

HDOS SOFTWARE REFERENCE
MANUAL

HDOS DISK OPERATING SYSTEM

VERSION 3.02

CHAPTER 14

DATA BITS

HEATH DISK OPERATING SYSTEM

SOFTWARE REFERENCE MANUAL

VERSION 3.02

HDOS was originally copyrighted in 1980 by the Heath Company. Through the years it continued to be improved by successive revisions which included 1.5, 1.6, and finally 2.0. It was entered into public domain on 19 July 1989 per letter by Jim Buszkiewicz, Managing Editor, Heath Users' Group, P.O. Box 217, Benton Harbor, MI 49022-0217 (616)982-3463. A copy of this letter is available for public inspection. Indeed, HDOS is still alive and well!

This manual is indicative of further improvements and provides for the latest revision, HDOS 3.0 and HDOS 3.02. Revision 3.0 is detailed in chapters 1, 2, and 3, while chapters 4, 5, 6, 7 and 8, 13 and 14, are related to revision 3.02. Chapters 9 through 12, with minor improvements, are essentially picked up from the original HDOS 2.0 manual.

Chapter 14, Data Bits, is a mixed collection of various bits of datum that are worthy of being contained in the HDOS 3.02 manual. It will give the reader some interesting background information that couldn't be obtained from any other source.

SPECIAL DISCLAIMER: The Heath Company cannot provide consultation on either the HDOS Operating System or user-developed or modified versions of Heath software products designed to operate under the HDOS Operating System. Do not refer to Heath for questions.

Instead, you are invited to direct any questions concerning the Heath Disk Operating System (HDOS) to Mr. Kirk L. Thompson, Editor "Staunch 89/8" Newsletter, P.O. Box 548, #6 West Branch Mobile Home Village, West Branch, IA 52358.

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INTRODUCTION

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This chapter is provided as a convenience to furnish reference data which is quickly available. For instance, if you desire to scan 'New Commands,' 'New Batch Commands,' or wants to find the files on 'PIP Capsule Review' before using PIP to resolve a specific problem, the TABLE OF CONTENTS can quickly lead you to the appropriate page.

Also, since the 'Filelist for HDOS 3.0a' contains a list of all of the original source code files you don't have to turn on your computer to locate specific files, or sort thru a pile of disks to find the files you want to check. To shorten the time required to perform this task, first go to the Table of Contents, determine which disk is likely to contain your file, and turn to the appropriate page(s).

Further, if you desire to learn more details about the HDOS 3.02 mod, all that is necessary is to refer to 'Disk Contents,' 'Notes' section, and you will find all the data is laid out before you when you turn to the page(s) of interest.

Finally, the data is available in transportable sections on the disk. If you want to make notes, all you have to do is to print the file that interests you, and you don't need to format it first, as you would have to do if the original copy of the file resided on disk. Therefore, this chapter provides convenience and saves time for the user.

It also will be a help to those who do not yet have a printer, since all the data is already printed.

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WHAT'S NEW IN HDOS 3.02 ?

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A capsule review of the differences between SYSCMD 3.0a and 3.02.

BIT has been enhanced.
 CLR has been changed to CFLAGS with no arguments.
 CLS has been enhanced.
 COPY has been enhanced; see discussion in PIP section below.
 COUNT has been enhanced.
 DMM has been enhanced.
 END has been enhanced.
 FLAGS has been changed to SFLAGS and CFLAGS with arguments.
 LOADF has been changed to FLOAD.
 IF KEY has been enhanced.
 SI has been enhanced.
 WAIT has been enhanced.

New Commands	Meaning
-----	-----
ALT	Show alternate device name
ALT DVn:	Set alternate device name
ALT :	Set alternate device name to default name
BAT[CH] fname [args]	Bypass .ABS link & try to run BATCH file
CF[LAGS] file(s)	Clear all flags on specified file(s)
CF[LAGS] file(s)=flags	Clear flags on specified file(s)
CLS	Clear console screen (reset graphics, reverse, 25th line)
CLS <any arg>	Reset graphics, reverse, 25th line
DEF[AULT] ~	Set system default to all nulls
D	; Dismount primary device unit 0
FLO[AD] xx[:]	Same as LOAD plus Fix in memory
HA[LT]	Try SHUTDOWN.ABS(.BAT) then exit HDOS
M	; Mount primary device unit 0
MOV[E] dest=source	Copy file(s), verify, delete source file(s)
Pn	Set current list device unit to #n. n=0..7
PRN	Show current list device name & unit
PRN DVn:	Set current list device name to xx (unit 0)
PU[SER] file(s)=users	Put specified file(s) in specified user areas
QD	; Quiet Dismount (All available units of default device)
QD SY:, DK:, Etc	; Quiet Dismount (All available units of xx:)
QM	; Quiet Mount (All available units of default device)
QM SY:, DK:, Etc	; Quiet Mount (All available units of xx:)
R	; Reset primary device unit 0
RU[SER] file(s)	Remove specified file(s) from all active user areas
RU[SER] file(s)=users	Remove specified file(s) from specified user areas
SF[LAGS] file(s)=flags	Set specified flags on specified file(s)

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WHAT'S NEW (Cont)

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A capsule review of differences between SYSCMD 3.0a and 3.02. (Cont)

New Commands	Meaning
U[SER]	Show active user area
U[SER] n	Set active user area to #n. n=0..7
Un	Set active user area to #n. n=0..7
XYZ[ZY]	Toggle display of exit codes upon return to SYSCMD
XYZ[ZY] <any arg>	Toggle display of PIP command syntax within SYSCMD

New BATCH Commands	Meaning
BIT	Show BIT values
BIT T	Toggle all BIT flags
BIT T digit	Toggle specific BIT flag (0..7)
CB[UF]	Clear console buffer
COU[NT]	Show system counter value
END	Exit BATCH file (usually before physical end)
END C	Exit BATCH file & clear console screen & modes
END <any arg>	Exit BATCH file & clear ONLY console modes
IF [NOT] KEY = value command	Test ASK or TRAP keystroke value
KEY	Show current ASK keystroke value
KEY alpha	Preset ASK keystroke
KEY ?<cr space tab ?>	Preset special value. CR = null
' [text]	Remark, do nothing
TR[AP]	Grab keystroke on the fly & save it
WAIT	Wait indefinitely for user to touch any key

New special replaceable parameters:

%# = active user area (0)

%p = active LP unit (0)

%k = ASK keystroke

New special characters:

\$@ = the NULL char

\$< = the BACKSPACE char

\$# = active user area (0)

\$p = active LP unit (0)

Note: The old "\$p" has changed to "\$>"

\$k = the ASK keystroke

\$> = default system prompt

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WHAT'S NEW (Cont)

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A capsule review of differences between SYSCMD 3.0a and 3.02. (Cont)

'&' has been added to the possible flags. It equals 'SLWD.'
 't' has been added to the possible sort fields. It is time ascending.
 'tr' has been added to the possible sort fields. It is time
 descending.

When copying files to a different disk, if the destination disk is filled or there is not enough room left on it to copy the next file in your list, PIP will give you the opportunity to reset the destination drive and insert another disk.

A capsule review of the differences between PIP 3.0a and 3.02

/SUPPRESS has been enhanced with subswitches.
 /PAGE has been enhanced to paginate DIR listings to the console.
 /FULL header has been rearranged.

New Verb Switches	Meaning
-----	-----
/NOP	Do absolutely nothing
/PUT[USER]:f..	Put file in user areas
/PUT[USER]:f.!. .	Put in these user areas & Remove from others except 0
/PUT[USER]:*	Put file in all user areas
/REM[USER]	Remove file from all user areas except 0
/REM[USER]:f..	Remove file from specified user areas ('0' invalid)
/REM[USER]:*	Remove file from all user areas except 0
/USR	Set active user area to 0
/USR:n	Set active user area to #n. n=0..7
/TAB[LE]	Build source file list
/W[IDE]	Same as /B
New Modifier Switches	Meaning
-----	-----
/.	Override automatic setting of /US:<Active user area>
/CLS	Clear console screen on H19
/DSF	Delete source file after verifying destination
/HOLD	Set Hold Screen mode on H19
/NOU[SER]	Include files ONLY in user area 0
/NOU[SER]:u..	Include files NOT in specified user areas
/P[AGE]	Paginate directory listings sent to console
/SO[RT]:t[r]	Sort files for DEST usage t = creation Time ascending tr = reverse sort

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WHAT'S NEW (Cont)

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A capsule review of the differences between PIP 3.0a and 3.02: (Cont)

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New Modifier Switches   Meaning
-----
/SU[PRESS]              Supress trailing message & files selected count
/SU[PRESS]              [a][h][t][s][c][*] Supress selected item(s)
                        a = audit trail          s = status (25th) line
                        h = header lines        c = files selected count
                        t = trailing messa   * = all possible items

/T[ODAY]               Include files created today
/UA[REAS]              Set DEST file user areas to SOURCE file user
                        areas
/UA[REAS]:u..         Set DEST file user areas
/US[ER]:u..           Include files in specified user areas
*****

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FILELIST FOR HDOS 3.0A

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The following are /FULL listings of the seven (7) single-sided hard-sector distribution disks and the four (4) source disks for HDOS 3.0, Revision A.

