SENCORE

1/28/81

TEST INSTRUMENTS

Highly human-engineered test equipment & analyzers at an affordable price. Most think of Sencore as an investment for the 80's, not an expenditure.

All American designed, manufactured, distributed, and serviced by a highly technical team dedicated to test equipment only. We make nothing else.

Built-in quality for the lifetime of the instrument with Sencore's exclusive 100% Made-Right Lifetime Guarantee.

Designed for the 1980's

Reaching you monthly by Sencore News. Read by over a quarter million technicians and engineers.

Sales Engineers: Located right in your area to demonstrate equipment needed.

SALES ENGINEERS · SERVICE SEMINARS · SENCORE NEWS

Seminars: To help you understand instrument applications and answer your questions.

See product index on back page.

Take command of virtually all digital and conventional circuits for the 80's with the all new Sencore SC60 "WIDEBANDER"

Shipped with all needed probes.

$1,895

NEW

SC60 60 MHz, useable to 100 MHz, Dual Trace Oscilloscope

For just a few dollars more than 30 MHz scopes and for at least $500 less than competitive 60 MHz scopes.

60 MHz bandwidth (useable to 100 MHz) for today's electronics: Only 3 dB down at 60 MHz, 6 dB at 80 MHz, and 12 dB down at 100 MHz, covers virtually all digital logic families today. You'll need the 60 MHz bandwidth to see the fifth harmonic of square wave output of new popular 10 to 12 MHz digital logic circuits; a 30 or 35 MHz scope just won't do. All resistance coupled circuits, with no peaking coils, means true waveform reproduction, too. 6 nanoseconds risetime produces sharp, bright wavefronts all the way to 100 MHz. High input impedance of 10 Megohms, with built-in calibrated 10 to 1 probe means up to 10 times less circuit loading. AC or DC input coupling at the flick of a switch. The SC60 "WIDEBANDER" is a sure fire answer to analyzing circuits of the 80's.

High sensitivity (5 mV per centimeter) and 2 KV protection let you measure in more circuits for the money than ever before. 5 millivolts per centimeter sensitivity on both channels enables you to troubleshoot in very low level circuits. For example, you can see the RF envelope of the low channel TV stations at the tuner RF amplifier. You can view 45 MHz TV IF without detection. The SC60 is designed for high level signal input, too, with 2 KV input protection.

Rock solid fiddle-free sync: ECL logic and differential amplifiers used throughout the triggering circuits provide you with rock solid sync. You can rotate the TIMEBASE control through all settings with only one centimeter of signal, and the SC60 stays locked in without adjusting any other control. Automatic sync mode keeps scope trace on CRT when no signal is present, so you'll know your scope is on and working. Built-in sync separators are turned on in video mode to lock to sync pulses from complex waveforms for solid sync when working on TV, video tape recorders, etc.

Saves you time when setting TIMEBASE control with easy-to-use sweep speeds. The "WIDEBANDER" sweep speed is calibrated in both time and frequency, making timebase adjustments a snap. Video sweep speed setting is 100% automatic by simply switching to the video preset switch position and pushing the vertical or horizontal pushbuttons. Maximum sweep speed goes to .1 u sec (1 MHz) and to .01 u sec (10 MHz) when horizontal position control is pulled for 10X expand. Makes viewing VIR signals, glitches, etc. a snap.

Delayed signal trace enables you to see the beginning of the waveform on both channels. By delaying both traces, you can view the leading edge of the waveform that is doing the triggering. A must for digital service, VTR service, etc.

Makes phase comparisons with exclusive 5 MHz vector response at the push of a button. The "WIDEBANDER" is also a front end amplification type vectorscope to 5 MHz. Excellent for color TV repair, video tape recorder service, speed alignment in hi-fi, school demonstrations, and anywhere phase checking is essential. Z-axis also fed directly in rear for special tests.

You can add, subtract, or view channels separately at the push of a button. Push the Channel A pushbutton and view channel A. Push the Channel B pushbutton and view channel B. Push both buttons and read A plus B. Pull the vertical position control and invert A to read B minus A. Makes distortion testing in amplifiers easy. Handy beam finder shows you where the beam is to help you get started.

Easy to use: Spacious human-engineered front panel design eliminates skinned knuckles and accidental bumping of adjacent controls. Every control is functionally grouped and conveniently located, just where you'd expect it to be, to speed your work. Fewer operating controls than competitive scopes lets you save time by making fewer set-up adjustments.

Post deflection, high intensity blue phosphor CRT provides easy-to-view trace, even under high ambient lighting conditions. Recessed P31 blue phosphor, post deflection, 8 x 10 cm. (5") CRT, with 6 KV 2nd anode voltage, produces each waveform with sharp focus crystal clarity, even on very short duty cycle waveforms.

Futuristic design makes it a prestigious-looking addition to your bench or lab: Handsome grey aluminum case and panel, black Cycolac® bezel, handle, and grey feet, are accented by black controls for a truly futuristic-looking oscilloscope. Measures only 9½" x 12" x 17" HWD (21.6 x 30.5 x 43.2 cm.) 25 lbs. (11.34 Kg.) 115 VAC operated; 35 Watts.

Be confident the power is right, with the 5-way AC "POWERITE"

NEW

A must when working on hot TV chassis or when repairing shutdown circuits.

PR57 "POWERITE" Variable Isolation Transformer and Safety Tester $395

Prevent dangerous shocks to you or your customers: The "POWERITE's" 400 watt isolation transformer is for use on hot chassis when serviced on your bench or in the home. Prevent damage to the chassis and your test equipment. And, think of your liability with these hot chassis around children, gabby housewives, visiting customers, etc.

Make all recommended tests on shutdown circuits: The "POWERITE's" 400 watt AC variable output transformer provides a continuously variable output voltage from 0 to 140 volts; a necessity for troubleshooting the new shutdown circuits. Test TV receivers at different line voltages; catches voltage sensitive circuits or components before delivery to customers. Also, you'll need the variable output transformer to set the line voltage to 117 volts for accurate circuit voltage, current, or power measurements; and, you'll need the variable output transformer to sweat out intermittents.

Make sure high or low line voltage is not the cause of malfunction: The PR57 is an AC line voltage monitor so that you can measure the incoming line voltage from 0 to 150 VAC to be sure the incoming voltage to the unit under test is correct.

Know that you are delivering the correct power at all times: The PR57 is a complete output power monitor. By simply pushing a button, you can read the AC voltage that is being delivered from the "POWERITE" from 0 to 150 VAC, the AC current to 1.5 or 4 amperes, or the wattage to 175 or 470 watts.

Protect you and your customer: The PR57 is an AC line safety tester to prevent OSHA from coming down around your neck, to hold insurance rates down or to prevent a lawsuit. Simply touch the safety leakage probe to any exposed parts of the chassis and check leakage current in microamps to manufacturer's standards. Checks to both high and low side of the line made by simply pushing a button. No hook ups, manufacturer's recommended gimmicks, identification of high or low side of AC line, or charts needed. 500 microamps leakage current maximum is considered standard in the industry, although 300 microamps is recommended by some manufacturers, and 100 microamps is maximum allowable leakage current if TV is used in hospital environment. Any leakage may mean that something is going wrong and you'd better check it before the leakage increases to a dangerous level.

The PR57 is a real money maker: The "POWERITE" will pay for itself in a month as you check all TVs, stereos, etc., for leakage and attach provided certificate label to chassis. Average charge for leakage test is $3.00. You receive a complete promotional kit with each PR57 that includes: Stick-on labels indicating you have performed the safety leakage test, banners for your shop, and a newspaper ad slick to inform your customers of your new safety checks.

The "POWERITE" is more than an AC power supply,

it's a troubleshooting tool, too!

No modern service bench is complete without the PR57. You'll use it to service over 25% of the defective receivers on the bench as over 25% have power distribution problems.

The PR57 lets you quickly locate those leaky filter capacitors, that will only show up as excessive power consumption, before they can cause a circuit problem and a costly callback.

Pesky shutdown circuits are a snap, too, with the PR57. Just reduce the AC input voltage to a level below the shutdown mode. Only then can you make the necessary measurements in the circuit to locate the defect in the shutdown circuit.

Voltage regulator troubleshooting is a breeze, as well. The PR57 lets you bypass the regulator transistor, adjust the output B + to the correct voltage, and locate the defect without damage to the transistors or circuit components. You can quickly isolate the trouble to the power supply or the circuits operated from the power supply in a minute or two.

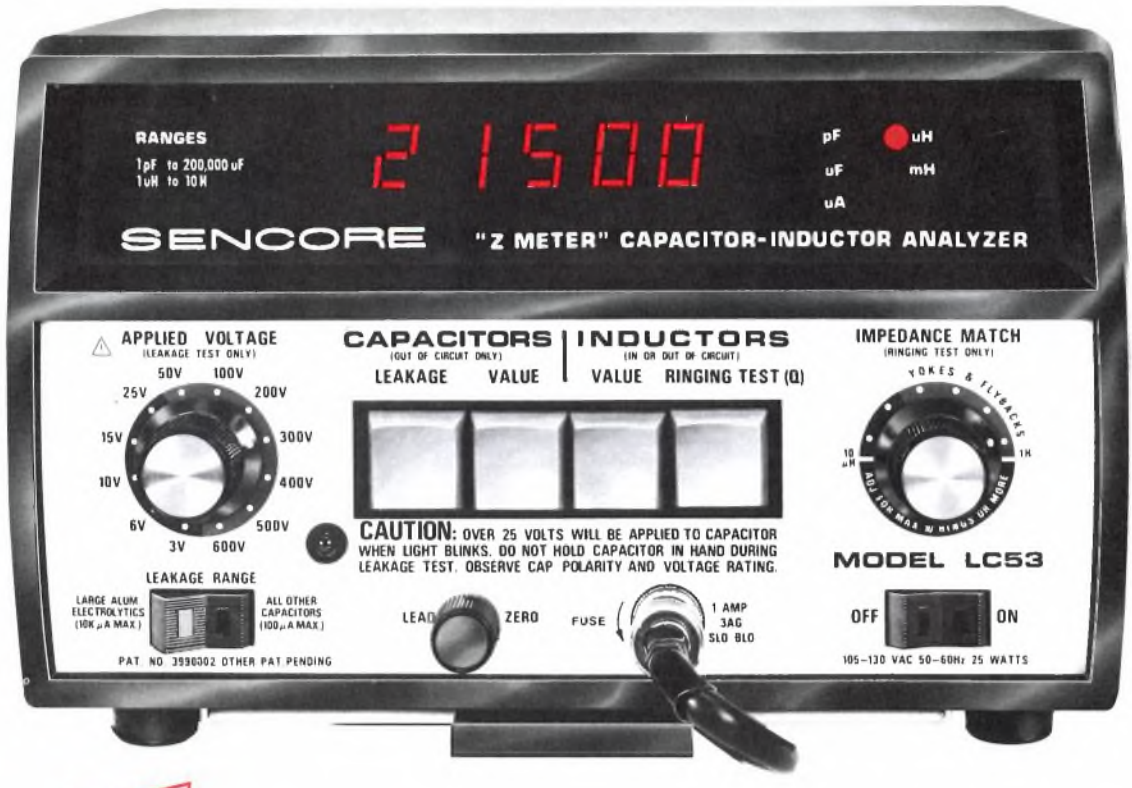
Protect those new and costly horizontal output transistors with the PR57. Simply run the AC input voltage up slowly while monitoring the AC current on the PR57. You will have no more damaged output transistors due to hidden circuit defects.

