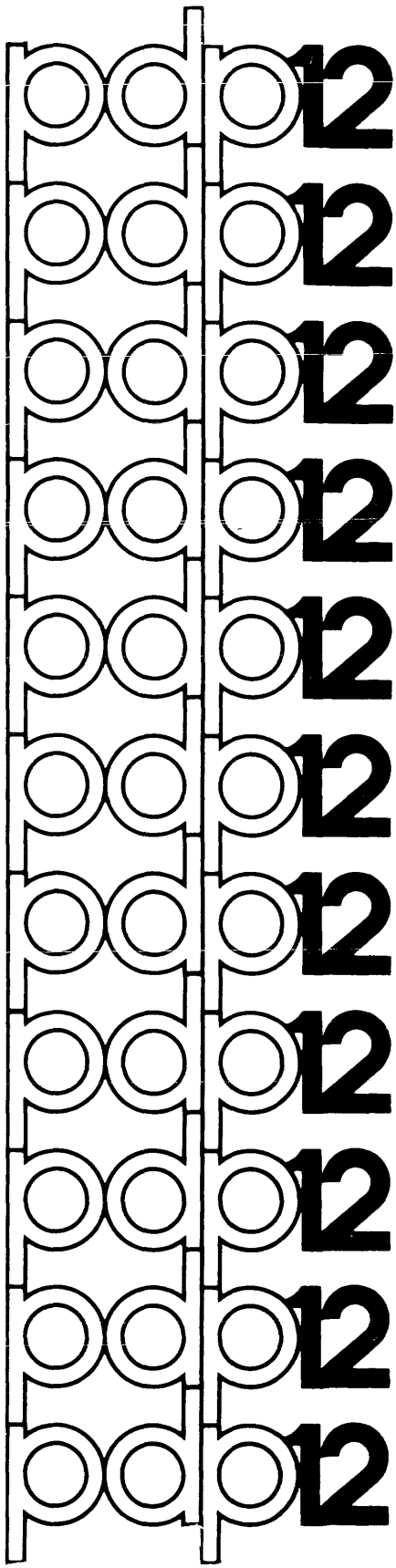
digital



SOFTWARE PACKAGE AND SERVICES

IMPORTANT – PLEASE READ

DEC-12-BW1J-D

SOFTWARE PACKAGE AND SERVICES

For additional copies, order DEC-12-BW1J-D from Software Distribution Center, Digital Equipment Corporation, 146 Main Street, Maynard, Massachusetts 01754

First Printing, June 1971
Revised, June 1972

The material in this handbook, including but not limited to instruction times and operating speeds, is for information purposes and is subject to change without notice.

Dear Customer:

The following paragraphs offer suggestions for using your PDP-12 Computer System; an overview of the current Software Package (Appendix A) and Software Services (Appendix B) is also provided in this document.

Immediately upon receipt of your PDP-12 computer, you should (1) read this document and the LAP6-DIAL[1] manual and (2) use the PIP program to make copies of the LINCtapes which you plan to use.

If you did not order a PDP-12 DEC Supplies Kit (Appendix C) with your PDP-12, you may order the kit now. Individual items, such as LINCtapes or Teletype[2] paper, are also available. Included is a DEC supplies price list. Appendix D of this manual contains the PDP-12 Price List and should be referenced if duplicate copies of part, or all, of the Software Package are required.

We recommend a careful reading of Appendix E, which describes the details of the DIAL software release, and Appendix F, which describes other PDP-12 software. Appendix G is a table of required and supported PDP-12 options.

Please be certain to keep all the maintenance programs (write-ups and tapes) near the computer to facilitate service by your DEC Service Representative.

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[1]LAP6-DIAL is commonly referred to as DIAL.

[2]Teletype is a registered trademark of the Teletype Corporation.

APPENDIX A
PDP-12 SOFTWARE PACKAGE

The basic PDP-12 Software Package consists of LINCtapes, paper tapes, and looseleaf notebooks containing program documentation. The components of the package are inventoried in the PDP-12 Software List (which includes the PDP-8/I Software List). It is a good idea to verify the Software Package with the Check List. Any discrepancies should be reported to the Software Distribution Center[1].

From a functional viewpoint, all PDP-12 software falls into one of three broad categories: "user" software, "demo" software and "maintenance" software. User software is software which is useful in applying the computer to specific technical problems. It includes programs for specific applications, systems programs, and utility programs. Demo software consists primarily of the DEMO-12 Monitor and programs taken from the LINC-8 program library (the programs have been modified to run under the Monitor). Some are intended for demonstration/amusement only; some are useful applications programs, though unsupported by DEC. Maintenance software consists of "hardware diagnostics" - programs designed to test the operation of the PDP-12 hardware. Maintenance software is used primarily by maintenance personnel and is not normally of interest to people doing applications programming.

The LINCtapes supplied in the PDP-12 Software Package contain user programs, a demo program and two maintenance programs.

ALL ARE LAP6-DIAL, VERSION 2 TAPES

DIAL can be used as DIAL-V2 for 4K systems or as DIAL-MS for 8K and larger systems. The program GENASYS must be used to combine the DIAL-V2 binaries into a DIAL-MS system (refer to Appendix A of the LAP6-DIAL Programmer's Reference Manual. Each DIAL program has

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[1] Formerly called the Program Library.

an accompanying publication which describes its operation in detail. In addition, each maintenance program has a source file associated with it, containing information pertaining to that particular program; each user program is defined in Appendix E. The tapes containing user and demo programs are 1600 blocks long. The DIAL programs in general recognize only the first 1000_8 blocks. The extra blocks are utilized for storage of sources which will be used infrequently. To manipulate files beyond block 777_8, use PIP to copy them to another tape or disk; the files will be appropriately assigned for DIAL on the new tape or disk.

TRAINING

A two-week PDP-12 Programming Course is given periodically at DEC's main plant in Maynard, Massachusetts, U.S.A.; Palo Alto, California, U.S.A.; Reading, Berkshire, United Kingdom; Cologne, Germany; and Paris, France. This course is an excellent way to learn about both basic PDP-12 Programming and PDP-12 Software Package. "Hands-on" training, using the PDP-12's in the Digital Training Department's fully-equipped Computer Lab, is a particularly valuable feature of the course. A PDP-12 Programming Course enrollment is included with each PDP-12 purchased.

SOFTWARE SUPPORT

The DEC Software Support Organization is world-wide and provides technical assistance to our customers to enable them to understand and better utilize our porducts.

The following software support services are available from DEC:

Installation Support -- DEC's software support staff will assist in the installation (by the original purchaser) of DEC major Category 1 Software Products[1].

Advisory Support -- The local software support organization will provide consultation at no charge to the original DEC equipment purchaser for a fixed period of time during the 90 day period following the initial computer system installation by DEC.

Additional Software Support -- If desired, DEC will provide software support services on a fixed-rate-plus-expense basis. Typical examples of such support include assisting a customer with an application program, providing extended maintenance on Category 2 software, assisting in the maintenance of a customer software system, and educating a

[1] Defined in Appendix D.

customer on the features and operation of DEC standard software following the expiration of the advisory support period.

Remedial Support Services -- This service is available on Category 1 software only for a specified period after installation. Remedial Support is provided at two levels:

Software Performance Reports (SPR) and

Telephone Inquiry Service (to handle emergency cases where a software failure[1] prevents a system from fulfilling it's prime application).

SOFTWARE DISTRIBUTION CENTER

New and revised programs and manuals, Software Performance Report forms and cumulative Software Manual Updates are available from the Software Distribution Center. Please include the code number and a brief description of the program or manual requested. Orders may be forwarded by mail with a purchase order number or check to your local Digital office or to the Software Distribution Center. Orders originating outside the United States must be processed through your local Digital office.

