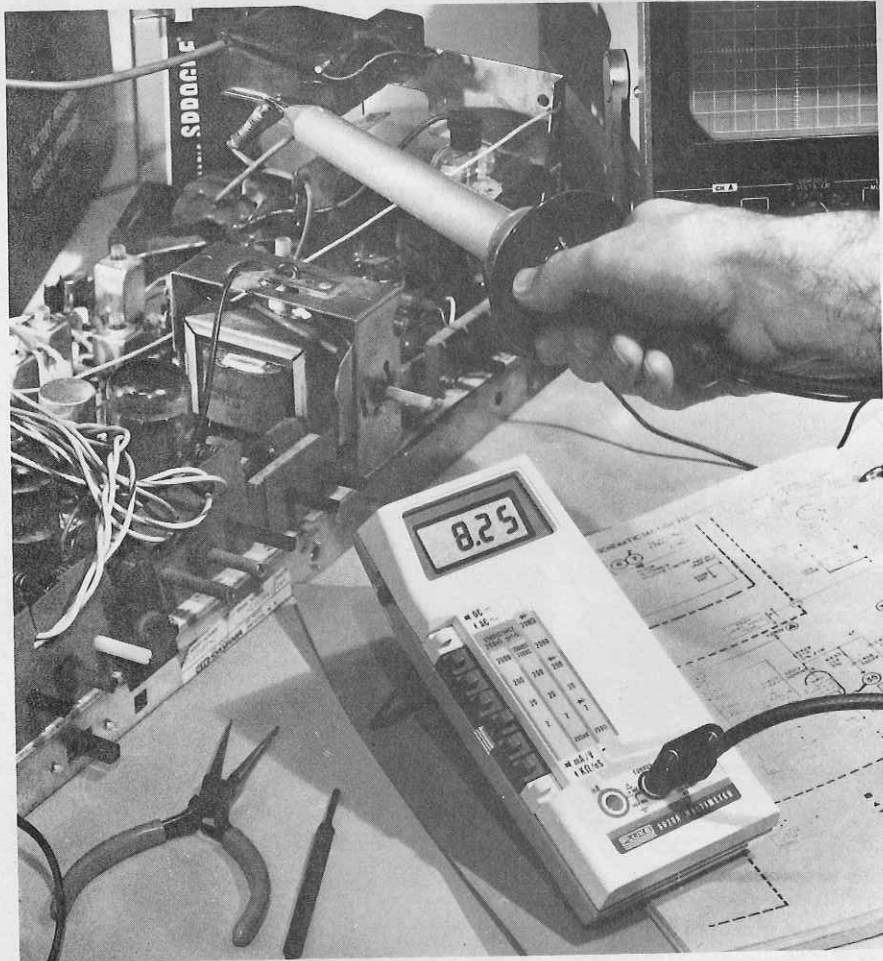


How do you really use a multimeter?



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.

FLUKE[®]

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**

EQUIPMENT REPORTS *continued from page 26*

ductor cables, color-coded on one side and colored plain red on the other. This helps identify the position of the edge connector in the chassis socket. The terminal boards used for the socket end of these cables are made with what looks like a good grade of glass epoxy. Printed-circuit wiring on the other side of the board completes the circuit, and jumpers are added where used in the original socket that look as if they would stand up to hard use with no trouble.

I feel these extension module cable kits are a giant step forward in making our job just a little bit easier! The suggested retail prices for the extension cable sets are as follows: the Zenith model KZ-2, \$49.50; the RCA model KRX-5, \$54.50. The sets are available from Sylvania dealers and distributors. "Try 'em, you'll like 'em!" **R-E**

Microproducts Apple II Assembler/Editor

CIRCLE 142 ON FREE INFORMATION CARD

A CORESIDENT ASSEMBLER/TEXT EDITOR FOR the Apple II computer is now available from Microproducts (1024 17th Street, Hermosa Beach, CA 90254). This assembler is supplied on cassette tape, floppy-disc or EPROM, and features line renumbering, printer control and driver software for Microproducts' EPROM programmer. I used the disc-based assembler (Version 2.0), which also allows the program text files to be stored, retrieved and merged from the disc.

Writing in machine language yields fast and efficient programs. However, machine code is tedious and hard to debug. Even with a mini-assembler, such as the one in the Apple II, changing one line of a program usually necessitates a lot of machine code acrobatics. With a true assembler/editor such as the one described here, the program is written into a text file that can easily be read, documented, altered and debugged.

The Apple II assembler supports all standard 6502 mnemonics and address modes. Also included are six pseudo-op codes that allow you to originate variable codes as well as hexadecimal format and ASCII constants or tables. Labels can be 1 to 4 characters long, and the comment field handles up to 16 characters. Using this assembler makes writing machine-language programs almost as easy as using BASIC (well, maybe not quite). But with a little practice even the beginning computer user can break the "BASIC barrier."

I did find one bug that causes the assembler to generate false code—it does not always catch a BRANCH OUT OF RANGE error. Instead, it generates legitimate code, which can play havoc with your program and is very hard to debug. Fortunately, I also found the cure for this problem, and I notified Microproducts so that the company can correct any future units. (If anyone has an old version of this assembler and wishes to correct it, just send a self-addressed, stamped envelope to West Side Electronics, Dept. MP-F, P.O. Box 636, Chatsworth, CA 91311.)

The assembler on cassette tape (No. MP 78101-1) costs \$19.95; on disc (No. MP 78101-3), \$25.00; and on EPROM (No. MP 78101-2), \$40.00 and you must supply the two 5-volt 2716 EPROM's. **R-E**