



**Sensata**  
Technologies

**121208B**

Manufacturer of Dimensions™ Inverters  
4467 White Bear Parkway  
St. Paul, MN 55110  
Phone: 651-653-7000 Fax: 651-653-7600  
E-mail: [inverterinfo@sensata.com](mailto:inverterinfo@sensata.com)  
Web: [www.dimensions.sensata.com](http://www.dimensions.sensata.com)

**OWNERS MANUAL**

**JANUARY 2007**

# **DIMENSIONS™**

## **DC to AC Power Inverters**

OWNERS MANUAL for Model:

**ADI-300/3000D**

**ADI-300/5000D**

**ADI-300/7000D**

Including Options T, T1

Form 121208

**OWNERS MANUAL  
FOR SENSATA TECHNOLOGIES  
DIMENSIONS INVERTERS**

**Model ADI-300/3000D  
Model ADI-300/5000D  
Model ADI-300/7000D**

Including options T, R

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**1. GENERAL**

**1.01** Dimensions inverters have been designed and manufactured for many user applications and long life. They utilize patented construction methods and high technology electronic parts and circuitry.

**1.02** *CAUTION:* Inverters produce hazardous voltages, to avoid risk of harm or fire the unit must be properly installed. There are no user serviceable parts inside, do not remove the cover.

*CAUTION:* The inverter should not be installed in a zero clearance enclosure.

*CAUTION:* Damage to the inverter will occur

if correct polarity is not observed when installing the DC input cables.

*CAUTION:* Damage to the inverter will occur if an external AC power source is applied to the inverter's AC output or it's hardwire output.

*CAUTION:* Working in the vicinity of lead-acid batteries is dangerous. Batteries generate explosive gases during operation. There is a risk of acid exposure. There is also a risk of high current discharge from shorting the battery that can cause fire and explosion.

*CAUTION:* Be sure both the inverter and, if used, the external AC input circuit breaker or fuse are turned OFF during installation.

**2. DESCRIPTION**

**2.01** The inverter converts 300 VDC to 120/240 VAC, 60 HZ, having a quasi-sine wave form.

**2.02** The inverter has internal protection against output short circuit, output overload and high temperature conditions.

**2.03** The enclosure is sealed to meet Nema 12 requirements.

**2.04** The inverter is designed to operate almost any 120/240 VAC, 60 HZ, single phase appliance, equipment or tool within its power ratings that does not require a pure sine waveform.

**3. INSTALLATION**

**3.01** The following instructions should be thoroughly read and understood before installation.

**3.02** *CAUTION:* Inverters produce hazardous voltages, to avoid risk of harm or

fire the unit must be properly installed.

**CAUTION:** Damage to the inverter will occur if correct polarity is not observed when installing the DC input cables.

**CAUTION:** Damage to the inverter will occur if an external AC power source is applied to the inverter's AC outlet or its hardwire output.

**CAUTION:** Be sure both the inverter and, if used, the external AC input circuit breaker or fuse are turned "OFF" during installation.

**NOTE:** All wiring must follow the National Electric Code, Provincial or other codes in effect at the time of installation, regardless of suggestions in this manual. All wires should be copper conductors.

**NOTE:** Use care to seal all input and output connections to maintain the Nema 12 dustproof enclosure protection.

### 3.03 Mounting

**3.03.1** Locate a suitable, secure flat mounting surface. The maximum recommended distance between the mounting location and the power source is 40 feet.

**3.03.2** The location should provide adequate ventilation and clearance to maintain less than 40°C while the unit is operating. At least 1/2 inch of clearance is required on all sides.

**3.03.3** Secure the unit with 1/4 inch screws or bolts in the mounting slots on the flanges of the chassis.

### 3.04 Chassis Bonding Lug - FIG. 1

**3.04.1** Connect a #8 gauge or greater copper wire between the bonding lug on the inverter and the earth grounding system.

### 3.05 D.C. Input Wiring - Fig. 1

**3.05.1** Use stranded copper wire between the power source and inverter as indicated. A line fuse must be installed between the power source and the inverter.

#### DC Input Wire Lengths (maximum) and Fusing Guide

Model	Distance (feet)		Line
	1-19	20-40	Fuse
300/3000	10 ga	8 ga	20
300/5000	8 ga	6 ga	40
300/7000	6 ga	4 ga	50

**3.05.2 NOTE:** Using smaller input cable or longer length will greatly degrade the inverter's surge performance.

**3.05.3** Install the wires at the power source, inverter and then fuse holder. Make sure that good, clean connections are made. Use care not to touch the positive and negative wires together. This will result in a violent spark and fire.

**3.05.4 CAUTION:** Connecting the inverter to the power supply with reverse polarity will cause damage that is not covered under warranty.

**3.05.5** The DC input terminals are located in the wiring compartment. A mounting spark may result when connecting the input wire, due to an initial charging of the of the internal input capacitor.

