

SGP3000A-121

User Manual

12V DC input | 110V AC output

3000W rated output / 6000W peak

Peak power is a temporary startup rating. The source manual does not specify its duration. Do not treat 6000W as continuous output.

Read this manual before installation or operation. Keep it with the inverter for future reference. Installation and electrical connections should be completed by a qualified installer.

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Important safety instructions

WARNING - Electric shock, fire and battery hazards

The AC output carries hazardous voltage. The battery can supply very high fault current even when the inverter switch is OFF. Isolate the DC supply before working on wiring.

Electrical safety

- Never connect the inverter AC output to utility power, a generator output or another inverter output. Never backfeed a wall outlet.
- Do not open, modify or attempt internal repairs. Have a damaged or malfunctioning inverter serviced by qualified personnel.
- Keep the inverter dry. Do not operate with wet hands or expose it to rain, splashes or condensation.
- Use sound cables, plugs and outlets. Insert plugs fully. Do not use loose outlets or damaged insulation, and do not crush, sharply bend or pull cables.
- Keep children away. Do not insert tools or metal objects into vents or openings.

Battery and fire safety

- Use a 12V nominal battery system only. Never connect this model to a 24V or 48V bank. Verify polarity before energizing: positive (+) to positive (+), negative (-) to negative (-).
- Connections may spark. Keep flames, flammable materials and accumulated battery gases away. Provide ventilation for the inverter and battery installation.
- Keep tools and conductive objects from bridging battery terminals. Follow the battery manufacturer's handling, charging and protection requirements.
- Keep cooling vents clear. Do not place objects on the inverter or install it beside heat sources.

Grounding and permitted use

The source manual warns that inappropriate AC output-to-ground connections can damage the inverter, but does not define a complete grounding or neutral-bonding arrangement. Do not create an AC output-to-chassis or neutral-to-ground bond without model-specific manufacturer instructions. Have a qualified installer confirm the required protective grounding and bonding before installation.

The inverter has not been tested for medical equipment.

Product overview and specifications

This inverter converts battery DC power to pure sine wave AC power. Match every connected appliance to the output voltage, confirmed output frequency and available power.

Model	SGP3000A-121
Nominal DC input	12V DC
AC output voltage	110V AC
Rated output power	3000W
Peak output power	6000W
Output waveform	Pure sine wave
Frequency	50/60Hz
USB output	5V DC, 1A
No-load current	1.5A
DC input voltage range	9.5-15.2V
Low-voltage alarm	10V $\pm$ 0.5V
Low-voltage protection	9.5V $\pm$ 0.5V
Overvoltage protection	16V $\pm$ 0.5V
Maximum efficiency	94%;
Operating environment	-10°C to 40°C (32°F to 104°F); dry, no condensation

Controls and connections

DC positive (+) and negative (-) terminals: battery input. **Fans and vents:** cooling airflow. **AC outlets:** appliance connections. **USB port:** 5V output. **Power switch:** turns inverter operation on or off. **Indicators:** power and protection status.

Plan the installation

Choose a suitable location

Install on a solid, stable surface that supports the inverter and cables. Keep the area dry and ventilated, between 0°C and 40°C, without condensation. Avoid direct sunlight, heaters, flammable materials and locations where battery gases can collect. Leave fans and vents unobstructed; the source does not specify a numerical clearance.

Use a suitable 12V battery supply

Battery capacity alone does not establish whether a bank can run this inverter. Confirm that the batteries, any battery management system (BMS), cables, terminals and protective devices can supply the required continuous and startup current. Follow the battery manufacturer's limits.

Plan for high DC current

Illustrative calculation: $3000W \div (12V \times 0.90)$ is approximately 278A. This uses an assumed 90% efficiency, not a guaranteed rating. Current increases as battery voltage falls. This example is not a cable or fuse sizing instruction.

A general preference for 150Ah or larger batteries, but that capacity does not guarantee 3000W operation. If multiple batteries are used, a qualified installer must design a compatible bank that retains 12V nominal voltage. Do not series-connect two 12V batteries to this inverter.

Cables, protection and grounding

- Have a qualified installer select the DC cable size and length, appropriately rated overcurrent protection close to the battery positive connection, and a suitable means of DC isolation. These details are not specified in the supplied manual.
- Keep DC cable runs short, support them against movement and protect them from heat, sharp edges and abrasion. Use suitable lugs and secure connections; obtain terminal torque requirements from the supplier.
- Confirm the rating of each AC outlet, plug and cable. The 3000W total inverter rating does not mean that one outlet can safely carry the entire load.
- For fixed building or RV wiring, obtain a model-specific connection design, source isolation and protective grounding instructions from a qualified installer.

Connect and start the inverter

Before making connections

Turn the inverter and all appliances OFF. Keep the battery supply isolated while wiring. Confirm the unit label says SGP3000A-121, 12V DC input and 110V AC output. Resolve any label discrepancy with the supplier before use.

