Rev2
5/16/22

BUILD YOUR OWN HIGH QUALITY AM MODULATION METER

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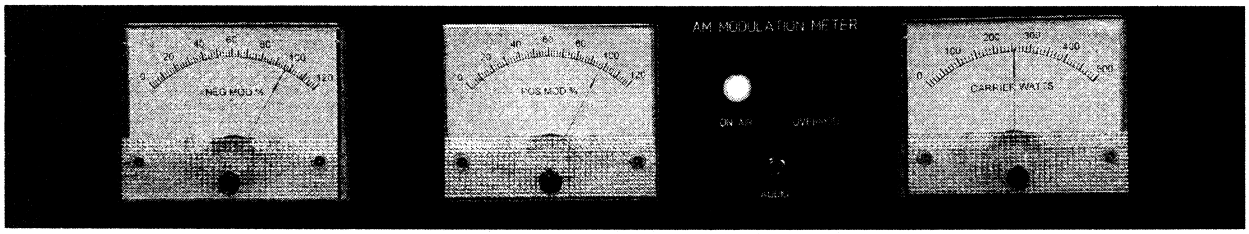
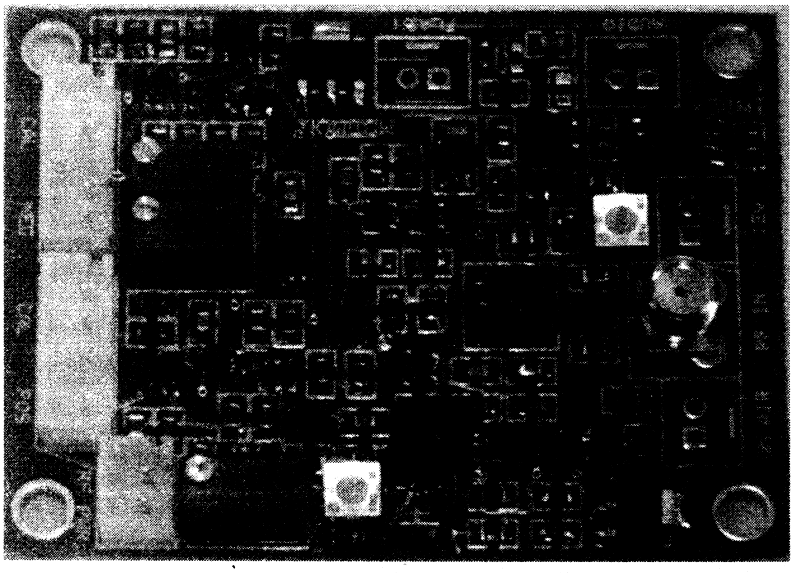
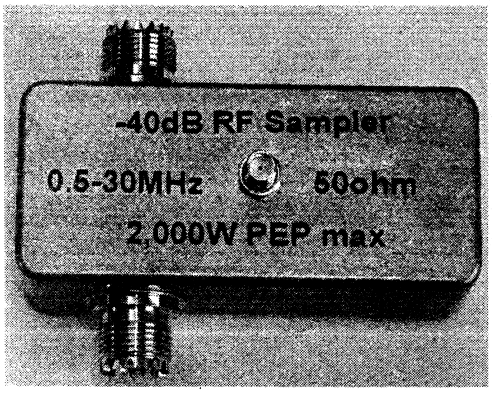


Here is an AM modulation meter featuring analog meters for positive modulation, negative modulation and carrier power along with an overmodulation flasher and on air light. Also, a low distortion detected audio output is provided. We offer a built and tested PCB assembly and RF sampler head. You supply the meters and enclosure and put it together.

The operating range for the unit is 25 watts to 500 watts carrier power.
When a signal in the operating range is present, the green on air light will come on. If the negative modulation reaches the baseline, the red overmodulation light will flash. The carrier wattmeter is optimized to accurately show carrier shift under modulation and provides an easy to read linear watts display.

Shown in the photographs is a completed version as built here. The two unit rack panel is custom cut and engraved by Front Panel Express using software on their website. The meters are from allelectronics.com with custom scales made with free software from Tonne software. The panel and styling was selected to look good above the Super Senior AM Transmitter. This modulation meter is equally suitable for use with vintage and former broadcast AM transmitters and the user is free to implement his own ideas for packaging.



