Hu7 CD SYSTEM

SOFTWARE MANUAL

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SOFTWARE

Chapter 1   SOFTWARE

The Hu7 CD system contains a 2HD floppy disk providing the following software. The software operates under MS-DOS ver3.1.

Description of terms

CD Contents	The Hu7 CD Contents Hard Disk Unit and the data area on the unit that contains the CD data is called CD Contents.
MS-DOS Partition	A part of the hard disk is secured for MS-DOS on the Hu7 CD contents hard disk unit. This is called the MS-DOS partition.
1) SCSIDEV.SYS	Device driver for an additional hard disk (620M), 8mm MT drive, and MS-DOS drive.
2) HDMUSIC.EXE	Records, plays, edits, and saves data for linear PCM. By using a bus mouse, this transfers data between the 8mm MT and CD contents, and between CD contents and MS-DOS.
3) ADPCM.EXE	Records, plays, edits, and saves data for ADPCM. By using a bus mouse, this creates MS-DOS data.
4) HDWRITE.EXE	Saves MS-DOS files to CD contents. It also adds, fetches, deletes, and lists files. It can be retrieved by batch file or by "make command" since it is a command line type of command.
5) CV.EXE	Converts the MX/BX file created by AS.LK to the file format (binary) used for CD.
6) INFGET.EXE	Converts file information saved in CD contents to the EQU file, which can be referenced by a program, and outputs this to the standard output.
7) CDEMUL.EXE	Emulates a CD-ROM2 drive through parallel I/O connected to the Hu7. Possesses monitor functions for the received commands.
8) BACKUPEX.EXE	Records files contained in CD contents to 8mm MT. MT can be saved as a master.
9) VERIFYEX.EXE	Compares the contents of CD contents to those of the 8mm MT. To verify the accuracy of the master, this must be executed. Print out the results to list the master contents.
10) RESTOREX.EXE	Restores data from 8mm MT to CD contents. This is used to restore data recorded by BACKUPEX.EXE to CD contents.

11) LISTEX.EXE   Displays a listing of the contents of the 8mm MT.

12) MSBACKUP.EXE   Records MS-DOS files to 8mm MT. Possesses add, fetch, and
                        display list functions. Used for routine program BACKUP.

13) SFTFMT.EXE   Initializes the MS-DOS drive that is used by the CD contents
                        unit. Format has already been done so use of this is not neces-
                        sary.

14) EJECT.EXE   Opens the door of the 8mm MT.

15) HDTOC.EXE   Outputs TOC information of the CD. Print the result as a part
                        of master documents.

16) HD384FMT.EXE   Executes physical format in case of an error on a hard disk.

Production Sequence

Chapter 2 PRODUCTION SEQUENCE

The following are the sequences required for creating various kinds of data and programs for CD-ROM2. Let's assume that this CD system is available for a programmer and a person who records linear PCM. The production sequence of program, picture data, ADPCM data, and linear PCM data are as follows:

2.1 Creating Programs

1. Creating IPL

> Create IPL and write data by using HDWRITE. (See IPL)

2. Estimating the data capacity and securing the program and data area

> Assume that plan and data structures are set. Estimate the capacity of each data as maximum. Because CD Contents Unit can only manage the programs and data as if it were on tape, secure the maximum capacity for program and data areas and organize them by name. For example, if you use 1M byte for your program, prepare as much as 2M bytes. 2MB can be controlled, but it will be better to divide it into 32K or 64K bytes. Files will be saved to CD contents using HDWRITE.EXE. (See HDWRITE.EXE)

> Example. HDWRITE -U10000, 0 PRG PRG1.BIN

> The above means that 10000H (64KB) is secured in CD Contents under the group name PRG, and the file name PRG1.BIN. You can repeat this 32 times to get 2M bytes. Secure the data area in the same way.

3. Getting record number

> Now, all programs and data areas are set in CD contents. You need to know the registered record number to get access to those programs and data. INFGET is the command for that. Always use this command to create a table.

4. Editing programs

> Create programs with an editor.

5. Creating CD files

> After creation of programs, use the assembler, linker, and converter to convert them to CD file format (binary). Use each tool as follows:

> | | |
> |---|---|
> | AS (Relocatable binary file) | : Assemble |
> | LK (MX/BX file) | : Link |
> | CV (Binary file) | : Convert |

6. Writing files in CD

> Write the files into CD Contents. With step 1, the area was secured for use, so execute HDWRITE to write files to CD Contents.

2.2   Creating Character Data

1. Creating data

> Use various kinds of programs to create character data.

2. Creating CD files

> Since the data format differs from pro ͠m to program, convert files to binary files for creating CD files.

3. Writing files in CD

> Write binary files into CD Contents. Execute HDWRITE at the secured area.

2.3   Creating ADPCM Data

1. Executing live recording

> First, decide what you want to record, then record it using a cassette tape recorder.

2. Recording as ADPCM data

> Record and save it as ADPCM data by using ADPCM.

3. Editing

> If necessary, use multiple ADPCM data for editing.

4. Creating CD files

> The data created at ADPCM is binary formatted. No change is necessary.

5. Writing files in CD

> Write binary files into CD Contents. Execute HDWRITE at the secured area.

2.4   Creating Linear PCM Data

1. Executing live recording

    First, decide what you want to record. Then record it using a 2 track 38 tape re-
    corder. As the linear PCM data is heard by a user as CD audio, a good recording
    system should be used.

2. Recording it as linear PCM data

    Record and register data as linear PCM data by using HDMUSIC.

3. Backing up to 8mm MT

    As the file volume of linear PCM data is too large to be handled by 2HD floppy
    disks, use 8mm MT.

4. Delivering the linear PCM data to a programmer

    A programmer saves the received data to CD contents by using HDMUSIC or
    he/she adds them using the RESTOREX A (append) option.

2.5   Creating a Master

1. Creating a master tape

    Record CD contents to 8mm MT by using BACKUPEX. It will take (depending on
    the volume) up to 2 hours.

2. Examining a master tape

    Compare the 8mm MT with CD contents using VERIFYEX. The list of contents of
    the 8mm MT will become a file.

3. Creating TOC list documents

    Create the TOC list by using HDTOC.EXE and print out the document.

4. Executing a file listing

    Print out the file created by VERIFYEX. This is a part of the master document.
    Create three tapes as master tapes. One of them is for your records. Submit the
    other tapes as the masters. Write the necessary items in the BIOS usage informa-
    tion form and turn it in with forms 3.,4. and the two 8mm MT master tapes. To
    protect the master tapes, turn in a set of presented master verification forms as well.

    Master presentation documents and MT:

    1. File list
    2. TOC list
    3. 8mm MT - two tapes
    4. BIOS usage information form
    5. Presented master verification forms

SCSIDEV.SYS

Chapter 3. SCSIDEV.SYS

3.1   Outline

This file is a device driver operated by MS-DOS ver3.1, or higher, and it controls the 620MB hard disk and 8mm data cartridge ,etc. through SCSI interface.

3.2   System Requirements

Please note that this cannot work on machines manufactured before the PC-9801VX because of DMA.

3.3   Execution Sequence

This driver configures 6 software interrupts (INT command) from the number specified by the CONFIG.SYS file at start up time as an interface into MS-DOS. Therefore, it is necessary to specify the software interrupt at application.

3.4   Option Specification

A 298MB MS-DOS drive can be used as an option, but the maximum capacity for one drive is limited to 60MB by MS-DOS. Specification of software interrupt numbers is also possible.

3.5   Format

The MS-DOS partition operated by this drive cannot be initialized by the ∕RMAT program of MS-DOS. To construct a new system, to secure a new MS-DOS partition, or to change capacity, initialize with the attached SFTFMT command. (See SFTFMT)

3.6   Control Information

As this driver secures the 8MB MS-DOS partition as a control drive (used by system) at the end of 620M hard disk, the actual maximum capacity becomes 628MB.

3.7   Set Up CONFIG.SYS

To use this system, modify the CONFIG.SYS file into a device driver. The method of specification is the same as that for device driver specification. Specify path and file names of SCSIDEV.SYS. This device driver can specify the following options:

1. MS-DOS partition to be secured on 620MB hard disk

> There are two specification methods; to specify by mega byte, use a 1/2 sized number and a 1/2 sized letter [M] after / as in example 1. To specify by kilo byte, use a 1/2 sized number and a 1/2 sized letter [K] after / as in example 2. A maximum of 60M can be specified. The maximum drive number is 7, but the total volume capacity is 298M.

> Note: K is times 1024, and M is 1024 times of K.

> Example 1.   DEVICE=A:¥SCSIDEV.SYS /40M
> Example 2.   DEVICE=A:¥SCSIDEV.SYS /40960K

2. Specifying software interrupt numbers

> Specify them after the 1/2 sized [#] symbol by using 2 digit hexadecimal numbers. If this option is omitted, #68 will be specified. When using Japanese FP, specify software interrupt numbers not used by them.

3.8   Title at Execution

When this device driver is set up, the following titles will be displayed to tell you a device driver number, the secured drive, and its volume.

Example 1.   When the following instruction is specified without two 2HD hard disks
                 DEVICE = A:¥SCSIDEV.SYS

Translation: Can be used as a hard disk device driver Ver 1.00 (INT68H-6DH used) drive (C:8M)

```
ハードディスク　デバイスドライバー　Ver 1.00　（INT 68H 6DHを使用）
ドライブ（C:8M）として使用可能です
```

Example 2.   When the following instruction is specified without two 2HD hard disks
                 DEVICE = A:¥SCSIDEV.SYS #50 /60M /20M /10M

Translation: Can be used as a hard disk device driver Ver 1.00 (INT50H-55H used) drive (C:8M D:60M E:20M F:10M)

```
ハードディスク　デバイスドライバー　Ver 1.00　（INT 50H 55Hを使用）
ドライブ（C:8M D:60M E:20M F:10M）として使用可能です
```

HDMUSIC.EXE

Chapter 4. HDMUSIC.EXE

4.1 Outline

This program has two functions. One is to record, playback, edit, and save linear PCM and the other is to back up and transfer files.

