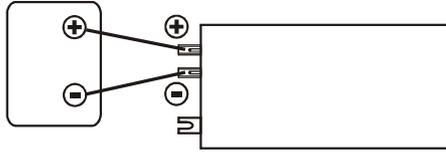


Figure 4 Battery Cable Connection to Inverex

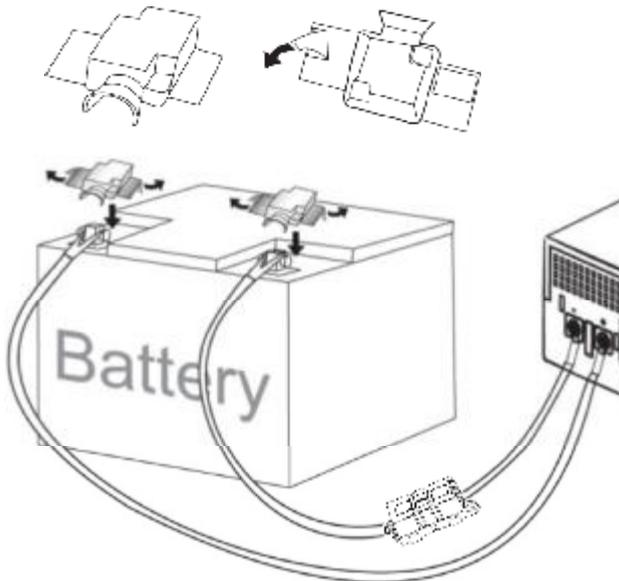
Step 3- Connect battery cables to your batteries

- I Single battery connection: When using a single battery, its voltage must be equal to the voltage of Inverter Nominal Input Voltage (see specs)

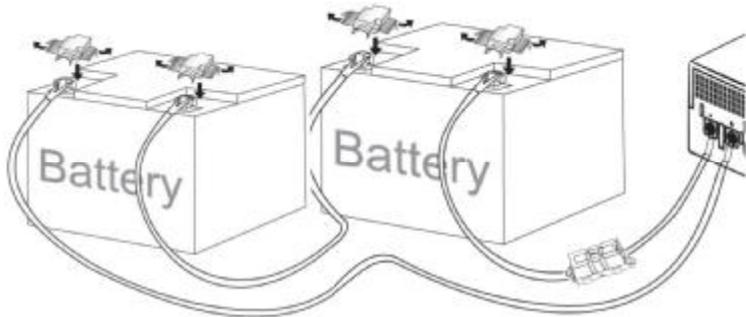
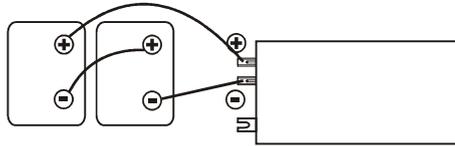


12VDC

- I For the user operation safety, we strongly recommend that you should isolate the battery terminals before you start to operate the unit. Please refer to below instruction for further information. If you parallel more batteries to extend the backup time, please make sure that you already use tapes to isolate the rest battery terminals before you start to operate the unit.
- I Note: When connect the inverter and battery, need to string into the fuse between inverter and battery.

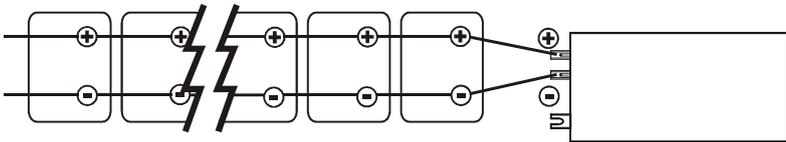


- I Series battery connection: When using multiple batteries in series, all batteries must be equal in voltage and amp hour capacity, and the sum of their voltages must be equal to the voltage of Inverter Nominal Input Voltage (see specs)



24VDC

- I Parallel battery connection: When using multiple batteries in parallel, each battery's voltage must be equal to the voltage of Inverter Nominal Input Voltage (see specs)



AC Connection

Before having AC connection, match the power requirements of connected devices with the power output of Inverter to avoid overload. Consult a qualified electrician, and follow local code for the proper wire sizes, connectors and conduit requirements.

Specification

MODEL		IG500-12-C	IG1000-12-C	IG2000-24-C	IG 1000-24-C
CAPACITY	VA/W	500VA/300W	1000VA/600W	2000VA/1200W	1000VA/600W
INPUT	Nominal Voltage	110/120VAC or 220/230/240VAC			
	Voltage Range	90-145VAC or 170-280VAC (Narrow Range) 50-145VAC or 90-280VAC (Wide Range)			
OUTPUT	Voltage	120VAC or 230VAC			
	Voltage Regulation (Batt. Mode)	+10% / -18%			
	Frequency	50Hz or 60Hz			
	Frequency Regulation (Batt. Mode)	+/-0.1 Hz			
	Output Waveform	Modified Sine-wave			
BATTERY & CHARGER	Charger Current	10Amp +/- 1Amp	10 Amp +/- 1Amp	10Amp +/- 1Amp	10A +/-1Amp
	DC Voltage	12V +/- 0.2V	12V +/- 0.2V	24V +/- 0.4V	24V +/- 0.4V
	Overcharge Protection	14.5V +/- 0.3V charger stops and fault		29V +/- 0.6V charger stops and fault	
TRANSFER TIME	Typical	10-20ms typical(narrow range); 40ms max(wide range)			
EFFICIENCY	AC to AC	>95%			
	DC to AC	>80%			
INDICATOR	AC Mode	Green lighting			
	Battery Mode	Yellow lighting			
	Battery Charging Mode	Green flashing every 2 seconds			
	Overload	Red flashing every 0.5 second			
	Fault	Red lighting			
AUDIBLE ALARM	Low Battery at Battery Mode	Sounding every 2 seconds			
	Overload	Sounding every 0.5 second			
	Fault	Continuously sounding			
PROTECTION	Full Protection	Discharge, overcharge, and overload protection			
PHYSICAL	Dimension (DxWxH) mm	224 X 255 X 80			
	Net Weight (kgs)	1.7	2.1	2.3	2.1
ENVIRONMENT	Operating Environment	0- 40°C, 0-90 % relative humidity (non-condensing)			
	Noise Level	Less than 55dB			

* Product specifications are subject to change without further notice.