

OPERATING INSTRUCTIONS

TYPE 874-MR RECTIFIER MIXER



1. **PURPOSE.** The Type 874-MR Mixer Rectifier can be used as the first detector in a heterodyne frequency converter to permit an amplifier or radio receiver to serve as a uhf detector. With a suitable local oscillator and low-frequency receiver or i-f amplifier the mixer rectifier provides means of detecting signals up to 7000 Mc.

2. **DESCRIPTION.** The Type 874-MR Mixer Rectifier consists of a short coaxial line with a 250-ohm series resistor and a crystal rectifier, terminated in a low-pass filter with a cut-off frequency of 40 Mc. (See Figure 1.) The output of a local oscillator is applied to the Type 1N21-B crystal diode through the 250-ohm resistor, while the signal to be detected is applied directly to the diode. The 250-ohm resistor insures that the impedance presented to the signal will always be reasonably high. The high-frequency signal is heterodyned down to 30 Mc or less and amplified by a radio receiver or i-f amplifier.

3. **LOCAL OSCILLATOR.** Recommended oscillators are the following:

<u>Oscillator</u>	<u>Frequency Range</u>
Type 1208-B Unit Oscillator	65-500 Mc
Type 1209-B Unit Oscillator	250-920 Mc
Type 1209-BL Unit Oscillator	180-600 Mc
Type 1215-B Unit Oscillator	50-250 Mc
Type 1218-A Unit Oscillator	900-2000 Mc
Type 1360-A Microwave Oscillator	1.7-4.1 Gc
Type 1361-A UHF Oscillator	450-1050 Mc

The above oscillators have adjustable output coupling loops terminated in Type 874 Coaxial Connectors which permit direct connection to the mixer rectifier.

4. **OUTPUT AMPLIFIER.** A Type 1216-A Unit I-F Amplifier is recommended for use as the output amplifier. Also satisfactory is a communications receiver with a pass band of at least 20 kc, and with enough sensitivity so that a one-microvolt signal produces a noticeable S-meter deflection. The receiver can be tuned to any desired output frequency from the mixer rectifier up to 30 Mc, but it is usually better to tune to the higher frequencies to minimize confusion from spurious responses (refer to paragraph 7.) A reasonable pass band is necessary to allow for the normal frequency variation in both the local-oscillator and input signals.

5. **OTHER ACCESSORIES.** In some instances, a poor match between the signal source and the mixer crystal may cause low sensitivity. The match can usually be improved by the insertion of a short air line (such as the Type 874-L10 or 874-EL), an adjustable-length line, and/or a tuning stub between the signal source and the mixer.