

# **AIRPAX**

## **DIMENSIONS**

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**122080C**

***OWNERS MANUAL***

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# Airpax Dimensions, Inc.

## **S.P.S.**

### (Standby Power Supply)

OWNERS MANUAL for Models:

# **ADI-24/6000B1DTXP**

# **ADI-48/8000B1DTXP**

**OWNERS MANUAL  
FOR AIRPAX DIMENSIONS  
S.P.S.**

Model ADI-24/6000B1DTXP  
Model ADI-48/8000B1DTXP

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**1. GENERAL**

**1.01** Dimensions Standby Power Supplies (S.P.S.) 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:** S.P.S. units produce hazardous voltage. 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 S.P.S. should not be mounted in a location that may be exposed to rain or spray.

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

*CAUTION:* Damage to the S.P.S. will occur if correct polarity is not observed when

installing the DC input cables.

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

*CAUTION:* The S.P.S. 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 S.P.S. and the external AC input circuit breaker or fuse are turned off during installation.

**2. DESCRIPTION**

**2.01** The S.P.S. consists of a DC to AC inverter, a voltage controlled transfer switch and a regulated battery charger.

**2.02** The inverter converts 24 or 48VDC to 120/240 VAC, 60 HZ, having a quasi-sine wave form. The battery charger converts 240 VAC, 60 HZ, to 24 or 48VDC for recharging the batteries.

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

**2.04** The S.P.S. is designed to operate almost any 120/240 VAC, 60 HZ, single phase appliance, equipment or tool within its power ratings, unless the equipment is specifically designed for a pure sine wave-

form.

**2.05** The battery charger has sophisticated, patented recharge detection circuitry to ensure complete battery charging. It is fully automatic and regulated, and will charge at the rate listed:

<b>BATTERY CHARGER RATE</b>	
<u>MODEL</u>	<u>MAX. AMPS</u>
24/6000B1DTXP	160
48/8000B1DTXP	80

### 3. INSTALLATION

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

**3.02 CAUTION:** S.P.S. units produce hazardous voltages. To avoid risk of harm or fire the unit must be properly installed.

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

**CAUTION:** Damage to the S.P.S. 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 S.P.S. and the external AC input circuit breaker or fuse are turned "Off" during installation.

**NOTE:** All wiring must follow the 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 flat 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 is 20 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 and the inverter. Codes require that the fuse be within 18 inches of the battery. A DC wire length and fusing guide follows.

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

Model	Distance(feet)			Line
	1-10	11-15	16-20	Fuse
24/6000	3/0 ga	3/0 ga	4/0 ga	600A
48/8000	2/0 ga	2/0 ga	3/0 ga	500A

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

**3.05.4** Install the wires at the battery, S.P.S. and then fuse holder. Make sure that clean, tight 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 S.P.S. to the battery with reverse polarity will cause damage that is not covered under warranty!

**3.05.6** The battery 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 Remote Temperature Sense for the Battery Charger**

**3.06.1** A 10 foot long cable with temperature sense probe is provided with the unit. This allows the unit to know the exact battery temperature for correct operation of the temperature-compensated circuitry. This changes the output voltage as required by the battery at a given temperature.

**3.06.2** Install the probe end on a NEGATIVE battery terminal post.

**3.06.3 CAUTION:** Failure to connect the remote temperature sense probe correctly will result in improper battery charging.

**3.07 120/240 VAC Output**

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

**3.07.2** 120 VAC output of the S.P.S. is provided at the receptacle outlet on the inverter.

**3.07.3** 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.

**3.08 120/240 VAC Inputs**

**3.08.1** 120/240 VAC, 60HZ power with 30 amp capacity from the electric utility or generator can be connected to the S.P.S. with hardwire connections at the AC Input transfer 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** 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.

**3.08.3** A separate battery charger 240 VAC, 30 amp input circuit is also required.

This circuit activates the battery charger and also turns "Off" the inverter.

