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Space-Saver System

the TI 59 programmable calculator and PC-100A printer

Calculator — my cost $395, your cost $35. With that "for sale" ad successfully (?) transacted, I announced to my still-patient spouse (a veteran of H-P 35s, TI 51 and TI 52 calculator campaigns), "Now I'm going to get *the* calculator!" *The* calculator was to be a TI 59 programmable plus a PC-100A printer. "Think of it," I exclaimed. The $395 price tag that five years ago had hung on my first hand-held "number-cruncher" would now include: a magnetic card or keyboard-programmable portable calculator with up to 960 programmable steps, or 100 memory/data registers; a mating (but detachable) printer having full alphabetic, symbolic and numeric typeset. The printer functions under keyboard or program results!

I bought the package, and I still think it was a super purchase. Here's an armchair tour of what I found.

Solid State "Software"

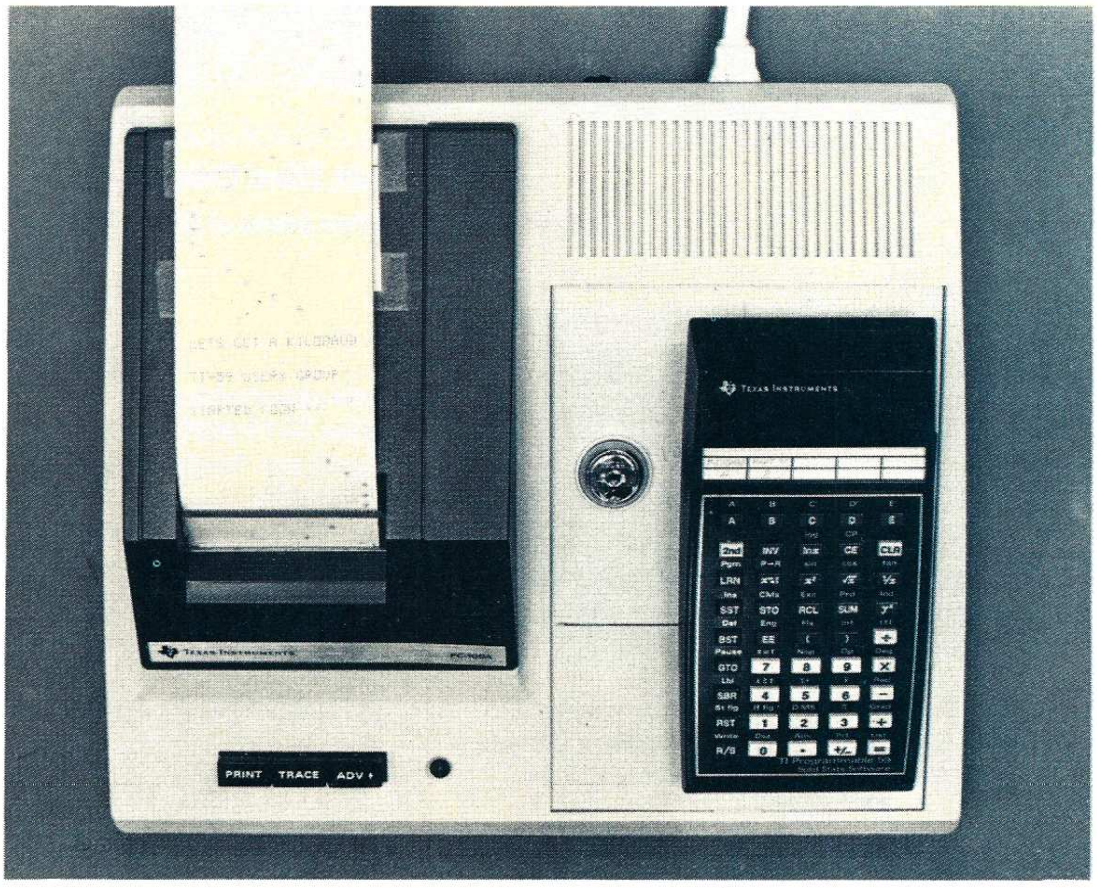
A new innovation emerging in hand-helds is the use of solid-state chips containing multiprogram libraries the user can insert and remove from the calculator. The TI 59 comes with a Master Library Module "chip" containing 25 programs ranging from matrix math (a 9 x 9 matrix inversion can be performed that occupies 898 steps and requires 12 minutes to solve!) to moving averages, compound interest, annuities, etc., and yes, of course, a game (HI-LO)!

The real power of these library modules is their easy accessibility through a simple keyboard call-up routine, 2nd PGM-M-N, where M and N are the program identification numbers, and/or a subroutine in a user-developed program. Employing the solid-state libraries as program subroutines actually extends the program step capability out into the thousands of steps in many cases.

Manuals — Back to the Books

The TI 59 comes with two large (8½ x 11) manuals, *Personal Programming* and *Master Library*. If you're the "push the switches and buttons and read later" type, these widgets will be your Waterloo. *Personal Programming* was my evening reading material for two solid weeks! There are 45 keys on the TI 59 keyboard. Through their direct function, and when combined with the 2nd and INV keys, they allow 108 operations from the keyboard! The manual's large print and organization of instructions are effective if a reader sequentially works his way through it. However, a ring-binder type of manual instead of the hard binding type used would help the reader.

Master Library details the key usage sequence and gives sample problems for each of the 25 programs stored in the Master Library solid-state module. A disappointment was the lack of a full step sequence listing for any of the programs. Such a listing would help the novice programmer understand how program sequences are optimally employed. For owners of the TI 59 and PC-100A printer, an answer does exist: a down-loading procedure that transfers a selected library routine into the calculator memory where it can then be printed out as a step-by-step sequence.



