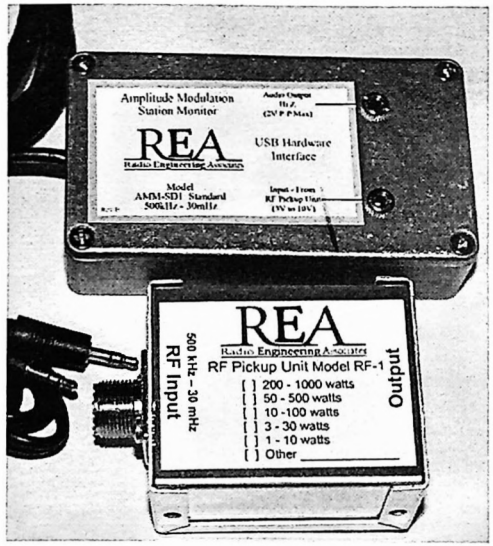
REA
Radio Engineering Associates

Amplitude Modulation Monitor
Model AMM-SD1 Standard



Setup and Installation Guide

Thank You for purchasing the REA AMM-SD1 Modulation Monitor ! Before use, please read this guide, and in particular read the safety information and precautions contained in the following pages to ensure safe use of your new Modulation Monitor.

Important Use and Safety Information

Cautions:

1. To prevent fire or shock, do not expose this unit to rain, water or moisture.
2. The ambient temperature must not exceed 80 degrees Fahrenheit.
3. Do not place the unit on or above other equipment that generates heat.
4. This equipment must only be connected to 5 V, USB compatible power source. Use of any other power source can result in a fire, shock or other safety hazard, and will invalidate the unit's warrantee.
5. Do not exceed the power rating of the RF pickup unit. Exceeding the power rating of the pickup can result in damage to the pickup unit and the modulation monitor itself, excessive heat, and possible fire hazard.
6. Observe RF Safety Rules. This equipment is designed to be installed and used by licensed and trained personnel who understand RF Safety, grounding and other safety issues involving RF radiation, shielding, grounding, and lightning protection.
7. The peak power rating of the RF pickup unit is 10 x the carrier power rating (200% positive modulation). Do not exceed the peak power rating of the RF pickup units.

Important Notice Regarding Product Use and Applications

This equipment is designed to provide an excellent indication of modulation with respect to standard Amplitude Modulated signals, and considerable efforts have been made with respect to accuracy. Your monitor was tested at the factory before shipment. This equipment is not intended for use in environments or applications where registration, certification or verification of this equipment by any department, agency or bureau, governmental or otherwise is required. **Note:** This equipment is not intended for use where loss of life or property is a possibility.

Changes in Product Appearance and Specifications

Radio Engineering Associates Inc. reserves the right to make changes in product specifications, features and performance and appearance without notice.

Intended Audience

This product and the accompanying documentation, software and accessories is intended for installation and use by technically competent personnel who are experienced in the areas of radio, amplitude modulation and RF practices and principles and who have reasonable expertise and experience with computer hardware, software setup and the installation and configuration of hardware and software on Microsoft Windows XP / Windows 7 / Windows 10.

Installing the Modulation Monitor Software

The AMM-SD1 Standard Modulation Monitor uses a computer, running the Radio Engineering Associates Modulation Monitor Software to display the modulation. The Monitor software must be installed on your computer.

Computer Software Requirements:
Operating System: Microsoft Windows XP, Windows 7, 8 or 10;
High speed Internet connection for downloading the installation software.

Computer Hardware Requirements:
Intel Pentium 4, 1.2gHz or better; 500mb or more RAM recommended;
Good quality VGA or better video; 1 free USB "A" socket

Software Download

The preferred and best method of getting the software for your Modulation Monitor is to download the software installation from the Radio Engineering Associates software distribution web site. This will ensure that you are running the newest version of the software, and have all the newest features. To download and run the software installer, start your web browser (the Internet) and (next page →)

Go to: www.radioassociates.com/software.htm

Once you are on the Radio Engineering Associates software distribution page, click on the proper software version for your computer and operating system to download the installation kit.

Depending on your computer, software and browser, you may be asked if you want to run the software installation, and you must click on "Run" or "Yes" to all such questions to allow the installation to continue.

