

IMSAI

The Standard of Excellence in
Microcomputer Systems.

VDP-4X

Video Data Processors: VDP-40
VDP-42
VDP-44



Designed for both office and home use, the IMSAI SERIES VDP-4X places a complete microcomputer system well within the budget of the average small businessman or system developer.

Three versions, the VDP-40, VDP-42 and VDP-44, provide disk storage capacities of **180K, 400K and 780K bytes**, respectively.

A fully integrated system the VDP-4X features an 8085 microprocessor, 32K/64K RAM, dual 5¼-inch floppy disk drives, 9-inch CRT, keyboard and serial I/O, all in a desk-top cabinet. IMDOS, the IMSAI Multi-Disk Operating System supplied with the VDP-4X, has a large number of utilities -- including video/context editor, 8085 assembler, dynamic software debugging program and floppy disk system diagnostic program.

The VDP-4X communicates with other IMSAI VDP-4Xs and other 8080/85-based computers, or acts as a terminal in a data communication network. Unlimited applications are possible. For example, use the VDP-40 for distributed data processing applications. Computerize the accounting and inventory functions of a small business with the single or double density VDP-42. Select the double density, double track VDP-44 for greater disk storage capacity.

FEATURING:

8085 PROCESSOR
32K/64K RAM MEMORY
9 - INCH CRT
KEYBOARD
TWO 5¼" FLOPPY DISK DRIVES
SERIAL I/O
IMSAI's Multi-Disk Operating
System -- IMDOS

SERIES VDP-4X systems feature the following components:

MULTIFUNCTION PROCESSOR BOARD

The MPU-B contains an 8085 microprocessor and a serial I/O interface. Some features are included or excluded from system memory under software control -- three 16-bit programmable timers, 256 bytes of RAM, a 2K firmware monitor program which permits bootstrap loading from the floppy disks and 26 other commands for stand-alone operation.

Performing 50% faster than the 8080, the 8085 microprocessor maintains or improves bus timing margins, thereby reducing critical timing requirements of RAM and other interfaces. A four-level maskable priority interrupt system, plus the regular 8085 system interrupt, enables the MPU-B to be used in sophisticated interrupt-driven systems without additional interrupt controllers. The I/O and timers included on the MPU-B can be used with the interrupts.

VIDEO INTERFACE BOARD (VIO-D)

The VIO-D contains the logic and firmware necessary to create and control the CRT screen display. Firmware-controlled display options include a 24-line by 80-character display format, insert/delete, programmable character set (font), protected fields and inverse video.

Custom Character Set

The VIO-D supports a 256 alphanumeric and graphic character font, both upper and lower case ASCII characters (with descenders), special symbols and a line-drawing character set. With user-provided EPROMs, the font may be customized to create special characters of the user's design, including foreign alphabets, pictures and forms. The standard typefont generated by the VIO-D is a 5x7 dot matrix in a 7x10 dot cell.

Protected Fields

Protected fields aid clerical personnel in data entry applications by ensuring that the operator completes entries of predetermined length in an expected sequence.

Variable Screen Format

Variable format, under program control, allows one to halve either or both dimensions of the 24-line by 80-character format with a proportional increase in character size for viewing at long distances. Possible formats are 12x80, 12x40, 24x80 and 24x40.

TWIN MINIATURE FLOPPY DISK SYSTEM

Select disk storage capacity from a range of 180K* bytes to 780K bytes.

VDP-40 Drive Configuration -- The MDIO single board controller supplied with the VDP-40 is a disk formatter/controller. Two 40-track floppy disks provide **180K bytes of on-line storage**.

VDP-42 Drive Configuration -- A DIO-D two-board controller supports dual single and/or double density 40-track floppy disk drives, providing 180K bytes of on-line storage in single density. In double density, the user may specify 17 sectors per track at 256 bytes per sector for 340K bytes of on-line storage or 5 sectors per track at 1024 bytes per sector for **400K bytes of on-line storage**. In the single density mode, the VDP-42 is media-compatible with the VDP-40.

VDP-44 Drive Configuration -- A DIO-D supports dual single and/or double density, double (77) track floppy disks. The VDP-44 provides 354K bytes in single density. The user may specify 17 sectors per track at 256 bytes per sector for 660K bytes of on-line storage or 5 sectors per track at 1024 bytes per sector for **780K bytes of on-line storage**.

*For specific figures, please refer to TABLE A.

CRT DISPLAY

The 9-inch CRT with a 14 MHz bandwidth minimizes operator fatigue by offering a large viewing area and a non-glare faceplate.

MOTHERBOARD

Six motherboard slots are available for user expansion with the VDP-40, while five slots are available with the VDP-42 and VDP-44. Signal traces are interleaved with ground traces for better signal isolation on the back plane. Signal lines are terminated in order to reduce reflected signal noise.

KEYBOARD

The programmable keyboard console utilizes an 8035 control processor and a high quality keyboard array, fully debounced (to ensure that a character is printed only once each time a key is engaged). Keys are arranged in a tiered, typewriter layout for operator convenience. In addition, each key stroke is registered regardless of the number of keys pressed simultaneously (N-KEY ROLLOVER). Continuous depression of a key will invoke an AUTO REPEAT function, causing a character to output continuously until the key is released. Any one key may be redefined to generate any eight-bit code under key-entry control. The user designates upper/lower case or upper case only operations.