SOFTWARE INFORMATION SERVICE

Announcements of new and revised software, as well as programming notes, software problems, and documentation corrections are published monthly in Digital Software News for the PDP-8 & PDP-12. Articles in this newsletter contain information to update the cumulative Software Performance Summary for the PDP-8 & PDP-12. PDP-12 users benefit from the software development effort for the PDP-8 computer because of the PDP-12's ability to execute PDP-8 programs. If you are interested in receiving Digital Software News please notify your Software Specialist or Software Information Service. Additional copies of the Software Performance Summary may requested without cost from the Software Distribution Center.

[1] Failure is defined as a discrepancy between the performance of the software and its description in the pertinent DEC documentation.

DECUS

The Digital Equipment Computer User's Society (DECUS) offers a number of valuable services to PDP-12 users, including a user's library, a periodical newsletter, DECUSCOPE, and the technical symposia which are held each year in Australia, Canada, Europe and the United States.

APPENDIX C

BASIC PDP-12 KIT CONTENTS

DESCRIPTION	QTY.PER SYS.
PDP-12 LOG BOOK	1
PDP-12 MAINT. MANUAL VOL I,II,III,IV	4
PDP-12 INSTRUCTION CARD	1
SUPPLIER'S LIST	1
ROLLED OILED PAPER TAPE	3
TELETYPE PAPER (TWX) FOR ASR, KSR 33	1 roll
TELEPRINT PAPER FOR ASR/KSR 35	1 case
TELETYPE MANUAL VOL. 1	1
TELETYPE MANUAL VOL. 2	1
TELETYPE MANUAL PARTS	1
TELETYPE RIBBON	1
EMPTY SPOOLS	2
UNCERTIFIED DECTAPE/LINC TAPE	2
CLEANING KIT	1
TU 56 MANUAL	1
VR 14 MANUAL	1

Revised, April, 1972

To order this kit or individual items from the kit, contact your local Digital sales office.

The following distribution and support categories apply to Digital Equipment Corporation's software products. After formal announcement software products are available to DEC customers subject to the then prevailing terms and conditions and charges specified by DEC. Charges for software products may be made irrespective of whether software support services are available from DEC.

DISTRIBUTION CATEGORIES

The distribution procedure for DEC software products is denoted by a code which will appear with each software product on the Software Distribution Center price list. The distribution codes are:

G General Distribution:
Distributed without charge with the delivery of the requisite system or hardware configuration, additional copies and programs completed after system delivery are available at prevailing charges upon order from the Software Distribution Center.

R Distribution by Request:
All other software available from DEC upon order from the Software Distribution Center at prevailing charges.

SOFTWARE CATEGORIES

Digital Equipment Corporation makes available four categories of software. The categories reflect the types of support a customer may expect from DEC for a specified software product. DEC reserves the right to change the category of a software product at any time. The four categories are:

Category 1
Software Products Supported At No Charge

This classification includes current versions of Monitors, programming languages and support programs provided by DEC. DEC will provide installation (when applicable), advisory, and remedial support at no charge. These services are limited to original purchasers of DEC computer systems who have the requisite DEC equipment and software products.

At the option of DEC a software product may be re-categorized from Category 1 to Category 2 for a particular customer if the software product has been modified by the customer or a third party.

Category 2

Software Products That Receive Support for a Fee

This category includes prior versions of Category 1 programs and all other programs available from DEC for which support is given. Programming assistance (additional support), as available, will be provided on these DEC programs and non-DEC programs when used in conjunction with these DEC programs and equipment supplied by DEC.

Category 3

Pre-Release Software

DEC may elect to release certain software products to customers in order to facilitate final testing and/or customer familiarization, in this event, DEC will limit the use of such pre-release software to internal, non-competitive applications. Category 3 software is only supported by DEC where this support is consistent with evaluation of the software product. While DEC will be grateful for the reporting of any criticism and suggestions pertaining to a pre-release, there exists no commitment to respond to these reports.

Category 4

Non-Supported Software

This category includes programs for which no support is given (either at no charge or at a fee).

Uncategorized software is given the designation U.

The PDP-8 Price List supplies the prices for the PDP-8 subset of the Software Package.

Title	Price	Software Category	Distribution Category
PDP-8/I Basic Software Package (documents and tapes)	$ 215.00	1	G
PDP-12 Basic Software Package	560.00	1	G
FPP Software Package LIBKIT-12-UFLTA-A-K	195.00	1	G
LINCtapes			
LAP6-DIAL User Programs			
DEC-12-SE2E-UO[1]	35.00	1	G
DEC-12-SE3C-UO	35.00	1	G
DEC-12-SE4C-UO	35.00	1	G
AIPOS System Tape			
DEC-12-SE6E-UO	35.00	1	G

[1] "UO" = LINCtape; "D" = Document; "PB" = Paper Tape Binary; "PA" = Paper Tape ASCII.

DEMO12 Programs	DEC-12-UXZC-UO	$ 35.00	2	G
Maintenance Programs				
MAINDEC-12-D7AH-UO		35.00	1	G
MAINDEC-12-D8GF-UO		35.00	1	G
User Program Documents				
FOCAL-12	DEC-12-AJAA-D	3.00	1	G
FOCAL-12 Listing	DEC-12-AJAA-LA	10.00	1	R
FPP Assembler	DEC-12-AQZA-D	5.00	1	G
TED	DEC-12-EOSA-D	5.00		
CONVERT	DEC-12-ESYB-D	5.00	1	G
QANDA	DEC-12-FISA-D	5.00	1	G
DISPLAY	DEC-12-FLSB-D	5.00	1	G
FFTD	DEC-12-FQEA-D	5.00	1	R
CREF12	DEC-12-FRZB-D	5.00	1	G
MILDRED	DEC-12-FZDA-D	5.00	1	G
FRED	DEC-12-FZFA-D	1.00	1	G
FPP Users Manual	DEC-12-GQZA-D	5.00		
LAP6-DIAL Manual	DEC-12-SE2D-D	2.00	1	G
DIAL-MS Update	DEC-12-SE2D-DN	1.00	1	G
L8SIM	DEC-12-SI1B-D	5.00	1	G
AIPOS	DEC-12-SQ1A-D	5.00	1	G
MASH Documents	DEC-12-SQ2A-D	5.00	1	G
MIDAS	DEC-12-SQ3A-D	5.00	1	G
PDP-12 User's Handbook	DEC-12-SRZB-D	5.00	1	G
CATACAL	DEC-12-UW1A-D	5.00	1	G
ADTAPE/ADCON	DEC-12-UW2A-D	5.00	1	G
TISA	DEC-12-UW3A-D	5.00	1	G
SINPRE	DEC-12-UW4A-D	5.00	1	G
NMRSIM	DEC-12-UW5A-D	5.00	1	G
LIFE	DEC-12-UW8B-D	5.00	1	G
MAGSPY	DEC-12-UZSA-D	5.00	1	G
SIGAVG	DEC-12-UZ1A-D	5.00	1	G
FPP Support Library	DEC-12-YEXA-D	5.00	1	G
MARK12	DEC-12-YITB-D	5.00	1	G
PRTC12-F	DEC-12-YIYA-D	5.00	1	G
PATCH	DEC-12-YU2A-D	5.00	1	G

Demo Program Documents

Monitor Technical Description	DEC-12-MRZA-D	5.00	2	G
User's Guide	DEC-12-UXZB-D	5.00	2	G
DEMO Monitor Listing	DEC-12-TRZA-LA	7.00	2	R