. . . And, solve many other power problems too numerous to mention here.

The "POWERITE" is protected by a 4 amp magnetic circuit breaker on the front, which is backed by a 4 amp Slo-Blo fuse on the rear.

General: Grey vinyl-clad steel case, molded plastic end panels, with scratch proof poly panel® faceplate. Tilt stand and carrying handle. 6" x 11½" x 12¾" HWD (15.2 x 29.2 x 32.4 cm.) 18 lbs. (8.2 Kg.) 115 VAC, 0.4 amps idle current.

Discover total reliability in capacitor, inductor, & special component analyzing with the triple patented "Z METER"



NEW LC53 "Z METER"™ Digital Capacitor and Inductor Analyzer $795

Capacitors and coils are used in greater numbers each year in conventional as well as integrated circuits. Capacitors have grown in size to over 100,000 MFD in new computer circuits. It is next to impossible to keep the correct value at the rated voltage in stock for substitution. Even if you could, electrolytics deform when sitting in stock, and it is easy to substitute and not find your problem. Schematics have always shown coil values, but there was nothing on the market to check them quickly before the LC53 "Z METER". The LC53 is truly the missing link in component testing with checks never before offered for testing component values and the component's ability to perform in-circuit.

The "Z METER" is fast, 100% automatic, and fool-proof: If you can push a button, you can operate the "Z METER". Does away with time-consuming bridges and gimmick "capacity only" meters. All readings are direct on large ½" LED digital display.

Automatically checks capacitor values from 1 picofarad to a whopping 200,000 microfarad. All readings direct with full auto-ranging. All you do is connect the capacitor and push the value button and read directly in microfarads or picofarads. Only direct reading digital capacitor meter on the market. Others read in nanofarads and millifarads.

Checks capacitors for leakage current, under full load, with up to 600 volts applied: No other tester checks capacitor leakage under dynamic conditions. Simply set Applied Voltage switch to the capacitor rated voltage, push the Leakage button, and read leakage current directly. Check for leakage between electrolytic sections by applying voltage and shorting other sections to ground to see if there is any change.

Provides two capacitor leakage ranges to speed up tests: The "Z METER" has a leakage range switch that can be set to either 100 microamps or 10,000 microamps to reduce waiting time while the capacitor charges. The larger range is simply used for all aluminum electrolytics and the smaller range for all other capacitors.

A convenient pull chart shows the maximum allowable leakage current for the capacitor size and applied voltage. Saves a great deal of time when checking capacitor leakage as the operator simply waits until the charging current reaches the maximum allowable level and then considers the capacitor good, without waiting for the full capacitor charge.

Automatically discharges the capacitor after leakage test. Release the Leakage pushbutton and an internal circuit quickly discharges even the largest electrolytic to prevent shock hazard. Also prevents capacitor charge from damaging "Z METER" circuit when you read capacitor value after leakage test to check dielectric absorption.

Reforms dryed out electrolytics: The "Z METER" power supply can be used to reform electrolytics up to 600 volts by simply inserting a provided pushbutton holder between the "Z METER" handle and the Leakage button.

Exclusive dielectric absorption capacitor check. The capacitor is checked for value, charged by making the leakage check, discharged by releasing the Leakage button, and then the value rechecked. If the value changes, the capacitor has dielectric absorption. This common problem can only be detected by the "Z METER". Nothing else checks it, yet well over half of all electrolytic failures are dielectric absorpiton.

Automatically checks coil value from 1 microhenry to 10 Henrys: Just push the "Z METER" inductance value pushbutton and any inductance value from a small 1 microhenry to a whopping 10 Henrys instantly reads in the digital window. Decimal is automatically shifted and microhenry or millihenry indicator lit for direct reading.

Automatically checks coil ringing capability and effective Q. All coils are matched to the "Z METER" circuitry to read 10 rings or more as good when the Impedance Match control is rotated for the maximum number of rings in the digital readout window. This is the same type patented test that is used on the Sencore YF33 Ringer that has proven itself 100% accurate on yokes and flyback transformers and has now been extended to smaller and larger coils. Simply connect the coil to the test leads, push the Ringing test pushbutton, and rotate the Impedance Match switch through all positions while viewing the digital window for a maximum reading. Any reading above 10 indicates that the coil is good. Many coils, including yokes and flybacks, can be checked in-circuit without ever disconnecting a single component.

The "Z METER" has special tests not found on any other instrument

It's a transmission line tester: The "Z METER" tests for opens and shorts in any transmission line to within feet. Distance to opens are located by measuring capacity and dividing by capacity per foot. Shorts are located by measuring inductance and dividing by inductance per foot. The price of an equivalent transmission line tester is at least five times the cost of the "Z METER."

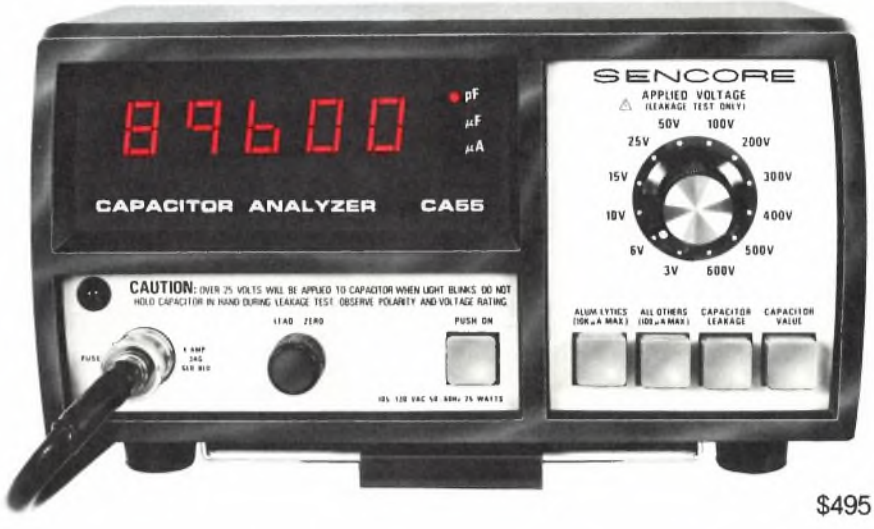
It's an SCR, TRIAC, and hi voltage diode tester: The "Z METER" power supply & capacitor leakage check becomes a fool-proof, go/no-go SCR, TRIAC, and hi voltage diode tester with the addition of the easy to use SCR224 SCR & TRIAC Test Accessory. No more downtime while you wait for an expensive replacement SCR, TRIAC, or hi voltage diode to substitute in the circuit only because you didn't have a tester to do the job.

It's a hi pot dielectric leakage tester, too: There are many times that you'll want to know leakage between transformer windings, foil runs on PC boards, plastic insulators, etc. Crank up the power supply voltage to as high as 600 volts and use the capacitor leakage test to measure leakage (withstand) to 1 microamp or 120 megohms. A hi pot tester will cost you many times the price of the "Z METER" and they are very cumbersome to use.

General (LC53 "Z METER"): Construction: Handsome grey aluminum case and molded black Cycolac® bezel. POWER: 105-130 VAC, 60 Hz, 25 Watts. FUSE: Test lead input with in-line 1 Amp 3 AG Slo-Blo fuse. SIZE: 6" x 9" x 11.5" HWD (15.24 x 22.86 x 29.1 cm.) 7¾ lbs. (3.56 Kg.)

NEW

The CA55 Capacitor Analyzer



$495

Checks capacity value automatically: Just push a button and the CA55 reads capacitor value from 1 picofarad to 200,000 MFD with the same 100% autoranged circuits as the LC53. All readings are direct with no interpretation.

Checks leakage with up to 600 volts applied: Simply select the capacitor's rated voltage, push the Leakage button, and read leakage current directly with the same reliable test that is used on the LC53. Checks leakage between electrolytic sections, too. Handy pull chart guides you all the way. Capacitors are automatically discharged to prevent shock hazard. Electrolytics can be reformed with the power supply by inserting a special pushbutton holder between the handle and leakage button.

Tests for electrolytic dielectric absorption: Electrolytic dielectric absorption is quickly detected by checking capacitor value after performing the leakage test, just like the LC53. Finds the real troublemakers that all other capacitor testers miss.

Used in many other applications, too: The CA55 can be used to check SCRs and TRIACs, checks the front to back ratio of rectifiers, match tone arm cable capacity to the cartridge, transistor, FETs, and diode capacity and many other applications where a reliable capacity or leakage reading is required.

General: Construction: Handsome grey aluminum case and black Cycolac® bezel. POWER: 105-130 VAC, 60 Hz, 17 Watts. FUSE: Test lead input with in-line 1 Amp 3 AG Slo-Blo fuse. SIZE: 4" x 8" x 11.5" HWD (10.16 x 20.32 x 29.21 cm.) WEIGHT: 6½ lbs. (2.98 Kg.)

