CADstation™ 2/50 System

High-performance stand-alone raster design/drafting system for CADAM® users

- Uses CADRA™-I software to provide most of the functionality of the CADAM CAD-Only Interactive Module at a low cost per seat
- Supports a user interface similar to that of CADAM
- Requires virtually no retraining of CADAM operators
- Allows easy access to host-resident CADAM database
- Reduces connect time to the host computer while providing local, stand-alone capabilities
- Offers response times similar to that of typical CADAM mainframe systems

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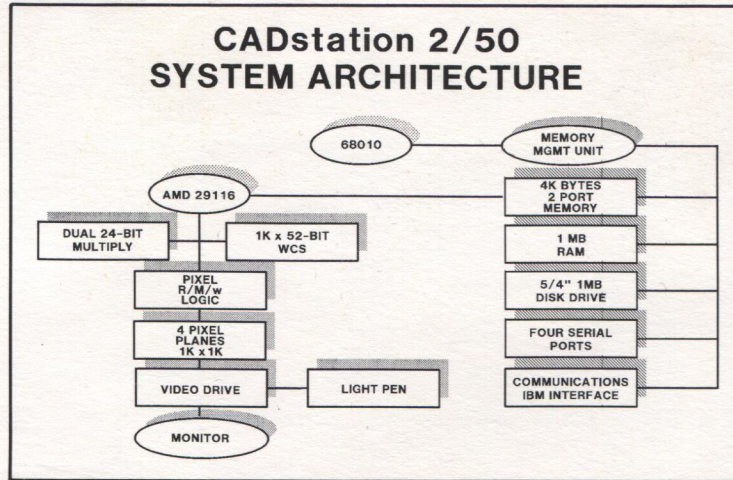# ADAGE

**CADstation 2/50
SYSTEM ARCHITECTURE**

Figure 1. Adage CADstation 2/50 Hardware Architecture

The Adage CADstation 2/50 System is a stand-alone raster graphics system optimized for efficient and high-quality two-dimensional Computer-Aided Design and Drafting (CADD) drawings. Designed for high performance yet practically priced, the user-friendly CADstation 2/50 offers engineers, mechanical designers and draftsmen a desktop workstation that operates in essentially the same way as the CADAM system. CADstation 2/50 Systems offload the interactive, terminal-intensive portion of the design process from the host mainframe, allowing the host to concentrate on the more calculation-intensive analysis functions. The command languages and user interface of the CADstation 2/50 are so similar to the CADAM design package that most users require little or no retraining.

Hardware:

The CADstation 2/50 System consists of a 19" monochrome raster graphics monitor and a stand-alone tower chassis, which houses the processing unit, display controller, disk drive and communications and I/O ports.

Interactive devices included with each system are a light pen, alphanumeric keyboard and 32 function keys. An optional data tablet with stylus is available for light pen emulation, and a cost-effective hardcopy device for obtaining screen copies from the graphics display is also optional. The graphics display monitor produces a bright, flicker-free display of high-resolution 1024 × 1024 60Hz non-interlaced images. Designed specifically for the office environment, the graphics monitor can be optionally mounted on an ergonomic tilt-swivel base for ease of viewing and use.

A powerful 32-bit microprocessor-based CPU with one Mbyte of local memory drives the system, while a one Mbyte, 5¼" floppy disk drive is used to load the CADRA-I software and to store and restore locally held drawings. The CADstation's bit-slice microprocessor-based geometry engine runs over 6.5 million instructions per second (mips) in order to perform the system's mathe-matical, geometric, and display func-tions. All calculations are done in double precision to maintain an accurate database. The CPU, local memory, geometry engine, and disk drive are housed in a floor-mounted tower chassis. The Adage CADstation 2/50 is designed to run in a standard office environment and has no special power requirements.

Figure 1 shows the hardware architecture of the Adage CADstation 2/50.

Software:

The CADstation 2/50 System entirely offloads the host computer, communi-cating with the host only for file transfer of drawings, or while emulating an IBM 3278 Model 2 terminal.

CADRA-I, the workstation's design/draft-ing software, features state-of-the art performance and functionality for design layouts, detailing and dimensioning. Since the software's input command structure nomenclature and method of interaction are very similar to that of CADAM, users already familiar with the CADAM package will have no difficulty adapting to the CADstation 2/50.

Operators can use the system to create original drawings or to call existing drawings from the CADAM database for annotation or reworking. All changes or additions to drawings are fully com-patible with CADAM and can be easily refiled in the CADAM database. CADRA-I software includes a module, resident on the host computer, that permits this exchange of data. Figure 2 illustrates the interaction with the CADAM database.

