

MODEL 250 AC VTVM AND AMPLIFIER

High sensitivity, wideband AC VTVM and amplifier of laboratory accuracy and quality. Measures AC voltages from 1 mV rms to 300 V rms in 12 ranges. Function-selector switch on the attractively designed front panel converts the unit to a wideband amplifier with a gain of 60 db on the 1 mV range and a maximum output of 5 V rms. Responds to average value of the applied wave and reads rms value of a sine wave. The 0-1, 0-3 voltage scales are linear. The decibel scale is based on 0 db equals 1 mW in 600 ohms, with 10 db interval between ranges. Features frame-grid triode-cathode follower input circuit, frequency-compensated input attenuator and cathode circuit attenuator; use of high-gain, frame-grid pentodes permits fewer amplifier stages for less phase shift and greater stability. Two-stage R-C coupled amplifier and full-bridge meter circuit in one overall feedback loop. Single sensitivity adjustment. No response adjustment is required in amplifier circuit. Stabilized power supply incorporates voltage regulator, DC-biased filaments and hum-adjust pot. **VOLTMETER—Voltage Ranges:** 1, 3, 10, 30, 100, 300 mV and V rms. **Decibel Range:** -80 to +52 db in 12 ranges. **Frequency Response:** ±0 db, 10 cps-600 kc. **Input Impedance:** 10 megohms, shunted by 15 pF. **Accuracy:** ±3% of full scale. **AMPLIFIER—Max. Output Voltage:** 5 V rms. **Max. Gain:** 60 db in 1 mV range. **Frequency Response:** ±0, -3 db, 8 cps-800 kc. **Int. Max. Hum and Noise:** -40 db, inputs above 2 mV. **Input Impedance:** 10 megohms, shunted by 15 pF. **Output Impedance:** 5K ohms. **Tubes:** 2-6EJ7/EF184 frame-grid pentodes, 1-6FY5/EC97 frame-grid triode, 1-6X4 full-wave rectifier, 1-OA2 voltage regulator. **Power Required:** 15 watts, 105-125 VAC, 60 cps. **Size:** 5½" w. x 7" d. x 8½" h. **Weight,** 8 lbs.

Model 250 AC VTVM and Amplifier—Wired, Net Each. . . \$79.95
Model 250K AC VTVM and Amplifier Kit—Net Each. . . 49.95

MODEL 255 AC VTVM

Highly sensitive, wideband AC VTVM of laboratory accuracy and quality. Measures AC voltages from 1 mV rms to 300 V rms in 12 ranges. Instrument responds to the average value of the applied wave and reads in rms value of a sine wave. The 0-1 and 0-3 voltage scales are linear. The decibel scale is based on 0 db equals 1 mW in 600 ohms, with 10 db interval between ranges. Features are primarily the same as the VTVM section of the Eico Model 250. **Voltage Ranges:** 1, 3, 10, 30, 100, 300 mV rms; 1, 3, 10, 30, 100, 300 V rms. **Decibel Range:** -80 to +52 db in 12 ranges. **Frequency Response:** ±0 db, 10 cps-600 kc. **Int. Impedance:** 10 megohms, shunted by 15 pF. **Accuracy:** ±3% of full scale. **Tubes:** 2-6EJ7/EF184 frame-grid pentodes, 1-6FY5/EC97 frame-grid triode, 1-6X4 rectifier, 1-OA2 voltage regulator. **Power Required:** 15 watts, 105-125 VAC, 60 cps. **Size:** 5½" w. x 7" d. x 8½" h. **Wt.,** 8 lbs.

Model 255 AC VTVM—Wired, Net Each. . . \$72.95
Model 255K AC VTVM Kit—Net Each. . . 44.95

MODEL 249 DELUXE PEAK-TO-PEAK VTVM

Measures directly p-p voltage of complex and sine waves; 0-4, 14, 42, 140, 420, 1400, 4200. **DC/Rms Sine Volts:** 0-1.5, 5, 15, 50, 150, 500, 1,500 (up to 30,000 V with HVP probe and 250 Mc with PRF probe). **Ohms:** 0.2 ohm to 1,000 megohms. Seven non-skip ranges on every function. Calibration without removing from cabinet. 7½" meter with "can't-burn-out" circuit. 1% multipliers. Zero center. With AC/DC Uni-Probe: One probe for all functions—half-turn of probe tip selects DC or AC ohms. **Power:** 5 watts, 117 VAC, 60 cps.

Model 249 VTVM—Wired, ready to use. Net Each. . . \$59.95
Model 249K VTVM Kit—Net Each. . . 39.95

MODEL 232 PEAK-TO-PEAK VTVM

Measures directly p-p voltage of complex and sine waves; 0-4, 14, 42, 140, 420, 1400, 4200. **DC/Rms Sine Volts:** 0-1.5, 5, 15, 50, 150, 500, 1,500 (up to 30,000 V with HVP probe and 250 Mc with PRF probe). **Ohms:** 0.2 ohm to 1,000 megohms. Seven non-skip ranges on every function. Calibration without removing from cabinet. 4½" meter with "can't-burn-out" circuit. 1% multipliers. Zero center. With AC/DC Uni-Probe: One probe for all functions—half-turn of probe tip selects DC or AC ohms. **Power:** 5 watts, 117 VAC, 60 cps. **Size:** 5" w. x 5" d. x 5½" h. **Weight,** 7 lbs.

Model 232 VTVM—Wired, ready to use. Net Each. . . \$49.95
Model 232K VTVM Kit—Net Each. . . 29.95

MODEL 221 VTVM

Large 4½" meter with "can't-burn-out" circuit. Zero center for TV/FM discriminator alignment. **AC/DC Volts:** 0-5, 10, 100, 500, 1,000 (up to 30,000 V with HVP probe; up to 200 Mc with PRF probe, and peak-to-peak with PTP probe). **Ohms:** 0.2 ohm to 1,000 megohms. **DB:** -20 to +55. **Input R:** 25 megohms, ±1% precision multipliers. Double-triode bridge circuit. Deep-etched aluminum panel; steel case. **Power:** 10 watts, 117 VAC, 60 cps.

