

JUL 1972

# DIGITAL SOFTWARE NEWS

## FOR THE

## PDP-8 & PDP-12

Software Information Service  
Digital Equipment Corporation  
Maynard, Massachusetts 01754

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FOR THE PDP-8 AND THE PDP-12

Digital Software News for the PDP-8 & PDP-12 is designed to provide users of PDP-8 and PDP-12 software with up to date information on software problems, programming notes, and new and revised software. Each article, other than announcements and documentation corrections, is coded sequentially by system program in the lower right corner for ease in maintaining a quick reference file. The original material for such a file is supplied in the Software Performance Summary for the PDP-8 & PDP-12. This publication which is placed in each basic software kit, is a collection of all current information on known software problems, patches, and programming notes. As new versions correct software problems and obsolete patches, and reprinted manuals include programming notes and manual corrections, new articles in the Digital Software News will announce the revised software and specify by code which article should be removed from your Software Performance Summary file. Articles may also be replaced when new information becomes available; such as, procedure to circumvent a problem may replace the original report of the problem. All articles in the Digital Software News which should be added to your file will be appropriately coded.

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PDP-8 & PDP-12 SOFTWARE NEWS

JULY 1972

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PDP-8 NEW AND REVISED SOFTWARE

RTPS FORTRAN IV package

The complete package has been submitted to the Software Distribution Center and is available now. There are currently 2 packages: DECTape and LINCTape.

Customers may order this software for the applicable fee:

	<u>FIRST COPY</u>	<u>ADDITIONAL COPIES</u>
<u>The DECTape package includes:</u>		
System Software DEC-08-LRTDA-A-UC	\$1000.00 for	\$35.00
Lab Peripheral Addendum DEC-08-LRTPA-A-DN	DECTape package	N/C
<u>Lab Peripheral Tapes:</u>		
Plot-Paper tape Source DEC-08-LLB1A-A-PA		\$ 5.00
ADC-Paper tape Source DEC-08-LLB2A-A-PA		\$ 5.00
REALTM-Paper tape Source DEC-08-LLB3A-A-PA		\$ 5.00
<u>The LINCTape package includes:</u>		
LINCTape DEC-12-LRTLA-A-UO	\$1000.00 for LINCTape package	\$35.00
<u>Both packages contain:</u>		
RTPS FORTRAN IV User's Manual DEC-08-LRTPA-A-D	(part of both packages)	\$ 5.00
RTPS FORTRAN IV Library Reference Manual DEC-08-LRTSA-A-D	(part of both packages)	\$ 5.00

All Prices are in U.S. dollars and apply to U.S. customers only. Because currency and import considerations affect the prices in all countries outside the U.S., all other users must check with the nearest Digital office or representative to place their orders.

U.S. customers may send orders with purchase order, check or money order directly to

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Digital Equipment Corporation  
146 Main Street  
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PDP-8 REVISED DOCUMENTATION

The following programs have been revised to correct all known problems.

Customers may order this software for the applicable fee:

KE8E (EAE) Instruction Test-1 (MAINDEC-8E-DØLB)		
Paper Tape Binary	MAINDEC-8E-DØLB-PB	\$5.00
Document	MAINDEC-8E-DØLB-D	\$8.00
KE8E (EAE) Instruction Test-2 (MAINDEC-8E-DØMB)		
Paper Tape Binary	MAINDEC-8E-DØMB-PB	\$5.00
Document	MAINDEC-8E-DØMB-D	\$7.00
KP8E Power Fail/Auto Restart Test (MAINDEC-08-DHKPA)		
Paper Tape Binary	MAINDEC-08-DHKPA-PB	\$5.00
Document	MAINDEC-08-DHKPA-D	\$5.00

DF32/DF32D Disk Data Text (MAINDEC-08-D5CG)

(also refer to article MAINDEC 13 for further information)

Paper Tape Binary	MAINDEC-08-D5CF-PB	\$5.00
Document	MAINDEC-08-D5CF-D	\$8.00

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PDP-12 REVISED DIAGNOSTIC SOFTWARE

Customers may order the following revised software for the applicable fee:

Optional System Diagnostic tape (MAINDEC-12-D8GF)

This Linctape was updated to include revisions of the system exerciser program (MAINDEC-12-D7CD) and the DC02F program (MAINDEC-12-D8FB)

Linctape MAINDEC-12-D8GF-UO \$35.00

System Exerciser (MAINDEC-12-D7CD)

This program was revised to correct an error in the RF08 Module.

Paper Tape Binary MAINDEC-12-D7CD-PB \$ 5.00  
Document MAINDEC-12-D7CD-D \$10.00

A.I.P. INSTRUCTION TEST II (MAINDEC-12-D8MB)

This program was revised to correct an error in A/D calibration routine.

