

DIGITAL SOFTWARE NEWS

FOR THE

PDP-8 & PDP-12

Software Information Service
Digital Equipment Corporation
Maynard, Massachusetts 01754

DIGITAL SOFTWARE NEWS

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-12 NEW SOFTWARE

MIDAS DEC-12-SQ3A

MIDAS (Multi Instrument Data Acquisition Software) is a general data acquisition program for the LDP system which acquires data from multiple instruments (8) via the AIP-12 in a synchronous or asynchronous manner and throughputs that data to mass storage (RK8 Disk or LINCTape). The maximum data rate for a given instrument or the maximum across a number of them depends on hardware configuration but can be as high as 150000 Hertz. Minimum hardware for MIDAS is a PDP-12/40 and AIP-12.

MIDAS allows control over experiments via Schmitt Triggers, external syncs, analog inputs, clocks, 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. Instruments typically found in a MIDAS laboratory would be GC, UV, and IR.

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.

Customers may order this software for the applicable fee.

<u>ITEM</u>	<u>DEC CODE</u>	<u>FEE</u>
MIDAS User's Manual	DEC-12-SQ3A-D	\$ 5.00
MIDAS Binary on LINCTape	DEC-12-SE6D-UO	35.00
MIDAS Source (part of AIPOS Source Kit)	DEC-12-SEXA-UO	100.00

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.

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PDP-12 NEW SOFTWARE

MASH (Mass Spectroscopy Handler) DEC-12-SQ2A

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)

The chemist can recalibrate the mass spectrometer to correct for drift. The calibration procedure is efficient, thorough, and easy to use, and enables the MASH system to determine spectrum mass numbers with an accuracy of .2 amu if 15 bits, .3 amu if 12 bits, at masses of up to 600.

Acquisition (ACQUI)

During the acquisition program data can be acquired and processed in either multiple scan (useful if a gas chromatograph is attached to the mass spectrometer) or single scan mode. The data is sampled at high speed and processed in the computer's memory. Only the coordinates of the mass peaks are saved on tape or disk.

Report Generator (LOOK)

The Report program displays the results of the scan(s) to the chemist. Data is manipulated in a line spectra format, using any of the nineteen powerful teletype commands provided by the program. Report's response times for all commands are well under one second.

All three MASH programs are run under the standard AIPOS System, and all MASH files are compatible with standard AIPOS files. Thus, the AIPOS system now has the capability of controlling a mass spectrometer or mass spectrometer/gas chromatograph configuration.

The minimum hardware configuration is a PDP-12/40 with a 12 or 15 bit A.I.P. The AIPOS Monitor must be used with the program.

PDP-12 New Software Cont.

MASH

Customers may order this software for the applicable fee.

<u>ITEM</u>	<u>DEC code</u>	<u>Fee</u>
MASH User's Manual	DEC-12-SQ2A-D	\$ 5.00
MASH Binary on LINCtape	DEC-12-SE6D-UO	35.00
MASH Source on LINCtape (Part III)	DEC-12-SEXA-UO	35.00

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PDP-12 REVISED SOFTWARE

Revised LINctape

With the addition of MIDAS (Multi Instrument Data Acquisition Software) to the LINctape DEC-12-SE6C-UO, the library code has been changed to DEC-12-SE6D-UO to reflect this.

PDP-12 REVISED SOFTWARE

Revised LINctape

With the addition of MASH (Mass Spectroscopy Handler) to the AIPOS system LINctape DEC-12-SE6C-UO, the code has been changed to DEC-12-SE6D-UO.

LAP6-DIAL-MS

Two bootstraps to load LAP6-DIAL-MS directly from the disk

The following two bootstraps should be used to load LAP6-DIAL-MS directly from the disk (RF08 or RK08). Each bootstrap, when assembled, will yield one block of binary that must be moved to block 0 of the respective disk via PDP-12 PIP. The following instructions should be followed to assemble the bootstrap needed:

1. Type up the program via LAP6-DIAL EDITOR
2. →ZE (zero binary work area)
3. →AS (assemble program)
4. →SB (save binary of program)
5. →DX (note where the one block of binary is saved)
6. →PIP*(load PIP and transfer the one block of binary to R10 (disk 0), block 0)
7. Toggle in the two or four word bootstrap and LAP6-DIAL-MS will start up.

