

# MDOS - TECHNICAL Reference

Reserved words, PCN PIO ect.

SUPPORTED FUNCTIONS, CHKDSK ect.

SUPPORTED DEVICES

ADDRESS Decoding

HOOKS.

LATEST EPROM VERSIONS

## CALLS ADDED TO BASIC.

COMMAND - SAME AS MANUAL.

NOTES: NEW <FULL USAGE>

Changed <NEW USAGE>

SAME AS DOCUMENTED.

ADDRESS HANDLER.

IF NEW TO 1.21 &  
AUTHOR

## APPENDUM FOR LATEST MDOS Release.

EXTERNAL DSK SPECIFICATION

ENHANCEMENTS & LIMITATIONS OF G.P.E.

WRITING A PRINT DRIVER Replacement

~~WRITING~~

SPECIAL AS:

SHORT ASSEMBLY CODE TO DO SPECIAL THINGS

VIDEO ON/OFF

7777.RA.

CALLING DOS COMMANDS.

Intro INTO, LOADSYS, SYSI.

LOADSYS, SYSI.

Change & ADDITIONS TO DOS VERSIONS

\* FORMAT NEEDS TO BE MADE &

EXTERNAL COMMAND OR HAVE HOOKS

For changed device i.e. 1.4 MB floppies

ALSO See "History" TAB: MDOS. - For Files Touched & Fixed.

Untitled  
SOME PLACES IN MDOS SOURCE CODE THAT CYA MODIFYS  
-----

MDOS\HD\FLPPRM

The last 15 lines of this file set up the HFDC floppy step rates. Look at Mike Maksimik's article on step rates for the values. The 'LI R4' lines are the settings.

MDOS\L8\DSRPASS-S

The REMAPs are in this file. Look for the label DEFMAP.

MDOS\CLI\HCLIS

The AUTOEXEC file&pathname is here, with it's three uses.

MDOS\L6\CHARSETS

The character set is defined here. If you've got DATA statements that define your character set. This is the place for them. Please try not to redefine 0-31 or 128-255.

MDOS\HEAD\TASKHEADS

The default PROMPT, PATH, ASSIGNS, and MAXIMUM DRIVE are here. If your ASSIGN statement is over 5 bytes in length, it must be chained in 5 byte strings. Don't change the number of bytes used in the data block! There are also some other unused options in this file.

5-3-01 Tony Knerr

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**Folder: Inbox**

**From:** "Tim Tesch" <[insane\\_m@hotmail.com](mailto:insane_m@hotmail.com)> [Save Address](#) - [Block Sender](#)

**Reply-To:** [ti99-4a@yahoogroups.com](mailto:ti99-4a@yahoogroups.com)

**To:** <[ti99-4a@yahoogroups.com](mailto:ti99-4a@yahoogroups.com)> [Save Address](#)

**Subject:** [ti-99/4a] MDOS Compilation Instructions :)

**Date:** Wed, 28 Mar 2001 23:14:53 -0600

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GENEVE MDOS COMPILATION NOTES

March 28, 2001 - Tesch

(I'm at work - so this is from memory. Dano, correct me if I'm wrong) :)

DESCRIPTION:

MDOS must be compiled with GenASM, GenLINK, GenMAKE which are all part of Paul Charleton's GenProg package. These programs are native MDOS programs; therefore, MDOS must be compiled on a Geneve using a previously compiled version of MDOS.

PROCEDURE:

To compile MDOS, you must have all of the source files in the proper directory structure starting at the ROOT of the hard drive. The subdirectories correspond to the MDOS archive filenames. Files that belong at the root (MDOS) level are in the ROOT archive. You must also have the GenProg utility, which may have been included (though I should not have done so).

```
-----
MDOS\
MDOS\L6
MDOS\L7
..
..
MDOS\SCSI
-----
```

Since the MAKE program is flawed and uses a two-digit year, it becomes more difficult to track changes and assemble the code. I disassembled the code before the last Chicago Faire and was close to fixing it, but there seemed to be some encryption used within the program. (Note: perhaps Jim Uzzell will read this and have an idea of how to crack it? Jim?) Use the following command at the MDOS (ROOT) level to begin a FULL compilation:

```
MAKE HDOS,F
```

This tells MAKE to use the !MAKEFILE dependency file to generate object code. The ",F" flag tells MAKE to FORCE a full compilation, meaning every source file will be assembled and the appropriate object files created in their respective directories. HDOS is the "rule" by which MAKE does its work. See "!MAKEFILE" for some details.

