

MRC-37B

DUAL UNINTERRUPTIBLE POWER SUPPLY



Operation Manual

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1.1 SCOPE

This manual has been prepared by McDowell Research, an Ultralife Company for the purpose of providing operational and parts information necessary to operate the MRC-37B Dual Uninterruptible Power Supply (UPS).

1.2 GENERAL DESCRIPTION

The MRC-37B Dual Uninterruptible Power Supply provides a nominal 28 VDC of uninterruptible power under varying input conditions.

1.2.1 PHYSICAL DESCRIPTION

The MRC-37B Dual UPS is a self-contained unit measuring 12 inches long, 10 inches wide and 6 inches deep without mounting feet. The unit has two separate AC inputs and a single DC output. The input and output port and a vent valve are located on one edge of the unit. Four LED indicators are located on the top cover of the MRC-37B. The top cover is secured in place with four clamps to assure a tight fit.

Internally the MRC-37B consists of the following: Two Control Boards – located on these circuit boards are the circuit breakers, EMI filters, and other electronic components. Four AC Power Modules – potted modules used for transforming the input AC voltage to a regulated DC output. Single Battery – MRC-2590/U Rechargeable, Lithium Ion Battery.

1.2.2. FUNCTIONAL DESCRIPTION

AC input power is provided through the two input power cables which are held in place through their respective stuffing tubes. The DC output is provided through a stuffing tube. Circuits for power conversion, status monitoring and battery charging are contained inside the MRC-37B.

- A. **Control Board** – Contains the circuit breakers, EMI filter, steering diode logic circuits for DC voltages from the Power Modules and LED indicator driver circuits. The Control Board serves as the main interconnection for the AC Modules, Input Power, Output Power and Internal Battery.
- B. **AC Module** – Contains the circuitry to transform the 95 to 265 VAC, 47 to 440 Hz input power to a regulated 28 VDC (nominal) output. This is used to charge the internal battery and power output.
- C. **MRC-2590/U Rechargeable Lithium Ion Battery** – Provides back-up power when AC input power is lost or not available.
- D. **LED Indicators** – There are four light emitting diodes (LEDs) located on the top cover of the MRC-37B. These green LEDs illuminate whenever the respective AC Modules are providing a DC output.

1.2.3. FEATURES

- A. Provides uninterruptible 28 VDC (nominal) output under varying input and output conditions.
- B. The integrated, internal battery can be recharged in four hours while the MRC-37B is being used.
- C. Allows the operation of 28 VDC equipment from AC voltage sources between 95 and 265 VAC, at frequencies from 47 to 440 HZ. This encompasses most ship, aircraft and other AC generating systems, both domestic and foreign.
- D. All input and output circuits are EMI filtered.
- E. Provides DC output power and charges battery simultaneously from almost any AC input power source.
- F. No shipping or handling restrictions. (Battery has the same shipping and handling classification as an ordinary flashlight battery.)

1.2.4 EQUIPMENT CHARACTERISTICS

Power Capabilities

AC Input Range	95 to 265 VAC, 47-440 HZ
Charger Output	28 VDC @ 2 amps, 5 amps for 60 minutes watts (nominal)

Environmental

Storage Temperature	-50 ⁰ C to +65 ⁰ C
Operating Temperature	-30 ⁰ C to +55 ⁰ C
Relative Humidity	95%
Storage Altitude	55,000 Ft.
Operating Altitude	27,000 Ft.

Physical

Length	12 inches (13.5 inches with mounting)
Width	10 inches (10.94 inches with mounting)
Depth	6 inches
Weight	10 lbs.

2.1 INTRODUCTION

This Section provides a basic operational description of the MRC-37B Dual UPS and its assemblies/ major components.

2.2 GENERAL

The MRC-37B Dual UPS provides an output of 28 VDC (nominal) to power equipment from a 95 to 265 VAC source. The MRC-37B has redundant Control Boards and dual redundant AC power modules (four total AC modules) to assure a continuous output from two separate AC input sources. Upon the loss of a single AC source the MRC-37B has an internal sealed lead-acid battery with an approximate two amp-hour capacity thus depending on the load can provide a continuous output without any input power for some time.

The internal MRC-2590/U rechargeable Lithium Ion Battery is continuously charged whenever AC power is applied to the MRC-37B. The unit can be operated while the battery is being recharged, if a completely discharged battery is used allow approximately four hours for the battery to reach full charge. The MRC-37B automatically maintains the proper charge. The MRC-2590/U battery does not develop a “memory effect”, however, it is suggested that the unit be tested at least yearly to verify battery capacity.

