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IMLAC Corporation

THE COMPUTER HISTORY MUSEUM



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PDS-1

low-cost flexible
DISPLAY COMPUTER

that's right .

DISPLAY COMPUTER . . not Computer Display

MEMORY

WORD SIZE	• 16 bits
MEMORY SIZE	• 4K words - 32K (optional)
CYCLE TIME	• 2.0 μ sec
MEMORY PROTECT	• optional-sections
DIRECT ADDRESSING	• 2K words
INDIRECT ADDRESSING	• 32K single level (multi-level optional)

CPU

GENERAL PURPOSE REGISTERS	• 1 + link bit for multiple precision
INDEX REGISTERS	• 16 (auto index)
IMMEDIATE INSTRUCTIONS	• yes
DOUBLE-WORD INSTRUCTIONS	• no

I/O

I/O WORD SIZE	• 16 bits
I/O SELECTIONS	• up to 50 units
PRIORITY INTERRUPT LEVELS	• 1
DIRECT MEMORY ACCESS CHANNEL	• optional
I/O MAXIMUM WORD RATE	• 500 (KHz)

OTHER FEATURES

REAL TIME CLOCK	• optional
POWER FAIL/RESTART	• optional - yes
DISK	• optional
MAGNETIC TAPE	• optional

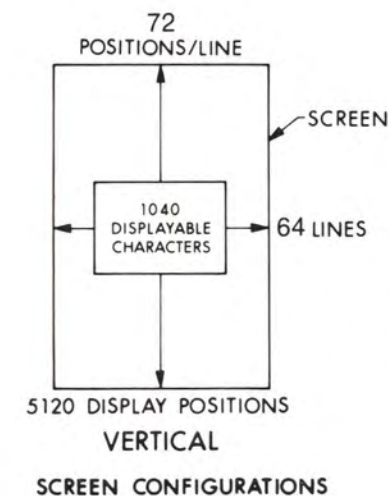
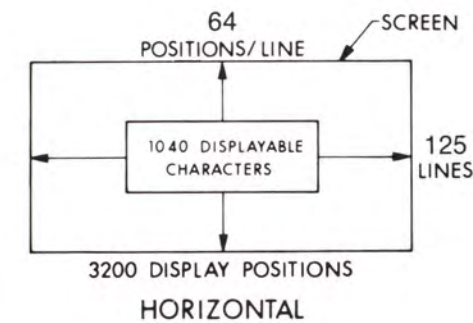


IMLAC PDS-1 SPECIFICATIONS

KEY FUNCTIONS

- ← No data entry, causes the cursor to move one position to the left.
- No data entry, causes the cursor to move one position to the right.
- ↓ No data entry, causes cursor to move down one line.
- ↑ No data entry, causes cursor to move up one line.

REPEAT When held down, in conjunction with controls or characters, causes the function to repeat 8 times. This is a software function, therefore variable.



CHARACTER GENERATION	7 x 9 standard 5 x 7, 9 x 11 optional
PRESENTATION	vertical and horizontal
CHARACTER REPERTOIRE	up to 196
CRT TYPE	standard 14" tube with bonded safety plate
CRT PHOSPHOR	p39
REFRESH RATE	40HZ (60, 50, 30 available)
BRIGHTNESS	50 ft. lamberts
CRT DEFLECTION	electromagnetic
CRT FOCUS	electrostatic
CURSOR	keyboard control, processor blink
OPERATING TEMP. RANGE	5°C to 45°C

Additional Features

- Vertical orientation-72 characters per line
- Horizontal orientation-125 characters per line
- Null characters not transmitted
- Split screen-multidivision
- Scrolling of text-software control
- Multi data block development
- Overlay compatibility
- Multi-terminals-optional
- Detachable keyboard-optional

Imlac's PDS-1 Display Computer

incorporates a dynamic cathode ray tube and a solid state keyboard (offering plug-in key variations), controlled by a sixteen bit 4,096 word mini-processor, with a 2 micro-second core memory.