The CADstation 2/50 includes enhance-ments that increase ease-of-use. Action keys located on the alphanumeric keyboard provide more efficient and dynamic windowing capabilities. Menu items are spelled out in full and an addi-tional line of information for enhanced messages, prompts and status messages is also included.
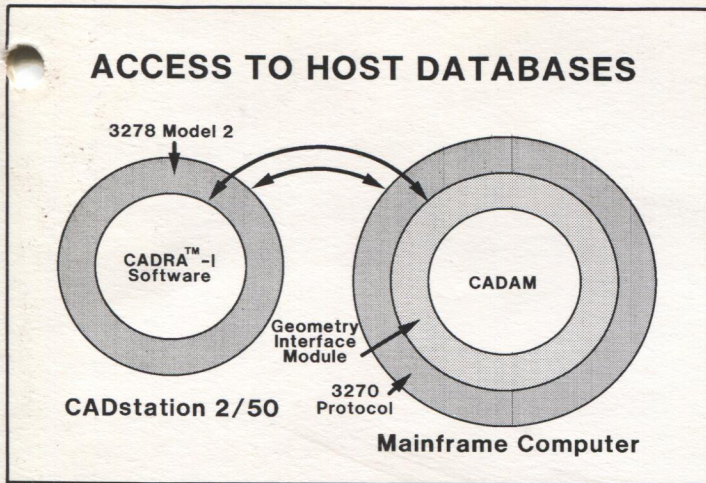
ACCESS TO HOST DATABASES

Figure 2. CADstation 2/50 Interaction with CADAM Database

CADstation 2/50 ENVIRONMENT

- ● Host file transfer to and from CADAM database
- ● Local or remote connection via 3270 series controllers
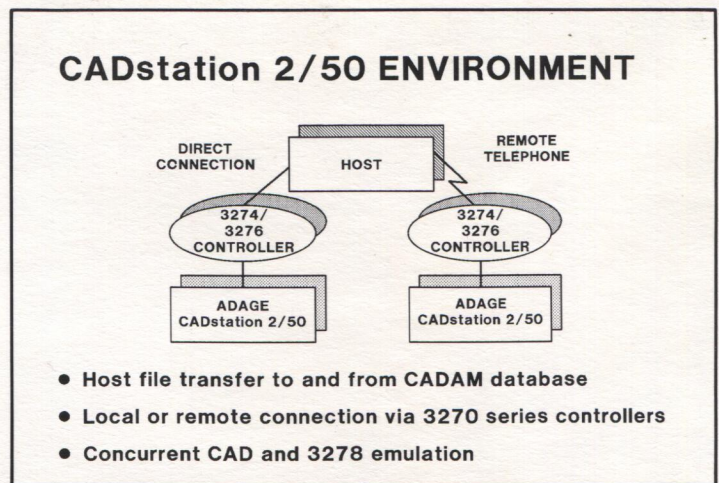- ● Concurrent CAD and 3278 emulation

Figure 3. Typical CADstation 2/50 Site Configuration

Stand-Alone Capabilities:

In addition to the ability to interact with the CADAM database, the CADstation 2/50 can be used for stand-alone operation. The system's local memory, storage and processing offer flexible off-line, self-contained operation, while providing response times similar to those expected by CADAM users. Affordable by most engineering, design, drafting or manufacturing departments, the system is easily cost-justified by considering not only the low initial cost, but also the ongoing advantages of greatly reduced host-connect time charges and no retraining costs.
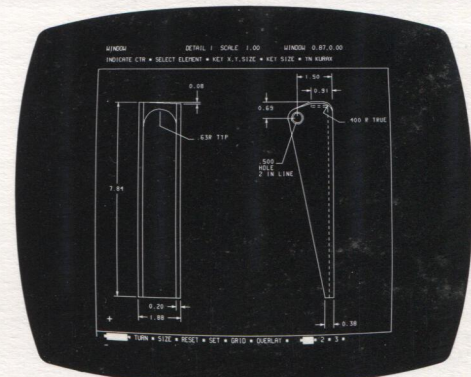
Communications:

Although designed to operate in a stand-alone environment, the system uses the CADAM database resident on a host computer. The CADstation 2/50 can be connected to an IBM 3274 Control Unit, IBM 3276 Control Unit Display Station or equivalent, via an IBM Type A or equivalent coaxial cable and BNC connector.
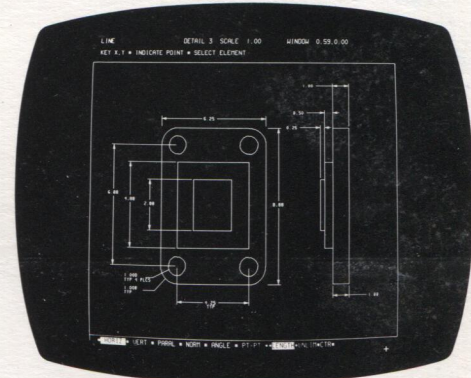
The system's screen display menu allows the user to select one of three operating environments: Local CAD, 3278 emulation mode, or concurrent CAD and 3278 modes. While in the Local CAD mode, the system is completely self-contained and interacts with the host only when transferring a drawing to or from the CADAM database.