Maintenance Programs and Documents

Instruction Test Part 1	MAINDEC-12-DØBA-D	5.00	1	G
	DØBA-PB	5.00	1	G
Part 2	MAINDEC-12-DØAB-D	5.00	1	G
	DØAB-PB	5.00	1	G
Part 3	MAINDEC-12-DØCB-D	7.00	1	G
	DØCB-PB	5.00	1	G
Tape Quickie	MAINDEC-12-DØGA-D	5.00	1	G
	DØGA-PB	5.00	1	G
DR12 Relay Test	MAINDEC-12-DØHA-D	5.00	1	G
	DØHA-PB	5.00	1	G
CM12 A,B TEST	MAINDEC-12-DØJA-D	5.00	1	G
	DØJA-PB	5.00	1	G
Coulter S Interface Test	MAINDEC-12-DØKA-D	5.00	1	G
	DØKA-PB	5.00	1	G
FPP-12 TRACE	MAINDEC-12-DØLC-D	18.00	1	G
	DØLC-PB	5.00	1	G
FPP-12 Instruction Test 2A	MAINDEC-12-DØMC-D	10.00	1	G
	DØMC-PB	5.00	1	G
FPP-12 Instruction Test 2B	MAINDEC-12-DØNB-D	5.00	1	G
	DØNB-PB	5.00	1	G
FPP-12 Instruction Test 2C	MAINDEC-12-DØOB-D	8.00	1	G
	DØOB-PB	5.00	1	G
FPP-12 Address Test	MAINDEC-12-DØPC-D	5.00	1	G
	DØPC-PB	5.00	1	G
FPP-12 Exerciser	MAINDEC-12-DØQA-D	7.00	1	G
	DØQA-PB	5.00	1	G
KF-12B Automatic Priority Interrupt	MAINDEC-12-DØSA-D	8.00	1	G
	DØSA-PB	5.00	1	G
FPP-12 Trace-EPM	MAINDEC-12-DØTA-D	18.00	1	G
	DØTA-PB	5.00	1	G
FPP-12 Instruction Test 3 EPM Version	MAINDEC-12-DØUA-D	8.00	1	G
	DØUA-PB	5.00	1	G
Extended Memory Control Test	MAINDEC-12-D1AC-D	7.00	1	G
	D1AC-PB	5.00	1	G
JMPSELF	MAINDEC-12-D1BA-D	5.00	1	G
	D1BA-PB	5.00	1	G

Maintenance Programs and Documents (Cont.)

PDP-12 Address Test	MAINDEC-12-D1CA-D	5.00	1	G
	D1CA-PB	5.00	1	G
PDP-12 Checkerboard	MAINDEC-12-D1DA-D	5.00	1	G
	D1DA-PB	5.00	1	G
Float 1's and Ø's Through Memory	MAINDEC-12-D1EA-D	5.00	1	G
	D1EA-PB	5.00	1	G
Basic Memory Control Test	MAINDEC-12-D1FA-D	5.00	1	G
	D1FA-PB	5.00	1	G
KP12: Power Fail Test	MAINDEC-08-D1KA-D	5.00		
	D1KA-PB	5.00		
VTØ6 (Datapoint 33Ø)	MAINDEC-12-D2AA-D	7.00	1	G
	D2AA-PB	5.00	1	G
CD12 Data Break Card Reader	MAINDEC-12-D2BA-D	5.00	1	G
	D2BA-PB	5.00	1	G
Tape Control Test (TC12I)	MAINDEC-12-D3AE-D	14.00	1	G
	D3AE-PB	5.00	1	G
PDP-12 MAGtape Data Exerciser (LINCtape)	MAINDEC-12-D3DB-D	7.00	1	G
	D3DB-PB	5.00	1	G
TC12-F Option	MAINDEC-12-D3EB-D	7.00	1	G
	D3EB-PB	5.00	1	G
Tape Data Test	MAINDEC-12-D3FB-D	5.00	1	G
	D3FB-PB	5.00	1	G
Tape Control Test (TC12II)	MAINDEC-12-D3GA-D	12.50	1	G
	D3GA-PB	5.00	1	G
DF32 Disk List Logic Test	MAINDEC-12-D5BA-D	7.00	1	G
	D5BA-PB	5.00	1	G
DVØ8-N Data Verifier Test	MAINDEC-12-D5CA-D	5.00	1	G
	D5CA-PB	5.00	1	G
VR12 Display	MAINDEC-12-D6BC-D	5.00	1	G
	D6BC-PB	5.00	1	G
A to D Test	MAINDEC-12-D6CC-D	5.00	1	G
	D6CC-PB	5.00	1	G
A to D Test	MAINDEC-12-D6DA-D	5.00	1	G
	D6DA-PB	5.00	1	G
System Exerciser	MAINDEC-12-D7CD-D	10.00	1	G
	D7CD-PB	5.00	1	G
Chain Monitor Diagnostic System	MAINDEC-12-D7DA-D	5.00		
	D7DA-UO	35.00		
DR12 Relay Register Test	MAINDEC-12-D8AB-D	5.00	1	G
	D8AB-PB	5.00	1	G
KW12A Clock Test	MAINDEC-12-D8CD-D	10.00	1	G
	D8CD-PB	5.00	1	G

DCØ4TST	MAINDEC-12-D8DA-D	5.00	1	G
	D8DA-PB	5.00	1	G
KW12 B-C Simple Clock	MAINDEC-12-D8EB-D	5.00	1	G
	D8EB-PB	5.00	1	G
DCØ2-F Option Test	MAINDEC-12-D8FB-D	5.00	1	G
	D8FB-PB	5.00	1	G
DPØ2 Test	MAINDEC-12-D8HA-D	5.00	1	G
	D8HA-PB	5.00	1	G
CCØ2 Test	MAINDEC-12-D8JA-D	5.00	1	G
	D8JA-PB	5.00	1	G
VWØ1 Control Test	MAINDEC-12-D8KA-D	5.00	1	G
	D8KA-PB	5.00	1	G
A.I.P Instruction Test I	MAINDEC-12-D8LA-D	7.00	1	G
	D8LA-PB	5.00	1	G
A.I.P Instruction Test II	MAINDEC-12-D8MB-D	8.00	1	G
	D8MB-PB	5.00	1	G
DB12 Test	MAINDEC-12-D9BA-D	5.00	1	G
	D9BA-PB	5.00	1	G
PDP-12 Operating Procedures	MAINDEC-12-D9CA-D	5.00	1	G

The following software kits may be purchased from the Software Distribution Center at the prices listed below. Prices are specified for initial copies and additional copies.

