

MFJ

Field Strength Meter

Model MFJ-802B

INSTRUCTION MANUAL

CAUTION: Read All Instructions Before Operating Equipment

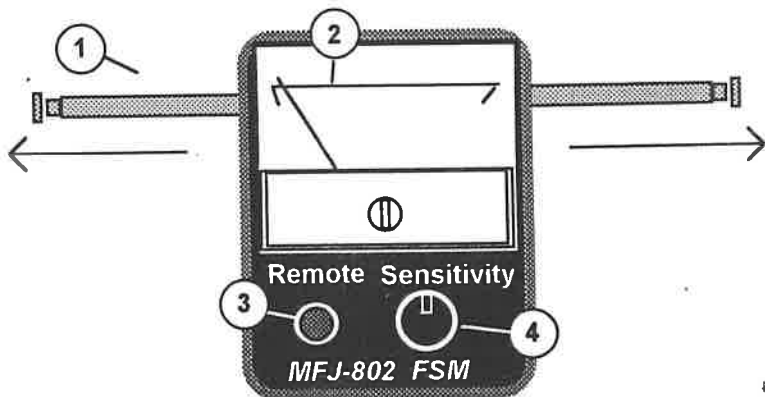
MFJ ENTERPRISES, INC.

300 Industrial Park Road
Starkville, MS 39759 USA
Tel: 662-323-5869 Fax: 662-323-6551

INTRODUCTION

Thank you for purchasing the MFJ-802B. A field-strength meter (or FSM) is one of the most practical pieces of ham test equipment you can own, and the MFJ-802B has some special features we think you'll like. For example, it has a huge high-resolution meter with a robust 0-100 scale that's easy to read from several feet away. It also combines a balanced pick-up antenna with a RF-insulated enclosure to eliminate hand-capacitance errors typical of older-style meters. There's a high-Z balanced decoupling network that ensures top efficiency over a wide frequency range and provides complete isolation between the detector and metering circuits. And, there's a uA-type meter movement with a wide-range sensitivity control to handle signals from the milliwatt to kilowatt level. Add the MFJ-802R remote pickup, and you can monitor field strength from anywhere you wish in the comfort of your shack. Inexpensive low-voltage dc wire connect the two units together. Like most field-strength meters, the MFJ-802B is extremely simple to operate. However, as with any piece of RF test equipment, it has limitations you should know about--and we urge you to read the manual carefully before using it.

YOUR METER'S CONTROLS



1. **Collapsible Dipole:** Balanced pickup element extend to 38" (1/2-wave on 2-meters). Adjust for resonance at VHF/UHF frequencies, or extend fully and use as a non-resonant dipole at HF. The antenna is RF-decoupled from metering circuitry, and a dipole pattern will be maintained at non-resonant frequencies.

2. **Easy-to-Read Meter Scale:** Bold 0-100 scale is readable for several feet--may be set up at any convenient location near your operating site. High-quality meter movement resolves even small changes in the RF field.
3. **Remote Detector Jack:** Standard phone jack accepts monaural 1/4" plug when MFJ-802R remote detector is used.
4. **Wide-Range Sensitivity Control:** Adjusts your meter for a wide range of power levels and distances to the RF source. To prevent damage, always begin measurements with the sensitivity control set at minimum (fully counter clockwise).

USING YOUR METER

The MFJ-802B is useful anywhere a hand-held or stationary field-strength meter is needed. For example, it's perfect for resonating critical HF mobile antennas, adjusting tuning networks, optimizing antenna arrays for highest ERP, and tuning transmitter circuitry for maximum output. Remember to exercise caution when working near transmitting antennas.

Important Safety Warning: Never work in close proximity with any energized transmit antenna. Even at low power, antennas may develop dangerous RF-voltage levels that can cause painful burns and permanent injury.

Here are some specific tips to help you get the most from your meter:

1. To avoid violently pinning the meter, always begin field-strength measurements with the sensitivity control turned fully down (or counter-clockwise). Also, it's a good practice to store your meter with the sensitivity set to minimum.
2. For best meter resolution, set the meter's sensitivity control to yield mid-range readings.
3. Orient the meter's pick-up dipole to the same polarization as your antenna under test.
4. At VHF/UHF frequencies, maintain a *minimum of 2-3 wavelengths* spacing between the pick-up antenna and any antenna under test. Closer proximity could easily damage the meter's diode detector, and may detune the test antenna you're attempting to adjust.

5. Try to keep test antennas--and your meter's pick-up antenna--well separated from nearby cables, masts, or other metallic structures that could act as a parasitic element and effect your results.

Important Warning: Never place your MFJ-802B close to any antenna radiating transmitter-level power, or permanent damage may result.

REMOTE PICKUP (MFJ-802R)

The MFJ-802R is an optional antenna/detector unit that is identical to your MFJ-802B--minus the meter and sensitivity control. The MFJ-802R can be plugged into your primary meter and located remotely to provide optimum monitoring positioning. For example, to obtain station antenna measurements uncolored by household wiring and RF leakage, install the MFJ-802R remote outside of the building and connect it to your MFJ-802B in the ham shack. Or, for accurate-antenna range measurements, install the MFJ-802R remote several wavelengths down-range and locate the MFJ-802B meter at your antenna test site. The MFJ-802B meter and remote pickup require only low-cost 2-conductor dc wire for interconnection. The remote pickup is a great way to increase the versatility and usefulness of your MFJ-802B.

