DEC Datasystem Series

MANAGEMENT SUMMARY

DEC's Commercial OEM product line—comprising the Datasystem Series and selected corporate configurations that run under RT-11, CTS-300, CTS-500 (RSTS/E), RSX-11M, and RSX-11M-PLUS operating systems—includes a wide range of components offering an equally broad range of capabilities. The range of processors used in the Datasystem family include the PDP-11/23, PDP/23-PLUS, 11/24, 11/34A, 11/44, and 11/70 CPUs. DEC has revised, reconfigured, and infused new blood into the Datasystem product line over the past several years in order to fine tune a comprehensive offering for the commercially-oriented business user. The VAX-11 based Datasystem 700 Series, however, has recently been dropped from the line-up.

The packaged systems offered by Commercial OEM are based on a focused number of hardware kernel configurations. DEC's goal at the systems level is to provide a full complement of configurations that are consistent and compatible in terms of packaging and design. Standardization of all UNIBUS systems in a 41.75 inch high H9642 cross-products cabinet reflects this packaging philosophy. Consequently, the design aim of the DEC Datasystem family is complete compatibility of interactive components, languages, and utilities across the range of Datasystem computers.

For the purpose of this report, we shall concentrate on those Datasystems that run under the commercially-oriented CTS-300 and CTS-500 (RSTS/E) operating systems. The CTS-300 operating system provides data processing capabilities for a small department or office. The CTS-500 operating system is for midrange and large multiuser, multiprogram systems and can support a large number of terminals simultaneously for order entry, text ▷
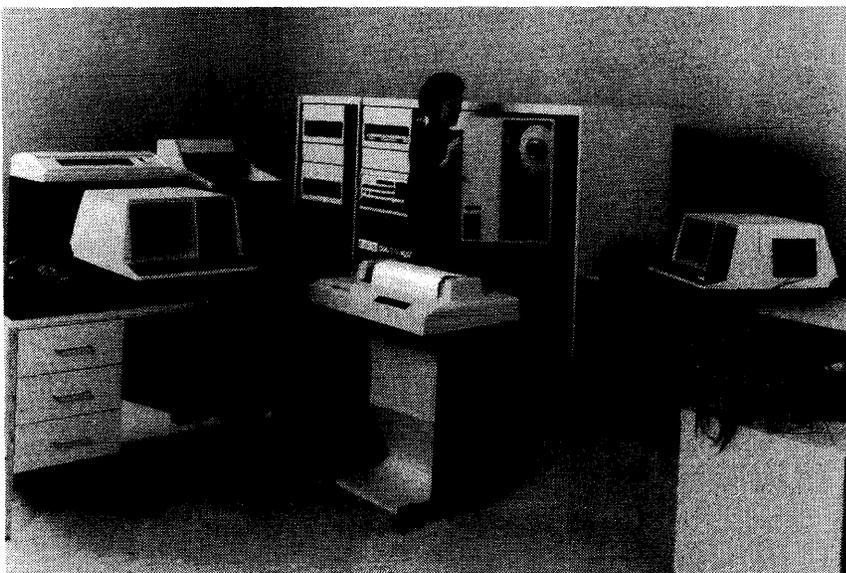
Digital's PDP-11 based Datasystems comprise an extensive list of packaged business systems and selected corporate configurations. The PDP-11/23, 11/24, 11/34, 11/44, and 11/70 processors combined with the CTS-300, CTS-500, RT-11, RSX-11M, and RSX-11M-PLUS operating systems provide Datasystem users with an impressive range of system capabilities.

MAIN MEMORY: 64KB to 3.5 megabytes
DISK CAPACITY: Up to 1.4 gigabytes
WORKSTATIONS: Up to 127
PRINTERS: Up to 900 lpm
OTHER I/O: Magnetic tape, cartridge tape, plotters, card readers.

CHARACTERISTICS

MANUFACTURER: Digital Equipment Corporation, Commercial Products Group, Continental Boulevard, Merrimack, New Hampshire 03054. Telephone: (603) 884-5111.

Digital Equipment Corporation (DEC) is the world's largest manufacturer of minicomputer systems. DEC's product lines include general-purpose computing systems, laboratory monitoring and control systems, process control systems, industrial control systems, editing and typesetting systems, and business computing systems. DEC maintains 200 sales and service offices in over 35 countries and has manufacturing facilities in Puerto Rico, Canada, Ireland, Scotland, Hong Kong, and Taiwan in addition to 17 facilities in the U.S. The company employs 44,000 persons worldwide and has installed more than 235,000 computer systems. ▶

Utilizing the PDP-11/23, 11/23-PLUS, 11/24, 11/44, 11/34A or 11/70 processor, the DEC Datasystem family supports a maximum of 127 terminals, 3.5 megabytes of memory, and up to 1.4 gigabytes of disk storage. The configuration shown includes a 176-megabyte disk drive, a VT100 terminal, a 300-lpm printer, a 1600-bpi magnetic tape transport, and a DECwriter hardcopy terminal.

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editing, inventory control, accounting, timesharing, transaction processing, statistical analysis, and other business applications.

Designed specifically for the lower end Datasystem family, CTS-300 is a compact, single- and multiuser realtime operating system that supports online applications and interactive program development. The current Datasystem product line running under CTS-300 includes:

- Model D315—PDP-11/23 dual RX02-based system with VT100 terminal, LA120-RA DECprinter III, or DECtype-300 word processing software; supports from 64KB to 256KB of memory and up to 3 terminals.

- Model D336—PDP-11/23 dual RL02-based system with VT100 terminal, LA120-RA DECprinter III, or LPV11-AA lineprinter; supports from 128KB to 256KB of memory and up to 8 terminals.

- Model D346—PDP-11/24 dual RL02-based system with VT100 terminal, LA120-RA DECprinter III, or LP11-AA lineprinter; supports up to 256KB of main memory and up to 12 terminals.

- Model D348—PDP-11/24 dual RK07-based system with VT100 terminal, LA120-RA DECprinter III, or LP11-AA lineprinter; supports up to 256KB main memory and up to 12 terminals.

- Model D356—PDP-11/34A dual RL02-based system with VT100 terminal, LA120-RA DECprinter III, or LP11-AA lineprinter; supports up to 256KB of main memory and up to 12 terminals.

- Model D358—PDP-11/34A dual RK07-based system with VT100 terminal, LA120-RA DECprinter III or LP11-AA lineprinter; supports up to 256KB of memory and up to 12 terminals.

CTS-500 (RSTS/E) is an interactive, multiuser/multi-tasking, general purpose operating system. Designed for the D500 Series, CTS-500 is based on the RSTS/E operating system (Verison 7.2) with software enhancements that provide a broad range of commercial data processing capabilities. CTS-500 (RSTS/E) systems support concurrent interactive timesharing, transaction/batch processing, and program development and can support up to 127 terminals. The current line of computers running under CTS-500 include:

- Model D522—PDP-11/24 dual RL02-based system with an LA120-RA DECwriter III console; supports from 256KB to 768KB with the Physical Address Extension memory module and can support up to four RL02 disks.

- Model D528—PDP-11/24 RK07-based system with LA120-DA DECwriter III, PDP-11 Cobol, or the Physical Address Extension (PAX); supports up to 1 megabyte of memory and up to 8 RK07 disk drives.

VENDORS: Manufacturer and OEM supplies. Contact DEC's Commercial Products Group to find the OEM supplier in your locale.

MODELS: DEC Datasystems D315 and D336 (PDP-11/23 based); D346, D348, D522, and D528 (PDP-11/24 based); D356, D532, D358, and D538 (PDP-11/34 based); D546, and D548 (PDP-11/44 based); and D576 and D579 (PDP-11/70 based). DEC's Commercial OEM systems also include numerous corporate configurations: the SR, SM, and SN series, and the DR, DE, DX, and DM series.

DATE ANNOUNCED: Datasystem 300, January 1977 (D320); Datasystem 500, February 1975 (D570).

DATE OF FIRST DELIVERY: Datasystem 300, March 1977 (D320); Datasystem 500, September 1975 (D570).

NUMBER INSTALLED TO DATE: Specific model information is not available; however, the total number installed is approximately 18,000 systems.

DATA FORMATS

BASIC UNIT: 16-bit word plus 2 parity bits. The processor can also handle 8-bit bytes, and is capable of bit manipulation.

FIXED-POINT OPERANDS: 16-bit words or 8-bit bytes are used as operands in both single- and double-operand instructions. Bit manipulation is provided through Boolean AND/OR instructions.

FLOATING POINT OPERANDS: Optional 32-bit single-precision operands with an 8-bit exponent and signed 24-bit fractions on PDP-11/34A based Datasystems; or 64-bit double-precision operands with an 8-bit exponent and signed 56-bit fraction on PDP/11/34A, 11/44, 11/24 and 11/70 based models.

Single- and double-precision hardware via a floating-point processor is optionally available on all models. This hardware includes a dedicated set of six 64-bit accumulators. ROM implementation of EIA (extended instruction set) is available for 11/34 and 11/44 based systems. Floating-point software subroutines are available for all Datasystems.

INSTRUCTIONS: PDP-11 instructions are 16-bits long. If program counter addressing is employed, then an additional 16 bits are added to the instruction length. Instruction formats are numerous, varying from one PDP-11 based Datasystem to another. Common formats throughout the line occur in instructions of the single operand group, the double operand group, branch group, subroutine return, and condition code operators group. Operation codes vary from 4 bits to 16 bits in length.

A Commercial Instruction Set (CIS) is available on PDP-11/24 and PDP-11/44 based systems. The CICS chip is a CPU microcode extension that implements a set of commercial instructions on a variety of data types, including character-string, packed decimal, and numeric formats. The firmware implementation yields much faster program execution times than a similar software implementation.

INTERNAL CODE: ASCII for text-oriented data; binary for calculations.

MAIN STORAGE

General aspects, including type, cycle time, and capacity are covered for the entire family in the Main Storage Characteristics table (page M11-384-305) in the PDP-11 Family report M11-384-301.

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PERIPHERALS/TERMINALS

DEVICE	
TERMINALS	**DESCRIPTION & SPEED**
VT100-AA (AB)	VT100 tabletop video display terminal; operates on full duplex asynchronous communications lines, and is equipped with a standard EIA interface; 50 to 19,200 bps baud rate; 24 lines x 80 characters or 14 lines x 132 characters (selectable); 7 x 9 dot matrix, 2-dot descenders; 94-character ASCII and 32 special graphic features
VT100-NA (NB)	VT100 tabletop video display terminal with DECform keycaps
VT100-WA (WB)	VT100 tabletop video display terminal with word processing keyboard and advanced video option
VT101-AA (AB)	VT101 tabletop video display terminal; operates on full-duplex, asynchronous communications lines and is equipped with a standard EIA interface; 50 to 19,200 bps baud rate; 24 lines x 80 character ASCII set with 32 special graphic characters; 83-key detachable unit; standard numeric/function keypad
VT102-AA (AB)	VT102 tabletop video terminal; 50 to 19,200 bps baud rate; 24 lines x 80 characters or 132 characters; 7 x 10 dot matrix with 2 dot descenders; 94-character ASCII set with 32 special graphics characters; U.S. and British character sets standard, others optional; normal or reverse video, blinking, underline, and bold characters on a character-by-character basis; standard numeric/function keypad
VT102-WA (WB)	VT102 tabletop video terminal with work processing keyboard and advanced video
VK100-AA (AB)	GIGI (General Imaging Generator and Interpreter) VK100 tabletop keyboard terminal; includes graphics, multiple character sets, local intelligence, local ROM BASIC, 8 level color support, graphics printer interface, screen control functions and graphics tablet support; operates over full-duplex, asynchronous serial communications lines and on either EIA or 20mA communications interfaces
VT125-AA (AB)	VT125 tabletop graphics terminal operating with EIA/CCITT interface; 50 to 19,200 bps baud rates; even, odd or none keyboard-selectable parity; 768 x 240 pixel graphics resolution; printer port for graphics mode (for use with LA34-VA); 24 lines x 80 characters or 14 lines x 132 characters; 7 x 10 dot matrix with descenders; 96-character ASCII set (upper/lower case, numeric and punctuation) with 32-character special graphics set; split screen capability
LA34-VA	DECwriter IV graphics printing terminal, basic printer; 110 to 9,600 bps baud rate; 45 ips print speed (text mode), 320 columns per second or 960 dots per second (graphics mode); 132 print columns, 128-character ASCII set; includes roll paper holder, paper low detection option, BC22A-25 cable, ribbon cartridge, and one roll of paper
LA34-WA	Receive-only printer; same as LA34-VA and also includes tractors, paper out switch option; BC22A-25 cable, ribbon cartridge and tractor feed paper sample
LA38-GA	Tabletop DECwriter IV printing terminal; 110 or 300 bps baud rates; 30 cps print speed; 7-bit ASCII character set plus ANSI-compatible escape sequences; 10/20/13.2/16.5 characters per inch
LA38-HA	DECwriter IV printing terminal; same as LA38-GA except in the freestanding version
LA120-DA	Freestanding DECwriter III hardcopy terminal; 60 to 9,600 bps baud rates; 180 cps print speed; 7 x 7 dot matrix; 7-bit ASCII character set plus ANSI-compatible escape sequences
LA120-RA	Freestanding DECprinter III receive-only version of the LA120-DA hardcopy terminal
CARTRIDGE TAPE	
TU58-DA	TU58-cabinet-mountable dual drive cartridge tape subsystem including the necessary hardware for mounting in standard cabinetry; 800 bpi record density; 30 ips read/write speed; 262KB capacity per cartridge
MAGNETIC TAPE	
TS11-BA (BB)	Nine track TS11 magnetic tape subsystem mounted in a 60 inch H9602 single width highboy cabinet; 1600 bpi record density; 45 ips read/write speed; requires UNIBUS PDP-11 based Datasystem configured in H9600 series cabinets
TS11-CA (CB)	Nine track TS11 magnetic tape subsystem mounted in a 60.5 inch high H9696 cabinet; 1600 bpi record density; 45 ips read/write speed; requires a PDP-11/24 or PDP-11/44 based Datasystem
TJE16-AA (AD)	TE16 magnetic tape transport and controller to interface to the PDP-11 UNIBUS; includes the controller, a tape formatter, and one nine track TE16 tape transport; 1600 bpi and 800 bpi record densities; 45 ips read/write speed; mounted in a 60 inch H9602 cabinet
TWE16-AA (AD)	Same as TJE16-AA except interfaces to the PDP-11/70 MASSBUS
TE16-AE (AJ)	TE16 magnetic tape transport mounted in a 60 inch H9602 single width highboy cabinet
TJU77-AB (AD)	TU77 magnetic tape transport and controller to interface to the PDP-11 UNIBUS; includes the controller, a tape formatter, and one nine-track TU77 tape transport; 1600 bpi and 800 bpi record densities; 125 ips read/write speed
TWU77-AB (AD)	Same as TJU77-AB except interfaces to the PDP-11/70 MASSBUS
TU77-AF (AJ)	TU77 magnetic tape transport

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PERIPHERALS/TERMINALS (Continued)

TERMINALS	DESCRIPTION & SPEED
LINEPRINTERS AND PLOTTERS	
LXV11-XX	Line printer/plotter; 300/240/170 lpm printing speeds; 16.7 inch per minute plotting speed; 96 ASCII standard character set; 8 inch per second slow speed; requires a PDP-11/103 or 11/23
LXY11-XX	Line printer/plotter; same as LXV11-XX except requires a UNIBUS PDP-11
LXY21-XX	Line printer/plotter; 600/465/320 lpm print speeds; 33.3 inch per minute plot speed; 96 ASCII standard character set; 16 inch per second paper slow speed; requires UNIBUS PDP-11
LPV11-AA	Band printer; 300 lpm for 64 ASCII character set; requires PDP-11/03, 11/23
LPV11-BA	Band printer; 300 lpm for 64 ASCII character set or 215 lpm for 96 ASCII character set; requires PDP-11/03, 11/23
LPV11-EA	Line printer operating at speeds of 600 lpm for 64 ASCII character set; requires PDP-11/23 based system
LPV11-EB	Line printer operating at speeds of 600 lpm for 64 ASCII character set, or 445 lpm for 96 ASCII character set; requires PDP-11/23 based system
LP11-EA	Line printer operating at speeds of 600 lpm for 64 ASCII character set; requires UNIBUS PDP-11 based system
LP11-EB	Line printer operating at speeds of 600 lpm for 64 ASCII character set or 445 lpm for 96 ASCII character set; requires UNIBUS PDP-11 based system
LP11-AA	Band printer; 300 lpm for 64 ASCII character set; requires UNIBUS PDP-11
LP11-BA	Band printer; 300 lpm for 64 ASCII set or 215 lpm for 96 ASCII character set
LP11-CA	Line printer; 900 lpm for 64 ASCII character set; requires UNIBUS PDP-11
LP11-DA (DD)	Line printer; 660 lpm for 96 ASCII character set; requires UNIBUS PDP-11
LP11-YA (YD)	Line printer; 660 lpm for 64 ASCII character set; requires UNIBUS PDP-11
LP11-ZA (ZD)	Line printer; 436 lpm for 96 ASCII character set; requires UNIBUS PDP-11
CARD READERS	
CR11 (A)	Tabletop card reader and controller; 285 cpm card speed; 550 card capacity; standard 12-row 80-column EIA (Hollerith code) hole punched cards; non-packed and packed data formats
CR11-BC (BD)	Tabletop card reader and controller; 600 cpm card speed; 1000 card capacity; standard 12-row 80-column EIA (Hollerith code) hole punched cards; non-packed and packed data formats

▷ • Model D532—PDP-11/34A dual RL02-based system with LA120-DA DECwriter III; supports up to 256KB of memory and up to 4 RL02 drives.