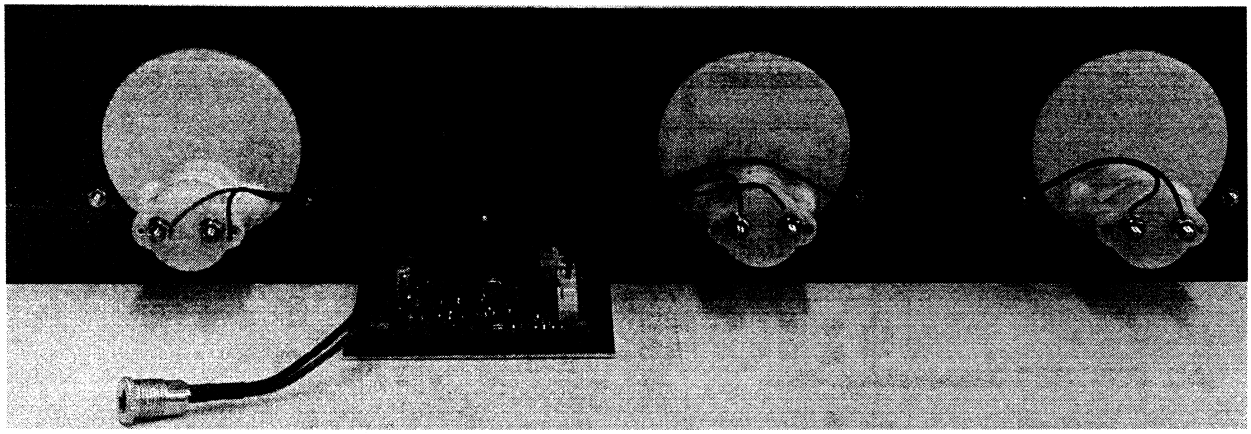


PERFORMANCE

The following outputs are provided:

Positive Modulation %
Negative Modulation %
Carrier Power Watts
Overmodulation Flasher
On Air Light
Low Distortion Audio Output

Frequency Range	0.5 - 30.0 MHz
Carrier Power Range	25 - 500 Watts
Power Required	12VDC at 0.5A
Suitable Meters	DC 50uA to 1mA full scale



PUTTING IT TOGETHER

The wiring is straightforward as shown in the diagram. A source of 12VDC at 0.5A or more is required. Caution: Some wall wart supplies generate RF interference. You should check with your receiver to ensure your supply is not causing RFI.

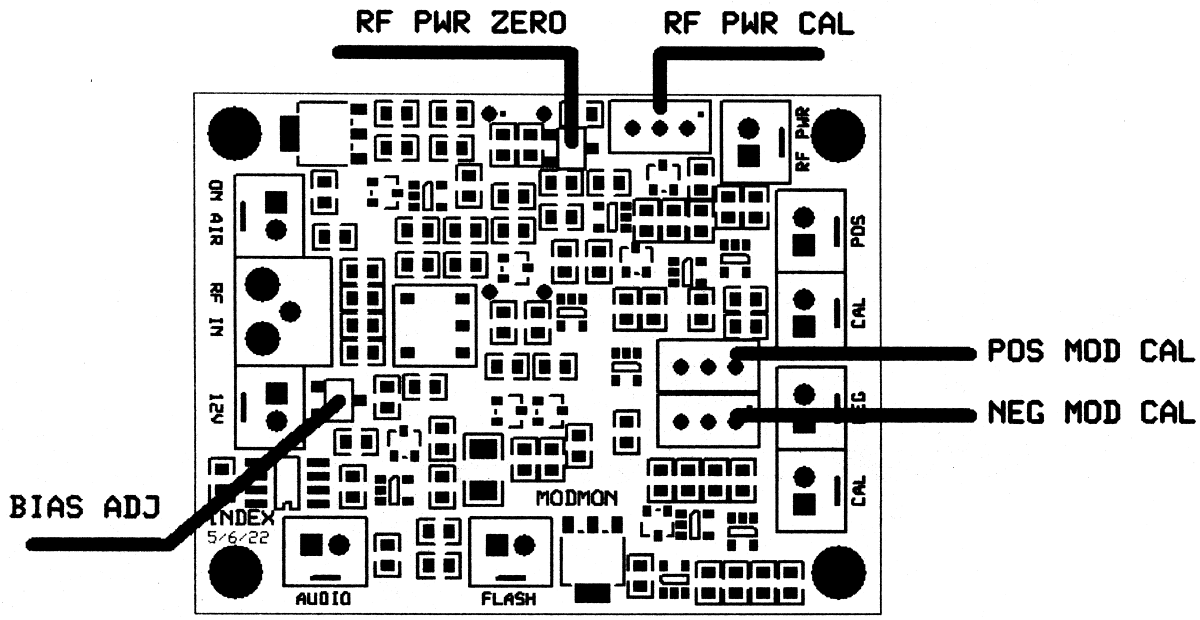
The ON AIR connector is wired to the green indicator. Note polarity with the red wire to the plus terminal. The FLASH connector goes to the red overmodulation indicator also observing polarity.