* After the PIP transfer, the user should create an index entry (via PDP-12 TED) in the DIAL index so that DIAL will not save a file over this binary.

The procedure above assumes that the disk has been initialized See LAP6-DIAL Manual, DEC-12-SE2D-D; Appendix A, section A.3.

*20

PMODE

*20

/RF08 BOOTSTRAP FOR DIAL-MS

/

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/MAYNARD, MASS, 01754

/

/7/14/71

/SGW

/

/FIRST, ASSEMBLE THE PROGRAM BELOW AND MOVE THE

/BINARY TO BLOCK 0 OF UNIT 10 (RF08 DISK),

/TO PRESERVE BLOCK ZERO, IT MAY BE WISE TO FAKE

/AN ENTRY IN THE INDEX OF UNIT 10 SHOWING

/BLOCK 0 AS USED, SO THAT SOMETHING DOESNT

/GET SAVED THERE AND DESTROY THE BOOTSTRAP,

/THEN,

/TO USE:

/TOGGLE IN THE FOLLOWING:

/ *20 /PMODE

/ 6603 /READ

/ 5021 /JMP ,

/

/ *7750

/ 7577 /WORD COUNT-1

/ 7777 /CORE LOC-1

/

/SET MODE = PMODE

/I/O PRESET

/START 20

/

/

0020	6623	DISK		/THIS OVERLAYS THE 6603
0021	5020	JMP	,-1	/AND THIS OVERLAYS THE JMP ,
0022	1044	TAD	P6777	
0023	3445	DCA I	P7750	/LOAD WORD COUNT-1
0024	1044	TAD	P6777	
0025	3446	DCA I	P7751	/AND ADDRESS-1
0026	1041	TAD	P10	
0027	6615	DIML		/LOAD EXTENDED ADDRESS (FIELD 1)
0030	1042	TAD	P15	/THIS IS BLOCK 322 IN DISGUISE
0031	6643	DXAL		
0032	1043	TAD	P1000	/,,,MORE OF BLOCK 322
0033	6603	6603		/READ
0034	6623	DISK		/SKIP ON DONE
0035	5034	JMP	,-1	
0036	6213	CIF CDF	10	
0037	5440	JMP I	,+1	
0040	7777	7777		/BOOT DIAL NOW
0041	0010	P10,	10	
0042	0015	P15,	15	
0043	1000	P1000,	1000	
0044	6777	P6777,	6777	
0045	7750	P7750,	7750	
0046	7751	P7751,	7751	

DXAL=6643

DIML=6615

DISK=6623

```

*20
/RK08 BOOTSTRAP FOR DIAL-MS
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/MAYNARD, MASS, 01754
/
/FIRST, ASSEMBLE THE PROGRAM BELOW AND MOVE
/THE BINARY TO BLOCK 0 OF UNIT 10 (RK08 DISK),
/IT MAY BE WISE TO FAKE AN ENTRY IN THE INDEX
/OF UNIT 10 TO PROTECT BLOCK 0 SO THE BOOTSTRAP
/DOESNT GET DESTROYED,
/
/TO USE:
/TOGGLE IN THE FOLLOWING:
/      *20      /PMODE
/      6733     /READ
/      5021     /JMP ,
/
/SET PMODE
/I/O PRESET
/START 20
/
/THE PROGRAM BELOW IS ORIGINATED AT *17, BUT IT ACTUALLY
/GETS LOADED AT *20, WHICH IS WHY ALL THE REFERENCES
/ARE OFF BY 1,
/

```

```

                PMODE
                *17
0017 6745      DSKD          /SKIP DISK DONE (OVERLAYS THE 6733)
0020 5020      JMP          , -1+1 /THIS IS REALLY JMP , -1 (OVERLAYS THE JMP ,)
0021 1040      TAD          P10+1
0022 6732      DLDC          /FIELD 1
0023 1041      TAD          P6777+1 /STARTING ADDR, -1
0024 6755      DLCA
0025 1042      TAD          P7000+1 /WORD COUNT
0026 6753      DLWC
0027 6742      DCLS
0030 1043      TAD          P322+1
0031 6733      DLDR          /READ BLOCK 322
0032 6745      DSKD
0033 5033      JMP          , -1+1
0034 6213      CIF CDF 10
0035 5437      JMP I       , +1+1 /BOOT DIAL NOW
0036 7777      7777
0037 0010      P10,        10
0040 6777      P6777,     6777
0041 7000      P7000,     7000
0042 0322      P322,      322
                DSKD = 6745
                DLDC = 6732
                DLCA = 6755
                DLWC = 6753
                DCLS = 6742
                DLDR = 6733