• Model D538—PDP-11/34A dual RK07-based system with LA120-DA DECwriter III console; supports up to 256KB of memory and a total of 8 RK07 disk drives.

• Model D546—PDP-11/44 RM02-based system with LA120-DA DECwriter III console, Commercial Instruction Set (KE44-A), or Cobol-11; supports from 512KB to 1MB of memory and a system total of 8 RM02 disk drives.

• Model D548—PDP-11/44 dual RK07-based system with LA120-DA DECwriter III console, Commercial Instruction Set, or Cobol-11; supports from 512KB to 1MB of memory and a system total of 8 RK07 drives.

• Model D576—PDP-11/70 RM03-based system with LA120-DA DECwriter III console; supports from 512KB to 3 megabytes of memory and a system total of 8 RM03 drives.

• Model D579—PDP-11/70 RM05-based system with LA120-DA DECwriter III console; supports from 512KB to 3 megabytes of memory and a system total of 8 RM05 drives. ▷

► **STORAGE TYPE:** Magnetic core, dynamic MOS, and bipolar are the three types most commonly used within the Datasystem family. Core is available in every Datasystem except PDP-11/23 and 11/44 based systems. Bipolar cache memory is available on 11/34A (optional) 11/44, and 11/70 based systems. Dynamic MOS is available for all models.

CYCLE TIME: Both cycle and access times are listed in the Main Storage Characteristics table on page M11-384-305 of the PDP-11 family report M11-384-301. Cache memory on the 11/34A (optional) has a 150 nanosecond cycle time; on the 11/44, 275 nanoseconds; on the 11/70, 240 nanoseconds.

CAPACITY: 64KB to 256KB for PDP-11/23 based systems; 64KB to 1MB on 11/23-PLUS based systems; 256KB to one megabyte on PDP-1/24 based systems; 256KB (minimum and maximum) on PDP-11/34A based systems; 512KB to one megabyte on PDP-11/44 based systems; and 512KB to 3.5MB on PDP-11/70 based systems.

CHECKING: A parity bit is standard with each byte. Error checking and correction (ECC) corrects all 1-bit errors and detects all double-bit errors, and most multi-bit errors. The process or memory mapping automatically protects storage.

STORAGE PROTECTION: Via the memory management function on all Datasystems. Mapping automatically provides hardware storage protection.

RESERVED STORAGE: The uppermost 8K bytes are reserved for I/O registers. All PDP-11 processors reserve at most 511 locations at the low end of memory for interrupt vectors, trap vectors, and floating vectors. ►

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▷ DEC's selected corporate configurations include those specific systems with the designation of SR, SM, SN, DR, DE, and DM systems. They use the same range of PDP-11 processors, and the RT-11, RSX-11M, RSX-11M-PLUS, and RSTS/E operating systems.

Software available for CTS-300 systems include the DIBOL language processor, DECtype-300 word processing software package, DIBS-11 Integrated Business System, DAP/CTS-300 application software package, CTS-300 RDCP (2780/3780) Remote Data Communications Package, CTS-300 DICAM/3271 Digital Interactive Communications Access Method, and the CTS-300 and CTS-500 Level 3 Upgrade.

Software for CTS-500 (RSTS/E) systems include the Fortran IV/PLUS, Basic-PLUS-2, Cobol-81, PDP-11 Cobol, and Fortran IV language compilers; DECword/DP word processing system; DATATRIEVE-11 interactive query, report, and data maintenance system; DIBOL-11/DECFORM; DMS-500 Data Management Services package; INDENT forms management and data entry package; and DECnet/E networking software.

A substantial library of user-generated, but not DEC-supported, software is available from three groups within DEC. DECUS, the DEC USers Society, offers a catalog of software packages that includes languages, editors, numerical functions, utilities, display routines, and various other types of applications software. Also, the Educational Products Group publishes the Index and Description of Educational Applicational Software (IDEAS), which lists software packages developed by users specifically for educational purposes. Some of the programs listed in the IDEAS catalog are from the DECUS catalog. Users can obtain copies of these programs on various media for a nominal charge by contacting either of these organizations. Finally, the Datasystems are covered in the AIP (Applications Interchange Program) catalog distributed by the Commercial Products Group. These are not customized software solutions but rather a directory of industry oriented applications. Contact your local sales office for information.

USER REACTION

Refer to the User Reaction section of the DEC PDP-11 Family report (M11-384-301) for user responses to the PDP-11 computer series.□

▶ CACHE MEMORY: The optional cache memory on the 11/34A has a 150-nanosecond cycle time; on the 11/44, 215-nanoseconds; on the 11/70, 240-nanoseconds.

CENTRAL PROCESSORS

See text and processor characteristics charts in Report M11-384-301 for details on the PDP-11/23, 11/23-PLUS, 11/24, 11/34A, 11/44, and 11/70 processors.

REGISTERS: The PDP-1/23 has eight general-purpose registers, while the PDP-11/24 and 11/34 have nine general-purpose registers. The 11/44 has ten general registers which can be used as accumulators, index registers, or as stack pointers. One of the general registers is used as 11/44's program counter, and three others are used as the processor stack pointers, one for each operational mode. The 11/70 has 16 user-accessible 16-bit registers and a 16-bit processor status register. The 16 registers are arranged as two sets of six general-purpose registers, three stack pointers, and a program counter.

ADDRESSING: Eight address modes are provided, with each operand address consisting of three bits to specify address mode and three bits that specify the register used to calculate the address. The modes consist of Register (operand in register), Register Indirect (operand address in register), Auto Increment/Decrement (self-incrementing/decrementing operand address in register), Auto Increment/Decrement Indirect (self-incrementing/decrementing register which points to an address in memory), Indexed, and Indexed Indirect. The eight modes can allow a specific operation code (e.g., MOV, for move) to accomplish register/register, register/memory, memory/memory, memory/stack, and register stack manipulation.

INSTRUCTIONS: PDP-11 instructions are 16 bits long. If program counter addressing is employed, then an additional 16 bits are added to the instruction length. All PDP-11 based Datasystem processors have the same standard PDP-11 instruction set. Instruction formats are numerous, varying from one PDP-11 model to another. Common formats throughout the PDP-11 line occur in instructions of the single operand group, the double operand group, branch group, subroutine return, and condition code operators group. Operation codes vary from 4 bits to 16 bits in length.

INTERRUPTS: Four-level automatic priority interrupt system, plus seven additional software-supported levels of interrupts for all models. Each of the interrupt levels can attach multiple, independently prioritized peripheral devices.

PHYSICAL SPECIFICATIONS: All Datasystems are generally 21 inches wide, 60 or 42 inches high, and 30 inches deep. All systems require 115 VAC, 60 Hz (or 230 VAC, 50 Hz) power with a voltage tolerance of +10 percent. The operating temperature range for all Datasystems is 65 to 75 degrees Fahrenheit.

INPUT/OUTPUT CONTROL

UNIBUS: All PDP-11 based Datasystems have a single, common data path UNIBUS that treats all components or modules of a system as equal-level devices for data access/transfers, including the processor, memory modules, and peripherals. For a detailed description of the UNIBUS, see the Input/Output Control section in Report M11-384-301.

CONFIGURATION RULES

For a detailed explanation of the PDP-11 configuration guidelines, please refer to Report M11-384-301. Maximum configuration parameters for the Datasystem family are as follows:

- Up to 3.5 megabytes of main memory
- Up to 1,428 gigabytes of on-line disk storage
- Up to 127 terminals
- Up to 8 magnetic tape drives
- Up to 8 line printers

WORKSTATIONS: Up to 12 terminals are supported on Datasystems running under CTS-300; up to 16 terminals on Datasytems running under the RSX-11M operating system; up to 32 terminals on Datasystems running under the RSX-11M-PLUS operating system; and up to 127 terminals on systems running under CTS-500 (although 63 is the recommended limit). ▶

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DEC DATASYSTEM CHARACTERISTICS

MODEL	PROCESSOR	MEMORY CAPACITY (Min./Max.)	TERMINALS (Max.)	STANDARD DISK	MAX. DISK CAPACITY	OPERATING SYSTEM
D315	11/23	64KB/128KB	3	RX02	10.4MB	CTS-300
D336	11/23	128KB/256KB	8	RLO2	41.6MB	CTS-300
D346	11/24	256KB/256KB	12	RLO2	41.6MB	CTS-300
D348	11/24	256KB/256KB	12	RKO7	224MB	CTS-300
D356	11/34A	256KB/256KB	12	RLO2	41.6MB	CTS-300
D358	11/34A	256KB/256KB	12	RKO7	224MB	CTS-300
D522	11/24	256KB/768KB	127	RLO2	41.6MB	CTS-500
D528	11/24	256KB/1MB	127	RKO7	224MB	CTS-500
D532	11/34A	256KB/256KB	127	RLO2	41.6MB	CTS-500
D538	11/34A	256KB/256KB	127	RKO7	224MB	CTS-500
D546	11/44	512KB/1MB	127	RMO2	536MB	CTS-500
D548	11/44	512KB/1MB	127	RKO7	224MB	CTS-500
D576	11/70	512KB/3MB	127	RMO3	536MB	CTS-500
D579	11/70	512KB/3MB	127	RMO5	2048MB	CTS-500

► **DISK STORAGE:** The Datasystem family can support a wide range of disk storage media. The capacities vary with the processor model and operating system. Datasystems running under RT-11 or CTS-300 can support up to 8 disk drives for a system total of 224MB; CTS-500, RSX-11M, and RSX-11M-PLUS operating systems can support up to 8 disk drives for a maximum system total of 1,428 gigabytes.

MAGNETIC TAPE: The RSX-11M-PLUS operating system can support up to four magnetic tape transports, while the RT-11, CTS-300, CTS-500, and RSX-11M operating systems can support up to eight magnetic tape transports.

LINE PRINTERS: The RT-11, RSX-11M, and RSX-11M-PLUS operating systems can support only one line printer; the CTS-300 operating system up to four line printers; and the CTS-500 operating system up to eight line printers.

MASS STORAGE

RXV21/RX211 FLOPPY DISK SUBSYSTEMS: Double density, dual floppy disk subsystems. Direct Memory Access (DMA) is used to provide rapid data transfer and efficient utilization of the host processor. These subsystems consist of two RX02 0.5MB (for a total of 1MB) drives and a controller with interconnect cabling and is packaged in a standard cabinet-mountable unit. Performance specifications include: 0.5MB formatted capacity per drive; 61KBS peak transfer rate; 262 msec average access time; 154 msec average seek time; 77 tracks per surface; 26 sectors per track; and a 360 rpm rotational speed.

RLV21/RL211 CARTRIDGE DISK SUBSYSTEMS: RLV21 and RL211 are single drive buffered subsystems. An embedded closed-loop servo positioning system improves data integrity by continuously sampling servo information with the same head that reads and writes the data. To further ensure data integrity, a cyclic Redundancy Check (CRC) is performed on data transfers between the drive and controller. Also, a phase-locked-loop clock system and modified frequency modulation (MFM) recording provides reliable reading and recording techniques. Direct Memory Access (DMA) is used to provide rapid data transfer and efficient utilization of the host processor. These subsystems consist of an RL02 10.4MB disk drive and controller with interconnect cabling and are packaged in a standard cabinet-mountable unit. Performance specifications include: 10.4MB formatted capacity per drive; 512KBS peak transfer rate; 67.5 msec average access time; 55 msec average seek time; 512 tracks per surface; 40 sectors per track; 256 bytes per sector; 2400 rpm rotational speed.

RK711 DISK SUBSYSTEM: A single drive, buffered subsystem. Data integrity features include a phase-locked-loop clock system and Modified Frequency Modulation (MFM); an Error Correction Code (ECC); a hardware write-check capability and verification of sector, track, and cylinder positioning; and a software-controlled diagnostic mode (DMD) for extensive status/error reporting. Direct Memory Access (DMA) is used to provide rapid data transfer and efficient utilization of the host processor. These subsystems consist of an RK07 28MB top-loading disk drive with disk cartridge and controller with interconnect cabling and are available mounted in either a 41.75 inch high freestanding H9642 cabinet or a 39 inch high freestanding H969 cabinet. All RK711 subsystems are expandable to a total of eight RK06 or RK07 disk drives. The RK711 controller requires two system units of mounting space. An additional two Hex slots and 1 Quad slot of expansion space is available in the RK711 backplane. Memory cannot be mounted in the additional expansion space provided by the RK711 backplane.

Performance specifications include: 28MB formatted capacity per drive; 538KBS peak transfer rate; 49 msec average access time; 36.5 msec average seek time; dual-port option; 815 tracks per surface; and a 2400 rpm rotational speed.

RJM02 DISK SUBSYSTEM: A single drive subsystem for data base intensive applications. Increased throughput is obtained on multidrive subsystems by allowing the simultaneous transfer of control information and data on the MASSBUS, thus enabling overlapped and optimizing seeking. In addition, blocked data transfer improves system throughput by reducing the number of data transfer requests. Direct Memory Access (DMA) is used to provide rapid data transfer and efficient utilization of the hot processor. This subsystem consists of an RM02 67MB top-loading disk drive, disk pack and controller with interconnect cabling. It is available mounted in a 39 inch high freestanding H969 cabinet. Performance specifications include: 67MB formatted capacity per drive; 806KBS peak transfer rate; 42.5 msec average access time; 30 msec average seek time; 12.5 msec average latency time; 823 tracks per surface; 512 bytes per sector; and 2400 rpm rotational speed.

RWM03/RGM03/REM03 DISK SUBSYSTEMS: Single drive subsystems for the PDP-11/70, VAX-11/750, and VAX-11/780. Features a dual-port option which allows data base sharing and rapid manual switching between controllers for high system availability. Increased throughput is obtained on multidrive subsystems by allowing the simultaneous ►

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▶ transfer of control information and data on the MASSBUS. RM03 subsystems consist of an RM03 67MB top-loading disk drive, a disk cartridge, and a controller with interconnect cabling. All subsystems are expandable to a total of eight RM03 disk drives. Each is available mounted in a 39 inch high freestanding H969 cabinet. Performance specifications include: 67MB formatted capacity per drive; 1200KBS peak transfer rate; 38.3 msec average access time; 823 tracks per surface; 32 sectors per track; 512 bytes per sector; and 3600 rpm rotational speed.

RWM05/REM05 DISK SUBSYSTEMS: The RWM05/REM05 disk subsystems for the PDP-11/70 and VAX-11/780 accommodates I/O-intensive applications by providing high throughput. This is accomplished with features such as overlapped seeks, for simultaneously transferring control information and data on the MASSBUS; mid-transfer seeks for automatically addressing the next data block whether on the same cylinder or the next highest cylinder; implied seeks, and blocked data transfers. Other features include a dual-port hardware option and Direct Memory Access (DMA). These subsystems consist of an RM05 256MB top-loading disk drive, a disk pack, and a controller with interconnect cabling. Performance specifications include: 256MB formatted capacity per drive; 1200KBS peak transfer rate; 38.3 msec average access time; 30 msec average seek time; 8.2 msec average latency time; 823 tracks per surface; 32 sectors per track; 512 bytes per sector; 3600 rpm rotational speed.

INPUT/OUTPUT UNITS

Please refer to the Peripherals/Terminals table on page M11-384-403.

DATA COMMUNICATIONS

Please refer to the communications Hardware Interface charts on pages M11-384-318 through -320 in Report M11-384-301 for a list of LSI-11 and UNIBUS communications options.

COMMUNICATIONS CONTROL

The CTS-300 and CTS-500 support 2780/3780, 2780, and 3271 communications protocols. For those available on RT-11, RSX-11M, and RSX-11M-PLUS operating systems, refer to the Communications Control section of Report M11-384-301.