Paper Tape Binary MAINDEC-12-D8MB-PB \$ 5.00  
Document MAINDEC-12-D8MB-D \$ 8.00

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LAB 8/e

Problem with the Advanced Averager

This program will fail when TRIGGER is entered if in Section I the channels are selected so that they store the data block links over the trigger section (4272-4365 of field 0). A three word link is stored in core at the end of each data block. If the channels are selected so that the end of the data block is in the same core locations as TRIGGER, the end of the block link will be stored over the trigger section.

To avoid this problem, create a CONTROL TAPE and run from it.



DF32/DF32D DISK DATA TEST (MAINDEC-08-D5CG)

Correction to the document

The procedure for testing a 50 cycle disk is missing from the document.

To correct this problem, set SR10 to a 1. This is mentioned in the first page of the listing.

OS/8 PIP

Patch to add line feeds to FORTRAN formatted output

It was previously reported that formatted I/O to mass storage does not automatically insert a line feed after a carriage return. (This is to permit over-writing on a line on output as required by the FORTRAN standard.) This lack of line feed causes difficulty primarily when using PIP to print the FORTRAN formatted output file. The following patch to OS/8 PIP can be added via ODT to add a line feed after each carriage return.

```
.GET SYS PIP
.ODT
13047/0356
```

Examine location 13047 - if it contains 0356, change location 13156 to 0022. If it contains 4757 change location 13160 to 0022.

Then change these locations:

<u>LOCATION</u>	<u>NEW CONTENTS</u>
13156 or 13160	0022
13337	5752
13352	6476
16476	1705
16477	7112
16500	7620
16501	5706
16502	1307
16503	3410
16504	5706
16505	7644
16506	3241
16507	0212

```
↑C
.SA SYS PIP
```

The option W can then be specified to PIP when the insertion of line feed is desired.

TO REPLACE  
OS/8 PIP 1

RTPS FORTRAN IV (LOAD.SV V13)

Correction to loader for more than 12K of Core

The RTPS FORTRAN IV loader, LOAD.SV, does not allocate core properly for 8 mode sections (FIELD1, SECT8, COMMZ) on computers with more than 12K of core memory. This problem can be corrected (using ODT or EPIC) by the following one location change:

<u>LOCATION</u>	<u>OLD CONTENTS</u>	<u>NEW CONTENTS</u>
2474	1170	1173

If the change is to be made using EPIC, the commands are:

.R EPIC	/CALL EPIC
*LOAD.SV</1\$	/EDIT LOAD
R,23	/READ BLOCK 23
O,74	/OPEN LOCATION 74
<u>1170/1173</u>	/CHANGE IT TO 1173
W	/WRITE THE BLOCK
E	/END OF EDITING
* ↑C	/EXIT EPIC
⋮	

Patch to correct odd string member in CGET and CPUT

These routines in the current RTPS FORTRAN library (FORLIB version 21) handle the even numbered members of the character string properly, but use the next lesser odd numbered member (n-2) of the string instead of the requested odd member (n). This problem will be corrected in the next revision of the FORTRAN system, but can be prevented in the current version by requesting the next greater odd member (n+2). For example, to get and put array elements 1-6, a possible program is:

```
      READ (4,10) ARG
10    FORMAT(A6)
      DO 20 I=1,3
      CALL CGET (ARG1,2*I+1,CHAR1)
      CALL CGET (ARG1,2*I,CHAR2)
      CALL CPUT (ARG1,2*I+1,CHAR1)
      CALL CPUT (ARG1,2*I,CHAR2)
20    CONTINUE
      WRITE (4,50) ARG1
50    FORMAT (1X,A6)
      END
```

Then input and output agree, such as:

```
123456          /INPUT
123456          /OUTPUT
```

In the future version of CGET and CPUT, the calls in the above program for the odd members would be:

```
CALL CGET (ARG,2*I-1,CHAR1)
CALL CPUT (ARG1,2*I-1,CHAR1)
```

RTPS FORTRAN IV (LOAD.SV version 13)

Patch to eliminate Loader problem

An input line to the loader (LOAD.SV) of just \* /O (no input files) causes all preceding overlay information to be disregarded.

The following patch eliminates the problem. Use OS/8 ODT to add the changes.

<u>LOCATION</u>	<u>OLD CONTENTS</u>	<u>NEW CONTENTS</u>
13152	3421	745Ø
13153	2Ø21	5741
13154	3Ø22	3421
13155	5741	2Ø21
13156	Ø	3Ø22
13157	Ø	5741

RTPS FORTRAN IV (FORRTS.FT Version 4)

Correction to rubout problem

In a formatted read, if rubout is used to delete characters and they are not replaced so that the format field is not filled, an erroneous value results. For example, for a format field F5.2 typing 1.234 \\\ produces 1.03. The following correction solves the problem.