Model 221 VTVM—Wired, ready to use. Net Each. . . \$39.95
Model 221K VTVM Kit—Net Each. . . 25.95

MODEL 214 DELUXE VTVM

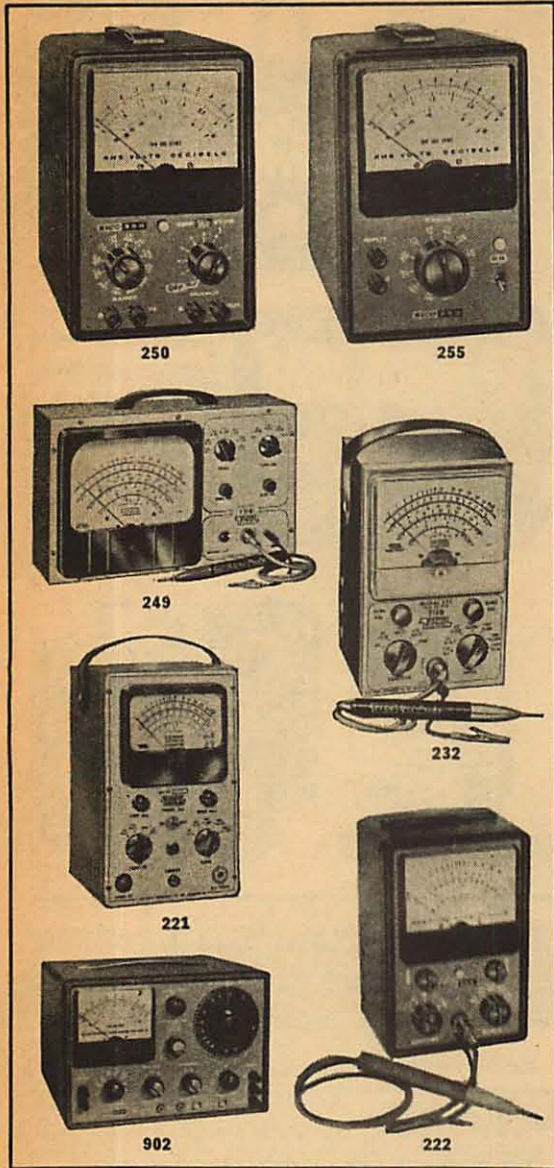
All the versatility and proven features of Model 221, plus a big 7½" meter. Appearance similar to Model 249. **Power:** 10 watts, 105-125 VAC, 50/60 cps.

Model 214K VTVM Kit—Net Each. . . \$34.95

MODEL 222 VTVM

Provides entirely electronic, direct-reading measurements of AC and DC voltages up to 1500 volts in five ranges; resistance in five ranges. Rugged compact VTVM features calibration without removal from cabinet. Completely overload protected electronically, plus fuse. Incorporates 1% ceramic resistors throughout. Zero center scale. Supplied complete with exclusive, time-saving Uni-Probe which measures AC volts, DC volts, or ohms by simply turning the probe tip. Five ranges of DC and AC volts are designed for maximum usefulness. **Frequency Response:** 30 cps to 3 Mc; up to 250 Mc using Eico PRF probe. Peak-to-peak readings made directly on DC scale using PTP probe. **Voltages AC and DC:** 0-3, 15, 75, 300 and 1500; up to 30 kV may be measured using Eico's HVP probe with 1090 meg multiplier resistor. **Resistance:** 0.2 ohm to 100 ohms. **Power:** 5 watts, 117 VAC, 60 cps.

Eico Model 222 VTVM—Wired and tested. Net Each. . . \$42.95
Eico Model 222K VTVM Kit—Net Each. . . 27.95



MODEL 902 IM/HARMONIC DISTORTION METER/AC VTVM
 A rugged, versatile combination of intermodulation/harmonic distortion meter, AC VTVM and db meter for precision measurements in audio design and development. Extremely stable and easy to operate. Big 4½" meter reads as low as 0.3% full scale and as low as 10 mV AC full scale with ±5% accuracy on distortion and ±4% on AC voltage. Precision ±1% resistors in bridge circuits. External high and low frequency panel jacks. HD Meter has 6:1 vernier tuning, 300 degree scale; oscilloscope output. AC VTVM and distortion metering employs cathode follower input; frequency-compensated input attenuator and cathode circuit attenuator. Two-stage R-C coupled amplifier with full bridge meter circuit in feedback loop. Single sensitivity adjustment. No response adjustment required. **IM DISTORTION—Ratios of LF to HF:** 4:1 and 1:1, selected by front panel switch. **Test Signal Output:** 0-5 V, adjusted by 600-ohm L-pad. **Output Termination:** 600 ohms or desired external value, selected by front panel switch. **Distortion Ranges:** 0.3, 1, 3, 10, 30%. **HARMONIC DISTORTION—Fundamental Frequency Ranges:** 20-200, 200-2,000, 2,000-20,000 cps. **Distortion Ranges:** 0.3, 1, 3, 10, 30, 100%. **Impedance at Input Terminals (HD or IM):** 500K ohms. **Minimum Input Level for Measurements (HD or IM):** 0.7 volts. **AC VTVM—Ranges:** 0.01, 0.03, 0.1, 0.3, 1, 3, 10, 30, 100, 300 V rms. **DB:** -20 to +2. **Impedance at Input Terminals:** 2 megohms shunted by 15 pF. **Frequency Response:** ±0 db, 10-100,000 cps; 3 db down at 300 kc. **Power Supply:** Regulated, full wave. **Power Required:** 115 VAC, 60 cps. **Size:** 12½" w. x 10¼" d. x 8½" h. **Weight,** 18 lbs.

