

IQS300 Series Inverter



Installation & Operation Manual



ANALYTIC SYSTEMS

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Toll Free 1-800-668-3884
INTRODUCTION

State of the Art MOSFET technology coupled with unique Soft-Start circuitry guarantees reliable operation. The ON-OFF switch illuminates when AC is present at the outputs to provide positive indication of proper operation. The output is a full 160 or 320 Volts peak (115/230 Vrms) to allow it to handle most applications from sonar monitors to electric drills. Extremely heavy input filtering ensures that no electrical noise will be generated to interfere with autopilots, radios or other devices sharing the same batteries. The transformer type output prevents any spikes or surges that might damage computers or other sensitive equipment. Low voltage shutdown circuitry protects the batteries. Current Limiting and Over Temperature shutdown protect the inverter. Ground Fault Interrupt and Short Circuit Detection protect both the user and inverter. Diagnostic LEDs indicate the cause of any shutdown and show when the unit is overloaded. One standard AC receptacle provides for easy connection. Versions are available to operate from 12, 24 or 32 volt battery systems. As with all of our equipment, the IQS300 Series inverters carry a full three year warranty.

IQS300-ip-op Specifications

Input Voltages

Nominal (ip)	12	24	32
Actual (Vdc)	11 – 14	22 – 28	30 – 38
Input Amps (max)	48	24	16.5
Input Fuse (ATC)	25 x 2	30	25

Output Voltages

Nominal (op)	110	220
Actual (Vac)	110 – 120	220 - 240
Output Amps (max)	2.6 cont. / 4.0 peak	1.3 cont. / 2.0 peak
Output Frequency	60 ± 1 Hz	50 ± 1 Hz
Output Type	Quasi-Sine Wave	

General

Efficiency	> 85% @ maximum output
Temp Range	-25 to +40 °C @ maximum output
Isolation	500 VDC Input to Case, 1500 VDC Input to Output & Output to Case
Length	10.1 in / 25.6 cm
Width	5.25 in / 13.3 cm
Height	4.45 in / 11.4 cm
Clearance	1.0 in / 2.5 cm
Material	Marine Grade Aluminum
Finish	Black Powder Epoxy
Fastenings	18-8 Stainless Steel
Weight	11.0 lb / 5.0 kg

Designed and manufactured by:

ANALYTIC SYSTEMS WARE (1993) LTD.

#207 12448 82 Ave. Surrey, B.C., V3W 3E9, Canada

phone (604) 543-7378 fax (604) 543-7354

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Revised: Feb 2003

Specifications subject to change without notice.

IMPORTANT SAFETY INSTRUCTIONS

- 1) **SAVE THESE INSTRUCTIONS** — This manual contains important safety and operating instructions for inverter.
- 2) Do not expose inverter to rain or snow.
- 3) Use of an attachment not recommended or sold by the inverter manufacturer may result in a risk of fire, electric shock, or injury to persons.
- 4) Do not disassemble inverter; take it to a qualified serviceman when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
- 5) To reduce risk of electric shock, unplug inverter from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.
- 6) Never place inverter directly above battery; gases from battery will corrode and damage marine inverter.
- 7) Never allow battery acid to drip on inverter when reading gravity or filling battery.

GROUNDING AND AC POWER CORD CONNECTION INSTRUCTIONS — Inverters should be grounded to reduce risk of electric shock. Inverter is equipped with electric receptacles capable of accepting an equipment-grounding conductor and a grounding plug.

DANGER — Never alter AC cord or plug provided — if it will not fit outlet, have proper cord installed by a qualified electrician. Improper connection can result in a risk of an electric shock.

Analytic Systems does not recommend the use of the IQS300 Series Inverters in life support applications where failure or malfunction of this product can be reasonably expected to cause failure of the life support device or to significantly affect its safety or effectiveness. **Analytic Systems** does not recommend the use of any of its products in direct patient care.

Examples of devices considered to be life support devices are neonatal oxygen analyzers, nerve stimulators (whether used for anesthesia, pain relief, or other purposes), autotransfusion devices, blood pumps, defibrillators, arrhythmia detectors and alarms, pacemakers, hemodialysis systems, peritoneal dialysis systems, neonatal ventilator incubators, ventilators for both adults and infants, anesthesia ventilators, and infusion pumps as well as any other devices designated as "critical" by the U.S. FDA.

INSTALLATION

MOUNTING

Mount the unit in a DRY location. Allow at least 1 inch of clearance around the unit for adequate cooling.

The case is connected to **AC Neutral and AC Ground** to meet regulatory requirements and to reduce the possibility of the inverter generating any radio frequency interference. There is 500 VDC of isolation between the DC input and the case. You may need to isolate the case from the mounting surface if it is at a different potential than AC Ground. In a vehicle such as a car, truck or bus, the unit should be mounted or electrically connected to the chassis. However, on a steel tugboat, it may need to be isolated from the hull, and have the AC Ground connected to a different location. This can be done by fastening a ground strap under one of the mounting screws, and scraping the paint from under the screw head to ensure a good electrical contact.

<p>CAUTION: Do not mount the unit where explosive gases may accumulate as a slight arc may occur when the power leads are connected, and in the unlikely event of a failure, sparks may be generated inside the unit.</p>
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POWER CONNECTION

The unit is supplied with two 5 foot power cables. This should normally be adequate to connect to a source of power. If you must extend the cable:

- Use the smallest extension length possible.
- Use no less than 6 gauge conductors.
- Splice and solder the joints.
- Protect the joints with heat shrink tubing.

Connect the wires as follows:

- Red to Positive
- Black to Negative

OUTPUT CONNECTIONS

One standard two outlet AC receptacle is provided. Ensure that the total average load connected does not exceed the continuous current rating of the unit.