Finally, after the object code is generated, MAKE will launch LINK. LINK takes all of the object code, places it into the correct banks of memory, links/resolves the labels/addresses, and creates the final product: HDOS.

The TESTH executable can be used to test mdos from the MDOS folder as follows:

```
TESTH HDOS\HDOS
```

If all goes well, your new MDOS will load and run.

DISTRIBUTION NOTES:

Once the new MDOS is tested, the final step is to imbed the CRC values. The program in question loads MDOS, calculates CRC values, does some additional "massaging", then imbeds the codes. I have a copy of this program, as does one, perhaps two other people. I have asked these people to not distribute the code or the program without consulting me first.

Tim

----- Original Message -----

From: "Tim Tesch" <insane\_m@hotmail.com>

> Tony,

> Make absolutely certain the source code is not corrupt... :)

>

> ----- Original Message -----

> From: "Tony Knerr" <knerr@erols.com>

> > I've actually downloaded the source code to MDOS from the WHT site.

> > The problem that exists as I see it is that there are no instructions

> > on how to assemble the code. If someone would explain how that's done,

> > maybe there would be some progress. ( Ball back in your court! ) ;-)

> >

> > Tony

> >

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```
*
* The version of MDOS
*
ALL:   HDOS

*
* Unified version of MDOS (HFDC/Floppy/SCSI)
*
HDOS:      HDOS\HDOS
HDOS\HDOS: HEAD\PG_NUM HHEAD L5-6 L7 L8 L9 L10 HD HCLI TASK HLINK HDOS\HDOSL SC
           ASM CLI\HTITLES,CLI\HTITLE,,RCO
           LINK HDOS\HDOSL

*
* hard disk link utils
*
HLINK:     LN\HDD LN\HSAVE LN\LOADER
LN\HDD:    LN\HDOES HEAD\HMOVTABS HEAD\PAGENUMS
           ASM LN\HDOES,LN\HDD,,RCO
LN\HSAVE:  LN\HSAVES HEAD\HMOVTABS HEAD\PAGENUMS
           ASM LN\HSAVES,LN\HSAVE,,RCO

HEAD\PG_NUM:  HEAD\PG_NUMS HEAD\PAGENUMS
           ASM HEAD\PG_NUMS,HEAD\PG_NUM,,RCO

*
* power up, scheduler, and paging code
*
HHEAD:     HEAD\HOSHEAD
HEAD\HOSHEAD: HEAD\HOSHEADS HEAD\OSHEAD1S HEAD\HPAGES HEAD\HMOVTABS \
            HEAD\OSHEAD2S HEAD\PAGENUMS
            ASM HEAD\HOSHEADS,HEAD\HOSHEAD,,RCO

