

# **AIRPAX**

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***OWNERS MANUAL***

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# Airpax Dimensions, Inc.

## **Uninterruptible Power System**

OWNERS MANUAL for Model:

# **ADI-250/1800UPS**

# UNINTERRUPTIBLE POWER SYSTEM MODEL ADI-250/900UPS

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## **SAFETY NOTES**

**PLEASE READ THIS AS WELL AS THE REST OF THIS MANUAL FOR YOUR SAFETY.**

There are dangerous voltages present in a UPS system. The internal battery allows AC output with no external power connected.

During installation and maintenance, the battery fuse should be removed, and the 250VDC buss should be disengaged at the external disconnect switch.

After installation and proper operation, keep the internal status door closed to protect personnel from dangerous internal voltages.

Although this unit uses a sealed battery, explosive hydrogen gas and/or corrosive acid may be generated if a system fault takes place. *Keep sparks and flames well away from the UPS system.*

Use care when replacing the batteries. Rough handling may break the seal and cause an acid leak.

Eye protection is always recommended when working in an industrial environment.

## **I. GENERAL INFORMATION**

### **INTRODUCTION:**

The primary application of the ADI UPS system is to power PLC's (Programmable Logic Controllers), weighing systems, strobe lighting and other electronic equipment/controls for steel manufacturing plants. The UPS changes the available 250 volt DC buss to 60 cycle AC power and is a no-break or uninterruptible system. As the DC input to the UPS has brief outages, the AC output will remain on uninterrupted. This is accomplished by means of an internal battery which backs-up the input buss. Steel mills and smelters present an especially hostile environment to electronic equipment, with high levels of airborne particulates, temperature extremes, vibration/mechanical shock, and high voltage spikes on the 250 volt buss.

The ADI system utilizes patented construction methods, high energy transient voltage input protection, and an aluminum NEMA 4X enclosure.

### **SPECIFICATIONS: ADI-250/1800UPS**

Output Power- 1800 Watts continuous.

DC Input- 190 to 300V, 250 nominal at up to 5 Amperes.

AC Output- 120V, 60Hz  $\pm 0.05\%$  quasi sine-wave at up to 15 Amps.

Efficiency of Conversion- up to 80%.

Operating Temperature- 0° to 40° C (32° to 104° F).

Transient Surge Protection- will hold a high input voltage pulse to less than 600V with 200 Amperes flowing for 100 u seconds-370 watt-seconds peak.

Battery hold-up time- 5 minutes at full load.

Battery recharge time- 5 hours.

Battery float voltage- 27.6VDC @ 20° C.

Enclosure- 24"W x 24"H x 8"D continuous hinge aluminum NEMA type 4X with swing-out internal control panel.

Weight- 165 LBS. excluding batteries.

### **FEATURES:**

#### **PROTECTION:**

Converter Low Input Voltage- 5 second surge delay and shutdown at 190VDC with audio alert; auto reset at 205VDC; AC output continues until Inverter Low Input Voltage shutdown (low battery).

Overload- 5 second surge delay and shutdown; manual reset by toggle of on/off switch.

High Temperature- Automatic shutdown protects semiconductors and transformers; auto reset.

24V Battery- internal 125A fuse.

AC Output- control panel mounted 20A breaker.

#### CONTROLS:

On/Off Switch- Activates both DC to DC converter and DC to AC inverter.

Alarm On/Off Switch- for low input voltage audio alert silence.

Battery Voltage Test Switch- Push to read battery float voltage.

#### INDICATORS:

Converter Status.

Inverter Status.

Battery Status- Expanded scale voltmeter- 27.0 to 28.0 volts.

## II. INSTALLATION:

### IMPORTANT:

The battery used in the Dimensions UPS system is a Sealed, Valve-Regulated, Gelled Electrolyte, Lead Acid type. The manufacturer is East Penn Manufacturing Co., Inc., Lyon Station, PA. East Penn manufactures this battery under license of Sonnenschein Batteries, Budingen, Germany. The specific battery is the DEKA Dominator Type 8GU1, 12V/31Ahr. This battery was chosen primarily because it is a proven, sealed unit with the ability to withstand abuse including vibration.

The application of the battery is one of No-Break Standby Float Service. The only time the battery is called on to deliver energy is when main power fails. The primary concern for this duty is float voltage verses temperature and maximum temperature. The published optimum float voltage at 20° C(68° F) is 2.3V/cell. When temperature changes, the float voltage must change. This relationship is specified as -3.3mV/degree C. An example would be 2.2V/cell at 50° C(122° F). This is also the maximum steady-state temperature the battery should experience.

