



## THE TYPE 1211-C, AN IMPROVED UNIT OSCILLATOR

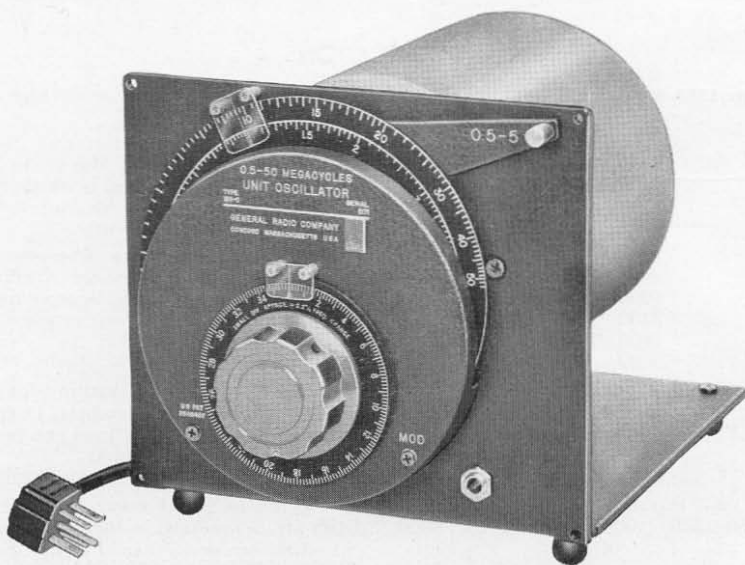


Figure 1. View of the Type 1211-C Unit Oscillator.

The TYPE 1211 Unit Oscillator,<sup>1</sup> 0.5 to 50 Mc, which was first announced in September, 1953, has now been modified as a first step in a program of Unit-Oscillator redesign which should make these popular rf power sources even more useful in the future. The characteristic L-shaped mounting panel of the Unit Oscillators and their open construction, which give excellent shielding and heat dissipation at a minimum price, have been retained, but the panel of the new oscillator, TYPE 1211-C, has been reduced to 7-inch height (four standard relay-rack units). Panel width is 8 inches, corresponding to one half relay-rack width, for mounting side by side in a relay rack with other GR half-

rack instruments. Mounting in a relay rack is by means of simple, inexpensive adaptor panels (see Figure 2).

Frequency range, input power requirements, and output power remain es-

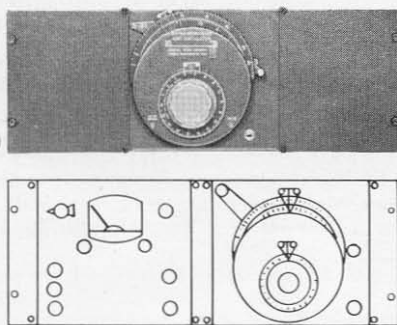


Figure 2. (Top) View of the oscillator with adaptor set installed for relay-rack mounting. (Below) Sketch showing arrangement of oscillator and amplitude-regulating power supply for relay-rack mounting.

<sup>1</sup>A. G. Bousquet, "A Unit Oscillator for the 0.5- to 50-Mc Range," *General Radio Experimenter*, 28, 4, September, 1953.



sentially unchanged, but distortion has been reduced considerably. The 100-to-1 frequency range of this oscillator is covered in two 10-to-1 ranges, 0.5 to 5 Mc and 5 to 50 Mc. The required 100-to-1 variation in the LC product on each range is obtained by changing the inductance as well as the capacitance of the tuned circuit. The capacitance is varied from 20 to 800 pf (40-to-1), and simultaneously the inductance value is altered by sickle-shaped cores, mounted on the capacitor shaft (see Figure 3). One core is made of aluminum, the other of iron dust. As the frequency dial is

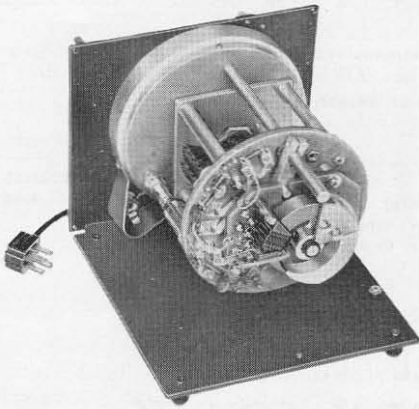


Figure 3. Rear view of the Unit Oscillator, with cover removed, showing tuned circuit inductors and sickle-shaped cores.

rotated, the active core material within the inductors varies smoothly from dust core for maximum inductance to a full aluminum core for minimum inductance. A 2.5-to-1 change in inductance is realized, from 125 to 50  $\mu$ h for the 0.5-

to 5-Mc range and from 1.25 to 0.5  $\mu$ h for the 5- to 50-Mc range. The cores and the capacitor plates are shaped for logarithmic frequency change with angular rotation.

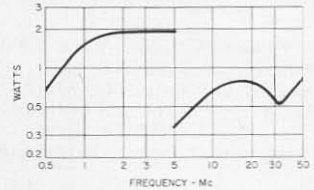


Figure 4. Typical output curves of the Type 1211-C Unit Oscillator.