No need to build an extra room in the house for this combo!

Programming a future article?

Programming, Calculator Style

Flowchart problem-structuring, subroutines, GOTO, branching, looping, conditional testing and transfer, terms familiar to mini and microcomputer users, are applicable to TI 59 programming. With a couple of keystrokes, the TI 59 can be shifted back and forth from the calculator mode to the programming mode, wherein each keystroke can be stored in the calculator's memory and, if desired later, onto magnetic cards for permanent storage.

Another innovation is the TI 59's ability to allocate or partition the total calculator memory between program steps and data storage registers. Starting with 100 memories and 160 program steps, you can trade in blocks of ten program memories to gain 80 program steps. The maximum is 960 steps.

The partitioning is performed easily from the keyboard and adds to the calculator's versatility. For example, some games, such as Blackjack, require many program steps and few memories. Other uses, such as stock-market 30-or-60-day moving averages require lots of data memory and not many program steps.

Put It in Writing — Print It!

Hours and hours of programming and debugging on a TI 52 had convinced me that my next calculator would have to have printout capability. The TI 59 exceeded my expectations for ease of programming and clear presentation of program results. The PC-100A printer incorporates a complete alphabetic, symbolic and numeric typeset. Full program titles and prompting directions can be printed, and calculation results can be labeled.

Don't expect to use this feature too liberally, however, since it's quite costly in terms of programming space. Each letter, number, space or symbol used has to be coded in as a two-digit number. The printer uses 2½-inch-wide heat-sensitive paper and solid-state heating element typeset. Twenty characters (alpha or numeric) can be placed on one line. Operation is *really* whisper-quiet.

Primary Modes of Operation

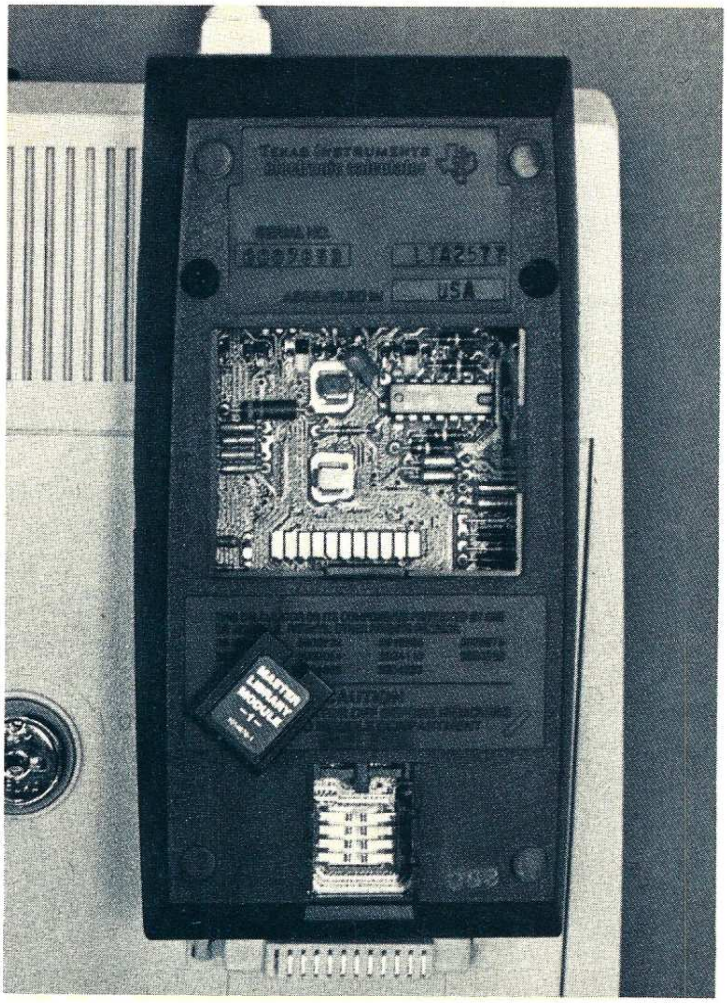
- List — Prints out each program step number and a key-code number that identifies which key was pressed for each step of the entire program.
- Trace — Prints out every calculation value and the instruction that generated that value.
- Calculation printout — This is under program control and causes a printout of intermediate and final calculation values. Four character labels can be added to each line.
- Plot — Also a program-controlled feature allowing the printer to print an asterisk at any of 20 locations across the tape width. Since the tape advance can also be under program control, the result is a handy but rudimentary plotting capability. The personal programming manual shows a sample sine-wave plotting program.

More to Come

In addition to the Master Library Module, which comes as standard equipment with the calculator, TI has other solid-state modules on real estate, statistics, navigation and surveying. These can be purchased separately and readily substituted for the Master Library.

A user's group, sponsored by Texas Instruments has formed for TI 59 owners; its purpose is to encourage program exchanges. The calculator is so new, and the user's group response has been so huge, that it apparently caught TI by surprise — so details of program listings, etc., are still at the printers. I'm sure *Kilobaud* readers will be interested in programs of applications, games and unusual printouts since this is unquestionably going to be a "hot" user combo.

Write, publish, and save your money, because although this certainly is *the* calculator, PET computer literature sure looks terrific. ■



View of the TI 59 from the back. Removing the two-cell battery accesses the printer interface contacts. Note the Master Library Module, which contains 25 programs.