



***LaMARCHE***®

**MODEL A61D**

DC/DC  
CONVERTER

**INSTRUCTION MANUAL**

ECN/DATE

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**106 BRADROCK DRIVE  
DES PLAINES, IL. 60018-1967  
(847) 299-1188  
FAX: (847)299-3061**

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**IMPORTANT SAFETY INSTRUCTIONS**  
**FOR THE**  
**LA MARCHE POWER CONVERSION EQUIPMENT**  
**SAVE THESE INSTRUCTIONS**

This manual contains important safety and operating instructions for the La Marche Power Conversion Equipment.

Before using this equipment, read all instructions and cautionary markings on (1) unit, (2) battery, and (3) product using the battery.

**CAUTION: To reduce risk of injury, use only the type of batteries specified on nameplate. Other types of batteries may burst causing personal injury and damage.**

*Do not* expose equipment to rain or snow.

*Do not* operate equipment if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified serviceman.

*Do not* disassemble this unit; take it to a qualified serviceman when service or repair is required. Incorrect re-assembly may result in a risk of electric shock or fire.

To reduce risk of electric shock, disconnect this unit from the a.c. supply, or batteries and loads before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.

**WARNING - RISK OF EXPLOSIVE GASSES WORKING IN VICINITY OF A BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASSES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT EACH TIME BEFORE USING THIS UNIT, YOU READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY.**

To reduce risk of battery explosion, follow these instructions and those published by the battery manufacturer and manufacturer of any equipment you intend to use in the vicinity of the battery.

Review cautionary marking on all products .

**PERSONAL PRECAUTIONS:**

1. Someone should be within range of your voice or close enough to come to your aid when you work near a battery.
2. Have plenty of fresh water and soap nearby in case the battery electrolyte contacts skin, clothing, or eyes.
3. Wear complete eye protection and clothing protection. Avoid touching eyes while working near a battery.
4. If the battery electrolyte contacts skin or clothing, wash immediately with soap and water. If the electrolyte enters the eye, immediately flood the eye with running cold water for at least ten (10) minutes and get medical attention immediately.
5. Never smoke or allow a spark or flame in vicinity of a battery.
6. Be extra cautious to reduce risk of dropping a metal tool onto a battery. It might spark or short-circuit the battery or other electric part that may cause an explosion.
7. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a battery. A battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.
8. NEVER charge a frozen battery.

**PREPARING TO CHARGE**

1. If necessary to remove the battery connections, always remove grounded terminal from the battery first. Make sure all loads are disconnected and unit is off, so as not to cause an arc.
2. Be sure the area around the battery is well ventilated while the battery is being charged.
3. When cleaning battery terminals, be careful to keep corrosion from coming in contact with eyes.
4. Study all the battery manufacturer's specific precautions such as removing or not removing cell caps while charging, recommended rates of charge, and maintenance procedures.

**UNIT LOCATION**

- Never place this unit directly above the battery. Gases from the battery will corrode and damage equipment.
- Never allow the battery electrolyte to drip on this unit when reading the specific gravity or filling the battery.
- Do not operate this unit in a closed-in area or restrict ventilation in any way.
- Do not set a battery on top of this unit.

**D.C. CONNECTION PRECAUTIONS**

Connect and disconnect d.c. output cables only after setting all of this unit's switches to off position and removing a.c. input supply.

**GROUNDING INSTRUCTIONS**

This battery charger should be connected to a grounded, metal, permanent wiring system; or an equipment grounding conductor should be run with circuit conductors and connected to equipment-grounding terminal or lead on battery charger. Connections to battery should comply with all local codes and ordinances.

## RECEIVING INSTRUCTIONS AND GENERAL EQUIPMENT INFORMATION

**CAUTION: To ensure safe installation and operation, the information given in the instruction manual should be read and understood before installing or using the equipment.**

### RECEIVING INSTRUCTIONS

Unpacking and Inspection: Examine the shipping crate upon arrival. If there is obvious damage, describe on the receiving documents. Within a few days after delivery, the equipment should be uncrated and carefully inspected for hidden damages. When removing packaging material, be careful not to discard any equipment, parts, or manuals. If any damage is detected you should:

1. File a claim with the carrier within five (5) days.
2. Send a copy of the claim to La Marche Mfg. Co.
3. Call La Marche Mfg. For a RETURN MATERIAL AUTHORIZATION NUMBER.

