

HOW TO TROUBLESHOOT VCR's

\$1.25 ■ APRIL 1979

Radio-Electronics

THE MAGAZINE FOR NEW IDEAS IN ELECTRONICS

**Build this versatile
BURGLAR ALARM**
It protects your
valuables and your family

**Audio breakthrough
MAGNETIC AMPLIFIER**
Revolutionary circuit
you've never seen before

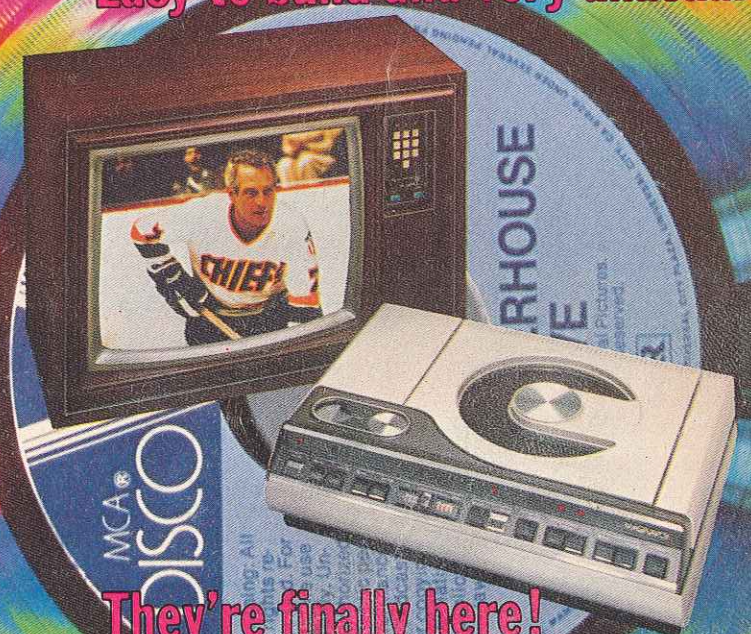
**Troubleshooting
COMMUNICATION
RECEIVERS**
Step-by-step technique

PLUS

- ★ Motion Detector Security Alarm
- ★ Equipment Reports
- ★ 2 Hi-Fi Test Reports
From R-E's Audio Lab
- ★ Service Clinic
- ★ Hobby Corner

**Special for April
3 UNIQUE PROJECTS**
Easy to build and very unusual

**They're finally here!
2 VIDEODISC SYSTEMS**
See how they work



A
GERNSBACK
PUBLICATION

scare you. The first test reads: "Pick it up and hold it 12 inches over a horizontal wooden surface, then drop it." The next test is worse: Set to the 100-mV range and then apply 1000 volts to the input terminals for 5 seconds! After this, you feed in the specified test voltages and log the readings. On the unit I used, I got a reading of 100 mV on the 100-mV range, and on the 1000-volt range, the unit read 1000.1 volts.

The resistance range tests are almost as scary. First, apply 250 volts 60-Hz AC to the input on the 1000-ohm range for 2 seconds. Then check all ranges for the rated accuracy. All these tests are referenced to U.S. Bureau of Standards ratings and standards, and a Certificate of Conformance is furnished with each unit.

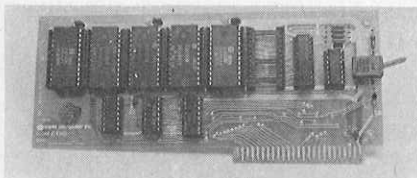
The model 248 runs on a single NiCad battery. A plug-in charger plus test leads, complete with clips, are included. The whole unit, charger and all, can be carried in a neat zippered traveling case. The test leads plug into protected jacks on the right-hand side of the case, and the charger plugs into the back. Each unit carries a full one-year warranty against any defects.

If the decimal point blinks, this indicates there are five minutes of accurate operation left before you must recharge the battery. If the charger is left plugged in during bench operation, the battery is kept at full charge. The model 248 will then run for 6 hours of in-spec operation before a recharge is needed. The charger recharges the unit overnight or in 12 hours.

The instruction manual contains full operating and recalibration data. All calibration adjustments are easily accessible by removing the case; the calibration points are all located in a row along the bottom of the chassis.

