

Product Description

Three New Computers from Radio Shack

Stan Miastkowski, Editor

Ever since the TRS-80 was introduced, there has been repeated speculation about its successor. Rumors have flown about the imminent demise of the Model I and the introduction of a "TRS-90" (or something of that sort). Last year the TRS-80 Model II was introduced. Even though its capabilities are much greater than the Model I, its price was aimed squarely at the small-business market.

The TRS-80 Model III

All the speculation, or at least most of it, can now come to an end. The TRS-80 Model III has arrived, and along with it come the TRS-80 Color Computer and the TRS-80 Pocket Computer. Even though the Radio Shack people say the Model III is *not* designed to replace the Model I, it is the successor and it seems likely to eventually push aside the Model I.

Several Radio Shack development people told me that the Model III was introduced because they saw a need for

what was termed a "powerful" desk-top computer that would be smaller and less expensive than the Model II (which starts at \$3450).

Cosmetically, the TRS-80 Model III bears a more-than-vague resemblance to the Model II. The entire unit is housed in a one-piece molded case sporting the familiar battleship-gray motif. One big change is that the keyboard (65 keys including keypad) is nondetachable. The high-resolution monitor measures 30.48 cm (12 inches) diagonally, and space has been left next to the monitor to mount one or two (optional) disk drives. The obvious reason for the one-piece design is to provide increased RF (radio frequency) shielding to comply with FCC (Federal Communications Commission) rules and regulations. This was confirmed by several Radio Shack people.

As for the internal design of the TRS-80 Model III, the only thing I was able to uncover is that the Z80 continues to be Radio Shack's microprocessor of choice. At a recent press conference introducing the products, none of the new products was shown with the cover removed. Requests to "take a look inside" were firmly, but politely, denied. Despite the myriad hobbyists waiting with hot soldering irons to get inside, the official policy of the Tandy Corporation is that its computers should be opened only by authorized service personnel.

The TRS-80 Model III is being marketed in three basic configurations ranging in price from \$699 to \$2495. Radio Shack says that all Model I software will run on the Model III without modification. You can purchase 4 K bytes of programmable memory, uppercase-only alphanumeric character set, and Level I BASIC for \$699. An important addition to Level I BASIC is the inclusion of LPRINT and LLIST (since a printer interface is included).

Significantly, none of the Model III configurations include the familiar cassette recorder. Radio Shack is selling the optional CTR-80A for \$59.95. Another new feature is that the cassette data-transfer speed is now a respectable 1500 bps (bits per second) even with Level I BASIC. No more time to go get a sandwich and coffee while a program is loading.

The next step up in the Model III progression is \$999. Inasmuch as this buys you a *lot* of capability, it seems destined to be the most popular version of the new computer. Included are 16 K bytes of programmable memory, uppercase and lowercase alphanumerics, a real-time clock, and something called "Model III BASIC" (not to be confused with Level III BASIC which is marketed for the TRS-80 by an independent supplier). At press time, no details were available on how Model III BASIC differs from Level II BASIC. I did learn that a TIMES\$ function and several new statements are included.

The top of the TRS-80 Model III line is what Tandy is calling its "Desktop Business Computer." The price for this configuration jumps to \$2495, but it adds two double-density 5¼-inch (12.7 cm) floppy-disk drives and an RS-232C interface. The drives give the Model III a