THEORY OF OPERATION

The MFJ-802B Field-Strength Meter uses a dipole sense antenna with a diode bridge connected across its feedpoint. The diode bridge passes dc-detector voltage to sensitivity control R1, while blocking RF and isolating the antenna from common-mode pickup. R1 is an adjustable voltage divider that controls the detector output level applied to meter M1. The remote detector is identical to the MFJ-802B, minus the sensitivity control and meter.

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IN CASE OF DIFFICULTY

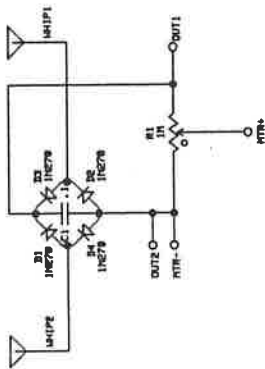
Your meter has no internal adjustments and represents a trouble-free design. However, it has a sensitive electro-mechanical meter that may sustain damage if dropped. Also, the MFJ-802B is not weatherproof, and should not be exposed to heavy rain, snow, or other harsh environmental conditions

TECHNICAL ASSISTANCE

If you have any problem with this unit first check the appropriate section of this manual. If the manual does not reference your problem or your problem is not solved by reading the manual you may call *MFJ Technical Service* at **662-323-0549** or the *MFJ Factory* at **662-323-5869**. You will be best helped if you have your unit, manual and all information on your station handy so you can answer any questions the technicians may ask.

You can also send questions by mail to MFJ Enterprises, Inc., 300 Industrial Park Road, Starkville, MS 39759; by Fax to 662-323-6551; or by email to techinfo@mfjenterprises.com. Send a complete description of your problem, an explanation of exactly how you are using your unit, and a complete description of your station.

SCHEMATIC



RESISTANCE VALUES ARE IN OHMS
CAPACITANCE VALUES ARE IN MICROFARADS
UNLESS OTHERWISE SPECIFIED

RES-VALUES	0	10K-100KΩ	100K-1MΩ
CAP-VALUES	1	100P-100N	100N-100U

FIELD STRENGTH METER

DATE	REV	DESIGNED BY	MANUFACTURED BY
MFJ ENTERPRISES, INC. 3111 CHERRY STREET FT. BARRIE, STAMFORDVILLE, IN 47783			

LIMITED 12 MONTH WARRANTY

MFJ Enterprises, Inc. warrants to the original owner of this product, if manufactured by MFJ Enterprises, Inc. and purchased from an authorized dealer or directly from MFJ Enterprises, Inc. to be free from defects in material and workmanship for a period of 12 months from date of purchase provided the following terms of this warranty are satisfied:

1. The purchaser must retain the dated proof-of-purchase (bill of sale, canceled check, credit card or money order receipt, etc.) describing the product to establish the validity of the warranty claim and submit the original or machine reproduction of such proof of purchase to MFJ Enterprises, Inc. at the time of warranty service. MFJ Enterprises, Inc. shall have the discretion to deny warranty without dated proof-of-purchase. Any evidence of alteration, erasure, or forgery shall be cause to void any and all warranty terms immediately.
2. MFJ Enterprises, Inc. agrees to repair or replace at MFJ's option without charge to the original owner any defective product under warrantee provided the product is returned postage prepaid to MFJ Enterprises, Inc. with a personal check, cashiers check, or money order for \$7.00 covering postage and handling.
3. This warranty is NOT void for owners who attempt to repair defective units. Technical consultation is available by calling Service Department at 662-323-0549 or the MFJ Factory at 662-323-5869.
4. This warranty does not apply to kits sold by or manufactured by MFJ Enterprises, Inc.
5. Wired and tested PC board products are covered by this warranty provided only the wired and tested PC board product is returned. Wired and tested PC boards installed in the owner's cabinet or connected to switches, jacks, or cables, etc. sent to MFJ Enterprises, Inc. will be returned at the owner's expense unrepaired.
6. Under no circumstances is MFJ Enterprises, Inc. liable for consequential damages to person or property by the use of any MFJ products.
7. Out-of-Warranty Service: MFJ Enterprises, Inc. will repair any out-of-warranty product provided the unit is shipped prepaid. All repaired units will be shipped COD to the owner. Repair charges will be added to the COD fee unless other arrangements are made.
8. This warranty is given in lieu of any other warranty expressed or implied.
9. MFJ Enterprises, Inc. reserves the right to make changes or improvements in design or manufacture without incurring any obligation to install such changes upon any of the products previously manufactured.
10. All MFJ products to be serviced in-warranty or out-of-warranty should be addressed to:

MFJ Enterprises, Inc.
300 Industrial Park Road
Starkville, Mississippi 39759 USA

and must be accompanied by a letter describing the problem in detail along with a copy of your dated proof-of-purchase.

11. This warranty gives you specific rights, and you may also have other rights which vary from state to state.