**3.08.4 NOTE:** This circuit must be the same phase and fed from the same source as the transfer input circuit.

**3.08.5 NOTE:** Both the battery charger input circuit and the transfer circuit must be powered for the battery charger to operate.

#### 4. START UP/OPERATION

**4.01** The battery charger will operate any time that there is external power applied to the Battery Charger AC input and the battery is not 100% charged. The status lights will indicate that there is external power and the battery's condition.

**4.02** The switch on the right side of the unit must be set for the correct type of battery attached to the unit as labelled on the unit or as shown in the Battery Type Selection Table following.

BATTERY TYPE SELECTION	
SETTING	BATTERY TYPE
A	Vented Nickel-Cadium 10 cells
B	Vented Lead-Acid (Antimony) Flooded Electrolyte
C	Sealed Lead-Acid Absorbed or Vented Nickel-Cadium 9 cell
D	Sealed Lead-Acid Gelled

**4.02.1 Note:** Used batteries should be operated one setting below the setting determined from the Battery Type Selection Table. Example: Operate a used Vented Nickel-Cadium 10 cell on setting B instead of A.

**4.03** The switch labeled "Battery Size"

should be set to the correct setting based on the total amp hour capacity of the batteries attached to the inverter. Use the following table to determine the correct setting.

BATTERY CAPACITY SELECTION	
SETTING	AMP HOUR CAPACITY
A	Over 600
B	600 - 400
C	400 - 200
D	Less than 200

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

#### 5. TROUBLESHOOTING

**5.01** Dimensions offers free phone consultation (no collect calls) concerning installation or troubleshooting. Call the Customer Service Department at (651) 653-7000.

**NOTE:** Since the S.P.S. 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 S.P.S. fails to operate, use the following troubleshooting procedure.

**5.02.1** Connect a 100 watt light bulb to the S.P.S. 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 battery condition. Switch the inverter "Off" for 5 seconds, then "On" again. 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°C. Verify that the S.P.S. is not in a closed compartment and that the fan is not blocked.

**5.03** When the battery charger fails to operate correctly: check the inverter troubleshooting procedure in 5.02, assure that the remote temperature probe is installed correctly, then observe the front panel lights:

a) The external power light should be lit, if not, verify that the external power circuit is providing 240 VAC, 60HZ power to the unit. Check all external power wiring and external circuit breakers or fuses.

b) The green "Timer Complete" light indicates the unit's battery charger was unable to completely charge the batteries during the 12 hour charge cycle. One or more of the following conditions can cause a "Timer Complete" condition.

1) The charger was unable to detect the 80% charge level point during the 12 hour cycle due to a defective battery.

2) The battery's voltage dropped below 25.2 volts while the charger was attempting to detect the 80% charge level. A battery with a shorted cell or incorrect acid density can cause this condition.

3) The battery(ies) have more Ampere Hours of capacity than the charger can

recharge in one 12 hour cycle.