4.2 Linear PCM Data Processing Concept

The following five functions are provided for linear PCM and are done in CD contents:

1. Record

This is a function used to record onto a hard disk from audio tapes or other medi   . Note that a sound length less than 4 seconds is not allowed when recording   linear PCM on CD, so the minimum file size (4 sec) is 690K.

Warning: Recorded data is not set under system control without saving. Always save your important data. Refer to "Save" for details.

2. Playback

This is a function to transform a hard disk to a super CD player. It is much faster and better in quality than any other CD player in the market.

3. Edit

Basically this is a function to edit the area controlled on CD contents. This can edit not only music, but also data, programs, etc.

4. Save/Delete

Save/Delete is used to start or stop the handling of data (at the end of the hard disk) as CD data. In other words, "Save" puts data on the hard disk under system control and "delete" sets free the data from system control.

5. Visualize

This will visualize audio data using a wave form to graphically display the audio data.

Flow of linear PCM data creation

Record	Check Playback	Save	Back up	End

4.3   File Processing Concept

Normally, transfer from MS-DOS to CD Contents is done by using HDWRITE.EXE. However, HDWRITE.EXE is designed to receive all parameters from the command input of the shell, in case a big modification of the MAKE file takes place. So, for small changes or cases where visual control is desired, a function other than HDWRITE can be used. The following two functions are provided for file processes:

1. Related to 8mm MT

Function to read and write data to 8mm MT. As a file volume is too big to handle linear PCM data for 2HD floppy, 8mm MT must be used.

2. Related to OS

Function to playback, delete, rename, and list files of the CD Contents files.

4.4   Execution Method

Executes from the MS-DOS command line.
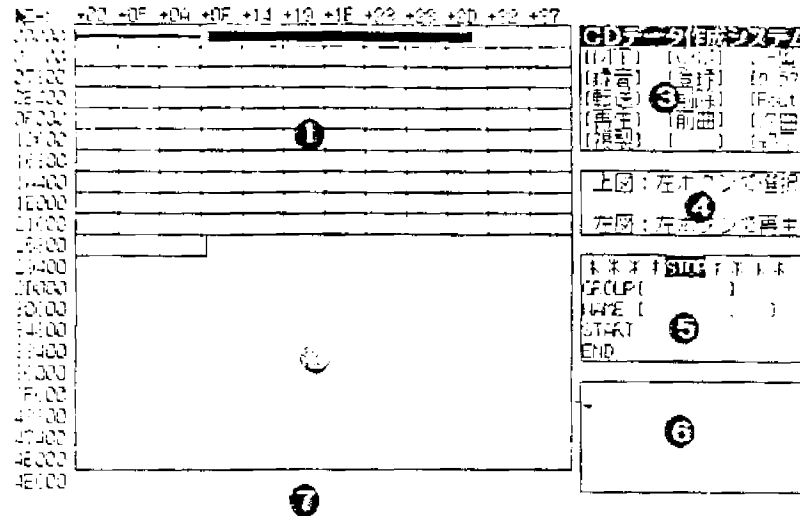
4.5   Option Specification

No option specification.

4.6   Format

HDMUSIC

4.7   Display at Execution

When HDMUSIC is executed, the screen looks like this:

4.7.1 Function of each area

1.   CD contents area map:
     This is used to specify a record number. Left clicking roughly specifies a record
     number. Playback also starts from the location. Right clicking stops playing.

2.   MS-DOS area:
     This is the area secured in the CD Contents Hard Disk Unit for the MS-DOS parti-
     tion. Clicking here has no effect.

3.   Command select area:
     Area to select each function. Clicking here executes each transaction.

4.   Message line to users:
     A message from the program side is displayed here.

5.   Status display and message line:
     Present CD player status such as playback, record, stop, or delete is displayed.
     When playback is executed, the record number of the starting record and the inter-
     rupted record number will be displayed.

6.   Message to be saved separately from area (5) such as register/transfer is displayed.
     Normally nothing is displayed here.

7.   Plain graph:
     Normally nothing is displayed, but if necessary, a graph is displayed. This is to help
     you visually control the music.

4.8 Commands

4.8.1 Record

This is to record linear PCM data in the open area of CD Contents and to prepare it for saving.
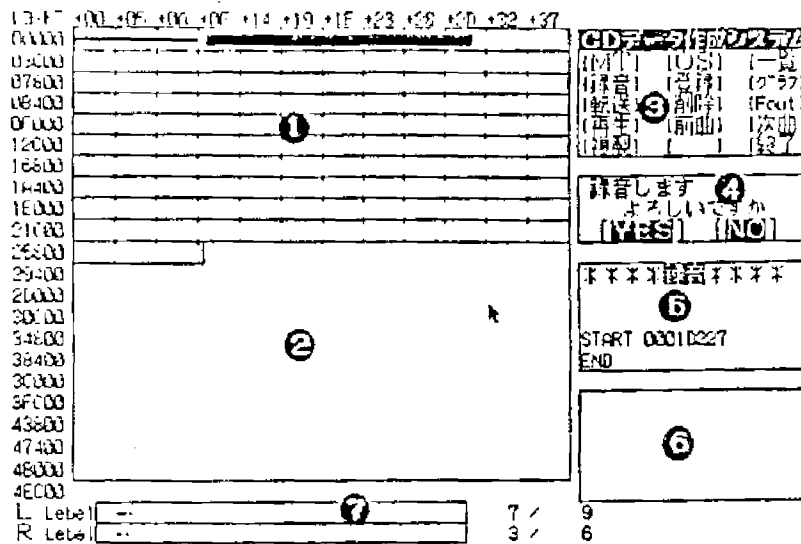
1. Recording procedure

a)   Click "record" in command select area (3) with the left button.

b)   The above display appears and status is now "ready to record" showing the plain
      level meter shown at (7). Adjust levels by using the meter. The plain level meter
      indicates in db the value for left and right, separately. Color between cyan and red
      is -14db and scales are not set regularly. The number on the right side of the meter
      is digital absolute value of present value and maximum value. The number value
      would be 0 through 32768. Status display (5) becomes "record" and the starting
      record number to be recorded at START is displayed.
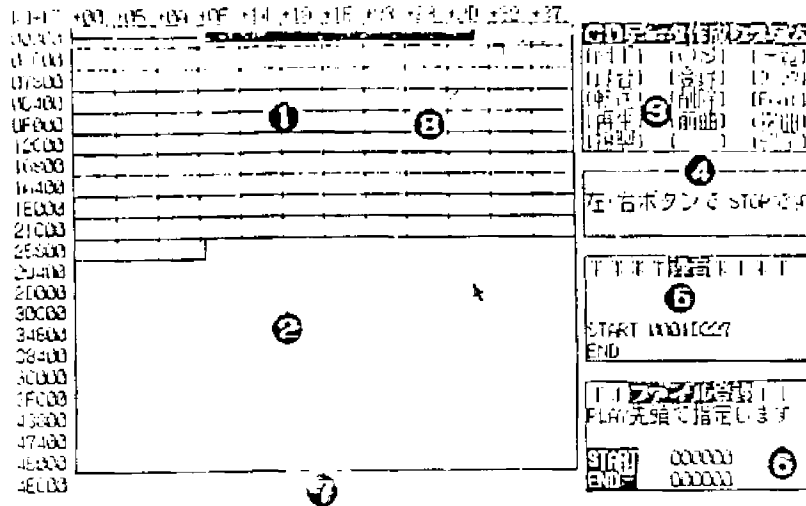
c)   Start recording after level adjustment is completed. If YES is selected, the above
     display will appear and start recording. White lines such as (8) will increase in the
     area (1) while recording. If you need to cancel, select NO when the system asks a
     user to confirm Y/N at the message line, or a right click will stop this command. If
     retry is necessary, start again from a).

d)   Either right or left click will stop recording. At this time, the white lined area will
     change into a red line. This shows the recorded area and lets you know about the
     next time for saving.

     Note: If [MT] [OS] [List] [Graph] is selected, although these lines disappear,
     the contents will remain to allow you to save.

4.8.2. Save

This is to put PCM data on the hard disk (recorded or already registered) under system control and additionally save them as files. Recording is necessary before this command. (Always added to the end of the file control)
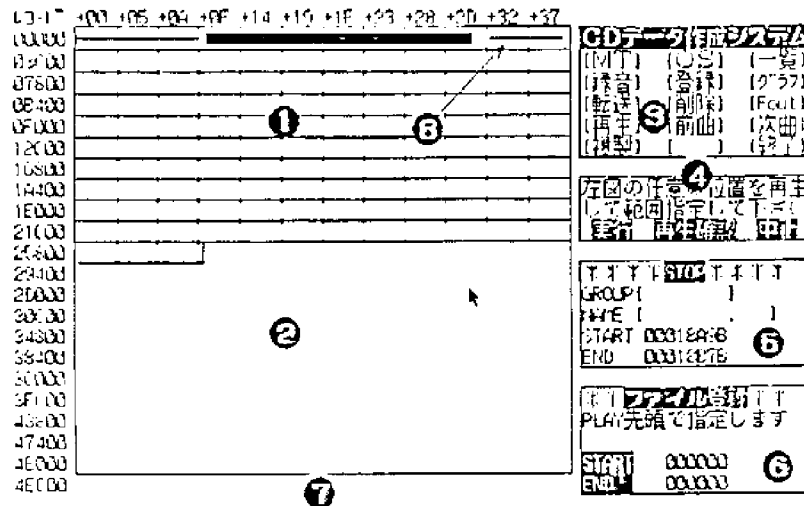
Saving Procedure

a)   Click "register" in command select area (3) with the left button.

b)   The above display appears with the area specified. The red reversed characters [Execute] [Check Playback] [Stop] will be displayed at the message line to the user (4).

c)   Specify the range you want to save. Specify starting and ending locations. There are two ways of specifying:

   A. Click CD Contents (1) directly.

   In this way, the record number clicked with the left button will be displayed in area (5). First, specify starting location to be saved in area (1) by clicking. Click "start" in area (6) with the left button to specify the start location. In the same manner, click the end location in area (1). Then, click "end" in area (6) with the left button to specify the end location.