CTS-300 RDCP (2780/3780): CTS-300 2780/3780 Remote Data Communications Package (RDCP) enables a Datasystem running CTS-300 to act as a remote job entry (RJE) terminal. RDCP users can transmit data and/or job control files to another CTS-300 RDCP system, to a Digital system running a 2780/3780 emulator, or to an IBM 360/370 system. RDCP operates at line speeds up to 9600 bits per second on D330, D340 and D350 systems, and at 4800 bits per second on D320 systems. Switched or private circuits using Bell System series 201, 208, or 209 modems or equivalent are supported. This option includes required communications hardware, RPCP, software license, binaries, documentation, and full support services.

CTS-300 DICAM 3271: CTS-300 DICAM/3271 (Datasystem Interactive Communications Access Method) is a communications option that executes under the CTS-300 operating system. It permits a user-written DIBOL application program executing on a Datasystem 150, 320, 330, 340 or 350 to communicate with a user-written application program executing on an IBM/360 or 370 system running CICS. With the IBM/360 or 370, DICAM uses the same interactive communications facilities as the 3271 remote keyboard display controller. This option includes required communications hardware, DICAM software license, binaries, documentation, and support services.

CTS-500(RSTS/E) 2780: The CTS-500 (RSTS/E) 2780 software emulates the communications protocol of an IBM 2780 remote batch device while running as a user job on a suitably configured CTS-500 system. CTS-500 2780 transmits files stored on any medium supported by the CTS-500 operating system, and stores files on any output medium supported by CTS-500 except DECtape II (TU58). Files can be printed directly on any line printer supported by the host operating system. CTS-500 2780 includes single-use license, binaries, documentation, and full support services. Minimum hardware requirements include a memory increment of 16KB to accommodate the emulator; DUP11, DP11, or DU11 synchronous line interface; and KG11-A communications arithmetic element.

CTS-500(RSTS/E) 2780/3780: CTS-500(RSTS/E) 2780/3780 High Performance 2780/3780 Emulator emulates the communications protocol of an IBM 2780/3780 device while running as a user job on a suitably configured CTS-500 system. It uses a KMC11 microprocessor to handle modem and line control, as well as BSC protocol. It appears as an IBM 27890 or 3780 data transmission terminal on a point-to-point switched or non-switched synchronous data link operating with standard 2780/3780 protocol. Operating at line speeds up to 9600 bits per second, the High Performance Emulator can transmit and receive data and/or job control files with an IBM System/370 (including 303X processor systems) running Power/VS, HASP, ASP, JES1, or JES3. Switched, leased, or private circuits using Bell System 201, 208, 209, or 212 modems or equivalents are supported. Includes single-use license, binaries, documentation, and full support services.

CTS-500(RSTS/E)/3271: The CTS-500/3271 Protocol Emulator permits application programs written in Basic-PLUS, Basic-PLUS-2, Cobol, or Dibol running under CTS-500 to communicate interactively with user jobs running on an IBM 370 or 303X host system. The IBM application program can run with IMS/VS, CICS/VS, or TSO. The package makes it possible to implement applications performing remote, on-line access to IBM data bases for data entry, retrieval, and update, or file transfer. This option includes binaries, license, documentation, and full support services.

DECnet/E allows a suitably configured CTS-500 system to participate as a Phase II DECnet node in point-to-point computer networks. DECnet/E offers task-to-task communications, network file transfer capabilities, plus a number of user-oriented utilities—all of which utilize Digital Network Architecture (DNA) protocols. DECnet/E communicates with adjacent nodes over synchronous communication lines interfaces with microprogrammed controllers. DECnet/E functions are available to CTS-500 user programs written in Basic-PLUS, Basic-PLUS-2, Cobol, Dibol, Fortran IV, Fortran IV-PLUS, and Macro.

SOFTWARE

OPERATING SYSTEMS: Operating systems for the PDP-11 based Datasystems include CTS-300 and CTS-500, RT-11, RSX-11M, and RSX-11M-PLUS. For a discussion of the RT-11, RSX-11M, and RSX-11M-PLUS operating systems, please refer to the Operating System section in Report M11-384-301.

CTS-300 (Commercial Transaction System-300): CTS-300 is a single- and multi-user realtime operating system that supports online applications and interactive program development. It supports PDP-11/23, 11/24, 11/23-PLUS, and 11/34 based Datasystems.

Designed specifically for the lower end 300 computer family, CTS-300 packaging incorporates the RT-11 operating system and a wide range of commercial programming software. ▶

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▶ These include a choice of three runtime systems (single-user, time-shared, and extended memory) and a variety of utilities such as the interactive DIBOL Debugging Technique (DDT), a multivideo terminal editor, and DECform and SORT data management services. The operating system also includes full processing facilities for sequential, relative, and indexed access methods as well as file sharing, file protection and concurrent program development. CTS-300 includes the DIBOL language processor, a high-level programming language specifically developed for minicomputer-based commercial applications. It resembles Cobol in that it uses English-like statements.

CTS-300 supports indirect command files which further simplify system interaction. Indirect command files often contain strings of commonly-issued keyboard monitor commands; they also provide capabilities similar to batch processing, yet do not require users to learn the job control language. Users can invoke the command stream by executing the indirect command file. CTS-300 does include a batch facility should it be required.

CTS-300 supports a variety of optional business-oriented and advanced networking software. The Digital Integrated Business System (DIBS) and the Digital Agency Partner (DAP) are complete sets of software modules designed to ease the accounting function in small businesses. Communications capabilities include Digital's Remote Data Communications Package (RDCP) 2780/3780, and Digital Interactive Communications Access Method (DICAM) 3271. With these products, CTS-300 can communicate with IBM mainframe systems or other systems supporting Binary Synchronous Communications (BSC) protocols.

CTS-500 (RSTS/E): CTS-500 and RSTS/E are highly interactive, multiuser/multitasking, general purpose operating systems. Designed for the DEC Datasystem 500 computer family, CTS-500 is based on the RSTS/E operating system (Version 7.2) with software enhancements that provide a broad range of commercial data processing capabilities. CTS-500 (RSTS/E) systems support concurrent interactive timesharing, transaction/batch processing, and program development. Application development tools include high-level languages; data management and file processing facilities, with sequential, relative, and multikey ISAM support; file sharing, and protection mechanisms; program development aids; and communications capabilities.

Standard CTS-500 and RSTS/E software includes Basic-PLUS, Macro-11 assembly language, RMS-11K Record Management Services system, and the SORT-11 utility. Optional software includes Basic-PLUS-2, Cobol-81, Fortran IV, Fortran IV-PLUS, and DECnet/E networking software. Also available is the DMS-500 data management system (CTS-500 levels 2 and 3), Dibol-11 with DECFORM (CTS-500 level 3), and protocol emulators for IBM interconnects (RSTS/E-2780, RSTS/E-3271, RSTS/E-CTS-500 High Performance 2780/3780).

CTS-500 (RSTS/E) dynamically allocates system resources such as processor time and memory space on a best fit/best throughput basis to maintain processing efficiencies. Shared common code, shareable data, and intertask communication combine to save memory space and increase performance. A disk data cache, overlapped seeks, and file placement control improve disk access times and optimize throughput. Using facilities that support multiple job terminals, some CTS-500 and RSTS/E systems can support up to 127 concurrent terminal users; however, the recommended number of simultaneous jobs per system is 63.

Additional features include disk file and device backup and restore utilities, system management operations and access control utilities, user-definable terminal commands, multistream batch processing facilities, and lineprinter spooling. Extensive system maintenance tools, such as automatic device error logging, are also included.

CTS-500 is essentially the RSTS/E (Version 7.2) operating system with commercial software enhancements. It comprises two basic, commercially-oriented packages: CTS-500 level 2 and CTS-500 level 3. CTS-500 level 2 is based on RSTS/E Version 7.2, which includes the Basic-PLUS language processor, RMS-11K data management system, and SORT-11. Level 2 also incorporates the DMS-500 data management system. CTS-500 level 3 is also based on RSTS/E Version 7.2 which includes Basic-PLUS, RMS-11K, SORT-11, and a video screen formatting, data entry, and file review utility package. Level 3 also incorporates DMS-500, Dibol-11 with DECFORM, and DATATRIEVE-11. CTS-500 and RSTS/E also support DECword/DP word processing software.

CTS-300 to CTS-500 Level 3 Upgrade is used to upgrade a Datasystem 340 or 350 system with CTS-300 software to permit use of CTS-500 level 3 software on the same single PDP-11/24 or PDP-1/34A CPU on which CTS-300 is already licensed. The license previously granted for CTS-300 will be extended to include CTS-500 level 3. D340 or D350 hardware must also be modified to meet the minimum CTS-500 hardware requirements (e.g. minimum 256KB memory and a hardcopy console terminal), as well as the requirements of the intended upgraded application.

CTS-500 Level 2 to 3 Upgrade: consists of Dibol-11/DECFORM and DATATRIEVE options for CTS-500 level 2, upgrading the system to CTS-500 level 3. Includes single-use license, binaries for Dibol-11/DECFORM and DATATRIEVE-11, documentation, and support services.

LANGUAGES: DEC offers several major programming languages for PDP-11 based Datasystems. For the purposes of this report, we shall only describe those available under the CTS-300 and CTS-500 operating systems. For compilers available under the RT-11, RSX-11M, and RSX-11M-PLUS operating systems, refer to the PDP-11 Family Report M11-384-301. Only Dibol is available on the CTS-300. The following languages are available on CTS-500 only.

PDP-11 Fortran IV/PLUS/RSTS/E is an extended implementation of the ANSI Fortran X3.9-1966 standard. The compiler produces direct PDP-11 machine code optimized for execution time efficiency on a PDP-11 with a floating point processor. Fortran IV-PLUS provides a set of object modules (Object Time System or OTS) that are selectively linked with compiler-produced object modules by the operating system to produce a Task (program) ready for execution. Fortran-IV-PLUS provides the capability of creating either or both of the following object time systems: File Control Services and Record Management Services. Other features include general expressions in all meaningful contexts; mixed-mode arithmetic; BYTE data type for character manipulation; commenting at the end of each source line; and list-directed input/output.

CTS-500 Basic-PLUS-2 is a superset of the Basic-PLUS and Dartmouth Basic languages which use simple English language-like statements and familiar mathematical notations to perform operations. The language processor is composed of a compiler and an Object-Time System/Library that contains the following run-time routines: performing library and arithmetic functions; handling dynamic allocation of string storage and I/O buffers; handling I/O operations; and processing errors in arithmetic, I/O, and system operations. Other features include terminal-format files; virtual arrays; matrix handling; RMS Record I/O; string arithmetic; and external subprograms such as SUB, CALL, CHAIN, and COMMON. ▶

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OPERATING SYSTEMS COMPARISON TABLE

	CTS-500 (RSTS/E)	CTS-300
Hardware utilization:		
PDP-11/23	No	Yes
PDP-11/24	Yes	Yes
PDP-11/44	Yes	No
PDP-11/34A	Yes	Yes
PDP-11/70	Yes	No
Programming language support:		
MU Basic	No	No
Basic-II	Standard	No
Basic-Plus	Std./Opt.	No
Cobol-II	Optional	No
Dibol	Optional	Standard
Fortran IV	Optional	No
Fortran IV Plus	Optional	No
Macro Assembler	Standard	No
Cobol 81	Optional	No
Coral 66	No	No
Type of operating system:		
Single-user	No	Yes
Multi-user	Yes	Yes
Single-job	No	Yes
Foreground/background	Yes	Yes
Multiprogramming	No	Yes
Time-sharing	Yes	Yes
Multi-user data base mgmt.	No	No
Dynamic memory allocation	Yes	Yes
Memory mgmt. support (swapping)	Yes	Yes
Program scheduling:		
By operator	Yes	Yes
By event interrupt	No	—
By another program/task	Yes	—
By time of day	No	—
No. of terminals in use simultaneously	127	12
Number of concurrent jobs	63	16
Min. memory required (bytes)	128K	32K
DBMS-11 support	Yes (DMS-500)	No
Re-entrant I/O	—	—
I/O spooling	Yes	Yes
Concurrent batch & I/O spooling	Yes	Yes
Fixed & variable-length records	Yes	Yes
File access methods:		
Sequential	Yes	Yes
Index sequential	Optional	Yes
Direct access	Yes	Yes
Multi-keyed index sequential	Optional	Optional
Hierarchical	No	No
Usage accounting	Yes	—
Sharable data files	Yes	—
Program priority levels	255	—
Disk/memory program swapping	Yes	Yes
System generation on target equipment	Yes	—
Security:		
System level	Yes	Yes
File level	Yes	Yes
Software:		
DAP/CTS-300	No	Yes
RMS-11	Yes	No
Sort-II	Yes	No
DMS-500	Yes	No
DECFORM	Yes	No
2780/3780	Yes	Yes
3271	Yes	Yes
Datatrieve-II	Yes	No
DECword/DP	Yes	No
Indent	Yes	No
DECnet	Yes	No
Files-II	No	No
DBMS-II	No	No
FMS-II	No	No
RJE/HASP	No	No
DLX-II	No	No
SNA	No	No
DECtype-300	No	Yes
DIBS-II	No	Yes

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▶ *Dibol-11/DECFORM* is a software configuration option for RSTS/E and CTS-500 level 2 operating systems (it is included with CTS-500 level 3). Dibol-11/DECFORM is a complete forms language package that includes the Dibol-11 language processor and the DECFORM screen formatting and file review utility. DECFORM enables the development of interactive data entry screen formatting and file review functions, and also provides a number of programmer capabilities such as defining field protection, field totaling and autoduplication.

PDP-11 Cobol is a precise, well-defined language for business data processing. The PDP-11 Cobol language processor is composed of a compiler and an Object Time System/Library. The user can write subprograms in both Cobol or in Macro-11 and access them with the CALL statement. PDP-11 Cobol includes an interactive debugger, support for the Commercial Instruction Set (CIS), CBLMRG for merging ODL files, and RFRMT to convert PDP-11 terminal format Cobol programs into conventional ANS Cobol program format. PDP-11 Cobol requires an RSTS/E (CTS-500) operating system configuration with 248KB of memory and at least 10MB of on-line disk storage.

CTS-500 Fortran IV is a problem-oriented language for expressing mathematical operations. As an optional programming language that may be implemented under CTS-500, features of Fortran IV include fast compilation speed, extensive subroutine packages, complete device independence, operation on stand-alone satellite systems, and specially designed extensions to formatting capabilities. Fortran IV is an extended superset of the ANSI Fortran X3.9-1966 standard. Fortran IV provides a set of object modules (Object Time System or OTS) that are selectively linked with compiler-produced object modules to produce an executable program. Other features include general expressions in all meaningful contexts; mixed-mode arithmetic; BYTE data type for character manipulation; commenting at the end of each source line; and list-directed input/output. Fortran programs can be developed under RSTS/E and output in absolute binary format for execution on a stand-alone PDP-11 system with minimal peripherals.

Cobol-81 is an interactive, high-performance compiler that produces compact object code. It provides features aimed at making the Cobol programmer and the Cobol programs highly productive on small business systems. A subset of VAX-11 Cobol V1.0, Cobol-81 has been designed for upward compatibility to VAX-11 Cobol and is intended for entry-level users. It will enable users to begin with the smallest RSTS/E system and grow upward to all PDP-11 RSTS/E and VAX systems. Programs written for Cobol-81 can compile and execute using VAX-11 Cobol V1.0, without source changes. Cobol-81 is designed and implemented to run under the RSTS/E operating system and on PDP-11/24s and PDP-11/44s; however, it can run on any PDP-11 processor using the Extended Instruction Set (EIS).

DATA MANAGEMENT: DEC offers several data management systems for use on the CTS-500 operating system including DMS-500, INDENT, and the DATA-TRIEVE-11/CTS-500 upgrade package. For more information on PDP-11 data management systems, refer to Report M11-384-301.

DMS 500 is an extension of the RSTS/E or CTS-500 system software that aids the development and operation of business applications running under CTS-500 or RSTS/E. DMS-500, which is included in CTS-500 levels 2 and 3, consists of a group of software modules that provide general methods for organizing and processing logical data records stored in indexed random (hashed), indexed sequential and relative access file structures. Interfaces to the RSTS/E file system, control of direct access device I/O, and data buffering are handled by selected software modules appended to user Basic-

PLUS programs. Interactive utility routines are provided to define, allocate, and organize data into these file structures. The Data Management Services (DMS) package includes Indexed Access Method (IAM), Indexed Sequential/Relative Access Method (ISAM/RAM), and Extended Sort.