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Volume: 0 on 11-Aug-88 Type: System Init Date: 14-Dec-86

Label: HDOS 3.0, Issue #50.07.00 [System Distribution]

```

-----
Name      .Ext  Size Alloc  Created      Time  Flags---  Accessed  A/C
-----
HDOS30   .SYS   40    40   4-Oct-86   3:16a  SLWC  D
TT       .DVD   13    14   5-Oct-86   5:28p  SL  C  D
SYSCMD   .SYS   38    38   4-Oct-86   6:25p  SLWC  D
PIP      .ABS   42    42   4-Oct-86   6:29p  SLWC  D
SY       .DVD   18    18   5-Oct-86   5:32p  SL  C  D
ERRORMSG.SYS  8     8   10-Aug-86  11:15a  SLWC  D
SET      .ABS   8     8   20-Sep-86  10:12p  WC  D
SYSHELP  .DOC   25    26   19-Oct-86  8:52p  SLWC  D
HELP     .      12    12   19-Oct-86  8:56p  SLWC  D
INIT     .ABS   29    30   5-Oct-86   5:00p  WC  D
SYSGEN   .ABS   20    20   5-Oct-86   5:12p  WC  D
MAP      .ABS   8     8   18-Oct-86  11:35p  WC  D
SYSHELP  .H19   26    26   21-Sep-86  3:30p  WC  D
ONECOPY  .ABS   21    22   13-Oct-86  11:00p  WC  D
WHAT     .ABS   16    16   5-Oct-86   3:10p  WC  D
SYS      .ABS   1     2    7-Aug-86  11:15a  WC  D
HELP     .H19   13    14   14-Sep-86  1:52p  WC  D
MAKMSD   .ABS   3     4    5-Oct-86   4:09p  WC  D
EDIT     .ABS   16    16   5-Oct-86   4:42p  WC  D
RGT      .SYS   1     2   14-Dec-86  5:29p  SLWC  D
GRT      .SYS   1     2   14-Dec-86  5:29p  SLWC  D
DIRECT   .SYS   18    18   14-Dec-86  5:29p  SLWC  D

```

22 Files, Using 377 Sectors (386 Allocated, 4 Free, 1.0 % Free)

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FILELIST FOR HDOS 3.0a (Cont)

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Volume: 1 on 11-Aug-88 Type: Data Init Date: 14-Nov-86
 Label: HDOS 3.0, Issue #50.07.00 [Utilities and Drivers]

Name	.Ext	Size	Alloc	Created	Time	Flags---	Accessed	A/C
BASIC	.ABS	41	42	6-Aug-86	9:39p	WC D		
PATCH	.ABS	10	10	6-Aug-86	9:39p	WC D		
ASM	.ABS	32	32	6-Aug-86	9:40p	WC D		
XREF	.ABS	12	12	6-Aug-86	9:40p	WC D		
TT	.DVD	13	14	5-Oct-86	5:28p	WC D		
ND	.DVD	3	4	5-Oct-86	3:23p	WC D		
H17	.DVD	18	18	5-Oct-86	5:32p	WC D		
H37	.DVD	20	20	5-Oct-86	5:36p	WC D		
H47	.DVD	13	14	5-Oct-86	3:39p	WC D		
AT84	.DVD	5	6	6-Oct-86	10:07p	WC D		
AT85	.DVD	5	6	6-Oct-86	10:09p	WC D		
H1484	.DVD	6	6	7-Oct-86	9:44p	WC D		
H1485	.DVD	6	6	7-Oct-86	9:51p	WC D		
H2484	.DVD	6	6	7-Oct-86	10:15p	WC D		
H2584	.DVD	10	10	5-Oct-86	5:30p	WC D		
H4484	.DVD	8	8	9-Oct-86	8:40p	WC D		
MX8084	.DVD	8	8	10-Oct-86	12:58a	WC D		
MX8011	.DVD	8	8	10-Oct-86	12:56a	WC D		
IOMEGA	.DVD	10	10	5-Oct-86	5:39p	WC D		
README	.DOC	35	36	14-Nov-86	2:51a	WC D		
CLOCK89	.TAS	3	4	5-Oct-86	4:37p	WC D		
CLOCK89	.H8A	22	22	5-Oct-86	4:36p	WC D		
CLOCK	.TAS	3	4	5-Oct-86	5:45p	WC D		
CLOCK	.H8A	19	20	5-Oct-86	5:45p	WC D		
RGT	.SYS	1	2	14-Nov-86	4:18p	SLWC D		
GRT	.SYS	1	2	14-Nov-86	4:18p	SLWC D		
DIRECT	.SYS	18	18	14-Nov-86	4:18p	SLWC D		

27 Files, Using 336 Sectors (348 Allocated, 42 Free, 10.5 % Free)

=====

Volume: 2 on 11-Aug-88 Type: Data Init Date: 14-Nov-86
 Label: HDOS 3.0, Issue #50.07.00 [Driver Source 1]

Name	.Ext	Size	Alloc	Created	Time	Flags---	Accessed	A/C
H17DVD	.H8A	91	92	5-Oct-86	5:24p	WC D		
H17INIT	.H8A	81	82	5-Oct-86	5:24p	WC D		
H17ABT	.ACM	3	4	10-Aug-86	11:23a	WC D		
H17CLK	.ACM	3	4	10-Aug-86	11:23a	WC D		
H17LOA	.ACM	13	14	13-Aug-86	11:23a	WC D		
H17MOU	.ACM	16	16	21-Sep-86	2:36p	WC D		
H17RDY	.ACM	5	6	10-Aug-86	11:23a	WC D		
H17REA	.ACM	14	14	10-Aug-86	11:23a	WC D		
H17RER	.ACM	2	2	13-Aug-86	11:23a	WC D		
H17ROD	.ACM	31	32	10-Aug-86	11:23a	WC D		
H17SET	.ACM	14	14	20-Sep-86	9:59p	WC D		

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FILELIST FOR HDOS 3.0a Cont)

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 Volume: 2 on 11-Aug-88 Type: Data Init Date: 14-Nov-86
 Label: HDOS 3.0, Issue #50.07.00 [Driver Source 1]

Name	.Ext	Size	Alloc	Created	Time	Flags---	Accessed	A/C
H17SET2	.ACM	2	2	10-Aug-86	11:23a	WC D		
H17UNL	.ACM	3	4	10-Aug-86	11:23a	WC D		
H17WRI	.ACM	13	14	10-Aug-86	11:23a	WC D		
H17SKEW	.MBA	2	2	25-Nov-81	11:23a	WC D		
NDDVD	.H8A	12	12	5-Oct-86	2:55p	WC D		
ATDVD	.H8A	39	40	6-Oct-86	10:08p	WC D		
MAKE	.BAT	1	2	13-Aug-86	11:17a	WC D		
MAKEDVD	.BAT	1	2	1-Sep-86	12:56p	WC D		
MAKEDVD2	.BAT	1	2	31-Aug-86	11:18a	WC D		
RGT	.SYS	1	2	14-Nov-86	4:18p	SLWC D		
GRT	.SYS	1	2	14-Nov-86	4:18p	SLWC D		
DIRECT	.SYS	18	18	14-Nov-86	4:18p	SLWC D		

23 Files, Using 367 Sectors (382 Allocated, 8 Free, 2.0 % Free)

=====

Volume: 3 on 11-Aug-88 Type: Data Init Date: 14-Nov-86
 Label: HDOS 3.0, Issue #50.07.00 [Driver Source 2]

Name	.Ext	Size	Alloc	Created	Time	Flags---	Accessed	A/C
H37DVD	.H8A	53	54	5-Oct-86	5:25p	WC D		
H37INIT	.H8A	93	94	5-Oct-86	5:25p	WC D		
H37LIB	.ACM	87	88	13-Aug-86	11:24a	WC D		
IODVD	.H8A	42	42	5-Oct-86	5:25p	WC D		
IOINIT	.H8A	22	22	5-Oct-86	5:25p	WC D		
IODEF	.ACM	14	14	15-Mar-85	11:24a	WC D		
IOSUBS	.ACM	21	22	19-Aug-86	11:24a	WC D		
RGT	.SYS	1	2	14-Nov-86	4:19p	SLWC D		
GRT	.SYS	1	2	14-Nov-86	4:19p	SLWC D		
DIRECT	.SYS	18	18	14-Nov-86	4:19p	SLWC D		

10 Files, Using 352 Sectors (358 Allocated, 32 Free, 8.0 % Free)

=====

Volume: 4 on 11-Aug-88 Type: Data Init Date: 14-Nov-86
 Label: HDOS 3.0, Issue #50.07.00 [Driver Source 3]

Name	.Ext	Size	Alloc	Created	Time	Flags---	Accessed	A/C
H47DVD	.H8A	34	34	5-Oct-86	2:50p	WC D		
H47INIT	.H8A	64	64	5-Oct-86	2:51p	WC D		
H47LIB	.ACM	56	56	14-Aug-86	11:24a	WC D		
TTDVD	.H8A	103	104	5-Oct-86	5:24p	WC D		
H14DVD	.H8A	66	66	7-Oct-86	9:50p	WC D		
RGT	.SYS	1	2	14-Nov-86	4:20p	SLWC D		

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FILELIST FOR HDOS 3.0a Cont)

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[Continued]

