Electro-Resales

Getting started with your Impedance tester.

Many thanks for purchasing this simple calibrator. We appreciate your business and want to ensure that your experience with our products is a pleasurable one. We understand that you want the product to work without fault and that is our wish also. The following hints are designed to help you get up and operational as quickly as possible.

The calibrator has been designed to be quickly deployed on the bench to provide 4 valid SWR test loads. In addition the 1:1 load can be used as a low power dummy load (12 watts). You should find this capable unit a great addition to the test bench.
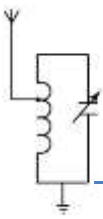
As supplied the calibrator is a fully completed unit, follow the steps below to start using the calibrator

Initial operation

While reading these notes, it is a good idea to have the calibrator to hand and also use the picture(s) in this guide to help identify the sections being discussed.

**Picture # 1 – Overview of calibrator**
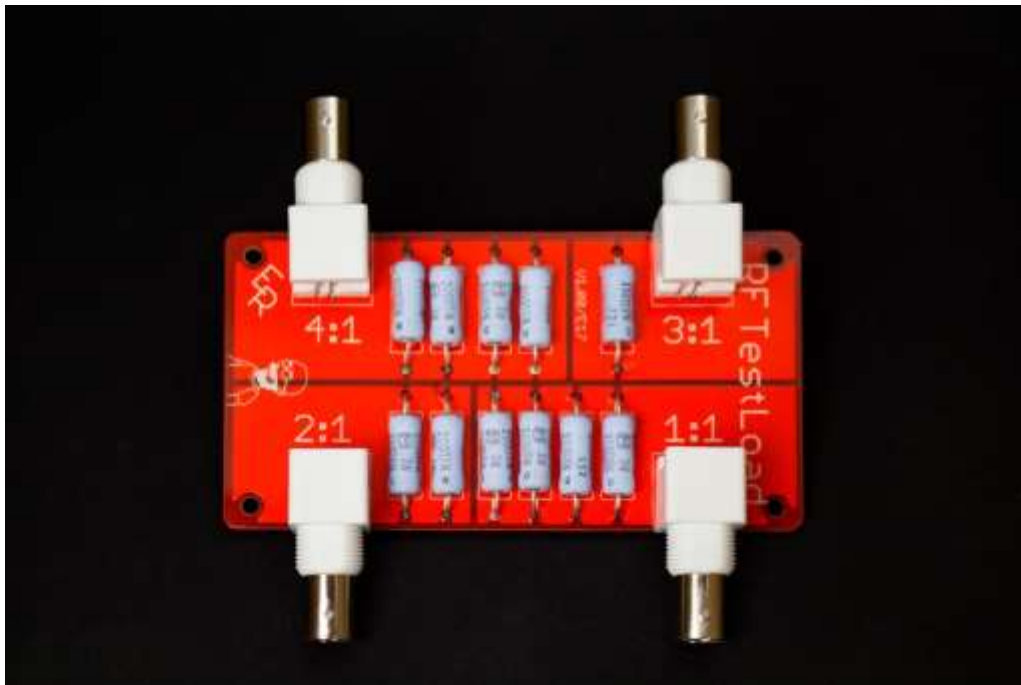
As picture 1 shows, the calibrator has 4 isolated sections, with loads from 1:1 thru' 4:1 impedance or put another way ; 50 Ω, 100 Ω, 150 Ω and 200 Ω loads. These impedance loads allow you to make calibration checks of an antenna analyzer periodically to ensure it is calibrated.

Connect the required load BNC jack to the test instrument to start the test, it is best to connect using the shortest jumper cable or as directly as possible, to minimize variables introduced by the cable. Picture # 2 illustrates a best practice for connecting the load. Note the use of gender changing interconnects rather than cables.