INDENT provides forms management and data entry capabilities that simplify the development and maintenance of interactive data entry applications written in Dibol, Cobol, or Basic-PLUS-2 running under CTS-500. INDENT supports VT100 terminals and uses a wide range of VT100 features such as split screen, scroll and reverse screen. The form definition language is easy to learn and supports Cobol data types, as well as alphabetic, alphanumeric and numeric data types for Dibol. INDENT supports both synchronous and asynchronous commands. The asynchronous commands enable host programs to continue executing application code subsequent to executing an INDENT command.

DATATRIEVE-11/CTS-500 Upgrade: DATATRIEVE-11 is an interactive query, report, and data maintenance system designed for less sophisticated computer users. The DATATRIEVE-11 package, which is available on DEC Datasystems running under CTS-500 level 3, utilizes the RMS-11K data management facility incorporated in CTS-500 to access data contained in files of sequential, indexed, or relative organization. It also provides facilities for selective data retrieval, sorting, formatting, updating, and report generation without the need for programming overhead. Data dictionaries, which are shared by DATATRIEVE-11 users, can be used to store frequently used sequences of commands to be recalled and processed later.

WORD PROCESSING: For Datasystems running under the CTS-300 or CTS-500 operating systems, DEC offers DECtype-300 and DECword/DP word processing packages.

DECtype-300 is a layered word processing software package that supplements CTS-300 data processing systems with word processing capabilities. DECtype-300 can create and maintain documents on the full range of disk storage devices supported by the CTS-300 operating system. Some capabilities of DECtype-300 include concurrent word processing and data processing, center screen editing, menu-driven structure, and list processing using data processing files. Extension editing features include cut and paste blocks of text, insert bodies of text and/or boilerplates from library files, user-defined keys (UDK's) to perform specific sequences of keystrokes automatically, search and replace capability, wide-document editing and printing, and four-function math capabilities. DECtype-300 hardware requirements include any valid CTS-300 configuration with 128KB of memory, one VT100-family word processing terminal, one printer (draft or letter-quality), and disk storage capacity of 1MB. Configurations with only 64KB will only support one user and will not perform concurrent printing and editing.

DECword/DP is a layered word processing system supported by RSTS/E. It offers WP/DP capabilities for RSTS/E users whose primary need is data processing. DECWord/DP operations such as document creation and editing are selected from menus. Document printing, in either draft or letter-quality form, is also selectable from a menu. Other features include list processing, spelling-error detection, and file conversion on floppy disk between WPS-8 and DECword/DP. RUNOFF and ASCII files can be converted to DECword documents. Some of the word processing editing features include the ability to cut and paste 25 different portions of text simultaneously; add/delete by character, word, or paragraph; and create/retrieve boilerplates from library files.

UTILITIES: DEC offers Dibol-11/DECFORM (described under Software) for those Datasystems running under the CTS-500 operating system. For a rundown on those utilities ▶

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► for the RT-11, RSX-11M, and RSX-11M-PLUS operating systems, refer to Report M11-384-301.

APPLICATIONS SOFTWARE: DEC provides a number of applications software packages that run under both the CTS-300 and CTS-500 operating systems.

DIBS-11, Digital's Integrated Business System, is a multiuser accounting software package. Written in Dibol and designed to run on the CTS-300 operating system, DIBS-11 comprises five accounting modules: Order Entry/Invoicing/Inventory, General Ledger, Accounts Receivable, Accounts Payable, and Payroll. Documentation is provided on word processing diskettes and in printed form. Four guides--one each for the user, the manager, the site manager, and the programmer-- provide the information necessary to successfully run the DIBS package. The DIBS-11 system makes use of the account group driver subsystem, the path for data to the General Ledger and DIBS-11 standard routines. It also uses standard maintenance programs and tables (parameters, defaults, and verification for nonintegrated systems). DIBS-11 modules may be implemented individually or as part of a totally-integrated packaged system. Minimum hardware requirements for single-user, non-integrated systems is any Datasystem 300 with at least 64KB of memory, one VT100-family terminal, one lineprinter, and a minimum of two RL01 disk drives. Minimum hardware requirements for multiuser integrated systems is any Datasystem 300 with at least 128KB of memory, one VT100-family terminal, one lineprinter, and a minimum of two RL02 disk drives.

DAP/CTS-300 Digital Agency Partner is a comprehensive application software package that provides a base of functions required by property and casualty agents. Because of the completeness of DAP/CTS-300, a turnkey package can be easily developed around this application package tool. Written in Dibol and designed to run on the CTS-300 operating system, DAP/CTS-300 comprises five systems: Recordkeeping, Daily Activity, Accounts Receivable, Company and Producer, and General Ledger. These systems aid the user in gathering data, performing activities, accumulating files, and producing reports efficiently.

The Recordkeeping system contains the master files, such as Customer, Producer, Company, and General Ledger Chart of Accounts. In the Daily Activity system, the user gathers data required for invoicing, recording cash receipts and disbursements, and completing adjusting entries. The Accounts Receivable system provides such features as Open Item Accounting, Application of Cash, Late Charge Generation, Statements, and Adjustments. With the Company and Producer system, a file is maintained which contains all the premium transactions generated by the invoicing activity for accurate reporting. Fully integrated with all the other Agency Partner systems is the General Ledger system. It maintains an item-by-item recording of all entries from the Daily Activity system, and all information is source-referenced to allow a complete audit.

Minimum hardware requirements for DAP/CTS-300 includes any CTS-300 configuration with a minimum of 56KB of memory, one VT100-family terminal, a lineprinter, and a minimum of two RL01 disk drives.

PRICING

POLICY: DEC generally provides the Datasystems on a purchase basis, with separately priced maintenance agreements. Leasing arrangements are available through DEC's joint venture with U.S. Leasing Corp. or through TEC Leasing Corp. of New York. Lease rates vary with the prime interest rate, the customer's volume of business with DEC, and the value of the equipment being leased.

Software maintenance is offered through several levels of optional service, ranging from a periodic software newsletter to automatic updates of software and manuals (software subscription service). In addition, software components, including documents and updates, can be purchased separately from Digital's Software Distribution Center.

DEC has set up a 24-hour-a-day, 7-day-a-week Telephone Support Center (TSC) for users with CTS/500, CTS-300, COS-310, and RSX-11M operating systems, among others. Users under warranty or who are subscribing to Digital's post warranty software services have access to TSC. DEC claims that greater than 90 percent of their customers' problems can be solved by TSC.

The Digital Equipment Computer Society (DECUS) is a voluntary, non-profit users' group supported by DEC. DECUS provides an extensive program library, users' groups, special interest groups, and workshops/symposia. Technical symposia are sponsored twice a year in the United States and once a year in Europe, Canada, and Australia. In terms of documentation, the society has the responsibility of maintaining the DECUS program library and publishing a library catalog, the proceedings of symposia, and a periodic newsletter, DECUSCOPE.

Training credits are issued with the systems, allowing the customer to obtain free training in programming techniques and systems operation and applications. Each individual student week of instruction or fraction thereof requires one training credit. Training is offered in 17 DEC facilities found in Japan, Australia, Great Britain, Germany, France, The Netherlands, Sweden, Italy, Canada, and throughout the United States. At present, over 100 courses are offered. Digital also offers on-site instruction in both standard and customized courses and self-paced audio/visual (A/V) courses. A/V courses are presented through mixed media of audio/film-strip cartridges, video cassettes, and workbooks. DEC's Special Systems group offers training in both hardware and software areas on-site and in DEC training centers.

Field service is offered on several levels to meet varying customer needs. For customers with in-house trouble-shooting and self-maintenance capabilities, DEC offers the off-site facilities of its Product Repair Center (PRC), with 17 locations throughout the world. Services provided by PRC include return-to-PRC agreements which cover all repairs (user performs troubleshooting) on a specific CPU, peripheral, or system for one year; exchange service providing teletypewriters, punches, and selected disk drive exchange at a flat rate; a fixed quote service, which provides a quote on equipment repair before any work is performed; and a loose piece module repair plan for modules and subassemblies. Under the repair plan, DEC estimates a typical turn-around repair time of 20 working days after receipt at the customer returns area (CRA). PRC also offers a module exchange service on a yearly contract basis, allowing a customer to replace a defective module within seven working days from the time it is received at the CRA. DEC supplies special mailers for both the loose piece module repair plan and the module exchange service. Also available for this class of customer is a customer spares program, which includes component and subassembly spares, engineer-designed spares kits, memory stack spares, maintenance test equipment, maintenance documentation service, and emergency parts service.

On-site field service is offered worldwide through a network of 300 offices, 190 of which are located in North America. These offices provide both field service and spare parts inventory. Over 4000 service representatives are assigned to these offices. ►

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➤ Per Call On Site Service is offered to customers for whom downtime may not be critical and who have sufficient expertise to perform first-line maintenance, or as a supplementary program for standard service agreement customers if remedial maintenance is required outside their normal hours of coverage. Labor rate charges are portal-to-portal; parts and travel expenses are rated separately. Labor rates from 8 a.m. to 5 p.m. Monday through Friday are $63 per hour; all other times, including Digital holidays, are priced at $75 per hour. A two-hour minimum is in effect for per call service. Travel charges are based on a portal-to-portal rate of 16 cents per mile plus any commercial travel expenses incurred. Normal response for per call service is one to two days. If unanswered in three working days, per call requests are placed in the same category as standard service agreement or warranty customers.

The basic field service agreement includes remedial maintenance; preventive maintenance; an assigned service representative; all parts, material, and labor; engineering modifications; and documentation. Hours of coverage are 8 a.m. to 5 p.m. Monday through Friday. (Preventive maintenance time is extended by 3 hours to 8 p.m. on weekdays.) Extensions are available to allow coverge up to 24 hours a day, 7 days a week.

The DECservice agreement is the same as the basic field service agreement except for these additions: response time of four hours or less if a call is made during coverage hours; continuous service until system level repairs are complete; and no extra charge for service continued after coverage hours.

The newest field engineering service is Remote Diagnosis for the PDP-11/70. This process consists of an electronic console, the Digital Diagnosis Center (DDC) with its host computer, and the Service Response Hot-Line/Remote Diagnosis. The electronic console replaces the regular PDP-11/70 front panel and permits initiation of operating commands through the system terminal. Both the DDC and the response group operate 24 hours per day and 7 days a week, and are responsible for decisions on the use of remote diagnosis and analysis of results.

EQUIPMENT: A large number of packaged PDP-11 systems appear in the Equipment Price List which follows.

EQUIPMENT PRICES

		Purchase Price	Monthly Maint.
DATASYSTEMS RUNNING UNDER RT-11			
D315A-RA (RD)	PDP-11/23 dual RXO2-based DEC Datasystem 315 with RT-11 operating system; 11/23 CPU; 64KB MOS memory; memory management; extended instruction set; bootstrap ROM with diagnostics; four-line asynchronous EIA/CCITT interface (three available for expansion); an RX78-WA (WD) disk subsystem with one 512KB RXO2 floppy disk drive as system device, and one 512KB RXO2 as backup and load; VT100 family terminal; MOS memory can be added up to a total of 256KB.	$11,700	$ 89
D315A-SA (SD)	PDP-11/23 dual RXO2-based DEC Datasystem 315; same as D315-RA (RD) except also includes an LA120-RA DECprinter III 180s cps "receive only" printer.	13,800	124
SR-WXMMB-BA (BD)	PDP-11/23 dual RLO2-based DEC Datasystem with RT-11 operating system; 11/23 CPU; 128KB MOS memory; memory management; bootstrap module with diagnostics; four-line asynchronous EIA/CCITT interface (three lines available for expansion); one RLV21 disk subsystem (controller and one 10.4MB RLO2 cartridge disk drive) as system device; one 10.4MB RLO2 as backup and load; 41.75 inch high H9642 cabinet; VT100 family terminal with advanced video; an additional 128KB MOS memory can be added for a total of 256KB; two more RLO2 disks can be added for a total of four.	26,500	235
DR-FXMMA-BA (BD)	PDP-11/24 dual RLO2-based Datasystem includes RT-11; 11/24 CPU in 5.25 inch high CPU box; 256KB parity MOS memory; memory management; bootstrap loader with diagnostics; line frequency clock; two single-line asynchronous EIA/CCITT interfaces (one available for expansion); one RL211 disk subsystem (controller and one 10.4MB RLO2 disk drive) as system device; one 10.4MB RLO2 disk drive for backup and load; one 41.75 inch high H9645 CPU cabinet; VT100 family terminal with advanced video; no memory expansion is possible in this configuration.	30,000	260
DATASYSTEMS RUNNING UNDER CTS-300			
D315A-AA (AD)	PDP-11/23 dual RXO2-based Datasystem 315 includes CTS-300; 11/23 CPU; 64KB MOS memory; memory management; extended instruction set; bootstrap ROM with diagnostics; four-line asynchronous EIA/CCITT interface (three available for expansion); an RX78-WA (WD) disk subsystem with one 512KB RXO2 floppy disk as system device, and one 512KB RXO2 as backup and load; VT100 family terminal; MOS memory can be added up to a total of 256KB.	13,000	89
D315A-BA (BD)	PDP-11/23 dual RXO2-based Datasystem 315; same as D315A-AA (AD) except also includes an LA120-RA DECprinter III 180 cps "receive-only" printer.	15,100	124
D315A-WA (WD)	PDP-11/23 dual RXO2-based Datasystem 315; same as D315A-AA (AD) except includes DECtype-300 word processing/data processing software and VT100-family word processing terminal.	15,500	92
D336C-AA (AD)	PDP-11/23 dual RLO2-based Datasystem 336 includes CTS-300; 11/23 CPU; 128KB MOS memory; memory management; bootstrap loader with diagnostics; four-line asynchronous EIA/CCITT interface (three available for expansion); one RLV21 disk subsystem (controller and one 10.4MB RLO2 disk drive) as system device; one 10.4MB RLO2 disk drive as backup and load; one 41.75 inch high H9642 cabinet; VT100 terminal; one 30 inch high H9532-AB workstation; an additional 128KB of MOS memory can be added for a total of 256KB.	30,500	232
D336C-CA (CD)	PDP-11/23 dual RLO2-based Datasystem 336; same as D336C-AA (AD) except also includes an LA120-RA DECprinter III 180 cps "receive-only" printer.	31,500	269