B. Display plain graph (7).

First, click CD contents (1) directly to specify the appropriate location. Next, click plain graph (7) with the left button. The next graph will appear in "plain graph mode". You can specify detailed record numbers by looking at the graph indicator. The record number is displayed at the lower left of the plain graph. Refer to "plain graph" for details. Then, specify the starting location to be saved in plain graph. Next, click "start" in area (6) with the left button to specify the start location. In the same way, specify the end location in plain graph. Then, click "end" with the left button to specify the end location.
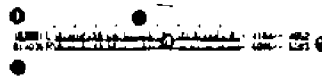
d)   Confirm the area to be saved. Click "Check playback" with the left button to make sure that the area to be saved is correct.   ...y the area to be saved will be played.

e)   Saving. If the area that you want to save is correct, click "Execute" with the left button.

f)   Save by using a group name or a file name. Type in group and name in area (6) for input. Files in CD Contents are stored under the group and file names. Specification of a group name is not necessary, but it is better to use the name for convenience.

g)   Start saving. At this time, POST GAP (4seconds of blank) can be inserted right after the data file. It will take longer to save than to record.

4.8.3 Playback

This is to playback the audio data from top, which is recorded in CD contents. The track is the one previously played. A left click of CD contents at (1) will change the playback location. This is used to listen to the recorded data. The current playback location is shown as white lines (2). To stop playback, click the right button.

4.8.4 Previous song

This is to start playback from the top of the preceding song which played before the current song. Use this command to listen to the recorded contents. Current playback location is shown as white lines (2). To stop playback, click the right button.

4.8.5 Next song

This is to playback from the top of the song next to track played before. Use this command to listen to the recorded contents. Current playback location is shown as white lines (2). To stop playback, click the right button.

4.8.6 Graph

This is to visualize PCM data on the hard disk. It starts graphing from the top of the preceding play. The display becomes as shown below:
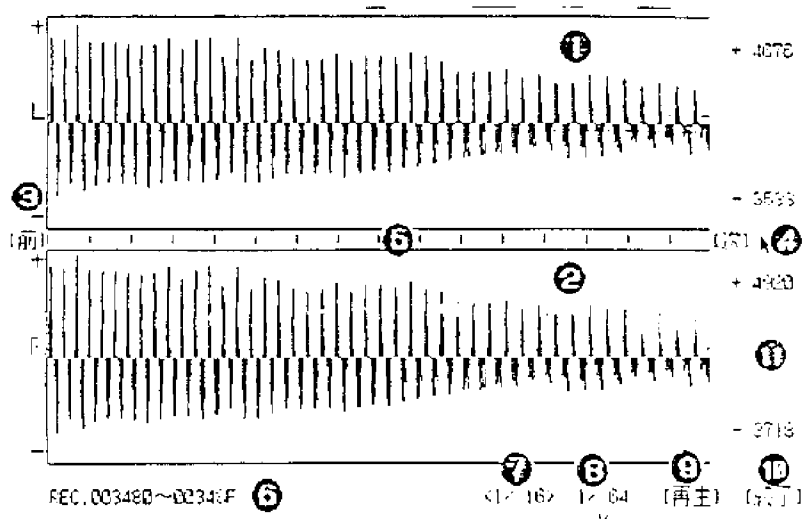
Explanation of each area:

1.   Graphic display area for the left channel
2.   Graphic display area for the right channel
3.   (Preceding) is the preceding block display
4.   (Next) is the next block display
5.   2048 bytes unit scale. If area 1, 2, or 5 is clicked, start redisplay from the record.
6.   Graphic record range
7.   Sampling interval for graph data. 1/1 is continuous data, 1/16 is 16 pcs. (32 words) interval.
8.   Scale of graph data. 1/1 is graph as it is, 1/64 is to reduce the graph to 1/64 size.
9.   Clicking the left button plays the graphic range
10.   Clicking the right or the left button terminates this command
11.   Minimum and maximum value in the graphic record range

4.8.7 Transfer

This is to transfer data on the hard disk to another area. It can also transfer re-recorded linear PCM data to an area where data is already saved.

1. Operation procedure

a. The the same as for saving, decide a source START, END, and a destination START.

b. Check the source contents of the transfer by clicking "Playback" with the left button.

c. Click "Execute" with the left button to transfer.

If "Cancel" is selected, it will terminate automatically.

4.8.8 Delete

This is to completely delete the last file on a hard disk. It can only delete the end file. The display will be as follows and area (1) indicates group, name, start record, and end record, and area (2) confirms your command. Select "Yes" to delete, "No" to cancel. If "Yes" is selected, the file will be deleted and this command will end.

4.8.9 Fout

This is to fade out the linear PCM data on a hard disk. It reduces the play by 1 second less than what was specified. The last one second become 0 data, therefore, if play is less than 1 second, this does not function.

1. Operation procedure

a.   The same as for saving, decide the starting record and the ending record by play top location specification.

b.   Click "Play Check" with the left button and check the contents to fade out.

c.   Click "Execute" with left button to fade out.

If "Ca   " is selected, it will terminate automatically.

4.8.10   End

This is to end HDMUSIC. If "End" is clicked with the left button, HDMUSIC will end and return to the MS-DOS shell.

4.8.11   OS

This is to transfer files between MS-DOS and a hard disk. The following display will appear.

This is a list of files saved to CD contents. The files can be returned to the MS-DOS file one by one by specifying a MS-DOS path name. Each area has the following functions:

1.   List of the file. Can be selected by a direct click of this area.
2.   It indicates the files that are presently selected.
3.   Displays two screens before
4.   Displays one screen before.
5.   Select one file before. If top, displays a listing of preceding files.
6.   Select next file. If end, displays a listing of the next files.
7.   Displays one screen after.
8.   Displays two screens after.
9.   Displays the first file.
10.   Displays the end file.
11.   Switches OS list and HD list.
12.   Delete end file saved on HD.
13.   Transfer currently selected file as a MS-DOS file to MS-DOS.
14.   Change directory of destination.
15.   Ends OS command and returns to the initial screen state.
16.   Area where messages such as "Check" are displayed.
17.   Displays the return destination path name.

Application Method of This Command

1. Click (14) with the left button and specify a path name you want to return to.
2. Use (2) to (10) to specify files you want to return to MS-DOS.
3. Click (13) with the left button to return to MS-DOS.

About HD file item list

MD	Three file modes: D: Data A: Audio *: Delete file
GROUP	Group name
NAME	File name
EXT	Extension
File length	Number of valid bytes of a file
Y-M-S	Data when a file is saved
HH:MM:SS	Time when a file is saved
Starting record	Starting record number of a file on HD
No. of record	Number of records in files on HD

If (11) is clicked with the left button, the MS-DOS file list will be displayed, and files can be transferred between the MS-DOS file and CD contents. The following display will appear.
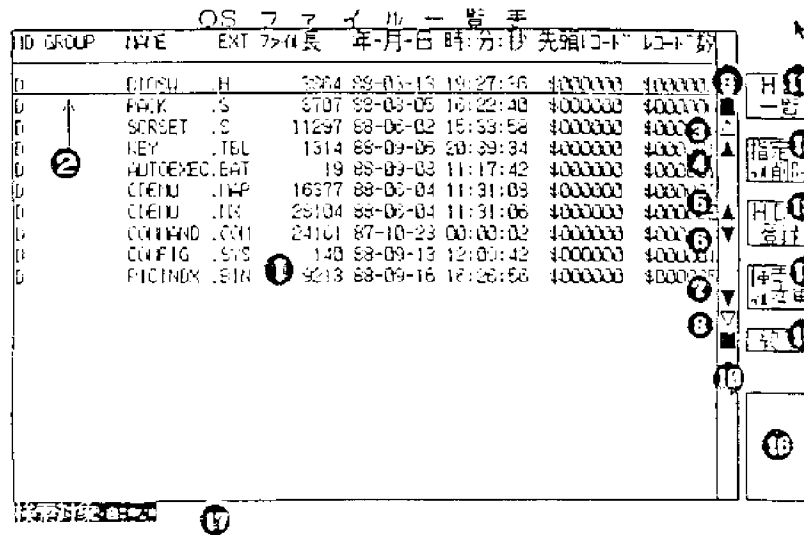
Specified MS-DOS files can be transferred to CD contents one by one.

Each area has the following function:

1. File list is displayed. Can be selected by direct clicking.
2. Indicates the currently selected file.
3. Displays a file list two screens before.
4. Displays a file list one screen before.
5. Select the previous file. If top, displays a listing of proceeding files.
6. Select the next file. If end, displays a listing of the next files.
7. Displays one screen after.
8. Displays two screens after.
9. Display the first file.
10. Display the end file.
11. Switches HD list and OS list.
12. Deletes the specified file.
13. Saves the currently selected file as a HD file.
14. Changes the selected files. MS-DOS wild cards can be used.
15. Ends OS command and returns to the initial screen state.
16. Message such as "Check" are displayed.
17. Displays the selected file.

4.8.12   List

This is to edit files saved in CD Contents. The following display will appear when this command is selected.

This is the file list saved in CD Contents. Each area has the following function:

1.   File list is displayed. Can be selected by direct clicking.
2.   Indicates the currently selected file.
3.   Displays the file list two screens before.
4.   Displays the file list one screen before.
5.   Select the previous one file. If top, displays a listing of proceeding files.
6.   Select the next one file. If end, displays a listing of the next files.
7.   Displays one screen after.
8.   Displays two screens after.
9.   Display the first file.
10.   Display the end file.
11.   Command.