Calibrate or check calibration of your LC53 or CA55

with the FC221 Field Calibrator

Only $49.00

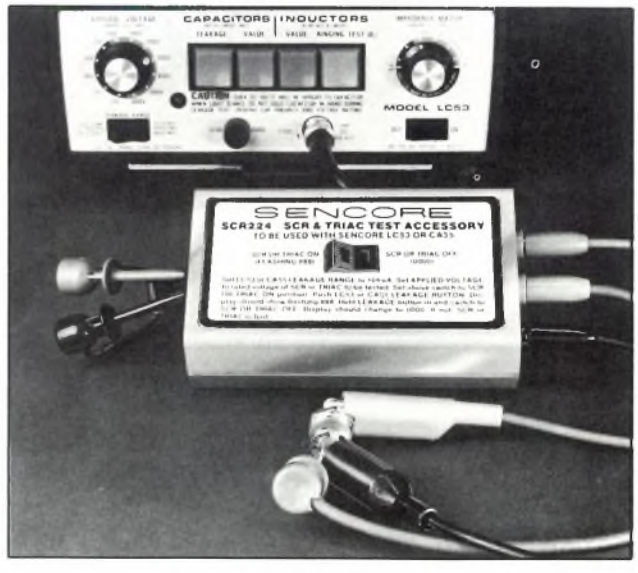
Contains three low drift inductors and capacitors to compare to readings obtained on LC53 or CA55. Each component is checked against lab standard and reading logged in space by component connection on top of unit. Saves downtime and service calibration expense. Pays for itself the first time you use it.

Checks SCRs & TRIACs with your LC53 or CA55 with this handy accessory,

SCR224 SCR & TRIAC Test Accessory only $35.00

Easy to use: Simply connect three test leads to SCR or TRIAC, connect LC53 or CA55 test lead E-Z Hooks® to opposite end of accessory and you are ready to go. Prevents hooking up leads to SCR or TRIAC incorrectly or getting a shock from the 600 volt power supply.

Checks for turn-on and turn-off capability of SCRs and TRIACs: Push the large rocker switch, on the top of the SCR224, to the left and check for "turn-on" by pushing the Leakage button on the LC53 or CA55 and looking for a reading of 888. Push the rocker switch to the right and check "turn-off" by looking for 0000. It is that fast and simple.



Touch & Test, the DVM56 "MICRORANGER" does the rest

The DVM56 is the ultimate in timesaving design and versatility. With autoranged speed and extra circuit tests, Sencore guarantees that the "MICRORANGER" will save you an hour a day, every day or your money back. LED function and range indicators, auto polarity, auto zero, and auto decimal provide you with direct error-free measurements. Double your circuit testing capability with tests that you'll need to do a complete job, but are not found on any other DVM, at any price. Compare these features with any DVM on the market today:

Push Range Hold if you wish to stay on one range.

NEW DVM56 "MICRORANGER"™ Automatic 4½ Digit DVM $795

Automatic DC volts to 10 KV: Switch to DC volts and the DVM56 automatically changes ranges for you, from 0 to 2 KV at .075% DC accuracy. Less than 2 seconds wait for even the highest range. Extend internally protected 2 KV automatic measurements to 10 KV with included 10 KV probe; decimal automatically shifted. Extend to 50 KV with HP200 high voltage probe.

Automatic resistance measurements to 100 Megohms: Automatic Hi Power Ohms measurements all the way to 100 Megohms for conventional resistance checks at 0.3% accuracy. Automatic Lo Power Ohms measurements, 0.3% accuracy, to 2 Megohms with test voltage below the semiconductor conductance range when measuring resistance in-circuit. Lead resistance is automatically remembered by the microprocessor and subtracted for true low value resistance measurements.

AC RMS voltage measurements: Automatically measure AC RMS voltage to 1 KV at .5% accuracy. A must when comparing AC measurements on schematics, etc.

AC True RMS voltage measurements: Switch to True AC RMS (.5%) and measure true AC voltage to 1 KV when measuring in switching supplies, CRT filament voltages, or wherever true power dissipation or heat is a factor.

Exclusive peak-to-peak measurements: For the first time in DVM or DMM history, you can switch to peak-to-peak volts and measure all waveforms shown on schematics to 2 KV, at an amazing 1% accuracy. Covers all the way from 30 Hz to 100 KHz + 1 dB. Speeds up your troubleshooting beyond belief as you read the DC voltage and then troubleshoot by switching to P-P without removing the test lead. Saves using a scope three out of four times.

Standard dB measurements: Switch to dBm and read standard dB gain or loss from 30 Hz to 20 KHz ± 1 dB; zero referenced to 1 mW into 600 ohms from -43 to + 62 dB. 20 dB adder (DBA220) available for critical tests.

Programmable dB: Now, for the most pleasant surprise of all, create your own zero reference for direct dB gain or loss readings with no calculations at all. Simply switch to dBP, connect to your chosen reference signal, and push the "dBP ZERO" pushbutton to program the microprocessor. Connect to any other circuit and measure the signal in dB gain or loss in reference to the programmed point. Super handy for reading stage gain, multiple stage gain, attenuation, etc. directly.

Automatic AC and DC current ranges to 20 amps: Measure current automatically to 2 amps at .3% accuracy. Measure to 20 amps with the CS223 20 amp current shunt shown below.

Your choice of 3, 4, or 4½ digits: Use 3 digits for fast service checks, 4 digits for design or low level measurements, and 4½ as lab standard, to satisfy FCC or warranty station requirements, or for calibration of other meters. Your choice for best reading stability or accuracy as required; at the push of a button.

Automatic peak and null indicating lights: For the first time, you can use your DVM to adjust tuned circuits. Lit positive arrow means you are adjusting toward peak. Lit negative arrow means you are adjusting toward a null. Both arrows lit means you are at peak or null.

General: CONSTRUCTION: Handsome two-tone case with grey aluminum wrapper and front panel with molded Cycolac® bezel. POWER: 105-130 VAC, 60 Hz, 35 Watts. SIZE: 4" x 8" x 11.5" HWD (10.16 x 20.32 x 29.21 cm.) 7¾ lbs. (3.56 Kg.)

Universal Voltmeter Accessories

DP213 Universal Voltage Quadrupler Detector Probe $20.00
Use with any 10 or 15 Megohm DC voltmeter to detect any RF or IF signal to 100 MHz and quadruple the DC output before applying to DVM. Enables user to signal trace or test low level circuits. Requires no power and fits all Sencore meter test lead probes.

TP212 Universal Transient Protector . $19.50
Plug onto any Sencore FET or DVM test lead probe and protect meter to 10 KV; multiply reading by ten. Extends input impedance to 150 Meg ohms to reduce circuit loading when measuring in high impedance circuits. Also isolates capacity loading to almost zero. Supplied with DVM56.

HP200 Universal High Voltage Probe . . $49.00
Extend the use of any Sencore FET meter or DVM to measure up to 50,000 volts. Simply insert the HP200 over the end of the DVM or FET probe. Select any DC voltage range and multiply the reading by 100. Extend effective input impedance by 100 times.

PA208 Universal 115 Volt AC Power Adaptor $12.95
Plugs into 115 volts to power up DVM32, DVM35, DVM36, DVM37, TF40, CB41, TF46, PR47, PR50, and TF54. Also used to recharge Ni-Cad batteries when used with all instruments except the PR50 and PR47.

DBA220 Low Level X10 Audio Amplifier . . . $48
Use with DVM56 or SC60 scope for increased resolution on low level signals. Signal levels in the .5 to 200 mV (RMS) range are increased by 10 times (20 dB) before being applied to the meter or scope. Powered by 15V DC accessory jack on DVM56 or SC60.

CS223 Universal 20 Amp Current Shunt . . $35.00
Measure AC or DC currents up to 20 amps using any analog or digital voltmeter voltage scale. CS223 is designed to be used as close to the measured circuit as possible to prevent an excessive voltage burden from being placed on the tested circuit by the connectors and test leads.






A "prime" standard at your fingertips for measurements you can trust

An interference-free standard at your fingertips: If you're looking for that one meter that you can really count on when the going gets tough, then you want the DVM38 as your "prime" shop or lab standard. It's so interference-free that it will work right at a transmitter site and right on top of a TV high voltage cage, too.

Super-accurate .1% into 15 Megohm input to 2 KV DC: .1% DC accuracy into 15 Megohm input impedance guarantees up to 50% less circuit loading than competitive 10 Megohm meters (even other 4½ digit DVMs). Measures boost voltage, etc., above 1000 volts to 2 KV when others fail. AC voltage measurements to 1000 volts. 5 ranges at .5% accuracy.

Hi-Lo Power Ohms measures from .01 Ohm to 20 Megohms: Use Lo Power Ohms for resistance checks without causing the semiconductors to conduct in solid-state circuits. Use Hi Power Ohms for standard diode and rectifier front to back ratio tests.

Simple to use pushbuttons with automatic operation: Just push the button and read. Autoranging, Auto Zero, Auto Polarity, Auto Decimal, Auto Overrange, and the large finger-sized pushbuttons make the DVM38 easy to use and easy to read.

AC operated

31 ranges at your fingertips

DVM38 3½ Digit .1% Autoranging Digital Multimeter $448

DC and AC current measurements to 2 Amps: 5 ranges at .3% accuracy on DC and 1% on AC. CS223 extends AC or DC current measurements to 20 amps.

General: LED, 7 segment, .4" display. Made of rugged vinyl-clad steel with aluminum panel. 105-130 VAC, 60 Hz, 7 Watts, 5.5" x 7.85" x 9" HWD (14 x 19.9 x 22.9 cm.) 6½ lbs. (3 Kg.)

