Vector Graphic Systems Reduce Host Overhead Through Use of Technology

Ease of interfacing, software, modularity, and multiterminal and remote capabilities are emphasized in the Whizzard 7000 and 5000 vector refresh graphic systems. Developed by Megatek Corp, 3931 Sorrento Valley Blvd, San Diego, CA 92121, the families encompass graphic peripherals, graphic terminals, and standalone graphic processing systems, and are based on building block modularity.

A self contained system, the 7000 is based on the dual bus architecture of the company's Megraphic 7000 terminal (see *Computer Design*, June 1978, pp 39, 42). A proprietary vector generator and an Adaptive Timing™ technique produce fine vector control and capacity for 20,000 short vectors, increased throughput, quality, and repeatability. The vectors have constant intensity; precise endpoint matching is ensured by a patented vector closure feature. Readability down to very small character sizes is provided by the use of stroke generated characters, which can be rotated, scaled, or translated at any angle with full precision of the rotate-translate circuitry.

An internal 32-bit bipolar microprocessor provides the high data processing rates necessary for interactive graphics applications, processing both X and Y information simultaneously. The 3-state 32-bit graphics bus insures that data transfer occurs at optimum rates. Peripheral I/O devices occupy a separate 16-bit bus.

The system's parallel interface uses programmed I/O or DMA control, connecting to DEC PDP-11 or Data General NOVA or ECLIPSE. A Universal Interface module allows connection with IBM Series/1, Hewlett-Packard, VAX 11/780, Interdata, and Prime computers.

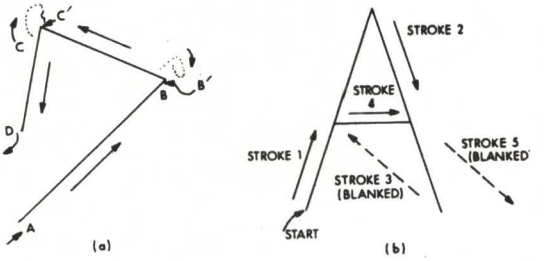
An intelligent peripheral control unit (IPCU) updates location counters, recording cursor location and making the data available to the CPU only when necessary, thus reducing the overhead loading needed to service peripheral interrupts. The IPCU serves to interface joystick, data tablet or digitizer, and keyboard to the system.

Three-dimensional graphics capability includes rotation. 2D and 3D can be obtained simultaneously on the same display. An optional color monitor provides up to five colors in 16 bits of user definable, user programmable line texture. Any line texture may be blanked, doubling the total line texturing capacity of the system.

Hardcopy output is facilitated by a vector to raster converter implemented in hardware. The Rastorizer™ processes vectors, randomly converting from an unordered vector list into raster bit data for the plotter, eliminating the need for the host to order vectors prior to printing.

An interactive total refresh graphic system, 5000 series standalone and terminal configurations are compatible with Data General RDOS, DOS, and RTOS operating systems. The system has a self contained NOVA or ECLIPSE with 32k-words memory, dual floppy disc drive, and RS-232 interface.

The dual board MG552 graphic display unit uses hardware routines to speed vector processing and minimize host processing time. As a DMA device the graphic display unit receives coordinates directly from the computer's memory. Precise analog stroke writing offers typical endpoint matching and closure of 0.005″ (0.0127 cm), 16 levels of intensity control, and constant vector intensity.



Constant vector intensity of Megatek's Whizzard graphic system is produced by turning off beam precisely as it passes through B. Beam continues on in undefined manner (a) and finally settles at point B′. After appropriate set-up time, beam begins from B′ and moves toward C. As it passes precisely through B, beam is unblanked and vector is drawn toward C where cycle repeats. Stroke generated characters (b) take advantage of precision of vector generator, producing readable characters even at sizes below 0.1 in

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