Zeroing and polarity indication are fully automatic. Most of the logic components are in a single LSI IC; the RMS-to-DC conversion is performed with a calculating-converter LSI module. The model 248's basic design is very similar to that of its predecessor, the model 245. For an accurate, rugged and reliable piece of test equipment, its price is well within reason at \$345. **R-E**

Apple Computer Applesoft ROM card

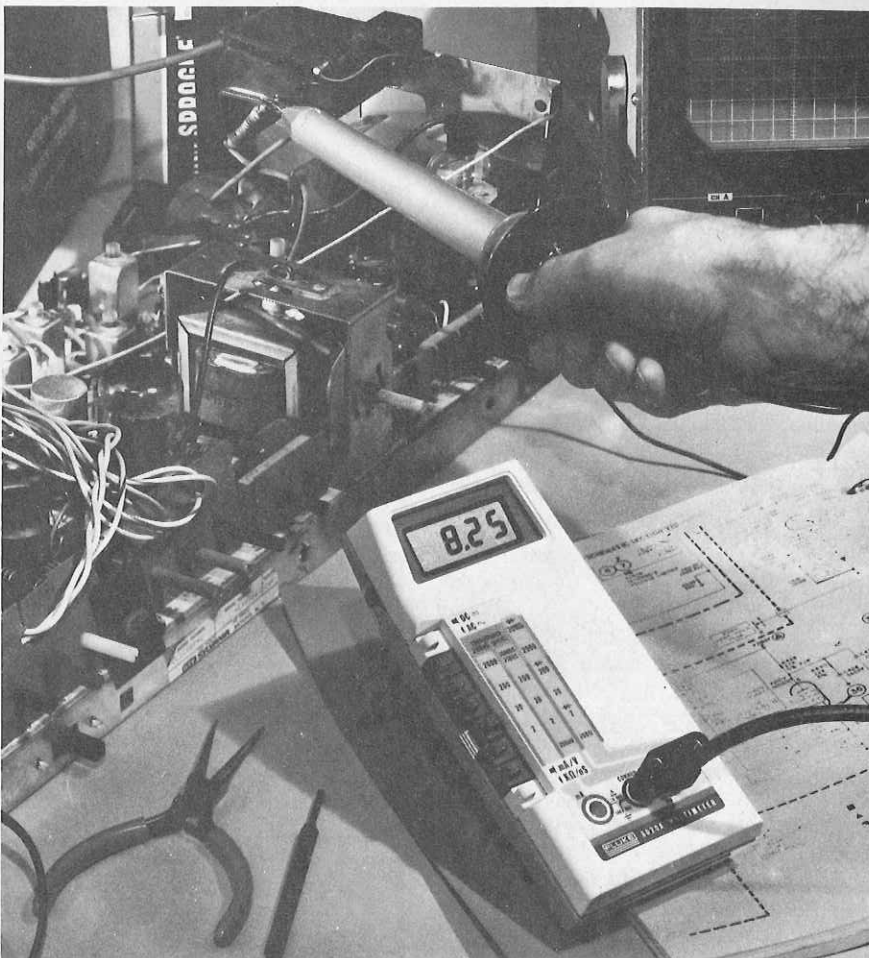


CIRCLE 145 ON FREE INFORMATION CARD

ONE OF THE LATEST ADDITIONS TO THE APPLE II line (Apple Computer, Inc., 10260 Bandy Drive, Cupertino, CA 95014) is the Applesoft ROM Card (part # A2B0009X). This plug-in board contains the newer version of Apple's floating-point BASIC (Applesoft II) completely in ROM. Thus, when this BASIC version is installed, it is always in the machine at power-on (no more waiting 90 seconds to load from the cassette tape), and, equally important, it cannot be wiped out inadvertently by the user's program. Of course it also frees the 10K of RAM that the cassette or disc version normally occupies, as well as 10K of

continued on page 86

How do you really use a multimeter?



Usually at your bench, in the shop, shared with others. And, if it's a Fluke multimeter, you use it with confidence.

Now you can carry that same bench precision on the job. Introducing the new Fluke 8020A DMM for only \$169.

This rugged beauty packs more field-valuable features than any other DMM available, at any price. And that means field versatility when you need it most.

The 8020A has six resistance ranges, including a 20 megohm range for those special high-resistance TV components. Plus, you can measure focus dividers, pcb and capacitor leakage clear up to 10,000 megohms with the new conductance function. And conductance allows you to measure transistor beta—unique

with the 8020A.

Ever damaged your meter in the fly-back circuit? Rest easy. The 8020A is MOV-protected to 6000V against hidden spikes and transients.

Your 8020A comes with a full-year warranty, with worldwide service backup. Regardless of what happens to it, we'll fix it inexpensively and quickly, making the 8020A a truly cost-effective investment.



8020A DMM \$169.