***Failure to properly file a claim for shipping damages, or provide a copy of the claim to La Marche Mfg., may void warranty service for any physical damages reported for repair.***

### HANDLING

***WARNING: Equipment can be very heavy, and top-heavy. Use adequate manpower or equipment for handling. Until the equipment is securely mounted, care must be used to prevent the equipment from being accidentally tipped over.***

### NOMENCLATURE PLATES

Each piece of La Marche Mfg. Equipment shipped is identified by part number on the nomenclature plate.

### ADJUSTMENTS

All equipment is shipped from the factory fully checked and adjusted. Do not make any adjustments unless the equipment has been powered-up and the settings have been determined to be incorrect.

### SPARE PARTS

To minimize downtime during installation or normal service, it is advisable to purchase spare fuses, circuit boards and other recommended components. Please refer to the list of recommended spare parts and their La Marche Mfg. Part numbers included with the instruction manual. It is recommended that spare fuses be ordered for all systems.

To order spare parts, please contact La Marche Mfg. (847)-299-1188 during business hours and ask for the Parts Department.

# INSTALLATION & OPERATING INSTRUCTIONS

## MODEL A61D DC/DC CONVERTER

### **INSTALLATION**

The La Marche Model A61D Converter is designed to supply a regulated d.c. output from a d.c. battery system. Since this unit is convection cooled, it is necessary to mount the converter in a vertical position so that the expanded metal case openings are at the top and bottom with the nameplate right side up. A minimum of two (2) inches should be clear above and below the case. The unit should not be mounted in any space less than ten (10) times the volume of the case.

The converter can be damaged by high temperatures and should be mounted in an area that does not exceed an ambient temperature of 122 degrees F. Check the nameplate of the converter to make sure the correct type and number of battery cells are provided for the d.c. input to the converter. Connecting wires from the converter to the battery must be as short as possible and permanently fastened. When connecting the input cables to the battery, make certain the positive lead to the converter is connected to the positive terminal of the battery and negative lead of the converter to the negative terminal of the battery. The output terminals should then be connected to the d.c. load observing polarity.

Check nameplate and follow electrical code to determine input and output wire size.

### **OPERATING**

The converter is equipped with an on/off switch on the front of the case. Turning this switch on puts the converter into operation. A potentiometer on the front of the unit is provided to adjust the d.c. output voltage.

### **PRELIMINARY TESTS**

Check the d.c. terminals of the converter with a d.c. voltmeter. If the polarity is reversed, the converter will not operate. The converter d.c. terminal voltage reading should be the same as the battery voltage and should agree with the nominal nameplate voltage. The converter is designed to operate on a battery within a voltage range of 1.75 to 2.45 volts per cell (lead acid battery) or 1 to 1.6 volts per cell (nickel cadmium battery).

To check the converter, disconnect the d.c. loads. Turn the converter on and measure the d.c. output voltage. Set d.c. voltage with (P-1). With the converter off, re-connect the load wires or turn on the d.c. loads. Turn on the converter to power the load. The voltage drop should be checked between the converter and the load when the converter is operating. A very slight voltage drop will indicate a good installation.

### **SAFETY PROTECTION**

This unit is equipped with a d.c. input and d.c. output fuse.

(Optional circuit breakers can be provided)

## **CHARGING EQUIPMENT**

A generator or charger should be used to maintain the converter batteries. The charging equipment should be sized so that it will keep the battery charged and carry the average d.c. load to the converter.

The maximum "on charge" voltage of the charging equipment should be adjusted so that voltage does not exceed 2.45 volts per cell on lead acid batteries or 1.6 volts per cell on nickel cadmium batteries.

After the charging equipment has been properly adjusted, the converter will automatically turn on after a short time delay.

