



Another industry first from Cromemco . . .

**11 Megabytes
of hard disk storage in
a fast new desk-top computer**

- **Fast transfer speeds**
- **Two floppy disk drives**
- **64K RAM memory**

 **Cromemco**TM
Tomorrow's Computers Today



The first computer to offer an integral 11-megabyte hard disk system

Cromemco's new Model Z-2H not only incorporates an 11-megabyte hard disk drive but also offers the other features you have come to expect from Cromemco. These include large and expandable memory, fast Z80A processor, rugged construction and broad software support.

This S100-bus computer has a motherboard with 12 slots, 5 of which are occupied by the cards supplied with the computer. Thus, you have 7 slots to use for additional Cromemco cards (such as for additional RAM and interface cards) or for special cards suited to your particular application.

The power supply in the Z-2H is more than ample for nearly any card complement, providing more than 30A at +18, 15A at +18V, and 15A at -18V.

FEATURES

Model Z-2H Computer

- Fast Z80A 4 MHz processor
- 11-megabyte hard disk drive
- Two floppy disk drives
- 64K RAM memory
- RS-232 serial interface
- Printer interface
- Extensive software available

ADVANCED HARD DISK SYSTEM

The hard-disk system in the Model Z-2H both has large storage and is extremely fast. Eleven megabytes unformatted or over 10 megabytes of formatted data can be stored. File transfers to and from the hard disks occur from 6 to 10 times faster than is commonly seen in floppy disk systems.

The information transfer rate to and from the disk is 5.6 megabits/second using the fast DMA controller supplied in the Z-2H computer.

64K RAM SUPPLIED

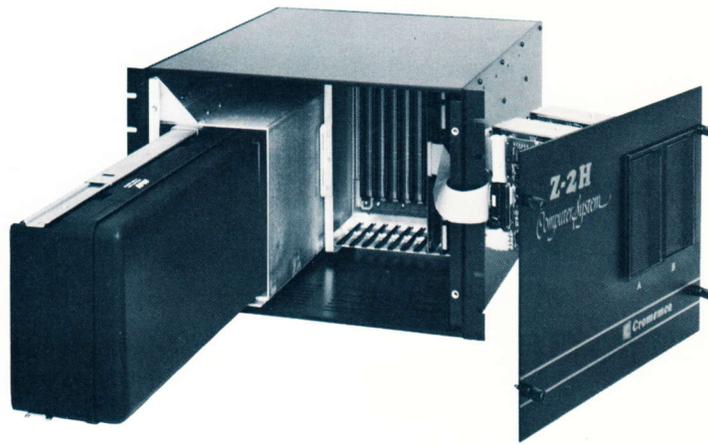
The Model Z-2H is provided with a full 64K of high-speed RAM memory using one of our highly-praised 64KZ RAM memory cards. With 64K of RAM memory you are sure to have enough for most any application whether it be in business, scientific, engineering, or process control applications.

RAM EXPANDABILITY

Even the 64K RAM is greatly expandable, however, since you can add additional RAM to give you as much as 512K bytes of RAM using our Cromemco Model 64KZ RAM cards.

PRINTER INTERFACE STANDARD

Every Z-2H is also supplied with a Cromemco Model PRI printer interface card. This card supports



the Cromemco dot-matrix printers as well as our fully-formed character printer.

SOFTWARE SUPPORT

With the Z-2H you receive a copy of our new extended CDOS operating system. This CDOS has been extended to support both the system floppy disks as well as the integral hard disk. With extended CDOS you have access to the full range of Cromemco software — software widely regarded to be the finest in the industry including:

- **FORTRAN IV**
- **Structured BASIC**
- **COBOL**
- **RATFOR**
- **LISP**
- **C**
- **RPG-II**
- **Z80 Macro Assembler**
- **Word Processing System**
- **Data Base Management System**

RELIABILITY/CONSTRUCTION

The disks and drive are housed in a sealed chamber (photo) so that the user has no need to provide filtered air for the unit. The chamber holds two rotating disks that provide 3 data surfaces.

To achieve fast transfer rates, the disks rotate at 3600 rpm and have a rotational latency of just 8.3 milliseconds. Head positioning is done with a linear actuator which is much faster than stepping motors and which achieves an average disk access time of only 50 msec.

Precise head positioning is achieved by using a servo track follower which is located on the fourth disk surface. Head positioning is thus maintained precisely despite temperature or humidity variations.

