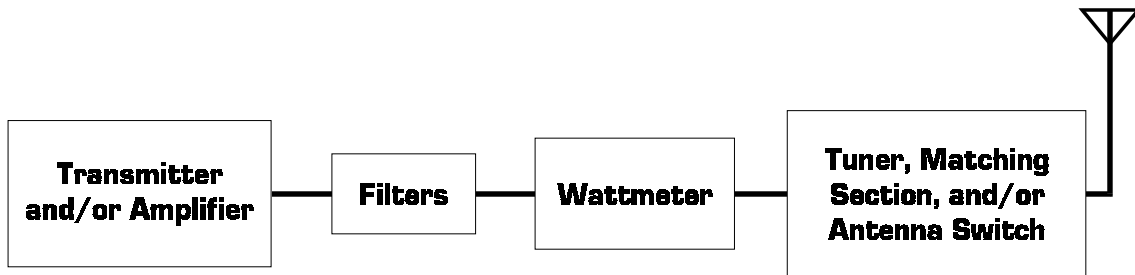


## MFJ-860 HF SWR/Wattmeter

The MFJ-860 HF SWR/Wattmeter measures forward and reflected power and indicates SWR for the ham bands from 160 meters to 6 meters. The MFJ-860 has 2 power scales which are selected with the front panel push button switch. The low power scale reads from 0-30 watts forward and 0-6 watts reflected. The high power scale reads from 0-300 watts forward and 0-60 watts reflected. SWR is indicated from 1:1 to ∞.

### Connections

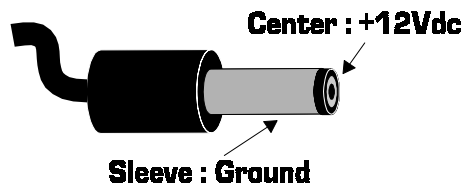
Connect your transmitter to the connector labeled "TRANSMITTER" and your antenna to the connector labeled "ANTENNA". It is important that you use good quality coax and properly installed connectors.



If you want to measure the power output capability of a transmitter/amplifier you should connect a quality dummy load (50 ohms) to the antenna jack of the MFJ-860.

**Caution:** many HF dummy loads exhibit SWR especially on 15 and 10 meters.

The MFJ-860 has an illuminated meter. To provide power for the meter lamp, a 12 Vdc supply such as the MFJ-1312B should be used. Use a standard 2.1 mm coaxial plug with the center conductor positive and the sleeve ground.



### Using the MFJ-860

To measure forward and reflected power press the selector switch to the correct power setting. Transmit a steady carrier and read the power from the meter. Each unmarked picket on the scale is an even division between the adjacent marked values. SWR is read from the SWR curve closest to where the meter needles cross.

If a more exact reading of SWR is needed you may use the equation for SWR. Measure the forward and reflected power then put the values into the following equation.

$$SWR = \frac{E}{G} + \sqrt{\frac{P_r}{P_f} \frac{I}{K}} / \frac{E}{G} \sqrt{\frac{P_r}{P_f} \frac{I}{K}}$$

Pr = Reflected Power  
Pf = Forward Power

**Parts List**

Designator	Part Number	Description
R1, R2	100-0003	Resistor, 1/4 Watt, 5%, Film, 100 $\Omega$
R3, R6	133-4100	Resistor, Trimpot, Sub. Horz., 10 k $\Omega$
R4, R5	133-5100	Resistor, Trimpot, Sub. Horz., 100 k $\Omega$
R7	101-1680	Resistor, 1/2 Watt, 5%, Film, 68 $\Omega$
R8	100-3330	Resistor, 1/4 Watt, 5%, Film, 3.3 k $\Omega$
C1-C4	200-0004	Capacitor, Disc Ceramic, 25/50v, 20%, .01 uF
C5	200-0010	Capacitor, Disc Ceramic, 50V, 20%, 220 pF
C6	204-0001	LLT, Capacitor, Trimmer, 250V, 3-10 pF
L1	401-0037	Inductor, Molded, .3", 10%, brn-blk-gld, 1.0uH
D1-D2	300-2835	Diode, Schottky, HP2835
for M1	715-6186	Spacer, Aluminum, Hex, 4-40-1/4"L, .25" Od, Plain
for M1	710-6050	Washer, Metal, Lock Washer, #6 Id, Int. Tooth
for M1	700-2221	Screw, Machine, Pan, Phillips, 4-40-1/4", St, BK
for M1	736-0100	Bracket, Tab, Meter,
J1, J2	610-2005	Connector, UHF, 4-Hole Mount, SO-239
J3	601-6121	Jack, Coaxial, 2.1mm, Ch. Mt., Closed, Mono
M1a&M1b	400-3084	Meter, Cross Needles, 200uA, 1200 Ohm, 300W

**Schematic**

## FULL 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 of machine reproduction or 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 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. MFJ Enterprises, Inc. will supply replacement parts free of charge for any MFJ product under warranty upon request. A dated proof of purchase and a **\$5.00** personal check, cashiers check, or money order must be provided to cover postage and handling.
4. This warranty is **NOT** void for owners who attempt to repair defective units. Technical consultation is available by calling (601) 323-5869.
5. This warranty does not apply to kits sold by or manufactured by MFJ Enterprises, Inc.
6. 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 unrepaid.
7. Under no circumstances is MFJ Enterprises, Inc. liable for consequential damages to person or property by the use of any MFJ products.
8. **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.
9. This warranty is given in lieu of any other warranty expressed or implied.
10. 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.
11. All MFJ products to be serviced in-warranty or out-of-warranty should be addressed to **MFJ Enterprises, Inc., 921A Louisville 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.
12. This warranty gives you specific rights, and you may also have other rights which vary from state to state.