

A source handbook for Digital Equipment Corporation LSI-11-compatible products

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Digital Equipment Corporation's LSI-11-compatible products are listed according to general type. Prices, delivery dates, and descriptive data are included. Sources and costs of general-purpose systems that will run RT-11 are also provided.

The LSI-11 is the least expensive of the very popular PDP-11 family of computers from Digital Equipment Corporation (DEC). In addition to having the powerful architecture of the PDP-11, the LSI-11 will execute much of the enormous quantity of software available for the PDP-11. An excellent operating system, RT-11 also runs on the LSI-11; RT-11 is designed for a small laboratory environment and does virtually everything that is needed to conveniently coordinate a computer system with relatively simple commands.

The primary purpose of this paper is to indicate availability, summarize features, and provide comparative prices of LSI-11-compatible items. These offerings, specifications, and prices, however, change frequently and sources should be consulted. Additional considerations are also important. Frequently overlooked factors are delivery dates, whether or not additional power supplies or cables are required, software compatibility and support, and the degree and source of hardware support. General engineering support for DEC's LSI-11 products can be obtained through their hotline (800-225-9220). Every attempt has been made to assure an accurate description and price. However, no responsibility is assumed by the author or publisher for accuracy or completeness. Readers should consult sources concerning all information.

Prices are typically given as the list unit price. However, several system houses have negotiable prices. It is possible for educational institutions to obtain discounts of as much as 25% from some vendors. When you decide on a system and receive a quote, by all means, let the competition have a chance to negotiate.

The DEC prices are listed as: (1) list price, the price charged by the regional sales offices; (2) catalogue price, the price charged by the DEC Direct Sales Division, if they bill you; and (3) cash price, the price charged by the DEC Direct Sales Division if you send cash. When two prices are given for other suppliers, the second price is a cash or COD cost.

A modified version of this paper will appear in the October issue of *Mini-Micro* (Mini-Micro Systems, 221 Columbus Avenue, Boston, Massachusetts 02116).

SYSTEMS

The typical laboratory system includes a central processing unit (CPU), 28K of memory, one parallel input-output (I/O) interface, one serial I/O interface, one terminator, one bootstrap, one floppy-disk controller, two floppy-disk drives, an 8-slot backplane, an enclosure, power supply, RT-11, and FORTRAN. A terminal costs an additional \$300 to \$3,000. Table 1 presents systems configured as a "typical" system for comparison purposes. These systems are guaranteed to be complete, configured, and to run RT-11 as shipped by the supplier (less only the terminal). This comparison configuration does not take advantage of the special pricing available for the "standard" system of each supplier, however, nor does it list systems not normally configurable in this way.

CENTRAL PROCESSING UNITS

It is within reason for someone with only moderate technical skill to configure his own system and thereby save a considerable amount of money. The initial requirement is an LSI-11 CPU. Two versions are presently available. The original LSI-11 is on a 23 x 27 cm board. It has four edge connectors and is referred to as a "quad" height board. The LSI-11/2 CPU is contained on a 23 x 13 cm board. It has two edge connectors and is referred to as a "dual" height board.

There are several differences between the boards in addition to size. The original board contained 4K of memory and simple refresh circuitry for the memory. Both have now been removed and put on a separate memory board. The CPU clock logic has been changed to a crystal for improved accuracy. The required external "wake-up" circuitry has also been eliminated. This is the external logic (normally contained in the DEC power supply) that sequences the CPU into the run state. This modification allows purchasers to build a system from bare boards with no additional logic. The KD11-R and the KD11-J are special-purpose 2-quad board configurations. The KD11-R contains 16K of semiconductor and the KD11-J contains 4K of core

memory. Table 2 indicates various sources for LSI-11 CPU boards, their prices, and delivery dates.

EXTENDED ARITHMETIC ELEMENT

The CPU boards contain an additional empty socket into which a special chip can be plugged to increase the speed of multiplication, division, and floating-point calculations. This extended arithmetic element chip is especially useful when arithmetic operations are needed in real-time. Table 3 presents sources for the extended arithmetic chip.

BACKPLANES

The CPU and other cards plug into and are thereby interconnected through a backplane. Backplanes may not be jumpered together indefinitely nor indiscriminately, however. The LSI-11 is limited to driving a signal through between 9 and 12 quad slots. The exact figure is determined by the backplane configuration. Considering the signal reflection problems and the cost of expanding a backplane through jumpers, it is advisable to purchase a large backplane initially if expansion is contemplated. The LSI-11 is also limited to driving 15 "unit loads." Each board in the backplane that uses the DEC recommended interface chips, whether dual or quad height, generally represents somewhere between .5 and 1 unit load to the bus. (See the discussion with Table 20 if more than 15-20 boards are needed.) Table 4 presents suppliers of backplanes.

POWER SUPPLIES

Logic in most computer circuits requires +5 V, $\pm 5\%$ with .15-V ripple. This supply provides most of the current in any system. In addition, DEC boards also require +12 V, $\pm 3\%$ with .35-V ripple. Analog circuitry usually requires ± 15 V, $\pm 1\%$ with 10-mV ripple. The accuracy of this power supply determines to a large extent the accuracy of the analog circuitry. Two other voltages that are occasionally required for boards without onboard converters and for lab-built boards are -12 V, $\pm 3\%$ with .15-V ripple, and -5 V, $\pm 5\%$ with .05-V ripple. The easiest way to determine the required capacity of each supply while providing sufficient current for expansion is to calculate the current required by each board to be used from its specification sheet then double that amount. If a shop-made or surplus power supply is used, an overvoltage protector (OVP) should be included. Table 5 lists power supplies available through system houses or LSI-11 vendors. DEC and several other suppliers include in the power supply the necessary "wake-up circuitry" (WU) to initialize the LSI-11. Other suppliers provide the power-up sequencer as a separate unit. Separate power-up sequencers are presented in Table 21; with them, any power supply may be used.

ENCLOSURES WITH BACKPLANES

The system is most easily and safely assembled into a rack-mounting enclosure, which can be easily shop-built or purchased from various sources. Table 6 lists enclosures with backplanes offered by system houses. These enclosures do not necessarily accommodate an internally mounted power supply from a different supplier.

MEMORY

The LSI-11 is capable of addressing 32K of memory with the upper 4K generally reserved for peripheral devices. Memory chips can now be manufactured in 16K increments, resulting in 32K boards rather than the conventional 28K, which is typically considered a complete memory. Some of the upper 4K memory space can be used, however, as unsupported memory when it is available. Semiconductor memory manufacturing technology is quickly developing, with a resultant rapid decrease in cost and size. Memory prices, therefore, should be checked within a month of purchase, and purchase of memory should be delayed whenever possible. Suppliers of semiconductor memories (RAMs) are listed in Table 7. These are typically dynamic memories, which are compact and inexpensive but must be frequently "refreshed" to retain information. (See discussion with Table 14 for discussion of methods.) Dynamic memory boards with onboard refresh do not require the use of the bus for refresh and save the purchase of an additional "refresher" board. Semiconductor memories that do not require refresh are static memories and are indicated as such.

Table 8 lists special-purpose memories. Core memory retains information when the machine is powered down. Several types of semiconductor memories also retain information when the power is removed. Read-only memory (ROM) is permanently programmed during manufacture. Programmable read-only memory (PROM) allows the user to write the information into the chips with the use of a special programmer. Simple or fusible link PROM is permanently programmed once written, whereas UV PROM allows the user to erase the memory with ultraviolet light.

INPUT-OUTPUT

These boards take the bits that are set in the computer word and set output lines, or sense signals on input lines and set bits in the computer word. I/O is accomplished in either a serial or parallel fashion. Serial I/O is for low-speed applications, such as terminals and phone lines, in which data is transmitted 1 bit at a time. Table 9 lists suppliers of serial boards.

Parallel I/O is when information is transferred 16 bits at a time, as in digital on-line control of experiments. Additional circuitry is required to drive relays, unless the board is specifically designed to drive high-current

devices. The extra circuitry for the additional drivers is straightforward, however, and can be easily constructed. Suppliers of parallel boards are listed in Table 10.

OPERATING SYSTEMS AND SOFTWARE

Software is supplied on various media, with and without source listings, and with different levels of support and updating service. The RT-11, mini UNIX, mini FORTH, and PASCAL operating systems and various software packages such as FORTRAN, FOCAL, APL, TSX, BASIC, and others are available as indicated in Table 11.

FLOPPY DISKS

In order to run the RT-11 operating system, a mass storage device such as a floppy disk is required. A disk subsystem contains a disk drive and a controller. Some vendors sell only the controller, some supply both the controller and the drive. Table 12 lists only those controllers or disk subsystems that plug into an LSI-11 backplane, are compatible with unmodified RT-11 disk handlers, and conform to the single-density single-sided DEC media format. Table 13 is a list of floppy-disk controllers and disk systems that plug into the LSI-11 but do not run under an unmodified RT-11, or are not the single-density single-sided DEC format. DEC format is limited to 235K bytes/diskette, whereas double-density double-sided diskettes can contain 1.2 megabytes. Some of the controllers listed in Table 13 require only minimal software changes and/or have conversion software available from the vendor.

HARD DISKS

In addition to the relatively inexpensive flexible or floppy disks, hard-surface disks are available. Their capacity is from 20 to 100 times that of a single DEC-format floppy, and they have a much faster data rate. Table 14 presents suppliers of hard-disk controllers and/or disk subsystems that plug into the LSI-11 backplane.

TERMINATORS

A terminator that suppresses signal reflection in multibackplane configurations and increases noise immunity is frequently used at the end of the bus when it has been extended through flat cable. It is not as crucial in single large backplanes. It is usually implemented as a board, but the ADAC, Andromeda, and DEC LSI-11/2 backplanes incorporate built-in sockets for terminator chips. It takes little to terminate the bus, so other functions are frequently available on the same

board. Table 15 presents suppliers of terminator boards. Major boards such as disk controllers that include a terminator are listed with those boards.

A typical function that is added to a terminator board is memory refresh. When at least one memory board does not have onboard refresh, this function must be provided by some other board. This can be accomplished in either of two ways. The LSI-11 (KD11-F) CPU board has a refresh circuit that stops the processor and refreshes the entire memory at one time. This takes 160 microsec every 2 msec regardless of the amount of memory implemented. A different "interleaved" memory-refresh circuitry is available in the REV series terminators. The refresh is interleaved between CPU operations such that only 1.2 microsec every 30 microsec are used. In this way important high-speed events such as direct memory access (DMA) (see discussion with Table 21 for explanation) or fast interrupt servicing are not precluded. However, the memory-refresh card must be physically closer to the CPU than any other DMA device. If a DMA device is required and the memory-refresh circuitry is with the terminator, the DMA device frequently may be positioned after the terminator-refresh board, but it should be avoided when possible.

OTHER STORAGE MEDIA

Magnetic tape, cartridge tape, LINCtape or DECTape, and paper tape are other types of storage media. These tapes are less expensive and have a greater capacity than disks, but they are slower. LINCtape or DECTape is file structured in the same way as a disk and can therefore be used as a random-access device just as a disk.

The other storage media listed in this table are sequential access and may not be randomly accessed. Magnetic tape provides a great deal of relatively inexpensive storage. Tape cartridges are more convenient, but they provide only about as much storage as a small hard-surface disk. Paper tape is the least expensive and the slowest. It has traditionally been the universal media, in that at one time virtually every system had an ASR33 Teletype. Table 16 lists suppliers for each type of storage device.

ANALOG CONVERTERS

Frequently, analog information such as voltage levels must be sensed or produced by the computer. This is done by means of analog-to-digital (A/D) and digital-to-analog (D/A) converters, respectively. These boards plug into the LSI-11 and are used very much like parallel and serial I/O boards (Table 17). In this case, however, digital bit patterns represent voltages. Some analog

boards do not have onboard voltage converters and require either additional system power supplies or the purchase of voltage converters as an option.

CLOCKS

Programmable real-time clocks allow the user to set and read a "memory location" as a time that automatically increments or decrements at a specified rate. These clocks can also be configured to provide an interrupt at given intervals or to measure time intervals of external events. This is a great asset when timekeeping functions are important and great accuracy or many timing-related operations are necessary. Table 18 presents suppliers of real-time clocks.

GRAPHICS

Graphic display systems create figures and images on a cathode-ray tube (CRT). The two major classes of graphic display systems are the raster scan and the XY display. A home television is a raster-scan CRT. In raster-scan displays, the electron beam scans the screen automatically and the computer turns the beam off and on as it passes the appropriate points. An XY display works on the same principle as an "Etch-a-Sketch." XY displays move the beam only where it is needed in the image. There are two types of XY displays, point plot and vector. In XY point-plot displays, the image is created as a series of independently specified points. In vector graphics a line is drawn between a start position and a stop position. Raster-scan CRT displays are less expensive than comparable XY CRT displays.

In general, a great deal of memory and/or computer power is required for graphics when the display must be continually maintained or refreshed by the graphics controller. For example, a raster-scan image with a resolution of 512 by 512 points similar to a high-contrast television picture requires 16K of 16-bit words. With a storage CRT, once the image is drawn, little further overhead is necessary. Table 19 lists the graphics controllers that plug into the LSI-11.

BUS REPEATERS AND CONVERTERS

When the drive capability of the CPU is exceeded, a "bus repeater" is required. The bus repeater simply amplifies or redrives the signals to and from the CPU. The unassisted CPU can drive 15 unit loads. A bus repeater as the 15th unit load allows the use of additional unit loads on the bus.

Boards are available to plug into the LSI-11 and translate the Qbus (LSI-11) into Unibus (PDP-11) protocol. The Qbus-to-Unibus converter enables the LSI-11 to take advantage of the enormous number of peripheral controllers that have been developed or are currently in use for the more established PDP-11s.

A bus protocol that is increasing in popularity is the general-purpose interface bus (GPIB) or IEEE-488 bus: A growing variety of instruments and controllers are available that plug into the IEEE-488 bus.

MISCELLANEOUS INTERFACES

Table 21 lists some miscellaneous interfaces that plug into the LSI-11. These include DMA interface controllers for various peripherals. A DMA controller is an intelligent I/O card that works independently of the CPU, thus freeing the CPU from the overhead of performing certain types of I/O operations. DMA is typically used for high-speed data transfers. Once loaded with the addresses of a block of memory, the device transfers the entire block before requiring service by the CPU again. DMA transfers can interfere with any bus memory-refresh operation and therefore must be carefully considered when configuring the refresh hardware and when writing the DMA software.

For custom-circuit applications, there are many classes of blank boards or boards that provide only the bus interface logic. These range from small undrilled boards to large wire-wrappable boards already containing DMA logic. Table 22 lists suppliers of these boards.

CABLES

Premade cables can be expensive; however, 40-conductor flat cables can be easily and economically made by the user. Lab-built cables cost about \$1/ft, plus \$10 for the connectors. The flat cable can be cut with an ordinary scissors and the connector can be installed by inserting the flat cables in the provided slot and then squeezing the connector shut in a vise. Reels of cable and "insulation displacement" connectors are available from many sources. Twisted-pair cable is also available with flat spots every few feet so that common insulation displacement connectors can be used. Some representative premade cables are presented in Table 23.

Table 24 lists the addresses and telephone numbers of the vendors cited in the previous tables. Known information concerning the warranty period and educational discounts are also noted.

