

# Electro-Resales

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## Relative Field Strength Indicator

### Overview

Many thanks for your purchase of this Field Strength Meter or FSM, this guide is intended to allow you to quickly get operational.

The FSM comprises an approx. 2 x 3 inch PCB that contains the moving coil meter and associated detector components. A telescoping antenna (extends to approx. 30 Inches) is connected at the rear of the unit to allow RF energy to be detected. The rear of the PCB is protected by a laser cut acrylic shield

The meter can detect and display relative field strength for signals below 1 MHz to above 460 MHz

### Read before first use – Includes important safety information

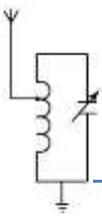
The meter unit, while only a relative indicator (it is not a calibrated instrument) is a delicate unit that can be easily damaged by misuse. Please follow these guidelines to minimize potential damage;

1. The detector sensitivity can be adjusted with the gain control, always start measurements with the gain control set fully anticlockwise or at the zero gain position.
2. For initial testing use the included antenna. If the output of a transmitter is directly attached to the FSM damage may occur.
3. The FSM can be used as a detector for all legal power output levels used by amateur radio operators/users, however, always conduct experiments at the lowest output power that gives acceptable results.
4. Do not allow the FSM telescopic antenna to come into direct contact with antenna elements or feeder cable, additionally do not let any part of the FSM, yourself or the telescopic antenna to come in contact with exposed RF components such as output tubes (valves) or other components of a linear amplifier, transmitter or antenna tuning unit.

### Initial set-up and antenna tests

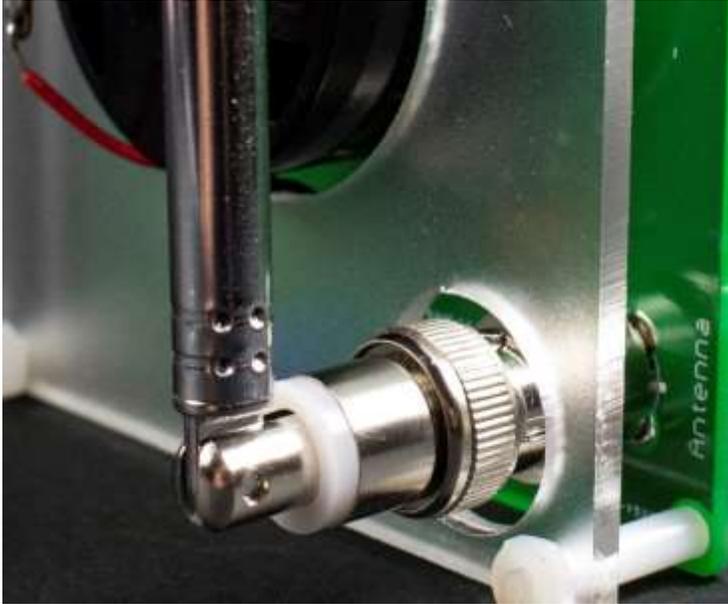
For initial tests the FSM should be used with the supplied antenna. Carefully align the BNC jack on the antenna with the corresponding BNC on the FSM, then, gently push & twist to lock the antenna in place.

**See Photo on next page for details on this.**



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Extend the antenna to its full extent, always use the supplied antenna fully extended. Make sure the FSM gain control is fully anti-clockwise, as this sets the meter sensitivity to its lowest level. Place or hold the FSM near the transmitting unit/antenna being evaluated then energize the transmitter, while doing this, slowly advance the FSM gain control clockwise until the meter reads full scale. At this point you have established the base sensitivity level for your transmission set up, moving the FSM around and then further away or nearer to the transmitter will show swings or changes in meter reading indicating how the transmitted energy changes due to distance or

position/orientation of the FSM antenna compared to say a handheld transceiver antenna.

Further tests can be arranged at the feedline of an external dipole or long wire antenna to observe RF leakage (or lack), also antenna radiation patterns are possible to determine by careful detection of the antenna during transmit by moving the detector along or around the antenna path, but without physically touching the antenna.

Use of the unit and interpretation of results will require time to gain experience in how the meter responds to your station configuration. Use of notes to record meter readings and measurement distance, along with other data such as antenna type and transmit power will prove invaluable. While the meter scale is uncalibrated, the readings obtained are consistent and repeatable. Keeping notes will allow changes to be measured and understood over time.

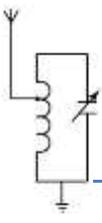
## Other uses/Experimental ideas

For general field strength tests always use the supplied telescopic antenna, however, the meter can also be used as a measuring (uncalibrated) tool, by connecting an RF feed line directly to the BNC socket.

Using the meter in this way allows for comparison or measurements to be made of low (QRP) RF signals, and the meter can be used to note changes in output level that occur as a result of adjustments to the transmitter output circuitry.

The use of an attenuator between the source of RF and the meter is advised along with making sure to keep the gain control adjusted for the minimum deflection.

