

COMPUTER BITS

A First Look at Zenith's Z-100

By Les Solomon

IF you've been waiting for the new Zenith microcomputer, it's here, and we have had a chance to see it and even put in some "hands-on" time. The Z-100 is a powerful new desktop microcomputer employing an 8085/8088 single-board computer operating at 5 MHz. It has 128K of RAM (expandable to 192K) on the main board, an integrated 5-slot S-100 motherboard, two synchronous/asynchronous serial I/O ports, an 8-bit parallel port, RGB color interface, light-pen interface, and an 8035 μ P controlled keyboard.

Unlike the CompuPro system, the Z-100 is an integrated desktop unit available in two configurations: the ZF-110-21 low-profile model includes an RGB color-display controller that generates 225 raster lines and a 640 by 500 dot resolution with 8 colors; the Model ZF-120-21 is an all-in-one computer with integrated 12" green phosphor display and built-in support for an outboard color display by adding memory, for red and blue color generation, to the display controller.

A notable design technique used is evident in the method of character generation. Rather than employing character set ROMs, the Z-100 treats the screen in the graphics mode. Therefore, even alphanumeric characters are addressed dot-by-dot, with look-up tables in the system ROM. This, asserts product-line manager Barry Watzman, provides an additional level of flexibility to the OEM who wants to create specialized characters either by providing ROMs or using downloadable character definitions.

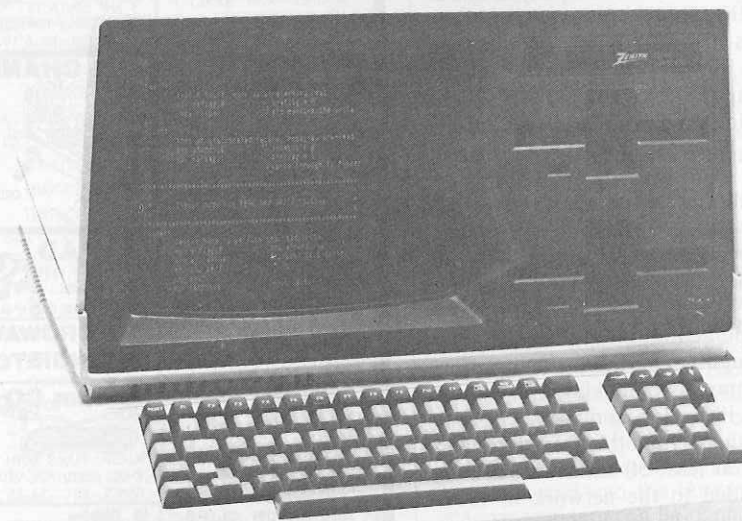
The basic systems, including the single-board dual processor with 128K of RAM, 5 expansion slots, CRT controller (an integrated display for the Model ZF-120-21), dual 48-tpi Tandon disk drives, full-size keyboard, light-pen connector, disk controller capable of supporting a total of 8 drives (four 5 $\frac{1}{4}$ " and four 8") are expected to be priced well under \$5000. Full production is due by 1983.

Super Software. The Z-100 series comes with CP/M-85 and MS-DOS, the same operating system used on the IBM PC. The 8-bit CP/M-85 is an optimized version that takes advantage of the

unique attributes of the system. For example, the throughput of the system is several times greater than standard CP/M and takes advantage of the "goodness" of the hardware design.

Moreover, the 8-bit O/S allows the use of any number of CP/M packages currently available. Zenith is planning to offer Supercalc and Wordstar and, possibly later, some graphics software for the 16-bit processor.

We specifically like the implementation of Microsoft BASIC. This version of BASIC uses MS-DOS and has built-in graphics primitives to take advantage of the powerful bit-mapped screen. You can, for example, perform area fills, paint objects, and even perform rotations. Zenith has allowed 64K for the screen, which means that you can create foreground and background planes. Although we didn't perform the function, it appears from the unique screen handling capabilities that you can move objects over and through existing objects in a manner similar to that on much more expensive dedicated graphics terminals.



Zenith's Z-100 desktop microcomputer system.