Table 1
Systems

ANDROMEDA 11B System	
KD11-HA (dual)	\$ 650
32K memory (dual)	1650
Parallel I/O board (dual)	180
Serial I/O board (dual)	195
Terminator/bootstrap (NA)	NA
8-slot backplane	350
Dual floppy-disk subsystem plus bootstrap (dual)	2340
5-V, 15-A power supply	135
12-V, 3.4-A power supply	80
Power distribution unit	200

Table 1 Continued

Control panel	120
Chassis	350
Serial cables	70
Parallel cables	60
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	6380
10% integration	638
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	7018
RT-11 V3 (Category C)	1200
FORTTRAN V2 (Category C)	500
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	\$8718

CRDS
MF11 System

KD11-HA (dual)	*
32K memory (dual)	*
Parallel I/O board (dual)	*
Serial I/O board (dual)	*
Bootstrap (NA)	*
8-slot backplane	*
Dual floppy-disk subsystem (dual)	*
5-V, 18-A power supply	*
12-V, 3.5-A power supply	*
Enclosure with switches	*
RT-11 V3 (Category C)	*
FORTTRAN V2 (Category C)	*
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	\$8790

COMPUTER MARKETING

QB11 System	\$8700
KD11-F (4K memory) (quad)	*
24K memory (dual)	*
Parallel I/O board (dual)	210
Serial I/O board (dual)	250
Terminal/bootstrap (NA)	NA
9 quad-slot backplane	*
Dual floppy-disk subsystem (quad controller)	*
5-V, 30-A, OVP power supply	*
12-V, 4-A power supply	*
-12-V, 1.7-A power supply	*
Enclosure	*
RT-11 V3 (Category C)	*
FORTTRAN V2 (Category C)	610
9-in., 64 characters by 16 lines CRT monitor, keyboard, quad controller	*
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	\$9770

DEC

11/03-LC	\$3995
KD11-R (+16K memory) 2 quad	*
16K memory (dual)	1375
Parallel I/O board (dual)	210
Serial I/O board (dual)	250
Bootstrap/diagnostics/PROM module (quad)	*
9 quad-slot backplane	*
Dual floppy-disk subsystem (dual)	4300
5-V, 18-A power supply	*
12-V, 3.5-A power supply	*
Chassis	*
RT-11 V3 (Category C)	1380
FORTTRAN (Category C)	610
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	\$12120

FIRST COMPUTER CORPORATION

11VB03-ZA (DEC)	\$9294
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Table 1 Continued

KD11-H (quad)	*
16K memory (quad)	*
16K memory (quad)	*
Parallel I/O board (dual)	185
Terminator/bootstrap/diagnostics (quad)	*
9-slot backplane	*
Dual floppy-disk subsystem (dual)	*
5-V, 18-A power supply	*
12-V, 3.5-A power supply	*
RT-11 V3 (Category A)	*
FORTTRAN (Category C)	519
H984 roll-around cabinet	*
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	\$9998

GENERAL ROBOTICS

Executioner III-FDX3 system	\$10000
KD11-HA (dual)	*
31K memory, refresh (quad)	*
Parallel I/O board (dual)	200
Serial I/O board (dual)	*
Terminator/bootstrap/real-time clock (dual)	*
8-slot backplane	*
Dual, floppy, double-density, double-sided disk subsystem (quad)	*
5-V, 15-A power supply	*
12-V, 3-A power supply	*
Control panel	*
Chassis	*
RT-11 (supported)	*
FORTTRAN (supported)	490
Extended arithmetic chip	*
	<hr/>
	10690
Less 10% educational discount	1069
	<hr/>
	\$ 9621

HEATH†

Kit H11 (kit)	\$1350
KD11-F (4K memory) (quad)	*
32K memory (dual) (DEC MSV11-DD)	2100
Parallel I/O board (dual) (kit)	100
Serial I/O board (dual) (kit)	115
WH27 floppy disk	2495
5-V, 15-A power supply	*
12-V, 3-A power supply	*
HT-11 operating system	250
HT-11 FORTTRAN	150
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	\$6560

MDB

KD11-HD (32K memory) (2 dual)	\$2100
Parallel I/O board (dual)	195
Serial I/O board (dual)	225
8-slot backplane	350
Dual floppy-disk subsystem (dual)	3245
5-V, 12-A; 12-V, 8-A power supply	350
System monitoring unit (dual)	350
Chassis	325
RT-11 V3 (Category C) (from DEC)	1380
FORTTRAN V2 (Category C) (from DEC)	610
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	\$9130

PLESSEY

PM-SYST-1A	\$8990
KD11-HA (dual)	*

Table 1 Continued

28K memory (dual)	*
Parallel I/O board (dual)	210
Serial I/O board (dual)	*
Terminator/bootstrap	*
4-hex slot Qbus backplane	*
5-hex slot Unibus backplane	*
Dual floppy-disk subsystem (1-hex Unibus)	*
5-V, 25-A power supply	*
12 V (from +15 V)	*
-15-V, 3.5-A power supply	*
15-V, 3.5-A power supply	*
Chassis	*
Unibus converter (quad)	*
RT-11 V3 (Category C)	1104
FORTRAN V2 (Category C)	488
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	\$10792
RDA	
RD11-28NR system	\$4895
KD11-HA (dual)	*
32K memory (dual)	*
Parallel I/O board (dual)	210
Serial I/O board (dual)	*
Terminator/bootstrap	NA
9-slot backplane	*
Dual floppy-disk subsystem, double density	4595
5-V, 18-A power supply	*
12-V, 6.5-A power supply	*
Control panel	*
Chassis	*
RT-11 V3 (Category C)	1380
FORTRAN V2 (Category C)	610
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	\$11690
TERAK	
8510/a system	\$7850
KD11-F (+4K memory) (quad)	*
24K memory (quad)	*
Parallel I/O board (dual)	300
Serial I/O board (dual)	*
Terminator/bootstrap	NA
4-slot backplane	*
4-slot backplane	190
Jumper cables (2 dual)	290
Expansion enclosure	350
Single-disk drive with controller (quad)	*
Additional floppy drive	1775
5-V, 6-A power supply	*
12-V, 3.5-A power supply	*
Enclosure	*
RT-11 V2 (Category C)	1380
FORTRAN V1 (Category C)	610
12-in. CRT, keyboard and raster graphics	*
320 x 240	*
	<hr/>
	\$12745

Table 2 Continued

Model	Price	Delivery	Description
KD11-HF	850	Stock-30	DEC KD11-HF
DEC			
KD11-F	990, 941, 901		CPU with 4K RAM, quad board.
KD11-FA	1240, 1178, 1128		CPU with 8K RAM, 1 quad and 1 dual board.
KD11-FB	1490, 1416, 1356		CPU with 12K RAM, 1 quad and 2 dual boards.
KD11-FC	1990, 1891, 1811		CPU with 20K RAM, 2 quad boards.
KD11-R	2490, 2366, 2266		CPU with 16K RAM, 2 quad boards.
KD11-U	990		CPU with 4K UVPRAM, ¼K RAM, 1 quad and 1 dual board.
KD11-WA	3490		CPU with 16K RAM, 1K x 24 writable control store RAM, 3 quad boards.
KD11-HA	22,950 /50 (459)		CPU, dual board. Minimum order for CPU is 50.
KD11-HB	1290		KD11-HA with 8K RAM, onboard refresh, 2 dual boards.
KD11-HC	1690		KD11-HA with 16K RAM, onboard refresh, 2 dual boards.
KD11-HD	2490		KD11-HA with 32K RAM, onboard refresh, 2 dual boards.
KD11-HF	990		KD11-HA with 4K RAM, onboard refresh, 2 dual boards.
KD11-J	1536		CPU with 4K core, 2 quad boards.
KD11-HU	990		KD11-HA with sockets for up to 4K UVPRAM chips, ¼K RAM, onboard refresh, 2 dual boards. Writable control store field upgrade kit.
KUV11-UH	2195		
FIRST			
KD11-F	743	Stock-30	DEC KD11-F
KD11-J	1229	Stock-30	DEC KD11-J
KD11-R	1868	Stock-30	DEC KD11-R
KD11-HA	612	Stock-30	DEC KD11-HA
KD11-HB	1135	Stock-30	DEC KD11-HB
KD11-HC	1487	Stock-30	DEC KD11-HC
KD11-HD	2191	Stock-30	DEC KD11-HD
KD11-HF	871	Stock-30	DEC KD11-HF
KD11-HU	871	Stock-30	DEC KD11-HU
MDB			
MLSI-KD11F	900	Stock-14	DEC KD11-F
MLSI-KD11HA	450	Stock-14	DEC KD11-HA
MLSI-KD11HB	1050	Stock-14	DEC KD11-HB
MLSI-KD11HC	1425	Stock-14	DEC KD11-HC
MLSI-KD11HD	2100	Stock-14	DEC KD11-HD
MLSI-KD11HF	900	Stock-14	DEC KD11-HF
NETCOM			
KD11-F	900	Stock-30	DEC KD11-R
KD11-HA	660	Stock-30	DEC KD11-HA
NEWMAN			
KD11-F	891, 801	Stock	DEC KD11-F
KD11-J	1460	Stock	DEC KD11-J
KD11-R	2366	Stock	DEC KD11-R
KD11-HB	1226	Stock	DEC KD11-HB
KD11-HC	1606	Stock	DEC KD11-HC
KD11-HD	2360	Stock	DEC KD11-HD
KD11-HF	941	Stock	DEC KD11-HF
RDA			
KD11F	990, 891	Stock	DEC KD11-F
KD11J	1536, 1383	Stock	DEC KD11-J
KD11R	2490, 2241	Stock	DEC KD11-R
KD11-HA	675, 610	Stock	DEC KD11-HA
KD11-HB	1290, 1160	Stock	DEC KD11-HB
KD11-HC	1690, 1520	Stock	DEC KD11-HC
KD11-HD	2490, 2240	Stock	DEC KD11-HD
KD11-HF	990, 890	Stock	DEC KD11-HF
KD11-HU	990, 890	Stock	DEC KD11-HU
SEC			
SEC-KD11	895	Stock	DEC KD11-F

†Consult Heath for statements concerning expandability beyond 6 unit loads and compatibility with RT-11.

Table 2 Suppliers of LSI-11 CPUs

Model	Price	Delivery	Description
ADAC			
1804-CPU	990	Stock-30	DEC KD11-F
1816-CPU	2490	Stock-30	DEC KD11-R
ANDROMEDA			
KD11-F	850	Stock-30	DEC KD11-F
KD11-HA	650	Stock-30	DEC KD11-HA
KD11-HB	1107	Stock-30	DEC KD11-HB
KD11-HC	1450	Stock-30	DEC KD11-HC
KD11-HD	2136	Stock-30	DEC KD11-HD

Table 3 Extended Arithmetic Chip

Company	Model	Price	Delivery	Description
ADAC	1800/KEV11	190	Stock-30	DEC KEV11
Andromeda	KEV11	170	Stock-30	DEC KEV11
DEC	KEV11	190, 181, 173		Extended arithmetic chip
First	KEV11	167	Stock-14	DEC KEV11
Heath	H11-6	159	Stock	DEC KEV11
MDB	KEV-11	155	Stock-14	DEC KEV11
Netcom	KEV11	175	Stock-30	DEC KEV11
Newman	KEV11	181	Stock	DEC KEV11
Plessey	PMKEV11	190	45	DEC KEV11
RDA	KEV-11	190, 171	Stock	DEC KEV11
SEC	SEC KEV11	190	Stock-30	DEC KEV11
Xylogics	KEV11		30	DEC KEV11

**Table 4
Backplanes**

Model	Price	Delivery	Description
ADAC 1000-BP	400	Stock-30	11 quad slot, card cage, terminator, +15-V bus.
ANDROMEDA 8LCC	350	Stock-30	8 quad slot, card cage, terminator, power cable.
4LCC	170	Stock-30	DEC H9270 and power cable.
DEC H9270	190, 181, 173		4 quad slot and card cage.
H9271	94		Unwired version of H9270.
DDV11-B	400, 380, 364		9 quad wired slots and 9 dual unwired slots (9 x 6). Card cage \$39 extra.
H9281-AA	75		4 dual slot and power connections.
H9281-AB	110		8 dual slot and power connections.
H9281-AC	145		12 dual slot and power connections.
H9281-BA	105		Housing assembly including card guides and H9281-AA backplane.
H9281-BB	155		Housing assembly including card guides and H9281-AB backplane.
H9281-BC	205		Housing assembly including card guides and H9281-AC backplane.
FIRST H9270	167	Stock-30	DEC H9270
H9271	85	Stock-30	DEC H9271
H9281-BA	92	Stock-30	DEC H9281-BA
H9281-BB	136	Stock-30	DEC H9281-BB
H9281-BC	180	Stock-30	DEC H9281-BC
DDV11-B	360	Stock-30	DEC DDV11-B
MDB MLSI-BPA84	350	Stock-14	8 quad slot and card cage.
NETCOM HV-1148	350	Stock-90	8 quad slot and card cage.
NEWMAN H9270	181	Stock	DEC H9270
H9271	89	Stock	DEC H9271
DDV11-B	380	Stock	DEC DDV11-B
H9281-BA	100	Stock	DEC H9281-BA
H9281-BB	147	Stock	DEC H9281-BB
H9281-BC	195	Stock	DEC H9281-BC
MLSI-BPA84	350	Stock	MDB MLSI-BPA84
PLESSEY PM F11/LS4	265	45	4 slot hex backplane, 4 quad and 2 dual Qbus slots, +12-V, 3.5-A regulator, power cables, control plug.
PM F11/LS9	350	45	9 quad slot Qbus, 7 dual unwired slots available, +12-V, 3.5-A regulator.
PM F11/QU	370	45	4 slot hex Qbus, 4 quad, 2 dual, 5 standard hex wide Unibus SPC slots, +12-V, 3.5-A regulator, power cables, control plug.
RDA H9270	190, 171	Stock	DEC H9270
DDV11-B	400, 360	Stock	DEC DDV11-B
MLSI-BPA84	350	30	MDB MLSI-BPA84
SEC SEC-BCG8	350	Stock	8 quad slot, card cage, and power cables.
STANFORD APPLIED ENGINEERING 4x6	85	21	4 x 6 module (100 price).

**Table 5
Power Supplies**

Model	Price	Delivery	Description
AED AED 101	250	Stock	5 V, 12 A; 24 V, 3.5 A; 12 V, .7 A.
AED 201	140	Stock	5 V, 5 A; 24 V, 2.8 A; -5 V, .7 A.
ADAC 1000-PSD	750	Stock-30	5 V, 25 A; +12 V, 4 A; +15 V, 1.5 A, OVP, WU, LC, fans, cable, 3 control switches, switching type, slavable regulator.
ANDROMEDA 5VPS	135	Stock-30	+5 V, 15 A, OVP, OCP, with cable to power distribution unit.
12 VPS	80	Stock-30	+12 V, 3.4 A, OVP, OCP, with cable to power distribution unit.
PDU	200	Stock-30	Power distribution unit with fans (prefer to sell with system).
COMPUTER MARKETING QB-PS	450	60-90	+5 V, 30 A; +12 V, 4 A; -12 V, 1.7 A; -5 V, 1 A, ferresonant, WU/line clock, fans, relay power switch.

Table 5 Continued

Model	Price	Delivery	Description
DEC H780-H	700, 665, 637		Power supply with controls 5 V, 18 A; +12 V, 3.5 A, OVP, OCP, PU, line time clock, fans, cable, and controls.
H780-C	650		Same as H780H, without controls.
H780-K	675		Same as H780H, except with slave console.
FIRST H780-H	630	Stock-30	DEC H780-H
H780-C	585	Stock-30	DEC H780-C
H780-K	608	Stock-30	DEC H780-K
NEWMAN H780-H	665	Stock	DEC H780-H
H780-C	618	Stock	DEC H780-C
H780-K	642	Stock	DEC H780-K
MDB			Other configurations available on request.
MLSI-120-5	200	Stock-14	+5 V, 12 A, OVP \$25 extra, with cable.
MLSI-250-5	375	Stock-14	+5 V, 25 A, OVP \$25 extra, with cable.
MLSI-250-D-5/12	350	Stock-14	+5 V, 12 A; +12 V, 8 A, each OVP \$25 extra, with cable.
MLSI-250-T-5/12	300	Stock-14	+5 V, 12 A; +12 V, 3.5 A, each OVP \$25 extra, with cable.
RDA PS5-12	145	Stock	5 V, 12 A, OVP.
PS5-18	175	Stock	5 V, 18 A, OVP.
PS12-6.5	145	Stock	12 V, 6.5 A, OVP.
PS12-10	175	Stock	12 V, 10 A, OVP.
PSLSI	425	Stock	5 V, 15 A; +12 V, 4 A; -250 V, .25 A, switching type.
PSD5/12	275	Stock	5 V, 18 A; 12 V, 6 A, OVP.
H780-C	650	30	DEC H780-C
H780 H	700	30	DEC H780-H
SEC SEC-H8	399	Stock	5 V, 24 A; +12 V, 3 A, OVP.