Model 902 IM/Harmonic Distortion Meter and AC VTVM—Wired, Net Each. . . \$250.00



LABORATORY PRECISION INSTRUMENTS & KITS

NEW MODEL 342 FM MULTIPLEX SIGNAL GENERATOR

For testing and aligning multiplex circuits of FM multiplex stereo tuners and receivers. Measures and adjusts channel separation, balance and input level required for switch-over to stereo operation. Provides controlled amplitude composite audio output and FM RF output (adjustable about 100 Mc); crystal controlled 19 kc pilot signal switches on and off independently of the composite signal; oscilloscope sync output with choice of 19 kc internal sync or 1 kc external oscillator sync; dual inputs and amplifiers for stereo. **Pilot Frequency:** = 2 cps, 19 kc, crystal controlled. **Separation:** 40 db min., 200 cps to 10 kc; 30 db min., 50 cps to 15 kc. **Composite Signal Output:** 0-5 V p-p, continuously variable, output impedance 1.5K ohms. **FM Multiplex RF Output:** 200 mV; output impedance, 50 ohms. **Signal Selection:** L+R (sum), L-R (difference), L only, R only, 19 kc pilot only, stereo source. **Power Requirements:** 117 VAC, 50/60 cps. **Size:** 5 3/4" w. x 12 1/2" d. x 8 3/4" h. Weight, 10 lbs.

Model 342 FM Multiplex Signal Generator—Wired.
Net Each.....\$149.95

NEW MODEL 261 AC VOLT-WATT METER

Designed for testing, evaluating and servicing audio amplifiers. Can be used for "Q" and comparison measurements of capacity, inductance and resistance. **Voltmeter Ranges:** .01, .03, 0.1, 0.3, 1, 3, 10, 30, 100, 300, 1000 V rms. **Frequency Response:** = 0 db, 10 cps to 150 kc; -3 db at 500 kc. **Input Impedance:** 2 meg ohms shunted by 15 pF. **Accuracy:** = 4% F.S. **Wattmeter Ranges:** 0.15, 1.5, 15, 150 mW; 1.5, 15, 150 W. **Frequency Response:** = 0 db, 10 cps to 100 kc. **Accuracy:** = 5%. **Internal Loads:** 4 ohms (40 watts), 8 ohms (80 watts), 16 ohms (40 watts), 600 ohms (40 watts). **External Loads:** 4, 8, 16, 600 ohms, all up to 150 watts. **Power Requirements:** 15 watts, 105-125 VAC, 60 cps. **Size:** 5 3/4" w. x 7" d. x 8 1/2" h. Weight, 6 lbs.

Model 261 AC Volt-Watt Meter—Wired. Net Each....\$79.95
Model 261K AC Volt-Watt Meter Kit—Net Each..... 49.95

MODEL 565 VOM

20,000 ohms/volt; 31 full-scale ranges. **DC/AC Volts:** 0-2.5, 10, 50, 250, 1,000, 5,000. **DC Current:** 0-100, 10, 100, 500 ma; 10 amps. **Ohms:** 0-2,000; 200K; 20 meg. **Db:** Five ranges, -12 to +55. **Large 4 1/2"**, 50 mA meter. Bakelite* case. **Size:** 5 1/4" w. x 3" d. x 6 3/4" h. Weight, 3 lbs.

Model 565 VOM—Wired. Net Each.....\$29.95
Model 565K VOM Kit—Net Each..... 24.95
Model 555 VOM—1% resistors. Wired. Net Each..... 34.95
Model 555K VOM Kit—1% resistors. Net Each..... 29.95
*Registered Bakelite Corp. trademark.

MODEL 536 VOM

1,000 ohms/volt; 31 full-scale ranges. **AC/DC Volts:** 0-1, 5, 10, 50, 100, 500, 5,000. **AC/DC Current:** 0-1, 10 mA; 0.1, 1.0 amp. **Ohms:** 0-5,000, 100K, 1 meg. **Db:** Six ranges, -20 to +69. **Meter 3" 400 mA.** High impact Bakelite case. **Size:** 3 3/4" w. x 2 3/4" d. x 6 1/2" h. Weight, 2 lbs.

Model 536 VOM—Wired. ready to use. Net Each.....\$18.95
Model 536K VOM Kit—Net Each..... 14.95
Model 526 VOM—With 1% resistors. Wired. Net Ea... 19.95
Model 526K VOM Kit—With 1% resistors. Net Each... 15.95

MODEL 566 VOM

1,000 ohms/volt; 38 full-scale ranges. **AC/DC volts, AC/DC current, db and ohm ranges** same as Model 536 but with 7 additional output voltage ranges: 0-1, 5, 10, 50, 100, 500 and 5,000. **Meter 4 1/2" 400 mA.** Bakelite case. **Size:** 5 1/4" w. x 3" d. x 6 3/4" h. Weight, 3 lbs.

Model 566 VOM—Wired. Net Each.....\$22.95
Model 566K VOM Kit—Net Each..... 16.95
Model 556 VOM—1% resistors. Wired. Net Each..... 25.95
Model 556K VOM Kit—1% resistors. Net Each..... 18.95

MODEL 632 CRT TESTER AND REJUVENATOR

Portable CRT tester and rejuvenator accommodates any picture tube, color or black and white. Includes transformer-operated 1000 v. DC supply for repairing defects, 150 v. DC negative supply with potentiometer to indicate contrast range, plus rheostat and three-range selector for precisely controlled filament voltage. **Meter (4 1/2")**, reads grid cut-off and filament voltages, plus beam current. Neon lamp short test. Six-pushbutton operation, with panel switch to select color gun; separate pushbutton for rejuvenation-welding. **Power:** 117 VAC. **Size:** 9 1/2" w. x 12" d. x 5 1/4" h. Weight, 11 lbs.

Model 632 CRT Tester and Rejuvenator—Wired. Net...\$69.95
Model 632K CRT Tester and Rejuvenator Kit—Net Ea... 49.95

MODEL 944 FLYBACK TRANSFORMER AND YOKE TESTER

Positive check of all flybacks and yokes, in or out of set. Uses sensitive grid-dip principle to show up even one shorted strand. Separate calibration for air- and iron-core flybacks. Large, easy-to-read 4 1/2" meter with three colored scales. With one 6K6 tube. **Power:** 105-125 VAC, 60 cps. **Size:** 5" w. x 4" d. x 7" h. Wt., 5 lbs.