**BATTERY CHARGER CAPACITIES**

<u>MODELS</u>	<u>AMP.-HOURS</u>
24/6000	800
48/8000	800

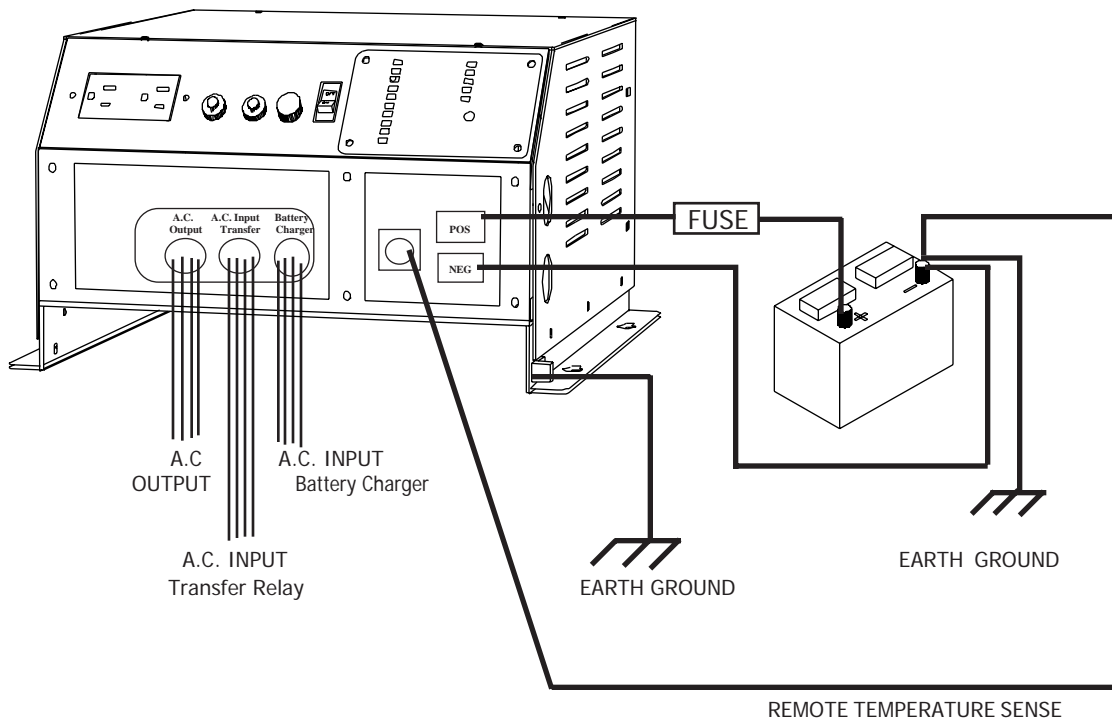
4) More than 20 Amps of DC load current was drawn directly from the batteries during the charge cycle.

5) AC power loss (brown out) in the external AC input that limited the amount of AC power available to the battery charger.

**5.04** A new charge cycle may correct the "Timer Complete" condition if the cause seems to be conditions 3, 4 or 5. The new charge cycle can be started by disconnecting the battery charger's external AC input for 5 seconds then reconnecting it.

**5.05** Call Airpax Dimensions, Inc. for technical assistance and/or a return authorization number if the above steps are completed and the inverter or battery charger 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 Airpax Dimensions, 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

o No returned materials will be accepted without an accompanying Returned Materials Authorization Number (RMA) from the factory.

o Credit will be issued for returned goods to the original purchaser within 60 days of purchase, provided the inverter is returned to Dimensions unused and not mounted. The amount of credit will be issued at Dimensions discretion based on the condition of the product.

o Customer must be in good standing with Dimensions.

o 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

o Support components supplied by Dimensions vendors will be covered under that manufacturer's credit return policy.

o Customer pays return freight.

**PLEASE SHIP AUTHORIZED RETURNS TO:** Airpax Dimensions, Inc. / 4467 White Bear Parkway / St. Paul, MN 55110  
**Return Freight Prepaid**

### LIMITED WARRANTY

Airpax Dimensions, Inc. extends the following warranty to the original purchaser of those goods subject to the qualifications indicated.

Dimensions warrants to the original purchaser for use that the goods or any component thereof manufactured by Dimensions will be free from defects in workmanship for a period of 1 year from the date of purchase, provided such goods are installed, maintained and used in accordance with Dimensions and the original manufacturer's written instructions.

Components not manufactured by Dimensions, but used within the assembly provided by Dimensions, 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 Dimensions and the manufacturer's written instructions.

Dimensions 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: Airpax Dimensions, Inc., 4467 White Bear Parkway, St. Paul, MN 55110, 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.

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

### WARNING: LIMITATIONS ON USE

Dimensions products are not intended for use in connection with Life Support Systems and for Avionic use. Dimensions makes no warranty or representation in connection with their products for such uses.