(Playback)	Playback a file to select.
(Delete)	Put a delete mark on the selected file. Actual data is not deleted.
(Change)	Change the selected file name and group name.
	After the following questions, type in the new information.
	GROUP ?
	NAME ?
	EXT ?
(Insert)	Insert the last file in front of the specified file.
(Erase)	Erase the specified file and reorganize the files.
(Volume)	Adjusts sound volume of the specified file. Use fraction (numerator 0 - 100, denominator 1 - 100 can be specified). If numerator is bigger than the denominator, it will take the biggest or the smallest value.
(Search)	Displays a file list from the specified file. Inputs are group name, file name, and extension.
(End)	Ends a file list and returns to the initial screen.

About File List Items

MD	Three file modes:
	D: Data
	A: Audio
	*: Delete file
GROUP	Group name
NAME	File name
EXT	Extension
File length	Number of valid bytes of a file
Y-M-S	Data when a file is saved
HH:MM:SS	Time when a file is saved
Starting record	Starting record number of a file on HD
No. of records	Number of records in files on HD

4.8.13   MT

This is to transfer a file between 8mm MT and a hard disk. Format for 8mm MT is the same as for the back up command, BACKUPEX.EXE. Operations such as changing the order of a 8mm MT back up of another system or returning a part of it to a hard disk are possible. The following display will appear:

This is the file list saved in CD Contents. Each specified file can be backed up to 8mm MT. Each area has the following function:

1. File list is displayed. Can be selected by direct clicking.
2. Indicates the currently selected file.
3. Displays the file list two screens before.
4. Displays the file list one screen before.
5. Select the previous one file. If top, displays a listing of proceeding files.
6. Select the next one file. If end, displays a listing of the next files.
7. Displays one screen after.
8. Displays two screens after.
9. Display the first file.
10. Display the end file.
11. Switches MT list and HD list.
12. Deletes the last file saved on HD.
13. Backs up the presently selected file to 8mm MT. If not initialized, this results in an error, so initialize MT in advance.
14. Initializes 8mm MT and brings it to the writable state. If 8mm MT is not set, this results in an error, so set it in advance.
15. Ends MT command and returns to the initial screen state.
16. Messages such as "Check" are displayed here.
17. Exchanges 8mm MT. Do not use the eject button on the Hu7 CD Contents Hard Disk Unit for exchanging 8mm MT. Always click MT exchange with the left button.

Operation

Application Method of This Command

1. Click (17) with the left button to open the 8mm MT door.
2. Set the 8mm MT and close the door.
3. Click (14) with the left button to initialize MT.
4. Specify a file to back up to 8mm MT by using (2) to (10).
5. Click (13) with the left button to back up to the 8mm MT.

About HD file list item

MD	Three file modes:
	D: Data
	A: Audio
	*: Delete file
GROUP	Group name
NAME	File name
EXT	Extension
File length	Number of valid bytes of a file
Y-M-S	Data when a file is saved
HH:MM:SS	Time when a file is saved
Starting record	Starting record number of a file on HD
No. of records	Number of records in files on HD

If the MT list (11) is clicked with the left button, the "Creating MT list" message will appear at (16) and starts reading 8mm. Once data starts coming into the 8mm MT, the following display will appear to list 8mm MT. Files can be transferred between 8mm MT and CD Contents.

ID GROUP	NAME	EXT	ファイ長	年-月-日	時:分:秒	先頭コード	コード
D	AFPT123	.BIN	65536	88-02-04	13:02:33	400FE82	40000X
D	AFPT134	.BIN	65536	88-03-04	18:02:38	400FC3	4000
D	ADPC105	.BIN	65536	88-03-04	18:02:38	400FE2	4000
D	AFPT106	.BIN	65536	88-03-04	18:02:38	400002	4000
D	AFPT107	.BIN	65536	88-03-04	18:02:38	400022	4000
D	AFPT108	.BIN	65536	88-03-04	13:02:33	400042	4000
D	AFPT109	.BIN	65536	88-03-04	18:02:38	400302	4000
- SYSTEM	FUST_G-P	.4S	614400	88-03-03	17:15:32	400302	4000
H serif	serifu01.		126363	88-03-15	23:25:32	40031FE	4000
H serif	serifu02.		59992	88-03-15	23:26:30	400307	4000
H serif	serifu03.		200704	88-03-15	23:27:42	400340	4000
H serif	serifu04.		200704	88-03-15	23:28:43	400356	4000
H serif	serifu05.		65536	88-03-15	23:30:50	400371	40001
H serif	serifu06.		159744	88-03-15	23:31:52	40032B	40001
H serif	serifu07.		362416	88-03-15	23:33:10	400304	40001
H serif	serifu08.		450176	88-03-15	23:35:54	40031D	400034
H serif	serifu09.		2617344	88-03-15	23:50:23	40043C1	4000FD
H serif	serifu10.		157384	88-03-15	23:52:53	4004EF	4000300
H serif	serifu11.		2007040	88-03-15	23:55:30	4004EEF	4000304
H serif	serifu12.		559104	88-03-15	23:57:14	4004F93	4000153

If 8mm MT is not set, this results in an error. Always set it in advance.
Note: It takes a long time to create a 8mm MT list.

Each area has the following function:

1.   Displays a file list. Can be selected by direct clicking.
2.   Indicates the currently selected file.
3.   Displays the file list two screens before.
4.   Displays the file list one screen before.
5.   Selects the previous one file. If top, displays a listing of proceeding files.
6.   Selects the next one file. If end, displays a listing of the next files.
7.   Displays one screen after.
8.   Displays two screens after.
9.   Displays the first file.
10.   Displays the end file.
11.   Switches HD list and OS list.
12.   Deletes the specified file.
13.   Save the currently selected file as a HD file.
14.   Initializes the Hu7 CD Contents Hard Disk (initialize control file only).
15.   Ends the MT command and returns to the initial screen state.
16.   Displays messages such as "Check" here.
17.   Exchange 8mm MT. Do not use the eject button on the Hu7 CD Contents Hard Disk Unit to exchange 8mm MT. Always click MT exchange with the left button.

About MT file list items

MD	Three file modes:
	D: Data
	A: Audio
	*: Delete file
GROUP	Group name
NAME	File name
EXT	Extension
File length	Number of valid bytes of a file
Y-M-S	Data when a file is saved
HH:MM:SS	Time when a file is saved
Starting record	Starting record number of a file on HD
No. of records	Number of records in files on HD

4.⌐ Plain Graph

The plain graph mode is used to specify a record number in detail when you save or transfer files. A plain graph will appear if the plain graph display area (lower MS-DOS area) is clicked with the left button during playback. The display looks like this:
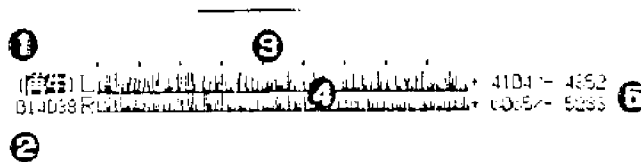
Each area has the following function:

1. Left click will start playback from record number at (2). During playback this plain graph disappears but it will reappear from the currently playing record number if (1) and (2) are clicked with the left button.
2. Displays the left end record number of the currently displaying plain graph. Left clicking this will also display 8 records before.
3. Indicates the record partition.
4. Plain graph. Specifies the record for start record if (3) and (4) are clicked with the left button.
5. Indicates the maximum value of the present graph.

If the CD Contents area map is clicked with the left button during plain graph mode, it will display a graph of the location.

ADPCM.EXE

Chapter 5   ADPCM.EXE

5.1   Outline

Playback of ADPCM is possible on the PC engine IFU30. This is to record, playback, edit, and save data for this ADPCM. These process are all done in the MS-DOS current directory. ADPCM is the method to compress a sound signal to 1 sample, 4 bits digital data.

Sampling frequency can be created with this program and data/second and the maximum time played at 64K are as follows:

Sampling frequency	Data/Sec.	Playback time
16 KHz	8000 bytes	8.192 seconds
8 KHz	4000 bytes	16.384 seconds
4 KHz	2000 bytes	32.768 seconds
2 'Hz	1000 bytes	65.536 seconds

The following five functions are provided by this program:

1.   Sampling frequency setting
     A sampling frequency of 16, 8, 4, 2 KHz can be set.

2.   Record
     Record as ADPCM data. The recorded data is saved as a file. Cut the sound data from the file and save it as a regular file.

3.   Playback
     Playback the data recorded as ADPCM from any data location.

4.   Visualize (Graphic, HEX indication)
     It graphicizes ADCPM data for easier understanding. If ADPCM is well understood, HEX indication is possible.

5.   Edit
     Lists ADPCM data and combines them to make a large file.

5.2   Execution Method

ADPCM.EXE is executed from the MS-DOS command line.

5.3   Format

ADPCM   [Option specification] [Edit file names]

5.4   Option

/D   Specifies a mode to edit in HEX data without graphics.
/N   Specifies a mode without graphics nor HEX data. (Used only at recording)
--   Indicates how to use this program
--   The following display will appear if an option is specified.

```
ADPCM Version 1.00      Copyright 1988 Hudson soft
使用法 : ADPCM  [/オプション]   [編集ファイル名]
         /D        グラフ表示せずHEXで編集します。
         /N        グラフ表示もHEX表示もしません。
         オプション省略はグラフ表示可能モードで、
         ファイル名省略は無指定となります。
         ADPCMの録音・再生・編集ツールです。
```

Translation:

Direction: ADPCM [/Option] [Edit file name]
               /D Edit at HEX without graphics
               /N Do not display graphics nor HEX
               An omitted option results in graphic mode. An omitted file name results in
               no file name. This is a program for recording, playback, and editing.

The graphic mode (at omitted option) will convert ADPCM data to PCM data, and to
drawing graphics from the data. The graphic mode enables editing data by looking at the
graph. This mode takes time due to graphics. If ADPCM data mechanism is understood,
the HEX mode can be used to cut time by specifying the [/D] option. The file name is
the file name to be edited first. If specified, you can start editing immediately. If starting
from recording, execute without specifying the file name.