Model 944 Flyback and Yoke Tester—Wired. Net Ea...\$34.95
Model 944K Flyback and Yoke Tester Kit—Net Each... 23.95

MODEL 540 READI-TESTER

AC/DC voltmeter, ammeter, ohmmeter, wattmeter and leakage tester. Rotary switch selector; one-place visual indicator. Instruction book covers basic electricity as well as operation; also procedures and diagrams for common repairs. **AC/DC Voltage Range:** 0-300 V. **AC/DC Current Range:** 0-15 A. **Size:** 3 3/4" w. x 3 3/4" d. x 6 1/2" h. Weight, 3 lbs.

Model 540 Read-Tester—Wired. Net Each.....\$15.95
Model 540K Read-Tester Kit—Net Each..... 12.95

MODEL 610 TUBE TESTER ADAPTER

Adapts Models 625 and 666 tube testers for testing 5- and 7-pin novistors, 10-pin miniatures, 12-pin compactrons, and novars. Adapter cable plugs into 9-pin socket; tenth connection is provided by cap terminal on adapter for connecting grid cap lead from tube tester. Also included are roll-chart supplements. Gray wrinkle finish case; brushed aluminum panel. **Size:** 2 1/2" w. x 1 1/4" d. x 6" h.

Model 610 Tube Tester Adapter—Wired. Net Each.....\$11.95
Model 610K Tube Tester Adapter Kit—Net Each..... 5.95



HIGH VOLTAGE PROBE
For safe measurement up to 30,000 v. DC with any VTVM or 20,000 ohms/volt VOM. Includes choice of high quality multiplier resistor to match most popular instruments.
Model HVP-2 High Voltage Probe—Wired. Net Each...\$6.95

PEAK-TO-PEAK VTVM PROBES AND KITS
Reads p-p voltages directly on DC scales of VTVM. Traces complex AC waveforms through TV deflection systems.
Model PTP-11—For use with 11 meg VTVM. Wired. Net...\$6.95
Model PTP-11K Kit—For 11 meg VTVM. Net Each... 4.95
Model PTP-25—For 25 meg VTVM. Wired. Net Each... 4.95
Model PTP-25K Kit—For 25 meg VTVM. Net Each... 4.95

MODEL UP UNI-PROBE® AND KIT
Performs all functions: Half-turn of probe tip selects DC or AC ohms. Adapts to Elco Model 221 VTVM and other VTVM's in just 15 minutes. Complete instructions supplied.
Model UP—Wired. Net Each.....\$6.95
Model UPK Kit—Net Each..... 4.95

RF VTVM PROBES AND KITS
For RF voltage measurements up to 250 Mc, ±10% accurate.
Model PRF-11—For 11 meg VTVM. wired. Net Each...\$4.95
Model PRF-11K Kit—For use with 11 meg VTVM. Net Each... 3.95
Model PRF-25—For 25 meg VTVM. wired. Net Each... 4.95
Model PRF-25K Kit—For 25 meg VTVM. Net Each... 3.95

CRA, CRA-110 AND CRU PICTURE TUBE TEST ADAPTERS
Model CRA—For testing 70° and 90° picture tubes with Models 625 and 666 tube testers. Wired. Net Each.....\$4.50
Model CRA-110—For testing 110° picture tubes with Models 625 and 666 tube testers. Wired. Net Each.....\$3.95
Model CRU—For testing all color and black-and-white tubes with Models 667 or 628 testers. Wired. Net Each.....\$9.95



MODEL 667 TUBE AND TRANSISTOR TESTER

Dynamic conductance tester combines mutual conductance and peak emission tests in single reading. Also tests transistors for gain and leakage. Tests almost any receiving tube, plus nuvistors, novars, compactrons, special purpose tubes. Special pilot light tests. All tests under actual operating conditions. Lever switch sets voltages, 13 pushbuttons for testing. Twenty filament voltages. Tests color or black and white CRT's with Model CRU adapter. Line adjust control; 400 μ A, 4 1/2" meter. For 105-135 VAC. **Model 667 Tube and Transistor Tester—Wired, Net Each... \$129.95**
Model 667K Tube and Transistor Tester Kit—Net Ea. 79.95

MODEL 628 TUBE TESTER

Tests standard tubes, nuvistors, novars, compactrons, series string, VR and "eye" tubes; all CRT's with adapter. Thirteen lever-type element switches; 4 1/2" meter with three-color scale. Three-column roll chart, snap-out window. Pilot light test socket, line adjust control, overload lamp. **Power: 105-135 VAC.**
Model 628 Tube Tester—Wired, Net Each... \$59.95
Model 628K Tube Tester Kit—Net Each... 44.95

MODEL 615 TUBE TEST ADAPTER

Adapts Models 628 or 667 testers for 4, 5, 6 or 7 pin tubes.
Model 615 Test Adapter—Wired, Net Each... \$11.95
Model 615K Test Adapter Kit—Net Each... 5.95

MODEL 680 TRANSISTOR AND CIRCUIT TESTER

Checks germanium, silicon and selenium diodes and rectifiers. Provides significant measurement of actual transistor parameters, plus all the VOM ranges needed to service transistor equipment. Meter provides 50 μ A sensitivity and 3 1/2" long scale for accuracy. **Transistor Measurements:** I_{CEO} and I_{CBO} with separate ranges for signal and power types; DC beta in two ranges, 2-30 and 20-300; AC beta indirectly on separate scale, using incremental differences in collector and base currents of DC beta to find AC beta. **DC Current Ranges:** 50 μ A, 500 μ A, 5 mA, 50 mA, 500 mA. **DC Voltage:** 5 and 50 volts. **Resistance Range:** x1 (0-2K, 12 ohms center), x100 (0-200K; 12,000 ohms center), and x10K (0-20 meg; 120K ohms center). **Size:** 5 1/4" w. x 3" d. x 6 3/4" h.
Model 680 Transistor and Circuit Tester—Wired and tested. Net Each... \$39.95
Model 680K Transistor and Circuit Tester Kit—Net Ea... 25.95