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DEC Datasystem Series

EQUIPMENT PRICES

			Purchase Price	Monthly Maint.
▶ **DATASYSTEMS RUNNING UNDER CTS-300 (Continued)**				
D336C-JA (JD)	PDP-11/23 dual RL02-based Datasystem 336; same as D336C-AA (AD) except also includes an LPV11-AA 285 lpm lineprinter.		39,500	322
D346B-AA (AD)	PDP-11/24 dual RL02-based Datasystem 346 includes CTS-300; 11/24 CPU in 5.25 inch high box; 256KB parity MOS memory; memory management; extended instruction set; line frequency clock; bootstrap loader with diagnostics; two single-line asynchronous EIA/CCITT interfaces (one available for expansion); one RL211 disk subsystem (controller and one 10.4MB RL02 disk drive) as system device; one 10.4MB RL02 disk drive) as system device; one 10.4MB RL02 for backup and load; one 41/75 inch high H9645 cabinet; a VT100 terminal; 30 inch high H9532-AB workstation; no memory expansion is possible in this configuration.		38,000	256
D346B-CA (CD)	PDP-11/24 dual RL02-based Datasystem 346; same as D346B-AA (AD) except includes an LA120-RA 180 cps "receive-only" DECprinter III.		40,100	293
D346B-JA (JD)	PDP-11/23 dual RL02-based Datasystem 346; same as D346B-AA (AD) except includes an LP11-AA 285 lpm printer.		47,000	351
D348A-AA (AD)	PDP-11/24 dual RK07-based Datasystem 348 includes CTS-300; 11/24 CPU in a 10.5 inch high box; 256KB parity MOS memory; memory management; extended instruction set; line frequency clock; bootstrap loader with diagnostics; two single-line asynchronous EIA/CCITT interfaces; one RK711 disk subsystem as system device; one 28MB RK07 disk drive for backup and load; one 41.75 inch high H9642 cabinet; two 41.75 inch high RK07 disk drives in H9642 cabinets; a VT100 terminal; and 30 inch high H9532-AB workstation; no memory expansion is possible in this configuration.		54,800	412
D348A-CA (CD)	PDP-11/24 dual RK07-based Datasystem 348; same as D348A-AA (AD) except includes an LA120-RA 180 cps DECprinter III.		56,900	449
D348A-JA (JD)	PDP-11/24 dual RK07-based Datasystem 348; same as D348A-AA (AD) except includes an LP11-AA 285 lpm line printer.		63,800	507
D356D-AA (AD)	PDP-11/34A dual RL02-based Datasystem 356 includes CTS-300; 11/34A CPU; 256KB parity MOS memory; memory management; extended instruction set; bootstrap module with diagnostics; single-line asynchronous EIA/CCITT interface; line frequency clock; one RL211 disk subsystem as system device; one 10.4MB RL02 disk drive for backup and load; one 41.75 inch high H9642 CPU cabinet; one 41.75 inch high H9642-BD RL02 disk cabinet bolted to the CPU cabinet; 30 inch high H9532-AB workstation; VT100 terminal; two more RL02 disk drives can be added for a total of four.		43,400	274
D356D-CA (CD)	PDP-11/34A dual RL02-based Datasystem 356; same as D356D-AA (AD) except includes an LA120-RA 180 cps DECprinter III.		45,500	309
D356D-JA (JD)	PDP-11/34A dual RL02-based Datasystem 356; same as D356D-AA (AD) except includes an LP11-A 285 lpm lineprinter.		52,400	364
D358D-AA (AD)	PDP-11/34A dual RK07-based Datasystem 358 includes CTS-300 operating system; 11/34A CPU; 256KB parity MOS memory; memory management; extended instruction set; bootstrap module with diagnostics; single-line asynchronous EIA/CCITT interface; line frequency clock; one RK711 disk subsystem as system device; one 28MB RK07 disk drive for backup and load; one 41.75 inch high H9642 CPU cabinet; two 41.75 inch high RK07 disk drives in H9642 cabinets; VT100 terminal; and 30 inch high H9532-AB workstation; six more freestanding RK07 disk drives can be added for a total of eight.		60,900	427
D358D-CA (CD)	PDP-11/34A dual RK07-based Datasystem 358; same as D358D-AA (AD) except includes LA120-RA 180 cps DECprinter III.		63,000	463
D358D-JA (JD)	PDP-11/34A dual RK07-based Datasystem 358; same as D358D-AA (AD) except includes LP11-AA 285 lpm lineprinter.		69,900	521
DATASYSTEMS RUNNING UNDER CTS-500 (RSTS/E)				
D522A-DA (DD)	PDP-11/24 dual RL02-based Datasystem 522 includes CTS-500 level 2; 11/24 CPU in 5.25 inch high box; 256KB parity MOS memory; memory management; extended instruction set; line frequency clock; bootstrap loader with diagnostics; two single-line asynchronous EIA/CCITT interfaces; one RL211 disk subsystem as system device; one 10.4MB RL02 disk drive for backup and load; one 41.75 inch high H9645 cabinet; and LA120-DA console terminal; memory expansion capabilities to 768KB: two more RL02 disks can be added for a total of four.		46,700	270
D522E-DA (DD)	PDP-11/24 RL02-based Datasystem 522; same as D522A-DA (DD) except includes CTS-500 level 3.		50,700	270
DE-FXMMA-CA (CD)	PDP-11/23 dual RL02-based Datasystem; same as D522A-DA (DD) except includes the RSTS/E operating system.		43,700	270
D528A-DA (DD)	PDP-11/24 dual RK07-based Datasystem 528 includes CTS-500 level 2; 11/24 CPU in 10.5 inch high box; 256KB parity MOS memory; extended instruction set; line frequency clock; memory management; bootstrap loader with diagnostics; two single-line asynchronous EIA/CCITT interfaces; one RK711 disk subsystem as system device; one 28MB RK07 disk drive for backup and load; one 41.75 inch high H9642 cabinet; two 41.75 inch high RK07 disk drives in H9642 cabinets; and LA120-DA DECwriter III console terminal; memory expansion capabilities to 1MB; six more RK07 drives can be added for a total of eight.		65,700	426
D528E-DA (DD)	PDP-11/24 dual RK07-based Datasystem 528; same as D528A-DA (DD) except includes CTS-500 level 3.		69,700	426
D528E-FA (FD)	PDP-11/24 dual RK07-based Datasystem 528; same as D528A-DA (DD) except includes CTS-500 level 3; KT24 physical address extension module providing system memory expansion to 1MB; and PDP-11 Cobol.		82,700	520
DE-FXHHA-CA (CD)	PDP-11/24 dual RK07-based Datasystem; same as D528A-DA (DD) except includes RSTS/E operating system.		62,700	416

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EQUIPMENT PRICES

		Purchase Price	Monthly Maint.
▶ **DATASYSTEMS RUNNING UNDER CTS-500 (RSTS/E) (Continued)**			
D532A-FA (FD)	PDP-11/34A dual RL02-based Datasystem 532 includes CTS-500 level 2; 11/34A CPU; 256KB parity MOS memory; memory management; extended instruction set; bootstrap loader with diagnostics; line frequency clock; single-line asynchronous EIA/CCITT interface; one RL211 disk subsystem as system device; one 10.4MB RL02 disk drive for backup and load; one 41.75 inch high H9642 CPU cabinet; one 41.75 inch H9642-BD disk cabinet bolted to the CPU cabinet; and an LA120-DA DECwriter III.	50,300	287
D532E-FA (FD)	PDP-11/34A RL02-based Datasystem 532; same as D532A-FA (FD) except includes CTS-500 level 3.	54,300	287
D538A-HA (HD)	PDP-11/34A dual RK07-based Datasystem 538 includes CTS-500 level 2; 11/34A CPU; 256KB parity MOS memory; memory management; extended instruction set; bootstrap loader with diagnostics; line frequency clock; single-line asynchronous EIA/CCITT interface; one RK711 disk subsystem as system device; one 28MB RK07 disk drive for backup and load; one 41.75 inch high H9642 CPU cabinet; two 41.75 inch high RK07 disk drives in H9642 cabinets; and LA120-DA DECwriter III; six more RK07 drives can be added for a total of eight.	72,500	440
D538E-HA (HD)	PDP-11/34A dual RK07-based Datasystem 538; same as D538A-HA (HD) except includes CTS-500 level 3.	76,500	440
D546A-BA (BD)	PDP-11/44 RM02-based Datasystem 546 includes CTS-500 level 2; 11/44 CPU; 512KB ECC MOS memory; 8KB parity cache memory; memory management with physical address extension; extended instruction set; bootstrap loader with diagnostics; line frequency clock; two single-line asynchronous EIA/CCITT interfaces; one RJM02 disk subsystem (controller and one 67MB RM02 disk drive) as system device; one 41.75 inch high H9642 CPU cabinet; one DD11-CK backplane providing 2 HEX and 2 QUAD slots of expansion; one 39 inch high RM02 freestanding disk cabinet; an LA120-DA DECwriter III terminal; and dual TU58 cartridge tape subsystem (256KB per cartridge) for system diagnostics.	91,200	409
D546E-CA (CD)	PDP-11/44 RM02-based Datasystem 546; same as D546A-BA (BD) except includes CTS-500 level 3.	95,200	409
D546E-BA (BD)	PDP-11/44 RM02-based Datasystem 546; same as D546A-BA (BD) except includes CTS-500 level 3; commercial instruction set; and PDP-11 Cobol.	108,100	424
D548A-BA (BD)	PDP-11/44 dual RK07-based Datasystem 548 includes CTS-500 level 2; 11/44 CPU; 512KB ECC MOS memory; 8KB parity cache memory; memory management with physical address extension; extended instruction set; bootstrap loader with diagnostics; line frequency clock; two single-line asynchronous EIA/CCITT interfaces; one RK711 disk subsystem (controller and one 28MB RK07 disk drive) as system device; one 28MB RK07 disk drive for backup and load; one 41.75 inch high H9642 CPU cabinet; two 41.75 inch high RK07 disk drives in H9642 cabinets; an LA120-DA DECwriter III terminal; one DD11-CK backplane providing 2 HEX and 2 QUAD slots of expansion; and a dual TU58 cartridge tape subsystem (256KB per cartridge) for system diagnostics.	86,800	504
D548E-CA (CD)	PDP-11/44 dual RK07-based Datasystem 548; same as D548A-BA (BD) except includes CTS-500 level 3.	90,800	504
D548E-BA (BD)	PDP-11/44 dual RK07-based Datasystem 548; same as D548A-BA (BD) except includes CTS-500 level 3; the commercial instruction set; and PDP-11 Cobol.	103,000	518
D576A-DA (DD)	PDP-11/70 RM03-based Datasystem 576 includes CTS-500 level 2; 11/70 CPU; 512KB interleaved ECC MOS memory with battery backup, 2KB bipolar cache memory; memory management with physical address extension; extended instruction set; bootstrap loader with diagnostics; line frequency clock; one single-line asynchronous EIA/CCITT interface; one RWM03 disk subsystem as system device; one 60 inch high H9600 double-width highboy CPU cabinet; one bolt-on 60 inch high H9602 options cabinet with a BA11-K expansion box and one DD11-CK expansion backplane providing 2 HEX and 2 QUAD slots of UNIBUS expansion; one 39 inch high freestanding RM03 disk drive; and an LA120-DA DECwriter III terminal; an additional 3MB of memory may be added; seven more RM02 drives may be added for a total of eight.	145,300	559
D576E-DA (DD)	PDP-11/70 RM03-based Datasystem 576; same as D576-DA (DD) except includes CTS-500 level 3.	149,300	559
D579A-DA (DD)	PDP-11/70 RM05-based Datasystem 579 includes CTS-500 level 2; 11/70 CPU; 512KB interleaved ECC MOS memory with battery backup; 2KB bipolar cache memory; memory management with physical address extension; extended instruction set; bootstrap loader with diagnostics; line frequency clock; one single-line asynchronous EIA/CCITT interface; one RWM05 disk subsystem (controller and one single-ported 256MB RM05 disk drive) as system device; one 60 inch high H9600 double-width highboy CPU cabinet; one bolt-on 60 inch high H9602 options cabinet with FA11-K expansion box and one DD11-CK expansion backplane providing 2 HEX and 2 QUAD slots of UNIBUS expansion; one 36 inch high RM05 disk drive; one 36 inch high RM05 utility cabinet housing the disk drive adapter; and an LA120-DA DECwriter III terminal.	154,000	672
D579E-DA (DD)	PDP-11/70 RM05-based Datasystem 579; same as D579A-DA (DD) except includes CTS-500 level 3.	158,000	672
DATASYSTEMS RUNNING UNDER RSX-11M			
SM-WXMMB-BA (BD)	PDP-11/23 dual RL02-based Datasystem includes RSX-11M; 11/23 CPU, 128KB MOS memory; memory management; bootstrap module with diagnostics; four-line asynchronous EIA/CCITT interface; one RLV21 disk subsystem as system device; one 10.4MB RL02 disk drive for backup and load; one 41.75 inch high H9642 cabinet; and a VT100 terminal with advanced video; an additional 128KB of memory can be added; two more RL02 disks can be added for a total of four.	30,100	235

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EQUIPMENT PRICES

DATASYSTEMS RUNNING UNDER RSX-11M (Continued)		Purchase Price	Monthly Maint.
► DM-FXMMA-BA (BD)	PDP-11/24 dual RL02-based Datasystem includes RSX-11M; 11/24 CPU in 5.25 inch high box; 256KB parity MOS memory; memory management; extended instruction set; bootstrap loader with diagnostics; line frequency clock; two-single-line asynchronous EI/CCITT interfaces; one RL211 disk subsystem as system device; one 10.4MB RL02 disk drive for backup and load; one 41.75 inch high H9645 CPU cabinet; and a VT100 terminal with advanced video; system can be expanded to 768KB; two more RL02 drives can be added for total of four.	35,000	270
DM-FXMMA-CA (CD)	PDP-11/24 dual RL02-based Datasystem; same as DM-FXMMA-BA (BD) except includes an LA120-DA DECwriter III console and does not include the extended instruction set.	35,700	260
SM-30MCC-BA (BD)	PDP-11/34A dual RL02-based Datasystem includes RSX-11M; 11/34A CPU; 256KB parity MOS memory; memory management; extended instruction set; line frequency clock; bootstrap loader with diagnostics; single-line asynchronous EIA/CCITT interface; one RL211 disk subsystem as system device; one 10.4MB RL02 disk drive for backup and load; one 41.75 inch high H9642 CPU cabinet; one 41.75 inch high H9642-BD (BE) RL02 disk cabinet; and VT100 terminal with advanced video; two more RL02 drives can be added for a total of four.	39,600	277
SM-30HHC-CA (CD)	PDP-11/34A dual RK07-based Datasystem; same as SM-30MCC-BA (BD) except includes RK711 disk subsystem; 28MB RK07 disk drive; and LA120-DA DECwriter III terminal.	61,500	440
SM-40UAB-CA (CD)	PDP-11/44 RM02/TS11-based system includes RSX-11M; 11/44 CPU; 512KB ECC MOS memory; 8KB parity cache memory; memory management with physical address extension; bootstrap loader with diagnostics; line frequency clock; two single-line asynchronous EIA/CCITT interfaces; one RJM02 disk subsystem (controller and 67MB RM02 drive); one TS11 magtape subsystem; one 41.75 inch high H9642 CPU cabinet; one 60.5 inch high H9646 bolt-on TS11 magtape cabinet; one 39 inch high RM02 disk drive; dual TU58 cartridge tape subsystem (256KB per cartridge) for system diagnostics; and an LA120-DA DECwriter III terminal.	94,200	484
SM-40HHB-CA (CD)	PDP-11/44 dual RK07-based system includes RSX-11M; 11/44 CPU; 512KB ECC MOS memory; 8KB cache memory; memory management with physical address extension; extended instruction set; bootstrap loader with diagnostics; line frequency clock; two single-line asynchronous EIA/CCITT interfaces; one RK711 disk subsystem as the system device; one 28MB RK07 disk drive for backup and load; one 41.75 inch high H9642 CPU cabinet; two 41.75 inch high RK07 disk drives in H9642 cabinets; an LA120-DA DECwriter III terminal; and dual TU58 cartridge tape subsystem (256KB per cartridge) for system diagnostics.	77,200	504
SM-70TAA-CA (CD)	PDP-11/70 RM03/TS11-based system includes RSX-11M; 11/70 CPU; 512KB ECC MOS memory with battery backup; 2KB parity cache memory; memory management with physical address extension; bootstrap module with diagnostics; line frequency clock; single-line asynchronous EIA/CCITT interface; one RWM03 disk subsystem as system device; one TS11 magtape subsystem for backup and load; one 60 inch high H9600 double-width highboy CPU/memory cabinet; one 60 inch high H9602 bolt-on TS11 magtape cabinet; one 39 inch high RM03 disk drive; and an LA120-DA DECwriter III terminal.	139,000	614
SM-70TVC-CA (CD)	PDP-11/70 RM03/TE16-based system; same as SM-70TAA-CA (CD) except includes one TWE16 magtape subsystem for backup and load; and one 60 inch high H9602 bolt-on TE16 magtape cabinet.	148,000	693

SYSTEMS RUNNING UNDER RSX-11M-PLUS

SN-40UAB-CA (CD)	PDP-11/44 RM02/TS11-based system includes RSX-11M-PLUS; 11/44 CPU; 512KB ECC MOS memory; 8KB parity cache memory; memory management with physical address extension; extended instruction set; bootstrap loader with diagnostics; line frequency clock; two single-line asynchronous EIA/CCITT interfaces; one RJM02 disk subsystem; one TS11 magtape subsystem; one 41.75 inch high H9642 CPU cabinet; one 60.5 inch high H9646 bolt-on TS11 magtape cabinet; one 39 inch high RM02 disk drive; an LA120-DA DECwriter III terminal; and dual TU58 cartridge tape subsystem for system diagnostics.	98,200	484
SN-70TAA-CA (CD)	PDP-11/70 RM03/TS11-based system includes RSX-11M-PLUS; 11/70 CPU; 512KB ECC MOS memory with battery backup; 2KB parity cache memory; memory management with physical address extension; bootstrap module with diagnostics; line frequency clock; single-line asynchronous EIA/CCITT interface; one RWM03 disk subsystem as system device; one TS11 magtape subsystem for backup and load; one 60 inch high H9600 CPU/memory cabinet; one 60 inch high H9602 bolt-on TS11 magtape cabinet; one 39 inch high RM03 disk drive; and an LA120-DA DECwriter III terminal.	143,000	614
SN-70TVA-CA (CD)	PDP-11/70 RM03/TE16-based system; same as SN-70TAA-CA (CD) except includes TWE16 magtape subsystem as backup and load; and one 60 inch high H9602 bolt-on TE16 magtape cabinet.	152,000	693
SN-70DBA-CA (CD)	PDP-11/70 RM05/TU77-based system; same as SN-70TAA-CA (CD) except includes RWM05 disk subsystem as system device; TWU77 magtape subsystem for backup and load; RM05 disk drive and utility cabinet.	174,000	888

PROCESSOR OPTIONS

PDP-11/23 Options

KEF11-AA	Single and double precision floating point option; the microcode to implement this option resides in two chips on one 40-pin package; mounts on KDF11 CPU board; requires PDP-11/23, 11/24.	420	NC