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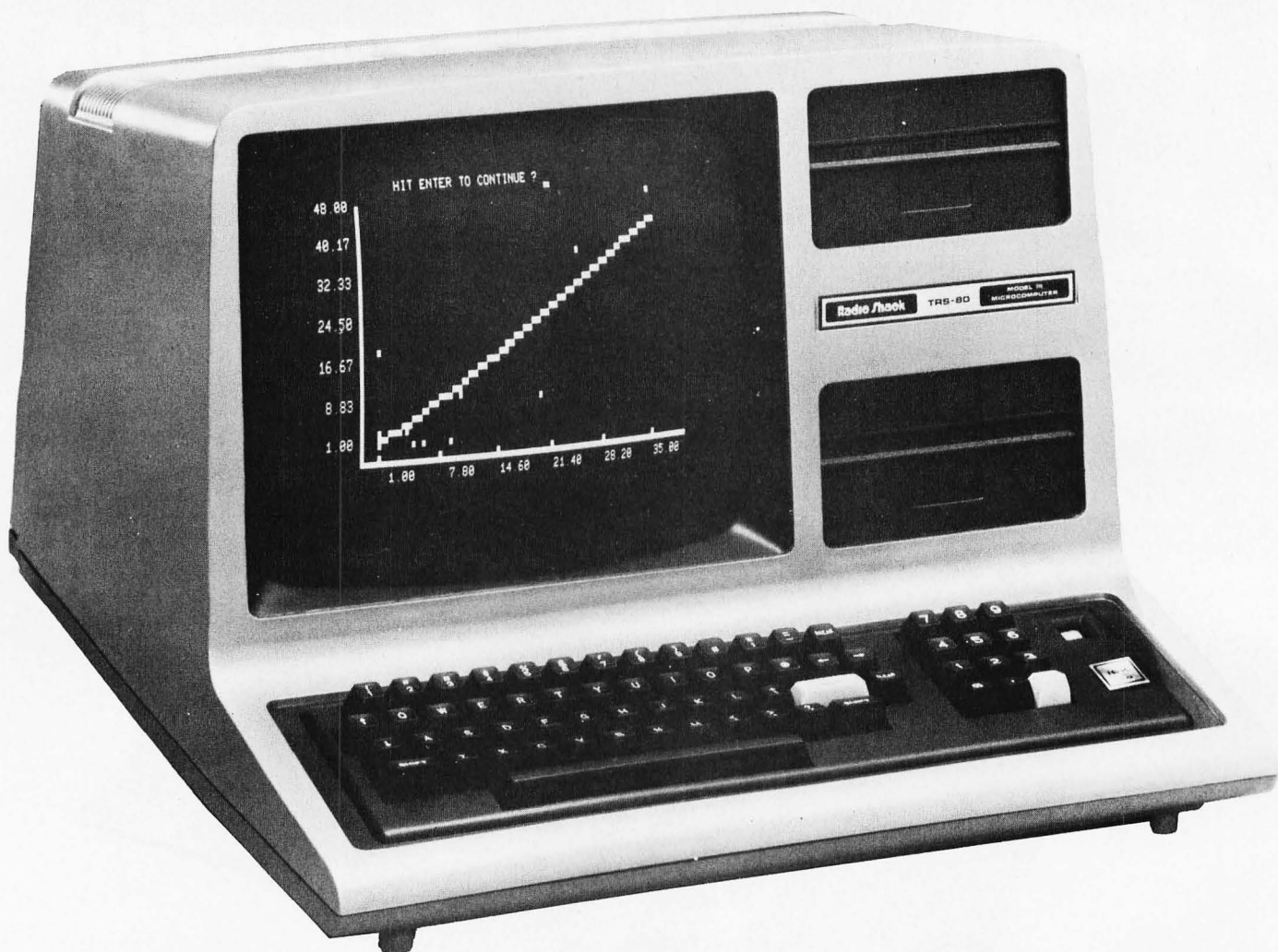


Photo 1: The TRS-80 Model III is available in three configurations ranging in price from \$699 to \$2495. The Model III is housed in a one-piece case with a nondetachable keyboard. Utilizing a Z80 microprocessor, the Model III is available with uppercase and lowercase alphanumerics, real-time clock, RS-232C serial interface, and "Model III BASIC"—an expanded version of the familiar Level II BASIC.

total storage capacity of 315 K bytes. Radio Shack has also introduced a new daisy-wheel printer for \$1960 (more about the printer later). It's a natural to go with the Desktop Business Computer Model III configuration, and it brings the price of the Desktop Business System to \$4455.

Although these are what Radio Shack calls its three basic configurations, you are not limited to them. As with the TRS-80 Model I, you can pick and choose. For example, adding 16 K bytes of programmable memory costs \$199. Sixteen K bytes and the Model III BASIC are \$299. The RS-232C serial interface can be installed in any of the Model III configurations for \$99. If for some reason you want a single floppy-disk drive, it's available for \$849, including a new TRSDOS (disk operating system). The second drive is \$399.

The TRS-80 Color Computer

Of the three new computers that Radio Shack announced, the TRS-80 Color Computer will probably create the most interest in consumer markets. It's sure to create quite a few sales along the way. Radio Shack's copywriters call it "high-technology at low cost." For \$399, you receive a full-fledged computer with color and

sound, and it is programmable in BASIC. Included are 4 K bytes of programmable memory, a built-in television modulator, and a 53-key standard keyboard.

The TRS-80 Color Computer utilizes a Motorola 6899E microprocessor and supports several levels of color graphics, each using increasing amounts of memory. Eight colors are available—any one of which the user can select for the background color. The character format is 16 lines by 32 characters. The "standard" graphics format is 64 by 32. The highest-resolution graphics are 128 by 192 (using four colors) and 256 by 192 (one color only).