NEW MODEL 380 COLOR BAR GENERATOR

Solid state color signal and dot bar generator provides precise color signals and dot-bar patterns for both black-and-white and color sets. Fully saturated NTSC color signals include both chrominance and luminance signals; precision 1% voltage dividers. Color-burst gated and delayed to NTSC standards (8 to 10 burst cycles terminated within 10 μ sec after leading edge of horizontal sync pulse). Three crystal controlled oscillators for color burst, convergence and RF. **RF Output:** 0 to 50,000 μ V into 300 ohms (61.25 Mc crystal controlled for TV channel 3). **Video Output:** Both + and - polarities, 0-10 V p-p into 4700 ohms. **Horizontal Lines:** 13 variable thickness. **Vertical Lines:** 10 variable thickness. **Crosshatch:** 13 horiz. and 10 vert. lines. **Dots:** 130 variable size. **NTSC Colors:** Yellow, I, red, R-Y, magenta, Q, B-Y, blue, cyan, green and white. **Power:** 117 VAC, 60 cps. **Size:** 5 3/4" w. x 6 3/4" d. x 8 1/2" h. **Weight:** 4 lbs.
Model 380 Color Bar Generator—Wired, Net Each... \$159.95
Model 380K Color Bar Generator Kit—Net Each... 109.95

NEW MODEL 435 WIDEBAND 3" DC OSCILLOSCOPE

Compact, portable DC 'scope equal in performance to larger, heavier types. Permanently accurate, zener diode calibration (200 mV peak-to-peak). Direct-coupled vertical amplifier is three-stage push-pull type; response, DC to 4.5 Mc; sensitivity, 18 mV rms/cm. Full retrace blanking. Flat-faced 3" CRT with mu-metal shield; distortionless vert. and hor. positioning and trace expansion; adjustable, edge-lighted, grid screen. Horizontal amplifier response, 1 cps to 500 kc; sensitivity, 0.7 V rms/cm. Four overlapping sweep ranges, 10 cps to 100 kc plus TV-vert. position (30 cps) and TV-hor. (7,875 cps). **Power:** 60 watts, 117 VAC. **Size:** 5 1/4" w. x 12 3/4" d. x 8 3/4" h. **Weight:** 15 lbs.
Model 435 DC Oscilloscope—Wired, Net Each... \$149.95
Model 435K DC Oscilloscope Kit—Net Each... 99.95

MODEL 430 HIGH PERFORMANCE 3" OSCILLOSCOPE

Compact and lightweight, but with performance of a bigger 'scope. Vertical amplifier flat from 2 cps to 500 kc. Sensitivity, 25 mV rms/cm. Frequency compensated coarse attenuator plus fine attenuator. Vertical and horizontal positioning controls. Horizontal amplifier, 2 cps to 300 kc with sensitivity of 0.25 V rms/cm. Sweep frequencies from 10 cps to 100 kc in four ranges; internal or external sweep. Full retrace blanking; automatic sync. Flat-face 3" CRT with mu-metal neck shield; direct connection to deflection plates. High intensity modulation input operates from only 3 V rms. Regulated power supply. **Power:** 60 watts, 117 VAC. **Size:** 5 1/4" w. x 11 1/4" d. x 8 1/2" h. **Weight:** 11 lbs.
Model 430 Oscilloscope—Wired, Net Each... \$99.95
Model 430K Oscilloscope Kit—Net Each... 69.95

MODEL 427 HIGH SENSITIVITY DC 5" OSCILLOSCOPE

Now with zener calibrator \pm 1% permanently accurate. Direct coupled vertical amplifier of three push-pull pairs is flat from DC to 500 kc (-6 db at 1 Mc) with 10 mV p-p/cm or 3.5 mV rms/cm sensitivity. Includes four-position frequency-compensated decade attenuator plus internal voltage calibrating position. All trace controls and DC balance may be adjusted from panel; sharp, clean trace is free of blooming. Instantaneous drift-free positioning permits centering of any part of trace, expanded 30 cm vertically or 20 cm horizontally. Slide switch selection of direct plate connections without removing jumper links. Sawtooth output for frequency compensating trimmer adjustments and intensity modulation input. Horizontal amplifier flat from 2 cps to 450 kc, +1, -3 db; sensitivity 0.18 V rms/cm. Four overlapping sweep ranges from 10 cps to 100 kc. Fully automatic sync and full retrace blanking. **Power:** 55 watts, 117 VAC. **Size:** 8 1/4" w. x 16 1/4" d. x 12 1/2" h. **Weight:** 28 lbs.
Model 427 DC Oscilloscope—Fully wired, Net Each... \$109.95
Model 427K DC Oscilloscope Kit—Net Each... 69.95

MODEL 460 WIDEBAND DC 5" OSCILLOSCOPE

For color, and monochrome TV, lab and industry. Flat from DC to 4.5 Mc; usable to 10 Mc; DC amplifiers. **Vertical Sensitivity:** 10 mV rms/cm, push-pull throughout. **Sweep Frequency:** 10 cps to 100 kc; low sweep with external capacitor. Automatic sync limiter and amplifier. Internally modulated sawtooth output; 60 cps test signal; external sync; external capacitor jacks; 60 cps variable phase sine sweep. Pre-set TV vertical and horizontal sweep positions. Four frequency-compensated attenuator positions, up to 1,000:1 on either direct or capacitive-coupled input. **Power:** 95 watts, 117 VAC. **Size:** 8 1/4" w. x 16" d. x 13" h. **Weight:** 29 lbs.
Model 460 DC 5" Oscilloscope—Wired, Net Each... \$129.50
Model 460K DC 5" Oscilloscope Kit—Net Each... 89.95

MODEL 488 ELECTRONIC SWITCH

Allows you to observe two patterns on one 'scope simultaneously: Compare voltage and current, amplitudes, waveforms, frequency and phase relationships. Continuously variable switching rates from less than 10 cps to over 2 kc. Use as square wave generator on same range. **Power:** 25 watts, 105-125 VAC, 60 cps.
Model 488 Electronic Switch—Wired, Net Each... \$39.95
Model 488K Electronic Switch Kit—Net Each... 23.95