**Table 6
Enclosures with Backplanes**

Model	Price	Delivery	Description
ADAC 1000-EN;1000BP	800	Stock-30	19-in. rack-mount enclosure, 11 quad slot backplane, terminators, two slides, fans, room for internal power supply.
DEC H909-C;DDV11B	750, 713, 683		19-in. rack-mount enclosure with 9 quad slot and 9 unwired dual slot (9 x 6) backplane, room for internal power supply.
H909-C;H9270	540, 514, 492		19-in. rack-mount enclosure with 4 quad slot backplane, room for internal power supply.
FIRST H909-C;DDV11B	675	Stock-30	DEC H909-C and DDV11B
H909-C;H9270	482	Stock-30	DEC H909-C and H9270
MDB MLSI-BA11; MLSI-BPA84	675	Stock-14	19-in. rack-mount enclosure with 8 quad slot backplane, 2 fans, AC power cord.
NETCOM HV-1100X	800	Stock-7	Enclosure with 8 quad slot backplane, fan, AC circuit breaker.
RDA H909-C;DDV11B	750 710	60	DEC H909-C and DDV11B
RD11-1	TBA	Stock-30	Front opening enclosure, 8 slot backplane, fan.
SEC SEC-EB8; SEC-BCG8	730	Stock-30	Rack-mount enclosure with 8 quad slot backplane, fans, and room for internal power supply.

**Table 7
Memory**

Model	Price	Delivery	Description
ADAC MSV11-B	625	Stock-30	DEC MSV11-B
MSV11-CD	1800	Stock-30	DEC MSV11-CD
MSV11-DB	850	Stock-30	DEC MSV11-DB
MSV11-DC	1375	Stock-30	DEC MSV11-DC
MSV11-DD	2400	Stock-30	DEC MSV11-DD
MSV11-EB	925	Stock-30	DEC MSV11-EB

Table 7 Continued

Table 7 Continued

Model	Price	Delivery	Description	Model	Price	Delivery	Description
MSV11-EC	1475	Stock-30	DEC MSV11-EC	MSV11-ED	2525		32K RAM, byte parity, onboard refresh, dual board.
MSV11-FD	2525	Stock-30	DEC MSV11-FD				
ADVANCED COMPUTER EQUIPMENT				EM&M			
MMS 1110	850	Stock	Motorola MMS 1110	7711-16	775	Stock-30	16K static RAM, no refresh needed, quad board.
ANDROMEDA				7711-12			
M4-11D	545	Stock-30	4K RAM, in sockets, onboard refresh, 16 address lines, quad board.	7711-8	665	Stock-30	12K static RAM, no refresh needed, quad board.
M8-11D	645	Stock-30	8K RAM, in sockets, onboard refresh, 16 address lines, quad board.		554	Stock-30	8K static RAM, no refresh needed, quad board.
M12-11D	745	Stock-30	12K RAM, in sockets, onboard refresh, 16 address lines, quad board.	FABRI-TIK			
M16-11D	845	Stock-30	16K RAM, in sockets, onboard refresh, 16 address lines, quad board.	960-1043-01	819	10	8K RAM, sockets, dual board.
M16-11D/2	1050	Stock-30	16K RAM, in sockets, onboard refresh, 18 address lines, dual board.	960-1043-00	1071	10	16K RAM, sockets, dual board.
M32-11D/2	1650	Stock-30	32K RAM, in sockets, onboard refresh, 18 address lines, dual board.	960-1043-02	1570	10	24K RAM, sockets, dual board.
				960-1043-03	2000	10	32K RAM, sockets, dual board.
				960-1043-04	819	Stock-60	8K RAM, sockets, byte parity optional, onboard refresh, 18 address lines, dual board.
				960-1043-05	1071	Stock-60	16K RAM, sockets, byte parity optional, onboard refresh, 18 address lines, dual board.
				960-1043-06	1570	Stock-60	24K RAM, sockets, byte parity optional, onboard refresh, 18 address lines, dual board.
				960-1043-07	2000	Stock-60	32K RAM, sockets, byte parity optional, onboard refresh, 18 address lines, dual board, upper 1K limit.
CAMBRIDGE MEMORIES				FIRST			
STOR LSI-11-8	850	Stock	8K RAM, sockets, dual board.	MSV11-B	456	Stock-30	DEC MSV11-B
STOR LSI-11-16	1155	Stock	16K RAM, sockets, dual board.	MSV11-CD	1004	Stock-30	DEC MSV11-CD
STOR LSI-11-24	1595	Stock	24K RAM, sockets, dual board.	MSV11-DB	748	Stock-30	DEC MSV11-DB
STOR LSI-11-32	1895	Stock	32K RAM, sockets, dual board.	MSV11-DC	1210	Stock-30	DEC MSV11-DC
STOR LSI-11/2-16	1245	30	16K RAM, sockets, parity, onboard refresh, 18 address lines, dual board.	MSV11-DD	2112	Stock-30	DEC MSV11-DD
STOR LSI-11/2-24	1685	30	24K RAM, sockets, parity, onboard refresh, 18 address lines, dual board.	IN1611-08	717	Stock-30	Intel in1611-08
STOR LSI-11/2-32	2020	30	32K RAM, sockets, parity, onboard refresh, 18 address lines, dual board.	IN1611-16	977	Stock-30	Intel in1611-16
				IN1611-24	1415	Stock-30	Intel in1611-24
				GENERAL ROBOTICS RAM24			
					1350	30	24K RAM, onboard refresh, quad board.
				HEATH			
				RAM32	1560	30	32K RAM, onboard refresh, quad board.
				CHRISLIN			
CI-1103-8	390	Stock	8K RAM, onboard refresh, 18 address lines, dual board.	Kit H11-1	275	Stock	4K RAM, dual board in kit form, *tri-state bus logic. Consult DEC Qbus specifications for applicability to DEC systems.
CI-1103-16	650	Stock	16K RAM, onboard refresh, 18 address lines, dual board.				
CI-1103-24	825	Stock	24K RAM, onboard refresh, 18 address lines, dual board.	INTEL			
CI-1103-32	995	Stock	32K RAM, onboard refresh, 18 address lines, dual board.	in1611-8	650		8K RAM, dual board.
COMPUTER MARKETING				in1611-16	925		16K RAM, dual board.
8K	815	Stock	Intel in1611-8	in1611-24	1200		24K RAM dual board.
16K	1110	Stock	Intel in1611-16	in5004-616	925		32K RAM, dual board.
24K	1665	Stock	Intel in1611-24	in5004-816	975		16K RAM, onboard refresh, dual board.
32K	2080	Stock	Intel in1611-32	in5004-624	1200		16K RAM, byte parity, onboard refresh, dual board.
CYBERCHRON				in5004-824	1275		24K RAM, onboard refresh, dual board.
CDM-77/03-16	925	Stock-14	16K RAM, in sockets, dual board.	in5004-832	1575		24K RAM, byte parity, onboard refresh, dual board.
CDM-77/03R-16	995	Stock-14	16K RAM, in sockets, onboard refresh, parity \$60 extra, dual board.				32K RAM, onboard refresh, dual board.
CDM-77/03-32	1420	Stock-14	32K RAM, in sockets, dual board.				32K RAM, byte parity, onboard refresh, dual board.
CDM-77/03R-32	1495	Stock-14	32K RAM, in sockets, onboard refresh, parity \$100 extra, dual board.	MDB			
DATARAM				MLSI-MSV11-DB	720	Stock-14	DEC MSV11-DB
DR-1155-8K	590	30	8K RAM, dual board.	MLSI-MSV11-DC	1150	Stock-14	DEC MSV11-DC
DR-1155-8KP	620	30	8K RAM, byte parity, onboard refresh, dual board.	MLSI-MSV11-DD	2000	Stock-14	DEC MSV11-DD
DR-1155-16K	840	30	16K RAM, dual board.	MEMORY SYSTEMS			
DR-1155-16KP	885	30	16K RAM, byte parity, onboard refresh, dual board.	2000-8	875		8K RAM board.
DR-1155-32K	1400	30	32K RAM, dual board.	2000-16	1450		16K RAM board.
DR-1155-32KP	1475	30	32K RAM, byte parity, onboard refresh, dual board.	MICROMEMORY			
DEC				MM1132-1	900		16K RAM, onboard refresh, dual board.
MSV11-B	625, 594, 569		4K RAM, dual board.	MM1132-2	1675		32K RAM, onboard refresh, dual board.
MSV11-CD	1375, 1306, 1251		16K RAM, onboard refresh, quad board.	MONOLITHIC SYSTEMS			
MSV11-DB	850		8K RAM, onboard refresh, dual board.	MSC4601-16	1125	14	16K RAM, onboard refresh, dual board.
MSV11-EB	925		8K RAM, byte parity, onboard refresh, dual board.	MSC4601-24	1575	14	24K RAM, onboard refresh, dual board.
MSV11-DC	1375		16K RAM, onboard refresh, dual board.	MSC4601-28	1868	14	28K RAM, onboard refresh, dual board.
MSV11-EC	1475		16K RAM, byte parity, onboard refresh, dual board.	MSC4601-32	2156	14	32K RAM, onboard refresh, dual board.
MSV11-DD	2400		32K RAM, onboard refresh, dual board.				

Table 7 Continued

Model	Price	Delivery	Description
MSC4503-8	835	14	8K RAM, onboard refresh, dual board.
MSC4501-4	495	14	4K RAM, onboard refresh, quad board.
MSC4501-8	675	14	8K RAM, onboard refresh, quad board.
MSC4501-12	855	14	12K RAM, onboard refresh, quad board.
MSC4501-16	1035	14	16K RAM, onboard refresh, quad board.
MOSTEK			
MK8005-A-04	760	30	8K RAM, sockets optional, onboard refresh, quad board.
MK8005-A-02	950	30	16K RAM, sockets optional, onboard refresh, quad board.
MK8005-A-01	1210	30	24K RAM, sockets optional, onboard refresh, quad board.
MK8005-A-00	1500	30	32K RAM, sockets optional, onboard refresh, quad board.
MOTOROLA			
MMS1110-3	510	Stock	4K RAM, sockets, byte parity \$75 extra, 18 address lines, quad board.
MMS1110-2	730	Stock	8K RAM, sockets, byte parity \$75 extra, 18 address lines, quad board.
MMS1110-1	885	Stock	12K RAM, sockets, byte parity \$75 extra, 18 address lines, quad board.
MMS1110	925	Stock	16K RAM, sockets, byte parity \$75 extra, 18 address lines, quad board.
MMS1102-2	TBA	21	8K RAM, sockets, byte parity \$100 extra, onboard refresh, 18 address lines, dual board.
MMS1102-1	TBA	21	16K RAM, sockets, byte parity \$100 extra, onboard refresh, 18 address lines, dual board.
MMS1102	TBA	21	32K RAM, sockets, byte parity \$100 extra, onboard refresh, 18 address lines, dual board.
NETCOM			
MSC4601-16	1125	14	Monolithic MSC4601-16
MSC4601-24	1575	14	Monolithic MSC4601-24
MSC4601-28	1868	14	Monolithic MSC4601-28
MSC4601-32	2156	14	Monolithic MSC4601-32
MSC4503-8	835	14	Monolithic MSC4503-8
MSC4501-4	495	14	Monolithic MSC4501-4
MSC4501-8	675	14	Monolithic MSC4501-8
MSC4501-12	855	14	Monolithic MSC4501-12
MSC4501-16	1035	14	Monolithic MSC4501-16
NEWMAN			
MSV11-B	594	Stock	DEC MSV11-B
MSV11-CD	1306	Stock	DEC MSV11-CD
MSV11-DB	808	Stock	DEC MSV11-DB
MSV11-DC	1306	Stock	DEC MSV11-DC
MSV11-EB	879	Stock	DEC MSV11-EB
MSV11-EC	1401	Stock	DEC MSV11-EC
MSV11-ED	2399	Stock	DEC MSV11-ED
PLESSEY			
PM-SV32-100	1975	45	31K RAM, onboard refresh, quad board
PM-SV32-101	1735	45	24K RAM, onboard refresh, quad board.
PMSV32-102	1440	45	20K RAM, onboard refresh, quad board.
PM-SV32-103	1265	45	16K RAM, onboard refresh, quad board.
PM-SV32A-100	1760	45	31K RAM, onboard refresh, dual board.
PM-SV32A-101	1550	45	24K RAM, onboard refresh, dual board.
PM-SV32A-102	1050	45	16K RAM, onboard refresh, dual board.
PM-SV32A-103	790	45	8K RAM, onboard refresh, dual board.
RDA			
7711-16	960	30	EM&M 7711-16
7711-12	805	30	EM&M 7711-12
MSV11-CD	1375, 975	30	DEC MSV11-CD
MSV11-DB	850, 765	30	DEC MSV11-DB
MSV11-DC	1375, 1237	30	DEC MSV11-DC
MSV11-DD	2400, 2160	30	DEC MSV11-DD
MSV11-EB	925, 832	30	DEC MSV11-EB
MSV11-EC	1475, 1327	30	DEC MSV11-EC
MSV11-ED	2525, 2272	30	DEC MSV11-ED
1611-8	650	Stock	Intel in1611-8
1611-16	925	Stock	Intel in1611-16
1611-24	1200	Stock	Intel in1611-24
1611-32	1475	Stock	Intel in1611-32

Table 7 Continued

Model	Price	Delivery	Description
MSC 4601-16	1092, 1038	30	Monolithic MSC 4601-16
MSC 4601-24	1392, 1377	30	Monolithic MSC 4601-24
MSC 4601-28	1500, 1475	30	Monolithic MSC 4601-28
MSC 4601-32	1700, 1650	30	Monolithic MSC 4601-32
MSC 4501-16	900, 860	30	Monolithic MSC 4501-16
SEC			
SEC-MSV11B	550	Stock	4K RAM, dual board.
SEC-MSV11BB	750	Stock	8K RAM, dual board.

Table 8
Miscellaneous Memories

Model	Price	Delivery	Description
ADAC			
MMV11-A	990	Stock-30	DEC MMV11-A
MRV11-AA	175	Stock-30	DEC MRV11-AA
MRV11-AC	40	Stock-30	DEC MRV11-AC
MRV11-BA	325	Stock-30	DEC MRV11-BA
MRV11-BC	100	Stock-30	DEC MRV11-BC
ANDROMEDA			
PROM11	170	Stock-30	8K maximum UVPROM memory for 2704 (1K), 2708 (4K), 2716 (8K) chips, dual board.
PROM11-A	150	Stock-30	256 x 16 PROM module for 74S471 chips, dual board.
MREF/PROM11	230	Stock-30	PROM11 with memory refresher, dual board.
MREF/PROM11-A	230	Stock-30	PROM11-A with memory refresher, dual board.
MRV11-AA	165	Stock-30	DEC MRV11-AA
CONTROLEX			
CM 324	2100	TBA	28K core memory, 2 slot thick quad board. +5 V and +12 V only, 45 W.
DATARAM			
DR-115-16K	1465	Stock-30	16K core memory with byte parity, 2 slot thick quad board.
DR-115-8K	1260	Stock-30	8K core memory with byte parity, 2 slot thick quad board.
DEC			
MMV11-A	990, 941, 901		4K core memory, quad board.
MRV11-AA	175, 166, 159		2K or 4K fusible link PROM memory, uses MRV11-AC chip, dual board.
MRV11-AC	40, 38, 36		PROM chip for MRV11-AA board.
MRV11-BA	325, 309, 296		4K UVPROM (use MRV11-BC or Intel 2708), with 1/2K RAM, onboard refresh, dual board.
MRV11-BC	100, 95, 91		UVPROM chip for MRV11-BA.
DIGITAL			
PATHWAYS			
ROM-016	695	Stock-14	16K ROM bank switchable memory, can extend memory beyond DEC 28K limit, for Intel 2716 PROM.
RMP-004	675	Stock-14	4K ROM bank switchable memory, similar in logical structure to ROM-016 but having onboard PROM programming capability.
RVM-064	3000 (tentative)	TBA	65K dynamic RAM bank switching system.
FIRST			
MMV11-A	871	Stock-30	DEC MMV11-A
MRV11-AA	154	Stock-30	DEC MRV11-AA
MRV11-AC	35	Stock-30	DEC MRV11-AC
MRV11-BA	286	Stock-30	DEC MRV11-BA
MRV11-BC	88	Stock-30	DEC MRV11-BC
MDB			
MLSI-MRV			ROM module, dual board.
MLSI-MRV-000	150	Stock-14	4K maximum for 2704 and 2708 UVPROMS, needs -12 V.
MLSI-MRV-001	150	Stock-14	1K maximum for 1702 UVPROMS, needs -12 V.
MLSI-MRV-002	150	Stock-14	4K maximum for 5623 and 5624 fusible PROMS.
MLSI-MRV-003	150	Stock-14	8K maximum for 3625 fusible PROMS and ROMS.
MICROMEMORY			
MM1103	1259	30	8K core memory, quad board 2 slots thick.
MM1103/16	1750	30	16K core memory, quad board 2 slots thick.
NETCOM			
LSI PROG	275	Stock-14	2K UVPROM board (2704, 2708, 2716), programmer, dual board.
NEWMAN			
MMV11-A	941	Stock	DEC MMV11-A
MRV11-AA	166	Stock	DEC MRV11-AA

Table 8 Continued

Model	Price	Delivery	Description
MLSI-MRV-XX	143	Stock	MDB MLSI-MRV
MRV11-AC	38	Stock	DEC MRV11-AC
Monostore XI/ Planar	1250	Stock	16K—Monolithic Systems, high reliability and long life, quad board.
PLESSEY PM-V08	TBA	45	8K x 16 core memory, 1 quad board.
RDA MRV11-AA	175, 158	Stock	DEC MRV11-AA
MLSI-MRV-00	150	Stock	MDB MLSI-MRV-000
MLSI-MRV-01	150	Stock	MDB MLSI-MRV-001
RMV-8K	245	Stock	8K EPROM/ROM board.
MRV11-BA	325, 293	60	DEC MRV11-BA
MMV11-A	990, 891	Stock	DEC MMV11-A
MM-1103-4	789	Stock	MicroMemory 4K core memory, quad board.
MM-1103-8	1259, 1195	Stock	MicroMemory MM1103
DR115	1840, 1795	Stock	16K core memory, 2 quad boards.
SFC SEC-MRV11A			UV PROM (2708), onboard PROM programmer, dual board.
SEC-MRV11A-1	445	Stock-30	SEC-MRV11A with 1K.
SEC-MRV11A-2	533	Stock-30	SEC-MRV11A with 2K.
SEC-MRV11A-3	675	Stock-30	SEC-MRV11A with 3K.
SEC-MRV11A-4	725	Stock-30	SEC-MRV11A with 4K.
SEC-DPM	2495	30-45	Dual port memory, Qbus and Unibus.

