



Figure 4. Circuit diagram of the Type 1204-B Unit Variable Power Supply.

meter reading, and its function is therefore obvious. The meter can be switched with the toggle switch to read either current or voltage.

A feature of the design of this power supply is the Variac®, which controls the a-c voltage to be rectified. It is used because it provides a continuous control to zero volts and because, being an auto-transformer, it maintains a low source impedance at all settings. Since there is but one transformer in the instrument, and the Variac® used is a standard, 115-volt stock model, a novel circuit arrangement is used to provide a constant voltage of 6.3 volts ac and a continu-

ously variable voltage of zero to 300 volts dc. This circuit is shown in Figure 4.

The power transformer isolates the output voltages from the line, furnishes the 6.3-volt heater supply, and provides a voltage for the Variac® augmented to about 17% above line voltage. The particular Variac® used will withstand this voltage, plus or minus 10%, at 60 cycles without excessive magnetization current, and will produce an output voltage adjustable between zero and 158 volts. A voltage-doubler rectifier circuit is used to produce the desired d-c output voltage.

SPECIFICATIONS

Output Voltages: 6.3 volts ac, nominal; 3 amperes maximum. The d-c output voltage is adjustable from zero to 300 volts with a maximum load of 100 milliamperes. No-load maximum, 400 volts.

Meter: A panel meter indicates the d-c output voltage and current.

Hum Level: About 250 millivolts at 300 volts, 100 milliamperes d-c load; about 150 millivolts at 350 volts, 50 milliamperes d-c load.

Input: 115 volts at 60 cycles; 75 watts at full output load. A line-connector cord is permanently attached to the instrument.

Rectifier: Two selenium rectifiers used in a voltage doubling circuit.

Output Terminals: Insulated binding posts on panel and a standard multipoint connector on the side of the instrument.

Accessories Supplied: Spare fuses; a mating multipoint connector.

Mounting: Black-crackle-finish panel and sides. Aluminum cover finished in clear lacquer.

Dimensions: (Width) 9 7/8 x (height) 5 3/4 x (depth) 6 1/4 inches, not including power cord.

Net Weight: 9 3/4 pounds.

Type	Code Word	Price
1204-B Unit Variable Power Supply.....	AGATE	\$85.00

U. S. Patent No. 2,009,013.

TYPE 1214-A UNIT OSCILLATOR

This simple two-frequency oscillator (400 and 1000 cycles), shown in Figure 5, is useful as a modulating source for high-frequency oscillators such as the TYPE 1208-A and the TYPE 1209-A and

as a general-purpose laboratory source for bridge measurements.

It will furnish approximately 0.2 watt to a balanced or unbalanced 8000-ohm load at less than 2% distortion.



Its most striking feature is that it violates the fundamental concept of the unit line by incorporating its own power supply. This was justified as an economy because an iron-coil inductor is used as the tuning inductance of a Hartley circuit, and an output coupling coil, wound on the same core, can be used to isolate the output terminals from any direct connection to the oscillator. A Type 117N7-GT Diode-Pentode tube, used as a voltage-doubler, can then be worked directly off the line without danger of cross-up of grounds on load and a-c line.

A small thyrite piece is used from grid to ground to limit the oscillator amplitude. The third-harmonic limiting resulting from the symmetrical current-voltage characteristic contributes substantially to the low distortion of the oscillator and helps to maintain stability of output as the line voltage is varied.



Figure 5. Panel view of the Type 1214-A Unit Oscillator.

SPECIFICATIONS

Frequency: 400 and 1000 cycles, accurate to $\pm 2\%$.

Output: The maximum output power is over 200 milliwatts; the output impedance is about 8000 ohms with the (10 k Ω) output control at maximum. Open-circuit voltage about 80 volts.

Distortion: Less than 3% into matching load.

Output Circuit: The output can be isolated from ground for using the oscillator as a modulator in the plate circuit of a high-frequency oscillator, such as the TYPE 1208-A or the TYPE 1209-A. The output control is adequate for external d-c currents as great as 36 ma in the output circuit.

Controls: A toggle switch to select frequency, an output control, and a power switch.

Terminals: Jack-top binding posts with standard $\frac{3}{4}$ -inch spacing; a ground terminal is provided.

Power Supply: 115 volts, 40-60 cycles, 16 watts.

Accessories Supplied: Spare fuses.

Tube: One 117N7-GT supplied.

Mounting: Black-crackle-finish panel and sides. Aluminum cover finished in clear lacquer.

Dimensions: (Height) $5\frac{3}{4}$ x (width) 5 x (depth) $6\frac{1}{4}$ inches, overall, not including power cord.

Net Weight: $4\frac{1}{2}$ pounds.

Type	Cord Word	Price
1214-A Unit Oscillator (including power supply)	ALLAY	\$60.00

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General Radio Unit Instruments are inexpensive high-quality instruments for use in laboratories operating on limited budgets. The instruments described here, in conjunction with the previously described U-H-F and V-H-F Unit Oscillators² and the appropriate TYPE 874 Coaxial Elements, make it possible to

assemble many specialized setups by the building-block method. Thus, signal generators, test oscillators, heterodyne-detection systems, voltage calibrators, etc., can be made available by simply plugging together elements already available in the laboratory.

²See Footnote 1.