Lab accurate, indestructible, and interference free

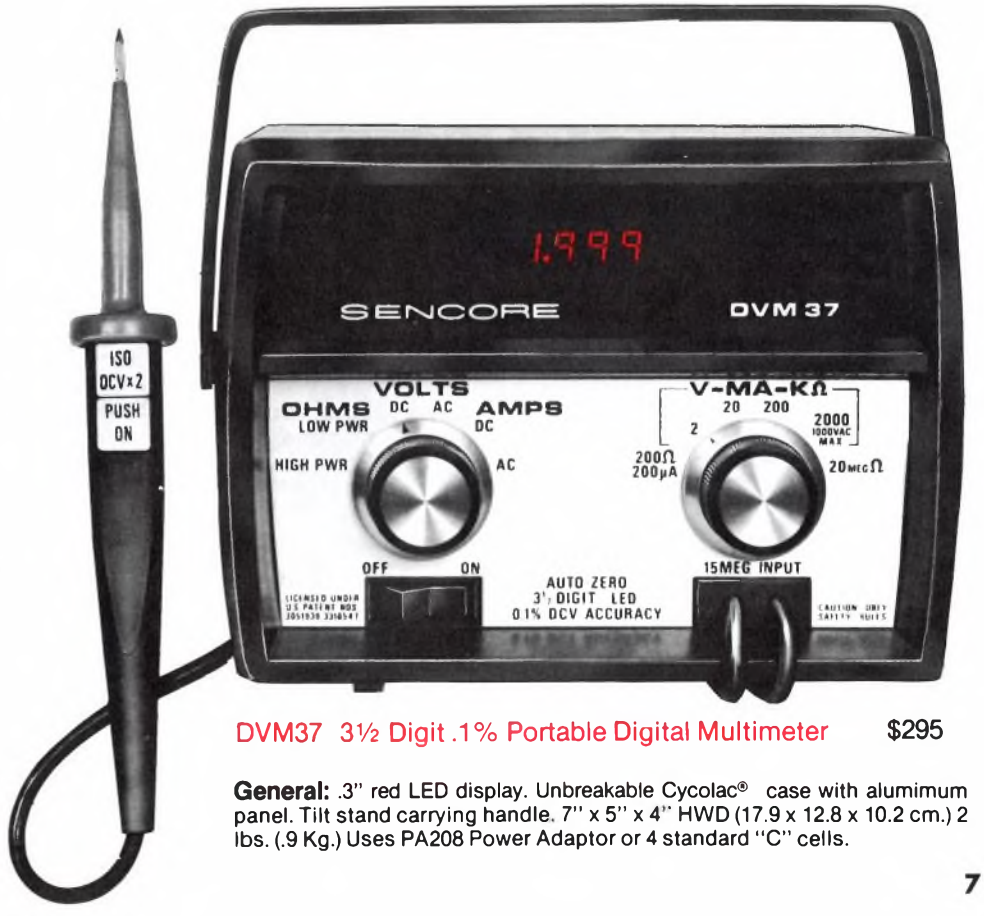
One super rugged digital voltmeter for every use: If you are the kind of person who likes to get used to one meter and use it everywhere and anywhere, you'll want the super reliable DVM37. You can drop it, kick it, carry it by the test leads, and it will keep right on operating at lab accuracy.

Fully protected inside, too: Unheard of 8 KV transient and 2 KV DC protection on every function and range, including ohms, spells unmatched internal protection. Extra fuse and high voltage protection equips the DVM37 to withstand 440 VAC motor start-up surges and direct connection to the plate of a horizontal output tube with 5000 VAC spikes, etc.

.1% DCV accuracy into 15 Megohm input: 15 Megohm input impedance means 50% less loading and thus, 50% greater accuracy than other .1% DVM's.

Automatic features at an affordable price: Auto Zero, Auto Polarity, Auto Decimal, and Auto Overrange, plus Hi-Lo Ohms saves time and makes each job effortless.

28 full ranges as follows: 4 DC voltage ranges to 2000 volts at .1% accuracy, 4 AC voltage ranges to 1000 volts at .75% accuracy, 5 DC current ranges to 2000 mA at .3% accuracy, 5 AC current ranges to 2000 mA at 1% accuracy, 5 Lo Power resistance ranges to 2 Megohms at .2% accuracy, and 5 Hi Power resistance ranges to 20 megohms at .2% accuracy. CS223, 20 amp current shunt, extends AC or DC current measurements to 20 amps.



DVM37 3½ Digit .1% Portable Digital Multimeter $295

General: .3" red LED display. Unbreakable Cycolac® case with aluminum panel. Tilt stand carrying handle. 7" x 5" x 4" HWD (17.9 x 12.8 x 10.2 cm.) 2 lbs. (.9 Kg.) Uses PA208 Power Adaptor or 4 standard "C" cells.

Test transistors or FETS in- or out-of-circuit with the super fast, super easy and super reliable Super Cricket

"Go/No Go" testing in-circuit, or thorough analyzing out-of-circuit

TF46 Portable Super Cricket Transistor & FET Tester $295

Super fast: You can automatically test transistors or FETS in- or out-of-circuit in less than 15 seconds with the patented Super Cricket "Good-Bad" phase inversion test. The Super Cricket tells you instantly if the transistor has gain.

Super easy to use: Simply connect the test leads to the transistor or FET in any order you want, rotate the permutator switch until the Super Cricket "chirps" to tell you that the transistor has been connected correctly. Then, proceed with the Super Cricket tests. If the transistor is good, you can automatically determine transistor polarity, basing, and even identify whether it is a transistor or FET without a set-up book or any reference data.

Super reliable results: The Super Cricket takes the guesswork out of transistor testing with 99.9% reliability proven by over 70,000 Crickets already in use in virtually every facet of the electronics industry. The exclusive "Good-Bad" Cricket test, along with the backup inter-element leakage test for transistors, and the important I_{DSS} FET leakage test, find those tough dog transistor problems other testers miss.

Automatic out-of-circuit parameter tests: You can read transistor beta (H_{FE}) or FET transconductance (G_m) directly on the meter scale by simply pushing a button; for design, matching push-pull outputs, selecting a replacement, comparing transistors, checking for excess gain, etc.

Super handy portability: You can operate the Super Cricket anywhere at any time, in hundreds of places you want to test transistors or FETs without dragging an AC line cord. The Super Cricket can be powered by 6 inexpensive "AA" type alkaline penlight batteries, from 6 standard "AA" ni-cad rechargeable batteries, or from the AC line with the PA208 Power Adaptor (which automatically recharges your rechargeable batteries, too).

Battery-saving automatic power shut-off: An exclusive power shutoff circuit remembers to turn off the battery power after about 10 minutes, should you forget, to extend the life of your batteries for months of trouble-free testing in the field. The shutoff circuit is automatically bypassed by the PA208 AC Power Adaptor, for continuous operation when used on the bench.

Simplified board servicing: The optional 39G85 Touch-Test Probe allows you to skip through circuit board tests quickly and accurately from the foil side of the board. There is no need to remove the transistor for your test as needle-sharp probes insure solid connections. Color-coded pins let you identify basing connections, too, as they are related directly to the Super Cricket's color-coded test leads.

Check transistors or FET's automatically in- or out-of-circuit

TF54 Pocket Cricket Portable Transistor and FET Tester $168

Automatically identifies transistor type, polarity, and lead connections: No setup book needed. Simply connect the test leads in any order; rotate the large "permutator" switch until the Cricket chirps. The setting of the permutator switch automatically tells you whether it's a transistor or FET and whether it's NPN or PNP.

Tried and proven 99.9% reliable good-bad patented Cricket test works every time in seconds: Cricket chirps and reads good if transistor is phase inverting and amplifying the signal. Works in-circuit, too, down to a few ohms parallel impedance with amazing 99.9% accuracy.

Tests leakage out-of-circuit: As a back-up so you know you are right. Uses sensitive D'Arsonval meter movement to measure all inter-element leakages to just a few microamps, so you catch those transistors or FET's just starting to go bad.

Battery or AC operated and built rugged for portable use: Automatically turns itself off after 10 minutes, should you forget, to save batteries. PA208 Power Adaptor used on the bench, bypasses turn-off circuit.

General: Unbreakable Cycolac® case with aluminum panel. 2½" D'Arsonval meter with positive action toggle switches. 6" x 4" x 1¼" HWD (15.2 x 10.2 x 3.2 cm) 1 lb. (5 Kg) Powered by two 9V transistor batteries or PA208 AC Power Adaptor.

PA208 115 VAC Power Adaptor. Supplies power when bench-operated to prolong battery life, or recharges nickel-cadmium batteries. Bypasses auto-off circuit when plugged into TF54 or TF46 ..... **$12.95**

39G85 Touch Test Probe. Efficiently test transistors from foil side of P.C. board. Needle-sharp points break through oxide to insure positive connection. Connects to Cricket test leads **$12.95**

CC217 Customized Carrying Case. Custom-made for DVM35, DVM36, and TF40 and TF54 Pocket Crickets. Holds probes, leads, accessories, and parts. Cover snaps onto rear **$25.00**

Automatically test and restore B & W, color, and computer CRTs with confidence

PATENTED

CR31A Updated Super Mack Automatic CRT Tester/Restorer

$695

Test CRTs with total confidence using dynamic true beam current that checks both emission and contrast range of each electron gun. The CR31A lets you test the CRT dynamically, as it would normally be operating in the circuit, by applying bias to both the control grid and operating voltage to the screen grid. The CR31A measures the true beam current of each gun in the CRT, so that you check not only cathode emission, but also the effects of the control grid on the electron beam.

Never get caught short on "oddball" filament voltage settings. One out of ten CRTs use a filament voltage other than 6.3 volts. The CR31A has a fully adjustable filament voltage to test all CRTs from 2.3 volts to 13.8 volts and every filament voltage in between.

Read color tracking capability directly without calculations. The CR31A has a patented automatic color tracking test that compares the emission of all three guns simultaneously. The results are read out in simple "good-bad" terms on the large customer convincing meter.

Test for leakage between all the critical electron gun elements with two exclusive metered shorts tests: The CR31A is the only tester that tests for leakage between the heater, cathode, control grid, and screen grid. Heater to cathode shorts are read separately so you'll know whether a tube brightener is needed to isolate the filament.

Be sure the CRT is really the trouble with exclusive circuit tests. The CR31A eliminates the laborious job of changing a good color CRT only to find that one of the operating voltages was off. The CR31A tests AC line, focus, and 2nd anode voltages, to make sure the problem is really the CRT.

Prevent embarrassing apologies to your customers with six safe levels of restoration. The CR31A prevents embarrassing apologies to your customer for stripping the cathode or opening the filament of their CRT. All other restoring systems limit you to only one method of cathode recovery, which may be too little or too much to do the restoring job safely. The CR31A has six different levels of rejuvination and restoration providing you with just the right level for any CRT condition.

Take the surprise out of CRT testing and restoring with 18 included sockets. You won't be unpleasantly surprised by not having the right socket. The CR31A is the only CRT tester/restorer that includes 18 sockets with the original purchase price. The unique socket add-on capability of the CR31A makes it virtually obsolescence proof.