Servo track following also permits the system to operate in various orientations — there is no need to level the unit before using.

Head tracking pressure is very light — just 10 grams — thereby virtually eliminating the source of “head crashes” common with other disk drives.

The 11 megabytes of storage in this compact drive is achieved by using a low head flying height of 19 micrometers. This low height coupled with the precise servo track positioning allows a radial data density of 5868 bits per inch and an axial density of 300 tracks per inch.



DETACHABLE-KEYBOARD CRT TERMINAL

The CRT terminal available for the Model Z-2H has 80 characters/line and a 24-line page.

The terminal also offers line and page editing, and has 20 software-assignable function keys.

Note the separate numeric keypad and the cursor keypad.



FAST LINE PRINTER

The Model 3703 line printer available for the Z-2H prints at a maximum speed of 180 characters/second using its bi-directional printing.

Printing line width is 132 columns. Paper feed is tractor type.



Broad Software Support

Following is some of the outstanding software support available to you.

More becomes available all the time.

These disk software packages comprise a totally integrated system running under our CDOS system.

- **CROMEMCO DISK OPERATING SYSTEM (CDOS).** This is the framework through which all disk file management is handled. (Application software written for Digital Research CP/M will also run with this system.)
- **DATA BASE MANAGEMENT SYSTEM.** This advanced software package can be used for general ledgers, mailing lists, inventory control, order entry, or other important business applications.

To create a data base, an operator simply specifies the field attributes, then the sorts by which the data can be retrieved (e.g., by state, by name, by state by city by name, etc.)

- **CROMEMCO STRUCTURED BASIC.** This disk-extended BASIC was specifically designed to meet the most demanding requirements of business firms while also providing the flexibility and speed necessary for real-time control applications. It fully utilizes the extensive 158-instruction set of the Z-80 microprocessor to maximize computational precision (a full 14 digits), programming power, and speed of execution.

- **COBOL COMPILER.** This is a compiler that contains all the features of Level 1 COBOL as defined by the 1974 ANSI standard. It also contains the most useful options of Level 2.

For example, this COBOL includes the verbs SEARCH, COMPUTE, STRING, and UNSTRING.

Our Cromemco COBOL also supports Computational-3 data to give more compact storage of decimal data on a diskette (by packing 2 digits per byte).

- **FORTRAN IV.** Cromemco FORTRAN IV provides new capabilities for users of Z-80 based microcomputer systems. This is a complete implementation of ANSI standard FORTRAN X3.9-1966, except for complex data types. Therefore, users can take advantage of the large number of applications already written in FORTRAN.

- **'C'** is the language of choice for systems programming. It offers efficiencies comparable to those of assembly language while allowing full use of structural programming techniques. The C compiler operates only under the CROMIX operating system.

- **LISP.** This is a highly-evolved high-level language used particularly in artificial intelligence work. Cromemco LISP has a virtual storage capability, comprehensive error-trapping capabilities, and many other advanced features.

- **WORD PROCESSING SYSTEM.** The Cromemco word processing system is a combination Text Editor and Formatter for the professional preparation of documents.

Lines of text may be left- or right-justified or centered. Key words can be noted. An alphabetical index may be automatically prepared.

TECHNICAL SPECIFICATIONS

Model Z-2H Computer

Processor: 4 MHz Z80A

Cycle Time: 250 nanoseconds

Minimum Instruction Execution Time: 1 microsecond

Instruction Set: 158 instructions including the 78 instructions of the 8080

System Bus: Industry Standard S-100

Card Capacity: 12 cards

Standard Card Complement: Cromemco ZPU, 4FDC, 64KZ, PRI, and WDI

Number of Floppy Disk Drives: 2, each with 390K bytes

Hard Disk Drive Capacity: 11 Megabytes

PROM Firmware: 1K Bytes

Serial Interface: RS-232 or current loop, 110-76,800 baud. Supports Cromemco CRT terminal.

Printer Interface: Supports Cromemco dot-matrix or fully formed character printers.

RAM Memory: 64K bytes

Power: Operates from 110/220 volts; 50/60 cycle; 600 watts

Dimensions: 12¼"H x 19"W x 20¾"D (31.1 x 48.3 x 52.7 cm)

Weight: 90 lbs. (41 kg)

Mounting: For rack mounting (optional cabinets available)

Data subject to change without notice.



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