What surprised us about the software systems introduced was the absence of a multiuser/multitasking operating system such as MP/M either for the 8- or 16-bit environment. Currently, Zenith has no plans to make such an offering; but it fully expects dealers and OEMs to add this feature.

Even though we could understand Zenith's strategy in offering a one-machine/one-user system, we felt that ignoring the aspect of multiple use was a bit short-sighted. We would have liked to have seen, as a possibility, the use of concurrent CP/M and MP/M-86, along with networking capabilities. It appears that the system would be almost an ideal node in a Corus Omninet environment. When asked about this, Zenith elected to defer it to a later time, when they may have an answer.

Already, though, speculation is running high that Zenith's solution may be an implementation of Microsoft's Xenix, a UNIX look-alike. Sources close to Microsoft indicated that discussions between the two companies have been taking place. What appears to be in the near future, though, is an implementation of MP/M by independent dealers who will probably offer an Omninet or similar network interface.

Interestingly, the drives chosen for the Z-100 are 48-tpi Tandon 5 $\frac{1}{4}$ " floppies rather than 96 tpi. We questioned Mr. Watzman about this and he contended that they felt a conservative approach was required at this time simply because 96-tpi drives haven't really proven themselves. Moreover, there appears to be

computers

some question of data interchange on the devices with higher track densities.

One aspect of the system that we like was the inclusion of the disk controller. It supports up to four 5 $\frac{1}{4}$ " and four 8" floppies. The drives can be single-sided single-density, double-sided double-density, or any combination that suits your requirements.

In addition, you can add a Winchester drive and controller without disturbing the operation of the system. Zenith plans to offer a Winchester drive shortly.

About the Light Pen. A part of the basic architecture of the Z-100 system is a light-pen port. Although the capability exists, Zenith elected not to provide software support for it at this time. The reasoning was partly based on the unavailability of a reliable low-cost light pen. However, this situation may be solved as early as January, according to Zenith officials.

In general, we found the Z-100 desktop systems to be high-performance units with a great deal of expansion capability. We liked the attention paid to detail in the layout of the units and the solid switching power supply. To our knowledge, this is the only system that provides a supply that delivers 2 A to each S-100 bus slot and has full margining for brownout protection.

Those of you who enjoy kit building will be glad to know that the Heathkit side of Zenith will be offering the computers in kit form later this year. But don't plan on building the CPU board! It's a four-layer board and is extremely complicated. What you will get to build is the disk controller, video board, and parts of the enclosure. In general, the kit will be very similar to the popular WH-89.

To further enhance the system, a great deal of care has been taken in the preparation of the support manuals. Unlike the 89 manuals that had many shortcomings and mistakes, the Z-100 manuals are designed with the novice user in mind, but they contain enough technical details for the experienced user also.

Zenith has taken a similar approach to the software manuals. They have carefully documented all the important functions of a package and lead you into the operation in a carefully controlled manner in order that you can become familiar with the machine quickly.

The Z-100 series isn't going to be limited to the models discussed here but will grow to meet specific data processing requirements. Even though Zenith officials were not willing to discuss future plans, they did hint that we could probably look forward to the use of the ZT-1 communications terminals (with some unique enhancements) as part of the Z-100 series. \diamond

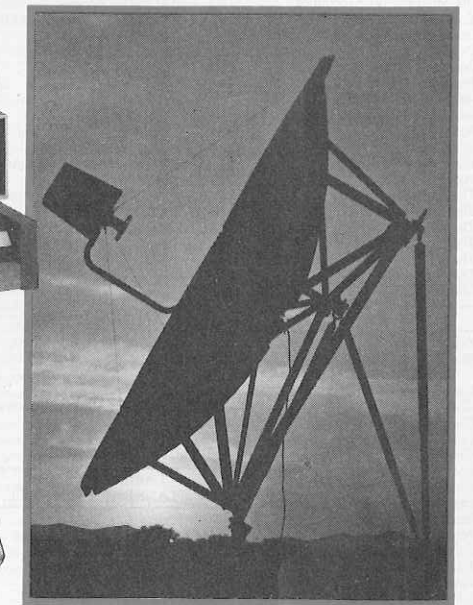
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