```


PDP-12 MASS SPECTROSCOPY HANDLER (MASH)

Insensitive, drifting, or erroneous calibrations

The library version of MASH should, during an automated calibration run on a standard spectrum, never have an unassigned mass (one for which no intensity peak could be found.) If one occurs, it will be due to insensitivity, drift or error (wrong spectra used; as for example, low boiling p. f. k. instead of high boiling p. f. k.)

Assuming an unassigned mass does occur in a calibration which the operator does not for some reason wish to discard, then for each unassigned mass occurring among the last 7 peaks of a run of up to 500 peaks, a line will be lost on the display.

For example, assuming 300 peaks, and 2 unassigned masses between peaks 294 and 300, then the last display would show:

<u>PEAK#</u>	<u>HALL</u>	<u>INT</u>	<u>MASS</u>	<u>DEVIATION</u>
294	960	300		
295	995	405		
---	---	---	580	---
296	1031	500		
---	---	---	610	---
297	1732	200		
298	1917	300	620	3

There would be no way to see the values of line 299 and 300 via the display.

If necessary, a printout could be obtained, which would have all lines in it correctly, by hitting P, thus circumnavigating the problem.

PDP-12 MASS SPECTROSCOPY HANDLER (MASH)

Limitations in MASH

The current library version of MASH assumes a non-quadrupole mass spectrometer and a 12-bit A/D as part of its standard hardware configuration. The following patches eliminate those restrictions:

A. For a 15-bit A/D:

<u>BLOCK</u>	<u>LOCATION</u>	<u>OLD CONTENTS</u>	<u>NEW CONTENTS</u>	<u>SOURCE</u>
33	122	3220	3221	/RESCALE PEAK
	123	1214	1215	/X-Y PARA.
	134	3220	3221	

B. For a quadrupole mass spectrometer of the Finnegan variety:

<u>BLOCK</u>	<u>LOCATION</u>	<u>OLD CONTENTS</u>	<u>NEW CONTENTS</u>	<u>SOURCE</u>
6	217	1501	2205	/RESOLUTION IS
	220	2323	2317	/NOW MASS RANGE
	221	4022	1425	
	222	0116	2411	
	223	0705	1716	
	315	2225	2201	
21	331	2	7776	/FINNEGAN PEAK
	332	3300	2365	/WIDTH CONSTANT
	333	0	6050	
25	150	5	4	/FINNEGAN RELAY
	151	4	5	/PROBLEMS
26	166	0	-	/WAITM, 0/WATING ON
				/RELAY 2
	167	7300	-	/CLA CLL
	170	3015	-	/DCA 15
	171	1150	-	/TAD STSCNI
	172	4563	-	/JMS I DOSCNI
	173	2015	-	/ISZ 15
	174	5371	-	/JMP WAITM+3
	175	5766	-	/JMP I WAITM
27	46	1376	1150	/LOAD RELAY 2
	176	2	-	
30	13	4755	7300	/JMP WAITM
	175	566	-	
52	362	40	1031	/ELIMINATE 50 UNIT
	363	40	1752	/MASS CHECK

PS/8 PIP

Copy problems with tapes produced by the Binary Punch Routine

The current version of PS/8 PIP will not copy binary tapes produced with the Binary Punch Routine (DEC-08-YX1A-PB or DEC-08-YX2A-PB). PIP detects an origin setting as the signal for an absolute binary tape. The Binary Punch Routine outputs a field setting as the first character, not an origin, thus PIP does not recognize the tape as being absolute binary.

PDP-12 AIPOS USER'S MANUAL (DEC-12-SQ1A)

Documentation correction

Page 4-1, Section 4.3 of the AIPOS User's Manual (DEC-12-SQ1A-D) states that the L R command to FOCAL-12 will cause a return to JDB Control. This is an error. The R must be followed by a comma (,). Therefore, the format should be:

L R, ↓