MODEL PLC OSCILLOSCOPE LOW CAPACITY PROBE

For TV sync signal tracing and general testing in video sync and sweep circuits.
Model PLC Probe—Wired, ready to use, Net Each... \$5.95
Model PLCK Probe Kit—Net Each... 3.95

MODEL PSD OSCILLOSCOPE DEMODULATOR PROBE

For signal tracing and checking of TV and radio RF and IF stages. Demodulates amplitude modulated carriers between 150 kc and 250 Mc.
Model PSD Probe—Wired, ready to use, Net Each... \$5.95
Model PSDK Probe Kit—Net Each... 3.95

MODEL PD OSCILLOSCOPE DIRECT PROBE

For TV waveform tracing in low impedance or low frequency circuits. Eliminates stray pickup and signal re-radiation.
Model PD Probe—Wired, Net Each... \$3.95
Model PDK Probe Kit—Net Each... 2.95

MODEL 315 DELUXE RF SIGNAL GENERATOR

Better than 1% accuracy on all seven stages. Frequency: Fundamentals 75 kc to 50 Mc in five ranges. Calibrated harmonics 13 Mc to 150 Mc in two ranges. RF Output: Over 100,000 μ V. Audio Modulation Frequency: 400 cps. VR tube regulated power supply. Internal 400 cps sine wave audio generator with attenuator for RF modulation and external audio testing. Provision for external modulation. Power Required: 117 VAC, 60 cps. Size: 12" w. x 7" d. x 13" h. Weight, 18 lbs.

Model 315 Deluxe RF Signal Generator—Wired, Net. . . \$69.95
Model 315K Deluxe RF Signal Generator Kit—Net Ea. 49.95

MODEL 324 RF SIGNAL GENERATOR

IF-RF alignment, signal tracing and trouble-shooting of TV, FM, and AM sets on all fundamentals; marker generator; 400 cps sine wave audio testing. Also for lab and experimental work. Extended Frequency Range: Six fundamental bands: 150-400 kc, 400-1,200 kc, 1.2-3.5 Mc, 3.5-11 Mc, 11-37 Mc, 37-145 Mc; harmonic band 111 Mc-435 Mc. Frequency accuracy $\pm 1.5\%$. Colpitts RF oscillator, directly plate-modulated by cathode follower. Variable depth of internal modulation, 0-50% by 400 cps Colpitts oscillator. Variable gain external modulation amplifier; 3 V needed for 30% modulation. Fine and coarse (3-step) RF attenuators; 50-ohm output impedance. Power Required: 8 watts, 117 VAC, 60 cps. Size: 10" w. x 4 3/4" d. x 8" h. Weight, 8 lbs.

Model 324 RF Signal Generator—Wired, Net Each. . . \$39.95
Model 324K RF Signal Generator Kit—Net Each. . . 28.95

MODEL 320K RF SIGNAL GENERATOR KIT

For radio servicing, AM and FM IF alignment, checking RF stages; marker generator for TV alignment, 400 cps sine wave audio testing; laboratory and experimental work. Vernier tuning condenser. Hartley RF oscillator, circuit. Frequency Range: 150 kc to 34 Mc in five bands; calibrated harmonics to 102 Mc. RF output attenuator. Colpitts oscillator, 400 cps sine wave output. Modulated or unmodulated RF output. Power supply with full wave rectification. Power Required: 117 VAC, 60 cps. Size: 10" w. x 4 3/4" d. x 8" h. Weight, 8 lbs.

Model 320K RF Signal Generator Kit—Net Each. . . \$24.95

MODEL 369 TV-FM SWEEP AND POST-INJECTION MARKER GENERATOR

Electronic inductor sweep generator with variable and fixed (crystal) marker generators. Markers are post-injected so that circuit response is unaffected by markers and vice versa. AGC three-stage circuit keeps signal constant over entire frequency range through 20 Mc. Rear phasing control permanently adjusts horizontal sweep signal. With 6:1 vernier dials and 350° scales frequency tuning. Sweep Generator Range: Fundamental 3-7.5, 6-16, 16-42, 36-95, and 75-220 Mc. Marker Generator Range: Four ranges 2-225 Mc; harmonic, 60-225 Mc. Fixed Frequency Marker Oscillator: 4.5 Mc, crystal supplied. Output Impedance: 50 ohms. Power Required: 60 watts, 105-125 VAC, 60 cps. Tubes: Six dual-purpose; plus rectifiers.

Model 369 Sweep-Marker Generator—Wired, Net Ea. \$139.95
Model 369K Sweep-Marker Generator Kit—Net Ea. 89.95

MODEL 360K TV-FM SWEEP GENERATOR KIT

Covers all VHF TV and FM channels and IF frequencies: 500 kc to 228 Mc on fundamentals. Continuous sweep width control, 0-30 Mc. Crystal marker oscillator. Variable phasing of 60 cps output. Provision for external marker injection. Crystals are not included. Power Required: 117 VAC, 60 cps. Size: 10" w. x 6 3/4" d. x 8" h. Weight, 11 lbs.

Model 360K TV-FM Sweep Generator Kit—Net Each. \$39.95
C-5 or C-4.5 Mc Crystals—Specify, Net Each. . . 3.95

MODEL 377 SINE AND SQUARE WAVE AUDIO GENERATOR

Wien bridge tuning circuit, 1% resistors. Frequency Range: Sine wave, 20-200,000 cps in four bands; square wave, 60-50,000 cps. Response: 60-150,000 cps, $\pm 1\frac{1}{2}$ db. Less than 1% distortion. Hum: Less than 0.4%. Accuracy: $\pm 3\%$. Output: 10 V across 1,000 ohms rated load (100 mW). Power Required: 50 watts, 117 VAC, 60 cps. Size: 11 1/2" w. x 7 1/2" d. x 7 1/2" h. Weight, 13 lbs.