Table 9
Serial Boards

Model	Price	Delivery	Description
ACT 10027	899		4 asynchronous EIA or 20 mA, 110 to 9600 baud, software compatible with DEC DLV11, quad board.
ADAC 1796	235	Stock-30	1 asynchronous serial EIA or 20 mA, 50 to 9600 baud, dual board, DLV11 software compatible.
DLV11	250	Stock-30	DEC DLV11
DLV11-J	465	Stock-30	DEC DLV11-J
DIV11-KA	110	Stock-30	DEC KLV11-KA
DLV11-E	300	Stock-30	DEC DLV11-E
DLV11-EB	400	Stock-30	DEC DLV11-EB
DUV11-DA	750	Stock-30	DEC DUV11-DA
DZV11-B	850	Stock-30	DEC DZV11-B
ANDROMEDA DLV11 MS111	225	Stock-30	DEC DLV11 Asynchronous serial EIA or 20 mA, 50 to 19.2K baud, dual board, DLV11 software compatible.
MS111-1	210	Stock-30	1 channel.
MS111-2	295	Stock-30	2 channel.
MS111-3	395	Stock-30	3 channel.
MS111-4	450	Stock-30	4 channel.
MS111-xA	250	Stock-30	Add-on price for LA180 Centronics parallel printer interface.
COMPUTER MARKETING Quadra Sync	899	Stock	ACT 10027
CRDS DLV11	250	30	DEC DLV11
DEC DLV11	250, 238, 228		1 asynchronous serial EIA or 20 mA, 50 to 9600 baud, dual board.
DLV11-J	465		4 asynchronous serial EIA, 150 to 38.4K baud, software compatible with DLV11, dual board.
DLV11-KA	110		Smart cable that provides DLV11-J with 20 mA and 110 baud.
DLV11-E	300, 285, 273		Same as DLV11 with software baud select and modem control, dual board.
DLV11-EB	400		Same as DLV11-E with cable.
DUV11-DA	750		Synchronous serial for Bell 200 modems, quad board.
DZV11-B	850		4 line asynchronous multiplexer, 50 to 9600 software baud select, modem control, quad board.
FIRST DLV11	220	Stock-30	DEC DLV11
DLV11-E	270	Stock-30	DEC DLV11-E
DLV11-J	419	Stock-30	DEC DLV11-J
DLV11-KA	97	Stock-30	DEC DLV11-KA
DUV11-DA	660	Stock-30	DEC DUV11-DA
DZV11-B	748	Stock-30	DEC DZV11-B

Table 9 Continued

Model	Price	Delivery	Description
GENERAL ROBOTICS GRC-DLV11	250	30	Asynchronous serial, EIA, 20 mA, or TTL, 75 to 19.2K baud, DLV11 software compatible, modem control, dual board.
HEATH Kit H11-5	115	Stock	1 asynchronous serial EIA or 20 mA, 50 to 9600 baud, dual board, *tri-state Qbus interface. Consult DEC Qbus specifications for applicability to DEC systems.
MDB MLSI-DLV11	225	Stock-14	1 asynchronous serial EIA, 20 mA or 60 mA, switch selectable baud 75 to 19.2K, software compatible with DLV11, dual board.
MLSI-DLV11E	275	Stock-14	Same as above with dual up capability, dual board.
MLSI-DUV11	700	Stock-14	Synchronous serial, software compatible with DEC DUV11, quad board.
NETCOM CV-1103	180	Stock-14	Asynchronous serial EIA or 20 mA, 50 to 9.6K baud, needs -12 V.
CV-1103-1	200	Stock-14	Same as above with converter for -12 V.
CV-1103-2	210	Stock-14	Same as CV-1103 with software control of 60-Hz clock.
CV-1103-3	230	Stock-14	Same as above with converter for -12 V.
NEWMAN DLV11	238	Stock	DEC DLV11
MLSI-DLV11	214	Stock	MDB MLSI-DLV11
MLSI-DUV11	736	Stock	MDB MLSI-DUV11
DLV11-E	285	Stock	DEC DLV11-E
DLV11-J	465	Stock	DEC DLV11-J
PLESSEY PM DLV11			1 asynchronous serial EIA or 20 mA, 50 to 9.6K baud, software compatible with DLV11, dual board.
PM DLV11-A	225	45	PM DLV11 with current loop cable.
PM DLV11-B	225	45	PM DLV11 with modem cable.
PM DLV11-C	225	45	PM DLV11 with RS232 cable.
RDA DLV11	250, 225	Stock	DEC DLV11
DLV11-J	465, 427	Stock	DEC DLV11-J
DLV11-E	300, 270	Stock	DEC DLV11-E
DZK-11	895	30	4-channel serial line multiplex unit with modem control.
DUV11-DA	750	60	DEC DUV11-DA
XYLOGIC'S XDLV11		Stock-30	Equivalent to DEC DLV11.

Table 10
Parallel Input-Output Boards

Model	Price	Delivery	Description
ADAC 1632 TTL	250	Stock-30	32 I/O lines, any combination in and out in increments of 8, latched outputs, dual board, diode clamped input, 2 interrupts, DEC DRV11 software compatible.
1664 TTL	280	Stock-30	64 I/O lines, any combination in and out in increments of 8, program control interface, dual board, diode clamped input, latched outputs.
1616 CCI	225	Stock-30	16 contact closure inputs, inputs debounced and latched, program control and program interrupt interface, dual board, 1 interrupt.
1616 HCO	255	Stock-30	16 high-current latched outputs, program control interface, dual board.
1632 HCO	355	Stock-30	32 high-current latched outputs, program control interface, dual board.
1616-OII	325	Stock-30	16 optically isolated input lines, dual board, diode clamped, 1 interrupt.
1616-OIO	250	Stock-30	16 optically isolated output lines, dual board, latched outputs.
ANDROMEDA DRV11	180	Stock-30	DEC DRV11
DATA TRANSLATION DT2768	695	5	16 optically isolated lines in, 16 latched optically isolated lines out, 32-V, 2-A programmable external event counter, dual board.
DT2768-II	1395	5	Same as above with additional conditioning for 110VAC, 10 A.

Table 10 Continued

Model	Price	Delivery	Description
DEC DRV11	210, 200, 191		16 diode-clamped input lines, 16 latched output lines, 2 interrupts, dual board.
FIRST DRV11	185	Stock-30	DEC DRV11
HFATH Kit H11-2	100	Stock	16 diode-clamped input lines, 16 latched output lines, interrupts, dual board, *tri-state bus. Consult DEC Qbus specifications for applicability to DEC systems.
MDB MLSI-DRV11C	195	Stock-14	16 diode-clamped input lines, 16 latched output lines, 2 interrupts, dual board, DEC software compatible.
NEWMAN DRV11	200	Stock	DEC DRV11
MLSI-DRV11C	185	Stock	MDB MLSI-DRV11C
PLESSEY PM DRV11	190	45	16 diode-clamped input lines, 16 latched output lines, DEC DRV11 software and hardware compatible, dual board.
RDA DRV11	210, 189	Stock	DEC DRV11
1632	250, 238	Stock	ADAC 1632 TTL
1664	280, 266	30	ADAC 1664 TTL
1616-HCO	255	Stock	ADAC 1616 HCO
1632-HCO	355	30	ADAC 1632 HCO
1616-OIO	250	30	ADAC 1616 OIO
1616-OII	325	30	ADAC 1616 OII
DT2768	695	30	Data Translation DT2768
XYLOGICS DRV11			DEC DRV11

Table 11 Continued

Model	Price	Delivery	Description
DPCM	2000	Stock	Distributed processing communication module.
EZMAIL	TBA	TBA	Manages mailing lists, membership lists, etc.
EZEDIT	TBA	TBA	Permits full screen text editing using DEC VT52.
DATANET HASP-11	3500	Stock	Enables LSI-11 to mimic HASP remote job entry station.
DEC QJV10-CB	110, 105, 100		PTS-11 paper-tape operating system.
QJV11-CB	30, 29, 27		PROM formatter software.
QJ013-AY	2760		RT-11 real-time operating system V3.
QJ013-CY	1380		RT-11 real-time operating system V3.
QJ013-DZ	1105		RT-11 real-time operating system V3.
QJ940-AY	550		Lab Applications/RT-11 V3.
QJ945-AY	1100		REMOTE/RT-11 V1.
QJ945-CY	550		REMOTE/RT-11 V1.
QJ945-DZ	440		REMOTE/RT-11 V1.
QJ642-AY	1650		RSX-11S operating system V2.
QJ642-CY	825		RSX-11S operating system V2.
QJ642-DZ	660		RSX-11S operating system V2.
QJ913-AY	830		BASIC/RT-11 V2.
QJ913-CY	550		BASIC/RT-11 V2.
QJ913-DZ	440		BASIC/RT-11 V2.
QJ921-AY	830		Multiuser BASIC/RT-11 V1.
QJ921-CY	550		Multiuser BASIC/RT-11 V1.
QJ921-DZ	440		Multiuser BASIC/RT-11 V1.
QJ830-AY	830		BASIC/RT-11 with extensions V1.
QJ830-CY	415		BASIC/RT-11 with extensions V1.
QJ830-DZ	335		BASIC/RT-11 with extensions V1.
QJ922-AY	370		FOCAL/RT-11 V1B.
QJ922-CY	185		FOCAL/RT-11 V1B.
QJ922-DZ	150		FOCAL/RT-11 V1B.
QJ813-AY	880		FORTRAN IV/RT-11 V2.
QJ813-CY	610		FORTRAN IV/RT-11 V2.
QJ813-DZ	490		FORTRAN IV/RT-11 V2.
QJ960-AY	370		FORTRAN SSP-11/RT-11 scientific sub-routines V1.
QJ960-CY	185		FORTRAN SSP-11/RT-11 scientific sub-routines V1.
QJ960-DZ	150		FORTRAN SSP-11/RT-11 scientific sub-routines.
QJ980-AY	880		FORTRAN/RT-11 extensions V1B.
QJ980-CY	440		FORTRAN/RT-11 extensions V1B.
QJ980-DZ	355		FORTRAN/RT-11 extensions V1B.
QJ907-AY	1650		APL-11/RT-11 V1.
QJ907-CY	825		APL-11/RT-11 V1.
QJ907-DZ	660		APL-11/RT-11 V1.
QJ058-AY	2500		RT-11/LSI-11 2780 V2 (emulation of IBM 2780 Model 1 remote batch terminal).
QJ058-CY	1250		RT-11/LSI-11 2780 V2 (emulation of IBM 2780 Model 1 remote batch terminal).
QJ058-DZ	1000		RT-11/LSI-11 2780 V2 (emulation of IBM 2780 Model 1 remote batch terminal).
ZJV01-RB	120, 114, 109		LSI-11 paper-tape diagnostics.
ZJ215-RY	330		LSI-11, 11/03, 11V03 diagnostics on floppy disk.
DECUS 11-232	23		FORTH programming language on floppy disk, \$65 on magnetic tape.
11-304	65		LISP11 interpreter on magnetic tape.
FIRST QJV10-CB	110	Stock-30	DEC QJV10-CB (paper-tape operating system).
QJV11-CB	30	Stock-30	DEC QJV11-CB (PROM formatter).
QJ013-AY	2346	Stock-30	DEC QJ013 (RT-11 operating system V3).
QJ013-CY	1173	Stock-30	DEC QJ013 (RT-11 operating system V3).
QJ013-DZ	939	Stock-30	DEC QJ013 (RT-11 operating system V3).
QJ642-AY	2640	Stock-30	DEC QJ642 (RSX-11S).
QJ642-CY	1320	Stock-30	DEC QJ642 (RSX-11S).
QJ642-DZ	1056	Stock-30	DEC QJ642 (RSX-11S).
QJ830-AY	730	Stock-30	DEC QJ830 (BASIC extensions).
QJ830-CY	365	Stock-30	DEC QJ830 (BASIC extensions).
QJ830-DZ	295	Stock-30	DEC QJ830 (BASIC extensions).
QJ907-AY	1452	Stock-30	DEC QJ907 (APL).
QJ907-CY	726	Stock-30	DEC QJ907 (APL).
QJ907-DZ	581	Stock-30	DEC QJ907 (APL).
QJ913-AY	706	Stock-30	DEC QJ913 (BASIC).
QJ913-CY	468	Stock-30	DEC QJ913 (BASIC).
QJ913-DZ	387	Stock-30	DEC QJ913 (BASIC).
QJ922-AY	315	Stock-30	DEC QJ922 (FOCAL).
QJ922-CY	163	Stock-30	DEC QJ922 (FOCAL).
QJ922-DZ	132	Stock-30	DEC QJ922 (FOCAL).
QJ945-AY	968	Stock-30	DEC QJ945 (REMOTE).

Table 11
Operating Systems and Languages

Model	Price	Delivery	Description
AIS Avid	12000	90	CAI package, single user including graphics CRT, multiuser available.
ANDROMEDA QJ013	1200	Stock	DEC QJ013-CY (RT-11 V3).
QJ921	450	Stock	DEC QJ921-CY (MUBASIC).
QJ913	450	Stock	DEC QJ913-CY (BASIC V2).
QJ813	500	Stock	DEC QJ813-CY (FORTRAN IV V2).
QJ960	185	Stock	DEC QJ960-CY (FORTRAN scientific subroutines).
QJ980	750	Stock	DEC QJ980-CY (FORTRAN extensions).
QJ907	700	Stock	DEC QJ907-CY (APL).
DPS	200	Stock	Document processing system.
DI-H	100	Stock	Daisy-wheel printer handler.
TSX	1270	Stock	RT-11 timesharing system.
TREK	Free	Stock	Super Trek, 24K, FORTRAN and MACRO, requires RT-11, KEV11, 24K words, line clock, send floppy and postage.
AUTOMATED LOGIC	250		Cross-assemblers for Intel 4000 and 8000 family of microprocessors.
BELL LABS Unix®	190/12000	Stock	Mini Unix operating system, includes C, utilities, FORTRAN, RATFOR, with manuals. User must supply three RK05 disks or one 9-track, 800-bpi magnetic tape (190 for licensed educational users).
BOSTON SYSTEMS OFFICE	2000		Cross-assemblers for 4000 and 8000 series, 6800, 6500, Pace, 1802, PPS/4, F8, TMS 1000 series, TMS 9900, Z80, SC/MP, and IMP-8.
	3000		Simulator-debugger for same microprocessors as above.
COMPUTER SOLUTIONS RJE	2500	Stock	Remote job entry programmable work station.
EZSHAR	1500	Stock	Distributed timesharing programmable work station.