The following display will appear if this program is executed without options.
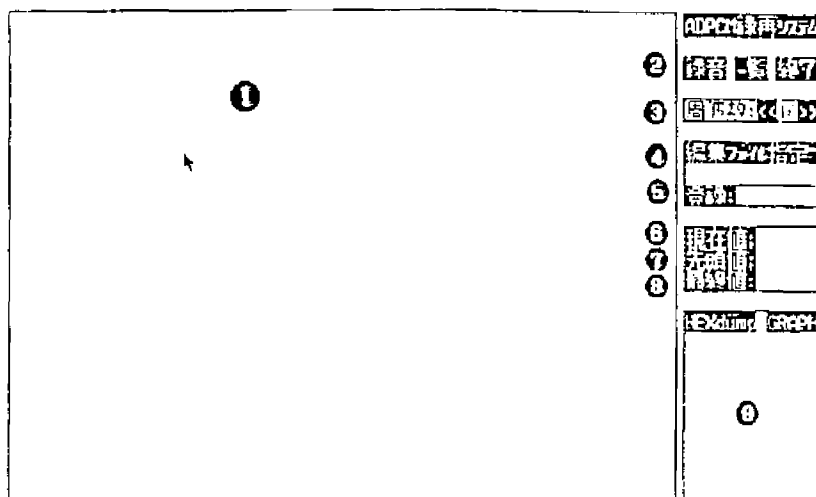
Each area has the following functions:

1.   Editable area. Graphic data will be displayed here. If clicked with the left button, ADPCM data will playback from the location.
2.   Commands can be used by this program. Mode will change upon clicking the left button.
        (Record)   Record ADPCM
        (List)   Display a file list and execute playback and edit.
        (End)   End the program and return to the MS-DOS command.
3.   Sets sampling frequency. To decrease sampling frequency, click "< <" with the left button and to increase, click "> >" with the left button.
4.   Specifies a file to edit. Clicking the left button brings a cursor to specify a file.
5.   Saves. Execute after a start value (7) and an end value (8) are specified.
6.   Indicates the playback start location as a present value.
7.   Specifies a value to be used as start value at saving. If clicked with the left button, a present value (6) will be copied.
8.   Specifies a value to be used as an end value at saving. If clicked with the left button, a present value (6) will be copied.
9.   If the area (1) is too small, it can be magnified. If clicked with the left button, display the magnified record on (6). Clicking the right or left button at this area can make the starting location on the screen move back and forth.

5.5   Recording

Recording procedure is as follows:

1.   Live recording.
     First, decide what you want to record. Then record it using a cassette tape recorder,
     etc.

2.   Set sampling frequency. Click "< <" or "> >" with the left button to set sampling
     frequency.

3.   Clicking "Record" (2) with the left button will bring up the following indication at
     area (9), then prepare for recording.

     Record in TEMP.??K   OK?   [YES] /[NO]
     (?? is the sampling frequency at the time)

     If [, es] is clicked with the left button, starts recording but areas with no sound will
     not be recorded. Clicking either left or right button will stop recording. If the level
     is exceeded during recording due to ADPCM exchange, "Level over" will appear in
     area (9). Clicking either button of the mouse will create graphs. It will take time
     for graphs to be displayed in area (1). If graphs are displayed, it will look like the
     following. If there is a red line, it means that the level is exceeded. If you play this
     bad data with the actual machine, the sound will be destroyed. Re-record or save
     the data except for areas with red lines.
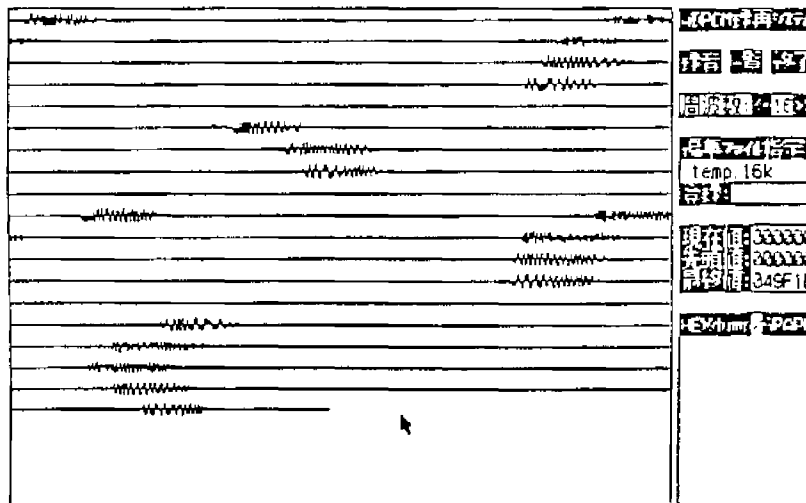
5.6 Saving

You can separate and save a portion of data which has already been saved. The procedure is as follows:

1.   Specify the location you want to save.

   Click the top of the wanted location with the left button to save. You may click with the left button as much as you want until you find exactly the right location. After the right position is found, click with the right button to interrupt playback and specify an end value by clicking with the left button.

2.   Save files.

   If the right registration range is specified, save it as a file. Click "Register" (5) with the left button. Type the file nar..... on the keyboard.

Using HEX dump and magnifying graphics.

The area (9) can be magnified to see in detail if the right position cannot be specified in the editing area. Click (9) with the left button to bring up wave graphs. BACK is displayed at the left side of this area and NEXT at the right side of the area. Clicking the area with the left button will start displaying 64 samples before or after. Clicking wave form with the left button will display wave graphs. Click HEX dump with the left button from HEX dump/GRAPH will switch to the HEX mode. Mode can be switched at any time by left clicking. However, it cannot be used when the /D option is selected. HEX display will start by left clicking the HEX part.

3.   Saving

   If the correct file name is input, it will be saved as a MS_DOS file. However, if an extension is not specified, an extension indicating sampling frequency such as 16K, 08K, 04K will be added automatically.

5.7   HEX Mode

Execute a HEX dump without wave graphics, if the /D option is specified. Use this when you understand the ADPCM data format. HEX data will be displayed instead of wave graphics after completion of recording. HEX data will be reduced according to the size of files since it cannot be displayed in the whole edit area. Others do not function specifically. The following screen appears when recording with the /D option.
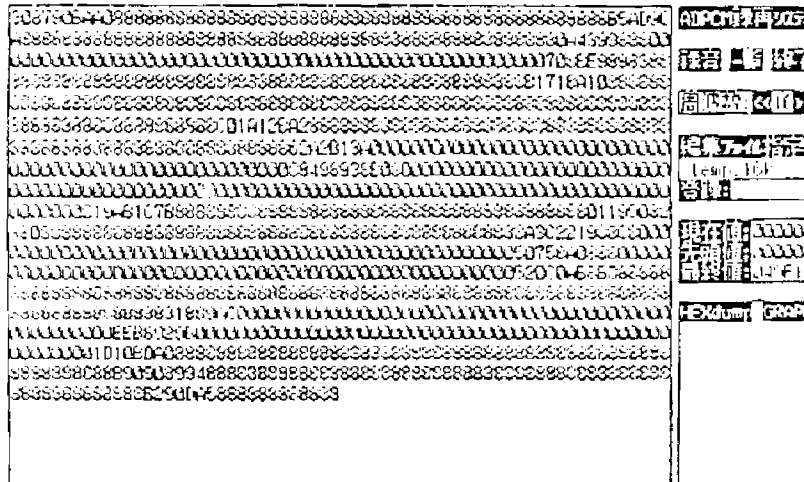
5.8 List

The list mode of ADPCM has the following three functions:

1. Display a list
2. Playback files by unit
3. Combine files
4. Get information of combined files

The following screen will appear if Display list is clicked with the left button.
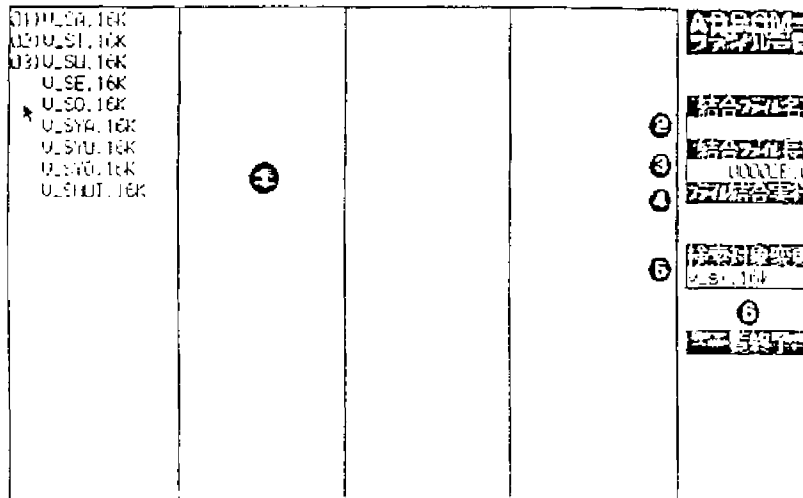
Each area has the following functions:

1. Total of 91 files can be displayed in the area. (The excess will be cut) The format is
   three blank spaces, a file name, and extension. The following two functions can be
   done in this area:

   a. Playback

   Playback ADPCM data by reversing the file name by clicking the file name with the
   left button. (Sampling frequency will be read automatically by the extension (??K).)
   Pressing the mouse button will stop it during playback.

   b. Assign order of combination

   Order of combination can be assigned by clicking on the three letter area of the file
   name. Another click will erase the order. Erase from a larger number. If the order
   is assigned, the file length (3) will increase. If erased, the file length will decrease.

2. Input the file names to be combined. Clicking the left button will input file names. You
   can only specify file names here.