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Volume: 4 on 11-Aug-88 Type: Data Init Date: 14-Nov-86
 Label: HDOS 3.0, Issue #50.07.00 [Driver Source 3]

Name	.Ext	Size	Alloc	Created	Time	Flags---	Accessed	A/C
GRT	.SYS	1	2	14-Nov-86	4:20p	SLWC D		
DIRECT	.SYS	18	18	14-Nov-86	4:20p	SLWC D		

8 Files, Using 343 Sectors (346 Allocated, 44 Free, 11.0 % Free)

=====

Volume: 5 on 11-Aug-88 Type: Data Init Date: 14-Nov-86
 Label: HDOS 3.0, Issue #50.07.00 [Driver Source 4]

Name	.Ext	Size	Alloc	Created	Time	Flags---	Accessed	A/C
H24DVD	.H8A	51	52	7-Oct-86	10:14p	WC D		
H25DVD	.H8A	59	60	5-Oct-86	5:24p	WC D		
H44DVD	.H8A	54	54	9-Oct-86	8:39p	WC D		
MX80DVD	.H8A	61	62	10-Oct-86	12:58a	WC D		
MAKMSD	.H8A	11	12	5-Oct-86	4:08p	WC D		
SET	.H8A	81	82	5-Oct-86	4:12p	WC D		
SYS	.H8A	11	12	7-Aug-86	11:25a	WC D		
RGT	.SYS	1	2	14-Nov-86	4:21p	SLWC D		
GRT	.SYS	1	2	14-Nov-86	4:21p	SLWC D		
DIRECT	.SYS	18	18	14-Nov-86	4:21p	SLWC D		

10 Files, Using 348 Sectors (356 Allocated, 34 Free, 8.5 % Free)

=====

Volume: 6 on 11-Aug-88 Type: Data Init Date: 14-Nov-86
 Label: HDOS 3.0, Issue #50.07.00 [Common Decks 1]

Name	.Ext	Size	Alloc	Created	Time	Flags---	Accessed	A/C
ABSDEF	.ACM	1	2	15-Mar-85	11:19a	WC D		
ASCII	.ACM	4	4	22-Sep-86	8:25p	WC D		
BITC	.ACM	2	2	15-Mar-85	11:21a	WC D		
BITS	.ACM	2	2	2-Mar-86	12:00a	WC D		
BOODEF	.ACM	3	4	2-Aug-86	11:20a	WC D		
CDEHL	.ACM	1	2	15-Mar-85	11:19a	WC D		
CHL	.ACM	1	2	15-Mar-85	11:19a	WC D		
CPA	.ACM	6	6	27-Jul-86	11:22a	WC D		
BPDEHL	.ACM	1	2	21-Sep-86	9:22p	WC D		
CVD	.ACM	2	2	21-Sep-86	11:17p	WC D		
DADA	.ACM	1	2	15-Mar-85	11:19a	WC D		
DADA2	.ACM	1	2	15-Mar-85	11:19a	WC D		
DDD	.ACM	3	4	21-Sep-86	10:28p	WC D		
DDDEF	.ACM	3	4	21-Sep-86	10:30p	WC D		
DDFDEF	.ACM	1	2	21-Sep-86	10:31p	WC D		
DDS	.ACM	5	6	15-Mar-85	11:21a	WC D		

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FILELIST FOR HDOS 3.0a Cont)

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[Continued]

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Volume: 6 on 11-Aug-88 Type: Data Init Date: 14-Nov-86

Label: HDOS 3.0, Issue #50.07.00 [Common Decks 1]

Name	.Ext	Size	Alloc	Created	Time	Flags---	Accessed	A/C
DEVDEF	.ACM	7	8	17-Aug-86	11:20a	WC	D	
DIRDEF	.ACM	3	4	19-Mar-85	11:19a	WC	D	
DNV	.ACM	7	8	21-Sep-86	11:20p	WC	D	
DU66	.ACM	1	2	15-Mar-85	11:19a	WC	D	
DVDDEF	.ACM	3	4	25-Mar-85	11:19a	WC	D	
DVDIO	.ACM	13	14	6-Oct-86	9:57p	WC	D	
DVDIO2	.ACM	5	6	9-Oct-86	10:13p	WC	D	
ECDEF	.ACM	9	10	10-Aug-86	11:22a	WC	D	
ECVEC	.ACM	2	2	17-Jul-86	11:20a	WC	D	
EDCON	.ACM	2	2	21-Sep-86	10:36p	WC	D	
EDRAM	.ACM	4	4	21-Sep-86	10:38p	WC	D	
EDVEC	.ACM	4	4	10-Aug-86	11:22a	WC	D	
ESINT	.ACM	13	14	20-Aug-86	11:23a	WC	D	
ESVAL	.ACM	8	8	27-Jul-86	11:19a	WC	D	
FILDEF	.ACM	1	2	21-Sep-86	10:40p	WC	D	
FLTDEF	.ACM	2	2	7-Aug-86	11:22a	WC	D	
FST	.ACM	6	6	22-Sep-86	12:42a	WC	D	
H14	.ACM	1	2	7-Oct-86	9:32p	WC	D	
H17DEF	.ACM	5	6	15-Mar-85	11:20a	WC	D	
H17ROM	.ACM	3	4	10-Dec-81	11:19a	WC	D	
H37DEF	.ACM	10	10	10-Aug-86	11:22a	WC	D	
H47DEF	.ACM	12	12	6-Aug-86	11:22a	WC	D	
H47PAR	.ACM	1	2	6-Aug-86	11:22a	WC	D	
HDSROM	.ACM	3	4	9-Aug-86	11:21a	WC	D	
RGT	.SYS	1	2	14-Nov-86	4:21p	SLWC	D	
GRT	.SYS	1	2	14-Nov-86	4:21p	SLWC	D	
DIRECT	.SYS	18	18	14-Nov-86	4:21p	SLWC	D	
HLIHL	.ACM	1	2	15-Mar-85	11:20a	WC	D	
HOSBASE	.ACM	10	10	14-Sep-86	4:45p	WC	D	
HOSDEF	.ACM	7	8	1-Sep-86	8:45p	WC	D	
HOSEQU	.ACM	3	4	9-Aug-86	11:19a	WC	D	
HROM	.ACM	5	6	10-Aug-86	11:21a	WC	D	
INDL	.ACM	2	2	15-Mar-85	11:20a	WC	D	
INIDEF	.ACM	4	4	11-Aug-86	11:21a	WC	D	
IOCDEF	.ACM	5	6	15-Mar-85	11:20a	WC	D	
ITL	.ACM	2	2	15-Mar-85	11:21a	WC	D	
LABDEF	.ACM	5	6	9-Aug-86	11:19a	WC	D	
LBD	.ACM	5	6	12-Aug-86	11:23a	WC	D	
MCU	.ACM	2	2	21-Sep-86	10:48p	WC	D	
MLU	.ACM	2	2	21-Sep-86	10:49p	WC	D	
MOVE	.ACM	3	4	15-Mar-85	11:20a	WC	D	
MTR	.ACM	8	8	19-Aug-86	11:23a	WC	D	
MTRDEF	.ACM	2	2	27-Jul-86	11:22a	WC	D	
MTRRAM	.ACM	7	8	17-Jul-86	11:22a	WC	D	

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FILELIST FOR HDOS 3.0a Cont)

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[Continued]

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Volume: 6 on 11-Aug-88 Type: Data Init Date: 14-Nov-86

Label: HDOS 3.0, Issue #50.07.00 [Common Decks 1]

Name	.Ext	Size	Alloc	Created	Time	Flags---	Accessed	A/C
MU86	.ACM	1	2	15-Mar-85	11:20a	UC D		
PBF	.ACM	3	4	15-Feb-85	11:23a	WC D		
PBV	.ACM	4	4	15-Feb-85	11:23a	WC D		
PICDEF	.ACM	1	2	15-Mar-85	11:20a	WC D		
RCHAR	.ACM	1	2	15-Mar-85	11:20a	WC D		
RTL	.ACM	4	4	21-Sep-86	10:57p	WC D		
SAVALL	.ACM	3	4	15-Mar-85	11:20a	WC D		
SETCAL	.ACM	3	4	20-Sep-86	9:56p	WC D		
SOB	.ACM	2	2	21-Sep-86	11:03p	WC D		
SOP	.ACM	5	6	11-Aug-86	11:23a	WC D		
TBLS	.ACM	3	4	15-Mar-85	11:20a	WC D		
TBRA	.ACM	2	2	15-Mar-85	11:20a	WC D		
TDD	.ACM	3	4	15-Mar-85	11:21a	WC D		
THD	.ACM	2	2	15-Feb-85	11:23a	WC D		
TJMP	.ACM	2	2	15-Mar-85	11:20a	WC D		
TOD	.ACM	2	2	15-Feb-85	11:23a	WC D		
TRACE	.ACM	1	2	15-Mar-85	11:20a	WC D		
TYPTX	.ACM	2	2	15-Mar-85	11:20a	WC D		
U8250	.ACM	9	10	15-Mar-85	11:20a	WC D		
U8251	.ACM	5	6	15-Mar-85	11:20a	WC D		
U8255	.ACM	6	6	10-Oct-86	12:28a	WC D		
UDD	.ACM	2	2	15-Mar-85	11:20a	WC D		
UOW	.ACM	4	4	19-Aug-86	11:23a	WC D		
WTBLS	.ACM	3	4	15-Feb-85	11:23a	WC D		
ZERO	.ACM	1	2	15-Mar-85	11:20a	WC D		
ZEROS	.ACM	1	2	15-Mar-85	11:20a	WC D		