Stay up to date with additional set-up information. A new set-up book is mailed each year, addendum information is printed in the *Sencore News*, and a toll-free number is available in case you run into a tube that is not listed elsewhere.

New CRT set-up book now available for your Sencore CR161, CR168, CR31, and CR31A, CRT Tester and/or Restorer. The new set-up book lists 580 new tubes not found in your present set-up book. The new book is Form No. 2011 and is available for $8.00 from the Sencore Service Dept., 3200 Sencore Dr., Sioux Falls, SD 57107. New sockets are also available from the factory service department. To order, call toll-free **800-843-3338**, or send your order direct to the Sencore factory.

General: Vinyl-clad steel with aluminum panel. 6" 500 microamp meter. 12" x 11" x 7" HWD (30.6 x 27.5 x 17.5 cm.) 13 lbs. (6 Kg.) 115 VAC operation; 25 Watts.

The world's most proven tube tester

Tried and proven by over 75,000 service people: Saves you time by catching those "tough dog" tube troubles that other testers miss.

Checks them all — over 3,000 types, foreign or domestic: Checks them all for Good or Bad, even the latest types, with special Pin Elimination switches to disconnect internal tube connections.

Stethoscopic shorts test: Rotation of the "D" switch carefully checks for inter-element shorts as one element is checked against all others to be sure that the tube is absolutely free of shorts.

Checks emission under full load: If a tube glows blue in operation, it will glow blue in the Mighty Mite.

Finds "tough dog" troubles with grid leakage test: Famous 100 Megohm Grid Leakage test finds leakage problems other testers miss.

General: Durable vinyl-clad steel with aluminum panel. 3" D'Arsonval meter. Tube setup book in cover. 9" x 10" x 4" HWD (23 x 25 x 10 cm.) 9 lbs. (4.1 Kg.) 115 VAC operated; 30 Watts.

TC162 Mighty Mite VII Tube Tester $295

Pays for itself quicker than any other instrument.

The only counter you'll need for documenting and troubleshooting broadcast, 2-way, & digital systems.

FC51 1 GHz Frequency Counter $975

Covers 10 Hz through 1 GHz continously at better than FCC requirements all the way: Super-accuracy of .5 parts per million, with a maximum of 2 PPM change per year, from 0 to 40°C, means that you will be within FCC specs at all times. Kept accurate by proportionately-controlled oven.

Stable readings anywhere: You can take the FC51 to a transmitter site or even place it on a TV high voltage cage and still rely on the FC51 for interference-free readings.

Automatic decimal provides all direct readings: Simply push the test you want and that's what you get with automatic decimal shifting.

Precisely measure audio and sub-audible signals: You can check squelch tones, VTR speeds, etc., to .01 Hertz resolution, all directly with no calculations or decimal shifting at all. Resolution multiplier is automatically switched in on two lowest frequency ranges.

Stable readings on even complex waveforms: To stabilize complex waveform reading, sensitivity is reduced with sensitivity adjust control, so only highest amplitude signal reaches threshold sensitivity level of FC51. Enables you to read signals of more than one frequency when other counters won't.

Measure virtually any signal: 25 millivolts average sensitivity on 1 megohm input from 10 Hz to 100 MHz assures low level signal tracing with pick-up loop. 100 millivolt average sensitivity on 50 ohm input, from 10 MHz to 1 GHz, means clean, interference-free signal pick up.

Check crystals instantly: You needn't worry about the frequency being off because of defective crystals. You can check crystals in seconds with the FC51 by simply inserting the crystal into the holder and pushing the Crystal pushbutton and reading the crystal's fundamental frequency directly on the display. Only Sencore frequency counters provide you with this important test.

Includes all needed accessories: Your FC51 1 GHz Frequency Counter is ready to go when you receive it. If you are on the bench, plug the line cord into any 115 VAC outlet. If you are in a vehicle, take along the supplied 12 volt cigar lighter adaptor and cable and monitor the frequency in any remote area. If you wish to monitor a station with a relatively weak signal, connect the supplied AN219 Adjustable Antenna into either the 50 ohm or 1 megohm input jack and adjust the antenna for a stable reading.

Handy frequency standard: You can use the super accurate 10 MHz buffered clock frequency, readily available at the rear of the FC51, for calibration checks against WWV, or to calibrate lower quality frequency counters, or anywhere a frequency standard comparison is needed.

No more down time for recalibration: Exchangeable clock module program, available only from Sencore, lets you recalibrate your FC51 in only minutes. There is no need to send in the entire counter. You simply pull out the clock module and return it to the factory for a calibration check, order a new module, and get credit when your module is returned, or sign up for the special exchange service at the time interval you request. Special included certificate shows that module (or FC51) is calibrated to WWV to prove to the FCC Inspector your FC51 is right on frequency. You'll always be FCC accurate to protect your FCC license if you own a Sencore FC51.

General: Vinyl-clad steel case with aluminum panel and steel handle. 5½" x 8" x 9" HWD (14 x 20 x 23 cm.) 6½ lbs. (3 Kg.) 50 ohm and 1 megohm input jacks. 115 VAC or 12 volt with supplied cigar lighter adaptor — 45 Watts.

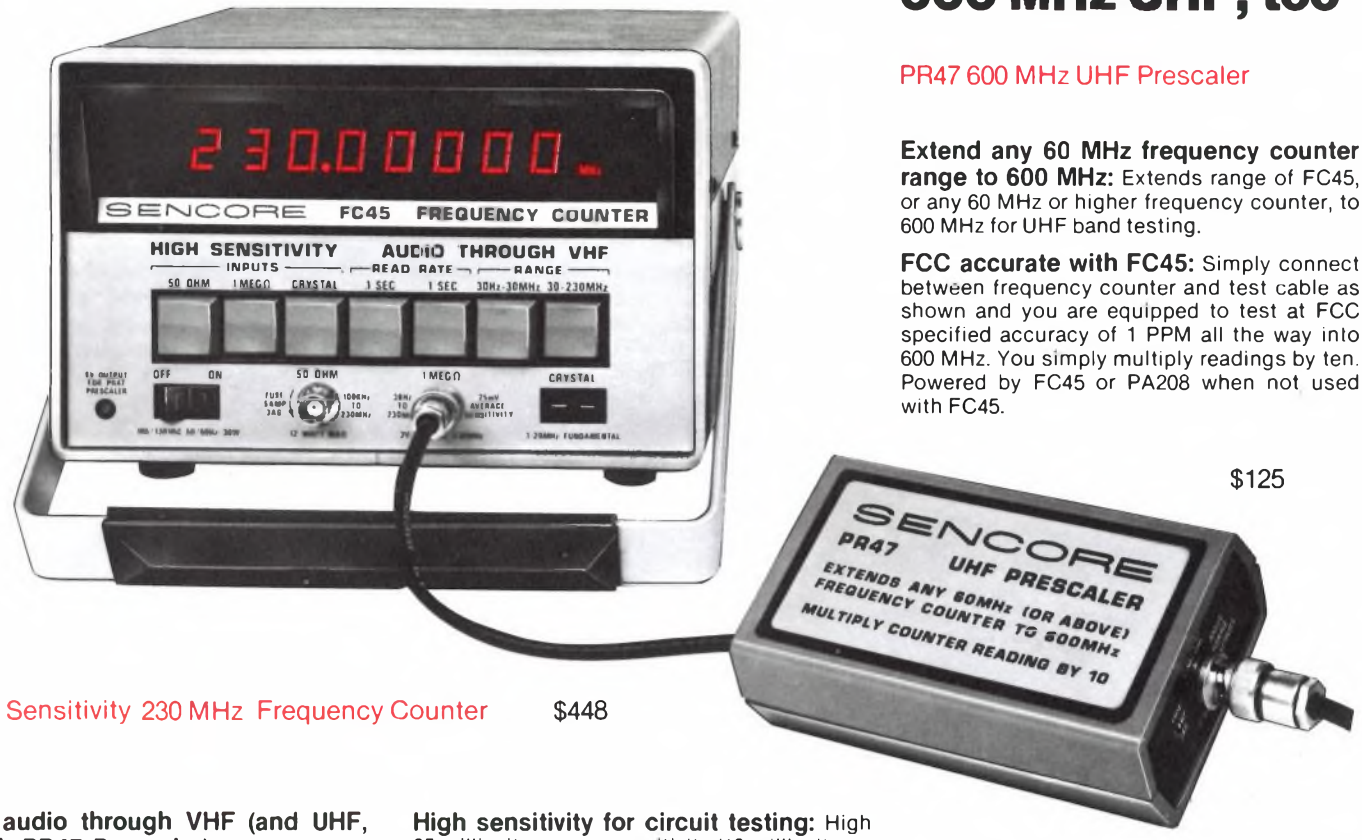
Measure extremely small signals with optional amplifier

WBA52 $295

Optional sensitivity: Optional 30 dB Wideband Amplifier, WBA52, ($295) connects into 50 Ohm input cable to increase sensitivity to 3 millivolts for weak signal pickup. Can be used on 1 Megohm input to produce less than 1 millivolt of sensitivity. Read communication monitor outputs on a frequency counter for the first time or use with AN210 Antenna or PL207 Pick-Up Loop to detect exceptionally low-level signals.

Interference-free frequency counter that you can really count on from audio through 230 MHz VHF

Take your frequency counter all the way into 600 MHz UHF, too



FC45 Hi Sensitivity 230 MHz Frequency Counter $448

PR47 600 MHz UHF Prescaler $125

Extend any 60 MHz frequency counter range to 600 MHz: Extends range of FC45, or any 60 MHz or higher frequency counter, to 600 MHz for UHF band testing.

FCC accurate with FC45: Simply connect between frequency counter and test cable as shown and you are equipped to test at FCC specified accuracy of 1 PPM all the way into 600 MHz. You simply multiply readings by ten. Powered by FC45 or PA208 when not used with FC45.

Covers audio through VHF (and UHF, too, with PR47 Prescaler): Very wide frequency range for every use from 10 Hz audio through 230 MHz VHF. Covers 600 MHz UHF business band with PR47 Prescaler, too.