*
* task header
*
TASK:      HEAD\TASKHEAD HEAD\TASK1

HEAD\TASKHEAD: HEAD\TASKHEADS
           ASM HEAD\TASKHEADS,HEAD\TASKHEAD,,RCO

HEAD\TASK1:  HEAD\TASK1S
           ASM HEAD\TASK1S,HEAD\TASK1,,RCO

*
* keyboard, video, sound
*
L5-6:      L6\XOPS-G
L6\XOPS-G: L6\XOPS-S L6\UX0003S L6\UX0405S L6\UX06S L6\UX07S L6\UX08S \
```

L6\UX090AS L6\UX0BOES L6\UXOF15S L6\UX161CS L6\UX1D23S \  
L6\UX2426S L6\UX282AS L6\UX2B2CS L6\UX2D2FS L6\UX353AS \  
L6\KEY1S L6\KEY2S HEAD\LOWMAP L6\CHARSETS L6\WRITETTY \  
L6\UX-INTS L6\SOUNDS HEAD\OSTASK

ASM L6\XOPS-S,L6\XOPS-G,,RCO

\*  
\* memory management  
\*

L7: L7\MANAGE2 L7\MBUF  
L7\MANAGE2: L7\MANAGE2S L7\MANAGE2I HEAD\OSTASK L7\MEMPIRS HEAD\PAGENUMS  
ASM L7\MANAGE2S,L7\MANAGE2,,RCO

L7\MBUF: L7\MBUFS L7\MEMPTRS  
ASM L7\MBUFS,L7\MBUF,,RCO

\*  
\* DSR i/o library  
\*

L8: L8\OBJ1 L8\OBJ2 L8\OBJ3 L8\OBJ4 L8\OBJ5

L8\OBJ1: L8\LAYOUT HEAD\OSTASK L8\FDC-SRC-P L8\HDR1-P2 L8\HDR2-P2 \  
L8\SECT2-P L8\HFDFMT L8\VDPIO-P L8\PTRCON L8\FILEOP! L8\PASDAT \  
L8\OPEN&LS2 L8\SYSRTN-P L8\ILR L8\DSRMEM L8\MEMLST L8\LOADSAV-P \  
L8\DELETE-P L8\RW-P2 L8\CLORESSTS L8\GETAUS-P4 L8\GETISEC-P3 \  
L8\TIMES L8\GETVIB-P L8\SECMONS \  
HEAD\PAGENUMS  
ASM L8\FDC-SRC-P,L8\OBJ1,,RCO

L8\OBJ2: L8\LAYOUT L8\COPY2-P2 L8\CFILES-P3 L8\COMPAR-P2 L8\FORMAT-P3 \  
L8\SECT3-P3 L8\DISK3-P3 L8\CIF \  
HEAD\PAGENUMS  
ASM L8\COPY2-P2,L8\OBJ2,,RCO

L8\OBJ3: L8\LAYOUT L8\DSRPASS-S L8\DSRMEM HEAD\PAGENUMS  
ASM L8\DSRPASS-S,L8\OBJ3,,RCO

L8\OBJ4: L8\LAYOUT L8\EASDAT-S HEAD\PAGENUMS  
ASM L8\EASDAT-S,L8\OBJ4,,RCO

L8\OBJ5: L8\LAYOUT L8\RS-S L8\A2-P L8\B2-P L8\C2-P L8\D2-P \  
L8\BUFFERS L8\INTS \  
HEAD\PAGENUMS  
ASM L8\RS-S,L8\OBJ5,,RCO

\*  
\*SCSI SECTOR ACCESS ROUTINES.  
\* 10/20/94..11/12/94 mjm  
SC: SCSI\SCSIOBJ  
SCSI\SCSIOBJ: SCSI\SECTOR\_S SCSI\SCSIDRCT\_S SCSI\SCSIDMA\_S SCSI\SCSIEQU\_S \  
SCSI\SCSIIOBJ

SCSI\SCSIDATA\_S SCSI\SCSILL\_S  
ASM SCSI\SECTOR\_S,SCSI\SCSIOBJ,,RCO

\*  
\* Fixed disk directory structure library.  
\*

HD: HD\HDOBJ

HD\HDOBJ: HD\COPY HD\EQUATES HD\WINDS1-S HD\WINDS3-S HD\WINDS6-S HD\WINDS7-S  
HD\FLPPRM HD\MONS HD\CIF HD\SETAXB HD\FINDFL HD\FRBITM HD\GETSEC \  
HD\SCROLL HD\TIME HD\SECTORIOW HD\SECTORIOB HD\GETAU HD\GPLSUBS \  
HD\GETBUF HD\ADDADR HD\MAPRS HD\VDPF2 HD\DATA \  
HEAD\PAGENUMS

ASM HD\COPY,HD\HDOBJ,,RCO

\*  
\* hard disk i/o library - 9/15/90 (code for GPL testing)  
\*

HFDC: HFDC\HDOBJ

HFDC\HDOBJ: HFDC\COPY HFDC\EQUATES \  
HFDC\WINDS1-S HFDC\WINDS3-S HFDC\WINDS6-S HFDC\WINDS7-S \  
HFDC\FLPPRM HFDC\MONS HFDC\CIF HFDC\SETAXB \  
HFDC\SETAXB HFDC\FINDFL HFDC\FRBITM HFDC\GETSEC \  
HFDC\SCROLL HFDC\TIME HFDC\SECTORIOW \  
HFDC\SECTORIOW HFDC\SECTORIOB HFDC\GETAU HFDC\GPLSUBS \  
HFDC\GETBUF HFDC\ADDADR \  
HFDC\MAPRS HFDC\VDPF2 HFDC\DATA \  
HFDC\GPLLNK HEAD\PAGENUMS

ASM HFDC\COPY,HFDC\HDOBJ,,RCO

\*  
\* utilities  
\*

L9: L9\GENERAL L9\PARSEF L9\LOADF2 L9\FORK

L9\GENERAL: L9\GENERALS HEAD\OSTASK  
ASM L9\GENERALS,L9\GENERAL,,RCO

L9\PARSEF: L9\PARSEFS HEAD\OSTASK HEAD\LOWMAP  
ASM L9\PARSEFS,L9\PARSEF,,RCO

L9\LOADF2: L9\LOADF2S HEAD\OSTASK  
ASM L9\LOADF2S,L9\LOADF2,,RCO

L9\FORK: L9\FORKS HEAD\OSTASK HEAD\PAGENUMS  
ASM L9\FORKS,L9\FORK,,RCO

\*  
\* math

\*  
L10: L10\MATHO  
L10\MATHO: L10\FLOAT L10\CNS L10\CSNN L10\CFI L10\CIF L10\TRINSIC1 \  