### 3.07 120/240 VAC Output

**3.07.1 CAUTION:** Do not connect an other source of AC power directly to the output of the inverter. This will result in damage to the inverter that is not covered under warranty!

**3.07.2** The 120/240 VAC output is presented behind the wiring compartment panel for direct hardwire connection. The black wires are hot, the white wire is neutral and the green wire is ground. The cable clamp strain relief should be used to secure the field wires.

**3.07.3** The remote AC outlets should be mounted at a convenient location in a listed outlet box with approved strain relief.

### **3.08 120/240 VAC Input (T or T1 option)**

**3.08.1** 120/240 VAC, 60 HZ power from the electric utility or generator can be connected to the inverter with hardwire connections at the AC Input wire leads provided in the hardwire compartment. The black wires are hot, the white wire is neutral, and the green wire is ground. The cable clamp strain relief should be used to secure the field wires.

**3.08.2** The input circuit should have 30 amp (50 amp for T1) circuit protection from the distribution panel.

**3.08.3** If provided with the "T" or "T1" option, when external 120/240 VAC is supplied, the internal transfer switch is automatically activated, the inverter is turned "Off", and the inverter's loads will operate from external AC.

## **4. START UP/OPERATION**

**4.01** To operate the inverter, turn the inverter switch to "ON". Assure that the breakers are reset.

## **5. TROUBLESHOOTING**

**5.01** Sensata offers free phone consultation (no collect calls) concerning installation or troubleshooting. Call the Customer Service Department at:

1-651- 653-7000 or 1-800-553-6418

fax number: 651-653-7600

e-mail: [inverterinfo@sensata.com](mailto:inverterinfo@sensata.com)

**NOTE:** Since the inverter has a quasi-sine waveform, a TRUE RMS volt meter is required for an accurate reading. Other volt meters that use averaging circuitry will give incorrect readings.

**5.02** If the inverter fails to operate, use the following troubleshooting procedure.

**5.02.1** Connect a 100 watt light bulb to the inverter output.

**5.02.2** Make sure inverter is turned "On", and the circuit breakers are reset.

**5.02.3** Observe the fault indicating lights on the front of the inverter.

a) The Low input voltage light indicates a low power source condition. Switch the inverter "Off" for 5 seconds, then "On" again. The light coming on again indicates a fault in the D.C. wiring, power source capacity and voltage or the line fuse.

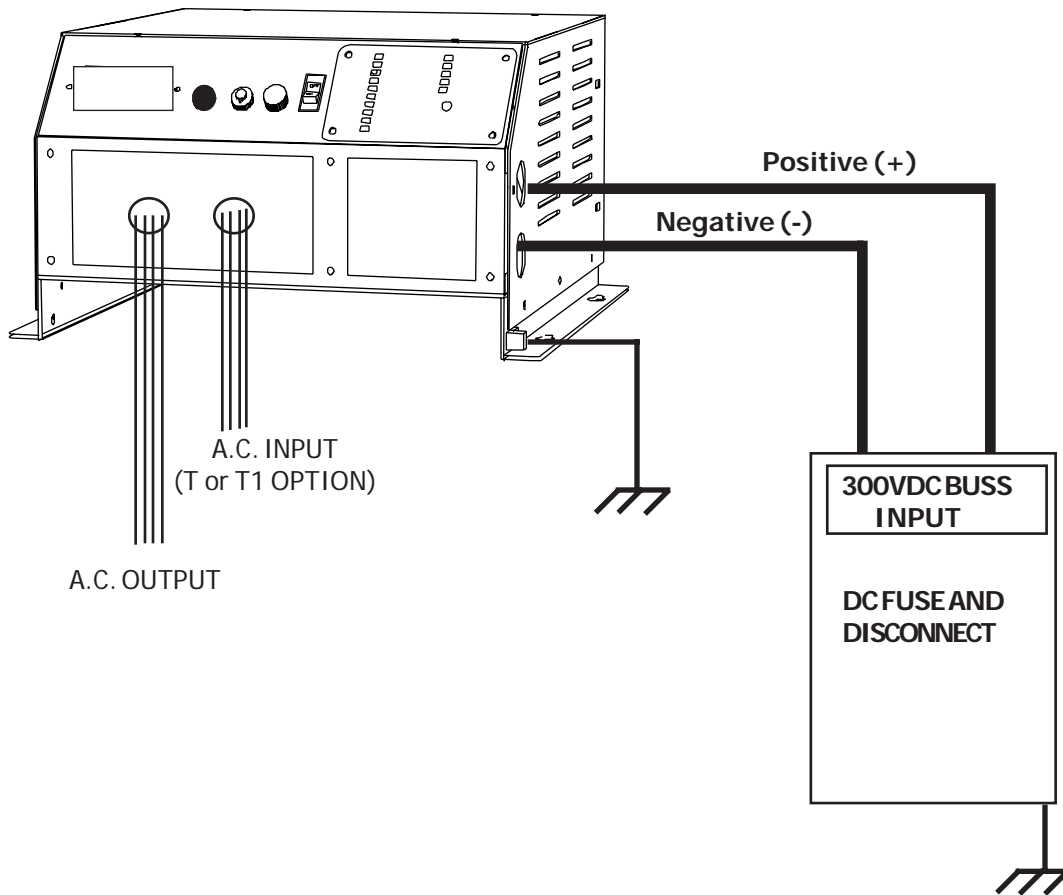
b) The Overload light indicates an output wiring short circuit or a load that is too large for the power rating of the inverter. Switch the inverter "Off", remove the short circuit or excessive load from the output, then switch the inverter back "On".