In the 3278 mode, the system emulates an IBM 3278 Model-2 Terminal. Concurrent CAD and 3278 mode allows the user to do design/drafting while simultaneously viewing and accessing programs on the host in a 3278 session. The user can alternate between CAD and 3278 display screens. CAD mode file transfers to or from the host are not allowed during this concurrent mode.

A typical site configuration is presented in Figure 3.

Two views of a metal bracket created on a CADstation 2/50 System.

Menu and prompts of the CADstation 2/50 System are similar to CADAM.

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Specifications Summary

Hardware:

CPU: *32-bit Motorola 68010, 10MHz clock rate*

Memory: *1 megabyte*

Local Mass Storage: *5¼" floppy disk, holds 1 megabyte, unformatted*

Geometry engine: *AMD 29116-based, bit-slice processor*

Graphics Display Monitor:
Type: rectangular monochrome
Technology: raster scan, 60Hz, non-interlaced
Size: 19" (48.3 cm) diagonal
Resolution: 1024 × 1024 pixels × 4 bit-planes
Graphics Area: 11" × 11" (28 cm × 28cm)
Menu/Status Text Area: Similar to CADAM

Standard Peripheral Devices:
Alphanumeric Keyboard
Function Keyboard with 32 Keys
Light Pen

Communications:
Via IBM 3278 Model 2, input emulation in all operating modes.

File transfer times depend on communications rates permitted by the options selected on IBM 3274, IBM 3276 or equivalent.

Line Picks: *Highlighted by increasing line intensity*

Software:

Design/drafting functionality similar to CADAM CAD-Only module.

IBM 3278 Model 2 terminal emulation software.

Enhanced windowing capabilities and menu prompting.

Host-resident software for CADstation 2/50 access to CADAM database via GIM (Geometry Interface Module).

Consistent response time similar to that of typical CADAM systems.

Options:

Peripheral Devices:
Data Tablet with Stylus
Tilt and Swivel Monitor Base
Local Dot Matrix Printer

Worldwide Sales and Service:

Adage Sales and Customer Service Representatives are located throughout the U.S., Europe and Japan. For the location of the nearest Adage sales or service office, contact Adage at one of the offices listed below.

Adage, Inc. *One Fortune Drive, Billerica, Massachusetts 01821, U.S.A., (617) 667-7070, TWX 710-347-1594*

Europe: Adage GmbH, *Postfach 1161, Mainzer Str. 75, 6200 Wiesbaden, West Germany, Telephone 6121/70 00 34 TWX 4186007*

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5. What provisions are made for data security for CADstation 2/50 users?

Provided within the CADstation's software are parameters that may be modified by the system manager for each individual workstation. These include Model Size, Read-Only Group/User List, Read Write Group/User List, and Disable Local Filing capability. In order for a user to file or call a model from the host, he or she must first log onto that host using the existing mainframe security system under TSO or CMS.

6. How does the CADstation 2/50 handle plots?

Currently, a local dot matrix printer is available as an option to create quick screen copy prints for review or checking purposes. If a formal print is required, the model created on the CADstation can be transferred to the host and plotted there. The user must be logged onto a CADAM terminal and flag a drawing to be plotted from there. Adage is, however, planning a pen plotter connection in the near future that will allow plots to be created locally, directly from the CADstation.

7. How long does it take to download a model from the mainframe to the CADstation 2/50?

The time required for file transfer is dependent on several factors, including host usage, host memory capacity, speed of the communications medium, type of cluster controller used, number of terminals connected to the cluster controller and their usage, etc. The speed is comparable to that expected to download a CADAM image by utilizing IBM's Graphic Display and Query Facility (GDQF), Softcopy or Colorcopy.

8. How large a model can the CADstation 2/50 display?

At present, the CADstation 2/50 can be set by the system manager to handle models up to 32K in size. By the way, all geometry for any size model is fully displayed and users do not receive an annoying constant "Buffer Full" message. The CADstation does not use the traditional display list processing hardware and software (GAM) used by standard CADAM terminals. THE CADstation is equipped with a high-resolution 1024 x 1024 60Hz non-interlaced monitor, that eliminates all flicker and provides a bright, crisp raster display.