Picture # 2 – Best connection method
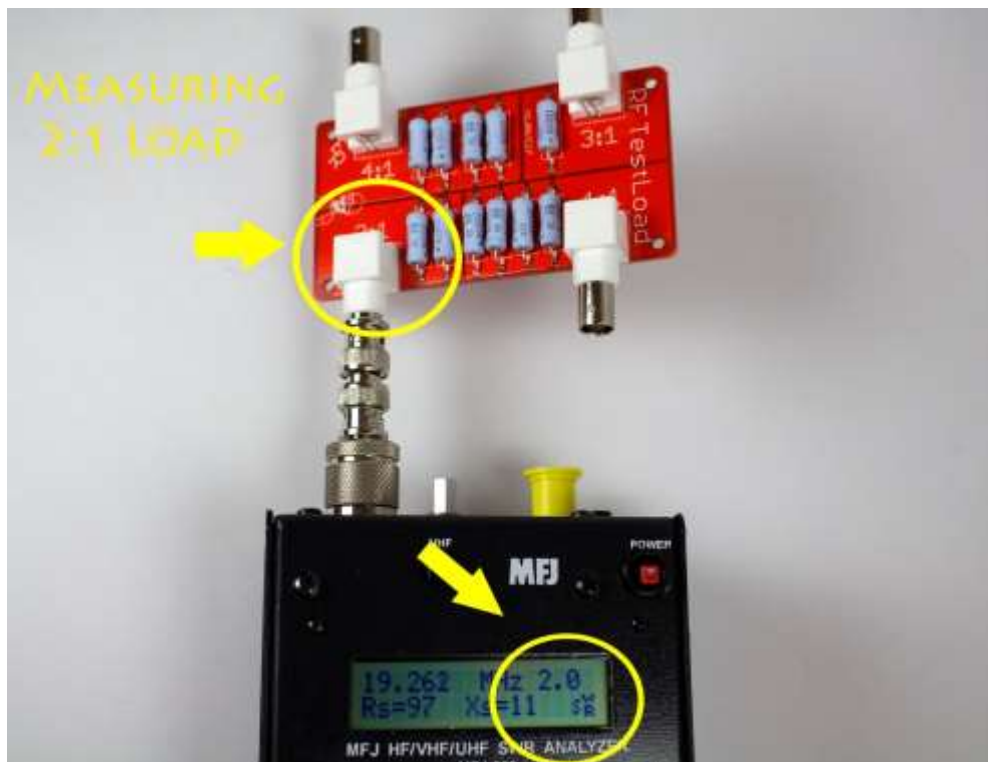
Please note that you will likely see variations occur in the displayed load impedance when using an analyzer at different frequencies, for instance, at say 25 MHz with the 4:1 load connected it is likely the analyzer will show a 4:1 load connected, however, as the frequency is increased the readout may show a 3:1 impedance, or some other value. This may well change back to 4:1 as the frequency continues to be increased.

The key here is to make a note of these changes in a log or note book with date and time noted and any other conditions that may be relevant. These notes become valuable when making future measurements as they allow you to start noting any trends.
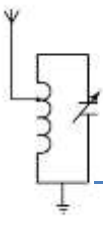
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Additional tests

While the key use of this unit is to be a measuring tool for checking instrument calibration, it can also be used to check other parts of the RF chain. The following are two possible extra uses.

1. **Cable check** - Jumper cables are used in many applications and coax cables while mainly 'set and forget' can go bad over time or be badly made at the outset. By connecting the calibrator 1:1 load to an analyzer directly, then via a test jumper lead, a quick check on insertion loss or SWR variation can be determined. If the SWR goes high or changes if the cable is moved around, then the jumper likely needs attention or replacing.

2. **Antenna Tuner** – Can your ATU tune out a high SWR antenna? Using this calibrator you can determine if the tuner is able to 'tune' out the SWR. Use an antenna analyzer as the RF source(do not transmit in to the calibrator), test the tuners ability to 'tune' using the 4:1 load first and going down to 1:1 at the end. Can the tuner match a bad SWR?

3. **Dummy Load** – Do not transmit into the 2:1, 3:1 or 4:1 loads. The 1:1 Load is a very true low power (12 watts) dummy load. It can be used to check out QRP transmitters and homemade gear. While the 1:1 load can be used for brief periods at a maximum of 25 watts, continuous use at these levels will damage the load and cause inaccurate measurements.

Mounting in a Hammond 1591 style enclosure.

The calibrator as supplied is ready to use, however, on the bench it may be better if some protection can be provided to the PCB. To that end the PCB was sized and dimensioned to properly fit a Hammond 1591 enclosure, replacing the enclosures lid. The enclosure supplied screws can then be used to affix the PCB to the enclosure

These enclosures are available in several colors, including clear, black and grey;

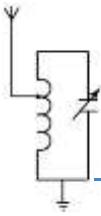Grey Box;

Mouser PN – 546-1591BGY

Black Box;

Mouser PN – 546-1591BSBK

Clear Box;

Mouser PN – 546-1591BTCL

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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.

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