Table 11 Continued

Model	Price	Delivery	Description
QJ945-CY	484	Stock-30	DEC QJ945 (REMOTE).
QJ945-DZ	387	Stock-30	DEC QJ945 (REMOTE).
QJ960-AY	315	Stock-30	DEC QJ960 (FORTRAN subroutines).
QJ960-CY	157	Stock-30	DEC QJ960 (FORTRAN subroutines).
QJ960-DZ	132	Stock-30	DEC QJ960 (FORTRAN subroutines).
QJ813-AY	748	Stock-30	DEC QJ813 (FORTRAN).
QJ813-CY	519	Stock-30	DEC QJ813 (FORTRAN).
QJ813-DZ	431	Stock-30	DEC QJ813 (FORTRAN).
QJ980-AY	774	Stock-30	DEC QJ980 (FORTRAN extensions).
QJ980-CY	374	Stock-30	DEC QJ980 (FORTRAN extensions).
QJ980-DZ	312	Stock-30	DEC QJ980 (FORTRAN extensions).
FORTH			
Mini-FORTH	10500	90	Mini-FORTH, multitask, virtual memory operating system, optimized for process control and data acquisition; includes FORTH language, disk utility, editor, documentor, file handler; requires 6K bytes, RS-232 CRT terminal and one disk; includes documentation, sources, on-site installation and training.
GENERAL ROBOTICS			
BASIC	450	30	Fully supported by General Robotics. BASIC language processor.
F4	500	30	FORTRAN IV compiler.
MUBASIC	450	30	Multiuser BASIC.
APL	700	30	APL interpreter.
TSX	1250	30	Timesharing executive software.
OREGON MINICOMPUTER SOFTWARE			
PASCAL	1500		PASCAL package including compiler, demo library and debugger.
RDA			
QJV10-CB	110	Stock	DEC QJV10-CB (paper-tape operating system).
QJV11-CB	30	Stock	DEC QJV11-CB (PROM formatter).
QJ945-AY	1100, 990	Stock	DEC QJ945 (Remote).
QJ642-AY	3300, 2970	Stock	DEC QJ642 (RSX-11S).
QJ642-CY	1650, 1485	Stock	DEC QJ642 (RSX-11S).
QJ920-AY	830, 747	Stock	DEC BASIC V1.B.
QJ920-CY	550, 495	Stock	DEC BASIC V1.B.
QJ921-AY	830, 747	Stock	DEC QJ921 (MUBASIC).
QJ921-CY	550, 495	Stock	DEC QJ921 (MUBASIC).
QJ922-AY	370, 333	Stock	DEC QJ922 (FOCAL).
QJ922-CY	185, 167	30	DEC QJ922 (FOCAL).
QJ925-AY	880, 792	Stock	DEC FORTRAN V1.C.
QJ925-CY	610, 549	Stock	DEC FORTRAN V1.C.
QJ960-AY	370, 333	Stock	DEC QJ960 (FORTRAN subroutines).
QJ960-CY	185, 167	Stock	DEC QJ960 (FORTRAN subroutines).
QJ907-AY	1650, 1485	30	DEC QJ907 (APL).
QJ907-CY	825, 743	30	DEC QJ907 (APL).
ZJV01	120	Stock	DEC ZJV01 (LSI-11 paper-tape diagnostics).
ZJ215-RY	330	30	DEC ZJ215-RY (diagnostics on floppy).
ASR	500, 450	Stock	ASCII TTY communications emulator.
SORT	300, 270	Stock	10-key replacement selective sort utility.
FORMAT	300, 270	Stock	Text processor/output formatter.
BASEDIT	300, 270	Stock	BASIC/MUBAS editor.
1600SE	290, 250	Stock	Diablo 1620 and 1610 format and control software.
SAL11	700	Stock	Structured programming language.
MINBOL	1000, 900	Stock	Business programming language.
SEC			
QJV10-CB	85	30	DEC QJV10-CB (paper-tape operating system).
QJV11-CB	25	30	DEC QJV11-CB (PROM formatter).
QJ013-CY	1035	30	DEC QJ013 (RT-11 operating system V2C).
QJ913-CY	415	30	DEC QJ913 (BASIC).
QJ921-CY	415	30	DEC QJ921 (MUBASIC).
QJ922-CY	140	30	DEC QJ922 (FOCAL).
QJ813-CY	460	30	DEC QJ813 (FORTRAN V2).
QJ960-CY	140	30	DEC QJ960 (FORTRAN subroutines).
ZJ215-RY	250	30	DEC ZJ215-RY (diagnostics on floppy).
ZJV01-RB	90	30	DEC ZJV01-RB (paper-tape diagnostics).
CAMAC	450	Stock	CAMAC FORTRAN, callable, single-action statements.
UCSD			
PASCAL	200	Stock	PASCAL operating system includes PASCAL compiler, 2 editors, filer, debug package, BASIC compiler, utility programs. Includes users manual, sources, documentation, and support.
	50	Stock	Same as above, except no detailed system documentation or continued support.

Table 11 Continued

Model	Price	Delivery	Description
VIRTUAL SYSTEMS	1495		Cross-assemblers and loaders for 8080, 8085, Z80, 6800, and equivalent systems; coded in Macro-11, works under RT-11.
MTX-11	1395		Multitasking executive for timesharing and general-purpose operating systems.
XYLOGICS RT-11			DEC QJ013 (RT-11 operating system V2C).
BASIC MUBASIC FORTRAN			DEC QJ913 (BASIC). DEC QJ921 (MUBASIC). DEC QJ813 (FORTRAN).
YOURDON TBA	TBA		"C" language.

Table 12
Floppy-Disk Drives and/or Controllers
(DEC Single-Side, Single-Density, Media, and RT-11 Handler Compatible)

Model	Price	Delivery	Description
ANDROMEDA			
FDC11	850	Stock-30	Controller for up to 4 single-sided, single-density, Pertec FD400 or FD500 drives (1 personality card, PC400, required per drive, \$80 each), hardware bootstrap, write protect and formatter, dual board with cable.
FDC11-A	885	Stock-30	Same as FDC11 but for Shugart SA-800-2 or equivalent drives, no personality card required.
FDC11-B	895	Stock-30	Same as FDC11-A except for Shugart SA-850 double-sided drives or equivalent, compatible in single-side mode only.
PC400	80	Stock-30	Personality card for use with FDC11 and Pertec FD400/500.
FD400	525	Stock-30	Disk drive, Pertec (DC motor).
FD500	525	Stock-30	Disk drive, Pertec (AC motor).
SA-800-2	560	Stock-30	Disk drive, Shugart.
SA-850	640	TBA	Disk drive, Shugart, double sided.
DFDS	3095	30	Subsystem with 2 single-sided, single-density Pertec drives, full controls and indicator lights, formatter, write protect, dual board.
DFDS-A	3095	30	Same as DFDS, but Shugart 800 drives and only write protect and boot switches, formatter, dual board.
DFDS-B	3295	30	Subsystem with 2 double-sided, single-density Shugart 850 drives, DEC media and handler compatible in single-sided mode only, double-sided handler included, formatter, write protect, dual board.
CRDS			
FD-11	2875	30	Subsystem with 2 single-sided, single-density Shugart SA800 drives, bootstrap in PROM, write-protect switch, unit-select switches, microprocessor controller on quad board, formatter.
FD-11-X	3425	TBA	Same as above but with double-sided Shugart 850 drives, media and handler compatible in single-side mode only.
COMPUTER MARKETING			
MF-11	3440	30	Subsystem with 2 single-sided, single-density Shugart SA800 drives, bootstrap in PROM, write-protect switch, unit-select switches, microprocessor controller on quad board, formatter.
MF-11*	3940	90	Same as above but with double-sided Shugart 850 drives, compatible in single-side mode only.
DATA SYSTEMS DESIGN			
			Subsystems with single-sided, single-density Shugart SA800-2 drives, write-protect switches, hardware bootstrap, bus terminators, memory refresher, formatter, dual board.
DSD 210-L11A-1	2795	30	Single drive system.
DSD 210-L11A-2	3295	30	Dual drive system.
DSD 210-L11A-3	4495	30	Triple drive system.
DSD 110-2	3195	30	Subsystem with 2 single-sided, single-density Shugart SA800-2 drives, for-

Table 12 Continued

Model	Price	Delivery	Description
DSD 110-2DS	3800	TBA	matter and bootstrap, dual board, disk notch write protect. Same as above except with double-sided drives, software compatible in single-sided mode only.
DSD 440-L11-2	4400	TBA	System with 2 dual-sided double-density Shugart 850-2 drives, formatter, DEC media and handler compatible in single-density single-side mode only, dual board.
DEC RXV11-AA	3350		System with 1 single-sided single-density drive, dual board interface with cable. Same as above with 2 drives.
RXV11-BA	4300		
FIRST RXV11-AA	2948	Stock-30	DEC RXV11-AA
RXV11-BA	3225	Stock-30	DEC RXV11-BA
MDB MLSI-DSD-110	3245	Stock-30	DSD-110-2
NEWMAN RXV11-BA	4085	Stock	DEC RXV11-BA
PLESSEY PM-XF11/A101	3650	45	System with 2 single-sided single-density GRI drives, formatter, write protect, hex Unibus. Same as above except single drive.
PM-XF11/A100	2740	45	
RDA RXV11-AA	3350, 3193	30	DEC RXV11-AA
RXV11-BA	4300, 4085	Stock	DEC RXV11-BA
FT-0122	4650, 4495	30	Subsystem with 2 single-sided Shugart 800-2 drives, programmable single or double density, media and handler compatible in single density only, formatter, write protect, handler included, up to 4 drives maximum, quad board. Same as above but with one drive. Single-drive expansion with chassis, power supply and cables. Dual drive expansion with chassis, power supply and cables. Same as FT-0122 but with 2 double-sided drives, cannot be expanded, media and handler compatible in single side single density only.
FT-0112	4000, 3850	30	
FT-0012	1850, 1815	30	
FT-0022	2500	30	
FR-0127	5150, 4995	30	
XEBEC 2501N	2200	30	Subsystem with 1 single-sided, single-density PerSci drive, high-speed seek, low power, formatter, quad board. Same as above with 2 drives.
2502N	2700	30	
1252N	4950	30	Subsystem with 2 single-sided, double-density Shugart 800 drives, uses RK handler, switch selectable to DEC media format, formatter, write protect \$50 extra, quad board. Same as above except double-sided drives.
1262N	5450	30	

Table 13 Continued

Model	Price	Delivery	Description
ANDROMEDA MDC11	510	Stock-30	Controller for up to 3 Shugart, Wangco, or Pertec minidisk drives (70K bytes), formatter, write protect, dual board, includes 4K x 16 PROM, memory refresher.
SA-400 DFDC11	325 TBA	Stock-30 TBA	Shugart minidisk drive for MDC11. DMA controller for up to 8 single- or dual-sided, single- or dual-density Shugart 800 or 850 or Pertec drives, programmed I/O in single-side single-density mode, DMA for double density, dual card, DEC media compatible in single side, formatter, write protect, double-sided handler \$100 extra.
DDFDS	TBA	TBA	Subsystem with 2 single-sided double-density Pertec drives, DEC compatible in single-density mode, double-density handler included, dual board, control and indicator lights.
DDFDS-A	TBA	TBA	Same as above except Shugart 800 drives and write-protect switches.
DDFDS-B	TBA	TBA	Same as DFD5-A except double-sided drives and write-protect switches, handler included.
CALCOMP 1149	1020		Table or rack-mount enclosure, wire harness, power supply, control switches, for up to 2 drives.
1143M	660		Controller for up to 4 single-sided or double-sided drives, media compatible, notch write protect, can have 2 host adaptors, requires +12 V, +5 V, and -5 V, 8 x 4 in board.
LSI-11 Adaptor	650		LSI-11 host adaptor with onboard firmware, dual board.
142M	625		Single-sided floppy drive.
143M	750		Double-sided floppy drive.
1149;1143M;LSI Adaptor; two 142M	3580		Subsystem with 2 single-sided floppy disks.
COMPUTER MARKETING 484KB	2875	30	Subsystem with 2 single-sided single-density Shugart drives, DEC media compatible, formatter, write protect, quad board.
968KB	3425	90	Same as above but double-sided drives.
COMPUTER TECHNOLOGY FDI-I	950	30	DMA controller for 4 SA800, SA850 or 3 mini SA400 or SA450, or equivalent drives, single density, double sided, dual board, RT-11 handler included, DEC media compatible, built-in bootstrap.
FDI-III	1250	30	Same as above but single- and double-density modes, allows transfer of single-density data to double density or vice versa.
FDS-I-21	2950	60	Subsystem with 2 single-sided, single-density drives.
FDS-I-22	3450	60	Subsystem with 2 dual-sided, single-density drives.
FDS-III-21	3250	60	Subsystem with 2 single-sided, double-density drives.
FDS-III-22	3750	60	Subsystem with 2 dual-sided, dual-density drives.
CRDS FD-11DD	TBA	TBA	Subsystem with single-sided double-density Shugart 800 drives, formatter, write protect, media and handler compatible with new DEC double-density standard.
DATA SYSTEMS DESIGN DSD 110-2DS	3800	TBA	Subsystem with 2 dual-sided single-density Shugart 850-2 drives, formatter, bootstrap, dual board.
GENERAL ROBOTICS F'DV11	5000	30	Subsystem with 2 dual-sided double-density drives, DMA interface, expandable to 4 drives, quad board.
F'D610	1000	30	Floppy-disk drive, dual density, double sided to expand F'DV11.

Table 13 Floppy-Disk Drives and/or Controllers (Compatible to LSI-11)

Model	Price	Delivery	Description
AED All prices include educational discount (25%).			
3100LP;FD410;2002	3335	30-60	Subsystem with 2 single-sided, single-density Pertec FD400 drives, disk 0 write protect, programmable formatter, DEC media compatible, handler \$400 extra, quad board.
3100P;FD410;2002	5058	30	Same as above except 4 disk drives.
6200LP;FD510;2002	3448	30	Subsystem with 2 single-sided, double-density AED 6200 drives, disk 0 write protect, programmable formatter, handler \$400 extra.
6200P;FD510;2002	5058	30	Same as above with 4 drives.
6200LD;SA850;2002	3958	30	Subsystem with 2 dual-sided, double-density Shugart SA850 drives, disk 0 write protect, programmable formatter, handler \$400 extra, quad board.
6200LD;6200LD/2; SA850;2002	6678	30	Same as above except 4 drives.

Table 13 Continued

Model	Price	Delivery	Description
HEATH WH27	ca. 1700	TBA	Preliminary specification: Prewired subsystem with one single-sided, single-density drive, space for additional drive, possibly media and handler compatible with DEC RT-11, may include Heath operating system. May have tri-state bus logic, consult DEC specifications for applicability to DEC systems.
WH27-1	ca. 500	TBA	Additional drive for WH27.
RDA 3100LP	4395, 3995	Stock	Subsystem with 2 single-sided, single-density AED drives, DMA interface, programmable formatter, write protect, handler included, quad board.
3100P	4555, 4265	Stock	Same as 3100LP except expandable to 4 drives.
FD400	730	30	AED floppy-disk drive for Units 3 and 4 of 3100P.
6200LP	4595, 4265	Stock	Same as 3100LP except double density.
6200P	4595, 4325	Stock	Same as 6200LP except expandable to 4 drives.
FD510	730	30	AED floppy-disk drives for Units 3 and 4 of 6200P.
220MF	2695, 2595	30	Subsystem with 2 mini single-sided, single- or double-density Wangco drives, RT-11 handler, write protect, dual board.
REMAX RFS7524	3200	30-60	Enclosure with 2 single-sided, single-density Remex drives, power supply, formatter and electronics, selectable sector/track.
RFS7514	2550	30-60	Same as above but with single drive.
Qbus to RFS7524 Controller	600	30-60	Controller for up to 4 RFS7524 drives; ROM boot and 128-byte buffer \$200 extra, ROM boot and 256-byte buffer \$250 extra, handlers for RT-11 \$150 extra, diagnostics included.
Qbus to Controller	100	30-60	Dual board and cable to connect Qbus to controller.
RFS7510	1550	30-60	Expander chassis for 2 drives, includes 1 drive and power supply.
RFS7520	2200	30-60	Expander chassis with 2 drives.
RFD	650	30-60	Drive only.
RMF0025	100	Stock	LSI-11 RT-11 to IBM 3740 EBCDIC key to diskette format or vice versa, on diskette.
SMS FD010x	1400	30	Controller for up to 4 popular drives, formatter, quad board.
FD010xD	1600	30	Same as above but for dual density.
FT0102	2600	TBA	System with no drive, software selectable density, single or dual sided, auto bootstrap, write protect, formatter, quad board.
FT0112	3250	TBA	FT0102 with 1 single-sided drive.
FT0122	3900	TBA	FT0102 with 2 single-sided drives.
FT0117	3500	TBA	FT0102 with 1 dual-sided drive.
FT0127	4400	TBA	FT0102 with 2 dual-sided drives.