86 Files, Using 330 Sectors (382 Allocated, 8 Free, 2.0 % Free)

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Volume: 0 on 11-Aug-88 Type: Data Init Date: 25-Jun-87

Label: HDOS 3.0, Issue #50.07.00 [System Source 1]

Name	.Ext	Size	Alloc	Created	Time	Flags---	Accessed	A/C
HOS3	.H8A	388	400	4-Oct-86	3:13a	LWC D		
SYSCMD	.H8A	94	96	4-Oct-86	5:35p	LWC D		
PIP	.H8A	53	64	4-Oct-86	5:21p	LWC D		
SYSGEN	.H8A	212	224	5-Oct-86	5:04p	LWC D		
INIT	.H8A	215	224	5-Oct-86	4:58p	LWC D		
ONECOPY	.H8A	238	240	13-Oct-86	10:59p	LWC D		
RGT	.SYS	1	16	25-Jun-87	6:03p	SLWC D		
GRT	.SYS	1	16	25-Jun-87	6:03p	SLWC D		
DIRECT	.SYS	32	32	25-Jun-87	6:03p	SLW D		

9 Files, Using 1234 Sectors (1312 Allocated, 2656 Free, 66.4 % Free)

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FILELIST FOR HDOS 3.0a Cont)

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Volume: 0 on 11-Aug-88 Type: Data Init Date: 25-Jun-87
 Label: HDOS 3.0, Issue #50.07.00 [System Source 2]

Name	.Ext	Size	Alloc	Created	Time	Flags---	Accessed	A/C
EDIT	.H8A	163	176	5-Oct-86	4:40p	LWC D		
LABEL	.H8A	20	32	11-Jul-86	11:25a	LWC D		
FIX	.H8A	26	32	19-Oct-86	8:14p	LWC D		
MAP	.H8A	31	32	18-Oct-86	11:35p	LWC D		
WHAT	.C	10	16	5-Oct-86	3:09p	LWC D		
CREDITS	.H8A	4	16	10-Aug-86	11:17a	LWC D		
TITLES	.ACM	17	32	13-Aug-86	11:15a	LWC D		
RGT	.SYS	1	16	25-Jun-87	6:05p	SLWC D		
GRT	.SYS	1	16	25-Jun-87	6:05p	SLWC D		
DIRECT	.SYS	32	32	25-Jun-87	6:05p	SLW D		

10 Files, Using 305 Sectors (400 Allocated, 3568 Free, 89.2 % Free)

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Volume: 0 on 11-Aug-88 Type: Data Init Date: 25-Jun-87
 Label: HDOS 3.0, Issue #50.07.00 [Common Decks 2]

Name	.Ext	Size	Alloc	Created	Time	Flags---	Accessed	A/C
ABR	.ACM	16	16	2-Aug-86	11:19a	LWC D		
AGT	.ACM	9	16	25-Mar-85	11:21a	LWC D		
ALP	.ACM	2	16	15-Mar-85	11:21a	LWC D		
BSXDEF	.ACM	2	16	14-Sep-86	1:35p	LWC D		
CAB	.ACM	2	16	15-Mar-85	11:21a	LWC D		
CAC	.ACM	2	16	25-Mar-85	11:21a	LWC D		
CAD	.ACM	14	16	12-Jul-86	12:00a	LWC D		
CCO	.ACM	2	16	15-Mar-85	11:19a	LWC D		
CCT	.ACM	1	16	29-Mar-86	12:00a	LWC D		
CDM	.ACM	4	16	25-Mar-85	11:21a	LWC D		
CDS	.ACM	8	16	3-Aug-86	11:21a	LWC D		
CDT2	.ACM	14	16	13-Aug-86	12:00a	LWC D		
CDU	.ACM	3	16	25-Mar-85	11:21a	LWC D		
CFC	.ACM	5	16	25-Mar-85	11:21a	LWC D		
CFD	.ACM	2	16	21-Sep-86	11:15p	LWC D		
CFI	.ACM	3	16	26-Mar-85	11:21a	LWC D		
CFP	.ACM	2	16	25-Mar-85	11:22a	LWC D		
CLL	.ACM	2	16	14-Sep-86	7:49p	LWC D		
COF	.ACM	4	16	15-Mar-85	11:21a	LWC D		
COMP	.ACM	2	16	15-Mar-85	11:19a	LWC D		
CPDEHL	.ACM	1	16	21-Sep-86	9:22p	LWC D		
CPF	.ACM	3	16	22-Sep-86	12:41a	LWC D		
CRLF	.ACM	1	16	15-Mar-85	11:19a	LWC D		
DAD	.ACM	7	16	3-Oct-86	8:12p	LWC D		
DCF	.ACM	2	16	17-Aug-86	11:22a	LWC D		
DDS2	.ACM	5	16	15-Mar-85	11:21a	LWC D		

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FILELIST FOR HDOS 3.0a (Cont)

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[Continued]

Volume: 0 on 11-Aug-88 Type: Data Init Date: 25-Jun-87

Label: HDOS 3.0, Issue #50.07.00 [Common Decks 2]

Name	.Ext	Size	Alloc	Created	Time	Flags---	Accessed	A/C
DDS3	.ACM	6	16	17-Jul-81	12:00a	LWC	D	
DFA	.ACM	4	16	25-Mar-85	11:22a	LWC	D	
DFC	.ACM	4	16	28-Mar-85	11:22a	LWC	D	
DFD	.ACM	9	16	17-Aug-86	11:23a	LWC	D	
DIFDEF	.ACM	2	16	15-Mar-85	11:19a	LWC	D	
DISDEF	.ACM	2	16	15-Mar-85	11:19a	LWC	D	
DNS	.ACM	4	16	21-Sep-86	11:18p	LWC	D	
DNT	.ACM	4	16	25-Mar-85	11:22a	LWC	D	
DOS	.ACM	3	16	13-Jul-86	11:23a	LWC	D	
DREAD	.ACM	3	16	15-Mar-85	11:19a	LWC	D	
DRS	.ACM	15	16	21-Sep-86	11:34p	LWC	D	
DTB	.ACM	4	16	21-Sep-86	11:35p	LWC	D	
FBDEF	.ACM	2	16	21-Sep-86	10:39p	LWC	D	
FCC	.ACM	2	16	25-Mar-85	11:22a	LWC	D	
RGT	.SYS	1	16	25-Jun-87	6:07p	SLWC	D	
GRT	.SYS	1	16	25-Jun-87	6:07p	SLWC	D	
DIRECT	.SYS	32	32	25-Jun-87	6:07p	SLW	D	
FCLEAR	.ACM	3	16	15-Mar-85	11:19a	LWC	D	
FCLO	.ACM	6	16	21-Sep-86	11:44p	LWC	D	
FDB	.ACM	2	16	25-Mar-85	11:22a	LWC	D	
FEC	.ACM	2	16	29-Mar-86	12:00a	LWC	D	
FERROR	.ACM	3	16	21-Sep-86	11:51p	LWC	D	
FGC	.ACM	4	16	25-Mar-85	11:22a	LWC	D	
FOE	.ACM	4	16	25-Mar-85	11:22a	LWC	D	
FOPE	.ACM	9	16	21-Sep-86	11:58p	LWC	D	
FREAB	.ACM	9	16	15-Mar-85	11:19a	LWC	D	
FREAL	.ACM	11	16	15-Mar-85	11:19a	LWC	D	
FST2	.ACM	9	16	22-Sep-86	12:42a	LWC	D	
FUTIL	.ACM	8	16	22-Sep-86	12:01a	LWC	D	
FWRIB	.ACM	13	16	22-Sep-86	12:17a	LWC	D	
FWRIL	.ACM	3	16	15-Mar-85	11:19a	LWC	D	
GETLAB	.ACM	2	16	3-Aug-86	11:19a	LWC	D	
GNL	.ACM	2	16	21-Sep-86	10:41p	LWC	D	
GUP	.ACM	2	16	15-Mar-85	11:19a	LWC	D	
H17SUBS	.ACM	24	32	20-Aug-86	12:00a	LWC	D	
BCTT	.ACM	4	16	15-Mar-85	11:21a	LWC	D	
IDN	.ACM	2	16	15-Mar-85	11:21a	LWC	D	
ILDEHL	.ACM	1	16	22-Sep-86	12:49a	LWC	D	
IMM	.ACM	4	16	3-Aug-86	11:21a	LWC	D	
INCHA	.ACM	5	16	14-Sep-86	7:50p	LWC	D	
INDXX	.ACM	7	16	22-Sep-86	12:53a	LWC	D	
ISDEHL	.ACM	2	16	21-Sep-86	10:45p	LWC	D	
LDE	.ACM	6	16	25-Mar-85	11:22a	LWC	D	
LDI	.ACM	9	16	17-Aug-86	11:22a	LWC	D	
LFD	.ACM	3	16	17-Aug-86	11:22a	LWC	D	
LUD	.ACM	3	16	25-Mar-85	11:21a	LWC	D	

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FILELIST FOR HDOS 3.0a (Cont)

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[Continued]