Model 377 Audio Generator—Wired, Net Each. . . \$54.95
Model 377K Audio Generator Kit—Net Each. . . 37.95

MODEL 1078 METERED VARIABLE AC BENCH SUPPLY

invaluable power supply for production line testing, quality control, and service work. Unit is instrument-styled, fully metered variable AC supply. May be used to study performance under varying line conditions, to check power consumption, to compensate for power line voltage fluctuations, to expose intermittent components by inducing failure with over-voltage. Features 0-140 VAC adjustable output voltage from a 120 VAC input from line. Highly efficient variable auto-transformer is toroidal core design. The smooth, rotary brush-tap is controlled by dial on the panel. Linear variation of output voltage, 0-140 volts. Unit has a separate output ammeter and output voltmeter. Ammeter is dual-range, permitting switching under load. Auto-transformer and ammeter are protected by separate extractor-post fuses on panel. Two-pole power switch disconnects both sides of unit from power line. Frequency: 60 cps. Input Voltage: 120 VAC. Output Voltage: 0-140 VAC (30-140 VAC meter). Output Current: Two types, 0-2 1/2 and 0-7 1/2 amps. Switching: Power switch, two-pole type. Range switch selects lower or higher current range for ammeter and may be switched under load. Meter Accuracy: $\pm 3\%$ of full scale. Fusing: 7 1/2 amps slo-blo; 2 1/2 amps fuse protects ammeter on both current ranges. Size: 5 1/2" w. x 7" d. x 8 1/2" h. Weight, 13 lbs.

Model 1078 Bench Power Supply—Wired, Net Each. . . \$54.95
Model 1078K Bench Power Supply Kit—Net Each. . . 42.95

MODEL 1073 METERED VARIABLE AC BENCH SUPPLY

Same features as Model 1078, but with 3 amps current rating. Model 1073 Bench Power Supply—Wired, Net Each. . . \$47.95
Model 1073K Bench Power Supply Kit—Net Each. . . 39.95



MODEL 145AK MULTI-SIGNAL TRACER KIT

High gain RF and low gain audio input channels for signal tracing and trouble shooting. Enough RF gain to trace up to receiver input; signal is heard through built-in 5" FM speaker. Individual panel receptacles for easy change-over from RF to audio tracing or vice versa. Noise localizer circuit applies DC test voltage through probe. May be connected as test speaker, amplifier, or output transformer. Output for VTVM or scope. Power Required: 40 watts, 105-125 VAC, 60 cps. Size: 5-9/10" w. x 5 1/4" d. x 7 13/16" h. Weight, 7 lbs.

Model 145AK Multi-Signal Tracer Kit—Net Each. . . \$23.95

MODEL 147A DELUXE MULTI-SIGNAL TRACER

For RF and audio signal tracing and trouble-shooting on AM/FM/TV sets. Separate high gain RF and low gain audio input channels. Magic-eye monitor plus speaker for easier estimation of signal strength and gain per stage. High RF sensitivity permits signal tracing to receiver input. Shielded RF crystal demod and direct probes provided. Noise locator circuit applies DC test voltage to component, amplifying effect. Calibrated wattmeter. Power Required: 40 watts, 105-125 VAC, 60 cps. Size: 10" w. x 4 3/4" d. x 8" h. Weight, 10 lbs.

Model 147A Multi-Signal Tracer—Wired, Net Each. . . \$44.95
Model 147AK Multi-Signal Tracer Kit—Net Each. . . 29.95



NEW MODEL 965 FARADOHM BRIDGE/ANALYZER
Permits safe, precise measurement of all capacitors (even 1-volt types) and resistors; capacitor leakage measurement; diode reverse and transistor, capacitor measurements; resistance-capacitance-inductance comparison. Instant VTVM zeroing; 6-range VTVM; full overload protection; variable polarizing voltage; 11-range VT nano-micro-milliammeter. **Capacitance Ranges:** 5-10,000 pF, 500 pF-1 μF, 0.5 μF-100 μF, 50-5000 μF. **Power Factor:** 0-80% at 60 cps. **Resistance:** 0.5-1000, 50-100,000 ohms, 5000 ohms-10 megohms, 5-5000 megohms directly and up to 200,000 megohms using metered variable DC supply. **DC Voltages:** 1.5, 5, 15, 50, 150, 500 volts full scale into 10-megohm input. **DC Current:** 0.15, 0.5, 1.5, 5, 15, 50 μA; 0.15, 0.5, 1.5, 5, 15 mA (75 mV drop across terminals). **Accuracy:** ±5% on all except power factor when reading below 30%. **RCL Comparator:** 0.25-50 (ratio). **Variable DC:** 0.4-1.5, 1.4-5, 4-15, 14-50, 40-150, 140-500 volts at 10 mA max. **Power Requirements:** 32-45 watts, 115 VAC, 60 cps. **Size:** 12 3/4" w. x 9" d. x 8 1/2" h. Weight, 15 lbs.

Model 965 FaradOhm Bridge Analyzer—Wired. Net... \$129.95

MODEL 955 IN-CIRCUIT BRIDGE-TYPE CAPACITOR TESTER*
Provides short and open tests; includes Wien bridge for capacitance tests, with shunt resistance balancing provision that permits in-circuit measurements even when shunting resistance is low. One coax lead for all tests; detachable, with milke connector coupling to unit. **Shorts:** In or out of circuit, with shunt as low as 1 ohm; reliable up to 2,000 μf; max. test, 6.3 v. AC (open leads), decreasing with decreasing impedance. **Open:** In or out of circuit; tests capacitors as small as 15 μμf. In-circuit, shunt may be as low as 35 ohms above 250 μμf, 7K ohms at 15 μμf. **Capacitance:** 0.1-50 μf using Wien bridge with shunt balancing permitting ±10% accuracy. In or out of circuit. **Power Required:** 8 watts, 105-130 VAC, 60 cps. **Tubes:** 1-6C4, 1-EM84/6BG6. **Size:** 5 3/4" w. x 6" d. x 8 3/4" h. Weight, 6 lbs. *Patent pending.

Model 955 Capacitor Tester—Wired. Net Each... \$39.95

Model 955K Capacitor Tester Kit—Net Each... 19.95

MODEL 950B RC BRIDGE AND R-C-L COMPARATOR
Bridge-type instrument reading directly: **Resistance,** 0.5 ohm to 500 megs, 4 ranges; **Capacitance,** 10 pF to 5,000 μF, 4 ranges; power factor. (Kit includes precision calibrating resistor.) Unique comparator range for R, C and L comparison measurement against external standard. Leakage testing of all capacitors at rated WDC with internal 0-500 v. DC source. Electron ray tube as both bridge balance and capacitor leakage indicator. **Power:** 117 V, 60 cps. **Size:** 10" w. x 4 3/4" d. x 8" h. Weight, 8 lbs.