Power output over the frequency range varies approximately as shown in Figure 4, when the inexpensive TYPE 1203-B Unit Power Supply is used. With the plate-regulated TYPE 1201-B Unit Regulated Power Supply, the output frequency as well as the output power is stabilized against line-voltage change, but output is reduced to about three quarters of that shown.

The frequency dial of the TYPE 1211-C Unit Oscillator can be swept back and forth mechanically by the TYPE 1750-A Sweep Drive,<sup>2</sup> the TYPE 908-P Synchronous Dial Drives, or the TYPE 908-R96 Dial Drive, and constant output over the frequency ranges can be obtained with the TYPE 1263-B Amplitude-Regulating Power Supply.<sup>3</sup> The combination of Unit Oscillator, Sweep or Dial Drive, and Amplitude-Regulating Power Supply is used for recording or for oscillographic display of frequency characteristics (see cover photograph). The TYPE 1263-B Amplitude-Regulating Power Supply will also be found useful for manual operation of the Unit Oscillator.

— E. KARPLUS

## SPECIFICATIONS

### FREQUENCY

**Range:** 0.5 to 50 Mc in two ranges.

**Calibration Accuracy:**  $\pm 2$  percent at no load.

**Warmup Drift:**  $0.4\% \pm 0.2\%$ , largest at the high-frequency end of each range.

**Controls:** A two-position range switch, a six-inch dial with approximately logarithmic calibration, and a slow-motion dial to indicate frequency increments of 0.2 percent per dial division.

SPECIFICATIONS (Continued)

**OUTPUT**

**System:** Output available at a TYPE 874 Coaxial Connector (locking) at rear of instrument. Adjacent ground terminal also permits connection by TYPE 274-M Double Plug. Output is controlled by a 250-ohm resistive voltage divider. The dial is calibrated in 100 arbitrary units.

**Power:** With the TYPE 1203-B Unit Power Supply, at least 200 milliwatts into 50-ohm load at any frequency. Over the 0.5- to 5-Mc range, average output is approximately 1 watt; over the 5- to 50-Mc range, 0.4 watt. See Figure 4 for typical output characteristics.

**GENERAL**

**Circuit:** Hartley oscillator coupled directly to output. Capacitance and inductance are simultaneously changed for frequency variation.

**Modulation:** Plate modulation of 30% at audio frequencies can be produced by external source of 50 volts. Input impedance is about 8000 ohms. For amplitude modulation free from incidental fm, a TYPE 1000-P6 Crystal Diode

Modulator can be used at carrier frequencies above 10 Mc.

**Power Supply Requirements:** 320 volts, 50 milliamperes, dc; 6.0 volts, 0.75 ampere, ac or dc. TYPE 1203-B Unit Power Supply, TYPE 1201-B Unit Regulated Power Supply, or TYPE 1263-B Amplitude-Regulating Power Supply is recommended.

**Mounting:** Oscillator on aluminum casting is shielded with a spun aluminum cover; assembly is mounted on an L-shaped panel and chassis. Adaptor panels for relay-rack mounting are available.

**Accessories Supplied:** TYPE 874-R22 Patch Cord, TYPE 874-Q2 Adaptor, telephone plug.

**Other Accessories Available:** TYPE 1750-A Sweep Drive, TYPE 908 Dial Drives, TYPE 874 Coaxial Elements, TYPE 1000-P6 Crystal Diode Modulator, TYPE 480 Relay-Rack Adaptor Sets.

**Dimensions:** Width 8, height 7½, depth 12 inches (205 by 192 by 305 mm), over-all.

**Net Weight:** 11½ pounds (5.5 kg).

Type		Code Word	Price
1211-C	Unit Oscillator	ATLAS	\$305.00
480-P408	Relay-rack Adaptor Set (for oscillator only)	EXPANELJAG	8.00
480-P416	Relay-rack Adaptor Set (for oscillator and Type 1263-B Amplitude-Regulating Power Supply)	EXPANELNIT	6.00

U.S. Patent No. 2,548,457.

## USING A PHOTOCELL WHERE IT COUNTS

For those wishing to measure the speed of rotating objects and to present the results as a continuous digital display, we recommend the combination of the new TYPE 1536-A Photoelectric Pickoff and the TYPE 1150-A Digital Frequency Meter.<sup>1</sup>

The pickoff consists of a light source, an optical system, a photocell, an output cable, and a flexible linkage system. Light from the source is reflected, either by the rotating object or by reflective tape attached to it, back to the photocell, which sends electrical pulses to the

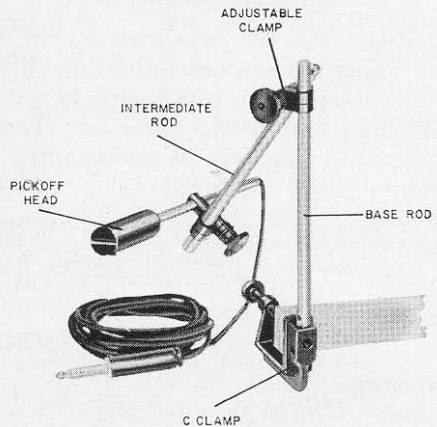


Figure 1. View of the Photoelectric Pickoff with component parts identified.

<sup>1</sup>R. W. Frank, J. K. Skilling, "A Five-Digit Solid-State Counter for Frequency Measurements to 220 kc," *General Radio Experimenter*, 36, 4, April, 1962.