Once the installation procedure is running, just follow the instructions that appear as part of the installation process, and install the Modulation Monitor Software on your computer.

Connecting the Modulation Monitor Hardware

Inspect all parts to ensure no damage occurred during shipping and handling.

Connect the Modulation Monitor hardware interface to the computer

Plug the USB cable (integral to the hardware interface) into a spare USB "A" socket on the host computer.

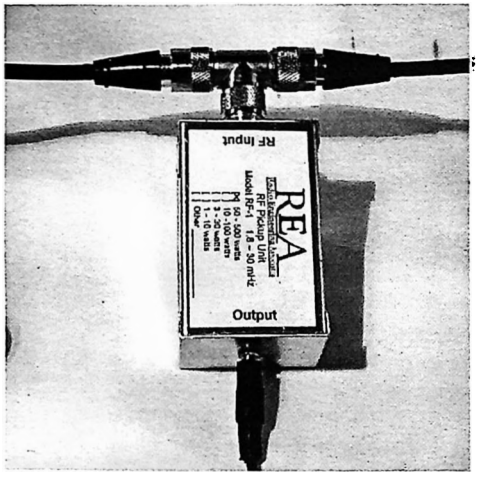
Use the supplied cable to connect the output connector of the RF Pickup Unit to the "Input - from RF Pickup Unit" connector on the Modulation Monitor hardware interface

Connecting the RF Pickup Unit to the Transmitter

AM Broadcast Transmitter Connection: If the transmitter is equipped with a modulation monitor RF output (typical for most AM broadcast transmitters), connect the RF pickup unit directly to this output with a short piece of coaxial cable or an adapter.

Connecting in-line: For connecting to other than a Broadcast Transmitter, the RF pickup unit is connected in line with the output of the transmitter (or in line with the antenna system) using a "T" connector. The "T" connector allows the RF Pickup Unit to "tap" the transmitter output. The pickup unit consumes very little power and does NOT terminate the line in any way; it is essentially an →

open circuit. Make sure all RF connections are tight to prevent RF leakage and other problems from occurring. NEVER use an RF pickup unit with its cover removed. **Note:** Do not exceed the power and frequency specifications of the RF pickup unit.



Shown here: In-line connection of an RF pickup unit.

Building RF Pickup Units Directly Into Transmitters:

The RF pickup unit is very simple, and it may be desirable to build an RF pickup unit directly into an existing or new transmitter. Schematic diagrams for RF pickup units are included in the help documentation for the Modulation Monitor software. Run the software, and click the "Help" menu, and select "Modulation Monitor Help..."

Connecting Other RF Pickup Devices to the Modulation Monitor

Radio Engineering Associates offers additional RF Pickup Devices such as an off-air pickup unit that does not require a direct connection to the transmitter or antenna feedline. Check the Radio Engineering web site at www.radioassociates.com for more information.

Connecting the Modulation Monitor to external Audio Equipment

The Audio Output jack on the Modulation Monitor Hardware Interface is a high impedance (50k) audio output suitable for connection to any number of external audio amplification devices such as monitor amplifiers, headphone amplifiers, etc. This is a high quality, line level analog output. The audio output level is set at the factory to approximately 1V P-P. If necessary, the level can be adjusted by inserting a small, flat blade screwdriver into the hole located in the back of the Modulation Monitor Hardware Interface and accessing → the audio level set control. Be careful to insert the screwdriver fairly straight into the hole so as to avoid contacting other components, and possibly damaging the Hardware Interface.

Using the Modulation Monitor

Once you have connected the Modulation Monitor Hardware, and have installed the Monitor Software on your computer, you are ready to go!

Double-click on the Modulation Monitor Icon on your computer, or otherwise run the Modulation Monitor software, depending on your particular installation.

There is extensive help and documentation available as part of the Monitor software that will guide you through the use and features. **Click on the "Help" menu, and select "Modulation Monitor Help..."** If the help does not appear, run the Monitor as "Administrator" (Windows 7).