Initial Copies

Title	Code	Price	Software Category	Distribution Category
Edusystem 5Ø LINCtape Kit		$5,000.00	1	R
RTPS FORTRAN IV LINCtape Kit	LIBKIT-12-LFOLA-A-K	1,000.00	1	R
OS/12 LINCtape Kit	LIBKIT-S8-OS8LA-A-K	300.00	1	R
X8 System Exerciser LINCtape Kit	LIBKIT-X8-DIQCA-A-K	300.00	2	R

Additional Copies

Edusystem 5Ø Kit Registration Form	N/A	N/C	1	R
TSS/8 System Managers Memo	N/A	N/C		
TSS/8 System User Guide	DEC-T8-MRFC-D	5.00		
TSS/8 Extended Basic	DEC-T8-AJZA-D	5.00		
TSS/8 System Manager's Guide	DEC-T8-MBZB-D	3.00		
Introduction to Programming (5 copies)		2.00 ea		
Programming Languages (5 copies)		2.00 ea		
PDP-8 & PDP-12 Software Performance Summary Vol.2 (5 copies)		N/C		
Monitor System LINCtape				
TSS/12 Library LINCtape	DEC-12-SY1A-UO	100.00		
TSS/12 DIAL LINCtape	DEC-12-SY2A-UO	100.00		
BUILD	DEC-E8-SBHA-PB	5.00		
PIP	DEC-E8-PPFA-PB	5.00		

Title	Code	Price	Software Category	Distribution Category
Additional Copies (Continued)				
XDDT	DEC-E8-JDFA-PB	$ 5.00		
Binary Loader	DEC-Ø8-LBAA-PM	5.00		
RTPS FORTRAN IV Kit			1	R
Registration Form	N/A	N/C		
RTPS FORTRAN IV User's Guide	DEC-Ø8-LRTPA-A-D	5.00		
RTPS FORTRAN IV Library Reference Manual	DEC-Ø8-LRTSA-A-D	5.00		
RTPS FORTRAN IV System LINCtape	DEC-12-LRTLA-A-UO	35.00		
OS/12 LINCtape Kit				
Required hardware: PDP-12, 8K and LINCtape			1	R
Registration Form	N/A	N/C		
OS/8 System User's Guide	DEC-S8-OSUMA-A-D	5.00		
Change Notice to OS/8 User's Guide	DEC-S8-OSUMA-A-DN1	N/C		
Software Support Manual	DEC-Ø8-MEXB-D	5.00		
OS/12 System LINCtape #1	DEC-12-OSYSA-A-UO	50.00		
OS/12 System LINCtape #2	DEC-12-OSC4A-A-UO	120.00		
OS/8 System Binary Tape	DEC-S8-OOS8A-A-PB	20.00		
OS/8 Command Decoder Binary Tape	DEC-S8-OCMDA-A-PB	15.00		
RK8 Configuration Binary Tape	DEC-S8-ODRKA-A-PB	10.00		
RFØ8 Configuration Binary Tape	DEC-S8-ODRFA-A-PB	10.00		
DF32 Configuration Binary Tape	DEC-S8-ODDFA-A-PB	10.00		
OS/8 System Build Binary Tape	DEC-S8-OBLDA-A-PB	25.00		
OS/8 Auxiliary Device Handler Binary Tape	DEC-S8-OBADA-A-PB	15.00		

Title	Code	Price	Software Category	Distribution Category
Additional Copies (Continued)				
TD8-E Bootstrap (RIM) Binary Tape	DEC-S8-OTBSA-A-PM	$ 3.00		
TD8-E Initializer (RIM) Binary Tape	DEC-S8-OTINA-A-PM	10.00		
Multi-Break System Exerciser	MAINDEC-Ø8-D9KA-D	7.00		
	MAINDEC-Ø8-D9KA-PB	5.00		
PDP-8 System Exerciser			2	R
Registration form	N/A	N/C		
DEC/X8 File LINCtape (OS/8 - PS/12 format)	MAINDEC-X8-DDQAA-A-UO	35.00		
DEC/X8 User's Guide	MAINDEC-X8-DIQAB-A-D	5.00		
DEC/X8 Module "TC12LT" TC12 LINCtape Exerciser	MAINDEC-X8-DDTCA-A-D	5.00		
DEC/X8 Module "DF32DS" DF32/DF32-D DECdisk System Exerciser	MAINDEC-X8-DIDFA-A-D	5.00		
DEC/X8 Module "EAEDP" KE8-E EAE Double Precision and SAM Instructions Exerciser	MAINDEC-X8-DHKEA-A-D	5.00		
DEC/X8 Module "MRIØ8A" Memory Reference Instruction Test	MAINDEC-X8-DIKAA-A-D	5.00		
DEC/X8 Module "RANMRI" Random Memory Reference Instruction Exerciser	MAINDEC-X8-DIKAB-A-D	5.00		
DEC/X8 Module "OPRATE" Operate Instruction Test	MAINDEC-X8-DIKAC-A-D	5.00		

Title	Code	Price	Software Category	Distribution Category
Additional Copies (Continued)				
DEC/X8 Module "NOTFUN" Non-functional IOT Test	MAINDEC-X8-DIKAD-A-D	$ 5.00		
DEC/X8 Module "EAEALL" EAE Exercise of MUY, DVI, SHL, LSR, ASR and NMI Instructions	MAINDEC-X8-DIKEA-A-D	5.00		
DEC/X8 Module "PRNTER" Printer Exerciser	MAINDEC-X8-DILPA-A-D	5.00		
DEC/X8 Module "HSRHSP" High Speed Reader/ Punch Exerciser	MAINDEC-X8-DIPCA-A-D	5.00		
DEC/X8 Module "RFØ8DS" RFØ8 Disk System Exerciser	MAINDEC-X8-DIRFA-A-D	5.00		
DEC/X8 Module "TCØ1DT" TCØ1/TCØ8 DECtape Exerciser	MAINDEC-X8-DITCA-A-D	5.00		
DEC/X8 Module "TIMERA" Real Time Clock Elapsed Time Reporter Job Dead Checker and Rotation Randomizer	MAINDEC-X8-DIDKA-A-D	5.00		
	MAINDEC-X8-DIDKA-A-PB	5.00		
DEC/X8 Module "FPP12"	MAINDEC-X8-DIFPA-A-D	5.00		
	MAINDEC-X8-DIFPA-A-PB	5.00		
DEC/X8 Module "RK8DS" RK8 Disk System Exerciser	MAINDEC-X8-DIRKA-A-D	5.00		
	MAINDEC-X8-DIRKA-A-PB	5.00		
DEC/X8 Module "TC58MT" TC58 DECMAG-tape Exerciser	MAINDEC-X8-DITCB-A-D	5.00		
	MAINDEC-X8-DITCB-A-PB	5.00		

The following software kits may be purchased from the Software Distribution Center at the prices listed below. No items included in these kits can be purchased separately, (with the exception of DEC-12-SQ1A-D).

		Price	Software Category	Distribution Category
AIPOS SOURCE PACKAGE		$ 300.00	1	R

Includes the following:

- AIPOS User's Manual
  DEC-12-SQ1A-D
- AIPOS Monitor Internal Descriptions
  DEC-12-UR1A-D
- AIPOS Job Control Processor I/O Internal Descriptions
  DEC-12-UR2A-D
- AIPOS BUILD/INIT Internal Descriptions
  DEC-12-UR3A-D
- AIPOS DORA Internal Descriptions
  DEC-12-UR4A-D
- AIPOS File Handling Functions & MOVE Internal Descriptions
  DEC-12-UR5A-D
- AIPOS Source LINCtape Tape 1
  DEC-12-SEXA-UO
- AIPOS Source LINCtape Tape 2
  DEC-12-SEXA-UO
- AIPOS Source LINCtape Tape 3
  DEC-12-SEXB-UO
- MASH Listing
  DEC-12-SQZA-LA

LAP-6 DIAL	DEC-12-SEYA-UO	100.00	1	R

Includes the following:

- LAP 6 DIAL, Version 2A (Tape 1 of 2)
  DEC-12-SEYA-UO
- LAP 6 DIAL, Version 2B (Tape 2 of 2)
  DEC-12-SEYA-UO
- LAP 6 DIAL, ASSEMBLER
  DEC-12-ZW1A-D
- LAP 6 DIAL, PIP
  DEC-12-ZW2A-D
- LAP 6 DIAL, PXDXSRC
  DEC-12-ZW3A-D
- LAP 6 DIAL, PRINTMS
  DEC-12-ZW4A-D
- LAP 6 DIAL, SAVE BINARY
  DEC-12-ZW5A-D
- LAP 6 DIAL, LOADER
  DEC-12-ZW6A-D