<u>.R EPIC</u>	Call EPIC
<u>*DSK:FORRTS.FT &lt;/1\$</u>	Systems device; \$=altmode
<u>R,11</u>	Read block 11
<u>O,315</u>	Open relative location 315
<u>7001/5341</u>	Change to 5341
<u>O,341</u>	Open relative location 341
<u>0000/1774</u>	Change 341 to 1774
<u>0000/3350</u>	Change 342 to 3350
<u>0000/1114</u>	Change 343 to 1114
<u>0000/3750</u>	Change 344 to 3750
<u>0000/7001</u>	Change 345 to 7001
<u>0000/5316</u>	Change 346 to 5316
<u>W</u>	Write the block
<u>E</u>	Exit FPIP
<u>↑C</u>	Return to Command Decode

The underlined portions are printed by EPIC and are the current contents of the locations. Note that FPIP is a new DS/8 program whose 2 main functions are to read in paper-tape patches and to permit typing in short fixes (similar to ODT) for the FORTRAN IV files.

TC-58 DECmagtape

Programming note for data transfers relative to extended memory

To transfer data to or from extended memory (valid for Write, Read, and Read-Compare) users should set AC bits 6-8 to the field number and issue "MTGO". The AC remains unchanged.

To reflect this procedure, "MTGO" is defined as follows:

MTGO (6722) loads the extended memory address bits from AC6-8, then sets the "GO" bit to execute the command (if legal) in the command register. The AC is unchanged.

AC6-8 → EMA  
1 → GO

Programming Example:

```
.          /Program setup
.
.
TAD DFIFLD/Field in AC6-8.
MTGO      /Load CMA and "go"
CLA       /Clear AC.
```

TC-58 DECmagtape

Programming note on CONTINUE mode operations

Operating in CONTINUE mode enables the program to issue a new command to the TC-58 without waiting for TAPE UNIT READY (TUR) and results in continuous versus start/stop tape motion.

The restrictions in this mode of operation are:

- A) The command in bits 6-8 is the only change allowed in the Command Register.
- B) The MTGO instruction must be executed before the tape control enters the "ready" state. Otherwise, an "Illegal Command" error will occur.
- C) TC-58 design requires the program to verify that the tape control has accepted continuous mode. Checking that tape control is busy after MTGO is executed indicates acceptance. Otherwise, control has not accepted the command and the operation must be initiated when the tape unit is ready (start/stop mode).

Programming Example:

```
          CLA
          TAD      WRDCNT      /Set up word count
          DCA I    WCLOC
          TAD      CURADR      /Set up current address
          DCA I    CALOC
          TAD      COMAND      /Put command in AC. All bits
                                /must be the same as in the
                                /previous function except
                                /for the command in bits
                                /6-8.
          MTCR
          JMP      CONTNU      /OK to go continuous?
STRSTP,  MTCR
          JMP      .-1         /Yes.
          MTCR
          JMP      .-1         /No. Wait for control ready
          MTCL
          CLA
          TAD      DFIELD      /Clear all and load command.
          TAD      DFIELD      /Memory field in AC6-8.
          MTGO
          MTTR
          JMP      .-1         /Mag Tape "GO".
          JMP      .-1         /Wait for tape unit ready.
          JMP      EXIT        /Exit
```



CONTNU,	MTCL		/Clear flags and load command.
	CLA		
	TAD	DFIELD	/Memory field in AC6-8
	MTGO		/Mag Tape "GO".
	MTCR		/Did tape go continuous mode?
	JMP	EXIT	/Yes. Exit
	MTAF		/No. Clear flags
	CLA		
	TAD	COMAND	/Command in AC.
	JMP	STRSTP	/Go start/stop
	CLA		
EXIT,	.		
	.		
	.		

PDP-8E TELETYPE MNEMONICS

Correction to instruction card

The PDP-8/E Instruction Card is incorrect in its definition of mnemonics for the teletype instructions 6040 (SPF) and 6045 (SPI).

The mnemonics are correctly defined in PDP-8/E manuals and also in PAL 111 as 6040 (TFL) and 6045(TSK).

## PDP-8/E PROGRAM INITIALIZATION

### Programming note

When loading and starting programs on the PDP-8/E, users should ensure that the correct Instruction and Data Field, selection is effected by using the "Extended Address Load" switch before "Loading Address" and "Starting".

Users should be particularly aware of usage of the "Extended Address Load" switch when referencing documentation, written for 8-Family machines other than the 8/E.

A case in point concerns the loading of PS/8 onto a disk system from paper tape.

The first lines of page 8-3 of the PS/8 Users Guide should be re-written to read:

- "6. Put 0200 in the switch register, press EXTENDED ADDRESS LOAD (8/E only) press LOAD ADDR and START keys in that order."

In this instance if the EXTENDED ADDRESS LOAD switch is not pressed then the system will not load correctly.

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