RC 4000 COMPUTER®

PRELIMINARY

SPECIFICATION

HARDWARE

RC 4195 GRAPHIC DISPLAY TERMINAL

The graphic display terminal enables real-time graphic communication with the RC 4000 computer. Output is generated on a cathode ray tube, whereas a light pen is used for input. The display terminal has its own refresh memory, so that the RC 4000 is only engaged during generation of the display file and processing of light pen interrupts. As the display terminal is a point display, all lines and curves must be composed of successive dots. Characters can be generated from subroutines in the refresh memory.

The display terminal, a self-contained unit with its own power supply, is connected to the low-speed data channel of the RC 4000.

Operation

The graphic display terminal is operated by the standard input/output instruction for reading and writing in the refresh memory and setting a picture mask. The read/write address for the refresh memory can be preset by a control command and is automatically incremented following each read/write operation. The program controlled picture mask delimits the field visible to the light pen to a selectable part of the displayed picture or shows the entire picture.

During the refresh operation data is read sequentially from the refresh memory and interpreted as instructions for controlling light pen position and intensity. The instruction set provides one-level subroutine operation.

When the light pen recognizes a picture point, the position of the point and a sub-picture identifier are stored and the graphic display terminal sends an interrupt. The point position and the sub-picture identifier can be program sensed by means of a sense command; if the mask does not show the entire picture, the sub-picture identifier will match the current picture mask.

The standard display terminal has buttons for intensity and focus regulation, a power switch, and a light pen with a push-button. All operator control is conducted by means of the light pen and light points (function dots on the screen).

Keyboards and function keys are available as separate units with their own connections to the low-speed data channel of the RC 4000. (The program interprets the keyboard as a separate device).

Data Formats

The display terminal is operated in a conventional XYZ coordinate system with Z representing intensity. Each 16-bit refresh memory word is interpreted as one or more instructions, and can contain either five instructions without operands or one instruction with a 10-bit operand.

CHARACTERISTICS

Type of Display
CRT point display with light pen input

Screen
8×10 inches, P7 phosphor

Points per Picture
max. 15,000 at refresh rate of 30 frames/sec

Refresh Memory
4,096 16-bit words, expandable to 8,192 16-bit words
cycle time less than 3 μsec

Resolution
0.01 inch (least programmable increment)

Intensity
4 programmable levels with blink facility