## **BATTERY SIZE**

The battery size is an important consideration in successful converter operation. The amp hour capacity of the battery must be large enough so that the voltage will not drop below 1.75 volts per cell when the converter is operating. If the converter is to operate on the battery continuously without charging equipment, the battery size must be large enough to carry the converter load for the length of time required. Other d.c. loads on the battery must also be considered in sizing the battery. The number of battery cells must agree with the nameplate rating of the converter, otherwise the converter may be damaged.

## **TROUBLESHOOTING**

### **GENERAL INFORMATION**

This troubleshooting guide is intended for use only by trained service personnel or experienced electricians.

***CAUTION: HAZARDOUS A.C. AND D.C. VOLTAGES ARE PRESENT IN THE UNIT.***

### **PRELIMINARY CHECKS**

Before proceeding with any testing or troubleshooting, give the unit a general inspection.

Check for the following:

1. Check for shipping damage, loose connections, broken wires, etc.
2. Check the d.c. input cables to make sure they are proper and secure. The d.c. voltage must be above 2.14V per cell (L.A.) across terminals 1 & 4 on TS1. Terminal 1 positive and Terminal 4 negative.
3. Check d.c. load connections across the positive and negative d.c. output.

### **QUICK CHECK TROUBLE ANALYSIS**

#### **Symptoms and possible causes:**

#### ***1. Input fuse F1 blow***

- A. Shorted C2 capacitor.
- B. Defective Control Switching Assembly. S2A-103
- C. Shorted wiring.

#### ***2. Blown F2 Fuse***

- A. Overload condition.
- B. Defective regulator.

#### ***3. Lockout (no output)***

- A. Defective fuse.
- B. No or low d.c. voltage input
- C. Broken wire.
- D. Shorted C1 capacitor.
- E. Defective regulator.

## **MANUFACTURER'S WARRANTY**

All La Marche Manufacturing Co. equipment has been thoroughly tested and found to be in proper operating condition upon shipment from the factory and is warranted to be free from any defect in workmanship and material that may develop within one year from date of purchase.

Any part or parts of the equipment that prove defective within a one year period shall be replaced without charge after examination at our factory, providing such defect in our opinion, is due to faulty material or workmanship and not caused by tampering, abuse or misapplication. All such adjustments are made F.O.B. Des Plaines, Illinois.

Contact your local sales representative for minor parts replacement or equipment adjustments.

Should a piece of equipment require major component replacement or repair, these can be handled in one of two ways:

1. The equipment can be returned to the La Marche factory to have the inspections, parts, replacements and testing performed by factory personnel. Should it be necessary to return a piece of equipment or parts to the factory, the dealer from whom the equipment was purchased will obtain authorization from the factory. If upon inspection at the factory, the defect was due to faulty material or workmanship, all repairs will be made at no cost to the customer.
2. If the purchaser elects not to return the equipment to the factory and wishes a factory service representative to make adjustments and repairs at the equipment location, La Marche's field service labor rates will apply. A purchase order to cover the labor and transportation cost is required prior to the deployment of the service representative.

In accepting delivery of the equipment, the purchaser assumes full responsibility for proper installation, installation adjustments and service arrangements. Should minor adjustments be required, the local La Marche Sales Office should be contacted to provide this service.

All sales are final. Only standard La Marche units will be considered for return. A 25% restocking fee is charged when return is factory authorized. Special units are not returnable.

In no event shall La Marche Manufacturing Co. have any liability for consequential damages, or loss, damage or expense directly or indirectly arising from the use of the products, or any inability to use them either separately or in combination with other equipment or materials, or from any other cause. In addition, any alterations of equipment made by anyone other than La Marche Manufacturing Co. renders this warranty null and void.

La Marche Manufacturing Co. reserves the privilege of making revisions in current production of equipment, and assumes no obligation to incorporate these revision in earlier models.

The failure of La Marche Manufacturing Co. to object to provisions contained in customers' purchase orders or other communications shall not be deemed a waiver of the terms or conditions hereof, no acceptance of such provisions.

The above warranty supersedes and is in lieu of all other warranties, expressed or implied, and no person, agent or dealer is authorized to give any warranties on behalf of the Manufacturer, nor to assume for the Manufacturer any other liability in connection with any of its products unless made in writing and signed by an official of the manufacturer.