Table 14
Disk Controllers and Disks (Other than Floppies)

Model	Price	Delivery	Description
AED All prices include educational discount (25%). 2200B "Kit"	1166	30-60	Controller for RK05 drives or up to 4 Pertec 3000 drives, up to 20 megabytes, 1500 rpm, RK handler compatible, dual interface card.
2200B "System"	2081	30-60	Same as above except with power supply, enclosure and status indicators.
ANDROMEDA RKX11	7500	Stock-60	Disk subsystem with 1 5-megabyte Caelus drive, 1 fixed and 1 removable, front load, 2400 rpm, 100 tpi, quad board, RK handler compatible.
RKX11-A	7750	Stock-60	Same as above except with a 10-megabyte drive.
AVIV DFS903	8100	45	Disk subsystem with 10-megabyte drive.

Table 14 Continued

Model	Price	Delivery	Description
COMPUTER MARKETING 5.0MB	7400	30-60	Disk subsystem with 1 5-megabyte drive, 1 fixed and 1 removable, front load, 100 tpi, RK handler, RK05 media read compatible only, 2 dual boards.
10.0MB	8545	30-60	Disk subsystem with 1 10-megabyte drive, 5540 top load, 2400 rpm, 200 tpi, RK handler compatible.
DATARAM BC-203-7	2800	30	Bulk Core Disk Emulator: Power supplies, cabinet, etc., for up to 2 core modules, controller is RF-11 handler compatible, 700-nsec access time, 5-microsec word rate.
BC-203-15 3/4 Core Mod	2800 4500	30 30	Same as above except up to 8 modules. Core module containing 256K bytes.
DEC RKV11-AA	9900		Disk subsystem with 1 2.5-megabyte removable disk, front load, 1500 rpm, 100 tpi, dual board interface, RK media and handler compatible.
RKV11-DE	11050		Same as above but with cabinet.
RKV11-XX	16150		Same as above but also with one fixed drive.
RL01	5100		Subsystem with 5.2-megabyte removable disk with controller.
DILOG DQ100	1995		Disk controller for up to 80 megabytes, front or top load, 1500 or 2400 rpm, 100 or 200 tpi, microprocessor based, emulates DEC RKV11, RT-11 and RSX-11 compatible, quad board.
DYNUS DI-C03	2000	30-45	Disk controller for up to 20 megabytes, front or top load, 1500 and 2400 rpm, 100 and 200 tpi, microcoded microprocessor, emulates DEC RK-11 disk subsystem, quad board.
EQUIPMENT RESOURCES ER1010	6900		Disk subsystem, 10 megabytes, transparent to RT-11.
FIRST RKV11-AA	9220	Stock-30	DEC RKV11-AA
RKV11-DE	10198	Stock-30	DEC RKV11-DE
RKV11-XX	14695	Stock-30	DEC RKV11-XX
GENERAL ROBOTICS CDV11	13000	60	Disk subsystem with 20-megabyte disk, 3 fixed, 1 removable, front load, 1500 rpm, 200 tpi, RK-11 handler compatible, quad board.
PHYSTAR PF-LSI-RK	2000	Stock	Disk controller, up to 20 megabytes, front or top load, 1500 rpm, 100-200 tpi, RK-11 handler compatible, quad board.
PLESSEY PMDSV11/B	TBA	60	Disk subsystem with 5-megabyte drive, 1 fixed, 1 removable, front load, 2400 rpm, 100 tpi, RK handler compatible, RK05 media compatible, quad Qbus board.
PMDSV11/C	TBA	60	Disk subsystem with 10-megabyte drive, 1 fixed, 1 removable, top load, 1500 or 2400 rpm, 200 tpi, RK handler compatible.
PM DS-11B	8100	45	Disk subsystem with 2.5-megabyte front-load disk with Unibus 4 card controller, backplane and interface cable, RK05 media and RK handler compatible, uses PM VU-11 bus converter.
RDA RDD10	9500, 8990	60	Disk subsystem with 10-megabyte drive, 1 fixed, 1 removable, front or top load, 2400 rpm, 200 tpi, RK handler compatible, read compatible with RK05 if front load, quad board.
RDD10-1	5790, 5270	60	Second 10-megabyte drive and cable.
WESTERN PERIPHERALS DC230-LSI	5050	Stock-30	Controller for up to 20 megabytes, front or top load, 1500 or 2400 rpm, RK handler compatible, RK05 media handler compatible with correct drive, includes

Table 14 Continued

Model	Price	Delivery	Description
			cables to Qbus and first drive, quad board. External chassis which provides 2 additional hex Unibus SPC slots. Can be configured with drive of choice and supplied as computer disk system.
XEBEC 5500	3250	30	Disk controller for up to 4 10-megabyte drives, top or front load, 1500 and 2400 rpm, 100 and 200 tpi, controller in rack-mount enclosure, interfaces with all commercially available disk drives, handler \$300 extra, not RK05 format.
5800	2800	30	Disk controller for up to 20 megabytes, top or front load, 1500 or 2400 rpm, 100 or 200 tpi, RK handler compatible, media compatible if correct drives used, quad board.
7600	7950	30	"CDC storage module" protocol controller, up to 1200 megabytes, up to 4 drives, 3½-in. rack mount, RT-11 handler \$300 extra.
XYLOGICS C45L	3575		Disk controller boards (2 hex and 1 quad) and backplane (4 hex slots) with Qbus dual board interface and cable.
C45L-1	4375	30	C45L disk controller in enclosure with power supply, for up to 20 megabytes, front or top load, 1500 or 2400 rpm, Diablo 31 protocol drives, RK handler compatible.
S45L-1/5.0	8200	30	Subsystem with C45L controller and 1 5-megabyte drive, front load, 1500 or 2400 rpm, 100 tpi, RK05 media and handler compatible if front load.
S45L-1/10	9345	30	Same as above except 10-megabyte drive.

Table 15 Terminators, Bootstrap, and Refresh

Model	Price	Delivery	Description
ADAC 1800 REV11-A	320	Stock-30	DEC REV11-A
1800 REV11-C	320	Stock-30	DEC REV11-C
ANDROMEDA MREF11	195	Stock-30	Memory refresher.
DEC TEV11 REV11-A	110, 105, 100, 320, 304, 291		Bus terminator, dual board. Bus terminator, refresh, bootstrap, diagnostics, dual board.
REV11-C BDV11-AA	320, 304, 291, 750		Refresh/bootstrap, diagnostics. Bootstrap/diagnostics/PROM, sockets for 16K ROM and 2K EPROM, quad board.
FIRST TEV11 REV11-A REV11-C	97, 282, 282	Stock-30, Stock-30, Stock-30	DEC TEV11, DEC REV11-A, DEC REV11-C
MDB MLSI-TEV MLSI-REV11-A MLSI-REV11-C	100, 275, 275	14, 14, 14	DEC TEV11, DEC REV11-A, DEC REV11-C
NEWMAN TEV11 REV11-C REV11-C	105, 304, 304	Stock, Stock, Stock	DEC TEV11, DEC REV11-A, DEC REV11-C
PLFESSEY PM REV 11	300	45	Terminator/refresh/bootstrap, and controller for 16-switch register, dual board, different versions available.
RDA TEV11 REV11-A REV11-C REV11-H	110, 99, 320, 288, 320, 288, 550	Stock, Stock, Stock, 30	DEC TEV11, DEC REV11-A, DEC REV11-C, Remote 11 bootstrap.
SFC SEC-TEV11 SFC-REV11-A SFC-REV11-C	135, 325, 325	30, 30, 30	DEC TEV11, DEC REV11-A, DEC REV11-C
XYLOGICS			Bootstrap, 512 x 16 ROM, can have Qbus jumper function.

Table 16 Magnetic Tape, DECTape, and Paper Tape

Model	Price	Delivery	Description
AVIV TFC901	2900		Magnetic-tape controller, NRZI, 12.5 to 125 ips, 1 dual and 1 hex board, MT handler compatible.
TFC902	3700		Same as above except NRZI/PE.
COMPUTER MARKETING 1139-8-2-LSI	5250	30	Magnetic-tape subsystem, NRZI, 556 or 800 bpi, 7 in., 25 ips, 7 or 9 track, quad board, MT compatible.
1139-6-2-LSI	6400	30	Magnetic-tape subsystem, PE, 1600 bpi, 7 in., 25 ips, 9 track, quad board, MT compatible.
1139-86-2-LSI	6900	30	Magnetic-tape subsystem, PE, 800 or 1600 bpi, 7 in., 25 ips, 9 track, quad board, MT compatible.
1639-8-2-LSI	5500	30	Magnetic-tape subsystem, NRZI, 556 or 800 bpi, 8½ in., 25 ips, 7 or 9 track, quad board, MT compatible.
1639-6-2-LSI	6650	30	Magnetic-tape subsystem, PE, 1600 bpi, 8½ in., 25 ips, 9 track, quad board, MT compatible.
1739-86-2-LSI	7200	30	Magnetic-tape subsystem, NRZI/PE, 800 or 1600 bpi, 8½ in., 25 ips, 9 track, quad board, MT compatible.
1739-8-4-LSI	6075	30	Magnetic-tape subsystem, NRZI, 556 or 800 bpi, 10½ in., 45 ips, 7 or 9 track, quad board, MT compatible.
1739-6-4-LSI	7225	30	Magnetic-tape subsystem, NRZI, 1600 bpi, 10½ in., 45 ips, 9 track, quad board, MT compatible.
1739-6-4-LSI	7775	30	Magnetic-tape subsystem, NRZI/PE, 1600 bpi, 10½ in., 45 ips, 9 track, quad board, MT compatible.
1739-8-7-LSI	8800	30	Magnetic-tape subsystem, NRZI, 556 or 800 bpi, 10½ in., 75 ips, 7 or 9 track, quad board, MT compatible.
1739-6-7-LSI	9850	30	Magnetic-tape subsystem, PE, 1600 bpi, 10½ in., 75 ips, 9 track, quad board, MT compatible.
1739-86-7-LSI	10850	30	Magnetic-tape subsystem, NRZI/PE, 800 or 1600 bpi, 10½ in., 75 ips, 9 track, quad board, MT compatible.
COMPUTER OPERATIONS CO-3000LSI	2495	30	DECTape subsystem, rack mount, 1 drive, 300 bpi, media compatible with PDP-10 DEC tape, quad board controller, expandable up to 4 drives, does not format, handler \$275 extra, can be used as system device.
CO-3005D	1450	30	Rack-mount expansion slave drive for CO-3000LSI.
CO-3300LSI	2800	30	Same as CO-3000LSI except portable version in aluminum suitcase.
DEC PRS01	750, 713, 683		Portable paper-tape reader, 300 or 2400 baud, 20-mA current loop uses DLV11.
DILOG DQ120	2295	30	Magnetic-tape controller, NRZI, 7 track at 200, 556, or 800 bpi, 9 track at 800 bpi, 12.5 to 125 ips, up to 8 drives, RT-11 and RSX-11 compatible, completely emulates DEC TM11 controller.
DYNUS DI-CO4	2800	30	Magnetic-tape controller, NRZI, 7 track at 200, 556, and 800 bpi, 9 track at 800 bpi, 12.5 to 75 ips, up to 4 drives, microcoded microprocessor, RT-11 and RSX-11S compatible, emulates DEC TM-11/TU10.
EECO E-9000-LSI-RP	250	40-50	Paper-tape reader and punch controller (for EECO products), RT handler compatible, diagnostics and cable included, negative TTL logic output, dual card. Peripherals for above controller:
RPI-9362	2750	40-50	Paper-tape reader and punch, rack mount, fan fold, 60-cps punch and 300-cps reader, with power supply.
TR-9301	820	40-50	Paper-tape reader, rack mount, 300 cps, with power supply.

Table 16 Continued

Model	Price	Delivery	Description
TPF-9962	2195	40-50	Paper-tape punch, rack mount, fan fold, 60 cps, with power supply.
2001-2	290	Stock-14	Paper-tape reader, not rack mount, 150 cps, no power supply.
FIRST PRS01	660	Stock-30	DEC PRS01
MDB			
MLSI-PC11PR	550	Stock-14	Paper-tape reader and punch controller for all popular readers and punches, PC-11 software compatible, connectors and cables, dual board.
MLSI-PC11R	450	Stock-14	Same as above except for reader only.
MLSI-PC11P	450	Stock-14	Same as above except for punch only.
NEWMAN			
MLSI-PC11B	523	Stock	MDB MLSI-PC11PR
PLESSEY			
PMPC11	3035	45	Paper-tape subsystem, rack mount, 1000-cps paper-tape reader and 50-cps punch, quad Unibus. Other configurations available.
TBA	8720	45	Magnetic-tape subsystem, NRZI or PE, 10½ in., 45 ips, 9 track, 4 Unibus controller cards, backplane and interface cables, can be expanded to 8 drives, MT handler compatible, requires PM VU-11 converter.
QUANTEX			
650	675		Cartridge-tape drive.
200	250		Minicartridge-tape drive.
2200	1695		Tape cartridge subsystem, 1 drive, PE, 1600 bpi, 30 ips, 1 or 4 track, 5¼-in. package.
2400	2120		Tape cartridge subsystem, 1 drive, PE, 1600 bpi, 30 ips, 1 or 4 tracks, 8¼-in. rack-mount package.
2710	1745		Tape cartridge subsystem, 1 drive, PE, 1600 bpi, 30 ips, 4 track, portable system in an aluminum suitcase, connects to LSI-11 through cable connected to terminator slot.
RDA			
RDT812	7490	60	Magnetic-tape subsystem, NRZI, 8½ in., 12 ips, 7/9 track, 2 dual boards.
RDT1025	7990	60	Magnetic-tape subsystem, NRZI, 10½ in., 25 ips, 7/9 track, 2 dual boards.
RDT1025DD	9990	60	Magnetic-tape subsystem, NRZI/PE, 10½ in., 25 ips, 9 track, 2 dual boards.
CO3000LSI	2545	15	Computer Operations CO3000LSI
CO3005D	1450	30	Computer Operations CO3005D
CO3300LSI	2875	15	Computer Operations CO3300LSI
PTR150	900	30	Paper-tape reader, 150-cps reader and controller, dual board.
RDTP	4295	45	Paper-tape subsystem, 60-cps punch, 300-cps reader, controller, dual board.
MLSI-PC11PR	550	Stock	MDB MLSI-PC11PR
MLSI-PC11R	450	Stock	MDB MLSI-PC11R
MLSI-PC11P	450	Stock	MDB MLSI-PC11P
REMEX			
RAF6500	1020	60	500-cps paper-tape reader with fanfold tanks.
RAF6075	2675	60	75-cps punch and 300-cps reader for fanfold tape.
RAF6120	3125	60	120-cps punch and 300-cps reader for fanfold tape.
WESTERN PERIPHERALS			
TC150	3500	Stock-30	Magnetic-tape controller for up to 8 drives, NRZI/PE, 12.5 to 125 ips, 7 or 9 track, 1 dual interface board and quad backplane with 4 quad boards, RT-11 MT handler compatible, DEC or IBM format. Available in system configuration which includes drive of choice.
TC158	TBA	TBA	Same as above except only NRZI.
XEBEC			
9000NRZI	2950	30	Magnetic-tape controller for up to 4 popular tape drives, NRZI, 200-800 bpi, 7 or 9 track, 3½-in. rack-mount package, handler \$300 extra, quad board.
9000NRZI/PE	3950	30	Magnetic-tape controller for up to 4 popular tape drives, NRZI/PE, 200-800 bpi, 7 or 9 track, 3½-in. rack-mount package, handler \$300 extra, quad board.