		Price	Software Category	Distribution Category
LAP 6 DIAL (Continued)				
LAP 6 DIAL, EDITOR V2	DEC-12-ZW7A-D			
LAP 6 DIAL, ADD PROGRAM	DEC-12-ZW8A-D			
LAP 6 DIAL, FILE COMMANDS	DEC-12-ZW9A-D			
LAP 6 DIAL MS	DEC-12-SEZB-UO	$ 100.00	1	R

Includes the following:

- LAP 6 DIAL-MS, Part 1
  DEC-12-SEZB-U1
- LAP 6 DIAL-MS, Part 2
  DEC-12-SEZB-U2

Write-ups

- DIAL-MS ASSEMBLER
  DEC-12-ZR1B-D
- DIAL-MS PIP
  DEC-12-ZR2B-D
- DIAL-MS PXDXSRC
  DEC-12-ZR3B-D
- DIAL-MS PRINTMS
  DEC-12-ZR4B-D
- DIAL-MS BUILD
  DEC-12-ZR5B-D
- DIAL-MS LOADER
  DEC-12-ZR6B-D
- DIAL-MS EDITOR
  DEC-12-ZR7B-D
- DIAL-MS FILE
  DEC-12-ZR8B-D
- Building LAP 6 DIAL Sources
  DEC-12-ZR9B-D
- DIAL-MS CREF 12
  DEC-12-ZRØB-D

DEC-12-SE2E-UO

NAME	SOURCE BN	SOURCE BLKS	BINARY BN	BINARY BLKS
PIP			247	21
MARK12	1512	50	470	7
FOCAL-12			477	26
FOCAL4K	776	1	226	21
$THRUF0*	1562	12	525	4
CATACAL			531	21
MAGSPY			216	10
QANDA	660	17	213	3
MILDRED	677	35	210	3
SIGAVG1			200	10
LIFE			552	21
GENASYS			164	5
DIAL-MS1			573	20
DIAL-MS2			144	20
DIAL-MS3			613	6
DIAL-MS4			124	20
TISA			621	20
DISPLAY	107	13	122	2
ADTAPE			71	16
ADCON			57	12
NMRSIM			37	20
CREF12			171	7
L8SIM			34	3
FFTD			641	17
SIGAVG2			24	10
FRED	734	40		
SIGAVG4			12	12
SINPRE	1450	36	0	12
FFTC-1	1000	50		
FFTC-2	1050	33		
MILQAN	1103	54		
SIN256	1157	4		
LIFE B01	1163	37		
LIFE B4	1222	43		
LIFE B5	1265	22		
LIFE B6	1307	47		
SIGAVG	1356	65		
CNTRL2	1443	3		
CNTRL4	1506	4		
SE2E	777	1		

*This program is loaded via FOCAL-12, not DIAL-MS. Refer to the FOCAL-12 Manual, DEC-12-AJAA-D.

NAME	SOURCE BN	SOURCE BLKS	BINARY BN	BINARY BLKS
PIP			247	21
CONVERT	746	27	470	5
FORCOM	14	1	475	20
FORSYS	13	1	231	16
BINLOAD	11	1	515	3
PATCH	15	24	520	4
PRTC12-F	1145	65	524	12
YQ1B-PB			222	7
YQ2B-PB			213	7
YQ3B-PB			536	10
YQ4B-PB			202	11
25F-EAE1			546	7
25F-EAE2			555	7
25F-EAE3			171	11
25F-EAE4			564	11
FMAA-PA	167	2		
FMBA-PA	164	3		
FMCB-PA	160	4		
FMDA-PA	575	10		
FMEA-PA	151	7		
FMFC-PA	605	10		
FMGB-PA	146	3		
FMHA-PB			137	7
FMIA-PA	615	1		
FMJA-PA	616	3		
FMKA-PA	135	2		
10UASCII	621	1		
11UASCII	622	4		
14UASCII	131	4		
15UASCII	626	5		
18UASCII	125	4		
19UASCII	122	3		
21UASCII	633	5		
22UASCII	117	3		
23UASCII	640	5		
24UASCII	111	6		
25UASCII	645	10		
28UASCII	102	7		
29UASCII	655	12		
21-U-BIN			77	3
NMRSIME			57	20
CATACALE			667	21
CAT1E			50	7
CAT1			41	7
MAGSPY	710	36		
TIP1	775	73		
TIP2	1070	55		
ADTAPE	1232	71		
ADCON	1323	46		
NMR2	1371	40		
NMR3	1431	52		
SE3C	12	1		
L8SIM	1503	14		

	SOURCE		BINARY	
NAME	BN	BLKS	BN	BLKS
PIP			247	7
TED	1146	53	240	7
CAT2	1000	61		
CAT3	1061	65		
SE4C	267	1		

DEC-12-UXZC-UO

NAME	SOURCE BN	SOURCE BLKS	BINARY BN	BINARY BLKS
LOADER.			0	1
SEG01-3.			1	3
SEG11-4.			4	4
INITLIZ.			10	1
GREETIN.			11	1
BALLOON.			12	5
SEG04-4.			17	1
DMOINDX.			20	2
Q AND A.			22	2
.DA-DTST	24	2	165	3
.DDATA12	26	4	37	6
.DMAGSPY	32	2	153	10
.DFRQANA	35	2	72	11
.DDIAL	45	1	163	2
.EFREQ12	46	2	170	3
.EWAVES	50	2	173	3
.EB.BALL	52	1	176	3
.EBASMEM	53	1	201	5
.FSOLACE	54	1	206	2
.FMUSIC	55	1	210	6
.FKALEID	56	1	216	2
.FDRAW12	57	2	220	3
.FECHASK	61	2	223	3
.FSPCWAR	63	3	226	16
.TDAYCOM	66	1	244	4
.TSTPWCH	67	2	250	6
.TCLOCK	71	1	256	5
SCRATCH.	103	50		
GREETING	530	1	776	1
INDEXSRC	263	5		
OMAGSPY	540	37		
DRAW12	470	6		
KALIED	476	1		
H-DIAL	477	1		
H-FRQANA	500	2		
EX.PROG.	526	1	520	2
AD DEMO	527	1	614	3
BINLOAD			535	3
H-FREQ12	502	2		
H-B.BALL	504	1		
H-ECHASK	505	2		
H-DAYCOM	507	1		
CAROLS			617	11
H-STPWCH	510	1		
LOADER	635	2	637	2
INITLIZE	641	17	660	3
SEG0	663	34	717	6
SEG1	725	36	763	6
BALLOON			771	5
H-DRAW12	511	2		
H-SOLACE	513	1		
H-CLOCK	514	1		
H-BASMEM	515	1		
H-MAGSPY	516	2		
H-A-DTST	522	1		
DATA12	777	17		
ECHASK	531	3		
H-DATA12	577	3		
KW12SUBC	602	5		
STPWCH	1016	25		
FRQANA	1043	31		
UXZC	523	1		
04-06-70	**524**	2		

DEC-12-D7AH-UO (Basic diagnostics)