3. Display the file length of combined files in hexadecimal notation. Adjust not to go
   beyond 10000 bytes since the ADPCM buffer is 64KB. (This program will not warn
   you if it is over 64KB.)

4. Start combining files by clicking "File combine execute" with the left button. If a file
   name is not specified, then a window will appear asking for the input file name. The
   combined files will be output to the specified file and the combined information file
   will be output to the name specified using .H extension. The contents are as fol-
   lows:

   Example of combined information files

   ```
   TEST1_BX EQU $0000    CONTAINED FROM BEGINNING
   TEST1_AX EQU $1023    $1023 BYTES
   TEST1_DH EQU $0E      FREQUENCY 16K

   TEST2_BX EQU $1023    CONTAINED FROM ADDRESS $1023
   TEST2_AX EQU $0800    $800 BYTES
   TEST2_DH EQU $0C      FREQUENCY 8K
   ```

5. To specify file names to be listed, click "change selection" with the left button. Use wild
   card characters * and ? to specify.

6. To return to the main menu, click "list end" with the left button.

HDWRITE.EXE

Chapter 6. HDWRITE.EXE

6.1 Outline

This is to save additional MS-DOS files to CD Contents or to fetch them. Can be used by MAKE or by batch file since it is a command line type program that does not use a mouse. The following six functions are provided:

1. Save files to CD Contents
2. Update files on CD Contents
3. Fetch files from CD Contents
4. Delete specified file
5. Delete files after a specified file
6. Output a file list

6.2 Execution Method

HDWRITE.EXE is executed from the MS-DOS command line.

6.3 Format

HDWRITE [Option specification] Path name [Group name] [File name]

6.4 Option

-U [M,N]	Add and update files. [M] specifies a maximum value for file length. [N] specifies offset in 800H units. A value for both [M] and [N] are contained in 8 digits HEX.
-X	Fetch files
-D	Put a delete mark on files
-K	Delete files after a specified file
-L	Output a file list

The following display will appear if HDWRITE is executed without any parameters.

```
HDWRITE Version 1.00 Copyright 1987 Hudson soft
使用法 : HDWRITE [スイッチ] パス名 [グループ名] [ラベル名]
        -U[M,N] ファイルの追加・更新、[M]は最大値、[N]はオフセット
                16進 8桁のバイト値指定、[N]は800Hの倍数であること
        -K      指定ファイル以後を全て削除する
        -D      ファイルに削除マークを付ける
        -X      ファイルの取り出し
        -L      一覧出力
```

Translation:

Direction :   HDWRITE [Switch] Path name [Group name] [Label name]

          -U[M,N]   Add or update files. [M] is a maximum value for the file, [N] is the offset in hex notation specified by an 8 digit value. [N] is a multiple of 800H.

          -K   Delete files after a specified file

          -D   Put a delete mark on files

          -X   Fetch files

          -L   Output a file list

Each command area has the following meaning:

Path name: MS-DOS drive:Directory¥ File name.Extension
                 Wild cards can be specified.

Group name: Consider this as a part of the file name managed by CD Contents. If this is not specified, it is treated as if there is no group specification.

Label name: File name.Extension managed in CD Contents. If this is not specified, the file name (File name. extension) will be used. If a wild card is specified at path name, do not specify a label name. A label name cannot be specified with the -X,-D, or -K options, because a path name equals a file name.extension for CD Contents.

6.5   Directions

We will give an example of actual use.

To save a new file to CD Contents

Name a MS-DOS file with group name [TEST] and save it under the name of
[TEST.BIN] .

```
E>HDWRITE TEST.BIN TEST
HDWRITE Version 1.00 Copyright 1987 Hudson soft
WRITE:D TEST TEST .BIN 17137 88-07-11 16:47:28 $001000 $000009
```

If a file [TEST.BIN] of [TEST] has already been saved and its volume is equal to or
smaller than the previous version, update the file. If the volume becomes larger, a delet
mark will be placed at the old location and it will be added in at the end location. If : is
new file, add it at the end location. To write a new file (especially program or character
data, etc. which is likely to change), save the maximum volume using the U option so that
there will be no need to change it later.

To fetch a file from CD Contents

Return a file in CD Contents called [TEST.BIN] and group name [TEST] to a MS-DOS
file [TEST.BIN] under the current directory.

```
E>HDWRITE -X TEST.BIN TEST
HDWRITE Version 1.00 Copyright 1987 Hudson soft
READ:D  TEST TEST .BIN 17137 88-07-11 16:47:28 $001000 $000009
```

To delete the specified file

Assume that the CD Contents file [TEST.BIN] and the group name [TEST] have been
deleted.

```
E>HDWRITE -D TEST.BIN TEST
HDWRITE Version 1.00 Copyright 1987 Hudson soft
DELETE:D TEST TEST.BIN 17137 88-07-11 16:47:28 $001000 $000009
```

To delete files after the specified file

Delete all files after the CD Contents file (TEST.BIN), group name (TEST).

```
E>HDWRITE -K TEST.BIN TEST
HDWRITE Version 1.00 Copyright 1987 Hudson soft
KILL:D   TEST   TEST.BIN 17137 88-07-11 16:47:28 $001000 $000009
Delete following files.  OK(Y) ?Y
Deleted
```

Nothing will happen if a key other than Y is pressed.

To list files

```
E>HDWRITE -L
HDWRITE Version 1.00 Copyright 1987 Hudson soft
MD_GROUP__NAME___.EXT_BYTES__YY/MM/DD_HH:MM:SS_RECORD__LENGTH
A CD_ROM MESSAGE.     7913472 88-02-24 18:57:02 $000000 $000F18
* SYSTEM PRE_GAP.3S    475136 56-02-04 02:02:48 $000F18 $0000E8
D TEST   TEST   .BIN    17137 88-07-11 16:47:28 $001000 $000009
D TEST   HS1    .CG     29696 88-06-04 15:12:32 $001009 $00000F
D TEST   HS2    .CG     29696 88-06-04 15:12:34 $001018 $00000F
D TEST   AME0   .CG     29696 88-06-04 15:12:34 $001027 $00000F
MD_GROUP_NAME___.EXT___BYTES_YY/MM/DD_HH:MM:SS__RECORD__LENGTH
```

CV.EXE

Chapter 7 CV.EXE

7.1 Outline

This is to convert [.MX] /[.BX] files created by AS/LK to CDROM data image files. Use this converter to make binary files for program files and write the files to CD Contents by using HDWRITE or HDMUSIC.

7.2 Execution Method

CV.EXE is executed from the MS-DOS command line.

7.3 Format

CV   Input file name   Output file name

7.4 Options

No options available

7.5 Directions

The following direction will be displayed if input and output file names are not specified before execution.

```
E>CV
binary file converter Ver 1.00 copyright 1988 Hudson soft
Usage: cv in_file out_file
```

The in_file is a [.MX] /[.BX] file name output by AS/LK, and out_file is a binary file name for CD ROM.

Example. To convert DSP.MX to DSP.BIN

```
E>CV DSP.MX DSP.BIN
binary file converter Ver 1.00 copyright 1988 Hudson soft
address = 00004000 length = 02e0
```

INFGET.EXE

Chapter 8. INFGET.EXE

8.1 Outline

This is to output file information saved in CD Contents as a EQU file that corresponds to the program. It can be redirected to create files to send to standard output.

8.2 Execution Method

INFGET.EXE is executed from the MS-DOS command line.

8.3 Format

INFGET [Option]

8.4 Options

-A   Data record also repeats absolute record from a start
-E   Extension is also a part of the label name
-G   Group name is also a part of the label name
--   Displays directions

```
E>INFGET--
Directions : INFGET - switch character
        Write CD system control information to standard text
        -A  Data record repeats absolute record from start.
        -E  Extension is also a part of label name.
        -G  A group name is also a part of label name.
```

Output format is as follows:

Label name _ SM EQU Start specification of music at label name   (Minutes) BCD data
Label name _ SS EQU Start specification of music at label name   (Seconds) BCD data
Label name _ SF EQU Start specification of music at label name   (Frame)   BCD data
Label name _ EM EQU End specification of music at label name   (Minutes) BCD data
Label name _ ES EQU End specification of music at label name   (Seconds) BCD data
Label name _ EF EQU End specification of music at label name   (Frame)   BCD data
Label name _ HI EQU Most significant byte of start record of the data at label name
Label name _ LW EQU Least significant 2 bytes of start record of the data at label name
Label name _ LN EQU Length of data is given in 2 bytes at label name *
Label name _ RL EQU Least significant 2 bytes of the number of records is given at
                        label name *
Label name _ RH EQU Most significant byte of the number of records is given at
                        label name *

* Output only more than 64K record.

8.5   Directions

This command is usually used with the output redirected to files.

```
A>INFGET >TEST.H

(TEST.H CONTENTS)

;TRACK NO.=01

;88-02-24          18:57:02               CD_ROM_MESSAGE.
MESSAGE_SM   EQU   $00
MESSAGE_SS   EQU   $02
MESSAGE_SF   EQU   $00
MESSAGE_EM   EQU   $00
MESSAGE_ES   EQU   $46
MESSAGE_EF   EQU   $65

;TRACK NO.=02

;88-09-05          01:34:26               SYSTEM_HUDSON.IPL
HUDSON_HI    EQU   $00
HUDSON_LW    EQU   $0000
HUDSON_RL    EQU   $0001
HUDSON_LN    EQU   $0800


;88-09-22          23:44:28               _IPL.INF
IPL_HI       EQU   $00
IPL_LW       EQU   $0001
IPL_RL       EQU   $0001
IPL_LN       EQU   $0080
```

CDEMUL.EXE

Chapter 9. CDEMUL.EXE

9.1 Outline

This substitutes for the CD-ROM drive by interpreting the CD-ROM command which is sent from Hu7 through parallel I/O connected to the Hu7 system. Pressing the ESC key will return to the command line.

9.2 Execution Method

CDEMUL.EXE is executed from the MS-DOS command line.

