

Cromemco Z-2 Systems



The System Two Disk Computer shown here is a complete, factory-assembled version of the Z-2D Disk computer. This system consists of two 5 $\frac{1}{4}$ -inch disk drives capable of storing a total of 184 KB, 64 KB RAM, and a printer interface. Price for the system as shown is \$3990. The Z-2 systems are all programmable in BASIC, FORTRAN IV, COBOL, or Assembler.

BACKGROUND INFORMATION

Cromemco Incorporated, 280 Bernardo Ave., Mountain View, CA 94043. Telephone (415) 964-7400.

Cromemco was formed in December 1975, and delivered its first computer, the Z-2, early in 1977. Cromemco also offers a higher-performance System Three Disk computer for business, professional, industrial, and education applications. Present volume of the company is about \$50 million per year.

The current Z-2 computer system product line spans a very large range of performance and capability, only the low end of which fits into the personal computer category. The upper end capabilities of the Z-2 that are considered beyond the personal computer range include the availability of 11MB hard disk drives, a multi-user operating system capable of supporting a network of up to eight users, and memory expansion of up to 512KB for use with multi-user operating environments.

Cromemco has carved out a reputation for having high quality, reliable equipment, well supported with extensive documentation and factory service. A dedicated staff of customer support personnel at Cromemco is available to fix bugs in existing software and develop software updates for distribution among Cromemco users.

A noteworthy aspect of Cromemco's support program, and one which must be given some of the credit for the high degree of satisfaction among Cromemco users, is the firm's thorough dealer training program. Each dealer must attend a 1-week class, and must send service

Current models: Z-2, Z-2D, CS-2.
Memory: 4KB-64KB RAM; 92KB-1MB diskette.
Base list price: \$1,290-\$2,780 (processor/memory).
Typical list prices: about \$4,000 (student)—16KB RAM, B/W CRT terminal, mini-diskette; about \$7,200 (business)—64KB RAM, B/W CRT terminal, 2 mini-diskettes, printer.
Primary uses: household management, professional offices, small business, control applications.
Popular options: from Cromemco—large diskette capability, color graphics; from independent sources—graphic I/O tablet, home controller.
Principal programming languages: BASIC, FORTRAN IV, COBOL, Macro Assembler.
Principal applications software: word processing.
First shipment: 1977.
Number installed to date: not available.
Available through: about 250 dealers nationwide.

personnel back to class once each year to maintain their knowledge of the systems and learn about any new products.

Most of the Cromemco Z-2 systems that have been sold to consumers or for home use are directed to scientists, engineers, and other professionals who may use the systems in support of their occupations.

SYSTEM CHARACTERISTICS

The Z-2's are housed in standard 19-inch cabinets, with space inside the chassis for 20 memory and/or I/O boards. There is also room in this housing for one or two mini-diskette floppy disk drives. When configured with a minimum of 4KB RAM (and no mini-diskette), the basic Z-2 sells for \$1,290.

With the addition of a mini-diskette drive, the system is referred to by Cromemco as the Z-2D Disk Computer System. A 64KB RAM Z-2D system capable of running the Cromemco Disk Operating System sells for \$3,785. A fully-configured Z-2D with two mini-diskette drives and 64KB RAM costs \$3,990. To each of the above systems must be added suitable peripherals such as a video display/keyboard (\$1,995), add-on mini-diskette drives (\$495 each), and a printer (\$1,495 to \$3,195). The CS-2 system is a fully configured Z-2 configuration.

All of the Z-2's are based upon the S-100 bus structure, and also have an unusually rich variety of systems and language support. Available are FORTRAN IV, COBOL, 3K Control BASIC, 16KB BASIC, 32KB Structured BASIC, Multi-user BASIC, RATFOR, a complete word processing system including a screen editor and a formatter, and Assembler language. Programs developed for small-size Z-2 personal computers can also be run on super-size Z-2's, as well as the System Three. A Cromemco user's group—CUssP—has been formed with Cromemco support. ▷