	SOURCE		BINARY	
NAME	BN	BLKS	BN	BLKS
PIP	604	1	251	17
MARK12	167	1	470	7
RIMLDR	605	1	477	3
BINLDR	606	1	502	3
CBL	607	1	505	3
CBH	104	1	245	4
ADDRSLO	612	1	510	3
ADDRSHI	103	1	241	4
ADDRS12	563	1	513	2
RANISZ	101	1	515	5
RANJMP	102	1	235	4
JMPJMS	100	1	522	4
JMPSELF	610	1	233	2
MEMDATA	613	1	231	2
INST1	614	1	526	13
INST2	77	1	217	12
INST2A	726	1	203	14
INST2B	602	1	541	6
TC12DAEX	200	1	547	10
MEMC1	577	1	665	12
CPTST1	712	1	564	4
CPTST2	713	1	146	21
CPTST3	114	1	131	15
TTY1	714	1	570	7
TTY2	715	1	615	13
TC12F	117	1	121	10
EXTMC	120	1	630	6
EXTAT	116	1	636	7
EXTCB	721	1	654	11
EXTMC12	170	1	62	15
TC12 I	202	1	41	21
TC12 II	177	1	727	15
TAPEDATA	201	1	107	4
ADTST	171	1	172	3
RELAYTST	762	1	706	4
DISPTST	175	1	557	4
KW12A	176	1	20	21
ONOFF	765	1	722	3
CB12	115	1	3	3

NAME	SOURCE BN	SOURCE BLKS	BINARY BN	BINARY BLKS
PIP	42	1	251	17
MARK12	41	1	470	7
RIMLDR	37	1	477	3
BINLDR	40	1	502	3
DB12	250	1	505	5
DC04	247	1	515	11
VT06	530	1	76	13
LP08	111	2	145	16
PECITRE	555	1	534	7
PECITIT	245	1	207	11
PECITDRT	246	1	543	12
PECITDT	512	1	201	6
DC02F	172	1	26	11
DC02E	531	1	571	6
EAE3A	532	1	130	15
EAE3B	533	1	615	14
DP12A	577	1	114	14
PWRFAIL	631	1	600	3
KW12BC	637	1	632	5
CALCOMP	113	1	640	10
SYEX12	75	1	650	26
KF12B	74	1	711	20
HSRDPUN	244	1	603	12
PT08	173	1	526	2
DF32DD	243	1	220	21
DF32DL	242	1	556	13
RF08DD	241	1	60	13
RF08MD	513	1	174	5
LINEPNTR	514	1	54	4
CARDREAD	43	1	703	6

```
INDEX OF: MAY13,1971
INDEX LENGTH =    4
VOLUME LENGTH = 1600
SYSTEM

FILNAM EXT   START  LEN
BUILD .BIN     35    11
INIT  .BIN     35    11
CREATE.BIN     46    27
INTERP.BIN     46    27
TRANS .BIN     46    27
PRINT .BIN     46    27
DISHDR.BIN     46    27
FIXHDR.BIN     46    27
MOVE  .BIN     75     6
DORA  .BIN    103    53
FOCAL .12     156    26
LOAD  .BIN    204     6
GAUSS         212    31
MIDAS .BIN    243    30
MSORT .BIN    273    21
LOOKI .BIN    314    52
LOOKE .BIN    366    47
ACQUI .BIN    435    74
CALIB .BIN    435    74
MCHROM.BIN    531     6
TICGEN.BIN    537     5
BCKSUB.BIN    544     6
WORK  AREA    552  1026
```

	SOURCE		BINARY	
NAME	BN	BLKS	BN	BLKS
PIP			247	21
MARK12			240	7
FPPASM			216	22
FPPASM1	470	61		
FPPASM2	143	53		
FPPASM3	551	41		
FPPLIB	126	15		
FPPLB1	73	33		
FPPLIBS	612	45		
FPPLB1S	42	31		
FPPLB2S	657	74		

DIAL-V2 Sources

DEC-12-SEYA-UO

PART 1

	SOURCE		BINARY	
NAME	BN	BLKS	BN	BLKS
PIP			251	17
MARK12	202	47	470	7
REMAKE			477	17
MAGSPY	516	36		
CONVERT	554	27		
L8SIM	166	14		
CLEARSYM	7	1		
ASSEMTWO	614	75		
ASSEMONE	10	73		
QANDA	147	17		
DIALV2A	146	1		

PART 2

	SOURCE		BINARY	
NAME	BN	BLKS	BN	BLKS
PIP			251	17
MARK12			470	7
PXDXSRC	31	21		
PRINTMS	105	15		
PIP2	511	71		
LOADERST	237	12		
PIP1	171	46		
PIP4	602	56		
PIP3	122	47		
SAVBINST	660	15		
DIALV2B	104	1		
EDITORV2	676	77		
APNPTRV2	477	12		
FCOMSV2	64	20		

DIAL-MS Sources

DEC-12-SEZB-UO

PART 1

	SOURCE		BINARY	
NAME	BN	BLKS	BN	BLKS
PIP			247	21
MARK12			470	7
PIP1	477	56		
PIP2	151	76		
PIP3	76	53		
PIP4	555	40		
PIP5	615	66		
FILECOMS	16	54		
CREF12	703	51		
GENASYS	3	13		

PART 2

	SOURCE		BINARY	
NAME	BN	BLKS	BN	BLKS
PIP			247	21
MARK12			240	7
BUILD	150	70		
ASSEM1	470	45		
ASSEM2	535	50		
ASSEM3	102	46		
EDITOR1	605	37		
EDITOR2	14	66		
PXDXSRC	644	21		
PRINTMS	665	15		
LOADER	702	25		
MILDRED	727	35		

NAME	SOURCE BN	SOURCE BLKS	BINARY BN	BINARY BLKS
DA	220	50		
DB	470	51		
DC	177	21		
DA1	140	37		
DA2	541	26		
DA3	121	17		
ADA	567	1		
ADB	570	1		
OVR0	571	12		
OVR1	103	16		
OVR2	603	12		
OVR3	64	17		
OVR4	615	15		
OVR5	46	16		
OVR6	632	12		
OVR7			644	3
SOVR7			44	2
FORA	647	74		
FORB	6	36		
FORCH	5	1		
MOVE	743	15		
B02	760	54		
MA02	1034	61		
MB02	1115	31		
JL02	1146	25		
CM02	1173	61		
XSA02	1254	40		
XSB02	1314	50		

NAME	SOURCE BN	SOURCE BLKS	BINARY BN	BINARY BLKS
M0	562	74		
MS2	535	25		
MS0	113	42		
M2	53	40		
M1	215	32		
MS1	155	35		
MIDAS			23	30
MSORT			656	21
M	212	2		
M3	470	45		

	SOURCE		BINARY	
NAME	BN	BLKS	BN	BLKS
PIP			247	21
MARK12			470	7
MASHEC	112	34		
ACQ27	652	60		
ACFPPT	753	55		
PAFPP	146	38		
MLB1S	217	30		
OVLYC4	1166	11		
CURFIT4	1267	16		
ML32S	1305	74		
REPORTC	477	61		
MASHFPPN	66	24		
PREAC	1054	54		
PACPU2	1177	70		

APPENDIX E

UPDATE OF LAP6-DIAL

The latest release of LAP6-DIAL provides implementation of RK8 disks and LP08 line printer, chaining of programs, and several new applications programs. A brief description of the user programs follows (note that some require additional hardware - e.g., KW12A clock or 8K of memory); see the individual descriptions for particulars.

ADTAPE/ADCON

ADTAPE is a data acquisition program that allows the user to simultaneously sample from 1 to 16 A/D channels at sampling rates up to 1000 points/second and up to a maximum time of 40 seconds/point, display the output of any two channels on the scope, and output all results to LINCtape in real time. ADTAPE has a setup mode that allows the user to define a wide variety of sampling schemes via either the keyboard/scope or LINCtape. The program ADCON is utilized subsequent to ADTAPE and allows the user to stratify ADTAPE LINCtape output for a given channel on contiguous tape blocks.