Volume: 0 on 11-Aug-88 Type: Data Init Date: 25-Jun-87

Label: HDOS 3.0, Issue #50.07.00 [Common Decks 2]

Name	.Ext	Size	Alloc	Created	Time	Flags---	Accessed	A/C
MND	.ACM	9	16	17-Aug-86	11:23a	LWC D		
MOVEL	.ACM	4	16	21-Sep-86	10:50p	LWC D		
MOVL	.ACM	6	16	14-Sep-86	7:51p	LWC D		
MOVLL	.ACM	4	16	14-Sep-86	7:50p	LWC D		
MU10	.ACM	1	16	15-Mar-85	11:20a	LWC D		
NAMDEF	.ACM	2	16	14-Jul-86	11:21a	LWC D		
NREDY	.ACM	2	16	15-Mar-85	11:21a	LWC D		
OVLDEF	.ACM	2	16	15-Mar-85	11:20a	LWC D		
PCL	.ACM	4	16	4-Jul-86	12:00a	LWC D		
PDD	.ACM	3	16	15-Mar-85	11:21a	LWC D		
PGT	.ACM	16	16	17-Aug-86	11:21a	LWC D		
RBF	.ACM	2	16	25-Mar-85	11:22a	LWC D		
RDL	.ACM	5	16	1-Sep-86	9:27p	LWC D		
READY	.ACM	2	16	15-Mar-85	11:21a	LWC D		
RTL2	.ACM	5	16	21-Sep-86	11:03p	LWC D		
RVD	.ACM	3	16	15-Mar-85	11:21a	LWC D		
SCU	.ACM	5	16	22-Sep-86	1:08a	LWC D		
SGT	.ACM	3	16	25-Mar-85	11:22a	LWC D		
TASKDEF	.ACM	43	48	22-Jun-86	12:00a	LWC D		
TFN	.ACM	2	16	2-Aug-86	11:19a	LWC D		
TFNS	.ACM	3	16	13-Oct-86	10:23p	LWC D		
TYPCC	.ACM	2	16	21-Sep-86	11:05p	LWC D		
TYPCH	.ACM	2	16	15-Mar-85	11:20a	LWC D		
TYPET	.ACM	8	16	15-Mar-85	11:20a	LWC D		
TYPLN	.ACM	5	16	15-Mar-85	11:20a	LWC D		
TYPT2	.ACM	2	16	15-Mar-85	11:20a	LWC D		
UAD	.ACM	4	16	1-Sep-86	4:27p	LWC D		
UDDN	.ACM	4	16	15-Mar-85	11:20a	LWC D		
UDDX	.ACM	4	16	21-Sep-86	11:07p	LWC D		
UDE	.ACM	4	16	25-Mar-85	11:22a	LWC D		
UDS	.ACM	2	16	25-Mar-85	11:22a	LWC D		
UHW	.ACM	3	16	21-Sep-86	11:08p	LWC D		
UNUM	.ACM	2	16	15-Mar-85	11:21a	LWC D		
WDO	.ACM	2	16	15-Mar-85	11:22a	LWC D		
WER	.ACM	2	16	15-Mar-85	11:20a	LWC D		
XCHGBC	.ACM	2	16	11-Jul-81	12:00a	LWC D		

108 Files, Using 552 Sectors (1792 Allocated, 2176 Free, 54.4 % Free)

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FILELIST FOR HDOS 3.0a (Cont)

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Volume: 0 on 11-Aug-88 Type: Data Init Date: 25-Jun-87

Label: HDOS 3.0, Issue #50.07.00 [Common Decks 3]

Name	.Ext	Size	Alloc	Created	Time	Flags---	Accessed	A/C
BATCH	.ACM	63	64	7-Sep-86	12:00a	LWC	D	
BYE	.ACM	4	16	9-Aug-86	12:00a	LWC	D	
CHECK	.ACM	2	16	22-Jun-86	12:00a	LWC	D	
CLS	.ACM	1	16	9-Aug-86	12:00a	LWC	D	
COPY	.ACM	1	16	9-Aug-86	12:00a	LWC	D	
DATE	.ACM	3	16	9-Aug-86	12:00a	LWC	D	
DEFAULT	.ACM	14	16	13-Aug-86	12:00a	LWC	D	
DELETE	.ACM	2	16	22-Jun-86	12:00a	LWC	D	
DEV	.ACM	23	32	17-Sep-86	12:00a	LWC	D	
DFSS	.ACM	7	16	29-May-86	12:00a	LWC	D	
DIR	.ACM	9	16	9-Aug-86	12:00a	LWC	D	
DMM	.ACM	11	16	18-Sep-86	12:00a	LWC	D	
DMMBIG	.ACM	34	48	17-May-86	12:00a	LWC	D	
DSSS	.ACM	7	16	9-Mar-86	12:00a	LWC	D	
EDLINE	.ACM	32	32	1-Sep-86	12:00a	LWC	D	
FLAG	.ACM	3	16	9-Aug-86	12:00a	LWC	D	
H19SUBS	.ACM	4	16	24-Jul-86	12:00a	LWC	D	
HDOS30	.ACM	2	16	14-Sep-86	1:35p	LWC	D	
HELP	.ACM	1	16	13-Aug-86	12:00a	LWC	D	
INDLB	.ACM	3	16	2-Mar-86	12:00a	LWC	D	
LOADD	.ACM	14	16	<No-Date>	12:00a	LWC	D	
LOG	.ACM	3	16	9-Aug-86	12:00a	LWC	D	
MDR	.ACM	23	32	22-Sep-86	8:28p	LWC	D	
PATH	.ACM	4	16	9-Aug-86	12:00a	LWC	D	
PIP	.ACM	8	16	9-Sep-86	12:00a	LWC	D	
PIPCMDS	.ACM	74	80	18-Sep-86	11:43p	LWC	D	
PIPCOPY	.ACM	50	64	20-Sep-86	12:00a	LWC	D	
PIPLIST	.ACM	86	96	14-Sep-86	5:11p	LWC	D	
PIPSUBS	.ACM	84	96	20-Sep-86	10:28p	LWC	D	
PIPSWI	.ACM	54	64	9-Sep-86	12:00a	LWC	D	
PRINT	.ACM	3	16	4-Sep-86	12:00a	LWC	D	
PROMPT	.ACM	3	16	9-Aug-86	12:00a	LWC	D	
PROMSHO	.ACM	9	16	3-Sep-86	12:00a	LWC	D	
PRSCL	.ACM	2	16	4-Aug-86	12:00a	LWC	D	
RENAME	.ACM	2	16	22-Jun-86	12:00a	LWC	D	
RUN	.ACM	2	16	30-Jul-86	12:00a	LWC	D	
RVL	.ACM	5	16	4-Aug-86	12:00a	LWC	D	
SI	.ACM	13	16	11-Sep-86	12:00a	LWC	D	
SORT	.ACM	20	32	2-Mar-86	12:00a	LWC	D	
SSM	.ACM	7	16	4-Aug-86	12:00a	LWC	D	
RGT	.SYS	1	16	25-Jun-87	6:09p	SLWC	D	
GRT	.SYS	1	16	25-Jun-87	6:09p	SLWC	D	
DIRECT	.SYS	32	32	25-Jun-87	6:09p	SLWC	D	
START	.ACM	9	16	4-Oct-86	6:22p	LWC	D	
TIME	.ACM	13	16	7-Sep-86	12:00a	LWC	D	

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FILELIST FOR HDOS 3.0a (Cont)

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Volume: 0 on 11-Aug-88 Type: Data Init Date: 25-Jun-87

Label: HDOS 3.0, Issue #50.07.00 [Common Decks 3]

Name	.Ext	Size	Alloc	Created	Time	Flags---	Accessed	A/C
TYPE	.ACM	3	16	26-May-86	12:00a	LWC D		
VERIFY	.ACM	4	16	9-Aug-86	12:00a	LWC D		
VERSN	.ACM	4	16	3-Sep-86	12:00a	LWC D		
XYZZY	.ACM	1	16	9-Aug-86	12:00a	LWC D		

49 Files, Using 760 Sectors (1264 Allocated, 2704 Free, 67.6 % Free)

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DISK CONTENTS FOR HDOS 3.0

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This file briefly describes the contents of the HDOS 3.0 Distribution Disks. The files included here are the final versions, except where indicated.

Disk	File	Description
----	-----	-----
2	ASM.ABS	This will not assemble much of HDOS. The Gibson Assembler, available from Quikdata was used to develop HDOS 3.0. The Gibson assembler is about 10 times faster than this one and if you plan on changing HDOS and reassembling, I strongly recommend it. The features I used which are not supported by this assembler are relatively benign and should be easily worked around.
2	AT84.DVD	Device driver for alternate terminal for H8-4 interface.
2	AT85.DVD	Device driver for alternate terminal for H8-5 interface.
2	BASIC.ABS	Benton Harbor BASIC. This has minor changes for HDOS 3.0.
2	CLOCK.TAS	Standard H89 real time clock processor. Type 'START CLOCK<RTN>.' Applies to the typical H89/Z90 computer systems. Place this command in your AUTOEXEC.BAT file.
2	CLOCK89.TAS	Super-89 real time clock processor. Type 'START CLOCK89<RTN>.' Applies to computer systems with the D.G. Super89 CPU Board. If you have one, place this command in your AUTOEXEC.BAT file.
1	EDIT.ABS	Heath's Line Editor crossed over to HDOS 3.0.
1	ERRORMSG.SYS	A listing of HDOS 3.0a/3.02 error messages. This listing has been revised and improved over the listing of HDOS 2.0 and below.
2	H1484.DVD	Device driver for H14 printer with H8-4 interface.
2	H1485.DVD	Device driver for H14 printer with H8-5 interface.
2	H17.DVD	H17 device driver.
2	H2484.DVD	Device driver for H24 printer (TI-810) with H8-4 interface.