Technical Specifications

RF Frequency Range: Standard R.E.A. Pickup Units:	.5-30mHz
Number of Inputs for Pickup Units:	1 1/8 inch stereo mini phone jack
RF Pickup Unit RF Input Connector Type:	SO239, High Impedance
RF Pickup Unit Output Connector:	1/8 inch stereo mini phone jack
Demodulated Carrier DC Input Voltage:	3V to 12V max, surge protected
Measurement Accuracy:	+/- 2.5% at 100% Modulation
Modulation Meter Range – Positive:	0 – 160%
Modulation Meter Range – Negative:	0 – 100%
Negative Peak Flasher Adjustment Range:	0 – 100%
Positive Peak Flasher Adjustment Range:	0 – 200%
Audio Outputs:	1/8 inch stereo mini phone, Hi Z
Maximum Audio Output Voltage:	2V Peak to Peak, 100% modulation
Audio Output Impedance:	50k Ohms
Demodulated Audio Frequency Response:	10 – 20,000 Hz +/- 1.5dB @ 95% Mod.
Power Requirements:	5VDC, 150mA
Enclosure Size:	4.5 L x 2.5 W x 1.25 H
Operating Environmental Temp Range:	33 deg. F. to 95 deg. F.
Computer Software Requirements:	Operating System: Microsoft Windows XP or Windows 7 / 10; High speed Internet connection for downloading the installation software.
Computer Hardware Requirements:	Intel Pentium 4, 1.2gHz or better; 500mb or more RAM recommended; Good quality VGA or better video; 1 free USB "A" socket

Limited Warranty

Radio Engineering Associates Inc warrants this product, except as set forth below, ONLY TO THE ORIGINAL PURCHASER AT RETAIL to be free from defective materials and workmanship from the date of original retail purchase for a period of: 1 year for parts and 180 days for labor ("The Warranty Period")

This Limited Warranty is valid ONLY IN THE FIFTY (50) UNITED STATES AND THE DISTRICT OF COLUMBIA.

What is Covered:

If, during The Warranty Period, this product is found to be defective, Radio Engineering Associates Inc will repair or replace defective parts at no charge to the original owner. Such repair and replacement services shall be rendered by Radio Engineering Associates Inc during normal business hours or by an authorized service facility during their normal business hours. Parts used for replacement are warranted only for the remainder of The Warranty Period.

How to Obtain Warranty Service:

To obtain service under this Warranty, the owner must contact Radio Engineering Associates Inc during regular business hours at the customer support telephone or email address stating the problem. If, after further investigation the problem is found to be in our unit, the unit must be returned to Radio Engineering Associates Inc or an authorized service center or facility with a copy of the original bill of sale, insured and packaged in a suitable manner to prevent damage. The original packing materials are preferred.

What is Not Covered:

This limited warranty provided by Radio Engineering Associates Inc does not cover:

1. Products which have been subject to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, or if repaired or serviced by anyone other than Radio Engineering Associates Inc or an authorized service facility authorized by Radio Engineering Associates Inc to render such service.
2. Products which have been subject to overload, damaged as a result of electrical discharge or surge, or products that have been operated from other than the original power source.
3. Initial installation and installation and removal for repair.
4. Operational adjustments covered in the Owner's Manual, calibration, and normal maintenance
5. Damage that occurs in shipment, damage that occurs due to acts of God, and cosmetic damage.
6. Cables and interconnecting wires.
7. Computer and computer related problems.
8. Accessories and connectors.

There are no other warranties except as listed above.

THE DURATION OF ANY IMPLIED WARRANTIES INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, IS LIMITED OT THE DURATION OF THE EXPRESS WARRANTY HEREIN

Radio Engineering Associates Inc SHALL NOT BE LIABLE FOR THE LOSS OF USE OF THE PRODUCT, INCONVENIENCE, LOSS OR ANY OTHER DAMAGES, WHETHER DIRECT, INCIDENTAL OR CONSEQUENTAL RESULTING FROM THE USE FO THIS PRODUCT, OR ARISING OUT FO ANY BREACH OF THIS WARRANTY. ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE WARRANTY PERIOD SET FORTH ABOVE.

Some states do not allow the exclusion of incidental or consequential damages or limitations on how long an implied warranty lasts, so these limitation or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state

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