2.3 CONTROLS, INDICATORS AND TERMINAL BOARD CONNECTIONS

The MRC-37B has an internal lever-lock toggle switch. With the switch in the OFF position the DC output is interrupted. It is suggested this switch be turned off if maintenance is being performed on the unit as the battery can deliver high currents without any AC input power.

The MRC-37B has four LEDs located on the top cover of the unit. These LEDs are illuminated whenever the respective power module is providing a DC output. During normal operation with the two AC power sources available all four LEDs should be illuminated.

The Terminal Board has the following connections:

- TB1 Pin 1 - +28 VDC (nominal) Output
- TB1 Pin 2 – DC Output Ground
- TB1 Pin 3 - AC #1 Input
- TB1 Pin 4 - AC #1 Input
- TB1 Pin 5 - Positive Battery (Charge/Output)
- TB1 Pin 6 - Battery Ground
- TB1 Pin 7 - AC #2 Input
- TB1 Pin 8 - AC #2 Input

2.4 OPERATING PROCEDURES

2.4.1 POWER SOURCES

The MRC-37B Dual UPS operates from the following power sources:

- A. Dual AC input voltage sources
- B. Internal Battery

2.4.2 INSTALLATION

2.4.2.1 AC Input Line Cords

The MRC-37B has two separate AC input stuffing tubes. The AC power cords can be installed or removed by releasing the jam nuts on the stuffing tubes and sliding the power the power cords through the stuffing tubes. If the power cords are removed make sure all rubber seals and o-rings are retained. It is suggested that each AC line cord be connected to a separate AC power source to assure maximum redundancy of the MRC-37B.

2.4.2.2 DC Output Line Cord

A single DC output is provided form the DC stuffing tube the line cord is permanently attached to the MRC-37B through the use of a stuffing tube. As with the AC power cord the DC power cord can be removed be releasing the jam nut on the stuffing tube.

Prior to checking the MRC-37B verify the internal toggle switch is in the correct position.

WARNING

**HAZARADOUS VOLTAGES ARE PRESENT IN THE MRC-37B.
OBSERVE SAFETY PROCEDURES TO PREVENT CONTACT
WITH THESE VOLTAGES TO PREVENT SERIOUS INJURY OR
DEATH.**

**Section 3
MAINTENANCE AND WARRANTY INFORMATION**

3.1 PREVENTIVE MAINTENANCE

3.1.1 DIRT AND DUST

All components to the MRC-132 can be cleaned with a water dampened non-abrasive cloth and allowed to air dry or wipe dry with a clean dry non-abrasive cloth.

3.1.2 OILS AND GREASE

All components to the MRC-132 can be cleaned with a mild soap/water solution dampened non-abrasive cloth. Rinse with water dampened non-abrasive cloth and allowed to air dry or wipe dry with a clean dry non-abrasive cloth.

WARNING

**DO NOT USE CHEMICAL CLEANING AGENTS ON THE MRC-132. USE OF
CHEMICAL AGENTS MAY CAUSE DAMAGE TO THE UNIT.**

3.2 CORRECTIVE MAINTENANCE

The MRC-132 has **NO** user serviceable parts. Units requiring corrective maintenance should be sent to McDowell Research for repair. Contact information is provided below in the Warranty Statement section.

3.3 Warranty Information

3.3.1 Warranty Statement

**4 years for equipment shipped after May 1, 2004
3 years for equipment shipped prior to May 1, 2004**

McDowell Research warrants to its customers that the products it manufactures and sells will be free from defects in materials and workmanship for a period of four (4) years for equipment shipped after May 1, 2004.

This warranty shall not apply to any defect, failure or damage caused by improper use or inadequate maintenance and care. McDowell shall not be obligated to provide service under this warranty to repair, service, or modify these products.

In order to obtain service under this warranty, customers must return a failed unit to McDowell with a description of the failure, contact information (in case questions arise and to speed up processing of warranty claims) and finally a return shipping address. McDowell will return any failed unit at McDowell's cost.

3.3.2 Contact Information:

Please call (254) 752-1411 to obtain an RMA number prior to returning any failed unit(s):

McDowell Research, an Ultralife Company
300 South 8th Street
Waco, Texas 76701
Phone: (254) 752-1411
Fax: (254) 752-1812

Online RMA requests can be located and submitted at:
<http://www.mcdowellresearch.com/shop/RMArequest.asp> or
service@mcdowellresearch.com