

**Sensata**  
Technologies

**121094B**

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**OWNERS MANUAL**

**JANUARY 2007**

ISO 9001:2008 Certified Company

# **DIMENSIONS™**

## **DC to AC Power Inverters**

OWNERS MANUAL for Model:

**ADI-125/750**

**ADI-125/1500**

**ADI-125/2500**

**Including Options F, T, Y**

Form 121094

**OWNERS MANUAL  
FOR SENSATA TECHNOLOGIES  
DIMENSIONS INVERTERS**

Model ADI-125/750  
Model ADI-125/1500  
Model ADI-125/2500

Including Options F, T, Y

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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 mounted in a location that may be exposed to rain or spray.

*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 its hardwire output.

*CAUTION:* The inverter contains a circuit breaker and capacitor that may produce a spark. Do not mount in a confined battery or gas compartment.

*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 125 VDC to 120 VAC, 60 Hz output with a quasi-sine wave form. Units with the "F" option have 220VAC, 50 Hz output. Units with the "Y" option have 120 VAC, 50 Hz output.

**2.02** The inverter has internal protection against output short circuit, output overload, and high temperature conditions. Also, there is a thermally controlled cooling fan.

**2.03** The inverter is designed to operate any 120VAC, 60 HZ, single phase equipment within its power ratings, unless specifically designed for 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 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.

### 3.03 Mounting

**3.03.1** Locate a suitable, secure vertical or horizontal mounting surface as close to the battery as possible without being in the same air tight compartment. The maximum recommended distance between the mounting location and the battery or power source is 40 feet.

**3.03.2** The location should provide adequate ventilation and clearance to maintain room temperature 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 Battery Wiring - FIG. 1

**3.05.1 CAUTION:** Assure that hydrogen gas does not accumulate near the battery by keeping the area well ventilated. A spark may result when connecting the final battery wiring due to an initial charging of the internal input capacitor.

**3.05.2** Use stranded copper wire between the battery and inverter as indicated. A line fuse must be installed between the battery or power supply and the inverter, within 18 inches of the power source.

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

Model	Distance (feet)		Line Fuse
	1-19	20-40	
125/750	12 ga	10 ga	15
125/1500	10 ga	8 ga	25
125/2500	8 ga	6 ga	40

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

**3.05.4** 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 could result in exploding batteries and fire.

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

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

### 3.06 120 VAC Output

**3.06.1 CAUTION:** Do not connect another 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!

**3.06.2** 120 VAC output of the inverter is provided at the receptacle outlets on the inverter. Units with option "F" or "Y" will not have receptacle outlets.

**3.06.3** The AC output is also presented behind the wiring compartment panel for direct hardwire connection. The black wire is hot, the white wire is neutral and the green wire is ground. With option "F", the two black wires are hot and the green wire is ground. The cable

clamp strain relief should be used to secure the field wires.

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

### **3.07 120 VAC Input (T option)**

**3.07.1** 120 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 wire is 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.

**3.07.2** The input circuit should have 30 Amp circuit protection from the distribution

**3.07.3** When external 120 VAC is supplied to units with the "T" option, 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 switch to "ON". Assure that the breakers are reset.

## **5. TROUBLESHOOTING**

**5.01** Sensata offers free phone consultation concerning installation or troubleshooting. Call the Customer Service Department at:

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

Fax: 1-651-653-7600

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.

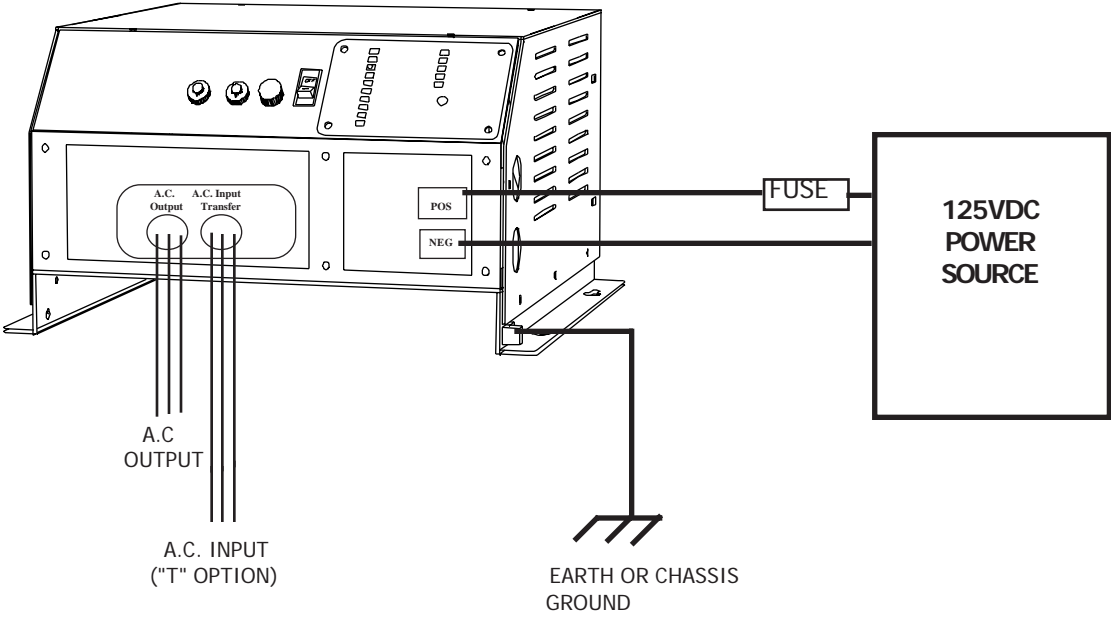
a) The Low input voltage light indicates a low D.C. condition. Switch the inverter "Off" for 5 seconds, then "On" again. The light coming on again indicates a fault in the D.C. wiring, power source capacity and voltage, or the line fuse.

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 compartment and that the fan is not blocked.

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

**WARNING: CONNECTING THE BATTERY WITH THE WRONG POLARITY TO THE INVERTER WILL CAUSE DAMAGE THAT IS NOT COVERED UNDER THE WARRANTY.**



**FIG. 1 INSTALLATION WIRING**

# 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.