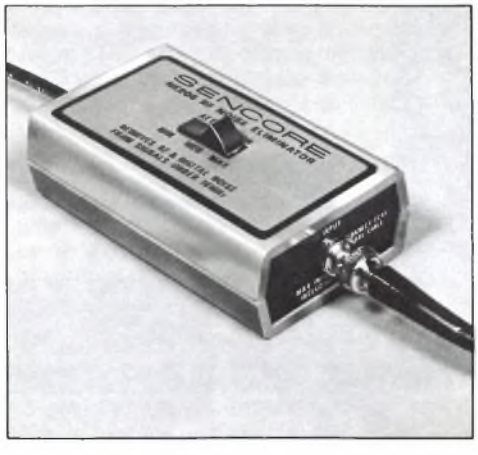
Better than FCC specified accuracy: Five times better than FCC requirements with .0001% accuracy (one part per million). A high accuracy reference oscillator enclosed in a temperature controlled oven, assures this accuracy through the entire frequency range and from 0 to 40°C temperatures.

High sensitivity for circuit testing: High 25 millivolt average sensitivity (10 millivolts on low end) throughout the frequency range for checking operating frequencies in low level oscillator circuits, amplifiers, etc., with PL207 "Snoop Loop". Add the optional AN210 adjustable antenna and monitor transmitted signals from distant points.

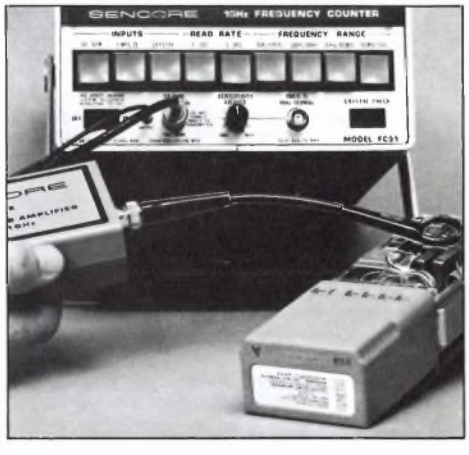
Easy-to-use pushbutton and all direct readout: What you push is what you get and what you read. Decimals are shifted automatically.

Provides special user features: Exclusive automatic Crystal Check. Built-in 12 Watt Dummy Load. Either 115 Volt AC or 12 Volt mobile operation with supplied cigar lighter adaptor plug.

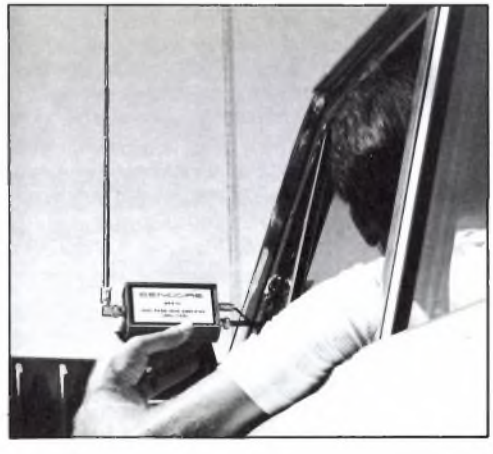
General: Vinyl-clad steel case with aluminum panel and steel handle. 5½" x 8" x 9" HWD (14 x 20 x 23 cm.) 6½ lbs. (3 Kg.) 50 Ohm and 1 Megohm input jacks. 115 VAC or 12 volt with supplied cigar lighter adaptor — 30 Watts.



NE206 Noise Eliminator. $25.00
Attenuates complex signals below threshold of FC45 so counter stabilizes as it reads only signal of greatest amplitude.

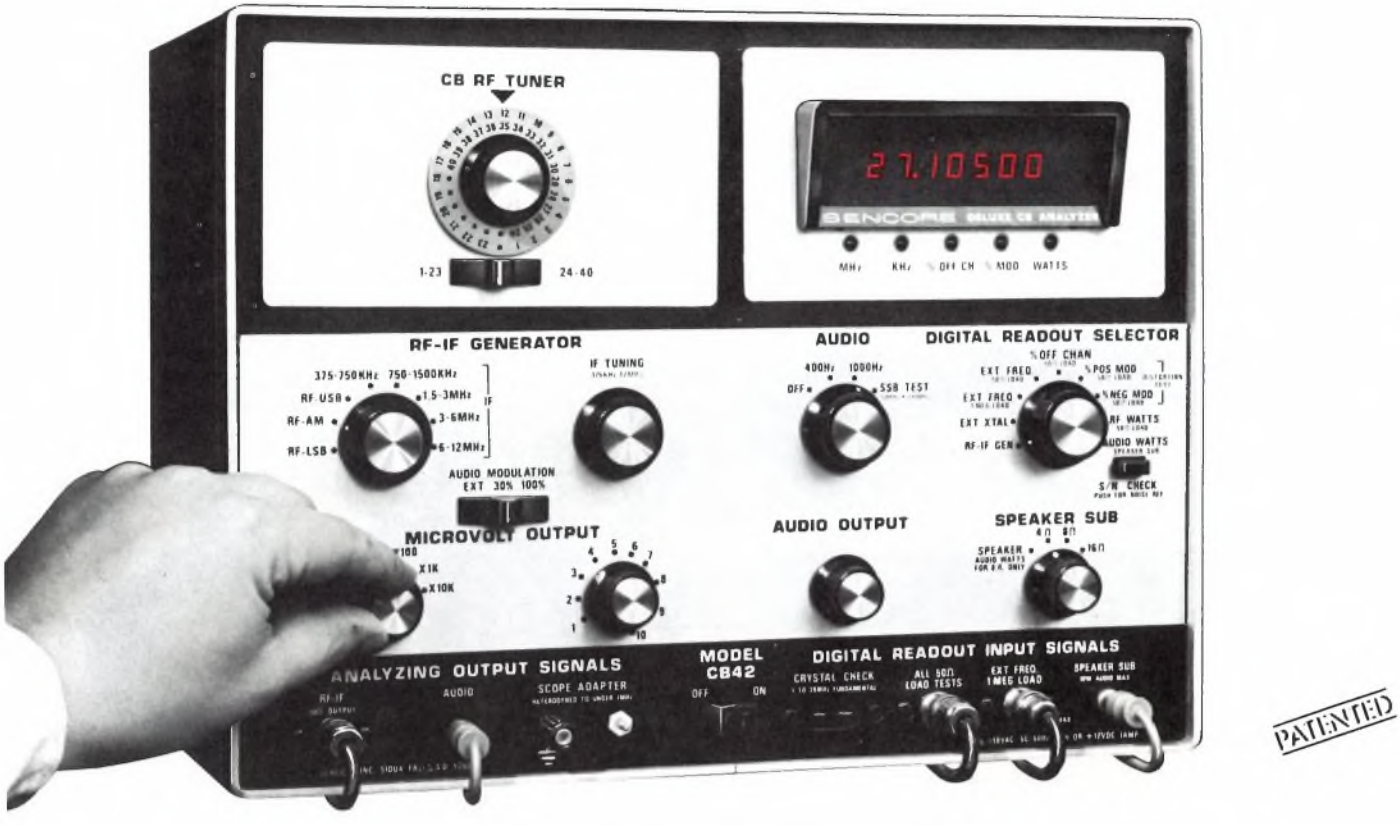


PL207 Pick-Up "Snoop Loop" . . . $9.95
Special made untuned loop that prevents direct circuit connections and picks up signals in low level circuits for troubleshooting. Lets you "hang back" from circuit so you don't detune it. Supplied with FC51 but not FC45.



AN210 Adjustable Antenna. $25.00
Supplied with FC51 but not FC45. Used to pick up very small signals. Plugs into 50 or 1 Megohm input jacks.

Walk the troubles out of any CB transceiver in seconds — at FCC specs



CB42 Automatic CB Analyzer $1,095

Everything you need to service CBs in one instrument: Everything you need for testing and troubleshooting any AM or SSB rig from the antenna through the receiver to the speaker, and the transmitter from the mike back to the antenna again.

Uses only three connecting cables to CB: Only three connecting cables do the whole job without time-wasting multiple connections between separate instruments. All signals are microvolt-controlled down to .1 microvolts and up to 100,000 microvolts.

Troubleshoots every receiver stage: Every RF, IF, and audio troubleshooting and alignment signal at your fingertips to help you walk through the receiver stages in minutes. Only CB analyzer that supplies IF frequency signals from 375 KHz to 12 MHz for dual frequency IF troubleshooting.

Choice of audio modulation: Modulate with 400 Hz or 1000 Hz for AM receivers or 500 Hz + 2400 Hz to establish single sideband in SSB receivers.

Makes receiver sensitivity test a snap: Direct-reading microvolt sensitivity control coupled with a signal-to-noise pushbutton makes S + N/N EIA standard receiver sensitivity test easy.

Direct digital readout of all transmitter tests: Fast digital meter reads out RF power, channel frequency, both positive and negative percent modulation, and modulation distortion for error-free FCC transmitter performance tests. Positive and negative modulation compared to each other for distortion check. They should be approximately the same.

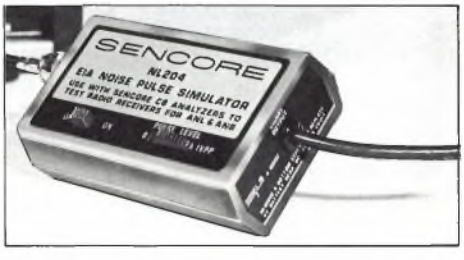
Simplifies channel checking for channel accuracy: Exclusive patented Percent Off Channel test reads actual percentage off the FCC specified frequency on all 40 channels in less than one minute. No need to look up a frequency again as all 40 channels are limited to .005 percent deviation. This feature alone pays for your CB analyzer in time saved.

Checks all single sideband CBs, too: Checks all SSB transceivers as easily as standard AM to bring in the profits on these higher-margin units.

It's a complete service center with extra features: Includes built-in 50 MHz frequency counter for circuit troubleshooting, 12 Watt Dummy Load, Speaker Substitute Load to avoid annoying howl when servicing, Crystal Checker, and Dynamic Mike Tester. Keep your bench clean for additional test equipment. All testing cables included.

Approved by leading CB manufacturers: 16 leading manufacturers now use or approve the CB42 for use in servicing their CB transceivers. Many use the CB42 exclusively for their servicing seminars because it is complete, accurate, and easy to use. The CB42 replaces up to 10 different instruments on any CB service bench for complete, simplified servicing.