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EQUIPMENT PRICES

		Purchase Price	Monthly Maint.
➤ PROCESSOR OPTIONS (Continued)			
MSV11-DC	32KB dynamic Random Access Memory (RAM)	500	16
MSV11-DD	64KB dynamic RAM.	750	27
MRV11-BA	256 x 16-bit memory module that contains 8 sockets for MRV11-BC UV PROM chips; no memory chips are included.	390	NA
MRV11-BC	1K x 8-bit UV PROM chip; unprogrammed for use with MRV11-BA	110	NA
DS3KM-AA (AD)	Processor/memory upgrade kit that converts a PDP-11/03 based Datasystem (D325 only) with 64KB of memory to a PDP-11/23 based Datasystem with 128KB of memory; kit includes PDP-11/23 processor and 64KB of MOS memory.	4,000	NA
PDP-11/24 Options			
MS11-LB	128KB parity MOS memory.	2,400	42
MS11-LD	256KB parity MOS memory.	2,800	79
H775-A	Battery backup; requires 5.25 inch PDP-11/24 CPU.	700	8
H7750-BA (BD)	Battery backup; requires 10.5 inch PDP-11/24 CPU.	1,600	15
KT 24	Physical Address Extension (PAX) module allows memory expansion up to 768 bytes with a 5.25 inch CPU box and up to 1MB with a 10.5 inch CPU box.	1,500	15
PDP-11/34A Options			
FP11-A	Floating point processor for the PDP-11/34A; 46 instruction set; performs hardware operations on 32-bit and 64-bit floating point numbers as well as integer to floating point conversions.	3,400	25
KK11-A	2KB high-speed cache memory.	4,400	18
MS11-LB	128KB parity MOS memory.	2,400	42
MS11-LD	256KB parity MOS memory.	2,800	79
H775-CA (CB)	Battery backup; requires 10.5 inch PDP-11/34A CPU.	1,600	8
PDP-11/44 Options			
KE44-A	Commercial Instruction Set (CIS) processor; implements a set of 27 new commercial instructions on a variety of data types, including character strings, packed decimal and numeric.	7,900	17
FP11-F	Floating point processor; forty-six floating point instruction set; performs hardware operations on 32-bit and 64-bit floating point numbers providing up to 17 digits of precision as well as integer to floating point conversions.	3,100	17
MS11-MB	256KB ECC MOS memory.	5,600	48
MS11-MC	512KB ECC MOS memory.	8,900	95
MS11-MD	768KB ECC MOS memory.	13,200	142
H7750-BA (BD)	Battery backup for PDP-11/44 CPU	1,600	15
PDP-11/70 Options			
FP11-C	Floating point processor; 46 instruction set; performs hardware operations on 32-bit and 64-bit floating point numbers providing up to 17 digits of precision as well as integer to floating point conversions.	6,600	34
MK11-CE	512KB ECC MOS expansion memory.	10,200	126
MK11-CF	1024KB ECC MOS expansion memory.	13,800	252
MK11-CA (CD)	512KB ECC MOS memory including box, power supplies, and controller.	24,600	168
MASS STORAGE			
DS3RX-AA (AD)	RXV21 dual floppy disk drive and controller to interface to the LSI-11 bus; includes two 0.5MB RX02 drives; 61KBS peak transfer rate; 262 msec. average access time; requires PDP-11/03L, 11/23.	4,500	48
RX211-BA (BD)	RX211 dual floppy disk drive and controller to interface to the PDP-11 UNIBUS; includes two RX02 0.5MB drives; 61KBS peak transfer rate; 262 msec. average access time; requires UNIBUS PDP-11 based system.	4,150	48
DS3RL-BA (BB)	Includes an H9642 cabinet with power supply, an RLV21-AK controller and single RL02 cartridge disk drive, and a BA11-NE (NF) expansion box with a 9-slot backplane; D315-PLUS option.	10,800	77
DS3R2-AA	Top loading removable cartridge disk drive and controller to interface to the LSI-11 bus; includes an RL02 10.4MB disk drive; 512KBS peak transfer rate; 67.5 msec average access time; requires PDP-11/03, 11/23.	7,600	61
RL211-AK	Top-loading removable cartridge disk drive and controller to interface to the PDP-11 UNIBUS; includes an RL02 10.4MB disk drive; 512KBS peak transfer rate; 67.5 msec. average access time; there is a maximum of two RL211-AK controllers per CPU; requires UNIBUS PDP-11 based systems.	6,900	68
RL02-AK	Add-on cartridge disk; RL211-AK, DS3RA-AA, RL11-AK or RLV11-AK.	5,600	60
RL02K-DC	10.4MB disk cartridge for the RL02.	199	NA
RK711-EA (ED)	RK711 disk drive and controller to interface to the PDP-11 UNIBUS; includes an RK07 28MB top-loading disk drive; mounts in a 39 inch H969 freestanding cabinet; requires UNIBUS PDP-11 system configured in H960 or H9600 series cabinets.	18,500	153
RK711-PA (PD)	RK711 disk drive and controller for PDP-11/70 Datasystems mounted in a 41.75 inch high freestanding cabinet; includes an RK07 28MB top-loading disk drive; requires a UNIBUS PDP-11 system configured in an H9640 series cabinet.	18,500	153
RK07-EA (ED)	RK07 28MB top-loading cartridge disk drive with disk cartridge mounted in a 39 inch high freestanding H969 cabinet; requires RK711-EA (ED).	13,000	121

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DEC Datasystem Series

EQUIPMENT PRICES

► MASS STORAGE (Continued)		Purchase Price	Monthly Maint.
RK07-PA (PD)	RK07 28MB top-loading cartridge disk drive with disk cartridge mounted in a 41.75 inch high freestanding H9642 cabinet; requires RK711-PA (PD).	13,000	121
RK07K-DC	28MB disk cartridge for the RK07 disk drive.	430	NC
RK07K-AC	28MB alignment disk cartridge for the RK07 disk drive.	1,483	NC
RK07K-EF	Error-free 28MB disk cartridge for the RK07 disk drive.	650	NC
RJM02-AA (AD)	RM02 disk drive and controller to interface to the PDP-11 UNIBUS; includes an RM02 67MB top-loading disk drive, disk pack and controller; 806KBS peak transfer rate; 42.5 msec average access time; requires UNIBUS PDP-11 based system.	32,300	179
RM02-AA (AD)	RM02 disk drive; requires a RJM02-A.	20,300	147
RM03-P	67MB disk pack for either the RM02 or RM03 disk drives.	635	NA
RWM03-AA (AD)	Single-ported RM03 disk drive and controller to interface to the PDP-11/70 MASSBUS; includes an RM03 67MB top-loading disk drive, disk cartridge and controller; 1200KBS peak transfer rate; 38.3 msec average access time; requires a PDP-11/70.	32,300	179
RWM03-BA (BD)	Dual-ported RM03 disk drive and two controllers to interface to two PDP-11/70 systems; includes an RM03 67MB top-loading disk drive; 1200KBS peak transfer rate; 38.3 msec average access time; requires one or two PDP-11/70s.	43,900	226
RM03-AA (AD)	Single-ported RM03 disk drive; requires RWM03-A.	20,300	147
RM03-BA (BD)	Dual-ported RM03 disk drive; requires RWM03-B.	22,500	163
RWM03-C	RM03 dual-port kit containing drive logic, cables and second controller to convert RWM03-A to RWM03-B; requires two PDP-11/70s.	13,700	48
RM03-C	RM03 dual-port containing drive logic and cables to convert RM03-A to RM03-B.	2,150	16
RM03-P	67MB disk pack for either the RM02 or RM03 disk drives.	635	NA
RWM05-AA (AB)	Single-ported RM05 disk drive and drive adapter packaged in separate utility cabinet to interface to the PDP-11/70 MASSBUS; includes an RM05 256MB top-loading disk drive, disk pack and controller with interconnect cabling; 1200KBS peak transfer rate; 38.3 msec average access time; requires a PDP-11/70.	46,000	310
RMW05-BA (BB)	Dual-ported RM05 disk drive and drive adapter; same as RWM05-AA except interfaces to two PDP-11/70 systems.	60,600	395
RM05-AA (AB)	Add-on single-ported 256MB RM05 disk drive and adapter; packaged in one 36 inch high freestanding disk drive cabinet and one 36 inch high utility cabinet which houses the RM05 drive adapter and contains space for one additional drive adapter.	34,000	240
RM05-BA (BB)	Same as RM05-AA except dual-ported.	39,140	255
RM05-AC (AD)	Add-on single-ported 256MB RM05 disk drive and drive adapter; packaged in one 36 inch high freestanding disk drive cabinet only.	34,000	240
RM05-BC (BD)	Same as RM05-AC except dual-ported.	39,140	255
RWM05-C	RM05 dual-port upgrade kit containing drive logic, cables, and second controller to convert RWM05-A to RWM05-B.	16,700	85
RM05-C	RM05 dual-port kit containing drive logic and cables to convert RM05-A to RM05-B.	5,150	15
RM05-P	256MB removable disk pack for RM05.	1,500	NA
RM05-PX	256MB hard error-free removable disk pack for RM05.	1,650	NA
CARTRIDGE TAPE			
TU58-DA	TU58 cabinet-mountable dual drive cartridge tape subsystem including the necessary hardware for mounting in standard cabinetry; 800 bpi record density; 30 ips read/write speed; 262KB capacity per cartridge.	1,850	16
TU58-EB	Same as TU58-DA except tabletop version.	1,750	16
TU58-K	One 256KB TU58 data cartridge for the TU58-DA and TU58-EB.	18	NA
MAGNETIC TAPE			
TS11-BA (BB)	Nine track TS11 magnetic tape subsystem mounted in a 60 inch H9602 single width highboy cabinet; 1600 bpi record density; 45 ips read/write speed; requires UNIBUS PDP-11 system configured in H9600 series cabinets.	16,400	75
TS11-CA (CB)	Nine track TS11 magnetic tape subsystem mounted in a 60.5 inch high H9646 cabinet; 1600 bpi record density; 45 ips read/write speed; requires a PDP-11/24 or PDP-11/44.	16,400	75
TJE16-AA (AD)	TE16 magnetic tape transport and controller to interface to the PDP-11 UNIBUS; includes the controller, a tape formatter, and one nine track TE16 tape transport; 1600 bpi and 800 bpi record densities; 45 ips read/write speed; mounted in a 60 inch H9602 cabinet.	27,000	155
TWE16-AA (AD)	Same as TJE16-AA except interfaces to the PDP-11/70 MASSBUS.	27,000	155
TE16-AE (AJ)	TE16 magnetic tape transport mounted in a 60 inch H9602 single width highboy cabinet.	15,900	92
TJU77-AB (AD)	TU77 magnetic tape transport and controller to interface to the PDP-11 UNIBUS; includes the controller, a tape formatter, and one nine track TU77 tape transport; 1600 bpi and 800 bpi record densities; 125 ips read/write speed.	36,800	247
TWU77-AB (AD)	Same as TJU77-AB except interfaces to the PDP-11/70 MASSBUS.	36,800	247
TU77-AF (AJ)	TU77 magnetic tape transport	23,800	184
TERMINALS			
VT100-AA (AB)	VT100 tabletop video display terminal; operates on full duplex asynchronous communications lines, and is equipped with a standard EIA interface; 50 to 19,200 bps baud rate; 24 lines x 80 characters or 14 lines x 132 characters (selectable); 7 x 9 dot matrix, 2-dot descenders; 94-character ASCII and 32 special graphic features.	2,150	18
VT100-NA (NB)	VT100 tabletop video display terminal with DECform keycaps.	2,150	18
VT100-WA (WB)	VT100 tabletop video display terminal with word processing keyboard and advanced video option.	2,700	21

DEC Datasystem Series

EQUIPMENT PRICES

		Purchase Price	Monthly Maint.
VT101-AA (AB)	VT101 tabletop video display terminal; operates on full-duplex, asynchronous communications lines and is equipped with a standard EIA interface; 50 to 19,200 bps baud rate; 24 lines x 80 characters ASCII set with 32 special graphic characters; 83-key detachable unit; standard numeric/function keypad.	2,150	15
VT102-AA (AB)	VT102 tabletop video terminal; 50 to 19,200 bps baud rate; 24 lines x 80 characters or 132 characters; 7 x 10 dot matrix with 2 dot descenders; 94-character ASCII set with 32 special graphics characters; U.S. and British character sets standard, others optional; normal or reverse video, blinking, underline, and bold characters on a character-by-character basis; standard numeric/function keypad.	2,400	22
VT102-WA (WB)	VT102 tabletop video terminal with word processing keyboard and advanced video.	2,400	22
VK100-AA (AB)	GIGI (General Imaging Generator and Interpreter) VK100 tabletop keyboard terminal; includes graphics, multiple character sets, local intelligence, local ROM Basic, 8 level color support, graphics printer interface, screen control functions and graphics tablet support; operates over full-duplex, asynchronous serial communication lines and on either EIA or 20mA communications interfaces.	2,500	23
VT125-AA (AB)	VT125 tabletop graphics terminal operating with EIA/CCITT interface; 50 to 19,200 bps baud rates; even, odd or none keyboard-selectable parity; 768 x 240 pixel graphics resolution; printer port for graphics mode (for use with LA34-VA); 24 lines x 80 characters or 14 lines x 132 characters; 7 x 10 dot matrix with descenders; 96 character ASCII set (upper/lower case, numeric and punctuation) with 32-character special graphics set; split screen capability.	3,800	29
VT1XX-AA	20mA adapter for the VT100; allows VT100 terminal to convert from an EIA interface to a 20mA current loop interface.	140	4
VT1XX-AB	Advanced video option for the VT100/VT125	150	4
VT1XX-AC	Printer port option; allows connection of a VT100 to a hardcopy printer.	225	7
VT1XX-CA	20mA interface adapter for VT101/VT102/VT125.	140	4
VT1XX-CB	Upgrade kit for adding VT125 functionality to a VT100 terminal.	2,000	11
VT1XX-CE	Upgrade kit to convert VT100-AA (AB) or VT100-NA (NB) to a VT100-WA (WB) word processing terminal.	975	NA
LA34-VA	DECwriter IV graphics printing terminal, basic printer; 110 to 9,600 bps baud rate; 45 ips print speed (text mode), 320 columns per second or 960 dots per second (graphics mode); 132 print columns; 128-character ASCII set; includes roll paper holder, paper low detection option, BC22A-25 cable, ribbon cartridge, and one roll of paper.	1,550	21
LA34-WA	Receive-only printer; same as LA34-VA and also includes tractors, paper out switch option; BC22A-25 cable, ribbon cartridge and tractor feed paper sample.	1,700	21
LA38-GA	Tabletop DECwriter IV printing terminal; 110 or 300 bps baud rates; 30 cps print speed; 7-bit ASCII character set plus ANSI-compatible escape sequences; 10/12/13.2/16.5 characters per inch.	1,750	18
LA38-HA	DECwriter IV printing terminal; same as LA38-GA except in the freestanding version.	1,850	18
LA120-DA	Freestanding DECwriter III hardcopy terminal; 50 to 9600 bps baud rates; 180 cps print speed; 7 x 7 dot matrix; 7-bit ASCII character set plus ANSI-compatible escape sequences.	2,800	32
LA120-RA	Freestanding DECprinter III receive-only version of the LA120-DA hardcopy terminal.	2,700	37

LINEPRINTERS AND PLOTTERS

		Purchase Price	Monthly Maint.
LXV11-XX	Lineprinter/plotter; 300/240/170 lpm printing speeds; 16.7 inch per minute plotting speed; 96 ASCII standard character set; 8 inch per second slow speed; requires a PDP-11/03 or 11/23.	9,950	134
LXY11-XX	Lineprinter/plotter; same as LXV11-XX except requires a UNIBUS PDP-11.	11,250	134
LXY21-XX	Lineprinter/plotter; 600/465/320 lpm print speeds; 33.3 inch per minute plot speed; 96 ASCII standard character set; 16 inch per second paper slow speed; requires UNIBUS PDP-11.	15,800	155
LPV11-AA	Band printer; 300 lpm for 64 ASCII character set; requires PDP-11/03, 11/23.	8,350	95
LPV11-BA	Band printer; 300 lpm for 64 ASCII character set or 215 lpm for 96 ASCII character set; requires PDP-11/03, 11/23.	8,950	95
LPV11-EA	Lineprinter operating at speeds of 60 lpm for 64 ASCII character set; requires PDP-11/23 based system.	13,600	143
LPV11-EB	Lineprinter operating at speeds of 600 lpm for 64 ASCII character set, or 445 lpm for 96 ASCII character set; requires PDP-11/23 based system.	13,600	143
LP11-EA	Lineprinter operating at speeds of 600 lpm for 64 ASCII character set; requires UNIBUS PDP-11 based system.	13,600	143
LP11-EB	Lineprinter operating at speeds of 600 lpm for 64 ASCII character set or 445 lpm for 96 ASCII character set; requires UNIBUS PDP-11 based system.	13,600	143
LP11-AA	Band printer; 300 lpm for 64 ASCII character set; requires UNIBUS PDP-11.	8,350	95
LP11-BA	Band printer; 300 lpm for 64 ASCII character set or 215 lpm for 96 ASCII character set.	8,950	95
LP11-CA (CD)	Lineprinter; 900 lpm for 64 ASCII character set; requires UNIBUS PDP-11.	32,500	195
LP11-DA (DD)	Lineprinter; 660 lpm for 96 ASCII character set; requires UNIBUS PDP-11.	34,500	195
LP11-YA (YD)	Lineprinter; 660 lpm for 64 ASCII character set; requires UNIBUS PDP-11.	24,240	158
LP11-ZA (ZD)	Lineprinter; 436 lpm for 96 ASCII character set; requires UNIBUS PDP-11.	26,280	158

CARD READERS

		Purchase Price	Monthly Maint.
CR11 (A)	Tabletop card reader and controller; 285 cpm card speed; 550 card capacity; standard 12-row 80-column EIA (Hollerith code) hole punched cards; non-packed and packed data formats.	8,250	70

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DEC Datasystem Series

EQUIPMENT PRICES

		Purchase Price	Monthly Maint.