Model 950B Bridge-Comparator—Wired. Net Each... \$29.95

Model 950BK Bridge-Comparator Kit—Net Each... 23.95

MODEL 1064 BATTERY ELIMINATOR AND CHARGER
Heavy-duty battery eliminator drives any auto radio, mobile and marine transceiver. Also charges 6- and 12-volt storage batteries. Continuous output voltage adjustment on both ranges; LC filter with heavy-duty choke; fused primary and automatic reset overload relay in the secondary; heavy-duty selenium rectifiers. **Output Voltages:** 0-8 VDC, 0-16 VDC. **Current Ratings:** 10 amps continuous, 20 amps intermittent at 0-8 V; 6 amps continuous, 10 amps intermittent at 0-16 V. **AC Ripple:** 1.5% at 2 amps, 2% at 6 amps and 4.5% at 10 amps at 0-8 V; 0.3% at 2 amps, 1% at 6 amps and 1.5% at 10 amps at 0-16 V. **Meters:** Voltmeter, 0-20 volts; ammeter, 0-10, 0-20 amps. **Power Requirements:** 150 watts, 117 VAC, 60 cps. **Size:** 5 3/4" w. x 7 3/4" d. x 8 3/4" h. Weight, 14 lbs.

Model 1064 Battery Eliminator and Charger—Wired. Net Each... \$54.95

Model 1064K Battery Eliminator and Charger Kit—Net... \$45.95

MODEL 1060 BATTERY ELIMINATOR AND CHARGER
Extra-filtered DC power (0.3% AC ripple) for servicing transistorized equipment. **Two Ranges:** 0-8 v., 10 a. cont., 20 a. inter.; 0-16 v., 6 a. cont., 10 a. inter. Special built-in filter takes full continuous and intermittent current output on both ranges. Variable type transformer; fused primary; automatic reset overload relay opens secondary. Separate voltmeter and dual-range ammeter; automatic ammeter switching. Wide-angle vision, sloping panel, all-steel case; wall mounting feature optional.

Model 1060 Battery Charger and Eliminator—Wired... \$49.95

Model 1060K Battery Charger and Eliminator Kit—Net... 39.95

MODEL 1050 BATTERY ELIMINATOR AND CHARGER
Work bench 6 v. and 12 v. power supply for servicing vacuum tube equipment. Similar to Model 1060, less special filter.

Model 1050 Battery Eliminator and Charger—Wired... \$38.95

Model 1050K Battery Eliminator and Charger Kit—Net... 29.95

MODEL 1020 SOLID STATE POWER AND BIAS SUPPLY
A completely transistorized, low-ripple, continuously variable DC power and bias supply. Two 2N256 power transistors permit output voltages up to 30 v. Maximum load current, 300 ma. Max. ripple (120 cps) full load, 1/200 of 1%.

Model 1020 Power and Bias Supply—Wired. Net Each... \$29.95

Model 1020K Power and Bias Supply Kit—Net Each... 23.95

MODEL 1180 CAPACITANCE DECADE
Precision silver-mica capacitors (±1% accuracy, 500 VDC rated), arranged in three decades—100 μμf to 0.111 μf, in steps of 100 μμf. Positive detent ceramic wafer switches.

Model 1180 Capacitance Decade—Wired. Net Each... \$24.95

Model 1180K Capacitance Decade Kit—Net Each... 17.95

MODEL 1171 RESISTANCE DECADE
Wide range, versatile instrument covering 0-99,999 ohms in one ohm steps with five decades and 1/2% precision.

Model 1171 Resistance Decade—Wired. Net Each... \$29.95

Model 1171K Resistance Decade Kit—Net Each... 24.95

MODEL 584 BATTERY TESTER
Provides true dynamic test of A and B portable radio type, hearing aid, lantern, radiation counter and electronic equipment batteries—in or out of equipment. Spare position adapts for other types.

Model 584 Battery Tester—Wired. Net Each... \$12.95

Model 584K Battery Tester Kit—Net Each... 9.95

MODEL 1100 EIA RESISTANCE BOX
For rapid substitution of EIA resistance values, 15 ohms to 10 megs in decade multiples of 15, 22, 33, 47, 68 and 100 ohms. Uses standard 1 watt ±10% EIA resistors. Five-way jack-top binding posts. **Size:** 6 3/4" w. x 3 3/4" d. x 3 3/4" h. Weight, 2 lbs.

Model 1100 Resistance Substitution Box—Wired. Net... \$12.95

Model 1100K Resistance Substitution Box Kit—Net. Ea. 7.95

MODEL 1120 EIA CAPACITANCE BOX
For rapid substitution of EIA capacitance values, 0.0001 to 0.22 μf in operating circuits: ±10% accurate. Uses silver mica and molded plastic capacitors, conservatively rated at 600 v. Five-way jack-top binding posts. **Size:** 3 3/4" w. x 3 3/4" d. x 6 1/4" h. Weight, 2 lbs.

Model 1120 Capacitance Substitution Box—Wired. Net... \$10.95

Model 1120K Capacitance Substitution Box Kit—Net... 6.95

MODEL 1140 SERIES/PARALLEL RC COMBINATION
A valuable combination of Model 1100 resistance box and Model 1120 capacitance box. Permits selection of any resistance alone, any capacitance alone, or any combination of either. Open circuit and short circuit positions are provided as well. Capacitance and resistance values are accurate within 10% from 0.0001 to 0.22 μf, and 15 ohms to 10 megohms. **Size:** 6 3/4" w. x 2 3/4" d. x 5 3/4" h. Weight, 3 lbs.

Model 1140 Series/Parallel RC Combination—Wired. Net Each... \$19.95

Model 1140K Series/Parallel RC Combination Kit—Net Each... 14.95