General: Vinyl-clad steel with aluminum panel. All cables shipped with analyzer. 115 volt AC operation. 12 volt cigar lighter adaptor, for remote automobile type testing included, 11" x 14" x 11" HWD (28 x 35.5 x 28 cm.) 24 lbs. (10.9 Kg.)



NL204 EIA Noise Pulse Simulator. $45.00
Simulates ignition noise for testing as established by the Electronics Industry Association. A must if you are going to certify tests when doing warranty service.

DP213 Universal Voltage Quadrupler Detector Probe. $20.00
To be used with any 10 or 15 Megohm input multimeter to signal trace RF or IF signals for faster troubleshooting.

CB215 Ford CB Adaptor. $14.95

CB216 Chrysler CB Adaptor. $14.95

Checks any CB SWR, RF Watts, or % Modulation automatically. You just push the button.

CB41 Automatic CB Performance Tester

$168

Automatically tests CB Power, SWR, & Percent Modulation: Provides 100% AUTOMATIC "talk power tests." Tests RF Watts, SWR, and Percent Modulation in seconds with the push of a button.

Self-calibrating push-button operation: Automatic, self-calibrating circuits do all the "thinking" for you without messy calibrations and time-consuming adjustments.

Adjusts SWR with meter at antenna: You can take your meter right to the antenna as you make SWR adjustments. The exclusive included 12-foot EX203 Extension Cable makes it easy.

Customer-convincing Good-Bad scale: Show your customer the easy-to-understand Good-Bad scale to show peak CB performance and keep him happy.

General: Unbreakable Cycolac® case with black panel and brushed aluminum trim. 4½" moving coil meter. 10" x 5½" x 3½" HWD (25.4 x 14 x 8.9 cm.) 4½ lbs. (2 Kg.) Uses two standard 9 volt radio batteries. 115 VAC powered with optional PA208 Power Adaptor (see page 6).

Convert any 1 MHz scope into a 40 channel CB scope with the CB44 27 MHz scope converter

CB44 27 MHz CB Scope Freq. Converter $75

Save hundreds of dollars for a special 30 MHz scope to view the 27 MHz CB modulation envelope for distortion, clipping tests, or SSB transmitter testing. Simply connect the CB44 between the CB and scope vertical input.

Provides much needed built-in 12 watt dummy load. You can transmit the CB directly into the CB44 for safe operation.

The most versatile and protected supply you can buy for hundreds of uses.

UPS164
Universal Power Supply $448

Two supplies in one: A highly filtered variable 0 to 35 volt, 2 amp designer type supply for every use from supplying power to module boards to substituting for sweep derived voltage in a TV set. A flick of a switch and you have a 6 volt, 20 amp or 12 volt, 10 amp battery eliminator to power up all kinds of battery-operated equipment or to charge batteries.

Goof-proof direct short protection: Short any output with a screwdriver; sparks will fly but the UPS164 will keep on working without damage.

Goof-proof circuit protection with current set: Set the maximum current level you want to draw before you begin your work. Protects you, the UPS164, and the circuit being repaired. Why burn up parts needlessly?

Goof-proof dual meters: Two sensitive 3" moving coil meters monitor every change in voltage and/or current simultaneously.

UPS164 Specifications

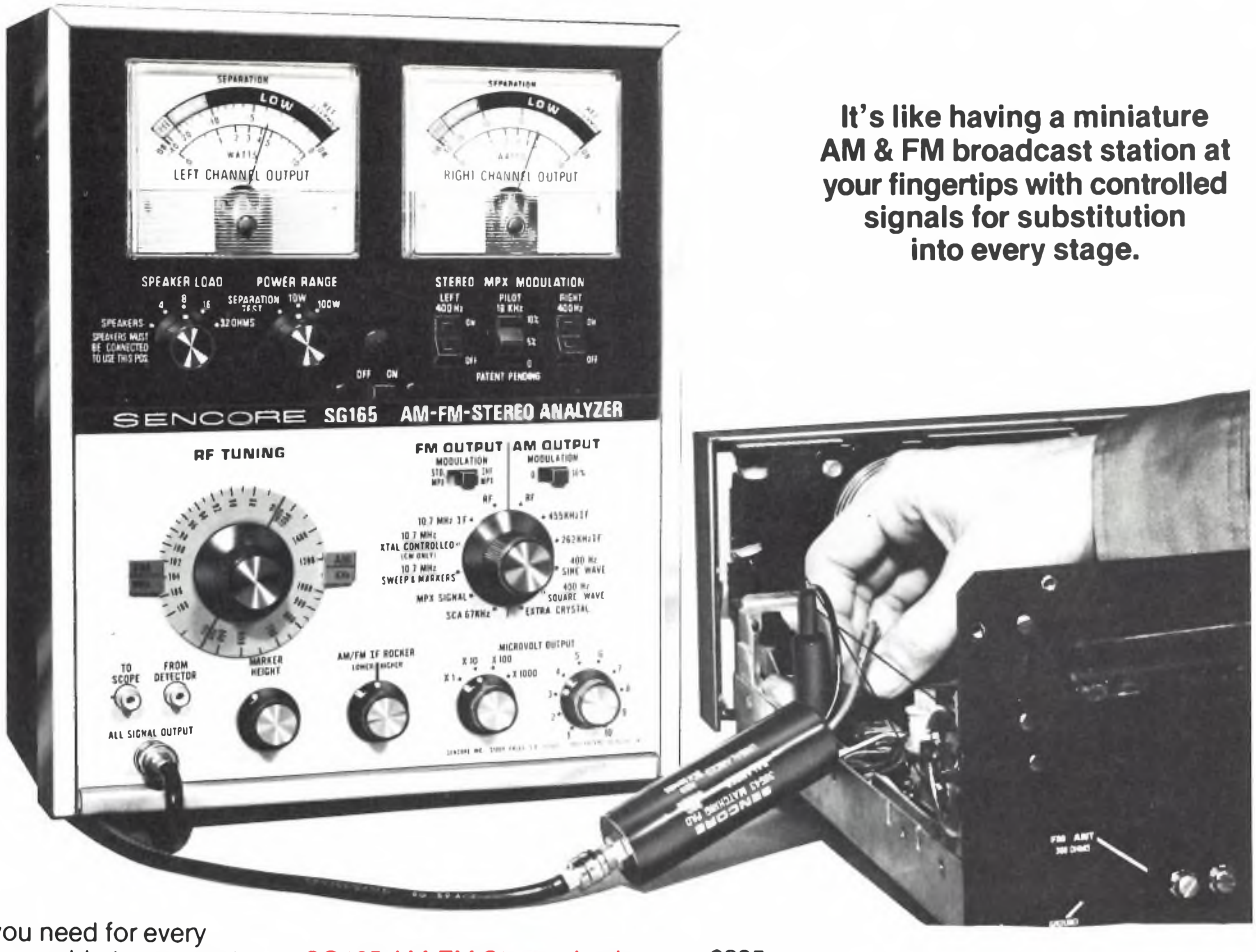
.5 - 30 volt variable, regulated, high-filtered supply: VOLTAGE OUTPUT: .5 - 15, .5 - 30 volts DC, regulated and continuously variable (35 volts available at less than 1 amp load). 0 - 2 amps continuous current limiting protection. RIPPLE: 5.4 mV P-P.

Standard 6 volt fixed supply: VOLTAGE OUTPUT: 7.5 volts (no load). 4.5 volts (full load). CURRENT OUTPUT: 20 amps continuous at 4.5 volts. 28 amp maximum surge. RIPPLE: No load: .10 volts P-P or less. 10 amp load: 2.5 volts P-P or less. Full load: 4.0 volts P-P or less.

Standard 12 volt fixed supply: VOLTAGE OUTPUT: 15.0 volts (no load), 11.5 volts (full load). CURRENT OUTPUT: 10 amps continuous at 11.5 volts. 14 amp maximum surge. RIPPLE: No load .2 volts P-P or less. 5 amp load: 2.0 volts P-P or less. Full load: 4.0 volts P-P or less.

General: METERS: (Voltage and Current): Switched for either 0 - 30 volts regulated supply, 6 or 12 volt supply. ACCURACY: ±3%. POWER REQUIREMENTS: 105 - 130 VAC, 60 Hz, 30 watts (max. load). (220 VAC conversion available). SIZE: 10" x 13½" x 9½". WEIGHT: 23 lbs.

Walk the troubles out of any AM or FM receiver step by step



PATENTED

It's like having a miniature AM & FM broadcast station at your fingertips with controlled signals for substitution into every stage.

Everything that you need for every stage with only one cable to connect

SG165 AM-FM Stereo Analyzer $895

Saves you time on every job: The SG165 is the one and only AM-FM Stereo Analyzer on the market in one integrated instrument. It is designed to save you time on every single service job so that you can turn those lost hours into profitable service. What's more, the SG165 assures correct alignment with adequate stereo separation, reducing your callbacks and preventing poor field performance. The SG165 increases your service reputation in your community, too.

Troubleshoot and align RF & IF stages in a jiffy: The SG165 is a snap to use as microvolt-controlled signals enable you to inject into the RF and IF stages right up to the detectors. A sweep and marker generator is placed at your fingertips for familiar alignment procedures, but a more innovative vector speed alignment is explained in the operating manual to speed up your service in a truly dynamic way. Don't be surprised if the receiver sounds better than when it was new, that's how you build your reputation with the SG165.

Troubleshoot and align multiplex decoder with ease: Complete multiplex signals are also delivered through the same output cable to inject directly into the FM multiplex decoder for troubleshooting and isolating separation problems. 5% and 10% pilot signals exactly duplicate your FM broadcast.

Troubleshoot audio section: A sine and square wave are also delivered through one common cable to chase troubles through the audio section.

Special meters guide you all the way: Two built-in meters, with dummy loads up to 100 watts, monitor your every action as you walk through the circuits. Each dummy load is connected directly in place of the speakers to avoid that annoying howl in your shop. The meters are calibrated in decibels to -40 dB, as good or bad (so you can convince your customers that you have done a good job), and has two audio wattage scales of 10 and 100 watts. All signals and tests are within FCC broadcast specs and tolerances are tighter than the FM station signal itself.