OPERATION

Turn the switch on the front of the unit on to energize the outputs. The switch will glow to indicate the presence of AC power at the receptacles.

PROBLEM SOLVING

If the unit switches off or won't turn on, check the diagnostic LED's.

- If the Low Input LED is on, check the battery.
- If the Overheat LED is on, reduce the load and wait a few minutes. The unit will switch itself back on. If this does not work there may not be adequate cooling for the inverter. To correct this either move the unit to a place with better ventilation or direct a stream of cool air over the unit.
- If neither LED is on, check the fuse.
 - If it is blown, replace it with the appropriate size as shown in the specifications.
 - If the unit still won't work, or the fuse is good, check for the presence of input voltage.
 - If the replacement fuse also blows, unplug all devices connected to the unit and try again.
 - If the fuse blows again, the unit is defective and must be returned for repair.
 - The main cause for the fuse to blow is incorrect hookup to the battery (reversed polarity). This is a feature designed to protect the inverter from such a possibility. If this occurs replace the fuse with the same type and rating and connect the inverter properly. If the fuse continues to blow, the unit is defective and must be returned for repair.
- If the Ground Fault LED is on, a ground fault has occurred. Turn the unit off and disconnect all loads. Turn the unit on and one at a time connect the loads until the ground fault occurs. Turn the unit off and disconnect the load that caused the ground fault. Have the load checked by a qualified service person to determine and correct the reason for the ground fault. Then and only then is it safe to reconnect the load to the inverter.
- If the Short Circuit LED is on, a short circuit has occurred. Turn the unit off and disconnect all loads. Turn the unit on and one at a time connect the loads until the short circuit occurs. Turn the unit off and disconnect the load that caused the short circuit. Have the load checked by a qualified service person to determine and correct the reason for the short circuit. Then and only then is it safe to reconnect the load to the inverter.

If the Overload LED comes on, the total load of all devices connected to the unit exceeds the maximum output capability. Remove at least one of the devices to reduce the maximum load to acceptable levels.

REMOTE CONTROL (OPTIONAL)



A remote control panel may be connected to the inverter using a 9-pin D-connector, which attaches to the front panel of the inverter. The remote control panel and D connector are part of the remote control option. The remote control panel allows the unit to be operated remotely as well as duplicating all the diagnostic indicators and audible alarm.

IMPORTANT: This remote is to be used only on Inverters manufactured by Analytic Systems.

REMOTE CONNECTOR

This connector is located on the side of the unit. **Important:** To prevent the possibility of **High Voltage Electrical Shock**, do not power up the Inverter unless all wiring from the unit to the remote is securely connected. Do not remove the dust cover from the DB-9 connector if the remote is not being used.

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Limited Warranty

1. The equipment manufactured by Analytic Systems Ware (1993) Ltd. (the "Warrantor") is warranted to be free from defects in workmanship and materials under normal use and service.
2. This warranty is in effect for:
 - a. 3 Years from **date of purchase** by the end user for standard products offered in our catalog.
 - b. 2 Years from **date of manufacture** for non-standard or OEM products
 - c. 1 Year from **date of manufacture** for encapsulated products.
3. Analytic Systems will determine eligibility for warranty from the date of purchase shown on the warranty card when returned within 30 days, or
 - a. The date of shipment by Analytic Systems, or
 - b. The date of manufacture coded in the serial number, or
 - c. From a copy of the original purchase receipt showing the date of purchase by the user.
4. In case any part of the equipment proves to be defective, the Purchaser should do the following:
 - a. Prepare a written statement of the nature of the defect to the best of the Purchasers knowledge, and include the date of purchase, the place of purchase, and the Purchasers name, address and telephone number.
 - b. Call Analytic Systems at 800-668-3884 or 604-543-7378 and request a return material authorization number (RMA).
 - c. Return the defective part or unit along with the statement at the Purchasers expense to the Warrantor; Analytic Systems Ware (1993) Ltd., #207 12448 82nd Ave., Surrey, B.C., V3W 3E9, Canada.
5. If upon the Warrantor's examination the defect proves to be the result of defective material or workmanship, the equipment will be repaired or replaced at the Warrantor's option without charge, and returned to the Purchaser at the Warrantor's expense by the most economical means. Requests for a different method of return or special handling will incur additional charges and are the responsibility of the Purchaser.
6. Analytic Systems reserves the right to void the warranty if:
 - a. Labels, identification marks or serial numbers are removed or altered in any way.
 - b. Our invoice is unpaid.
 - c. The defect is the result of misuse, neglect, improper installation, environmental conditions, non-authorized repair, alteration or accident.
7. No refund of the purchase price will be granted to the Purchaser, unless the Warrantor is unable to remedy the defect after having a reasonable number of opportunities to do so.
8. Only the Warrantor shall perform warranty service. Any attempt to remedy the defect by anyone else shall render this warranty void.
9. There shall be no warranty for defects or damages caused by faulty installation or hook-up, abuse or misuse of the equipment including exposure to excessive heat, salt or fresh water spray, or water immersion except for equipment specifically stated to be waterproof.
10. No other express warranty is hereby given and there are no warranties that extend beyond those described herein. This warranty is expressly in lieu of any other expressed or implied warranties, including any implied warranty of merchantability, fitness for the ordinary purposes for which such goods are used, or fitness for a particular purpose, or any other obligations on the part of the Warrantor or its employees and representatives.
11. There shall be no responsibility or liability whatsoever on the part of the Warrantor or its employees and representatives for injury to any person or persons, or damage to property, or loss of income or profit, or any other consequential or resulting damage which may be claimed to have been incurred through the use or sale of the equipment, including any possible failure of malfunction of the equipment, or part thereof.
12. The Warrantor assumes no liability for incidental or consequential damages of any kind.