POWER SUPPLY

The power supply, available in domestic and international versions, is a heavy-duty, regulated and unregulated unit. The power supply outputs an unregulated +16 volts DC at 4.5 amps, +8 volts DC at 16 amps and -16 volts DC at 3 amps. Three lines provide +12 volts DC, one a 1 amp and two at 2 amps; and two lines provide +5 volts DC at 1 amp. The power supply requires 95-130 volts AC at 60 Hz in the domestic version. The international version requires 95-130 volts AC or 190 to 260 volts AC at 50-60 Hz.

IMDOS

Included with the VDP-4X, IMDOS (IMSAI's Multi-Disk Operating System) provides unequaled performance and ease of use. IMDOS includes high performance utilities, such as an enhanced 8080/85 assembler, a powerful video/context editor for program development and documentation, a dynamic software debugging program and a comprehensive system diagnostic program.

SOFTWARE AVAILABLE

Software available for the VDP-4X includes ANSI Level 2 FORTRAN IV, a linking loader and four kinds of BASIC - Microsoft, Commercial, 8K and Extended.

SYSTEM EXPANSION

A built-in serial port is used to drive optional peripheral devices, including line printers, modems and auxiliary terminals. Expansion capability allows the user to increase RAM, I/O and disk drives.

SERIES VDP-4X SPECIFICATIONS

PROCESSOR BOARD (MPU-B):

Processor 8085
Clock Speed 3 MHz
Priority Interrupts 4 levels, expandable to 12
Instruction Set 74 Basic Instructions
Monitor 2K ROM

BUS: S-100

MEMORY:

RAM 32K or 64K bytes included
Access Time 375 nanoseconds
Cycle Time 500 nanoseconds

CRT:

Screen Size 9-inch
Bandwidth 14 MHz

KEYBOARD:

Number of Keys 62 Keys
Modes Upper case mode, upper/lower case mode

Special Features N-KEY ROLLOVER, AUTO REPEAT

VIDEO INTERFACE BOARD:

Character Font 256 alphanumeric and graphic character font, both upper and lower case ASCII characters (with descenders), special symbols and a line-drawing character set

5x7 dot matrix in 7x10 dot cell

Software Variable Screen
Format 12x80, 12x40, 24x80, 24x40
VIO Firmware 2K ROM

MOTHERBOARD:

VDP-40 4 slots occupied, 6 available for user expansion

VDP-42/44 5 slots occupied, 5 available for user expansion

SERIAL I/O:

Modes Asynchronous, synchronous
Serial Interface RS232

SOFTWARE-CONTROLLED FEATURES:

Baud Rate:
 Async Mode 0.5 to 9600
 Sync Mode 30.5 to 56,000
Bit Timers 3-16 bit
Time Intervals Up to 35.79 minutes

POWER SUPPLY:

Inputs:

Domestic: 95-130 Volts AC, 60 Hz
Universal: 95-130 Volts AC, 50-60 Hz
190-260 Volts AC, 50-60 Hz

Outputs:

Unregulated: +8 Volts DC @ 4.5 amps
+16 Volts DC @ 16 amps
-16 Volts DC @ 3 amps
Regulated: +5 Volts DC @ 1 amp, 2 outputs
+12 Volts DC @ 1 amp
+12 Volts DC @ 2 amps, 2 outputs
Power: 180 watts nominal
600 watts maximum

DIMENSIONS: 18" w x 27" d x 12" h

WEIGHT: 65 lbs.

ALL VDP-4X SYSTEMS ARE SHIPPED FULLY ASSEMBLED AND TESTED.

TABLE A
SERIES VDP-4X
MASS STORAGE CHARACTERISTICS

	VDP-40	VDP-42	VDP-44
IMDOS Formatted Storage Capacity:			
Bytes Per Sector/Sectors Per Track:			
Single Density	128/18 or 256/9	128/18 or 256/9	128/18 or 256/9
Double Density	----	256/17 or 1024/5	256/17 or 1024/9
Tracks:	40	40	77
Bytes Per Drive:			
Single Density	92,160 bytes	92,160 bytes	177,408 bytes
Double Density	----	172,032 bytes	333,056 bytes
17 Sectors Per Track	----	201,984 bytes	391,424 bytes
5 Sectors Per Track			
Bytes Per System:			
Single Density	184,320 bytes	184,320 bytes	354,816 bytes
Double Density	----	344,064 bytes	666,112 bytes
17 Sectors Per Track	----	403,968 bytes	782,848 bytes
5 Sectors Per Track			
Transfer Rate:			
Single Density	125K bits/sec	125K bits/sec	125K bits/sec
Double Density	----	250K bits/sec	250K bits/sec
Operating Times:			
Latency (Average)	100 ms	100 ms	100 ms
Access Time:			
Track to Track	12 ms	5 ms	30 ms
Average	175 ms	75 ms	780 ms
Settling Time	20 ms	15 ms	10 ms
Head Load Time	75 ms	35 ms	75 ms
Controller:			
Type	MDIO	DIO-D	DIO-D
Slots Required in Motherboard	1	2	2
Recording Technique:			
Single Density	FM	FM	FM
Double Density	----	MFM	MFM



IMSAI MANUFACTURING CORPORATION
14860 Wicks Boulevard
San Leandro, CA 94577
(415) 483-2093 TWX 910 366-7287

IMSAI EUROPE
EUROPA Terrassen, 8 rue Jean Engling
Dommeldange, Luxembourg 43-67-46 Telex: 1428