The SG165 is your confidence and pride builder and an insurance policy for your customer as he knows that his AM-FM-Stereo was serviced by an expert. It means increased income from time saved and the extra charge you can make by having a professional instrument to do the job. What's it costing you by not having this popular instrument on your bench?

General: Black vinyl-clad steel with aluminum half panel. 3½" moving coil meters. Large lead storage compartment in rear. 16" x 10" x 9" HWD (32 x 25 x 23 cm.) 18 lbs. (8.2 Kg.) 115 VAC; 7 Watts.

Rock-solid patterns in a caddy-size generator

CG25 Little Huey Portable Digital Color Bar Generator

Rock-solid digital patterns: Just push the buttons for jitter-free standard color bars, horizontal and vertical lines, crosshatch, and white dot patterns.

Built rugged for field use: Lasts and lasts on the road with tough acrylic case and computer-type circuit boards.

Big generator features, too: Dot size, color level, and RF channel controls just like the deluxe generators.

Automatically shuts itself off: Battery-saving power shut-off after 20 minutes when the job is done.

$148

Divide and Conquer troubles in any TV, video system, or video tape recorder in half the time . . . with the VA48.

PATENTED

Increase your efficiency as much as 80% for more profitable service.

VA48 TV-MATV, VTR Video Analyzer

$1,195

Space-saving and cost effective: The VA48 directly replaces up to ten separate video repair instruments on your bench and increases your efficiency with more bench space, less dangling leads, and one integrated instrument to do the job. You save money, too, as these 10 instruments cost over $3,000.

Uses familiar standard color bars and patterns: The VA48 uses the same patterns your Howard Sams and manufacturer's service literature shows for easy comparison. Each pattern is rock-solid, digitally controlled, and phase-locked with no "cog wheel" color bars, for trouble-free testing and convergence.

New patented Bar Sweep patterns for simplified IF and Chroma bandpass alignment: For the first time, your IF frequency response curve is shown directly on the TV screen, or on your scope connected to the video detector. It takes only minutes to set each bar amplitude for a compiete alignment. Trap adjustments are easier and more accurate, too, with individual crystal-controlled "trap-setter" signals. All bars are phase-locked to the synchronizing pulses so TV synchronous detectors and comb filters, that can't be aligned with a sweep and marker generator, can be aligned or trouble detected in a hurry.

All RF and IF signals for injection before the detector from one cable: Walk through all RF and IF stages in minutes with every VHF and UHF channel and IF signal controlled by the calibrated output control through a single time-saving cable. Tests each video IF individually with preset microvolt outputs.

All drive signals for every stage after the detector — tube and solid-state: The VA48 has every signal for substituting after the detector in any tube or solid-state set. Just flip the switch for phase-locked (a) video signals (b) 3.58 MHz color oscillator and 3.58 chroma substitute signals (c) horizontal osc. substitute signals for tube, transistor, or SCR operated horizontal output stages, or (d) V & H sync signals. All signals adjustable positive or negative to 30 volts for solid-state receiver troubleshooting and to 300 volts positive or negative for tube receivers. 300 volt horizontal keying pulse also provided to open gated AGC, burst amplifiers, etc. Now you can pinpoint sweep and sync problems that you could only guess at before.

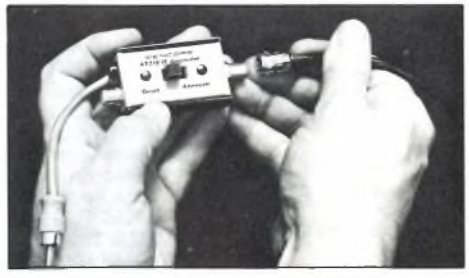
100% accurate Ringer yoke and flyback test: Check the yoke and flyback with the 100% reliable patented Ringer test. Checks in-circuit or out-of-circuit for positive Good-Bad testing in seconds.

Accurate drive signal monitoring and peak-to-peak meter: Every signal is monitored, at all times, for peak-to-peak voltage drive level on the built-in meter so that you know just how much signal you are driving the circuits with. Should you run into situations where you don't have a substitute signal or want to speed up troubleshooting by signal tracing, flip the METER switch and convert to an external peak-to-peak TV signal tracer in a second.

Video sweep generator for standard video, MATV, and VTR tests: You'll want a good video sweep generator to service VTRs, MATV systems, and closed circuit TV in a hurry. Here is where the VA48 really comes in handy as the Video Bar Sweep serves as a dynamic video sweep generator. Simply set the Drive Signal switch to VIDEO PATTERN and the VIDEO PATTERN switch to BAR SWEEP. Standard 1 VPP video into 75 Ohms is also provided for VTR troubleshooting on separate jack.

Bias and B + substitute power supply: Your power source for substituting sweep derived voltage in the newest sets, that develop B + from the flyback, is taken care of by the 1 amp, highly filtered BIAS & B + SUB power supply on the VA48. You can also use the supply for clamping your AGC, ACC, and other automatic circuit voltage by simple DC voltage substitution.

General: Black vinyl steel case with aluminum panel. 11" x 14" x 11" HWD (28 x 35.5 x 28 cm.) 22 lbs. (10 Kg.) 115 VAC AC operated; 30 Watts.



AT218 40 dB Attenuator Trap Alignment Aid $14.95
Attenuates IF trap signals to below AGC threshold for easier alignment of traps on CRT. Also provides easier connection for IF input.

TR219 1:1 Horizontal Output Drive Isolation Transformer. $24.95
Used with VA48 to drive horizontal output transistors in split flyback and hot ground/cold ground chassis.

SENCORE

3200 Sencore Dr., Sioux Falls, SD 57107
TWX: (910) 660-0300

Prices and specifications subject to change without notice.

Sencore Time-Saving Instruments Represented by:

Want to Order? Let Sencore Technical Customer Service Help You

Call (605) 339-0100 or Call Toll-Free

800-843-3338

We will . . .

- ☐ Answer technical questions
- ☐ Discuss an instrument with you
- ☐ Discuss finance plans to purchase your instrument(s)
- ☐ Take an order ☐ Expedite delivery
- ☐ Take a message for your local Sales Engineer or put him in touch with you

Ask for us by name . . . please.

Purchasing or financing questions:
Doug Bowden, Sales Eng.

Purchasing or technical questions:
Henry Moser, Sales. Eng.

Purchasing or technical questions,
Glenn Boech, Sales Eng.

Seminars, Sales Engineer whereabouts, or most anything
Deb LeBrun, Sales Sec.

All Instruments sold with Sencore's no risk 30-day "Proof of Performance" guarantee. We want to be sure that Sencore instruments do just what we say they will do and perform to specifications as shown in Sencore literature or as promised at seminars. If you should find that any Sencore instrument does not perform as promised, and our Sales Engineer or Customer Service agrees with you, we will authorize the return for full credit. This period cannot exceed 30 days from purchase, however.

Backed by Sencore's exclusive 100% Made Right Lifetime Guarantee. Sencore backs your instrument for the lifetime of the product with an exclusive 100% Made Right Lifetime Guarantee. This does not mean that the product is serviced free of charge for a lifetime. It does mean, as it states in the Sencore warranty policy, "If your instrument was not MADE RIGHT 100 percent, Sencore will MAKE IT RIGHT free of charge." This extends to the lifetime of the product and we take your word for the claim.

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Page		Price
	Capacitor & Inductor Analyzers & Accessories	
4	LC53 "Z METER" Capacitor & Inductor Analyzer	$ 795.00
5	CA55 Capacitor Analyzer	$ 495.00
5	FC221 LC53 or CA55 Field Calibrator	$ 49.00
5	SCR224 SCR & TRIAC Test Accessory for LC53 or CA55	$ 35.00
	CB and Communications Instruments	
13	CB41 Automatic CB Performance Tester	1 168.00
12	CB42 Automatic CB Radio Analyzer	$1,095.00
13	CB44 27 MHz Scope Converter	$ 75.00
12	NL204 EIA Noise Pulse Simulator	$ 45.00
12	DP213 Universal Voltage Quadrupler Detector Probe	$ 20.00
12	CB215 Ford CB Adaptor	$ 14.95
12	CB216 Chrysler CB Adaptor	$ 14.95
	Digital Multimeters	
7	DVM37 .1% Portable Meter	$ 295.00
7	DVM38 .1% Autoranging Bench Meter	$ 448.00
6	DVM56 .075% Microprocessor Autoranging Bench Meter	$ 795.00
	Digital Multimeter Accessories	
6	HP200 50 KV High Voltage Probe	$ 49.00
6	PA208 Universal 115 VAC Power Adaptor	$ 12.95
6	TP212 10 KV Transient Protector Probe	$ 19.50
6	DP213 Universal Voltage Quadrupler Detector Probe	$ 20.00
6	CS223 Universal Current Shunt	$ 35.00
6	DBA220 Low Level X10 AC Amplifier	$ 48.00
	Oscilloscope	
2	SC60 Dual Trace 60 MHz "WIDEBANDER" Oscilloscope	$1,895.00
	Frequency Counters and Accessories	
11	FC45 230 MHz Frequency Counter	$ 448.00
10	FC51 1 GHz Frequency Counter	$ 975.00
11	PR47 600 MHz UHF Prescaler	$ 125.00
10	WBA52 1 GHz 30 dB Wide Band Amplifier	$ 295.00
11	NE206 Noise Eliminator	$ 25.00
11	PL207 Pick-Up "Snoop Loop"	$ 9.95
11	AN210 Adjustable Antenna	$ 25.00
	Picture Tube Testers	
9	CR31A CRT Tester and Restorer	$ 695.00
	Power Supplies	
3	PR57 Variable AC Isolated Power Supply	$ 395.00
13	UPS164 Universal DC Power Supply	$ 448.00
	Transistor Testers	
8	TF46 Portable Transistor/FET Tester	$ 295.00
8	TF54 Pocket Portable Transistor/FET Tester	$ 168.00
8	39G85 Touch Test Probe	$ 12.95
	Tube Testers	
9	TC162 Mighty Mite Tube Tester	$ 295.00
	TV and Radio Service Instruments	
14	CG25 Portable Digital Color Generator	$ 148.00
15	VA48 Video, TV and VTR Analyzer	$1,195.00
14	SG165 IF Trap Signal Attenuator	$ 895.00
15	AT218 IF Trap Signal Attenuator	$ 14.95
15	TR219 Horizontal Drive Signal Isolation Transformer	$ 24.95