Connection concept

Battery positive (+)	DC overcurrent protection and isolation to inverter positive (+)
Battery negative (-)	Inverter negative (-)
Inverter AC output	Compatible 110V AC appliances within all ratings

Functional connection reference only. Protection ratings, conductor sizing, grounding and any fixed AC wiring require an installation design. It is not a complete wiring schematic.

Installation and commissioning sequence

- 1. Inspect.** Check the inverter, battery terminals, cables and plugs for damage. Confirm a dry, ventilated location and correctly rated components.
- 2. Make the isolated DC connections.** Connect the negative cable to the inverter negative terminal and battery negative connection. Connect the positive cable through the specified protection and isolation to the inverter positive terminal and battery positive connection. Keep the source isolated throughout this work.
- 3. Verify.** Check polarity, battery voltage, secure terminals, cable protection and the approved grounding arrangement. Ensure no tools or loose metal remain near the terminals.
- 4. Energize without load.** Restore the DC supply using the installed isolator, then turn the inverter ON with appliances disconnected. Check for normal operation. If an alarm or protection indication appears, turn it OFF and correct the cause.
- 5. Connect appliances.** With each appliance switched OFF, insert its plug fully into a suitable AC outlet. Turn appliances ON one at a time and observe the inverter.
- 6. Verify under load.** Stop if there is an alarm, repeated shutdown, overheating, unusual smell or abnormal noise. Do not continue until the cause has been corrected.

A power indication during normal operation and a red protection indication during faults. A protection light can indicate several conditions; do not assume that every red indication means overload.

Operation, shutdown and care

Manage connected loads

Keep the combined running load within 3000W and within the individual outlet, cable and battery-system ratings. Motors, pumps, compressors and some power tools may draw much more power during startup. The startup current of approximately two to six times normal operating current for some loads; actual demand varies.

The 6000W peak figure does not guarantee that an appliance will start. Its startup power and duration must be compatible with the inverter, and the battery system must supply the required current. Add loads one at a time and reduce the load if protection activates.

Protect the battery

Respond to a low-voltage warning by switching off loads and recharging the battery with a compatible charger. Follow the battery manufacturer's minimum voltage and discharge limits; the inverter's low-voltage cutoff may be too low for the battery. A battery BMS may disconnect before the inverter reaches its own protection threshold.

The inverter draws power while switched on even with no AC load. Turn it OFF when not needed. The listed 1.5A no-load current is approximately 18W at 12V, so leaving it on reduces available runtime.

Normal shutdown

1. Turn connected appliances OFF.
2. Turn the inverter OFF.
3. Unplug appliances when required. For maintenance or disconnection, isolate the DC supply and have a qualified person verify a safe condition before working.

Removing the installation

With the inverter OFF, appliances unplugged and DC source isolated, the source manual specifies removing the positive DC cable before the negative cable. Have a qualified installer carry out disconnection and immediately insulate exposed cable ends. Turning the inverter OFF alone does not isolate battery wiring.

Care and inspection

- Keep the exterior and ventilation openings clean and dry. Isolate power before cleaning; use a dry cloth and do not allow liquids into the enclosure.
- Regularly inspect cables, plugs and terminals for looseness, damaged insulation, discolouration or overheating. Have defects corrected before use.
- Do not repeatedly cycle the power switch to override a fault. Allow an overheated inverter to cool and correct the load or ventilation problem before restarting.
- Do not open the housing or replace internal components yourself. Contact the supplier for service.

Troubleshooting and support

If a fault occurs, switch off connected loads and the inverter. Isolate the battery before checking or adjusting wiring. Live electrical measurements should be performed only by a qualified person.

Symptom	Checks and action
No AC output / no power indication	Check the switch position, DC isolator, battery condition, external protection and connections. Check polarity before energizing. Do not bypass a fuse or repeatedly replace a blown fuse.
Low-voltage alarm or shutdown	Recharge the battery. Have the battery voltage under load and voltage drop in DC cables checked. Inspect isolated connections for looseness. Confirm battery/BMS current capability.
Protection indication with a load	Disconnect loads. Check for excessive running power, high startup demand, a faulty appliance or damaged wiring. Restart only after the cause has been corrected, then add loads one at a time.
Overvoltage protection	Stop operation. Have the battery-bank voltage and charger settings checked. Use a 12V nominal supply within the specified input range; do not operate up to the protection threshold.
Shutdown when hot	Turn OFF and allow to cool. Clear airflow obstructions, reduce load and confirm the ambient temperature is within 0°C to 40°C. Seek service if the problem persists.
Fault persists with no load	Stop using the inverter and contact the supplier. Do not open the housing or attempt an internal repair.

Information to provide for service

Record the model, serial number, purchase date, battery type and bank configuration, connected appliance ratings, indicator behaviour and circumstances of the fault. Include voltage measurements only when taken safely by a qualified person.

Model: **SGP3000A-121**

Serial number: _____

Purchase date: _____

Supplier / service contact: _____