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DISK CONTENTS FOR HDOS 3.0 (Cont)

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Disk	File	Description
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2	H2584.DVD	Device driver for H25 printer with H8-4 interface.
2	H37.DVD	H37 device driver.
2	H4484.DVD	Device driver for H44 Diablo printer with H8-4 interface.
2	H47.DVD	H47 device driver.
1	HDOS30.SYS	This is the entire operating system. There are no overlays.
1	HELP	Help for PIP.ABS for the non-H19 terminal.
1	HELP.H19	Help for PIP.ABS for the H19 terminal.
1	SYSHelp.DOC	Help with SYSCMD.SYS for the non-H19 terminal.
1	HELP.H19	Help with SYSCMD.SYS for the H19 terminal.
1	INIT.ABS	Initializes HDOS 3.0 disks.
2	IOMEGA.DVD	Bernoulli Box device driver. (See the source code before attempting to use this driver!!)
1	MAKMSD.ABS	Used to create mass storage (disk) drivers.
1	MAP.ABS	Fun facts.
2	MX8011.DVD	Device driver for Epson MX-80 printer with H8-4 interface.
2	MX8084.DVD	Device driver for Epson MX-80 printer with Z89-11 interface. This is a parallel driver.
2	ND.DVD	Device driver for the null device.
1	ONECOPY.ABS	Copy files with one disk drive.
1	PATCH.ABS SYSPATCH.ABS	For fixing bugs and patching programs.

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DISK CONTENTS FOR HDOS 3.0 (Cont)

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Disk	File	Description
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1	PIP.ABS	Peripheral Interchange Program.
1	SET.ABS	Driver and HDOS SET Utility.
1	SY.DVD	Device driver for your primary system device.
1	SYS.ABS	Sets the system bit in a disk volume label.
1	SYSCMD.SYS	System Command Processor.
1	SYSGEN.ABS	Copies the HDOS 3.0 operating system onto newly-initialized disks.
2	TT.DVD	Device driver for the console. Also processes all terminal-related scalls.
1	WHAT.ABS	Tells what files are. Try "What HDOS30.SYS."
1	XREF.ABS	A program that goes with ASM.ABS. Used in creating machine code files.

NOTES

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[A] MEMORY MAP

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HDOS 3.0 is ORG-0. This does not mean that the program area (USERFWA) is near zero, but rather the system itself, HDOS30.SYS, is loaded in low memory. This buys the user about 4-5K of additional memory for programs. A brief memory map would appear as follows:

Start	End	Description
000000	027377	HDOS30.SYS
030000	033315	H17 ROM Subroutines
* 033316	037377	HDOS buffers and work areas [Note 1]
* 040000	040077	Monitor work cells [Note 2]
040100	042177	HDOS data area
042200	S.SYSM	User program area
S.SYSM	S.RFWA	Loaded (but not locked) drivers
S.RFWA	S.HIMEM	GRT tables, locked drivers, buffers

Refer to Chapter 8, Appendix 8-A: Memory Layouts - Memory Map, page 8-10 for further detail concerning the memory map for HDOS 3.02.

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NOTES (Cont)

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NOTES:

(1) The H17 driver code which formerly resided here is GONE, and should not be referenced! If a person calls this code directly, the disk WILL CRASH under this HDOS version!

(2) This is where the PAM-8 or MTR-88/89/90 monitors kept their scratch pad data. Since HDOS runs in low memory, consider it safe to assume that there is no monitor. HDOS, however, uses selected cells in this area in the same fashion as the monitor. Software which references this area should function properly.

Software which calls the monitor code itself will NOT work. The only monitor point retained under 3.0 is .DLY. Calling any other monitor routine will crash the system.

[B] DIRECTORY STRUCTURE AND FLAGS

=====

The directory structure has changed slightly. You will NOT be able to read HDOS 3.0 diskettes with earlier versions of HDOS. You will be able to read earlier diskettes with HDOS 3.0. Non-standard HDOS diskettes (using various time-of-day and other patches) may or may not work. Mount any diskettes in question with the write-enable notch COVERED. The directory entry now contains the following information:

- * file name
- * file type
- * time and date of file's creation
- * number of times the file has been accessed (up to 255)
- * flags
 - A - File has been backed up [Note 2]
 - B - File contains bad sectors [Note 3]
 - C - File is contiguous on disk [Note 1]
 - D - File may not be deleted [Note 4]
 - L - Flags are locked
 - S - System file
 - U - User flag [Note 5]
 - W - File is read-only

NOTES:

(1) The contiguous flag [C] is automatically set by HDOS whenever a file is closed if that file happens to be contiguous on disk. The .OPENC SCALL may still be used as before to create 'C' files, as may the '/C' switch in PIP.

NOTES (Cont)

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NOTES: (Cont)

(2) The archive flag [A] is used by a file archive (ARC) utility. The Archive utility is available separately from Kirk Thompson.

(3) The bad sector flag [B] is used by a disk verify utility which is called BAD.ABS. This utility is available separately from Kirk Thompson.

(4) The flag [D] locks a file against deletion. This does not imply write-protection, as the file may still be freely read or written. However, a file with the 'D' flag set may not be opened for .WRITE as this would cause the file to be deleted. Instead, open for .UPDATE must be used.

(5) The flag [U] is provided for user's use.

- * user area mask (not implemented)
- * first group number of file
- * last group number of file
- * last sector index of file
- * file's creation date
- * date of the file's last access

[C] DEVICE DRIVERS

=====

Device drivers may be cleanly UNLOADED. They may also process interrupts. The user should refer to H17DVD.H8A and H37DVD.H8A for examples of how this works. Pre-3.0 drivers which process interrupts should not be used. The techniques used under 2.0 to process interrupts may crash the system under 3.0.

The device table size is determined dynamically at boot time. If you have two drivers (the minimum, allowing for SY: and TT:) you get two entries. If you have fifteen drivers (!) HDOS will build a table sufficient to hold all entries.

TT: is no longer part of HDOS but is an independent device driver. In addition to the standard device driver entry points, TT: includes routines to process the following SCALLs: .SCIN, .SCOUT, .PRINT, .CONSL, and .CLRCO. TT: also supports operation at 19200 and 38400 baud.

A Device driver preamble (the SET part of the driver) may be larger than two sectors. It may extend to 16 sectors in multiples of two sectors.

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NOTES (Cont)

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[D] SYSCMD/Plus and PIP/Plus

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SYSCMD.SYS and PIP.ABS remain co-resident whenever possible, eliminating the repeated re-loading of PIP.

PIP has approximately 50 switches. See the "HELP." file for a brief description of them.

SYSCMD supports many new commands. It also supports execution of "batch" files. (A batch file is a text file containing commands which is read by SYSCMD). Batch file names end in ".BAT". SYSCMD will automatically search for and execute "SY0:AUTOEXEC.BAT" when the system boots. (This is in addition to, but AFTER, running of SY0:PROLOGUE.SYS by HDOS.) Operation of batch files is nearly identical to that of MS-DOS, with the exception of FOR/IN/DO which is not implemented.

[E] DEFAULT DEVICE DATA

=====

A default device may be "logged in" from the SYSCMD prompt.

A search path is implemented which causes SYSCMD to search for commands which are not found on the default device.

All programs distributed with HDOS 3.0 use the default device for reading and writing files.

[F] LIST OF FILES FOR HDOS 3.02

=====

HDOS30.SYS	version 3.02 of HDOS
TT.DVD	H19 driver
DK.DVD	Secondary disk drives driver
SY.DVD	Primary disk drives driver (less grinding sounds from drive)
H47.DVD	H47 driver (8-inch disks)
H37.DVD	H37 driver (soft-sector)
H17.DVD	H17 driver (hard-sector)
ND.DVD	Null device driver
RX.DVD	A Null device that tells you what its doing (debugging tool)
SYSCMD.SYS	3.02 System Command Processor
ERRORMSG.SYS	3.02 error list
HELP.	3.02 help file
PIP.ABS	3.02 peripheral interchange program
SYSHELP.DOC	3.02 help file

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ACT.ABS	Show what tasks are loaded in "task manager"
BLANK.BAT	Screen blanking batch file. Touch any key to restore the screen

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NOTES (Cont)

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[F] LIST OF FILES FOR HDOS 3.02 (Cont)

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BLINK.BAT Silly way to clear the screen
CALC.ABS Newer calculator that includes date codes
CHAN.TAS <TMG> Shows I/O channel activity on 25th line
CLOCK.TAS <TMG> Standard software clock
CRASH.TAS <TMG> Touch BREAK key to crash system
DFD.ABS Deleted files directory
DS.ABS Directory sort
DVL.ABS Display volume label sector
DVT.ABS Show contents of device table
ECHO.TAS <TMG> Send screen output to LP: (First load LP:)
IOT.ABS Show contents of I/O table
JTRA.ABS Job translator utility
KAL.ABS Pretty patterns on your screen
KEYS.TAS <TMG> Program all 8 function keys
MAP.ABS Print magic addresses for 3.02
MDRC.BAT A tool for looking at lots of disks
MP.ABS MEGAPIP, an HDOS file-handling utility
OC.ABS Newer ONECOPY
OPE.ABS A utility to alter memory
SHOWALL.BAT Show lots of HDOS information
SORT.ABS File sorting utility
SYSHELP.DOC 3.02 help file
SYSMON.TAS <TMG> Monitor STACK for overflow and S.FASER syscalls
SYSPATCH.ABS PATCH without codes
TAS.ABS Activates and deactivates tasks in 'Task Manager'
TDU.TAS <TMG> Terminal debug utility
TICTOC.BAT Start clock first; then try this
TMAP.ABS Task map. Shows which are in memory
TMG.TAS The 'Task Manager.' Must be started first before
certain tasks will work
TSR.ABS Task status report for 'Task Manager'
USR.ABS Show system speed with or without user clock vector
ZZ.ABS Zig-Zag

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NOTES (Cont)

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GRAPHICS CHARACTERS

Below the character map is the lower case character (and it's decimal equivalent) which gives you the graphic character; followed by the Hex code and Control code for the native mode of the graphic character.