1. What is the CADstation 2/50?

The CADstation is the first stand-alone design/drafting system intended specifically for users of CADAM® design software. The CADstation provides most of the function-ality of CADAM's CAD-ONLY Interactive Module, on a stand-alone basis. Thus, a CADAM user can quickly become familiar with the CADstation and be productive almost immediately. The CADstation communicates with the mainframe CADAM database to store and retrieve drawings, symbols, standard libraries, etc.

2. How does the CADstation 2/50 interact with the CADAM package running on my mainframe computer?

The CADstation 2/50 is seen by the host mainframe as an IBM 3278 Model 2 Display Station. Adage provides a mainframe-resident CADAM interface that utilizes CADAM's Geometry Interface Module to access the CADAM database. The user simply logs onto the host like a typical 3270 user, enters local CAD mode, provides a valid group and user ID, and selects the HOST CALL or a HOST FILE command. All other interactions between the CADstation and the mainframe are transparent to the user.

3. Can I run CATIA® or other graphics packages on the CADstation 2/50?

The CADstation has been designed specifically to allow CADAM users to free-up and offload their mainframe computers. It also offers design and drafting personnel, who previously had little or no access to CADAM, the ability to become productive while maintaining the cor-porate database and utilizing existing training programs. Since the CADstation emulates a 3278 Model 2 Display Station, it can run other 3270 programs.

4. Are users required to pay additional software license fees to CADAM INC. or IBM in order to add CADstation 2/50 Systems to an existing configuration?

No! The CADstation 2/50 does not actually run CADAM software. CADRA™-I, a proprietary software package pro-vided with each unit, communicates with CADAM via the CADAM Geometry Interface Module.

9. How does the CADstation 2/50 handle host-resident symbol tables?

CADAM's Geometry Interface Module allows symbols to be transferred to and from the host database. A near-term CADstation enhancement will allow users to locally define symbol space so that symbols can be retrieved either from the host or locally. This feature will be under the control of the system manager.

10. What are the hardware and software requirements necessary to run CADstation 2/50 Systems?

Users should have a host computer environment suffi-cient to run CADAM Release 19.1 or a later release; a VM/ CMS Operating System or OS/VS II (SVS or MVS) with TSO; CADAM's Geometry Interface Module-Release 19.1 or later; and an H-extended FORTRAN compiler. Installa-tions should have a TSO region size equivalent to one MByte per user or CMS virtual machine equivalent to at least one MByte or greater, a virtual disk with at least four cylinders to contain the CADRA-I/CADAM interface software (supplied by Adage), and a 1600 BPI, nine-track tape drive. In addition, an IBM 3274 or 3276 cluster con-troller unit, or equivalent, is required with one port con-figured for an IBM 3278 Model 2 Display Station for each CADstation, local or remote. The user will also need to supply Type-A (RG-62 or equivalent) cables, with BNC type connectors, for each CADstation.

11. How would the CADstation be affected by a change in CADAM's Geometry Interface Module?

Adage will update the CADRA-I/CADAM interface soft-ware to remain compatible. Changes to the Geometry Interface Module are generally upward compatible and add increased efficiency and functionality. A major change would affect the in-house software developed by the many major corporations currently using the GIM. It would also affect packages like IBM's IGES Interface, GDQF, CATIA, CAEDS™, Softcopy and Colorcopy. Adage maintains an IBM mainframe facility that runs current versions of CADAM and is constantly testing for com-patibility with the CADstation 2/50.

12. I've noticed the CADstation doesn't have buffer points, buffer trim and the ANALYZE/COMPUTE/ function. How will I operate without them?

The features built into the CADstation have made buffer points and buffer trim obsolete. Rather than adding a point or trimming geometry "approximately," based on information in the display list processor, CADstation users can add real points, trim and relimit to any geome-try—even geometry with dittos and symbols. As for ANALYZE/COMPUTE/, we have moved its functionality into our much enhanced keyboard math. The CADsta-tion's keyboard now provides the user with opera-tion precedence and trigonometric functions. Keyboard math can be also be used like a calculator. For example, a user can now simply enter 1 + 9/16, use the key ALT '=', and display the answer of 1.5625 in the upper left portion of the screen — instead of being limited to left to right evaluations.

Plus One More . . .

Where can I get one?

CADstation 2/50 Systems are available only from Adage. For more information on how to add CADstations to your CADAM system or for answers to any additional ques-tions, contact Adage at one of the offices listed below. Adage Sales and Customer Service Representatives are located throughout the United States, Europe and Japan. We'll provide you with the location of the Adage sales or service office closest to you.