Table 17
Analog Systems

Model	Price	Delivery	Description
ADAC			
1030	595-1095	Stock-30	12-bit A/D converter, 16, 32, or 64 channels, 35 kHz, quad board, 100 kHz \$300 extra, ±15 V DC/DC converter \$100 extra.
1400	450-750	Stock-30	12-bit D/A converter, 1 to 4 channels, 2 axes, 3-wire sense, dual board, ±15 V \$100 extra.
1108/1116RL	895, 1195	Stock-30	8- or 16-channel A/D converter, high common mode, 200 Hz, low-level series, quad board, ±15 V \$100 extra.
1108/1116RX	695, 995	Stock-30	8- or 16-channel A/D converter, high common mode, low-level multiplexer expander system for 1108/1116RL, quad board, ±15 V \$100 extra.
1014	1095	Stock-30	14-bit A/D converter, 16 channel, dual board, ±15 V \$100 extra.
1012	595-1000	Stock-30	12-bit A/D converter, 16 SE or 8 DI, 35 kHz, dual board, 100 kHz \$300 extra, ±15 V \$100 extra.
1012EX	350	Stock-30	Mux expander for 1012, up to 64 channels, dual board.
ANDROMEDA			
ADC11	850	Stock-30	12-bit A/D converter, 16 channel, 16-word FIFO, sequence truncate, and burst modes, dual board, includes ±15 V.
DAC11	700	Stock-30	12-bit D/A converter, 4 channel, remote sense, 16 TTL output lines, dual board, includes ±15 V.
CB11	150	Stock-30	Connector box series facilitates external connections to the ADC11, DAC11, PRTC11, and DRV11.
DATA TRANSLATION			
DT1760 Series			Quad boards, DMA option, 100 kHz, programmable gain options, calibration and diagnostics included, RT-11 compatible.
DT1761	995	5	12-bit A/D converter, 16-SE or 8-DI channels plus 2 12-bit D/A converters with Z control.
DT1762-16	695	5	12-bit A/D converter, 16-SE or 8-DI channels.
DT1762-64	1095	5	12-bit A/D converter, 64-SE or 32-DI channels.
DT1764-16	795	5	12-bit A/D converter, 16-SE or 8-DI channels, input ±10 mV to ±10 V.
DT1764-64	1195	5	12-bit A/D converter, 64-SE or 32-DI channels, input ±10 mV to ±10 V.
DT1765	1095	5	12-bit A/D converter, 16-SE or 8-DI channels, input ±10 mV to ±10 V, plus 2 12-bit D/A converters with Z control.
DT1766	695	5	12-bit D/A converter, 4 channel, 4 digital outputs, separately selectable FSR.
DT1768-4	895	5	12-bit A/D converter, 4 channel, ±250-V common mode, ±10-mV to ±10-V inputs.
DT1768-12	1445	5	Same as DT1768-4, but with 12 input channels.
DT1769	1195	5	Same as DT1768-4, but with 2 12-bit D/A converters with Z control.
DT2760 Series			Dual boards; 100 kHz, programmable gain options, calibration and diagnostics included, RT-11 compatible.
DT2762	695	5	12-bit A/D converter, 16-SE or 8-DI channels.
DT2764	795	5	12-bit A/D converter, 16-SE or 8-DI channels, input ±10 mV to ±10 V.
DT2765	895	5	12-bit A/D converter, 4 channel, ±250-V common mode isolation, ±10-mV to ±10-V inputs.
DT2766	695	5	12-bit D/A converter, 4 channel, plus 4 digital outputs, separately selectable FSR.
DT2767	495	5	Same as DT2766 except has 8-bit resolution.
DEC			
AAV11-A	900, 855, 819		12-bit D/A converter, 4 channel, quad board.
ADV11-A	1000, 950, 910		12-bit A/D converter, 16 channel, quad board.
FIRST			
AAV11-A	792	Stock-30	DEC AAV11-A
ADV11-A	880	Stock-30	DEC ADV11-A
MDB			
MLSI-DT1761	995	Stock-14	Data Translation DT1761

Table 17 Continued

Model	Price	Delivery	Description
RDA			
600-11D	750	30	ADAC 12-bit D/A converter, 4 channel.
600-16	695	30	ADAC 12-bit A/D converter, 16 channel.
600-32	795	30	ADAC 12-bit A/D converter, 32 channel.
600-64	1095	30	ADAC 12-bit A/D converter, 64 channel.
1012	695	30	ADAC 1012
ADV11-A	1000, 975	Stock	DEC ADV11-A
AAV11-A	900, 875	Stock	DEC AAV11-A
DT1762	695	30	Data Translation DT1762
DT1761	995	30	Data Translation DT1761
DT1765	1095	30	Data Translation DT1765
DT2762	695	30	Data Translation DT2762
DT2764	795	30	Data Translation DT2764
DT2766	695	30	Data Translation DT2766
DT2767	495	30	Data Translation DT2767

Table 18
Clock Boards

Model	Price	Delivery	Description
ADAC			
KWV11-A	600	Stock-30	DEC KWV11-A
ANDROMEDA			
PRTC11	600	Stock-30	Programmable real-time clock, 13 internally generated timing rates, software selectable, dual board, frequency count mode, superset of DEC KWV11-A.
DATA			
TRANSLATION			
DT2769	575	5	Programmable real-time clock, KMV11 software compatible, equivalent to DEC KWV11-A, dual board.
DEC			
KWV11-A	600, 570, 546		Programmable real-time clock, 4 software modes and 5 crystal frequencies, quad board.
DIGITAL			
PATHWAYS			
TCU-50	295	Stock-14	Time/date unit, date and time, battery powered, over 3 months without recharging, charges when computer is on, dual board.
FIRST			
KWV11-A	528	Stock-30	DEC KWV11-A
MDB			
MLSI-KW11-P	550	Stock-14	Programmable real-time clock, 4 software-selectable rates, quad board.
NEWMAN			
MLSI-KW11-P	428	Stock	MDB MLSI-KW11-P
PLESSEY			
PM KW11-P	630	45	Programmable real-time clock, similar to DEC, quad board, must be used with PM VU11 converter.
RDA			
KWV11-A	600, 575	30	DEC KWV11-A
MLSI-KW11-P	550	15	MDB MLSI-KW11-P
DT2769	575	30	Data Translation DT2769
TCU-50	390	30	Digital Pathways TCU-50

Table 19
Graphics and Alphanumeric Controllers

Model	Price	Delivery	Description
COMPUTER			
MARKETING			
QB11-DC	750	60-90	64-character x 16-line alphanumeric display controller with composite video output for raster monitor, quad board, Qbus terminator sockets, terminators included, 16K x 16 ROM keyboard input.
COMPUTER			
TECHNOLOGY			
VIURAM L11/16	475	30	64-character x 16-line alphanumeric display controller with composite video output for raster monitor, dual board, software \$20 extra.
DATA			
TRANSLATION			
DT1761-0	795	5	2-channel, 12-bit D/A converter with Z control.

Table 19 Continued

Model	Price	Delivery	Description
DT1761-0	795	5	2-channel, 12-bit D/A converter with Z control.
DEANZA			
ID1000	3500		256 x 256 x 6-bit pixels, system includes memory, interface, 6-bit D/A converter, video generator, power supply and chassis, 16 line x 16 character annotation area, RS170 protocol. Same as above for a color system.
MATROX			
MLSI-2480	495		80 characters x 24 lines of 5 x 7 or 7 x 9 alphanumeric display controller for MLSI graphic VRAMs, composite video output for raster monitor, quad board.
MLSI-256	895		Graphic VRAM, display field 256 x 256, 7/8 x 10 1/2 in. board.
MLSI-256-512	1095		Graphic VRAM, display field 256 x 512, 7/8 x 10 1/2 in. board.
MLSI-512	1395		Graphic VRAM, display field 512 x 512, 7/8 x 10 1/2 in. board.
MLSI-256-1024	1395		Graphic VRAM, display field 256 x 1024, 7/8 x 10 1/2 in. board.
NEWMAN			
MLSI-2480	495	Stock	Matrox MLSI-2480
MLSI-256	895	Stock	Matrox MLSI-256
MLSI-256-512	1095	Stock	Matrox MLSI-256-512
MLSI-512	1395	Stock	Matrox MLSI-512
MLSI-256-1024	1395	Stock	Matrox MLSI-256-1024
RDA			
VURAM	575	Stock	64-character x 16-line alphanumeric display controller with composite video output for raster monitor, dual board, software \$20 extra.

Table 20
Bus Translators and Bus Redrivers

Model	Price	Delivery	Description
ACC			
UA/11-C	650		Qbus to Unibus converter, quad board.
ACT			
10001	675		"Univerter." Qbus to Unibus, quad board, provides priority control and virtual memory map capability.
ADAC			
1900	450	Stock-30	Unibus from Qbus translator, quad Unibus board.
1950	400	Stock-30	Qbus repeater, dual board, drives 15 unit loads.
ANDROMEDA			
IBV11-A	650	45-60	DEC IBV11-A
COMPUTER			
MARKETING			
UV-11	675	60-90	ACT 10001
DATA			
TRANSLATION			
DT2770	750	5	Qbus to IEEE/488 instrument bus converter, dual board.
DEC			
IBV11-A	750, 713, 683		Qbus to IEEE/488 instrument bus converter, dual board.
FIRST			
IBV11-A	660	Stock-30	DEC IBV11-A
GENERAL			
ROBOTICS			
UNIBUS	850	30	Qbus to Unibus converter and Unibus terminator, quad board.
MDB			
MLSI-IBV11	700	Stock-14	DEC IBV11-A
NATIONAL			
INSTRUMENTS			
GPIB11V-1	695	Stock-30	Qbus to IEEE/488 instrument bus converter, cable and software included, dual board.
PLESSEY			
PM VU11	590	45	Qbus to Unibus converter, includes memory refresh, priority interrupt arbitration, Qbus and Unibus terminator, drives 19 unit loads, quad board.
RDA			
1900	450	30	ADAC 1900
10001	750, 695	15	ACT 10001

Table 20 Continued

Model	Price	Delivery	Description
IBV11-A	750, 715	Stock	DEC IBV11-A
DT2770	750	30	Data Translation DT2770
SEC			
SEC-DPV-11	2495	30-45	Dual-port 8K static RAM memory, Qbus and Unibus, 2 quad boards.
CC-LS11	1545	Stock-30	Qbus to CAMAC bus, 25 CAMAC stations, dual board, bus buffer option \$175 extra.
SEC-BB	195	Stock-30	Buffers or redrives Qbus lines, drives 4 m of flat cable, dual board.
XYLOGICS Univertex			ACT 10001

Table 21
Miscellaneous Interfaces

Model	Price	Delivery	Description
ADAC 1620	350	Stock-30	DMA interface, to control direct memory access transfers to and from both analog and digital peripherals, dual board.
1000 PSC	200	Stock-30	Power-up/down sequencer, line clock, 5 strap-selectable crystal-controlled frequencies, ±15-V regulator.
ANDROMEDA DRV11-B	510	45-60	DEC DRV11-B
SW11	120	45-60	CPU control-switch module, power-up sequencer, line-clock generator.
LPI11-A	295	45-60	Line-printer interface for LA180, dual board.
LPI11-B	340	45-60	Line-printer interface for Centronics, dual board.
LPI11-C	450	45-60	Line-printer interface for Diablo 1300, dual board.
COMPUTER MARKETING LPLSI	450	60-90	Line-printer controller for Centronics printers.
COMPUTER TECHNOLOGY DMA-L11	495	30	General-purpose DMA interface, 16-bit bidirectional tri-state data bus allows direct programmed I/O with the external device, 8 I/O registers, on-board PROM for bootstrap, dual board.
DEC DRV11-B	580, 551, 528		General-purpose DMA interface, quad board.
KPV11-A	290, 276, 264		Power sequencer, line clock, crystal clock, dual board.
KPV11-B	315, 299, 287		Power sequencer, line clock, crystal clock, bootstrap module, with terminator, dual board.
EDUCATIONAL DATA SYSTEMS 500	1680		DMA multiplexer 4-port module, expansion in 4-port increments, up to 128 ports.
501	540		4-port expansion board for Model 500.
FIRST DRV11-B	520	Stock-30	DEC DRV11-B
KPV11-A	247	Stock-30	DEC KPV11-A
KPV11-B	277	Stock-30	DEC KPV11-B
MDB MLSI-SMU	350	Stock-14	System-monitoring unit, switches and indicators on panel, bus terminator, power on/off, failure sequencing, equivalent to DEC KPV11, dual board.
MLSI-LP11	450	Stock-14	Line-printer controller for popular line printers, dual board.
MLSI-CR11	650	Stock-14	Card-reader interface, for popular card readers, dual board.
MLSI-XYV11	550	Stock-14	Incremental plotter interface, parallel interface for Houston or Calcomp XY plotters or equivalent, dual board.
NETCOM KPV11-1180	295	Stock-14	Line-printer controller for popular printers and LA180.
P100	85	Stock-14	Power fail, restart module, single board, monitors AC and DC interrupts on low. Restarts to ODT in semiconductor memory.

Table 21 Continued

Model	Price	Delivery	Description
P100-01	95	Stock-14	P100 with driver for DC on LED.
P100-02	105	Stock-14	P100 with LTC logic on board.
P100-03	115	Stock-14	P100 with -01 and -02.
P101	150	Stock-14	Front panel switch group, initialize, LTC, and power-up sequencer, can initialize without losing memory.
C-1101	750	Stock-14	Multiplexed communication serial line control, synchronous or asynchronous, 3 channels, expandable to 31 channels, quad board.
CV-1102	600	Stock-14	Expander of 4 channels for CV-1101, dual board.
CV-1116	450	Stock-14	CRC 16 registers, 16 half-duplex lines or 8 full-duplex lines, dual board.
CV-1120	TBA	TBA	DMA, full-duplex, 1-megabaud, user-programmable microprocessor on board.
NFWMAN MLSI-CR11	650	Stock	MDB MLSI-CR11
MLSI-LP11	450	Stock	MDB MLSI-LP11
DRV11-B	551	Stock	DEC DRV11-B
MLSI-SMU	333	Stock	MDB MLSI-SMU
RDA MLSI-XYV11	550	30	MDB MLSI-XYV11
MLSI-CR11	650	15	MDB MLSI-CR11
DRV11-B	580, 522	Stock	DEC DRV11-B
LAV11-PA	3330, 2997	15	LA180, 180-cps matrix printer with quad-board controller.
PB600	4795	15	600-cps matrix printer with dual-board controller, LP compatible.
285CR	4400	90	285-cpm Documentation card reader and dual-board controller, CR handler compatible.
KPV11-A	290	30	DEC KPV11-A
SEC SEC-TD	495	30	Triac driver, drives 4 triacs.
XYLOGICS 300-005-900			Power sequencer, terminator, provides line-time clock, halt, boot initialize.

Table 22
Breadboards and Wire-Wrap Boards

Model	Price	Delivery	Description
ANDROMEDA DRV11-P	225	45-60	DEC DRV11-P
MLSI-1710	210	Stock-30	MDB MLSI-1710
ARTEC WW11.5	35	Stock	Dual wire-wrap board, designed for insertion of wire-wrap sockets, for 14- or 16-pin dips.
WW-11	75	Stock	Quad wire-wrap board, designed for insertion of wire-wrap sockets, up to 130 14- or 16-pin dips.
COMPUTER MARKETING	34 50	30-60 30-60	Dual extender board. Quad extender board.
DEC W9511	125, 119, 114		Quad wire-wrap board, no sockets, chip capacity: 72 14 pin or 61 16 pin; 5 24 pin and 3 40 pin.
W9512	70, 67, 64		Dual wire-wrap board, no sockets, chip capacity: 32 14 pin or 27 16 pin; 5 24 pin and 3 40 pin.
W9514	220, 209, 200		Quad wire-wrap board, 58 16-pin dip sockets.
W9515	120, 114, 109		Dual wire-wrap board, 25 16-pin dip sockets.
DRV11-P	275, 261, 250		Quad wire-wrap foundation module containing bus interface logic.
DCK11-AC	175, 168		LSI-11 bus interface foundation kit, dual breadboard with new DEC LSI interface logic chips, 6 chips for all bus logic, flat cable and connector, unassembled.
DCK11-AD	275, 264		Dual breadboard with new DEC LSI interface logic and DMA chips, 7 chips for all bus logic, flat cable connector and cable, unassembled.
DOUGLAS			Variety of DEC-compatible extenders and breadboards, blank, drilled, and wire-wrap boards.