▶ **CARD READERS (Continued)**

		Purchase Price	Monthly Maint.
CR11-BC (BD)	Tabletop card reader and controller; 600 cpm card speed; 1000 card capacity; standard 12-row 80-column EIA (Hollerith code) hole punched cards; non-packed and packed data formats.	11,700	72
CMS11-KA (KB)	Tabletop card reader and controller; 250 cps card speed; 250 card capacity; standard 12-row 80-column EIA (Hollerith code) hole punched cards; non-packed and packed data formats.	4,950	91

EXPANSION HARDWARE

		Purchase Price	Monthly Maint.
DD11-CK	Four slot expansion backplane for use in BA11-K and BA11-L expander boxes; also mounts in the PDP-11/04, 11/24, 11/34A, and PDP-11/44 CPU boxes; accommodates two hex and two quad modules.	470	NC
DD11-DK	Nine slot expansion backplane for use in BA11-K and BA11-L expander boxes; also mounts in PDP-11/04; 11/24, 11/34A, and 11/44 CPU boxes; accommodates seven hex and two quad modules.	940	NC
DS3BA-AA (AD)	BA11-KW (KX) expansion box with cable and 40 inch high cabinet for the addition of disk controllers, magnetic tape controllers, and other peripherals to D350 systems.	7,100	19
BA11-KW (KX)	UNIBUS expansion box; cabinet mountable expander box with bezel and slides for use in H9642-DB (DC) or H9602-CC (CD) cabinets.	3,500	19
DS3QB-AA (AD)	LSI-11 bus expansion kit for D330 systems; includes BA11-NE (NF) expansion mounting box with power supply and nine-slot LSI-11 backplane.		
BA11-NE (NF)	LSI-11 Bus expansion box; cabinet mountable expander box with bezel for use with PDP-11/03L and PDP-11/23 systems; includes one nine slot LSI-11 backplane that provides seven LSI-11 quad slots of mounting space.	2,000	9
DB11-A	UNIBUS repeater; adds 19 unit busloads and allows up to 50 feet of additional UNIBUS length to be added to the system.	2,240	7

UNIBUS COMMUNICATIONS OPTIONS

		Purchase Price	Monthly Maint.
KMC11-A	Auxiliary Communications Processor		
KMC11-A	High-speed general purpose processor that interfaces between synchronous or asynchronous I/O options and the PDP-11 UNIBUS; it uses a 72-bit microcode and operates on 8-bit data paths; the KMC11 includes 1024 16-bit word write operation control memory, and 1024 16-bit data memory; NPR UNIBUS interface provides 8- or 16-bit direct memory access to data buffers or control blocks located in PDP-11 memory under microprogram control.	2,580	23
DL11	Single Line Asynchronous Interfaces		
DL11-WC/WB	EIA/CCITT serial line interface and line frequency realtime clock; switch-selectable character size, parity, stop bits, and speed of operation; operates at full- or half-duplex; the line frequency clock is used when this option is the console interface on a PDP-11/04 or PDP-11/34; the DL11-WB or DL11-WC require a null modem with local devices.	950	7
DL11-WA	20mA serial line interface and line frequency realtime clock; switch-selectable character size, parity, stop bits, and speed of operation; operates at full- or half-duplex; switch-selectable active or passive transmitter and receiver.	990	7
DL11-E	Modem controlling EIA/CCITT serial line interface with jumper-selectable speed, character size, parity and stop bit size; operates at full- or half-duplex; compatible with Bell 103, 113, 202 or equivalent.	1,170	8
DZ11 Asynchronous Multiplexer (Programmed I/O)			
DZ11-A	Asynchronous eight-line multiplexer for EIA/CCITT terminals or lines; features programmable speeds (up to 960 bps) and formats on a per-line basis; operates at full-duplex; can expand to 16 lines with the addition of a DZ11-B and includes 16-line Distribution Pair; includes data set control for use with Bell 103 or 113 modems or equivalent.	2,700	31
DZ11-B	Eight-line EIA/CCITT expansion multiplexer for the DZ11-A.	2,150	27
DZ11-C	Asynchronous 8-line multiplexer for 20mA current loop terminals; features programmable speeds (up to 9600 bps) and formats on a per-line basis; operates at full-duplex; can expand to 16 lines with the addition of a DZ11-D; includes 16-bit Distribution Pan.	3,000	31
DZ11-D	8-line current loop expansion multiplexer for the DZ11-C.	2,310	27
DZ11-E	Asynchronous 16-line multiplexer for EIA/CCITT terminals or lines; features programmable speeds (up to 9600 bps) and formats on a per-line basis; operates at full-duplex; includes 16-line Distribution Pan; includes data set control for use with Bell 103 and 113 modems or equivalent.	4,350	53
DZ11-F	Asynchronous 16-line multiplexer for 20mA current loop terminals; features programmable speeds (up to 9600 bps) and formats on a per-line basis; operates at full-duplex.	5,000	53
DH11	Asynchronous Multiplexer (NPR Output)		
DH11-AD	Complete programmable asynchronous EIA/CCITT 16-line multiplexer; operates full- or half-duplex; includes modem control.	8,950	65
DH11-AE	Complete programmable EIA/CCITT asynchronous 16-line multiplexer; operates full- or half-duplex; does not include modem control.	7,950	54

Single Line Synchronous Interface

		Purchase Price	Monthly Maint.
DUP11	Full- or half-duplex synchronous interface; can be programmed to handle 8-bit character-oriented protocols such as DDCMP and Bisync and bit-oriented protocols such as SDLC and HDLC; hardware calculates CRC-16 when using DDCMP protocol (not Bisync) and CRC/CCITT when using bit-oriented protocols; interfaces to Bell 200 series modems or equivalent at speeds up to 9600 bps.	1,575	11

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DEC Datasystem Series

EQUIPMENT PRICES

		Purchase Price	Monthly Maint.
▶ DMC11/DMR11 Network Link Modules			
DMR11-AC	Network link DDCMP microprocessor and line unit modules for operation support; provides high-speed connection to another DMR11 or DMC11 using twinaxial, coaxial, or triaxial cables up to 18,000 ft.; operates full-duplex with two cables and half-duplex with a single cable.	4,400	37
DMC11-AR	Network link DDCMP microprocessor module (remote); DDMCP protocol implemented in hardware for remote operation; operates full- or half-duplex; NPR input and output transfers; includes firmware for unattended operation (remote load detect).	2,130	20
DMC11-DA	Network link unit module (remote); interfaces to EIA/CCITT synchronous modems (Bell series 200 compatible) at speeds up to 19,200 bps; operates full- or half-duplex; includes data set control for switched network operations; can be used to communicate over common carrier facilities to another DMC11 or to a synchronous interface with software implementation of DDCMP version 3.2.	1,500	7
DMC11-FA	Network link module (remote); interfaces to CCITT V.35/DDS synchronous modems (Bell 500A LI/5 or equivalent) at speeds up to 250,000 bps; includes data set control for full- or half-duplex, private wire operation; can be used to communicate over common carrier facilities to another DMC11 or to a synchronous interface with software implementation of DDCMP version 3.2.	1,880	7
DMR11-AA	Network link DDCMP microprocessor and line unit modules for remote support; speeds up to 19,200 bps; operates full- or half-duplex; includes data set control for switched network operations; can be used to communicate over common carrier facilities to another DMR11, DMC11, or to a synchronous interface with software implementation of DDCMP version 3.1 or 4.0.	4,400	37
DMR11-AE	Network link DDCMP microprocessor and line unit modules for remote support; speeds up to 1,000,000 bps; operates full- or half-duplex; includes data set control for switched network operations; can be used to communicate over common carrier facilities to another DMR11, DMC11, or to a synchronous interface with software implementation of DDCMP version 3.1 or 4.0.	4,400	37
DMR11-AB	Network link DDCMP microprocessor and line unit modules for remote support; interfaces to CCITT V.35/DDS synchronous modems (Bell 500A LI/5 or equivalent) at speeds up to 1,000,000 bps; includes data set control for full- or half-duplex; private wire operation; can be used to communicate over common carrier facilities to another DMR11, DMC11 or to a synchronous interface with software implementation of DDCMP version 3.1 or 4.0.	4,400	37
Communications Arithmetic Option			
KG11-A	Communications Arithmetic Option; computes cyclic redundancy check (CRC), longitudinal redundancy check (LRC), and block check characters (BCC).	1,350	7
DV11 Multiple Line Synchronous/Asynchronous Interfaces			
DV11-AA	Synchronous/asynchronous communications preprocessor for up to 16 EIA/CCITT lines; NPR input and output transfers, table-driven character processing, CRC calculation; up to 9600 bps full-duplex transmission for each line; requires one or two DV11-BA, DV11-BB, or DV11-BC line groups.	6,970	13
DV11-BA	Eight-line synchronous group for use with DV11-AA; can handle character-oriented protocols with switch-selectable character size and format (5 to 8 data bits plus odd, even, or no parity); program-selectable per line choice of two switch selectable sync characters; includes internal clock for local connection; switch-selectable parameters are on a 4-line basis.	5,440	18
DV11-BB	Eight-line asynchronous group for use with DV11-AA; features programmable speeds and formats on a per line basis.	4,800	18
DV11-BC	Eight-line synchronous/asynchronous group for use with DV11-AA; four lines are synchronous (compatible in-line capability to DV11-BA lines); synchronous (compatible in-line capability to DV11-BA lines); four lines are asynchronous (compatible in-line capability to DV11-BB lines).	5,140	18
Modems			
DF02-AA	Direct connect, full-duplex, asynchronous modem with self-contained power supply operating at speeds of 0-300 bps; allows terminals and processors to communicate over unconditioned, dial-up lines; compatible with DF03 modem, Bell 103J, 212A data sets, and all Digital asynchronous data communication controllers that support EIA RS-232-C interface standard and dial-up modem control.	450	11
DF02-AC	Consists of a DF02 modem with serial Automatic Call Unit (ACU), ACU allows initiating calls without operator intervention, and uses an asynchronous ASCII input format at switch-selectable data rates of 110 or 300 bps; can store up to 16 digits for dialing/redialing.	925	13
DF03-AA	Direct connect, full-duplex, synchronous/asynchronous modem with self-contained power supply operating at speeds of 0-300 bps or 1200 bps; allows terminals and processors to communicate over unconditioned, dial-up lines; low-speed operation (0-300 bps) is asynchronous; high-speed operation (1200 bps) can be either character-asynchronous or bit-synchronous; compatible with DF02 modem, Bell System 103J, 212A data sets, and all Digital data communication controllers that support EIA RS-232-C interface standard and dial-up modem.	950	14
DF03-AC	Consists of a DF03 modem with serial Automatic Call Unit (ACU); ACU allows initiating calls without operator intervention and uses an asynchronous ASCII input format at switch-selectable data rates of 110, 300, or 1200 bps; can store up to 16 digits for dialing/redialing.	1,350	15

DEC Datasystem Series

SOFTWARE PRICES

		License Fee

Fortran IV/RT-11

QJ813-AD	Magtape (9-track, 800 bpi)	$ 1,250
QJ813-AG	DECtape II (TU58)	1,250
QJ813-AH	Disk Cartridge (RL02)	1,310
QJ813-AQ	Disk Cartridge (RL01)	1,250
QJ813-AY	Floppy Disk (RX01)	1,250

Basic-11/RT-11

QJ913-AD	Magtape (9-track, 800 bpi)	1,450
QJ913-AG	DECtape II (TU58)	1,450
QJ913-AH	Disk Cartridge (RL02)	1,500
QJ913-AQ	Disk Cartridge (RL01)	1,450
QJ913-AY	Floppy Disk (RX01)	1,450

MU Basic-11/RT-11

QJ921-AG	DECtape II (TU58)	1,320
QJ921-AH	Disk Cartridge (RL02)	1,380
QJ921-AQ	Disk Cartridge (RL01)	1,320
QJ921-AY	Floppy Disk (RX01)	1,320

DECnet-RT

QJ685-AD	Magtape (9-track, 800 bpi)	1,750
QJ685-AG	DECtape II (TU58)	1,750
QJ685-AM	Magtape (9-track, 1600 bpi)	1,750
QJ685-AQ	Disk Cartridge (RL01)	1,750
QJ685-AT	Disk Cartridge (RL06)	1,930
QJ685-AV	Disk Cartridge (RL07)	2,010
QJ685-AX	Floppy Disk (RX02)	1,750
QJ685-AY	Floppy Disk (RX01)	1,750

RT-11 2780/3780 Protocol Emulator

QJD59-AD	Magtape (9-track, 800 bpi)	3,500
QJD59-AG	DECtape II (TU58)	3,500
QJD59-AH	Disk Cartridge (RL02)	3,530
QJD59-AQ	Disk Cartridge (RL01)	3,500
QJD59-AX	Floppy Disk (RX02)	3,500
QJD59-AY	Floppy Disk (RX01)	3,500

FMS-11/RT-11

QJ713-AG	DECtape II (TU58)	3,110
QJ713-AH	Disk Cartridge (RL02)	3,160
QJ713-AQ	Disk Cartridge (RL01)	3,110
QJ713-AY	Floppy Disk (RX01)	3,110

DECtype-300

QJ038-AH	Disk Cartridge (RL02)	4,000
QJ038-AQ	Disk Cartridge (RL01)	4,000
QJ038-AV	Disk Cartridge (RL07)	4,000
QJ038-AX	Double Density Diskette (RX02)	4,000

DIBS-11

QJA30-CH	Disk Cartridge (RL02)	18,700
QJA30-CV	Disk Cartridge (RK07)	18,700

DIBS-11 Order Entry/Invoicing/Inventory

QJA31-CH	Disk Cartridge (RL02)	4,400
QJA31-CQ	Disk Cartridge (RL01)	4,400
QJA31-CV	Disk Cartridge (RL07)	4,400

DIBS-11 General Ledger

QJA33-CH	Disk Cartridge (RL02)	4,400
QJA33-CQ	Disk Cartridge (RL01)	4,400
QJA33-CV	Disk Cartridge (RK07)	4,400

DIBS-11 Accounts Receivable

QJA34-CH	Disk Cartridge (RL02)	4,400
QJA34-CQ	Disk Cartridge (RL01)	4,400
QJA34-CV	Disk Cartridge (RK07)	4,400