The meters should be in the range of 50uA to 1mA full scale with the connectors labeled on the PCB. Note that the positive and negative modulation meters are plugged into the adjacent CAL connectors for calibration, then moved to the POS and NEG connectors.

The sampler head is connected to RF IN with an SMA cable. The transmitter output is connected to the sampler and the sampler is connected through a reference wattmeter for calibration then to a good quality dummy load.

The AUDIO output is high impedance at one volt peak suitable for oscilloscope display, etc. For low impedance earphones an external amplifier with volume control can be used.

Note: The RF Sampler is designed for 50 ohm termination of the sample signal. Certain other manufacturers use a high impedance sample signal, typically 1,000 ohms and their samplers cannot be used with this meter.



CALIBRATION

First, apply 12V power with no signal to the unit. The bias trimpot located near the 12V connector is adjusted to a point just beyond where the overmodulation light goes out.

Next, apply an unmodulated carrier with power near what you normally use. The green on air light should come on. The positive and negative modulation meters which are plugged into their respective CAL connectors are both adjusted to read 100%. Because of the wide range of meter sensitivity 25 turn pots are used. It would be prudent to turn the calibration pots counterclockwise before applying power to avoid damaging sensitive meters. The blue pots are near each of the outputs.

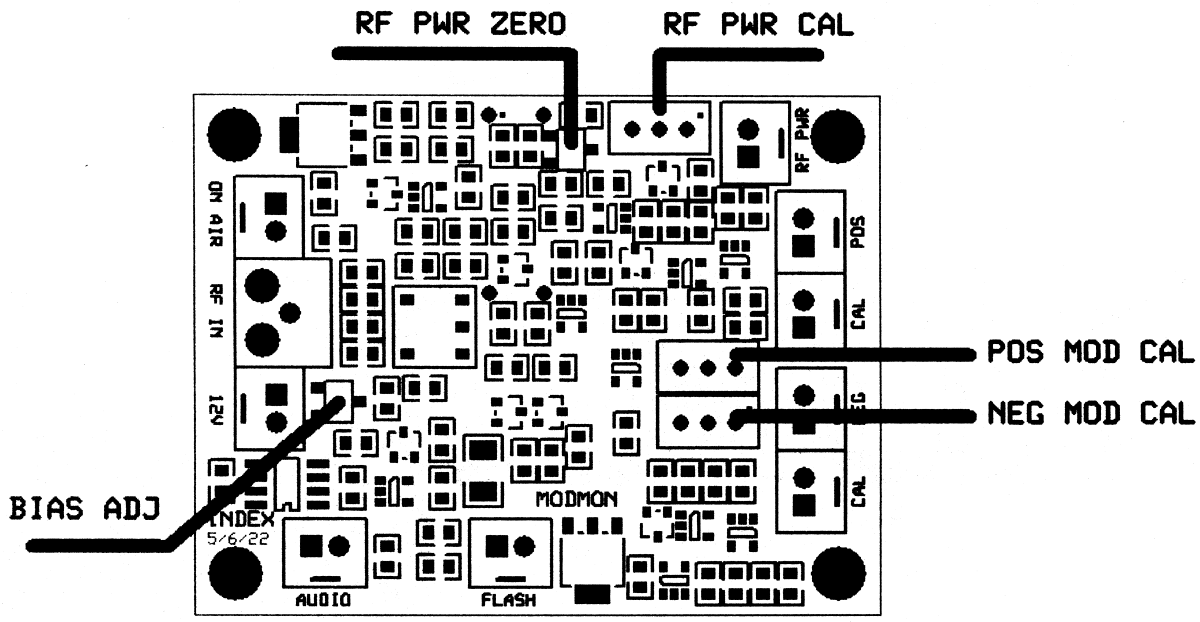
The RF PWR calibration pot is adjusted so that the meter indication matches your reference wattmeter. There is an additional ZERO pot for the RF power meter that is adjusted at the factory. If it needs to be reset, the procedure is detailed in the appendix.

You can now move the POS MOD and NEG MOD meter plugs from the CAL connectors to the POS and NEG connectors and the modulation meter is ready to use.

ORDERING

The Modulation Meter PCB assembly built and tested is offered at $130.00.

The -40dB RF Sampler is offered at $50.00.



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Plus $9.00 for Priority Mail shipping.

My PayPal account is indexlabs@gmail.com