212-687-2224

THE TEST EQUIPMENT SPECIALISTS

**TOLL FREE HOT LINE
800-223-0474**

54 West 45 Street, New York, N.Y. 10036

**ADVANCE
ELECTRONICS**

APRIL 1979

Nobody does it better than VIZ

NEW SIGNALYST™ Color Bar Generator

Model WR-515B \$249



EVERY COLOR TV TEST SIGNAL YOU NEED. A PRICE NOBODY ELSE CAN MATCH.

There's absolutely nothing else on the market like this new VIZ Color Bar Signalyst. Use it to service TV sets, video recorders, CATV, MATV, CCTV, etc. Compact enough to carry with you on house calls. Complete enough for every shop test—at a price you can afford. Look what it does for you:

Patterns supplied. Superpulse; regular color bars; color bars with luminance; color bars less burst; red, green or blue primary color rasters; color trio; gray quad; hatchdots; dots—all with progressive or interlaced scanning and 4.5 megahertz sound carrier.

Outputs. Video (pos. or neg. polarity) 0-1.7 volts into 75 ohm line. RF and IF continuously adjustable from snow-low 20 microvolts to 200,000 microvolts (enough to drive a whole hotel full of TV sets). All outputs crystal controlled.

Scope triggers. Two separate 3.7 V peak-to-peak pulses for H & V trigger.

Comes complete with 75 ohm output cable and 300 ohm snap-on head and excellent text on application.

See your local VIZ distributor.

VIZ Test Equipment Group
335 E. Price St., Philadelphia, PA 19144

The VoltOhmyst company

EQUIPMENT REPORTS

continued from page 35

space on each disc. In addition, the board has hardware and software selection capability between Integer BASIC and Applesoft II.

A small toggle switch protrudes from the board and is accessible from the rear of the Apple II without having to remove its cover. This switch selects the BASIC that is initiated by the normal control-B command. However, this selection can be overridden by software addressing of two locations. Thus, for example, when retrieving an Applesoft program from the disc, the DOS automatically selects the Applesoft ROM Card before loading the program. As with the original on-board ROM in the Apple II computer, the Applesoft firmware board contains an extra (empty) socket for future ROM expansion.

Applesoft II is a fairly comprehensive BASIC interpreter written by Microsoft. It includes extensive graphic commands to match the Apple II's 16-color low-resolution and four-color high-resolution graphic capabilities. Also included are such additional commands as HOME (cursor), INVERSE, FLASH, SPEED, and ON ERR GO TO. Data matrices can now also be STORE'd and RECALL'ed from the cassette.

If the firmware board is installed in an Apple II system with a disc, it offers one more convenience: FP and INT commands to switch between floating-point Applesoft II and Integer BASIC. The Applesoft ROM board makes an excellent addition to the Apple II computer. It costs \$200; a bit expensive but worth it if you take into account the RAM savings it affords.

R-E

The American Economic System
We should all learn more about it.

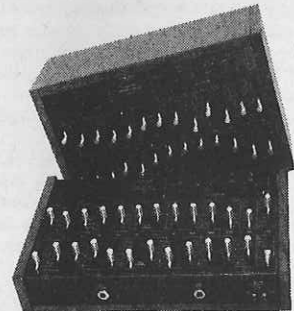
A public service message of
The Magazine & the Advertising Council
& the U.S. Department of Commerce



THE BIG PLUS + Graphic Equalizer

ASSEMBLED
\$189⁹⁵

KIT
\$99⁹⁵



LOADED with Quality Features!

- Stereo . . . Eleven Bands Per Channel • Extremely Low Noise & Distortion • LED Peak Indicators • Center Detent ("flat") sliders • Built-in "record" Switching • Line and Microphone Level Inputs/Outputs • Regulated Power Supply • Fully Guaranteed • Horizontal or Vertical Cabinets • Kit or Fully Assembled • Plus Much, Much More!

Absolutely equals or exceeds overall performance and features of any graphic equalizer made today!

AARON-GAVIN INSTRUMENTS, INC.

17231 Corla Avenue Tustin, California 92680

Yes! I've enclosed \$ _____; RUSH me: cabinet send assembled equalizers at \$189.95, p.p.d. brochure un-assembled equalizer kits at \$99.95, p.p.d. Horizontal (flat) Vertical (up-right)

California residents include 6% sales tax Visa. & Master Charge orders accepted

Name _____ Card No. _____
Address _____ Exp. Date _____ Bank No. _____
City _____ State _____ Zip _____

Dealer inquiries invited

CIRCLE 28 ON FREE INFORMATION CARD