DEC Datasystem Series

SOFTWARE PRICES

		License Fee
DIBS-11 Accounts Payable		
QJA35-CH	Disk Cartridge (RL02)	4,400
QJA35-CQ	Disk Cartridge (RL01)	4,400
QJA35-CV	Disk Cartridge (RK07)	4,400
DIBS-11 Payroll		
QJA36-CH	Disk Cartridge (RL02)	4,400
QJA36-CQ	Disk Cartridge (RL01)	4,400
QJA36-CV	Disk Cartridge (RK07)	4,400
DPA/CTS-300		
QJA07-CH	Disk Cartridge (RL02)	15,000
QJA07-CQ	Disk Cartridge (RL01)	15,000
QJA07-CV	Disk Cartridge (RK07)	15,000
CTS-300 RDCP 2780/3780 (For D330)		
DS3CJ-AH	Disk Cartridge (RL02)	4,150
DS3CJ-AQ	Disk Cartridge (RL01)	4,750
DS3CJ-AY	Floppy Disk (RX01)	4,750
CTS-300 RDCP 2780/3780 (For D340 and D350)		
DS3CH-AH	Disk Cartridge (RL02)	4,850
DS3CH-AQ	Disk Cartridge (RL01)	5,600
DS3CH-AT	Disk Cartridge (RK06)	5,600
DS3CH-AV	Disk Cartridge (RK07)	5,600
CTS-300 DICAM 3271 (For D330)		
DS3CN-AH	Disk Cartridge (RL02)	5,100
DS3CN-AQ	Disk Cartridge (RL01)	5,100
DS3CN-AY	Floppy Disk (RX01)	5,100
CTS-300 DICAM 3271 (For D340 and D350)		
DS3CQ-AH	Disk Cartridge (RL02)	5,700
DS3CQ-AQ	Disk Cartridge (RL01)	5,700
DS3CQ-AT	Disk Cartridge (RK06)	5,700
DS3CQ-AV	Disk Cartridge (RK07)	5,700
DS3CQ-AY	Floppy Disk (RX01)	5,700
CTS-300 to CTS-500 Level 3 Upgrade		
QP527-AD	Magtape (9-track, 800 bpi)	15,800
QP527-AH	Disk Cartridge (RL02)	15,800
QP527-AM	Magtape (9-track, 1600 bpi)	15,800
QP527-AQ	Disk Cartridge (RL01)	15,800
QP527-AT	Disk Cartridge (RK06)	16,500
QP527-AV	Disk Cartridge (RK07)	16,500
CTS-500 Basic-Plus-2		
QJ916-AD	Magtape (9-track, 800 bpi)	6,400
QJ916-AH	Disk Cartridge (RL02)	6,450
QJ916-AM	Magtape (9-track, 1600 bpi)	6,400
QJ916-AQ	Disk Cartridge (RL01)	6,400
QJ916-AT	Disk Cartridge (RK06)	6,540
QJ916-AV	Disk Cartridge (RK07)	6,640
Cobol-81		
QJ993-AD	Magtape (9-track, 800 bpi)	6,540
QJ993-AH	Disk Cartridge (RL02)	6,590
QJ993-AM	Magtape (9-track, 1600 bpi)	6,540
QJ993-AQ	Disk Cartridge (RL01)	6,540
QJ993-AT	Disk Cartridge (RK06)	6,690
QJ993-AV	Disk Cartridge (RK07)	6,780
CTS-500 Fortran IV		
QR435-AD	Magtape (9-track, 800 bpi)	3,870
QR435-AH	Disk Cartridge (RL02)	3,920
QR435-AM	Magtape (9-track, 1600 bpi)	3,870
QR435-AQ	Disk Cartridge (RL01)	3,870
QR435-AT	Disk Cartridge (RK06)	4,020
QR435-AV	Disk Cartridge (RK07)	4,110

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► CTS-500 Level 2 to 3 Upgrade

QP529-AD	Magtape (9-track, 800 bpi)	7,800
QP529-AH	Disk Cartridge (RL02)	7,800
QP529-AM	Magtape (9-track, 1600 bpi)	7,800
QP529-AQ	Disk Cartridge (RL01)	7,800
QP529-AT	Disk Cartridge (RK06)	8,100
QP529-AV	Disk Cartridge (RK07)	8,200

DECword/DP

QR480-AD	Magtape (9-track, 800 bpi)	8,500
QR480-AH	Disk Cartridge (RL02)	8,550
QR480-AM	Magtape (9-track, 1600 bpi)	8,500
QR480-AQ	Disk Cartridge (RL01)	8,500
QR480-AT	Disk Cartridge (RK06)	8,600
QR480-AV	Disk Cartridge (RK07)	8,740

Datatrieve-11/CTS-500 Upgrade

QP300-AD	Magtape (9-track, 800 bpi)	7,000
QP300-AH	Disk Cartridge (RL02)	7,050
QP300-AM	Magtape (9-track, 1600 bpi)	7,000
QP300-AQ	Disk Cartridge (RL01)	7,000
QP300-AT	Disk Cartridge (RK06)	7,150
QP300-AV	Disk Cartridge (RK07)	7,240

Dibol-11/DECFORM

QP528-AD	Magtape (9-track, 800 bpi)	8,400
QP528-AH	Disk Cartridge (RL02)	8,400
QP528-AM	Magtape (9-track, 1600 bpi)	8,400
QP528-AQ	Disk Cartridge (RL01)	8,400
QP528-AT	Disk Cartridge (RK06)	8,500
QP528-AV	Disk Cartridge (RK07)	8,600

DMS-500

QJ430-AD	Magtape (9-track, 800 bpi)	3,450
QJ430-AH	Disk Cartridge (RL02)	3,450
QJ430-AM	Magtape (9-track, 1600 bpi)	3,450
QJ430-AQ	Disk Cartridge (RL01)	3,450
QJ430-AT	Disk Cartridge (RK06)	3,650
QJ430-AV	Disk Cartridge (RK07)	3,650

INDENT

QP530-AD	Magtape (9-track, 800 bpi)	2,950
QP530-AH	Disk Cartridge (RL02)	2,950
QP530-AM	Magtape (9-track, 1600 bpi)	2,950
QP530-AQ	Disk Cartridge (RL01)	2,950
QP530-AT	Disk Cartridge (RK06)	3,050
QP530-AV	Disk Cartridge (RK07)	3,150

RJE/HASP

QJ560-XD	Magtape (9-track, 800 bpi)	9,900
QJ560-XH	Disk Cartridge (RL02)	9,900
QJ560-XM	Magtape (9-track, 1600 bpi)	9,900
QJ560-XQ	Disk Cartridge (RL01)	9,900
QJ560-XT	Disk Cartridge (RK06)	9,900
QJ560-XV	Disk Cartridge (RK07)	9,900

FMS-11/RSX Upgrade

QJ718-AD	Magtape (9-track, 800 bpi)	1,550
QJ718-AH	Disk Cartridge (RL02)	1,550
QJ718-AM	Magtape (9-track, 1600 bpi)	1,550
QJ718-AQ	Disk Cartridge (RL01)	1,550
QJ718-AT	Disk Cartridge (RK06)	1,670
QJ718-AV	Disk Cartridge (RK07)	1,760

DATATRIEVE-11/RSX-11M

QP301-AD	Magtape (9-track, 800 bpi)	7,000
QP301-AH	Disk Cartridge (RL02)	7,050
QP301-AM	Magtape (9-track, 1600 bpi)	7,000
QP301-AQ	Disk Cartridge (RL01)	7,000
QP301-AT	Disk Cartridge (RK06)	7,150
QP301-AV	Disk Cartridge (RK07)	7,240 ►

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► **DATATRIEVE-11/RSX-11M Upgrade**

QP311-AD	Magtape (9-track, 800 bpi)	9,670
QP311-AH	Disk Cartridge (RLO2)	9,720
QP311-AM	Magtape (9-track, 1600 bpi)	9,670
QP311-AQ	Disk Cartridge (RLO1)	9,670
QP311-AT	Disk Cartridge (RKO6)	9,820
QP311-AV	Disk Cartridge (RKO7)	9,900

Basic-11/IAS-RSX

QP240-AD	Magtape (9-track, 800 bpi)	3,520
QP240-AH	Disk Cartridge (RLO2)	3,580
QP240-AM	Magtape (9-track, 1600 bpi)	3,520
QP240-AQ	Disk Cartridge (RLO1)	3,520
QP240-AT	Disk Cartridge (RKO6)	3,660
QP240-AV	Disk Cartridge (RKO7)	3,750

PDP-11 Basic-Plus-2

QJ918-AD	Magtape (9-track, 800 bpi)	6,400
QJ918-AH	Disk Cartridge (RLO2)	6,450
QJ918-AM	Magtape (9-track, 1600 bpi)	6,400
QJ918-AQ	Disk Cartridge (RLO1)	6,400
QJ918-AT	Disk Cartridge (RKO6)	6,540
QJ918-AV	Disk Cartridge (RKO7)	6,640

RSX-11 2780/3780 Emulator

QJD82-AD	Magtape (9-track, 800 bpi)	6,400
QJD82-AH	Disk Cartridge (RLO2)	6,430
QJD82-AM	Magtape (9-track, 1600 bpi)	6,400
QJD82-AQ	Disk Cartridge (RLO1)	6,200
QJD82-AT	Disk Cartridge (RKO6)	6,380
QJD82-AV	Disk Cartridge (RKO7)	6,660

Fortran IV/IAS-RSX

QP230-AD	Magtape (9-track, 800 bpi)	1,250
QP230-AH	Disk Cartridge (RLO2)	1,310
QP230-AM	Magtape (9-track, 1600 bpi)	1,250
QP230-AQ	Disk Cartridge (RLO1)	1,250
QP230-AT	Disk Cartridge (RKO6)	1,600
QP230-AV	Disk Cartridge (RKO7)	1,710

PDP-11 Fortran IV-Plus/RSX

QJ668-AD	Magtape (9-track, 800 bpi)	6,670
QJ668-AH	Disk Cartridge (RLO2)	6,670
QJ668-AM	Magtape (9-track, 1600 bpi)	6,670
QJ668-AQ	Disk Cartridge (RLO1)	6,670
QJ668-AT	Disk Cartridge (RKO6)	6,790
QJ668-AV	Disk Cartridge (RKO7)	6,900

PDP-11 Cobol

QP011-AD	Magtape (9-track, 800 bpi)	10,240
QP011-AH	Disk Cartridge (RLO2)	10,290
QP011-AM	Magtape (9-track, 1600 bpi)	10,240
QP011-AQ	Disk Cartridge (RLO1)	10,240
QP011-AT	Disk Cartridge (RKO6)	10,390
QP011-AV	Disk Cartridge (RKO7)	10,480

RMS-11K

QP901-AD	Magtape (9-track, 800 bpi)	3,620
QP901-AH	Disk Cartridge (RLO2)	3,680
QP901-AM	Magtape (9-track, 1600 bpi)	3,620
QP901-AQ	Disk Cartridge (RLO1)	3,620
QP901-AT	Disk Cartridge (RKO6)	3,770
QP901-AV	Disk Cartridge (RKO7)	3,860

Sort-11

QP602-AD	Magtape (9-track, 800 bpi)	950
QP602-AH	Disk Cartridge (RLO2)	1,000
QP602-AM	Magtape (9-track, 1600 bpi)	950
QP602-AQ	Disk Cartridge (RLO1)	950
QP602-AT	Disk Cartridge (RKO6)	1,090
QP602-AV	Disk Cartridge (RKO7)	1,190 ►

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▶ **DECnet-11M**

QJ684-AD	Magtape (9-track, 800 bpi)	4,000
QJ684-AH	Disk Cartridge (RL02)	4,030
QJ684-AM	Magtape (9-track, 1600 bpi)	4,000
QJ684-AQ	Disk Cartridge (RL01)	4,000
QJ684-AT	Disk Cartridge (RK06)	4,180
QJ684-AV	Disk Cartridge (RK07)	4,260

Coral 66

QP066-AD	Magtape (9-track, 800 bpi)	7,600
QP066-AQ	Disk Cartridge (RL01)	7,600
QP066-AT	Disk Cartridge (RK06)	7,600
QP066-AV	Disk Cartridge (RK07)	8,000

DBMS-11/RSX-11M

| QP376-AD | Magtape (9-track, 800 bpi) | 23,800 |
| QP376-AM | Magtape (9-track, 1600 bpi) | 23,800 |

RSX-11/3271 Protocol Emulator (PE)

QJD76-AD	Magtape (9-track, 800 bpi)	6,700
QJD76-AH	Disk Cartridge (RL02)	6,730
QJD76-AM	Magtape (9-track, 1600 bpi)	6,700
QJD76-AQ	Disk Cartridge (RL01)	6,700
QJD76-AT	Disk Cartridge (RK06)	6,880
QJD76-AV	Disk Cartridge (RK07)	6,960

RSX-11M/IAS RJE/HASP

QJS60-XS	Magtape (9-track, 800 bpi)	9,900
QJS60-XH	Disk Cartridge (RL02)	9,900
QJS60-XM	Magtape (9-track, 1600 bpi)	9,900
QJS60-XQ	Disk Cartridge (RL01)	9,900
QJS60-XT	Disk Cartridge (RK06)	9,900
QJS60-SV	Disk Cartridge (RK07)	9,900

FMS-11/RSX

QJ715-AD	Magtape (9-track, 800 bpi)	3,110
QJ715-AH	Disk Cartridge (RL02)	3,160
QJ715-AM	Magtape (9-track, 1600 bpi)	3,110
QJ715-AQ	Disk Cartridge (RL01)	3,110
QJ715-AT	Disk Cartridge (RK06)	3,680
QJ715-AV	Disk Cartridge (RK07)	3,310

RSX-11M/SNA Protocol Emulator

QJD69-AD	Magtape (9-track, 800 bpi)	10,000
QJD69-AH	Disk Cartridge (RL02)	10,030
QJD69-AM	Magtape (9-track, 1600 bpi)	10,000
QJD69-AQ	Disk Cartridge (RL01)	10,000
QJD69-AT	Disk Cartridge (RK06)	10,180
QJD69-AV	Disk Cartridge (RK07)	10,260

RSX DLX-11

QJ689-AD	Magtape (9-track, 800 bpi)	800
QJ689-AH	Disk Cartridge (RL02)	830
QJ689-AM	Magtape (9-track, 1600 bpi)	800
QJ689-AQ	Disk Cartridge (RL01)	800
QJ689-AT	Disk Cartridge (RK06)	890
QJ689-AV	Disk Cartridge (RK07)	1,060

DECnet-11M-Plus

| QR580-AD | Magtape (9-track, 800 bpi) | 5,000 |
| QR580-AM | Magtape (9-track, 1600 bpi) | 5,000 |

DBMS-11/RSX-11M-Plus

| QR515-AD | Magtape (9-track, 800 bpi) | 21,850 |
| QR515-AM | Magtape (9-track, 1600 bpi) | 21,850 |

DBMS-11/RSX-11M-Plus Upgrade

| QR516-AD | Magtape (9-track, 800 bpi) | 10,520 |
| QR516-AM | Magtape (9-track, 1600 bpi) | 10,520 ▶ |

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▶ **Fortran IV/RSTS/E**

QR435-AD	Magtape (9-track, 800 bpi)	3,870
QR435-AH	Disk Cartridge (RL02)	3,920
QR435-AM	Magtape (9-track, 1600 bpi)	3,870
QR435-AQ	Disk Cartridge (RL01)	3,870
QR435-AT	Disk Cartridge (RK06)	4,020
QR435-AV	Disk Cartridge (RK07)	4,110

PDP-11 Fortran IV/Plus/RSTS/E

QR100-AD	Magtape (9-track, 800 bpi)	6,670
QR100-AH	Disk Cartridge (RL02)	6,670
QR100-AM	Magtape (9-track, 1600 bpi)	6,670
QR100-AQ	Disk Cartridge (RL01)	6,670
QR100-AT	Disk Cartridge (RK06)	6,790
QR100-AV	Disk Cartridge (RK07)	6,900

RSTS/E-2780 (CTS-500)

QPD10-AD	Magtape (9-track, 800 bpi)	7,000
QPD10-AH	Disk Cartridge (RL02)	7,030
QPD10-AM	Magtape (9-track, 1600 bpi)	7,000
QPD10-AQ	Disk Cartridge (RL01)	7,000
QPD10-AT	Disk Cartridge (RK06)	7,180
QPD10-AV	Disk Cartridge (RK07)	7,260
QPD10-AY	Floppy Disk (RX01)	7,000

DECnet/E

QP690-AD	Magtape (9-track, 800 bpi)	3,750
QP690-AH	Disk Cartridge (RL02)	3,780
QP690-AM	Magtape (9-track, 1600 bpi)	3,750
QP690-AQ	Disk Cartridge (RL01)	3,750
QP690-AT	Disk Cartridge (RK06)	3,930
QP690-AV	Disk Cartridge (RK07)	4,010

RSTS/E 2780/3780 Emulator (CTS-500)

QRD06-AD	Magtape (9-track, 800 bpi)	7,400
QRD06-AH	Disk Cartridge (RL02)	7,430
QRD06-AM	Magtape (9-track, 1600 bpi)	7,400
QRD06-AQ	Disk Cartridge (RL01)	7,400
QRD06-AT	Disk Cartridge (RK06)	7,580
QRD06-AV	Disk Cartridge (RK07)	7,660

RSTS/E 3271 Protocol Emulator (CTS-500)

QRD05-AD	Magtape (9-track, 800 bpi)	8,000
QRD05-AH	Disk Cartridge (RL02)	8,030
QRD05-AM	Magtape (9-track, 1600 bpi)	8,000
QRD05-AQ	Disk Cartridge (RL01)	8,000
QRD05-AT	Disk Cartridge (RK06)	8,180
QRD05-AV	Disk Cartridge (RK07)	8,260 ■