ADAGE 4250
GRAPHICS WORK STATION

High-performance interactive graphics for mainframe users

Direct connection to mainframe channel of IBM, or IBM-compatible, computer

Executes 3250 graphics command set; offers extended graphics command set

Compatible with CADAM® software

Supports up to 16 high-performance, high-resolution work stations

Connection to microwave, telephone "T1," 56 Kbaud, or fiber optic links

The Adage 4250 Work Station—a high-performance, high-resolution, vector refresh display—attaches directly to the mainframe channel of an IBM, or IBM-compatible, computer. The 4250 Work Station, which emulates an IBM 3250 Display Terminal by interpreting the graphics orders generated by software packages such as CADAM, provides the higher performance required by demanding CAD/CAM applications. A network of high-speed microprogrammed processors reduces channel-program execution time, handles interrupts quickly, and speeds up user interaction with complex images.

*CADAM is a registered trademark of CADAM INC.

In addition to improved display capabilities and advanced ergonomics, Adage 4250 Work Stations can be flexibly placed in relation to the mainframe. The 4250 can be located up to three miles (4,827m) from the mainframe channel via coaxial-cable pairs or remotely via microwave, Bell System "T1," fiber optic, or 56 Kbaud links. Full-duplex transmission rates of three Mbaud up to 1.5 miles (2,414m) or 1.5 Mbaud up to three miles (4,827m) are standard. A full-duplex transmission rate of 56 Kbaud is available.

Optional features that add to the 4250 Work Station's flexibility include: local zoom, hardware window, data tablet, and local hard copy.

4250 Hardware

The 4250 consists of a Channel Unit, a Control Station, and up to three Display Stations. Each control station and display station incorporates a high-resolution vector refresh CRT display monitor.

The Channel Unit (CU/4201) connects directly to the mainframe channel of an IBM, or IBM-compatible, computer and provides data transmission for up to four clusters of displays in the standard configuration. Each cluster can include up to four displays, for a total of 16 displays on one IBM-channel connection.

The multi-drop feature provides an alternate configuration for users interacting with very complex images. Multi-drop allows the user to connect up to eight clusters to the Channel Unit. Each cluster can include up to two displays, for a total of 16 displays per Channel Unit. This multi-drop configuration concentrates local processing power and refresh memory, allowing each display to use images of greater complexity.

The Control Station (CS/4250) contains both the display controller and the first work station. The work station is identical to the Display Stations described on side two. The display controller incorporates two microprogrammed processors. One processor controls interrupts and communications with the Channel Unit. The second processor, called a Digital Graphics Controller, contains firmware that: 1) interprets the IBM 3250 graphic-order set, 2) fetches and interprets data from the refresh buffer, 3) performs all image manipulation, and 4) handles all interactive peripheral devices.

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The controller also contains a Refresh Buffer Memory and High-Speed Stroke Generator. The memory stores host-generated images and system parameters. The stroke generator converts digital data to analog signals to drive up to four displays. Interfacing for interactive peripheral devices is also located in the controller.

Three Display Stations (DS/4250) can be added to a CS/4250 control station, for a total of four displays in a 4250 cluster. Displays can be separated by up to 190 feet (58 meters) per 4250 cluster. Each display station is physically identical to the CS/4250, except that DS/4250s do not contain a display controller.

Display Monitors are mounted on a large work surface that accommodates the standard interactive devices (Light Pen, Alphanumeric Keyboard, and Programmable Function Keys), as well as the optional Digital Data Tablet and Alphanumeric Function Keyboard.

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

SPECIFICATIONS SUMMARY

CU/4201 Channel Unit

Input: *standard IBM selector, or block multiplexer channel*

Input Control: *microprogrammed processor with local buffer memory that recognizes 16 device addresses*

Output: *customer-supplied coaxial-cable pairs*

Output Control: *four microprogrammed processors, each capable of supporting a CS/4250 Control Station (a total of 16 displays can be supported by each CU/4201)*

Data-Transfer Rates: *3 Mbaud up to 1.5 mi. (2,414m); 1.5 Mbaud up to 3 mi. (4,827m)*

Coaxial-Cable Connection Distance: *up to 3 mi. (4,827m)*

Transmit/Receive Mode: *full duplex*

Special Feature: *self-contained readiness test*

CS/4250 Control Station

DISPLAY CONTROLLER

Digital Graphics Controller

Graphic Orders: *IBM 3250, plus extensions*

Microinstruction-Word Length: *56 bits*

Data-Word Length: *16 bits*

Instruction-Cycle Time: *200ns*

Arithmetic Logic Unit (Multiplier-Adder): *400ns for a 16 × 16-bit multiply*

Control-Store Memory: *4K ROM*

Scratch-Pad Memory: *1K × 16-bit words*

Number of Displays Controlled: *up to 4 displays, plus all peripheral devices on each display*

High-Speed Stroke Generator

Drawing Method: *stroke*

Coordinate Resolution: *13 bits over a 48" (122cm) display space (0.006" [0.15mm])*

Intensity Levels: *16 from visual cutoff to maximum brightness*

VECTOR GENERATOR

Display Space: *12" × 12" (30.5cm × 30.5cm)*

Vector-Drawing Rate: *750,000 in./sec. (19,050m/sec.)*

Vector-Move Rate: *1,500,000 in./sec. (38,100m/sec.)*

Vector Line Textures: *solid, dashed, dotted, and end-point dot or dot-dash*

SYMBOL GENERATOR

Character Set: *95 ASCII, plus 27 Adage-defined symbols*

Average Drawing Time: *less than 5μs*

Character Sizes: *240 programmable sizes from 0.08" to 1.3" (0.20cm to 3.3cm) high*

Character-String Orientations: *128 angles and 4 reflections*

CS/4250 DISPLAY MONITOR

The Control Station contains its own display monitor, standard peripheral devices, and tabletop. This configured group is identical to the DS/4250 Display Station described below.

DS/4250 Display Station

DISPLAY MONITOR

Type: *rectangular monochrome*

Size: *21" (53.3cm) diagonal*

Precision Area: *10" × 10" (25.4cm × 25.4cm)*

Usable Area: *13" × 18" (33cm × 45.7cm)*

Line Width: *0.015" (0.38mm) typical; 0.20" (0.50mm) maximum*

Phosphor: *P40*

PERIPHERAL DEVICES

Alphanumeric Keyboard

Light Pen

32 Lighted Programmable Function Keys

Options

GRAPHICS PROCESSOR

Refresh Buffer Memory Expansions: *expand the local 64K-byte Refresh Buffer Memory up to 128K bytes*

Local Zoom: *maximum 4:1, capable of pan and scroll in a 96" × 96" virtual display space*

Hardware Window

PERIPHERAL DEVICES

Digital Data Tablet

Alphanumeric Function Keyboard (includes numeric keypad and Zoom keys)

Graphics Hard Copy Interface

Local Graphics Hard Copy Unit: *locally produces high-resolution, electrostatic paper copy of the displayed image without host interaction*

COMMUNICATIONS

T1 Adapter: *interfaces the Channel Unit and the Control Station to a Bell T1, 1.544-Mbit/sec. specification link for microwave or fiber optic communication*

56 Kbaud Adapter: *interfaces the Channel Unit and Control Station to the Bell System's 56 Kbaud Digital Data System (DDS) link*