



***LaMARCHE***®

MODEL

**A97**

SERIES

130Vdc Switchmode Utility  
Rectifier/Battery Charger

ECN/DATE

**CPN108172**


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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 and/or damage to the batteries, use only the type of batteries specified on the charger.**

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 – THERE IS A RISK OF EXPLOSIVE GASSES AND WORKING IN THE VICINITY OF A BATTERY IS DANGEROUS. SOME BATTERIES GENERATE EXPLOSIVE GASES 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, DO NOT drop metal onto a battery. It might spark or short-circuit the battery or 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 these items causing severe burns.
8. NEVER charge a frozen battery.

**PREPARING TO CHARGE**

1. If it is necessary to remove the battery connections, always remove grounded the 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 standard flooded battery. Gases from the battery will corrode and damage equipment. A sealed maintenance free or valve regulated lead acid (VRLA) may be placed below this 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 any 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.

**CAUTION: DO NOT PULL ON OUTPUT CABLES WHEN DISCONNECTING CHARGER FROM BATTERY.**

## 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.

**GENERAL**

The A97 Series is available in two mounting types. A97W (Wall/Shelf Mount) and A97R (Rack Mount). See data sheet for details.

This rectifier is designed to operate on a specific number of cells. The nameplate on the rectifier indicates the type and number of cells required.

The float and equalize voltage is factory set, but can be re-adjusted by using the float and equalize potentiometers located on the front of the unit. The float/equalize switch must be in the proper position when setting these voltages. The float voltage is set at 2.17Vpc Lead, 1.4Vpc NiCad. The equalize voltage is set at 2.33Vpc Lead, 1.55Vpc NiCad.

**Standard Features**

✓ >85% efficiency including series output diode	✓ DC Ammeter
✓ Single Phase AC Input	✓ AC Breaker 2 Pole
✓ Compact, Light Weight System	✓ DC Breaker 2 Pole
✓ Power Supply/Battery Eliminator	✓ AC Power Failure Alarm Contacts Form "C"
✓ Power Factor Correction Circuitry	✓ Fan Cooling
✓ High Voltage Shutdown	✓ Float/Equalize Switch
✓ Walk-in Circuit	✓ Adjustable Float Voltage
✓ DC Voltmeter	✓ Adjustable Equalize Voltage
✓ Rack Mount (19" & 23") or wall/shelf mount configuration	

**LED Status Indicators**

<b>AC Failure LED</b> – A Red LED illuminates upon loss of a.c.	
<b>Fan Failure LED</b> – A Red LED illuminates when the cooling fan is not operating	<b>Thermal Control LED</b> – A Yellow LED illuminates when the rectifier is operating at reduced output due to excessive internal temperatures
<b>Over-temperature LED</b> – A Red LED illuminates upon over temperature of the rectifier	<b>DC Amps LED</b> – A Green LED illuminates when the rectifier is operating and producing current
<b>High Voltage Shutdown LED</b> – A Red LED illuminates when the rectifier has shutdown due to the output voltage being greater than 150V	<b>DC Volts LED</b> – A Green LED illuminates when the rectifier is operating between 95Vdc and 148Vdc
<b>AC Available LED</b> – A Green LED illuminates when adequate a.c. voltage is present	<b>Equalize LED</b> – A Yellow LED illuminates when the rectifier is in the equalize mode
<b>Current Limit LED</b> – A Red LED illuminates when the rectifier is in current limit	<b>Float LED</b> – A Green LED illuminates when the rectifier is in the float mode

INSTALLATIONS INSTRUCTIONS

To operate the rectifier, connect the a.c. power to the a.c. input circuit breaker.

Connect the battery or loads to the d.c. output circuit breaker.

**\*\*\*\*\*OBSERVE PROPER POLARITY\*\*\*\*\***

Be sure that the battery type, number of cells, and the a.c. input agree with the nameplate data.

All wiring should be done following the National Electrical Code and all local codes.

FUSE SIZE	WIRE SIZE REQUIREMENT CUSTOMER CONNECTION	EQUIPMENT GROUNDING CONDUCTOR MINIMUM	FUSE SIZE	WIRE SIZE REQUIREMENT CUSTOMER CONNECTION	EQUIPMENT GROUNDING CONDUCTOR MINIMUM
1	#14	#14	150	#1	#6
3	#14	#14	175	#1/0	#6
4	#14	#14	200	#2/0	#6
5	#14	#14	225	#2/0	#4
6	#14	#14	250	#4/0	#4
10	#14	#14	300	250-MCM	#4
15	#12	#12	350	350-MCM	#2
20	#12	#12	400	400-MCM	#2
25	#10	#12	450	500-MCM	#2
30	#10	#10	500	600-MCM	#2
35	# 8	#10	600	900-MCM	#1
40	# 8	#10	700	1500-MCM	1/0
45	# 8	#10	800	2/500-MCM	1/0
50	# 8	#10	1000	2/800-MCM	4/0
60	# 6	#10	1200	2/1000-MCM	4/0
70	# 6	# 8	1600	2/2000-MCM	4/0
80	# 4	# 8	2000		250-MCM
90	# 4	# 8	2500		350-MCM
100	# 4	# 8	3000		400-MCM
110	# 2	# 6	4000		500-MCM
125	# 2	# 6	5000		700-MCM
130	# 2	# 6	6000		800-MCM

TROUBLESHOOTING

Be sure all connections are tight and correct. Check Polarities. Check to make sure the a.c. input and d.c. output agree with the units' nameplate. There are no user serviceable parts internal to the A97 unit. Should the A97 stop operating correctly, contact the La Marche Service Department for a Return Material Authorization (RMA) number.

## 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 (1) year from date of purchase under normal use.

If the equipment proves defective within a one year period, it 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, misapplication or improper installation.

Should the equipment require major replacement or repair, the equipment must 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 to the factory, the customer or Sales representative must first obtain a RMA (Return Material 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 during the warranty period.

All internal maintenance to be performed by La Marche. **Warranty is void if seal is damaged.**

La Marche reserves the right to honor the warranty with a replacement unit.

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 Representative should be contacted to provide this service.

All sales are final. Only standard LaMarche 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 right to make revisions in current production of equipment, and assumes no obligation to incorporate these revisions 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, nor acceptance of such provisions.

The above warranty is exclusive, supersedes and is in lieu of all other warranties, expressed or implied, including any implied warranty of merchantability or fitness. 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.