9 3 Format

CDEMUL [Option]

9.4 Options

A   Execute player simulation
D   Display output command and monitor the output commands
Q   Return other than PLAY-STATUS by SUB-Q sense
S   Emulation without emulating SEEK TIME
--   Display directions

```
PC ENGINE CDROM DRIVE EMULATOR VERSION 1.00
Direction: CDEMUL  Option
           A        All audio tracks
           D        Display the command sent
           Q        Return other than PLAY-STATUS by SUB-Q sense
           S        Do not emulate SEEK TIME
```

9.5   Directions

We will give an example of actual use.

To simulate player

CDEMUL A

Execute with the A option. Player simulation will be executed and will be displayed from the PC engine side. Used to check music.

To monitor a command

CDEMUL D

Execute with the D option. It will monitor a command sent from the PC engine. Display as follows:

```
A>CDEMUL D
PC ENGINE CDROM DRIVE EMULATOR VERSION 1.00
Start CD emulation
(use EXC key to stop)
TEST UN.   READY00 00 00 00 00 00 s00m
READ TOC        DE 00 00 00 00 00 00 00 00 00 01020000s00m
READ TOC        DE 01 00 00 00 00 00 00 00 00 00592500s00m
READ TOC        DE 02 02 00 00 00 00 00 00 00 00564604s00m
DATA READ       08 00 10 00 01 00 s00m
DATA READ       08 00 10 00 10 00 s00m
DATA READ       08 00 2C F8 01 00 s00m
```

The D option can be turned on/off by hitting "D" on the keyboard.

When a program to run requires ATIME

CDEMUL Q

Execute with the Q option. If the emulation program is run without this option, SUB-Q sense will not return ATIME status. Specify it when you want to run a program to look at ATIME, etc. using SUB-Q sense.

Do not emulate during CD seek time

CDEMUL S

Execute with the S option. This option does not perform during CD-seek-time, therefore, debug time will be shortened.

To end simulation

Press the ESC key to end emulation.

BACKUPEX.EXE

Chapter 10.   BACKUPEX.EXE

10.1 Outline

This is to record CD Contents to 8mm MT. File control information is also recorded to the backup. A tape that is baked up by this program is used as a master.

10.2 Execution Method

BACKUPEX.EXE is executed from the MS-DOS command line.

10.3 Format

BACKUPEX Comment

10.4 Options

No options available

The following directions will be displayed if executed without any comments.

```
A>BACKUPEX
BACKUP EXA Version 1.00 Copyright 1987 Hudson soft
Directions : BACKUPEX REM
             Backup to 8mm MT according to CD_DOC.DIR
             information.
```

Example (Backup to 8mm MT with the name such as SAMPLE PROGRAM.)

```
A>BACKUPEX SAMPLE PROGRAM
BACKUP EXA Version 1.00 Copyright 1987 Hudson soft
.................................... Display a file list
```

VERIFYEX.EXE

Chapter 11.   VERIFYEX.EXE

11.1 Outline

This is to compare 8mm MT contents with CD Contents. Always use this program to compare and check a master tape.

11.2 Execution Method

VERIFYEX.EXE is executed from the MS-DOS command line.

11.3 Format

VERIFYEX [File name]

11.4 Options

It will create a file of the verified results if a file name is specified. Print this as a part of master presentation record.

Example

```
A>VERIFYEX
VERIFY EXA Version 1.00 Copyright 1987 Hudson soft
------------------------------------------------------------
HUDSON CDROM DEVELOPMENT SYSTEM ver 1.00
8mm Backup Method 1
1. This file (256 bytes)
2. HD management file header (32 bytes)
3. Data (4000H*n + 800H*m)
Repeat 2. and 3.
FMK 1 pc.
------------------
DATE 88/09/15
TIME 03:58:42
REM  DEMO


------------------------------------------------------------
Compare to HD.  OK?  (Y)
```

To start comparison, press the Y key. A file list will be displayed. It will be OK unless an error is indicated. Pressing other than the Y key will return to the command line without a comparison.

RESTOREX.EXE

Chapter 12.   RESTOREX.EXE

12.1 Outline

This is to return files of the 8mm MT recorded by BACKUPEX.EXE to CD Contents.

12.2 Execution Method

RESTOREX.EXE is executed from the MS-DOS command line.

12.3 Format

RESTORE [Option]

12.4 Options

-I   Restores from the start of CD Contents. The present CD Contents will be lost and 8mm MT contents will be stored in its place.

-A   Add the 8mm MT contents to the end location of current file management.

The following directions will be displayed if nothing is specified.

```
A>RESTOREX
RESTORE EXA Version 1.00 Copyright 1987 Hudson soft
Direction : RESTOREX - Switch Character
            Restores 8mm MT contents to CD Contents
            -I Restores 8mm MT contents to top of CD Contents
            -A Returns to end location of the current file
               management
```

12.5 Directions

We will give an example of actual use.

To restore 8mm MT contents to CD Contents

RESTORE -I

Execute with the -I option.

```
A>RESTOREX
RESTORE EXA Version 1.00 Copyright 1987 Hudson soft
--------------------------------------------------------------------
HUDSON CDROM DEVELOPMENT SYSTEM ver 1.00
8mm Backup Method 1
1. This file (256 bytes)
2. HD management file header (32 bytes)
3. Data (4000H*n + 800H*m)
Repeat 2. and 3.
FMK 1 pc.
----------------
DATE 88/09/15
TIME 03:58:42
REM  DEMO

--------------------------------------------------------------------
Restore to HD.  OK?  (Y)
```

Pressing other than the Y key will return to the command line.

To add 8mm MT contents to CD Contents

RESTORE -A

Execute with the -A option.

LISTEX.EXE

Chapter 13.   LISTEX.EXE

13.1 Outline

This is to display a list of contents of the 8mm MT recorded by using BACKUPEX.EXE, etc.

13.2 Execution Method

LISTEX.EXE is executed from the MS-DOS command line.

13.3 Format

LISTEX

13.4 Options

No options available

Example

A > LISTEX
LIST EXA Version 1.00 Copyright 1987 Hudson soft
...... A file list is displayed with the header information

```
┌─────────────────────────────────────┐
│  ┌───────────────────────────────┐  │
│  │                               │  │
│  │        MSBACKUP.EXE           │  │
│  │                               │  │
│  └───────────────────────────────┘  │
└─────────────────────────────────────┘
```

Chapter 14.   MSBACKUP.EXE

14.1 Outline

This is to backup MS-DOS files to 8mm MT. It can also add, fetch files, and display lists.

14.2 Execution Method

MSBACKUP.EXE is executed from the MS-DOS command line.

14.3 Format

MSBACKUP [Option]

14.4 Options

/I   Write a file from the start of the 8mm MT
/D   Do not copy subdirectories and write directories only
/T   (Date) (-Date)
      Write files of the specified day or duration
/L   List 8mm MT files
/R   Restore from 8mm MT to MS-DOS

The following directions will be displayed if options are not specified.

```
MS-DOS 8mm MT BACKUP version 1.00
Directions: MSBACKUP [Switch] file name REM
            Copy MS-DOS files to 8mm MT
            /I E:¥¥*.*REM     Copy from the start of 8mm MT
            /D                Do not copy subdirectories
            /T[DATE]          Copy between specified dates
                              (88/02/12-88/04/21,today is omitted)
            /L[¥PATH]         A 8mm MT file list (/T is valid)
            /R[¥PATH]         Restore from 8mm MT to MS-DOS
                              (/T is valid)
```

14.5 Directions

We will give an example of actual use.

To backup all specified drives

```
B>MSBACKUP /I A:¥*.*
```

Explanation : Copy all in drive A: (including subdirectories) to 8mm MT.

SFTFMT.EXE

To additionally backup all specified drives

```
B>MSBACKUP B:¥*.*
```

Explanation : Copy additionally all in drive B: (including subdirectories) to 8mm MT.

To display the directory of the specified file

```
B>MSBACKUP /L¥*.ASM
```

Explanation : Display all ASM files in the root directory of the 8mm MT.

To restore the specified file to the specified drive

```
B>MSBACKUP /R¥*.ASM C:¥
```

Explanation : Copy all ASM files in the root directory of the 8mm MT to drive C:¥. The subdirectory will be automatically created.

To backup files of the specified date

```
B>MSBACKUP /T88/09/30
```

Explanation : Only backup the files dated 88/09/30 to 8mm MT.

To back up files of specified dates

```
B>MSBACKUP /T88/09/30-88/10/03
```

Explanation : Only backup the files dated between 88/09/30 and 88/10/03 to 8mm MT.

File names which can be specified by the /L and /R options are:

/L	All
/L¥*.ASM	All ASM file within root
/L¥*¥*.ASM	All ASM files in all directory
/L¥BIN¥*.EXE	All EXE files in ¥BIN
/L¥BIN¥*¥*.OBJ	All OBJ files in the directory under ¥BIN

Chapter 15.   SFTFMT.EXE

15.1 Outline

This is to initialize the MS-DOS drive within CD Contents. This device driver can set a minimum of 1 drive to a maximum of 8 drives of MS-DOS partitions. Each drive can be expanded up to 60M.

15.2 Execution Method

SFTFMT.EXE is executed from the MS-DOS command line.

15.3 Format

SFTFMT [Drive : Volume name]

15.4 Options

No options available

15.5 Directions

In the following cases, use this command to format. Also backup your data before formatting.

1) When you change parameters of SCSIDEV.SYS in CONFIG.SYS.

2) When you delete all the files in a temporary drive and construct a new file.

If the following drive name: volume name is input at the command line, the program will wait for a confirming Y key. If other than the Y key is pressed, it returns to the command line without doing anything. Pressing the Y key will analyze drive parameters, clear the FAT area, set a volume name at the start of a directory area, and clear everythingelse. Date and time of the occurrance will be written with the volume name.

A > SFTFMT E:60M_Disk

Format E: OK? (Y)

You can use any characters for a volume name. For the file name, only use the characters allowed in MS-DOS.