A unique built-in feature of the TRS-80 business computer is an RS-232C serial interface for modem or printer connection. Because of this, the Level I BASIC of the Color Computer includes LPRINT and LLIST. With the addition of a modem (\$199) and a special software package (\$29.95), the Color Computer becomes a Videotex terminal (Radio Shack's name for its connection to the CompuServe Information Services Network).

At present, seven games and a personal finance program (all full-color) are available in ROM (read-only memory) "Program Paks" that plug into the side of the unit. Several of the games require optional joysticks (\$24.95).



Photo 2: The TRS-80 Color Computer sells for \$399 with BASIC, 4 K bytes of user memory, and a built-in television RF modulator. It supports eight colors and several levels of graphics resolution. Eight game programs are currently available on ROM-based "Program Paks" that plug into the right side of the unit. Expansion is available with 16 K of programmable memory and Extended Color BASIC, which allows the creation of high-resolution graphics from within a BASIC program. The monitor shown receives standard television signals and sells for \$399.

The TRS-80 Color Computer can be expanded to 16 K bytes with a set of programmable memory processors that sell for \$99 plus installation. Another option is the Extended Color BASIC package (in 8 K of ROM). It gives you the ability to create high-resolution graphics from within a BASIC program. The Color Computer with both the expanded memory and Extended Color BASIC can be purchased for \$599, which is a reasonable

price for its capabilities and should give some other personal-computer manufacturers a few sleepless nights.

One interesting point: the TRS-80 Color Computer can be programmed in machine language (for those so inclined).

For storing and loading programs, you will still need a cassette recorder, which is not included. As I previously mentioned, the CTR-80A sells for \$59.95. If you want

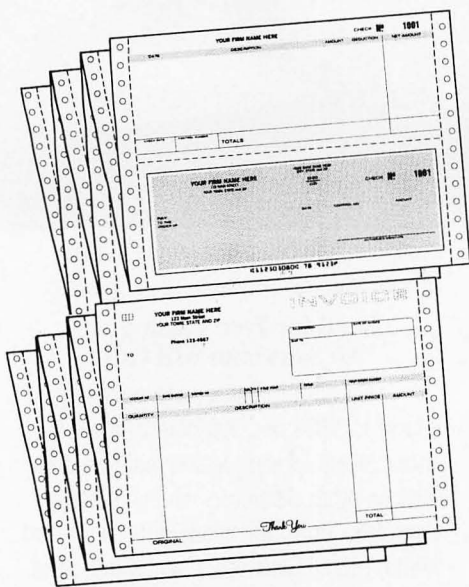


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still more storage, Radio Shack says a floppy-disk drive will be available for the Color Computer in early 1981.

You will also need a color monitor for the TRS-80 Color Computer. Since it has a built-in television RF modulator, you can use the family television. But if that draws complaints from the family, an option is available. Radio Shack is now selling its first-ever standard color television. The TRS-80 33 cm (13-inch) Color Video Receiver (made by RCA) sells for \$399 and has full American-standard reception capabilities. It has digital channel display and push-button tuning. At the recent introduction of the Color Computer, it did an excellent job of displaying the high-resolution graphics.

The TRS-80 Pocket Computer

Radio Shack spent a great deal of time stressing the "breakthrough" of the TRS-80 Pocket Computer at this press conference. I have to admit that it is a very interesting product. If you sit back and think a minute, you'll realize that only a couple of years ago genuine pocket computers (not calculators) were something found only in the realm of science fiction.

The TRS-80 Pocket Computer (\$249) is *not* a glorified calculator. It's a compact unit 17.78 by 7 by 1.27 cm (7 by 2¾ by ½ inches), that is programmed in Level I BASIC (without the graphics capability). The keyboard has 57 keys (many of them double function) with the standard "QWERTY" alphanumeric keys. Although the keys are placed very close together, even a high-speed touch-typist can get used to their spacing and feel in a very short time.

The Pocket Computer utilizes a liquid-crystal 24-character alphanumeric display (5-by-7 dot matrix). Lines longer than twenty-four characters can be entered and displayed, and program lines are scrolled automatically. There are 1.9 K bytes of user memory included. For obvious reasons, it is not expandable. An interesting feature is that, since CMOS (complementary metal-oxide semiconductor) programmable memory is used, programs are retained when the power is turned off. Also, automatic BASIC abbreviation eliminates spaces in the stored program to conserve memory space. For off-line program storage, a cassette interface (\$49) is available. Although any cassette recorder is usable, Radio Shack has introduced the Minisette-9 as a logical companion to the Pocket Computer. It's compact (18.25 by 11.6 by 3.33 cm) and uses standard cassettes.