BINLOAD

The Binary Loader (DEC-08-LBAA-PB) is also included in the tape for those using binary paper tapes. It is self starting and loads into field Ø. If one wishes to use it in field 1, read in the first block, the header block, and change:

Word 1	from 62Ø2	to 6212
Word 357	from 7777	to Ø
Word 377	from Ø	to 7777

and rewrite the block.

CATACAL

CATACAL is a box car averager and data manipulation program that can acquire data from an external instrument at rates that range from .25m to 35 seconds per point. CATACAL has the capability of reading and writing on LINCtape; it can output one or two spectra to either the scope or an X-Y recorder. It can also differentiate, integrate, strip, and compare spectra and display the results on the scope. CATACALE has the same capabilities as CATACAL, but uses EAE. Note that reassembly of either program requires DIAL-MS. CAT2 and CAT3 are the sources for the program; CAT1 and CAT1E are the floating-point overlays.

CONVERT

CONVERT translates a LAP6 or LAP6-3L source program on LINCtape to source usable by DIAL.

CREF12

CREF12 allows the DIAL-MS user to generate cross-reference listings of all user defined symbols with the line numbers at which the symbol was defined and used.

DIAL

LAP6-DIAL, commonly referred to as DIAL, is supplied in two versions: DIAL-V2, for non-disk systems and DIAL-MS for 8K disk systems. DIAL

is the PDP-12 operating system and includes assembling, editing, and PIP capabilities.

DISPLAY

DISPLAY enables a data display facility for those routines which do not require complex display processing or cannot sacrifice the core for such a display. The routine displays any contiguous section of core via a moving window, with a cursor and octal readout of cursor positions to facilitate operator interaction.

FFTD

Fast Fourier transforms and inverse Fast Fourier transforms can be performed on 4 to 1024 real or complex points using the FFTD (Fast Fourier) Transform and Display) program. The real and imaginary parts of the input or output data and the magnitude and scale factor of the output data can be displayed on the scope via a moving window. Transformed data can be stored on DIAL or data LINCtapes or disks.

FOCAL4K

FOCAL4K (DEC-08-AJAE-PB) is included on the tape for convenience of loading. FOCAL is an on-line, conversational, interpretive language designed to solve numerical problems using short, easy-to-learn, imperative English statements.

FOCAL-12

FOCAL-12 is an extension of FOCAL designed to optimize ease of use of the PDP-12 and its standard peripherals, including the display scope, LINCtape, disk, A/D channels, sense switches, and KW12 clock. DIAL files are utilized for program and/or data storage and retrieval.

FORCOM/FORSYS

The 4K FORTRAN System is included on the tape: FORCOM, the compiler (DEC-08-AFC1-PB) and FORSYS, the operating system (DEC-08-AFC3-PB).

FRED/MILDRED

The File Replacement, Entry and Deletion subroutine processes the DIAL tape indices for the user, freeing him from writing the clerical function of maintaining the file entries. MILDRED processes tape and/or disk indices using the DIAL-MS I/O subroutines.

GENASYS

The tapes distributed by the Program Library are set up to operate with LAP6-DIAL V2. Those users with 8K of core memory who wish to use the disk version of LAP6-DIAL may convert to DIAL-MS using GENASYS.

LIFE

Acquired data is characterized and stored for subsequent matching and retrieval by the program LIFE, Library File Entry. A library of spectra data is created on LINCtape or disk by specifying features of the data via a cursor and moving window on the display scope. Unknowns then can be compared with the library for identification. LIFE is particularly useful with data obtained by the PDP-12 data acquisition programs such as TISA and ADTAPE.

L8SIM

The LINC-8 Simulator Trap Processor handles Teletype input and output for LINC-8 and classic LINC programs when they are run on the PDP-12. It must be loaded into the PDP-12 core memory with any LINC-8 or classic LINC program which uses the keyboard or any classic LINC program which uses the Teleprinter in order for that program to run on the PDP-12.

MAGSPY

The MAGSPY program provides a moving window for scanning data stored on digital magnetic tape. The data is displayed on the scope and can be scanned at a rate determined by a potentiometer setting. The data can be interpreted either as a binary point plot or as packed ASCII characters.

MARK12

The MARK12 program is used to format tapes to be used with the PDP-12. Three format options are available including a 1600_8 block format, and, by using the subroutines within MARK12, the user can generate a tape of arbitrary format.

NMRSIM

NMRSIM is a program that allows the user to calculate theoretical spectra of wide variety of compounds. The user inputs the appropriate parameters from the keyboard, such as spin, chemical shifts, and coupling constants. Calculated line spectra are displayed on the scope. NMRSIM can output spectra to LINCtape and also can read, merge and display a series of spectra from LINCtape which effectively simulates large spin systems or mixtures of compounds. NMRSIME performs the same functions as NMRSIM, but also uses EAE. Note that reassembly of both programs requires DIAL-MS. NMR2 and NMR3 are the sources for the program, CAT1 and CATE are the floating point overlays.

PATCH

The PATCH program will modify any location in any TBLK on tape unit 1. Its primary function is to provide a method for making small patches to LINCtape binaries. For example, PATCH can be used to modify load and go arguments in a LAP6-DIAL binary header TBLK.

PIP

The Peripheral Interchange Program provides a flexible means of transferring data among peripheral devices such as LINCtape, Teletype, high-speed paper-tape reader/punch, line printer, disk and card reader. Symbolic and binary files, as well as absolute data, are processed in response to scope-directed operator requests.

PRTC12-F

The program PRTC12-F operates the TC12-F tape option and allows the user to read and write in the forward direction DECtapes that have been formatted on the PDP-8, PDP-9, PDP-10 or PDP-15 computers.

QANDA

QANDA is a subroutine which allows a user to display textual information on the CRT display, ask questions of the viewer, allow editing of the input, and receive answers.

SIGAVG/SINPRE

SIGAVG is a multisweep signal averager that allows the user to extract a signal from a signal/noise external environment, and display it on the scope. SIGAVG can sample at rates that range from 55-4Ø95 microseconds per point per instrument, can support a maximum of five instruments, can take up to 4Ø96 sweeps, and can output averaged results to LINCtapel. SINPRE converts the output of SIGAVG (two word) to the commonly used one word format. SIGAVG1, SIGAVG2, and SIGAVG4 are the binary versions described in the Signal Averager document; CNTRL2 and CNTRL4 are the parameter tables described in the same document.

TED

TED (Tape Editor) allows selective modification of any specified block of tape or disk via a CRT display and simple keyboard commands. Ten locations of a block and a movable cursor are displayed at a time. Changes can be single or multi-word.

TISA

TISA can acquire asynchronous or synchronous data simultaneously from up to five instruments at rates that do not exceed 1/2 millisecond/point and store data on LINCtape. Data is displayed on the scope via a moving window and cursor with X-Y decimal read out. TISA has a setup mode that allows the user to define a wide variety of experiments via either the keyboard/scope or LINCtape and supports up to 32K of core. Data can be acquired from instruments that are interfaced via shaft encoders or potentiometers or both. With the power to call any LAP7-DIAL program, TISA is able to interact with all PDP-12 software.

APPENDIX F

ADDITIONAL SOFTWARE FOR THE PDP-12

AIPOS

AIPOS is a comprehensive real-time data acquisition and manipulation operating system for the laboratory environment. File handling functions, an interactive display, a wide range of mathematical functions, and a constantly expanding library of programs are all designed for simplicity of usage.

DEMO12

DEMO12 contains a variety of data acquisition, reduction, manipulation and presentation programs which operate on the PDP-12A.

FPP ASSEMBLER

The FPP Assembler translates PDP-8 and floating point op codes into binary code in 2 passes. The FPP hardware greatly increases calculating speeds and an additional instruction set enhances capabilities. Two word or floating point format is permitted.