**Never attach a transmitter directly to the meter that is capable of output above 5 Watts**



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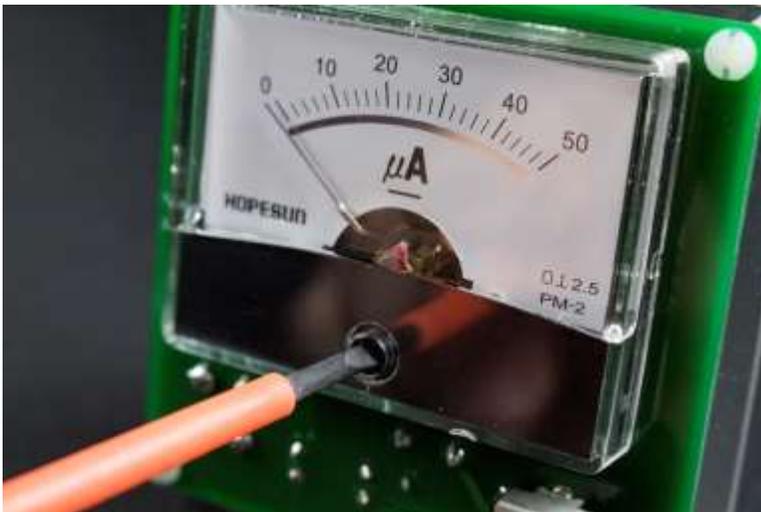
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## Care of the meter

The meter is a delicate instrument that will provide long service, the following notes cover care of the meter.

- The meter movement will need to be adjusted occasionally to ensure the meter needle lines up with the '0' on the meter face. Adjustment to zero will require using a small screwdriver to gently move the set screw on the meter face until the needle matches the '0' mark, the meter has a mirror scale which will help when zeroing to avoid parallax error:

## Using a screwdriver to set meter zero

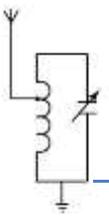


Do not force the screw to move, instead apply gentle pressure clockwise or counter clockwise to the screw while turning to adjust. It may take a few tries to hit '0'

- The acrylic shield will get soiled and attract dust with time/use. The best way to clean the shield is with antiseptic alcohol, such as the 91% variety sold at CVS or Walgreens. Apply with a tissue, and while still wet, gently dry with a dry tissue
- The shield can be detached if needed, by undoing the four nylon nuts, when re-assembling do not over tighten as nylon easily strips.

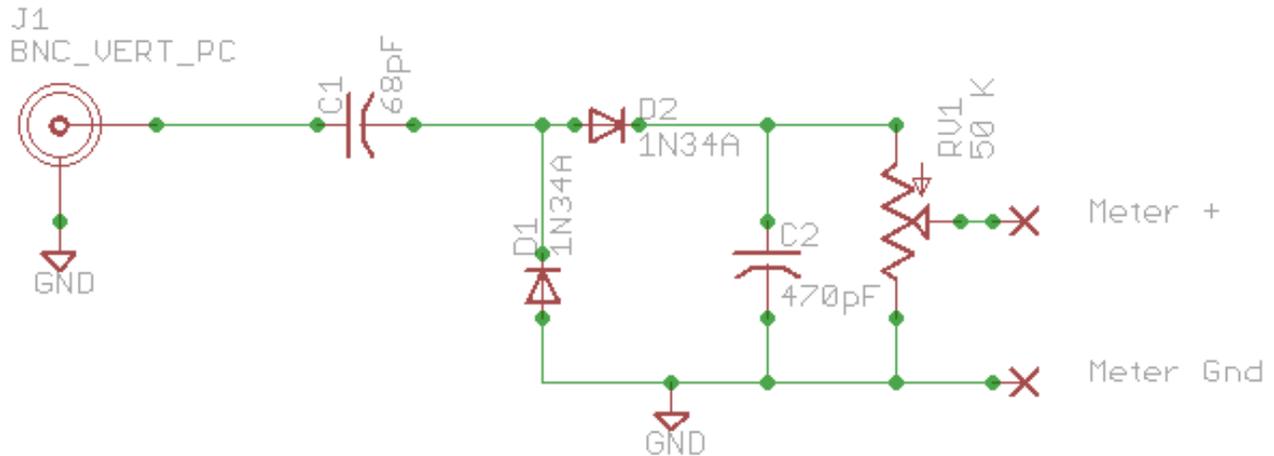
**For Technical Assistance please email to:**

**[resalese@gmail.com](mailto:resalese@gmail.com)**



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## Schematic of the meter



## DISCLAIMER

Any person who constructs or works on electronic equipment may be exposed to hazards, including physical injury, the risk of electric shock or electrocution.. These hazards can result in health problems, injury, or death. Only qualified persons who understand and are willing to bear these risks themselves should attempt the construction of electronic equipment. By purchasing this item, the buyer acknowledges these risks.

There is a risk of electric shock, electrocution, burns, or fires that is inherent in the construction and use of electronic equipment. By purchasing this item, the buyer acknowledges these risks.

IN NO EVENT SHALL THE SELLER BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE including, but not limited to, property damage, personal injury, death or legal expenses. Buyer's recovery from Seller for any claim shall not exceed the purchase price paid by Buyer for the goods, irrespective of the nature of the claim, whether in warrant, contract or otherwise. By purchasing this item, BUYER AGREES TO INDEMNIFY, DEFEND AND HOLD SELLER HARMLESS FROM ANY CLAIMS BROUGHT BY ANY PARTY REGARDING ITEMS SUPPLIED BY SELLER AND INCORPORATED INTO THE BUYER'S PRODUCT.