Because the Dimensions UPS enclosure is sealed to prevent particulate infiltration, there will be a significant, (20° to 25° C), internal temperature rise over ambient at full load with little external air passing over the cabinet. This heat load is dissipated primarily by conduction through the aluminum housing and enhanced by an internal circulating fan. *It is important that external air flow around the enclosure not be restricted. We are close to maximum with ideal temperatures.* **Dimensions UPS systems should be installed so that surface temperatures do not exceed 70° C (158° F).**

### MOUNTING:

Bolt securely to a rigid system, keeping in mind the opening of both external and internal doors for wiring and maintenance.

### WIRING:

Use normal electrical wiring practice.

**Provide an external switch/fuse box for the 250VDC input-disconnect in a convenient location. Insure this switch is kept OFF during installation.**

Wire to internal in/out terminal block.  
Be certain UPS ON/OFF switch is OFF.  
Install the supplied battery fuse.

### III. OPERATING INSTRUCTIONS:

#### NORMAL:

Open external door only.

Engage 250VDC buss at external switch/fuse box.

Verify that "250VDC BUSS" lamp is lit.

Engage on/off switch to ON.

Verify that "CONVERTER POWER" and "INVERTER POWER" lamps are lit.

Engage alert switch to ON.

Verify battery float voltage to spec.

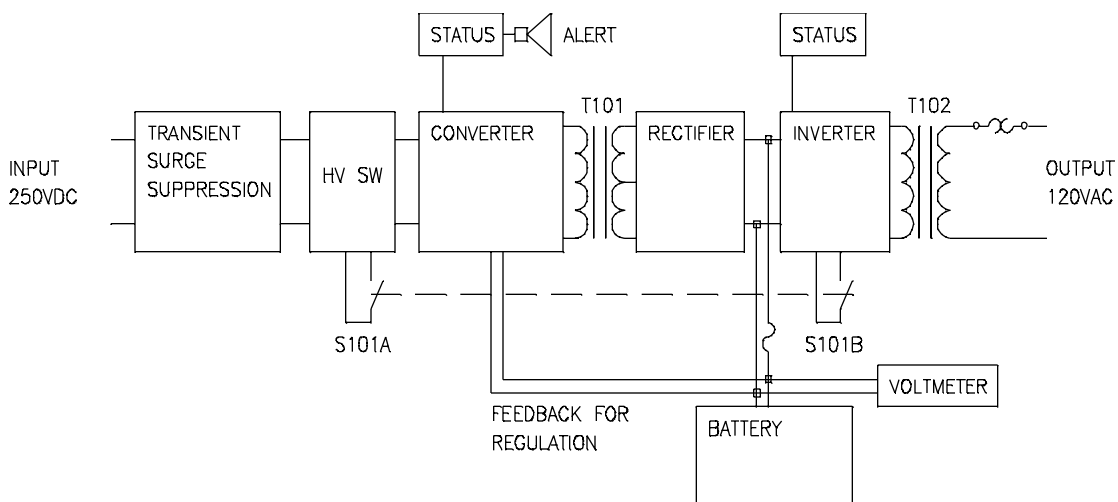
Close door using all door clamps.

#### 250VDC BUSS FAILURE:

If this condition continues beyond a need for UPS power, disengage the internal switch until such time when the buss is stable. This will conserve the battery for a more rapid recharge and readiness for the next outage. If this is not done the UPS will automatically shut down when the battery is depleted.

In this state, either the external switch or the internal one must be toggled OFF and then ON to reset the UPS.

After an outage, it is a good practice to view the status indicators as above under "NORMAL" operation.



## **IV. PRINCIPLES OF OPERATION:**

The ADI UPS has several functional blocks. See block diagram.

### **TRANSIENT VOLTAGE PROTECTION:**

This network removes high voltage noise from the 250VDC buss before conversion.

### **HIGH VOLTAGE SWITCH:**

Provides a buffer for DC input to converter logic power.

### **CONVERTER:**

Changes the 250VDC buss to a lower DC voltage to float charge a battery and provide power to the DC to AC power inverter.

### **BATTERY:**

Backs-up the converter to provide power to the inverter for no-break short term power.

### **INVERTER:**

Changes the low DC voltage to AC voltage at 60 cycle for output.

## **V. MAINTENANCE**

### **BATTERY:**

The battery is a sealed, gelled electrolyte type that is rugged and completely maintenance free.

For this application, the battery should be replaced each two years.

Replacement batteries are available from:

East Penn Manufacturing Co., Inc.

215-682-4231

Type 8GU1

Secure the batteries using 1/2"W x 29"L heavy duty lashing-type cable ties.

## 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.