Table 22 Continued

Model	Price	Delivery	Description
	5-9		Single boards, single height.
	10-40		Dual boards, single height and extended height.
	20-150		Quad boards, extended height.
	32-215		Hex boards, extended height.
FIRST DRV11-P	242	Stock-30	DEC DRV11-P
GARRY CIP2/11-16-15-3B	125	15-30	Dual universal wire-wrap board, accommodates mixed LSI and DIP.
CIP4/11-32-15-3B	254	15-30	Quad universal wire-wrap board, accommodates mixed LSI and DIP.
CIP6/11-48-15-3B	375	15-30	Hex universal wire-wrap board, accommodates mixed LSI and DIP.
GEN/COMP 2040-01	99		Quad universal wire-wrap board, 72 IC positions.
2040-01-S	165		Same as 2040-01 with sockets and capacitors.
2040-02	57		Dual universal wire-wrap board, 36 IC positions.
2040-02-S	165		Same as 2040-2 with sockets and capacitors.
INTERCONN D101-PS	165	Stock-30	Quad wire-wrap board, 72 14- or 16-pin IC capacity, sockets and capacitors.
D101-P	99	Stock-30	Same as above but without sockets and capacitors.
D102-PS	86	Stock-30	Dual wire-wrap board, 36 14- or 16-pin IC capacity, sockets and capacitors.
D102-P	57	Stock-30	Same as above but without sockets and capacitors.
D103-PS	176	Stock-30	Quad wire-wrap board, 54 14- or 16-pin IC capacity, 2 universal rows, sockets and capacitors.
D103-P	93	Stock-30	Same as above but without sockets and capacitors.
D104-PS	93	Stock-30	Dual wire-wrap board, 24 14- or 16-pin IC capacity, 1 universal row, sockets and capacitors.
D104-P	60	Stock-30	Same as above but without sockets and capacitors.
D108-PS	265	Stock-30	Hex wire-wrap board, 90 14- or 16-pin IC capacity, 2 universal rows, sockets and capacitors.
D108-P	176	Stock-30	Same as above but without sockets and capacitors.
MDB MLSI-WWB1	75	Stock-14	Dual universal wire-wrap board, up to 3 40 pin, universal (.3, .4, .6), and 30 16 pin.
MLSI-11WWB	125	Stock-14	Quad universal wire-wrap board, up to 70 16-DIP positions, 6 40-pin universal (.3, .4, .6), and 60 16 pin.
MLSI-1710	175	Stock-14	Dual general-purpose interface module, with bus interface, 2 40-pin universal (.2, .3, .6), and 17 16 pin.
MLSI-11B	575	Stock-14	Quad DMA bus foundation module with DMA bus interface, 22 16 pin, 2 40-pin universal (.3, .4, .6).
MLSI-DRV11P	250	Stock-14	Quad bus foundation module with bus interface, 4 40-pin universal (.2, .3, .6), and 43 16 pin.
NETCOM DMFV-11	575	Stock-14	Quad DMA foundation module, about 30 mixed-IC capacity.

Table 22 Continued

Model	Price	Delivery	Description
NEWMAN DRV11-P	261	Stock	DEC DRV11-P
MLSI-DRV11P	238	Stock	MDB MLSI-DRV11P
MLSI-1710	166	Stock	MDB MLSI-1710
MLSI-WWB1	71	Stock	MDB MLSI-WWB1
MLSI-11WWB	120	Stock	MDB MLSI-11WWB
RDA DRV11-P	275, 248	30	DEC DRV11-P
MDB-11WWB	125	Stock	MDB MLSI-11WWB
MLSI-WWB1	75	Stock	MDB MLSI-WWB1
MLSI-1710	175	Stock	MDB MLSI-1710
SOUTHWEST SYSTEMS SWS-DEB	60	14	Dual height-extender board.
VECTOR 4607	16	Stock	General-purpose prototyping dual bare board, completely perforated on .1-in. centers.
XYLOGICS 300-007-900			Hex wire-wrap board, 3 sets of universal rows (.3 and .6), 70 holes each, 84 16-pin locations, 60-pin connector and 4 34-pin connectors.
300-*			Quad wire-wrap board, 2 sets of universal rows, 70 holes each, 56 16-pin locations, 1 50-pin and 1 34-pin flat cable connector.
300-044-900			Hex x 15-in. wire-wrap board, 12 40-pin (.3, .4, .5, .6) and 135 20-pin locations, and 3 60-pin connectors.

Table 23 Backplane Jumper Cable Assemblies

Model	Price	Delivery	Description
DEC BCV1A-xx	210, 200, 191		Jumper cable assembly, 2, 4, 6, or 10 ft, second to third backplane.
BCV1B-xx	290, 276, 264		Jumper cable assembly, 2, 4, 6, or 10 ft, backplane with terminator.
FIRST BCV1A-xx	185	Stock-30	DEC BCV1A-xx
BCV1B-xx	255	Stock-30	DEC BCV1B-xx
MDB MLSI-BCV02	200	Stock-14	Jumper cable assembly, second to third backplane.
MLSI-BCV01	200	Stock-14	Jumper cable assembly with terminator, first to second backplane.
NETCOM W551	27	Stock-14	DLV11 to 20-mA cable, 5 ft long, with Mate N Lok connector.
NEWMAN BCV1A-xx	200	Stock	DEC BCV1A-xx
BCV1B-xx	276	Stock	DEC BCV1B-xx
RDA BCV1A-xx	210, 189	30	DEC BCV1A-xx
BCV1B-xx	290, 261	Stock	DEC BCV1B-xx
XYLOGICS 300-041-900			Qbus jumper receiver card with sockets for terminator.
300-041-902			Qbus jumper originator card with sockets for terminator.
400-039-900			Jumper cables.

Table 24 Company Addresses

ACC
 Associated Computer Consultants
 228 East Cota Street
 Santa Barbara, CA 93101
 805-963-8801

ACT
 Able Computer Technology, Inc.
 1715 Langley Avenue
 Irvine, CA 92714
 714-547-6236

ADAC Corporation
 15 Cummings Park
 Woburn, MA 01801
 617-935-6668
 (90-day warranty. Resells DEC components. Configures systems to specification. Vendor of prepackaged LSI-11 systems.)

Advanced Computer Equipment
 1 Esquire Road
 Billerica, MA 01821
 617-667-2190

AED
 Advanced Electronics Design, Inc.
 440 Potrero Avenue
 Sunnyvale CA 94086
 408-733-3555
 (90-day warranty. 25% educational discount.)

AIS
 Advanced Interactive Systems
 8216 Pickering Street
 Philadelphia, PA 19150

Andromeda Systems, Inc.
14701 Arminta Street No. J
Panorama City, CA 91402
213-781-6000
(90-day warranty on moving parts.
1-year warranty on nonmoving parts,
out of warranty, replace at 25% list.
Resell DEC components at 15%
discount. Configures systems to
specification. Vendor of prepackaged
LSI-11 systems.)

Artec Electronics Inc.
605 Old County Road
San Carlos, CA 94070
415-592-2740

Automated Logic
2675 Cumberland Parkway
Atlanta, GA 30339
404-433-0505

AVIV
300 Sweetwater Avenue
Bedford, MA 01730
617-275-AVIV
(1-year warranty.)

Bell Labs
Murray Hill, NJ 07974
201-582-4373

Boston Systems Office, Inc.
400 Totten Pond Road
Waltham, MA 02154
617-894-7800
(90-day warranty.)

CalComp
California Computer Products, Inc.
Small Disk Operation
1270 North Kraemer Blvd.
Anaheim, CA 92806
714-632-5461
(120-day warranty. \$125 repair and
refurbish.)

Cambridge Memories, Inc.
12 Crosby Drive
Bedford, MA 01730
617-271-6463

Chrislin Industries, Inc.
Computer Products Division
31312 Via Colinas
Westlake Village, CA 91361
213-991-2254
(1-year warranty.)

Computer Marketing
257 Crescent Street
Waltham, MA 02154
617-894-7000
(Vendor of prepackaged LSI-11
systems.)

Computer Operations, Inc.
9700-B Palmer Hwy.
Lanham, MD 20801
301-459-2100
(1-year warranty.)

Computer Solutions
17922 Sky Park Circle, Suite L
Irvine, CA 92714
714-751-5040

Computer Technology
6043 Lawton Avenue
Oakland, CA 94618
415-451-7145
(6-month warranty.)

Controlex
16005 Sherman Way
Van Nuys, CA 91406
213-780-8877

CRDS
Charles River Data Systems, Inc.
4 Tech Circle
Natick, MA 01760
617-655-1800
(90-day warranty. Resells DEC com-
ponents. Vendor of prepackaged
LSI-11 systems.)

Cyberchron Corporation
5768 Mosholu Avenue
Riverdale, NY 10471
212-548-0503
(1-year warranty. Resells DEC com-
ponents and systems, at least 10%
discount.)

Datanet, Inc.
P.O. Box 30008
Eugene, Oregon 97403
503-687-2520

Dataram Corporation
Princeton-Hightstown Road
Cranbury, NJ 08512
609-799-0071
(1-year warranty.)

Data Systems Design, Inc.
3130 Coronado Drive
Santa Clara, CA 95051
408-249-9353
(90-day warranty. \$150 for fix,
module swap out.)

Data Translation
4 Strathmore Road
Natick, MA 01760
617-655-5300
(90-day warranty.)

DeAnza Systems
3444 De La Cruz
Santa Clara, CA 95050
408-988-2656

DEC
Digital Equipment Corporation
Components Group
One Iron Way
Malborough, MA 01752
617-897-5111
Engineering Hotline 800-225-9220
(90-day warranty. Repair service after
warranty.)
Direct Sales Catalog
Merrimack, NH 03054
800-258-1710

DECUS
126 Main Street
Maynard, MA 01754
617-897-5111

Digital Pathways Inc.
4151 Middlefield Road
Palo Alto, CA 94306
415-493-5544
(90-day warranty.)

Dilog
Distributed Logic Corporation
12800 Garden Grove Blvd, Suite G
Garden Grove, CA 92643
714-534-8950

D/L Logic, Inc.
141-A Central Avenue
Farmingdale, NY 11735
(Vendor of various breadboarding
supplies.)

Douglas Electronics Inc.
718 Marina Blvd.
San Leandro, CA 94577
415-483-8770
(30-day warranty.)

Dynus Inc.
3190 K Airport Loop Drive
Costa Mesa, CA 92626
714-979-6811

Educational Data Systems
1682 Langley Avenue
Irvine, CA 92714
714-556-4242

EECO
1441 E. Chestnut Avenue
Santa Ana, CA 92701
714-835-6000
(5% educational discount. 1-year
warranty.)

Electronic Service Specialists
W164 N8460 Hiawatha Avenue
Menomonee Falls, WI 53051
414-255-4634
(Repair service for LSI-11s, interfaces,
memories, etc. \$30/h flat rate, 5-day
turn around maximum.)

EM&M
12621 Chadron Avenue
Hawthorne, CA 90250
213-644-9881

Equipment Resources, Inc.
1175-4 Fleming Street
Smyrna, GA 30080
404-434-1382
800-241-9960
(1-year warranty.)

Fabri-Tek, Inc.
5901 S. County Road 18
Minneapolis, MN 55436
612-935-8811
(1-year warranty.)

First Computer Corporation
764 Burr Oak Drive
Westmont, IL 60559

Table 24 Continued

312-920-1050 (All prices are listed as educational discount. 90-day warranty. Vendor of prepackaged LSI-11 systems.) Forth, Inc. 815 Manhattan Avenue Manhattan Beach, CA 90266 213-372-8493 (20% educational discount. 180-day maintenance.) Garry Manufacturing Co. 1010 Jersey Avenue New Brunswick, NJ 08902 201-545-2424	(1-year unconditional warranty on MDB swap out. Repair service after warranty. Configures systems to specification. Vendor of prepackaged LSI-11 systems.) Memory Systems, Inc. 3341 W. El Segundo Blvd. Hawthorne, CA 90250 No phone listed. MicroMemory Inc. 9438 Irondale Avenue Chatsworth, CA 91311 213-998-0070 (1-year warranty.) Monolithic Systems Corporation 14 Inverness Drive Englewood CO 80110 303-770-7400 (10% educational discount. 1-year warranty.) Mostek Memory Systems 1215 West Crosby Road Carrollton, TX 75006 214-242-0444 (1-year warranty.) Motorola Integrated Circuits Division 3501 Ed Bluestein Blvd. Austin, TX 78721 512-928-2600 National Instruments 9513 Burnet Road Austin, TX 78758 512-837-9546 (1-year warranty.) Netcom 3687 Enochs Street Santa Clara, CA 95051 408-737-1191 (Educational discount when applicable. 1-year warranty. DEC components OEM. Configures systems to specification. Depot repair.) Newman Computer Exchange, Inc. 1250 North Main Street P.O. Box 8610 Ann Arbor, MI 48107 313-994-3200 (90-day warranty on most items. 10% off LSI-11 equipment on cash orders.) Norden Division United Technologies Corporation Norwalk, CT 06856 800-243-5840 (Manufacturer of high-reliability LSI-11 family emulators for military use.) Oregon Minicomputer Software, Inc. 2340 Southwest Canyon Road Portland, Oregon 97201 503-266-7760	Pfystar Microcomputer Products 1681 West Broadway Anaheim, CA 92802 714-635-7282 (5% educational discount. 1-year warranty. \$125 out of warranty on controller.) Plessey Peripheral Systems 17466 Daimler Avenue Irvine, CA 92714 714-540-9945 (Vendor of prepackaged LSI-11 systems.) Quantex Division North Atlantic Industries 200 Terminal Drive Plainview, NY 11803 516-681-8350 Radgo 3988 McMann Cincinnati, OH 45245 800-543-1986 (90-day warranty. Stocking distributor of DEC LSI-11 components.) RDA, Inc. 5012 Herzel Place Beltsville, MD 20705 301-937-2215 (3%-4% educational discount. 60- to 90-day warranty. Resells DEC components. Configures systems to specification. Vendor of prepackaged LSI-11 systems.) Remex Division Ex-Cell-O Corporation 1733 East Alton Street P.O. Box C19533 Irvine, CA 92713 714-557-6860 (90-day warranty.) SEC Standard Engineering Corporation 44800 Industrial Drive Fremont, CA 94538 415-657-7555 (1-year warranty. Configures systems to specification. Vendor of prepackaged LSI-11 systems.) SMS Scientific Micro Systems 777 East Middlefield Road Mountain View, CA 94043 415-964-5700 (90-day warranty on floppy drives. 1-year warranty on circuit cards.) Southwest Systems P.O. Box 2808 Laguna Hills, CA 92653 714-586-3233
Gen/Comp 6 Algonquin Road Canton, MA 02021 617-828-2008 (1-year warranty.) General Robotics Corporation 55-57 North Main Street Hartford, WI 53027 414-673-6800 (10% educational discount. 120-day warranty. Out of warranty service. Vendor of prepackaged LSI-11 systems.) Hamilton-Avnet 118 Westpark Road Dayton, Ohio 45459 800-762-4717 (Stocking distributor of LSI-11 components.) Heath Company Benton Harbor, MI 49022 616-982-3206 (Vendor of prepackaged LSI-11 systems.) Intel Memory Systems 1302 N. Mathilda Avenue Sunnyvale, CA 94086 408-734-8102 (1-year warranty.) Interconn Interconnection Technology Inc. 225 Lowell Road Hudson, NH 03051 617-871-1228 Matrox Electronic Systems P.O. Box 56 Ahuntsic Station Montreal, Quebec, Canada H3L 3N5 514-481-6838 (3-month warranty.) MDB Systems, Inc. 1995 North Batavia Street Orange, CA 92665 714-998-6900		

Table 24 Continued

Stanford Applied Engineering 340 Martin Avenue Santa Clara, CA 95050 408-243-9200	Unicomp, Inc. 8950 Westpart, Suite 312 Houston, TX 77063 713-782-1750 (Vendor of prepackaged LSI-11 systems.)	Xebec Systems Incorporated 2985 Kifer Road Santa Clara, CA 95051 408-988-2550 (90-day warranty.)
Tennecomp Systems, Inc. 785 Oak Ridge Turnpike Oak Ridge, TN 37830 615-482-3491 (Vendor of prepackaged LSI-11 systems.)	Vector Electronic 12460 Gladstone Avenue Sylmar, CA 91342 213-365-9661	Xylogics 42 Third Avenue Burlington, MA 01803 617-272-8140 (Vendor of prepackaged LSI-11 systems.)
Terak Corporation P.O.Box 3078 Scottsdale, AZ 85257 602-991-1580 (Vendor of prepackaged LSI-11 systems.)	Virtual Systems Inc. 1500 Newell Avenue No. 406 Walnut Creek, CA 94596 415-935-4944	Yourdan Inc. 1133 Avenue of the Americas New York, NY 10036 212-730-2670
UCSD University of California at San Diego PASCAL Group Institute for Information Systems UCSD Mail Code C-021 La Jolla, CA 92093 714-452-4723	Western Peripherals 1100 Claudina Place Anaheim, CA 92805 714-991-8700 (5% educational discount. 1-year warranty.)	

(Received for publication February 21, 1978;
revision accepted March 15, 1978.)