L10\TRINSIC2 L10\MATHS

ASM L10\MATHS,L10\MATHO,,RCO

\*  
\* command line interpreter  
\*

MCLI: CLI\CLI CLIM CLI\TITLE CLI\NEW1  
HCLI: CLI\HCLI CLIH CLI\HTITLE CLI\NEWCMD

CLI\NEW1: CLI\NEWCMDS  
ASM CLI\NEWCMDS,CLI\NEWCMD,,RCO

CLI\NEWCMD: CLI\NEWCMDS  
ASM CLI\NEWCMDS,CLI\NEWCMD,,RCO

CLI\TITLE: CLI\TITLES  
REM

CLI\HTITLE: CLI\HTITLES  
REM

CLI\CLI: CLI\CLIS CLI\VERSIONS  
ASM CLI\CLIS,CLI\CLI,,RCO

CLI\HCLI: CLI\HCLIS CLI\HVERSIONS  
ASM CLI\HCLIS,CLI\HCLI,,RCO

CLIM: CLI\GETCAT CLI\GETSTR CLI\CIS CLI\XOPVID CLI\MATCH CLI\COMMAND \  
CLI\CONVERT CLI\CLOCK CLI\DIR CLI\TREE CLI\TYPE CLI\MODE CLI\VOL \  
CLI\LAB CLI\FORMAT CLI\DISKCOPY CLI\CHKDSK CLI\FILEOP \  
CLI\PAGE CLI\BATCMD CLI\CMDSTK CLI\COPY CLI\DISKCOMP

CLIH: CLI\GETCAT CLI\GETSTR CLI\CIS CLI\XOPVID CLI\MATCH CLI\COMMAND \  
CLI\CONVERT CLI\CLOCK CLI\DIR CLI\TREE CLI\TYPE CLI\MODE CLI\VOL \  
CLI\LAB CLI\FORMAT CLI\DISKCOPY CLI\CHKDSK CLI\FILEOP \  
CLI\PAGE CLI\BATCMD CLI\CMDSTK CLI\COPY CLI\DISKCOMP

CLI\COPY: CLI\COPYS CLI\CATMAPS  
ASM CLI\COPYS,CLI\COPY,,RCO

CLI\GETCAT: CLI\GETCATS CLI\CATMAPS  
ASM CLI\GETCATS,CLI\GETCAT,,RCO

CLI\GETSTR: CLI\GETSTRS  
ASM CLI\GETSTRS,CLI\GETSTR,,RCO



CLI\CIS: CLI\CISS  
ASM CLI\CISS, CLI\CIS, ,RCO

CLI\XOPVID: CLI\XOPVIDS  
ASM CLI\XOPVIDS, CLI\XOPVID, ,RCO

CLI\MATCH: CLI\MATCHS  
ASM CLI\MATCHS, CLI\MATCH, ,RCO

CLI\COMMAND: CLI\COMMANDS  
ASM CLI\COMMANDS, CLI\COMMAND, ,RCO

CLI\CONVERT: CLI\CONVERTS  
ASM CLI\CONVERTS, CLI\CONVERT, ,RCO

CLI\CLOCK: CLI\CLOCKS  
ASM CLI\CLOCKS, CLI\CLOCK, ,RCO

CLI\DIR: CLI\DIRS CLI\CATMAPS  
ASM CLI\DIRS, CLI\DIR, ,RCO

CLI\TREE: CLI\TREES CLI\CATMAPS  
ASM CLI\TREES, CLI\TREE, ,RCO

CLI\TYPE: CLI\TYPES  
ASM CLI\TYPES, CLI\TYPE, ,RCO

CLI\MODE: CLI\MODES  
ASM CLI\MODES, CLI\MODE, ,RCO

CLI\VOL: CLI\VOLS CLI\CATMAPS  
ASM CLI\VOLS, CLI\VOL, ,RCO

CLI\LAB: CLI\LABS  
ASM CLI\LABS, CLI\LAB, ,RCO

CLI\FORMAT: CLI\FORMATS  
ASM CLI\FORMATS, CLI\FORMAT, ,RCO

CLI\DISKCOPY: CLI\DISKCOPYS  
ASM CLI\DISKCOPYS, CLI\DISKCOPY, ,RCO

CLI\CHKDSK: CLI\CHKDSKS CLI\CATMAPS  
ASM CLI\CHKDSKS, CLI\CHKDSK, ,RCO

CLI\FILEOP: CLI\FILEOPS CLI\CATMAPS  
ASM CLI\FILEOPS, CLI\FILEOP, ,RCO

CLI\DISKCOMP: CLI\DISKCOMPS  
ASM CLI\DISKCOMPS, CLI\DISKCOMP, ,RCO

CLI\PAGE: CLI\PAGES  
ASM CLI\PAGES,CLI\PAGE,,RCO

CLI\BATCMD: CLI\BATCMDS HEAD\PAGENUMS  
ASM CLI\BATCMDS,CLI\BATCMD,,RCO

CLI\CMDSTK: CLI\CMDSTKS  
ASM CLI\CMDSTKS,CLI\CMDSTK,,RCO

SECTOR - S  
HFDC\COPY

#1269, #772, SECTOR-S ~~SECTOR-S~~ COPY FILE  
#1355, #85 SELDEL  
#1308, #38 ARBDEL

#1 2-JUN-1991 03:59:36.27

NEWMAIL

From: BOS1B::JHWHITE  
To: EICHER  
CC:  
Subject: 9640 tech. spec's

Dan: Sorry I've been sitting on so much insider information. I probably have some of the most complete technical specifications of the Geneve (and other hardware) available. I promise as soon as I finish the last outstanding conference transcript (Gary Bowser CO), I'll publish the known spec's of the Geneve. In the meantime, here is a nifty little routine that will boot the Geneve from either 99/4A mode or 9640 mode. (If Jerry hadn't taken it upon himself to edit the Al Beard and Don O'Neil conference transcripts, no telling much longer the spec's would be hidden on my hard disk.)

