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
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 x 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, 5½" 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 mathematical, geometric, and display functions. 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, communicating with the host only for file transfer of drawings, or while emulating an IBM 3278 Model 2 terminal.

CADRA-I, the workstation's design/drafting 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 compatible with CADAM and can be easily relotted 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 enhancements 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 additional line of information for enhanced messages, prompts and status messages is also included.
**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.
Specifications Summary

Hardware:
- CPU: 32-bit Motorola 68010, 10MHz clock rate
- Memory: 1 megabyte
- Local Mass Storage: 5 1/4" 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 x 1024 pixels x 4 bit-planes
  - Graphics Area: 11" x 11" (28 cm x 28 cm)
- 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.

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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.