FPP SUPPORT LIBRARY

The FPP Support Library is a group of routines to handle all I/O and mathematical calculations commonly required by the FPP hardware user. Only requested routines need be loaded. The Library performs FPP hardware interfacing needed by the programmer, so he need not code his own I/O routines.

MASH

The Mass Spectrometer Handler (MASH) is a complete interactive data acquisition, processing and report generating system, utilizing the interfacing of a PDP-12 computer to any single mass spectrometer (or mass spectrometer/gas chromatograph combination) at a user's site. Three programs provide for the specification of parameters and control of all instrumentation during an experiment. The programs are:

Calibration (CALIB) which allows a recalibration at the mass spectrometer to correct for drift; Acquisition (ACQUI), which acquires and processes in either multiple scan (useful if a gas chromatograph is attached to the mass spectrometer) or single scan mode; Report Generator (LOOK) which displays the results of the scan(s).

All three MASH programs are run under the standard AIPOS system, and all MASH files are compatible with standard AIPOS files.

MIDAS/MSORT

MIDAS (Multi Instrument Data Acquisition Software) is a general data acquisition program for the LDP system which acquires data from multiple instruments (8) in a synchronous or asynchronous manner and throughputs that data to mass storage (RK8 Disk or LINCtape).

MIDAS allows control over experiments via Schmitt Triggers, external syncs, analog inputs, clock, sense lines, relays, and keyboard. The controls may be dependent upon or independent of other on-line instruments in the MIDAS environment. The program recognizes all AIP hardware configurations, extended core, and up to 8 mass storage devices, and also allows setup of instruments while acquiring data from other on-line experiments.

MSORT (MIDAS Sorter) converts the output of MIDAS from a given experiment into a three word floating point format that is interpretable by other LDP software, e.g., DORA.

OS/12

The OS/12 Operating System is a powerful programming system for the PDP-12 series of computers. This system permits use of a wide range of peripherals and all available core up to 32K. OS/12 offers a versatile Keyboard Monitor which allows the user to control the flow

programs and extensive I/O facilities at the Monitor level -- many commonly performed I/O functions such as file LOOKUPS, ENTERS, and CLOSES have been incorporated as part of the Monitor.

OS/12 includes a library of powerful system programs which allow the user to do program development using FORTRAN or assembly language. Included are: Symbolic Editor (EDIT), PAL8 Assembler, Peripheral Interchange Program (PIP), Cross Reference (CREF), Absolute Binary Loader (ABSLDR), Octal Debugging Program (ODT), FORTRAN, Library Setup (LIBSET) and System Builder (BUILD).

OS/12 also has a Command Decoder, device handlers, and a User Service Routine (USR). OX/12 provides true device-independence.

The OS/12 system controls the copying of data from any medium to any other medium by means of subroutine calls to execute I/O routines. Logical names can be assigned to devices within the system to enable symbolic referencing of devices.

Variable length I/O buffers can be specified by the user program. OS/12 takes full advantage of the RK8 disk pack for the fast bulk storage, yet full system services are possible with a single DECtape.

The OS/12 system uses the following devices:

LINCtape (PDP-12)
DF32/RF08 disk
RK8 disk

If DF32 is the system device, at least 64K (2 platters) must be available. In addition, if disk is the system device, high-speed reader/punch provides a very useful tool.

Several devices can be interfaced to a single OS/12 system. These optional devices include:

high-speed paper tape reader/punch

up to four RK8 disks

up to four RS08 disks

up to four DF32 disks

card reader (optical mark or punched cards)

line printer

PDP-12 LINCtape

any other device for which it is possible to write a device handler in one or two pages of core.

RTPS FORTRAN

RTPS FORTRAN IV provides the computational power of ANSII standard FORTRAN IV, supports libraries of commonly used subroutines and allows the use of complex overlay structures. This FORTRAN is an extension of the existing OS/8 system software and as such uses many of the existing OS/8 programs, particularly the Keyboard Monitor, Command Decoder and Editor.

All RTPS FORTRAN IV programs use the powerful FPP-12 floating point processor, a parallel processor to the PDP-8 or PDP-12, which fetches instructions and accesses data directly from core memory.

The FPP-12 uses the DEC standard PDP-8 floating-point format, which includes a 12-bit signed two's complement exponent and a 24-bit signed two's complement fraction. All single-precision calculations are carried to 28 bits of precision and rounded to 24 bits after normalization. Double precision calculations are carried to 60 bits and truncated. Double precision arithmetic requires the use of double precision hardware.

APPENDIX G

REQUIRED AND SUPPORTED HARDWARE

The following matrix summarizes the required and supported PDP-12 options for each program.

Program	Additional Hardware and Software				
	DIAL-MS	8K Core Mem.	KW12 Clock	Disk	F.P.P.
ADTAPE/ ADCON			x		
AIPOS		x	*	*	*
BINLOAD					
CATACAL		x	x		
CONVERT					
CREF12	x	x		*	
DEMO12	*	x			
DIAL-MS		x		*	
DISPLAY		*			
FFTD	x	x		*	
FOCAL4K					
FOCAL-12	x	x	*	*	
FORCOM/ FORSYS					
FPP Assembler	x	x		*	*
FPP Support Library	x	x		*	x
FRED		*			
MILDRED		*		*	
GENASYS					
LIFE	x	x		*	
L8SIM					
MAGSPY					
MARK12					

Additional Hardware and Software (Cont.)

Program	DIAL-MS	8K Core Mem.	KW12 Clock	Disk	F.P.P.
MASH		x	x	*	x
MIDAS/ MSORT				*	
NMRSIM		x	x		
OS/12		x		*	
PATCH					
PIP		*		*	
PRTC12-F					
QANDA RTPS FORTRAN		x		*	x
SIGAVG/ SINPRE		*	x		
TED	x	x			
TISA		*	x		

x = required
* = optional

HOW TO OBTAIN SOFTWARE INFORMATION

Announcements for new and revised software, as well as programming notes, software problems, and documentation corrections are published by Software Information Service in the following newsletters.

Digital Software News for the PDP-8 & PDP-12
Digital Software News for the PDP-11
Digital Software News for the PDP-9/15 Family

These newsletters contain information applicable to software available from Digital's Program Library, Articles in Digital Software News update the cumulative Software Performance Summary which is contained in each basic kit of system software for new computers. To assure that the monthly Digital Software News is sent to the appropriate software contact at your installation, please check with the Software Specialist or Sales Engineer at your nearest Digital office.

Questions or problems concerning Digital's Software should be reported to the Software Specialist. In cases where no Software Specialist is available, please send a Software Performance Report form with details of the problem to:

Software Information Service
Digital Equipment Corporation
146 Main Street, Bldg. 3-5
Maynard, Massachusetts 01754

These forms which are provided in the software kit should be fully filled out and accompanied by teletype output as well as listings or tapes of the user program to facilitate a complete investigation. An answer will be sent to the individual and appropriate topics of general interest will be printed in the newsletter.

Orders for new and revised software and manuals, additional Software Performance Report forms, and software price lists should be directed to the nearest Digital Field office or representative. U.S.A. customers may order directly from the Program Library in Maynard. When ordering, include the code number and a brief description of the software requested.

Digital Equipment Computer Users Society (DECUS) maintains a user library and publishes a catalog of programs as well as the DECUSCOPE magazine for its members and non-members who request it. For further information please write to:

DECUS
Digital Equipment Corporation
146 Main Street, Bldg. 3-5
Maynard, Massachusetts 01754

Software Package and Services
DEC-12-BW1J-D

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