The TRS-80 Pocket Computer is, interestingly enough, Radio Shack's only computer that is not company-made in Fort Worth, Texas. It's a Japanese product with Radio Shack packaging. (Observant BYTE readers will notice that it bears a distinct resemblance to several other pocket computers which were recently introduced.)

Although I didn't get a look inside, I was able to learn that the Pocket Computer uses *two* 4-bit CMOS microprocessors (one for arithmetic calculations and the other for the BASIC interpreter). There is an 80-character input buffer and the built-in ROM uses 7 K bytes for the BASIC interpreter and 4 K bytes for the monitor.

Not unlike a sophisticated calculator, fifteen mathematical functions are available, including trigonometric and inverse trigonometric with readout in degrees, radians, and gradians, plus logarithms, exponents, angular conversion, integer, and absolute value. The Pocket



Photo 3: The TRS-80 Pocket Computer. Measuring 17.78 by 7 by 1.27 cm (7 by 2¾ by ½ inches), the hand-held unit sells for \$249 and can be programmed in Level I BASIC. The display is 24-character liquid-crystal type utilizing a 5-by-7 dot matrix. There are 1.9 K bytes of programmable memory included, and a cassette interface (list price \$49) is available for off-line storage. Eight software packages are currently available, including Aviation, Real Estate, Engineering, Finance, Games, and Math.

Computer has 10-digit accuracy. It uses four 67S mercury batteries for a total life of about 300 hours. The Pocket Computer automatically shuts off after seven minutes of inactivity to conserve the batteries.

The Pocket Computer is fun to use, even for hardcore computer enthusiasts. There is something very different about banging in a quick BASIC program on a hand-held unit. If you're used to the pseudo-assembly language of programmable calculators, you'll find using the TRS-80 Pocket Computer an exhilarating experience. Single-step, debug, and edit modes are available to make things easier. It's also useful as a "pocket notebook"—since strings of up to seven characters can be stored as data and then sorted and searched.

Radio Shack has put a good deal of thought and work into eight software tapes that are currently available for the Pocket Computer. They've promised many more to come. Those available now are: Real Estate, Civil Engineering, Aviation, Math Drill, Games I, Business Statistics, Business Financial, and Personal Financial. All of the software has been especially designed for the capabilities of the Pocket Computer. More information fits into that 1.9 K than you might expect. For instance, the Business Statistics software contains eight programs, including forecasting, seasonal variations, moving average, multiple regression, and more. The Management Decisions package also contains eight programs including break-even analysis, optimum order quantity, profit margin, and random sample.

Although there has already been criticism of the TRS-80 Pocket Computer as a "toy," it is a very sophisticated computer for its size and price. Radio Shack is counting on this computer to be a best seller that will

help further Radio Shack's hold on the personal-computer market.

The Printers

Complementing its three new computers, Radio Shack has introduced four new printers, bringing its printer line to seven units at prices ranging from \$219 to \$1960.

The most interesting new arrival is the Daisy Wheel Printer II. Selling for \$1960, it's specifically designed for word-processing applications. It features 10- or 12-pitch as well as proportional spacing and operates at 43 cps (characters per second). A pinchfeed roller takes paper widths from 10.16 to 37.8 cm (4 to 14¾ inches) and a tractor feed will also be available. At present, one character wheel is available, but, because they are easily interchangeable, more can probably be expected in the future.

Another new and different arrival is the Plotter/Printer (\$1460). As the name implies, it can be used as either a normal line printer (uppercase only) or a plotter. It takes 20.3 cm (8-inch) tractor-feed paper and prints at an average speed of 10 cps.

The Line Printer IV sells for \$999, and it is Radio Shack's lowest-cost "letter-quality" printer. It prints both uppercase and lowercase alphanumeric in 80- or 132-character columns and handles roll paper, fanfold, or single sheets.

Rounding out the line of new printers is the Line Printer VI. It is a medium-cost business printer designed for reports, checks, invoices, etc. It sells for \$1160. It utilizes a bidirectional printhead (7-by-9 matrix) that operates at 100 cps. It takes 10.16 to 38.1 cm (4- to 15-inch) fanfold, roll, or single sheet paper, and comes with a removable tractor mechanism. ■