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HARDWARE/PACKAGING

PROCESSOR/MEMORY

Model: Zilog Z-80A microprocessor; 8 bits
RAM: 4KB to 64KB in 4KB (\$295); 16KB (\$595), or 64KB (\$1,785) increments
ROM: 8KB; additional 8KB (\$245), 16KB (\$245), or 32KB (\$295) capacity cards are available—PROM not included
System prices: 4KB (\$1,290), 8KB (\$1,585), 16KB (\$1,590), 24KB (\$2,180), 32KB (\$2,185), 48KB (\$2,780), 64KB (\$2,780)

DISPLAY

Type: B/W 3102 CRT Terminal (\$1,995)
Number: none provided; maximum of 1 available
Screen size: 12"
Chars./screen: 1,920; 80 chars./line, 24 lines plus 1 line text
Char. type: upper/lower case, 7 x 9 matrix
Features: partial screen lock; time of day clock; normal, reverse, flashing, half-intensity, underlined characters
Graphics: character graphics
Interface: 1 slot

KEYBOARD

Type: typewriter style, tactile, fixed
No. of keys: 116, includes 20 user-definable function keys, 14-key numeric keypad
Interface: integral 3102 connection

DIRECT ACCESS STORAGE

	Mini Disk	Dual Disk
Type:	5¼" diskette	8" diskette
Capacity/drive:	92KB or 184KB	256KB
Drives/system:	8 max; 4/control.	8 max.; 4/control.
Interface:	1 slot	1 slot
Price:	\$495 drive only	\$2,495 dual drive only

PRINTERS

	Model 3779	Model 3703	Model 3355A
Type:	matrix, impact	matrix, impact	full-char., impact
Paper:	fan-fold, tractor, 12"	fan-fold, tractor, 18"	fan-fold, tractor, 15"
Char. set:	96	96	96
Chars./line:	132	132	132
Speed:	60 cps	180 cps	55 cps
Interface:	1 slot	1 slot	1 slot
Price:	\$1,495	\$2,995	\$3,195

DATA COMMUNICATIONS

None provided

OTHER I/O

Magnetic tape: not attachable
Game controls: Joystick console with speaker (\$95); 1 slot
Standard interfaces: mini-diskette or diskette Controller (\$495); Parallel Printer (\$195); RS-232 dual terminal serial/parallel TU-

ART (\$295), 8-Port Parallel (\$295); 4-Port Parallel Isolated (\$395); SDI Color Graphics interface (\$595), D+7A I/O analog (\$245), TV Dazzler (\$350)

I/O ELECTRONICS

Structure: S-100 bus; chassis with 21 slots, 20 of which are available to use for memory or I/O boards

SOFTWARE

LANGUAGES

BASIC: 16KB Floating Point BASIC (\$95), 32KB Structured BASIC (\$295), 3KB Control BASIC (\$95)
FORTRAN: FORTRAN IV (\$95), RATFOR with FORTRAN IV (\$195)
COBOL: Level 1 COBOL (\$95)
Assembler: Z-80 Relocatable Macro Assembler (\$95)

OPERATING SYSTEM

Name: Cromemco Single-User Disk Operating System (CDOS)
Type: CP/M-compatible; single-thread execution with priority I/O interrupt structure
Functions: I/O device handling; keyboard and screen editing

UTILITIES

General: system diagnostics, etc.
TRACE: system simulator (\$95)

DATA BASE MANAGEMENT SYSTEMS

Name/price: DBMS; \$95
Function: general-purpose list management, including Mail List Inventory, storing, searching, and retrieval; requires 48KB

COMMUNICATIONS SUPPORT

None

APPLICATIONS PROGRAMS

General business: Word Processor (\$95)
Education: none
Entertainment: Dazzler games (\$95); requires Dazzler

SUPPORT SERVICES

DOCUMENTATION

Range: about 40 manuals available, for \$5 or \$20 apiece, such as 16KB Extended BASIC (\$20), FORTRAN IV Instruction manual (\$20), Dazzler Graphics Manual (\$5), Joystick Manual (\$5)

SUPPORT

Training: none from Cromemco; available at discretion of dealer
Maintenance: simple repairs by all dealers; some dealer can provide major repair service; other work at factory; all service fee based

TERMS AND CONDITIONS

Warranties: 90 days parts and labor
Discounts: none officially available at retail level; some dealers and mail order houses will offer up to 15% off list ■