EJECTEX.EXE

Chapter 16.   EJECTEX.EXE

16.1 Outline

This is to open the door of the 8mm MT unit. If a 8mm MT is installed, rewind the 8mm MT before opening the door.

16.2 Execution Method

EJECTEX.EXE is executed from the MS-DOS command line.

16.3 Format

EJECT

16.4 Options

No options available

```
┌─────────────────────────────────────┐
│ ┌─────────────────────────────────┐ │
│ │                                 │ │
│ │       HD384FMT.EXE              │ │
│ │                                 │ │
│ └─────────────────────────────────┘ │
└──┬──────────────────────────────────┘
   │                                  │
   └──────────────────────────────────┘
```

Chapter 17.   HD384FMT.EXE

17.1 Outline

This is to physically format the Hu7 CD Contents Hard Disk Unit.

17.2 Execution Method

HD384FMT.EXE is executed from the MS-DOS command line.

17.3 Format

HD384FMT

17.4 Options

No options available.

17.5 Directions

This command will bring up the following display.

```
Initialize Hu7 CD Contents Hard Disk Unit
OK?     (Y)
```

The Y key will start initialization. Other keys will end the command without initializing.

Note: It will take more than 20 minutes to execute this command. Start restoring by using
       the message data of the first track of a 8mm MT.

HDTOC.EXE

Chapter 18.   HDTOC.EXE

18.1 Outline

This is to create files of TOC information in CD Contents. Create files of TOC information to use as a part of master documents by using this command.

18.2 Execution Method

HDTOC.EXE is executed from the MS-DOS command line.

18.3 Format

 ʰDTOC File name

18.4 Options

No options available.

18.5 Directions

This command will output TOC information to the specified file. Print this file as a part of the documents to turn in with the masters.

-------Information---
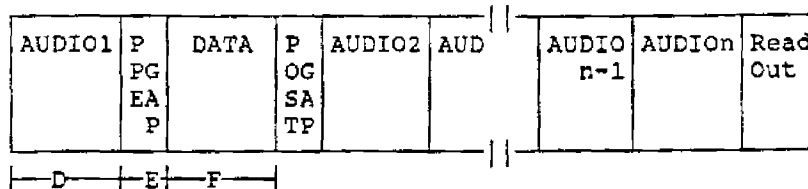
Explanation of the File Management Method of CD System

All files in CD Contents are managed by the MS-DOS files called CD_DOC.DIR. These files are located in the root directory of the first MS-DOS drive (an 8M drive can be used without option specification). This drive number is input at the execution of SCSIDEV.SYS. The drive number will not be changed later. Drive D: will remain unchanged (meaning that files may be created in a new drive). Files are not managed by MS-DOS nor a device driver. The CD_DOC.DIR file manages them in each program. Management is done in one direction and addition and deletion is possible from the end of the file as a rule. However, withn HDWRITE, if the size of a new file is smaller than or the same as the target file, it can be written over at the same location. If 8 HEX digits are specified after the /U option of HDWRITE, the capacity will be expanded from the first writing. It means that you always write on the same location. Files in the middle can be deleted by putting a delete mark on them, but it does not necessarily increase the empty area within the file. The only way to delete a file completely is to backup to 8mm MT once, then use the HDMUSIC. EXE MT command to initialize CD Contents and then restore only the specified files to CD Contents. Both DATA and AUDIO are managed by 2048 bytes per record. Only INFGET.EXE and CDEMUL.EXE are recalculated to 2353 bytes for one record. Record number 0 means 00 minutes 02 seconds 00 frame. One record is one frame (1/75 seconds).

Differences between CD system record number management and the actual CD ROM

CD system considers 2048 bytes as one record.

AUDIO1	P PG EA P	DATA	P OG SA TP	AUDIO2	AUDI			AUDIO n-1	AUDIOn	Empty Area

├──A──┤├─B┤├──C──┤
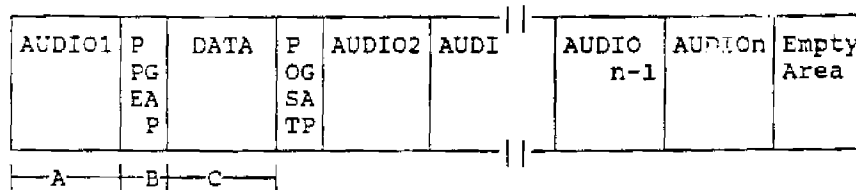
CD ROM (AUDIO is considered as 2352 bytes and DATA as 2048 bytes per record)

AUDIO1	P PG EA P	DATA	P OG SA TP	AUDIO2	AUD			AUDIO n-1	AUDIOn	Read Out

├──D──┤├─E┤├──F──┤

AUDIO area record computation $D = (A*2048+2351)/2352$ Integral value
GAP area   record computation $E = B$
DATA area   record computation $F = C$

CD_DOC.DIR file contents

```
OFFSET   LENGTH   CONTENTS
00H      1        Attribute (80H=DATA,COH=AUDIO,00H=Nonsense)
01H      3        Record no. of 2048 bytes unit (LOW,MID,HIGH)
04H      3        No. of record of 2048 bytes unit (LOW,MID,HIGH)
07H      6        Group name
0DH      8        File name (Label name)
15H      3        Extension
18H      4        No. of byte (From low byte to high byte)
1CH      2        Time (Time format of MS-DOS file)
1EH      2        Date (Date format of MS-DOS file)
```

DUMP example of CD_DOC.DIR file

```
00000000    C0 00 00 00 18 0F 00 43-44 5F 52 4F 4D 4D 45 53
00000010    53 41 47 45 00 00 00 00-00 C0 78 00 21 97 58 10

00000020    00 18 0F 00 E8 00 00 53-59 53 54 45 4D 50 52 45
00000030    5F 47 41 50 20 33 53 20-00 40 07 00 58 10 58 10

00000040    80 00 10 00 08 00 00 54-45 53 54 00 00 54 45 53
00000050    54 00 00 00 00 42 49 4E-2A 03 00 00 3D 7C 8E 10

00000060    80 08 10 00 10 00 00 54-45 53 54 00 00 46 4F 52
00000070    44 00 00 00 00 43 47 00-00 74 00 00 8C 79 8E 10
```

Above CD Contents in HDWRITE /L display

```
MO_GROUP_NAME___.EXT__BYTES_YY/MM/DD_HH:MM:SS__RECORD__LENGTH
A CD_ROM MESSAGE.   7913472 88-02-24 18:57:02 $000000 $000F18
* SYSTEM PRE_GAP.3S  475136 88-02-24 02:02:48 $000F18 $0000E8
D TEST   TEST  .BIN     810 88-04-14 15:33:58 $001000 $000008
D TEST   FORD  .CG    29696 88-04-14 15:12:24 $001008 $000010
```

About IPL

```
        seg    cseg
;-------------------------------------------------------------------------------------------
;      IPLINF
;
iplinftop:
        db     0      ;00 IPLBLK H    ;load start block no. of CD
        db     0      ;01 IPLBLK M    ;load start block no. of CD
        db     0      ;02 IPLBLK L    ;load start block no. of CD
        db     0      ;03 IPLBLN      ;load block length of CD
        db     0      ;04 IPLSTA L    ;program load address L
        db     0      ;05 IPLSTA H    ;program load address H
        db     0      ;06 IPLJMP L    ;program execute address offset L
        db     0      ;07 IPLJMP H    ;program execute address offset H
;
        db     ?      ;08 IPLMPR2     ;ipl set mpr2
        db     ?      ;09 IPLMPR3     ;ipl set mpr3
        db     ?      ;10 IPLMPR4     ;ipl set mpr4
        db     ?      ;11 IPLMPR5     ;ipl set mpr5
        db     ?      ;12 IPLMPR6     ;ipl set mpr6
;
        db     ?      ;13 OPENMODE    ;opening mode
                                      ;bit76543210
                                      ;    |||    |└─ data read to vram
                                      ;    |||    |   0 : not read
                                      ;    |||    |   1 : read
                                      ;    |||    └── data read to adpcm
                                      ;    |||        0 : not read
                                      ;    |||        1 : read
                                      ;    ||└──────── bg display
                                      ;    ||          0 : display on
                                      ;    ||          1 : display off
                                      ;    |└──────── adpcm play
                                      ;    |           0 : play
                                      ;    |           1 : not play
                                      ;    └──────── adpcm play mode
                                      ;                0 : single
                                      ;                1 : repeat
;
        db     ?      ;14 GRPBLK H    ;opening graphic data record no.
        db     ?      ;15 GRPBLK M    ;opening graphic data record no.
        db     ?      ;16 GRPBLK L    ;opening graphic data record no.
        db     ?      ;17 GRPBLN      ;opening graphic data length
        db     ?      ;18 GRPADR L    ;opening graphic data read address L
        db     ?      ;19 GRPADR H    ;opening graphic data read address H
;
        db     ?      ;20 ADPBLK H    ;opening ADPCM data record no.
        db     ?      ;21 ADPBLK M    ;opening ADPCM data record no.
        db     ?      ;22 ADPBLK L    ;opening ADPCM data record no.
        db     ?      ;23 ADPBLN      ;opening ADPCM data length
        db     ?      ;24 ADPRATE     ;opening ADPCM sampling rate
;
```

```
        db      0       ;25             ;(reserve)
        db      0       ;26             ;(reserve)
        db      0       ;27             ;(reserve)
        db      0       ;28             ;(reserve)
        db      0       ;29             ;(reserve)
        db      0       ;30             ;(reserve)
        db      0       ;31             ;(reserve)
;
        db      'PC Engine CD-ROM SYSTEM',0      ;(ID string)
        db      'Copyright HUDSON SOFT / NEC Home Electronics, Ltd.',0
        db      '                        ;program name (16 bytes)
        db      '        '               ;           (6  bytes)
;=====================================================================================================
```