c) The High temperature light indicates the inverter has overheated. The unit will automatically turn back on when it has cooled

to 40 degrees C. Verify that the inverter is not in a closed air tight compartment.

**5.03** Call Sensata for technical assistance and/or a return authorization number if the above steps are completed and the inverter still will not operate satisfactory.

# FIGURE 1 INSTALLATION WIRING



**WARNING:** Connecting the power supply with the wrong polarity to the inverter will cause damage that is not covered under the warranty.

# Limited Warranty Terms & Conditions

**SHIPPING TERMS:** F.O.B. St. Paul Minnesota. Freight prepaid and billed, subject to prior credit approval.

**MINIMUM ORDER:** \$50.00 Net Price

**LOSS OR DAMAGE:** Loss or damage in transit are the responsibility of the carrier. Any claim should be filed with the delivering transport company. Invoice, Bill of Lading and Delivery receipt with damage noted therein must accompany any claims for freight damage. Claims for shortage and lost shipments must be made in writing to Sensata Technologies, Power Controls White Bear, St. Paul, MN within 10 days of date of shipment. Claims not reported within this time frame will not be honored.

**PRICES:** Prices are subject to change without notice. All orders are subject to acceptance at the factory. We reserve the right to invoice prices in effect at time of shipment.

**TERMS:** Net 30 days with approved credit, credit card or C.O.D.

**RETURN GOODS POLICY:**

- No returned materials will be accepted without an accompanying Returned Materials Authorization Number (RMA) from the factory. The RMA number must be clearly printed outside the inverter box.
- Credit will be issued for returned goods to the original purchaser within 60 days of purchase, provided the inverter is returned to Sensata unused and not mounted. The amount of credit will be issued at Sensata's discretion based on the condition of the product.
- Customer must be in good standing with Sensata Technologies.
- Inverters that are discontinued, high-voltage (over 24vdc), special-order or used are excluded and will not be eligible for credit. Non-inverter items such as cable assemblies, fuses and fuse holders, will not be eligible for credit.
- Support components supplied by Sensata vendors will be covered under that manufacturer's credit return policy.
- Customer pays return freight.

**PLEASE SHIP AUTHORIZED RETURNS TO:**

Sensata Technologies / Power Controls White Bear / 4467 White Bear Parkway / St. Paul, MN 55110  
Return Freight Prepaid

**LIMITED WARRANTY:**

Sensata Technologies extends the following warranty to the original purchaser of those goods subject to the qualifications indicated. Sensata warrants to the original purchaser for use that the goods or any component thereof manufactured by Sensata will be free from defects in workmanship from the date of purchase for the period listed on the product label, provided such goods are installed, maintained and used in accordance with Sensata and the original manufacturer's written instructions. Damages caused by the misuse, undue care or obvious wear through use will not be covered by this warranty.

Components not manufactured by Sensata, but used within the assembly provided by Sensata, are subject to the warranty period as specified by the individual manufacturer of said component, provided such goods are installed, maintained and used in accordance with Sensata and the manufacturer's written instructions.

Sensata's sole liability and the Purchaser's sole remedy for a failure of goods under this limited warranty and for any and all claims arising out of the purchase and use of the goods, shall be limited to the repair or replacement of the goods that do not conform to this warranty.

To obtain repair or replacement service under the limited warranty, the purchaser must contact the factory for a Return Material Authorization (RMA). Once obtained, send the Return Material Authorization Number along with the defective part or goods to: Sensata Technologies, Power Controls White Bear, 4467 White Bear Parkway, St. Paul, MN 55110, Return Freight Prepaid.

THERE ARE NO EXPRESS WARRANTIES COVERING THESE GOODS OTHER THAN AS SET FORTH ABOVE. THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN DURATION TO ONE YEAR FROM DATE OF PURCHASE.

SENSATA TECHNOLOGIES ASSUMES NO LIABILITY IN CONNECTION WITH THE INSTALLATION OR USE OF THE PRODUCT, EXCEPT AS STATED IN THIS LIMITED WARRANTY. SENSATA TECHNOLOGIES WILL IN NO EVENT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

**WARNING: LIMITATIONS ON USE:** DIMENSIONS<sup>®</sup> brand products are not intended for use in connection with Life Support Systems and for Avionic use. Sensata Technologies makes no warranty or representation in connection with their products for such uses.