Functioning under program control of its own mini-computer, the PDS-1 is easily the most flexible and powerful low cost display computer available. Some of the abilities of the PDS-1 are:

- Full editing
- Graphics
- Operational on simplex, half or full duplex lines
- Single key-multiple character generation
- Local electronic data validation
- Expandable character set and size
- Expandable memory
- Compatibility to all systems
 - bit structures
 - code levels
 - transmission rates up to 9600 baud
 - Formatting, system control
 - Variable memory-5120 possible positions
 - 7 x 9 matrix presents 1040 characters
 - 5 x 7 matrix presents 1300 characters

description

The PDS-1 is a stand-alone terminal designed to directly replace any teletype or similar on-line device, even other CRT's. It is pre-programmed to duplicate the communications characteristics of your present tele-processing terminals, while it provides significant additional flexibility. The selection of this terminal alleviates the costly modifications normally associated with the developments of a display system such as re-programming and core expansion of the central processor, faster transmission rates, re-configuring of the communication network, lengthy operator adjustment. Once the terminal is in, any future field modifications or upgrading may be done on site either through software or interface substitution. Access to the PDS-1 is via a tape reader with an associated console to enable the IMLAC field engineer to address specific locations in memory and to thoroughly diagnose all modifications.

editing

The standard editing routines of the PDS-1 are line and character insertion or deletion. These functions compress or expand data for text justification. The justification is automatic; therefore, the operator does not have to expend time to re-position data on the screen.

data transmission

The flexibility of the PDS-1 allows for many variations which are dependent on the requirements of the system. Any visible or invisible control characters may be formulated into a message either through the keyboard or pre-programming. The PDS-1, utilizing an acoustical coupler or modem, can transmit single characters, conversational by-line or full length pages. Data may be received in the same manner. Upon depressing the transmit key, the operator is alerted to the end of transmission by a blinking cursor. The terminal functions on transmission facilities up to 9600 baud rates, utilizing 5 to 9 level codes and any bit structure.

character generation

The PDS-1 construction of the 1040+ characters, in 5120 addressable positions, is accomplished by the generation of visible and invisible vectors via its own software, presenting clear and easily read definitions in both upper and lower case modes. Options available are italics, umlaut, accents, etc., for non-English alpha's and variable character size, depending on the number of characters required per line.

formatting

For repetitive functions, a formatting routine permits the operator to access and transmit only variable data fields or segments of it. If the present system is using paper forms, these can be identically reconstructed on the display for transition expediency. Forms may be called from the CPU, PDS-1's memory, or constructed from the keyboard or an overlay may be used.

hard copy

Print-outs of either full pages or variable data can be transmitted by the operator to an associated printer without locking the keyboard; or a CPU generated print message can go directly to the printer. If the display is to be unattended, a mode can be designated by the operator by which all incoming messages go directly to the printer. Parallel transmission to the display and printer is optional.

optional data validation

The memory is organized into two partitions. One segment is used for characters, editing, and display utility programs. The other is reserved for data control validation addressable to specific locations on the screen. If the operator should neglect to complete a specific field or insert unjustifiable data and attempt to transmit, the display will lock and the invalid locations will blink.

graphics

A standard function of the PDS-1 is a powerful graphical mode on a dynamic display, that can be duplicated only by display terminals costing several times as much.

The PDS-1 can display 1040 high definition characters with up to 500 inches of combined characters and graphics at a 40 cycle refresh rate. These combinations can use both upper and lower case plus the 16 graphical designations. The resolution of the system is 1024 points in X and 1024 points in Y and all points on the screen are directly addressable. As an option, smooth curve generation permits a presentation of arbitrary curves. The system permits several approaches to generating graphs:

1. As the function and execution of programming statements.
2. Graphs may be constructed on the screen, transmitted to the CPU and stored in an addressable file as *packed controlled numerics 1-16*.
3. External devices, such as light pens and tablets, may be used to input graphic data.

typical graphical applications

- Design and Animation
- Function plots, histograms and process control indicators
- Management information systems-bar

Utilization of the PDS-1

existing system

The PDS-1 was designed to be specifically effective for integration into an existing system. The PDS-1, utilizing its powerful mini-processor, can be pre-programmed to duplicate the characteristics of your present system; therefore, the device is interchangeable with all electro-mechanical devices. If you presently have an existing CRT system and wish to add additional applications, but are prevented because of the inflexibility of your present device, IMLAC's PDS-1 makes your expansion possible.

new system

The flexibility of the PDS-1 allows the hardware, software, and communications managers to design a system minus the rigidity of pre-described requirements. PDS-1 has total compatibility to communication speeds and interfaces, bit structure, code levels, and language. The system can be a mixture of PDS-1's, printers, hard copy and other terminals.

time sharing environment

The PDS-1 terminal can function in both half and full duplex modes, through any acoustical coupler or data modem. It is pre-programmed, with all the necessary control characters, for compatibility with all time sharing systems.



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