CHARACTER NATIVE CODE
=====

<pre> +--MOD--+ +-----+ </pre>	<pre> +--MOD--+ ***** ***** ***** ***** ***** ***** **** *** ** * +-----+ </pre>	<pre> +-----+ ** ** ** ** ** ** ** ** ** ** ** +-----+ </pre>	<pre> +-----+ ***** ***** +-----+ </pre>	<pre> +-----+ ** ** ** ** ***** ***** ** ** ** ** ** +-----+ </pre>	<pre> +-----+ ***** ***** +-----+ </pre>
<pre> ^ 94 7F Hex DEL </pre>	<pre> _ 95 1F Hex ^_ </pre>	<pre> ` 96 00 Hex ^@ </pre>	<pre> a 97 01 Hex ^A </pre>	<pre> b 98 02 Hex ^B </pre>	<pre> c 99 03 Hex ^C </pre>
<pre> +-----+ ** ** ** ** ***** ***** +-----+ </pre>	<pre> +-----+ ** ** ** ** ***** ***** +-----+ </pre>	<pre> +-----+ ***** ***** ** ** ** ** +-----+ </pre>	<pre> +--NEW--+ * ** ***** ** * +-----+ </pre>	<pre> +--MOD--+ ***** ***** * +-----+ </pre>	<pre> +--MOD--+ * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * +-----+ </pre>
<pre> d 100 04 Hex ^D </pre>	<pre> e 101 05 Hex ^E </pre>	<pre> f 102 06 Hex ^F </pre>	<pre> g 103 07 Hex ^G </pre>	<pre> h 104 08 Hex ^H </pre>	<pre> i 105 09 Hex ^I </pre>

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GRAPHICS CHARACTERS (Cont)

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CHARACTER NATIVE CODE

=====

+--NEW--+	+--MOD--+	+-----+	+-----+	+-----+	+-----+
**** **** **** **** **** **** **** **** **** ****	* * * * * ***** *** *	**** **** **** **** ****	**** **** **** **** ****	**** **** **** **** ****	**** **** **** **** ****
j 106 0A Hex ^J	k 107 0B Hex ^K	l 108 0C Hex ^L	m 109 0D Hex ^M	n 110 0E Hex ^N	o 111 0F Hex ^O

CHARACTER NATIVE CODE

=====

+-----+	+-----+	+--MOD--+	+-----+	+-----+	+-----+
***** ***** ***** ***** *****	**** **** **** **** **** **** **** **** **** ****	***** ***** ***** ***** ***** ***** **** **** *** ** *	***** ***** ***** ***** ***** ***** ** ** ** ** **	** ** ** ** ** ***** ***** ** ** ** **	** ** ** ** ***** *****
p 112 10 Hex ^P	q 113 11 Hex ^Q	r 114 12 Hex ^R	s 115 13 Hex ^S	t 116 14 Hex ^T	u 117 15 Hex ^U
** ** ** ** ***** ***** ** ** ** ** ** **	* * ** ** ** ** **** ** ** **** ** ** ** ** ** ** * *	* ** ** ** ** ** ** ** ** ** ** *	* ** ** ** ** ** ** ** ** ** *	***** *****	***** *****
v 118 16 Hex ^V	w 119 17 Hex ^W	x 120 18 Hex ^X	y 121 19 Hex ^Y	z 122 1A Hex ^Z	{ 123 1B Hex ^[

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GRAPHICS CHARACTERS (Cont)

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CHARACTER NATIVE CODE (Cont)

=====

+-----+	+-----+	+--NEW--+	+--OLD--+	+--OLD--+	+--OLD--+
**	**	****			
**	**	* *			****
**	**	* * * *	*		****
**	**	* *	*	*	****
**	**	* * * *	*****		***
**	**	* ** *	*	*****	**
**	**	* *	*		**
**	**	****		*	**
**	**	**	*****		
**	**	**			
124	} 125	~ 126	(g 103)	(j 106)	(~ 126)
1C Hex	1D Hex	1E Hex	(07 Hex)	(0A Hex)	(1E Hex)
^\	^]	^^	(^G)	(^J)	(^^)

NOTE: Reverse video for these characters has the high bit set in native mode.

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THE ULTRA ROM

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SPECIAL KEYBOARD SEQUENCES

Version 2.8 of the Ultra ROM Firmware

Control-Shift-ESC	Clear Transparent Mode if set. Clear Native Mode if set. Unlock keyboard if locked. No code is sent to host.
Control-TAB	Transmit 14H to host.
Shift-SCROLL	Enter Scroll Mode if not already set. Advance one page if in scroll mode. No code is sent to host.
Control-SCROLL	Exit Scroll Mode if set. No code is sent to host.
Control-Shift-DELETE	Soft Reset if H19 terminal. No code is sent to host.
Control-RETURN	Return cursor to column one. No code is sent to host.
Control-Shift-RETURN	Transmit current line edited. Line is terminated with CR.
Control-ERASE	Erase to end of screen. No code is sent to host.
Control-Shift-ERASE	Erase entire screen. Home cursor.

Note: Upon receipt of a 12H the terminal will emit the 'click' sound, similar to the tick of a clock.

NORMAL MODE FUNCTION KEYS

Values of function keys in their normal mode.
Native mode values are included for reference.

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THE ULTRA-ROM (Cont)

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NORMAL MODE FUNCTION KEYS (Cont)

SHIFTED

f 1	f 2	f 3	f 4	f 5
ESC s	ESC t	ESC u	ESC v	ESC w
F3 Hex	F4 Hex	F5 Hex	F6 hex	F7 Hex

UNSHIFTED

ESC S	ESC T	ESC U	ESC V	ESC W
D3 Hex	D4 Hex	D5 Hex	D6 Hex	D7 Hex

SHIFTED

ERASE	BLUE	RED	WHITE
ESC E	ESC p	ESC q	ESC r
C5 Hex	F0 Hex	F1 Hex	F2 Hex

UNSHIFTED

ESC J	ESC P	ESC Q	ESC R
CA Hex	D0 Hex	D1 Hex	D2 Hex

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THE ULTRA ROM (Cont)

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NORMAL MODE FUNCTION KEYS (Cont)

How they function with the OFF LINE key down:

SHIFTED

f 1	f 2	f 3	f 4	f 5
ESC s swap page	ESC t enter shifted keypad	ESC u exit shifted keypad	ESC v wrap at end of line	ESC w discard at end of line

UNSHIFTED

ESC S [+ arg] cursor type	ESC T enter transparent mode	ESC U set HALF duplex	ESC V set FULL duplex	ESC W transmit character at cursor
--------------------------------------	---------------------------------------	-----------------------------	-----------------------------	---

SHIFTED

ERASE	BLUE	RED	WHITE
ESC E cls and home cursor	ESC p enter reverse video	ESC q exit reverse video	ESC r [+ arg] change baud rate

UNSHIFTED

ESC J erase to end of screen	ESC P enter native mode	ESC Q exit native mode	ESC R [+ arg] copy page to other
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(SEE SECOND NOTE ON NEXT PAGE)

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THE ULTRA ROM (Cont)

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NORMAL MODE FUNCTION KEYS (Cont)

NOTE 1: This information is given so you will know what is going on if you get strange results from the function keys while the OFF LINE key is down.

NOTE 2: The entry noted as means that while in native mode, pressing the unshifted RED key will transmit the native mode code for that key, not 'ESC Q'. Therefore, it is not possible to exit native mode with that key. You can exit native mode by pressing the ESC key followed by the 'Q' key or by using CONTROL-SHIFT-ESC.

USER-DEFINED FUNCTION KEYS

There are two built in sets of defined strings for the unshifted function keys. Notice that with the shift key they are unchanged from normal mode. You can, of course, assign your own values to the unshifted keys.

SHIFTED (no change)

f 1	f 2	f 3	f 4	f 5
ESC s	ESC t	ESC u	ESC v	ESC w

UNSHIFTED CPM

'dir '	'type '	'list '	'stat '	'pip '
User	User	User	User	User
????????	????????	????????	????????	????????