```
DEF BOOT          DEF to run from GPL mode
B @BOOT          MDOS CLI loader assumes a start at first word
START LI R12.>1EF6 CRU bit for mapped/unmapped mode
SBC 0            map EPROM
BLWP @0          do a RESET of the system
```

Press RETURN for more...

MAIL>

#1 2-JUN-1991 03:59:36.27

NEWMAIL

```
BOOT LIM1 0      Keep MDOS out of this
      LWPI >F000  must have an on-chip WS
      LI R0.START going to put the power-up link on-chip
      LI R1.>F020 start after the WS
LOOP  MOV *R0+,*R1+ move the link to on-chip RAM
      CI R0.BOOT
      JNE LOOP
      B @>F020   go to on-chip RAM and execute power-up
      END
```

As it is, the power-up linkage is not terribly useful, doing the same thing as a Shift-Shift-Control from MDOS. MDOS does not clear pages >E8-EF (or >EC-EF if the extra SRAM is not there), so it is possible to hide your program there for automatic testing with different versions of MDOS, given that it will fit and you have a small routine that requests the needed pages and links properly.

I'm looking into the possibility of a new boot EPROM, and the above program was just a test of the CRU bit at >1EFA. There are a few peculiarities

Press RETURN for more...

MAIL>

#1 2-JUN-1991 03:59:36.27

NEWMAIL

related to this CRU bit, but I guess you can wait for "the rest of the story."

Jeff White

p.s.: Mapping the EPROM in mapped mode does not work as well because certain Geneve functions stop functioning.

MAIL>

#2 2-JUN-1991 04:24:12.94

NEWMAIL

From: BOS2A::JHWHITE  
To: EICHER  
CC:

Subj: the other way

Dan: This program does the same as the last, but must have extra logic to force the mode or find the mode, or be assembled in two versions. Jeff White

```
DEF BOOT
B @BOOT
HF0F1 DATA >F0F1 16K EPROM at pages >1111xxx0 and >1111xxx1
START LI R0.MAPPER MAPPER should equal >8000 in GPL, >F110 in MDOS
MOV @HF0F1.*R0+
MOV @HF0F1.*R0+
MOV @HF0F1.*R0+
MOV @HF0F1.*R0
BLWP @0
BOOT LIM1 0
LWPI >F000
```

Press RETURN for more...

MAIL>

#2 2-JUN-1991 04:24:12.94

NEWMAIL

```
LI R0.START
LI R1.>F020
LOOP MOV *R0+,*R1+
CI R0.BOOT
JNE LOOP
B @>F020
END
```

MAIL>