UNSHIFTED HDOS

'mount'	'dis'	'reset'	'copy'	'type'
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THE ULTRA ROM (Cont)

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USER-DEFINED FUNCTION KEYS (Cont)

SHIFTED (no change)

ERASE	BLUE	RED	WHITE
ESC E	ESC p	ESC q	ESC r

UNSHIFTED CPM

ESC J	'ren ' User ?????????	'era ' User ?????????	'user ' User ?????????
-------	-----------------------------	-----------------------------	------------------------------

UNSHIFTED HDOS

ESC J	'cat ' User ?????????	'SY1:' User ?????????	'SY2:' User ?????????
-------	-----------------------------	-----------------------------	-----------------------------

NOTE: Spaces follow some of the predefined strings.

The ERASE key is unaffected by this mode.

CONTROL-KEY MODE FUNCTION KEYS

At any time that the CONTROL key is depressed, the function keys perform the following:

SHIFTED

f 1	f 2	f 3	f 4	f 5
disable graphics mode	disable reverse video	disable wrap at end of line	disable shifted keypad mode	enter transparent mode

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THE ULTRA ROM (Cont)

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CONTROL KEY MODE FUNCTION KEYS (Cont)

UNSHIFTED

f 1	f 2	f 3	f 4	f 5
enable graphics mode	enable reverse video	enable wrap at end of line	enable shifted keypad mode	enable native mode

SHIFTED

ERASE	BLUE	RED	WHITE
ESC E	disable user function keys	copy 2nd page ram to video ram	zero the 25th line clock

UNSHIFTED

ESC J	enable user function keys	copy video ram to 2nd page ram	swap page
-------	------------------------------------	---	-----------

NOTE: The ERASE key is not affected by this mode.

These keys do not function this way in native mode. However, they will in transparent mode. While in transparent mode the graphics mode and reverse video mode will not function except where transparent mode uses reverse video normally. If you have graphics or reverse video turned on and then exit transparent mode then will still be enabled and functioning the way you expect.

If you are in transparent mode and turn on native mode then the function keys revert to sending native mode codes only.

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THE ULTRA ROM (Cont)

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CODES FOR THE KEYPAD

	insert char	up cursor	delete char
SHIFTED	ESC @ [O]	ESC A	ESC N
ALTERNATE	ESC ? w	ESC ? x	ESC ? y
SHIFTED NATIVE	97 Hex	98 Hex	99 Hex
UNSHIFTED NATIVE	87 Hex	88 Hex	89 Hex
UNSHIFTED	7	8	9
	left cursor	home cursor	right cursor
SHIFTED	ESC D	ESC H	ESC C
ALTERNATE	ESC ? t	ESC ? u	ESC ? v
SHIFTED NATIVE	94 Hex	95 Hex	96 Hex
UNSHIFTED NATIVE	84 Hex	85 Hex	86 Hex
UNSHIFTED	4	5	6
	insert line	down cursor	delete line
SHIFTED	ESC L	ESC B	ESC M
ALTERNATE	ESC ? q	ESC ? r	ESC ? s
SHIFTED NATIVE	91 Hex	92 Hex	93 Hex
UNSHIFTED NATIVE	81 Hex	82 Hex	83 Hex
UNSHIFTED	1	2	3
	zero	period	return
SHIFTED	0	.	CR
ALTERNATE	ESC ? p	ESC ? n	ESC ? M
SHIFTED NATIVE	90 Hex	9A Hex	9B Hex
UNSHIFTED NATIVE	80 Hex	8A Hex	8B Hex
UNSHIFTED	0	.	ENTER

(DOT)

NOTE: The shifted 7 key has two sequences. The first one (ESC @) sets insert character mode and the second one (ESC O) exits insert character mode.

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THE ULTRA ROM (Cont)

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ESCAPE SEQUENCES

In alphabetical order, the '*' means an added feature of this ROM.

ESC #	transmit page
ESC :	* transmit current line
ESC ;	* transmit current line edited
ESC <	* NOT used - formerly ANSI MODE enable
ESC =	enter alternate keypad mode
ESC >	exit alternate keypad mode
ESC ?	* send configuration report
ESC @	enter insert character mode
ESC A	cursor up
ESC B	cursor down
ESC C	cursor right
ESC D	cursor left
ESC E	erase screen and home cursor
ESC F	enter graphics mode
ESC G	exit graphics mode
ESC H	home cursor
ESC I	reverse line feed
ESC J	erase to end of page
ESC K	erase to end of line
ESC L	insert line
ESC M	delete line
ESC N	delete character
ESC O	exit insert character mode
ESC P	* enter native keyboard mode

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THE ULTRA ROM (Cont)

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ESCAPE SEQUENCES (Cont)

ESC Q * exit native keyboard mode

ESC R <arg> * copy display memory to/from 2nd page memory <arg>
 is '1' or '2' which is the target of the copy.

ESC S <arg> * set cursor type
 <arg> is '1' thru '8' which is cursor type
 1 underscore - steady 5 block - steady
 2 underscore - invisible 6 block - invisible
 3 underscore - fast blink 7 block - fast blink
 4 underscore - slow blink 8 block - slow blink

ESC T * enter transparent mode

ESC U * set half duplex

ESC V * set full duplex

ESC W * transmit character at cursor

ESC X <arg> * set clock
 <arg> is a seven-character string in the form:
 'hmmmss' followed by any character, usually a return.

ESC Y <r> <c> direct cursor addressing
 <r> is row, <c> is column

ESC Z identify as VT-52 (ESC / K)

ESC [enter hold screen mode

ESC \ exit hold screen mode

ESC] transmit 25th line

ESC ^ * reset clock to 00:00:00

ESC _ <arg> * reverse characters on screen
 <arg> is a count of how many characters to reverse

ESC ` * reverse entire screen

ESC a <n> <\$> * load programmable function keys
 <n> is '1' thru '8' indicating which function key
 <\$> is up to an 8 character string. if not using
 all 8 characters then must terminate with DEL.

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THE ULTRA ROM (Cont)

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ESCAPE CODES (Cont)

ESC b erase to beginning of page

ESC c * enable clock display

ESC d * disable clock display

ESC e * send time to host

ESC f <n> <\$> * expand bytes vertical
 <n> is count, <\$> is character to expand

ESC g <n> <\$> * expand bytes horizontal
 <n> is count, <\$> is character to expand

ESC h <arg> * set/clear MODE 2 settings
 <arg> is '1' thru '8', mode to set/clear
 1 enable software handshake
 2 disable software handshake
 3 start screen clock
 4 stop screen clock
 5 enable programmed function keys

 6 disable programmed function keys
 7 select CPM function keys
 8 select HDOS function keys
 9 NOT USED

ESC i <\$> * fill screen with byte
 <\$> is the character to fill screen with

ESC j save cursor position

ESC k restore cursor position

ESC l erase entire line

ESC m * reset programmable function keys

ESC n cursor position report

ESC o erase to beginning of line

ESC p enter reverse video mode

ESC q exit reverse video mode

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THE ULTRA ROM (Cont)

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ESCAPE SEQUENCES (Cont)

ESC r <arg> * set baud rate (NOT a new feature, but modified)

<arg> is 'A' thru 'H', new baud rate

A 110 E 4800

B 300 F 9600

C 1200 G 19200

D 2400 H 38400

from original ROM

<arg> is 'A' thru 'L', new baud rate

A 110 E 1200 I 3600

B 150 F 1800 J 4800

C 300 G 2000 K 7200

D 600 H 2400 L 9600

ESC s * swap display memory with 2nd page memory

ESC t enter shifted keypad mode

ESC u exit shifted keypad mode

ESC v set wrap at end of line

ESC w set discard at end of line

ESC x <arg> Heath set mode

<arg> is '1' thru '9', mode to set

1 enable 25th line

2 disable key click

3 enter hold screen mode

4 block cursor

5 cursor off

6 enter keypad shifted mode

7 enter alternate keypad mode

8 auto line feed on receipt of CR

9 auto CR on receipt of line feed

ESC y <arg> Heath reset mode

<arg> is '1' thru '9', mode to reset

1 disable 25th line

2 enable key click

3 exit hold screen mode

4 underscore cursor

5 cursor on

6 exit keypad shifted mode

7 exit alternate keypad mode

8 no auto line feed

9 no auto CR

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THE ULTRA ROM (Cont)

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ESCAPE SEQUENCES (Cont)

ESC z reinitialize to power-up configuration

ESC { enable keyboard input

ESC | * execute terminal self-test

ESC } disable keyboard input

NOTES ON THE ULTRA ROM:

This file was prepared for those people who have the Ultra ROM.

The Ultra ROM was designed by Bill Parrott III. For a time it was sold by Software Wizardry. Unfortunately, at the completion of this manual it is no longer commercially available.

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.....

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=====

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Products for HDOS 3.0/3.02

=====

Ultimate Printer Driver
 Misc software for HDOS

Gibson HDOS 3.0/3.02 Assembler;
 Various H89 hardware and software;
 HDOS Software Reference Manuals;

Associated utilities for HDOS;
 HDOS Software Reference manual;
 manuals; all of the HDOS 3.02
 files on disk or hardcopy;
 miscellaneous software